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

PROPOSAL

INCLUDES ADDENDUM No. 1 DATED 06-26-2025

DATE AND TIME OF BID OPENING: **Jul 15, 2025 AT 02:00 PM**

CONTRACT ID	C205072
WBS	40237.3.2

FEDERAL-AID NO.	STATE FUNDED
COUNTY	NEW HANOVER, PENDER
T.I.P NO.	R-3300A
MILES	7.044
ROUTE NO.	US-17
LOCATION	US-17 (HAMPSTEAD BYPASS) FROM US-17 BYPASS SOUTH OF HAMPSTEAD TO NC-210.
TYPE OF WORK	GRADING, DRAINAGE, PAVING, AND STRUCTURES.

NOTICE:

ALL BIDDERS 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 BIDDER 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. BIDDERS 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. NOTWITHSTANDING THESE LIMITATIONS ON BIDDING, THE BIDDER WHO IS AWARDED ANY FEDERAL - AID FUNDED PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING.

BIDS WILL BE RECEIVED AS SHOWN BELOW:

THIS IS A ROADWAY & STRUCTURE PROPOSAL

5% BID BOND OR BID DEPOSIT REQUIRED

PROPOSAL FOR THE CONSTRUCTION OF

CONTRACT No. C205072 IN NEW HANOVER AND PENDER COUNTIES, NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION,

RALEIGH, NORTH CAROLINA

The Bidder has carefully examined the location of the proposed work to be known as Contract No. **C205072** has carefully examined the plans and specifications, which are acknowledged to be part of the proposal, the special provisions, the proposal, the form of contract, and the forms of contract payment bond and contract performance bond; and thoroughly understands the stipulations, requirements and provisions. The undersigned bidder agrees to bound upon his execution of the bid and subsequent award to him by the Board of Transportation in accordance with this proposal to provide the necessary contract payment bond and contract performance bond within fourteen days after the written notice of award is received by him. The undersigned Bidder further agrees to provide all necessary machinery, tools, labor, and other means of construction; and to do all the work and to furnish all materials, except as otherwise noted, necessary to perform and complete the said contract in accordance with the *2024 Standard Specifications for Roads and Structures* by the dates(s) specified in the Project Special Provisions and in accordance with the requirements of the Engineer, and at the unit or lump sum prices, as the case may be, for the various items given on the sheets contained herein.

The Bidder shall provide and furnish all the materials, machinery, implements, appliances and tools, and perform the work and required labor to construct and complete Contract No. **C205072** in **New Hanover and Pender Counties**, for the unit or lump sum prices, as the case may be, bid by the Bidder in his bid and according to the proposal, plans, and specifications prepared by said Department, which proposal, plans, and specifications show the details covering this project, and hereby become a part of this contract.

The published volume entitled *North Carolina Department of Transportation, Raleigh, Standard Specifications for Roads and Structures, January 2024* with all amendments and supplements thereto, is by reference incorporated into and made a part of this contract; that, except as herein modified, all the construction and work included in this contract is to be done in accordance with the specifications contained in said volume, and amendments and supplements thereto, under the direction of the Engineer.

If the proposal is accepted and the award is made, 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 over the signature of the said Contract Officer.

The quantities shown in the itemized proposal for the project are considered to be approximate only and are given as the basis for comparison of bids. The Department of Transportation may increase or decrease the quantity of any item or portion of the work as may be deemed necessary or expedient.

An increase or decrease in the quantity of an item will not be regarded as sufficient ground for an increase or decrease in the unit prices, nor in the time allowed for the completion of the work, except as provided for the contract.

Accompanying this bid is 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 Bidder 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 him, as provided in the *Standard Specifications*; otherwise said deposit will be returned to the Bidder.

State Contract Officer

Signed by:
Ronald Elton Davenport, Jr.
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06/26/2025

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PROJECT SPECIAL PROVISIONS

GENERAL

AWARD OF CONTRACT:
(1-16-18)(Rev. 5-28-24) 103 SP1 G01

Revise the *Standard Specifications* as follows:

Page 1-24, Subarticle 103-4(A) General, 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 60 days after the opening of bids or upon issuance of any necessary debt instrument, whichever is later, but not to exceed 120 days; except with the consent of the lowest responsible bidder 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 bidder. In the absence of such agreement, the lowest responsible bidder may withdraw his bid at the expiration of 120 days without penalty if no notice of award has been issued.

HAUL ROADS:
(7-16-24) 105 SP1 G04

Revise the *Standard Specifications* as follows:

Page 1-45, Article 105-15 RESTRICTION OF LOAD LIMITS, line 31, add the following after second sentence of the second paragraph:

At least 30 days prior to use, the Contractor shall notify the Engineer of any public road proposed for use as a haul road for the project.

CONTRACT TIME AND LIQUIDATED DAMAGES:
(8-15-00) (Rev. 5-16-23) 108 SP1 G08 A

The date of availability for this contract is **August 25, 2025**, except that work in jurisdictional waters and wetlands shall not begin until a meeting between the DOT, Regulatory Agencies, and the Contractor is held as stipulated in the permits contained elsewhere in this proposal. This delay in availability has been considered in determining the contract time for this project.

The completion date for this contract is **March 30, 2030**.

Except where otherwise provided by the contract, observation periods required by the contract will not be a part of the work to be completed by the completion date and/or intermediate contract times stated in the contract. The acceptable completion of the observation periods that extend beyond the final completion date shall be a part of the work covered by the performance and payment bonds.

The liquidated damages for this contract are **Two Hundred Dollars ($ 200.00)** per calendar day. These liquidated damages will not be cumulative with any liquidated damages which may become chargeable under Intermediate Contract Time Number 1.

INTERMEDIATE CONTRACT TIME NUMBER 1 AND LIQUIDATED DAMAGES:
(7-1-95) (Rev. 2-21-12) 108 SP1 G13 A

Except for that work required under the Project Special Provisions entitled *Planting, Reforestation* and/or *Permanent Vegetation Establishment*, included elsewhere in this proposal, the Contractor will be required to complete all work included in this contract and shall place and maintain traffic on same.

The date of availability for this intermediate contract time is **August 25, 2025**.

The completion date for this intermediate contract time is **October 1, 2029**.

The liquidated damages for this intermediate contract time are **Eleven Thousand Dollars ($ 11,000.00)** per calendar day.

Upon apparent completion of all the work required to be completed by this intermediate date, a final inspection will be held in accordance with Article 105-17 and upon acceptance, the Department will assume responsibility for the maintenance of all work except *Planting, Reforestation* and/or *Permanent Vegetation Establishment*. The Contractor will be responsible for and shall make corrections of all damages to the completed roadway caused by his planting operations, whether occurring prior to or after placing traffic through the project.

INTERMEDIATE CONTRACT TIME NUMBER 2 AND LIQUIDATED DAMAGES:
(2-20-07) 108 SP1 G14 A

The Contractor shall complete the required work of installing, maintaining, and removing the traffic control devices for lane closures and restoring traffic to the existing traffic pattern. The Contractor shall not close or narrow a lane of traffic on **NC 140 (-Y33-), -L1- , NC 210 (-Y30-), or -L1_NORTHERN-** during the following time restrictions:

DAY AND TIME RESTRICTIONS

Monday thru Sunday, 6:00 AM to 7:00 PM

In addition, the Contractor shall not close or narrow a lane of traffic on **NC 140 (-Y33-), -L1-, NC 210 (-Y30-), or -L1_NORTHERN-**, detain and/or alter the traffic flow on or during holidays, holiday weekends, special events, or any other time when traffic is unusually heavy, including the following schedules:

HOLIDAY AND HOLIDAY WEEKEND LANE CLOSURE RESTRICTIONS

1. For **unexpected occurrence** that creates unusually high traffic volumes, as directed by the Engineer.

2. For **New Year's Day**, between the hours of **6:00 AM** December 31st and **7:00 PM** January 2nd. If New Year's Day is on a Friday, Saturday, Sunday or Monday, then until **7:00 PM** the following Tuesday.

3. For **Easter**, between the hours of **6:00 AM** Thursday and **7:00 PM** Monday.

4. For **Memorial Day**, between the hours of **6:00 AM** Friday and **7:00 PM** Tuesday.

5. For **Independence Day**, between the hours of **6:00 AM** the day before Independence Day and **7:00 PM** the day after Independence Day.

   If **Independence Day** is on a Friday, Saturday, Sunday or Monday, then between the hours of **6:00 AM** the Thursday before Independence Day and **7:00 PM** the Tuesday after Independence Day.

6. For **Labor Day**, between the hours of **6:00 AM** Friday and **7:00 PM** Tuesday.

7. For **Thanksgiving**, between the hours of **6:00 AM** Tuesday and **7:00 PM** Monday.

8. For **Christmas**, between the hours of **6:00 AM** the Friday before the week of Christmas Day and **7:00 PM** the following Tuesday after the week of Christmas Day.

9. For the **Azalea Festival**, between the hours of **6:00 AM** the **Tuesday before the weekend** of the **Azalea Festival** and **7:00 PM** the **Monday after the weekend** of the **Azalea Festival**.

Holidays and holiday weekends shall include New Year's, Easter, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas. The Contractor shall schedule his work so that lane closures will not be required during these periods, unless otherwise directed by the Engineer.

The time of availability for this intermediate contract work shall be the time the Contractor begins to install all traffic control devices for lane closures according to the time restrictions listed herein.

The completion time for this intermediate contract work shall be the time the Contractor is required to complete the removal of all traffic control devices for lane closures according to the time restrictions stated above and place traffic in the existing traffic pattern.

The liquidated damages are **Five Hundred Dollars ($ 500.00)** per hour.

INTERMEDIATE CONTRACT TIME NUMBER 3 AND LIQUIDATED DAMAGES:
(2-20-07) 108 SP1 G14 C

The Contractor shall complete the required work of installing, maintaining, and removing the traffic control devices for lane closures and restoring traffic to the existing traffic pattern. The Contractor shall not close or narrow a lane of traffic on **Sidbury Road (-Y34-) or Harrison Creek Road (-Y35-)** during the following time restrictions:

DAY AND TIME RESTRICTIONS

Monday thru Friday, 6:00 AM to 9:00 AM and 3:00 PM to 6:00 PM

The time of availability for this intermediate contract time will be the time the Contractor begins to install traffic control devices required for the lane closures according to the time restrictions stated herein.

The completion time for this intermediate contract time will be the time the Contractor is required to complete the removal of traffic control devices required for the lane closures according to the time restrictions stated herein and restore traffic to the existing traffic pattern.

The liquidated damages are **Two Hundred Fifty Dollars ($ 250.00)** per hour.

INTERMEDIATE CONTRACT TIME NUMBER 4 AND LIQUIDATED DAMAGES:
(2-20-07) (Rev. 10-15-13) 108 SP1 G14 E

The Contractor shall complete the required work of installing, maintaining, and removing the traffic control devices for road closures, **using a Rolling Roadblock Operation**, and restoring traffic to the existing traffic pattern. The Contractor shall not close **NC 140 (-Y33-), -L1-, or the existing Flyover to West NC 140** during the following time restrictions:

DAY AND TIME RESTRICTIONS

Monday thru Sunday, 5:00 AM to 11:00 PM

The maximum allowable time for **Hanging Girders** is **thirty (30)** minutes for **NC 140 (-Y33-), -L1-, or the existing Flyover to West NC 140**. The Contractor shall reopen the travel lanes to traffic until any resulting traffic queue is depleted.

The time of availability for this intermediate contract time will be the time the Contractor begins to install traffic control devices required for the road closures according to the time restrictions stated herein.

The completion time for this intermediate contract time will be the time the Contractor is required to complete the removal of traffic control devices required for the road closures according to the time restrictions stated herein and restore traffic to the existing traffic pattern.

The liquidated damages are **Two Hundred Fifty Dollars ($ 250.00)** per fifteen **(15)** minute time period.

PERMANENT VEGETATION ESTABLISHMENT:
(2-16-12)(Rev. 1-16-24) 104 SP1 G16

Establish a permanent stand of the vegetation mixture shown in the contract. During the period between initial vegetation planting and final project acceptance, perform all work necessary to establish permanent vegetation on all erodible areas 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 applicable section of the *Standard Specifications*. All work required for initial vegetation planting shall be performed as a part of the work necessary for the completion and acceptance of the Intermediate Contract Time (ICT). Between the time of ICT and Final Project acceptance, or otherwise referred to as the vegetation establishment period, the Department will be responsible for preparing the required National Pollutant Discharge Elimination System (NPDES) inspection records.

Once the Engineer has determined that the permanent vegetation establishment requirement has been achieved at an 80% vegetation density (the amount of established vegetation per given area to stabilize the soil) and no erodible areas exist within the project limits, the Contractor will be notified to remove the remaining erosion control devices that are no longer needed. The Contractor will 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.

Payment for *Response for Erosion Control*, *Seeding and Mulching, Repair Seeding*, *Supplemental Seeding, Mowing, Fertilizer Topdressing, Silt Excavation,* and *Stone for Erosion Control* will be made at contract unit prices for the affected items. Work required that is not represented by contract line items will be paid in accordance with Articles 104-7 or 104-3 of the *Standard Specifications*. No additional compensation will be made for maintenance and removal of temporary erosion control items.

CONSTRUCTION MORATORIUM (Bats):
(1-19-16) SP1 G18C

No tree cutting will be allowed when **temperature is 40 degrees or less**.

MAJOR CONTRACT ITEMS:
(2-19-02)(Rev. 1-16-24) 104 SP1 G28

The following listed items are the major contract items for this contract (see Article 104-5 of the *Standard Specifications*):

Line #	**Description**
8	Borrow Excavation

SPECIALTY ITEMS:

(7-1-95)(Rev. 1-16-24) 108-6 SP1 G37

Items listed below will be the specialty items for this contract (see Article 108-6 of the *Standard Specifications*).

Line #	**Description**
97-110	Guardrail
111-113	Fencing
118-154	Signing
169-174, 179-181	Long-Life Pavement Markings
182-183	Permanent Pavement Markers
185-197	Utility Construction
198-239	Erosion Control

FUEL PRICE ADJUSTMENT:

(11-15-05)(Rev. 1-16-24) 109-8 SP1 G43

Page 1-82, Article 109-8, FUEL PRICE ADJUSTMENTS, add the following:

The base index price for DIESEL #2 FUEL is **$ 2.2231** per gallon. Where any of the following are included as pay items in the contract, they will be eligible for fuel price adjustment.

The pay items and the fuel factor used in calculating adjustments to be made will be as follows:

Description	**Units**	**Fuel Usage Factor Diesel**
Unclassified Excavation	Gal/CY	0.29
Borrow Excavation	Gal/CY	0.29
Class IV Subgrade Stabilization	Gal/Ton	0.55
Aggregate Base Course	Gal/Ton	0.55
Sub-Ballast	Gal/Ton	0.55
Erosion Control Stone	Gal/Ton	0.55
Rip Rap, Class _____	Gal/Ton	0.55
Asphalt Concrete Base Course, Type ____	Gal/Ton	0.90 or 2.90
Asphalt Concrete Intermediate Course, Type ____	Gal/Ton	0.90 or 2.90
Asphalt Concrete Surface Course, Type ____	Gal/Ton	0.90 or 2.90
Open-Graded Asphalt Friction Course	Gal/Ton	0.90 or 2.90
Permeable Asphalt Drainage Course, Type ____	Gal/Ton	0.90 or 2.90
Sand Asphalt Surface Course, Type ____	Gal/Ton	0.90 or 2.90
Ultra-thin Bonded Wearing Course	Gal/Ton	0.90 or 2.90
Aggregate for Cement Treated Base Course	Gal/Ton	0.55
Portland Cement for Cement Treated Base Course	Gal/Ton	0.55
> 11" Portland Cement Concrete Pavement	Gal/SY	0.327
Concrete Shoulders Adjacent to > 11” Pavement	Gal/SY	0.327
9” to 11" Portland Cement Concrete Pavement	Gal/SY	0.272
Concrete Shoulders Adjacent to 9” to 11” Pavement	Gal/SY	0.272
< 9” Portland Cement Concrete Pavement	Gal/SY	0.245
Concrete Shoulders Adjacent to < 9” Pavement	Gal/SY	0.245

For the asphalt items noted in the chart as eligible for fuel adjustments, the bidder may include the *Fuel Usage Factor Adjustment Form* with their bid submission if they elect to use the fuel usage factor. The *Fuel Usage Factor Adjustment Form* is found at the following link:

https://connect.ncdot.gov/letting/LetCentral/Fuel%20Usage%20Factor%20Adjustment%20Form%20-%20%20Starting%20Nov%202022%20Lettings.pdf

Select either 2.90 Gal/Ton fuel factor or 0.90 Gal/Ton fuel factor for each asphalt line item on the *Fuel Usage Factor Adjustment Form*. The selected fuel factor for each asphalt item will remain in effect for the duration of the contract.

Failure to complete the *Fuel Usage Factor Adjustment Form* will result in using 2.90 gallons per ton as the Fuel Usage Factor for Diesel for the asphalt items noted above. The contractor will not be permitted to change the Fuel Usage Factor after the bids are submitted.

STEEL PRICE ADJUSTMENT:
(4-19-22)(Rev. 12-20-22) SP1 G47

Description and Purpose

Steel price adjustments will be made to the payments due the Contractor for items as defined herein that are permanently incorporated into the work, when the price of raw steel mill products utilized on the contract have fluctuated. The Department will adjust monthly progress payments up or down as appropriate for cost changes in steel according to this provision.

Eligible Items

The list of eligible bid items for steel price adjustment can be found on the Departments website at the following address:

https://connect.ncdot.gov/letting/LetCentral/Eligible%20Bid%20Items%20for%20Steel%20Price%20Adjustment.xlsx

Nuts, bolts, anchor bolts, rebar chairs, connecting bands and other miscellaneous hardware associated with these items shall not be included in the price adjustment.

Adjustments will only be made for fluctuations in the material cost of the steel used in the above products as specified in the Product Relationship Table below. The producing mill is defined as the source of steel product before any fabrication has occurred (e.g., coil, plate, rebar, hot rolled shapes, etc.). No adjustment will be made for changes in the cost of fabrication, coating, shipping, storage, etc.

No steel price adjustments will be made for any products manufactured from steel having an adjustment date, as defined by the Product Relationship Table below, prior to the letting date.

Bid Submittal Requirements

The successful bidder, within 14 calendar days after the notice of award is received by him, shall provide the completed Form SPA-1 to the Department (State Contract Officer or Division Contract Engineer) along with the payment bonds, performance bonds and contract execution signature sheets in a single submittal. If Form SPA-1 is not included in the same submittal as the payment bonds, performance bonds and contract execution signature sheets, the Contractor will not be eligible for any steel price adjustment for any item in the contract for the life of the contract. Form SPA-1 can be found on the Department's website at the following address:

https://connect.ncdot.gov/letting/LetCentral/Form%20SPA-1.xlsm

The Contractor shall provide Form SPA-1 listing the Contract Line Number, (with corresponding Item Number, Item Description, and Category) for the steel products they wish to have an adjustment calculated. Only the contract items corresponding to the list of eligible item numbers for steel price adjustment may be entered on Form SPA-1. The Contractor may choose to have steel price adjustment applied to any, all, or none of the eligible items. However, the Contractor's selection of items for steel price adjustment or non-selection (non-participation)

may not be changed once Form SPA-1 has been received by the Department. Items the Bidder chooses for steel price adjustment must be designated by writing the word "Yes" in the column titled "Option" by each Pay Item chosen for adjustment. Should the bidder elect an eligible steel price item, the entire quantity of the line item will be subject to the price adjustment for the duration of the Contract. The Bidder's designations on Form SPA-1 must be written in ink or typed and signed by the Bidder (Prime Contractor) to be considered complete. Items not properly designated, designated with "No", or left blank on the Bidder's Form SPA-1 will automatically be removed from consideration for adjustment. No steel items will be eligible for steel price adjustment on this Project if the Bidder fails to return Form SPA-1 in accordance with this provision.

Establishing the Base Price

The Department will use a blend of monthly average prices as reported from the Fastmarkets platform to calculate the monthly adjustment indices (BI and MI). This data is typically available on the first day of the month for the preceding month. The indices will be calculated by the Department for the different categories found on the Product Relationship Table below. For item numbers that include multiple types of steel products, the category listed for that item number will be used for adjusting each steel component.

The bidding index for Category 1 Steel items is **$ 39.00** per hundredweight.
The bidding index for Category 2 Steel items is **$ 56.85** per hundredweight.
The bidding index for Category 3 Steel items is **$ 63.53** per hundredweight.
The bidding index for Category 4 Steel items is **$ 48.26** per hundredweight.
The bidding index for Category 5 Steel items is **$ 52.81** per hundredweight.
The bidding index for Category 6 Steel items is **$ 63.84** per hundredweight.
The bidding index for Category 7 Steel items is **$ 42.30** per hundredweight.

The bidding index represents a selling price of steel based on Fastmarkets data for the month of **April 2025**.

MI = Monthly Index. – in Dollars ($) per hundredweight (CWT). Use the adjustment indices from the month the steel was shipped from the producing mill, received on the project, or member cast as defined in the Product Relationship Table.

BI = Bidding Index. - in Dollars ($) per hundredweight (CWT). Use the adjustment indices as listed in the proposal.

Product Relationship Table			
Steel Product (Title)	BI, MI*	Adjustment Date for MI	Category
Reinforcing Steel, Bridge Deck, and SIP Forms	Based on one or more Fastmarkets indices	Delivery Date from Producing Mill	1
Structural Steel and Encasement Pipe	Based on one or more Fastmarkets indices	Delivery Date from Producing Mill	2
Steel H-Piles, Soldier Pile Walls	Based on one or more Fastmarkets indices	Delivery Date from Producing Mill	3

Guardrail Items and Pipe Piles	Based on one or more Fastmarkets indices	Material Received Date**	4
Fence Items	Based on one or more Fastmarkets indices	Material Received Date**	5
Overhead Sign Assembly, Signal Poles, High Mount Standards	Based on one or more Fastmarkets indices	Material Received Date**	6
Prestressed Concrete Members	Based on one or more Fastmarkets indices	Cast Date of Member	7
* BI and MI are in converted units of Dollars per Hundredweight ($/CWT)			
** Material Received Date is defined as the date the materials are received on the project site. If a material prepayment is made for a Category 4-6 item, the Adjustment Date to be used will be the date of the prepayment request instead of the Materials Received Date.			

Submit documentation to the Engineer for all items listed in the Contract for which the Contractor is requesting a steel price adjustment.

Submittal Requirements

The items in categories 1,2, and 3, shall be specifically stored, labeled, or tagged, recognizable by color marking, and identifiable by Project for inspection and audit verification immediately upon arrival at the fabricator.

Furnish the following documentation for all steel products to be incorporated into the work and documented on Form SPA-2, found on the Departments website at the following address:

https://connect.ncdot.gov/projects/construction/Construction%20Forms/Form%20SPA-2.xlsx

Submit all documentation to the Engineer prior to incorporation of the steel into the completed work. The Department will withhold progress payments for the affected contract line item if the documentation is not provided and at the discretion of the Engineer the work is allowed to proceed. Progress payments will be made upon receipt of the delinquent documentation.

Step 1 (Form SPA -2)

Utilizing Form SPA-2, submit separate documentation packages for each line item from Form SPA-1 for which the Contractor opted for a steel price adjustment. For line items with multiple components of steel, each component should be listed separately. Label each SPA-2 documentation package with a unique number as described below.

a. Documentation package number: (Insert the contract line-item) - (Insert sequential package number beginning with “1”).
   Example: 412 - 1,
   412 - 2,
   424 – 1,
   424 – 2,
   424 – 3, etc.
b. The steel product quantity in pounds

i. The following sources should be used, in declining order of precedence, to determine the weight of steel/iron, based on the Engineers decision:
   1. Department established weights of steel/iron by contract pay item per pay unit;
   2. Approved Shop Drawings;
   3. Verified Shipping Documents;
   4. Contract Plans;
   5. Standard Drawing Sheets;
   6. Industry Standards (i.e., AISC Manual of Steel Construction, AWWA Standards, etc.); and
   7. Manufacture's data.

ii. Any item requiring approved shop drawings shall have the weights of steel calculated and shown on the shop drawings or submitted and certified separately by the fabricator.

c. The date the steel product, subject to adjustment, was shipped from the producing mill (Categories 1-3), received on the project (Categories 4-6), or casting date (Category 7).

Step 2 (Monthly Calculator Spreadsheet)

For each month, upon the incorporation of the steel product into the work, provide the Engineer the following:

1) Completed NCDOT Steel Price Adjustment Calculator Spreadsheet, summarizing all the steel submittal packages (Form SPA-2) actually incorporated into the completed work in the given month.
   a. Contract Number
   b. Bidding Index Reference Month
   c. Contract Completion Date or Revised Completion Date
   d. County, Route, and Project TIP information
   e. Item Number
   f. Line-Item Description
   g. Submittal Number from Form SPA-2
   h. Adjustment date
   i. Pounds of Steel
2) An affidavit signed by the Contractor stating the documentation provided in the NCDOT Steel Price Adjustment Calculator Spreadsheet is true and accurate.

Price Adjustment Conditions

Download the Monthly Steel Adjustment Spreadsheet with the most current reference data from the Department's website each month at the following address:

https://connect.ncdot.gov/projects/construction/Construction%20Forms/Form%20SPA-3%20NCDOT%20Steel%20Price%20Adjustment%20Calculator.xlsx

If the monthly Fastmarkets data is not available, the data for the most recent immediately preceding month will be used as the basis for adjustment.

Price Adjustment Calculations

The price adjustment will be determined by comparing the percentage of change in index value listed in the proposal (BI) to the monthly index value (MI). (See included sample examples). Weights and date of shipment must be documented as required herein. The final price adjustment dollar value will be determined by multiplying this percentage increase or decrease in the index by the represented quantity of steel incorporated into the work, and the established bidding index (BI) subject to the limitations herein.

Price increase/decrease will be computed as follows:

SPA = ((MI/ BI) -1) * BI *(Q/100)

Where;

SPA = Steel price adjustment in dollars

MI = Monthly Shipping Index. – in Dollars ($) per hundredweight (CWT). Use the adjustment indices from the month the steel was shipped from the producing mill, received on the project, or member cast as defined in the Product Relationship Table.

BI = Bidding Index. - in Dollars ($) per hundredweight (CWT). Use the adjustment indices as listed in the proposal.

Q = Quantity of steel, product, pounds actually incorporated into the work as documented by the Contractor, or Design Build Team and verified by the Engineer.

Calculations for price adjustment shall be shown separate from the monthly progress estimate and will not be included in the total cost of work for determination of progress or for extension of Contract time in accordance with Subarticle 108-10(B)(1).

Any apparent attempt to unbalance bids in favor of items subject to price adjustment may result in rejection of the bid proposal.

Adjustments will be paid or charged to the Contractor only. Any Contractor receiving an adjustment under this provision shall distribute the proper proportional part of such adjustments to the subcontractor who performed the applicable work.

Delays to the work caused by steel shortages may be justification for a Contract time extension but will not constitute grounds for claims for standby equipment, extended office overhead, or other costs associated with such delays.

If an increase in the steel material price is anticipated to exceed 50% of the original quoted price, the contractor must notify the Department within 7 days prior to purchasing the material. Upon receipt of such notification, the Department will direct the Contractor to either (1) proceed with the work or (2) suspend the work and explore the use of alternate options.

If the decrease in the steel material exceeds 50% of the original quoted price, the contractor may submit to the Department additional market index information specific to the item in question to dispute the decrease. The Department will review this information and determine if the decrease is warranted.

When the steel product adjustment date, as defined in the Product Relationship Table, is after the approved contract completion date, the steel price adjustments will be based on the lesser value of either the MI for the month of the approved contract completion date or the MI for the actual adjustment date.

If the price adjustment is based on estimated material quantities for that time, and a revision to the total material quantity is made in a subsequent or final estimate, an appropriate adjustment will be made to the price adjustment previously calculated. The adjustment will be based on the same indices used to calculate the price adjustment which is being revised. If the adjustment date of the revised material quantity cannot be determined, the adjustment for the quantity in question, will be based on the indices utilized to calculate the steel price adjustment for the last initial documentation package submission, for the steel product subject to adjustment, that was incorporated into the particular item of work, for which quantities are being finalized.
Example: Structural steel for a particular bridge was provided for in three different shipments with each having a different mill shipping date. The quantity of structural steel actually used for the bridge was calculated and a steel price adjustment was made in a progress payment. At the conclusion of the work an error was found in the plans of the final quantity of structural steel used for the bridge. The quantity to be adjusted cannot be directly related to any one of the three mill shipping dates. The steel price adjustment for the quantity in question would be calculated using the indices that were utilized to calculate the steel price adjustment for the quantity of structural steel represented by the last initial structural steel documentation package submission. The package used will be the one with the greatest sequential number.

Extra Work/Force Account:

When steel products, as specified herein, are added to the contract as extra work, in accordance with the provisions of Article 104-7 or 104-3, the Engineer will determine and specify in the supplemental agreement, the need for application of steel price adjustments on a case-by-case basis. No steel price adjustments will be made for any products manufactured from steel having an adjustment date prior to the supplemental agreement execution date. Price adjustments will be made as provided herein, except the Bidding Index will be based on the month in which the supplemental agreement pricing was executed.

For work performed on force account basis, reimbursement of actual material costs, along with the specified overhead and profit markup, will be considered to include full compensation for the current cost of steel and no steel price adjustments will be made.

Examples **Form SPA-2**

Steel Price Adjustment Submission Form

Contract Number __C203394_____ Bid Reference Month __January 2019__

Submittal Date ___8/31/2019_____

Contract Line Item _____237_____

Line Item Description __APPROX….LBS Structural Steel_____

Sequential Submittal Number _____2_____

Supplier	Description of material	Location information	Quantity in lbs.	Adjustment Date
XYZ mill	Structural Steel	Structure 3, Spans A-C	1,200,000	May 4, 2020
ABC distributing	Various channel & angle shapes	Structure 3 Spans A-C	35,000	July 14, 2020
		Total Pounds of Steel	1,235,000	

Note: Attach the following supporting documentation to this form.

- Bill of Lading to support the shipping dates
- Supporting information for weight documentation (e.g., Pay item reference, Shop drawings, shipping documents, Standards Sheets, industry standards, or manufacturer's data)

By providing this data under my signature, I attest to the accuracy of and validity of the data on this form and certify that no deliberate misrepresentation in any manner has occurred.

Printed Name _____ Signature _____

Examples **Form SPA-2**

Steel Price Adjustment Submission Form

Contract Number C203394 Bid Reference Month January 2019

Submittal Date August 31, 2019

Contract Line Item 237

Line Item Description SUPPORT, OVRHD SIGN STR -DFEB – STA 36+00

Sequential Submittal Number 2

Supplier	Description of material	Location information	Quantity in lbs.	Adjustment Date
XYZ mill	Tubular Steel (Vertical legs)	-DFEB – STA 36+00	12000	December 11, 2021
PDQ Mill	4" Tubular steel (Horizontal legs)	-DFEB – STA 36+00	5900	December 11, 2021
ABC distributing	Various channel & angle shapes (see quote)	-DFEB – STA 36+00	1300	December 11, 2021
	Catwalk assembly	-DFEB – STA 36+00	2000	December 11, 2021
Nucor	Flat plate	-DFEB – STA 36+00	650	December 11, 2021
		Total Pounds of Steel	21,850	

Note: Attach the following supporting documentation to this form.

- Bill of Lading to support the shipping dates
- Supporting information for weight documentation (e.g., Pay item reference, Shop drawings, shipping documents, Standards Sheets, industry standards, or manufacturer's data)

By providing this data under my signature, I attest to the accuracy of and validity of the data on this form and certify that no deliberate misrepresentation in any manner has occurred.

Printed Name _____ Signature _____

Price Adjustment Sample Calculation (increase)

Project bid on September 17, 2019

Line Item 635 “Structural Steel” has a plan quantity of 2,717,000 lbs.

Bidding Index for Structural Steel (Category 2) in the proposal was $36.12/CWT = BI

450,000 lbs. of Structural Steel for Structure 2 at Station 44+08.60 were shipped to fabricator from the producing mill in same month, May 2021.

Monthly Index for Structural Steel (Category 2) for May 2021 was $64.89/CWT = MI

The Steel Price Adjustment formula is as follows:

SPA = ((MI/ BI) -1) * BI *(Q/100)

Where; SPA = Steel price adjustment in dollars

BI = Bidding Index – in dollars ($) per hundredweight (CWT). Use the adjustment indices as listed in the proposal.

MI = Mill Shipping Index – in dollars ($) per hundredweight (CWT). Use the adjustment indices from the month the steel was shipped from the producing mill, received on the project, or member cast as defined in the Product Relationship Table.

Q = Quantity of steel product, in pounds (lbs.) actually incorporated into the work as documented by the Contractor, or Design Build Team and verified by the Engineer.

BI = $36.12/ CWT

MI = $64.89 / CWT

% change = ((MI/ BI)-1) = ($64.89 / $36.12 – 1) = (1.79651 – 1) = 0.79651162791

Q = 450,000 lbs.

SPA = 0.79651162791x $36.12 x (450,000/100)

SPA = 0.79651162791* $36.12 *4,500

SPA = $129,465 pay adjustment to Contractor for Structural Steel (Structure 2 at Station 44+08.60)

Price Adjustment Sample Calculation (decrease)

Project bid on December 18, 2018

Line Item 635 Structural Steel has a plan quantity of 2,717,000 lbs.

Bidding Index for Structural Steel (Category 2) in the proposal was $46.72/CWT = BI

600,000 lbs. of Structural Steel for Structure 1 at Station 22+57.68 were shipped to fabricator from the producing mill in same month, August 2020.

Monthly Index for Structural Steel (Category 2) for August 2020 was $27.03/CWT = MI

The Steel Price Adjustment formula is as follows:

SPA = ((MI/ BI) -1) * BI *(Q/100)

Where; SPA = Steel price adjustment in dollars

BI = Bidding Index – in dollars ($) per hundredweight (CWT). Use the adjustment indices as listed in the proposal.

MI = Mill Shipping Index – in dollars ($) per hundredweight (CWT). Use the adjustment indices from the month the steel was shipped from the producing mill, received on the project, or member cast as defined in the Product Relationship Table.

Q = Quantity of steel product, in pounds (lbs.) actually incorporated into the work as documented by the Contractor, or Design Build Team and verified by the Engineer.

BI = $46.72/ CWT

MI = $27.03 / CWT

% change = ((MI/ BI)-1) = ($27.03/ $46.72–1) = (0.57855–1) = -0.421446917808

Q = 600,000 lbs.

SPA = -0.421446917808 * $46.72 * (600,000/100)

SPA = -0.421446917808 * $46.72 *6,000

SPA = $ 118,140.00 Credit to the Department for Structural Steel (Structure 1 at Station 22+57.68)

Price Adjustment Sample Calculation (increase)

Project bid on July 16, 2020

Line Item 614 Reinforced Concrete Deck Slab has a plan quantity of 241974 lbs.

Bidding Index Reference Month was May 2020. Bidding Index for Reinforced Concrete Deck Slab (Category 1) in the proposal was $29.21/CWT = BI

51,621 lbs. of reinforcing steel and 52,311 lbs. of epoxy coated reinforcing steel for Structure 2 at Station 107+45.55 -L- was shipped to fabricator from the producing mill in same month, May 2021.

Monthly Index for Reinforced Concrete Deck Slab (Category 1) for May 2021 was $43.13/CWT = MI

The Steel Price Adjustment formula is as follows:

SPA = ((MI/ BI) -1) * BI *(Q/100)

Where; SPA = Steel price adjustment in dollars

BI = Bidding Index – in dollars ($) per hundredweight (CWT). Use the adjustment indices as listed in the proposal.

MI = Mill Shipping Index – in dollars ($) per hundredweight (CWT). Use the adjustment indices from the month the steel was shipped from the producing mill, received on the project, or member cast as defined in the Product Relationship Table.

Q = Quantity of steel product, in pounds (lbs.) actually incorporated into the work as documented by the Contractor, or Design Build Team and verified by the Engineer.

BI = $29.21/ CWT

MI = $43.13 / CWT

% change = ((MI/ BI)-1) = ($43.13 / $29.21 – 1) = (1.47655 – 1) = 0.47654912701

Q = 103932 lbs.

SPA = 0. 47654912701 * $29.21 * (103,932/100)

SPA = 0. 47654912701 * $29.21 *1,039.32

SPA = $14,467.33 Pay Adjustment to Contractor for Reinforced Concrete Deck Slab (Category 1) at Station 107+45.55 -L-

PAYOUT SCHEDULE:

(1-19-10) (Rev. 1-17-12) 108 SP1 G57

Submit an Anticipated Monthly Payout Schedule prior to beginning construction. The Anticipated Monthly Payout Schedule will be used by the Department to monitor funding levels for this project. Include a monthly percentage breakdown (in terms of the total contract amount) of the work anticipated to be completed. The schedule should begin with the date the Contractor plans to begin construction and end with the anticipated completion date. 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 the original Anticipated Monthly Payout Schedule and all subsequent updates to the Resident Engineer with a copy to the State Construction Engineer at 1 South Wilmington Street, 1543 Mail Service Center, Raleigh, NC 27699-1543.

SCHEDULE OF ESTIMATED COMPLETION PROGRESS:

(7-15-08)(Rev. 6-17-25) 108-2 SP1 G58

The Contractor's attention is directed to the Standard Special Provision entitled *Availability of Funds Termination of Contracts* included elsewhere in this proposal. The Department of Transportation's schedule of estimated completion progress for this project as required by that Standard Special Provision is as follows:

	Fiscal Year	**Progress (% of Dollar Value)**
2026	(7/01/25 - 6/30/26)	**27**% of Total Amount Bid
2027	(7/01/26 - 6/30/27)	**29**% of Total Amount Bid
2028	(7/01/27 - 6/30/28)	**24**% of Total Amount Bid
2029	(7/01/28 - 6/30/29)	**17**% of Total Amount Bid
2030	(7/01/29 - 6/30/30)	**3**% of Total Amount Bid

The Contractor shall also furnish his own progress schedule in accordance with Article 108-2 of the *Standard Specifications*. Any acceleration of the progress as shown by the Contractor's progress schedule over the progress as shown above shall be subject to the approval of the Engineer.

MINORITY BUSINESS ENTERPRISE AND WOMEN BUSINESS ENTERPRISE:

(10-16-07)(Rev. 5-9-24) 102-15(J) SP1 G66

Description

The purpose of this Special Provision is to carry out the North Carolina Department of Transportation's policy of ensuring nondiscrimination in the award and administration of contracts financed in whole or in part with State funds.

Definitions

Additional MBE/WBE Subcontractors - Any MBE/WBE submitted at the time of bid that will not be used to meet the Combined MBE /WBE Goal. No submittal of a Letter of Intent is required.

Combined MBE/WBE Goal: A portion of the total contract, expressed as a percentage that is to be performed by committed MBE/WBE subcontractors.

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

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

Goal Confirmation Letter - Written documentation from the Department to the bidder confirming the Contractor's approved, committed participation along with a listing of the committed MBE and WBE firms.

Manufacturer - A firm that owns (or leases) and operates or maintains a factory or establishment that produces on the premises, the materials or supplies obtained by the Contractor. A firm that makes minor modifications to the materials, supplies, articles, or equipment is not a manufacturer.

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

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

Regular Dealer - A firm that owns (or leases), and operates a store, warehouse, or other establishment in which the materials or supplies required for the performance of the contract are bought, kept in sufficient quantities, 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, concrete or concrete products, gravel, stone, asphalt and petroleum products need not keep such products in stock, if it owns and operates distribution equipment for the products. Any supplement of regular dealers' own distribution equipment shall be by a long-term operating lease and not on an ad hoc or contract-by-contract basis.

Distributor – A firm that engages in the regular sale or lease of the items specified by the contract. A distributor assumes responsibility for the items it purchases once they leave the point of origin (e.g., a manufacturer's facility), making it liable for any loss or damage not covered by the carrier's insurance.

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

North Carolina Unified Certification Program (NCUCP) - A program that provides comprehensive services and information to applicants for MBE/WBE certification. The MBE/WBE program follows the same regulations as the federal Disadvantaged Business Enterprise (DBE) program 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.

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

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

Forms and Websites Referenced in this Provision

Payment Tracking System - On-line system in which the Contractor enters the payments made to MBE and WBE 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 MBE/WBE firms working on the project. This form is for paper bid projects only. https://connect.ncdot.gov/business/Turnpike/Documents/Form%20DBE-IS%20Subcontractor%20Payment%20Information.pdf

RF-1 *MBE/WBE Replacement Request Form* - Form for replacing a committed MBE or WBE. https://connect.ncdot.gov/projects/construction/Construction%20Forms/DBE%20MBE%20WBE%20Replacement%20Form%20and%20Instructions.pdf

SAF *Subcontract Approval Form* - Form required for approval to sublet the contract. https://connect.ncdot.gov/projects/construction/Construction%20Forms/SAF%20Form%20-%20Subcontract%20Approval%20Form%20Revised%2004-19.xlsm

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 MBE/WBE subcontractor, manufacturer or regular dealer that affirms that a portion of said contract is going to be performed by the signed MBE/WBE 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 MBE and WBE Subcontractors Form - Form for entering MBE/WBE subcontractors on a project that will meet the Combined MBE/WBE goal. This form is for paper bids only. http://connect.ncdot.gov/municipalities/Bid%20Proposals%20for%20LGA%20Content/09%20MBE-WBE%20Subcontractors%20(State).docx

Subcontractor Quote Comparison Sheet - Spreadsheet for showing all subcontractor quotes in the work areas where MBEs and WBEs 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 Regular Dealer/Distributor Affirmation Form – Form is used to make a preliminary counting determination for each DBE listed as a regular dealer or distributor to assess its eligibility for 60 or 40 percent credit, respectively of the cost of materials or supplies based on its demonstrated capacity and intent to perform as a regular dealer or distributor, as defined in section 49 CFR 26.55 under the contract at issue. A Contractor will submit the completed form with the Letter of Intent. https://connect.ncdot.gov/projects/construction/Construction%20Forms/DBE%20Regular%20Dealer-Distributor%20Affirmation%20Form%20-%20USDOT%202024.pdf

Combined MBE/WBE Goal

The Combined MBE/WBE Goal for this project is **5.0 %**

The Combined Goal was established utilizing the following anticipated participation for Minority Business Enterprises and Women Business Enterprises:

(A) Minority Business Enterprises **2.0 %**

(1) *If the anticipated MBE participation is more than zero*, the Contractor shall exercise all necessary and reasonable steps to ensure that MBEs participate in at least the percent of the contract as set forth above.

(2) *If the anticipated MBE participation is zero*, the Contractor shall make an effort to recruit and use MBEs during the performance of the contract. Any MBE participation obtained shall be reported to the Department.

(B) Women Business Enterprises **3.0 %**

(1) *If the anticipated WBE participation is more than zero*, the Contractor shall exercise all necessary and reasonable steps to ensure that WBEs participate in at least the percent of the contract as set forth above.

(2) *If the anticipated WBE participation is zero*, the Contractor shall make an effort to recruit and use WBEs during the performance of the contract. Any WBE participation obtained shall be reported to the Department.

The Bidder is required to submit only participation to meet the Combined MBE/WBE Goal. The Combined Goal may be met by submitting all MBE participation, all WBE participation, or a combination of MBE and WBE participation.

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 MBE and WBE certified shall be used to meet the Combined MBE/WBE 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 MBE/WBE Subcontractors

At the time of bid, bidders shall submit all MBE and WBE participation that they anticipate to use during the life of the contract. Only those identified to meet the Combined MBE/WBE Goal will be considered committed, even though the listing shall include both committed MBE/WBE subcontractors and additional MBE/WBE subcontractors. Any additional MBE/WBE subcontractor participation above the goal will follow the banking guidelines found elsewhere in this provision. All other additional MBE/WBE subcontractor participation submitted at the time of bid will be used toward the Department's overall race-neutral goals. Only those firms with current MBE and WBE certification at the time of bid opening will be acceptable for listing in the bidder's submittal of MBE and WBE participation. The Contractor shall indicate the following required information:

(A) Electronic Bids

Bidders shall submit a listing of MBE and WBE participation in the appropriate section of the electronic submittal file.

(1) Submit the names and addresses of MBE and WBE firms identified to participate in the contract. If the bidder uses the updated listing of MBE and WBE firms shown in the electronic submittal file, the bidder may use the dropdown menu to access the name and address of the firms.

(2) Submit the contract line numbers of work to be performed by each MBE and WBE firm. When no figures or firms are entered, the bidder will be considered to have no MBE or WBE participation.

(3) The bidder shall be responsible for ensuring that the MBE and WBE are certified at the time of bid by checking the Directory of Transportation Firms. If the firm is not certified at the time of the bid-letting, that MBE's or WBE's participation will not count towards achieving the Combined MBE/WBE goal.

(B) Paper Bids

(1) *If the Combined MBE/WBE Goal is more than zero,*

(a) Bidders, at the time the bid proposal is submitted, shall submit a listing of MBE/WBE participation, including the names and addresses on *Listing of MBE and WBE Subcontractors* contained elsewhere in the contract documents in order for the bid to be considered responsive. Bidders shall indicate the total dollar value of the MBE and WBE participation for the contract.

(b) If bidders have no MBE or WBE participation, they shall indicate this on the *Listing of MBE and WBE 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.** Bids submitted that do not have MBE and WBE participation indicated on the appropriate form will not be read publicly during the opening of bids. The Department will not consider these bids for award and the proposal will be rejected.

(c) The bidder shall be responsible for ensuring that the MBE/WBE 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 bid-letting, that MBE's or WBE's participation will not count towards achieving the Combined MBE/WBE Goal.

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

MBE or WBE Prime Contractor

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

MBE/WBE prime contractors shall also follow Sections A and B listed under *Listing of MBE/WBE Subcontractor* just as a non-MBE/WBE bidder would.

Written Documentation – Letter of Intent

The bidder shall submit written documentation for each MBE/WBE that will be used to meet the Combined MBE/WBE Goal of the contract, indicating the bidder's commitment to use the MBE/WBE 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. of the sixth calendar day following opening of bids, 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 bidder fails to submit the Letter of Intent from each committed MBE and WBE to be used toward the Combined MBE/WBE Goal, or if the form is incomplete (i.e. both signatures are not present), the MBE/WBE participation will not count toward meeting the Combined MBE/WBE Goal. If the lack of this participation drops the commitment below the Combined MBE/WBE

Goal, the Contractor shall submit evidence of good faith efforts for the goal, 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 bids, 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.

Banking MBE/WBE Credit

If the bid of the lowest responsive bidder exceeds $500,000 and if the committed MBE/WBE participation submitted exceeds the algebraic sum of the Combined MBE /WBE Goal by $1,000 or more, the excess will be placed on deposit by the Department for future use by the bidder. Separate accounts will be maintained for MBE and WBE participation and these may accumulate for a period not to exceed 24 months.

When the apparent lowest responsive bidder fails to submit sufficient participation by MBE and WBE firms to meet the advertised goal, as part of the good faith effort, the Department will consider allowing the bidder to withdraw funds to meet the Combined MBE/WBE Goal as long as there are adequate funds available from the bidder's MBE and WBE bank accounts.

Submission of Good Faith Effort

If the bidder fails to meet or exceed the Combined MBE/WBE Goal, the apparent lowest responsive bidder shall submit to the Department documentation of adequate good faith efforts made to reach that specific 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 bids unless the sixth day falls on an official state holiday. In that situation, it would be 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 Contractor cannot send the information electronically, then one complete set and 5 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 MBE/WBE 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 a Combined MBE/WBE Goal More Than Zero

Adequate good faith efforts mean that the bidder took all necessary and reasonable steps to achieve the goal which, by their scope, intensity, and appropriateness, could reasonably be expected to obtain sufficient MBE/WBE participation. Adequate good faith efforts also mean that the bidder actively and aggressively sought MBE/WBE 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 bidder has made. Listed below are examples of the types of actions a bidder will take in making a good faith effort to meet the goals 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 MBEs/WBEs that are also prequalified subcontractors. The bidder must solicit this interest within at least 10 days prior to bid opening to allow the MBEs/WBEs to respond to the solicitation. Solicitation shall provide the opportunity to MBEs/WBEs within the Division and surrounding Divisions where the project is located. The bidder must determine with certainty if the MBEs/WBEs are interested by taking appropriate steps to follow up initial solicitations.

(B) Selecting portions of the work to be performed by MBEs/WBEs in order to increase the likelihood that the Combined MBE/WBE Goal will be achieved.

(1) Where appropriate, break out contract work items into economically feasible units to facilitate MBE/WBE 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 advertised goal when the work to be sublet includes potential for MBE/WBE participation (2nd and 3rd tier subcontractors).

(C) Providing interested certified MBEs/WBEs that are also prequalified subcontractors 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 MBEs/WBEs. It is the bidder's responsibility to make a portion of the work available to MBE/WBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available MBE/WBE subcontractors and suppliers, so as to facilitate MBE/WBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of MBEs/WBEs 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 MBEs/WBEs to perform the work.

(2) A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including MBE/WBE subcontractors, and would take a firm's price and capabilities as well as the advertised goal into consideration. However, the fact that there may be some additional costs involved in finding and using MBEs/WBEs is not in itself sufficient reason for a bidder's failure to meet the contract 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 bidder of the responsibility to make good faith

efforts. Bidding contractors are not, however, required to accept higher quotes from MBEs/WBEs if the price difference is excessive or unreasonable.

(E) Not rejecting MBEs/WBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder'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 bidder's efforts to meet the project goal.

(F) Making efforts to assist interested MBEs/WBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or bidder.

(G) Making efforts to assist interested MBEs/WBEs 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 MBEs/WBEs. Contact within 7 days from the bid opening the Business Opportunity and Work Force Development Unit at BOWD@ncdot.gov to give notification of the bidder's inability to get MBE or WBE quotes.

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

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

(1) Whether the bidder's documentation reflects a clear and realistic plan for achieving the Combined MBE/WBE Goal.

(2) The bidders' past performance in meeting the contract goal.

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

If the Department does not award the contract to the apparent lowest responsive bidder, the Department reserves the right to award the contract to the next lowest responsive bidder that can satisfy to the Department that the Combined MBE/WBE Goal can be met or that an adequate good faith effort has been made to meet the advertised goal.

Non-Good Faith Appeal

The State Prequalification Engineer will notify the Contractor verbally and in writing of non-good faith. A Contractor may appeal a determination of non-good faith made by the Goal Compliance Committee. If a Contractor wishes to appeal the determination made by the Committee, they shall provide written notification to the State Prequalification Engineer. The appeal shall be made within 2 business days of notification of the determination of non-good faith.

Counting MBE/WBE Participation Toward Meeting the Combined MBE/WBE Goal

(A) Participation

The total dollar value of the participation by a committed MBE/WBE will be counted toward the contract goal requirements. The total dollar value of participation by a committed MBE/WBE will be based upon the value of work performed by the MBE/WBE and the actual payments to MBE/WBE firms by the Contractor.

(B) Joint Checks

Prior notification of joint check use shall be required when counting MBE/WBE 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 MBE/WBE may enter into subcontracts. Work that a MBE subcontracts to another MBE firm may be counted toward the anticipated MBE participation. The same holds true for work that a WBE subcontracts to another WBE firm. Work that a MBE/WBE subcontracts to a non-MBE/WBE firm does <u>not</u> count toward the contract goal requirement. It should be noted that every effort shall be made by MBE and WBE contractors to subcontract to the same certification (i.e., MBEs to MBEs and WBEs to WBEs), in order to fulfill the MBE or WBE participation breakdown. This, however, may not always be possible due to the limitation of firms in the area. If the MBE or WBE firm shows a good faith effort has been made to reach out to similarly certified firms and there is no interest or availability, and they can get assistance from other certified firms, the Engineer will not hold the prime responsible for meeting the individual MBE or WBE breakdown. If a MBE or WBE 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 MBE or WBE is not performing a commercially useful function.

(D) Joint Venture

When a MBE or WBE performs as a participant in a joint venture, the Contractor may count toward its contract goal requirement a portion of the total value of participation with the MBE or WBE in the joint venture, that portion of the total dollar value being a distinct clearly defined portion of work that the MBE or WBE performs with its forces.

(F) Manufacturer, Regular Dealer, Distributor

A Contractor may count toward its MBE/WBE requirement 40 percent of its expenditures for materials or supplies (including transportation costs) from a MBE/WBE distributor, 60 percent of its expenditures for materials or supplies (including transportation costs) from a MBE/WBE regular dealer and 100 percent of such expenditures obtained from a MBE/WBE manufacturer.

A Contractor may count toward its MBE/WBE requirement the following expenditures to MBE/WBE firms that are not manufacturers, regular dealers or distributors:

(1) The fees or commissions charged by a MBE/WBE 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 MBE/WBE, which is neither a manufacturer, regular dealer, nor a distributor count the entire amount of fees or commissions charged that the Department deems to be reasonable, including transportation charges for the delivery of materials or supplies. Do not count any portion of the cost of the materials and supplies themselves.

A Contractor will submit a completed *DBE Regular Dealer/Distributor Affirmation Form* with the Letter of Intent to the State Contractor Utilization Engineer or DBE@ncdot.gov. The State Contractor Utilization Engineer will make a preliminary assessment as to whether a MBE/WBE supplier has the demonstrated capacity to perform a commercially useful function (CUF) on a contract-by-contract basis *prior* to its participation.

Commercially Useful Function

(A) MBE/WBE Utilization

The Contractor may count toward its contract goal requirement only expenditures to MBEs and WBEs that perform a commercially useful function in the work of a contract. A MBE/WBE performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its responsibilities by performing, managing, and supervising the work involved. To perform a commercially useful function, the MBE/WBE 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 MBE/WBE 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 performing and the MBE/WBE credit claimed for its performance of the work, and any other relevant factors. If it is determined that a MBE or WBE is not performing a Commercially Useful Function, the contractor may present evidence to rebut this presumption to the Department.

(B) MBE/WBE Utilization in Trucking

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

(1) The MBE/WBE 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 the Combined MBE/WBE Goal.

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

(3) The MBE/WBE 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 MBE may subcontract the work to another MBE firm, including an owner-operator who is certified as a MBE. The same holds true that a WBE may subcontract the work to another WBE firm, including an owner-operator who is certified as a WBE. When this occurs, the MBE or WBE who subcontracts work receives credit for the total value of the transportation services the subcontracted MBE or WBE provides on the contract. It should be noted that every effort shall be made by MBE and WBE contractors to subcontract to the same certification (i.e., MBEs to MBEs and WBEs to WBEs), in order to fulfill the participation breakdown. This, however, may not always be possible due to the limitation of firms in the area. If the MBE or WBE firm shows a good faith effort has been made to reach out to similarly certified transportation service providers and there is no

interest or availability, and they can get assistance from other certified providers, the Engineer will not hold the prime responsible for meeting the individual MBE or WBE participation breakdown.

(5) The MBE/WBE may also subcontract the work to a non-MBE/WBE firm, including from an owner-operator. The MBE/WBE who subcontracts the work to a non-MBE/WBE is entitled to credit for the total value of transportation services provided by the non-MBE/WBE subcontractor not to exceed the value of transportation services provided by MBE/WBE-owned trucks on the contract. Additional participation by non-MBE/WBE 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 MBE/WBE and the Contractor will not count towards the MBE/WBE contract requirement.

(6) A MBE/WBE may lease truck(s) from an established equipment leasing business open to the general public. The lease must indicate that the MBE/WBE 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 MBE/WBE, so long as the lease gives the MBE/WBE absolute priority for use of the leased truck. This type of lease may count toward the MBE/WBE's credit as long as the driver is under the MBE/WBE's payroll.

(7) Subcontracted/leased trucks shall display clearly on the dashboard the name of the MBE/WBE 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.

MBE/WBE Replacement

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

The Contractor must give notice in writing both by certified mail and email to the MBE/WBE subcontractor, with a copy to the Engineer of its intent to request to terminate a MBE/WBE subcontractor or any portion of its work, and the reason for the request. The Contractor must give the MBE/WBE subcontractor five (5) business days to respond to the Contractor's Notice of Intent to Request Termination and/or Substitution. If the MBE/WBE subcontractor objects to the intended termination/substitution, the MBE/WBE, within five (5) business days must advise the Contractor 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 MBE/WBE subcontractor.

A committed MBE/WBE subcontractor may only be terminated or any portion of its work after receiving the Department's written approval based upon a finding of good cause for the proposed termination and/or substitution. Good cause does not exist if the Contractor seeks to terminate a

MBE/WBE or any portion of its work that it relied upon to obtain the contract so that the Contractor can self-perform the work for which the MBE/WBE was engaged, or so that the Contractor can substitute another MBE/WBE or non- MBE/WBE contractor after contract award. For purposes of this section, good cause shall include the following circumstances:

(a) The listed MBE/WBE subcontractor fails or refuses to execute a written contract;
(b) The listed MBE/WBE 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 MBE/WBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the prime contractor;
(c) The listed MBE/WBE subcontractor fails or refuses to meet the prime contractor's reasonable, nondiscriminatory bond requirements;
(d) The listed MBE/WBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;
(e) The listed MBE/WBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant to 2 CFR parts 180, 215 and 1200 or applicable State law;
(f) The listed MBE/WBE subcontractor is not a responsible contractor;
(g) The listed MBE/WBE voluntarily withdraws from the project and provides written notice of withdrawal;
(h) The listed MBE/WBE is ineligible to receive MBE/WBE credit for the type of work required;
(i) A MBE/WBE owner dies or becomes disabled with the result that the listed MBE/WBE contractor is unable to complete its work on the contract; and
(j) Other documented good cause that compels the termination of the MBE/WBE subcontractor.

The Contractor shall comply with the following for replacement of a committed MBE/WBE:

(A) Performance Related Replacement

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

If a replacement MBE/WBE is not found that can perform at least the same amount of work as the terminated MBE/WBE, the Contractor 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 MBE/WBEs that their interest is solicited in contracting the work defaulted by the previous MBE/WBE or in subcontracting other items of work in the contract.

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

(a) The names, addresses, and telephone numbers of MBE/WBEs who were contacted.

(b) A description of the information provided to MBE/WBEs regarding the plans and specifications for portions of the work to be performed.

(3) A list of reasons why MBE/WBE quotes were not accepted.

(4) Efforts made to assist the MBE/WBEs contacted, if needed, in obtaining bonding or insurance required by the Contractor.

(B) Decertification Replacement

(1) When a committed MBE/WBE is decertified by the Department after the SAF (*Subcontract Approval Form*) has been received by the Department, the Department will not require the Contractor to solicit replacement MBE/WBE 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 but not the overall goal.

(i) If the MBE/WBE's ineligibility is caused solely by its having exceeded the size standard during the performance of the contract. The Department may continue to count participation equal to the remaining work performed by the decertified firm which will count toward the contract goal requirement and overall goal.

(ii) If the MBE/WBE's ineligibility is caused solely by its acquisition by or merger with a non- MBE/WBE during the performance of the contract. The Department may not continue to count the portion of the decertified firm's performance on the contract remaining toward either the contract goal or the overall goal, even if the Contractor has executed a subcontract with the firm or the Department has executed a prime contract with the MBE/WBE that was later decertified.

(2) When a committed MBE/WBE is decertified prior to the Department receiving the SAF (*Subcontract Approval Form*) for the named MBE/WBE firm, the Contractor shall take all necessary and reasonable steps to replace the MBE/WBE subcontractor with another MBE/WBE subcontractor to perform at least the same amount of work to meet the Combined MBE/WBE goal requirement. If a MBE/WBE 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 MBE/WBE firm shall be submitted to the Engineer for approval on Form RF-1 *(DBE Replacement Request)*. If the Contractor fails to follow this procedure, the Contractor may be disqualified from further bidding for a period of up to 6 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 MBE/WBE, the Contractor will not be required to seek additional participation. When the Engineer makes changes that result in additional work to be performed by a MBE/WBE based upon the Contractor's commitment, the MBE/WBE shall participate in additional work to the same extent as the MBE/WBE 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 Contractor shall seek additional participation by MBEs/WBEs 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 MBE/WBE, the Contractor shall seek participation by MBEs/WBEs unless otherwise approved by the Engineer.

When the Contractor requests changes in the work that result in the reduction or elimination of work that the Contractor committed to be performed by a MBE/WBE, the Contractor shall seek additional participation by MBEs/WBEs equal to the reduced MBE/WBE 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 MBE/WBE subcontractor. The Department reserves the right to require copies of actual subcontract agreements involving MBE/WBE subcontractors.

When using transportation services to meet the contract commitment, the Contractor 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 MBE/WBE for materials, supplies or services, not otherwise documented by the SAF as specified above, the Contractor shall furnish the Engineer a copy of the agreement. The documentation shall also indicate the percentage (60% or 100%) of expenditures claimed for MBE/WBE credit.

Reporting Minority and Women Business Enterprise Participation

The Contractor shall provide the Engineer with an accounting of payments made to all MBE/ WBE 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 contractor 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 MBEs/WBEs, 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 Contractor to submit the required information in the time frame specified may result in the disqualification of that contractor and any affiliate companies 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 contractor and any affiliate companies from being approved for work on future DOT projects until the required information is submitted.

Contractors reporting transportation services provided by non-MBE/WBE 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 Contractor shall report the accounting of payments through the Department's Payment Tracking System.

Failure to Meet Contract Requirements

Failure to meet contract requirements in accordance with Subarticle 102-15(J) of the *Standard Specifications* may be cause to disqualify the Contractor.

RESTRICTIONS ON ITS EQUIPMENT AND SERVICES:

(11-17-20) SP01 G090

All telecommunications, video or other ITS equipment or services installed or utilized on this project must be in conformance with UNIFORM ADMINISTRATIVE REQUIREMENTS, COST PRINCIPLES, AND AUDIT REQUIREMENTS FOR FEDERAL AWARDS **2 CFR, § 200.216 Prohibition on certain telecommunications and video surveillance services or equipment.**

USE OF UNMANNED AIRCRAFT SYSTEM (UAS):

(8-20-19) SP1 G092

The Contractor 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 Contractor 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 prior to beginning the operations.

All contractors or subcontractors operating UAS shall have UAS specific general liability insurance to cover all operations under this contract.

The use of UAS is at the Contractor's discretion. No measurement or payment will be made for the use of UAS. In the event that the Department directs the Contractor to utilize UAS, payment will be in accordance with Article 104-7 Extra Work.

CONSTRUCTION EQUIPMENT EMISSIONS:

(1-1-20) (Rev. 1-18-22) SP1 G94

Reporting Requirements

During construction, within 60 days after the end of each calendar year, the Contractor shall submit to the Department a list of nonroad diesel-powered construction equipment that was used for construction work for more than 40 hours during that calendar year. Such list shall be submitted each year through the final acceptance of the project. The list shall be submitted on a form supplied by the Department and shall include the following information for each applicable piece of non-road construction equipment:

- equipment type and manufacturer;
- engine manufacturer and model;
- engine model number;
- engine family name and model year;
- engine horsepower or kilowatts;
- engine serial number; and
- engine EPA Tier number.

The submittal shall include the Tier (0, 1, 2, 3 or 4) Nonroad Exhaust Emission Standard that the equipment's engine currently satisfies in accordance with EPA current standards. This list shall be updated and submitted annually.

Failure to provide the equipment list by the timeframe provided above may result in the Department withholding money from the Contractor due for work performed by that entity in the next partial payment until the necessary assurances are made consistent with this provision.

Minimum Tier Requirements

A minimum of fifty percent (50%) of the reported construction equipment used on the project must meet Tier 4 or Tier 4i requirements.

Incentive

The Department will pay a Fifty Thousand and 0/100 Dollars ($50,000.00) incentive to the Contractor if, at the conclusion of the project, each calendar year's report reflects that both items below were accomplished:

(1) More than seventy-five percent (75.0%) of the total number of pieces of applicable construction equipment used on the project meets Tier 4 Final requirements, and
(2) Less than twenty-five percent (25.0%) of the total number of pieces of applicable construction equipment used on the project is categorized as Tier 0 or 1.

Exclusions

A piece of applicable construction equipment operated by DBE firms (federally funded projects) or MBE/WBE firms (state funded projects) may be excluded from the Reporting Requirements and Minimum Tier Requirements sections above, provided the applicable piece of equipment meets at least the Tier 1 requirements. However, to be eligible for the incentive, the Contractor must include all of these firms' applicable construction equipment in the percentage calculations provided in the Incentive section above.

Regardless of Tier level, cranes are subject to the Reporting Requirements section above. However, any crane may be excluded from the calculations provided under the Minimum Tier Requirements and Incentive sections above, provided that crane meets Tier 1 or higher requirements.

EQUIPMENT IDLING GUIDELINES:

(1-19-21) 107 SP1 G096

Exercise reduced fuel consumption and reduced equipment emissions during the construction of all work associated with this contract. Employees engaged in the construction of this project should turn off vehicles when stopped for more than thirty (30) minutes and off-highway equipment should idle no longer than fifteen (15) consecutive minutes.

These guidelines for turning off vehicles and equipment when idling do not apply to:

1. Idling when queuing.
2. Idling to verify the vehicle is in safe operating condition.
3. Idling for testing, servicing, repairing or diagnostic purposes.
4. Idling necessary to accomplish work for which the vehicle was designed (such as operating a crane, mixing concrete, etc.).
5. Idling required to bring the machine system to operating temperature.
6. Emergency vehicles, utility company, construction, and maintenance vehicles where the engines must run to perform needed work.
7. Idling to ensure safe operation of the vehicle.
8. Idling when the propulsion engine is providing auxiliary power for other than heating or air conditioning. (such as hydraulic systems for pavers)
9. When specific traffic, safety, or emergency situations arise.

10. If the ambient temperature is less than 32 degrees Fahrenheit. Limited idling to provide for the safety of vehicle occupants (e.g. to run the heater).
11. If the ambient temperature is greater than 90 degrees Fahrenheit. Limited idling to provide for the safety of vehicle occupants of off-highway equipment (e.g. to run the air conditioning) no more than 30 minutes.
12. Diesel powered vehicles may idle for up to 30 minutes to minimize restart problems.

Any vehicle, truck, or equipment in which the primary source of fuel is natural gas or electricity is exempt from the idling limitations set forth in this special provision.

SUBSURFACE INFORMATION:
(7-1-95) 450 SP1 G112 C

Subsurface information is available on the roadway and structure portions of this project.

PORTABLE CONCRETE BARRIER - (Partial Payments for Materials):
(7-1-95)(Rev. 1-16-24) 1170-4 SP1 G121

When so authorized by the Engineer, partial materials payments will be made up to 95 percent of the delivered cost of portable concrete barrier, provided that these materials have been delivered on the project and stored in an acceptable manner, and further provided the documents listed in Subarticle 109-5(C) of the *Standard Specifications* have been furnished to the Engineer.

The provisions of Subarticle 109-5(B) of the *Standard Specifications* will apply to the portable concrete barrier.

MAINTENANCE OF THE PROJECT:
(11-20-07)(Rev. 1-16-24) 104-10 SP1 G125

Revise the *Standard Specifications* as follows:

Page 1-35, Article 104-10 Maintenance of the Project, line 3, add the following after the first sentence of the first paragraph:

All guardrail/guiderail within the project limits shall be included in this maintenance.

Page 1-35, Article 104-10 MAINTENANCE OF THE PROJECT, line 8, add the following as the last sentence of the first paragraph:

The Contractor shall perform weekly inspections of 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 7 consecutive calendar days of such inspection report.

Page 1-35, Article 104-10 MAINTENANCE OF THE PROJECT, lines 20-22, replace the last sentence of the last paragraph with the following:

The Contractor will not be directly compensated for any maintenance operations necessary, except for maintenance of guardrail/guiderail, as this work will be considered incidental to the work

covered by the various contract items. The provisions of Article 104-7, Extra Work, and Article 104-8, Compensation and Record Keeping will apply to authorized maintenance of guardrail/guiderail. Performance of weekly inspections of guardrail/guiderail, and the damage reports required as described above, will be considered to be an incidental part of the work being paid for by the various contract items.

COOPERATION BETWEEN CONTRACTORS:

(7-1-95)(Rev. 1-16-24) 105-7 SP1 G133

The Contractor's attention is directed to Article 105-7 of the *Standard Specifications*.

R-3300B (C204553) is located adjacent to this project. R-3300B is currently under construction and not anticipated to be completed prior to the letting of this project.

The Contractor on this project shall cooperate with the Contractor 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:

(1-1-02) (Rev.8-20-24) 103 SP1 G142

General

The successful Bidder (Contractor) shall submit the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation used to prepare the bid for this contract to the Department within 10 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 Bidder in the preparation of the bid. The term *bid documentation* includes, but is not limited to, contractor equipment rates, contractor 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 Bidder in formulating and determining the bid. The term *bid documentation* also includes any manuals, which are standard to the industry used by the Bidder in determining the bid. 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 Bidder 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.

Contractor's Representative - Officer of the Contractor's company; if not an officer, the Contractor shall supply a letter signed and notarized by an officer of the Contractor's company, granting permission for the representative to sign the escrow agreement on behalf of the 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 Bidder after the notice of award for informational purposes. The Bidder 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 Bidder's failure to provide the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation within 14 days after the notice of award is received may be just cause for rescinding the award of the contract and may result in the removal of the Bidder from the Department's list of qualified bidders for a period of up to 180 days. Award may then be made to the next lowest responsible bidder 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 10 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 Bidder includes an affidavit stating that the enclosed documentation is an EXACT copy of the original documentation used by the Bidder 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 Bidder 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 State Contract Officer acting directly or through a duly authorized representative and the Bidder's representative will verify the accuracy and completeness of the bid documentation compared to the affidavit. Should a discrepancy exist, the Bidder's representative shall immediately furnish the State Contract Officer acting directly or through a duly authorized representative with any other needed bid documentation. The State Contract Officer acting directly or through a duly authorized representative upon determining that the bid documentation is complete will, in the presence of the Bidder'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 Bidder. 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 Contractor 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 Contractor 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 Bidder as a *trade secret* at the time the bid documentation is delivered to the State Contract Officer acting directly or through a duly authorized representative 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 Contractor receives the final estimate; or until such time as the Contractor:

(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 Contractor against the Department, or receipt of a letter from the Contractor authorizing release, the Department may obtain the release and custody of the bid documentation.

The Bidder certifies and agrees that the sealed container placed in escrow contains all of the bid documentation used to determine the bid and that no other bid documentation shall be relevant or material in litigation over claims brought by the Contractor 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 Contractor receives the final estimate and the Contractor 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 Contractor.

The Contractor will be notified by certified letter from the Escrow Agent that the bid documentation will be released to the Contractor. The 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 Contractor does not receive the documents within 30 days of the receipt of the certified letter, the Department will contact the 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) 108 SP1 G145

(A) The Contractor 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 Contractor will not be responsible for damage due to faulty design, 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 Contractor is responsible for invoking the warranted repair work with the manufacturer. The Contractor'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 Contractor would be wholly responsible for under the terms of the contract. Examples would include pavement structures, bridge components, and sign structures. This provision will not be used as a mechanism to force the Contractor to return to the project to make repairs or perform additional work that the Department would normally compensate the Contractor for. In addition,

routine maintenance activities (i.e. mowing grass, debris removal, ruts in earth shoulders,) are not parts of this guarantee.

Appropriate provisions of the payment and/or performance bonds shall cover this guarantee for the project.

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.

OUTSOURCING OUTSIDE THE USA:

(9-21-04) (Rev. 5-16-06) SP1 G150

All work on consultant contracts, services contracts, and construction contracts shall be performed in the United States of America. No work shall be outsourced outside of the United States of America.

Outsourcing for the purpose of this provision is defined as the practice of subcontracting labor, work, services, staffing, or personnel to entities located outside of the United States.

The North Carolina Secretary of Transportation shall approve exceptions to this provision in writing.

EROSION AND SEDIMENT CONTROL/STORMWATER CERTIFICATION:

(1-16-07) (Rev. 10-15-24) 105-16, 225-2, 16 SP1 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 Pollution 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 Supervisor to manage the Contractor and subcontractor operations, insure 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 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. 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 Contractor'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 Contractor 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 Contractor's operations.
(j) Ensure that proper cleanup occurs from vehicle tracking on paved surfaces 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 are, but are not limited to:

(a) Control project site waste to prevent contamination of surface or ground waters of the state, i.e. from equipment operation/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 equal to or greater than 1.0 inch that occurs within a 24 hour period. Additional monitoring may be required at the discretion of Division of Water Resources personnel 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 Division of Water 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 Contractor and subcontractors' construction activities.

(b) Ensure that all operators and subcontractors 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 Contractor'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 Contractor 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 Contractor 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 Contractor 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 Certified Designer on the erosion and sediment control/stormwater component of all reclamation plans and if applicable, the certification number of the Level III 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 Designer* and notify the Engineer of changes in certified personnel over the life of the contract within 2 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 C*ease 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 10 calendar days after receiving notice of the proposed adverse action.

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

Failure to appeal within 10 calendar days will result in the proposed adverse action becoming effective on the date specified on the certified notice. Failure to appeal within the time specified will 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 7 days of hearing the appeal. Decision of the Chief Engineer will 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

All work described within this provision and the role of 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:

(2-20-07) (Rev. 1-16-24) 105-16, 230, 801 SP1 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 Contractor 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 DWQ 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 *Standard Specifications*, the Contractor 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 Contractor's test results, an immediate test shall be performed jointly with the results superseding the previous test results of both the Department and the Contractor.

The Contractor shall use the *NCDOT Turbidity Reduction Options for Borrow Pits Matrix,* available at https://connect.ncdot.gov/resources/roadside/FieldOperationsDocuments/TurbidityReductionOptionSheet.pdf to plan, design, construct, and maintain BMPs to address water quality standards. 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 DWQ'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 Contractor 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 Contractor may use cation exchange capacity (CEC) values from proposed site borings to plan and develop the bid 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.

NOTE TO CONTRACTOR:

The Contractor shall be guided by the following condition that was inadvertently omitted from 401 Water Quality Certification Letter February 11, 2025 from the Department of Environmental Quality.

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 tress. Riparian areas are defined as a distance 25 feet from the top of stream bank. [15A NCAC 02B.0224, .0225]

PROJECT SPECIAL PROVISIONS

ROADWAY

SHOULDER RECONSTRUCTION PER SHOULDER MILE:

(1-18-00) (Rev. 1-17-23) 560, 1019 SP1 R07R(Rev)

Description

The work covered by this provision consists of clipping high shoulders and reconstructing the earth shoulder in accordance with Standard Drawing No. 560.01 and 560.02 of the *Roadway Standard Drawings* with the following exceptions: the width will be shown on typical sections, or to the existing shoulder point, whichever is nearer, as long as the desired typical is achieved. Seeding and mulching shall be performed upon completion of shoulder grading when earth borrow is used.

This work shall be performed immediately after the resurfacing operations are complete as directed by the Engineer.

Materials

The Contractor shall furnish all earth material necessary for the construction of the shoulders in accordance with Section 1019 of the *Standard Specifications*. All soil is subject to test and acceptance or rejection by the Engineer.

Construction Methods

Obtain material from within the project limits or approved source. Prior to adding borrow material, the existing shoulder shall be scarified to provide the proper bond and shall be compacted to the satisfaction of the Engineer.

Any excess material generated by the shoulder reconstruction shall be disposed of by the Contractor in an approved disposal site.

Measurement and Payment

Shoulder Reconstruction will be measured and paid as the actual number of miles of shoulders that have been reconstructed and accepted by the Engineer. Measurement will be made along the surface of each shoulder to the nearest 0.01 of a mile. Such price will include disposing of any excess material in an approved disposal site, and for all labor, tools, equipment, and incidentals necessary to complete the work.

Borrow Excavation will be measured and paid in accordance with Section 230 of the *Standard Specifications* for earth material furnished by the Contractor.

Incidental Stone Base will be measured and paid as provided in Article 545-6 of the *Standard Specifications*.

Seeding and Mulching will be measured and paid as provided in Article 1660-8 of the *Standard Specifications*.

Payment will be made under:

Pay Item	**Pay Unit**
Shoulder Reconstruction	Shoulder Mile

SHOULDER RECONSTRUCTION PROCEDURE:

(7-1-95) (Rev. 10-15-13) 560 SP1 R10BR

Perform shoulder reconstruction immediately following paving operations and in no case allow paving operations to exceed shoulder operations by more than two weeks without written permission of the Engineer. Failure to meet this requirement shall be cause to cease paving operations until it can be met. Place final pavement marking after shoulder reconstruction.

Upon completion of shoulder reconstruction, remove construction signs and use on other projects or store at the county maintenance installation or as directed by the Engineer.

CLEARING AND GRUBBING – MODIFIED METHOD III:

(3-19-24) 200 SP2 R02B

Perform clearing on this project to the limits established by Modified Method - III shown on Standard Drawing No. 200.03 of the *Roadway Standard Drawings*. Conventional clearing methods may be used except where permit drawings or conditions have been included in the proposal which require certain areas to be cleared by hand methods.

BURNING RESTRICTIONS:

(7-1-95) 200, 210, 215 SP2 R05(Rev)

Open burning is not permitted on the New Hanover County portion of the right-of-way limits established for this project. Do 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 New Hanover County. Dispose of the clearing, grubbing and demolition debris from New Hanover County by means other than burning, according to state or local rules and regulations.

TEMPORARY DETOURS:

(7-1-95) (Rev. 11-19-13) 1101 SP2 R30B

Construct temporary detours required on this project in accordance with the typical sections in the plans or as directed.

After the detours have served their purpose, remove the portions deemed unsuitable for use as a permanent part of the project as directed by the Engineer. Salvage and stockpile the aggregate base course removed from the detours at locations within the right of way, as directed by the Engineer, for removal by State Forces. Place pavement and earth material removed from the detour in embankments or dispose of in waste areas furnished by the Contractor.

Aggregate base course and earth material that is removed will be measured and will be paid at the contract unit price per cubic yard for *Unclassified Excavation*. Pavement that is removed will be measured and will be paid at the contract unit price per square yard for *Removal of Existing _____ Pavement*. Pipe culverts removed from the detours remain the property of the Contractor. Pipe culverts that are removed will be measured and will be paid at the contract unit price per linear foot for *Pipe Removal*. Payment for the construction of the detours will be made at the contract unit prices for the various items involved.

Such prices and payments will be full compensation for constructing the detours and for the work of removing, salvaging, and stockpiling aggregate base course; removing pipe culverts; and for placing earth material and pavement in embankments or disposing of earth material and pavement in waste areas.

SHOULDER AND FILL SLOPE MATERIAL:

(5-21-02)(Rev. 1-16-24) 235, 560 SP2 R45 B

Description

Perform the required shoulder and slope construction for this project in accordance with the applicable requirements of Section 560 and Section 235 of the *Standard Specifications*.

Measurement and Payment

When the Contractor elects to obtain material from an area located beneath a proposed fill sections which does not require excavation for any reason other than to generate acceptable shoulder and fill slope material, the work of performing the excavation will be considered incidental to the item of *Borrow Excavation* or *Shoulder Borrow*. If there is no pay item for *Borrow* or *Shoulder Borrow* in the contract, this work will be considered incidental to *Unclassified Excavation*. Stockpile the excavated material in a manner to facilitate measurement by the Engineer. Fill the void created by the excavation of the shoulder and fill slope material with suitable material. Payment for material used from the stockpile will be made at the contract unit price for *Borrow Excavation* or *Shoulder Borrow*. If there is no pay item for *Borrow Excavation* or *Shoulder Borrow*, then the material will be paid for at the contract unit price for *Unclassified Excavation*. The material used to fill the void created by the excavation of the shoulder and fill slope material will be made at the contract unit price for *Unclassified Excavation*, *Borrow Excavation*, or *Shoulder Borrow*, depending on the source of the material.

Material generated from undercut excavation, unclassified excavation or clearing and grubbing operations that is placed directly on shoulders or slope areas, will not be measured separately for payment, as payment for the work requiring the excavation will be considered adequate compensation for depositing and grading the material on the shoulders or slopes.

When undercut excavation is performed at the direction of the Engineer and the material excavated is found to be suitable for use as shoulder and fill slope material, and there is no area on the project currently prepared to receive the material generated by the undercut operation, the Contractor may construct a stockpile for use as borrow at a later date. Payment for the material used from the stockpile will be made at the contract unit price for *Borrow Excavation* or *Shoulder Borrow*.

When shoulder material is obtained from borrow sources or from stockpiled material, payment for the work of shoulder construction will be made at the contract unit price per cubic yard for *Borrow Excavation* or *Shoulder Borrow* in accordance with the applicable provisions of Section 230 or Section 560 of the *Standard Specifications*.

MANUFACTURED QUARRY FINES IN EMBANKMENTS:

(01-17-17)(Rev. 4-16-24) 235 SP02 R72

Description

This specification addresses the use of manufactured quarry fines that are not classified as select materials. The specification allows the Contractor 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 subgrade stabilization in accordance with the contract. Geotextile for subgrade stabilization is 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.

Materials

Manufactured Quarry Fines.

Site specific approval of MQFs material will 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 *Standard Specifications.*

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, address, 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.

Construction Methods

Place MQFs in the core of the embankment section with at least 4 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 10 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 percent of optimum but not greater than one percent above optimum as determined by AASHTO T 99, Method A or C.

In embankments where MQFs are incorporated, geotextile for subgrade stabilization shall be used. Refer to Article 505-2 of the *Standard Specifications* for geotextile type and Article 505-3 of the *Standard Specifications* for the geotextile construction methods.

Measurement and Payment

Borrow Excavation will be measured by truck volume and paid in cubic yards in accordance with Article 230-5 of the *Standard Specifications*. As an alternate weigh tickets can be provided and payment made by converting weight to cubic yards based on the verifiable unit weight. Where the pay item for *Borrow Excavation* is not included in the original contract then no separate payment will be made for this item and payment will be included in the lump sum price bid for *Grading*.

Geotextile for Subgrade Stabilization will be measured and paid in accordance with Article 505-4 of the *Standard Specifications*. When the pay item for *Geotextile for Subgrade Stabilization* is not included in the original contract then no payment will be made for this item and will be considered incidental to the use of MQFs in embankment.

FLOWABLE FILL:

(9-17-02) (Rev. 1-16-24) 300, 340, 1000, 1530, 1540, 1550 SP3 R30

Description

This work consists of all work necessary to place flowable fill in accordance with these provisions, the plans, and as directed.

Materials

Refer to Division 10 of the *Standard Specifications*.

Item	Section
Flowable Fill	1000-7

Construction Methods

Discharge flowable fill material directly from the truck into the space to be filled, or by other approved methods. The mix may be placed full depth or in lifts as site conditions dictate. The Contractor shall provide a method to plug the ends of the existing pipe in order to contain the flowable fill.

Measurement and Payment

At locations where flowable fill is called for on the plans and a pay item for flowable fill is included in the contract, *Flowable Fill* will be measured in cubic yards and paid as the actual number of cubic yards that have been satisfactorily placed and accepted. Such price and payment will be full compensation for all work covered by this provision including, but not limited to, the mix design, furnishing, hauling, placing and containing the flowable fill.

Payment will be made under:

Pay Item	**Pay Unit**
Flowable Fill	Cubic Yard

CORRUGATED ALUMINUM ALLOY CULVERT PIPE:

(9-21-21)(Rev. 1-16-24) 305, 310 SP3 R34

Revise the *Standard Specifications* as follows:

Page 3-5, Article 305-2, MATERIALS, add the following after line 16:

Item	**Section**
Waterborne Paint	1080-9
Hot Bitumen	1081-3

Page 3-5, Article 305-3, CONSTRUCTION METHODS, add the following after line 26:

Coating must be applied to the aluminum when in contact with concrete. Immediately prior to coating, aluminum surfaces to be coated shall be cleaned by a method that will remove all dirt, oil, grease, chips, and other foreign substances. Aluminum to be coated shall be given one coat of suitable quality coating such as:

Approved waterborne paint (Section 1080-9)
Approved Hot Bitumen (Section 1081-3)

Other coating materials may be submitted to the Engineer for approval.

Page 3-7, Article 310-6, MEASUREMENT AND PAYMENT, lines 10-11, delete the fourth sentence and replace with the following:

Select bedding and backfill material and coating will be included in the cost of the installed pipe.

PIPE ENDWALL WITH LOAD-CARRYING GRATE:

Description

This work consists of the manufacture and installation of precast concrete pipe endwall with load-carrying grate in accordance with Section 1032-6 and 310 of the *Standard Specifications*, at the locations as shown on the plans, and as directed by the Engineer.

Materials

When pipe endwall with load-carrying grates are required in the contract plans, the precast concrete pipe end section shall meet the requirements of Section 1032-6(C), Section 310 and any other applicable parts of the *Standard Specifications*. Pipe end sections shall meet all material requirements pertaining to reinforced concrete pipes.

Materials and fabrication methods for the hinged load-carrying grates shall conform to requirements of Sections 1070, 1072, 1074 and 1081 of the *Standard Specifications*. The hinged load-carrying grate shall be constructed of Grade 60 reinforcing steel bars in accordance with Section 1070 of the Standard Specifications. The hinged load-carrying grate shall be fully welded in accordance with plans and galvanized in accordance with Section 1076 of the Standard Specifications. The hinged load-carrying grate shall be anchored to the proposed pipe end section by using anchor bolts in accordance with Section 420 of the Standard Specifications. All hardware shall be galvanized steel.

Construction Methods

Precast concrete pipe endwall with load-carrying grates shall be mitered to fit fill slope for safe passage of an errant vehicle as shown on the plans. Install in accordance with Section 310 of the *Standard Specifications*, at the locations as shown on the plans.

Measurement and Payment

Pipe Endwall with Load-Carrying Grate will be measured and paid as the actual number of each of these items manufactured and installed into the completed and accepted work. Such price and payment will be full compensation for all work and will include, but not be limited to, furnishing all labor, materials, equipment and other incidentals necessary to complete this work.

Payment will be made under:

Pay Item	**Pay Unit**
___" Pipe Endwall with Load-Carrying Grate	Each

BRIDGE APPROACH FILLS:

(10-19-10)(Rev. 1-16-24) 422 SP4 R02

Description

Bridge approach fills consist of backfilling behind bridge end bents with select material or aggregate to support all or part of bridge approach slabs. Install outlets and grade bridge approach fills to drain water through and away from approach fills. Install geotextiles to allow for possible future slab jacking and separate approach fills from embankment fills, natural ground and pavement sections 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 as required. Construct bridge approach fills in accordance with the contract, accepted submittals and bridge approach fill *Roadway Standard Drawings*.

Define bridge approach fill types as follows:

Type 1 Approach Fill – Approach fill for bridge abutment in accordance with *Roadway Standard Drawing* No. 423.01;

Type 1A Approach Fill – Alternate approach fill for integral bridge abutment in accordance with *Roadway Standard Drawing* No. 423.02;

Type 2 Approach Fill – Approach fill for bridge abutment with MSE wall in accordance with *Roadway Standard Drawing* No. 423.03 and

Type 2A Approach Fill – Alternate approach fill for integral bridge abutment with MSE wall in accordance with *Roadway Standard Drawing* No. 423.04.

At the Contractors option, use Type 1A or 2A approach fills instead of Type 1 or 2 approach fills, respectively, for integral bridge abutments. Type 1A and 2A approach fills consists 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 is designed for a construction surcharge, remains in place and is aligned so the wall face functions as a form for the integral end bent cap backwall and wing walls.

Materials

Refer to Division 10 of the *Standard Specifications*.

Item	Section
Geotextiles	1056
Portland Cement Concrete	1000
Select Materials	1016
Subsurface Drainage Materials	1044
Welded Wire Reinforcement	1070-3

Provide Type 1 geotextile for separation geotextiles, Type 4a geotextile for under bridge approach slabs and Class B concrete for outlet pads. Use Class V or Class VI select material for Type 1 and

1A approach fills and the same aggregate type approved for the reinforced zone in the accepted MSE wall submittal for Type 2 and 2A approach fills. For MSE wall aggregate, reinforcement and connector materials, see the *Mechanically Stabilized Earth Retaining Walls* provision. Provide outlet pipes and fittings for subsurface drainage materials. Provide 1/4" hardware cloth with 1/4 inch openings constructed from 24 gauge wire.

For temporary geotextile walls, use welded wire reinforcement for welded wire facing and Type 5a geotextile for reinforcement geotextiles. Use Type 5a geotextile with lengths as shown in *Roadway Standard Drawing* No. 423.02 or 423.04.

Construction Methods

Excavate as necessary for approach fills and, if applicable, temporary geotextile walls in accordance with the contract. Ensure limits of approach fills are graded to drain as shown in the bridge approach fill *Roadway Standard Drawings*. For Type 1 and 1A approach fills in embankment fills, place and compact a temporary 1.5:1 (H:V) fill slope in accordance with *Roadway Standard Drawing* No. 423.01 or 423.02 and in accordance with Subarticle 235-3(B) and 235-3(C) of the *Standard Specifications*. Density testing is required within the temporary fill slope and additional more frequent density testing is also required for bridge approach embankments. Wait 3 days before cutting the slope back to complete the approach fill excavation. Use excavated material elsewhere on the project to form embankments, subgrades, or shoulders. If a slope for an approach fill is excavated to flatter than what is required for access or any other reason, that same slope is required for the entire approach fill excavation. Do not backfill overexcavations that extend outside the approach fill limits shown on the *Roadway Standard Drawings* with embankment soils. Instead, expand approach fill limits to include overexcavations.

Notify the Engineer when embankment fill placement and approach fill excavation is complete. Do not place separation geotextiles or aggregate until approach fill dimensions and embankment materials below and outside approach fills are approved.

For Type 2 approach fills, cast MSE wall reinforcement or connectors into end bent cap backwalls within 3 inches 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 Type 2 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 over any MSE wall geosynthetic reinforcement, pull reinforcement taut so that it is in tension and free of kinks, folds, wrinkles or creases.

For Type 1 and 1A approach fills, place pipe sleeves in wing walls so water drains towards outlets. Use sleeves that can withstand wing wall loads. Insert outlet pipes into pipe sleeves to direct water towards outlets. Attach hardware cloth in front of the outlet pipe at the wing. Connect outlet pipes and fittings with solvent cement in accordance with Article 815-3 of the *Standard Specifications* and place outlet pads in accordance with Roadway Standard Drawing No. 815.03.

Attach separation geotextiles to end bent cap backwalls and wing walls with adhesives, tapes or other approved methods. Overlap adjacent geotextiles of the same type at least 18 inches. Cover select material or aggregate with Type 4a geotextile at an elevation 6 inches below the bridge

approach slab. 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 or MSE wall reinforcement.

For Type 1A and 2A approach fills, install temporary geotextile walls as shown in *Roadway Standard Drawing* No. 423.02 or 423.04. At the Contractor's option, construct the bottom portion of integral end bents before temporary geotextile walls as shown in the plans. Erect and set welded wire facing for temporary geotextile walls so facing functions as a form for the integral end bent cap backwall. Place welded wire facing adjacent to each other in the horizontal and vertical directions to completely cover the temporary geotextile 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 wall face in accordance with *Roadway Standard Drawing* No. 423.02 or 423.04 and cover geotextiles with at least 3 inches of select material or aggregate. Place layers of reinforcement geotextiles within 3 inches of locations shown in *Roadway Standard Drawing* No. 423.02 or 423.04. Install reinforcement geotextiles with the direction shown in *Roadway Standard Drawing* No. 423.02 or 423.04. Orient overlapping seams in reinforcement geotextiles perpendicular to the integral end bent cap backwall. Do not overlap reinforcement geotextiles so seams are parallel to the wall face. Before placing select material or aggregate over reinforcement geotextiles, pull geotextiles taut so they are in tension and free of kinks, folds, wrinkles or creases. Temporary geotextile walls are designed for a surcharge pressure in accordance with *Roadway Standard Drawing* No. 423.02 or 423.04. If loads from construction equipment will be more than what the wall is designed for, contact the Engineer before positioning equipment on top of temporary geotextile walls.

Place select material or aggregate in 6 inch to 8 inch thick lifts. Compact fine aggregate for Type 2 and 2A approach fills in accordance with Subarticle 235-3(C) of the *Standard Specifications* except compact fine aggregate to a density of at least 98%. Compact select material for Type 1 and 1A approach fills and coarse aggregate for Type 2 and 2A approach fills with at least 4 passes of a trench roller in a direction parallel to the end bent cap backwall. Do not displace or damage geosynthetics or MSE wall reinforcement when placing and compacting select material or aggregate. End dumping directly on geosynthetics is not permitted. Do not operate heavy equipment on geosynthetics until they are covered with at least 8 inches of select material or aggregate. Replace any damaged geosynthetics to the satisfaction of the Engineer. When approach fills extend beyond bridge approach slabs, wrap Type 4a geotextiles over select material or aggregate and back under approach slabs as shown in *Roadway Standard Drawing* No. 423.03 or 423.04.

Measurement and Payment

Type 1 and 1A approach fills will be paid for at the contract lump sum price for *Type 1 Bridge Approach Fill, Station* _____ and Type 2 and 2A approach fills will be paid for at the contract lump sum price for *Type 2 Bridge Approach Fill, Station* _____. The lump sum price for each approach fill will be full compensation for providing labor, tools, equipment and approach fill materials, excavating, backfilling, hauling and removing excavated materials, installing wall facing, geotextiles and outlets, compacting backfill and supplying select material, aggregate, geotextiles, pipe sleeves, outlet pipes and pads and any incidentals necessary to construct approach fills behind bridge end bents.

Compensation for the material placed within the temporary 1.5:1 (H:V) fill slopes will be made in accordance with Section 225, 226, or 230 of the *Standard Specifications*. The cost of removal, including excavating, hauling, placement, and compaction of the material elsewhere on or off the project will be included in the contract lump sum price for *Type 1 Bridge Approach Fill, Station* _____.

The contract lump sum price for *Type 2 Bridge Approach Fill, Station* _____ will also be full compensation for supplying and connecting MSE wall reinforcement to end bent caps but not designing MSE wall reinforcement and connectors. The cost of designing reinforcement and connectors for Type 2 approach fills behind bridge end bents with MSE abutment walls will be incidental to the contract unit price for *MSE Retaining Wall No.* _____.

Payment will be made under:

Pay Item	Pay Unit
Type 1 Bridge Approach Fill, Station _____	Lump Sum
Type 2 Bridge Approach Fill, Station _____	Lump Sum

AUTOMATED FINE GRADING:

(1-16-96)(Rev. 1-16-24) 610 SP5 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 Standard Specifications except use an automatically controlled fine grading machine using 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.

No direct payment will be made for the work required by this provision as it will be considered incidental to other work being paid for by the various items in the contract.

STABILIZATION OF COASTAL PLAIN SANDS:

(11-18-14) 510 SP5 R12

Description

As directed by the Engineer, stabilize sandy subgrade material with Class IV aggregate to prevent rutting of the subgrade prior to paving directly on the subgrade. Remove material as needed in cut areas prior to placing the Class IV aggregate.

Materials

Refer to Division 10.

Item	Section
Select Material, Class IV	1016

Use Class IV Select Material for Class IV Aggregate Stabilization.

Construction Methods

Class IV Aggregate Stabilization

As directed by the Engineer, place aggregate by end dumping aggregate on approved subgrade soils to provide a working platform and reduce wheel rutting of subgrade material. Place the Class IV aggregate stabilization to a thickness of 2 to 3 inches.

Maintenance

Maintain aggregate stabilization in an acceptable condition and minimize the use of heavy equipment on aggregate in order to avoid damaging the subgrade. Provide and maintain drainage ditches and drains as required to prevent entrapping water in aggregate stabilization.

Measurement and Payment

Class IV Aggregate Stabilization will be measured and paid in tons. Aggregate will be measured by weighing in trucks in accordance with Article 106-7. The contract unit price for *Class IV Aggregate Stabilization* will be full compensation for furnishing, hauling, handling, placing, mixing, compacting and maintaining aggregate.

The work to excavate material to place Class IV Aggregate Stabilization below subgrade is considered incidental to the work of placing the aggregate and no separate payment will be made.

Payment will be made under:

Pay Item	**Pay Unit**
Class IV Aggregate Stabilization	Ton

INCIDENTAL STONE BASE:

(7-1-95)(Rev.1-16-24) 545 SP5 R28R

Description

Place incidental stone base on driveways, mailboxes, etc. immediately after paving and do not have the paving operations exceed stone base placement by more than one week without written permission of the Engineer.

Materials and Construction

Provide and place incidental stone base in accordance with Section 545 of the *Standard Specifications*.

Measurement and Payment

Incidental Stone Base will be measured and paid in accordance with Article 545-6 of the *Standard Specifications*.

PRICE ADJUSTMENT - ASPHALT BINDER FOR PLANT MIX:
(11-21-00)(Rev. 1-16-24) 620 SP6 R25

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

The base price index for asphalt binder for plant mix is **$ 563.75** per ton.

This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on **May 1, 2025**.

MILLED RUMBLE STRIPS ON ASPHALT CONCRETE SHOULDERS:
(11-19-24)(Rev. 6-17-25) 665 SP6 R56

Revise the *Standard Specifications* as follows:

Page 6-53, Article 665-3 CONSTRUCTION METHODS, lines 20-21, delete and replace the first sentence of the second paragraph with the following:

Provide rumble strips that have finished dimensions of 7 inches ± 1/2 inch wide in the direction of travel and the length measured perpendicular to the direction of travel as specified in the contract.

Page 6-53, Article 665-4 MEASUREMENT AND PAYMENT, lines 30-33, delete and replace with the following:

Milled Rumble Strips (Asphalt Concrete), ___" will be measured and paid at the contract unit price per linear foot for the actual number of linear feet, measured longitudinally along the surface of each shoulder and/or edgeline, where rumble strips have been constructed.

Payment will be made under:

Pay Item	**Pay Unit**
Milled Rumble Strips (Asphalt Concrete), ___"	Linear Foot

IMPACT ATTENUATOR UNITS, TYPE TL-___:
(4-20-04)(Rev. 8-20-24) SP8 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

Furnish attenuator units listed on the NCDOT APL. Units shall not be modified by the manufacturer and installer once approved and on the NCDOT APL.

Prior to installation the Contractor shall submit to the Engineer certified working drawings and assembling instructions from the manufacturer for each impact attenuator unit in accordance with

Article 105-2 of the *Standard Specifications*.

Construction Methods

Perform installation in accordance with the plans and details and assembling instructions furnished by the manufacturer.

Measurement and Payment

Impact Attenuator Unit, Type TL-___ will be measured and paid at the contract unit price per each. Such prices and payment will be full compensation for all work covered by this provision including, but not limited to, furnishing, installing and all incidentals necessary to complete the work.

Payment will be made under:

Pay Item	**Pay Unit**
Impact Attenuator Units, Type TL-___	Each

FOUNDATIONS AND ANCHOR ROD ASSEMBLIES FOR METAL POLES:

(1-17-12)(Rev. 1-16-24) 9, 14, 17 SP9 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 *Standard Specifications* and Roadway Standard Drawing No. 1743.01.

Materials

Refer to the *Standard Specifications*.

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 *Standard Specifications* 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 or defective materials will 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 *Standard Specifications*. 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 approved by the Engineer. Provide an Ordinary Surface finish in accordance with Subarticle 825-6(B) of the *Standard Specifications* 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, Contractor and Drilled Pier Contractor Superintendent will attend this predrill meeting.

Do not excavate holes, install piles or allow equipment wheel loads or vibrations within 20 ft 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 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 *Standard Specifications*. 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 Contractor proposes leaving casings in place, temporary casings should 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 Contractor 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 2 ft of the bottom of holes. Take sample sets from excavations to test polymer slurry immediately after filling holes with slurry, at least every 4 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 *Standard Specifications* 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. 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.

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 *Standard Specifications*. A drilled pier will be considered defective in accordance with Subarticle 411-5(D) of the *Standard Specifications* and drilled pier acceptance is based in part on the criteria in Article 411-6 of the *Standard Specifications* except for the top of pier tolerances in Subarticle 411-6(C) of the *Standard Specifications*.

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 is required in accordance with Article 411-6 of the *Standard Specifications*. No 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 *Standard Specifications*. 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.

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 *Standard Specifications*. 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 *Standard Specifications*. 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 3 to 5 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 2 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 4 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.

Measurement and Payment

Foundations and anchor rod assemblies for metal poles and upright trusses will be measured and paid for elsewhere in the contract.

No payment will be made for temporary casings that remain in drilled pier excavations. No payment will be made for PIT. No payment will be made for further investigation of defective piers. Further investigation of piers that are not defective will be paid as extra work in accordance with Article 104-7 of the *Standard Specifications*. No payment will be made for remediation of unacceptable drilled piers or post repair testing.

OVERHEAD AND DYNAMIC MESSAGE SIGN FOUNDATIONS:

(1-16-18)(Rev. 1-16-24) SP9 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 *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*.

Materials

Use sign foundation materials that meet the *Foundations and Anchor Rod Assemblies for Metal Poles* provision.

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 is 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 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.

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 2 feet of finished grade before beginning drilling. Drill borings to 2 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 required. 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 *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*. 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 *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*.

Submit boring logs, if any, working drawings and design calculations for acceptance in accordance with Article 105-2 of the *Standard Specifications*. 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* provision.

Measurement and Payment

Overhead Footing will be measured and paid in cubic yards. Sign foundations will be measured as the cubic yards of foundation concrete for footings, pedestals, drilled piers, grade beams and wings shown in the accepted submittals. The contract unit price for *Overhead Footings* will be full compensation for providing labor, tools, equipment and foundation materials, stabilizing or shoring excavations, supplying and placing concrete, reinforcing steel, conduit, anchor rod assemblies and any incidentals necessary to construct sign foundations. Subsurface investigations required by the Engineer will be paid as extra work in accordance with Article 104-7 of the *Standard Specifications*.

Payment will be made under:

Pay Item	**Pay Unit**
Overhead Footing	Cubic Yard

ELECTRONIC TICKETING SYSTEM:

(7-16-24)(Rev. 12-17-24) 1020 SP10 R20

Description

At the contractor's option, the use of an electronic ticketing system for reporting individual and cumulative asphalt material deliveries may be utilized on this project. At the preconstruction conference, the contractor shall notify the Engineer if they intend to utilize an electronic ticketing system for reporting individual and cumulative asphalt material deliveries to the project.

Electronic Ticketing Requirements

a. The electronic ticketing system must be fully integrated with the load read-out system at the plant. The system shall be designed so data inputs from scales cannot be altered by either the Contractor or the Department.

b. Material supplier must test to confirm that ticketing data can be shared from the originating system no less than 30 days prior to project start.

c. After each truck is loaded, ticket data must be electronically captured, and ticket information uploaded via Application Programming Interface (API) to the Department.

d. Obtain security token from NCDOT for access to E-Ticketing portal (to send tickets). To request a Security Key, fill out the below E-Ticketing Security Request Form: https://forms.office.com/g/XnT7QeRtgt

e. Obtain API from NCDOT containing the required e-ticketing data fields and format. Download the API from the NCDOT E-ticketing Webpage: https://connect.ncdot.gov/projects/construction/E-Ticketing/Pages/default.aspx

f. Provide all ticket information in real time and daily summaries to the Department's designated web portal. If the project contains locations with limited cellular service, an alternative course of action must be agreed upon.

g. Electronic ticketing submissions must be sent between the Material Supplier and the Department.

h. The electronic ticket shall contain the following information:

Date
Contract Number
Supplier Name
Contractor Name
Material
JMF
Gross Weight
Tare Weight
Net Weight
Load Number
Cumulative Weight
Truck Number
Weighmaster Certification
Weighmaster Expiration
Weighmaster Name
Facility Name
Plant Certification Number
Ticket Number
Hauling Firm (optional)

Voided Ticket Number (if necessary)
Original Ticket Number (if necessary)
Supplier Revision (If necessary)

The Contractor/supplier can use the electronic ticketing system of their choice to meet the requirements of this provision.

Measurement and Payment

No measurement or payment will be made for utilizing an electronic ticketing system as the cost of such shall be included in the contract price bid for the material being provided.

GLASS BEAD GRADATION FOR PAVEMENT MARKINGS:
(9-17-24) 1087 SP10 R87

Revise the *Standard Specifications* as follows:

Page 10-187, Subarticle 1087-4(C), Gradation & Roundness, after line 6, delete and replace Table 1087-2 with the following:

TABLE 1087-2
GLASS BEAD GRADATION REQUIREMENTS

Sieve Size	Gradation Requirements	
	Minimum	Maximum
Passing #20	100%	--
Retained on #30	5%	15%
Retained on #50	40%	80%
Retained on #80	15%	40%
Passing #80	0%	10%
Retained on #200	0%	5%

TEMPORARY SHORING:
(2-20-07)(Rev. 1-16-24) SP11 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 Contractor'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 contract and accepted submittals. Construct temporary shoring at locations shown in the plans and as directed. Temporary shoring is 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 5 feet from the edge of pavement of an open travelway. This 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 is 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, geostrip, welded wire grid or metallic strip reinforcement.

Temporary geosynthetic walls consist of geotextiles or geogrids wrapped behind welded wire facing or geostrips connected to welded wire facing. Define "temporary geotextile wall" as a temporary geosynthetic wall with geotextile reinforcement, "temporary geogrid wall" as a temporary geosynthetic wall with geogrid reinforcement and "temporary geostrip wall" as a temporary geosynthetic wall with geostrip 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 embedment below the grade at the wall face.

(E) Positive Protection

Define "unanchored or anchored portable concrete barrier" as portable concrete barrier (PCB) that meets *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 *Roadway Standard Drawing* No. 862.02.

Materials

Refer to the *Standard Specifications*.

Item	Section
Concrete Barrier Materials	1170-2
Flowable Fill, Excavatable	1000-7
Geosynthetics	1056
Grout, Type 1	1003
Portland Cement	1024-1
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
Water	1024-4
Welded Wire Reinforcement	1070-3

Provide Type 6 material certifications for shoring materials in accordance with Article 106-3 of the *Standard Specifications*. Use Class IV select material for temporary guardrail and Class A concrete that meets Article 450-2 of the *Standard Specifications* or Type 1 grout for drilled-in piles. Provide untreated timber with a thickness of at least 3 inches 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 will 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 *Standard Specifications*. Splice bars in accordance with Article 1070-9 of the *Standard Specifications*. Do not splice strands. Use bondbreakers, spacers and centralizers that meet Article 6.3.5 of the *AASHTO LRFD Bridge Construction Specifications*.

Use neat cement grout that only contains cement and water with a water cement ratio of 0.4 to 0.5 which is approximately 5.5 gallons of water per 94 pounds of Portland cement. Provide grout with a compressive strength at 3 and 28 days of at least 1,500 and 4,000 psi, respectively.

(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 and Geostrip Reinforcement

Use geogrids with a roll width of at least 4 feet. Use geogrids for geogrid reinforcement and geostrips for geostrip reinforcement with an "approved" status code in accordance with the NCDOT Geosynthetic Reinforcement Evaluation Program. The list of approved geogrids and geostrips is available from: connect.ncdot.gov/resources/Geological/Pages/Products.aspx

Provide geogrids and geostrips with design strengths in accordance with the accepted submittals. Geogrids and geostrips are approved for short-term design strengths (3-year design life) in the machine direction (MD) and cross-machine direction (CD) 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 *Standard Specifications* 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 Contractor'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 is 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 Contractor's option or if clear distance for cantilever, braced and anchored shoring is less than 4 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 *Standard Specifications*. 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 a Design 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 or flood 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 does not apply to construction traffic. Design temporary shoring for any construction surcharge if construction traffic will be above and within H of shoring. Design temporary shoring for a traffic (live load) surcharge in accordance with Article 11.5.6 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 Type 1 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. 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 6 inches above top of shoring.

Design cantilever, braced and anchored shoring for a maximum deflection of 3 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 6 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 5 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 6 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 6 feet, whichever is longer. Extend the reinforced zone at least 6 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 and geostrip reinforcement, use approved geosynthetic reinforcement properties available from the website shown elsewhere in this provision. Use geosynthetic properties for the direction reinforcement will be installed, a 3-year design life and shoring backfill to be used in the reinforced zone.

Do not use more than 4 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 3 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 to

24 inch long legs. Locate geosynthetic 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 3 feet back behind facing into shoring backfill. Attach geostrip reinforcement to welded wire facing with a connection approved by the Department.

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, geostrip and wire walls, retain shoring backfill at welded wire facing with retention geotextiles and extend geotextiles at least 3 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, Area Construction Engineer, Geotechnical Operations Engineer, Contractor 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 *Standard Specifications* and *Roadway Standard Drawing* No. 1170.01. Use temporary guardrail in accordance with Section 862 of the *Standard Specifications* and *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 6 inches of horizontal and vertical alignment shown in the accepted submittals, and

(3) Shoring plumbness (batter) is not negative and within 2 degrees of vertical.

(B) Cantilever, Braced and Anchored Shoring Installation

If overexcavation 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 *Standard Specifications* 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 Type 1 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 7 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 5 feet. Remove flowable fill and material in between H-piles as needed to install timber lagging. Position lagging with at least 3 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 are 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) Mix and place neat cement grout in accordance with Subarticles 1003-5, 1003-6 and 1003-7 of the *Standard Specifications*. 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 3 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 inches between the 1 and 10 minute readings or less than 0.08 inches 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.

Attach geostrip reinforcement to welded wire facing and wrap geotextile reinforcement and retention geotextiles behind welded wire facing as shown in the plans and accepted submittals. Cover geotextiles with at least 3" 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 3 inches of locations shown in the plans and accepted submittals. Before placing shoring backfill, pull geosynthetic 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 8 to 10 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 *Standard Specifications*. Use only hand operated compaction equipment to compact backfill within 3 feet of welded wire facing. At a distance greater than 3 feet, compact shoring backfill with at least 4 passes of an 8 to 10 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 geosynthetics is not permitted. Do not operate heavy equipment on reinforcement until it is covered with at least 8 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 *Standard Specifications*. Bench temporary walls into the sides of excavations where applicable. For temporary geosynthetic walls with top of wall within 5 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.

Measurement and Payment

Temporary Shoring will be measured and paid in square feet. Temporary walls will be measured as the square feet of exposed wall face area. Cantilever, braced or anchored shoring will be measured as the square feet of exposed shoring face area with the shoring height equal to the difference between the top and bottom of shoring elevations. Define "top of shoring" as where the grade intersects the back of sheet piles or H-piles and timber lagging. Define "bottom of shoring" as where the grade intersects front of sheet piles or H-piles and timber lagging. No measurement will be made for any embedment, shoring extension above top of shoring or pavement thickness above temporary walls.

The contract unit price for *Temporary Shoring* will be full compensation for providing shoring designs, submittals and materials, excavating, backfilling, hauling and removing excavated materials and supplying all labor, tools, equipment and incidentals necessary to construct temporary shoring.

No payment will be made for temporary shoring not shown in the plans or required by the Engineer including shoring for OSHA reasons or the Contractor's convenience. No value engineering proposals will be accepted based solely on revising or eliminating shoring locations shown in the plans or estimated quantities shown in the bid item sheets as a result of actual field measurements or site conditions.

PCB will be measured and paid in accordance with Article 1170-4 of the *Standard Specifications*. No additional payment will be made for anchoring PCB for temporary shoring. Costs for anchoring PCB will be incidental to temporary shoring.

Temporary guardrail will be measured and paid for in accordance with Article 862-6 of the *Standard Specifications*.

Payment will be made under:

Pay Item	**Pay Unit**
Temporary Shoring	Square Foot

FLAGGERS:

(12-17-24) 1150 SP11 R50

Revise Section 1150 of the *Standard Specification* as follows:

Page 11-13, Article 1150-1, DESCRIPTION, add the following after line 31:

Alternatively, at the discretion of the Contractor, the Contractor may furnish, install, place in operation, repair, maintain, relocate, and remove remotely controlled Automated Flagging Assistance Devices (AFAD) or Temporary Portable Traffic Signal units (PTS units) to assist, supplement, or replace human flaggers for one-lane, two-way traffic maintenance during construction in accordance with this provision and the *Standard Specifications*.

For the purpose of this provision, an "approach" refers to a single lane of traffic moving in one direction toward a point of control or work zone. Flaggers, AFAD and PTS units are only used to control one lane of approaching traffic in a specific direction.

Page 11-13, Article 1150-2, MATERIALS, add the following after line 34:

Provide documentation to the Engineer that the AFAD or PTS units meets or exceeds the requirements of this special provision and is on the NCDOT APL or ITS and Signals QPL.

(A) Automated Flagging Assistance Devices (AFAD)

(1) AFAD General

Cover the automated gate arm with Department approved Type VII, VIII or IX retroreflective sheeting of vertical alternating red and white stripes at 16 inch intervals measured horizontally. When the gate arm is in the down position the minimum vertical aspect of the arm and sheeting shall be 4 inches. The retroreflectorized sheeting shall be on both sides of the gate arm. With the AFAD parked or positioned 2 feet outside or in a location deemed acceptable for the lane being controlled, the gate arm shall reach at least to the center of the lane but shall not exceed the width of the lane being controlled.

Design the system to be fail-safe. Provide a conflict monitor, malfunction monitoring unit, or similar device that monitors for malfunctions and prevents the display of conflicting indications. This system shall be electronic and operated by remote control.

(2) AFAD Type I System: RED/YELLOW

Provide a Red/Yellow AFAD with at least one set of CIRCULAR RED and CIRCULAR YELLOW lenses in a vertical configuration that are 12 inches in diameter. The bottom of the housing (including brackets) shall be at least 7 feet (2.1 meters) above the pavement.

This system is required to have yellow 12 inch aluminum or polycarbonate vehicle signal heads with 10 inch tunnel visors, backplates, and Light Emitting Diode (LED) modules. Provide signal heads, backplates, and LED modules listed on the ITS and Signals QPL available on the Department’s website.

Provide an automated gate arm on the AFAD that descends to a down position across the approaching lane of traffic when the steady CIRCULAR RED lens is illuminated and then ascends to an upright position when the flashing CIRCULAR YELLOW lens is illuminated. The automated gate arm is to be designed such that if a motorist pulls underneath the gate arm while lowering, no damage to the vehicle occurs.

A STOP HERE ON RED (R10-6 or R10-6a) sign shall be installed on the right-hand side of the approach at the point at which drivers are expected to stop when the steady CIRCULAR RED lens is illuminated.

To stop traffic, the AFAD shall transition from the flashing CIRCULAR YELLOW lens by initiating a minimum 5 second steadily illuminated CIRCULAR YELLOW lens followed by the CIRCULAR RED lens.

Once the CIRCULAR RED lens is displayed, the system is to have a minimum 2 second delay between the time the steady CIRCULAR RED is displayed and the time the gate arm begins to lower. The maximum delay between CIRCULAR RED and the time the gate arm lowers is 4 seconds. To permit stopped road users to proceed, the AFAD shall display the flashing CIRCULAR YELLOW lens and the gate arm shall be placed in the upright position.

Ensure the system monitors for a lack of yellow or red signal voltage, total loss of indication in any direction, presence of multiple indications on any approach and low power conditions.

Additional sets of CIRCULAR RED and CIRCULAR YELLOW lenses located over the roadway or on the left side of the approach and operated in unison with the primary set, may be used to improve visibility of the AFAD. If the set of lenses is located over any portion of the roadway that can be used by motor vehicles, the bottom of the housing (including brackets) shall be at least 15 feet (4.6 meters) above the pavement.

(3) AFAD Type II System: STOP/SLOW

Provide STOP/SLOW signs that are octagonal in shape, made of rigid material, and at least 36 inch x 36 inch in size. Letters shall be a minimum of 8 inches high. The STOP face shall have a red background with white letters and border.

The SLOW face shall be diamond shaped, orange, or yellow background with black letters and border. Cover both faces in a Department approved Type VII, VIII or IX retroreflective sheeting. The minimum mounting height for the sign faces shall be 7 feet above the pavement to the bottom of the sign.

The AFAD's STOP/SLOW signs shall be supplemented with active conspicuity devices by incorporating a stop beacon (red lens) and a warning beacon (yellow lens). The stop beacon shall be no more than 24 inches above the STOP face. Mount the warning beacon no more than 24 inches above or beside of the SLOW face. Except for the mounting locations, the beacons shall conform to the provisions of Chapter 4L of the MUTCD and have 12 inch signal lenses.

Strobe/flashing lights are an acceptable alternative to flashing beacons. If utilized, they shall be either white or red flashing lights located within the STOP face and white or yellow flashing lights within the SLOW face and conform to the provisions of Chapter 6D of the MUTCD. If used, the lens diameter shall be a minimum of 5 inches with a minimum height of 6 inches. Equip strobes/flashing lights for both dual and quad flash patterns.

Type B warning lights shall not be used in lieu of the beacons or the strobe lights.

The faces of the AFADs STOP/SLOW sign may include louvers. If louvers are used, design the louvers such that the aspect of the sign face to approaching traffic is a full sign face at a distance of 50 feet or greater.

A WAIT ON STOP (R1-7) sign and a GO ON SLOW (R1-8) sign shall be displayed to traffic approaching the AFAD. Position signs on the same support structure as the AFAD. Both signs shall have black legends and borders on white Type III sheeting backgrounds. Each of these signs shall be rectangular in shape and be at least 24 inch x 30 inch size with letters at least 6 inches high.

Provide an automated gate arm on the AFAD that descends to a down position across the approaching lane of traffic when the STOP face is displayed and then ascends to an upright position when the SLOW face is displayed.

The automated gate arm is to be designed such that if a motorist pulls underneath the gate arm while lowering, no damage to the vehicle occurs.

A STOP HERE ON RED (R10-6 or R10-6a) sign shall be installed on the right-hand side of the approach at the point at which drivers are expected to stop when the STOP face is displayed.

