



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

November 13, 2014

U. S. Army Corps of Engineers
Regulatory Field Office
3331 Heritage Trade Drive Suite 105
Wake Forest, NC 27587

ATTN: Mr. Andrew Williams
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 14 and Section 401 Water Quality Certification** for the proposed Improvements to NC 268 (Elkin Highway) from NC 18 to SR 1966 (Airport Road) in Wilkes County. Federal Project No. STP-0268(15), Division 11, TIP No. R-2603. Debit \$570 from WBS 34518.1.1.

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes improvements to NC 268 from NC 18 to SR 1966 (Airport Road) in Wilkes County. The proposed project is approximately 3.6 miles in length, and includes upgrades to the existing multi-lane section from NC 18 to the vicinity of Shaver Street, as well as widening from the existing multi-lane section east of NC 18 to SR 1966. There will be 725 linear feet of permanent stream impacts, 105 linear feet of bank stabilization and 0.03 acre of temporary stream impacts. There will be 0.29 acre of permanent wetland impacts. Additionally, there will be 0.01 acre of temporary wetland impacts from utility relocation. The cumulative impacts to a jurisdictional feature will not exceed the Nationwide thresholds.

Please see enclosed copies of the Pre-Construction Notification (PCN), EEP acceptance letter, Stormwater Management Plan, permit drawings, utility drawings and design plans. A Notification of Jurisdictional Determination (JD) was received from the USACE, dated June 17, 2008. A field re-verification visit was conducted on August 8, 2013 with Monte Matthews of the U.S. Army Corps of Engineers (USACE) and Amy Euliss of the North Carolina Division of Water Quality (DWR). This Nationwide 14 Permit application includes a request for the renewal of the JD of the resources included in the R-2603 project area. An Environmental Assessment (EA) was completed in January 2011 and a

Finding of No Significant Impact (FONSI) was completed in February 2012 and both distributed shortly thereafter. Additional copies are available upon request.

Comments from the North Carolina Wildlife Resources Commission (NCWRC) will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachments, NCDOT hereby requests NCWRC review. NCDOT requests that NCWRC forward their comments to the Corps of Engineers and the NCDOT within 30 calendar days of receipt of this application.

This project calls for a letting date of May 19, 2015 and a review date of March 31, 2015.

A copy of this permit application and its distribution list will be posted on the NCDOT Website at: <http://connect.ncdot.gov/resources/Environmental>. If you have any questions or need additional information, please call Erin Cheely at (919) 707-6108.

Sincerely,



for

Richard W. Hancock, P.E., Manager
Project Development and Environmental Analysis Unit

cc:

NCDOT Permit Application Standard Distribution List



Office Use Only:
Corps action ID no. _____
DWQ project no. _____
Form Version 1.3 Dec 10 2008

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit ☐ Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 14 or General Permit (GP) number:	
1c. Has the NWP or GP number been verified by the Corps?	☐ Yes ☒ No
1d. Type(s) of approval sought from the DWQ (check all that apply): ☒ 401 Water Quality Certification – Regular ☐ Non-404 Jurisdictional General Permit ☐ 401 Water Quality Certification – Express ☐ Riparian Buffer Authorization	
1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: ☐ Yes ☒ No
	For the record only for Corps Permit: ☐ Yes ☒ No
1f. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts? If so, attach the acceptance letter from mitigation bank or in-lieu fee program.	☒ Yes ☐ No
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.	☐ Yes ☒ No
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?	☐ Yes ☒ No

2. Project Information

2a. Name of project:	Improvements to NC 268 (Elkin Highway) from NC 18 to SR 1966 (Airport Road)
2b. County:	Wilkes
2c. Nearest municipality / town:	Wilkesboro
2d. Subdivision name:	<i>not applicable</i>
2e. NCDOT only, T.I.P. or state project no:	R-2603

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	<i>not applicable</i>
3c. Responsible Party (for LLC if applicable):	<i>not applicable</i>
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6108
3g. Fax no.:	(919) 212-5785
3h. Email address:	ekcheely@ncdot.gov

4. Applicant Information (if different from owner)	
4a. Applicant is:	☐ Agent ☐ Other, specify:
4b. Name:	<i>not applicable</i>
4c. Business name (if applicable):	
4d. Street address:	
4e. City, state, zip:	
4f. Telephone no.:	
4g. Fax no.:	
4h. Email address:	
5. Agent/Consultant Information (if applicable)	
5a. Name:	<i>not applicable</i>
5b. Business name (if applicable):	
5c. Street address:	
5d. City, state, zip:	
5e. Telephone no.:	
5f. Fax no.:	
5g. Email address:	

B. Project Information and Prior Project History	
1. Property Identification	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 36.28545 (DD.DDDDDD) Longitude: - 81.318355 (-DD.DDDDDD)
1c. Property size:	57 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Long Creek, Mulberry Creek
2b. Water Quality Classification of nearest receiving water:	C
2c. River basin:	Yadkin-Pee Dee
3. Project Description	
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: Land use consists of about 45% forest land (including mixed pine-hardwood forest), 50% developed or disturbed land (roadsides, utility corridors, commercial/industrial/residential areas) and 5% cultivated land (agricultural fields and pastures).	
3b. List the total estimated acreage of all existing wetlands on the property: 0.79	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: ~5,000	
3d. Explain the purpose of the proposed project: The purpose of the proposed action is to: Improve traffic flow and level of service, and reduce conflicts between through and local traffic on NC 268 in the project area; and, provide infrastructure upgrades to the existing multi-lane section of NC 268 between NC 18 and Shaver Street.	
3e. Describe the overall project in detail, including the type of equipment to be used: The proposed project includes upgrades to the existing multi-lane section, from NC 18 to the vicinity of Shaver Street as well as widening from the existing multi-lane section to SR 1966 (Airport Road). Upgrades would include improvements to the existing roadway, such as resurfacing, replacement of drainage structures, and replacement of curb and gutter. The total length of the proposed project is approximately 3.6 miles. Standard road building equipment, such as trucks, dozers and cranes will be used.	
4. Jurisdictional Determinations	
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments: Action ID 200801913	☒ Yes ☐ No ☐ Unknown JD expired 6/17/13 – field re-verified 8/8/13. DWR sent verification letter 10/10/13.
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☐ Preliminary ☒ Final
4c. If yes, who delineated the jurisdictional areas? Name (if known): Brian Dustin/Erin Cheely	Agency/Consultant Company: Mulkey/NCDOT Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. Monte Matthews of the USACE and Amy Euliss of DWR verified the streams and wetlands on 4/16/08 (with 404 and 401 written verification) and 8/8/13 (with 401 written verification). Updated 404 JD is requested with this permit.	
5. Project History	
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☐ Yes ☒ No ☐ Unknown
5b. If yes, explain in detail according to "help file" instructions.	
6. Future Project Plans	
6a. Is this a phased project?	☐ Yes ☒ No
6b. If yes, explain.	

C. Proposed Impacts Inventory						
1. Impacts Summary						
1a. Which sections were completed below for your project (check all that apply):						
☒ Wetlands		☒ Streams - tributaries		☐ Buffers		
☐ Open Waters		☐ Pond Construction				
2. Wetland Impacts						
If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.						
2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)	
Site 5 ☒ P ☐ T	Fill	WC - Non-tidal freshwater marsh	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.13	
Site 6 ☒ P ☐ T	Fill	WB - Non-tidal freshwater marsh	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.17	
Site UC1 ☐ P ☒ T	Utility relocation	WB - Non-tidal freshwater marsh	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.10	
2g. Total wetland impacts					0.29 Permanent 0.10 Temporary	
2h. Comments:						
- UTILITY IMPACTS: Site UC1 on the attached Utility Impact Permit Drawings consists of temporary excavation and hand clearing in order to relocate an overhead power line in this area. No mitigation is required for this temporary activity. - Total wetland impacts are based on rounding, due to calculating totals with actual numbers to the thousandths.						
3. Stream Impacts						
If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.						
3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 ☐ P ☒ T	Temp. (raise headwall)	S1 – Long Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	16	37 (<0.01 ac)
Site 2 ☒ P ☐ T	Culvert replace/extend	S4 – UT to Long Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	7	106
Site 2 ☒ P ☐ T	Bank stabilization	S4 – UT to Long Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	7	20
Site 2 ☐ P ☒ T	Culvert replace/extend	S4 – UT to Long Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	7	54 (0.01 ac)
Site 3 ☒ P ☐ T	Pipe extension	S10 – UT to Long Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	4	80
Site 3 ☒ P ☐ T	Bank stabilization	S10 – UT to Long Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	4	10
Site 3 ☐ P ☒ T	Pipe extension	S10 – UT to Long Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	4	30 <0.01 ac)
Site 4 ☒ P ☐ T	Pipe replacement	S11 – UT to Long Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	123
Site 4 ☐ P ☒ T	Pipe replacement	S11 – UT to Long Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	20 (<0.01 ac)

Site 7 ☒ P ☐ T	Pipe replace/extend	S3A – UT to Mulberry Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	3	120
Site 7 ☒ P ☐ T	Rip rap in channel	S3A – UT to Mulberry Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	3	38
Site 7 ☒ P ☐ T	Bank Stabilization	S3A – UT to Mulberry Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	3	10
Site 7 ☐ P ☒ T	Pipe replace/extend	S3A – UT to Mulberry Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	3	35 (<0.01 ac)
Site 8 ☒ P ☐ T	Pipe extension	S3B – UT to Mulberry Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	70
Site 8 ☒ P ☐ T	Bank stabilization	S3B – UT to Mulberry Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	12
Site 8 ☐ P ☒ T	Pipe extension	S3B – UT to Mulberry Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	20 (<0.01 ac)
Site 9A ☐ P ☒ T	Temp. disturbance	S3 – UT to Mulberry Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	8	30 (<0.01 ac)
Site 9B ☐ P ☒ T	Temp. disturbance	S3 – UT to Mulberry Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	8	20 (<0.01 ac)
Site 9C ☐ P ☒ T	Temp. disturbance	S3 – UT to Mulberry Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	8	12 (<0.01 ac)
Site 9D ☐ P ☒ T	Temp. disturbance	S3 – UT to Mulberry Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	8	38 (<0.01 ac)
Site 10 ☒ P ☐ T	Pipe replace/extend	S3 – UT to Mulberry Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	8	123
Site 10 ☐ P ☒ T	Pipe replace/extend	S3 – UT to Mulberry Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	8	68 (0.01 ac)
Site 11 ☒ P ☐ T	Pipe extension	S9 – UT to Mulberry Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	47
Site 11 ☐ P ☒ T	Pipe extension	S9 – UT to Mulberry Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	59 (0.01 ac)
Site 12 ☒ P ☐ T	Pipe replacement	S12 – UT to Long Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	18
Site 12 ☒ P ☐ T	Bank stabilization	S12 – UT to Long Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	18
Site 12 ☐ P ☒ T	Pipe replacement	S12 – UT to Long Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	27 (<0.01 ac)
Site 13 ☒ P ☐ T	Bank stabilization	Mulberry Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	60	35
Site 13 ☐ P ☒ T	Temp. Causeway	Mulberry Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	60	29 (<0.01 ac)
3h. Total stream and tributary impacts						830 Perm 479 Temp (0.03 ac Temp)
3i. Comments: - Of the 830 total feet of permanent stream impact, 105 total feet are from bank stabilization. DWR does not require mitigation for impacts to streams totaling less than 150 feet. Therefore, stream mitigation required by the USACE = 725 linear feet, required by DWR = 168 linear feet. - Temporary impacts totals are based on rounding, due to some of the individual impacts being <0.01 acre.						

4. Open Water Impacts

If there are proposed impacts to lakes, ponds, estuaries, tributaries, sounds, the Atlantic Ocean, or any other open water of the U.S. then individually list all open water impacts below.

4a. Open water impact number – Permanent (P) or Temporary (T)	4b. Name of waterbody (if applicable)	4c. Type of impact	4d. Waterbody type	4e. Area of impact (acres)
O1 ☐ P ☐ T				
O2 ☐ P ☐ T				
O3 ☐ P ☐ T				
O4 ☐ P ☐ T				
4f. Total open water impacts				0 Permanent 0 Temporary

4g. Comments: No open waters.

5. Pond or Lake Construction

If pond or lake construction proposed, then complete the chart below.

5a. Pond ID number	5b. Proposed use or purpose of pond	5c. Wetland Impacts (acres)			5d. Stream Impacts (feet)			5e. Upland (acres)
		Flooded	Filled	Excavated	Flooded	Filled	Excavated	Flooded
P1								
P2								
5f. Total								

5g. Comments:

5h. Is a dam high hazard permit required?	☐ Yes ☐ No If yes, permit ID no:
5i. Expected pond surface area (acres):	
5j. Size of pond watershed (acres):	
5k. Method of construction:	

6. Buffer Impacts (for DWQ)

If project will impact a protected riparian buffer, then complete the chart below. If yes, then individually list all buffer impacts below. If any impacts require mitigation, then you **MUST** fill out Section D of this form.

6a. Project is in which protected basin?			☐ Neuse ☐ Catawba			☐ Tar-Pamlico ☐ Randleman	☐ Other:
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)		
B1 ☐ P ☐ T			☐ Yes ☐ No				
B2 ☐ P ☐ T			☐ Yes ☐ No				
B3 ☐ P ☐ T			☐ Yes ☐ No				
6h. Total buffer impacts							
6i. Comments: This project is not located within a protected buffer area.							

D. Impact Justification and Mitigation		
1. Avoidance and Minimization		
1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project. The new bridge over Mulberry Creek will span the creek. Bridge deck drainage will not be allowed to discharge directly into the water. Heavy development in the area severely limits the viable options for treatment of runoff. However, where there is sufficient space, preformed scour holes will be used to diffuse the concentrated flow from storm drain outlet pipes into non-erosive sheet flow to surrounding water resources (see stormwater management plan for locations). The flow from pipes draining towards jurisdictional streams will be controlled via rip rap at the outlet in order to prevent erosive velocities.		
1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. Best Management Practices (BMPs) will be utilized during construction to attempt to reduce the stormwater impacts to the receiving stream due to erosion and runoff.		
2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State		
2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	☒ Yes ☐ No Mitigation for bank stabilization impacts is required by DWR, but not required by USACE. Mitigation for streams with permanent impacts <150' not required by DWR. Therefore: Total stream impacts requiring DWR mitigation = 168' Total stream impacts requiring USACE mitigation = 725' Both agencies require mitigation for the 0.29 acre wetland impacts. If no, explain:	
2b. If yes, mitigation is required by (check all that apply):	☒ DWQ ☒ Corps	
2c. If yes, which mitigation option will be used for this project?	☐ Mitigation bank ☒ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation	
3. Complete if Using a Mitigation Bank		
3a. Name of Mitigation Bank: not applicable		
3b. Credits Purchased (attach receipt and letter)	Type	Quantity
3c. Comments:		
4. Complete if Making a Payment to In-lieu Fee Program		
4a. Approval letter from in-lieu fee program is attached.	☒ Yes	
4b. Stream mitigation requested:	725 linear feet	
4c. If using stream mitigation, stream temperature:	☐ warm ☒ cool ☐ cold	
4d. Buffer mitigation requested (DWQ only):	0 square feet	
4e. Riparian wetland mitigation requested:	0.29 acres	
4f. Non-riparian wetland mitigation requested:	0 acres	
4g. Coastal (tidal) wetland mitigation requested:	0 acres	

4h. Comments: The NCDOT does not propose mitigation for the 105 linear feet of stream bank stabilization, the 0.03 acre of temporary stream impacts from pipe extensions and replacements or the 0.1 acre of temporary wetland impacts from utility relocation. These actions do not require permanent fill in the stream bed and, therefore, under Section 404 of the Clean Water Act, do not constitute Loss of Waters of the U.S. and are not subject to compensatory mitigation. Furthermore, the proposed bank stabilization activities are necessary to prevent erosion and sedimentation, i.e. preventing bank destabilization.

5. Complete if Using a Permittee Responsible Mitigation Plan

5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.

6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ

6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation? ☐ Yes ☒ No

6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.

Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1			3 (2 for Catawba)	
Zone 2			1.5	
6f. Total buffer mitigation required:				

6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).

6h. Comments:

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)	
1. Diffuse Flow Plan	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	☐ Yes ☒ No
1b. If yes, then is a diffuse flow plan included? If not, explain why. Comments: If required from 1a, see attached buffer permit drawings.	☐ Yes ☐ No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	☒ Yes ☐ No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached permit drawings.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	☐ Certified Local Government ☐ DWQ Stormwater Program ☒ DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	☐ Coastal counties ☐ HQW ☐ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No N/A
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☐ Yes ☐ No N/A
5b. Have all of the 401 Unit submittal requirements been met?	☐ Yes ☐ No N/A

F. Supplementary Information	
1. Environmental Documentation (DWQ Requirement)	
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	☒ Yes ☐ No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	☒ Yes ☐ No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments: Environmental Assessment (EA) approved January 2011 and Finding of No Significant Impact (FONSI) approved February 2012	☒ Yes ☐ No
2. Violations (DWQ Requirement)	
2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)?	☐ Yes ☒ No
2b. Is this an after-the-fact permit application?	☐ Yes ☒ No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):	
3. Cumulative Impacts (DWQ Requirement)	
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	☐ Yes ☒ No
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. This project involves improving existing lanes as well as widening existing roadway. A Community Impact Assessment and Qualitative Indirect and Cumulative Effects Assessment report was completed for the proposed project in September 2008: Community Impact Assessment and Qualitative Indirect and Cumulative Effects Assessment, NC 268 (Elkin Highway) Widening and Improvements from NC 18 to Airport Road (SR 1966). The proposed project is not expected to cause substantial indirect and cumulative growth along the project corridor. The project is not expected to influence population growth substantially beyond that which is forecasted.	
4. Sewage Disposal (DWQ Requirement)	
4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable	

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☐ Yes	☒ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☐ Yes	☒ No
5c. If yes, indicate the USFWS Field Office you have contacted.	☐ Raleigh ☐ Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? As of January 14, 2014 the USFWS lists only one federally listed species for Wilkes County, the bog turtle. No habitat for the bog turtle exists within the project limits, therefore the biological conclusion for this species is "No Effect". A US Fish and Wildlife Service proposal for listing the Northern Long-eared Bat (<i>Myotis septentrionalis</i>) as an Endangered species was published in the Federal Register in October 2013. The listing will become effective on or before April, 2015. Furthermore, this species is included in USFWS's current list of protected species for Wilkes County. NCDOT is working closely with the USFWS to understand how this proposed listing may impact NCDOT projects. NCDOT will continue to coordinate appropriately with USFWS to determine if this project will incur potential effects to the Northern long-eared bat, and how to address these potential effects, if necessary.		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ Yes	☒ No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	☐ Yes	☒ No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	☐ Yes	☒ No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		
for <u>Richard W. Hancock, P.E.</u> Applicant/Agent's Printed Name	 Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	<u>11-13-2014</u> Date

TIP No. R-2603 NWP 14 Crossings and Impact Values												
NWP 14 Crossings	Impact Site #s	Features Impacted	Stream Impacts Permanent		Stream Impacts Temporary		Wetland Impact ^{1/}	Pond Impact	TOTAL IMPACT Permanent		TOTAL IMPACT Temporary	
			LF	Acreage	LF	Acreage	Acreage	Acreage	LF	Acreage	LF	Acreage
#1	1	Long Creek (S1)	--	--	37	<0.01	--	--	--	--	37	<0.01
#2	2	S4	126	0.02	54	0.01	--	--	126	0.02	54	0.01
#3	3	S10	80	<0.01	30	<0.01	--	--	80	<0.01	30	<0.01
#4	4	S11	123	0.01	20	<0.01	--	--	123	0.01	20	<0.01
#5	5, 6, UC1	WC, WB	--	--	--	--	0.29	--	--	0.29	--	--
#6	7	S3A	168	0.01	35	<0.01	--	--	168	0.01	35	<0.01
#7	8	S3B	82	0.01	20	<0.01	--	--	82	0.01	20	<0.01
#8	9A, 9B, 9C, 9D	S3	--	--	100	0.01	--	--	--	--	100	0.01
#9	10	S3	123	0.01	68	0.01	--	--	123	0.01	68	0.01
#10	11	S9	47	<0.01	59	0.01	--	--	47	<0.01	59	0.01
#11	12	S12	36	<0.01	27	<0.01	--	--	36	<0.01	27	<0.01
#12	13	Mulberry Creek	35	<0.01	29	<0.01	--	--	35	<0.01	29	<0.01

^{1/} Wetland impacts are permanent impacts only. They do not include 'temporary excavation' and 'hand-clearing' impacts (which are part of Site UC1).



North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Michael Ellison, Director
Ecosystem Enhancement Program

John E. Skvarla, III
Secretary

October 28, 2014

Mr. Richard W. Hancock, P.E.
Manager, Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Hancock:

Subject: EEP Mitigation Acceptance Letter:

R-2603, Elkin Highway – NC 268 Improvements from Multi-lanes East of NC 18 to SR 1966, Wilkes County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream and riparian wetland mitigation for the subject project. Based on the information supplied by you on October 27, 2014, the impacts are located in CU 03040101 of the Yadkin River basin in the Northern Mountains (NM) Eco-Region, and are as follows:

Yadkin 03040101 NM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	725.0	0	0.29	0	0	0	0

*Some of the stream and wetland impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details on the mitigation ratio proposal.

EEP commits to implementing sufficient compensatory stream mitigation and riparian wetland mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies in accordance with the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-707-8420.

Sincerely,

James B. Stanfill
EEP Asset Management Supervisor

cc: Mr. Andy Williams, USACE – Raleigh Regulatory Field Office
Mr. Dave Wanucha, Division of Water Resources, Wetlands/401 Unit
File: R-2603

1652 Mail Service Center, Raleigh, North Carolina 27699-1652
Phone: 919-707-8976 \ Internet: www.ncdenr.gov

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North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: R-2603

County(ies): Wilkes

Page 1 of 3

General Project Information

Project No.:	R-2603	Project Type:	Roadway Widening	Date:	1/7/2014
NCDOT Contact:	Bill Zerman, PE	Contractor / Designer:	MA Engineering Consultants, Inc: Roger Weadon, PE		
Address:	1020 Birch Ridge Dr Raleigh, NC 27610	Address:	598 East Chatham St Cary, NC 27511		
	Phone:		(919) 707-6755	Phone:	(919) 297-0220
	Email:		bzerman@ncdot.gov	Email:	rweadon@maec.com
City/Town:	North Wilkesboro, NC	County(ies):	Wilkes		
River Basin(s):	Yadkin-Pee Dee	CAMA County?	No		
Primary Receiving Water:	Mulberry Creek	NCDWQ Stream Index No.:	12-42		
NCDWQ Surface Water Classification for Primary Receiving Water	Primary:	Class C			
	Supplemental:	None			
Other Stream Classification:					
303(d) Impairments:					
Buffer Rules in Effect					

Project Description

Project Length (lin. Miles or feet):	3.502 mi	Surrounding Land Use:	First half of project is urban industrial and last half of project is rural wooded with pasture lands		
	Proposed Project		Existing Site		
Project Built-Upon Area (ac.)	17.00 ac.		40.00 ac.		
Typical Cross Section Description:	5 lane with curb and gutter; 4 lane divided with raised median and outside curb and gutter; 4 lane divided with raised median and shoulders		two lane highway with normal crown		
Average Daily Traffic (veh/hr/day):	Design/Future:	26,400	Existing:	20,540	

General Project Narrative:

References



North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS



(Version 1.2; Released September 2011)

Project/TIP No.: R-2603

County(ies): Wilkes

Page 2 of 3

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
4	Y1 28+73 to 29+30	Stream	Perennial	Long Creek	S1	12-42-9	C	biological impairment	Clearing	N/A	
4	Y1A 25+25 to 25+68	Stream	Intermittent		S12	12-42-9			Culvert	N/A	
7	L 59+55 to 59+86	Stream	Perennial		S4	12-42			Culvert	N/A	
9	L 78+78 to 78+95	Stream	Intermittent		S10	12-42-9			Culvert	N/A	
10	L 96+13 to 96+82	Stream	Intermittent		S11	12-42			Culvert	N/A	
11	L 117+30 to 117+30	Stream	Perennial	Mulberry Creek	Mulberry Creek	12-42	C				PFSH
12	L 122+48 to 124+10	Wetland	Non-Tidal Freshwater Marsh		WC				Fill	N/A	
12	L 122+42 to 124+54	Wetland	Non-Tidal Freshwater Marsh		WB				Fill	N/A	
12	L 126+89 to 127+23	Stream	Intermittent		S3A	12-42			Culvert	N/A	
12	L 129+55 to 129+55	Stream	Intermittent		S3B	12-42			Clearing	N/A	
14-16	L 149+90 to 172+41	Stream	Perennial		S3	12-42			Culvert	N/A	PFSH
16	L 179+79 to 180+87	Stream	Intermittent		S9	12-42			Culvert	N/A	

* List all stream and surface water impact locations regardless of jurisdiction or size.

Equalizer Pipes to be noted as a minimization of impacts.

All proposed SCMs listed must also be listed under Swales, Preformed Sour Holes and other Energy Dissipators, or Other Stormwater Control Measures.

Description of Minimization of Impacts or Mitigation

Since S1 (Long Creek) is a noted as 303(d) impaired stream, standard treatment options were investigated but it was determined that there was not adequate space to accommodate any viable treatment options.

References



* Refer to the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), NCDOT Standard Details, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and criteria.

CONTRACT:



WILKES COUNTY

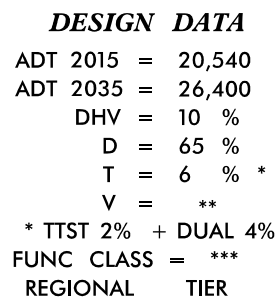
***TYPE OF WORK: GRADING, DRAINAGE, PAVING, CURB & GUTTER,
SIGNALS, STRUCTURES, AND SIGNING***

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 1 OF 28



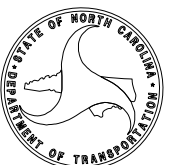
*** MINOR ARTERIAL FROM BEGINNING OF PROJECT TO MULBERRY CREEK
MAJOR COLLECTOR FROM MULBERRY CREEK TO END OF PROJECT



LENGTH ROADWAY PROJECT R-2603	=	3.474 mi.
LENGTH STRUCTURE PROJECT R-2603	=	0.028 mi.
TOTAL LENGTH OF TIP PROJECT R-2603	=	3.502 mi.
LENGTH OF PROJECT BASED ON -L-		

K. S. HUTCHENS, PE
PROJECT DESIGN ENGINEER

P.E.
SIGNATURE: _____



DETAIL PR1
PIPE OUTLET RIP RAP
(Not to Scale)

Natural Ground — MIN. 2:1
d
GEOTEXTILE
Channel Bed
TIE TO EXISTING CHANNEL BANK

LENGTH = 18 FT.
d = 3 Ft.

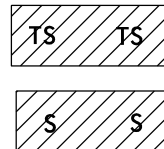
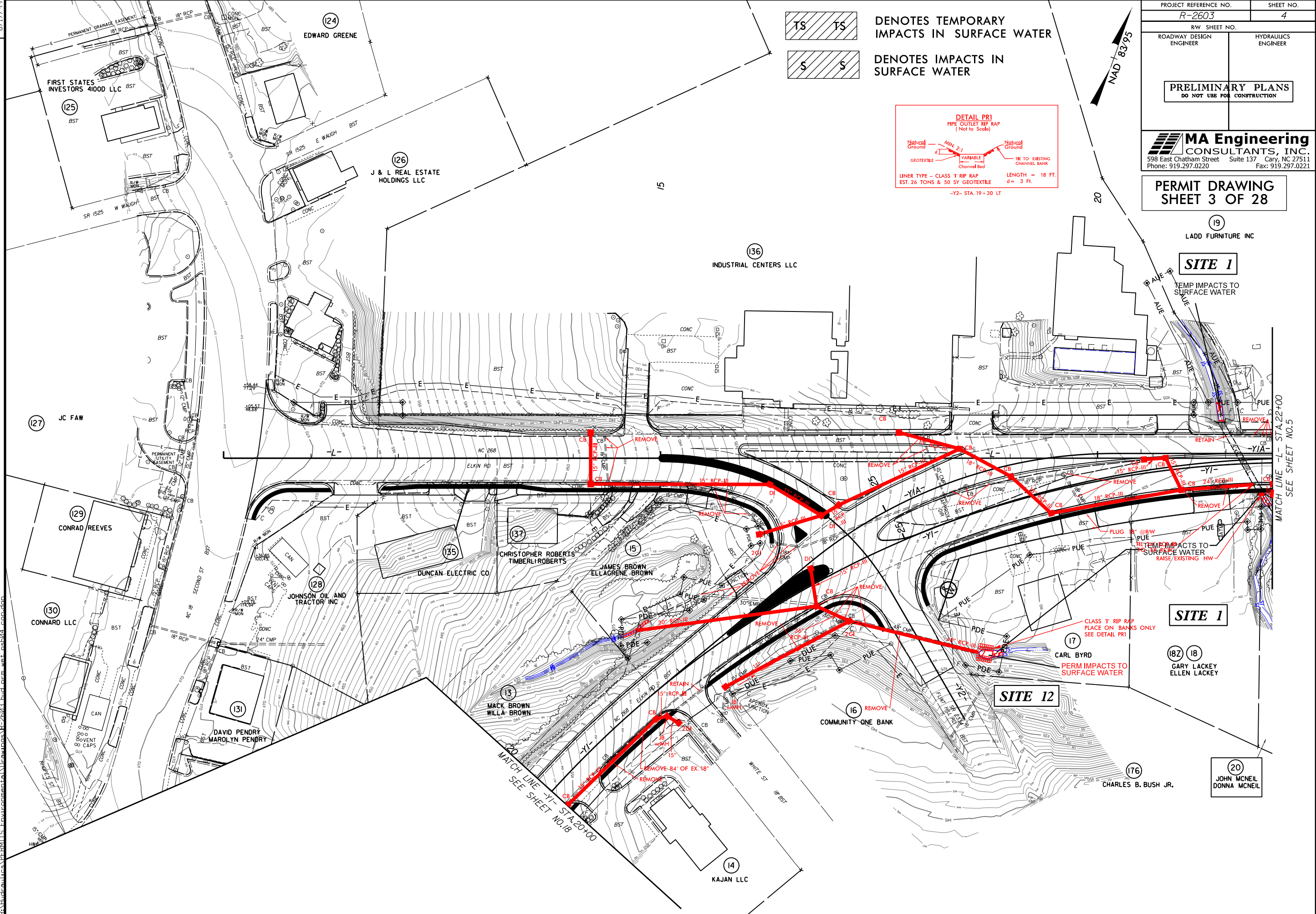
LINER TYPE - CLASS 1' RIP RAP
EST. 26 TONS & 50 SY GEOTEXTILE

-Y2- STA. 19+30 LT



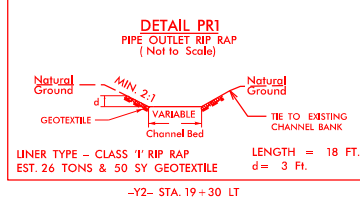
10/6/2014
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REVISIONS



DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN
SURFACE WATER



PROJECT REFERENCE NO. R-2603		SHEET NO. 4	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
MA Engineering CONSULTANTS, INC. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221			

PERMIT DRAWING
SHEET 3 OF 28

19
LADD FURNITURE INC
SITE 1
TEMP IMPACTS TO
SURFACE WATER

17
CARL BYRD
PERM IMPACTS TO
SURFACE WATER

18
GARY LACKEY
ELLEN LACKEY

20
JOHN MCNEIL
DONNA MCNEIL

176
CHARLES B. BUSH JR.

SITE 12

16
COMMUNITY ONE BANK

MATCH LINE -YI- STA 20+00
SEE SHEET NO.18

MATCH LINE -L- STA 22+00
SEE SHEET NO.5

5/28/99

M A Engineering Consultants, Inc.

598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

EXISTING GROUND

PROPOSED GRADE

LEFT DITCH GRADE

RIGHT DITCH GRADE

PROJECT REFERENCE NO.
R-2603

SHEET NO.
29

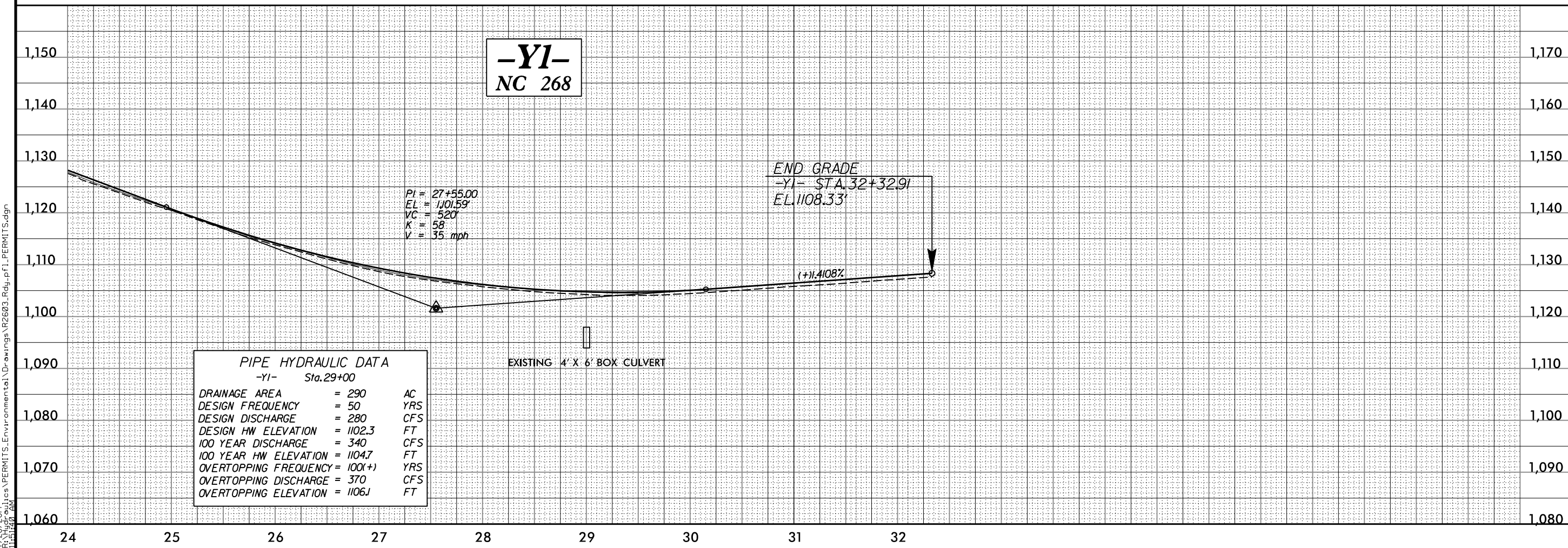
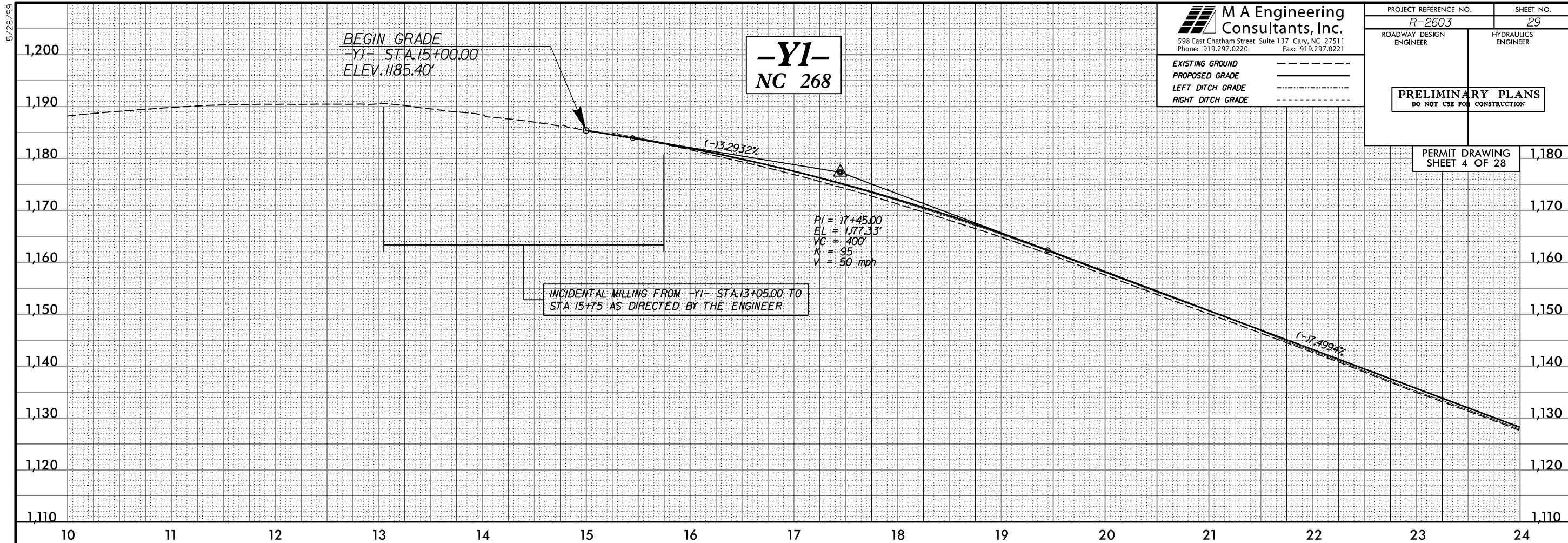
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

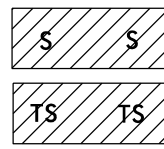
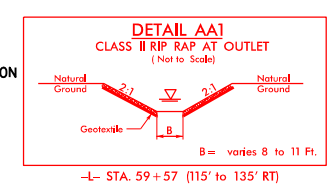
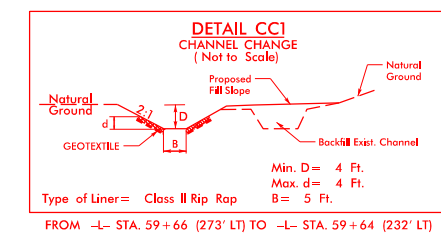
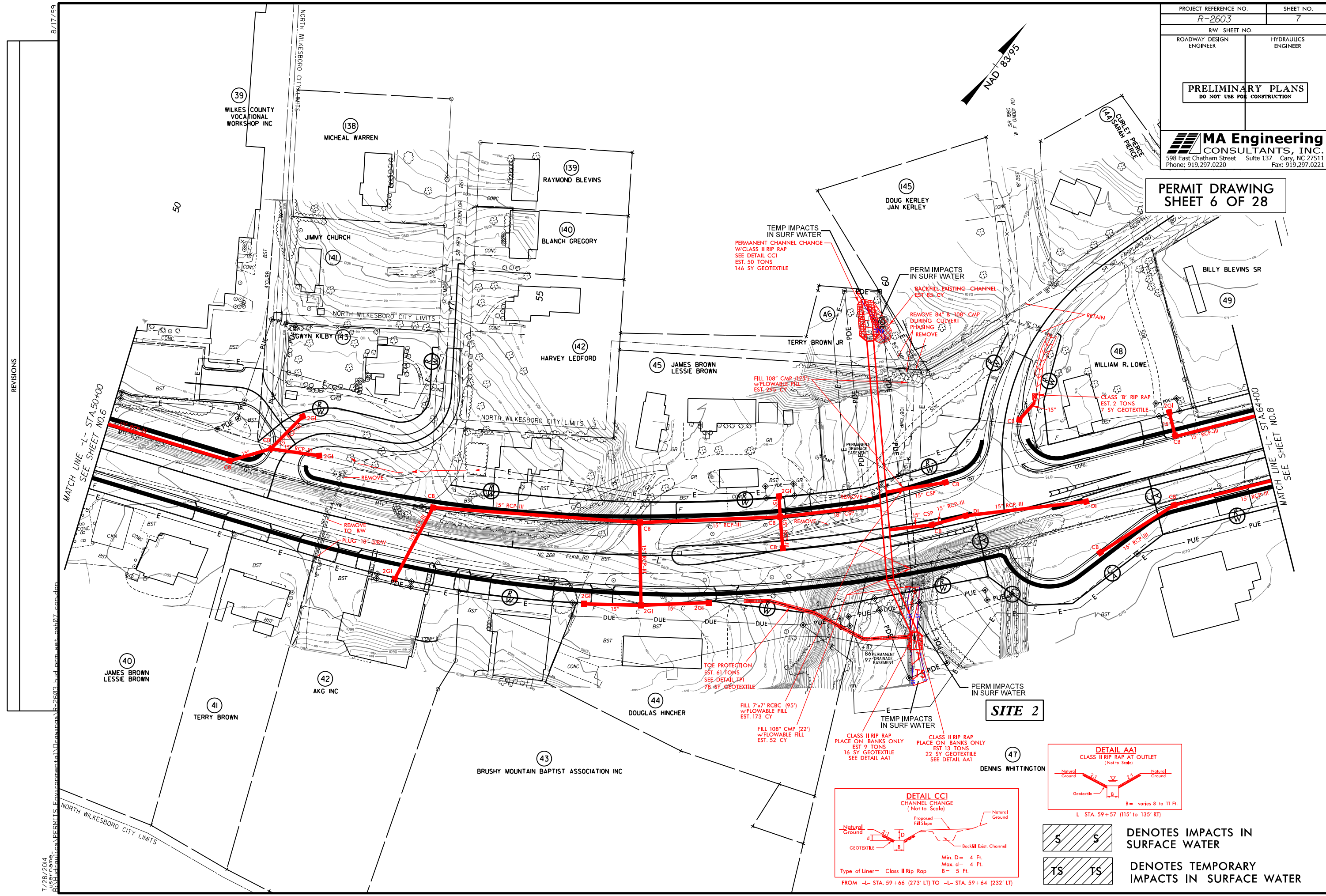
PERMIT DRAWING SHEET 4 OF 28



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PERMIT DRAWING
SHEET 6 OF 28



Denotes Impacts in Surface Water

Denotes Temporary Impacts in Surface Water

5/28/99



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Consultants, Inc.

