



IN REPLY REFER TO

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS

Washington Regulatory Field Office
2407 W 5th Street
Washington, North Carolina 27889

January 29, 2013

Regulatory Division

Action ID No. 2008-00252

Mr. Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Reference the Department of the Army (DA) individual permit (IP) issued to you on July 21, 2008, for the U.S. Highway 70 Goldsboro Bypass project (R-2554), from Aulander Road (SR 1381) west of Goldsboro, in Wayne County and ending east of Promise Land Road (SR 1323) southwest of LaGrange, in Lenoir County. This office received a permit modification request dated November 6, 2012, addressing the proposed construction of Sections BB and C, from east of Wayne Memorial Drive (SR 1556) to east of Promise Land Road (SR 1323) in Wayne County, North Carolina.

The modification also requests a permit expiration date extension until December 31, 2018. The R-2554 permit expires on December 31, 2013. The anticipated construction completion date for Sections BB and C is July 3, 2015.

The proposed modification for R-2554 Sections BB and C will result in 18.99 acres of permanent wetland impacts, 0.01 acres of temporary wetland impacts, 1.26 acres of hand clearing in wetlands, 8042 linear feet of permanent stream impacts, and 734 linear feet of temporary stream impacts. Sections BB and C are the final two of four phases of construction. The following table reflects the total impacts for the R-2554 Goldsboro Bypass project:

R-2554 Section	Permanent Wetland Impacts (ac.)*	Temporary Wetland Impacts (ac.)	Hand Clearing (ac.)	Wetlands Requiring Mitigation (ac.)	Permanent Stream Impacts (lf)	Temporary Stream Impacts (lf)	Streams Requiring Mitigation (lf)
A	3.99	0.31	0.31	3.99	2,202	165	2,202
BA	5.78	0	2.18	5.78	3,722	254	3772
BB -C	18.99	<0.01	1.26	18.99	8,042	734	6,918
Totals	28.76	0.31	3.75	28.76	14,016	1,153	12,892

*Includes permanent fill, excavation and mechanized clearing.

There will be no jurisdictional impacts due to utility relocations on this project. The power lines, telephone lines and cable TV will be relocated jointly to the left side of US 70 on proposed poles and existing poles in wetlands. Most of the existing water lines will be relocated along the length of the project with installation in wetland areas being performed by trenchless methods.

This modification request was discussed and coordinated with the appropriate State and Federal agencies at previous Merger 01 concurrence meetings and the coordination revealed no objections to this modification request. Therefore, the permit is hereby modified in accordance with the specific work activities described above and in enclosed with the permit modification package.

It is understood that all conditions of the original permit and applicable modifications remain valid. In addition, the permittee will comply with the additional special permit conditions as follows:

a.) All work authorized by this permit modification must be performed in strict compliance with the submitted work plans, which are part of this permit. Any modification to the permit plans must be approved by US Army Corps of Engineers (Corps) prior to implementation.

b.) The permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit, and any authorized modifications. A copy of this permit, and any authorized modifications, including all conditions, shall be available at the project site during construction and maintenance of this project.

c.) Under the previous permit, compensatory mitigation was provided for the following impacts on the entire R-2554 project: 16.32 acres of riparian wetlands, 11.3 acres of non-riparian wetlands, and 13,153 feet of stream impacts. Increased stream and wetland impacts will be mitigated through the use of assets in the NCDOT Debit Ledger and onsite mitigation via natural stream design (NSD). The permittee shall comply with the on-site wetland and stream mitigation plans submitted with the original application R-2554-BA dated March 28, 2008, the modification request for R-2554-A on January 10, 2012, and the on-site wetland and stream mitigation plans submitted with this modification request for R-2554-BB and C. The following tables represent the mitigation proposed by NCDOT:

Table 1. Wetland Mitigation (acres)

Section	Restoration	Preservation (5:1)	Total Credits Proposed
R-2554BA Tommy's Rd. (site 8)	0.11	2.37	0.58
R-2554C Bear Creek (site 12)*	26.84		26.84
Jeffrey's Warehouse	0.21	8.61	1.9
Totals	27.16	10.98	29.32

*Bear Creek is the Mill Branch Mitigation Bank

Table 2. Stream Mitigation (linear feet)

Section	Restoration	Preservation (5:1)	Total Credits Proposed
R-2554A Claridge Nursery	10,397		10,397
R-2554A NSD Site VII	544		544
R-2554BA NSD Site 4	1,083		1,083
R-2554BA NSD Site 5	561		561
R-2554BA Tommys Rd. (site 8)	61	691	199.2
R-2554BB NSD Site 9	1,322		1,322
R-2554C UT West Bear Creek	1,038		1,038
Totals	15,006	691	15,144.2

d.) The permit expiration date is extended from December 31, 2013 to December 31, 2018.

e.) Prior to commencing construction within jurisdictional waters of the United States for any portion of the proposed project, the permittee shall forward the latest version of project construction drawings to the Corps of Engineers, Washington Regulatory Field Office NCDOT Regulatory Project Manager. Half-size drawings will be acceptable.

Questions regarding this correspondence may be directed to Tom Steffens, NCDOT Coordinator/Regulatory Project Manager at the Washington Regulatory Field Office, telephone (910) 251-4615.

Sincerely,

FILENAM:LETTERHD R-2554-BB-IP Mod Final
CESAW-RG-W/Steffens/rab/s

Mail/29 Jan 15 File

Tom Steffens
Supervisory Regulatory Project Manager
Washington Regulatory Field Office

Copies furnished w/o attachments:

Mr. Travis Wilson
NC Wildlife Resources Commission
Eastern Region Highway Project Coordinator
Habitat Conservation Program
1142 I-85 Service Road
Creedmoor, North Carolina 27522

Mr. Gary Jordan
U.S. Fish and Wildlife Service
Fish and Wildlife Enhancement
Post Office Box 33726
Raleigh, North Carolina 27636-3726

Mr. Chris Militscher
C/O FHWA
U.S. Environmental Protection Agency
Raleigh Office
310 New Bern Avenue, Room 206
Raleigh, North Carolina 27601

Mr. Rob Ridings
NC Division of Water Quality
Transportation Permitting Unit
1650 Mail Service Center
Raleigh, North Carolina 27699

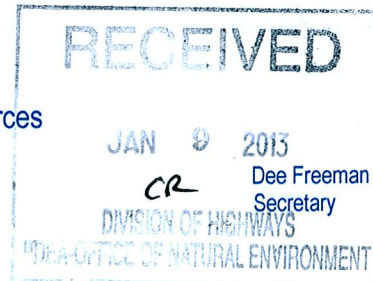


North Carolina Department of Environment and Natural Resources

Division of Water Quality
Charles Wakild, P.E.
Director

Beverly Eaves Perdue
Governor

December 27, 2012



Dr. Greg Thorpe, PhD., Manager
Project Development and Environmental Analysis
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina, 27699-1548

Subject: Modification to the 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act and NEUSE BUFFER RULES with ADDITIONAL CONDITIONS for Construction of US 70 Goldsboro Bypass in Wayne County, Federal Aid Project No. F-56-2(28), State Project No. 8.T330801, TIP No. R-2554BB &C, DWQ Project No. 20080570 ver. 4.

Dear Dr. Thorpe:

Attached hereto is a modification of Certification No. 3740 issued to The North Carolina Department of Transportation (NCDOT) dated May 16, 2008.

If we can be of further assistance, do not hesitate to contact us.

Sincerely,

Charles Wakild
Director

Attachments

cc: Tom Steffens, US Army Corps of Engineers, Washington Field Office
Chris Manley, NCDOT NEU
Chad Coggins, Division 4 Environmental Officer
Travis Wilson, NC Wildlife Resources Commission
Jason Elliott, NCDOT, Roadside Environmental Unit
File Copy

Transportation and Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6492
Internet: www.ncwaterquality.org

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**Modification to the 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act
and NEUSE BUFFER RULES, with ADDITIONAL CONDITIONS**

THIS CERTIFICATION MODIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (DWQ) Regulations in 15 NCAC 2H .0500 and 15A NCAC 2B.0233. This certification modification for R-2554 Section A authorizes the NCDOT to impact acres of jurisdictional wetlands, linear feet of jurisdictional streams and square feet of protected riparian buffers in Wayne County. The project shall be constructed pursuant to the application dated received November 1, 2012 and additional information received December 21, 2012. The modified authorized impacts are as described below, and **replace** the Section BB & C approved impacts in the original authorization:

Revised Section BB & C Stream Impacts in the Neuse River Basin

Site	Permanent Impact to Stream (linear ft)	Bank Stabilization to Stream (linear ft)	Temporary Impact to Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
3BB	1197	0	176	1373	1197
4BB	965	0	45	1010	965
9BB	1763	0	10	1773	1763
10BB	14	26	16	56	0
12BB	94	41	0	135	0
13BB	75	13	9	97	0
1C	956	0	100	1056	956
3C	712	12	30	754	724
4C	489	0	151	640	489
5C	273	0	29	302	273
10C	288	0	37	325	288
11C	346	0	40	386	346
12C	394	19	10	423	413
14C	365	0	81	446	365
Total	7931	111	734	8776	7779

Total Revised Stream Impact for R-2554 Section BB&C: 8776 linear feet

Section BB&C Onsite Stream Restoration

Site	Onsite Stream Restoration (linear feet)
9BB	1322
4C	1038
Total	2360

***7770 ft stream mitigation required minus 2360 ft onsite = 5410 linear feet required.**

Revised Section BB&C Wetland Impacts in the Neuse River Basin

Site	Permanent Fill (ac)	Temporary Fill (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Total Wetland Impact (ac)	Wetland Impacts Requiring Mitigation (ac)
1BB	0.07	0.01	0	0	1.26	1.34	0.07
6BB	0.14	0	0	0.02	0	0.16	0.16
7BB	0.23	0	0	0.07	0	0.30	0.30
10BB	0.02	0	0	0.03	0	0.05	0.05
4C	0.39	0	0	0	0	0.39	0.39
6C	1.72	0	0	0.12	0	1.84	1.84
7C	2.80	0	0	0.24	0	3.04	3.04
8C	0.16	0	0	0.06	0	0.22	0.22
9C	2.01	0	0	0.25	0	2.26	2.26
10C	1.03	0	0.03	0.19	0	1.25	1.25
11C	1.48	0	0.02	0.22	0	1.72	1.72

12C	3.99	0	0	0.51	0	4.50	4.50
13C	0.73	0	0	0.14	0	0.87	0.87
14C	2.05	0	0.07	0.20	0	2.32	2.32
Total	16.82	0.01	0.12	2.05	1.26	20.26	18.99

Total Revised Wetland Impact for R-2554 Section BB&C: 20.26 acres.

Revised Section BB&C Neuse Riparian Buffer Impacts

Site	Zone 1 Impact (sq ft)	<i>minus</i> Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Impacts Requiring Mitigation (sq ft)		Zone 2 Impact (sq ft)	<i>minus</i> Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Impacts Requiring Mitigation (sq ft)
1BB (Bridge)	12673	0	12673	N/A		6632	1282	5350	N/A
1BB (Road)	0	0	0	0		2662	0	2662	2662
2BB	14557	0	14557	14557		9274	0	9274	9274
3BB	84682	0	84682	84682		54810	0	54810	54810
4BB	56693	0	56693	56693		33216	0	33216	33216
5BB	5837	0	5837	N/A		3767	0	3767	N/A
8BB	27383	0	27383	27383		17829	0	17829	17829
9BB	75556	0	75556	75556		51193	0	51193	51193
10BB	19949	2146	17803	17803		13834	0	13834	13834
11BB	150	0	150	N/A		0	0	0	N/A
12BB	8763	0	8763	8763		5855	0	5855	5855
13BB	5482	0	5482	N/A		3605	0	3605	N/A
1C	81439	0	81439	81439		55355	0	55355	55355
3C	38586	0	38586	38586		25761	0	25761	25761
4C (Bridge)	42577	0	42577	N/A		24848	0	24848	N/A
4C (Road)	29122	6074	23048	23048		19521	0	19521	19521
5C	16066	0	16066	16066		8839	0	8839	8839
10C	17771	17771	0	0		9597	9597	0	0
11C	21574	13098	8476	8476		11233	5705	5528	5528
12C	26669	2018	24651	24651		19063	2377	16686	16686
13C Perpendicular	508	0	508	N/A		2190	0	2190	N/A
13C (Parallel)	4568	0	4568	4568		5504	0	5504	5504
14C	23583	21511	2072	2072		14238	12540	1698	1698
Totals	614188	62618	551570	484343		398826	31501	367325	327565

Total Revised R-2554 Section BB&C Buffer Impacts: 1013014 square feet.

Note: Wetland, Stream and Riparian Buffer Impacts for R-2554 Sections A and BA are unchanged from the previous versions of this application. This modification addresses impact changes for Sections BB and C only.

Section BB&C Neuse Buffer Onsite Restoration

Site	Zone 1 Restoration (sq ft)	Zone 2 Restoration (sq ft)	Total Buffer Restoration (sq ft)
9BB	76057	55759	131816
4C	78065	51956	130021
Totals	154122	107715	261837

The application provides adequate assurance that the discharge of fill material into the waters of the Neuse River Basin in conjunction with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your modified application dated received November 2, 2012 and addition information received December 21, 2012. All the authorized activities and conditions of certification associated with the original Water Quality Certification dated May 16, 2008 and modifications dated August 24, 2009 and March 19, 2012 still apply except where superceded by this certification. Should your project change, you are required to notify NCDWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). Additional buffer impacts may require compensatory mitigation as described in 15A NCAC 2B.0242(9). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Conditions of Certification:

1. Compensatory mitigation for impacts to 13,655 linear feet of streams is required for all of R-2554. As stated in your application, compensatory mitigation for impacts to jurisdictional streams shall be provided by onsite stream restorations plus onsite stream preservation. The stream mitigations will occur as follows:

Section	Site	Restoration (1:1) (linear feet)	Preservation (5:1) (linear feet)	Total Credits Proposed (linear ft)
A	Claridge Nursery	10397	0	10397
A	NSD Site VII	544	0	544
BA	NSD Site 4	1083	0	1083
BA	NSD Site 5	561	0	561
BA	Tommy's Road Site 8	61	691	199.2
BB	NSD Site 9	1322	0	1322
C	UT West Bear Creek	1038	0	1038
Totals	-	15,006	691	15144.2

The onsite stream relocations shall be constructed in accordance with the design submitted in your March 28, 2008 application and January 10, 2012 and November 2, 2012 modification applications. Please be reminded that as-builts for the completed streams shall be submitted to the North Carolina Division of Water Quality 401 Wetlands Unit with the as-builts for the rest of the project. If the parameters of this condition are not met, then the permittee shall supply additional stream mitigation for these impacts. All channel relocations will be constructed in a dry work area, will be completed and stabilized, and must be approved on site by DWQ staff, prior to diverting water into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. All stream relocations and restorations shall have a 50-foot wide native wooded buffer planted on both sides of the stream unless otherwise authorized by this Certification. A transitional phase incorporating rolled erosion control product (RECP) and appropriate temporary ground cover is allowable.

2. The stream mitigation sites shall be monitored annually for five years or until success criteria are satisfied. Monitoring protocols shall follow the Monitoring Level I outlined in the Stream Mitigation Guidelines, April 2003. Success of the mitigation site shall be determined by NCDWQ during an on-site visit at or near the end of the monitoring period.

3. Compensatory mitigation for impacts to 28.76 acres of wetlands for all of R-2554 is required. As stated in your application, compensatory mitigation for these wetlands shall occur as follows:

Section	Site	Restoration (1:1) (acres)	Preservation (5:1) (acres)	Total Credits Proposed (acres)
BA	Tommy's Road Site 8	0.11	2.37	0.58
C	Bear Creek (Site 12)	26.84	0	26.84
Jeffrey's Warehouse	Jeffrey's Warehouse Mitigation Bank	0.21	8.61	1.9
Totals	-	27.16	10.98	29.32

The permittee shall comply with the on-site wetland mitigation plan submitted with the application on March 28, 2008 and modification applications on January 10, 2012 and November 1, 2012.

4. For the onsite wetland mitigation sites, the permittee shall plant 680 stems/acre. Vegetation success shall be measured by survivability over a 5-year monitoring period. Survivability will be based on 320 stems/acre after three (3) years and 260 stems after five (5) years. A survey of vegetation during the growing season shall be conducted annually over the five-year monitoring period and submitted to the NC Division of Water Quality. If the surviving vegetation densities are below the required thresholds after the five-year monitoring period, the site may still be declared successful at the discretion of and with written approval from the NC Division of Water Quality.

5. For the onsite wetland mitigation sites, hydrologic success of the sites will be attained by restoration of a hydrologic regime that results in inundation or saturation of the soils within 12 inches of the ground surface for at least 12.5 percent of the growing season. The hydrologic monitoring shall persist for a total of five (5) years. After the five-year monitoring period, if the monitoring requirements are not met, the site may still be declared successful at the discretion of and with written approval from the NC Division of Water Quality.

6. Compensatory mitigation for impacts to 833,336 square feet of protected riparian buffers in Zone 1 and 582,742 square feet of protected riparian buffers in Zone 2 shall be required for all of R-2554 for a total of 1,416,078 square feet. As stated in your applications compensatory mitigation for these riparian buffers shall be provided partially by onsite buffer restorations as follows:

Section	Site	Zone 1 Restoration (sq ft)	Zone 2 Restoration (sq ft)	Total (sq ft)
A	NSD Site VII	34380	22733	57113
A	Claridge Nursery	617605	377052	994657
BA	NSD Site 4	59609	35530	95139
BA	NSD Site 5	34199	21760	55959
BA	Tommy's Road Site 8	4459	3333	7792
BB	NSD Site 9	76057	55759	131816
C	UT West Bear Creek	78065	51956	130021
Totals	-	904,374	568,123	1,472,497

7. In accordance with 15A NCAC 02B.0242(9) riparian vegetation reestablishment for buffer mitigation sites shall include a minimum of at least 2 native hardwood tree species planted at a density sufficient to provide 320 trees per acre at maturity. The mitigation area shall be placed under a perpetual conservation easement that will provide for protection of the property's nutrient removal efficiencies.

8. For the buffer mitigation sites, the permittee shall monitor the sites. An annual report shall be submitted to the DWQ for a period of 5 years showing monitoring results, survival rate/ success of tree and vegetation establishment, and that diffuse flow through the riparian buffer has been maintained. The first annual report shall be submitted within one year of final planting. Failure to achieve a buffer density of 320 trees per acre after 5 years will require the annual report to provide appropriate remedial actions to be implemented and a schedule for implementation. Approval of the final annual report, and a formal "close out" of the mitigation site by the DWQ is required.

9. All on-site mitigation sites shall be protected in perpetuity by a conservation easement or through NCDOT fee simple acquisition and recorded in the NCDOT Natural Environment Unit mitigation geodatabase.

10. A copy of the final construction drawings shall be furnished to NCDWQ Central Office prior to the pre-construction meeting. The permittee shall provide written verification that the final construction drawings comply with the permit drawings contained in the application dated received November 1, 2012 and additional information received December 7, 2012 and December 21, 2012. Any deviations from the approved drawings are not authorized unless approved by the NC Division of Water Quality.

11. No waste, spoil, solids, or fill of any kind shall occur in wetlands, waters, or riparian areas beyond the footprint of the impacts depicted in the 404/401 Permit Application, including at any borrow sites. All construction activities, including the design, installation, operation, and maintenance of sediment and erosion control Best Management Practices, shall be performed so that no violations of state water quality standards, statutes, or rules occur;

12. The post-construction removal of any temporary bridge structures must return the project site to its preconstruction contours and elevations. The impacted areas shall be revegetated with appropriate native species.

13. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of *Stormwater Best Management Practices*.

14. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams, shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.

15. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.

16. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed.

17. For all streams being impacted due to site dewatering activities, the site shall be graded to its preconstruction contours and revegetated with appropriate native species.

18. The stream channel shall be excavated no deeper than the natural bed material of the stream, to the maximum extent practicable. Efforts must be made to minimize impacts to the stream banks, as well as to vegetation responsible for maintaining the stream bank stability. Any applicable riparian buffer impact for access to stream channel shall be temporary and be revegetated with native riparian species.

19. All riparian buffers impacted by the placement of temporary fill or clearing activities shall be restored to the preconstruction contours and revegetated. Maintained buffers shall be permanently revegetated with non-woody species by the end of the growing season following completion of construction. For the purpose of this condition, maintained buffer areas are defined as areas within the transportation corridor that will be subject to regular NCDOT maintenance activities including mowing. The area with non-maintained buffers shall be permanently revegetated with native woody species before the next growing season following completion of construction.

20. All stormwater runoff shall be directed as sheetflow through stream buffers at nonerosive velocities, unless otherwise approved by this certification.

21. Pursuant to NCAC15A 2B.0233(6), sediment and erosion control devices shall not be placed in Zone 1 of any Neuse Buffer without prior approval by the NCDWQ. At this time, the NCDWQ has approved no sediment and erosion control devices in Zone 1, outside of the approved project impacts, anywhere on this project. Moreover, sediment and erosion control devices shall be allowed in Zone 2 of the buffers provided that Zone 1 is not compromised and that discharge is released as diffuse flow.

22. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills.

23. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers.

24. The dimension, pattern and profile of the stream above and below the crossing shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions.

25. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage.

26. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval.

27. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water.

28. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream.

29. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.

30. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification.

31. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.

32. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If NCDWQ determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, NCDWQ may reevaluate and modify this certification.

33. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification..

34. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager.

35. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification.

36. The Permittee shall report any violations of this certification to the Division of Water Quality within 24 hours of discovery.

37. The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.

38. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer shall complete and return the enclosed "Certification of Completion Form" to notify NCDWQ when all work included in the 401 Certification has been completed.

39. Native riparian vegetation (i.e. trees and shrubs native to your geographic region) must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction.

40. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities.

41. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards:

- a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
- b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
- c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
- d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

42. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification.

43. No drill slurry or water that has been in contact with uncured concrete shall be allowed to enter surface waters. This water shall be captured, treated, and disposed of properly.

44. This certification authorizes riparian buffer impacts for the Gray Pit borrow site. As stated in your application, 17,892 square feet of Zone 1 buffers and 11,803 square feet of Zone 2 buffers will be impacted however reforested. The replacement buffer will be 82,328 square feet of Zone 1 buffers and 57,935 square feet of Zone 2 buffers. Riparian vegetation reestablishment shall include a minimum of at least 2 native hardwood tree species planted at a density sufficient to provide 320 trees per acre at maturity.

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

If you wish to contest any statement in the attached Certification you must file a petition for an administrative hearing. You may obtain the petition form from the office of Administrative hearings. You must file the petition with the office of Administrative Hearings within sixty (60) days of receipt of this notice. A petition is considered filed when it is received in the office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00am and 5:00pm, except for official state holidays. The original and one (1) copy of the petition must be filed with the Office of Administrative Hearings.

The petition may be faxed-provided the original and one copy of the document is received by the Office of Administrative Hearings within five (5) business days following the faxed transmission.
The mailing address for the Office of Administrative Hearings is:

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919)-733-2698, Facsimile: (919)-733-3478

A copy of the petition must also be served on DENR as follows:

Ms. Mary Penny Thompson, General Counsel
Department of Environment and Natural Resources
1601 Mail Service Center
Raleigh, NC 27699-1601

This the 27th day of December 2012

DIVISION OF WATER QUALITY

A large, stylized handwritten signature in blue ink, appearing to read "Robert Ridgway".A small, stylized handwritten signature in blue ink, appearing to read "for".

Charles Wakild
Director

WQC No. 3740

NCDWQ Project No.: _____

County: _____

Applicant: _____

Project Name: _____

Date of Issuance of 401 Water Quality Certification: _____

Certificate of Completion

Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, and any subsequent modifications, the applicant is required to return this certificate to the 401 Transportation Permitting Unit, North Carolina Division of Water Quality, 1650 Mail Service Center, Raleigh, NC, 27699-1650. This form may be returned to NCDWQ by the applicant, the applicant's authorized agent, or the project engineer. It is not necessary to send certificates from all of these.

Applicant's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Agent's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Engineer's Certification

_____ Partial _____ Final

I, _____, as a duly registered Professional Engineer in the State of North Carolina, having been authorized to observe (periodically, weekly, full time) the construction of the project, for the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature _____ Registration No. _____

Date _____



North Carolina Department of Environment and Natural Resources

Division of Water Resources

Thomas A. Reeder

Director

Pat McCrory
Governor



March 13, 2013

Mr. Chris Rivenbark
NCDOT
1598 MSC
Raleigh, NC 27699-1598

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
7011 1570 0000 6993 6094

Subject: CCPCUA Permit No. CU4030
NCDOT - R-2554 BB & C
Lenoir and Wayne Counties

Dear Mr. Rivenbark:

In accordance with your application dated January 9, 2013 and associated documentation, we are forwarding Permit No. CU4030 for water use in the Central Coastal Plain Capacity Use Area in Lenoir and Wayne Counties. This permit allow for the withdrawal of water for the purpose of mine dewatering.

Enclosed with this package are forms DWR CCPCUA-4 and DWR CCPCUA-6. Form DWR CCPCUA-4 is for reporting water withdrawals, in accordance with Sections I. C. and IV. A. of your permit. Form DWR CCPCUA-6 is for reporting ground water levels, in accordance with Sections II. B. and IV. B. of your permit.

If you are not already doing so, DWR requests you submit your monthly water withdrawal and water level information using our online system. By doing so you will not need to mail the Division a signed hard copy. The CCPCUA online permit renewal application, water withdrawal and levels reporting forms are at:

<http://www.ncwater.org/CCPCUAreportonline>

If you do not have internet access then please make as many copies as necessary and send forms on a monthly basis to the address on the top of the forms.

This permit is effective from the date of issuance until February 28, 2018, and is subject to the conditions and/or limitations contained therein. In order for this permit to continue uninterrupted, please apply for permit renewal at least three (3) months before the expiration date.

Sincerely,

Nathaniel C. Wilson, Chief
Ground Water Management Branch

**North Carolina
Environmental Management Commission
Department of Environment and Natural Resources**

**Permit For The Withdrawal And Use Of Water
In The Central Coastal Plain Capacity Use Area**

In accordance with the provisions of Part 2, Article 21 of Chapter 143, General Statutes of North Carolina as amended, and any other applicable Laws, Rules and Regulations,

Permission Is Hereby Granted To

NC Department of Transportation

Project No. R-2554 BB & C

US 70 (Goldsboro Bypass) from east of SR 1556 (Wayne Memorial Drive) to east SR 1323 (Promise Land Rd).

FOR THE

Withdrawal and Use of Water in Wayne and Lenoir Counties, North Carolina in accordance with the grantee's application dated January 9, 2013, and any supporting data submitted with the application, all of which are filed with the Department of Environment and Natural Resources and are considered part of this Permit.

This Permit shall be effective from the date of its issuance until February 28, 2018, and shall be subject to the specified conditions and/or limitations contained in Sections I - X of this Permit.

Permit issued this the 13 day of MARCH, 2013.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

BY _____



**Thomas A. Reeder
Director, Division of Water Resources**

By Authority of the Secretary of the Department of Environment and Natural Resources

PERMIT # CU4030

I. WITHDRAWALS

A. USE

This Permit allows the withdrawal of water for the purpose of dewatering borrow pits to extract material for road construction.

B. RATES OF WITHDRAWALS

The maximum quantity of water that may be withdrawn shall not exceed what is established in the Reclamation Plan as specified in NCDOT's CCPCUA Special Provisions document.

C. SOURCE(s) OF WITHDRAWALS

Ground Water Source(s): Withdrawals shall be made from sumps in borrow pits in the surficial aquifer.

D. MONITORING OF WITHDRAWALS

Withdrawals from each source, whether well or sump, shall be measured by an approved metering device equipped with a totalizing indicator, and having an accuracy within plus or minus five percent.

II. WATER LEVELS

A. MAXIMUM DRAWDOWN LEVELS

1. Pump intakes for the well(s) shall not be set below the depth specified in the permit application or associated documentation without prior approval of the Division of Water Resources.
2. In the event that data from the permitted wells or other wells within the zone influenced by pumping of the permitted wells indicates a deterioration of quality or quantity in surrounding aquifers or the source aquifer, an alternate maximum pumping level may be established by the Division of Water Resources.

B. MONITORING OF WATER LEVELS

1. The pumping water level in each supply well shall be measured once a month:
 - a. by a steel or electric tape from a fixed reference point, or by using the air-line method
 - b. within accuracy limits of plus or minus one percent,
 - c. just prior to shutting off the pump, or after sufficient time of pumping, so that a maximum drawdown may be obtained, and

- d. during the last planned pumping day of the month, or within the last five days of the month.
2. The static water level in each supply well shall be measured once a month:
 - a. by a steel or electric tape from a fixed reference point, or by using the air-line method
 - b. within accuracy limits of plus or minus one percent,
 - c. after the pump is shut off for approximately 12 hours, and
 - d. within the last five days of the month.
3. Unused supply wells or other suitable wells that may be available shall be monitored when such monitoring is specified by the Division of Water Resources and when pertinent to observation or evaluation of the effects of withdrawals made under this permit.

III. OTHER PROVISIONS

A. WELL CONSTRUCTION APPROVAL

No new wells shall be constructed without prior approval from the Director of Water Resources. A Well Construction Permit shall be required prior to the construction of any well that will be used to withdraw any portion of the water regulated under this Permit. Application for the well construction permit must be submitted to the Washington Regional Office, Division of Water Quality, 943 Washington Square Mall • Washington, NC 27889. A copy of the Well Construction record (GW-1) shall be submitted to the Division of Water Resources and the Division of Water Quality within 30 days upon completion of the well construction.

B. ACCESS TO FACILITIES

The Environmental Management Commission and employees of the Department of Environment and Natural Resources shall have reasonable access to areas owned and under control of the permittee for observation and inspection of water use and related facilities pertinent to the provisions of this permit and other regulations.

IV. REPORTS REQUIRED

A. WITHDRAWALS

Monthly reports of daily withdrawal totals from each well or sump shall be furnished to the Division on a quarterly basis, within 30 days after the end of March, June, September and December.

B. WATER LEVELS

Water level measurements for each supply well shall be measured in accordance with Condition II. B. 1. of this permit and submitted to the Division not later than 30

days after the end of the calendar month in which the measurement was taken.

V. MODIFICATION OR REVOCATION

A. MODIFICATION

1. The Permittee must notify the Director of any proposed major changes in usage and apply for a modification of the permit for such changes or for any revisions of the terms of this permit.
2. The Director may modify the terms of the permit, after 60 days written notice to the permittee, if he finds that the terms of the permit and/or the resulting water use are found to be contrary to the purposes of the Water Use Act of 1967 or contrary to public interest or having an unreasonably adverse effect upon other water uses in the capacity use area. Modifications may include, but are not limited to, requirements for alternate pumping levels or the collection, analysis, and reporting of ground or surface water quality samples.

B. REVOCATION

The Director may revoke the permit if he finds that:

1. the Permittee has violated the terms of the permit; or
2. the terms of the Permit and/or the resulting water use are contrary to the purpose of the Water Use Act of 1967 or contrary to the public interest or having an unreasonably adverse effect upon other water uses in the capacity use area and cannot be cured by modification; or
3. the Permittee made false or fraudulent statements in the application for the water use permit; or
4. water withdrawn under the terms of the permit is used for purposes other than those set forth in the permit.

VI. CONSTRUCTION OF PERMIT

- A. The terms and conditions shall not be construed to relieve the Permittee of any legal obligation or liability, which it owes or may incur to third parties as the result of the conduct of its operations in conformity with this Permit.
- B. When under the terms hereof, any provision of this Permit requires approval of the Department or becomes effective at the discretion of the Department, the notice of approval or the exercise of such discretion shall be evidenced by written instrument issued by the Department.
- C. The terms and conditions of this Permit shall not be construed as a limitation of the

powers, duties, and authority vested in the Environmental Management Commission or any other State, Federal, or local agency, or any applicable laws hereafter enacted.

VII. ADDITIONAL CONDITIONS

- A. This Permit shall be subject to any limitations or conditions in other State permits, including but not limited to permits required pursuant to North Carolina General Statutes §143-215.1.
- B. Issuance of this Permit shall have no bearing on subsequent State decision(s) regarding any other water use or other permit application(s) submitted or which may be submitted by the Permittee, its successors or assigns.
- C. Compliance with the terms and conditions in this permit does not relieve the permittee of compliance with any provision, now in force or hereafter enacted or promulgated, of the Water Use Act of 1967, the regulations promulgated thereunder, or any other provision of State law.

VIII. PENALTIES

Violations of the terms and conditions of this Permit are subject to penalties as set forth in North Carolina General Statutes §143-215.17.

IX. PERMIT NONTRANSFERABLE

Water Use Permits shall not be transferred except with approval of the Environmental Management Commission.

X. RENEWAL OF PERMIT

The Permittee, at least three (3) months prior to the expiration of this permit, shall request its extension. Upon receipt of the request, the Commission will review the adequacy of the facilities described therein, and if warranted, will extend the permit for such period of time and under such conditions and limitations as it may deem appropriate.

Report of Water Withdrawals from Each Source

North Carolina Department of Environment and Natural Resources

Mail To: Division of Water Resources - NC DENR
1611 Mail Service Center
Raleigh, North Carolina 27699-1611
Attention : Capacity Use Administration

Check Box If No Use This Month ☐

For month of: _____ Year: _____ Facility: **NCDOT (R-2554 BB & C)** Permit #: **CU4030** Sheet ____ of ____

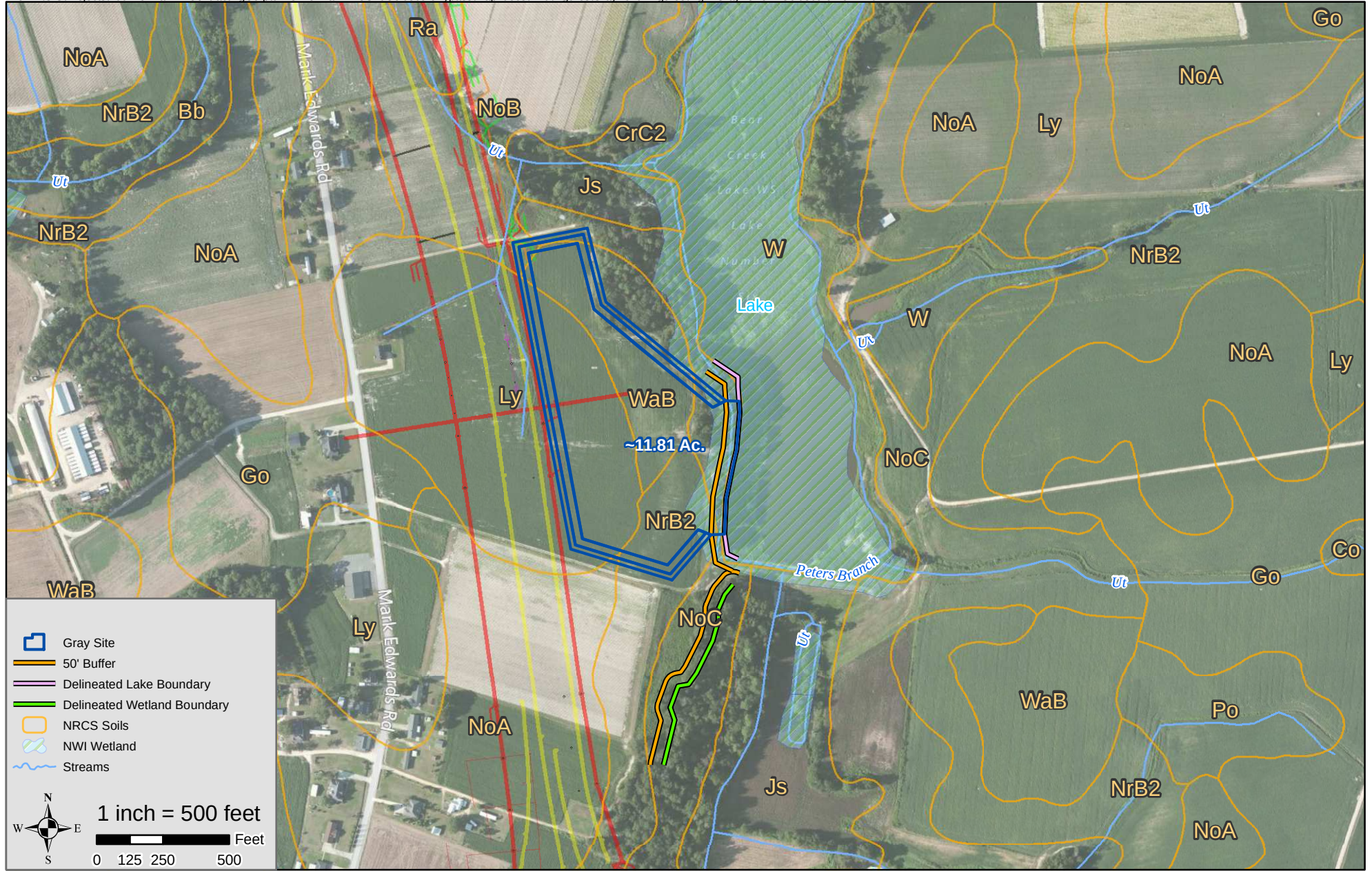
Well/Sump ID →	meter readings ↓	gallons per day	meter readings ↓	gallons per day	meter readings ↓	gallons per day	Total Withdrawn
Beginning reading →							
Day 1							
Day 2							
Day 3							
Day 4							
Day 5							
Day 6							
Day 7							
Day 8							
Day 9							
Day 10							
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Day 23							
Day 24							
Day 25							
Day 26							
Day 27							
Day 28							
Day 29							
Day 30							
Day 31							

Preformed Scour Holes

Station	DA (Acres)	Q10 (cfs)
470+50 -LREV- RT	1.15	3.6
474+08 -LREV- LT	1.54	6.5
476+69 -LREV- LT	0.38	2.2
644+51 -LREV- LT	1.79	6.5

D:\GIS\Projects\200245 - Barnhill Contracting Corp\0176775 - Barnhill\US70GoldsboroBypass\map_docs\mxd\working\Goldsboro_4C_borrow_gray_pond_new.mxd | Last Updated: 10.10.2012



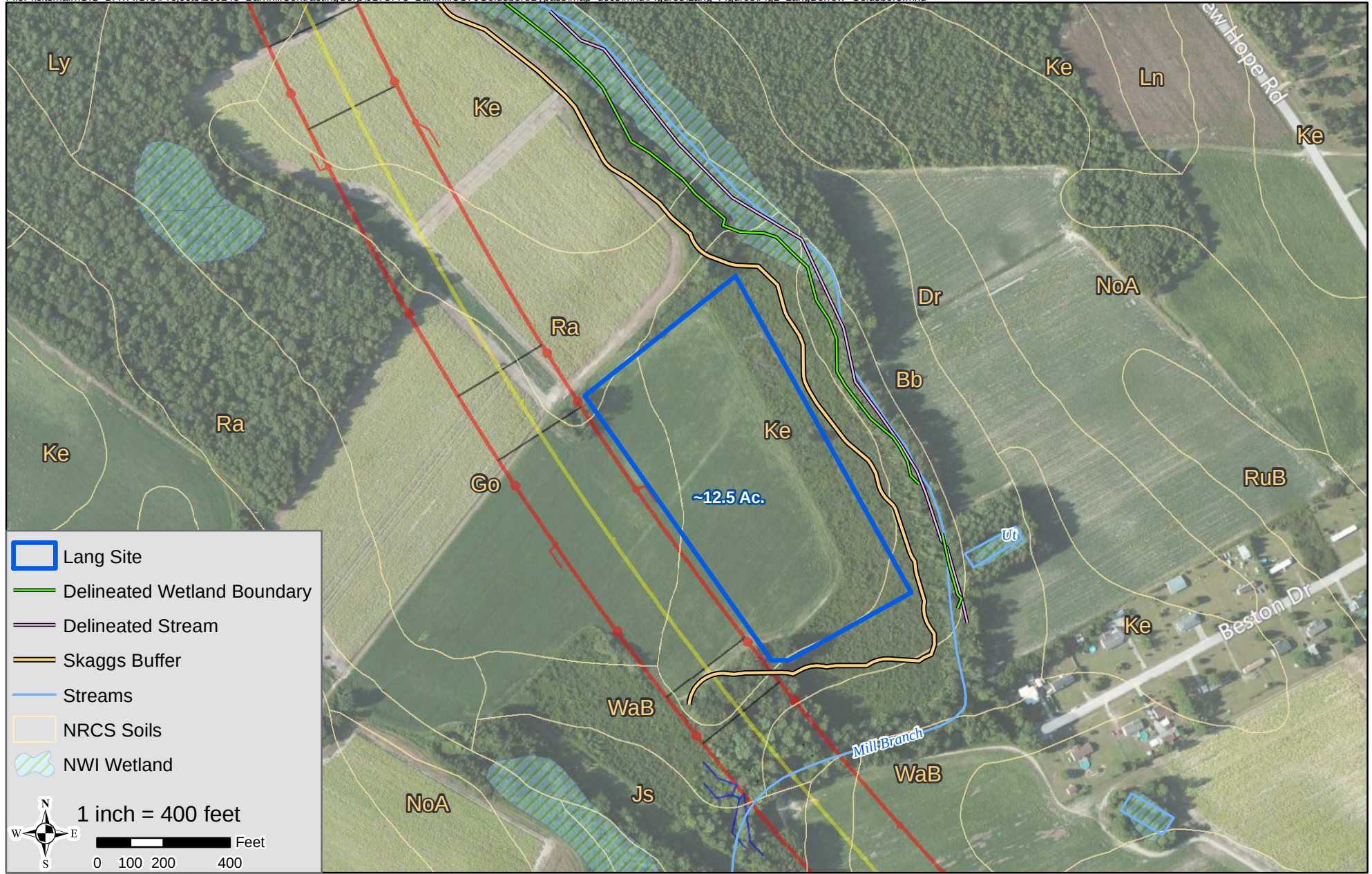


NRCS Soils/National Wetlands Inventory (NWI) Map
Figure 2

HDR
ONE COMPANY | *Many Solutions*™

HDR
ONE COMPANY | *Many Solutions*™

Figure 2



NRCS Soils/National Wetlands Inventory (NWI) Map
Figure 2

HDR
ONE COMPANY | *Many Solutions*™

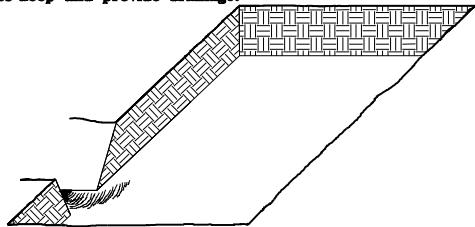
ONE COMPANY | *Many Solutions*™

REFORESTATION DETAIL

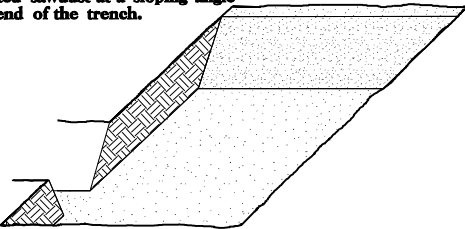
PLANTING DETAILS
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

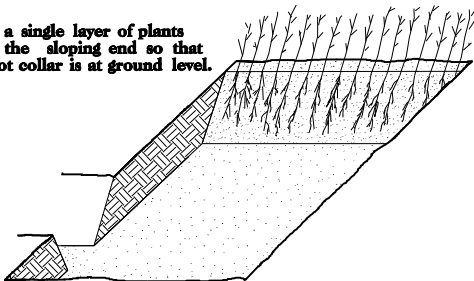
- 1. Locate a healing-in site in a shady, well protected area.
- 2. Excavate a flat bottom trench 12 inches deep and provide drainage.



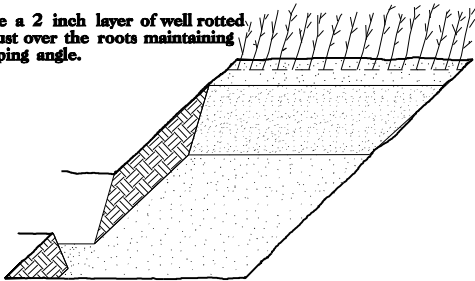
- 3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



- 4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

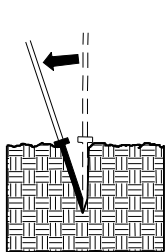


- 5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

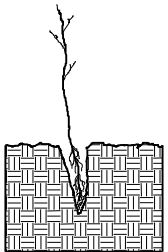


- 6. Repeat layers of plants and sawdust as necessary and water thoroughly.

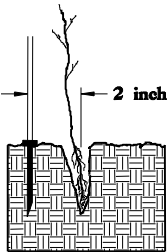
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



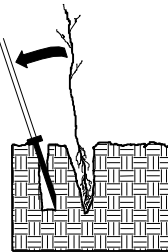
- 1. Insert planting bar as shown and pull handle toward planter.



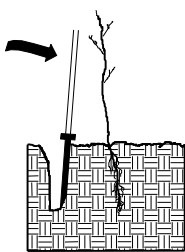
- 2. Remove planting bar and place seedling at correct depth.



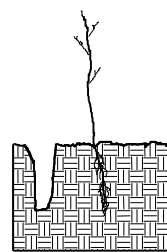
- 3. Insert planting bar 2 inches toward planter from seedling.



- 4. Pull handle of bar toward planter, firming soil at bottom.



- 5. Push handle forward firming soil at top.



- 6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.



KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

- TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
25% PLATANUS OCCIDENTALIS	SYCAMORE	12 in - 18 in BR
25% FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	
BARNHILL CONTRACTING COMPANY	

**North Carolina Department of Transportation
Project Development and Environmental Analysis Unit
Natural Environment Section (NES)
Raleigh, North Carolina**

**NSD Site 9 (Mark Edwards Site)
On-site Stream Mitigation Plan for
US Highway 70 Goldsboro Bypass Construction
Wayne County, North Carolina**

**T.I.P. Number R-2554BB&C
WBS No. 34461.3.8
ONE # 096-013**

October 30, 2012

1.0 BASELINE INFORMATION

The project is located within USGS Hydrologic Cataloging Unit 03020202, and NC Division of Water Quality (NCDWQ) sub-basin 03-04-05 of the Neuse River Basin, and is part of the of the South Atlantic-Gulf region. The mitigation site begins adjacent to Mark Edwards Road approximately 0.7 mile south of the intersection of Mark Edwards Road and Hood Swamp Road in Wayne County near Goldsboro, within the Right of Way for R-2554. The project is within the Inner Coastal Plain physiographic province, specifically the Rolling Coastal Plain Ecoregion. Land use within the watershed is primarily agriculture with limited forested areas and low density residential development. The existing stream length, drainage area, and jurisdictional status are summarized in Table 1.

Table 1. Summary of Existing Stream Length and Drainage Area.

Stream Reach	Existing Length (LF)	Drainage Area (sq mi)	Intermittent/Perennial Status
UT to West Bear Upper Reach (Sta. 13+08.94 -SR13REV- to 14+49.33 -SR13REV-) NSD Site 9 Mark Edwards Site	841	0.05	NCDWQ Form Score ≥ 30 Stream reach already considered perennial by agencies during impact assessments. Status = <u>Perennial</u>
UT to West Bear Lower Reach (Sta. 44+77.69 -SR12- to 53+98.90 -SR12-) NSD Site 9 Mark Edwards Site	736	0.24	NCDWQ Form Score ≥ 30 Stream reach already considered perennial by agencies during impact assessments. Status = <u>Perennial</u>

The project includes relocation and buffer restoration of an unnamed tributary (UT) to West Bear Creek. West Bear Creek has been assigned Stream Index Number 27-72-2 (NCDWQ 2012) and is designated a warm water stream with a classification of C; Sw, NSW. Class C waters are protected for secondary recreation, fishing, and aquatic life. The supplemental classifications for Bear Creek are Swamp Water (Sw) and Nutrient Sensitive Waters (NSW). Swamp Water is

intended to recognize those waters with low velocities and other natural characteristics different from adjacent streams; Nutrient Sensitive Waters are those needing additional nutrient management due to their potential for excessive growth of microscopic or macroscopic vegetation.

A large portion of the native plant communities have been removed from the site and its drainage area to facilitate agricultural land uses. Approximately 70% (2.2 acres) of the project boundary is composed of agricultural fields, 20% (0.6 acres) is made up of a mix of riparian species along a portion of the left stream bank, and the remaining 10% (0.3 acres) is low density residential.

NCDOT will perform on-site mitigation for jurisdictional stream impacts associated with Transportation Improvement Program (TIP) R-2554 as part of the construction of the US Highway 70 Goldsboro Bypass alignment. The project will serve as on-site mitigation through the restoration of 1,322 linear feet of stream and 76,057 square feet (sq. ft.) of Zone 1 and 55,759 sq. ft. of Zone 2 riparian buffer.

2.0 SITE SELECTION

TIP R-2554BB&C involves construction of the US Highway 70 Bypass from Wayne Memorial Drive east to existing US 70 near La Grange. The majority of existing channel of the UT will be filled in during construction of the US 70 Bypass and relocated within the roadway Right of Way. Buffers will be reforested adjacent to the stream relocation with a total buffer width of approximately 100 feet. Two culverts (187 feet and 90 feet) will be constructed to carry the flow of the UT to West Bear Creek beneath the US 70 Bypass and service road as well as the replacement of a 29-foot long culvert to provide access to the adjacent landowners. Permanent stream impacts associated with the construction of the Goldsboro Bypass include 14,016 linear feet of jurisdictional stream channels.

The mitigation site will include approximately 3.1 acres within the NCDOT Right of Way. The area occurs northeast and southwest of the alignment from approximate roadway station SR13REV 12+68 RT to station LREV 357+94. Within this area, NCDOT will perform natural channel design of 1,322 linear feet of stream via floodplain excavation, site grading and planting. Approximately 131,816 square feet of buffer restoration adjacent to the UT to West Bear Creek will occur at this site. The vast majority of the restoration will occur downstream of the proposed culvert, to the southwest of the R-2554BB&C alignment.

Site Considerations

The UT to West Bear Creek relocation will begin below an existing driveway culvert adjacent to Mark Edwards Road. The relocation will then turn west toward the US 70 Bypass alignment, cross the alignment through reinforced concrete pipe culverts, then take a southerly course, pass through a 29-foot driveway culvert, and eventually tie in to the existing channel. The design of the stream relocation has been broken into two segments, upper and lower reaches, due to the change in the drainage areas and proposed highway crossing.

A preliminary design was provided and approved by the agencies; however, several constraints have been noted during more detailed design. These constraints include an overhead utility pole which will not be moved during this project and two additional tie-ins that were not included in the previous design. In addition to these issues, the stream also has approximately 3 feet of fall over its length. The proposed culvert under the US 70 Bypass will be sloped in order to minimize the number of drops along the reach. Also, the existing driveway crossing, located 2/3 of the way down the lower reach will be replaced to provide increased capacity, promote connection with the restored floodplain, and set culvert inverts to the appropriate elevation.

3.0 SITE PROTECTION INSTRUMENT

The mitigation area is located within the NCDOT Right of Way. The site will be managed to prohibit all uses inconsistent with its use as mitigation property, including any activity that would materially alter the biological integrity or functional and educational value of the site, consistent with the mitigation plan.

The site will be placed in the NES mitigation geodatabase. It will be monitored for five years with annual reports provided to the Interagency Review Team. After closeout, the site will be placed in the NCDOT Stewardship Program for long term management and protection.

4.0 OBJECTIVES

The goal of the project is to restore 1,322 linear feet of stream and 76,057 sq. ft. of Zone 1 and 55,759 sq. ft. of Zone 2 riparian buffer to mitigate for impacts associated with TIP R-2554. The functional restoration of the site will be accomplished using natural channel design approaches for a single-thread channel for the UT to West Bear Creek and buffer restoration. The proposed restoration and mitigation amounts are summarized in Table 2 below:

Table 2. Restoration Approaches and Proposed Mitigation Amounts.

Mitigation Area	Size	Potential Credits (1:1 ratio)	Restoration Approach
UT to West Bear Creek Upper Reach (Sta. 13+08.94 - SR13REV- to 14+49.33 -SR13REV-)	632 LF	632	Restoration will consist of a Rosgen Priority Level II approach. A new floodplain will be excavated at a lower elevation, and a stable meandering channel restored through the new floodplain. (C/E5 streamtype)
UT to West Bear Creek Lower Reach (Sta. 44+77.69 -SR12- to 53+98.90 -SR12-)	690 LF	690	Restoration will consist of a Rosgen Priority Level II approach. A new floodplain will be excavated at a lower elevation, and a stable meandering channel restored through the new floodplain. (C/E5 streamtype)
Riparian Buffer Restoration	Zone 1 76,057 SQ.FT.	Zone 1 76,057 SQ.FT.	Restoration will include the planting of a approximately 100 foot total riparian buffer corridor along the restored stream.
	Zone 2 55,759 SQ.FT.	Zone 2 55,759 SQ.FT.	

5.0 MITIGATION WORK PLAN

The mitigation area will be constructed following residential relocations and culvert installation during the construction of TIP R-2554BB&C. Construction activities related to the mitigation site involve floodplain excavation, stream channel grading, structure installation, and native vegetation planting. Once these have been established, the new stream channels will be stabilized and prepared for normal flow conditions.

Reference reach data and past project experience support the design of a single-thread channel due to the watershed size, slope, and sediment transport competency (unit stream power). The design involves a Rosgen Priority Level II approach in which a new, meandering single-thread channel (C/E5 streamtype) will be constructed through a newly-established floodplain excavated at a lower elevation. In-stream structures will consist of logs and wooden structures to provide stability. The streambanks and adjacent floodplain areas will be planted with native vegetation that are moderately to highly tolerant of flooded conditions.

Riparian Buffer Planting

Following the successful completion of site grading and stabilization, the vegetation plan for the site will include the planting of bare-root trees in riparian buffer areas adjacent to the UT to West Bear Creek. An approximately 100-foot wide buffer corridor will be maintained along the restored stream reach. Tree species commonly found in Coastal Plain Bottomland Hardwood forests will be planted across the site that include a mixture of no less than four native species adapted to site conditions, such as river birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*), swamp tupelo (*Nyssa sylvatica* var. *biflora*), sycamore (*Platanus occidentalis*), overcup oak (*Quercus lyrata*), and swamp chestnut oak (*Quercus michauxii*). Final species selection will be based on availability.

Native grass seeding and mulching will be applied on all disturbed areas within the stream restoration area for stabilization purposes according to guidance and standard procedures of NCDOT's Roadside Environmental Unit. An as-built report will be submitted within 60 days of completion of the project. Construction is anticipated to start in the summer of 2013.

6.0 PERFORMANCE STANDARDS

NCDOT shall monitor stream channel stability and buffer vegetation survival on the site. Post-restoration monitoring will be conducted for a minimum of five years or until the success criteria are met following the completion of construction to document project success. Monitoring approaches follow those recommended by the Stream Mitigation Guidelines (USACE and NCDWQ 2003) for the UT to West Bear stream reach. These approaches are described below in Section 7.0.

7.0 MONITORING REQUIREMENTS

The stream mitigation site will be monitored for five years or until success criteria is satisfied. Monitoring protocols shall follow the Monitoring Level 1 outlined in the Stream Mitigation Guidelines, April 2003. NCDOT will evaluate the success of the stream restoration project based on guidance provided by the Stream Mitigation Guidelines disseminated by the United States Army Corps of Engineers-Wilmington District. The survey of the channel dimension will consist of permanent cross sections placed at an equal number of pools and riffles. Annual photographs showing both banks and upstream and downstream views will be taken from permanent, mapped photo points. The entire restored length of stream will be investigated for channel stability and in-stream structure functionality as well as survey of the longitudinal profile. Any evidence of channel instability will be identified, mapped and photographed.

8.0 OTHER INFORMATION

During refinement of the design of the stream relocation, two 0.5ft drops were proposed. Both of these drops are proposed downstream of the outlet of the culvert that passes under -SR12-. The locations of the proposed drops were determined based on the upstream grade control provided by the culverts under the roadway alignments. There will be a drop halfway between the culvert outlet and the first meander bend, then another drop in the first meander. The long culverts under the roadway alignments along with the two drop structures helped mitigate the 3 ft elevation change in this short reach.

9.0 DETERMINATION OF CREDITS

Per the NCDOT plans and 401/404 permit application for R-2554, NCDOT proposes to restore 1,322 linear feet of stream and 76,057 sq. ft. of Zone 1 and 55,759 sq. ft. of Zone 2 riparian buffer via floodplain excavation and channel grading and subsequent native buffer reforestation to mitigate for permanent impacts associated with the TIP at a 1:1 ratio. An as-built report will be submitted within 60 days of completion of the project to verify actual linear feet constructed and buffer acreage planted. The success of the mitigation area and determination of total credits will be based upon successful completion and closeout of the monitoring period.

9.1 CREDIT RELEASE SCHEDULE

NCDOT proposes immediate, full release of the proposed 1,322 linear feet of restored streams and 76,057 sq. ft. of Zone 1 and 55,759 sq. ft. of Zone 2 riparian buffer as on-site mitigation for the associated stream impacts of 14,016 linear feet for all sections of R-2554 at a 1:1 ratio.

Table 3. Restoration Credit Schedule.

Section / Site	Stream Restoration (LF)	Buffer Restoration Zone 1 (Sq. Ft.)	Buffer Restoration Zone 2 (Sq. Ft.)	Total Buffer Credit (Sq. Ft.)
R-2554BB NSD Site 9 Mark Edwards Site	1,322	76,057	55,759	131,816

In the event that mitigation credits remain after permitting, they will be placed on the NCDOT on-site debit ledger for use on future TIP projects.

10.0 GEOGRAPHIC SERVICE AREA

The proposed Geographic Service Area (GSA) for the mitigation area is composed of the 8-digit Hydrologic Cataloging Unit (HUC) 03020202. It is anticipated that the entire 1,322 linear feet will be used on-site at a 1:1 ratio to offset stream impacts associated with R-2554. Any remaining mitigation credit will be available for use within HUC 03020202 as well as adjacent HUC's 03020201 and 03020203 within the Neuse River Basin.

11.0 MAINTENANCE PLAN

The site will be held by NCDOT and placed in the NES mitigation geodatabase. Once monitoring is completed and the site is closed out, it will be placed in the NCDOT Stewardship Program for long term maintenance and protection.

If an appropriate third party recipient is identified in the future, then the transfer of the property will include a conservation easement or other measure to protect the natural features and mitigation value of the site in perpetuity.

12.0 LONG TERM ADAPTIVE MANAGEMENT PLAN

The site will be managed by NCDOT according to the mitigation plan. In the event that unforeseen issues arise that affect the management of the site, any remediation will be addressed by NCDOT in coordination with the Interagency Review Team.

13.0 FINANCIAL ASSURANCES

The site will be managed by NCDOT with its own distinct cost center number within the NCDOT budgeting and financial tracking system. Therefore, all accounting for revenues, contract encumbrances, fund transfers, and expenses will be performed and reported independent from other capital budget or operating budget accounting.

**North Carolina Department of Transportation
Project Development and Environmental Analysis Unit
Natural Environment Section (NES)
Raleigh, North Carolina**

**UT to West Bear Creek (Benton)
On-site Stream Mitigation Plan for
US Highway 70 Goldsboro Bypass Construction
Wayne County, North Carolina**

**T.I.P. Number R-2554BB&C
WBS No. 34461.3.8
ONE ID # 096-008**

October 30, 2012

1.0 BASELINE INFORMATION

The project is located within USGS Hydrologic Cataloging Unit 03020202, and NC Division of Water Quality (NCDWQ) sub-basin 03-04-05 of the Neuse River Basin, and is part of the of the South Atlantic-Gulf region. The mitigation site is located approximately 0.6 mile west of the intersection of Guy Smith Road and N. Beston Road in Wayne County near Goldsboro within the Right of Way (ROW) for R-2554. The project is within the Inner Coastal Plain physiographic province, specifically the Rolling Coastal Plain Ecoregion. Land use within the watershed is primarily agriculture with limited forested areas and low density residential development. The existing stream length, drainage area, and jurisdictional status are summarized in Table 1.

Table 1. Summary of Existing Stream Length and Drainage Area.

Stream Reach	Existing Length (LF)	Drainage Area (sq mi)	Intermittent/Perennial Status
UT to West Bear Creek (Benton)	498	1.16	NCDWQ Form Score ≥ 30 Stream reach already considered perennial by agencies during impact assessments. Status = <u>Perennial</u>

The project includes relocation of an unnamed tributary (UT) to West Bear Creek and buffer restoration along the UT as well as the left (north) bank of West Bear Creek. West Bear Creek has been assigned Stream Index Number 27-72-2 (NCDWQ 2012) and is designated a warm water stream with a classification of C; Sw, NSW. Class C waters are protected for secondary recreation, fishing, and aquatic life. The supplemental classifications for Bear Creek are Swamp Water (Sw) and Nutrient Sensitive Waters (NSW). Swamp Water is intended to recognize those waters with low velocities and other natural characteristics different from adjacent streams; Nutrient Sensitive Waters are those needing additional nutrient management due to their potential for excessive growth of microscopic or macroscopic vegetation.

Most of the native plant communities have been removed from the site and its drainage area to facilitate agricultural land uses. Approximately 95% (19 acres) of the project boundary is composed of open fields, currently planted in corn, while the remaining 5% (1 acres) is made up of a mix of riparian species associated with the existing stream banks and fallow land along the edge of the field.

NCDOT will perform on-site mitigation for jurisdictional stream impacts associated with Transportation Improvement Program (TIP) R-2554 as part of the construction of the US Highway 70 Goldsboro Bypass alignment. The project will serve as on-site mitigation through the restoration of 1,038 linear feet of streams and 78,065 square feet (sq. ft.) of Zone 1 and 51,956 sq. ft. of Zone 2 riparian buffer.

2.0 SITE SELECTION

TIP R-2554BB&C involves construction of the US Highway 70 Bypass from Wayne Memorial Drive east to existing US 70 near La Grange. The existing channel of the UT will be filled in during construction of the US 70 Bypass and relocated within the floodplain of West Bear Creek. A 600-foot long bridge will be built to carry the US 70 Bypass over West Bear Creek, with buffers restored adjacent to the left bank of West Bear Creek as well as the relocated UT to West Bear Creek. Permanent stream impacts associated with the project include 14,016 linear feet of jurisdictional stream channels.

The mitigation site includes approximately 19.96 acres within Right of Way held by NCDOT. The area occurs north of the alignment from approximate roadway station 473+53LT to station 481+39 LT. Within this area, the NCDOT will restore 1038 linear feet of stream via floodplain excavation, site grading and planting. Approximately 130,021 square feet of buffer restoration adjacent to the UT to West Bear Creek and the left bank of West Bear Creek will occur at this site.

Site Considerations

The UT to West Bear Creek relocation will begin below the existing scour hole at the pipe outlet from the existing pond upstream. The stream relocation should have no impacts to the existing dam and the NCDOT does not have any maintenance responsibilities related to the dam.

The area within the Right of Way will also be used for a borrow site for the proposed roadway and may provide additional wetland restoration credit. It is anticipated that approximately 50 thousand cubic yards of material will be removed from the site.

The existing berm adjacent to West Bear Creek will be removed to provide access to the floodplain and the FEMA analysis of the West Bear bridge crossing as well as to provide a riparian buffer along West Bear Creek within the Right of Way. The berm currently acts as a trail for off road vehicles. This will need to be monitored to ensure that the mitigation site is not vandalized by such activities in the future.

3.0 SITE PROTECTION INSTRUMENT

The mitigation area is located within the NCDOT Right of Way and NCDOT Right of Way acquired for the project. The site will be managed to prohibit all uses inconsistent with its use as mitigation property, including any activity that would materially alter the biological integrity or functional and educational value of the site, consistent with the mitigation plan.

The site will be placed in the NES mitigation geodatabase. It will be monitored for five years with annual reports provided to the Interagency Review Team. After closeout, the site will be placed in the NCDOT Stewardship Program for long term management and protection.

4.0 OBJECTIVES

The goal of the project is to restore 1,038 linear feet of stream and 78,065 sq. ft. of Zone 1 and 51,956 sq. ft. of Zone 2 riparian buffer to mitigate for impacts associated with TIP R-2554. The functional restoration of the site will be accomplished using natural channel design approaches for a single-thread channel for the UT to West Bear Creek and buffer restoration for the UT as well as the left bank of West Bear Creek. The proposed restoration and mitigation amounts are summarized in Table 2 below:

Table 2. Restoration Approaches and Proposed Mitigation Amounts.

Mitigation Area	Size	Potential Credits	Restoration Approach
UT to West Bear Creek (Benton)	1,038 LF	1,038 (1:1 ratio)	Restoration will consist of a Rosgen Priority Level II approach. A new floodplain will be excavated at a lower elevation, and a stable meandering channel restored through the new floodplain. (C/E5 streamtype)
Riparian Buffer Restoration Zone 1	78,065 SQ.FT.	78,065 SQ. FT. (1:1 ratio)	Restoration will include the planting of 50 foot riparian buffers on both sides of the restored stream as well as on the left bank of West Bear Creek.
Riparian Buffer Restoration Zone 2	51,956 SQ. FT.	51,956 SQ. FT. (1:1 ratio)	

5.0 MITIGATION WORK PLAN

The mitigation area will be constructed following prior to excavation of the borrow material for TIP R-2554BB&C at this site. Construction activities related to the mitigation site involve floodplain excavation, stream channel grading, structure installation, and native vegetation planting. Once these have been established, the new stream channels will be stabilized and prepared for normal flow conditions.

Reference reach data and past project experience support the design of a single-thread channel due to its watershed size, slope, and sediment transport competency (unit stream power). The

design involves a Rosgen Priority Level II approach in which a new, meandering single-thread channel (C/E5 streamtype) will be constructed through a newly-established floodplain excavated at a lower elevation. In-stream structures will consist of logs and wooden structures to provide stability. The stream banks and adjacent floodplain areas will be planted with native vegetation that are moderately to highly tolerant of flooded conditions.

Riparian Buffer Planting

Following the successful completion of site grading and stabilization, the vegetation plan for the site will include the planting of bare-root trees in riparian buffer areas adjacent to the UT to West Bear Creek and the left bank of West Bear Creek. A minimum buffer width of 50 feet will be maintained on all restored streams with wider buffers in most areas. Tree species commonly found in Coastal Plain Bottomland Hardwood forests will be planted across the site that include a mixture of no less than four native species adapted to site conditions, such as river birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*), swamp tupelo (*Nyssa sylvatica* var. *biflora*), sycamore (*Platanus occidentalis*), overcup oak (*Quercus lyrata*), and swamp chestnut oak (*Quercus michauxii*). Final species selection will be based on availability.

Native grass seeding and mulching will be applied on all disturbed areas within the stream restoration area for stabilization purposes according to guidance and standard procedures of NCDOT's Roadside Environmental Unit. An as-built report will be submitted within 60 days of completion of the project. Construction is anticipated to start in the summer of 2013.

6.0 PERFORMANCE STANDARDS

NCDOT shall monitor stream channel stability and buffer vegetation survival on the site. Post-restoration monitoring will be conducted for a minimum of five years or until the success criteria are met following the completion of construction to document project success. Monitoring approaches follow those recommended by the Stream Mitigation Guidelines (USACE and NCDWQ 2003) for the UT to West Bear stream reach. These approaches are described below in Section 7.0.

7.0 MONITORING REQUIREMENTS

The stream mitigation site will be monitored for five years or until success criteria is satisfied. Monitoring protocols shall follow the Monitoring Level 1 outlined in the Stream Mitigation Guidelines, April 2003. NCDOT will evaluate the success of the stream restoration project based on guidance provided by the Stream Mitigation Guidelines disseminated by the United States Army Corps of Engineers-Wilmington District. The survey of the channel dimension will consist of permanent cross sections placed at an equal number of pools and riffles. Annual photographs showing both banks and upstream and downstream views will be taken from permanent, mapped photo points. The entire restored length of stream will be investigated for channel stability and in-stream structure functionality as well as survey of the longitudinal profile. Any evidence of channel instability will be identified, mapped and photographed.

8.0 OTHER INFORMATION

A couple of issues related to the dam upstream of the proposed stream relocation were noted during preliminary design. The first issue is sediment transport. The water coming out of the riser structure from the pond will be sediment starved and careful attention must be paid to the profile to ensure that a steep stream gradient does not further promote erosion. A range of unit stream power was calculated based on the stable reference reach and applied to the proposed design. Due to the elevation difference of the stream at the ROW limits and the tie in location at West Bear Creek, a total of ten 0.5ft drops have been added to meet the parameters of a stable stream.

The second issue is the flood attenuation the pond provides. Due to the attenuation, the channel cannot be designed based on the drainage area. However, a small section (20-30 ft) of the existing reach was found to be relatively stable and was therefore used as a reference reach. The profile and a cross section of this reach were surveyed to determine a bankfull discharge. The bankfull discharge for 1.16 sq mile drainage area was also routed through the pond and riser structure. The bankfull width based on the routed discharge was approximately 8 ft. The stable reach that was surveyed had a bankfull width of 8 ft as well, so the design moved forward with an 8 ft. bankfull width.

9.0 DETERMINATION OF CREDITS

Per the NCDOT plans and 401/404 permit application for R-2554, NCDOT proposes to restore 1,038 linear feet of stream and 78,065 sq. ft. of Zone 1 and 51,956 sq. ft. of Zone 2 riparian buffer via floodplain excavation and channel grading and subsequent native buffer reforestation to mitigate for permanent impacts associated with the TIP at a 1:1 ratio. An as-built report will be submitted within 60 days of completion of the project to verify actual linear feet constructed and buffer acreage planted. The success of the mitigation area and determination of total credits will be based upon successful completion and closeout of the monitoring period.

9.1 CREDIT RELEASE SCHEDULE

NCDOT proposes immediate, full release of the proposed 1,038 linear feet of restored streams and 78,065 sq. ft. of Zone 1 and 51,956 sq. ft. of Zone 2 restored riparian buffer as on-site mitigation for the associated stream impacts of 14,016 linear feet for R-2554 at a 1:1 ratio.

Table 3. Restoration Credit Schedule.

Section / Site	Stream Restoration (LF)	Buffer Restoration Zone 1 (Sq. Ft.)	Buffer Restoration Zone 2 (Sq. Ft.)	Total Buffer Credit (Sq. Ft.)
R-2554C UT to West Bear Creek (Benton)	1,038	78,065	51,956	130,021

In the event that mitigation credits remain after permitting, they will be placed on the NCDOT on-site debit ledger for use on future TIP projects.

10.0 GEOGRAPHIC SERVICE AREA

The proposed Geographic Service Area (GSA) for the mitigation area is composed of the 8-digit Hydrologic Cataloging Unit (HUC) 03020202. It is anticipated that the entire 1,038 linear feet will be used on-site at a 1:1 ratio to offset stream impacts associated with R-2554. Any remaining mitigation credits will be available for use within HUC 03020202 as well as adjacent HUC's 03020201 and 03020203 within the Neuse River Basin.

11.0 MAINTENANCE PLAN

The site will be held by NCDOT and placed in the NES mitigation geodatabase. Once monitoring is completed and the site is closed out, it will be placed in the NCDOT Stewardship Program for long term maintenance and protection.

If an appropriate third party recipient is identified in the future, then the transfer of the property will include a conservation easement or other measure to protect the natural features and mitigation value of the site in perpetuity.

12.0 LONG TERM ADAPTIVE MANAGEMENT PLAN

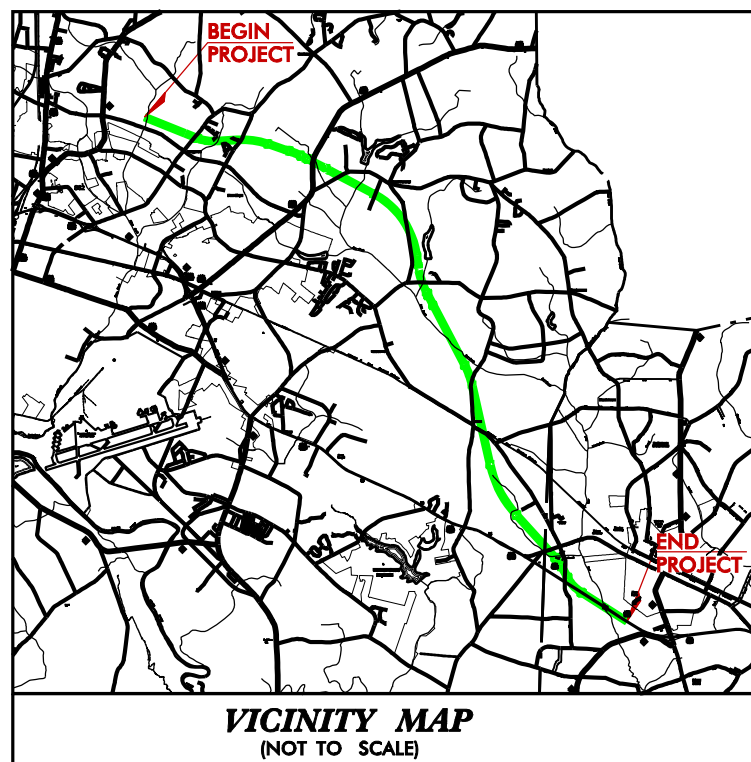
The site will be managed by NCDOT according to the mitigation plan. In the event that unforeseen issues arise that affect the management of the site, any remediation will be addressed by NCDOT in coordination with the Interagency Review Team.

13.0 FINANCIAL ASSURANCES

The site will be managed by NCDOT with its own distinct cost center number within the NCDOT budgeting and financial tracking system. Therefore, all accounting for revenues, contract encumbrances, fund transfers, and expenses will be performed and reported independent from other capital budget or operating budget accounting.

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TIP PROJECT: R-2554BB&C
CONTRACT: C202771



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
WAYNE-LENOIR COUNTIES

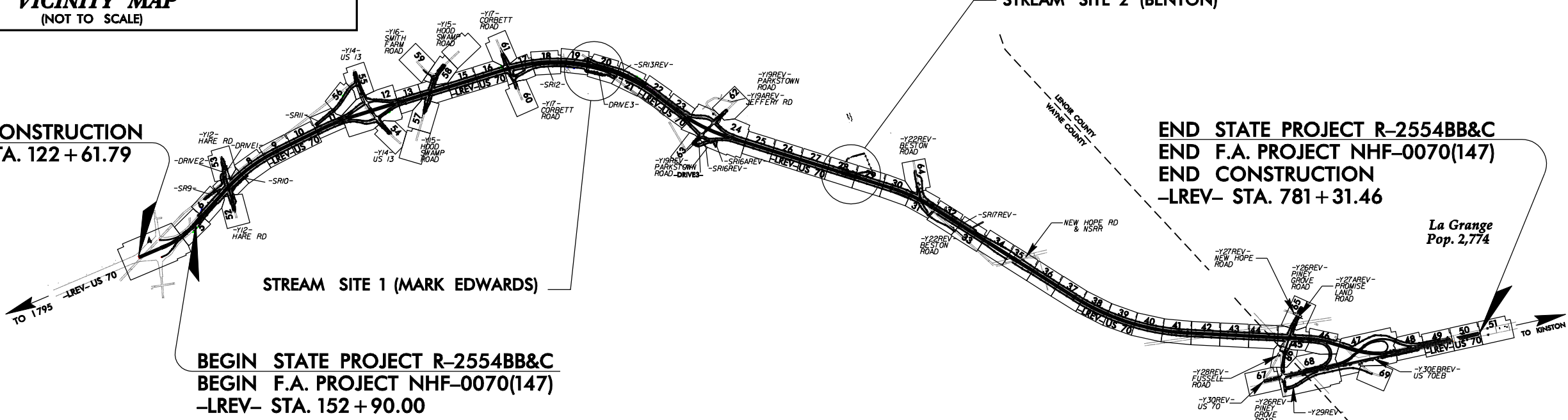
LOCATION: US 70 (GOLDSBORO BYPASS) FROM EAST OF SR 1556
(WAYNE MEMORIAL DRIVE) TO EAST OF SR 1323
(PROMISE LAND ROAD)

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

R-2554BB&C
ON-SITE MITIGATION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2554BB&C	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34461.3.8	NHF-0070(147)	CONSTRUCTION	

BEGIN CONSTRUCTION
-LREV- STA. 122 + 61.79

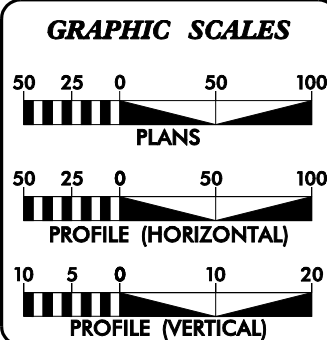


THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

PROJECT PREPARED BY:

**HDR** HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

**BARNHILL**
CONTRACTING
COMPANY



DESIGN DATA

ADT 2011 =	21400
ADT 2035 =	44500
DHV =	8 %
D =	55 %
T =	11 % *
V =	75 MPH
FUNCTIONAL CLASSIFICATION:	
INTERSTATE	
* TTST = 7%	DUAL = 4%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2554BB&C	= 11.646 MILES
LENGTH STRUCTURE TIP PROJECT R-2554BB&C	= 0.256 MILES
TOTAL LENGTH TIP PROJECT R-2554BB&C	= 11.902 MILES
BRIDGE LENGTH BASED ON CENTERLINE PROJECTION STATION	

Prepared for the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

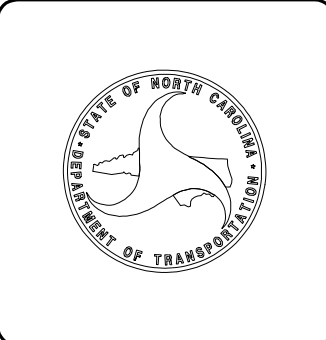
RIGHT OF WAY DATE: JANUARY 25, 2012 (R-2554BB) DECEMBER 23, 2002 (R-2554C)	PAUL A. MEEHAN, P.E. PROJECT ENGINEER
LETTING DATE: JANUARY 25, 2012	CALVIN W. MOODY, III, P.E. PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

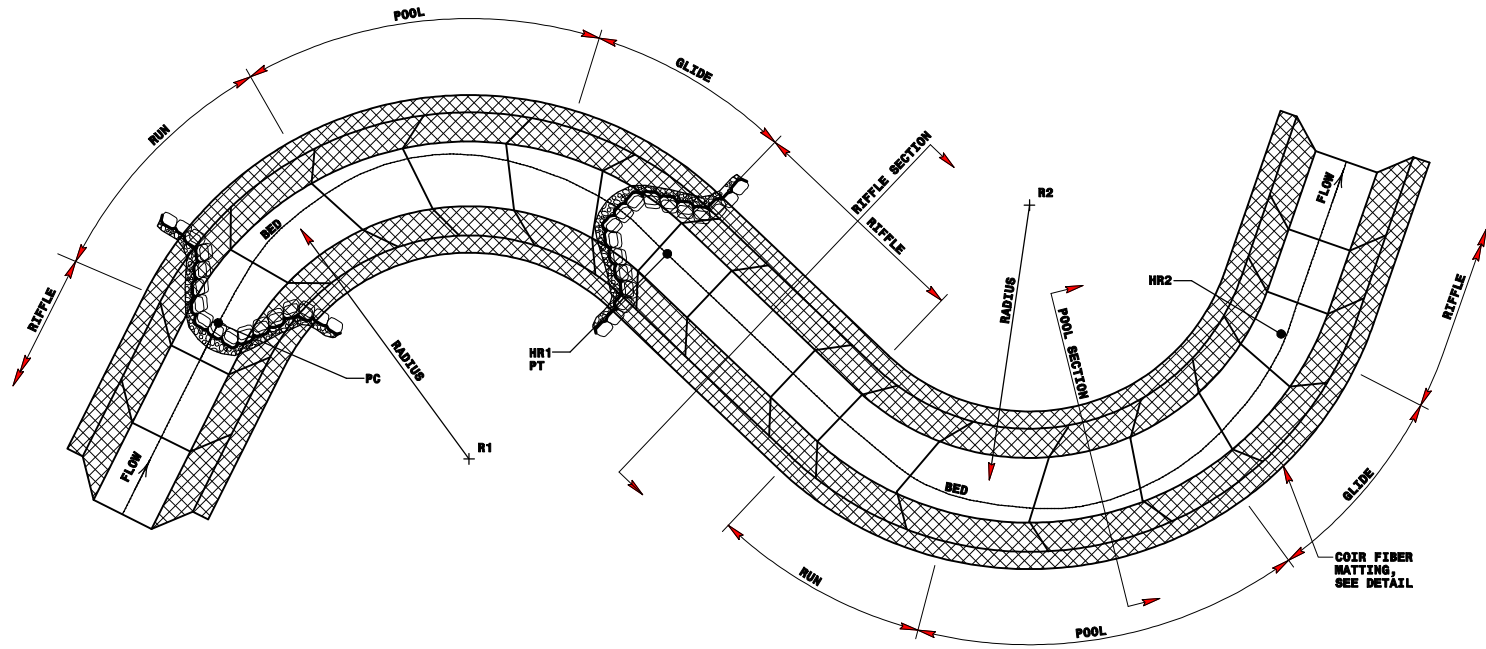
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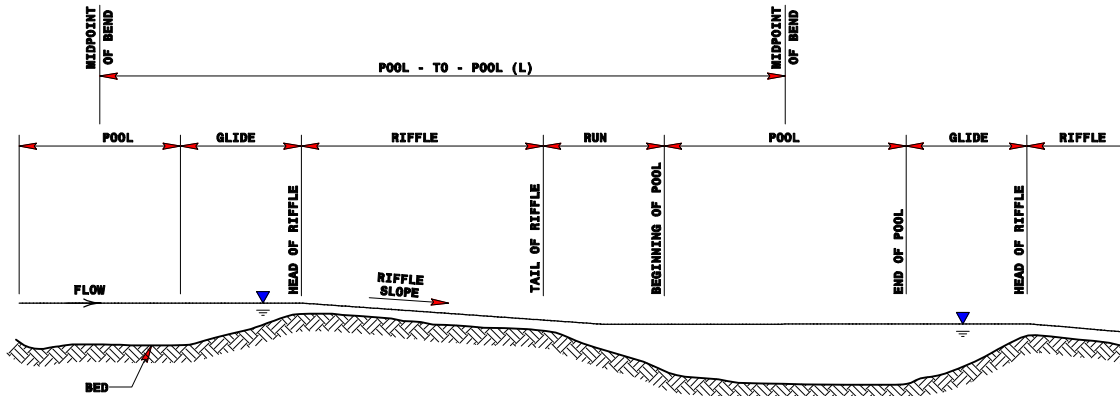
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

REVISIONS



TYPICAL PLAN



TYPICAL PROFILE

CROSS-SECTION DIMENSIONS

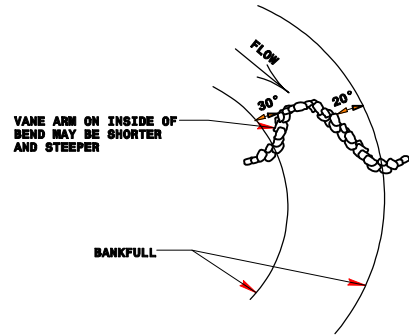
	RIFFLE				POOL						
	W_{bkf}	D_{max}	W_b	W_{fpa}	W_{bkf}	D_{max}	W_b	W_{fpa}	Width/Depth Ratio	D_{bench}	P_{bar} Slope
STREAM 1											
Sta. 10+00 - 26+39.1 (MARK EDWARDS)	7.0	0.9	1.6	75	10.5	1.75	0.7	75	12	1.0	5.75:1
STREAM 2											
Sta. 10+00 - 20+37.91 (BENTON)	8.0	0.96	2.3	75	12	2	0.9	75	12	1.0	5.75:1

NOTES:

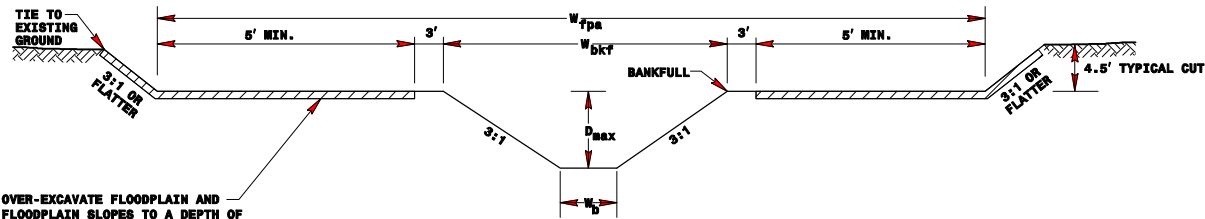
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CHANNEL TYPICAL DETAIL

NOT TO SCALE

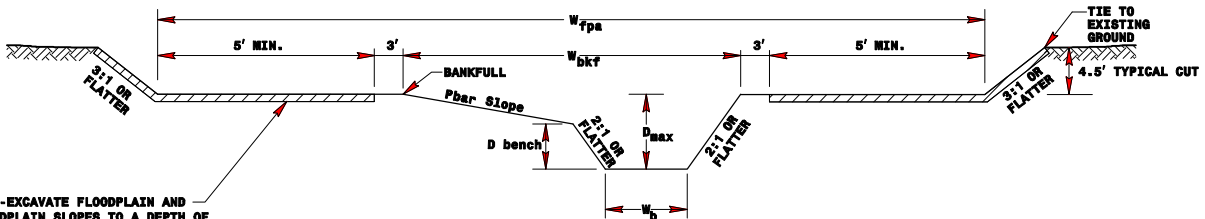


CROSS VANE CONSTRUCTION
IN MEANDER-BEND
PLAN VIEW



OVER-EXCAVATE FLOODPLAIN AND FLOODPLAIN SLOPES TO A DEPTH OF 6" BELOW FINAL GRADE AND PLACE 6" OF TOPSOIL TO FILL TO FINAL GRADE. OVER-EXCAVATION SHOULD BEGIN 3' FROM TOP OF BANK AND EXTEND TO EXCAVATION LIMITS.

TYPICAL RIFFLE WITH
BANKFULL BENCH

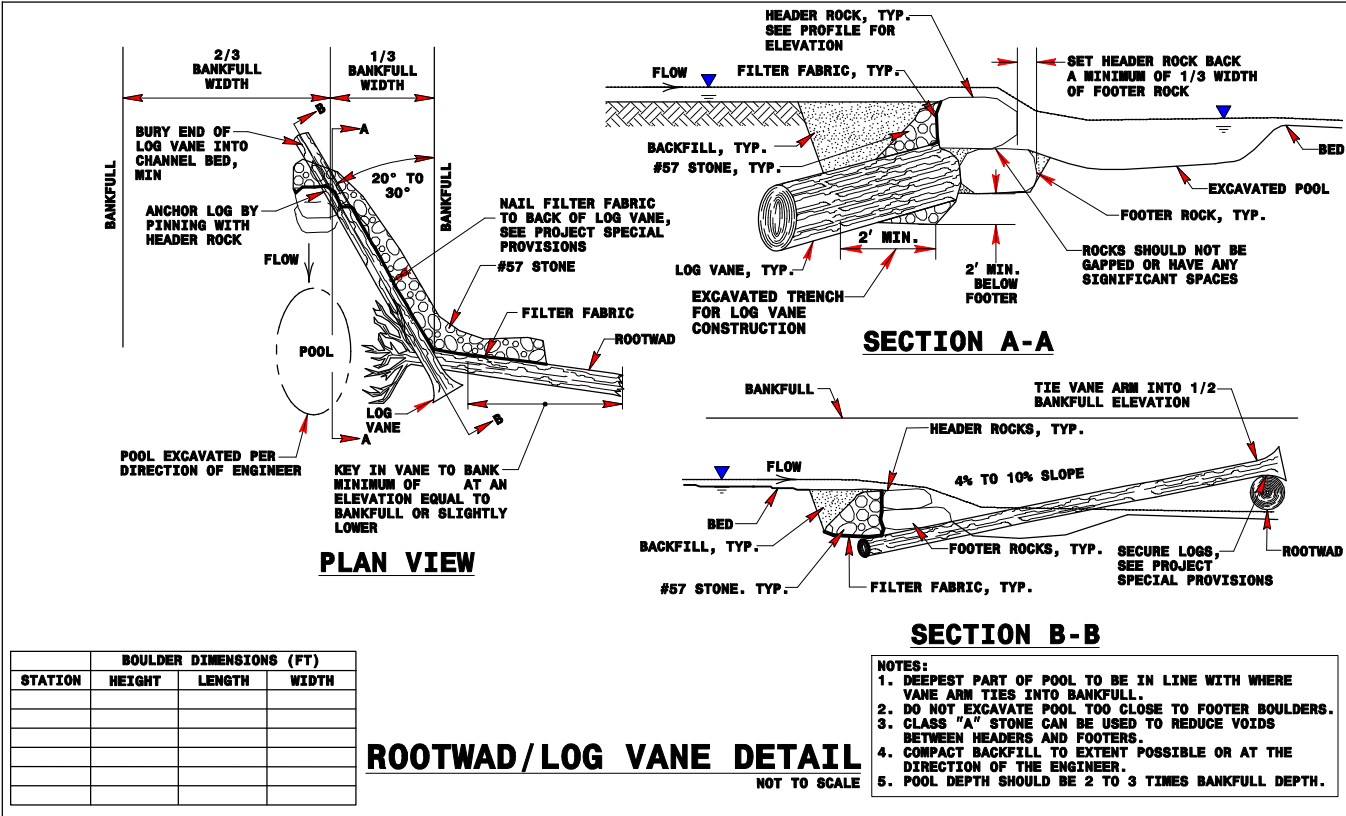
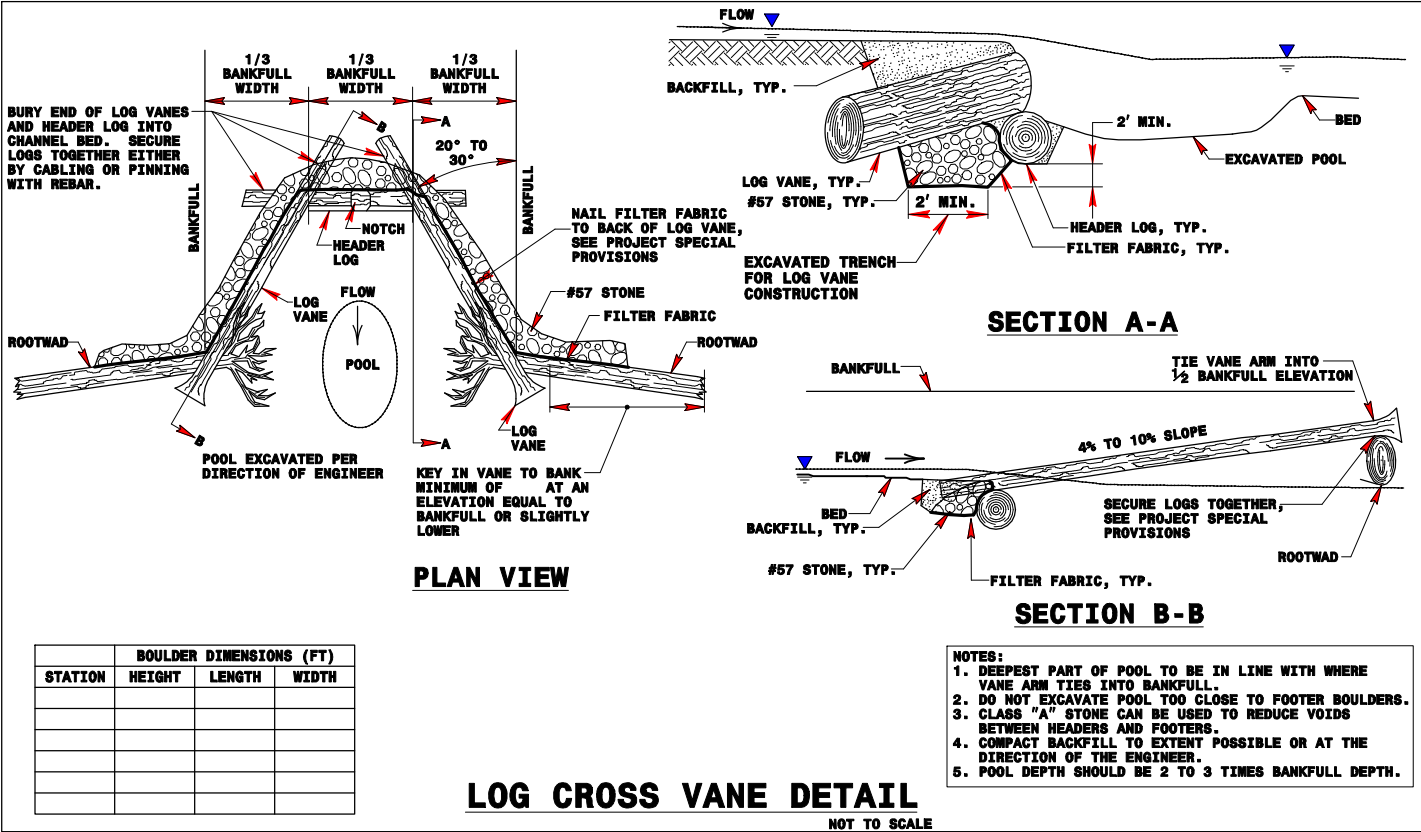


OVER-EXCAVATE FLOODPLAIN AND FLOODPLAIN SLOPES TO A DEPTH OF 6" BELOW FINAL GRADE AND PLACE 6" OF TOPSOIL TO FILL TO FINAL GRADE. OVER-EXCAVATION SHOULD BEGIN 3' FROM TOP OF BANK AND EXTEND TO EXCAVATION LIMITS.

TYPICAL POOL WITH
BANKFULL BENCH

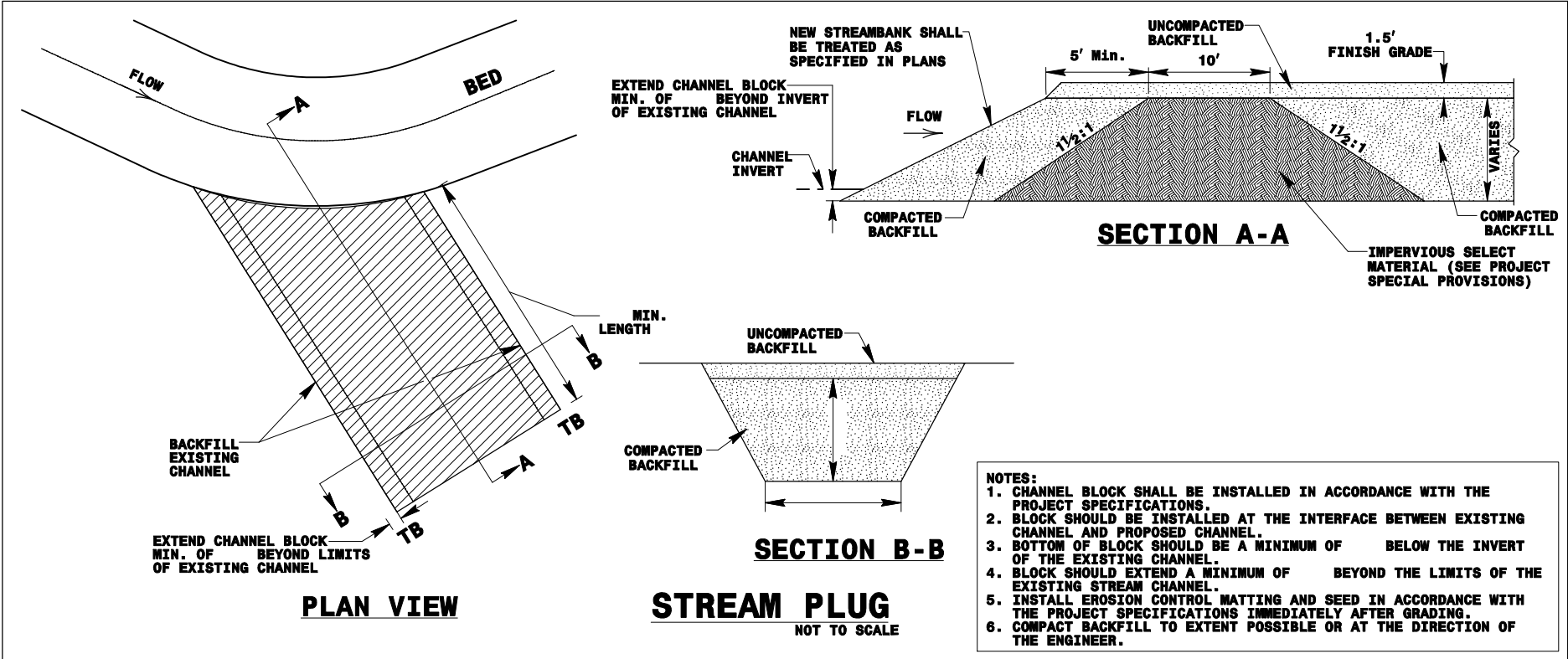
W_{bkf} = BANKFULL WIDTH
 D_{max} = MAXIMUM DEPTH
 W_b = BOTTOM WIDTH
 W_{fpa} = FLOOD PRONE AREA WIDTH

REVISIONS



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO.	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

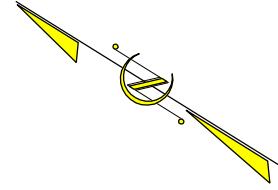
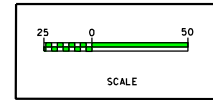
REVISIONS



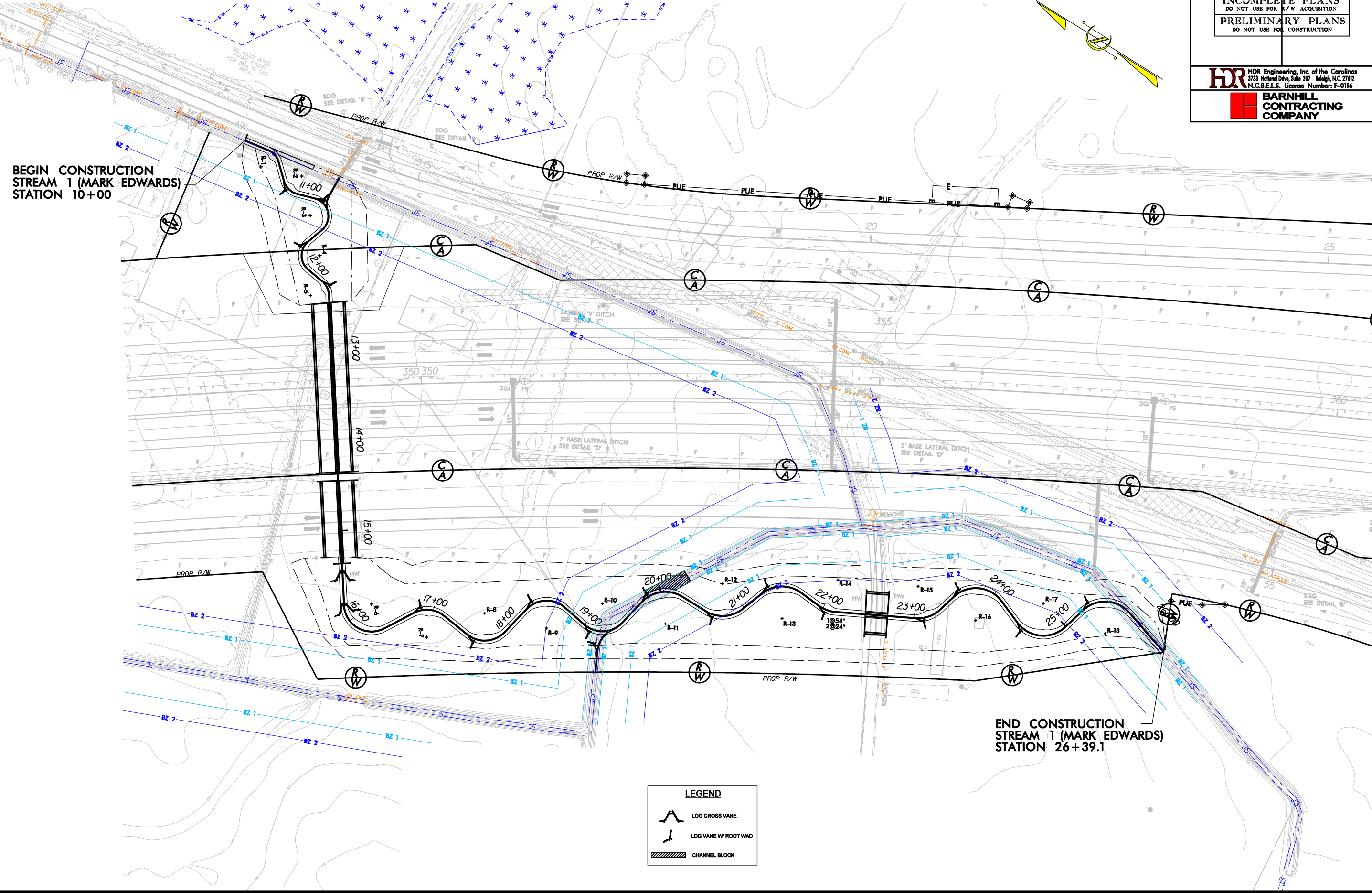
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R-2554BB&C		
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
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 BARNHILL CONTRACTING COMPANY		

REVISIONS

STREAM 1 (MARK EDWARDS) SITE OVERVIEW



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO.
STREAM 1		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116 BARNHILL CONTRACTING COMPANY		

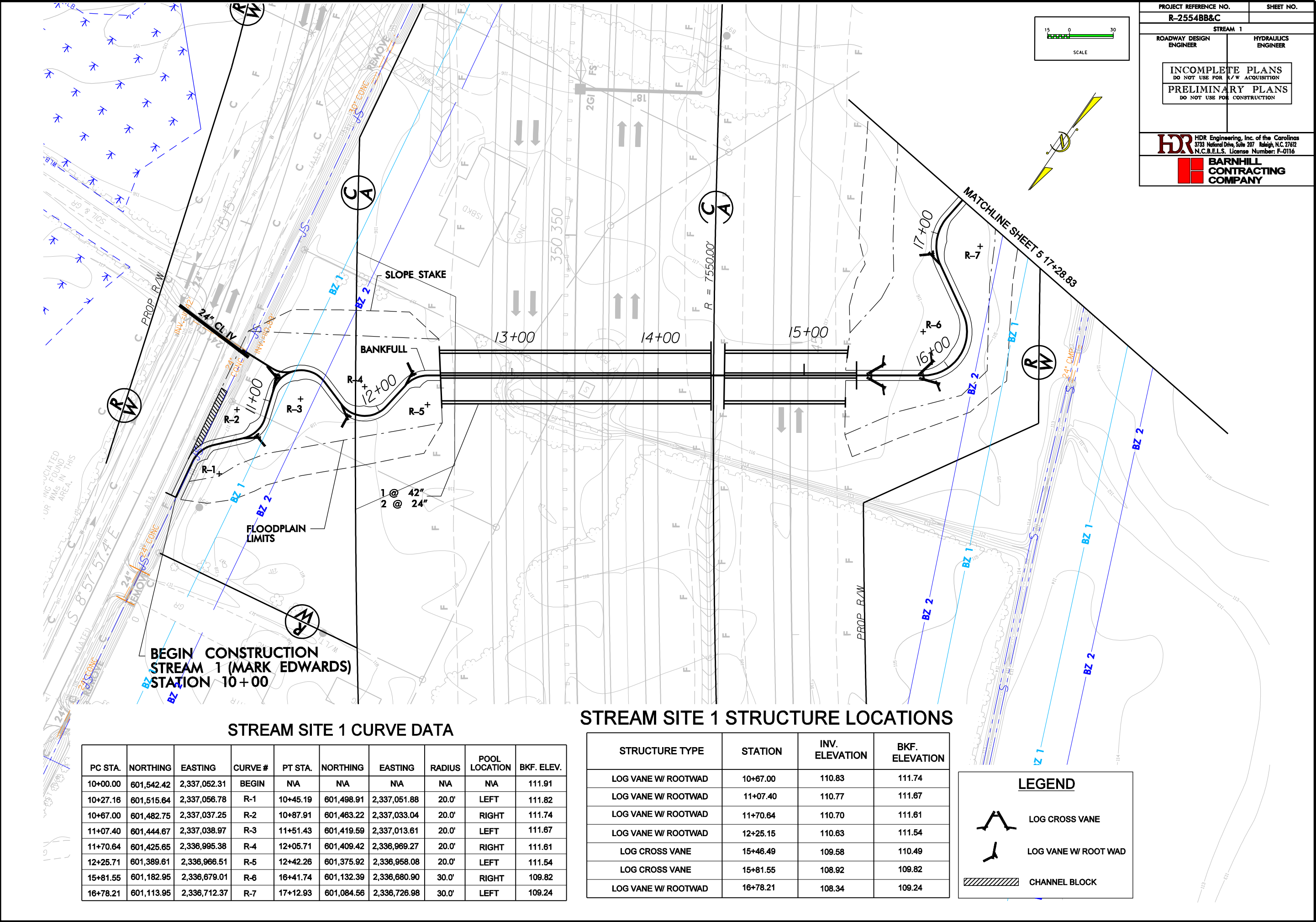


BEGIN CONSTRUCTION
STREAM 1 (MARK EDWARDS)
STATION 10+00

END CONSTRUCTION
STREAM 1 (MARK EDWARDS)
STATION 26+39.1

LEGEND	
	LOG CROSS VANE
	LOG VANE W/ ROOT WAD
	CHANNEL BLOCK

REVISIONS



STREAM SITE 1 CURVE DATA

PC STA.	NORTHING	EASTING	CURVE #	PT STA.	NORTHING	EASTING	RADIUS	POOL LOCATION	BKF. ELEV.
10+00.00	601,542.42	2,337,052.31	BEGIN	N/A	N/A	N/A	N/A	N/A	111.91
10+27.16	601,515.64	2,337,056.78	R-1	10+45.19	601,498.91	2,337,051.88	20.0'	LEFT	111.82
10+67.00	601,482.75	2,337,037.25	R-2	10+87.91	601,463.22	2,337,033.04	20.0'	RIGHT	111.74
11+07.40	601,444.67	2,337,038.97	R-3	11+51.43	601,419.59	2,337,013.61	20.0'	LEFT	111.67
11+70.64	601,425.65	2,336,995.38	R-4	12+05.71	601,409.42	2,336,969.27	20.0'	RIGHT	111.61
12+25.71	601,389.61	2,336,966.51	R-5	12+42.26	601,375.92	2,336,958.08	20.0'	LEFT	111.54
15+81.55	601,182.95	2,336,679.01	R-6	16+41.74	601,132.39	2,336,680.90	30.0'	RIGHT	109.82
16+78.21	601,113.95	2,336,712.37	R-7	17+12.93	601,084.56	2,336,726.98	30.0'	LEFT	109.24

STREAM SITE 1 STRUCTURE LOCATIONS

STRUCTURE TYPE	STATION	INV. ELEVATION	BKF. ELEVATION
LOG VANE W/ ROOTWAD	10+67.00	110.83	111.74
LOG VANE W/ ROOTWAD	11+07.40	110.77	111.67
LOG VANE W/ ROOTWAD	11+70.64	110.70	111.61
LOG VANE W/ ROOTWAD	12+25.15	110.63	111.54
LOG CROSS VANE	15+46.49	109.58	110.49
LOG CROSS VANE	15+81.55	108.92	109.82
LOG VANE W/ ROOTWAD	16+78.21	108.34	109.24

LEGEND

- LOG CROSS VANE
- LOG VANE W/ ROOT WAD
- CHANNEL BLOCK

PROJECT REFERENCE NO.
R-2554BB&C

SHEET NO.

STREAM 1

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR A/W ACQUISITION

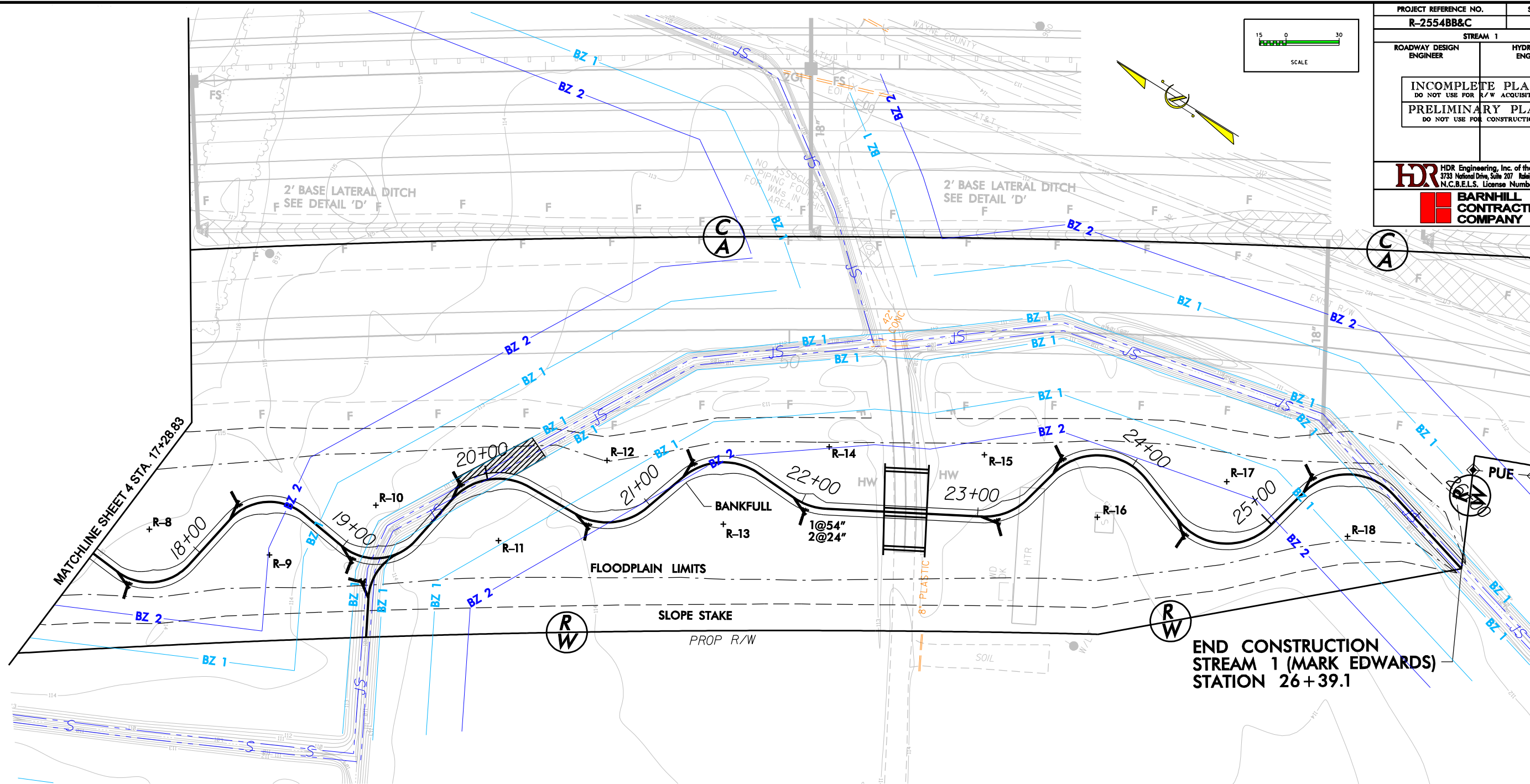
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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N.C.B.E.L.S. License Number: F-0116

BARNHILL CONTRACTING COMPANY

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REVISIONS



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO.
STREAM 1		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
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BARNHILL CONTRACTING COMPANY		

STREAM SITE 1 CURVE DATA

PC STA.	NORTHING	EASTING	CURVE #	PT STA.	NORTHING	EASTING	RADIUS	POOL LOCATION	BKF. ELEV.
17+46.08	601,051.64	2,336,723.12	R-8	17+90.49	601,018.78	2,336,746.73	30.0'	RIGHT	109.13
18+25.37	601,011.59	2,336,780.86	R-9	18+71.20	600,977.33	2,336,804.28	30.0'	LEFT	109.01
18+99.46	600,949.45	2,336,799.65	R-10	19+45.53	600,915.14	2,336,823.30	30.0'	RIGHT	108.91
19+76.72	600,908.95	2,336,853.87	R-11	20+24.63	600,874.73	2,336,881.93	35.0'	LEFT	108.82
20+54.86	600,844.50	2,336,882.00	R-12	20+97.90	600,811.58	2,336,905.38	35.0'	RIGHT	108.73
21+24.77	600,802.65	2,336,930.73	R-13	21+70.59	600,766.95	2,336,954.00	35.0'	LEFT	108.64
21+94.87	600,742.74	2,336,952.14	R-14	22+14.30	600,723.94	2,336,955.96	35.0'	RIGHT	108.57
23+02.08	600,646.02	2,336,996.36	R-15	23+31.19	600,628.31	2,337,018.41	35.0'	RIGHT	108.31
23+51.62	600,623.04	2,337,038.15	R-16	24+10.71	600,576.30	2,337,061.66	35.0'	LEFT	108.25
24+39.93	600,549.14	2,337,050.87	R-17	24+99.07	600,502.39	2,337,074.43	35.0'	RIGHT	108.16
25+25.67	600,495.58	2,337,100.14	R-18	25+82.02	600,451.46	2,337,124.62	35.0'	LEFT	108.08
26+39.14	600,396.86	2,337,107.83	END	N/A	N/A	N/A	N/A	N/A	108.08

STREAM SITE 1 STRUCTURE LOCATIONS

STRUCTURE TYPE	STATION	INV. ELEVATION	BKF. ELEVATION
LOG VANE W/ ROOTWAD	17+46.08	108.22	109.13
LOG VANE W/ ROOTWAD	18+25.37	108.10	109.01
LOG VANE W/ ROOTWAD	18+99.46	108.00	108.91
LOG VANE W/ ROOTWAD	19+76.72	107.91	108.82
LOG VANE W/ ROOTWAD	20+54.86	107.82	108.73
LOG VANE W/ ROOTWAD	21+24.77	107.74	108.64
LOG VANE W/ ROOTWAD	21+94.87	107.67	108.57
LOG VANE W/ ROOTWAD	23+02.88	107.36	108.31
LOG VANE W/ ROOTWAD	23+51.62	107.34	108.25
LOG VANE W/ ROOTWAD	24+39.93	107.25	108.16
LOG VANE W/ ROOTWAD	25+25.67	107.17	108.08

LEGEND

 LOG CROSS VANE

 LOG VANE W/ ROOT WAD

 CHANNEL BLOCK

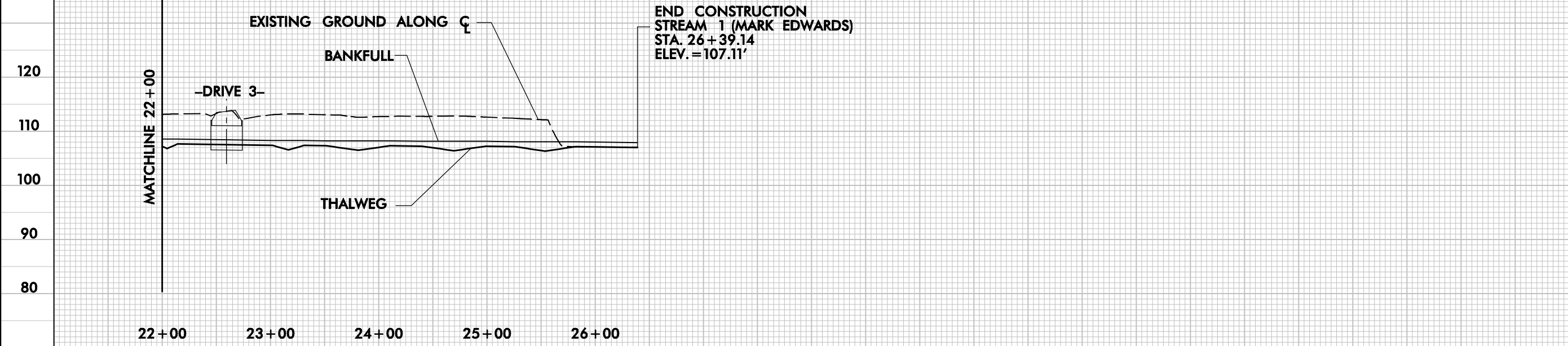
5/28/99

STREAM 1 (MARK EDWARDS)

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



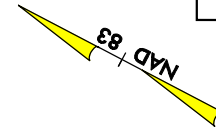
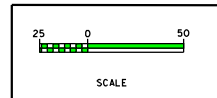
STREAM 1 (MARK EDWARDS)



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REVISIONS

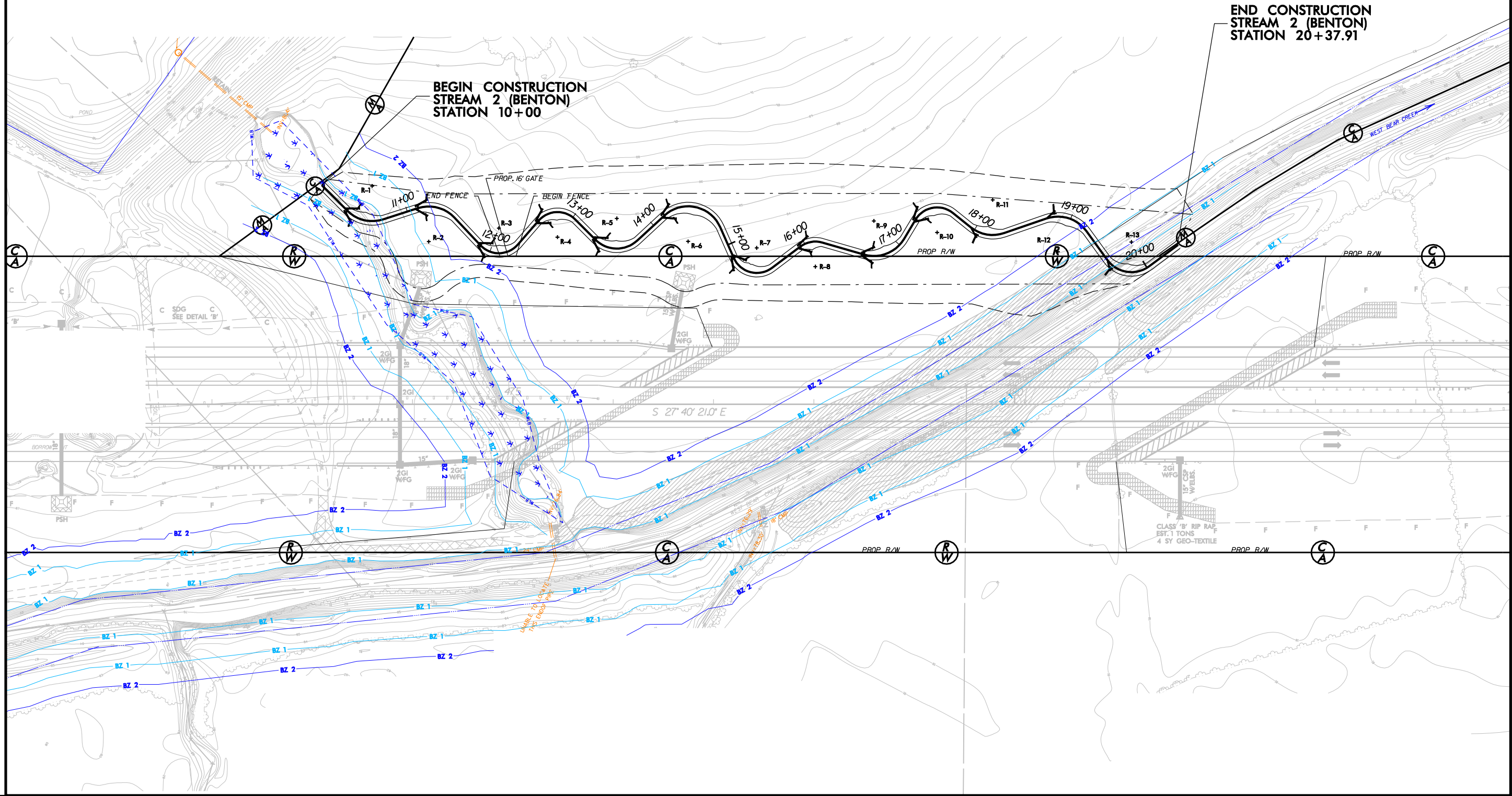
STREAM 2 (BENTON) SITE OVERVIEW



LEGEND

- LOG CROSS VANE
- LOG VANE W/ ROOT WAD
- CHANNEL BLOCK

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO.
STREAM 2		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
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BARNHILL CONTRACTING COMPANY		



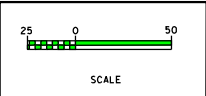
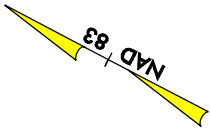
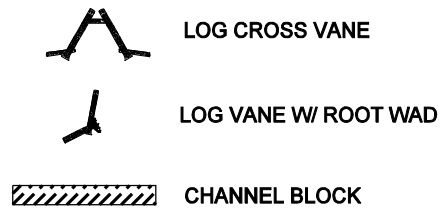
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REVISIONS

STREAM SITE 2 CURVE DATA

PC STA.	NORTHING	EASTING	CURVE #	PT STA.	NORTHING	EASTING	RADIUS	POOL LOCATION	BKF. ELEV.
10+00.00	590,023.59	2,341,688.62	BEGIN	N/A	N/A	N/A	N/A	N/A	
10+36.14	589,989.08	2,341,677.88	R-1	10+74.46	589,953.74	2,341,686.75	35.0'	RIGHT	80.93
11+11.20	589,927.97	2,341,712.93	R-2	11+50.59	589,891.61	2,341,721.47	35.0'	LEFT	80.35
11+88.75	589,855.54	2,341,709.03	R-3	12+30.52	589,823.06	2,341,726.92	25.0'	RIGHT	79.78
12+62.12	589,815.80	2,341,757.67	R-4	13+03.21	589,783.97	2,341,775.78	25.0'	LEFT	79.21
13+31.73	589,756.76	2,341,767.22	R-5	13+77.71	589,719.51	2,341,785.76	30.0'	RIGHT	78.66

LEGEND



PROJECT REFERENCE NO.
R-2554BB&C

SHEET NO.

STREAM 2

ROADWAY DESIGN ENGINEER

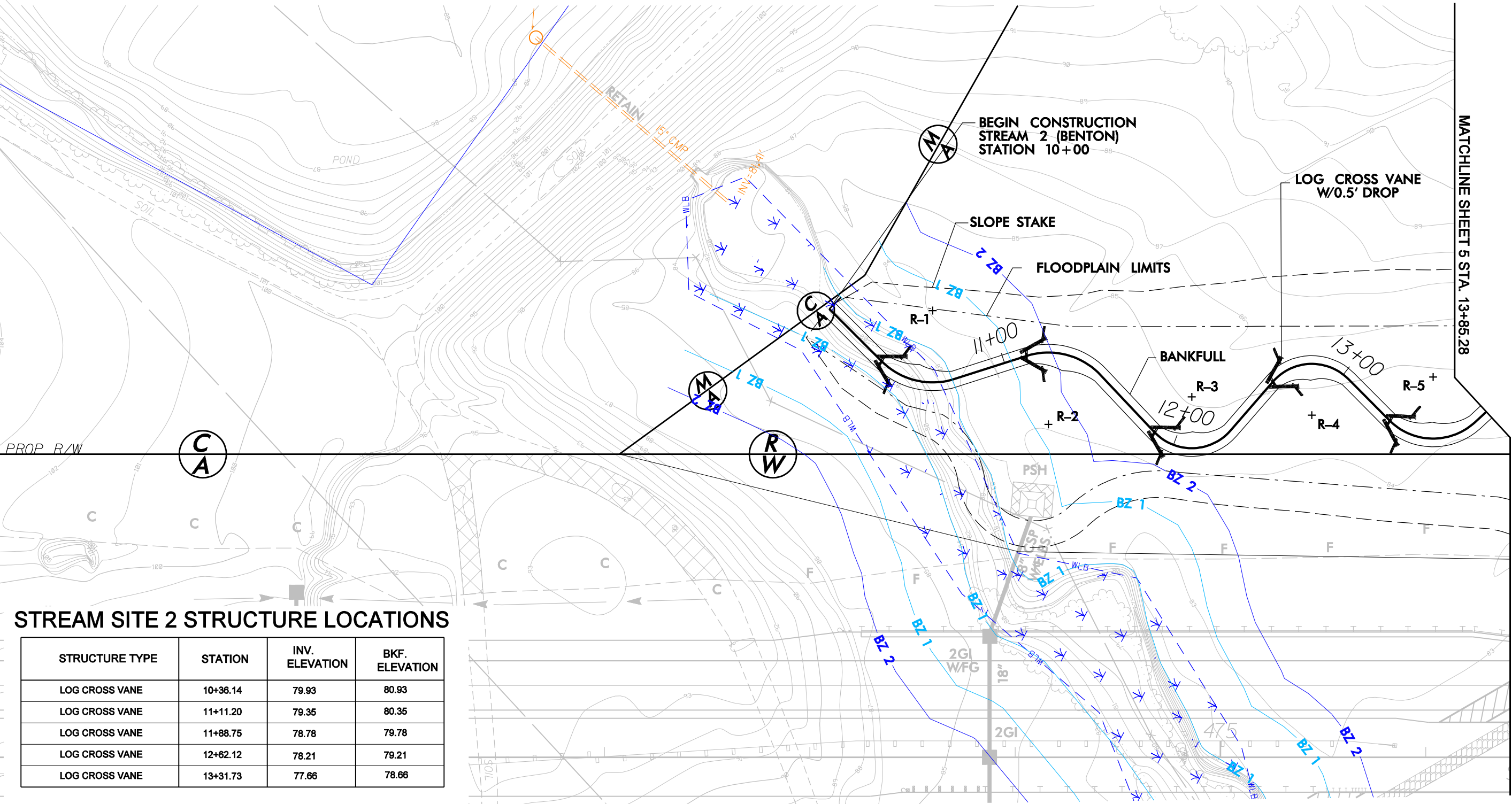
HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
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BARNHILL CONTRACTING COMPANY

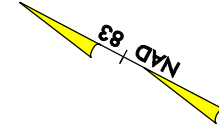


STREAM SITE 2 STRUCTURE LOCATIONS

STRUCTURE TYPE	STATION	INV. ELEVATION	BKF. ELEVATION
LOG CROSS VANE	10+36.14	79.93	80.93
LOG CROSS VANE	11+11.20	79.35	80.35
LOG CROSS VANE	11+88.75	78.78	79.78
LOG CROSS VANE	12+62.12	78.21	79.21
LOG CROSS VANE	13+31.73	77.66	78.66

PC STA.	NORTHING	EASTING	CURVE #	PT STA.	NORTHING	EASTING	RADIUS	POOL LOCATION	BKF. ELEV.
14+14.46	589,707.16	2,341,820.37	R-6	14+80.97	589,652.40	2,341,835.98	35.0'	LEFT	78.08
15+14.50	589,626.17	2,341,815.11	R-7	15+59.49	589,588.02	2,341,823.94	25.0'	RIGHT	77.52
15+94.92	589,572.81	2,341,855.95	R-8	16+18.07	589,555.23	2,341,869.71	25.0'	LEFT	76.95
16+61.48	589,512.70	2,341,878.40	R-9	17+07.40	589,484.76	2,341,910.69	35.0'	RIGHT	76.36
17+29.98	589,483.47	2,341,933.22	R-10	17+72.65	589,453.70	2,341,956.33	25.0'	LEFT	75.84
17+95.53	589,431.25	2,341,951.93	R-11	18+30.81	589,399.06	2,341,962.26	35.0'	RIGHT	75.27
18+75.46	589,368.43	2,341,994.75	R-12	19+20.13	589,327.38	2,342,002.08	35.0'	LEFT	75.18
19+55.29	589,295.90	2,341,986.42	R-13	20+02.84	589,255.49	2,342,000.30	30.0'	RIGHT	75.11
20+37.91	589,240.31	2,342,031.92	END	N/A	N/A	N/A	N/A	N/A	

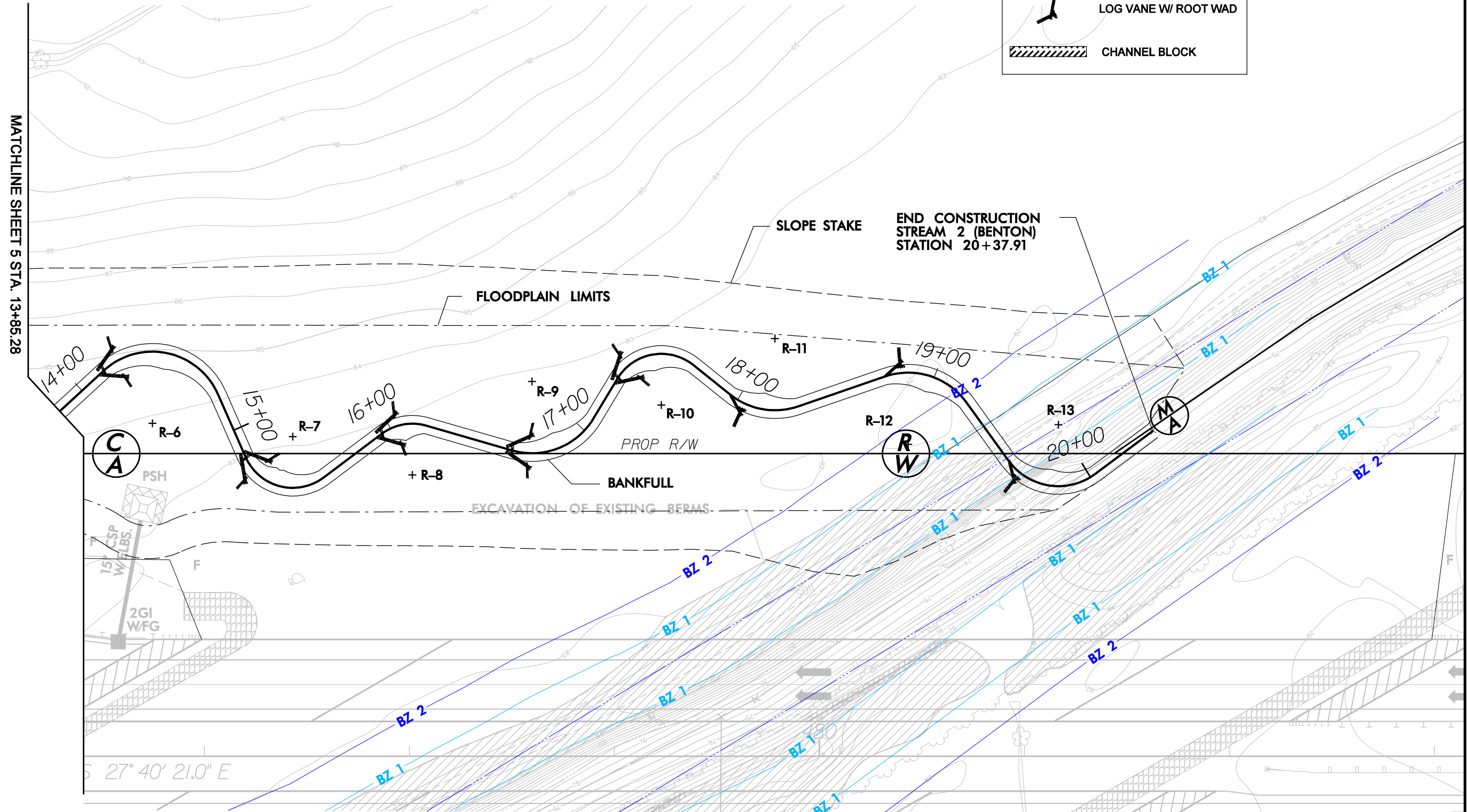
STRUCTURE TYPE	STATION	INV. ELEVATION	BKF. ELEVATION
LOG CROSS VANE	14+14.46	77.08	78.08
LOG CROSS VANE	15+14.50	76.52	77.52
LOG CROSS VANE	15+94.92	75.95	76.95
LOG CROSS VANE	16+61.48	75.36	76.36
LOG CROSS VANE	17+29.98	74.81	75.84
LOG VANE W/ ROOTWAD	17+95.54	74.27	75.27
LOG VANE W/ ROOTWAD	18+75.43	74.18	75.18
LOG VANE W/ ROOTWAD	19+55.29	74.11	75.11



The diagram illustrates three types of log structures used in erosion control:

- LOG CROSS VANE:** A cross-section view of a log structure with three vanes extending from a central point.
- LOG VANE W/ ROOT WAD:** A cross-section view of a log structure with a single vane and a root wad attached to the base.
- CHANNEL BLOCK:** A cross-section view of a rectangular block with a hatched pattern, representing a channel block.

PROJECT REFERENCE NO.		SHEET NO.									
R-2554BB&C											
STREAM 2											
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER									
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INCOMPLETE PLANS											
DO NOT USE FOR R/W ACQUISITION											
PRELIMINARY PLANS											
DO NOT USE FOR CONSTRUCTION											
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		BARNHILL CONTRACTING COMPANY									

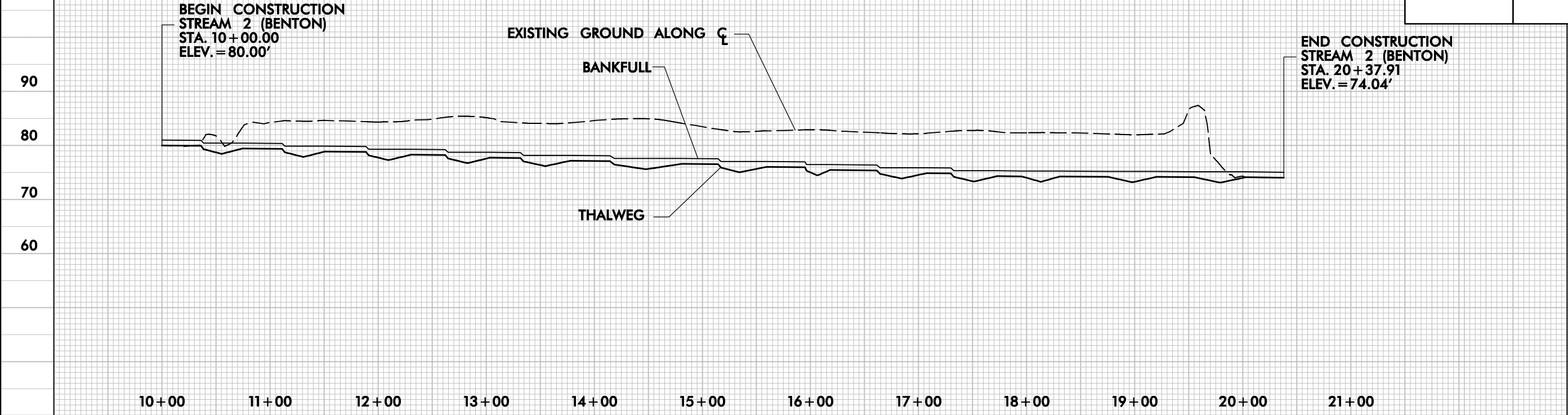


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STREAM 2 (BENTON)

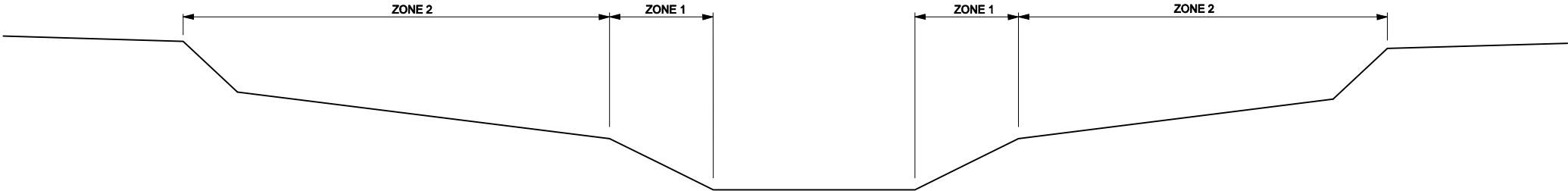
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INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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REVISIONS

PLANTING DETAILS



ZONE 1

LIVE STAKES

Species Name	Common Name
<i>Cornus amomum</i>	Silky dogwood
<i>Cephalanthus occidentalis</i>	Button bush

Zone 1 Streambank reforestation shall be planted 3' to 5' on center, random spacing, averaging 4' on center. Approx. 2722 plants per acre.

Native grass seeding and mulching will be applied on all disturbed areas within the stream restoration area for stabilization purposes according to guidance and standard procedures of NCDOT's Roadside Environmental Unit.

ZONE 2

BARE ROOT

Species Name	Common Name
<i>Betula nigra</i>	River Birch
<i>Fraxinus pennsylvanica</i>	Green Ash
<i>Nyssa sylvatica</i> var. <i>biflora</i>	Swamp Tupelo
<i>Platanus occidentalis</i>	Sycamore
<i>Quercus lyrata</i>	Overcup Oak
<i>Quercus michauxii</i>	Swamp Chestnut Oak

Zone 2 Streambank reforestation shall be planted 6' to 10' on center, random spacing, averaging 8' on center. Approx. 680 plants per acre.

A minimum of 4 out of the 6 species to be installed approx. 10' on center (480 bare roots/acre) in equal proportions. Substitutions with other native species common to Coastal Plain Bottomland Hardwood may be accepted if the following species are not available. Prior approval is required for substitutions.

STREAM SITE 1 (MARK EDWARDS)

TOTAL QUANTITY OF PLANTING

Bare Roots	1,510
Live Stakes	544

STREAM SITE 2 (BENTON)

TOTAL QUANTITY OF PLANTING

Bare Roots	1,394
Live Stakes	436

PERMANENT SEED MIX/ TEMPORARY SEEDING

Native grass seeding and mulching will be applied on all disturbed areas within the stream restoration area according to guidance and standard procedures of NCDOT's Roadside Environmental Unit (Special Provision for Seeding and Mulching Native Grass-East).

PROJECT REFERENCE NO.		SHEET NO.	
R-2554BB&C			
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR		HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	
BARNHILL CONTRACTING COMPANY			

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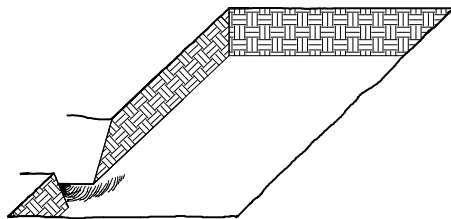
REVISIONS

PLANTING DETAILS

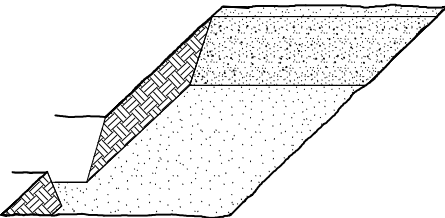
PLANTING DETAILS SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

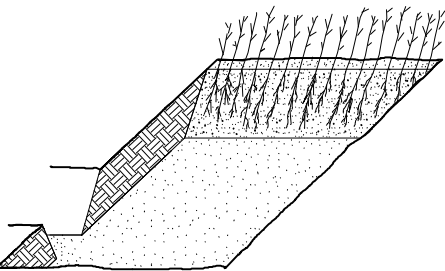
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12IN. deep and provide drainage.



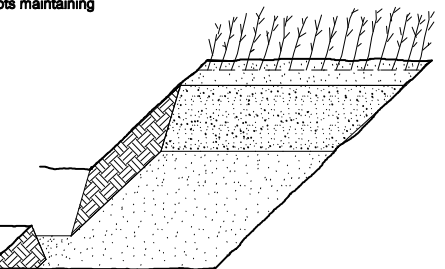
3. Backfill the trench with 2IN. well rotted sawdust. Place a 2IN. layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

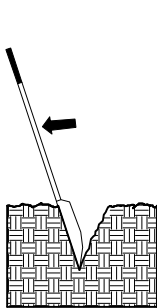


5. Place a 2IN. layer of well rotted sawdust over the roots maintaining a sloping angle.

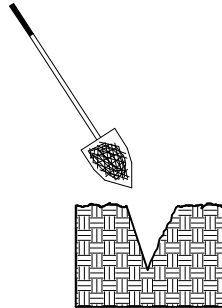


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

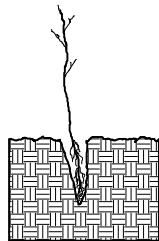
PLANTING METHOD USING A SHOVEL



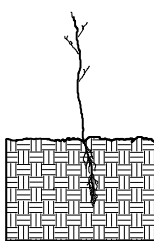
1. Dig hole with shovel to appropriate depth and width for seedling.



2. Remove soil from hole with shovel. Hole shall not be made by compacting soil away from the hole.



3. Remove shovel and place seedling at correct depth.



4. Fill hole with soil. Tamp soil to remove air pockets. Water Thoroughly.

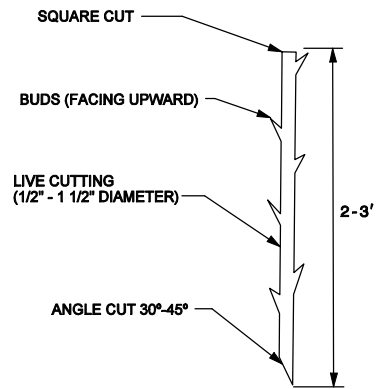
PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 24 inches (24IN.) below the root collar.

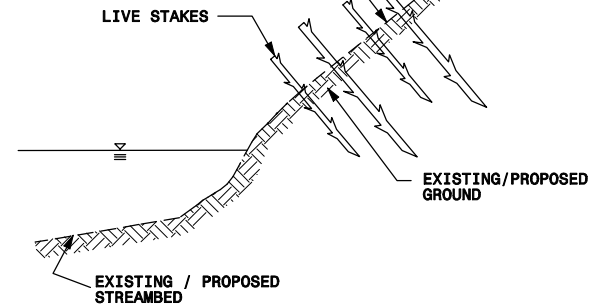


LIVE STAKE DETAIL



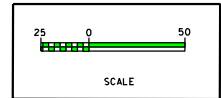
LIVE STAKE

NOTE: STAKING MAY BE REQUIRED THROUGH MATTING, ROCK OR COMPACTED SOILS. A STARTER HOLE MAY BE REQUIRED.



- NOTE:
1. LIVE STAKES SHALL BE EVENLY SPACED 2' APART.
 2. LIVE STAKES SHALL BE DRIVEN UNTIL APPROXIMATELY 3/4 OF LIVE STAKE IS WITHIN GROUND.
 3. IF STARTER HOLE IS NEEDED, MINIMIZE AIR POCKET.
 4. UTILIZE ALL ON SITE TRANSPLANT MATERIALS MADE AVAILABLE BY THE OWNER. ONCE SOURCE OF TRANSPLANT MATERIAL HAS BEEN HARVESTED, THEN UTILIZE LIVE STAKING.