When approaching motorists are to proceed, display the SLOW face and the warning beacon or strobes are to flash on the AFAD. When approaching motorists are will be stopped, display the STOP face and the stop beacon or strobes are to flash on the AFAD.

To stop traffic, the AFAD will transition from the SLOW face to the STOP face by initiating a minimum 5 second change cycle. First, the warning beacon is to be steadily illuminated for the change cycle. If strobes are used in lieu of a warning beacon, they are to be placed in the quad flash pattern. At the end of the change cycle, the STOP face is to be displayed with the stop beacon flashing and the warning beacon or strobes are to stop flashing. Once the STOP face is displayed, the system is to have a minimum 2 second delay between the time the STOP face is displayed and the time the gate arm begins to lower. The maximum delay between the time the STOP face is displayed and the time the gate arm lowers is 4 seconds.

To permit stopped road users to proceed, the gate arm shall be placed in the upright position and the AFAD shall display the SLOW face and the warning beacon or strobes are to flash in the dual flash pattern.

Do not flash the stop beacon when the SLOW face is displayed, and do not flash the warning beacon when the STOP face is displayed.

(B) Portable Traffic Signals (PTS) Units

Provide PTS units with at least one set of CIRCULAR RED, CIRCULAR YELLOW, and CIRCULAR GREEN lenses in a vertical configuration that are 12 inch diameter aluminum or polycarbonate vehicle signal heads with 10 inch tunnel visors, backplates, and Light

Emitting Diode (LED) modules. All signal heads, tunnel visors, and backplates shall be yellow in color.

The bottom of the housing (including brackets) shall be at least 7 feet above the pavement for single set units. Additional signal heads on units with more than one signal head shall be capable of extending over the travel lane.

Communication Requirements

All PTS units within the signal set up systems shall maintain communication at all times by either hardwire cable or wireless radio link communication. If the hardwire cable communication is utilized the communication cable shall be deployed in a manner that will not intrude in the direct work area of the project or obstruct vehicular and pedestrian traffic. Utilize radio communication with 900MHz frequency band and frequency hopping capability. The radio link communication system shall have a minimum range of 1 mile.

Fault Mode Requirements

Revert PTS units to a flashing red mode upon system default unless otherwise specified by the Engineer. Equip the PTS units with a remote monitoring system. Where cell communication availability exists, the remote monitoring system shall adhere to the remote monitoring system section of this provision.

Remote Monitoring System

The remote monitoring system (RMS) shall be capable of reporting signal location, battery voltage / battery history and system default. Provide a password protected website viewable from any computer with internet capability for the RMS. In the event of a system default, the RMS shall provide specific information concerning the cause of the system default (i.e. red lamp on signal number 1). Equip the RMS with a mechanism capable of immediately contacting a minimum of three previously designated individuals via text messaging and/or email upon a default.

The running program operating the PTS units shall be always available and viewable through the RMS website. Maintain a history of the RMS operating system in each signal including operating hours and events and the location of the PTS units.

Trailer / Cart

The AFAD and PTS units may be mounted on either a trailer or a moveable cart system.

Finish all exterior metal surfaces with Federal orange enamel per AMS-STD-595, color chip ID# 13538 or 12473 respectively with a minimum paint thickness of 2.5 mils (64 microns).

Design and test the AFAD or PTS units trailer / cart to withstand an 80 MPH wind load while in the operational position. Provide independent certification that the assembly meets the design wind load.

Equip the AFAD or PTS units with leveling jacks capable of stabilizing the unit in a horizontal position when located on slopes 6:1 or flatter.

Equip trailers in compliance with North Carolina Law governing motor vehicles and include a 12-volt trailer lighting system complying *with Federal Motor Carrier Safety Regulations 393*, safety chains and a minimum 2 inch ball hitch.

Provide a minimum 4 inch wide strip of fluorescent conspicuity sheeting retroreflective sheeting to the frame of the trailer. Apply the sheeting to all sides of the trailer. The sheeting shall meet the ASTM requirements of Type VII, VIII or IX.

Power System

Design the systems to operate both with and without an external power source. Furnish transmitters, generators, batteries, controls and all other components necessary to operate the device.

Provide equipment that is solar powered and supplemented with a battery backup system that includes a minimum 110/120 VAC powered on-board charging system capable of powering the unit for 7 continuous days with no solar power. Each unit shall also be capable of being powered by standard 110/120 VAC power sources, if applicable.

Locate batteries and electronic controls in a locked, weather and vandal resistant housings.

Page 11-14, Article 1150-3, CONSTRUCTION METHODS, add the following after line 11:

Flaggers shall have a path to escape an errant approaching vehicle at all times, unimpeded by barrier, guardrail, guiderail, parked vehicles, construction materials, slopes steeper than 2:1, or any other obstruction at all times. If an unimpeded path cannot be maintained, the Contractor shall use AFAD or PTS units in lieu of a flagger.

Provide documentation to the Engineer prior to deploying the device that the AFAD or PTS units operator(s) are qualified flagger(s) that have been properly trained through an NCDOT approved training agency or other NCDOT approved training provider and that the qualified flagger(s) have received manufacturer training to operate that specific device. This training shall include proper installation, remote control operation, central control systems and maintenance of the AFAD or PTS units. The training shall take place off the project site where training conditions are removed from live traffic. The documentation shall include the names of the authorized trainer, the trainees, the device on which they have been trained and the date of the training. Provide updated documentation to the Engineer prior to deploying any additional operators.

Install advance warning signs and operate AFADs in accordance with the attached detail drawings in this provision.

Install advance warning signs and operate PTS units in accordance with *NCDOT Roadway Standard Drawings* No. 1101.02, Sheet 17.

AFAD and PTS units shall only be used in situations where there is only one lane of approaching traffic in the direction to be controlled. **At no time shall an AFAD unit controlling traffic through the work area be placed in an autonomous mode and/or left unattended.**

Signal timing and operation of PTS units shall be field verified and accepted by the Engineer before use.

Use AFAD or PTS units in locations where queueing from the AFAD or PTS units will extend to within 150 feet of a signalized intersection or railroad crossing. Do not be use AFAD and PTS units as a substitute for or a replacement for a continuously operating temporary traffic control signal as described in Section 6F.84 of the MUTCD.

If used at night, illuminate each AFAD or PTS units as described in Section 6D of the MUTCD.

Provide a complete AFAD or PTS units that is capable of being relocated as traffic conditions demand.

If AFADs or PTS units become inoperative, be prepared at all times to replace the unit with the same type and model of AFAD or PTS units, revert to human flagging operations or terminate all construction activities requiring the use of the AFAD or PTS units until the AFAD or PTS units become operative or qualified human flaggers are available.

When the work requiring the AFAD or PTS units is not pursued for 30 minutes or longer, power off each AFAD or PTS units. Removed the AFAD or PTS units from the travel lane and relocated to a minimum of 5 feet from the edge line. AFAD gate arms shall be in the upright position. Remove all traffic control devices from the road, place two cones by each AFAD or PTS units and all signs associated with the lane closure operation shall be removed or laid down. At the end of each workday, remove all AFADs or PTS units from the roadway and shoulder areas.

Ensure the system's wireless communication links continuously monitor and verify proper transmission and reception of data used to monitor and control each AFAD or PTS units. Ensure ambient mobile or other radio transmissions or adverse weather conditions do not affect the system.

In the event of a loss of communications, immediately display the flashing RED or STOP indication on all AFAD or PTS units.

AFAD Specific Construction Methods

The flagger/operator controlling the AFAD units shall be on the project site at all times. If multiple AFAD units are used, one AFAD unit shall be the Main AFAD unit and all other units shall be remote AFAD units. Ensure that each device meets the physical display and operational characteristics as specified in the MUTCD.

Multiple AFAD units may be controlled with **one** flagger/operator when the AFAD units meet each of the following requirements:

(1) AFAD units are spaced no greater than the manufacturer's recommendations.

(2) Both AFAD units can be seen at the same time from the flagger/operator's position, or the AFAD is operating on its own secure network with malfunction detection and notification to the flagger/operator.

(3) The flagger/operator has an unobstructed view of approaching traffic in both directions from the flagger/operator position or the AFAD is operating on its own secure network, with cameras that provide the flagger/operator an unobstructed view of approaching traffic from both directions. The flagger/operator may control the AFAD units from a pilot vehicle.

If any of the above requirements are not met, flagger/operator control each AFAD unit.

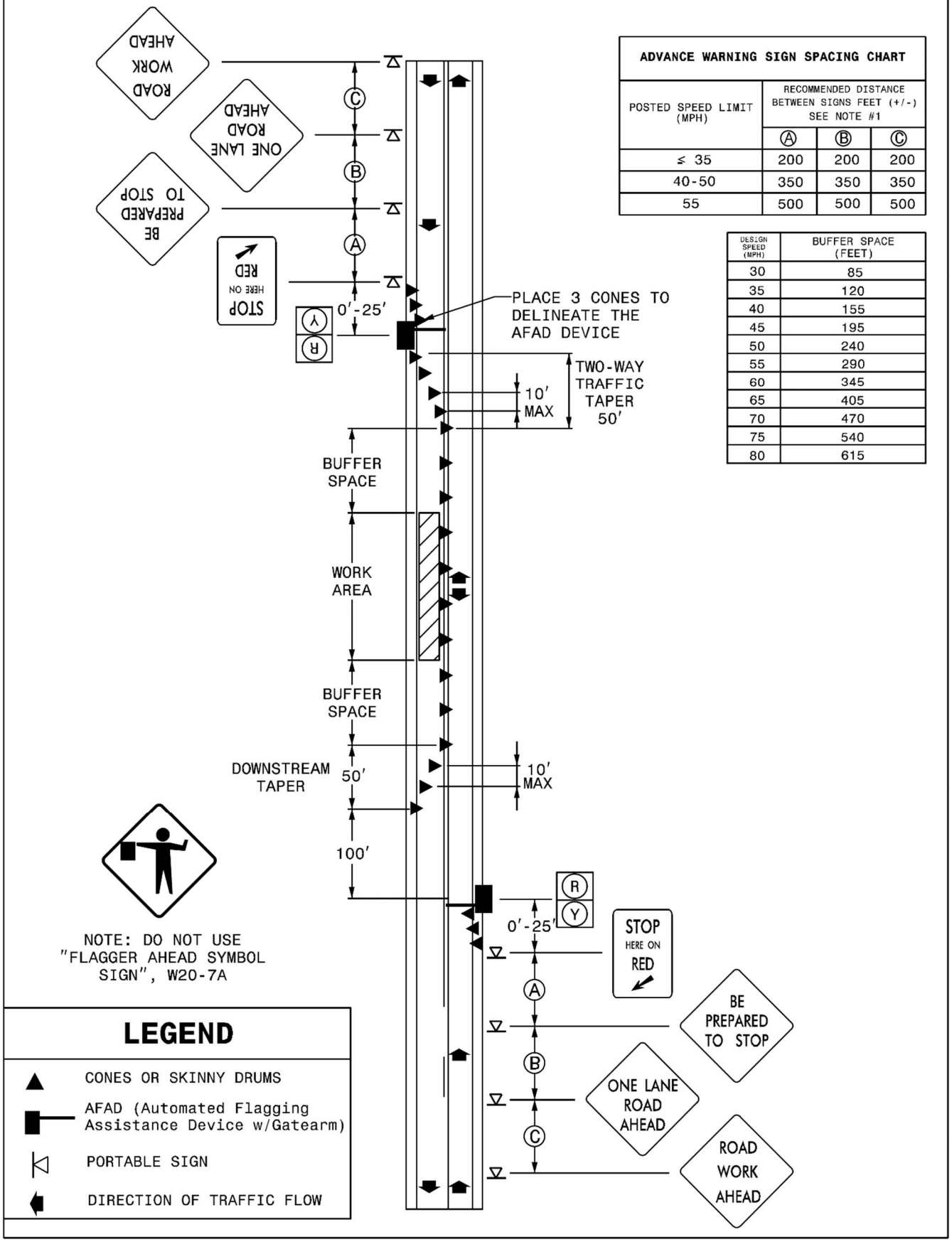
AFAD operators may either control traffic at side streets or driveways between the AFAD units or operate the pilot car while operating the AFAD system if approved by the Engineer. AFAD units must continue to be within clear sight of the operator during these work activities.

Page 11-14, Article 1150-4, MEASUREMENT AND PAYMENT, add the following after line 24:

Each AFAD or PTS unit will be measured and paid for as *Flaggers* paid by day in accordance with Article 1150-4 of the *Standard Specifications*. Where the pay item for *Flaggers* is not included in the original contract then no separate payment will be made for this item and payment will be included in the lump sum price bid for *Temporary Traffic Control* found elsewhere in this contract. Each approach controlled by AFAD or PTS units will be measured and paid as one flagger, irrespective of the number of devices used. If multiple PTS units are required to control a single approach, these units will collectively be considered as replacing one flagger.

No separate measurement or payment will be made for AFAD or PTS unit operators, as the cost of such including their training and operational costs shall be included in the unit or lump sum price for *Flaggers* or *Temporary Traffic Control*. Such price and payment also includes the relocation, maintenance, and removal during repair periods of AFAD or PTS units as well as the signal controller, communication, vehicle detection system, traffic signal software of PTS units and any other incidentals necessary to complete the work.

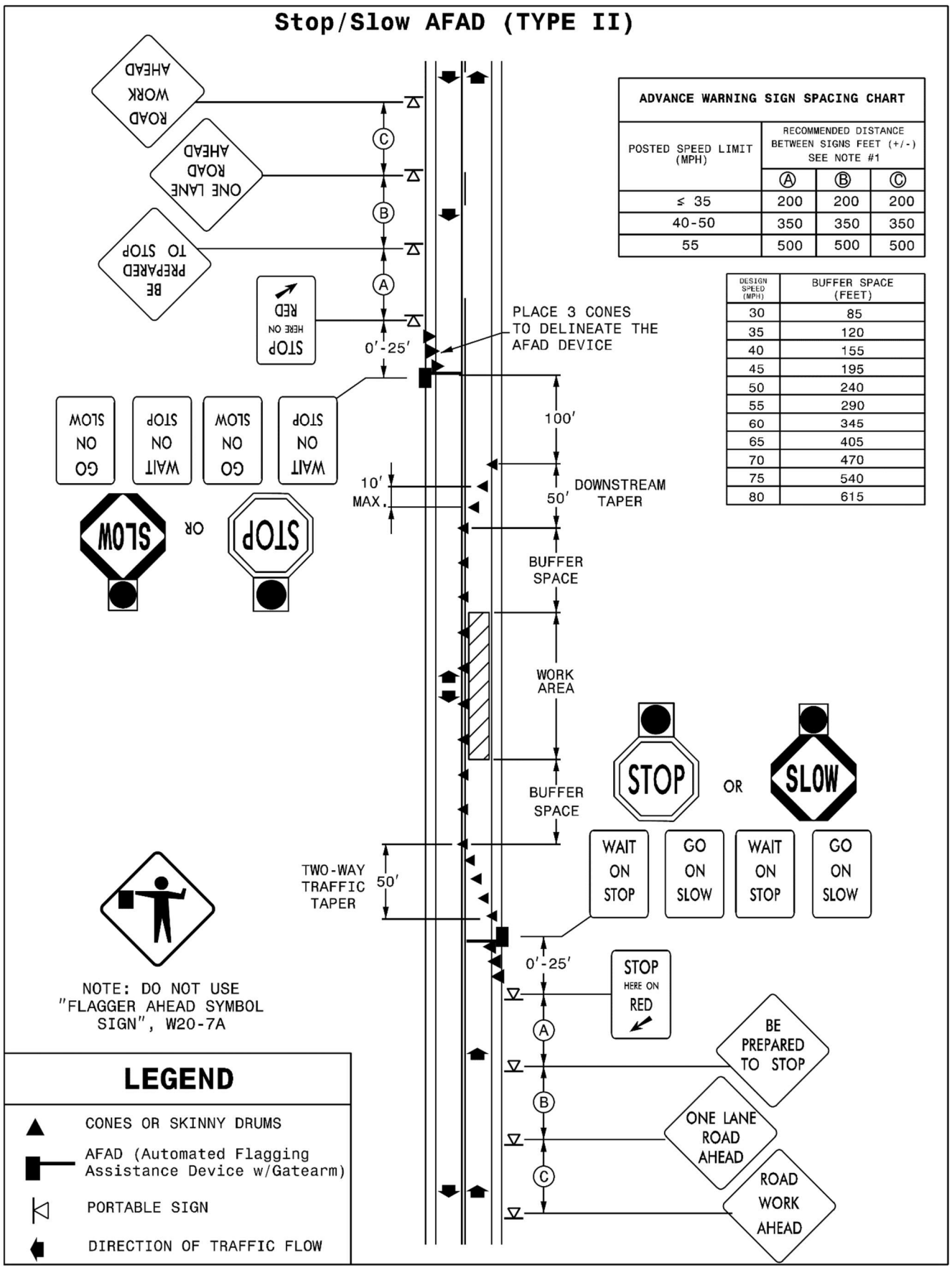
Red/Yellow Lens AFAD (TYPE I)



ADVANCE WARNING SIGN SPACING CHART			
POSTED SPEED LIMIT (MPH)	RECOMMENDED DISTANCE BETWEEN SIGNS FEET (+/-) SEE NOTE #1		
	Ⓐ	Ⓑ	Ⓒ
≤ 35	200	200	200
40-50	350	350	350
55	500	500	500

DESIGN SPEED (MPH)	BUFFER SPACE (FEET)
30	85
35	120
40	155
45	195
50	240
55	290
60	345
65	405
70	470
75	540
80	615

Stop/Slow AFAD (TYPE II)



ADVANCE WARNING SIGN SPACING CHART			
POSTED SPEED LIMIT (MPH)	RECOMMENDED DISTANCE BETWEEN SIGNS FEET (+/-) SEE NOTE #1		
	Ⓐ	Ⓑ	Ⓒ
≤ 35	200	200	200
40-50	350	350	350
55	500	500	500

DESIGN SPEED (MPH)	BUFFER SPACE (FEET)
30	85
35	120
40	155
45	195
50	240
55	290
60	345
65	405
70	470
75	540
80	615

NOTE: DO NOT USE "FLAGGER AHEAD SYMBOL SIGN", W20-7A

LEGEND

- ▲ CONES OR SKINNY DRUMS
- AFAD (Automated Flagging Assistance Device w/Gatearm)
- PORTABLE SIGN
- DIRECTION OF TRAFFIC FLOW

PORTABLE CONCRETE BARRIER:
(12-17-24) 1170 SP11 R70

Revise the *Standard Specifications* as follows:

Page 11-17, Subarticle 1170-3(A)(1) Portable Concrete Barrier, after line 25, add the following:

For MASH approved F-Shape K-Wall, install anchorage transitions between unanchored portable concrete barrier and temporary crash cushions, and between unanchored portable concrete barrier and portable concrete barrier (anchored) as shown in the *Roadway Standard Drawings*, No. 1170.01.

Page 11-19, Article 1170-4 MEASUREMENT AND PAYMENT, line 16, after the second sentence of the first paragraph add the following:

Crash cushion to unanchored concrete requires a transition

Page 11-19, Article 1170-4 MEASUREMENT AND PAYMENT, line 13, delete and replace "*Portable Concrete Barrier (____)*" with "*Portable Concrete Barrier*".

Page 11-19, Article 1170-4 MEASUREMENT AND PAYMENT, line 16, after the second sentence of the first paragraph add the following:

As shown in the *Roadway Standard Drawings*, No. 1170.01, anchorage transition sections between *Portable Concrete Barrier* and *Temporary Crash Cushions* as found in Section 1160 will be measured and paid as *Portable Concrete Barrier*. No additional payment will be made for equipment, materials or labor to meet the anchorage transition requirements.

Page 11-19, Article 1170-4 MEASUREMENT AND PAYMENT, line 16, after the first paragraph add the following:

Portable Concrete Barrier (Anchored) will be measured and paid as the maximum number of linear feet furnished, satisfactorily installed, accepted by the Engineer, maintained and removed, at any one time during the life of the project, including anchorage transition sections between portable concrete barrier and portable concrete barrier (anchored) as shown in the Roadway Standard Drawings, No. 1170.01. Measurement will be made by counting the number of barrier units used and multiplying by the length of a unit.

Page 11-19, Article 1170-4 MEASUREMENT AND PAYMENT, line 21, delete and replace "*Remove and Reset Portable Concrete Barrier (____)*" with "*Remove and Reset Portable Concrete Barrier*".

Page 11-19, Article 1170-4 MEASUREMENT AND PAYMENT, line 24, after the second sentence of the third paragraph add the following:

As shown in the *Roadway Standard Drawings*, No. 1170.01, anchorage transition sections between *Portable Concrete Barrier* and *Temporary Crash Cushions* as found in Section 1160 will be measured and paid as *Remove and Reset Portable Concrete Barrier*. No additional

payment will be made for equipment, materials or labor to meet the anchorage transition requirements.

Page 11-19, Article 1170-4 MEASUREMENT AND PAYMENT, line 28, after the third paragraph add the following:

Remove and Reset Portable Concrete Barrier (Anchored) will be measured and paid as the number of linear feet of barrier moved from one location on the project to another location on the project, including anchorage transition sections between portable concrete barrier and portable concrete barrier (anchored) as shown in the Roadway Standard Drawings, No. 1170.01. Measurement will be made by counting the number of barrier units moved during any one move and multiplying by the length of a unit. Where barrier units are moved more than once, each move will be measured separately. Whenever the Engineer directs the Contractor to move barrier units from an installed location to a stockpile either on or off the project and then back to another installed location, the complete move from the first installed location to the next installed location will be measured as 2 moves.

SNOWPLOWABLE DELINEATION:

(10-15-24) 1253 SP12 R53

Description

Furnish, install and maintain snowplowable delineation.

There are five snowplowable delineation alternate options approved for use in North Carolina. They include the following markers and markings options:

(1) Polycarbonate H-shaped Markers
(2) Inlaid Raised Pavement Markers
(3) 10' Rumble Skips
(4) Inlaid Cradle Markers
(5) 10' Inlaid Pavement Markings

Only one type of snowplowable delineation will be allowed on a single project.

Materials

Refer to Division 10 of the *Standard Specifications*.

Item	**Section**
Epoxy	1081
Pavement Markings	1087
Snowplowable Pavement Markers	1086-3

Any snowplowable pavement delineation shall conform to the applicable requirements of Sections 1086, 1087, and 1081 of the *Standards and Specifications.* Use snowplowable delineation markers and markings listed on the NCDOT APL. Any treatment that requires pavement cutting or milling shall be installed within 7 calendar days of the pavement cutting or milling operation.

Construction Methods

(A) General

For any snowplowable delineation, prior to installation, by brushing, blow cleaning, vacuuming or other suitable means, ensure that all materials and the pavement surface are free of dirt, grease, dust, oil, moisture, mud, grass, or any other material that would prevent adhesion to the pavement by brushing blow cleaning, or vacuuming. If required, apply a primer per manufactures recommendations to pavement surfaces before applying pavement marking material.

Install snowplowable delineation per manufacturers specifications every 80 feet. Make sure pavement markers are oriented to traffic correctly and pavement markings are applied in a uniform thickness. Do not apply markings over longitudinal joints. Protect the pavement markings until they are tack free. Apply applicable Sections 1205 and 1250 of the *Standards Specifications*.

If damage occurs during installation the effected treatments shall be corrected or replaced. This work shall be considered incidental to the installation of the marking or marker.

(B) Polycarbonate H-shaped Markers and Inlaid Cradle Markers

Bond marker housings to the pavement with epoxy adhesive. Mechanically mix and dispense epoxy adhesives as required by the manufacturer's specifications. Place the markers immediately after the adhesive has been mixed and dispensed.

Install polycarbonate H-shaped markers and inlaid cradle markers castings into slots sawcut into the pavement. Make slots in the pavement to exactly duplicate the shape of the casting of the polycarbonate H-shaped markers and inlaid cradle markers.

If saw cutting, milling, or grooving operations are used, promptly remove all resulting debris from the pavement surface. Install the marker housings within 7 calendar days after saw cutting , milling, or grooving the pavement. Remove and dispose of loose material from the slots by brushing, blow cleaning or vacuuming. Dry the slots before applying the epoxy adhesive. Install polycarbonate H-shaped markers and inlaid cradle markers according to the manufacturer's recommendations.

Protect the polycarbonate H-shaped markers or inlaid cradle markers until the epoxy has initially cured and is track free.

Construct inlaid cradle markers in accordance with the details in the plans and as directed by the Engineer.

(C) Reflector Replacement

The following requirements only apply to polycarbonate H-shaped markers and inlaid cradle markers.

In the event that a reflector is damaged, replace the damaged reflector by using adhesives and methods recommended by the manufacturer of the markers and approved by the Engineer. This work is considered incidental if damage occurs during the initial installation of the marker housings and maintenance of initial polycarbonate H-shaped markers or inlaid cradle markers specified in this section.

If during reflector replacement it is discovered that the housing is missing or broken this will be paid as *Polycarbonate H-shaped Markers* or *Inlaid Cradle Markers*. Missing housings shall be replaced. Broken housings shall be removed and replaced. In both cases the slot for the housings shall be properly prepared prior to installing the new housing; patch the existing marker slots as directed by the Engineer and install the new marker approximately one foot before or after the patch. Removal of broken housings and preparation of slots will be considered incidental to the work of replacing housings.

(D) Inlaid Raised Pavement Markers

Cut groove in accordance with the details in the plans and as directed by the Engineer.

Use adhesive recommended by the manufacturer to install markers into the groove in accordance with Section 1251. The raised pavement markers are incidental to inlaid raised pavement markers.

(E) 10' Rumble Skips

Construct 10' rumble skips on asphalt concrete in accordance with Section 665 for all centerline and shoulder rumble skips, details in the plans and as directed by the Engineer. Construct 10' rumble skips on Portland cement concrete in accordance with Section 730 for all centerline and shoulder rumble skips, details in the plans and as directed by the Engineer. The milled rumble strips are incidental to the rumble skips. Using polyurea or extruded 90 mil thermoplastic construct pavement markings in accordance with Section 1205.

(F) 10' Inlaid Pavement Markings

The groove in which the marking is to be placed shall be one inch wider than the marking to be placed and 10 mils deeper than the thickness of the marking.

When using this method, use enhanced reflective media. The following retroreflectivity values shall be met.

MINIMUM INITIAL REFLECTOMETER READINGS		
Item	**Color**	**Reflectivity**
Enhanced Reflectivity Media	White	450 mcd/lux/m^2
	Yellow	350 mcd/lux/m^2

Using polyurea, extruded 90 mil thermoplastic or cold applied plastic construct pavement markings in accordance with Section 1205.

Maintenance

Maintain all installed snowplowable delineation before acceptance by the Engineer.

Measurement and Payment

Polycarbonate H-shaped Markers will be measured and paid as the actual number of polycarbonate H-shaped markers satisfactorily placed and accepted by the Engineer.

Inlaid Raised Pavement Markers will be measured and paid as the actual number of inlaid raised pavement markers satisfactorily placed and accepted by the Engineer.

10' Rumble Skips will be measured and paid as the actual number of rumble skips satisfactorily placed and accepted by the Engineer.

Inlaid Cradle Markers will be measured and paid as the actual number of pavement markers satisfactorily placed and accepted by the Engineer.

10' Inlaid Pavement Markings will be measured and paid as the actual number of 10' inlaid pavement markings satisfactorily placed and accepted by the Engineer.

Replace Snowplowable Pavement Marker Reflector will be measured and paid in accordance with Article 1253-5.

Payment will be made under:

Pay Item	**Pay Unit**
Polycarbonate H-shaped Markers	Each
Inlaid Raised Pavement Markers	Each
10' Rumble Skips	Each
Inlaid Cradle Markers	Each
10' Inlaid Pavement Markings	Each

WATTLE DEVICES:

(1-1-24) 1642 SP16 R01

Page 16-23, Subarticle 1642-2(B) Wattle, lines 10-12, delete and replace with the following:

(B) Wattle and Wattle Barrier

Wattles shall meet Table 1642-1.

TABLE 1642-1 100% CURLED WOOD (EXCELSIOR) FIBERS - WATTLE	
Property	**Property Value**
Minimum Diameter	12 inches
Minimum Density	2.5 pcf +/- 10%
Net Material	Synthetic
Net Openings	1 inch x 1 inch
Net Configuration	Totally Encased
Minimum Weight	20 lb +/- 10% per 10 foot length

Coir Fiber Wattles shall meet Table 1642-2.

TABLE 1642-2 100% COIR (COCONUT) FIBERS WATTLE	
Property	**Property Value**
Minimum Diameter	12 inches
Minimum Density	3.5 pcf +/- 10%
Net Material	Coir Fiber
Net Openings	2 inch x 2 inch
Net Strength	90 lb
Minimum Weight	2.6 pcf +/- 10%

Wattle Barriers shall meet Table 1642-3.

TABLE 1642-3 100% CURLED WOOD (EXCELSIOR) FIBERS – WATTLE BARRIER	
Property	**Property Value**
Minimum Diameter	18 inches
Minimum Density	2.9 pcf +/- 10%
Net Material	Synthetic
Net Openings	1 inch x 1 inch
Net Configuration	Totally Encased
Minimum Weight	5 pcf +/- 10%

Coir Fiber Wattle Barriers shall meet Table 1642-4.

TABLE 1642-4 100% COIR (COCONUT) FIBERS WATTLE BARRIER	
Property	**Property Value**
Minimum Diameter	18 inches
Minimum Density	5 pcf +/- 10%
Net Material	Coir Fiber
Net Openings	2 inch x 2 inch
Net Strength	90 lb
Minimum Weight	10 pcf +/- 10%

Pages 16-24 & 16-25, Article 1642-5 MEASUREMENT AND PAYMENT, lines 42-47 & lines 1-2, delete and replace with the following:

Wattle will be measured and paid for by the actual number of linear feet of wattles which are installed and accepted. Such price and payment will be full compensation for all work covered by this section, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to install the *Wattle*.

Coir Fiber Wattles will be measured and paid for by the actual number of linear feet of coir fiber wattles which are installed and accepted. Such price and payment will be full compensation for all work covered by this section, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to install the *Coir Fiber Wattles*.

Wattle Barrier will be measured and paid as the actual number of linear feet of wattle barrier installed and accepted. Such price and payment will be full compensation for all work covered by this provision, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to install the *Wattle Barrier*.

Coir Fiber Wattle Barrier will be measured and paid as the actual number of linear feet of coir fiber wattle barrier installed and accepted. Such price and payment will be full compensation for all work covered by this provision, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to install the *Coir Fiber Wattle Barrier*.

Page 16-25, Article 1642-5 MEASUREMENT AND PAYMENT, after line 9, delete and replace "___ Wattle Check" with "Wattle".

Page 16-25, Article 1642-5 MEASUREMENT AND PAYMENT, after line 9, delete and replace "___ Wattle Barrier" with "Wattle Barrier".

Page 16-25, Article 1642-5 MEASUREMENT AND PAYMENT, after line 9, add the following:

Pay Item	**Pay Unit**
Coir Fiber Wattle	Linear Foot
Coir Fiber Wattle Barrier	Linear Foot

PERMANENT SEEDING AND MULCHING:

(7-1-95)(Rev. 1-16-24) 1660 SP16 R02

The Department desires that permanent seeding and mulching be established on this project as soon as practical after slopes or portions of slopes have been graded. As an incentive to obtain an early stand of vegetation on this project, the Contractor's attention is called to the following:

For all permanent seeding and mulching that is satisfactorily completed in accordance with the requirements of Section 1660 in the *Standard Specifications* and within the following percentages of elapsed contract times, an additional payment will be made to the Contractor as an incentive additive. The incentive additive will be determined by multiplying the number of acres of seeding and mulching satisfactorily completed times the contract unit bid price per acre for Seeding and Mulching times the appropriate percentage additive.

Percentage of Elapsed Contract Time	Percentage Additive
0% - 30%	30%
30.01% - 50%	15%

Percentage of elapsed contract time is defined as the number of calendar days from the date of availability of the contract to the date the permanent seeding and mulching is acceptably completed divided by the total original contract time.

EROSION AND STORMWATER CONTROL FOR SHOULDER CONSTRUCTION AND RECONSTRUCTION:

(11-16-10) (Rev. 1-21-20) 105-16, 225-2, Division 16 SP16 R03R

Land disturbing operations associated with shoulder construction/reconstruction may require erosion and sediment control/stormwater measure installation. National Pollutant Discharge Elimination System (NPDES) inspection and reporting may be required.

Erosion control measures shall be installed per the erosion control detail in any area where the vegetated buffer between the disturbed area and surface waters (streams, wetlands, or open waters) or drainage inlet is less than 10 feet. The Engineer may reduce the vegetated buffer threshold for this requirement to a value between 5 and 10 feet. Erosion control measures shall be spot checked every 7 days until permanent vegetative establishment.

In areas where shoulder construction/reconstruction includes disturbance or grading on the front slope or to the toe of fill, relocating ditch line or backslope, or removing vegetation from the ditch line or swale, NPDES inspection and monitoring are required every 7 days or within 24 hours of a rainfall event of greater than 1.0 inch. Maintain daily rainfall records. Install erosion control measures per detail.

In areas where the vegetated buffer is less than 10 feet between the disturbed area and waters of the State classified as High Quality Water (HQW), Outstanding Resource Water (ORW), Critical Areas, or Unique Wetlands, NPDES inspection and monitoring are required every 7 days or within 24 hours of a rainfall event of greater than 1.0 inch. The Engineer may reduce the vegetated buffer threshold for this requirement to a value between 5 and 10 feet. The plans or provisions will indicate the presence of these water classifications. Maintain daily rainfall records. Install erosion control measures per detail.

Land disturbances hardened with aggregate materials receiving sheet flow are considered non-erodible.

Sites that require lengthy sections of silt fence may substitute with rapid permanent seeding and mulching as directed by the Engineer.

NPDES documentation shall be performed by a Level II Erosion and Sediment Control/Stormwater certificate holder.

Materials used for erosion control will be measured and paid as stated in the contract.

STANDARD SPECIAL PROVISION
AVAILABILITY OF FUNDS – TERMINATION OF CONTRACTS

(5-20-08)(Rev. 1-16-24) 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 Subarticle 108-13(D) of the *Standard Specifications*.

STANDARD SPECIAL PROVISION
NCDOT GENERAL SEED SPECIFICATION FOR SEED QUALITY

(5-17-11) 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

(1-16-24) (Rev. 4-15-25) Z-4

Revise the *2024 Standard Specifications* as follows:

Division 3

Page 3-5, Article 305-2 MATERIALS, after line 16, replace " 1032-3(A)(7)" with "1032-3" and add the item "Galvanized Corrugated Steel Pipe" with Section "1032-3".

Page 3-6, Article 310-2 MATERIALS, after line 9, add the item "Galvanized Corrugated Steel Pipe" with Section "1032-3".

Division 6

Page 6-31, Article 610-16 MEASUREMENT AND PAYMENT, line 13, replace "*Hot Mix Asphalt Pavement*" with "*Asphalt Concrete* _____ *Course, Type* _____".

Division 9

Page 9-17, Article 904-4 MEASUREMENT AND PAYMENT, prior to line 1, replace " Sign Erection, Relocate Type (Ground Mounted)" with "Sign Erection, Relocate Type ___ (Ground Mounted)".

Division 10

Page 10-51, Article 1024-4 WATER, prior to line 1, delete the "unpopulated blank row" in Table 1024-2 between "Time of set, deviation from control" and "Chloride Ion Content, Max.".

Page 10-170, Subarticle 1081-1(C) Requirements, line 4, replace "maximum" with "minimum".

Division 11

Page 11-15, Article 1160-4 MEASUREMENT AND PAYMENT, line 24, replace "Where barrier units are moved more than one" with "Where barrier units are moved more than once".

Division 15

Page 15-10, Article 1515-4 MEASUREMENT AND PAYMENT, lines 11, replace " All piping" with "All labor, the manhole, other materials, excavation, backfilling, piping".

Division 16

Page 16-14, Article 1633-5 MEASUREMENT AND PAYMENT, line 20-24 and prior to line 25, delete and replace with the following " *Flocculant* will be measured and paid in accordance with Article 1642-5 applied to the temporary rock silt checks."

Page 16-3, Article 1609-2 MATERIALS, after line 26, replace "Type 4" with "Type 4a".

Page 16-25, Article 1644-2 MATERIALS, after line 22, replace "Type 4" with "Type 4a".

STANDARD SPECIAL PROVISION

PLANT AND PEST QUARANTINES

(Imported Fire Ant, Guava Root Knot Nematode, Spongy Moth (formerly known as gypsy moth), Witchweed, Cogon Grass, And Any Other Regulated Noxious Weed or Plant Pest)

(3-18-03)(Rev. 3-18-25) Z-04a

Within Quarantined Area

This project may be within a county regulated for plant and/or pests. If the project or any part of the Contractor'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/divisions/plant-industry/plant-protection/plant-industry-plant-pest-quarantines* 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 present a hazard of spreading imported fire ant, guava root knot nematode, spongy moth (formerly known as gypsy moth), witchweed, cogon grass, or other regulated noxious weed or plant pest.

STANDARD SPECIAL PROVISION

MINIMUM WAGES

(7-21-09) Z-5

FEDERAL: The Fair Labor Standards Act provides that with certain exceptions every employer shall pay wages at the rate of not less than SEVEN DOLLARS AND TWENTY FIVE CENTS ($7.25) per hour.

STATE: The North Carolina Minimum Wage Act provides that every employer shall pay to each of his employees, wages at a rate of not less than SEVEN DOLLARS AND TWENTY FIVE CENTS ($7.25) per hour.

The minimum wage paid to all skilled labor employed on this contract shall be SEVEN DOLLARS AND TWENTY FIVE CENTS ($7.25) per hour.

The minimum wage paid to all intermediate labor employed on this contract shall be SEVEN DOLLARS AND TWENTY FIVE CENTS ($7.25) per hour.

The minimum wage paid to all unskilled labor on this contract shall be SEVEN DOLLARS AND TWENTY FIVE CENTS ($7.25) per hour.

This determination of the intent of the application of this act to the contract on this project is the responsibility of the Contractor.

The Contractor shall have no claim against the Department of Transportation for any changes in the minimum wage laws, Federal or State. It is the responsibility of the Contractor to keep fully informed of all Federal and State Laws affecting his contract.

STANDARD SPECIAL PROVISION

TITLE VI AND NONDISCRIMINATION:

(6-28-77)(Rev 1/16/2024) Z-6

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 Non-discrimination 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) are 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 is 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:

(a) 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.

(b) 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);

(c) Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex);

(d) 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;

(e) The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);

(f) 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 will 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 will 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 will 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 Non¬ discrimination 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 PROVISION

ON-THE-JOB TRAINING

(10-16-07) (Rev. 4-21-15) 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.

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WICK DRAINS:

(SPECIAL)

Description:

Furnish, place and install vertical wick drains along with geotextiles for wick drain and select material for wick drain in accordance with the contract. Wick Drains are required to accelerate embankment settlements at the locations shown in the plans and as directed by the Engineer.

Materials:

Refer to Division 10 of the Standard Specifications.

Item	Section
Wick Drains	1056-5
Geotextiles	1056-4
Select Materials	1016-3

Provide wick drains that meet wick drains in Section 1056-5 of the Standard Specifications. Furnish to the Engineer a Type 2 Typical Certified Mill Test Report for the wick drain in accordance with Section 106-3 of the Standard Specifications if the provided wick drains are not listed in the approved products that is available from: https://apps.ncdot.gov/vendor/approvedproducts/

All wick drain materials shall be subject to inspection, test or approval by the Engineer. At least four (4) weeks before construction of wick drains, provide a sample of 5 foot long wick drain to the Engineer for review and approval.

Geotextile for Wick Drains will be used for separation and shall meet the requirements of Geotextiles, Type 1 or Type 2 in Section 1056 of the Standard Specifications. Select Material for Wick Drains will be used for drainage layer and shall meet the requirements of Select Materials, Class III in Section 1016 of the Standard Specifications.

Equipment:

Select the proper size and amount of equipment to provide the desired results, but provide the following basic items. The type of carrier to be used will depend on the desired installation force, but it must be equipped with a mandrel or sleeve of minimum cross sectional area not to exceed 10 square inches.

Submit to the Engineer for review and approval full details on all equipment proposed for drain installation at least two weeks before beginning work. Replace or supplement any equipment found unsatisfactory. All equipment approved for use will be on a trial basis.

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If after a short test section the equipment proves unsatisfactory, it must be removed, replaced or supplemented as deemed necessary to accomplish the desired results.

Installation of Wick Drains:

At least four weeks prior to the installation of wick drains, submit to the Engineer for his review and approval, details regarding the sequence of construction and method of installation. Approval by the Engineer of the sequence and method of installation will not necessarily constitute acceptance for the duration of the project. If, at any time, the Engineer considers that the method of installation is not satisfactory, the Contractor must alter his method and/or equipment as necessary to comply with the requirements.

If installation of wick drains through overlying layers and/or obstructions cannot be accomplished with the proper equipment, the Contractor will be permitted to use augering or other approved methods. Any holes augured must have a minimum diameter required to permit the mandrel or sleeve carrying the wick and wick anchorage to penetrate into the underlying soft soils. Penetration of more than 2 feet into the soft layer will not be allowed.

Install the wick drains after placement of the Geotextile for Wick Drain for soil separation and drainage layer. The drainage layer must consist of Select Material for Wick Drain as described above. Install wick drains at the designated locations using a mandrel or sleeve which completely encloses the wick drain, thereby protecting it from tears, cuts, and abrasions during installation. Provide the mandrel or sleeve with an anchor plate or similar arrangement at the bottom to prevent the soil from entering the bottom of the mandrel during installation of the drain, and to anchor the drain tip at the required depth at the time of mandrel withdrawal. Push the mandrel into the ground to the depth indicated on the plans unless otherwise directed by the Engineer. Retract the mandrel leaving the wick in place to function as a vertical drain. Cut the wick neatly at its upper end with 6 inches of wick material protruding above the drainage layer.

Splices or connections of the wick drain material must be done in a workmanlike manner to ensure the hydraulic continuity of the drain. One (1) splice per wick drain location is permitted. Overlap the jacket and core a minimum of 6 inches per splice. Form the splice by inserting the bottom side of the wick drain into the upper end to ensure continuous full flow. Use a minimum of ten (10) staples (4 on each side and 2 in the middle) to hold the splice.

Installed wicks must not deviate more than 1 inch per 12 inches from the vertical. Wicks that are out of their proper location by more than 6 inches, damaged in construction or improperly completed will be rejected by the Engineer.

Provide a suitable means of making a linear determination of the depth of the wick drain at any time during installation. Each wick drain length that is complete and in place will be recorded and used to determine total quantity of vertical wick drains for payment purposes.

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Provide the necessary steps to protect the instrumentation devices. Any devices that are damaged or become unreliable must be replaced at no additional cost to the Department.

Measurement and Payment:

Wick drain will be measured and paid for at the contract unit price per linear foot for "Wick Drains" complete and in place. Payment will be full compensation for work required to install the wick drains, including any augering required and furnishing all labor, equipment, tools, and incidentals necessary to complete the work.

Augering for wick drains installation will be incidental to the cost of wick drains, and no separate measurement for payment will be made.

Select Material for Wick Drain will be measured and paid in tons of material that is placed. The number of tons of material is determined by weighing the material in trucks in accordance with Article 106-7 of Standard Specifications. No deduction will be made for any moisture contained in the material at the time of weighing. The contract unit price for Select Material for Wick Drain will be full compensation for furnishing, hauling, handling, placing, compacting and maintaining the Select Material for Wick Drain.

Geotextile for Wick Drain will be measured and paid for in square yards.

Payment will be made under:

Pay Items:	Wick Drains	Linear Foot
	Select Material for Wick Drain	Ton
	Geotextile for Wick Drain	Square Yard

DocuSigned by:
Yinhui Liu
673A8A76BCF14BE...
4/29/2025

Yinhui Liu, Ph.D., P.E.
CATLIN Geotechnical Engineer

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STANDARD SHORING: **(1-16-24)**

Description

Standard shoring includes standard temporary shoring and standard temporary mechanically stabilized earth (MSE) walls. At the Contractor's option, use standard shoring as noted in the plans or as directed. When using standard shoring, a temporary shoring design submittal is not required. Construct standard shoring based on actual elevations and shoring dimensions in accordance with the contract and Geotechnical Standard Detail No. 1801.01 or 1801.02.

Define "standard temporary shoring" as cantilever shoring that meets the standard temporary shoring detail (Geotechnical Standard Detail No. 1801.01). Define "standard temporary wall" as a temporary MSE wall with geotextile or geogrid reinforcement that meets the standard temporary wall detail (Geotechnical Standard Detail No. 1801.02). Define "standard temporary geotextile wall" as a standard temporary wall with geotextile reinforcement and "standard temporary geogrid wall" as a standard temporary wall with geogrid reinforcement.

Provide positive protection for standard shoring at locations shown in the plans and as directed. See *Temporary Shoring* provision for positive protection types and definitions.

Materials

Refer to the *Standard Specifications*.

Item	Section
Concrete Barrier Materials	1170-2
Flowable Fill, Excavatable	1000-7
Geosynthetics	1056
Grout, Type 1	1003
Portland Cement Concrete, Class A	1000
Select Materials	1016
Steel Beam Guardrail Materials	862-2
Steel Sheet Piles and H-Piles	1084
Untreated Timber	1082-2
Welded Wire Reinforcement	1070-3

Provide Type 6 material certifications for shoring materials. Use Class IV select material for temporary guardrail. Use Class A concrete that meets Article 450-2 of the *Standard Specifications* or Type 1 grout for drilled-in piles.

Based on actual shoring height, positive protection, groundwater elevation, slope or surcharge case and traffic impact at each standard temporary shoring location, use sheet piles with the minimum required section modulus or H-piles with the sizes shown in Geotechnical Standard Detail No. 1801.01. Use untreated timber with a thickness of at least 3" and a bending stress of at least 1,000 psi for timber lagging.

(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 the following:

(1) A-2-4 soil for backfill around culverts,

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(2) A-2-4 soil in the reinforced zone of standard temporary walls with a back slope and

(3) Class VI select material in the reinforced zone of standard temporary geotextile walls.

(B) Standard Temporary Walls

Use welded wire reinforcement for welded wire facing, struts and wires with the dimensions and minimum wire sizes shown in Geotechnical Standard Detail No. 1801.02. Provide Type 2 geotextile for separation and retention geotextiles. Do not use more than 4 different reinforcement strengths for each standard temporary wall.

(1) Geotextile Reinforcement

Provide Type 4a geotextile for geotextile reinforcement except for the ultimate tensile strength. Based on actual wall height, groundwater elevation, slope or surcharge case and shoring backfill to be used in the reinforced zone at each standard temporary geotextile wall location, provide geotextiles with ultimate tensile strengths as shown in Geotechnical Standard Detail No. 1801.02.

(2) Geogrid Reinforcement

Use geogrids for geogrid reinforcement with a roll width of at least 4 ft and an "approved" status code in accordance with the NCDOT Geosynthetic Reinforcement Evaluation Program. The list of approved geogrids is available from:
connect.ncdot.gov/resources/Geological/Pages/Products.aspx

Based on actual wall height, groundwater or flood elevation, slope or surcharge case and shoring backfill to be used in the reinforced zone at each standard temporary geogrid wall location, provide geogrids for geogrid reinforcement with short-term design strengths as shown in Geotechnical Standard Detail No. 1801.02. Geogrids are approved for short-term design strengths (3-year design life) in the machine direction (MD) and cross-machine direction (CD) 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

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 Contractor's option or if the minimum required clear distance is not available, set concrete barrier next to and up against traffic side of standard shoring except for barrier above standard temporary walls. Concrete barrier with the minimum required clear distance is required above standard temporary walls.

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(B) Temporary Guardrail

Define "clear distance" behind temporary guardrail as the horizontal distance between guardrail posts and standard shoring. At the Contractor's option or if clear distance for standard temporary shoring is less than 4 ft, 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 standard temporary walls.

(C) Standard Shoring Selection Forms

Before beginning standard shoring construction, survey existing ground elevations in the vicinity of standard shoring locations to determine actual shoring or wall heights (H). Submit a standard shoring selection form for each location at least 7 days before starting standard shoring construction. Standard shoring selection forms are available from: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx

Construction Methods

Construct standard shoring in accordance with the *Temporary Shoring* provision.

(A) Standard Temporary Shoring Installation

Based on actual shoring height, positive protection, groundwater elevation, slope or surcharge case and traffic impact at each standard temporary shoring location, install piles with the minimum required embedment and extension for each shoring section in accordance with Geotechnical Standard Detail No. 1801.01. For concrete barrier above and next to standard temporary shoring and temporary guardrail above and attached to standard temporary shoring, use "surcharge case with traffic impact" in accordance with Geotechnical Standard Detail No. 1801.01. Otherwise, use "slope or surcharge case with no traffic impact" in accordance with Geotechnical Standard Detail No. 1801.01. If refusal is reached before driven piles attain the minimum required embedment, use drilled-in H-piles with timber lagging for standard temporary shoring.

(B) Standard Temporary Walls Installation

Based on actual wall height, groundwater elevation, slope or surcharge case, geotextile or geogrid reinforcement and shoring backfill in the reinforced zone at each standard temporary wall location, construct walls with the minimum required reinforcement length and number of reinforcement layers for each wall section in accordance with Geotechnical Standard Detail No. 1801.02. For standard temporary walls with pile foundations in the reinforced zone, drive piles through reinforcement after constructing temporary walls.

For standard temporary walls with interior angles less than 90°, wrap geosynthetics at acute corners as directed by the Engineer. Place geosynthetics as shown in Geotechnical Standard Detail No. 1801.02. Place separation geotextiles 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, place separation geotextiles between shoring backfill and backfill or natural ground on top of and at the back of the reinforced zone.

Measurement and Payment

Standard shoring will be measured and paid in accordance with the *Temporary Shoring* provision.

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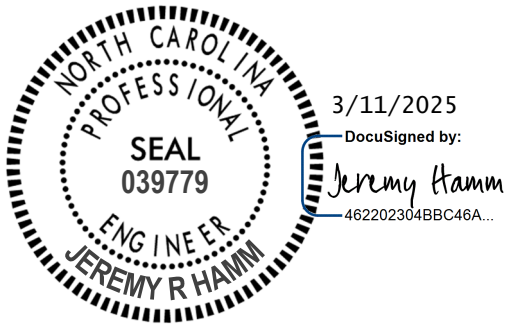
R-3300A

GT-2.4

New Hanover and
Pender Counties



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MECHANICALLY STABILIZED EARTH RETAINING WALLS (1-16-24)

1.0 GENERAL

Construct mechanically stabilized earth (MSE) retaining walls consisting of steel or geosynthetic reinforcement in the reinforced zone connected to vertical facing elements. Use precast concrete panels for vertical facing elements and coarse aggregate in the reinforced zone unless noted otherwise in the plans. Provide reinforced concrete coping and pile sleeves as required. Design and construct MSE retaining walls based on actual elevations and wall dimensions in accordance with the contract and accepted submittals. Use a prequalified MSE Wall Installer to construct MSE retaining walls.

Define MSE wall terms as follows:
Geosynthetic Reinforcement – Polyester Type (PET), HDPE or Polypropylene (PP) geosynthetic grids, i.e., geogrid reinforcement or polymer straps, i.e., geostrip reinforcement,
Geogrid – PET, HDPE or PP geogrid,
Reinforcement – Steel or geosynthetic reinforcement,
Aggregate – Coarse or fine aggregate,
Panel – Precast concrete panel,
Coping – Precast or CIP concrete coping,
Design Height (H) – Wall height + wall embedment as shown in the plans,
MSE Wall – Mechanically stabilized earth retaining wall,
MSE Wall Vendor – Vendor supplying the chosen MSE wall system,
MSE Panel Wall – MSE wall with panels,
MSE Segmental Wall – MSE wall with segmental retaining wall (SRW) units and
Abutment Wall – MSE wall with bridge foundations in any portion of the reinforced zone or an MSE wall connected to an abutment wall (even if bridge foundations only penetrate a small part of the reinforced zone, the entire MSE wall is considered an abutment wall).

For bridge approach fills behind end bents with MSE abutment walls, design reinforcement connected to end bent caps in accordance with the plans and this provision.

Use an approved MSE wall system in accordance with the plans and any NCDOT restrictions or exceptions for the chosen system. Value engineering proposals for other MSE wall systems will not be considered. Do not use MSE wall systems with an "approved for provisional use" status for MSE walls with design heights greater than 35 ft or walls supporting or adjacent to railroads or interstate highways. The list of approved MSE wall systems with approval status is available from:
connect.ncdot.gov/resources/Geological/Pages/Products.aspx

2.0 MATERIALS

Refer to the *Standard Specifications*.

Item	Section
Aggregate	1014
Asphalt Concrete Base Course, Type B25.0C	620
Corrugated Steel Pipe	1032-3

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Epoxy, Type 3A	1081
Geosynthetics	1056
Grout, Type 3	1003
Joint Materials	1028
Portland Cement Concrete, Class A	1000
Precast Retaining Wall Coping	1077
Reinforcing Steel	1070
Retaining Wall Panels	1077
Segmental Retaining Wall Units	1040-4
Select Material, Class V	1016
Shoulder Drain Materials	816-2
Steel Pipe	1036-4(A)

Use galvanized corrugated steel pipe with a zinc coating weight of 2 oz/sf (G200) for pile sleeves. Provide Type 2 geotextile for filtration and separation geotextiles. Use Class A concrete for CIP coping, leveling concrete and pads. Use galvanized steel pipe, threaded rods and nuts for the PET geogrid reinforcement vertical obstruction detail. Provide galvanized Grade 36 anchor rods and Grade A hex nuts that meet AASHTO M 314 for threaded rods and nuts.

Use panels and SRW units from producers approved by the Department and licensed by the MSE Wall Vendor. Provide steel strip connectors embedded in panels fabricated from structural steel that meets the requirements for steel strip reinforcement. Unless required otherwise in the contract, produce panels with a smooth flat final finish that meets Article 1077-11 of the *Standard Specifications*. Accurately locate and secure reinforcement connectors in panels and maintain required concrete cover. Produce panels within 1/4" of the panel dimensions shown in the accepted submittals.

Damaged panels or SRW units with excessive discoloration, chips or cracks as determined by the Engineer will be rejected. Do not damage reinforcement connection devices or mechanisms in handling or storing panels and SRW units.

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. Handle and store geosynthetics in accordance with Article 1056-2 of the *Standard Specifications*. Load, transport, unload and store MSE wall materials so materials are kept clean and free of damage. Bent, damaged or defective materials will be rejected.

A. Aggregate

Use standard size No. 57, 57M, 67 or 78M that meets Table 1005-1 of the *Standard Specifications* for coarse aggregate and the following for fine aggregate:

1. Standard size No. 1S, 2S, 2MS or 4S that meets Table 1005-2 of the *Standard Specifications* or
2. Gradation that meets Class III, Type 3 select material in accordance with Article

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1016-3 of the *Standard Specifications*.

Fine aggregate is exempt from mortar strength in Subarticle 1014-1(E) of the *Standard Specifications*. Use fine aggregate with a maximum organic content of 1.0%. Provide aggregate with chemical properties that meet the following requirements:

AGGREGATE pH REQUIREMENTS		
Aggregate Type (in reinforced zone)	**Reinforcement or Connector Material**	**pH**
Coarse or Fine	Steel	5 – 10
Coarse or Fine	Geosynthetic	4.5 – 9

AGGREGATE ELECTROCHEMICAL REQUIREMENTS (Steel Reinforcement/Connector Materials Only)			
Aggregate Type (in reinforced zone)	**Resistivity**	**Chlorides**	**Sulfates**
Coarse	≥ 5,000 Ω · cm	≤ 100 ppm	≤ 200 ppm
Fine	≥ 3,000 Ω · cm		

Use aggregate from sources participating in the Department's Aggregate QC/QA Program as described in Section 1006 of the *Standard Specifications*. Sample and test aggregate in accordance with the *Mechanically Stabilized Earth Wall Aggregate Sampling and Testing Procedures*.

B. Reinforcement

Provide steel or geosynthetic reinforcement supplied by the MSE Wall Vendor or a manufacturer approved or licensed by the vendor. Use reinforcement approved for the chosen MSE wall system. The list of approved reinforcement for each MSE wall system is available from the website shown elsewhere in this provision.

1. Steel Reinforcement

Provide Type 1 material certifications in accordance with Article 106-3 of the *Standard Specifications* for steel reinforcement. Use welded wire grid reinforcement ("mesh", "mats" and "ladders") that meet Article 1070-3 of the *Standard Specifications* and steel strip reinforcement ("straps") that meet ASTM A572, A1011 or A463. Use 10 gauge or heavier structural steel Grade 50 or higher for steel strip reinforcement. Galvanize steel reinforcement in accordance with Section 1076 of the *Standard Specifications* or provide aluminized steel strip reinforcement that meet ASTM A463, Type 2-100.

2. Geosynthetic Reinforcement

Provide Type 1 material certifications and identify geosynthetic reinforcement in

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accordance with Article 1056-3 of the *Standard Specifications*. Define machine direction (MD) and cross-machine direction (CD) for geogrids per Article 1056-3 of the *Standard Specifications*.

Use HDPE or PP geogrid for geogrid reinforcement cast into backwalls of end bent caps. Use PET or HDPE geogrid for geogrid reinforcement connected directly to SRW units and only HDPE geogrid for geogrid reinforcement cast into panels.

Provide extruded geogrids produced in the United States and manufactured from punched and drawn polypropylene sheets for PP geogrids that meet the following:

PP GEOGRID REQUIREMENTS		
Property	**Requirement[1]**	**Test Method**
Aperture Dimensions[2]	1" x 1.2"	N/A
Minimum Rib Thickness[2]	0.07" x 0.07"	N/A
Tensile Strength @ 2% Strain[2]	580 lb/ft x 690 lb/ft	ASTM D6637, Method B
Tensile Strength @ 5% Strain[2]	1,200 lb/ft x 1,370 lb/ft	
Ultimate Tensile Strength[2]	1,850 lb/ft x 2,050 lb/ft	
Junction Efficiency[3] (MD)	93%	ASTM D7737
Flexural Rigidity[4]	2,000,000 mg–cm	ASTM D7748
Aperture Stability Modulus[5]	0.55 lb–ft/degrees	ASTM D7864
UV Stability (Retained Strength)	100% (after 500 hr of exposure)	ASTM D4355

1. MARV per Article 1056-3 of the *Standard Specifications* except dimensions and thickness are nominal.
2. Requirement for MD x CD.
3. Junction Efficiency (%) = (Average Junction Strength (Xj_{ave}) / Ultimate Tensile Strength in the MD from ASTM D6637, Method A) × 100.
4. Test specimens two ribs wide, with transverse ribs cut flush with exterior edges of longitudinal ribs, and sufficiently long to enable measurement of the overhang dimension.
5. Applied moment of 17.7 lb–inch (torque increment).

C. Bearing Pads

For MSE panel walls, use preformed ethylene propylene diene monomer rubber bearing pads that meet ASTM D2000 Grade 2, Type A, Class A with a durometer hardness of 60 or 80 ± 5. Provide bearing pads with thicknesses that meet the following:

BEARING PAD THICKNESS	
Facing Area per Panel (A)	**Minimum Pad Thickness After Compression (based on 2 times panel weight above pads)**
$A \leq 30$ sf	1/2"
30 sf $< A \leq 75$ sf	3/4"

D. Miscellaneous Components

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Miscellaneous components may include connectors (e.g., anchors, bars, clamps, pins, plates, ties, etc.), fasteners (e.g., bolts, nuts, washers, etc.) and any other MSE wall components not included above. Use 10 gauge or heavier structural steel Grade 50 or higher for steel strip panel anchors and connectors. Galvanize steel components in accordance with Section 1076 of the *Standard Specifications*. Provide miscellaneous components approved for the chosen MSE wall system. The list of approved miscellaneous components for each MSE wall system is available from the website shown elsewhere in this provision.

3.0 PRECONSTRUCTION REQUIREMENTS

A. MSE Wall Surveys

The Retaining Wall Plans show a plan view, typical sections, details, notes and an elevation or profile view (wall envelope) for each MSE wall. Before beginning MSE wall design, survey existing ground elevations shown in the plans and other elevations in the vicinity of MSE wall locations as needed. For proposed slopes above or below MSE walls, survey existing ground elevations to at least 10 ft beyond slope stake points. Based on these elevations, finished grades and actual MSE wall dimensions and details, submit revised wall envelopes for acceptance. Use accepted wall envelopes for design.

B. MSE Wall Designs

For MSE wall designs, submit PDF files of working drawings and design calculations at least 30 days before the preconstruction meeting. Note name and NCDOT ID number of the panel or SRW unit production facility on working drawings. Do not begin MSE wall construction until a design submittal is accepted.

Use a prequalified MSE Segmental Wall Design Consultant to design MSE segmental walls. Provide MSE segmental wall designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for the MSE Segmental Wall Design Consultant. Provide MSE panel wall designs sealed by a Design Engineer licensed in the state of North Carolina and employed or contracted by the MSE Wall Vendor.

Design MSE walls in accordance with the plans, *AASHTO LRFD Bridge Design Specifications* and any NCDOT restrictions for the chosen MSE wall system unless otherwise required. For abutment walls only, design MSE walls for seismic if wall sites meet either or both of the following:

- Wall site is in seismic zone 2 based on Figure 2-1 of the *Structure Design Manual*,
- Wall site is classified as AASHTO Site Class E, as noted in the plans, and is in or west of Pender, Duplin, Wayne, Johnston, Wake, Durham or Person County.

Connect reinforcement to panels or SRW units with methods or devices approved for the chosen system. Use a uniform reinforcement length throughout the height of the wall of at least 0.7H or 6 ft, whichever is longer, unless noted otherwise in the plans. Extend the reinforced zone at least 6" beyond end of reinforcement. Do not locate drains, the

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reinforced zone or leveling pads outside right-of-way or easement limits.

Use the simplified method for determining maximum reinforcement loads and design parameters approved for the chosen MSE wall system or default values in accordance with the AASHTO LRFD specifications. Design steel components including reinforcement and connectors for the design life noted in the plans and aggregate type in the reinforced zone. If an MSE wall system with geosynthetic reinforcement includes any steel parts for obstructions, bin walls, connections or other components, design steel exposed to aggregate for the design life noted in the plans and aggregate type in the reinforced zone. Use "loss of galvanizing" metal loss rates for nonaggressive backfill in accordance with the AASHTO LRFD specifications for galvanized and aluminized steel and metal loss rates for carbon steel in accordance with the following:

CARBON STEEL CORROSION RATES	
Aggregate Type (in reinforced zone)	**Carbon Steel Loss Rate (after coating depletion)**
Coarse	0.47 mil/year
Fine (except abutment walls)	0.58 mil/year
Fine (abutment walls)	0.70 mil/year

For PET or HDPE geogrid and geostrip reinforcement and geosynthetic connectors, use approved geosynthetic properties for the design life noted in the plans and aggregate type in the reinforced zone. For geogrid reinforcement connected to end bent caps, embed reinforcement or connectors in caps as shown in the plans. For PP geogrid reinforcement connected to end bent caps, use the following design parameters for the aggregate type in the reinforced approach fill.

PP GEOGRID REINFORCEMENT DESIGN PARAMETERS				
Aggregate Type (in reinforced zone)	**T_{al} (MD)**	**F***	**α**	**ρ**
Coarse	400 lb/ft	0.70	0.8	32.0°
Fine	428 lb/ft	0.54	0.8	28.35°

Where,

T_{al} = long-term design strength (LTDS),
F* = pullout resistance factor,
α = scale effect correction factor and
ρ = soil-geogrid friction angle.

When noted in the plans, design MSE walls for a live load (traffic) surcharge of 250 psf in accordance with Figure C11.5.6-3(b) of the AASHTO LRFD specifications. For steel beam guardrail with 8 ft posts or concrete barrier rail above MSE walls, analyze top 2 reinforcement layers for traffic impact loads in accordance with Section 7.2 of *FHWA Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes – Volume I* (Publication No. FHWA-NHI-10-024) except use the following for geosynthetic reinforcement rupture:

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$$\phi\ T_{al}\ R_c \geq T_{max} + (T_I / RF_{CR})$$

Where,

ϕ = resistance factor for tensile resistance in accordance with Section 7.2.1 of the FHWA MSE wall manual,

T_{al} = long-term geosynthetic design strength approved for chosen MSE wall system,

R_c = reinforcement coverage ratio = 1 for continuous geosynthetic reinforcement,

T_{max} = factored static load in accordance with Section 7.2 of the FHWA MSE wall manual,

T_I = factored impact load in accordance with Section 7.2 of the FHWA MSE wall manual and

RF_{CR} = creep reduction factor approved for chosen MSE wall system.

When shown in the plans for abutment walls, use pile sleeves to segregate piles from aggregate in the reinforced zone. If existing or future obstructions such as foundations, guardrail, fence or handrail posts, moment slabs, pavements, pipes, inlets or utilities will interfere with reinforcement, maintain a clearance of at least 3" between obstructions and reinforcement unless otherwise approved. Design reinforcement for obstructions and locate reinforcement layers so all of reinforcement length is within 3" of corresponding connection elevations. Modify PET geogrid reinforcement for obstructions as shown in the plans.

Use 6" thick CIP unreinforced concrete leveling pads beneath panels and SRW units that are continuous at steps and extend at least 6" in front of and behind bottom row of panels or SRW units. Unless required otherwise in the plans, embed top of leveling pads in accordance with the following requirements:

WALL EMBEDMENT REQUIREMENTS		
Front Slope[1] (H:V)	**Minimum Embedment Depth[2] (whichever is greater)**	
6:1 or flatter (except abutment walls)	H/20	1 ft for H ≤ 10 ft 2 ft for H > 10 ft
6:1 or flatter (abutment walls)	H/10	2 ft
> 6:1 to < 3:1	H/10	2 ft
3:1 to 2:1	H/7	2 ft

1. Front slope is as shown in the plans.

2. H is the maximum design height per wall.

When noted in the plans, locate a continuous aggregate shoulder drain along the base of the reinforced zone behind the aggregate. Provide wall drainage systems consisting of drains and outlet components in accordance with Roadway Standard Drawing No. 816.02.

For MSE panel walls, cover joints at back of panels with filtration geotextiles at least 12" wide. If the approval of the chosen MSE wall system does not require a minimum

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number of bearing pads, provide the number of pads in accordance with the following:

NUMBER OF BEARING PADS		
Facing Area per Panel (A)	**Maximum Height of Wall Above Horizontal Panel Joint**	**Minimum Number of Pads per Horizontal Panel Joint**
A ≤ 30 sf	25 ft	2
	35 ft[1]	3
30 sf < A ≤ 75 sf	25 ft	3
	35 ft[1]	4

1. Additional bearing pads per horizontal panel joint may be required for wall heights above joints greater than 35 ft.

For MSE segmental walls, coarse aggregate is required in any SRW unit core spaces and between and behind SRW units for a horizontal distance of at least 18".

Separation geotextiles are required between the aggregate and overlying fill sections. When noted in the plans, separation geotextiles are also required at the back of the reinforced zone between the aggregate and backfill or natural ground. When placing pavement sections directly on the reinforced zone, cap aggregate with 4" of asphalt concrete base course. Unless required otherwise in the plans, use reinforced concrete coping at top of walls that meets the following requirements:

1. Coping dimensions as shown in the plans,
2. At the Contractor's option, coping that is precast or CIP concrete for MSE panel walls unless CIP coping is required as shown in the plans,
3. CIP concrete coping for MSE segmental walls and
4. At the Contractor's option and when shown in the plans, CIP concrete coping that extends down back of panels or SRW units or connects to panels or SRW units with dowels.

For MSE segmental walls with dowels, attach dowels to top courses of SRW units in accordance with the following:

1. Set dowels in core spaces of SRW units filled with grout instead of coarse aggregate or
2. Embed adhesively anchored dowels in holes of solid SRW units with epoxy.

For MSE panel walls with coping, connect CIP concrete coping or leveling concrete for precast concrete coping to top row of panels with dowels cast into panels. When concrete barrier rail is required above MSE walls, use concrete barrier rail with moment slab as shown in the plans.

Submit working drawings and design calculations for acceptance in accordance with Article 105-2 of the *Standard Specifications*. Submit working drawings showing plan

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views, wall profiles with foundation pressures, typical sections with reinforcement and connection details, aggregate locations and types, geotextile locations and details of leveling pads, panels or SRW units, coping, bin walls, slip joints, pile sleeves, etc. If necessary, include details on working drawings for concrete barrier rail with moment slab, reinforcement splices if allowed for the chosen MSE wall system, reinforcement connected to end bent caps, curved MSE walls with tight (short) radii and obstructions extending through walls or interfering with reinforcement, leveling pads, barriers or moment slabs. Submit design calculations for each wall section with different surcharge loads, geometry or material parameters. At least one analysis is required for each wall section with different reinforcement lengths. When designing MSE walls with computer software other than MSEW, use MSEW manufactured by ADAMA Engineering, Inc. to verify the design. At least one MSEW analysis is required per 100 ft of wall length with at least one analysis for the wall section with the longest reinforcement. Submit electronic MSEW input files and PDF output files with design calculations.

C. Preconstruction Meeting

Before starting MSE wall construction, hold a preconstruction meeting to discuss the construction and inspection of the MSE walls. If this meeting occurs before all MSE wall submittals have been accepted, additional preconstruction meetings may be required before beginning construction of MSE walls without accepted submittals. The Resident or Bridge Maintenance Engineer, Area Construction Engineer, Geotechnical Operations Engineer, Contractor and MSE Wall Installer Superintendent will attend preconstruction meetings.

4.0 CORROSION MONITORING

Corrosion monitoring is required for MSE walls with steel reinforcement. The Engineer will determine the number of monitoring locations and where to install the instrumentation. Contact M&T before beginning wall construction. M&T will provide the corrosion monitoring instrumentation kits and if necessary, assistance with installation.

5.0 SITE ASSISTANCE

Unless otherwise approved, an MSE Wall Vendor representative is required to assist and guide the MSE Wall Installer on-site for at least 8 hours when the first panels or SRW units and reinforcement layer are placed. If problems are encountered during construction, the Engineer may require the vendor representative to return to the site for a time period determined by the Engineer.

6.0 CONSTRUCTION METHODS

Control drainage during construction in the vicinity of MSE walls. Direct run off away from MSE walls, aggregate and backfill. Contain and maintain aggregate and backfill and protect material from erosion.

Excavate as necessary for MSE walls in accordance with the accepted submittals. If

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applicable and at the Contractor's option, use temporary shoring for wall construction instead of temporary slopes to construct MSE walls. Define "temporary shoring for wall construction" as temporary shoring not shown in the plans or required by the Engineer including shoring for OSHA reasons or the Contractor's convenience.

Unless required otherwise in the plans, install foundations and if required, pile sleeves located in the reinforced zone before placing aggregate or reinforcement. Brace piles in the reinforced zone to maintain alignment when placing and compacting aggregate. Secure piles together with steel members near top of piles. Clamp members to piles instead of welding if bracing is at or below pile cut-off elevations.

Notify the Engineer when foundation excavation is complete. Do not place leveling pad concrete, aggregate or reinforcement until excavation dimensions and foundation material are approved.

Construct CIP concrete leveling pads at elevations and with dimensions shown in the accepted submittals and in accordance with Section 420 of the *Standard Specifications*. Cure leveling pads at least 24 hours before placing panels or SRW units.

Erect and support panels and stack SRW units so the final wall position is as shown in the accepted submittals. Stagger SRW units to create a running bond by centering SRW units over joints in the row below as shown in the accepted submittals. Space bearing pads in horizontal panel joints as shown in the accepted submittals and cover all panel joints with filtration geotextiles as shown in the accepted submittals. Attach filtration geotextiles to back of panels with adhesives, tapes or other approved methods.

Construct MSE walls with the following tolerances:

A. SRW units are level from front to back and between units when checked with a 4 ft long level,

B. Vertical joint widths are 1/4" maximum for SRW units and 3/4", ±1/4" for panels,

C. Final wall face is within 3/4" of horizontal and vertical alignment shown in the accepted submittals when measured along a 10 ft straightedge and

D. Final wall plumbness (batter) is not negative (wall face leaning forward) and within 0.5° of vertical unless otherwise approved.

Place reinforcement at locations and elevations shown in the accepted submittals and within 3" of corresponding connection elevations. Install reinforcement with the direction shown in the accepted submittals. Before placing aggregate, pull geosynthetic reinforcement taut so it is in tension and free of kinks, folds, wrinkles or creases. Reinforcement may be spliced once per reinforcement length if shown in the accepted submittals. Use reinforcement pieces at least 6 ft long. Contact the Engineer when unanticipated existing or future obstructions such as foundations, guardrail, fence or handrail posts, pavements, pipes, inlets or utilities will interfere with reinforcement. To avoid obstructions, deflect, skew or modify reinforcement as shown in the accepted submittals.

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Place aggregate in the reinforced zone in 8" to 10" thick lifts. Compact fine aggregate in accordance with Subarticle 235-3(C) of the *Standard Specifications*. Use only hand operated compaction equipment to compact aggregate within 3 ft of panels or SRW units. At a distance greater than 3 ft, compact aggregate with at least 4 passes of an 8 ton to 10 ton vibratory roller in a direction parallel to the wall face. Smooth wheeled or rubber tired rollers are also acceptable for compacting aggregate. Do not use sheepsfoot, grid rollers or other types of compaction equipment with feet. Do not displace or damage reinforcement when placing and compacting aggregate. End dumping directly on geosynthetics is not permitted. Do not operate heavy equipment on reinforcement until it is covered with at least 8" of aggregate. Replace any damaged reinforcement to the satisfaction of the Engineer.

Backfill for MSE walls outside the reinforced zone in accordance with Article 410-8 of the *Standard Specifications*. If a drain is required, install wall drainage systems as shown in the accepted submittals and in accordance with Section 816 of the *Standard Specifications*. If pile sleeves are required, fill sleeves with loose uncompacted sand before constructing end bent caps.

Install dowels as necessary for SRW units and place and construct coping and leveling concrete as shown in the accepted submittals. Construct leveling concrete in accordance with Section 420 of the *Standard Specifications*. Construct CIP concrete coping in accordance with Subarticle 452-4(B) of the *Standard Specifications*. When single faced precast concrete barrier is required in front of and against MSE walls, stop coping just above barrier so coping does not interfere with placing barrier up against wall faces. If the gap between a single faced barrier and wall face is wider than 2", fill gap with Class V select material (standard size No. 78M stone). Otherwise, fill gap with backer rod and seal joint between barrier and MSE wall with silicone sealant.

When separation geotextiles are required, overlap adjacent geotextiles at least 18" and hold geotextiles in place with wire staples or anchor pins as needed. Seal joints above and behind MSE walls between coping and concrete slope protection with silicone sealant.

7.0 MEASUREMENT AND PAYMENT

MSE Retaining Wall No. __ will be measured and paid in square feet. MSE walls will be measured as the square feet of wall face area with the pay height equal to the difference between top of wall and top of leveling pad elevations. Define "top of wall" as top of coping or top of panels or SRW units for MSE walls without coping.

The contract unit price for *MSE Retaining Wall No. __* will be full compensation for providing designs, submittals, labor, tools, equipment and MSE wall materials, excavating, hauling and removing excavated materials, placing and compacting aggregate and backfill material and supplying site assistance, leveling pads, panels, SRW units, reinforcement, aggregate, wall drainage systems, geotextiles, aggregate concrete base course, bearing pads, coping, miscellaneous components and any incidentals necessary to construct MSE walls. The contract unit price for *MSE Retaining Wall No. __* will also be full compensation for reinforcement and connector design for reinforcement connected to end bent caps, wall modifications for obstructions, pile sleeves filled with sand, joints sealed with silicone

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sealant and gaps between barriers and MSE walls filled with backer rod or No. 78M stone, if required.

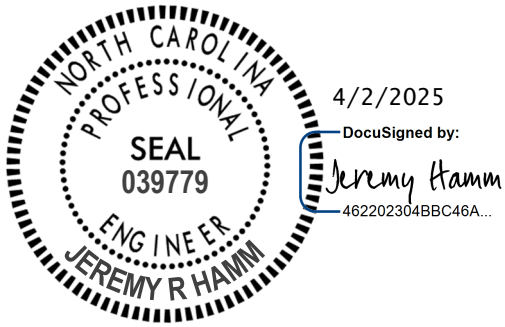
No separate payment will be made for temporary shoring for wall construction. Temporary shoring for wall construction will be incidental to the contract unit price for *MSE Retaining Wall No. __*.

The contract unit price for *MSE Retaining Wall No. __* does not include the cost for ditches, fences, handrails, barrier or guardrail associated with MSE walls as these items will be paid for elsewhere in the contract. The contract unit price for *MSE Retaining Wall No. __* also does not include the cost for constructing bridge approach fills behind end bents with MSE abutment walls. See *Bridge Approach Fills* provision for measurement and payment of Type 2 Bridge Approach Fills.

Where it is necessary to provide backfill material behind the reinforced zone from sources other than excavated areas or borrow sources used in connection with other work in the contract, payment for furnishing and hauling such backfill material will be paid as extra work in accordance with Article 104-7 of the *Standard Specifications*. Placing and compacting such backfill material is not considered extra work but is incidental to the work being performed.

Payment will be made under:

Pay Item	**Pay Unit**
MSE Retaining Wall No. __	Square Foot



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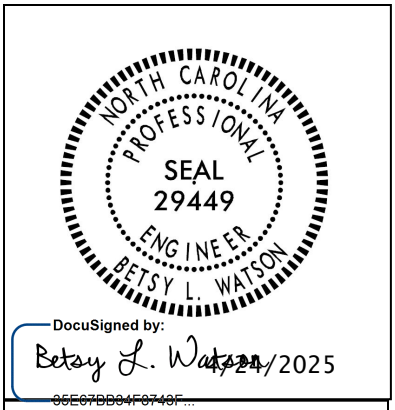

Prepared By: JBH
24-Apr-25

VERTICAL PANEL TYPE 3 OBJECT MARKER –OM3-C:

(A) General

Provide a vertical marker with sheeting for a Type 3 Object Marker – OM3-C at locations shown in the Signing Plans. The vertical marker support post shall be affixed to a base capable of restoring the marker to the vertical position if struck by a vehicle.

(B) Crash Testing

The vertical panel shall be crash tested and meet requirements for a NCHRP 350 or MASH-16 Category II device. The vertical marker shall be capable of sustaining a minimum of twenty (20) direct wheel-over impacts at 55 MPH without damage to the vertical marker or reflective sheeting applied to the vertical marker.

(C) Construction

The vertical marker shall be composed of UV-stabilized high impact plastic. The vertical marker shall be 12 inches wide, 36 inches tall, and a minimum of 48 inches above the travel way when installed as shown in NCDOT Roadway Standard Drawings (January 2024) #1264.02 (Sheet 1 of 1); "Type 1 or Type 3 Object Markers for Obstructions Within the Roadway." The vertical marker will consist of a flat panel, retro-reflective sheeting, support post, and permanent base. The post shall be attached to the base with a flexible mount or similar device capable of restoring the marker to the vertical position if struck by a vehicle.

(D) Reflective Sheeting

The vertical marker flat panel shall accommodate a minimum of 12 inches x 36 inches of Grade C, high intensity, retroreflective sheeting or better that meets the requirements of Section 1092 of the Standard Specifications for Roads and Structures. The retro-reflective sheeting shall meet the color and stripe patterns for Type 3 Object Markers – OM3-C per requirements of the Manual on Uniform Traffic Control Devices (2023 Edition).

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(E) Installation

The vertical markers shall be installed per manufacturer's instructions.

(F) Approval

All materials are subject to the approval of the Engineer prior to installation.

(G) Measurement and Payment

No measurement will be made of mounting base, attachment hardware, or support posts as these will be considered incidental to furnishing and erecting the Type 3 Object Marker.

Payment will be made under:

Pay Item	**Pay Unit**
Vertical Panel Type 3 Object Marker – OM3-C	each

Docusign Envelope ID: B66B0B86-2F65-4758-A8E4-47E76DBCCD47

PROJECT SPECIAL PROVISIONS
Utility Construction

Stantec Consulting Services Inc.
1 W 4th St, Suite 820
Winston-Salem, NC 27101
704-488-2171
Firm License No.: F-0672

NORTH CAROLINA PROFESSIONAL SEAL 023500 ENGINEER LINDA L. PASS
DocuSigned by: C7CFB5E727D64F3...
SEAL NOT VALID UNLESS SIGNED AND DATED
5/1/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Utility Owner:
Water
Pender County Utilities
605 E Fremont Street
Burgaw, North Carolina 28425

Where brand names and model numbers are specified in these Special Provisions or in the plans, the cited examples are used only to denote the quality standard of product desired and do not restrict bidders to a specific brand, make, or manufacturer. They are provided to set forth the general style, type, character, and quality of the product desired. Equivalent products will be acceptable.

The utility owner is the Pender County Utilities. The contact person is Katie Leubner, Pender County Utility Project Manager and she can be reached by phone at 910-663-3776.

The provisions contained within these Utilities Construction Project Special Provisions modify the *Standard Specifications* only for materials used and work performed constructing water or sewer facilities owned by Pender County Utilities.

Revise the 2024 *Standard Specifications* as follows:

Page 10-67, Article 1036-6, FIRE HYDRANTS, in Lines 18 and 19, delete "4 ½ inch diameter valve opening" and insert the following:

"5 1/4" diameter main valve opening"

Page 10-67, Article 1036-6, FIRE HYDRANTS, in Line 24, add the following sentences:

"Fire hydrants shall be painted with a reflective two-tone color scheme; red hydrant with silver caps and bonnet. The hydrants shall be cleaned, primed, and painted with a minimum of a two-coat system. The fire hydrant top and all caps shall receive the reflective paint.

The hydrant barrel shall be made in two sections joined together a few inches above the ground

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line by a watertight coupling, or break ring, so designed that if a break occurs, it will occur at this point. Breakaway bolts are not acceptable. The ring shall be of ample strength for ordinary service, and be easily and cheaply replaceable. The valve stem shall be in two sections, joined by a special coupling at the same point as the break ring, so designed that if the hydrant is broken, the coupling will break and the valve not be disturbed. All working parts shall be removable without disconnecting the hydrant. Fire hydrants shall be as manufactured by Clow Medallion (with stainless steel stems), and EJ 5CD250 with Pender County options 981, or approved equal. The hydrant leg shall be C900 DR 18 PVC pipe."

Page 10-67, Sub-article 1036-7, (C) Tapping Valves, after this paragraph, add the following Sub-article:

"**(D) Valve Boxes**

Adjustable 2-piece valve boxes shall be gray cast iron in conformance with ASTM A48, Class 30. Lids shall be heavy-duty traffic weight with the word "WATER" cast into the lid. Provide cast-iron screw type top section of length required for depth of burial of valve and bottom section with base of size to fit over valve. Valve boxes shall be coated inside and out with asphalt."

Page 10-68, Sub-article 1036-8, (A) Tapping Sleeves, after Line 19, add the following paragraph:

"Tapping saddles shall be banded type, with two (2) bands for ductile iron pipe and hinged type for PVC pipe, suitable for bolting in place on the pipe to be tapped. Sleeve shall have a single rubber gasket cemented in place on the inside of the sleeve body. Sleeve shall meet all the requirements of ANSI/AWWA C110/A21.10 and C111/A21.1.

Tapping sleeves greater than 2" diameter shall be stainless steel with carbon steel flanged outlet, and conform to the following:

1. Body, straps, and UNC threaded studs are made of 18-8 Type 304 stainless steel. Flange can be either ASTM A240 Type 304 stainless steel or ASTM carbon steel.
2. All sleeves shall be fully passivated for corrosion resistance.
3. Tapping sleeves shall be rated for 250 psi working pressure on 2" – 12" lines.
4. Outlet gasket shall be Buna-N rubber per ASTM D2000.
5. Sleeve shall be UL Classified to ANSI/NSF Standard 61."

Page 10-68, Sub-article 1036-8, (B) Transition Sleeves and Couplings, after Line 2, add the following paragraph and Sub-article (C):

"Use an HDPE Mechanical Joint (MJ) Fusion Adapter type coupling with a 8" X 6" MJ reducer to transition between the 8" Outside Diameter (OD) HDPE (DR 9) Pipe and 6" Inside Diameter (ID) PVC Pipe or DI Pipe."

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(C) Joint Material

Gaskets for pipe and fitting shall be continuous ring of rubber material compounded to resist deterioration and of a texture to assure a permanent and watertight seal. They shall have smooth surfaces, free from pitting, blisters, porosity or any other defects. Gaskets shall conform to the requirements of Federal Specification WW-P4211.

Gasket lubricant shall be a potable hydrogenated vegetable oil, insoluble in cold water, non-toxic, shall not support the growth of bacteria, and shall not impart taste or odor to the water. It shall not contain detergents, soaps, organic solvents, or other deleterious ingredients and shall have no deterioration effects on the gaskets. The lubricant shall be semi-paste, easily applicable, readily adherent to the inside of the bell, and shall remain in a usable state throughout the range of temperature in which pipe is normally installed. Lubricant shall be delivered to the job site in unopened containers bearing the manufacturer's name and trade name or trademark, NSF approved."

Page 10-68, Article 1036-9, SERVICE LINE VALVES AND FITTINGS, after Line 29, add the following paragraph:

"Tapping saddles are not allowed when connecting main diameter is 50% or larger than existing main to be tapped."

Page 15-1 and 15-2, Article 1500-5, RELATION OF WATER MAINS TO NON-POTABLE WATER LINES AND OTHER UTILITIES, lines 39-42 and lines 1-5, replace the article with the following:

Lay water mains at least 10 feet laterally from existing or proposed sanitary sewers or reclaimed water distribution lines. If local conditions or barriers prevent a 10-foot separation, lay the water main with at least 18 inches vertical separation above the top of the sanitary sewer or reclaimed water distribution pipe either in a separate trench or in the same trench on a bench of undisturbed earth.

For storm drain pipe or other utilities, lay the water main with at least 12 inches separation from the outside of the water main and the outside of the other facility.

One full length of water pipe at the point of crossing shall be located so that both joints will be as far from the sanitary sewer or reclaimed water distribution pipe as possible. If practicable, the water main shall be located above the sewer or reclaimed water distribution line.

Page 15-2, Article 1500-7, SUBMITTALS AND RECORDS, lines 29-30, replace the last sentence of the third paragraph with the following:

"Plans should also include water profiles showing any utility crossings along with the aforementioned information."

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"Digital as-built information shall be provided in AutoCAD and PDF format and shall include all information required on the as-built drawings. Digital pictures of all items of interest such as utility crossings and separations shall be included."

Page 15-2, Article 1500-9, PLACING PIPELINES INTO SERVICE, in Line 42, delete the words "8 hours." and insert the following sentences:

"6 hours between 10 PM and 4 AM. Absolutely no shutdowns of the existing water system shall occur at any time between Memorial Day and Labor Day in any given year. Contractor shall plan shutdowns to tie-in to existing water lines outside of these dates."

Page 15-6, Article 1510-2, MATERIALS, after Line 2, add the following paragraph:

"The tape shall be buried a maximum of 12" below the ground surface directly above the water line with printed side up. The Contractor shall take necessary precaution to ensure that the tape is not pulled, distorted or otherwise misplaced in completing the trench backfill.

Page 15-6, Sub-article 1510-3, (B) Testing and Sterilization, in Line 32, delete the words "for 2 hours", and insert the words and sub-paragraph as follows:

", or least 150% the working pressure at the point of testing, whichever is greater, for 2 hours for sections installed by open cut installation and 24 hours for sections installed by horizontal directional drilling.

Test Pressure Restrictions: Test pressures shall be:

(i) Not exceed pipe or thrust restraint design pressures.
(ii) Be of at least 2-hour duration for sections installed by open cut installation. Be of at least 24- hour duration for sections installed by horizontal directional drilling.
(iii) Not vary by more than plus or minus 5 psi.
(iv) Not exceed twice the rated pressure of the valve or hydrants when the pressure boundary of the test section includes closed gate valves or hydrants.
(v) Not exceed the rated pressure of the valves if resilient-seated butterfly valves are used.

When hydrants are in the test section, the test shall be made against the hydrant.

When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gal/hr/in. of nominal valve size shall be allowed."

Page 15-7, Sub-article 1510-3, (B) Testing and Sterilization, in Line 14, after the words "existing water mains" insert the following paragraphs:

"Valves should be operated to direct discharge to the selected fire hydrants used for blow off. Flushing shall continue until the Engineer determines that the residual chlorine is reduced to the same level as in the existing water mains. Chlorinated water will be treated prior to release into environment.

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The maximum flow rate that can be extracted from the Owner's system is 200 gallons per minute. A higher flow rate for flushing large diameter lines will be allowed at certain times of the day and week as approved by the Owner.

Upon completion of sterilization, the water line shall be refilled with water. Generally, a sample will be taken every 2,000' for distribution lines and every 4,000' on transmission lines. Samples may be taken at new service connections, at air valve stations, or through any other connection to the line 1" or smaller in diameter. Samples shall not be taken at fire hydrants. The samples shall be taken in standard sterilized bacteria sample bottles marked with the project name and sample location. Bacteriological samples collected following new water main disinfection should be performed by a North Carolina State Certified Laboratory, per Rule .1001 of the *Rules Governing Public Water Systems.* Results of the analysis shall be furnished to the Owner."

PROJECT SPECIAL PROVISIONS
Utilities by Others

SAM
2641-116 Sumner Boulevard
Raleigh, NC 27616
919-878-7466

General:

The following utility companies have facilities that will be in conflict with the construction of this project:

A) Duke Energy - Transmission
B) Duke Energy - Distribution
C) AT&T - Communications
D) Spectrum - Communications
E) Duke Fiber – Communications
F) PNG - Distribution

The conflicting facilities of these concerns will be adjusted prior to the date of availability, unless otherwise noted and are therefore listed in these special provisions for the benefit of the Contractor. All utility work listed herein will be done by the utility owners. All utilities are shown on the plans from the best available information.

The Contractor's attention is directed to Article 105-8 of the 2024 *Standard Specifications.*

Utilities Requiring Adjustment:

Utility relocations are shown on the Utilities by Others Plans.

A) Duke Energy-Transmission

1) Duke Energy Transmission's relocations will be complete prior to LET date.
2) Contact person for Duke Energy Transmission is Jacquelin Coley, 919-661-4335.

B) Duke Energy-Distribution

1) Duke Energy Distribution's relocations will be complete prior to LET date.
2) Contact person for Duke Energy Distribution is Matt Lashley, 919-886-0562

PROJECT SPECIAL PROVISIONS
Utilities by Others

C) AT&T-Communications

1) AT&T's relocation will be complete prior to LET date.
2) Contact person for AT&T is Liz Pate, 919-788-2752

D) Spectrum-Communications

1) Spectrum's relocation will be complete prior to LET date.
2) Contact person for Spectrum is Steve Barnette, 910-772-5755

E) Duke Fiber-Communications

1) Duke Fiber's relocation will be complete prior to LET date.
2) Contact person for Duke Fiber is Drew Dasburg, 919-218-2322

F) PNG

1) PNG's relocation will be complete prior to LET date.
2) Contact persons for PNG are Aaron Weldon, 803-331-4286, and Jim Strader, 629-239-3515

Project Special Provisions
Erosion Control

STABILIZATION REQUIREMENTS:

(4-30-2019)(Rev. 1-21-25)

Stabilization for this project shall comply with the time frame guidelines as specified by the NCG-010000 general construction permit issued by the North Carolina Department of Environmental Quality Division of Energy, Mineral and Land Resources. Temporary or permanent ground cover stabilization shall occur within the following time frames from the last land-disturbing activity:

- Stabilize perimeter dikes, swales, ditches, and perimeter slopes within 7 calendar days.
- Stabilize high quality water (HQW) zones within 7 calendar days.
- Stabilize slopes steeper than 3:1 within 7 calendar days.
    - If slopes are 10 feet or less in length and are not steeper than 2:1, 14 calendar days are allowed.
- Stabilize slopes 3:1 to 4:1 within 14 calendar days.
    - 7 calendar days for slopes greater than 50 feet in length and with slopes steeper than 4:1.
    - 7 calendar days for perimeter dikes, swales, ditches, perimeter slopes, and HQW Zones.
- Stabilize areas with slopes flatter than 4:1 within 14 calendar days.
    - 7 calendar days for perimeter dikes, swales, ditches, perimeter slopes, and HQW Zones.

The stabilization timeframe for High Quality Water (HQW) Zones shall be 7 calendar days with no exceptions for slope grades or lengths. High Quality Water Zones (HQW) Zones are defined by North Carolina Administrative Code 15A NCAC 04A.0105 (25). Temporary and permanent ground cover stabilization shall be achieved in accordance with the provisions in this contract and as directed.

SEEDING AND MULCHING: (East)

The kinds of seed and fertilizer, and the rates of application of seed, fertilizer, and limestone, shall be as stated below. During periods of overlapping dates, the kind of seed to be used shall be determined. All rates are in pounds per acre.

All Roadway Areas

March 1 - August 31		**September 1 - February 28**	
50#	Tall Fescue	50#	Tall Fescue
10#	Centipede	10#	Centipede
25#	Bermudagrass (hulled)	35#	Bermudagrass (unhulled)
500#	Fertilizer	500#	Fertilizer
4000#	Limestone	4000#	Limestone

Waste and Borrow Locations

March 1 – August 31		**September 1 - February 28**	
75#	Tall Fescue	75#	Tall Fescue
25#	Bermudagrass (hulled)	35#	Bermudagrass (unhulled)
500#	Fertilizer	500#	Fertilizer
4000#	Limestone	4000#	Limestone

Note: 50# of Bahiagrass may be substituted for either Centipede or Bermudagrass only upon Engineer's request.

Approved Tall Fescue Cultivars

06 Dust	Escalade	Kalahari	Serengeti
2nd Millennium	Essential	Kitty Hawk 2000	Shelby
3rd Millennium	Evergreen 2	Legitimate	Shenandoah III
Avenger	Faith	Lexington	Shenandoah Elite
Bar Fa	Falcon IV	LifeGuard	Sheridan
Barlexas	Falson NG	LSD	Sidewinder
Barlexas II	Falcon V	Magellan	Signia
Barrera	Fat Cat	Masterpiece	Silver Hawk
Barrington	Fesnova	Millennium SRP	Skyline
Barrobusto	Fidelity	Monet	Solara
Barvado	Finelawn Elite	Mustang 4	Southern Choice II
Biltmore	Finelawn Xpress	Naturally Green	Speedway
Bingo	Finesse II	Ninja 2	Spyder LS
Bizem	Firebird	Ol' Glory	Sunset Gold
Black Tail	Firecracker LS	Padre	Taccoa
Blackwatch	Firenza	Patagonia	Tahoe II
Blade Runner II	Five Point	Pedigree	Talladega
Bonsai	Focus	Picasso	Tanzania
Braveheart	Forte	Piedmont	Temple
Bravo	Garrison	Plantation	Terrano
Bullseye	Gazelle II	Proseeds 5301	Thor
Cannavaro	GLX Aced	Prospect	Thunderstruck
Catalyst	Gold Medallion	Quest	Titanium LS
Cayenne	Grande 3	RainDance	Titan LTD
Cezanne RZ	Greenbrooks	Raptor II	Tracer
Chipper	Greenkeeper	Rebel IV	Traverse SRP
Cochise IV	Gremlin	Rebel Exeda	Trio
Constitution	Greystone	Rebel Sentry	Tulsa Time
Corgi	Guardian 21	Regenerate	Turbo
Corona	Guardian 41	Regiment II	Turbo RZ
Coyote	Hemi	Rembrandt	Tuxedo
Cumberland	Honky Tonk	Rendition	Ultimate
Darlington	Hot Rod	Reunion	Umbrella

DaVinci	Hunter	Rhambler 2 SRP	Van Gogh
Desire	Inferno	Riverside	Venture
Diablo	Integrity	RNP	Watchdog
Dominion	Jaguar 3	Rocket	Wolfpack II
Dynamic	Jamboree	Saltillo	Xtremegreen
Dynasty	Justice	Scorpion	

On cut and fill slopes 2:1 or steeper Centipede shall be applied at the rate of 5 pounds per acre and add 20# of Sericea Lespedeza from January 1 - December 31.

Fertilizer shall be 10-20-20 analysis. A different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as a 10-20-20 analysis and as directed.

Native Grass Seeding and Mulching **(East)**

Native Grass Seeding and Mulching shall be performed on the disturbed areas of wetlands and riparian areas, and adjacent to Stream Relocation construction within a 50 foot zone on both sides of the stream or depression, measured from top of stream bank or center of depression. The stream bank of the stream relocation shall be seeded by a method that does not alter the typical cross section of the stream bank. Native Grass Seeding and Mulching shall also be performed in the permanent soil reinforcement mat section of preformed scour holes, and in other areas as directed.

The kinds of seed and fertilizer, and the rates of application of seed, fertilizer, and limestone, shall be as stated below. During periods of overlapping dates, the kind of seed to be used shall be determined. All rates are in pounds per acre.

March 1 - August 31		**September 1 - February 28**	
18#	Creeping Red Fescue	18#	Creeping Red Fescue
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

Approved Creeping Red Fescue Cultivars:

Aberdeen	Boreal	Epic	Cindy Lou

Fertilizer shall be 10-20-20 analysis. A different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as a 10-20-20 analysis and as directed.

Native Grass Seeding and Mulching shall be performed in accordance with Section 1660 of the *Standard Specifications* and vegetative cover sufficient to restrain erosion shall be installed immediately following grade establishment.

Measurement and Payment

Native Grass *Seeding and Mulching* will be measured and paid for in accordance with Article 1660-8 of the *Standard Specifications*.

All areas seeded and mulched shall be tacked with asphalt. Crimping of straw in lieu of asphalt tack shall not be allowed on this project.

CRIMPING STRAW MULCH:

Crimping shall be required on this project adjacent to any section of roadway where traffic is to be maintained or allowed during construction. In areas within six feet of the edge of pavement, straw is to be applied and then crimped. After the crimping operation is complete, an additional application of straw shall be applied and immediately tacked with a sufficient amount of undiluted emulsified asphalt.

Straw mulch shall be of sufficient length and quality to withstand the crimping operation.

Crimping equipment including power source shall be subject to the approval of the Engineer providing that maximum spacing of crimper blades shall not exceed 8".

TEMPORARY SEEDING:

Fertilizer shall be the same analysis as specified for *Seeding and Mulching* and applied at the rate of 400 pounds and seeded at the rate of 50 pounds per acre. Sweet Sudan Grass, German Millet or Browntop Millet shall be used in summer months and Rye Grain during the remainder of the year. The Engineer will determine the exact dates for using each kind of seed.

FERTILIZER TOPDRESSING:

Fertilizer used for topdressing on all roadway areas except slopes 2:1 and steeper shall be 10-20-20 grade and shall be applied at the rate of 500 pounds per acre. A different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as 10-20-20 analysis and as directed.

Fertilizer used for topdressing on slopes 2:1 and steeper and waste and borrow areas shall be 16-8-8 grade and shall be applied at the rate of 500 pounds per acre. A different analysis of fertilizer may be used provided the 2-1-1 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as 16-8-8 analysis and as directed.

SUPPLEMENTAL SEEDING:

The kinds of seed and proportions shall be the same as specified for *Seeding and Mulching*, with the exception that no centipede seed will be used in the seed mix for supplemental seeding. The rate of application for supplemental seeding may vary from 25# to 75# per acre. The actual rate per acre will be determined prior to the time of topdressing and the Contractor will be notified in writing of the rate per acre, total quantity needed, and areas on which to apply the supplemental seed. Minimum tillage equipment, consisting of a sod seeder shall be used for incorporating seed into the soil as to prevent disturbance of existing vegetation. A clodbuster (ball and chain) may be used where degree of slope prevents the use of a sod seeder.

MOWING:

The minimum mowing height on this project shall be 4 inches.

LAWN TYPE APPEARANCE:

All areas adjacent to lawns must be hand finished as directed to give a lawn type appearance. Remove all trash, debris, and stones ¾" and larger in diameter or other obstructions that could interfere with providing a smooth lawn type appearance. These areas shall be reseeded to match their original vegetative conditions, unless directed otherwise by the Field Operations Engineer.

MINIMIZE REMOVAL OF VEGETATION:

The Contractor shall minimize removal of vegetation within project limits to the maximum extent practicable. Vegetation along stream banks and adjacent to other jurisdictional resources outside the construction limits shall only be removed upon approval of Engineer. No additional payment will be made for this minimization work.

CONSTRUCTION MATERIALS MANAGEMENT
(3-19-19) (rev. 04-27-20)

Description

The requirements set forth shall be adhered to in order to meet the applicable materials handling requirements of the NCG010000 permit. Structural controls installed to manage construction materials stored or used on site shall be shown on the E&SC Plan. Requirements for handling materials on construction sites shall be as follows:

Polyacrylamides (PAMS) and Flocculants

Polyacrylamides (PAMS) and flocculants shall be stored in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures designed to protect adjacent surface waters. PAMS or other flocculants used shall be selected from the NC DWR List of Approved PAMS/Flocculants The concentration of PAMS and other flocculants used shall not exceed those specified in the NC DWR List of Approved PAMS/Flocculants and in accordance

with the manufacturer's instructions. The NC DWR List of Approved PAMS/Flocculants is available at:

https://files.nc.gov/ncdeq/Water+Quality/Environmental+Sciences/ATU/PAM8_30_18.pdf

Equipment Fluids

Fuels, lubricants, coolants, and hydraulic fluids, and other petroleum products shall be handled and disposed of in a manner so as not to enter surface or ground waters and in accordance with applicable state and federal regulations. Equipment used on the site must be operated and maintained properly to prevent discharge of fluids. Equipment, vehicle, and other wash waters shall not be discharged into E&SC basins or other E&SC devices. Alternative controls should be provided such that there is no discharge of soaps, solvents, or detergents.

Waste Materials

Construction materials and land clearing waste shall be disposed of in accordance with North Carolina General Statutes, Chapter 130A, Article 9 - Solid Waste Management, and rules governing the disposal of solid waste (15A NCAC 13B). Areas dedicated for managing construction material and land clearing waste shall be at least 50 feet away from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. Paint and other liquid construction material waste shall not be dumped into storm drains. Paint and other liquid construction waste washouts should be located at least 50 feet away from storm drain inlets unless there is no alternative. Other options are to install lined washouts or use portable, removable bags or bins. Hazardous or toxic waste shall be managed in accordance with the federal Resource Conservation and Recovery Act (RCRA) and NC Hazardous Waste Rules at 15A NCAC, Subchapter 13A. Litter and sanitary waste shall be managed in a manner to prevent it from entering jurisdictional waters and shall be disposed of offsite.

Herbicide, Pesticide, and Rodenticides

Herbicide, pesticide, and rodenticides shall be stored and applied in accordance with the Federal Insecticide, Fungicide, and Rodenticide Act, North Carolina Pesticide Law of 1971 and labeling restrictions.

Concrete Materials

Concrete materials onsite, including excess concrete, must be controlled and managed to avoid contact with surface waters, wetlands or buffers. No concrete or cement slurry shall be discharged from the site. (Note that discharges from onsite concrete plants require coverage under a separate NPDES permit – NCG140000.) Concrete wash water shall be managed in accordance with the *Concrete Washout Structure* provision. Concrete slurry shall be managed and disposed of in accordance with *NCDOT DGS and HOS DCAR Distribution of Class A Residuals Statewide* (Permit No. WQ0035749). Any hardened concrete residue will be disposed of, or recycled on site, in accordance with state solid waste regulations.

Earthen Material Stock Piles

Earthen material stock piles shall be located at least 50 feet away from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available.

Measurement and Payment

Conditions set within the *Construction Materials Management* provision are incidental to the project for which no direct compensation will be made.

WASTE AND BORROW SOURCES:

(2-16-11) (Rev. 3-17-22)

Payment for temporary erosion control measures, except those made necessary by the Contractor's own negligence or for his own convenience, will be paid for at the appropriate contract unit price for the devices or measures utilized in borrow sources and waste areas.

No additional payment will be made for erosion control devices or permanent seeding and mulching in any commercial borrow or waste pit. All erosion and sediment control practices that may be required on a commercial borrow or waste site will be done at the Contractor's expense.

All offsite Staging Areas, Borrow and Waste sites shall be in accordance with "Borrow and Waste Site Reclamation Procedures for Contracted Projects" located at:

https://connect.ncdot.gov/resources/roadside/FieldOperationsDocuments/Contract%20Reclamation%20Procedures.pdf

All forms and documents referenced in the "Borrow and Waste Site Reclamation Procedures for Contracted Projects" shall be included with the reclamation plans for offsite staging areas, and borrow and waste sites.

TEMPORARY DIVERSION:

This work consists of installation, maintenance, and cleanout of *Temporary Diversions* in accordance with Section 1630 of the *Standard Specifications*. The quantity of excavation for installation and cleanout will be measured and paid for as *Silt Excavation* in accordance with Article 1630-3 of the *Standard Specifications*.

SAFETY FENCE AND JURISDICTIONAL FLAGGING:

Description

Safety Fence shall consist of furnishing materials, installing and maintaining polyethylene or polypropylene fence along the outside riparian buffer, wetland, or water boundary, or other boundaries located within the construction corridor to mark the areas that have been approved to

infringe within the buffer, wetland, endangered vegetation, culturally sensitive areas or water. The fence shall be installed prior to any land disturbing activities.

Interior boundaries for jurisdictional areas noted above shall be delineated by stakes and highly visible flagging.

Jurisdictional boundaries at staging areas, waste sites, or borrow pits, whether considered outside or interior boundaries shall be delineated by stakes and highly visible flagging.

Materials

(A) Safety Fencing

Polyethylene or polypropylene fence shall be a highly visible preconstructed safety fence approved by the Engineer. The fence material shall have an ultraviolet coating.

Either wood posts or steel posts may be used. Wood posts shall be hardwood with a wedge or pencil tip at one end, and shall be at least 5 ft. in length with a minimum nominal 2" x 2" cross section. Steel posts shall be at least 5 ft. in length, and have a minimum weight of 0.85 lb/ft of length.

(B) Boundary Flagging

Wooden stakes shall be 4 feet in length with a minimum nominal 3/4" x 1-3/4" cross section. The flagging shall be at least 1" in width. The flagging material shall be vinyl and shall be orange in color and highly visible.

Construction Methods

No additional clearing and grubbing is anticipated for the installation of this fence. The fence shall be erected to conform to the general contour of the ground.

(A) Safety Fencing

Posts shall be set at a maximum spacing of 10 ft., maintained in a vertical position and hand set or set with a post driver. Posts shall be installed a minimum of 2 ft. into the ground. If hand set, all backfill material shall be thoroughly tamped. Wood posts may be sharpened to a dull point if power driven. Posts damaged by power driving shall be removed and replaced prior to final acceptance. The tops of all wood posts shall be cut at a 30-degree angle. The wood posts may, at the option of the Contractor, be cut at this angle either before or after the posts are erected.

The fence geotextile shall be attached to the wood posts with one 2" galvanized wire staple across each cable or to the steel posts with wire or other acceptable means.

Place construction stakes to establish the location of the safety fence in accordance with Article 105-9 or Article 801-1 of the *Standard Specifications.* No direct pay will be made for the staking

of the safety fence. All stakeouts for safety fence shall be considered incidental to the work being paid for as "Construction Surveying", except that where there is no pay item for construction surveying, all safety fence stakeout will be performed by state forces.

The Contractor shall be required to maintain the safety fence in a satisfactory condition for the duration of the project as determined by the Engineer.

(B) Boundary Flagging

Boundary flagging delineation of interior boundaries shall consist of wooden stakes on 25 feet maximum intervals with highly visible orange flagging attached. Stakes shall be installed a minimum of 6" into the ground. Interior boundaries may be staked on a tangent that runs parallel to buffer but must not encroach on the buffer at any location. Interior boundaries of hand clearing shall be identified with a different colored flagging to distinguish it from mechanized clearing.

Boundary flagging delineation of interior boundaries will be placed in accordance with Article 105-9 or Article 801-1 of the *Standard Specifications*. No direct pay will be made for delineation of the interior boundaries. This delineation will be considered incidental to the work being paid for as *Construction Surveying,* except that where there is no pay item or construction surveying the cost of boundary flagging delineation shall be included in the unit prices bid for the various items in the contract. Installation for delineation of all jurisdictional boundaries at staging areas, waste sites, or borrow pits shall consist of wooden stakes on 25 feet maximum intervals with highly visible orange flagging attached. Stakes shall be installed a minimum of 6" into the ground. Additional flagging may be placed on overhanging vegetation to enhance visibility but does not substitute for installation of stakes.

Installation of boundary flagging for delineation of all jurisdictional boundaries at staging areas, waste sites, or borrow pits shall be performed in accordance with Subarticle 230-4(B)(5) or Subarticle 802-2(F) of the *Standard Specifications*. No direct pay will be made for this delineation, as the cost of same shall be included in the unit prices bid for the various items in the contract.

The Contractor shall be required to maintain alternative stakes and highly visible flagging in a satisfactory condition for the duration of the project as determined by the Engineer.

Measurement and Payment

Safety Fence will be measured and paid as the actual number of linear feet of polyethylene or polypropylene fence installed in place and accepted. Such payment will be full compensation including but not limited to furnishing and installing fence geotextile with necessary posts and post bracing, staples, tie wires, tools, equipment and incidentals necessary to complete this work.

Payment will be made under:

Pay Item	**Pay Unit**
Safety Fence	Linear Foot

PERMANENT SOIL REINFORCEMENT MAT:
9-1-2011 (Rev. 8-16-24)

Description

This work consists of furnishing and placing permanent soil reinforcement mat (PSRM), of the type specified, over previously prepared areas at locations shown on the plans and as directed by the Engineer.

Materials

The product shall be a permanent soil reinforcement mat constructed of synthetic stabilized, non-biodegradable synthetic fibers processed to form a rigid permanent three-dimensional structure to promote soil stability in combination with vegetation under hydraulic stresses. Organic biodegradable fibers (such as straw, coir, excelsior or blends thereof) may also incorporated into the PSRM, evenly distributed throughout the mat. PSRMs utilizing organic fibers shall have a bottom and top UV stabilized netting stitched together with UV stabilized thread to retain the organic fibers. All PSRMs shall meet the following minimum physical properties:

Property	Test Method	Value	Unit
Thickness	ASTM D6525	$\geq$0.25	in
Tensile Strength (MD)	ASTM D6818	225	lbs/ft
Tensile Strength (TD)	ASTM D6818	175	lbs/ft
Vegetation Establishment (Min)	ASTM D7322	250	%
UV Stability[1]	ASTM D4355	$\geq$80	%

[1]ASTM D4355 Tensile Strength and % strength retention of material after 1,000 hours of exposure.

PSRM shall also meet the minimum performance values by type as shown in the table below:

Property	Test Method	Type 1	Type 2	Type 3	Type 4	Type 5	Unit
Maximum Permissible Shear Stress (Unvegetated)	ASTM 6460	2.25	2.5	3.0	3.25	N/A	lb/ft^2
Maximum Permissible Shear Stress (Vegetated)	ASTM 6460	6.0	8.0	10.0	12.0	16.0	lb/ft^2
Maximum Allowable Velocity (Vegetated)	ASTM 6460	8.0	12	16.0	20.0	24.0	ft/s

Staples shall be used as anchors. Provide staples to meet Article 1060-8 of the *Standard Specifications*.

Construction Methods

All areas to be protected with the PSRM shall be brought to final grade and prepared in accordance with Section 1660 of the *Standard Specifications*. The surface of the soil shall be smooth, firm, stable and free of rocks, clods, roots or other obstructions that would prevent the mat from lying in direct contact with the soil surface. Preserve the required line, grade and cross section of the area covered. Unroll the PSRM in the direction of the flow of water and apply without stretching so that it will lie smoothly but loosely on the soil surface. Bury the up-channel or top of slope end of each piece of PSRM in a narrow trench at least 6 inches deep and tamp firmly. Where one roll of matting ends and a second-roll begins, overlap the end of the upper roll over the beginning of the second roll so there is a 6 inch overlap. Install staple checks 4 inches on center and every 30 feet longitudinally in the matting or as directed by the Engineer. Fold over and bury matting to the full depth of the trench, close and tamp firmly. Overlap matting at least 4 inches where 2 or more widths of matting are laid side by side.

Place staples across matting at ends, junctions and check trenches approximately 10 inches apart. Place staples along the outer edges and down the center of each strip of matting 3 feet apart. Place staples along all lapped edges 10 inches apart. Install product with netting and biodegradable fibers on the top side if present. Trenching and stapling shall fit individual cut or fill slope conditions and conform to manufacturer's installation recommendations for the type specified. Any conflict between the manufacturer's installation recommendations and this special provision will be resolved by the more stringent measures being required.

Apply all soil amendments and one-half of the seed in accordance with Section 1660 of the Standard Specifications of the types at the rates specified in the contract prior to installation of the PSRM. For PSRMs that do not contain biodegradable fibers, apply 3/4 inch to 1 inch loose, friable topsoil uniformly over the PSRM and gently work to incorporate into the structure of the PSRM completely filling the voids until the level of soil is at the top of the PSRM. Apply the remainder of the seed and gently work into the surface of the topsoil in-fill and mulch. For all other PSRMs, apply 3/4 inch to 1 inch of loose, friable topsoil uniformly over the PSRM and gently work to create a suitable seed bed. Apply the remainder of the seed and gently work into the surface of the topsoil. At the sole discretion of the Engineer, topsoil may be omitted for PSRMs containing biodegradable fibers. All seed should be applied prior to installation of PSRM if topsoil is omitted and will not need to be mulched.

Measurement and Payment

Permanent Soil Reinforcement Mat, Type __ will be measured and paid for as the actual number of square yards measured along the surface of the ground over which permanent soil reinforcement mat of the specified type is installed and accepted. Overlaps will not be included in the measurement and will be considered as incidental to the work. Such price and payment shall be full compensation for all work covered by this provision, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to apply topsoil and install the PSRM.

Payment will be made under:

Pay Item	Pay Unit
Permanent Soil Reinforcement Mat, Type __	Square Yard

BORROW PIT DEWATERING BASIN:
(3-17-09) (Rev 3-2-11)

Description

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.

Construct, maintain and remove earth embankments used to reduce turbidity from dewatering borrow sites. Work includes providing porous coir fiber baffle, filtration geotextile, stone and outlet structures; cleaning out, maintaining, removing and disposing of the borrow pit dewatering basin and all components; and reshaping, dressing, seeding and mulching the area.

Materials

Refer to Division 10

Item	Section
Riprap, Class A, B, 1, and 2	1042
Geotextile for Drainage, Type 2	1056
Coir Fiber Baffle	1640-2

Use suitable excavated materials, as specified in Sections 225, 230 and 240 of the *Standard Specifications* in the construction of earth embankments for borrow pit dewatering basins, except where otherwise specified.

Construction Methods

Construct borrow pit dewatering basins according to the detail in the erosion control plans, and at locations shown on Reclamation Plans or in areas as directed.

The volume of the borrow pit dewatering basin will be based on a 2 hour retention time. The pump rate shall not exceed 1,000 GPM. The Contractor, at his option, may use a greater retention time for managing turbidity.

The straight line distance between the inlet and outlet shall be divided to include a forebay chamber in the upper quarter cell. Install one porous coir fiber baffle across the full width of the basin to

delineate the forebay chamber. Do not use earthen or rock baffle. Install filtration geotextile on the interior side slopes and the floor of the forebay.

The water pumped from the borrow pit into the dewatering basin shall be obtained from the top of the water column and shall be discharged into the forebay in a non-erodible manner.

The borrow pit dewatering basin outlet shall be a vertical non-perforated riser pipe or flash board riser attached with a watertight connection to a barrel that carries the water through the embankment.

Maintenance and Removal

Maintain the borrow pit dewatering basin, coir fiber baffle, and remove and dispose of silt accumulations in accordance with Article 1630-3 of the *Standard Specifications*. The Contractor may include a drain device for maintenance and removal at his discretion.

Remove the borrow pit dewatering basin once dewatering operations are completed. Grade, seed, and mulch the area after removal of the borrow pit dewatering basin in accordance with Section 1660 of the *Standard Specifications*. The area shall be stabilized with an approved groundcover before final acceptance of the site.

Measurement and Payment

No direct payment will be made for borrow pit dewatering basins with the exception of the work of silt removal during dewatering basin operation and the work of seeding and mulching after removal of the dewatering basin. All other work and materials required for installation, maintenance and removal of borrow pit dewatering basins shall be incidental to *Borrow Excavation*. Such price and payments will be full compensation for the work of constructing, maintaining and removing the borrow pit dewatering basin including, but not limited to, the construction and removal of the borrow pit dewatering basin; furnishing of the outlet structure, baffle, filtration geotextile, stone and optional drain devices; and removal of all such items once dewatering operations are completed.

Removal and disposal of silt accumulations during dewatering operations will be measured and paid at the contract unit price per cubic yard for *Silt Excavation* in accordance with Article 1630-4 of the *Standard Specifications.*

Grading, seeding, and mulching the area after removal of the borrow pit dewatering basin will be measured and paid at the contract unit price per acre for *Seeding and Mulching* in accordance with Section 1660-8 of the *Standard Specifications*.

CULVERT DIVERSION CHANNEL:

Description

This work consists of providing a *Culvert Diversion Channel* to detour the existing stream around the culvert construction site at locations shown on the plans. Work includes constructing the diversion channel, disposing of excess materials, providing and placing geotextile liner, maintaining the diversion area in an acceptable condition, removing geotextile liner, backfilling diversion channel area with suitable material, and providing proper drainage when diversion channel area is abandoned.