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Phone: 919.297.0220 Fax: 919.297.0221

EXISTING GROUND -----
PROPOSED GRADE -----
LEFT DITCH GRADE -----
RIGHT DITCH GRADE -----

PROJECT REFERENCE NO.

R-2603

SHEET NO.

23

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 7 OF 28

-L-
NC 268

BM * 3
-L- STA.42+89.22
203.52' RT.
8" SPIKE IN ROOT OF 16" POPLAR TREE
ELEV.1074.70'

PI = 37+00.00
EL = 1,086.11'
VC = 430'
K = 164
V = 65 mph

PI = 43+75.00
EL = 1,076.62'
VC = 420'
K = 97
V = 50 mph

EXISTING 5' X 6' BOX CULVERT

PIPE HYDRAULIC DATA		
-L- Sta.44+02		
DRAINAGE AREA	= 145	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 120	CFS
DESIGN HW ELEVATION	= 1077.7	FT
100 YEAR DISCHARGE	= 150	CFS
100 YEAR HW ELEVATION	= 1078.3	FT
OVERTOPPING FREQUENCY	= 100(+)	YRS
OVERTOPPING DISCHARGE	= 165	CFS
OVERTOPPING ELEVATION	= 1078.6	FT

-L-
NC 268

BM * 4
-L- STA.60+50.08
180J2' LT.
8" SPIKE IN ROOT OF 10" PINE TREE
ELEV.1075.36'

PI = 52+80.00
EL = 1,103.23'
VC = 840'
K = 136
V = 55 mph

PI = 60+95.00
EL = 1,076.77'
VC = 260'
K = 97
V = 50 mph

7/28/2014
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MATCH LINE -L- STA.92+00

MATCH LINE -L- STA. 78+00

REVISIONS

7/28/2014

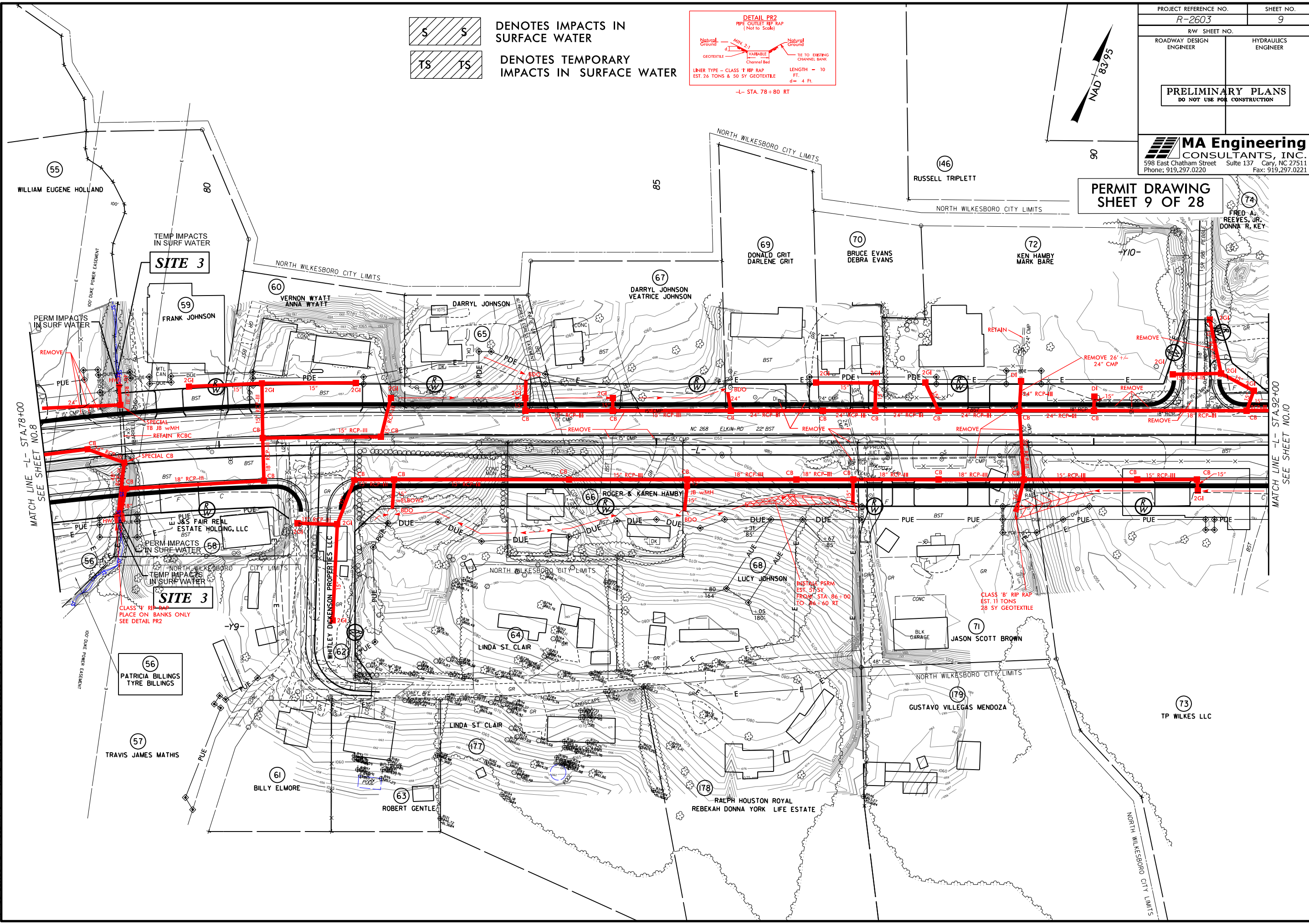
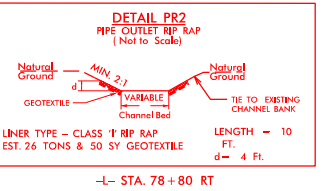
PROJECT REFERENCE NO. R-2603		SHEET NO. 9
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
MA Engineering CONSULTANTS, INC. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221		

PERMIT DRAWING
SHEET 9 OF 28



S S
DENOTES IMPACTS IN
SURFACE WATER

TS TS
DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



REVISIONS

MATCH LINE -L- STA. 78+00
SEE SHEET NO. 8

MATCH LINE -L- STA. 92+00
SEE SHEET NO. 10

5/28/99

M A Engineering
Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE

PROJECT REFERENCE NO.

R-2603

SHEET NO.

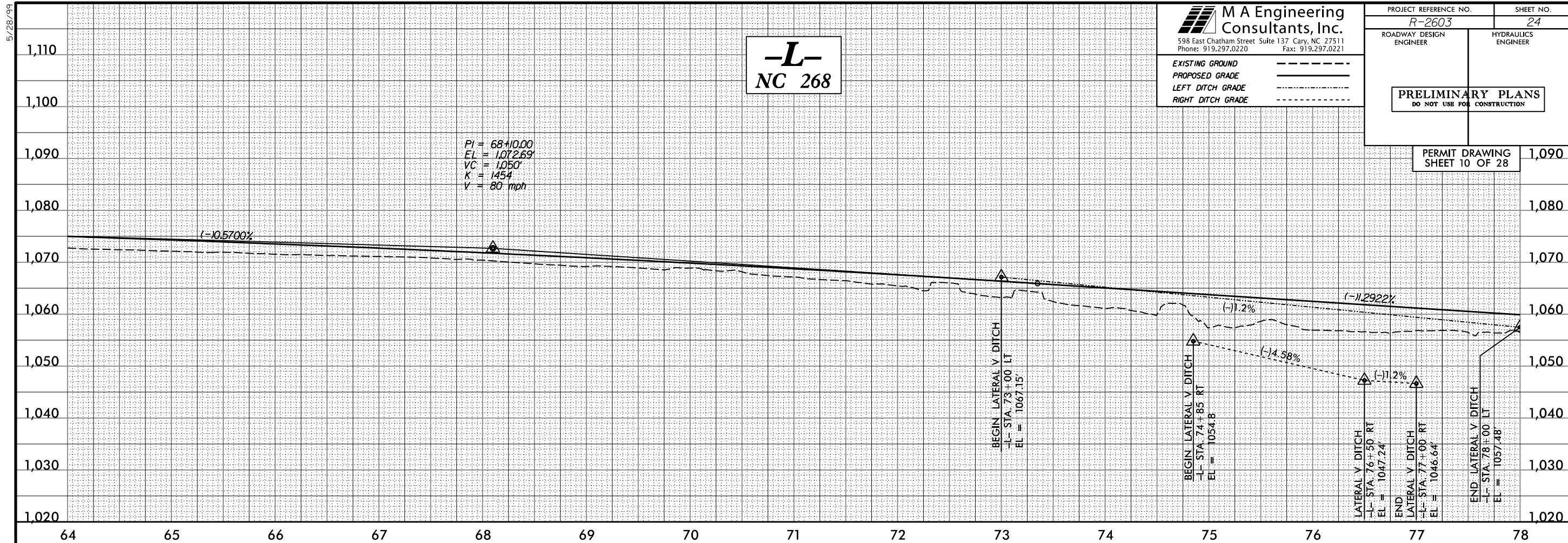
24

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 10 OF 28



7/28/2014
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BM * 5
-L- STA.79+19.79
129.22' RT.
8" SPIKE IN ROOT OF 10" FORKED MAPLE
ELEV.1055.75'

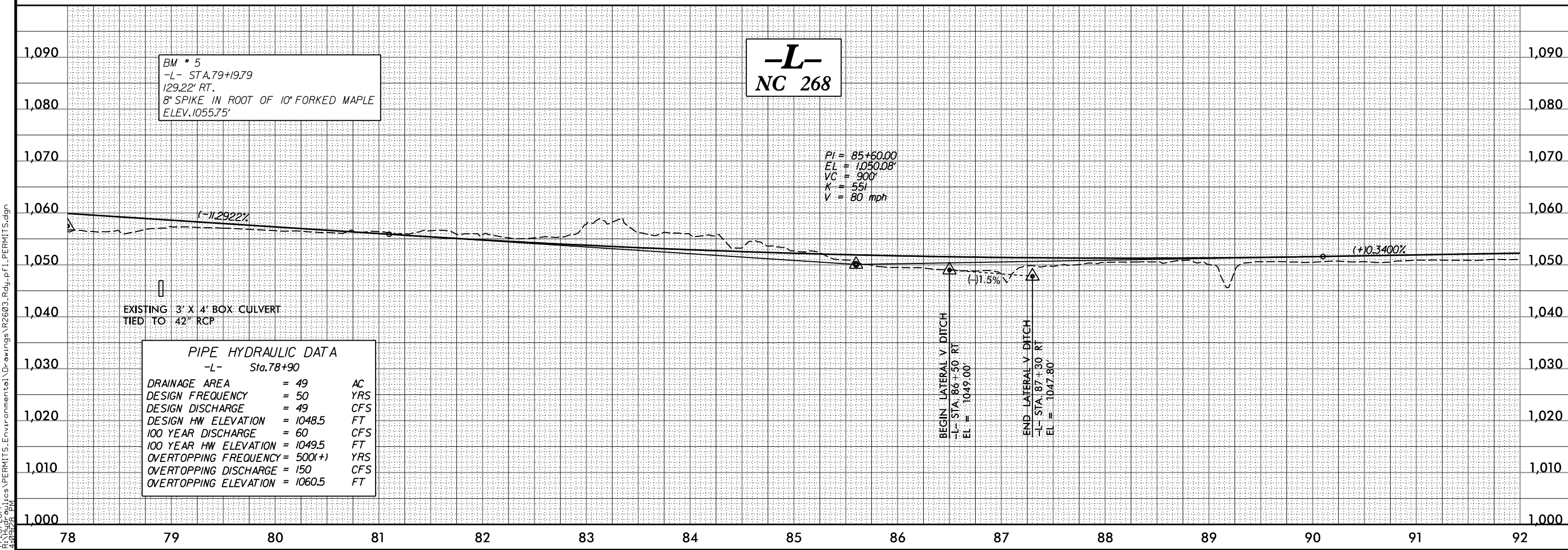
-L-
NC 268

PI = 85+60.00
EL = 1050.08'
VC = 900'
K = 551
V = 80 mph

EXISTING 3' X 4' BOX CULVERT
TIED TO 42" RCP

PIPE HYDRAULIC DATA		
-L- Sta.78+90		
DRAINAGE AREA	= 49	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 49	CFS
DESIGN HW ELEVATION	= 1048.5	FT
100 YEAR DISCHARGE	= 60	CFS
100 YEAR HW ELEVATION	= 1049.5	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 150	CFS
OVERTOPPING ELEVATION	= 1060.5	FT

7/28/2014
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74
FRED A. REEVES, JR.
DONNA R. KEY

75
WILLIAM ELLER
ALMEDA ELLER

SITE 4

CLASS 'B' RIP RAP
EST. 2 TONS EA.
7 SY GEOTEXTILE EA.

CLASS 'B' RIP RAP
EST. 3 TONS
10 SY GEOTEXTILE

TEMP IMPACTS
IN SURF WATER

PERM IMPACTS
IN SURF WATER

NC 26

73
TP WILKES LLC

F 76
FRED REEVES

77
FRED REEVES
CONSTRUCTION CO INC

(79)
TAM HUTCHINSON
MARY HUTCHINSON

MATCH LINE -L- STA. 92+00
SEE SHEET NO. 9

MATCH LINE -L- STA.105+00
SEE SHEET NO.11

MATCH LINE -YII- STA. 20+00
SEE SHEET NO. 19

78
HUTCHINSONS LLC

105 105

105 105

MATCH LINE -YII- STA. 20
 SEE SHEET NO. 11

-DRIVE3-

REVISIONS

7/28/2014 usernone- B:\Hidraulics\PERMITS_Environmental\Drawings\B-2503_bud_prm_wet_asth10.dwg	8/17/99
--	---------

Topographic map showing contour lines and two points labeled Q27.06 and Q26.56. A diagonal line labeled "MATCH LINE -YII- STA. 25+00" and "SEE SHEET NO. 11" crosses the map.

74
FRED A. REEVES, JR.
DONNA R. KEY

75
WILLIAM ELLER
ALMEDA ELLER

SITE 4

78
HUTCHINSONS LLC

MATCH LINE -L- STA.92+00
SEE SHEET NO.9

MATCH LINE -L- STA.105+00
SEE SHEET NO.11

73
TP WILKES LLC

77
FRED REEVES
CONSTRUCTION CO INC

79
TAM HUTCHINSON
MARY HUTCHINSON

MRS ROBY SHUMATE

REVISIONS

7/28/2014 usernone- B:\Hidraulics\PERMITS_Environmental\Drawings\B-2503_bud_prm_wet_ast10_cao.doc	8/17/99
---	---------

DETAIL EB1

RIP RAP AT BRIDGE BENT AND STREAM EMBANKMENT

(Not to Scale)

PROP. BRIDGE BENT

2'

GEOTEXTILE

Type of Liner = 55 TONS, CL II Rip-Rap
Geotextile = 60 sy

— STA. 147 + 65

DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

SITE 13

MATCH LINE -L- STA.105+00
SEE SHEET NO.10

MATCH LINE -L- STA.119+00

REVISION	03/2013 RW REVISION: REALIGNED -YTL- TO ITS EXISTING LOCATION ON PARCEL 78 - KNW 03/2014 RW REVISION: SUBDIVIDED PARCEL 78 INTO PARCELS 78 & 78A; ADDED PROPERTY C
----------	---

9/18/2014
username=
R:\Hydraulics\PERMITS Environmental\Drawings\8-2603 bud perm wet ospil.dwg

DETAIL P1

PRECASTED SCOUR HOLE

"NOT TO SCALE"

PLAN VIEW

INSTALL LEVEL AND FLUSH WITH NATURAL GROUND

Pipe or Ditch Outlet

Perforated Square Reinforced Concrete Scour Hole

Square Perforated Scour Hole (PSH)

Flow Pipe in (basin not shown for clarity)

12" MIN DIA

12" MIN DIA

SECTION A-A

PIPE (ø = 15" OR 18")

FILL SLOPE

INFLOW

PSRM

NATURAL GROUND

MIN. 1" TUCK

LINEAR, CLASS B BITUM' WITH FILTER FABRIC

B = 2'
D = 1'
W = 4'

308

DETAIL EB1

RIP RAP AT BRIDGE BENT AND STREAM EMBANKMENT
(Not to Scale)

PROP. BRIDGE BENT

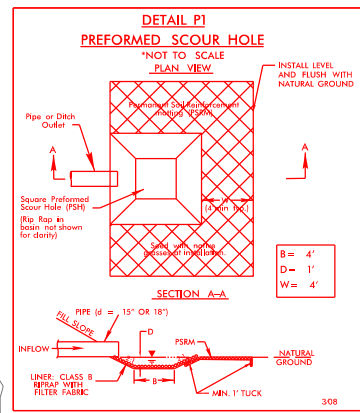
2'

GEOTEXTILE

Type of Liner = 55 TONS/CL II Rip-Rap
Geotextile = 60 sy

— STA. 117 + 65

DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

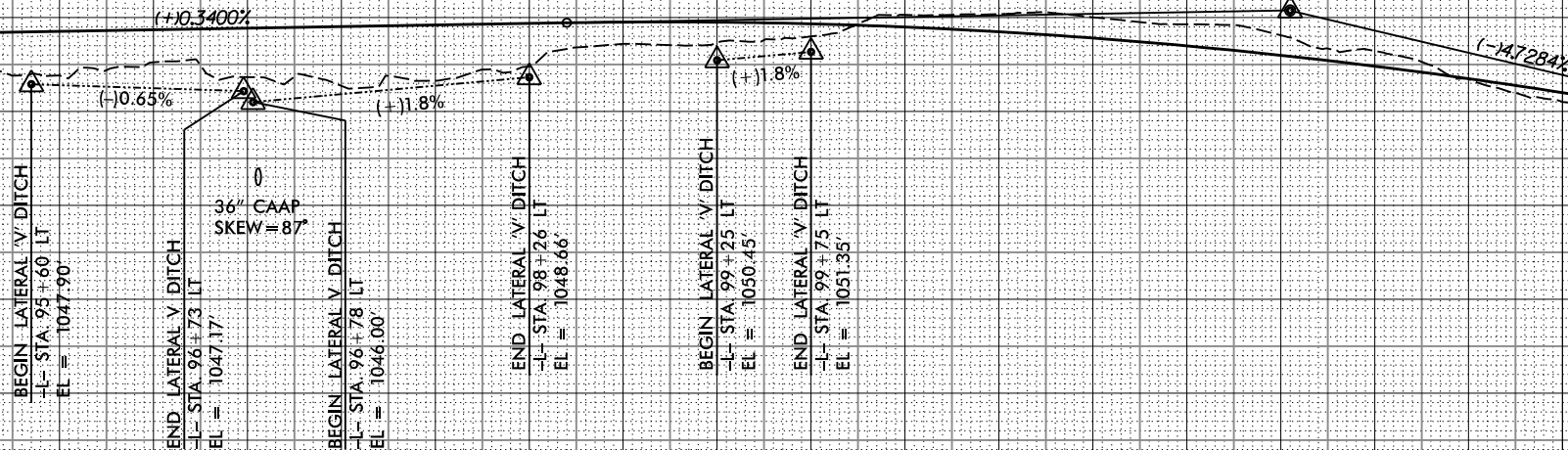


9/18/2014
username:
R:\Hydraul

PI = 102+30.00
EL = 1055.76'
VC = 770'
K = 152
V = 60 mph

-L-
NC 268

PIPE HYDRAULIC DATA		
-L- Sta. 96+81		
DRAINAGE AREA	= 21	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 35	CFS
DESIGN HW ELEVATION	= 1049	FT
100 YEAR DISCHARGE	= 42	CFS
100 YEAR HW ELEVATION	= 1049.9	FT
OVERTOPPING FREQUENCY	= 100(+)	YRS
OVERTOPPING DISCHARGE	= 46	CFS
OVERTOPPING ELEVATION	= 1050.5	FT



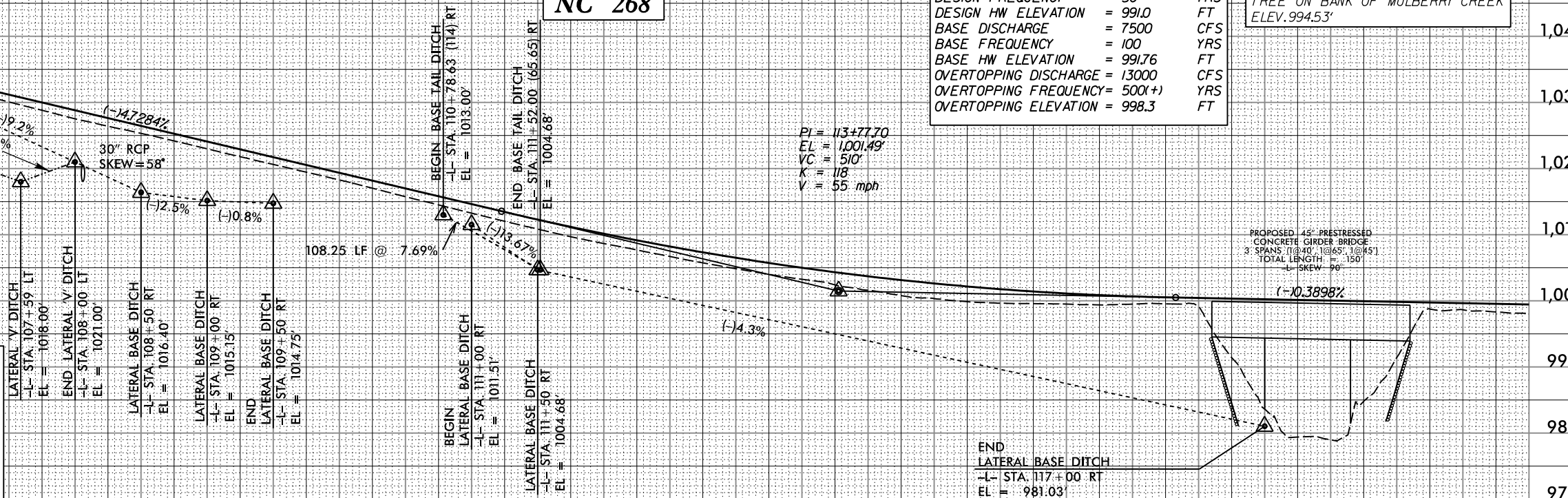
-L-
NC 268

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 6500	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 991.0	FT
BASE DISCHARGE	= 7500	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 991.76	FT
OVERTOPPING DISCHARGE	= 13000	CFS
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING ELEVATION	= 998.3	FT

BM * 6
-L- STA. 118+08.33
209.61' LT.
8" SPIKE IN ROOT OF 10" WALNUT
TREE ON BANK OF MULBERRY CREEK
ELEV. 994.53'

PI = 113+77.70
EL = 1001.49'
VC = 510'
K = 118
V = 55 mph

PIPE HYDRAULIC DATA		
-L- Sta. 108+06 LT		
DRAINAGE AREA	= 18	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 30	CFS
DESIGN HW ELEVATION	= 1022.3	FT
100 YEAR DISCHARGE	= 36	CFS
100 YEAR HW ELEVATION	= 1022.8	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 50	CFS
OVERTOPPING ELEVATION	= 1025.1	FT



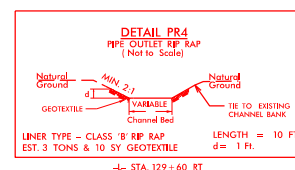
PROPOSED 45'-PRESTRESSED
CONCRETE GIRDER BRIDGE
3 SPANS (110'40', 110'63', 110'45')
TOTAL LENGTH = 331'
SKEW = 90°

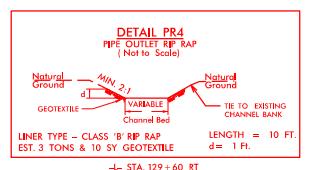
DENOTES FILL IN
WETLAND

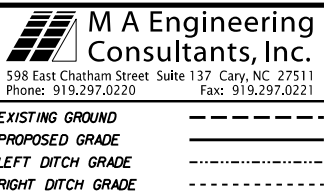
DENOTES IMPACTS IN
SURFACE WATER

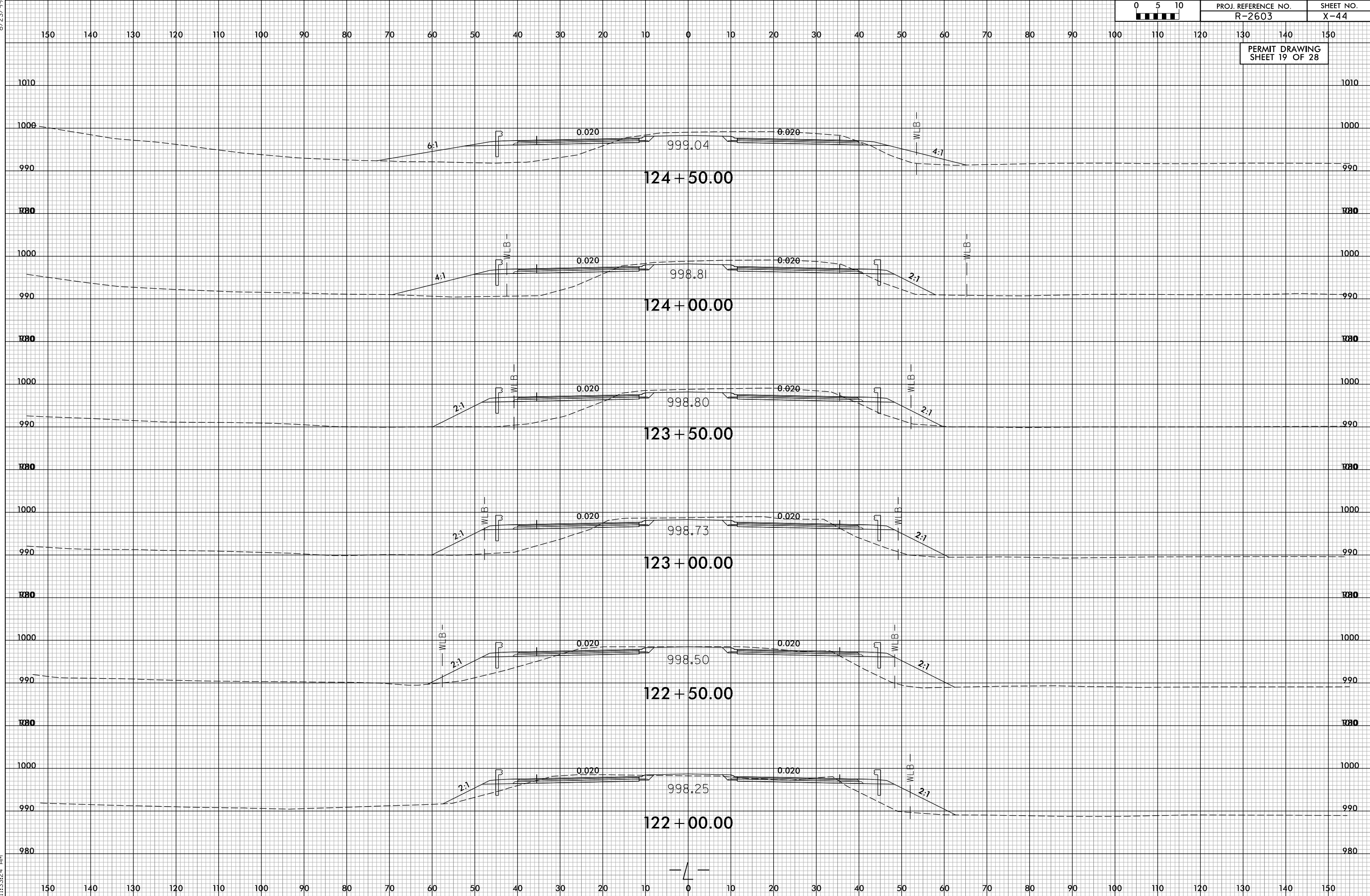
DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

MATCH LINE -L- STA. 133+00
SEE SHEET NO. 13









8/17/99

SHEILA & RONNIE CHURCH

(88)

JAMES TRICE
PATRICIA TRICE

(155)

CARY PEARSON
RUTH PEARSON

(152)

CHRISTY HALL

(151)

CHRIS SHEW
PATRICIA SHEW

(153)

NANCY JOHNSTON

(154)

VICTOR GARCIA

(156)

BERM DITCH
SEE RDWY STD. 240.01
STATION 12+50 TO 13+90
BERM DITCH
SEE RDWY STD. 240.01
STATION 14+60 TO 15+50

CARL YOUNCE
JUVIE YOUNCE

(158)

RAUL RIVAS

(89)

CHRISTOPHER WATSON

(90)

MATCH LINE -L- STA. 145+00
SEE SHEET NO. 13

WILLIAM BLACKBURN
EVELYN BLACKBURN

(82)

ROYALE LAZENBY

(91)

SITE 9A

F C JOHNSON HEIRS

(92)

TS TS
DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

NAD 83 95

155

PROJECT REFERENCE NO. R-2603		SHEET NO. 14	
R/W SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
MA Engineering CONSULTANTS, INC. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221			

PERMIT DRAWING
SHEET 20 OF 28

MATCH LINE -L- STA. 159+00
SEE SHEET NO. 15

CLASS 'B' RIP RAP
EST. 1 TONS
5 SY GEOTEXTILE

SITE 9B

SITE 9C

ROBERT WYATT

(94)

ALICE PREVETTE

(93)

REVISIONS

10/6/2014
user:none
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DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

NAD 83/95

MATCH LINE -L- STA.145+00
SEE SHEET NO.13

MATCH LINE -L- STA.159+00
SEE SHEET NO.15

SITE 9A

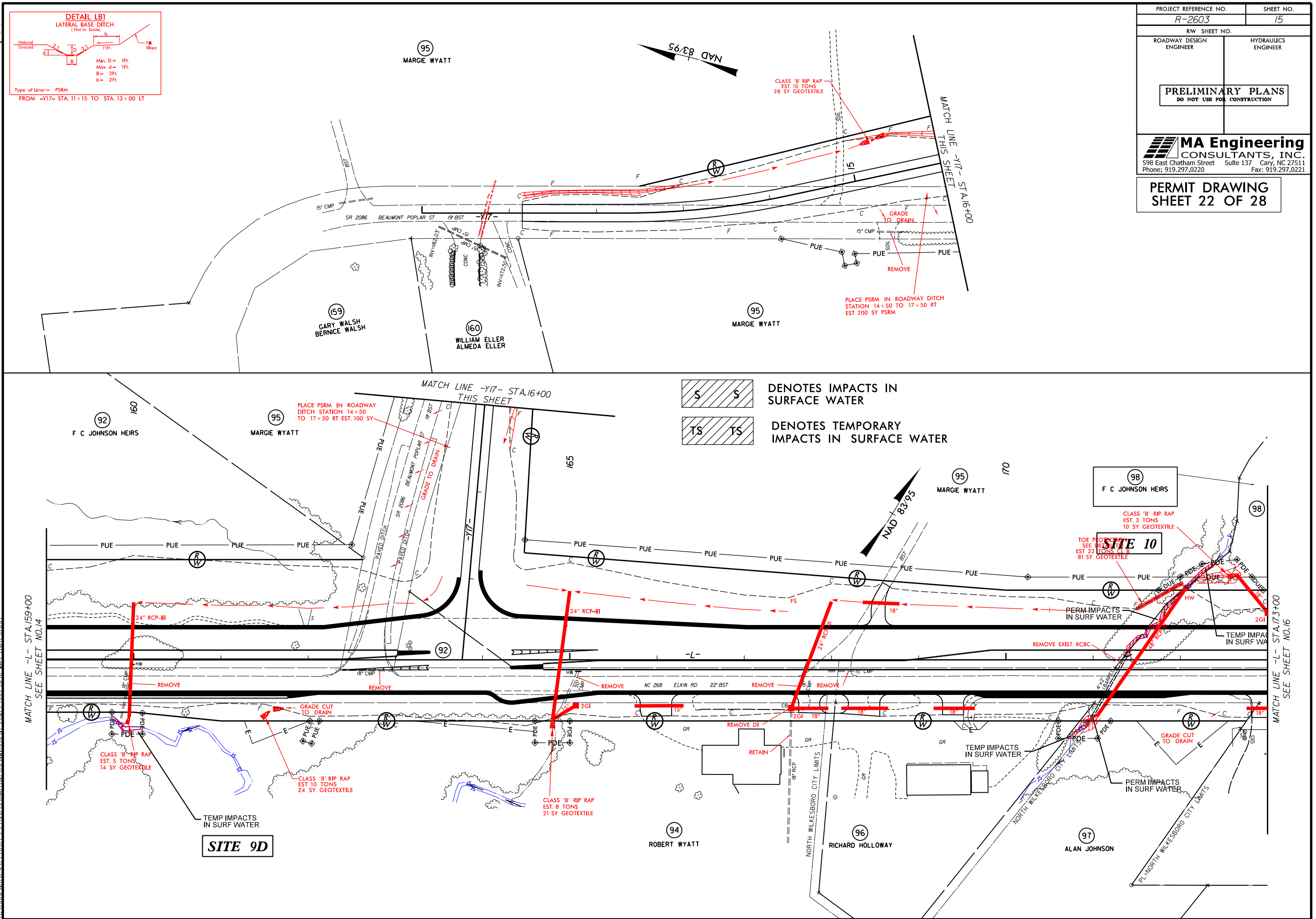
SITE 9B

SITE 9C

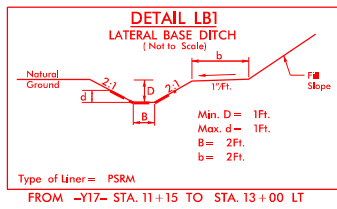
REVISIONS

0/6/2014	user_name=RichHydrocoults\B-2503_hud_perm_wet_ash14_candon	8/17/99
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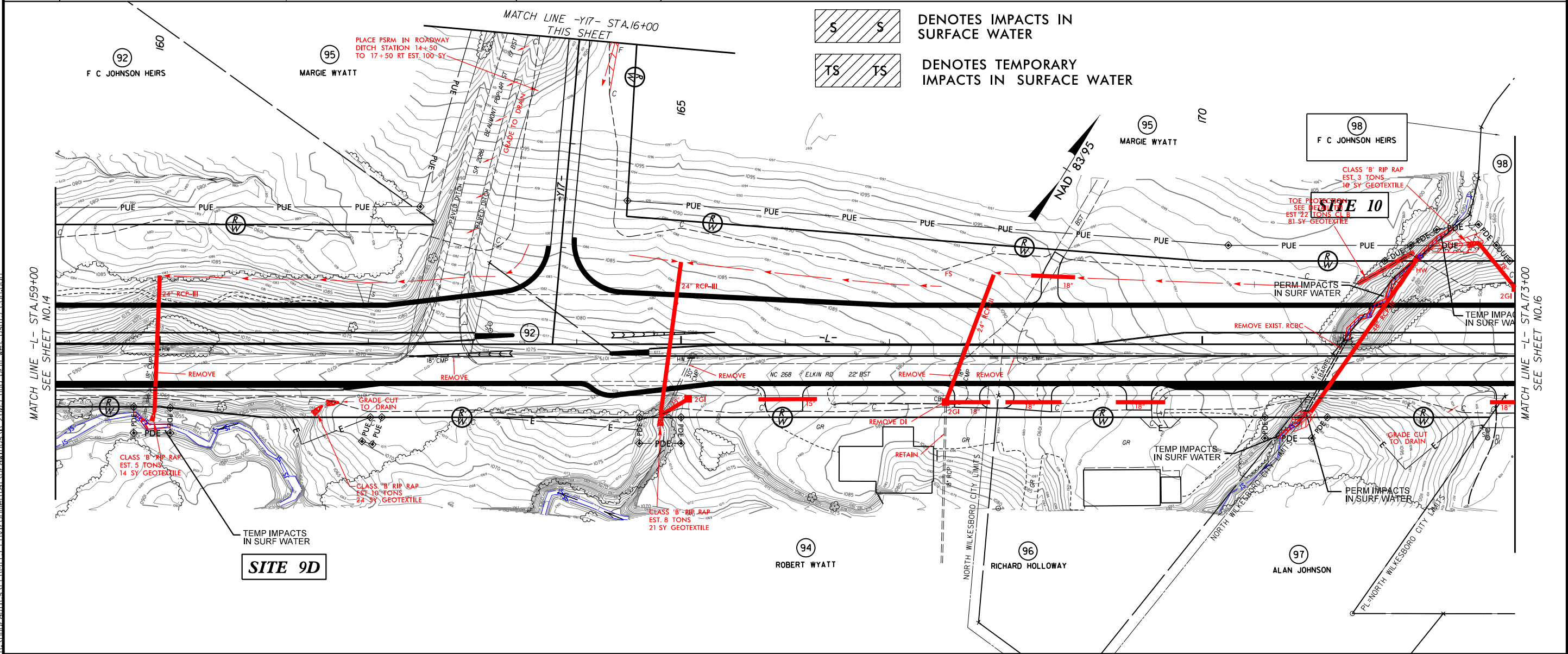
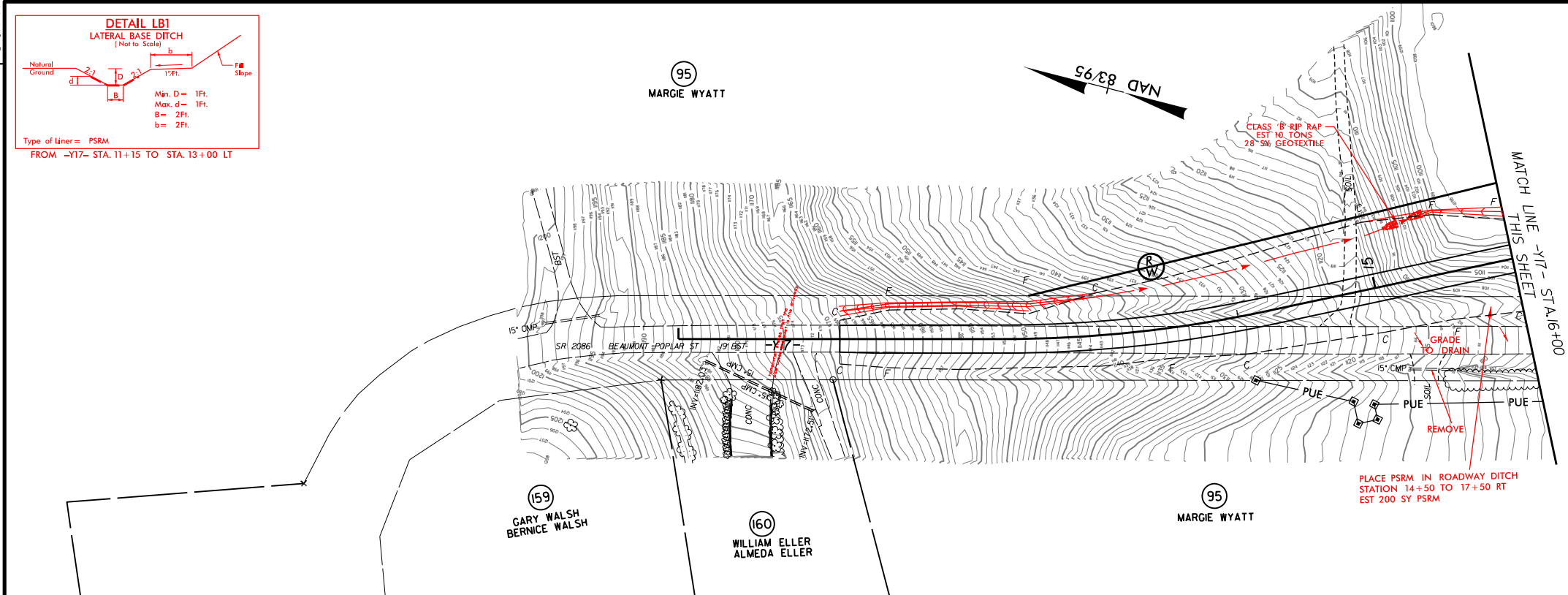
REVISIONS