STREAM 1 (MARK EDWARDS) PLANTING OVERVIEW



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO.
STREAM 1		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		
BARNHILL CONTRACTING COMPANY		

BEGIN CONSTRUCTION
STREAM 1 (MARK EDWARDS)
STATION 10+00

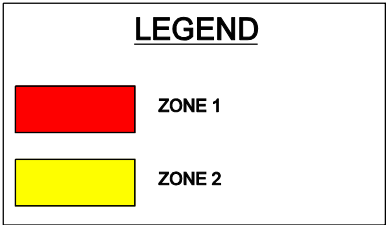
BEGIN CONSTRUCTION
STREAM 1 (MARK EDWARDS)
STATION 26+39.1

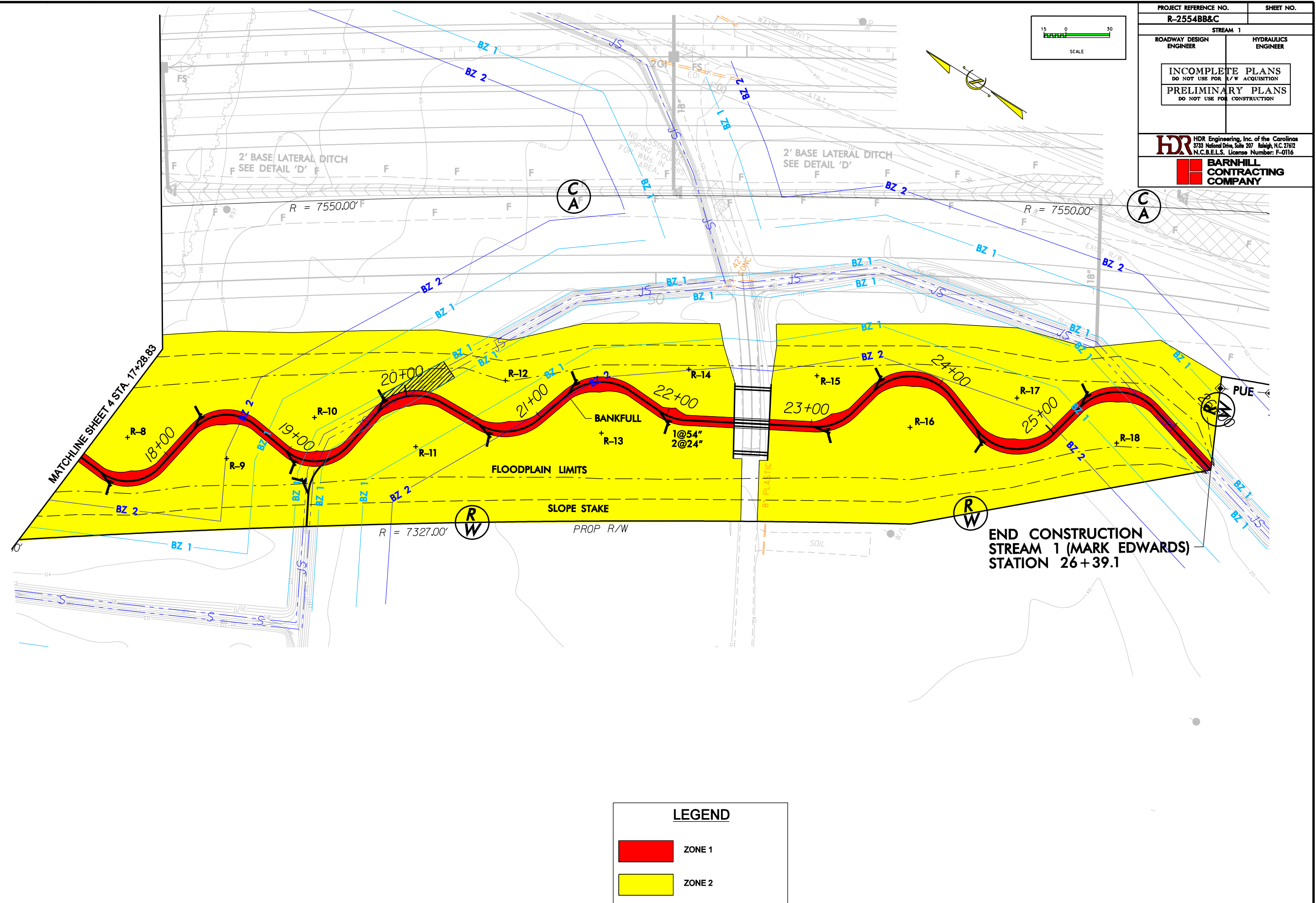
LEGEND

- ZONE 1
- ZONE 2

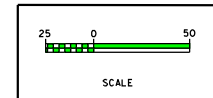
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REVISIONS





STREAM 2 (BENTON) SITE PLANTING OVERVIEW



PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		
STREAM 2		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
 BARNHILL CONTRACTING COMPANY		

REVISIONS

BEGIN CONSTRUCTION
STREAM 2 (BENTON)
STATION 10+00

END CONSTRUCTION
STREAM 2 (BENTON)
STATION 20+37.91

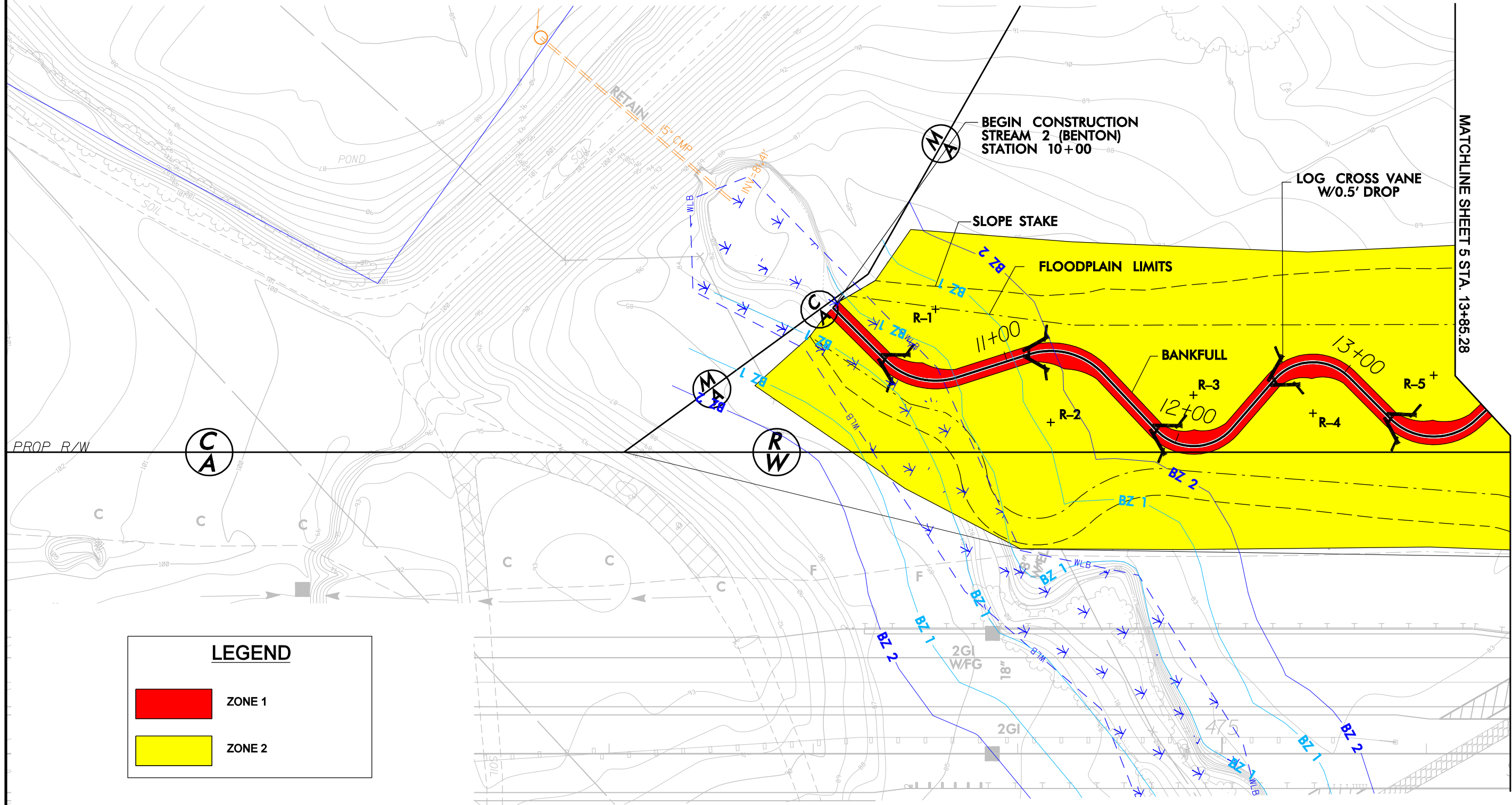
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-  ZONE 1
-  ZONE 2

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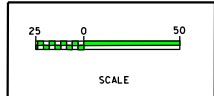
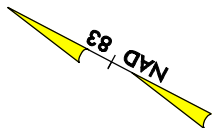
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REVISIONS



LEGEND

	ZONE 1
	ZONE 2



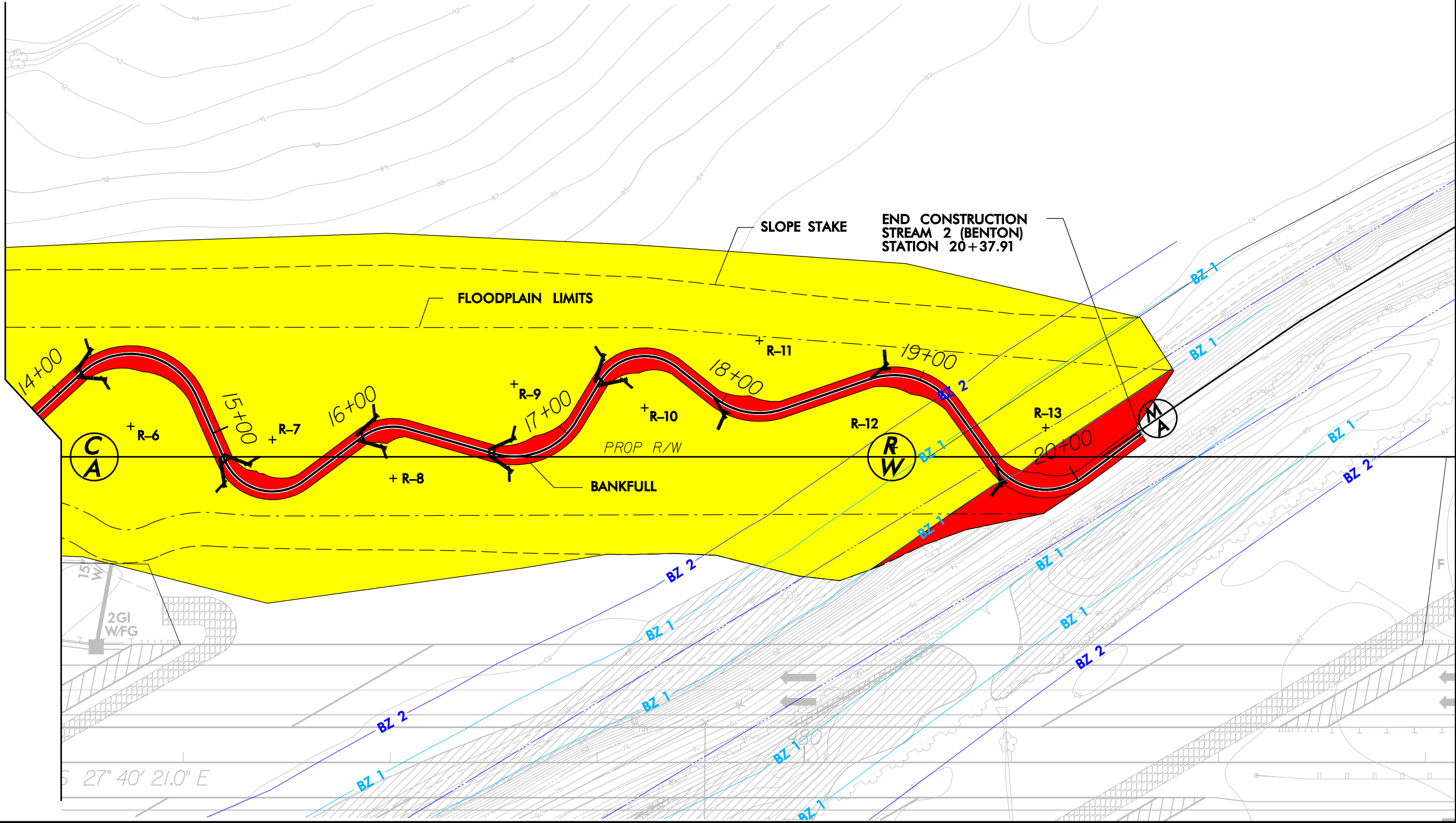
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STREAM 2		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

MATCHLINE SHEET 5 STA. 13+85.28

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REVISIONS

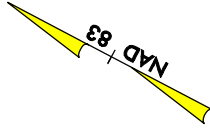
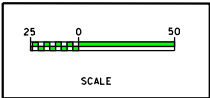
MATCHLINE SHEET 5 STA. 13+85.28



LEGEND

ZONE 1

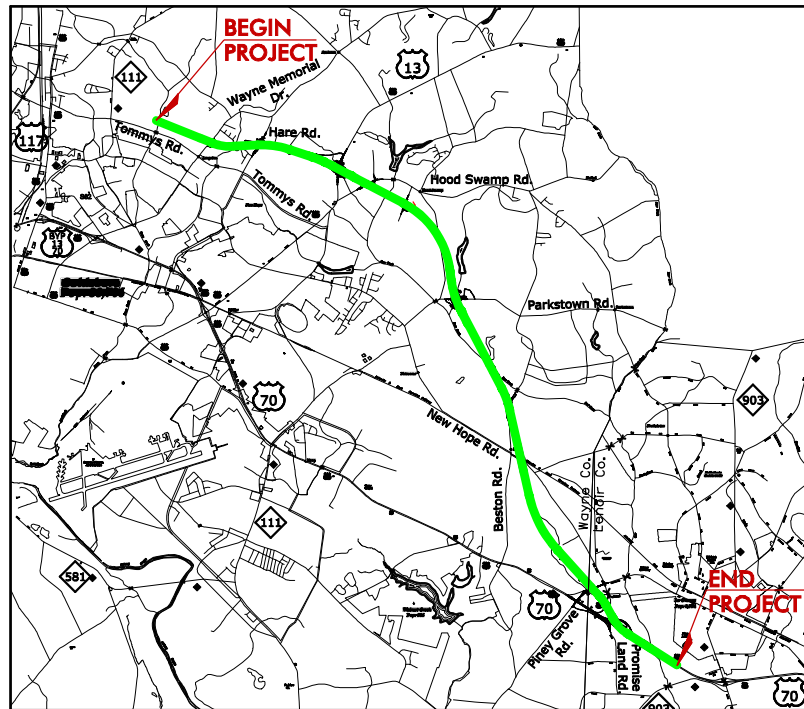
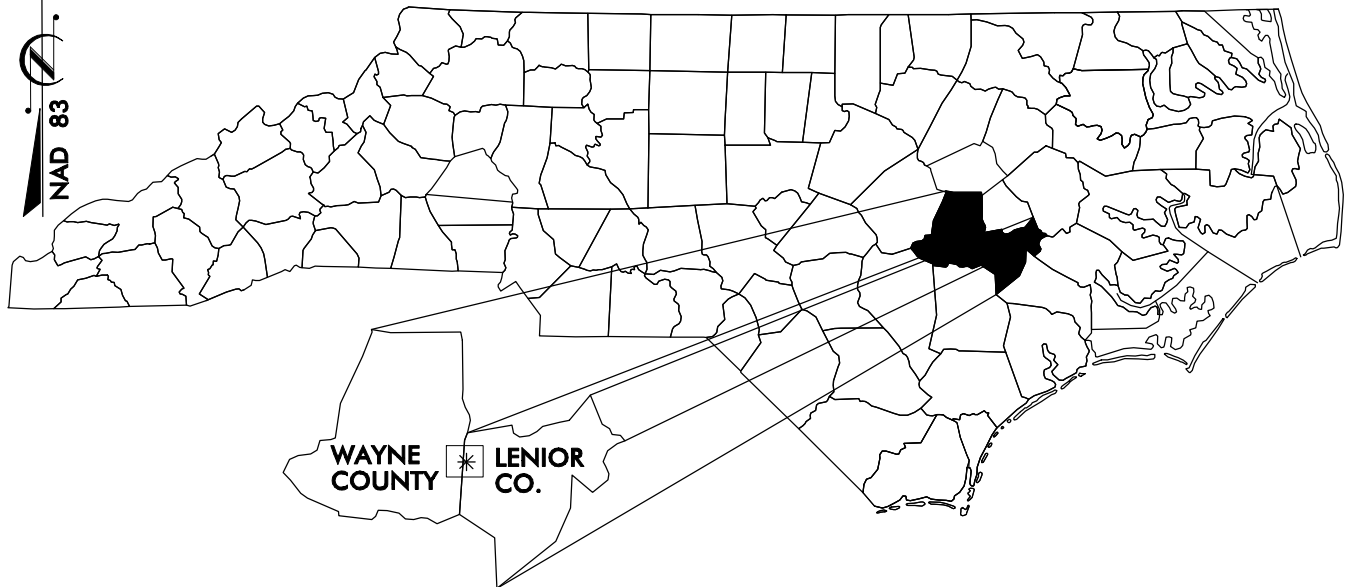
ZONE 2



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO.
STREAM 2		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		



NORTH CAROLINA



VICINITY MAPS

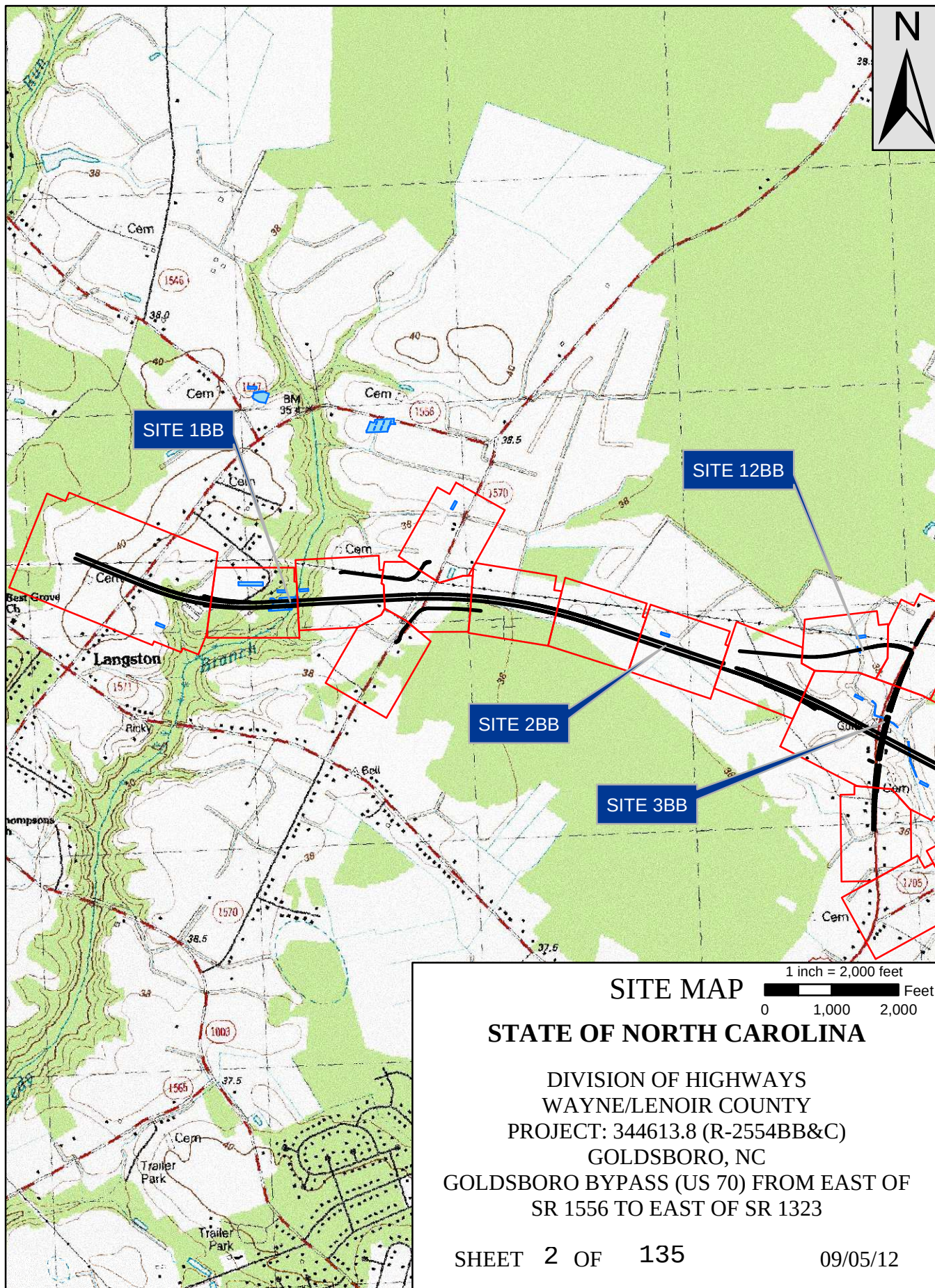
NORTH CAROLINA

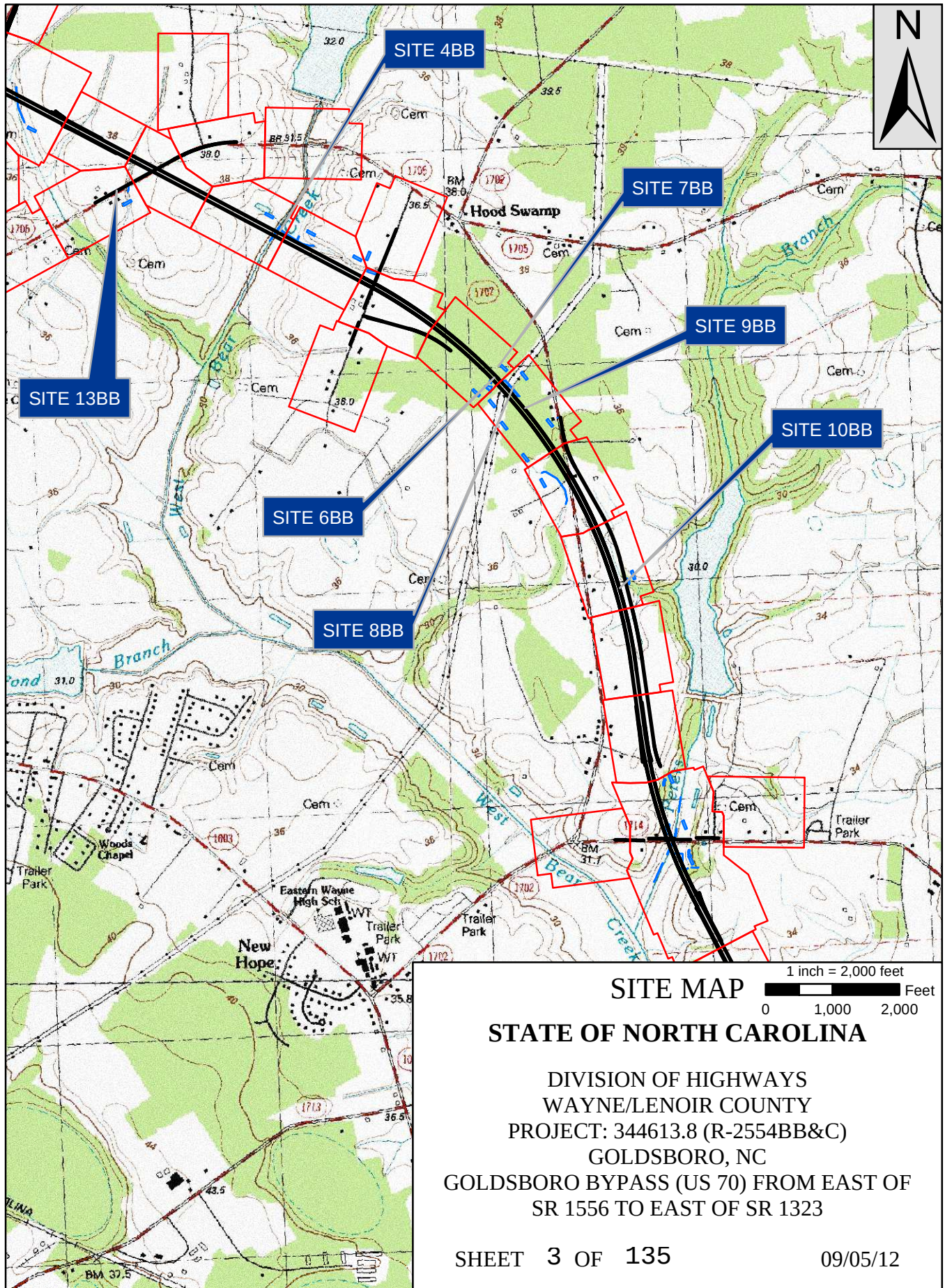
DIVISION OF HIGHWAYS
WAYNE/LENOIR COUNTY

PROJECT: 34461.3.8
(R-2554BB&C)

U.S. 70 (GOLDSBORO BYPASS)
FROM EAST OF SR 1556
TO EAST OF SR 1323

SHEET 1 OF 135 09 / 05 / 12





SITE MAP

1 inch = 2,000 feet

0 1,000 2,000 Feet

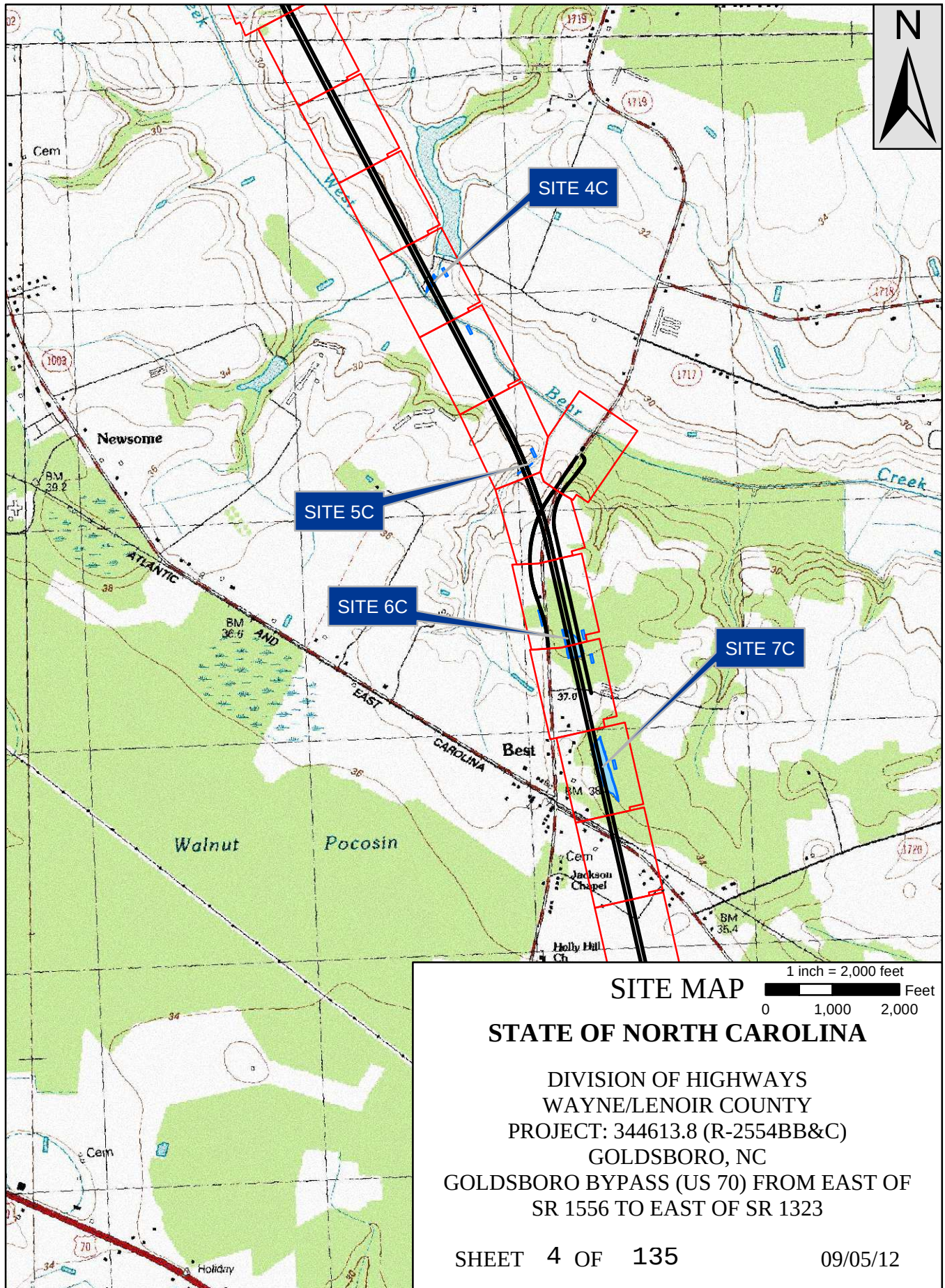
STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS
WAYNE/LENOIR COUNTY
PROJECT: 344613.8 (R-2554BB&C)
GOLDSBORO, NC

GOLDSBORO BYPASS (US 70) FROM EAST OF
SR 1556 TO EAST OF SR 1323

SHEET 3 OF 135

09/05/12



SITE MAP

1 inch = 2,000 feet

0 1,000 2,000 Feet

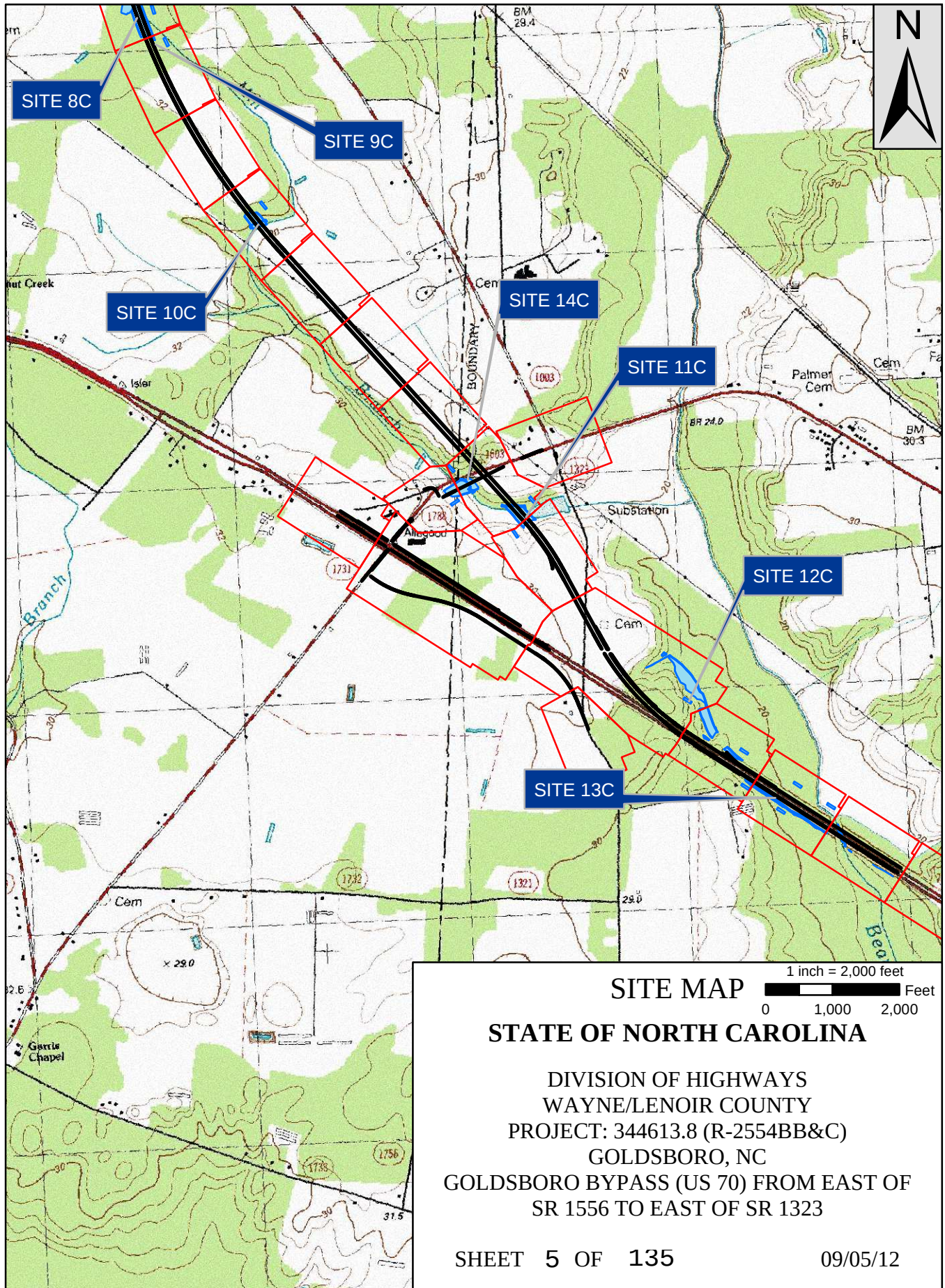
STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS
WAYNE/LENOIR COUNTY
PROJECT: 344613.8 (R-2554BB&C)
GOLDSBORO, NC

GOLDSBORO BYPASS (US 70) FROM EAST OF
SR 1556 TO EAST OF SR 1323

SHEET 4 OF 135

09/05/12



SITE MAP

1 inch = 2,000 feet

0 1,000 2,000 Feet

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS
WAYNE/LENOIR COUNTY
PROJECT: 344613.8 (R-2554BB&C)
GOLDSBORO, NC

GOLDSBORO BYPASS (US 70) FROM EAST OF
SR 1556 TO EAST OF SR 1323

SHEET 5 OF 135

09/05/12

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES	SITE NO.
1	Carrie Mae Ward Lewiis	605 E. Chestnut St. Goldsboro, NC 27530	1BB
2	TGL Property Management, LLC	1112 Park Avenue A Goldsboro, NC 27530	1BB
59	J. Issac Gurley, Farms, INC.	PO Box 1661 Goldsboro, NC 27533	3BB
75	Earl E. Parks	2875 HWY 13 North Goldsboro, NC 27534	3BB
89	Glen A. Thomas, ET AL	PO Box 11184 Goldsboro, NC 27534	3BB,12BB
95	Winston C. Smith	315 Oak Hill Stockbridge, GA 30281	6BB,7BB
163	Berry A. Parks	839 Mark Edwards Rd. La Grange, NC 28551	7BB
173	Berry A. Parks	839 Mark Edwards Rd. La Grange, NC 28551	9BB
103	Winston P. Best	1935 New Hope Road La Grange, NC 28551	9BB,10BB
104	Charles A. Parks	811 Mark Edwards Rd. La Grange, NC 28551	9BB

NORTH CAROLINA

DIVISION OF HIGHWAYS
WAYNE/LENOIR COUNTY

PROJECT: 34461.3.8
(R-2554BB&C)

U.S. 70 (GOLDSBORO BYPASS)
FROM EAST OF SR 1556
TO EAST OF SR 1323

SHEET 6 OF 135

10 / 15 / 12

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES	SITE NO.
105	Best Farms, Inc.	1361 New Hope Rd. La Grange, NC 28551	10BB
80	Frances B. Smith, ETALS	262 Hood Swamp Rd. Goldsboro, NC 27534	13BB
9	NCDOT	1 South Wilmington St. Raleigh, NC 27601	1C
6	NCDOT	1 South Wilmington St. Raleigh, NC 27601	1C,2C
12A	NCDOT	1 South Wilmington St. Raleigh, NC 27601	1C,3C
12B	NCDOT	1 South Wilmington St. Raleigh, NC 27601	1C,3C
26	NCDOT	1 South Wilmington St. Raleigh, NC 27601	4C
27	NCDOT	1 South Wilmington St. Raleigh, NC 27601	4C
31	NCDOT	1 South Wilmington St. Raleigh, NC 27601	5C
34	NCDOT	1 South Wilmington St. Raleigh, NC 27601	6C

NORTH CAROLINA

DIVISION OF HIGHWAYS
WAYNE/LENOIR COUNTY

PROJECT: 34461.3.8
(R-2554BB&C)

U.S.70 (GOLDSBORO BYPASS)
FROM EAST OF SR 1556
TO EAST OF SR 1323

SHEET 7 OF 135 10 / 15 / 12

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES	SITE NO.
35	Ralph Garris	1 South Wilmington St. Raleigh, NC 27601	7C
36	Christine Eason Garris	1 South Wilmington St. Raleigh, NC 27601	7C
38	James Alton Eason	1 South Wilmington St. Raleigh, NC 27601	7C
56	Paul Everette Uzzell	1 South Wilmington St. Raleigh, NC 27601	8C
57	Sleepy Creek Farms, Inc.	1 South Wilmington St. Raleigh, NC 27601	8C,9C
58	Thomas Uzzell Farms, Inc.	1 South Wilmington St. Raleigh, NC 27601	9C
59	Fannie A. Isler	1 South Wilmington St. Raleigh, NC 27601	9C
60	Dorothy Langston Isler	1 South Wilmington St. Raleigh, NC 27601	10C
61	Billy Ray Vinson	1 South Wilmington St. Raleigh, NC 27601	10C
64	Martha G. Mooring	1 South Wilmington St. Raleigh, NC 27601	11C,12C, 13C

NORTH CAROLINA

DIVISION OF HIGHWAYS
WAYNE/LENOIR COUNTY

PROJECT: 34461.3.8
(R-2554BB&C)

U.S. 70 (GOLDSBORO BYPASS)
FROM EAST OF SR 1556
TO EAST OF SR 1323

SHEET 8 OF 135 10 / 15 / 12

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES	SITE NO.
65	Sleepy Creek Farms, Inc.	1 South Wilmington St. Raleigh, NC 27601	12C
66	Restorations Systems, LLC.	1 South Wilmington St. Raleigh, NC 27601	12C
68	Ronald Lee Page	1 South Wilmington St. Raleigh, NC 27601	13C

NORTH CAROLINA

DIVISION OF HIGHWAYS
WAYNE/LENOIR COUNTY

PROJECT: 34461.3.8
(R-2554BB&C)

U.S.70 (GOLDSBORO BYPASS)
FROM EAST OF SR 1556
TO EAST OF SR 1323

SHEET 9 OF 135 10 / 15 / 12

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 BB	153+00/157+34-LREV-	Bridge	0.07	*<0.01			1.26					
3 BB	244+33/255+95 -LREV-	7' X 7' Culverts						0.14	0.02	1197	176	
4 BB	296+26 / 302+83 -LREV-	(2) 10' X 10' Culvert						0.12	0.01	**965	45	
6 BB	335+74 / 337+19 -LREV-	Roadway Fill	0.14			0.02						
7 BB	336+68 / 340+55 -LREV-	Roadway Fill	0.23			0.07						
9 BB	11+00 -SR13REV- / 54+00 -SR12-	Roadway Fill						0.12	<0.01	**1763	10	1322
10 BB	37+29 / 38+45 -SR13REV-	30" RCP	0.02			0.03		<0.01	<0.01	14	16	
		Bank Stabilization						0.01		26		
12 BB	28+17 / 29+18 -SR11-	54" RCP						0.01		94		
		Bank Stabilization						<0.01		41		
13 BB	26+58 /27+15 -Y15-	48" RCP						<0.01	<0.01	75	9	
		Bank Stabilization						<0.01		13		
1C	405+27/416+09 -LREV-	9' X 9' Culverts						0.22	0.02	956	100	
		Fill in Pond						0.15				
2C	16+16/16+97 -Y19RPBREV-	Fill in Pond						0.06				
3C	413+17/416+76 -LREV-	Roadway Fill						0.03	<0.01	**712	30	
		Fill in Pond						0.07				
		Bank Stabilization						<0.01		12		
4C	469+76/481+68 -LREV-	Roadway Fill	0.39					0.05	<0.01	489	4	
		Mitigation							0.03		89	1038
		Work Bridge							*<0.01		*58	
5C	505+27 / 506+07 -LREV-	6' X 6' Culvert						0.03	0.01	273	29	
6C	526+80 / 534+93 -LREV-	Roadway Fill	1.72			0.12						
7C	547+25 / 557+29 -LREV-	Roadway Fill	2.80			0.24						
8C	597+09 / 599+86 -LREV-	Roadway Fill	0.16			0.06						
9C	604+62 / 611+75 -LREV-	Roadway Fill	2.01			0.25						
		Pond						0.29				
10C	641+00 / 644+35 -LREV-	7' X 7' Culvert	1.03		0.03	0.19		0.01	<0.01	288	37	
11C	698+77 / 704+07 -LREV-	11' X 7' Culvert	1.48		0.02	0.22		0.12	0.01	346	40	
12C	12+51 / 34+02 -FLYREV-	Roadway Fill	3.99			0.51		0.04	<0.01	394	10	
		Bank Stabilization						<0.01		19		
13C	754+57/773+80 -LREV-	Roadway Fill	0.73			0.14						
14C	29+09 / 34+18 -Y26REV-	11' X 7' Culvert	2.05		0.07	0.20		0.08	0.02	365	81	
TOTALS:			16.82	<0.01	0.12	2.05	1.26	1.55	0.12	8042	734	2360

*Temporary impacts are due to temporary work bridge. Work bridge spans are a minimum of 20' long with five 1' X 1' H-piles per bent.

** Selected Permit Sites that have stream relocations.

-Site 4BB has 600 linear feet of stream relocation.

-Site 9BB has 199 linear feet of stream relocation.

-Site 3C has 245 linear feet of stream relocation.

--Total stream relocation = 1,044 linear feet

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAYNE/LENOIR COUNTIES
WBS - 34461.3.8 (R-2554BB&C)

TIP PROJECT: R-2554BB&C

CONTRACT: C202771

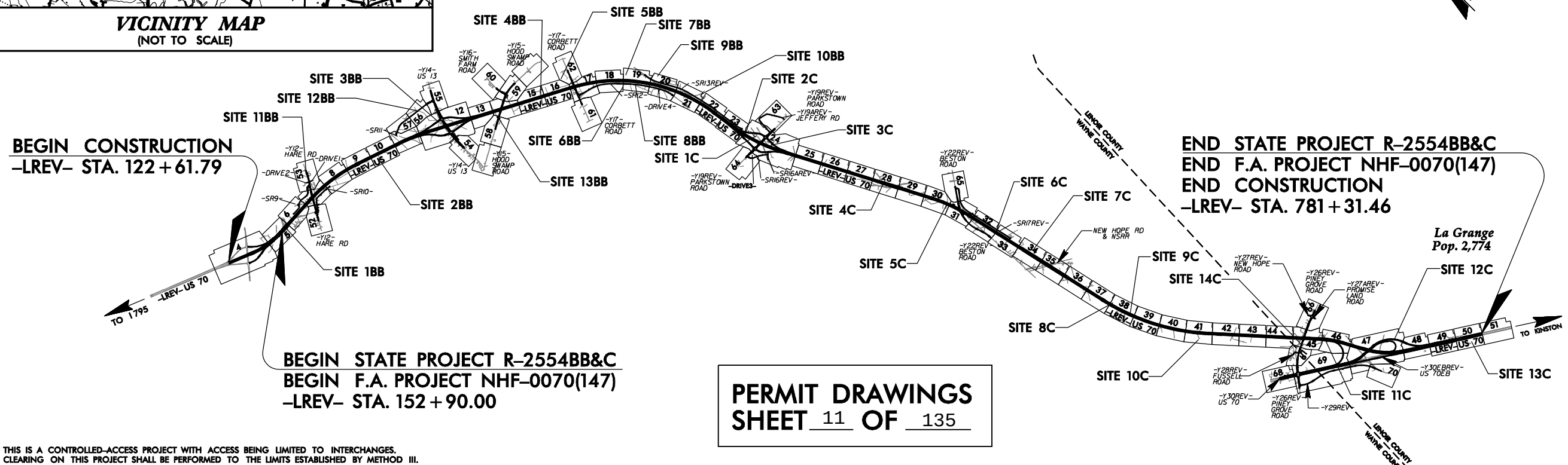
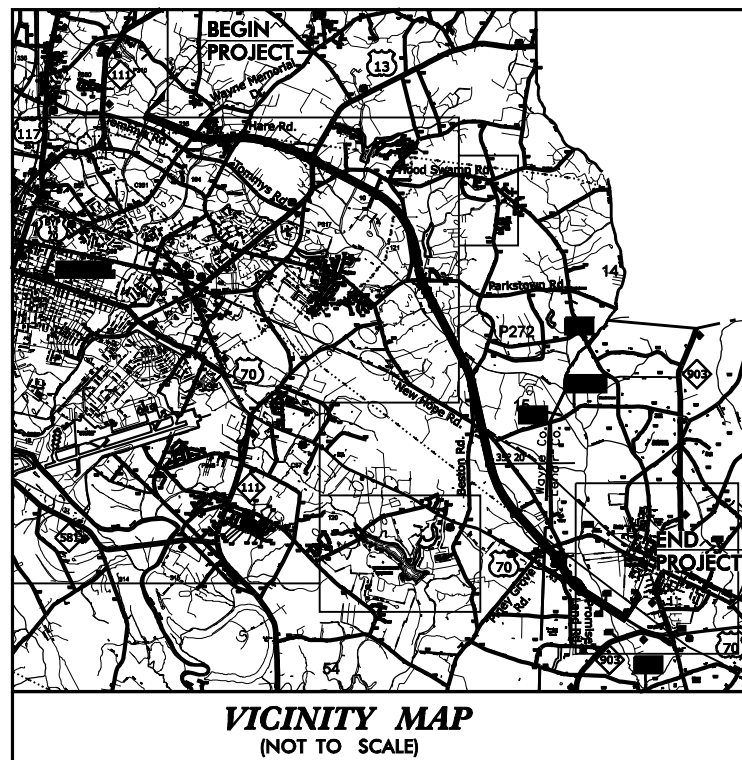
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

WAYNE-LENOIR COUNTIES

**LOCATION: US 70 (GOLDSBORO BYPASS) FROM EAST OF SR 1556
(WAYNE MEMORIAL DRIVE) TO EAST OF SR 1323
(PROMISE LAND ROAD)**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2554BB&C	1	
STATE PROJ.NO.	F.A.PROJ.NO.	DESCRIPTION	
34461.3.8	NHF-0070(147)	CONSTRUCTION	



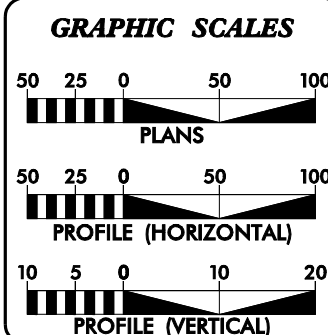
PERMIT DRAWINGS
SHEET 11 OF 135

PROJECT PREPARED BY:



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



DESIGN DATA

ADT 2011 = 21400
ADT 2035 = 44500
DHV = 8 %
D = 55 %
T = 11 % *
V = 75 MPH

FUNCTIONAL CLASSIFICATION:
INTERSTATE

* TTST=7% DUAL=4%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2554BB&C	=	11.646 MILES
LENGTH STRUCTURE TIP PROJECT R-2554BB&C	=	0.256 MILES
TOTAL LENGTH TIP PROJECT R-2554BB&C	=	11.902 MILES
BRIDGE LENGTH BASED ON CENTERLINE PROJECTION STATION		

Prepared for the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 25, 2012 (R-2554BB)
DECEMBER 23, 2002 (R-2554C)

LETTING DATE:
JANUARY 25, 2012

PAUL A. MEEHAN, P.E.
PROJECT ENGINEER

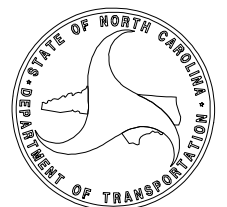
CALVIN W. MOODY, III, P.E.
PROJECT DESIGN ENGINEER

**HYDRAULICS
ENGINEER**

SIGNATURE: _____ **P.E.** _____

**ROADWAY DESIGN
ENGINEER**

SIGNATURE: _____ **P.E.** _____



REVISIONS

MATCHLINE -LREV- STA. 144+00, SEE SHEET 4

DRAINAGE STRUCTURES INSTALLED AS PART OF R-2554BA:
FOR R2554BB&C, ONLY MINOR GRADING AND PAVING WEST OF -LREV- STA. 152+90

WEST SIDE OF BRIDGE
IS PERMITTED UNDER R-2554BA

LEGEND

HC HC DENOTES HAND
CLEARING

E E DENOTES FILL IN
WETLAND



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 5
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
 BARNHILL CONTRACTING COMPANY		

SITE 1BB

CARRIE MAE
WARD LEWIS

MATCHLINE -LREV- STA. 157+00, SEE SHEET 6

-Y8RPA- SC Sta. 13+75.08

-Y8RPA- POT Sta. 10+00.00 =
-LREV- POC Sta. 148+90.43 (47.00 LT)

-Y8RPA- TS Sta. 11+35.08

PIPE OUTLET DATA
DA= 0.50 AC
SLOPE= 0.30%
Q2= 2.28 CFS
V2= 1.16 FPS
Q10= 2.93 CFS
V10= 1.27 FPS

PIPE OUTLET DATA
DA= 0.42 AC
SLOPE= 0.30%
Q2= 1.89 CFS
V2= 1.08 FPS
Q10= 2.43 CFS
V10= 1.18 FPS

CLASS II RIP RAP
TO ELEV. 107.7'
(BOTH SIDES)

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY GEO-TEXTILE

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY GEO-TEXTILE

-LREV- CS Sta. 149+85.61

-Y8RPD- SRS Sta. 12+40.00

-Y8RPD- ST Sta. 10+00.00 =
-LREV- POC Sta. 147+02.26 (47.00 RT)

-LREV- ST Sta. 152+64.48

TGL Property Management, LLC

PIPE OUTLET DATA
DA= 1.16 AC
SLOPE= 0.30%
Q2= 3.72 CFS
V2= 1.61 FPS
Q10= 4.80 CFS
V10= 1.74 FPS

CLASS 'B' RIP RAP
FOR DECK DRAINS

FILL IN WETLANDS
DUE TO PROPOSED
BRIDGES BENTS AND
DECK DRAIN RIP RAP

PERMIT DRAWINGS
SHEET 12 OF 135

SEE SHEET NO. 72 FOR -LREV- PROFILE.
SEE SHEET NO. 99 FOR -Y8RPA- PROFILE.
SEE SHEET NO. 100 FOR -Y8RPD- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

REVISIONS

LEGEND

HC HC DENOTES HAND CLEARING

F F DENOTES FILL IN WETLAND



DRAINAGE STRUCTURES INSTALLED AS PART OF R-2554BA:
FOR R2554BB&C, ONLY MINOR GRADING AND PAVING WEST OF -LREV- STA. 152 + 90

WEST SIDE OF BRIDGE
IS PERMITTED UNDER R-2554BA

SITE 1BB

CARRIE MAE
WARD LEWIS

MATCHLINE -LREV- STA. 144 + 00, SEE SHEET 4

MATCHLINE -LREV- STA. 157 + 00, SEE SHEET 6

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 5											
RW SHEET NO.													
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER											
<table border="1"><tr><td colspan="2">INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION</td></tr><tr><td colspan="2">PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION</td></tr></table>				INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION							
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION													
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION													
<table border="0"><tr><td rowspan="2"></td><td colspan="3">HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116</td></tr><tr><td colspan="3"><table border="0"><tr><td rowspan="2"></td><td colspan="2">BARNHILL CONTRACTING COMPANY</td></tr></table></td></tr></table>					HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			<table border="0"><tr><td rowspan="2"></td><td colspan="2">BARNHILL CONTRACTING COMPANY</td></tr></table>				BARNHILL CONTRACTING COMPANY	
	HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116												
	<table border="0"><tr><td rowspan="2"></td><td colspan="2">BARNHILL CONTRACTING COMPANY</td></tr></table>				BARNHILL CONTRACTING COMPANY								
	BARNHILL CONTRACTING COMPANY												

MATCHLINE -LREV- STA. 144 + 00, SEE SHEET 4

-Y8RPA- SC Sta. 13+75.08

-Y8RPA- POT Sta. 10+00.00 =
-LREV- POC Sta. 148+90.43 (47.00 LT)

-Y8RPA- TS Sta. 11+35.08

-Y8RPA- SRS Sta. 12+40.00

-Y8RPD- ST Sta. 10+00.00 =
-LREV- POC Sta. 147+02.26 (47.00 RT)

-LREV- CS Sta. 149+85.61

-LREV- ST Sta. 152+64.48

PIPE OUTLET DATA
DA= 0.50 AC
SLOPE= 0.30%
Q2= 2.28 CFS
V2= 1.16 FPS
Q10= 2.93 CFS
V10= 1.27 FPS

PIPE OUTLET DATA
DA= 0.42 AC
SLOPE= 0.30%
Q2= 1.89 CFS
V2= 1.08 FPS
Q10= 2.43 CFS
V10= 1.18 FPS

CLASS II RIP RAP
TO ELEV. 107.7'
(BOTH SIDES)

CLASS II RIP RAP
EST. 2 TONS
7 SY GEO-TEXTILE

TGL Property Management, LLC

PIPE OUTLET DATA
DA= 1.16 AC
SLOPE= 0.30%
Q2= 3.72 CFS
V2= 1.61 FPS
Q10= 4.80 CFS
V10= 1.74 FPS

CLASS 'B' RIP RAP
FOR DECK DRAINS

FILL IN WETLANDS
DUE TO PROPOSED
BRIDGES BENTS AND
DECK DRAIN RIP RAP

PERMIT DRAWINGS
SHEET 13 OF 135

SEE SHEET NO. 72 FOR -LREV- PROFILE.
SEE SHEET NO. 99 FOR -Y8RPA- PROFILE.
SEE SHEET NO. 100 FOR -Y8RPD- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTION STREAMS.

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TIME: 1/23/02 PM
DATE: 10/2/2012

REVISIONS

MATCHLINE -LREV- STA. 144+00, SEE SHEET 4

DRAINAGE STRUCTURES INSTALLED AS PART OF R-2554BA:
FOR R2554BB&C, ONLY MINOR GRADING AND PAVING WEST OF -LREV- STA. 152+90

WEST SIDE OF BRIDGE
IS PERMITTED UNDER R-2554BA

LEGEND



TEMPORARY
WORK BRIDGE



SITE 1BB

1
CARRIE MAE
WARD LEWIS

CLASS II RIP RAP
TO ELEV. 107.7'
(BOTH SIDES)

TEMPORARY
WORK BRIDGE

CLASS II RIP RAP
EST. 2 TONS
7 SY GEO-TEXTILE

-LREV- CS Sta. 149+85.61

CLASS II RIP RAP
EST. 2 TONS
7 SY GEO-TEXTILE

-LREV- ST Sta. 152+64.48

TGL Property Management, LLC

-Y8RPD- SRS Sta. 12+40.00

-Y8RPD- ST Sta. 10+00.00 =
-LREV- POC Sta. 147+02.26 (47.00 RT)

-Y8RPA- POT Sta. 10+00.00 =
-LREV- POC Sta. 148+90.43 (47.00 LT)

-Y8RPA- TS Sta. 11+35.08

-Y8RPA- SC Sta. 13+75.08

TEMPORARY WORK BRIDGE DETAIL

PERMIT DRAWINGS
SHEET 14 OF 135

SEE SHEET NO. 72 FOR -LREV- PROFILE.
SEE SHEET NO. 99 FOR -Y8RPA- PROFILE.
SEE SHEET NO. 100 FOR -Y8RPD- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

MATCHLINE -LREV- STA. 157+00, SEE SHEET 6

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 5
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR E/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
 BARNHILL CONTRACTING COMPANY		

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REVISIONS

MATCHLINE -LREV- STA. 144+00, SEE SHEET 4

DRAINAGE STRUCTURES INSTALLED AS PART OF R-2554BA:
FOR R2554BB&C, ONLY MINOR GRADING AND PAVING WEST OF -LREV- STA. 152+90

WEST SIDE OF BRIDGE
IS PERMITTED UNDER R-2554BA

LEGEND



TEMPORARY
WORK BRIDGE



PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		5
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR E/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
 BARNHILL CONTRACTING COMPANY		

SITE 1BB

1
CARRIE MAE
WARD LEWIS

MATCHLINE -LREV- STA. 157+00, SEE SHEET 6

TEMPORARY WORK BRIDGE DETAIL

PERMIT DRAWINGS
SHEET 15 OF 135

SEE SHEET NO. 72 FOR -LREV- PROFILE.
SEE SHEET NO. 99 FOR -Y8RPA- PROFILE.
SEE SHEET NO. 100 FOR -Y8RPD- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

REVISIONS

MATCHLINE -LREV- STA. 157+00, SEE SHEET 5

SITE 1BB

CARRIE MAE
WARD LEWIS

BEGIN WW FENCE
+08.04 -LREV-
57.00' LT
SDG
SEE DETAIL 'B'
+75.00 -LREV-
81.38' LT

DITCH OUTLET DATA
DA = 34.00 AC
SLOPE = 0.32%
L REQ = 3400 FT
L PRO = 94 FT
Q2 = 5.76 CFS
V2 = 1.73 FPS
Q10 = 9.54 CFS
V10 = 1.97 FPS

2' BASE TAIL DITCH
SEE DETAIL 'P'
LENGTH = 94 FT
SLOPE = 0.32%

CLASS 'B' RIP RAP
EST. 11 TONS
28 SY GEO-TEXTILE

END CONSTRUCTION
-DRIVE5- PT Sta. 15+60.47

BANK STABILIZATION
CLASS 'B' RIP RAP
SEE DETAIL 'T'

DETAIL T
BANK STABILIZATION
(Not to Scale)
FILTER FABRIC
NORMAL WATER SURFACE ELEVATION
* DO NOT PLACE
RIP RAP BELOW
NORMAL WATER SURFACE ELEVATION
Type of Liner = Class 'B' Rip-Rap

LEGEND

HC HC DENOTES HAND
CLEARING
F F DENOTES FILL IN
WETLAND

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 6
RW SHEET NO.		HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER		
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

MATCHLINE
-SR9- STA. 12+50
SEE SHEET 7

MATCHLINE -LREV- STA. 170+00, SEE SHEET 7

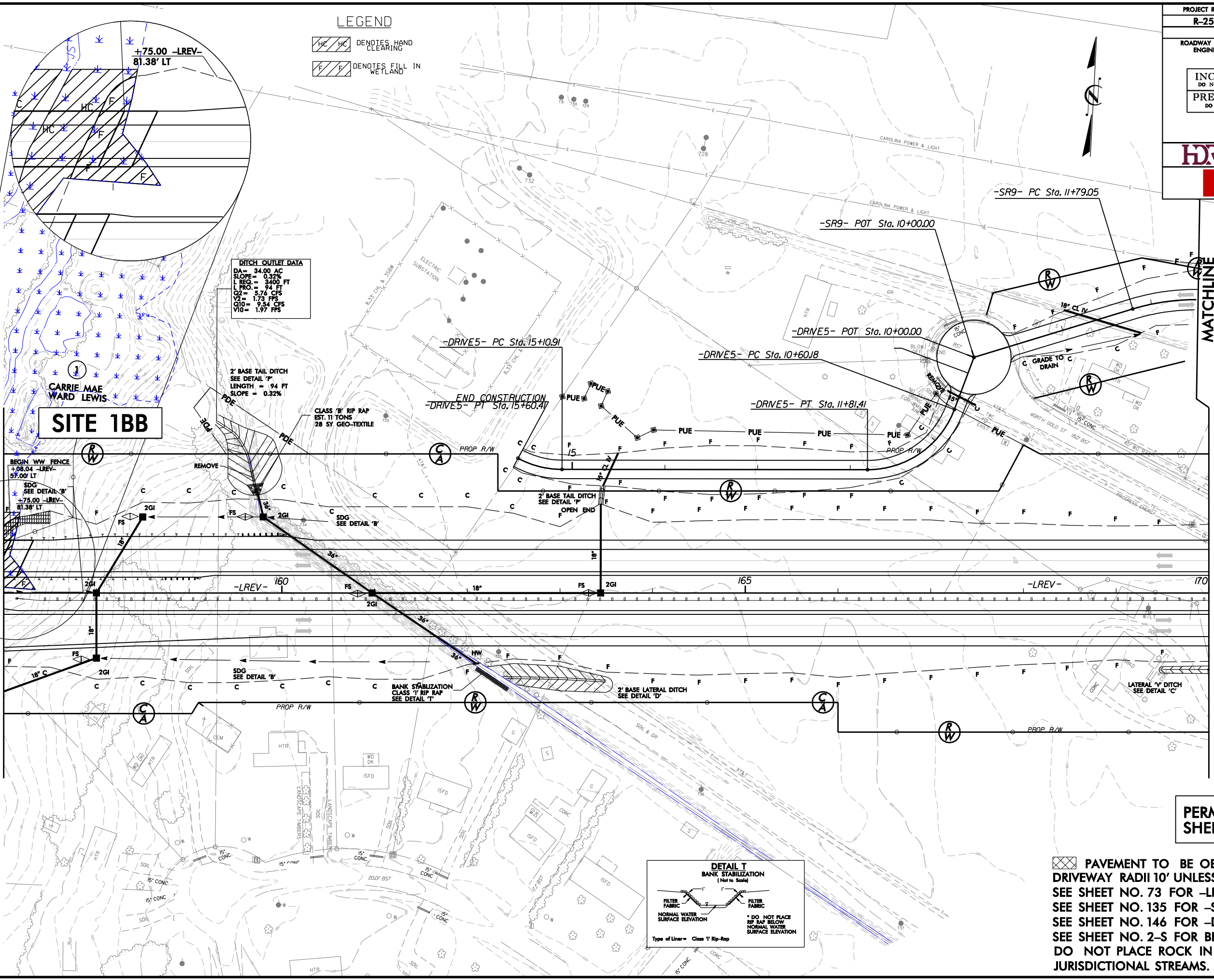
PERMIT DRAWINGS
SHEET 16 OF 135

PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 73 FOR -LREV- PROFILE.
SEE SHEET NO. 135 FOR -SR9- PROFILE.
SEE SHEET NO. 146 FOR -DRIVE5- PROFILE.
SEE SHEET NO. 2-S FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

REVISIONS

MATCHLINE -LREV- STA. 157+00, SEE SHEET 5

SITE 1BB



DITCH OUTLET DATA
DA = 34.00 AC
SLOPE = 0.32%
L REQ = 3400 FT
L PRO = 94 FT
Q2 = 5.76 CFS
V2 = 1.73 FPS
Q10 = 9.54 CFS
V10 = 1.97 FPS

2' BASE TAIL DITCH
SEE DETAIL 'P'
LENGTH = 94 FT
SLOPE = 0.32%

CLASS '1' RIP RAP
EST. 11 TONS
28 SY GEO-TEXTILE

END CONSTRUCTION
-DRIVE5- PT Sta. 15+60.47

-DRIVE5- PC Sta. 10+60.18

-SR9- POT Sta. 10+00.00

-SR9- PC Sta. 11+79.05

-DRIVE5- POT Sta. 10+00.00

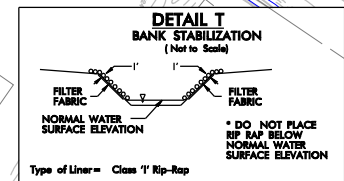
-DRIVE5- PT Sta. 11+81.41

SDG SEE DETAIL 'B'

BANK STABILIZATION
CLASS '1' RIP RAP
SEE DETAIL 'T'

2' BASE LATERAL DITCH
SEE DETAIL 'D'

LATERAL '1' DITCH
SEE DETAIL 'C'



PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 73 FOR -LREV- PROFILE.
SEE SHEET NO. 135 FOR -SR9- PROFILE.
SEE SHEET NO. 146 FOR -DRIVE5- PROFILE.
SEE SHEET NO. 2-S FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

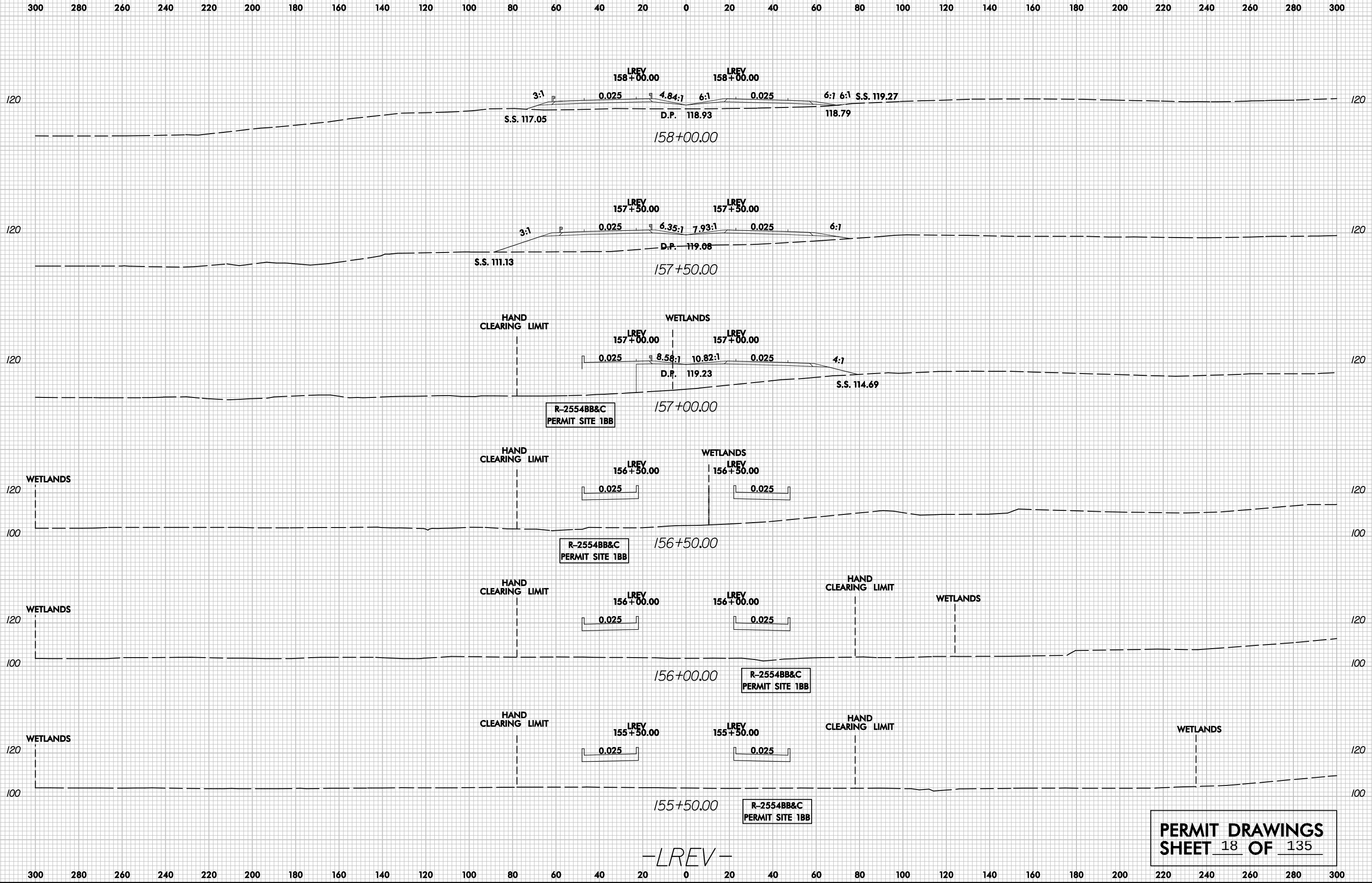
PERMIT DRAWINGS
SHEET 17 OF 135

MATCHLINE -LREV- STA. 170+00, SEE SHEET 7

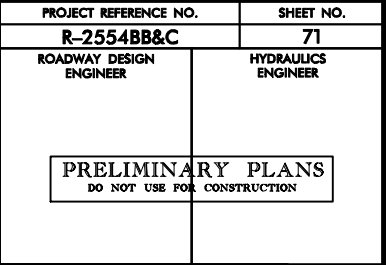
MATCHLINE
-SR9- STA. 12+50
SEE SHEET 7

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 6
RW SHEET NO.		HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER		
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

8/23/99



1:06:36 PM
R-2554BB&C-HYD-PRM-LREV.dgn
massdot



5/14/99

PROJECT REFERENCE NO. <i>R-2554BB&C</i>		SHEET NO. <i>BSR-1</i>	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

SITE 1BB R-2554BB&C

151+00 152+00 153+00 154+00 155+00 156+00 157+00 158+00

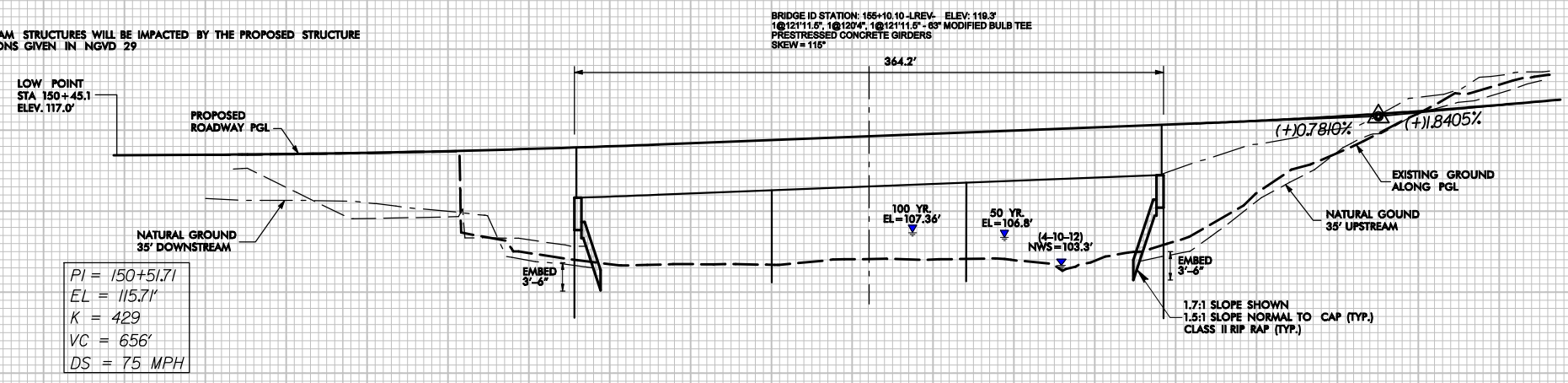
140
130
120
110
100
90

DECK SPREAD DATA

NO DECK DRAINS REQUIRED WESTBOUND BRIDGE
DECK SHOULDER WIDTH WESTBOUND BRIDGE = 10.0 FT
MAX SPREAD WESTBOUND BRIDGE WITHOUT DRAINS = 6.9 FT

NOTE:
- NO UPSTREAM STRUCTURES WILL BE IMPACTED BY THE PROPOSED STRUCTURE
- ALL ELEVATIONS GIVEN IN NGVD 29

SCALE:
1"=50' HORIZONTAL
1"=10' VERTICAL



PGL PROFILE- PROPOSED BRIDGE (WBL)

SCALE:
1"=50' HORIZONTAL
1"=10' VERTICAL

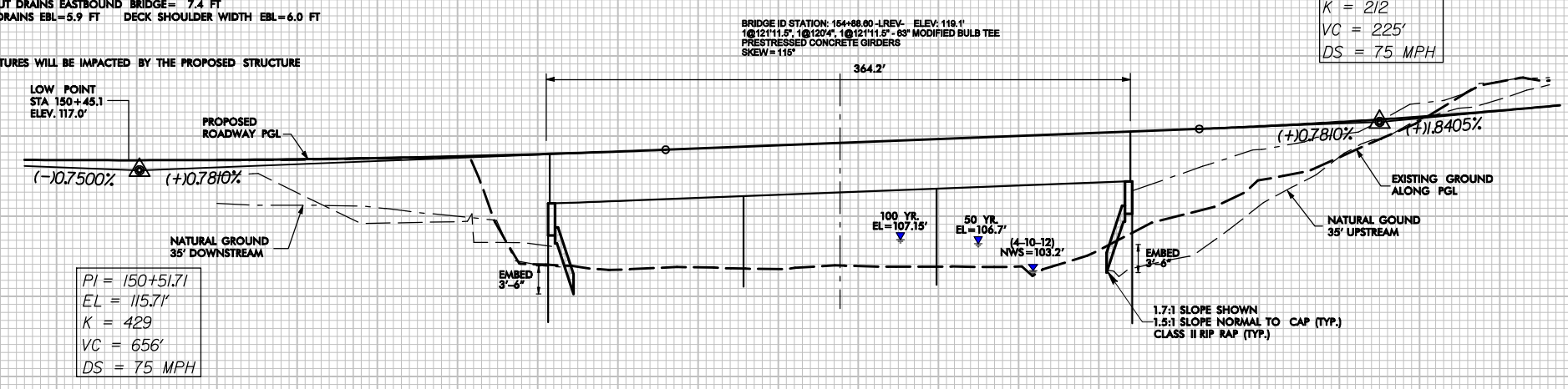
DECK SPREAD DATA

DECK DRAINS REQUIRED ON EASTBOUND BRIDGE ONLY
4" CIRCULAR DECK DRAINS, NO DRAINS OVER BUFFERS OR STREAMS
STA 156+38.0 TO STA 156+46.0 EBL: 2 DRAINS (8' SPACING)
STA 154+22.0 TO STA 154+30.0 EBL: 2 DRAINS (8' SPACING)
STA 152+91.0 TO STA 153+00.0 EBL: 2 DRAINS (7' SPACING)
MAX SPREAD WITHOUT DRAINS EASTBOUND BRIDGE = 7.4 FT
MAX SPREAD WITH DRAINS EBL=5.9 FT DECK SHOULDER WIDTH EBL=6.0 FT

NOTE:
NO UPSTREAM STRUCTURES WILL BE IMPACTED BY THE PROPOSED STRUCTURE

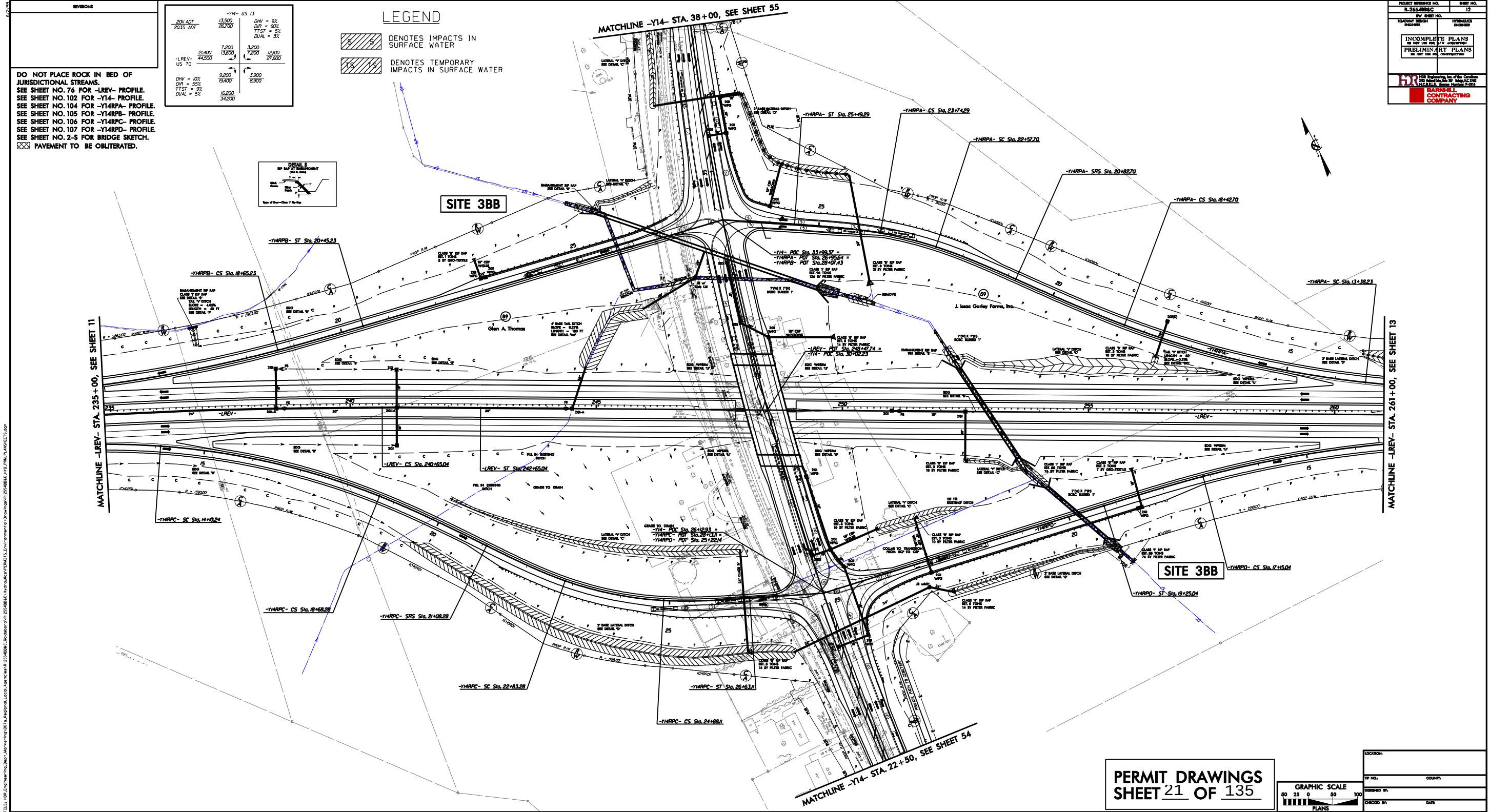
153+00 154+00 155+00 156+00

130
120
110
100
90



PGL PROFILE- PROPOSED BRIDGE (EBL)

8/4/27 AM
R-2554BB&C_HYO_PRM_WET_BSR.dgn
CHUBBS



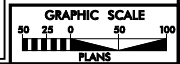
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.
SEE SHEET NO. 76 FOR -LREV- PROFILE.
SEE SHEET NO. 102 FOR -Y14- PROFILE.
SEE SHEET NO. 104 FOR -Y14RPA- PROFILE.
SEE SHEET NO. 105 FOR -Y14RPA- PROFILE.
SEE SHEET NO. 106 FOR -Y14RPA- PROFILE.
SEE SHEET NO. 107 FOR -Y14RPA- PROFILE.
SEE SHEET NO. 2-S FOR BRIDGE SKETCH.
☒ PAVEMENT TO BE OBLITERATED.

Y14- US 13				
2011 ADT	13,500	DWH = 8%		
2035 ADT	26,700	DTR = 60%		
		TTS = 5%		
		DUAL = 3%		
LREV- US 70				
	2,400	7,200	3,200	12,100
	44,500	13,600	7,200	27,600
		9,200	3,900	
		15,400	8,900	
		16,200		
		34,200		

- LEGEND
- [Symbol] DENOTES IMPACTS IN SURFACE WATER
 - [Symbol] DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT NUMBER	12
PROJECT NAME	2-3554BMAC
ROADWAY DESIGN	ROADWAY
HYDRAULICS	HYDRAULICS
INCOMPLETE PLANS	NO MAP USE FOR CONSTRUCTION
PRELIMINARY PLANS	NO MAP USE FOR CONSTRUCTION
BARNHILL CONTRACTING COMPANY	

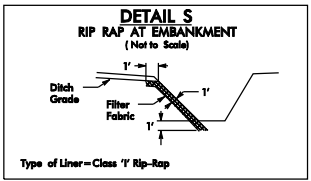
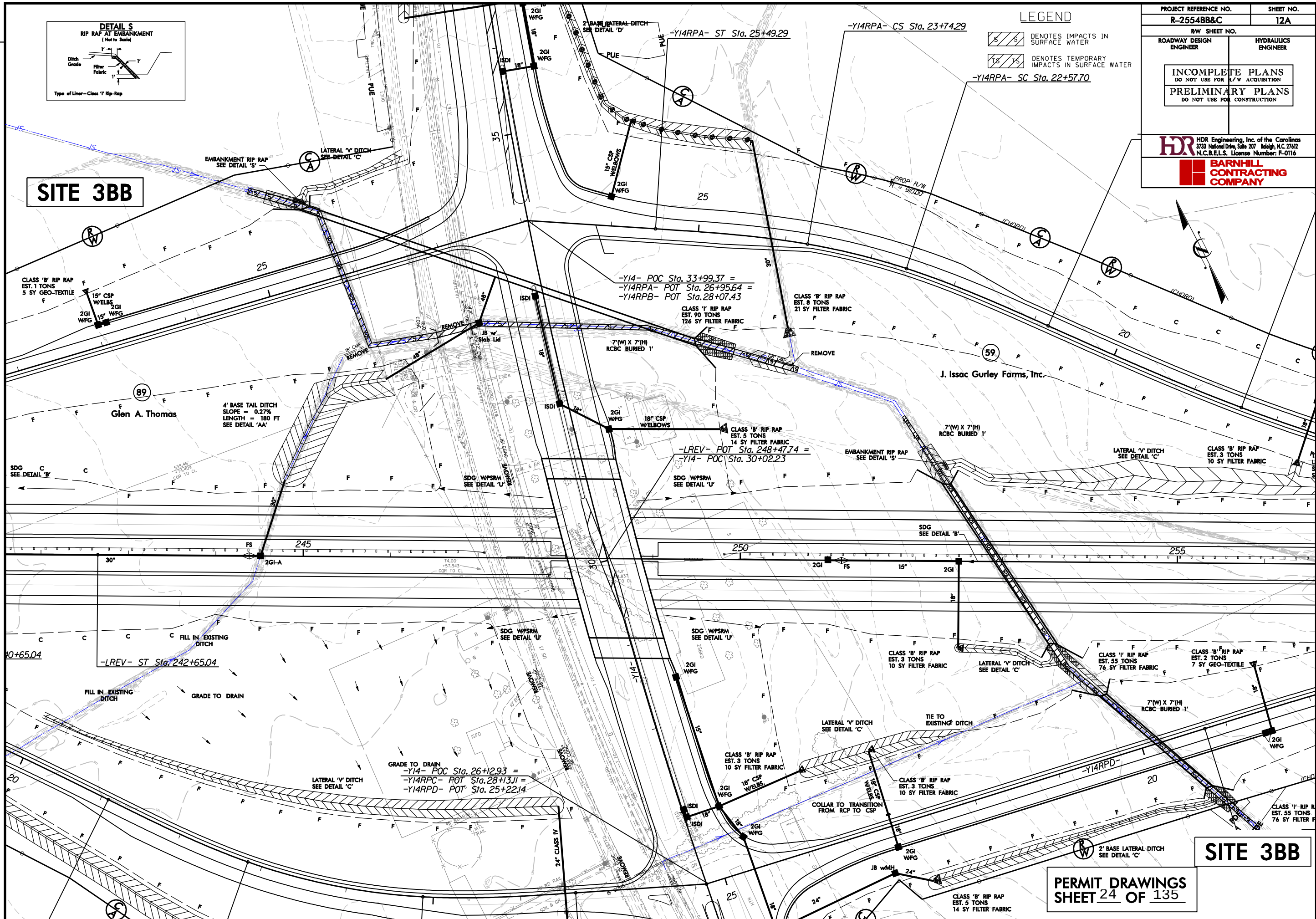
PERMIT DRAWINGS
SHEET 21 OF 135



LOCATION	
TP NO.	
COUNTY	
DRAWN BY	
CHECKED BY	
DATE	

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DATE: 10/4/2012
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REVISIONS



LEGEND

	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 12A	
RW SHEET NO. ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116			
BARNHILL CONTRACTING COMPANY			

PERMIT DRAWINGS
SHEET 24 OF 135

SITE 3BB

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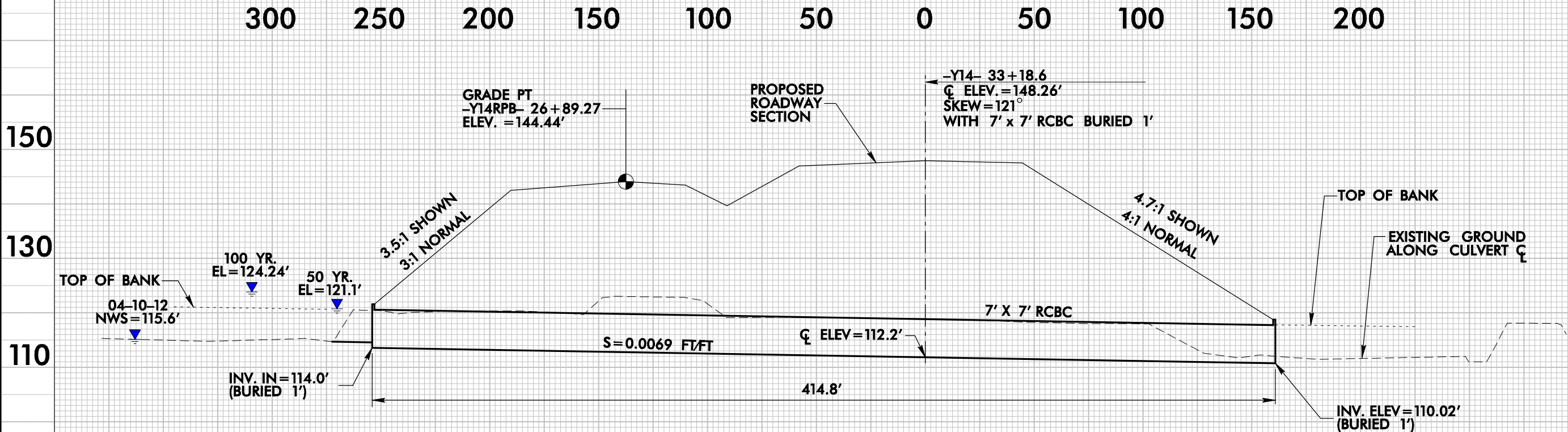
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5/14/99

REVISIONS

SITE 3BB R-2554BB&C

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. CSR 1
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		



PROFILE ALONG CL OF CULVERT

WSEL TABLE

YEAR	DISCHARGE (CFS)	EXISTING WSEL	PROPOSED WSEL
10	140	119.3'	119.1'
50	250	121.8'	121.1'
100	310	123.45'	124.24'
500	450	123.9'	134.8'

* DATA OBTAINED FROM STA. 1533 (US TOE)

PERMIT DRAWINGS
SHEET 25 OF 135

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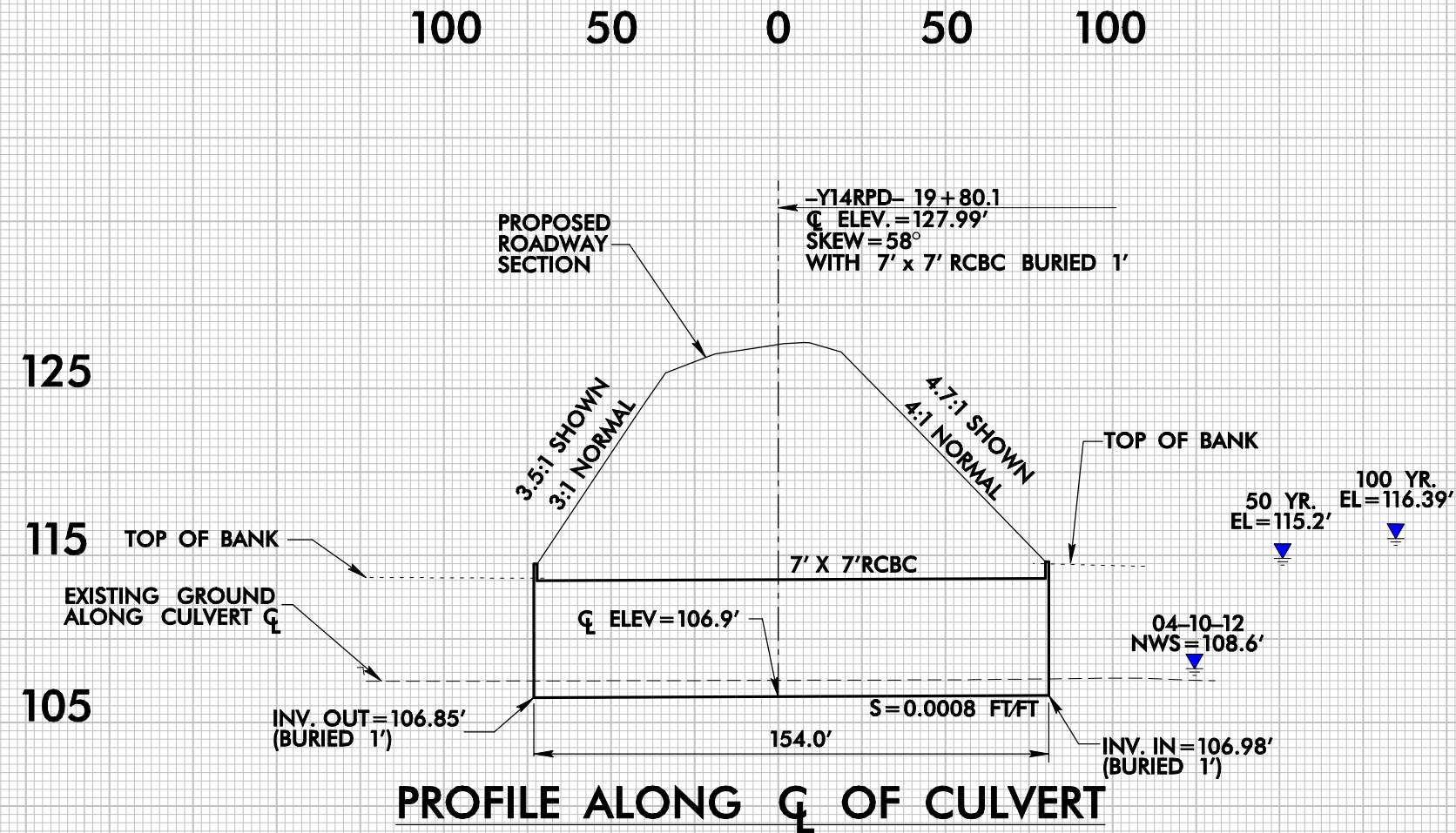
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5/14/99

REVISIONS

SITE 3BB R-2554BB&C

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. CSR 2	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



WSEL TABLE

YEAR	DISCHARGE (CFS)	EXISTING WSEL	PROPOSED WSEL
10	140	114.3'	113.4'
50	250	115.2'	115.2'
100	310	115.51'	116.39'
500	450	116.0'	119.7

* DATA OBTAINED FROM STA. 359 (US TOE)

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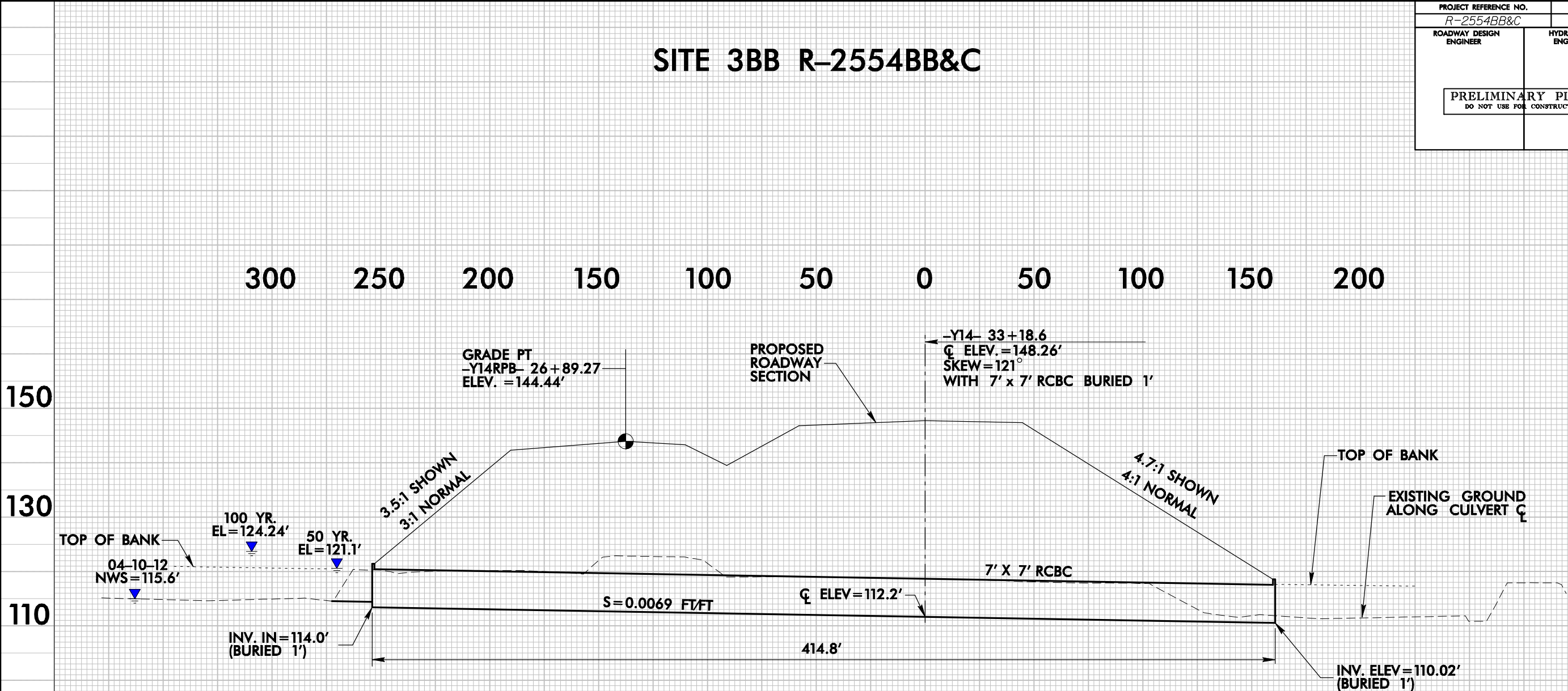
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5/14/99

REVISIONS

SITE 3BB R-2554BB&C

PROJECT REFERENCE NO. R-2554BB&C	SHEET NO. CSR 3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



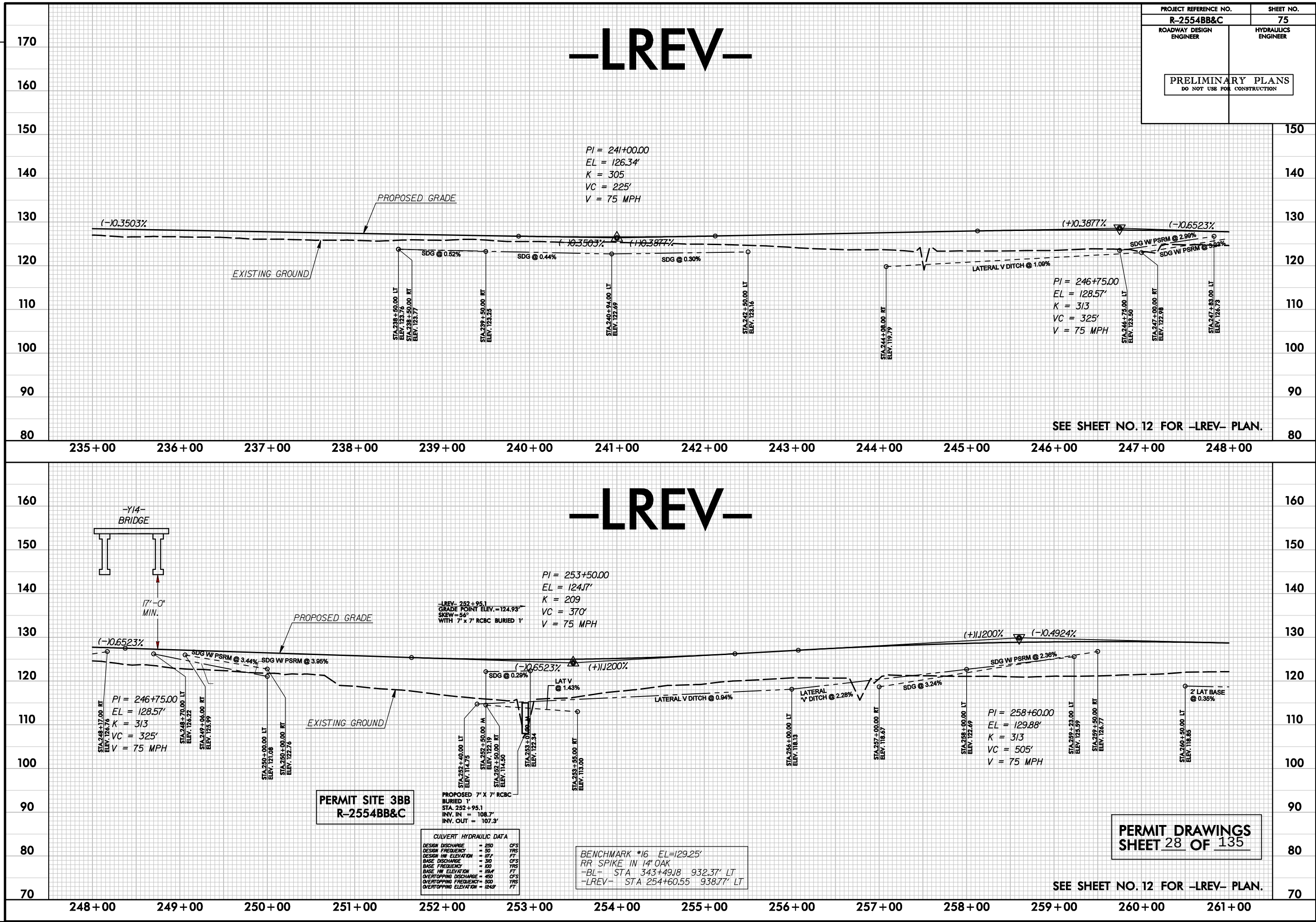
PROFILE ALONG CL OF CULVERT

WSEL TABLE

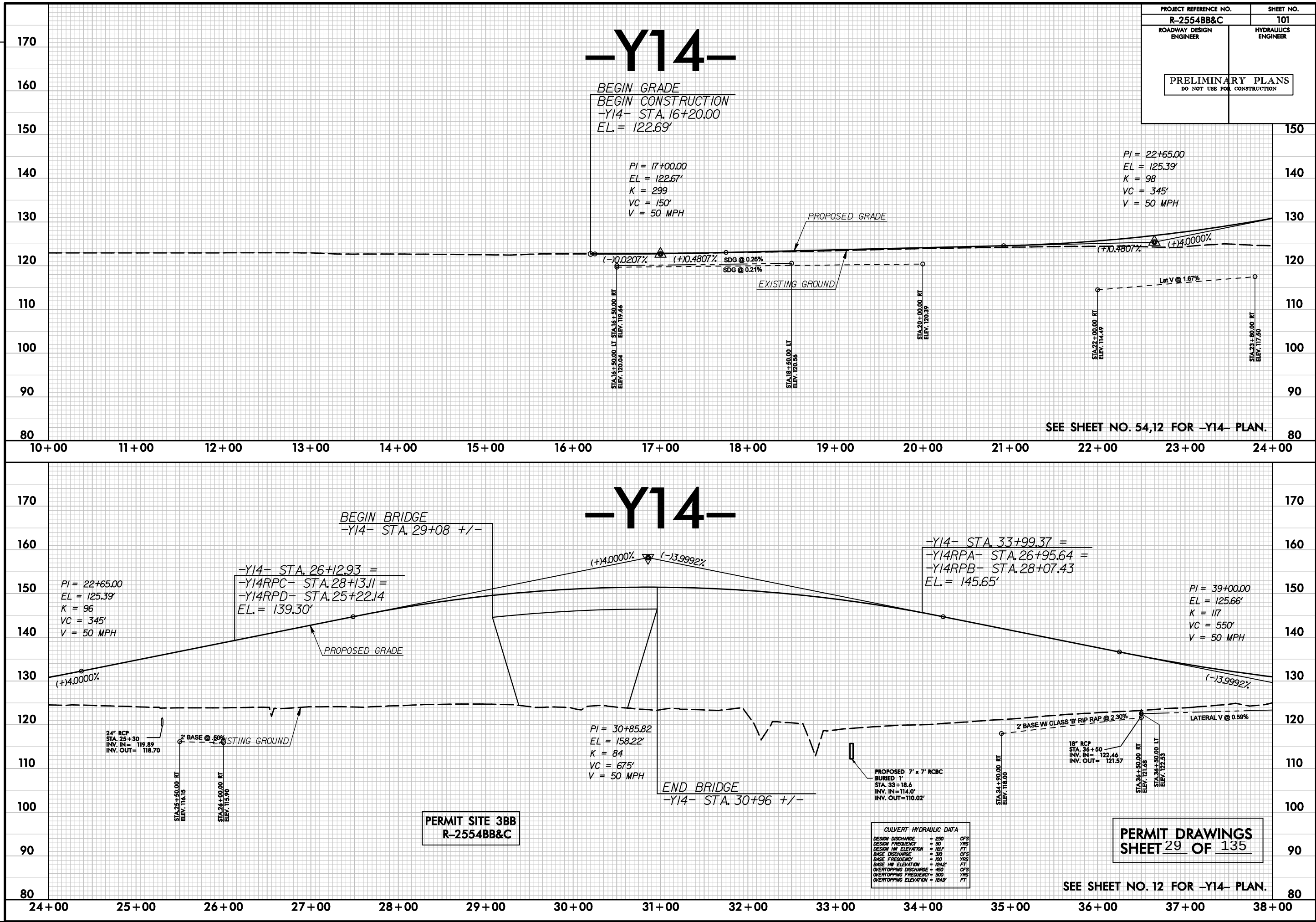
YEAR	DISCHARGE (CFS)	EXISTING WSEL	PROPOSED WSEL
10	140	119.3'	119.1'
50	250	121.8'	121.1'
100	310	123.45'	124.24'
500	450	123.9'	134.8'

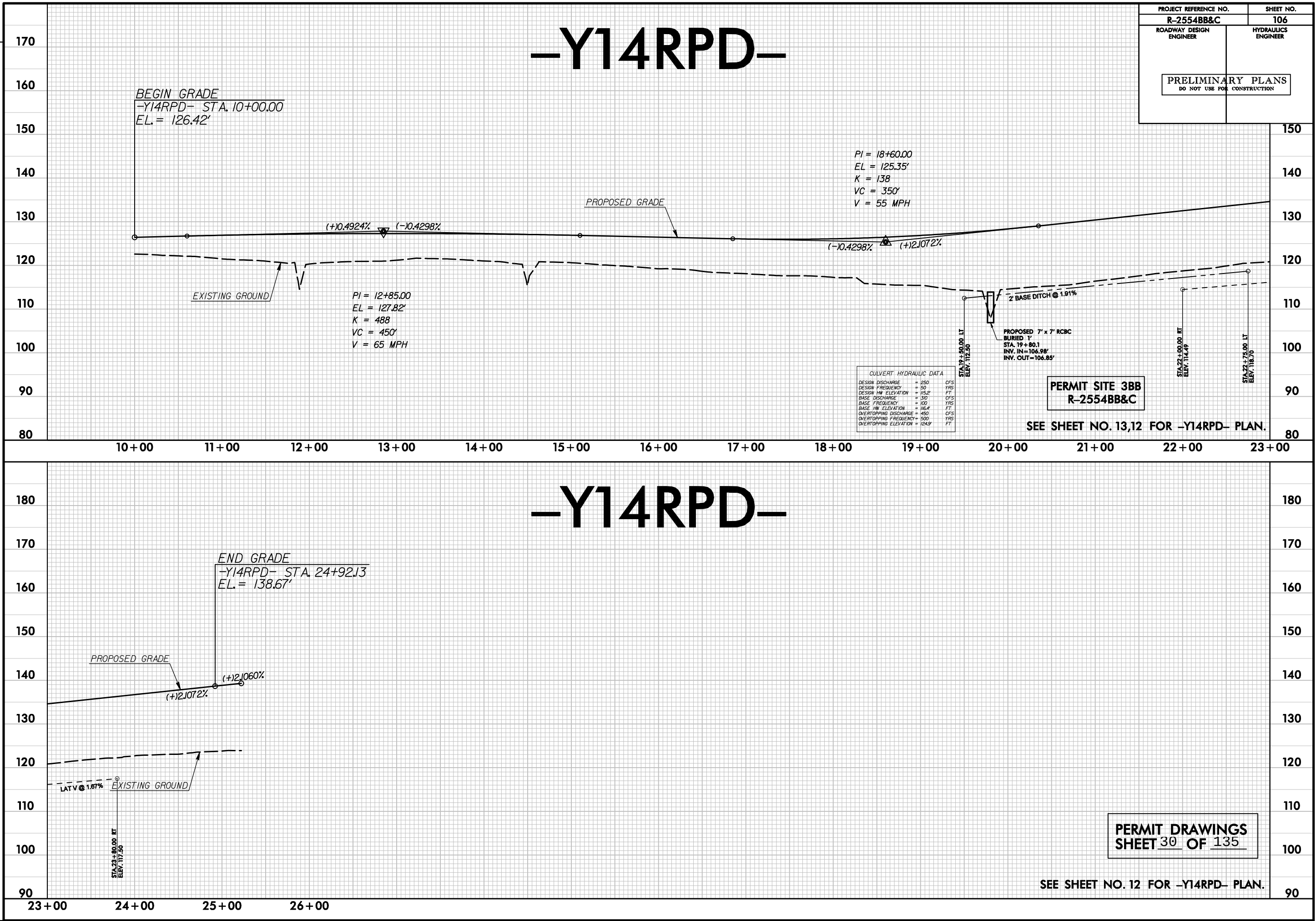
* DATA OBTAINED FROM STA. 1533 (US TOE)

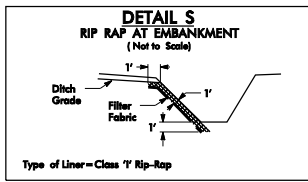
REVISIONS



REVISIONS





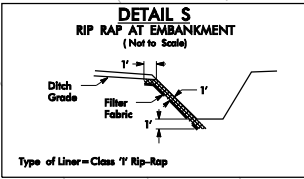
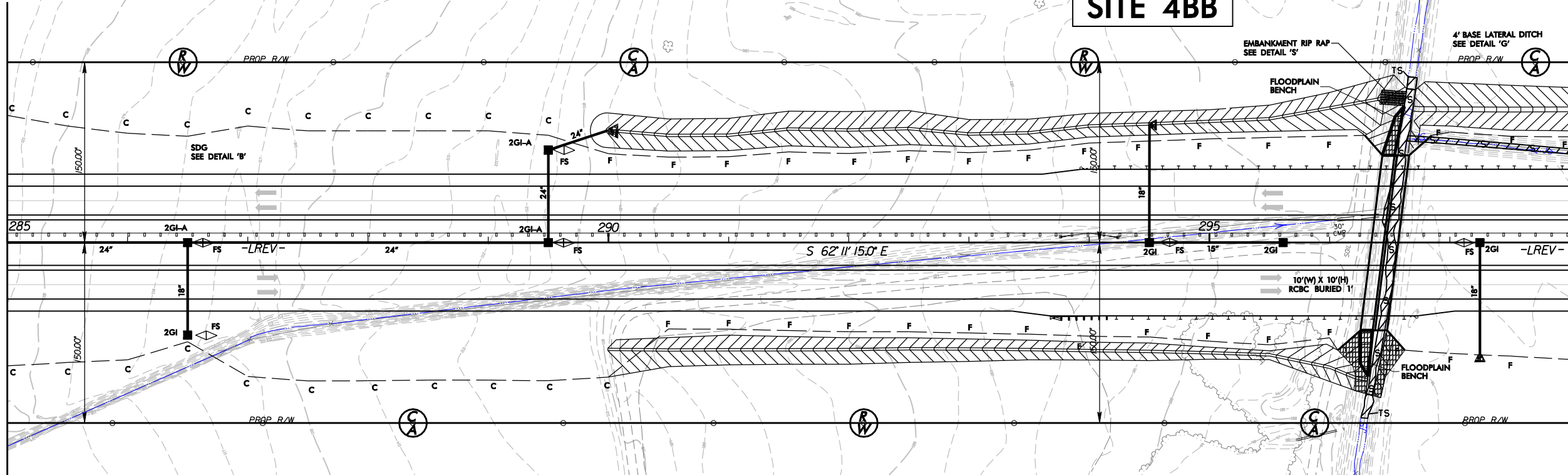


 PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 78 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PLOT DRIVER: NCDOT_color_eng_100.plt
PENTABLE: NCDOT_permits.tbl
USER: jmassroc
DATE: 10/4/2012
TIME: 1:26:17 PM
FILE: HDR.Engineering\Dept_Marketing\DOTs_Regional_Local_Agencies\R-2554BB&C_Goldboro\R-2554BB&C_Hydr.PRM_PLANSHEETS.dgn

REVISIONS

MATCHLINE -LREV- STA. 285+00, SEE SHEET 14



PERMIT DRAWINGS
SHEET 32 OF 135

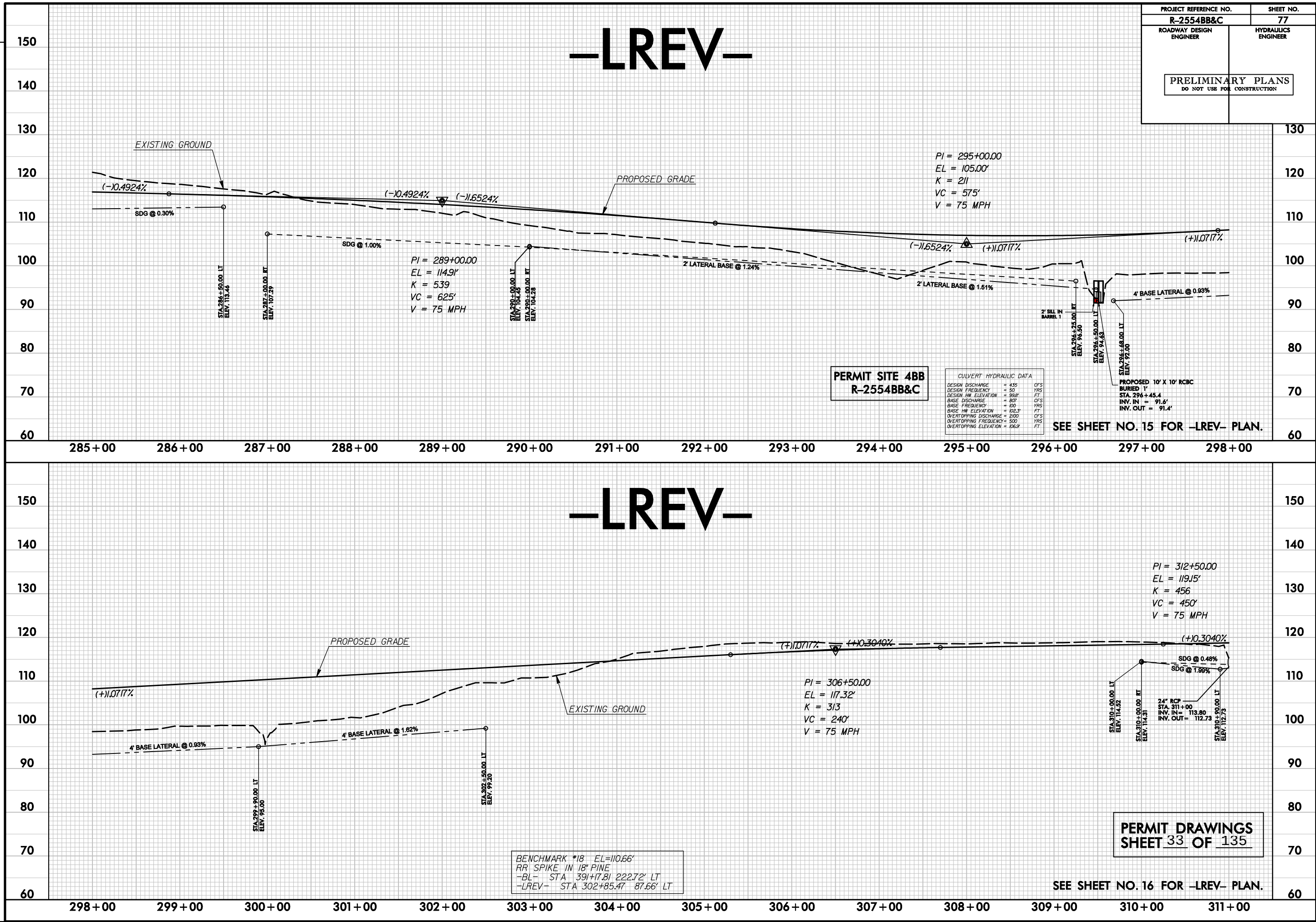
PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 78 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

LEGEND

- Denotes IMPACTS IN SURFACE WATER
- Denotes TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 15	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

REVISIONS



PLOT DRIVER: NCDOT_color_eng-100.plt
USER: _USERNAME_ DATE: 8/14/2012
FILE: R2554BB&C_HYD_PRL_PFL_CSF4.dgn

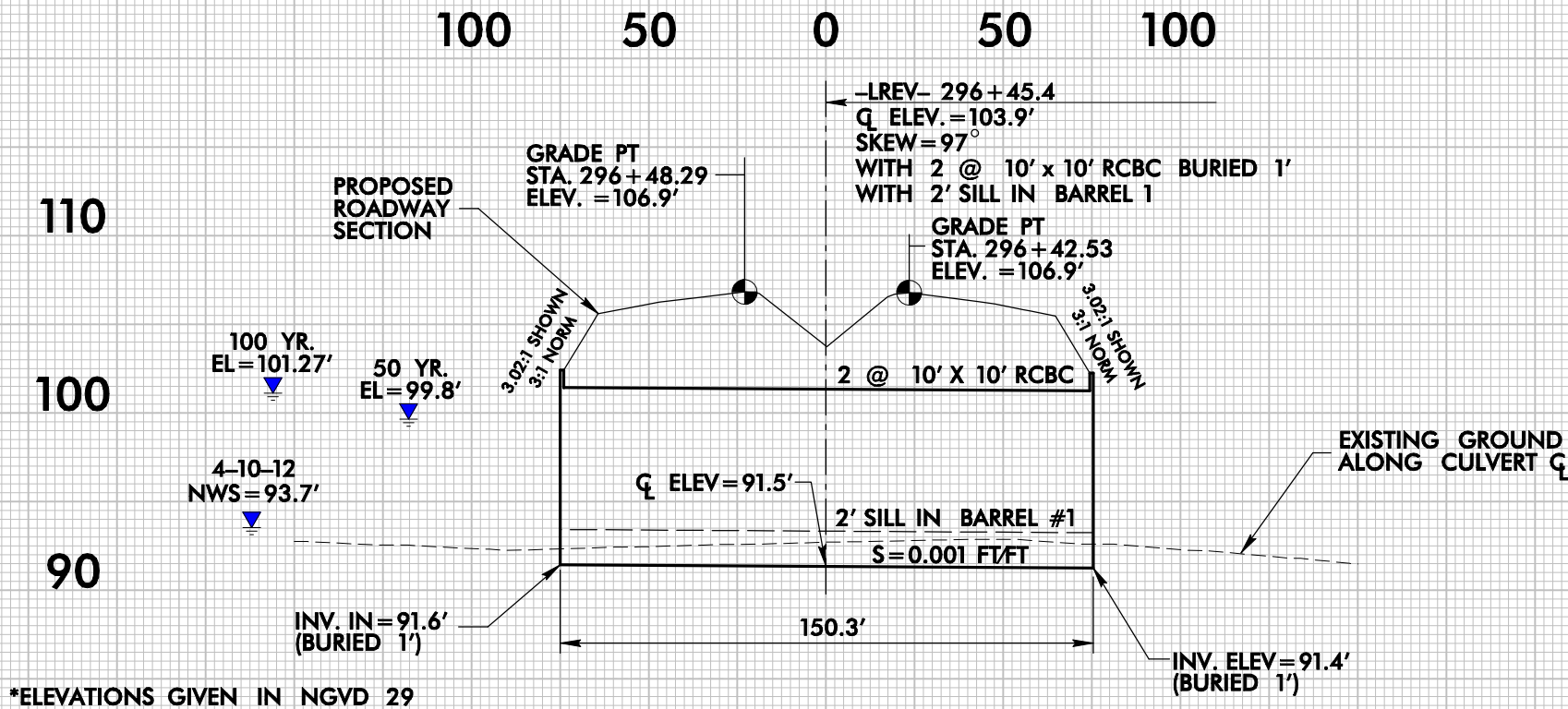
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TIME: 10:50:30 AM

5/14/99

REVISIONS

SITE 4BB R-2554BB&C

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. CSR-4	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



*ELEVATIONS GIVEN IN NGVD 29

PROFILE ALONG CL OF CULVERT

WSEL TABLE

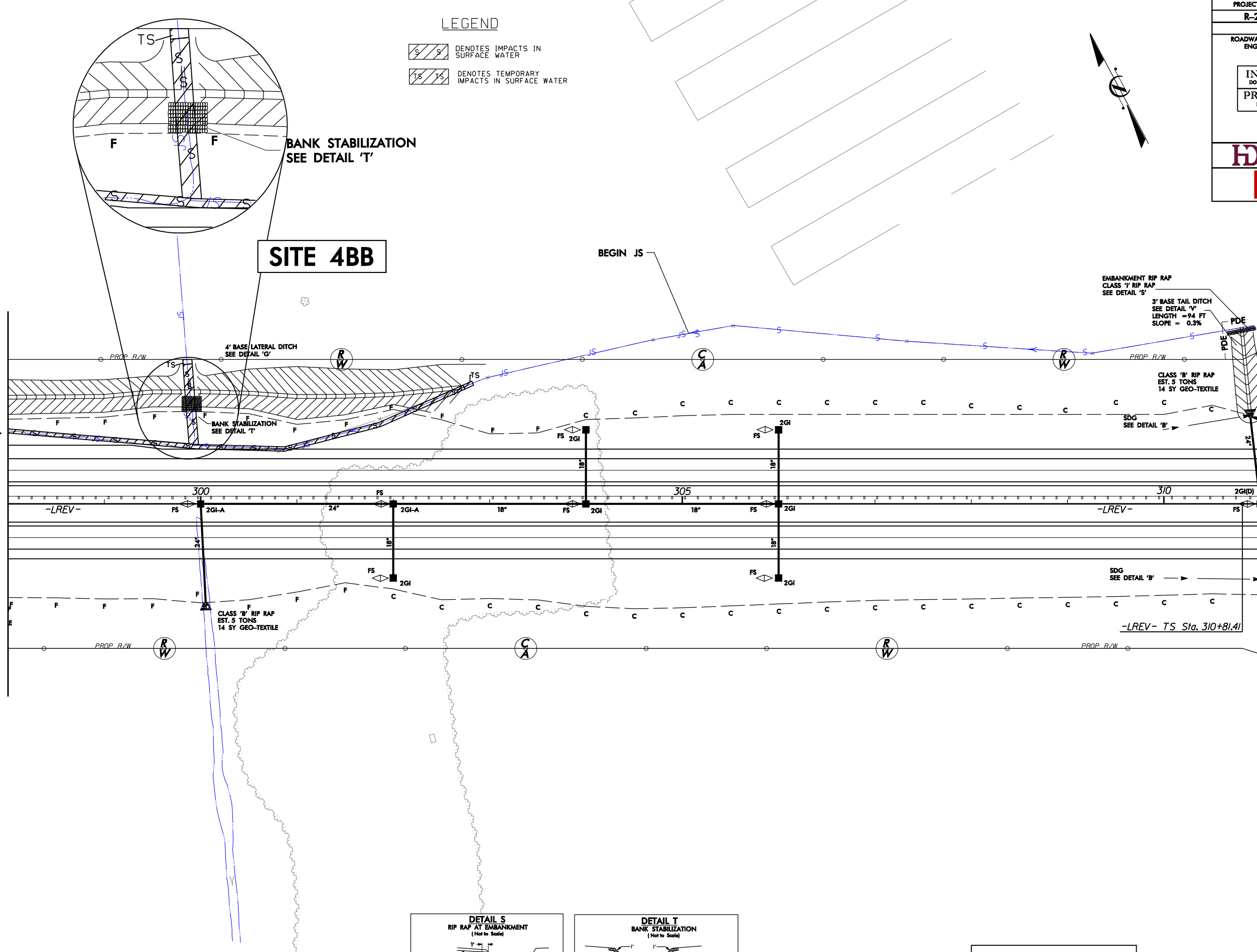
YEAR	DISCHARGE (CFS)	CORRECTED EFFECTIVE	REVISED
10	36	96.0'	95.9'
50	435	99.3'	99.5'
100	807	100.07'	101.02'
500	2003	101.6'	106.9'

* DATA OBTAINED FROM STA 32220 (US TOE)

PERMIT DRAWINGS
SHEET 34 OF 135

REVISIONS

MATCHLINE -LREV- STA. 298+00, SEE SHEET 15

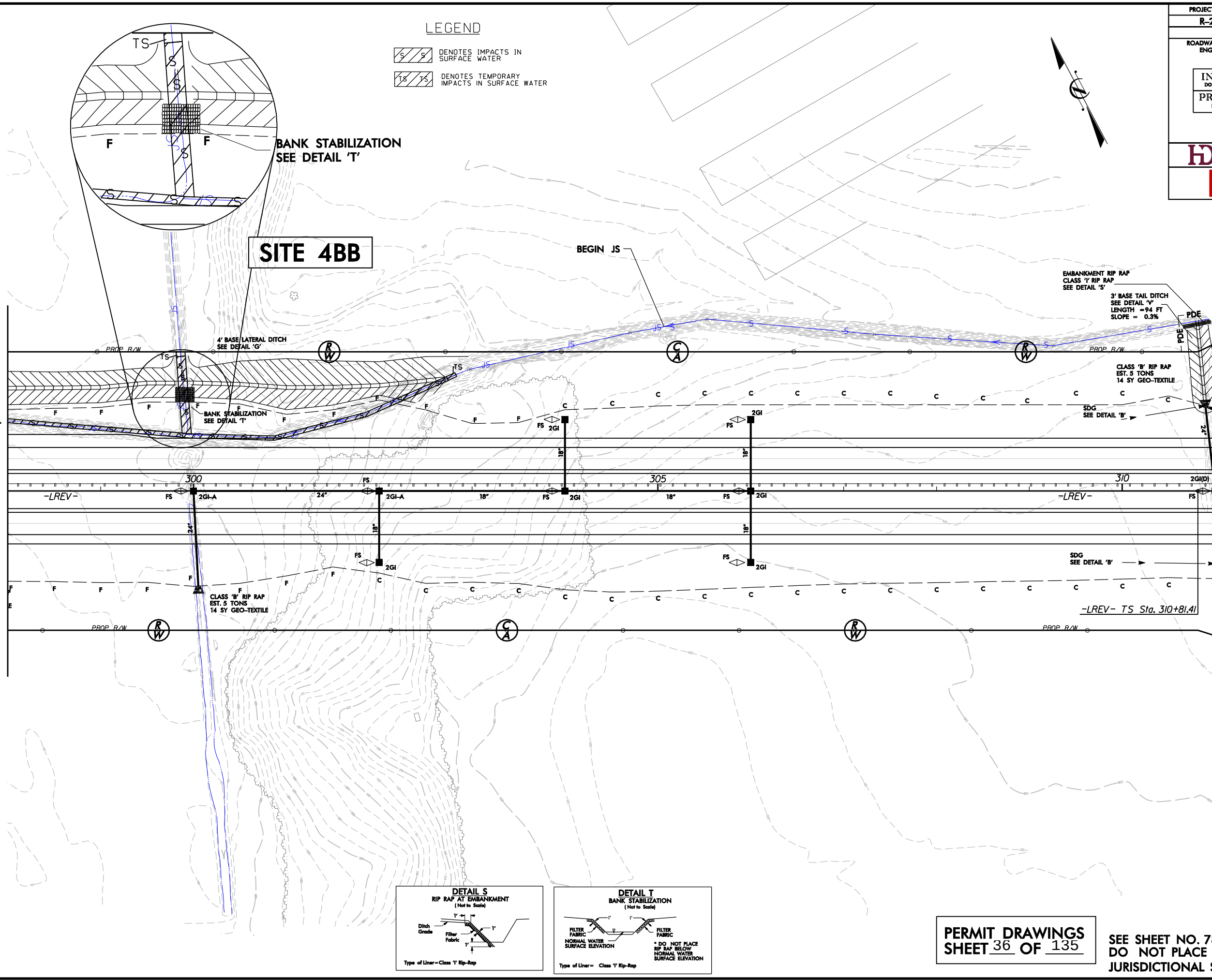


PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 16	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		BARNHILL CONTRACTING COMPANY	

SEE SHEET NO. 78 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

REVISIONS

MATCHLINE -LREV- STA. 298+00, SEE SHEET 15



LEGEND

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 4BB

BEGIN JS

EMBANKMENT RIP RAP
CLASS 'I' RIP RAP
SEE DETAIL 'S'

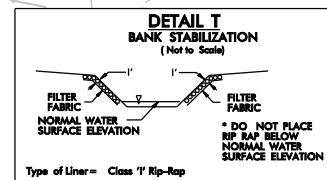
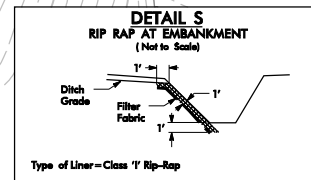
3' BASE TAIL DITCH
SEE DETAIL 'V'
LENGTH = 94 FT
SLOPE = 0.3%

CLASS 'B' RIP RAP
EST. 5 TONS
14 SY GEO-TEXTILE

SDG
SEE DETAIL 'B'

-LREV- TS Sta. 310+81.41

MATCHLINE -LREV- STA. 311+00, SEE SHEET 17



PERMIT DRAWINGS
SHEET 36 OF 135

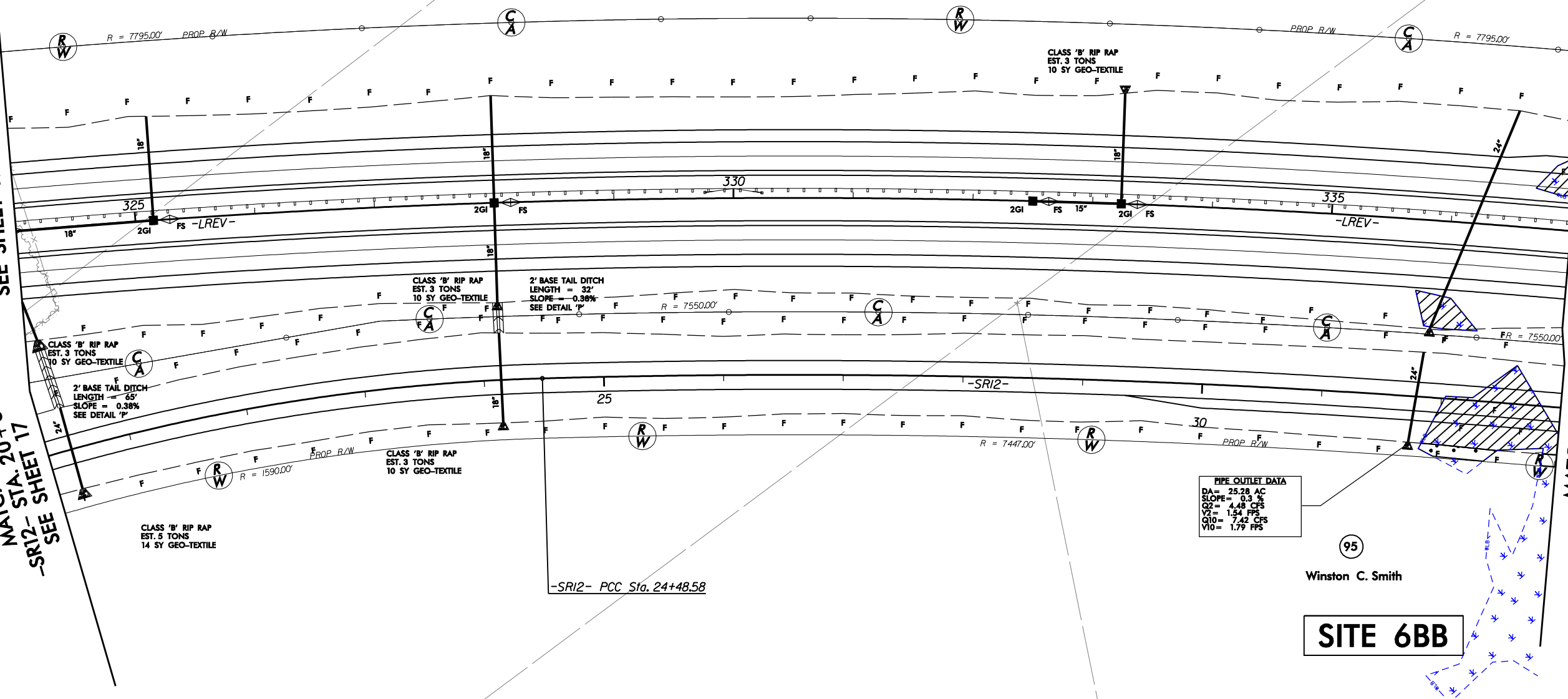
SEE SHEET NO. 78 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 16	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR E/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		BARNHILL CONTRACTING COMPANY	

REVISIONS

MATCHLINE
-LREV- STA. 324+00
SEE SHEET 17

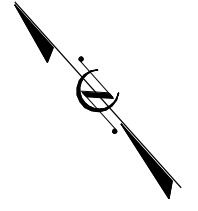
MATCHLINE
-SR12- STA. 20+30
SEE SHEET 17



LEGEND

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 18
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