Materials

Refer to Division 10

Item	Section
Geotextile for Soil Stabilization, Type 4a	1056

Construction Methods

Grade channel according to the plans with channel surface free of obstructions, debris, and pockets of low-density material. Utilize suitable material and provide disposal area for unsuitable material.

Line channel with geotextile unrolled in the direction of flow and lay smoothly but loosely on soil surface without creases. Bury top of slope geotextile edge in a trench at least 5" deep and tamp securely. Make vertical overlaps a minimum of 18" with upstream geotextile overlapping the downstream geotextile.

Secure geotextile with eleven gauge wire staples shaped into a *u* shape with a length of not less than 6" and a throat not less than 1" in width. Place staples along outer edges and throughout the geotextile a maximum of 3 ft. horizontally and vertically.

Measurement and Payment

Culvert Diversion Channel will be measured and paid for as the actual number of cubic yards excavated, as calculated from the typical section throughout the length of the diversion channel as shown on the final approved plans.

Geotextile for Soil Stabilization will be measured and paid for in accordance with Article 270-4 of the *Standard Specifications*.

Such price and payment shall be considered full compensation for all work covered by this section including all materials, construction, maintenance, and removal of *Culvert Diversion Channel*.

Payment will be made under:

Pay Item	Pay Unit
Culvert Diversion Channel	Cubic Yard

IMPERVIOUS DIKE:
(05-21-21) (rev. 11-15-22)

Description

This work consists of furnishing, installing, maintaining, pumping, and removing an *Impervious Dike* for the purpose of diverting normal stream flow around the construction site. The Contractor shall construct an impervious dike in such a manner approved by the Engineer. The impervious dike shall not permit seepage of water into the construction site or contribute to siltation of the stream. The impervious dike shall be constructed of an acceptable material in the locations noted on the plans or as directed by the Engineer.

Materials

Acceptable materials shall include steel sheet piles, composite sheet piles, or steel plates. Earthen berm or stone lined with polypropylene in any manner are not acceptable.

Construction Methods

Where impervious dikes are shown on the plans and used to dewater or lower the water elevation, construct in accordance with Article 410-4 and 410-5.

Measurement and Payment

Impervious Dike will be measured and paid as the actual number of linear feet of impervious dike(s) constructed, measured in place from end to end of each separate installation that has been completed and accepted by the Engineer. Such price and payment will be full compensation for all work including but not limited to furnishing materials, construction, maintenance, pumping, and removal of the impervious dike.

Payment will be made under:

Pay Item	Pay Unit
Impervious Dike	Linear Foot

TEMPORARY PIPE FOR CULVERT CONSTRUCTION:

Description

This work consists of furnishing, installing, maintaining and removing any and all temporary pipe used on this project in conjunction with the culvert construction.

Construction Methods

The Contractor shall install temporary pipe in locations shown on the plans in such a manner approved by the Engineer. The temporary pipe shall provide a passageway for the stream through the work-site. The minimum size requirements will be as stated on the erosion control plans.

Measurement and Payment

__" *Temporary Pipe* will be measured and paid for at the contract unit price per linear foot of temporary pipe approved by the Engineer and measured in place from end to end. Such price and payment will be full compensation for all work covered by this section including but not limited to furnishing all materials required for installation, construction, maintenance, and removal of temporary pipe.

Payment will be made under:

Pay Item	Pay Unit
__" Temporary Pipe	Linear Foot

PUMP AROUND OPERATION:

Description

The work covered by this section consists of furnishing, installing, maintaining and removing any and all pump around systems used on this project. The Contractor shall install a pump around system in locations as shown in the plans and in other locations approved by the Engineer. The pump around system shall provide a passageway for the stream flow around the work site. See the Example of Pump Around Operation Detail Sheet in the Erosion Control plans.

The quantity of pump around systems may be increased, decreased, or eliminated entirely as directed. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

Materials

Item	Section
Special Stilling Basin	1639

Impervious Dike shall meet the specifications as provided elsewhere in this contract.

Pumps shall be of sufficient size to divert the stream flow around the work area, as approved by the Engineer.

Construction Methods

Install *impervious dike(s)* as shown on the plans or as directed. Pump water around the work site. If the water is turbid or exposed to bare soil, pump through a *special stilling basin*. Once the work is complete in an area remove the *impervious dike(s)* and pump system, and stabilize the area.

Measurement and Payment

Impervious Dike will be measured and paid for as provided elsewhere in this contract.

Special Stilling Basin will be measured and paid for in accordance with Article 1639-4 of the *Standard Specifications*.

Payment for pumping operations shall be considered incidental to the work of installing pipes, culverts and channels. The pumping operations shall include but not be limited to, diverting the stream flow around the work area and pumping runoff from the work area into a stilling basin, special stilling basin or other sediment control device. No additional payment will be made for furnishing materials or maintenance of the pumping operations for the installation of pipes, culverts and channels.

The above prices and payments will be full compensation for all work covered by this section including, but not limited to furnishing all of the necessary materials, construction, maintenance and removal of the impervious dike and pump around system.

FLOATING TURBIDITY CURTAIN:

Description

This work consists of furnishing a *Floating Turbidity Curtain* to deter silt suspension and movement of silt particles during construction. The floating turbidity curtain shall be constructed at locations as directed.

Materials

The curtain material shall be made of a tightly woven nylon, plastic or other non-deteriorating material meeting the following specifications:

Property	Value
Grab tensile strength	*md-370 lbs *cd-250 lbs
Mullen burst stength	480 psi
Trapezoid tear strength	*md-100 lbs *cd-60 lbs
Apparent opening size	70 US standard sieve
Percent open area	4% permittivity 0.28 sec-1

*md - machine direction
*cd - cross machine direction

In the event that more than one width of fabric is required, a 6" overlap of the material shall also be required.

The curtain material shall be supported by a flotation material having over 29 lbs/ft buoyancy. The floating curtain shall have a 5/16" galvanized chain as ballast and dual 5/16" galvanized wire ropes with a heavy vinyl coating as load lines.

Construction Methods

The Contractor shall maintain the *Floating Turbidity Curtain* in a satisfactory condition until its removal is requested by the Engineer. The curtain shall extend to the bottom of the jurisdictional resource. Anchor the curtain according to manufacturer recommendations.

Measurement and Payment

Floating Turbidity Curtain will be measured and paid for as the actual number of square yards of curtain furnished as specified and accepted. Such price and payment will be full compensation for the work as described in this section including but not limited to furnishing all materials, tools, equipment, and all incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Floating Turbidity Curtain	Square Yard

CONCRETE WASHOUT:
(10-22-15)(Rev. 4-15-25)

Description

Concrete washouts are impermeable enclosures, above or below grade, to contain concrete wastewater and associated concrete mix from cleaning of ready-mix trucks, drums, pumps, tools or other equipment. Concrete washouts must collect and retain all the concrete washout water and solids, so that this material does not migrate to surface waters or into the ground water. These enclosures are not intended for concrete waste not associated with washout operations.

Acceptable concrete washouts may include constructed earthen structures, above or below ground, or commercially available devices designed specifically to capture concrete wash water.

Materials

Refer to Division 10 of the *Standard Specifications*.

Item	Section
Temporary Silt Fence	1605

Safety Fence shall meet the specifications as provided elsewhere in this contract.

Geomembrane basin liner shall consist of a minimum 10 mil thick polypropylene or polyethylene geomembrane.

Construction Methods

Build an enclosed earthen berm or excavate to form an enclosure in accordance with the details and as directed by the Engineer near the project entrance(s) or at location(s) of concrete operations. Structures shall be constructed a minimum of 50 feet from drainage conveyances or jurisdictional streams or wetlands. Alternate structure designs or plans for management of concrete washout may be submitted for review and approval by the Engineer. Include in the alternate plan the method used to retain, treat and dispose of the concrete washout wastewater generated within the project limits and in accordance with the minimum setback requirements.

Install temporary silt fence around the perimeter of the structure enclosure in accordance with the details and as directed by the Engineer if the structure is not located in an area where existing erosion and sedimentation control devices are capable of containing stormwater runoff.

Post a sign with the words “Concrete Washout” in close proximity of the concrete washout area, so it is clearly visible to site personnel. Install safety fence as directed by the Engineer for visibility to construction traffic.

Install prefabricated concrete washouts, designed specifically to capture concrete wash water, at locations of additional concrete pouring operations. Acceptable systems may include geotextile lined containers, vinyl or plastic containers or roll-off containers, with or without filter bags with a minimum functional holding capacity of 36 cubic feet (1.33 cubic yards). Submit prefabricated concrete washout system for approval by the Engineer prior to installation. Place prefabricated concrete washout devices to a minimum 50 foot setback from drainage conveyances and jurisdictional streams and wetlands. If the minimum setback cannot be achieved, provide secondary containment to prevent accidental release of wastewater from reaching drainage conveyances or streams.

Prefabricated concrete washouts must be clearly and visibly labeled as such, either by the manufacturer on the product itself, or by a sign with the words “Concrete Washout” in close proximity of the concrete washout area so it is clearly visible to site personnel.

Maintenance and Removal

Maintain the concrete washout structure(s) to provide adequate holding capacity plus a minimum freeboard of 12 inches. Remove and dispose of hardened concrete and return the structure to a functional condition after reaching 75% capacity. Inspect concrete washout structures for damage to liner or structure to maintain functionality.

Maintain prefabricated concrete washout systems per manufacturer's recommendations. Inspect concrete washout structures for damage to linings or structure and repair or replace as necessary.

Remove the concrete washout structures and sign upon project completion. Grade the area to match the existing topography and permanently seed and mulch area. Dispose of prefabricated concrete washout structures according to state or local waste regulations.

Measurement and Payment

Concrete Washout Structure will be measured and paid per each enclosure installed in accordance with the details in the plans. If alternate plans or details are approved, those structures will also be paid for per each approved and installed structure. Such price and payment will be full compensation for all work including, but not limited to, furnishing all materials, labor, equipment, signage, slurry solidification and incidentals necessary to construct, maintain and remove *Concrete Washout Structure* and dispose of residual concrete washout wastewater and concrete solids.

Prefabricated Concrete Washout will be measured and paid per each system installed in accordance with the manufacturer's recommendations. Such price and payment will be full compensation for all work including, but not limited to, furnishing all materials, labor, equipment, signage, slurry solidification and incidentals necessary to install, maintain and remove *Prefabricated Concrete Washout*, and dispose of residual concrete washout wastewater and concrete solids.

Temporary Silt Fence will be measured and paid for in accordance with Article 1605-5 of the *Standard Specifications*.

Temporary Silt Fence will be measured and paid for in accordance with Article 1605-5 of the *Standard Specifications*.

Safety Fence shall be measured and paid for as provided elsewhere in this contract.

No measurement will be made for over excavation or stockpiling or other items necessary to complete this work.

Payment will be made under:

Pay Item	**Pay Unit**
Concrete Washout Structure	Each
Prefabricated Concrete Washout	Each

LITTER REMOVAL (MOWING AREAS ONLY):
(07-19-22)

Description

This work consists of the pickup, removal, and disposal of litter from roadsides within the construction project prior to mowing operations.

Construction Methods

Provide labor, equipment and materials necessary for the pickup and removal of litter from non-construction sources and the disposal of same into state approved landfills. The Contractor shall abide by all ordinances, laws and regulations regarding disposal of litter and recycling of eligible materials. Wastes generated from construction activities shall be managed as provided elsewhere in the contract. Litter items may consist of any item not considered normal to the right-of-way, including but not limited to, varied sizes of bottles, cans, paper, tires, tire pieces, lumber, vehicle parts, building supplies, metals, household furnishings, cardboard, plastics, ladders, brush and other items not considered normal to the right of way. Litter removal shall be performed in designated areas within five days prior to any mowing operations and as directed. Designated areas shall include vegetated medians and shoulders within the project limits including all interchange ramps and other areas to be mown. Designated areas may be omitted for litter removal by the Engineer due to safety concerns.

The Contractor shall provide adequate personnel and materials to collect and remove litter. The Contractor shall be responsible for locating and utilizing approved local landfills and recycling facilities. Refer to Section 105-27 of the *Standard Specifications* for potential hazardous materials. All collected litter shall be containerized immediately and kept off the traveled portions of the roadway, shoulders, and rights-of-way (including paved shoulders). All collected litter that is small enough to be placed in a bag shall be bagged immediately. All collected litter that is too large for a bag shall be placed into a vehicle. Extended storage or stockpiling of collected litter and recyclables will not be permitted.

The Contractor's personnel shall dispose of any litter in a landfill approved by North Carolina Division of Waste Management. The Contractor will not be allowed to use NCDOT accounts at the landfills/recycling centers nor be allowed to dispose of the litter in NCDOT trash containers on any NCDOT property.

The Contractor shall report online the number of bags of litter and any recycling on the NCDOT Litter Management Website on the date of the pickup at the following website:

https://apps.ncdot.gov/LM

An access code ('Pickup Key') for the online reporting portal may be obtained via emailing the Roadside Environmental Unit Litter Management Section at ncdot.clr@ncdot.gov. The Contractor shall request access to the litter removal reporting website prior to starting initial litter collection operations.

Measurement and Payment

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

Manual Litter Removal will be measured and paid as the actual number of man hours each worker spends picking up litter. Such price and payment will be full compensation for all litter removal work covered by *Litter Removal*, including, but not limited to, furnishing all materials, labor, equipment, transport, reporting, and incidentals necessary to accomplish the work.

Litter Disposal will be measured and paid for by the actual number of tons of litter collected and properly disposed of at a state approved landfill. Such price and payment will be full compensation for all fees, labor, transport, and incidentals necessary to dispose of collected litter associated with *Litter Removal*.

All traffic control necessary to provide a safe work area for *Litter Removal* shall be paid for as specified elsewhere in the contract.

Payment will be made under:

Pay Item	Pay Unit
Manual Litter Removal	MHR
Litter Disposal	TON

RECLAMATION PLAN:
(3-27-25)

Revise the *2024 Standard Specifications* as follows:

Page 2-21, Article 230-4 Construction Methods, 3(d) Evaluation for Potential Wetlands and Endangered Species, replace the second paragraph with the following:

Delineate the boundaries of any wetlands, jurisdictional surface waters and streams encountered. Follow the standard practice for documenting the wetland delineation including completion of the USACE's approved Jurisdictional Determination Form. Document information including data regarding soil, vegetation and hydrology. Limits of disturbance shall maintain a minimum 25 foot undisturbed natural vegetated buffer adjacent to all sides of the wetland boundary and a minimum 50 foot undisturbed natural vegetated buffer adjacent to any stream or water body. Depict the limits of the delineated wetlands and water bodies with surrounding buffers on the Reclamation Plan. Do not remove borrow material in any area under the USACE or any other environmental agencies' regulatory jurisdiction unless and until the Department permit has been modified to allow such activity in the jurisdictional area.

Page 2-21, Article 230-4 Construction Methods, 4(a) Approval, line 32-34, delete the sentence and replace with the following:

If wetlands or streams are present within 400 feet of the borrow source, submit Skaggs Method hydraulic analysis to determine if lateral effects will permanently impact or cause degradation to wetlands or streams. The minimum offset distance calculated by Skaggs Method shall determine the limits of borrow excavation to the wetland, stream, or water body. If the Skaggs Method hydraulic analysis determines an offset distance of less than 25 feet for wetlands or 50 feet for streams and water bodies, the offset shall be 25 feet for wetlands and 50 feet for streams and water bodies Additional excavation buffer limits will need to be considered to allow for the operation of excavation, hauling and seeding equipment, stockpiling overburden, and installation and maintenance of any and all required erosion control devices.

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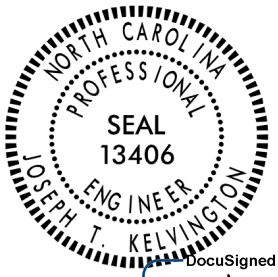
Project Special Provisions

Structures, Culverts



DocuSigned by:
Joe Kelvington
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5/4/2025

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MAINTENANCE AND PROTECTION OF TRAFFIC (8-13-04)
BENEATH PROPOSED STRUCTURE AT STATION 31+84.73 -Y33RPCA-

1.0 GENERAL

Maintain traffic on -L1-, Y33, and -Y8RPDB- as shown in Traffic Control Plans and as directed by the Engineer.

Provide a minimum temporary vertical clearance of 17'-3" at all times during construction.

Submit plans and calculations for review and approval for protecting traffic and bracing girders, as described herein, at the above station before beginning work at this location. Have the drawings and design calculations prepared, signed, and sealed by a North Carolina Registered Professional Engineer. The approval of the Engineer will not relieve the Contractor of the responsibility for the safety of the method or equipment.

2.0 PROTECTION OF TRAFFIC

Protect traffic from any operation that affords the opportunity for construction materials, equipment, tools, etc. to be dropped into the path of traffic beneath the structure. Based on Contractor means and methods determine and clearly define all dead and live loads for this system, which, at a minimum, shall be installed between beams or girders over any travelway or shoulder area where traffic is maintained. Install the protective system before beginning any construction operations over traffic. In addition, for these same areas, keep the overhang falsework in place until after the rails have been poured.

3.0 BRACING GIRDERS

Brace girders to resist wind forces, weight of forms and other temporary loads, especially those eccentric to the vertical axis of the member during all stages of erection and construction. Before casting of intermediate diaphragms, decks, or connecting steel diaphragms do not allow the horizontal movement of girders to exceed ½ inch.

4.0 BASIS OF PAYMENT

Payment at the contract unit prices for the various pay items will be full compensation for the above work.

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MAINTENANCE AND PROTECTION OF TRAFFIC (8-13-04)
BENEATH PROPOSED STRUCTURE AT STATION 225+92.26 -L1-

1.0 GENERAL

Maintain traffic on -Y33- as shown in Traffic Control Plans and as directed by the Engineer.

Provide a minimum temporary vertical clearance of 17'-4" at all times during construction.

Submit plans and calculations for review and approval for protecting traffic and bracing girders, as described herein, at the above station before beginning work at this location. Have the drawings and design calculations prepared, signed, and sealed by a North Carolina Registered Professional Engineer. The approval of the Engineer will not relieve the Contractor of the responsibility for the safety of the method or equipment.

2.0 PROTECTION OF TRAFFIC

Protect traffic from any operation that affords the opportunity for construction materials, equipment, tools, etc. to be dropped into the path of traffic beneath the structure. Based on Contractor means and methods determine and clearly define all dead and live loads for this system, which, at a minimum, shall be installed between beams or girders over any travelway or shoulder area where traffic is maintained. Install the protective system before beginning any construction operations over traffic. In addition, for these same areas, keep the overhang falsework in place until after the rails have been poured.

3.0 BRACING GIRDERS

Brace girders to resist wind forces, weight of forms and other temporary loads, especially those eccentric to the vertical axis of the member during all stages of erection and construction. Before casting of intermediate diaphragms, decks, or connecting steel diaphragms do not allow the horizontal movement of girders to exceed ½ inch.

4.0 BASIS OF PAYMENT

Payment at the contract unit prices for the various pay items will be full compensation for the above work.

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MAINTENANCE AND PROTECTION OF TRAFFIC (8-13-04)
BENEATH PROPOSED STRUCTURES AT STATION 232+80.54 -L1-

1.0 GENERAL

Maintain traffic on -Y8RPDB- as shown in Traffic Control Plans and as directed by the Engineer.

Provide a minimum temporary vertical clearance of 21'-2" at all times during construction.

Submit plans and calculations for review and approval for protecting traffic and bracing girders, as described herein, at the above station before beginning work at this location. Have the drawings and design calculations prepared, signed, and sealed by a North Carolina Registered Professional Engineer. The approval of the Engineer will not relieve the Contractor of the responsibility for the safety of the method or equipment.

2.0 PROTECTION OF TRAFFIC

Protect traffic from any operation that affords the opportunity for construction materials, equipment, tools, etc. to be dropped into the path of traffic beneath the structure. Based on Contractor means and methods determine and clearly define all dead and live loads for this system, which, at a minimum, shall be installed between beams or girders over any travelway or shoulder area where traffic is maintained. Install the protective system before beginning any construction operations over traffic. In addition, for these same areas, keep the overhang falsework in place until after the rails have been poured.

3.0 BRACING GIRDERS

Brace girders to resist wind forces, weight of forms and other temporary loads, especially those eccentric to the vertical axis of the member during all stages of erection and construction. Before casting of intermediate diaphragms, decks, or connecting steel diaphragms do not allow the horizontal movement of girders to exceed ½ inch.

4.0 BASIS OF PAYMENT

Payment at the contract unit prices for the various pay items will be full compensation for the above work.

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CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 384+20.26 -L1- **(12-12-13)**

GENERAL

Construct, maintain, and remove the temporary access required to provide the working area necessary for construction of the new bridge, construction of the temporary detour structure, or for the removal of an existing bridge, as applicable. Temporary access may involve the use of a work bridge or other methods; however, all types of temporary access are required to meet the requirements of all permits, the *Standard Specifications*, and this Special Provision.

TEMPORARY WORK BRIDGE

At the contractor's option, construction of a temporary work bridge within the limits shown on the plans is permitted. The temporary work bridge shall have a minimum span length of 20 feet. Submit details of the temporary work bridge to the Engineer prior to constructing the work bridge to ensure conformance with the plans and all permits. Completely remove the temporary bridge prior to final acceptance or as otherwise required by the permits.

MEASUREMENT AND PAYMENT

Construction, Maintenance and Removal of Temporary Access at Station 384+20.26 -L1- will be paid under the lump sum price bid for the above work, or other methods of access, including all material, work bridge components, equipment, tools, labor, disposal, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Construction, Maintenance and Removal of Temporary Access at Sta. 384+20.26 -L1-	Lump Sum

Docusign Envelope ID: 9794C09E-ADE0-4F02-B7C0-BC229353CC5E

CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 427+46.10 -L1- **(12-12-13)**

GENERAL

Construct, maintain, and remove the temporary access required to provide the working area necessary for construction of the new bridge, construction of the temporary detour structure, or for the removal of an existing bridge, as applicable. Temporary access may involve the use of a work bridge or other methods; however, all types of temporary access are required to meet the requirements of all permits, the *Standard Specifications*, and this Special Provision.

TEMPORARY WORK BRIDGE

At the contractor's option, construction of a temporary work bridge within the limits shown on the plans is permitted. The temporary work bridge shall have a minimum span length of 20 feet. Submit details of the temporary work bridge to the Engineer prior to constructing the work bridge to ensure conformance with the plans and all permits. Completely remove the temporary bridge prior to final acceptance or as otherwise required by the permits.

MEASUREMENT AND PAYMENT

Construction, Maintenance and Removal of Temporary Access at Station 427+46.10 -L1- will be paid under the lump sum price bid for the above work, or other methods of access, including all material, work bridge components, equipment, tools, labor, disposal, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Construction, Maintenance and Removal of Temporary Access at Sta. 427+46.10 -L1-	Lump Sum

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THERMAL SPRAYED COATINGS (METALLIZATION) (12-1-2017)

1.0 DESCRIPTION

Apply a thermal sprayed coating (TSC) and sealer to metal surfaces in accordance with the Thermal Sprayed Coatings (Metallization) Program and as specified herein when called for on the plans or by other Special Provisions. Use only Arc Sprayed application methods to apply TSC. The Engineer must approve other methods of application.

The Thermal Sprayed Coatings (Metallization) Program is available on the Materials and Tests Unit website.

2.0 QUALIFICATIONS

Only use NCDOT approved TSC Contractors meeting the requirements outlined in the Thermal Sprayed Coatings (Metallization) Program.

3.0 MATERIALS

Use only materials meeting the requirements of Section 7 of the Thermal Sprayed Coatings (Metallization) Program.

4.0 SURFACE PREPARATION AND TSC APPLICATION

Surface preparation of TSC surfaces shall meet the requirements of Section 8 of the Thermal Sprayed Coatings (Metallization) Program. Apply TSC with the alloy to the thickness specified on the plans or as required by Thermal Sprayed Coatings (Metallization) Program.

5.0 INSPECTION AND TESTING

The TSC Contractor must conduct inspections and tests listed in the Thermal Sprayed Coatings (Metallization) Program.

6.0 REPAIRS

Perform all shop repairs in accordance with the procedures outlined in the Thermal Sprayed Coatings (Metallization) Program.

Repairs associated with field welding shall be made by removing the existing metallizing by blast or power tool cleaning. Affected areas shall be addressed as follows:

- For Marine Environments, incorporate a minimum surface preparation in accordance with SSPC SP-11 (Power Tool Cleaning to Bare Metal) and require an approved epoxy mastic coating applied in accordance with the manufacturer's recommendation. Apply a minimum of two (2) coats at a rate of 5-7 (WFT) per coat to the affected area.

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- For Non-Marine Environments, incorporate a minimum surface preparation in accordance with SSPC SP-11 (Power Tool Cleaning to Bare Metal) and require an approved organic zinc-rich coating applied in accordance with the manufacturer's recommendation. Apply a minimum of two (2) coats at a rate of 5-7 (WFT) per coat to the affected area.

    1. Minor localized areas less than or equal to 0.1 ft^2 with exposed substrate shall be repaired as outlined above for marine and non-marine environments.

    2. Large localized areas greater than 0.1 ft^2 with exposed substrate shall require the Contractor to submit a detailed repair procedure to the Engineer for review and approval.

- Repair methods for areas where the substrate has not been exposed shall be mutually agreed upon between the Contractor and TSC Contractor as approved by the Engineer.

7.0 TWELVE MONTH OBSERVATION PERIOD

All TSC materials applied under the Thermal Sprayed Coatings (Metallization) Program shall be evaluated twelve (12) months after project acceptance for defective materials and workmanship.

8.0 BASIS OF PAYMENT

The contract price bid for the metal component to which the TSC is applied will be full compensation for the thermal sprayed coating.

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EXPANSION JOINT SEALS (9-30-11)

1.0 GENERAL

The work covered by this Special Provision consists of furnishing and installing the expansion joint seals as shown on the contract drawings. 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 plans.

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:

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	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.

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, see the Structure plans. At the splice locations, locate the hold-down bolts 3 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.

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

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- The proposed method of holding the base angle assembly in place while concrete is cast around it
- The proposed procedure to correct for the effects of beam movement and rotation when setting width of joint opening
- The proposed chronology of installation including the sequence and direction of the concrete casting
- The details of cross connectors between base angles, such as steel bars with slots bolted to angles, to maintain evenness between the adjacent base angles while accommodating movement that occurs when concrete is cast. Indicate when bolts are loosened to allow movement.
- The proposed method for removing the hold-down plate
- A section detail through the joint showing horizontal offset dimensions of the base angles from the centerline joint. This detail is required when the vertical face of the joint opening is not perpendicular to the roadway surface (e.g. when the roadway grade is significant).

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.

4.0 INSTALLATION

Provide supports for the base angle assembly at a maximum spacing of 9 feet. Place supports near field splices of base angles to ensure that field splices are straight and even. Provide base angles with ½" diameter weep holes at 12 inch centers to allow bleeding of trapped air and/or water. Do not obstruct the weep holes with falsework. Make the bottom of the trough parallel to grade and the sides parallel to the sides of the expansion joint seal.

For damaged areas, depressions, spalls, cracks, or irregularities of curbs or decks adjacent to the expansion joint, submit a proposed method of repair and repair material specifications for approval.

If the Engineer deems any aspects of the expansion joint seals unacceptable, make necessary corrections.

5.0 INSPECTION

When concrete is cast, use a non-aluminum, 10 foot, true to line straight edge to check and grade the top of the slab on each side of the joint to ensure smooth transition between spans.

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 1 inch above the roadway surface at all points. Block sidewalk sections and secure an unnozzled water hose

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delivering approximately 1 gallon of water per minute to the inside face of the bridge railing, trained in a downward position about 6 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 5 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.

6.0 BASIS OF PAYMENT

Basis of payment for all expansion joint seals will be at the lump sum contract price for "Expansion Joint Seals" which price and payment will be full compensation for furnishing all material, including any steel accessory plates for sidewalks, medians and rails, labor, tools, and incidentals necessary for installing the expansion joint seal in place and including all materials, labor, tools and incidentals for performing the original watertight integrity test.

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MODULAR EXPANSION JOINT SEALS (9-30-11)

GENERAL

Furnish and install modular expansion joint seals within the limits indicated on the plans.

Obtain modular expansion joint seals from Fabricators that are AISC certified in Category I.

Use a modular expansion joint seal that is a waterproof system such as WABOMODULAR as manufactured by Watson Bowman and Acme Corporation of Amherst New York, BROWN/MAURER as manufactured by the D. S. Brown Company of North Baltimore, Ohio or an approved equal. Do not use aluminum components in the modular expansion joint. Use a modular expansion joint seal consisting of three (3) or more transverse rails holding two (2) or more elastomeric seals in place and a support mechanism that ensures the rails maintain parallel and equidistant spacing. Do not use bolts to connect the rails to the support mechanism.

Provide an elastomeric component for each modular expansion joint seal that is one 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. 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 also. 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.

Provide modular expansion joint seals capable of handling a total movement measured parallel to the centerline of the roadway as shown on plans. Limit clear distance between centerbeams, and edgebeams and centerbeams, to 3½". Limit centerbeam spans to approximately 48".

DRAWING AND SPECIFICATION SUBMITTAL

Submit Shop Drawings for Fabrication and Installation Procedure and Revised Contract Plan Sheets, showing revised details of the Structure contract plans.

(A) Shop Fabrication and Installation Procedure Drawings

The deck slab is detailed in the contract plans with a required full depth transverse construction joint separating the main slab pour from the blockout area for the modular joint assembly. Position the modular joint assembly in the blockout area only after the main slab pours adjacent to the blockout area have been made and the girder rotation, deflection, and longitudinal movement due to slab pours have occurred.

Detail the method of positioning and securing the modular assembly in the blockout prior to the closure pour on the working drawings.

Submit two (2) complete sets of working drawings for review. Submit these drawings well in advance of the scheduled installation time for the modular expansion joint seals. Include material requirements and installation procedures and specifications in the drawings.

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After the drawings have been reviewed and, if necessary, corrections have been made, submit nine additional sets of the working drawings.

(B) Revised Contract Plan Sheets

Concurrent with the submission of the working drawings, submit two (2) sets of revised Structure plans for review. In the revised plans, include necessary changes in dimensions, reinforcing steel, and concrete blockouts to accommodate modular expansion joint seals. Have a North Carolina Registered Professional Engineer prepare and seal the revised plans. No adjustment will be made in the contract price for any bid item due to revisions necessary to accommodate the modular expansion joint seals. This cost is included in the lump sum price bid for furnishing and installing the modular expansion joint seal.

After the revised plans have been reviewed and, if necessary, corrections have been made, submit one 22" x 34" reproducible set of revised structure contract plans.

FABRICATION AND INSTALLATION

Protect the components of the modular expansion joint seal in the following manner. Upon completion of any shop fabrication, commercially blast clean (SP-6) all steel components, excluding stainless steel parts. Metallize to a minimum thickness of 8 mils on these surfaces. Metallize in accordance with the Special Provision for "Thermal Sprayed Coatings (Metallization)". Repair abraded or damaged coated surfaces anytime after applying the coating as specified for repair of galvanizing in the *Standard Specifications*. As an alternative to Metallizing, galvanizing in accordance with the *Standard Specifications* is permitted.

Install the modular expansion joint seals according to the procedures and recommendations of the manufacturer, except as amended in the next paragraph.

Limit modular expansion joint seal splices to crown points, abrupt changes in deck slab cross slope, lane lines, or as necessary for proper installation and alignment. All splice locations and details must be shown on the submitted working drawings and are subject to the Engineer's approval. For shop splices, full penetration welds are required for centerbeam splices. For shop splices, partial penetration welds are not allowed for centerbeam splices, except at barrier rail upturns or sidewalk upturns. For field splices, partial penetration welds are not allowed for centerbeam splices. Show and submit for approval all splice locations on the working drawings. For location of lane markings at the modular expansion joint seals, see the Structure plans.

When indicated on the plans, provide special snowplow protection, such as a snowplow blade guide or steel ribs, to prevent the blade from entering the joint recess.

If the Engineer deems any aspects of the modular expansion joint seals unacceptable, make necessary corrections.

(A) Watertight Integrity Test

(1) Upon completion of each modular 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,

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or barrier rail to barrier rail, with water, either ponded or flowing, not less than 1 inch above the roadway surface at all points. Block sidewalk sections and secure an unnozzled water hose delivering approximately 1 gallon of water per minute to the inside face of the bridge railing, trained in a downward position about 6 inches above the sidewalk, such that there is continuous flow of water across the sidewalk and down the curb face of the joint.

(2) Maintain the ponding or flowing of water on the roadway and continuous flow across sidewalks and curbs for a period of 5 hours. At the conclusion of the test, the underside of the joint is closely examined for leakage. The modular 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 considered a sign of leakage.

(3) 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.

(4) 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 additional cost to the Department.

MEASUREMENT AND PAYMENT

Modular Expansion Joint Seals will be paid for at the lump sum contract price. Payment will be full compensation for furnishing all material, including steel accessory plates for sidewalks, medians and rails, labor, tools, and incidentals necessary for installing the modular expansion joint seals in place and including all materials, labor, tools and incidentals for performing the original watertight integrity test.

Payment will be made under:

Pay Item	Pay Unit
Modular Expansion Joint Seals	Lump Sum

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FALSEWORK AND FORMWORK (11-30-23)

GENERAL

Use this Special Provision as a guide to develop temporary works submittals required by the *Standard Specifications* or other provisions; no additional submittals are required herein. Such temporary works include, but are not limited to, falsework and formwork.

Falsework is any temporary construction used to support the permanent structure until it becomes self-supporting. Formwork is the temporary structure or mold used to retain plastic or fluid concrete in its designated shape until it hardens. Access scaffolding is a temporary structure that functions as a work platform that supports construction personnel, materials, and tools, but is not intended to support the structure. Scaffolding systems that are used to temporarily support permanent structures (as opposed to functioning as work platforms) are considered to be falsework under the definitions given. Shoring is a component of falsework such as horizontal, vertical, or inclined support members. Where the term "temporary works" is used, it includes all of the temporary facilities used in bridge construction that do not become part of the permanent structure.

Design and construct safe and adequate temporary works that will support all loads imposed and provide the necessary rigidity to achieve the lines and grades shown on the plans in the final structure.

MATERIALS

Select materials suitable for temporary works; however, select materials that also ensure the safety and quality required by the design assumptions. The Engineer has authority to reject material on the basis of its condition, inappropriate use, safety, or nonconformance with the plans. Clearly identify allowable loads or stresses for all materials or manufactured devices on the plans. Revise the plan and notify the Engineer if any change to materials or material strengths is required.

DESIGN REQUIREMENTS

(A) Working Drawings

Provide working drawings for items as specified in the contract, or as required by the Engineer, with design calculations and supporting data in sufficient detail to permit a structural and safety review of the proposed design of the temporary work.

On the drawings, show all information necessary to allow the design of any component to be checked independently as determined by the Engineer.

When concrete placement is involved, include data such as the drawings of proposed sequence, rate of placement, direction of placement, and location of all construction joints.

When required, have the drawings and calculations prepared under the guidance of, and sealed by, a North Carolina Registered Professional Engineer who is knowledgeable in temporary works design.

If requested by the Engineer, submit with the working drawings manufacturer's catalog data listing the weight of all construction equipment that will be supported on the temporary work.

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Show anticipated total settlements and/or deflections of falsework and forms on the working drawings. Include falsework footing settlements, joint take-up, and deflection of beams or girders.

As an option for the Contractor, overhang falsework hangers may be uniformly spaced, at a maximum of 36 inches, provided the following conditions are met:

Member Type (PCG)	Member Depth, (inches)	Max. Overhang Width, (inches)	Max. Slab Edge Thickness, (inches)	Max. Screed Wheel Weight, (lbs.)	Bracket Min. Vertical Leg Extension, (inches)
II	36	39	14	2000	26
III	45	42	14	2000	35
IV	54	45	14	2000	44
MBT	63	51	12	2000	50
MBT	72	55	12	1700	48

Overhang width is measured from the centerline of the girder to the edge of the deck slab. For Type II, III & IV prestressed concrete girders (PCG), 45-degree cast-in-place half hangers and rods must have a minimum safe working load of 6,000 lbs.

For MBT prestressed concrete girders, 45-degree angle holes for falsework hanger rods shall be cast through the girder top flange and located, measuring along the top of the member, 1'-2 ½" from the edge of the top flange. Hanger hardware and rods must have a minimum safe working load of 6,000 lbs.

For link slabs, the top of girders directly beneath the link slab shall be free of overhang falsework attachments or other hardware. Submit calculations and working drawings for overhang falsework in the link slab region.

The overhang bracket provided for the diagonal leg shall have a minimum safe working load of 3,750 lbs. The vertical leg of the bracket shall extend to the point that the heel bears on the girder bottom flange, no closer than 4 inches from the bottom of the member. However, for 72-inch members, the heel of the bracket shall bear on the web, near the bottom flange transition.

Provide adequate overhang falsework and determine the appropriate adjustments for deck geometry, equipment, casting procedures and casting conditions.

If the optional overhang falsework spacing is used, indicate this on the falsework submittal and advise the girder producer of the proposed details. Failure to notify the Engineer of hanger type and hanger spacing on prestressed concrete girder casting drawings may delay the approval of those drawings.

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Falsework hangers that support concentrated loads and are installed at the edge of thin top flange concrete girders (such as bulb tee girders) shall be spaced so as not to exceed 75% of the manufacturer's stated safe working load. Use of dual leg hangers (such as Meadow Burke HF-42 and HF-43) are not allowed on concrete girders with thin top flanges. Design the falsework and forms supporting deck slabs and overhangs on girder bridges so that there will be no differential settlement between the girders and the deck forms during placement of deck concrete.

When staged construction of the bridge deck is required, detail falsework and forms for screed and fluid concrete loads to be independent of any previous deck pour components when the mid-span girder deflection due to deck weight is greater than ¾".

Note on the working drawings any anchorages, connectors, inserts, steel sleeves or other such devices used as part of the falsework or formwork that remains in the permanent structure. If the plan notes indicate that the structure contains the necessary corrosion protection required for a Corrosive Site, epoxy coat, galvanize or metalize these devices. Electroplating will not be allowed. Any coating required by the Engineer will be considered incidental to the various pay items requiring temporary works.

Design falsework and formwork requiring submittals in accordance with the current edition of AASHTO *Guide Design Specifications for Bridge Temporary Works* except as noted herein.

(1) Wind Loads

Table 2.2 of Article 2.2.5.1 is modified to include wind velocities up to 110 mph. In addition, Table 2.2A is included to provide the maximum wind speeds by county in North Carolina.

Table 2.2 - Wind Pressure Values

Height Zone feet above ground	Pressure, lb/ft^2 for Indicated Wind Velocity, mph				
	70	80	90	100	110
0 to 30	15	20	25	30	35
30 to 50	20	25	30	35	40
50 to 100	25	30	35	40	45
over 100	30	35	40	45	50

(2) Time of Removal

The following requirements replace those of Article 3.4.8.2.

Do not remove forms until the concrete has attained strengths required in Article 420-16 of the *Standard Specifications* and these Special Provisions.

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Do not remove forms until the concrete has sufficient strength to prevent surface damage.

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Table 2.2A - Steady State Maximum Wind Speeds by Counties in North Carolina

COUNTY	25 YR (mph)	COUNTY	25 YR (mph)	COUNTY	25 YR (mph)
Alamance	70	Franklin	70	Pamlico	100
Alexander	70	Gaston	70	Pasquotank	100
Alleghany	70	Gates	90	Pender	100
Anson	70	Graham	80	Perquimans	100
Ashe	70	Granville	70	Person	70
Avery	70	Greene	80	Pitt	90
Beaufort	100	Guilford	70	Polk	80
Bertie	90	Halifax	80	Randolph	70
Bladen	90	Harnett	70	Richmond	70
Brunswick	100	Haywood	80	Robeson	80
Buncombe	80	Henderson	80	Rockingham	70
Burke	70	Hertford	90	Rowan	70
Cabarrus	70	Hoke	70	Rutherford	70
Caldwell	70	Hyde	110	Sampson	90
Camden	100	Iredell	70	Scotland	70
Carteret	110	Jackson	80	Stanley	70
Caswell	70	Johnston	80	Stokes	70
Catawba	70	Jones	100	Surry	70
Cherokee	80	Lee	70	Swain	80
Chatham	70	Lenoir	90	Transylvania	80
Chowan	90	Lincoln	70	Tyrell	100
Clay	80	Macon	80	Union	70
Cleveland	70	Madison	80	Vance	70
Columbus	90	Martin	90	Wake	70
Craven	100	McDowell	70	Warren	70
Cumberland	80	Mecklenburg	70	Washington	100
Currituck	100	Mitchell	70	Watauga	70
Dare	110	Montgomery	70	Wayne	80
Davidson	70	Moore	70	Wilkes	70
Davie	70	Nash	80	Wilson	80
Duplin	90	New Hanover	100	Yadkin	70
Durham	70	Northampton	80	Yancey	70
Edgecombe	80	Onslow	100		
Forsyth	70	Orange	70		

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(B) Review and Approval

The Engineer is responsible for the review and approval of temporary works' drawings.

Submit the working drawings sufficiently in advance of proposed use to allow for their review, revision (if needed), and approval without delay to the work.

The time period for review of the working drawings does not begin until complete drawings and design calculations, when required, are received by the Engineer.

Do not start construction of any temporary work for which working drawings are required until the drawings have been approved. Such approval does not relieve the Contractor of the responsibility for the accuracy and adequacy of the working drawings.

CONSTRUCTION REQUIREMENTS

All requirements of Section 420 of the *Standard Specifications* apply.

Construct temporary works in conformance with the approved working drawings. Ensure that the quality of materials and workmanship employed is consistent with that assumed in the design of the temporary works. Do not weld falsework members to any portion of the permanent structure unless approved. Show any welding to the permanent structure on the approved construction drawings.

Provide tell-tales attached to the forms and extending to the ground, or other means, for accurate measurement of falsework settlement. Make sure that the anticipated compressive settlement and/or deflection of falsework does not exceed 1 inch. For cast-in-place concrete structures, make sure that the calculated deflection of falsework flexural members does not exceed 1/240 of their span regardless of whether or not the deflection is compensated by camber strips.

(A) Maintenance and Inspection

Inspect and maintain the temporary work in an acceptable condition throughout the period of its use. Certify that the manufactured devices have been maintained in a condition to allow them to safely carry their rated loads. Clearly mark each piece so that its capacity can be readily determined at the job site.

Perform an in-depth inspection of an applicable portion(s) of the temporary works, in the presence of the Engineer, not more than 24 hours prior to the beginning of each concrete placement. Inspect other temporary works at least once a month to ensure that they are functioning properly. Have a North Carolina Registered Professional Engineer inspect the cofferdams, shoring, sheathing, support of excavation structures, and support systems for load tests prior to loading.

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(B) Foundations

Determine the safe bearing capacity of the foundation material on which the supports for temporary works rest. If required by the Engineer, conduct load tests to verify proposed bearing capacity values that are marginal or in other high-risk situations.

The use of the foundation support values shown on the contract plans of the permanent structure is permitted if the foundations are on the same level and on the same soil as those of the permanent structure.

Allow for adequate site drainage or soil protection to prevent soil saturation and washout of the soil supporting the temporary works supports.

If piles are used, the estimation of capacities and later confirmation during construction using standard procedures based on the driving characteristics of the pile is permitted. If preferred, use load tests to confirm the estimated capacities; or, if required by the Engineer conduct load tests to verify bearing capacity values that are marginal or in other high risk situations.

The Engineer reviews and approves the proposed pile and soil bearing capacities.

REMOVAL

Unless otherwise permitted, remove and keep all temporary works upon completion of the work. Do not disturb or otherwise damage the finished work.

Remove temporary works in conformance with the contract documents. Remove them in such a manner as to permit the structure to uniformly and gradually take the stresses due to its own weight.

MEASUREMENT AND PAYMENT

Unless otherwise specified, *Falsework and Formwork* will not be directly measured.

Payment at the contract unit prices for the various pay items requiring temporary works will be full compensation for the above falsework and formwork.

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SUBMITTAL OF WORKING DRAWINGS (1-31-25)

GENERAL

Submit working drawings in accordance with Article 105-2 of the *Standard Specifications* and this Special Provision. For this Special Provision, "submittals" refers to only those listed in this Special Provision. The list of submittals contained herein does not represent a list of required submittals for the project. Submittals are only necessary for those items as required by the contract. Make submittals that are not specifically noted in this provision directly to the Engineer. Either the Structures Management Unit or the Geotechnical Engineering Unit or both units will jointly review submittals.

If a submittal contains variations from plan details or specifications or significantly affects project cost, field construction or operations, discuss the submittal with and submit all copies to the Engineer. State the reason for the proposed variation in the submittal. To minimize review time, make sure all submittals are complete when initially submitted. Provide a contact name and information with each submittal. Direct any questions regarding submittal requirements to the Engineer, Structures Management Unit contacts or the Geotechnical Engineering Unit contacts noted below.

To facilitate in-plant inspection by NCDOT and approval of working drawings, provide the name, address and telephone number of the facility where fabrication will actually be done if different than shown on the title block of the submitted working drawings. This includes, but is not limited to, precast concrete items, prestressed concrete items and fabricated steel or aluminum items.

ADDRESSES AND CONTACTS

For submittals to the Structures Management Unit, use the following addresses:

Via Email: SMU-wdr@ncdot.gov (do not cc SMU Working Drawings staff)

Via US mail:

Mr. D. N. Snoke, P. E.
State Structures Engineer
North Carolina Department
of Transportation
Structures Management Unit
1581 Mail Service Center
Raleigh, NC 27699-1581

Attention: Mr. J. L. Bolden, P. E.

Via other delivery service:

Mr. D. N. Snoke, P. E.
State Structures Engineer
North Carolina Department
of Transportation
Structures Management Unit
1000 Birch Ridge Drive
Raleigh, NC 27610

Attention: Mr. J. L. Bolden, P. E.

For submittals to the Geotechnical Engineering Unit, use the following addresses:

For projects in Divisions 1-7 (Eastern Regional Office):

Via Email: EastGeotechnicalSubmittal@ncdot.gov

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Via US mail:

Mr. Thomas Santee, P. E.
Assistant State Geotechnical
Engineer – Eastern Region
North Carolina Department
of Transportation
Geotechnical Engineering Unit
Eastern Regional Office
1570 Mail Service Center
Raleigh, NC 27699-1570

Via other delivery service:

Mr. Thomas Santee, P. E.
Assistant State Geotechnical
Engineer – Eastern Region
North Carolina Department
of Transportation
Geotechnical Engineering Unit
Eastern Regional Office
3301 Jones Sausage Road, Suite 100
Garner, NC 27529

For projects in Divisions 8-14 (Western Regional Office):

Via Email: WestGeotechnicalSubmittal@ncdot.gov

Via US mail or other delivery service:

Mr. Eric Williams, P. E.
Assistant State Geotechnical
Engineer – Western Region
North Carolina Department
of Transportation
Geotechnical Engineering Unit
Western Regional Office
5253 Z Max Boulevard
Harrisburg, NC 28075

The status of the review of structure-related submittals sent to the Structures Management Unit can be viewed from the Unit's website, via the "Drawing Submittal Status" link.
The status of the review of geotechnical-related submittals sent to the Geotechnical Engineering Unit can be viewed from the Unit's website, via the "Geotechnical Construction Submittals" link.

Direct any questions concerning submittal review status, review comments or drawing markups to the following contacts:

Primary Structures Contact:	James Bolden	(919) 707 – 6408
	jlbolden@ncdot.gov	
Secondary Structures Contacts:	Madonna Rorie	(919) 707 – 6508
	mlrorie@ncdot.gov	

Eastern Regional Geotechnical Contact (Divisions 1-7):

Thomas Santee (984) 920-8901

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EastGeotechnicalSubmittal@ncdot.gov

Western Regional Geotechnical Contact (Divisions 8-14):

Eric Williams (980)258-6400

WestGeotechnicalSubmittal@ncdot.gov

SUBMITTAL COPIES

Furnish one complete copy of each submittal, including all attachments, to the Engineer. At the same time, submit a copy of the same complete submittal directly to the Structures Management Unit and/or the Geotechnical Engineering Unit as specified in the tables below.

The first table below covers "Structure Submittals." The Engineer will receive review comments and drawing markups for these submittals from the Structures Management Unit. The second table in this section covers "Geotechnical Submittals." The Engineer will receive review comments and drawing markups for these submittals from the Geotechnical Engineering Unit.

Unless otherwise required, submit one set of supporting calculations to either the Structures Management Unit or the Geotechnical Engineering Unit unless both units require submittal copies in which case submit a set of supporting calculations to each unit. Provide additional copies of any submittal as directed.

STRUCTURE SUBMITTALS

Submittal	Submittal Required by Structures Management Unit?	Submittal Required by Geotechnical Engineering Unit?	Contract Reference Requiring Submittal [1]
Arch Culvert Falsework	Y	N	Plan Note, SN Sheet & "Falsework and Formwork"
Box Culvert Falsework [7]	Y	N	Plan Note, SN Sheet & "Falsework and Formwork"
Cofferdams	Y	Y	Article 410-4
Foam Joint Seals [6]	Y	N	"Foam Joint Seals"
Expansion Joint Seals (hold down plate type with base angle)	Y	N	"Expansion Joint Seals"

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Expansion Joint Seals (modular)	Y	N	"Modular Expansion Joint Seals"
Expansion Joint Seals (strip seals)	Y	N	"Strip Seal Expansion Joints"
Falsework & Forms [2] (substructure)	Y	N	Article 420-3 & "Falsework and Formwork"
Falsework & Forms (superstructure)	Y	N	Article 420-3 & "Falsework and Formwork"
Girder Erection over Railroad	Y	N	Railroad Provisions
Maintenance and Protection of Traffic Beneath Proposed Structure	Y	N	"Maintenance and Protection of Traffic Beneath Proposed Structure at Station ___"
Metal Bridge Railing	Y	N	Plan Note
Metal Stay-in-Place Forms	Y	N	Article 420-3
Metalwork for Elastomeric Bearings [4,5]	Y	N	Article 1072-8
Miscellaneous Metalwork [4,5]	Y	N	Article 1072-8
Disc Bearings [4]	Y	N	"Disc Bearings"
Overhead and Digital Message Signs (DMS) (metalwork and foundations)	Y	N	Applicable Provisions
Placement of Equipment on Structures (cranes, etc.)	Y	N	Article 420-20
Prestressed Concrete Box Beam (detensioning sequences) [3]	Y	N	Article 1078-11
Precast Concrete Box Culverts	Y	N	"Optional Precast Reinforced Concrete Box Culvert at Station ___"
Prestressed Concrete Cored Slab (detensioning sequences) [3]	Y	N	Article 1078-11
Prestressed Concrete Deck Panels	Y	N	Article 420-3

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Prestressed Concrete Girder (strand elongation and detensioning sequences)	Y	N	Articles 1078-8 and 1078-11
Removal of Existing Structure over Railroad	Y	N	Railroad Provisions
Revised Bridge Deck Plans (adaptation to prestressed deck panels)	Y	N	Article 420-3
Revised Bridge Deck Plans (adaptation to modular expansion joint seals)	Y	N	"Modular Expansion Joint Seals"
Sound Barrier Wall (precast items)	Y	N	Article 1077-2 & "Sound Barrier Wall"
Sound Barrier Wall Steel Fabrication Plans [5]	Y	N	Article 1072-8 & "Sound Barrier Wall"
Structural Steel [4]	Y	N	Article 1072-8
Temporary Detour Structures	Y	Y	Article 400-3 & "Construction, Maintenance and Removal of Temporary Structure at Station ____"
TFE Expansion Bearings [4]	Y	N	Article 1072-8

FOOTNOTES

1. References are provided to help locate the part of the contract where the submittals are required. References in quotes refer to the provision by that name. Articles refer to the *Standard Specifications*.
2. Submittals for these items are necessary only when required by a note on plans.
3. Submittals for these items may not be required. A list of pre-approved sequences is available from the producer or the Materials & Tests Unit.
4. The fabricator may submit these items directly to the Structures Management Unit.
5. The two sets of preliminary submittals required by Article 1072-8 of the *Standard Specifications* are not required for these items.
6. Submittals for Fabrication Drawings are not required. Submittals for Catalogue Cuts of Proposed Material are required. See Section 5.A of the referenced provision.
7. Submittals are necessary only when the top slab thickness is 18" or greater.

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GEOTECHNICAL SUBMITTALS

Submittal	Submittals Required by Geotechnical Engineering Unit	Submittals Required by Structures Management Unit	Contract Reference Requiring Submittal [1]
Drilled Pier Construction Plans [2]	Y	N	Subarticle 411-3(A)
Crosshole Sonic Logging (CSL) Reports [2]	Y	N	Subarticle 411-5(A)(2)
Pile Driving Equipment Data Forms [2,3]	Y	N	Subarticle 450-3(D)(2)
Pile Driving Analyzer (PDA) Reports [2]	Y	N	Subarticle 450-3(F)(3)
Retaining Walls [4]	Y; drawings and calculations	Y; drawings	Applicable Provisions
Temporary Shoring [4]	Y; drawings and calculations	Y; drawings	"Temporary Shoring" & "Temporary Soil Nail Walls"

FOOTNOTES

1. References are provided to help locate the part of the contract where the submittals are required. References in quotes refer to the provision by that name. Subarticles refer to the *Standard Specifications*.

2. Submit one hard copy of submittal to the Engineer. Submit a second copy of submittal electronically (PDF via email), US mail or other delivery service to the appropriate Geotechnical Engineering Unit regional office. Electronic submission is preferred.

3. The Pile Driving Equipment Data Form is available from:
   https://connect.ncdot.gov/projects/construction/ConstManRefDocs/PILE%20DRIVING%20EQUIPMENT%20DATA%20FORM.pdf

   See second page of form for submittal instructions.

4. Electronic copy of submittal is required. See referenced provision.

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CRANE SAFETY (6-20-19)

Comply with the manufacturer specifications and limitations applicable to the operation of any and all cranes and derricks. Prime contractors, sub-contractors, and fully operated rental companies shall comply with the current Occupational Safety and Health Administration (OSHA) regulations.

Submit all items listed below to the Engineer prior to beginning crane operations. Changes in personnel or equipment must be reported to the Engineer and all applicable items listed below must be updated and submitted prior to continuing with crane operations.

CRANE SAFETY SUBMITTAL LIST

A. **Competent Person:** Provide the name and qualifications of the "Competent Person" responsible for crane safety and lifting operations. The named competent person will have the responsibility and authority to stop any work activity due to safety concerns.

B. **Riggers:** Provide the qualifications and experience of the persons responsible for rigging operations. Qualifications and experience should include, but not be limited to, weight calculations, center of gravity determinations, selection and inspection of sling and rigging equipment, and safe rigging practices.

C. **Crane Inspections:** Inspection records for all cranes shall be current and readily accessible for review upon request.

D. **Certifications:** Crane operators shall be certified by the National Commission for the Certification of Crane Operators (NCCCO) or the National Center for Construction Education and Research (NCCER). Other approved nationally accredited programs will be considered upon request. In addition, crane operators shall have a current CDL medical card. Submit a list of crane operator(s) and include current certification for each type of crane operated (small hydraulic, large hydraulic, small lattice, large lattice) and medical evaluations for each operator.

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GROUT FOR STRUCTURES (12-1-17)

1.0 DESCRIPTION

This special provision addresses grout for use in pile blockouts, grout pockets, shear keys, dowel holes and recesses for structures. This provision does not apply to grout placed in post-tensioning ducts for bridge beams, girders, decks, end bent caps, or bent caps. Mix and place grout in accordance with the manufacturer's recommendations, the applicable sections of the Standard Specifications and this provision.

2.0 MATERIAL REQUIREMENTS

Unless otherwise noted on the plans, use a Type 3 Grout in accordance with Section 1003 of the Standard Specifications.

Initial setting time shall not be less than 10 minutes when tested in accordance with ASTM C266.

Construction loading and traffic loading shall not be allowed until the 3 day compressive strength is achieved.

3.0 SAMPLING AND PLACEMENT

Place and maintain components in final position until grout placement is complete and accepted. Concrete surfaces to receive grout shall be free of defective concrete, laitance, oil, grease and other foreign matter. Saturate concrete surfaces with clean water and remove excess water prior to placing grout.

4.0 BASIS OF PAYMENT

No separate payment will be made for "Grout for Structures". The cost of the material, equipment, labor, placement, and any incidentals necessary to complete the work shall be considered incidental to the structure item requiring grout.

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TEMPORARY BENTS **(11-30-23)**

5.0 GENERAL

When girder erection requires the use of temporary bents, design, construct, maintain and afterwards remove the temporary bents in accordance with the *Standard Specifications* and this Special Provision. For the purpose of this Special Provision, the term "temporary bents" includes girder erection temporary bents, vertical shoring and proprietary shoring systems.

Temporary bents for structures over railroads shall maintain a minimum horizontal clearance of 25' from center of track.

Design temporary bents in accordance with the current edition of *AASHTO Guide Design Specification for Bridge Temporary Works* (including interim revisions) and the Project Special Provision entitled "Falsework and Formwork". The design calculations and detailed drawings of the structural components shall be signed and sealed by a North Carolina Registered Professional Engineer.

Submit design calculations and detailed drawings of temporary bents to the Engineer for review and approval. The detailed drawings shall show the position of the temporary bents in relationship to the existing travel way, the location of the temporary bents with respect to the ends of the girders, the top of support elevations for setting girders in the cambered position, and a girder erection procedure. For stream crossings, determine the bent stability assuming a scour depth equal to 250% of the pile diameter or width below the existing bed elevation. The Engineer may require a more detailed analysis of scour depth for temporary bents containing more than a single row of piles.

Include all material specifications for new and used materials in the detail drawings. In addition, show the location of the used materials indicating condition of the material, the location and geometry of existing but unused holes, attachments left over from previous use and any other irregularities in the material. Account for the condition of all used materials in the design calculations.

For all manufactured components, provide engineering data supplied by the manufacturer. For proprietary shoring systems, evaluate differential leg loading.

Provide access to all new and used materials for inspection prior to assembly.

Before the temporary bent is loaded, the contractor shall inspect the bent in the presence of the Engineer and submit a written statement certifying that the erected bent complies with the approved detailed drawings. Any condition or material that does not comply with the accepted drawings, or any other condition deemed unsatisfactory by the Engineer, is cause for rejection until corrections are made.

Remove temporary bents in such a manner as to permit the structure to uniformly and gradually take the stresses due to its own weight. During removal do not disturb or otherwise damage the finished work.

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6.0 MEASUREMENT AND PAYMENT

Temporary Bents will not be directly measured, unless otherwise specified. Payment will be full compensation at the contract unit prices for the various pay items requiring temporary bents.

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DISC BEARINGS (2-3-14)

1.0 GENERAL

This item consists of furnishing, fabrication, and installation of disc bearings in accordance with *AASHTO LRFD Bridge Design Specifications*, the *Standard Specifications*, the recommendations of the manufacturer, the details shown on the plans and as specified herein. Disc Bearings consist of a polyether urethane structural element (elastomeric disc) confined by upper and lower steel bearing plates. Equip disc bearings with a shear restriction mechanism (shear pin) to prevent movement of the disc. Supply disc bearings as fixed bearings and guided expansion bearings as designated by the Contract Documents.

Fixed disc bearings allow rotation but no longitudinal or transverse movement in the bearing plane. Fixed bearings consist of a steel sole plate, an elastomeric disc, a shear pin, a steel upper bearing plate, a steel lower bearing plate, a steel masonry plate, a preformed bearing pad, anchor bolts, nuts and washers.

Guided expansion disc bearings allow rotation and only longitudinal movement in the bearing plane. Guided expansion disc bearings consist of a steel sole plate, a polished stainless steel sheet welded to the bottom of the sole plate within the sliding region, a steel upper bearing plate, a layer of virgin polytetrafluoroethylene (PTFE) material bonded to the top and sides of the upper plate within the sliding regions, guide bars welded to the bottom of the sole plate surrounding the sliding region to restrict transverse movement, polished stainless steel sheets welded to the sides of the guide bars within the sliding regions, an elastomeric disc, a shear pin, a steel lower bearing plate, a steel masonry plate, a preformed bearing pad, anchor bolts, nuts, washers, pipe sleeves, a closure plate, grout and various sizes of standard pipe, and any other necessary material as detailed on the plans. Align the stainless steel sheet on the bottom of the sole plate with the PTFE material on the top of the upper bearing plate. Align the PTFE material on the sides of the upper bearing plate with the stainless steel sheets on the sides of the guide bars.

2.0 MATERIALS

Use disc bearings produced by the same manufacturer.

Use AASHTO M270 Grade 50W (345W) or Grade 50 (345) for all steel plates except the stainless steel sheets in the disc bearings. Clean, coat, and seal the plates in the disc bearing assemblies except for the areas with special facings and the areas that come in contact with the elastomer disc, in accordance with the Special Provision for “Thermal Sprayed Coatings (Metallization)”. The surfaces shall be coated to a thickness of 8 mils minimum on all external parts. Repair surfaces that are abraded or damaged after the application of metallizing in accordance with the Special Provision for “Thermal Sprayed Coatings (Metallization)”.

Provide anchor bolts and nuts in accordance with the *Standard Specifications*.

When the maximum plan dimension of the sheet is 12" or less, provide a stainless steel sheet in expansion disc bearings that is at least 16 gage or $^{1}/_{16}$". When the maximum plan dimension is greater than 12", provide a stainless steel sheet that is at least 11 gage or ⅛". Ensure that all

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stainless steel sheets are in conformance with ASTM A240/A167 Type 304 and polished to a minimum #8 mirror surface finish.

Blast clean the surfaces of the steel sole plate and the steel guide bars that will be attached to the stainless steel sheets to a near white condition in accordance with the *Standard Specifications*. Position and clamp the back of the stainless steel sheets in contact with the steel sole plate and the steel guide bars. Apply the stainless steel sheets to the blast cleaned surfaces of the steel sole plate and the steel guide bars as soon as possible after blasting and before any visible oxidation of the blast cleaned surfaces occurs. Weld the stainless steel sheets continuously around the perimeter using a tungsten inert gas, wire-fed welder.

For the PTFE sheets bonded to the top and side sliding surfaces of the steel upper bearing plate, used as mating surfaces for the stainless steel sheets attached to the steel sole plate and the guide bars, provide an unfilled virgin PTFE sheet (recessed) or a glass-fiber filled PTFE sheet, resulting from skiving billets formed under hydraulic pressure and heat. Provide resin that conforms to the requirements of ASTM D4894 or D4895.

To bond the PTFE sheets and the steel upper bearing plate, use heat cured high temperature epoxy capable of withstanding temperature of –320°F to 500°F.

Weld the guide bars in expansion bearings to the bottom of the sole plate. Alternatively, integrate the guide bars and sole plate from the same piece of steel, ensuring that the required dimensions are provided. Provide $^{1}/_{16}$" clearances between the stainless steel sheets attached to the side sliding surfaces of the guide bars and the PTFE sheet attached to the side sliding surface of the steel upper bearing plate.

Mold the polyether urethane structural element (elastomeric disc) from a polyether urethane compound. The top and bottom surfaces of the disc shall be roughened. Ensure that the physical properties of the polyether urethane conform to the following requirements:

Physical Property	ASTM Test Method	Requirements Min.	Max.
Hardness, Type D Durometer	D2240	60	64
Tensile Stress psi At 100% elongation At 200% elongation	D412	 2,000 3,700	- - - -
Tensile Strength psi	D412	5,000	- - - -
Ultimate Elongation %	D412	220	- - - -
Compression Set % 22 hrs. at 158°F	D395	- - - -	40

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3.0 DESIGN

Design the disc bearings for the loads and movements shown on the contract plans. However, use the anchor bolt size, length, spacing and masonry plate thickness as shown on the contract plans and provide an overall bearing height within ½ inch of the bearing assembly height shown on the contract plans. Either combine and cast the sole plate and upper bearing plate (for fixed bearings), the sole plate and guide bars (for expansion bearings), and the lower bearing plate and masonry plate (for fixed and expansion bearings) as a single unit or weld together prior to the installation of the disc.

Ensure access and removal of anchor bolt nut is not in conflict with the upper bearing plate, guide bars or sole plate.

When designing the bearings, use the following allowable bearing stresses:

(A) On polyether urethane structural element: 5,000 psi

(B) On PTFE Sliding Surface, filled or unfilled PTFE (recessed): 3,500 psi

Submit eight sets of shop drawings and one set of design calculations for review, comments, and acceptance. Have a North Carolina Registered Professional Engineer check and seal the shop drawings and design calculations.

After the Engineer reviews the drawings and, if necessary, corrections are made, submit one 22" x 34" reproducible set of the working drawings.

4.0 SAMPLING AND TESTING

(A) Sampling

The manufacturer is responsible for randomly selecting and testing sample bearings from completed lots of bearings. The manufacturer is also responsible for certifying that the completed bearings and their components have been tested and are in compliance with the requirements of this Special Provision. The manufacturer shall furnish the results of the tests to the Materials and Tests Engineer.

(B) Testing

(1) Proof Load Test

Load a test bearing to 150% of the bearing's rated design capacity and simultaneously subject it to a rotational range of 0.02 radians (1.146°) for a period of 1 hour.

Have the bearing visually examined both during the test and upon disassembly after the test. Any resultant visual defects, such as extruded or deformed

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elastomer or PTFE, damaged seals or rings, or cracked steel is cause for rejection.

Keep continuous and uniform contact between the polyether urethane element and the bearing plates and between the stainless steel sheets and the PTFE sheets (for expansion bearings) for the duration of the test. Any observed lift-off or separation is cause for rejection.

(2) Sliding Coefficient of Friction

For all guided expansion bearings, measure the sliding coefficient of friction at the bearing's design capacity in accordance with the test method described below, and on the fifth and fiftieth cycles, at a sliding speed of 1 in/min.

Calculate the sliding coefficient of friction as the horizontal load required to maintain continuous sliding of one bearing, divided by the bearing's vertical design capacity.

The test results are evaluated as follows:

(a) A maximum measured sliding coefficient of friction of 3%.

(b) A visual examination both during and after the test. Any resultant visual defects, such as bond failure, physical destruction, cold flow of PTFE to the point of debonding, or damaged components is cause for rejection of the lot.

Using undamaged test bearings in the work is permitted.

(3) Test Method

The test method and equipment shall meet the following requirements:

(a) Arrange the test to determine the coefficient of friction on the first movement of the manufactured bearing.

(b) Clean the bearing surface prior to testing.

(c) Conduct the test at maximum working stress for the PTFE surface with the test load applied continuously for 12 hours prior to measuring friction.

(d) Determine the first movement static and dynamic coefficient of friction of the test bearing at a sliding speed of less than 1 in/min, not to exceed:

a. 0.04 unfilled PTFE

b. 0.08 filled PTFE

(e) Subject the bearing specimen to 100 movements of at least 1 inch of relative movement and, if the test facility permits, the full design

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movement at a speed of less than 1 ft/min. Following this test determine the static and kinetic coefficient of friction again. The specimen is considered a failure if it exceeds the values measured in (d) above or if it shows any signs of bond failure or other defects.

Bearings represented by test specimens passing the above requirements are approved for use in the structure subject to on-site inspection for visible defects.

5.0 INSTALLATION

Store disc bearings delivered to the bridge site upright and under cover on a platform above the ground surface. Protect the bearings from injury at all times and, before placing the bearings, dry and clean all dirt, oil, grease or other foreign substances from the bearing. Do not disassemble the bearings during installation, except at the manufacturer's direction. Lift bearing assemblies by their bottom surfaces only, unless lifting brackets that have been designed and approved by the manufacturer are used. Ensure that the polyether urethane disc is not exposed to direct flame or sparks. Place the bearings in accordance with the recommendations of the manufacturer, Contract Drawings, and as directed by the Engineer. If there is any discrepancy between the recommendations of the manufacturer, Special Provisions, and Contract Drawings, the Engineer is the sole judge in reconciling any such discrepancy.

Provide preformed bearing pads under the masonry plates in accordance with Article 1079-1 of the *Standard Specifications.*

Do not install any bearing before the Engineer approves it.

6.0 MEASUREMENT AND PAYMENT

Disc Bearings will be paid at the lump sum contract price bid for which includes full compensation for furnishing all disc bearings, labor, materials, tools, equipment, testing and incidentals required to complete the work in accordance with the *Standard Specifications*, this Special Provision, the manufacturer's requirements and as directed by the Engineer.

Payment will be made under:

Pay Item	Pay Unit
Disc Bearings	Lump Sum

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MASS CONCRETE **(6-20-19)**

GENERAL

This Special Provision applies to substructure components (footings, columns, or caps) where the smallest dimension of that component is greater than or equal to six feet and less than or equal to eight feet.

The mass concrete temperature after placement shall not exceed 158°F and the temperature difference between the core and exterior surfaces shall not exceed 35°F. Mass concrete should remain covered and monitored until the difference between the core temperature and the average daily ambient temperature is below 35°F. All mass concrete pours shall remain covered and protected a minimum of 7 days unless otherwise directed by the Engineer.

Submit an analysis, for review and approval, of the anticipated thermal developments in the mass concrete based on the proposed mix design, materials, and casting procedures. At a minimum the analysis shall provide: an anticipated range of peak temperatures, temperature gradients, time to peak temperature and recommended cure time. The submittal shall also describe the measures and procedures that will be taken to limit the temperature differential to 35°F or less between the core and exterior surfaces.

Methods for reducing thermal differential may involve but are not limited to a combination of the following:

(A) Selecting materials that minimize the heat generated by hydration of the cement.

(B) Cooling materials to reduce the temperature of the concrete in its plastic state.

(C) Controlling the rate of concrete placement.

(D) Insulating the concrete surface to prevent heat loss.

(E) Providing supplemental heat at the concrete surface to prevent heat loss.

(F) Other acceptable methods which may be developed by the Contractor.

The temperature of mass concrete at the time of placement shall not be less than 40°F nor more than 75°F.

Mass concrete shall contain an approved set-retarding, water-reducing admixture, and flyash or ground granulated blast furnace slag in the amount of 25% by weight of the total cementitious material (portland cement plus flyash). Fly ash or ground granulated blast furnace slag used in the mass concrete mix shall meet the requirements of Articles 1024-5 and 1024-6 of the *Standard Specifications*. Portland Cement shall meet the requirements of AASHTO M85 for Type II. The total cementitious material shall not exceed 600 lbs. per cubic yard of concrete.

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The Contractor shall test and submit results for the compressive strength of his proposed mix design for review and approval. The strength must be taken as the average of at least three (3) cylinders made in the laboratory and meet the minimum 28 day strength requirements noted in the contract plans.

The Contractor shall provide and install a minimum of six (6) temperature sensing devices in each mass concrete pour to monitor temperature differentials between the core and exterior surfaces. These devices shall have an accuracy of ±2°F within the temperature range of 40°F to 180°F. One temperature sensing probe shall be placed near the core of the pour, and the remaining temperature sensing probes shall be placed at approximately two (2) inches clear from the surface of the concrete furthest from the core. The Engineer shall approve the locations of the temperature sensing probes.

Readings from the temperature sensing devices shall be recorded at one-hour intervals, from the time casting is complete until the maximum temperature is established. After the maximum temperature is established, record readings from temperature sensing devices at two-hour intervals until consecutive readings indicated the temperature difference between the core and all exterior surfaces is less than 35°F. At the option of the Contractor, the temperature may be recorded by an approved strip-chart recorder furnished by the Contractor.

If monitoring indicates the 35°F differential has been exceeded, the Contractor shall take immediate action to reduce the temperature differential to less than 35°F and revise the thermal plan to ensure future mass concrete pours meet the temperature limits. All revisions to the approved plan must be approved by the Engineer prior to implementation.

At the discretion of the Engineer, all temperature monitoring requirements may be waived provided the Contractor has proven to the satisfaction of the Engineer that the temperature after placement will not exceed 158°F and the temperature difference between the core and all exterior surfaces will not exceed 35°F.

Placement of mass concrete shall be continuous resulting in a footing, column or cap that is monolithic and homogeneous.

MEASUREMENT AND PAYMENT

The entire cost of this work shall be included in the unit contract price bid for the class of concrete associated with *Mass Concrete*.

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MODIFIED 56" PRESTRESSED CONCRETE GIRDERS (SPECIAL)

Material requirements, fabrication, and tolerance requirements shall be in accordance with section 1078 of the Standard Specifications.

Girder erection and handling, and installation shall be in accordance with section 430 of the Standard Specifications.

1.0 MEASUREMENT AND PAYMENT

Modified 56" Prestressed Concrete Girders will be measured and paid as the number of linear feet of modified 56" prestressed concrete girders estimated in the plans as being necessary to complete the project.

Payment will be made under:

Modified 56" Prestressed Concrete Girders ..... Linear Foot

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Foundation Conditioning Geotextile **(SPECIAL)**

Provide Type 2 Geotextile for encapsulation of culvert Foundation Conditioning Material as called for in the plans. Geotextile material properties shall be as defined in Table 1056-1 of the Standard Specifications.

Material requirements, handling and storage, certifications and identification for Type 2 Geotextile shall be in accordance with Section 1056 of the Standard Specifications.

Place Foundation Conditioning Material for encapsulated culvert foundations to the minimum depth below the floor slab specified in the plans. Horizontal limits for encapsulation of Foundation Conditioning Material shall be equal to the total length of the culvert measured along the culvert centerline and the sum of clear barrel width(s) and all vertical wall thickness plus four (4) feet measured normal to the culvert centerline.

1.0 MEASUREMENT AND PAYMENT

Foundation Conditioning Geotextile for encapsulation of Foundation Conditioning Material in place and accepted by the Engineer shall be measured along the culvert centerline (length) and normal to the culvert centerline (width). Surface area for payment shall be the product of length and width dimensions measured in place.

Foundation Conditioning Geotextile will be paid for as the number of square yards of Foundation Conditioning Geotextile installed and accepted in place. Payment will be for all geotextile material(s), including overlap splices, anchoring hardware, equipment, tools, labor, and incidentals required to complete the work.

Payment will be made under:

Foundation Conditioning Geotextile ..... Square Yards

PROJECT SPECIAL PROVISION

(10-18-95) (Rev. 10-15-24) Z-1

PERMITS

The Contractor's attention is directed to the following permits, which 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)	Division of Water Resources, DEQ State of North Carolina

The Contractor shall comply with all applicable permit conditions during construction of this project.

Agents of the permitting authority will periodically inspect the project for adherence to the permits.

The Contractor's attention is also directed to Articles 107-10 and 107-13 of the *Standard Specifications* and the following:

Should the Contractor 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 Contractor's responsibility to coordinate with the Engineer to determine what, if any, additional permit action is required. The Contractor 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 Contractor 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 Contractor'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 Contractor's activities to certain times of the year, those moratoriums will apply only to the portions of the work taking place in the restricted waters, wetlands or buffer zones, provided that activities outside those areas is done in such a manner as to not affect the restricted waters, wetlands or buffer zones.

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JOSH STEIN
GOVERNOR

J.R. "JOEY" HOPKINS
SECRETARY

February 18, 2025

MEMO TO: Division 3 Environmental and Construction Units

FROM: Mason Herndon
Division 3 PDEA Engineer

SUBJECT: Section 404 Individual Permit Modification and Section 401 Water Quality Certification Modification for construction of the Hampstead Bypass from NC 140 (Wilmington Bypass) to NC 210 in New Hanover and Pender Counties. WBS 40237.1.3, TIP No. R-3300A

Please find enclosed the following modifications to the U.S. Army Corps of Engineers Individual Section 404 Permit, N.C. Division of Water Resources (NCDWR) 401Water Quality Certification and Division of Coastal Management Federal Consistency Determination for construction of the Hampstead Bypass from NC 140 (Wilmington Bypass) to NC 210 in New Hanover and Pender Counties. The current U-4751/R-3300 permit expiration date is **December 31, 2030.**

The Division Environmental Office must be consulted if any deviations from the permit(s) or accompanying permit drawings are required.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
5505 BARBADOS BOULEVARD
CASTLE HAYNE, NC 28429-5647

Telephone: 910-341-2001
Fax: 910-675-7827
Customer Service: 1-877-368-4968

Website: ncdot.gov

Location:
5505 BARBADOS BOULEVARD
CASTLE HAYNE, NC 28429-5647

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, WILMINGTON DISTRICT
WASHINGTON REGULATORY OFFICE
2407 WEST FIFTH STREET
WASHINGTON, NORTH CAROLINA 27889

February 18, 2025

Regulatory Program

Sent Via Email: tmherndon@ncdot.gov

NC Department of Transportation (NCDOT)
Mr. Mason Herndon
5501 Barbados Boulevard
Castle Hayne, North Carolina 28429-5647

Dear Mr. Herndon:

The U.S. Army Corps of Engineers (Corps) is pleased to enclose the Department of the Army permit to construct the Hampstead Bypass (R-3300-A) on new location, in New Hanover and Pender Counties, North Carolina, which should be made available at the construction site. R-3300-A is located between the terminus of Military Cutoff Road (T.I.P. No. U-4751) at I-140 and NC-210 at the terminus of R-3300 B. Work may begin immediately but the Corps must be notified of:

a. The date of commencement of the work,

b. The dates of work suspensions and resumptions of work, if suspended over a week, and

c. The date of final completion.

This information should be emailed to the Wilmington District South Atlantic Division at NCDOT_REG@usace.army.mil. The Corps is also responsible for inspections to determine whether Permittees have strictly adhered to permit conditions. Other notable conditions:

a. You must complete construction before **December 31, 2030**.

b. 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.

Should you require any changes to the work authorized or obligated by this permit, it is the responsibility of the Permittee to submit a modification request to the South Atlantic, Washington Field Office. The Corps will evaluate the request and determine whether it is appropriate to modify the terms and conditions of the permit. The Permittee

must obtain written approval of the requested modifications from the Corps prior to initiation of those changes.

If you have any questions concerning this correspondence, please contact Thomas Steffens, WRDA Project Manager of the Washington Field Office at (910) 251-4615, by mail at the above address, or by email at thomas.a.steffens@usace.army.mil. Please take a moment to complete our customer satisfaction survey located at https://regulatory.ops.usace.army.mil/customer-service-survey/.

FOR THE CHIEF, REGULATORY DIVISION

M. Scott Jones, PWS
NCDOT/WRDA Branch Chief
USACE - Wilmington District

Enclosures

Department of the Army Permit
Special Conditions
Plans

E-Copy Furnished w/attachments:

NC DEQ, DWR – Holly Snider holley.snider@deq.nc.gov
NC DEQ, DCM – Cathy Brittingham cathy.brittingham@deq.nc.gov
NC DEQ, DCM – Stephen Lane stephen.lane@deq.nc.gov
USFWS, Gary Jordan - gary_jordan@fws.gov
USEPA, Todd Bowers - bowers.todd@epa.gov

P-5

DEPARTMENT OF THE ARMY PERMIT

Permittee **NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**
ATTN: MR. MASON HERNDON

Permit No. **SAW-2007-01386, STIP R-3300-A**

Issuing Office **CESAW-RG-WRDA**

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: Construction of STIP R-3300-A, involves the discharge of fill to permanently impact 13.894 acres of riparian wetlands and 19.269 acres of non-riparian wetlands. Construction includes permanent impacts to streams of 4,868 linear feet. Temporary impacts include temporary fill and hand-clearing in wetlands. This includes 0.9230 acres of riparian wetlands and 1.863 acre of non-riparian wetlands, and temporary impacts to surface waters of 460 linear feet. The hand clearing totals due to the project construction are 1.163 acres.

Project Location: The R-3300-A project, (aka Hampstead Bypass), is located between the terminus of Military Cutoff Road (T.I.P. No. U-4751) at I-140 and NC-210 at the terminus of R-3300 B in New Hanover and Pender Counties, North Carolina. (Action ID SAW-2007-01386)

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2030.** 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.

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.

Mason Herndon _____ 2/14/25

(PERMITTEE) **NC DEPARTMENT OF TRANSPORTATION** *(DATE)*
ATTN: MR. MASON HERNDON

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

M. Scott Jarvis, FOR _____ 18 FEB 2025

(DISTRICT COMMANDER) **BRAD A. MORGAN, 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

1. Green sheets: All Green Sheet and/or Categorical Exclusion (CE) project commitments for R-3300-A Hampstead Bypass project are hereby incorporated by reference as special conditions of this permit.

2. Work Limits: All work authorized by this permit shall be performed in strict compliance with the attached permit plans dated November 22, 2024, 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 US Army Corps of Engineers prior to any active construction in waters or wetlands.

a. 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, drawings and attachments shall be available at the project site during the construction and maintenance of this project.

4. Pre-Construction Meeting: The Permittee shall schedule and attend a preconstruction meeting between its representatives, the contractors' representatives, and the U.S. Army Corps of Engineers, Washington Regulatory Field Office, NCDOT Regulatory Project Manager, prior to any work within jurisdictional waters and wetlands to ensure that there is a mutual understanding of all the terms and conditions contained with this Department of Army Permit. The Permittee shall provide the Corps, Washington Regulatory Field Office, NCDOT Project Manager, with a copy of the final permit plans at least two weeks prior to the preconstruction meeting along with a description of any changes that have been made to the project's design, construction methodology or construction timeframe. The Permittee shall schedule the

preconstruction meeting for a time frame when the Corps, NCDCM, and NCDWR Project Managers can attend. The Permittee shall invite the Corps, NCDCM, and NCDWR Project Managers a minimum of thirty (30) days in advance of the scheduled meeting 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: U.S. Army Corps of Engineers, Wilmington District Washington Regulatory Field Office, Attn: Mr. Thomas Steffens, 2407 West 5th St., Washington, NC 27889. The Permittee shall reference the following permit number, SAW-2007-01386, 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. 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: 910-251-4615 within 24 hours of the Permittee's discovery of the violation.

8. 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.

9. Endangered Species Act: The Permittee shall implement all necessary measures to ensure the authorized activity does not kill, injure, capture, harass, or otherwise harm any federally listed threatened or endangered species. While accomplishing the authorized work, if the Permittee discovers or observes an injured or dead threatened or endangered species, the U.S. Army Corps of Engineers, Wilmington District, Washington Regulatory Field Office, Attn: Thomas Steffens at 910-251-4615, or thomas.a.steffens@usace.army.mil will be immediately notified to initiate the required Federal coordination.

a. Northern long-eared bat

The USFWS has issued a programmatic biological opinion (PBO) in conjunction with the Federal Highway Administration (FHWA), the US Army Corps of Engineers

(USACE), and NCDOT for the northern long- eared bat (NLEB) (Myotis septentrionalis) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. Although this programmatic covers Divisions 1-8, The USFWS only considers NLEBs to be known or potentially found in 30 counties within Divisions 1-8. NCDOT, FHWA, and USACE have agreed to two conservation measures which will avoid/minimize mortality of NLEBs. These conservation measures only apply to the 30 current known/potential counties shown on Figure 2 of the PBO at this time. The programmatic determination for NLEB for the NCDOT program is May Affect, Likely to Adversely Affect. The PBO will ensure compliance with Section 7 of the Endangered Species Act for ten years (effective through December 31, 2030) for all NCDOT projects with a federal nexus in Divisions 1-8, which includes New Hanover and Pender Counties, where R-3300A is located.

b. Tricolored bat
The U.S. Fish and Wildlife Service's (USFWS's) Programmatic Conference Opinion (PCO) titled "NCDOT Program Effects on the Tricolored Bat in Divisions 1-8", dated November 20, 2023, contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that are specified in the PCO. Your authorization under this Corps permit is conditional upon your compliance with all the mandatory terms and conditions associated with incidental take of the PCO, 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 PCO, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit. The USFWS is the appropriate authority to determine compliance with the terms and conditions of its PCO, and with the ESA.

10. Culverts:
a.) 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.

b.) 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, bank full flow can be used as a comparable level.

c.) 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 Corps.

d.) Culverts placed within wetlands must be installed in a manner that does not restrict the flows and circulation patterns of waters of the United States. Culverts placed across wetland fills purely for the purposes of equalizing surface water shall not be buried, but the culverts must be of adequate size and/or number to ensure unrestricted transmission of water.

11. Sediment and Erosion Control:

a.) 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.

b.) 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.

c.) The Permittee shall remove all sediment and erosion control measures placed in waters and/or wetlands, orange safety fencing and shall restore natural grades on those areas, prior to project completion.

d.) 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 and wetlands.

12. Temporary Fills: Within thirty (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.

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 update on the wetland areas temporarily impacted. This update shall be conducted two growing seasons after completion of the work and shall consist of photographs and a brief report on the progress of the areas in re-attaining wetland jurisdictional status. Upon submission of this update to the USACE, the permittee shall schedule an agency field meeting with the USACE to determine if the temporarily impacted wetlands 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 USACE shall determine if additional compensatory wetland mitigation is required.

13. 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.a. 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.a. 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.

14. Mitigation: 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.

15. Utilities and Temporary Impacts Restoration Measures: Within thirty (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.

Cleared wetland areas shall be re-vegetated with a wetland seed mix or a mix of native woody species. Fescue grass or any invasive species such as Lespedeza spp., shall not be used within the wetland areas.

Rationale: The above Special Conditions reflect the reasoning of how the permittee will perform the work and remain compliant with Cultural Resources (Section 106), Endangered Species (Section 7), Soil and Erosion Control, Mitigation and other compliance measures.

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JOSH STEIN
Governor
D. REID WILSON
Secretary
RICHARD E. ROGERS, JR.
Director

NORTH CAROLINA
Environmental Quality

February 11, 2025

Mason Herndon, Project Development Environmental Engineer
NC DOT Division 3
5501 Barbados Drive
Castle Hayne, NC 28429

Subject: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS for the proposed Hampstead Bypass in Pender County, State Project No. 40237.3.2, TIP R-3300A.
NCDWR Project No. 20161268v8

Dear Mr. Herndon:

Attached hereto is a copy of Certification No. 004116 (this is the Individual Certification No.) issued to The North Carolina Department of Transportation (NCDOT) dated June 5, 2017 and modified on March 1, 2019, June 17, 2020, October 22, 2021, January 20, 2022, August 25, 2022, April 26, 2023 and February 11, 2025.

This approval is for the purpose and design described in your application. The plans and specifications for this project are incorporated by reference as part of this Water Quality Certification. If you change your project, you must notify the Division and you may be required to submit a new application package with the appropriate fee. If the property is sold, the new owner must be given a copy of this Certification and is responsible for complying with all conditions. [15A NCAC 02H .0507(d)(2)]. This Certification does not relieve the permittee of the responsibility to obtain all other required Federal, State, or Local approvals before proceeding with the project, including those required by, but not limited to, Sediment and Erosion Control, Non-Discharge, Water Supply Watershed, and Trout Buffer regulations.

If we can be of further assistance, do not hesitate to contact us.

Sincerely,
Signed by:
Susan Locklear
375CAE2BB9F540C...
Richard E. Rogers, Jr., Director
Division of Water Resources

Attachments

cc: Tom Steffens, USACE Washington Regulatory Field Office (via email)
Jon Giles, NCDOT Division 3 Environmental Officer
Amanetta Somerville, US Environmental Protection Agency

Gary Jordan, US Fish and Wildlife Service
Travis Wilson, NC Wildlife Resources Commission
Stephen Lane, NC Division of Coastal Management
Jason Elliott, NCDOT, Natural Environment Section
Beth Harmon, Division of Mitigation Services
Holley Snider, NCDWR Transportation Branch - WiRO
File Copy

401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act 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. This certification authorizes the NCDOT to permanently impact 33.163 acres of jurisdictional wetlands, 0.579 acres of open water and 4,220 linear feet of jurisdictional streams (Intermittent: 107 linear feet and perennial 3,653 linear feet) in Pender County. The project shall be constructed pursuant to the application dated received November 22, 2024. The authorized impacts are as described below:

Stream Impacts in the Cape Fear River Basin

Permit Drawing Site Number	Permanent Fill Intermittent Stream (ft)	Temporary Fill in Intermittent Stream (ft)	Permanent Fill in Perennial Stream (lf)	Temporary Fill in Perennial Stream (lf)	Bank Stabilization	Total Stream Impact	Mitigation Required [a]
Site 3 Y33 77+38 LT Bank Stabilization				27	89	27	
Site 6 Y33RPCA47+84 LT to 49+50 LT Bank Stabilization					300		
Site 6 Y33RPCA 49+50 LT TO 58+15 RT			***940	36		976	24
Site 7 253+29			226			226	
Site 7 253+29 Bank Stabilization				30	77	30	
Site 7 252+86 RT Bank Stabilization				12	75	12	
Site 8 258+25 LT Bank Stabilization				10	20	10	
Site 9 283+46			375	93		468	375
Site 10 306+20 LT Bank Stabilization				17	50	17	
Site 10 306+00			182			182	
Site 10 305+81 RT Bank Stabilization				8	53	8	
Site 11 312+06 to 312+33 LT Outlet Protection		56			22	56	
Site 11 313+03	107					107	
Site 15 SR1 14+86 LT Bank Stabilization				10	53	10	
Site 15 SR1 15+38			231			231	
Site 21 383+67-385+75 LT			61			61	

Site 21 383+85 - 385+20 LT Bank Stabilization				26	42	26	
Site 21 385+75 LT - 389+03 LT			219	37		256	
Site 28 434+12 LT-436+70 RT			235			235	
Site 28 434+12 LT-436+70 RT Bank Stabilization				33	31	332	
Site 29 442+28 LT-445+38 RT			273			273	
Site 29 442+28 LT-445+38 RT Bank Stabilization				8	80	8	
Site 37 REV 519+89 RT-Y35 20+28 LT			285			285	
Site 37 REV 519+89 RT-Y35 20+28 LT Channel Relocation			294	30		324	
Site 37 REV 519+89 RT-Y35 20+28 LT Bank Stabilization					100	100	
Site 46 564+45 LT-568+65 RT			332	12		344	332
Site 46 564+45 LT-568+65 RT Bank Stabilization					102	102	
Site 49 Y33 100+10 LT Bank Stabilization		15			14	15	
Totals	*107	61	3,653	389	**1,108	4220	731

Total Stream Impacts for Project: 4,220 linear feet (intermittent 107 lf and Perennial 3,653 lf)
1,108 lf of permanent bank stabilization not calculated as impacts
916 lf. of channel relocation at Site 6 not calculated as impacts
*Intermittent stream impacts not calculated
Permanent Stream Impacts in the Cape Fear River Basin Requiring Mitigation 731 linear feet

Wetland Impacts in the Cape Fear River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Total Wetland Impact (ac)
Site 1 Y33RPCA 23+50 to Y33LPC 21+45 Impacts Located at Y33RPCA Fill, Y33LPC Fill, and Ditch Inside Y33LPC	4.493		0.205	0.476		5.174

Site 2 Y33RPCA 29+35 RT to 30+87 LT, Y33LPC 5+47 to 8+09 RT	0.672		0.016	0.036		0.724
Site 4 Y33RPB 15+70 to 14+00 RT	0.103			0.220		0.125
Site 7 L1 249+91 to 254+73	1.655		0.009	0.126		1.790
Site 7 Temporary Diversion Channel***			0.040		0.017	0.040
Site 8 L1 254+84 to 260+33	2.188		0.030	0.224		2.442
Site 9 L1 282+72 to 285+60	0.605				0.097	0.605
Site 11 L1 312+20 LT to 315+52 RT	0.278			0.031		0.309
Site 12 L1 335+64 to 337+84 LT	0.211			0.045		0.256
Site 13 L1 337+91 to 350+22 RT	3.762				0.405	3.762
Site 14 L1 350+22 RT to 353+09 LT	0.918		0.057		0.040	0.975
Site 15 SR1 11+87 to 15+36 RT	0.332		0.004	0.018	0.005	0.354
Site 15 Temporary Diversion Channel**			0.015	0.006		0.021
Site 16 Y34 12+86 to 13+92 RT			0.018		0.018	0.018
Site 17 Y34 13+88 to 15+70 LT	0.046		0.025		0.010	0.071
Site 18 SR9 13+67 to 14+16	0.083				0.013	0.083
Site 19 Y34 35+75 to 36+11 RT			0.015		0.008	0.015
Site 20 L1 357+54 to 360+03 LT	0.758		0.005	0.037		0.800
Site 20**** L1 358+61 to 360+03 LT	0.035					0.035

Site 21** L1 383+67 LT - 385+75 LT	0.110		0.025	0.079	0.075	0.214
Site 21 L1 383+85 LT - 385+20 LT			0.006	0.004		0.010
Site 21 L1 385+75 LT - 389+03 LT	0.620		0.021	0.076		0.717
Site 22 L1 394+75 LT - 397+33 RT	0.196		0.008	0.044		0.248
Site 23 L1 399+85 LT - 401+69 RT	0.192		0.002	0.020		0.214
Site 24 L1 408-+64 LT - 412+19 RT	0.384		0.006	0.003		0.393
Site 25 L1 412-20 LT - 414+78 LT	0.240			0.013		0.253
Site 25 L1 414+86 LT - 415+77 LT	0.134			0.014		0.148
Site 26 L1 415+39 RT - 415+69 RT				0.003		0.003
Site 27*** L1 425+74 RT - 429+10 LT	0.192		0.023	0.111	0.415	0.326
Site 27 L1 428+70 RT - 429+37 LT	0.020			0.002		0.022
Site 28 L1 434+12 LT - 436+70 RT	0.141			0.012	0.008	0.153
Site 29 L1 442+28 LT - 445+38 RT	0.498	0.009	0.020	0.052	0.010	0.570
Site 29*** L1 442+28 LT - 445+38 RT			0.022			0.022
Site 30 L1 447+37 - 451+09 LT	0.625			0.031		0.656
Site 31 L1 452+05 RT - 452+66 RT	0.070		0.002	0.010		0.082
Site 32 L1 454+25 RT- 455+48 RT	0.106		0.004	0.009		0.119
Site 33 L1 455+52 RT - 467+46 RT	0.798		0.017	0.061		0.876
Site 34 L1 467+39 LT - 470+68 RT	0.197			0.015		0.212

Site 35 L1 469+64 LT - 485+61 RT	5.599		0.002	0.434		6.035
Site 36 L1REV 518+59 LT - 520+73 RT	0.108			0.005		0.113
Site 37 L1REV 519+89 RT - Y35 20+28 LT	0.489					0.489
Site 37 L1REV 519+59 RT – Y35 20+28 LT Channel relocation	0.242		0.081	0.054		0.377
Site 37*** L1REV 519+89 RT - Y35 20+28 LT			0.020			0.020
Site 38 L1REV 528+18 LT - 529+81 LT	0.185			0.024		0.209
Site 39 L1REV 532+78 RT	0.023					0.023
Site 40 L1REV 534+46 - 535+20 RT	0.067					0.067
Site 41 L1REV 537+11 - 538+10 LT	0.151					0.151
Site 42 L1REV 537+60 RT			0.005	0.003		0.008
Site 42 *** L1REV 537+60 RT			0.010			0.010
Site 43 L1REV 538+02 - 538+47 LT	0.006		0.005	0.015		0.026
Site 44 L1REV 545+23 LT - 546+61 RT	0.268			0.027		0.295
Site 45 L1 560+15 RT	0.001			0.001		0.002
Site 46 L1 562+69 LT - 563+66 LT	0.015			0.025		0.040
Site 46 L1 564+45 LT - 568+65 RT	1.827	0.026	0.049	0.172		2.048
Site 46*** L1 564+45 LT-568+65 RT			0.058			0.058
Site 47 Y35 13+45 RT - 14+17 RT	0.014		0.001	0.008		0.023
Site 47 Y35 DET		0.047			0.009	0.000

Site 48 Y35 36+00 LT			0.001	0.006		0.007
Site 50 SR2 14+30	0.005				0.022	0.005
Site 51 Y34DET 33+42 to 34+04 LT	0.001				0.011	0.001
Site 52 Y33 101+22 to 101+65 LT				0.017		0.000
PNG1 Y34 11+71 RT to Y34 14+26 RT		0.310		0.017		0.017
PNG2 Y34 18+28 RT to Y34 20+39 RT		0.211		0.064		0.064
PNG3 Y34 25+10 RT to Y34 29+97 RT		1.020		0.221		0.221
Total	29.663	1.623	0.827	2.673	1.163	33.163

Total Wetland Impact for Project: 33.163 acres permanent impact (1.623 acres temporary impact).
** hand clearing not calculated as impact **
** bank stabilization not calculated as impact **
Riparian Wetland Impacts: 13.894 acres permanent (0.923 acres temporary)
Non-Riparian Wetland Impacts: 19.269 acres permanent (1.863 acres temporary)

Open Water (Ponds/Lakes/Rivers/Sound/Ocean/etc) Impacts in the _____ River Basin

Site	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
Site 2 216+22 LT	0.002	0.002	0.004
Site 5 234+23 to 243+02 RT	0.440		0.440
Site 11 313+03	0.122	0.013	0.135
Total	0.564	0.015	0.579

Total Open Water Impact for Project: 0.579 acres.

The application provides adequate assurance that the discharge of fill material into the wetlands and waters of the **Cape fear River Basin** 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 November 22, 2024. All the authorized activities and conditions of certification associated with the original Water Quality Certification dated June 5, 2017, and modified on March 1, 2019, June 17, 2020, October 22, 2021, January 20, 2022, August 25, 2022, April 26, 2023 still apply except where superseded by this certification. 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 1 acre or 300 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7).

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.

This Water Quality Certification neither grants nor affirms any property right, license, or privilege in any lands or waters, or any right of use in any waters. This Water Quality Certification does not authorize any person to interfere with the riparian rights, littoral rights, or water use rights of any other person and does not create any prescriptive right or any right of priority regarding any usage of water. This Water Quality Certification shall not be interposed as a defense in any action respecting the determination of riparian or littoral rights or other rights to water use. No consumptive user is deemed by virtue of this Water Quality Certification to possess any prescriptive or other right of priority with respect to any other consumptive user regardless of the quantity of the withdrawal or the date on which the withdrawal was initiated or expanded. Upon the presentation of proper credentials, the Division may inspect the property.

Condition(s) of Certification:

1. This modification is applicable only to the additional proposed activities. All the authorized activities and conditions of certification associated with the original Water Quality Certification dated June 5, 2017, and modified on March 1, 2019, June 17, 2020, October 22, 2021, January 20, 2022, August 25, 2022, April 26, 2023 still apply except where superseded by this certification.
2. 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.
3. 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]
4. 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]
5. 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 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)]
6. 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)]

7. 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)]
8. The stream channel shall be excavated no deeper than the natural bed material of the stream, to the maximum extent practicable. Efforts must be made to minimize impacts to the stream banks, as well as to vegetation responsible for maintaining the stream bank stability. Any applicable riparian buffer impact for access to stream channel shall be temporary and be revegetated with native riparian species. [15A NCAC 02H.0506(b)(2)]
9. 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]
10. 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)]
11. The dimension, pattern and profile of the stream above and below the crossing shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions. [15A NCAC 02H.0506(b)(2)]
12. 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)].
13. If activities must occur during periods of high biological activity (e.g. sea turtle nesting, fish spawning, or bird nesting), then biological monitoring may be required at the request of other state or federal agencies and coordinated with these activities. All moratoriums on construction activities established by the NC Wildlife Resources Commission (WRC), US Fish and Wildlife Service (USFWS), NC Division of Marine Fisheries (DMF), or National Marine Fisheries Service (NMFS) shall be implemented. Exceptions to this condition require written approval by the resource agency responsible for the given moratorium. Work within a designated trout watershed of North Carolina (as identified by the Wilmington District of the US Army Corps of Engineers), or identified state or federal endangered or threatened species habitat, shall be coordinated with the appropriate WRC, USFWS, NMFS, and/or DMF personnel. [15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 04B .0125]
14. 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)]
15. 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)]
16. 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)]
17. 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)]
18. 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 15A NCAC 02B .0200] 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 and Erosion Control Manual,* or for linear transportation projects, the *NCDOT Sediment and Erosion Control Manual.* All devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) sites, including contractor-owned or leased borrow pits and waste sites 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. 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. If the project occurs in waters or watersheds classified as Primary Nursery Areas (PNAs), SA, WS-I, WS-II, 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 GC 4135]

19. 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)]
20. 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)]
21. 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)]
22. 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)
23. A turbidity curtain will be installed in the stream if driving or drilling activities occur within the stream channel, on the stream bank, or within 5 feet of the top of bank, or during the removal of bents from an old bridge. This condition can be waived with prior approval from the NCDWR. [15A NCAC 02H .0506(b)(3)
24. 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 .0506(b)(3)
25. Where placement of sediment and erosion control devices in wetlands and/or waters is unavoidable, they shall be removed and the natural grade restored upon completion of the project. [15A NCAC 02H.0506(b)(3) and (c)(3)]
26. The post-construction removal of any temporary bridge structures must return the project site to its preconstruction contours and elevations. The impacted areas shall be revegetated with appropriate native species. [15A NCAC 02H .0506(b)(2)]
27. Due to the possibility that compaction and/or other site alterations might prevent the temporary wetland impact area from re-attaining jurisdictional wetland status; the permittee shall provide an update on the wetland areas temporarily impacted. This update shall be conducted two growing seasons after completion of the work and shall consist of photographs and a brief report on the progress of the areas in re-attaining wetland jurisdictional status. Upon submission of this update 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.
28. 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 .0505(b)(2)]
29. Tall fescue shall not be used in the establishment of temporary or permanent groundcover within riparian areas. For the establishment of permanent herbaceous cover, erosion control matting shall be used in conjunction with an appropriate native seed mix on disturbed soils within the riparian area and on disturbed steep slopes with the following exception. Erosion control matting is not necessary if the area is contained by perimeter erosion control devices such as silt fence, temporary sediment ditches, basins, etc. Matting should be secured in place with staples, stakes, or wherever possible, live stakes of native trees. Erosion control matting placed in riparian areas shall not contain a nylon mesh grid, which can impinge and entrap small animals. For the establishment of temporary groundcover within riparian areas, hydroseeding along with wood or cellulose based hydro mulch applied from a fertilizer- and limestone-free tank is allowable at the appropriate rate in conjunction with the erosion control

measures. Discharging hydroseed mixtures and wood or cellulose mulch into surface waters is prohibited. Riparian areas are defined as a distance 25 feet landward from top of stream bank.

30. DWR approves the stormwater drainage design as shown in the 401 application, under the assumption that it meets the requirements of the NCDOT NPDES permit #NCS000250. These plans are enforceable by DWR. Changes to the approved plans are prohibited without prior approval from DWR. If sediment or other pollutants are found to be discharged from the stormwater outfalls, DWR may take enforcement action. NCDOT and DWR shall assess the damage to water quality standards and implement an appropriate action plan to address the impacts. The action plan shall provide an appropriate timeline for implementation as agreed upon by both DWR and NCDOT. This may require NCDOT to obtain a modification to its current 401 and 404 permits.
31. 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)]
32. 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)]
33. 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" to notify the NCDWR when all work included in the 401 Certification has been completed.
34. Compensatory mitigation for impacts to 33.163 acres of non-riparian wetlands is required. The permittee shall comply with the final on-site wetland mitigation plan (all components) dated August 2021 received by DWR on January 19, 2022. All on-site mitigation sites shall be protected in perpetuity by a conservation easement or through NCDOT fee simple acquisition and recorded in the NCDOT Natural Environment Unit mitigation geodatabase.
35. Compensatory mitigation for 731 linear feet of impacts to streams in the Cape Fear River basin is required. DWR understands that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Division of Mitigation Services (DMS), and that DMS has agreed to implement mitigation for the project. DMS has indicated in a letter dated November 14, 2024 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with DMS'S Mitigation Banking Instrument signed July 28, 2010.

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. Please be aware that impacting waters without first applying for and securing the issuance of a 401 Water Quality Certification violates Title 15A of the North Carolina Administrative Code (NCAC) 2H .0500. Title 15A NCAC 2H .0500 requires certifications pursuant to Section 401 of the Clean Water Act whenever construction or operation of facilities will result in a discharge into navigable waters, including wetlands, as described in 33 Code of Federal Regulations (CFR) Part 323. It also states any person desiring issuance of the State certification or coverage under a general certification required by Section 401 of the Federal Water Pollution Control Act shall file with the Director of the North Carolina Division of Water Quality. Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. Pursuant to G.S. 143-215.6A, these violations and any future violations are subject to a civil penalty assessment of up to a maximum of $25,000.00 per day for each violation.

This approval and its conditions are final and binding unless contested [G.S. 143-215.5]. Please be aware that impacting waters without first applying for and securing the issuance of a 401 Water Quality Certification violates Title 15A of the North Carolina Administrative Code (NCAC) 2H .0500. Title 15A NCAC 2H .0500 requires certifications pursuant to Section 401 of the Clean Water Act whenever construction or operation of facilities will result in a discharge into navigable waters, including wetlands, as described in 33 Code of Federal Regulations (CFR) Part 323. It also states any person desiring issuance of the State certification or coverage under a general certification required by Section 401 of the Federal Water Pollution Control Act shall file with the Director of the North Carolina Division of Water Quality. Pursuant to G.S. 143-215.6A, these violations and any future violations are subject to a civil penalty assessment of up to a maximum of $25,000.00 per day for each violation.

This Certification can be contested as provided in Chapter 150B of the North Carolina General Statutes by filing a Petition for a Contested Case Hearing (Petition) with the North Carolina Office of Administrative Hearings (OAH) within sixty (60) calendar days. Requirements for filing a Petition are set forth in Chapter 150B of the North Carolina General Statutes and Title 26 of the North Carolina Administrative Code. Additional information regarding requirements for filing a Petition and Petition forms may be accessed at http://www.ncoah.com/ or by calling the OAH Clerk's Office at (919) 431-3000.

A party filing a Petition must serve a copy of the Petition on:

William F. Lane, General Counsel
Department of Environmental Quality
1601 Mail Service Center
Raleigh, NC 27699-1601

If the party filing the Petition is not the permittee, then the party must also serve the recipient of the Certification in accordance with N.C.G.S 150B-23(a).

This the 11th day of February 2025

DIVISION OF WATER RESOURCES

Signed by:
Susan Locklear
375CAE2BB9F540C...

Richard E. Rogers, Jr., Director

WQC No. 004116

JOSH STEIN
Governor
D. REID WILSON
Secretary
TANCRED MILLER
Director

NORTH CAROLINA
Environmental Quality

February 12, 2025

Mr. Trevor Carroll, P.E.
Division 3 Engineer
N.C. Department of Transportation
5501 Barbados Blvd
Castle Hayne, NC 28429

SUBJECT: **CD 17-018** - Supplemental Consistency Concurrence, SR 1409 (Military Cutoff Road) extension and US 17 Hampstead Bypass in New Hanover and Pender Counties, TIP Nos. U-4751 and R-3300.

Dear Mr. Carroll:

The N.C. Division of Coastal Management (DCM) received a supplemental consistency certification from the N.C. Department of Transportation (NCDOT) dated November 20, 2024 for TIP R-3300A, which is the final segment of the Military Cutoff Road Extension (TIP U-4751) and US 17 Hampstead Bypass (TIP R-3300) project in New Hanover and Pender Counties. TIP R-3300A is proposed as a four-lane divided roadway approximately 6.9 miles in length with full control of access from NC 140 (Wilmington Bypass) in New Hanover County to NC 210 in Pender County.

DCM issued a conditional concurrence (CD-017) on June 16, 2017 for the final design of U-4751 and the preliminary design of R-3300. TIP R-3300 includes an A-Section and a B-Section. DCM issued a Supplemental Consistency Concurrence on June 25, 2020 for the final design of TIP R-3300B.

The November 20, 2024 submittal includes the following: a cover letter; supporting information document; green sheet project commitments; a Memorandum of Agreement (MOA) among the U.S. Army Corps of Engineers, NCDOT, and the N.C. State Historic Preservation Officer; a mitigation proposal to utilize the Beane Mitigation Site to offset all wetland impacts; and a mitigation acceptance letter dated November 14, 2024 from the N.C. Division of Mitigation Services (DMS) to mitigate for 2,844 linear feet of stream impacts.

DCM circulated the supplemental consistency certification to state agencies that would have a regulatory or resource interest in the proposed development. No comments were received asserting that the proposed project would be inconsistent with North Carolina's Coastal Management Program. North Carolina's coastal zone management program consists of, but is not limited to, the Coastal Area Management Act, the State's Dredge and Fill Law, Chapter 7 of Title 15A of North Carolina's Administrative Code, and the land use plan(s) of the county and/or local municipalities in which the proposed project is located. It is the objective of DCM to manage the State's coastal resources to

ensure that proposed Federal activities would be compatible with safeguarding and perpetuating the biological, social, economic and aesthetic values of the State's coastal resources.

DCM has reviewed the submitted information, and the comments received from state agencies, pursuant to the management objectives and enforceable policies of Subchapters 7H and 7M of Chapter 7 in Title 15A of the North Carolina Administrative Code. DCM concurs that the proposed project is consistent, to the maximum extent practicable, with North Carolina's certified coastal management program, with the following conditions:

1. This project shall be implemented in accordance with the Modification of the 401 Water Quality Certification No. WQ004116 which was issued by the N.C. Division of Water Resources (DWR) on February 11, 2025 (NCDWR Project No. 20161268 v.8).

Prior to the initiation of the described activities, NCDOT should obtain any required State approvals or authorizations. Should the proposed action be modified, a revised consistency determination could be necessary. This might take the form of either a supplemental consistency certification pursuant to 15 CFR 930.46, or a new consistency certification pursuant to 15 CFR 930.36. Likewise, if further project assessments reveal environmental effects not previously considered by the proposed development, a supplemental consistency certification may be required.

If you have any questions or concerns, please contact DCM Transportation Project Coordinator Cathy Brittingham by phone at (919) 707-9149 or via e-mail at cathy.brittingham@deq.nc.gov. Thank you for your consideration of the North Carolina Coastal Management Program.

Sincerely,

Cameron Luck

Cameron Luck
Federal Consistency Coordinator
N.C. Division of Coastal Management

cc: Mason Herndon, NCDOT
Jon Giles, NCDOT
Tom Steffens, USACE
Holley Snider, DWR
Beth Harmon, DMS
Travis Wilson, WRC
Gregg Bodnar, DCM
Tara MacPherson, DCM
Stephen Lane, DCM

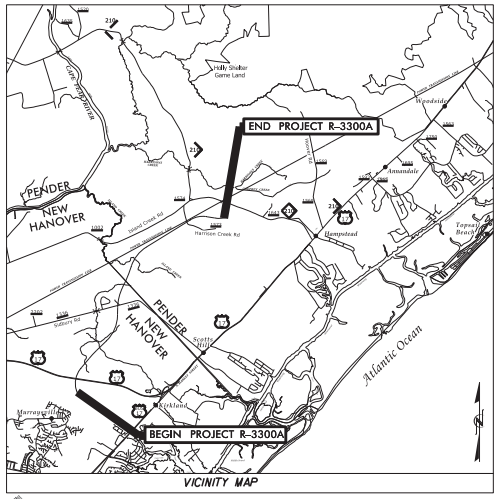
09/28/99

11/20/2024

CONTRACT:

TIP PROJECT: R-3300A

See Sheet 1A For Index of Sheets See Sheet 1B for Conventional Symbols



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NEW HANOVER & PENDER COUNTIES

PERMIT DRAWING
SHEET 1 OF 120

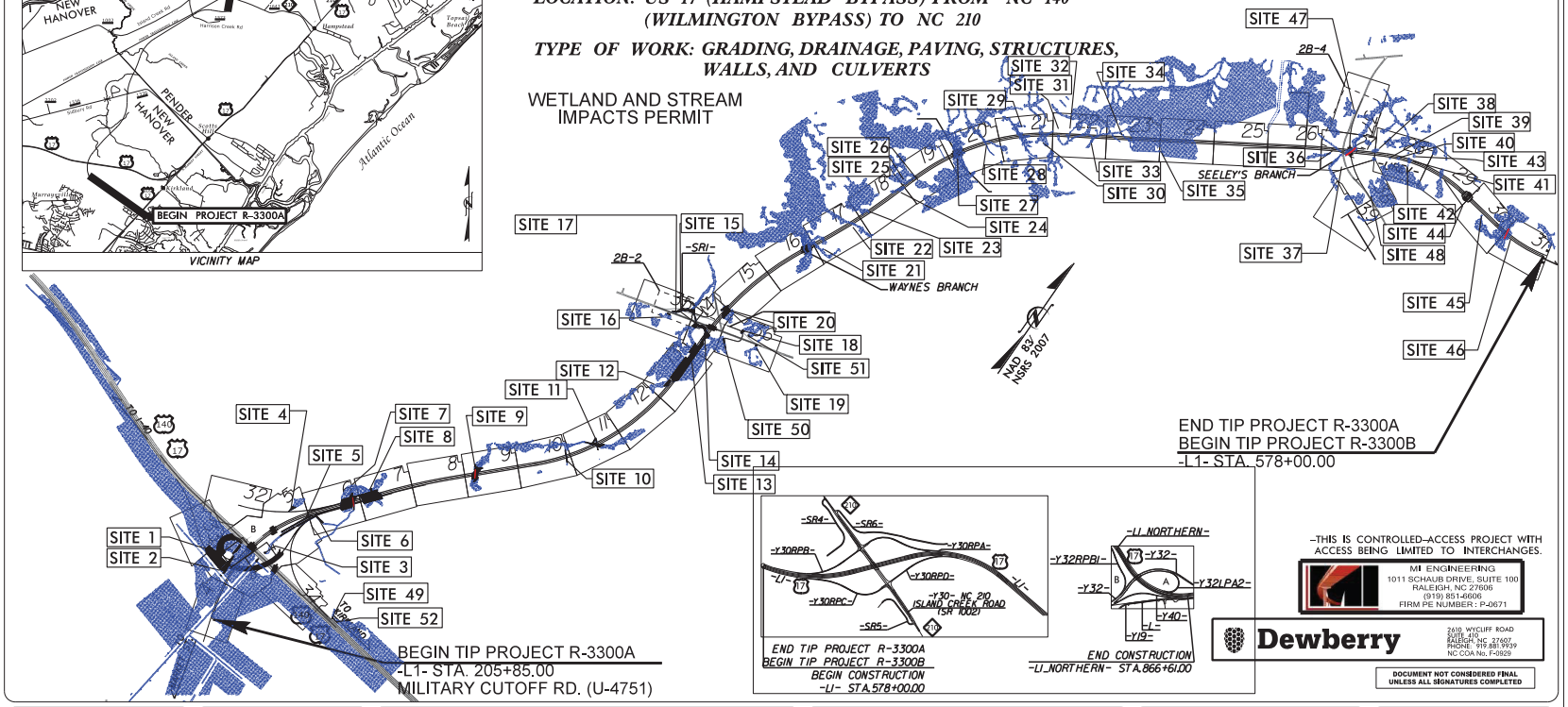
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3300A	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
40237.1.3	N/A	PE
40237.2.4	N/A	R/W
40237.2.6	N/A	UTILITIES
40237.3.2	N/A	CONST

LOCATION: US 17 (HAMPSTEAD BYPASS) FROM NC 140 (WILMINGTON BYPASS) TO NC 210

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, WALLS, AND CULVERTS

WETLAND AND STREAM IMPACTS PERMIT



BEGIN TIP PROJECT R-3300A
-L1- STA. 205+85.00
MILITARY CUTOFF RD. (U-4751)

END TIP PROJECT R-3300A
BEGIN TIP PROJECT R-3300B
-L1- STA. 578+00.00

-THIS IS CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0671

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS 50 0 50 100
PROFILE (HORIZONTAL) 50 0 50 100
PROFILE (VERTICAL) 10 0 10 20

DESIGN DATA

ADT 2016 = N/A
ADT 2040 = 54,800
K = 8 %
D = 60 %
T = 6 % *
V = 70 MPH
*(TTST 2% + DUALS 4%)
FUNC CLASS = FREEWAY
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-3300A = 6.892 MILES
LENGTH STRUCTURE TIP PROJECT R-3300A = 0.152 MILES
(NORTHBOUND LANES STATIONS USED)
TOTAL LENGTH TIP PROJECT R-3300A = 7.044 MILES

PREPARED IN THE OFFICE OF:
STANTEC CONSULTING
801 Jones Franklin Road | Suite 300 | Raleigh, NC 27606
Tel. (919) 851-6866 | Fax. (919) 851-7024 | www.stantec.com
License No. P-0672

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: APRIL 1, 2019

LETTING DATE: JULY 25, 2025

KATRINA N. HAZEL, P.E.
PROJECT DESIGN ENGINEER

TRACE HOWELL, P.E.
NCDOT DIVISION 3 CONTACT

HYDRAULICS ENGINEERS

SIGNATURES: P.E. P.E.