8/17/99



PROJECT REFERENCE NO. R-2603		SHEET NO. 15	
R/W SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
MA Engineering CONSULTANTS, INC. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221			
PERMIT DRAWING SHEET 23 OF 28			

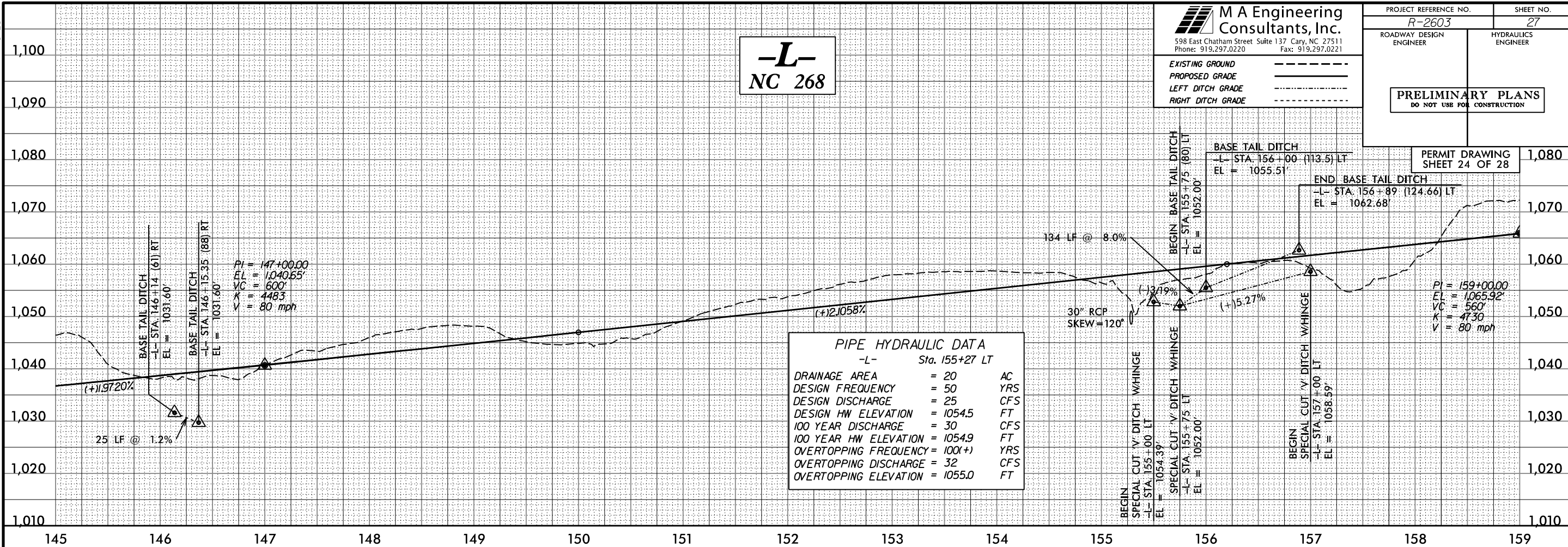


REVISIONS

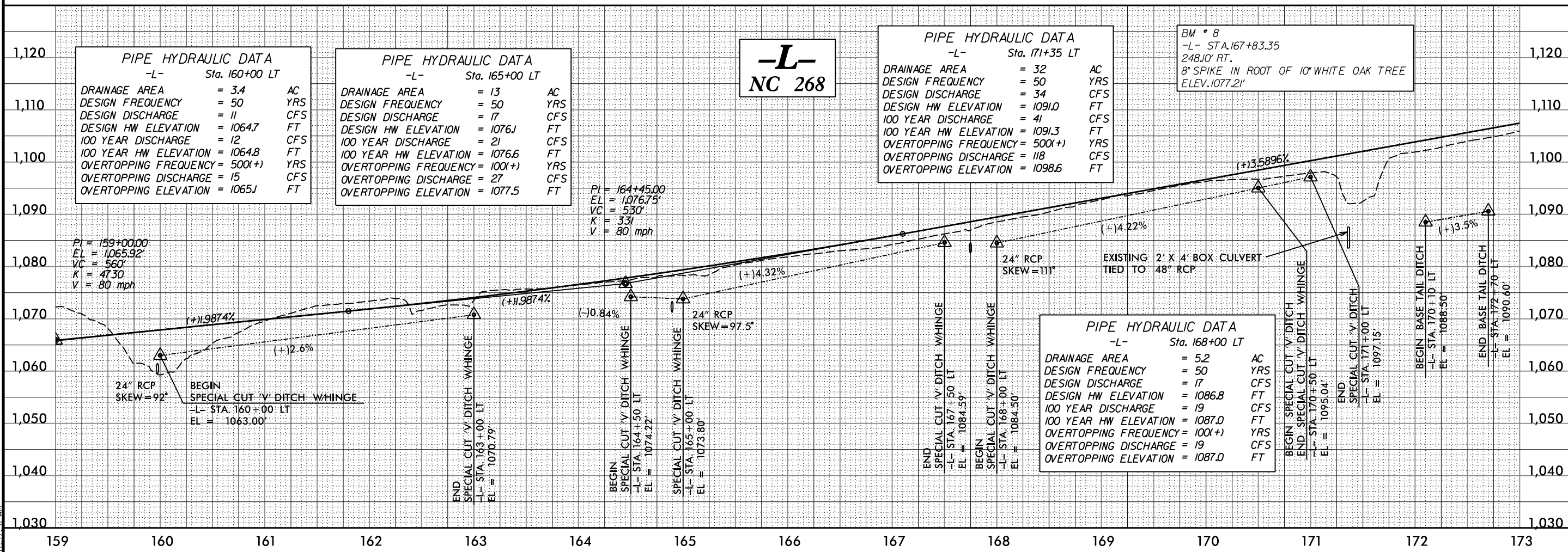
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5/28/99

-L- NC 268



-L- NC 268



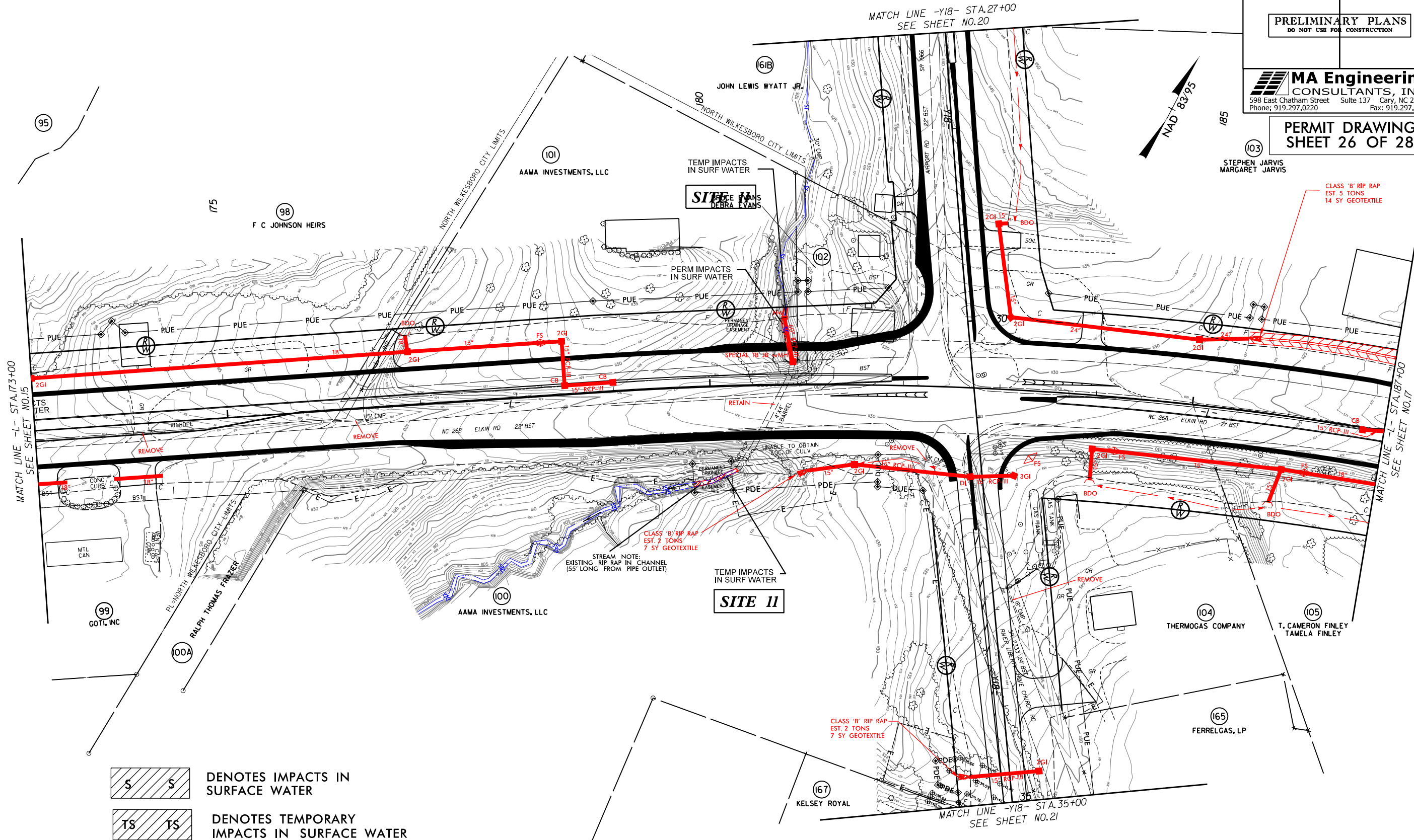
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PROJECT REFERENCE NO. R-2603		SHEET NO. 16	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
 MA Engineering CONSULTANTS, INC. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221			

PERMIT DRAWING
SHEET 26 OF 28

STEPHEN JARVIS
MARGARET JARVIS

CLASS 'B' RIP RAP
EST. 5 TONS
14 SY GEOTEXTILE



 DENOTES IMPACTS IN SURFACE WATER

 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

5/28/99

EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE

-L-
NC 268

PIPE HYDRAULIC DATA		
-L-	Sta. 180+78 LT	
DRAINAGE AREA	= 36	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 38	CFS
DESIGN HW ELEVATION	= 1115.3	FT
100 YEAR DISCHARGE	= 46	CFS
100 YEAR HW ELEVATION	= 1115.6	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 200	CFS
OVERTOPPING ELEVATION	= 1127.2	FT

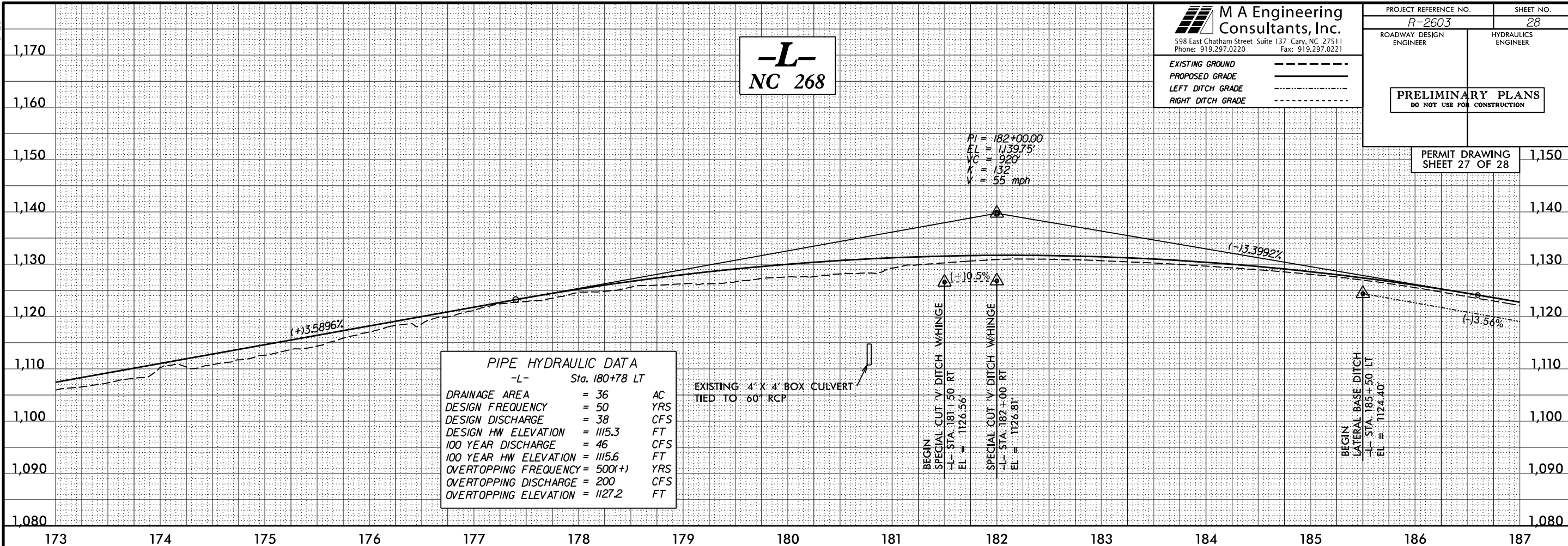
EXISTING 4' X 4' BOX CULVERT
TIED TO 60" RCP

PI = 182+00.00
EL = 1139.75'
VC = 920'
K = 132
V = 55 mph

BEGIN
SPECIAL CUT-V DITCH WHINGE
-L- STA. 181+50 RT
EL = 1126.56'

SPECIAL CUT-V DITCH WHINGE
-L- STA. 182+00 RT
EL = 1126.81'

BEGIN
LATERAL BASE DITCH
-L- STA. 185+50 LT
EL = 1124.40'



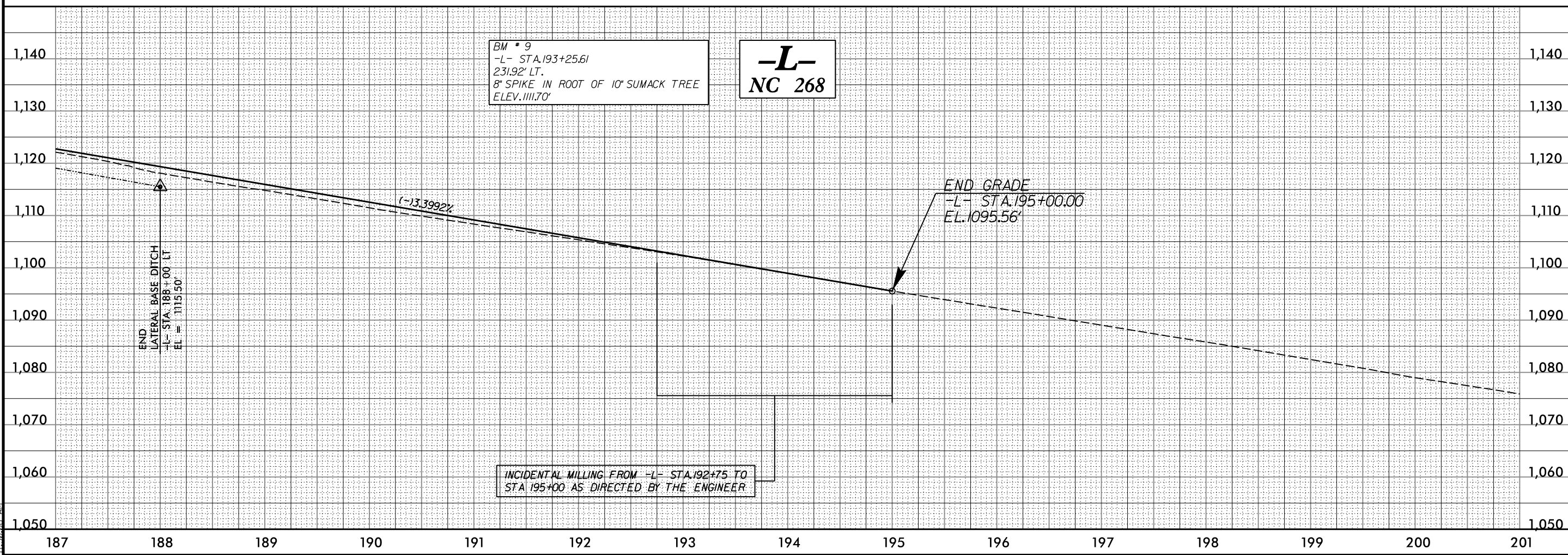
BM * 9
-L- STA. 193+25.61
231.92' LT.
8" SPIKE IN ROOT OF 10" SUMACK TREE
ELEV. 1111.70'

-L-
NC 268

END GRADE
-L- STA. 195+00.00
EL. 1095.56'

END
LATERAL BASE DITCH
-L- STA. 188+00 LT
EL = 1115.50'

INCIDENTAL MILLING FROM -L- STA. 192+75 TO
STA 195+00 AS DIRECTED BY THE ENGINEER



7/28/2014
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WETLAND PERMIT IMPACT 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)
1	Y1 28+73 to 29+30	72" RCP							<0.01		37	
2	L 59+55 to 59+86	8' x 8' RCBC						0.02	0.01	106	54	
		BANK STABILIZATION						< 0.01		20		
3	L 78+78 to 78+95	48" RCP						< 0.01	<0.01	80	30	
		BANK STABILIZATION						< 0.01		10		
4	L 96+13 to 96+82	36" RCP						0.01	<0.01	123	20	
5(T)	L 122+48 to 124+10	Fill	0.13									
6	L 122+42 to 124+54	Fill	0.17									
7	L 126+89 to 127+23	2 @ 30" RCP						0.01	<0.01	120	35	
		Rip Rap in channel						< 0.01		38		
		BANK STABILIZATION						< 0.01		10		
8	L 129+60	15" RCP						0.01	<0.01	70	20	
		BANK STABILIZATION								12		
9A	L 149+90 to 150+18	30" RCP-III							<0.01		30	
9B	L 157+36 to 157+63	15" RCP							<0.01		20	
9C	L 158+60 to 158+71	15" RCP							<0.01		12	
9D	L 159+75 to 160+10	24" RCP							<0.01		38	
10	L 170+73 to 172+41	48" RCP						0.01	0.01	123	68	
11	L 179+79 to 180+87	60" Pipe						< 0.01	0.01	47	59	
12	Y1A 25+25 to 25+68	30" Pipe						< 0.01	<0.01	18	27	
		Bank Stabilization						< 0.01		18		
13	L 117+58	Bank Stabilization						< 0.01		35		
		Causeway							<0.01		29	
TOTALS:			0.29					0.06	0.03	830	479	

NOTES:

(T) Indicates Total Take

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WILKES COUNTY
WBS - 36001.1.2 (R-2603)

SHEET 28 of 28

9/30/2014

R-2603 NES Narrative for Utility Impacts

There will be no impacts to environmentally sensitive areas from installation of any underground utilities (i.e. water, sewer lines)...as per design consultant, any underground utility crossing through wetlands or jurisdictional streams will be bored under these areas so that no ground surface will be disturbed inside these areas.

There will be hand-clearing for overhead power lines (15' each side of power line) and permanent excavation for one power pole installation as shown on the Utilities Sheet UC-1 (reference roadway sheet UC-12).

UTILITY WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS						SURFACE WATER IMPACTS				
			Permanent	Temp.	Excavation	Excavation	Mechanized	Hand	Permanent	Temp.	Existing	Existing	
Site	-L- Station	Structure	Fill In	Fill In	in	in	Clearing	Clearing	SW	SW	Channel	Channel	Natural
No.	(From/To)	Size / Type	Wetlands	Wetlands	Wetlands	Wetlands	in Wetlands	Wetlands	impacts	impacts	Permanent	Temp.	Design
			(ac)	(ac)	(ac)	(ac)	(ac)	(ac)	(ac)	(ac)	(ft)	(ft)	(ft)
UC1	Sta 121+70R to Sta 124+43R	overhead power line - hand clear 15' each side of power line						0.1 AC (4300 SQFT)					
UC1	Sta 123+74R	install power pole				< 0.01 (5 SQFT)							
TOTALS:						<0.01 (10 SQFT)		0.1 AC (4300 SQFT)					

* total calculated summing square footage at each site and then rounding to the nearest one-hundredth acre

SHEET 3 OF 3

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WILKES COUNTY
WBS - 37044.1.1 (R-2603)

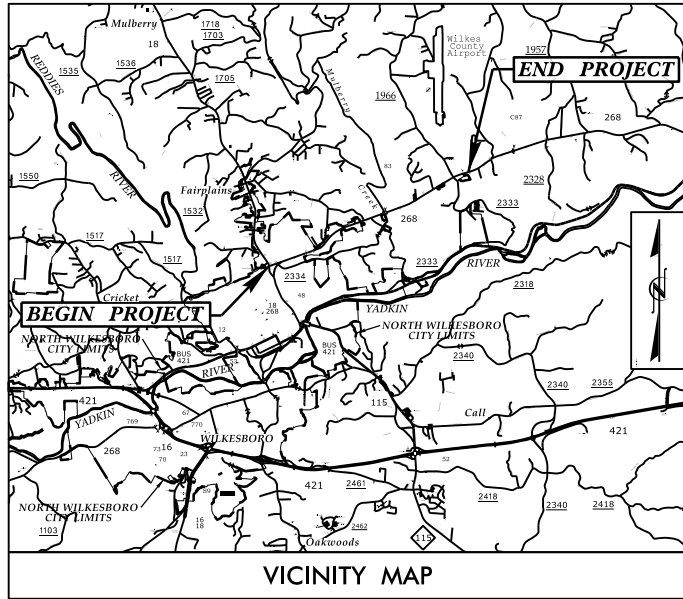
(08-04-2014)

09/08/99

TIP PROJECT: R-2603

CONTRACT:

See Sheet 1-A For Index of Sheets



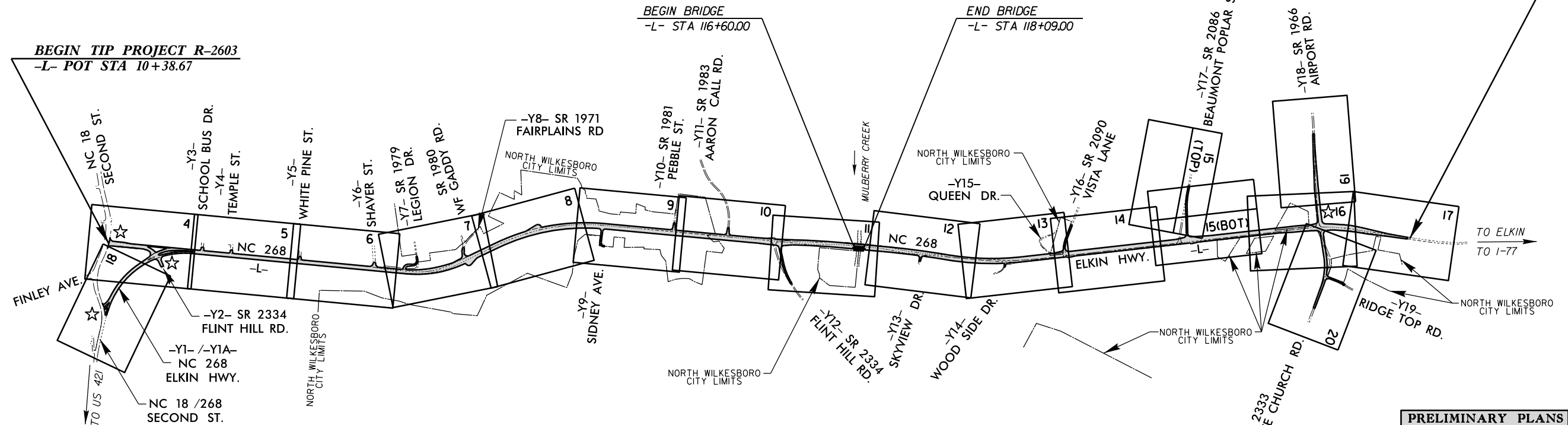
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WILKES COUNTY

LOCATION: NC 268 FROM MULTI-LANES EAST
OF NC 18 TO SR 1966 (AIRPORT ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, CURB & GUTTER,
SIGNALS, STRUCTURES, AND SIGNING

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2603	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
36001.1.2	STP-0268(15)	PE	
36001.2.1	STP-0268(16)	RW, UTILITIES	



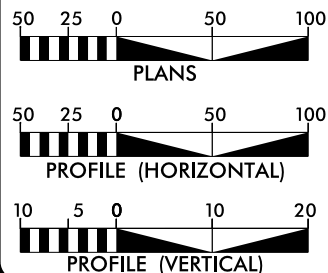
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF NORTH WILKESBORO.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

- ** 40 MPH FROM BEGINNING OF PROJECT TO FAIRPLAINS RD.
50 MPH FROM FAIRPLAINS RD. TO END OF PROJECT
- *** MINOR ARTERIAL FROM BEGINNING OF PROJECT TO MULBERRY CREEK
MAJOR COLLECTOR FROM MULBERRY CREEK TO END OF PROJECT

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NCDOT CONTACT:
BRENDA MOORE, PE
PROJECT ENGINEER
ROADWAY DESIGN UNIT

GRAPHIC SCALES



DESIGN DATA

ADT 2015 = 20,540
ADT 2035 = 26,400
DHV = 10 %
D = 65 %
T = 6 % *
V = **
* TTST 2% + DUAL 4%
FUNC CLASS = ***
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT R-2603 = 3.474 mi.
LENGTH STRUCTURE PROJECT R-2603 = 0.028 mi.
TOTAL LENGTH OF TIP PROJECT R-2603 = 3.502 mi.
LENGTH OF PROJECT BASED ON -L-

Prepared for:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., NC, 27610
Prepared by:
MA ENGINEERING CONSULTANTS, INC.
598 E. CHATHAM STREET, SUITE 137
CARY, NORTH CAROLINA 27511
(919) 297-0220

2012 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE:
APRIL 30, 2013
LETTING DATE:
MAY 19, 2015

BURKE EVANS, PE
PROJECT ENGINEER
K. S. HUTCHENS, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.
ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.



Note: Not to Scale

**S.U.E. = Subsurface Utility Engineering*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	-----*
Property Monument	□ ECM
Parcel/Sequence Number	123
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	---MLB---
Proposed Wetland Boundary	---MLB---
Existing Endangered Animal Boundary	---EAB---
Existing Endangered Plant Boundary	---EPB---
Known Soil Contamination: Area or Site	☠☠
Potential Soil Contamination: Area or Site	☠☠?

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□ †
Building	□
School	□ F
Church	□ C
Dam	-----

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
Jurisdictional Stream	---JS---
Buffer Zone 1	---BZ 1---
Buffer Zone 2	---BZ 2---
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	⬇
Proposed Lateral, Tail, Head Ditch	----- FLW
False Sump	◇

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite R/W Marker	-----
Proposed Control of Access Line with Concrete C/A Marker	-----
Existing Control of Access	-----
Proposed Control of Access	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Drainage / Utility Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed Aerial Utility Easement	-----

Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	---C---
Proposed Slope Stakes Fill	---F---
Proposed Curb Ramp	-----
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----

Equality Symbol

Pavement Removal

VEGETATION:

Single Tree	☼
Single Shrub	☼
Hedge	-----
Woods Line	-----

Orchard	-----
Vineyard	-----

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	-----
Paved Ditch Gutter	-----
Storm Sewer Manhole	-----
Storm Sewer	-----

UTILITIES:

POWER:	
Existing Power Pole	-----
Proposed Power Pole	-----
Existing Joint Use Pole	-----
Proposed Joint Use Pole	-----
Power Manhole	-----
Power Line Tower	-----
Power Transformer	-----
U/G Power Cable Hand Hole	-----
H-Frame Pole	-----
Recorded U/G Power Line	-----
Designated U/G Power Line (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	-----
Proposed Telephone Pole	-----
Telephone Manhole	-----
Telephone Booth	-----
Telephone Pedestal	-----
Telephone Cell Tower	-----
U/G Telephone Cable Hand Hole	-----
Recorded U/G Telephone Cable	-----
Designated U/G Telephone Cable (S.U.E.*)	-----
Recorded U/G Telephone Conduit	-----
Designated U/G Telephone Conduit (S.U.E.*)	-----
Recorded U/G Fiber Optics Cable	-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----

WATER:

Water Manhole	-----
Water Meter	-----
Water Valve	-----
Water Hydrant	-----
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
Above Ground Water Line	-----

TV:

TV Satellite Dish	-----
TV Pedestal	-----
TV Tower	-----
U/G TV Cable Hand Hole	-----
Recorded U/G TV Cable	-----
Designated U/G TV Cable (S.U.E.*)	-----
Recorded U/G Fiber Optic Cable	-----
Designated U/G Fiber Optic Cable (S.U.E.*)	-----

GAS:

Gas Valve	-----
Gas Meter	-----
Recorded U/G Gas Line	-----
Designated U/G Gas Line (S.U.E.*)	-----
Above Ground Gas Line	-----

SANITARY SEWER:

Sanitary Sewer Manhole	-----
Sanitary Sewer Cleanout	-----
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
Recorded SS Forced Main Line	-----
Designated SS Forced Main Line (S.U.E.*)	-----

MISCELLANEOUS:

Utility Pole	-----
Utility Pole with Base	-----
Utility Located Object	-----
Utility Traffic Signal Box	-----
Utility Unknown U/G Line	-----
U/G Tank; Water, Gas, Oil	-----
Underground Storage Tank, Approx. Loc.	-----
A/G Tank; Water, Gas, Oil	-----
Geoenvironmental Boring	-----
U/G Test Hole (S.U.E.*)	-----
Abandoned According to Utility Records	-----
End of Information	-----

PROJECT REFERENCE NO.
R-2603

SHEET NO.
2

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

PAYEMENT DESIGN ENGINEER

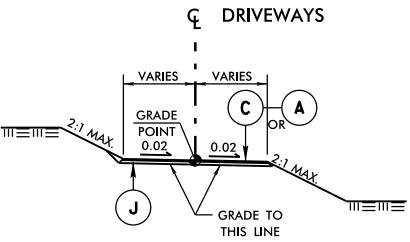
PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

 M A Engineering Consultants, Inc.

598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

PAVEMENT SCHEDULE			
A	6" PORTLAND CEMENT CONCRETE PAVEMENT.	J	6" AGGREGATE BASE COURSE
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.	R1	2'-6" CONCRETE CURB & GUTTER
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YARD PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1.5" OR GREATER THAN 2" IN DEPTH.	R2	1'-6" CONCRETE CURB & GUTTER
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.	R3	2'-9" CONCRETE CURB & GUTTER
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YARD PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1.5" OR GREATER THAN 2" IN DEPTH.	R4	5" MONOLITHIC CONCRETE ISLAND
C5	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YARD.	S	4" CONCRETE SIDEWALK
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.	T	EARTH MATERIAL
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.	U	EXISTING PAVEMENT
D3	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YARD.	W1	WEDGING (VARIABLE DEPTH ASPHALT PAVEMENT, SEE DETAIL ON THIS SHEET)
D4	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.	W2	WEDGING (VARIABLE DEPTH ASPHALT PAVEMENT, SEE DETAIL ON THIS SHEET)
E1	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YARD.	W3	WEDGING (VARIABLE DEPTH ASPHALT PAVEMENT, SEE DETAIL ON THIS SHEET)
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.		
E3	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.		
E4	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YARD.		
E5	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.	PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.	



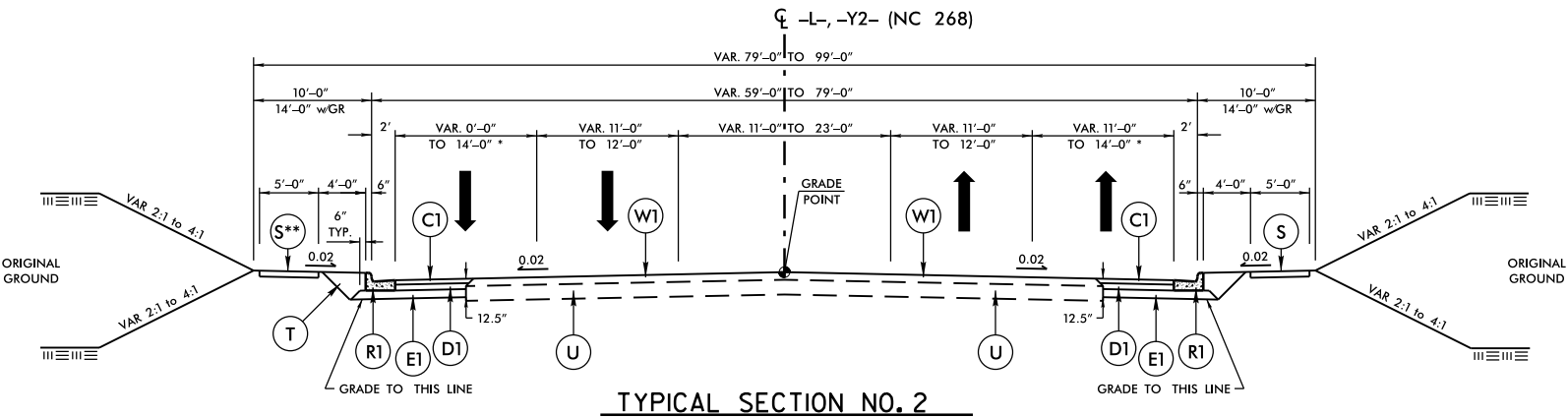
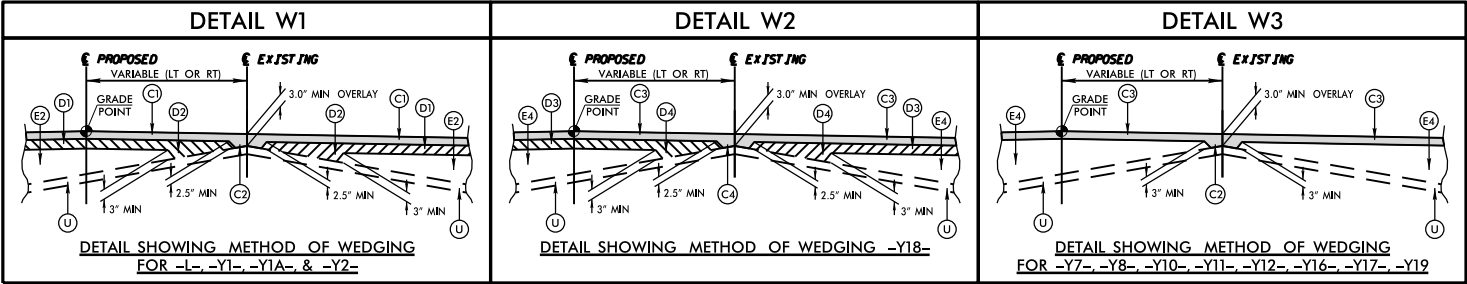
TYPICAL SECTION NO.1

USE TYPICAL SECTION NO.1 FOR DRIVEWAYS

		PROPOSED DRIVEWAY DESIGN			PAVEMENT DEPTH
		C	J	A	
Ex. DRIVEWAY TYPE	GRAVEL *	-	J	-	6"
	ASPHALT	C5	J	-	8"
	CONCRETE	-	-	A	6"

DRIVEWAY PAVEMENT TYPE TO BE REPLACED IN LIKE MATERIAL AS DIRECTED BY THE ENGINEER.

- GRAVEL DRIVEWAYS WITH >7% GRADES ARE TO BE PAVED WITH ASPHALT.



USE TYPICAL SECTION NO. 2:

FROM -L- STA.10+38.67 TO 14+65.00
FROM -L- STA.25+00.00 TO 57+00.00
FROM -Y2- STA.14+65.00 TO 17+14.58

- 14' OUTSIDE LANES TO ACCOMMODATE BICYCLES
- SIDEWALK ON LEFT SIDE FROM -L- STA.48+16.36 TO 57+00.00

PROJECT REFERENCE NO.
R-2603

SHEET NO.
2-A

R/W SHEET NO.