PERMIT DRAWINGS
SHEET 37 OF 135

SEE SHEET NO. 79 FOR -LREV- PROFILE.
SEE SHEET NO. 138 FOR -SR12- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

SITE 7BB

MATCHLINE
EV- STA. 337+00
SEE SHEET 19

MATCHLINE
-SR12- STA. 33+00
SEE SHEET 19

SITE 6BB

PERMIT DRAWINGS
SHEET 38 OF 135

SEE SHEET NO. 79 FOR -LREV- PROFILE.
SEE SHEET NO. 138 FOR -SR12- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

LEGEND

 DENOTES FILL IN WETLAND
 DENOTES MECHANIZED CLEARING

MATCHLINE
--LREV-- STA. 324+00
SEE SHEET 17

MATCHLINE
STA. 20+30
-SR12- STA. 17
SEE SHEET 17

-SR12- PCC Sta. 24+48.58

PIPE OUTLET DATA

DA=	25.28	AC
SLOPE=	0.3	%
Q2=	4.48	CFS
V2=	1.54	FPS
Q10=	7.42	CFS
V10=	1.79	FPS

Winston C. Smith

```
PLOT DRIVER: NCDOT_pdf_color_eng_100.plt
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USER: rybrown
DATE: 9/28/2012
TIME: 11:44:11 AM
FILE: \
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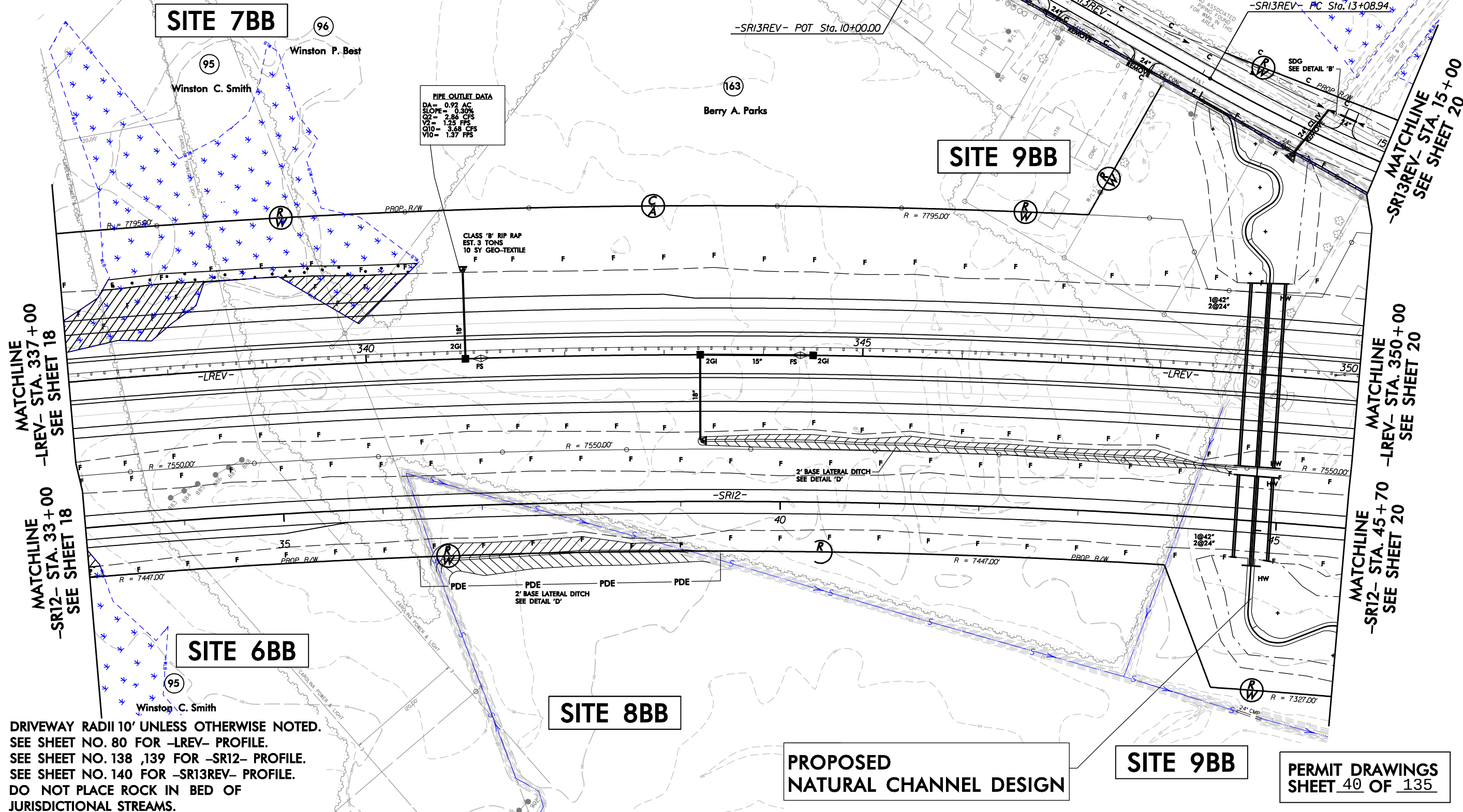

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REVISIONS

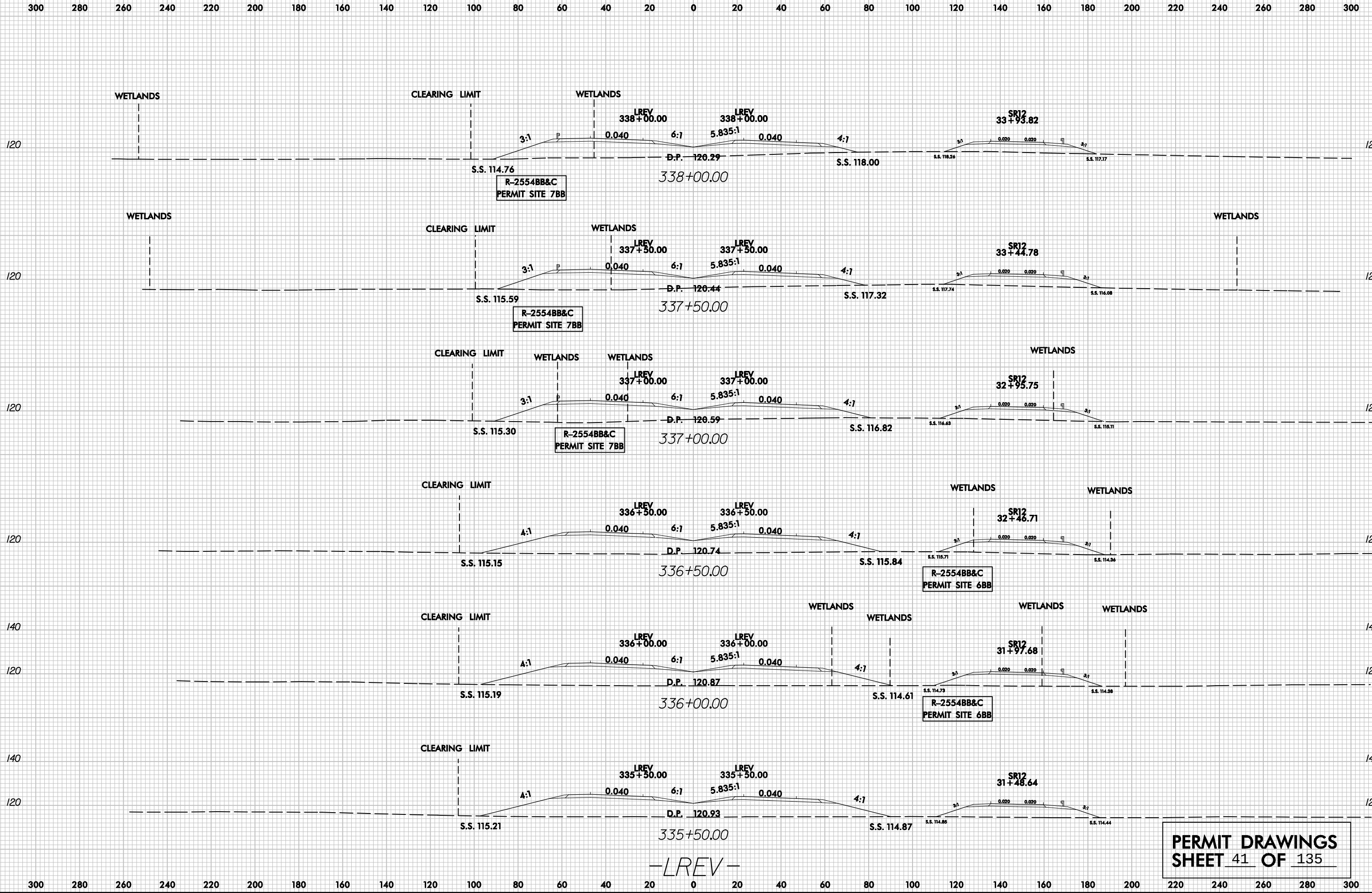
LEGEND

- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 19
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		



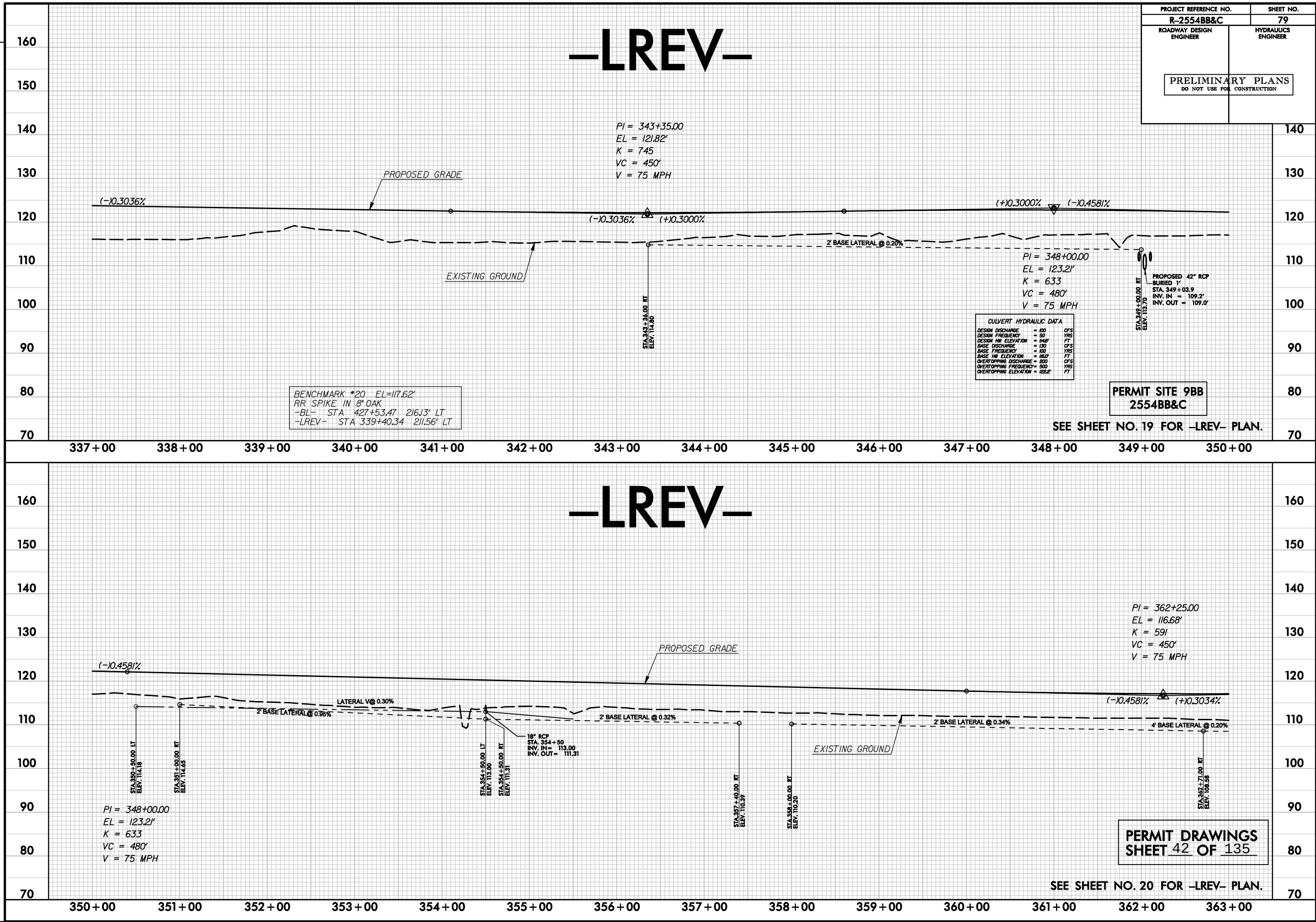
8/23/99

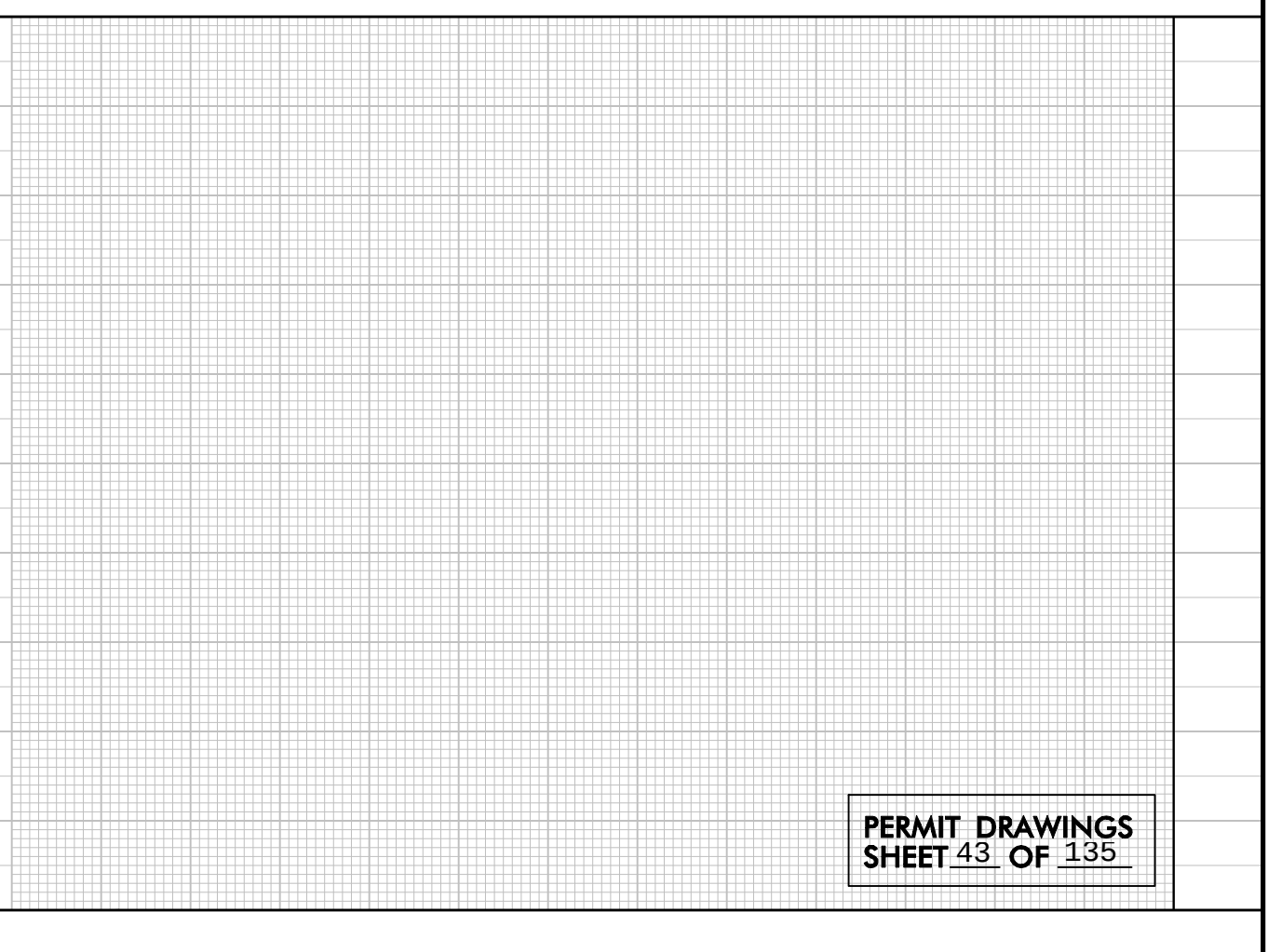
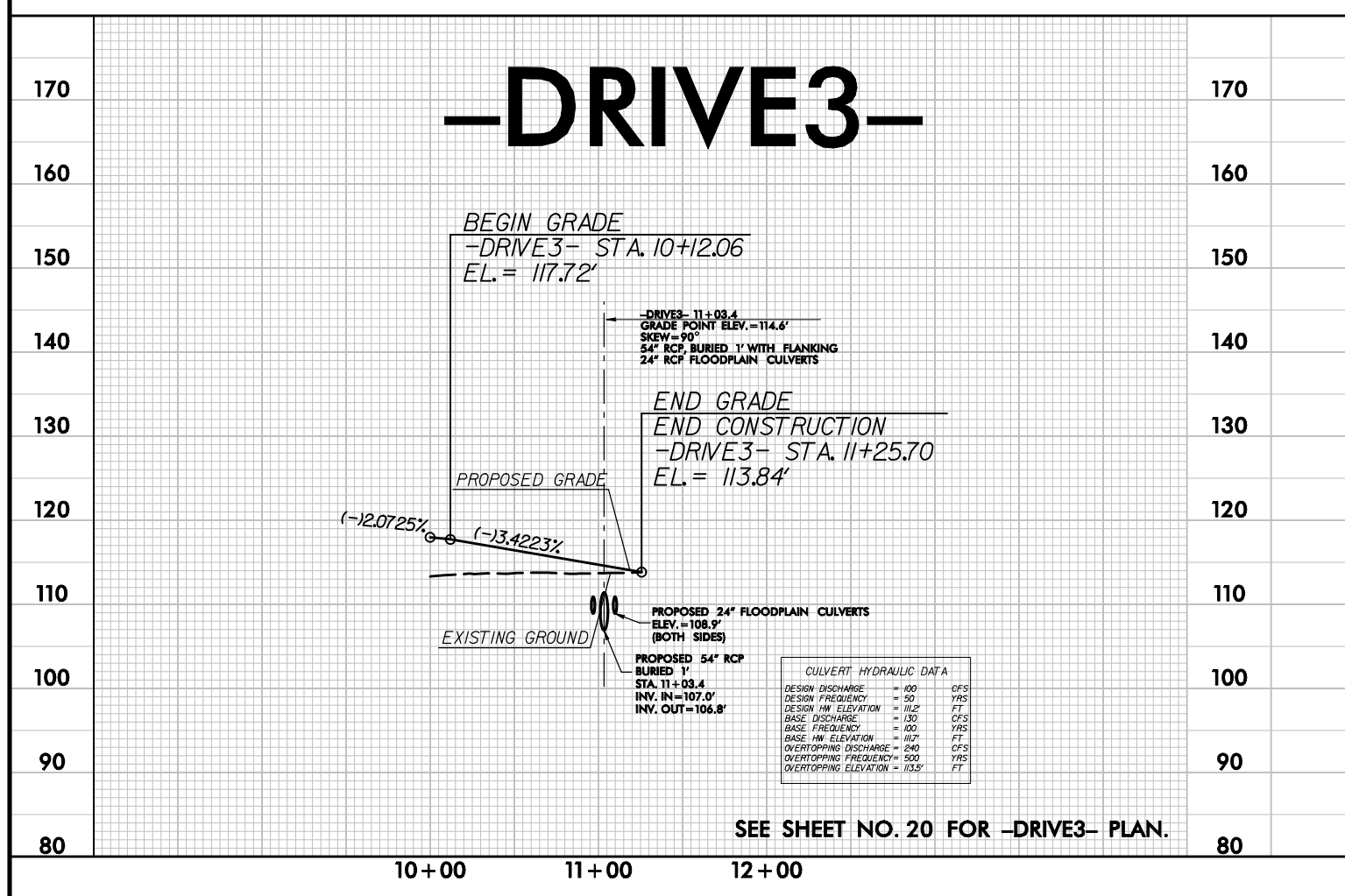
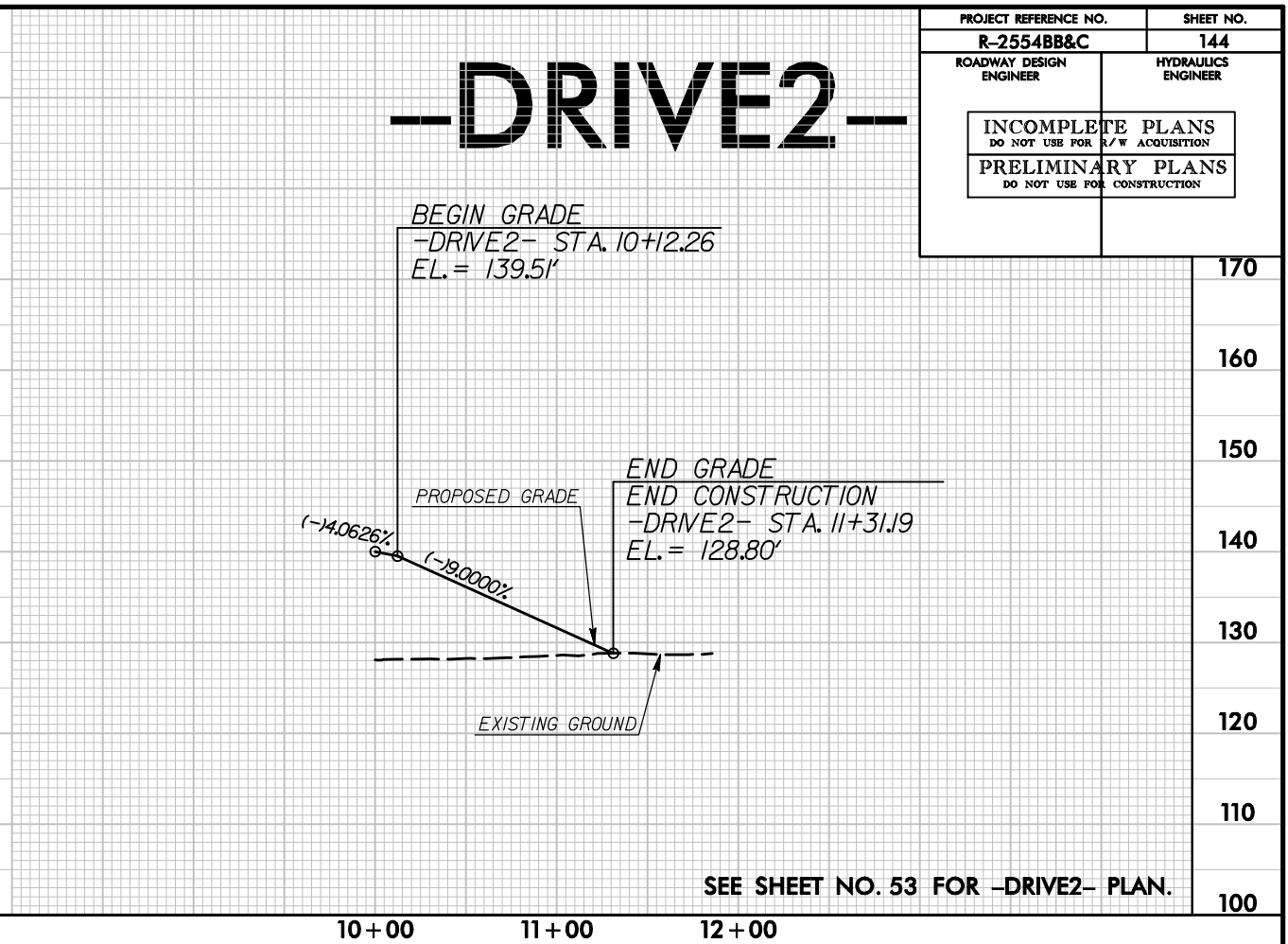
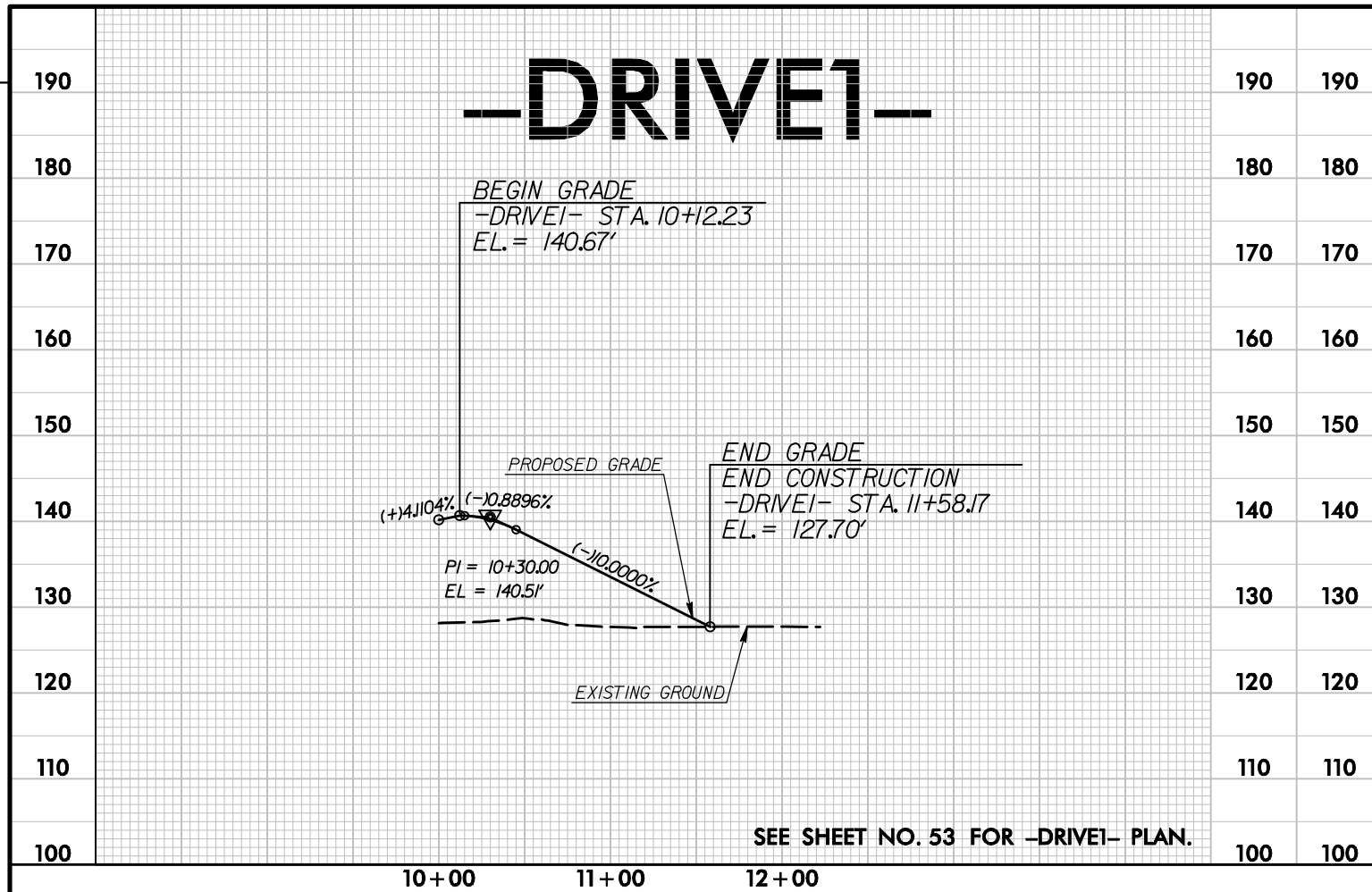


-LREV-

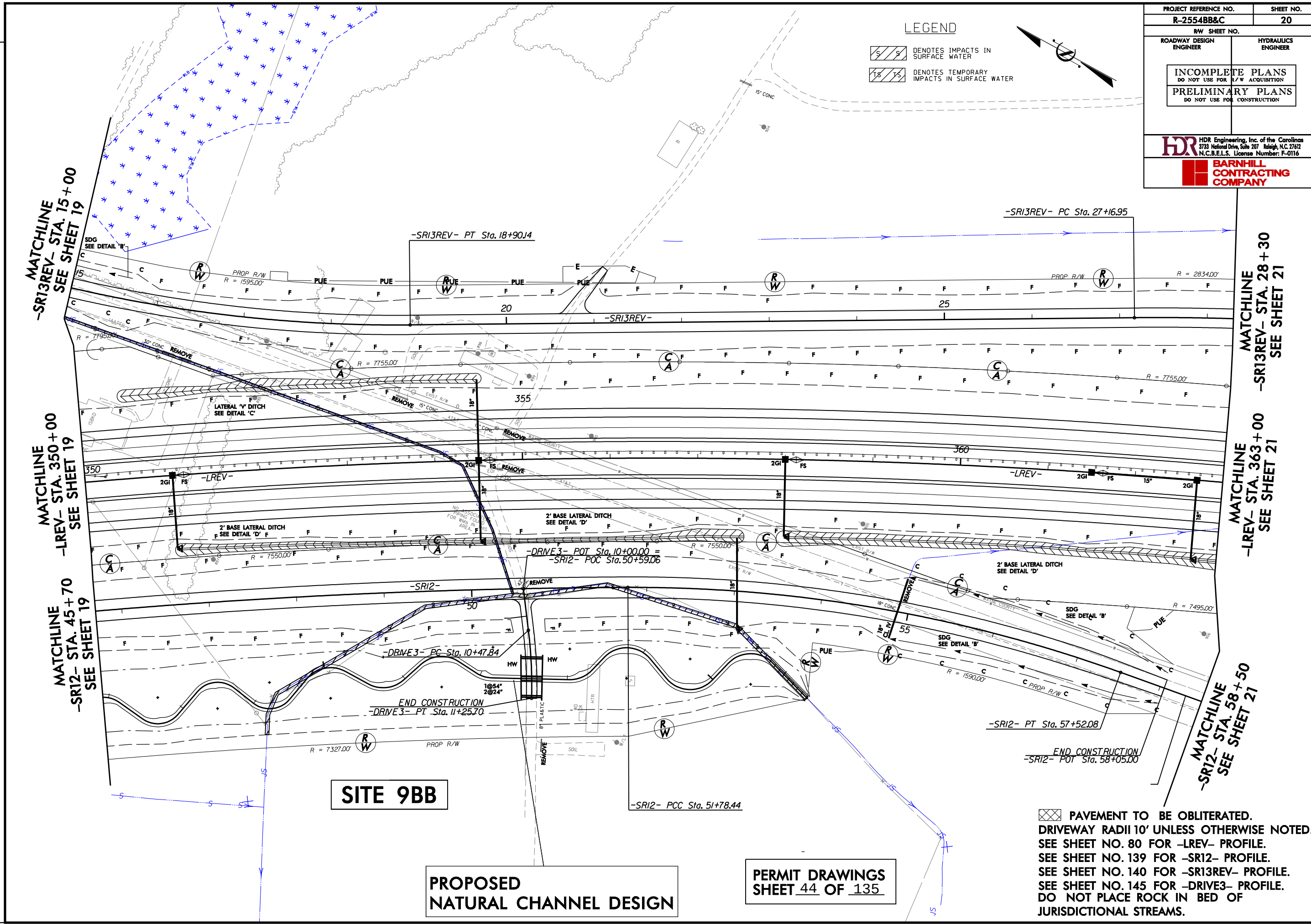
PERMIT DRAWINGS
SHEET 41 OF 135

REVISIONS





REVISIONS



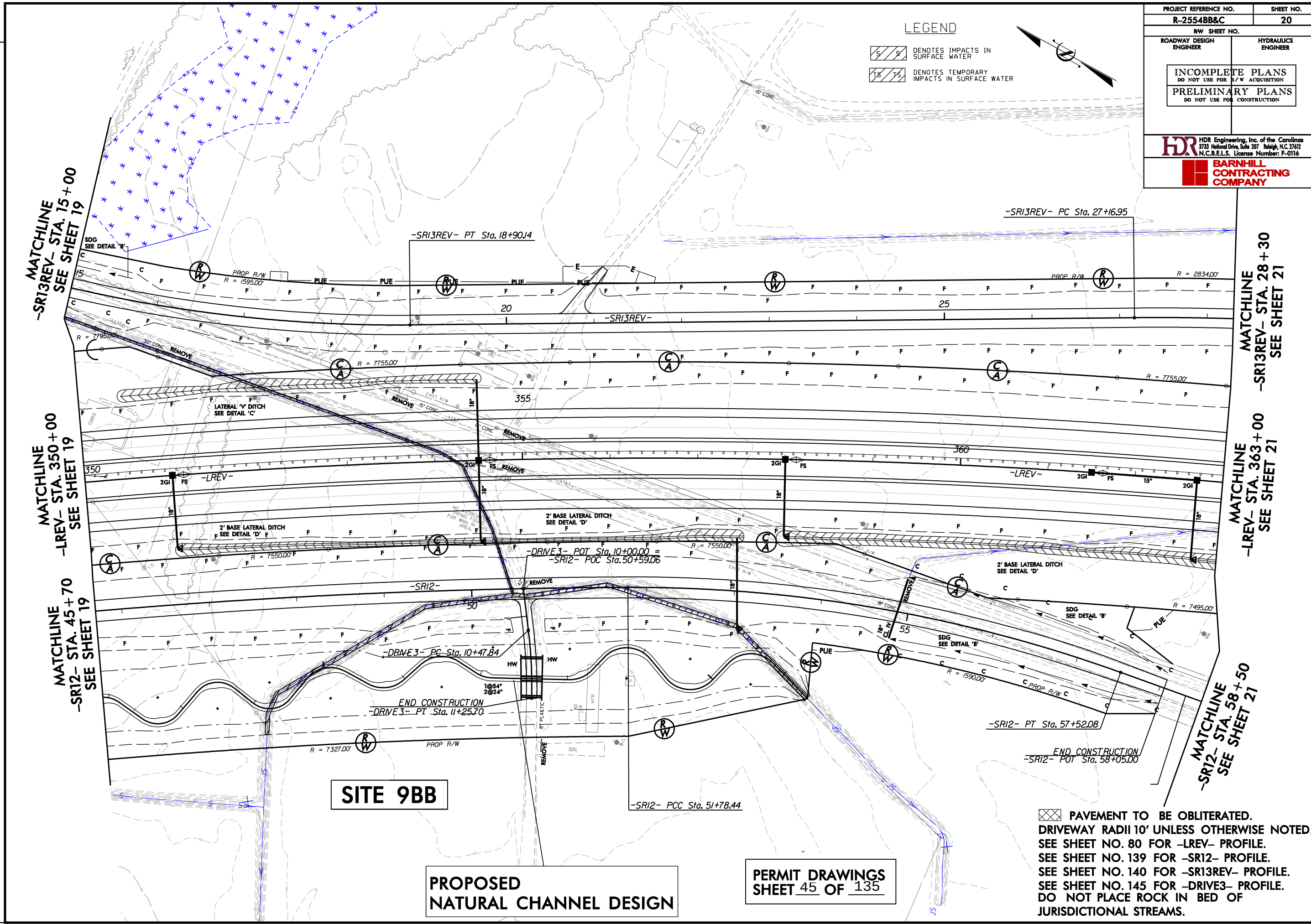
SITE 9BB

PROPOSED
NATURAL CHANNEL DESIGN

PERMIT DRAWINGS
SHEET 44 OF 135

PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 80 FOR -LREV- PROFILE.
SEE SHEET NO. 139 FOR -SR12- PROFILE.
SEE SHEET NO. 140 FOR -SR13REV- PROFILE.
SEE SHEET NO. 145 FOR -DRIVE3- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

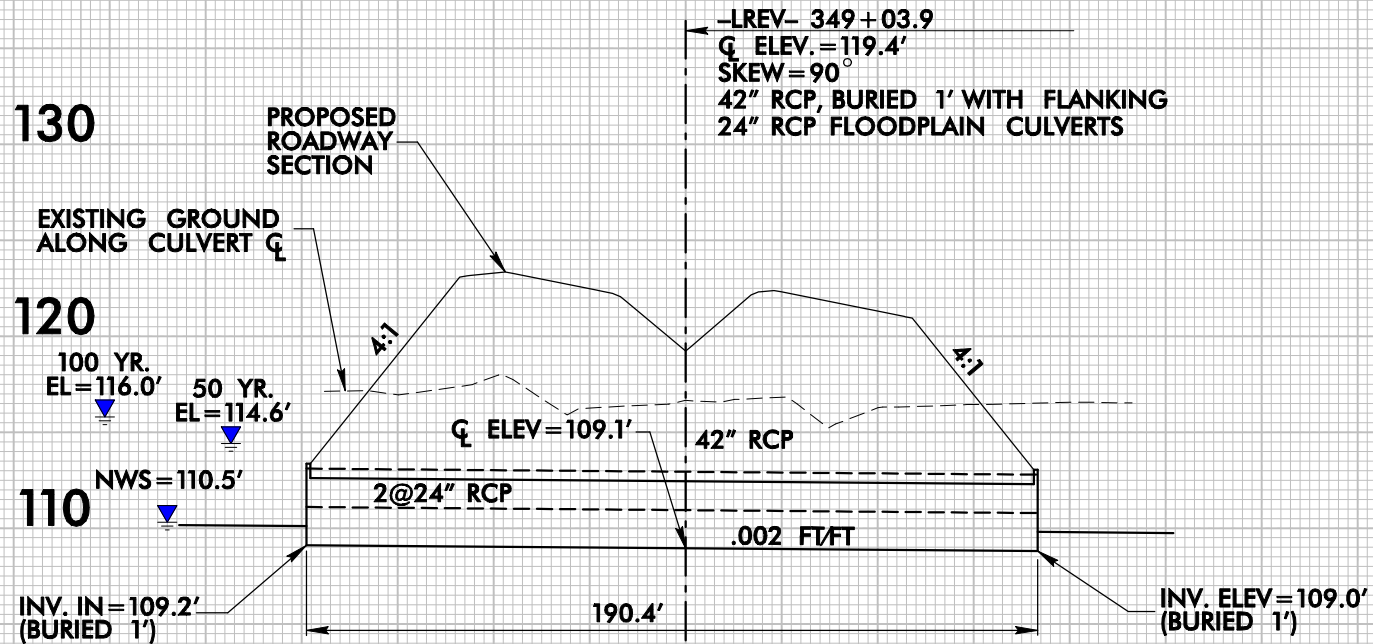
REVISIONS



REVISIONS

SITE 9BB R-2554BB&C

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. CSR 15	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



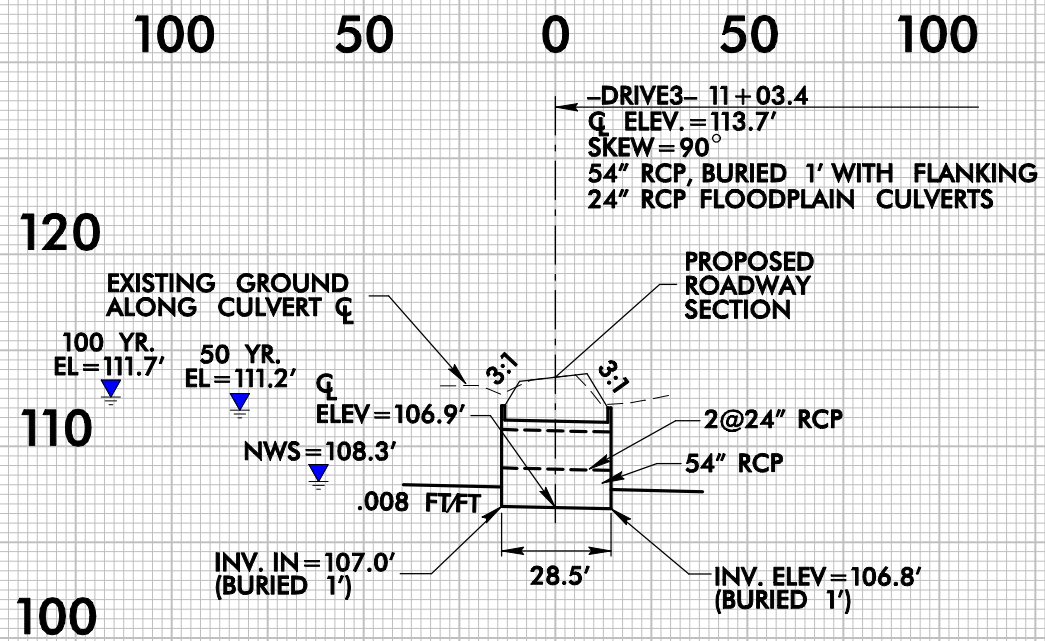
PROFILE ALONG CL OF CULVERT

WSEL TABLE

YEAR	DISCHARGE (CFS)	EXISTING* WSEL (FT)	REVISED* WSEL (FT)
10	55	114.5	113.1
50	100	114.9	114.6
100	130	115.2	116.0
500	190	115.5	120.1

* DATA OBTAINED FROM STA. 1238

SITE 9BB R-2554BB&C



PROFILE ALONG G_L OF CULVERT

WSEL TABLE

YEAR	DISCHARGE (CFS)	EXISTING* WSEL (FT)	REVISED* WSEL (FT)
10	55	111.2	110.3
50	100	112.3	111.2
100	130	112.7	111.7
500	190	113.3	113.3

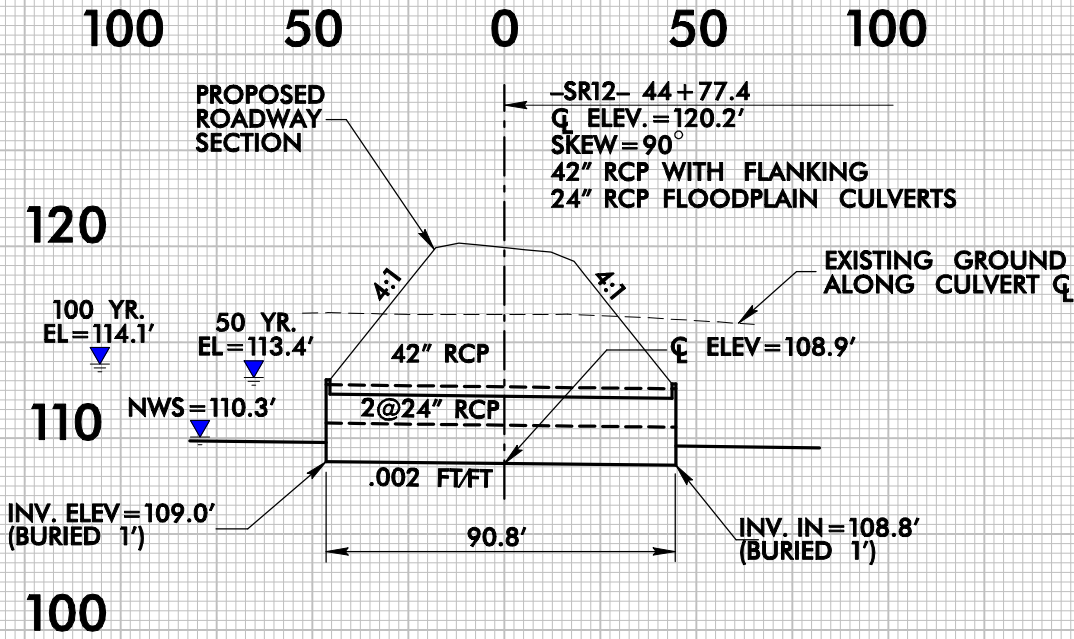
* DATA OBTAINED FROM STA. 305

PERMIT DRAWINGS
SHEET 47 OF 135

REVISIONS

SITE 9BB R-2554BB&C

PROJECT REFERENCE NO. R-2554BB&C	SHEET NO. CSR 17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



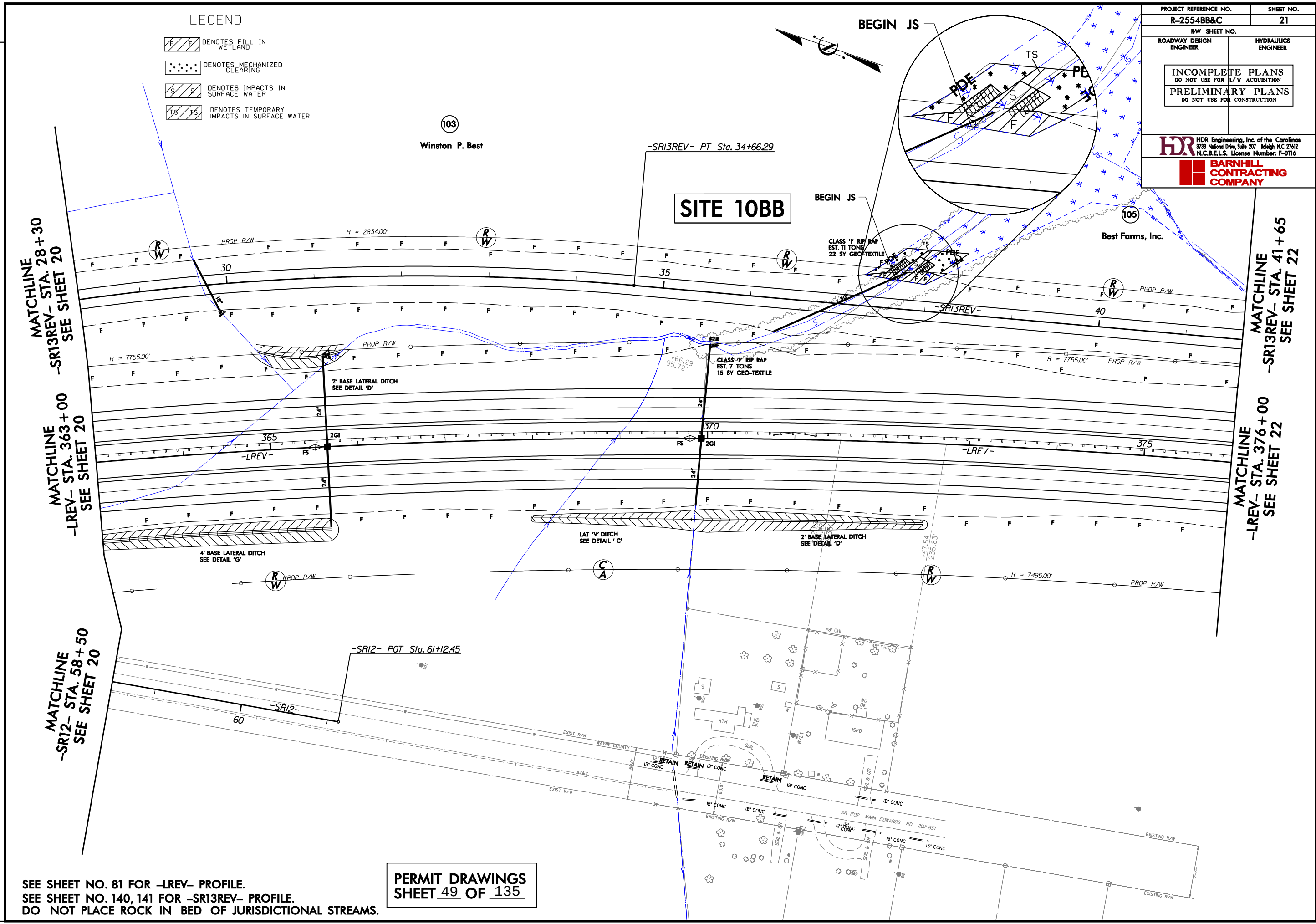
PROFILE ALONG CL OF CULVERT

WSEL TABLE

YEAR	DISCHARGE (CFS)	EXISTING* WSEL (FT)	REVISED* WSEL (FT)
10	55	114.5	112.5
50	100	114.8	113.4
100	130	115.0	114.1
500	190	115.3	116.1

* DATA OBTAINED FROM STA. 1045

REVISIONS



LEGEND

- Denotes FILL IN WETLAND
- Denotes MECHANIZED CLEARING
- Denotes IMPACTS IN SURFACE WATER
- Denotes TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 21
RW SHEET NO.		HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER		
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		
BARNHILL CONTRACTING COMPANY		

SEE SHEET NO. 81 FOR -LREV- PROFILE.
SEE SHEET NO. 140, 141 FOR -SR13REV- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

PERMIT DRAWINGS
SHEET 49 OF 135

REVISIONS

MATCHLINE -SR12- STA. 58+50
SEE SHEET 20

MATCHLINE -LREV- STA. 363+00
SEE SHEET 20

MATCHLINE -SR13REV- STA. 28+30
SEE SHEET 20

SEE SHEET NO. 81 FOR -LREV- PROFILE.
SEE SHEET NO. 140, 141 FOR -SR13REV- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

PERMIT DRAWINGS
SHEET 50 OF 135

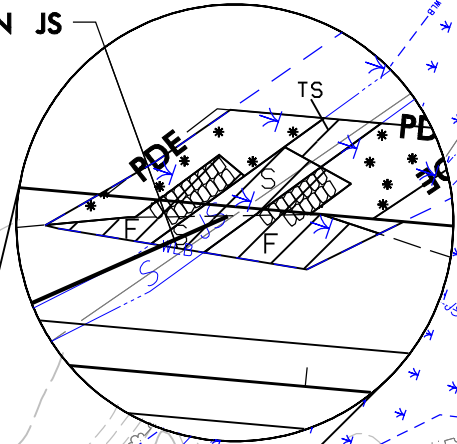
LEGEND

- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

Winston P. Best

SITE 10BB

BEGIN JS



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 21	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
 BARNHILL CONTRACTING COMPANY			

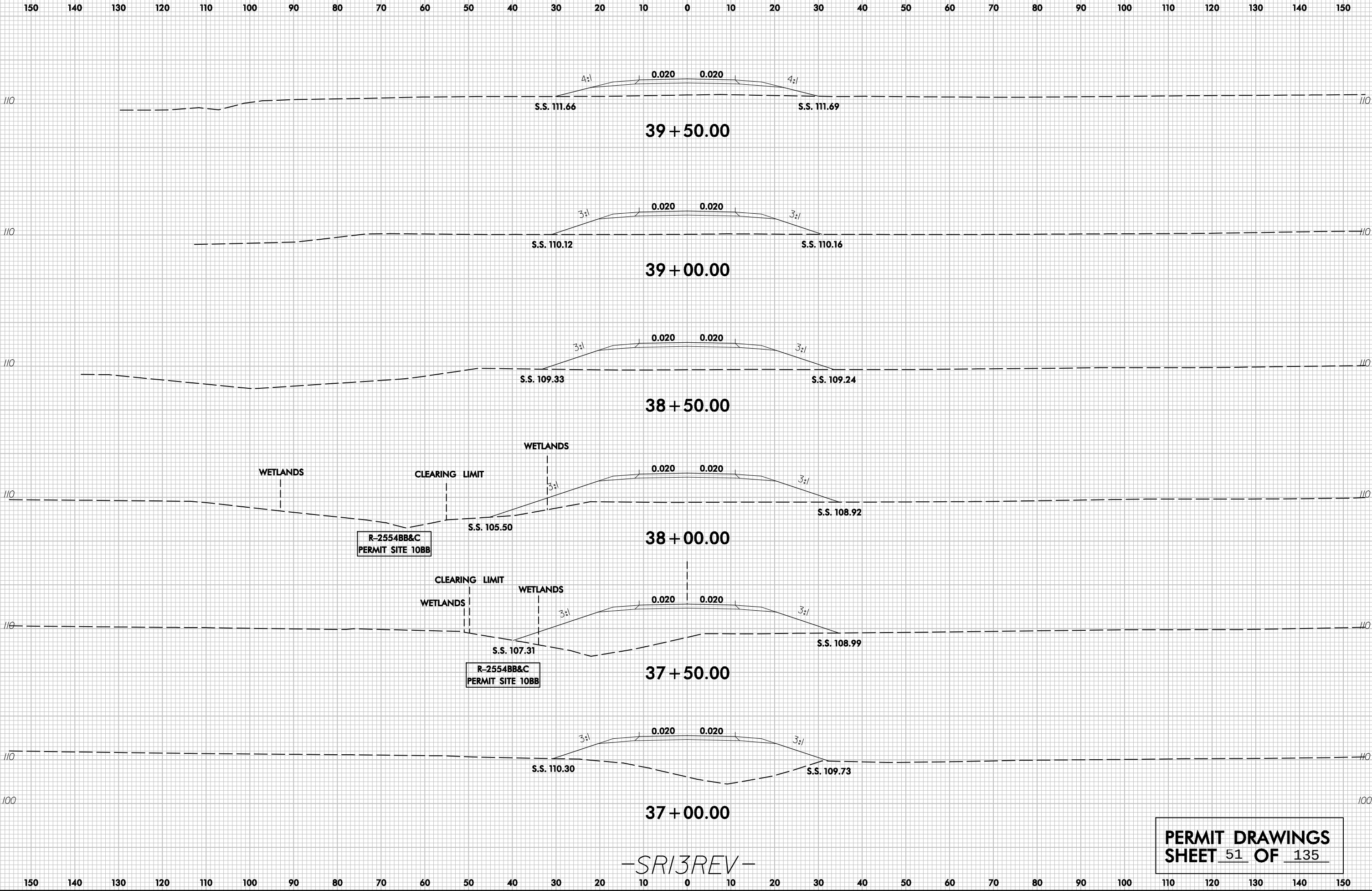
MATCHLINE -LREV- STA. 376+00
SEE SHEET 22

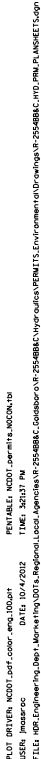
MATCHLINE -SR13REV- STA. 41+65
SEE SHEET 22

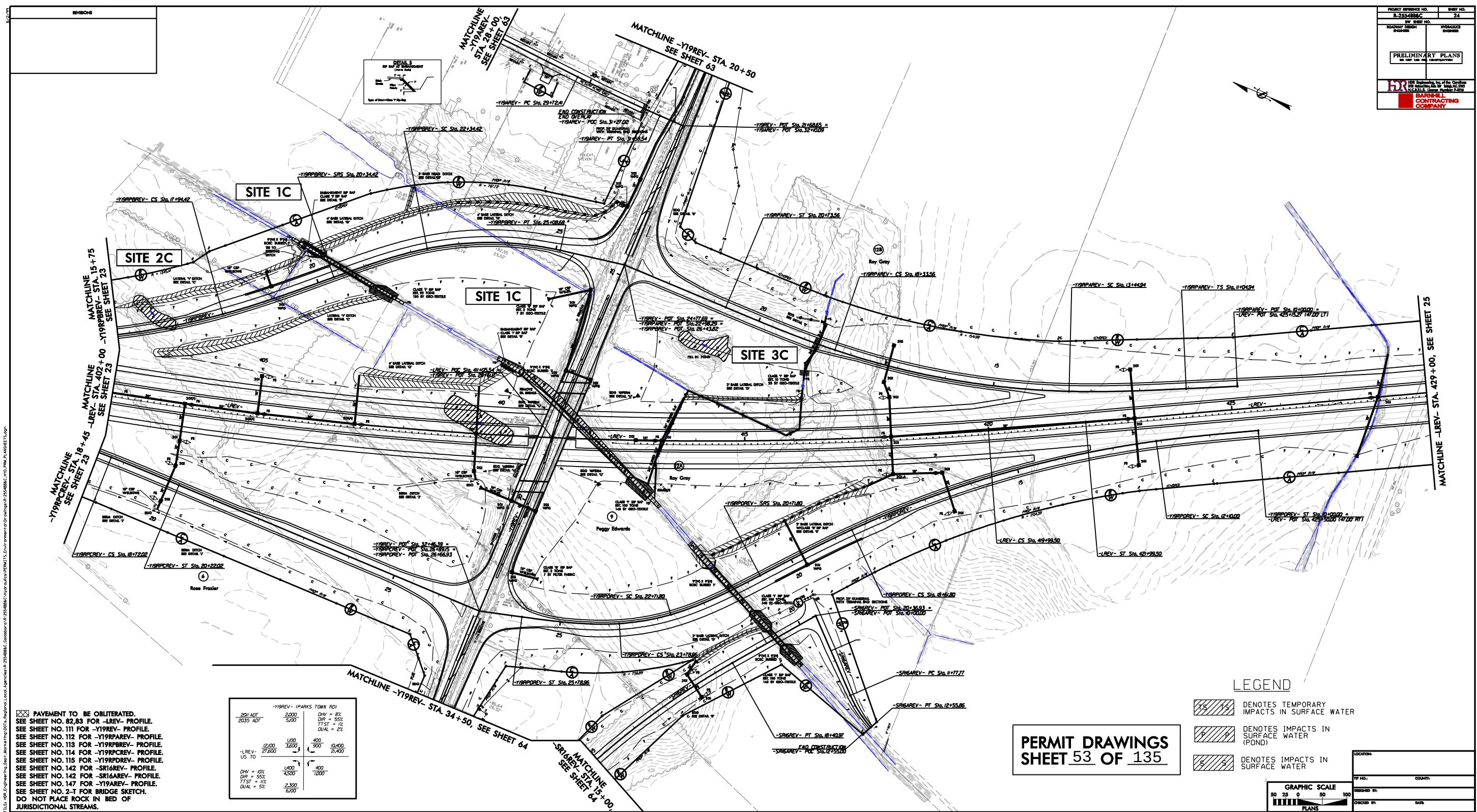
8/23/99

4:43:58 PM
R-2554BB&C.HYD.PRM-SRI3REV.XSEC.dgn
massdot

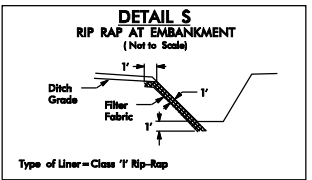
0510	PROJ. REFERENCE NO. R-2554BB&C	SHEET NO. X-488
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[illegible]

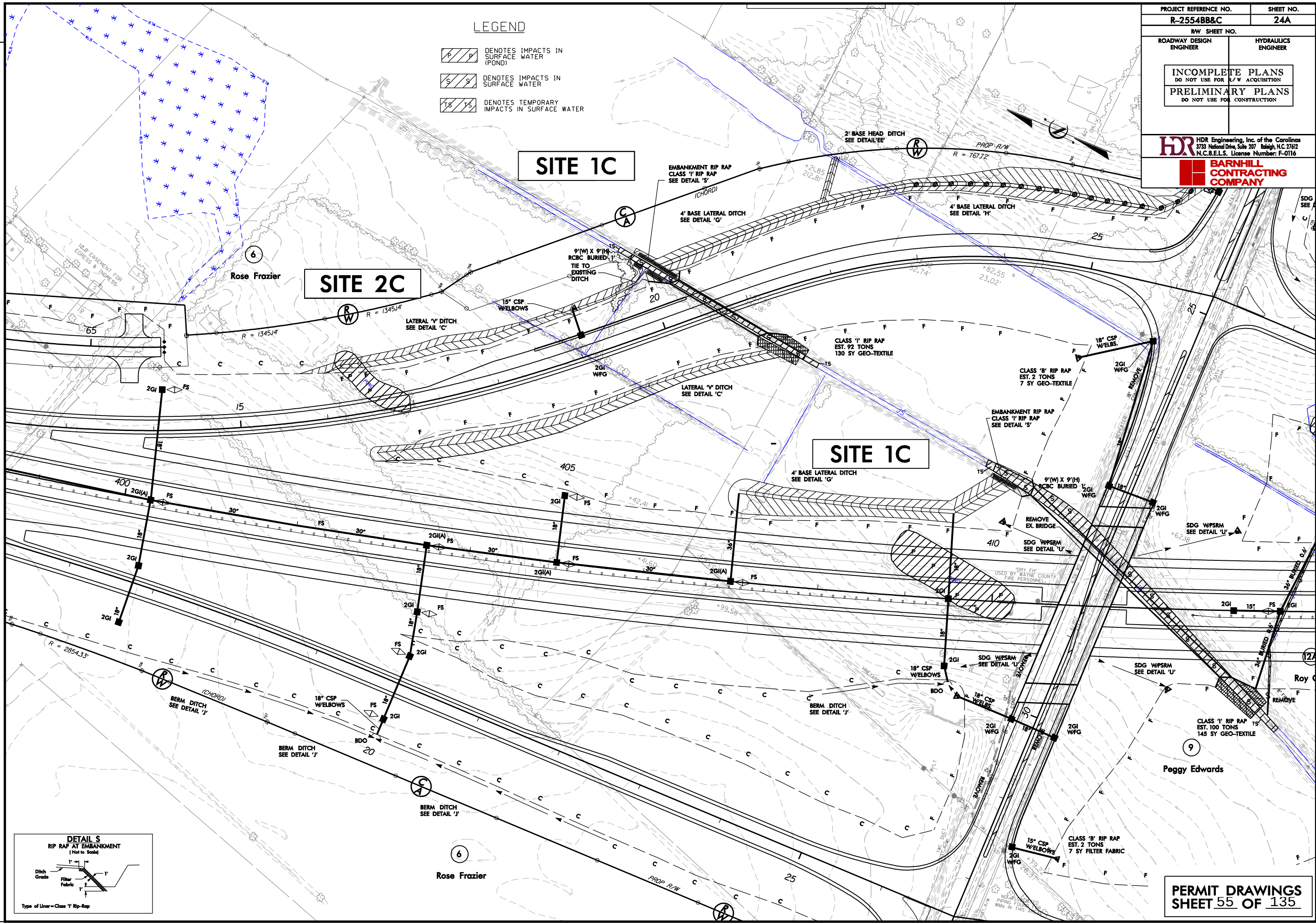


PERMIT DRAWINGS
SHEET 54 OF 135



REVISIONS

6/2/14



LEGEND

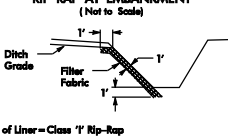
- DENOTES IMPACTS IN SURFACE WATER (POND)
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 1C

SITE 2C

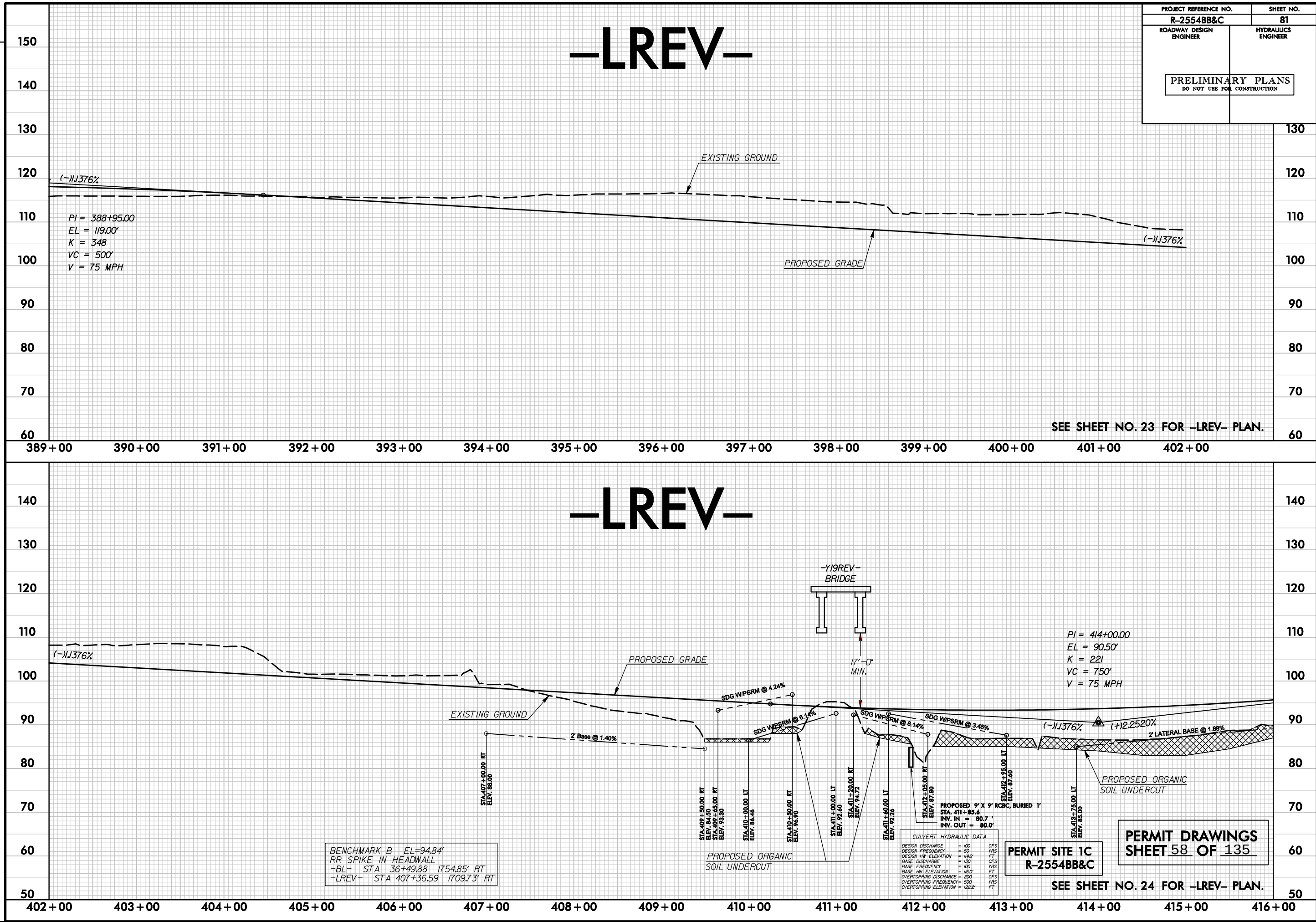
SITE 1C

DETAIL S



PLOT DRIVER: NCDOT_PFL_color_eng-100.plt
PENTABLE: NCDOT_PFL_XSC_UPDATED.tbl
USER: _USERNAME_ DATE: 8/30/2012
FILE: R-2554BB&C.HYD.PRM.PFL.081.dgn
TIME: 2:55:44 PM

REVISIONS



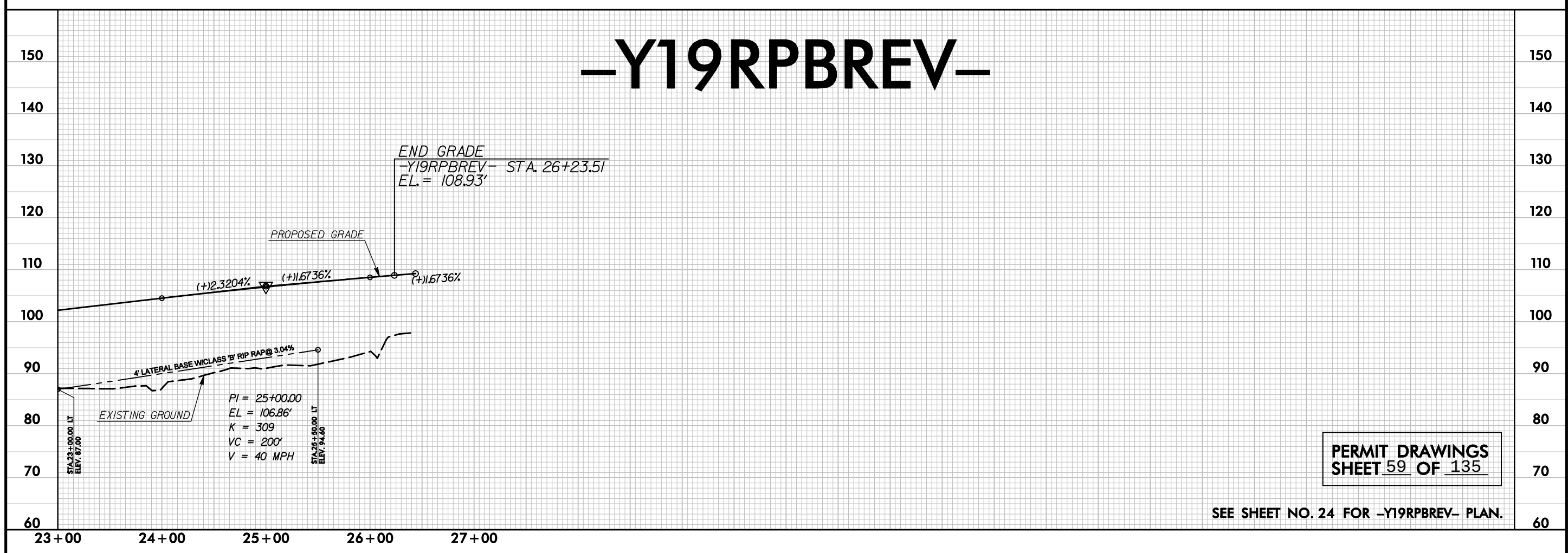
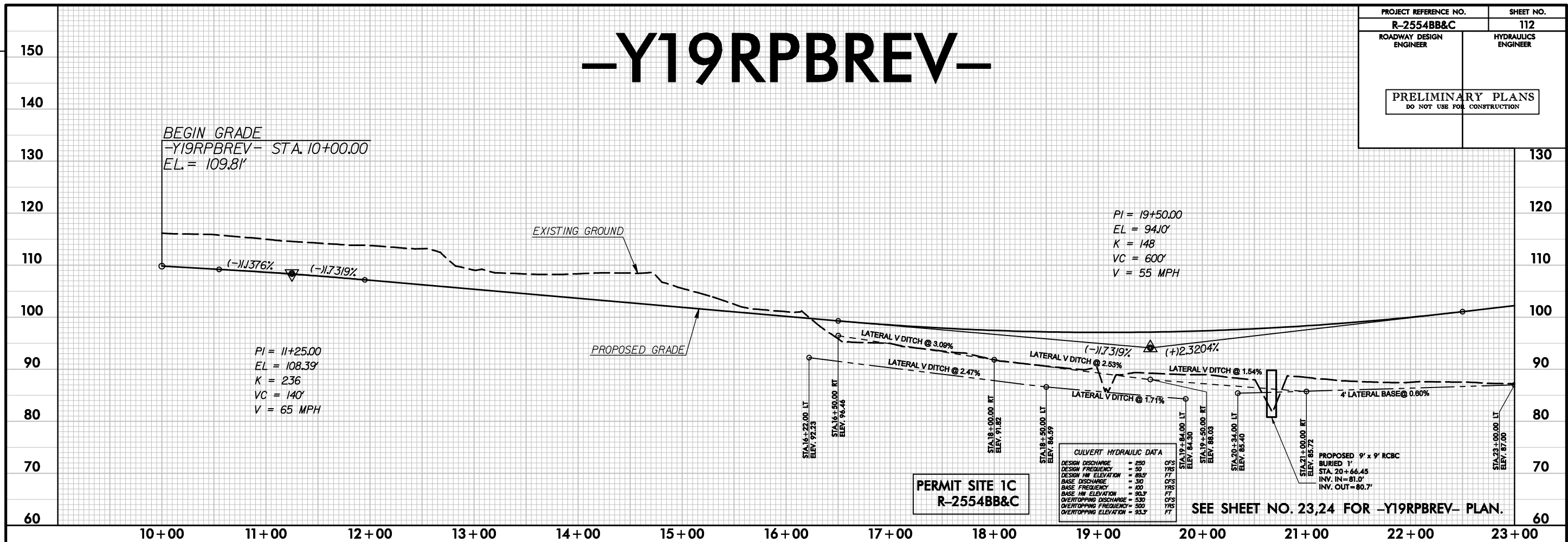
PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		81
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

BENCHMARK B EL=94.84'
RR SPIKE IN HEADWALL
-BL- STA 36+49.88 1754.85' RT
-LREV- STA 407+36.59 1709.73' RT

CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 100	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 114.6'	FT
BASE DISCHARGE	= 130	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 116.0'	FT
OVERTOPPING DISCHARGE	= 200	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 122.2'	FT

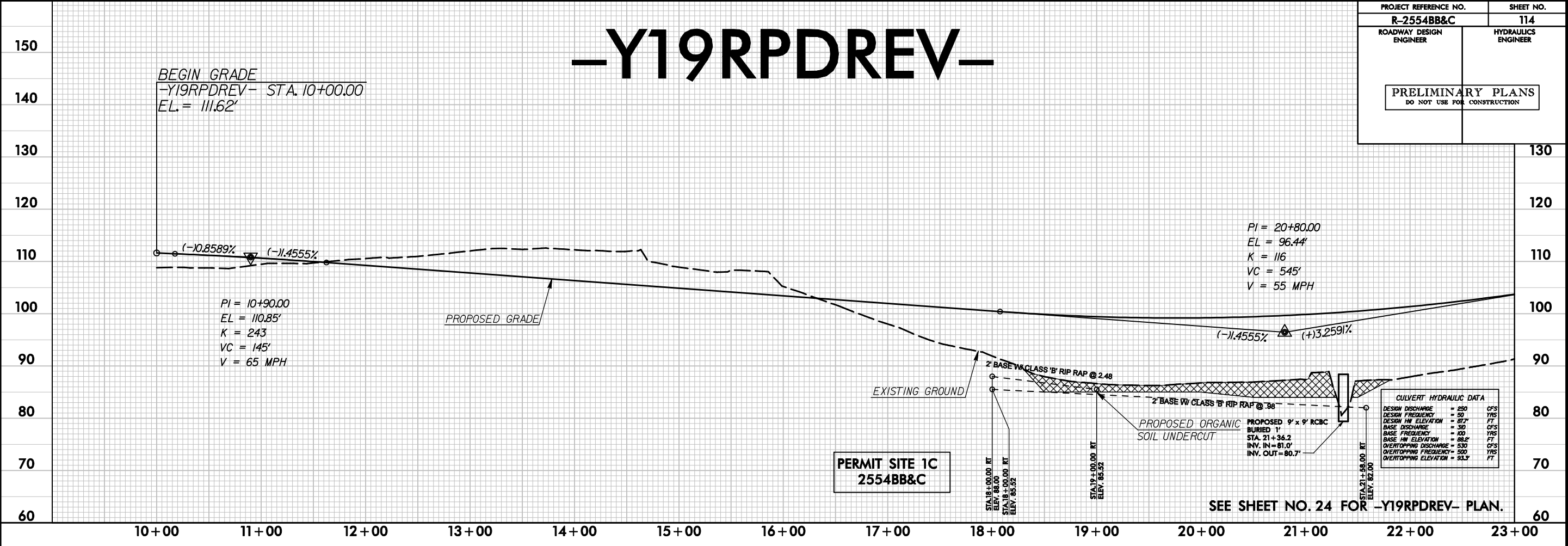
PERMIT SITE 1C
R-2554BB&C

PERMIT DRAWINGS
SHEET 58 OF 135

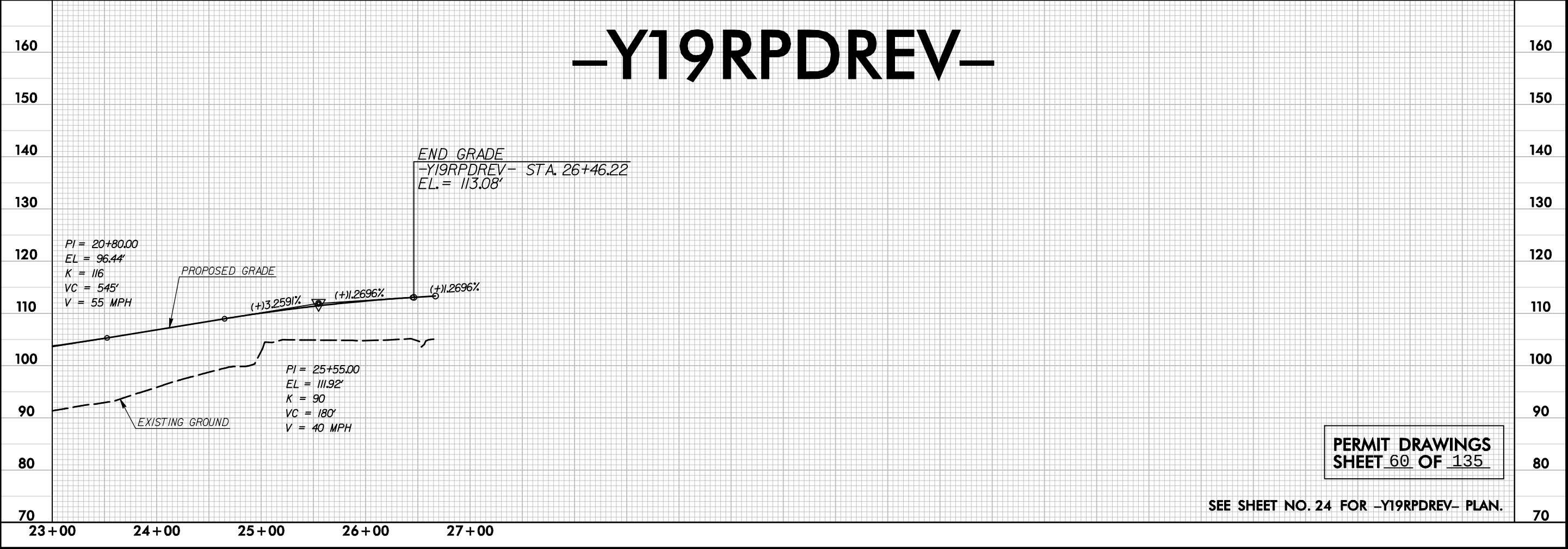


-Y19RPDREV-

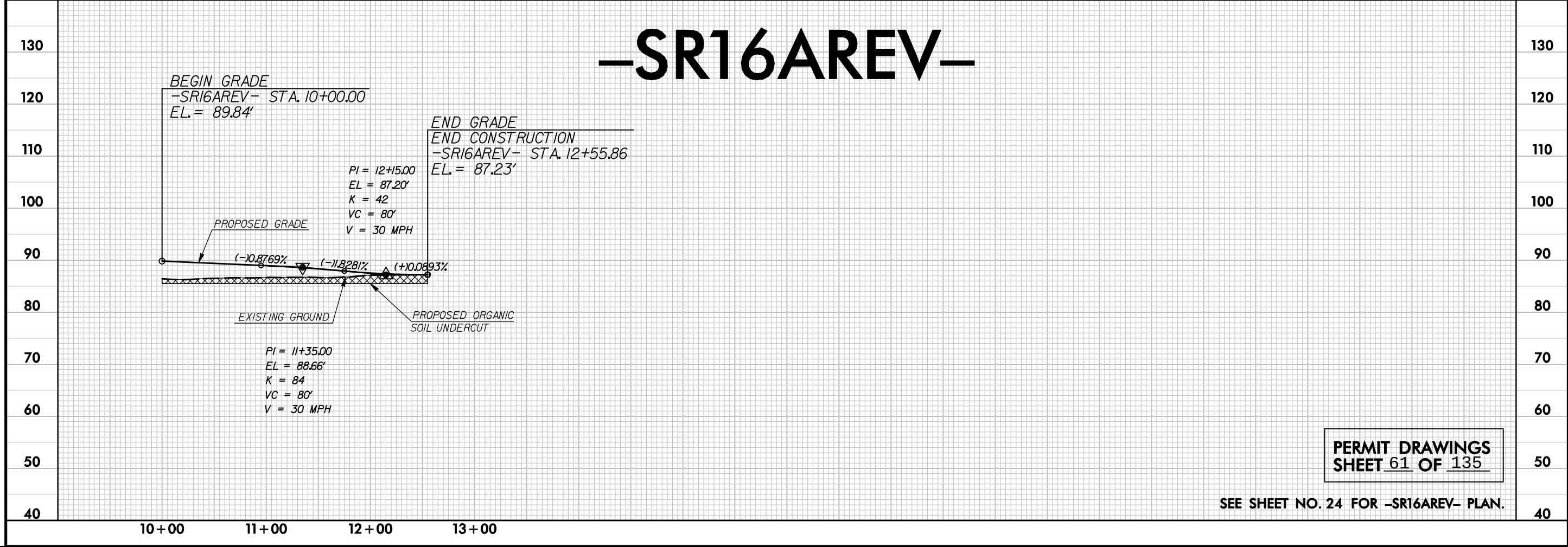
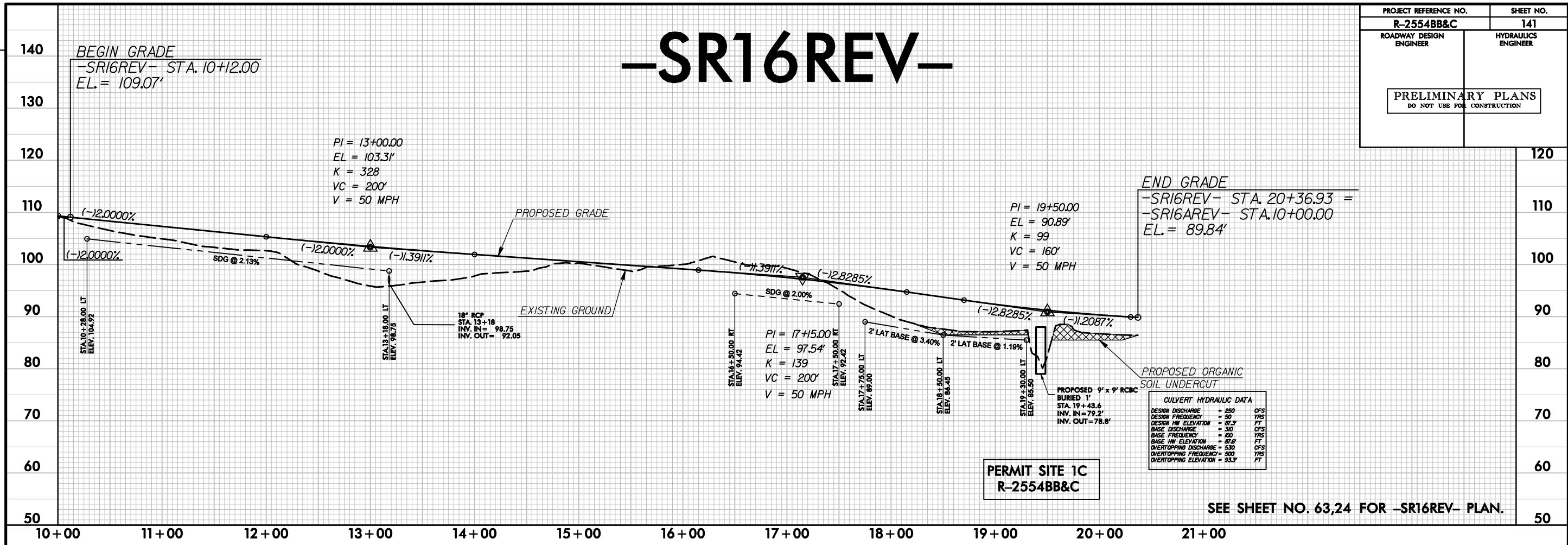
PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		114
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		



-Y19RPDREV-



REVISIONS



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PENTABLE: NCDOT_PFL_XSC_UPDATED.tbl
TIME: 4:05:56 PM

REVISIONS

5/14/99

SITE 1C R-2554BB&C

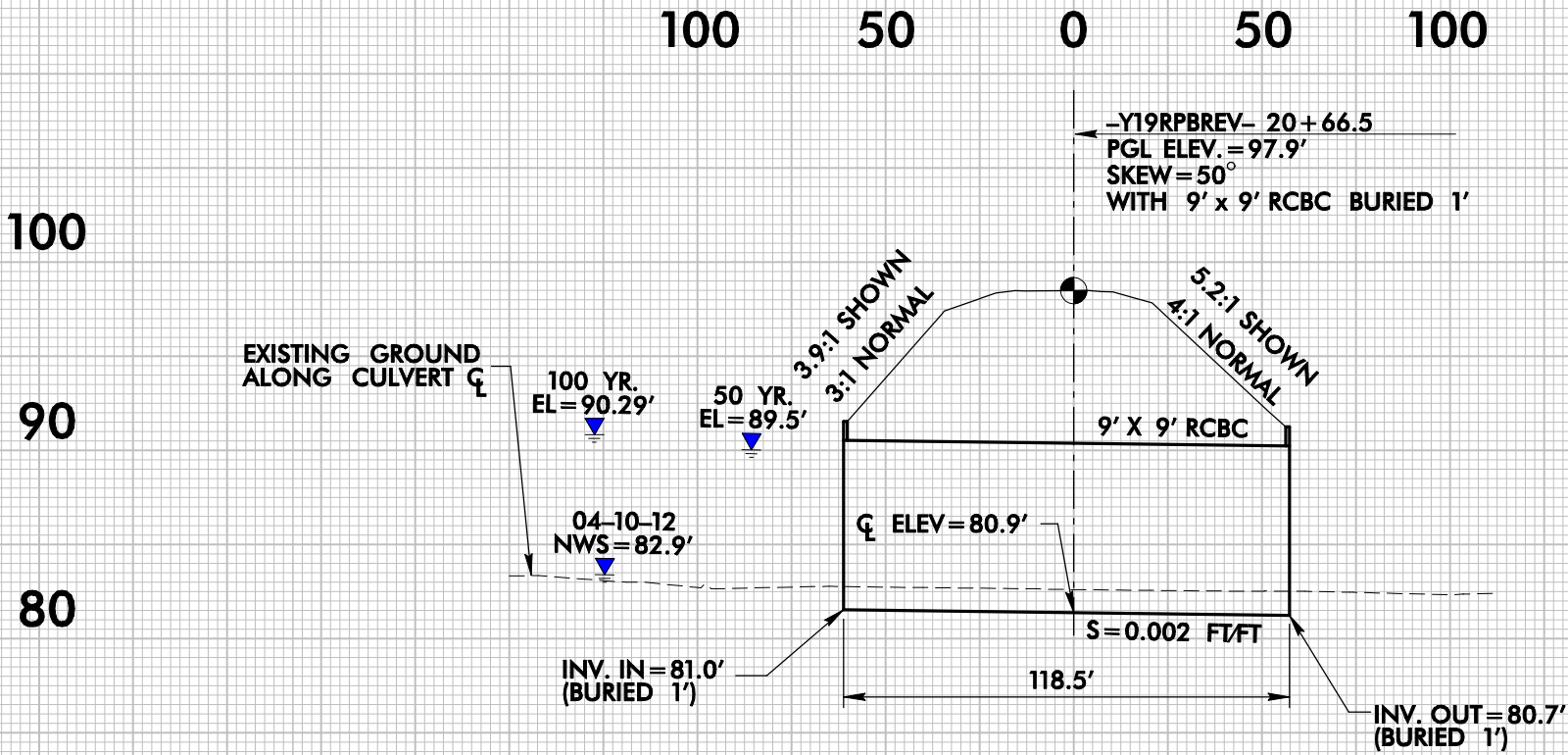
PROJECT REFERENCE NO.
R-2554BB&C

ROADWAY DESIGN
ENGINEER

SHEET NO.
CSR-5

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROFILE ALONG CL OF CULVERT

WSEL TABLE

YEAR	DISCHARGE (CFS)	EXISTING WSEL	REVISED WSEL
10	140	88.1'	87.9'
50	250	89.2'	89.5'
100	310	89.54'	90.29'
500	450	90.2'	93.2'

* DATA OBTAINED FROM STA. 1346 (US TOE)

PLOT DRIVER: NCDOT_color_eng-100.plt
USER: _USERNAME_ DATE: 8/13/2012
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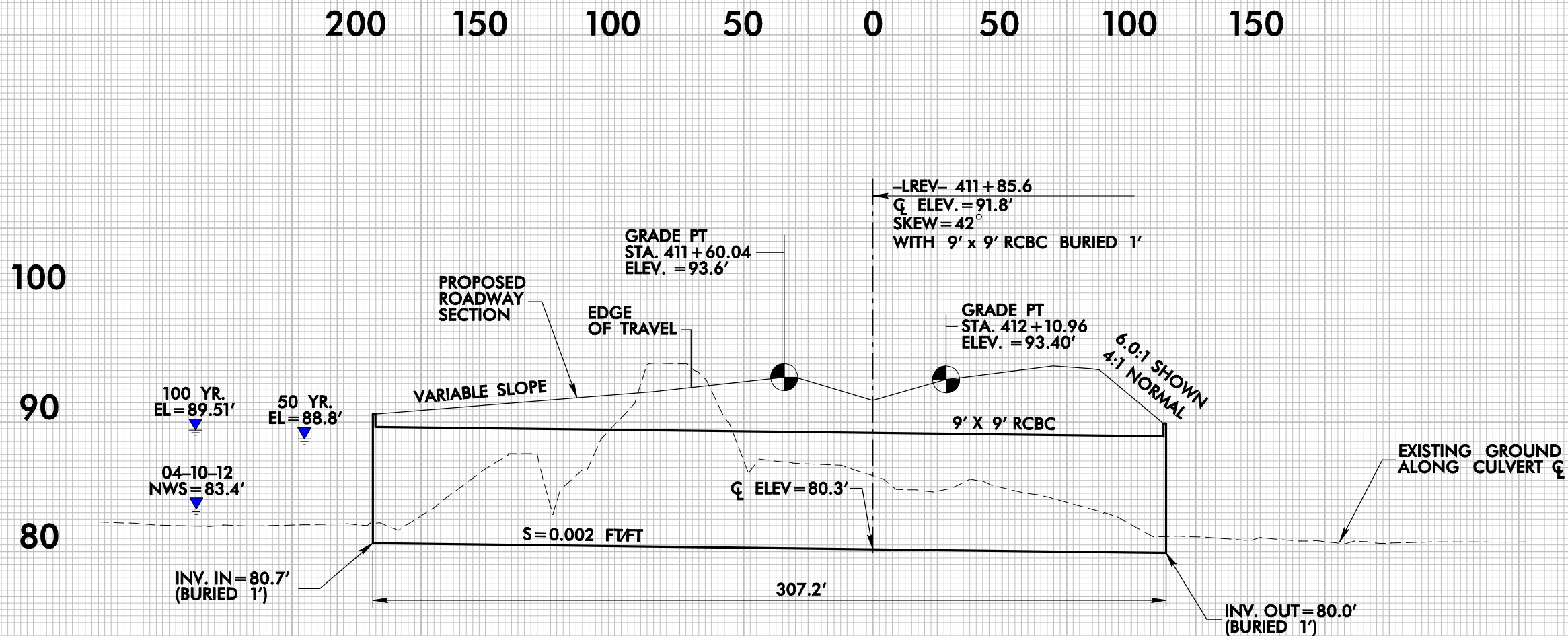
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TIME: 4:12:29 PM

5/14/99

REVISIONS

SITE 1C R-2554BB&C

PROJECT REFERENCE NO. R-2554BB&C	SHEET NO. CSR 6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



PROFILE ALONG CL OF CULVERT

WSEL TABLE

YEAR	DISCHARGE (CFS)	EXISTING WSEL	REVISED WSEL
10	140	87.8'	87.3'
50	250	89.0'	88.8'
100	310	89.39'	89.51'
500	450	90.0'	91.8'

* DATA OBTAINED FROM STA. 861 (US TOE)

PERMIT DRAWINGS
SHEET 63 OF 135

PLOT DRIVER: NCDOT_pdf_color_eng-100.plt
USER: _USERNAME_ DATE: 8/13/2012
FILE: R2554BB&C_HYD_PRM_PFL_CSR7.dgn

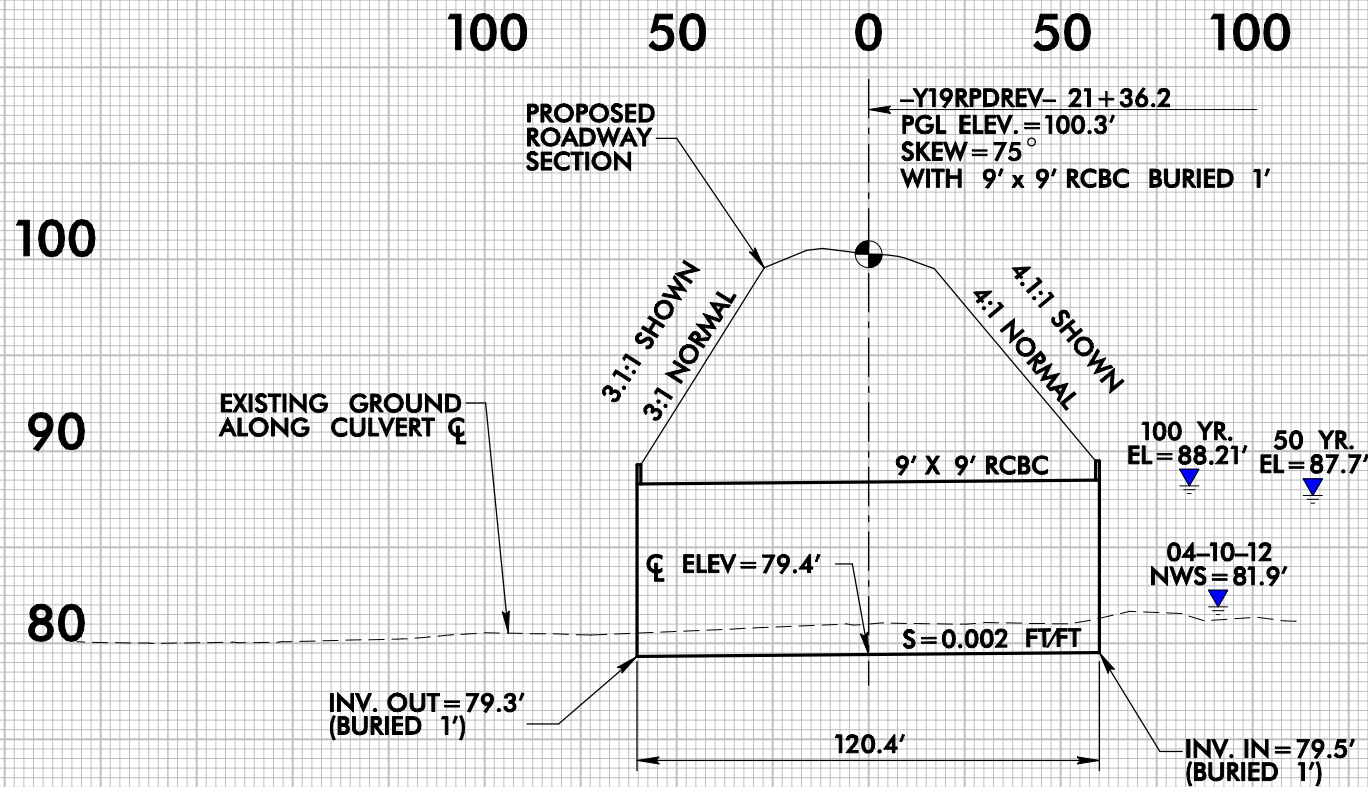
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5/14/99

REVISIONS

SITE 1C R-2554BB&C

PROJECT REFERENCE NO. R-2554BB&C	SHEET NO. CSR 7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



PROFILE ALONG CL OF CULVERT

WSEL TABLE

YEAR	DISCHARGE (CFS)	EXISTING WSEL	REVISED WSEL
10	140	86.8'	86.6'
50	250	87.9'	87.7'
100	310	88.17'	88.21'
500	450	88.7'	89.6'

* DATA OBTAINED FROM STA. 312 (US TOE)

PERMIT DRAWINGS
SHEET 64 OF 135

PLOT DRIVER: NCDOT_color_eng-100.plt
USER: _USERNAME_ DATE: 8/14/2012
FILE: R2554BB&C_HYD_PFM_PFL_CSF8.dgn

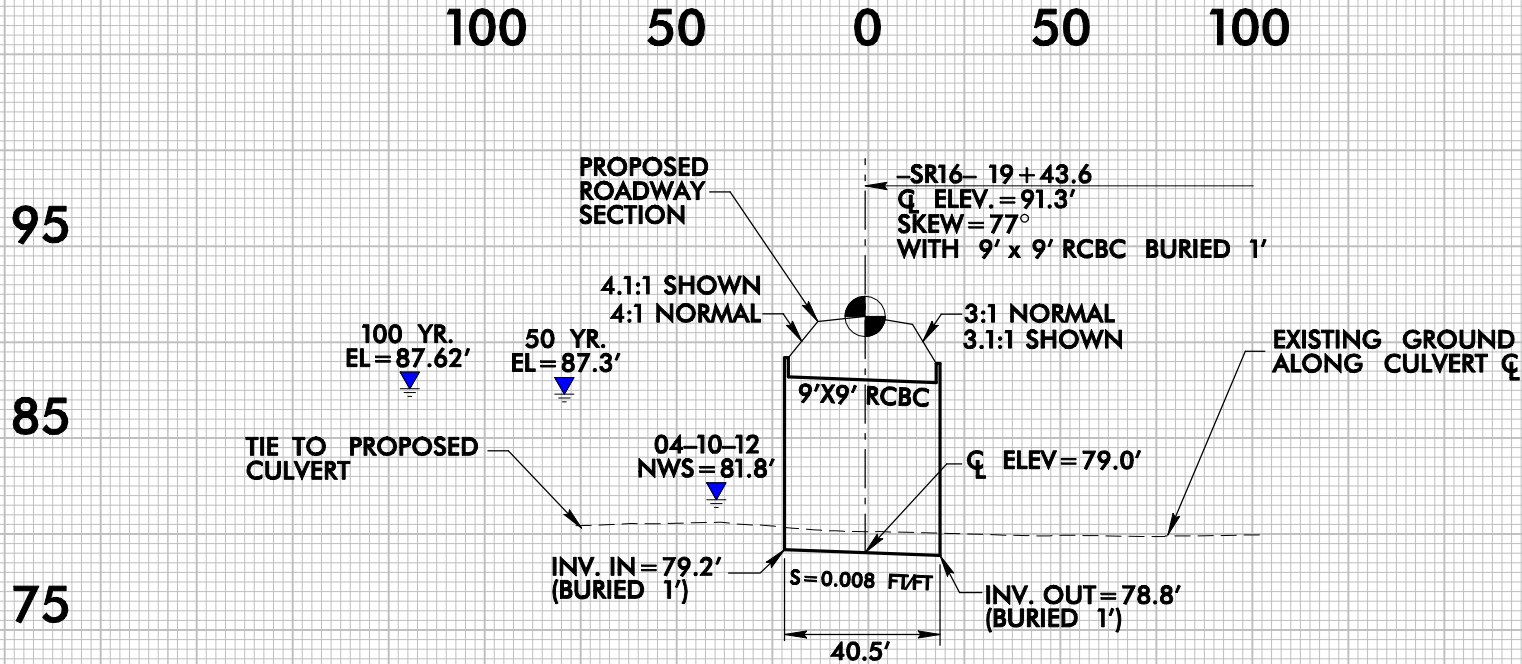
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5/14/99

REVISIONS

SITE 1C R-2554BB&C

PROJECT REFERENCE NO. R-2554BB&C	SHEET NO. CSR 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



PROFILE ALONG CL OF CULVERT

WSEL TABLE

YEAR	DISCHARGE (CFS)	EXISTING WSEL	REVISED WSEL
10	140	86.7'	85.6'
50	250	87.6'	87.3'
100	310	87.94'	87.62'
500	450	88.5'	88.4'

* DATA OBTAINED FROM STA. 142 (US TOE)

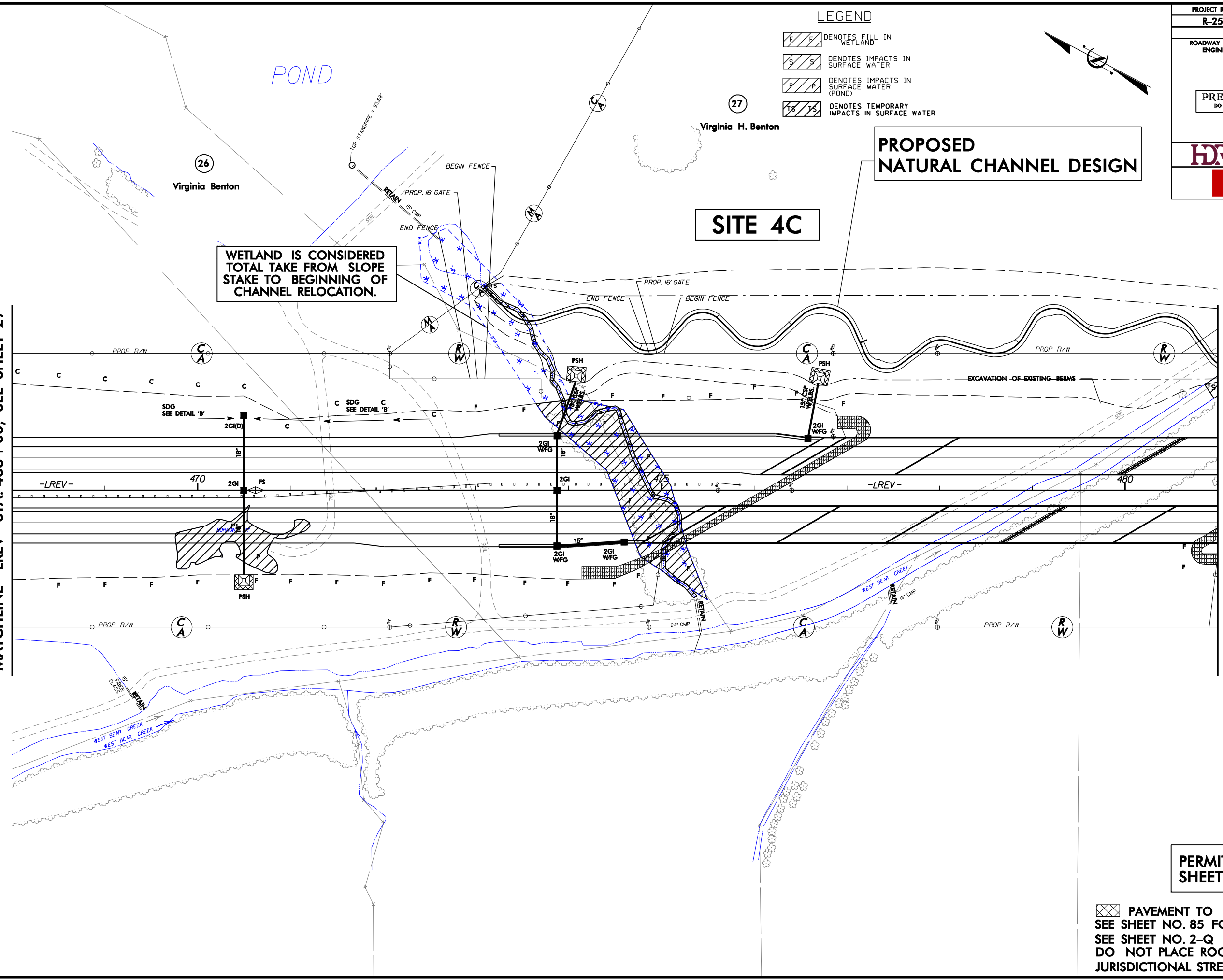
PERMIT DRAWINGS
SHEET 65 OF 135

PLOT DRIVER: NCDOT_color_eng-100.plt
USER: rjbrown
FILE: \

PENTABLE: NCDOT_permits.NCON.tbl
TIME: 10:59:06 AM
DATE: 9/28/2012

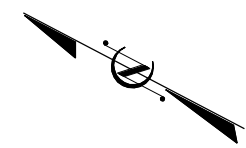
REVISIONS

MATCHLINE -LREV- STA. 468+00, SEE SHEET 27



LEGEND

- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER (POND)
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



Virginia H. Benton

Virginia Benton

SITE 4C

PROPOSED
NATURAL CHANNEL DESIGN

WETLAND IS CONSIDERED
TOTAL TAKE FROM SLOPE
STAKE TO BEGINNING OF
CHANNEL RELOCATION.

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 28	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

PERMIT DRAWINGS
SHEET 66 OF 135

PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 85 FOR -LREV- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

MATCHLINE -LREV- STA. 481+00, SEE SHEET 29

MATCHLINE -LREV- STA. 481+00, SEE SHEET 29

 PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 85 FOR -LREV- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

	DENOTES FILL IN WETLAND
	DENOTES IMPACTS IN SURFACE WATER
	DENOTES IMPACTS IN SURFACE WATER (POND)
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 4C

**WETLAND IS CONSIDERED
TOTAL TAKE FROM SLOPE
STAKE TO BEGINNING OF
CHANNEL RELOCATION.**

REVISIONS

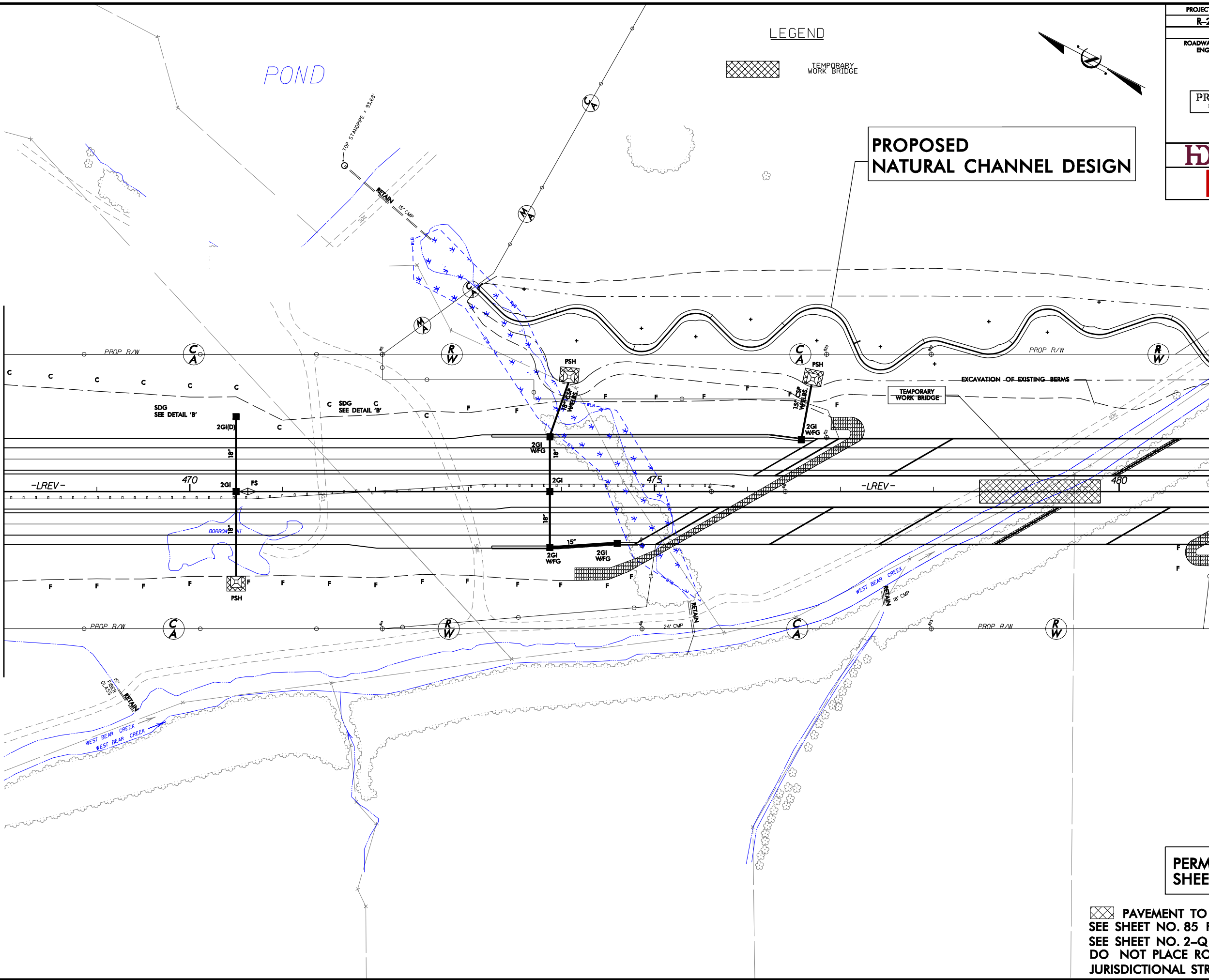
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FILE: \
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PLOT DRIVER: NCD0T_pdf_color_eng_100.plt
USER: rybrown
FILE: \ DATE: 9/2

PLOT DRIVER: NCDOT_color_eng-100.plt
USER: jmassoc
FILE: HDR.Engineering.Dept_Marketing\DOTs_Regional_Local_Agencies\IR-2554BB&C_Goldboro\IR-2554BB&C_Hydr-aulics\PERMITS_Environmental\Drawings\IR-2554BB&C_HYD_PRM_PLANSHEETS.dgn
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TIME: 1:31:59 PM
DATE: 10/2/2012

REVISIONS

MATCHLINE -LREV- STA. 468+00, SEE SHEET 27



LEGEND

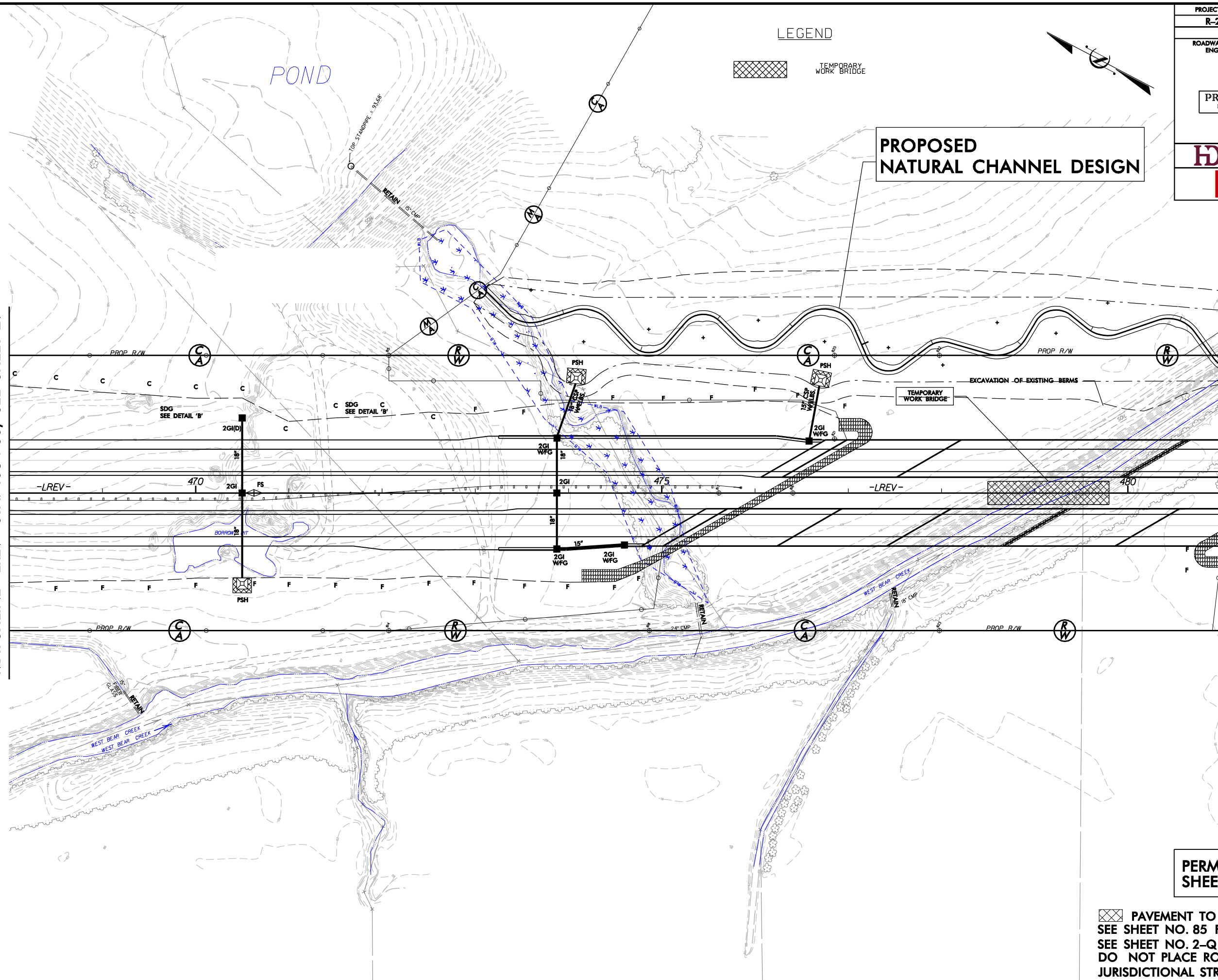
TEMPORARY
WORK BRIDGE

PROPOSED
NATURAL CHANNEL DESIGN

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 28	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
		BARNHILL CONTRACTING COMPANY	

PERMIT DRAWINGS
SHEET 68 OF 135

PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 85 FOR -LREV- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.



MATCHLINE -LREV- STA. 481+00, SEE SHEET 29

PERMIT DRAWINGS
SHEET 69 OF 135

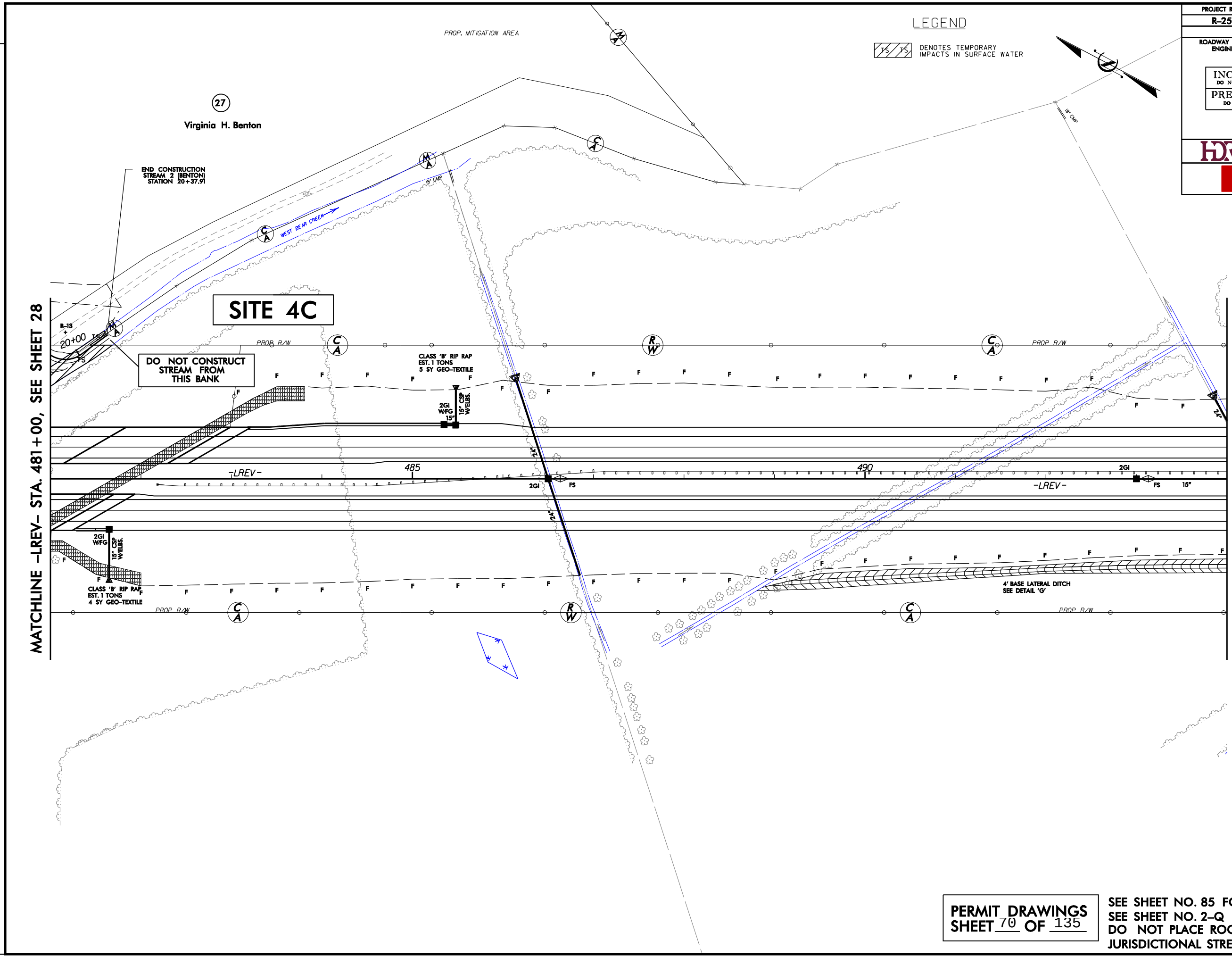
**PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 85 FOR -LREV- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.**

PROJECT REFERENCE NO.		SHEET NO.	
R-2554BB&C		28	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

PLOT DRIVER: NCDOT_color_eng-100.plt
USER: rjbrown
FILE: \

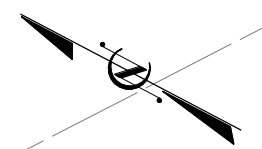
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REVISIONS



LEGEND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER



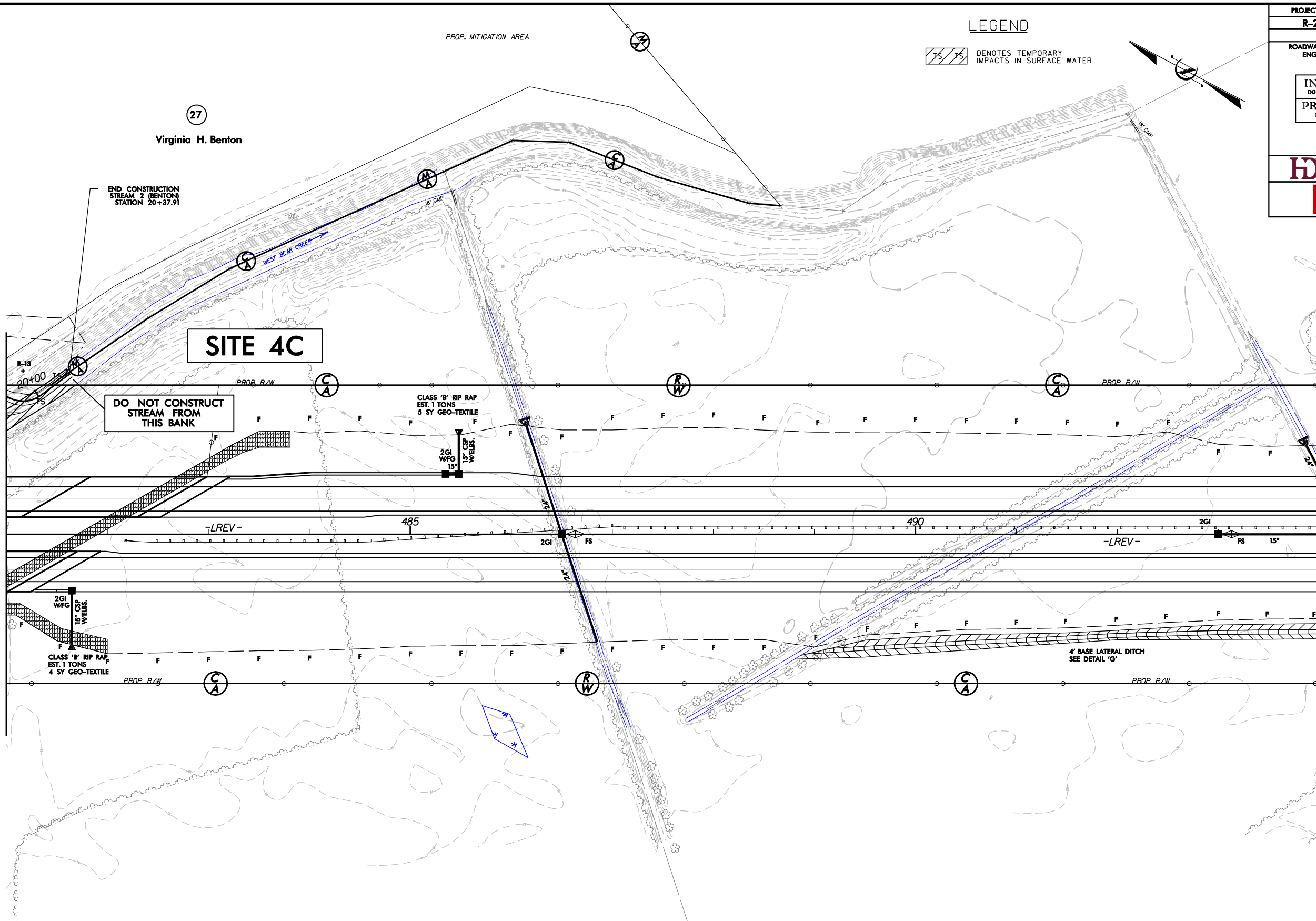
PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 29
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

PERMIT DRAWINGS
SHEET 70 OF 135

SEE SHEET NO. 85 FOR -LREV- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

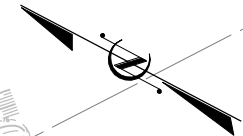
REVISIONS

MATCHLINE -LREV- STA. 481+00, SEE SHEET 28



LEGEND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER



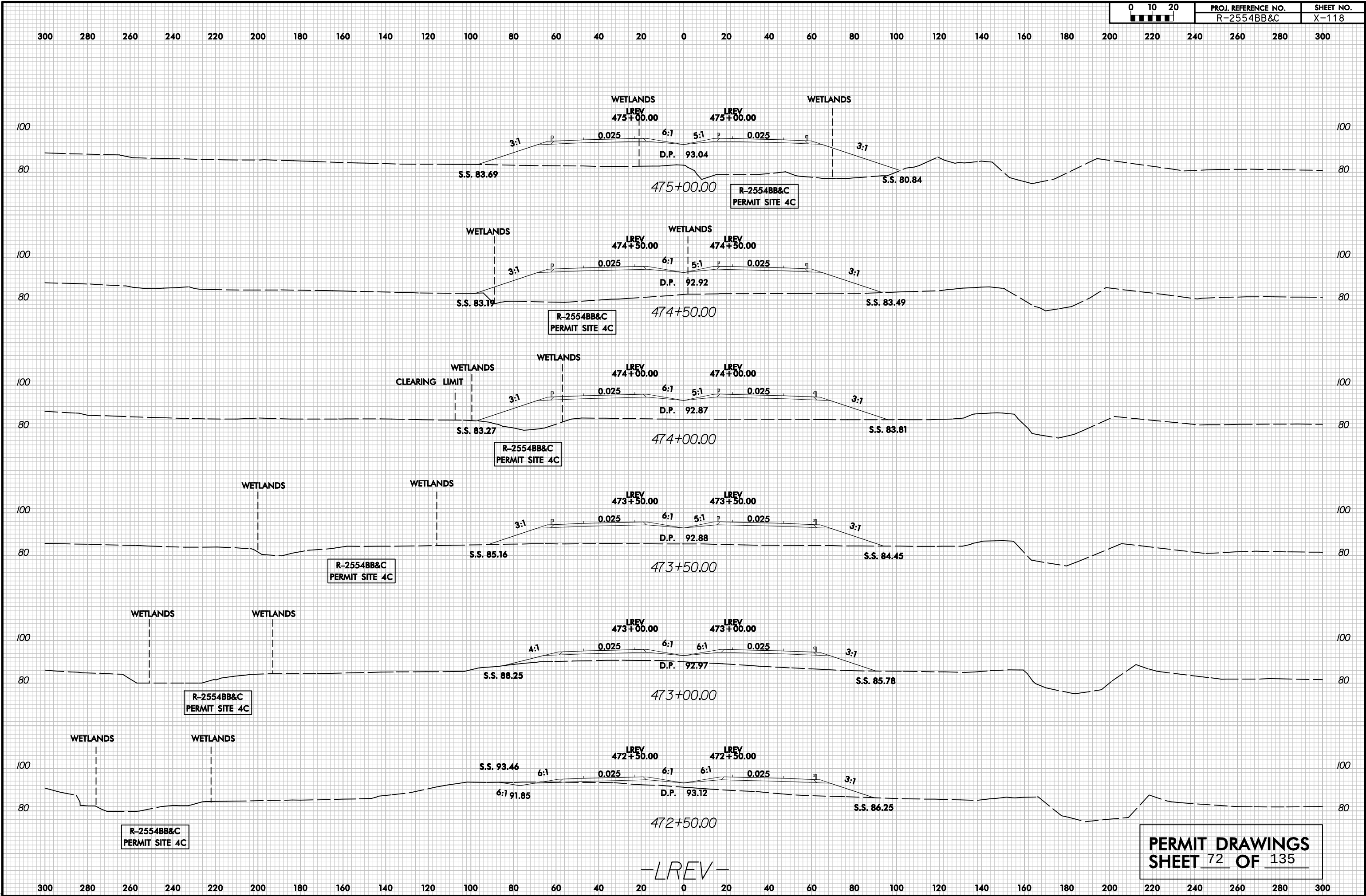
PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 29	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS		DO NOT USE FOR CONSTRUCTION	
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		BARNHILL CONTRACTING COMPANY	

PERMIT DRAWINGS
SHEET 71 OF 135

SEE SHEET NO. 85 FOR -LREV- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

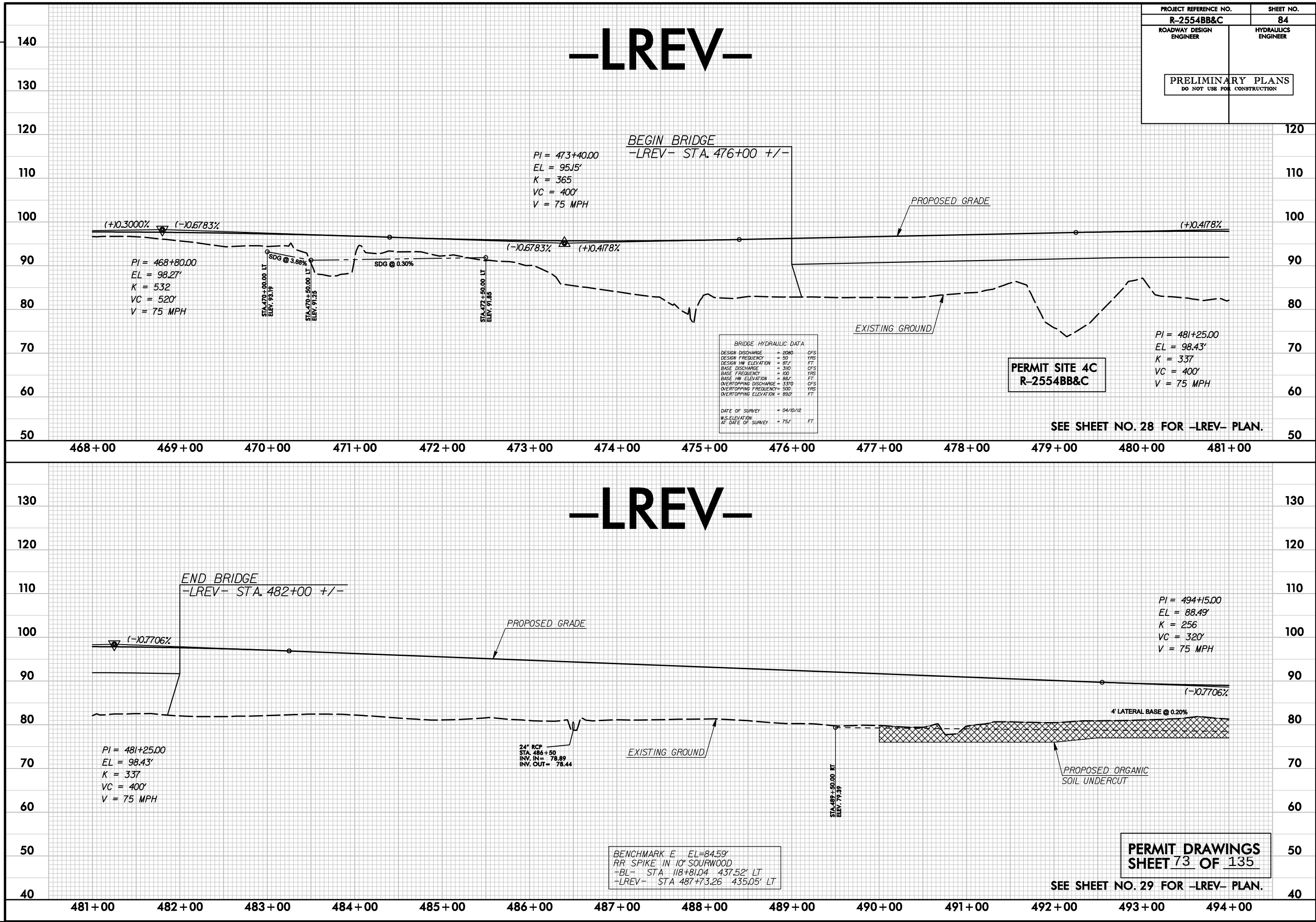
MATCHLINE -LREV- STA. 494+00, SEE SHEET 30

8/23/99



-LREV-

REVISIONS



5/14/99

8/9/2012
c:\pwworking\tpa\0382944\R2554BB&C_HYD_PLM_WET_BSR.dgn
imasscop

SITE 4C R-2554BB&C

PROJECT REFERENCE NO.
R-2554BB&C

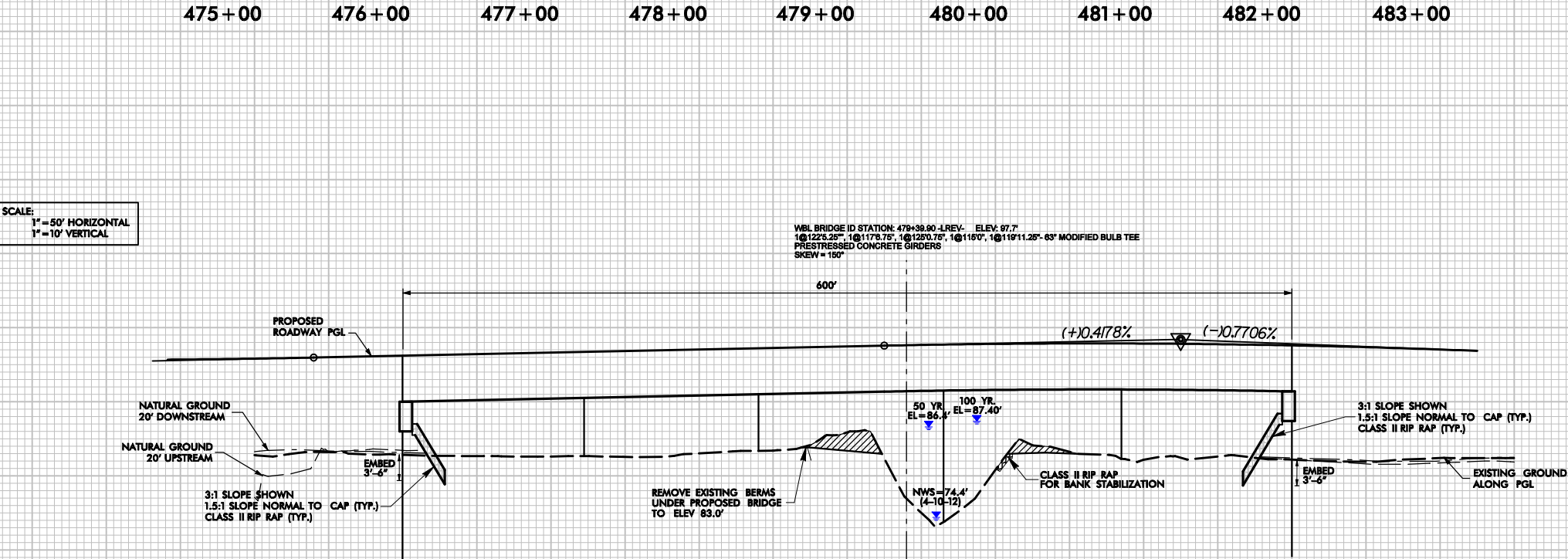
SHEET NO.
BSR-2

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DECK SPREAD DATA

NO DECK DRAINS REQUIRED ON BOTH SIDES
DECK SHOULDER WIDTH = 10.0 FT
MAX SPREAD WITHOUT DRAINS WBL 476+50 TO 481+64 = 8.6 FT
MAX SPREAD WITHOUT DRAINS WBL 481+64 TO 483+50 = 5.8 FT

NOTE:
NO UPSTREAM STRUCTURES WILL BE IMPACTED BY THE PROPOSED STRUCTURE

PROFILE ALONG STRUCTURE (WBL)

PI = 481+25.00
EL = 98.43'
K = 337
VC = 400'
DS = 75 MPH

EXCAVATION - EST. 1250 CY TOTAL*

* BERMS CREATED BY CLEANING OUT STREAM WILL BE REMOVED INSIDE LIMITS OF RIGHT OF WAY

FEMA COMPARISON

	DISCHARGE CFS	COR EFF	REVISED	NAT
10-YR	825	83.2'	84.0'	83.2'
50-YR	2080	85.6'	86.4'	85.5'
100-YR	3110	86.45'	87.40'	86.42'
500-YR	5190	87.6'	88.8'	87.6'

*DATA OBTAINED FROM
HEC-RAS STA 11933 (U/S TOE).
STATION WAS ADDED TO COR
EFF FOR COMPARISON

LEGEND

 DENOTES IMPACTS IN SURFACE WATER

 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

31

Sleepy Creek Farms, Inc.

SITE 5C

MATCHLINE -REV- STA. 494+00, SEE SHEET 29

MATCHLINE -LREV- STA. 507 + 00, SEE SHEET 31

31

Sleepy Creek Farms, Inc.

DETAIL S
RIP RAP AT EMBANKMENT
 (Not to Scale)

Ditch Grade

Filter Fabric

Rip-Rap

Type of Liner = Class '1' Rip-Rap

STA. 506+00 -LREV- RT

PERMIT DRAWINGS
SHEET 75 OF 135

PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 86 FOR -LREV-
PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

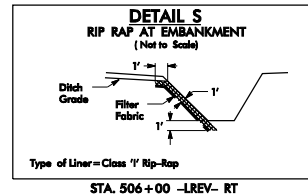
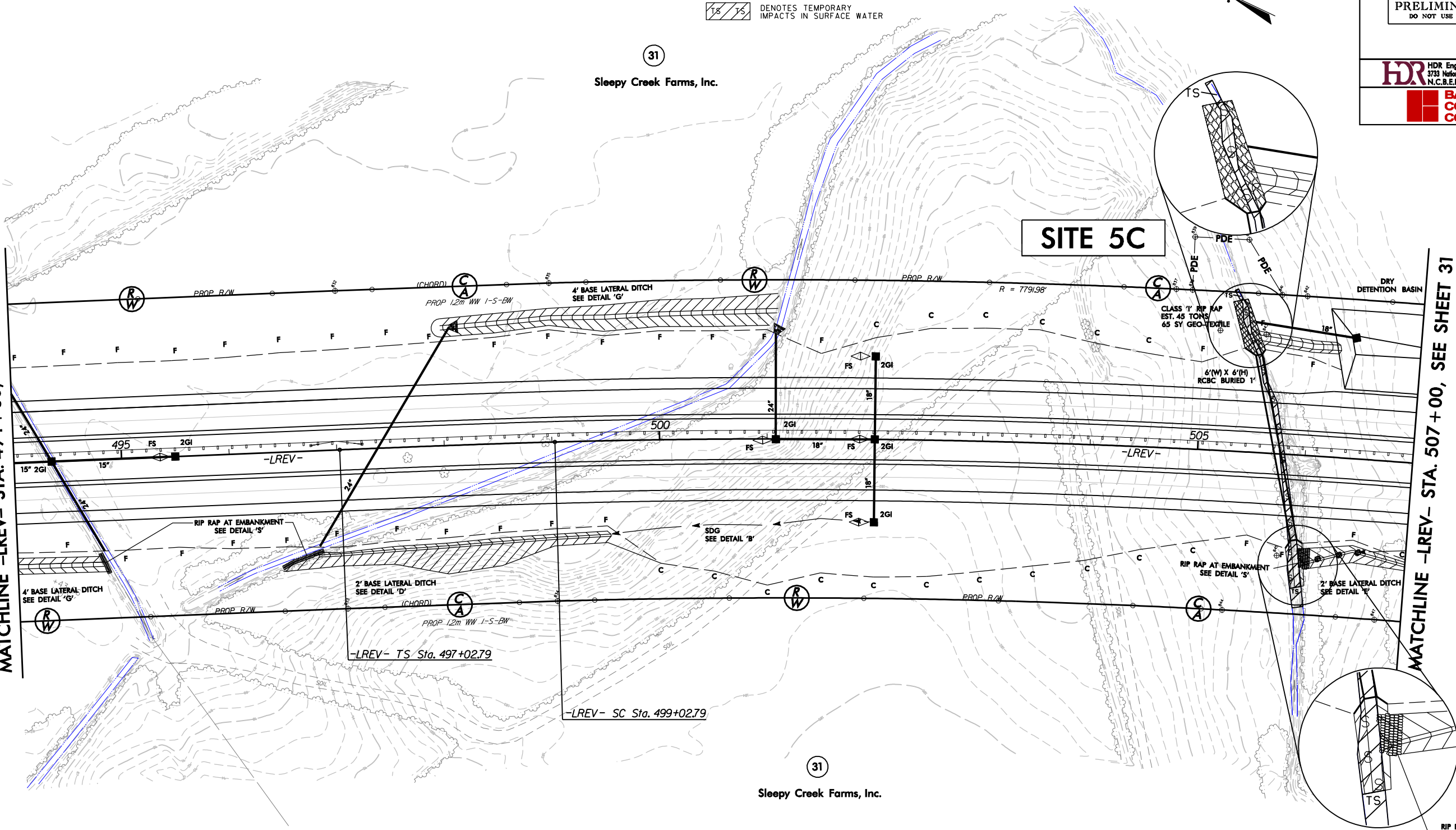
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TIME: 11:50:58 AM
DATE: 9/28/2012

REVISIONS

MATCHLINE -LREV- STA. 494+00, SEE SHEET 29



PERMIT DRAWINGS
SHEET 76 OF 135

PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 86 FOR -LREV-
PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

LEGEND

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

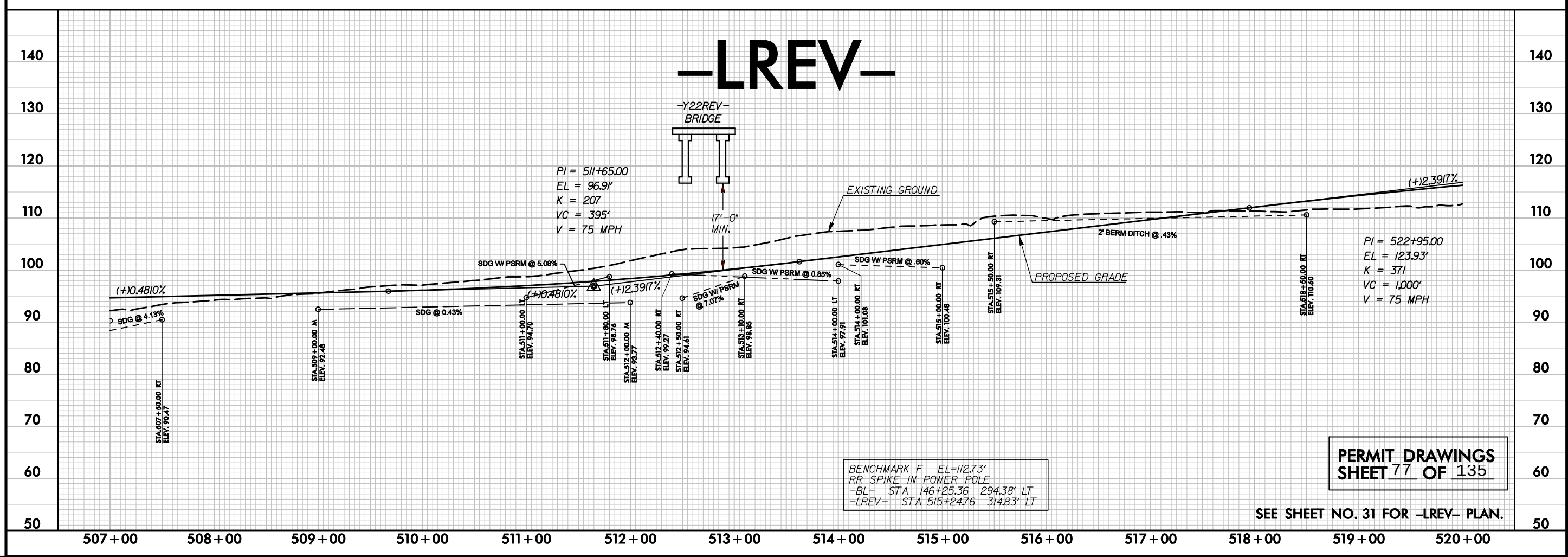
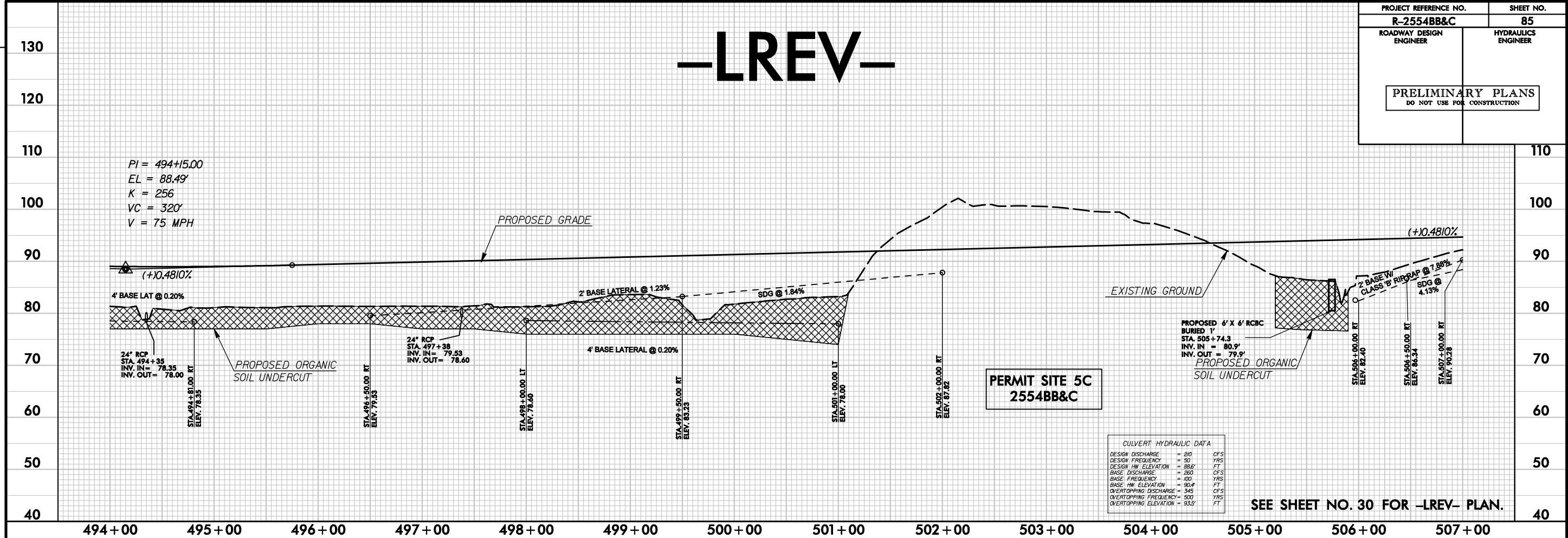
31
Sleepy Creek Farms, Inc.

SITE 5C

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 30
RW SHEET NO.		HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

REVISIONS

PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		85
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		



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FILE: R2554BB&C_HYD_PFM_PFL_CSF9.dgn

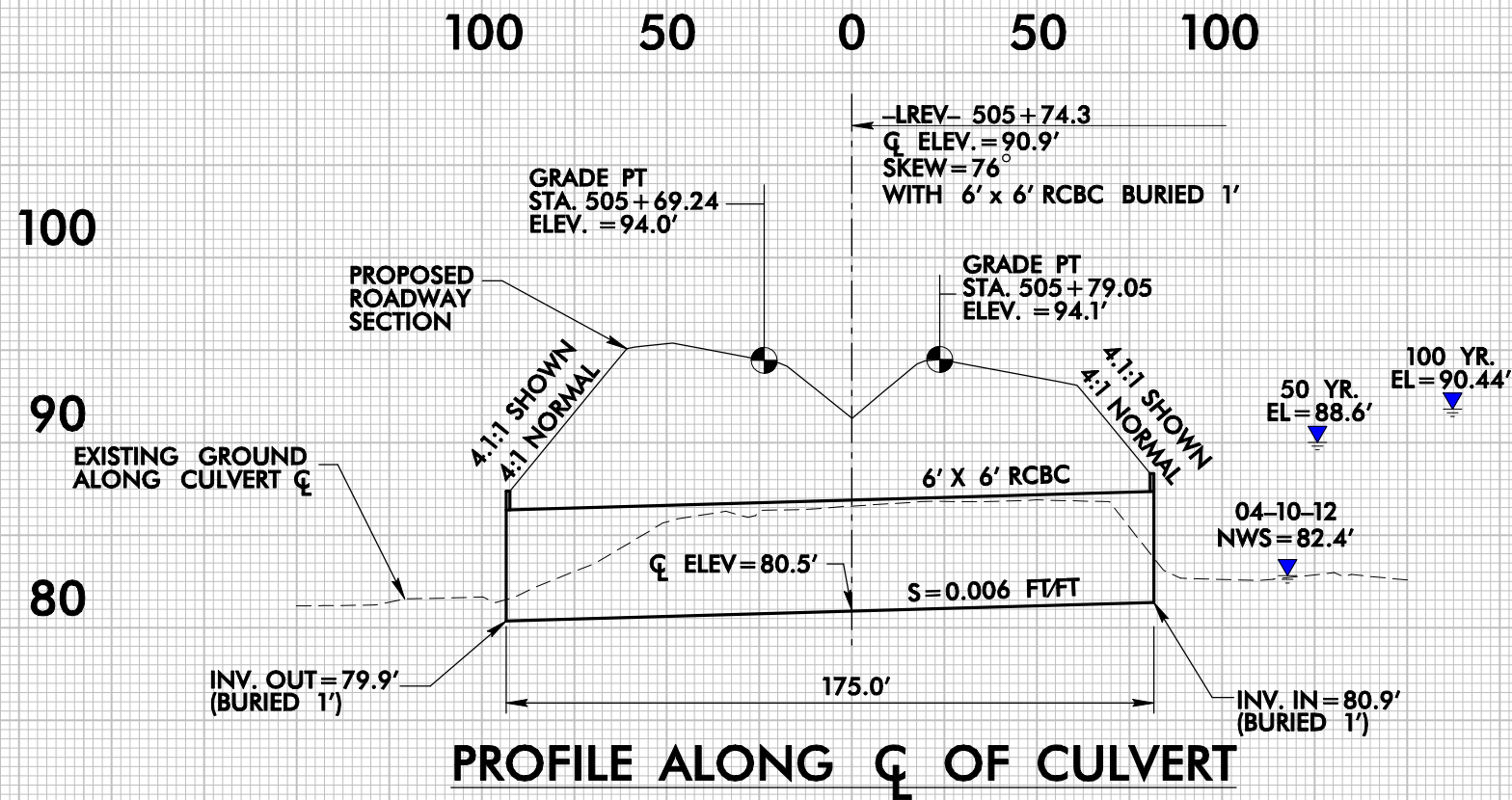
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5/14/99

REVISIONS

SITE 5C R-2554BB&C

PROJECT REFERENCE NO. R-2554BB&C	SHEET NO. CSR 9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



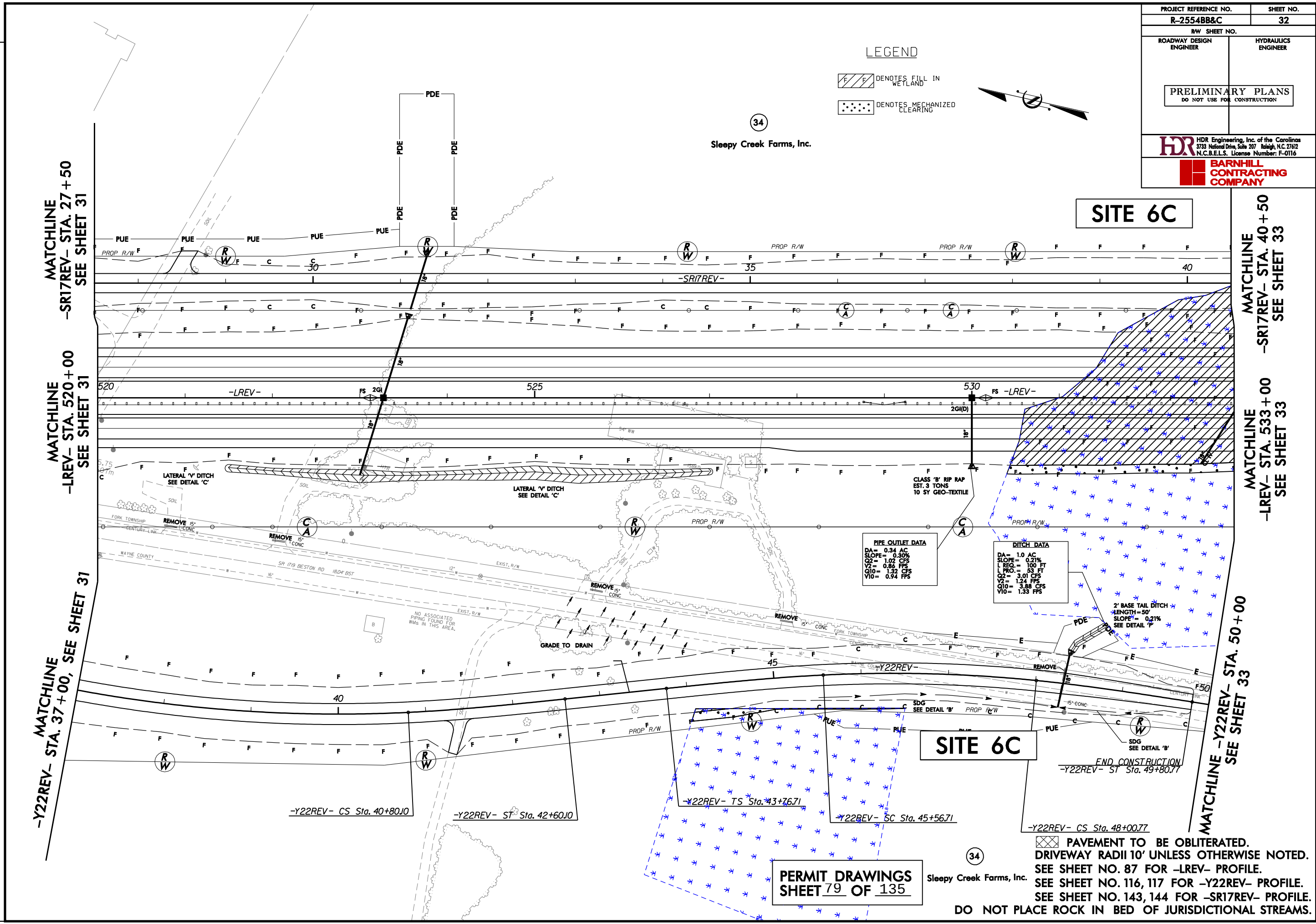
WSEL TABLE

YEAR	DISCHARGE (CFS)	EXISTING WSEL	REVISED WSEL
10	120	86.7'	86.3'
50	210	87.4'	88.6'
100	260	87.70'	90.44'
500	380	88.2'	94.5'

* DATA OBTAINED FROM STA. 492 (US OF TOE)

PERMIT DRAWINGS
SHEET 78 OF 135

REVISIONS



 DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING



34
Sleepy Creek Farms, Inc.

SITE 6C

-Y22REV- STA. 37 + 00, SEE SHEET 31

MATCHLINE
-LREV- STA. 533 + 00
SEE SHEET 33

**MATCHLINE -Y22REV- STA. 50 + 00
SEE SHEET 33**

 PAVEMENT TO BE OBLITERATED.
 DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
 SEE SHEET NO. 87 FOR -LREV- PROFILE.
 SEE SHEET NO. 116, 117 FOR -Y22REV- PROFILE.
 SEE SHEET NO. 143, 144 FOR -SR17REV- PROFILE.
 PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

PERMIT DRAWINGS
SHEET 80 OF 135

Sleepy Creek Farms, Inc.

PLOT DRIVER: NCDOT_color_eng_100.plt
USER: r.brown
FILE: \

PENTABLE: NCDOT_permit.ncocon.tbl
TIME: 11:01:03 AM
DATE: 9/28/2012

REVISIONS

MATCHLINE
-Y22REV- STA. 50+00, SEE SHEET 32

MATCHLINE
-LREV- STA. 533+00
SEE SHEET 32

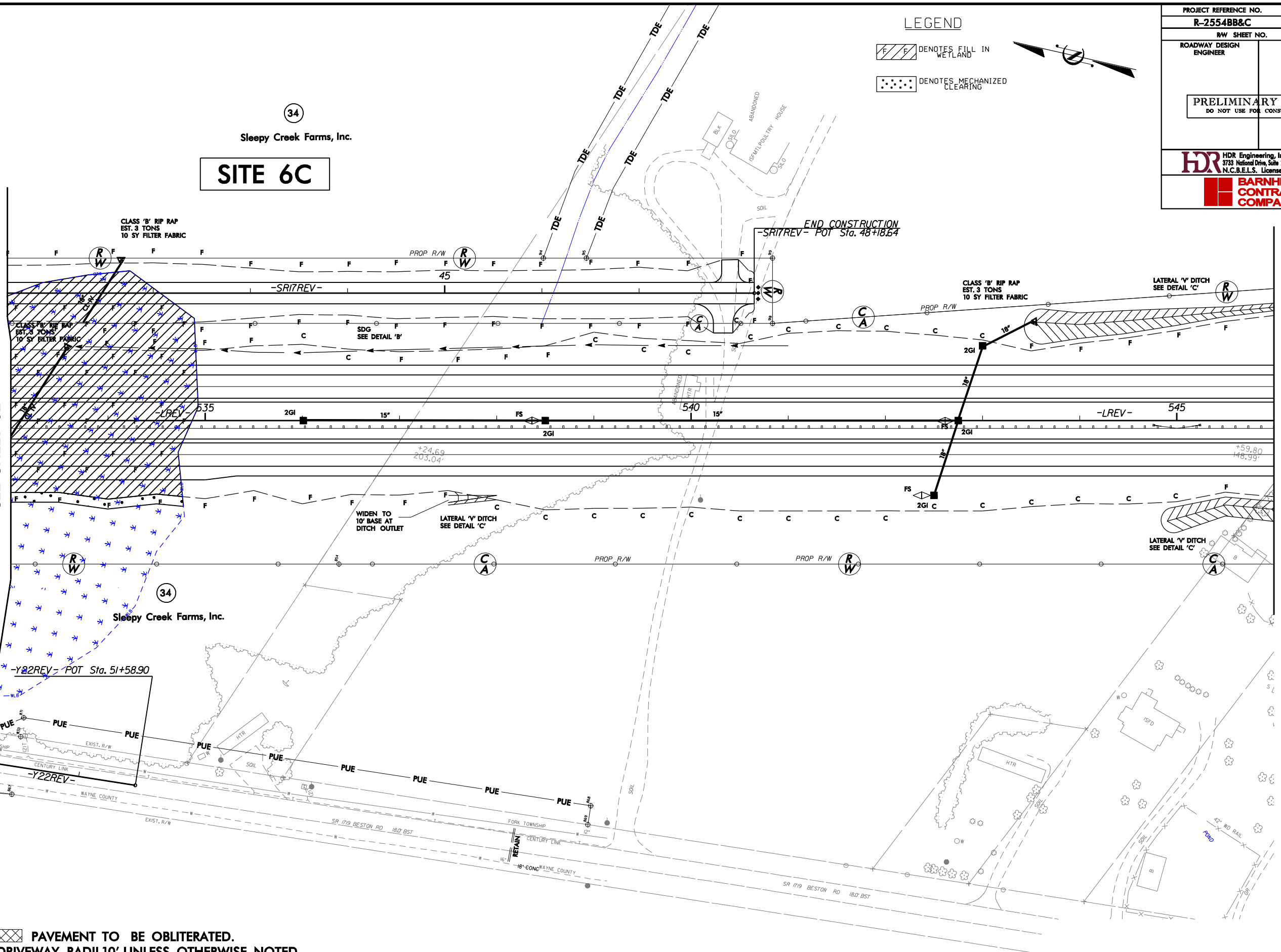
MATCHLINE
-SR17REV- STA. 40+50
SEE SHEET 32

PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 87 FOR -LREV- PROFILE.
SEE SHEET NO. 144 FOR -SR17REV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

SITE 6C

34
Sleepy Creek Farms, Inc.

PERMIT DRAWINGS
SHEET 81 OF 135



LEGEND

- Denotes Fill in Wetland
- Denotes Mechanized Clearing



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 33	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116			
		BARNHILL CONTRACTING COMPANY	

MATCHLINE -LREV- STA. 546+00, SEE SHEET 34

REVISIONS

MATCHLINE
-Y22REV- STA. 50+00, SEE SHEET 32

MATCHLINE
-LREV- STA. 533+00
SEE SHEET 32

MATCHLINE
-SR17REV- STA. 40+50
SEE SHEET 32

PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 87 FOR -LREV- PROFILE.
SEE SHEET NO. 144 FOR -SR17REV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

SITE 6C

Sleepy Creek Farms, Inc.

34

PERMIT DRAWINGS
SHEET 82 OF 135

LEGEND

DENOTES FILL IN
WETLAND

DENOTES MECHANIZED
CLEARING

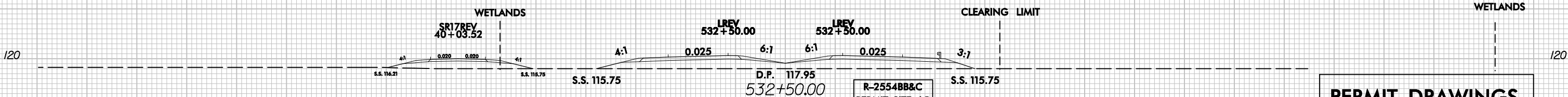
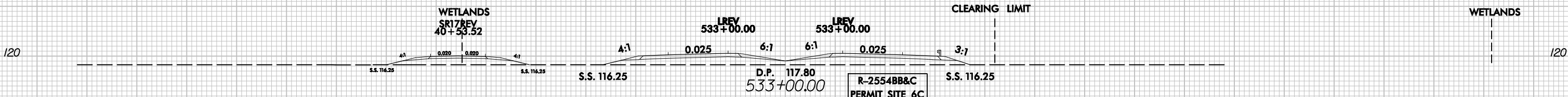
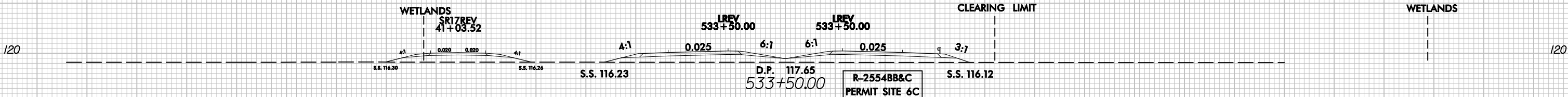
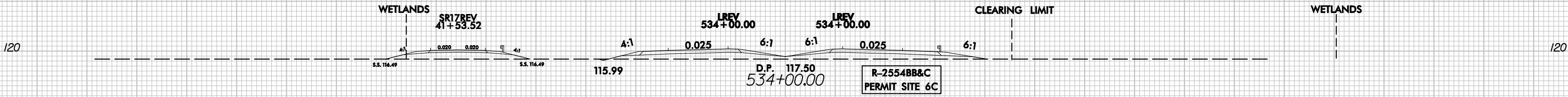
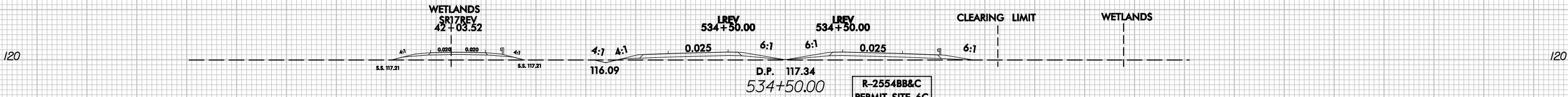
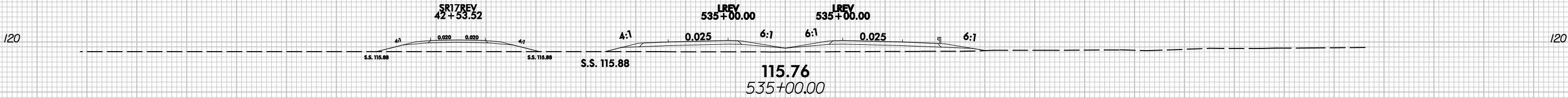


PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 33	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		BARNHILL CONTRACTING COMPANY	

MATCHLINE -LREV- STA. 546+00, SEE SHEET 34

8/23/99

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300



-LREV-

PERMIT DRAWINGS
SHEET 83 OF 135

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300



**BARNHILL
CONTRACTING
COMPANY**

 DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING

PIPE OUTLET DATA
DA= 16.46 AC
SLOPE= 0.3%
Q2= 3.14 CFS
V2= 1.32 FPS
Q10= 5.19 CFS
V10= 1.54 FPS

SITE 7C

PIPE OUTLET DATA

DA =	35.00 AC
SLOPE =	1.4%
Q2 =	5.92 CFS
V2 =	1.60 FPS
Q10 =	9.81 CFS
V10 =	1.85 FPS

PIPE OUTLET DATA

DA =	0.80 AC
SLOPE =	0.30%
Q2 =	2.61 CFS
V2 =	1.21 FPS
Q10 =	3.36 CFS
V10 =	1.33 FPS

MATCHLINE -LREV- STA. 559+00, SEE SHEET 35

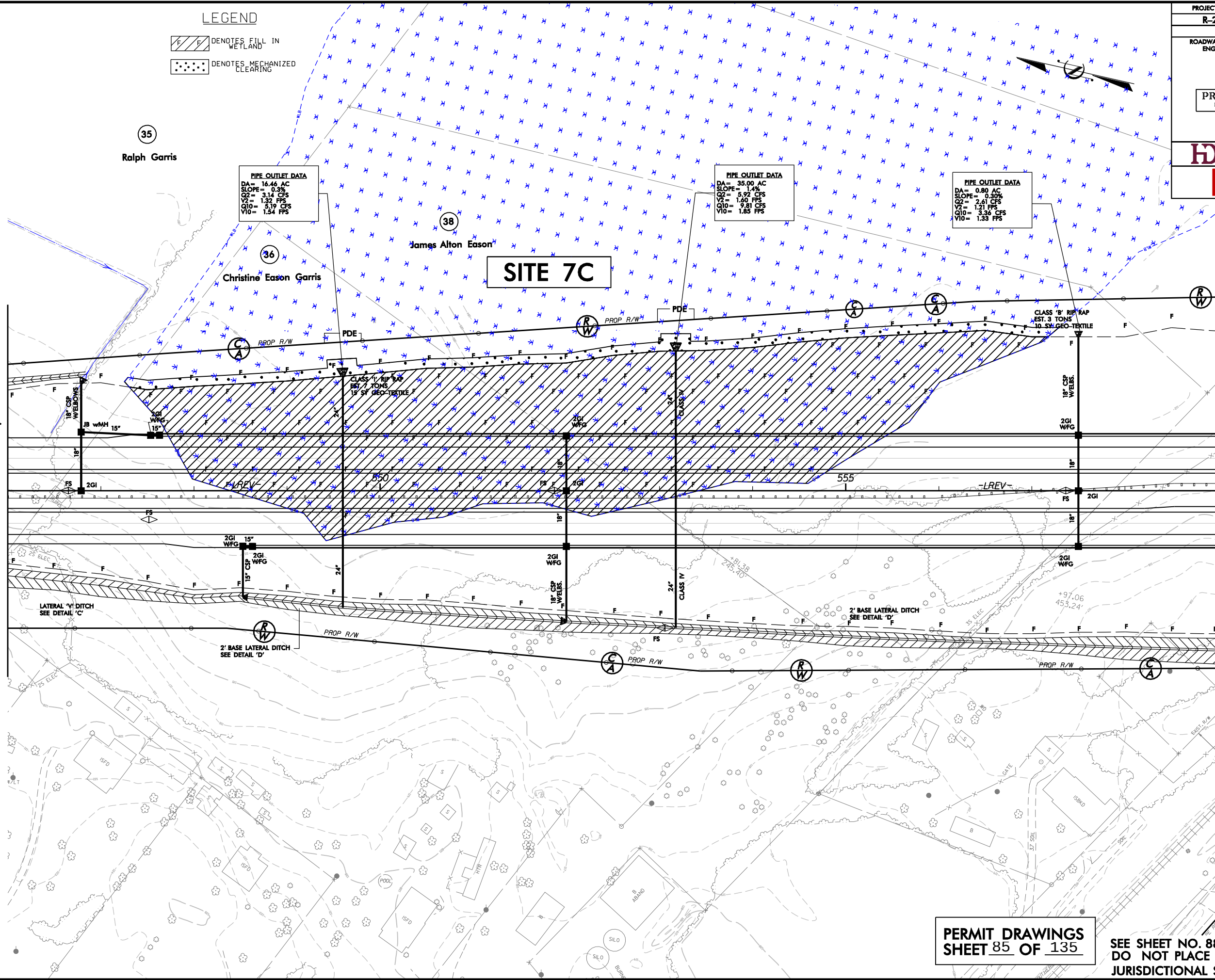
PERMIT DRAWINGS
SHEET 84 OF 135

SEE SHEET NO. 88 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PLOT DRIVER: NCD0T_permits.NC0CON.tbl
PENTABLE: NCD0T_permits.NC0CON.tbl
DATE: 9/28/2012
USER: r.brown
FILE: \

REVISIONS

MATCHLINE -LREV- STA. 546+00, SEE SHEET 33



LEGEND

- DENOTES FILL IN WETLAND
● DENOTES MECHANIZED CLEARING

PIPE OUTLET DATA
DA= 16.46 AC
SLOPE= 0.30%
Q2= 3.14 CFS
V2= 1.32 FPS
Q10= 5.19 CFS
V10= 1.54 FPS

PIPE OUTLET DATA
DA= 35.00 AC
SLOPE= 1.4%
Q2= 5.92 CFS
V2= 1.60 FPS
Q10= 9.81 CFS
V10= 1.85 FPS

PIPE OUTLET DATA
DA= 0.80 AC
SLOPE= 0.30%
Q2= 2.61 CFS
V2= 1.21 FPS
Q10= 3.36 CFS
V10= 1.33 FPS

SITE 7C

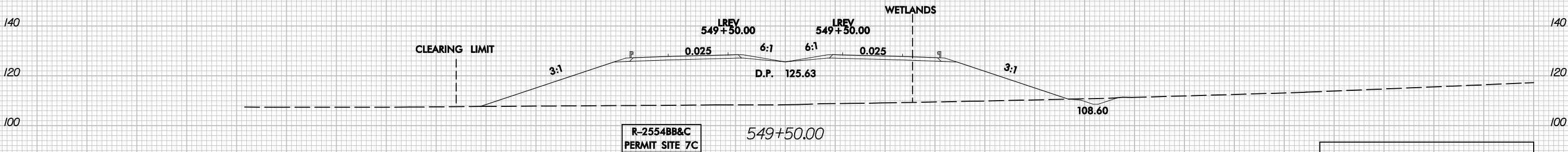
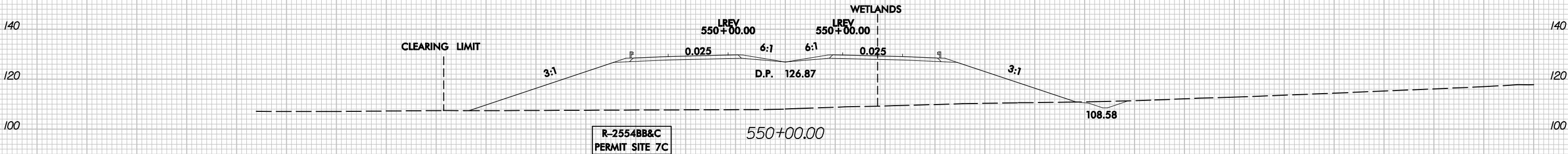
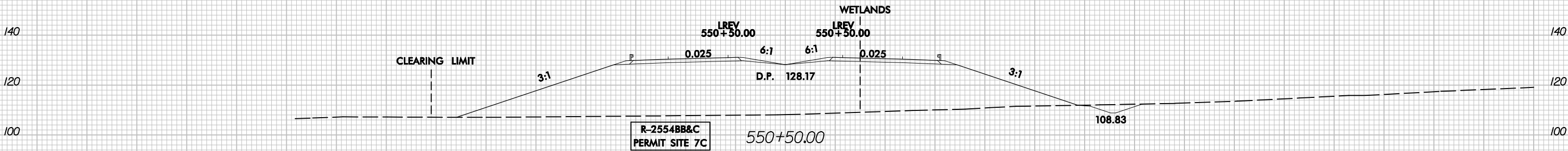
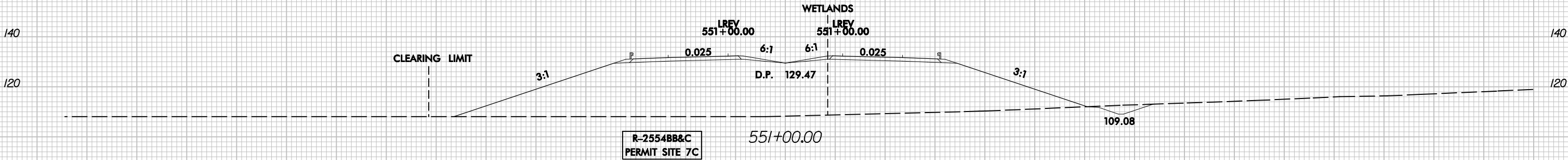
PERMIT DRAWINGS
SHEET 85 OF 135

SEE SHEET NO. 88 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 34	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

8/23/99

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300



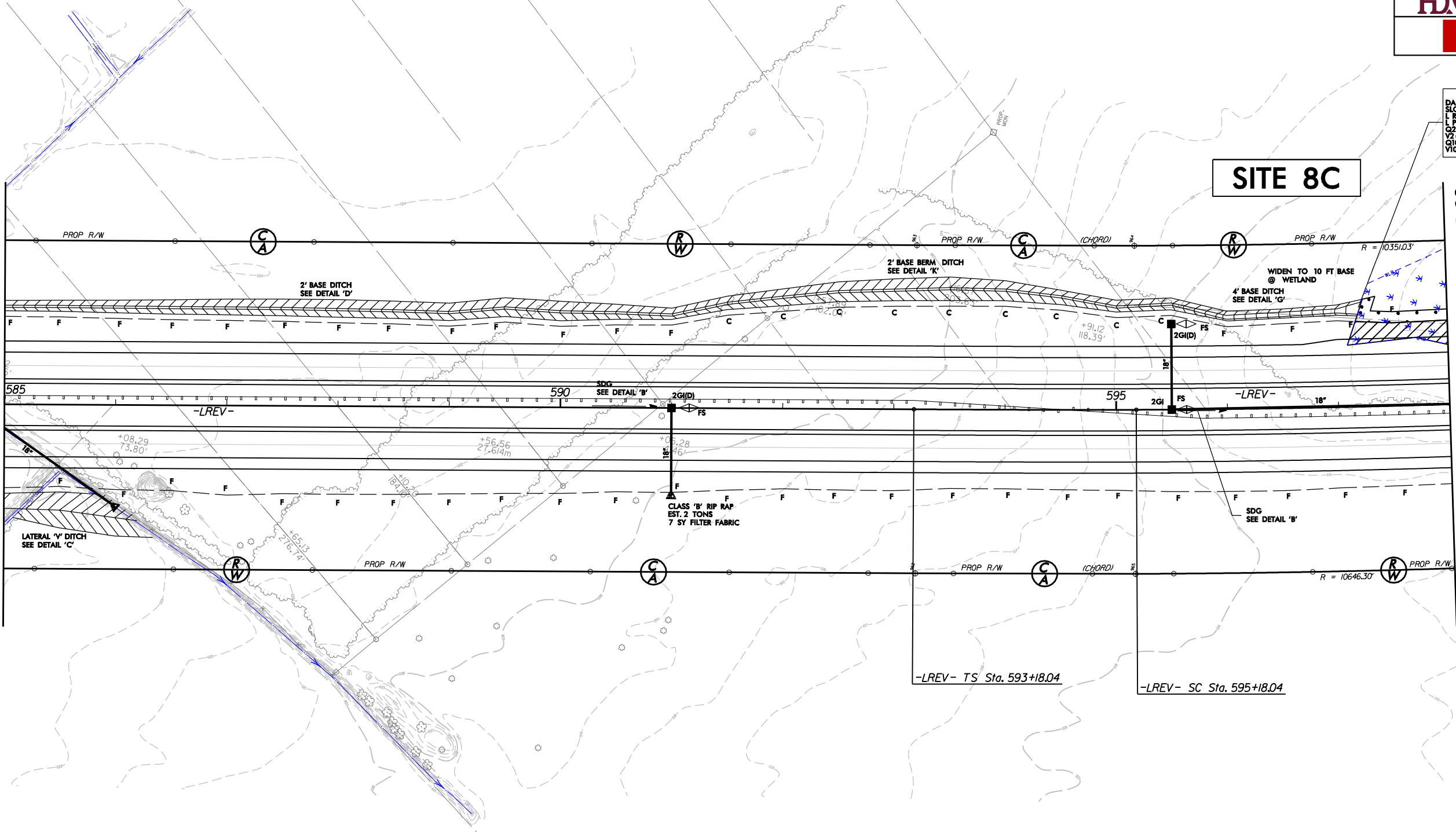
-LREV-

PLOT DRIVER: NCDOT_color_eng-100.plt
USER: jmassroc
FILE: HDR-Engineering-Dept_Marketing\DOTs_Regional_Local_Agencies\R-2554BB&C_Goldboro\o\R-2554BB&C_Hydrolics\PERMITS_Environmental\Dr_owings\R-2554BB&C_HYD_PRM_PLANSHEETS.dgn

PENTABLE: NCDOT_permits.tbl
TIME: 2:40:22 PM
DATE: 10/2/2012

REVISIONS

MATCHLINE -LREV- STA. 585+00, SEE SHEET 36



PERMIT DRAWINGS
SHEET 88 OF 135

SEE SHEET NO. 89 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

LEGEND

- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 37
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

DITCH DATA

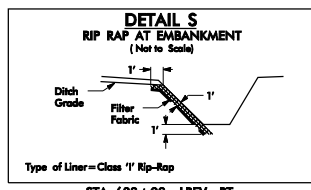
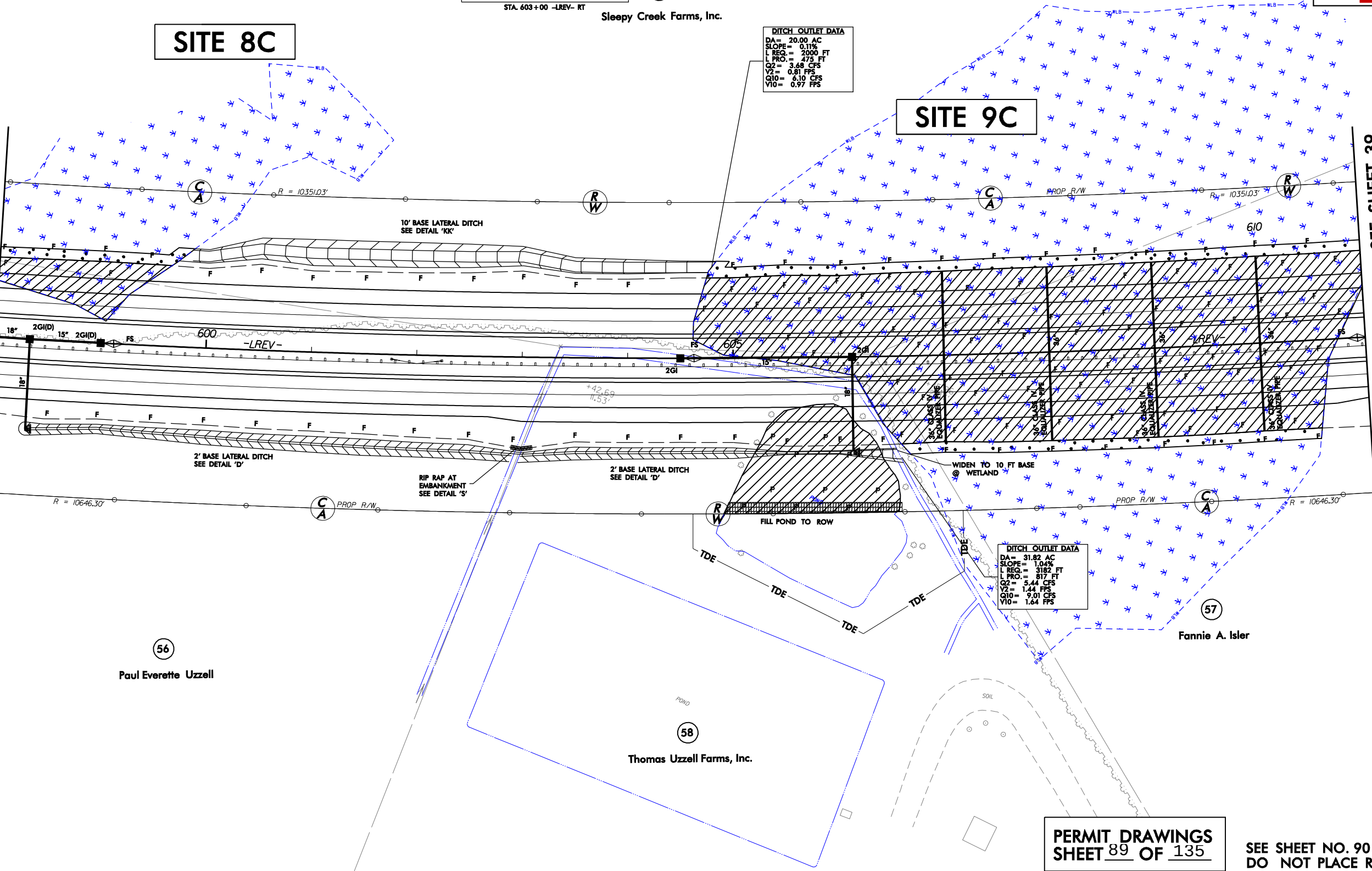
DA=	10.36 AC
SLOPE=	0.05%
L REQ=	1036 FT
L PRO=	1220 FT
Q2=	2.18 CFS
Q10=	1.42 CFS
Q10=	3.60 CFS
V10=	1.68 FPS

PLOT DRIVER: NCDOT_color_eng_100.plt
USER: rjbrown
FILE: \

PENTABLE: NCDOT_permits.NCON.tbl
TIME: 11:02:37 AM
DATE: 9/28/2012

REVISIONS

MATCHLINE -LREV- STA. 598+00, SEE SHEET 37



57

Sleepy Creek Farms, Inc.

DITCH OUTLET DATA
DA= 20.00 AC
SLOPE= 0.11%
L REQ= 2000 FT
L PRO= 475 FT
Q2= 3.68 CFS
V2= 0.81 FPS
Q10= 6.10 CFS
V10= 0.97 FPS

SITE 9C

DITCH OUTLET DATA
DA= 31.82 AC
SLOPE= 1.04%
L REQ= 3182 FT
L PRO= 817 FT
Q2= 5.44 CFS
V2= 1.44 FPS
Q10= 9.01 CFS
V10= 1.64 FPS

Fannie A. Isler

Thomas Uzzell Farms, Inc.

PERMIT DRAWINGS
SHEET 89 OF 135

SEE SHEET NO. 90 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

LEGEND

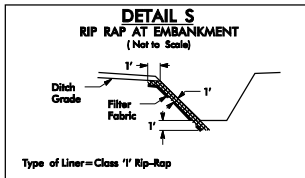
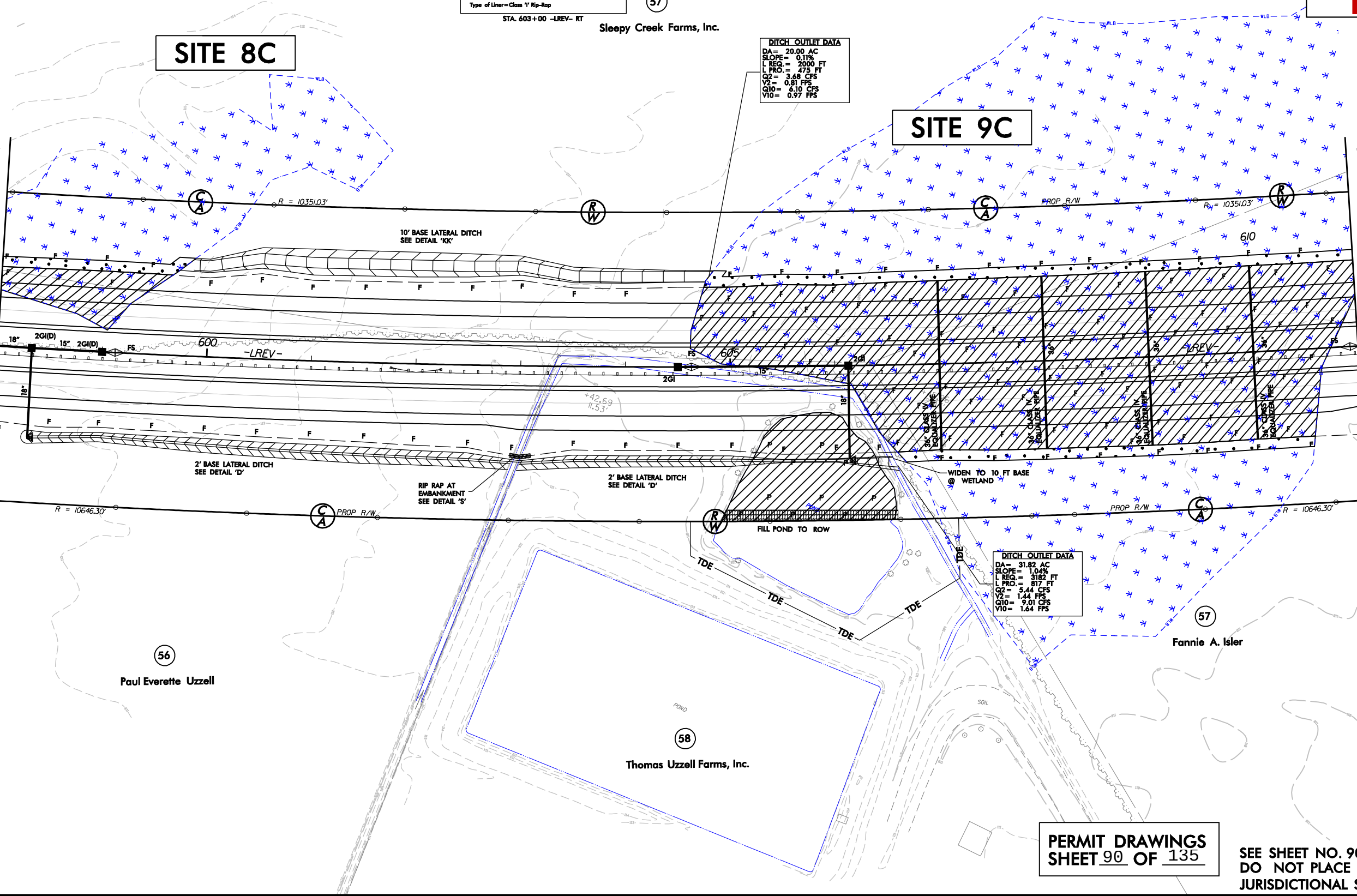
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES IMPACTS IN SURFACE WATER (POND)



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 38
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

REVISIONS

MATCHLINE -LREV- STA. 598+00, SEE SHEET 37



57

LEGEND

- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES IMPACTS IN SURFACE WATER (POND)



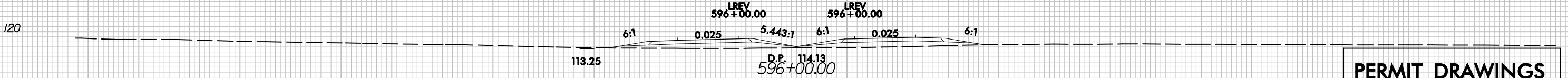
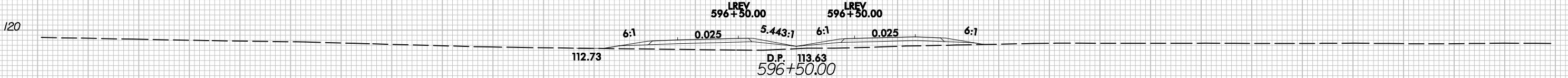
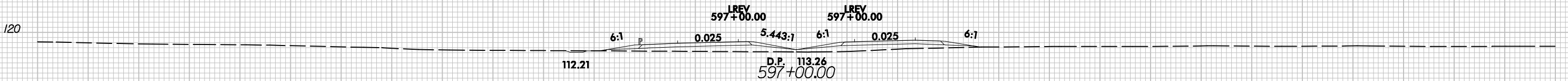
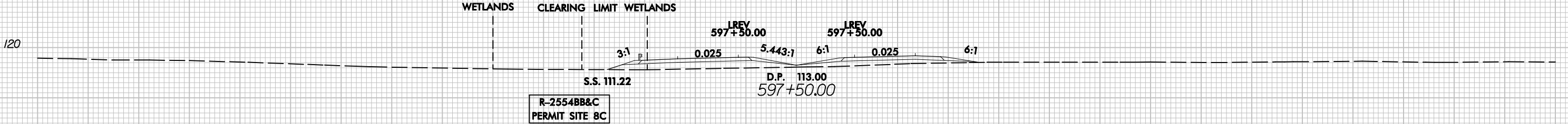
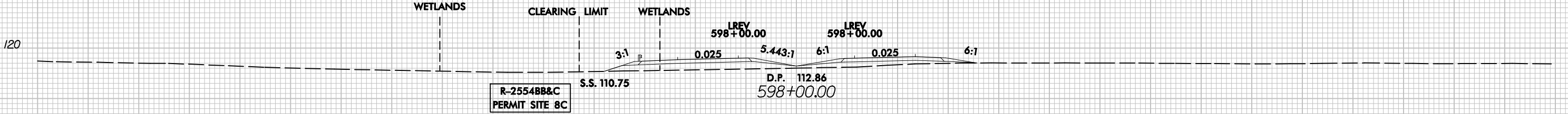
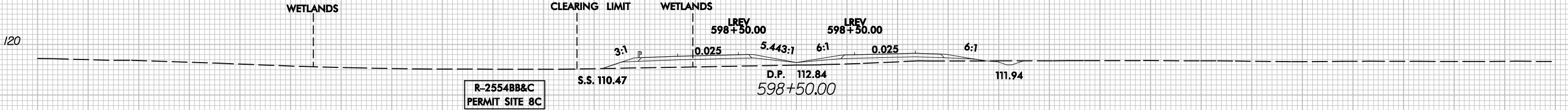
PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 38	
RAW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116			
 BARNHILL CONTRACTING COMPANY			

PERMIT DRAWINGS
SHEET 90 OF 135

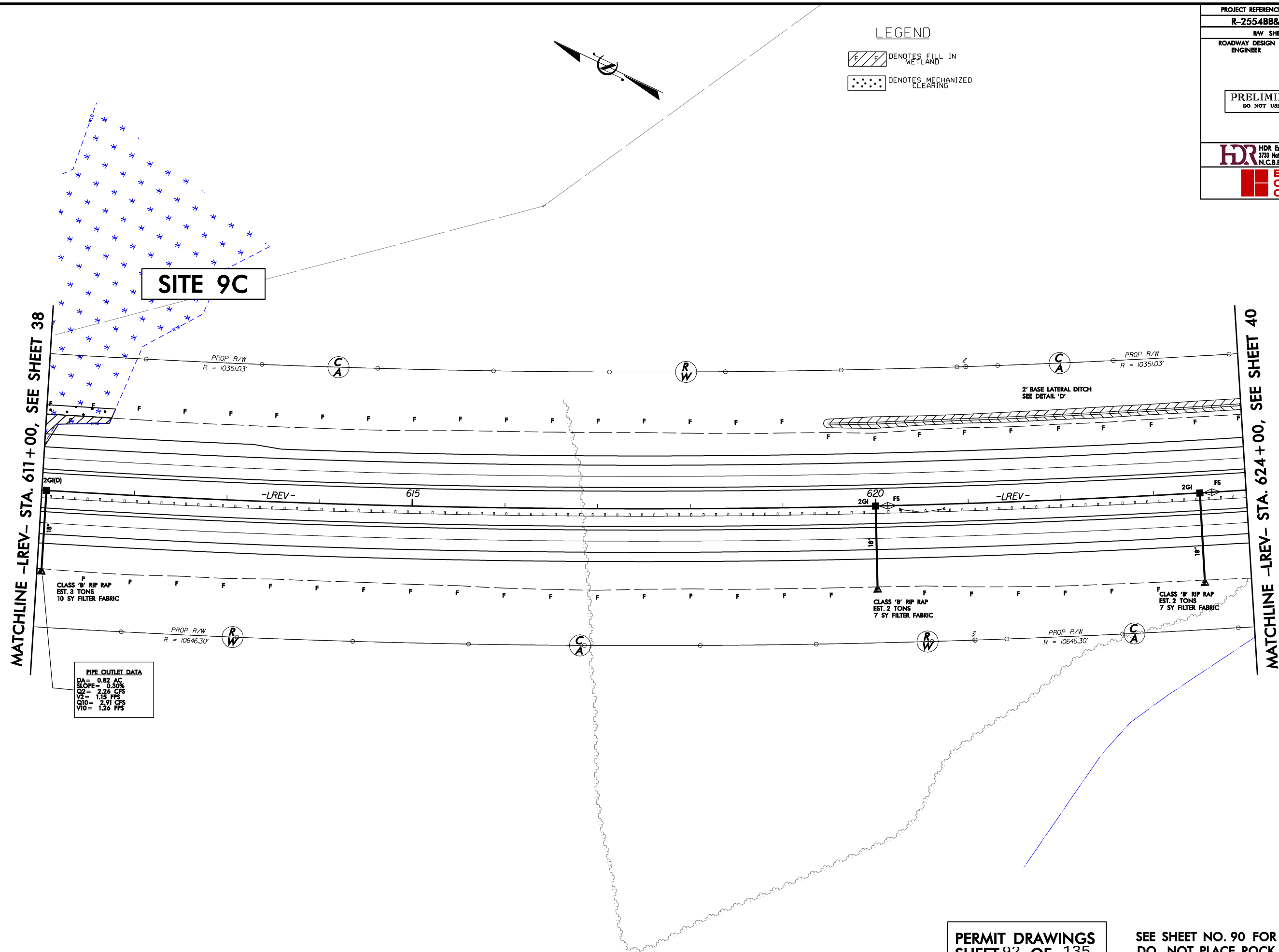
SEE SHEET NO. 90 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

8/23/99

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300



-LREV-



PERMIT DRAWINGS
SHEET 92 OF 135

SEE SHEET NO. 90 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	39
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

 DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING

SITE 9C

MATCHLINE -REV- STA. 611+00, SEE SHEET 38

MATCHLINE -REV- STA. 624+00, SEE SHEET 40

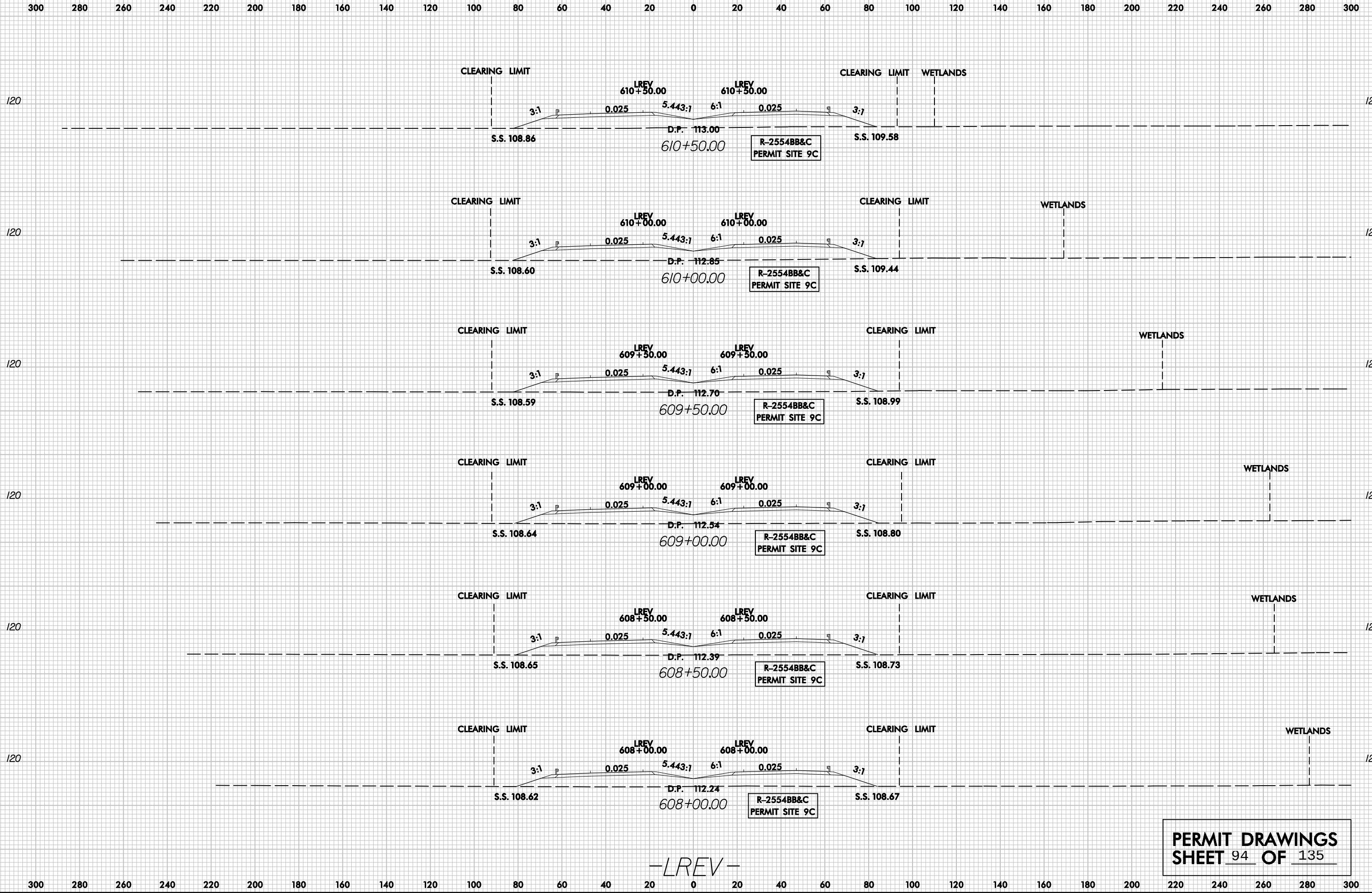
CLASS 'B' RIP RAP
EST. 3 TONS
10 SY FILTER FABRIC

PIPE OUTLET DATA
DA= 0.82 AC
SLOPE= 0.30%
Q2= 2.26 CFS
V2= 1.15 FPS
Q10= 2.91 CFS
V10= 1.26 FPS

PERMIT DRAWINGS
SHEET 93 OF 135

SEE SHEET NO. 90 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

8/23/99



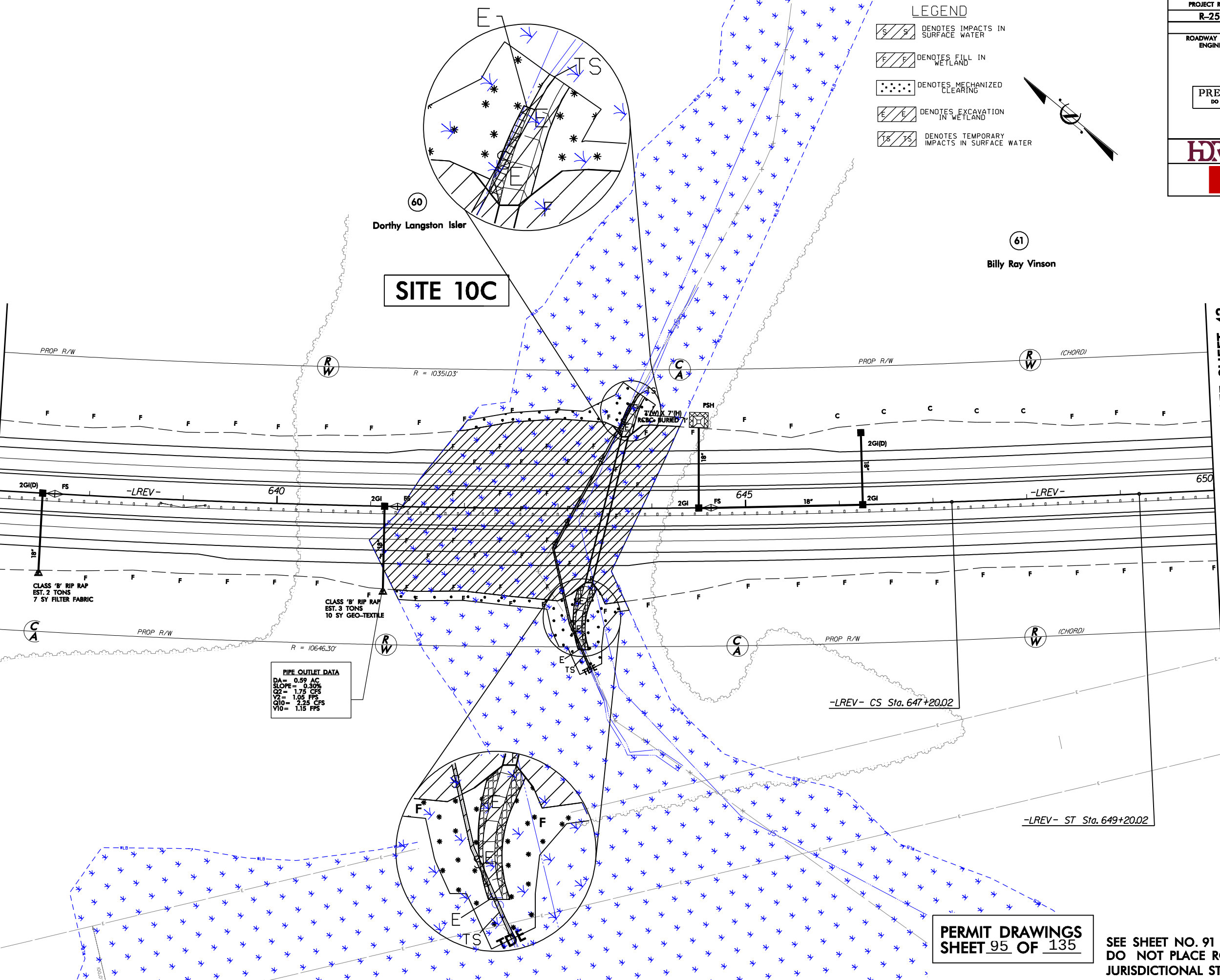
-LREV-

PERMIT DRAWINGS
SHEET 94 OF 135

PLOT DRIVER: NCDOT_color_eng_100.plt
PENTABLE: NCDOT_permits.NOCN.tbl
USER: jmassroc
DATE: 10/4/2012
TIME: 10:21:27 AM
FILE: HDR.Engineering\Dept_Marketing\DOTs_Regional_Local_Agencies\R-2554BB&C_Goldsboro\R-2554BB&C_Hydratics\PERMITS_Environmental\Drawings\R-2554BB&C_HYD_PRM_PLANSHEETS.dgn

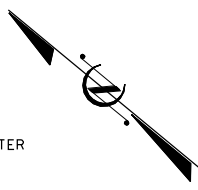
REVISIONS

MATCHLINE -LREV- STA. 637+00, SEE SHEET 40



LEGEND

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES EXCAVATION IN WETLAND
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 41	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

PERMIT DRAWINGS
SHEET 95 OF 135

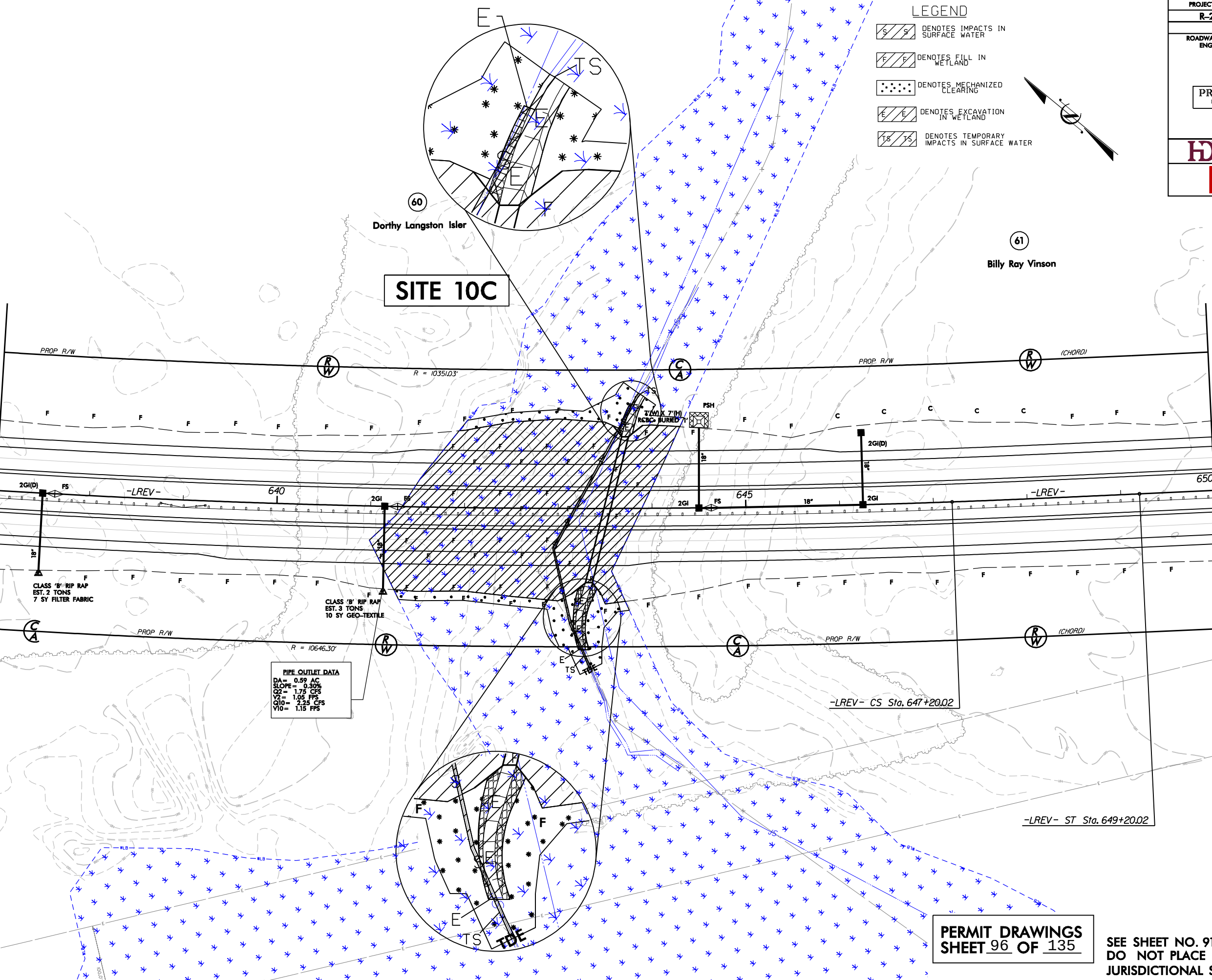
SEE SHEET NO. 91 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PLOT DRIVER: NCDOT_color_eng_100.plt
USER: jmassroc
FILE: HDR.Engineering.Dept_Marketing\NDOT's Regional Local Agencies\R-2554BB&C.Goldsboro\o\R-2554BB&C.Hydraulics\PERMITS.Environmental\Dr\Drawings\R-2554BB&C.HYD.PRM.PLAN.SHEETS.dgn

PENTABLE: NCDOT_permits.tb1
DATE: 10/4/2012
TIME: 10:15:47 AM

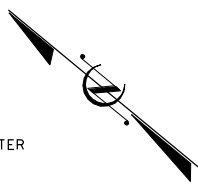
REVISIONS

MATCHLINE -LREV- STA. 637+00, SEE SHEET 40



PIPE OUTLET DATA
D₁₂ = 0.59 AC
SLOPE = 0.30%
Q₁₂ = 1.75 CFS
Q₁₀ = 1.05 CFS
Q₁₀ = 2.25 CFS
V₁₀ = 1.15 FPS

- LEGEND
- DENOTES IMPACTS IN SURFACE WATER
 - DENOTES FILL IN WETLAND
 - DENOTES MECHANIZED CLEARING
 - DENOTES EXCAVATION IN WETLAND
 - DENOTES TEMPORARY IMPACTS IN SURFACE WATER



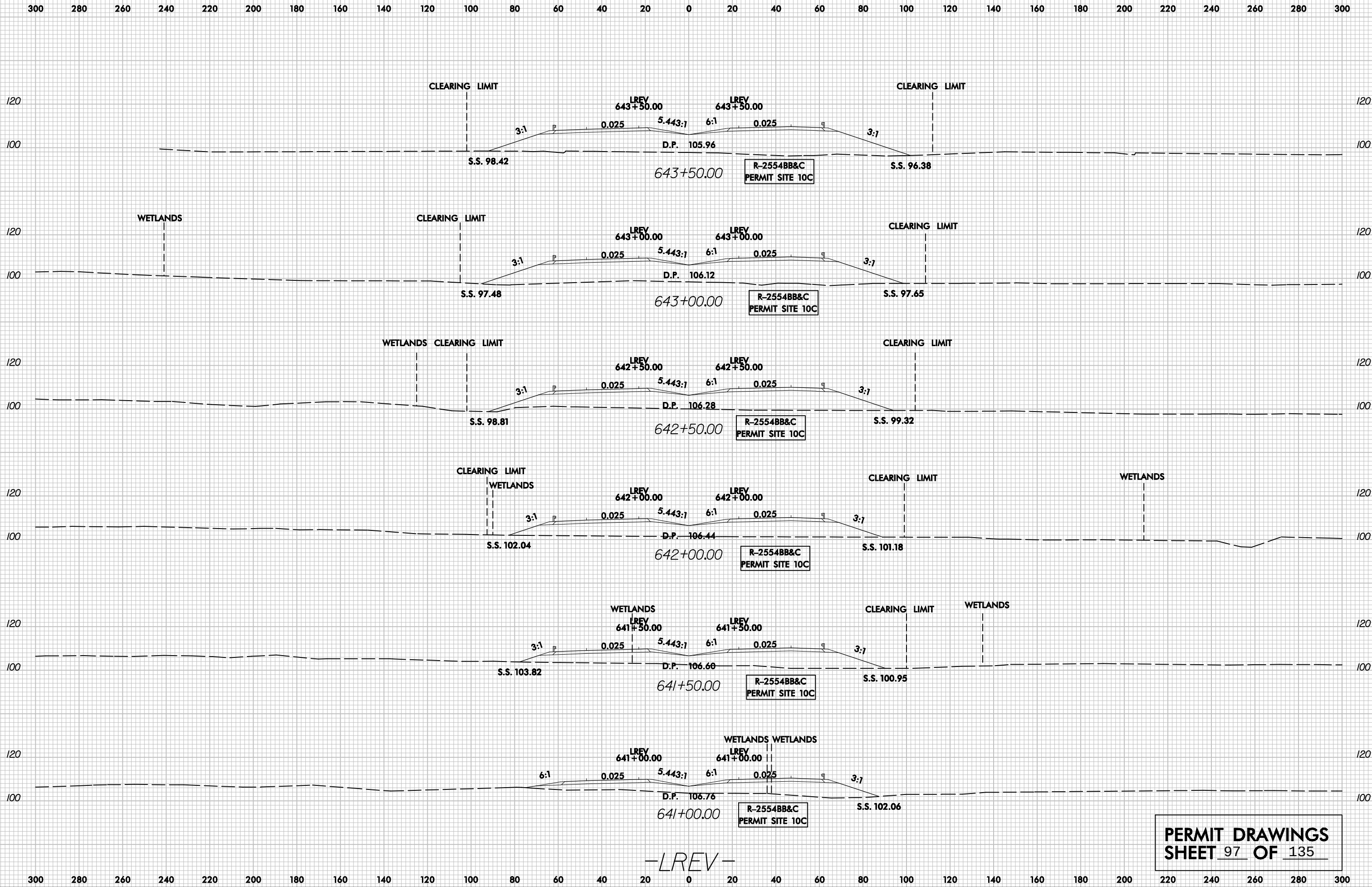
PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 41	
RW SHEET NO. ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

PERMIT DRAWINGS
SHEET 96 OF 135

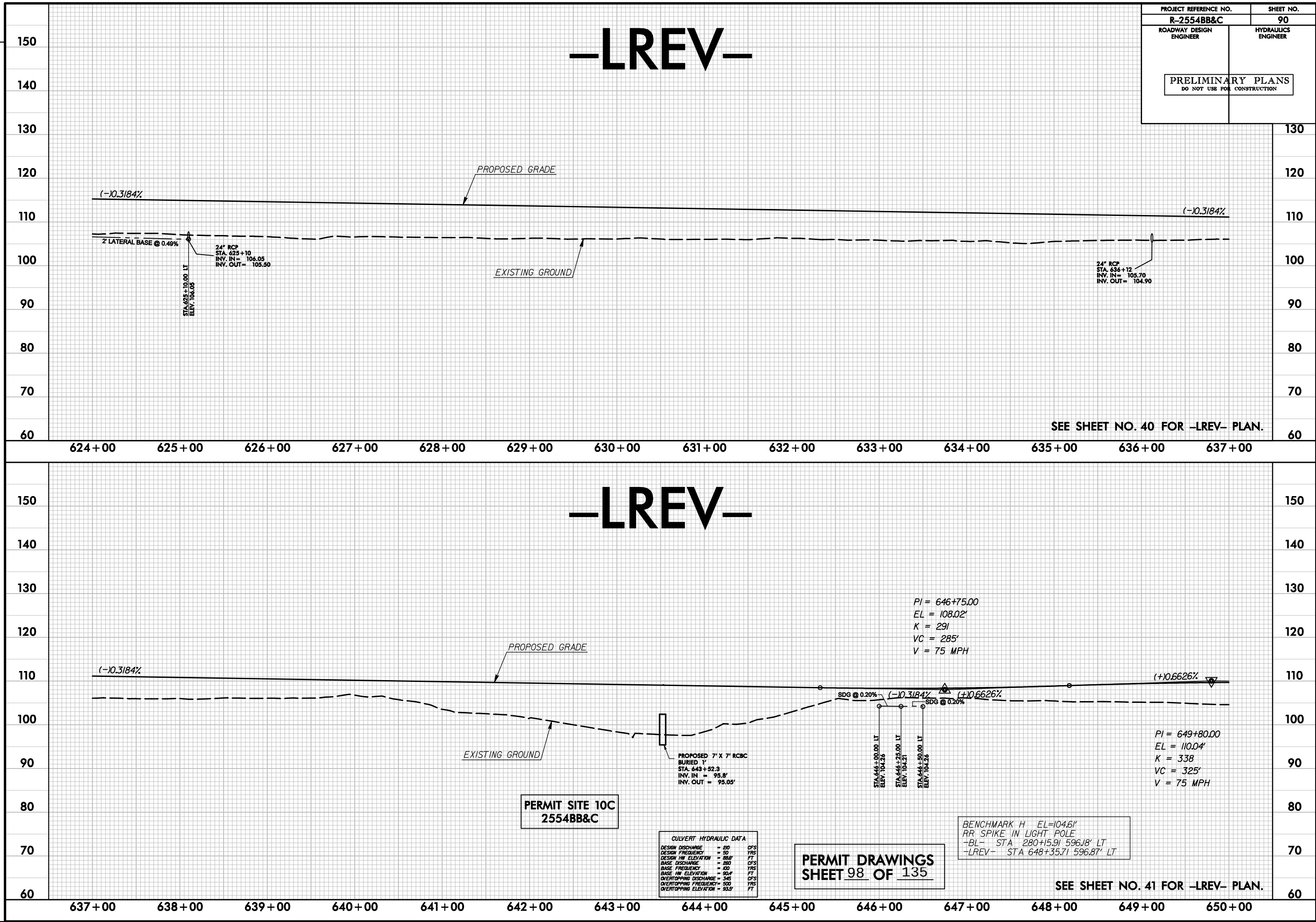
SEE SHEET NO. 91 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

MATCHLINE -LREV- STA. 650+00, SEE SHEET 42

8/23/99



REVISIONS



PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		90
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 200	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 88.6	FT
BASE DISCHARGE	= 280	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 90.4	FT
OVERTOPPING DISCHARGE	= 345	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 93.3	FT

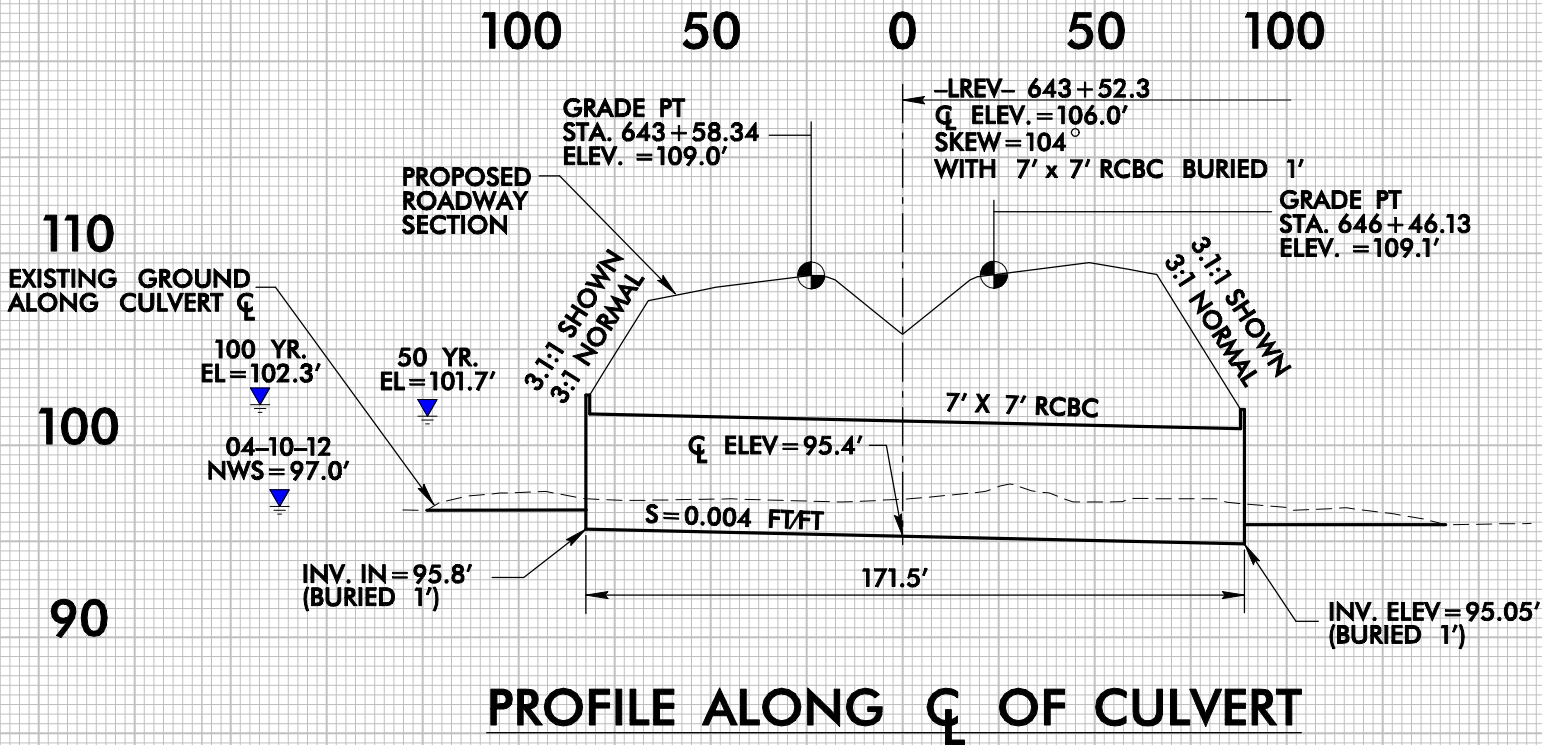
PERMIT DRAWINGS
SHEET 98 OF 135

BENCHMARK H EL=104.61'
RR SPIKE IN LIGHT POLE
-BL- STA 280+15.91 596.18' LT
-LREV- STA 648+35.71 596.87' LT

REVISIONS

SITE 10C R-2554BB&C

PROJECT REFERENCE NO. R-2554BB&C	SHEET NO. CSR 10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



WSEL TABLE

YEAR	DISCHARGE (CFS)	EXISTING WSEL	PROPOSED WSEL
10	75	99.1'	100.3'
50	140	99.5'	101.7'
100	170	99.7'	102.3'

* DATA OBTAINED FROM STA. 465 (US TOE)

☒ PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 92 FOR -LREV- PROFILE.
SEE SHEET NO. 117 FOR -Y26REV- PROFILE.
SEE SHEET NO. 2-U FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

LEGEND

- ☐ DENOTES MECHANIZED CLEARING
- ☐ DENOTES FILL IN WETLAND
- ☐ DENOTES IMPACTS IN SURFACE WATER
- ☐ DENOTES EXCAVATION IN WETLAND
- ☐ DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	45
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	
BARNHILL CONTRACTING COMPANY	

MATCHLINE -LREV- STA. 689+00, SEE SHEET 44

MATCHLINE -Y26REV- STA. 23+00, SEE SHEET 66

-Y26REV- ST Sta. 23+08.01

64

Martha G. Mooring

SITE 11C

MATCHLINE -LREV- STA. 703+00, SEE SHEET 46

SITE 14C

MATCHLINE -Y26REV- STA. 32+00, SEE SHEET 67

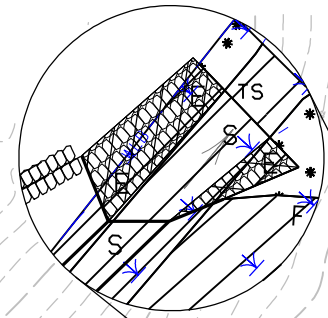
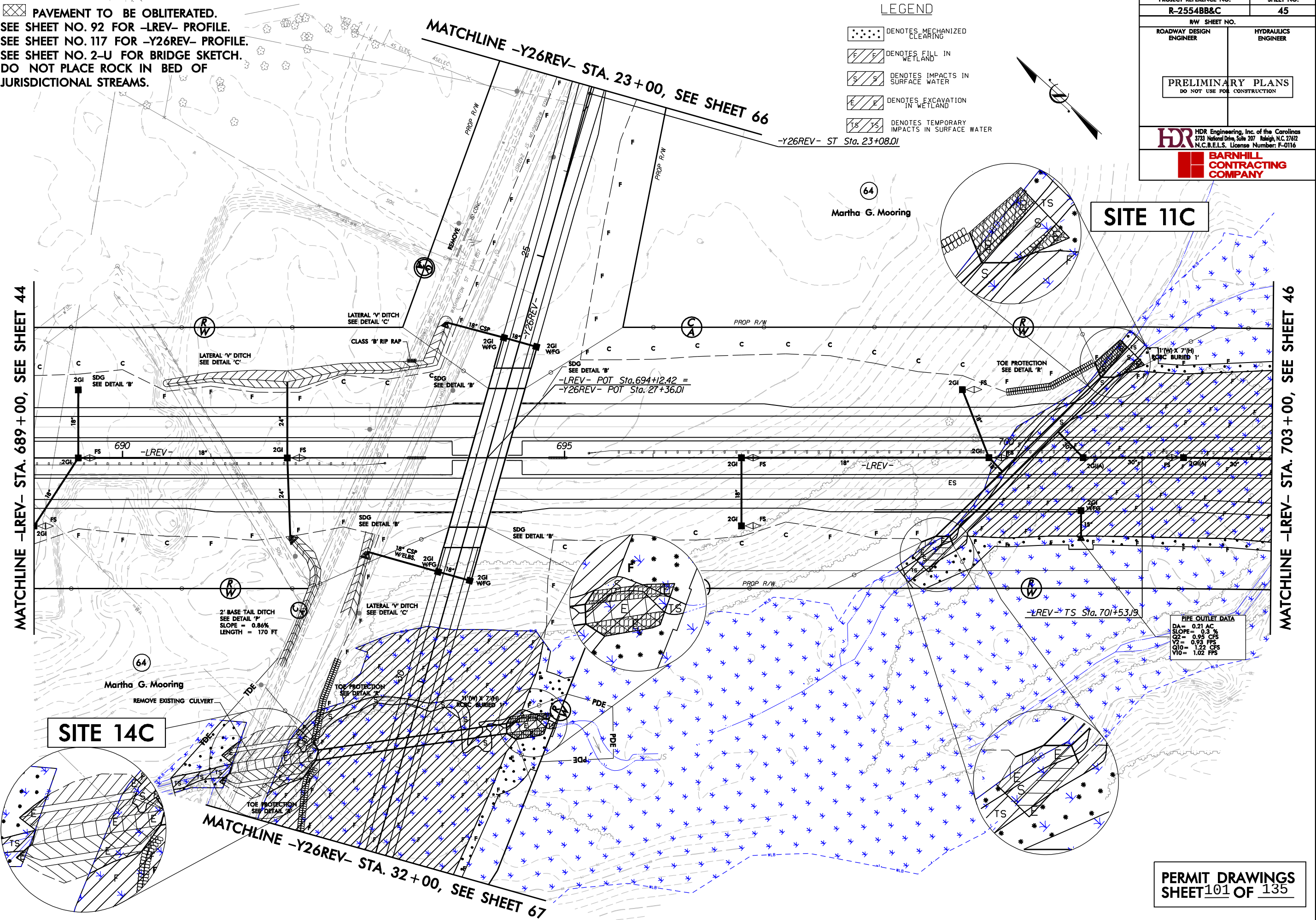
PERMIT DRAWINGS
SHEET 100 OF 135

☒ PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 92 FOR -LREV- PROFILE.
SEE SHEET NO. 117 FOR -Y26REV- PROFILE.
SEE SHEET NO. 2-U FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

LEGEND

- ☒ DENOTES MECHANIZED CLEARING
- F/F DENOTES FILL IN WETLAND
- S/S DENOTES IMPACTS IN SURFACE WATER
- E/E DENOTES EXCAVATION IN WETLAND
- TS/TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 45	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

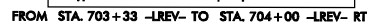


SITE 11C

SITE 14C

PIPE OUTLET DATA

DA =	0.21 AC
SLOPE =	0.3 %
Q2 =	0.95 CFS
Q7 =	0.95 CFS
Q10 =	1.22 CFS
V10 =	1.02 FPS

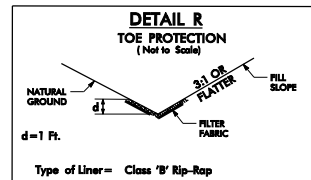


PERMIT DRAWINGS
SHEET 102 OF 135

REVISIONS

MATCHLINE -LREV- STA. 703+00, SEE SHEET 45

SITE 11C



FROM STA. 703+33 -LREV- TO STA. 704+00 -LREV- RT

PERMIT DRAWINGS
SHEET 103 OF 135

LEGEND

DENOTES FILL IN WETLAND
 DENOTES MECHANIZED CLEARING



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 46
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		
 BARNHILL CONTRACTING COMPANY		

PIPE OUTLET DATA
DA = 14.85 AC
SLOPE = 0.3 %
V2 = 2.08 FPS
V3 = 1.34 FPS
Q10 = 1.77 CFS
V10 = 1.57 FPS

-LREV- SC Sta. 704+53.9

-LREV- CS Sta. 710+70.67

-LREV- ST Sta. 713+70.67

PROP. 25' GUARDRAIL
WITH TERMINAL END SECTIONS

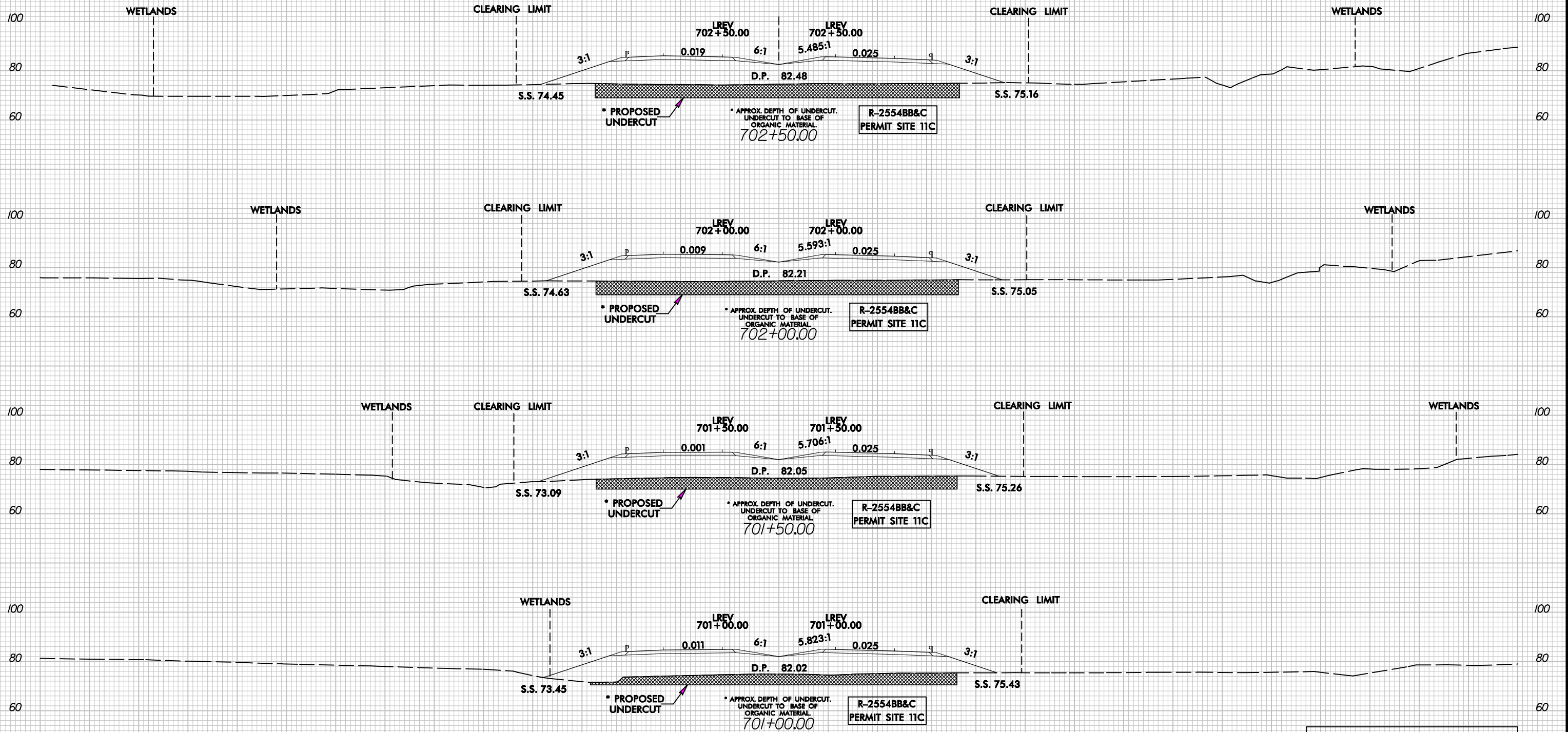
MATCHLINE -LREV- STA. 717+00, SEE SHEET 47

MATCHLINE -LPCREV- STA. 19+00, SEE SHEET 69

PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 94 FOR -LREV- PROFILE.
SEE SHEET NO. 134 FOR -LPCREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

8/23/99

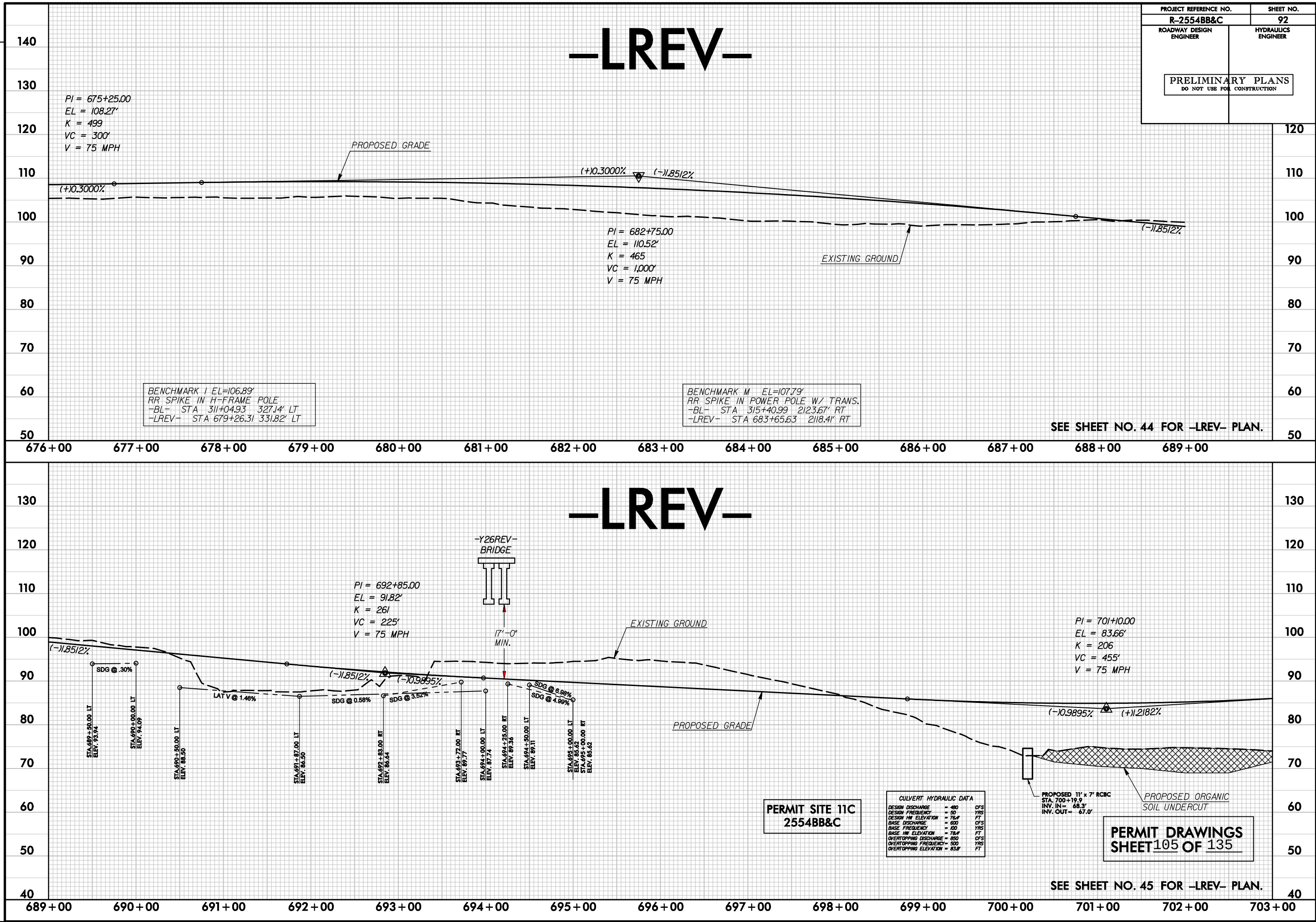
300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300



-LREV-

PERMIT DRAWINGS
SHEET 104 OF 135

REVISIONS



PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		92
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 480	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 76.4	FT
BASE DISCHARGE	= 600	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 78.4	FT
OVERTOPPING DISCHARGE	= 880	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 83.8	FT

PERMIT SITE 11C
2554BB&C

PERMIT DRAWINGS
SHEET 105 OF 135

PLOT DRIVER: NCDOT_pdf_color_eng-100.plt
USER: _USERNAME_ DATE: 8/13/2012
FILE: R2554BB&C_HYD_PFM_PFL_CSR11.dgn

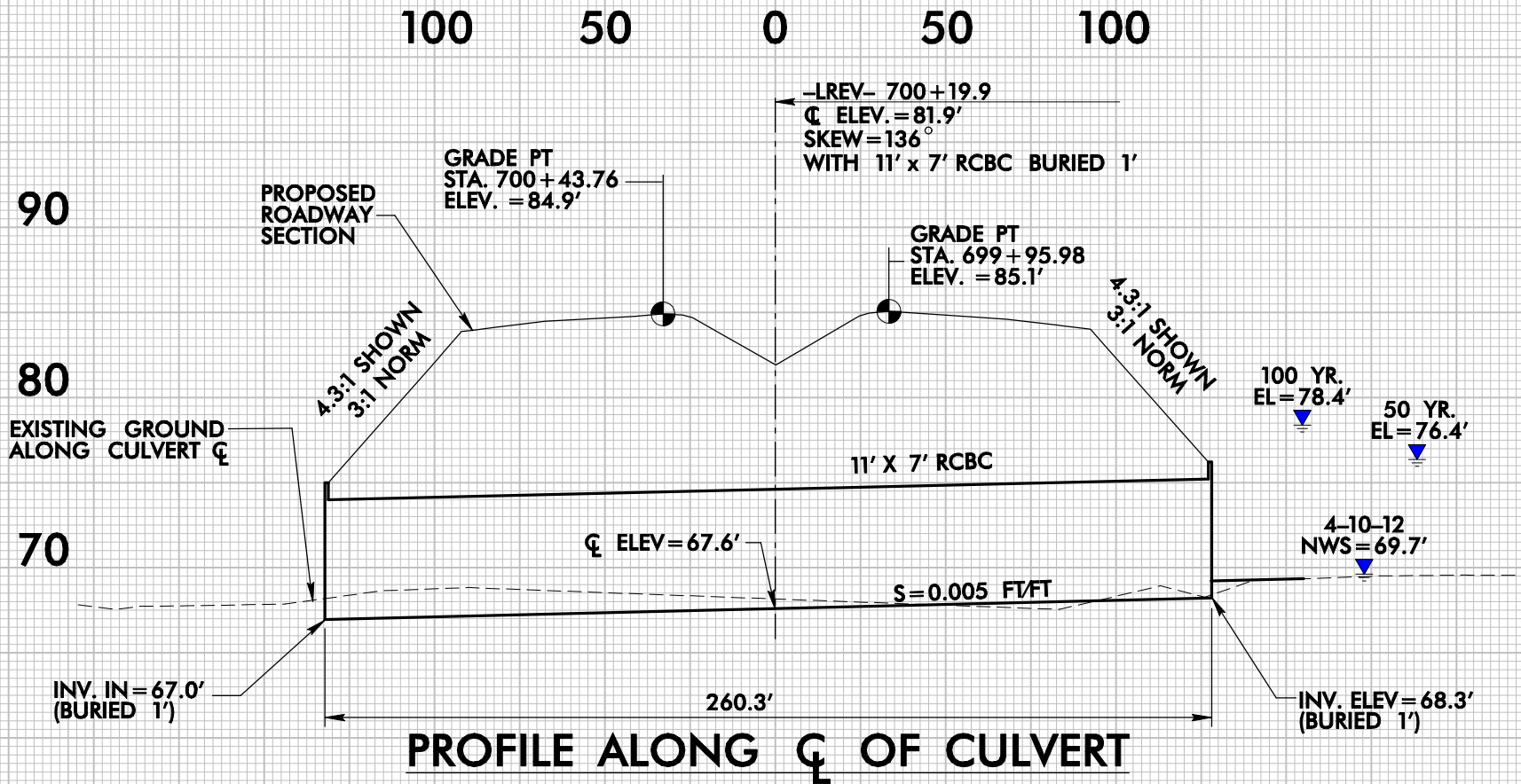
PENTABLE: NCDOT_PFL_XSC_UPDATED.tbl
TIME: 3:22:53 PM

5/14/99

REVISIONS

SITE 11C R-2554BB&C

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. CSR 11	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

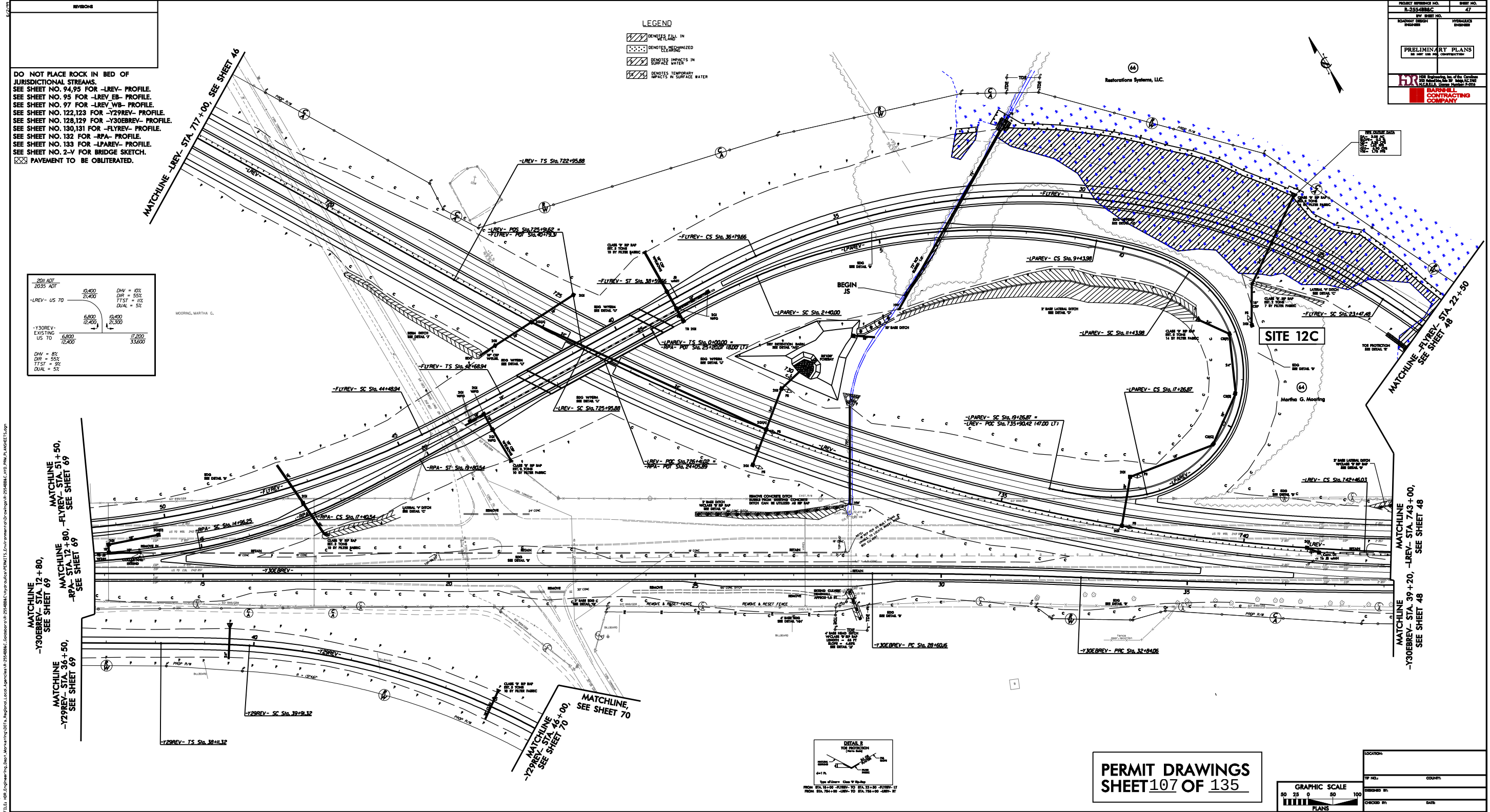


WSEL TABLE

YEAR	DISCHARGE (CFS)	EXISTING WSEL	PROPOSED WSEL
10	270	74.2'	74.2'
50	480	75.3'	76.4'
100	600	75.6'	78.4'
500	850	76.0'	83.8'

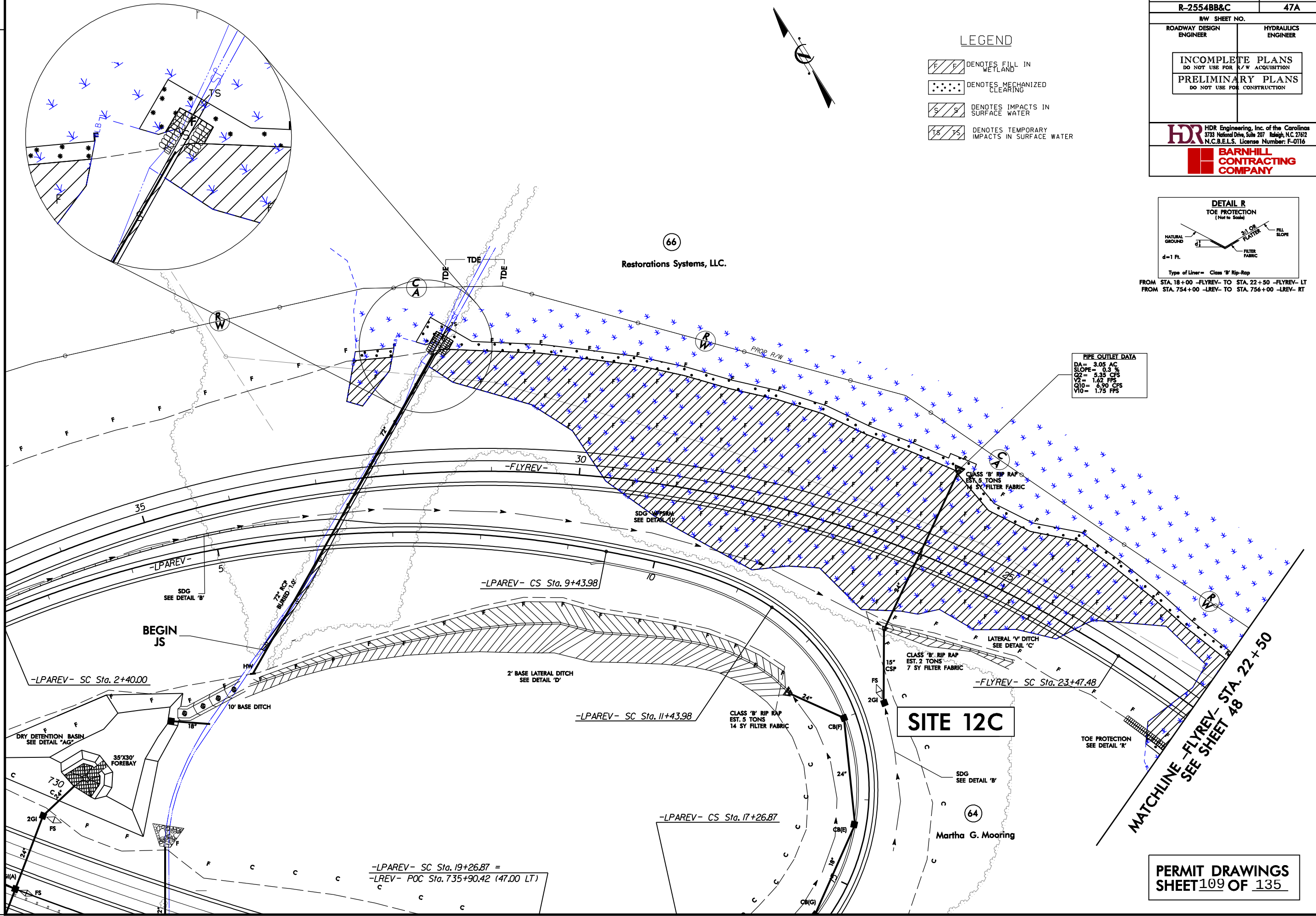
* DATA OBTAINED FROM STA. 471 (US TOE)

PERMIT DRAWINGS
SHEET 106 OF 135

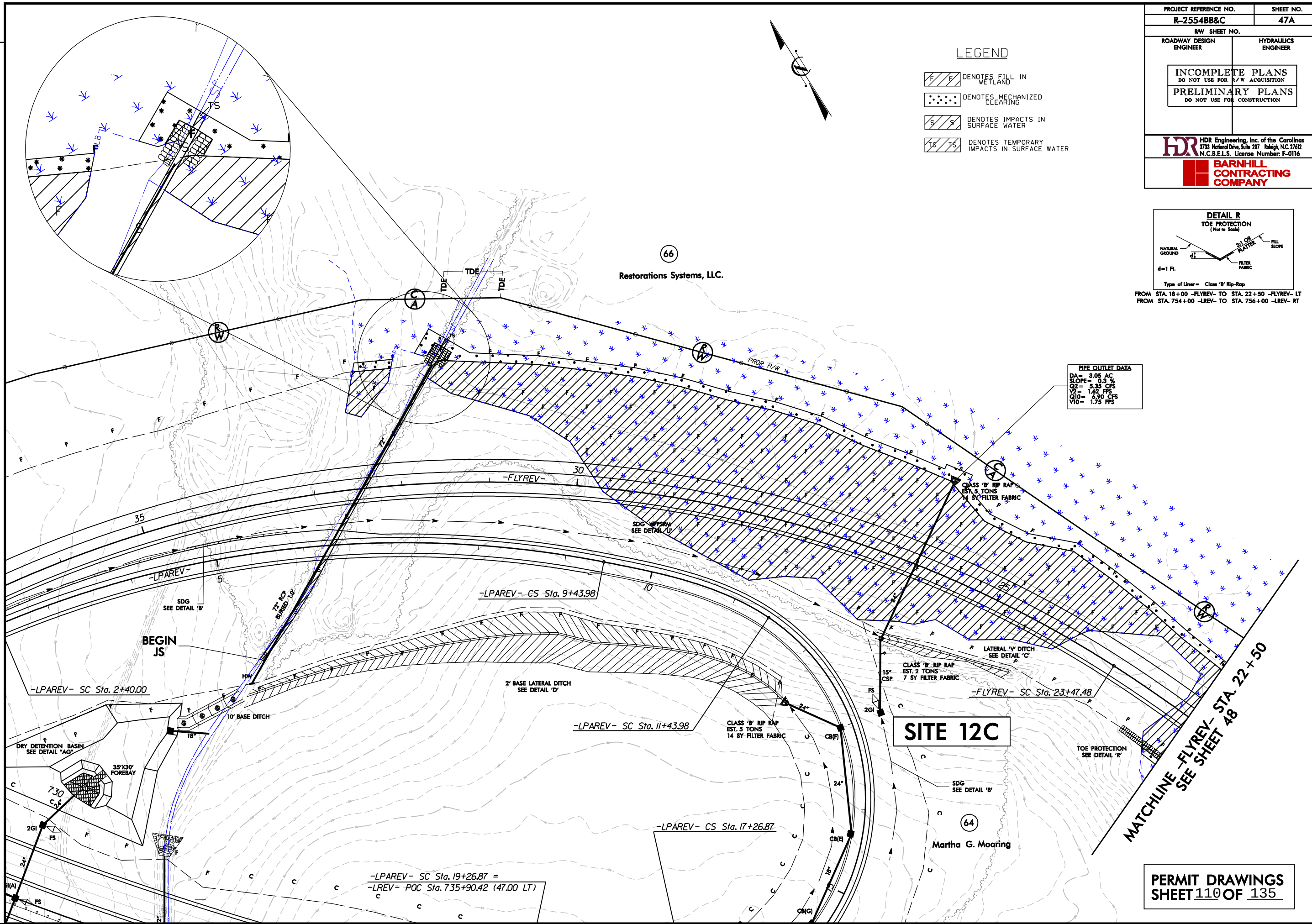


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DATE: 9/28/2012
TIME: 11:29:50 AM
FILE: \

REVISIONS



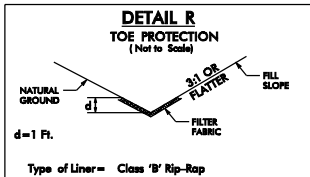
REVISIONS



LEGEND

- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	47A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	
BARNHILL CONTRACTING COMPANY	



FROM STA. 18+00 -FLYREV- TO STA. 22+50 -FLYREV- LT
FROM STA. 754+00 -LREV- TO STA. 756+00 -LREV- RT

PIPE OUTLET DATA
DA = 3.05 AC
SLOPE = 0.3 %
Q2 = 5.35 CFS
Y2 = 1.62 FPS
Q10 = 6.90 CFS
Y10 = 1.75 FPS

SITE 12C

MATCHLINE -FLYREV- STA. 22+50
SEE SHEET 48

PERMIT DRAWINGS
SHEET 110 OF 135

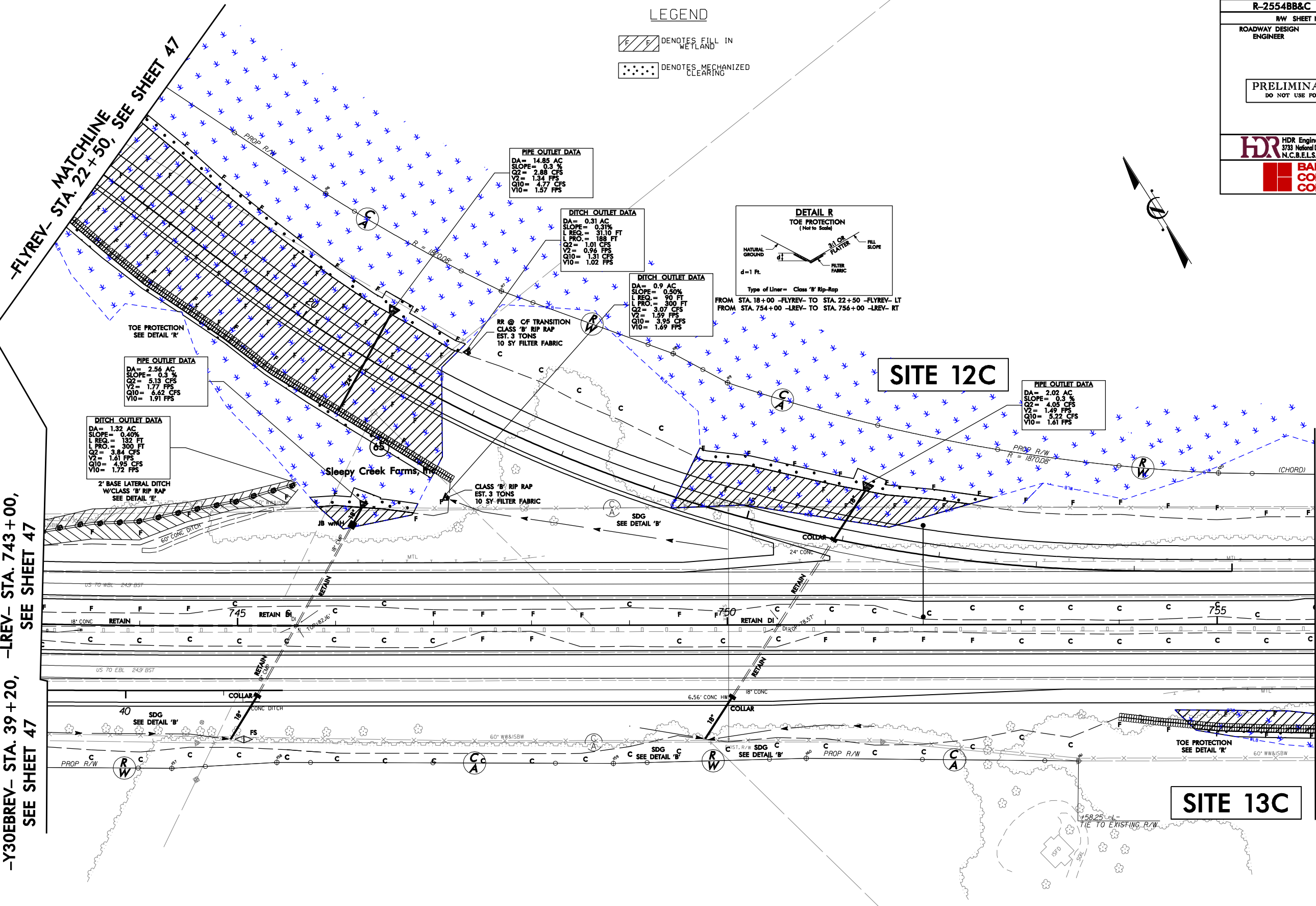
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FILE: \

REVISIONS

MATCHLINE
-Y30EBREV- STA. 39 + 20,
-LREV- STA. 743 + 00,
SEE SHEET 47

MATCHLINE
-FLYREV- STA. 22 + 50, SEE SHEET 47

MATCHLINE
-LREV- STA. 756 + 00, SEE SHEET 49



PERMIT DRAWINGS
SHEET 111 OF 135

SEE SHEET NO. 95 FOR -LREV_EB- PROFILE.
SEE SHEET NO. 97 FOR -LREV_WB- PROFILE.
SEE SHEET NO. 129 FOR -Y30EBREV- PROFILE.
SEE SHEET NO. 130 FOR -FLYREV- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 48
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

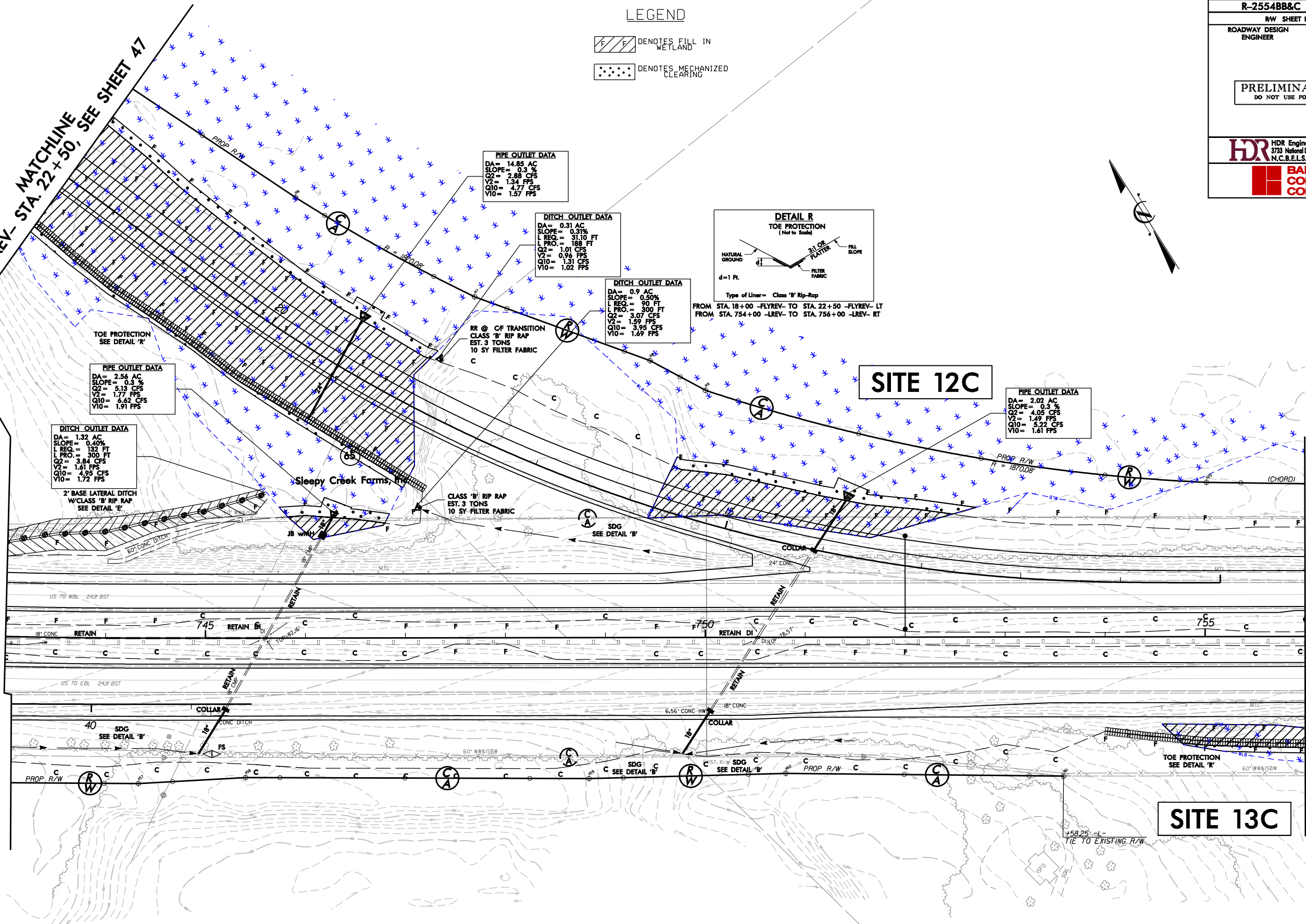
REVISIONS

MATCHLINE
-Y30EBREV- STA. 39+20,
-LREV- STA. 743+00,
SEE SHEET 47

MATCHLINE
-FLYREV- STA. 22+50, SEE SHEET 47

MATCHLINE
-LREV- STA. 756+00, SEE SHEET 49

MATCHLINE
-FLYREV- STA. 22+50, SEE SHEET 47



LEGEND
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING

DETAIL R
TOE PROTECTION
(Not to Scale)
Type of Liner= Class 'B' Rip-Rap
FROM STA. 18+00 -FLYREV- TO STA. 22+50 -FLYREV- LT
FROM STA. 754+00 -LREV- TO STA. 756+00 -LREV- RT

PIPE OUTLET DATA
DA= 14.85 AC
SLOPE= 0.3 %
Q2= 2.88 CFS
V2= 1.34 FPS
Q10= 4.77 CFS
V10= 1.57 FPS

DITCH OUTLET DATA
DA= 0.31 AC
SLOPE= 0.31 %
L REQ.= 31.10 FT
L PRO.= 188 FT
Q2= 1.01 CFS
V2= 0.96 FPS
Q10= 1.31 CFS
V10= 1.02 FPS

DITCH OUTLET DATA
DA= 0.9 AC
SLOPE= 0.50 %
L REQ.= 90 FT
L PRO.= 300 FT
Q2= 3.07 CFS
V2= 1.59 FPS
Q10= 3.95 CFS
V10= 1.69 FPS

PIPE OUTLET DATA
DA= 2.56 AC
SLOPE= 0.3 %
Q2= 5.19 CFS
V2= 1.77 FPS
Q10= 6.62 CFS
V10= 1.91 FPS

DITCH OUTLET DATA
DA= 1.32 AC
SLOPE= 0.40 %
L REQ.= 132 FT
L PRO.= 300 FT
Q2= 3.84 CFS
V2= 1.61 FPS
Q10= 4.95 CFS
V10= 1.72 FPS

PIPE OUTLET DATA
DA= 2.02 AC
SLOPE= 0.3 %
Q2= 4.05 CFS
V2= 1.49 FPS
Q10= 5.22 CFS
V10= 1.61 FPS

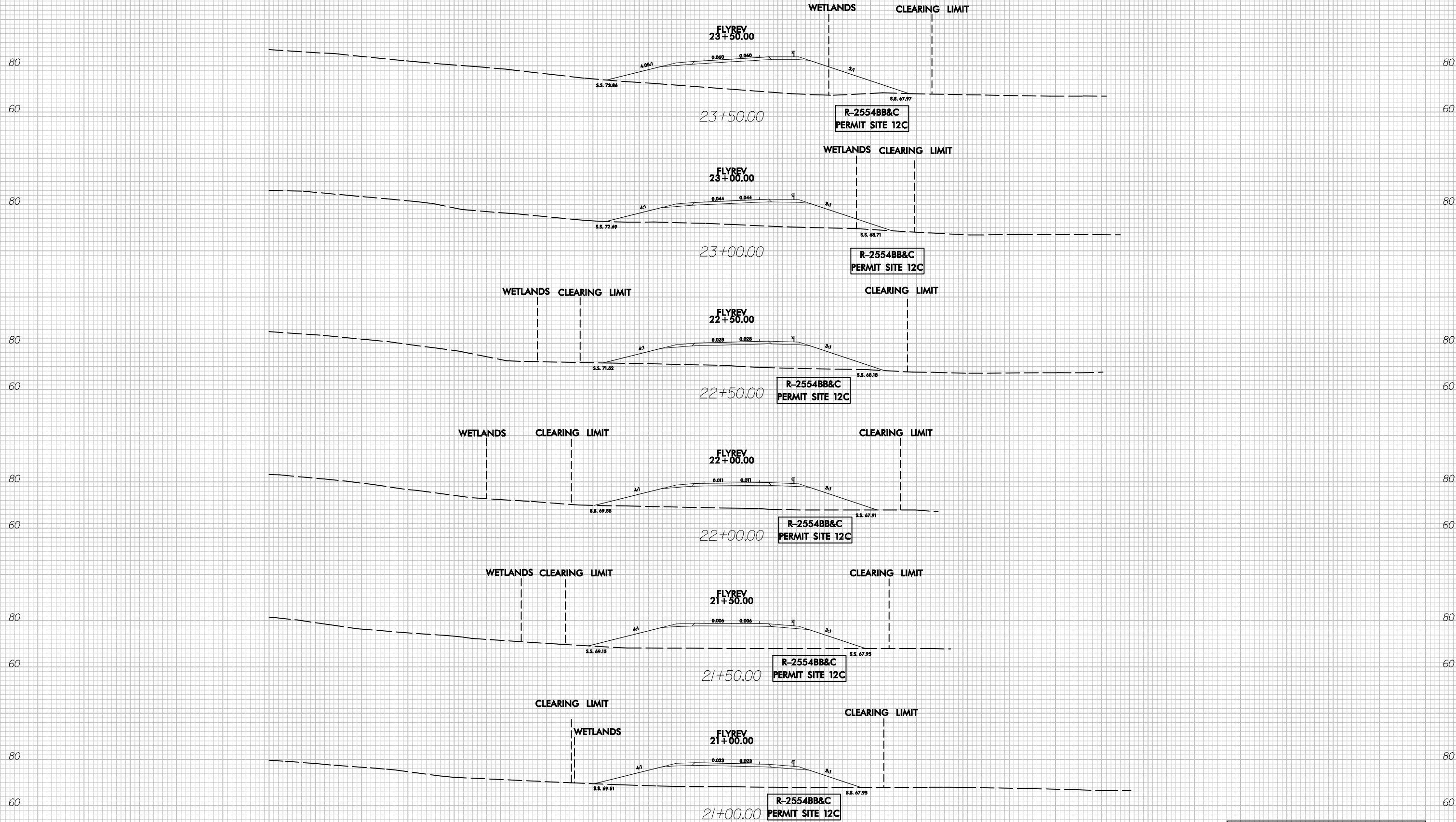
PERMIT DRAWINGS
SHEET 112 OF 135

SEE SHEET NO. 95 FOR -LREV_EB- PROFILE.
SEE SHEET NO. 97 FOR -LREV_WB- PROFILE.
SEE SHEET NO. 129 FOR -Y30EBREV- PROFILE.
SEE SHEET NO. 130 FOR -FLYREV- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 48	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
		BARNHILL CONTRACTING COMPANY	

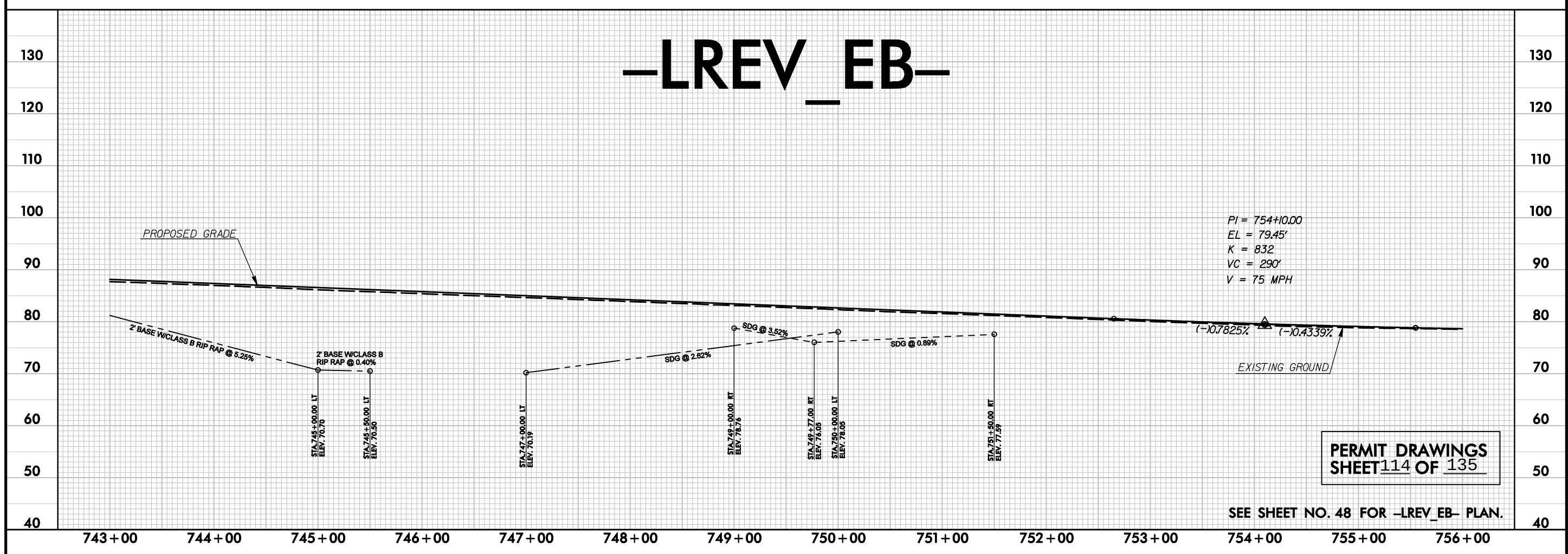
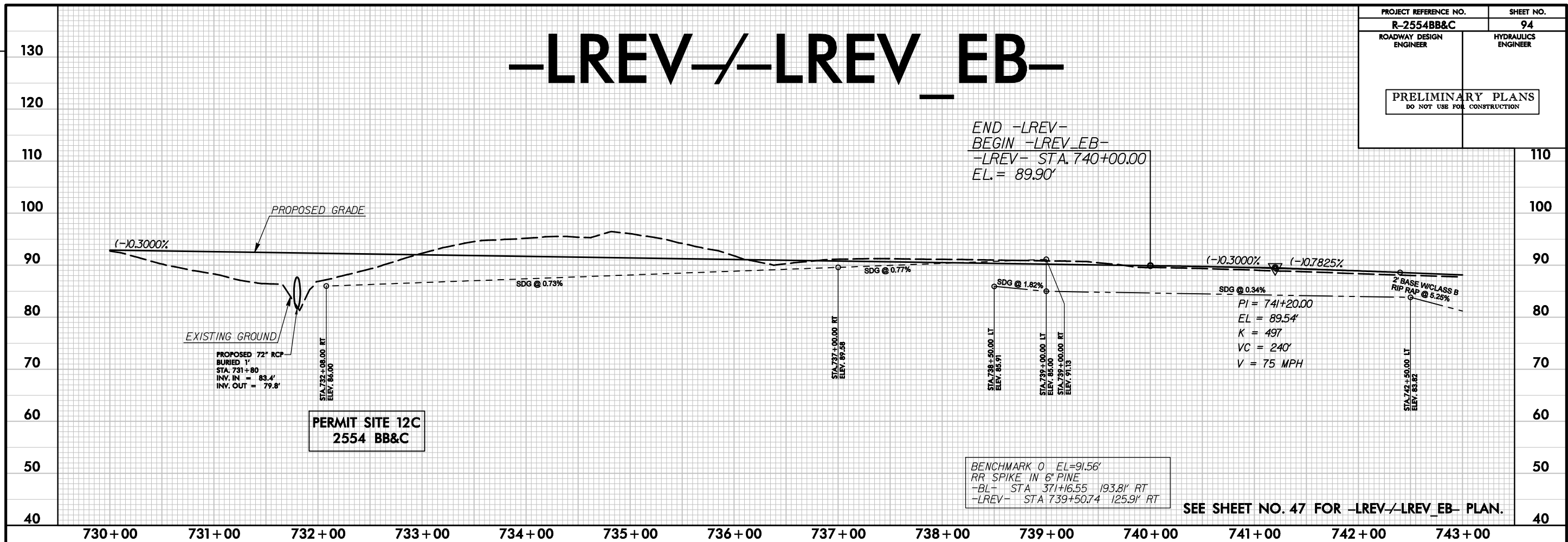
8/23/99

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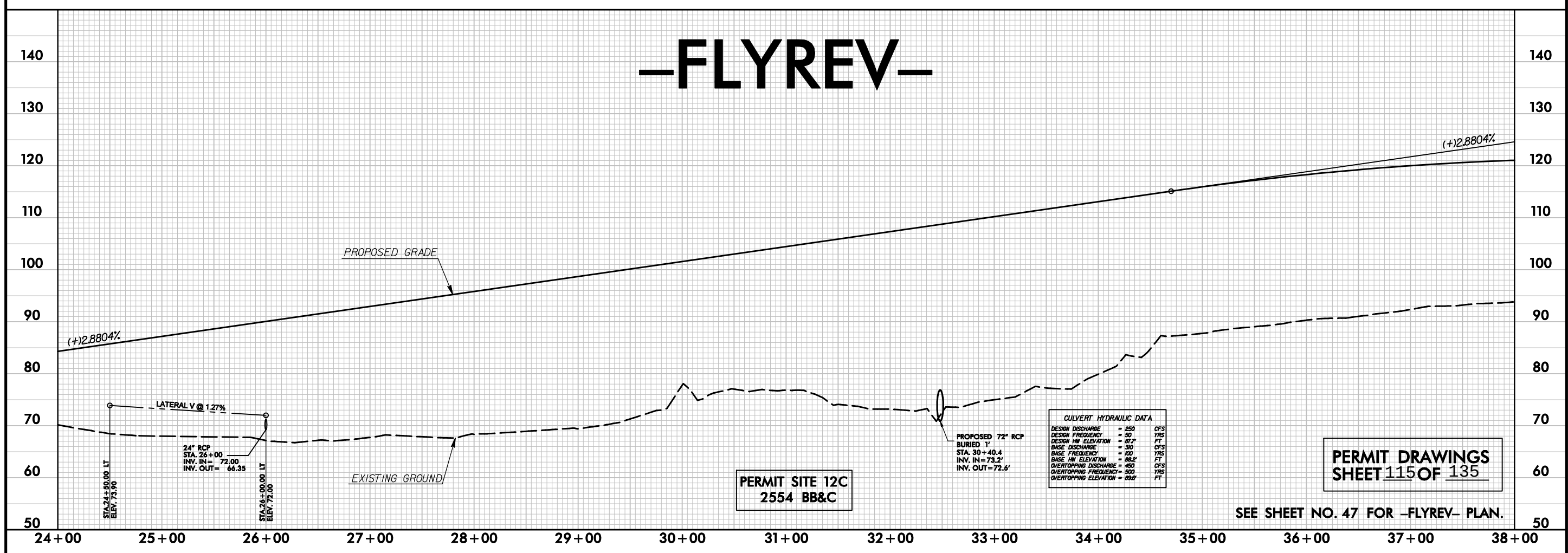
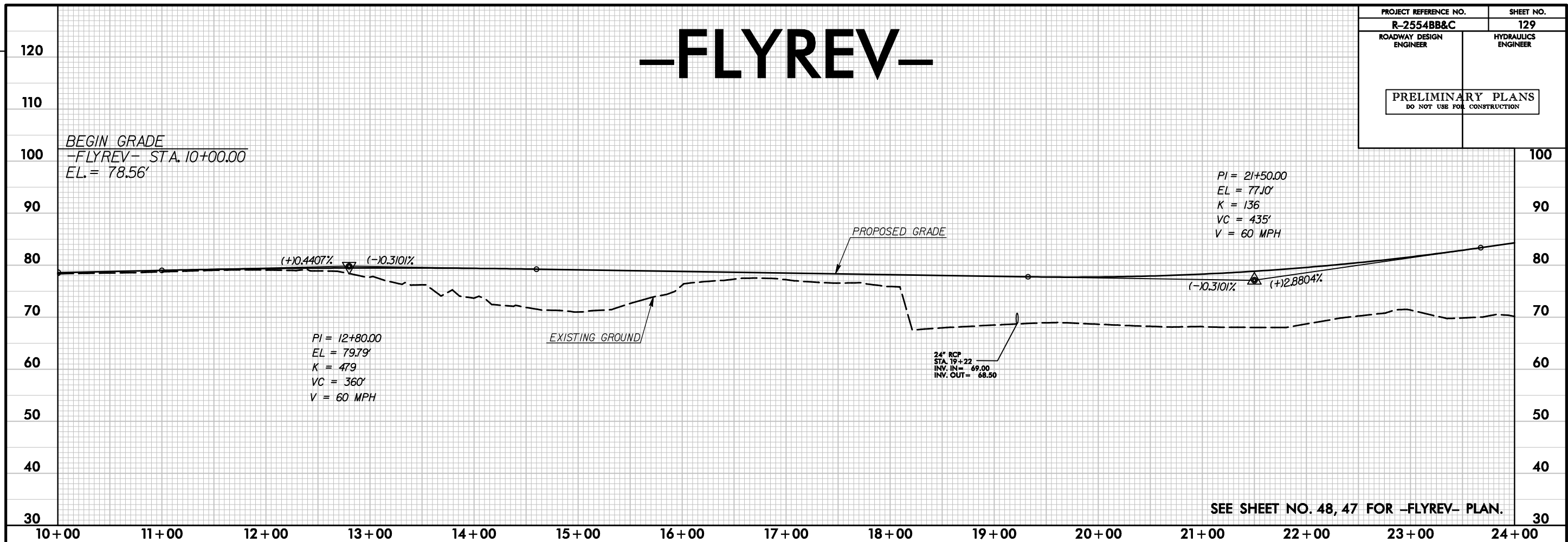


-FLYREV-

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	94
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



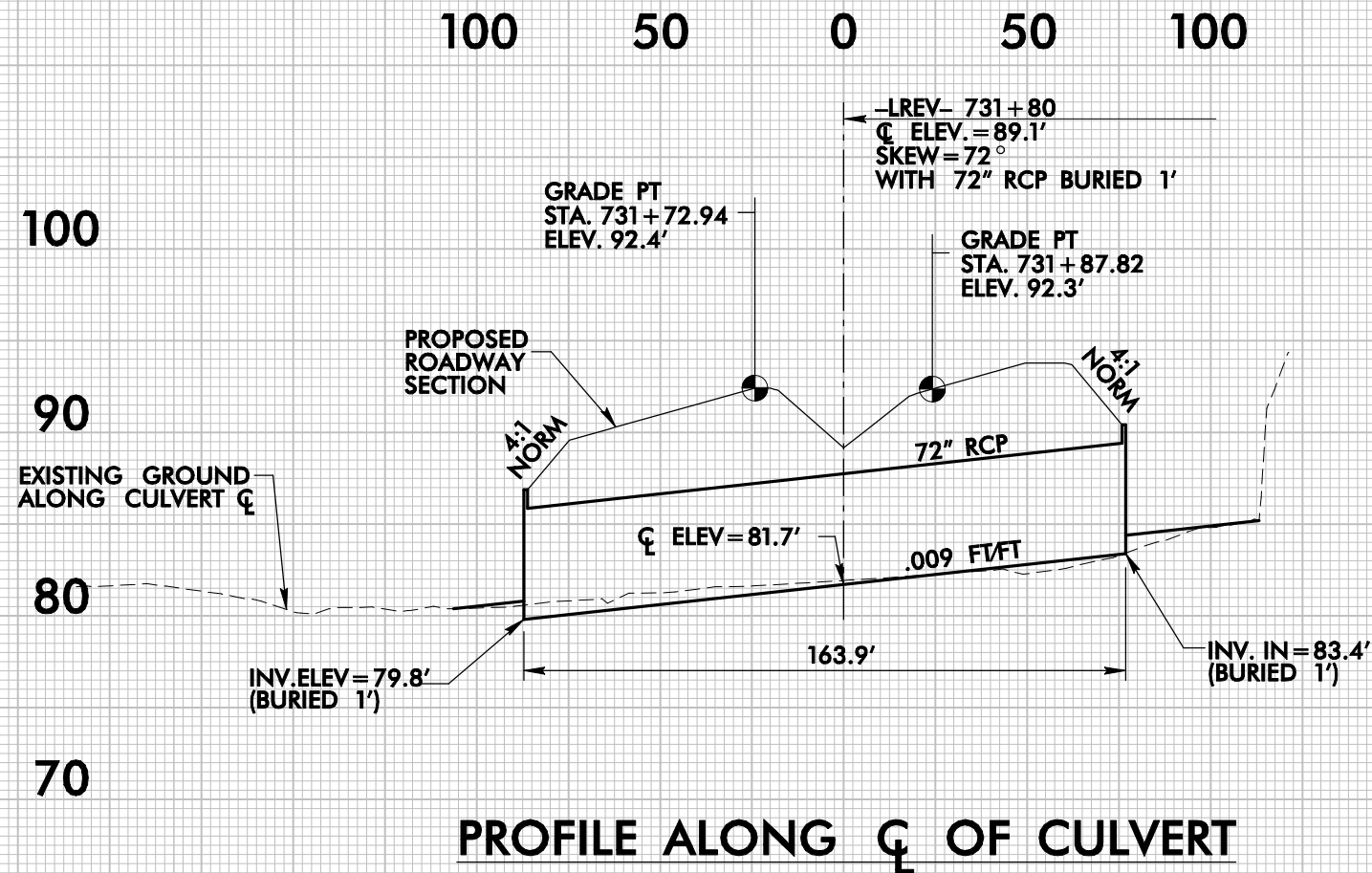
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TIME: 9:43:20 AM
FILE: R-2554B&C.HYD_PRM_PFL_094.dgn



REVISIONS

SITE 12C R-2554BB&C

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. CSR 14	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



WSEL TABLE

YEAR	DISCHARGE (CFS)	WSEL (FT)
10	140	86.6
50	250	87.7
100	310	88.2
500	450	89.6

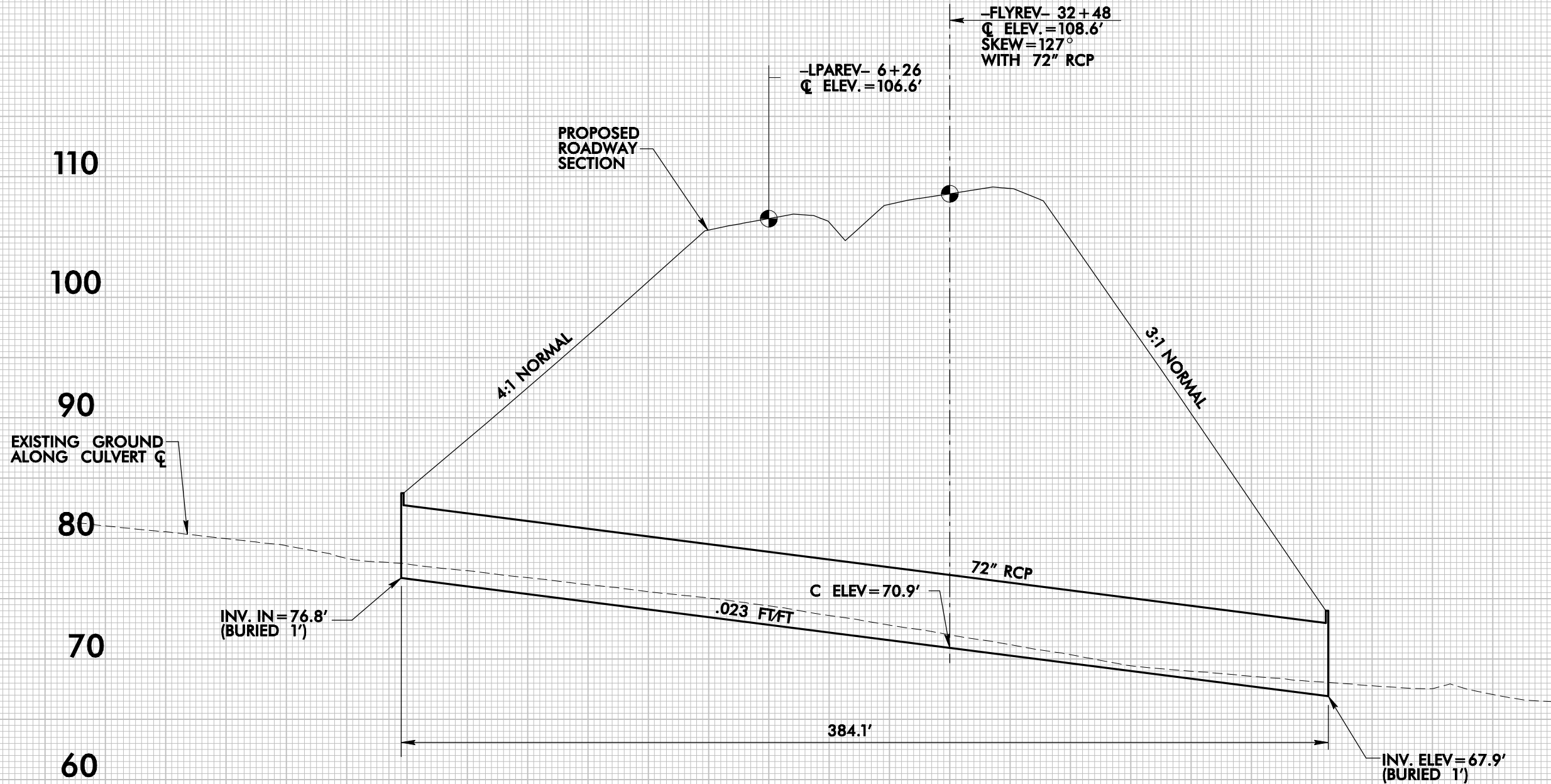
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5/14/99

REVISIONS

SITE 12C R-2554BB&C

PROJECT REFERENCE NO. R-2554BB&CC	SHEET NO. CSR 13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



WSEL TABLE

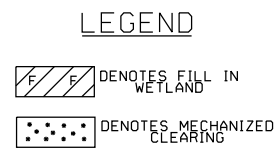
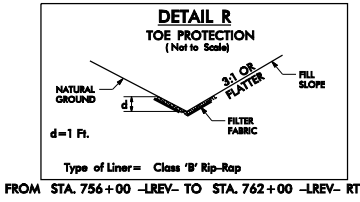
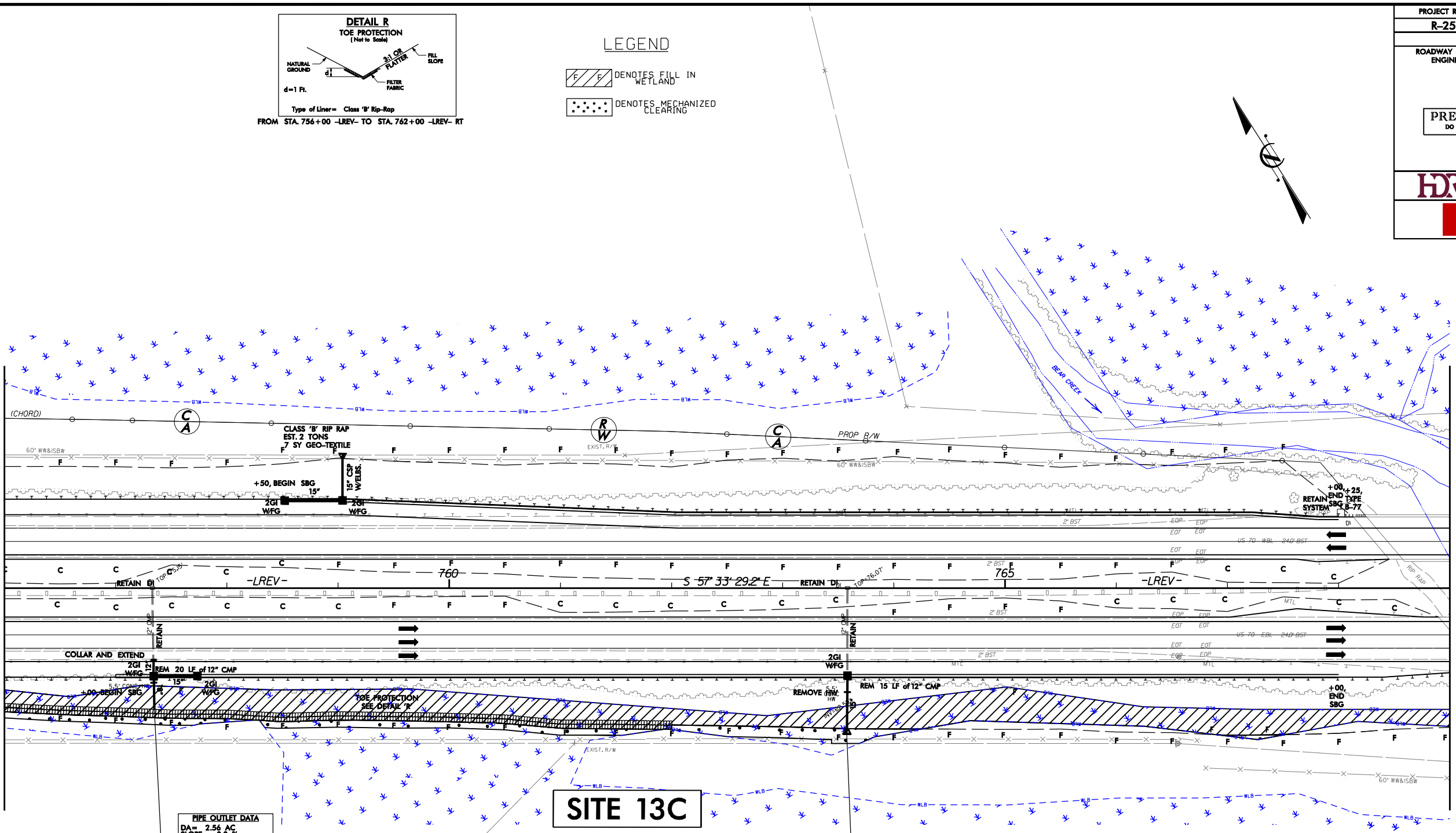
YEAR	DISCHARGE (CFS)	WSEL (FT)
10	140	86.6
50	250	87.7
100	310	88.2
500	450	89.6

PROFILE ALONG $\mathcal{C}$ OF CULVERT

PERMIT DRAWINGS
SHEET 117 OF 135

REVISIONS

MATCHLINE -LREV- STA. 756+00, SEE SHEET 48



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 49
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

PIPE OUTLET DATA
DA= 2.56 AC
SLOPE= 0.3 %
Q2= 5.19 CFS
Q5= 1.77 FPS
Q10= 6.62 CFS
V10= 1.91 FPS

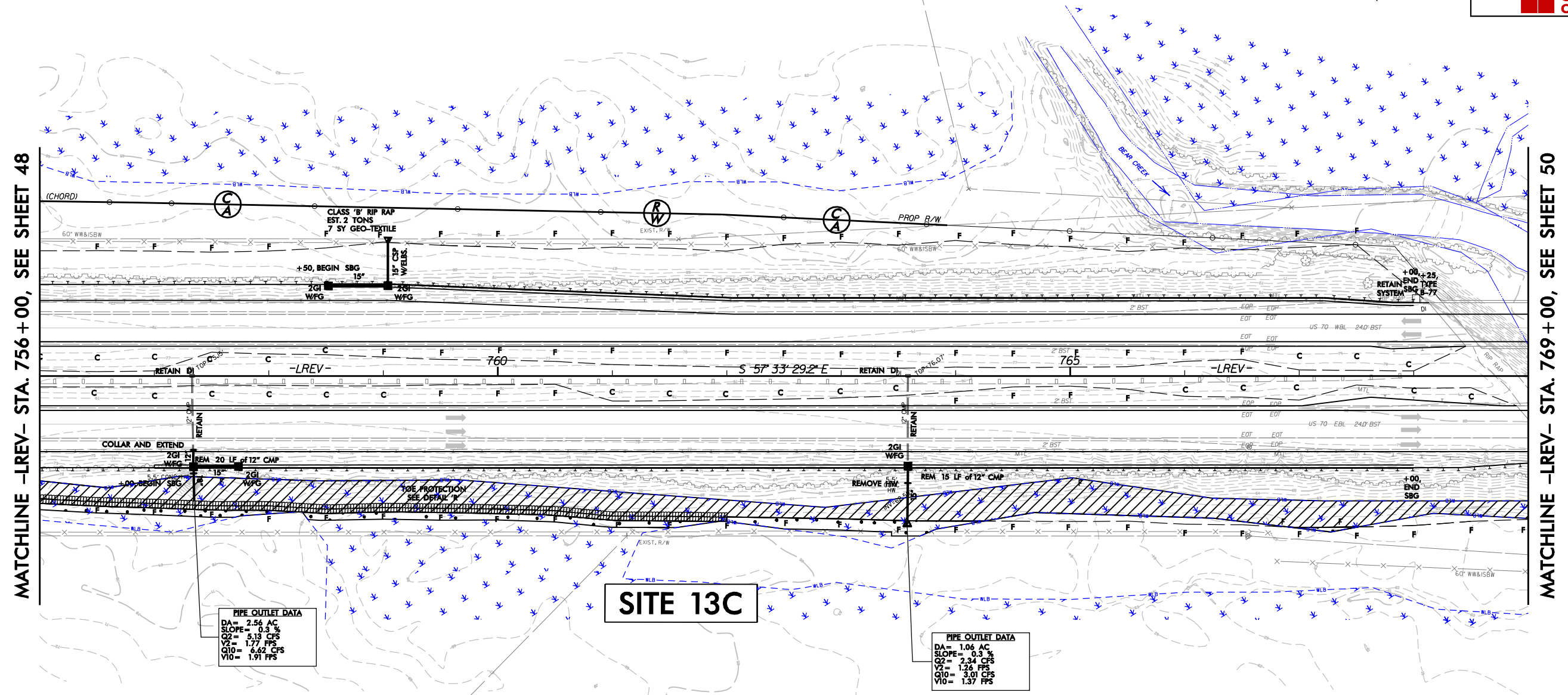
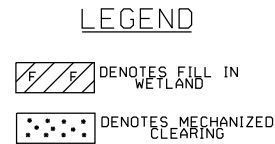
SITE 13C

PIPE OUTLET DATA
DA= 1.06 AC
SLOPE= 0.3 %
Q2= 2.34 CFS
Q5= 1.36 FPS
Q10= 3.01 CFS
V10= 1.37 FPS

MATCHLINE -LREV- STA. 769+00, SEE SHEET 50

PERMIT DRAWINGS
SHEET 118 OF 135

SEE SHEET NO. 96 FOR -LREV_EB- PROFILE.
SEE SHEET NO. 97,98 FOR -LREV_WB- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.



MATCHLINE -LREV- STA. 756+00, SEE SHEET 48

MATCHLINE -LREV- STA. 769+00, SEE SHEET 50

SITE 13C

PIPE OUTLET DATA
DA= 2.56 AC
SLOPE= 0.3 %
Q2= 5.13 CFS
V2= 1.77 FPS
Q10= 6.62 CFS
V10= 1.91 FPS

PIPE OUTLET DATA
DA= 1.06 AC
SLOPE= 0.3 %
Q2= 2.34 CFS
V2= 1.26 FPS
Q10= 3.01 CFS
V10= 1.37 FPS

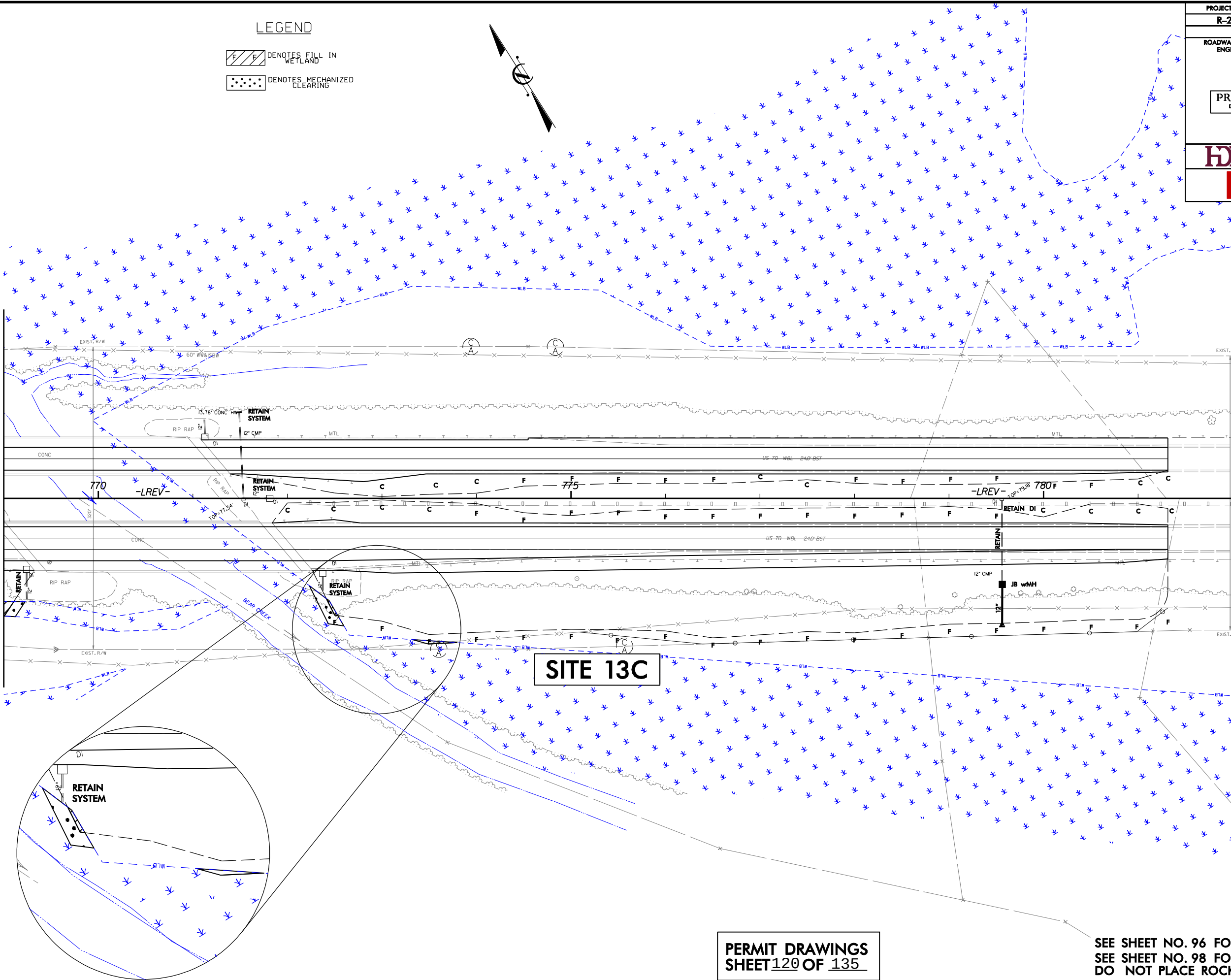
PERMIT DRAWINGS
SHEET 119 OF 135

SEE SHEET NO. 96 FOR -LREV_EB- PROFILE.
SEE SHEET NO. 97,98 FOR -LREV_WB- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

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DATE: 10/2/2012

REVISIONS

MATCHLINE -LREV- STA. 769 + 00, SEE SHEET 49



LEGEND

- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 50
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

MATCHLINE -LREV- STA. 782 + 00, SEE SHEET 51

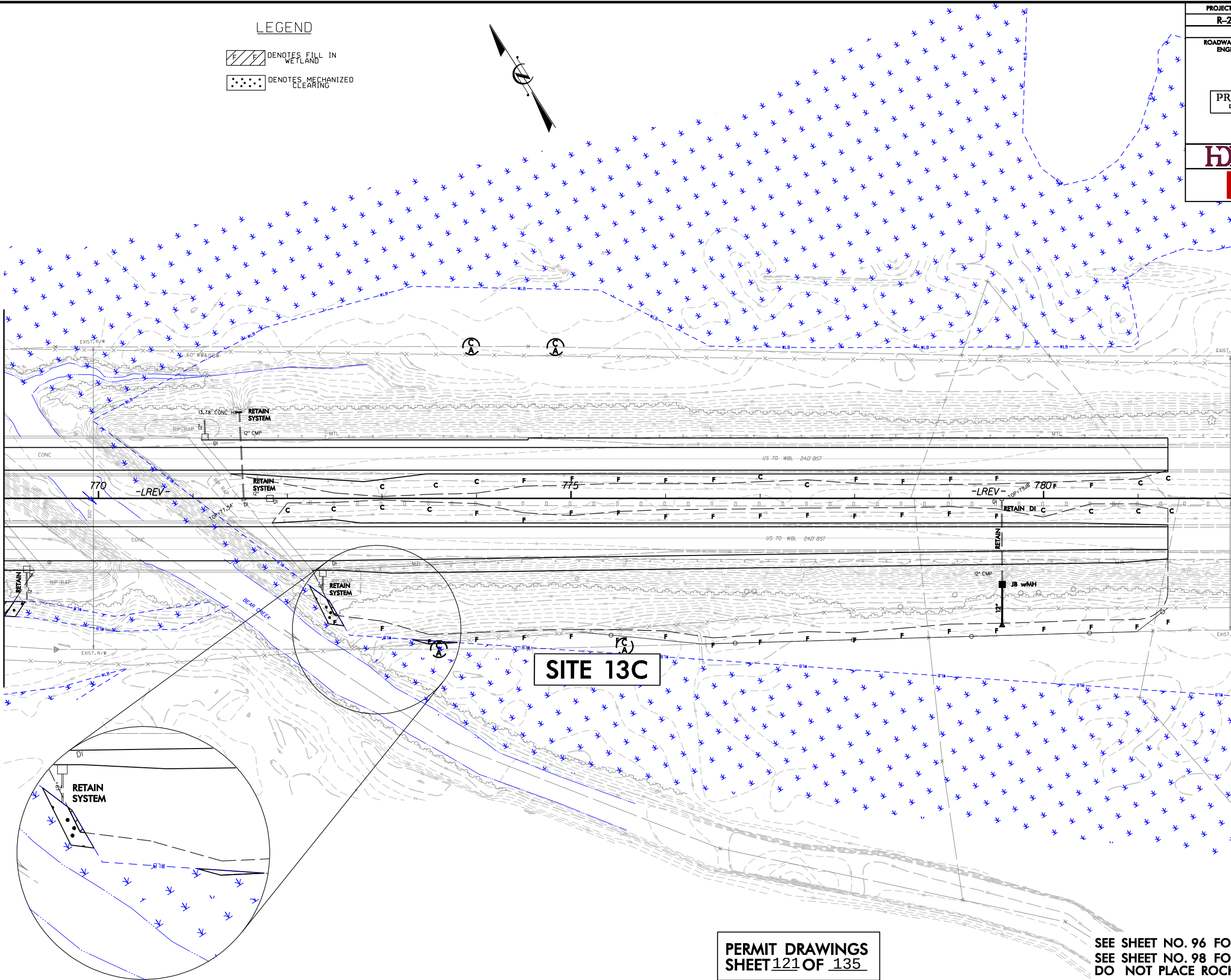
PERMIT DRAWINGS
SHEET 120 OF 135

SEE SHEET NO. 96 FOR -LREV_EB- PROFILE.
SEE SHEET NO. 98 FOR -LREV_WB- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

PLOT DRIVER: NCDOT_color_eng_100.plt
USER: jmassoc
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TIME: 2:42:39 PM
DATE: 10/2/2012

REVISIONS

MATCHLINE -LREV- STA. 769+00, SEE SHEET 49



MATCHLINE -LREV- STA. 782+00, SEE SHEET 51

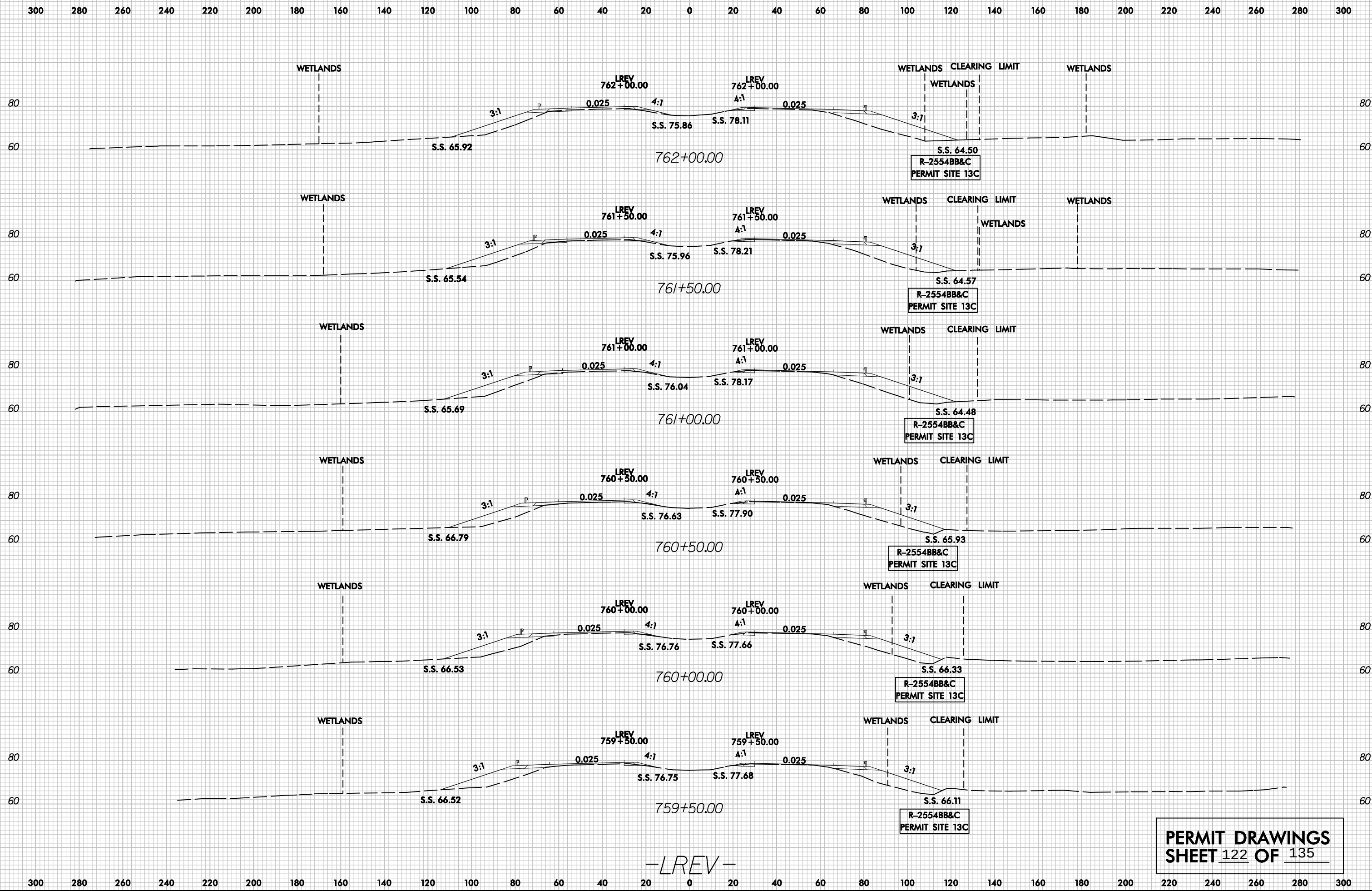
LEGEND

- DENOTES FILL IN WETLAND
■ DENOTES MECHANIZED CLEARING

PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		50
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
 BARNHILL CONTRACTING COMPANY		

PERMIT DRAWINGS
SHEET 121 OF 135

SEE SHEET NO. 96 FOR -LREV_EB- PROFILE.
SEE SHEET NO. 98 FOR -LREV_WB- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.



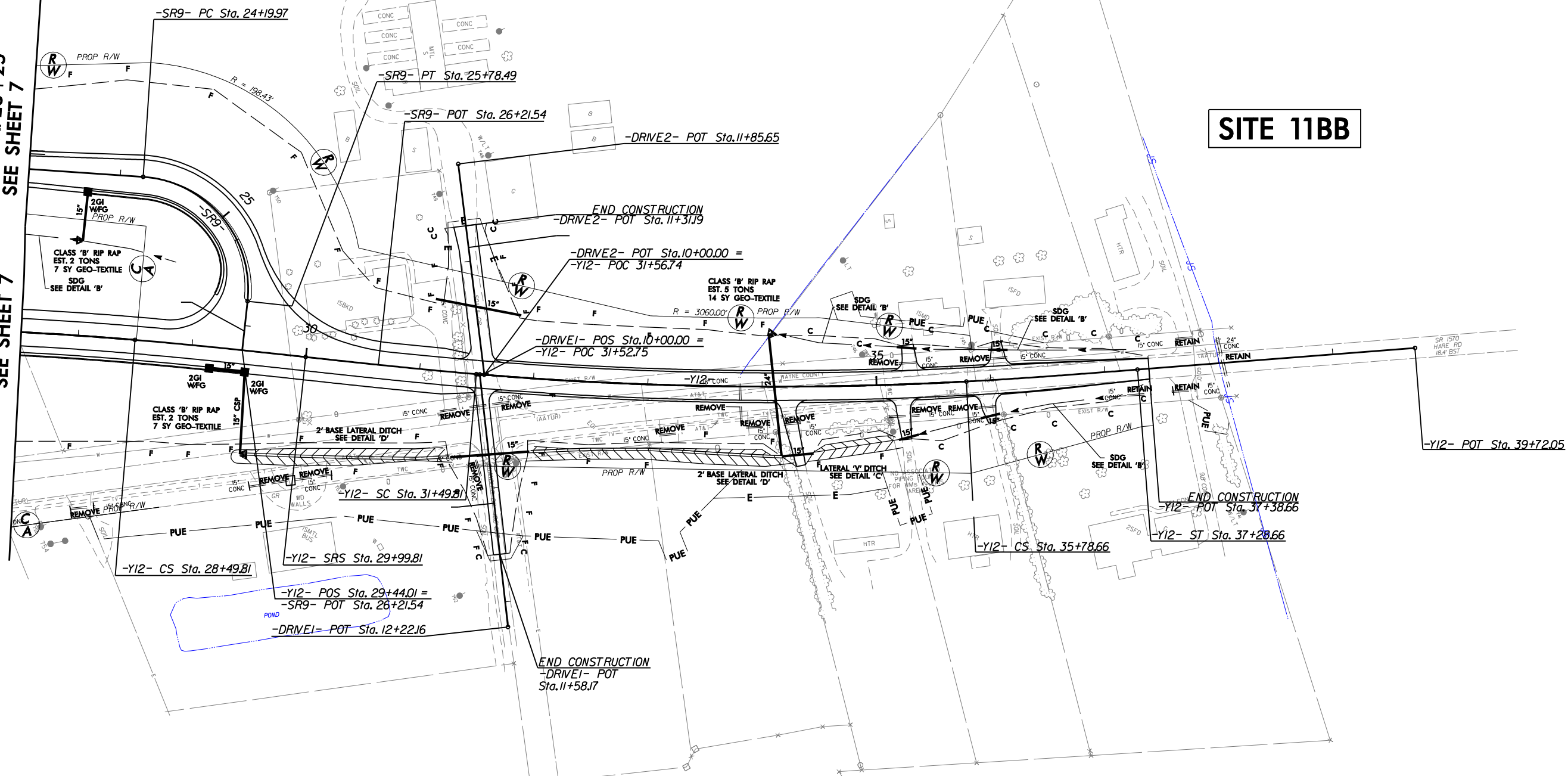
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PENTABLE: NCDOT_permits.NCON.tbl
DATE: 10/2/2012
TIME: 2:11:54 PM

REVISIONS

☒ PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 101 FOR -Y12- PROFILE.
SEE SHEET NO. 135 FOR -SR9- PROFILE.
SEE SHEET NO. 145 FOR -DRIVE1- & -DRIVE2- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

MATCHLINE
-Y12- STA. 27+50
SEE SHEET 7

MATCHLINE
-SR9- STA. 23+25
SEE SHEET 7



PERMIT DRAWINGS
SHEET 123 OF 135

PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		53
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116  BARNHILL CONTRACTING COMPANY		

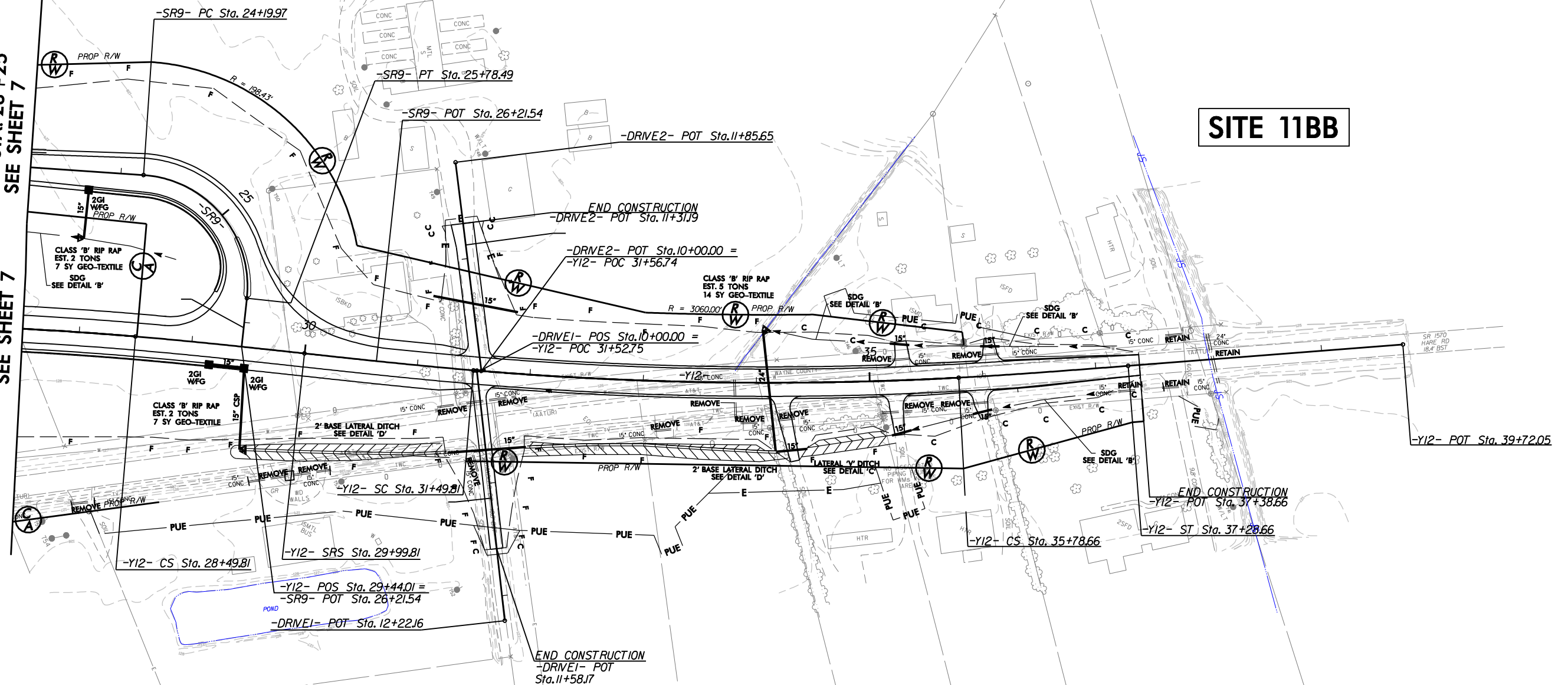
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USER: jmassoc
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DATE: 10/2/2012
TIME: 2:43:16 PM

REVISIONS

☒ PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 101 FOR -Y12- PROFILE.
SEE SHEET NO. 135 FOR -SR9- PROFILE.
SEE SHEET NO. 145 FOR -DRIVE1- & -DRIVE2- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

MATCHLINE
-Y12- STA. 27+50
SEE SHEET 7

MATCHLINE
-SR9- STA. 23+25
SEE SHEET 7



PERMIT DRAWINGS
SHEET 124 OF 135

PROJECT REFERENCE NO.		SHEET NO.					
R-2554BB&C		53					
RW SHEET NO.							
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER					
<table border="1"><tr><td colspan="2">INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION</td></tr><tr><td colspan="2">PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION</td></tr></table>				INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION							
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION							



HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

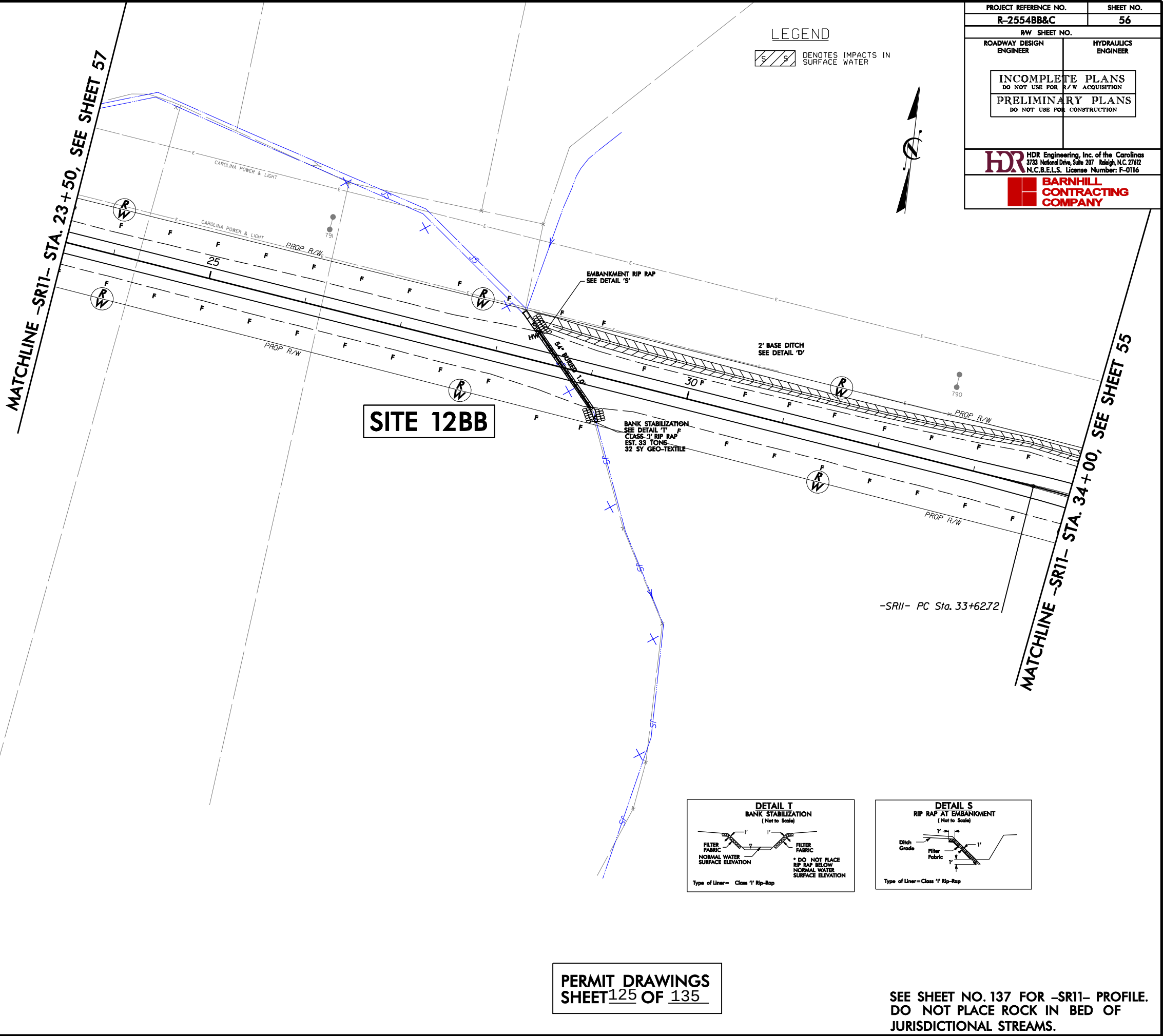


**BARNHILL
CONTRACTING
COMPANY**

PLOT DRIVER: NCDOT_color_eng_100.plt
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PENTABLE: NCDOT_permits.NOCON.tbl
DATE: 10/2/2012
TIME: 2:17:58 PM

REVISIONS



LEGEND

DENOTES IMPACTS IN SURFACE WATER

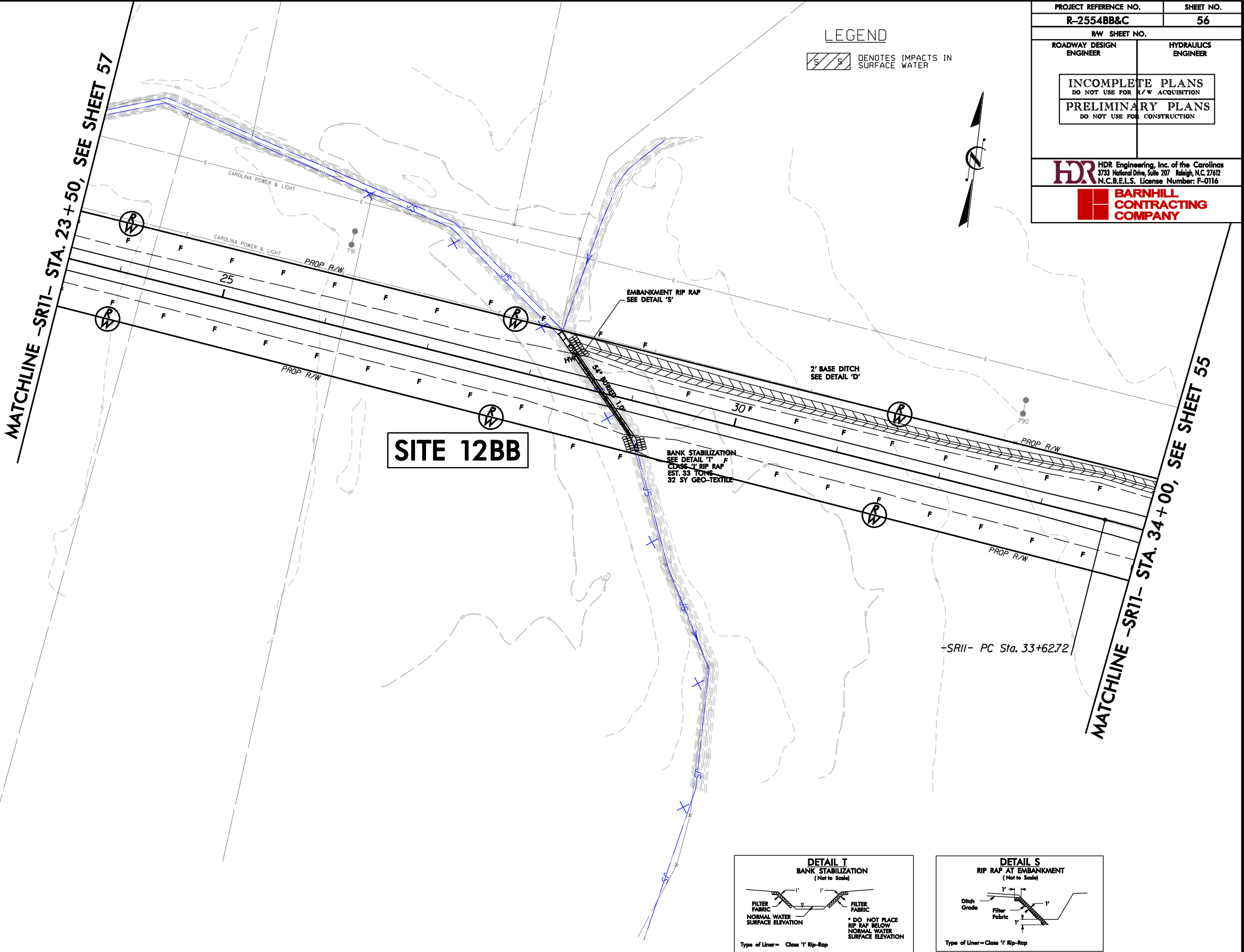


PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 56
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		
BARNHILL CONTRACTING COMPANY		

SEE SHEET NO. 137 FOR -SR11- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PLOT DRIVER: NCDOT_color_eng_100.plt
PENTABLE: NCDOT_permits.tbl