ROADWAY DESIGN ENGINEER

SEAL 034404

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

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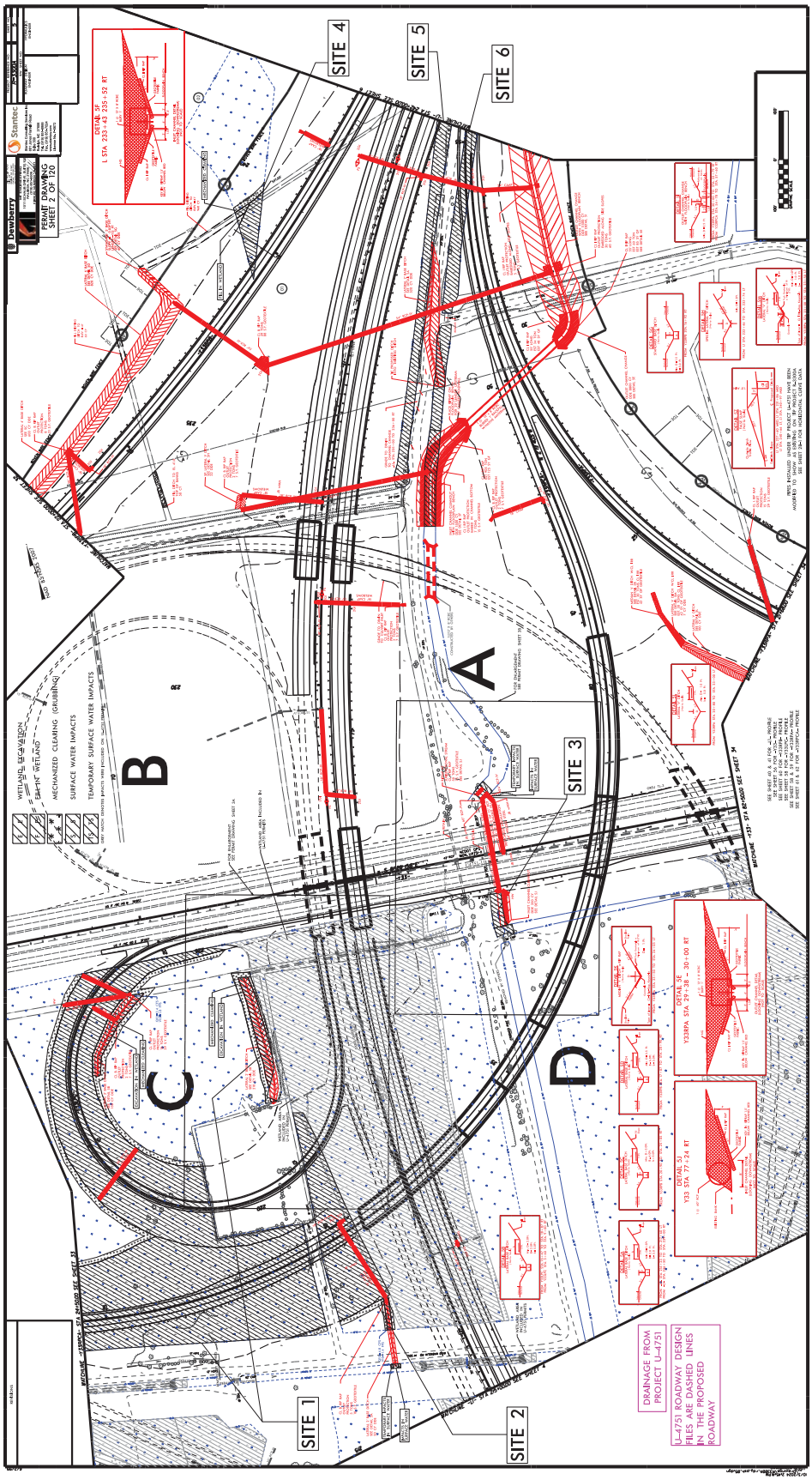
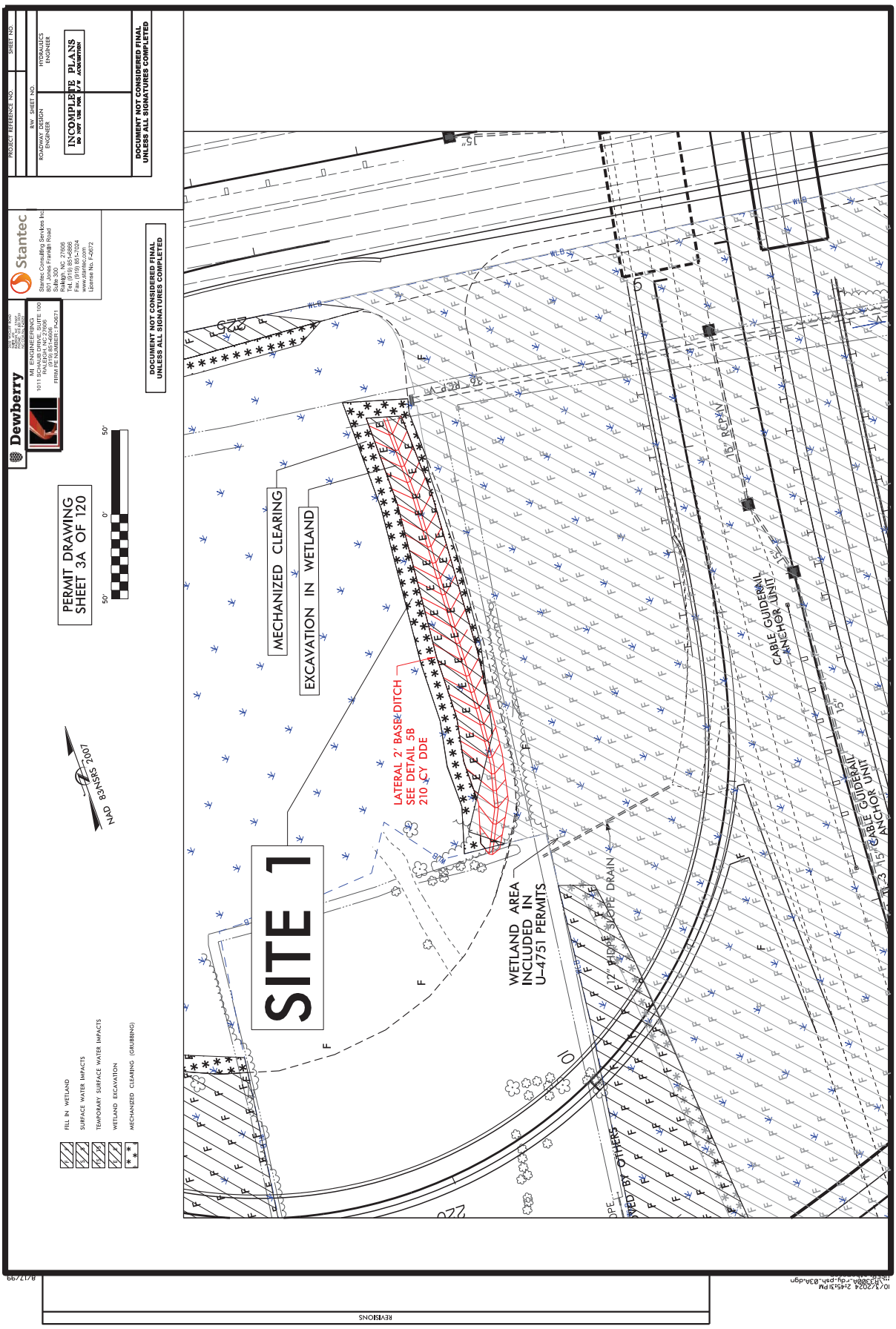
USER: athompson

P-29

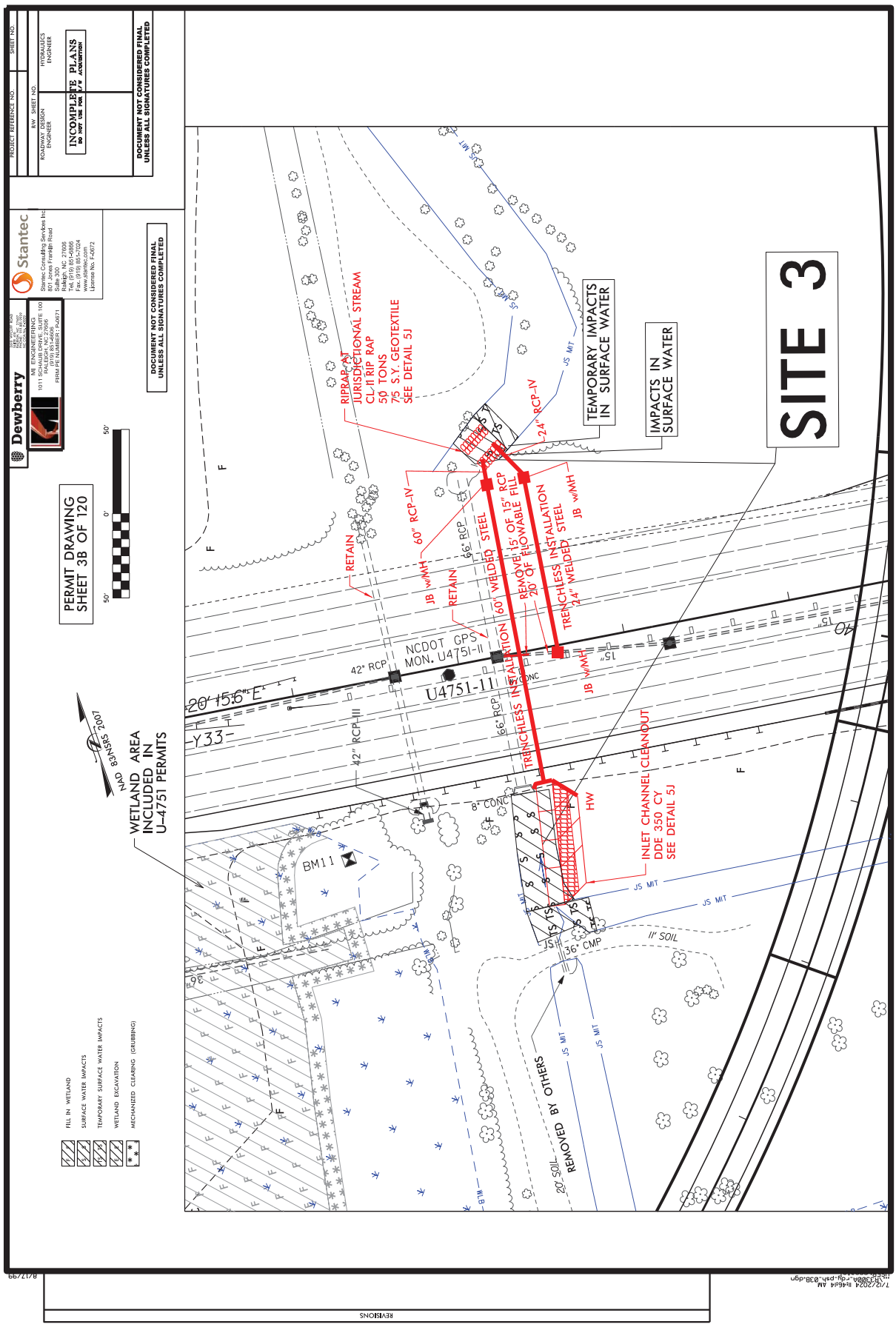

SITE 1
SITE 2
SITE 3
SITE 4
SITE 5
SITE 6
A
B
C
D
DRAINAGE FROM PROJECT U-4751
U-4751 ROADWAY DESIGN FILES ARE DASHED LINES IN THE PROPOSED ROADWAY

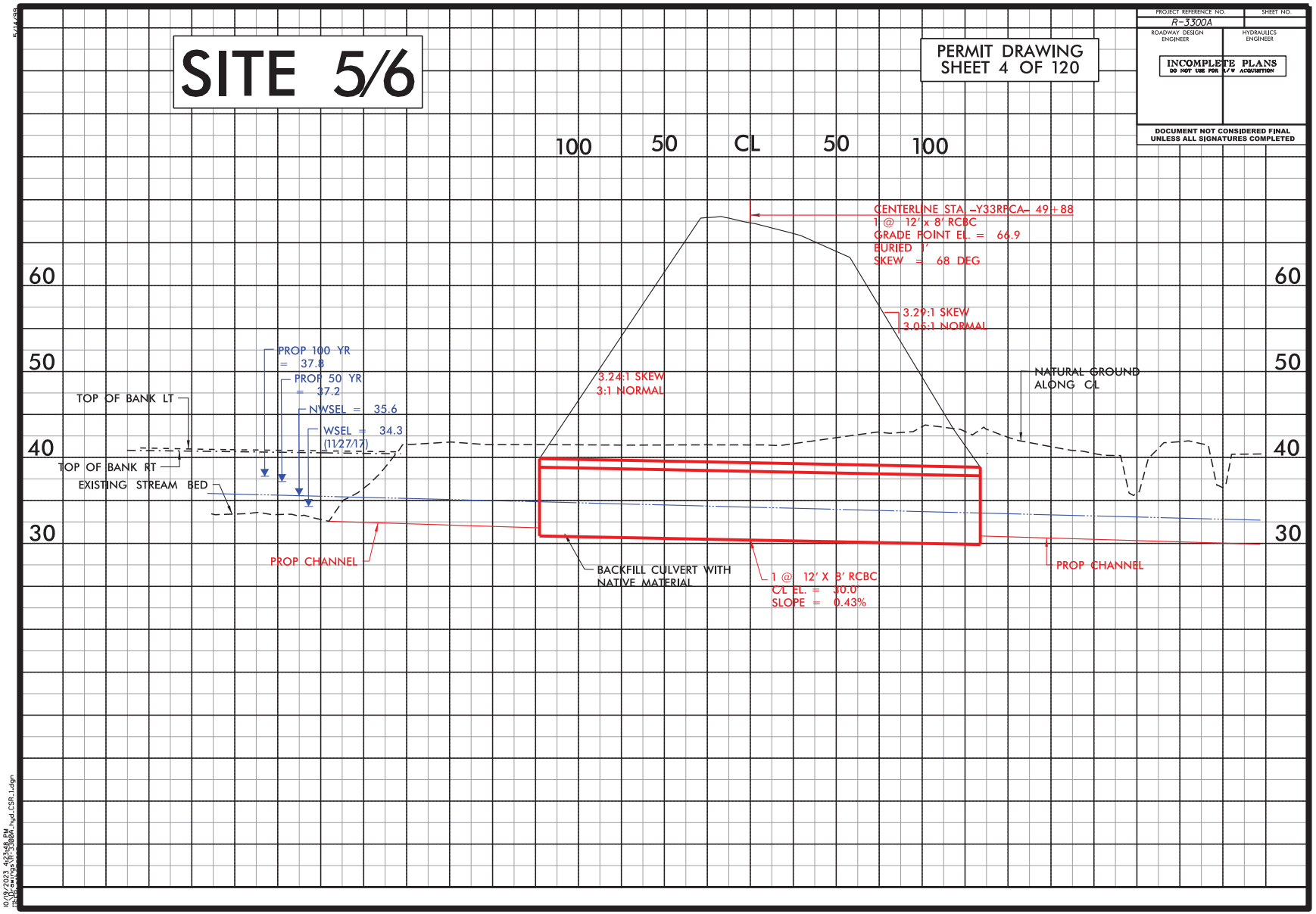
SITE 1
SITE 2
SITE 3
SITE 4
SITE 5
SITE 6
A
B
C
D
WETLAND RESTORATION
MECHANIZED CLEARING (GRUBBING)
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
PERMIT DRAWING SHEET 3 OF 10

11/20/2024


SITE 1
MECHANIZED CLEARING
EXCAVATION IN WETLAND
LATERAL 2' BASE DITCH
SEE DETAIL 5B
210 CY DDE
WETLAND AREA
INCLUDED IN
U-4751 PERMITS
12" PIPE SLOPE DRAIN
CABLE GUIDERAIL
ANCHOR UNIT
15" RCP
PERMIT DRAWING
SHEET 3A OF 120
NAD 83/NSRS 2007
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
WETLAND EXCAVATION
MECHANIZED CLEARING (GRUBBING)
Dewberry
Stantec
INCOMPLETE PLANS
DO NOT USE FOR BID OR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
R/W SHEET NO.
HYDRAULICS ENGINEER
REVISIONS

11/20/2024


SITE 3
PERMIT DRAWING
SHEET 3B OF 120
WETLAND AREA
INCLUDED IN
U-4751 PERMITS
NAD 83/NSRS 2007
TEMPORARY IMPACTS
IN SURFACE WATER
IMPACTS IN
SURFACE WATER
RIPRAP AT
JURISDICTIONAL STREAM
CL II RIP RAP
50 TONS
75 S.Y. GEOTEXTILE
SEE DETAIL 5J
24" RCP-IV
60" RCP-IV
66" RCP
STEEL
60" WELDED
TRENCHLESS INSTALLATION
REMOVE 15' OF 15" RCP
20' OF FLOWABLE FILL
24" WELDED
JB w/MH
RETAIN
NCDOT GPS
MON. U4751-II
U4751-11
42" RCP
42" RCP-III
8" CONC
HW
INLET CHANNEL CLEANOUT
DDE 350 CY
SEE DETAIL 5J
36" CMP
11' SOIL
20' SOIL
REMOVED BY OTHERS
BM11
JS MIT
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
WETLAND EXCAVATION
MECHANIZED CLEARING (GRUBBING)
Dewberry
Stantec
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION



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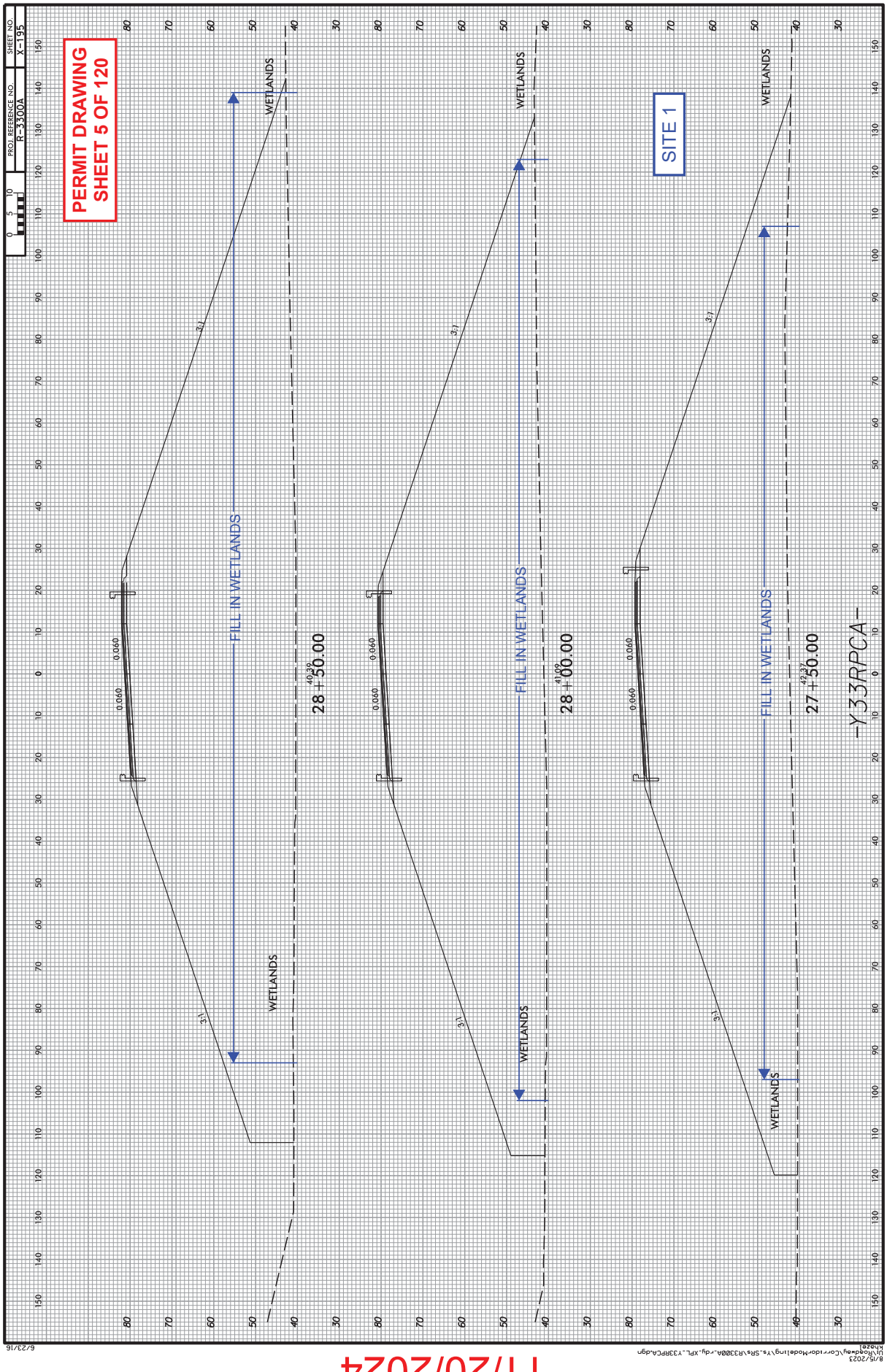
P-34


PERMIT DRAWING
SHEET 5 OF 120
PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-195
SITE 1
WETLANDS
FILL IN WETLANDS
28+30.00
28+00.00
27+50.00
3:1
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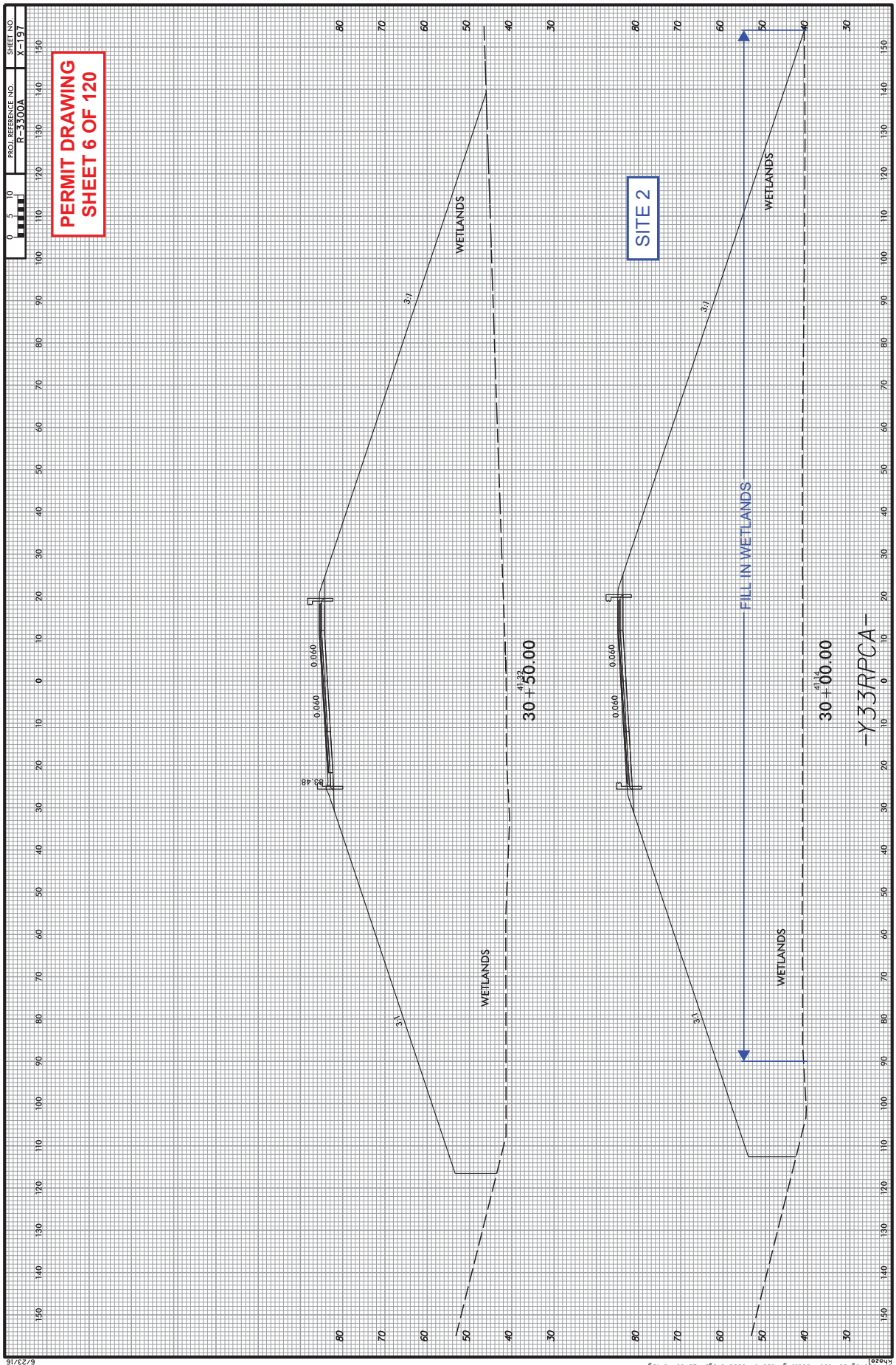
-Y33RPCA-

11/20/2024


PERMIT DRAWING
SHEET 6 OF 120
SHEET NO.
X-197
PROJ. REFERENCE NO.
R-3300A
0 5 10
SITE 2
WETLANDS
WETLANDS
WETLANDS
WETLANDS
FILL IN WETLANDS
30+50.00
30+00.00
-Y33RPCA-
3:1
3:1
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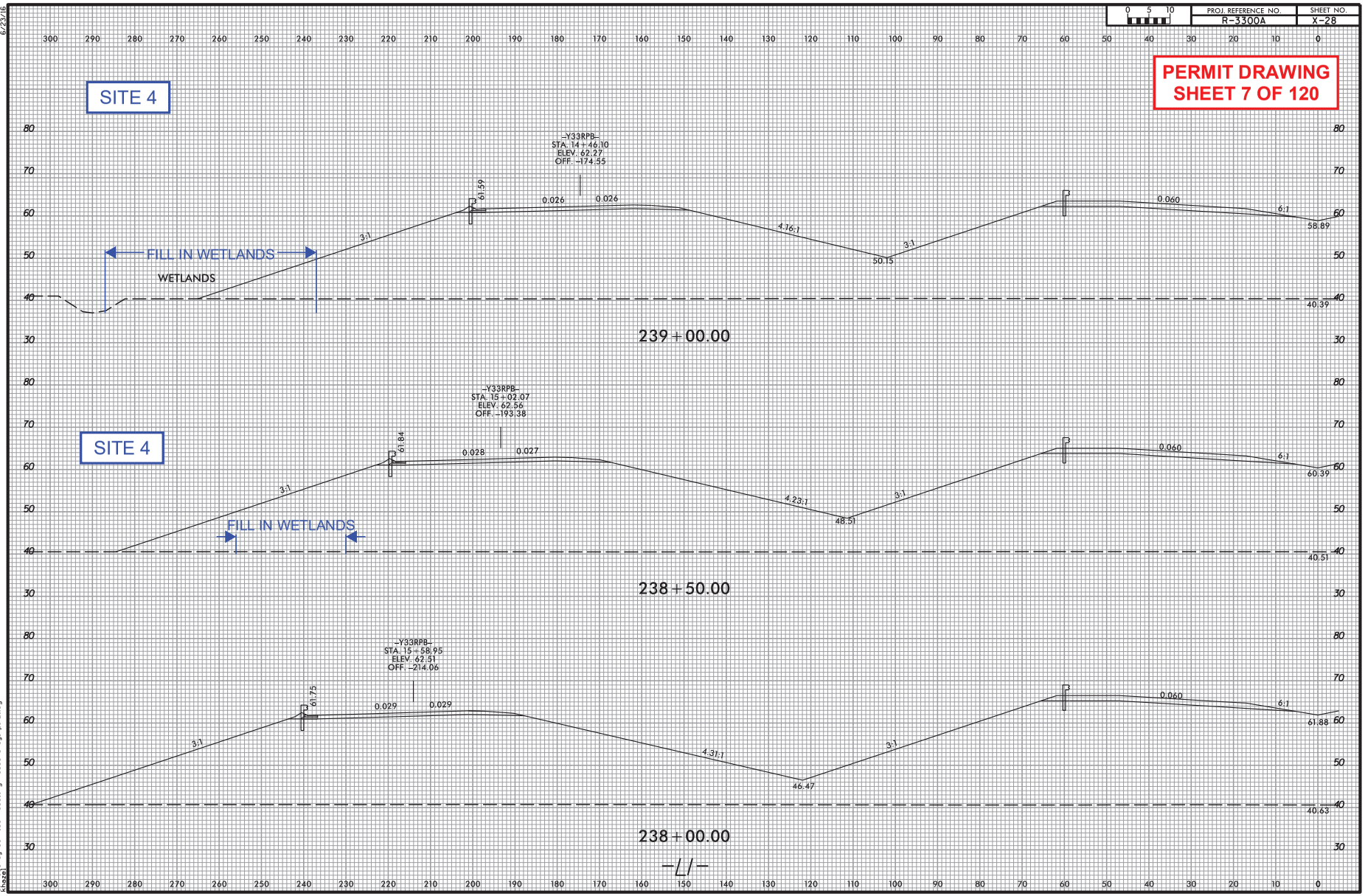
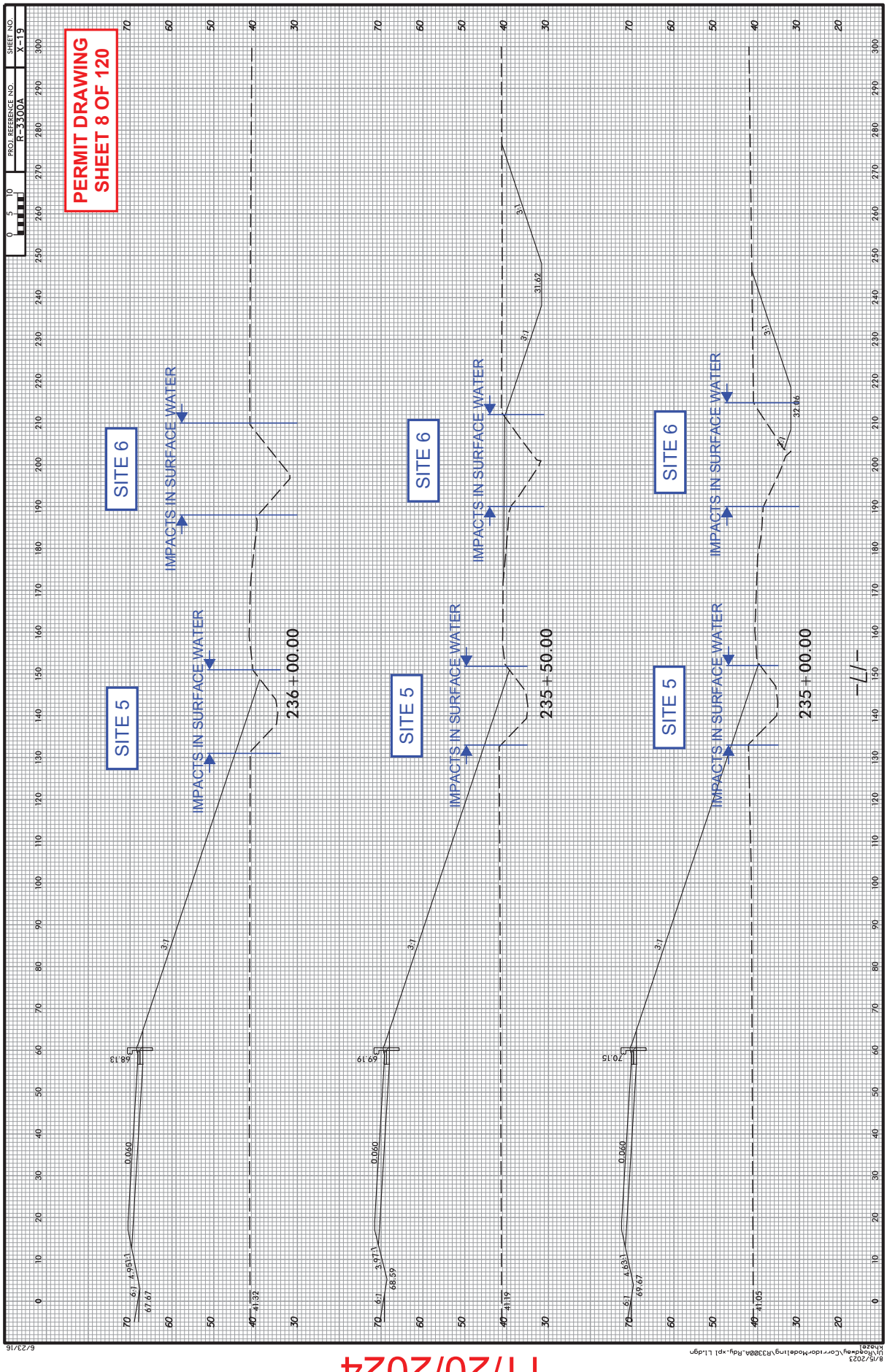
8/15/2023
6/23/16

11/20/2024

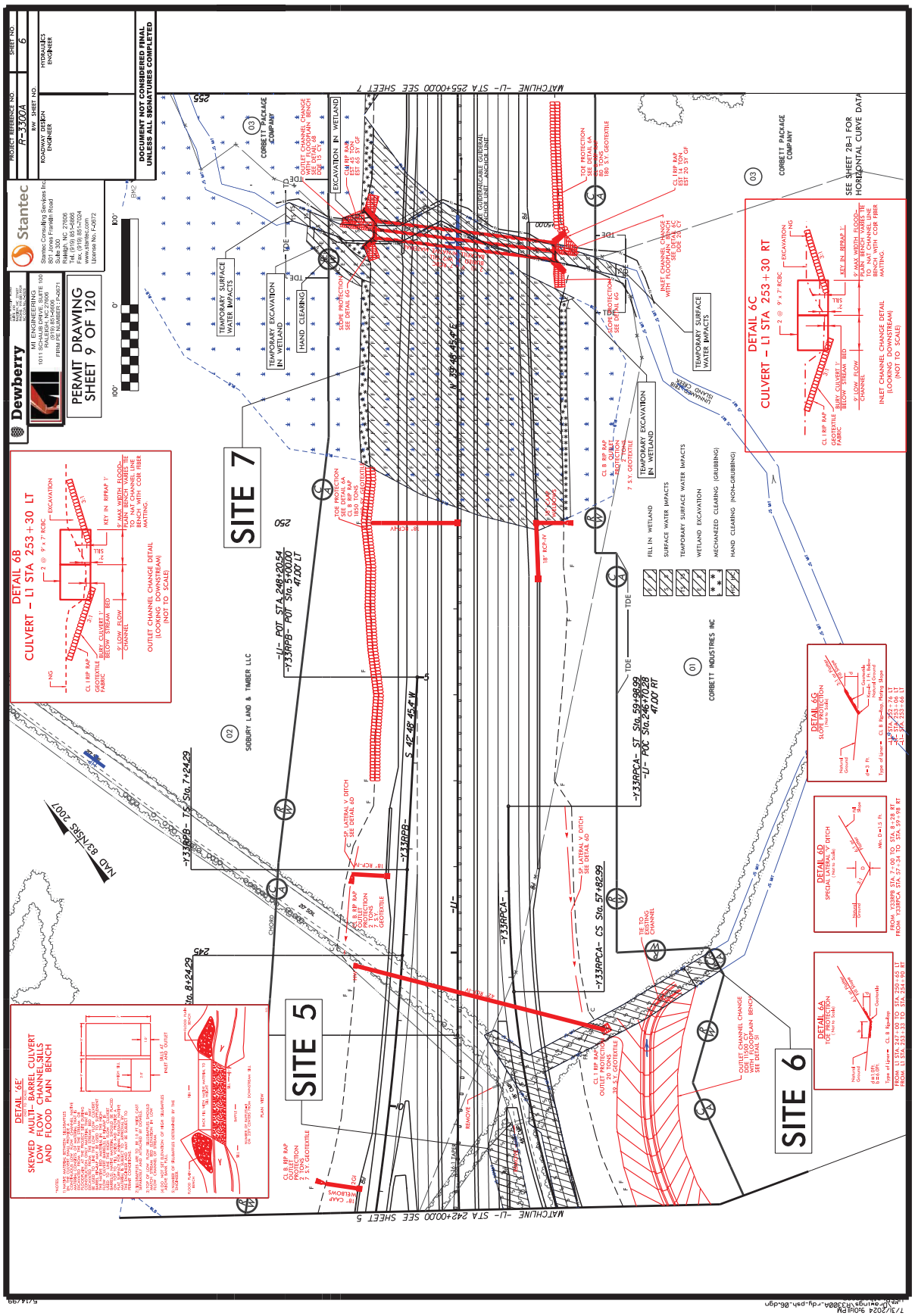


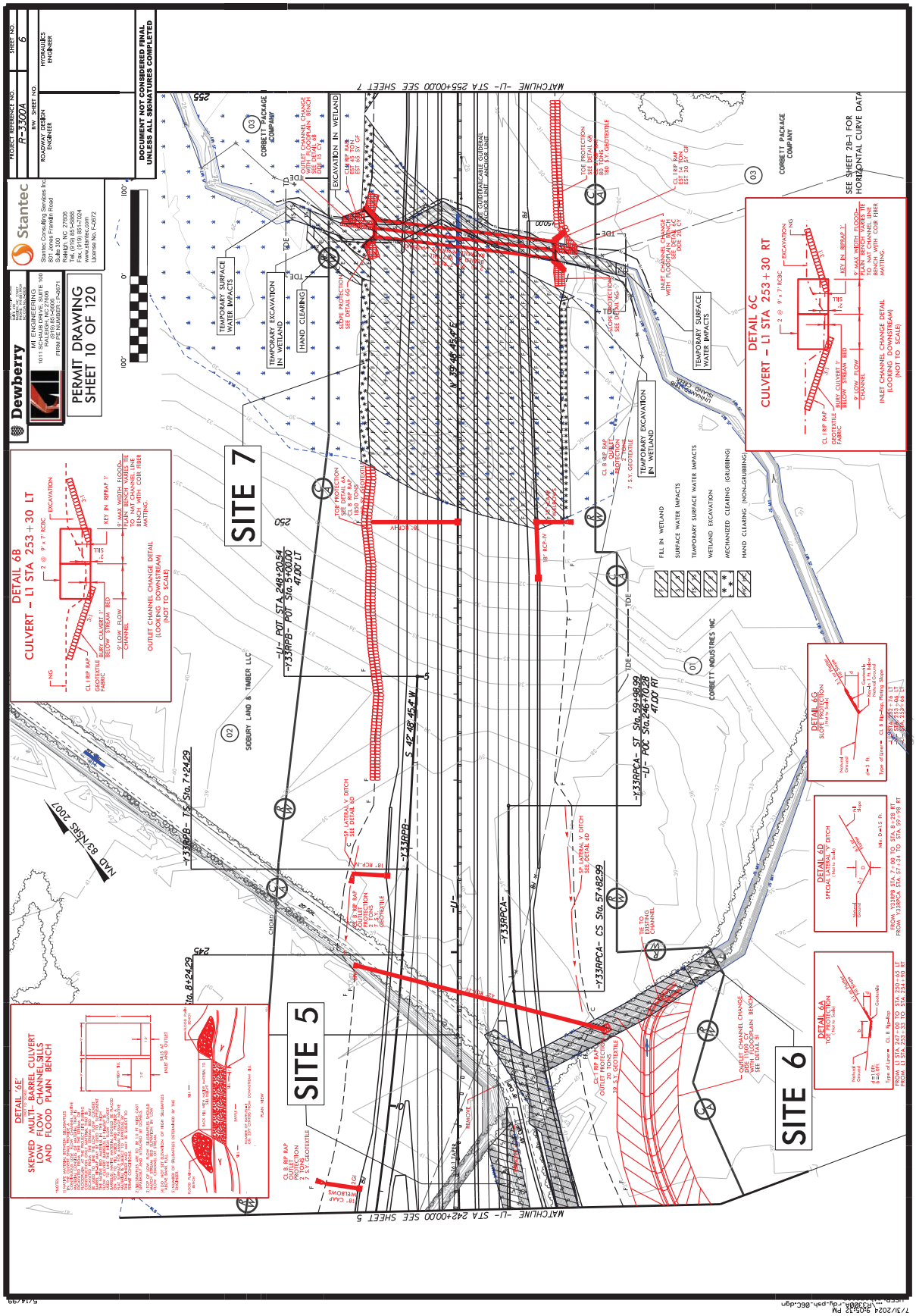
11/20/2024

P-37

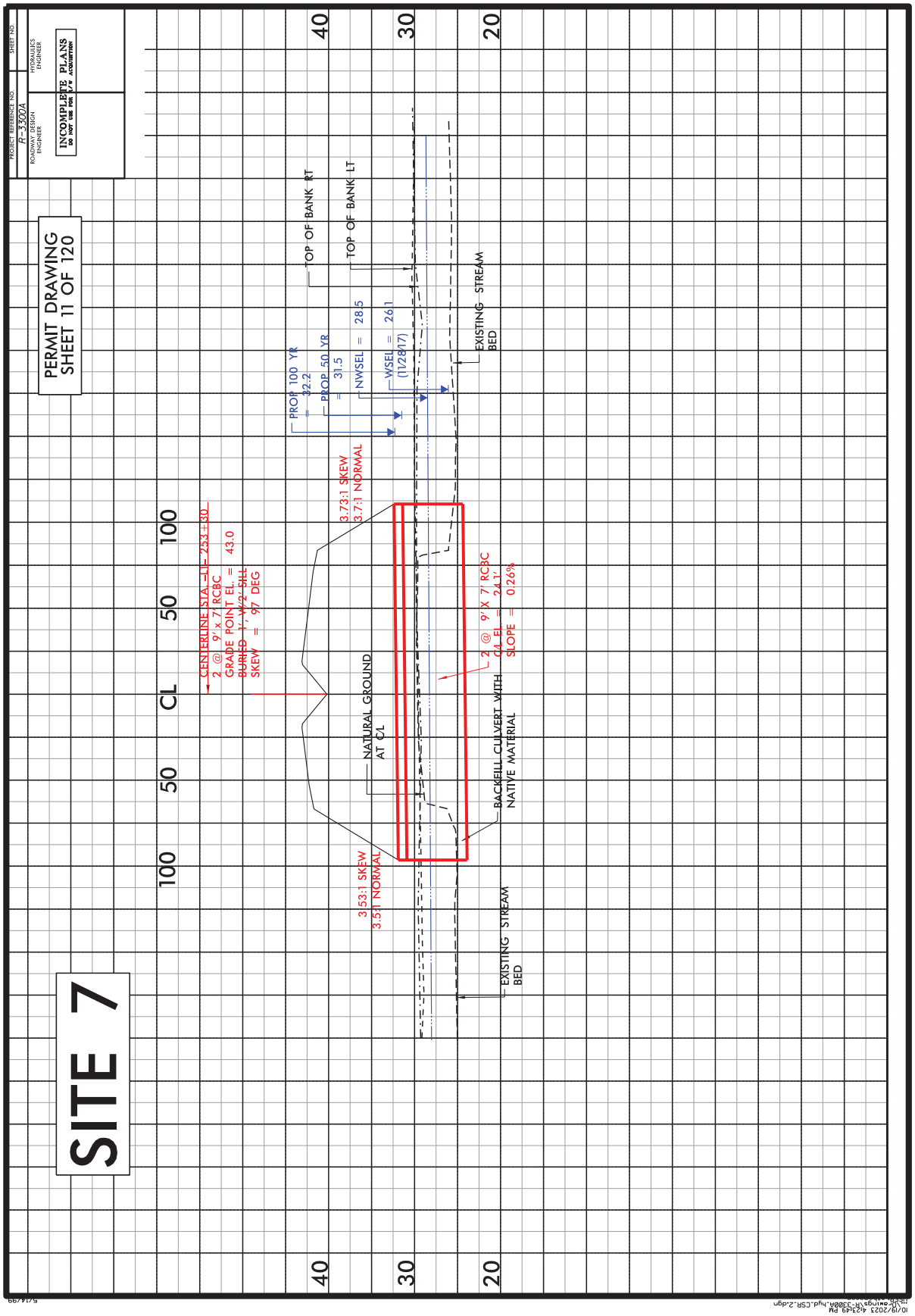

PERMIT DRAWING
SHEET 8 OF 120
SHEET NO. X-19
PROJ. REFERENCE NO. R-3300A
SITE 5
SITE 6
IMPACTS IN SURFACE WATER
236+00.00
235+50.00
235+00.00
-17-

11/20/2024

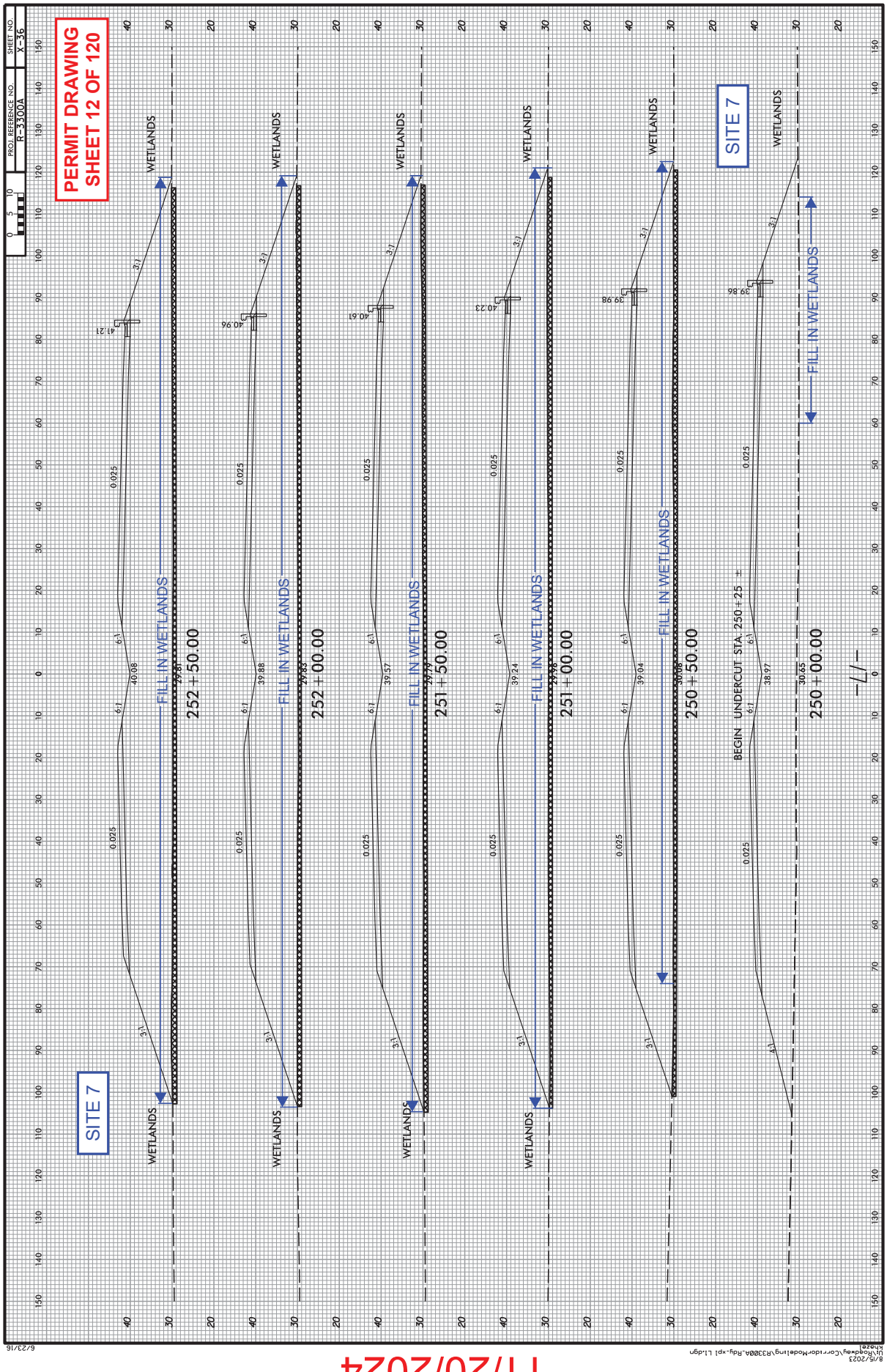

Dewberry
Stantec
PERMIT DRAWING
SHEET 9 OF 120
PROJECT REFERENCE NO. A-3300A
SHEET NO 6
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SITE 5
SITE 6
SITE 7
DETAIL 6B
CULVERT – L1 STA 253+30 LT
DETAIL 6C
CULVERT – L1 STA 253+30 RT
DETAIL 6E
SKEWED MULTI-BARREL CULVERT FLOW CHANNELS AND FLOOD PLAIN BENCH
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA
SOBURY LAND & TIMBER LLC
CORBETT INDUSTRIES INC
CORBETT PACKAGE COMPANY
-L1- POT STA 248+20.54
-Y33RPB- POT Sta. 5+00.00
4700' LT
-L1- POC Sta. 46+20.28
-Y33RPCA- ST Sta. 52+99.99
4700' RT
-Y33RPCA- CS Sta. 57+82.99
-Y33RPB- TS Sta. 7+24.29
-Y33RPB- S 42° 48' 45.4" W
N 35° 48' 45.4" E
MATCHLINE -L1- STA 255+00.00 SEE SHEET 7
MATCHLINE -L1- STA 242+00.00 SEE SHEET 5
NAD 83/NSRS 2007
11/20/2024


PERMIT DRAWING
SHEET 10 OF 120
Dewberry
Stantec
PROJECT REFERENCE NO. A-3300A
SHEET NO 6
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SITE 5
SITE 6
SITE 7
DETAIL 6B
CULVERT – L1 STA 253+30 LT
DETAIL 6C
CULVERT – L1 STA 253+30 RT
DETAIL 6E
SKEWED MULTI BARREL CULVERT WITH CHANNEL SILLS AND FLOOD PLAIN BENCH
SOBURY LAND & TIMBER LLC
CORBETT INDUSTRIES INC
CORBETT PACKAGE COMPANY
TEMPORARY EXCAVATION IN WETLAND
TEMPORARY SURFACE WATER IMPACTS
HAND CLEARING
EXCAVATION IN WETLAND
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
WETLAND EXCAVATION
MECHANIZED CLEARING (GRUBBING)
HAND CLEARING (NON-GRUBBING)
-L1- POT STA 248+20.54
-Y33RPB- POT Sta. 5+00.00
47.00' LT
-L1- POC Sta. 239+66.11
47.00' RT
-Y33RPCA- ST Sta. 59+99.99
-L1- POC Sta. 239+66.11
47.00' RT
-Y33RPB- TS Sta. 7+24.29
-Y33RPB-
-Y33RPCA-
-Y33RPCA- CS Sta. 57+82.99
-L1-
-Y33RPB- S 42° 48' 45.4" W
N 35° 48' 45" E
MATCHLINE -L1- STA 255+00.00 SEE SHEET 7
MATCHLINE -L1- STA 242+00.00 SEE SHEET 5
NAD 83/NSRS 2007
SEE SHEET 28-1 FOR HORIZONTAL CURVE DATA

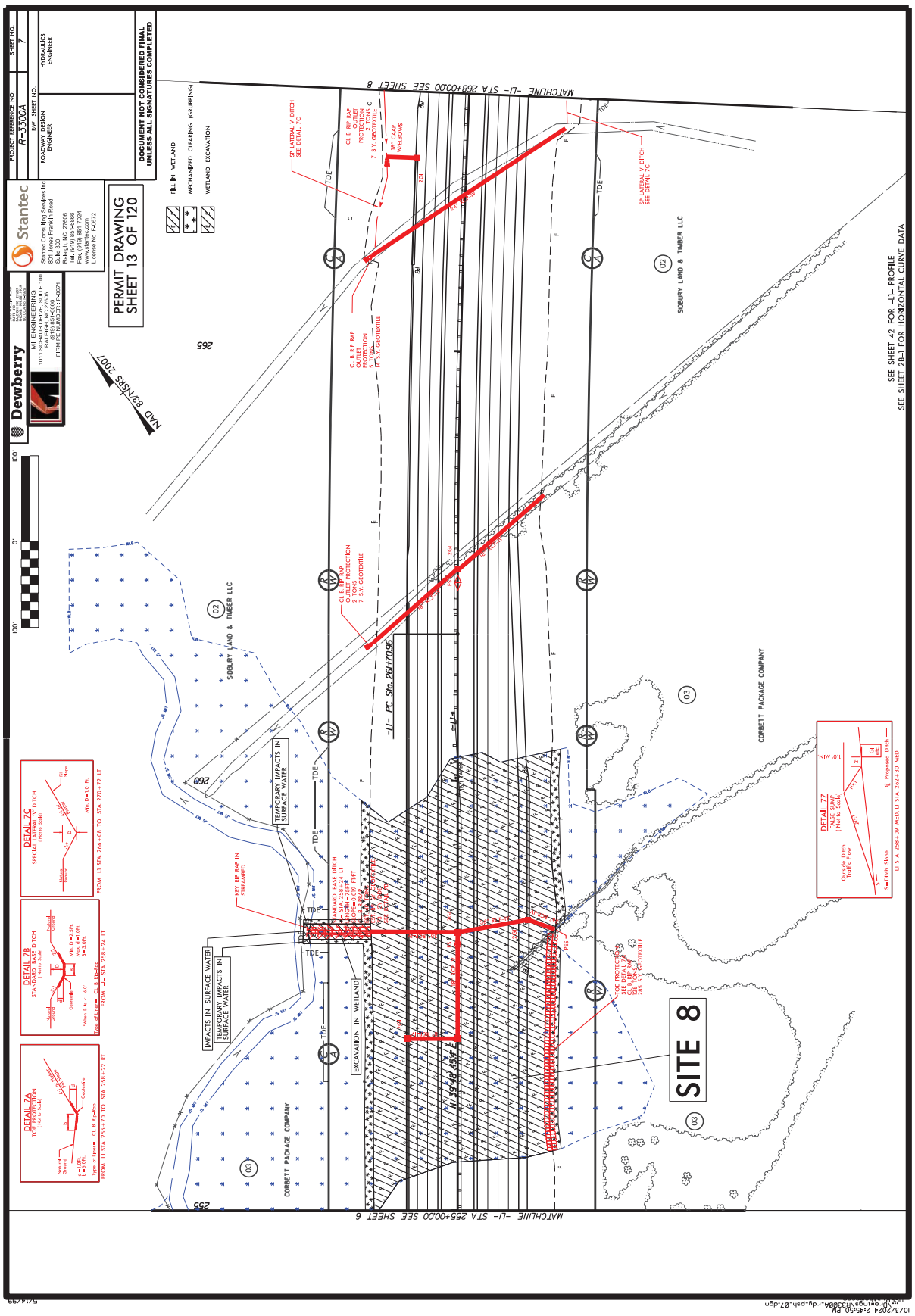
11/20/2024

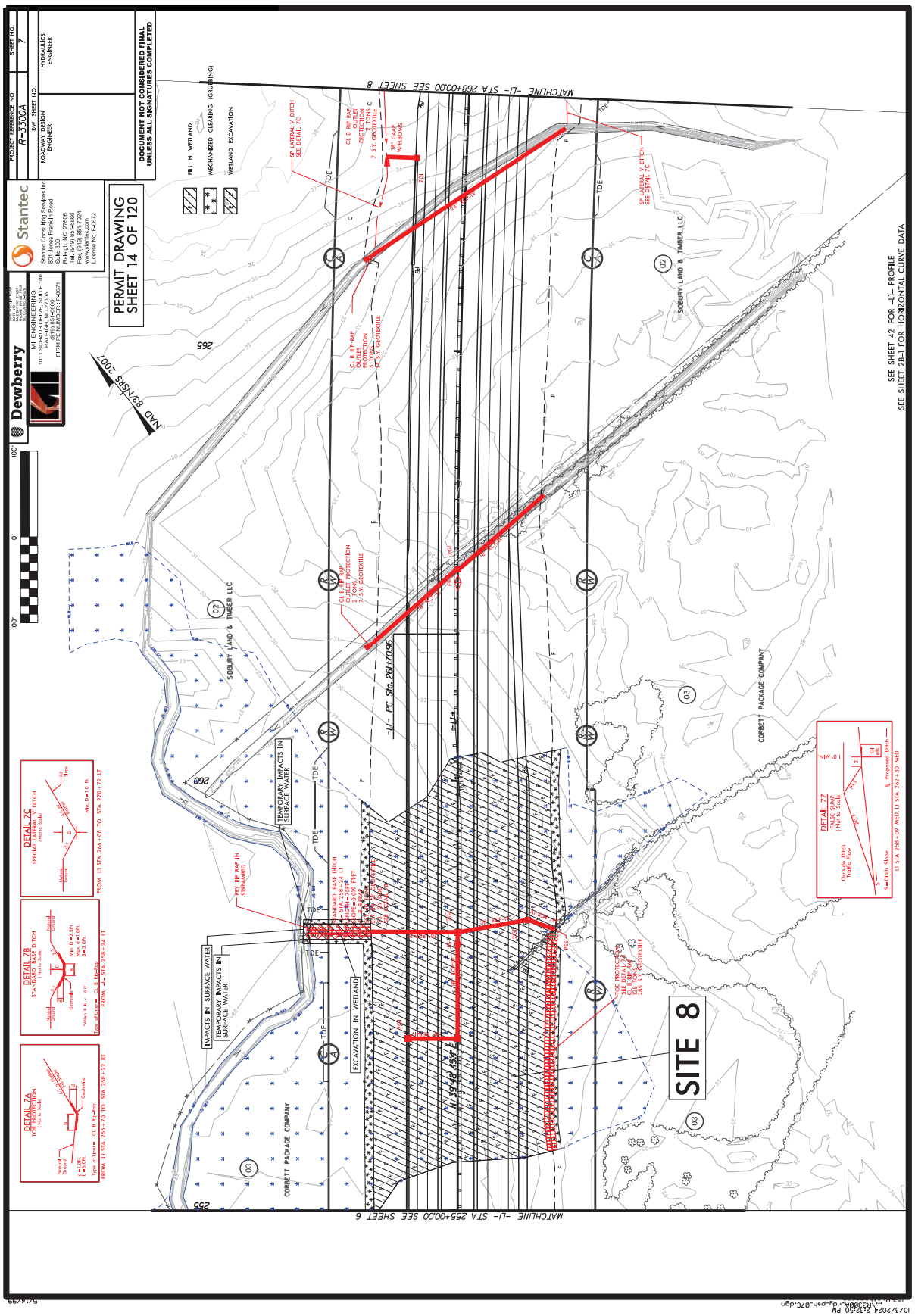

SITE 7
PERMIT DRAWING
SHEET 11 OF 120
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
PROJECT REFERENCE NO.
A-3300A
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CENTERLINE STA. -L1- 253+30
2 @ 9'x 7' RCBC
GRADE POINT EL. = 43.0
BURIED 1', W/2-BHL
SKEW = 97 DEG
PROP 100 YR = 32.2
PROP 50 YR = 31.5
NWSEL = 28.5
WSEL = 26.1 (1/2017)
TOP OF BANK RT
TOP OF BANK LT
EXISTING STREAM BED
3.73:1 SKEW
3.7:1 NORMAL
NATURAL GROUND AT ℄L
2 @ 9'X 7' RCBC
℄L EL. = 24.1'
SLOPE = 0.26%
BACKFILL CULVERT WITH NATIVE MATERIAL
3.53:1 SKEW
3.51 NORMAL
EXISTING STREAM BED
100
50
CL
50
100
40
30
20
10/19/2023 4:23:49 PM
...\A-3300A_Hyd_CSR_2.dgn

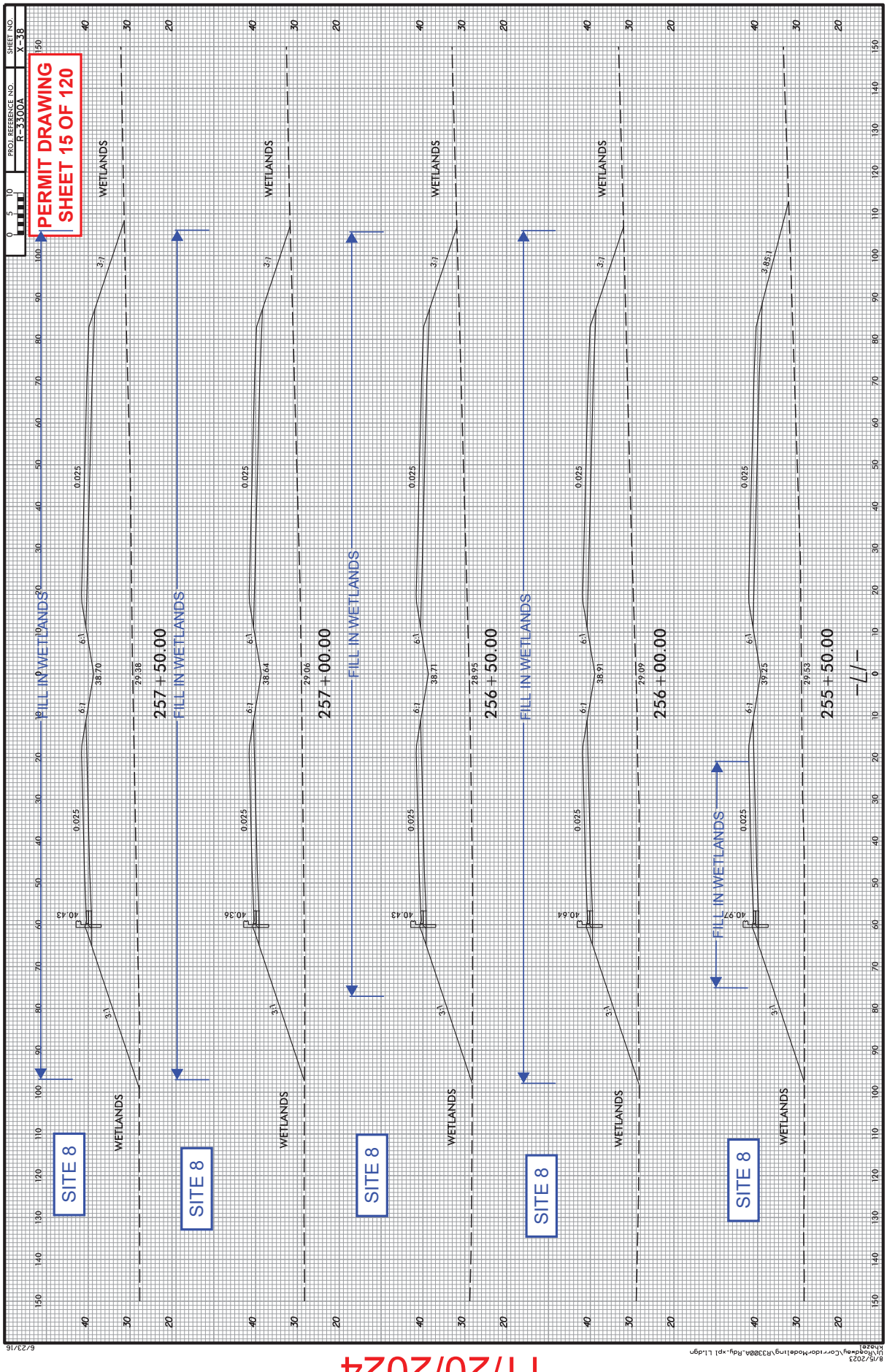
11/20/2024


PERMIT DRAWING
SHEET 12 OF 120
PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-36
SITE 7
WETLANDS
FILL IN WETLANDS
252+50.00
252+00.00
251+50.00
251+00.00
250+50.00
250+00.00
BEGIN UNDERCUT STA. 250+25 ±
SITE 7
-17-

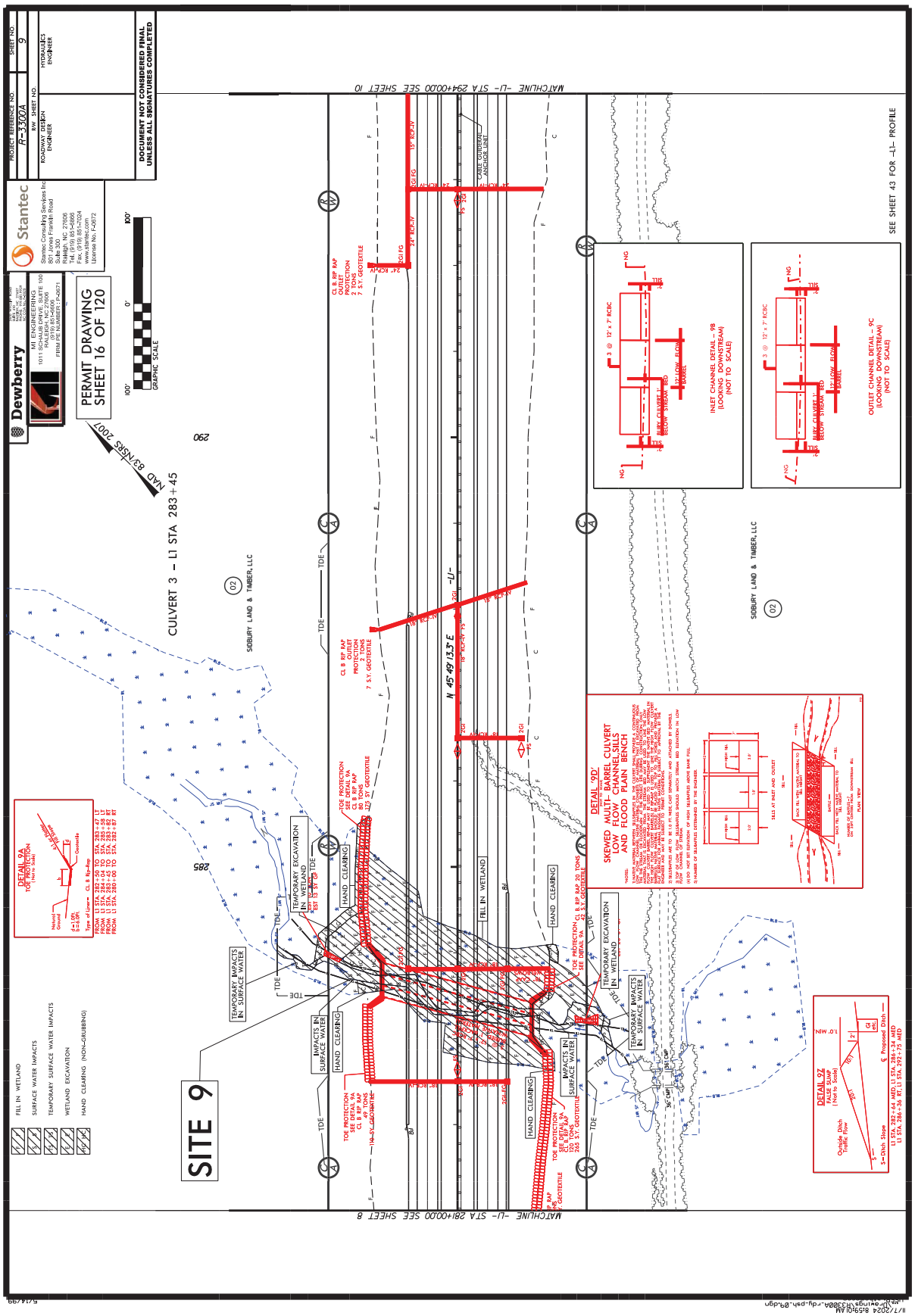
11/20/2024


PERMIT DRAWING
SHEET 13 OF 120
SITE 8
-L1- PC Sta 261+70.96
-L1- PT Sta 262+39.96
MATCHLINE -L1- STA 268+00.00 SEE SHEET 8
MATCHLINE -L1- STA 255+00.00 SEE SHEET 6
SEE SHEET 42 FOR -L1- PROFILE
SEE SHEET 28-1 FOR HORIZONTAL CURVE DATA
SUBURY LAND & TIMBER LLC
CORBETT PACKAGE COMPANY
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PROJECT REFERENCE NO. R-3300A
SHEET NO. 7
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Dewberry
MJ ENGINEERING
Stantec
DETAIL 7A
TOE PROTECTION
DETAIL 7B
STANDARD BASE DITCH
DETAIL 7C
SPECIAL LATERAL V DITCH
DETAIL 7Z
FALSE SUMP
IMPACTS IN SURFACE WATER
TEMPORARY IMPACTS IN SURFACE WATER
EXCAVATION IN WETLAND
KEY RIP RAP IN STREAMBED
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
WETLAND EXCAVATION
NAD 83/NSRS 2007


PROJECT REFERENCE NO. R-3300A
SHEET NO. 7
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Stantec
Stantec Consulting Services Inc.
801 Corporate Center Drive
Suite 300
Raleigh, NC 27607
Tel. (919) 851-6666
Fax. (919) 851-7024
www.stantec.com
License No. F-0272
Dewberry
MJ ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
FIRM PE NUMBER: P-0671
PERMIT DRAWING
SHEET 14 OF 120
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
WETLAND EXCAVATION
MATCHLINE -L1- STA 268+00.00 SEE SHEET 8
MATCHLINE -L1- STA 255+00.00 SEE SHEET 6
SEE SHEET 42 FOR -L1- PROFILE
SEE SHEET 28-L1 FOR HORIZONTAL CURVE DATA
SITE 8
SUDBURY LAND & TIMBER LLC
CORBETT PACKAGE COMPANY
-L1- PC Sta. 261+70.96
-L1- PT Sta. 263+39.61
SP LATERAL V DITCH SEE DETAIL 7C
CL B RIP RAP OUTLET PROTECTION 2 TONS, 7 S.Y. GEOTEXTILE
NP CAAP W/HEADING
TEMPORARY IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
EXCAVATION IN WETLAND
KEY RIP RAP IN STREAMBED
STANDARD BASE DITCH -SPL- 258+24 LT CORE=±0.019 FT/FT
TOE PROTECTION CL B RIP RAP 285 S.Y. GEOTEXTILE
DETAIL 7A TOE PROTECTION (Not to Scale)
DETAIL 7B STANDARD BASE DITCH (Not to Scale)
DETAIL 7C SPECIAL LATERAL V DITCH (Not to Scale)
DETAIL 7Z FALSE SUMP (Not to Scale)
NAD 83/NSRS 2007
0' 100'
100'


PERMIT DRAWING
SHEET 15 OF 120
PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-38
WETLANDS
FILL IN WETLANDS
SITE 8
257+50.00
257+00.00
256+50.00
256+00.00
255+50.00
-17-

11/20/2024


SITE 9
CULVERT 3 – L1 STA 283+45
N 45° 49' 13.3" E
SODBURY LAND & TIMBER, LLC
MATCHLINE -L1- STA 294+00.00 SEE SHEET 10
MATCHLINE -L1- STA 281+00.00 SEE SHEET 8
SEE SHEET 43 FOR -L1- PROFILE
PERMIT DRAWING
SHEET 16 OF 120
NAD 83/NSRS 2007
GRAPHIC SCALE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Dewberry
Stantec
PROJECT REFERENCE NO. A-3300A
SHEET NO 9
ROADWAY DESIGNER EVERETTE
HYDRAULICS ENGINEER
RW SHEET NO
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
WETLAND EXCAVATION
HAND CLEARING (NON-GRUBBING)
DETAIL 9A TOE PROTECTION
DETAIL '9D' SKEWED MULTI- BARREL CULVERT LOW FLOW CHANNELSILLS AND FLOOD PLAIN BENCH
INLET CHANNEL DETAIL – 9B (LOOKING DOWNSTREAM) (NOT TO SCALE)
OUTLET CHANNEL DETAIL – 9C (LOOKING DOWNSTREAM) (NOT TO SCALE)
DETAIL 9Z FALSE SUMP (Valley Gutter)
TEMPORARY IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
TEMPORARY EXCAVATION IN WETLAND
HAND CLEARING
FILL IN WETLAND
TOE PROTECTION SEE DETAIL 9A CL B RIP RAP 49 TONS 14 SY GEOTEXTILE
CL B RIP RAP OUTLET PROTECTION 2 TONS 7 SY GEOTEXTILE
TOE PROTECTION SEE DETAIL 9A CL B RIP RAP 80 TONS 28 SY GEOTEXTILE
TOE PROTECTION SEE DETAIL 9A CL B RIP RAP 20 TONS 7 SY GEOTEXTILE
CL B RIP RAP 80 TONS 28 SY GEOTEXTILE
CL B RIP RAP 20 TONS 7 SY GEOTEXTILE
CORE CONCRETE EXPANSION JOINT
3 @ 12' x 7' RCBC
24" RCP
15" RCP
18" RCP
TDE
TOE
-L1-
-L2-
-L3-
-L4-
-L5-
-L6-
-L7-
-L8-
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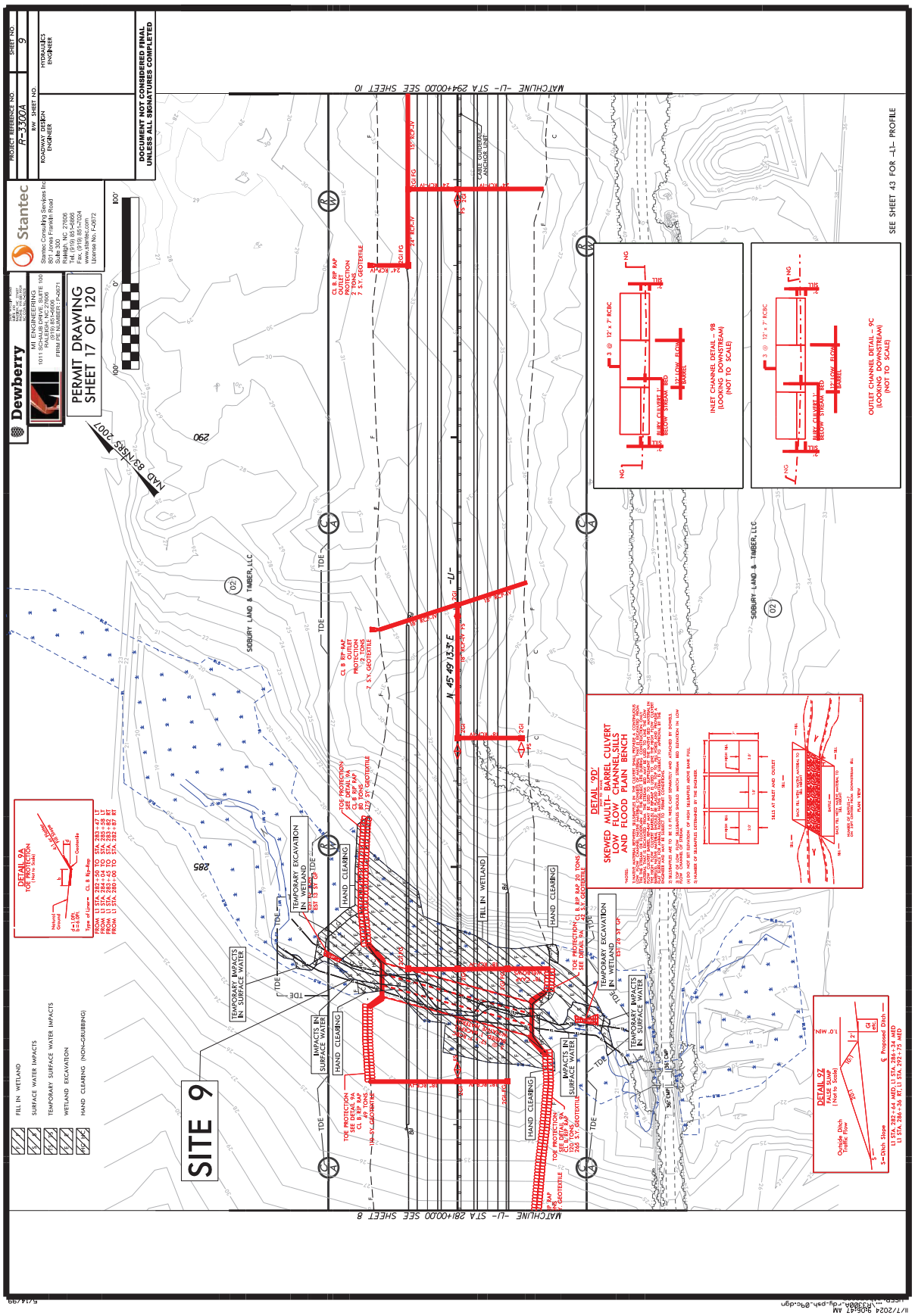
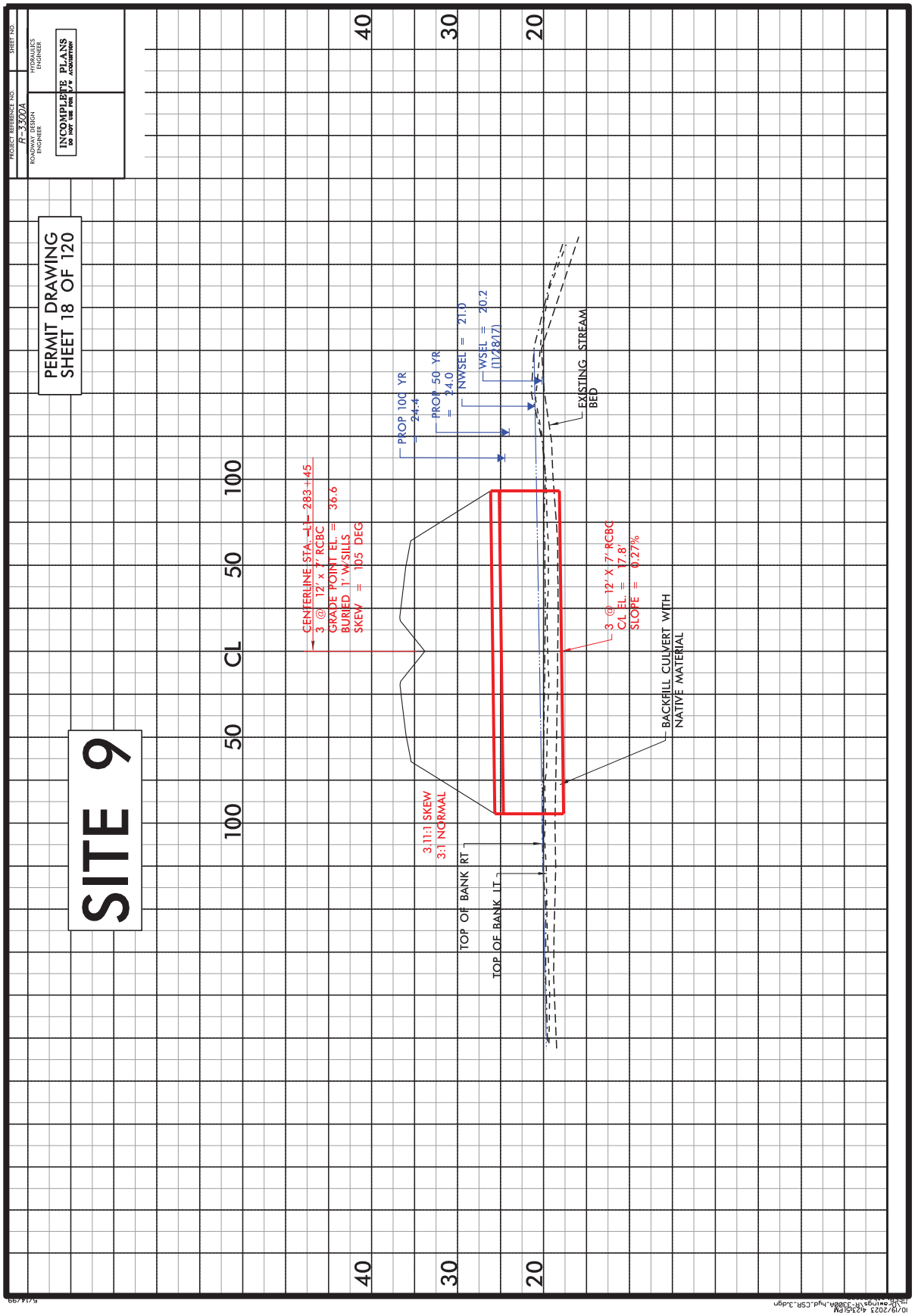
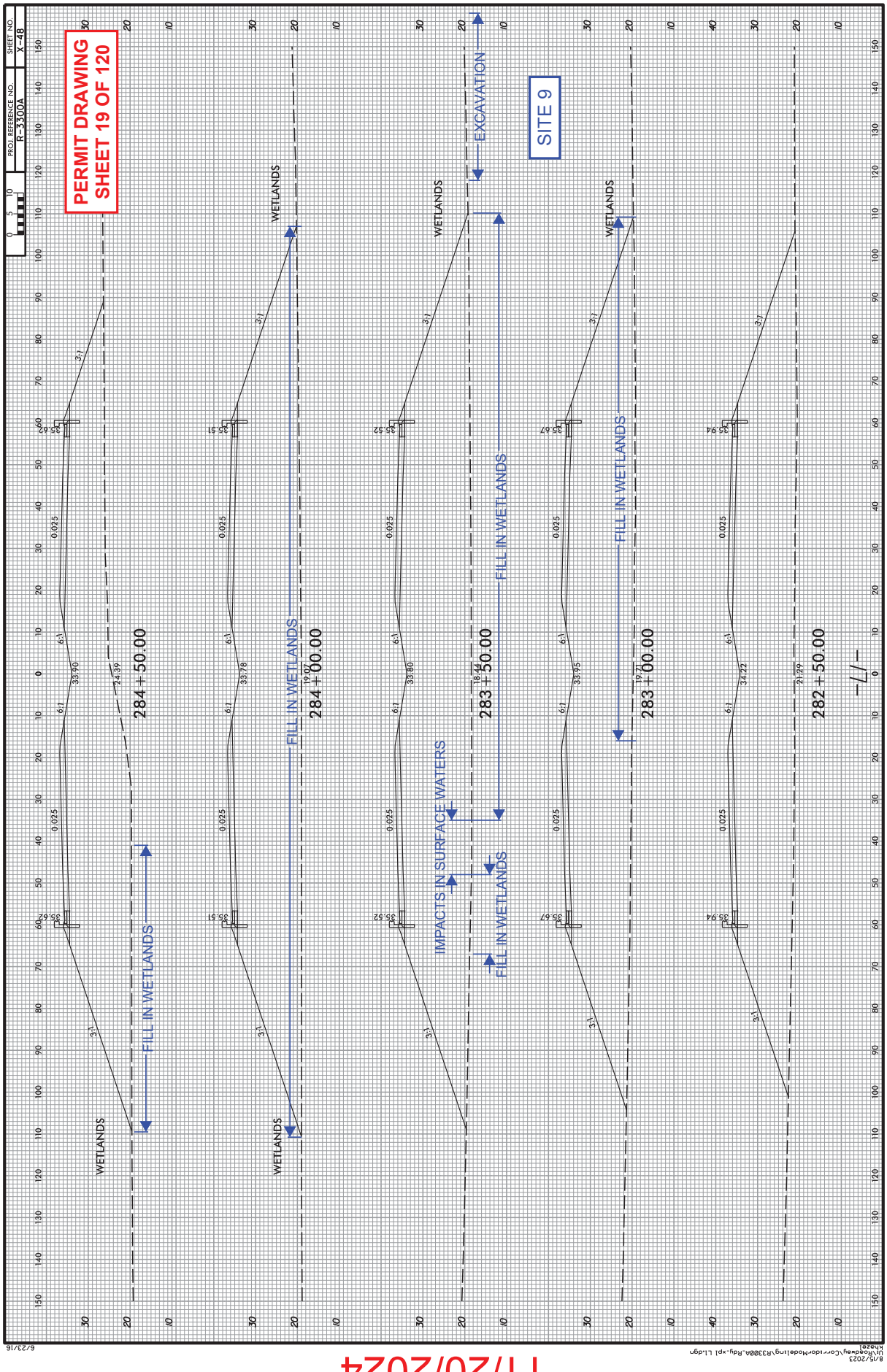

SITE 9
PERMIT DRAWING
SHEET 17 OF 120
Dewberry
Stantec
PROJECT REFERENCE NO.
A-3300A
SHEET NO
9
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
WETLAND EXCAVATION
HAND CLEARING (NON-GRUBBING)
SEE SHEET 43 FOR -L1- PROFILE
MATCHLINE -L1- STA 294+00.00 SEE SHEET 10
MATCHLINE -L1- STA 281+00.00 SEE SHEET 8
SOBURY LAND & TIMBER, LLC
N 45° 49' 13.3" E
DETAIL "9D"
SKEWED MULTI- BARREL CULVERT
LOW FLOW CHANNELSILLS
AND FLOOD PLAIN BENCH
DETAIL 9A
TOE PROTECTION
DETAIL 9B
INLET CHANNEL DETAIL - 9B
(LOOKING DOWNSTREAM)
(NOT TO SCALE)
OUTLET CHANNEL DETAIL - 9C
(LOOKING DOWNSTREAM)
(NOT TO SCALE)
DETAIL 9Z
FALSE SUMP
(Not to Scale)

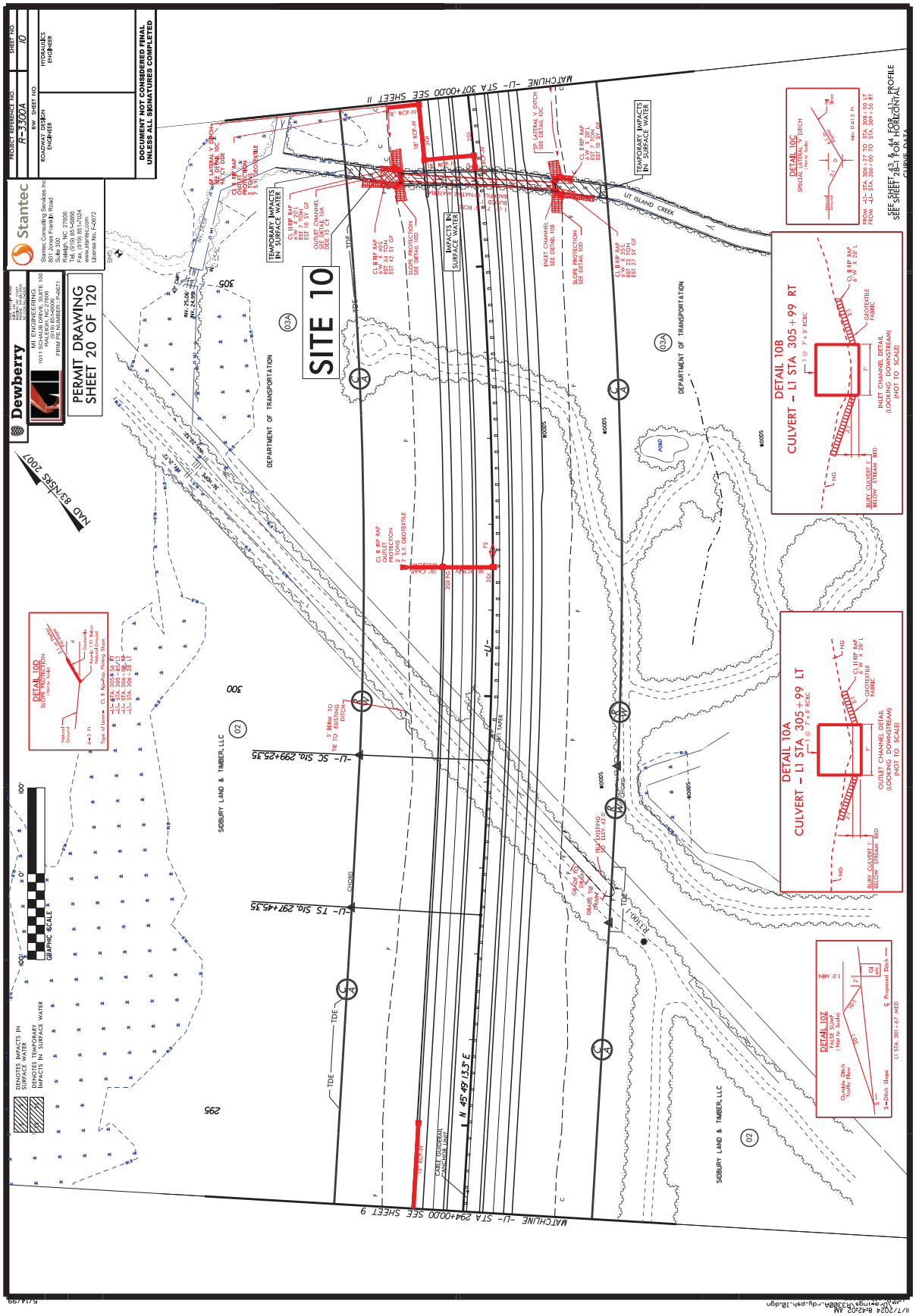
11/20/2024

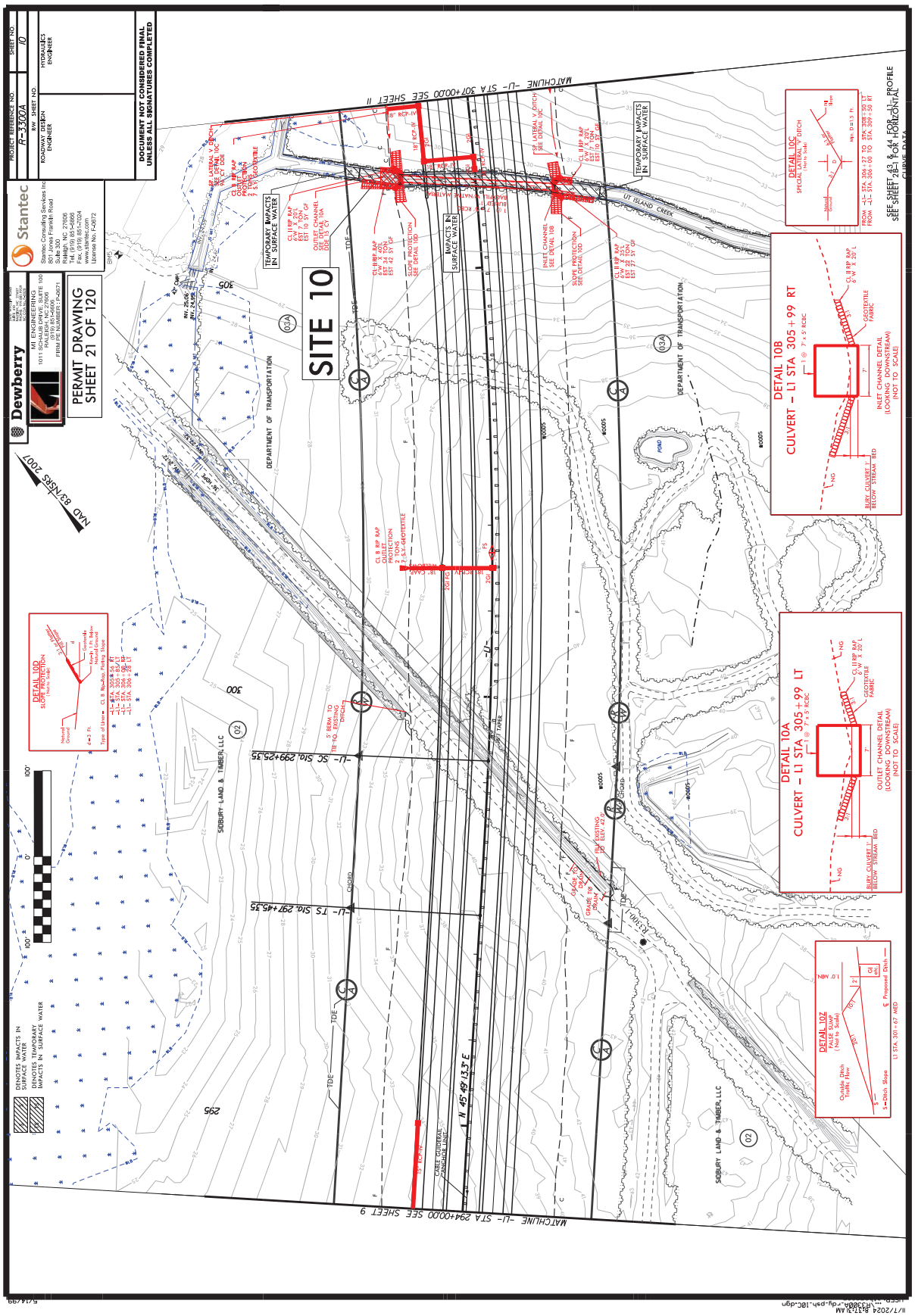

SITE 9
PERMIT DRAWING
SHEET 18 OF 120
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
PROJECT REFERENCE NO.
A-3300A
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CENTERLINE STA. 11+283+45
3 @ 12' x 7' RCBC
GRADE POINT EL. = 36.6
BURIED 1' W/SILLS
SKEW = 105 DEG
PROP 100 YR = 24.4
PROP 50 YR = 24.0
NWSEL = 21.0
WSEL = 20.2 (11/28/17)
EXISTING STREAM BED
3 @ 12'-X 7'-RCBC
CL EL = 17.8'
SLOPE = 0.27%
BACKFILL CULVERT WITH NATIVE MATERIAL
3:1 SKEW
3:1 NORMAL
TOP OF BANK RT
TOP OF BANK LT
100
50
CL
50
100
40
30
20
40
30
20

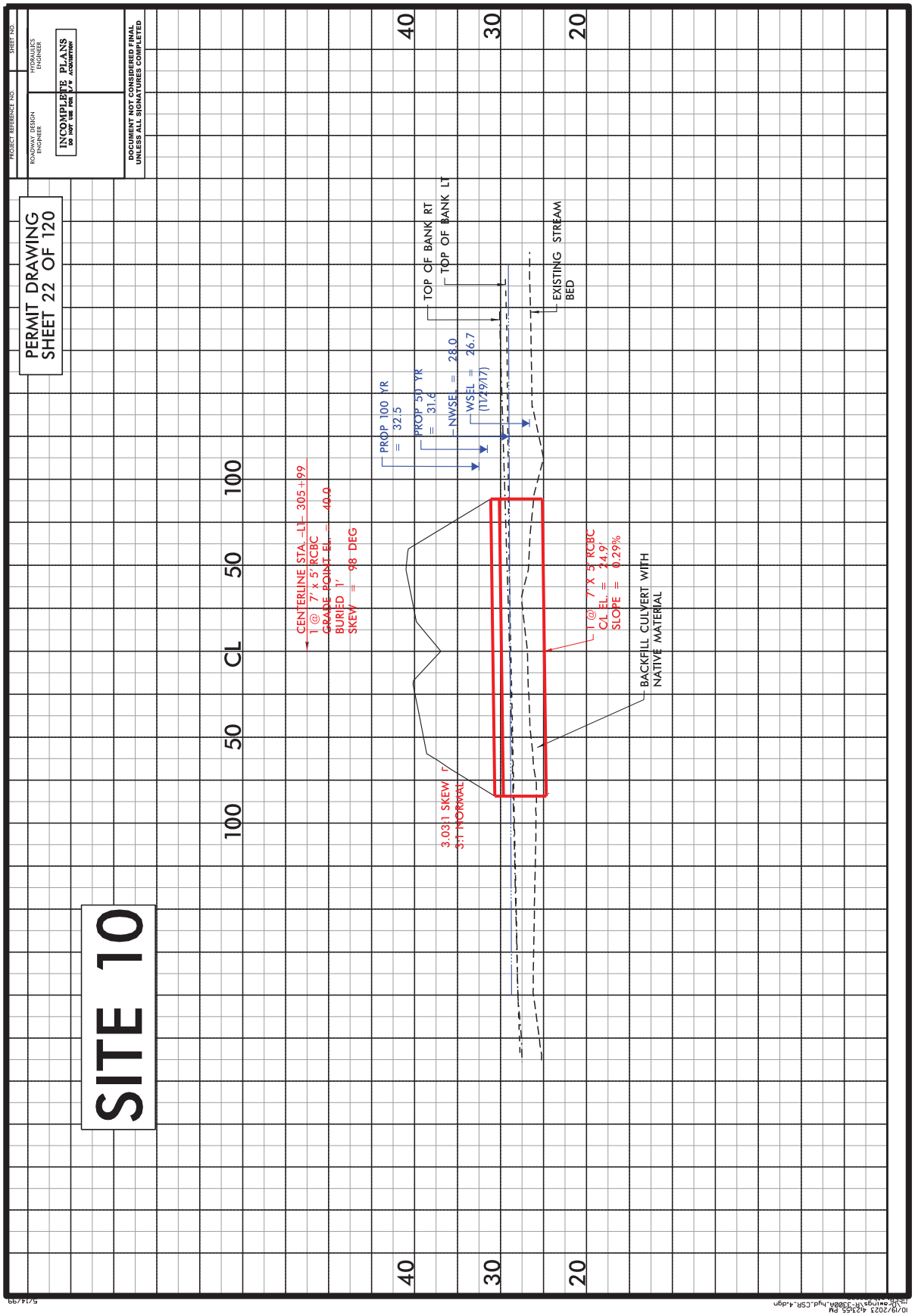
11/20/2024


PERMIT DRAWING
SHEET 19 OF 120
0 5 10
PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-48
SITE 9
EXCAVATION
WETLANDS
FILL IN WETLANDS
IMPACTS IN SURFACE WATERS
284 + 50.00
284 + 00.00
283 + 50.00
283 + 00.00
282 + 50.00
3:1
6:1
0.025
-17-
6/23/16
8/15/2023
U:\Projects\Corridor Modeling\R3300A_Rdy.xpl Ltadgn

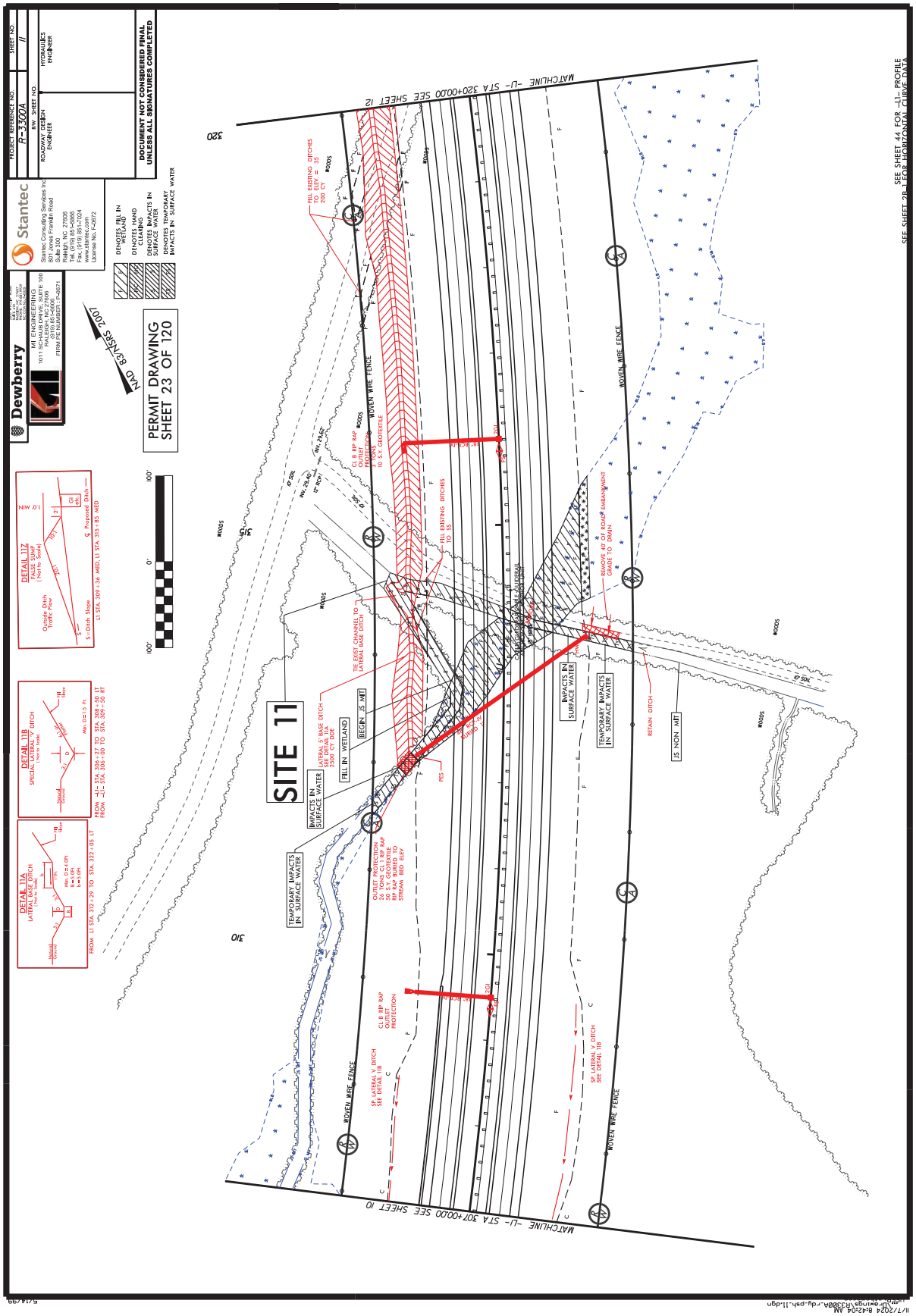
11/20/2024

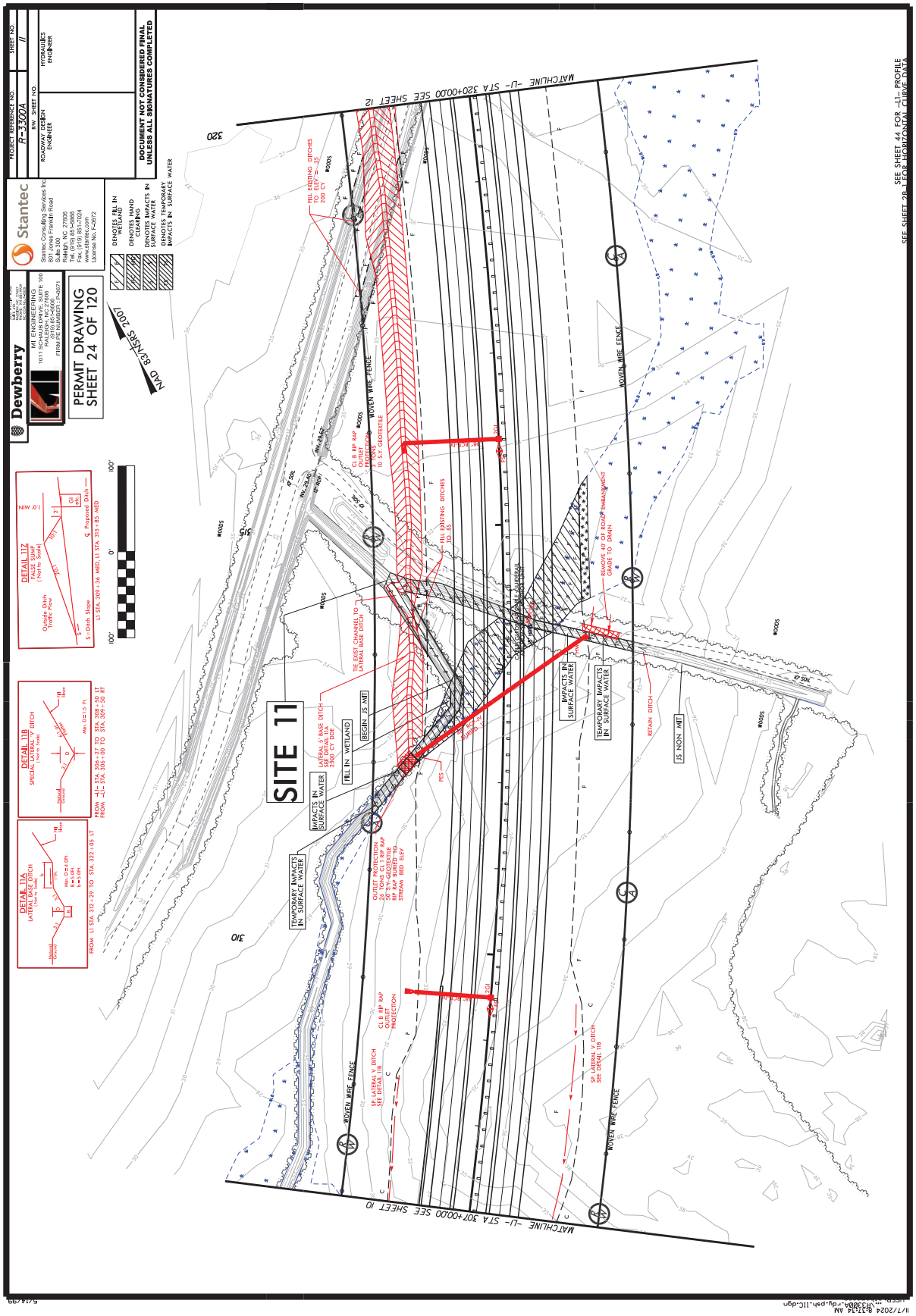

SITE 10
PERMIT DRAWING
SHEET 20 OF 120
Dewberry
MT ENGINEERING
Stantec
PROJECT REFERENCE NO. A-3300A
SHEET NO 10
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
HYDRAULICS ENGINEER
ROADWAY DESIGNER EVERETTE
R/W SHEET NO
NAD 83/NSRS 2007
GRAPHIC SCALE
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DEPARTMENT OF TRANSPORTATION
SUDBURY LAND & TIMBER, LLC
UT ISLAND CREEK
TEMPORARY IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
MATCHLINE -L1- STA 307+00.00 SEE SHEET 11
MATCHLINE -L1- STA 294+00.00 SEE SHEET 9
SEE SHEET 21 FOR PROFILE
SEE SHEET 28 & 44 FOR HORIZONTAL CURVE DATA
DETAIL 10A
CULVERT – L1 STA 305+99 LT
DETAIL 10B
CULVERT – L1 STA 305+99 RT
DETAIL 10C
DETAIL 10D
DETAIL 10Z
-L1- SC Sta. 299+25.35
-L1- TS Sta. 297+45.35
L1 STA. 301+67 MED
N 45° 49' 13.3" E
CL B RIP RAP OUTLET PROTECTION 2 TONS 7 SY GEOTEXTILE
CL II RIP RAP OUTLET PROTECTION 7 SY GEOTEXTILE
CL II RIP RAP 6'W X 20'L
CL II RIP RAP 4'W X 20'L
INSET CHANNEL SEE DETAIL 10B
SLOPE PROTECTION SEE DETAIL 10D
OUTLET CHANNEL SEE DETAIL 10A
SP. LATERAL V DITCH SEE DETAIL 10C
18" RCP-IV
24" RCP-IV
30" RCP-IV
CABLE COMMERCIAL CABLE LINE
TDE
SLOPE TAPER
GRADE TO DRAIN
GRADE TO DRAIN
TIE EXISTING DITCH TO LEFT
3' MIN. TO EXISTING DITCH
11/20/2024

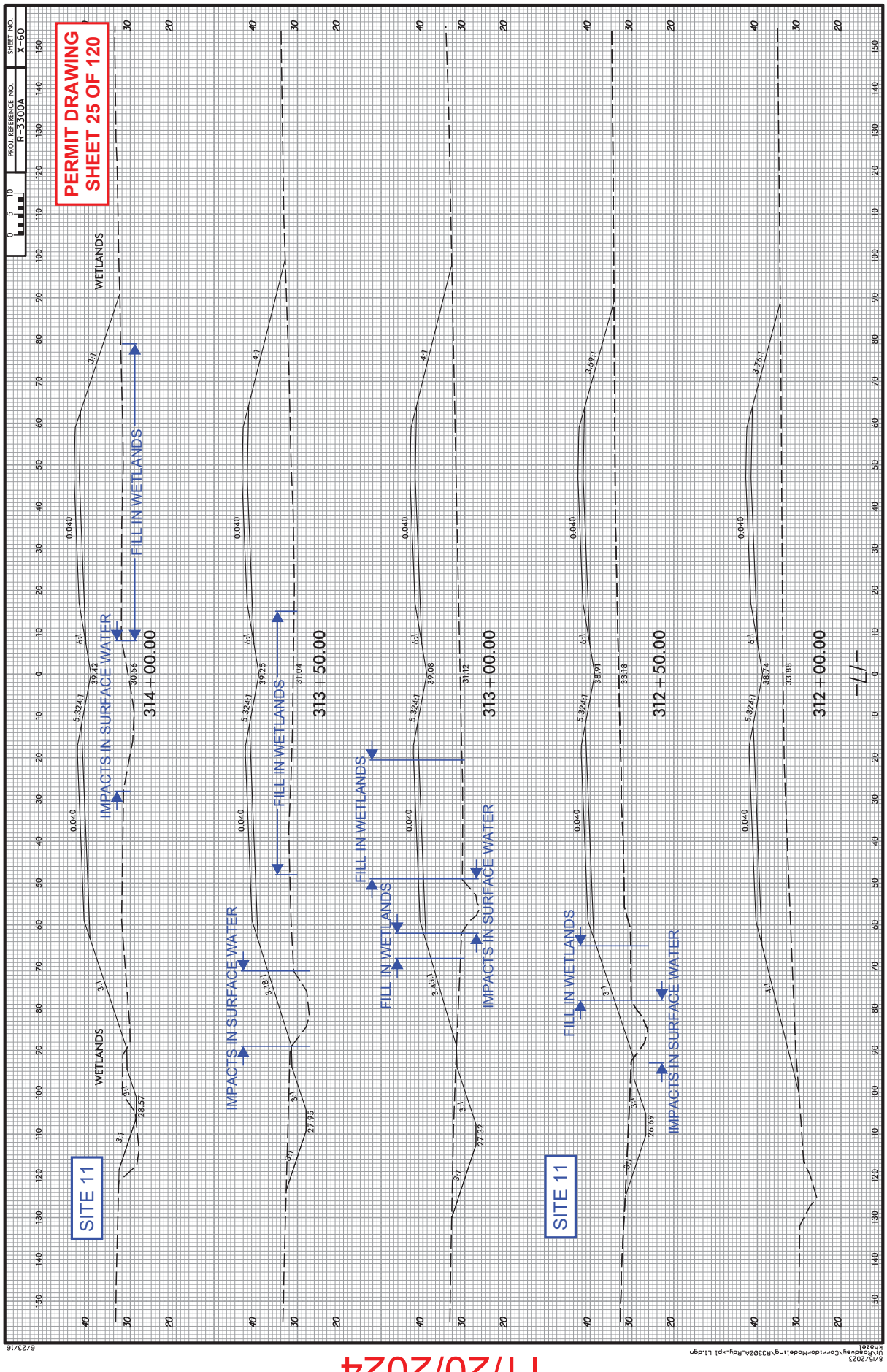

SITE 10
PERMIT DRAWING
SHEET 21 OF 120
Dewberry
Stantec
PROJECT REFERENCE NO. A-3300A
SHEET NO 10
R/W SHEET NO
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
DETAIL 10A
CULVERT – L1 STA 305+99 LT
DETAIL 10B
CULVERT – L1 STA 305+99 RT
DETAIL 10C
DETAIL 10D
DETAIL 10Z
MATCHLINE -L- STA 307+00.00 SEE SHEET 11
MATCHLINE -L- STA 294+00.00 SEE SHEET 9
SEE SHEET 23 & 44 FOR HORIZONTAL & PROFILE
SEE SHEET 28 FOR CURVE DATA
DEPARTMENT OF TRANSPORTATION
SODBURY LAND & TIMBER, LLC
UT ISLAND CREEK
TEMPORARY IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
NAD 83/NSRS 2007
-L- SC Sta. 299+25.35
-L- TS Sta. 297+45.35
L N 45° 49' 13.3" E
CL B RIP RAP OUTLET PROTECTION 2 TONS
CL II RIP RAP OUTLET PROTECTION 7.5 TONS
CL II RIP RAP OUTLET PROTECTION 22 TONS
SLOPE PROTECTION SEE DETAIL 10D
INLET CHANNEL SEE DETAIL 10B
OUTLET CHANNEL SEE DETAIL 10A
SF LATERAL V DITCH SEE DETAIL 10C
18" RCP
24" RCP
30" RCP
36" RCP
TDE
WOODS
POND
CREEK
GRADE TO DRAIN
TIE EXISTING DITCH AT EL= 42.0
5' BERM TO TIE TO EXISTING DITCH
CABLE GUIDERAIL ANCHOR UNIT
GEOTEXTILE FABRIC
BURY CULVERT 1' BELOW STREAM BED
INLET CHANNEL DETAIL (LOOKING DOWNSTREAM) (NOT TO SCALE)
OUTLET CHANNEL DETAIL (LOOKING DOWNSTREAM) (NOT TO SCALE)
FALSE SUMP
Outside Ditch Traffic Flow
S=Ditch Slope
Proposed Ditch
L1 STA. 301+67 MED
FROM -L- STA. 309+27 TO STA. 308+50 LT
FROM -L- STA. 306+00 TO STA. 309+50 RT
100'
0'
11/20/2024


SITE 10
PERMIT DRAWING
SHEET 22 OF 120
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CL
100
50
50
100
40
30
20
CENTERLINE STA. -LT- 305+99
1 @ 7' x 5' RCBC
GRADE POINT EL. = 40.0
BURIED 1'
SKEW = 98 DEG
PROP 100 YR
= 32.5
PROP 50 YR
= 31.6
NWSEL = 28.0
WSEL = 26.7
(11/29/17)
TOP OF BANK RT
TOP OF BANK LT
EXISTING STREAM
BED
3.03:1 SKEW
3:1 NORMAL
1 @ 7'X 5' RCBC
C/L EL. = 24.9
SLOPE = 0.29%
BACKFILL CULVERT WITH
NATIVE MATERIAL

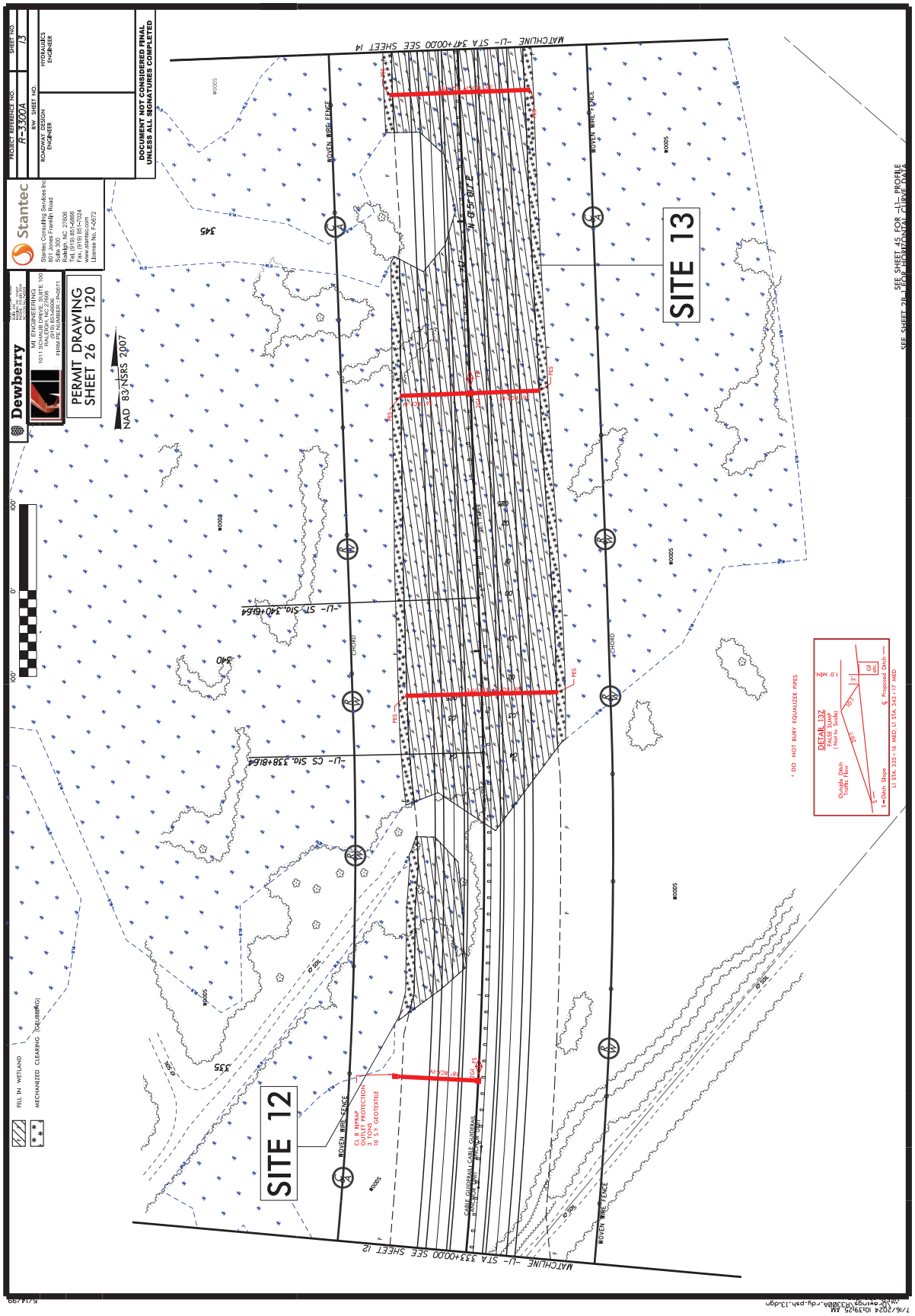
11/20/2024


SITE 11
MATCHLINE -L1- STA 320+00.00 SEE SHEET 12
MATCHLINE -L1- STA 307+00.00 SEE SHEET 10
PERMIT DRAWING
SHEET 23 OF 120
NAD 83/NSRS 2007
DETAIL 11A
LATERAL DITCH
DETAIL 11B
SPECIAL LATERAL V DITCH
DETAIL 11Z
FALSE SUMP
IMPACTS IN SURFACE WATER
TEMPORARY IMPACTS IN SURFACE WATER
FILL IN WETLAND
BEGIN JS MIT
JS NON MIT
RETAIN DITCH
WOVEN WIRE FENCE
CL B RIP RAP OUTLET PROTECTION
FILL EXISTING DITCHES TO SS
REMOVE 40 OF ROAD EMBANKMENT GRADE TO DRAIN
SEE SHEET 44 FOR -L1- PROFILE
SEE SHEET 28 FOR HORIZONTAL CURVE DATA
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