ROADWAY DESIGN
ENGINEER

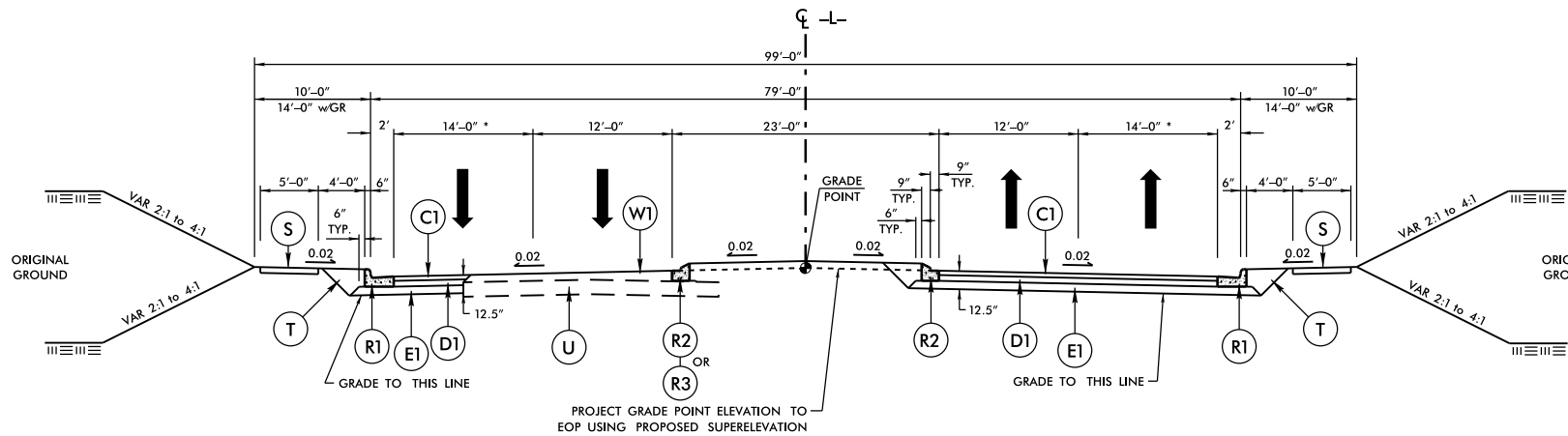
PAVEMENT DESIGN
ENGINEER

PRELIMINARY PLANS

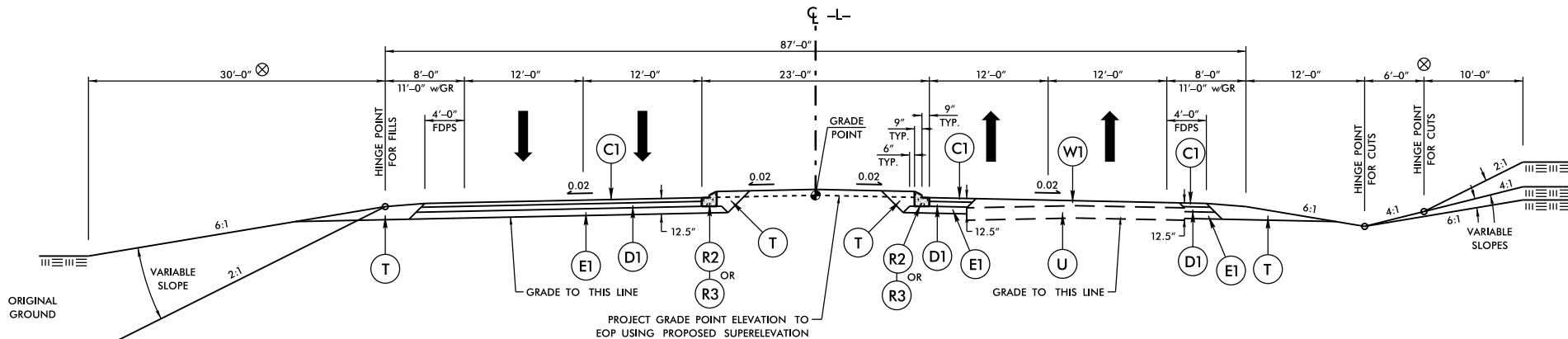
DO NOT USE FOR CONSTRUCTION

 **M A Engineering
Consultants, Inc.**

598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

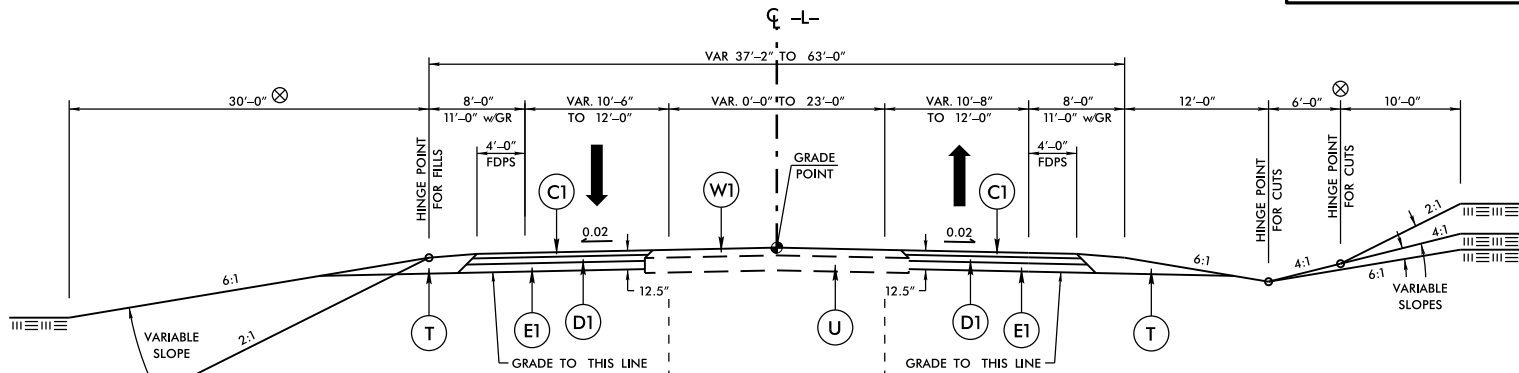


TYPICAL SECTION NO. 3

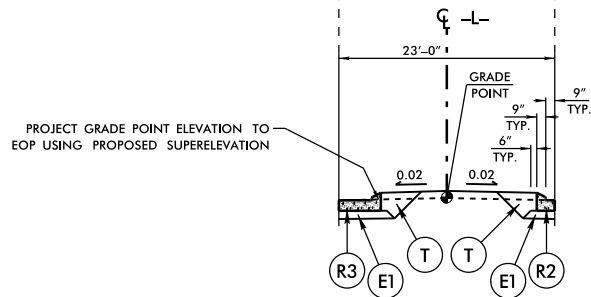


TYPICAL SECTION NO. 4

⊗ - WHEN THESE DISTANCES INDICATE SLOPES OUTSIDE THE LIMITS SHOWN, THE DISTANCE BECOMES VARIABLE, AND THE LIMITING SLOPE IS MAINTAINED.



TYPICAL SECTION NO. 5



TYPICAL SECTION NO. 5A

USE TYPICAL SECTION NO. 3:
FROM -L- STA. 57+00.00 TO 80+00.00
FROM -L- STA. 86+25.00 TO 105+99.33

USE TYPICAL SECTION NO. 3 WITH FULL WIDTH
NEW PAVEMENT ON BOTH SIDES OF THE TYPICAL
SECTION IN LIEU OF WEDGING & WIDENING:
FROM -L- STA. 80+00.00 TO 86+25.00

NOTE: EXISTING PAVEMENT LOCATION VARIES WITHIN
THE TYPICAL SECTION FROM THE LEFT TO
RIGHT SIDE OF THE PROPOSED TYPICAL SECTION,
SEE PLANS FOR LOCATIONS.

- 14' OUTSIDE LANES TO ACCOMMODATE BICYCLES

USE TYPICAL SECTION NO. 4:
FROM -L- STA. 105+99.33 TO 113+00.00
FROM -L- STA. 128+75.00 TO 185+95.46

USE TYPICAL SECTION NO. 4 WITH FULL WIDTH
NEW PAVEMENT ON BOTH SIDES OF THE TYPICAL
SECTION IN LIEU OF WEDGING & WIDENING:
FROM -L- STA. 113+00.00 TO 116+60 +/- (BEGIN BRIDGE)
FROM -L- STA. 118+09 +/- (END BRIDGE) TO 128+75.00

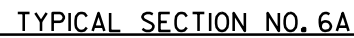
NOTE: EXISTING PAVEMENT LOCATION VARIES WITHIN
THE TYPICAL SECTION FROM THE LEFT TO
RIGHT SIDE OF THE PROPOSED TYPICAL SECTION,
SEE PLANS FOR LOCATIONS.

USE TYPICAL SECTION NO. 5:
FROM -L- STA. 185+95.46 TO 195+00.00

NOTE:
MILL TOP 1.5" LAYER OF EXISTING PAVEMENT
TO ENSURE SMOOTH TIE-IN:
FROM -L- STA. 192+50.00 TO 195+00.00

USE TYPICAL SECTION NO. 5A IN CONJUNCTION
WITH TYPICAL SECTION 5:
FROM -L- STA. 185+95.46 TO 189+30.10

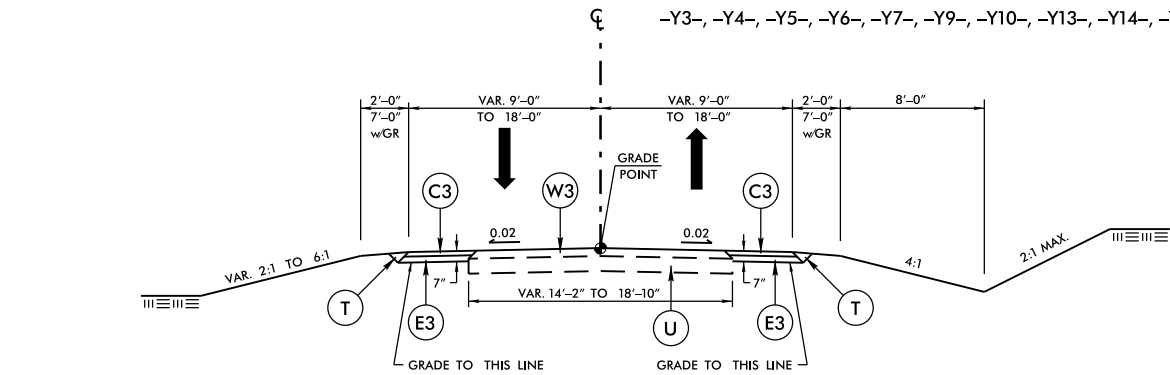
PAVEMENT SCHEDULE (PRELIM. PAVEMENT DESIGN)	
A	6" CONCRETE
C1	3" S9.5C
C2	VAR. S9.5C
C3	3" S9.5B
C4	VAR. S9.5B
C5	2" S9.5B
D1	4" I19.0C
D2	VAR. I19.0C
D3	2.5" I19.0B
D4	VAR. I19.0B
E1	5.5" B25.0C
E2	VAR. B25.0C
E3	4" B25.0B
E4	4.5" B25.0B
E5	VAR. B25.0B
J	6" ABC
R1	2'-6" C & G
R2	1'-6" C & G
R3	2'-9" C & G
R4	5" MONO. CONC. ISLAND
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W1	WEDGING
W2	WEDGING
W3	WEDGING
PAVEMENT EDGESLOPES 1:1 UNLESS NOTED OTHERWISE	



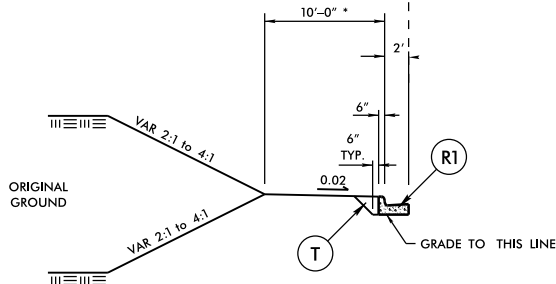
USE TYPICAL SECTION NO. 7A IN CONJUNCTION WITH
TYPICAL SECTION NO. 7:

FROM -Y2- STA. 18+54.72 TO 19+30.00

TYPICAL LANE WIDTHS	
-Y- LINE	LANE WIDTH
-Y3-	VAR.
-Y4-	VAR.
-Y5-	VAR.
-Y6-	VAR.
-Y7-	10' & 15'
-Y9-	10'
-Y10-	9'
-Y13-	VAR.
-Y14-	VAR.
-Y15-	9'
-Y16-	10'
-Y19-	9'
-Y20-	VAR.

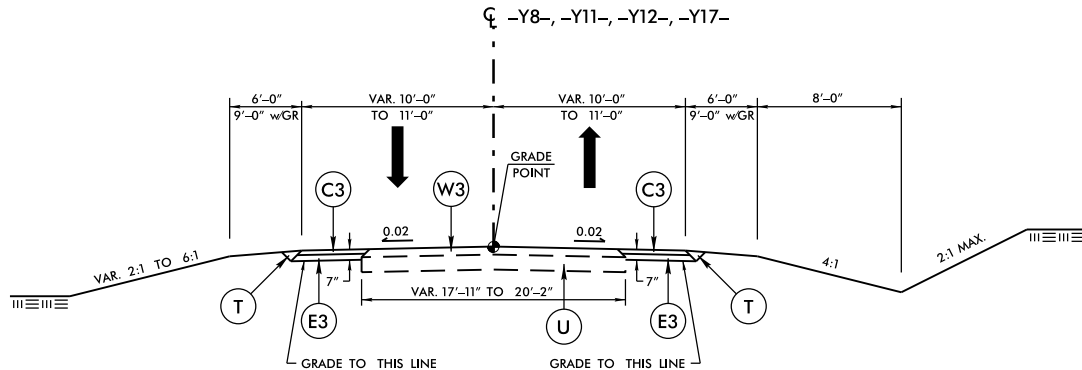


TYPICAL SECTION NO. 8

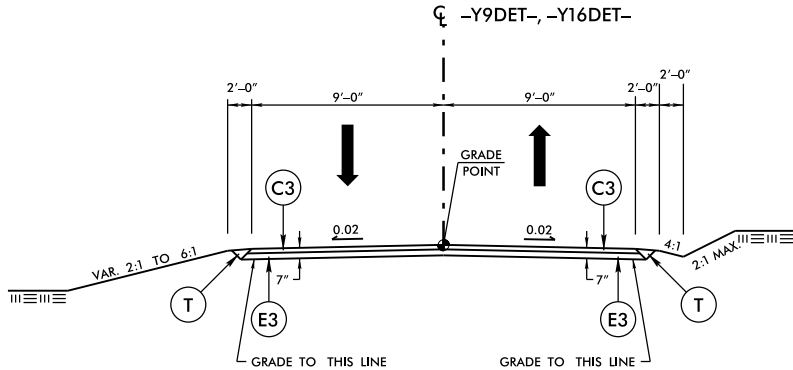


TYPICAL SECTION NO. 8A

TYPICAL LANE WIDTHS	
-Y- LINE	LANE WIDTH
-Y8-	11'
-Y11-	11'
-Y12-	10'
-Y17-	10'



TYPICAL SECTION NO. 9



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 8:

FROM -Y3- STA. 10+06.00 TO 10+72.48
FROM -Y5- STA. 10+00.00 TO 10+72.46
FROM -Y7- STA. 11+00.00 TO 12+00.14
FROM -Y10- STA. 11+56.49 TO 12+24.41
FROM -Y16- STA. 10+65.00 TO 11+05.00
FROM -Y19- STA. 12+50.00 TO 13+00.00
FROM -Y19- STA. 12+50.00 TO 13+00.00

USE TYPICAL SECTION NO. 8 WITH FULL WIDTH NEW PAVEMENT IN LIEU OF WEDGING & WIDENING:

FROM -Y4- STA. 10+00.00 TO 10+72.50
FROM -Y6- STA. 10+50.00 TO 11+72.20
FROM -Y7- STA. 12+00.14 TO 13+64.35
FROM -Y9- STA. 10+76.99 TO 13+25.00
FROM -Y13- STA. 10+72.51 TO 11+5.22
FROM -Y14- STA. 10+59.64 TO 10+92.86
FROM -Y15- STA. 10+10.00 TO 11+61.61
FROM -Y16- STA. 11+05.00 TO 14+01.75
FROM -Y19- STA. 10+15.30 TO 12+50.00

USE TYPICAL SECTION NO. 8A IN CONJUNCTION WITH TYPICAL SECTION 8:

FROM -Y5- STA. 10+00.00 TO 10+72.46
FROM -Y6- STA. 10+50.00 TO 11+72.20

- VARIES 2'-0" TO 10'-0" FOR -Y6-

USE TYPICAL SECTION NO. 9:

FROM -Y8- STA. 13+00.00 TO 14+36.89
FROM -Y11- STA. 12+48.35 TO 13+59.19
FROM -Y12- STA. 15+50.00 TO 16+25.02
FROM -Y17- STA. 11+5.00 TO 14+15.00

USE TYPICAL SECTION NO. 9 WITH FULL WIDTH NEW PAVEMENT IN LIEU OF WEDGING & WIDENING:

FROM -Y12- STA. 11+18.19 TO 15+50.00
FROM -Y17- STA. 14+15.00 TO 17+89.73

USE TYPICAL SECTION NO. 10:

FROM -Y9DET- STA. 10+10.39 TO 14+00.00
FROM -Y16DET- STA. 12+32.56 TO 17+42.30

PROJECT REFERENCE NO.
R-2603

SHEET NO.
2-C

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

PAVEMENT SCHEDULE (PRELIM. PAVEMENT DESIGN)

A	6" CONCRETE
C1	3" S9.5C
C2	VAR. S9.5C
C3	3" S9.5B
C4	VAR. S9.5B
C5	2" S9.5B
D1	4" I19.0C
D2	VAR. I19.0C
D3	2.5" I19.0B
D4	VAR. I19.0B
E1	5.5" B25.0C
E2	VAR. B25.0C
E3	4" B25.0B
E4	4.5" B25.0B
E5	VAR. B25.0B
J	6" ABC
R1	2'-6" C & G
R2	1'-6" C & G
R3	2'-9" C & G
R4	5" MONO. CONC. ISLAND
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W1	WEDGING
W2	WEDGING
W3	WEDGING
PAVEMENT EDGESLOPES 1:1 UNLESS NOTED OTHERWISE	

PROJECT REFERENCE NO.
R-2603

SHEET NO.
2-D

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

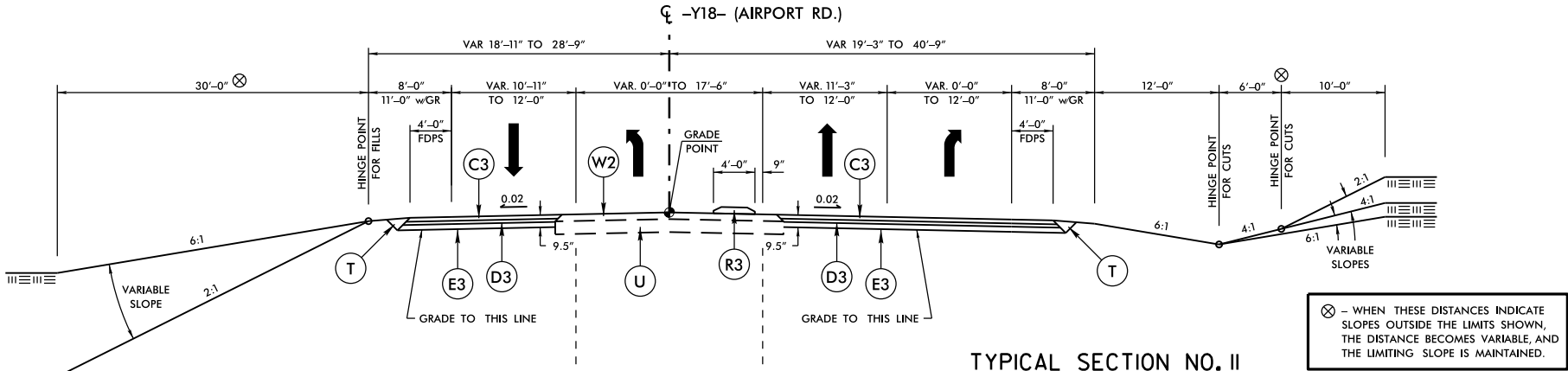
PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

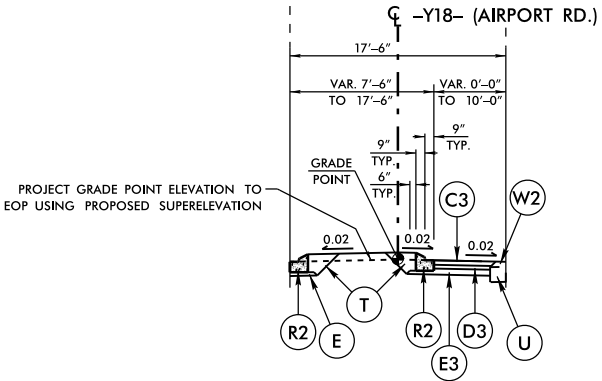


M A Engineering Consultants, Inc.

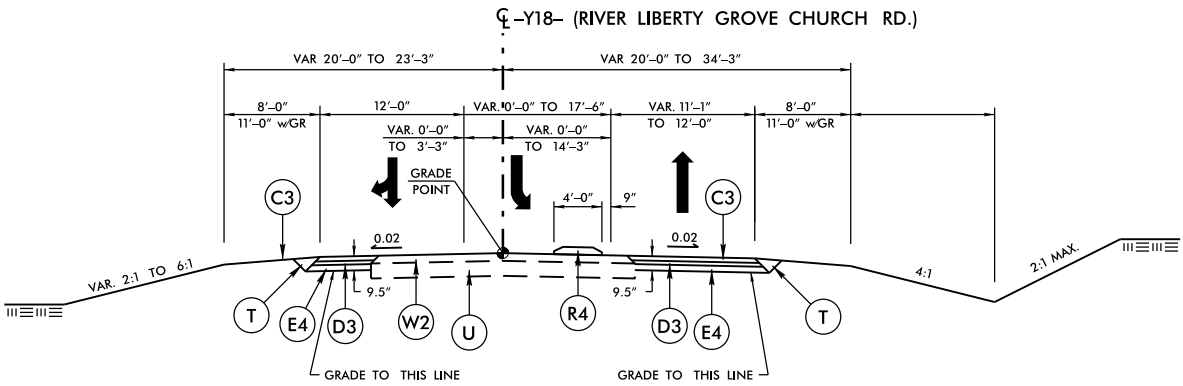
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



TYPICAL SECTION NO. II



TYPICAL SECTION NO. IIA



TYPICAL SECTION NO. I2

USE TYPICAL SECTION NO. II:
FROM -YI8- STA. 17+50.00 TO 30+21.37

NOTE:
MILL TOP 1.5' LAYER OF EXISTING PAVEMENT TO ENSURE SMOOTH TIE-IN:
FROM -YI8- STA. 17+50.00 TO 17+65.00

USE TYPICAL SECTION NO. IIA IN CONJUNCTION WITH TYPICAL SECTION II:
FROM -YI8- STA. 23+16.25 TO 27+31.67

USE TYPICAL SECTION NO. I2:
FROM -YI8- STA. 37+12.86 TO 42+40.00

USE TYPICAL SECTION NO. I2 WITH FULL WIDTH NEW PAVEMENT IN LIEU OF WEDGING & WIDENING:
FROM -YI8- STA. 31+17.25 TO 37+12.86

NOTE:
MILL TOP 1.5' LAYER OF EXISTING PAVEMENT TO ENSURE SMOOTH TIE-IN:
FROM -YI8- STA. 40+75.00 TO 42+40.00

PAVEMENT SCHEDULE (PRELIM. PAVEMENT DESIGN)	
A	6" CONCRETE
C1	3" S9.5C
C2	VAR. S9.5C
C3	3" S9.5B
C4	VAR. S9.5B
C5	2" S9.5B
D1	4" I19.0C
D2	VAR. I19.0C
D3	2.5" I19.0B
D4	VAR. I19.0B
E1	5.5" B25.0C
E2	VAR. B25.0C
E3	4" B25.0B
E4	4.5" B25.0B
E5	VAR. B25.0B
J	6" ABC
R1	2'-6" C & G
R2	1'-6" C & G
R3	2'-9" C & G
R4	5" MONO. CONC. ISLAND
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W1	WEDGING
W2	WEDGING
W3	WEDGING
PAVEMENT EDGESLOPES 1:1 UNLESS NOTED OTHERWISE	

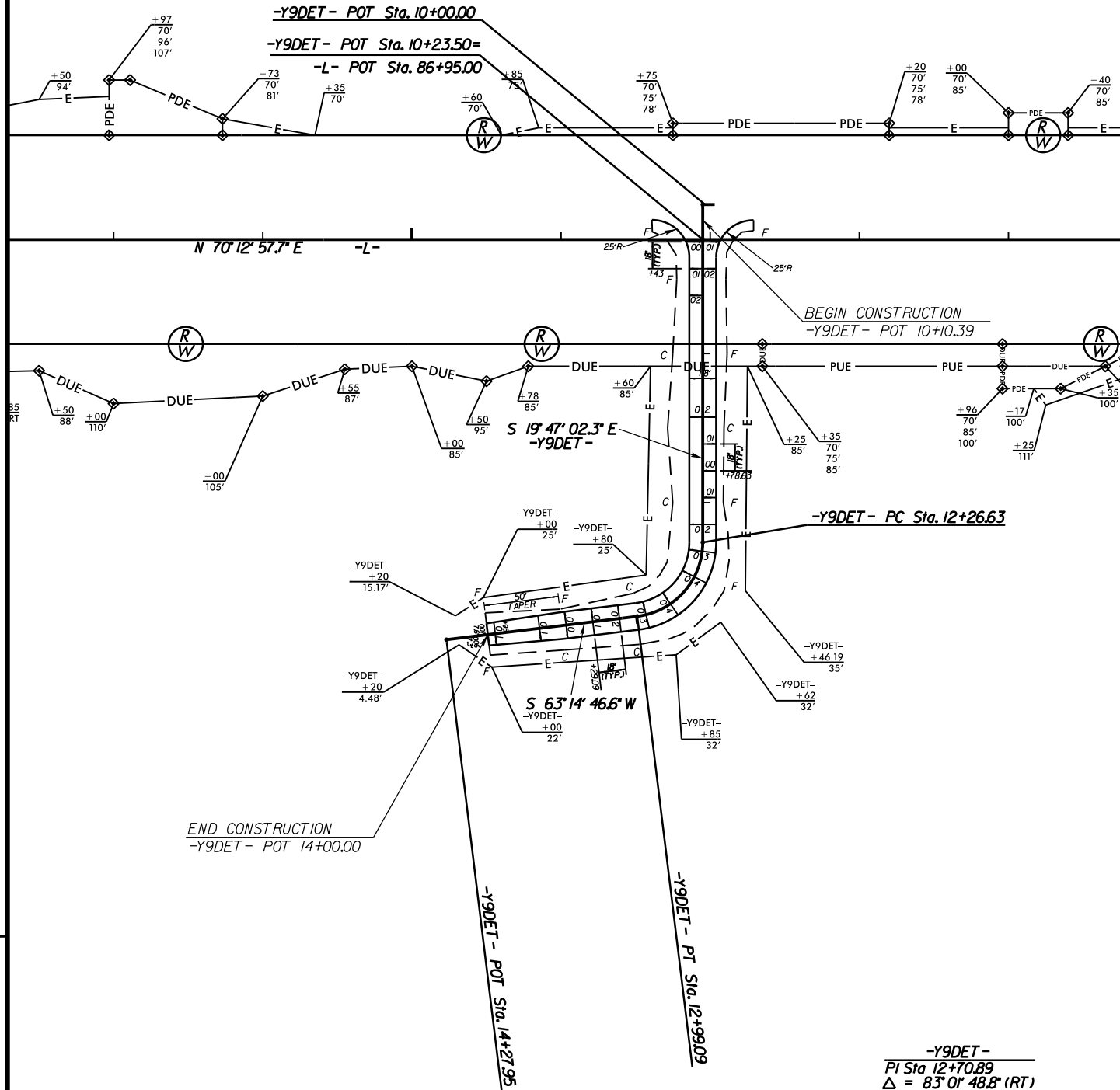
8/17/99

REVISIONS

17-MAR-2014 08:47
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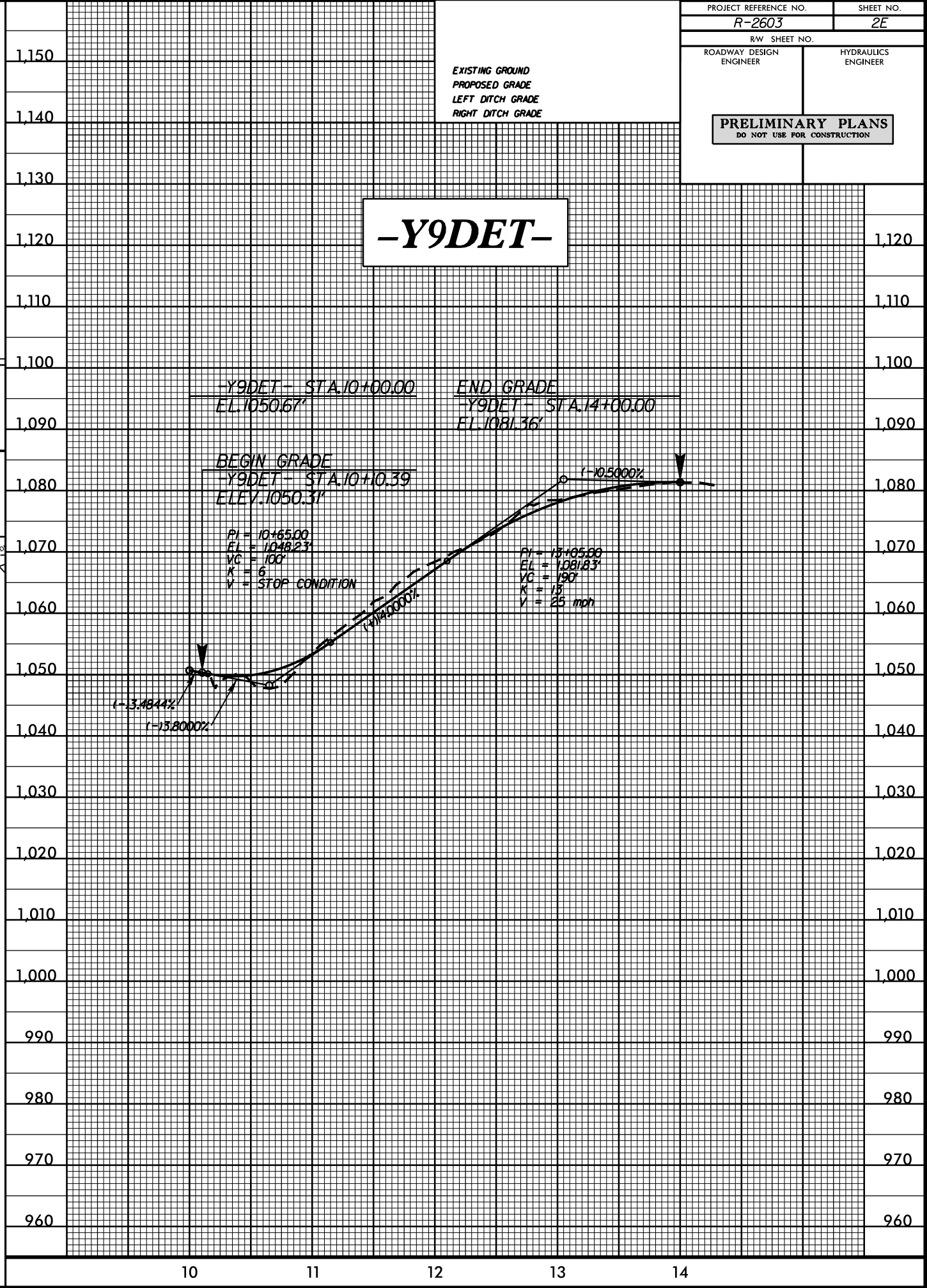


-Y9DET- SIDNEY AVE. DETOUR



EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE

-Y9DET-

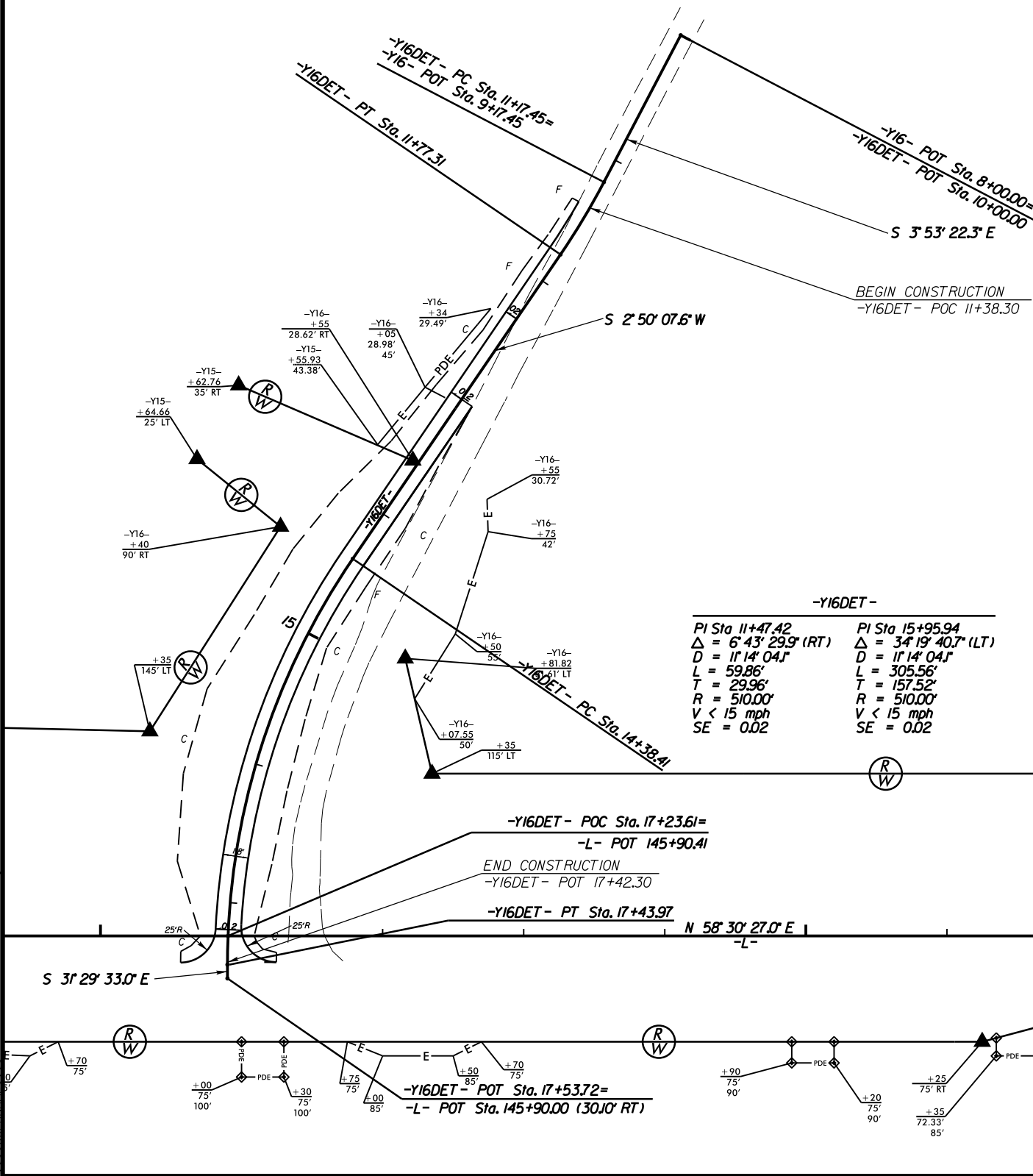


8/17/99

REVISIONS

17-MAR-2014 08:47
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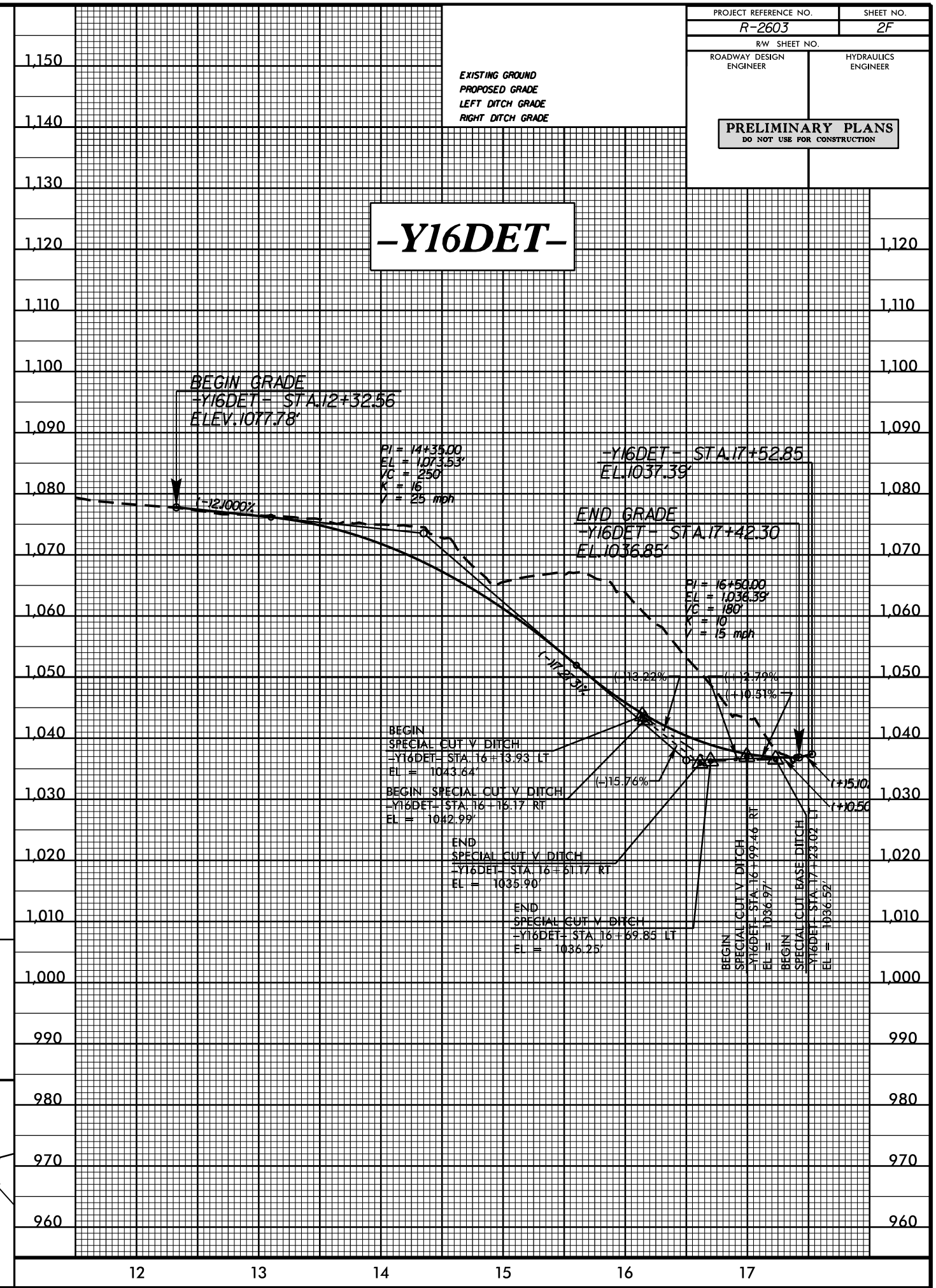
-Y16DET- SR 2090 DETOUR



-Y16DET-	
PI Sta 11+47.42	PI Sta 15+95.94
$\Delta = 6^\circ 43' 29.9''$ (RT)	$\Delta = 34^\circ 19' 40.7''$ (LT)
$D = 11' 14.04''$	$D = 11' 14.04''$
$L = 59.86'$	$L = 305.56'$
$T = 29.96'$	$T = 157.52'$
$R = 510.00'$	$R = 510.00'$
$V < 15$ mph	$V < 15$ mph
$SE = 0.02$	$SE = 0.02$