USER: jmassroc
DATE: 10/2/2012
TIME: 2:44:07 PM
FILE: HDR.Engineering_Dept_Marketing\DOTs_Regional_Local_Agencies\IR-2554BB&C_Goldsboro\IR-2554BB&C_Hydro\IR-2554BB&C_HYD_PLM_PLANSHEETS.dgn

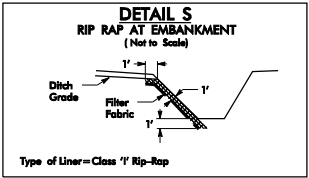
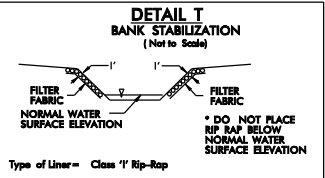
REVISIONS



LEGEND

DENOTES IMPACTS IN SURFACE WATER

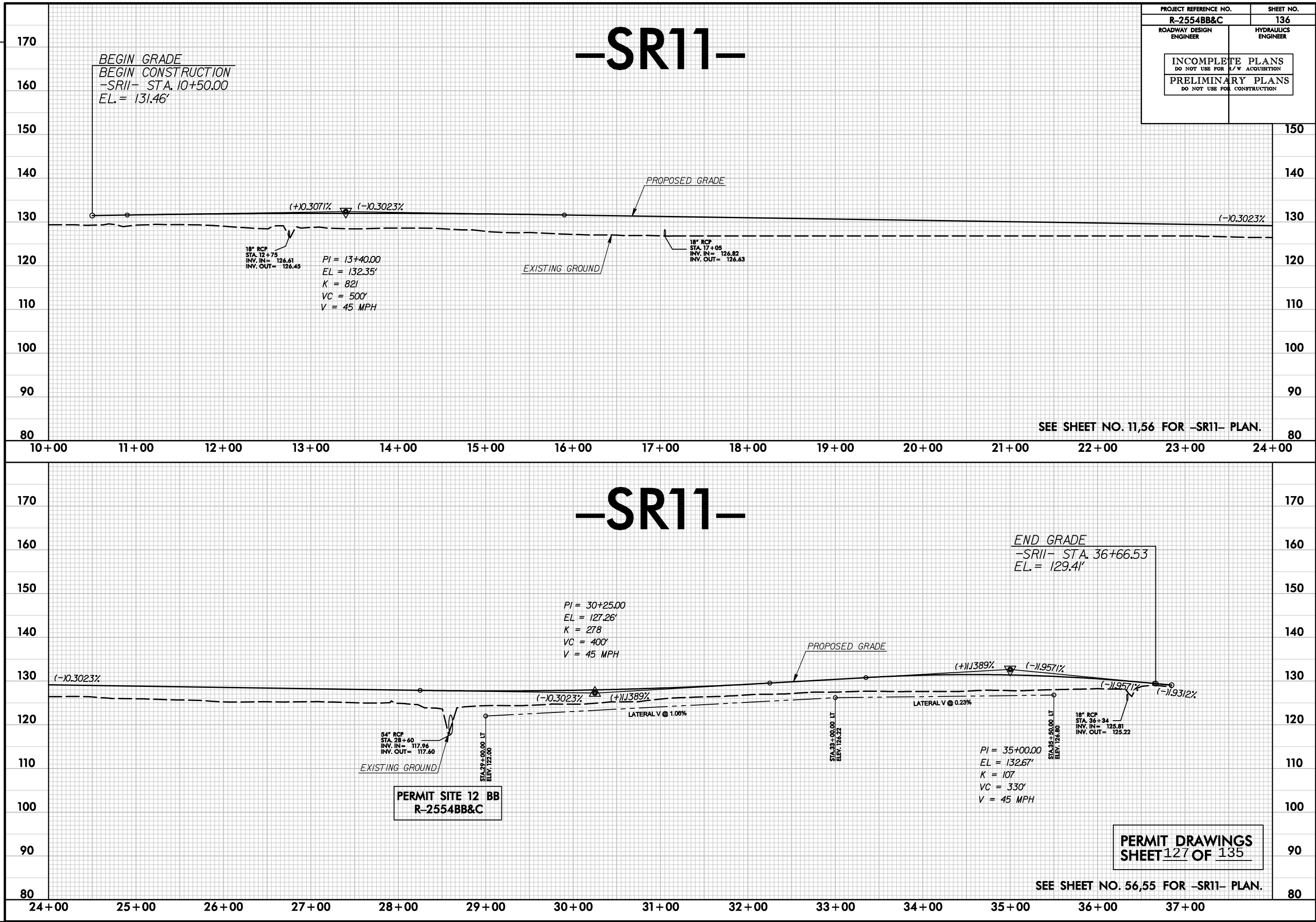
PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 56
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		
BARNHILL CONTRACTING COMPANY		



PERMIT DRAWINGS
SHEET 126 OF 135

SEE SHEET NO. 137 FOR -SR11- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

REVISIONS



PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		136
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

LEGEND

 DENOTES IMPACTS IN SURFACE WATER

 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

BEGIN JS

SITE 13BB

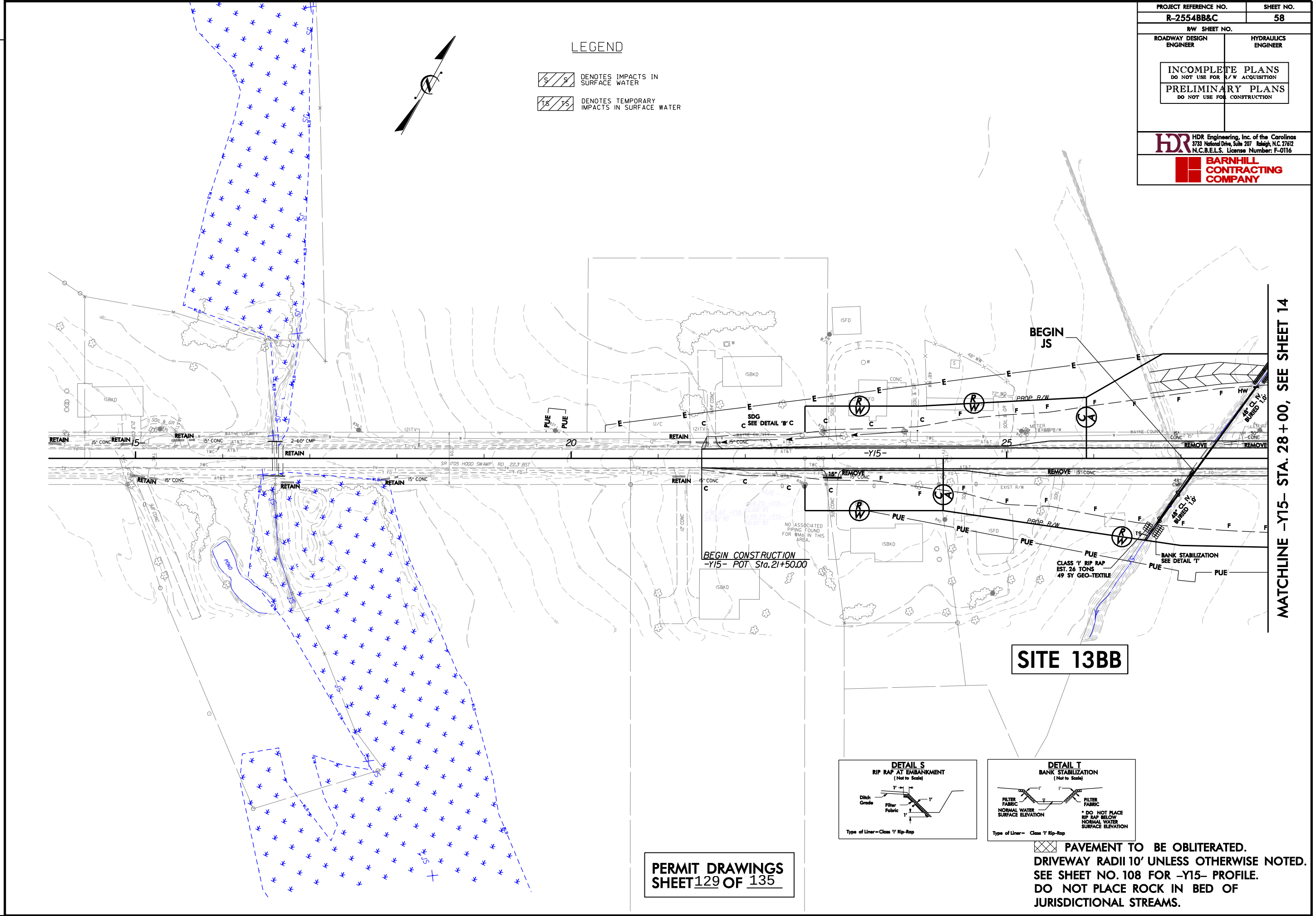
PERMIT DRAWINGS
SHEET 128 OF 135

 PAVEMENT TO BE OBLITERATED.
 DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
 SEE SHEET NO. 108 FOR -Y1- PROFILE.
 DO NOT PLACE ROCK IN BED OF
 JURISDICTIONAL STREAMS.

MATCHLINE -Y15- STA. 28+00, SEE SHEET 14

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TIME: 2:44:31 PM
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REVISIONS

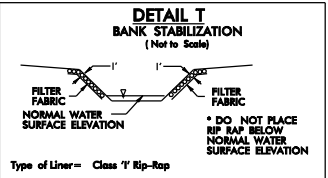
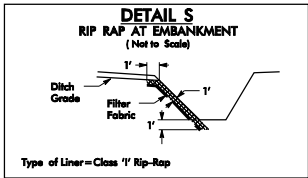


LEGEND

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 58
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

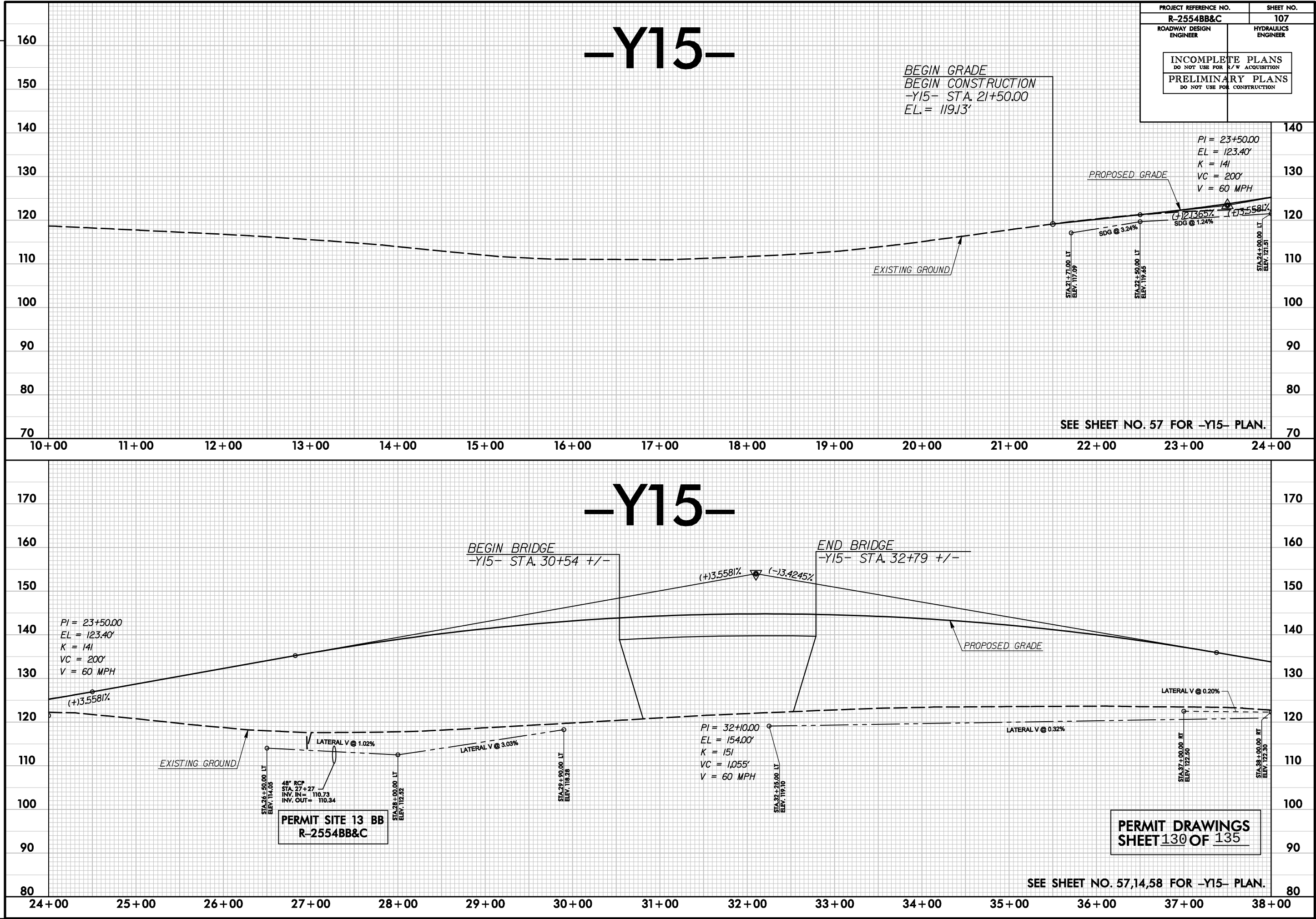
PERMIT DRAWINGS
SHEET 129 OF 135



PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 108 FOR -Y15- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

MATCHLINE -Y15- STA. 28+00, SEE SHEET 14

REVISIONS



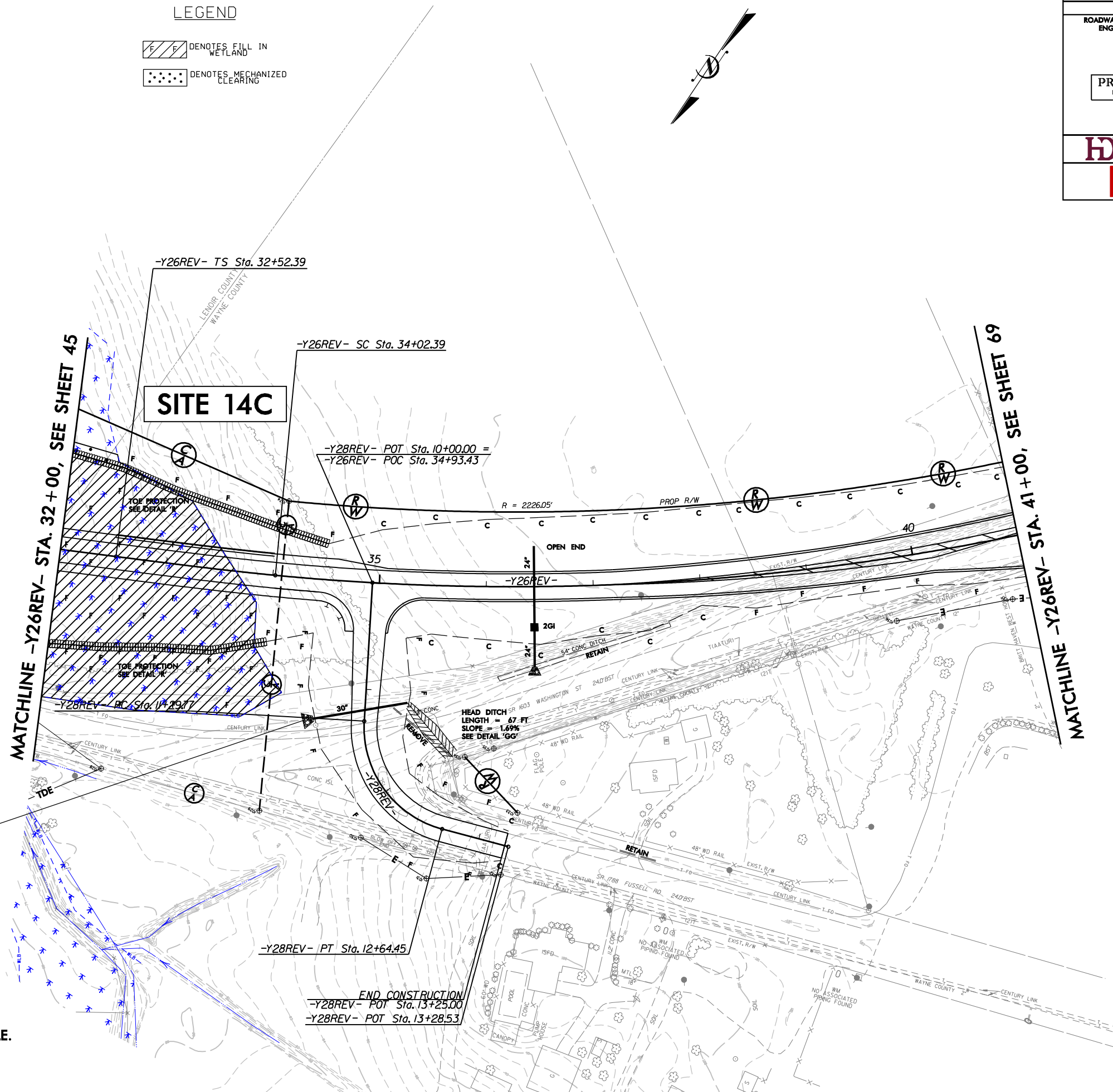
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REVISIONS

PERMIT DRAWINGS
SHEET 132 OF 135

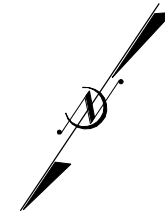
PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 118,119 FOR -Y26REV- PROFILE.
SEE SHEET NO. 121 FOR -Y28REV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PIPE OUTLET DATA
DA = 30.60 AC
SLOPE = 0.3 %
Q2 = 5.28 CFS
V2 = 1.49 FPS
Q10 = 8.75 CFS
V10 = 1.73 FPS



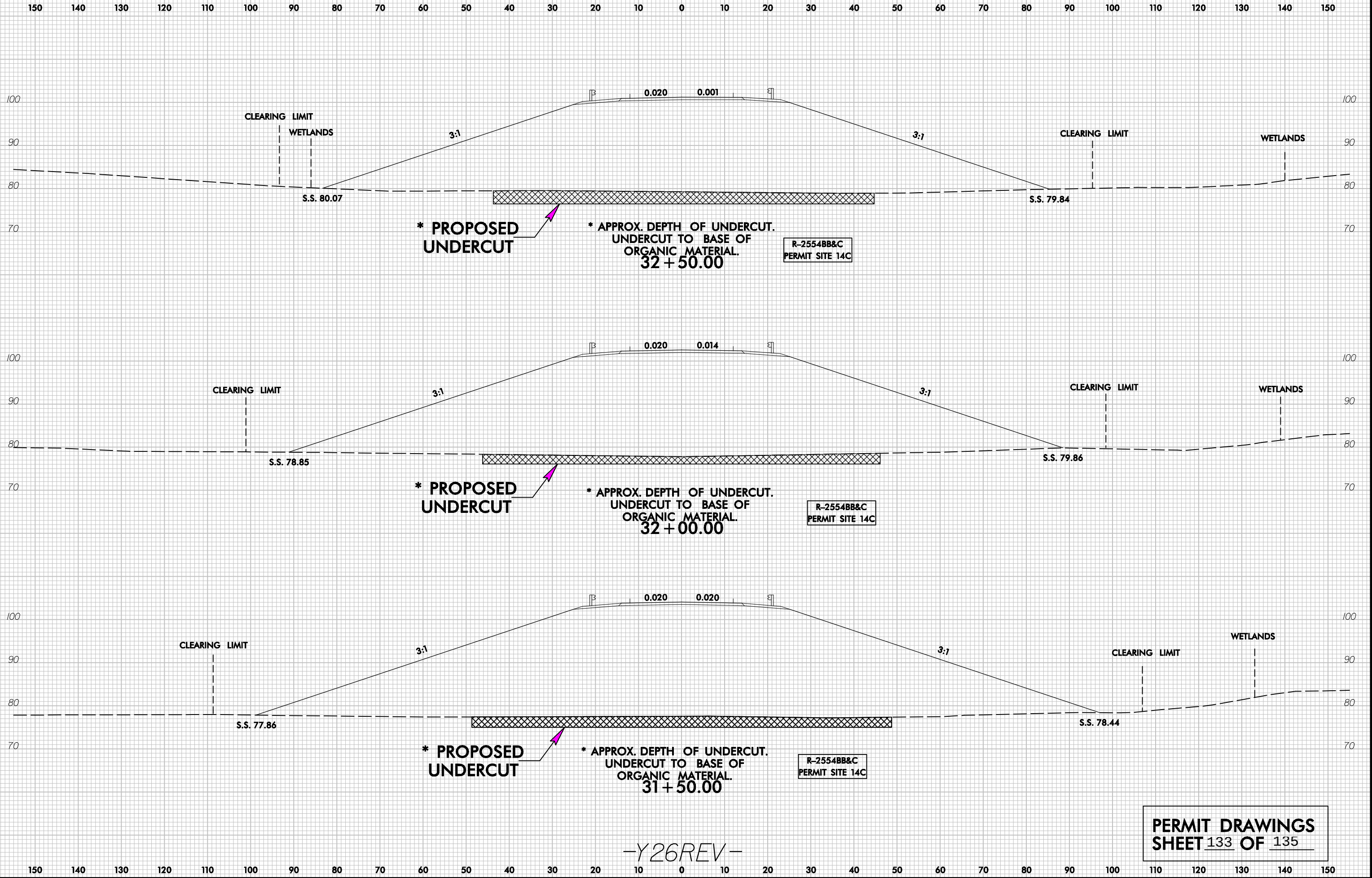
LEGEND

Denotes Fill in Wetland
Denotes Mechanized Clearing



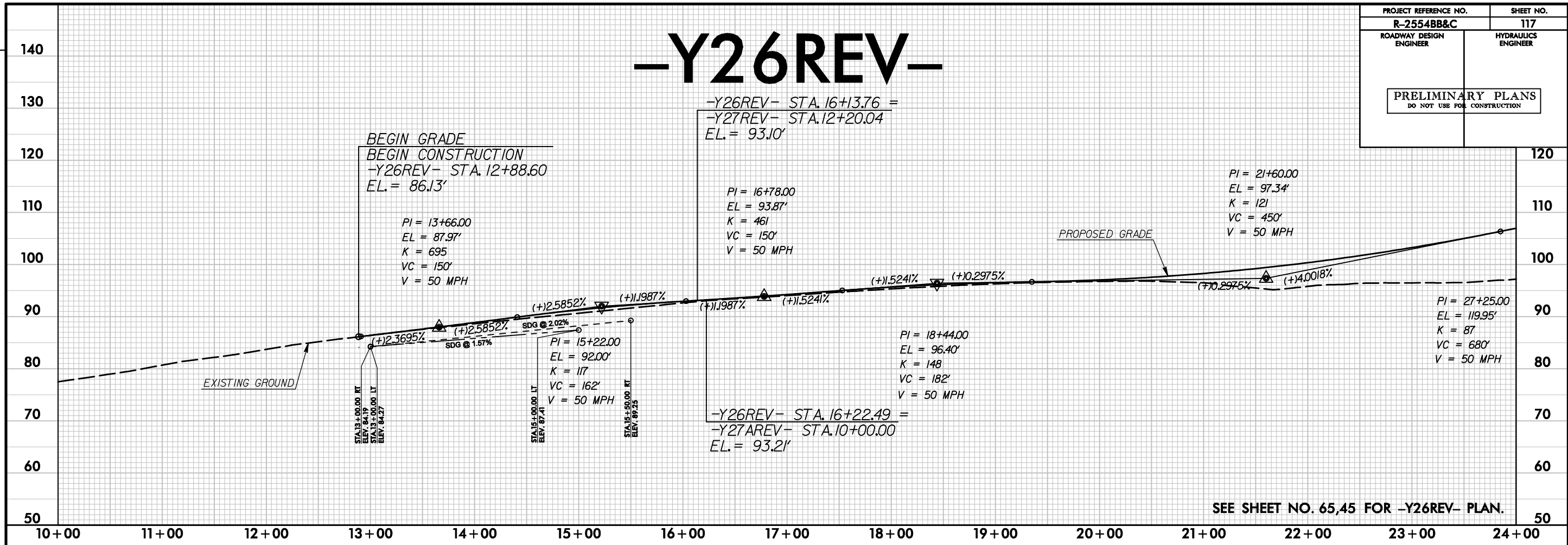
PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 67	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
		BARNHILL CONTRACTING COMPANY	

8/23/99

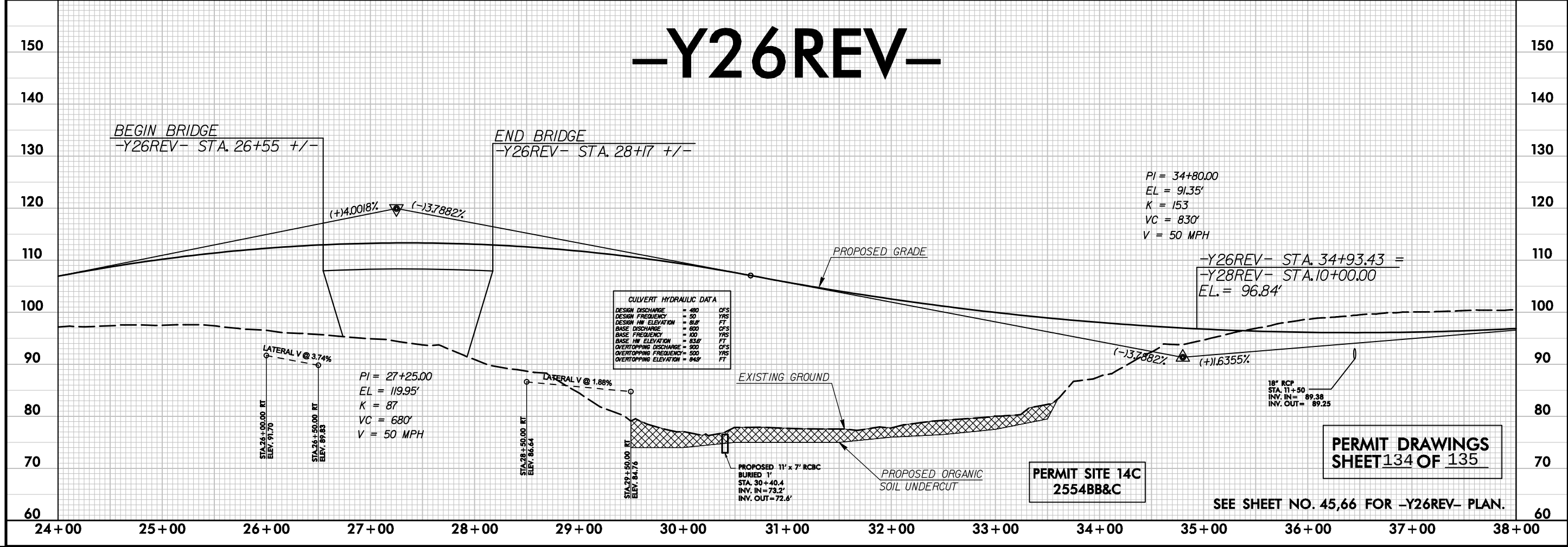


-Y26REV-

REVISIONS



PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		117
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		



REVISIONS

5/14/99

SITE 14C R-2554BB&C

PROJECT REFERENCE NO.
R-2554BB&C

ROADWAY DESIGN
ENGINEER

SHEET NO.
CSR 12

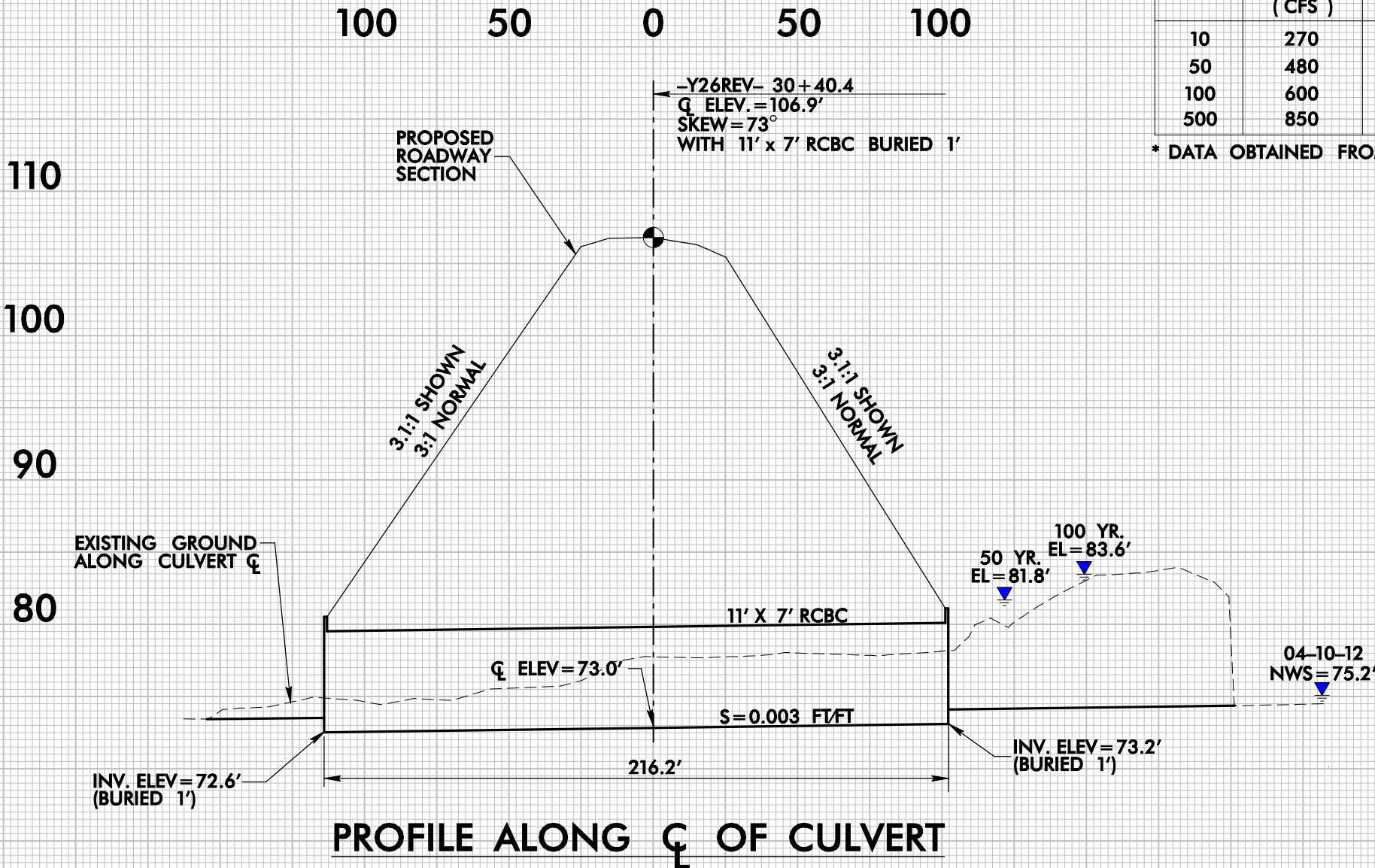
HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WSEL TABLE

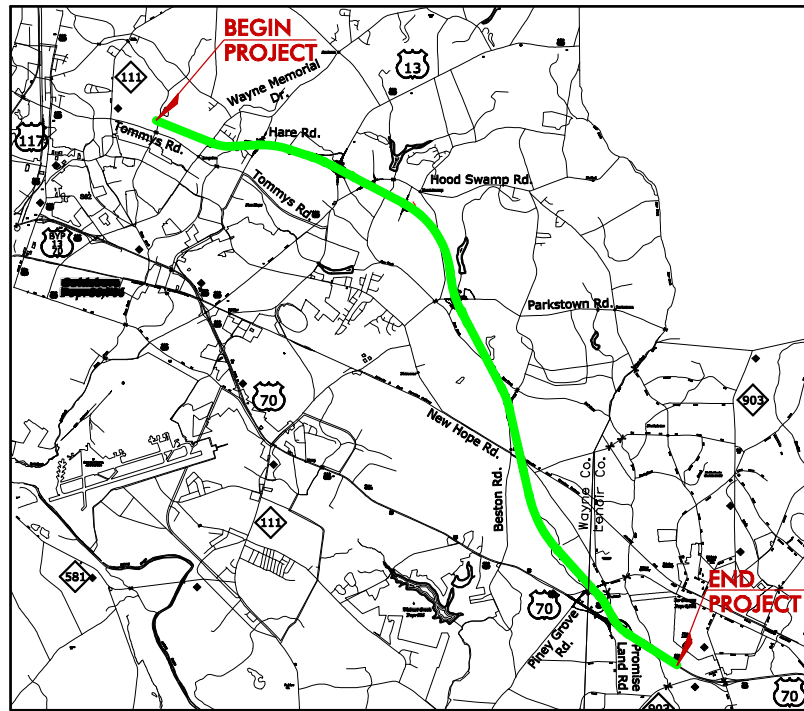
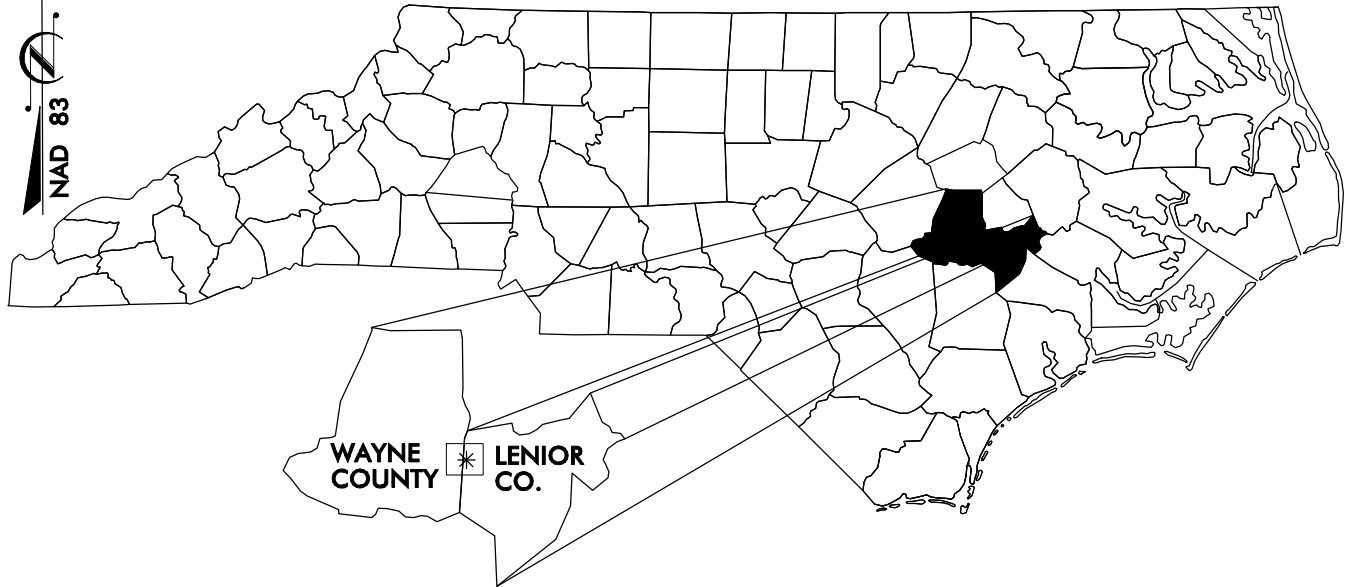
YEAR	DISCHARGE (CFS)	EXISTING WSEL	PROPOSED* WSEL
10	270	78.7'	79.4'
50	480	81.0'	81.8'
100	600	82.1'	83.6'
500	850	84.1'	92.6'

* DATA OBTAINED FROM STA. 1451 (U/S TOE)





NORTH CAROLINA



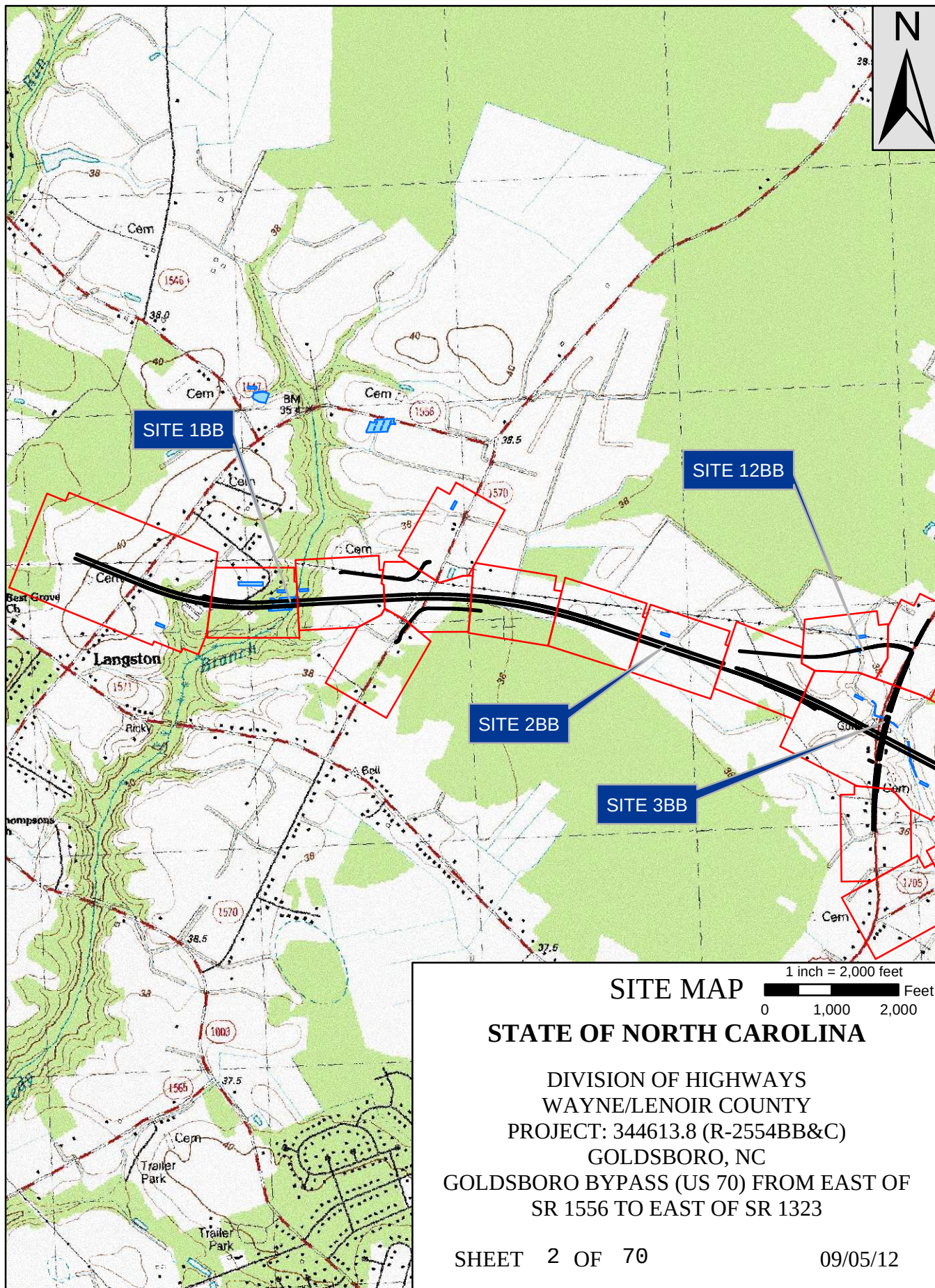
VICINITY MAPS

NORTH CAROLINA

DIVISION OF HIGHWAYS
WAYNE/LENOIR COUNTY

PROJECT: 34461.3.8
(R-2554BB&C)

U.S. 70 (GOLDSBORO BYPASS)
FROM EAST OF SR 1556
TO EAST OF SR 1323



SITE MAP

1 inch = 2,000 feet

0 1,000 2,000 Feet

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

WAYNE/LENOIR COUNTY

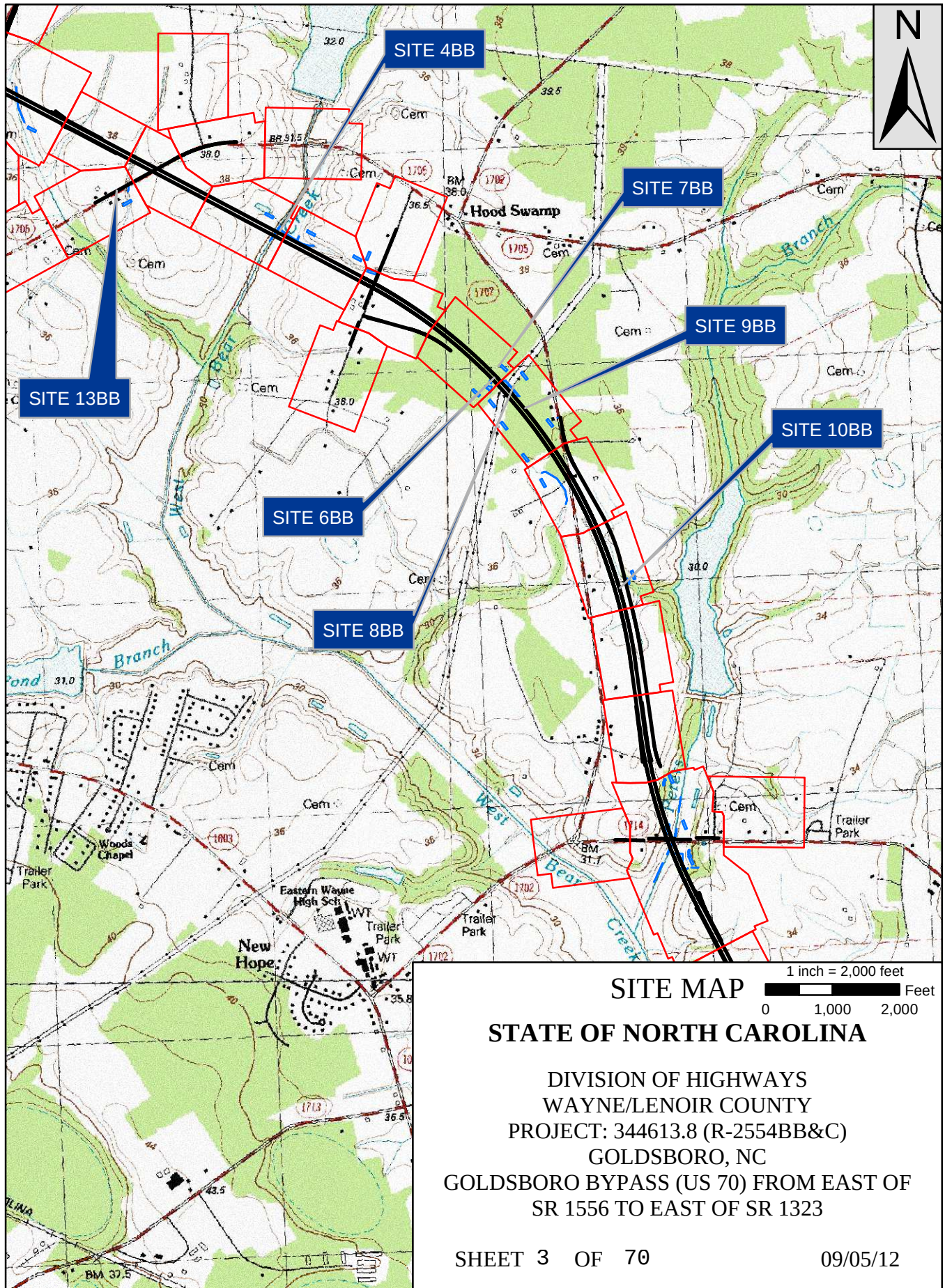
PROJECT: 344613.8 (R-2554BB&C)

GOLDSBORO, NC

GOLDSBORO BYPASS (US 70) FROM EAST OF
SR 1556 TO EAST OF SR 1323

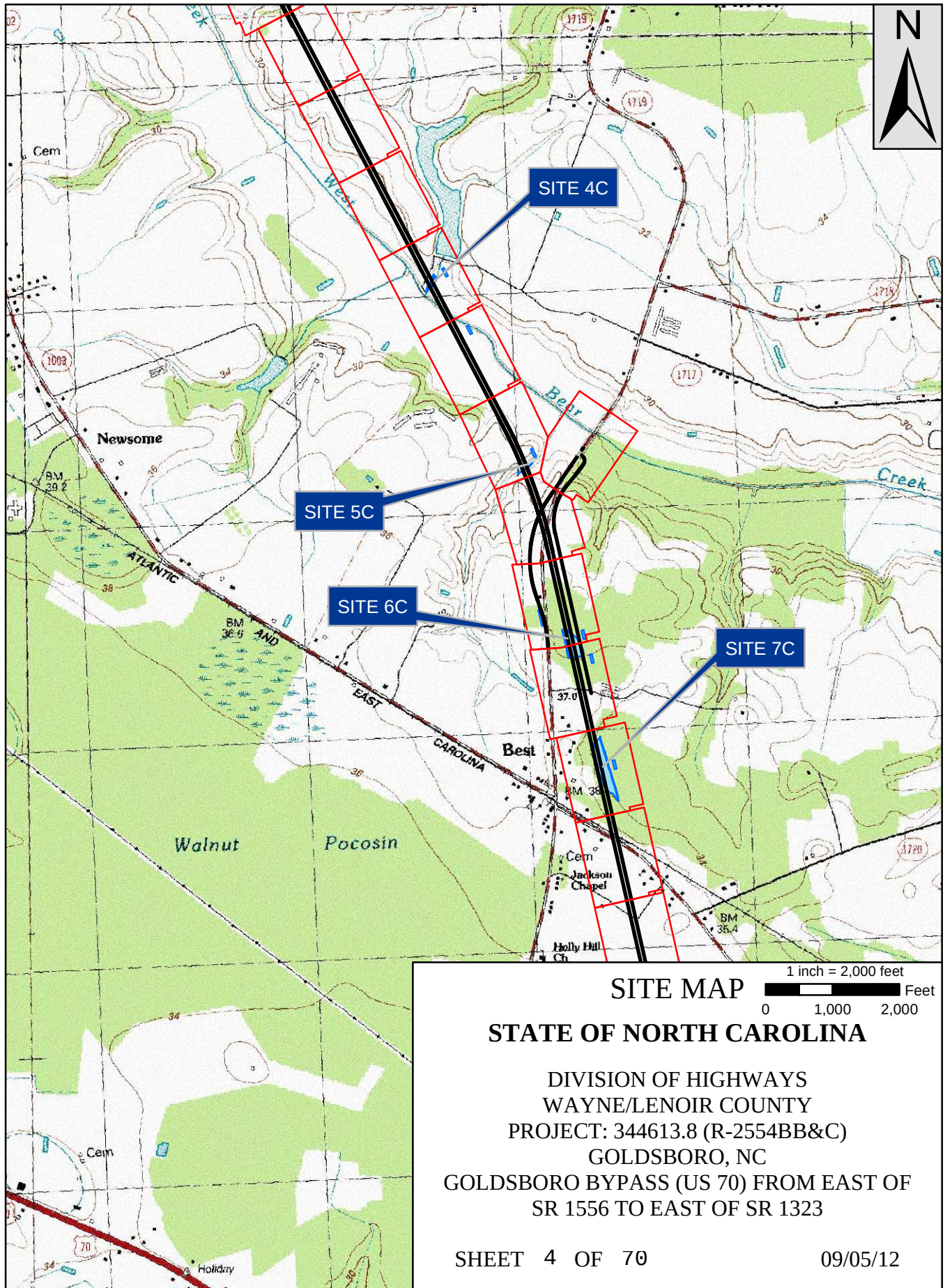
SHEET 2 OF 70

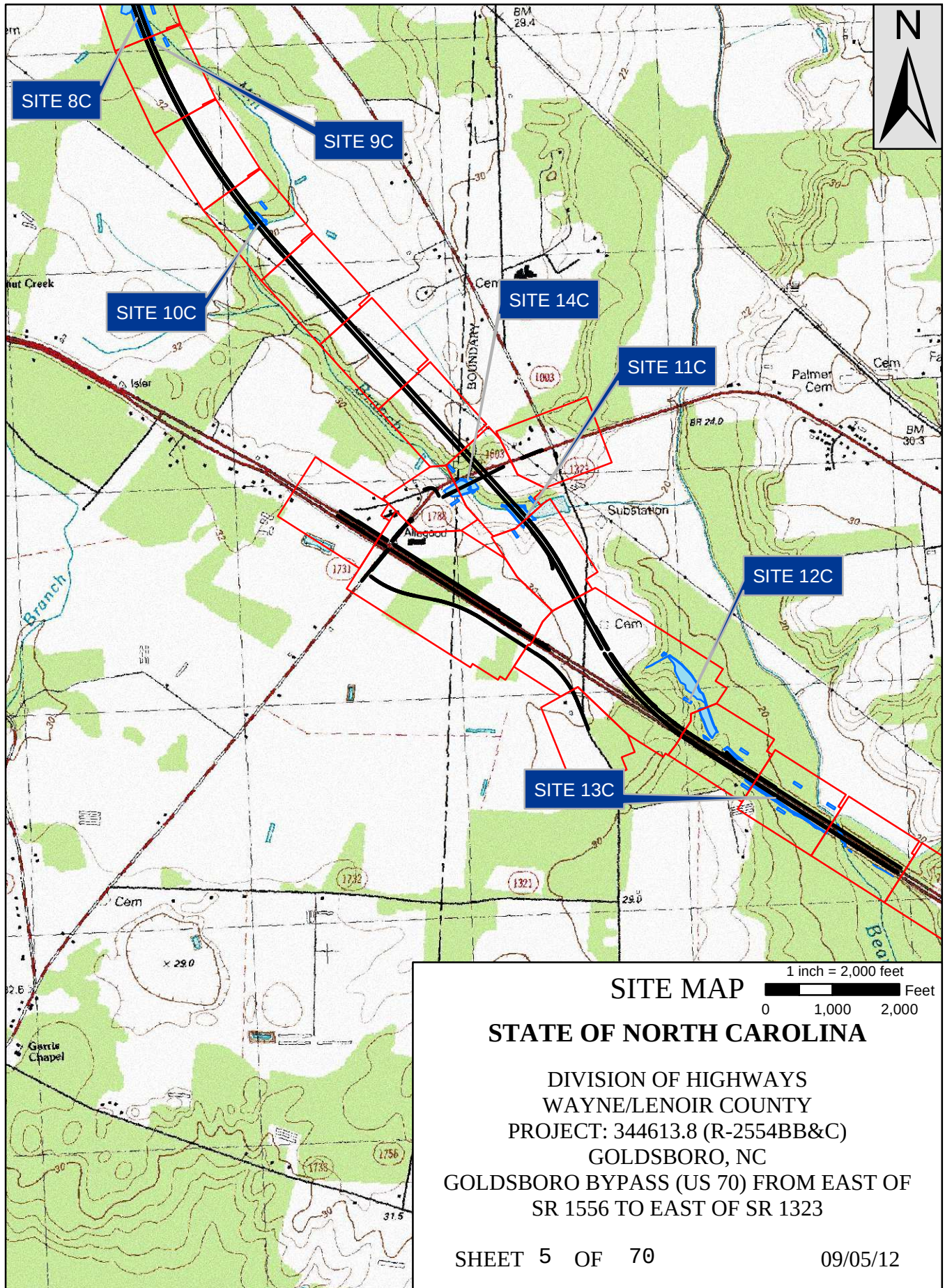
09/05/12



SITE MAP
STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS
WAYNE/LENOIR COUNTY
PROJECT: 344613.8 (R-2554BB&C)
GOLDSBORO, NC
GOLDSBORO BYPASS (US 70) FROM EAST OF
SR 1556 TO EAST OF SR 1323





SITE MAP

1 inch = 2,000 feet

0 1,000 2,000 Feet

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS
WAYNE/LENOIR COUNTY
PROJECT: 344613.8 (R-2554BB&C)
GOLDSBORO, NC

GOLDSBORO BYPASS (US 70) FROM EAST OF
SR 1556 TO EAST OF SR 1323

SHEET 5 OF 70

09/05/12

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES	SITE NO.
1	Carrie Mae Ward Lewiis	605 E. Chestnut St. Goldsboro, NC 27530	1BB
2	TGL Property Management, LLC	1112 Park Avenue A Goldsboro, NC 27530	1BB
59	J. Issac Gurley, Farms, INC.	PO Box 1661 Goldsboro, NC 27533	3BB
75	Earl E. Parks	2875 HWY 13 North Goldsboro, NC 27534	3BB
89	Glen A. Thomas, ET AL	PO Box 11184 Goldsboro, NC 27534	3BB,12BB
95	Winston C. Smith	315 Oak Hill Stockbridge, GA 30281	6BB,7BB
163	Berry A. Parks	839 Mark Edwards Rd. La Grange, NC 28551	7BB
173	Berry A. Parks	839 Mark Edwards Rd. La Grange, NC 28551	9BB
103	Winston P. Best	1935 New Hope Road La Grange, NC 28551	9BB,10BB
104	Charles A. Parks	811 Mark Edwards Rd. La Grange, NC 28551	9BB

NORTH CAROLINA

DIVISION OF HIGHWAYS
WAYNE/LENOIR COUNTY

PROJECT: 34461.3.8
(R-2554BB&C)

U.S. 70 (GOLDSBORO BYPASS)
FROM EAST OF SR 1556
TO EAST OF SR 1323

SHEET 6 OF 70 10 / 15 / 12

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES	SITE NO.
105	Best Farms, Inc.	1361 New Hope Rd. La Grange, NC 28551	10BB
80	Frances B. Smith, ETALS	262 Hood Swamp Rd. Goldsboro, NC 27534	13BB
9	NCDOT	1 South Wilmington St. Raleigh, NC 27601	1C
6	NCDOT	1 South Wilmington St. Raleigh, NC 27601	1C,2C
12A	NCDOT	1 South Wilmington St. Raleigh, NC 27601	1C,3C
12B	NCDOT	1 South Wilmington St. Raleigh, NC 27601	1C,3C
26	NCDOT	1 South Wilmington St. Raleigh, NC 27601	4C
27	NCDOT	1 South Wilmington St. Raleigh, NC 27601	4C
31	NCDOT	1 South Wilmington St. Raleigh, NC 27601	5C
34	NCDOT	1 South Wilmington St. Raleigh, NC 27601	6C

NORTH CAROLINA

DIVISION OF HIGHWAYS
WAYNE/LENOIR COUNTY

PROJECT: 34461.3.8
(R-2554BB&C)

U.S.70 (GOLDSBORO BYPASS)
FROM EAST OF SR 1556
TO EAST OF SR 1323

SHEET 7 OF 70 10 / 15 / 12

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES	SITE NO.
35	Ralph Garris	1 South Wilmington St. Raleigh, NC 27601	7C
36	Christine Eason Garris	1 South Wilmington St. Raleigh, NC 27601	7C
38	James Alton Eason	1 South Wilmington St. Raleigh, NC 27601	7C
56	Paul Everette Uzzell	1 South Wilmington St. Raleigh, NC 27601	8C
57	Sleepy Creek Farms, Inc.	1 South Wilmington St. Raleigh, NC 27601	8C,9C
58	Thomas Uzzell Farms, Inc.	1 South Wilmington St. Raleigh, NC 27601	9C
59	Fannie A. Isler	1 South Wilmington St. Raleigh, NC 27601	9C
60	Dorothy Langston Isler	1 South Wilmington St. Raleigh, NC 27601	10C
61	Billy Ray Vinson	1 South Wilmington St. Raleigh, NC 27601	10C
64	Martha G. Mooring	1 South Wilmington St. Raleigh, NC 27601	11C,12C, 13C

NORTH CAROLINA

DIVISION OF HIGHWAYS
WAYNE/LENOIR COUNTY

PROJECT: 34461.3.8
(R-2554BB&C)

U.S. 70 (GOLDSBORO BYPASS)
FROM EAST OF SR 1556
TO EAST OF SR 1323

SHEET 8 OF 70 10 / 15 / 12

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES	SITE NO.
65	Sleepy Creek Farms, Inc.	1 South Wilmington St. Raleigh, NC 27601	12C
66	Restorations Systems, LLC.	1 South Wilmington St. Raleigh, NC 27601	12C
68	Ronald Lee Page	1 South Wilmington St. Raleigh, NC 27601	13C

NORTH CAROLINA

DIVISION OF HIGHWAYS
WAYNE/LENOIR COUNTY

PROJECT: 34461.3.8
(R-2554BB&C)

U.S. 70 (GOLDSBORO BYPASS)

FROM EAST OF SR 1556

TO EAST OF SR 1323

SHEET 9 OF 7 10 / 15 / 12

SHEET 9 OF 7 10//15//12

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft ²)	ZONE 2 (ft ²)
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)		
1BB	BRIDGE	154+85/157+27 -LREV-		X		12673	6632	19305	0	2662	2662		
2BB	CULVERT	212+18/214+44 -LREV-	X						14557	9274	23831		
3BB	CULVERT	243+89/256+27 -LREV-	X						84682	54810	139492		
4BB	CULVERT	295+65/311+10 -LREV-	X						56693	33216	89909		
5BB	CULVERT	24+62/26+47 -Y17-	X			5837	3767	9604					
8BB	ROADWAY FILL	35+61/41+29-SR12-	X						27383	17829	45212		
9BB	ROADWAY FILL	11+10 -SR13REV-/54+10 -SR12-	X						75556	51193	126749	76057	55759
10BB	CULVERT	34+75/38+61 -SR13REV-	X						19949	13834	33783		
11BB	UTILITIES	37+89 -Y12- RT	X			150	0	150					
12BB	CULVERT	27+03/29+86 -SR11-	X						8763	5855	14618		
13BB	CULVERT	25+94/27+81 -Y15-	X			5482	3605	9087					
1C	CULVERT	404+90/417+46-LREV-	X						81439	55355	136794		
3C	CULVERT	412+82/417+34 -LREV-	X						38586	25761	64347		
4C	ROADWAY FILL/BRIDGE	472+44/482+77 -LREV-		X		42577	24848	67425	29122	19521	48643	78065	51956
5C	CULVERT	504+91/506+57 -LREV-	X						16066	8839	24905		
10C	CULVERT	642+41/644+32 -LREV-	X						17771	9597	27368		
11C	CULVERT	698+27/702+08 -LREV-	X						21574	11233	32807		
12C	CULVERT	30+95/34+62 -FLYREV-	X						26669	19063	45732		
13C	ROADWAY FILL	765+29/773+30 -LREV-	X			508	2190	2698	4568	5504	10072		
14C	CULVERT	29+60/32+41 -Y26REV-	X						23583	14238	37821		
TOTAL:						67227	41042	108269	546961	357784	904745	154122	107715

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAYNE/LENOIR COUNTIES
PROJECT: 34461.3.8 (R-2554BB&C)

10/30/2012

SHEET **10** OF **70**

Rev. May 2006

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLANDS IN BUFFERS	
			ZONE 1 (ft ²)	ZONE 2 (ft ²)
1BB	154+85/157+27 -LREV-		0	1282
10BB	34+75/38+61 -SR13REV-		2146	0
4C	472+44/482+77 -LREV-		6074	0
10C	642+41/644+32 -LREV-		17771	9597
11C	698+27/702+08 -LREV-		13098	5705
12C	30+95/34+62 -FLYREV-		2018	2377
14C	29+60/32+41 -Y26REV-		21511	12540
TOTAL:			62618	31501

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

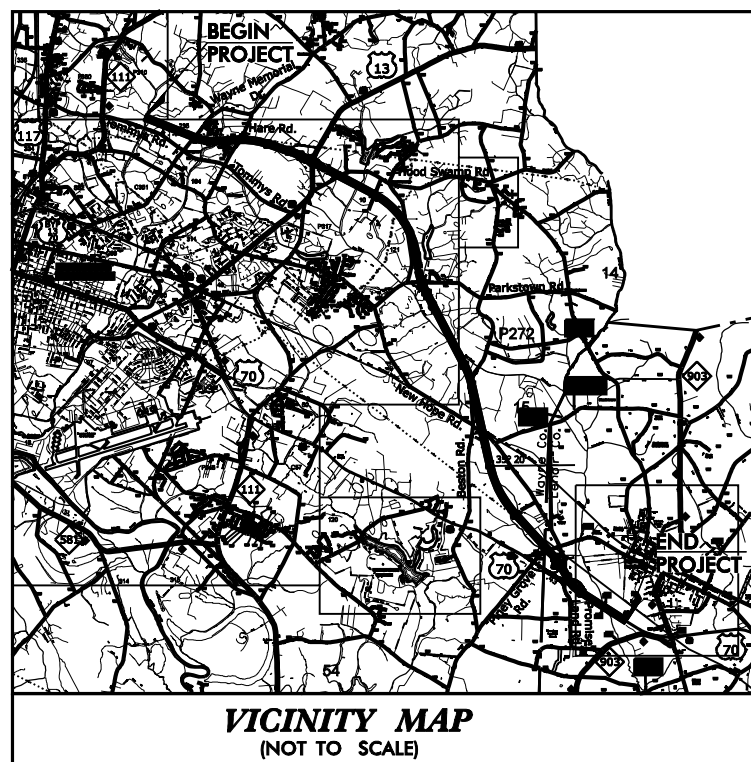
WAYNE/LENOIR COUNTIES
PROJECT: 34461.3.8 (R-2554BB&C)

10/12/2012
SHEET **11** OF **70**

Rev. Jan 2009

09/08/99
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TIP PROJECT: R-2554BB&C
CONTRACT: C202771



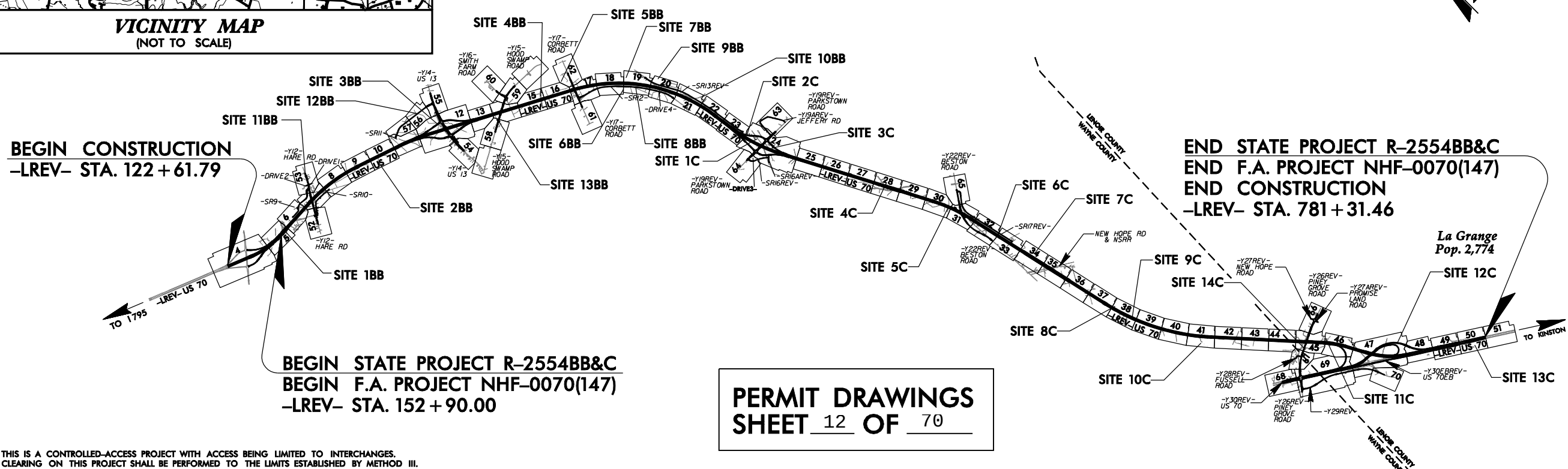
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
WAYNE-LENOIR COUNTIES

LOCATION: US 70 (GOLDSBORO BYPASS) FROM EAST OF SR 1556
(WAYNE MEMORIAL DRIVE) TO EAST OF SR 1323
(PROMISE LAND ROAD)

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

R-2554BB&C
BUFFER SITE MAP

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2554BB&C	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34461.3.8	NHF-0070(147)	CONSTRUCTION	



THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

PERMIT DRAWINGS
SHEET 12 OF 70

PROJECT PREPARED BY:

HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

BARNHILL
CONTRACTING
COMPANY

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

GRAPHIC SCALES 50 25 0 50 100 PLANS 50 25 0 50 100 PROFILE (HORIZONTAL) 10 5 0 10 20 PROFILE (VERTICAL)	DESIGN DATA ADT 2011 = 21400 ADT 2035 = 44500 DHV = 8 % D = 55 % T = 11 % * V = 75 MPH FUNCTIONAL CLASSIFICATION: INTERSTATE * TTST = 7% DUAL = 4%	PROJECT LENGTH LENGTH ROADWAY TIP PROJECT R-2554BB&C = 11.646 MILES LENGTH STRUCTURE TIP PROJECT R-2554BB&C = 0.256 MILES TOTAL LENGTH TIP PROJECT R-2554BB&C = 11.902 MILES BRIDGE LENGTH BASED ON CENTERLINE PROJECTION STATION	Prepared for the Office of: DIVISION OF HIGHWAYS 1000 Birch Ridge Dr., Raleigh NC, 27610 2006 STANDARD SPECIFICATIONS RIGHT OF WAY DATE: JANUARY 25, 2012 (R-2554BB) DECEMBER 23, 2002 (R-2554C) LETTING DATE: JANUARY 25, 2012	PAUL A. MEEHAN, P.E. PROJECT ENGINEER CALVIN W. MOODY, III, P.E. PROJECT DESIGN ENGINEER	HYDRAULICS ENGINEER SIGNATURE: _____ P.E. ROADWAY DESIGN ENGINEER SIGNATURE: _____ P.E.	
--	---	---	--	--	---	--

REVISIONS

MATCHLINE -LREV- STA. 144 + 00, SEE SHEET 4

DRAINAGE STRUCTURES INSTALLED AS PART OF R-2554BA:
FOR R2554BB&C, ONLY MINOR GRADING AND PAVING WEST OF -LREV- STA. 152 + 90

LEGEND

- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2
- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



SITE 1BB

MATCHLINE -LREV- STA. 157 + 00, SEE SHEET 6

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 5
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR E/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
 BARNHILL CONTRACTING COMPANY		

PERMIT DRAWINGS
SHEET 13 OF 70

SEE SHEET NO. 72 FOR -LREV- PROFILE.
SEE SHEET NO. 99 FOR -Y8RPA- PROFILE.
SEE SHEET NO. 100 FOR -Y8RPD- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTION STREAMS.

REVISIONS

MATCHLINE -LREV- STA. 144 + 00, SEE SHEET 4

DRAINAGE STRUCTURES INSTALLED AS PART OF R-2554BA:
FOR R2554BB&C, ONLY MINOR GRADING AND PAVING WEST OF -LREV- STA. 152 + 90

LEGEND

- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2
- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



SITE 1BB

MATCHLINE -LREV- STA. 157 + 00, SEE SHEET 6

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 5	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS		DO NOT USE FOR CONSTRUCTION	
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		 BARNHILL CONTRACTING COMPANY	

PERMIT DRAWINGS
SHEET 14 OF 70

SEE SHEET NO. 72 FOR -LREV- PROFILE.
SEE SHEET NO. 99 FOR -Y8RPA- PROFILE.
SEE SHEET NO. 100 FOR -Y8RPD- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

MATCHLINE -LREV- STA. 144+00, SEE SHEET 4

**DRAINAGE STRUCTURES INSTALLED AS PART OF R-2554BA;
FOR R2554BB&C, ONLY MINOR GRADING AND PAVING WEST OF -LREV- STA. 152 + 90**

TEMPORARY WORK BRIDGE DETAIL

PERMIT DRAWINGS
SHEET 15 OF 70

SEE SHEET NO. 72 FOR -LREV- PROFILE.
SEE SHEET NO. 99 FOR -Y8RPA- PROFILE.
SEE SHEET NO. 100 FOR -Y8RPD- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

WATCHLINE -LREV- STA. 157+00, SEE SHEET 6

SITE 1BB

CLASS II RIP RAP
TO ELEV. 107.7'
(BOTH SIDES)

CLASS 'B' RIP RA
EST. 2 TONS
7 SY GEO-TEXTI

CLASS 'B' RIP RA
EST. 2 TONS
7 SY GEO-TEXTI

PDE — PDE

LEGEND

TEMPORARY
WORK BRIDGE

PROJECT REFERENCE NO.	SHEET NO.		
R-2554BB&C	5		
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
<table border="1"> <tr> <td>INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION</td> </tr> <tr> <td>PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION</td> </tr> </table>		INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

HDR HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

BARNHILL
CONTRACTING
COMPANY

REVISIONS

MATCHLINE -LREV- STA. 144 + 00, SEE SHEET 4

DRAINAGE STRUCTURES INSTALLED AS PART OF R-2554BA:
FOR R2554BB&C, ONLY MINOR GRADING AND PAVING WEST OF -LREV- STA. 152 + 90

SITE 1BB

TEMPORARY WORK BRIDGE DETAIL

PERMIT DRAWINGS
SHEET 16 OF 70

SEE SHEET NO. 72 FOR -LREV- PROFILE.
SEE SHEET NO. 99 FOR -Y8RPA- PROFILE.
SEE SHEET NO. 100 FOR -Y8RPD- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

LEGEND



TEMPORARY
WORK BRIDGE

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 5	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		 BARNHILL CONTRACTING COMPANY	

REVISIONS

MATCHLINE -LREV- STA. 157+00, SEE SHEET 5

SITE 1BB

GRASS SWALE DATA
DA= 0.1 AC
SLOPE= 0.3 %
L REQ= 10.00 FT
L PRO= 10.00 FT
Q2= 0.20 CFS
Q2= 0.20 CFS
Q10= 0.24 CFS
V10= 0.68 FPS

GRASS SWALE DATA
DA= 0.31 AC
SLOPE= 1.65 %
L REQ= 31.00 FT
L PRO= 297 FT
Q2= 0.70 CFS
Q2= 1.46 CFS
Q10= 0.90 CFS
V10= 1.77 FPS

GRASS SWALE DATA
DA= 0.62 AC
SLOPE= 1.39 %
L REQ= 62.00 FT
L PRO= 350 FT
Q2= 1.87 CFS
Q2= 2.4 CFS
Q10= 0.76 CFS
V10= 2.10 FPS

GRASS SWALE DATA
DA= 0.26 AC
SLOPE= 1.65 %
L REQ= 26.00 FT
L PRO= 247 FT
Q2= 0.59 CFS
Q2= 1.57 CFS
Q10= 0.76 CFS
V10= 1.68 FPS

DITCH DATA
DA= 4.86 AC
SLOPE= 1.39 %
L REQ= 486 FT
L PRO= 140 FT
Q2= 13.42 CFS
Q2= 3.71 FPS
Q10= 17.27 CFS
V10= 3.96 FPS

DETAIL T
BANK STABILIZATION
(Not to Scale)
Type of Liner= Class '1' Rip-Rap
* DO NOT PLACE RIP RAP BELOW NORMAL WATER SURFACE ELEVATION

GRASS SWALE DATA
DA= 0.43 AC
SLOPE= 0.65 %
L REQ= 43.00 FT
L PRO= 408 FT
Q2= 0.97 CFS
Q2= 1.26 CFS
Q10= 1.25 CFS
V10= 1.34 FPS

PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 73 FOR -LREV- PROFILE.
SEE SHEET NO. 135 FOR -SR9- PROFILE.
SEE SHEET NO. 146 FOR -DRIVE5- PROFILE.
SEE SHEET NO. 2-S FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

LEGEND

- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2
- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 6	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR E/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

MATCHLINE
-SR9- STA. 12+50
SEE SHEET 7

MATCHLINE -LREV- STA. 170+00, SEE SHEET 7

PERMIT DRAWINGS
SHEET 17 OF 70

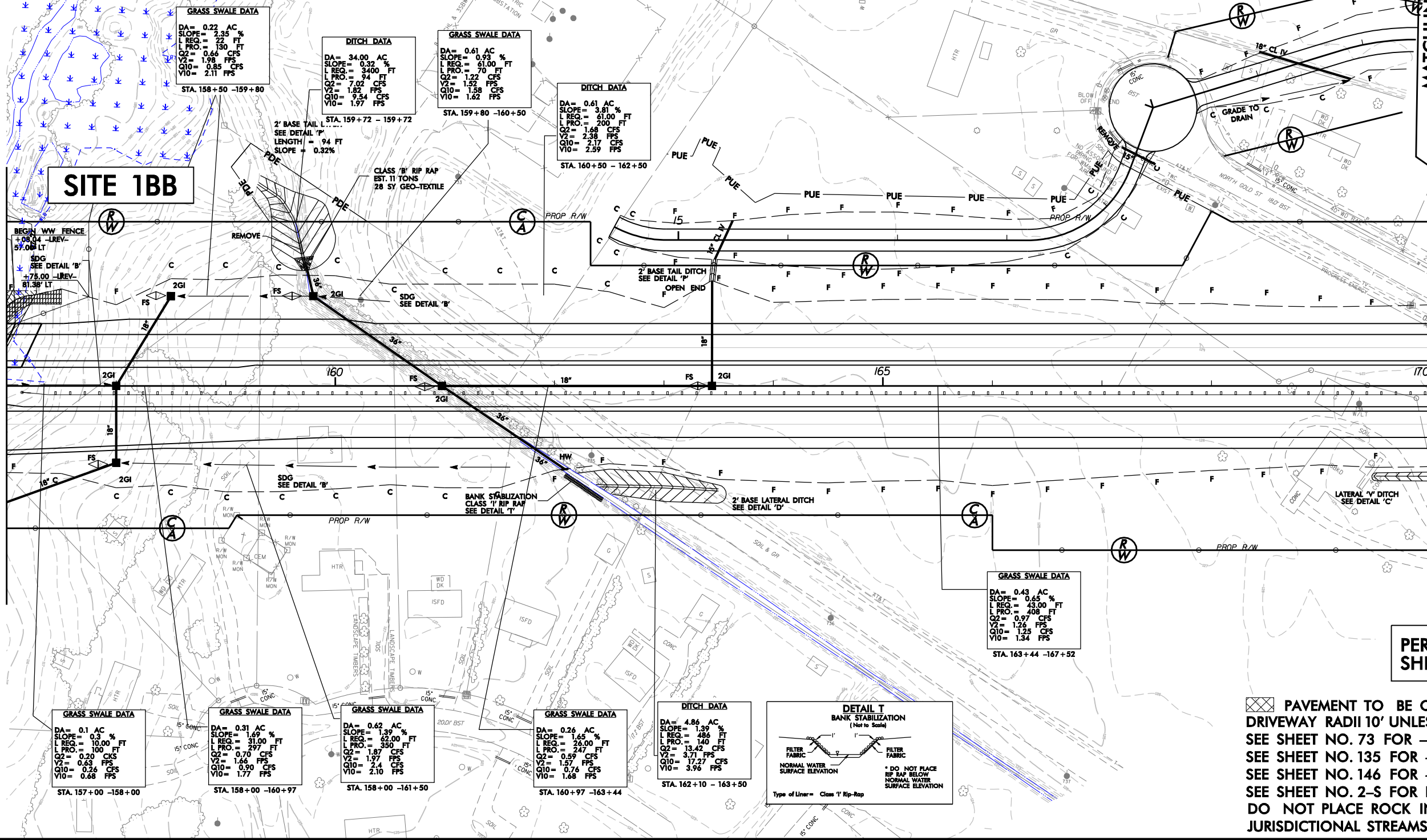
REVISIONS

MATCHLINE -LREV- STA. 157+00, SEE SHEET 5

SITE 1BB

LEGEND

- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2
- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



PERMIT DRAWINGS
SHEET 18 OF 70

PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 73 FOR -LREV- PROFILE.
SEE SHEET NO. 135 FOR -SR9- PROFILE.
SEE SHEET NO. 146 FOR -DRIVE5- PROFILE.
SEE SHEET NO. 2-S FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

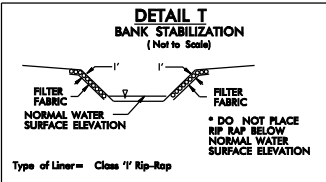
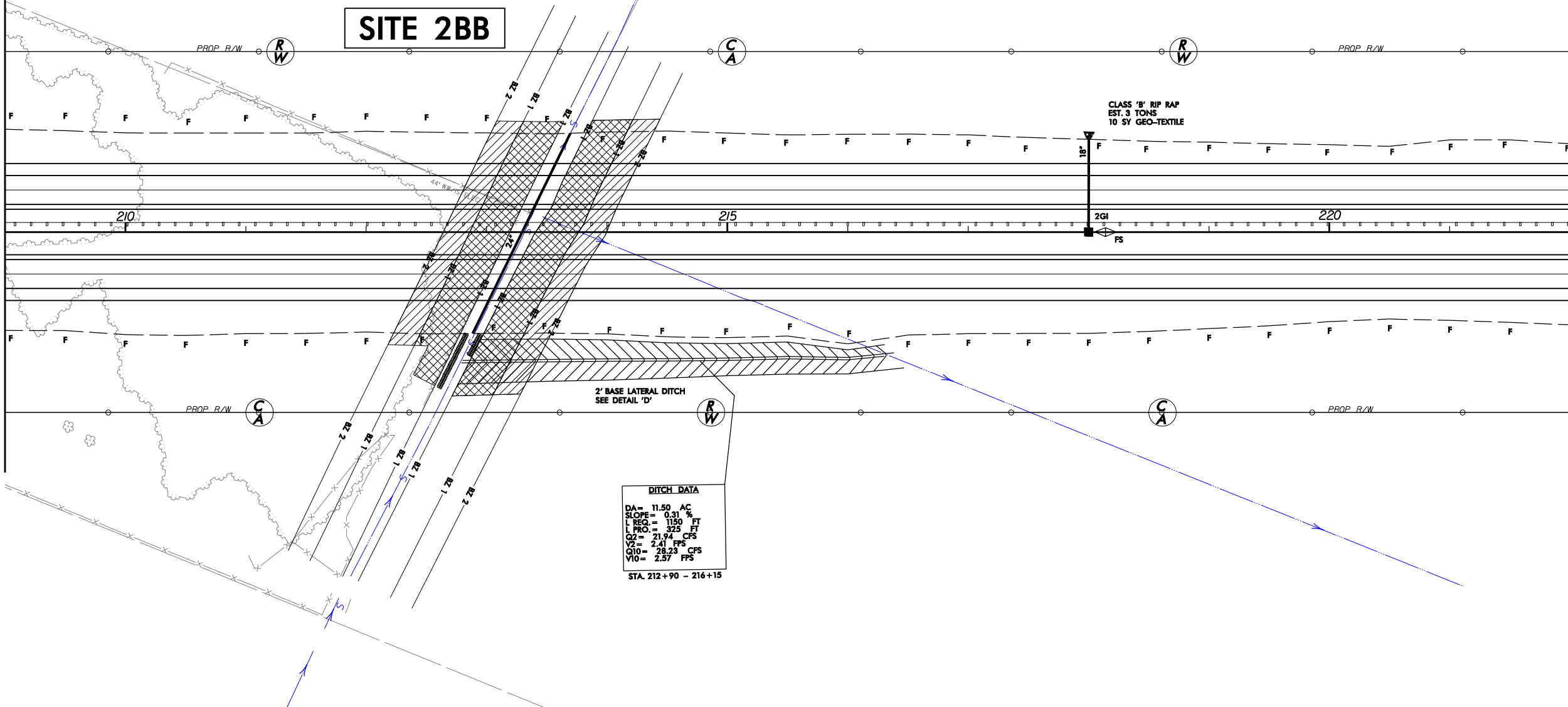
PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 6
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR E/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

MATCHLINE
-SR9- STA. 12+50
SEE SHEET 7

MATCHLINE -LREV- STA. 170+00, SEE SHEET 7

REVISIONS

MATCHLINE -REV- STA. 209+00, SEE SHEET 9



LEGEND

- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 10
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		
BARNHILL CONTRACTING COMPANY		

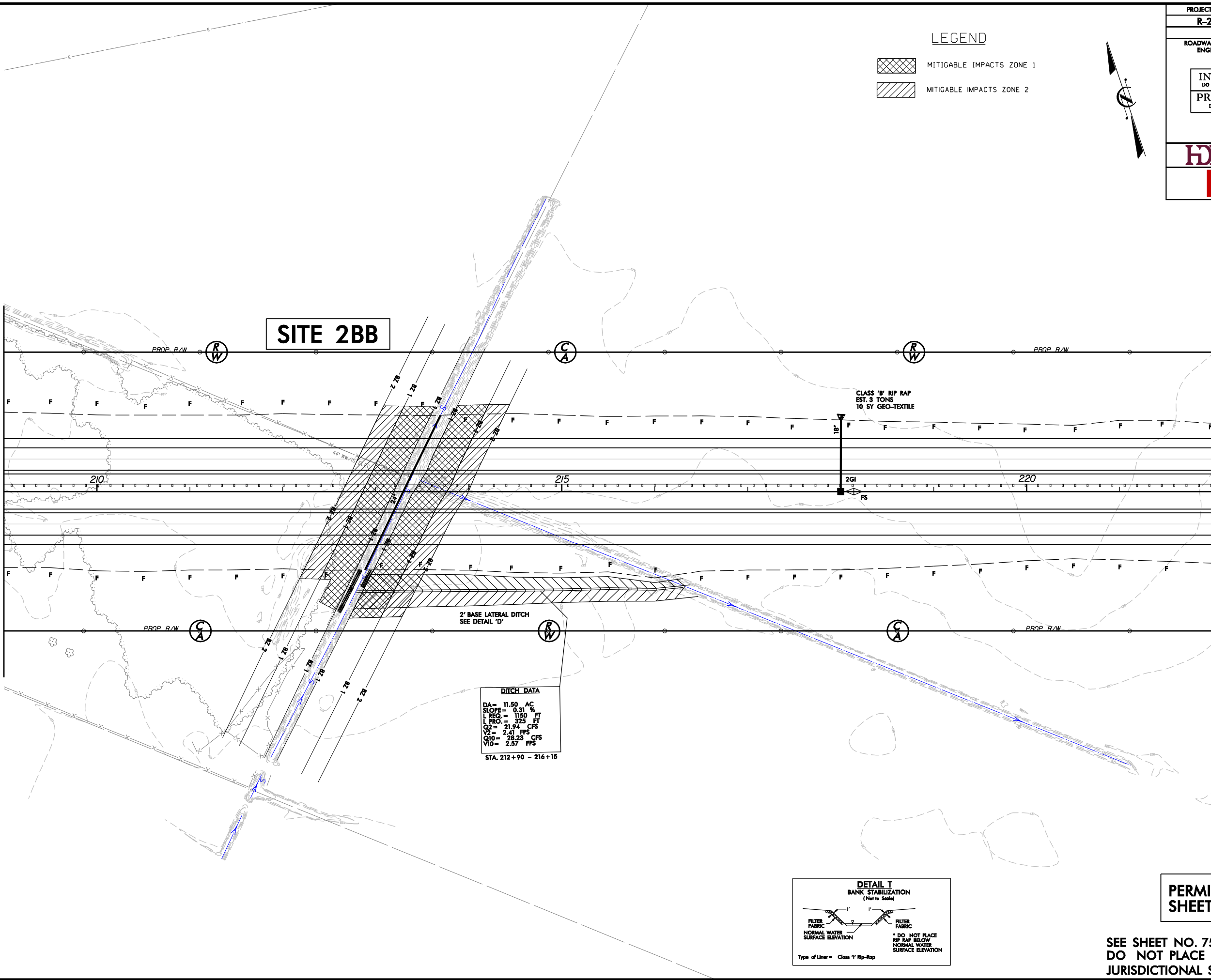
PERMIT DRAWINGS
SHEET 19 OF 70

SEE SHEET NO. 75 FOR -REV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

MATCHLINE -REV- STA. 222+00, SEE SHEET 11

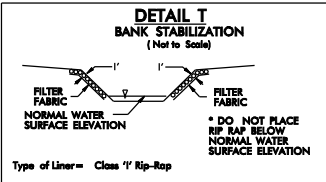
REVISIONS

MATCHLINE -REV- STA. 209+00, SEE SHEET 9



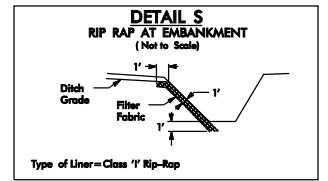
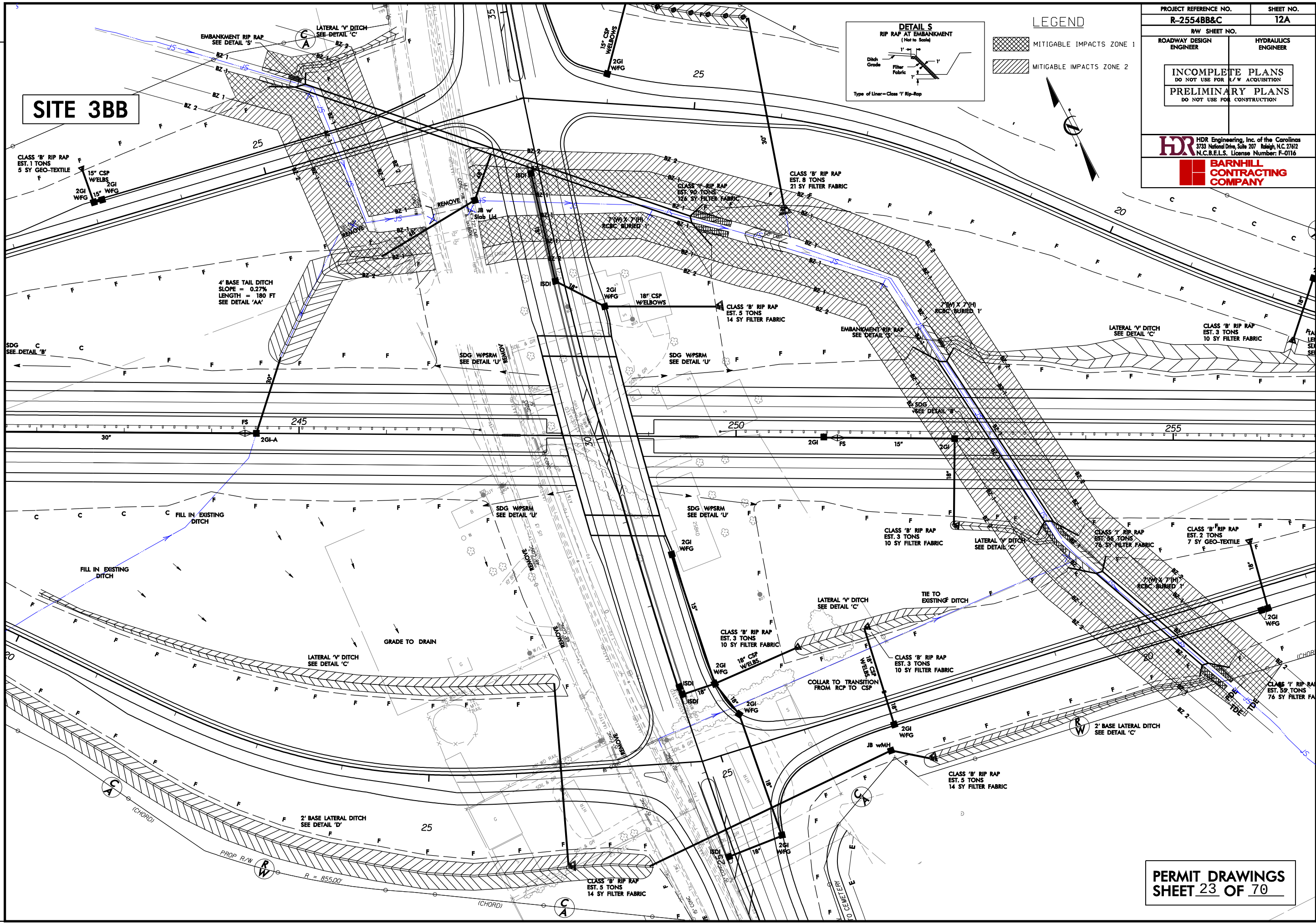
SITE 2BB

DITCH DATA
DA = 11.50 AC
SLOPE = 0.31 %
L REQ. = 1150 FT
L PRO. = 325 FT
Q2 = 21.94 CFS
V2 = 2.41 FPS
Q10 = 28.23 CFS
V10 = 2.57 FPS
STA. 212+90 - 216+15



REVISIONS

SITE 3BB



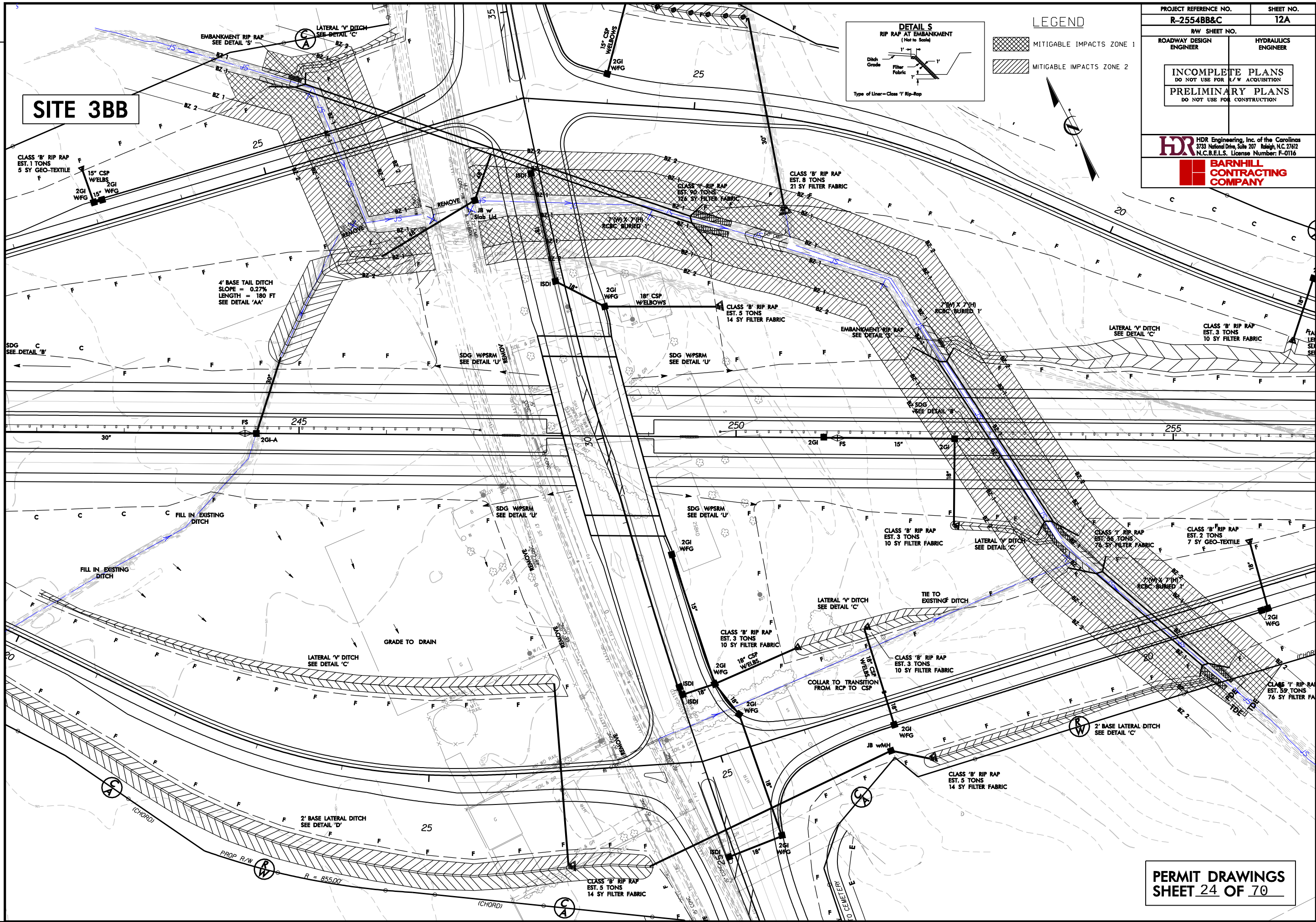
LEGEND

- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 12A	
RW SHEET NO. ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116			
BARNHILL CONTRACTING COMPANY			

REVISIONS

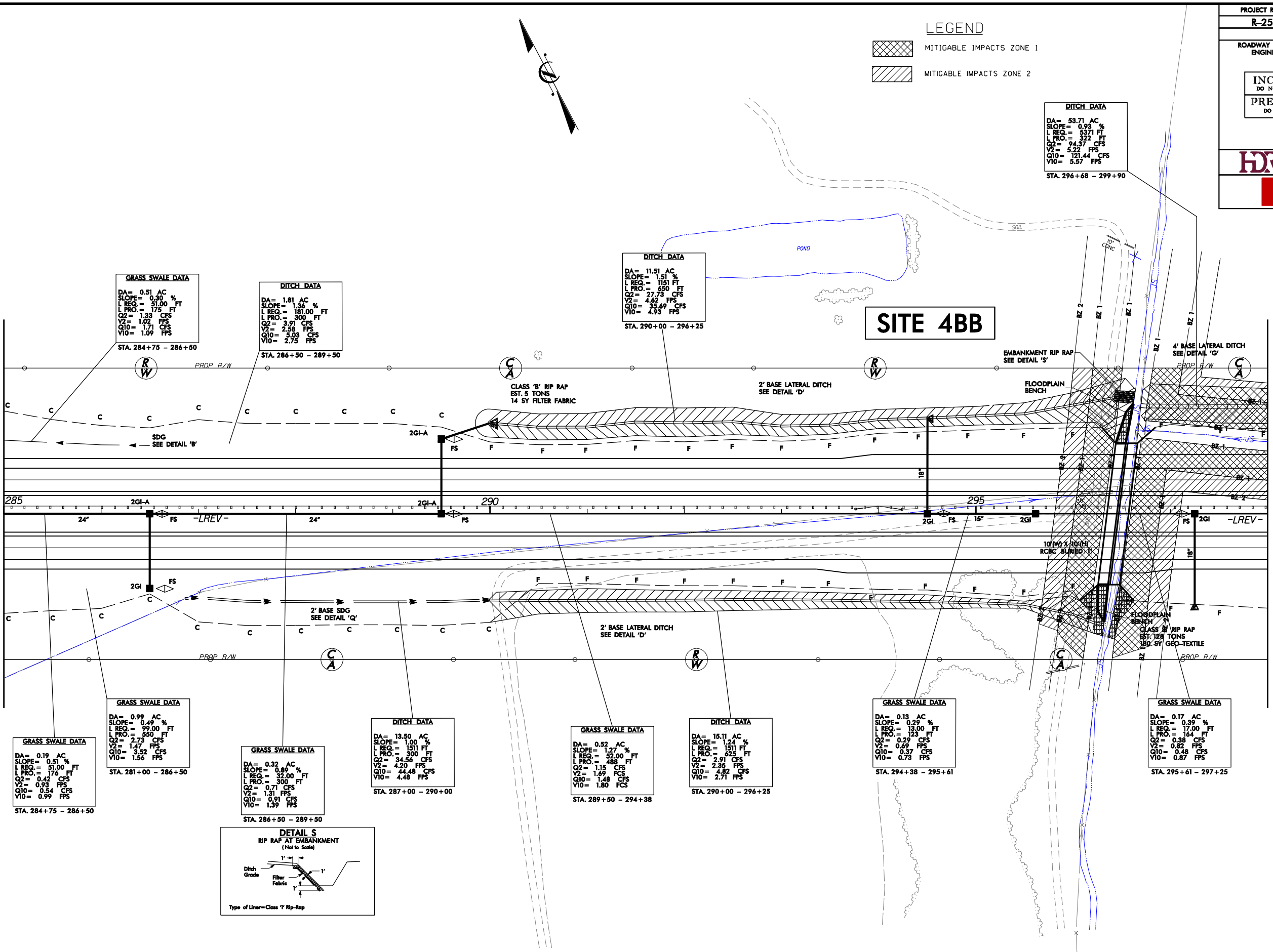


PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 12A	
RW SHEET NO. ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116			
BARNHILL CONTRACTING COMPANY			

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REVISIONS

MATCHLINE -LREV- STA. 285+00, SEE SHEET 14



LEGEND

- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

DITCH DATA
DA= 53.71 AC
SLOPE= 0.93 %
L REQ= 53.71 FT
L PRO= 322 FT
Q2= 94.37 CFS
V2= 5.22 FPS
Q10= 121.44 CFS
V10= 5.57 FPS
STA. 296+68 - 299+90

DITCH DATA
DA= 11.51 AC
SLOPE= 1.51 %
L REQ= 1151 FT
L PRO= 650 FT
Q2= 27.73 CFS
V2= 4.62 FPS
Q10= 35.69 CFS
V10= 4.93 FPS
STA. 290+00 - 296+25

SITE 4BB

GRASS SWALE DATA
DA= 0.17 AC
SLOPE= 0.39 %
L REQ= 17.00 FT
L PRO= 164 FT
Q2= 0.38 CFS
V2= 0.82 FPS
Q10= 0.48 CFS
V10= 0.87 FPS
STA. 295+61 - 297+25

GRASS SWALE DATA
DA= 0.13 AC
SLOPE= 0.39 %
L REQ= 13.00 FT
L PRO= 123 FT
Q2= 0.29 CFS
V2= 0.69 FPS
Q10= 0.37 CFS
V10= 0.73 FPS
STA. 294+38 - 295+61

DITCH DATA
DA= 15.11 AC
SLOPE= 1.24 %
L REQ= 1511 FT
L PRO= 625 FT
Q2= 2.91 CFS
V2= 2.35 FPS
Q10= 4.82 CFS
V10= 2.71 FPS
STA. 290+00 - 296+25

GRASS SWALE DATA
DA= 0.52 AC
SLOPE= 1.27 %
L REQ= 52.00 FT
L PRO= 488 FT
Q2= 1.15 CFS
V2= 1.69 FPS
Q10= 1.48 CFS
V10= 1.80 FPS
STA. 289+50 - 294+38

DITCH DATA
DA= 13.50 AC
SLOPE= 1.00 %
L REQ= 1350 FT
L PRO= 300 FT
Q2= 34.56 CFS
V2= 4.20 FPS
Q10= 44.48 CFS
V10= 4.48 FPS
STA. 287+00 - 290+00

GRASS SWALE DATA
DA= 0.32 AC
SLOPE= 0.89 %
L REQ= 32.00 FT
L PRO= 300 FT
Q2= 0.71 CFS
V2= 1.31 FPS
Q10= 0.91 CFS
V10= 1.39 FPS
STA. 286+50 - 289+50

GRASS SWALE DATA
DA= 0.99 AC
SLOPE= 0.49 %
L REQ= 99.00 FT
L PRO= 550 FT
Q2= 2.73 CFS
V2= 1.47 FPS
Q10= 3.32 CFS
V10= 1.56 FPS
STA. 281+00 - 286+50

GRASS SWALE DATA
DA= 0.19 AC
SLOPE= 0.51 %
L REQ= 51.00 FT
L PRO= 176 FT
Q2= 0.42 CFS
V2= 0.93 FPS
Q10= 0.54 CFS
V10= 0.99 FPS
STA. 284+75 - 286+50

GRASS SWALE DATA
DA= 0.51 AC
SLOPE= 0.30 %
L REQ= 51.00 FT
L PRO= 175 FT
Q2= 1.33 CFS
V2= 1.02 FPS
Q10= 1.71 CFS
V10= 1.09 FPS
STA. 284+75 - 286+50

DITCH DATA
DA= 1.81 AC
SLOPE= 1.36 %
L REQ= 181.00 FT
L PRO= 300 FT
Q2= 3.91 CFS
V2= 2.58 FPS
Q10= 5.03 CFS
V10= 2.75 FPS
STA. 286+50 - 289+50

PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 78 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

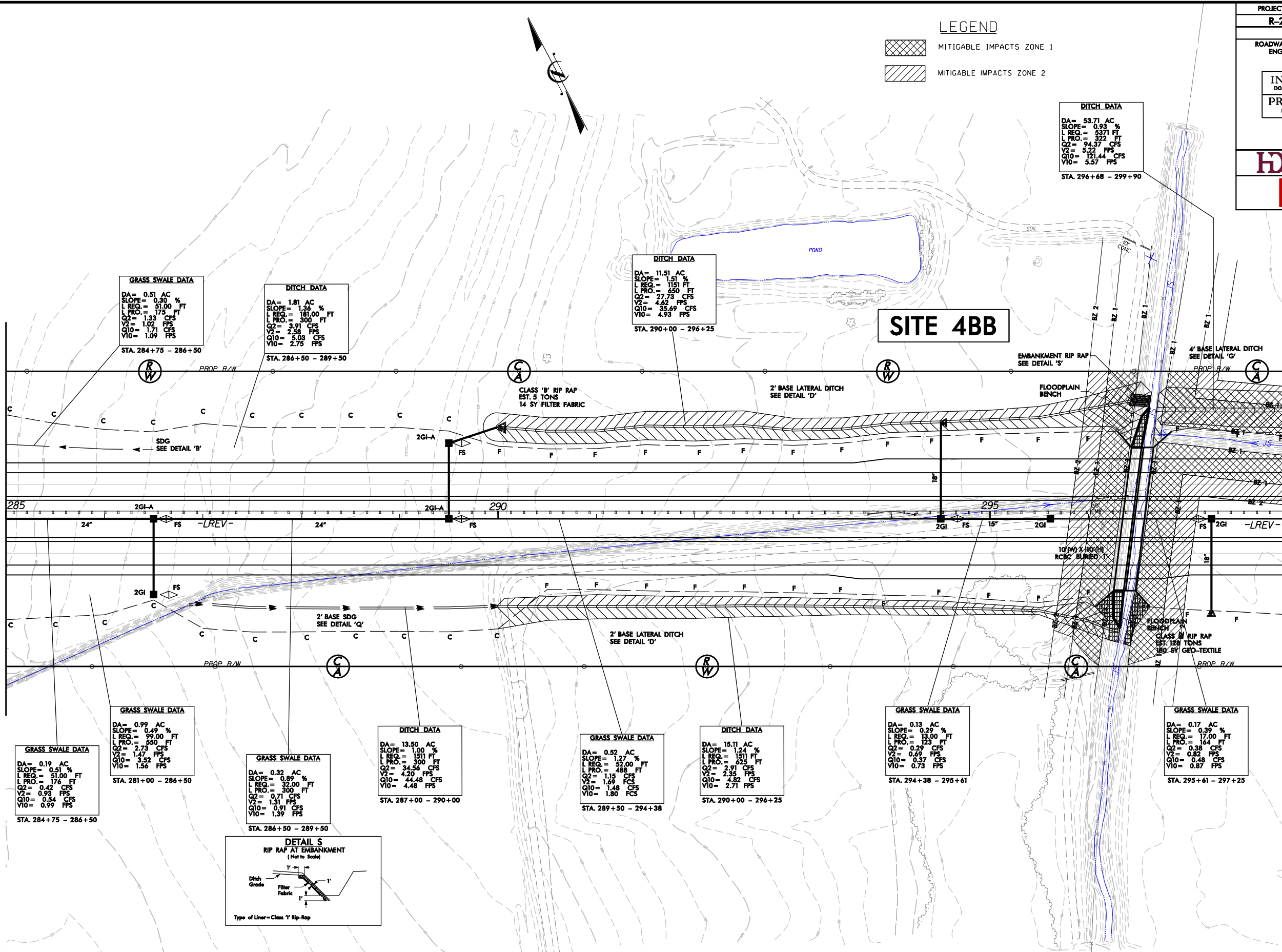
PERMIT DRAWINGS
SHEET 25 OF 70

MATCHLINE -LREV- STA. 298+00, SEE SHEET 16

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 15
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

REVISIONS

MATCHLINE -LREV- STA. 285+00, SEE SHEET 14



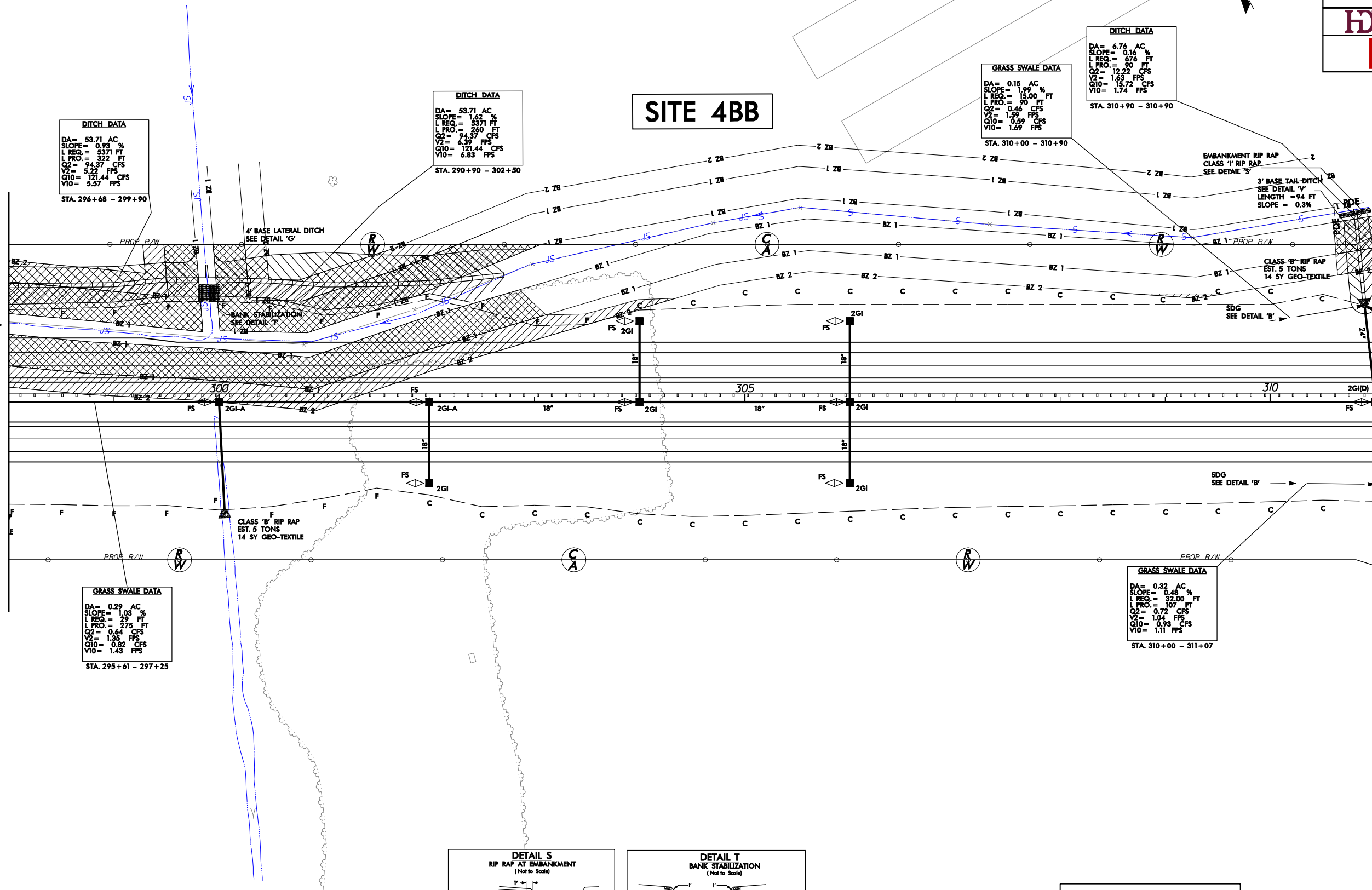
PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 78 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 15	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

MATCHLINE -LREV- STA. 298+00, SEE SHEET 16

REVISIONS

MATCHLINE -LREV- STA. 298+00, SEE SHEET 15



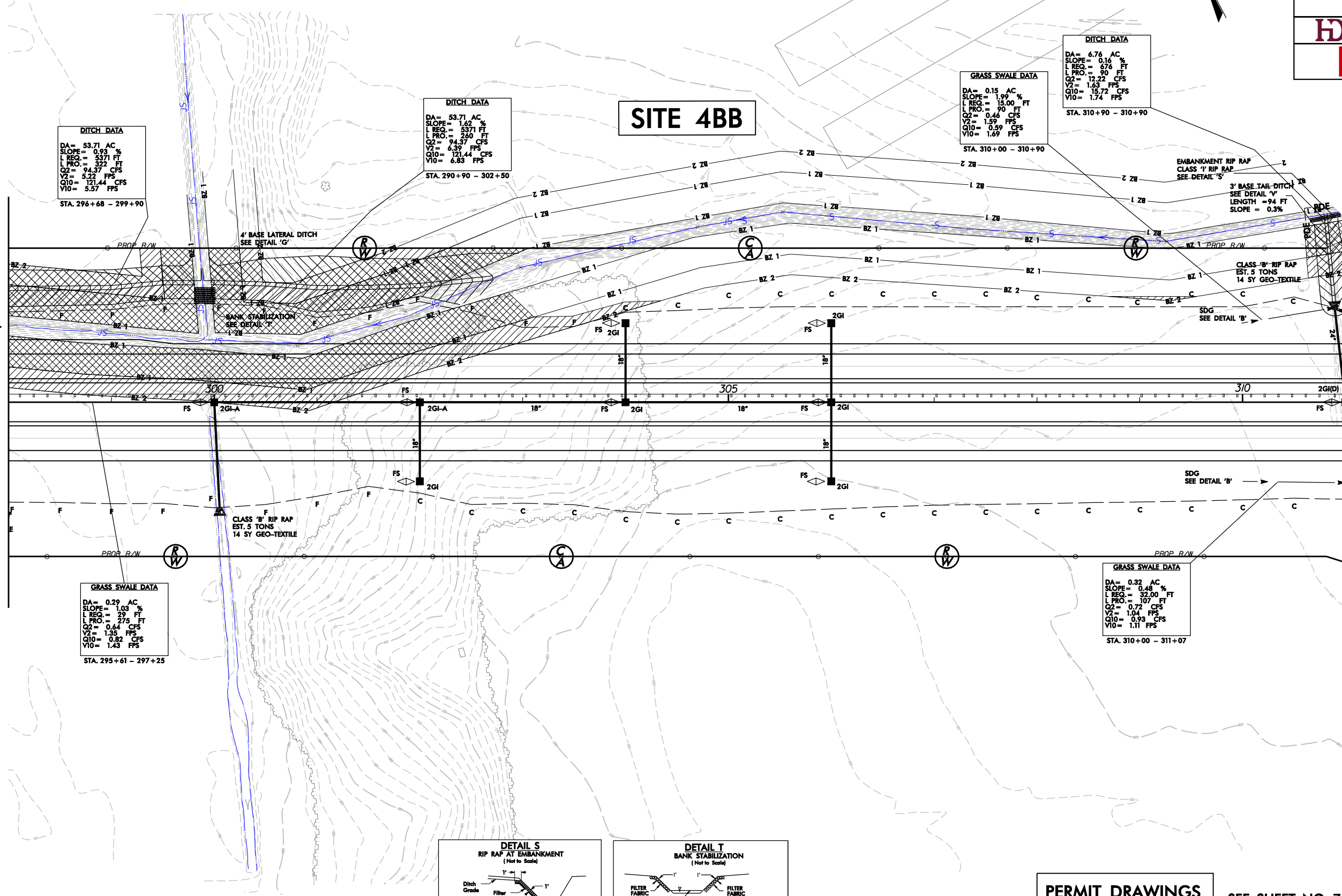
MATCHLINE -LREV- STA. 311+00, SEE SHEET 17

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 16	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

SEE SHEET NO. 78 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

REVISIONS

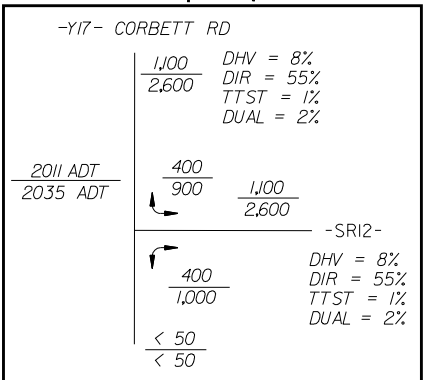
MATCHLINE -LREV- STA. 298+00, SEE SHEET 15



MATCHLINE -LREV- STA. 311+00, SEE SHEET 17

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 16
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		
BARNHILL CONTRACTING COMPANY		

SEE SHEET NO. 78 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

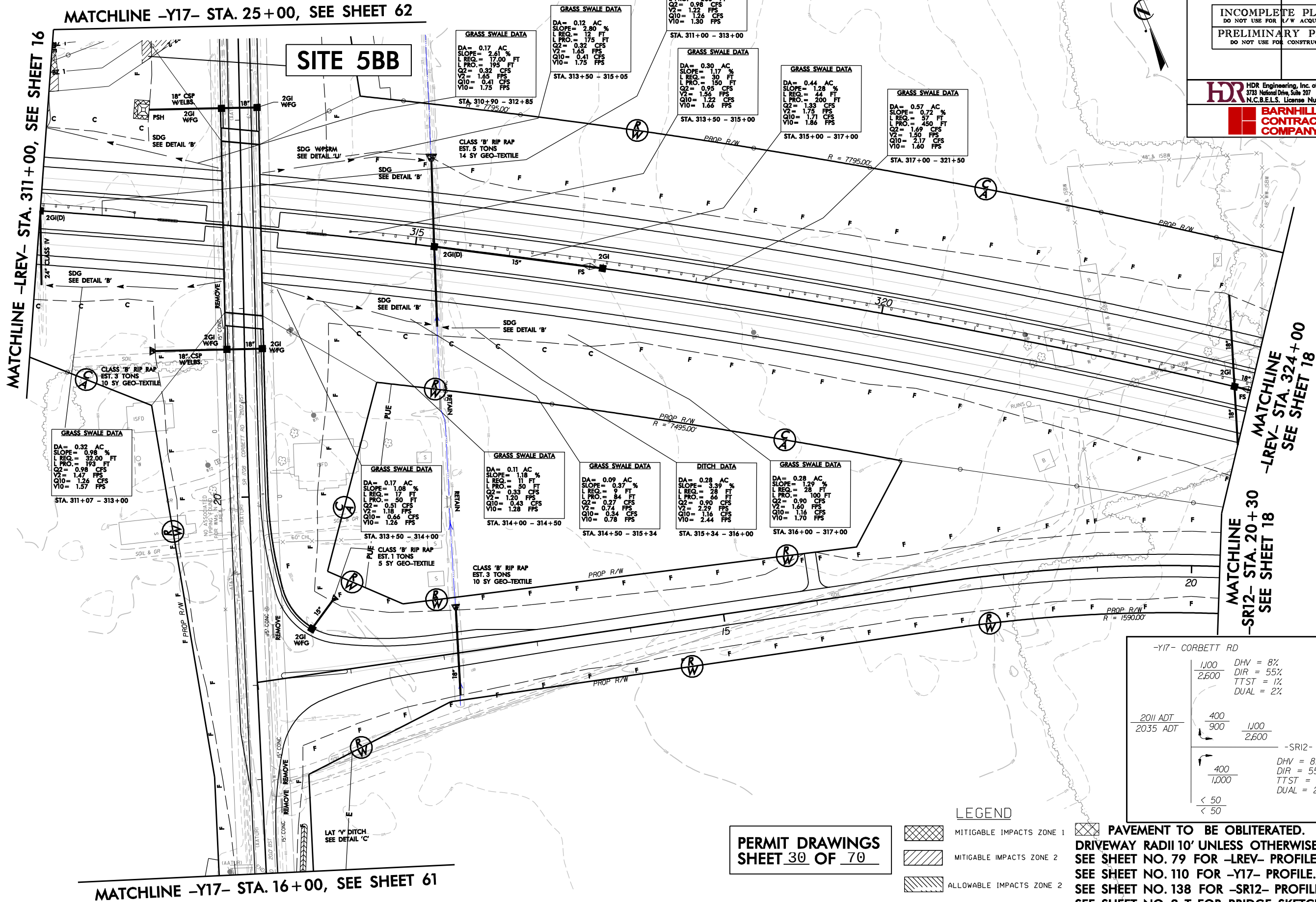


LEGEND

	MITIGABLE IMPACTS ZONE 1
	MITIGABLE IMPACTS ZONE 2
	ALLOWABLE IMPACTS ZONE 2

 PAVEMENT TO BE OBLITERATED.
 DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
 SEE SHEET NO. 79 FOR -LREV- PROFILE.
 SEE SHEET NO. 110 FOR -Y17- PROFILE.
 SEE SHEET NO. 138 FOR -SR12- PROFILE.
 SEE SHEET NO. 2-T FOR BRIDGE SKETCH.
 CE ROCK IN BED OF JURISDICTIONAL STREAMS.

REVISIONS



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 17	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

 MITIGABLE IMPACTS ZONE 1

 MITIGABLE IMPACTS ZONE 2

GRASS SWALE DATA

DA = 0.92 AC
SLOPE = 0.27 %
L REQ. = 92.00 FT
L PRO. = 571 FT
Q2 = 2.77 CFS
V2 = 1.18 FPS
Q10 = 3.57 CFS
V10 = 1.26 FPS

STA. 335+29 - 341+00

GRASS SWALE DATA DA= 0.38 AC SLOPE= 0.18 % L REQ.= 38.00 FT L PRO.= 237 FT Q2= 1.14 CFS V2= 0.81 FPS Q10= 1.47 CFS V10= 0.87 FPS
STA. 341+00 - 343+37

GRASS SWALE DATA
 DA= 0.67 AC
 SLOPE= 0.15 %
 L REQ.= 67.00 FT
 L PRO.= 413 FT
 Q2= 2.09 CFS
 V2= 0.91 FPS
 Q10= 2.68 CFS
 V10= 0.96 FPS
 STA. 343+37 - 347+5

MATCHLINE
-SR13REV- STA. 15+00
SEE SHEET 20

MATCHLINE
-SR12- STA. 45 + 70
SEE SHEET 20

GRASS SWALE DATA	GRASS SWALE DATA
DA= 1.83 AC	DA= 2.27 AC
SLOPE= 0.12 %	SLOPE= 0.20 %
L REQ.= 183 FT	L REQ.= 227 FT
L PRO.= 248 FT	L PRO.= 564 FT
Q2= 3.77 CFS	Q2= 6.15 CFS
V2= 1.07 FPS	V2= 1.46 FPS
Q10= 4.85 CFS	Q10= 7.92 CFS
V10= 1.14 FPS	V10= 1.56 FPS
STA. 36+15 - 38+83	STA. 343+36 - 349+0

PROPOSED NATURAL CHANNEL DESIGN

PERMIT DRAWINGS
SHEET 31 OF 70

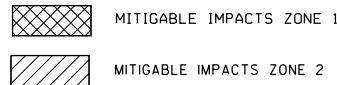
MATCHLINE
-SR12- STA. 33+00
SEE SHEET 18

**DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 80 FOR -LREV- PROFILE.
SEE SHEET NO. 138 ,139 FOR -SR12- PROFILE.
SEE SHEET NO. 140 FOR -SR13REV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.**

REVISIONS

DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 80 FOR -LREV- PROFILE.
SEE SHEET NO. 138, 139 FOR -SR12- PROFILE.
SEE SHEET NO. 140 FOR -SR13REV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

LEGEND



MATCHLINE
-LREV- STA. 337 + 00
SEE SHEET 18

MATCHLINE
-SR12- STA. 33 + 00
SEE SHEET 18

SITE 7BB

GRASS SWALE DATA
DA = 0.92 AC
SLOPE = 0.27 %
L REQ. = 92.00 FT
L PRO. = 571 FT
Q2 = 2.77 CFS
V2 = 1.18 FPS
Q10 = 3.57 CFS
V10 = 1.26 FPS
STA. 335 + 29 - 341 + 00

GRASS SWALE DATA
DA = 0.38 AC
SLOPE = 0.18 %
L REQ. = 38.00 FT
L PRO. = 237 FT
Q2 = 1.14 CFS
V2 = 0.81 FPS
Q10 = 1.47 CFS
V10 = 0.87 FPS
STA. 341 + 00 - 343 + 37

GRASS SWALE DATA
DA = 0.67 AC
SLOPE = 0.15 %
L REQ. = 67.00 FT
L PRO. = 415 FT
Q2 = 2.09 CFS
V2 = 0.91 FPS
Q10 = 2.58 CFS
V10 = 0.96 FPS
STA. 343 + 37 - 347 + 50

SITE 9BB

SITE 6BB

GRASS SWALE DATA
DA = 1.83 AC
SLOPE = 0.12 %
L REQ. = 183 FT
L PRO. = 248 FT
Q2 = 3.77 CFS
V2 = 1.07 FPS
Q10 = 4.85 CFS
V10 = 1.14 FPS
STA. 36 + 15 - 38 + 83

GRASS SWALE DATA
DA = 2.27 AC
SLOPE = 0.20 %
L REQ. = 227 FT
L PRO. = 564 FT
Q2 = 6.15 CFS
V2 = 1.46 FPS
Q10 = 7.92 CFS
V10 = 1.56 FPS
STA. 343 + 36 - 349 + 00

SITE 8BB

PROPOSED
NATURAL CHANNEL DESIGN

SITE 9BB

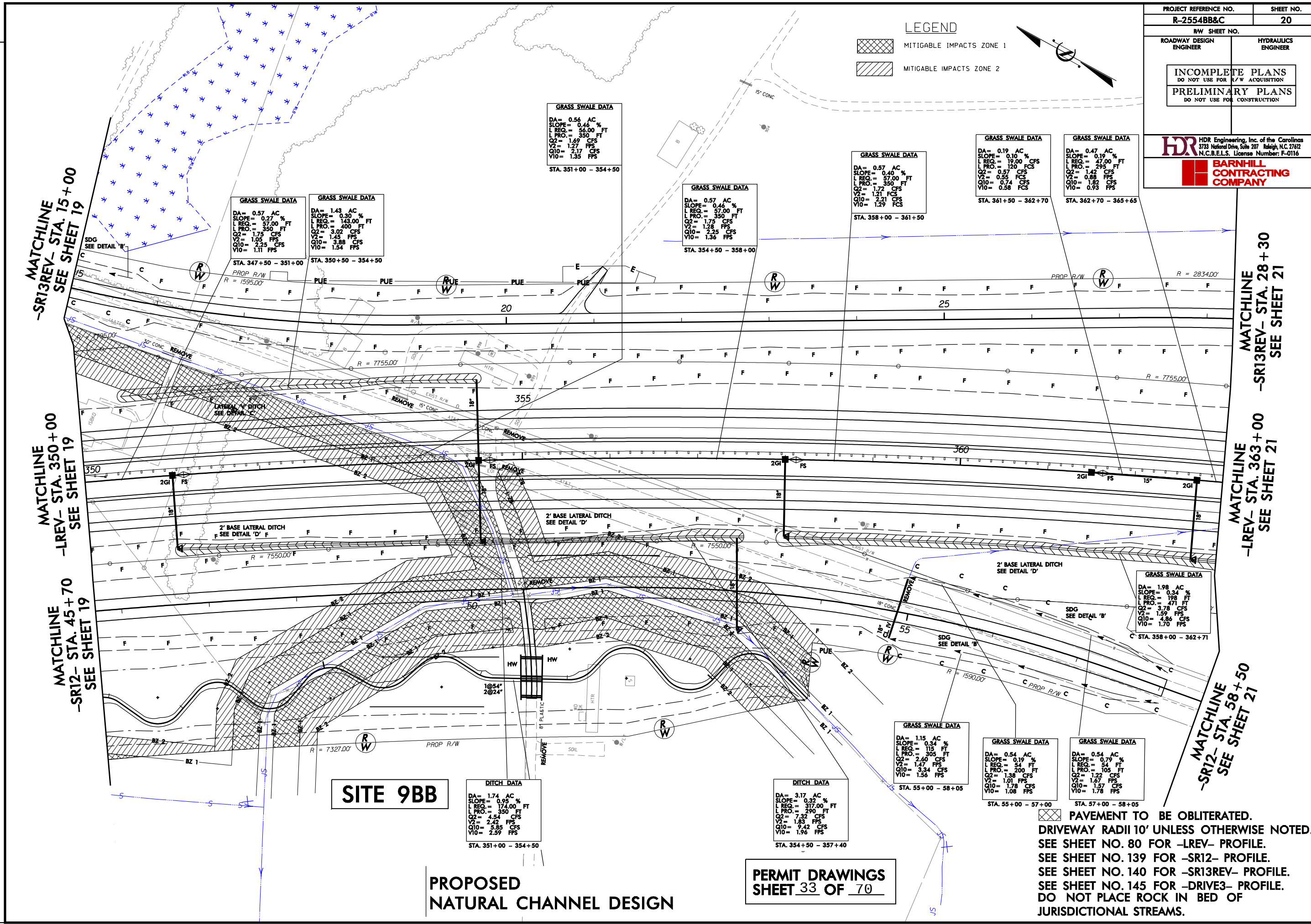
PERMIT DRAWINGS
SHEET 32 OF 70

MATCHLINE
-SR12- STA. 45 + 70
SEE SHEET 20

MATCHLINE
-SR13REV- STA. 15 + 00
SEE SHEET 20

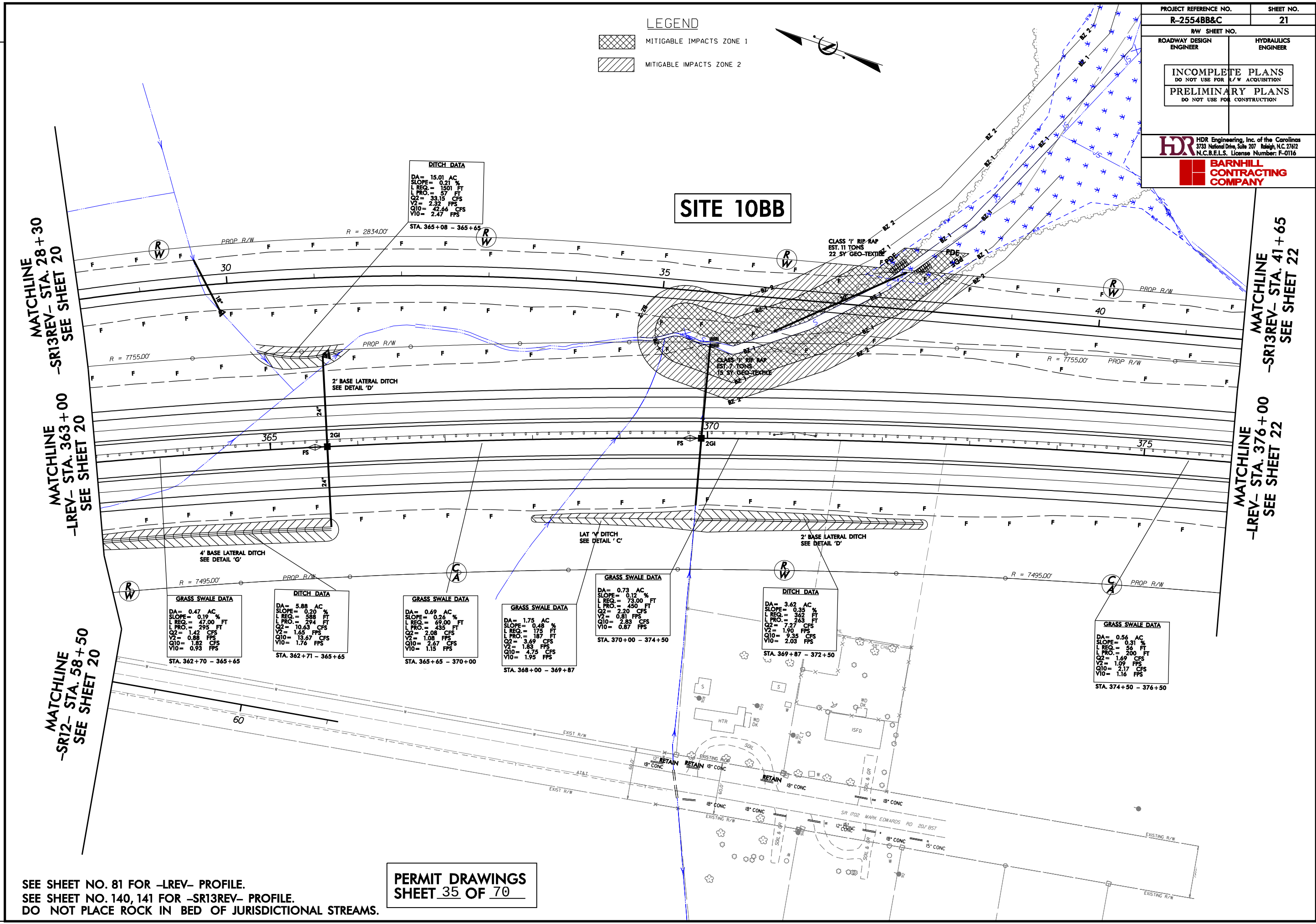
PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 19
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

REVISIONS



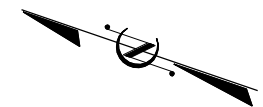
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DATE: 10/1/2012
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REVISIONS



LEGEND

- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 21	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER			
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116			
BARNHILL CONTRACTING COMPANY			

SITE 10BB

DITCH DATA
DA = 15.01 AC
SLOPE = 0.21 %
L REQ. = 1501 FT
L PRO. = 57 FT
Q2 = 33.15 CFS
V2 = 2.32 FPS
Q10 = 42.66 CFS
V10 = 2.47 FPS
STA. 365+08 - 365+65

CLASS '1' RIP RAP
EST. 11 TONS
22 SY GEO-TEXTILE

CLASS '1' RIP RAP
EST. 7 TONS
15 SY GEO-TEXTILE

GRASS SWALE DATA
DA = 0.47 AC
SLOPE = 0.19 %
L REQ. = 47.00 FT
L PRO. = 295 FT
Q2 = 1.42 CFS
V2 = 0.88 FPS
Q10 = 1.82 CFS
V10 = 0.93 FPS
STA. 362+70 - 365+65

DITCH DATA
DA = 5.88 AC
SLOPE = 0.20 %
L REQ. = 588 FT
L PRO. = 294 FT
Q2 = 10.63 CFS
V2 = 1.65 FPS
Q10 = 13.67 CFS
V10 = 1.76 FPS
STA. 362+71 - 365+65

GRASS SWALE DATA
DA = 0.69 AC
SLOPE = 0.26 %
L REQ. = 69.00 FT
L PRO. = 435 FT
Q2 = 2.08 CFS
V2 = 1.08 FPS
Q10 = 2.67 CFS
V10 = 1.15 FPS
STA. 365+65 - 370+00

GRASS SWALE DATA
DA = 1.75 AC
SLOPE = 0.48 %
L REQ. = 175 FT
L PRO. = 187 FT
Q2 = 3.69 CFS
V2 = 1.83 FPS
Q10 = 4.75 CFS
V10 = 1.95 FPS
STA. 368+00 - 369+87

GRASS SWALE DATA
DA = 0.73 AC
SLOPE = 0.12 %
L REQ. = 73.00 FT
L PRO. = 450 FT
Q2 = 2.20 CFS
V2 = 0.81 FPS
Q10 = 2.83 CFS
V10 = 0.87 FPS
STA. 370+00 - 374+50

DITCH DATA
DA = 3.62 AC
SLOPE = 0.35 %
L REQ. = 362 FT
L PRO. = 263 FT
Q2 = 7.27 CFS
V2 = 1.90 FPS
Q10 = 9.35 CFS
V10 = 2.03 FPS
STA. 369+87 - 372+50

GRASS SWALE DATA
DA = 0.56 AC
SLOPE = 0.31 %
L REQ. = 56 FT
L PRO. = 200 FT
Q2 = 1.69 CFS
V2 = 1.09 FPS
Q10 = 2.17 CFS
V10 = 1.16 FPS
STA. 374+50 - 376+50

SEE SHEET NO. 81 FOR -LREV- PROFILE.
SEE SHEET NO. 140, 141 FOR -SR13REV- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

PERMIT DRAWINGS
SHEET 35 OF 70

REVISIONS

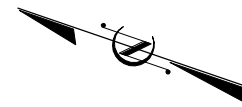
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-SR13REV- STA. 28+30
-LREV- STA. 363+00
-LREV- STA. 363+00
MATCHLINE -SR12- STA. 58+50
-SR12- STA. 58+50
SEE SHEET 20
SEE SHEET 20
SEE SHEET 20

SEE SHEET NO. 81 FOR -LREV- PROFILE.
SEE SHEET NO. 140, 141 FOR -SR13REV- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

PERMIT DRAWINGS
SHEET 36 OF 70

LEGEND

- MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2



SITE 10BB

DITCH DATA
DA= 15.01 AC
SLOPE= 0.21 %
L REQ= 1501 FT
L PRO= 57 FT
Q2= 33.15 CFS
V2= 2.32 FPS
Q10= 42.66 CFS
V10= 2.47 FPS
STA. 365+08 - 365+65

CLASS 'I' RIP RAP
EST. 11 TONS
22 SY GEO-TEXTILE

CLASS 'I' RIP RAP
EST. 7 TONS
15 SY GEO-TEXTILE

GRASS SWALE DATA
DA= 0.47 AC
SLOPE= 0.19 %
L REQ= 47.00 FT
L PRO= 295 FT
Q2= 1.42 CFS
V2= 0.88 FPS
Q10= 1.82 CFS
V10= 0.93 FPS
STA. 362+70 - 365+65

DITCH DATA
DA= 5.88 AC
SLOPE= 0.20 %
L REQ= 588 FT
L PRO= 294 FT
Q2= 10.63 CFS
V2= 1.65 FPS
Q10= 13.67 CFS
V10= 1.76 FPS
STA. 362+71 - 365+65

GRASS SWALE DATA
DA= 0.69 AC
SLOPE= 0.26 %
L REQ= 69.00 FT
L PRO= 435 FT
Q2= 2.08 CFS
V2= 1.08 FPS
Q10= 2.67 CFS
V10= 1.15 FPS
STA. 365+65 - 370+00

GRASS SWALE DATA
DA= 1.75 AC
SLOPE= 0.48 %
L REQ= 175 FT
L PRO= 187 FT
Q2= 3.69 CFS
V2= 1.83 FPS
Q10= 4.75 CFS
V10= 1.95 FPS
STA. 368+00 - 369+87

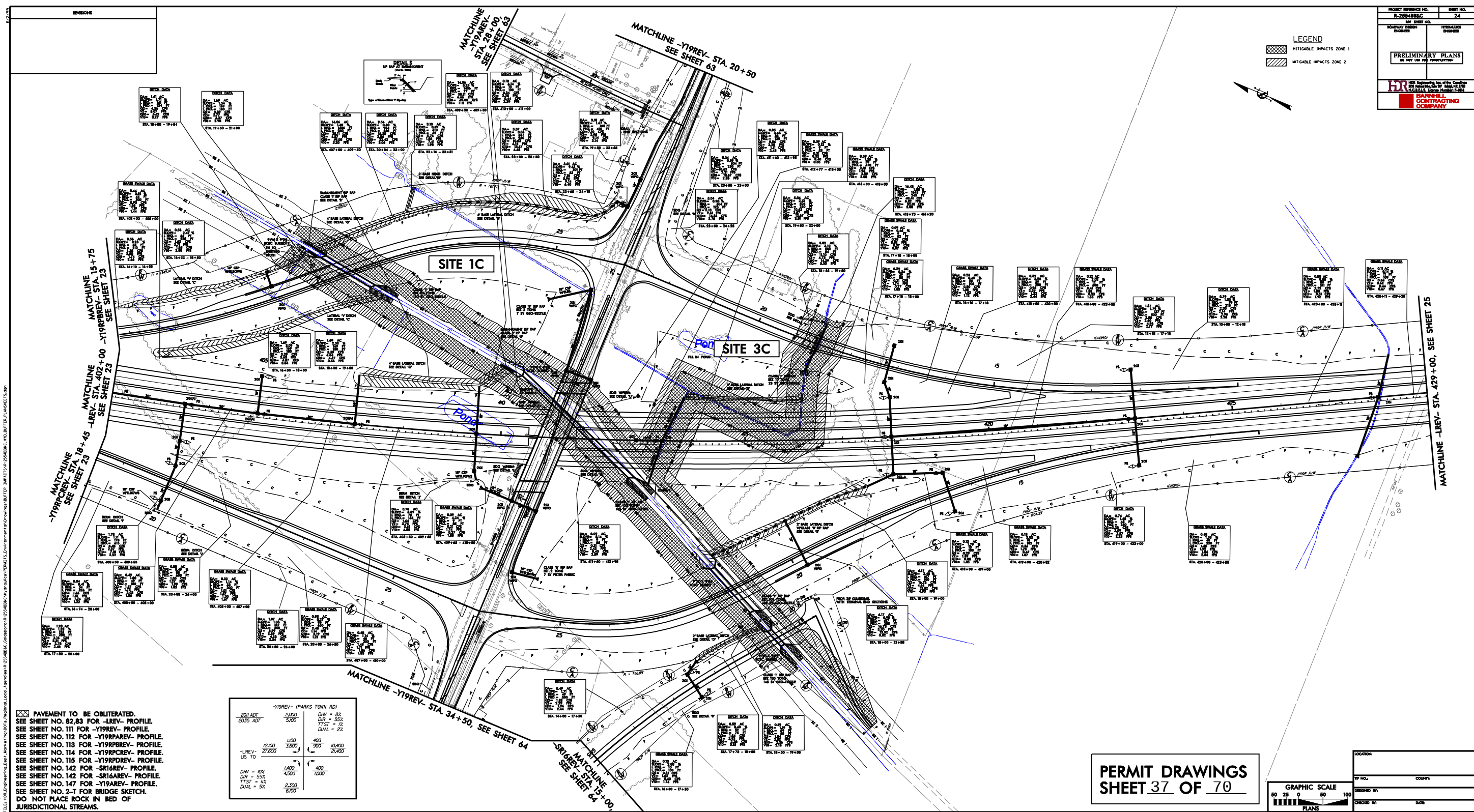
GRASS SWALE DATA
DA= 0.73 AC
SLOPE= 0.12 %
L REQ= 73.00 FT
L PRO= 450 FT
Q2= 2.20 CFS
V2= 0.81 FPS
Q10= 2.83 CFS
V10= 0.87 FPS
STA. 370+00 - 374+50

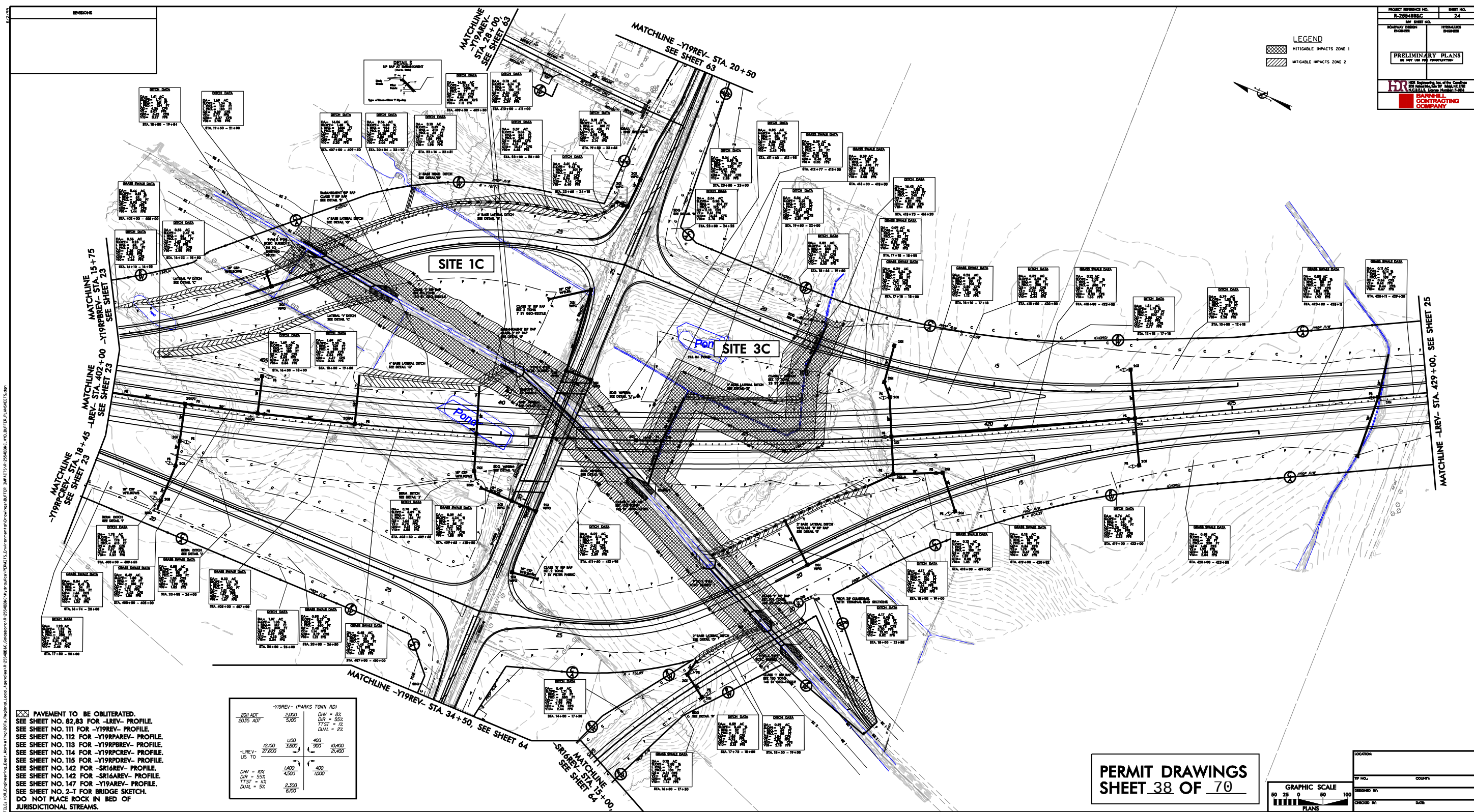
DITCH DATA
DA= 3.62 AC
SLOPE= 0.35 %
L REQ= 362 FT
L PRO= 263 FT
Q2= 7.27 CFS
V2= 1.90 FPS
Q10= 9.35 CFS
V10= 2.03 FPS
STA. 369+87 - 372+50

GRASS SWALE DATA
DA= 0.56 AC
SLOPE= 0.31 %
L REQ= 56 FT
L PRO= 200 FT
Q2= 1.69 CFS
V2= 1.09 FPS
Q10= 2.17 CFS
V10= 1.16 FPS
STA. 374+50 - 376+50

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 21	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER			
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
 BARNHILL CONTRACTING COMPANY			

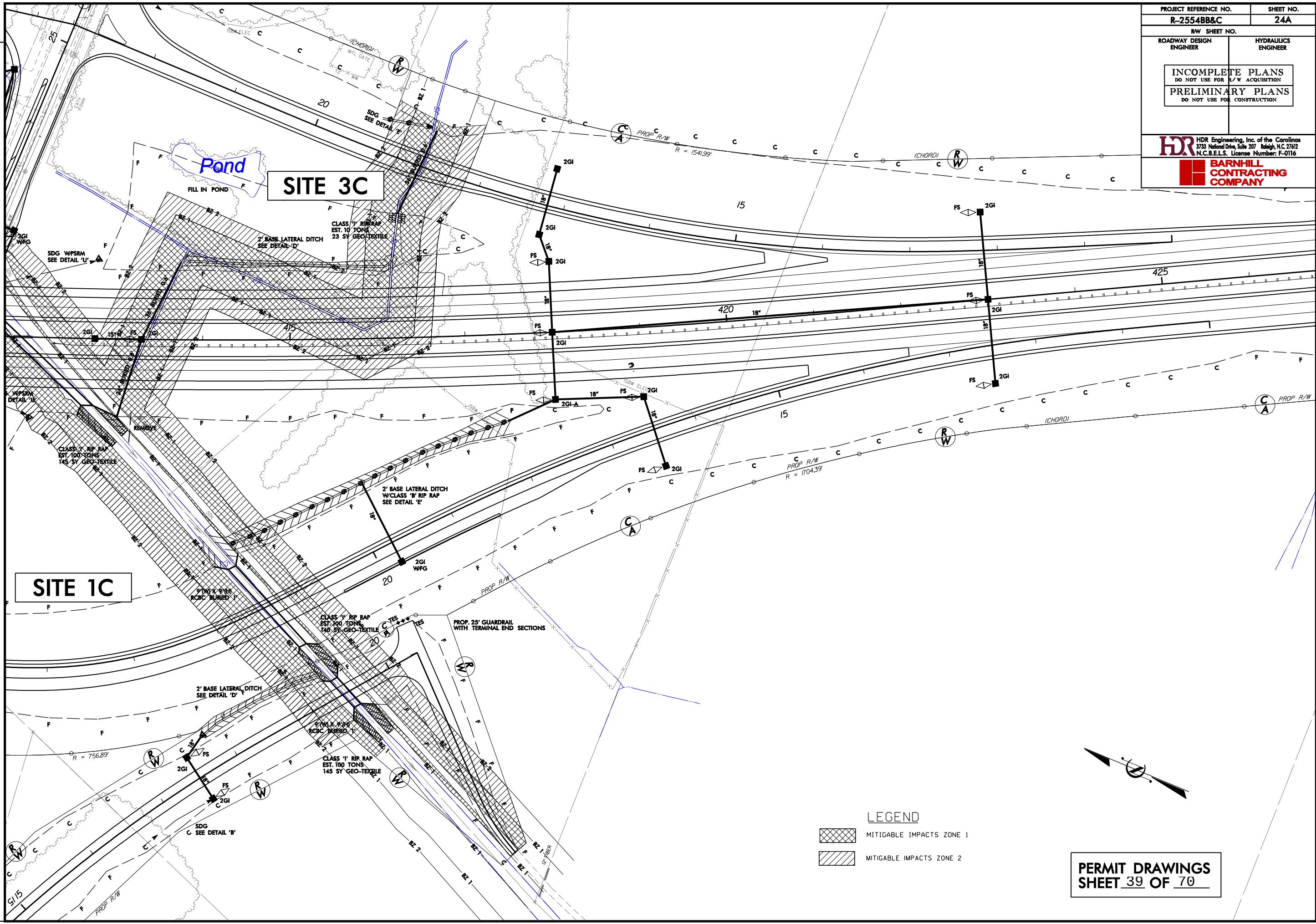
MATCHLINE -LREV- STA. 376+00
-LREV- STA. 376+00
MATCHLINE -SR13REV- STA. 41+65
-SR13REV- STA. 41+65
SEE SHEET 22
SEE SHEET 22





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REVISIONS



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 24A
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
 BARNHILL CONTRACTING COMPANY		

LEGEND

	MITIGABLE IMPACTS ZONE 1
	MITIGABLE IMPACTS ZONE 2



**BARNHILL
CONTRACTING
COMPANY**

SITE 3C

FILL IN POND

2' BASE LATERAL D
SEE DETAIL 'D'

2GI
WFG

**PROP. 25' GUARDRAIL
WITH TERMINAL END SECTIONS**

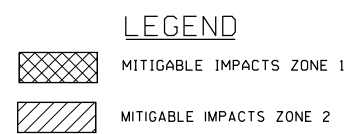
 MITIGABLE IMPACTS ZONE 1

 MITIGABLE IMPACTS ZONE 2

PERMIT DRAWINGS
SHEET 40 OF 70

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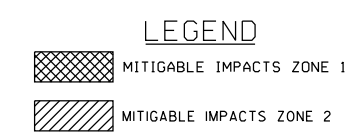
REVISIONS



SITE 1C

PERMIT DRAWINGS
SHEET 41 OF 70

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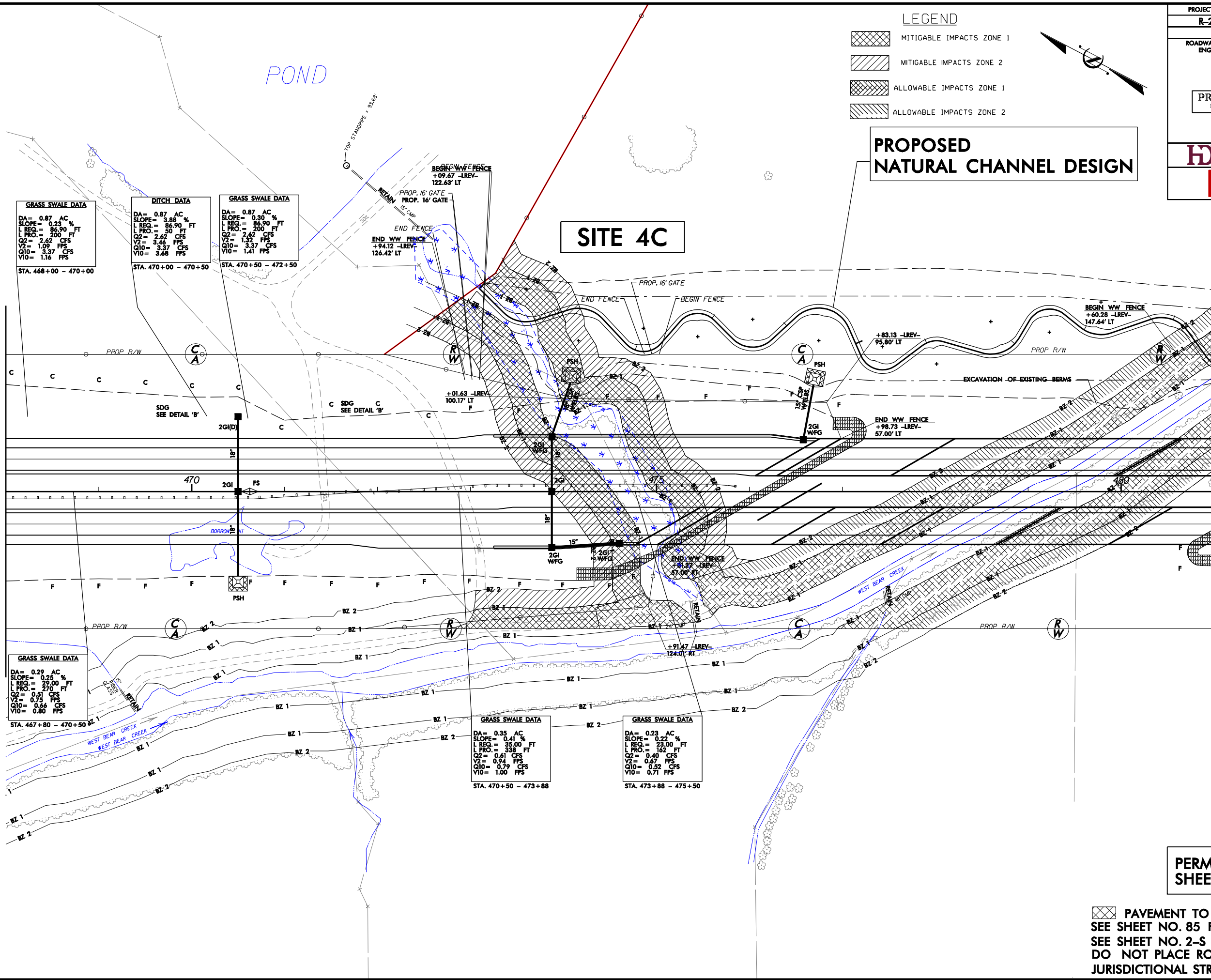
SITE 1C

PERMIT DRAWINGS
SHEET 42 OF 70

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REVISIONS

MATCHLINE -LREV- STA. 468+00, SEE SHEET 27



LEGEND

- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2
- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2

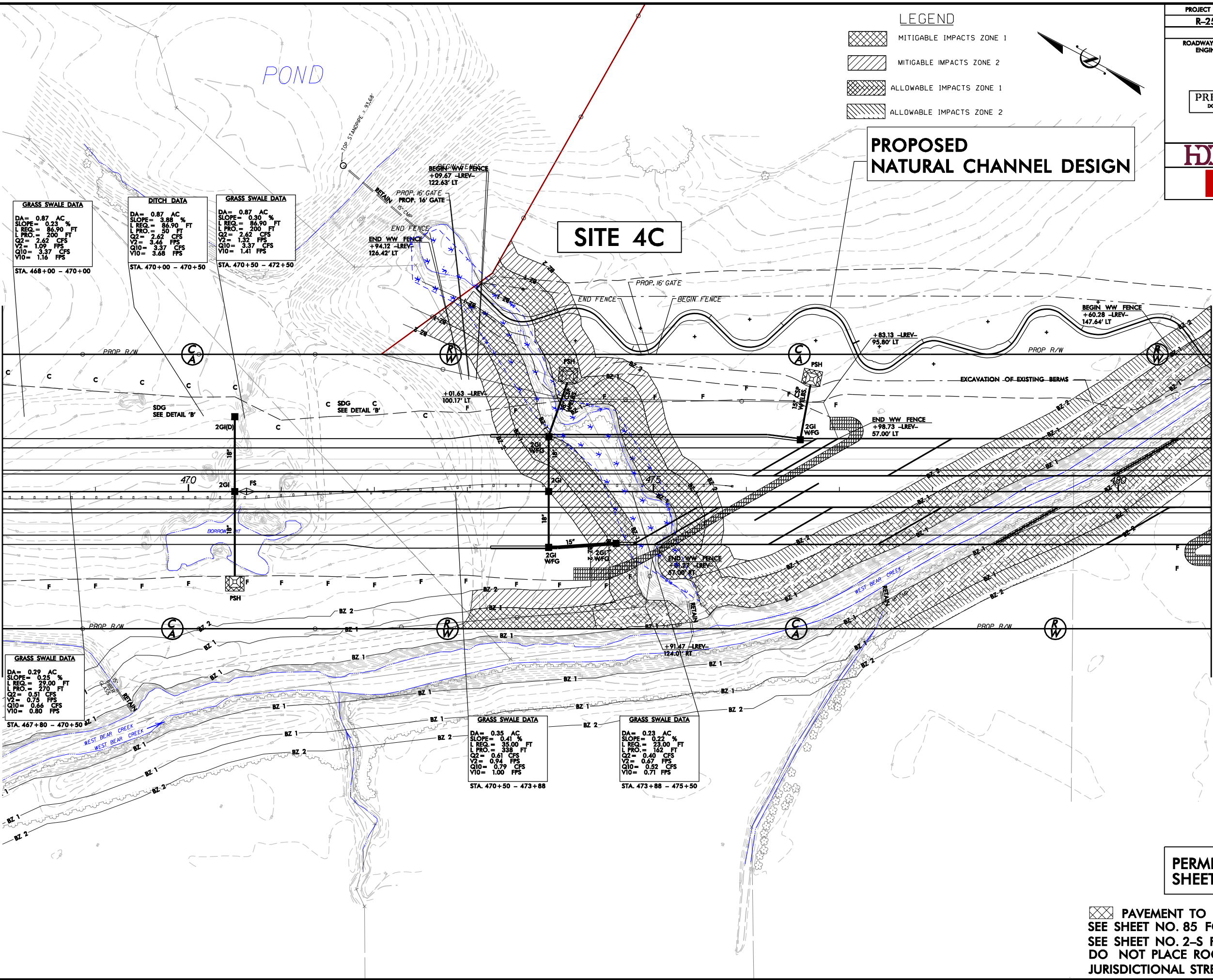
PROPOSED NATURAL CHANNEL DESIGN

SITE 4C

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 28	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

PERMIT DRAWINGS
SHEET 43 OF 70

PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 85 FOR -LREV- PROFILE.
SEE SHEET NO. 2-S FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.



MATCHLINE -LREV- STA. 481+00, SEE SHEET 29

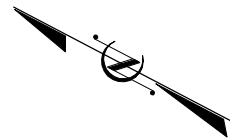
PERMIT DRAWINGS
SHEET 44 OF 70

 PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 85 FOR -LREV- PROFILE.
SEE SHEET NO. 2-S FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	28
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, NC 27612 N.C.B.E.L.S. License Number: F-0116	
 BARNHILL CONTRACTING COMPANY	

LEGEND

-  MITIGABLE IMPACTS ZONE 1
 MITIGABLE IMPACTS ZONE 2
 ALLOWABLE IMPACTS ZONE 1
 ALLOWABLE IMPACTS ZONE 2

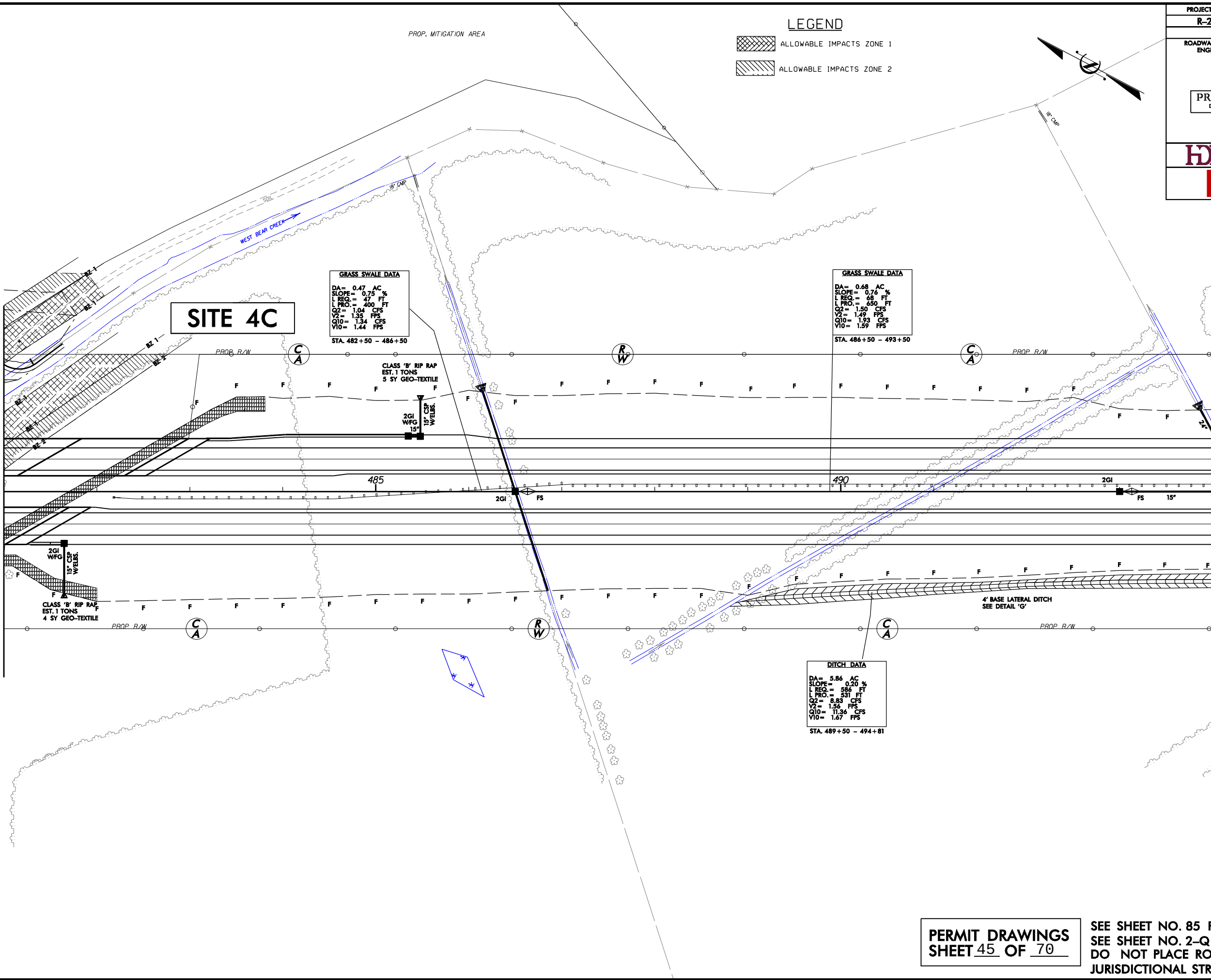


PROPOSED NATURAL CHANNEL DESIGN

SITE 4C

REVISIONS

MATCHLINE -LREV- STA. 481+00, SEE SHEET 28

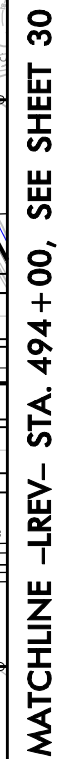
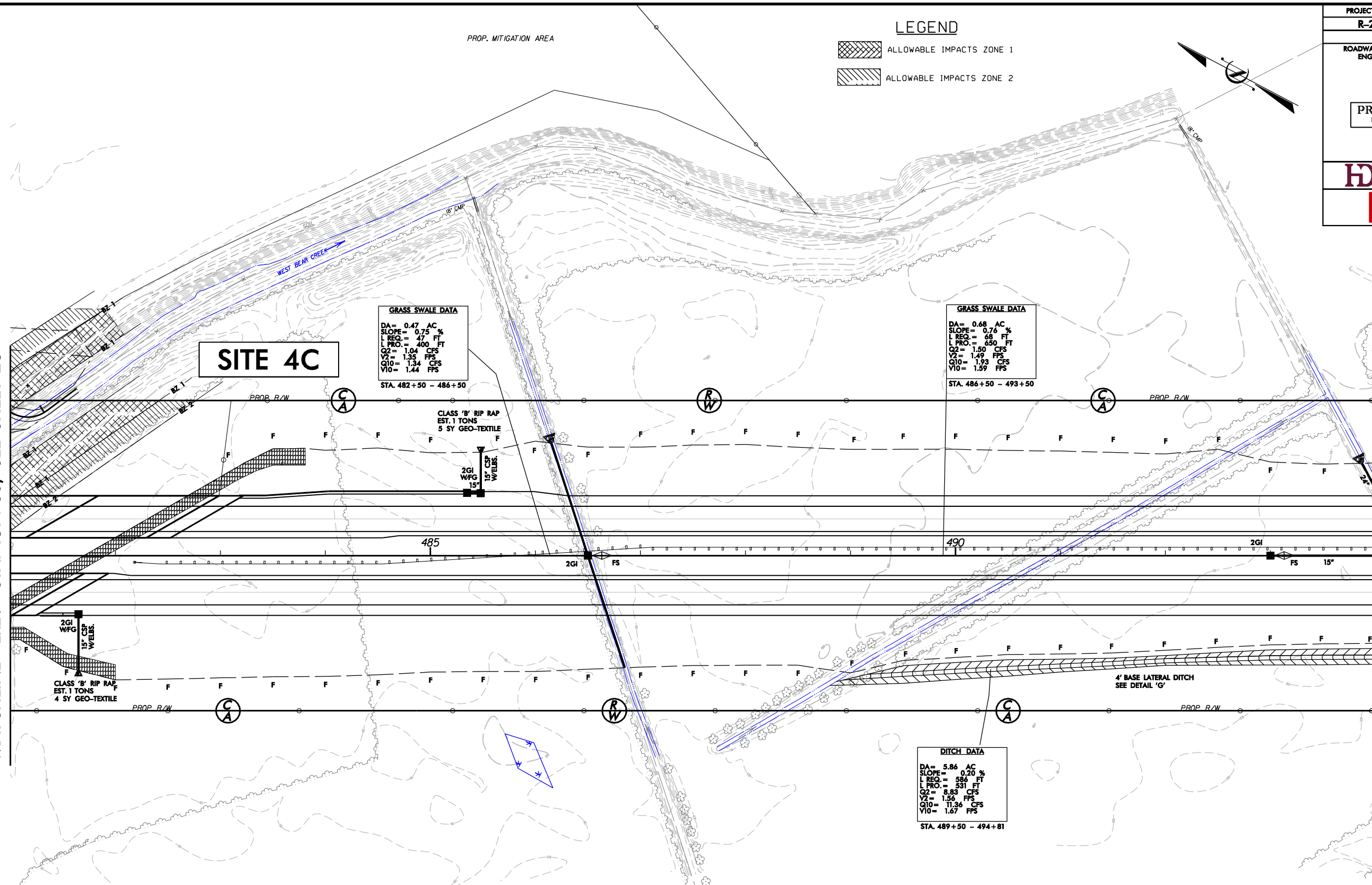


MATCHLINE -LREV- STA. 494+00, SEE SHEET 30

PERMIT DRAWINGS
SHEET 45 OF 70

SEE SHEET NO. 85 FOR -LREV- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 29
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

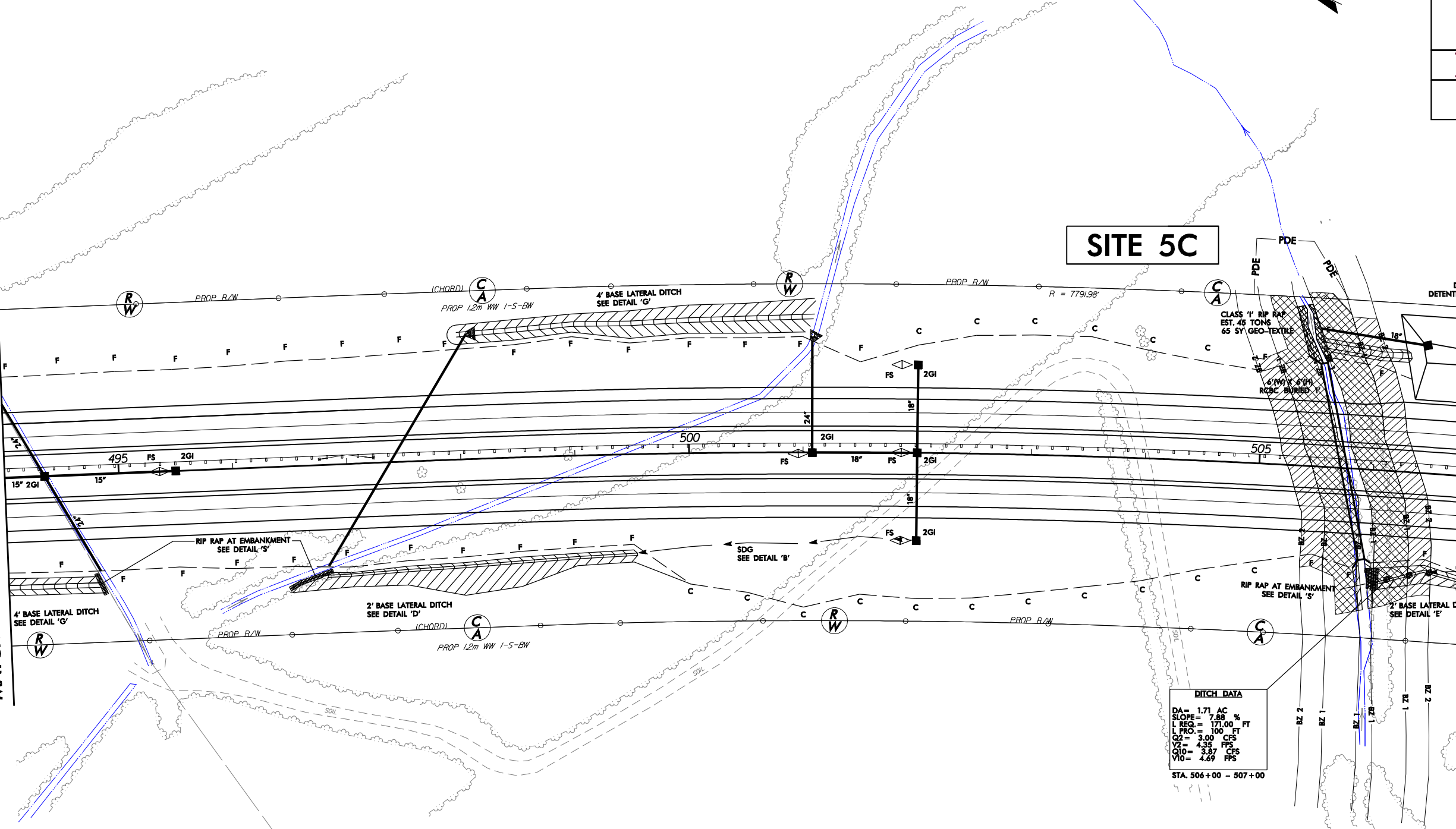


PERMIT DRAWINGS
SHEET 46 OF 70

SEE SHEET NO. 85 FOR -LREV- PROFILE.
SEE SHEET NO. 2-Q FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

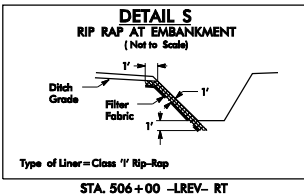
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MATCHLINE -LREV- STA. 494+00, SEE SHEET 29



SITE 5C

DITCH DATA	
DA=	1.71 AC
SLOPE=	7.88 %
L REQ=	171.00 FT
L PRO=	100 FT
Q2=	3.00 CFS
Q5=	4.35 CFS
Q10=	3.87 CFS
V10=	4.69 FPS
STA. 506+00 - 507+00	



LEGEND

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 30
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

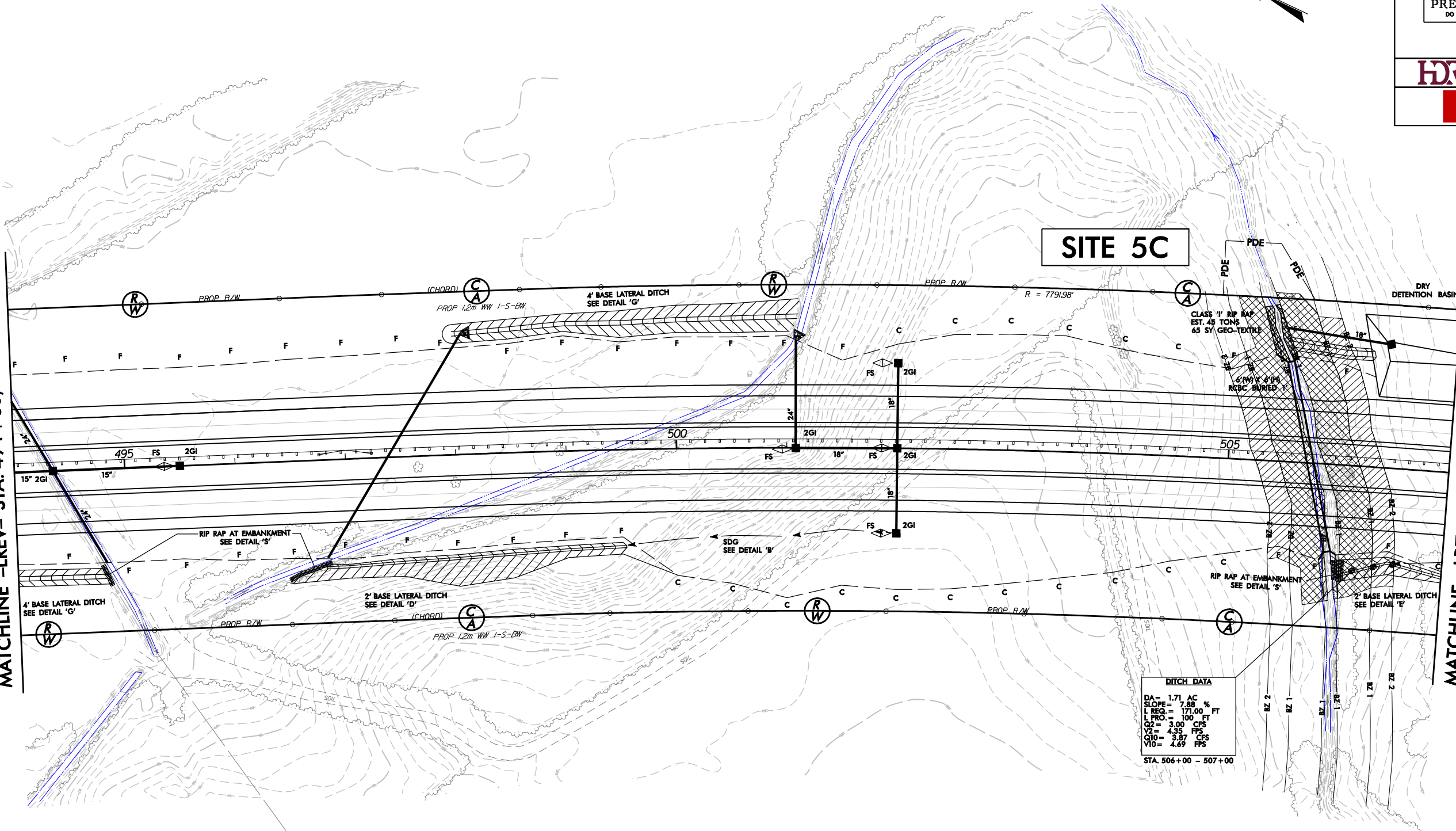
MATCHLINE -LREV- STA. 507+00, SEE SHEET 31

PERMIT DRAWINGS
SHEET 47 OF 70

PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 86 FOR -LREV-
PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

REVISIONS

MATCHLINE -LREV- STA. 494+00, SEE SHEET 29

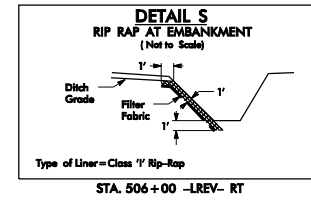


SITE 5C

DITCH DATA	
DA = 1.71 AC	
SLOPE = 7.88 %	
L REQ = 171.00 FT	
L PRO = 100 FT	
Q2 = 3.00 CFS	
Q10 = 3.87 CFS	
V10 = 4.69 FPS	

STA. 506+00 - 507+00

MATCHLINE -LREV- STA. 507+00, SEE SHEET 31



PERMIT DRAWINGS
SHEET 48 OF 70

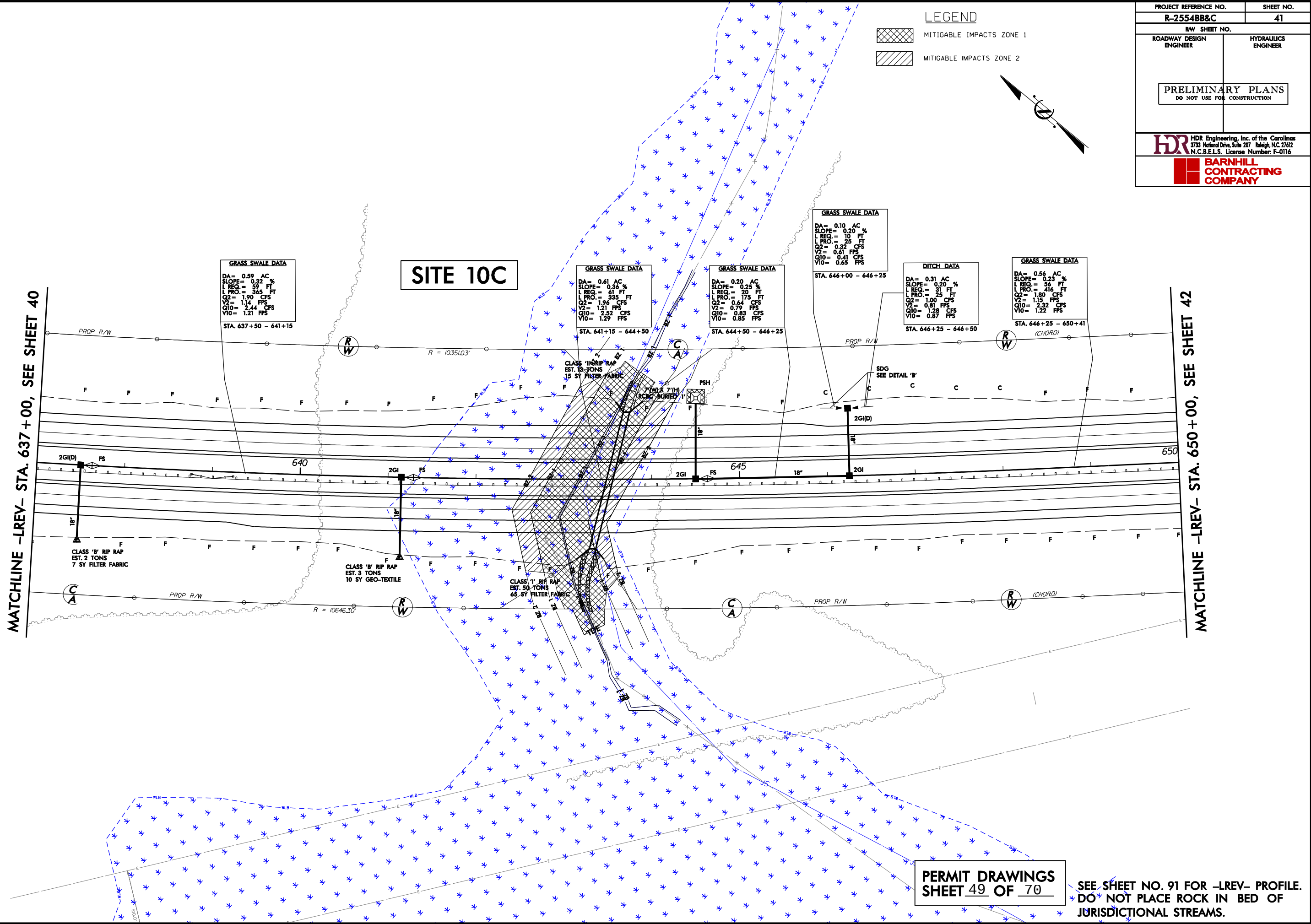
PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 86 FOR -LREV-
PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

LEGEND

- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

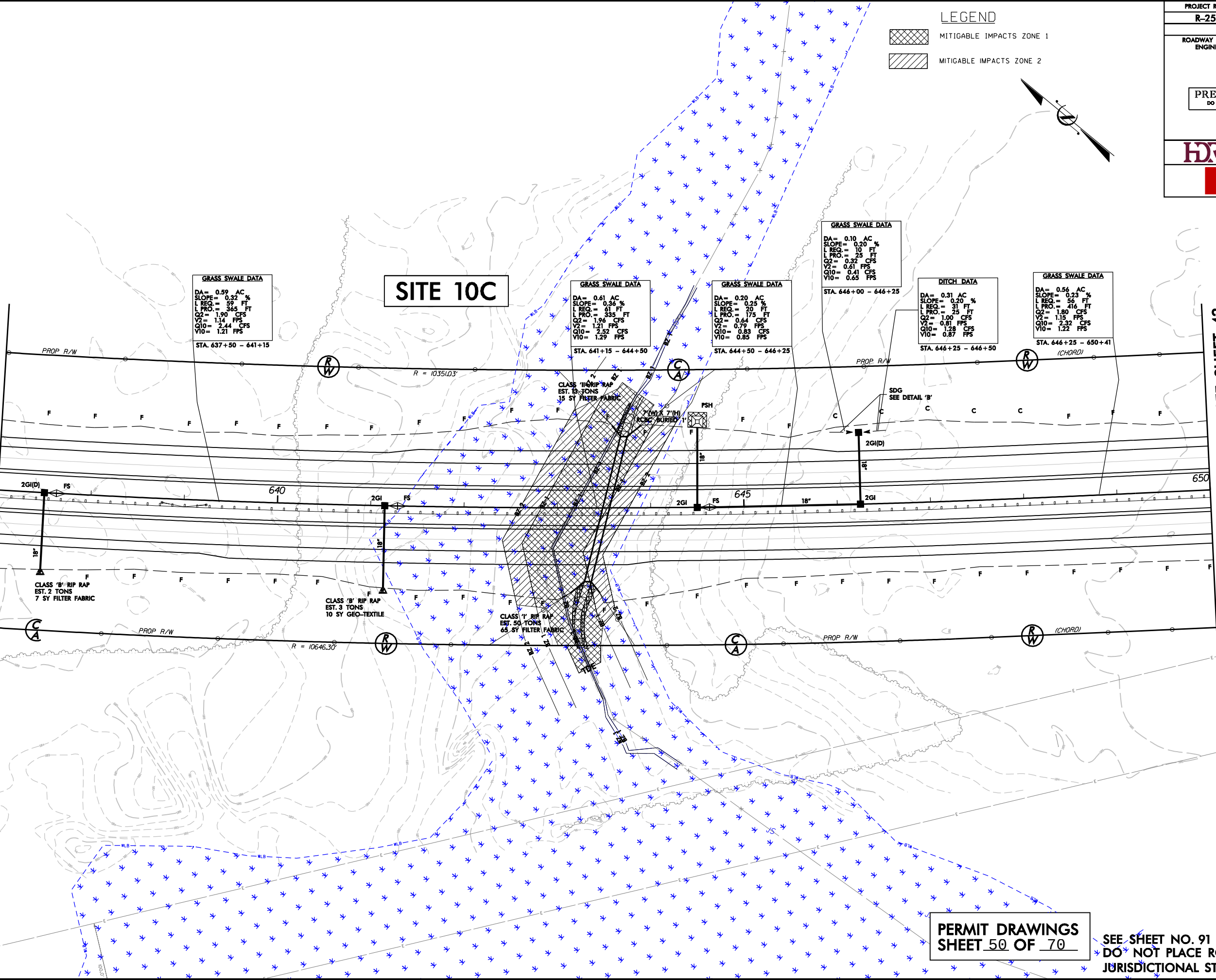
PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 30
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

REVISIONS



REVISIONS

MATCHLINE -LEV- STA. 637+00, SEE SHEET 40



MATCHLINE -LEV- STA. 650+00, SEE SHEET 42

PERMIT DRAWINGS
SHEET 50 OF 70

SEE SHEET NO. 91 FOR -LEV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

 PAVEMENT TO BE OBLITERATED.
 SEE SHEET NO. 92 FOR -LREV- PROFILE.
 SEE SHEET NO. 117 FOR -Y26REV- PROFILE.
 SEE SHEET NO. 2-U FOR BRIDGE SKETCH.
 DO NOT PLACE ROCK IN BED OF
 JURISDICTIONAL STREAMS.

LEGEND

MITIGABLE IMPACTS ZONE 1



MITIGABLE IMPACTS ZONE 2

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	45

RW SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
------------------------------------	--------------------------------

--	--

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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HDR HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116


**BARNHILL
CONTRACTING
COMPANY**

SITE 11C

MATCHLINE -LREV- STA. 689+00, SEE SHEET 44

MATCHLINE -LREV- STA. 703+00, SEE SHEET 46

ATCHLINE -Y26REV- STA. 32+00, SEE SHEET 67

PERMIT DRAWINGS
SHEET 51 OF 70

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PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 92 FOR -LREV- PROFILE.
SEE SHEET NO. 117 FOR -Y26REV- PROFILE.
SEE SHEET NO. 2-U FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

LEGEND

MITIGABLE IMPACTS ZONE 1

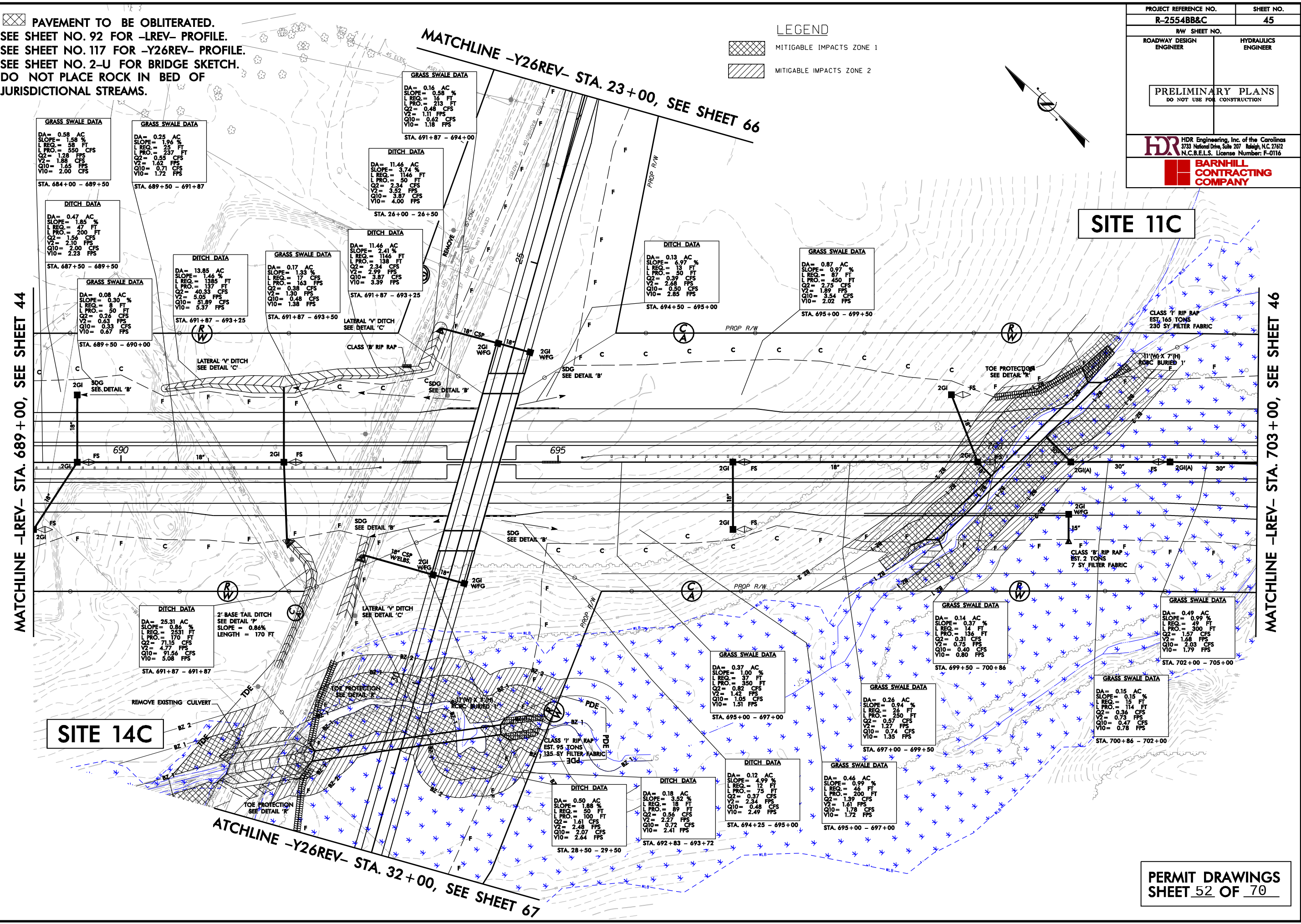
MITIGABLE IMPACTS ZONE 2

PROJECT REFERENCE NO.		SHEET NO.	
R-2554BB&C		45	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116			
BARNHILL CONTRACTING COMPANY			

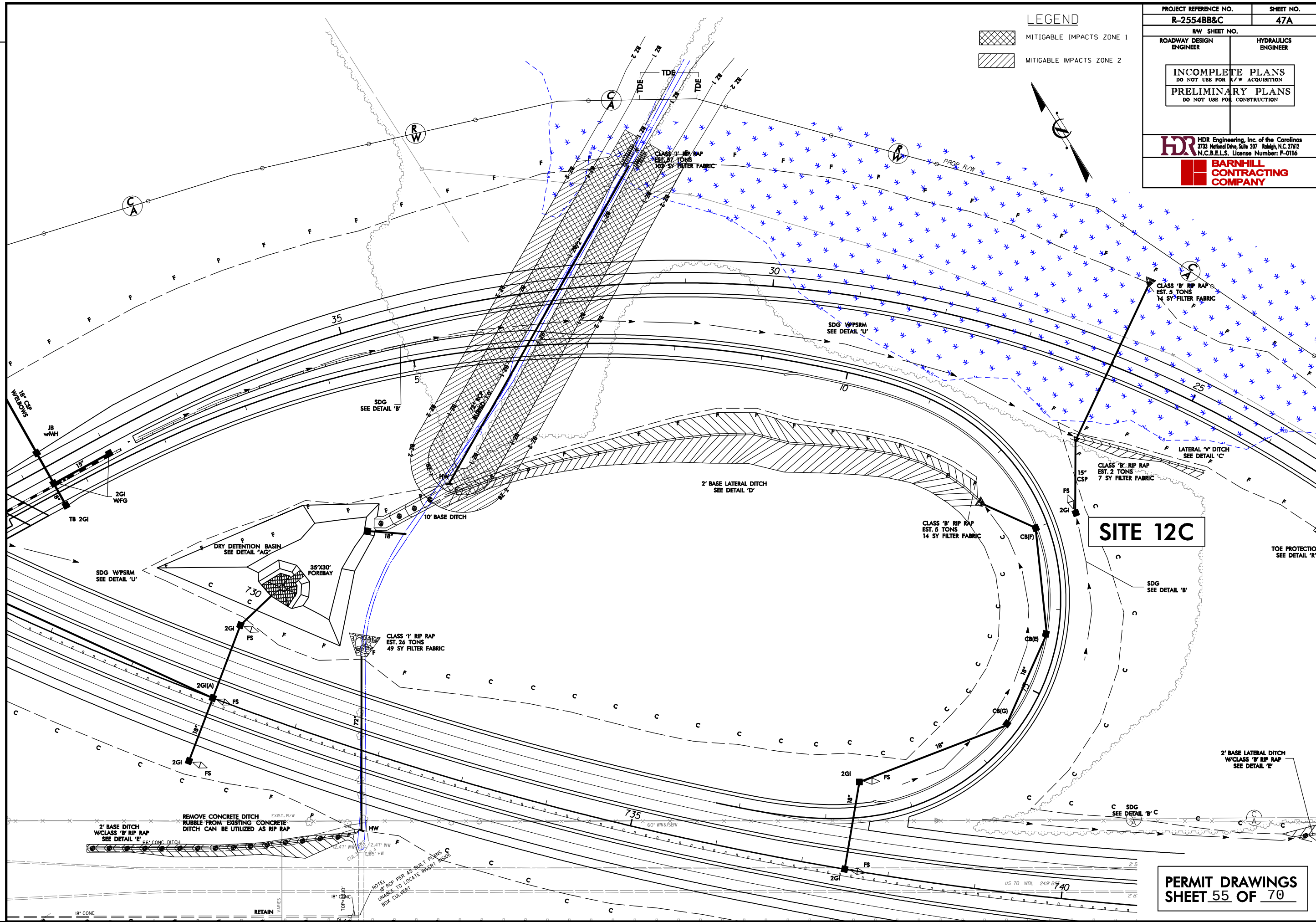
SITE 11C

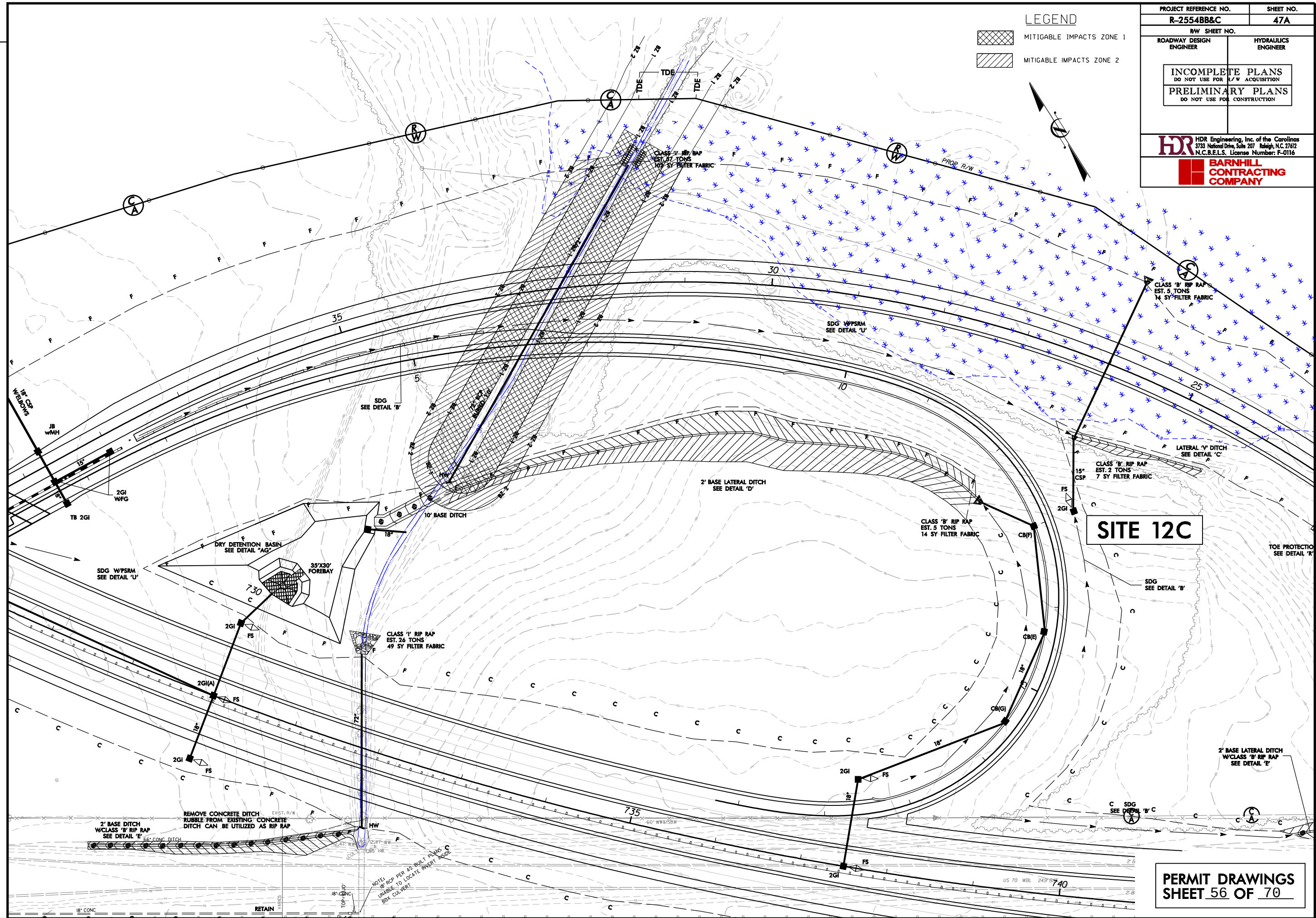
MATCHLINE -LREV- STA. 689+00, SEE SHEET 44

MATCHLINE -LREV- STA. 703+00, SEE SHEET 46



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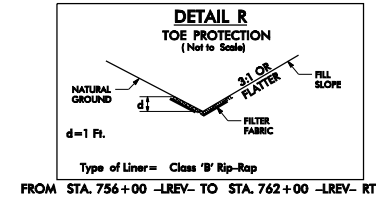
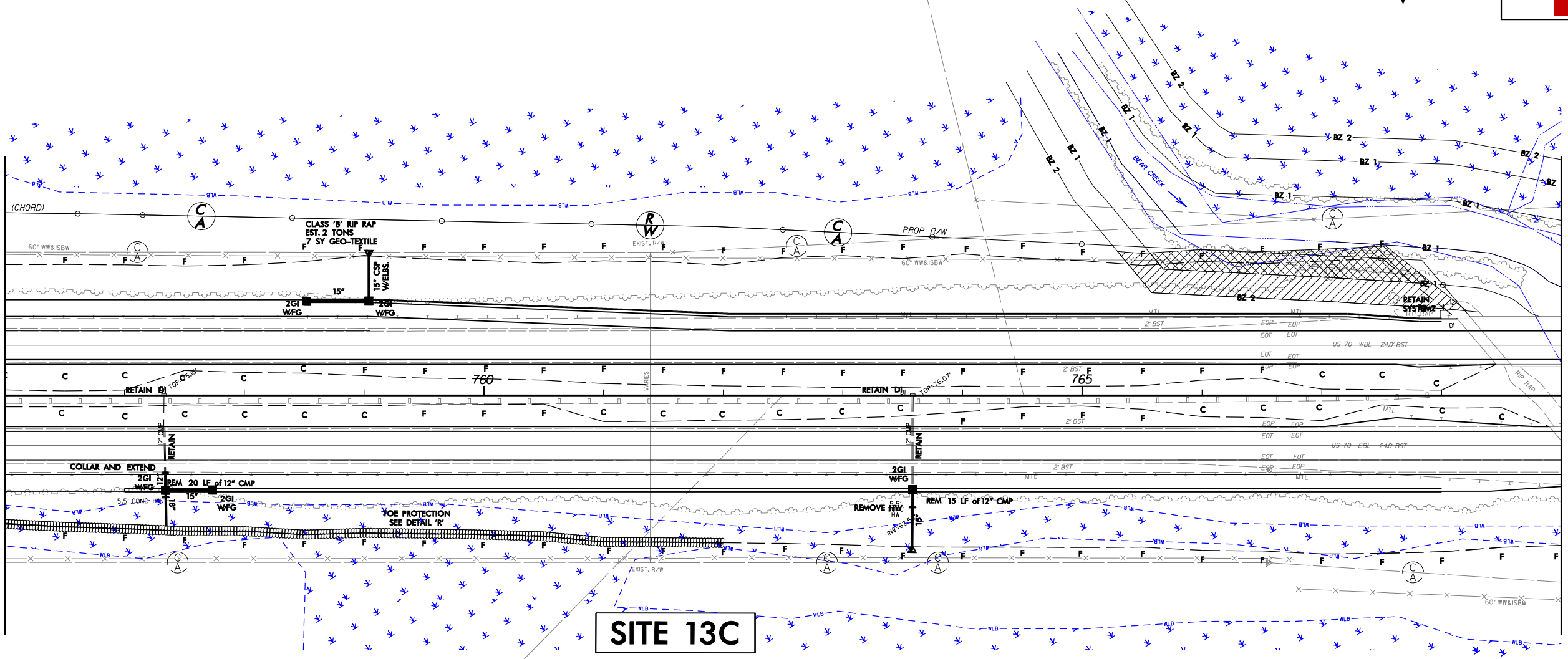




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REVISIONS

MATCHLINE -LREV- STA. 756+00, SEE SHEET 48



LEGEND

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 49
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

SITE 13C

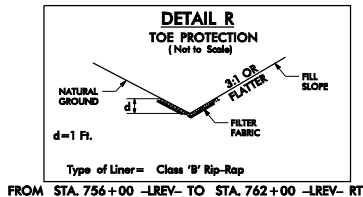
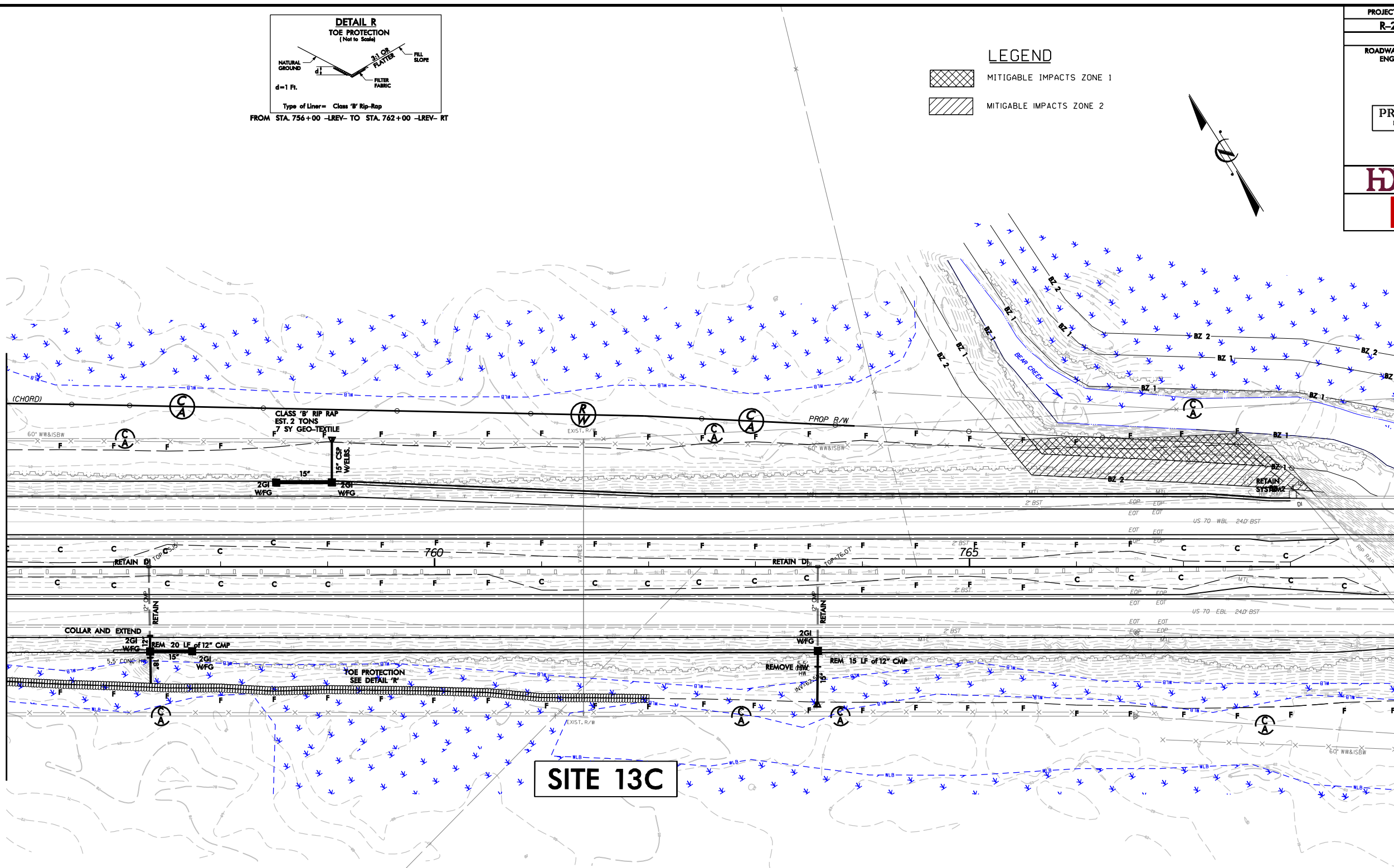
MATCHLINE -LREV- STA. 769+00, SEE SHEET 50

PERMIT DRAWINGS
SHEET 57 OF 70

SEE SHEET NO. 96 FOR -LREV_EB- PROFILE.
SEE SHEET NO. 97,98 FOR -LREV_WB- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

REVISIONS

MATCHLINE -LREV- STA. 756+00, SEE SHEET 48



LEGEND

- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2



PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		49
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
 BARNHILL CONTRACTING COMPANY		

SITE 13C

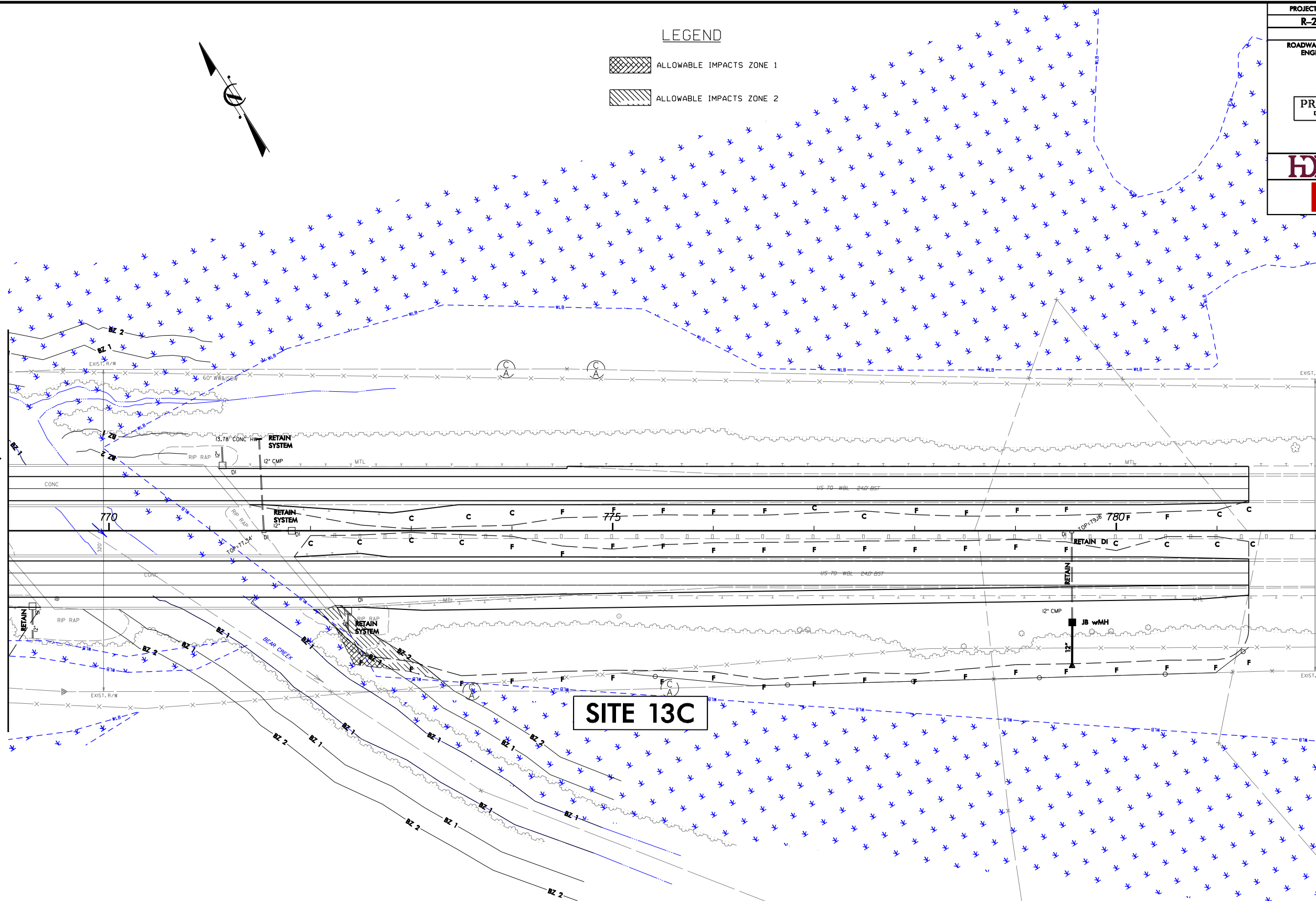
MATCHLINE -LREV- STA. 769+00, SEE SHEET 50

PERMIT DRAWINGS
SHEET 58 OF 70

SEE SHEET NO. 96 FOR -LREV_EB- PROFILE.
SEE SHEET NO. 97,98 FOR -LREV_WB- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

REVISIONS

MATCHLINE -LREV- STA. 769+00, SEE SHEET 49



MATCHLINE -LREV- STA. 782+00, SEE SHEET 51

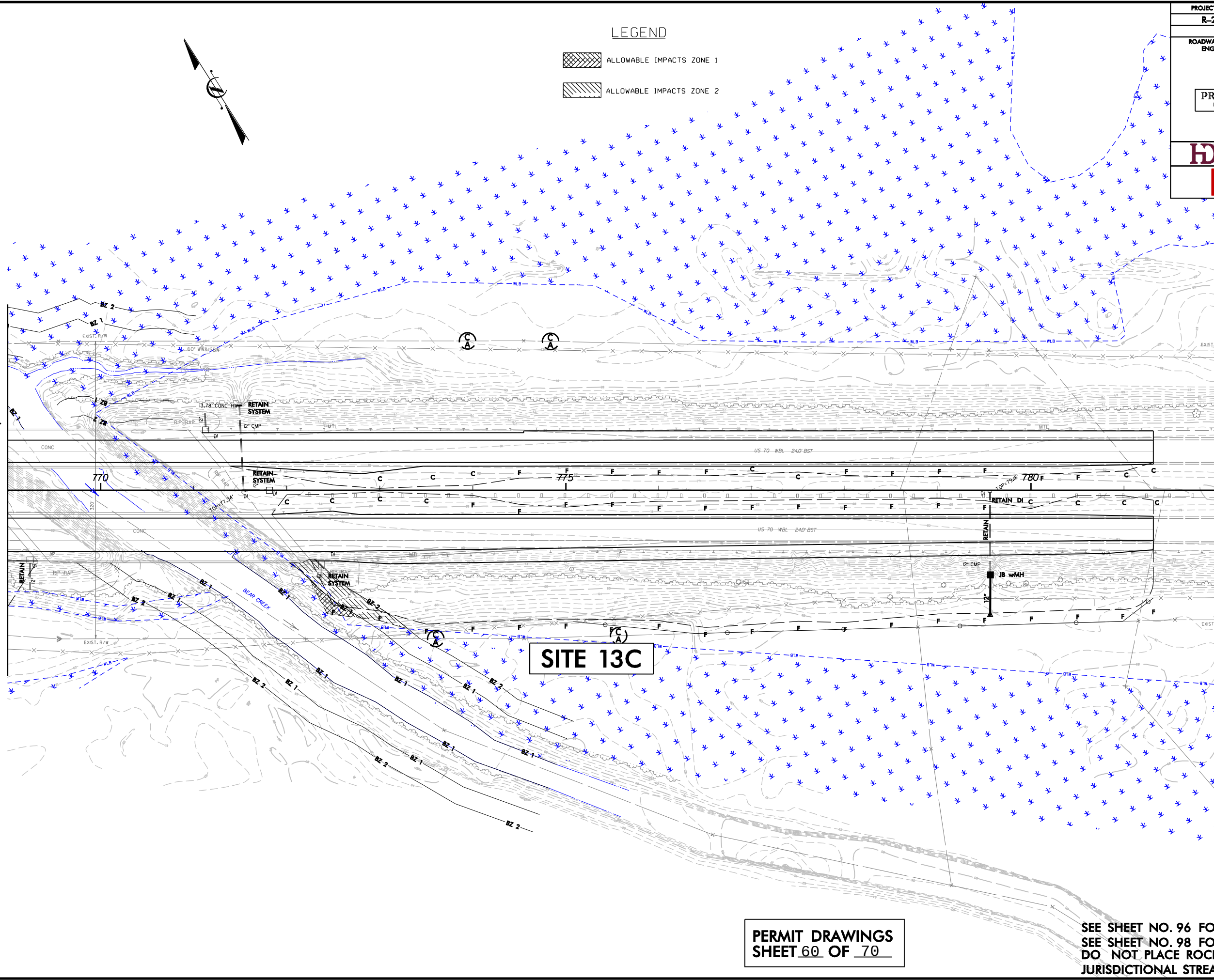
LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2

PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		50
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
 BARNHILL CONTRACTING COMPANY		

REVISIONS

MATCHLINE -LREV- STA. 769 + 00, SEE SHEET 49



LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2

PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		50
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
 BARNHILL CONTRACTING COMPANY		

PERMIT DRAWINGS
SHEET 60 OF 70

SEE SHEET NO. 96 FOR -LREV_EB- PROFILE.
SEE SHEET NO. 98 FOR -LREV_WB- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

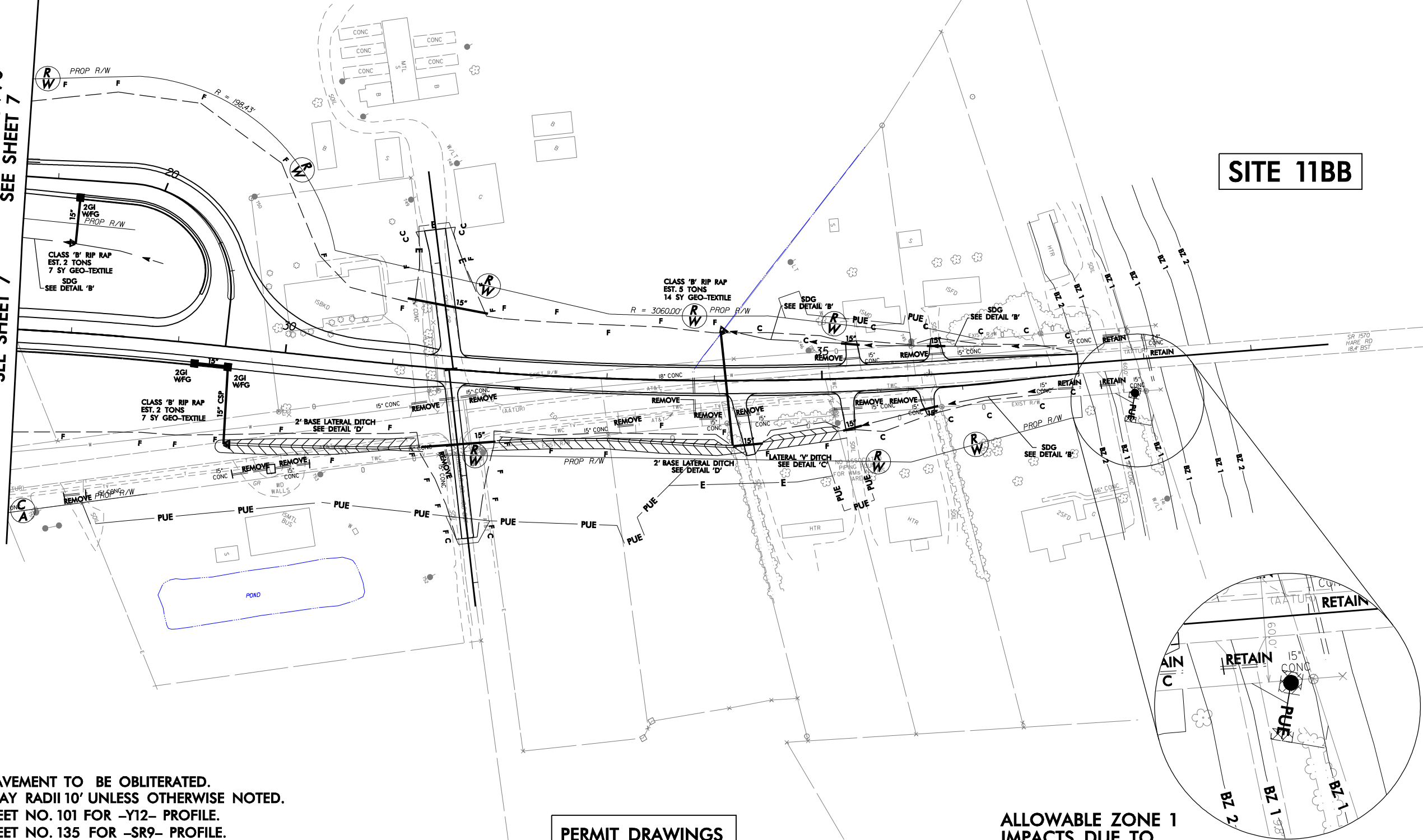
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DATE: 10/11/2012

REVISIONS

PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 101 FOR -Y12- PROFILE.
SEE SHEET NO. 135 FOR -SR9- PROFILE.
SEE SHEET NO. 145 FOR -DRIVE1- & -DRIVE2- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

MATCHLINE
-Y12- STA. 27+50
SEE SHEET 7

MATCHLINE
-SR9- STA. 18+70
SEE SHEET 7



LEGEND

ALLOWABLE IMPACTS ZONE 1

SITE 11BB

PERMIT DRAWINGS
SHEET 61 OF 70

ALLOWABLE ZONE 1
IMPACTS DUE TO
UTILITY POLE RELOCATION

PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		53
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
 BARNHILL CONTRACTING COMPANY		

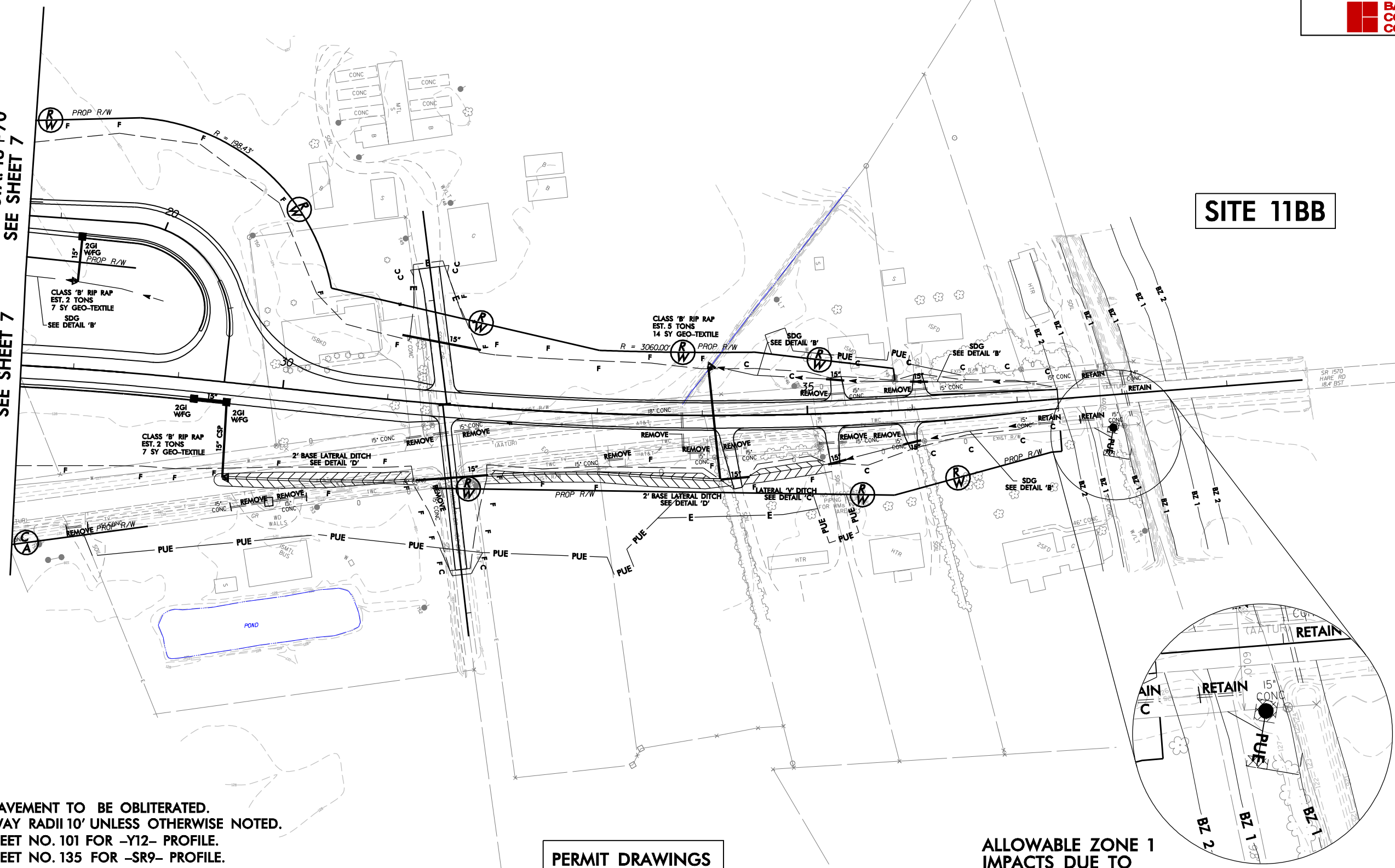
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REVISIONS

PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 101 FOR -Y12- PROFILE.