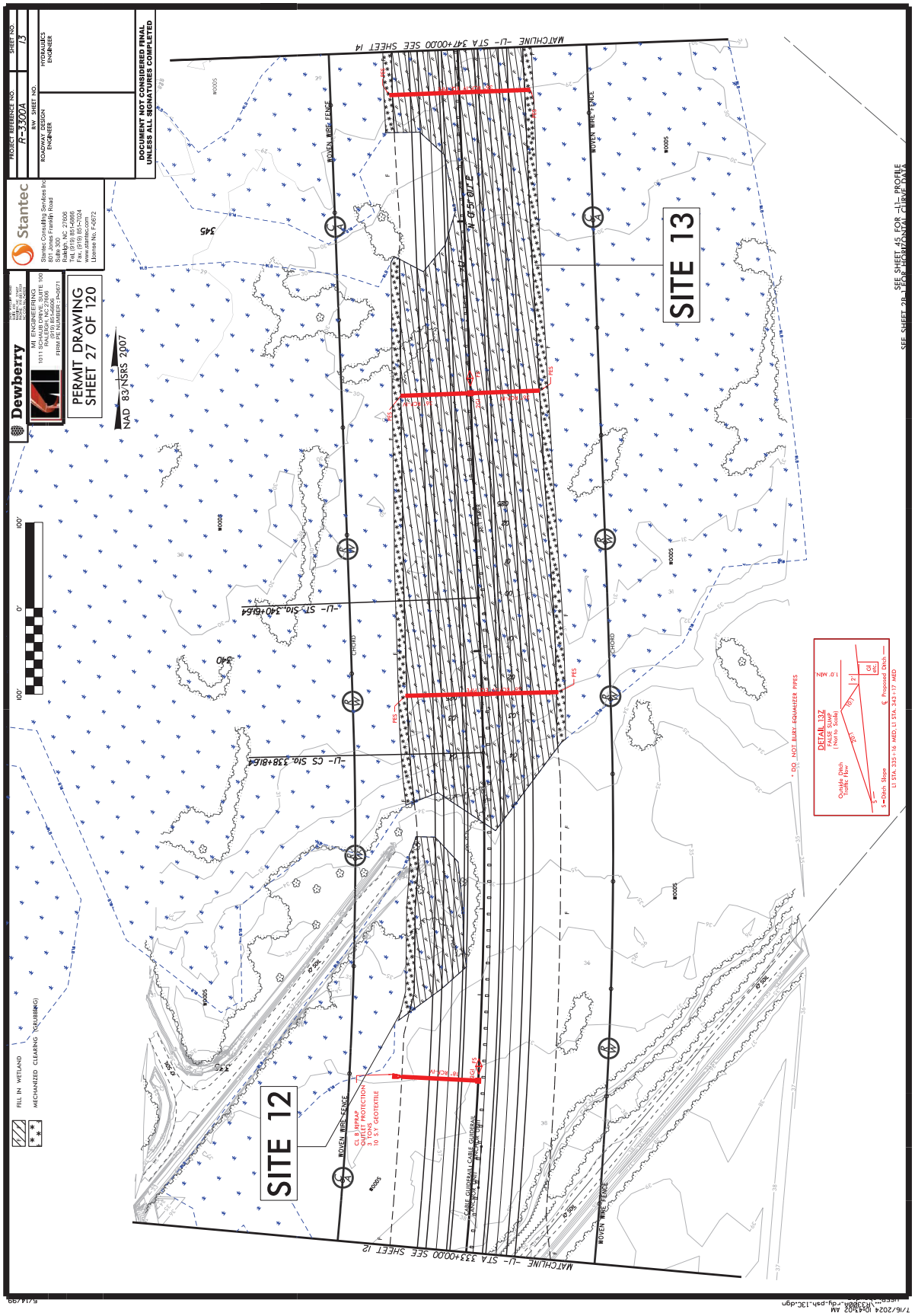

SITE 11
PERMIT DRAWING
SHEET 24 OF 120
NAD 83/NSRS 2007
Dewberry
Stantec
PROJECT REFERENCE NO.
R-3300A
SHEET NO.
11
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
R/W SHEET NO.
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
DENOTES PERMANENT IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DETAIL 11A
LATERAL V DITCH
DETAIL 11B
SPECIAL LATERAL V DITCH
DETAIL 11Z
FALSE SUMP
MATCHLINE -L1- STA 320+00.00 SEE SHEET 12
MATCHLINE -L1- STA 307+00.00 SEE SHEET 10
SEE SHEET 44 FOR -L1- PROFILE
SEE SHEET 28-1 FOR HORIZONTAL CURVE DATA
WOVEN WIRE FENCE
TEMPORARY IMPACTS IN SURFACE WATER
PERMANENT IMPACTS IN SURFACE WATER
FILL IN WETLAND
BEGIN JS MIT
JS NON MIT
RETAIN DITCH
FILL EXISTING DITCHES TO JS
REMOVE 40' OF ROAD EMBANKMENT GRADE TO DRAIN
TIE EXIST CHANNEL TO LATERAL BASE DITCH
OUTLET PROTECTION CL B RIP RAP 20' TYP
RIP RAP BURIED TO STREAM BED ELEV
SF LATERAL V DITCH SEE DETAIL 11B
FROM -L1- STA 312+29 TO STA 322+05 L1
FROM -L1- STA 308+27 TO STA 309+50 RT
STA 308+05 TO STA 309+50 LT
Outside Ditch
Traffic Flow
Proposed Ditch
S = Ditch Slope
L1 STA. 309+36 MED, L1 STA. 315+85 MED
100'
0'
100'


PERMIT DRAWING
SHEET 25 OF 120
PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-60
SITE 11
WETLANDS
IMPACTS IN SURFACE WATER
FILL IN WETLANDS
314+00.00
313+50.00
313+00.00
312+50.00
312+00.00
-17-

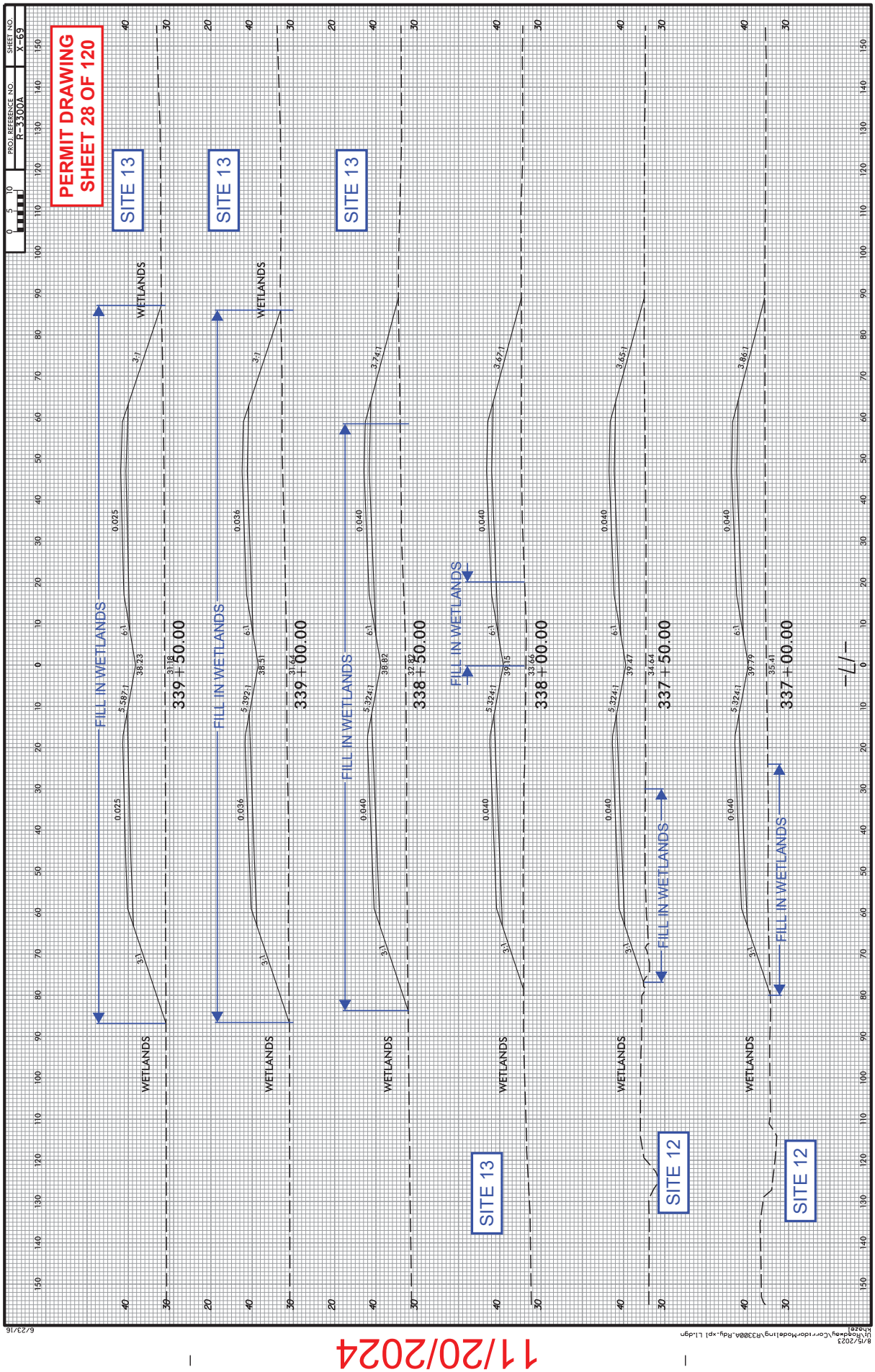
11/20/2024


SITE 12
SITE 13
MATCHLINE -L1- STA 333+00.00 SEE SHEET 12
MATCHLINE -L1- STA 347+00.00 SEE SHEET 14
-L1- CS Sta 338+81.64
-L1- ST Sta 340+81.64
N 69°51'01" E
WOVEN WIRE FENCE
CABLE GUIDERAIL
CL B RIPRAP OUTLET PROTECTION 3 TONS 10 S.Y. GEOTEXTILE
FILL IN WETLAND
MECHANIZED CLEARING (DISTURBING)
PERMIT DRAWING SHEET 26 OF 120
NAD 83/NSRS 2007
Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. 13
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
SEE SHEET 45 FOR -L1- PROFILE
HORIZONTAL CURVE DATA
DETAIL 13Z
FALSE SUMP
(NAME SUMP)
Outside Ditch
Traffic Flow
5-10min Slope
℄ Proposed Ditch
LT STA. 335+16 MED. LT STA. 343+17 MED
* DO NOT BURY EQUALIZER PIPES

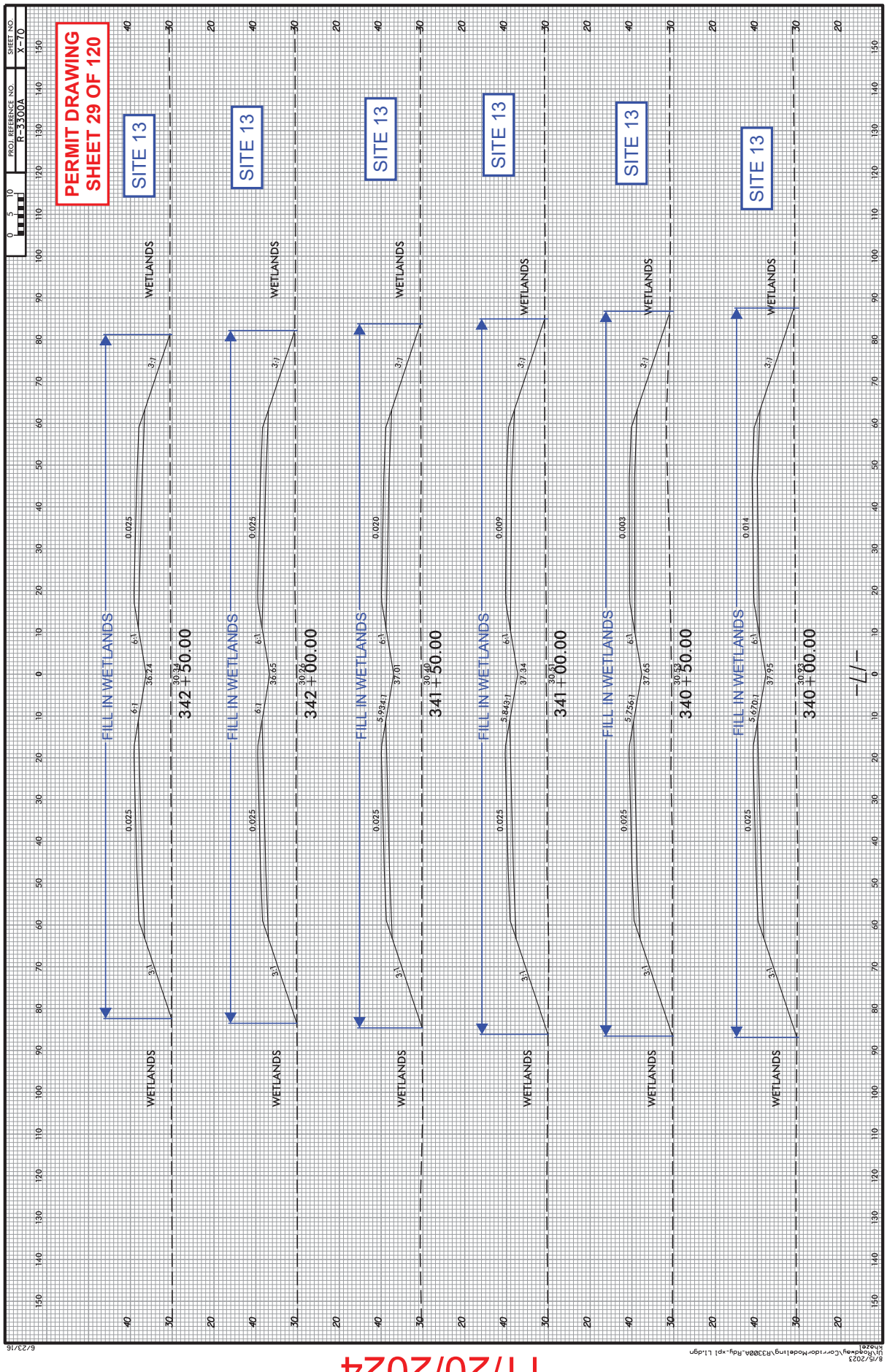
11/20/2024


SITE 12
SITE 13
MATCHLINE -L1- STA 333+00.00 SEE SHEET 12
MATCHLINE -L1- STA 347+00.00 SEE SHEET 14
SEE SHEET 45 FOR -L1- PROFILE
SEE SHEET 78 FOR HORIZONTAL CURVE DATA
PERMIT DRAWING
SHEET 27 OF 120
NAD 83/NSRS 2007
Dewberry
Stantec
PROJECT REFERENCE NO.
R-3300A
SHEET NO.
13
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
WOVEN WIRE FENCE
CL B RIPRAP OUTLET PROTECTION 30' W X 10' L X 1' D WITH GEOTEXTILE
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
DETAIL 132
FALSE SUMP
(Type 1 Shown)
Outside Ditch
Traffic Flow
Proposed Ditch
5 Min. Slope
1'-0" MIN.
DO NOT BURY AQUAMEDER PIPES
L1 STA. 335+16 MED. L1 STA. 343+17 MED.
WOODS
CHORD
PES
PCS
7/16/2024 10:47:02 AM

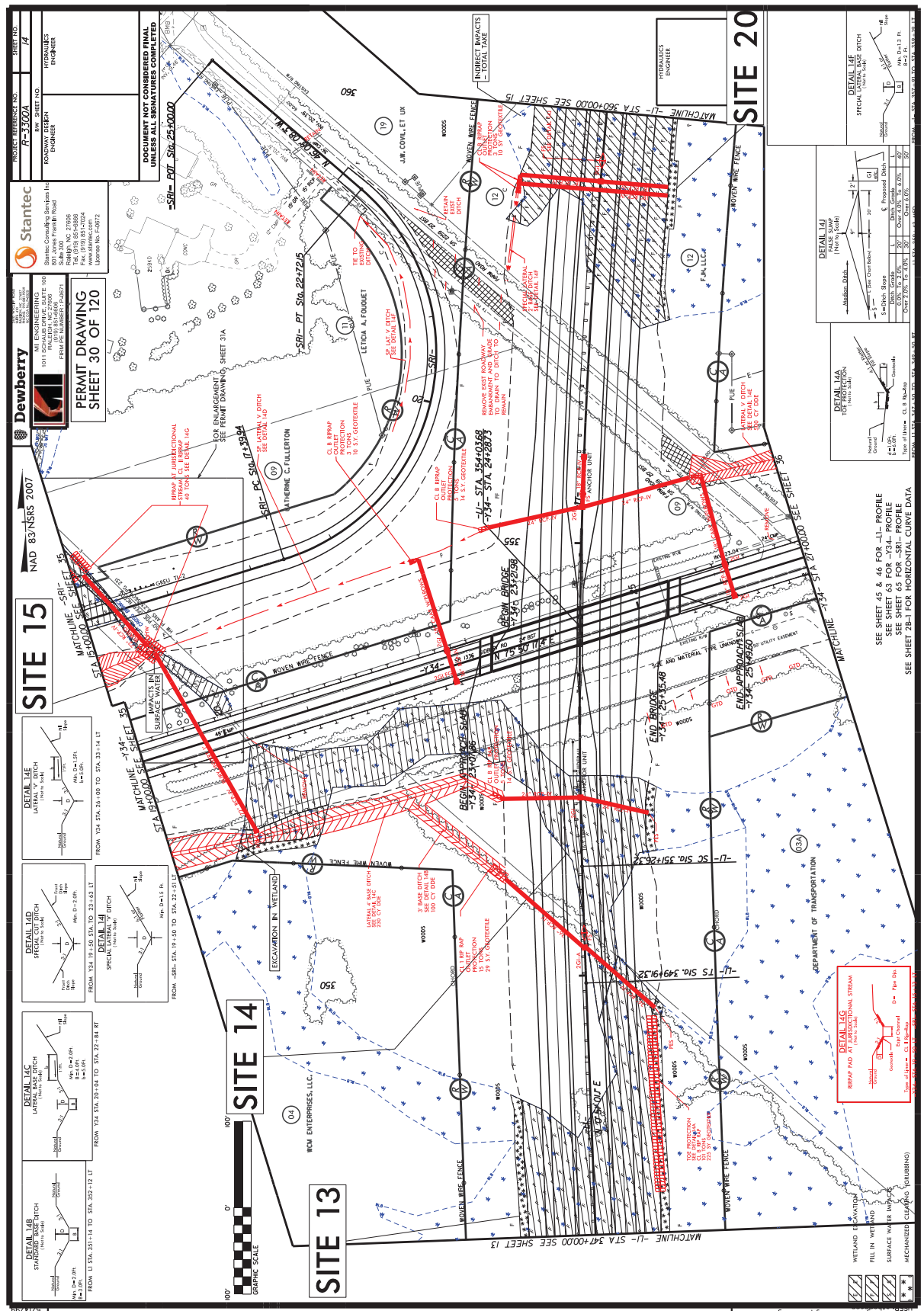
11/20/2024

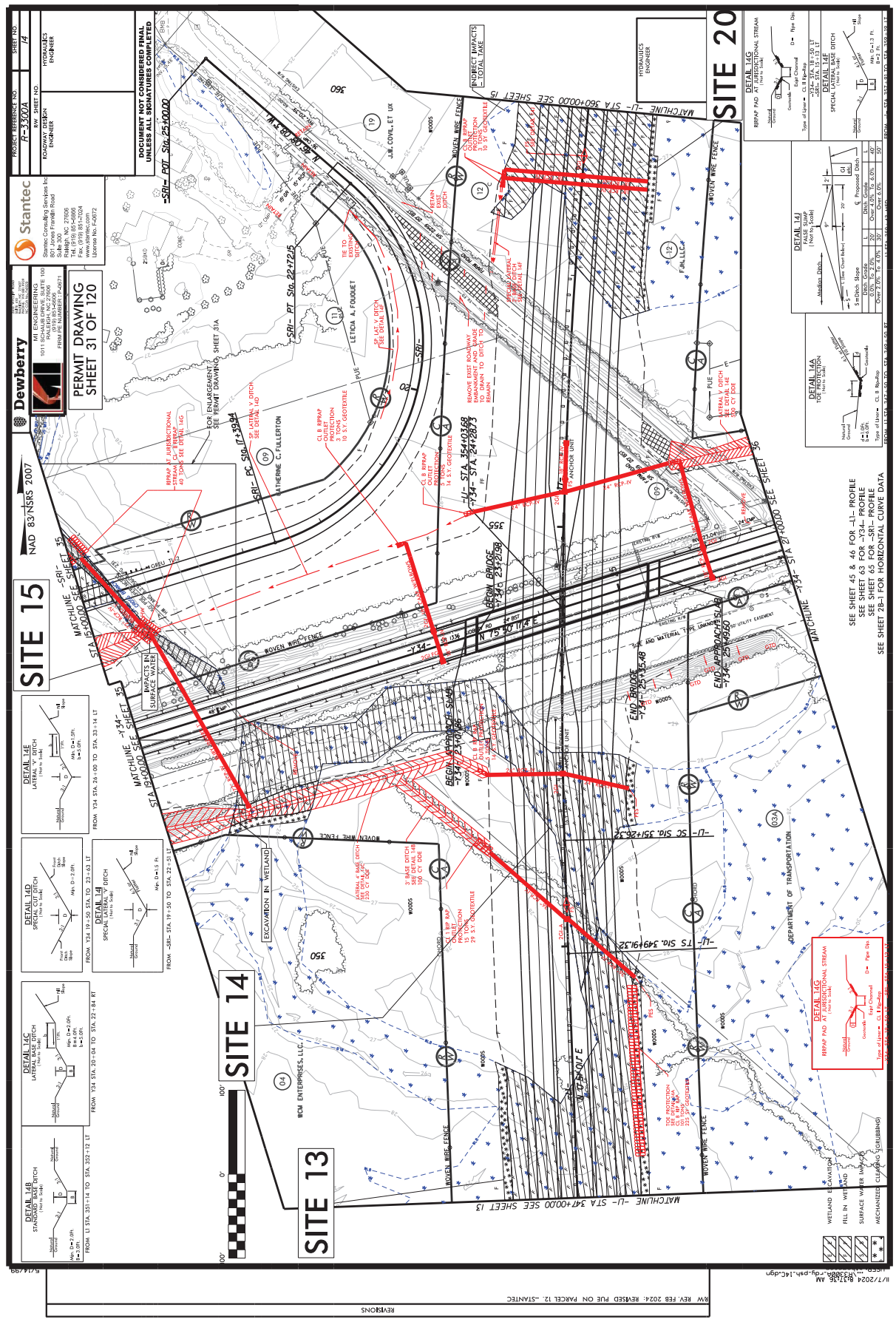

PERMIT DRAWING
SHEET 28 OF 120
PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-69
SITE 13
SITE 12
FILL IN WETLANDS
WETLANDS
339+50.00
339+00.00
338+50.00
338+00.00
337+50.00
337+00.00
-77-

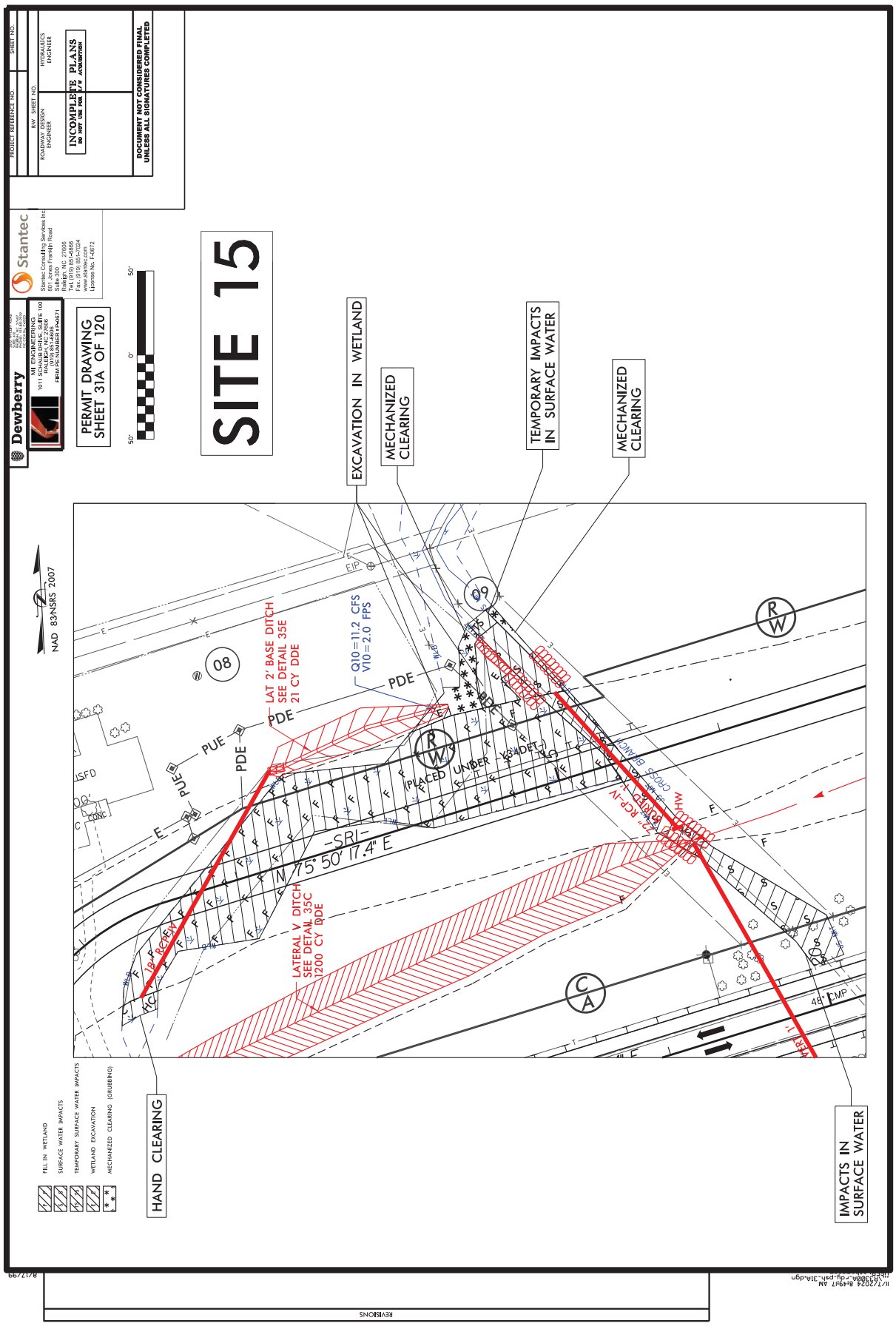
11/20/2024

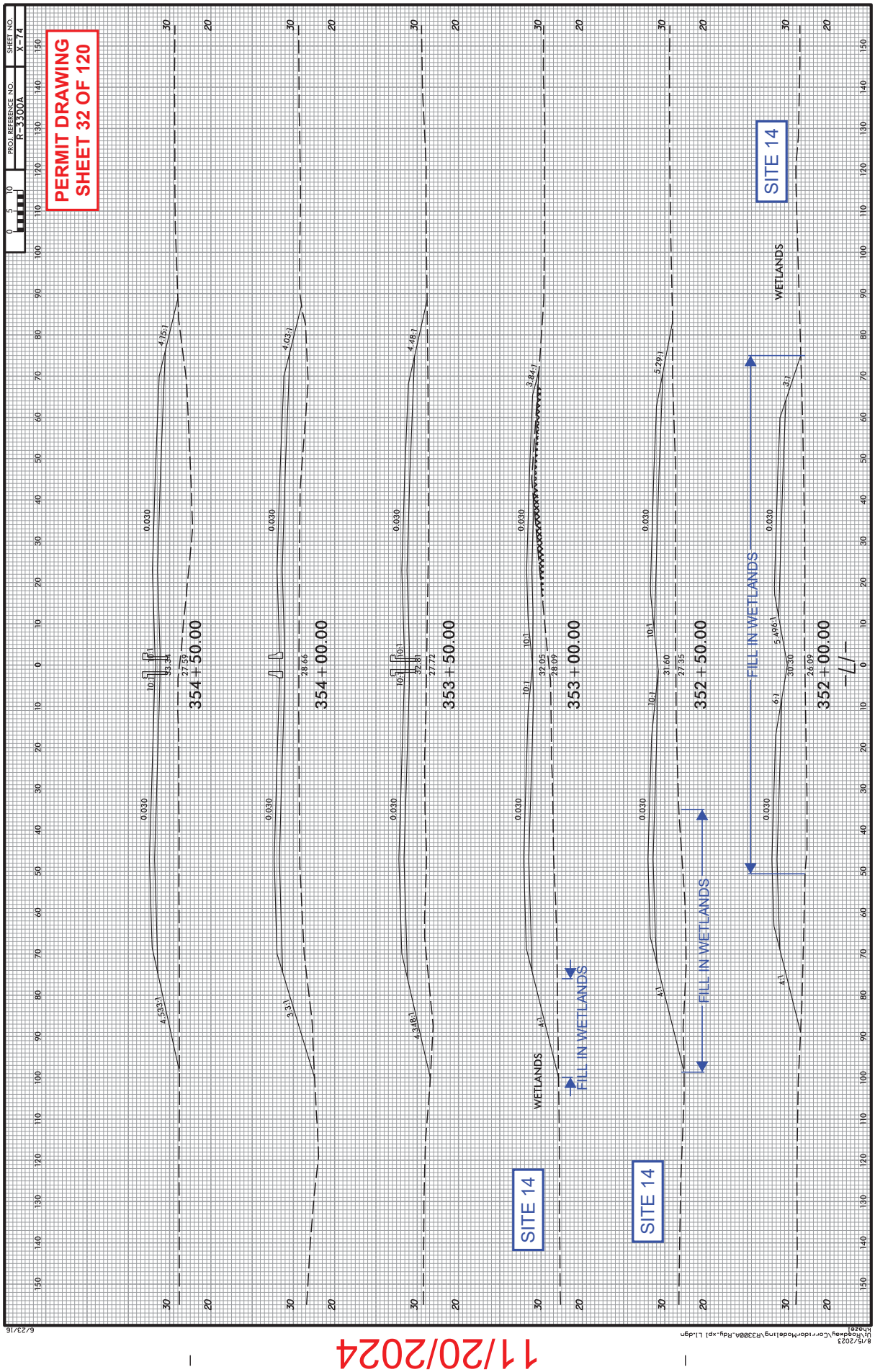

PERMIT DRAWING
SHEET 29 OF 120
PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-70
SITE 13
FILL IN WETLANDS
WETLANDS
342+50.00
342+00.00
341+50.00
341+00.00
340+50.00
340+00.00
0.025
0.020
0.009
0.003
0.014
6:1
3:1
36.24
36.65
37.01
37.34
37.65
37.95
-17-

11/20/2024

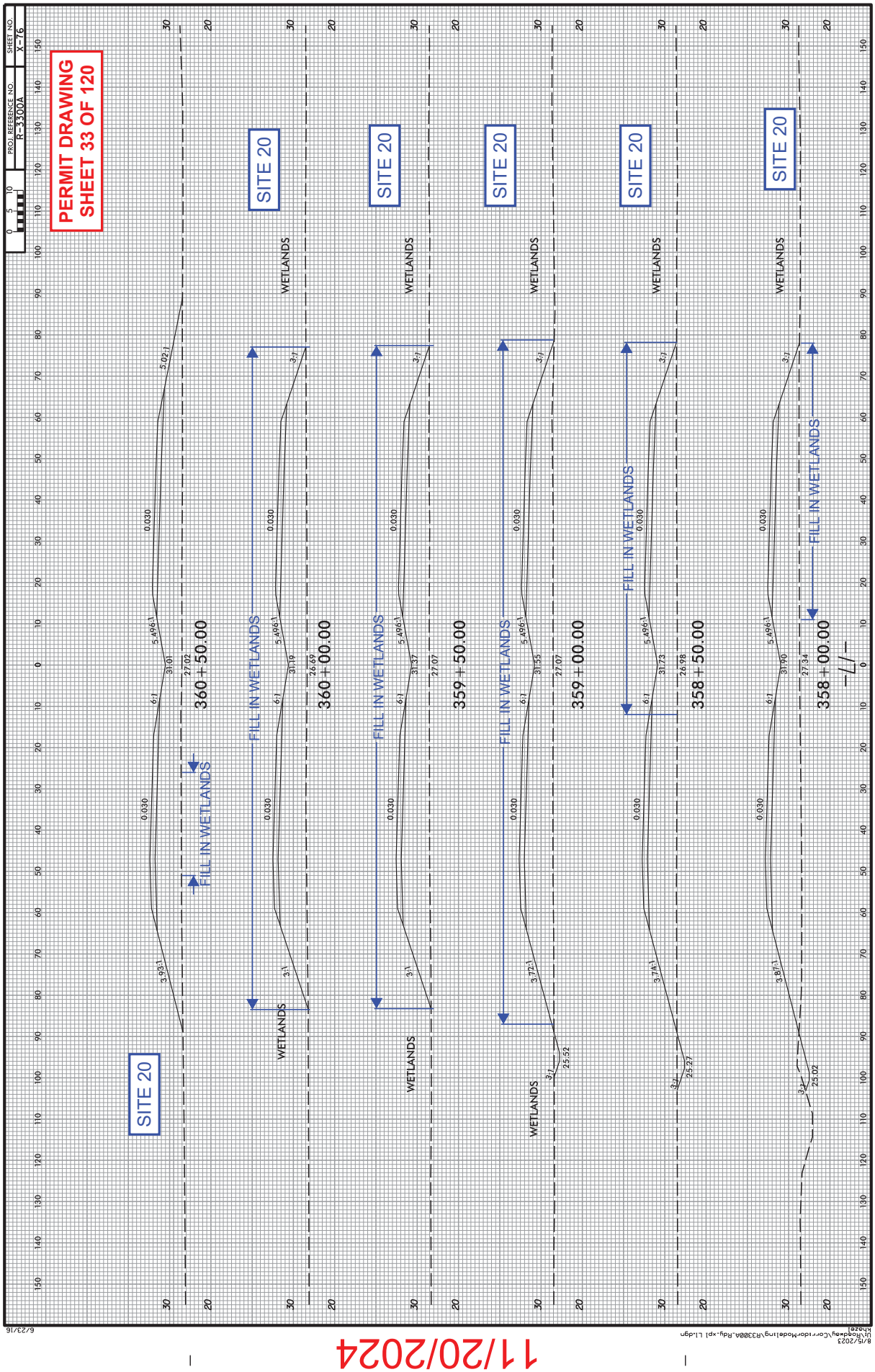

PERMIT DRAWING
SHEET 30 OF 120
SITE 15
SITE 14
SITE 13
SITE 20
Dewberry
Stantec
NAD 83/NSRS 2007
GRAPHIC SCALE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PROJECT REFERENCE NO. A-3300A
R/W SHEET NO 14
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
REVISIONS
R/W REV. FEB 2024: REVISED PUE ON PARCEL 12. -STANTEC
WETLAND EXCAVATION
FILL IN WETLAND
SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
DEPARTMENT OF TRANSPORTATION
WCM ENTERPRISES, LLC.
CATHERINE C. FULLERTON
LETICIA A. FOUQUET
J.W. COVIL, ET UX
F.JH, LLC
MATCHLINE -SRI- STA 15+00.00 SEE SHEET 35
MATCHLINE -Y34- STA 90+00.00 SEE SHEET 35
MATCHLINE -L1- STA 347+00.00 SEE SHEET 13
MATCHLINE -L1- STA 360+00.00 SEE SHEET 15
MATCHLINE -Y34- STA 87+00.00 SEE SHEET 36
SEE SHEET 45 & 46 FOR -L1- PROFILE
SEE SHEET 63 FOR -Y34- PROFILE
SEE SHEET 65 FOR -SRI- PROFILE
SEE SHEET 28-1 FOR HORIZONTAL CURVE DATA
-SRI- PC Sta 17+39.84
-SRI- PT Sta 22+72.25
-SRI- PT Sta 25+00.00
-L1- STA 354+03.68
-Y34- STA 24+28.73
-L1- SC Sta. 351+26.32
-L1- TS Sta. 349+91.32
BEGIN BRIDGE -Y34- 23+70.86
END BRIDGE -Y34- 25+35.48
END APPROACH SLAB -Y34- 25+59.60
DETAIL 14A TOE WALL PROTECTION
DETAIL 14B STANDARD BASE DITCH
DETAIL 14C LATERAL BASE DITCH
DETAIL 14D SPECIAL CUT DITCH
DETAIL 14E LATERAL V DITCH
DETAIL 14F SPECIAL LATERAL BASE DITCH
DETAIL 14G AT JURISDICTIONAL STREAM
DETAIL 14H SPECIAL V DITCH
DETAIL 14I FALSE SUMP
DETAIL 14J
RIPRAP 1' JURISDICTIONAL STREAM CL B RIPRAP 40 TONS SEE DETAIL 14G
CL B RIPRAP OUTLET PROTECTION 3 TONS 10 S.Y. GEOTEXTILE
CL B RIPRAP OUTLET PROTECTION 5 TONS 14 S.Y. GEOTEXTILE
CL B RIPRAP OUTLET PROTECTION 3 TONS 10 S.Y. GEOTEXTILE
CL B RIPRAP OUTLET PROTECTION 3 TONS 10 S.Y. GEOTEXTILE
CL B RIPRAP OUTLET PROTECTION 3 TONS 10 S.Y. GEOTEXTILE
CL B RIPRAP OUTLET PROTECTION 3 TONS 10 S.Y. GEOTEXTILE
TOE PROTECTION AT JURISDICTIONAL STREAM CL B RIP RAP 233 S.Y. GEOTEXTILE
RIPRAP PAD AT JURISDICTIONAL STREAM CL B Rip-Rap
REMOVE EXIST ROADWAY SURFACE AND GRADE TO DRAIN TO DITCH TO REMAIN
RETAIN EXIST DITCH
TIE TO EXISTING DITCH
DE-LAT V DITCH SEE DETAIL 14D
SPECIAL LATERAL BASE DITCH SEE DETAIL 14F
LATERAL V DITCH SEE DETAIL 14E
LATERAL 4' BASE DITCH SEE DETAIL 14F 230 CY DDE
3' BASE DITCH SEE DETAIL 14F 100 CY DDE
INDIRECT IMPACTS - TOTAL TAKE
IMPACTS IN SURFACE WATER
EXCAVATION IN WETLAND
WOVEN WIRE FENCE
WOODS
PUE
TYPE 'L' ANCHOR UNIT
N 75°50'17.4" E
N 75°50'17.4" E 1,000.00'
SIZE AND MATERIAL TYPE UNKNOWN SLAB
EXISTING R/W
UNKNOWN UTILITY EASEMENT
FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 31A
Stantec Consulting Services Inc. 801 Corporate Center Drive Suite 300 Raleigh, NC 27607 Tel (919) 851-6666 Fax (919) 851-7024 www.stantec.com License No. F-0272
MJ ENGINEERING 1017 DUKE STREET, SUITE 100 ALEXANDRIA, VA 22314 FIRM PE NUMBER: P-0671
Dewberry 8401 ARLINGTON BLVD FAIRFAX, VA 22031-4666 703.329.1000


SITE 15
SITE 14
SITE 13
SITE 20
PERMIT DRAWING
SHEET 31 OF 120
Dewberry
Stantec
PROJECT REFERENCE NO.
A-3300A
R/W SHEET NO
14
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83/NSRS 2007
-SRI- PC Sta 17+39.84
-SRI- PT Sta 22+72.25
-SRI- PT Sta 25+00.00
-SRI- Sta 15+00.00 SEE SHEET 35
-Y34- Sta 19+50.00 SEE SHEET 35
-Y34- Sta 23+06.66 SEE SHEET 35
-Y34- Sta 24+28.73
-Y34- Sta 25+00.00 SEE SHEET 36
-LI- Sta 354+03.68
-LI- Sta 347+00.00 SEE SHEET 13
-LI- Sta 360+00.00 SEE SHEET 15
-LI- SC Sta. 351+26.32
-LI- TS Sta. 349+91.32
-Y34- Sta 23+21.38
-Y34- Sta 25+35.48
-Y34- Sta 25+39.60
N 75°50'11" E
R=480.00'
L=84.84'
DETAIL 14A
TOE WALL SECTION
DETAIL 14B
STANDARD BASE DITCH
DETAIL 14C
LATERAL BASE DITCH
DETAIL 14D
SPECIAL CUT DITCH
DETAIL 14E
LATERAL "V" DITCH
DETAIL 14F
SPECIAL LATERAL BASE DITCH
DETAIL 14G
RIPRAP PAD AT JURISDICTIONAL STREAM
DETAIL 14I
FALSE SUMP
DETAIL 14J
SPECIAL LATERAL V DITCH
FROM L1 STA 351+14 TO STA 352+12 LT
FROM Y34 STA 20+04 TO STA 22+84 RT
FROM Y34 STA 19+50 TO STA 23+63 LT
FROM Y34 STA 24+00 TO STA 33+14 LT
FROM -SRI- STA 19+50 TO STA 22+31 LT
IMPACTS IN SURFACE WATER
EXCAVATION IN WETLAND
WCM ENTERPRISES, LLC.
LETICIA A. FOUQUET
CATHERINE C. FULLERTON
J.W. COVIL, ET UX
F.W. LLC
DEPARTMENT OF TRANSPORTATION
WOVEN WIRE FENCE
WOODS
WETLAND EXCAVATION
FILL IN WETLAND
SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
REVISIONS
11/20/2024

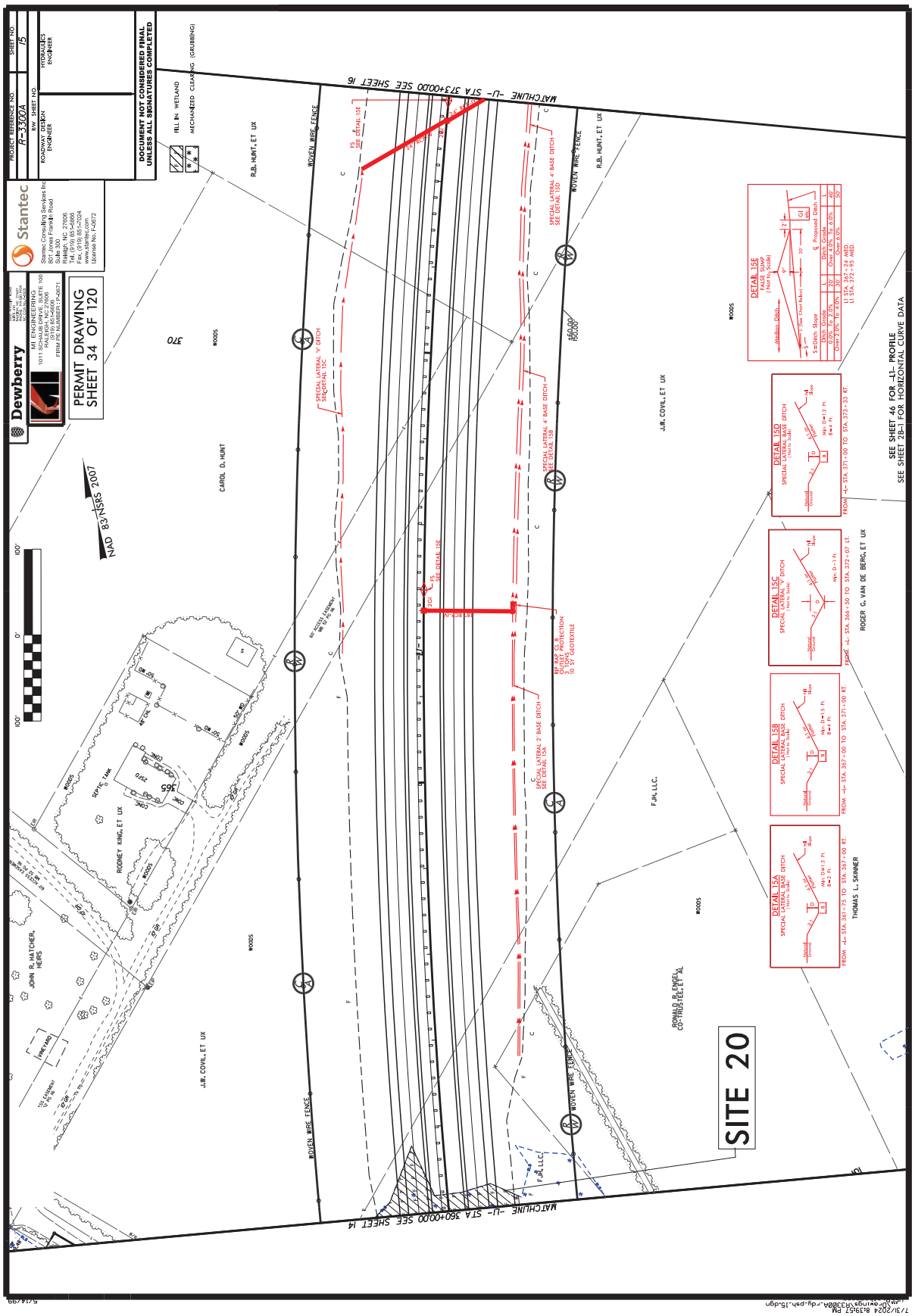

SITE 15
PERMIT DRAWING
SHEET 31A OF 120
EXCAVATION IN WETLAND
MECHANIZED CLEARING
TEMPORARY IMPACTS IN SURFACE WATER
MECHANIZED CLEARING
HAND CLEARING
IMPACTS IN SURFACE WATER
LAT 2' BASE DITCH
SEE DETAIL 35E
21 CY DDE
Q10=11.2 CFS
V10=2.0 FPS
LATERAL V DITCH
SEE DETAIL 35C
1200 CY DDE
-SRI-
N 75° 50' 17.4" E
(PLACED UNDER NCDOT)
48" CMP
NAD 83NSRS 2007
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
WETLAND EXCAVATION
MECHANIZED CLEARING (GRUBBING)
Dewberry
Stantec
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

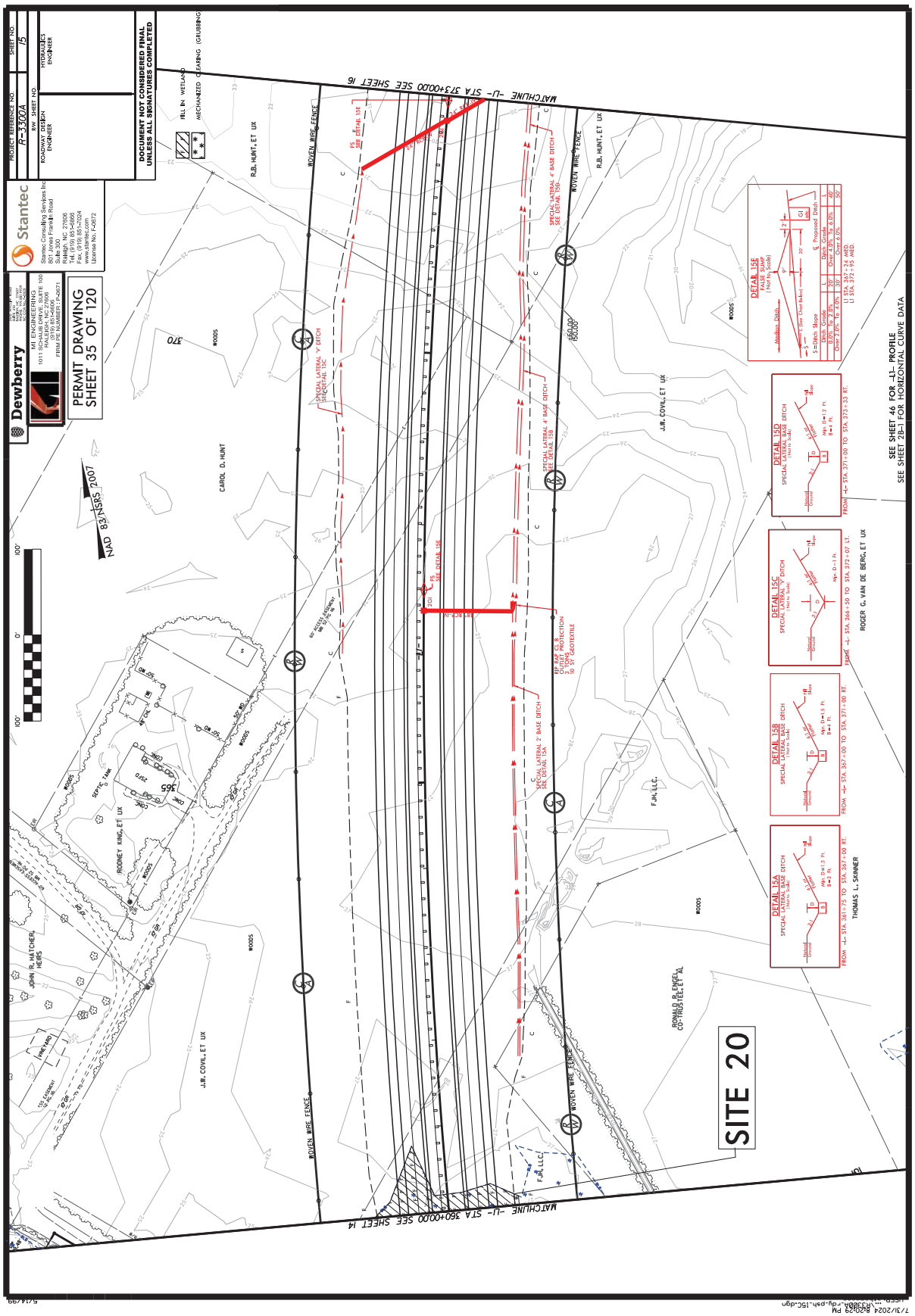

PERMIT DRAWING
SHEET 32 OF 120
PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-74
354+50.00
354+00.00
353+50.00
353+00.00
352+50.00
352+00.00
SITE 14
SITE 14
WETLANDS
WETLANDS
FILL IN WETLANDS
FILL IN WETLANDS
FILL IN WETLANDS
-L/-

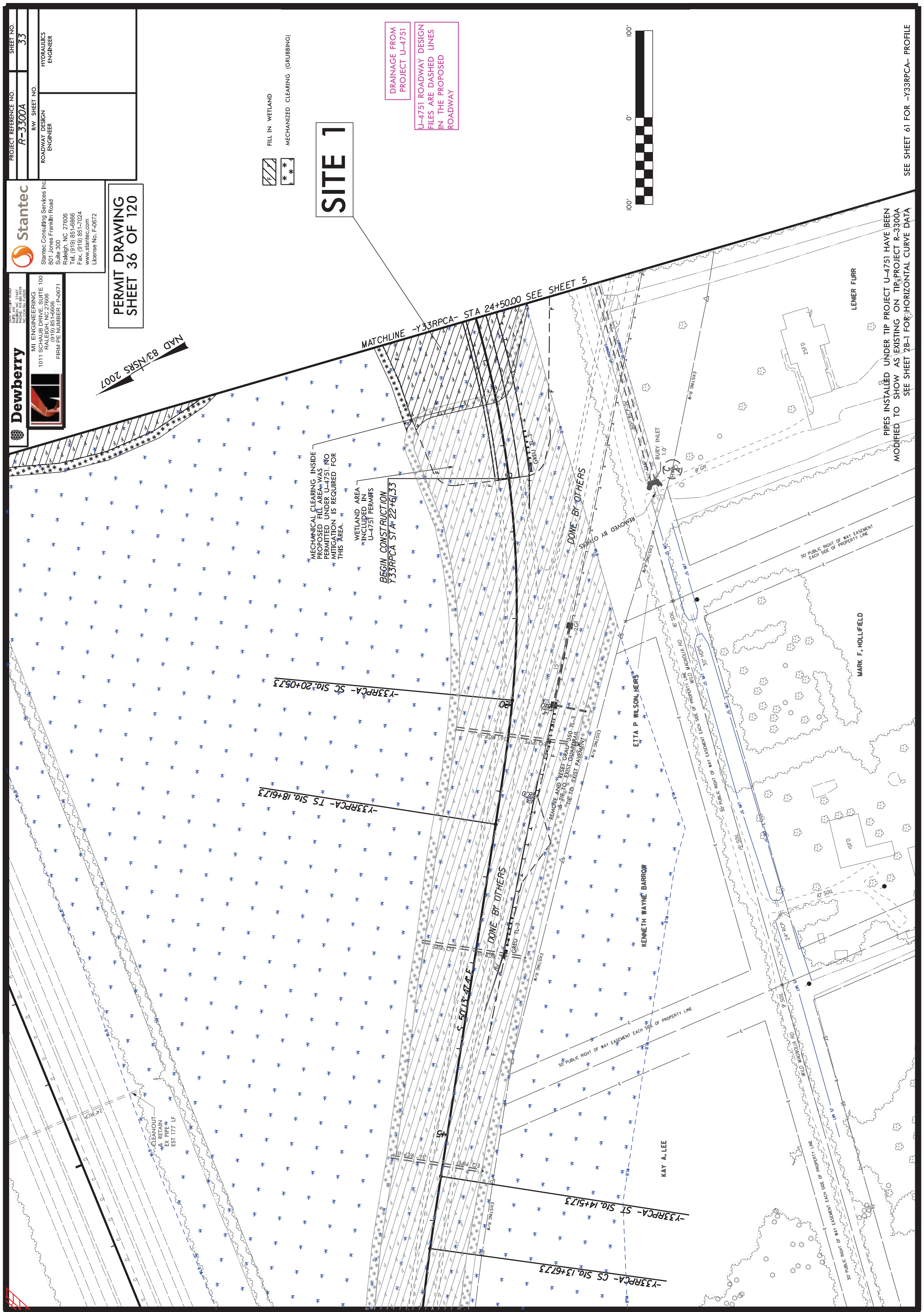
11/20/2024


PERMIT DRAWING
SHEET 33 OF 120
PROJ. REFERENCE NO. R-3300A
SHEET NO. X-76
SITE 20
WETLANDS
FILL IN WETLANDS
360+50.00
360+00.00
359+50.00
359+00.00
358+50.00
358+00.00
5.02:1
5.49:1
3.93:1
3.72:1
3.74:1
3.87:1
6:1
3:1
0.030
27.02
31.01
26.69
31.19
27.07
31.37
27.07
31.55
26.98
31.73
27.34
31.90
25.52
25.27
25.02

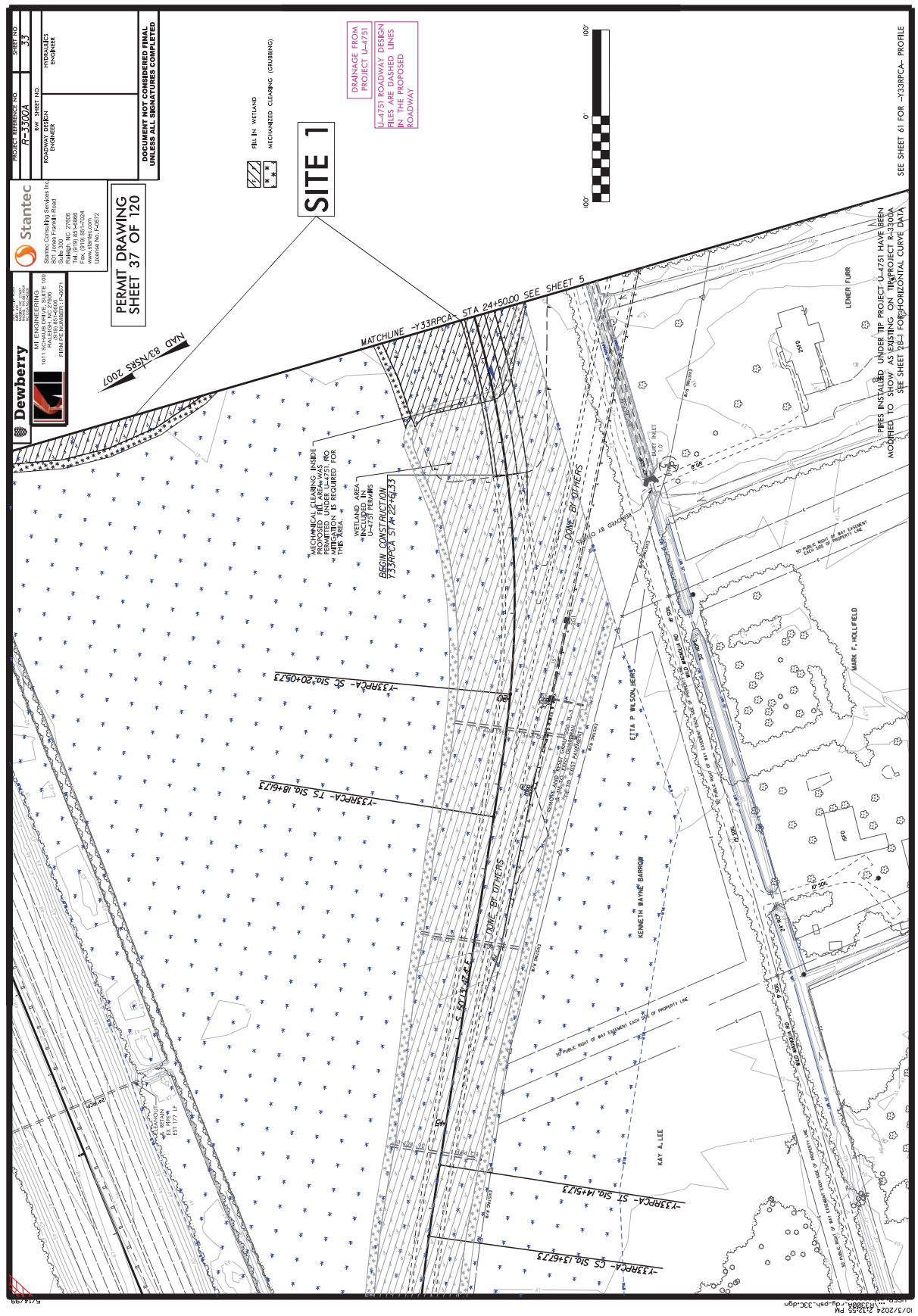
11/20/2024


PROJECT REFERENCE NO. R-3300A
SHEET NO. 15
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Stantec
Stantec Consulting Services Inc.
801 Corporate Center Drive
Suite 300
Raleigh, NC 27607
Tel. (919) 851-6666
Fax. (919) 851-7024
www.stantec.com
License No. F-0272
Dewberry
MT. ENGINEERING
101 INDUSTRIAL DRIVE, SUITE 100
RALEIGH, NC 27609
PHONE: (919) 469-1500
FIRM PE NUMBER: P-0671
PERMIT DRAWING
SHEET 34 OF 120
NAD 83/NSRS 2007
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
WATCHLINE -L- STA 373+00.00 SEE SHEET 16
WATCHLINE -L- STA 360+00.00 SEE SHEET 14
WOVEN WIRE FENCE
R.B. HUNT, ET UX
CAROL D. HUNT
J.W. COVIL, ET UX
ROGER G. VAN DE BERG, ET UX
F.J.H. LLC.
ROONEY KING, ET UX
JOHN R. HATCHER, HEIRS
THOMAS L. SKINNER
RONALD R. ENGEL CO-TRUSTEE, ET AL
WOODS
SEPTIC & TANK
365
370
SITE 20
SPECIAL LATERAL 'Y' DITCH SEE DETAIL 15A
SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 15A
SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 15B
RIP-RAP CL.B PLACED 5' THICK OVER 10 SY GEOTEXTILE
F5 SEE DETAIL 15E
DETAIL 15A SPECIAL LATERAL 'Y' DITCH
DETAIL 15B SPECIAL LATERAL 2' BASE DITCH
DETAIL 15C SPECIAL LATERAL 4' BASE DITCH
DETAIL 15D SPECIAL LATERAL 4' BASE DITCH
DETAIL 15E SPECIAL LATERAL DITCH
SEE SHEET 46 FOR -L1- PROFILE
SEE SHEET 28-I FOR HORIZONTAL CURVE DATA
100'
0'
100'

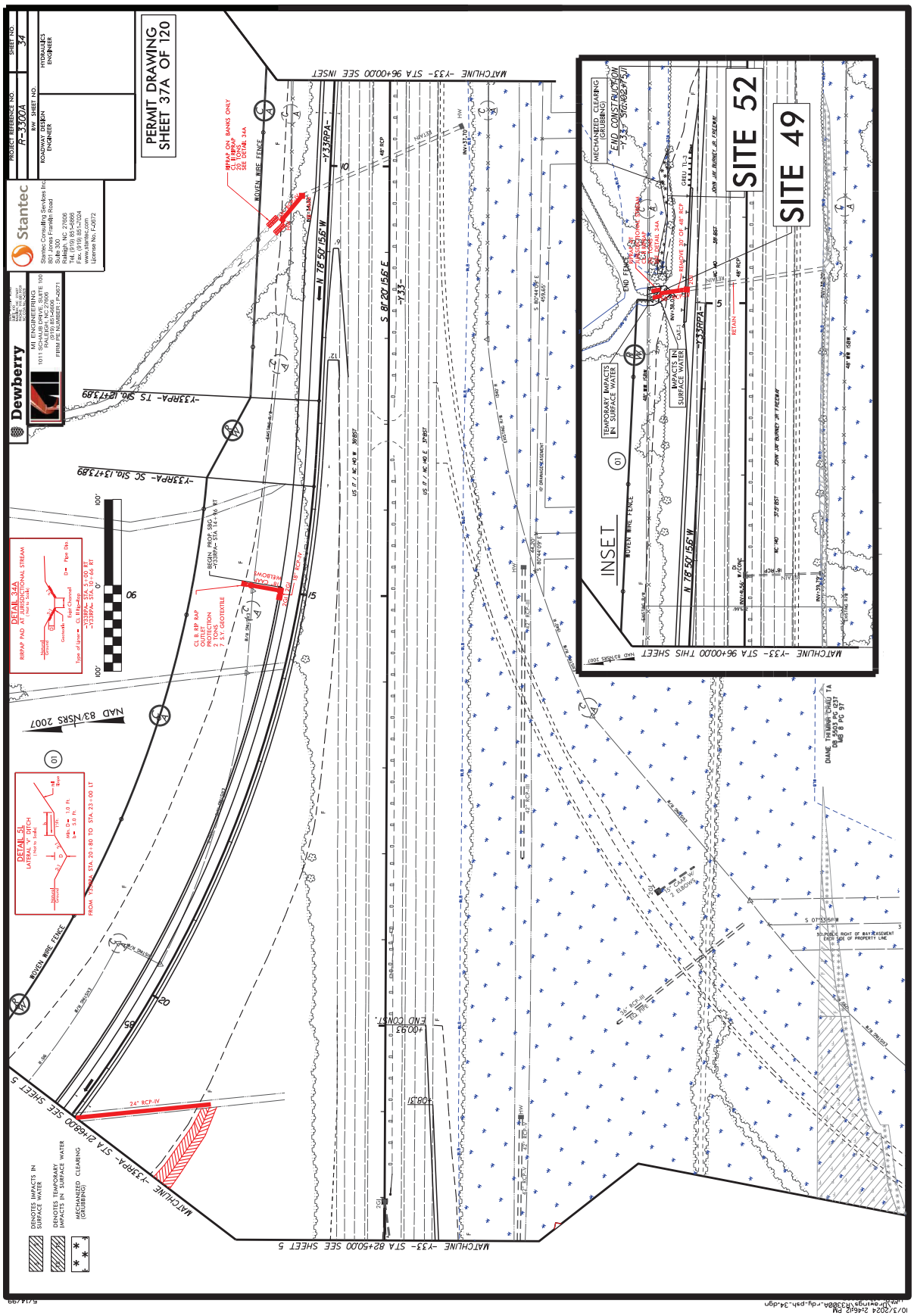

PROJECT REFERENCE NO.
R-3300A
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
SHEET NO.
15
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Stantec
Dewberry
PERMIT DRAWING
SHEET 35 OF 120
NAD 83/NSRS 2007
SITE 20
SEE SHEET 46 FOR -L1- PROFILE
SEE SHEET 28-I FOR HORIZONTAL CURVE DATA
WATCHLINE -L1- STA 373+00.00 SEE SHEET 16
WATCHLINE -L1- STA 360+00.00 SEE SHEET 14
WOVEN WIRE FENCE
R.B. HUNT, ET UX
CAROL D. HUNT
J.W. COVIL, ET UX
ROGER G. VAN DE BERG, ET UX
THOMAS L. SKINNER
RONALD R. ENGEL CO-TRUSTEE, ET AL
F.J.H. LLC.
RODNEY KING, ET UX
JOHN R. HATCHER, ET UX
WOODS
DETAIL 15A
DETAIL 15B
DETAIL 15C
DETAIL 15D
DETAIL 15E
RIP-RAP CL.B WITH GEOTEXTILE
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)

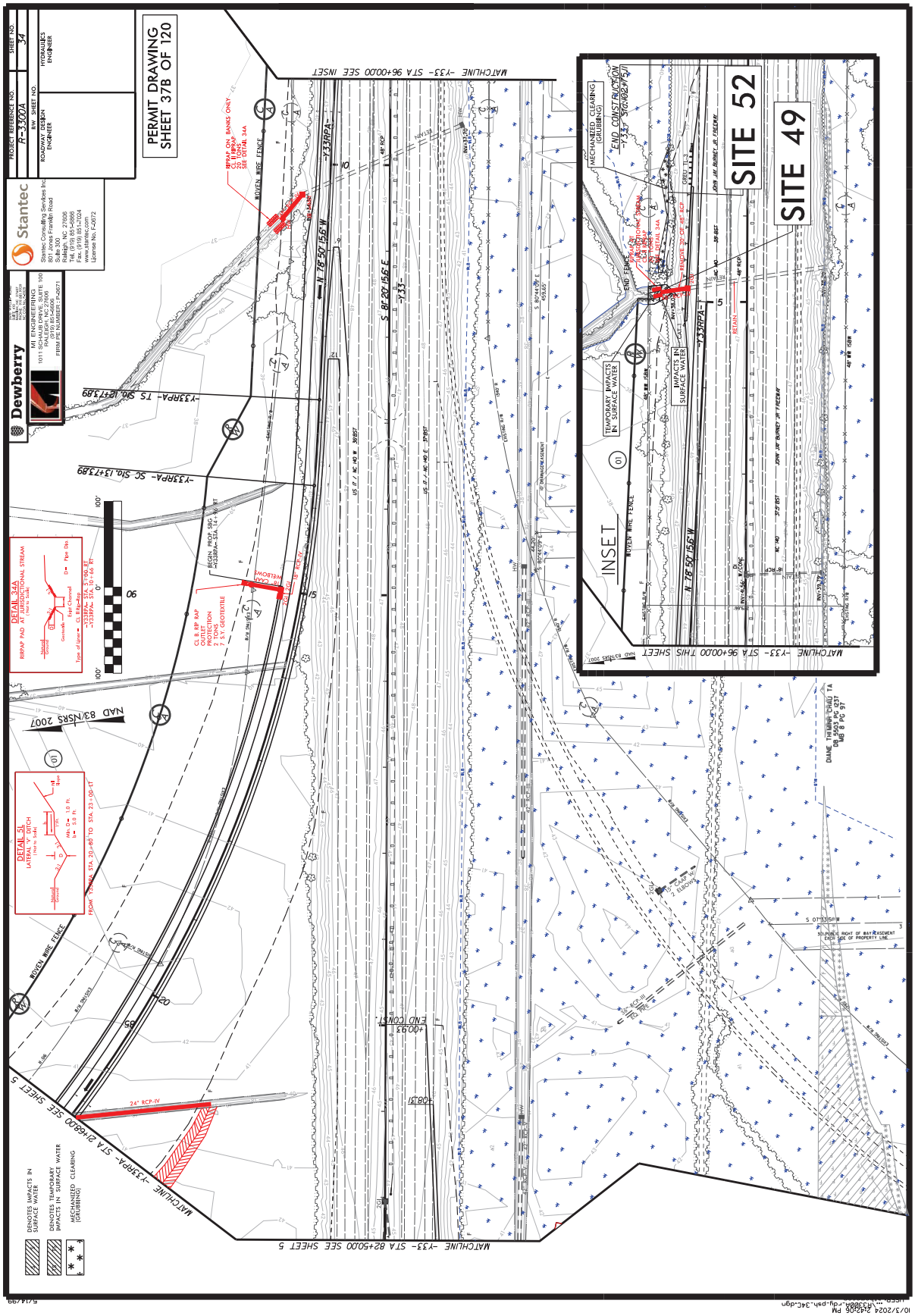

PROJECT REFERENCE NO. R-3300A
SHEET NO. 33
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Stantec
Stantec Consulting Services Inc
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672
Dewberry
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671
PERMIT DRAWING
SHEET 36 OF 120
NAD 83/NSRS 2007
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
SITE 1
DRAINAGE FROM PROJECT U-4751
U-4751 ROADWAY DESIGN FILES ARE DASHED LINES IN THE PROPOSED ROADWAY
100'
0'
100'
SEE SHEET 61 FOR -Y33RPCA- PROFILE
MATCHLINE -Y33RPCA- STA 24+50.00 SEE SHEET 5
PIPES INSTALLED UNDER TIP PROJECT U-4751 HAVE BEEN MODIFIED TO SHOW AS EXISTING ON TIP PROJECT R-3300A
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA
LENIER FURR
2SFD
BURY INLET 1.0'
MECHANICAL CLEARING INSIDE PROPOSED FILL AREA WAS PERMITTED UNDER U-4751. NO MITIGATION IS REQUIRED FOR THIS AREA.
WETLAND AREA INCLUDED IN U-4751 PERMITS
BEGIN CONSTRUCTION Y33RPCA STA 22+61.33
DONE BY OTHERS
REMOVED BY OTHERS
30' PUBLIC RIGHT OF WAY EASEMENT EACH SIDE OF PROPERTY LINE
MARK F. HOLLIFIELD
-Y33RPCA- SC Sta. 20+05.73
WILD MAGNOLIA RD
30" HDPE
ETTA P WILSON, HEIRS
REMOVE AND RESET GRAU 350 TL-3 & TIE TO EXIST GUARDRAIL
TIE TO EXIST PAVEMENT
EXISTING R/W
-Y33RPCA- TS Sta. 18+61.73
1SFD
10' SOIL
24" RCP
KENNETH WAYNE BARROW
DONE BY OTHERS
S 50°13'47.4" E
GREU TL-3
CLEANOUT & RETAIN EX PIPE EST 177 LF
KAY A. LEE
-Y33RPCA- ST Sta. 14+51.73
-Y33RPCA- CS Sta. 13+67.73
9' SOIL
5/14/99
10/3/2024 2:45:55 PM
...\Drawings\R3300A-rdy-psh-33.dgn

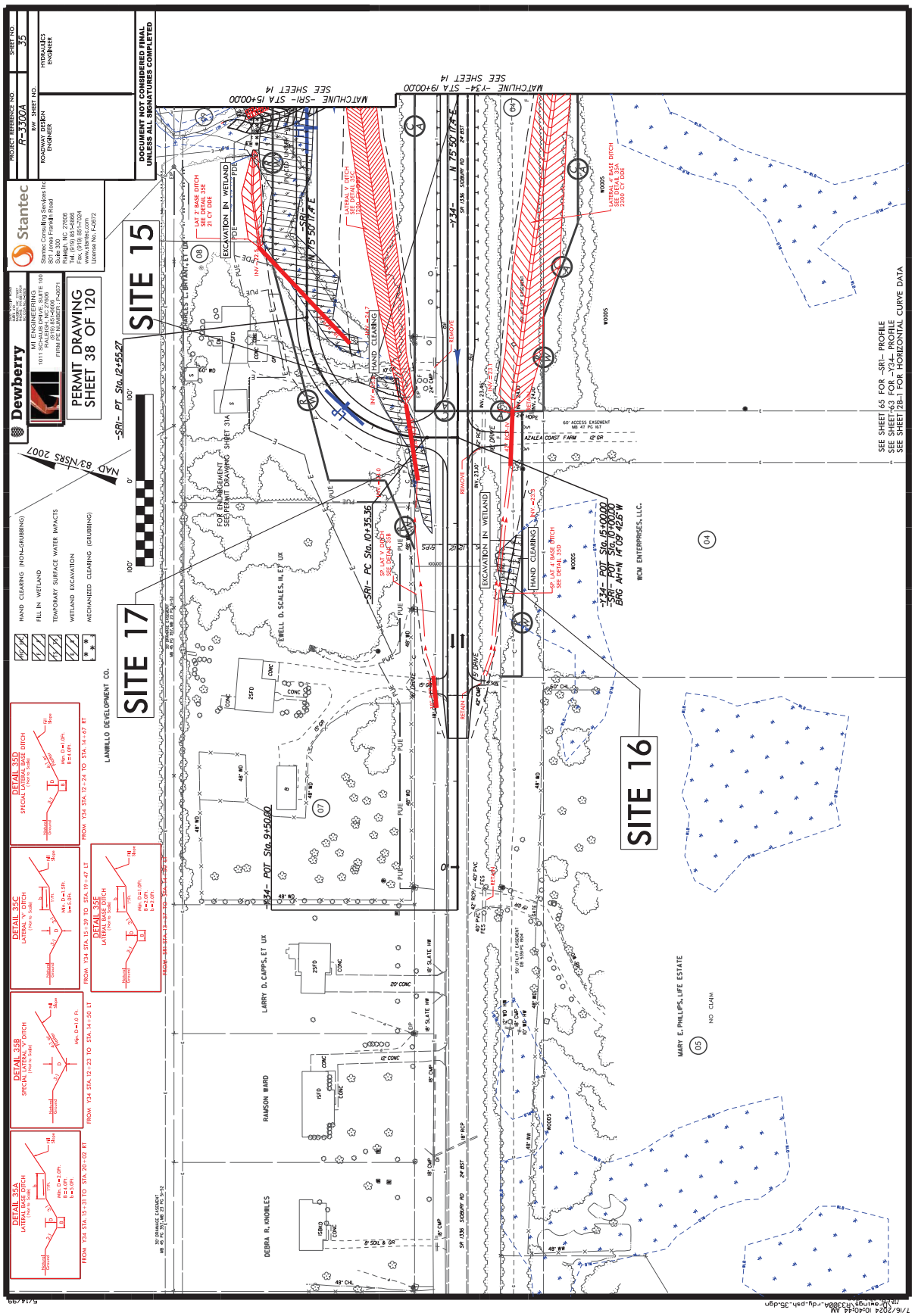
11/20/2024


SITE 1
PERMIT DRAWING
SHEET 37 OF 120
NAD 83/NSRS 2007
DRAINAGE FROM PROJECT U-4751
U-4751 ROADWAY DESIGN FILES ARE DASHED LINES IN THE PROPOSED ROADWAY
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
MATCHLINE -Y33RPCA- STA 24+50.00 SEE SHEET 5
SEE SHEET 61 FOR -Y33RPCA- PROFILE
PROJECT REFERENCE NO. R-3300A
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
SHEET NO. 33
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Stantec
Dewberry
MJ ENGINEERING
-Y33RPCA- STA 22+46.33
BEGIN CONSTRUCTION
-Y33RPCA- SC Sta 20+05.73
-Y33RPCA- TS Sta 18+61.73
-Y33RPCA- CS Sta 14+51.73
-Y33RPCA- ST Sta 13+67.73
DOME BY OTHERS
MARK F. HOLLIFIELD
KENNETH WAYNE BARROW
KAY A. LEE
ETTA P. WILSON, HEIRS
LENER FURR
PIPES INSTALLED UNDER TIP PROJECT U-4751 HAVE BEEN MODIFIED TO SHOW AS EXISTING ON THE PROJECT R-3300A
SEE SHEET 28-J FOR HORIZONTAL CURVE DATA

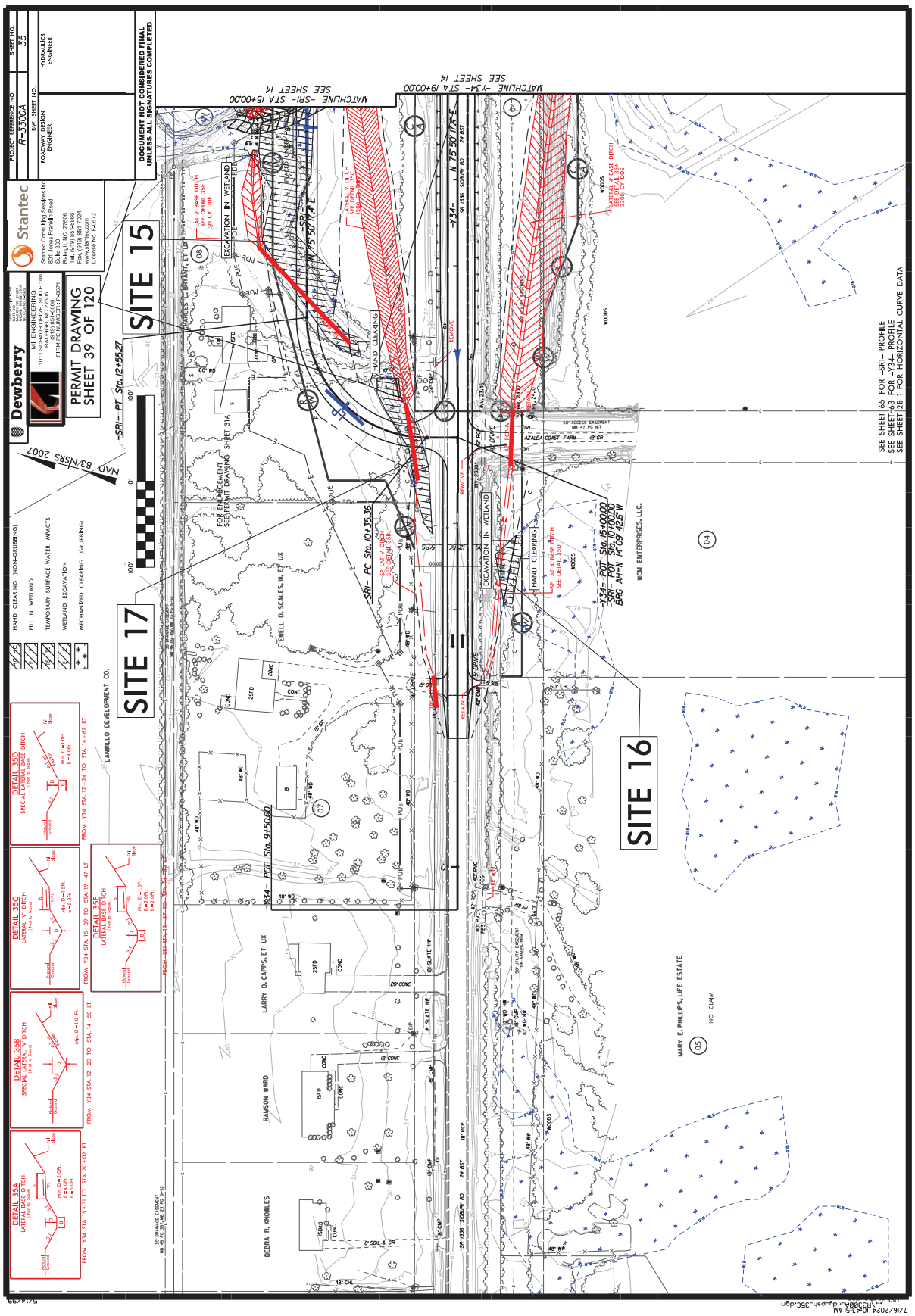
11/20/2024

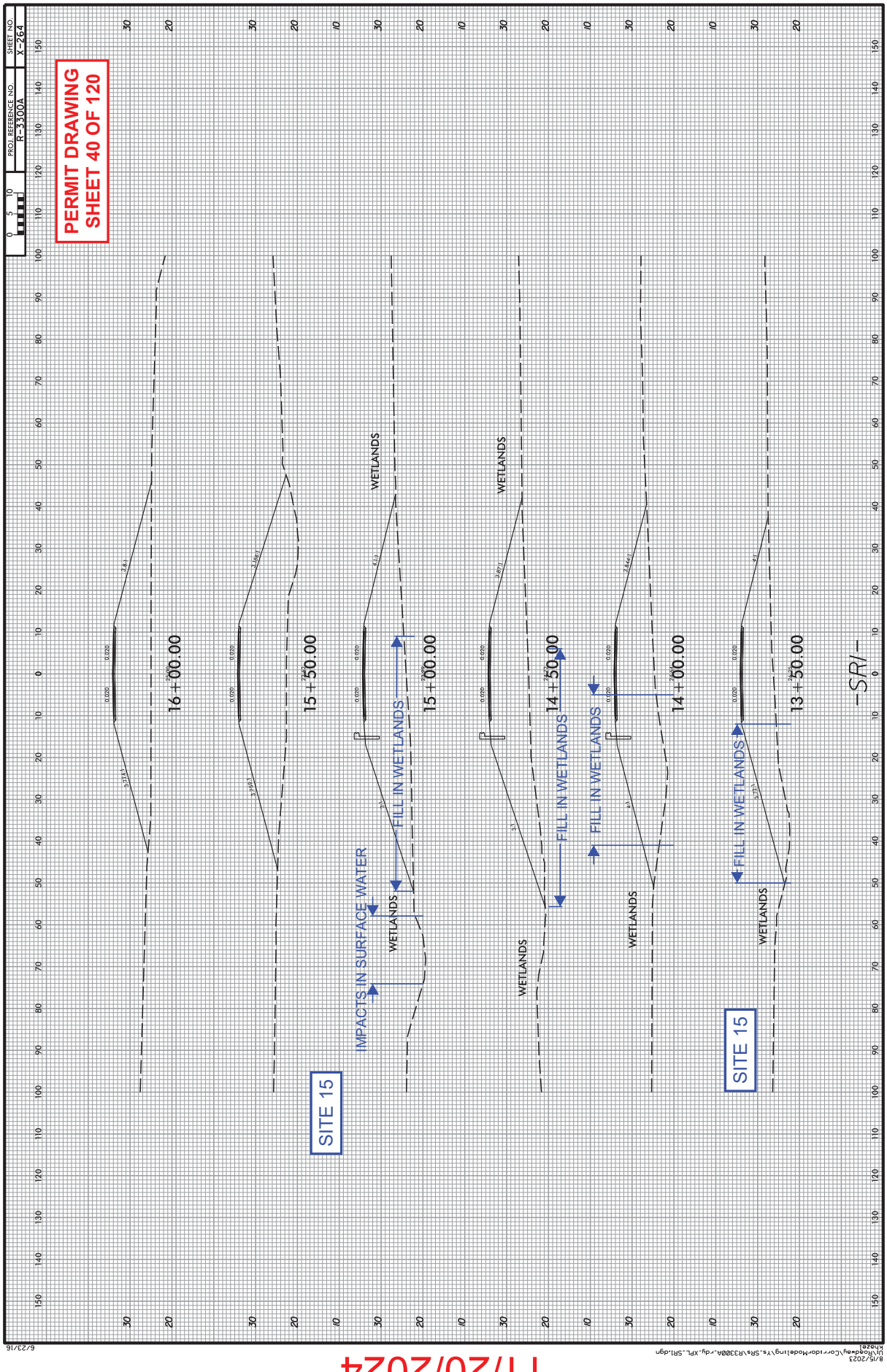

PERMIT DRAWING
SHEET 37A OF 120
SITE 49
SITE 52
INSET
MATCHLINE -Y33- STA 96+00.00 SEE INSET
MATCHLINE -Y33- STA 96+00.00 THIS SHEET
MATCHLINE -Y33RPA- STA 21+68.00 SEE SHEET 5
MATCHLINE -Y33- STA 82+50.00 SEE SHEET 5
-Y33RPA- TS Sta. 12+73.89
-Y33RPA- SC Sta. 13+73.89
N 78° 50' 15.6" W
S 81° 20' 15.6" E
-Y33-
-Y33RPA-
WOVEN WIRE FENCE
END CONST.
+00.93
RIPRAP ON BANKS ONLY
CLASS B
20 TONS
SEE DETAIL 34A
BEGIN PROP. SBG
-Y33RPA- STA 14+46 RT
CL B RIP RAP
OUTLET
PROTECTION
2 TONS
3' X 3' GEOTEXTILE
DETAIL 34A
RIPRAP PAD AT INTERMITTENT STREAM
DETAIL 5L
LATERAL "V" DITCH
FROM -Y33RPA- STA 20+80 TO STA 23+00 LT
24" RCP-IV
48" RCP
DIANE TIFFANY DAVIS TA
DB 3901 Pg 037
MB 8 PG 97
NAD 83/NSRS 2007
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
MECHANIZED CLEARING (GRUBBING)
Dewberry
Stantec
ROADWAY DESIGNER
HYDRAULICS ENGINEER
PROJECT REFERENCE NO. R-3300A
SHEET NO. 34
TOTAL SHEETS 34


PERMIT DRAWING
SHEET 37B OF 120
SITE 52
SITE 49
INSET
MATCHLINE -Y33- STA 96+00.00 SEE INSET
MATCHLINE -Y33- STA 96+00.00 THIS SHEET
MATCHLINE -Y33RPA- STA 21+66.00 SEE SHEET 5
MATCHLINE -Y33- STA 82+50.00 SEE SHEET 5
WOVEN WIRE FENCE
N 78°50'16.6" W
S 8°20'16.6" E
-Y33-
-Y33RPA-
END CONSTRUCTION
-Y33RPA- STA 21+66.00
-Y33- STA 82+50.00
RIPRAP ON BANKS ONLY
CLASS A
20 TONS
SEE DETAIL 34A
DETAIL 34A
RIPRAP PAD AT INTERMITTENT STREAM
DETAIL 5L
LATERAL "V" DITCH
CLASS A RIPRAP
PROTECTION
2 TONS
1 SY GEOTEXTILE
24" RCP-IV
NAD 83/NSRS 2007
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
MECHANIZED CLEARING (GRUBBING)
TEMPORARY IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
MECHANIZED CLEARING (GRUBBING)
Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. 34
ROADWAY DESIGNER ENGINEER
HYDRAULICS ENGINEER

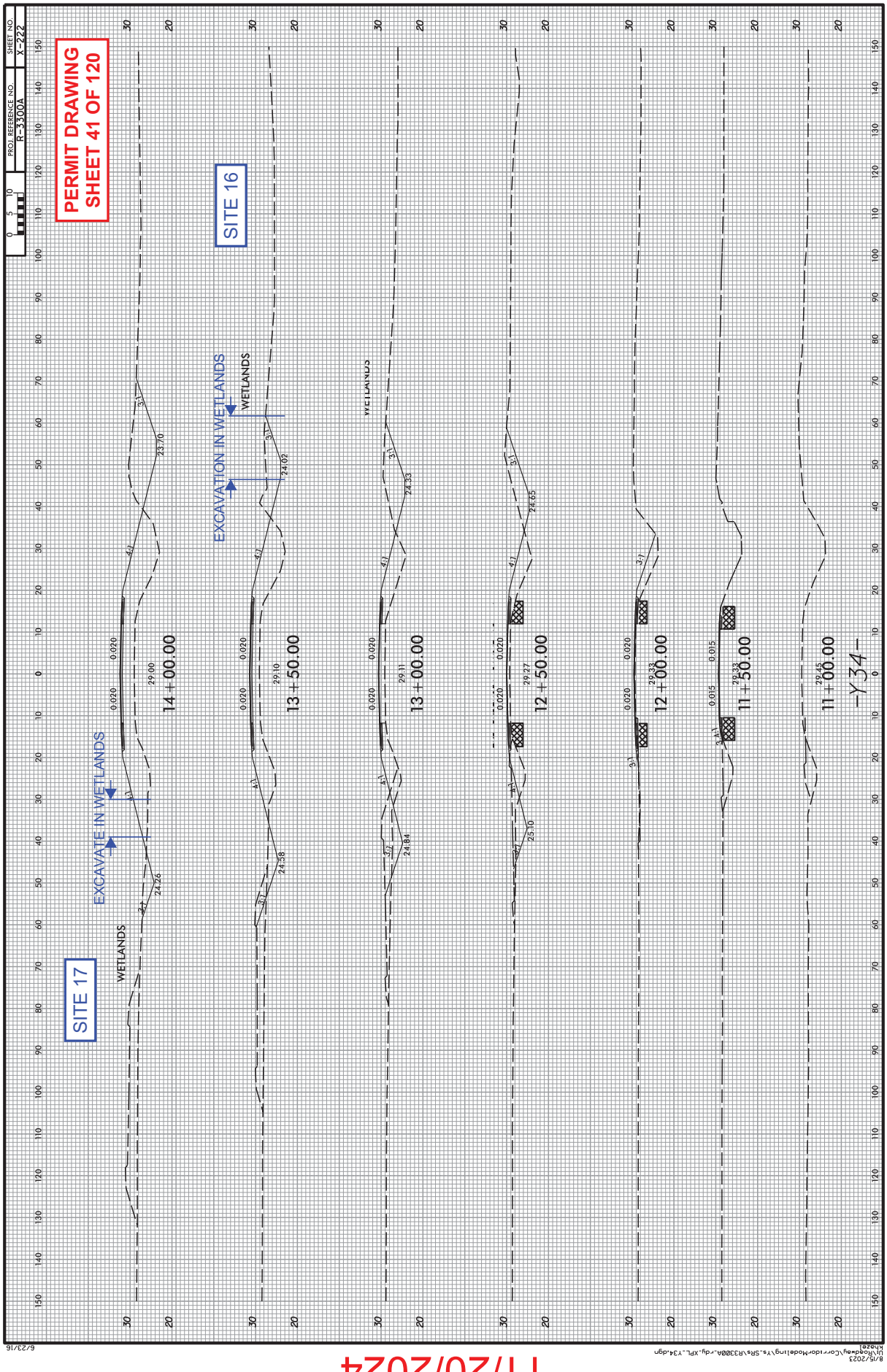

SITE 15
SITE 16
SITE 17
PERMIT DRAWING
SHEET 38 OF 120
Dewberry
Stantec
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PROJECT REFERENCE NO. A-3300A
SHEET NO 35
HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER
R/W SHEET NO
MT ENGINEERING
1011 CREEDMOOR ROAD, SUITE 100
RALEIGH, NC 27605
FIRM PE NUMBER: P-4671
Stantec Consulting Services Inc.
801 Corporate Center Drive
Suite 300
Raleigh, NC 27607
Tel. (919) 851-6666
Fax. (919) 851-7024
www.stantec.com
License No. F-0272
NAD 83/NSRS 2007
HAND CLEARING (NON-GRUBBING)
FILL IN WETLAND
TEMPORARY SURFACE WATER IMPACTS
WETLAND EXCAVATION
MECHANIZED CLEARING (GRUBBING)
DETAIL 35A
DETAIL 35B
DETAIL 35C
DETAIL 35D
DETAIL 35E
LANMILLO DEVELOPMENT CO.
LARRY D. CAPPS, ET UX
RAMSON WARD
DEBRA R. KNOWLES
EWELL D. SCALES, III, ET UX
MARY E. PHILLIPS, LIFE ESTATE
WCM ENTERPRISES, LLC.
AZALEA COAST FARM
SR 1336 SIDBURY RD
-SRI- PT Sta.12+55.27
-SRI- PC Sta.10+35.36
-Y34- POT Sta.9+50.00
-Y34- POT Sta.15+00.00
BRG AH=N 14°09'42.6"W
-SRI- PT Sta.20+02.74
-Y34- PC Sta.19+47.07
-Y34- PT Sta.12+24.14
-SRI- PC Sta.15+39.19
-Y34- PT Sta.14+50.13
-SRI- PT Sta.15+23.10
SEE SHEET 65 FOR -SRI- PROFILE
SEE SHEET 63 FOR -Y34- PROFILE
SEE SHEET 28-1 FOR HORIZONTAL CURVE DATA
MATCHLINE -SRI- STA 15+00.00
SEE SHEET 14
MATCHLINE -Y34- STA 19+00.00
SEE SHEET 14

11/20/2024

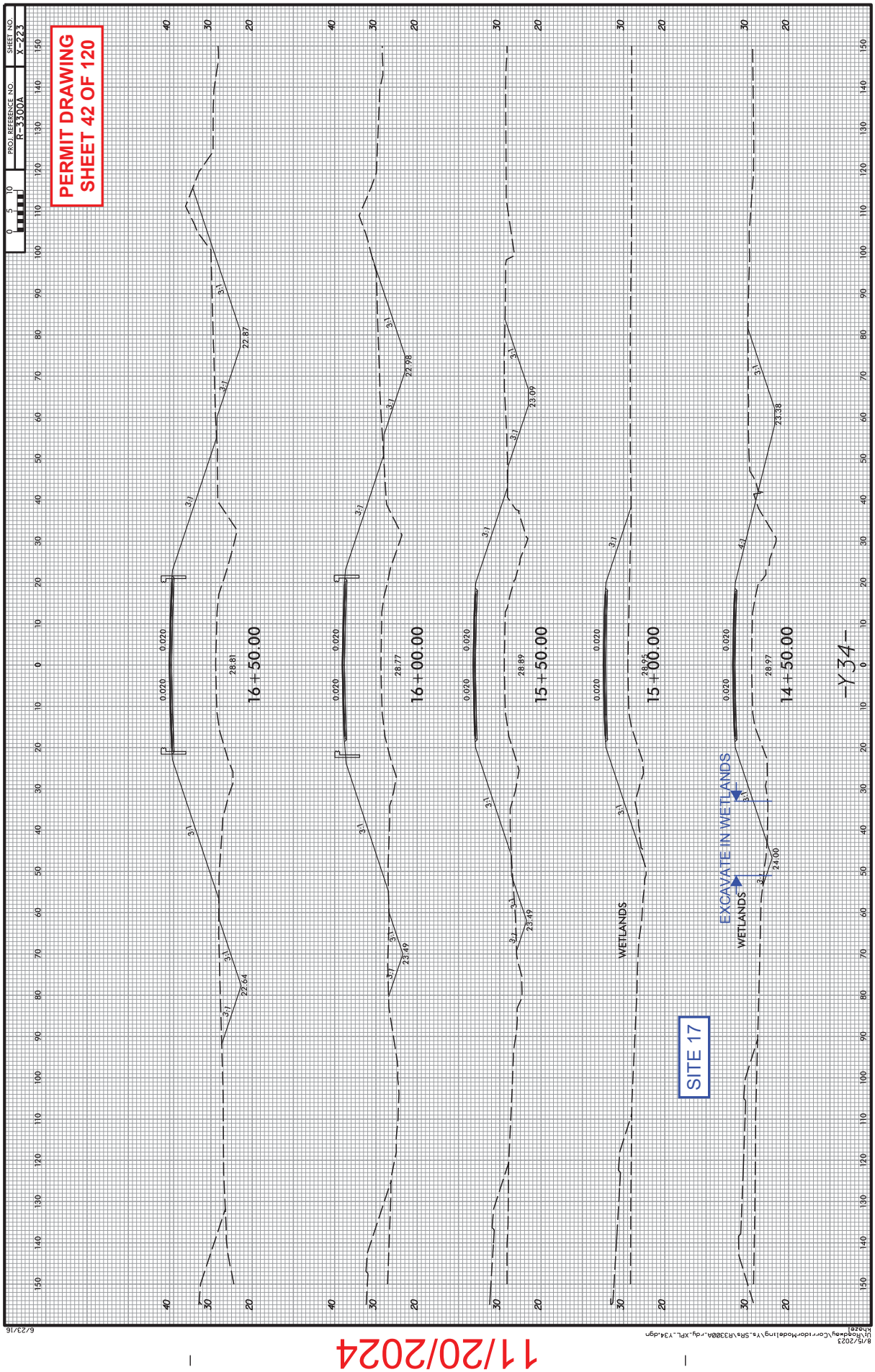

Dewberry
PERMIT DRAWING
SHEET 39 OF 120
SITE 15
SITE 16
SITE 17
-SRI- PT Sta 12+55.27
-Y34- POT Sta 9+50.00
-SRI- PC Sta 10+35.36
-Y34- POT Sta 16+00.00
-SRI- POT Sta 16+00.00
BRG AH=N 14°09'42.6"W
-SRI- N 75°50'17.4" E
-Y34- N 75°50'17.4" E
MATCHLINE -SRI- STA 15+00.00 SEE SHEET 14
MATCHLINE -Y34- STA 19+00.00 SEE SHEET 14
SEE SHEET 65 FOR -SRI- PROFILE
SEE SHEET 63 FOR -Y34- PROFILE
SEE SHEET 28-1 FOR HORIZONTAL CURVE DATA
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PROJECT REFERENCE NO. A-3300A
SHEET NO 35
HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER
R/W SHEET NO
Stantec
MJ ENGINEERING
LANDMILLO DEVELOPMENT CO.
LARRY D. CAPPS, ET UX
EWELL D. SCALES, III, ET UX
DEBRA R. KNOWLES
RAMSON WARD
MARY E. PHILLIPS, LIFE ESTATE
WCM ENTERPRISES, LLC.
AZALEA COAST FARM
DETAIL 35A
DETAIL 35B
DETAIL 35C
DETAIL 35D
DETAIL 35E
HAND CLEARING (NON-GRUBBING)
FILL IN WETLAND
TEMPORARY SURFACE WATER IMPACTS
WETLAND EXCAVATION
MECHANIZED CLEARING (GRUBBING)
NAD 83/NSRS 2007
11/20/2024


PERMIT DRAWING
SHEET 40 OF 120
SHEET NO.
X-264
PROJ. REFERENCE NO.
R-3300A
16+00.00
15+50.00
15+00.00
14+50.00
14+00.00
13+50.00
WETLANDS
IMPACTS IN SURFACE WATER
FILL IN WETLANDS
SITE 15
-SR1-

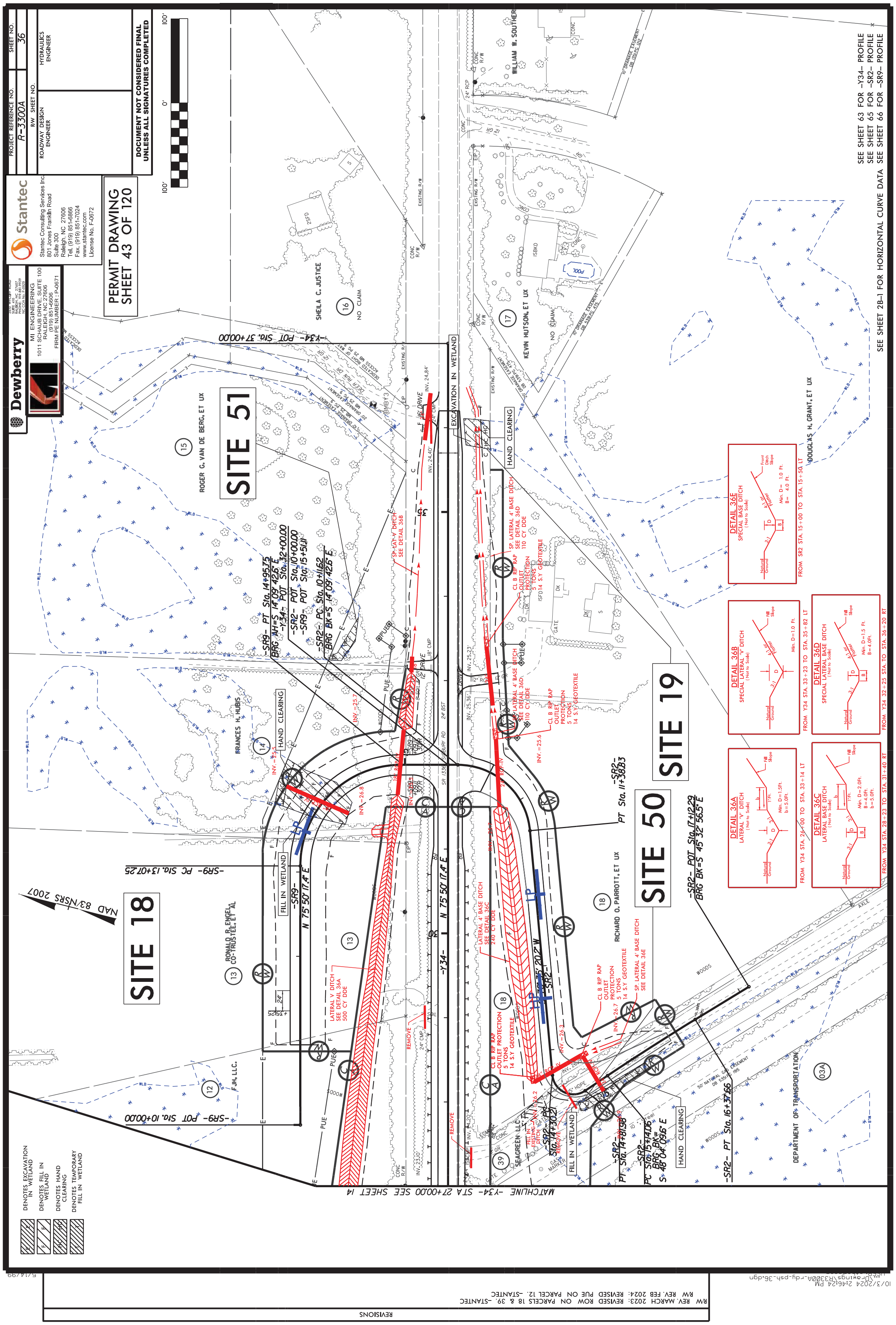
11/20/2024


PERMIT DRAWING
SHEET 41 OF 120
SHEET NO. X-222
PROJ. REFERENCE NO. R-3300A
0 5 10
SITE 17
SITE 16
EXCAVATE IN WETLANDS
EXCAVATION IN WETLANDS
WETLANDS
14+00.00
13+50.00
13+00.00
12+50.00
12+00.00
11+50.00
11+00.00
-Y34-
6/23/16
8/15/2023
U:\Projects\Corridor Modeling\Ys_SRs\R3300A_rdy_XPL_Y34.dgn

11/20/2024


PERMIT DRAWING
SHEET 42 OF 120
PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-223
16+50.00
16+00.00
15+50.00
15+00.00
14+50.00
WETLANDS
WETLANDS
EXCAVATE IN WETLANDS
SITE 17
-Y34-

11/20/2024


PROJECT REFERENCE NO.
R-3300A
SHEET NO.
36
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672
PERMIT DRAWING
SHEET 43 OF 120
Dewberry
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671
SITE 51
SITE 18
SITE 19
SITE 50
ROGER G. VAN DE BERG, ET UX
SHEILA C. JUSTICE
NO CLAIM
KEVIN HUTSON, ET UX
WILLIAM W. SOUTHERN
DOUGLAS H. GRANT, ET UX
FRANCES H. HUBIS
RONALD R. ENGEL, CO-TRUSTEE, ET AL
RICHARD O. PARROTT, ET UX
FJH, LLC.
SEAGREEN LLC
DEPARTMENT OF TRANSPORTATION
-Y34- POT Sta. 37+00.00
-SR9- PT Sta. 14+95.75
BRG AH=S 14°09' 42.6" E
-Y34- POT Sta. 32+00.00
-SR2- POT Sta. 10+00.00
-SR9- POT Sta. 15+51.11
-SR2- PC Sta. 10+11.62
BRG BK=S 14°09' 42.6" E
-SR9- PC Sta. 13+07.25
-SR9- POT Sta. 10+00.00
-SR2- PT Sta. 11+38.83
-SR2- POT Sta. 17+12.29
BRG BK=S 45°32' 56.5" E
-SR2- PC Sta. 14+30.21
-SR2- PT Sta. 14+81.98
-SR2- PC Sta. 15+14.06
S 48°04' 09.6" E
-SR2- PT Sta. 16+37.66
N 75°50' 17.4" E
NAD 83/NSRS 2007
EXCAVATION IN WETLAND
HAND CLEARING
FILL IN WETLAND
LATERAL V DITCH SEE DETAIL 36A 500 CY DDE
LATERAL 4' BASE DITCH SEE DETAIL 36C 240 CY DDE
SP. LATERAL 4' BASE DITCH SEE DETAIL 36D 110 CY DDE
SP. LATERAL 4' BASE DITCH SEE DETAIL 36E
SP. LAT V DITCH SEE DETAIL 36B
CL B RIP RAP OUTLET PROTECTION 5 TONS 14 S.Y GEOTEXTILE
DETAIL 36A LATERAL 'V' DITCH (Not to Scale) FROM Y34 STA. 26+00 TO STA. 33+14 LT
DETAIL 36B SPECIAL LATERAL 'V' DITCH (Not to Scale) FROM Y34 STA. 33+23 TO STA. 35+82 LT
DETAIL 36C LATERAL BASE DITCH (Not to Scale) FROM Y34 STA. 28+23 TO STA. 31+40 RT
DETAIL 36D SPECIAL LATERAL BASE DITCH (Not to Scale) FROM Y34 32+25 STA. TO STA. 36+20 RT
DETAIL 36E SPECIAL BASE DITCH (Not to Scale) FROM SR2 STA. 15+00 TO STA. 15+50 LT
MATCHLINE -Y34- STA 27+00.00 SEE SHEET 14
SEE SHEET 63 FOR -Y34- PROFILE
SEE SHEET 65 FOR -SR2- PROFILE
SEE SHEET 66 FOR -SR9- PROFILE
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
DENOTES TEMPORARY FILL IN WETLAND
REVISIONS
RW REV. MARCH 2023: REVISED ROW ON PARCELS 18 & 39. -STANTEC
RW REV. FEB 2024: REVISED PUE ON PARCEL 12. -STANTEC
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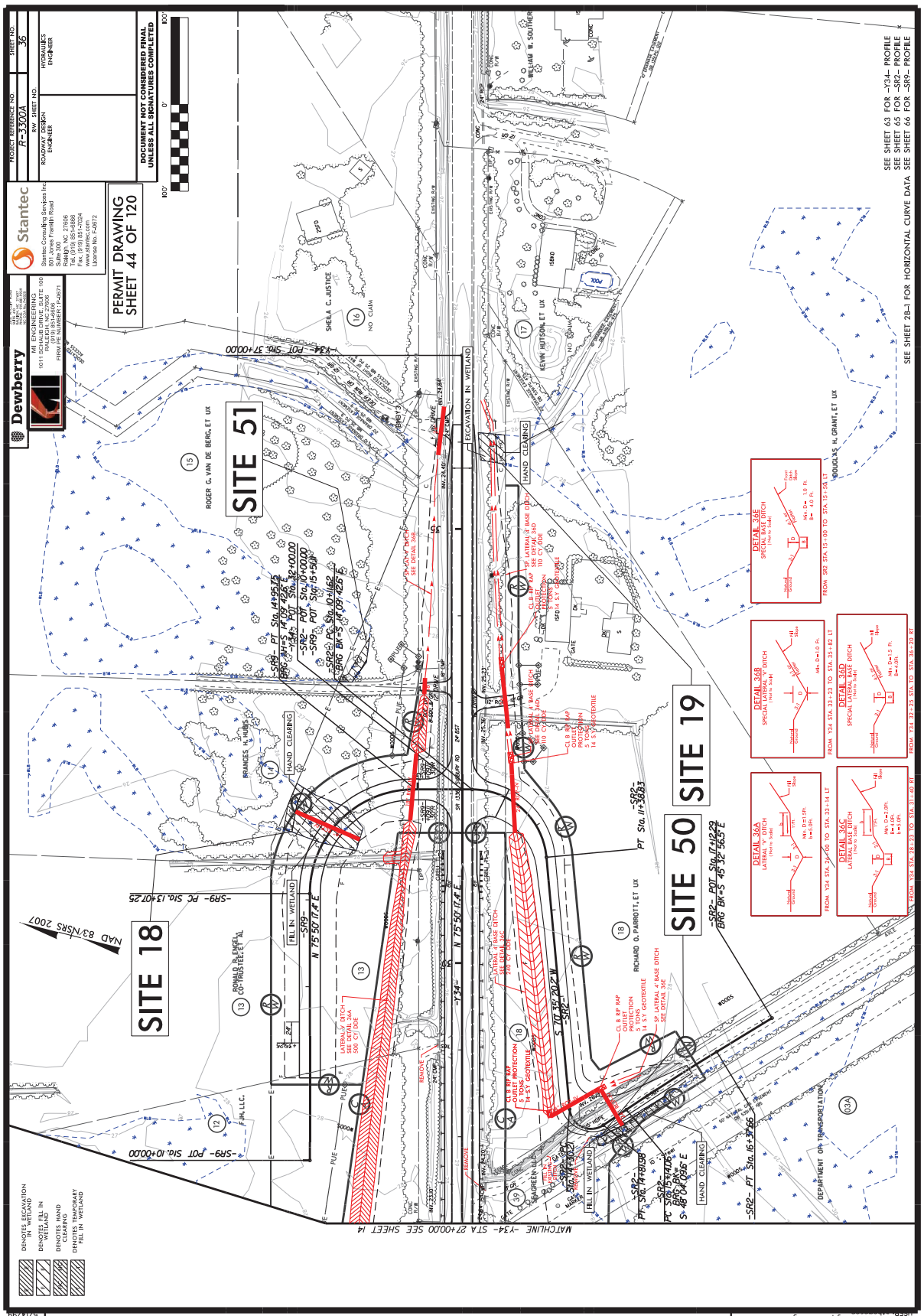
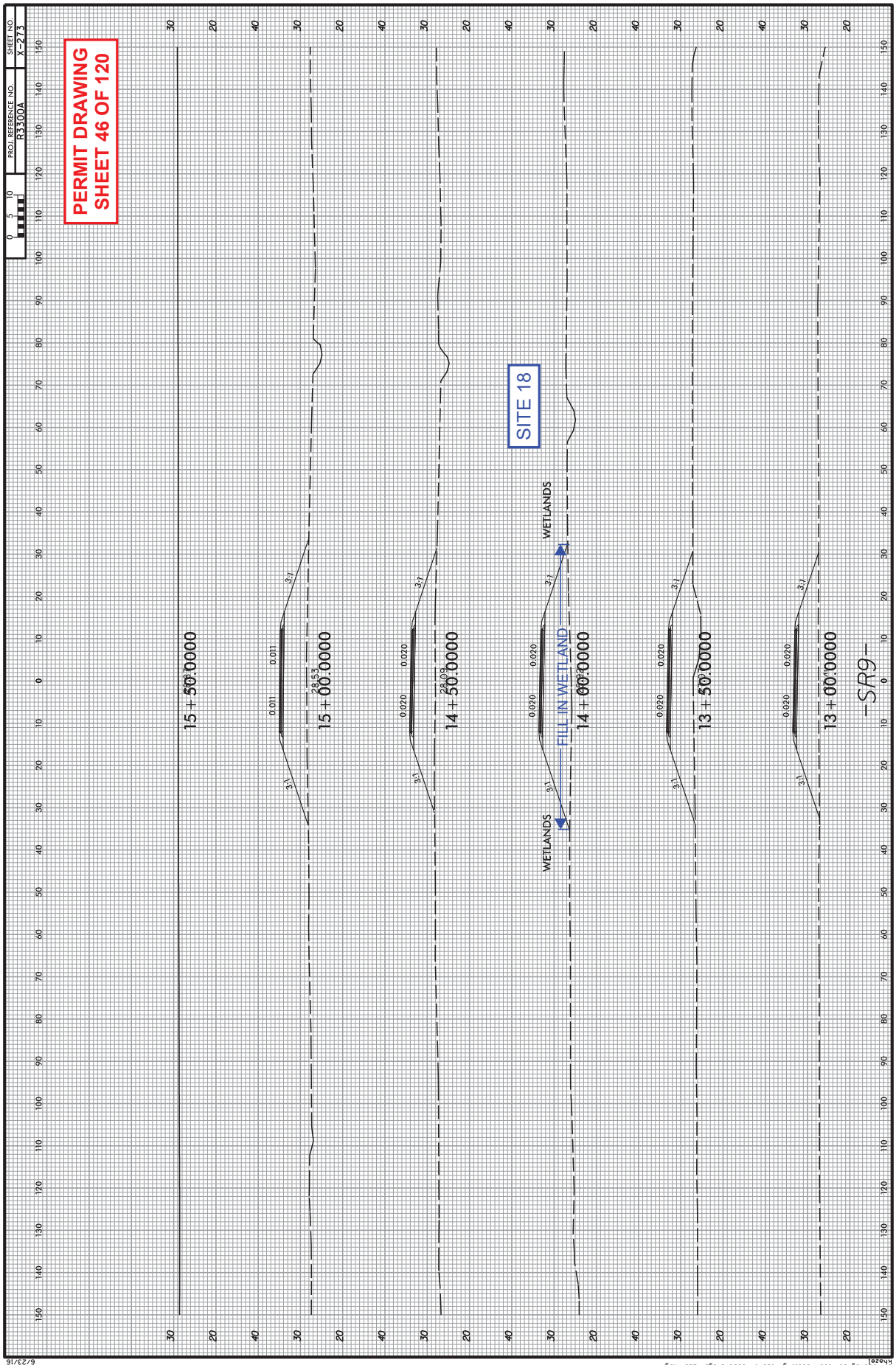
11/20/2024

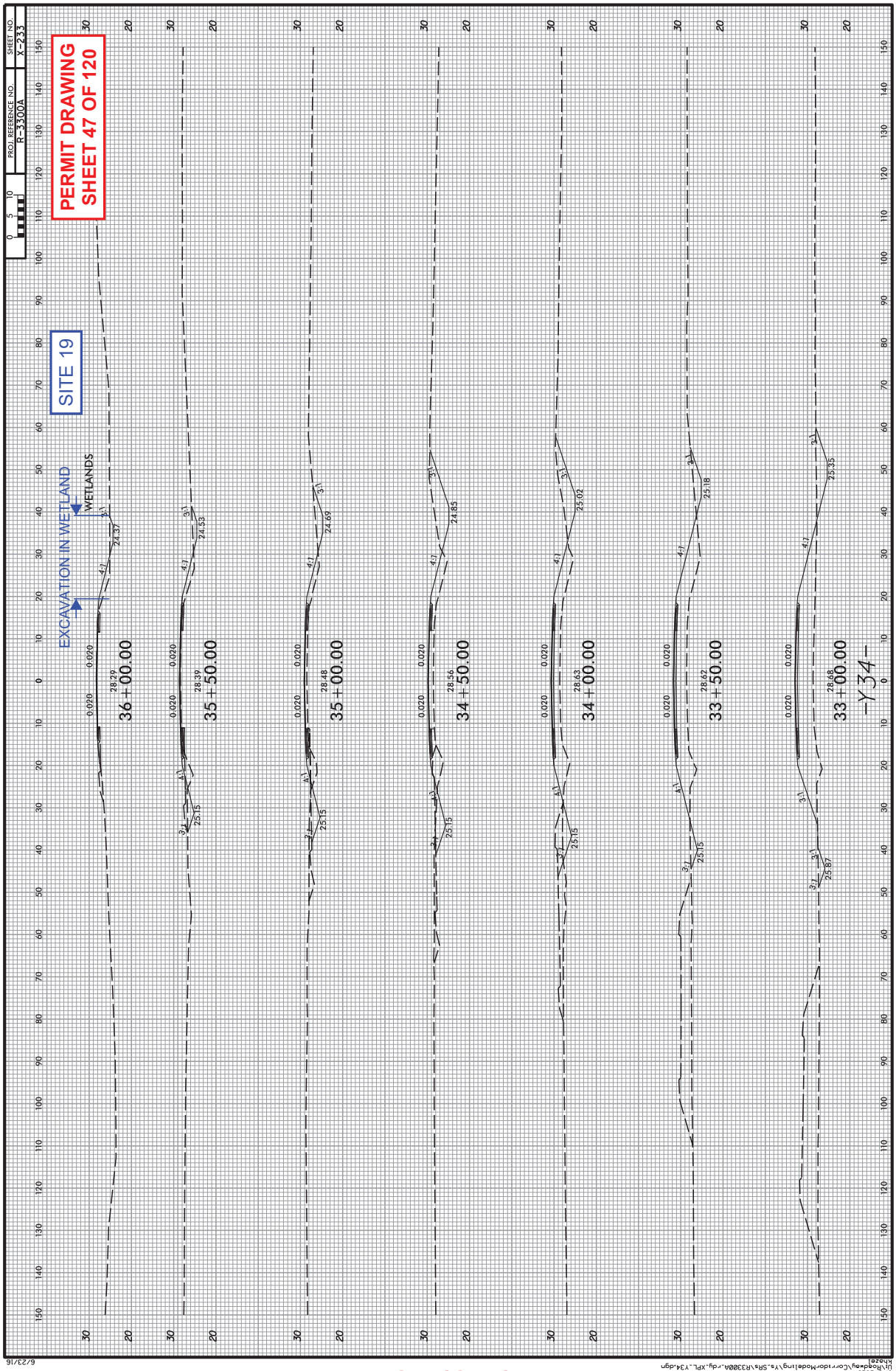

SITE 18
SITE 51
SITE 50
SITE 19
PERMIT DRAWING
SHEET 44 OF 120
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
Dewberry
Stantec
PROJECT REFERENCE NO. A-3300A
SHEET NO. 36
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NAD 83/NSRS 2007
SEE SHEET 63 FOR -Y34- PROFILE
SEE SHEET 65 FOR -SR2- PROFILE
SEE SHEET 66 FOR -SR9- PROFILE
SEE SHEET 2B-J FOR HORIZONTAL CURVE DATA
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
DENOTES ROADWAY FILL IN WETLAND
REVISIONS
-SR9- PC Sta. 13+07.25
-SR9- PT Sta. 14+09.42
-SR2- POT Sta. 10+00.62
-SR2- POT Sta. 32+00.00
-SR2- POT Sta. 15+50.00
-SR2- PC Sta. 10+14.30
-SR2- PT Sta. 16+37.66
-SR2- POT Sta. 11+36.83
-SR2- POT Sta. 17+12.29
-SR9- POT Sta. 10+00.00
-Y34- POT Sta. 37+00.00
MATCHLINE -Y34- STA 27+00.00 SEE SHEET 14
ROGER G. VAN DE BERG, ET UX
SHEILA C. AUSTICE
KEVIN HUTSON, ET UX
DOUGLAS H. GRANT, ET UX
RICHARD O. PARROTT, ET UX
DEPARTMENT OF TRANSPORTATION
DETAIL 36E
DETAIL 36B
DETAIL 36D
DETAIL 36A
DETAIL 36C
CL B RIP RAP OUTLET PROTECTION
SF LATERAL A BASE DITCH
SEE DETAIL 36E
300 CY/DE
HAND CLEARING
FILL IN WETLAND
EXCAVATION IN WETLAND
10/3/2024 2:13:49 PM
11/20/2024