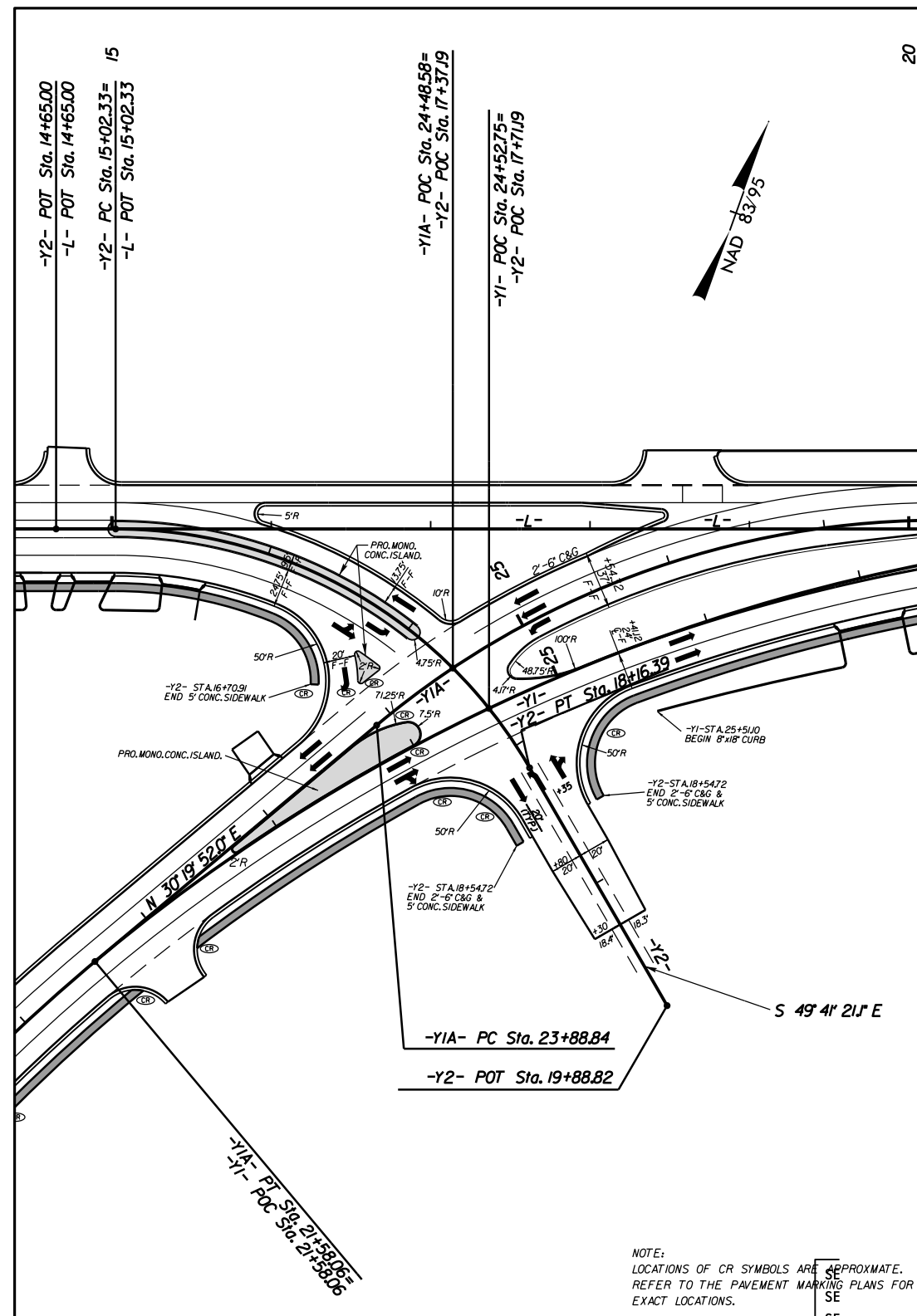
EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE

-Y16DET-



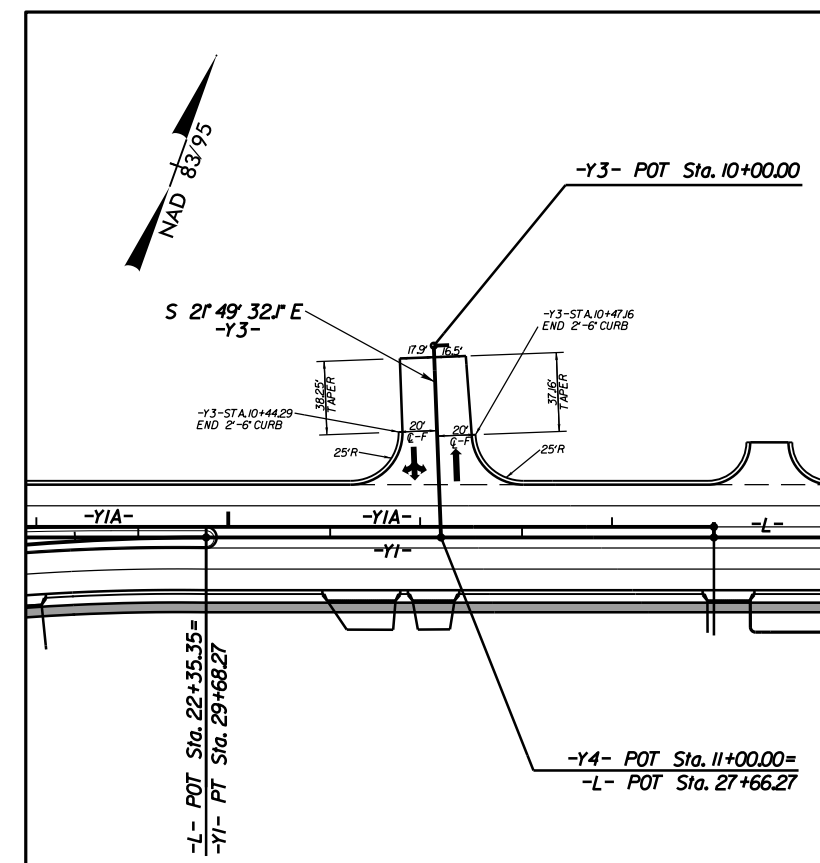
PROJECT REFERENCE NO.		SHEET NO.	
R-2603		2F	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

INTERSECTION DETAILS



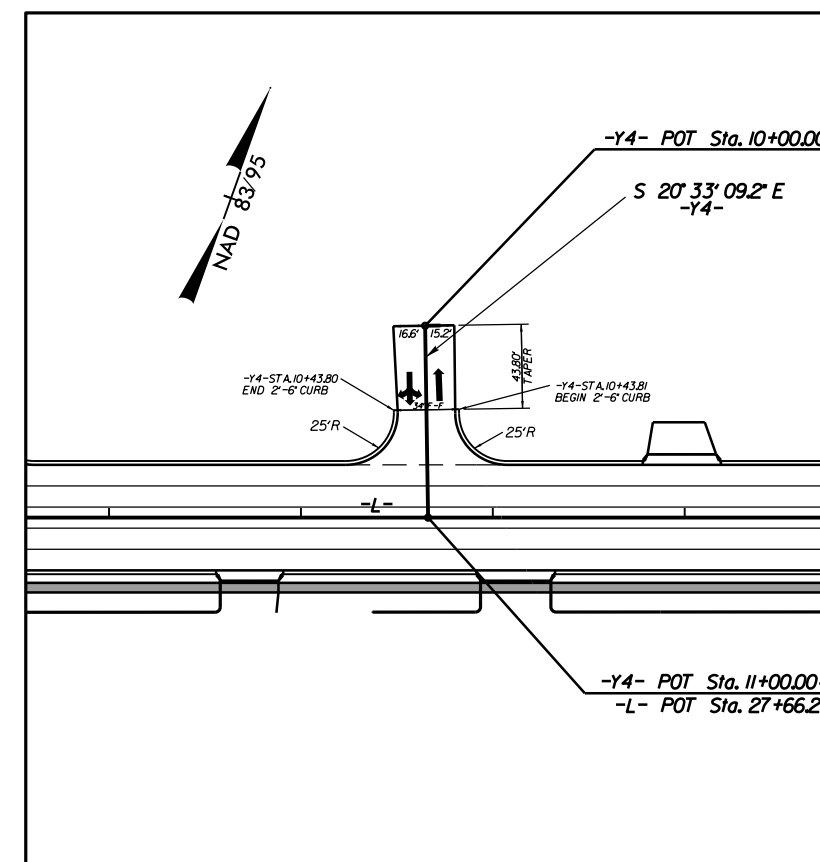
NC 268 (-Y1-/-Y1A-) ELKIN RD./
FLINT HILL RD. (-Y2-) INTERSECTION DETAIL

SEE SHEET 4 FOR PLAN VIEW



NC 268 (-L-) ELKIN RD./
SCHOOL BUS DR. (-Y3-) INTERSECTION DETAIL

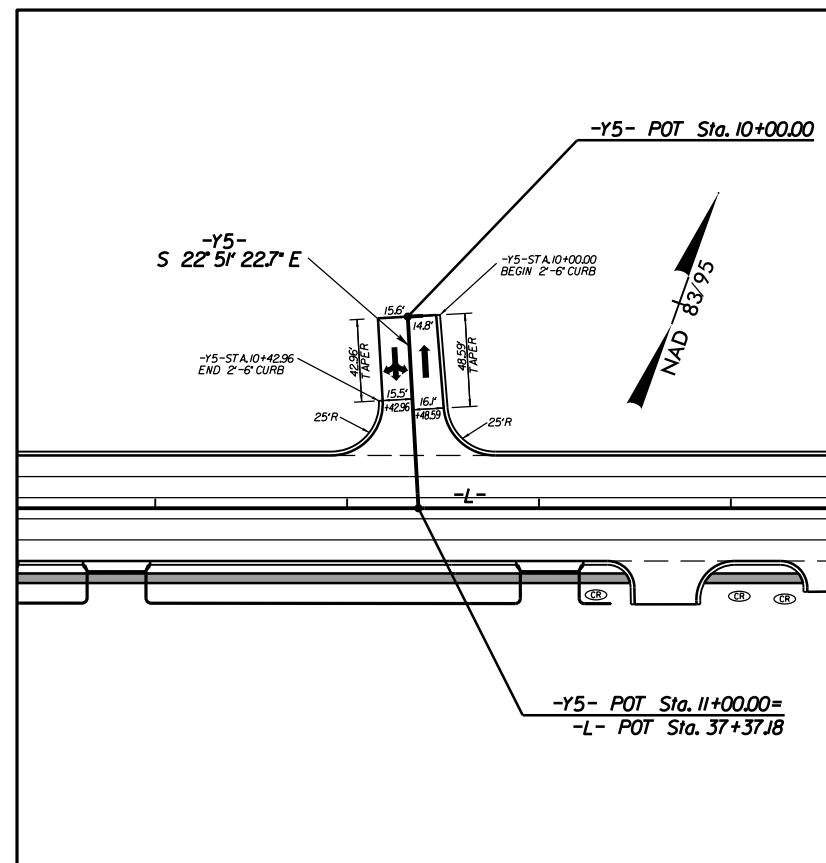
SEE SHEET 5 FOR PLAN VIEW



NC 268 (L-) ELKIN RD./
TEMPLE ST. (Y4-) INTERSECTION DETAIL

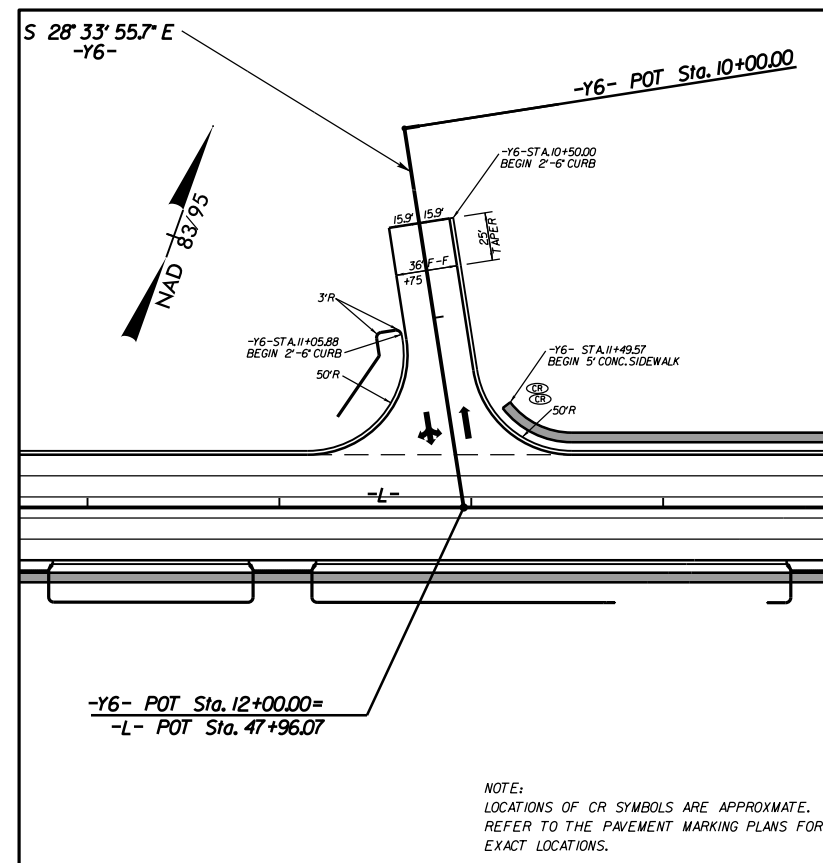
SEE SHEET 5 FOR PLAN VIEW

INTERSECTION DETAILS



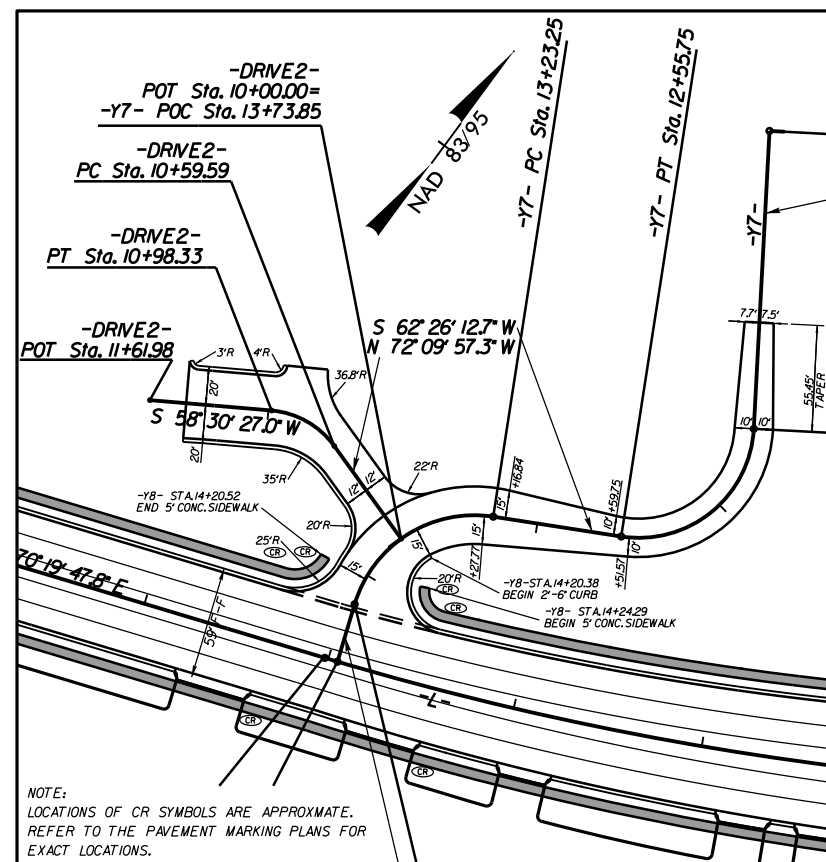
NC 268 (-L-) ELKIN RD./
WHITE PINE ST. (-Y5-) INTERSECTION DETAIL

SEE SHEET 6 FOR PLAN VIEW



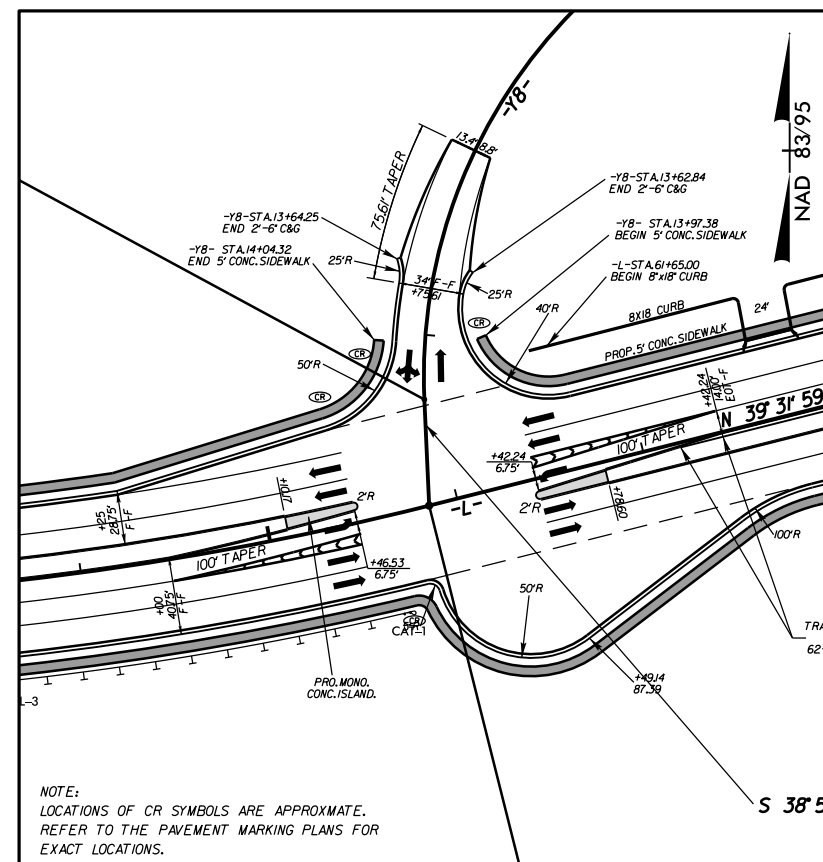
NC 268 (-L-) ELKIN RD./
SHAVER ST. (-Y6-) INTERSECTION DETAIL

SEE SHEET 6 FOR PLAN VIEW



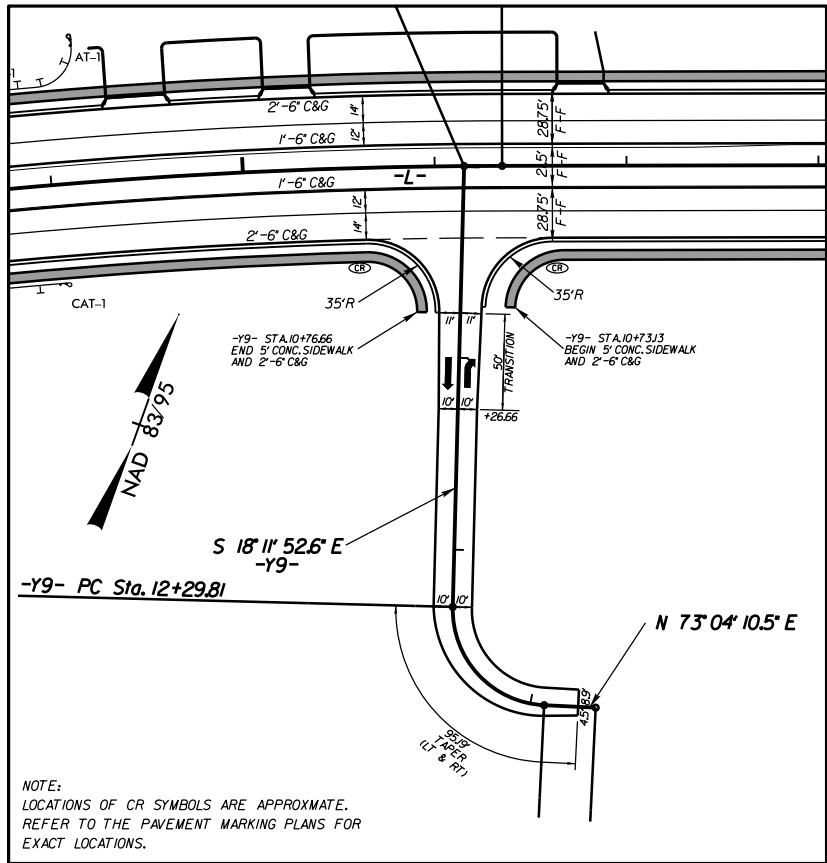
NC 268 (-L-) ELKIN RD./
LEGIION DR. (-Y7-) INTERSECTION DETAIL

SEE SHEET 7 FOR PLAN VIEW

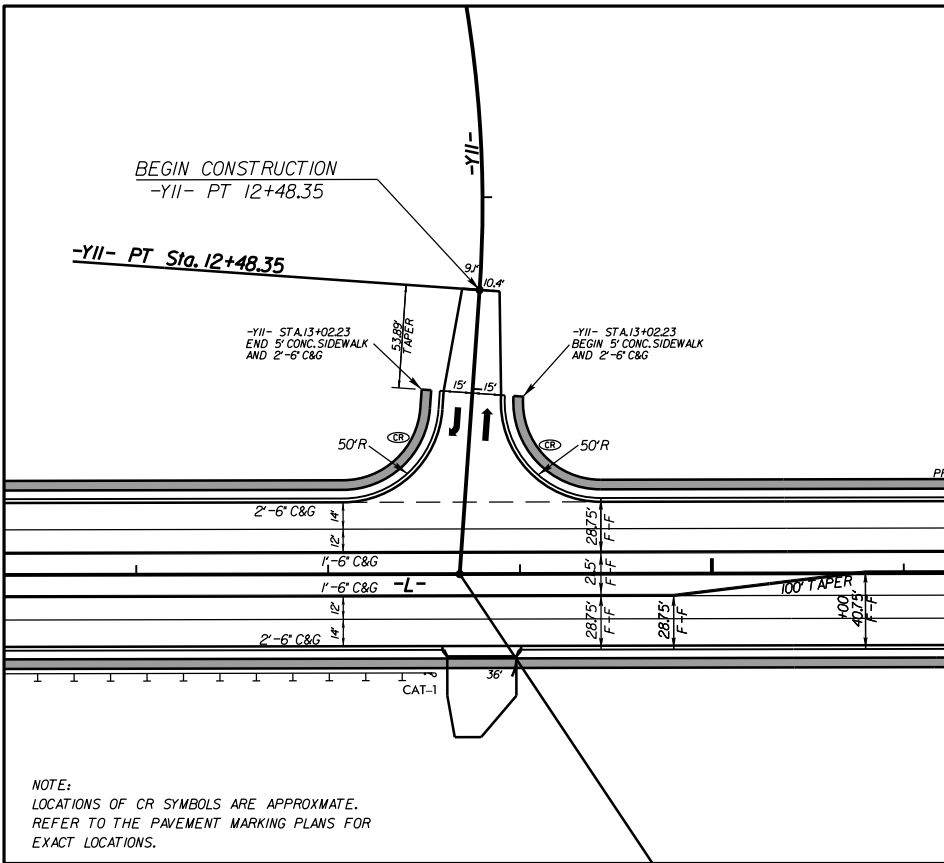


NC 268 (-L-) ELKIN RD./
FAIRPLAINS RD. (-Y8-) INTERSECTION DETAIL

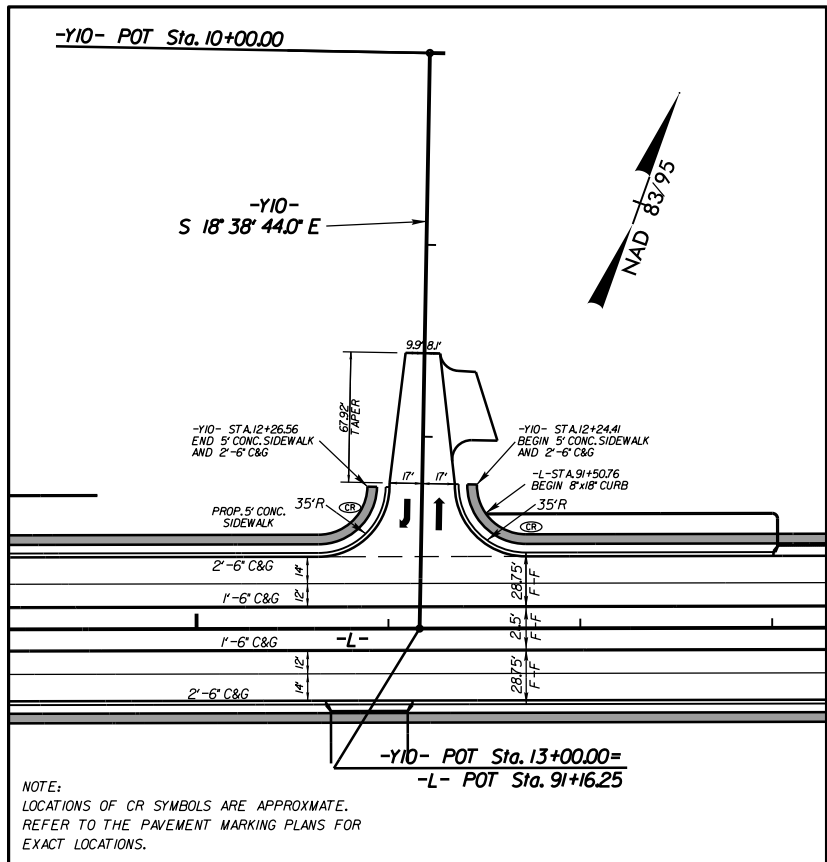
SEE SHEET 7 FOR PLAN VIEW



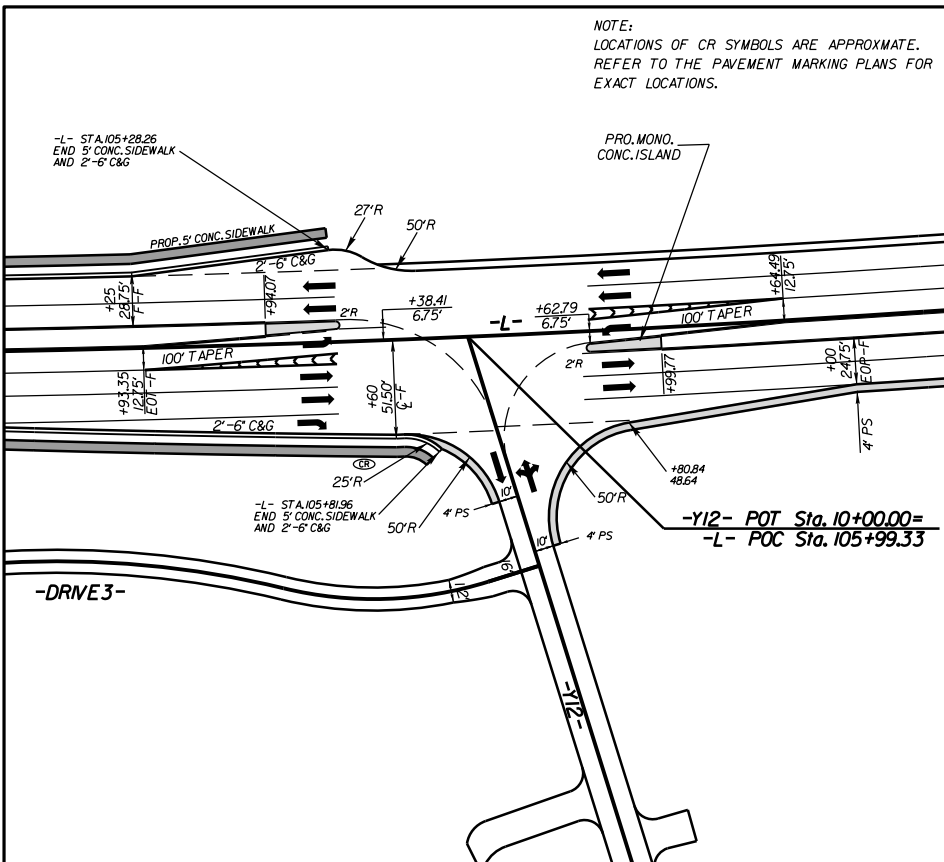
NC 268 (-L-) ELKIN RD./
SIDNEY AVE. (-Y9-) INTERSECTION DETAIL
SEE SHEET 9 FOR PLAN VIEW



NC 268 (-L-) ELKIN RD./
AARON CALL RD. (-Y11-) INTERSECTION DETAIL
SEE SHEET 10 FOR PLAN VIEW



NC 268 (-L-) ELKIN RD./
PEBBLE ST. (-Y10-) INTERSECTION DETAIL
SEE SHEET 9 FOR PLAN VIEW

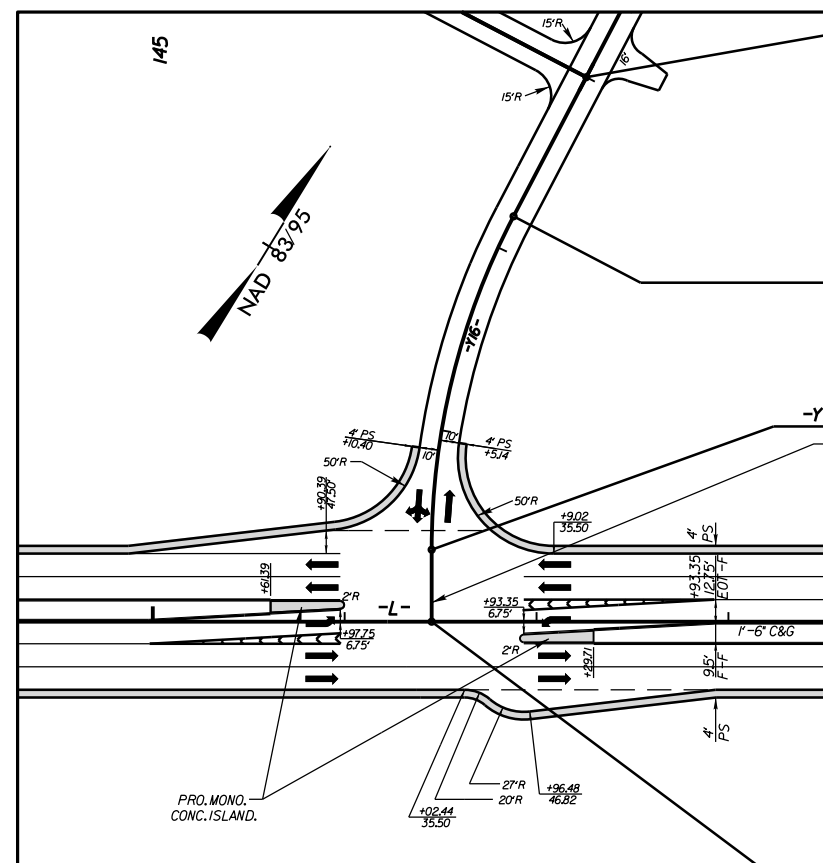


NC 268 (-L-) ELKIN RD./
FLINT HILL RD. (-Y12-) INTERSECTION DETAIL
SEE SHEET 11 FOR PLAN VIEW

PROJECT REFERENCE NO.	SHEET NO.
R-2603	21
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
MA Engineering CONSULTANTS, INC. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221	

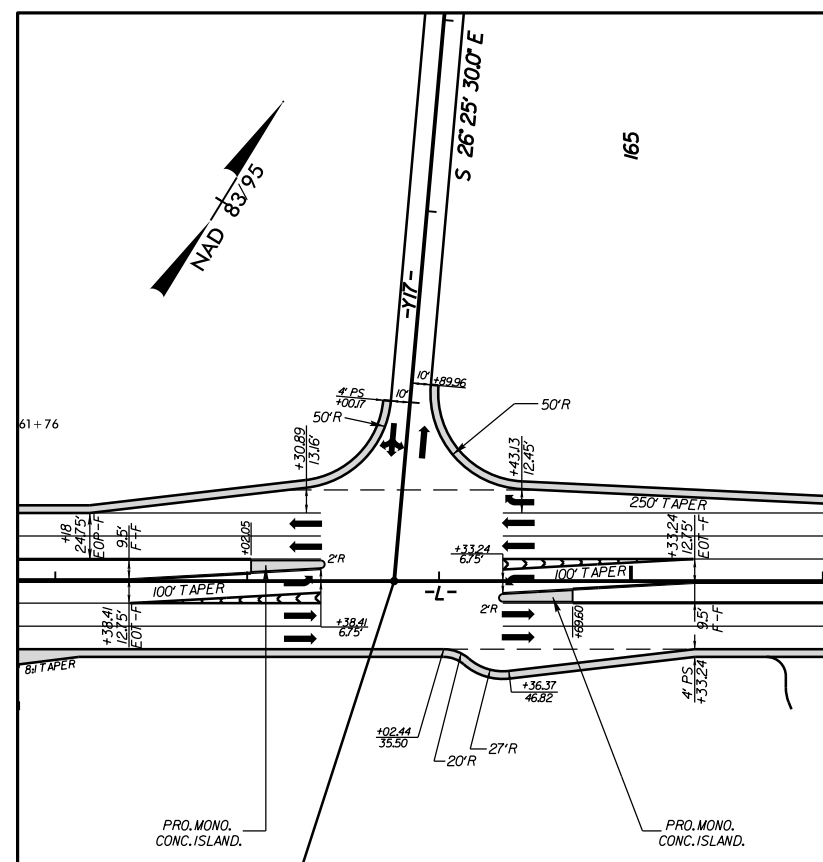
INTERSECTION DETAILS

INTERSECTION DETAILS



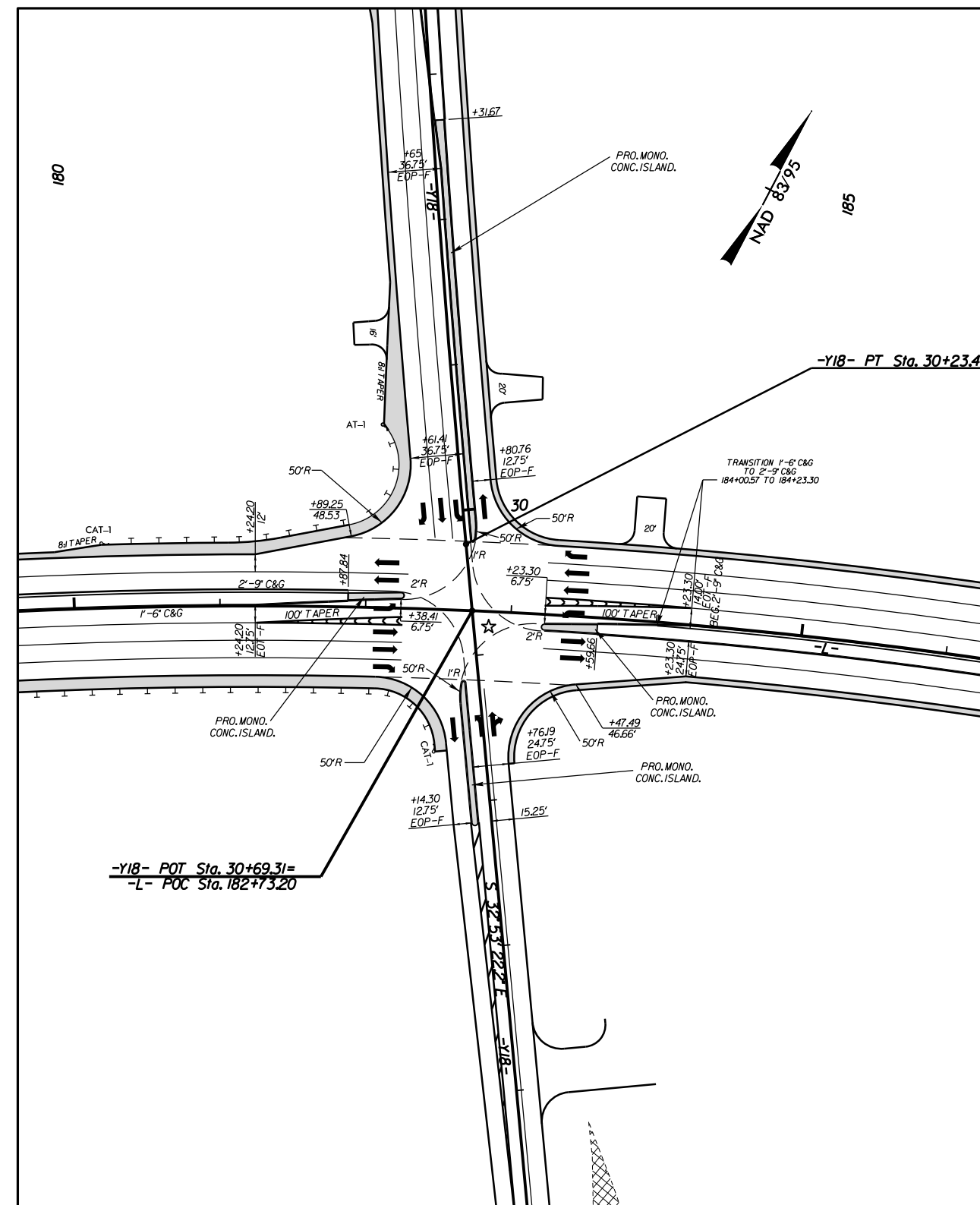
NC 268 (-L-) ELKIN RD./
VISTA LN. (-Y16-) INTERSECTION DETAIL

SEE SHEET 14 FOR PLAN VIEW



NC 268 (-L-) ELKIN RD./
BEAUMONT POPLAR ST. (-Y17-) INTERSECTION DETAIL

SEE SHEET 15 FOR PLAN VIEW



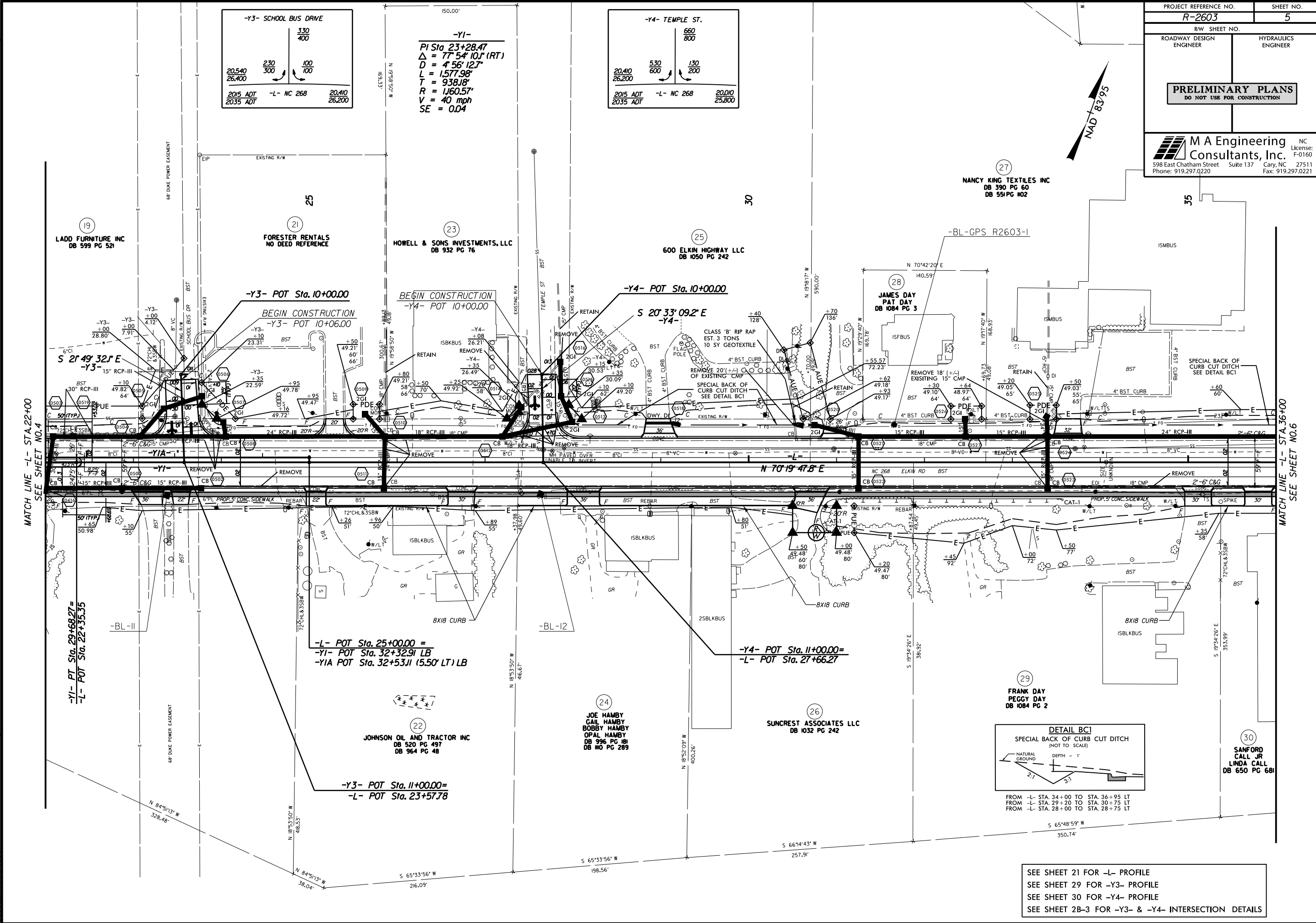
NC 268 (-L-) ELKIN RD./
AIRPORT RD/RIVER LIBERTY GROVE CHURCH RD. (-Y18-) INTERSECTION DETAIL