SEE SHEET NO. 135 FOR -SR9- PROFILE.
SEE SHEET NO. 145 FOR -DRIVE1- & -DRIVE2- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

MATCHLINE
-Y12- STA. 27+50
SEE SHEET 7

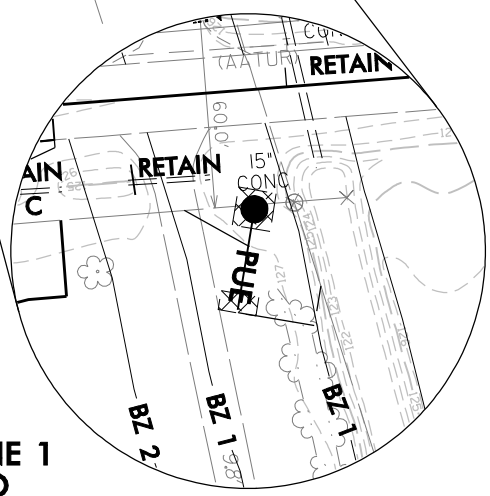
MATCHLINE
-SR9- STA. 18+70
SEE SHEET 7



LEGEND

ALLOWABLE IMPACTS ZONE 1

SITE 11BB

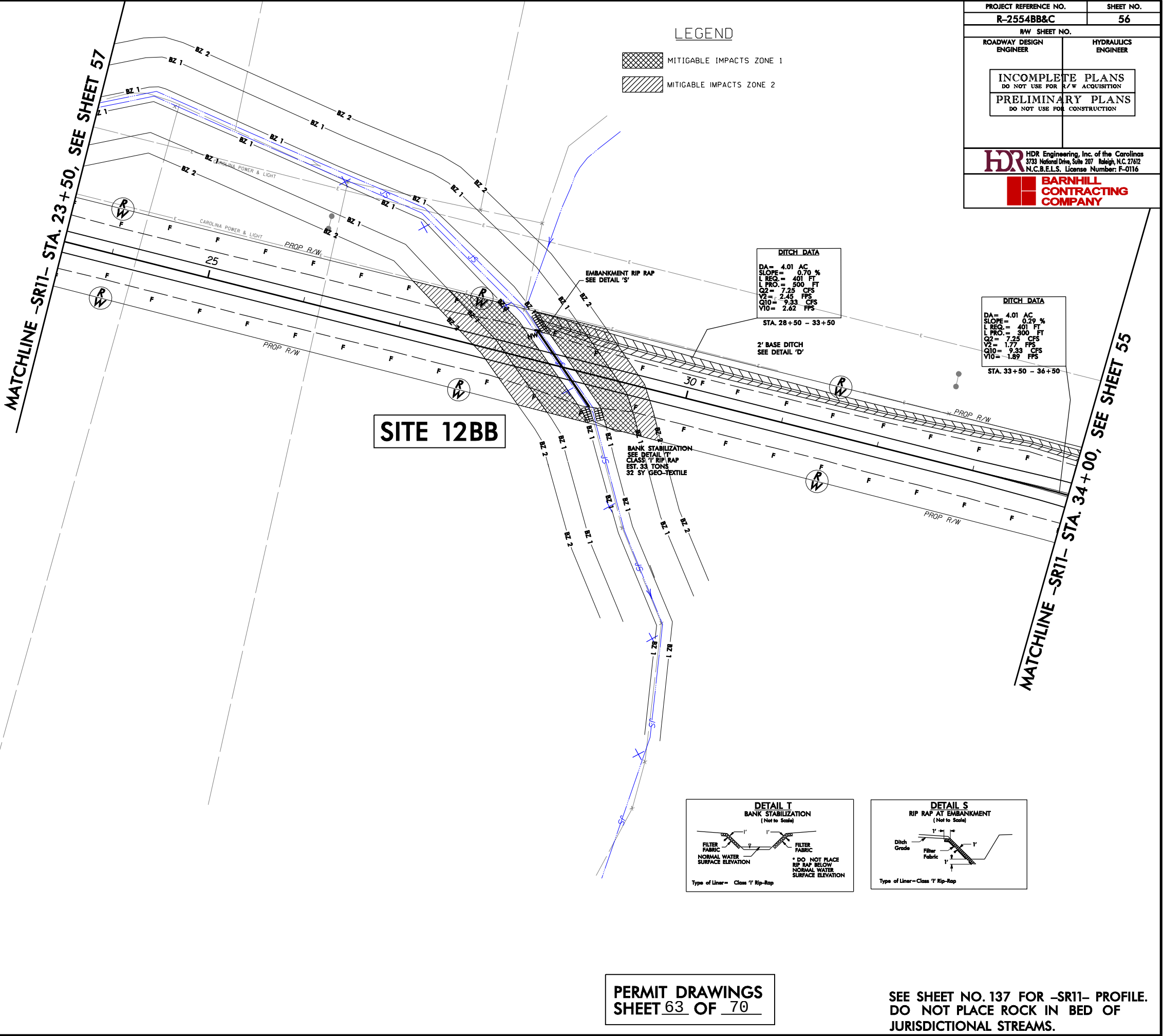


PERMIT DRAWINGS
SHEET 62 OF 70

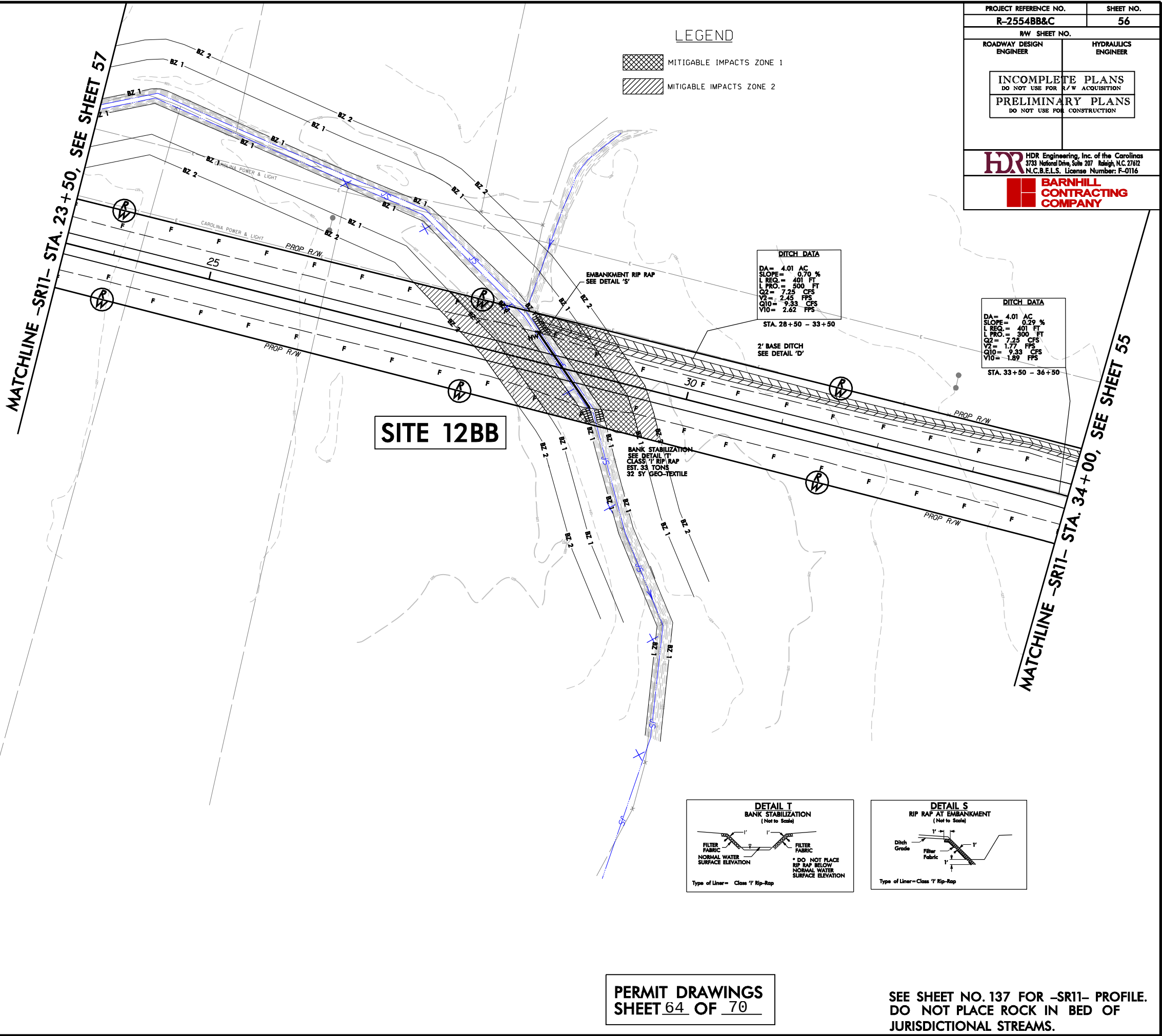
ALLOWABLE ZONE 1
IMPACTS DUE TO
UTILITY POLE RELOCATION

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 53
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

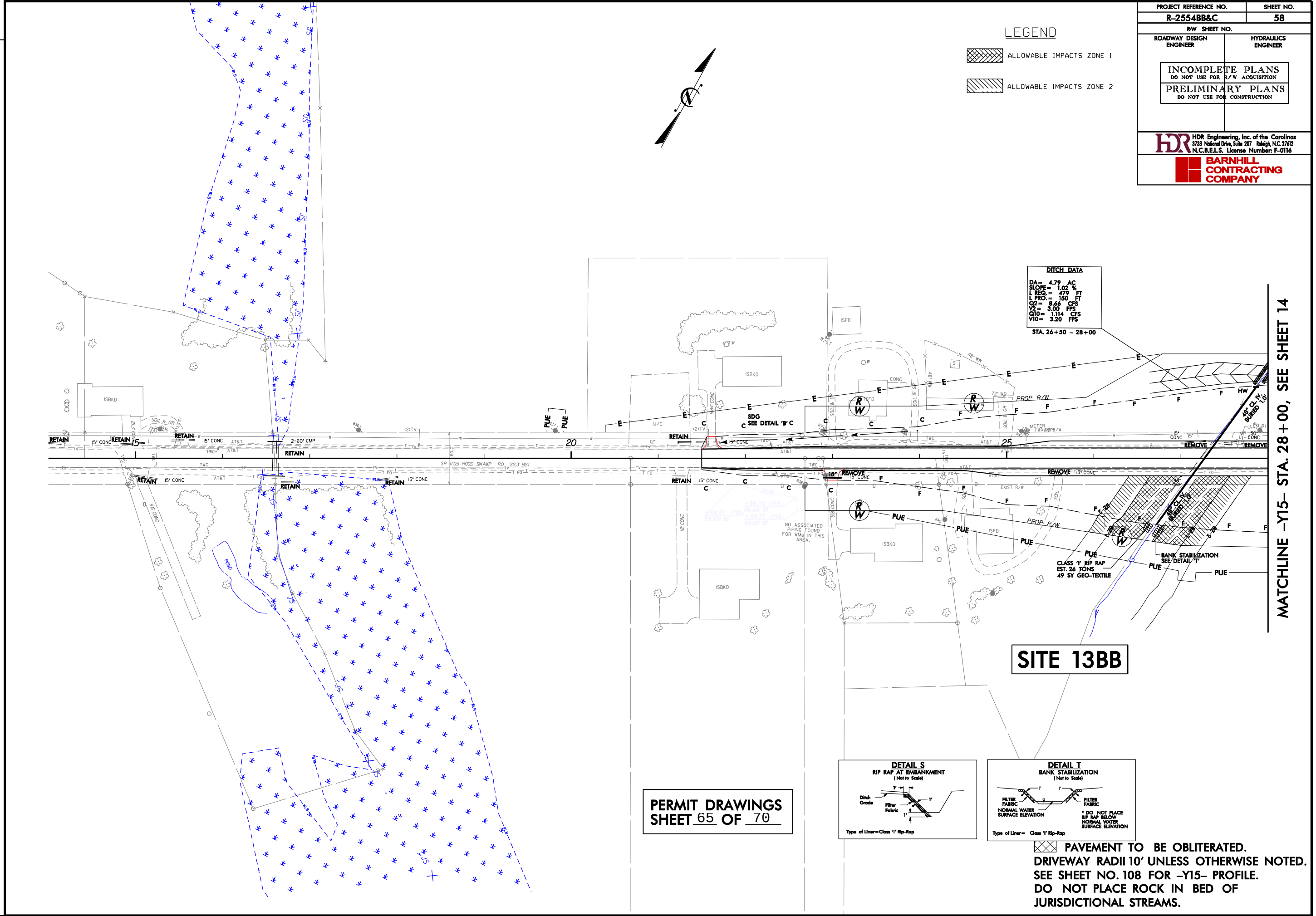
REVISIONS



REVISIONS



REVISIONS



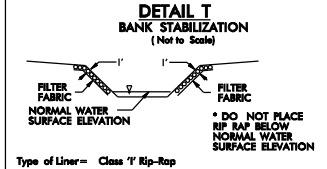
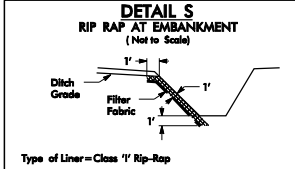
LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2

DITCH DATA
DA= 4.79 AC
SLOPE= 1.02 %
L REQ= 479 FT
L PRO= 150 FT
Q2= 8.66 CFS
V2= 3.00 FPS
Q10= 1.114 CFS
V10= 3.20 FPS
STA. 26+50 - 28+00

SITE 13BB

PERMIT DRAWINGS
SHEET 65 OF 70

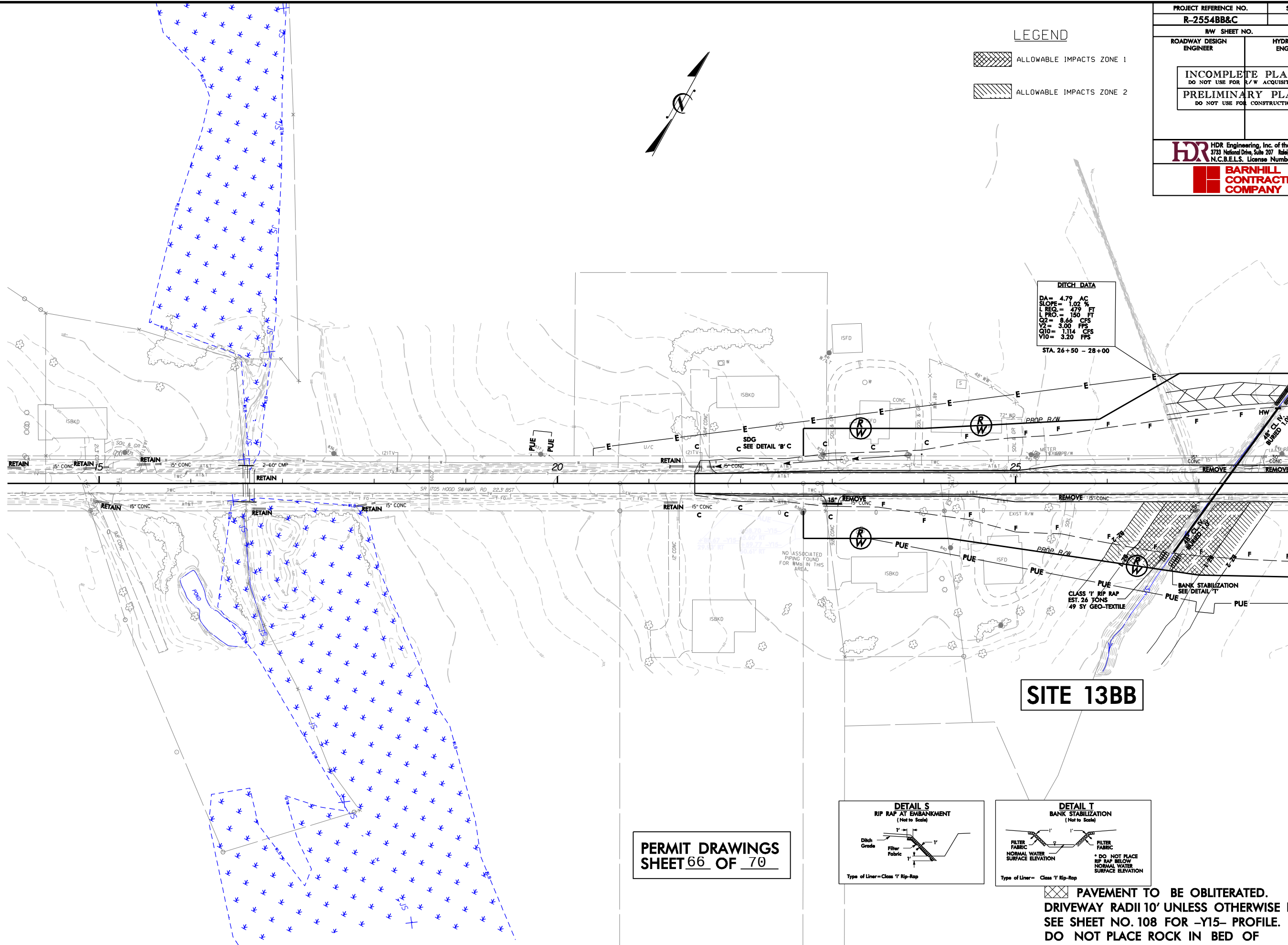


PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 108 FOR -Y15- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

MATCHLINE -Y15- STA. 28 + 00, SEE SHEET 14

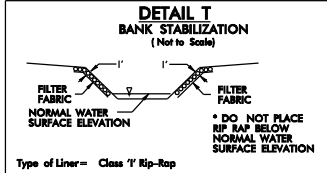
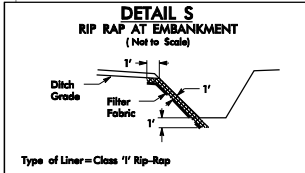
PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 58
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

REVISIONS



SITE 13BB

PERMIT DRAWINGS
SHEET 66 OF 70



PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 108 FOR -Y15- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 58	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116  BARNHILL CONTRACTING COMPANY			

MATCHLINE -Y15- STA. 28 + 00, SEE SHEET 14

REVISIONS

MATCHLINE -Y17- STA. 25+00, SEE SHEET 17

SITE 5BB

PERMIT DRAWINGS
SHEET 67 OF 70

LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		62
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
 BARNHILL CONTRACTING COMPANY		

PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 110 FOR -Y17- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

REVISIONS

MATCHLINE -Y17- STA. 25+00, SEE SHEET 17

SITE 5BB

PERMIT DRAWINGS
SHEET 68 OF 70

LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		62
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
 BARNHILL CONTRACTING COMPANY		

PAVEMENT TO BE OBLITERATED.

DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.

SEE SHEET NO. 110 FOR -Y17- PROFILE.

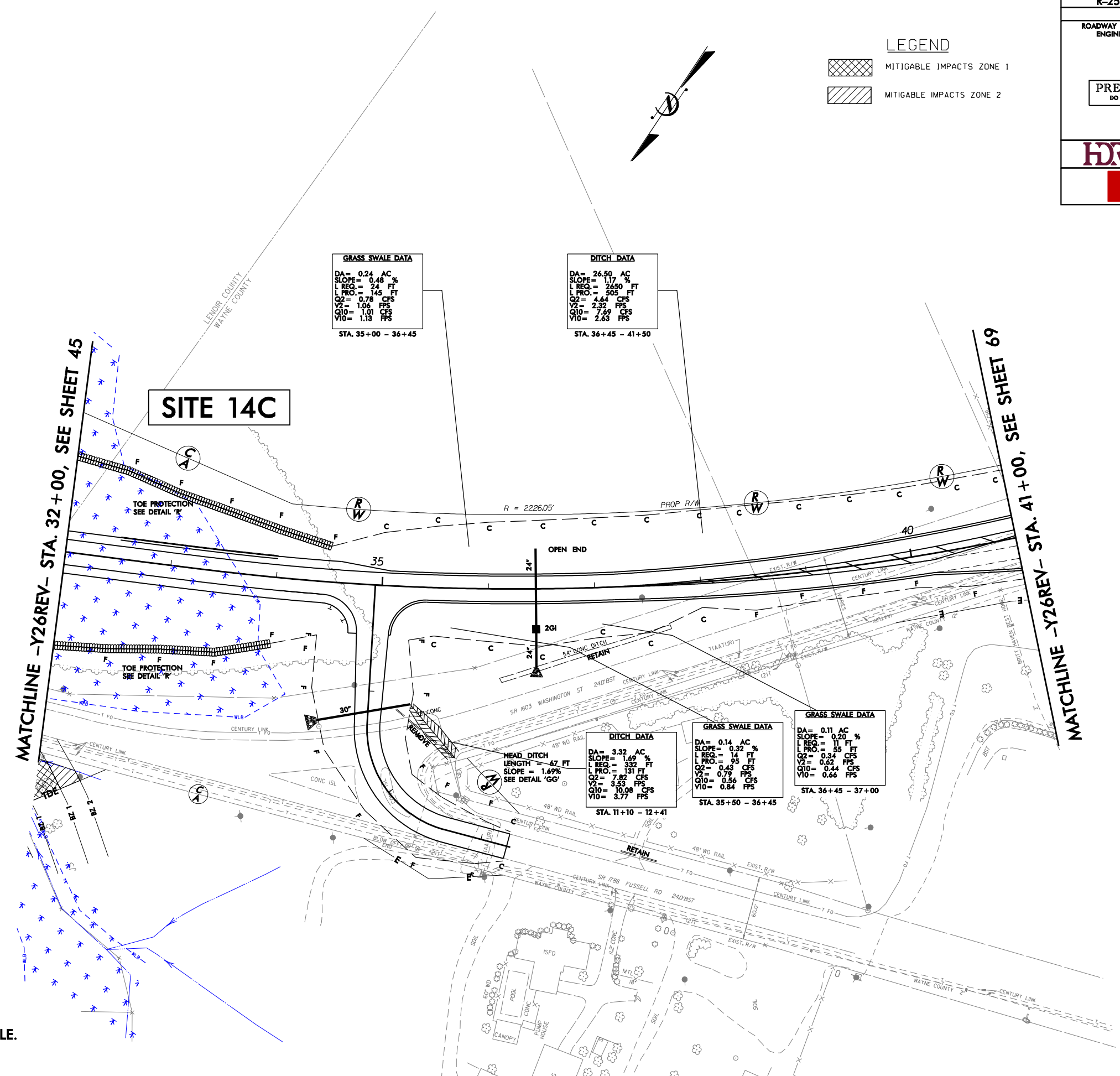
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

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REVISIONS

PERMIT DRAWINGS
SHEET 69 OF 70

PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 118,119 FOR -Y26REV- PROFILE.
SEE SHEET NO. 121 FOR -Y28REV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.



LEGEND

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

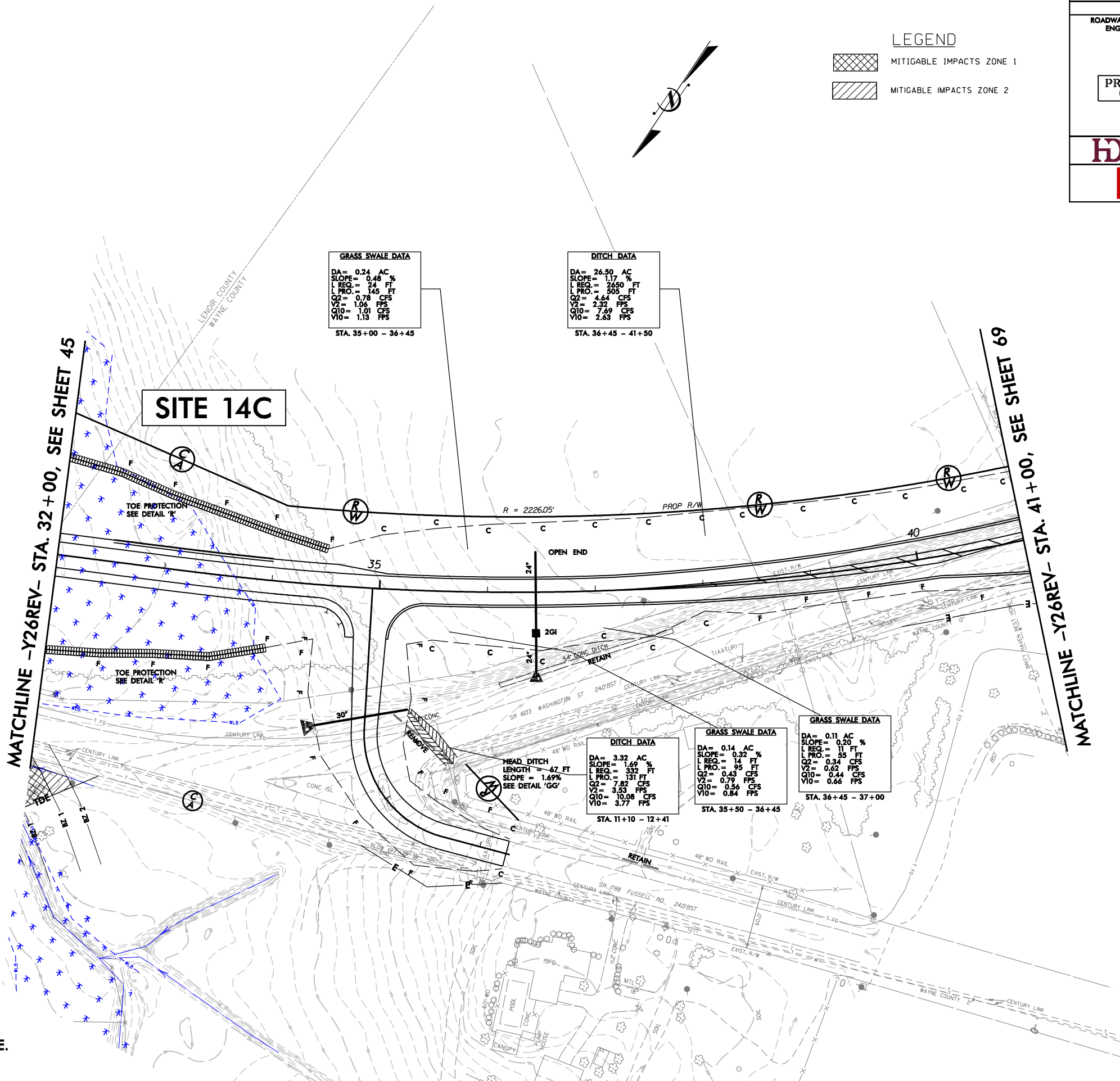
PROJECT REFERENCE NO.		SHEET NO.	
R-2554BB&C		67	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116			
BARNHILL CONTRACTING COMPANY			

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REVISIONS

PERMIT DRAWINGS
SHEET 70 OF 70

PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 118,119 FOR -Y26REV- PROFILE.
SEE SHEET NO. 121 FOR -Y28REV- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.



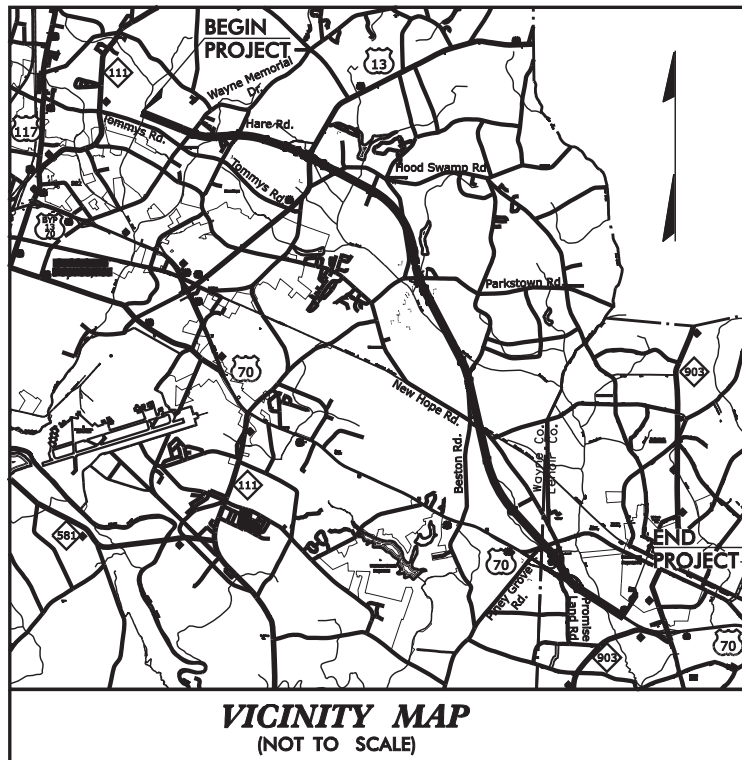
PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 67
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		
BARNHILL CONTRACTING COMPANY		

09/08/99

TIP PROJECT: R-2554BB&C

CONTRACT: C202771

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP
(NOT TO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAYNE-LENOIR COUNTIES

LOCATION: US 70 (GOLDSBORO BYPASS) FROM EAST OF SR 1556
(WAYNE MEMORIAL DRIVE) TO EAST OF SR 1323
(PROMISE LAND ROAD)

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

RIGHT OF WAY
ROADWAY PLANS

SUBMITTED: 10-11-2012

SUBMITTAL # S-030

BEGIN CONSTRUCTION
-LREV- STA. 122 + 61.79

BEGIN STATE PROJECT R-2554BB&C
BEGIN F.A. PROJECT NHF-0070(147)
-LREV- STA. 152 + 90.00

END STATE PROJECT R-2554BB&C
END F.A. PROJECT NHF-0070(147)
END CONSTRUCTION
-LREV- STA. 781 + 31.46

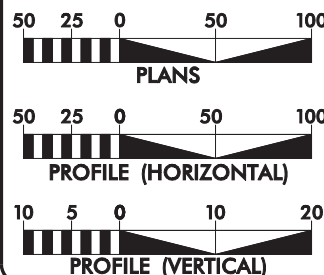
THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

PROJECT PREPARED BY:

HDR HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

BARNHILL
CONTRACTING
COMPANY

GRAPHIC SCALES



DESIGN DATA

ADT 2011 = 21400
ADT 2035 = 44500
DHV = 8 %
D = 55 %
T = 11 % *
V = 75 MPH
FUNCTIONAL CLASSIFICATION:
INTERSTATE
* TTST = 7% DUAL = 4%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2554BB&C = 11.646 MILES
LENGTH STRUCTURE TIP PROJECT R-2554BB&C = 0.256 MILES
TOTAL LENGTH TIP PROJECT R-2554BB&C = 11.902 MILES
BRIDGE LENGTH BASED ON CENTERLINE PROJECTION STATION

Prepared for the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 25, 2012 (R-2554BB)
DECEMBER 23, 2002 (R-2554C)

LETTING DATE:
JANUARY 25, 2012

PAUL A. MEEHAN, P.E.
PROJECT ENGINEER

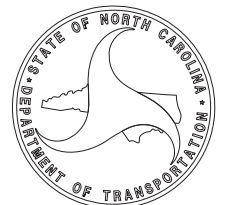
CALVIN W. MOODY, III, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS
ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN
ENGINEER

SIGNATURE: _____ P.E.



Note: Not to Scale

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

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin	
Property Corner	
Property Monument	
Parcel/Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
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	
Well	
Small Mine	
Foundation	
Area Outline	
Cemetery	
Building	
School	
Church	
Dam	

HYDROLOGY:

Stream or Body of Water	
Hydro, Pool or Reservoir	
Jurisdictional Stream	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	

RAILROADS:

Standard Gauge	
RR Signal Milepost	
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 RW Marker	
Proposed Control of Access Line with Concrete C/A Marker	
Existing Control of Access	
Proposed Control of Access	
Proposed Mitigation Area Line	
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	
Proposed Slope Stakes Fill	
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	

PAVEMENT SCHEDULE			
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	J1	PROP. 6.0" DEPTH AGGREGATE BASE COURSE
C2	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	J2	PROP. 8.0" DEPTH AGGREGATE BASE COURSE
C3	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J3	PROP. 10.0" DEPTH AGGREGATE BASE COURSE
C4	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J4	PROP. VARIABLE DEPTH AGGREGATE BASE COURSE
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.	P	PRIME COAT AT THE RATE OF 0.35 GAL. PER SQ. YD.
C6	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5 " IN DEPTH OR GREATER THAN 2" IN DEPTH.	R1	2'-6" CONCRETE CURB AND GUTTER
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	R2	SINGLE FACED CONCRETE BARRIER
D2	PROP. APPROX. 3.0" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	R3	DOUBLE FACED CONCRETE BARRIER (TYPE T)
D3	PROP. APPROX. 4.0" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R4	CONCRETE SHOULDER BERM GUTTER
D4	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4.0" IN DEPTH.	R5	CONCRETE EXPRESSWAY GUTTER
D5	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4.0" IN DEPTH.	R6	5" MONOLITHIC CONCRETE ISLAND (KEYED IN)
E1	PROP. APPROX. 3.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	S	8" INCIDENTAL STONE
E2	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL
E3	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	U	EXISTING PAVEMENT
E4	PROP. APPROX. 5.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL W1)
E5	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL W2)
E6	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3.0" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.	W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL W3)
E7	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3.0" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.	Y	PROPOSED MILLED RUMBLE STRIPS

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

PROJECT REFERENCE NO.
R-2554BB&C

SHEET NO.
2

RW SHEET NO.

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS

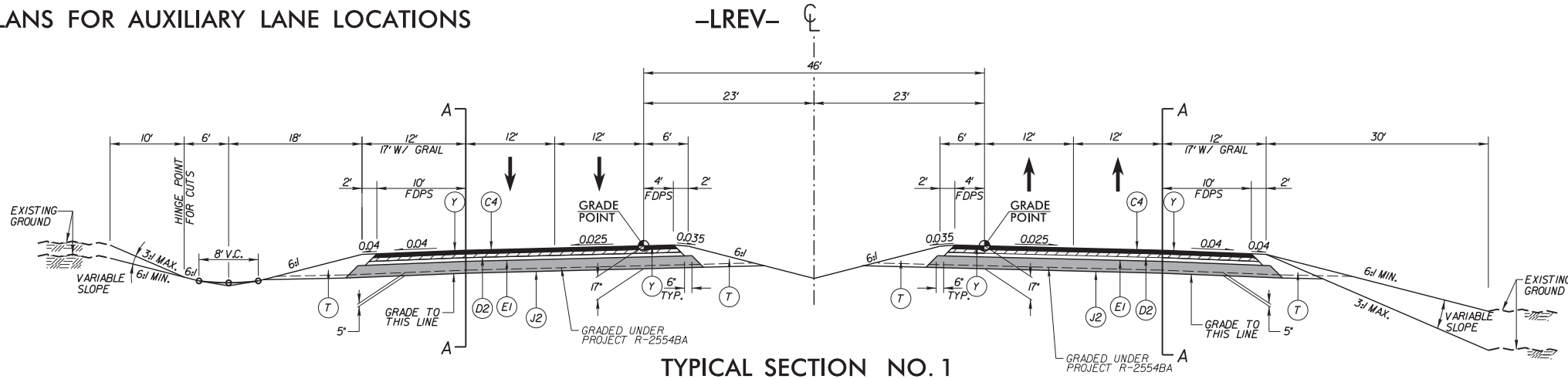
DO NOT USE FOR CONSTRUCTION

HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

BARNHILL CONTRACTING COMPANY

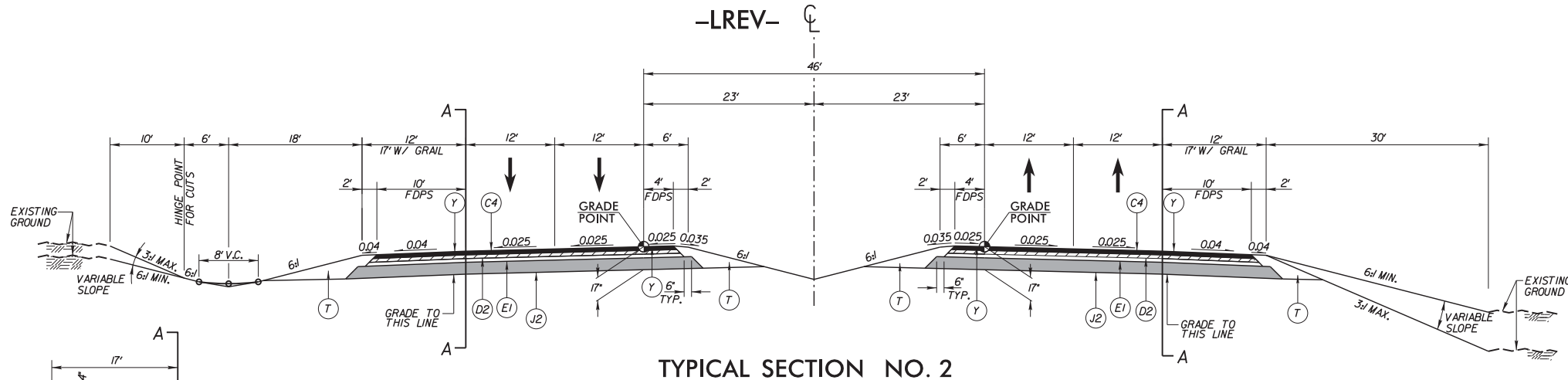
5/14/99

NOTE: SEE PLANS FOR AUXILIARY LANE LOCATIONS



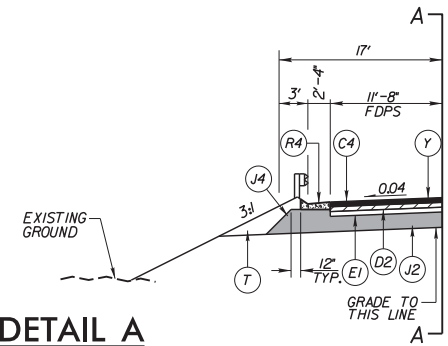
TYPICAL SECTION NO. 1

-LREV- STA 122 + 61.79 TO 152 + 90.00

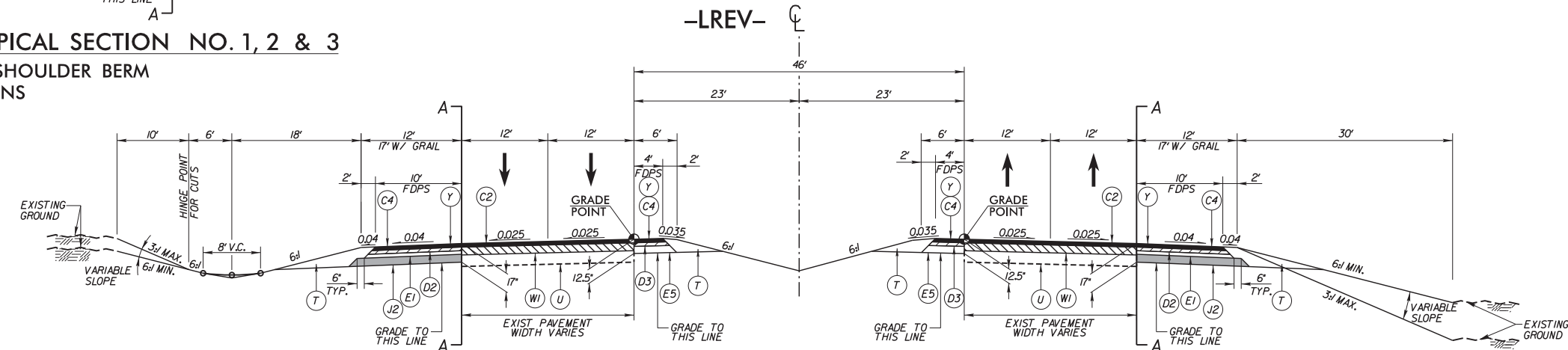


TYPICAL SECTION NO. 2

-LREV- STA 152 + 90.00 TO 152 + 93 +/- (BEGIN BRIDGE)
-LREV- STA 157 + 05 +/- (END BRIDGE) TO 475 + 77 +/- (BEGIN BRIDGE)
-LREV- STA 482 + 23 +/- (END BRIDGE) TO 560 + 71 +/- (BEGIN BRIDGE)
-LREV- STA 564 + 78 +/- (END BRIDGE) TO 738 + 79.37



DETAIL A
USE WITH TYPICAL SECTION NO. 1, 2 & 3
SEE PLANS FOR SHOULDER BERM
GUTTER LOCATIONS



TYPICAL SECTION NO. 3

-LREV- STA 738 + 79.37 TO 768 + 68 +/- (BEGIN BRIDGE)
-LREV- STA 771 + 62 +/- (END BRIDGE) TO 781 + 31.46

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	2-A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
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C1	1.5" S9.5B
C2	1.5" S9.5C
C3	3.0" S9.5B
C4	3.0" S9.5C
C5	VAR. S9.5B
C6	VAR. S9.5C
D1	2.5" I19.0B
D2	3.0" I19.0C
D3	4.0" I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3.0" B25.0C
E2	4.0" B25.0B
E3	4.5" B25.0B
E4	5.0" B25.0B
E5	5.5" B25.0C
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	6.0" ABC
J2	8.0" ABC
J3	10.0" ABC
J4	VAR. ABC
P	PRIME COAT
R1	2'-6" C & G
R2	SINGLE FACED BARRIER
R3	DOUBLE FACED BARRIER
R4	SHOULDER BERM GUTTER
R5	EXPRESSWAY GUTTER
R6	MONO. CONCRETE ISLAND
S	8" INCIDENTAL STONE
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING (SEE SHEET 2-K)
W2	WEDGING (SEE SHEET 2-K)
W3	WEDGING (SEE SHEET 2-K)
Y	MILLED RUMBLE STRIPS

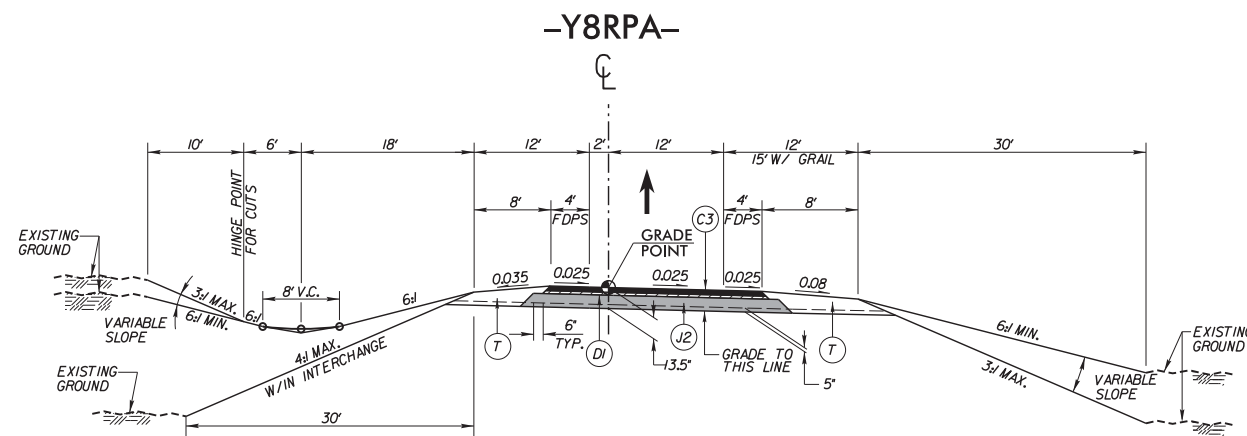
NOTE: PAVEMENT EDGE SLOPES ARE 1:1
UNLESS SHOWN OTHERWISE

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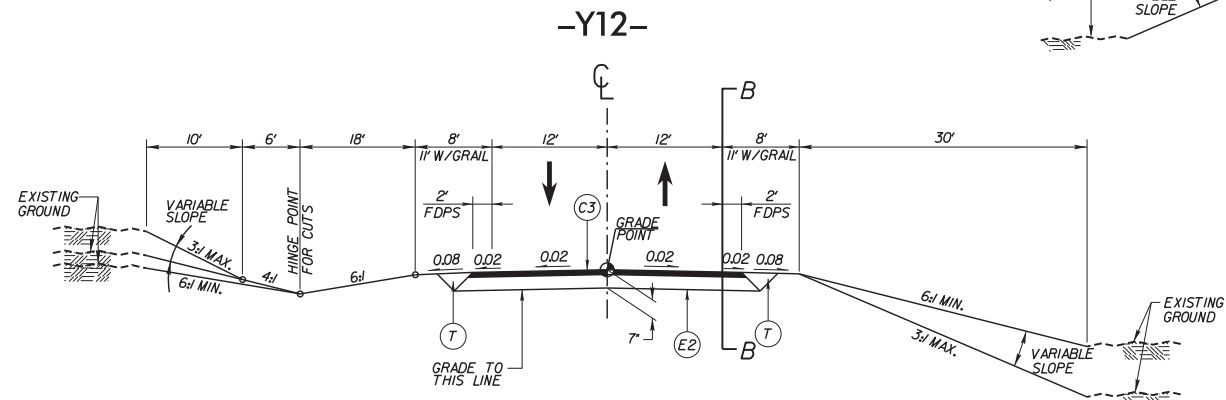
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REVISIONS

5/14/99

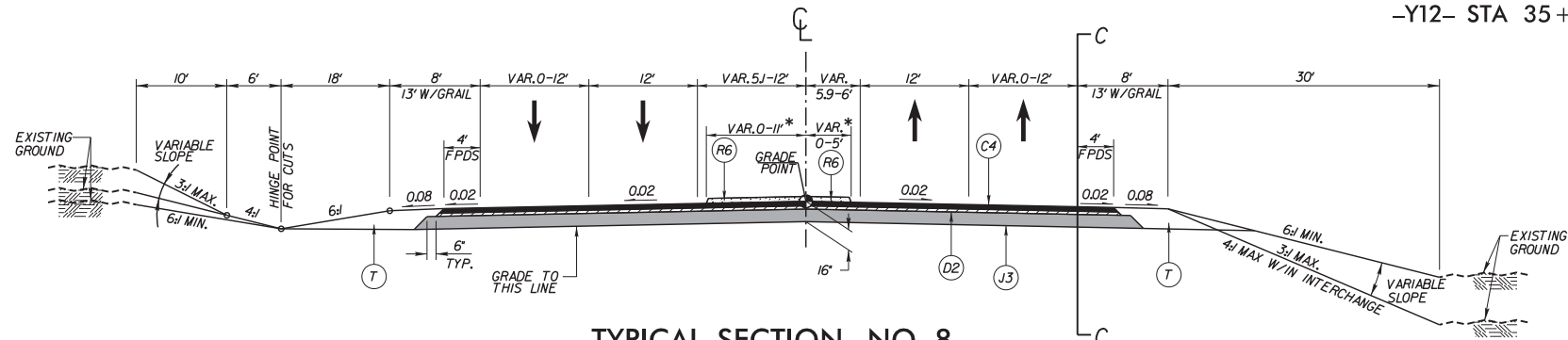


TYPICAL SECTION NO. 4
-Y8RPA- STA 15+86.86 TO 24+78.26



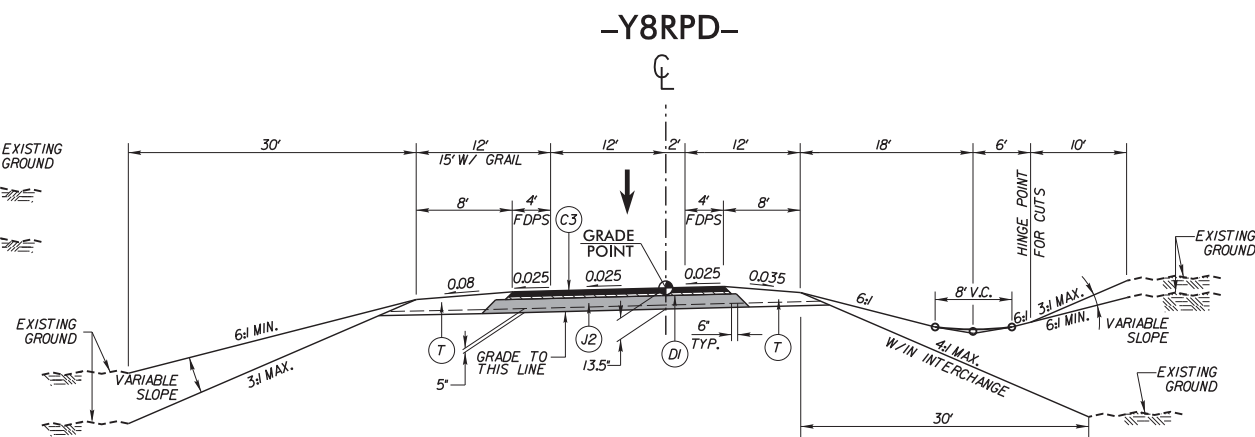
TYPICAL SECTION NO. 6
-Y12- STA 13+34.89 TO 22+57 +/- (BEGIN BRIDGE)
-Y12- STA 25+14 +/- (END BRIDGE) TO 35+60.65

DETAIL B
USE WITH TYPICAL SECTION NO. 6
SEE PLANS FOR SHOULDER BERM
GUTTER LOCATIONS

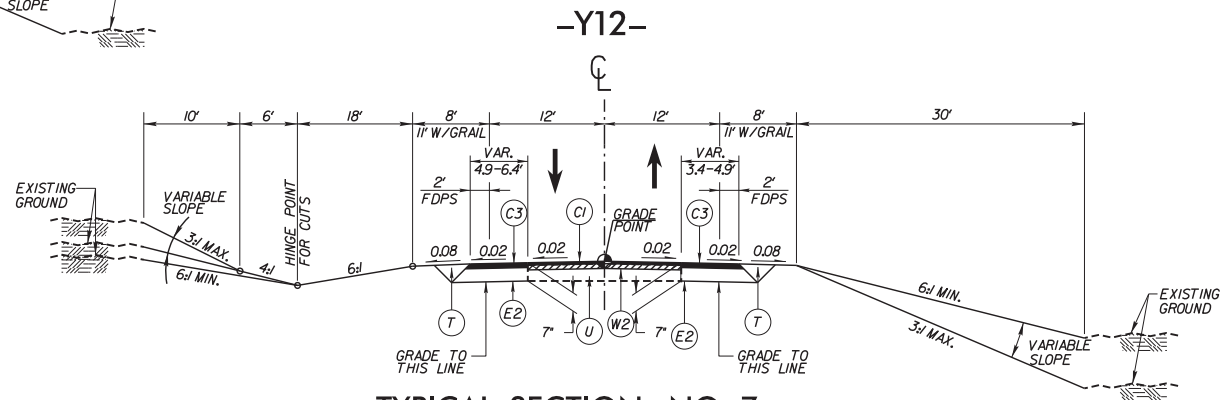


TYPICAL SECTION NO. 8
-Y14- STA 21+91.47 TO 28+84 +/- (BEGIN BRIDGE)
-Y14- STA 31+20 +/- (END BRIDGE) TO 42+48.21
* SEE PLAN SHEET FOR STATION RANGES

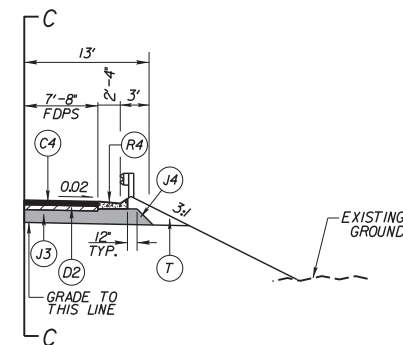
NOTE: SEE PLANS FOR AUXILIARY LANE LOCATIONS



TYPICAL SECTION NO. 5
-Y8RPD- STA 15+06.92 TO 26+21.29



TYPICAL SECTION NO. 7
-Y12- STA 11+90.00 TO 13+34.89
-Y12- STA 35+60.65 TO 37+38.66



DETAIL C
USE WITH TYPICAL SECTION NO. 8
SEE PLANS FOR SHOULDER BERM
GUTTER LOCATIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	2-B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	



C1	1.5" S9.5B
C2	1.5" S9.5C
C3	3.0" S9.5B
C4	3.0" S9.5C
C5	VAR. S9.5B
C6	VAR. S9.5C
D1	2.5" I19.0B
D2	3.0" I19.0C
D3	4.0" I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3.0" B25.0C
E2	4.0" B25.0B
E3	4.5" B25.0B
E4	5.0" B25.0B
E5	5.5" B25.0C
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	6.0" ABC
J2	8.0" ABC
J3	10.0" ABC
J4	VAR. ABC
P	PRIME COAT
R1	2'-6" C & G
R2	SINGLE FACED BARRIER
R3	DOUBLE FACED BARRIER
R4	SHOULDER BERM GUTTER
R5	EXPRESSWAY GUTTER
R6	MONO. CONCRETE ISLAND
S	8" INCIDENTAL STONE
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING (SEE SHEET 2-K)
W2	WEDGING (SEE SHEET 2-K)
W3	WEDGING (SEE SHEET 2-K)
Y	MILLED RUMBLE STRIPS

NOTE: PAVEMENT EDGE SLOPES ARE 1:1
UNLESS SHOWN OTHERWISE

5/14/99



* FOR WIDTHS GREATER THAN 10' USE (J3)
FOR WIDTHS LESS THAN 10' USE (E4)



* FOR WIDTHS GREATER THAN 10' USE (J3)
FOR WIDTHS LESS THAN 10' USE (E4)



—Y14RPD— STA 14+71.26 TO 24+92.13



—Y14RPC— STA 15+16.33 TO 27+75.85



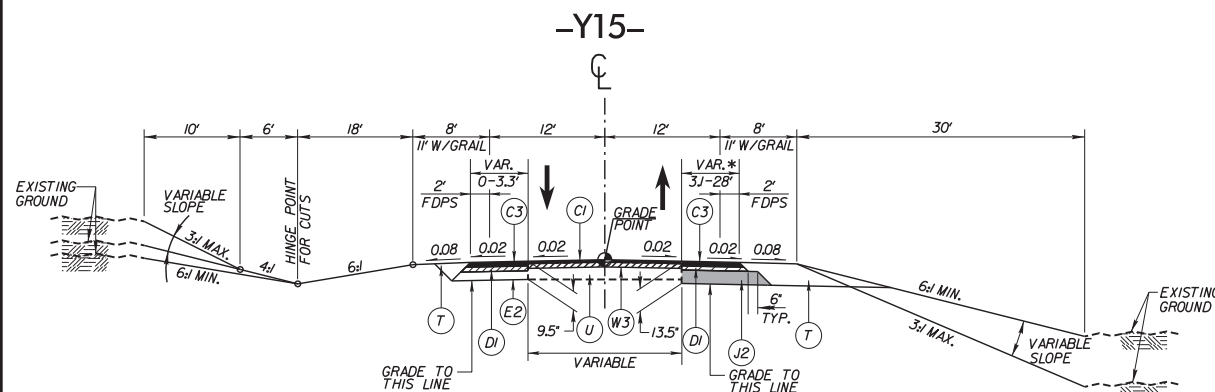
SEE PLANS FOR SHOULDER BERM
GUTTER LOCATIONS



**BARNHILL
CONTRACTING
COMPANY**

NOTE: PAVEMENT EDGE SLOPES ARE 1:1
UNLESS SHOWN OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	2-D
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	

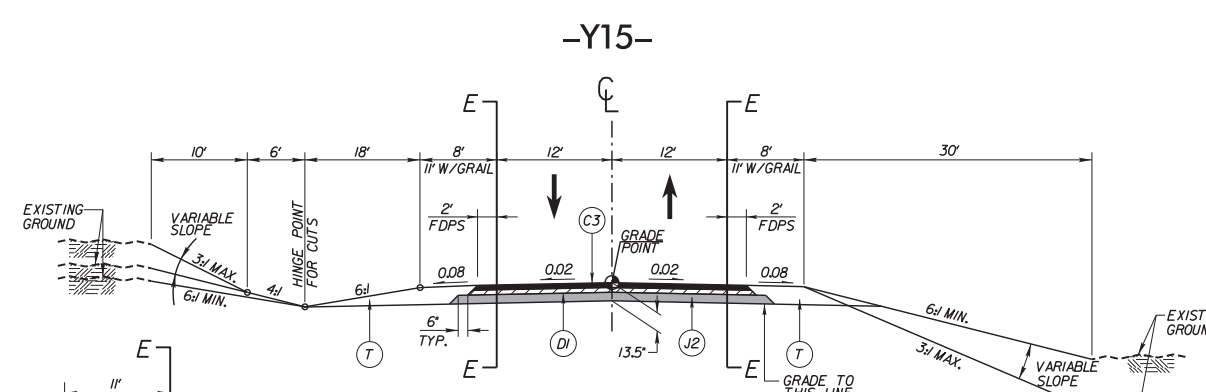


TYPICAL SECTION NO. 13

-Y15- STA 21+50.00 TO 23+37.03

-Y15- STA 42+67.53 TO 46+10.00

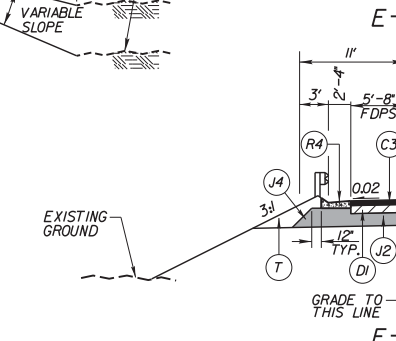
* FOR WIDTHS GREATER THAN 10' USE (J2)
FOR WIDTHS LESS THAN 10' USE (E2)



TYPICAL SECTION NO. 14

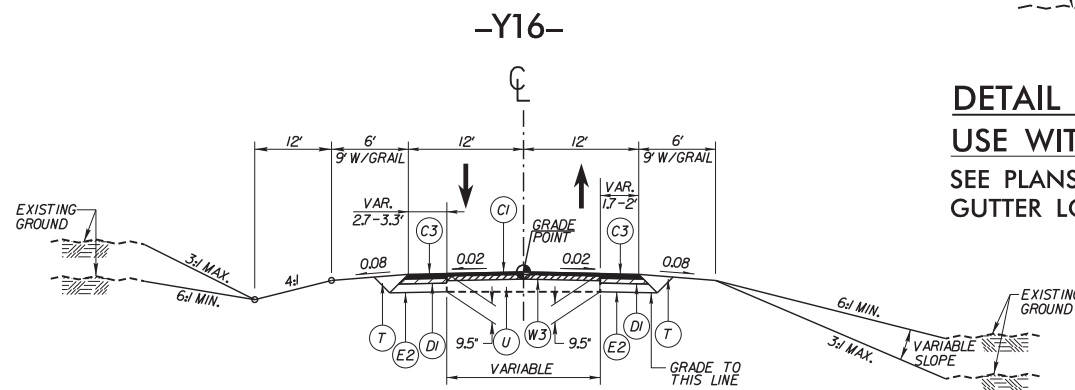
-Y15- STA 23+37.03 TO 30+34 +/- (BEGIN BRIDGE)

-Y15- STA 32+98 +/- (END BRIDGE) TO 42+67.53



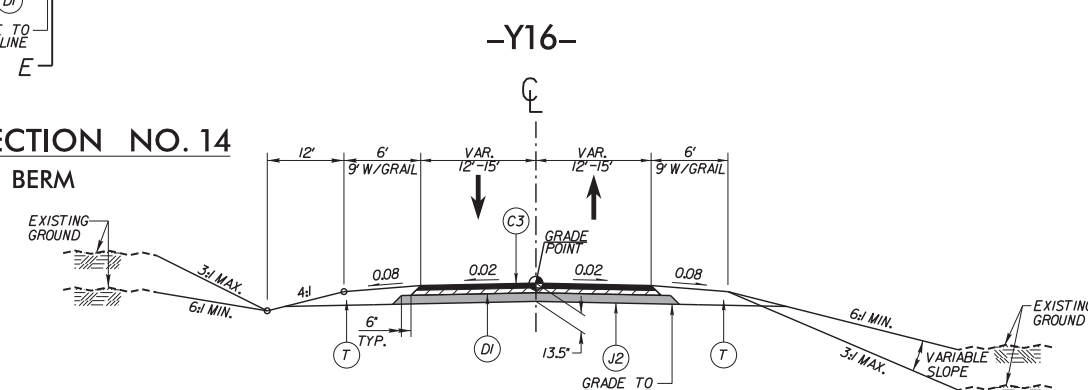
DETAIL E

USE WITH TYPICAL SECTION NO. 14

SEE PLANS FOR SHOULDER BERM
GUTTER LOCATIONS

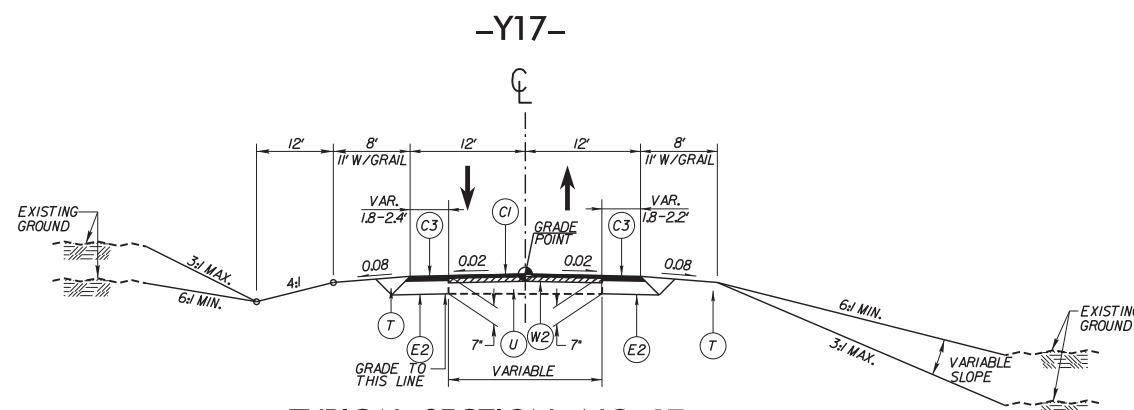
TYPICAL SECTION NO. 15

-Y16- STA 13+05.00 TO 15+47.58



TYPICAL SECTION NO. 16

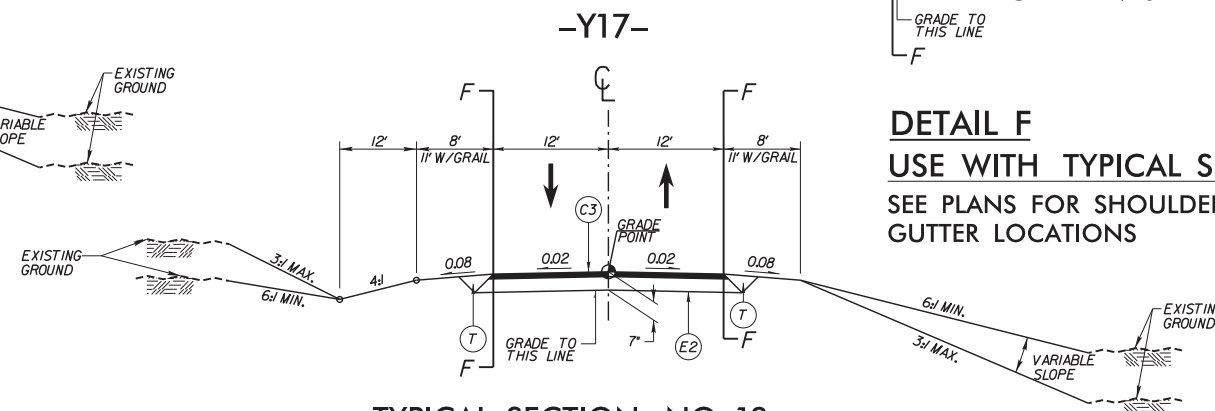
-Y16- STA 15+47.58 TO 18+63.95



TYPICAL SECTION NO. 17

-Y17- STA 13+40.00 TO 14+55.89

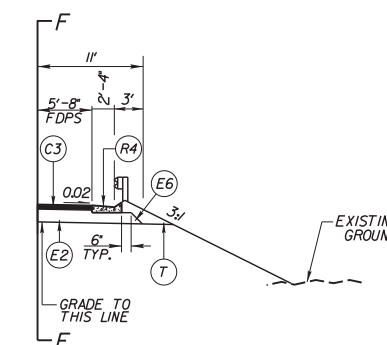
-Y17- STA 30+38.06 TO 31+40.00



TYPICAL SECTION NO. 18

-Y17- STA 14+55.89 TO 21+80 +/- (BEGIN BRIDGE)

-Y17- STA 23+90 +/- (END BRIDGE) TO 30+38.06



DETAIL F

USE WITH TYPICAL SECTION NO. 18

SEE PLANS FOR SHOULDER BERM
GUTTER LOCATIONS

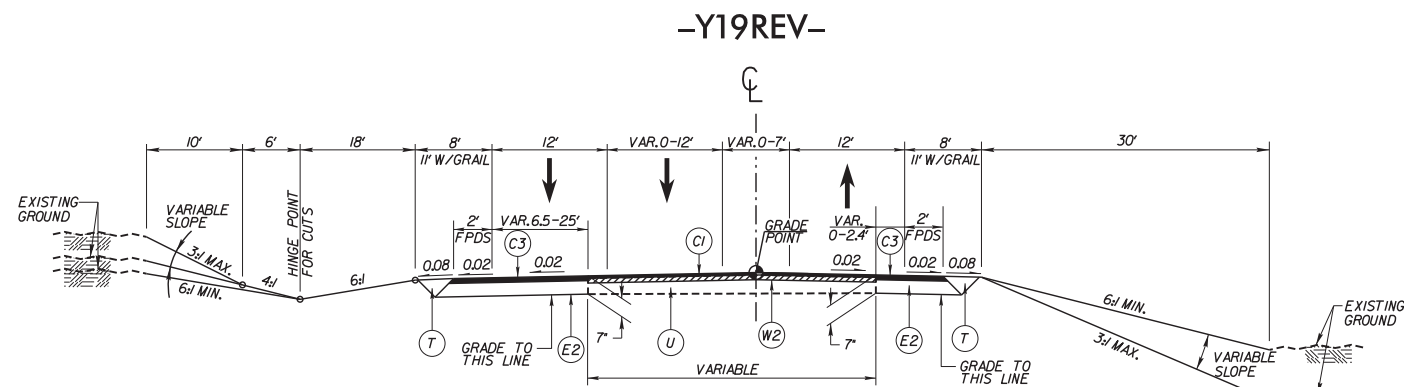
NOTE: SEE PLANS FOR AUXILIARY LANE LOCATIONS

C1	1.5" S9.5B
C2	1.5" S9.5C
C3	3.0" S9.5B
C4	3.0" S9.5C
C5	VAR. S9.5B
C6	VAR. S9.5C
D1	2.5" I19.0B
D2	3.0" I19.0C
D3	4.0" I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3.0" B25.0C
E2	4.0" B25.0B
E3	4.5" B25.0B
E4	5.0" B25.0B
E5	5.5" B25.0C
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	6.0" ABC
J2	8.0" ABC
J3	10.0" ABC
J4	VAR. ABC
P	PRIME COAT
R1	2'-6" C & G
R2	SINGLE FACED BARRIER
R3	DOUBLE FACED BARRIER
R4	SHOULDER BERM GUTTER
R5	EXPRESSWAY GUTTER
R6	MONO. CONCRETE ISLAND
S	8" INCIDENTAL STONE
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING (SEE SHEET 2-K)
W2	WEDGING (SEE SHEET 2-K)
W3	WEDGING (SEE SHEET 2-K)
Y	MILLED RUMBLE STRIPS

NOTE: PAVEMENT EDGE SLOPES ARE 1:1
UNLESS SHOWN OTHERWISE

REVISIONS

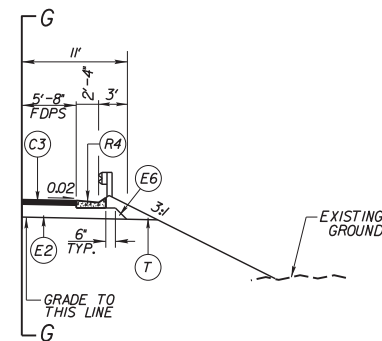
5/14/99



TYPICAL SECTION NO. 19

-Y19REV- STA 18+70.00 TO 20+80.22

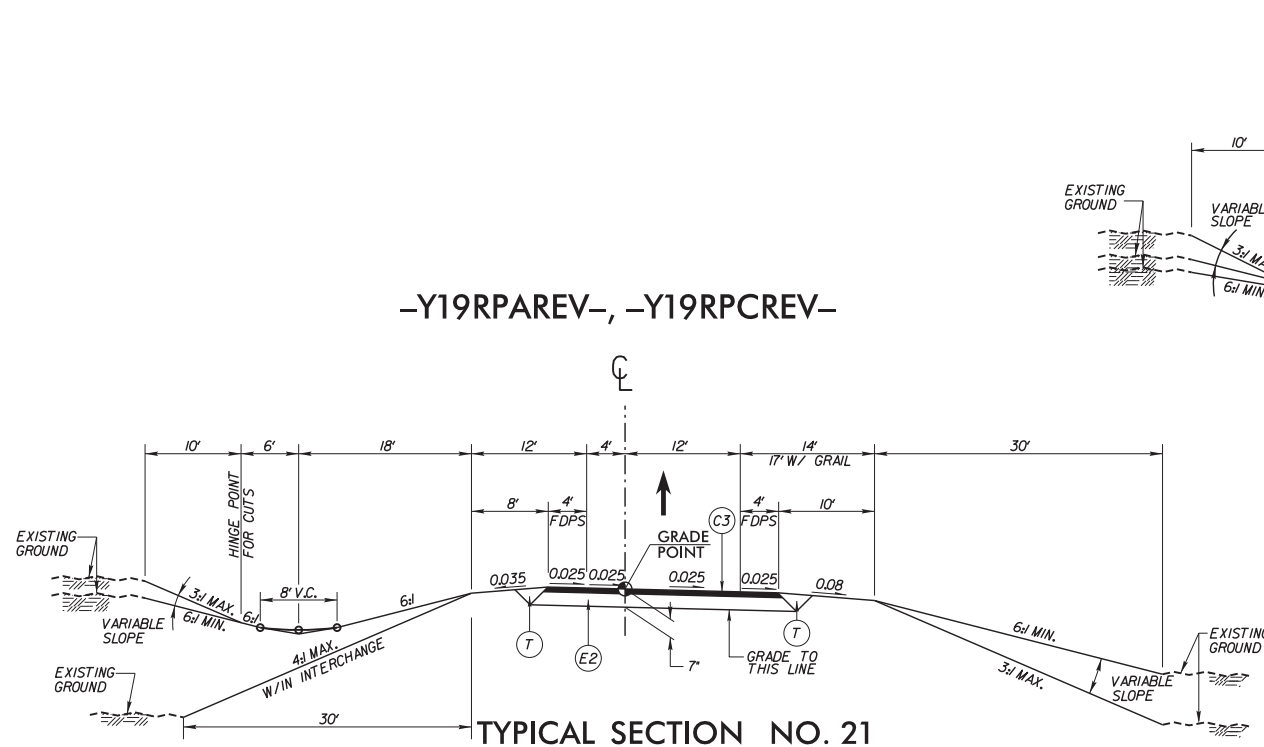
-Y19REV- STA 34+81.31 TO 38+55.00



DETAIL G

USE WITH TYPICAL SECTION NO. 20

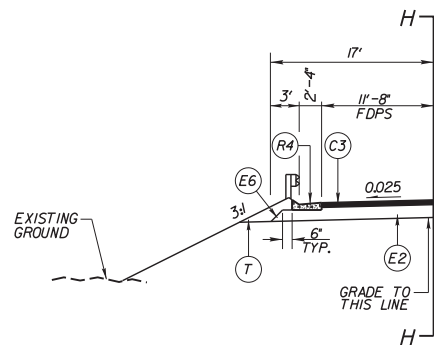
SEE PLANS FOR SHOULDER BERM
GUTTER LOCATIONS



TYPICAL SECTION NO. 21

-Y19RPAREV- STA 14+66.23 TO 22+78.29

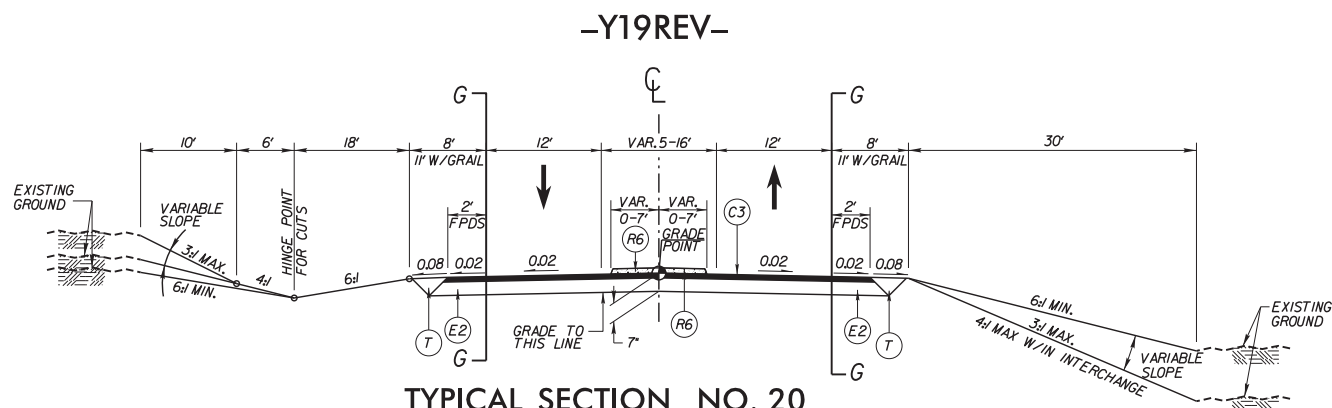
-Y19RPCREV- STA 15+41.68 TO 26+69.15



DETAIL H

USE WITH TYPICAL SECTION NO. 22

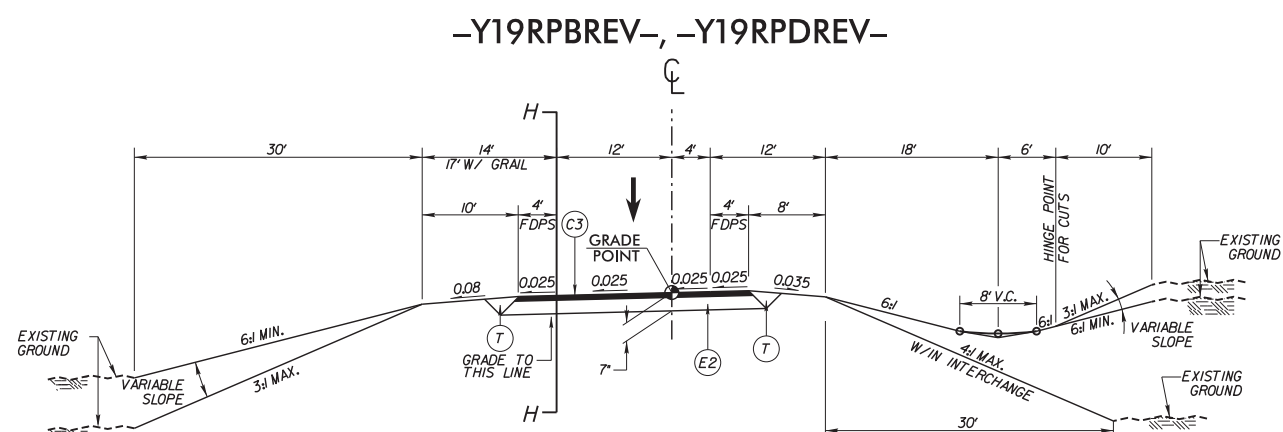
SEE PLANS FOR SHOULDER BERM
GUTTER LOCATIONS



TYPICAL SECTION NO. 20

-Y19REV- STA 20+80.22 TO 27+39 +/- (BEGIN BRIDGE)

-Y19REV- STA 29+82 +/- (END BRIDGE) TO 34+81.31



TYPICAL SECTION NO. 22

-Y19RPBREV- STA 13+89.92 TO 26+23.51

-Y19RPDREV- STA 14+62.05 TO 26+46.22

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	2-E
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116



C1	1.5" S9.5B
C2	1.5" S9.5C
C3	3.0" S9.5B
C4	3.0" S9.5C
C5	VAR. S9.5B
C6	VAR. S9.5C
D1	2.5" I19.0B
D2	3.0" I19.0C
D3	4.0" I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3.0" B25.0C
E2	4.0" B25.0B
E3	4.5" B25.0B
E4	5.0" B25.0B
E5	5.5" B25.0C
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	6.0" ABC
J2	8.0" ABC
J3	10.0" ABC
J4	VAR. ABC
P	PRIME COAT
R1	2'-6" C & G
R2	SINGLE FACED BARRIER
R3	DOUBLE FACED BARRIER
R4	SHOULDER BERM GUTTER
R5	EXPRESSWAY GUTTER
R6	MONO. CONCRETE ISLAND
S	8" INCIDENTAL STONE
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING (SEE SHEET 2-K)
W2	WEDGING (SEE SHEET 2-K)
W3	WEDGING (SEE SHEET 2-K)
Y	MILLED RUMBLE STRIPS

NOTE: PAVEMENT EDGE SLOPES ARE 1:1
UNLESS SHOWN OTHERWISE

NOTE: SEE PLANS FOR AUXILIARY LANE LOCATIONS

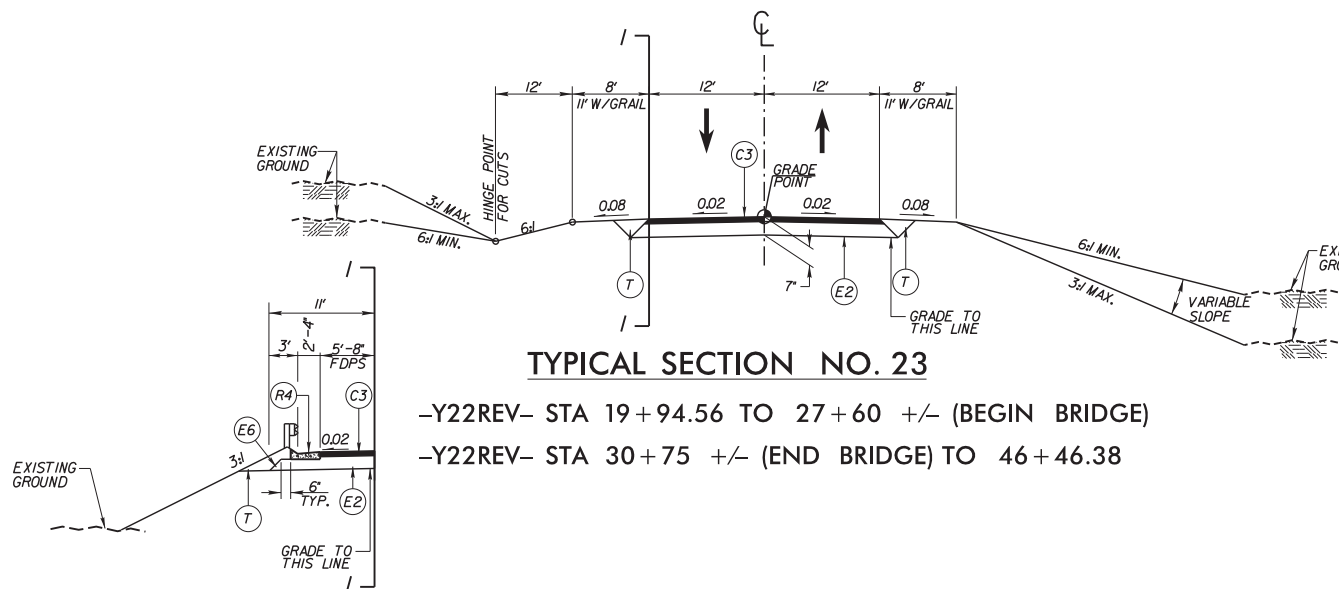
5/14/99

REVISIONS

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-Y22REV-



TYPICAL SECTION NO. 23

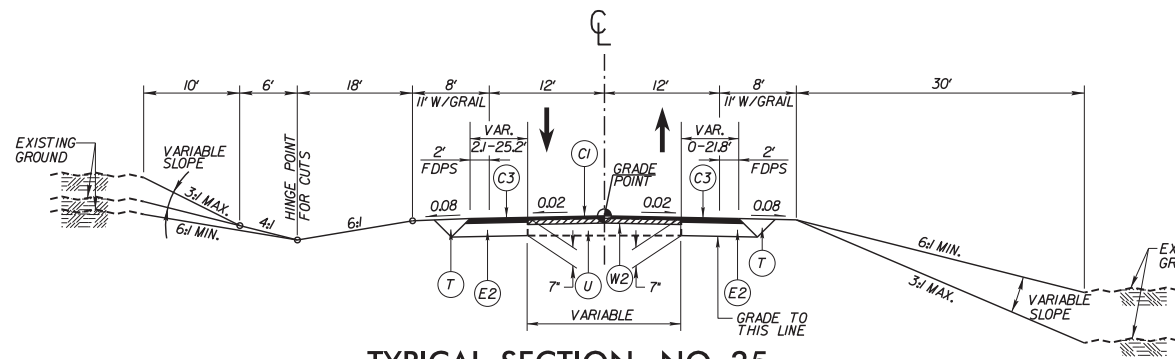
-Y22REV- STA 19+94.56 TO 27+60 +/- (BEGIN BRIDGE)
-Y22REV- STA 30+75 +/- (END BRIDGE) TO 46+46.38

DETAIL I

USE WITH TYPICAL SECTION NO. 23, 26

SEE PLANS FOR SHOULDER BERM
GUTTER LOCATIONS

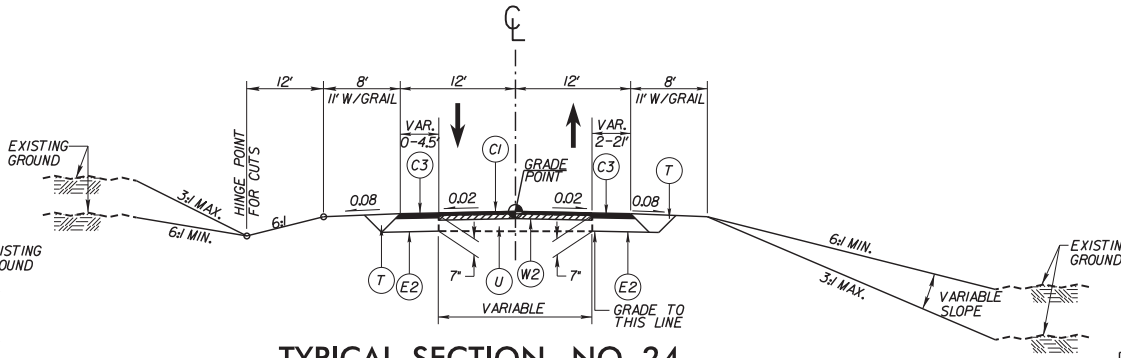
-Y26REV-



TYPICAL SECTION NO. 25

-Y26REV- STA 12+88.60 TO 20+59.12
-Y26REV- STA 40+52.97 TO 45+00.00
-Y26REV- STA 46+50.00 TO 52+07.50

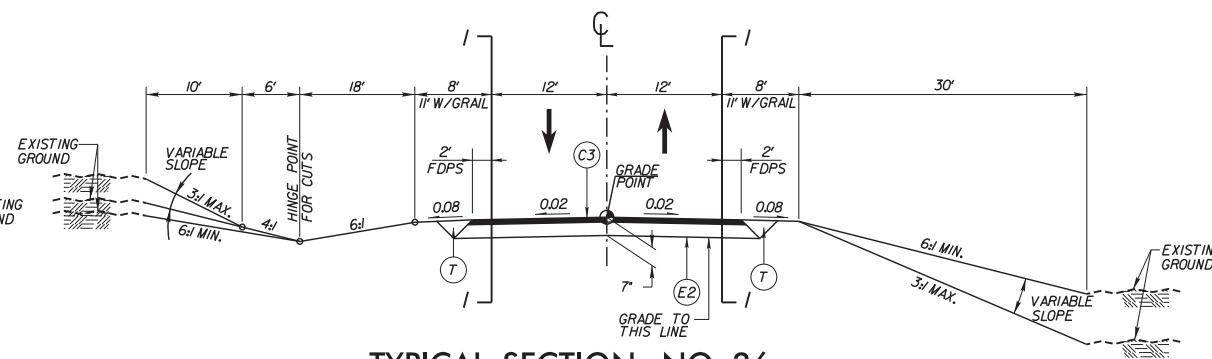
-Y22REV-



TYPICAL SECTION NO. 24

-Y22REV- STA 17+52.50 TO 19+94.56
-Y22REV- STA 46+46.38 TO 49+80.77

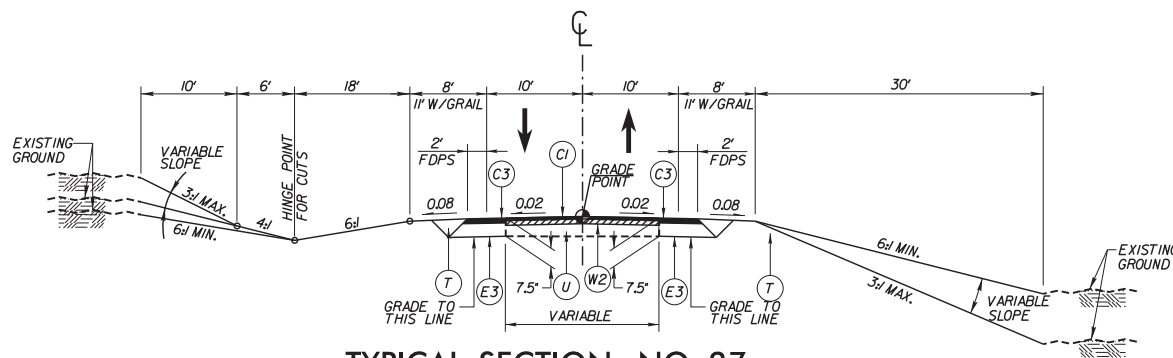
-Y26REV-



TYPICAL SECTION NO. 26

-Y26REV- STA 20+59.12 TO 26+31 +/- (BEGIN BRIDGE)
-Y26REV- STA 28+41 +/- (END BRIDGE) TO 40+52.97
-Y26REV- STA 45+00.00 TO 46+50.00

-Y27REV-



TYPICAL SECTION NO. 27

-Y27REV- STA. 10+00.00 TO 12+07.91

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	2-F
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

HDR HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116



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COMPANY

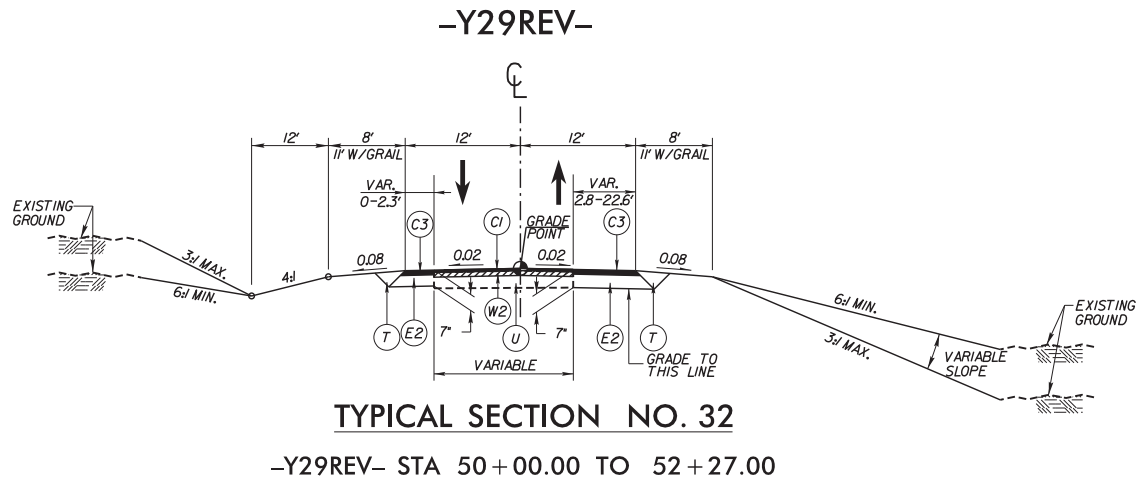
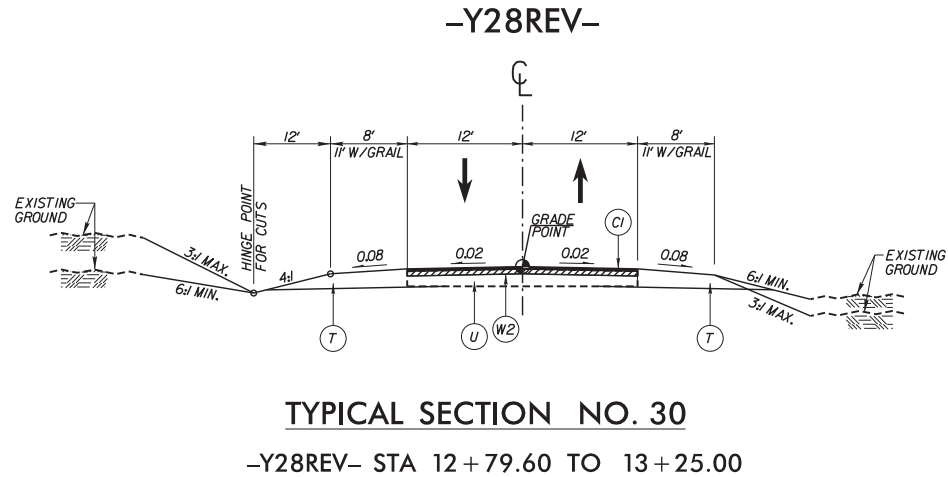
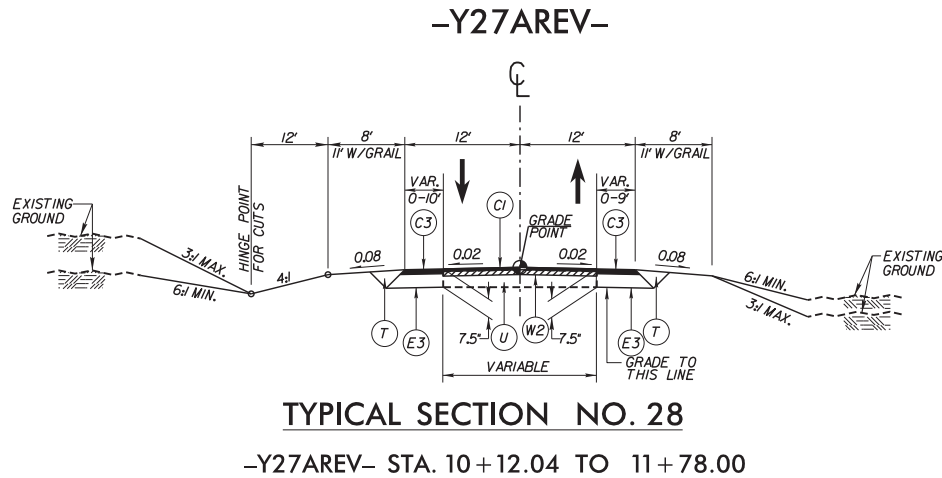
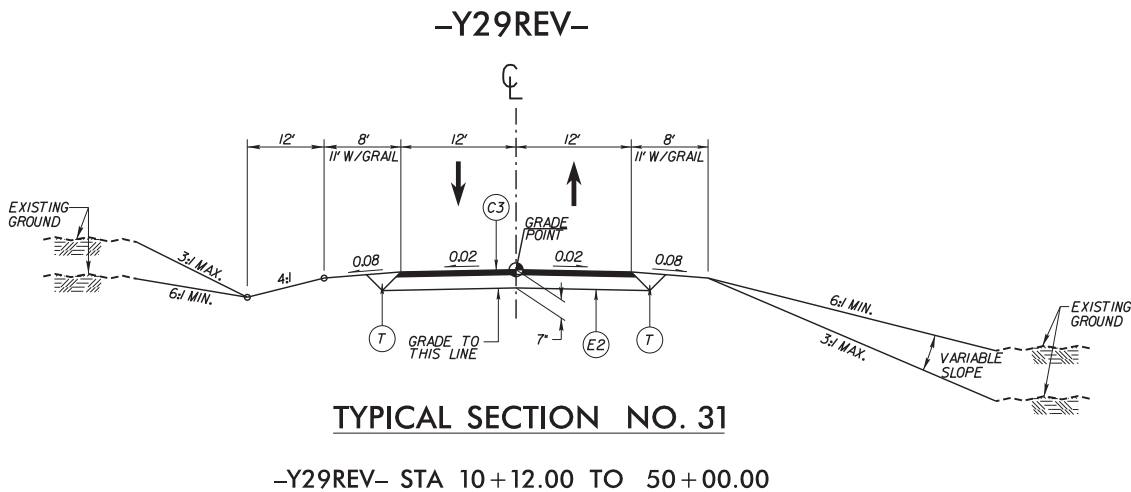
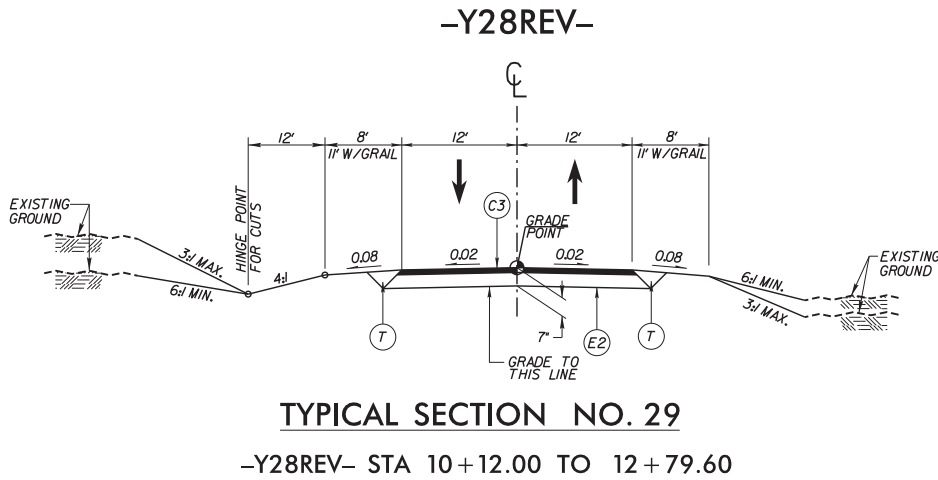
C1	1.5" S9.5B
C2	1.5" S9.5C
C3	3.0" S9.5B
C4	3.0" S9.5C
C5	VAR. S9.5B
C6	VAR. S9.5C
D1	2.5" I19.0B
D2	3.0" I19.0C
D3	4.0" I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3.0" B25.0C
E2	4.0" B25.0B
E3	4.5" B25.0B
E4	5.0" B25.0B
E5	5.5" B25.0C
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	6.0" ABC
J2	8.0" ABC
J3	10.0" ABC
J4	VAR. ABC
P	PRIME COAT
R1	2'-6" C & G
R2	SINGLE FACED BARRIER
R3	DOUBLE FACED BARRIER
R4	SHOULDER BERM GUTTER
R5	EXPRESSWAY GUTTER
R6	MONO. CONCRETE ISLAND
S	8" INCIDENTAL STONE
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING (SEE SHEET 2-K)
W2	WEDGING (SEE SHEET 2-K)
W3	WEDGING (SEE SHEET 2-K)
Y	MILLED RUMBLE STRIPS

NOTE: PAVEMENT EDGE SLOPES ARE 1:1
UNLESS SHOWN OTHERWISE

NOTE: SEE PLANS FOR AUXILIARY LANE LOCATIONS

REVISIONS

NOTE: SEE PLANS FOR AUXILIARY LANE LOCATIONS

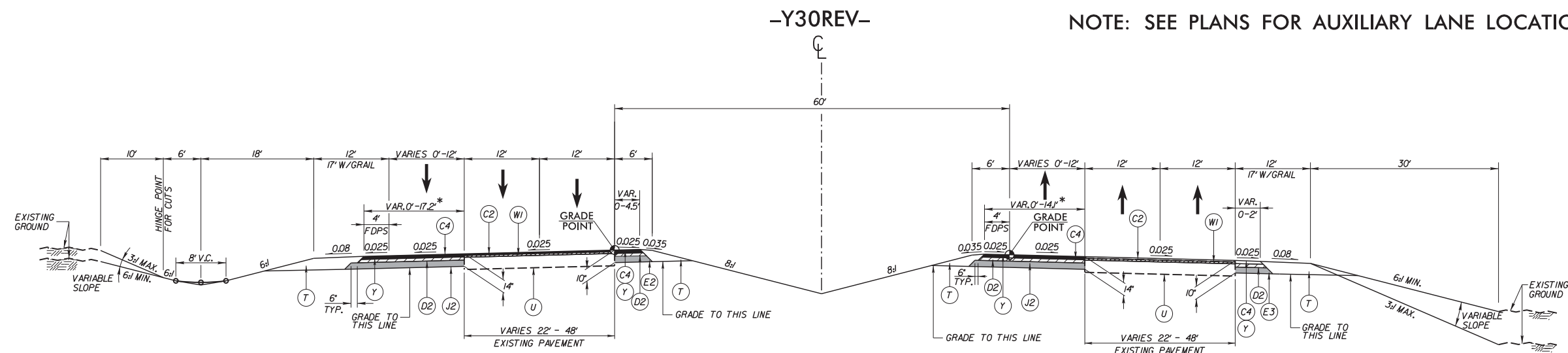


PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	2-G
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	



C1	1.5" S9.5B
C2	1.5" S9.5C
C3	3.0" S9.5B
C4	3.0" S9.5C
C5	VAR. S9.5B
C6	VAR. S9.5C
D1	2.5" I19.0B
D2	3.0" I19.0C
D3	4.0" I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3.0" B25.0C
E2	4.0" B25.0B
E3	4.5" B25.0B
E4	5.0" B25.0B
E5	5.5" B25.0C
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	6.0" ABC
J2	8.0" ABC
J3	10.0" ABC
J4	VAR. ABC
P	PRIME COAT
R1	2'-6" C & G
R2	SINGLE FACED BARRIER
R3	DOUBLE FACED BARRIER
R4	SHOULDER BERM GUTTER
R5	EXPRESSWAY GUTTER
R6	MONO. CONCRETE ISLAND
S	8" INCIDENTAL STONE
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING (SEE SHEET 2-K)
W2	WEDGING (SEE SHEET 2-K)
W3	WEDGING (SEE SHEET 2-K)
Y	MILLED RUMBLE STRIPS

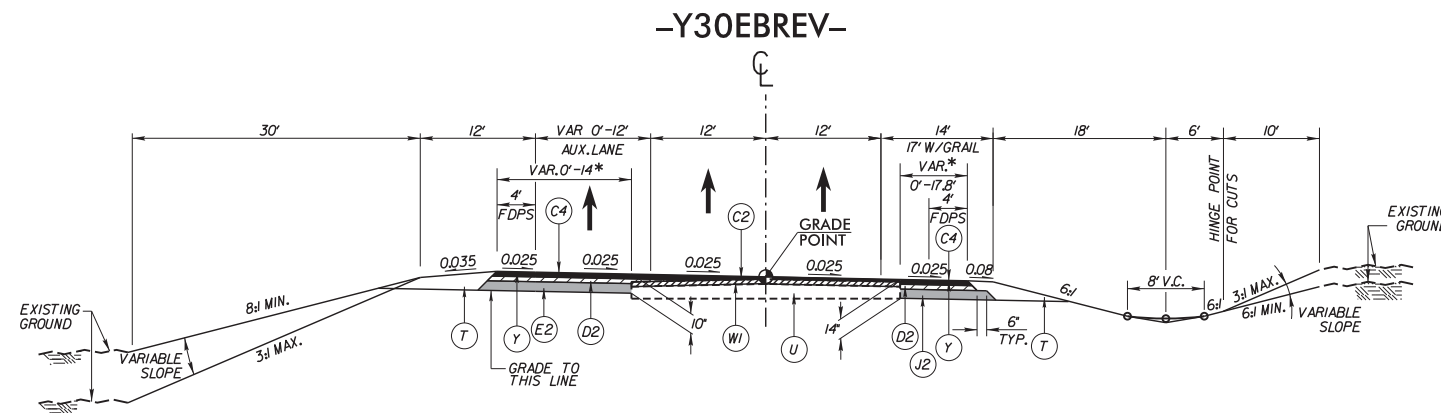
NOTE: PAVEMENT EDGE SLOPES ARE 1:1
UNLESS SHOWN OTHERWISE



TYPICAL SECTION NO. 33

—Y30REV— STA 10+00.00 TO 41+86.80

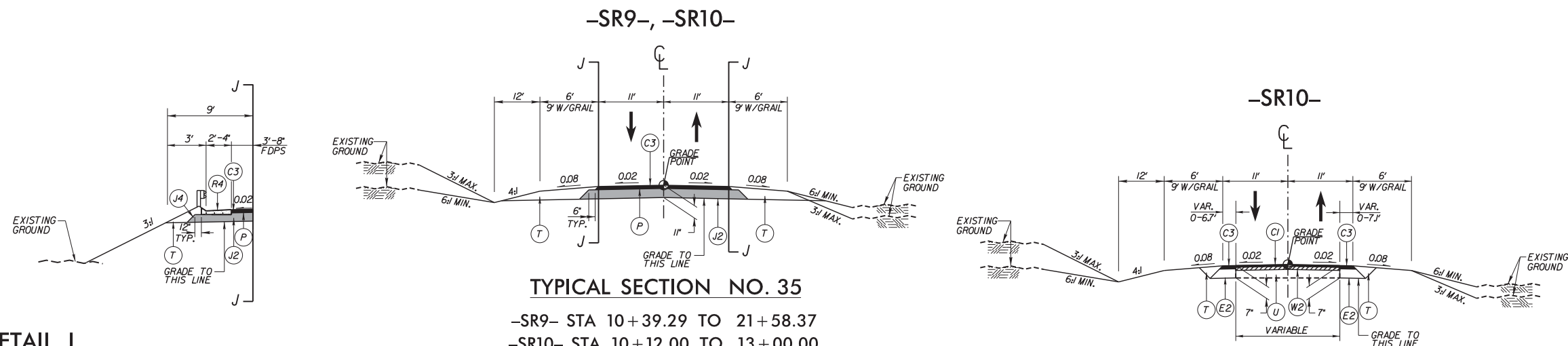
* FOR WIDTHS GREATER THAN 10' USE (J2)
FOR WIDTHS LESS THAN 10' USE (E2)



TYPICAL SECTION NO. 34

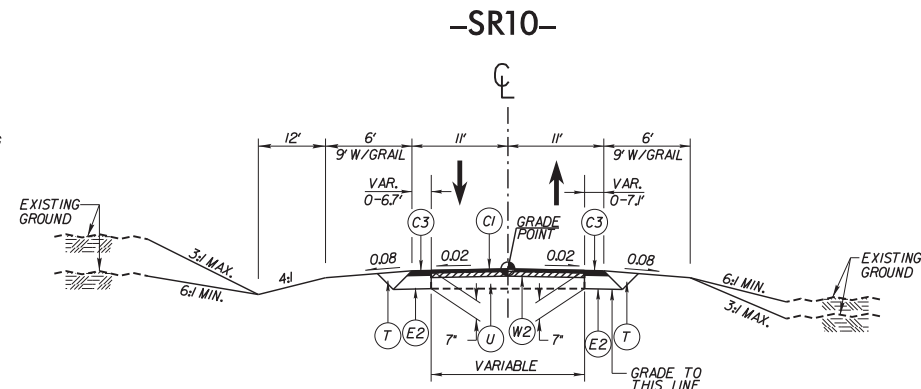
–Y30EBREV– STA 10+00.00 TO 35+25.96

* FOR WIDTHS GREATER THAN 10' USE (J2)
FOR WIDTHS LESS THAN 10' USE (E2)



TYPICAL SECTION NO. 35

-SR9- STA 10+39.29 TO 21+58.37
 -SR10- STA 10+12.00 TO 13+00.00
 -SR10- STA 16+50.00 TO 26+05.72



TYPICAL SECTION NO. 36

-SR10- STA 13+00.00 TO 16+50.00

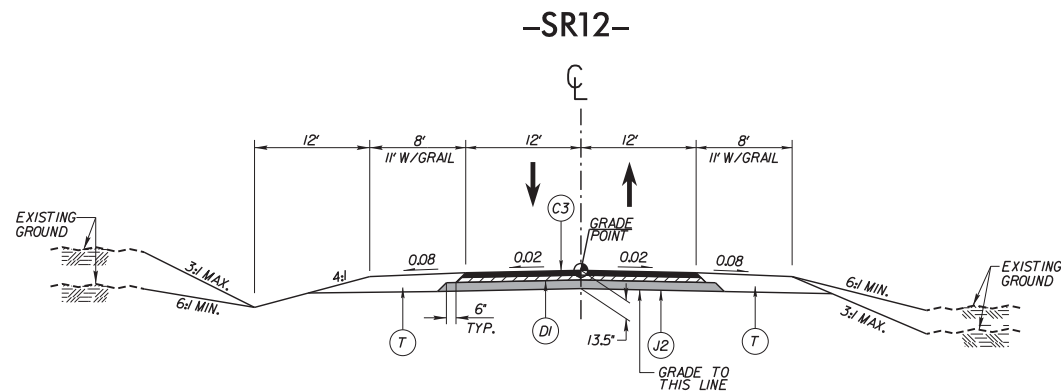
NOTE: SEE PLANS FOR AUXILIARY LANE LOCATIONS

PROJECT REFERENCE NO.		SHEET NO.	
R-2554BB&C		2-H	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		PAVEMENT DESIGN ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
		HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	


**BARNHILL
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COMPANY**

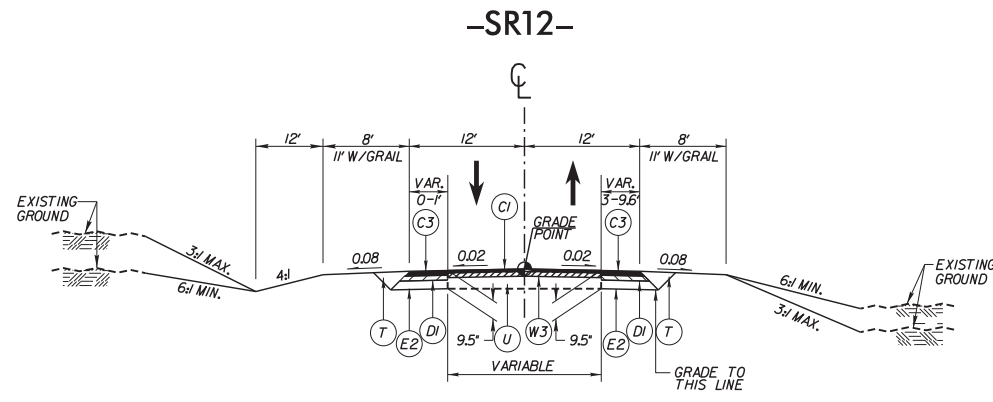
C1	1.5" S9.5B
C2	1.5" S9.5C
C3	3.0" S9.5B
C4	3.0" S9.5C
C5	VAR. S9.5B
C6	VAR. S9.5C
D1	2.5" I19.0B
D2	3.0" I19.0C
D3	4.0" I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3.0" B25.0C
E2	4.0" B25.0B
E3	4.5" B25.0B
E4	5.0" B25.0B
E5	5.5" B25.0C
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	6.0" ABC
J2	8.0" ABC
J3	10.0" ABC
J4	VAR. ABC
P	PRIME COAT
R1	2'-6" C & G
R2	SINGLE FACED BARRIER
R3	DOUBLE FACED BARRIER
R4	SHOULDER BERM GUTTER
R5	EXPRESSWAY GUTTER
R6	MONO. CONCRETE ISLAND
S	8" INCIDENTAL STONE
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING (SEE SHEET 2-K)
W2	WEDGING (SEE SHEET 2-K)
W3	WEDGING (SEE SHEET 2-K)
Y	MILLED RUMBLE STRIPS

NOTE: PAVEMENT EDGE SLOPES ARE 1:1
UNLESS SHOWN OTHERWISE



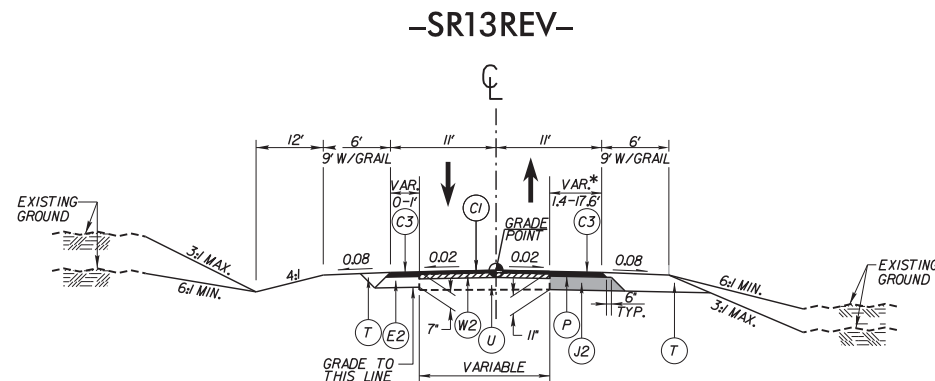
TYPICAL SECTION NO. 37

-SR12- STA 10+12.06 TO 56+00.00



TYPICAL SECTION NO. 38

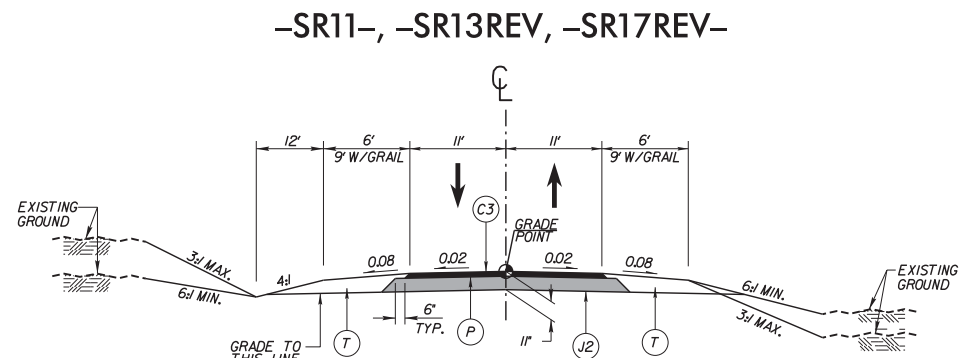
-SR12- STA 56+00.00 TO 58+05.00



TYPICAL SECTION NO. 39

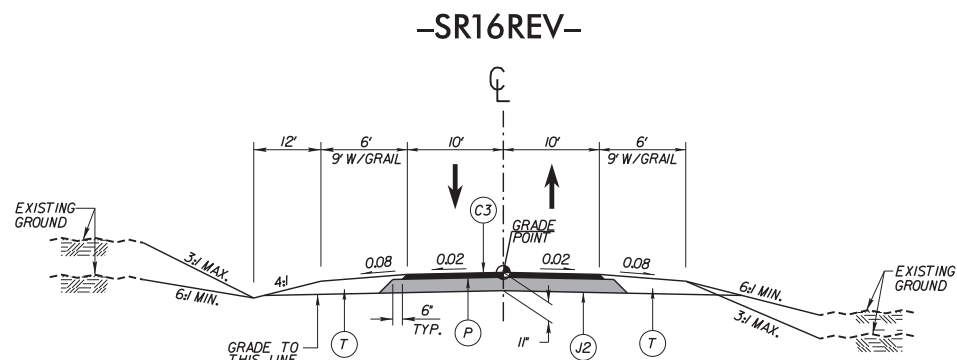
-SR13REV- STA 11+10.00 TO 15+43.74

* FOR WIDTHS GREATER THAN 10' USE (J2)
FOR WIDTHS LESS THAN 10' USE (E2)



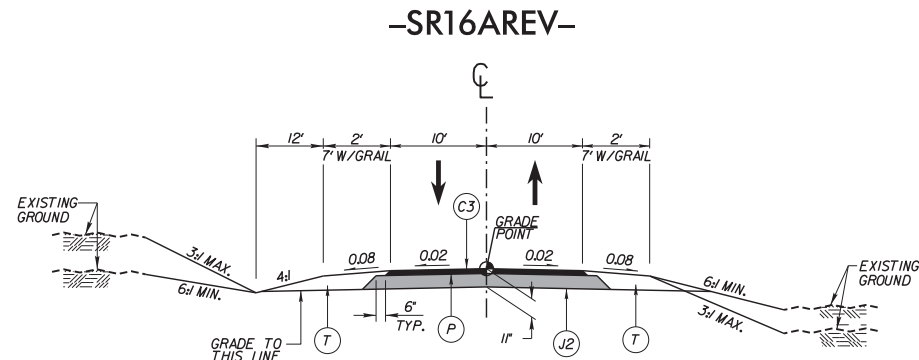
TYPICAL SECTION NO. 40

-SR11- STA 12+64.00 TO 37+68.63
-SR13REV- STA 15+43.74 TO 65+80.00
-SR17REV- STA 10+12.00 TO 48+18.64



TYPICAL SECTION NO. 41

-SR16REV- STA 10+12.00 TO 20+36.93



TYPICAL SECTION NO. 42

-SR16AREV- STA 10+00.00 TO 12+55.00

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	2-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	



C1	1.5" S9.5B
C2	1.5" S9.5C
C3	3.0" S9.5B
C4	3.0" S9.5C
C5	VAR. S9.5B
C6	VAR. S9.5C
D1	2.5" I19.0B
D2	3.0" I19.0C
D3	4.0" I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3.0" B25.0C
E2	4.0" B25.0B
E3	4.5" B25.0B
E4	5.0" B25.0B
E5	5.5" B25.0C
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	6.0" ABC
J2	8.0" ABC
J3	10.0" ABC
J4	VAR. ABC
P	PRIME COAT
R1	2'-6" C & G
R2	SINGLE FACED BARRIER
R3	DOUBLE FACED BARRIER
R4	SHOULDER BERM GUTTER
R5	EXPRESSWAY GUTTER
R6	MONO. CONCRETE ISLAND
S	8" INCIDENTAL STONE
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING (SEE SHEET 2-K)
W2	WEDGING (SEE SHEET 2-K)
W3	WEDGING (SEE SHEET 2-K)
Y	MILLED RUMBLE STRIPS

NOTE: PAVEMENT EDGE SLOPES ARE 1:1
UNLESS SHOWN OTHERWISE

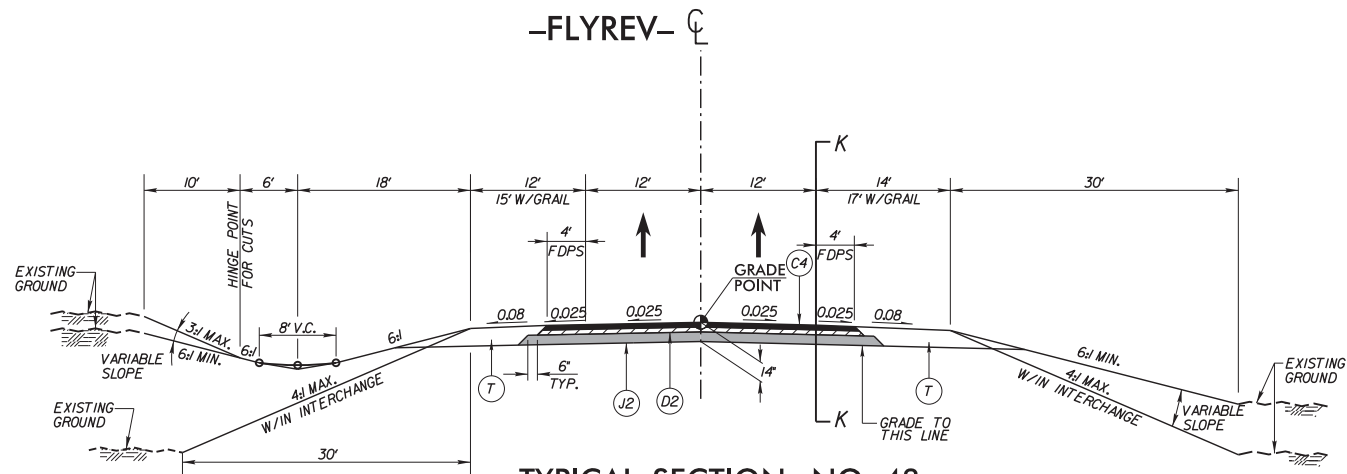
NOTE: SEE PLANS FOR AUXILIARY LANE LOCATIONS

5/14/99

REVISIONS

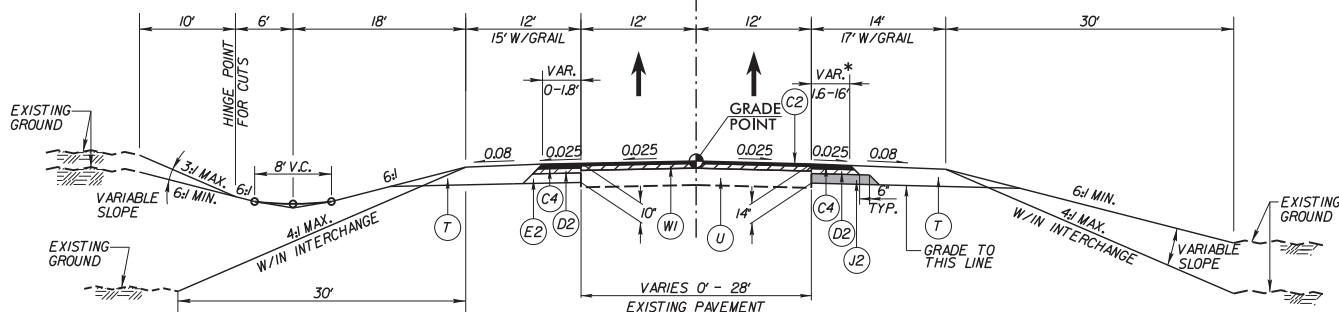
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TIME: 8:33:59 AM
SCALE: hof=100:1 - full=50:1

PLOT DRIVER: NCDOT_pdf_mono_eng_50.plt
USER: blibby
DATE: 10/10/2012
FILE: \



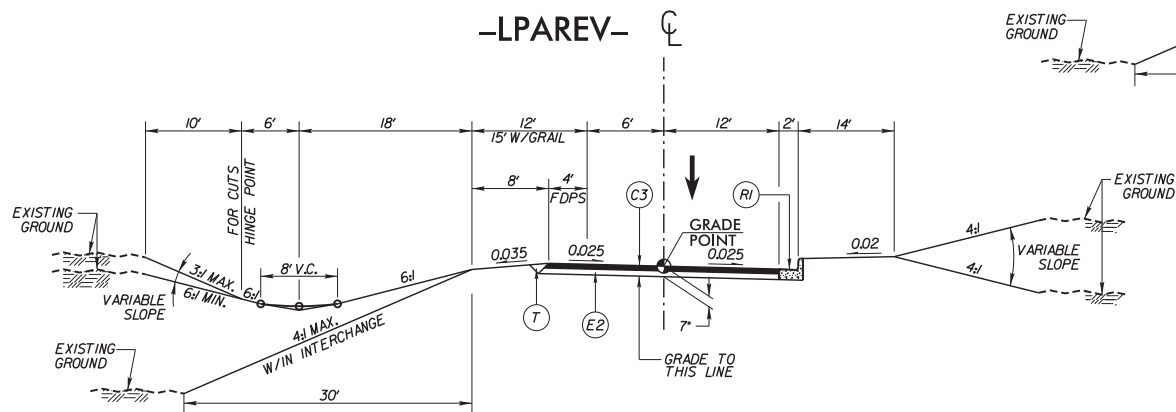
TYPICAL SECTION NO. 43

-FLYREV- STA 14+67.54 TO 39+29 +/- (BEGIN BRIDGE)
-FLYREV- STA 42+13 +/- (END BRIDGE) TO 50+29.74



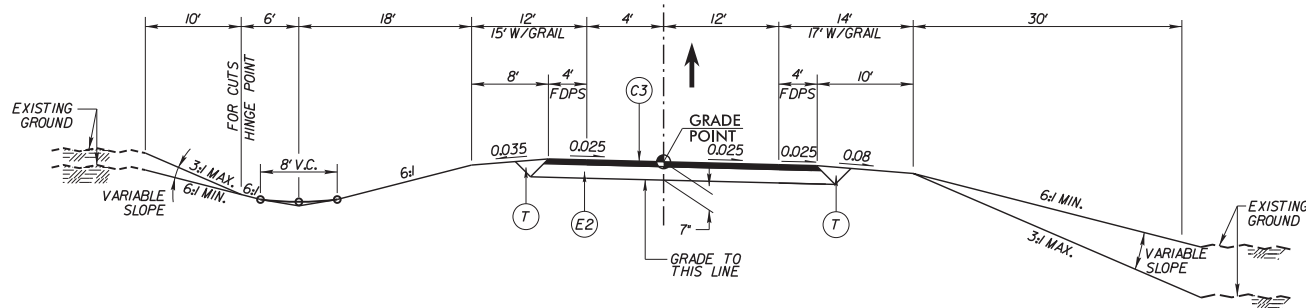
TYPICAL SECTION NO. 44

-FLYREV- STA 50+29.74 TO 54+23.88
* FOR WIDTHS GREATER THAN 10' USE (J2)
FOR WIDTHS LESS THAN 10' USE (E2)



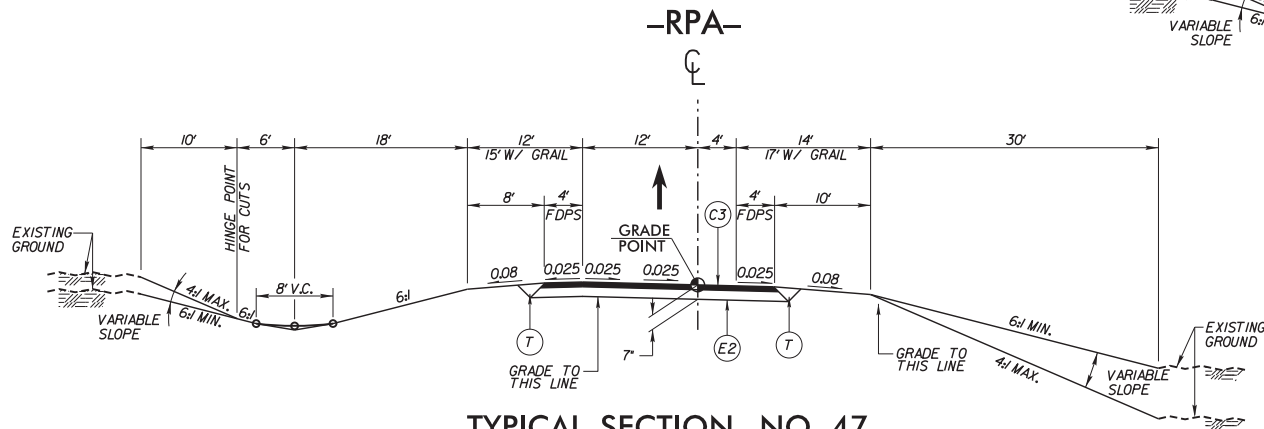
TYPICAL SECTION NO. 45

-LPAREV- STA. 9+43.98 TO 17+06.51



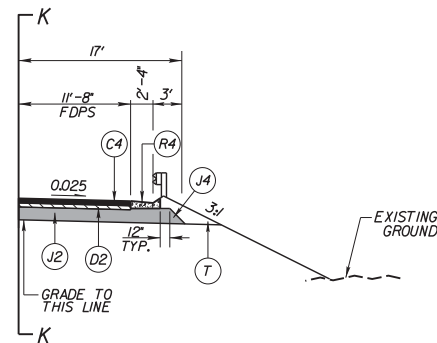
TYPICAL SECTION NO. 46

-LPAREV- STA 0+42 +/- (BEGIN BRIDGE) TO 9+43.98
-LPCREV- STA 13+32.40 TO 25+52.71



TYPICAL SECTION NO. 47

-RPA- STA 14+65.66 TO 22+84 +/- (BEGIN BRIDGE)



DETAIL K
USE WITH TYPICAL SECTION NO. 43
SEE PLANS FOR SHOULDER BERM
GUTTER LOCATIONS

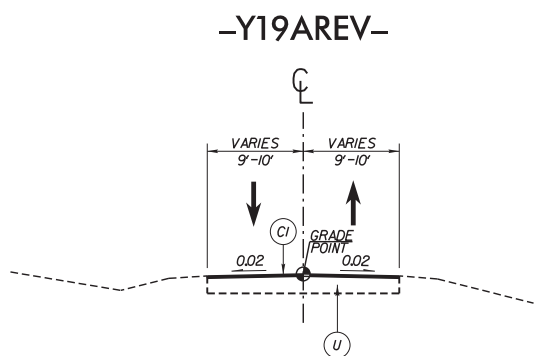
PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	2-J
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	



C1	1.5" S9.5B
C2	1.5" S9.5C
C3	3.0" S9.5B
C4	3.0" S9.5C
C5	VAR. S9.5B
C6	VAR. S9.5C
D1	2.5" I19.0B
D2	3.0" I19.0C
D3	4.0" I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3.0" B25.0C
E2	4.0" B25.0B
E3	4.5" B25.0B
E4	5.0" B25.0B
E5	5.5" B25.0C
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	6.0" ABC
J2	8.0" ABC
J3	10.0" ABC
J4	VAR. ABC
P	PRIME COAT
R1	2'-6" C & G
R2	SINGLE FACED BARRIER
R3	DOUBLE FACED BARRIER
R4	SHOULDER BERM GUTTER
R5	EXPRESSWAY GUTTER
R6	MONO. CONCRETE ISLAND
S	8" INCIDENTAL STONE
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING (SEE SHEET 2-K)
W2	WEDGING (SEE SHEET 2-K)
W3	WEDGING (SEE SHEET 2-K)
Y	MILLED RUMBLE STRIPS

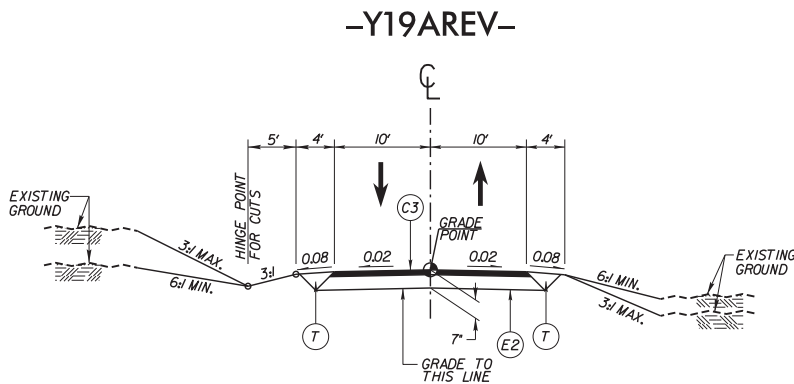
NOTE: PAVEMENT EDGE SLOPES ARE 1:1
UNLESS SHOWN OTHERWISE

NOTE: SEE PLANS FOR AUXILIARY LANE LOCATIONS



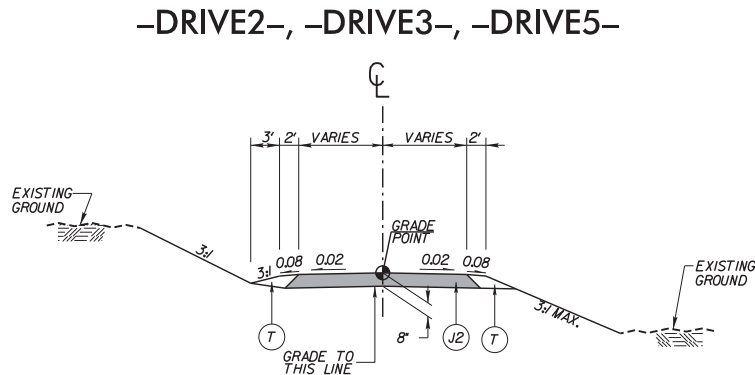
TYPICAL SECTION NO. 48

-Y19AREV- STA 10+10.20 TO 22+03.59
-Y19AREV- STA 24+31.53 TO 31+27.02



TYPICAL SECTION NO. 49

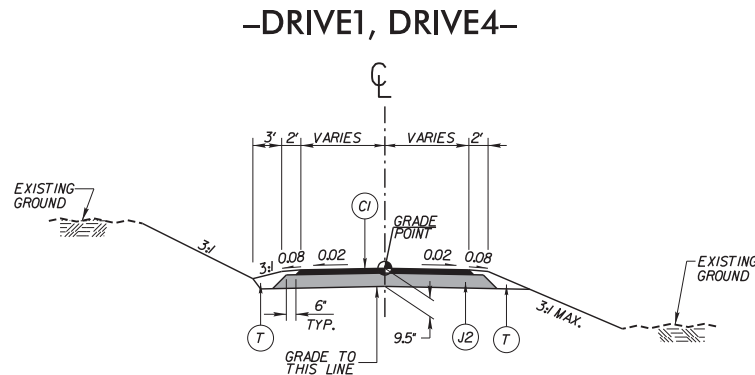
-Y19AREV- STA 22+03.59 TO 24+31.53



TYPICAL SECTION NO. 51

-DRIVE2- STA 10+12.26 TO 11+25.25
-DRIVE3- STA 10+12.06 TO 11+25.70
-DRIVE5- STA 10+39.09 TO 15+60.41

NOTE: SEE PLANS FOR AUXILIARY LANE LOCATIONS



TYPICAL SECTION NO. 50

-DRIVE1- STA 10+12.23 TO 11+46.19
-DRIVE4- STA 10+12.00 TO 11+52.79

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	2-K
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	

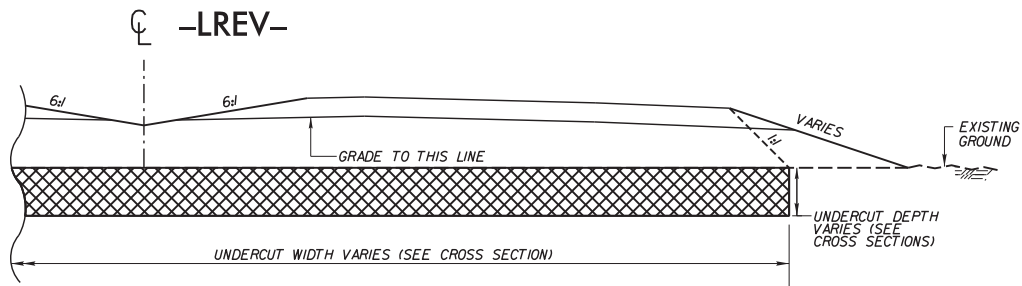


C1	1.5" S9.5B
C2	1.5" S9.5C
C3	3.0" S9.5B
C4	3.0" S9.5C
C5	VAR. S9.5B
C6	VAR. S9.5C
D1	2.5" I19.0B
D2	3.0" I19.0C
D3	4.0" I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3.0" B25.0C
E2	4.0" B25.0B
E3	4.5" B25.0B
E4	5.0" B25.0B
E5	5.5" B25.0C
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	6.0" ABC
J2	8.0" ABC
J3	10.0" ABC
J4	VAR. ABC
P	PRIME COAT
R1	2'-6" C & G
R2	SINGLE FACED BARRIER
R3	DOUBLE FACED BARRIER
R4	SHOULDER BERM GUTTER
R5	EXPRESSWAY GUTTER
R6	MONO. CONCRETE ISLAND
S	8" INCIDENTAL STONE
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING (SEE SHEET 2-K)
W2	WEDGING (SEE SHEET 2-K)
W3	WEDGING (SEE SHEET 2-K)
Y	MILLED RUMBLE STRIPS

NOTE: PAVEMENT EDGE SLOPES ARE 1:1
UNLESS SHOWN OTHERWISE

REVISIONS

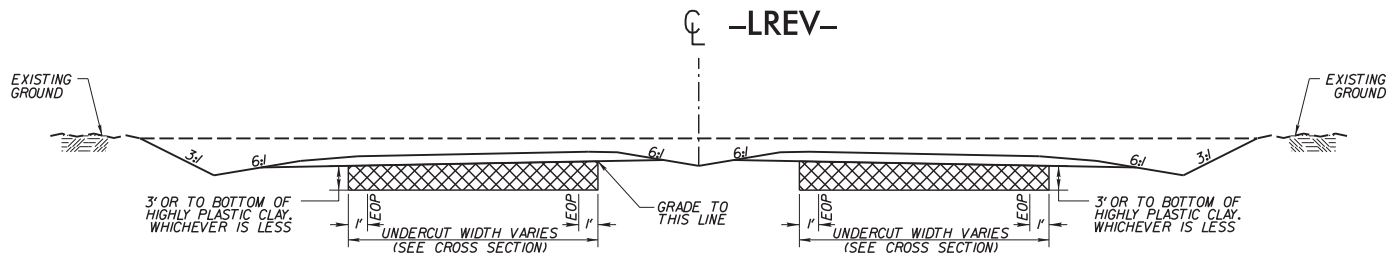
5/14/99



TYPICAL ORGANIC SOIL UNDERCUT DETAIL NO. 1

- * -LREV- STA 408+60 +/- TO 416+30 +/-
- LREV- STA 490+00 +/- TO 501+10 +/-
- LREV- STA 505+20 +/- TO 505+90 +/-
- LREV- STA 700+25 +/- TO 703+70 +/-

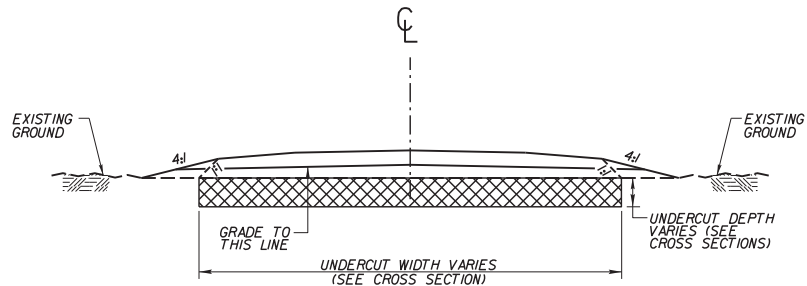
* EXCLUDING AREAS UNDER EXISTING PARKSTOWN ROAD
NOTE: ORGANIC MATERIALS UNDERCUT SHALL BE USED OUTSIDE
STRUCTURAL FILL LIMITS ALONG THE PROJECT



TYPICAL HIGHLY PLASTIC CLAY UNDERCUT DETAIL NO. 3

- LREV- STA 276+50 +/- TO 287+00 +/-
- LREV- STA 304+00 +/- TO 311+00 +/-
- LREV- STA 447+50 +/- TO 449+00 +/-
- LREV- STA 512+00 +/- TO 518+00 +/-

-Y- LINES, RAMPS AND
SERVICE ROADS

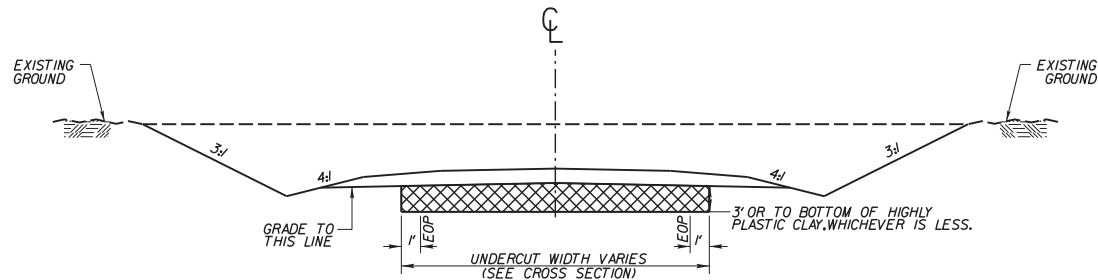


TYPICAL ORGANIC SOIL UNDERCUT DETAIL NO. 2

- Y19REV- STA 25+75 +/- TO 27+45 +/-
- Y19RPDREV- STA 18+50 +/- TO 21+80 +/-
- Y26REV- STA 29+50 +/- TO 33+60 +/-
- SR16REV- STA 18+20 +/- TO 20+36.93
- SR16AREV- STA 10+00 +/- TO 12+55.86
- SR17REV- STA 10+45 +/- TO 14+30 +/-

NOTE: ORGANIC MATERIALS UNDERCUT SHALL BE USED OUTSIDE
STRUCTURAL FILL LIMITS ALONG THE PROJECT

-Y19RPBREV-
-Y19RPCREV-



TYPICAL HIGHLY PLASTIC CLAY UNDERCUT DETAIL NO. 4

- Y19RPBREV- STA 10+00 +/- TO 12+00 +/-
- Y19RPCREV- STA 10+00 +/- TO 12+00 +/-

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	2-N
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	GEOTECHNICAL ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	



REVISIONS

CROSS-SECTION LAYOUT DETAIL

PROJECT REFERENCE NO. 8-255488&C SHEET NO. 2-G

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

HDR Engineering, Inc. of the Carolinas
2712 North Park Lane, Suite 100, Raleigh, NC 27617
P.O. BOX 11111, Raleigh, NC 27617

BARNHILL
CONTRACTING COMPANY

8.1.01N

MATCHLINE -LREV- STA. 717+00, SEE SHEET 46

STRUCTURE SITE 11

5.20% SE ROUTE

MATCHLINE -LYREV- STA. 22+50, SEE SHEET 48

MATCHLINE -LYREV- STA. 743+00, SEE SHEET 48

MATCHLINE -Y30EBREV- STA. 12+80, SEE SHEET 69

MATCHLINE -Y29REV- STA. 36+50, SEE SHEET 69

MATCHLINE -Y29REV- STA. 46+00, SEE SHEET 69

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:

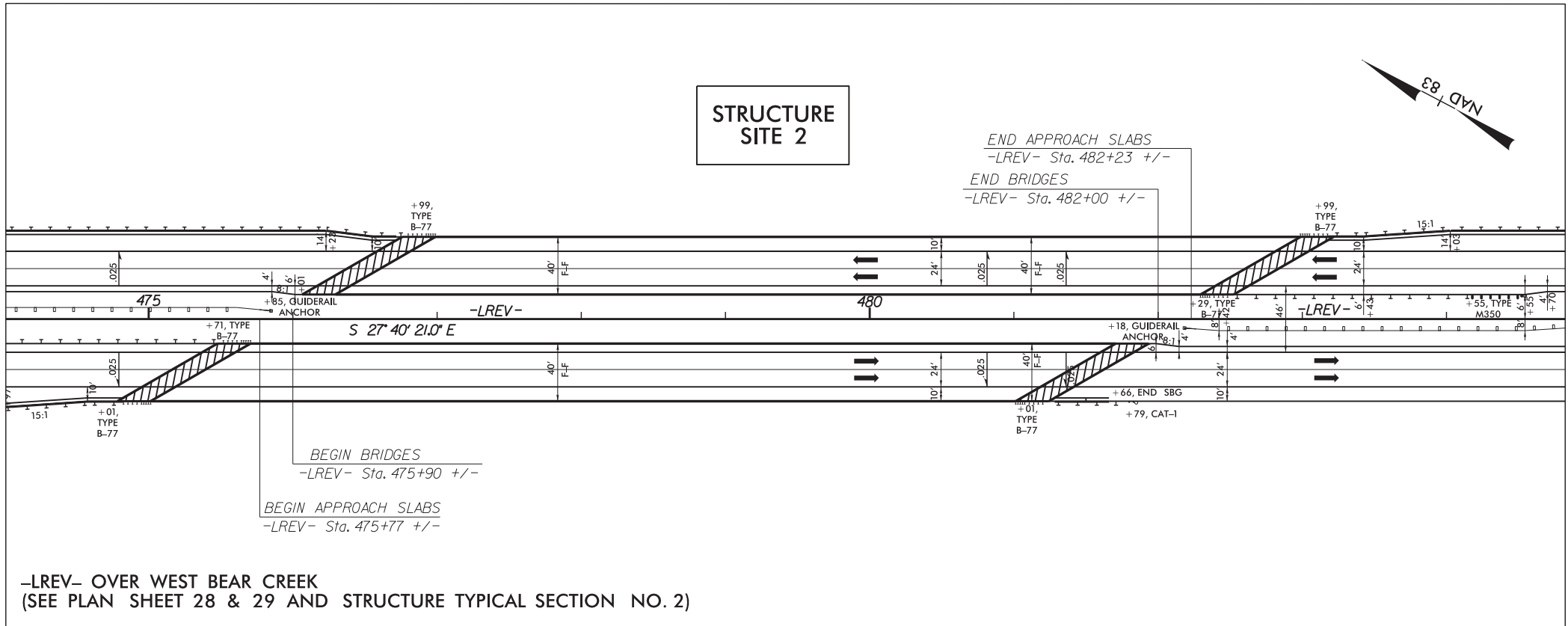
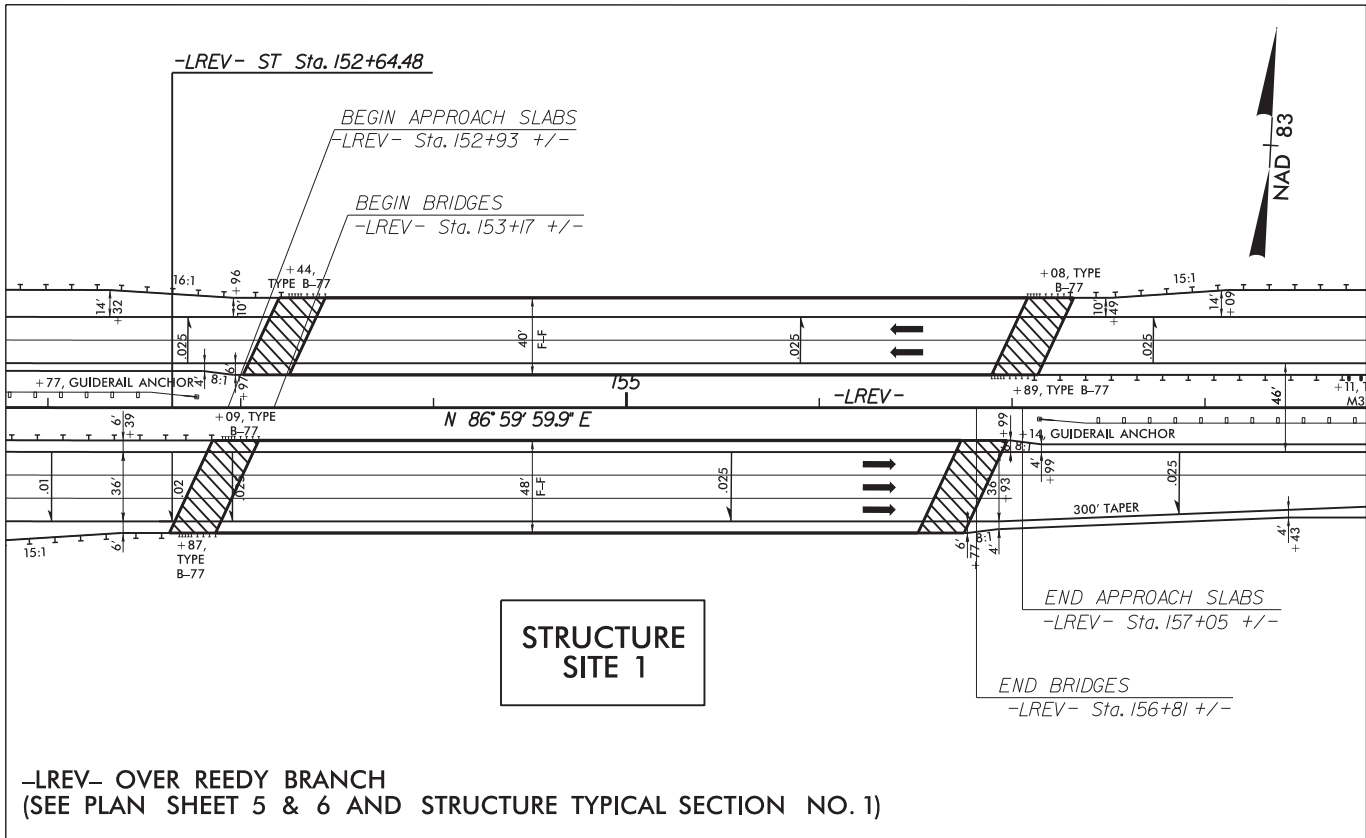
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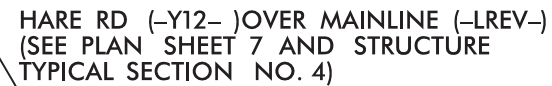
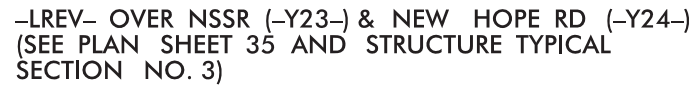
COUNTY:

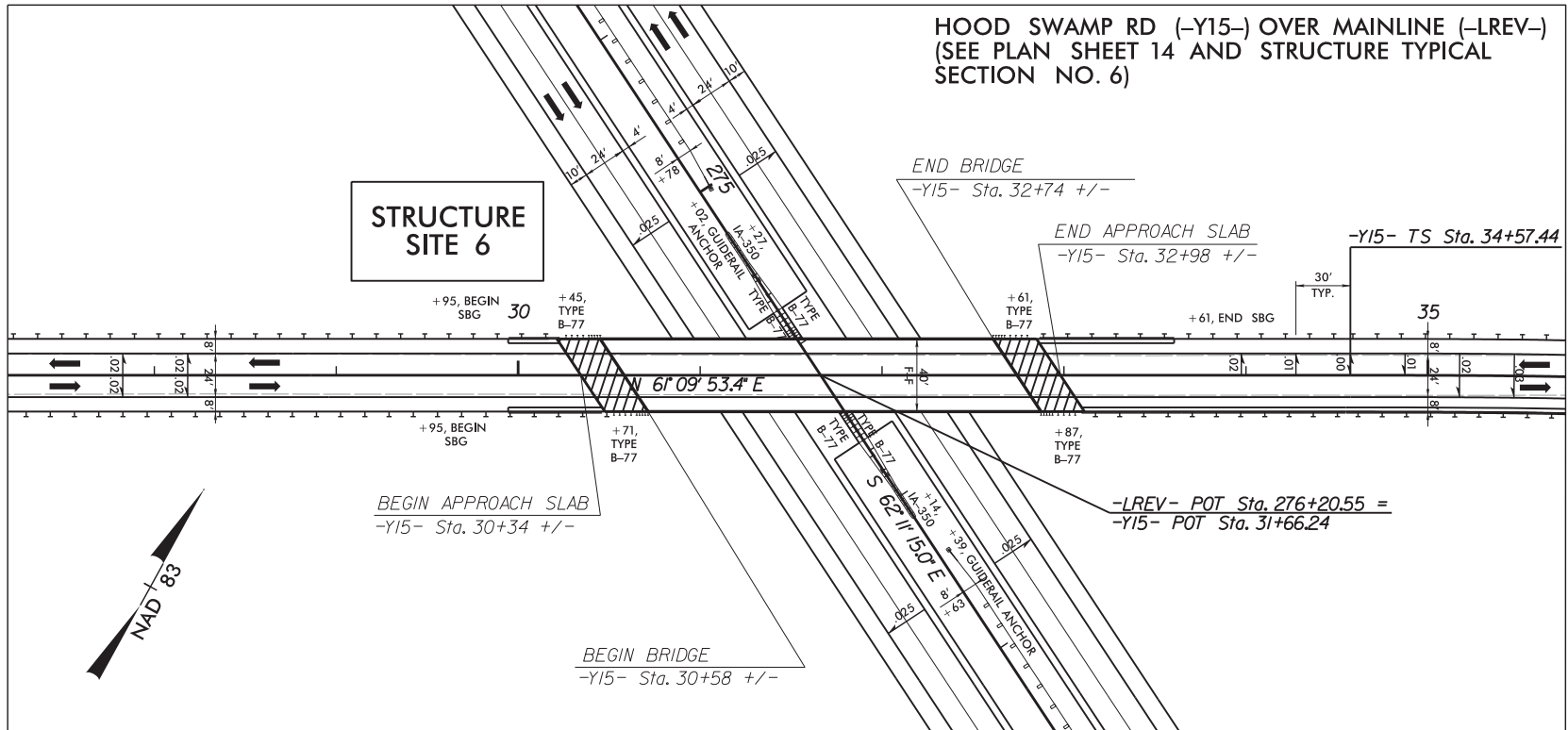
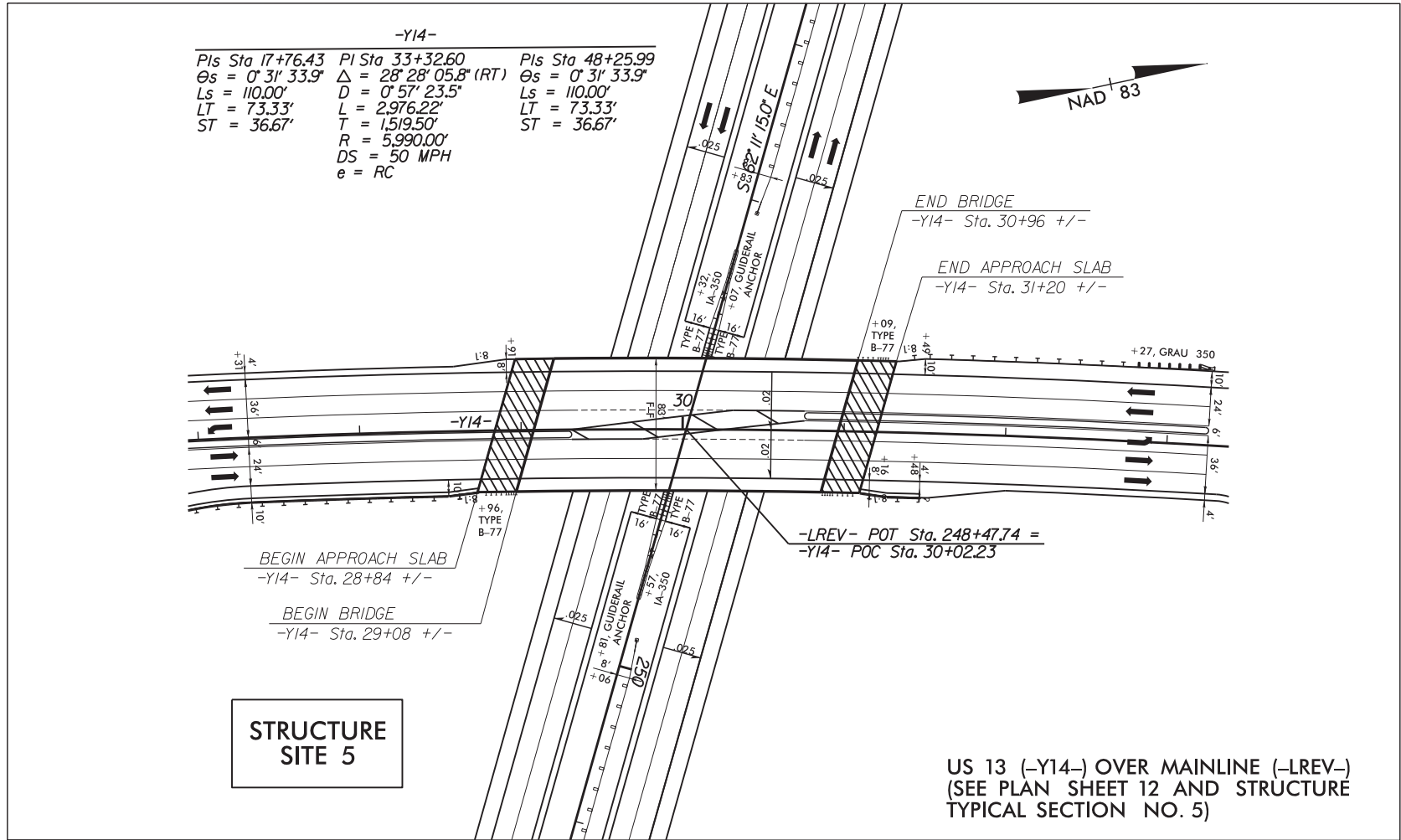
DESIGNED BY:

CHECKED BY:

DATE:

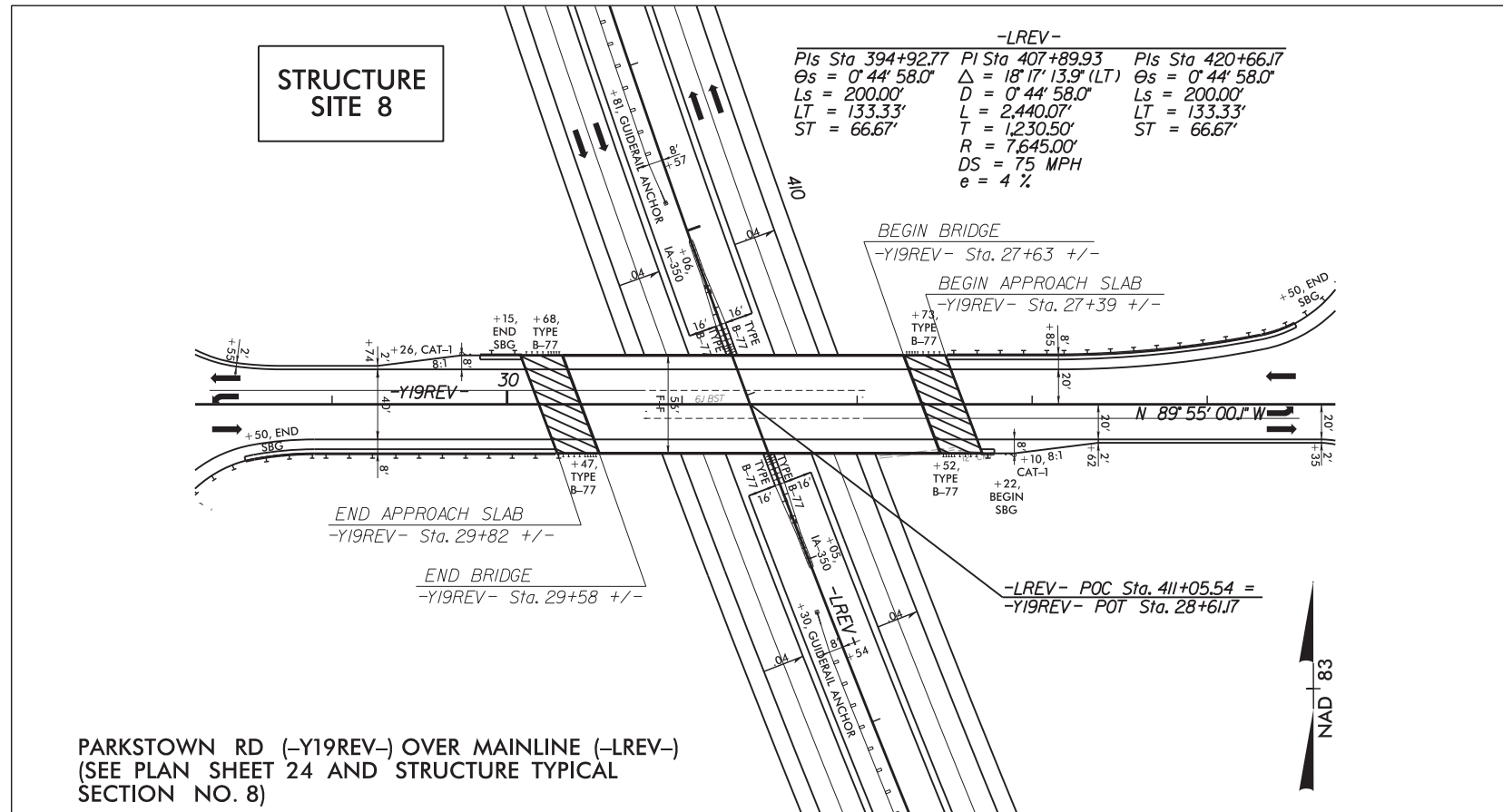
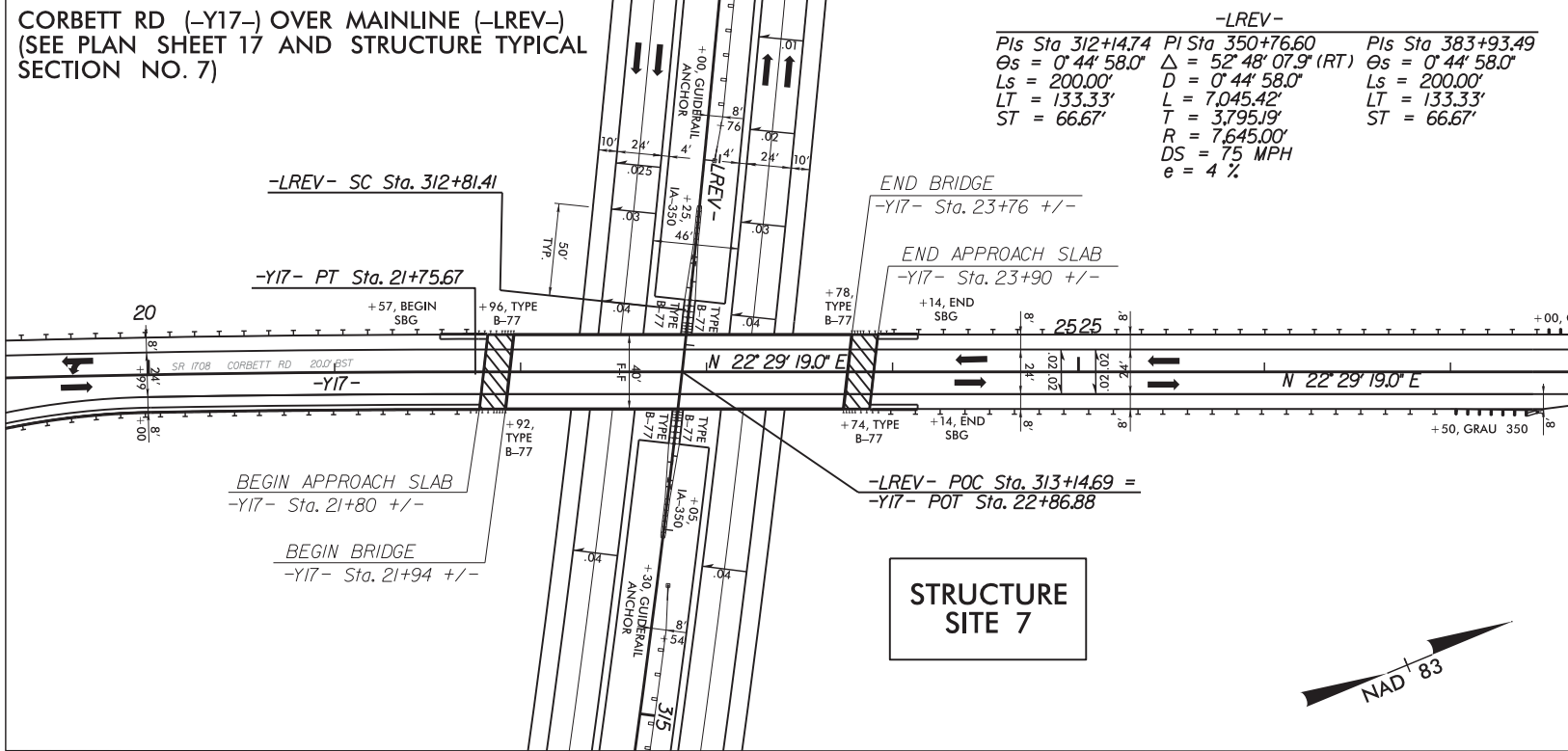






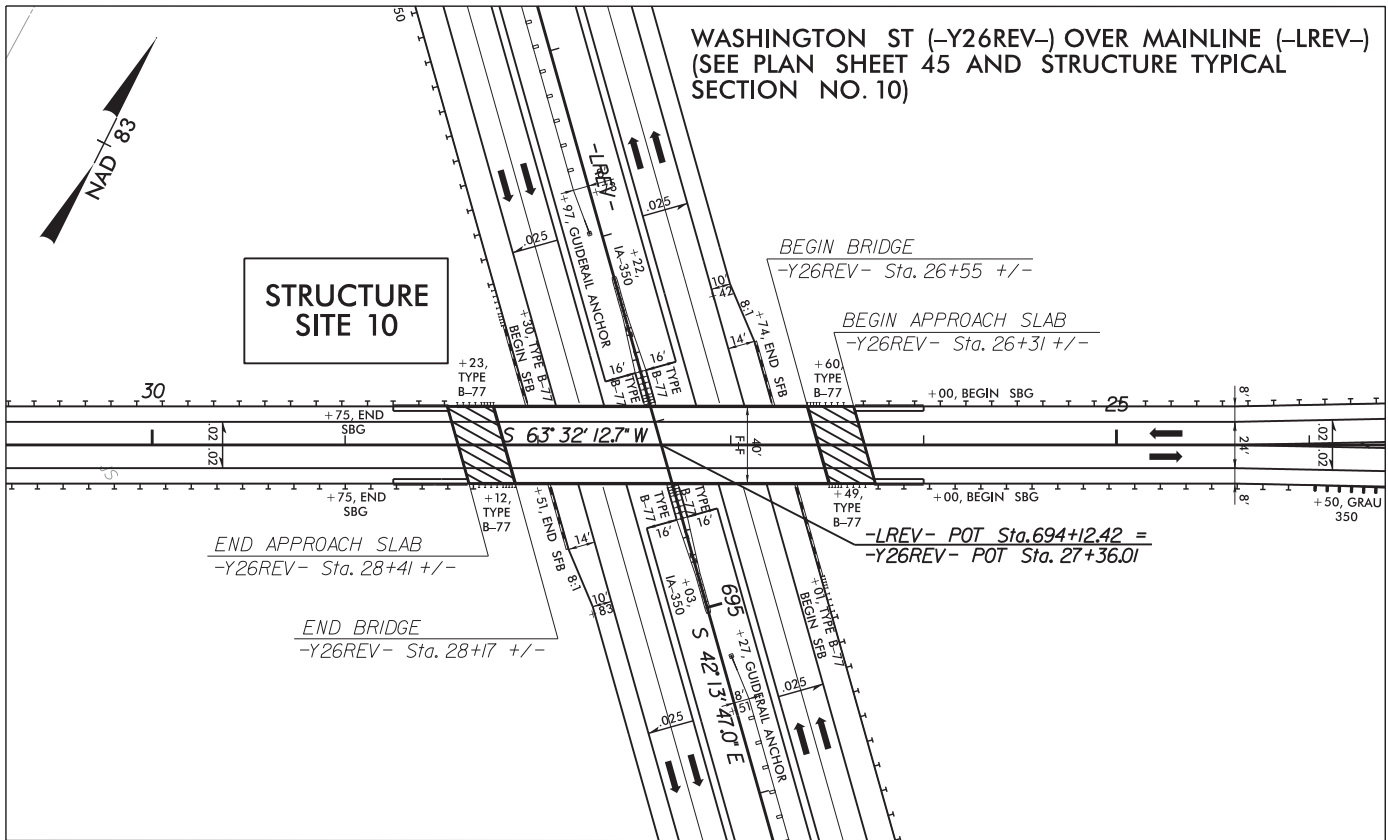
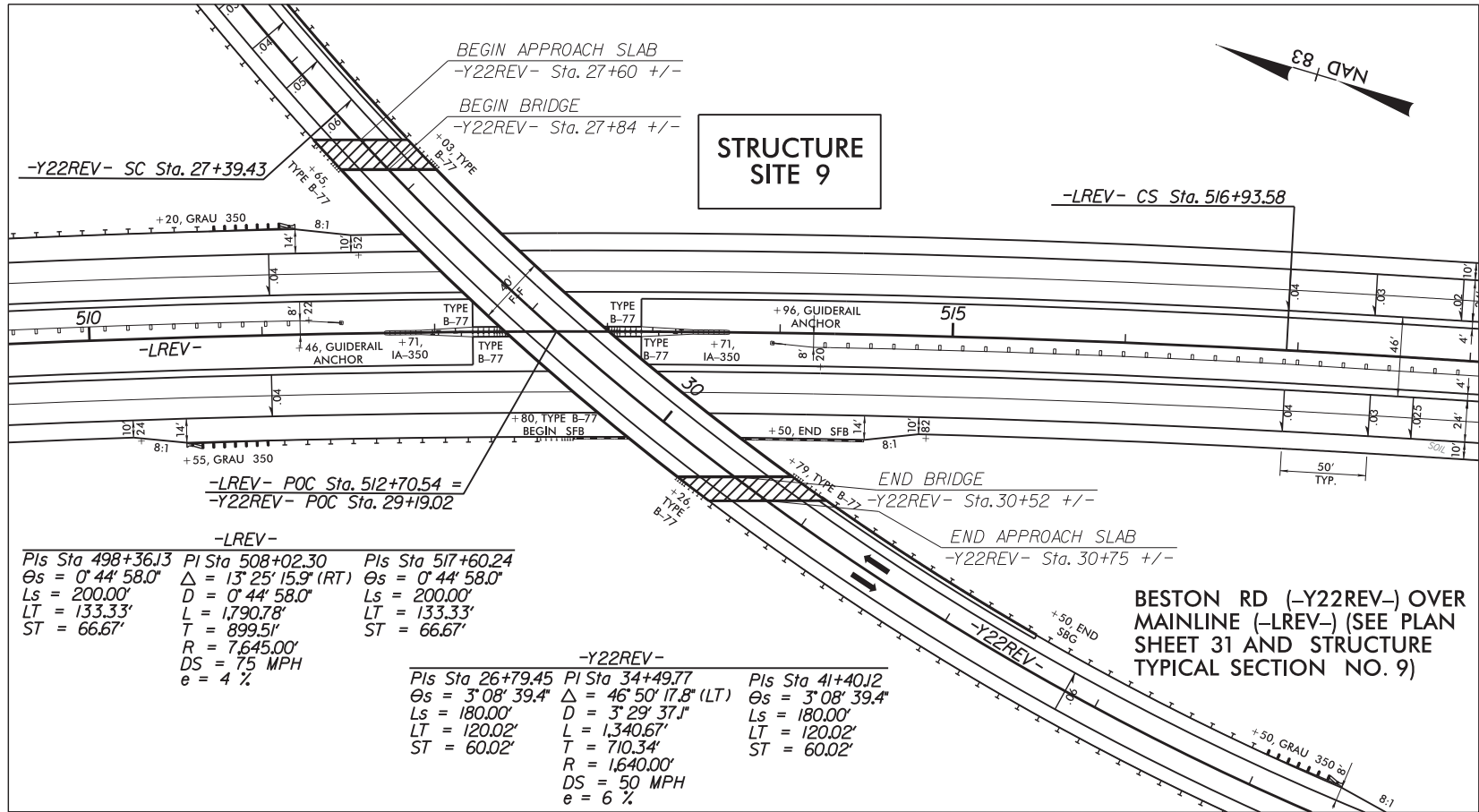
PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	2-U
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	





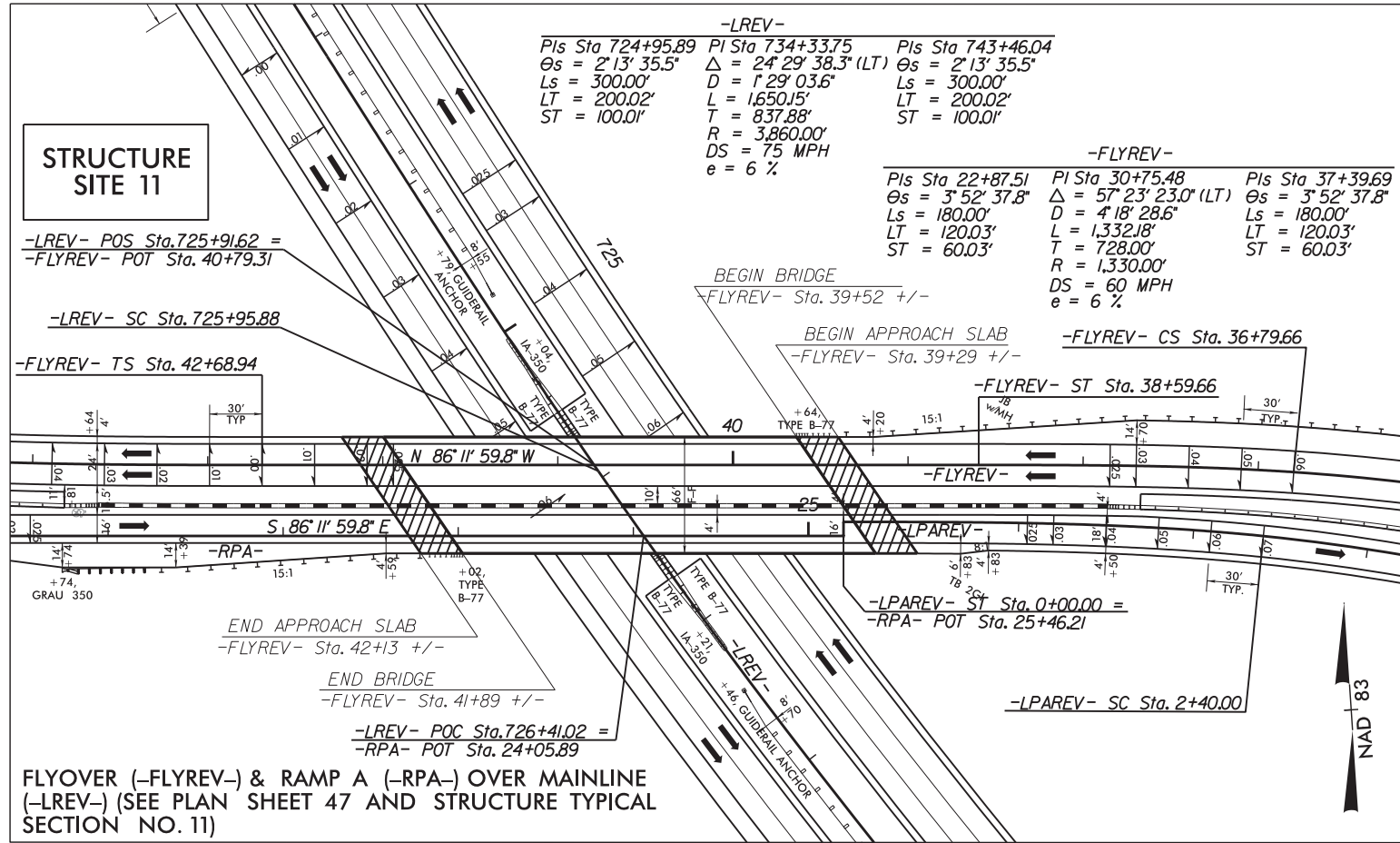
PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	2-V
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	





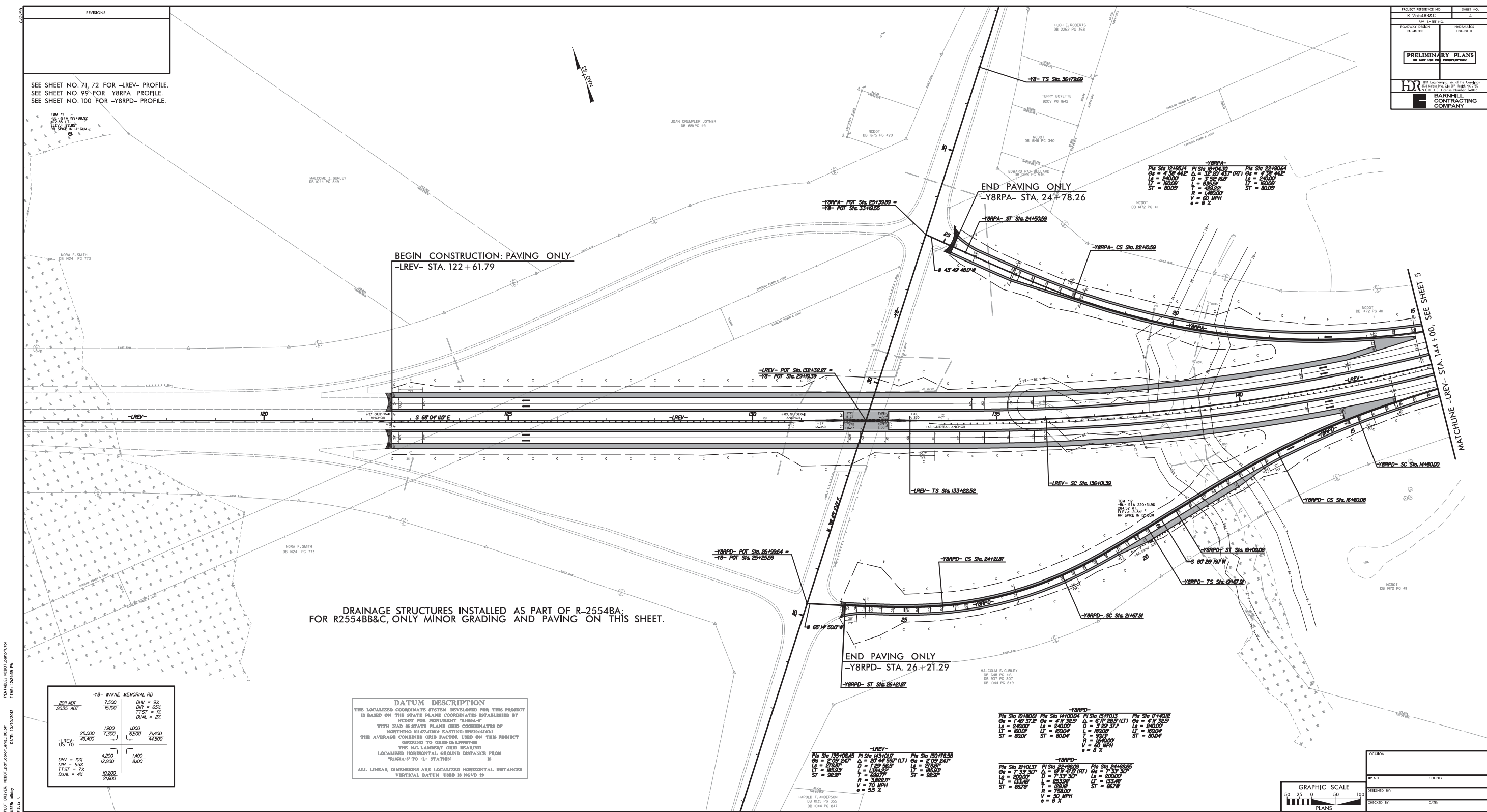
PROJECT REFERENCE NO.		SHEET NO.	
R-2554BB&C		2-W	
R/W SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			





PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	2-X
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
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REVISIONS

MATCHLINE -LREV- STA. 144+00, SEE SHEET 4

DRAINAGE STRUCTURES INSTALLED AS PART OF R-2554BA:
FOR R2554BB&C, ONLY MINOR GRADING AND PAVING WEST OF -LREV- STA. 152+90

-Y8RPA-
Pls Sta 12+95.14 PI Sta 18+04.30 Pls Sta 22+90.64
 $\Theta_s = 4' 38'' 44.2''$ $\Delta = 32' 20'' 43.7''$ (RT) $\Theta_s = 4' 38'' 44.2''$
 $L_s = 240.00'$ $D = 3' 52'' 16.8''$ $L_s = 240.00'$
 $LT = 160.06'$ $L = 835.51'$ $LT = 160.06'$
 $ST = 80.05'$ $T = 429.22'$ $ST = 80.05'$
 $R = 1,480.00'$
 $V = 65$ MPH
 $e = 8 \%$

-LREV-
Pls Sta 135+08.45 PI Sta 143+01.17 Pls Sta 150+78.58
 $\Theta_s = 2' 05'' 24.7''$ $\Delta = 20' 44'' 59.7''$ (LT) $\Theta_s = 2' 05'' 24.7''$
 $L_s = 278.87'$ $D = 1' 29'' 56.5''$ $L_s = 278.87'$
 $LT = 185.93'$ $L = 1,384.22'$ $LT = 185.93'$
 $ST = 92.97'$ $T = 699.77'$ $ST = 92.97'$
 $R = 3,822.17'$
 $V = 70$ MPH
 $e = 5.5 \%$

-Y8RPD-
Pls Sta 10+80.01
 $\Theta_s = 1' 46'' 37.2''$
 $L_s = 240.00'$
 $LT = 160.01'$
 $ST = 80.01'$
 $V = 65$ MPH
 $e = 8 \%$

-Y8RPA- POT Sta. 10+00.00 =
-LREV- POC Sta. 148+90.43 (47.00 LT)

-Y8RPA- TS Sta. 11+35.08

-LREV- CS Sta. 149+85.61

-Y8RPD- ST Sta. 10+00.00 =
-LREV- POC Sta. 147+02.26 (47.00 RT)

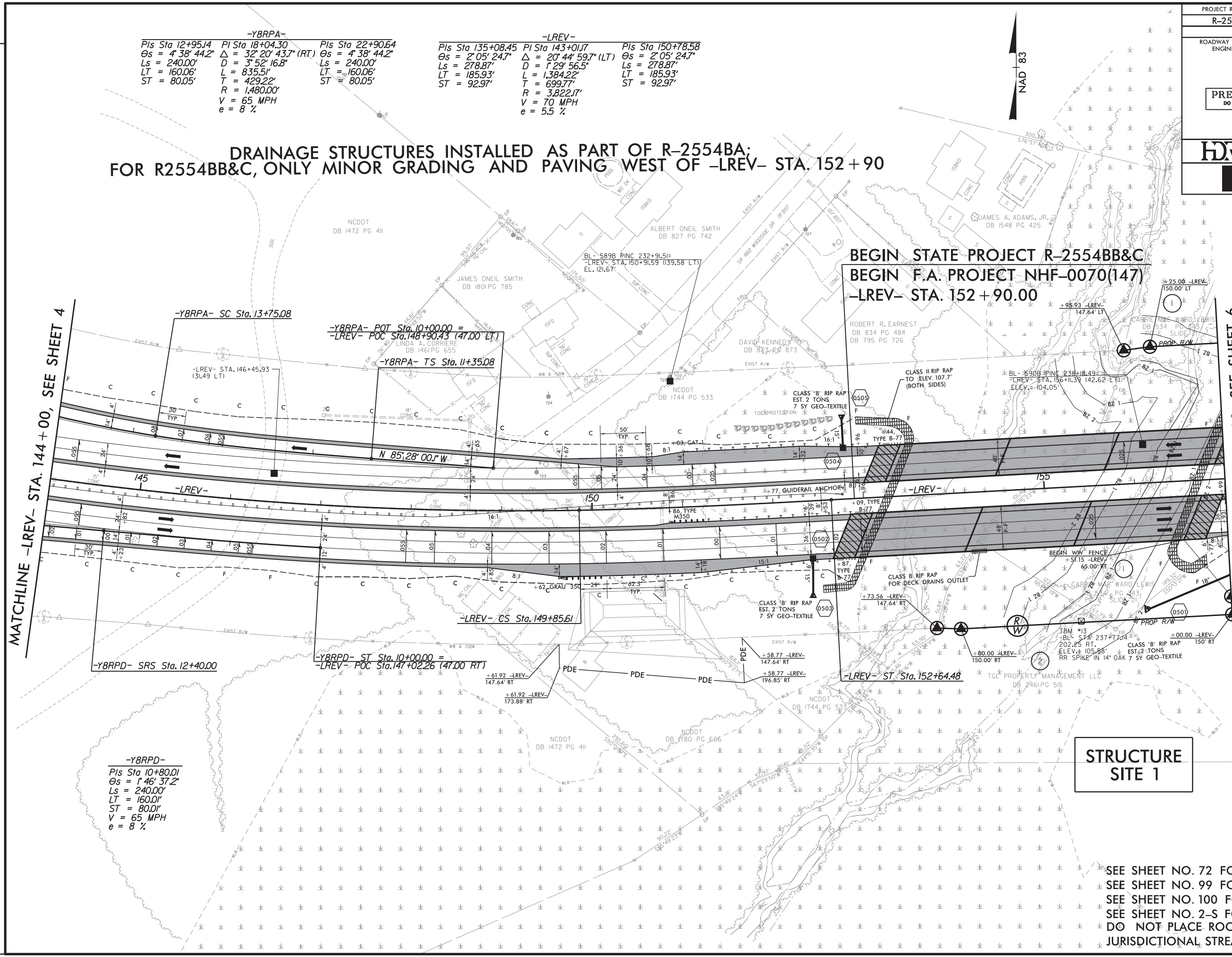
BEGIN STATE PROJECT R-2554BB&C
BEGIN F.A. PROJECT NHF-0070(147)
-LREV- STA. 152+90.00

STRUCTURE
SITE 1

SEE SHEET NO. 72 FOR -LREV- PROFILE.
SEE SHEET NO. 99 FOR -Y8RPA- PROFILE.
SEE SHEET NO. 100 FOR -Y8RPD- PROFILE.
SEE SHEET NO. 2-S FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

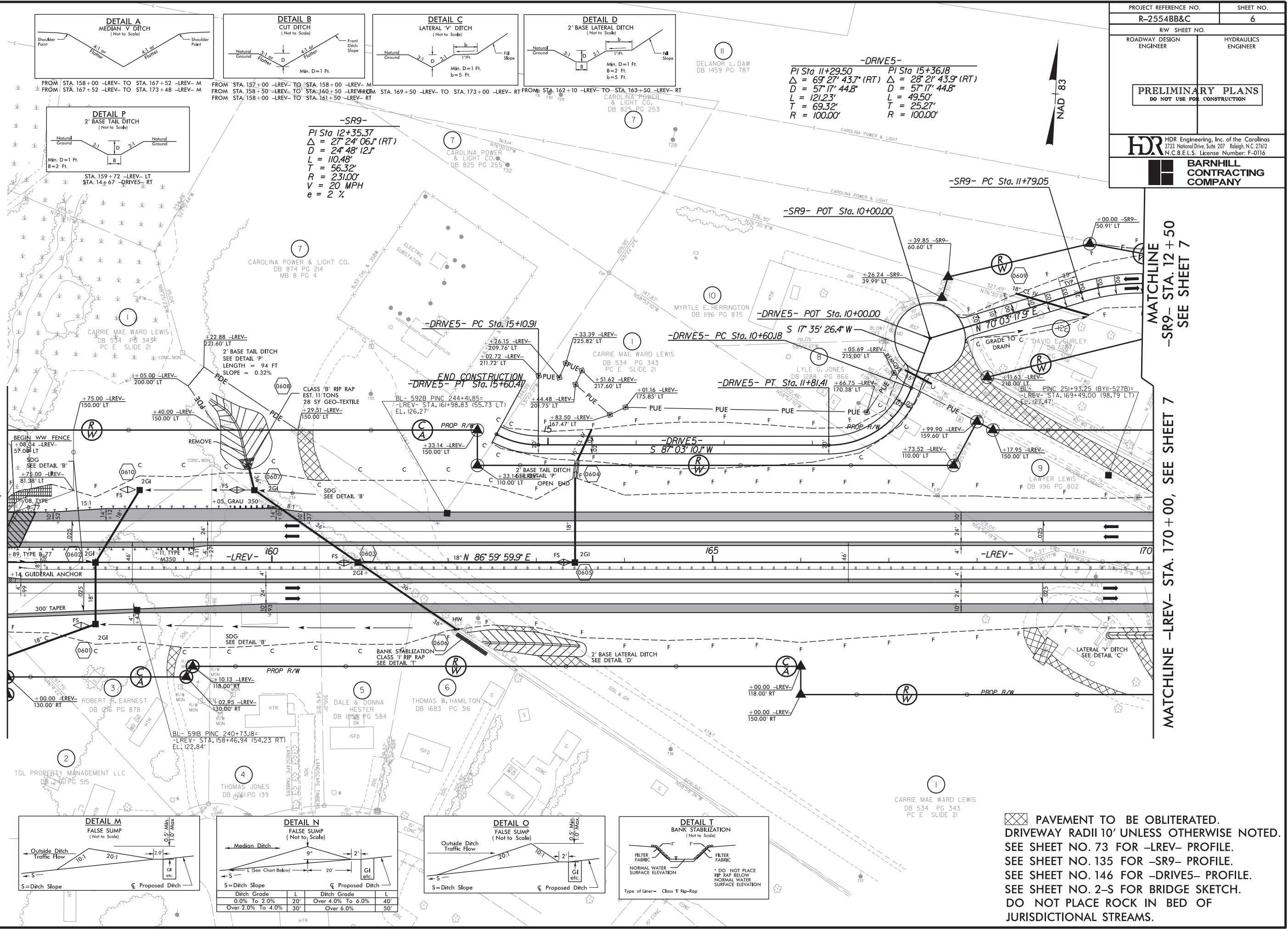
MATCHLINE -LREV- STA. 157+00, SEE SHEET 6

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 5
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		



REVISIONS

MATCHLINE -LREV- STA. 157+00, SEE SHEET 5



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 6	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 73 FOR -LREV- PROFILE.
SEE SHEET NO. 135 FOR -SR9- PROFILE.
SEE SHEET NO. 146 FOR -DRIVE5- PROFILE.
SEE SHEET NO. 2-S FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO.
R-2554BB&C

SHEET NO.
7

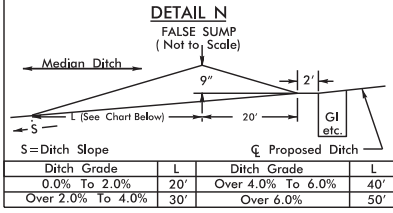
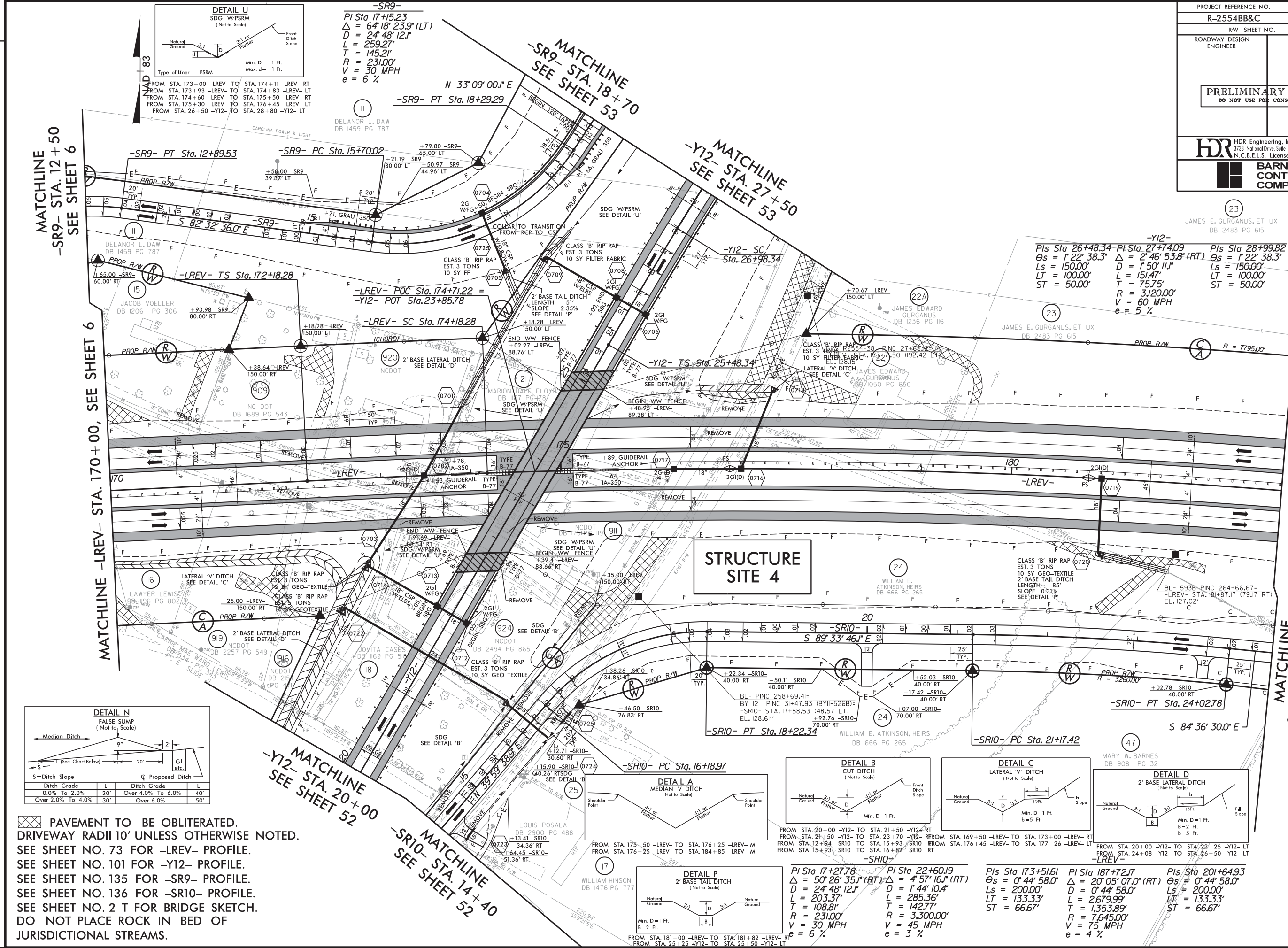
ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

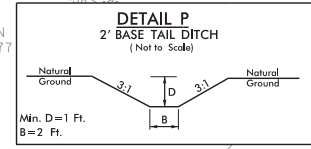
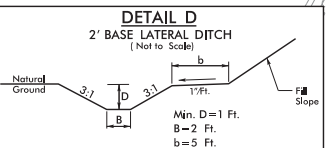
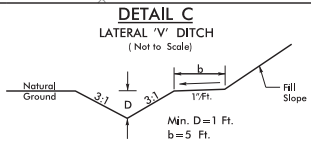
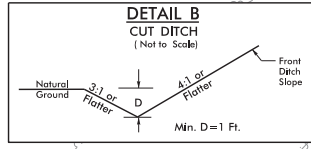
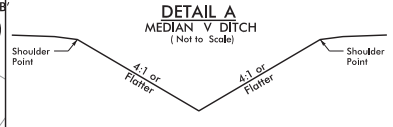
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

BARNHILL
CONTRACTING
COMPANY



PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 73 FOR -LREV- PROFILE.
SEE SHEET NO. 101 FOR -Y12- PROFILE.
SEE SHEET NO. 135 FOR -SR9- PROFILE.
SEE SHEET NO. 136 FOR -SR10- PROFILE.
SEE SHEET NO. 2-T FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.



PI Sta 17+27.78
 $\Delta = 50' 26' 35.1''$ (RT)
 $D = 24' 48' 12.1''$
 $L = 203.37'$
 $T = 108.81'$
 $R = 231.00'$
 $V = 30$ MPH
 $e = 6 \%$

PI Sta 22+60.19
 $\Delta = 4' 57' 16.1''$ (RT)
 $D = 1' 44' 10.4''$
 $L = 285.36'$
 $T = 142.77'$
 $R = 3,300.00'$
 $V = 45$ MPH
 $e = 3 \%$

PIs Sta 173+51.61
 $\Delta = 0' 44' 58.0''$
 $Ls = 200.00'$
 $LT = 133.33'$
 $ST = 66.67'$

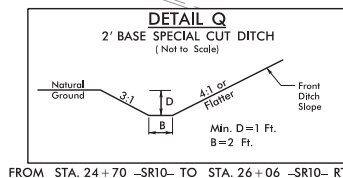
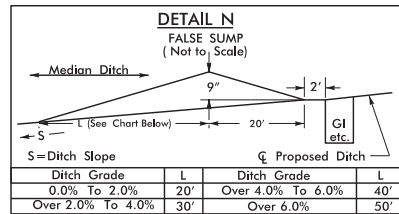
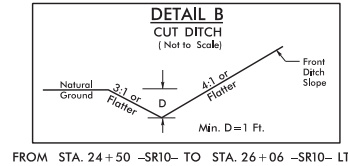
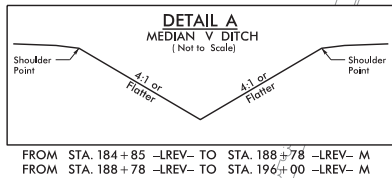
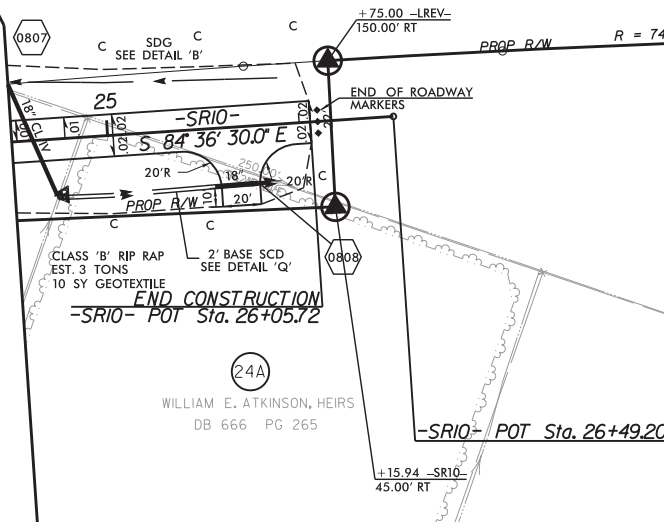
PI Sta 187+72.17
 $\Delta = 20' 05' 07.0''$ (RT)
 $Ls = 200.00'$
 $L = 2,679.99'$
 $T = 1,353.89'$
 $R = 7,645.00'$
 $V = 75$ MPH
 $e = 4 \%$

PIs Sta 201+64.93
 $\Delta = 0' 44' 58.0''$
 $Ls = 200.00'$
 $LT = 133.33'$
 $ST = 66.67'$

REVISIONS

MATCHLINE
-LREV- STA. 183+00
-SR10- STA. 24+50
SEE SHEET 7

MATCHLINE
-LREV- STA. 196+00
-SR10- STA. 26+00
SEE SHEET 9



-LREV-

Pls Sta 173+51.61	Pls Sta 187+72.17	Pls Sta 201+64.93
$\theta_s = 0^\circ 44' 58.0''$	$\Delta = 20^\circ 05' 07.0''$ (RT)	$\theta_s = 0^\circ 44' 58.0''$
$L_s = 200.00'$	$D = 0^\circ 44' 58.0''$	$L_s = 200.00'$
$LT = 133.33'$	$L = 2,679.99'$	$LT = 133.33'$
$ST = 66.67'$	$T = 1,353.89'$	$ST = 66.67'$
	$R = 7,645.00'$	
	$V = 75$ MPH	
	$e = 4\%$	

CLASS 'B' RIP RAP
EST. 5 TONS
14 SY GEO-TEXTILE

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

MURRAY R. DAW
DB 704 PG 18

WILLIAM E. ATKINSON, HEIRS
DB 666 PG 265

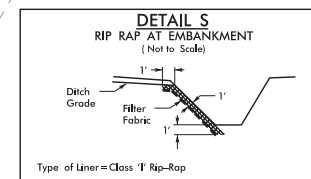
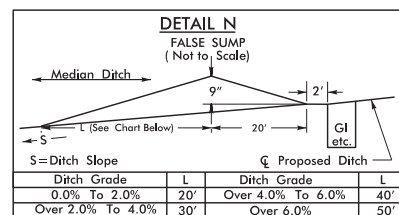
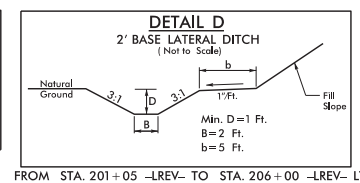
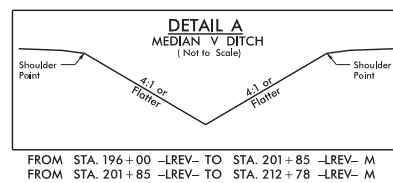
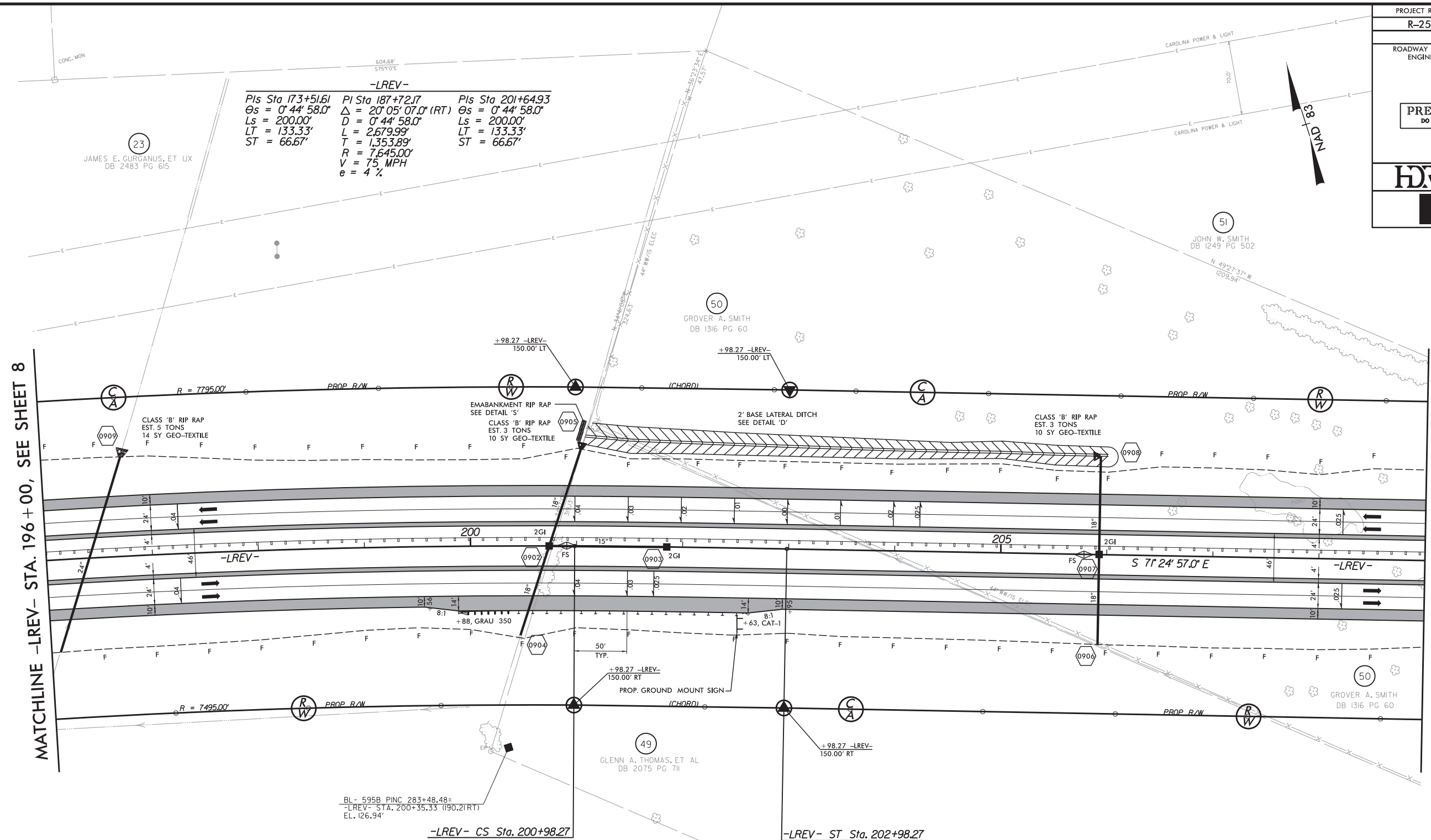
JAMES E. GURGANUS, ET UX
DB 2483 PG 615

JAMES E. GURGANUS, ET UX
DB 2483 PG 615

BL - 594B PINC 274+38.40=
-LREV- STA. 191+21.94 (440.15 RT)
EL. 125.07'

SEE SHEET NO. 74 FOR -LREV- PROFILE.
SEE SHEET NO. 136 FOR -SR10- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

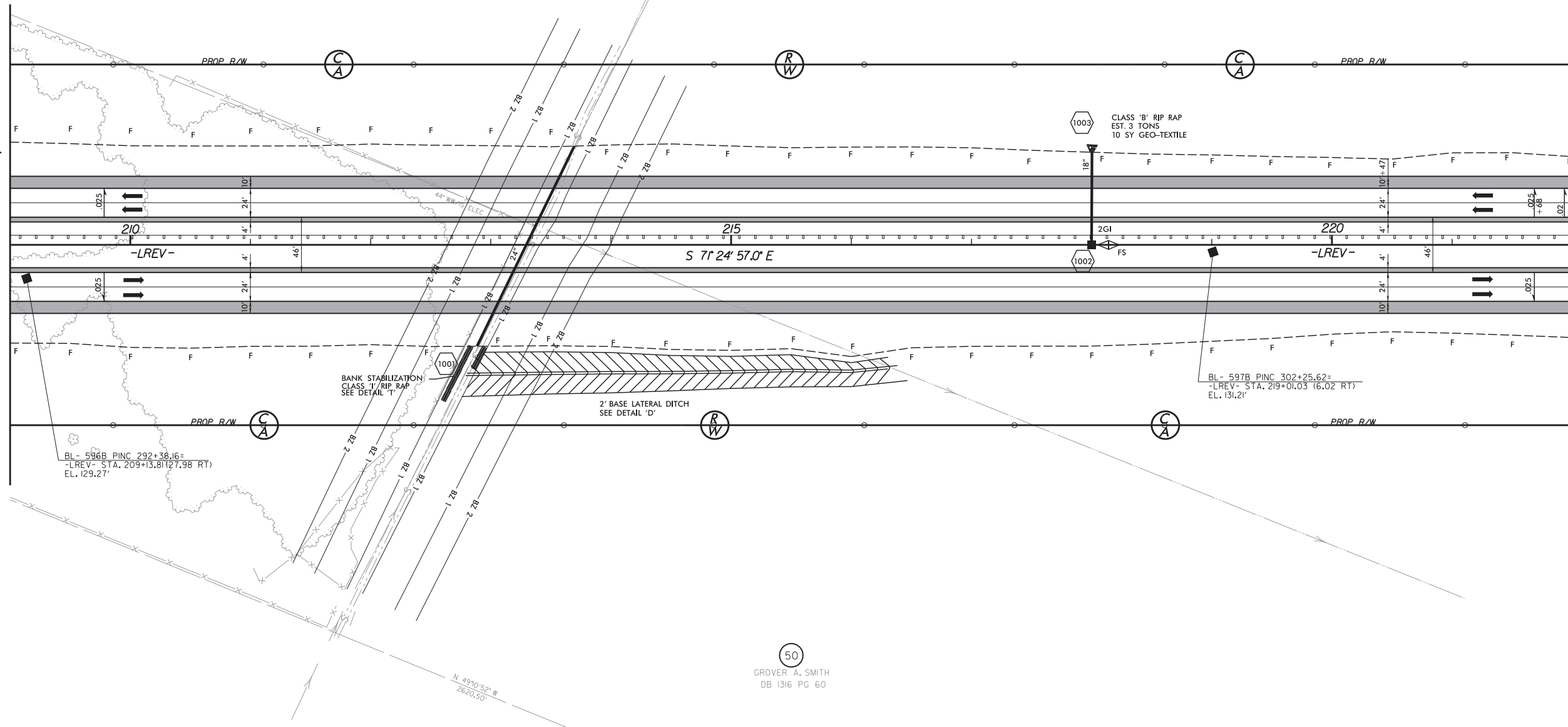
PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 8	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
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BARNHILL CONTRACTING COMPANY			



SEE SHEET NO. 74 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

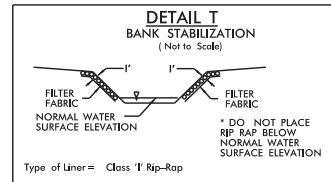
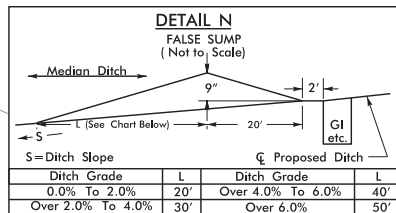
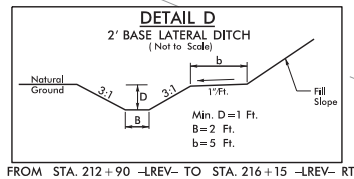
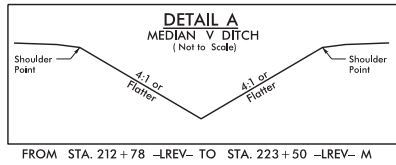
REVISIONS

MATCHLINE -LREV- STA. 209+00, SEE SHEET 9



49

GLENN A. THOMAS, ET AL
DB 2075 PG 71

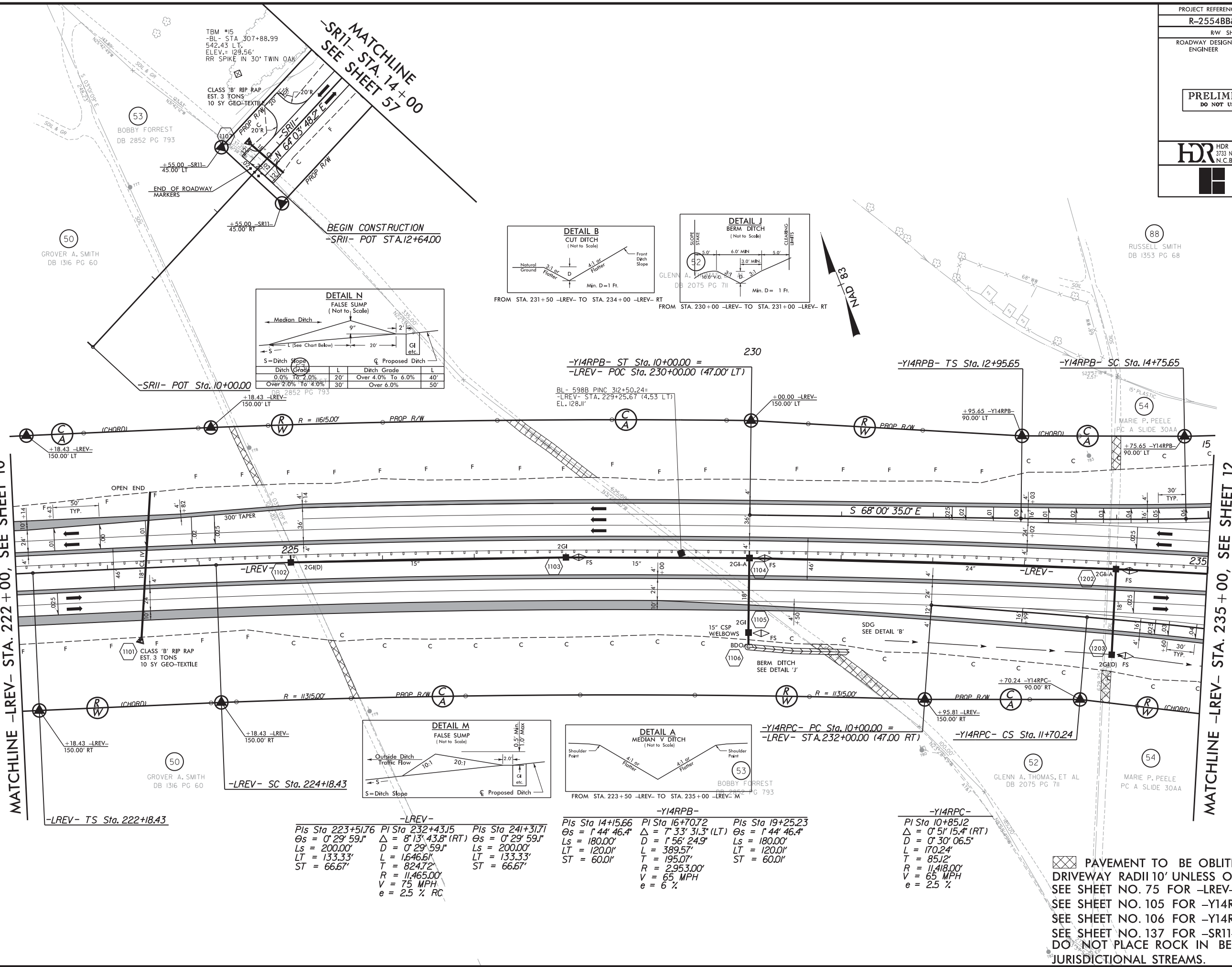


SEE SHEET NO. 75 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 10
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		

REVISIONS

MATCHLINE -LREV- STA. 222+00, SEE SHEET 10

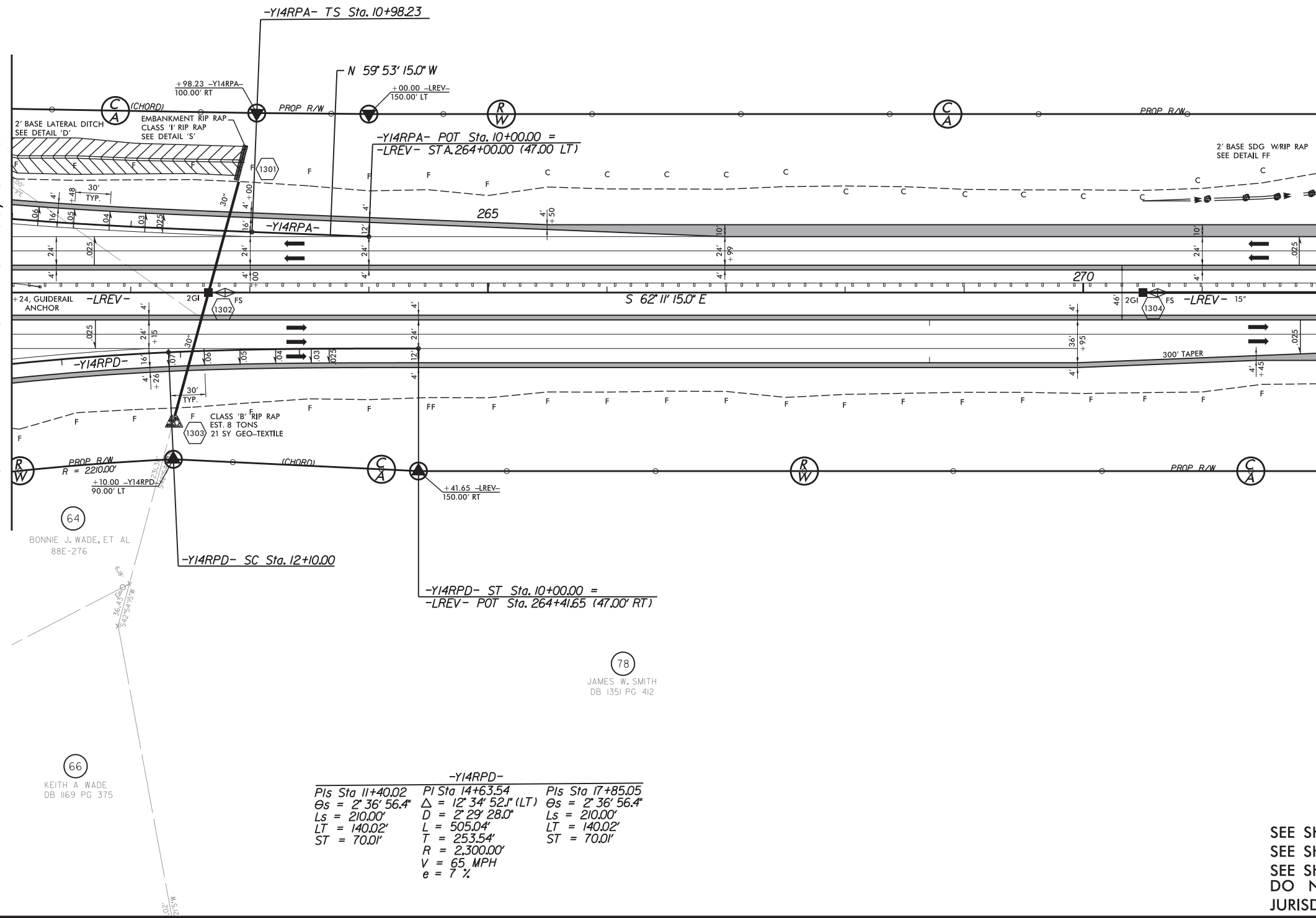


PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 11	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

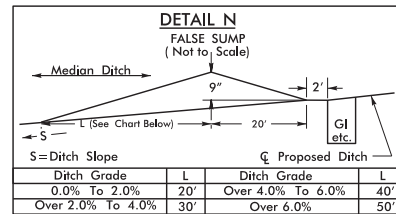
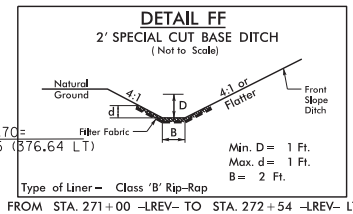
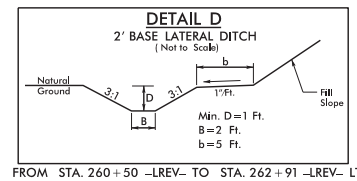
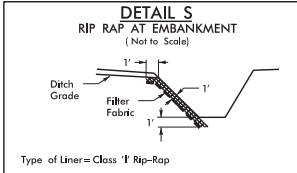
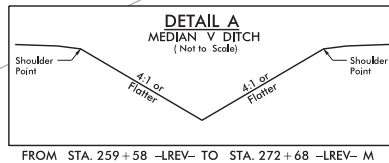
PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 75 FOR -LREV- PROFILE.
SEE SHEET NO. 105 FOR -Y14RPB- PROFILE.
SEE SHEET NO. 106 FOR -Y14RPC- PROFILE.
SEE SHEET NO. 137 FOR -SR11- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

REVISIONS

MATCHLINE -LREV- STA. 261+00, SEE SHEET 12



-Y14RPA-
Pls Sta 12+58.26 PI Sta 15+91.81 Pls Sta 19+22.73
 $\Theta s = 3^{\circ} 26' 15.9''$ $\Delta = 14^{\circ} 27' 06.7''$ (RT) $\Theta s = 3^{\circ} 26' 15.9''$
 $Ls = 240.00'$ $D = 2^{\circ} 51' 53.2''$ $Ls = 240.00'$
 $LT = 160.03'$ $L = 504.47'$ $LT = 160.03'$
 $ST = 80.03'$ $T = 253.58'$ $ST = 80.03'$
 $R = 2,000.00'$
 $V = 65$ MPH
 $e = 8\%$



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

(75A)
FRANCES CREECH

1472.25'
588.72' SE

BL- 601B PINC 348+59.70
-LREV- STA. 263+62.75 (876.64 LT)
EL. 122.31'

(78)
JAMES W. SMITH
DB 1351 PG 412

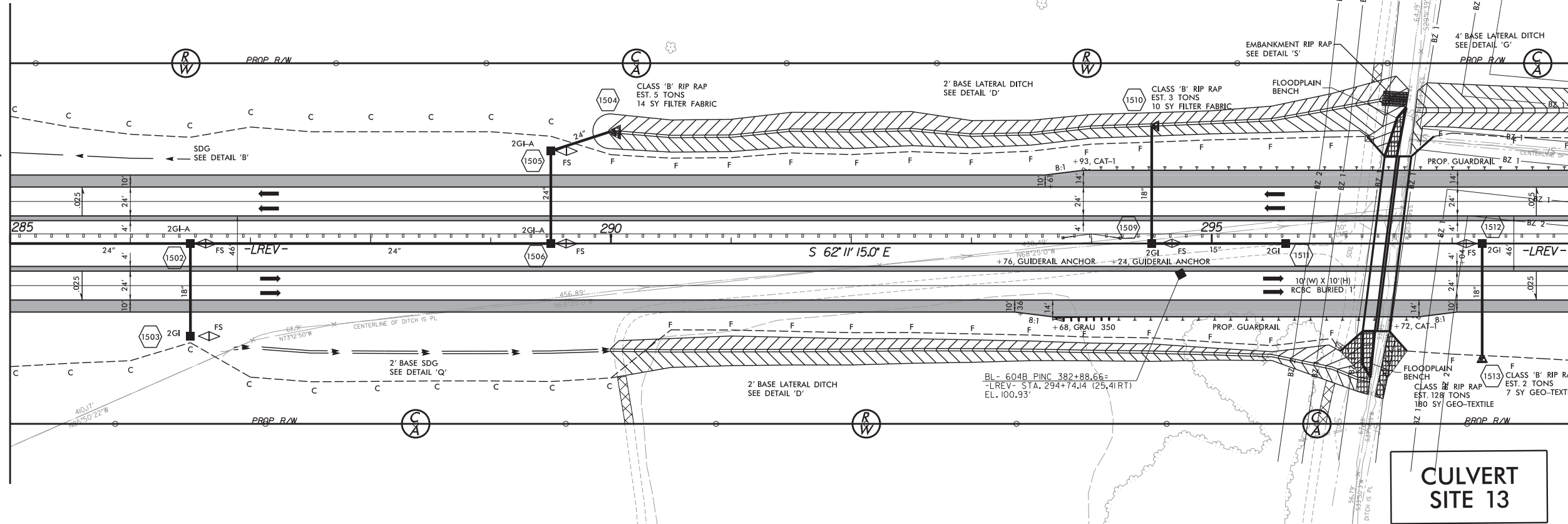


PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 13	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

SEE SHEET NO. 77 FOR -LREV- PROFILE.
SEE SHEET NO. 104 FOR -Y14RPA- PROFILE.
SEE SHEET NO. 107 FOR -Y14RPD- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

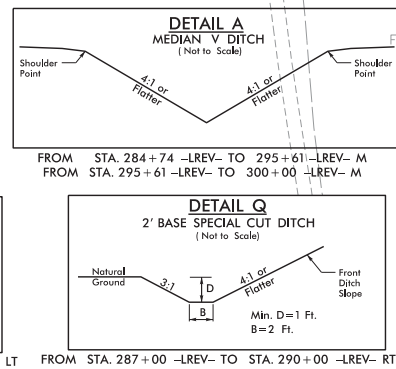
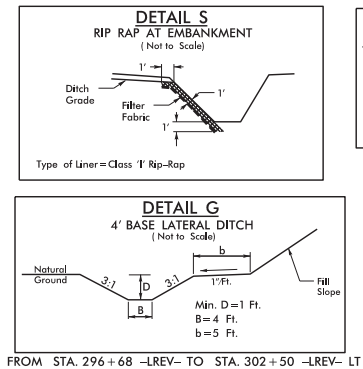
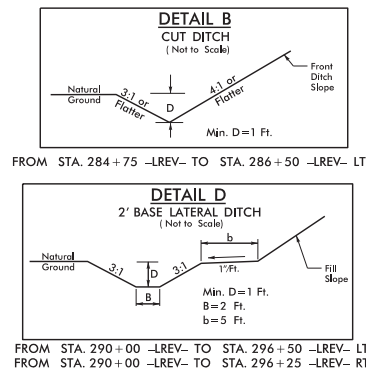
REVISIONS

MATCHLINE -LREV- STA. 285+00, SEE SHEET 14



MATCHLINE -LREV- STA. 298+00, SEE SHEET 16

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 15	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116			
BARNHILL CONTRACTING COMPANY			



FRANCES B. SMITH, ETALS
DB 1813 PG 351

JAMES P. SMITH, JR
DB 104 PG 118

PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 78 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

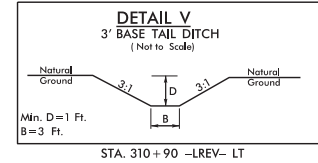
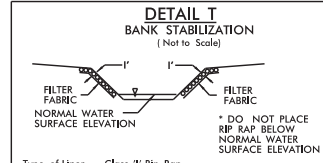
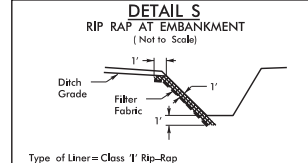
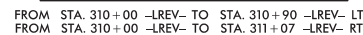
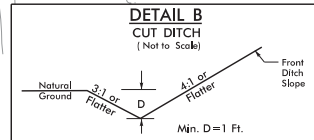
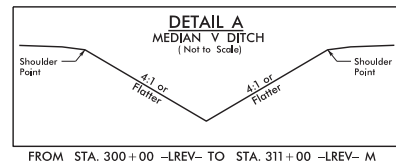
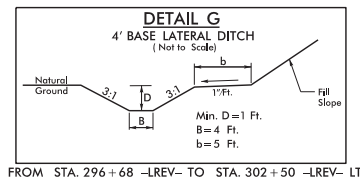
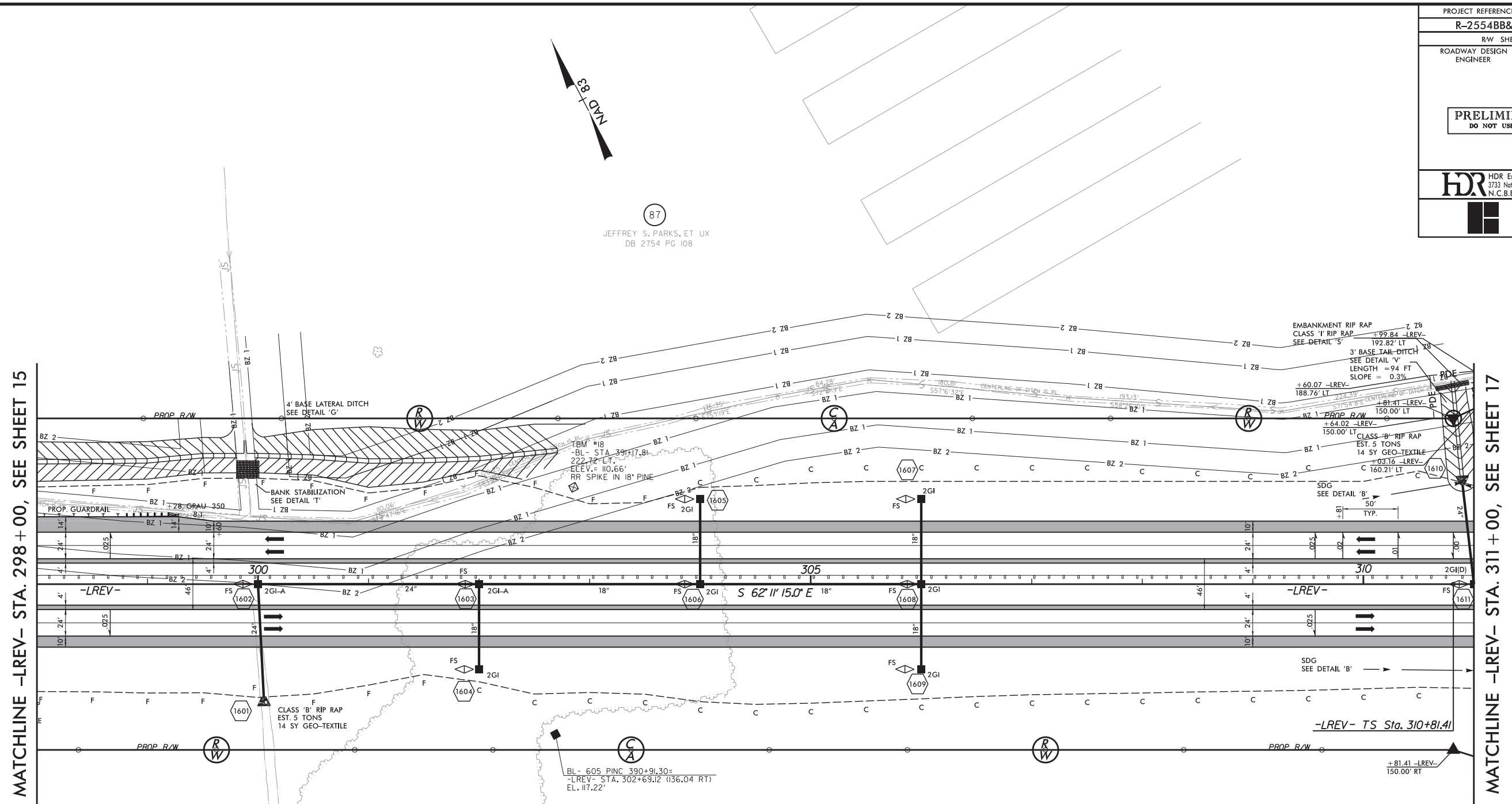
PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, NC 27612
N.C.B.E.L.S. License Number: F-0116



**BARNHILL
CONTRACTING
COMPANY**



<i>-LREV-</i>		
<i>Pls</i>	<i>Sta</i>	<i>312+14.74</i>
<i>Θs</i>	=	<i>0° 44' 58.0"</i>
<i>Ls</i>	=	<i>200.00'</i>
<i>LT</i>	=	<i>133.33'</i>
<i>ST</i>	=	<i>66.67'</i>

SEE SHEET NO. 78 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