PERMIT DRAWING
SHEET 45 OF 120
PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-268
17+00.00
16+50.00
16+00.00
15+50.00
15+00.00
14+50.00
14+00.00
13+50.00
SITE 13
SITE 13
FILL IN WETLANDS
FILL IN WETLANDS
-SR2-

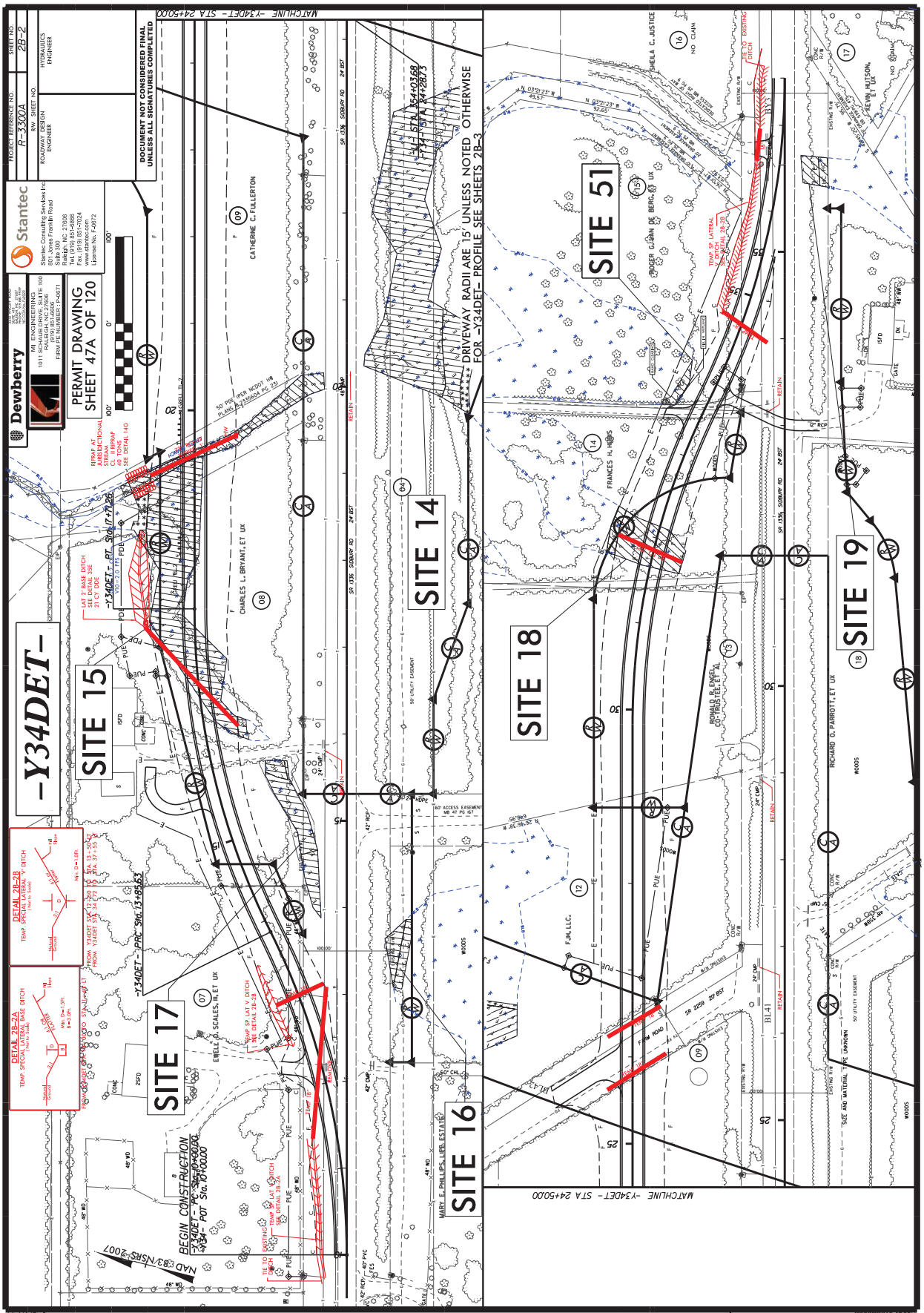
11/20/2024

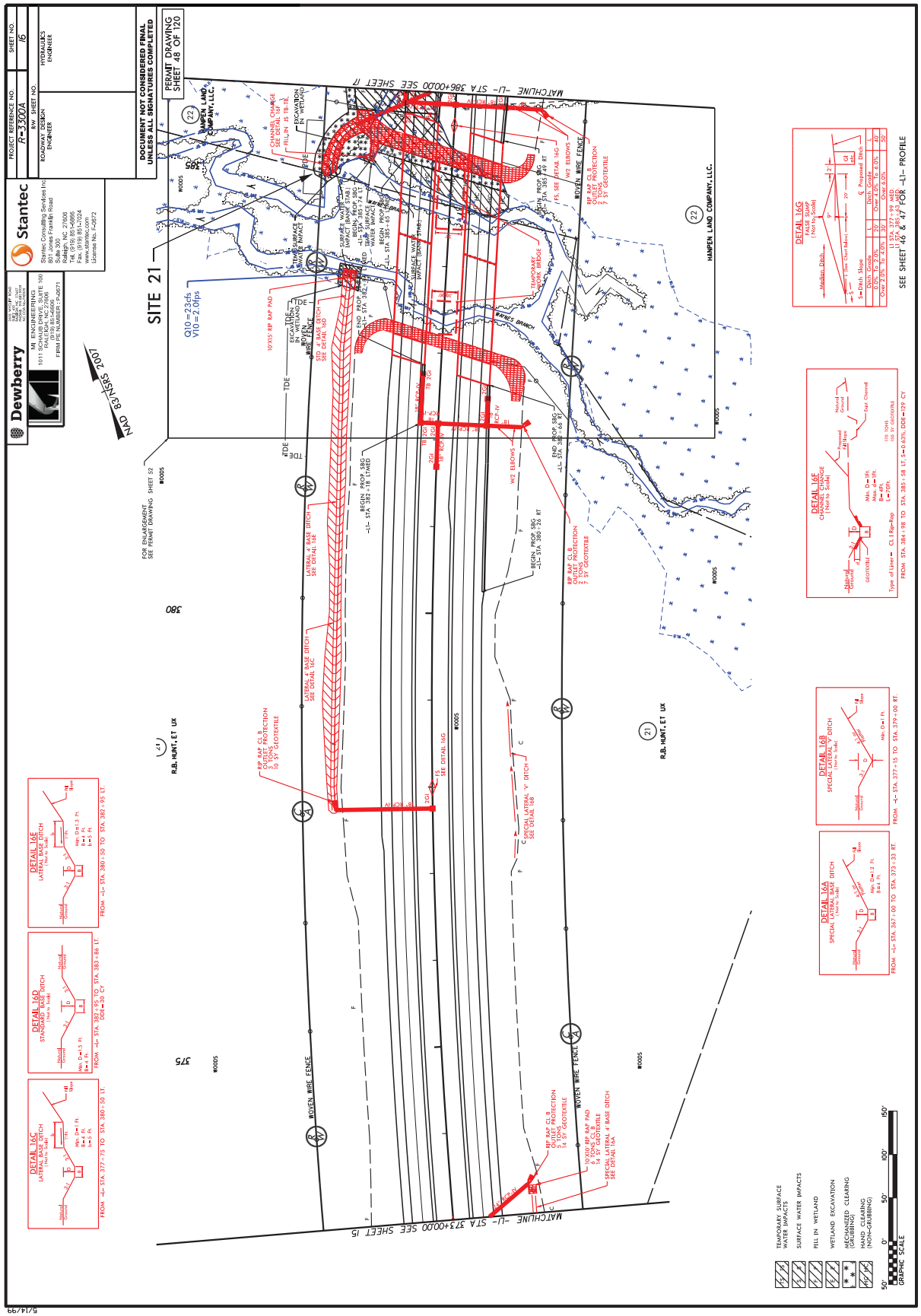

PERMIT DRAWING
SHEET 46 OF 120
SHEET NO.
X-213
PROJ. REFERENCE NO.
R3300A
0 5 10
SITE 18
FILL IN WETLAND
WETLANDS
WETLANDS
-SR9-
15 + 50.0000
15 + 00.0000
14 + 50.0000
14 + 00.0000
13 + 50.0000
13 + 00.0000
28.53
28.09
3:1
0.020
0.011

11/20/2024

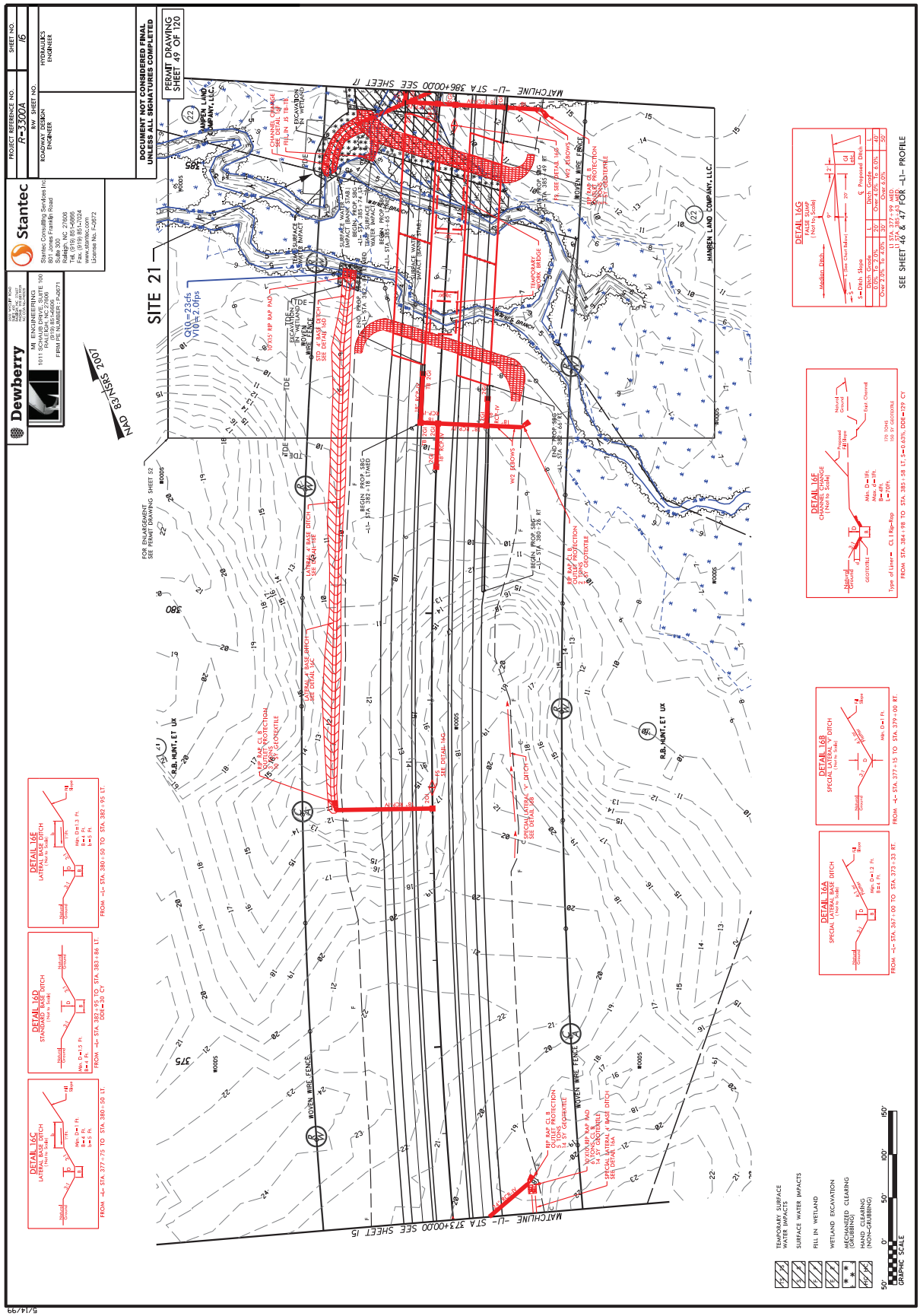

PERMIT DRAWING
SHEET 47 OF 120
SITE 19
EXCAVATION IN WETLAND
WETLANDS
PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-233
36+00.00
35+50.00
35+00.00
34+50.00
34+00.00
33+50.00
33+00.00
-Y34-

11/20/2024

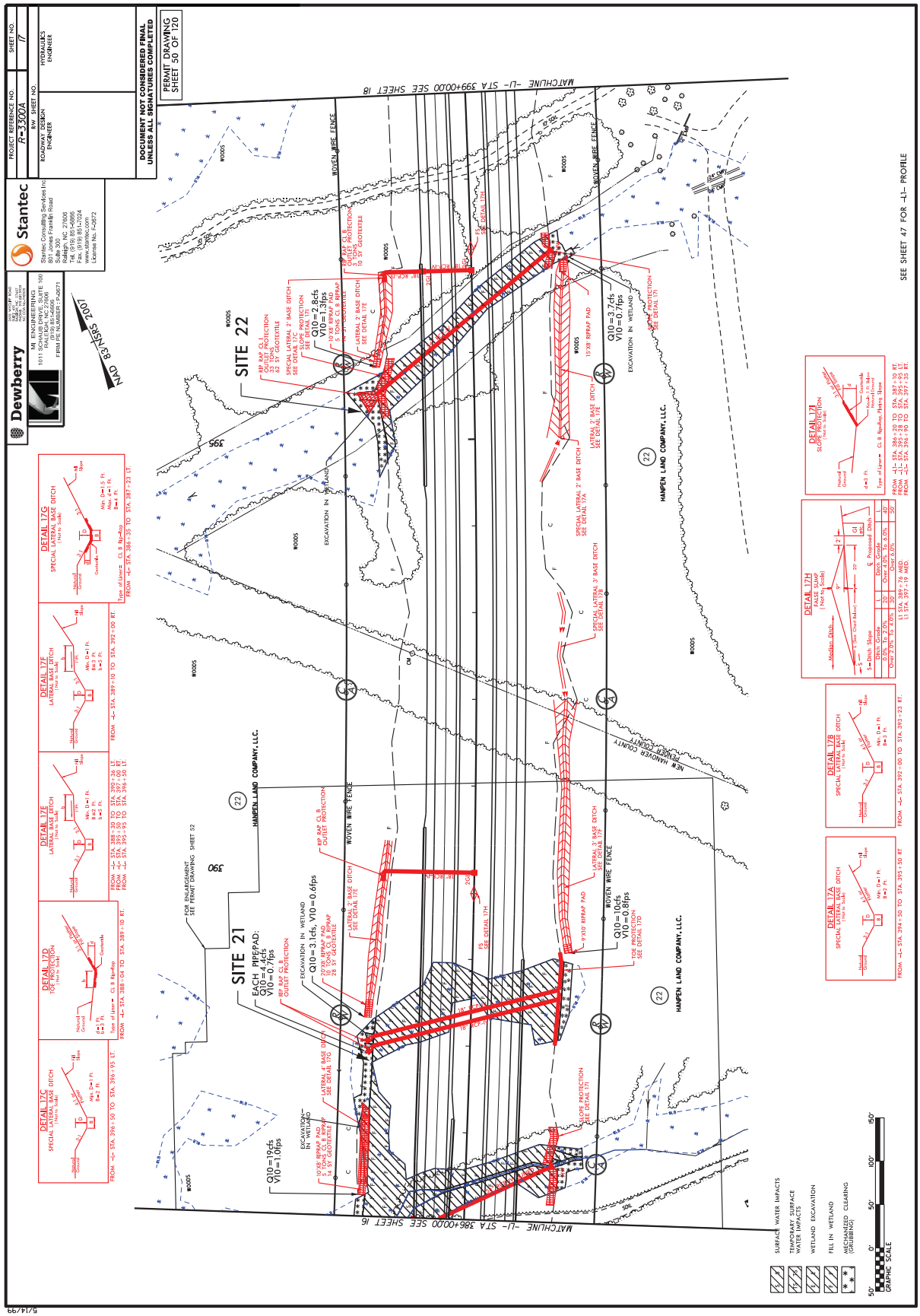

-Y34DET-
SITE 15
SITE 17
SITE 16
SITE 14
SITE 18
SITE 51
SITE 19
PERMIT DRAWING
SHEET 47A OF 120
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
DRIVEWAY RADII ARE 15' UNLESS NOTED OTHERWISE
FOR -Y34DET- PROFILE SEE SHEETS 28-3
MATCHLINE -Y34DET- STA 24+50.00
BEGIN CONSTRUCTION
-Y34DET- PC Sta. 10+00.00
-Y34- POT Sta. 10+00.00
-Y34DET- PRC Sta. 13+85.63
-Y34DET- PT Sta. 17+71.26
-Y34DET- STA. 354+03.68
-Y34- STA. 354+03.68
-Y34- 24+28.73
NAD 83/NSRS 2007
Dewberry
Stantec
R-3300A
2B-2
CATHERINE C. FULLERTON
CHARLES L. BRYANT, ET UX
FRANCES H. HOBBS
SHEILA C. JUSTICE
ROGER G. VAN DE BERG, ET UX
KEVIN HUTSON, ET UX
RONALD R. ENFIELD, ET UX
RICHARD O. PARROTT, ET UX
MARY E. PHILLIPS, LIFE ESTATE
F.M.H. LLC.
REVISIONS
11/20/2024


SITE 21
Q10 = 23cfs
V10 = 2.0fps
NAD 83 NSRS 2007
MATCHLINE -L- STA 373+00.00 SEE SHEET 15
MATCHLINE -L- STA 386+00.00 SEE SHEET 17
SEE SHEET 46 & 47 FOR -L- PROFILE
FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 52
PERMIT DRAWING SHEET 48 OF 120
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
HAMPEN LAND COMPANY, LLC.
R.B. HUNT, ET UX
WOVEN WIRE FENCE
WOODS
TEMPORARY SURFACE WATER IMPACTS
SURFACE WATER IMPACTS
FILL IN WETLAND
WETLAND EXCAVATION
MECHANIZED CLEARING (GRUBBING)
HAND CLEARING (NON-GRUBBING)
GRAPHIC SCALE
DETAIL 16C
DETAIL 16D
DETAIL 16E
DETAIL 16F
DETAIL 16G
DETAIL 16A
DETAIL 16B
Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. 16
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

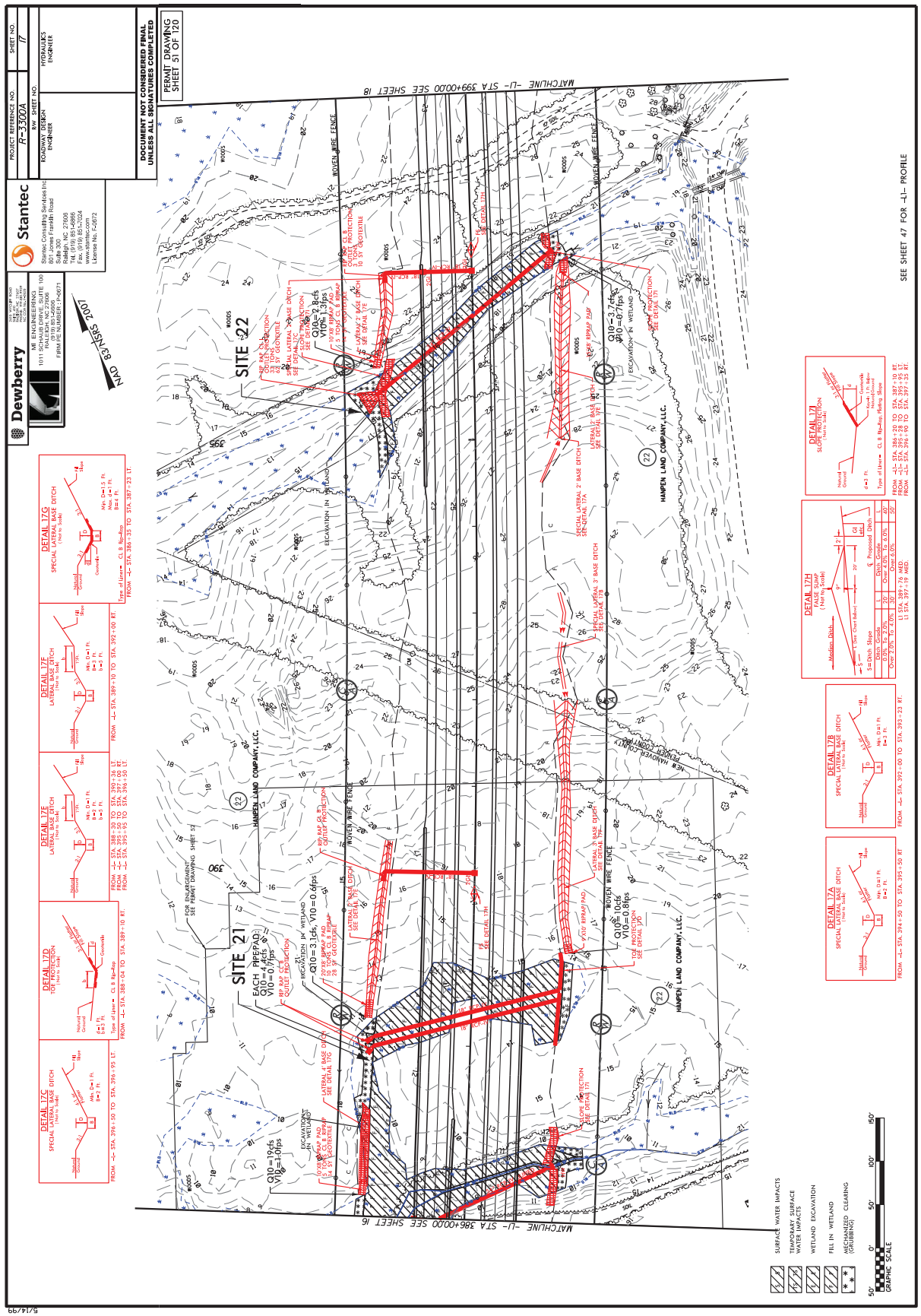
11/20/2024

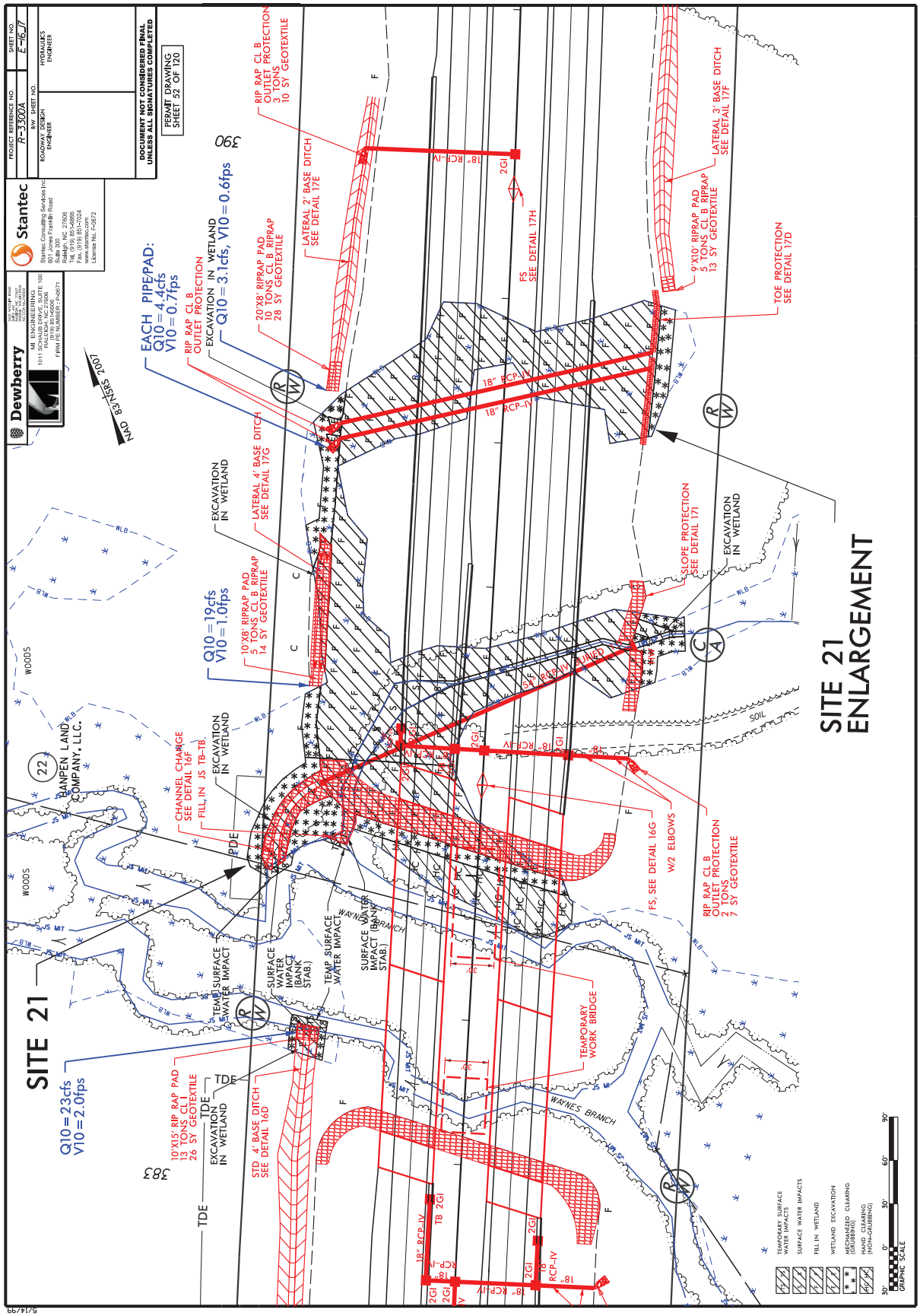

SITE 21
MATCHLINE -L- STA 373+00.00 SEE SHEET 15
MATCHLINE -L- STA 386+00.00 SEE SHEET 17
SEE SHEET 46 & 47 FOR -L- PROFILE
PERMIT DRAWING SHEET 49 OF 120
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. 16
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NAD 83/NSRS 2007
Q10=23cfs
V10=2.0fps
TEMPORARY SURFACE WATER IMPACTS
SURFACE WATER IMPACTS
FILL IN WETLAND
WETLAND EXCAVATION
MECHANIZED CLEARING (GRUBBING)
HAND CLEARING (NON-GRUBBING)
GRAPHIC SCALE
DETAIL 16C
DETAIL 16D
DETAIL 16E
DETAIL 16F
DETAIL 16G
DETAIL 16A
DETAIL 16B
WOVEN WIRE FENCE
WOODS
R.B. HUNT, ET UX
HAMBEN LAND COMPANY, LLC

11/20/2024


Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. 17
RW SHEET NO.
ROADWAY DESIGNER ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 50 OF 120
NAD 83/NSRS 2007
SITE 21
SITE 22
EACH PIPEPAD: Q10=4.4cfs V10=0.7fps
Q10=19cfs V10=1.0fps
Q10=3.1cfs, V10=0.6fps
Q10=2.8cfs V10=1.3fps
Q10=3.7cfs V10=0.7fps
Q10=1.0cfs V10=0.8fps
HANPEN LAND COMPANY, LLC.
WOVEN WIRE FENCE
EXCAVATION IN WETLAND
MATCHLINE -L- STA 386+00.00 SEE SHEET 16
MATCHLINE -L- STA 399+00.00 SEE SHEET 18
SEE SHEET 47 FOR -L- PROFILE
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
GRAPHIC SCALE

11/20/2024


Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. 17
ROADWAY DESIGNER ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 51 OF 120
NAD 83 NESS 2007
SITE 22
SITE 21
MATCHLINE -L- STA 399+00.00 SEE SHEET 18
MATCHLINE -L- STA 386+00.00 SEE SHEET 16
HANPEN LAND COMPANY, LLC.
WOVEN WIRE FENCE
WOODS
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (MASTICATING)
GRAPHIC SCALE
SEE SHEET 47 FOR -L1- PROFILE


SITE 21
SITE 21 ENLARGEMENT
EACH PIPE/PAD:
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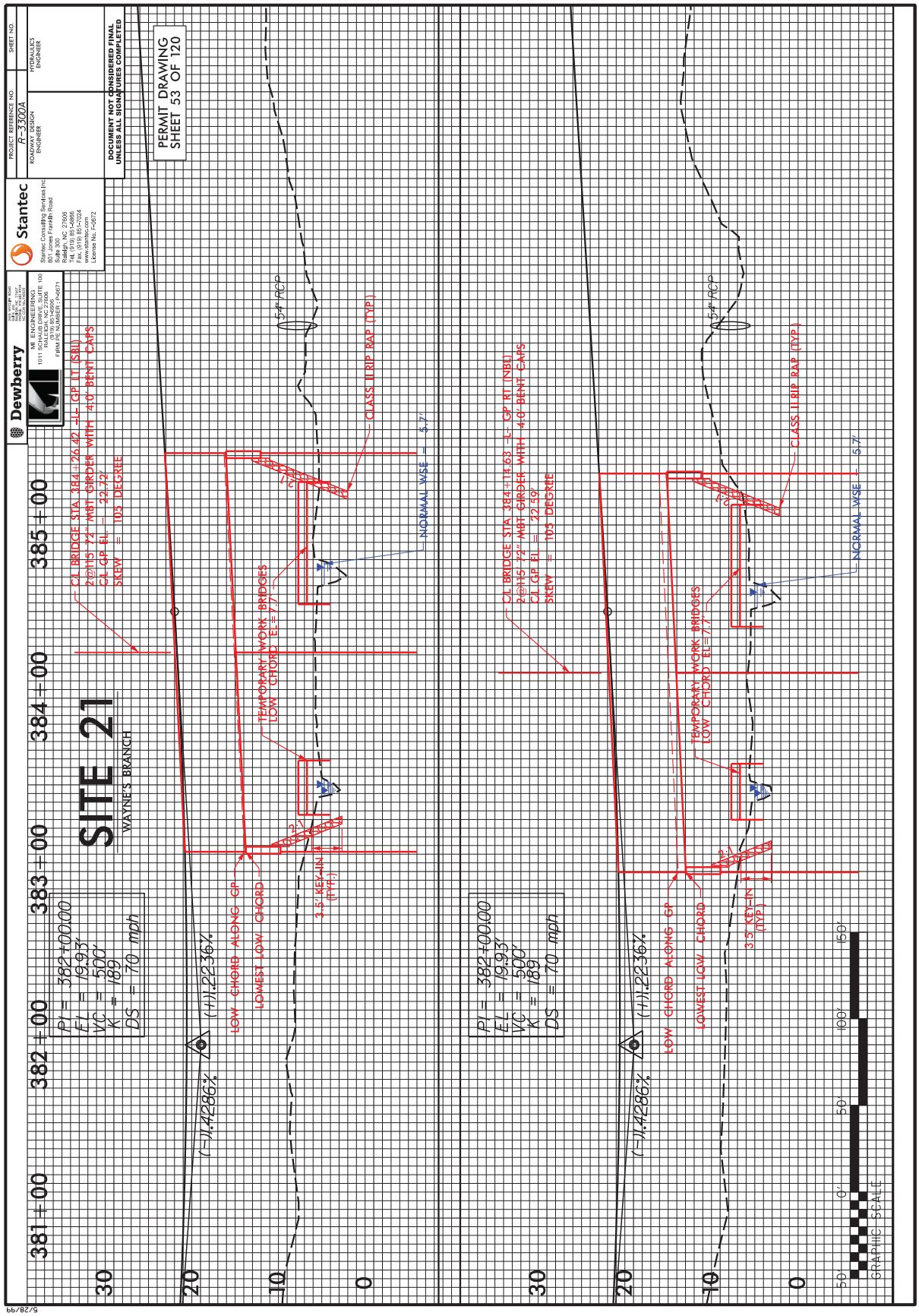
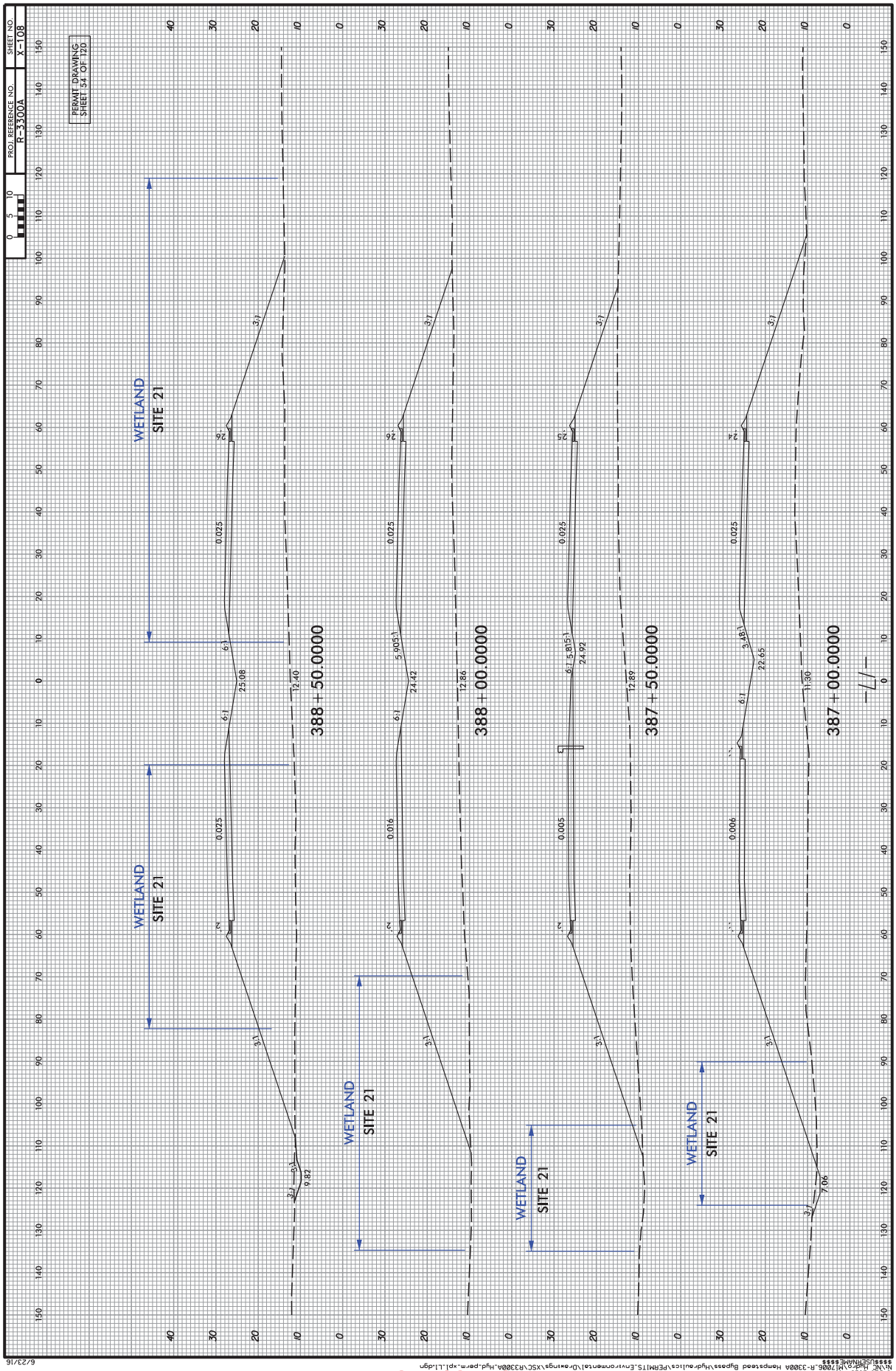
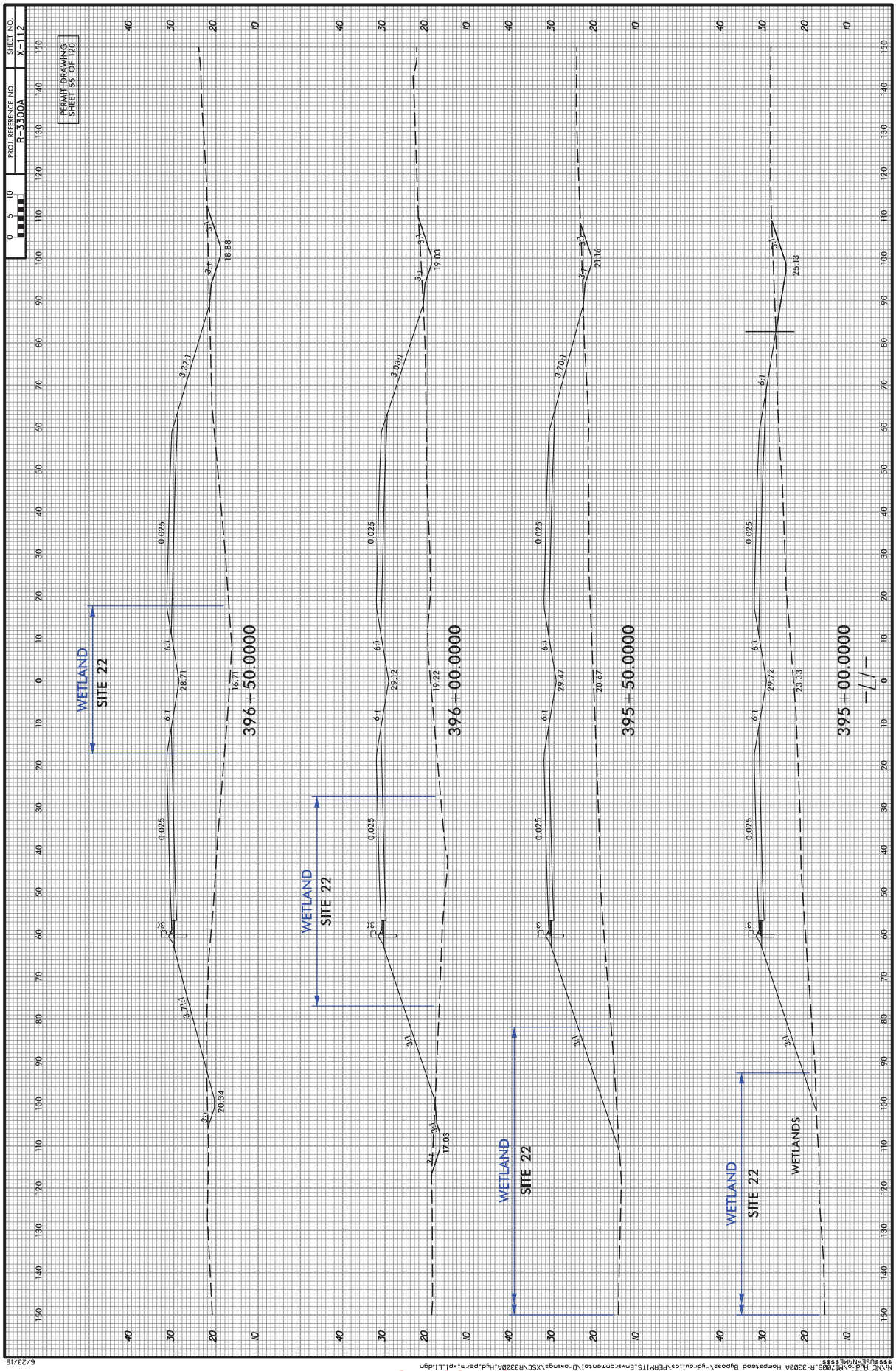
V10 = 0.7fps
Q10 = 3.1cfs, V10 = 0.6fps
Q10 = 19cfs
V10 = 1.0fps
Q10 = 23cfs
V10 = 2.0fps
RIP RAP CL B
OUTLET PROTECTION
EXCAVATION IN WETLAND
20'X8' RIPRAP PAD
10 TONS CL B RIPRAP
28 SY GEOTEXTILE
LATERAL 2' BASE DITCH
SEE DETAIL 17E
LATERAL 4' BASE DITCH
SEE DETAIL 17G
10'X8' RIPRAP PAD
5 TONS CL B RIPRAP
14 SY GEOTEXTILE
CHANNEL CHANGE
SEE DETAIL 16F
FILL IN JS TB-TB
10'X15' RIP RAP PAD
13 TONS CL I
26 SY GEOTEXTILE
STD 4' BASE DITCH
SEE DETAIL 16D
FS SEE DETAIL 17H
9'X10' RIPRAP PAD
5 TONS CL B RIPRAP
13 SY GEOTEXTILE
LATERAL 3' BASE DITCH
SEE DETAIL 17F
TOE PROTECTION
SEE DETAIL 17D
SLOPE PROTECTION
SEE DETAIL 17I
FS, SEE DETAIL 16G
W/2 ELBOWS
RIP RAP CL B
OUTLET PROTECTION
2 TONS
7 SY GEOTEXTILE
TEMPORARY
WORK BRIDGE
WAYNES BRANCH
SURFACE WATER IMPACT (BANK STAB.)
TEMP SURFACE WATER IMPACT
TDE
PDE
WOODS
SOIL
RANPEN LAND COMPANY, LLC.
383
390
NAD 83/NSRS 2007
Dewberry
Stantec
PROJECT REFERENCE NO.
R-3300A
SHEET NO.
E-16/7
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 52 OF 120
TEMPORARY SURFACE WATER IMPACTS
SURFACE WATER IMPACTS
FILL IN WETLAND
WETLAND EXCAVATION
MECHANIZED CLEARING (GRUBBING)
HAND CLEARING (NON-GRUBBING)
GRAPHIC SCALE


PERMIT DRAWING
SHEET 53 OF 120
SITE 21
WAYNE'S BRANCH
381+00
382+00
383+00
384+00
385+00
PI = 382+00.00
EL = 1993'
VC = 500'
K = 189
DS = 70 mph
(-)1.4286%
(+)1.2236%
LOW CHORD ALONG GP
LOWEST LOW CHORD
TEMPORARY WORK BRIDGES
LOW CHORD EL=77'
3.5' KEY-IN (TYP.)
CL BRIDGE STA 384+26.42 -L- GP LT (SBU)
2@115'-72" MBT GIRDER WITH 40° BENT CAPS
CL GP EL = 22.73'
SKEW = 105 DEGREE
CL BRIDGE STA 384+14.63 -L- GP RT (NBU)
2@115'-72" MBT GIRDER WITH 40° BENT CAPS
CL GP EL = 22.59'
SKEW = 105 DEGREE
54" RCP
CLASS II RIP RAP (TYP.)
NORMAL WSE = 5.7'
GRAPHIC SCALE
0'
50'
100'
150'
Dewberry
Stantec
Stantec Consulting Services Inc
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. C-0672
PROJECT REFERENCE NO.
R-2300A
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
M. ENCINOSA PROJECT ENGINEER
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 859-5000
FIRM PE NUMBER: C-0673
5/28/99
S:\USERNAMES\
N:\NC Triplo\M1706-J-2300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R-2300A_Hyd_prm_set_Byp1.dgn
7/31/2024

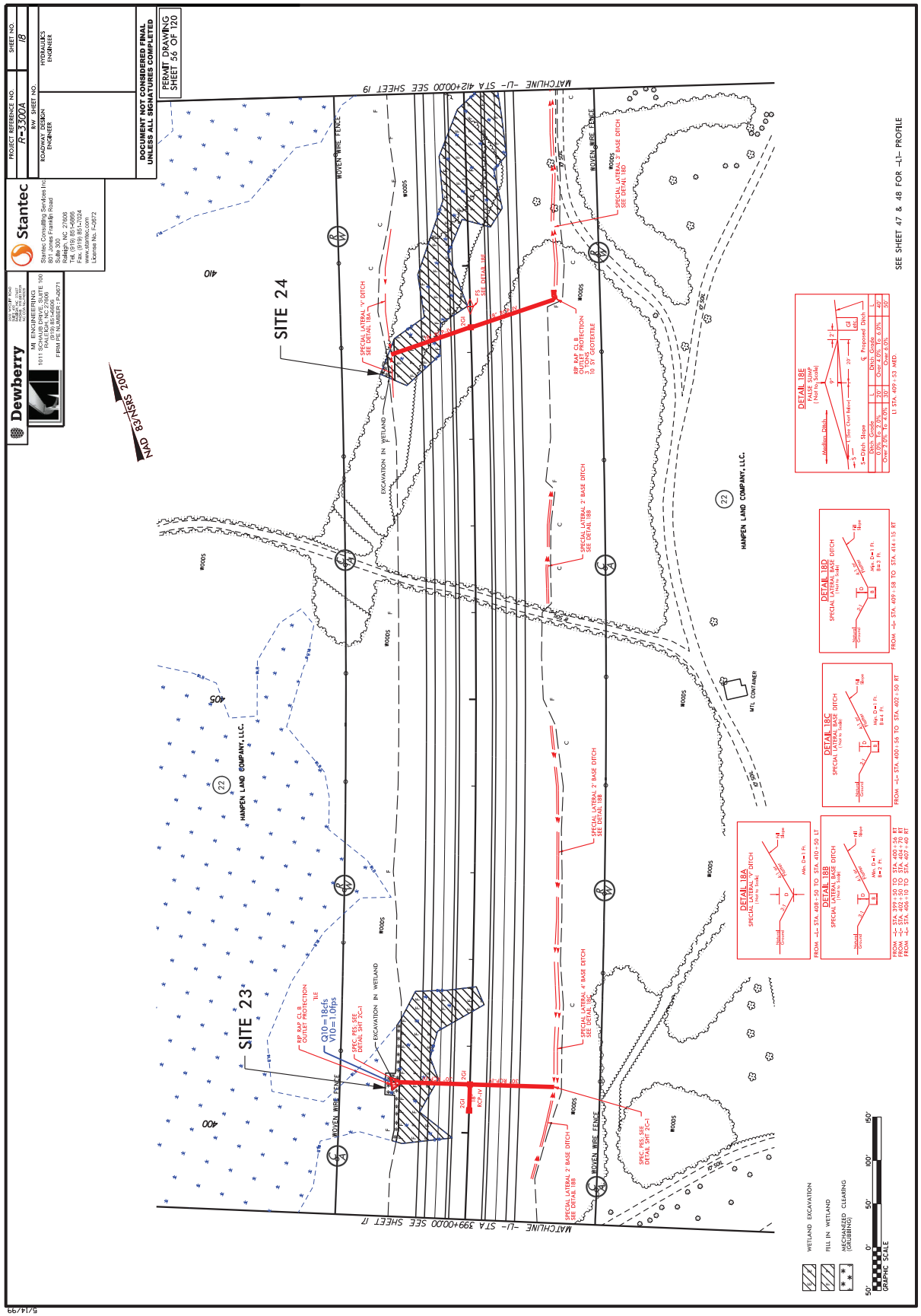
11/20/2024


PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-108
PERMIT DRAWING
SHEET 34 OF 120
WETLAND
SITE 21
388+50.0000
388+00.0000
387+50.0000
387+00.0000
0.025
0.016
0.005
0.006
6:1
3:1
5.905:1
5.815:1
3.48:1
12.40
25.08
9.82
24.42
12.86
24.92
12.89
22.65
11.30
7.06

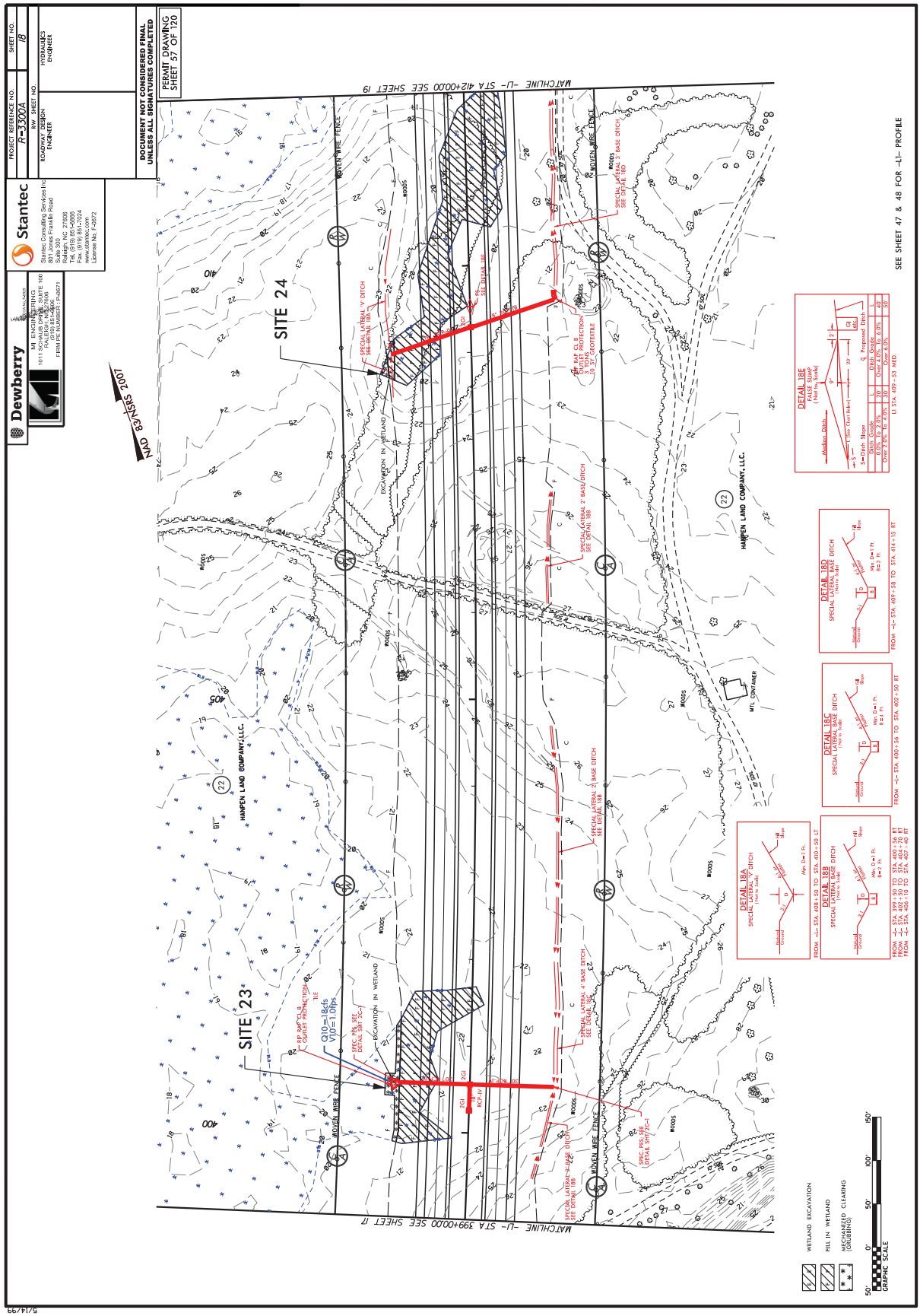
11/20/2024


PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-112
PERMIT DRAWING
SHEET 55 OF 120
396+50.0000
396+00.0000
395+50.0000
395+00.0000
WETLAND
SITE 22
WETLANDS
0.025
6:1
3:1
3.71:1
3.37:1
3.09:1
3.70:1
16.71
28.71
18.88
19.22
29.12
19.03
17.03
20.67
29.47
21.16
29.72
29.33
25.13
20.34

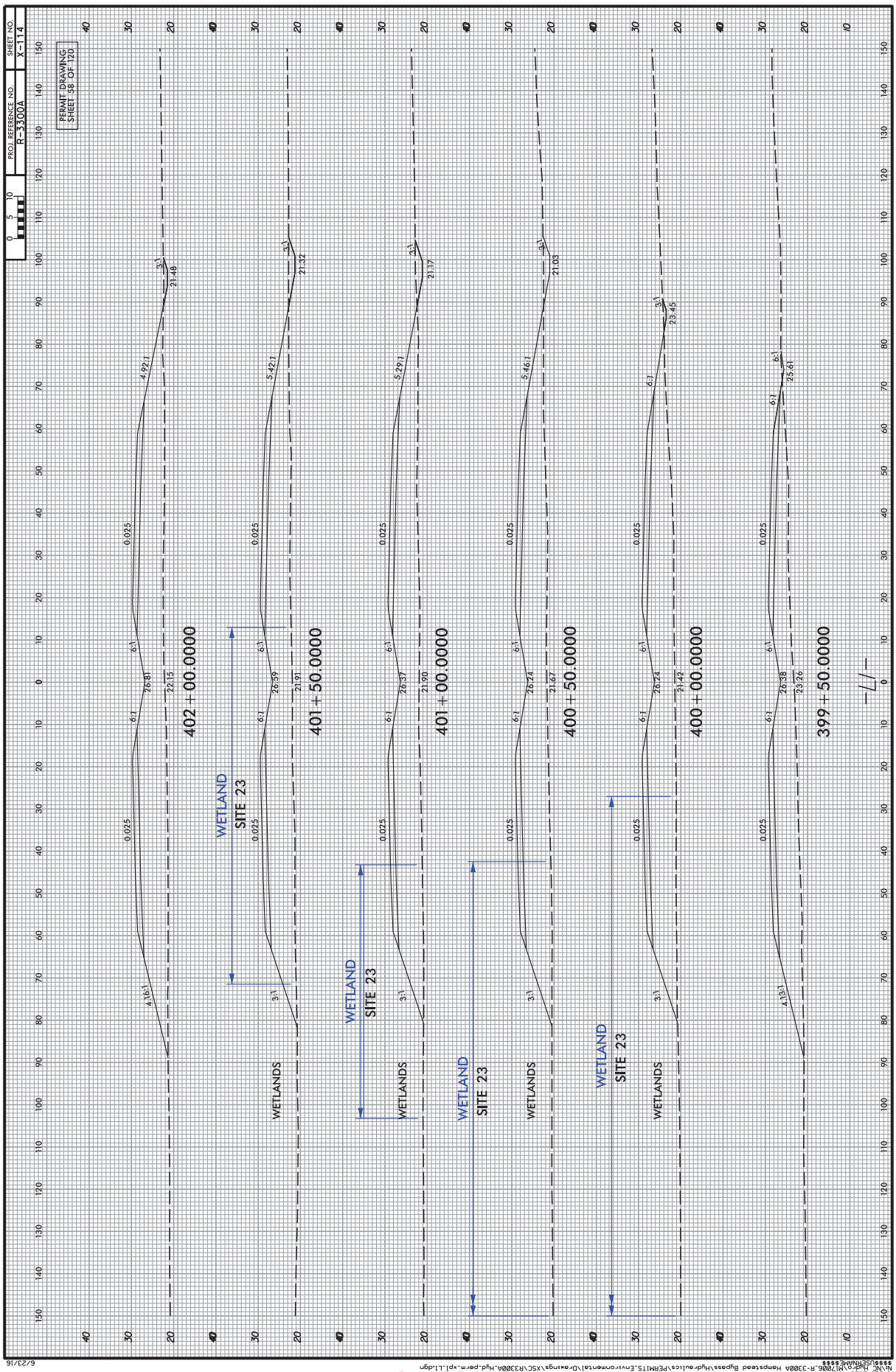
11/20/2024


SITE 24
SITE 23*
NAD 83/NSRS 2007
MATCHLINE -L- STA 412+00.00 SEE SHEET 19
MATCHLINE -L- STA 399+00.00 SEE SHEET 17
HANPEN LAND COMPANY, LLC.
WOVEN WIRE FENCE
WOODS
EXCAVATION IN WETLAND
SPEC. RSS. SEE DETAIL SHT. 2C-1
RIP RAP CL B OUTLET PROTECTION TO STA GEOTEXTILE
SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 18A
SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 18B
SPECIAL LATERAL 'V' DITCH SEE DETAIL 18A
Q10=18cfs
V10=1.0fps
M'L CONTAINER
DETAIL 18A
SPECIAL LATERAL 'V' DITCH
DETAIL 18B
SPECIAL LATERAL BASE DITCH
DETAIL 18C
SPECIAL LATERAL BASE DITCH
DETAIL 18D
SPECIAL LATERAL BASE DITCH
DETAIL 18E
SPECIAL LATERAL BASE DITCH
FROM -L- STA 399+50 TO STA 400+56 RT
FROM -L- STA 402+50 TO STA 404+70 RT
FROM -L- STA 406+10 TO STA 407+40 RT
FROM -L- STA 408+50 TO STA 410+50 LT
FROM -L- STA 400+56 TO STA 403+50 RT
FROM -L- STA 409+58 TO STA 414+15 RT
SEE SHEET 47 & 48 FOR -L- PROFILE
WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (WETLAND)
GRAPHIC SCALE
Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. 18
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 56 OF 120

11/20/2024


Dewberry
Stantec
PROJECT REFERENCE NO.
A-3300A
SHEET NO.
18
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 57 OF 120
NAD 83/NSRS 2007
SITE 23*
SITE 24
MATCHLINE -L- STA 399+00.00 SEE SHEET 17
MATCHLINE -L- STA 412+00.00 SEE SHEET 19
HAMPEN LAND COMPANY, LLC.
WOVEN WIRE FENCE
WOODS
EXCAVATION IN WETLAND
SPECIAL LATERAL 'V' DITCH SEE DETAIL 18A
SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 18B
SPECIAL LATERAL 3' BASE DITCH SEE DETAIL 18D
SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 18C
RIP RAP CL B OUTLET PROTECTION 10' (3Y) GEOTEXTILE
Q10=18cfs V10=1.0fps
DETAIL 18A SPECIAL LATERAL 'V' DITCH
DETAIL 18B SPECIAL LATERAL BASE DITCH
DETAIL 18C SPECIAL LATERAL BASE DITCH
DETAIL 18D SPECIAL LATERAL BASE DITCH
DETAIL 18E SPECIAL LATERAL DITCH
FROM -L- STA 408+50 TO STA 410+50 LT
FROM -L- STA 399+50 TO STA 400+56 RT
FROM -L- STA 402+50 TO STA 404+70 RT
FROM -L- STA 406+10 TO STA 407+40 RT
FROM -L- STA 400+56 TO STA 402+50 RT
FROM -L- STA 409+58 TO STA 414+15 RT
SEE SHEET 47 & 48 FOR -L- PROFILE
WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
GRAPHIC SCALE

11/20/2024

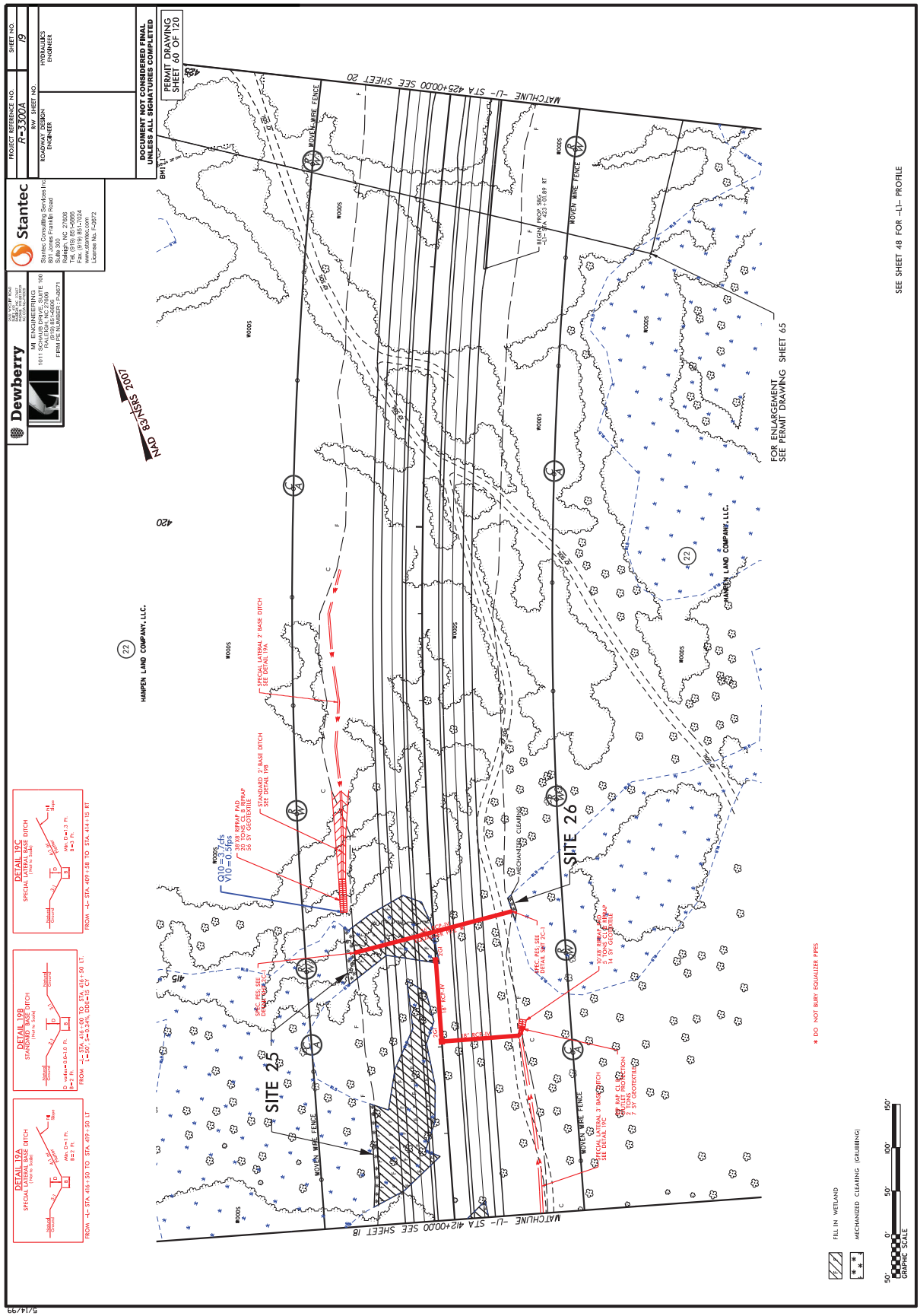


6/23/16

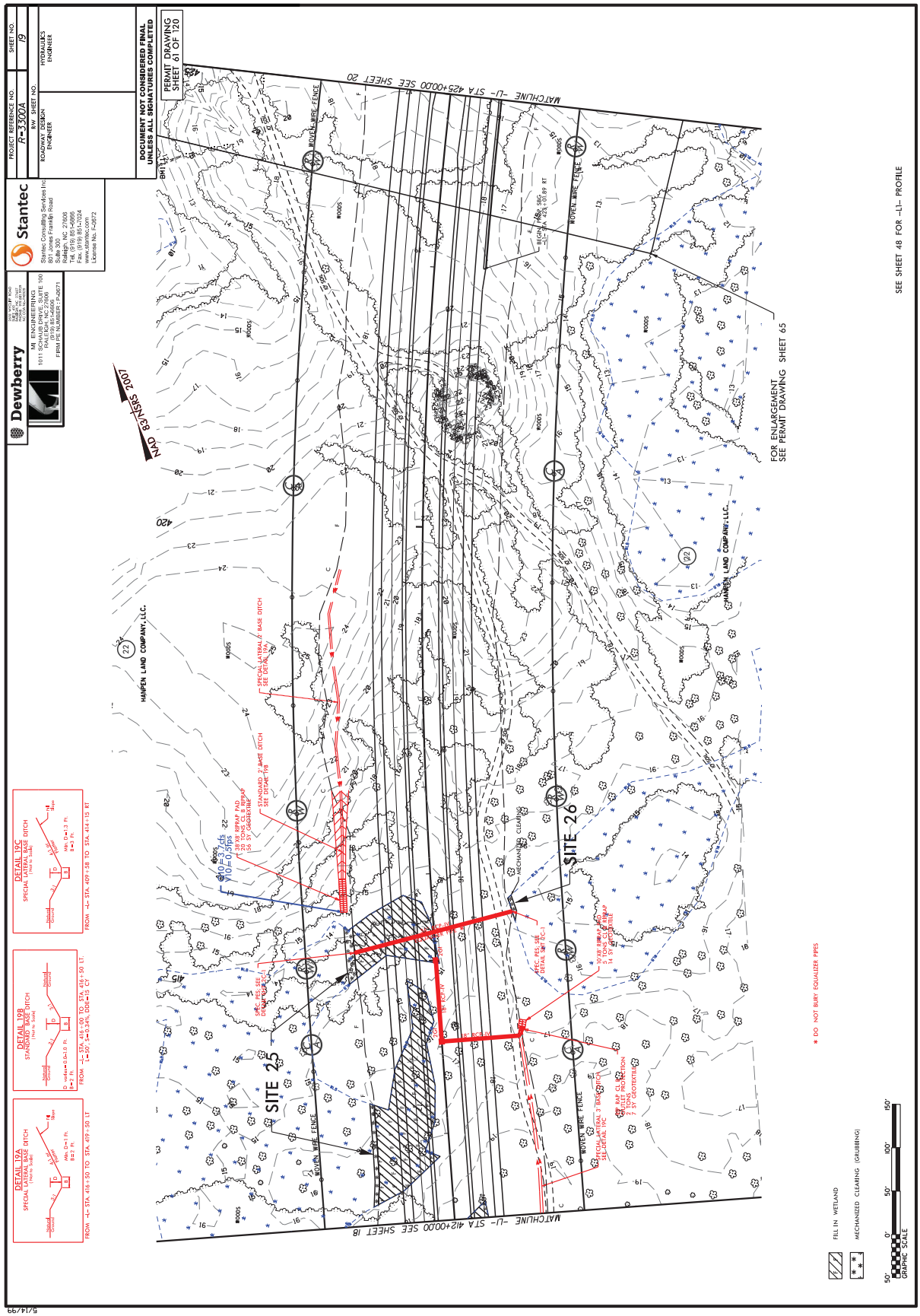
11/20/2024

PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-117
PERMIT DRAWING
SHEET 59 OF 120
410 + 50.0000
410 + 00.0000
409 + 50.0000
409 + 00.0000
408 + 50.0000
408 + 00.0000
WETLAND
SITE 24
WETLANDS
6:1
3:1
5:1
4:1
0.025

11/20/2024


Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. 19
RW SHEET NO.
ROADWAY DESIGNER ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 60 OF 120
MATCHLINE -L- STA 425+00.00 SEE SHEET 20
MATCHLINE -L- STA 412+00.00 SEE SHEET 18
SITE 25
SITE 26
WOVEN WIRE FENCE
WOODS
HANFEN LAND COMPANY, LLC.
MECHANIZED CLEARING
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
GRAPHIC SCALE
0' 50' 100' 150'
50'
FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 65
SEE SHEET 48 FOR -L1- PROFILE
* DO NOT BURY EQUALIZER PIPES
NAD 83/NSRS 2007
DETAIL 19A
DETAIL 19B
DETAIL 19C
5/14/99

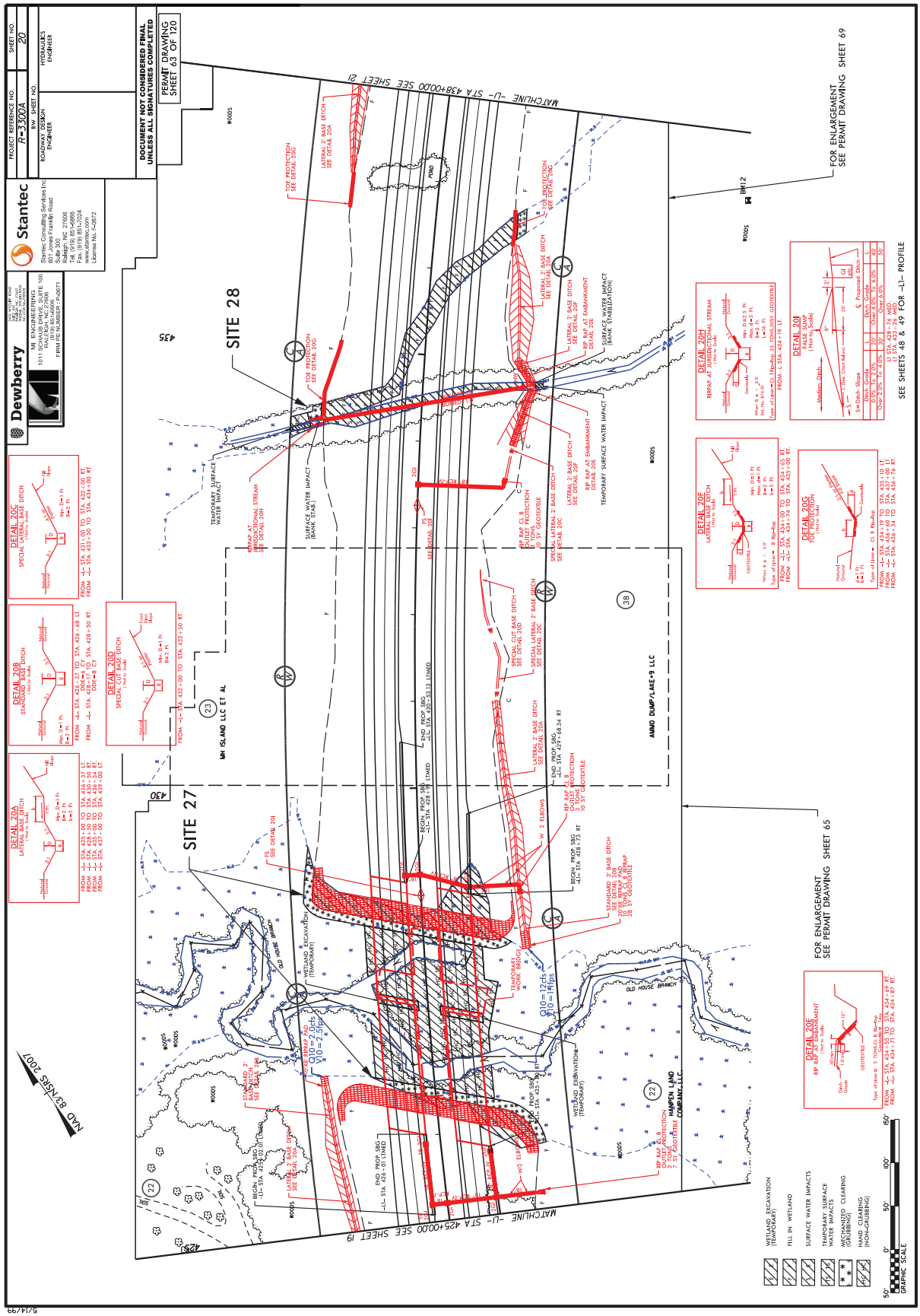
11/20/2024


Dewberry
Stantec
PROJECT REFERENCE NO.
R-3300A
SHEET NO.
19
R/W SHEET NO.
ROADWAY DESIGNER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 61 OF 120
NAD 83 (NSRS 2007)
MATCHLINE -L- STA 412+00.00 SEE SHEET 18
MATCHLINE -L- STA 425+00.00 SEE SHEET 20
SITE 25
SITE 26
HANFEN LAND COMPANY, LLC.
WOVEN WIRE FENCE
WOODS
MECHANIZED CLEARING
SPECIAL LATERAL A BASE DITCH SEE DETAIL
STANDARD 2' BASE DITCH SEE DETAIL
10' RIPRAP PAD 14 SY GEOTEXTILE
SEE PES SHEET FOR DETAIL
DETAIL 19A SPECIAL LATERAL BASE DITCH (WITH LINER)
DETAIL 19B STANDARD BASE DITCH (NO LINER)
DETAIL 19C SPECIAL LATERAL BASE DITCH (NO LINER)
FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 65
SEE SHEET 48 FOR -L1- PROFILE
* DO NOT BURY EQUALIZER PIPES
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
GRAPHIC SCALE

11/20/2024

PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-119
PERMIT DRAWING
SHEET 62 OF 120
WETLAND
SITE 25
SITE 26
WETLANDS
416+00.0000
415+50.0000
415+00.0000
414+50.0000
414+00.0000
0.036
0.025
0.014
0.008
0.009
3:1
6:1
5.933:1
5.588:1
5.670:1
5.756:1
5.844:1
4.341
4.251
3.421
22.95
22.56
22.29
22.15
14.87
14.92
14.60
15.55
17.07
16.85
13.89

11/20/2024


Dewberry
Stantec
PROJECT REFERENCE NO. A-3300A
SHEET NO. 20
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 63 OF 120
SITE 27
SITE 28
MATCHLINE -L- STA 428+00.00 SEE SHEET 19
MATCHLINE -L- STA 438+00.00 SEE SHEET 21
MH ISLAND LLC ET AL
AMMO DUMP/LAKE+9 LLC
HAMPEN LAND DUMP,LLC
OLD HOUSE BRANCH
WETLAND EXCAVATION (TEMPORARY)
WETLAND EXCAVATION (PERMANENT)
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
MECHANIZED CLEARING (MECHANIZED)
HAND CLEARING (NON-GRUBBING)
GRAPHIC SCALE
NAD 83/NSRS 2007
FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 65
FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 69
SEE SHEETS 48 & 49 FOR -L1- PROFILE
DETAIL 20A
DETAIL 20B
DETAIL 20C
DETAIL 20D
DETAIL 20E
DETAIL 20F
DETAIL 20G
DETAIL 20H
DETAIL 20I
DETAIL 20J
RIP RAP CL B OUTLET PROTECTION TO STA 428+73 RT 7.5Y GEOTEXTILE
RIP RAP CL B OUTLET PROTECTION TO STA 429+68.34 RT 10.5Y GEOTEXTILE
STANDARD 2' BASE DITCH TO STA 428+73 RT 70.9S RIPRAP 28.5Y GEOTEXTILE
Q10=12cfs V10=14fps
Q10=2.0cfs V10=2.4fps
Q10=1.0cfs V10=2.5fps
5/14/99
7/31/2024
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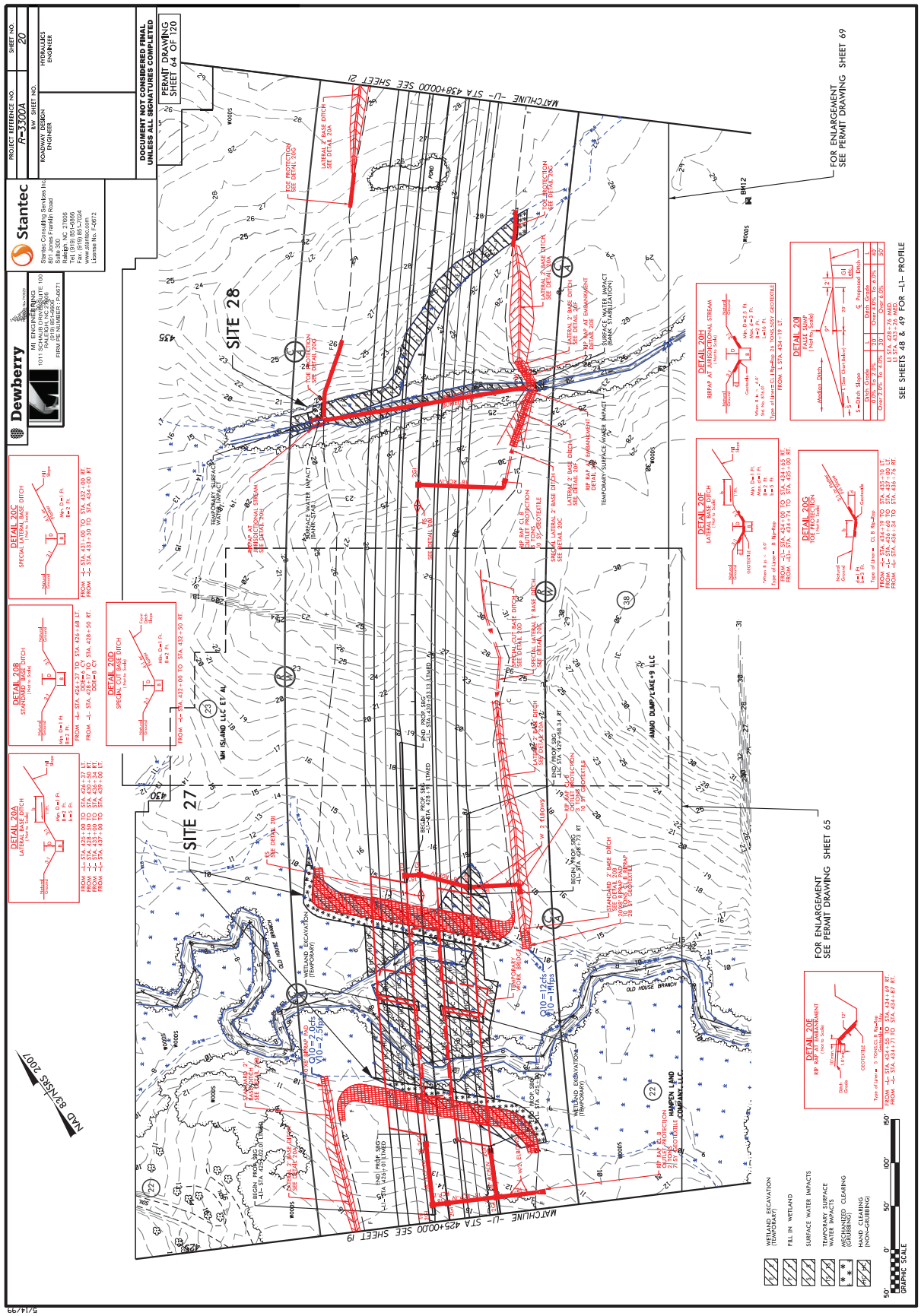
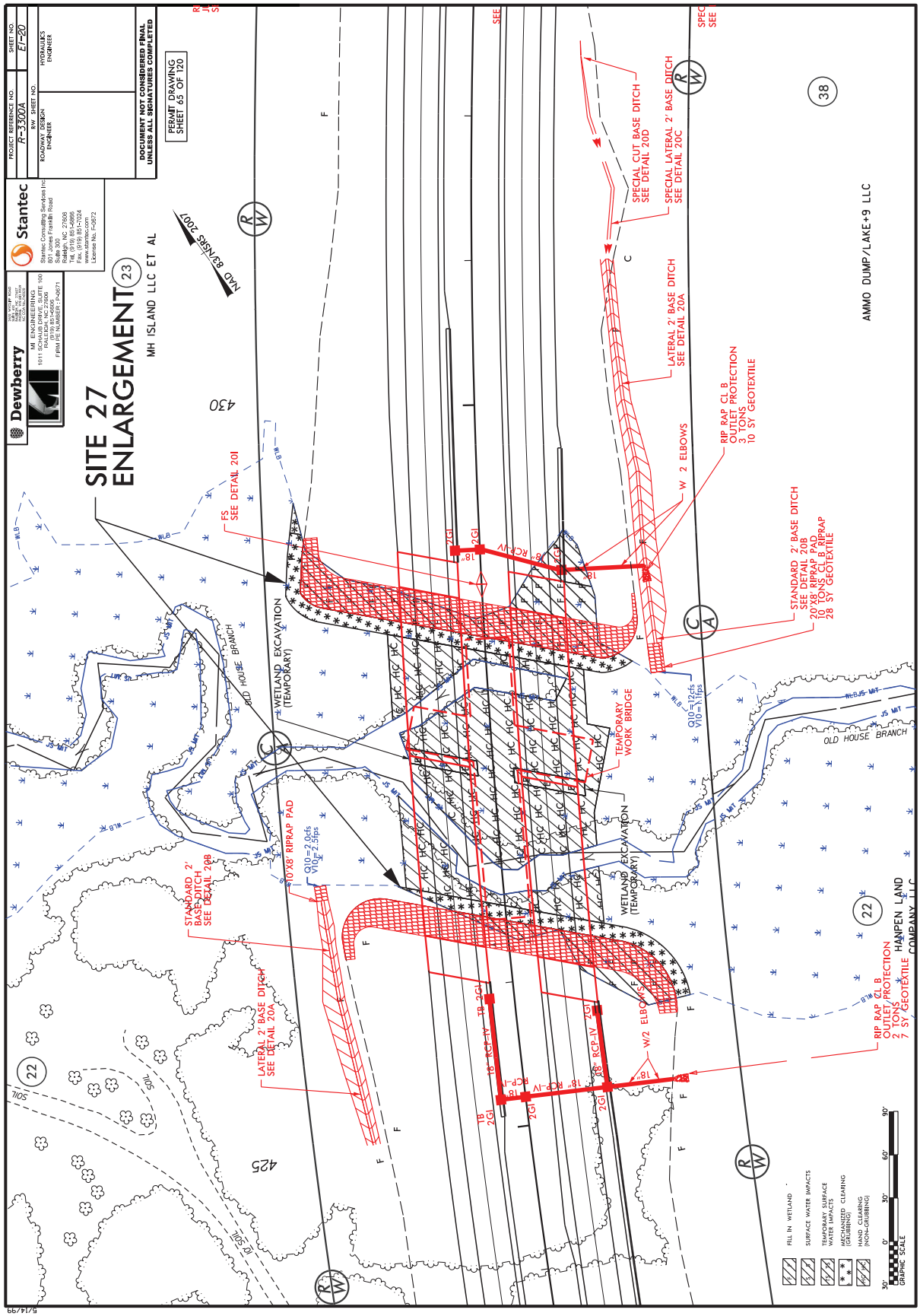
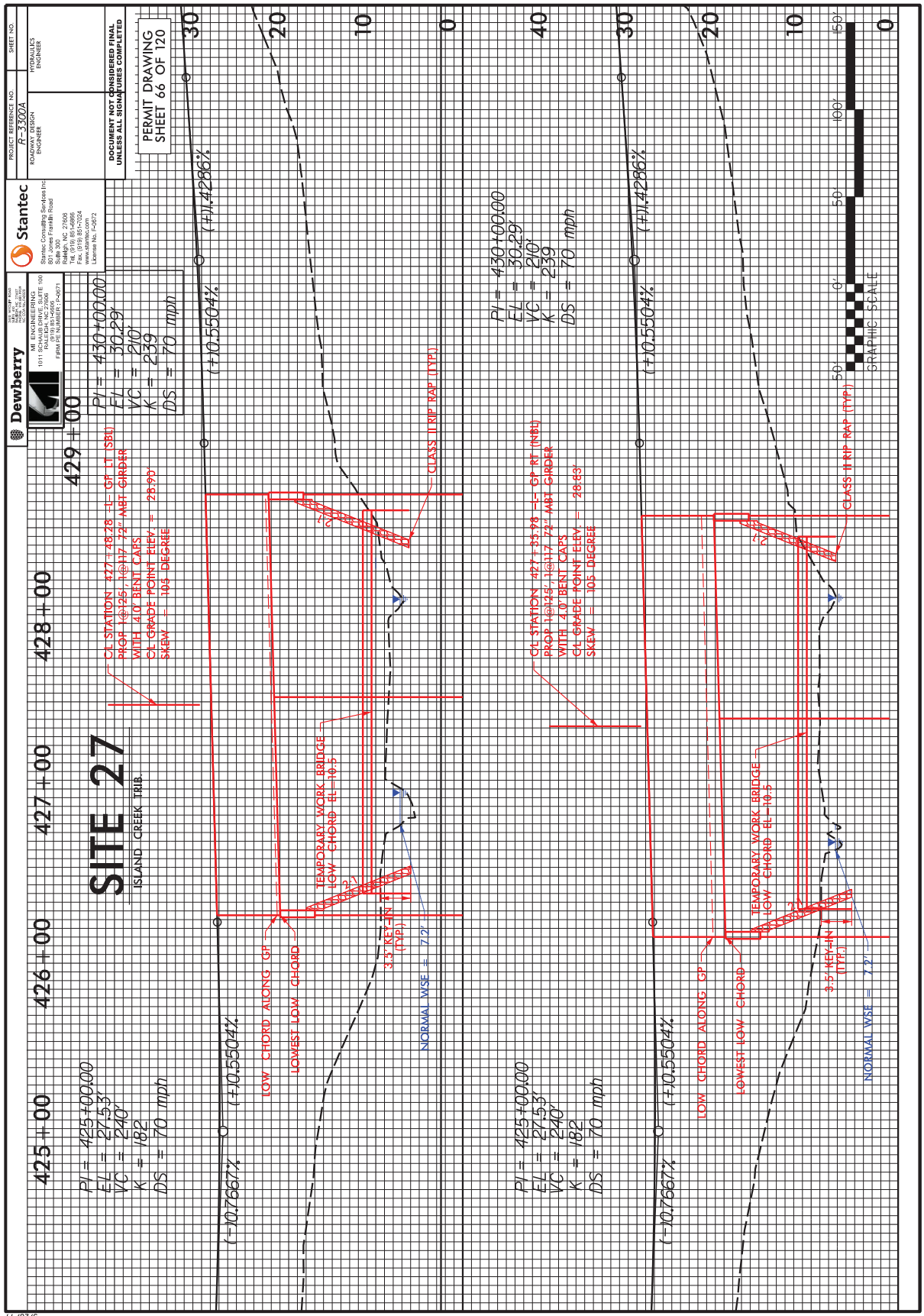

Dewberry
Stantec
PROJECT REFERENCE NO. A-3300A
SHEET NO. 20
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 64 OF 120
SITE 27
SITE 28
MATCHLINE -L- STA 425+00.00 SEE SHEET 19
MATCHLINE -L- STA 438+00.00 SEE SHEET 21
FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 65
FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 69
SEE SHEETS 48 & 49 FOR -L1- PROFILE
WETLAND EXCAVATION
WETLAND FILL
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
MECHANIZED CLEARING
HAND CLEARING (NON-GRUBBING)
GRAPHIC SCALE
NAD 83/NSRS 2007
AMMO DUMP/LAKE+9 LLC
HAMLEN LAND HOLDING, LLC
MH ISLAND LLC ET AL

11/20/2024


SITE 27
ENLARGEMENT
MH ISLAND LLC ET AL
AMMO DUMP/LAKE+9 LLC
HANPEN LAND COMPANY LLC
OLD HOUSE BRANCH
WETLAND EXCAVATION (TEMPORARY)
TEMPORARY WORK BRIDGE
STANDARD 2' BASE DITCH SEE DETAIL 20B
10'X8' RIPRAP PAD
LATERAL 2' BASE DITCH SEE DETAIL 20A
SPECIAL CUT BASE DITCH SEE DETAIL 20D
SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 20C
RIP RAP CL B OUTLET PROTECTION 3 TONS 10 SY GEOTEXTILE
W 2 ELBOWS
FS SEE DETAIL 20I
Q10=12cfs V10=4.1fps
Q10=7.0cfs V10=2.5fps
RCP-IV
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
MECHANIZED CLEARING
HAND CLEARING (NON-GRUBBING)
GRAPHIC SCALE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 65 OF 120
PROJECT REFERENCE NO. R-5300A
SHEET NO. E1-20
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Stantec
Dewberry
NAD 83/NSRS 2007

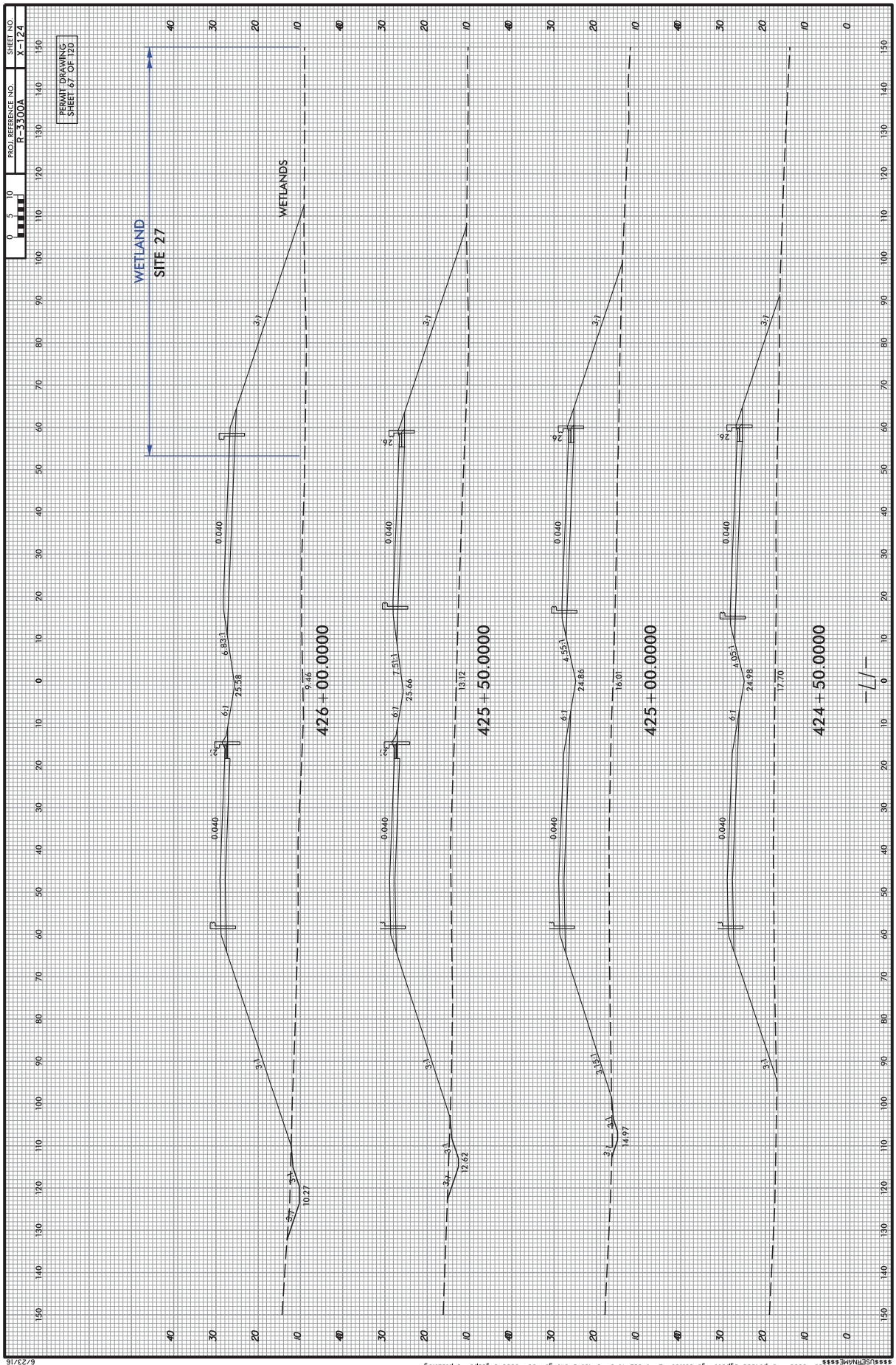
11/20/2024

P-100



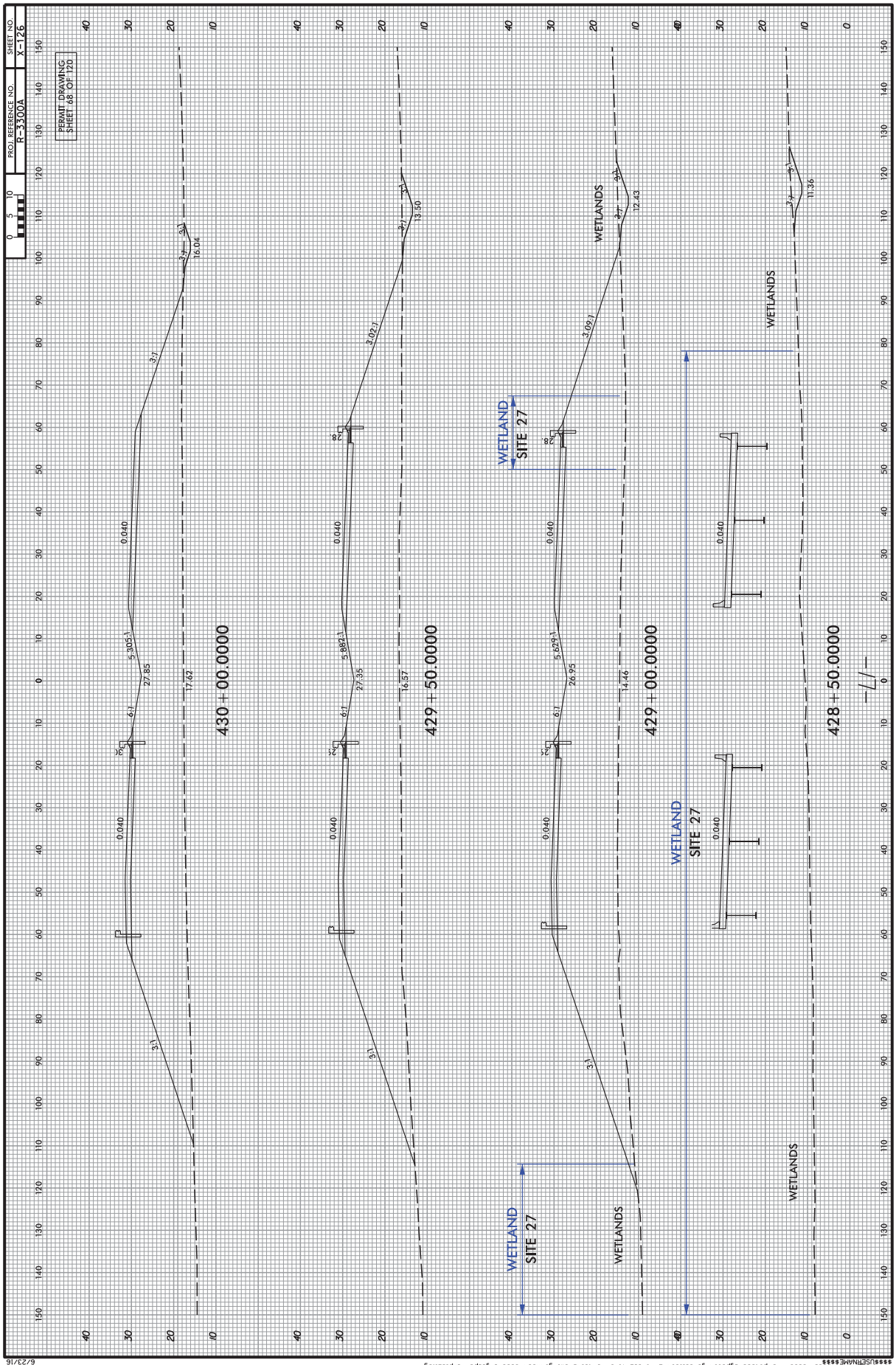
11/20/2024

P-101

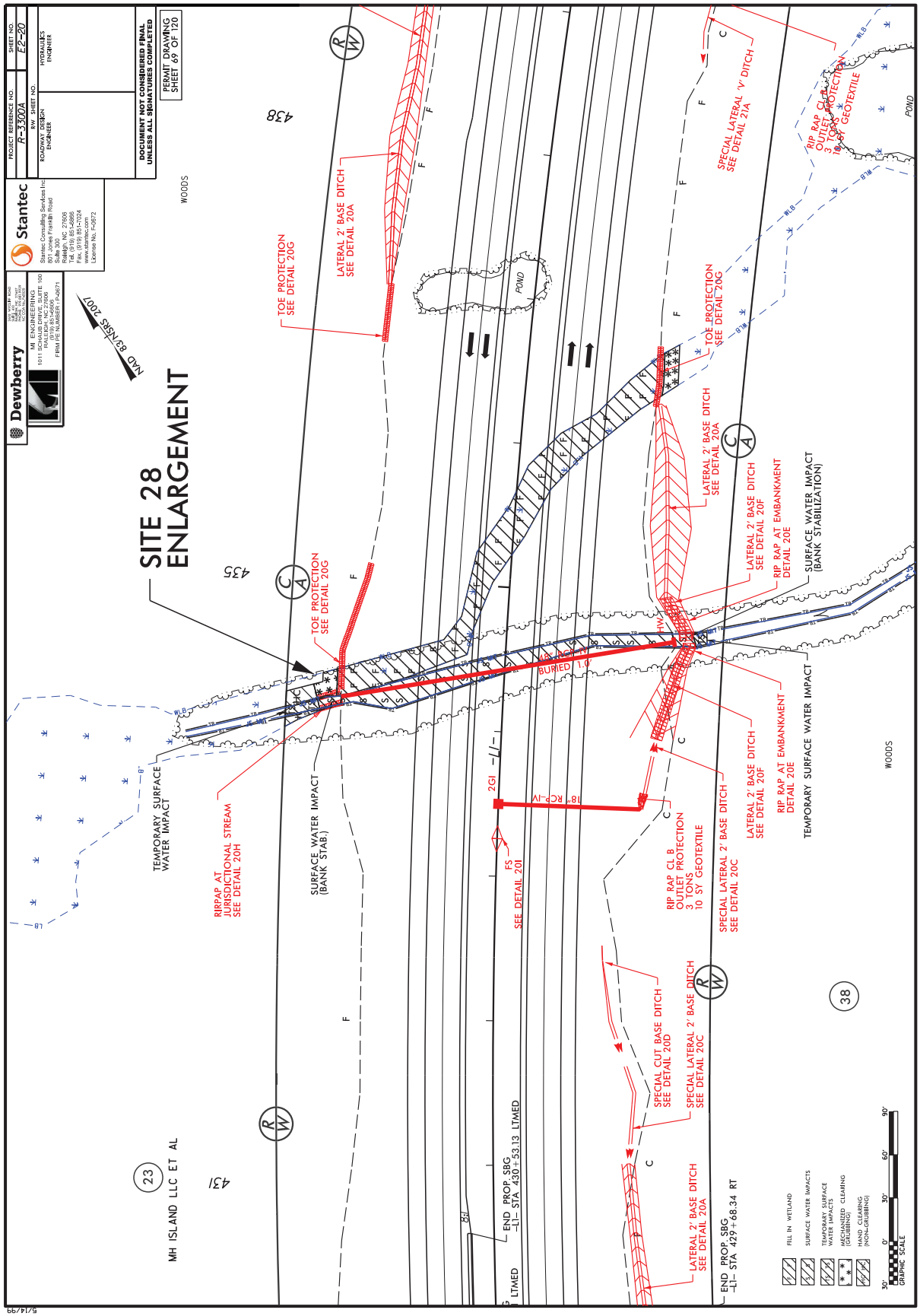


11/20/2024

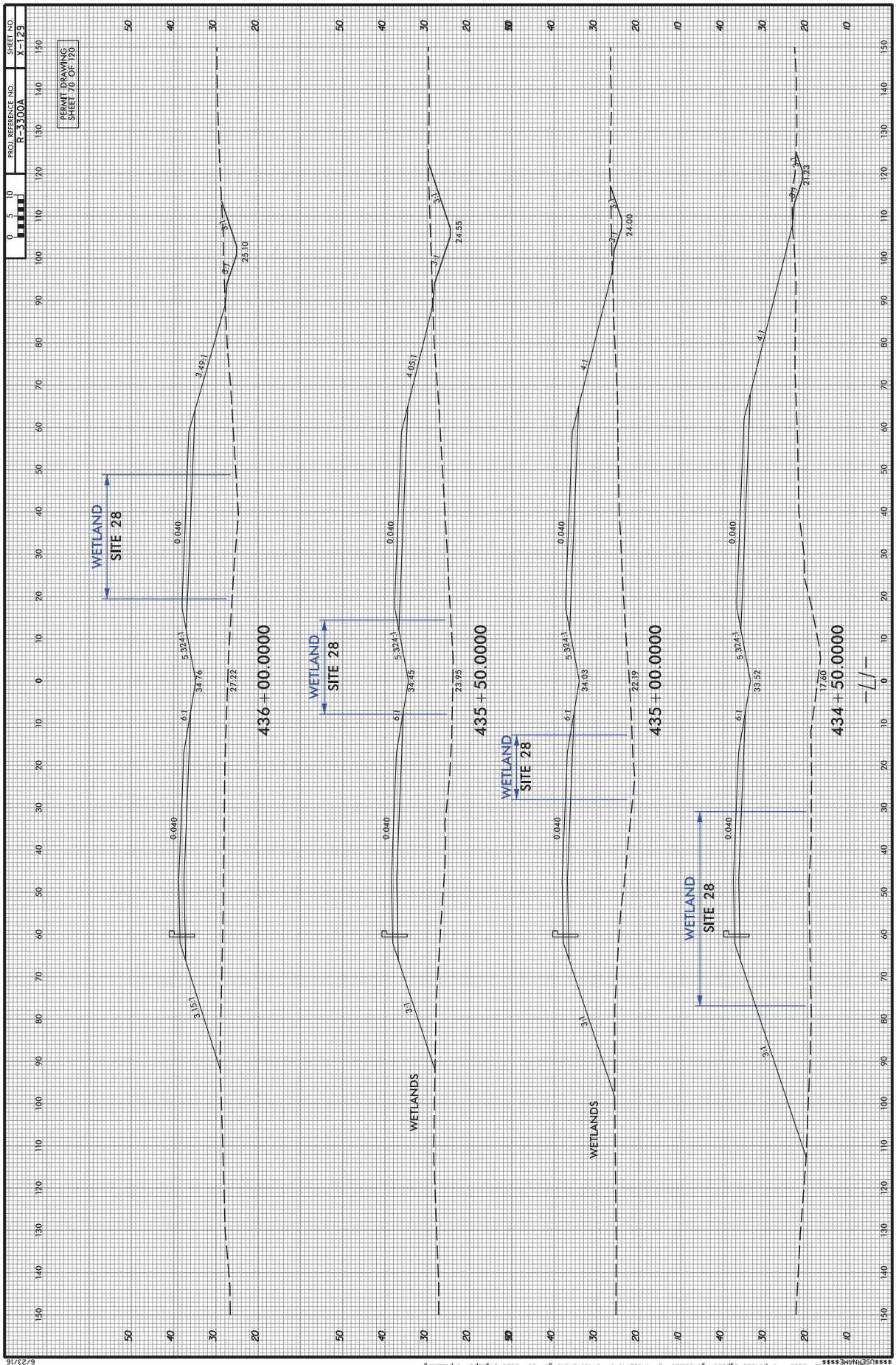
P-102



11/20/2024

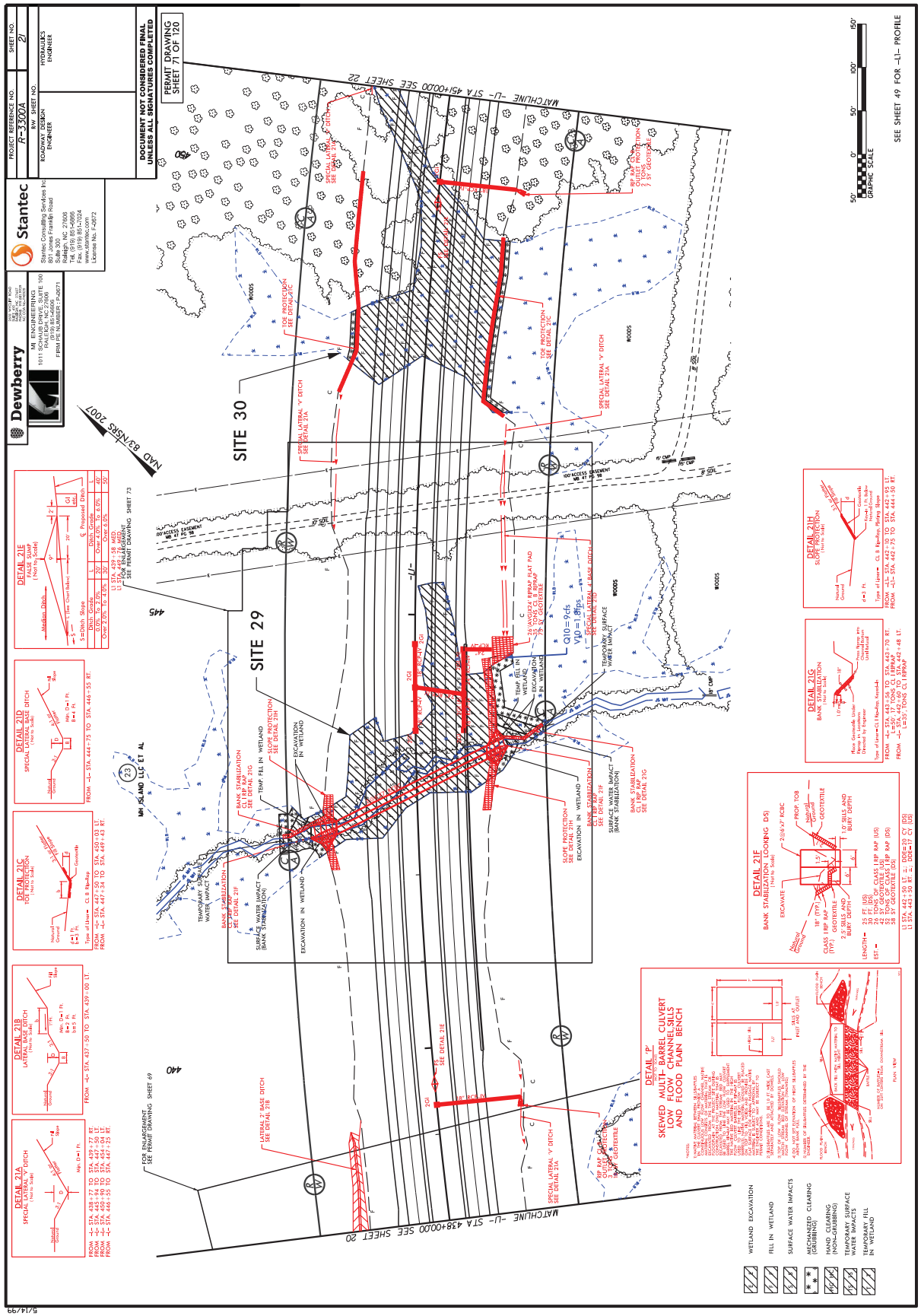

SITE 28
ENLARGEMENT
Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. E2-20
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 69 OF 120
NAD 83/NSRS 2007
TOE PROTECTION SEE DETAIL 20G
LATERAL 2' BASE DITCH SEE DETAIL 20A
SPECIAL LATERAL 'V' DITCH SEE DETAIL 21A
RIP RAP CL B OUTLET PROTECTION 3 TONS 10 SY GEOTEXTILE
LATERAL 2' BASE DITCH SEE DETAIL 20F
RIP RAP AT EMBANKMENT DETAIL 20E
SURFACE WATER IMPACT (BANK STABILIZATION)
TEMPORARY SURFACE WATER IMPACT
RIPRAP AT JURISDICTIONAL STREAM SEE DETAIL 20H
SURFACE WATER IMPACT (BANK STAB.)
FS SEE DETAIL 20I
18" RCP-JV
BURIED 1.0'
SPECIAL CUT BASE DITCH SEE DETAIL 20D
SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 20C
END PROP. SBG -L1- STA 430+53.13 LTMED
END PROP. SBG -L1- STA 429+68.34 RT
MH ISLAND LLC ET AL
WOODS
POND
438
435
431
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
MECHANIZED CLEARING
HAND CLEARING (NON-GRUBBING)
GRAPHIC SCALE

11/20/2024


PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-129
PERMIT DRAWING
SHEET 70 OF 130
436+00.0000
435+50.0000
435+00.0000
434+50.0000
WETLAND
SITE 28
WETLANDS
0.040
6:1
3:1
4:1
5.324:1
3.49:1
4.05:1
24.00
25.10
24.55
27.22
34.76
34.45
23.95
22.19
34.03
33.52
17.60
21.23

11/20/2024

P-105



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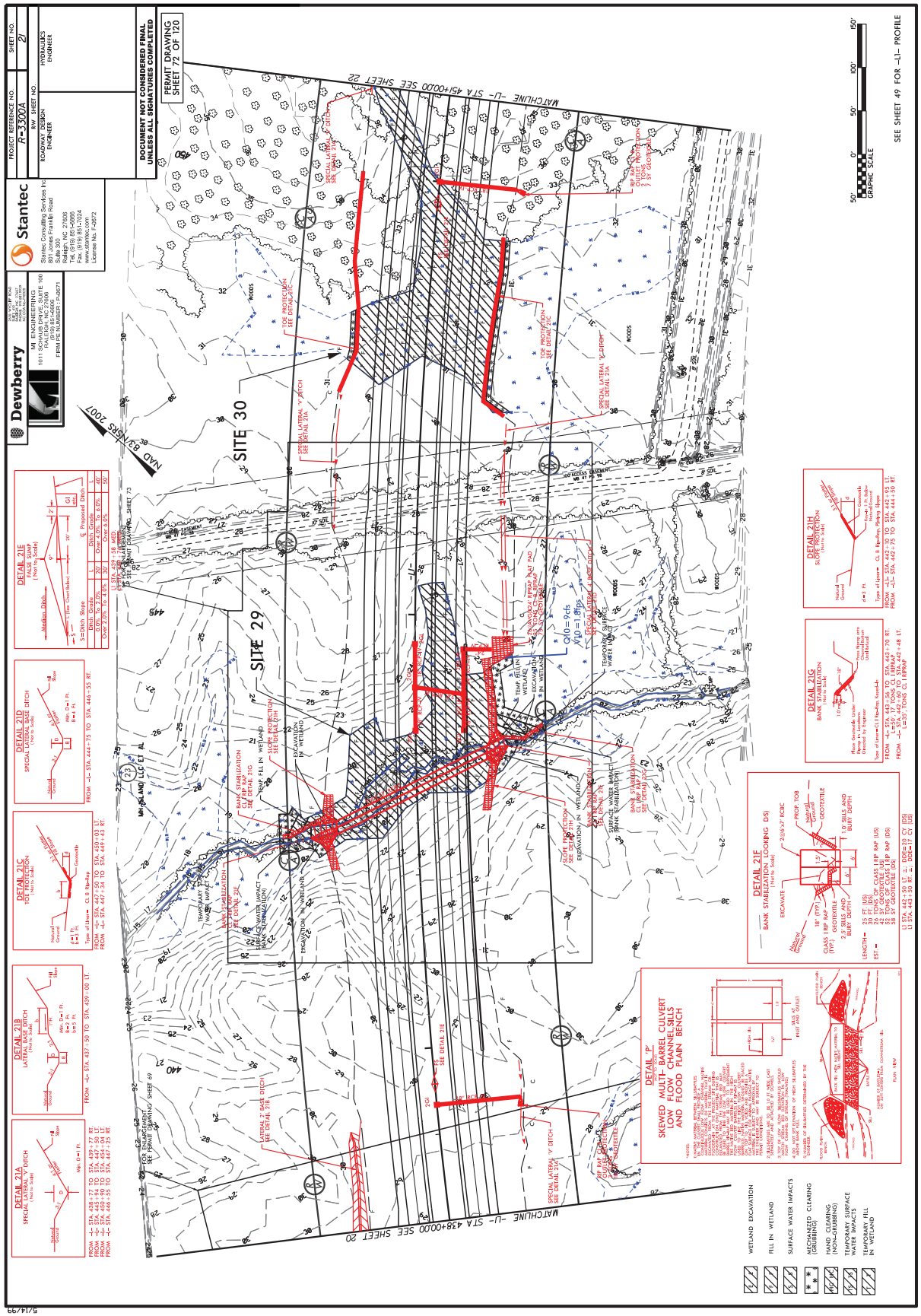
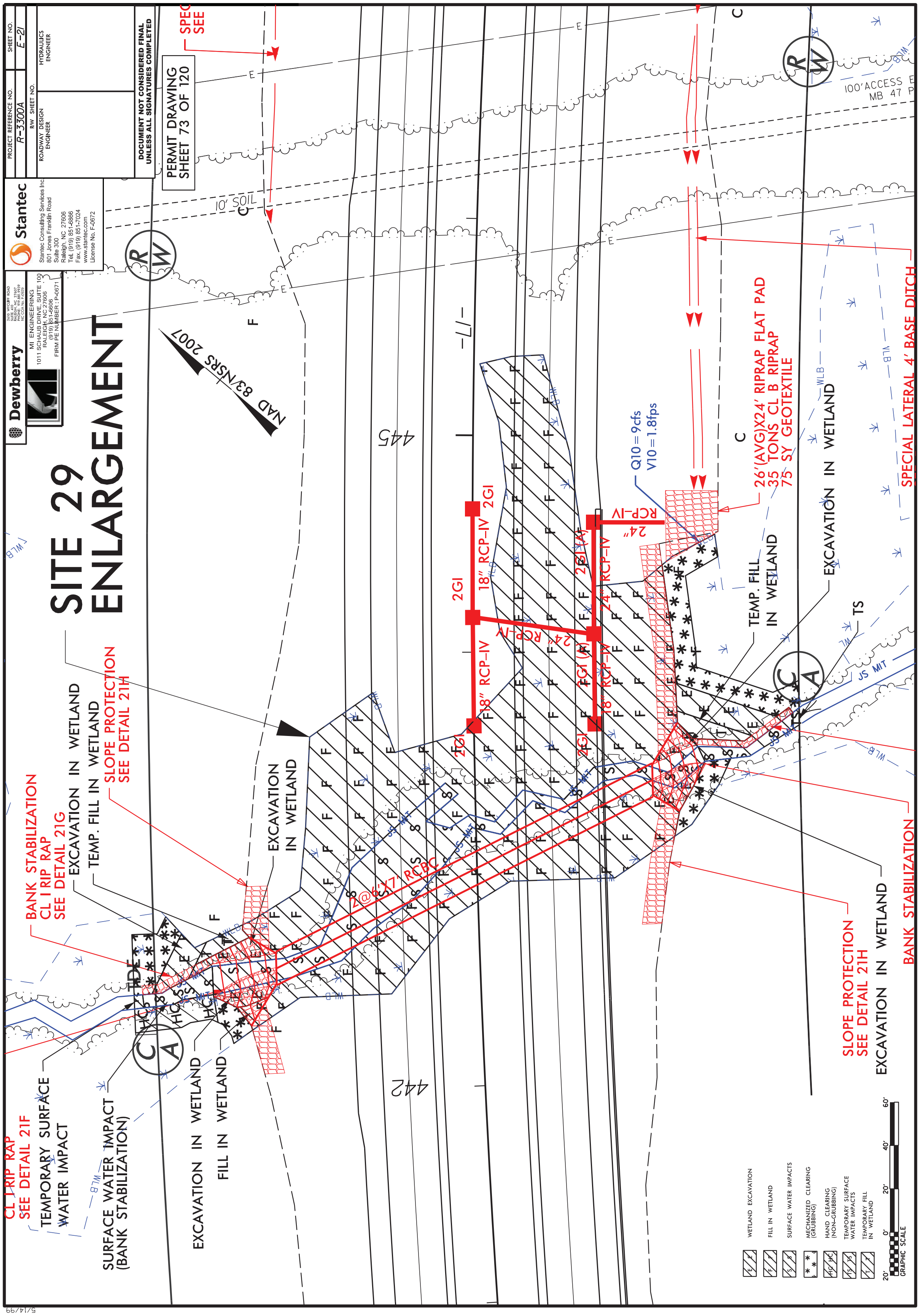

Dewberry
Stantec
PROJECT REFERENCE NO.
A-3300A
SHEET NO.
27
R/W SHEET NO.
HYDRAULICS ENGINEER
ROADWAY DESIGNER ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 72 OF 120
SITE 30
SITE 29
MATCHLINE -L- STA 438+00.00 SEE SHEET 20
MATCHLINE -L- STA 451+00.00 SEE SHEET 22
SEE SHEET 49 FOR -L1- PROFILE
GRAPHIC SCALE
NAD 83 (NSRS 2007)
DETAIL 21A
DETAIL 21B
DETAIL 21C
DETAIL 21D
DETAIL 21E
DETAIL 21F
DETAIL 21G
DETAIL 21H
SKEWED MULTI-BARREL CULVERT FLOW CHANNELS AND FLOOD PLAIN BENCH
WETLAND EXCAVATION
FILL IN WETLAND
SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
HAND CLEARING (NON-GRUBBING)
TEMPORARY SURFACE WATER IMPACTS
TEMPORARY FILL IN WETLAND