SEE SHEET 16 FOR PLAN VIEW

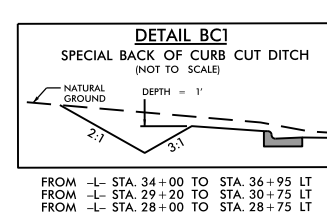
REVISIONS
09/02/2014 - RW REVISION: REVISED TCE ON PARCELS 25 & 27, ADDED PUE ON PARCEL 26; ELIMINATED TCE ON PARCEL 27; REVISED TCE BETWEEN -L- 31+20 RT
09/10/2014 - RW REVISION: REVISED TCE ON PARCELS 25 & 27, ADDED PUE ON PARCELS 26 & 27, MAE
10/14/2014 - RW REVISION: PROPERTY OWNER NAME REVISED ON PARCEL 23 - MAE
10/14/2014 - RW REVISION: WIDENED 24 DRIVE TO A 36 DRIVE ON PARCEL 26 - MAE

8/17/99

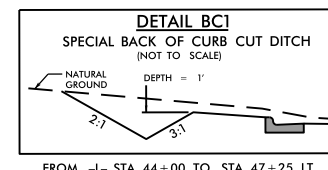
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\$\$\$\$\$ ISHNAME \$\$\$



PROJECT REFERENCE NO. R-2603		SHEET NO. 5	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
 M A Engineering Consultants, Inc. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221			



SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 29 FOR -Y3- PROFILE
SEE SHEET 30 FOR -Y4- PROFILE
SEE SHEET 2B-3 FOR -Y3- & -Y4- INTERSECTION DETAILS



SEE SHEET 22 FOR -L- PROFILE
SEE SHEET 30 FOR -Y5- & -Y6- PROFILES
SEE SHEET 2B-4 FOR -Y5- & -Y6- INTERSECTION DETAILS

	RW	REVISION:	UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 31.	- MAE
06/06/2014	- RW	REVISION:	UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 31.	- MAE
09/09/2014	- RW	REVISION:	ADDED PUE ON PARCEL 31; ADDED PUE AND REVISED TCE ON PARCEL 35.	- MAE
10/12/2014	- RW	REVISION:	ADDED 3.4 DRIVEWAY ON PARCEL 38.	- MAE

REVIEWS

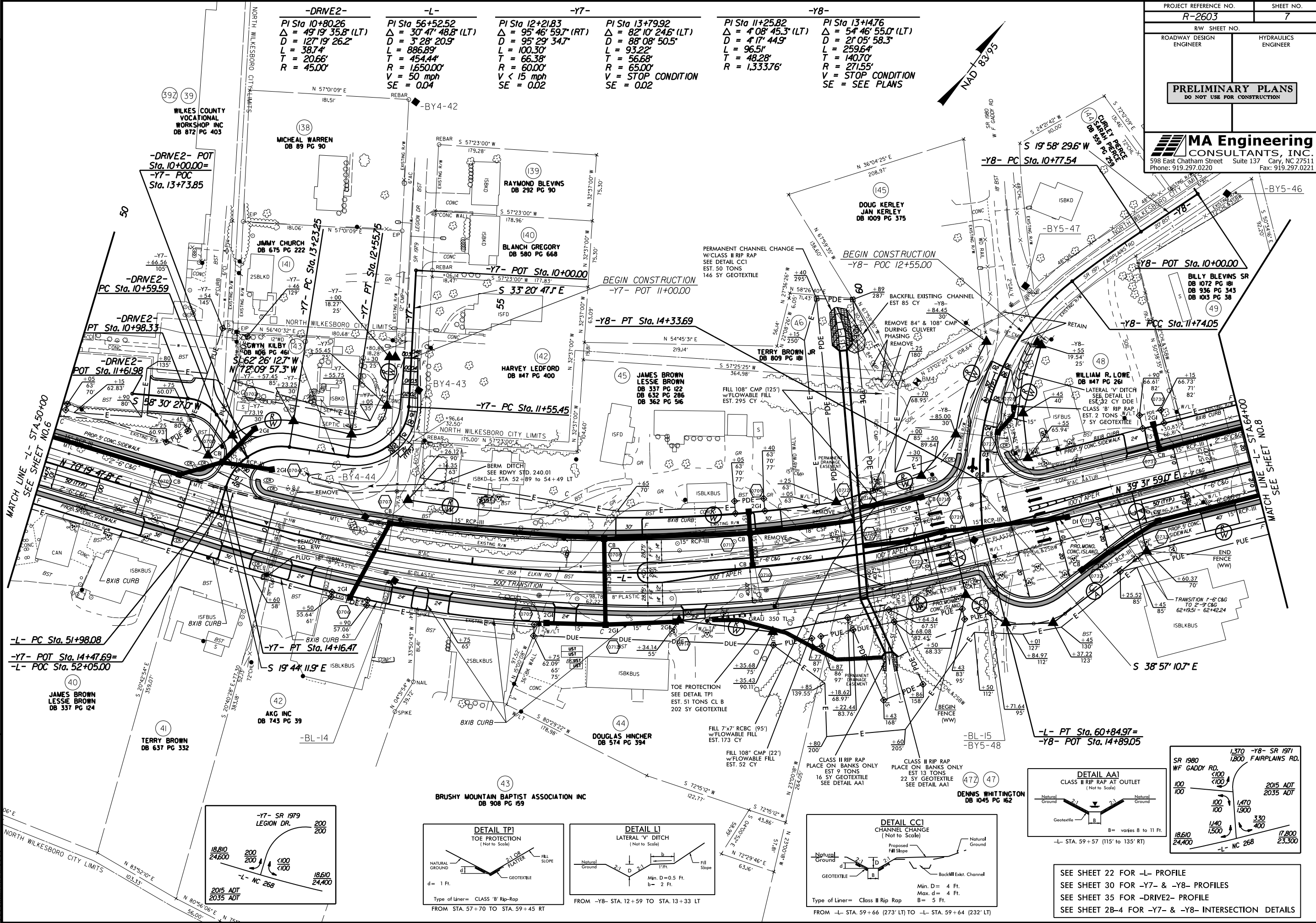
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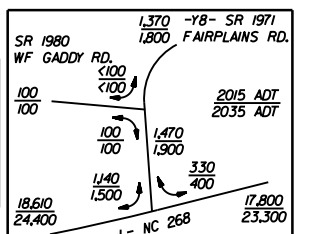
REVISIONS

08/07/2013 - RW REVISION: ADDED SEPTIC TANK AND LINES ON PARCEL 143. - KRW
03/13/2014 - RW REVISION: CHANGED 24' DRIVES TO 36' DRIVES ON PARCELS 40 & 41; UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 48 & 142. - MAE
09/02/2014 - RW REVISION: ADDED PUE AND REVISED TCE ON PARCELS 39 & 143; REMOVED PDE, ADDED DUE, AND REVISED PUE ON PARCEL 44; REVISED PUE ON PARCEL 47 AND CREATED PARCELS 39Z AND 47Z. - MAE
10/14/2014 - RW REVISION: REVISED EXISTING RW LIMITS, REMOVED PROPOSED RW, AND REVISED DUE ON PARCEL 43. - MAE

14-QCT-2014 1045
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PROJECT REFERENCE NO. R-2603		SHEET NO. 7	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
MA Engineering CONSULTANTS, INC. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221			



SEE SHEET 22 FOR -L- PROFILE
SEE SHEET 30 FOR -Y7- & -Y8- PROFILES
SEE SHEET 35 FOR -DRIVE2- PROFILE
SEE SHEET 2B-4 FOR -Y7- & -Y8- INTERSECTION DETAILS

REVISIONS

03/13/2014 - RW REVISION: ADDED BUILDING EXTENSION, CHANGED 30' DRIVES TO 36' DRIVES AND ADDED A 36' DRIVE ON PARCEL 49; ADDED A 20' DRIVE ON PARCEL 52; COMBINED PARCELS 49 & 53 INTO ONE PARCEL DENOTED AS PARCEL 49; SUBDIVIDED PARCEL 55 INTO 55 & 55A, UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 54, 55, 55A, & 57. - MAE

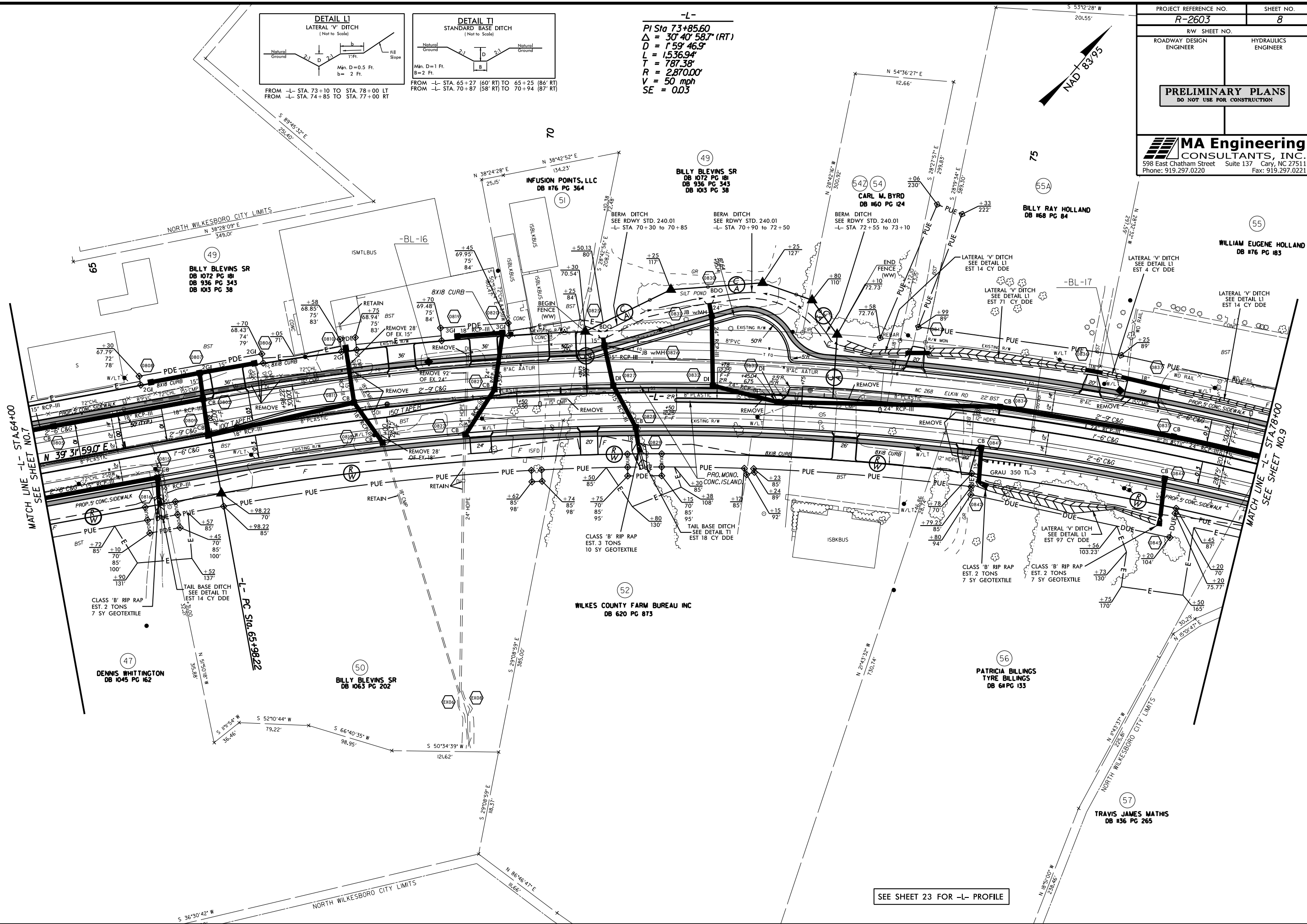
06/06/2014 - RW REVISION: UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 51. - MAE

09/02/2014 - RW REVISION: REVISED PUE ON PARCELS 50 & 52; ADDED PUE ON PARCELS 49, 54, 55A, & 55; REMOVED TCE ON PARCELS 55A & 55 AND CREATED PARCEL 54Z. - MAE

10/14/2014 - RW REVISION: REVISED EXISTING RW LIMITS ON PARCEL 51. - MAE

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8/17/99



PROJECT REFERENCE NO. R-2603		SHEET NO. 8	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
MA Engineering CONSULTANTS, INC. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221			

REVISIONS

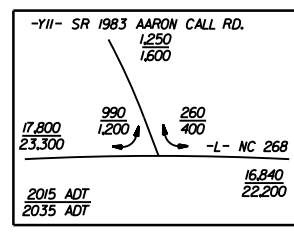
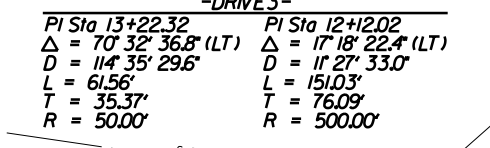
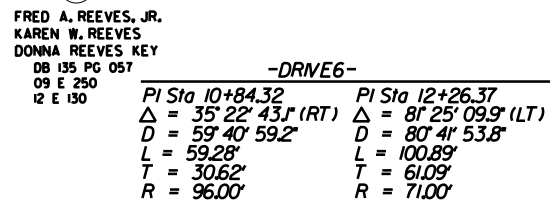
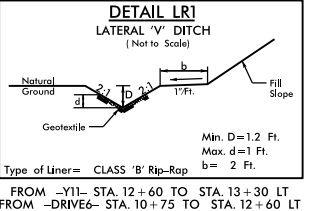
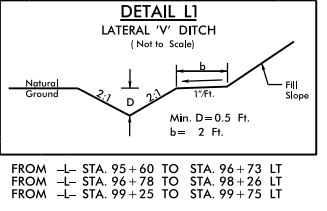
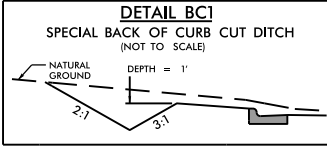
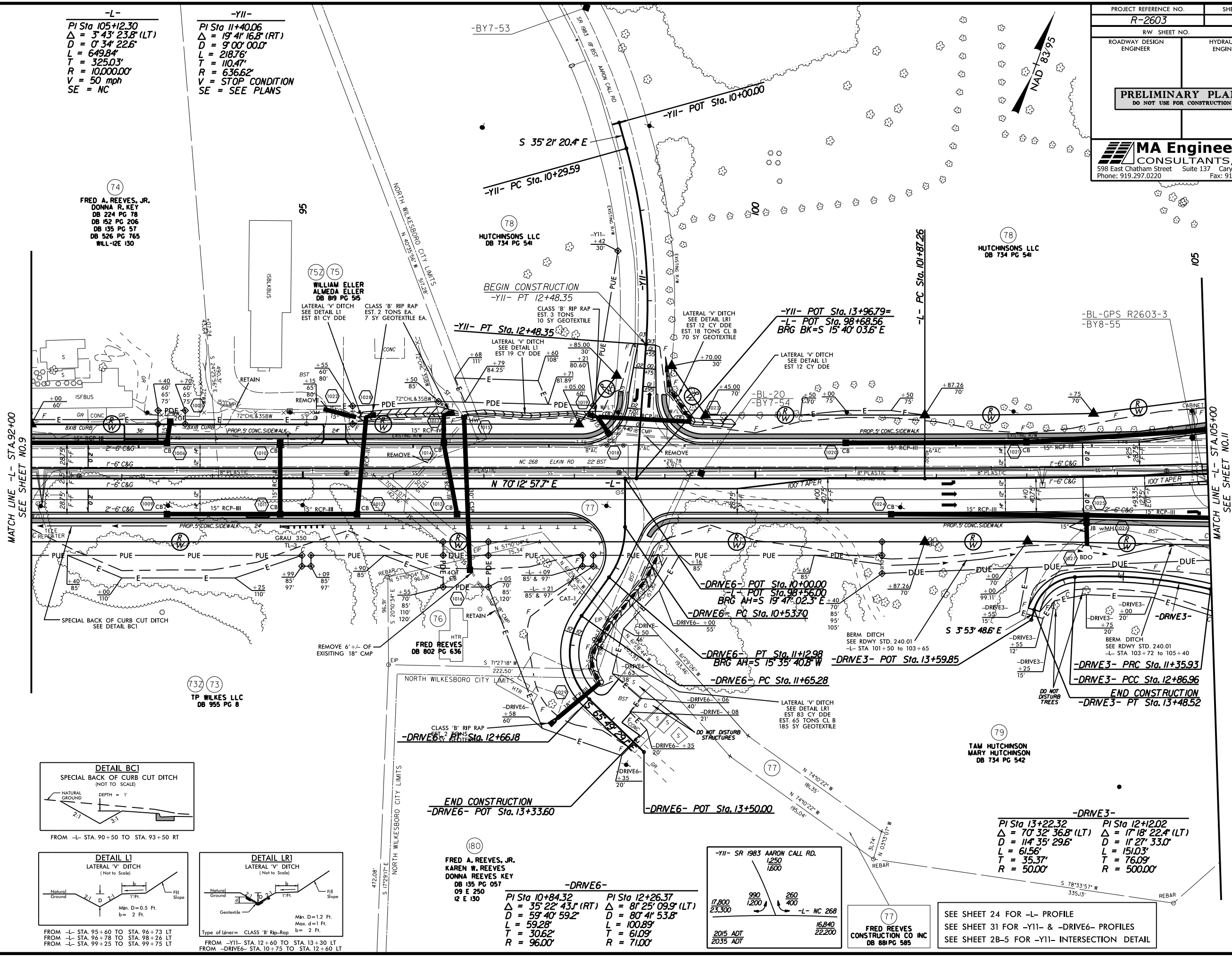
09/03/2013 - RW REVISION: REALIGNED -YII- TO ITS EXISTING LOCATION ON PARCEL 78 - KNW
03/13/2014 - RW REVISION: ADDED 24' DRIVE AND ADJUSTED TCE ON PARCEL 73; CHANGED 24' DRIVE TO 36' DRIVE AND CHANGED PROPERTY OWNER NAME ON PARCEL 74; CHANGED 20' DRIVE TO 36' DRIVE ON PARCEL 77 - MAE
04/17/2014 - RW REVISION: REPLACED DRIVEWAY WITH 24' CURB CUT AND ADJUSTED TCE ON PARCEL 73 - MAE
09/02/2014 - RW REVISION: ADDED PUE AND REVISED TCE ON PARCEL 73; REVISED PUE & TCE ON PARCEL 77; ADDED PUE ON PARCEL 78 AND CREATED PARCEL 73Z - MAE
10/03/2014 - RW REVISION: ADDED TCE FOR -DRIVE6- ON PARCELS 76, 77, 79, & 180; ADDED A 'DO NOT DISTURB STRUCTURES' NOTE ON PARCEL 180 - MAE
10/14/2014 - RW REVISION: REVISED TCE ON PARCEL 75 AND CREATED PARCEL 75Z - KNW

14-OCT-2014 10:45
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SSS:SPRAME

-L-
PI Sta 105+12.30
 $\Delta = 3^\circ 43' 23.8''$ (LT)
D = 0' 34' 22.6"
L = 649.84'
T = 325.03'
R = 10,000.00'
V = 50 mph
SE = NC

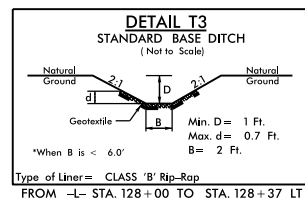
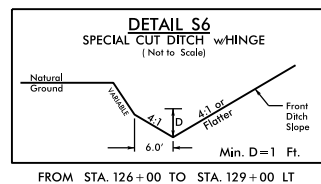
-YII-
PI Sta 11+40.06
 $\Delta = 19^\circ 41' 16.8''$ (RT)
D = 9' 00' 00.0"
L = 218.76'
T = 110.47'
R = 636.62'
V = STOP CONDITION
SE = SEE PLANS

PROJECT REFERENCE NO. R-2603		SHEET NO. 10	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
MA Engineering CONSULTANTS, INC. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221			

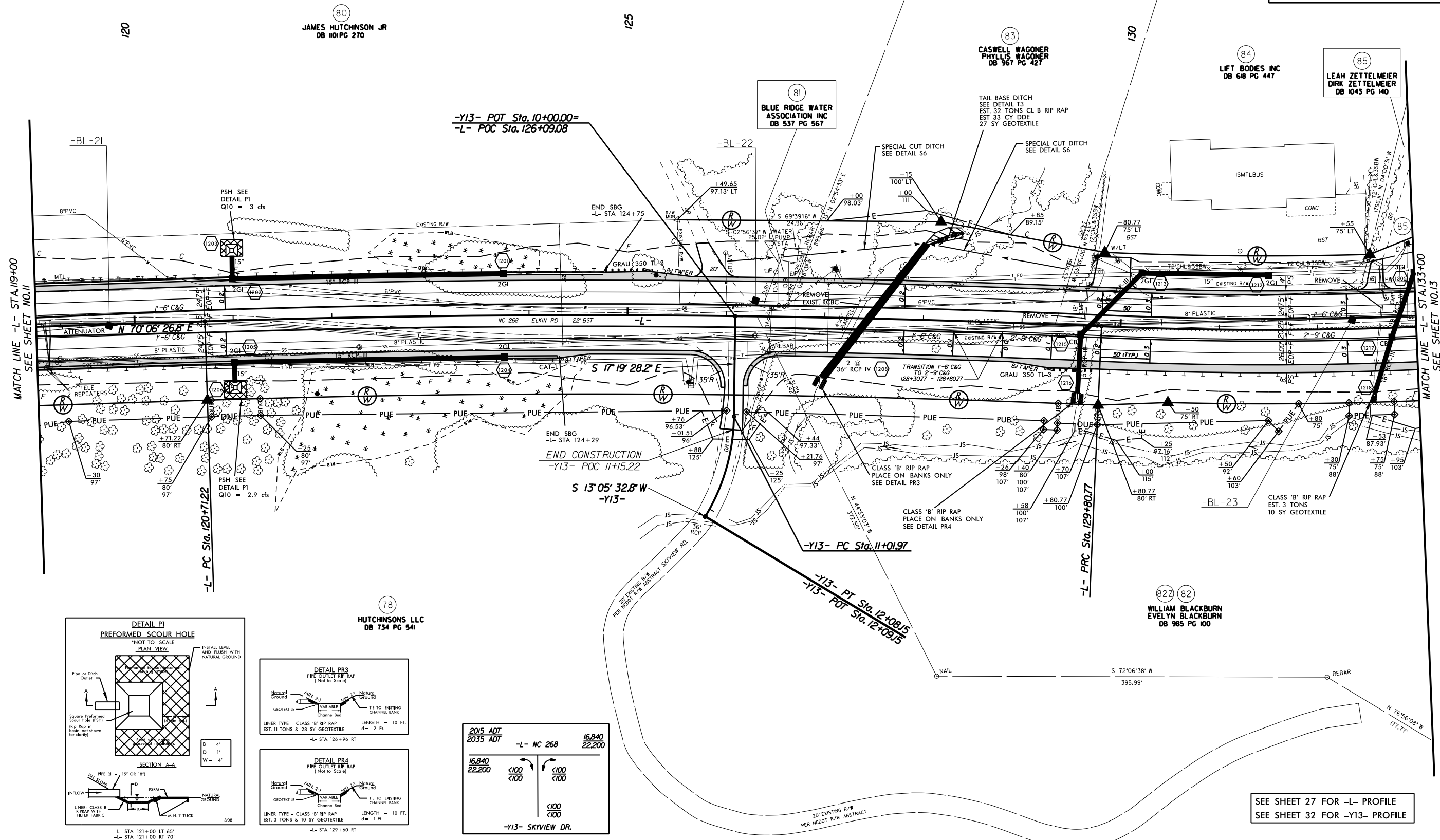


77
FRED REEVES
CONSTRUCTION CO INC
DB 88 PG 585

SEE SHEET 24 FOR -L- PROFILE
SEE SHEET 31 FOR -YII- & -DRIVE6- PROFILES
SEE SHEET 28-5 FOR -YII- INTERSECTION DETAIL



-L-		-Y13-	
PI Sta 125+26.21	PI Sta 135+15.68	PI Sta 11+56.34	
$\Delta = 4^{\circ} 20' 33.9''$ (RT)	$\Delta = 15^{\circ} 56' 33.6''$ (LT)	$\Delta = 30^{\circ} 25' 01.0''$ (RT)	
$D = 0^{\circ} 28' 38.9''$	$D = 1^{\circ} 29' 59.6''$	$D = 28^{\circ} 38' 52.4''$	
$L = 909.54'$	$L = 1,062.92'$	$L = 106.18'$	
$T = 454.99'$	$T = 534.92'$	$T = 54.37'$	
$R = 12,000.00'$	$R = 3,820.00'$	$R = 200.00'$	
$V = 50$ mph	$V = 50$ mph		
$SE = NC$	$SE = 0.03$		



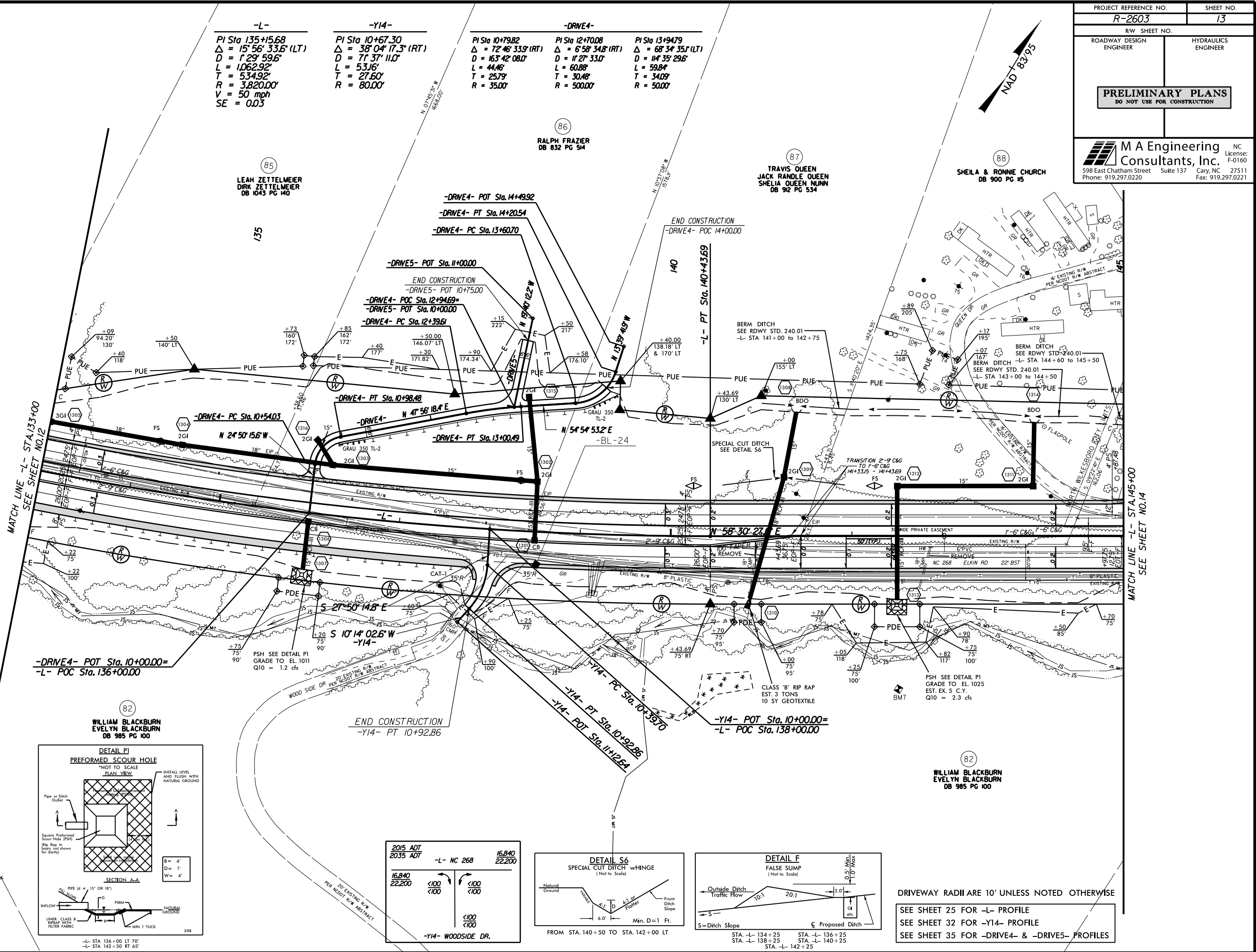
SEE SHEET 27 FOR -L- PROFILE
SEE SHEET 32 FOR -Y13- PROFILE

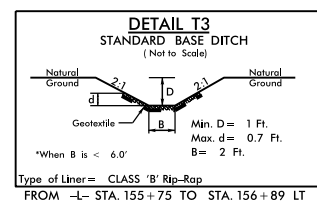
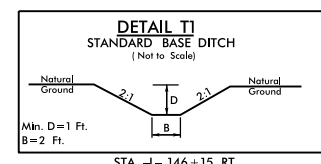
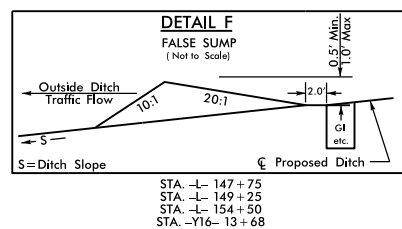
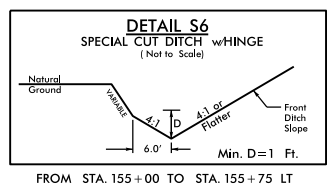
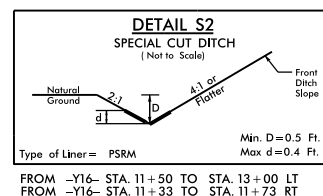
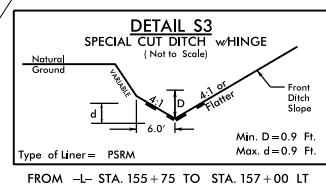
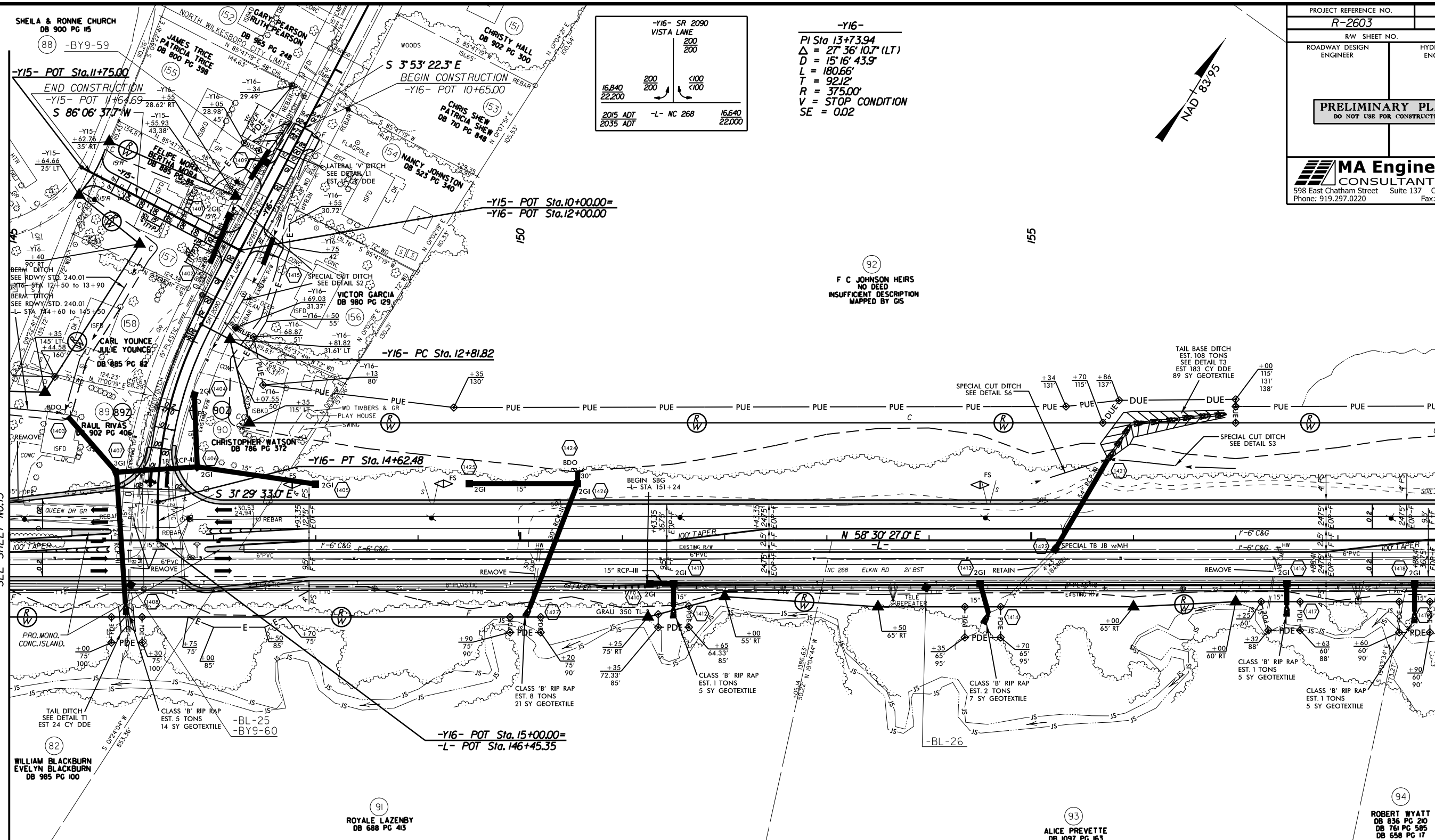
8/17/99

REVISIONS

03/13/2014 - RW REVISION: UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 88 - MAE
09/02/2014 - RW REVISION: ADDED PUE AND TCE ON PARCELS 85 & 86; ADDED PUE ON PARCELS 87 & 88 - MAE
09/16/2014 - RW REVISION: REVISED PROPOSED RW AND PUE ON PARCELS 86 & 87 - TLW

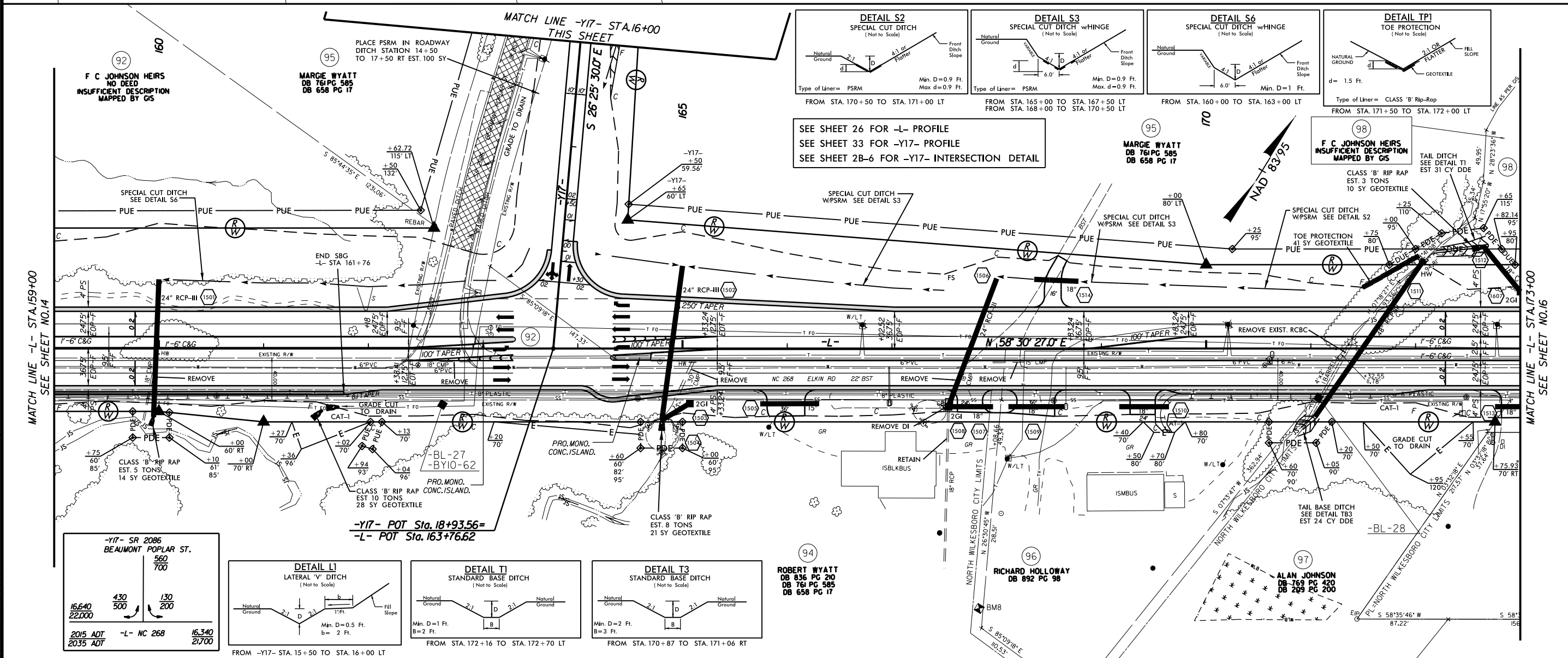
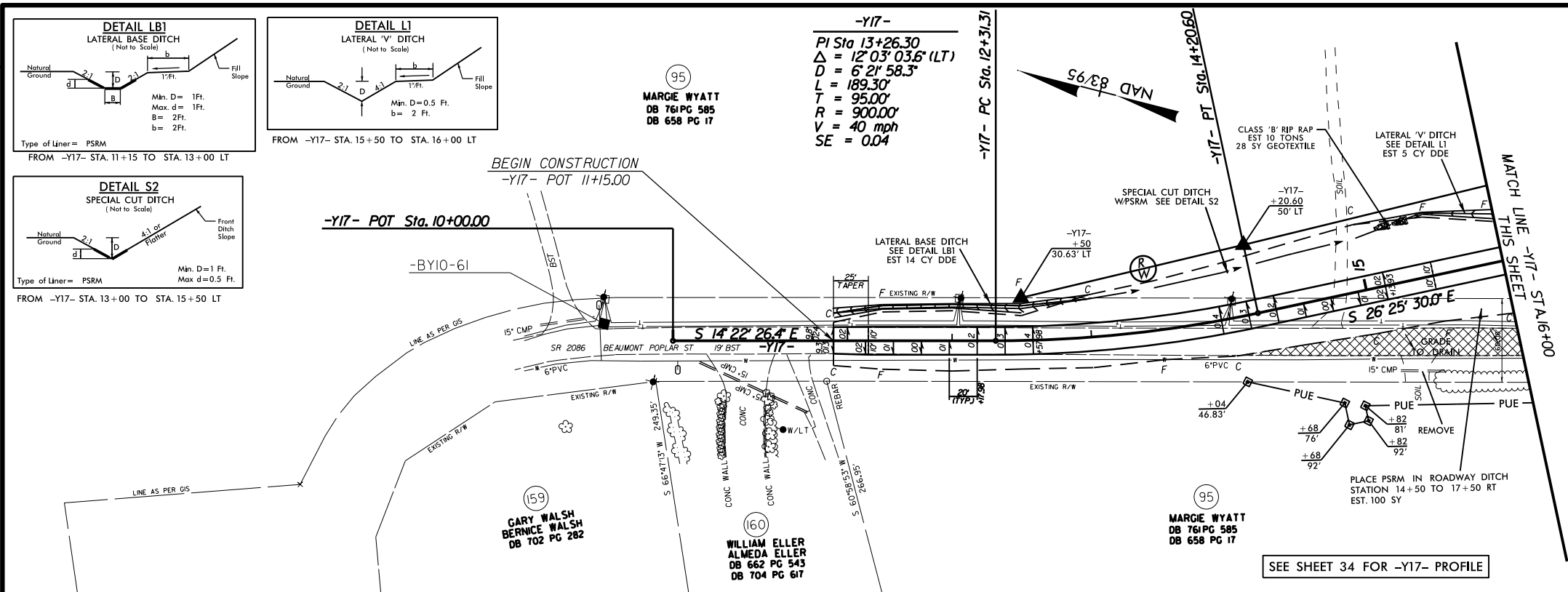
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R-2603.DWG