```
PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
PENTABLE: NCDOT_pshpfl.tbl
USER: blibby
DATE: 10/10/2012
TIME: 11:24:50 AM
FILE: \
```


-LREW-		
<i>Pls</i>	<i>Sta</i> 312+14.74	<i>Pl</i> <i>Sta</i> 350+76.60
<i>Øs</i>	= 0° 44' 58.0"	<i>Δ</i> = 52° 48' 07.9" (RT)
<i>Ls</i>	= 200.00'	<i>D</i> = 0° 44' 58.0"
<i>LT</i>	= 133.33'	<i>L</i> = 7,045.42'
<i>ST</i>	= 66.67'	<i>T</i> = 3,795.19'
		<i>R</i> = 7,645.00'
		<i>V</i> = 75 MPH
		<i>e</i> = 4 %

86
JAMES P. SMITH ,JR
DB 104 PG 118

90
M. C. CORBETT, HEIRS
DB 210 PG 480

NAD + 83

BL- 608B PINC 423+50.38=
-LREV- STA. 335+32.86 (15.98 LT)
EL. 114.98'

MATCHLINE
-LREV- STA. 324+00
SEE SHEET 17

MATCHLINE 20 + 30
STA. 20 + 30
SR12- STA. 20 + 30
SEE SHEET 17

MATCHLINE
-SR12- STA. 33+00
SEE SHEET 19

94
J. WALDO SMITH
DB 945 PG 7

95
WINSTON C. SMITH
DB I564 PG 219

DETAIL P
2' BASE TAIL DITCH
 (Not to Scale)

Natural Ground

3:1

D

3:1

Natural Ground

Min. D = 1 Ft.
 B = 2 Ft.

STA. 328 + 00 -LREV- RT
 STA. 324 + 00 -LREV- RT

-SR12-	
PI Sta 20+98.23	PI Sta 38+28.80
$\Delta = 24^{\circ} 52' 44.1''$ (RT)	$\Delta = 20^{\circ} 51' 46.6''$ (RT)
$D = 3^{\circ} 29' 37.1''$	$D = 0^{\circ} 45' 51.3''$
$L = 712.12'$	$L = 2,729.86'$
$T = 361.76'$	$T = 1,380.21'$
$R = 1,640.00'$	$R = 7,497.00'$
$V = 50$ MPH	$V = 50$ MPH
$e = 5\%$	$e = RC$

SEE SHEET NO. 79 FOR -LREV- PROFILE.
SEE SHEET NO. 138 FOR -SR12- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