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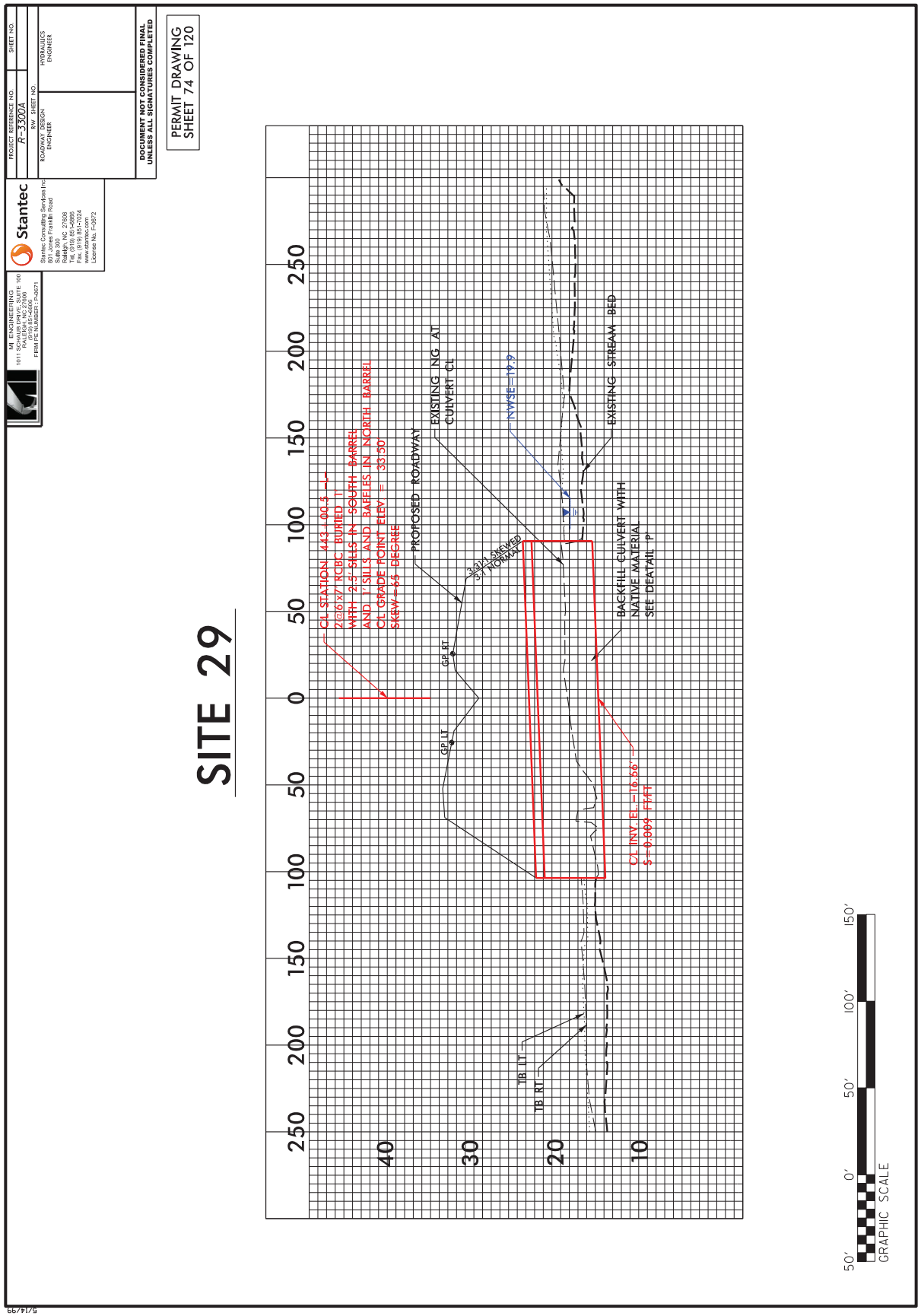
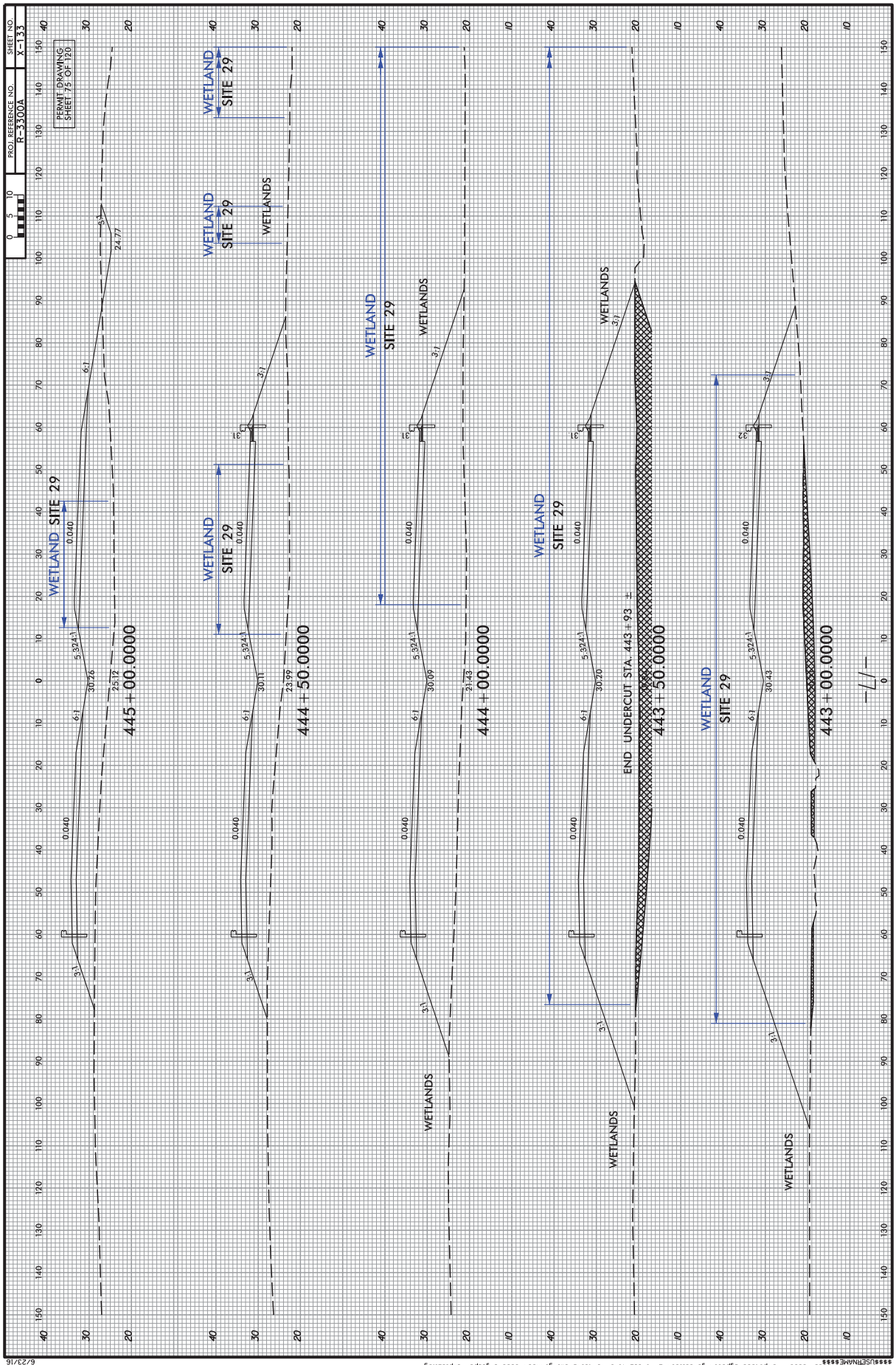
$(USERNAME)$
10/2/2024

11/20/2024

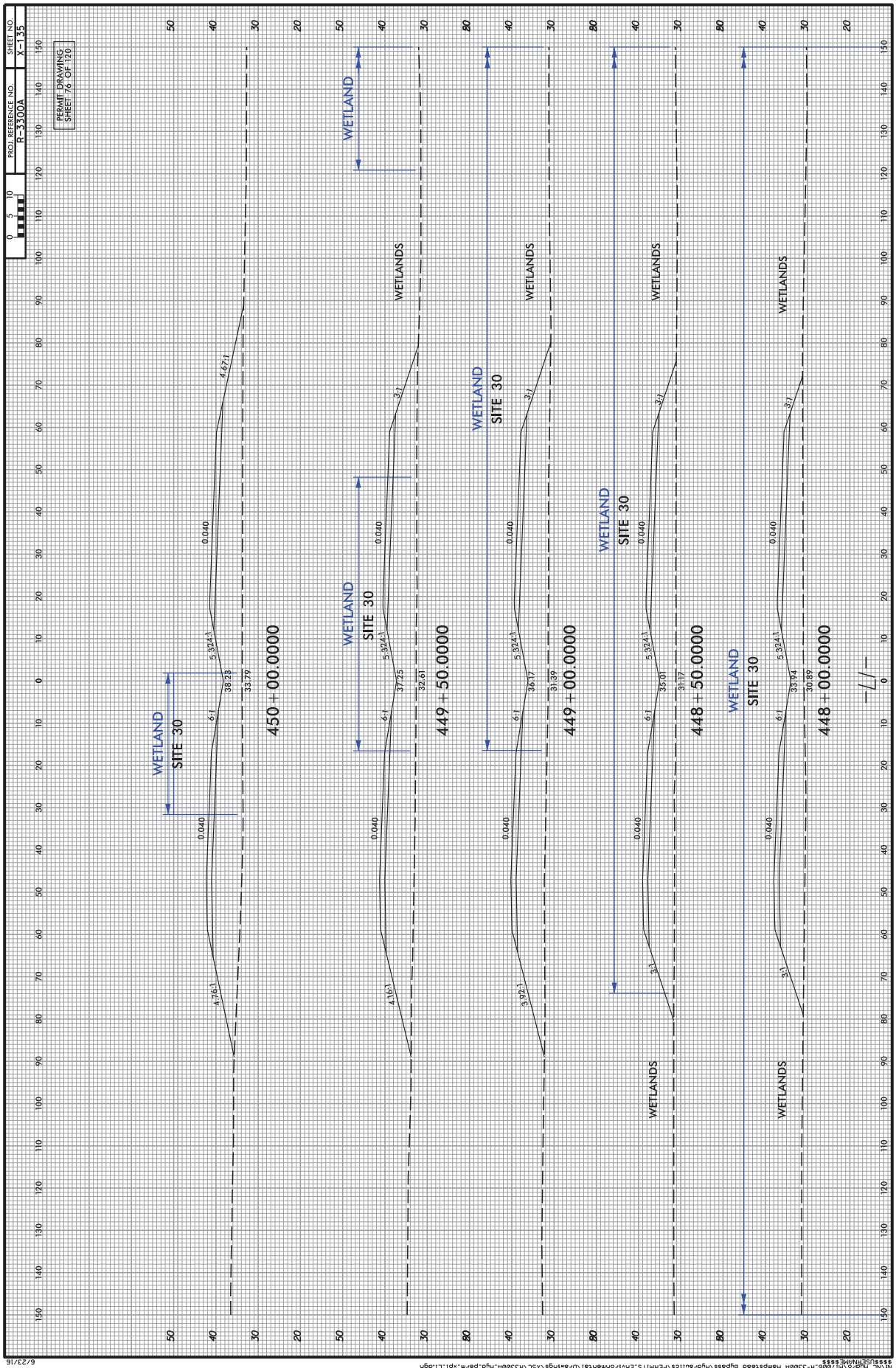

MT ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 859-9909
FIRM REGISTRATION NUMBER: P-0971
Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh NC 27606
Tel (919) 851-6866
Fax (919) 851-7024
www.stantec.com
License No. C-0672
PROJECT REFERENCE NO.
R-3300A
ROADWAY DESIGN ENGINEER
SHEET NO.
RW SHEET NO.
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING
SHEET 74 OF 120
SITE 29
C/L STATION 443+00.3 -L-
2@6'x7' RCBC BURIED 1'
WITH 2.9" SILS IN SOUTH BARREL
AND 1" SILTS AND BAFFLES IN NORTH BARREL
C/L GRADE POINT ELEV = 33.30'
SKEW = 65 DEGREE
PROPOSED ROADWAY
EXISTING C/L AT CULVERT
GP RT
GP LT
SILT FENCE TO BE INSTALLED
TB LT
TB RT
C/L INVT. EL.=16.56'
S = 0.009 F/FT
NWSE=19.9
EXISTING STREAM BED
BACKFILL CULVERT WITH NATIVE MATERIAL SEE DETAIL P
250 200 150 100 50 0 50 100 150 200 250
40 30 20 10
50' 0' 50' 100' 150'
GRAPHIC SCALE

11/20/2024

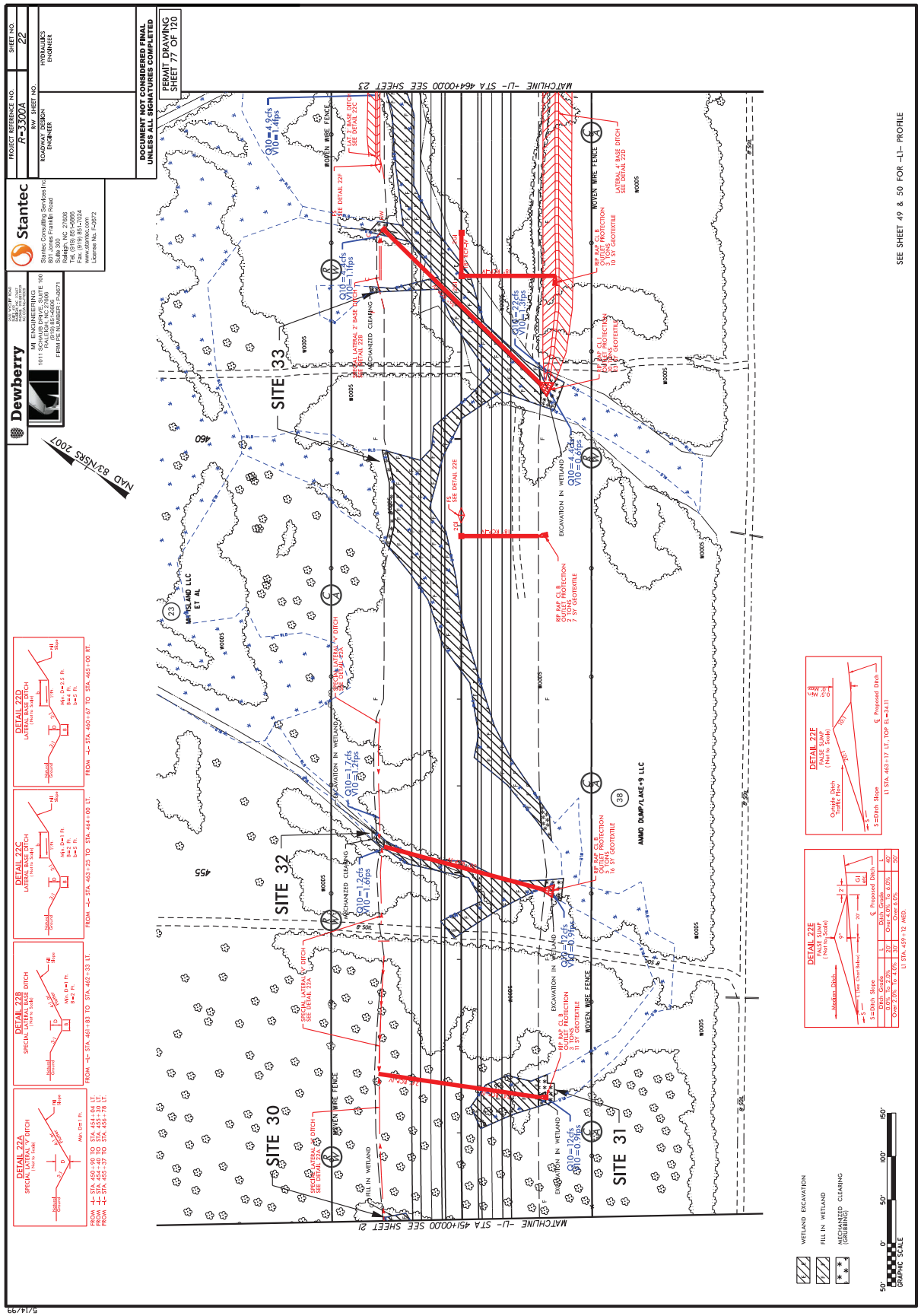
P-109



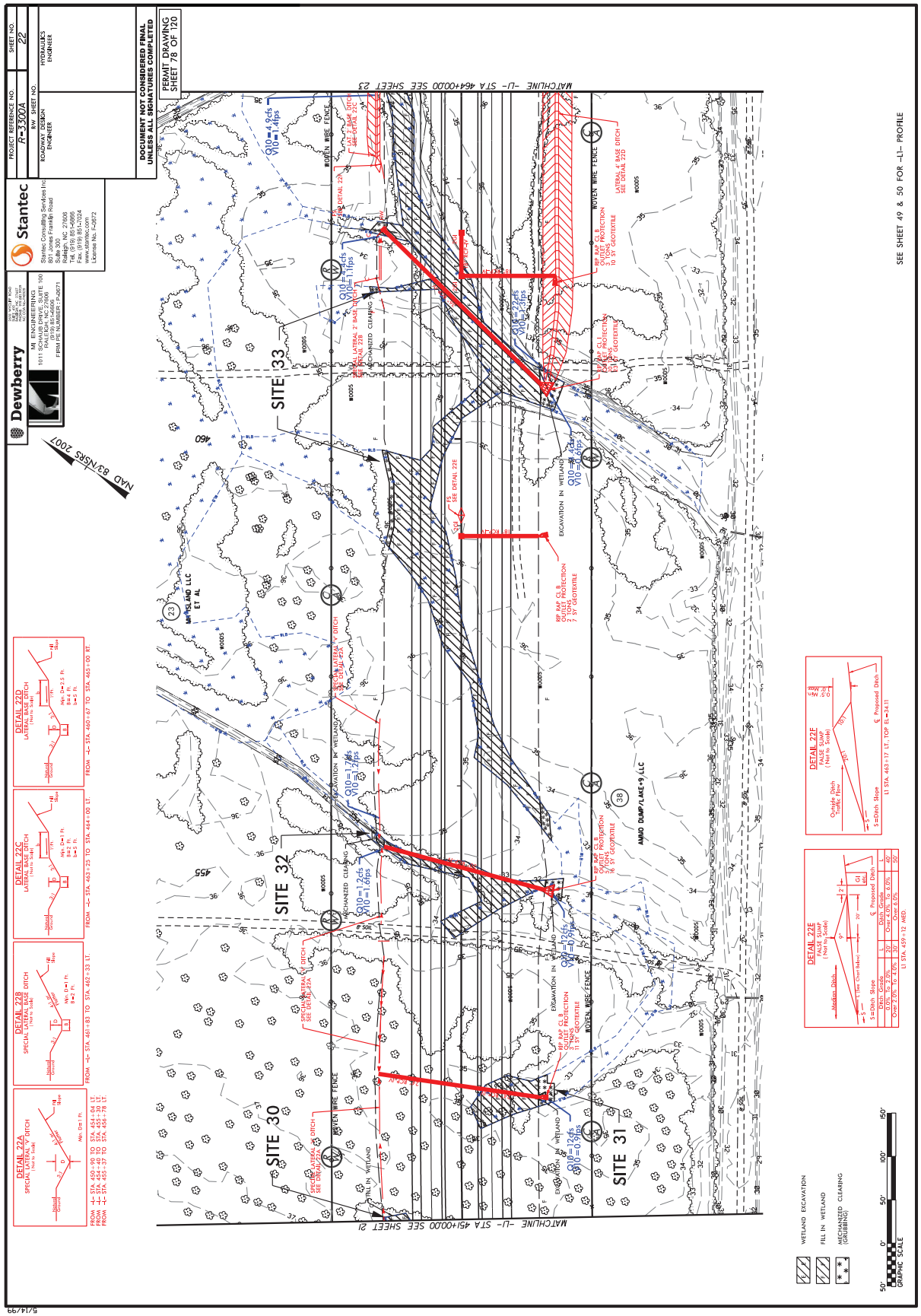
11/20/2024


PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-135
PERMIT DRAWING
SHEET 76 OF 120
WETLAND
SITE 30
WETLANDS
450+00.0000
449+50.0000
449+00.0000
448+50.0000
448+00.0000
6:1
3:1
0.040
5.324:1
4.67:1
4.76:1
4.16:1
3.92:1
38.28
33.79
37.25
32.61
36.17
31.39
35.01
31.17
33.94
30.89

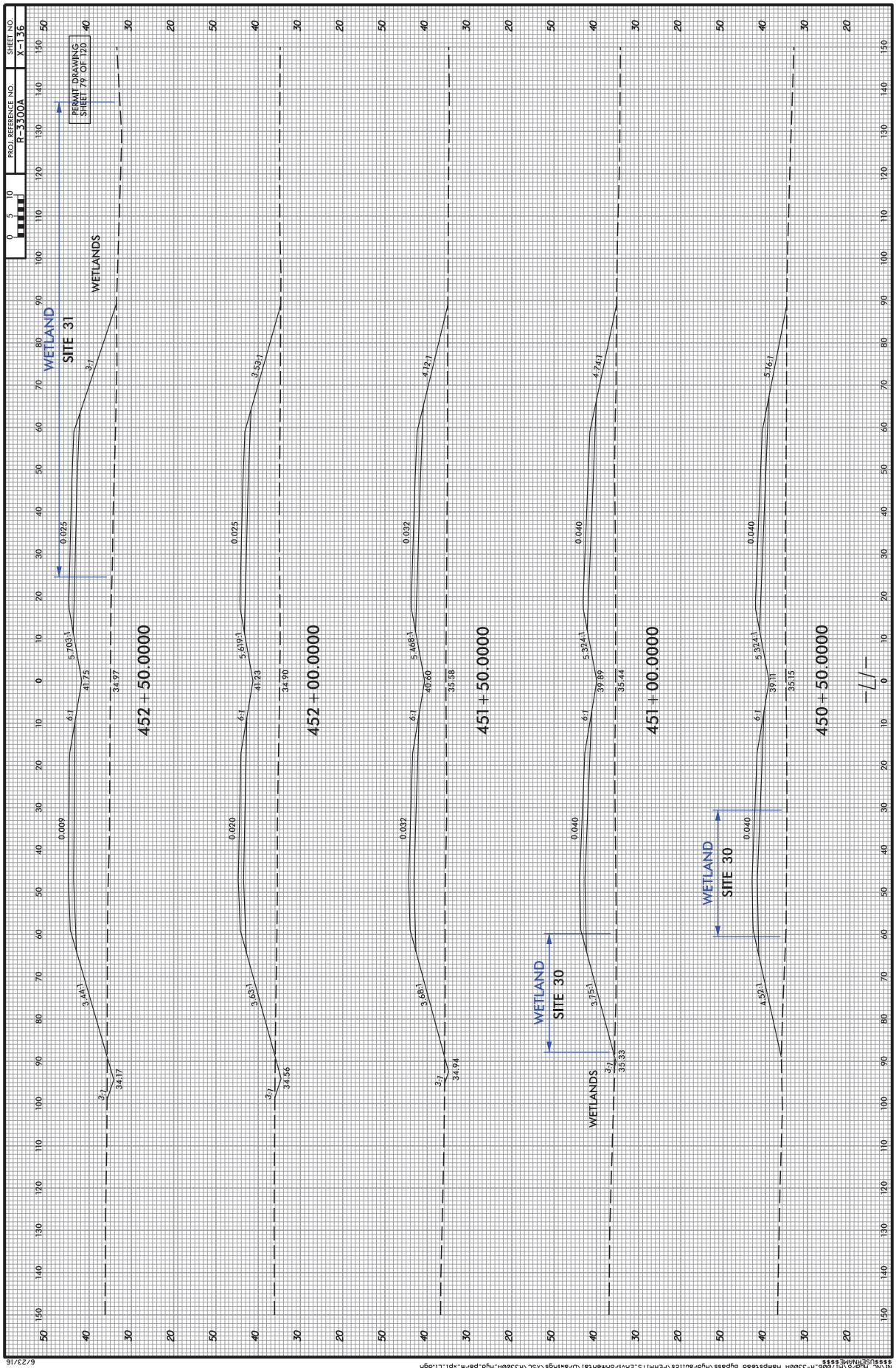
11/20/2024


Dewberry
Stantec
PROJECT REFERENCE NO. A-3300A
SHEET NO. 22
R/W SHEET NO.
ROADWAY DESIGNER ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 77 OF 120
NAD 83 NSRS 2007
SITE 30
SITE 31
SITE 32
SITE 33
AMMO DUMP/LAKE-9 LLC
WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
GRAPHIC SCALE
SEE SHEET 49 & 50 FOR -L1- PROFILE

P-112



11/20/2024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PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-136
PERMIT DRAWING
SHEET 79 OF 120
WETLAND
SITE 31
WETLANDS
452+50.0000
452+00.0000
451+50.0000
451+00.0000
450+50.0000
WETLAND
SITE 30
WETLANDS
WETLAND
SITE 30
0.025
0.009
0.020
0.032
0.040
6:1
3:1
3.44:1
5.703:1
5.619:1
3.63:1
5.468:1
3.68:1
4.12:1
3.59:1
3.75:1
4.74:1
5.524:1
4.52:1
5.16:1
41.75
41.23
40.60
39.89
39.11
34.97
34.90
35.58
35.44
35.15
34.17
34.56
34.94
35.33
6/23/16
1/13/2023
M ENGINEERING
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13-DEC-2023 14:21
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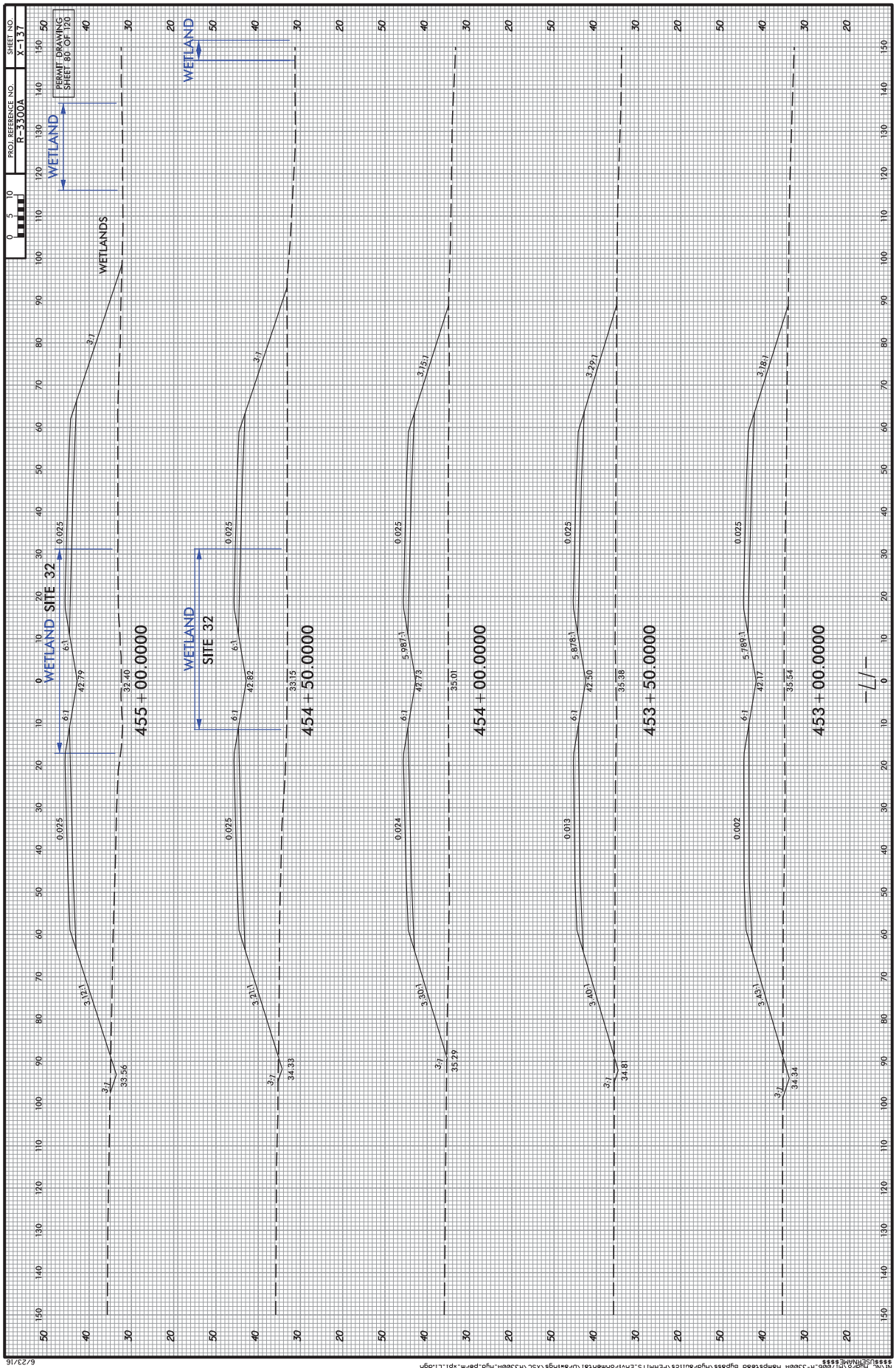
11/20/2024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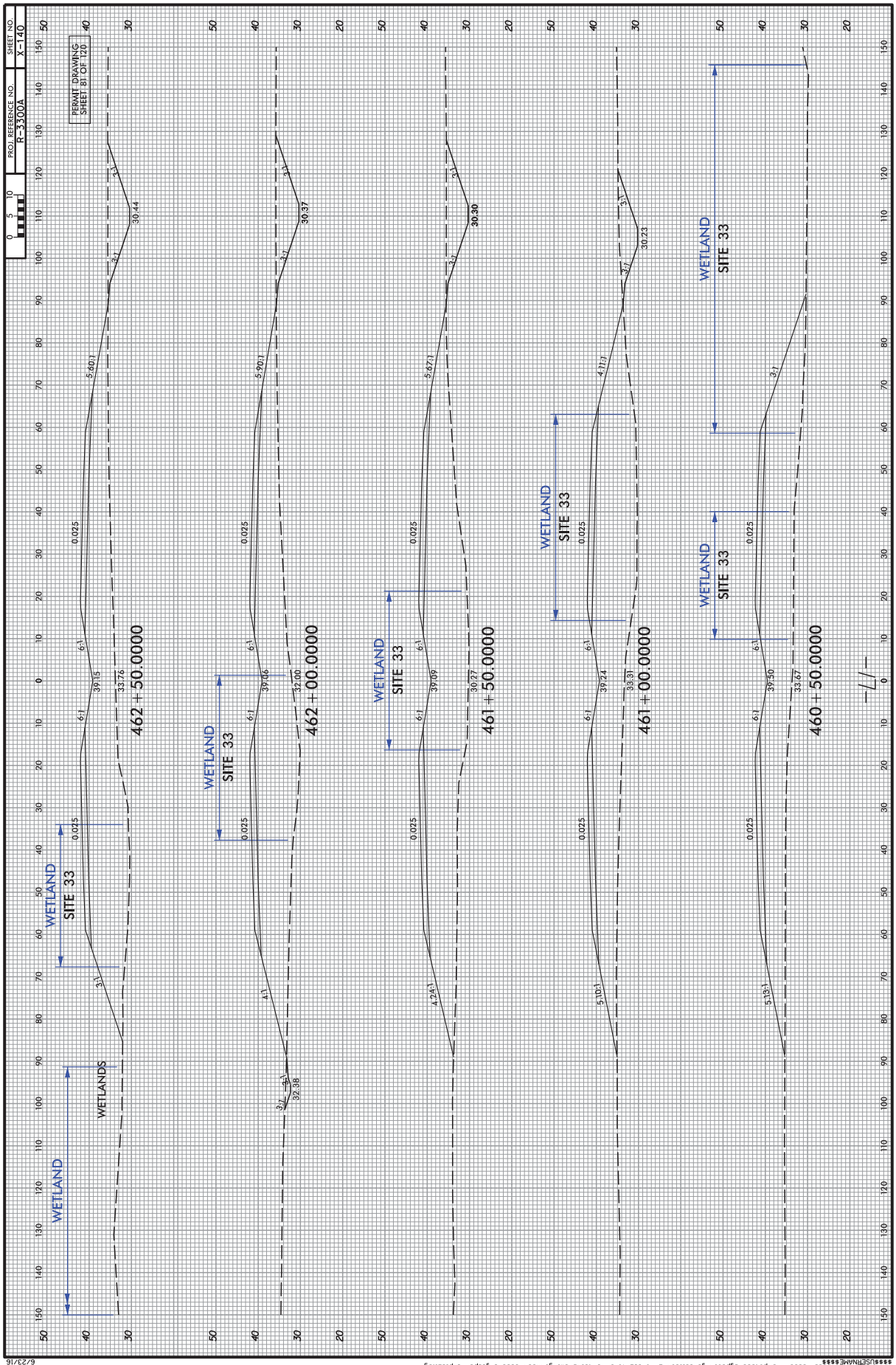
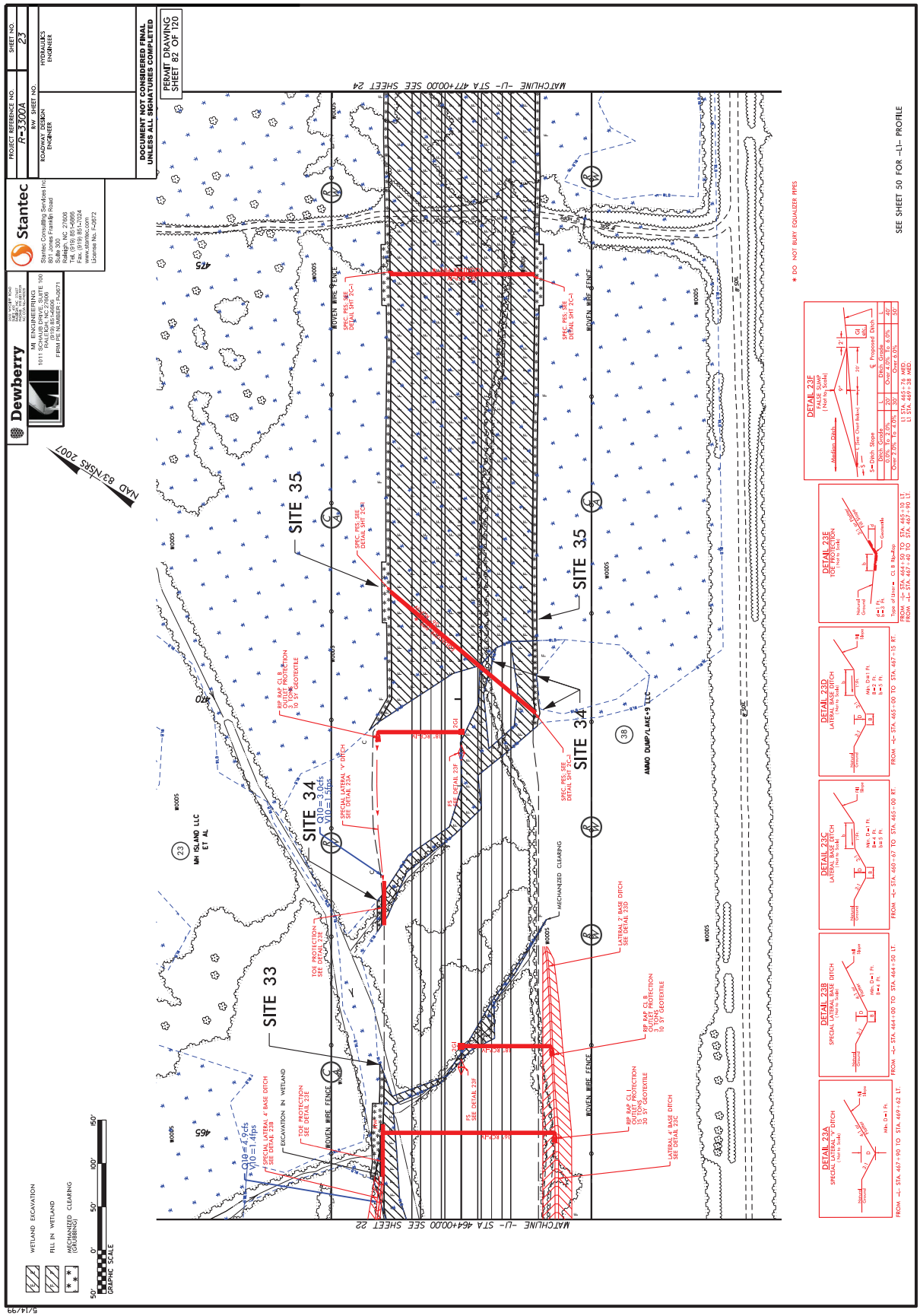
PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-137
PERMIT DRAWING
SHEET 80 OF 120
WETLAND
WETLANDS
WETLAND SITE 32
WETLAND
SITE 32
455+00.0000
454+50.0000
454+00.0000
453+50.0000
453+00.0000
0.025
0.024
0.013
0.002
3:1
6:1
5.10:1
3.21:1
3.30:1
3.40:1
3.43:1
5.98:1
5.87:1
5.78:1
3.15:1
3.29:1
3.18:1
42.79
42.82
42.73
42.50
42.17
32.40
33.15
35.01
35.38
35.54
33.56
34.33
35.29
34.81
34.34

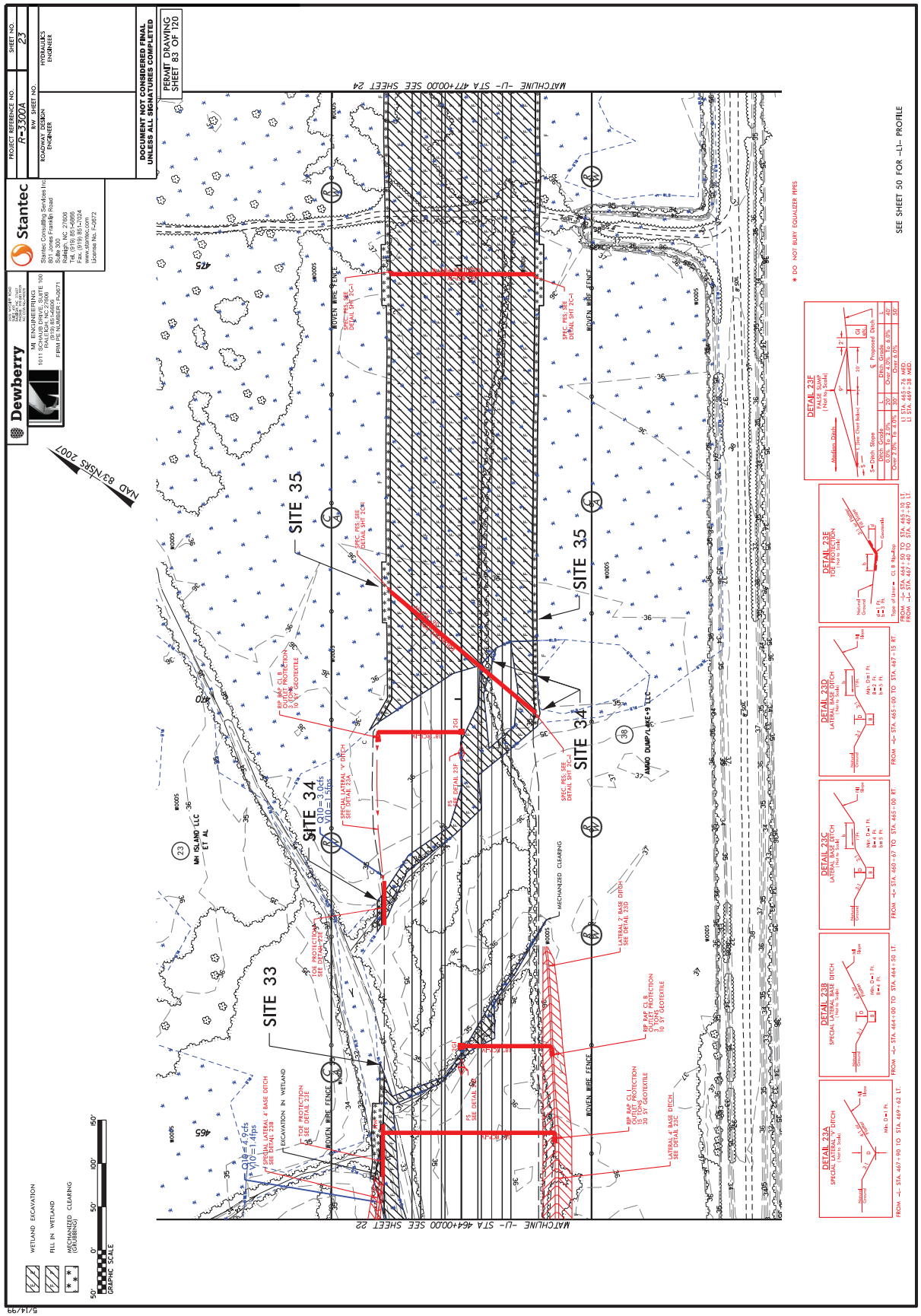
11/20/2024


PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-140
PERMIT DRAWING
SHEET 81 OF 120
WETLANDS
WETLAND
SITE 33
462+50.0000
462+00.0000
461+50.0000
461+00.0000
460+50.0000
WETLAND
SITE 33
WETLAND
SITE 33
WETLAND
SITE 33
WETLAND
SITE 33
WETLAND
SITE 33

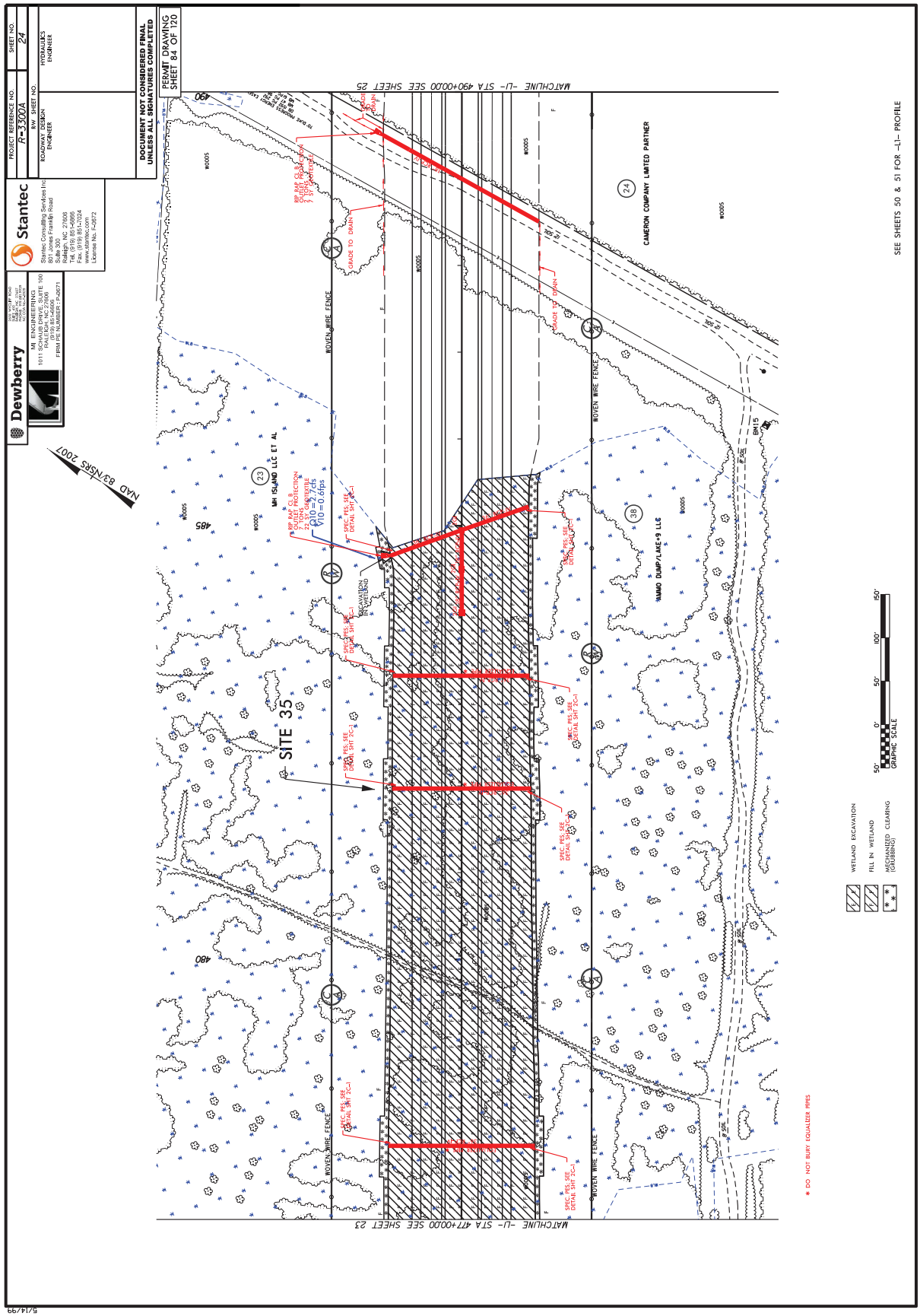
11/20/2024


Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. 23
ROADWAY DESIGNER RW
SHEET NO.
ROADWAY DESIGNER ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 82 OF 120
NAD 83/NSRS 2007
SITE 33
SITE 34
SITE 35
MATCHLINE -L- STA 464+00.00 SEE SHEET 22
MATCHLINE -L- STA 477+00.00 SEE SHEET 24
SEE SHEET 50 FOR -L1- PROFILE
WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
GRAPHIC SCALE
DETAIL 23A
DETAIL 23B
DETAIL 23C
DETAIL 23D
DETAIL 23E
DETAIL 23F
DO NOT BURY EQUALIZER PIPES

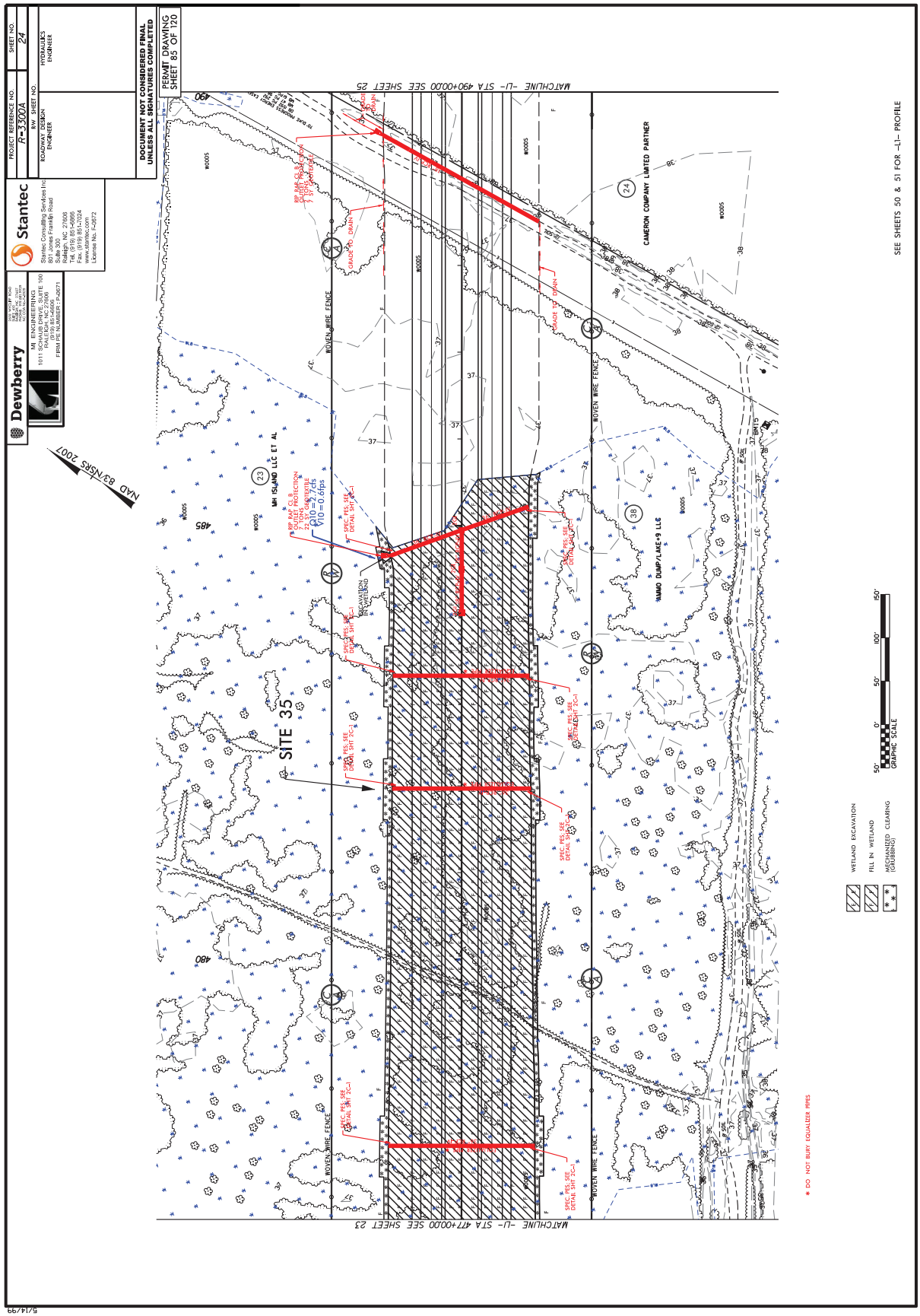
11/20/2024


Dewberry
Stantec
PROJECT REFERENCE NO. A-5300A
SHEET NO. 23
R/W SHEET NO.
ROADWAY DESIGNER ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 83 OF 120
NAD 83/NSRS 2007
WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
GRAPHIC SCALE
SITE 33
SITE 34
SITE 35
MATCHLINE -L- STA 464+00.00 SEE SHEET 22
MATCHLINE -L- STA 477+00.00 SEE SHEET 24
WOVEN WIRE FENCE
MECHANIZED CLEARING
WOODS
MH ISLAND LLC ET AL
AMMO DUMP LAKE-9 LLC
SPECIAL LATERAL V DITCH SEE DETAIL 23A
EXCAVATION IN WETLAND
TOE PROTECTION SEE DETAIL 23E
RIP RAP CL II OUTLET PROTECTION 3 TONS 10 SY GEOTEXTILE
LATERAL E BASE DITCH SEE DETAIL 23C
SPECIAL LATERAL E BASE DITCH SEE DETAIL 23B
SPEC. PES, SEE DETAIL SHT 2C-1
PES SEE DETAIL 23F
DETAIL 23A SPECIAL LATERAL "V" DITCH
DETAIL 23B SPECIAL LATERAL E BASE DITCH
DETAIL 23C LATERAL E BASE DITCH
DETAIL 23D LATERAL BASE DITCH
DETAIL 23E TOE PROTECTION
DETAIL 23F MEDIAN DITCH
FROM -L- STA 467+90 TO STA 469+62 LT.
FROM -L- STA 464+00 TO STA 464+50 LT.
FROM -L- STA 465+00 TO STA 467+15 RT.
FROM -L- STA 465+00 TO STA 465+69 RT.
FROM -L- STA 464+50 TO STA 465+10 LT.
FROM -L- STA 467+40 TO STA 467+90 LT.
L1 STA. 465+76 MED.
L1 STA. 469+38 MED.
SEE SHEET 50 FOR -L1- PROFILE
* DO NOT BURY EQUALIZER PIPES

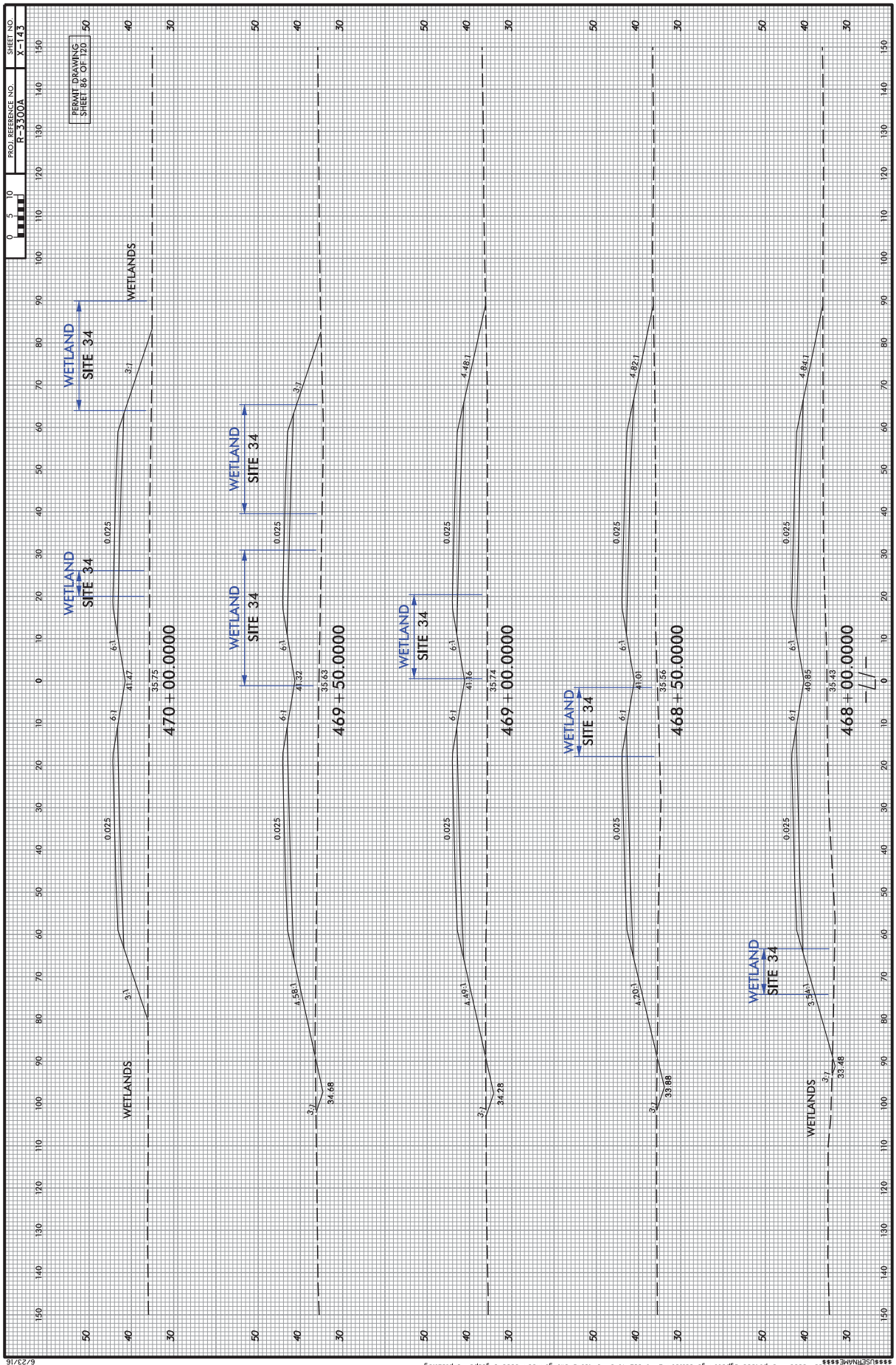
11/20/2024


Dewberry
Stantec
PROJECT REFERENCE NO.
A-3300A
SHEET NO.
24
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 84 OF 120
ROADWAY DESIGNER
RW
SHEET NO.
HYDRAULICS ENGINEER
SEE SHEETS 50 & 51 FOR -L1- PROFILE
MATCHLINE -L1- STA 490+00.00 SEE SHEET 25
MATCHLINE -L1- STA 477+00.00 SEE SHEET 23
SITE 35
CAMERON COMPANY LIMITED PARTNER
MAMO DUMPYLAKE-9 LLC
NH ISLAND LLC ET AL
WOVEN WIRE FENCE
WOODS
GRADE TO DRAIN
SPEC. PES, SEE DETAIL SHT 2C-1
RIP RAP CLASS II DOUBLE LAYER OVER GEOTEXTILE Q10=2.7cfs V10=0.6fps
RIP RAP CLASS II DOUBLE LAYER OVER GEOTEXTILE Q10=2.7cfs V10=0.6fps
EXCAVATION IN WETLAND
WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (CLEARING)
GRAPHIC SCALE
50' 0' 50' 100' 150'
* DO NOT BURY EQUALIZER PIPES
NAD 83/NSRS 2007

11/20/2024


Dewberry
Stantec
PROJECT REFERENCE NO.
A-3300A
SHEET NO.
24
ROADWAY DESIGNER
KW
SHEET NO.
ROADWAY DESIGNER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 85 OF 120
NAD 83/NSRS 2007
MATCHLINE -L1- STA 490+00.00 SEE SHEET 25
MATCHLINE -L1- STA 477+00.00 SEE SHEET 23
SITE 35
WOVEN WIRE FENCE
WOODS
CAMERON COMPANY LIMITED PARTNER
MH ISLAND LLC ET AL
MMO DUMPLAKE+9 LLC
SEE SHEETS 50 & 51 FOR -L1- PROFILE
WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (CLEARING)
GRAPHIC SCALE
* DO NOT BURY EQUALIZER PIPES

11/20/2024

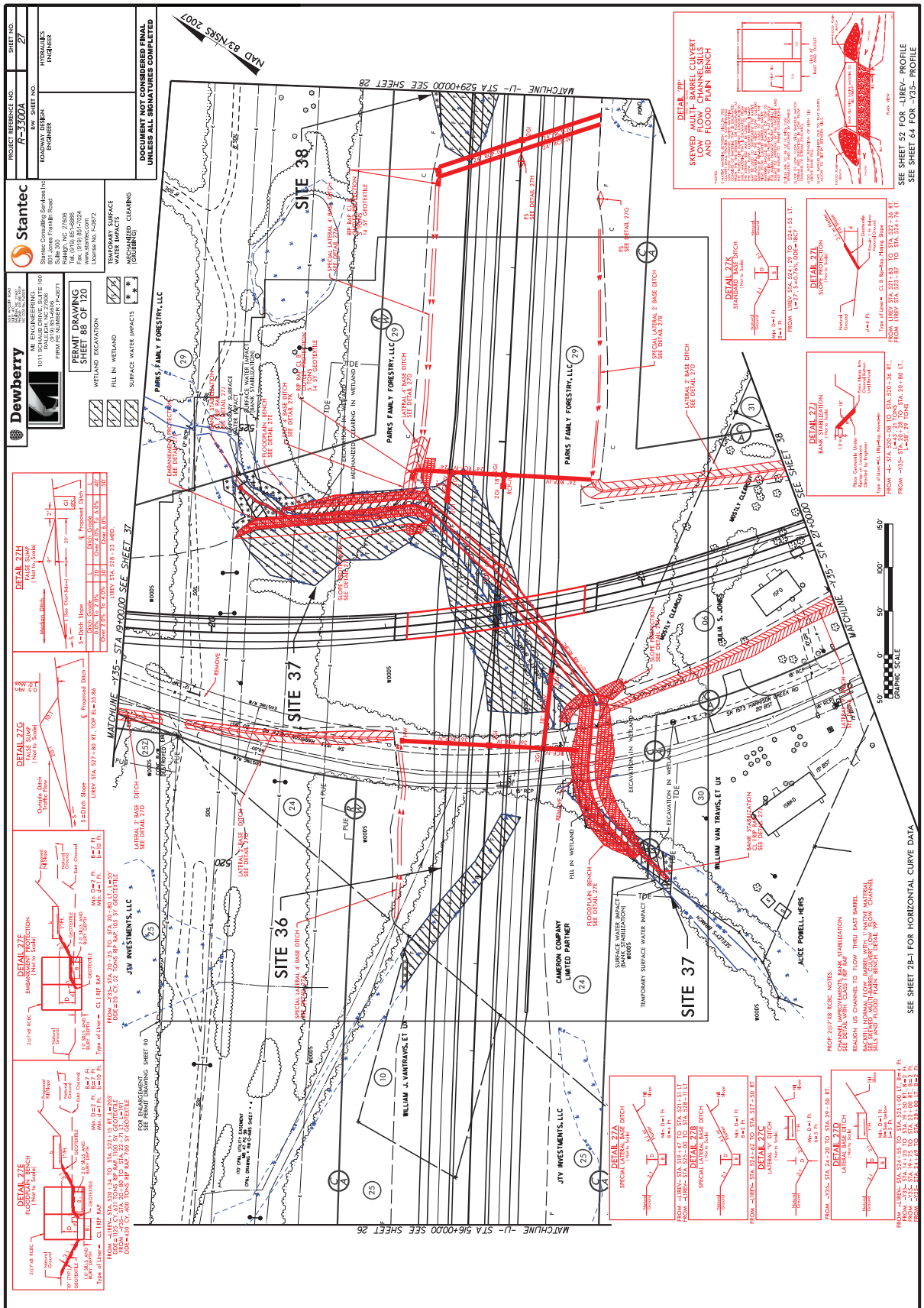


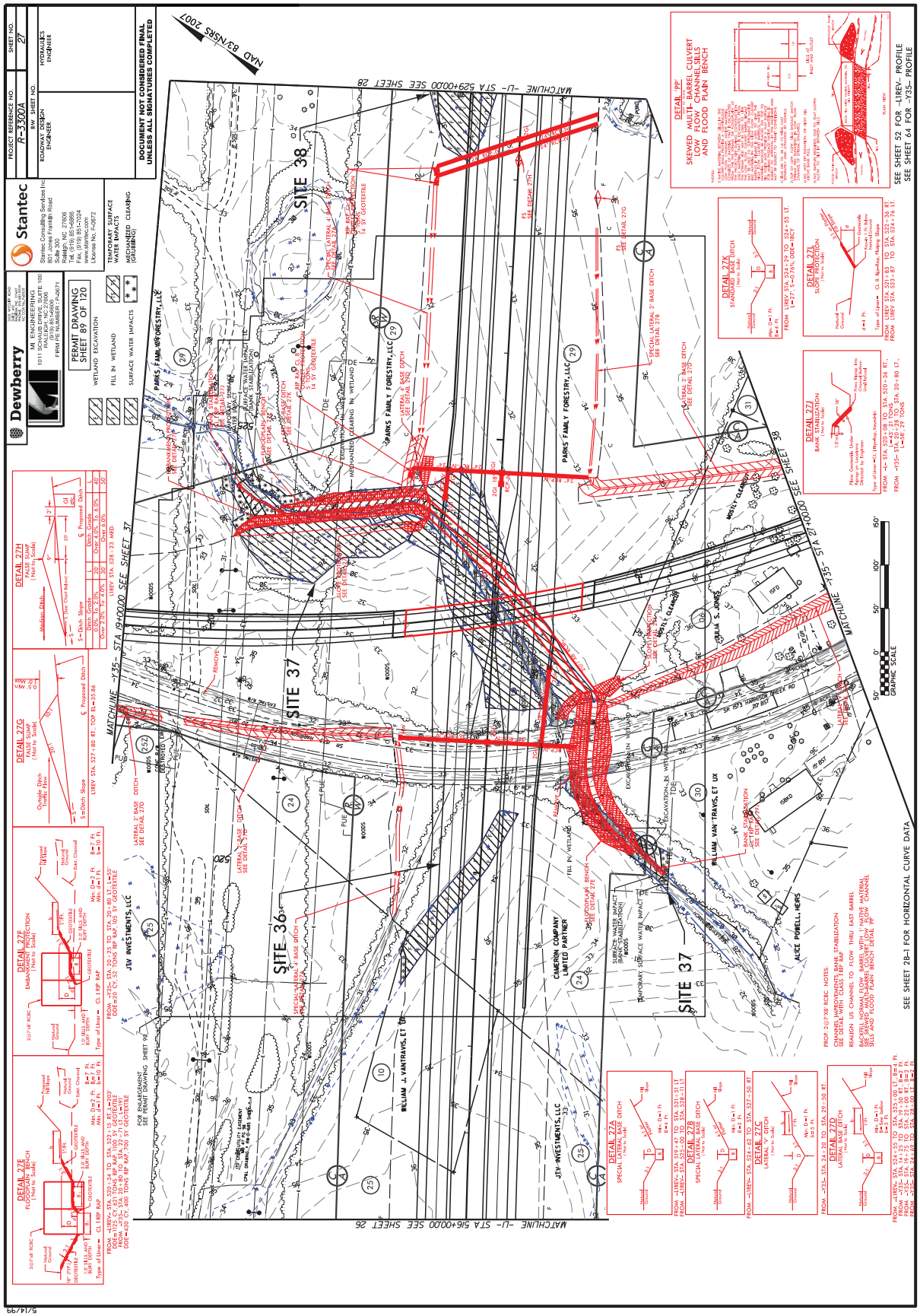
11/20/2024

6/23/16
1/13/2023
M ENGINEERING
N:\NC_Hydro\M7006_R-3300A Hampstead Bypass\Hydraulics\FERMITS_Environmental\Drawings\XSC\R3300A_Hyd_perm_xpl1.dgn
12:15:56 1:40:0 M7006_R-3300A Hampstead Bypass\Hydraulics\FERMITS_Environmental\Drawings\XSC\R3300A_Hyd_perm_xpl1.dgn
$$$$USERNAME$$$$

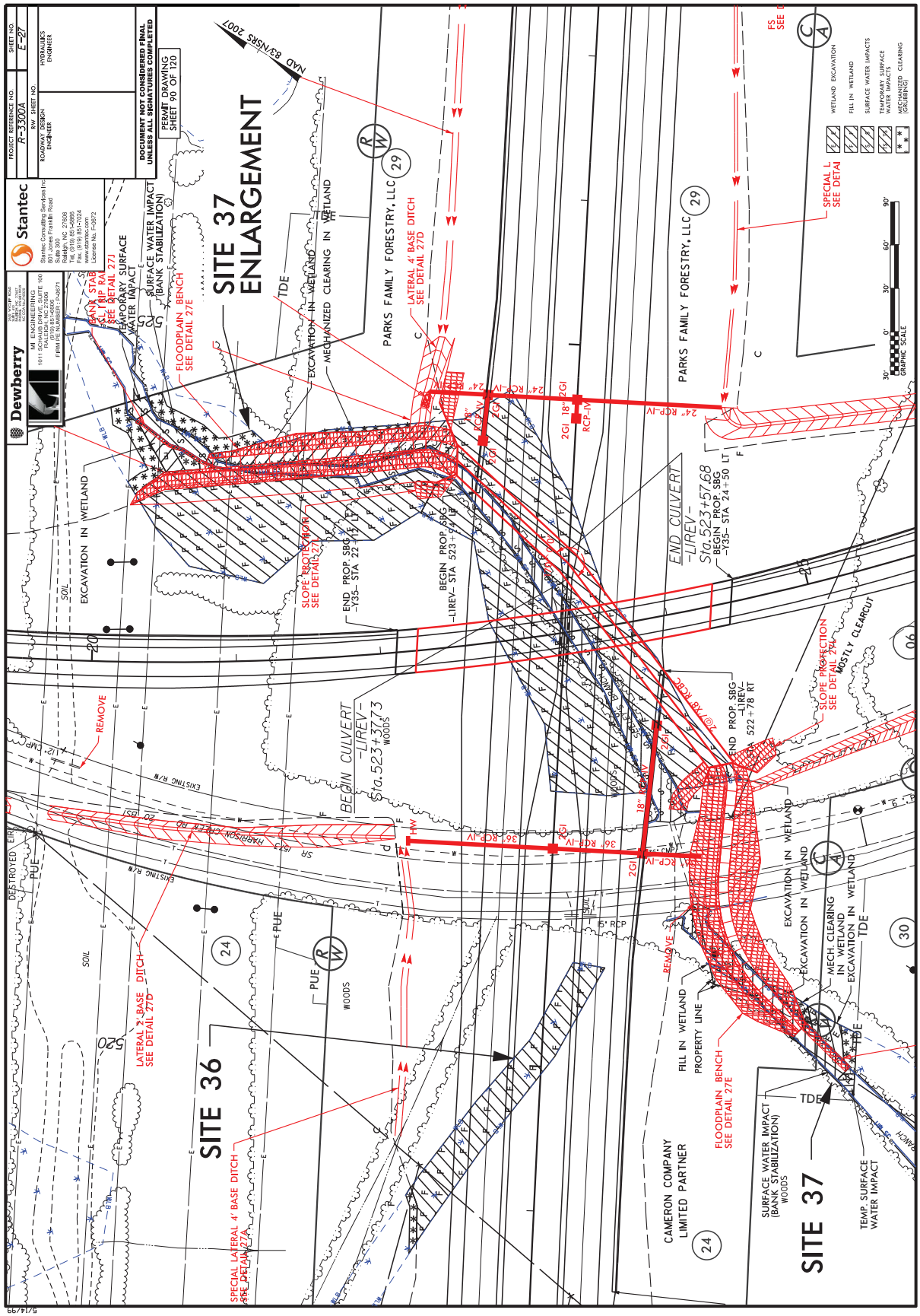
0 5 10
PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-146
PERMIT DRAWING
SHEET 87 OF 120
WETLAND
SITE 35
WETLANDS
0.025
6:1
3:1
43.32
36.63
477+50.0000
43.38
36.66
477+00.0000
43.37
36.63
476+50.0000
43.30
36.52
476+00.0000
43.17
36.49
475+50.0000

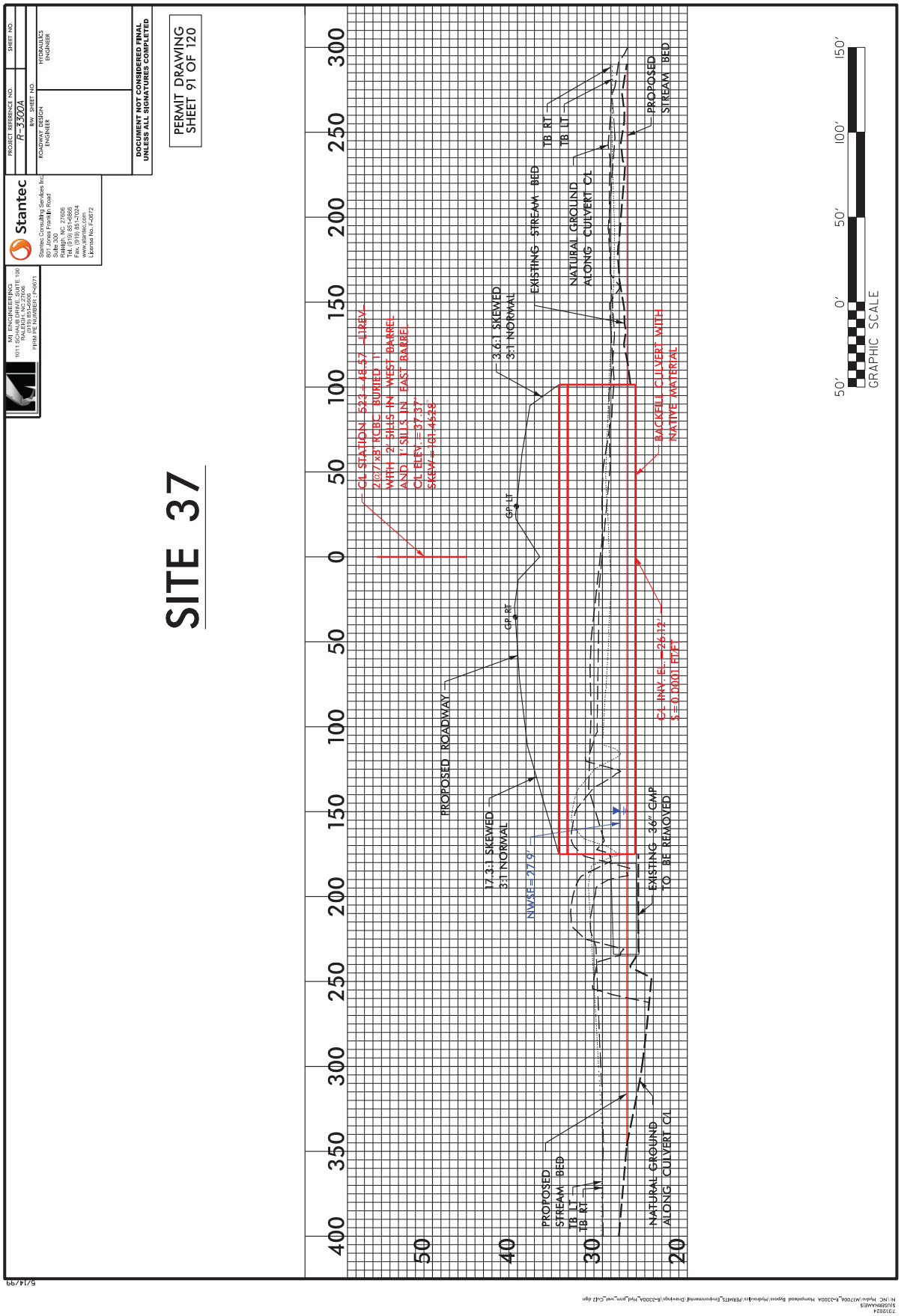
11/20/2024


Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. 27
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 88 OF 120
WETLAND EXCAVATION
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
NAD 83/NSRS 2007
SITE 36
SITE 37
SITE 38
PARKS FAMILY FORESTRY, LLC
JJV INVESTMENTS, LLC
CAMERON COMPANY LIMITED PARTNER
WILLIAM J. VANTRAVIS, ET UX
WILLIAM VAN TRAVIS, ET UX
JULIA S. JONES
ALICE POWELL, HEIRS
MATCHLINE -L- STA 516+00.00 SEE SHEET 26
MATCHLINE -L- STA 529+00.00 SEE SHEET 28
MATCHLINE -Y3S- STA 19+00.00 SEE SHEET 37
MATCHLINE -Y3S- STA 21+00.00 SEE SHEET 38
SEE SHEET 52 FOR -LREV- PROFILE
SEE SHEET 64 FOR -Y3S- PROFILE
SEE SHEET 28-1 FOR HORIZONTAL CURVE DATA
DETAIL PP SKEWED MULTI-BARREL CULVERT LOW FLOW CHANNEL/SILLS AND FLOOD PLAIN BENCH
DETAIL 27E FLOODPLAIN BENCH
DETAIL 27F EMBANKMENT PROTECTION
DETAIL 27G FALSE SUMP
DETAIL 27H FALSE SUMP
DETAIL 27J STANDARD DITCH
DETAIL 27K STANDARD DITCH
DETAIL 27L SLOPE PROTECTION
DETAIL 27I BANK STABILIZATION
DETAIL 27A SPECIAL LATERAL BASE DITCH
DETAIL 27B SPECIAL LATERAL BASE DITCH
DETAIL 27C LATERAL BASE DITCH
DETAIL 27D LATERAL BASE DITCH
GRAPHIC SCALE
REVISIONS
R/W REV. MAY 2024. ADDED PARCEL NO. 252, WHICH SHOWS ADDITIONAL 1506SF OF PUE OWNED BY NCDOT. -STANTEC
N:\NC Proj\o\R1700&-R3300A Hampstead Bypass\Hydraulics\Permits\Environmental\Drawings\R3300A_hyd_pm_27.dgn
5/14/99
11/20/2024



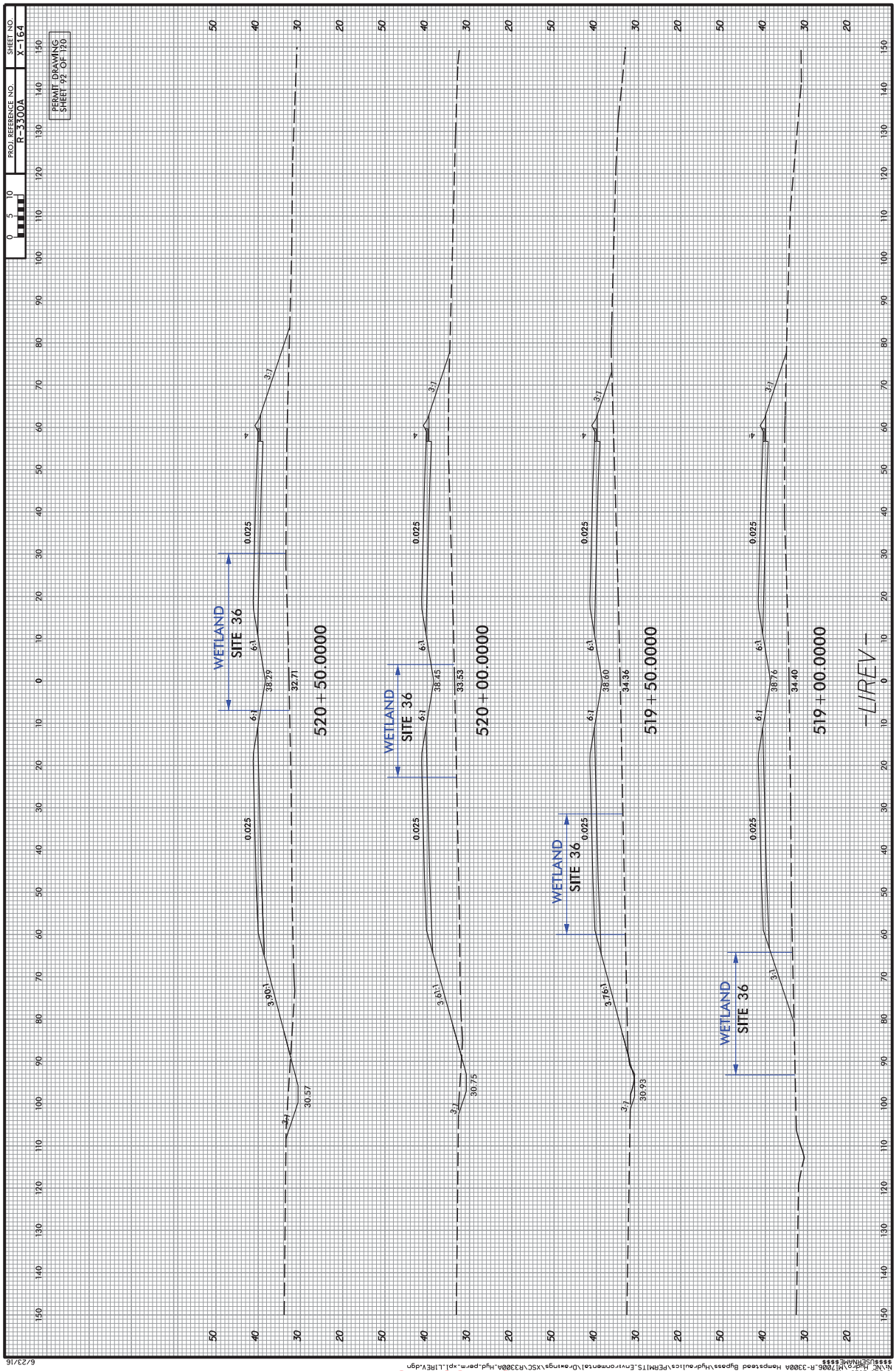
11/20/2024


SITE 37
ENLARGEMENT
SITE 36
SITE 37
PARKS FAMILY FORESTRY, LLC
CAMERON COMPANY
LIMITED PARTNER
BEGIN CULVERT
-LIREV-
Sta.523+37.73
END CULVERT
-LIREV-
Sta.523+57.68
EXCAVATION IN WETLAND
MECHANIZED CLEARING IN WETLAND
FILL IN WETLAND
PROPERTY LINE
TDE
SURFACE WATER IMPACT
(BANK STABILIZATION)
TEMPORARY SURFACE
WATER IMPACT
FLOODPLAIN BENCH
SEE DETAIL 27E
LATERAL 4' BASE DITCH
SEE DETAIL 27D
SLOPE PROTECTION
SEE DETAIL 29A
MOSTLY CLEARCUT
REMOVE
WOODS
SOIL
PUE
EXISTING R/W
HARRISON CREEK RD
SR 1523
NAD 83/NSRS 2007
PERMIT DRAWING
SHEET 90 OF 120
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
PROJECT REFERENCE NO.
R-5300A
SHEET NO.
E-27
ROADWAY DESIGN
ENGINEER
HYDRAULICS
ENGINEER
Stantec
Dewberry
WETLAND EXCAVATION
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE
WATER IMPACTS
MECHANIZED CLEARING
(GRUBBING)
GRAPHIC SCALE

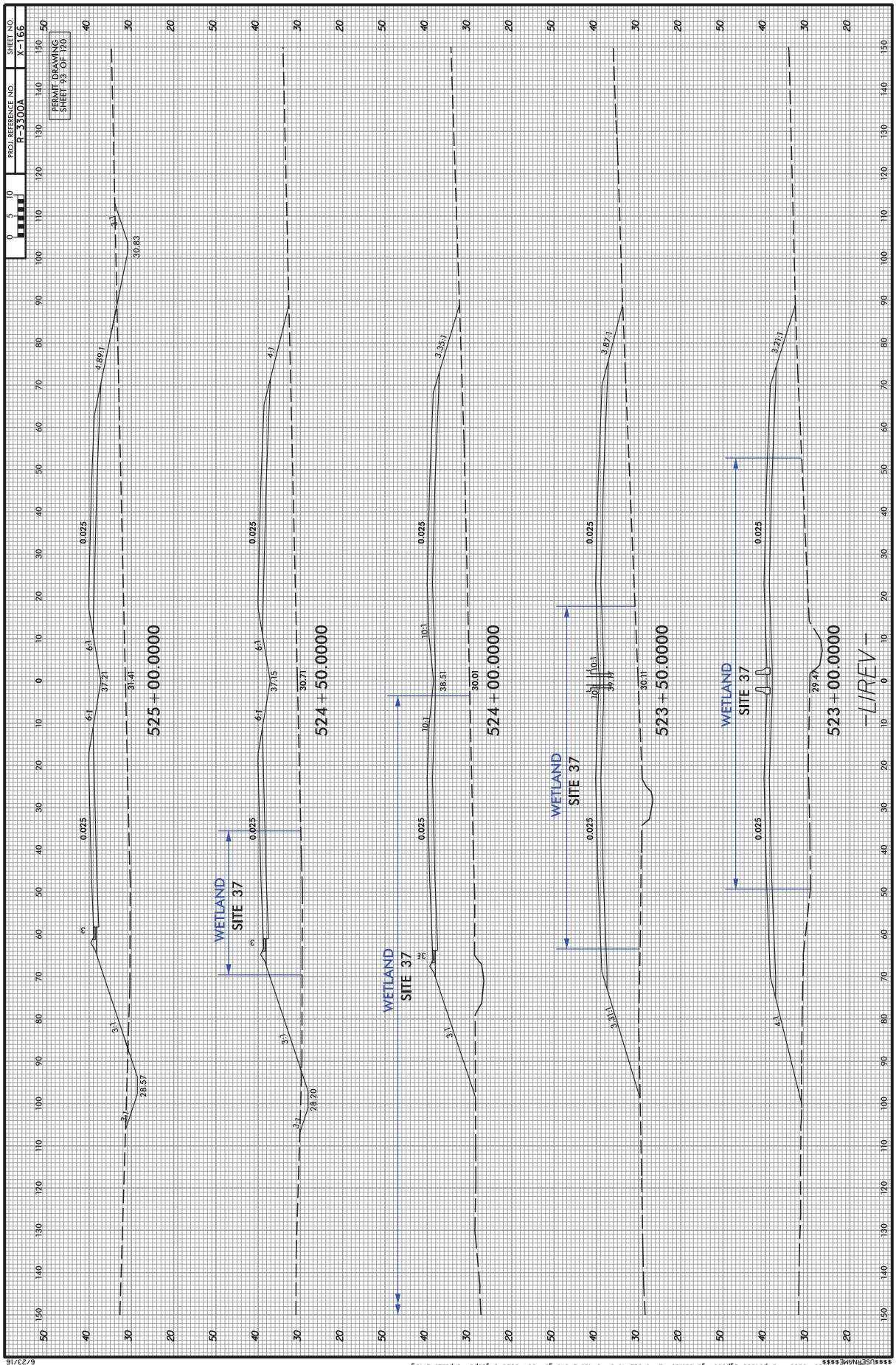

SITE 37
PERMIT DRAWING
SHEET 91 OF 120
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
PROJECT REFERENCE NO.
A-3300A
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
SHEET NO.
Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No.: C-0672
KE ENGINEERING
1011 ARENDELL STREET, SUITE 100
RALEIGH, NC 27608
PHONE: (919) 600-6660
FIRM PE NUMBER: P-0971
PROPOSED ROADWAY
17.3:1 SKEWED
3:1 NORMAL
NWSE = 279'
GP LT
GP RT
3.6:1 SKEWED
3:1 NORMAL
EXISTING STREAM BED
TB RT
TB LT
NATURAL GROUND
ALONG CULVERT C/L
PROPOSED
STREAM BED
CL STATION 523+48.57 -L1RBM-
2@7'x6' RCBC BURIED 1'
WITH 2" SILLS IN WEST BARREL
AND 1" SILLS IN EAST BARREL
CL ELEV. = 37.37'
SKEW = 61.4528°
BACKFILL CULVERT WITH
NATIVE MATERIAL
CL INVT EL. = 26.12'
S = 0.0001 ft/ft
EXISTING 36" CMP
TO BE REMOVED
PROPOSED
STREAM BED
TB LT
TB RT
NATURAL GROUND
ALONG CULVERT C/L
GRAPHIC SCALE
50' 0' 50' 100' 150'

11/20/2024

P-126



11/20/2024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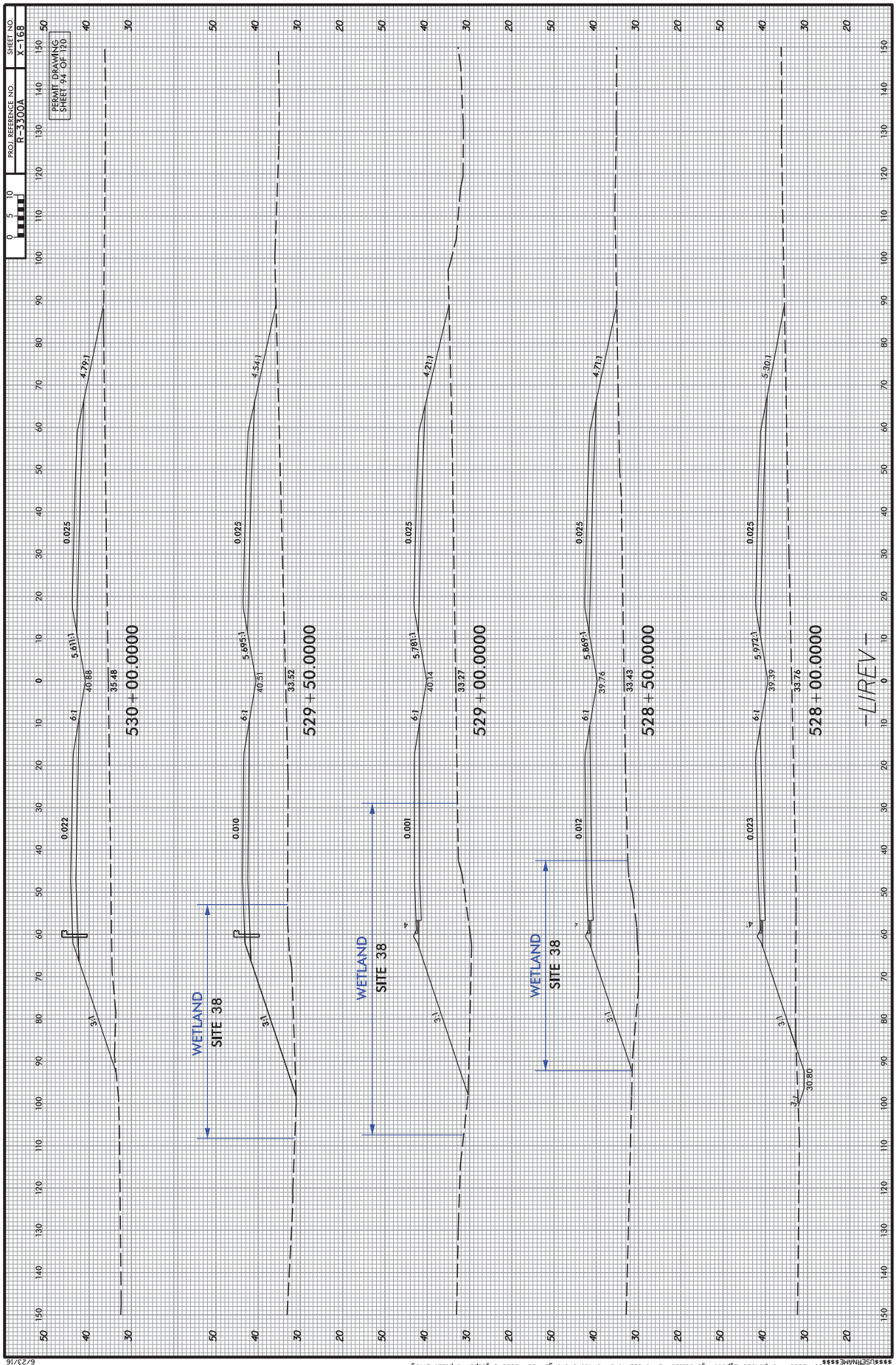
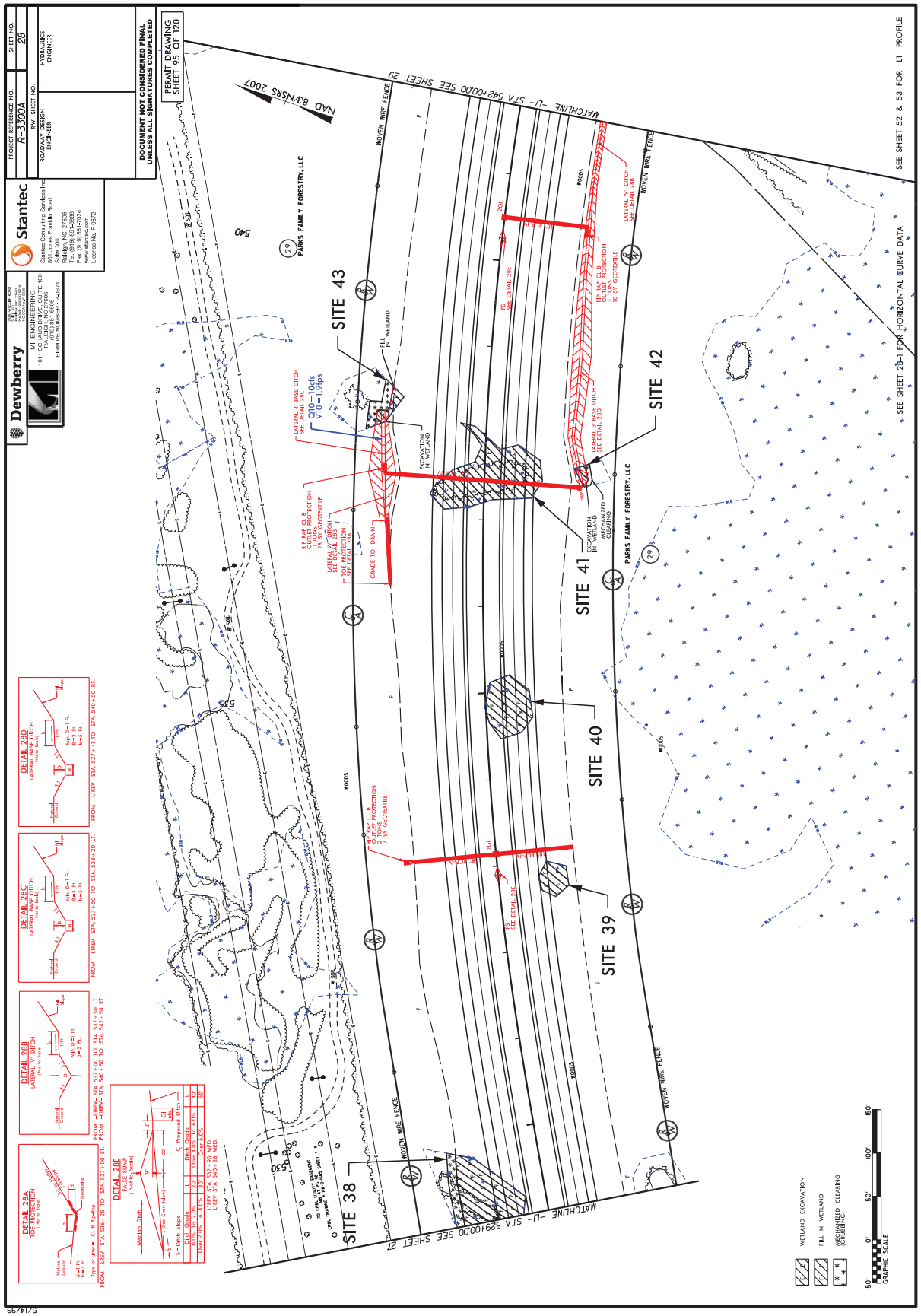
PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-166
PERMIT DRAWING
SHEET #3 OF #20
525+00.0000
524+50.0000
524+00.0000
523+50.0000
523+00.0000
WETLAND
SITE 37
-LIREV-

11/20/2024

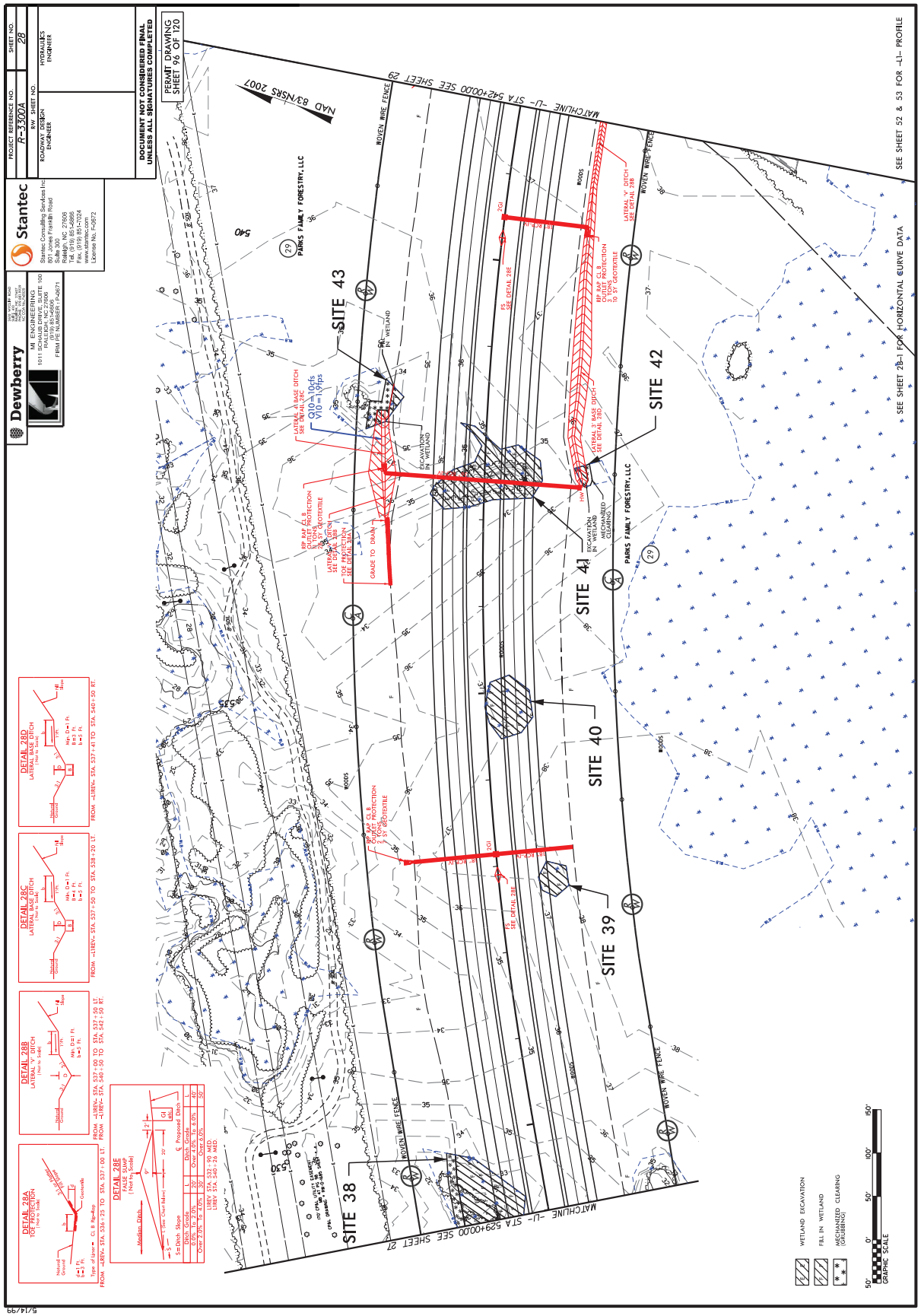

PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-168
PERMIT DRAWING
SHEET 44 OF 120
530+00.0000
529+50.0000
529+00.0000
528+50.0000
528+00.0000
WETLAND
SITE 38
-LIREV-

11/20/2024


Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. 28
ROADWAY DESIGN ENGINEER
STRUCTURES ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 95 OF 120
NAD 83/NSRS 2007
MATCHLINE -L- STA 542+00.00 SEE SHEET 29
MATCHLINE -L- STA 529+00.00 SEE SHEET 27
SEE SHEET 52 & 53 FOR -L- PROFILE
SEE SHEET 28 FOR HORIZONTAL CURVE DATA
SITE 38
SITE 39
SITE 40
SITE 41
SITE 42
SITE 43
PARKS FAMILY FORESTRY, LLC
WOVEN WIRE FENCE
WOODS
WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
GRAPHIC SCALE
DETAIL 28A
DETAIL 28B
DETAIL 28C
DETAIL 28D
DETAIL 28E
FALSE SUMP

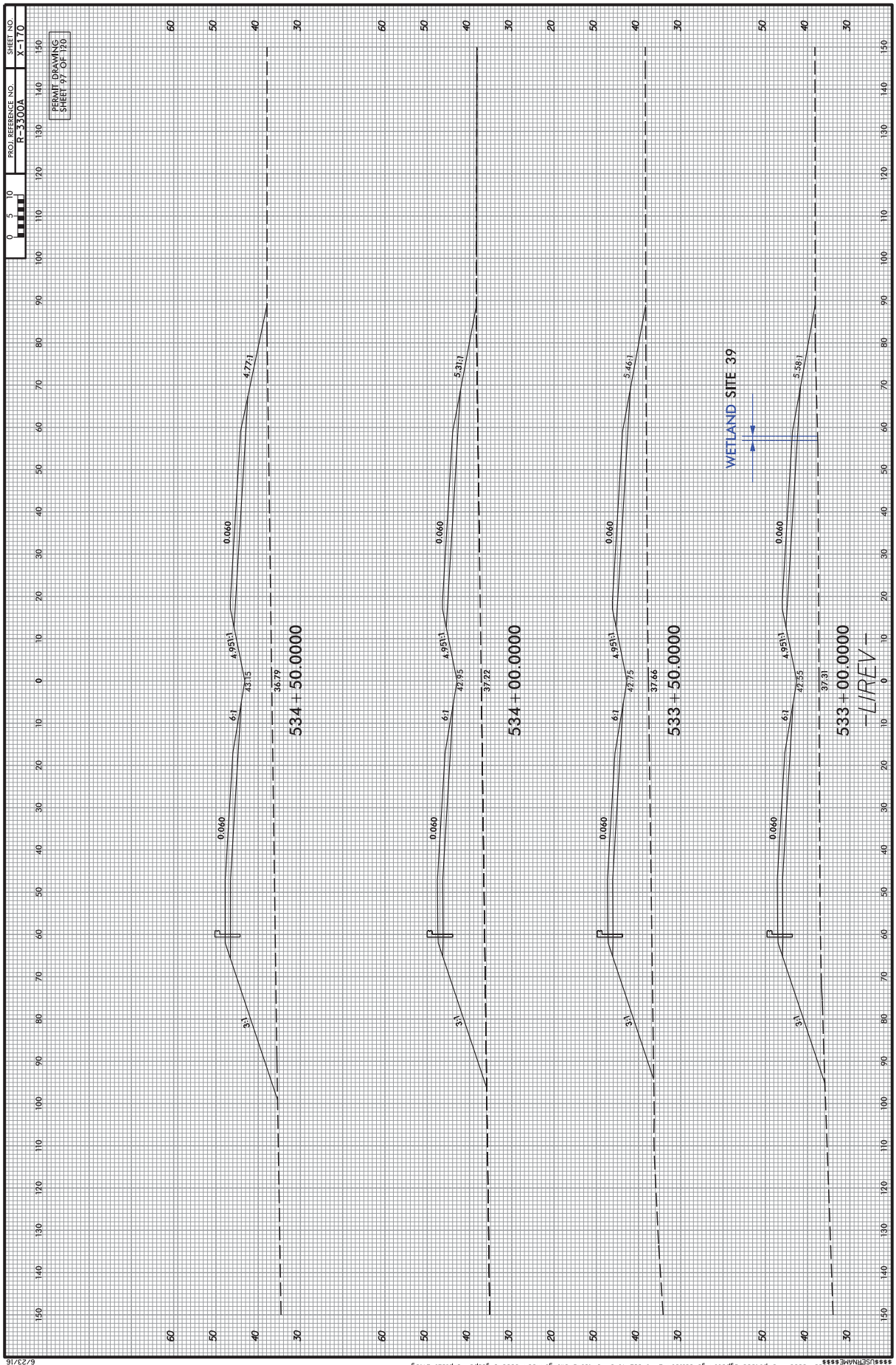
11/20/2024

P-130

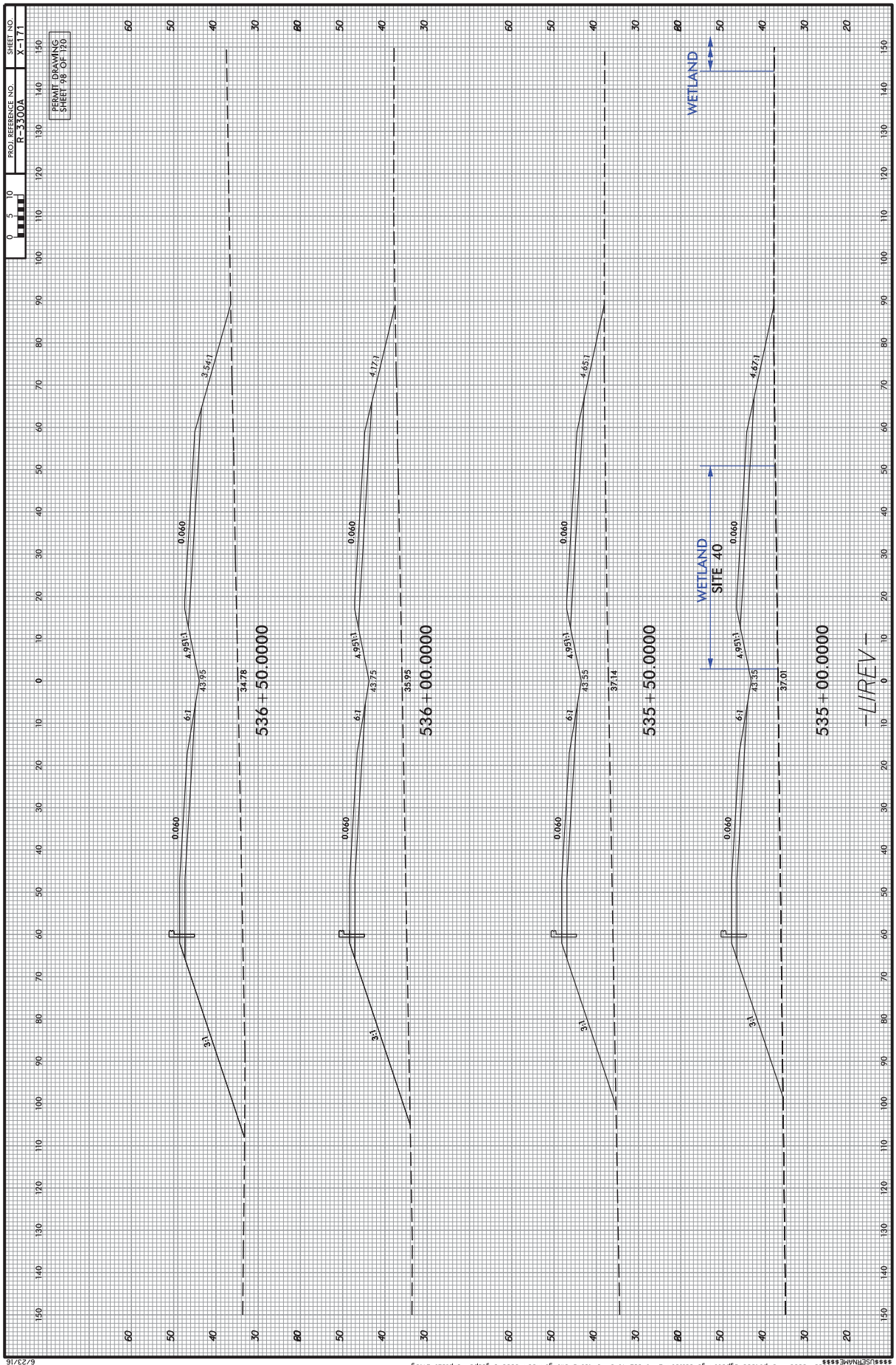


11/20/2024

P-131



11/20/2024



12/15/2023
MI ENGINEERING
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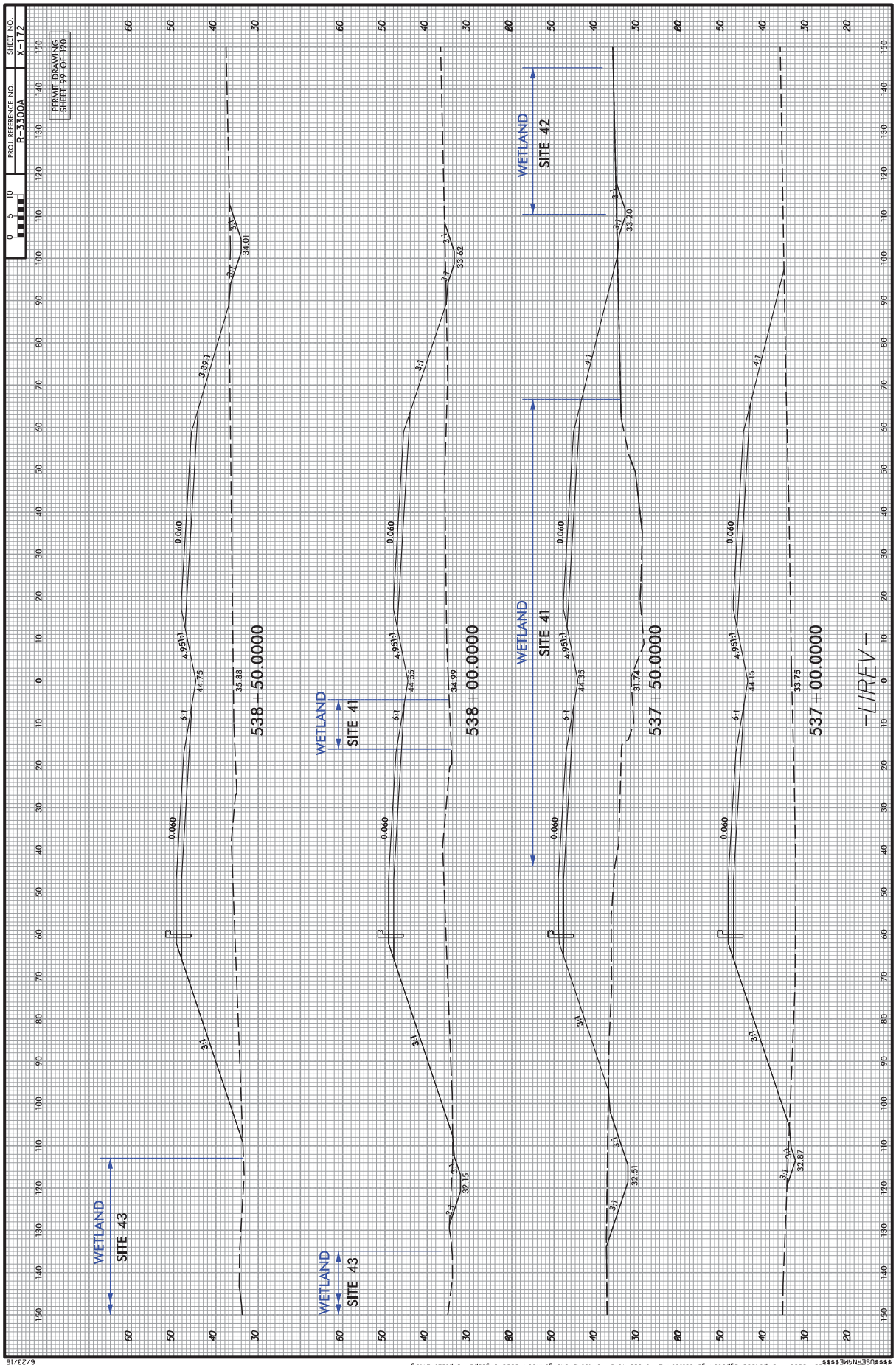
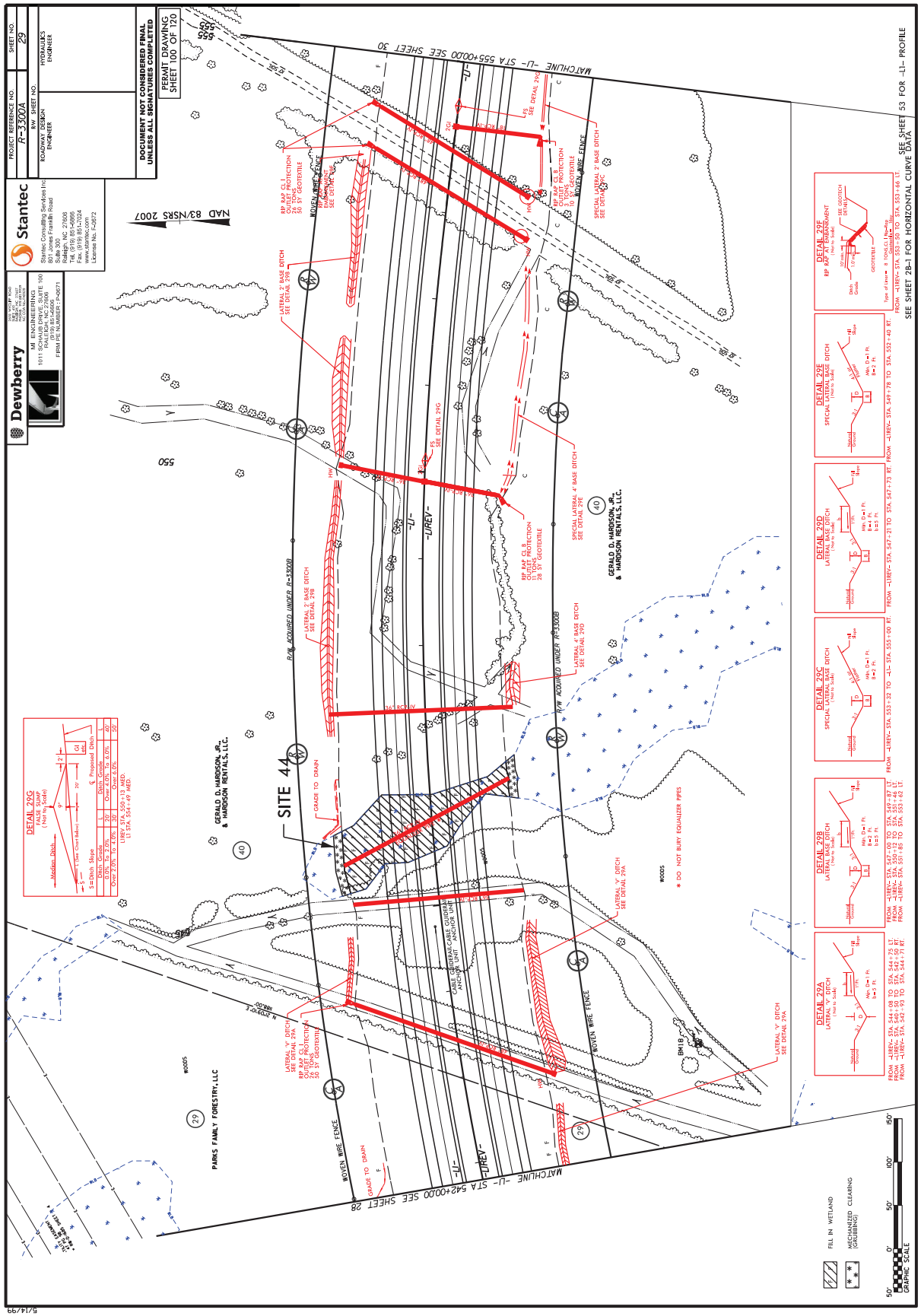
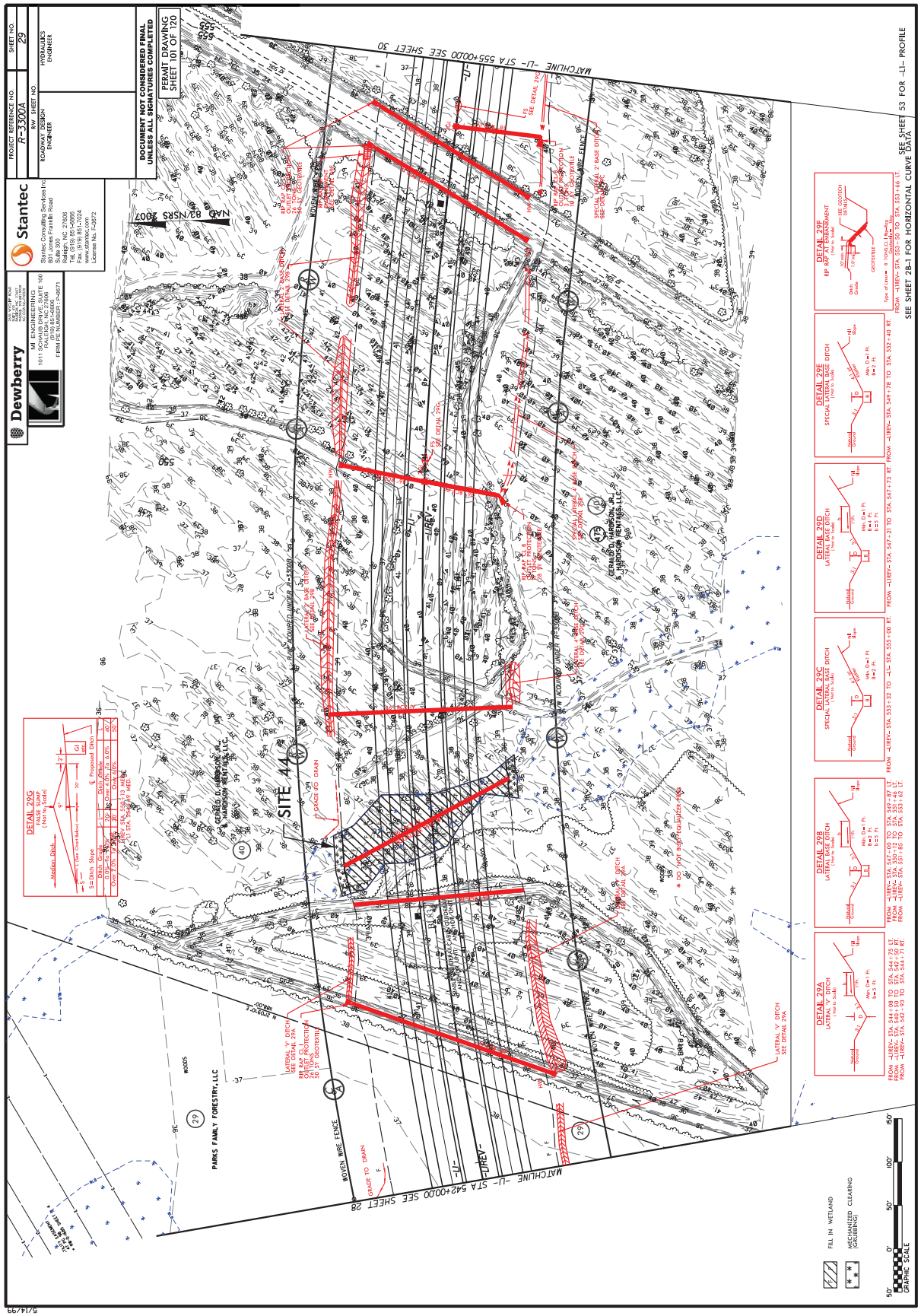
$$$$USERNAME$$$$
6/23/16
N:\NC Hydro\MI7006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\XSC\R3300A_Hyd_perm_xpl_LREV.dgn
11/20/2024


0 5 10
PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-172
PERMIT DRAWING
SHEET 99 OF 120
538+50.0000
538+00.0000
537+50.0000
537+00.0000
WETLAND
SITE 43
WETLAND
SITE 41
WETLAND
SITE 41
WETLAND
SITE 42
WETLAND
SITE 43
-L/REV-
6/23/16

11/20/2024


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 100 OF 120
PROJECT REFERENCE NO. R-3300A
SHEET NO. 29
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Stantec
Dewberry
NAD 83/NSRS 2007
MATCHLINE -L- STA 555+00.00 SEE SHEET 30
MATCHLINE -L- STA 542+00.00 SEE SHEET 28
SEE SHEET 28-I FOR HORIZONTAL CURVE DATA
SEE SHEET 53 FOR -L1- PROFILE
SITE 44
GERALD D. HARDISON, JR. & HARDISON RENTALS, LLC.
PARKS FAMILY FORESTRY, LLC
WOVEN WIRE FENCE
WOODS
GRADE TO DRAIN
* DO NOT BURY EQUALIZER PIPES
RIP RAP CL I OVER GEOTEXTILE 20 TONS 50 SY GEOTEXTILE
RIP RAP CL I OVER GEOTEXTILE 10 TONS 25 SY GEOTEXTILE
RIP RAP CL I OVER GEOTEXTILE 28 TONS 70 SY GEOTEXTILE
LATERAL 2' BASE DITCH SEE DETAIL 29B
SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 29E
LATERAL 4' BASE DITCH SEE DETAIL 29D
LATERAL 1' DITCH SEE DETAIL 29A
SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 29E
FS SEE DETAIL 29G
R/W ACQUIRED UNDER R-3300B
DETAIL 29G FALSE SUMP (Not to Scale)
DETAIL 29A LATERAL 1' DITCH (Not to Scale)
DETAIL 29B LATERAL BASE DITCH (Not to Scale)
DETAIL 29C SPECIAL LATERAL BASE DITCH (Not to Scale)
DETAIL 29D LATERAL BASE DITCH (Not to Scale)
DETAIL 29E SPECIAL LATERAL BASE DITCH (Not to Scale)
DETAIL 29F RIP RAP AT ENDWALL (Not to Scale)
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
GRAPHIC SCALE
11/20/2024