SEE SHEET 26 FOR -L- PROFILE
SEE SHEET 32 FOR -Y15- PROFILE
SEE SHEET 33 FOR -Y16- PROFILE
SEE SHEET 2B-6 FOR -Y16- INTERSECTION DETAIL

REVISIONS	
3/13/2014	- RW REVISION: UPDATED PROPERTY LINE ON PARCEL 97; UPDATED PROPERTY OWNER NAME, DEED REFERENCE, AND PROPERTY LINE ON PARCEL 99. - MAE
7/21/2014	- RW REVISION: REVISED PROPOSED RW AND TCE ON PARCELS 97 & 99 - KNW
9/22/2014	- RW REVISION: REMOVED TCE AND ADDED PUE ON PARCEL 92; ADDED PUE AND REVISED TCE ON PARCEL 94; ADDED PUE AND CHANGED PDE TO PUE ON PARCELS 95 & 98; ADDED STATION AND OFFSET LABEL AT -L- 169 + 80; 70 RT. - MAE



REVISIONS

03/13/2014 - R/W REVISION: UPDATED PROPERTY LINE ON PARCEL 99; SUBDIVIDED PARCEL 100 INTO PARCELS 100 & 100A; UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 99, 100, 100A, & 101. - MAE

06/06/2014 - R/W REVISION: UPDATED PROPERTY OWNER NAME ON PARCEL 167. - MAE

07/21/2014 - R/W REVISION: REMOVED PROPOSED R/W & TCE ON PARCEL 99; CORRECTED SHEET TO SHOW PREVIOUSLY REVISED PROPERTY LINES ON PARCELS 99 & 100A AND TCE WITH STATIONS & OFFSETS NEAR -Y18- 34+50 ON PARCEL 100. - KRW

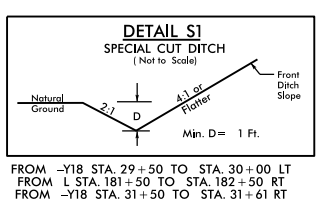
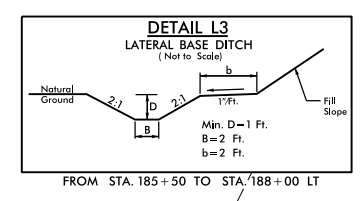
09/02/2014 - R/W REVISION: REVISED PUE ON PARCELS 98 & 102; ADDED PUE AND REMOVED TCE ON PARCEL 103; ADDED PUE AND REVISED TCE ON PARCEL 104; REMOVED PUE ON PARCEL 161; ADDED PUE ON PARCEL 165. - MAE

09/16/2014 - R/W REVISION: FLATTENED THE SLOPES FROM -L- (LT) 176+88 TO 179+70 ON PARCEL 101; SUBDIVIDED PARCEL 161 INTO 161 & 161B; PROVIDED PROPERTY OWNER INFO AND DEED REFERENCE ON PARCEL 161B. - TLW

8/17/199

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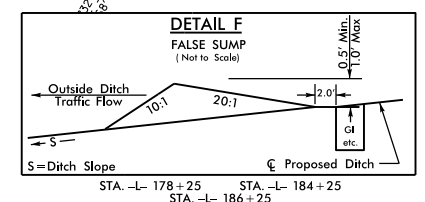
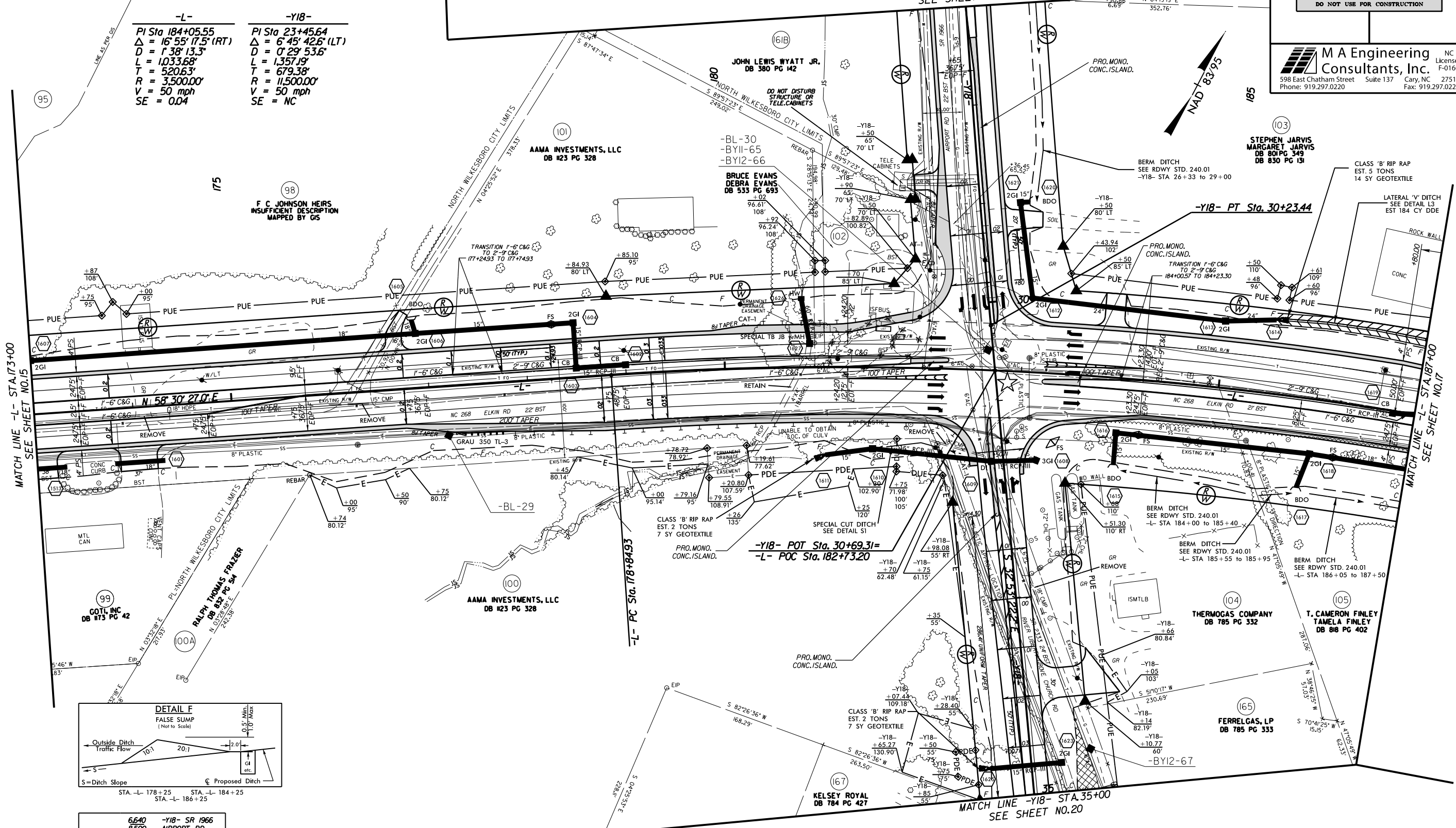


-L-

PI Sta 184+05.55
 $\Delta = 16' 55'' 17.5'' (RT)$
 $D = 1' 38'' 13.3''$
 $L = 1033.68'$
 $T = 520.63'$
 $R = 3500.00'$
 $V = 50 \text{ mph}$
 $SE = 0.04$

-Y18-

PI Sta 23+45.64
 $\Delta = 6' 45'' 42.6'' (LT)$
 $D = 0' 29'' 53.6''$
 $L = 1357.19'$
 $T = 679.38'$
 $R = 11500.00'$
 $V = 50 \text{ mph}$
 $SE = NC$



6640 8500	-Y18- SR 1966 AIRPORT RD.
16340 21700	5230 6800
	890 1000
	-L- NC 268
	1500 2500
	390 600
	10890 14100
2015 ADT	2410
2035 ADT	3700
	-Y18- SR 2333

★ UPGRADE EXISTING SIGNAL

SEE SHEET 27 FOR -L- PROFILE
SEE SHEET 34 FOR -Y18- PROFILE
SEE SHEET 28-6 FOR -Y18- INTERSECTION DETAIL

PROJECT REFERENCE NO. **R-2603** SHEET NO. **16**

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

NC License: F-0160

17

WAY DESIGN ENGINEER

HYDRAULICS
ENGINEER

--	--



REVISIONS

14-OCT-2014 10:45



SEE SHEET 27 FOR -L- PROFILE

-YI-

PI Sta 12+86.70	PI Sta 23+28.47
$\Delta = 4^{\circ} 05' 41.6" (RT)$	$\Delta = 77^{\circ} 54' 10.1" (RT)$
$D = 1^{\circ} 58' 32.6"$	$D = 4^{\circ} 56' 12.7"$
$L = 207.26'$	$L = 1,577.98'$
$T = 103.67'$	$T = 938.18'$
$R = 2,900.00'$	$R = 1,160.57'$
	$SE = 40 \text{ mph}$
	$VE = 0.04$

133
NORTH WILKESBORO BPOE
DB 301PG 150
INCORRECT DESCRIPTION

NAD 83/95

-BYI-36

BEGIN CONSTRUCTION
-YI- POC 13+05.00

$$\frac{-Y_I - POT}{Std. 10 + 00.00}$$

GARLAND STONE
DB 859 PG 158

RICHARD COLBURN
ROXIE COLBURN
DB 1027 PG 197

WALTER STONE
LAURETTA STONE
DB 931PG 33
INCORRECT
DESCRIPTION

KAJAN LLC
NO DEED REFERENCE
PB 9 PG 407

MCDONALDS REAL ESTATE COMPANY
DB 834 PG 262

13
MACK BROWN
WILLA BROWN
DB 807 PG 278

CLASS 'B' RIP RAP
EST. 1 TONS

WORTH WINEBARGER
DB 675 PG 314
DB 479 PG 247

GARY BESHEARS
DB 1010 PG 78

FIRST BAPTIST CHURCH CEMETARY
DB 1080 PG 265

YADKIN VALLEY
MOTOR CO INC
DB 660 PG 945
DB 671 PG 984
INCORRECT DESCRIPTION

WHITE REAL PROPERTY
DB 80IPG 91

KAJAN LLC
NO DEED REFERENCE
PB 9 PG 407

★ UPGRADE EXISTING SIGNAL

SEE SHEET 28 FOR -Y1- PROFILE

REVISIONS

02/2014 - R/W REVISION: ADDED PUE ON PARCEL 13. - MAE

8/17/99

02-SEP-2014 09:04
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\$\$\$USERNAME\$\$\$

8/17/99

REVISIONS
03/13/2014 - RW REVISION: SUBDIVIDED PARCEL 163 & 163A WITH PROPERTY OWNER NAMES AND DEED REFERENCES. - KNW
09/02/2014 - RW REVISION: REMOVED PUE AND CHANGED DUE TO PDE ON PARCEL 161. - MAE
07/02/2014 - RW REVISION: ORIGINAL PARCEL 161 SPLIT INTO 161, 161A, & 161B, AND BOTH NEW PARCELS HAVE NEW PROPERTY OWNER NAMES AND DEED INFO. - MAE
10/14/2014 - RW REVISION: UPDATED PROPERTY OWNER NAME ON PARCEL 163. - MAE

14-QCT-2014 1045
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\$\$\$\$\$ STRIKE NAME \$\$\$

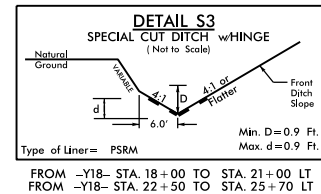
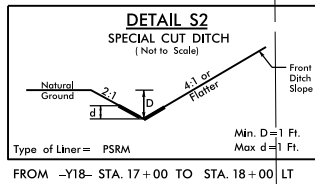
-Y18-
PI Sta 13+38.13
 $\Delta = 22^\circ 53' 33.8''$ (RT)
D = 3' 26' 28.3"
L = 665.26'
T = 337.13'
R = 1,665.00'
PI Sta 23+45.64
 $\Delta = 6^\circ 45' 42.6''$ (LT)
D = 0' 29' 53.6"
L = 1,357.19'
T = 679.38'
R = 11,500.00'
V = 60 mph
SE = NC

BEGIN CONSTRUCTION
-Y18- POC 17+50.00

(161)
VERNON WYATT
ANNA WYATT
DB 1062 PG 14

(161A)
OTHO BRIAN WYATT
DB 1069 PG 70

(161B)
JOHN LEWIS WYATT JR.
DB 380 PG 142



SEE SHEET 34 FOR -Y18- PROFILE

PROJECT REFERENCE NO. R-2603		SHEET NO. 19	
RW SHEET NO. 20		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
M A Engineering Consultants, Inc. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221			

(164)
H & E MOTORS INC
DB 121 PG 89

BERM DITCH
SEE RDWY STD. 240.01
-Y18- STA 26+38 TO 29+00

MATCH LINE -Y18- STA. 27+00
SEE SHEET NO. 16

5/28/99



M A Engineering
Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE

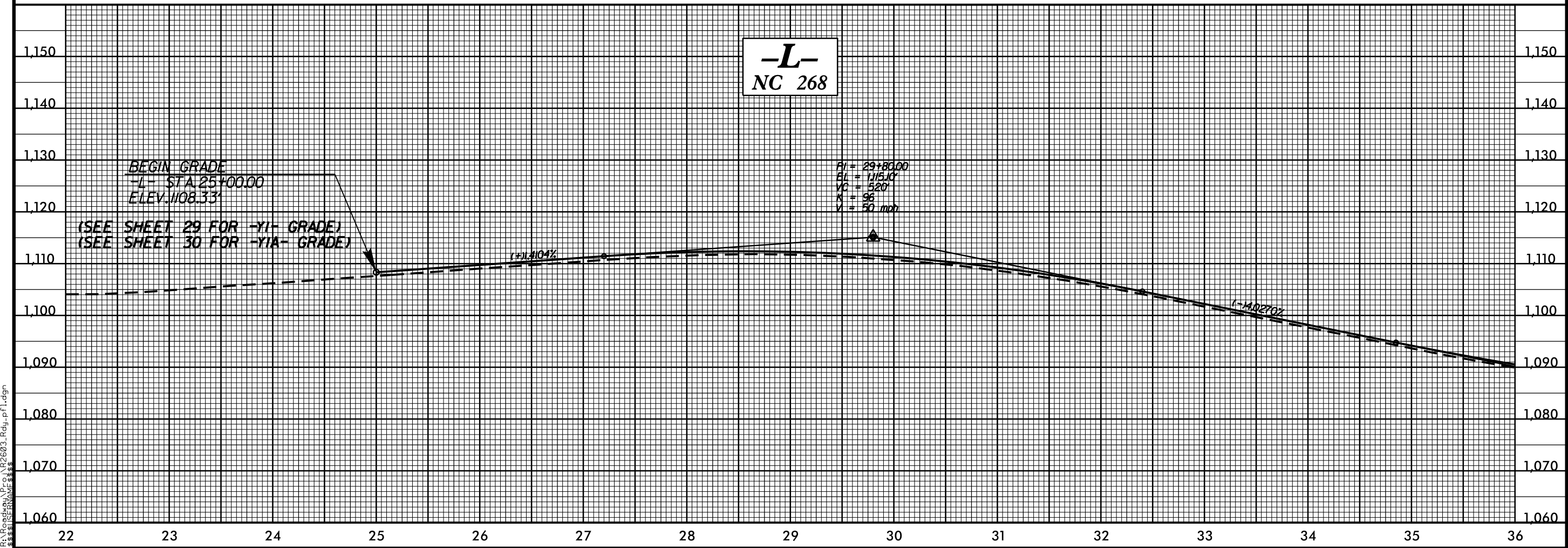
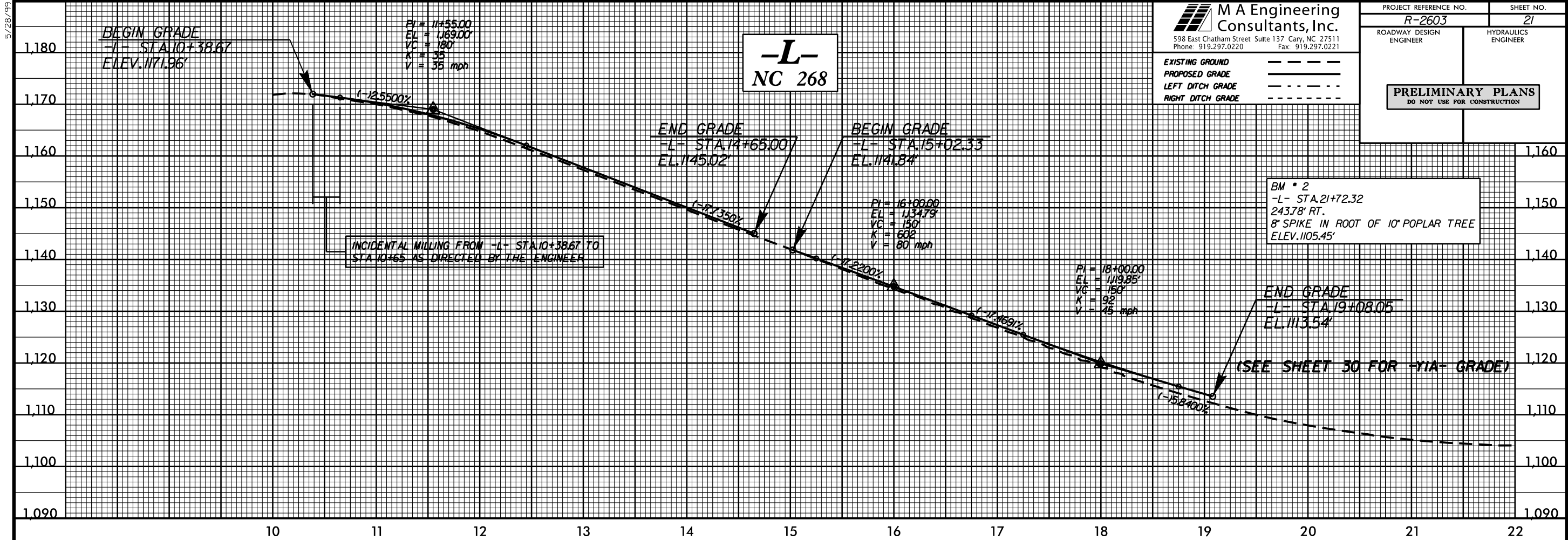
PROJECT REFERENCE NO.
R-2603

SHEET NO.
21

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



5/28/99

M A Engineering
Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

PROJECT REFERENCE NO.
R-2603

SHEET NO.
22

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-
NC 268

BM * 3
-L- STA.42+89.22
203.52' RT.
8" SPIKE IN ROOT OF 16" POPLAR TREE
ELEV.1074.70'

EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE

PI = 37+00.00
EL = 1086.11'
VC = 430'
K = 164
V = 65 mph

PI = 43+75.00
EL = 1076.62'
VC = 420'
K = 97
V = 50 mph

PIPE HYDRAULIC DATA		
-L- Sta.44+02		
DRAINAGE AREA	= 145	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 120	CFS
DESIGN HW ELEVATION	= 1077.7	FT
100 YEAR DISCHARGE	= 150	CFS
100 YEAR HW ELEVATION	= 1078.3	FT
OVERTOPPING FREQUENCY	= 100(+)	YRS
OVERTOPPING DISCHARGE	= 165	CFS
OVERTOPPING ELEVATION	= 1078.6	FT

EXISTING 5' X 6' BOX CULVERT

-L-
NC 268

BM * 4
-L- STA.60+50.08
180.12' LT.
8" SPIKE IN ROOT OF 10" PINE TREE
ELEV.1075.36'

PI = 52+80.00
EL = 1103.23'
VC = 840'
K = 136
V = 55 mph

PI = 60+95.00
EL = 1076.77'
VC = 260'
K = 97
V = 50 mph

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PROJECT REFERENCE NO. **R-2603** SHEET NO. **23**

ROADWAY DESIGN
ENGINEER

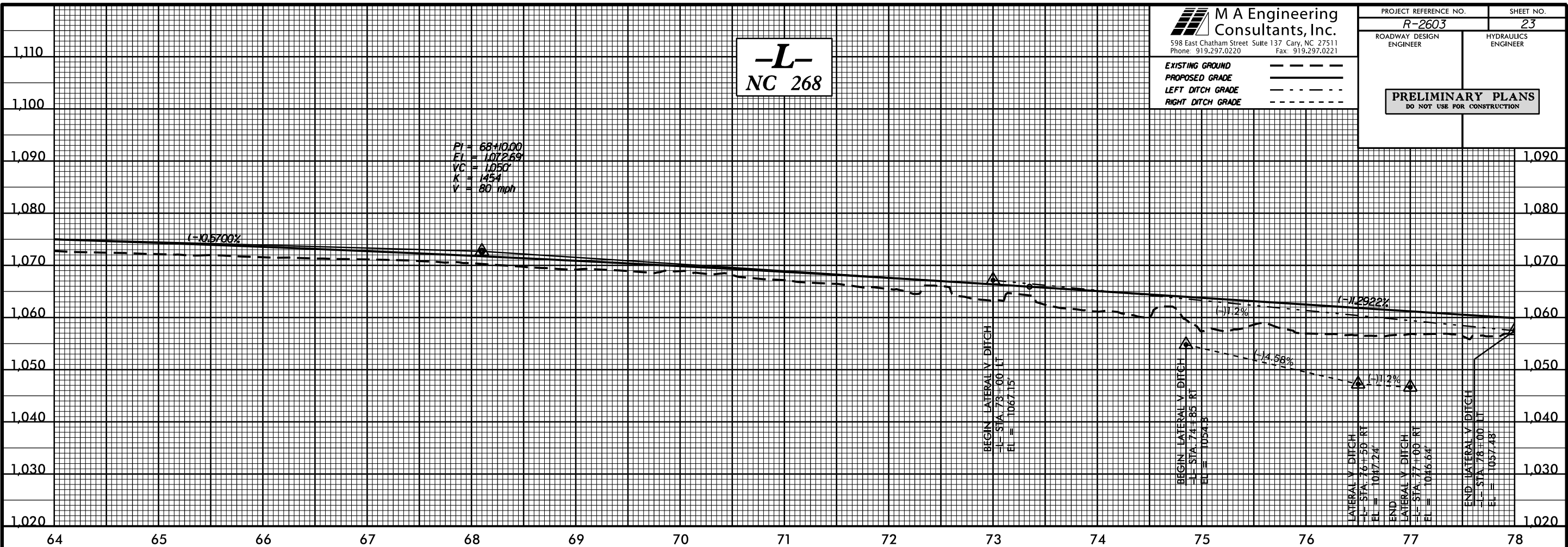
HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE

PI = 68+10.00
EI = 1072.69
VC = 1050'
K = 1454
V = 80 mph

-L-
NC 268



BM * 5
-L- STA.79+19.79
129.22' RT.
8" SPIKE IN ROOT OF 10" FORKED MAPLE
ELEV. 1055.75'

-L-
NC 268

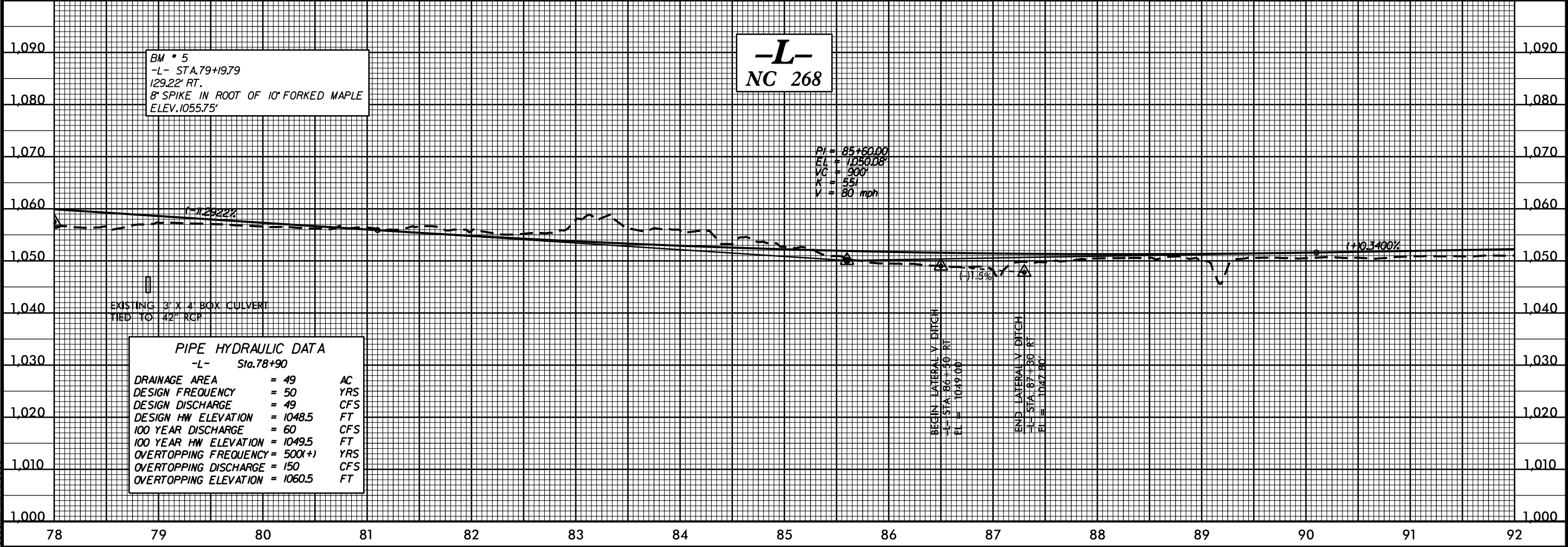
PI = 85+60.00
EI = 1050.08
VC = 900'
K = 551
V = 80 mph

EXISTING 3' X 4' BOX CULVERT
TIED TO 42" RCP

PIPE HYDRAULIC DATA		
-L- Sta.78+90		
DRAINAGE AREA	= 49	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 49	CFS
DESIGN HW ELEVATION	= 1048.5	FT
100 YEAR DISCHARGE	= 60	CFS
100 YEAR HW ELEVATION	= 1049.5	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 150	CFS
OVERTOPPING ELEVATION	= 1060.5	FT

BEGIN LATERAL V. DITCH
-L- STA. 86+30 RT
EL = 1049.00

END LATERAL V. DITCH
-L- STA. 87+90 RT
EL = 1047.80



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EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE

PI = 102+30.00
EL = 1055.76
VC = 770
K = 152
V = 60 mph

PIPE HYDRAULIC DATA			
-L- Sta. 96+81			
DRAINAGE AREA	= 21	AC	
DESIGN FREQUENCY	= 50	YRS	
DESIGN DISCHARGE	= 35	CFS	
DESIGN HW ELEVATION	= 1049	FT	
100 YEAR DISCHARGE	= 42	CFS	
100 YEAR HW ELEVATION	= 1049.9	FT	
OVERTOPPING FREQUENCY	= 100(+)	YRS	
OVERTOPPING DISCHARGE	= 46	CFS	
OVERTOPPING ELEVATION	= 1050.5	FT	

BEGIN LATERAL V DITCH
-L- STA. 95+60 LT
EL = 1047.90

END LATERAL V DITCH
-L- STA. 96+73 LT
EL = 1047.17

BEGIN LATERAL V DITCH
-L- STA. 96+78 LT
EL = 1046.90

END LATERAL V DITCH
-L- STA. 98+26 LT
EL = 1048.66

BEGIN LATERAL V DITCH
-L- STA. 99+23 LT
EL = 1050.45

END LATERAL V DITCH
-L- STA. 99+73 LT
EL = 1051.36

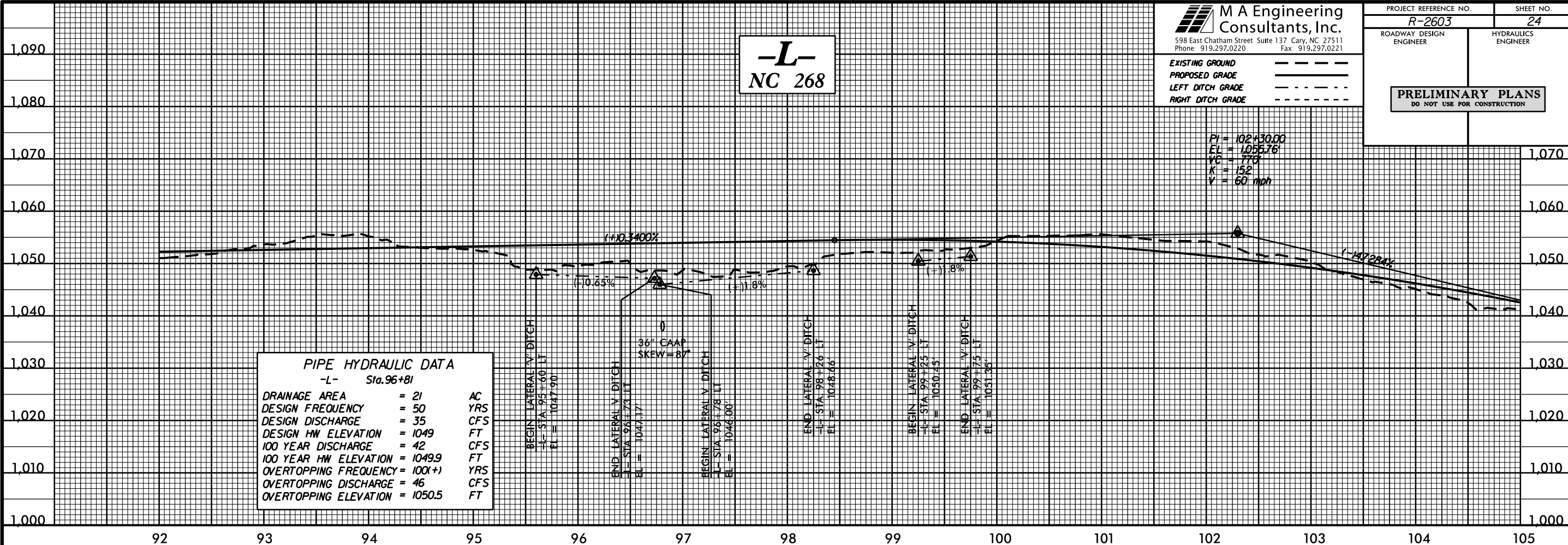
36" CAAP
SKEW = 87°

(+/-) 0.3400%

(-/-) 0.65%

(+/-) 1.8%

(+/-) 0.8%



BRIDGE HYDRAULIC DATA			
DESIGN DISCHARGE	= 6500	CFS	
DESIGN FREQUENCY	= 50	YRS	
DESIGN HW ELEVATION	= 991.0	FT	
BASE DISCHARGE	= 7500	CFS	
BASE FREQUENCY	= 100	YRS	
BASE HW ELEVATION	= 991.76	FT	
OVERTOPPING DISCHARGE	= 13000	CFS	
OVERTOPPING FREQUENCY	= 500(+)	YRS	
OVERTOPPING ELEVATION	= 998.3	FT	

BM * 6
-L- STA. 118+08.33
209.6' LT.
8" SPIKE IN ROOT OF 10" WALNUT
TREE ON BANK OF MULBERRY CREEK
ELEV. 994.53'

PI = 113+77.70
EL = 1001.49
VC = 510
K = 118
V = 55 mph

PIPE HYDRAULIC DATA			
-L- Sta. 108+06 LT			
DRAINAGE AREA	= 18	AC	
DESIGN FREQUENCY	= 50	YRS	
DESIGN DISCHARGE	= 30	CFS	
DESIGN HW ELEVATION	= 1022.3	FT	
100 YEAR DISCHARGE	= 36	CFS	
100 YEAR HW ELEVATION	= 1022.8	FT	
OVERTOPPING FREQUENCY	= 500(+)	YRS	
OVERTOPPING DISCHARGE	= 50	CFS	
OVERTOPPING ELEVATION	= 1025.1	FT	

BEGIN LATERAL V DITCH
-L- STA. 105+50 LT
EL = 1033.00

BEGIN LATERAL BASE DITCH
-L- STA. 107+00 RT
EL = 1030.20

LATERAL V DITCH
-L- STA. 107+59 LT
EL = 1016.90

END LATERAL V DITCH
-L- STA. 108+00 LT
EL = 1021.00

LATERAL BASE DITCH
-L- STA. 108+50 RT
EL = 1016.40

LATERAL BASE DITCH
-L- STA. 109+00 RT
EL = 1015.15

END LATERAL BASE DITCH
-L- STA. 109+50 RT
EL = 1014.75

BEGIN BASE TAIL DITCH
-L- STA. 110+78.63 (114) RT
EL = 1013.00

END BASE TAIL DITCH
-L- STA. 111+52.00 (165.65) RT
EL = 1004.68

LATERAL BASE DITCH
-L- STA. 111+00 RT
EL = 1011.51

LATERAL BASE DITCH
-L- STA. 111+50 RT
EL = 1004.68

108.25 LF @ 7.69%

(-/-) 1.18%

(-/-) 7.32%

(-/-) 2.2%

(-/-) 2.5%

(-/-) 0.8%

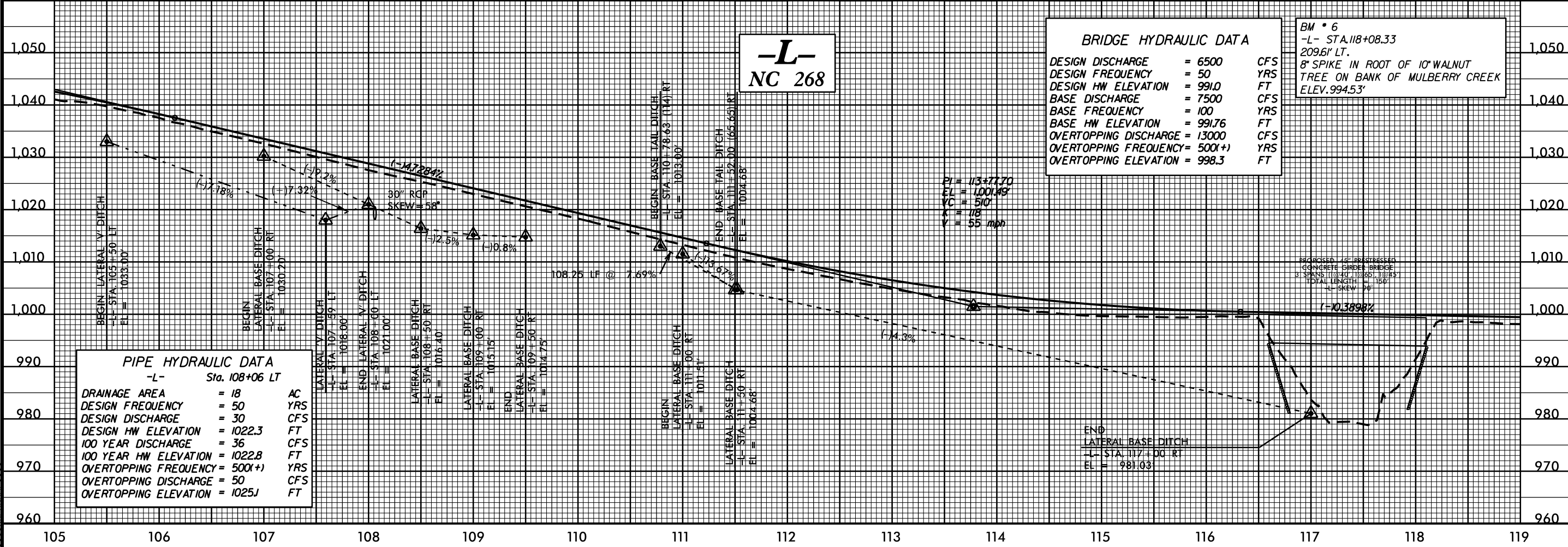
30" RGP
SKEW = 58°

(-/-) 14.3%

(-/-) 10.3898%

END LATERAL BASE DITCH
-L- STA. 117+00 RT
EL = 981.03

PROPOSED 15' PRESTRESSED
CONCRETE GIRDER BRIDGE
3 SPANS (10.40' 10.60' 10.40')
TOTAL LENGTH = 31.40'
L SKEW = 0°



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SHEET NO.