```
PLOT DRIVER: NCD0T_pdf_color_eng_50.plt
PENTABLE: NCD0T_psnfpf.tbl
USER: blibby
DATE: 10/10/2012
TIME: 11:27:05 AM
FILE: \
```

REVISIONS

DETAIL A
MEDIAN V DITCH
(Not to Scale)

Shoulder Point

4:1 or Flatter

4:1 or Flatter

Shoulder Point

FROM STA. 325+00 -LREV- TO STA. 333+50 -LREV- M
FROM STA. 333+50 -LREV- TO STA. 335+29 -LREV- M

DETAIL N
FALSE SUMP
(Not to Scale)

Median Ditch

9'

2'

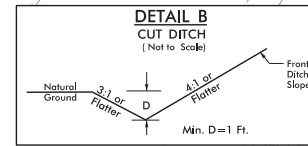
20'

S = Ditch Slope

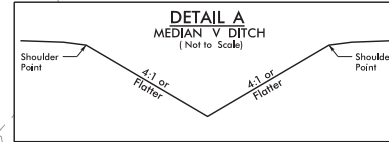
Gr. Proposed Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

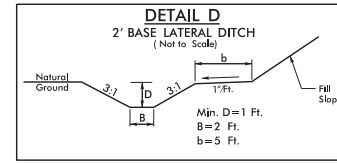
<i>Pls Sta 312+47.4</i>	<i>Pl Sta 350+76.60</i>	<i>Pls Sta 383+93.49</i>
<i>Θs = 0° 44' 58.0"</i>	<i>Δ = 52° 48' 07.9" (RT)</i>	<i>Θs = 0° 44' 58.0"</i>
<i>Ls = 200.00'</i>	<i>D = 0° 44' 58.0"</i>	<i>Ls = 200.00'</i>
<i>LT = 133.33'</i>	<i>L = 7,045.42'</i>	<i>LT = 133.33'</i>
<i>ST = 66.67'</i>	<i>T = 3,795.19'</i>	<i>ST = 66.67'</i>
	<i>R = 7645.00'</i>	
	<i>V = 75 MPH</i>	
	<i>e = 4 %</i>	



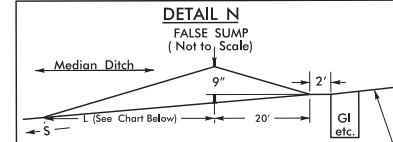
-SRI3REV-
PI Sta 16+02.62
 $\Delta = 20^\circ 18' 18.6''$ (LT)
 $D = 3^\circ 29' 37.1''$
 $L = 581.20'$
 $T = 293.68'$
 $R = 1,640.00'$
 $V = 50$ MPH
 $e = 5\%$



FROM STA. 341+00 -LREV- TO STA. 343+37 -LREV- M
FROM STA. 343+37 -LREV- TO STA. 347+50 -LREV- M



FROM STA. 36+35 -SR12- TO STA. 38+83 -SR12- RT
FROM STA. 343+36 -LREV- TO STA. 349+00 -LREV- R



S = Ditch Slope		C Proposed Ditch	
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-SRI3REV- POT Sta. 10+00.00

BY18 549B-POT 16+40.42=
-LREV- STA. 346+22.57 (417.69 L

-SR13REV- PC Sta. 13+08.94

MATCHLINE
-SR13REV- STA. 15+00
SEE SHEET 20

MATCHLINE
-LREV- STA. 350 + 00
SEE SHEET 20

MATCHLINE
-SR12- STA. 45 + 70
SEE SHEET 20

MATCHLINE
-LREV- STA. 337+00
SEE SHEET 18

MATCHLINE
-SR12- STA. 33+00
SEE SHEET 18

DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 80 FOR -LREV- PROFILE.
SEE SHEET NO. 138-139 FOR -SR12- PROFILE.
SEE SHEET NO. 140 FOR -SR13REV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

-SR12-
 PI Sta 38+28.80
 $\Delta = 20^\circ 51' 46.6''$ (RT)
 $D = 0^\circ 45' 51.3''$
 $L = 2,729.86'$
 $T = 1,380.21'$
 $R = 7,497.00'$
 $V = 50$ MPH
 $e = RC$

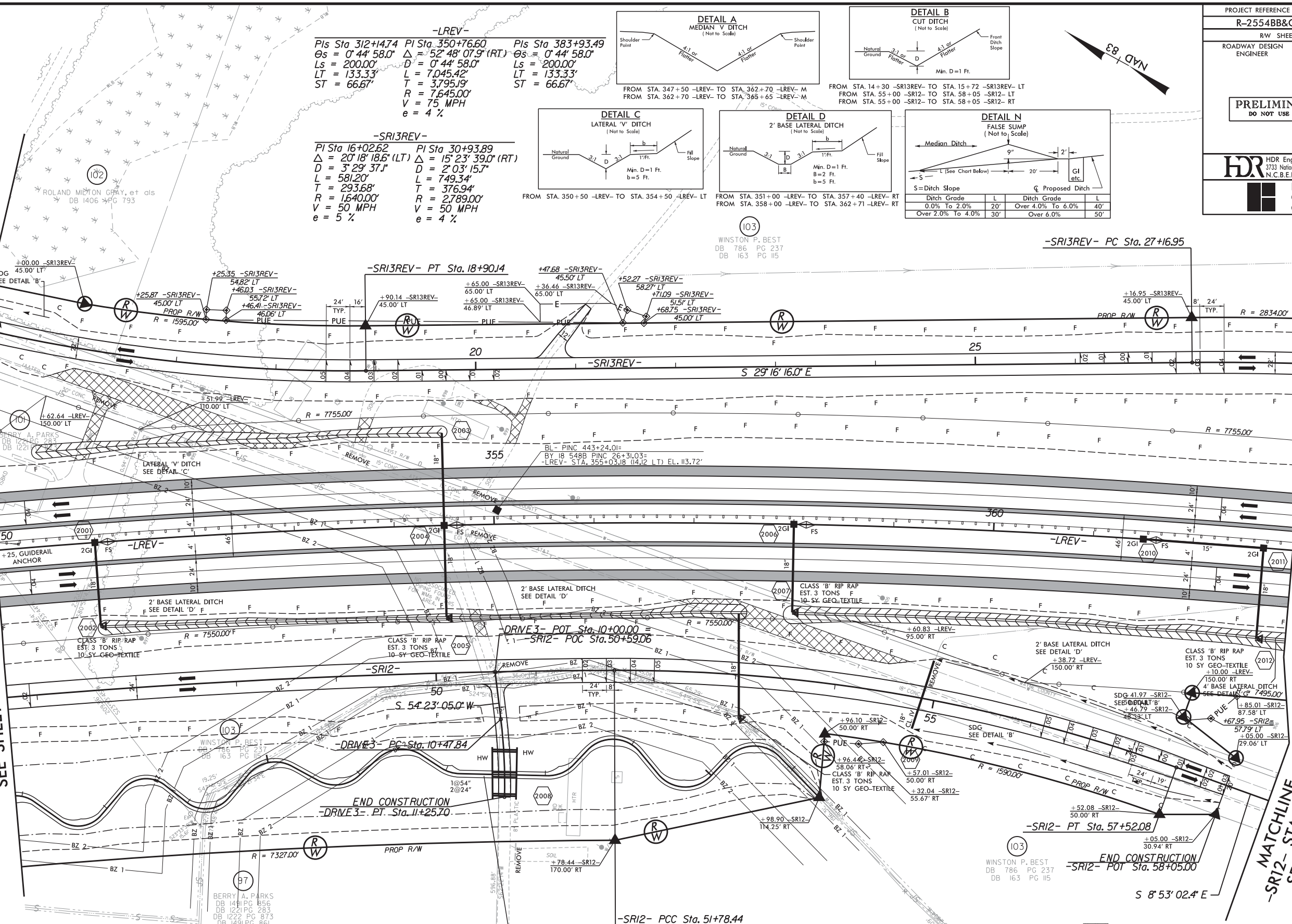
PROPOSED NATURAL CHANNEL DESIGN

REVISIONS

MATCHLINE -SR13REV- STA. 15+00
SEE SHEET 19

MATCHLINE -LREV- STA. 350+00
SEE SHEET 19

MATCHLINE -SR12- STA. 45+70
SEE SHEET 19

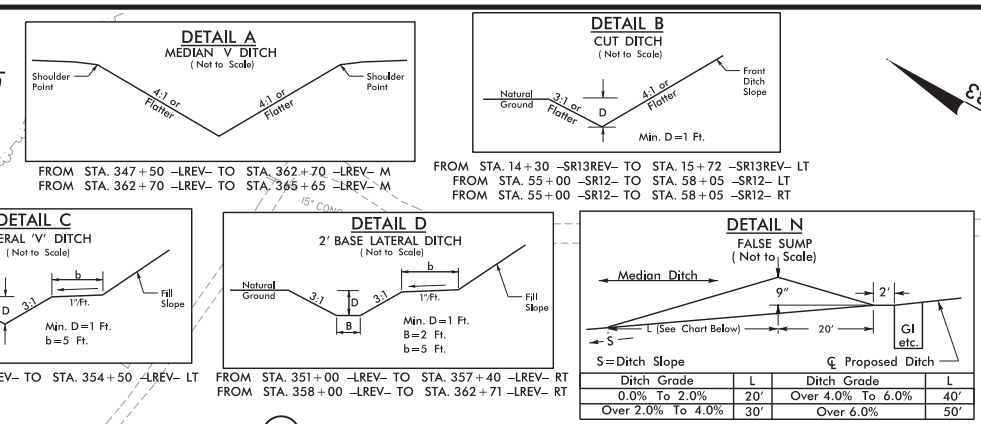


-LREV-

Pls Sta 312+14.74	PI Sta 350+76.60	Pls Sta 383+93.49
$\Delta_s = 0^\circ 44' 58.0''$	$\Delta = 52^\circ 48' 07.9''$ (RT)	$\Delta_s = 0^\circ 44' 58.0''$
$L_s = 200.00'$	$D = 0^\circ 44' 58.0''$	$L_s = 200.00'$
$LT = 133.33'$	$L = 7,045.42'$	$LT = 133.33'$
$ST = 66.67'$	$T = 3,795.19'$	$ST = 66.67'$
	$R = 7,645.00'$	
	$V = 75$ MPH	
	$e = 4\%$	

-SR13REV-

PI Sta 16+02.62	PI Sta 30+93.89
$\Delta = 20^\circ 18' 18.6''$ (LT)	$\Delta = 15^\circ 23' 39.0''$ (RT)
$D = 3^\circ 29' 37.1''$	$D = 2^\circ 03' 15.7''$
$L = 581.20'$	$L = 749.34'$
$T = 293.68'$	$T = 376.94'$
$R = 1,640.00'$	$R = 2,789.00'$
$V = 50$ MPH	$V = 50$ MPH
$e = 5\%$	$e = 4\%$



PROJECT REFERENCE NO. R-2554BB&C
SHEET NO. 20

ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

HDR HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-01116

BARNHILL CONTRACTING COMPANY

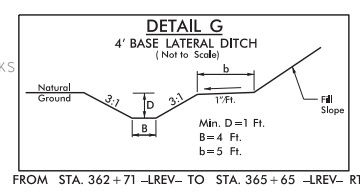
-SR12-

PI Sta 38+28.80	PI Sta 54+68.22
$\Delta = 20^\circ 51' 46.6''$ (RT)	$\Delta = 20^\circ 02' 26.9''$ (RT)
$D = 0^\circ 45' 51.3''$	$D = 3^\circ 29' 37.1''$
$L = 2,729.86'$	$L = 573.64'$
$T = 1,380.21'$	$T = 289.78'$
$R = 7,497.00'$	$R = 1,640.00'$
$V = 50$ MPH	$V = 50$ MPH
$e = RC$	$e = 5\%$

-DRIVE3-

PI Sta 10+86.84
$\Delta = 8^\circ 29' 52.0''$ (RT)
$D = 10^\circ 54' 48.5''$
$L = 77.86'$
$T = 39.00'$
$R = 525.00'$

PROPOSED NATURAL CHANNEL DESIGN



PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 80 FOR -LREV- PROFILE.
SEE SHEET NO. 139 FOR -SR12- PROFILE.
SEE SHEET NO. 140 FOR -SR13REV- PROFILE.
SEE SHEET NO. 145 FOR -DRIVE3- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

MATCHLINE -SR13REV- STA. 28+30
SEE SHEET 21

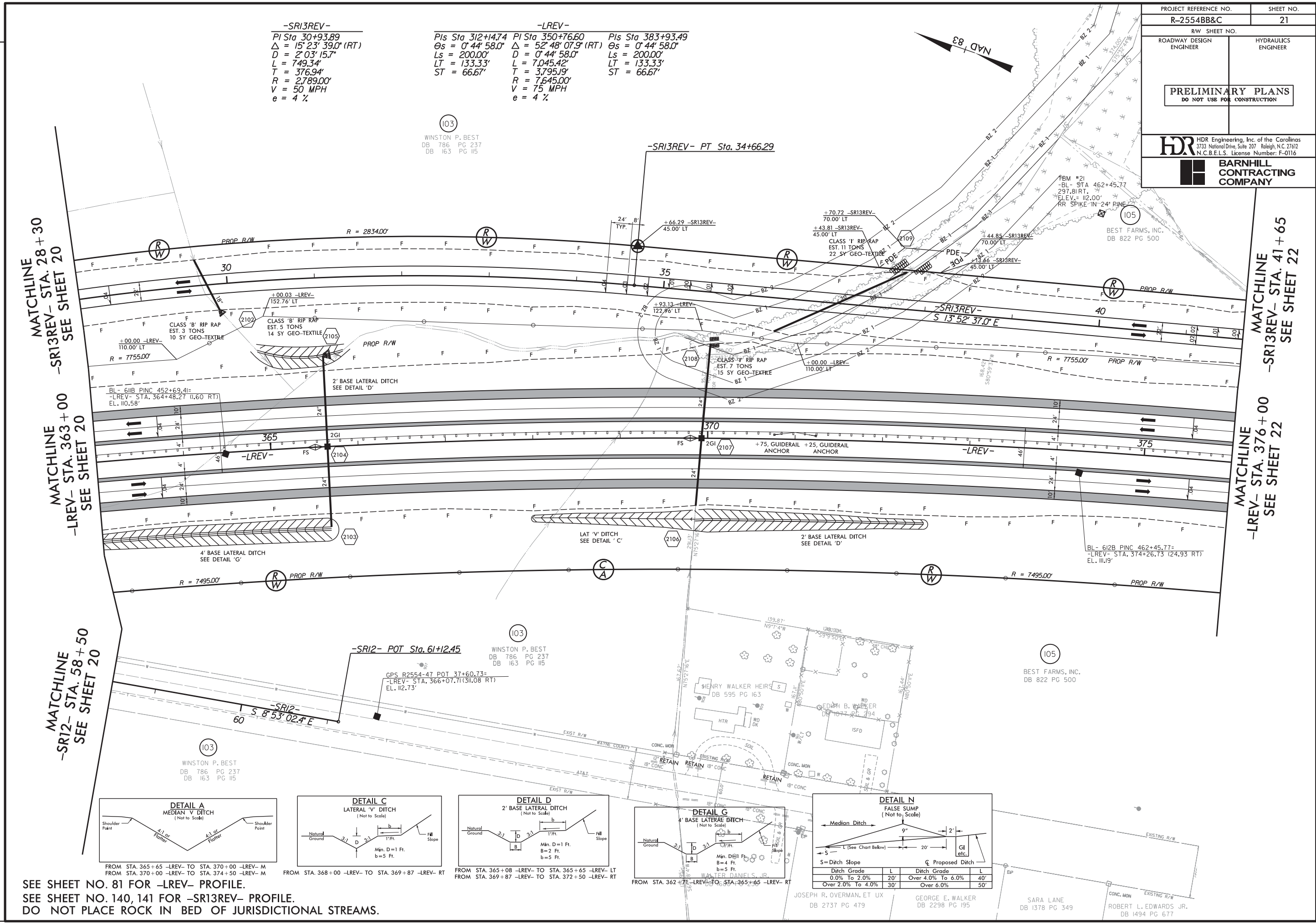
MATCHLINE -LREV- STA. 363+00
SEE SHEET 21

MATCHLINE -SR12- STA. 58+50
SEE SHEET 21

PLOT DRIVER: NCDOT_color_eng_50.plt
USER: bibby
FILE: \

PENTABLE: NCDOT_pshp.flx.tbl
TIME: 11:29:59 AM
DATE: 10/10/2012

REVISIONS



-SR13REV-
PI Sta 30+93.89
 $\Delta = 15^\circ 23' 39.0''$ (RT)
 $D = 2^\circ 03' 15.7''$
 $L = 749.34'$
 $T = 376.94'$
 $R = 2,789.00'$
 $V = 50$ MPH
 $e = 4\%$

-LREV-
PIs Sta 312+14.74 PI Sta 350+76.60 PI Sta 383+93.49
 $\Theta_s = 0^\circ 44' 58.0''$ $\Delta = 52^\circ 48' 07.9''$ (RT) $\Theta_s = 0^\circ 44' 58.0''$
 $L_s = 200.00'$ $D = 0^\circ 44' 58.0''$ $L_s = 200.00'$
 $LT = 133.33'$ $L = 7,045.42'$ $LT = 133.33'$
 $ST = 66.67'$ $T = 3,795.19'$ $ST = 66.67'$
 $R = 7,645.00'$
 $V = 75$ MPH
 $e = 4\%$

103
WINSTON P. BEST
DB 786 PG 237
DB 163 PG 115

103
WINSTON P. BEST
DB 786 PG 237
DB 163 PG 115

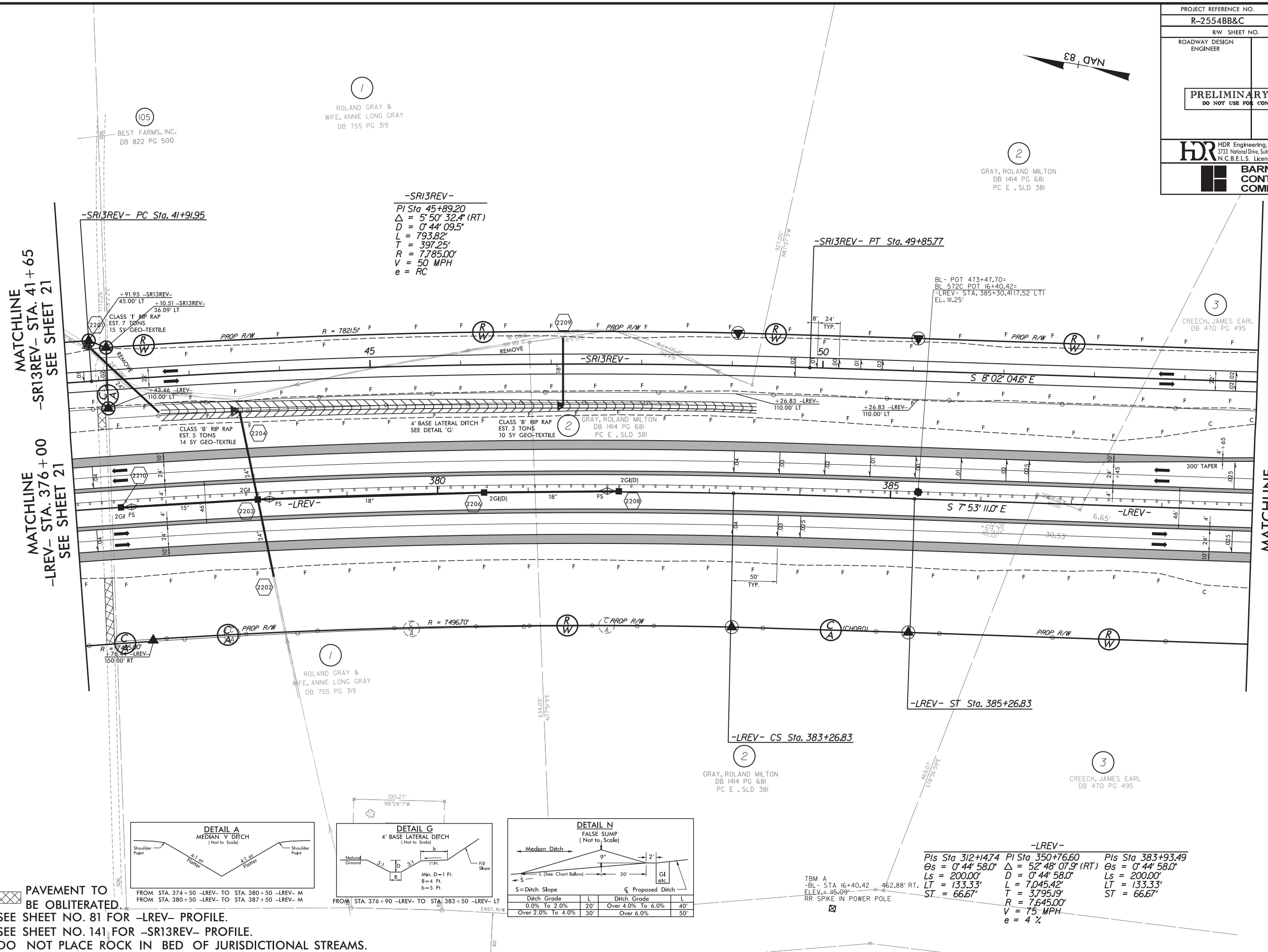
105
BEST FARMS, INC.
DB 822 PG 500

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 21
RW SHEET NO.		HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		
BARNHILL CONTRACTING COMPANY		

SEE SHEET NO. 81 FOR -LREV- PROFILE.
SEE SHEET NO. 140, 141 FOR -SR13REV- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

MATCHLINE -SR13REV- STA. 41+65
SEE SHEET 22

MATCHLINE -LREV- STA. 376+00
SEE SHEET 22



 PAVEMENT TO BE OBLITERATED. SEE SHEET NO. 81 FOR -LREV- PROFILE.
 SEE SHEET NO. 141 FOR -SR13REV- PROFILE.
 DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

S=Ditch Slope		C _p Proposed Ditch	
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-LREV-		
<i>Pis</i> Sta 312+14.74	<i>Pl</i> Sta 350+76.60	<i>Pis</i> Sta 383+93.49
$\Theta_s = 0^\circ 44' 58.0''$	$\Delta = 52^\circ 48' 07.9''$ (RT)	$\Theta_s = 0^\circ 44' 58.0''$
<i>Ls</i> = 200.00'	<i>D</i> = $0^\circ 44' 58.0''$	<i>Ls</i> = 200.00'
<i>LT</i> = 133.33'	<i>L</i> = 7,045.42'	<i>LT</i> = 133.33'
<i>ST</i> = 66.67'	<i>T</i> = 3,795.19'	<i>ST</i> = 66.67'
	<i>R</i> = 7,645.00'	
	<i>V</i> = 75 MPH	
	<i>e</i> = 4 %	

REVISIONS

MATCHLINE
-SR13REV- STA. 54 + 80
SEE SHEET 22

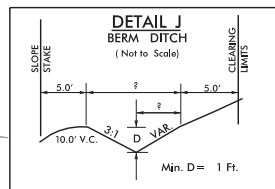
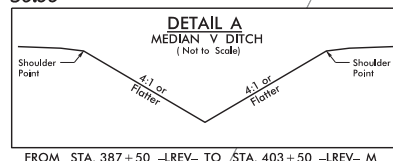
MATCHLINE
-LREV- STA. 389 + 00
SEE SHEET 22

-SR13REV-
PI Sta 64+02.64
 $\Delta = 15^\circ 40' 13.5" (LT)$
 $D = 4' 14" 38.9"$
 $L = 369.23'$
 $T = 185.77'$
 $R = 1,350.00'$
 $V = 50 \text{ MPH}$
 $e = 6 \%$

-Y19RPBREV-
PIs Sta 11+60.06 PI Sta 15+63.89 PIs Sta 19+57.77
 $\Theta_s = 4^\circ 38' 44.2"$ $\Delta = 24^\circ 41' 18.5" (LT)$ $\Theta_s = 4^\circ 38' 44.2"$
 $L_s = 240.00'$ $D = 3' 52' 16.8"$ $L_s = 240.00'$
 $LT = 160.06'$ $L = 637.72'$ $LT = 160.06'$
 $ST = 80.05'$ $T = 323.89'$ $ST = 80.05'$
 $R = 1,480.00'$
 $V = 65 \text{ MPH}$
 $e = 8 \%$

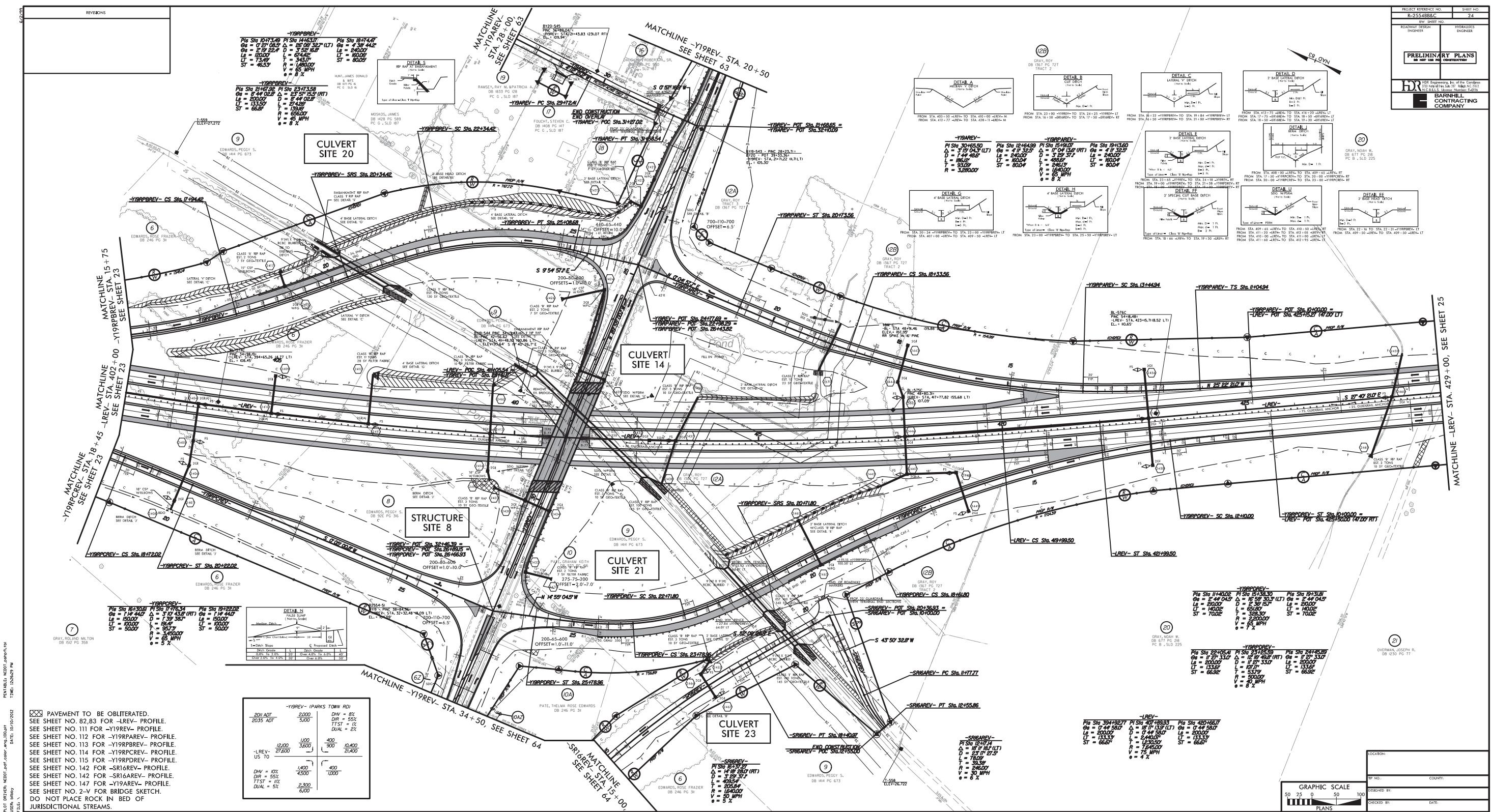
-LREV-
PIs Sta 394+92.77 PI Sta 407+89.93 PIs Sta 420+66.17
 $\Theta_s = 0^\circ 44' 58.0"$ $\Delta = 18^\circ 17' 13.9" (LT)$ $\Theta_s = 0^\circ 44' 58.0"$
 $L_s = 200.00'$ $D = 0' 44' 58.0"$ $L_s = 200.00'$
 $LT = 133.33'$ $L = 2,440.07'$ $LT = 133.33'$
 $ST = 66.67'$ $T = 1,230.50'$ $ST = 66.67'$
 $R = 7,645.00'$
 $V = 75 \text{ MPH}$
 $e = 4 \%$

-Y19RPCREV-
PIs Sta 16+30.61 PI Sta 17+76.34 PIs Sta 19+22.02
 $\Theta_s = 1^\circ 14' 44.0"$ $\Delta = 3^\circ 10' 43.8" (RT)$ $\Theta_s = 1^\circ 14' 44.0"$
 $L_s = 150.00'$ $D = 1^\circ 39' 38.7"$ $L_s = 150.00'$
 $LT = 100.00'$ $L = 191.41'$ $LT = 100.00'$
 $ST = 50.00'$ $T = 95.73'$ $ST = 50.00'$
 $R = 3,450.00'$
 $V = 65 \text{ MPH}$
 $e = 5 \%$



PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 82 FOR -LREV- PROFILE.
SEE SHEET NO. 113 FOR -Y19RPBREV- PROFILE.
SEE SHEET NO. 114 FOR -Y19RPCREV- PROFILE.
SEE SHEET NO. 141 FOR -SR13REV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 23
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		



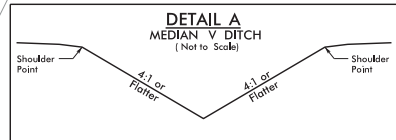
REVISIONS

MATCHLINE -LREV- STA. 429+00, SEE SHEET 24

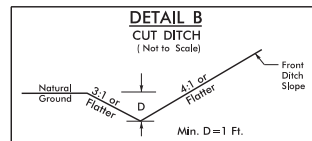
BL-577C
PINC 60+15.21=
-LREV- STA. 429+12.36 (1.17 RT)
TI - ELEV=106.54'

20

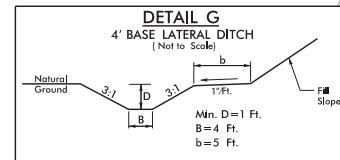
GRAY, NOAH W.
DB 677 PG 218
PC B , SLD 225



FROM STA. 429+20 -LREV- TO STA. 441+00 -LREV- M



FROM STA. 437+00 -LREV- TO STA. 437+50 -LREV- LT
FROM STA. 437+00 -LREV- TO STA. 437+50 -LREV- RT
FROM STA. 437+50 -LREV- TO STA. 442+50 -LREV- RT



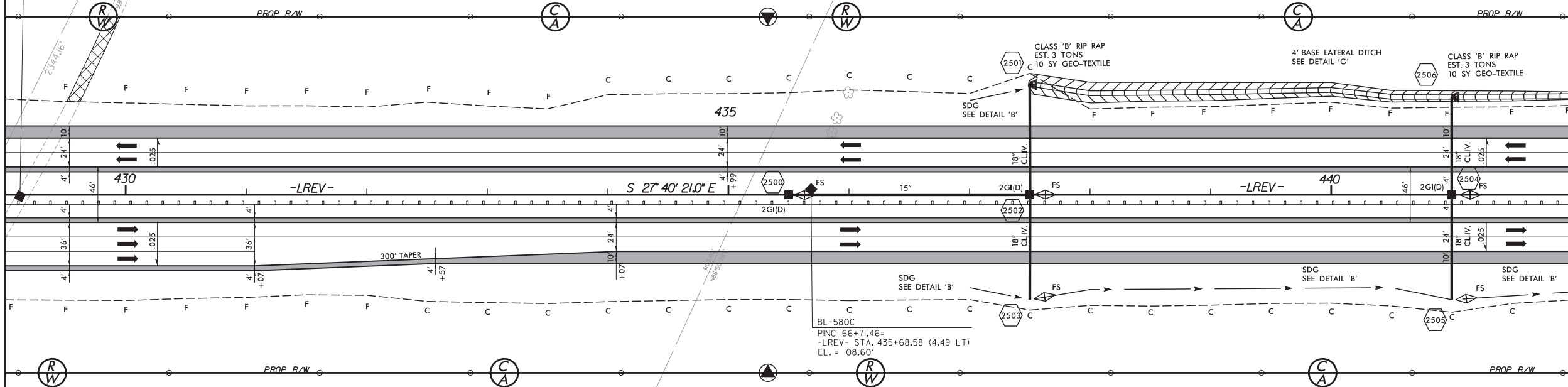
FROM STA. 437+50 -LREV- TO STA. 442+00 -LREV- LT

21

OVERMAN, JOSEPH R.
DB 1230 PG 77

22

EDWARDS, (WIDOW) BESSIE PUGH
DB 611 PG 31



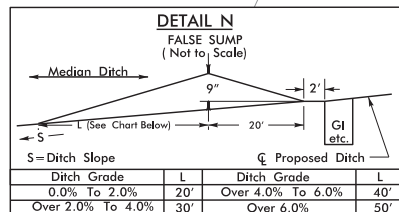
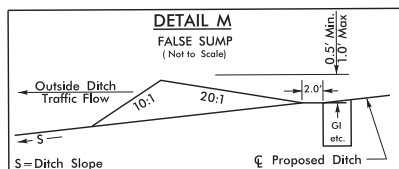
BL-580C
PINC 66+71.46=
-LREV- STA. 435+68.58 (4.49 LT)
EL. = 108.60'

21

OVERMAN, JOSEPH R.
DB 1230 PG 77

22

EDWARDS, (WIDOW) BESSIE PUGH
DB 611 PG 31

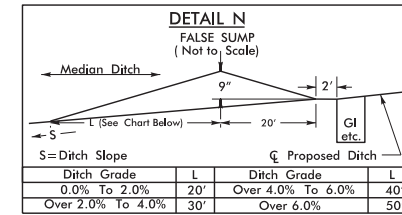
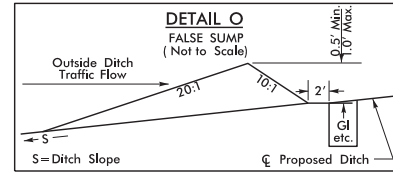
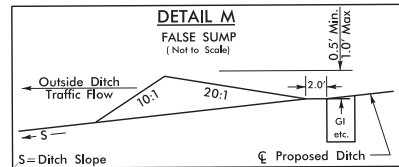
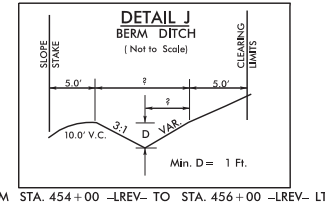
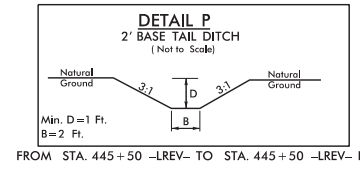
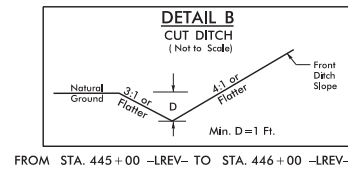
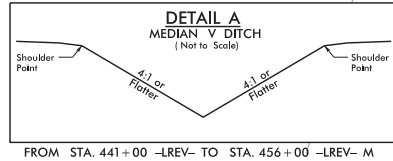
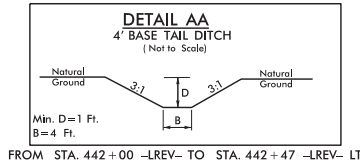
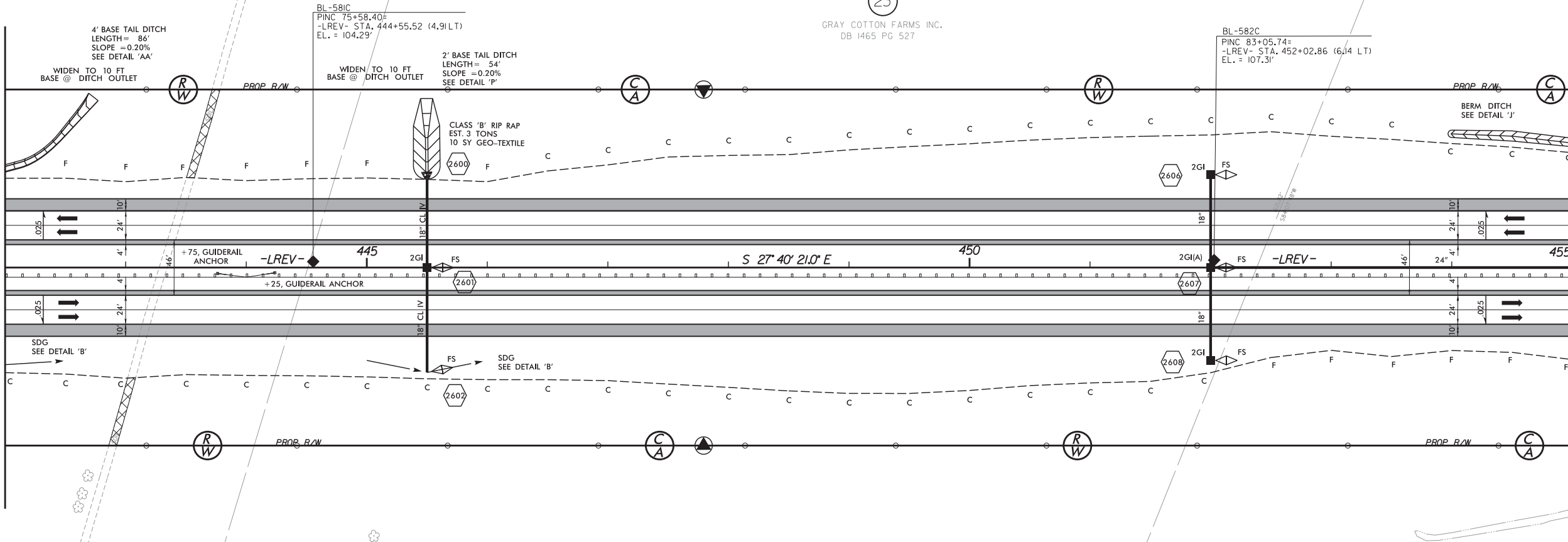


PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 83 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 25
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		
BARNHILL CONTRACTING COMPANY		

REVISIONS

MATCHLINE -LREV- STA. 442+00, SEE SHEET 25



TBM D
-BL- STA 79+51.17 292.29' LT.
ELEV.= 103.51'
TOP OF IRON ROD SET

GRAY COTTON FARMS INC.
DB 1465 PG 527

BL-582C
PINC 83+05.74=
-LREV- STA. 452+02.86 (6.14 LT)
EL. = 107.31'

JOHN H. SMITH, TRUST
DB 1565 PG 149

MATCHLINE -LREV- STA. 455+00, SEE SHEET 27

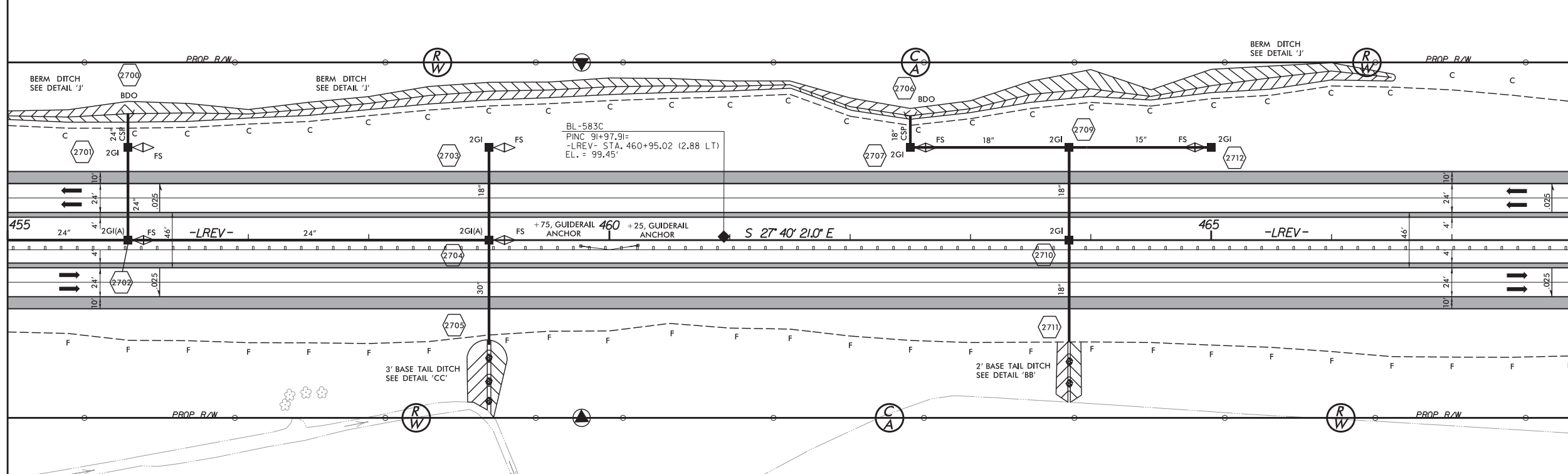
PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 84 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 26	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

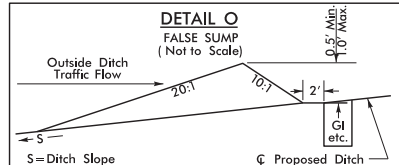
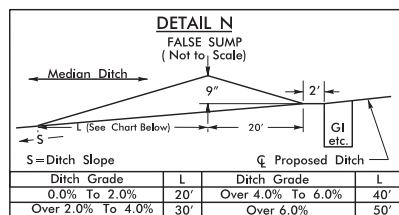
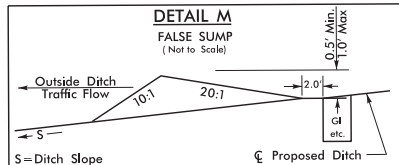
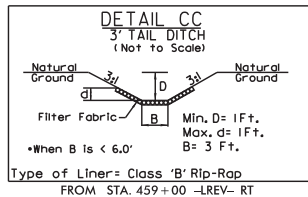
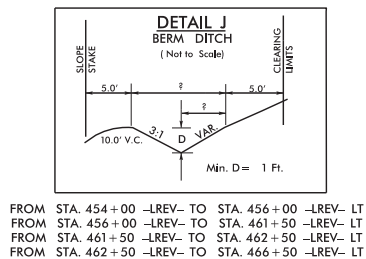
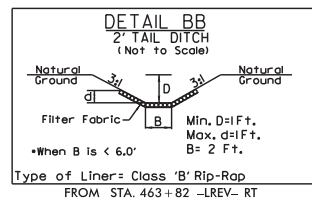
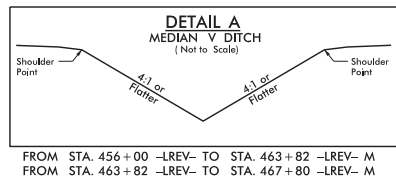
PLOT DRIVER: NCDOT_color_eng_50.plt
PENTABLE: NCDOT_pshp.flx.tbl
USER: bibby
DATE: 10/10/2012
TIME: 11:34:43 AM
FILE: \

REVISIONS

MATCHLINE -LREV- STA. 455+00, SEE SHEET 26



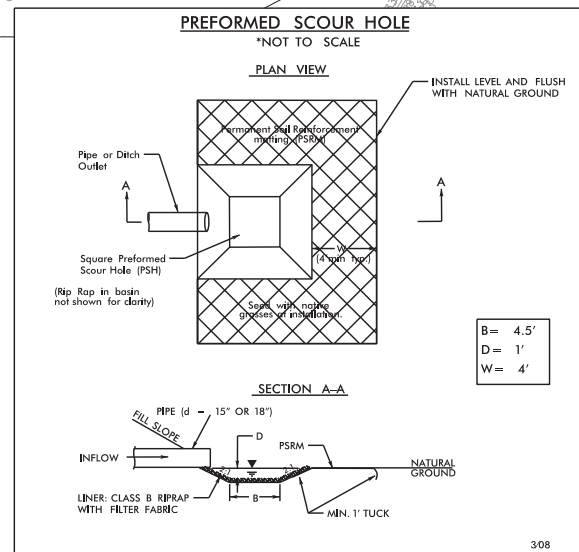
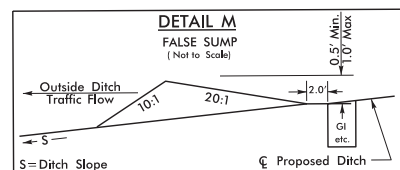
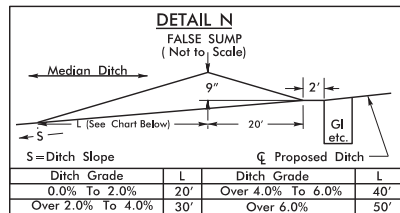
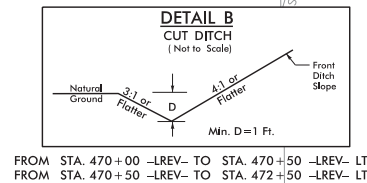
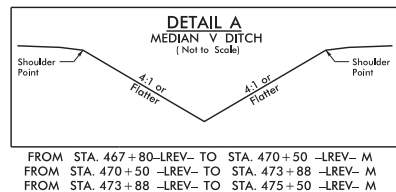
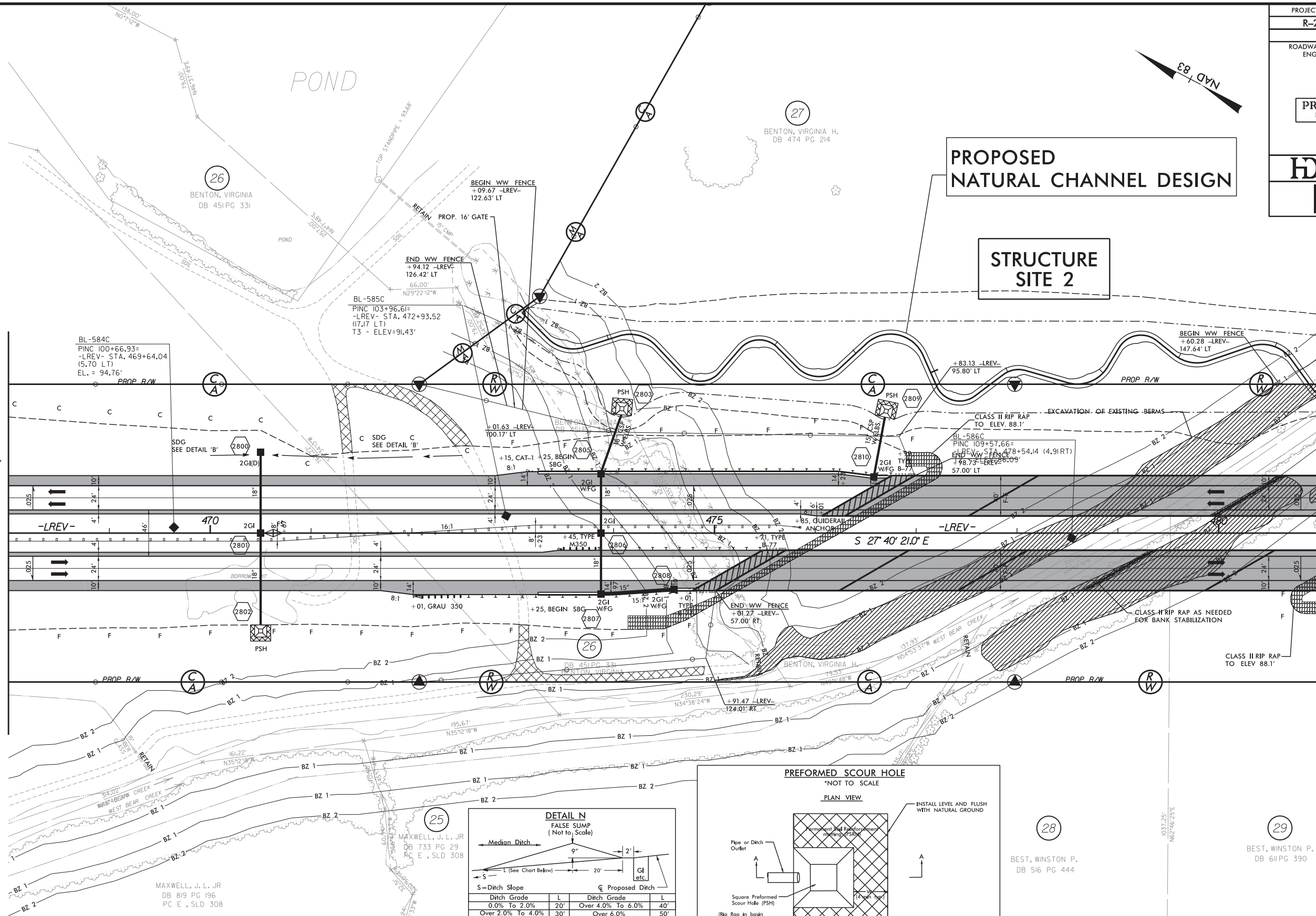
MATCHLINE -LREV- STA. 468+00, SEE SHEET 28



SEE SHEET NO. 84 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

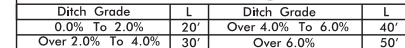
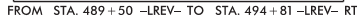
REVISIONS

MATCHLINE -LREV- STA. 468+00, SEE SHEET 27

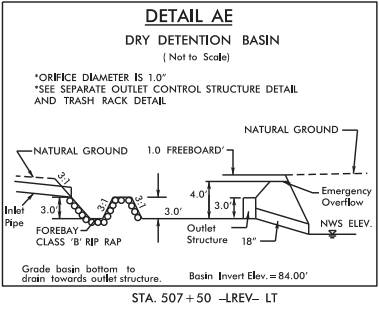


PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 85 FOR -LREV- PROFILE.
SEE SHEET NO. 2-S FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 28
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		



SEE SHEET NO. 85 FOR -LREV- PROFILE.
SEE SHEET NO. 2-S FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

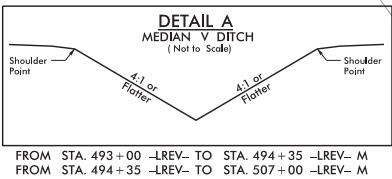
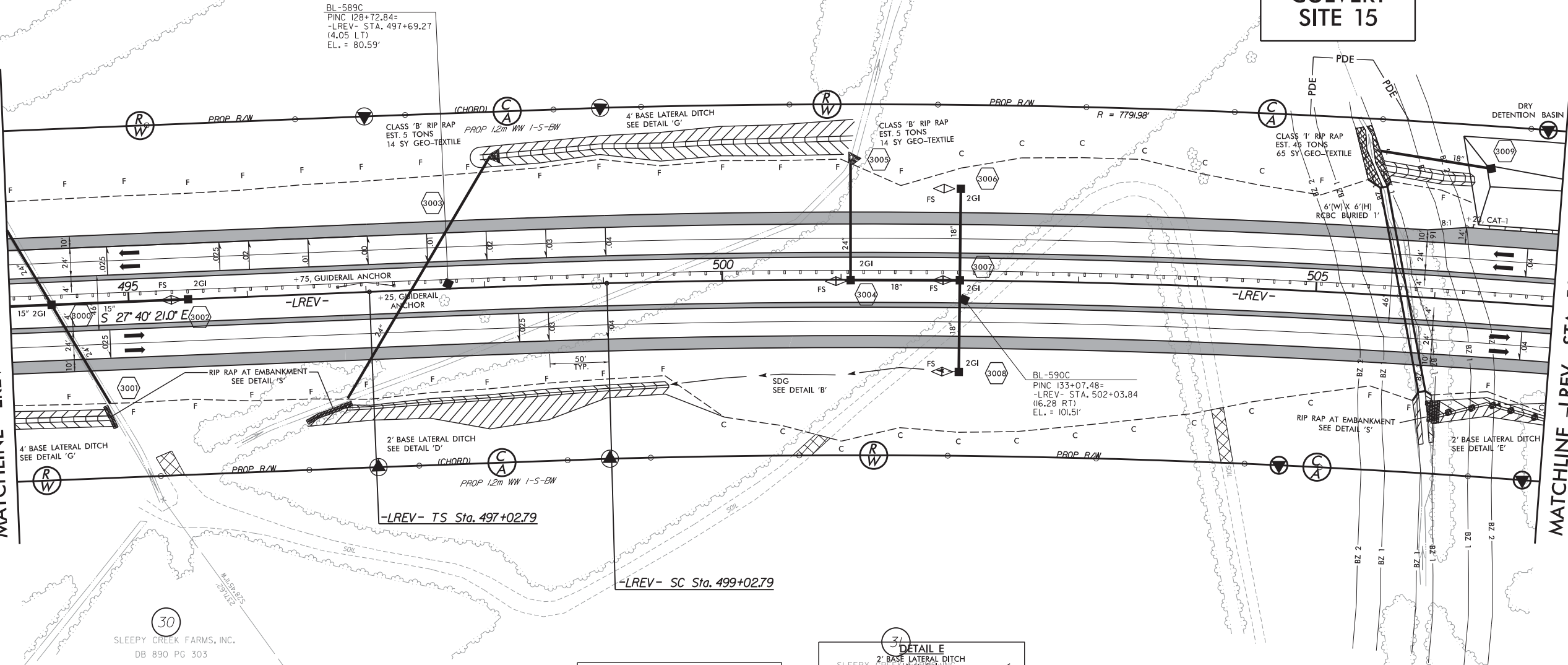


31
SLEEPY CREEK FARMS, INC.
DB 1533 PG 323
PC K, SLD 60F

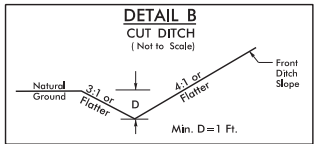
CULVERT
SITE 15

MATCHLINE -LREV- STA. 494+00, SEE SHEET 29

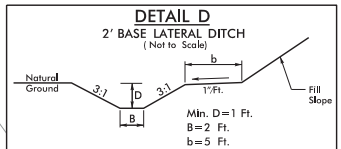
MATCHLINE -LREV- STA. 507+00, SEE SHEET 31



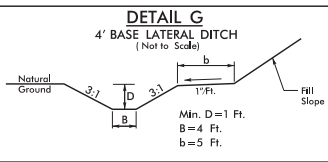
FROM STA. 493+00 -LREV- TO STA. 494+35 -LREV- M
FROM STA. 494+35 -LREV- TO STA. 507+00 -LREV- M



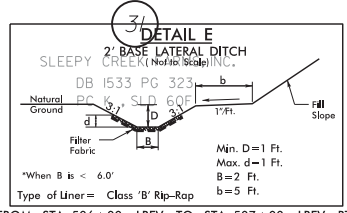
FROM STA. 499+30 -LREV- TO STA. 502+00 -LREV- RT



FROM STA. 496+50 -LREV- TO STA. 499+50 -LREV- RT



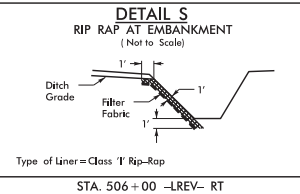
FROM STA. 498+00 -LREV- TO STA. 501+00 -LREV- LT



FROM STA. 506+00 -LREV- TO STA. 507+00 -LREV- RT

DETAIL N
FALSE SUMP
(Not to Scale)

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'



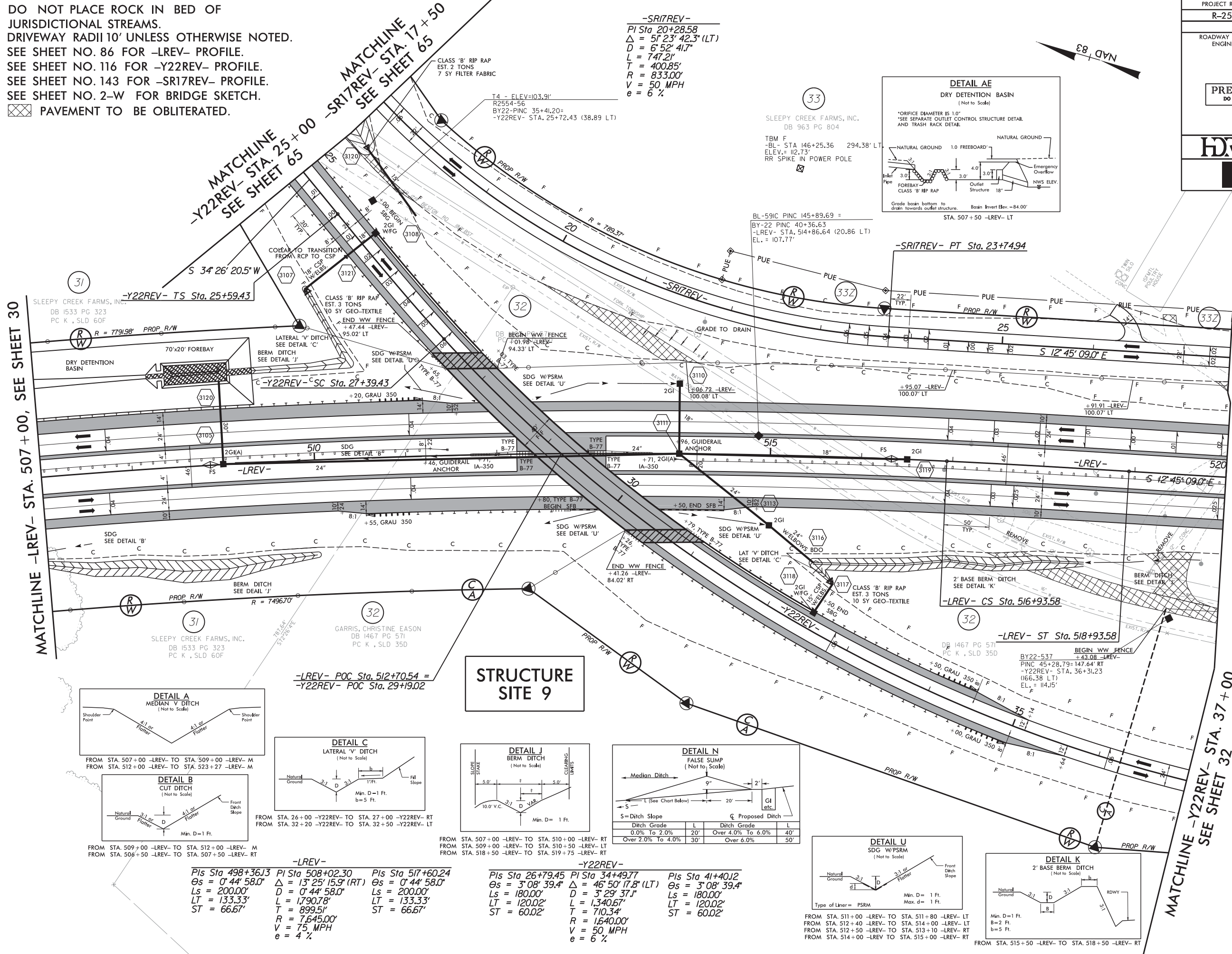
STA. 506+00 -LREV- RT

-LREV-
Pis Sta 498+36.13
Os = 0' 44' 58.0"
Ls = 200.00'
LT = 133.33'
ST = 66.67'
Pi Sta 508+02.30
Delta = 13' 25' 15.9" (RT)
D = 0' 44' 58.0"
L = 1790.78'
T = 899.51'
R = 7645.00'
V = 75 MPH
e = 4 %
Pis Sta 517+60.24
Os = 0' 44' 58.0"
Ls = 200.00'
LT = 133.33'
ST = 66.67'

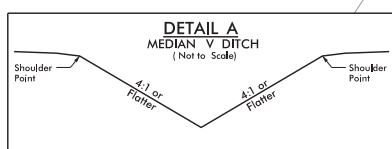
PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 86 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 86 FOR -LREV- PROFILE.
SEE SHEET NO. 116 FOR -Y22REV- PROFILE.
SEE SHEET NO. 143 FOR -SR17REV- PROFILE.
SEE SHEET NO. 2-W FOR BRIDGE SKETCH.
PAVEMENT TO BE OBLITERATED.

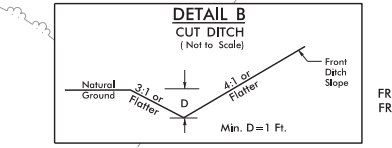
PROJECT REFERENCE NO.		SHEET NO.	
R-2554BB&C		31	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			



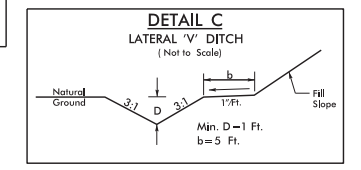
STRUCTURE SITE 9



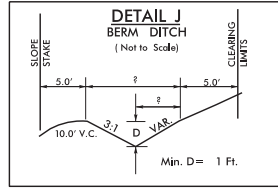
FROM STA. 507+00 -LREV- TO STA. 509+00 -LREV- M
FROM STA. 512+00 -LREV- TO STA. 523+27 -LREV- M



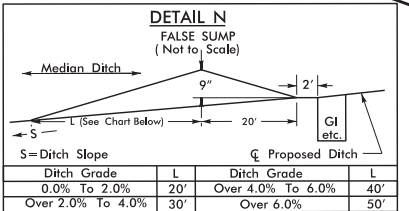
FROM STA. 509+00 -LREV- TO STA. 512+00 -LREV- M
FROM STA. 506+50 -LREV- TO STA. 507+50 -LREV- RT



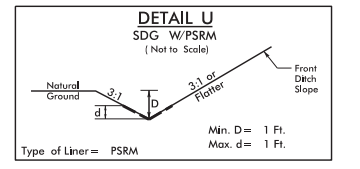
FROM STA. 26+00 -Y22REV- TO STA. 27+00 -Y22REV- RT
FROM STA. 32+20 -Y22REV- TO STA. 32+50 -Y22REV- LT



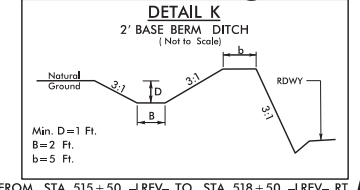
FROM STA. 507+00 -LREV- TO STA. 510+00 -LREV- RT
FROM STA. 509+00 -LREV- TO STA. 510+50 -LREV- LT
FROM STA. 518+50 -LREV- TO STA. 519+75 -LREV- RT



FROM STA. 507+00 -LREV- TO STA. 510+00 -LREV- RT
FROM STA. 509+00 -LREV- TO STA. 510+50 -LREV- LT
FROM STA. 518+50 -LREV- TO STA. 519+75 -LREV- RT



FROM STA. 511+00 -LREV- TO STA. 511+80 -LREV- LT
FROM STA. 512+40 -LREV- TO STA. 514+00 -LREV- LT
FROM STA. 512+50 -LREV- TO STA. 513+10 -LREV- RT
FROM STA. 514+00 -LREV- TO STA. 515+00 -LREV- RT



FROM STA. 515+50 -LREV- TO STA. 518+50 -LREV- RT

-LREV-
Pls Sta 498+36.13
Os = 0' 44' 58.0"
Ls = 200.00'
LT = 133.33'
ST = 66.67'

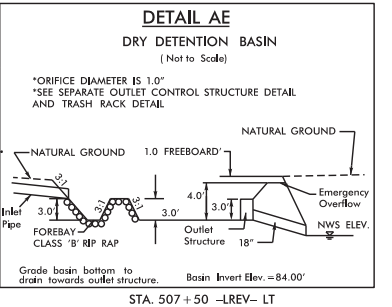
Pls Sta 508+02.30
Os = 13' 25' 15.9" (RT)
Ls = 0' 44' 58.0"
L = 1,790.78'
T = 899.51'
R = 7,645.00'
V = 75 MPH
e = 4 %

Pls Sta 517+60.24
Os = 0' 44' 58.0"
Ls = 200.00'
LT = 133.33'
ST = 66.67'

-Y22REV-
Pls Sta 26+79.45
Os = 3' 08' 39.4"
Ls = 180.00'
LT = 120.02'
ST = 60.02'

Pls Sta 34+49.77
Os = 46' 50' 17.8" (LT)
Ls = 3' 29' 37.1"
L = 1,340.67'
T = 710.34'
R = 1,640.00'
V = 50 MPH
e = 6 %

Pls Sta 41+40.12
Os = 3' 08' 39.4"
Ls = 180.00'
LT = 120.02'
ST = 60.02'



FROM STA. 507+50 -LREV- LT

DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

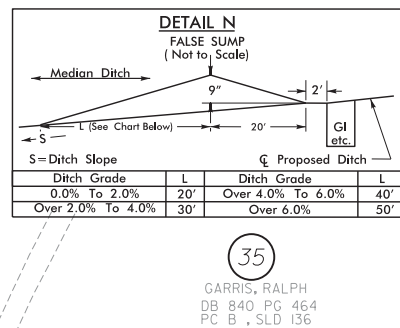
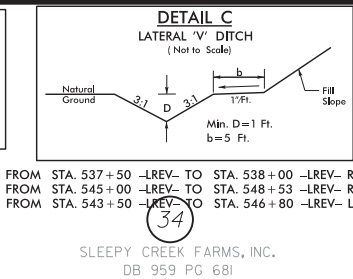
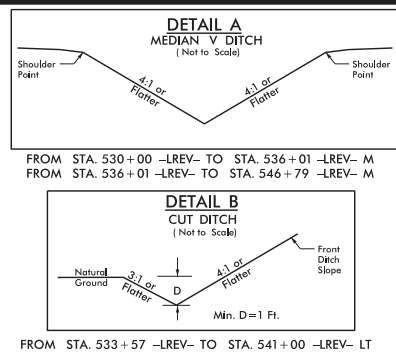
REVISIONS

MATCHLINE
-Y22REV- STA. 50+00, SEE SHEET 32

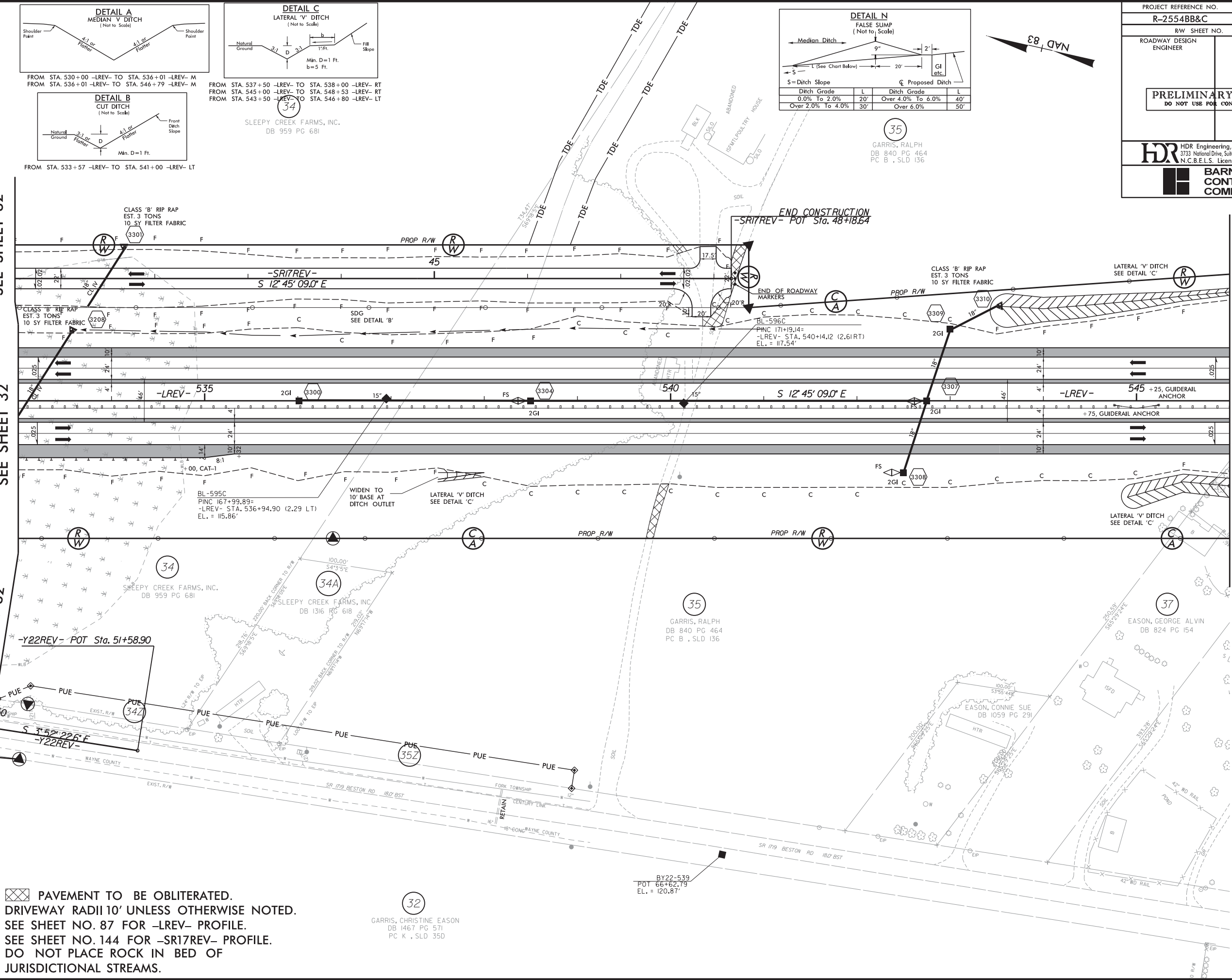
MATCHLINE
-LREV- STA. 533+00
SEE SHEET 32

MATCHLINE
-SR17REV- STA. 40+50
SEE SHEET 32

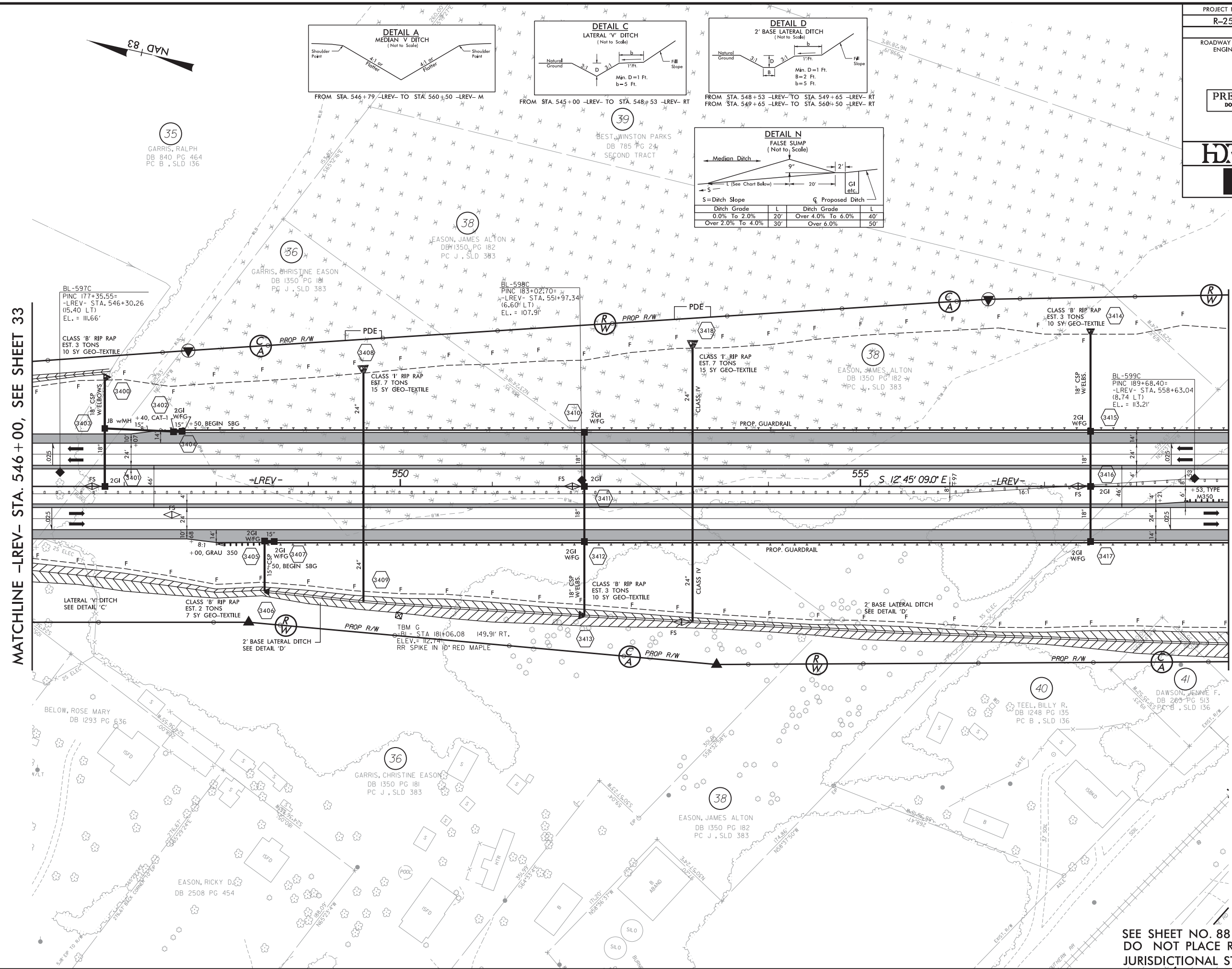
PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 87 FOR -LREV- PROFILE.
SEE SHEET NO. 144 FOR -SR17REV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 33
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		
BARNHILL CONTRACTING COMPANY		



MATCHLINE -LREV- STA. 546+00, SEE SHEET 34



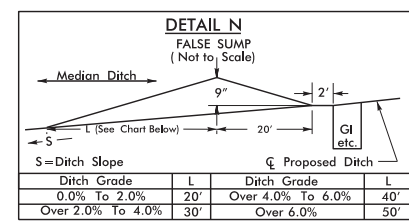
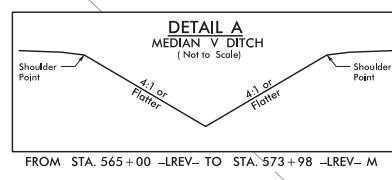
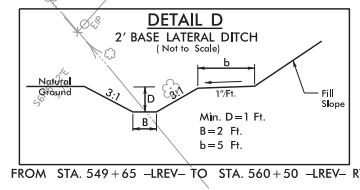
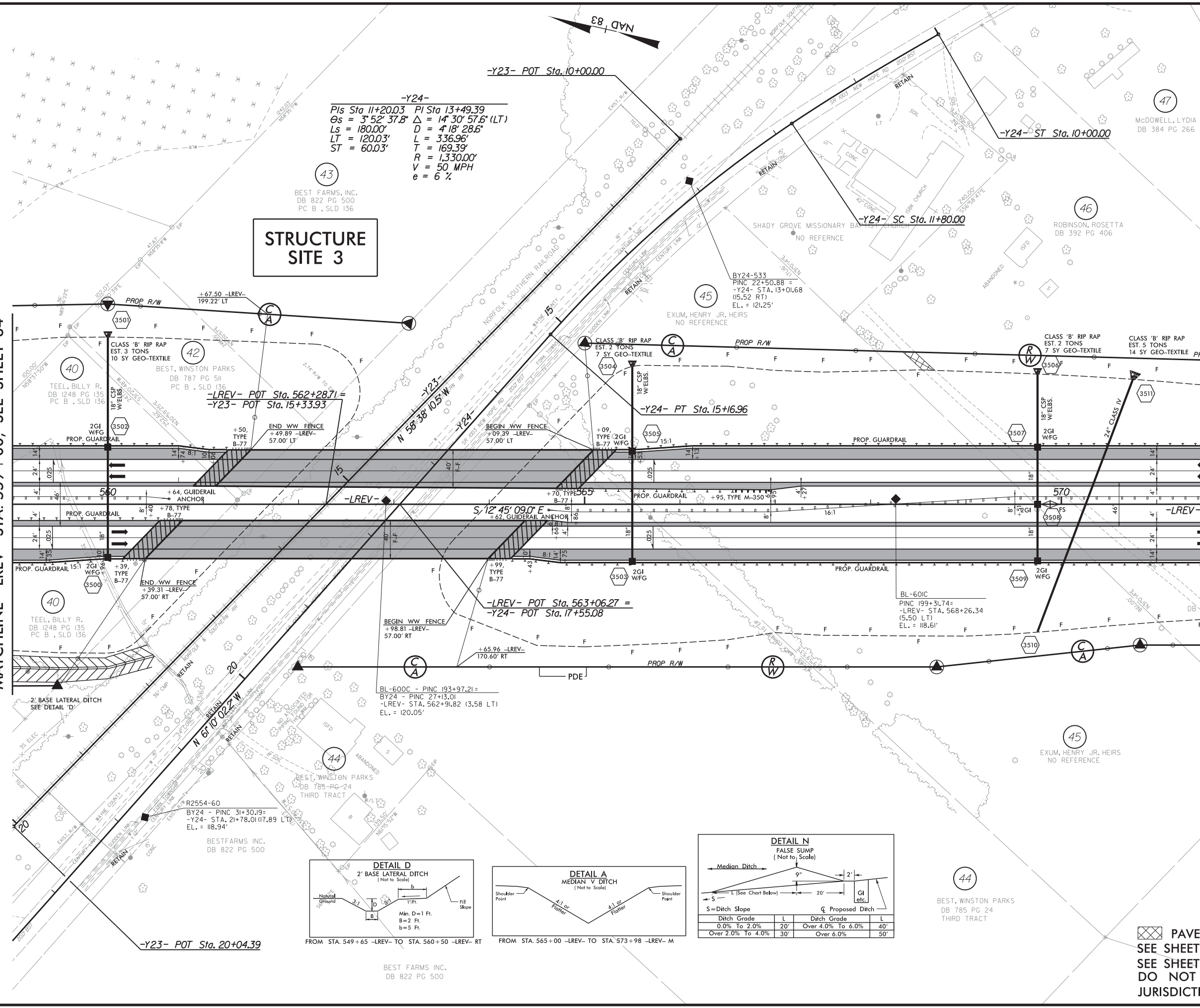
SEE SHEET NO. 88 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PLOT DRIVER: NCDOT_color_eng_50.plt
USER: bibby
DATE: 10/10/2012
TIME: 11:42:18 AM
FILE: \

REVISIONS

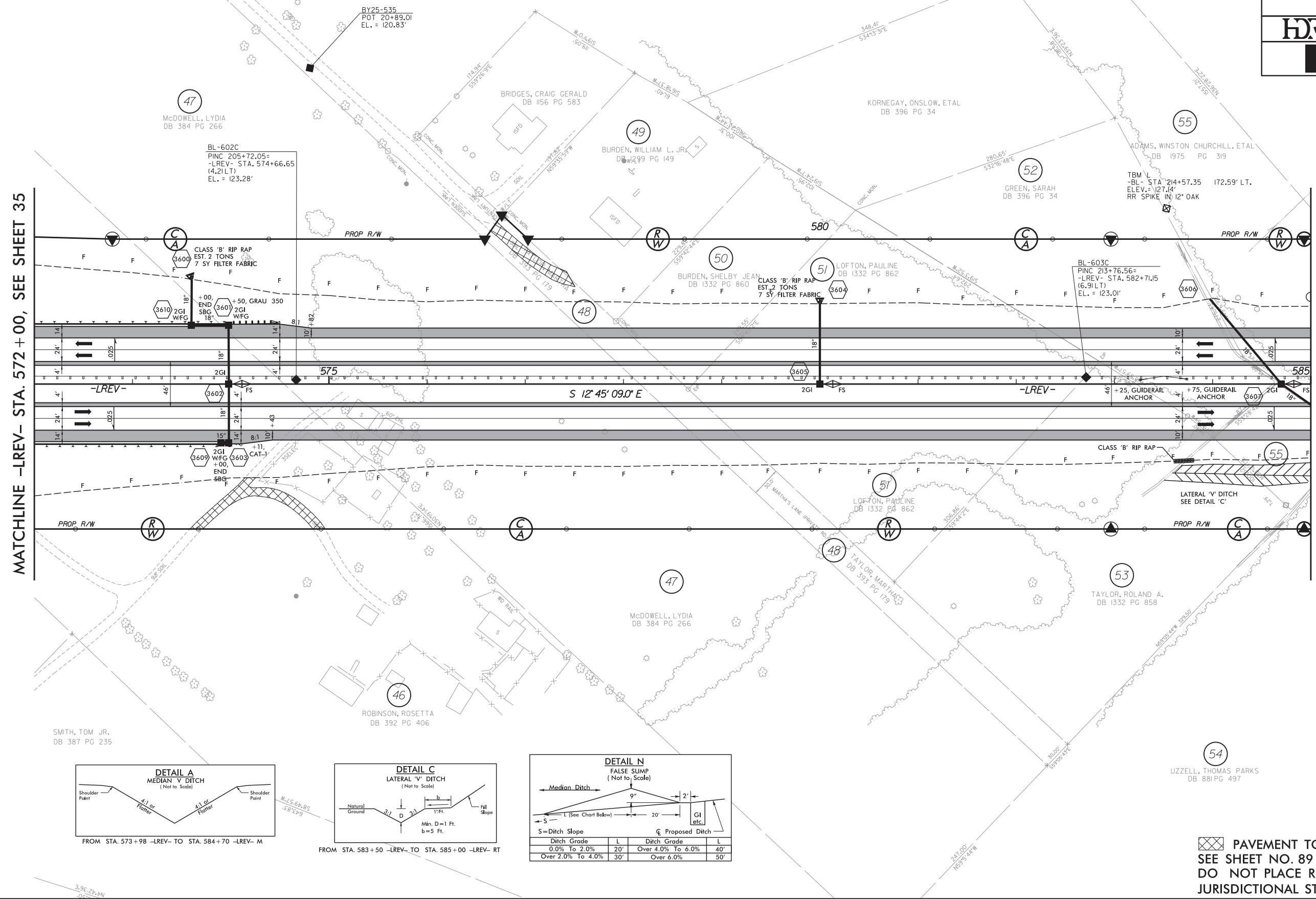
MATCHLINE -LREV- STA. 559 + 00, SEE SHEET 34

MATCHLINE -LREV- STA. 572 + 00, SEE SHEET 36



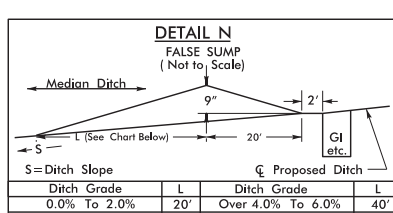
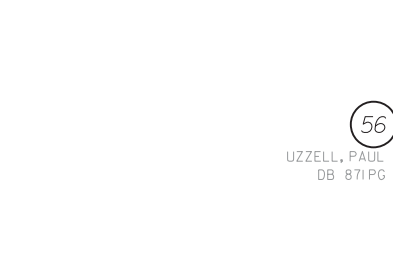
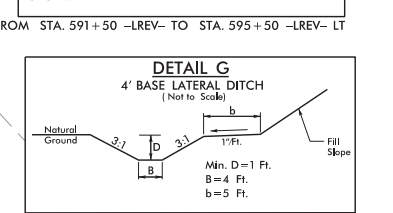
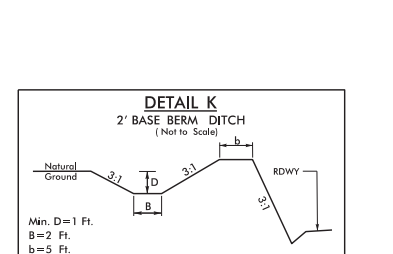
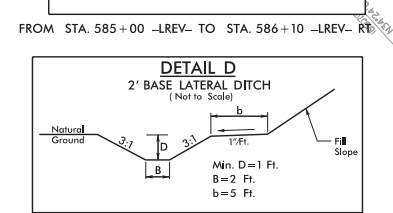
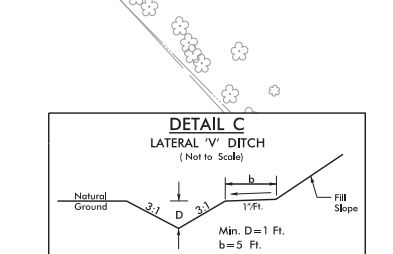
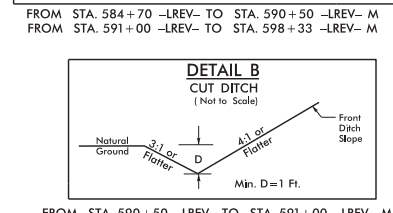
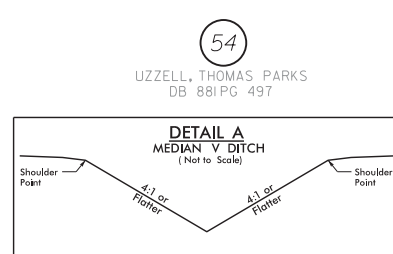
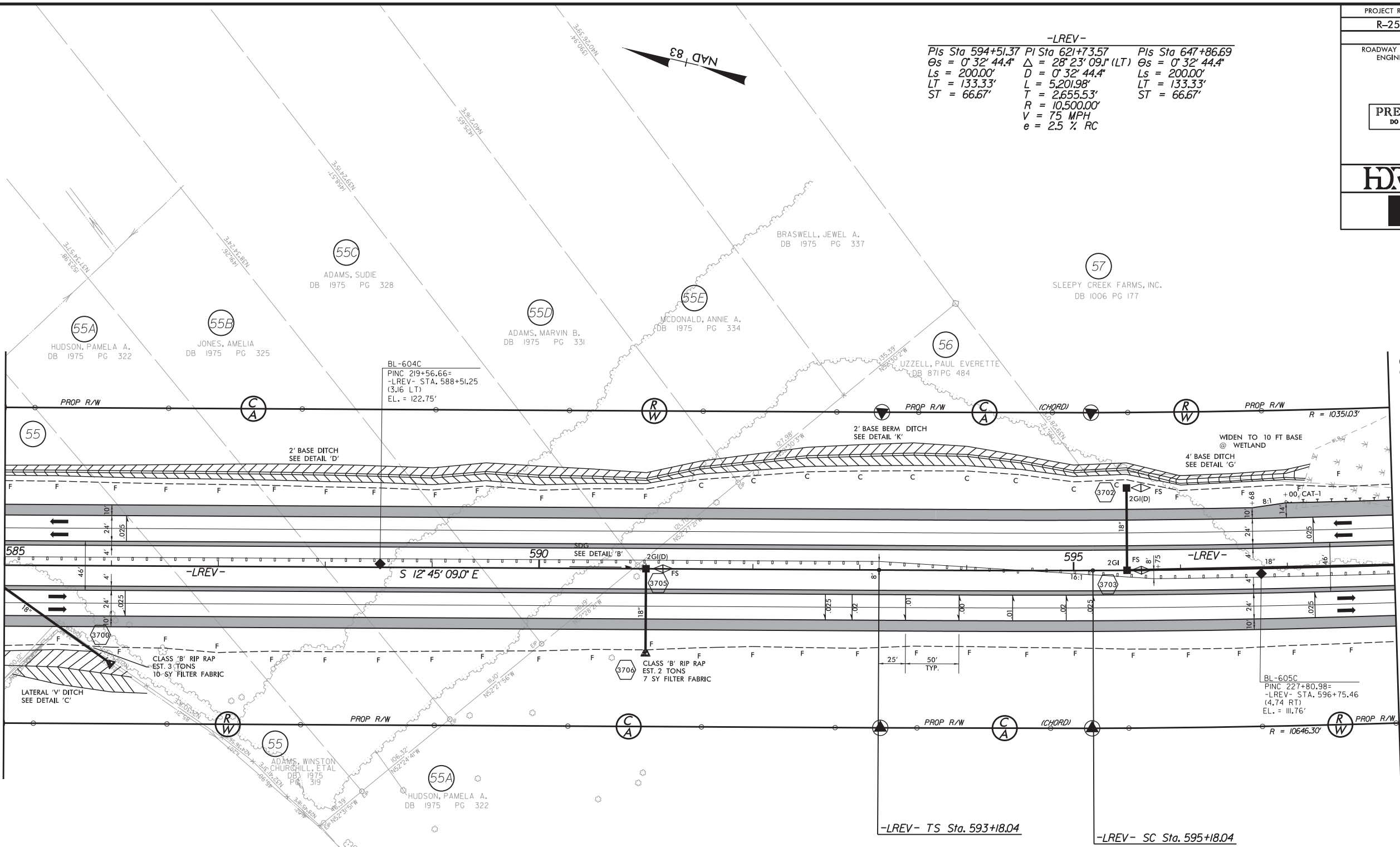
PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 88 FOR -LREV- PROFILE.
SEE SHEET NO. 2-T FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 35
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		
BARNHILL CONTRACTING COMPANY		



 PAVEMENT TO BE OBLITERATED.
 SEE SHEET NO. 89 FOR -LREV- PROFILE.
 DO NOT PLACE ROCK IN BED OF
 JURISDICTIONAL STREAMS.

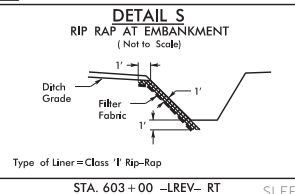
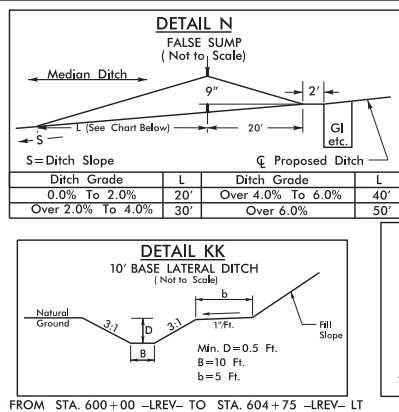
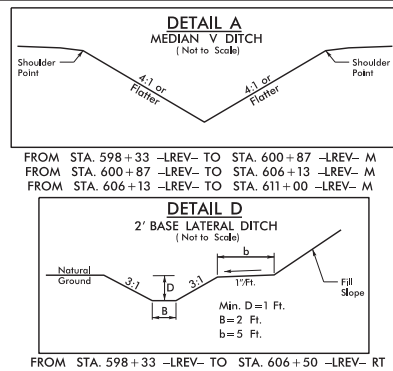
<i>Pls Sta</i> 594+51.37	<i>Pl Sta</i> 621+73.57	<i>Pls Sta</i> 647+86.69
<i>Θs</i> = 0° 32' 44.4"	<i>Δ</i> = 28° 23' 09.1" (LT)	<i>Θs</i> = 0° 32' 44.4"
<i>Ls</i> = 200.00'	<i>D</i> = 0° 32' 44.4"	<i>Ls</i> = 200.00'
<i>LT</i> = 133.33'	<i>L</i> = 5,201.98'	<i>LT</i> = 133.33'
<i>ST</i> = 66.67'	<i>T</i> = 2,655.53'	<i>ST</i> = 66.67'
	<i>R</i> = 10,500.00'	
	<i>V</i> = 75 MPH	
	<i>e</i> = 2.5 % RC	



SEE SHEET NO. 89 FOR -LREV- PROFILE
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS

REVISIONS

MATCHLINE -LREV- STA. 598+00, SEE SHEET 37

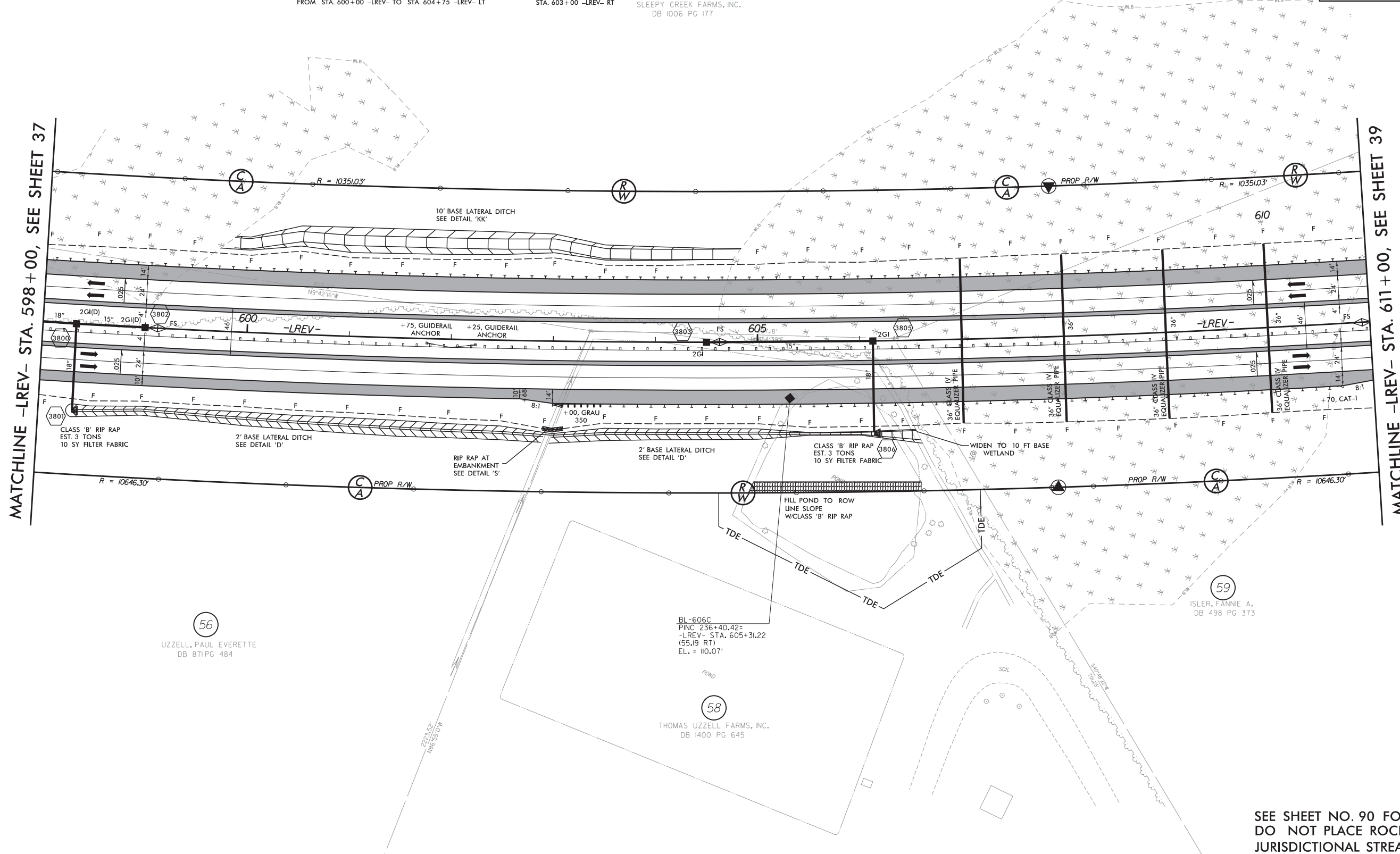


-LREV-

Pls Sta 594+51.37 PI Sta 621+73.57 Pls Sta 647+86.69
 $\theta_s = 0^\circ 32' 44.4''$ $\Delta = 28^\circ 23' 09.1''$ (LT) $\theta_s = 0^\circ 32' 44.4''$
 $L_s = 200.00'$ $D = 0^\circ 32' 44.4''$ $L_s = 200.00'$
 $LT = 133.33'$ $L = 5201.98'$ $LT = 133.33'$
 $ST = 66.67'$ $R = 2,655.53'$ $ST = 66.67'$
 $V = 75$ MPH
 $e = 2.5\%$ RC



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 38
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
BARNHILL CONTRACTING COMPANY		



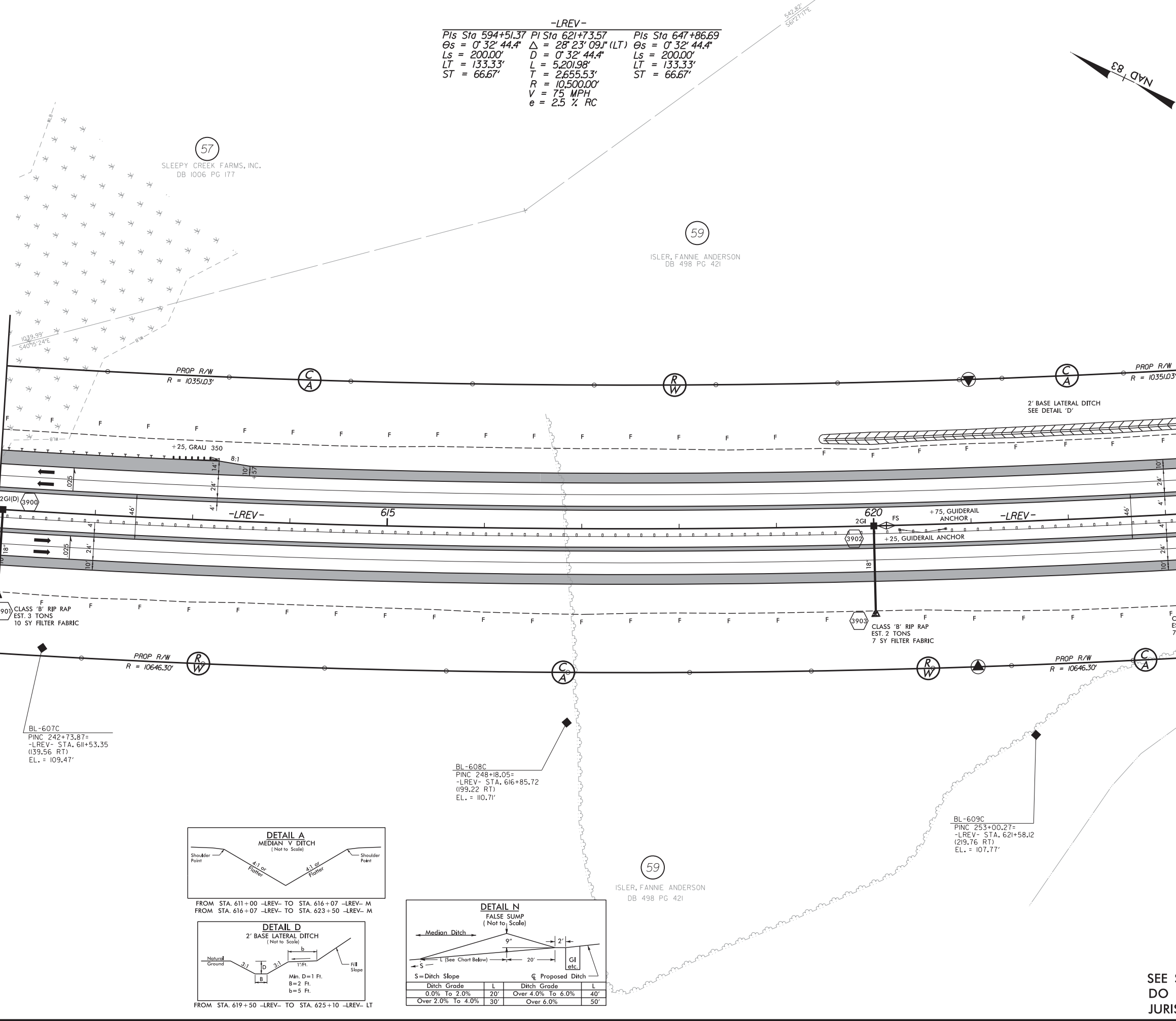
MATCHLINE -LREV- STA. 611+00, SEE SHEET 39

SEE SHEET NO. 90 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

REVISIONS

MATCHLINE -LREV- STA. 611+00, SEE SHEET 38

MATCHLINE -LREV- STA. 624+00, SEE SHEET 40

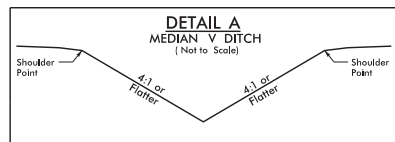


-LREV-
Pls Sta 594+51.37 PI Sta 621+73.57 Pls Sta 647+86.69
 $\theta_s = 0^\circ 32' 44.4''$ $\Delta = 28^\circ 23' 09.1''$ (LT) $\theta_s = 0^\circ 32' 44.4''$
 $L_s = 200.00'$ $D = 0^\circ 32' 44.4''$ $L_s = 200.00'$
 $LT = 133.33'$ $L = 5,201.98'$ $LT = 133.33'$
 $ST = 66.67'$ $T = 2655.53'$ $ST = 66.67'$
 $R = 10,500.00'$
 $V = 75$ MPH
 $e = 2.5 \frac{1}{2} RC$

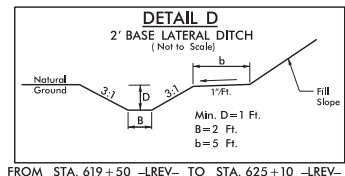
BL-607C
PINC 242+73.87=
-LREV- STA. 611+53.35
(139.56 RT)
EL. = 109.47'

BL-608C
PINC 248+18.05=
-LREV- STA. 616+85.72
(199.22 RT)
EL. = 110.71'

BL-609C
PINC 253+00.27=
-LREV- STA. 621+58.12
(219.76 RT)
EL. = 107.77'



FROM STA. 611+00 -LREV- TO STA. 616+07 -LREV- M
FROM STA. 616+07 -LREV- TO STA. 623+50 -LREV- M



FROM STA. 619+50 -LREV- TO STA. 625+10 -LREV- LT

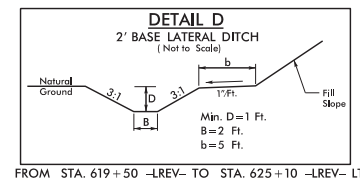
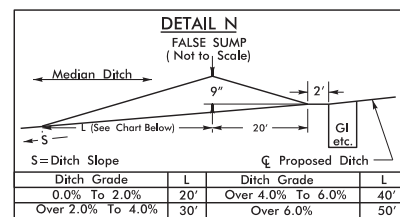
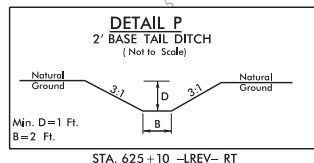
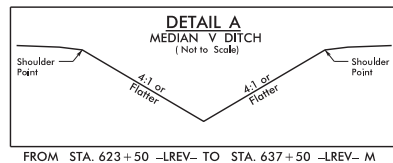
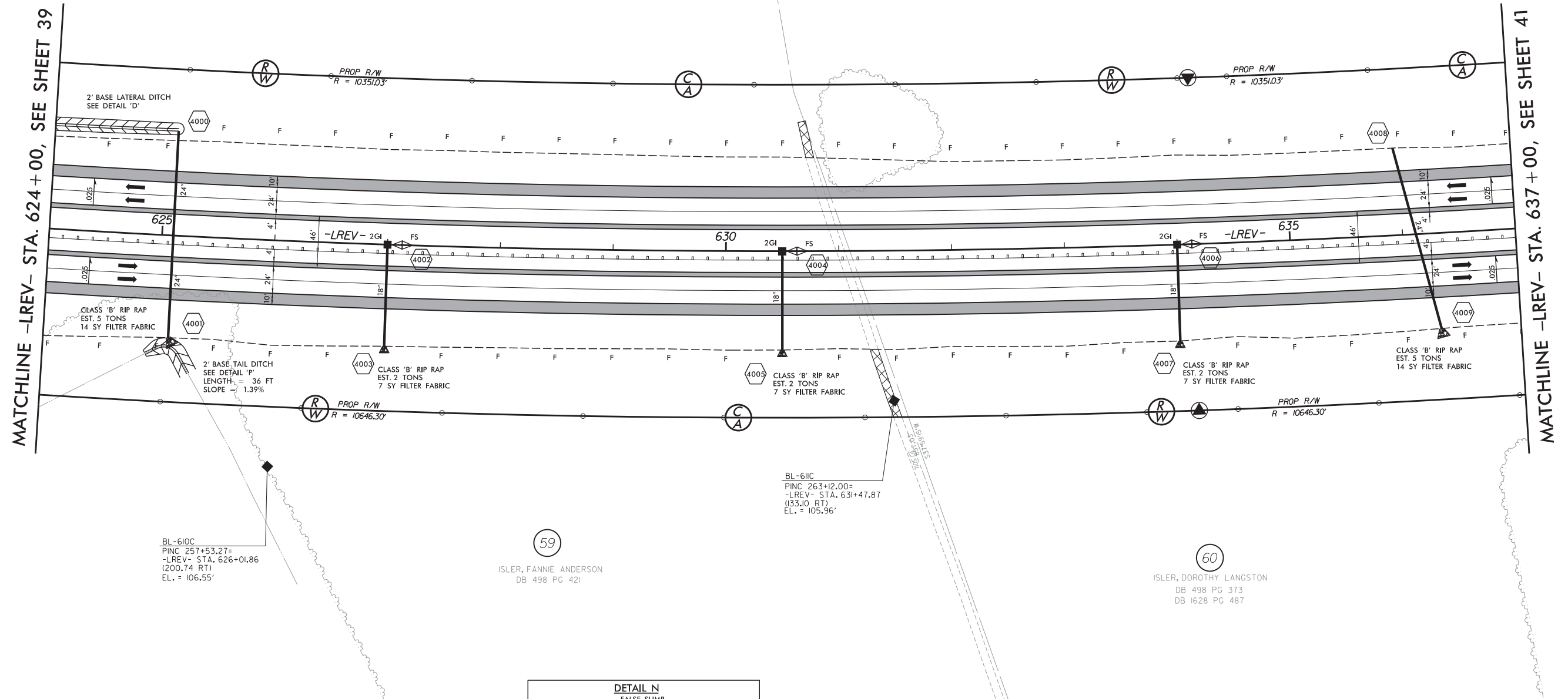
DETAIL N
FALSE SUMP
(Not to Scale)

Median Ditch
9'
2'
L (See Chart Below)
S=Ditch Slope
C Proposed Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

SEE SHEET NO. 90 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

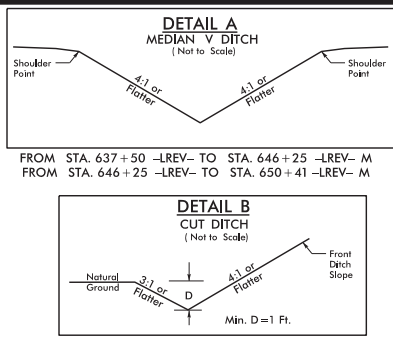
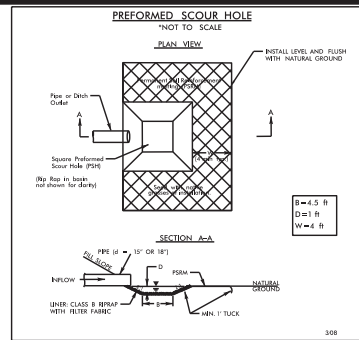
-LREV-		
<i>Pls</i> <i>Sta</i> 594+51.37	<i>Pl</i> <i>Sta</i> 621+37.57	<i>Pls</i> <i>Sta</i> 647+86.69
<i>Θs</i> = 0° 32' 44.4"	<i>Δ</i> = 28° 23' 09.1" (LT)	<i>Θs</i> = 0° 32' 44.4"
<i>Ls</i> = 200.00'	<i>D</i> = 0° 32' 44.4"	<i>Ls</i> = 200.00'
<i>LT</i> = 133.33'	<i>L</i> = 5,201.98'	<i>LT</i> = 133.33'
<i>ST</i> = 66.67'	<i>T</i> = 2,655.53'	<i>ST</i> = 66.67'
	<i>R</i> = 10,500.00'	
	<i>v</i> = 75 MPH	
	<i>e</i> = 2.5 % RC	



 PAVEMENT TO BE OBLITERATED.
 SEE SHEET NO. 91 FOR -LREV- PROFILE.
 DO NOT PLACE ROCK IN BED OF
 JURISDICTIONAL STREAMS.

REVISIONS

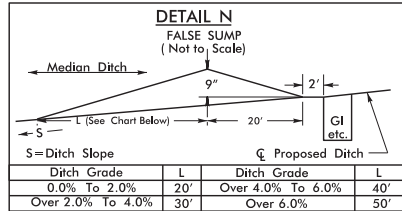
MATCHLINE -LREV- STA. 637+00, SEE SHEET 40



-LREV-

Pis Sta 594+51.37 PI Sta 621+73.57
Os = 0° 32' 44.4" Δ = 28° 23' 09.1" (LT)
Ls = 200.00' D = 0° 32' 44.4"
LT = 133.33' L = 5201.98'
ST = 66.67' T = 2,655.53'
R = 10,500.00'
V = 75 MPH
e = 2.5 % RC

Pis Sta 647+86.69
Os = 0° 32' 44.4"
Ls = 200.00'
LT = 133.33'
ST = 66.67'



BL-612C
PINC 272+64.89=
-LREV- STA. 640+87.71
(22.75 RT)
EL. = 104.71'

**CULVERT
SITE 16**

ISLER, DOROTHY LANGSTON
DB 498 PG 373
DB 1628 PG 487

ISLER, DOROTHY LANGSTON
DB 498 PG 373
DB 1628 PG 487

VINSON, BILLY RAY
DB 1564 PG 897

VINSON, BILLY RAY
DB 1564 PG 897

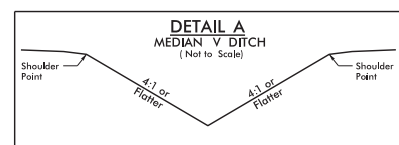
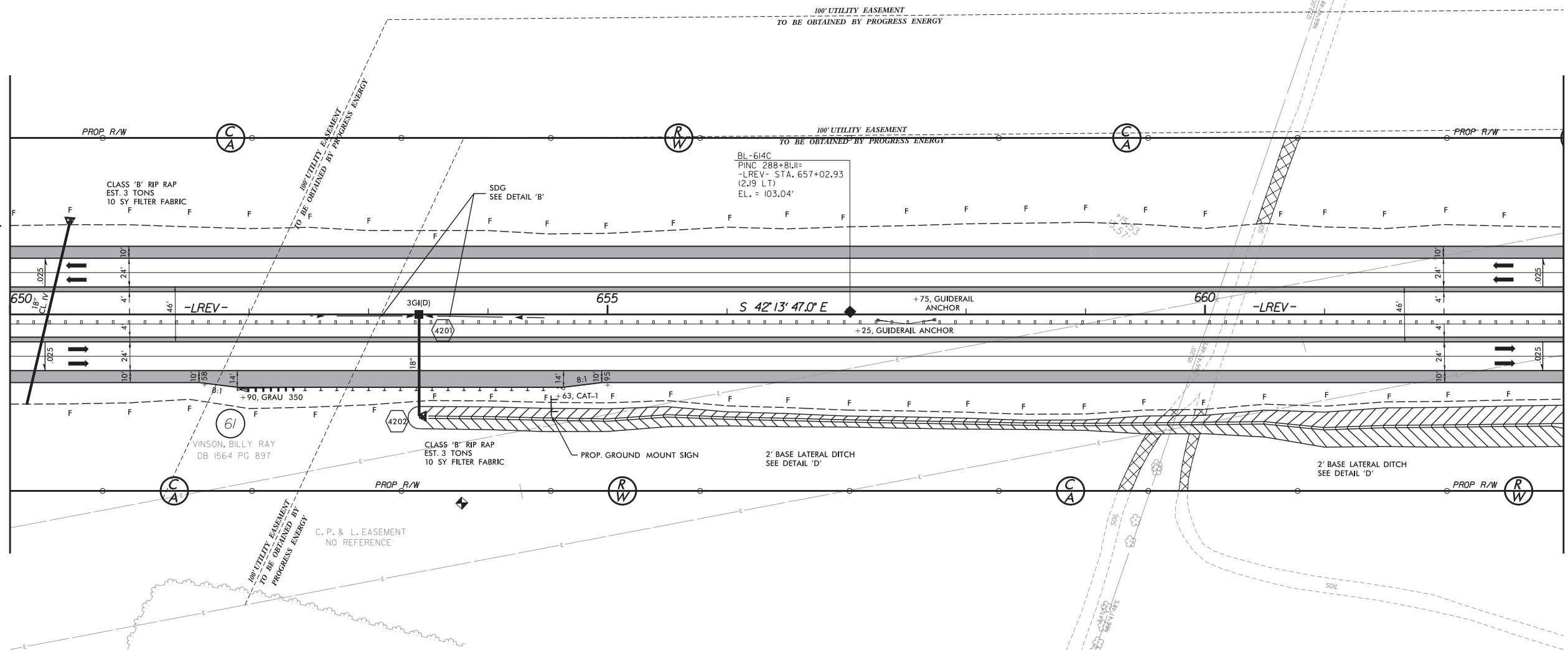
VINSON, BILLY RAY
DB 1564 PG 897

SEE SHEET NO. 91 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

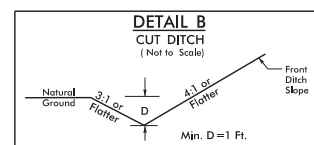
PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 41
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		
BARNHILL CONTRACTING COMPANY		

MATCHLINE -LREV- STA. 650+00, SEE SHEET 41

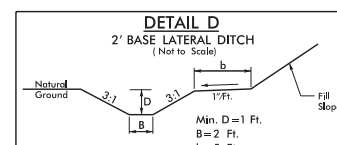
MATCHLINE -LREV- STA. 663+00, SEE SHEET 43



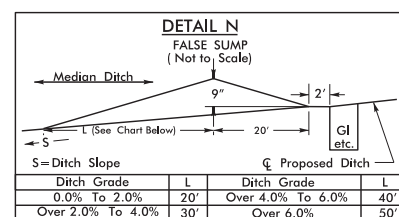
FROM STA. 650+41 -LREV-	TO STA. 652+50 -LREV-	M
FROM STA. 654+50 -LREV-	TO STA. 659+35 -LREV-	M
FROM STA. 659+35 -LREV-	TO STA. 664+50 -LREV-	M



FROM STA. 652+50 -LREV- TO STA. 653+42 -LREV- M
FROM STA. 653+42 -LREV- TO STA. 654+50 -LREV- M



FROM STA. 653+42 -LREV- TO STA. 663+00 -LREV- RT



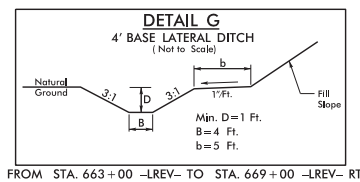
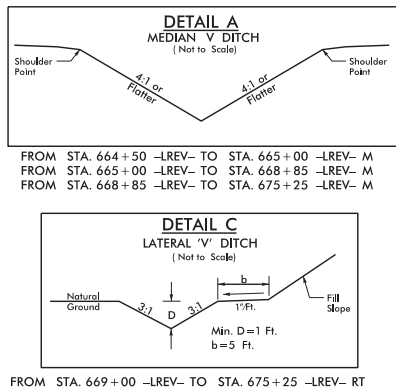
Ditch Grade		L	
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

 PAVEMENT TO BE OBLITERATED.
 SEE SHEET NO. 92 FOR -LREV- PROFILE.
 DO NOT PLACE ROCK IN BED OF
 JURISDICTIONAL STREAMS.

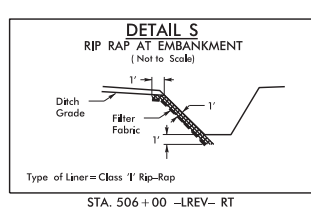
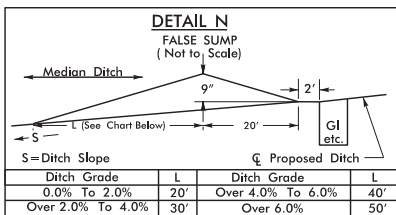
REVISIONS

MATCHLINE -LREV- STA. 663+00, SEE SHEET 42

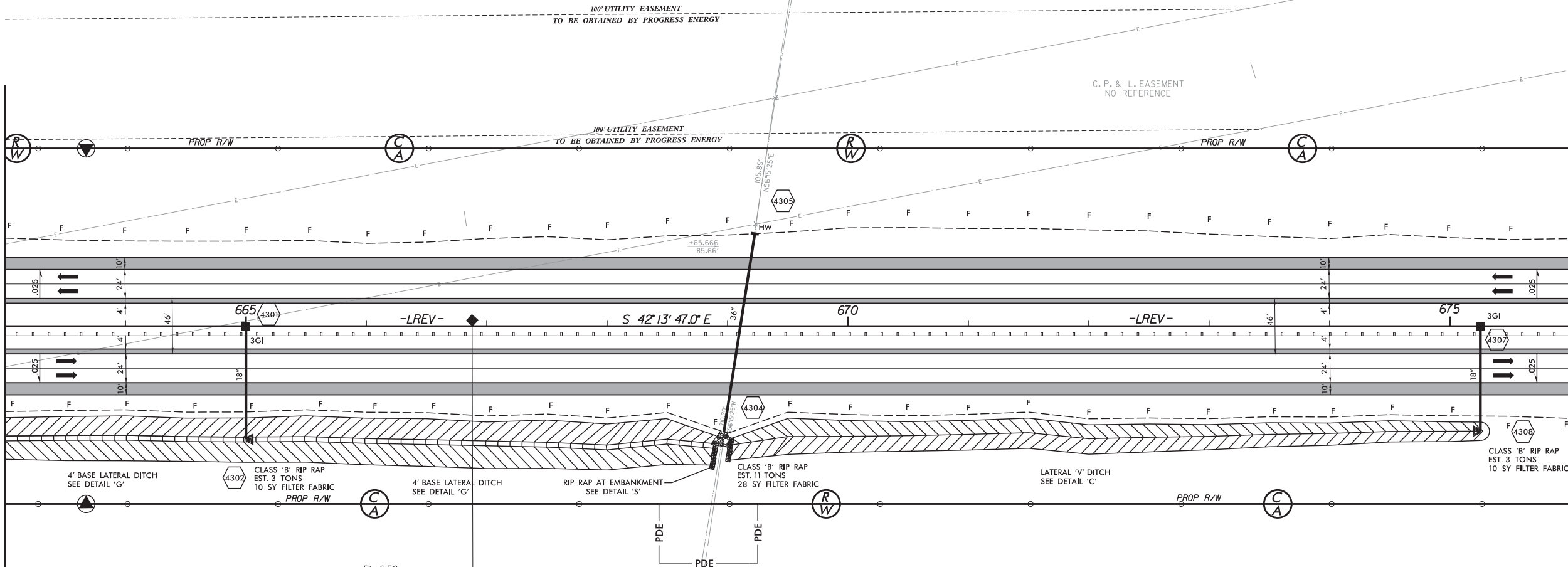
MATCHLINE -LREV- STA. 676+00, SEE SHEET 44



62
WHITFIELD, JAMES W.
DB 552 PG 542



63
MOORING, MARTHA G.
DB 1265 PG 761



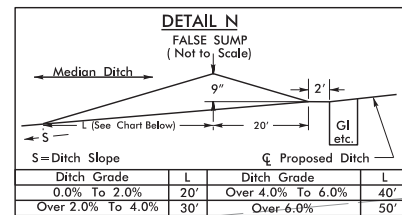
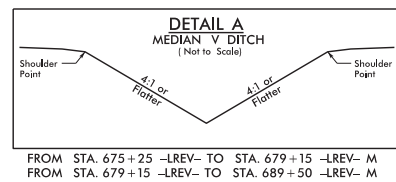
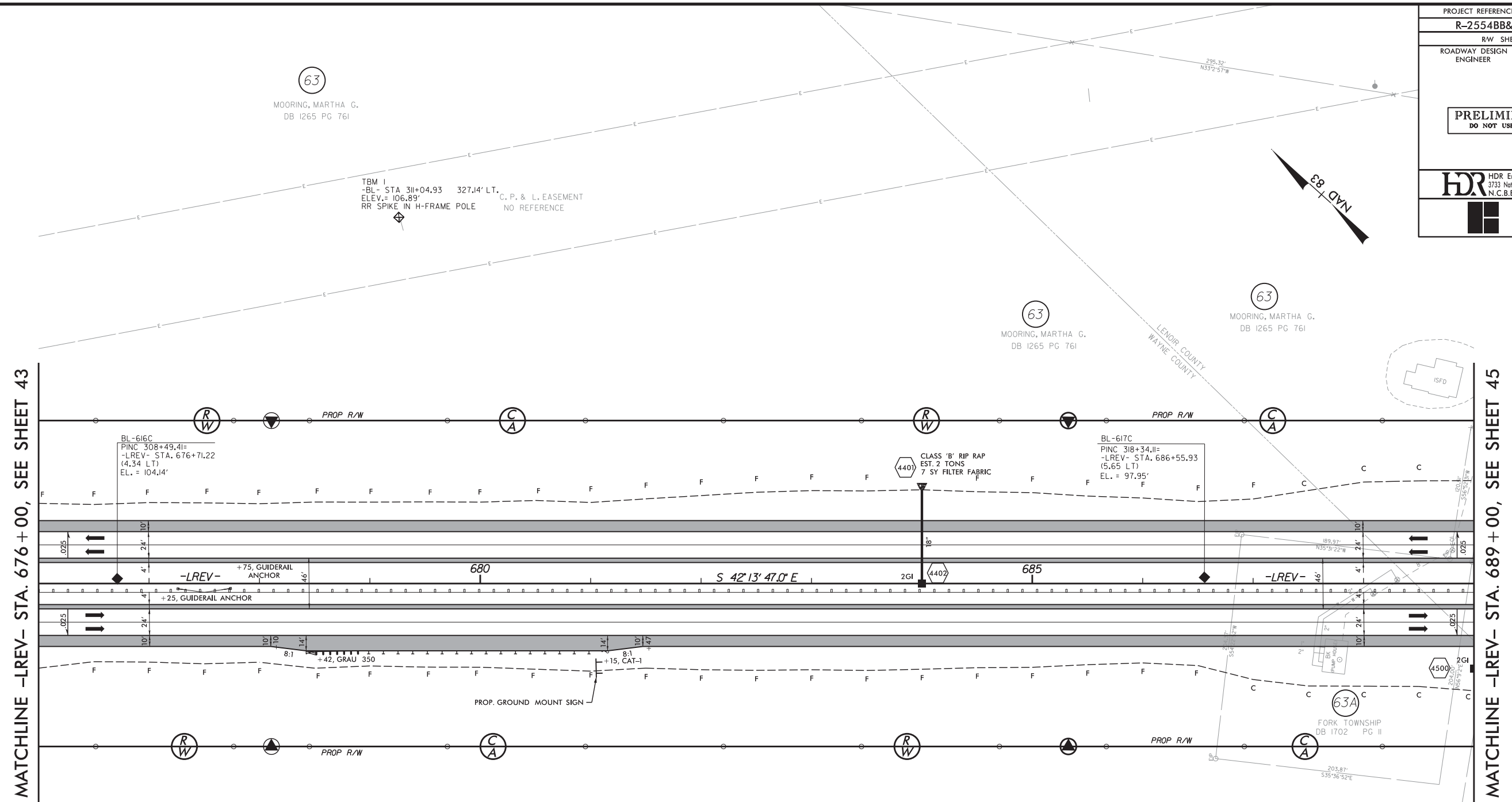
BL-615C
PINC 298+66.08+
-LREV- STA. 666+87.90
(4.84 LT)
EL. = 105.04'

62
WHITFIELD, JAMES W.
DB 552 PG 542

63
MOORING, MARTHA G.
DB 1265 PG 761

PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 43	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116			
BARNHILL CONTRACTING COMPANY			

SEE SHEET NO. 92 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.



SEE SHEET NO. 93 FOR -LREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

MATCHLINE -LREV- STA. 689+00, SEE SHEET 44

MATCHLINE -LREV- STA. 703+00, SEE SHEET 46

PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 93 FOR -LREV- PROFILE.
SEE SHEET NO. 118 FOR -Y26REV- PROFILE.
SEE SHEET NO. 2-W FOR BRIDGE SKETCH.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

STRUCTURE
SITE 10

CULVERT
SITE 17

CULVERT
SITE 22

MATCHLINE -Y26REV- STA. 23+00, SEE SHEET 66

-Y26REV- ST Sta. 23+08.01

-Y26REV-
Pls Sta 17+63.95 PI Sta 19+96.14 Pls Sta 22+28.01
 $\Delta s = 0^{\circ} 53' 58.1''$ $\Delta s = 5^{\circ} 45' 27.0''$ (LT) $\Delta s = 0^{\circ} 53' 58.1''$
 $L s = 120.00'$ $D = 1^{\circ} 29' 56.8''$ $L s = 120.00'$
 $L T = 80.00'$ $L = 384.06'$ $L T = 80.00'$
 $S T = 40.00'$ $T = 192.19'$ $S T = 40.00'$
 $R = 3,822.00'$
 $V = 50$ MPH
 $e = 3 \%$

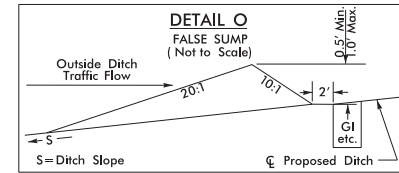
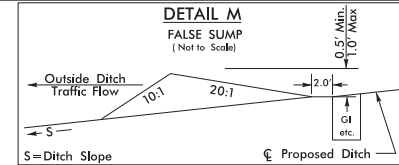
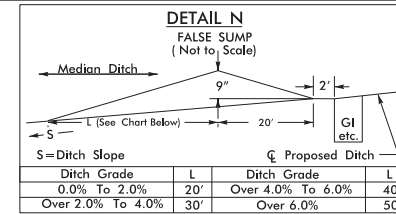
BL-619C
PINC 329+26.65=
-LREV- STA. 697+48.42 (II,22 LT)
T6 - ELEV=89.99'

FROM STA. 689+50 -LREV- TO STA. 690+00 -LREV- LT
FROM STA. 691+87 -LREV- TO STA. 694+00 -LREV- LT
FROM STA. 694+50 -LREV- TO STA. 695+00 -LREV- LT
FROM STA. 692+83 -LREV- TO STA. 693+72 -LREV- RT
FROM STA. 694+25 -LREV- TO STA. 695+00 -LREV- RT

FROM STA. 690+50 -LREV- TO STA. 691+87 -LREV- LT
FROM STA. 26+00 -Y26REV- TO STA. 26+50 -Y26REV- RT
FROM STA. 28+50 -Y26REV- TO STA. 29+50 -Y26REV- RT

-LREV-
Pls Sta 703+53.21 PI Sta 707+62.59 Pls Sta 711+70.69
 $\Delta s = 2^{\circ} 13' 35.5''$ $\Delta s = 9^{\circ} 09' 56.1''$ (RT) $\Delta s = 2^{\circ} 13' 35.5''$
 $L s = 300.00'$ $D = 1^{\circ} 29' 03.6''$ $L s = 300.00'$
 $L T = 200.02'$ $L = 617.48'$ $L T = 200.02'$
 $S T = 100.01'$ $T = 309.40'$ $S T = 100.01'$
 $R = 3,860.00'$
 $V = 75$ MPH
 $e = 6 \%$

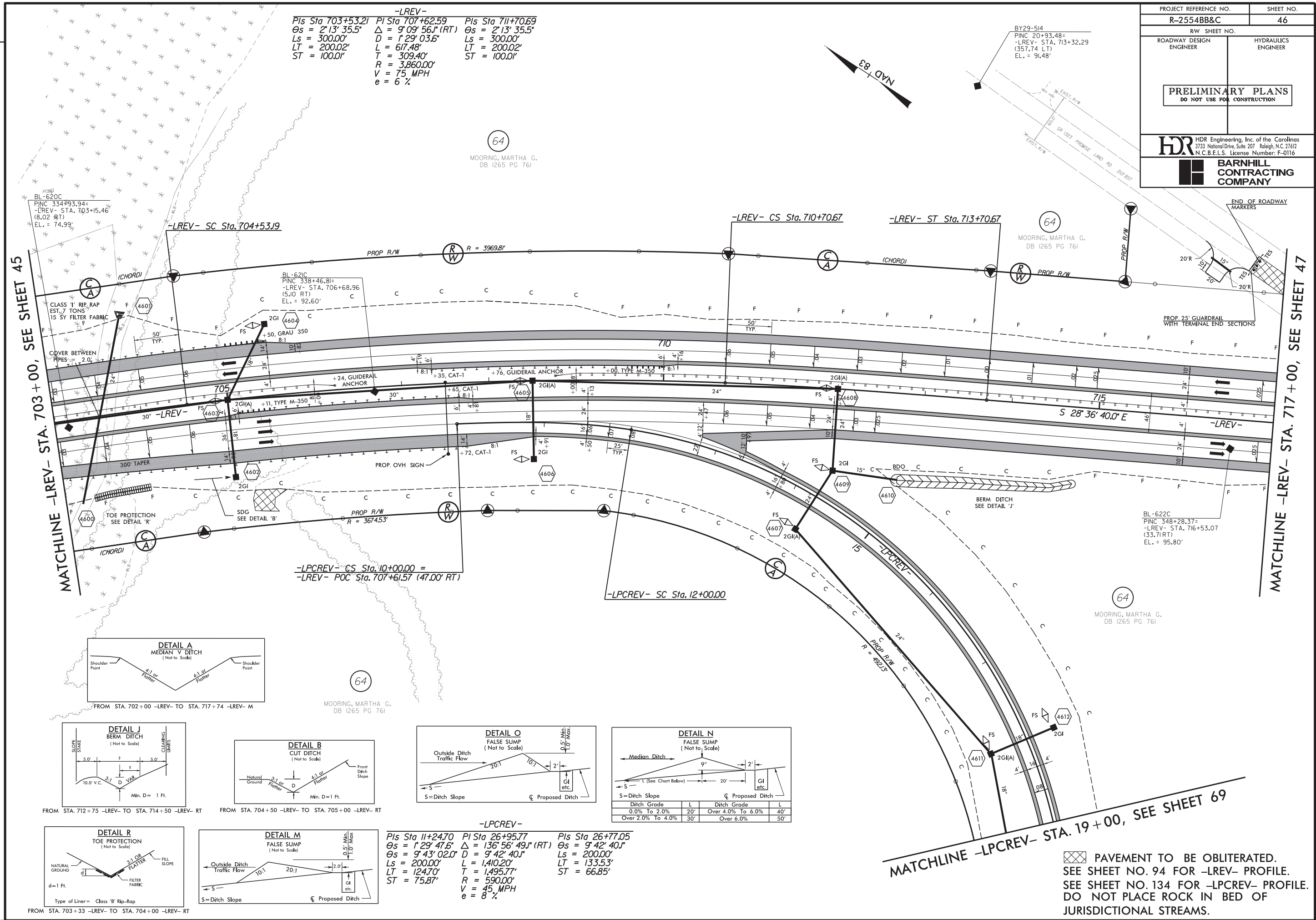
FROM STA. 700+00 -LREV- TO STA. 700+92 -LREV- LT
FROM STA. 30+00 -Y26REV- TO STA. 31+00 -Y26REV- RT
FROM STA. 31+25 -Y26REV- TO STA. 32+00 -Y26REV- RT

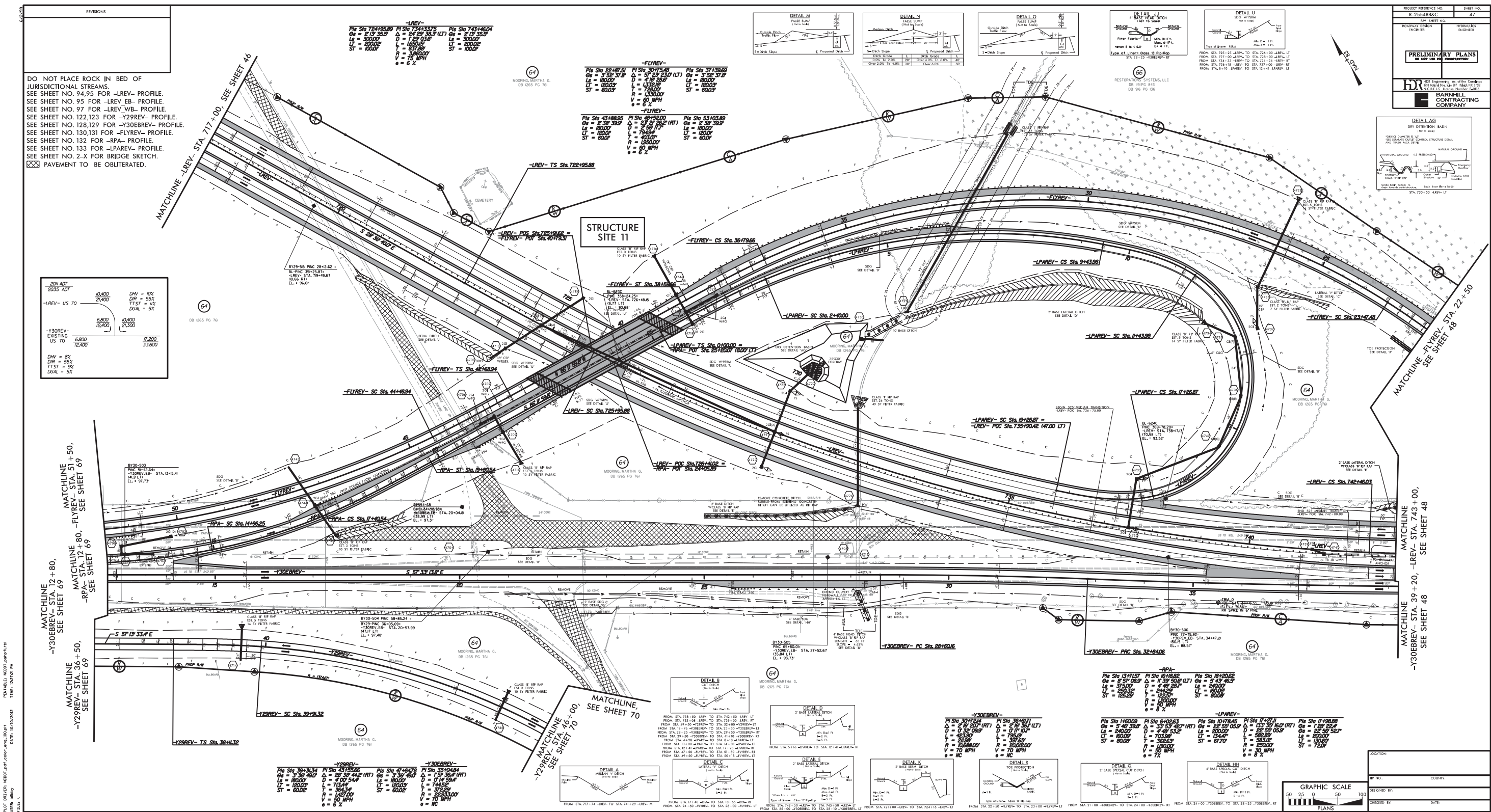


PROJECT REFERENCE NO. R-2554BB&C	SHEET NO. 45
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	
BARNHILL CONTRACTING COMPANY	

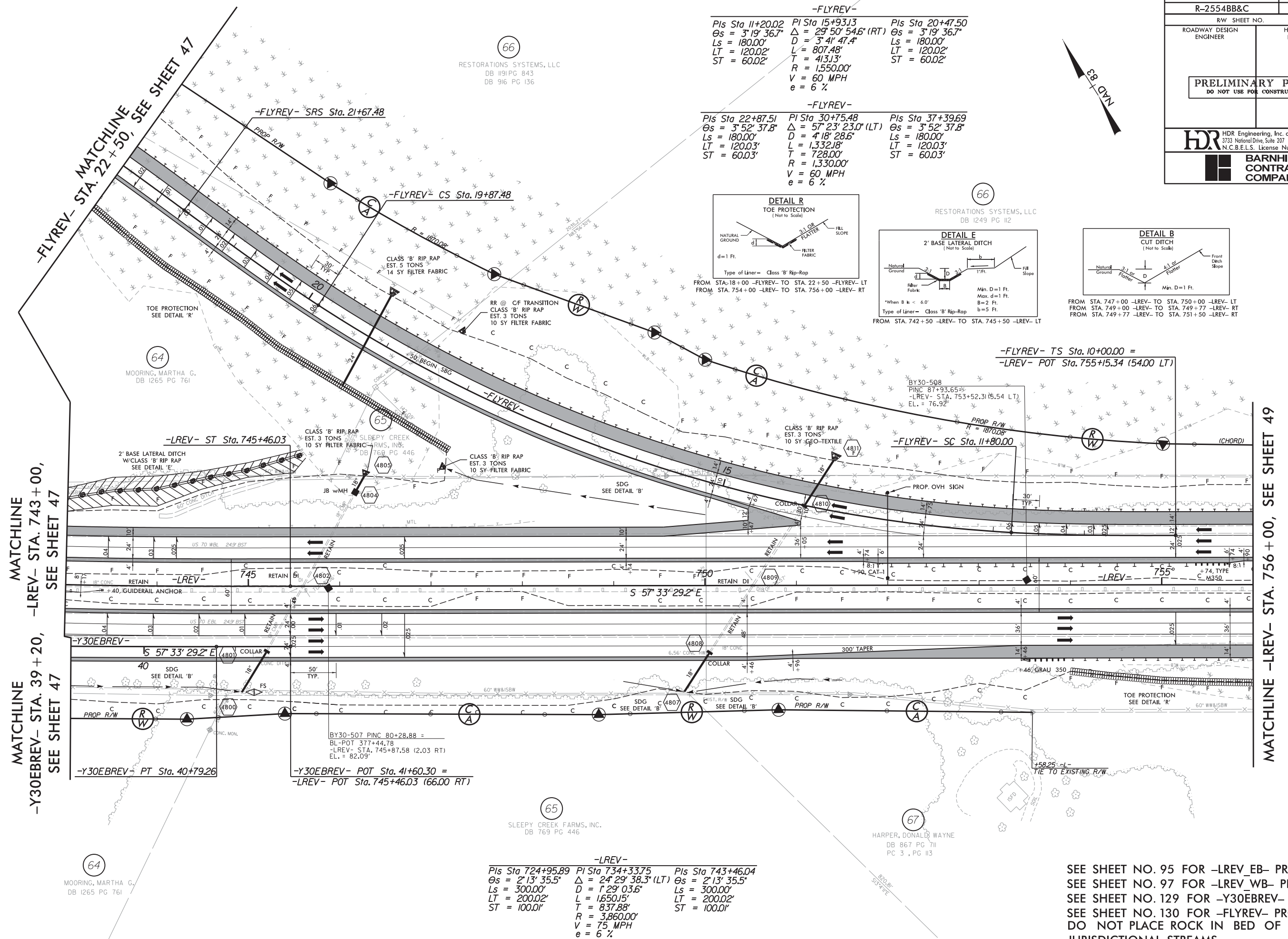
REVISIONS

PLOT DRIVER: NCDOT_color_eng_50.plt
PENTABLE: NCDOT_pshp.fl.tbi
USER: bibby
DATE: 10/10/2012
TIME: 11:50:57 AM
FILE:





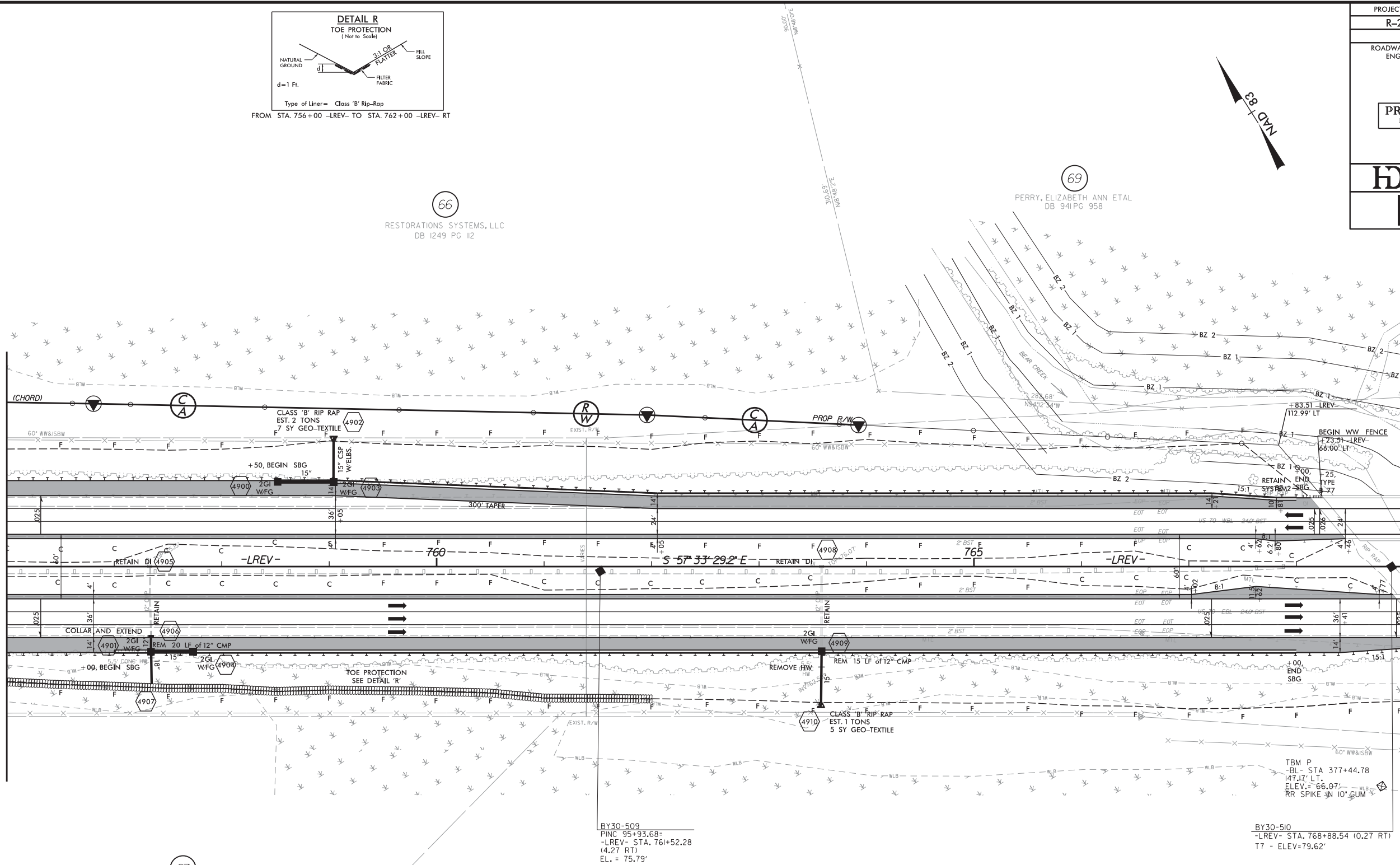
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PLOT DRIVER: NCDOT.pdf_color_eng.100.pit
PENTABLE: NCDOT.pshpflt.tbl
USER: bbbby
DATE: 10/10/2012
TIME: 12:27:21 PM
```