PROJECT REFERENCE NO.
A-3300A
R/W SHEET NO.
SHEET NO.
29
ROADWAY DESIGNER
ENGINEER
HYDRAULICS
ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 101 OF 120
Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. C-0672
Dewberry
NC LICENSURE
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-4929
FIRM PE NUMBER: P-0973
NAD 83/NSRS 2007
MATCHLINE -L- STA 555+00.00 SEE SHEET 30
MATCHLINE -L- STA 542+00.00 SEE SHEET 28
SEE SHEET 28-I FOR HORIZONTAL CURVE DATA
SEE SHEET 53 FOR -L1- PROFILE
SITE 44
GERALD D. HARDISON, JR. & HARDISON RENTALS, LLC
PARKS FAMILY FORESTRY, LLC
WOODS
WOVEN WIRE FENCE
-L-
-L1REV-
DETAIL 29A
LATERAL 'V' DITCH
DETAIL 29B
LATERAL BASE DITCH
DETAIL 29C
SPECIAL LATERAL BASE DITCH
DETAIL 29D
LATERAL BASE DITCH
DETAIL 29E
SPECIAL LATERAL BASE DITCH
DETAIL 29F
RIP RAP APPURTENANCE
DETAIL 29G
FALSE SUMP
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
GRAPHIC SCALE
0'
50'
100'
150'
5/14/99
7/31/2024
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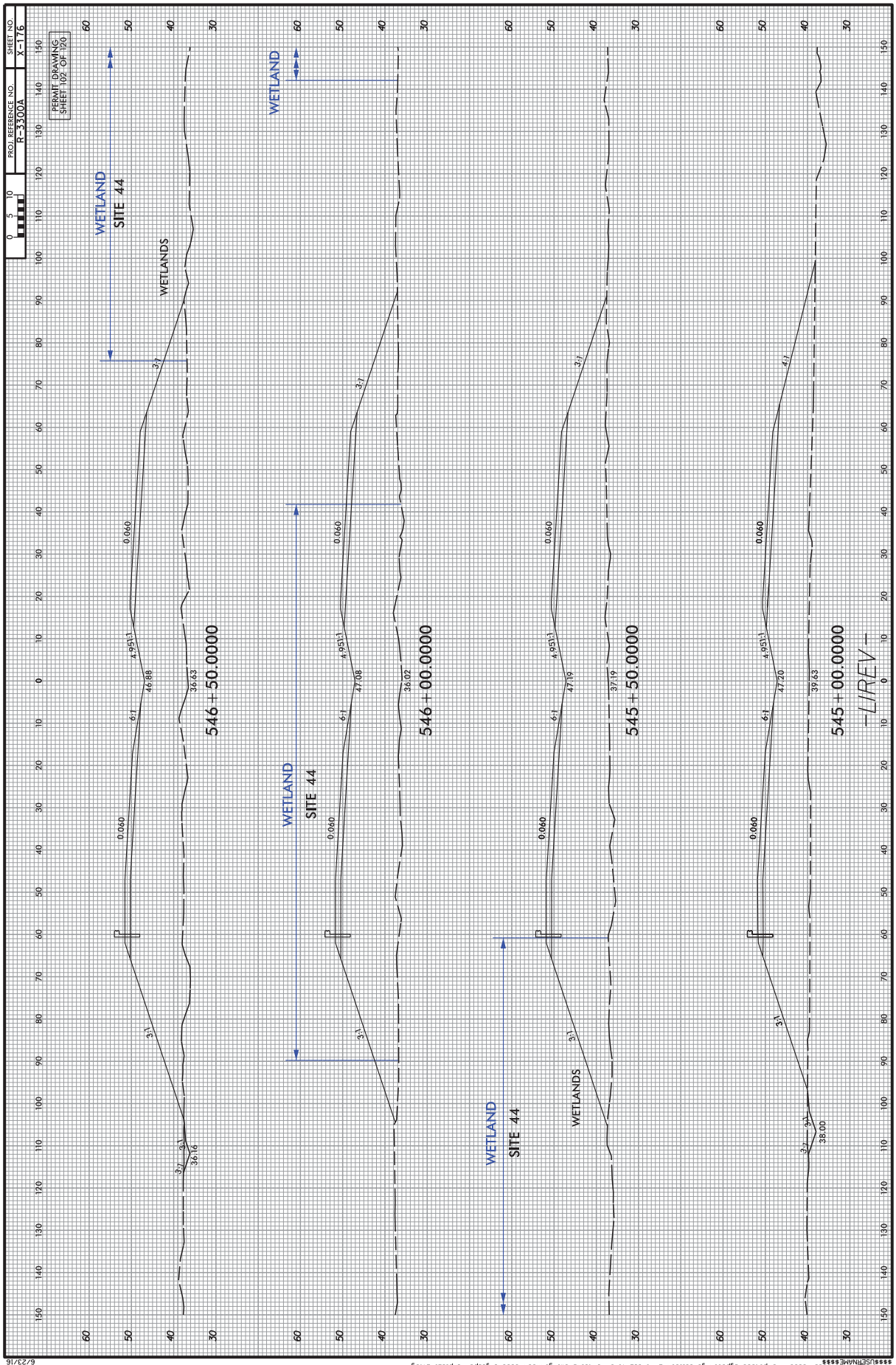
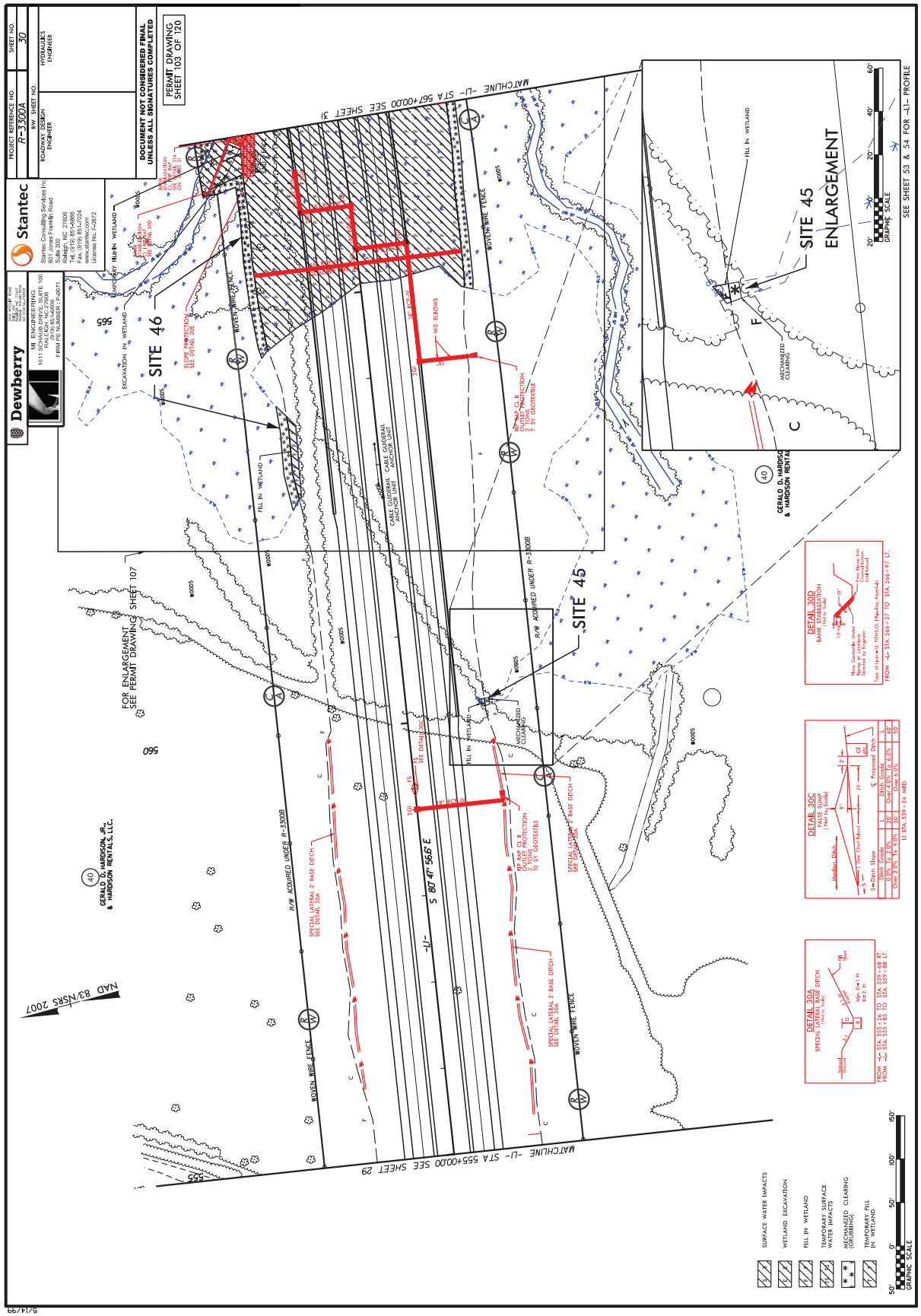
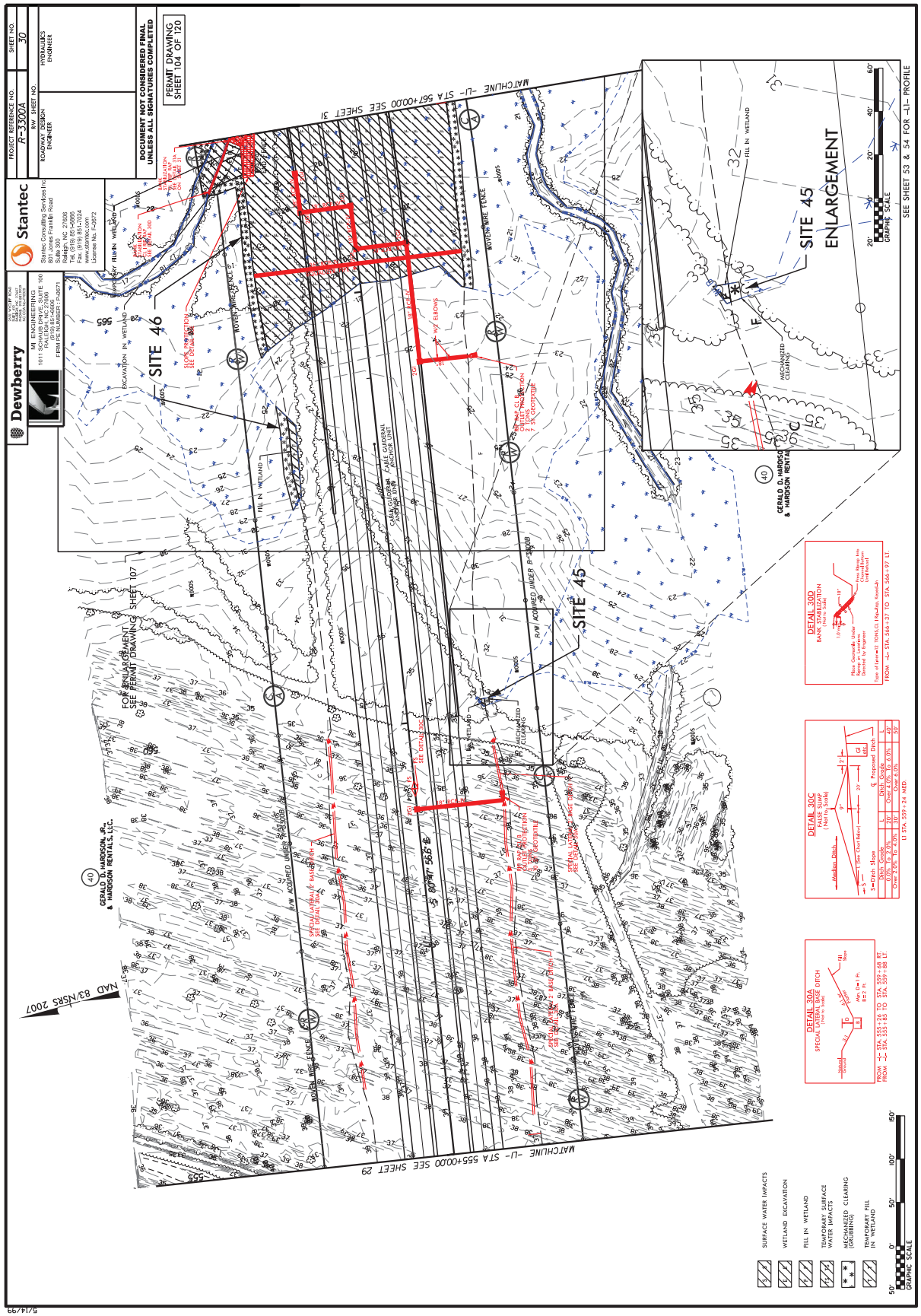
11/20/2024


PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-176
PERMIT DRAWING
SHEET 102 OF 120
WETLAND
SITE 44
WETLANDS
546+50.0000
546+00.0000
545+50.0000
545+00.0000
-L/REV-
0.060
4.95:1
6:1
3:1
46.88
36.63
36.16
36.02
47.08
37.19
47.19
39.63
47.20
38.00

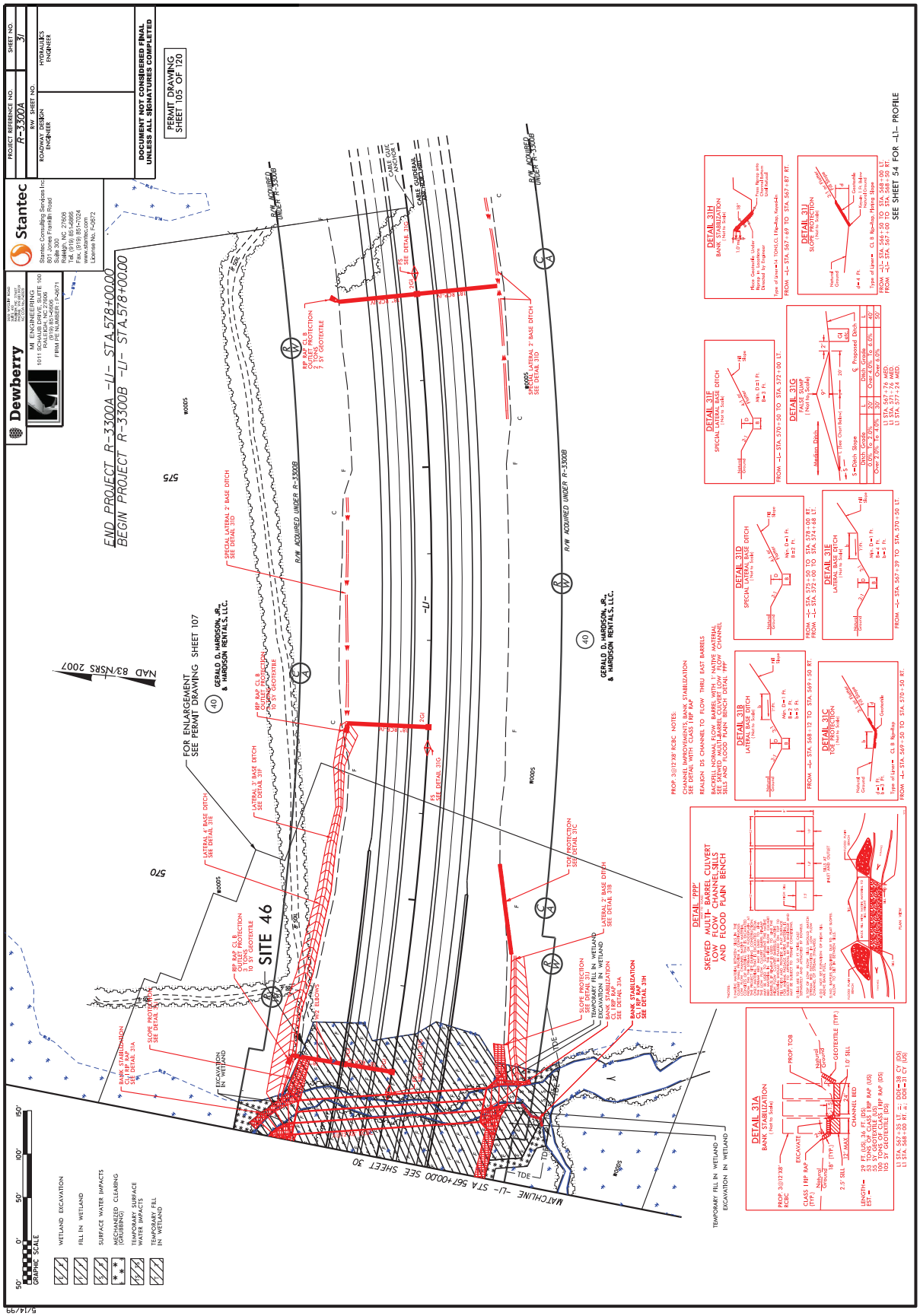
11/20/2024


Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. 30
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 103 OF 120
SITE 46
SITE 45
ENLARGEMENT
MATCHLINE -L- STA 560+00.00 SEE SHEET 31
MATCHLINE -L- STA 555+00.00 SEE SHEET 29
S 80° 47' 56.6" E
-L-
R/W ACQUIRED UNDER R-3300B
WOVEN WIRE FENCE
FILL IN WETLAND
EXCAVATION IN WETLAND
MECHANIZED CLEARING
CABLE GUIDERAIL ANCHOR UNIT
RIP RAP CL B OUTLET PROTECTION 2 TONS 7 SY GEOTEXTILE
SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 30A
SLOPE PROTECTION SEE DETAIL 30E
GERALD D. HARDISON, JR., & HARDISON RENTALS, LLC.
FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 107
SEE SHEET 53 & 54 FOR -L- PROFILE
NAD 83/NSRS 2007
GRAPHIC SCALE
SURFACE WATER IMPACTS
WETLAND EXCAVATION
FILL IN WETLAND
TEMPORARY SURFACE WATER IMPACTS
MECHANIZED CLEARING (DISTURBING)
TEMPORARY FILL IN WETLAND
DETAIL 30A
SPECIAL LATERAL BASE DITCH
DETAIL 30C
CABLE GUIDERAIL
DETAIL 30D
BACK SLOPE DITCH
FROM -L- STA 555+28 TO STA 559+68 RT.
FROM -L- STA 555+83 TO STA 559+88 LT.
FROM -L- STA 559+24 ABD.
FROM -L- STA 566+37 TO STA 566+97 LT.

11/20/2024

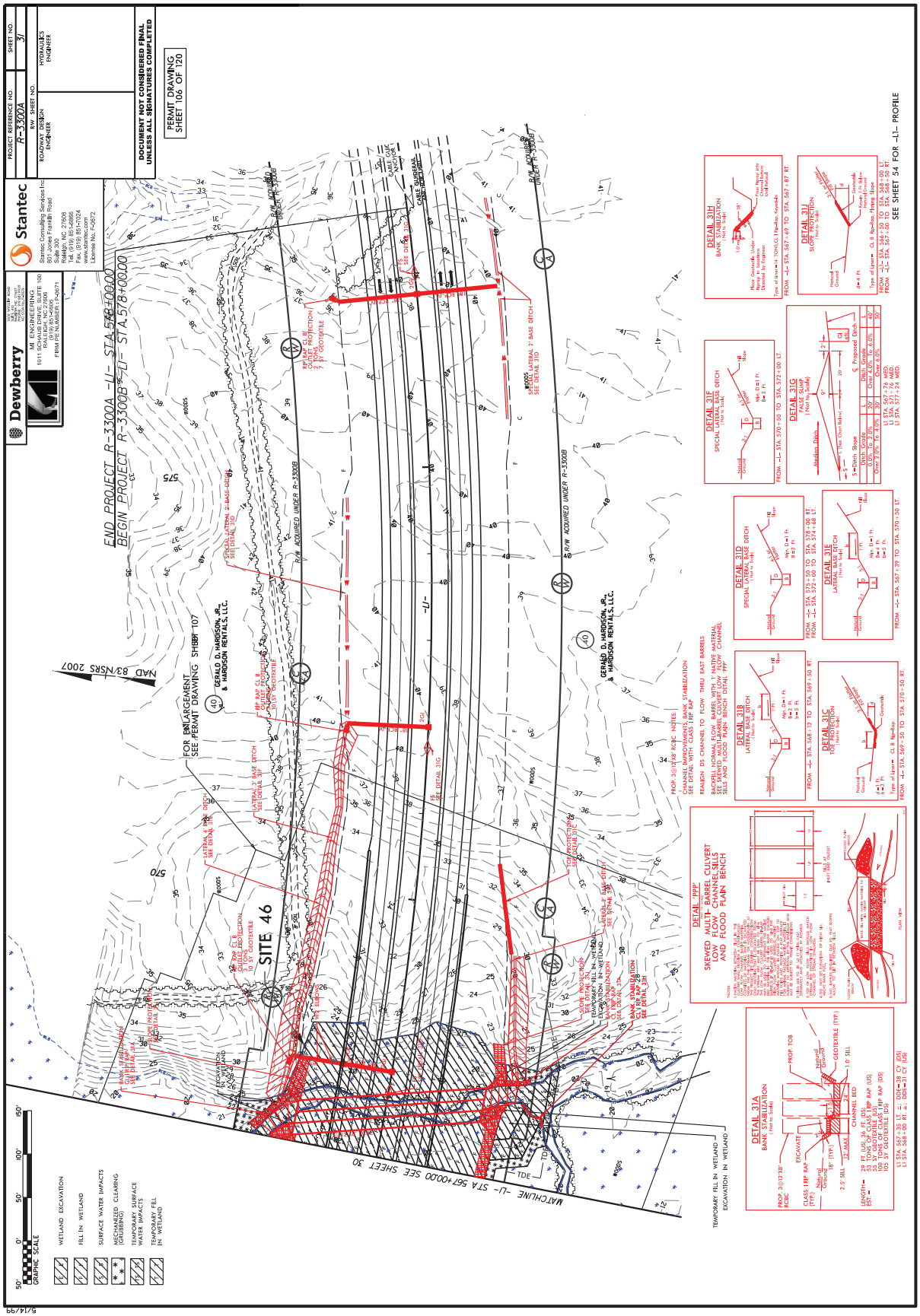

Dewberry
Stantec
PROJECT REFERENCE NO. A-3300A
SHEET NO. 30
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 104 OF 120
SITE 46
SITE 45
ENLARGEMENT
SEE SHEET 53 & 54 FOR -L- PROFILE
MATCHLINE -L- STA 567+00.00 SEE SHEET 31
MATCHLINE -L- STA 555+00.00 SEE SHEET 29
FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 107
GERALD D. HARDISON, JR. & HARDISON RENTALS, LLC.
GERALD D. HARDISON & HARDISON RENTALS, LLC.
WOVEN WIRE FENCE
WOODS
FILL IN WETLAND
EXCAVATION IN WETLAND
MECHANIZED CLEARING
R/W ACQUIRED UNDER B-3006
CABLE GUARDRAIL ANCHOR UNIT
DETAIL 30A SPECIAL LATERAL BASE DITCH
DETAIL 30C CABLE GUARDRAIL
DETAIL 30D BACK SLOPE DITCH
SURFACE WATER IMPACTS
WETLAND EXCAVATION
FILL IN WETLAND
TEMPORARY SURFACE WATER IMPACTS
MECHANIZED CLEARING (DISTURBANCE)
TEMPORARY FILL IN WETLAND
GRAPHIC SCALE
NAD 83/NSRS 2007

11/20/2024

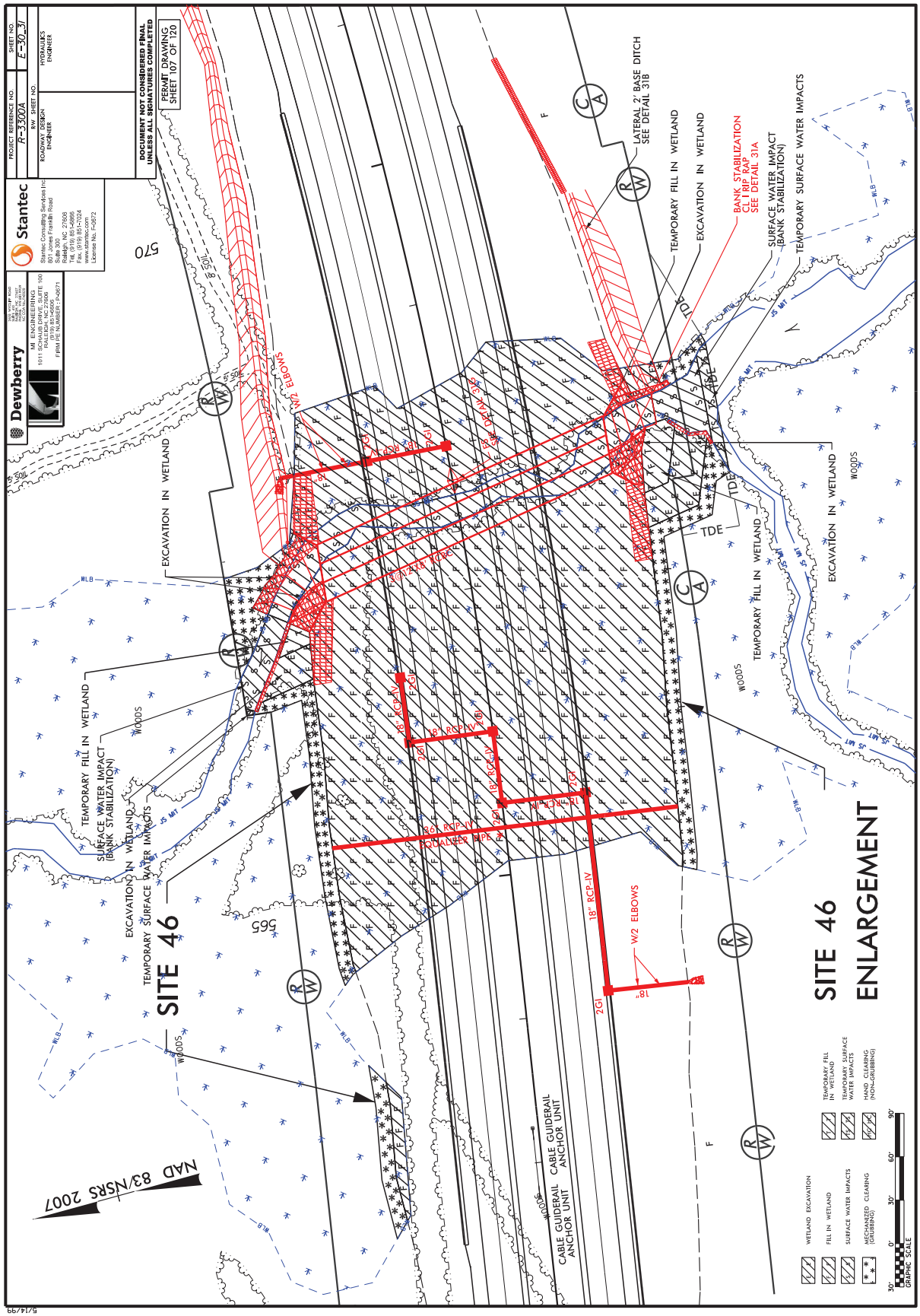

Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. 37
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 105 OF 120
END PROJECT R-3300A -L- STA 578+00.00
BEGIN PROJECT R-3300B -L- STA 578+00.00
SITE 46
MATCHLINE -L- STA 567+00.00 SEE SHEET 30
FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 107
SEE SHEET 54 FOR -L- PROFILE
R/W ACQUIRED UNDER R-3300B
GERALD D. HARDISON, JR. & HARDISON RENTALS, LLC.
WOODS
NAD 83/NSRS 2007
GRAPHIC SCALE
WETLAND EXCAVATION
FILL IN WETLAND
SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
TEMPORARY SURFACE WATER IMPACTS
TEMPORARY FILL IN WETLAND
DETAIL 31A BANK STABILIZATION
DETAIL 31B LATERAL BASE DITCH
DETAIL 31C TOE PROTECTION
DETAIL 31D SPECIAL LATERAL BASE DITCH
DETAIL 31E LATERAL BASE DITCH
DETAIL 31F SPECIAL LATERAL BASE DITCH
DETAIL 31G FALSE SUMP
DETAIL 31H BANK STABILIZATION
DETAIL 31I SLOPE PROTECTION
DETAIL "PPP" SKEWED MULTI- BARREL CULVERT LOW FLOW CHANNEL/SILLS AND FLOOD PLAIN BENCH

11/20/2024

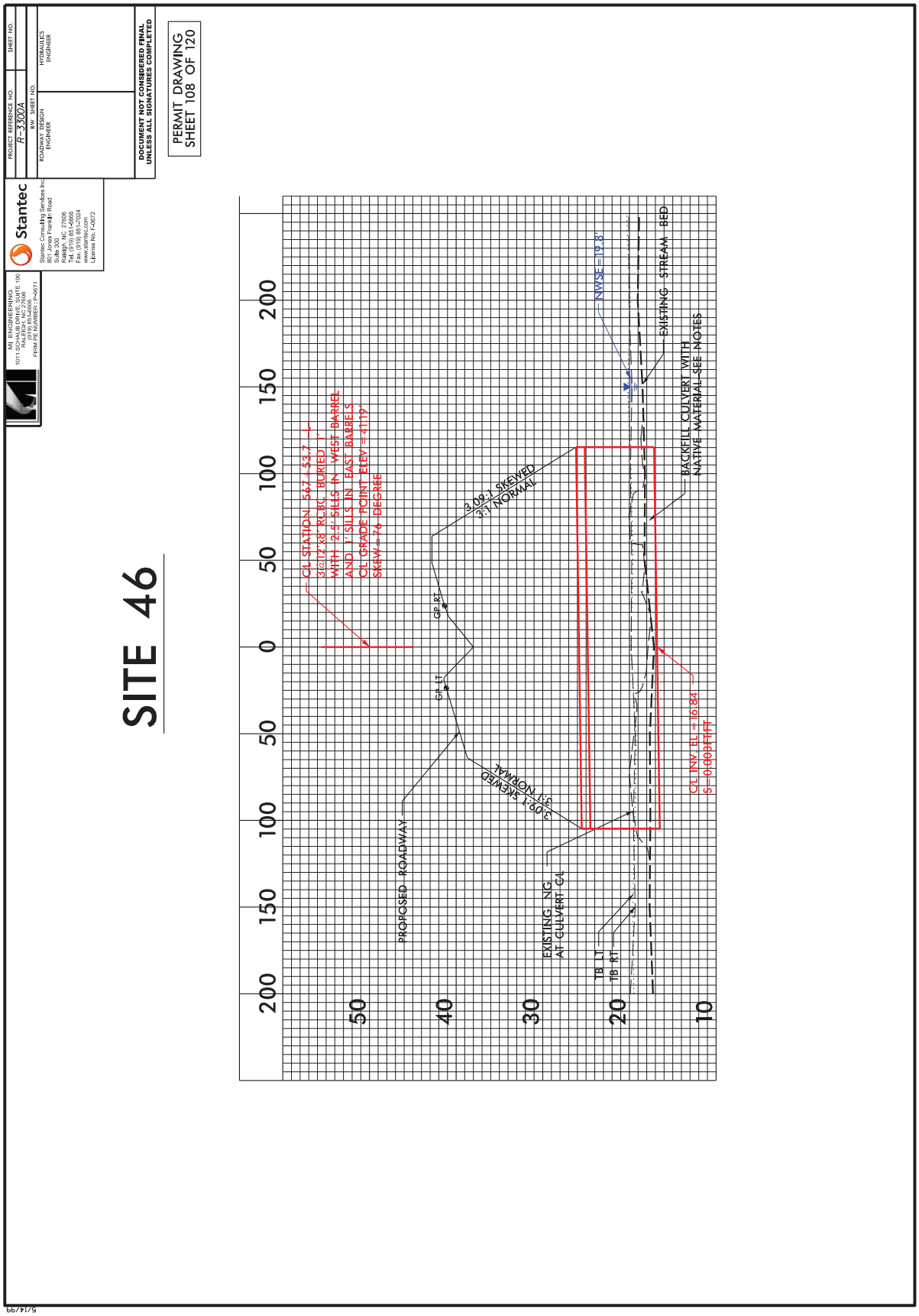
P-140



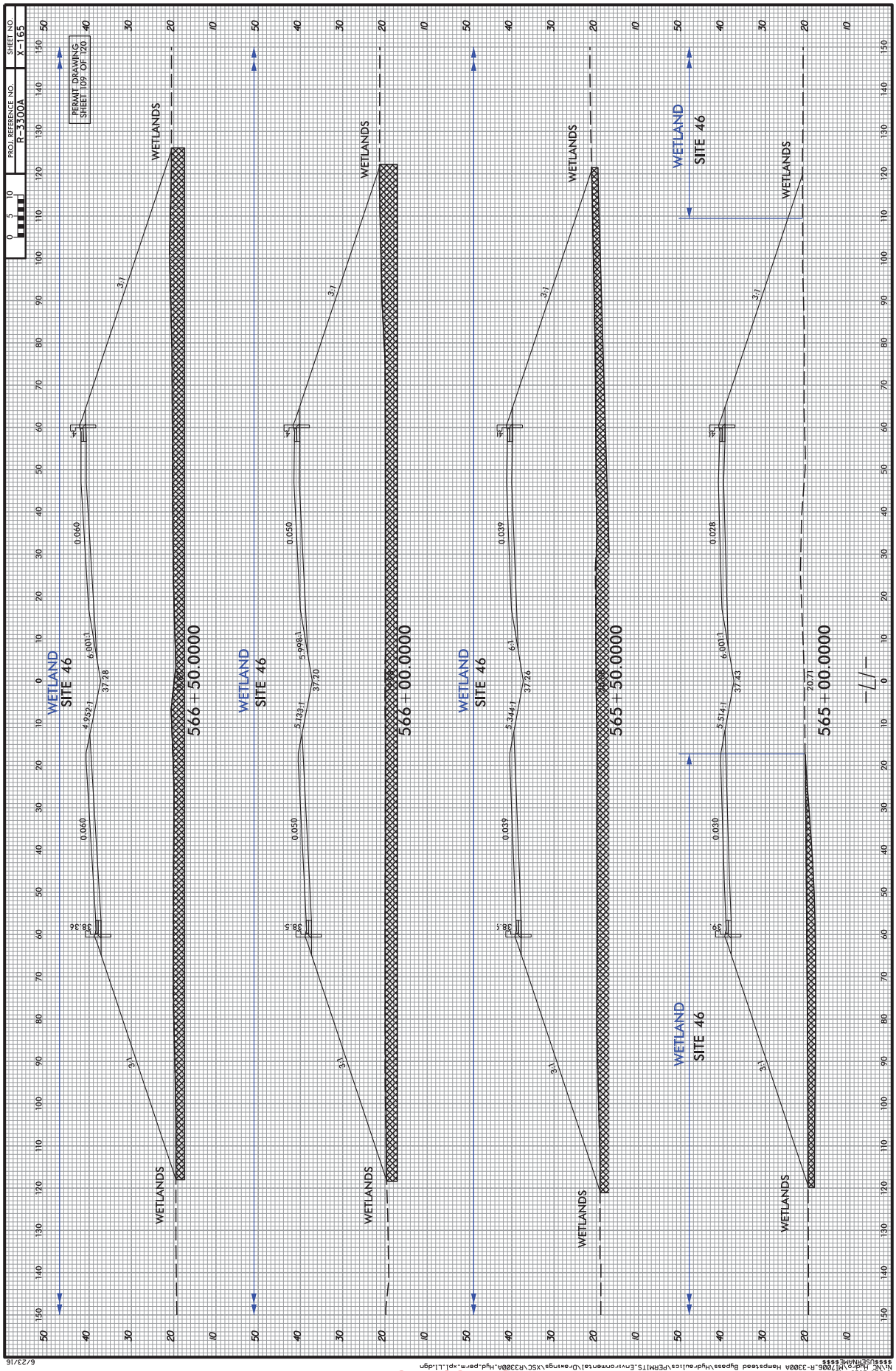
11/20/2024


SITE 46
SITE 46 ENLARGEMENT
NAD 83/NSRS 2007
EXCAVATION IN WETLAND
TEMPORARY FILL IN WETLAND
TEMPORARY SURFACE WATER IMPACTS
SURFACE WATER IMPACT (BANK STABILIZATION)
BANK STABILIZATION CLASS B RIP-RAP SEE DETAIL 31A
LATERAL 2' BASE DITCH SEE DETAIL 31B
CABLE GUIDERAIL ANCHOR UNIT
W2 ELBOWS
18" RCP-IV
WOODS
TDE
WLB
565
570
WETLAND EXCAVATION
FILL IN WETLAND
SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
TEMPORARY FILL IN WETLAND
TEMPORARY SURFACE WATER IMPACTS
HAND CLEARING (NON-GRUBBING)
GRAPHIC SCALE
Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. E-30_31
ROADWAY DESIGNER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 107 OF 120

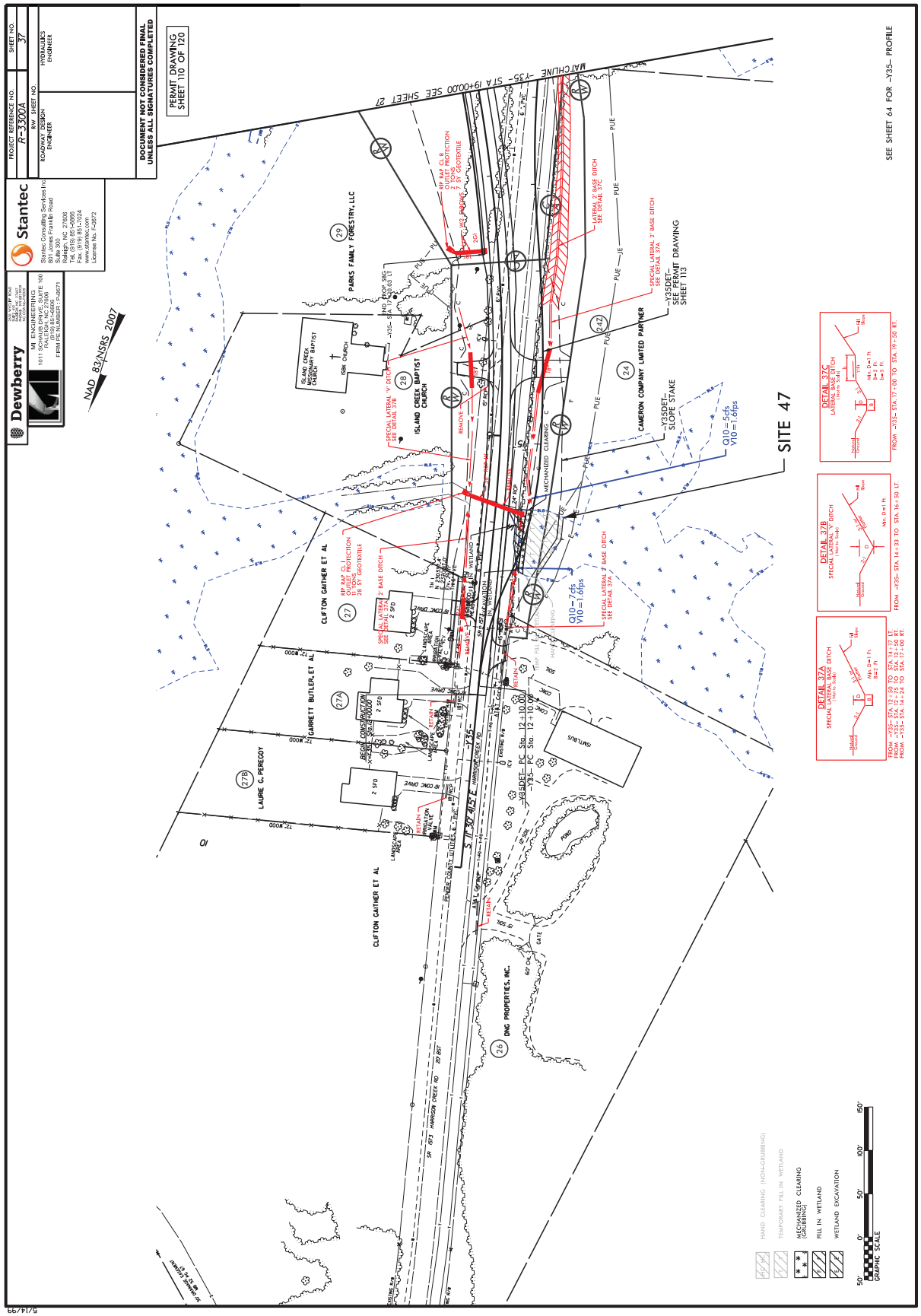
11/20/2024


PERMIT DRAWING
SHEET 108 OF 120
SITE 46
CL STATION 567+53.7
3@12'X8' RCBC BURIED
WITH 2.5' SILLS IN WEST BARREL
AND 1' SILLS IN EAST BARRELS
CL GRADE POINT ELEV=41.19
SKEW=74 DEGREE
3.0% SEWED
3:1 NORMAL
GP RT
GP LT
PROPOSED ROADWAY
3.0% SEWED
3:1 NORMAL
EXISTING NG
AT CULVERT CL
TB LT
TIB RT
NWSE=19.8'
EXISTING STREAM BED
BACKFILL CULVERT WITH
NATIVE MATERIAL-SEE NOTES
CL INV EL = 16.84
S=0.009FT/FT
200
150
100
50
0
50
100
150
200
50
40
30
20
10
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
PROJECT REFERENCE NO.
A-3300A
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No.: C-0672
MK ENGINEERING
1011 SOUTH SAUNDERS STREET, SUITE 100
RALEIGH, NC 27606
(919) 424-0900
FIRM PE NUMBER: P-0971
5/14/99
7/31/2024
SUSSEXMAPS
N:\NC Hydro\M1706A_A-3300A Hampstead Bypass\Hydraulics\PERMITS\Environmental\Drawings\A-3300A_HydPmt.mxd (Civil).dgn

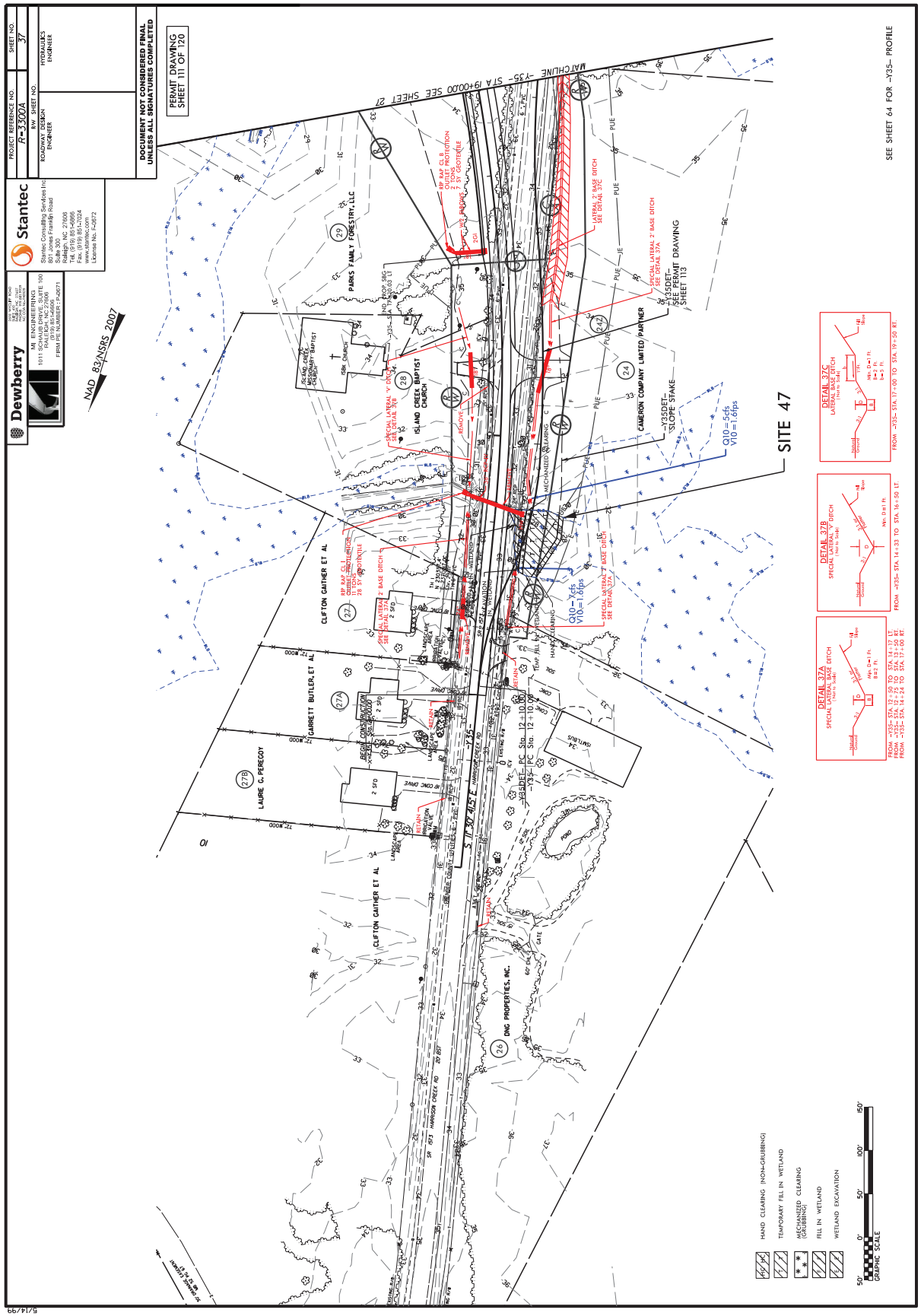
11/20/2024


PROJ. REFERENCE NO.
R-3300A
SHEET NO.
X-165
PERMIT DRAWING
SHEET 109 OF 120
WETLAND
SITE 46
WETLANDS
566+50.0000
566+00.0000
565+50.0000
565+00.0000
3:1
6:1
37.28
37.20
37.26
37.43
20.71
0.060
0.050
0.039
0.028
0.030
6.00:1
5.998:1
4.952:1
5.133:1
5.344:1
5.514:1
38.36
38.5
38.
39.
-17-

11/20/2024


PROJECT REFERENCE NO.
A-3300A
SHEET NO.
37
RW SHEET NO.
ROADWAY DESIGNER
ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 110 OF 120
Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. C-0672
Dewberry
NC LICENSE #P0339
1011 SCHULMAN AVE, SUITE 100
RALEIGH, NC 27606
(919) 851-4929
FIRM PE NUMBER: P-0673
NAD 83/NSRS 2007
MATCHLINE -Y35- STA 19+00.00 SEE SHEET 27
SEE SHEET 64 FOR -Y35- PROFILE
SITE 47
PARKS FAMILY FORESTRY, LLC
ISLAND CREEK BAPTIST CHURCH
CAMERON COMPANY LIMITED PARTNER
CLIFTON GAITHER ET AL
GARRETT BUTLER, ET AL
LAURIE G. PERCODY
DNG PROPERTIES, INC.
-Y35DET- SLOPE STAKE
-Y35DET- SEE PERMIT DRAWING SHEET 113
Q10=5cfs V10=1.6fps
Q10=7cfs V10=1.6fps
-Y35DET- PC Sta. 12+10.00
-Y35- PC Sta. 12+10.00
S 1°30'40"E
HARRISON CREEK RD
SR 1857
DETAIL 37A
DETAIL 37B
DETAIL 37C
HAND CLEARING (NON-GRUBBING)
TEMPORARY FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
FILL IN WETLAND
WETLAND EXCAVATION
GRAPHIC SCALE
0'
50'
100'
150'

11/20/2024


PROJECT REFERENCE NO. A-3300A
SHEET NO. 37
R/W SHEET NO.
ROADWAY DESIGNER ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 111 OF 120
Stantec
Stantec Consulting Services Inc
801 Jones Franklin Road
Suite 300
Raleigh NC 27606
Tel (919) 851-6866
Fax (919) 851-7024
www.stantec.com
License No. C-0672
Dewberry
DEWBERRY ENGINEERS INC.
NC FIRM LICENSE: C-0910
1011 SCHULMAN AVENUE, SUITE 100
RALEIGH, NC 27606
(919) 851-4838
FIRM PE NUMBER: P-0973
NAD 83/NSRS 2007
MATCHLINE -Y35- STA 19+00.00 SEE SHEET 27
SEE SHEET 64 FOR -Y35- PROFILE
SITE 47
PARKS FAMILY FORESTRY, LLC
ISLAND CREEK BAPTIST CHURCH
CAMERON COMPANY LIMITED PARTNER
CLIFTON GAITHER ET AL
GARRETT BUTLER, ET AL
LAURIE G. PERECODY
DNG PROPERTIES, INC.
-Y35DET- SEE PERMIT DRAWING SHEET 113
-Y35DET- SLOPE STAKE
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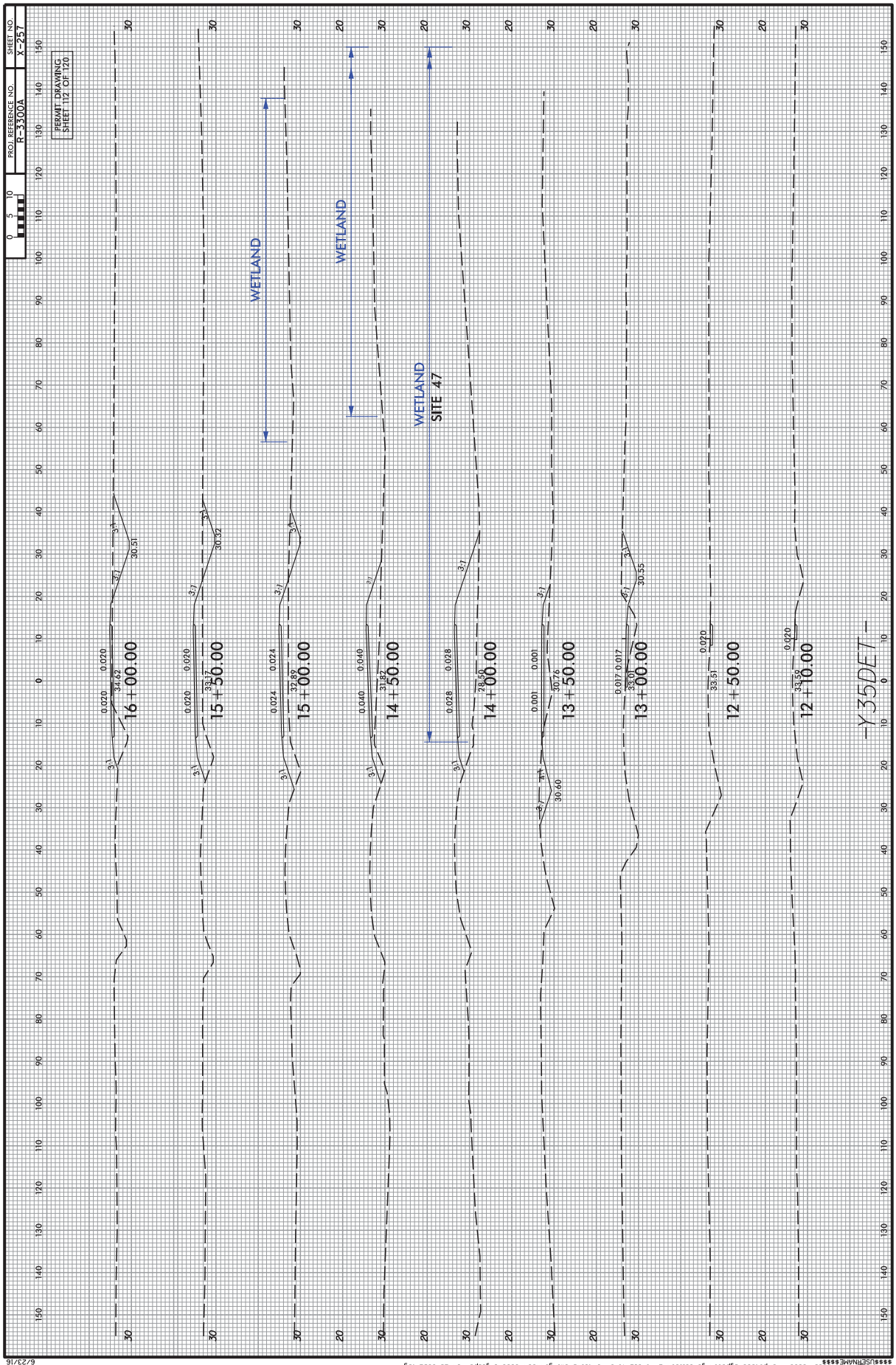
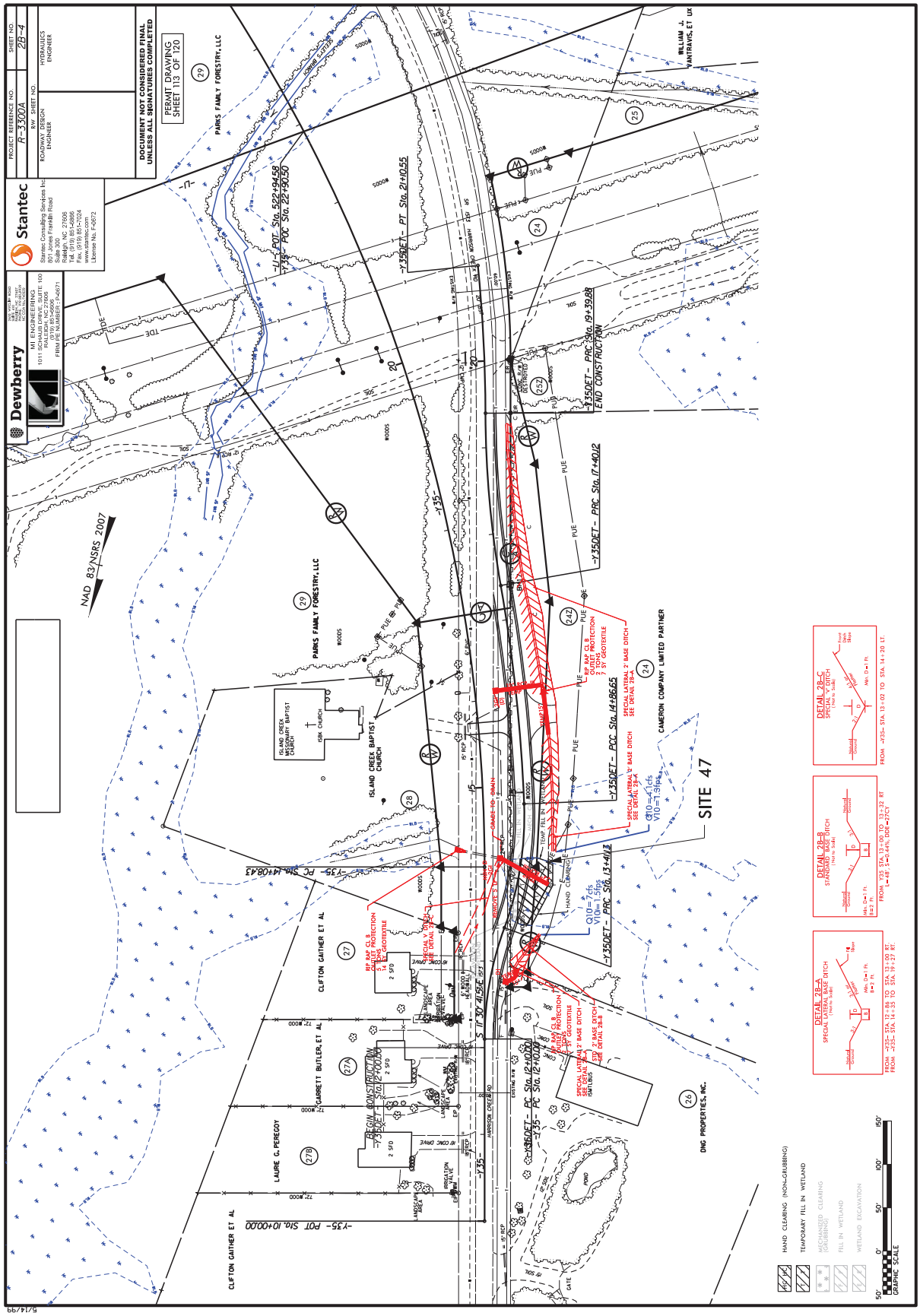
Q10=7cfs V10=1.6fps
DETAIL 37A
DETAIL 37B
DETAIL 37C
HAND CLEARING (NON-GRUBBING)
TEMPORARY FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
FILL IN WETLAND
WETLAND EXCAVATION
GRAPHIC SCALE
5/14/99

11/20/2024


SHEET NO.
X-257
PROJ. REFERENCE NO.
R-3300A
PERMIT DRAWING
SHEET 112 OF 120
WETLAND
WETLAND
WETLAND
SITE 47
16+00.00
15+50.00
15+00.00
14+50.00
14+00.00
13+50.00
13+00.00
12+50.00
12+10.00
-Y35DET-

11/20/2024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Stantec
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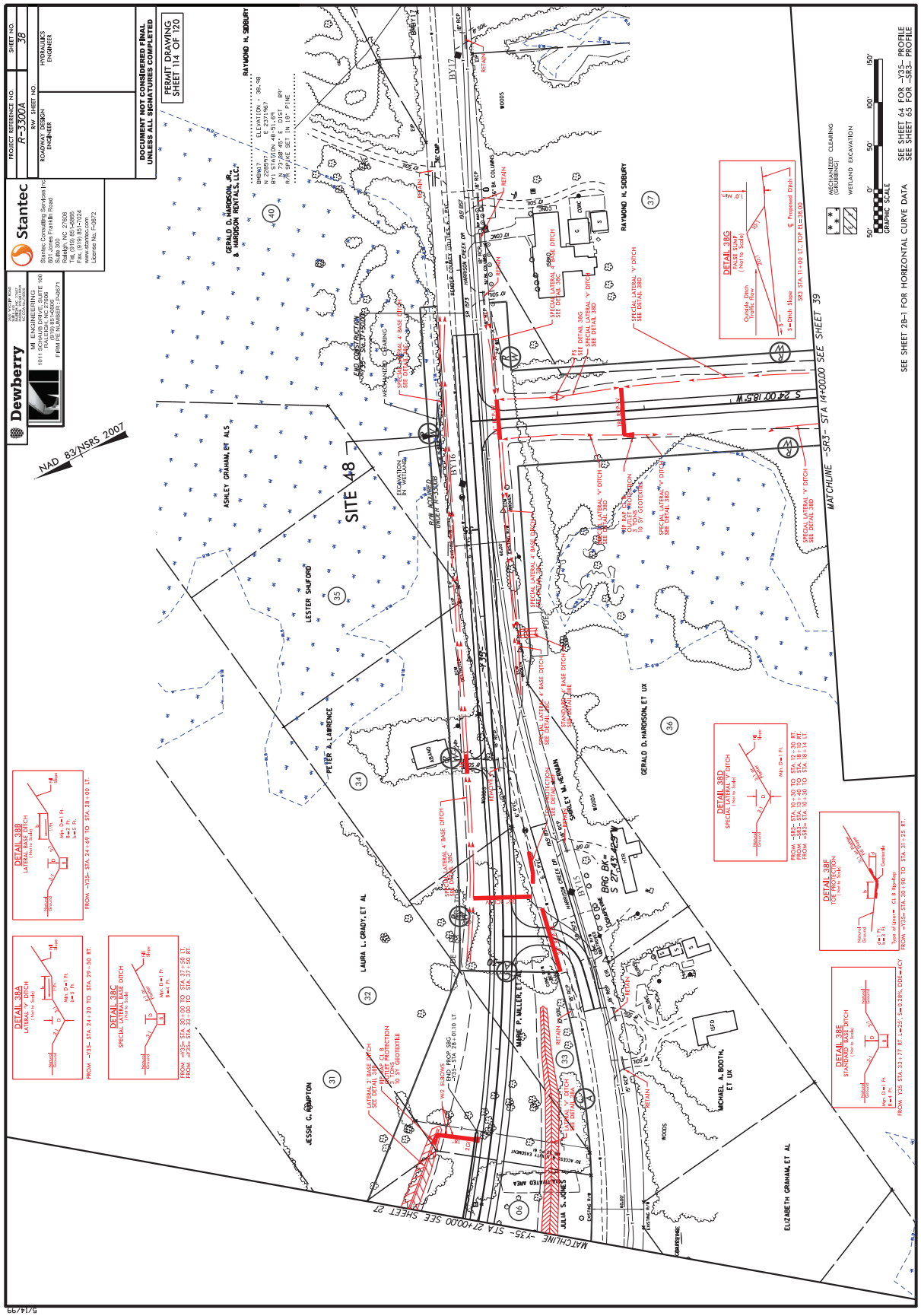
SHEET NO. 28-4
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 113 OF 120
NAD 83/NSRS 2007
-Y35- POT Sta. 10+00.00
-Y35- PC Sta. 12+00.00
-Y35- PC Sta. 12+10.00
-Y35- PT Sta. 12+86.10
-Y35- POT Sta. 13+22.58
-Y35- POC Sta. 13+30.50
-Y35- PC Sta. 14+08.43
-Y35DET- PT Sta. 21+10.55
-Y35DET- PRC Sta. 19+39.88
END CONSTRUCTION
-Y35DET- PRC Sta. 17+40.12
-Y35DET- POC Sta. 14+86.65
-Y35DET- PRC Sta. 13+40.12
-Y35DET- PC Sta. 12+10.00
BEGIN CONSTRUCTION
-Y35DET- Sta. 12+00.00
SITE 47
PARKS FAMILY FORESTRY, LLC
ISLAND CREEK MISSIONARY BAPTIST CHURCH
CLIFTON GAITHER ET AL
LAURIE G. PERIGOY
GARRETT BUTLER, ET AL
CAMERON COMPANY LIMITED PARTNER
DNG PROPERTIES, INC.
WILLIAM J. VANTRAVIS, ET UX
DETAIL 28-A
SPECIAL LATERAL BASE DITCH
DETAIL 28-B
STANDARD BASE DITCH
DETAIL 28-C
SPECIAL V-DITCH
HAND CLEARING (NON-GRUBBING)
TEMPORARY FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
FILL IN WETLAND
WETLAND EXCAVATION
GRAPHIC SCALE

11/20/2024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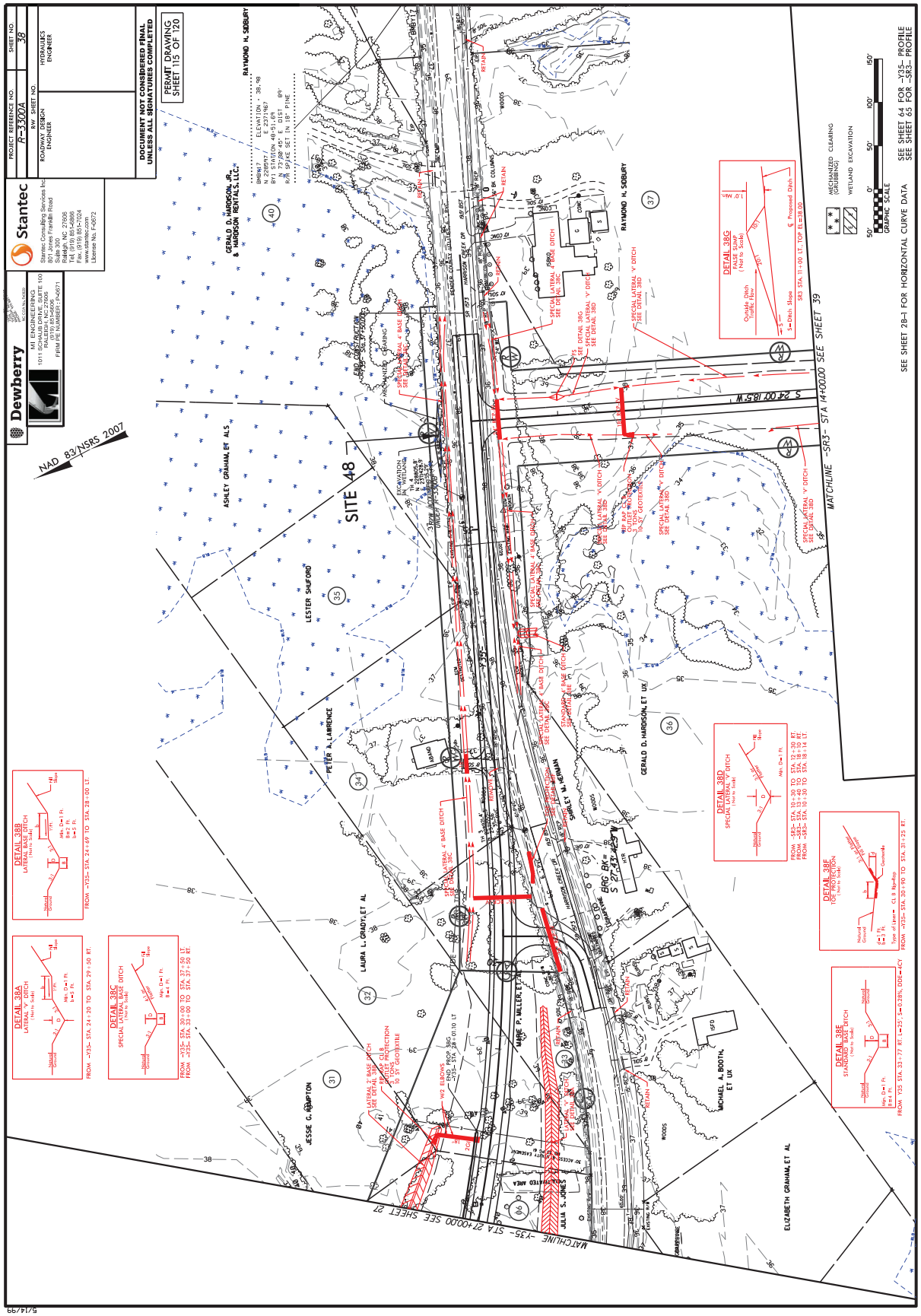
PROJECT REFERENCE NO. R-3300A
SHEET NO. 38
ROADWAY DESIGNER
STRUCTURES ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 114 OF 120
NAD 83/NSRS 2007
SITE 48
MATCHLINE -SR3- STA 14+00.00 SEE SHEET 39
MATCHLINE -Y35- STA 27+00.00 SEE SHEET 27
SEE SHEET 28-1 FOR HORIZONTAL CURVE DATA
SEE SHEET 64 FOR -Y35- PROFILE
SEE SHEET 65 FOR -SR3- PROFILE
MECHANIZED CLEARING (GRUBBING)
WETLAND EXCAVATION
GRAPHIC SCALE
RAYMOND H. SOBURY
GERALD D. HARDISON, JR., & HARDISON RENTALS, LLC
ASHLEY GRAHAM, ET ALS
LESTER SHUFORD
PETER A. LAWRENCE
LAURA L. CRADY, ET AL
JESSE G. HAMPTON
MARIE P. MILLER, ET AL
JULIA S. JONES
GERALD D. HARDISON, ET UX
SHIRLEY M. HERMAN
MICHAEL A. BOOTH, ET UX
ELIZABETH GRAHAM, ET AL
DETAIL 38A
DETAIL 38B
DETAIL 38C
DETAIL 38D
DETAIL 38E
DETAIL 38F
DETAIL 38G


Dewberry
Stantec
PROJECT REFERENCE NO. R-3300A
SHEET NO. 38
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 115 OF 120
NAD 83/NSRS 2007
SITE 48
MATCHLINE -SR3- STA 14+00.00 SEE SHEET 39
MATCHLINE -Y35- STA 27+00.00 SEE SHEET 27
SEE SHEET 28-1 FOR HORIZONTAL CURVE DATA
SEE SHEET 64 FOR -Y35- PROFILE
SEE SHEET 65 FOR -SR3- PROFILE
MECHANIZED CLEARING (GRUBBING)
WETLAND EXCAVATION
GRAPHIC SCALE
RAYMOND H. SOBURY
GERALD D. HARDISON, JR. & HARDISON RENTALS, LLC
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JULIA S. JONES
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GERALD D. HARDISON, ET UX
MICHAEL A. BOOTH, ET UX
ELIZABETH GRAHAM, ET AL
DETAIL 38A
DETAIL 38B
DETAIL 38C
DETAIL 38D
DETAIL 38E
DETAIL 38F
DETAIL 38G

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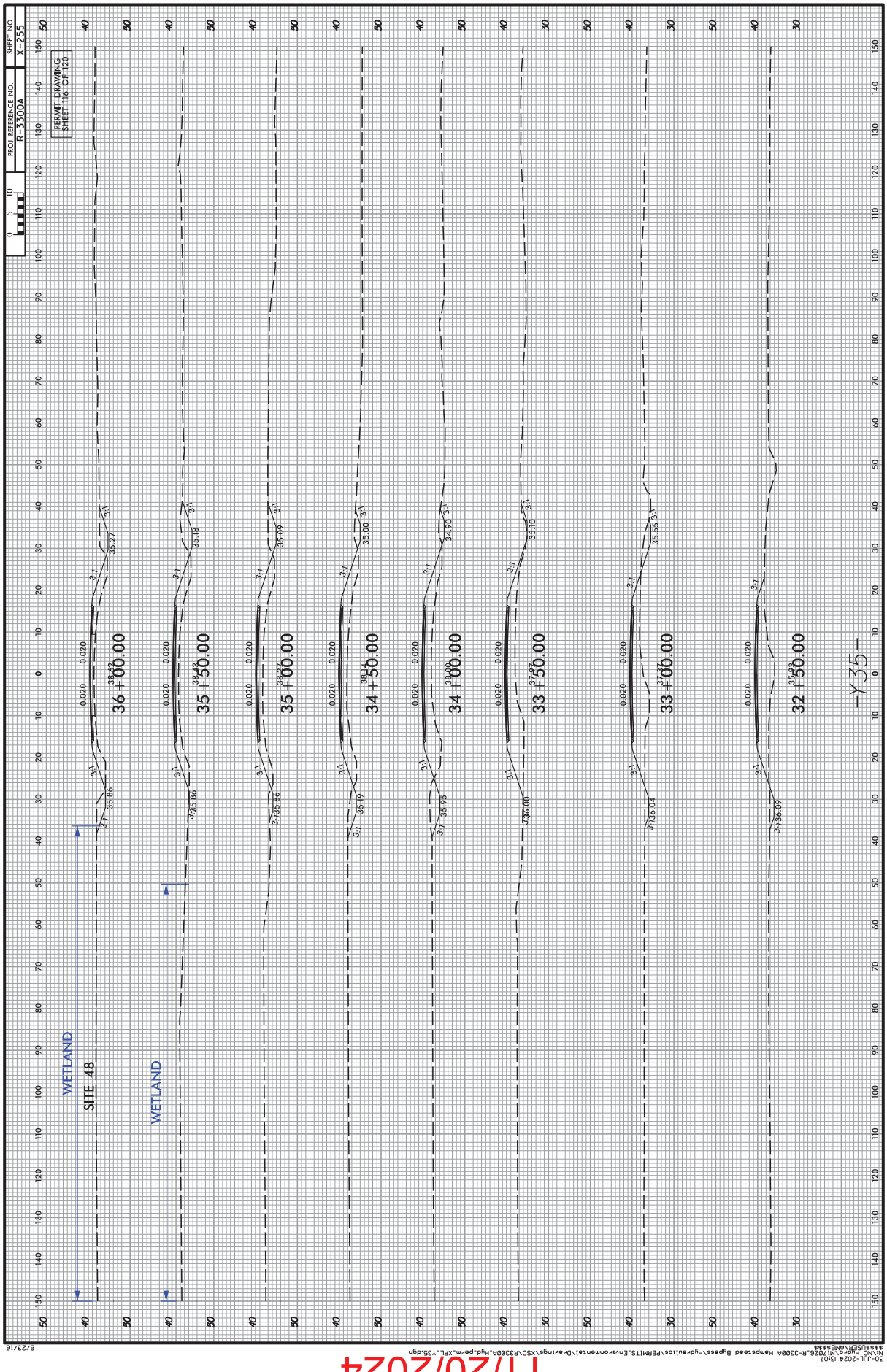
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X-255
PROJ. REFERENCE NO.
R-3300A
PERMIT DRAWING
SHEET 116 OF 120
WETLAND
SITE 48
WETLAND
36+00.00
35+50.00
35+00.00
34+50.00
34+00.00
33+50.00
33+00.00
32+50.00
-Y35-

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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)
Site 1	Y33RPCA 23+50 TO Y33LPC 21+45 IMPACTS LOCATED AT Y33RPCA FILL, Y33LPC FILL, AND DITCH INSIDE Y33LPC	Roadway Fill	4.493		0.205	0.476						
Site 2	Y33RPCA 29+35 RT TO 30+87 LT, Y33LPC 5+47 TO 8+09 RT	Roadway Fill	0.672		0.016	0.036						
Site 2	L1 216+22 LT	Bank Stabilization						0.002	0.002			
Site 3	Y33 77+38 LT	Bank Stabilization						0.049	0.021	89	27	
Site 49	Y33 100+10 LT	Bank Stabilization						0.004	0.007	14	15	
Site 52	Y33 101+22 TO 101+65 LT	Roadway Fill				0.017						
Site 4	Y33RPB 15+70 TO 14+00 RT	Roadway Fill	0.103			0.022						
Site 5	L 234+23 TO 243+02 RT	Roadway Fill						0.440				
Site 6	Y33RPCA 47+84 LT TO 49+50 LT	Bank Stabilization						0.108		300		
Site 6	Y33RPCA 49+50 LT TO 58+15 RT	Roadway Fill**						0.592	0.021	940	36	
Site 7	L1 249+91 TO 254+73	Roadway Fill	1.655		0.009	0.126						
Site 7	L1 253+29 LT	Bank Stabilization						0.030	0.013	77	30	
Site 7	L1 253+29	2-9'X7' RCBC						0.096		226		
Site 7		Temp. Diversion Channel***			0.040		0.017					
Site 7	L1 252+86 RT	Bank Stabilization						0.027	0.003	75	12	
Site 8	L1 254+84 TO 260+33	36" Pipe/Roadway Fill	2.188		0.030	0.224						
Site 8	L1 258+25 LT	Bank Stabilization						0.003	0.002	20	10	
Site 9	L1 282+72 TO 285+60	Roadway Fill	0.605				0.097					
Site 9	L1 283+46	3-12'X7' RCBC						0.088	0.016	375	93	
Site 10	L1 306+20 LT	Bank Stabilization						0.013	0.005	50	17	
Site 10	L1 306+00	7'X5' RCBC						0.059		182		
Sub Totals*:			9.716		0.300	0.901	0.114	1.511	0.090	2348	240	

NOTES:
** Site 6 - 916 LF of stream channel will be relocated to partially offset the 940 lf of permanent stream impacts at this site. The remaining 24 LF of stream loss willed require mitigation at 1:1 per email correspondence from DWR and USACE on 4/30/21.
*** Temporary Excavation Impact for the Diversion Channel

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WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER 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)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
Site 10	L1 305+81 RT	Bank Stabilization						0.017	0.002	53	8	
Site 11	L1 312+06 TO 312+33 LT	Outlet Protection (keyed in)						0.006	0.028	22	56	
Site 11	L1 313+03	48" Pipe (JS mit)						0.029		107		
Site 11	L1 313+03	48" Pipe (JS non-mit)						0.122	0.013			
Site 11	L1 312+20 LT TO 315+52 RT	Roadway Fill	0.278			0.031						
Site 12	L1 335+64 to 337+84 LT	Roadway Fill	0.211			0.045						
Site 13	L1 337+91 TO 350+22RT	Roadway Fill	3.762				0.405					
Site 50	SR2 14+30	24" Pipe	0.005				0.022					
Site 14	L1 350+22 RT to 353+09 LT	Roadway Fill	0.918		0.057		0.040					
Site 15	SR1 14+86 LT	Bank Stabilization						0.017	0.003	53	10	
Site 15	SR1 15+38	72" Pipe						0.073		231		
Site 15		Temp. Diversion Channel**			0.015	0.006						
Site 15	SR1 11+87 to 15+36 RT	Roadway Fill	0.332		0.004	0.018	0.005					
Site 16	Y34 12+86 to 13+92 RT	Lateral 4' Base Ditch			0.018		0.018					
Site 17	Y34 13+88 to 15+70 LT	24" Pipe	0.046		0.025		0.010					
Site 18	SR9 13+67 to 14+16	18" Pipe	0.083				0.013					
Site 19	Y34 35+75 to 36+11 RT	Special Lateral 4' Base Ditch			0.015		0.008					
Site 20	L1 357+54 to 360+80	2 @ 18" Pipe	0.758		0.005	0.037						
Site 20***	L1 358+61 to 360+03 LT	Indirect Impacts - Total Take	0.035									
Site 51	Y34DET 33+42 to 34+04 LT	Roadway Fill	0.001				0.011					
Sub Totals*:			6.429		0.139	0.137	0.532	0.264	0.046	466	74	

NOTES:
** Temporary Excavation Impact for the Diversion Channel
*** Site 20: Total Site Impact of 0.79 acres includes 0.76 acres of direct impacts and 0.03 acres of indirect impacts. Total Take impacts 1:1 mitigation.

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WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
Site 21 **	L1 383+67 LT - 385+75 LT	Dual 2@115', 72" MBT	0.110		0.025	0.079	0.075	0.009		61		
Site 21	L1 383+85 LT - 385+20 LT	Bank Stabilization			0.006	0.004		0.003	0.007	42	26	
Site 21	L1 385+75 LT - 389+03 RT	54" RCP & 2@18" RCP	0.620		0.021	0.076		0.035	0.003	219	37	
Site 22	L1 394+75 LT - 397+33 RT	54" RCP	0.196		0.008	0.044						
Site 23	L1 399+85 LT - 401+69 RT	30" RCP	0.192		0.002	0.020						
Site 24	L1 408+64 LT - 412+19 RT	18" RCP	0.384		0.006	0.003						
Site 25	L1 412+20 LT - 414+78 LT	Roadway fill	0.240			0.013						
Site 25	L1 414+86 LT - 415+77 LT	36" RCP	0.134			0.014						
Site 26	L1 415+39 RT - 415+69 RT	36" RCP				0.003						
Site 27 ***	L1 425+74 RT - 429+10 LT	Dual 1@125',1@117', 72" MBT	0.192		0.023	0.111	0.415					
Site 27	L1 428+70 RT - 429+37 LT	Roadway fill	0.020			0.002						
Site 28	L1 434+12 LT - 436+70 RT	48" RCP	0.141			0.012	0.008	0.059		235		
Site 28	L1 434+12 LT - 436+70 RT	Bank Stabilization						0.005	0.005	31	33	
Site 29	L1 442+28 LT - 445+38 RT	2@6'x7' RCBC	0.498	0.009	0.020	0.052	0.010	0.079		273		
Site 29 ****	L1 442+28 LT - 445+38 RT	Bank Stabilization			0.022			0.012	0.001	80	8	
Site 30	L1 447+37 RT - 451+09 LT	Roadway fill	0.625			0.031						
Site 31	L1 452+05 RT - 452+66 RT	24" RCP	0.070		0.002	0.010						
Site 32	L1 454+25 LT - 455+48 LT	30" RCP	0.106		0.004	0.009						
Site 33	L1 455+52 RT - 467+46 RT	Roadway fill & 2@36" RCP	0.798		0.017	0.061						
Site 34	L1 467+39 LT - 470+68 RT	Roadway fill & 36" RCP	0.197			0.015						
Site 35	L1 469+64 LT - 485+61 RT	5@36" RCP	5.599		0.002	0.434						
Site 36	L1REV 518+59 LT - 520+73 RT	Roadway fill	0.108			0.005						
Sub Totals*:			10.230	0.009	0.158	0.998	0.508	0.202	0.016	941	104	

NOTES:

** Site 21: Temp. work brg, "Temp Fill in Wetlands" (14HP piles): 40 sf total. (not included in quantities above)

*** Site 27: Temp. work brg, "Temp Fill in Wetlands": (14HP piles) 244sf total. (not included in quantities above)

*** Site 27: Temp. work brg, "Temp Fill in SW": (14HP piles) 20 sf total. (not included in quantities above)

*** Site 27: Interior Bent "Fill in Wetlands" (15@ 2'x2' sq. piles): 60 sf total. (not included in quantities above)

*** Site 27: Within the footprint of the interior bents, a 10 ft wide swath of Temp "Excavation in Wetlands" is shown for stump removal for pile installation.

**** Site 29: Temp Excavation impacts acreage includes temp fill impacts for bank stabilization shown on diversion channel.

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WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER 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)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
Site 37	L1REV 519+89 RT - Y35 20+28 LT	2@7'x8' RCBC	0.489					0.076		285		
Site 37	L1REV 519+89 RT - Y35 20+28 LT	Channel Relocation	0.242		0.081	0.054		0.068	0.007	294	30	
Site 37 **	L1REV 519+89 RT - Y35 20+28 LT	Bank Stabilization			0.020			0.024		100		
Site 38	L1REV 528+18 LT - 529+81 LT	Roadway fill	0.185			0.024						
Site 39	L1REV 532+78 RT	Roadway fill	0.023									
Site 40	L1REV 534+46 - 535+20 RT	Roadway fill	0.067									
Site 41	L1REV 537+11 - 538+10 LT	36" RCP	0.151									
Site 42	L1REV 537+60 RT	Lateral ditch			0.005	0.003						
Site 42 ***	L1REV 537+60 RT **	Indirect Impacts - Total Take			0.010							
Site 43	L1REV 538+02 - 538+47 LT	Lateral ditch	0.006		0.005	0.015						
Site 44	L1REV 545+23 LT - 546+61 RT	36" RCP	0.268			0.027						
Site 45	L1 560+15 RT	Roadway fill	0.001			0.001						
Site 46	L1 562+69 LT - 563+66 LT	Roadway fill	0.015			0.025						
Site 46	L1 564+45 LT - 568+65 RT	1@36" RCP,3@12'X8' RCBC	1.827	0.026	0.049	0.172		0.130	0.014	332	12	
Site 46 ****	L1 564+45 LT - 568+65 RT	Bank Stabilization			0.058			0.050		102		
Site 47	Y35 13+45 RT - 14+17 RT	36" RCP	0.014		0.001	0.008						
Site 47	Y35DET	Temp Detour		0.047			0.009					
Site 48	Y35 36+00 LT	Lateral ditch			0.001	0.006						
Sub Totals	THIS SHEET		3.288	0.073	0.230	0.335	0.009	0.348	0.021	1113	42	
Sub Totals	SHEETS 117-119		26.375	0.009	0.597	2.036	1.154	1.977	0.152	3755	418	
TOTALS*:			29.663	0.082	0.827	2.371	1.163	2.325	0.173	4868	460	

NOTES:

** Site 37: Temp Excavation impacts acreage includes temp fill impacts for bank stabilization shown on diversion channel.

*** Site 42: Total Take - total site impact of 0.018 acres includes includes 0.008 acres of direct impacts and 0.010 acres of indirect impacts.

**** Site 46: Temp Excavation impacts acreage includes temp fill impacts for bank stabilization shown on diversion channel.

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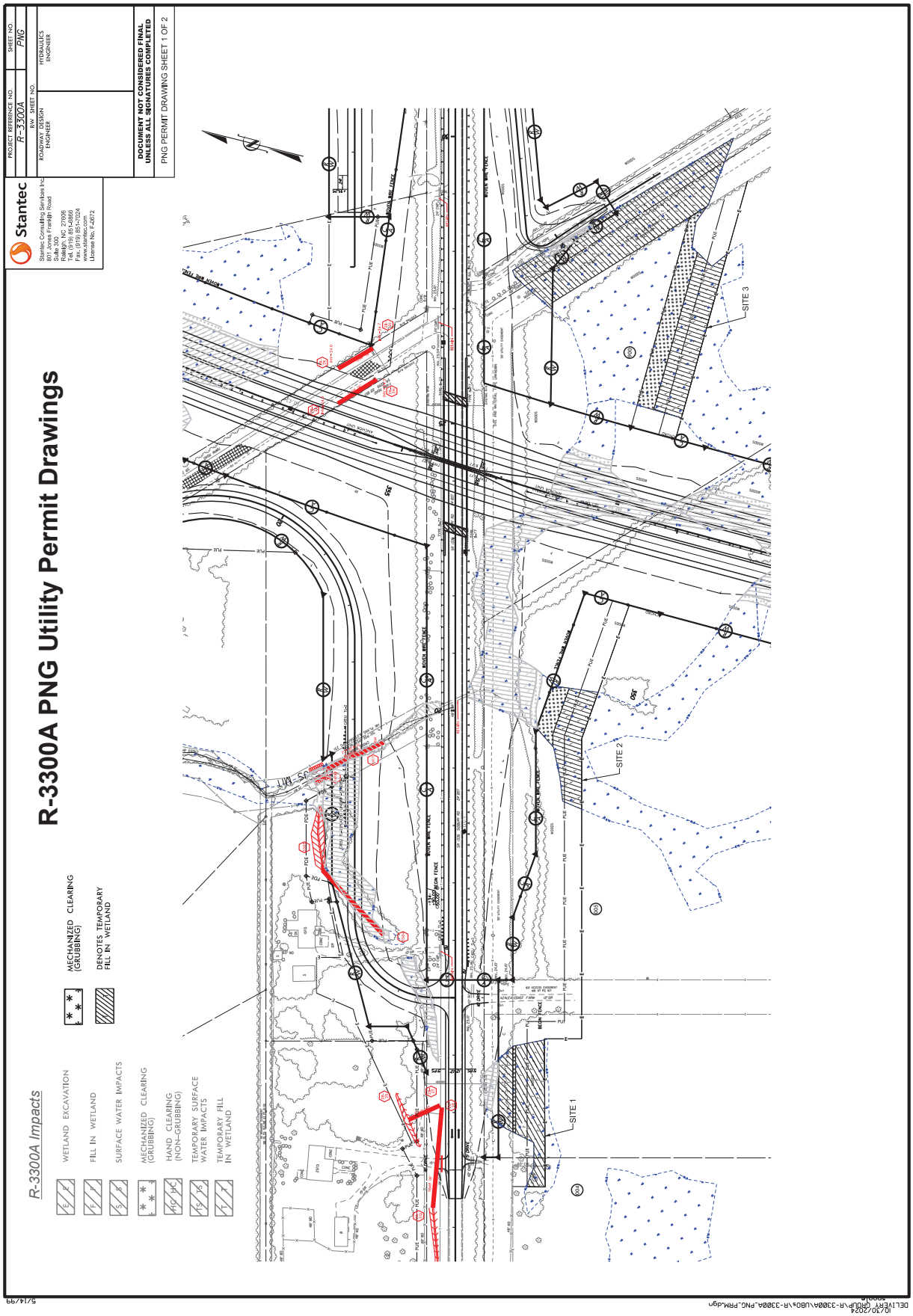
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R-3300A Impacts
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FILL IN WETLAND
SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
HAND CLEARING (NON-GRUBBING)
TEMPORARY SURFACE WATER IMPACTS
TEMPORARY FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
DENOTES TEMPORARY FILL IN WETLAND
Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 854-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672
PROJECT REFERENCE NO.
R-3300A
SHEET NO.
PNG
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PNG PERMIT DRAWING SHEET 1 OF 2
SITE 1
SITE 2
SITE 3

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WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
Site 1 **	Y34 11+71 RT TO Y34 14+26 RT	PNG GAS LINE		0.310		0.017						
Site 2 **	Y34 18+28 RT TO Y34 20+39 RT	PNG GAS LINE		0.211		0.064						
Site 3 **	Y34 25+10 RT TO Y34 29+97 RT	PNG GAS LINE		1.020		0.221						
Sub Totals*:				1.541		0.302						

*Rounded totals are sum of actual impacts

NOTES:
**Impacts are based on information and routing provided by PNG
PNG = Piedmont Natural Gas (Duke Energy)

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County: NEW HANOVER, PENDER

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			ROADWAY ITEMS			
0001	0000100000-N	800	MOBILIZATION	Lump Sum	L.S.	
0002	0000400000-N	801	CONSTRUCTION SURVEYING	Lump Sum	L.S.	
0003	0001000000-E	200	CLEARING & GRUBBING .. ACRE(S)	Lump Sum	L.S.	
0004	0008000000-E	200	SUPPLEMENTARY CLEARING & GRUBBING	5 ACR		
0005	0022000000-E	225	UNCLASSIFIED EXCAVATION	59,000 CY		
0006	0036000000-E	225	UNDERCUT EXCAVATION	63,517 CY		
0007	0084000000-E	SP	WICK DRAINS	165,000 LF		
0008	0106000000-E	230	BORROW EXCAVATION	3,300,000 CY		
0009	0127000000-N	235	EMBANKMENT SETTLEMENT GAUGES	38 EA		
0010	0134000000-E	240	DRAINAGE DITCH EXCAVATION	39,550 CY		
0011	0156000000-E	250	REMOVAL OF EXISTING ASPHALT PAVEMENT	15,600 SY		
0012	0177000000-E	250	BREAKING OF EXISTING ASPHALT PAVEMENT	5,700 SY		
0013	0192000000-N	260	PROOF ROLLING	90 HR		
0014	0194000000-E	265	SELECT GRANULAR MATERIAL, CLASS III	111,750 CY		
0015	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZATION	66,450 SY		
0016	0199000000-E	SP	TEMPORARY SHORING	6,420 SF		
0017	0241000000-E	SP	GENERIC GRADING ITEM GEOTEXTILE FOR WICK DRAIN	7,500 SY		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0018	0248000000-N	SP	GENERIC GRADING ITEM TYPE 1 BRIDGE APPROACH FILL, STATION 225+92.26 -L1-	Lump Sum	L.S.	
0019	0248000000-N	SP	GENERIC GRADING ITEM TYPE 1 BRIDGE APPROACH FILL, STATION 23+28.17 -Y35-	Lump Sum	L.S.	
0020	0248000000-N	SP	GENERIC GRADING ITEM TYPE 1 BRIDGE APPROACH FILL, STATION 232+80.54 -L1- LT	Lump Sum	L.S.	
0021	0248000000-N	SP	GENERIC GRADING ITEM TYPE 1 BRIDGE APPROACH FILL, STATION 232+80.54 -L1- RT	Lump Sum	L.S.	
0022	0248000000-N	SP	GENERIC GRADING ITEM TYPE 1 BRIDGE APPROACH FILL, STATION 24+28.73 -Y34-	Lump Sum	L.S.	
0023	0248000000-N	SP	GENERIC GRADING ITEM TYPE 1 BRIDGE APPROACH FILL, STATION 31+84.73 -Y33RPCA-	Lump Sum	L.S.	
0024	0248000000-N	SP	GENERIC GRADING ITEM TYPE 1 BRIDGE APPROACH FILL, STATION 384+20.26 -L1- LT	Lump Sum	L.S.	
0025	0248000000-N	SP	GENERIC GRADING ITEM TYPE 1 BRIDGE APPROACH FILL, STATION 384+20.26 -L1- RT	Lump Sum	L.S.	
0026	0248000000-N	SP	GENERIC GRADING ITEM TYPE 1 BRIDGE APPROACH FILL, STATION 427+46.10 -L1- LT	Lump Sum	L.S.	
0027	0248000000-N	SP	GENERIC GRADING ITEM TYPE 1 BRIDGE APPROACH FILL, STATION 427+46.16 -L1- RT	Lump Sum	L.S.	
0028	0255000000-E	SP	GENERIC GRADING ITEM SELECT MATERIAL FOR WICK DRAIN	325 TON		
0029	0318000000-E	300	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	2,650 TON		
0030	0321000000-E	300	FOUNDATION CONDITIONING GEOTEXTILE	8,340 SY		
0031	0335200000-E	305	15" DRAINAGE PIPE	88 LF		
0032	0335300000-E	305	18" DRAINAGE PIPE	2,060 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0033	0335400000-E	305	24" DRAINAGE PIPE	272 LF		
0034	0335850000-E	305	**" DRAINAGE PIPE ELBOWS (18")	44 EA		
0035	0335850000-E	305	**" DRAINAGE PIPE ELBOWS (24")	2 EA		
0036	0448000000-E	310	****" RC PIPE CULVERTS, CLASS IV (48")	1,444 LF		
0037	0448000000-E	310	****" RC PIPE CULVERTS, CLASS IV (54")	1,348 LF		
0038	0448000000-E	310	****" RC PIPE CULVERTS, CLASS IV (60")	400 LF		
0039	0448000000-E	310	****" RC PIPE CULVERTS, CLASS IV (72")	352 LF		
0040	0448200000-E	310	15" RC PIPE CULVERTS, CLASS IV	580 LF		
0041	0448300000-E	310	18" RC PIPE CULVERTS, CLASS IV	8,892 LF		
0042	0448400000-E	310	24" RC PIPE CULVERTS, CLASS IV	3,380 LF		
0043	0448500000-E	310	30" RC PIPE CULVERTS, CLASS IV	744 LF		
0044	0448600000-E	310	36" RC PIPE CULVERTS, CLASS IV	4,668 LF		
0045	0448700000-E	310	42" RC PIPE CULVERTS, CLASS IV	368 LF		
0046	0449000000-E	310	**" RC PIPE CULVERTS, CLASS V (24")	396 LF		
0047	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (24", 0.500")	52 LF		
0048	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (60", 0.875")	92 LF		
0049	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (24", 0.500")	52 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0050	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (60", 0.875")	92 LF		
0051	0995000000-E	340	PIPE REMOVAL	1,479 LF		
0052	1000000000-E	462	6" SLOPE PROTECTION	680 SY		
0053	1011000000-N	500	FINE GRADING	Lump Sum	L.S.	
0054	1099500000-E	505	SHALLOW UNDERCUT	1,000 CY		
0055	1099700000-E	505	CLASS IV SUBGRADE STABILIZATION	1,950 TON		
0056	1111000000-E	SP	CLASS IV AGGREGATE STABILIZATION	8,500 TON		
0057	1112000000-E	505	GEOTEXTILE FOR SUBGRADE STABILIZATION	3,000 SY		
0058	1121000000-E	520	AGGREGATE BASE COURSE	125,000 TON		
0059	1220000000-E	545	INCIDENTAL STONE BASE	10,000 TON		
0060	1245000000-E	SP	SHOULDER RECONSTRUCTION	10 SMI		
0061	1297000000-E	607	MILLING ASPHALT PAVEMENT, ***" DEPTH (1-1/2")	32,250 SY		
0062	1297000000-E	607	MILLING ASPHALT PAVEMENT, ***" DEPTH (3")	2,300 SY		
0063	1330000000-E	607	INCIDENTAL MILLING	2,000 SY		
0064	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	73,500 TON		
0065	1503000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	83,000 TON		
0066	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	5,000 TON		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0067	1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	70,000 TON		
0068	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	11,750 TON		
0069	1693000000-E	654	ASPHALT PLANT MIX, PAVEMENT REPAIR	800 TON		
0070	1841000000-E	665	GENERIC PAVING ITEM MILLED RUMBLE STRIPS (ASPHALT CONCRETE), 16"	141,425 LF		
0071	2022000000-E	815	SUBDRAIN EXCAVATION	1,646 CY		
0072	2026000000-E	815	GEOTEXTILE FOR SUBSURFACE DRAINS	4,900 SY		
0073	2036000000-E	815	SUBDRAIN COARSE AGGREGATE	823 CY		
0074	2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	4,900 LF		
0075	2070000000-N	815	SUBDRAIN PIPE OUTLET	10 EA		
0076	2077000000-E	815	6" OUTLET PIPE	60 LF		
0077	2209000000-E	838	ENDWALLS	77.1 CY		
0078	2220000000-E	838	REINFORCED ENDWALLS	57.4 CY		
0079	2275000000-E	SP	FLOWABLE FILL	20 CY		
0080	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	158 EA		
0081	2297000000-E	840	MASONRY DRAINAGE STRUCTURES	11.614 CY		
0082	2308000000-E	840	MASONRY DRAINAGE STRUCTURES	109.1 LF		
0083	2364000000-N	840	FRAME WITH TWO GRATES, STD 840.16	1 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0084	2364200000-N	840	FRAME WITH TWO GRATES, STD 840.20	42 EA		
0085	2365000000-N	840	FRAME WITH TWO GRATES, STD 840.22	71 EA		
0086	2366000000-N	840	FRAME WITH TWO GRATES, STD 840.24	6 EA		
0087	2367000000-N	840	FRAME WITH TWO GRATES, STD 840.29	26 EA		
0088	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)	1 EA		
0089	2396000000-N	840	FRAME WITH COVER, STD 840.54	9 EA		
0090	2407000000-N	840	STEEL FRAME WITH TWO GRATES, STD 840.37	5 EA		
0091	2473000000-N	SP	GENERIC DRAINAGE ITEM 30" PIPE ENDWALL WITH LOAD CARRYING GRATE	1 EA		
0092	2473000000-N	SP	GENERIC DRAINAGE ITEM 36" PIPE ENDWALL WITH LOAD CARRYING GRATE	21 EA		
0093	2473000000-N	SP	GENERIC DRAINAGE ITEM 48" PIPE ENDWALL WITH LOAD CARRYING GRATE	1 EA		
0094	2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	1,500 LF		
0095	2556000000-E	846	SHOULDER BERM GUTTER	16,700 LF		
0096	2724000000-E	857	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED	560 LF		
0097	3001000000-N	SP	IMPACT ATTENUATOR UNITS, TYPE TL-3	8 EA		
0098	3030000000-E	862	STEEL BEAM GUARDRAIL	31,075 LF		
0099	3105000000-N	862	STEEL BEAM GUARDRAIL TERMINAL SECTIONS	4 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0100	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	10 EA		
0101	3210000000-N	862	GUARDRAIL END UNITS, TYPE CAT-1	36 EA		
0102	3287000000-N	862	GUARDRAIL END UNITS, TYPE TL-3	50 EA		
0103	3288000000-N	862	GUARDRAIL END UNITS, TYPE TL-2	2 EA		
0104	3317000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE B-77	56 EA		
0105	3345000000-E	864	REMOVE & RESET EXISTING GUARDRAIL	405 LF		
0106	3360000000-E	863	REMOVE EXISTING GUARDRAIL	67.5 LF		
0107	3365000000-E	863	REMOVE EXISTING GUIDERAIL	992 LF		
0108	3389200000-E	865	CABLE GUIDERAIL	33,200 LF		
0109	3389500000-N	865	ADDITIONAL GUIDERAIL POSTS	10 EA		
0110	3389600000-N	865	CABLE GUIDERAIL ANCHOR UNITS	46 EA		
0111	3503000000-E	866	WOVEN WIRE FENCE, 47" FABRIC	74,375 LF		
0112	3509000000-E	866	4" TIMBER FENCE POSTS, 7'-6" LONG	5,010 EA		
0113	3515000000-E	866	5" TIMBER FENCE POSTS, 8'-0" LONG	580 EA		
0114	3628000000-E	876	RIP RAP, CLASS I	3,325 TON		
0115	3635000000-E	876	RIP RAP, CLASS II	300 TON		
0116	3649000000-E	876	RIP RAP, CLASS B	4,000 TON		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0117	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	18,255 SY		
0118	4048000000-E	902	REINFORCED CONCRETE SIGN FOUNDATIONS	34 CY		
0119	4054000000-E	902	PLAIN CONCRETE SIGN FOUNDATIONS	3 CY		
0120	4057000000-E	SP	OVERHEAD FOOTING	418 CY		
0121	4060000000-E	903	SUPPORTS, BREAKAWAY STEEL BEAM	33,005 LB		
0122	4066000000-E	903	SUPPORTS, SIMPLE STEEL BEAM	2,855 LB		
0123	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	3,518 LF		
0124	4096000000-N	904	SIGN ERECTION, TYPE D	5 EA		
0125	4102000000-N	904	SIGN ERECTION, TYPE E	106 EA		
0126	4108000000-N	904	SIGN ERECTION, TYPE F	23 EA		
0127	4109000000-N	904	SIGN ERECTION, TYPE *** (OVERHEAD) (A)	46 EA		
0128	4109000000-N	904	SIGN ERECTION, TYPE *** (OVERHEAD) (B)	18 EA		
0129	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)	39 EA		
0130	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)	16 EA		
0131	4114000000-N	904	SIGN ERECTION, MILEMARKERS	50 EA		
0132	4115000000-N	904	SIGN ERECTION, OVERLAY (OVERHEAD)	12 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0133	4116000000-N	904	SIGN ERECTION, OVERLAY (GROUND MOUNTED)	1 EA		
0134	4116100000-N	904	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (D)	1 EA		
0135	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (100+00 -Y33-)	Lump Sum	L.S.	
0136	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (150+00 -L-)	Lump Sum	L.S.	
0137	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (18+36 -Y33RPCA-)	Lump Sum	L.S.	
0138	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (201+77 -L-)	Lump Sum	L.S.	
0139	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (222+94 -L1-)	Lump Sum	L.S.	
0140	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (246+00 -L1-)	Lump Sum	L.S.	
0141	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (246+70 -L1-)	Lump Sum	L.S.	
0142	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (259+88 -L1-)	Lump Sum	L.S.	
0143	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (36+80 -Y33-)	Lump Sum	L.S.	
0144	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (48+15 -Y33-)	Lump Sum	L.S.	
0145	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (52+00 -Y33-)	Lump Sum	L.S.	
0146	4152000000-N	907	DISPOSAL OF SIGN SYSTEM, STEEL BEAM	16 EA		
0147	4155000000-N	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	20 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0148	4158000000-N	907	DISPOSAL OF SIGN SYSTEM, WOOD	2 EA		
0149	4192000000-N	907	DISPOSAL OF SUPPORT, U-CHANNEL	1 EA		
0150	4234000000-N	907	DISPOSAL OF SIGN, A OR B (OVERHEAD)	41 EA		
0151	4238000000-N	907	DISPOSAL OF SIGN, D, E OR F	3 EA		
0152	4238500000-N	907	DISPOSAL OF SIGN, MILEMARKER	20 EA		
0153	4251000000-N	907	DISPOSAL OF LIGHTING SYSTEM	4 EA		
0154	4360000000-N	SP	GENERIC SIGNING ITEM VERTICAL PANEL TYPE 3 OBJECT MARKER - OM3-C	1 EA		
0155	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	608 SF		
0156	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	404 SF		
0157	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	192 SF		
0158	4415000000-N	1115	FLASHING ARROW BOARD	2 EA		
0159	4420000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	5 EA		
0160	4430000000-N	1130	DRUMS	350 EA		
0161	4445000000-E	1145	BARRICADES (TYPE III)	592 LF		
0162	4455000000-N	1150	FLAGGER	90 DAY		
0163	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	8 EA		
0164	4470000000-N	1160	REMOVE & RESET TEMPORARY CRASH CUSHION	3 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0165	4480000000-N	1165	TMA	3 EA		
0166	4485000000-E	1170	PORTABLE CONCRETE BARRIER	6,700 LF		
0167	4500000000-E	1170	REMOVE AND RESET PORTABLE CONCRETE BARRIER	2,600 LF		
0168	4650000000-N	1251	TEMPORARY RAISED PAVEMENT MARKERS	1,220 EA		
0169	4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	35,612 LF		
0170	4688000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)	243,975 LF		
0171	4700000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)	14,912 LF		
0172	4709000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 90 MILS)	155 LF		
0173	4720000000-E	1205	THERMOPLASTIC PAVEMENT MARKING CHARACTER (90 MILS)	12 EA		
0174	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	47 EA		
0175	4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4")	85,700 LF		
0176	4835000000-E	1205	PAINT PAVEMENT MARKING LINES (24")	260 LF		
0177	4840000000-N	1205	PAINT PAVEMENT MARKING CHARACTER	16 EA		
0178	4845000000-N	1205	PAINT PAVEMENT MARKING SYMBOL	30 EA		
0179	4846000000-E	1205	POLYUREA PAVEMENT MARKING LINES (**", *** MILS) (12", 30 MILS)	64 LF		
0180	4846000000-E	1205	POLYUREA PAVEMENT MARKING LINES (**", *** MILS) (4", 30 MILS)	2,150 LF		
0181	4846000000-E	1205	POLYUREA PAVEMENT MARKING LINES (**", *** MILS) (6", 30 MILS)	7,656 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0182	4895000000-N	SP	GENERIC PAVEMENT MARKING ITEM POLYCARBONATE H-SHAPED MARKERS	2,750 EA		
0183	4900000000-N	1251	PERMANENT RAISED PAVEMENT MARKERS	26 EA		
0184	5255000000-N	1413	PORTABLE LIGHTING	Lump Sum	L.S.	
0185	5325600000-E	1510	6" WATER LINE	1,604.9 LF		
0186	5325800000-E	1510	8" WATER LINE	162.4 LF		
0187	5329000000-E	1510	DUCTILE IRON WATER PIPE FITTINGS	2,075 LB		
0188	5540000000-E	1515	6" VALVE	2 EA		
0189	5648000000-N	1515	RELOCATE WATER METER	1 EA		
0190	5666000000-N	1515	FIRE HYDRANT	2 EA		
0191	5673000000-E	1515	FIRE HYDRANT LEG	16.1 LF		
0192	5686000000-E	1515	**" WATER SERVICE LINE (1-1/2")	12.2 LF		
0193	5800000000-E	1530	ABANDON 6" UTILITY PIPE	1,609.6 LF		
0194	5815500000-N	1530	REMOVE FIRE HYDRANT	1 EA		
0195	5835600000-E	1540	12" ENCASEMENT PIPE	378.7 LF		
0196	5872500000-E	1550	BORE AND JACK OF **" (12")	62.8 LF		
0197	5872600000-E	1550	DIRECTIONAL DRILLING OF **" (8")	162.4 LF		
0198	6000000000-E	1605	TEMPORARY SILT FENCE	361,220 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0199	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	4,620 TON		
0200	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	37,430 TON		
0201	6012000000-E	1610	SEDIMENT CONTROL STONE	18,785 TON		
0202	6015000000-E	1615	TEMPORARY MULCHING	677 ACR		
0203	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	18,300 LB		
0204	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	93 TON		
0205	6024000000-E	1622	TEMPORARY SLOPE DRAINS	54,420 LF		
0206	6029000000-E	SP	SAFETY FENCE	62,440 LF		
0207	6030000000-E	1630	SILT EXCAVATION	115,000 CY		
0208	6036000000-E	1631	MATTING FOR EROSION CONTROL	417,550 SY		
0209	6037000000-E	1629	COIR FIBER MAT	47,750 SY		
0210	6042000000-E	1632	1/4" HARDWARE CLOTH	10,520 LF		
0211	6043000000-E	1644	LOW PERMEABILITY GEOTEXTILE	6,400 SY		
0212	6045000000-E	SP	**" TEMPORARY PIPE (36")	170 LF		
0213	6045000000-E	SP	**" TEMPORARY PIPE (60")	50 LF		
0214	6046000000-E	1636	TEMPORARY PIPE FOR STREAM CROSSING	350 LF		
0215	6048000000-E	SP	FLOATING TURBIDITY CURTAIN	185 SY		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0216	6069000000-E	1638	STILLING BASINS	3,310 CY		
0217	6070000000-N	1639	SPECIAL STILLING BASINS	7 EA		
0218	6071002000-E	1642	FLOCCULANT	52,365 LB		
0219	6071012000-E	1642	COIR FIBER WATTLE	46,600 LF		
0220	6071014000-E	1642	COIR FIBER WATTLE BARRIER	25,680 LF		
0221	6071030000-E	1640	COIR FIBER BAFFLE	30,900 LF		
0222	6071050000-E	1644	**" SKIMMER (1-1/2")	88 EA		
0223	6071050000-E	1644	**" SKIMMER (2")	7 EA		
0224	6071050000-E	1644	**" SKIMMER (2-1/2")	3 EA		
0225	6084000000-E	1660	SEEDING & MULCHING	553 ACR		
0226	6087000000-E	1660	MOWING	585 ACR		
0227	6090000000-E	1661	SEED FOR REPAIR SEEDING	6,750 LB		
0228	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	25 TON		
0229	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	8,875 LB		
0230	6108000000-E	1665	FERTILIZER TOPDRESSING	266.25 TON		
0231	6111000000-E	SP	IMPERVIOUS DIKE	2,110 LF		
0232	6114500000-N	1667	SPECIALIZED HAND MOWING	85 MHR		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0233	6114800000-N	SP	MANUAL LITTER REMOVAL	325 MHR		
0234	6114900000-E	SP	LITTER DISPOSAL	18 TON		
0235	6117000000-N	1675	RESPONSE FOR EROSION CONTROL	250 EA		
0236	6117500000-N	SP	CONCRETE WASHOUT STRUCTURE	4 EA		
0237	6120000000-E	SP	CULVERT DIVERSION CHANNEL	2,575 CY		
0238	6132000000-N	SP	GENERIC EROSION CONTROL ITEM PREFABRICATED CONCRETE WASHOUT	16 EA		
0239	6141000000-E	SP	GENERIC EROSION CONTROL ITEM PERMANENT SOIL REINFORCEMENT MAT, TYPE 1	1,485 SY		
			CULVERT ITEMS			
0240	8130000000-N	414	BOX CULVERT EXCAVATION, STA ******** (253+30.00 -L1-)	Lump Sum	L.S.	
0241	8130000000-N	414	BOX CULVERT EXCAVATION, STA ******** (283+45.00 -L1-)	Lump Sum	L.S.	
0242	8130000000-N	414	BOX CULVERT EXCAVATION, STA ******** (305+99.00 -L1-)	Lump Sum	L.S.	
0243	8130000000-N	414	BOX CULVERT EXCAVATION, STA ******** (443+00.00 -L1-)	Lump Sum	L.S.	
0244	8130000000-N	414	BOX CULVERT EXCAVATION, STA ******** (49+88.00 -Y33RPCA-)	Lump Sum	L.S.	
0245	8130000000-N	414	BOX CULVERT EXCAVATION, STA ******** (523+48.57 -L1REV-)	Lump Sum	L.S.	
0246	8130000000-N	414	BOX CULVERT EXCAVATION, STA ******** (567+53.70 -L1-)	Lump Sum	L.S.	

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0247	8133000000-E	414	FOUNDATION CONDITIONING MATERIAL, BOX CULVERT	5,809 TON		
0248	8196000000-E	420	CLASS A CONCRETE (CULVERT)	4,083.3 CY		
0249	8245000000-E	425	REINFORCING STEEL (CULVERT)	654,781 LB		
0250	8822000000-E	SP	GENERIC CULVERT ITEM FOUNDATION CONDITIONING GEOTEXTILE	4,082 SY		
			WALL ITEMS			
0251	8801000000-E	SP	MSE RETAINING WALL NO **** (1)	1,070 SF		
			STRUCTURE ITEMS			
0252	8017000000-N	SP	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA ********** (384+20.26 -L1-)	Lump Sum	L.S.	
0253	8017000000-N	SP	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA ********** (427+46.10 -L1-)	Lump Sum	L.S.	
0254	8091000000-N	410	FOUNDATION EXCAVATION FOR BENT NO ** AT STATION ********* (1, 225+92.26 -L1-)	Lump Sum	L.S.	
0255	8091000000-N	410	FOUNDATION EXCAVATION FOR BENT NO ** AT STATION ********* (1, 23+28.17 -Y35-)	Lump Sum	L.S.	
0256	8091000000-N	410	FOUNDATION EXCAVATION FOR BENT NO ** AT STATION ********* (1, 24+28.73 -Y34-)	Lump Sum	L.S.	
0257	8091000000-N	410	FOUNDATION EXCAVATION FOR BENT NO ** AT STATION ********* (1, 31+84.73 -Y33RPCA-)	Lump Sum	L.S.	
0258	8091000000-N	410	FOUNDATION EXCAVATION FOR BENT NO ** AT STATION ********* (2, 31+84.73 -Y33RPCA-)	Lump Sum	L.S.	
0259	8091000000-N	410	FOUNDATION EXCAVATION FOR BENT NO ** AT STATION ********* (3, 31+84.73 -Y33RPCA--)	Lump Sum	L.S.	

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0260	8091000000-N	410	FOUNDATION EXCAVATION FOR BENT NO ** AT STATION ********* (4, 31+84.73 -Y33RPCA-)	Lump Sum	L.S.	
0261	8091000000-N	410	FOUNDATION EXCAVATION FOR BENT NO ** AT STATION ********* (5, 31+84.73 -Y33RPCA-)	Lump Sum	L.S.	
0262	8091000000-N	410	FOUNDATION EXCAVATION FOR BENT NO ** AT STATION ********* (6, 31+84.73 -Y33RPCA-)	Lump Sum	L.S.	
0263	8091000000-N	410	FOUNDATION EXCAVATION FOR BENT NO ** AT STATION ********* (7, 31+84.73 -Y33RPCA-)	Lump Sum	L.S.	
0264	8091000000-N	410	FOUNDATION EXCAVATION FOR BENT NO ** AT STATION ********* (8, 31+84.73 -Y33RPCA-)	Lump Sum	L.S.	
0265	8147000000-E	420	REINFORCED CONCRETE DECK SLAB	137,150 SF		
0266	8161000000-E	420	GROOVING BRIDGE FLOORS	133,375 SF		
0267	8175000000-E	420	CLASS AA CONCRETE (BRIDGE)	2,221.7 CY		
0268	8182000000-E	420	CLASS A CONCRETE (BRIDGE)	618.4 CY		
0269	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (225+92.26 -L1-)	Lump Sum	L.S.	
0270	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (23+28.17 -Y35-)	Lump Sum	L.S.	
0271	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (232+80.54 -L1- LT)	Lump Sum	L.S.	
0272	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (232+80.54 -L1- RT)	Lump Sum	L.S.	
0273	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (24+28.73 -Y34-)	Lump Sum	L.S.	
0274	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (31+84.73 -Y33RPCA-)	Lump Sum	L.S.	

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0275	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (384+20.26 -L1- LT)	Lump Sum	L.S.	
0276	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (384+20.26 -L1- RT)	Lump Sum	L.S.	
0277	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (427+46.10 -L1- LT)	Lump Sum	L.S.	
0278	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (427+46.16 -L1- RT)	Lump Sum	L.S.	
0279	8217000000-E	425	REINFORCING STEEL (BRIDGE)	408,486 LB		
0280	8224000000-E	425	EPOXY COATED REINFORCING STEEL (BRIDGE)	76,404 LB		
0281	8238000000-E	425	SPIRAL COLUMN REINFORCING STEEL (BRIDGE)	3,583 LB		
0282	8277000000-E	430	MODIFIED 72" PRESTRESSED CONC GIRDERS	6,290.33 LF		
0283	8280000000-E	440	APPROX ..... LBS STRUCTURAL STEEL	2,808,131 LS		
0284	8328000000-E	450	PILE DRIVING EQUIPMENT SETUP FOR *** PRESTRESSED CONCRETE PILES (16")	128 EA		
0285	8328000000-E	450	PILE DRIVING EQUIPMENT SETUP FOR *** PRESTRESSED CONCRETE PILES (24")	15 EA		
0286	8328200000-E	450	PILE DRIVING EQUIPMENT SETUP FOR *** STEEL PILES (HP 12 X 53)	63 EA		
0287	8328200000-E	450	PILE DRIVING EQUIPMENT SETUP FOR *** STEEL PILES (HP 14 X 73)	148 EA		
0288	8328400000-E	450	PILE DRIVING EQUIPMENT SETUP FOR *** GALVANIZED STEEL PILES (PP 24 X 0.75)	14 EA		
0289	8333000000-E	450	16" PRESTRESSED CONCRETE PILES	5,990 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0290	8350000000-E	450	24" PRESTRESSED CONCRETE PILES	675 LF		
0291	8364000000-E	450	HP 12 X 53 STEEL PILES	3,135 LF		
0292	8384000000-E	450	HP 14 X 73 STEEL PILES	7,990 LF		
0293	8385200000-E	450	PP ** X **** GALVANIZED STEEL PILES (24 X 0.75)	630 LF		
0294	8391000000-N	450	STEEL PILE POINTS	102 EA		
0295	8392500000-E	450	PREDRILLING FOR PILES	1,611.4 LF		
0296	8393000000-N	450	PILE REDRIVES	190 EA		
0297	8394000000-N	450	DYNAMIC PILE TESTING	14 EA		
0298	8503000000-E	460	CONCRETE BARRIER RAIL	6,357.96 LF		
0299	8531000000-E	462	4" SLOPE PROTECTION	5,033 SY		
0300	8608000000-E	876	RIP RAP CLASS II (2'-0" THICK)	2,078 TON		
0301	8622000000-E	876	GEOTEXTILE FOR DRAINAGE	2,361 SY		
0302	8654000000-N	SP	DISC BEARINGS	Lump Sum	L.S.	
0303	8657000000-N	430	ELASTOMERIC BEARINGS	Lump Sum	L.S.	
0304	8706000000-N	SP	EXPANSION JOINT SEALS	Lump Sum	L.S.	
0305	8713000000-N	SP	MODULAR EXPANSION JOINT SEALS	Lump Sum	L.S.	
0306	8867000000-E	SP	GENERIC STRUCTURE ITEM MODIFIED 56" PRESTRESSED CONCRETE GIRDERS	2,075.7 LF		