25

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE

-L-
NC 268

PIPE HYDRAULIC DATA			
-L-		Sta. 127+38 LT	
DRAINAGE AREA	= 52	AC	
DESIGN FREQUENCY	= 50	YRS	
DESIGN DISCHARGE	= 43	CFS	
DESIGN HW ELEVATION	= 997.2	FT	
100 YEAR DISCHARGE	= 52	CFS	
100 YEAR HW ELEVATION	= 997.5	FT	
OVERTOPPING FREQUENCY	= 100(+)	YRS	
OVERTOPPING DISCHARGE	= 58	CFS	
OVERTOPPING ELEVATION	= 997.7	FT	

PI = 125+82.60
EL = 996.79
VC = 600'
K = 238
V = 80 mph

39.6' F @ 9.37%

END BASE TAIL DITCH
-L- STA. 128+00 (75.92)' LT
EL = 994.80'

BEGIN BASE TAIL DITCH
-L- STA. 128+37.70 (88.95)' LT
EL = 998.51'

BEGIN
SPECIAL CUT 'V' DITCH WHINCE
-L- STA. 126+00 LT
EL = 995.75'

(-)0.48%
2-30" RCP
SKEW = 118°

SPECIAL CUT 'V' DITCH WHINCE
-L- STA. 128+00 LT
EL = 994.80'

END
SPECIAL CUT 'V' DITCH WHINCE
-L- STA. 129+50 LT
EL = 1001.60'

(+2.550%)

-L-
NC 268

BM * 7
-L- STA. 142+51.53
168.89' RT.
8" SPIKE IN ROOT OF 12" BEECH TREE
ELEV. 1027.66'

PI = 138+75.00
EL = 1022.54'
VC = 250'
K = 303
V = 80 mph

PI = 142+00.00
EL = 1030.79'
VC = 400'
K = 706
V = 80 mph

PI = 134+00.00
EL = 1014.41'
VC = 530'
K = 107
V = 80 mph

(+2.550%)

(+1.7123%)

(+2.5385%)

(-)0.5%

(-)5.22%

(+1.9720%)

(+1.9720%)

BEGIN
SPECIAL CUT 'V' DITCH WHINCE
-L- STA. 140+25 LT
EL = 1023.86'

SPECIAL CUT 'V' DITCH WHINCE
-L- STA. 141+25 LT
EL = 1023.485'

END
SPECIAL CUT 'V' DITCH WHINCE
-L- STA. 142+00 LT
EL = 1027.40'

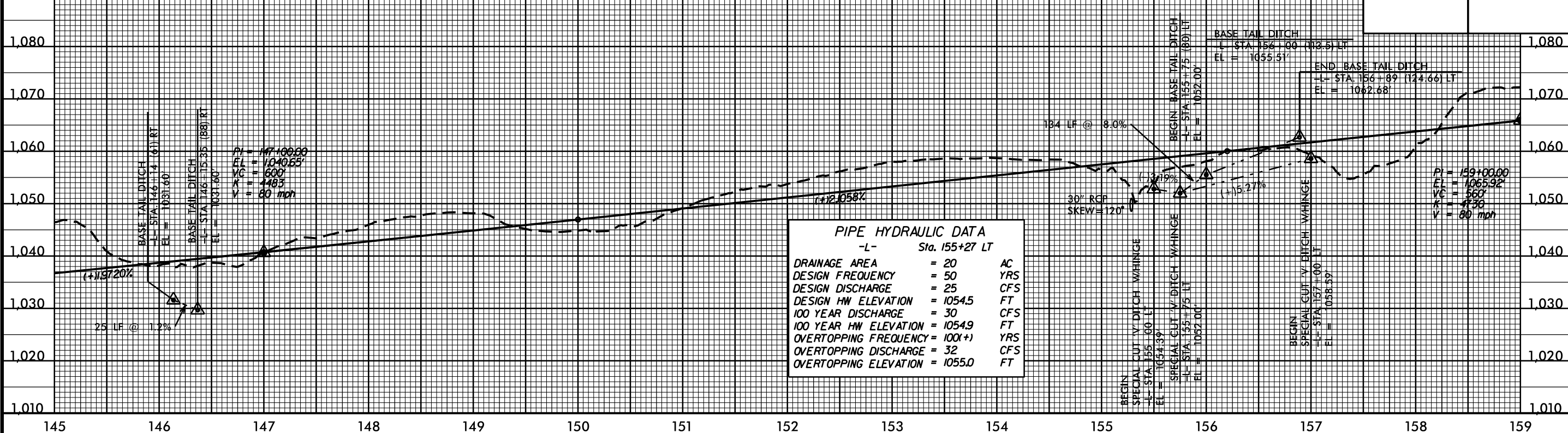
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-
NC 268

EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE



PIPE HYDRAULIC DATA
-L- Sta. 155+27 LT

DRAINAGE AREA	= 20	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 25	CFS
DESIGN HW ELEVATION	= 1054.5	FT
100 YEAR DISCHARGE	= 30	CFS
100 YEAR HW ELEVATION	= 1054.9	FT
OVERTOPPING FREQUENCY	= 100(+)	YRS
OVERTOPPING DISCHARGE	= 32	CFS
OVERTOPPING ELEVATION	= 1055.0	FT

PIPE HYDRAULIC DATA
-L- Sta. 160+00 LT

DRAINAGE AREA	= 3.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 11	CFS
DESIGN HW ELEVATION	= 1064.7	FT
100 YEAR DISCHARGE	= 12	CFS
100 YEAR HW ELEVATION	= 1064.8	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 15	CFS
OVERTOPPING ELEVATION	= 1065.1	FT

PIPE HYDRAULIC DATA
-L- Sta. 165+00 LT

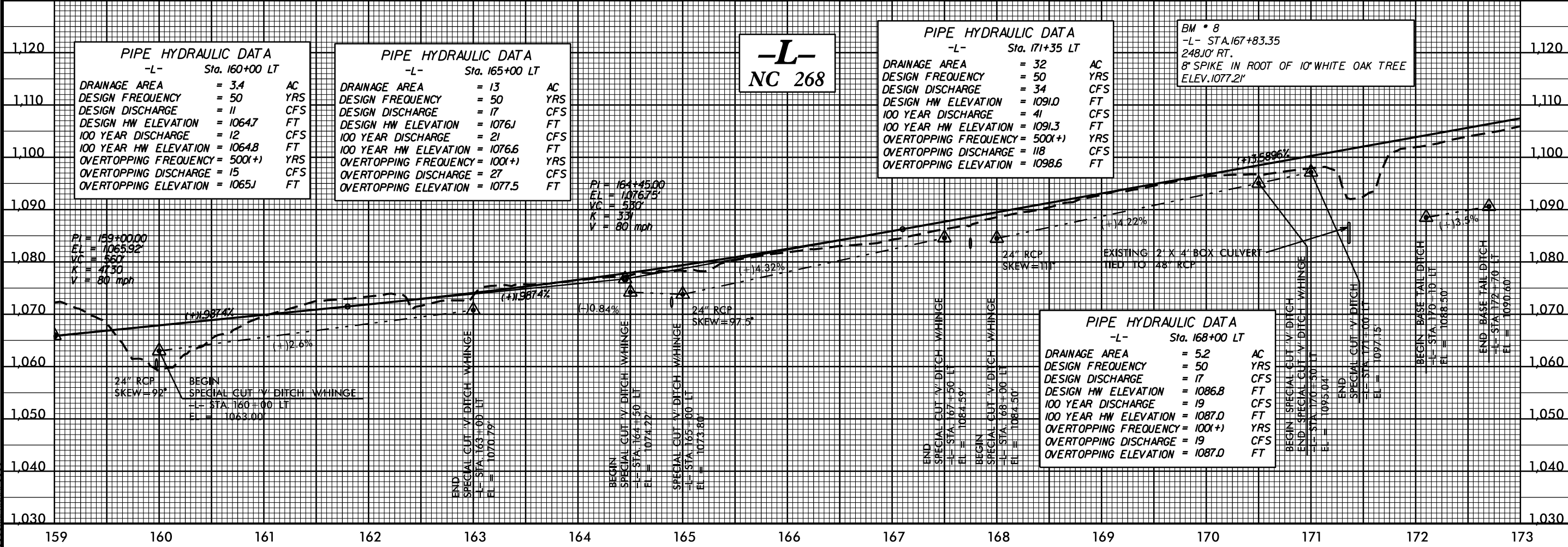
DRAINAGE AREA	= 13	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 17	CFS
DESIGN HW ELEVATION	= 1076.1	FT
100 YEAR DISCHARGE	= 21	CFS
100 YEAR HW ELEVATION	= 1076.6	FT
OVERTOPPING FREQUENCY	= 100(+)	YRS
OVERTOPPING DISCHARGE	= 27	CFS
OVERTOPPING ELEVATION	= 1077.5	FT

-L-
NC 268

PIPE HYDRAULIC DATA
-L- Sta. 171+35 LT

DRAINAGE AREA	= 32	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 34	CFS
DESIGN HW ELEVATION	= 1091.0	FT
100 YEAR DISCHARGE	= 41	CFS
100 YEAR HW ELEVATION	= 1091.3	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 118	CFS
OVERTOPPING ELEVATION	= 1098.6	FT

BM * 8
-L- STA. 167+83.35
248.10' RT.
8" SPIKE IN ROOT OF 10' WHITE OAK TREE
ELEV. 1077.2'



PIPE HYDRAULIC DATA
-L- Sta. 168+00 LT

DRAINAGE AREA	= 5.2	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 17	CFS
DESIGN HW ELEVATION	= 1086.8	FT
100 YEAR DISCHARGE	= 19	CFS
100 YEAR HW ELEVATION	= 1087.0	FT
OVERTOPPING FREQUENCY	= 100(+)	YRS
OVERTOPPING DISCHARGE	= 19	CFS
OVERTOPPING ELEVATION	= 1087.0	FT

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PROJECT REFERENCE NO.
R-2603

SHEET NO.
27

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE

-L-
NC 268

PI = 182+00.00
EI = 1139.75
VC = 920
K = 132
V = 55 mph

PIPE HYDRAULIC DATA			
-L-		Sta. 180+78 LT	
DRAINAGE AREA	= 36	AC	
DESIGN FREQUENCY	= 50	YRS	
DESIGN DISCHARGE	= 38	CFS	
DESIGN HW ELEVATION	= 1115.3	FT	
100 YEAR DISCHARGE	= 46	CFS	
100 YEAR HW ELEVATION	= 1115.6	FT	
OVERTOPPING FREQUENCY	= 500(+)	YRS	
OVERTOPPING DISCHARGE	= 200	CFS	
OVERTOPPING ELEVATION	= 1127.2	FT	

EXISTING 4' X 4' BOX CULVERT
TIED TO 40" RCP

BEGIN
SPECIAL CUT 'V' DITCH WHINAGE
-L- STA. 181+50 RT
EI = 1126.56

SPECIAL CUT 'V' DITCH WHINAGE
-L- STA. 182+00 RT
EI = 1126.81

BEGIN
LATERAL BASE DITCH
-L- STA. 185+50 LT
EI = 1124.40

(+3.5896%)

(-13.3992%)

(-13.56%)

1,170
1,160
1,150
1,140
1,130
1,120
1,110
1,100
1,090
1,080

1,150
1,140
1,130
1,120
1,110
1,100
1,090
1,080

173 174 175 176 177 178 179 180 181 182 183 184 185 186 187

BM * 9
-L- STA. 193+25.61
231.92' LT.
8" SPIKE IN ROOT OF 10' SUMACK TREE
ELEV. 1111.70'

-L-
NC 268

END GRADE
-L- STA. 195+00.00
EL. 1095.56'

END
LATERAL BASE DITCH
-L- STA. 188+00 LT
EI = 1115.50

(-13.3992%)

INCIDENTAL MILLING FROM -L- STA. 192+75 TO
STA. 195+00 AS DIRECTED BY THE ENGINEER

1,140
1,130
1,120
1,110
1,100
1,090
1,080
1,070
1,060
1,050

1,140
1,130
1,120
1,110
1,100
1,090
1,080
1,070
1,060
1,050

187 188 189 190 191 192 193 194 195 196 197 198 199 200 201

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PROJECT REFERENCE NO.
R-2603

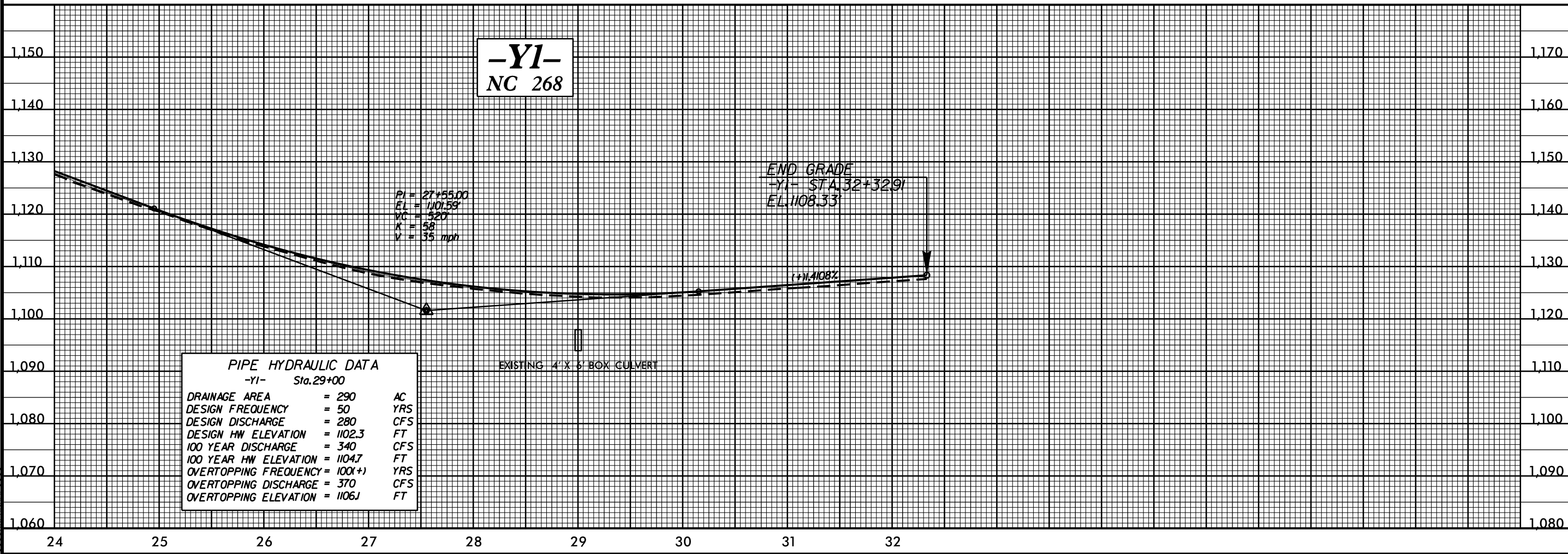
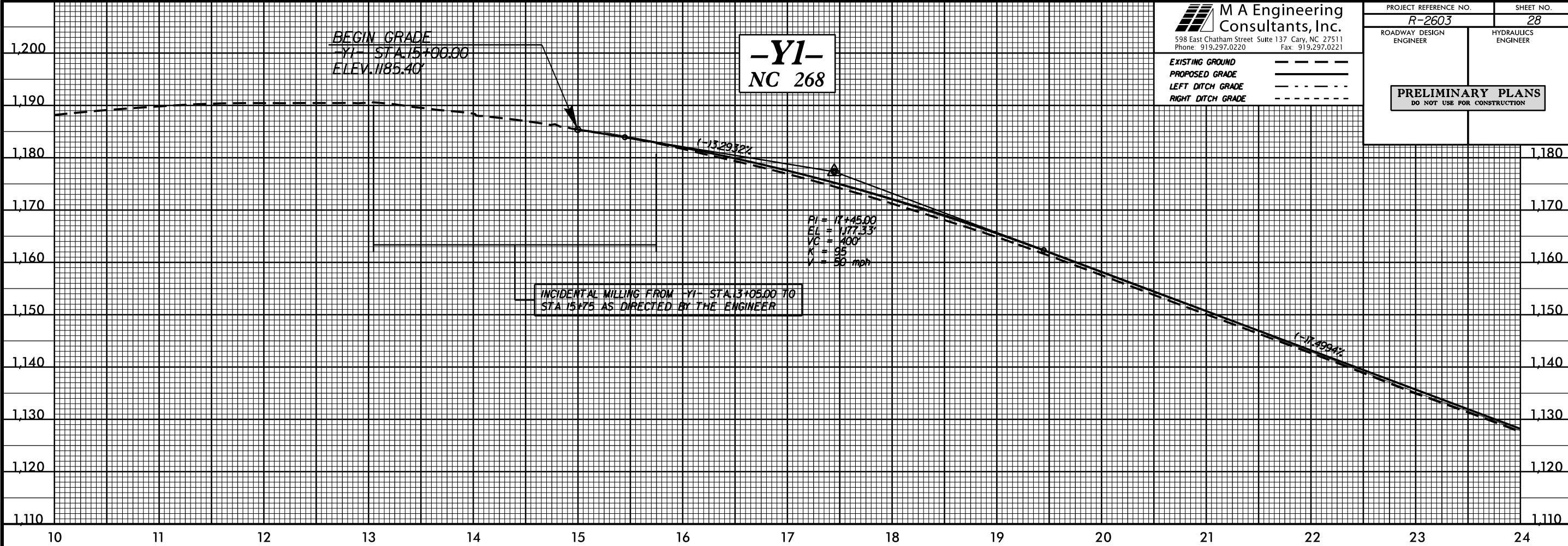
SHEET NO.
28

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE



PIPE HYDRAULIC DATA		
-YI-	Sta. 29+00	
DRAINAGE AREA	= 290	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 280	CFS
DESIGN HW ELEVATION	= 1102.3	FT
100 YEAR DISCHARGE	= 340	CFS
100 YEAR HW ELEVATION	= 1104.7	FT
OVERTOPPING FREQUENCY	= 100(+)	YRS
OVERTOPPING DISCHARGE	= 370	CFS
OVERTOPPING ELEVATION	= 1106.1	FT

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PROJECT REFERENCE NO. R-2603 SHEET NO. 29

ROADWAY DESIGN
ENGINEER HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE

-Y1A-
NC 268

BEGIN GRADE
-Y1A- STA. 21+58.06
ELEV. 1146.36'

PI = 23+20.00
EL = 1134.32'
VC = 280'
K = 243
V = 80 mph

30" RCP
SKEW = 34°

PIPE HYDRAULIC DATA
-Y1A- Sta. 23+06

DRAINAGE AREA	= 12	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 33	CFS
DESIGN HW ELEVATION	= 1125.0	FT
100 YEAR DISCHARGE	= 39	CFS
100 YEAR HW ELEVATION	= 1125.5	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 100	CFS
OVERTOPPING ELEVATION	= 1136.6	FT

PI = 28+25.00
EL = 1102.20'
VC = 430'
K = 55
V = 35 mph

END GRADE
-Y1A- STA. 32+53.11
ELEV. 1108.24'

(+11.108%)

-Y2-
SR 2334

BEGIN GRADE
-Y2- STA. 14+65.00
ELEV. 1145.02'

PI = 15+65.00
EL = 1137.28'
VC = 200'
K = 183
V = 70 mph

END GRADE
-Y2- STA. 17+14.58
ELEV. 1127.35'

PI = 17+17.09
EL = 1129.26'
VC = 126.4'

BEGIN GRADE
-Y2- STA. 17+93.62
ELEV. 1123.05'

PI = 18+60.69
EL = 1119.70'
VC = 134'
K = 10
V = 15 mph

END GRADE
-Y2- STA. 19+30.00
ELEV. 1125.51'

INCIDENTAL MILLING FROM -Y2- STA. 19+15.00 TO
STA. 19+30 AS DIRECTED BY THE ENGINEER

-Y3-
SCHOOL BUS DR.

BEGIN GRADE
-Y3- STA. 10+06.00
ELEV. 1106.45'

PI = 10+43.32
EL = 1105.18'
VC = 58'
K = 10
V = 15 mph

END GRADE
-Y3- STA. 10+72.48
ELEV. 1105.76'

-Y3- STA. 11+00.00
ELEV. 1106.33'

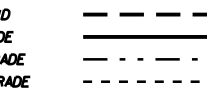
(-13.4000%)
(+2.0000%)
(+2.0712%)

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EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE



PROJECT REFERENCE NO.
R-2603

SHEET NO.
30

ROADWAY DESIGN
ENGINEER

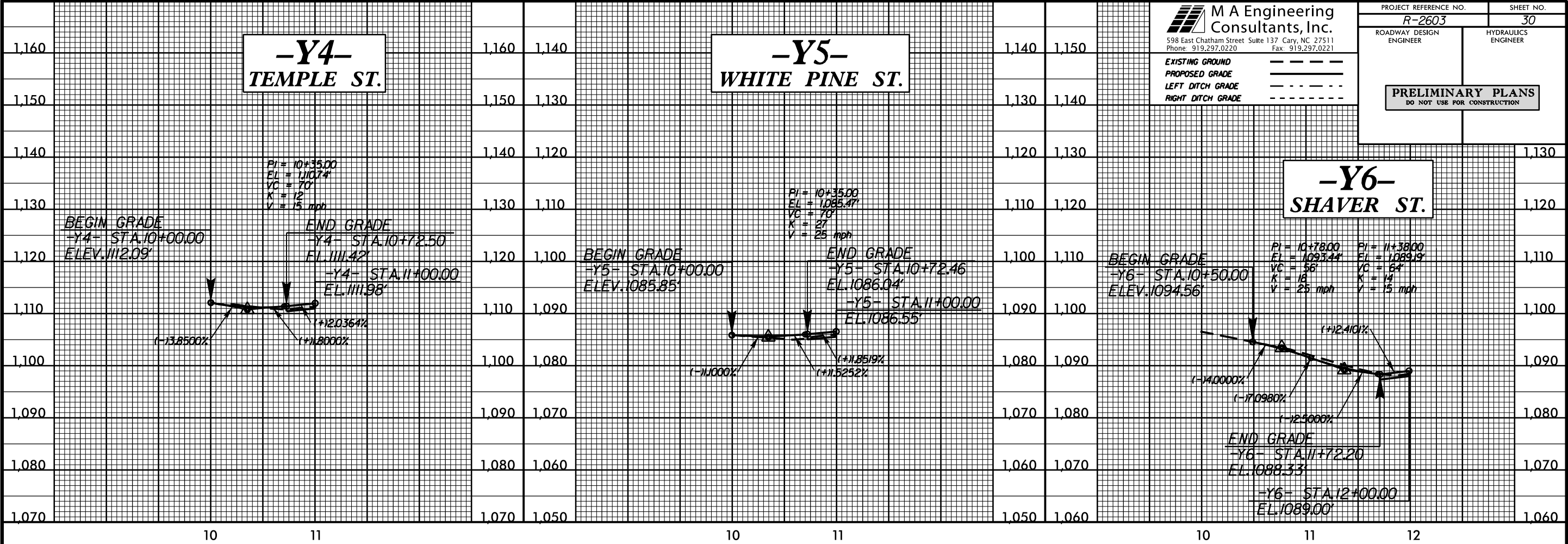
HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

**-Y4-
TEMPLE ST.**

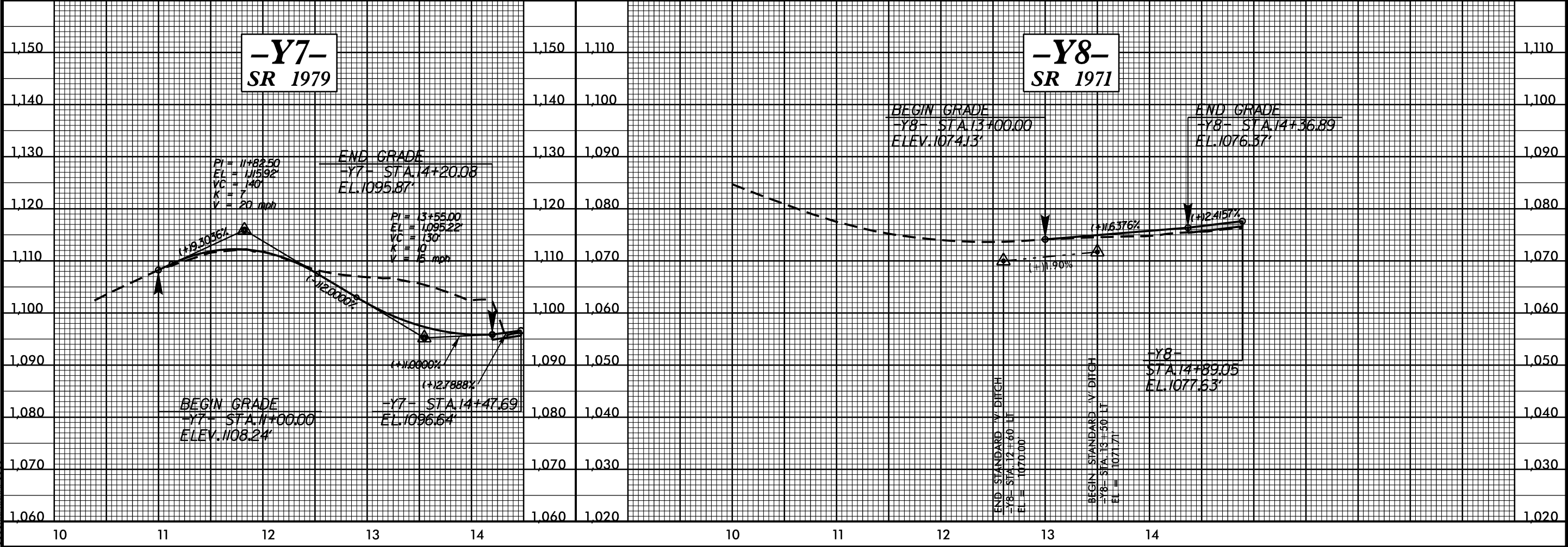
**-Y5-
WHITE PINE ST.**

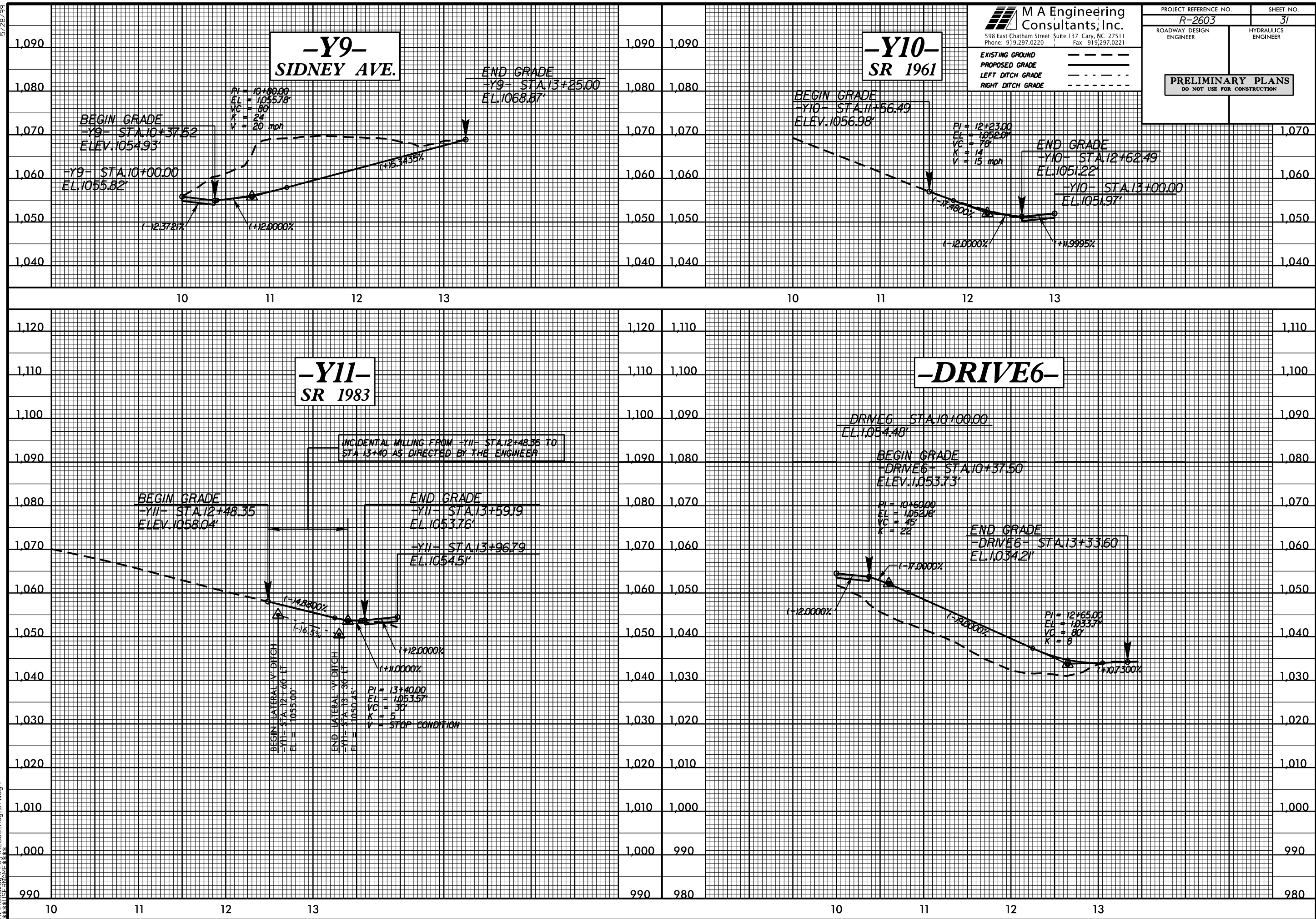
**-Y6-
SHAVER ST.**



**-Y7-
SR 1979**

**-Y8-
SR 1971**





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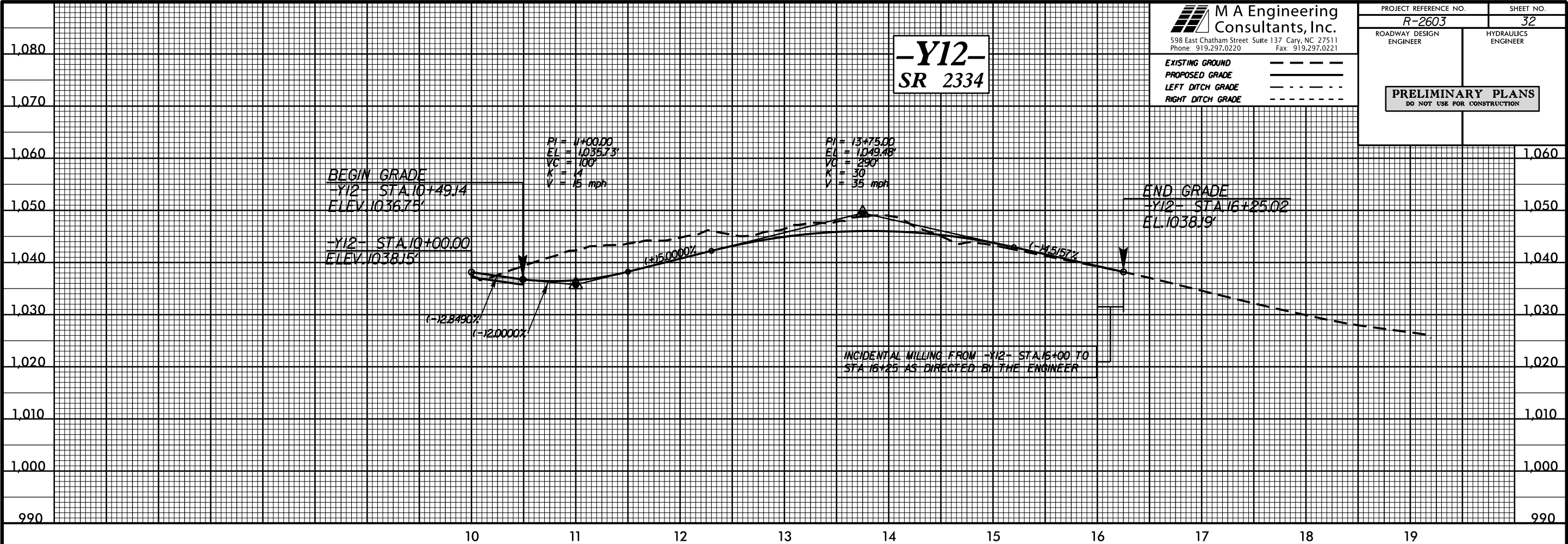
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32

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

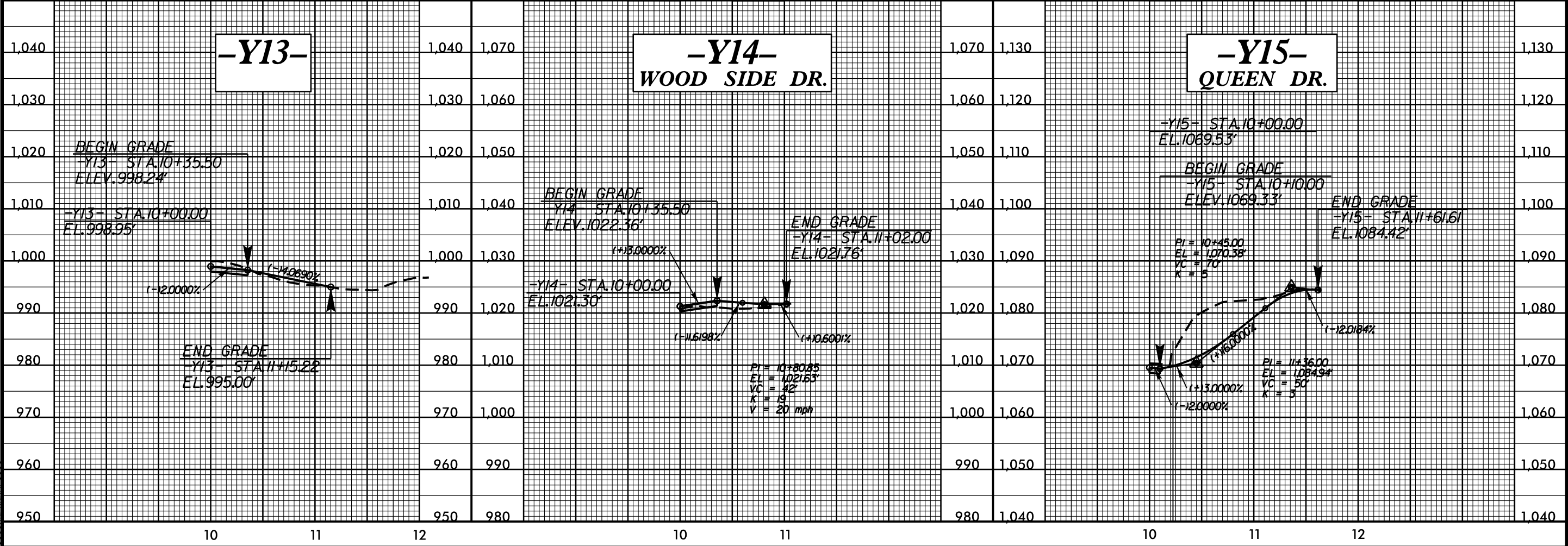
EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE



-Y13-

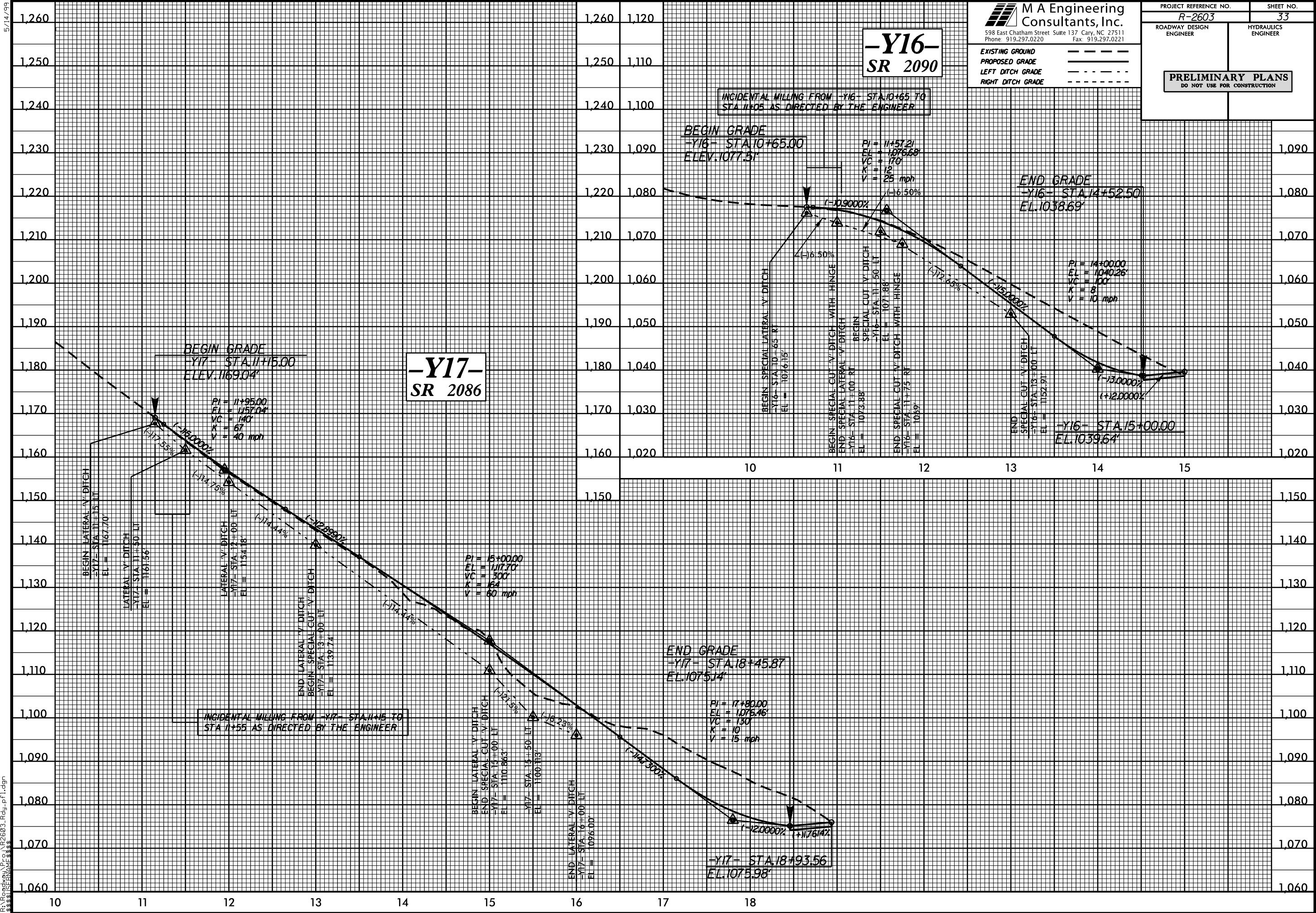
**-Y14-
WOOD SIDE DR.**

**-Y15-
QUEEN DR.**



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M A Engineering
Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

PROJECT REFERENCE NO. R-2603 SHEET NO. 34

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE

PIPE HYDRAULIC DATA

-Y18- Sta. 25+70 LT

DRAINAGE AREA	= 9J	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 27	CFS
DESIGN HW ELEVATION	= 1143.0	FT
100 YEAR DISCHARGE	= 29	CFS
100 YEAR HW ELEVATION	= 1143J	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 40	CFS
OVERTOPPING ELEVATION	= 1144J	FT

PI = 28+00.00
EL = 1138.67
VC = 440
K = 862
V = 80 mph

PIPE HYDRAULIC DATA

-Y18- Sta. 21+00 LT

DRAINAGE AREA	= 6.6	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 20	CFS
DESIGN HW ELEVATION	= 1158.1	FT
100 YEAR DISCHARGE	= 23	CFS
100 YEAR HW ELEVATION	= 1158.5	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 23	CFS
OVERTOPPING ELEVATION	= 1158.5	FT

PI = 19+35.00
EL = 1164.54
VC = 370
K = 259
V = 65 mph

INCIDENTAL MILLING FROM -Y18- STA. 17+50 TO
STA. 18+50 AS DIRECTED BY THE ENGINEER

-Y18-
SR 1966

BEGIN GRADE
-Y18- STA. 17+50.00
ELEV. 1172.71

BEGIN SPECIAL CUT 'V' DITCH
-Y18- STA. 17+00 LT
EL = 1175.04

END SPECIAL CUT 'V' DITCH
BEGIN SPECIAL CUT 'V' DITCH WHINGE
-Y18- STA. 18+00 LT
EL = 1167.97

END SPECIAL CUT 'V' DITCH WHINGE
-Y18- STA. 21+00 LT
EL = 1155.50

BEGIN SPECIAL CUT 'V' DITCH WHINGE
-Y18- STA. 22+50 LT
EL = 1152.33

END SPECIAL CUT 'V' DITCH WHINGE
-Y18- STA. 25+70 LT
EL = 1140.30

-Y18-
SR 1966

END GRADE
-Y18- STA. 42+40.00
ELEV. 1168.50

PI = 41+00.00
EL = 1170.23
VC = 280
K = 63
V = 45 mph

PI = 37+25.00
EL = 1158.15
VC = 390
K = 171
V = 60 mph

END GRADE
-Y18- STA. 30+21.37
ELEV. 1133.18

BEGIN GRADE
-Y18- STA. 31+17.25
ELEV. 1129.98

PI = 31+80.00
EL = 1128.10
VC = 128
K = 15
V = 15 mph

-Y18- STA. 30+69.31
EL = 1131.59

SPECIAL CUT 'V' DITCH
-Y18- STA. 31+50 RT
EL = 1127.022

END SPECIAL CUT 'V' DITCH
-Y18- STA. 31+61.57 RT
EL = 1127.08

END LATERAL 'V' DITCH
-Y18- STA. 38+10 LT
EL = 1157.17

LATERAL 'V' DITCH
-Y18- STA. 38+50 LT
EL = 1157.00

BEGIN LATERAL 'V' DITCH
-Y18- STA. 39+00 LT
EL = 1161.66

INCIDENTAL MILLING FROM -Y18- STA. 40+15 TO
STA. 42+40 AS DIRECTED BY THE ENGINEER

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\$\$\$\$\$ SR 1966 \$\$\$\$\$

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