SEE SHEET NO. 95 FOR -LREV_EB- PROFILE.
SEE SHEET NO. 97 FOR -LREV_WB- PROFILE.
SEE SHEET NO. 129 FOR -Y30EBREV- PROFILE.
SEE SHEET NO. 130 FOR -FLYREV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

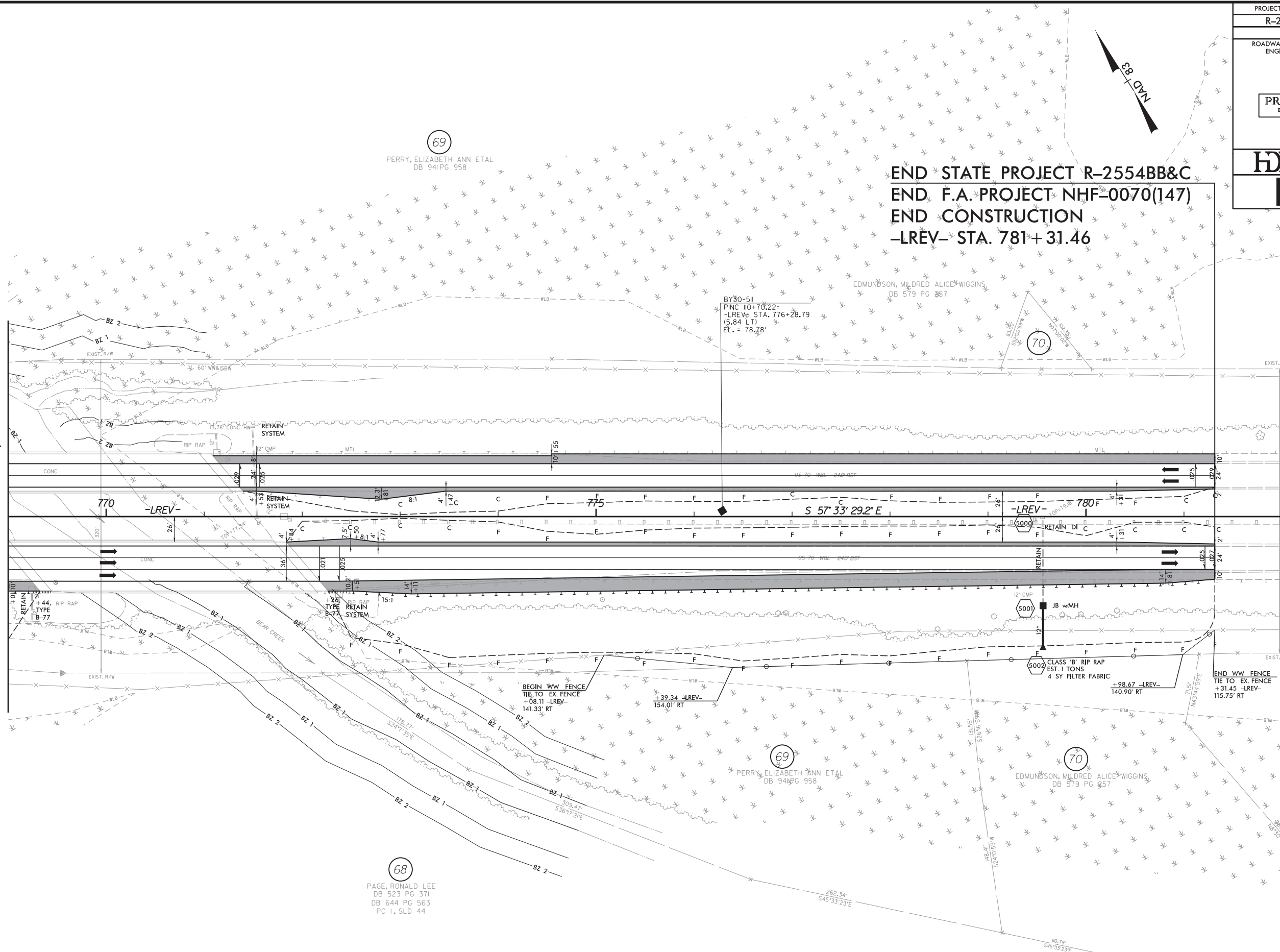
REVISIONS

MATCHLINE -LREV- STA. 756+00, SEE SHEET 48



REVISIONS

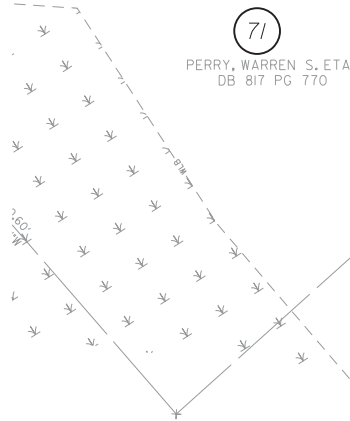
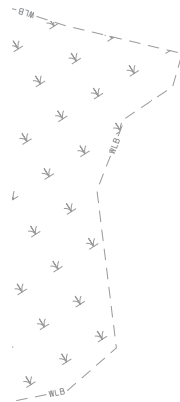
MATCHLINE -LREV- STA. 769 + 00, SEE SHEET 49



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 50	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
		BARNHILL CONTRACTING COMPANY	

REVISIONS

MATCHLINE -LREV- STA. 782 + 00, SEE SHEET 50



BY30-512
PINC 118+07.01=
-LREV- STA. 783+65.52
(3.05 RT)
EL. = 80.24'

-LREV-

785

DI 10°=81.08'

S 57° 33' 29.2" E

790

+95, CAT-1

PROP. OVH SIGN

-LREV-

+55, TYPE M350

R2554-71
BY30-POT 129+74.11
EL. = 83.73'

TBM K
-BL- STA 377+44.78 651.05' LT.
ELEV. = 82.12'
RR SPIKE IN 14' PINE

-LREV- POT Sta. 794+54.69

PERRY, WARREN S. ETAL
DB 817 PG 767

EDMUNDSON, MILDRED ALICE WIGGINS
DB 579 PG 257

PERRY, WARREN S. ETAL
DB 817 PG 770

DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		51
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.E.L.S. License Number: F-01116		
BARNHILL CONTRACTING COMPANY		

DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 101 FOR -Y12- PROFILE.
SEE SHEET NO. 136 FOR -SR10- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO.
R-2554BB&C

SHEET NO.
52

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

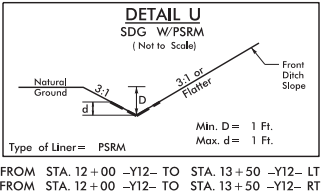
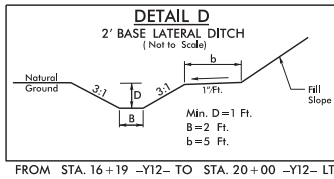
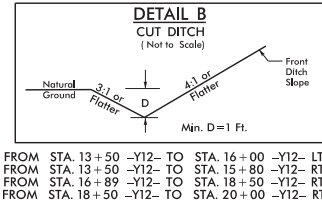
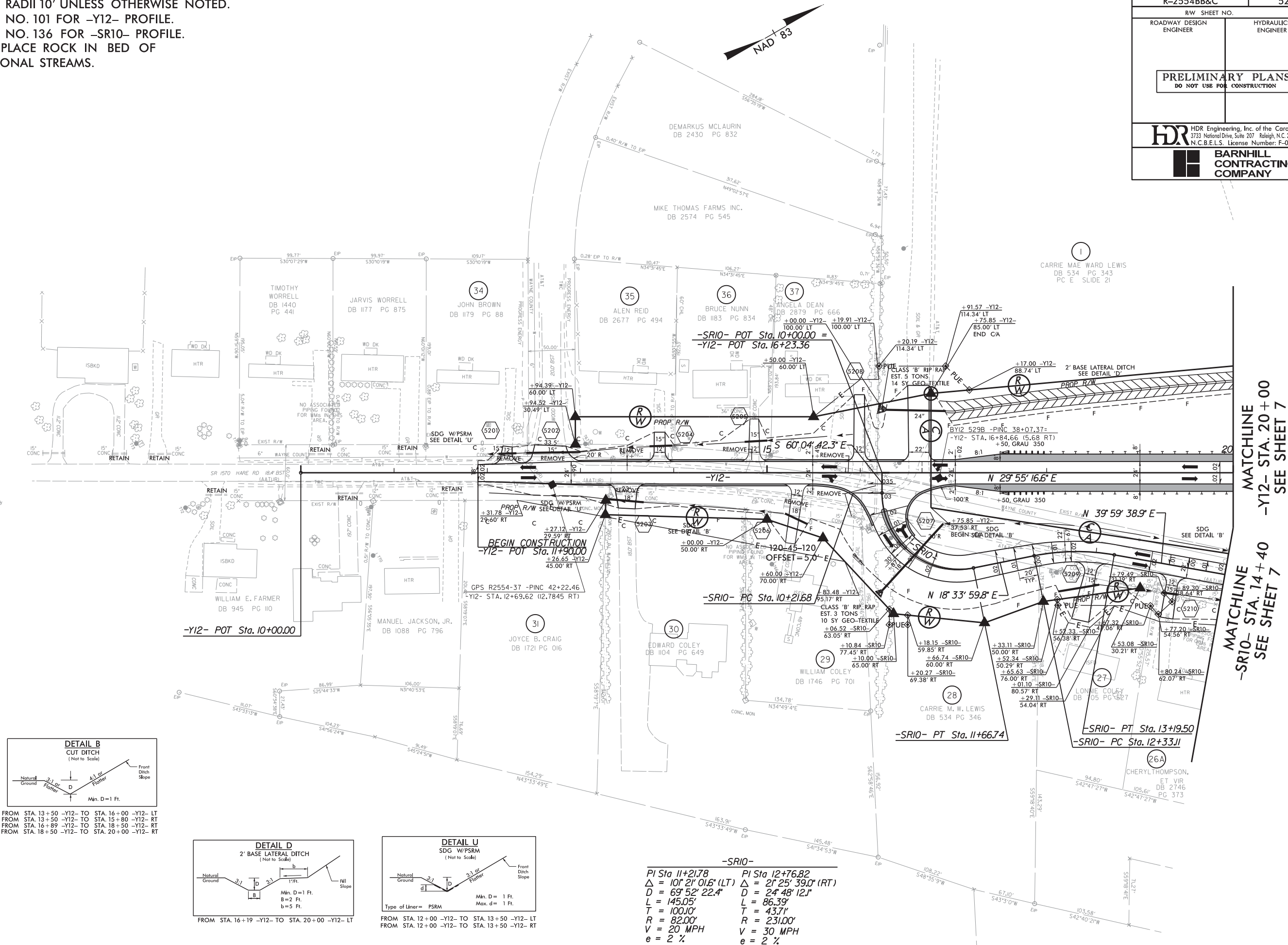
PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

HDR

HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

BARNHILL CONTRACTING COMPANY

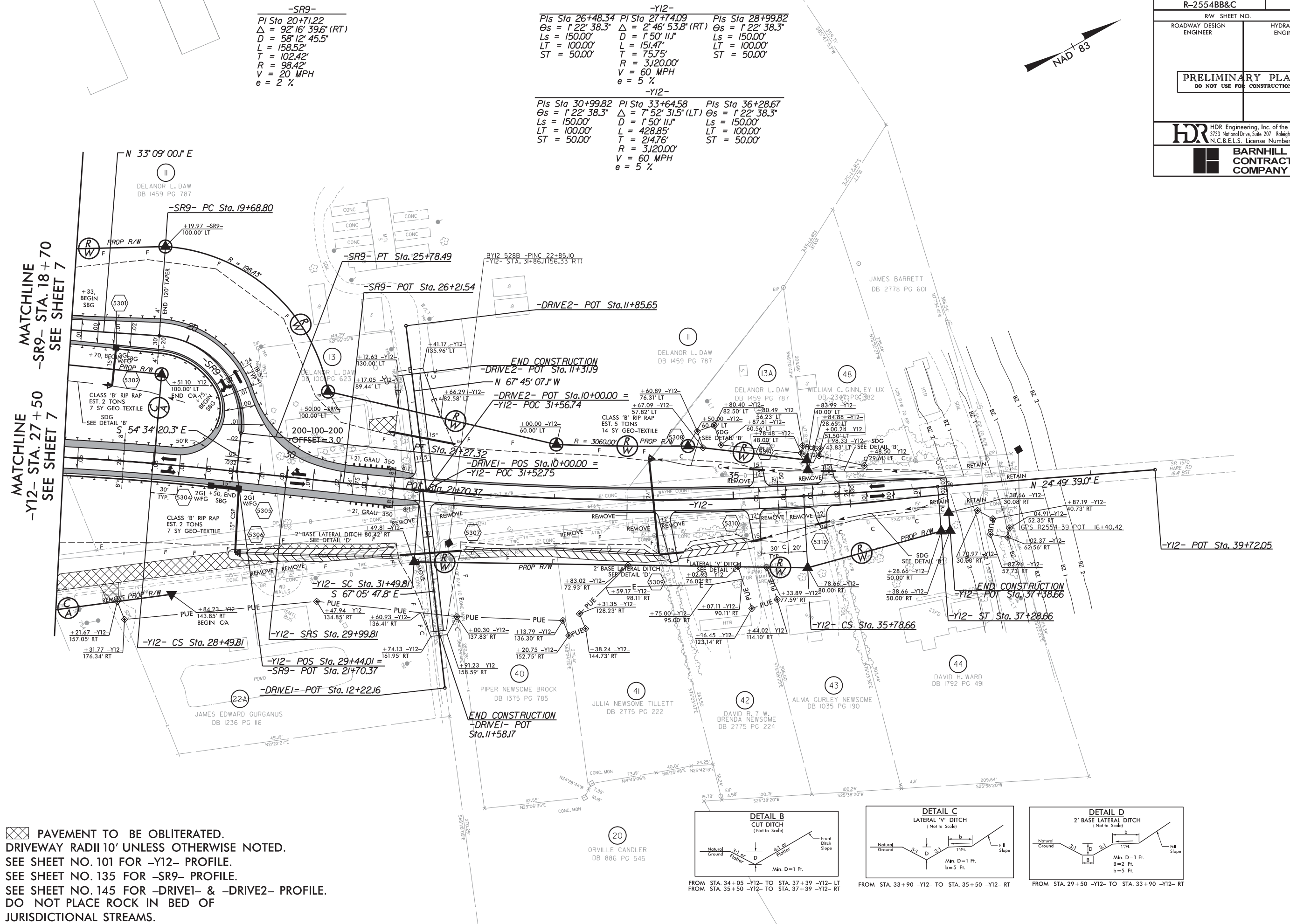


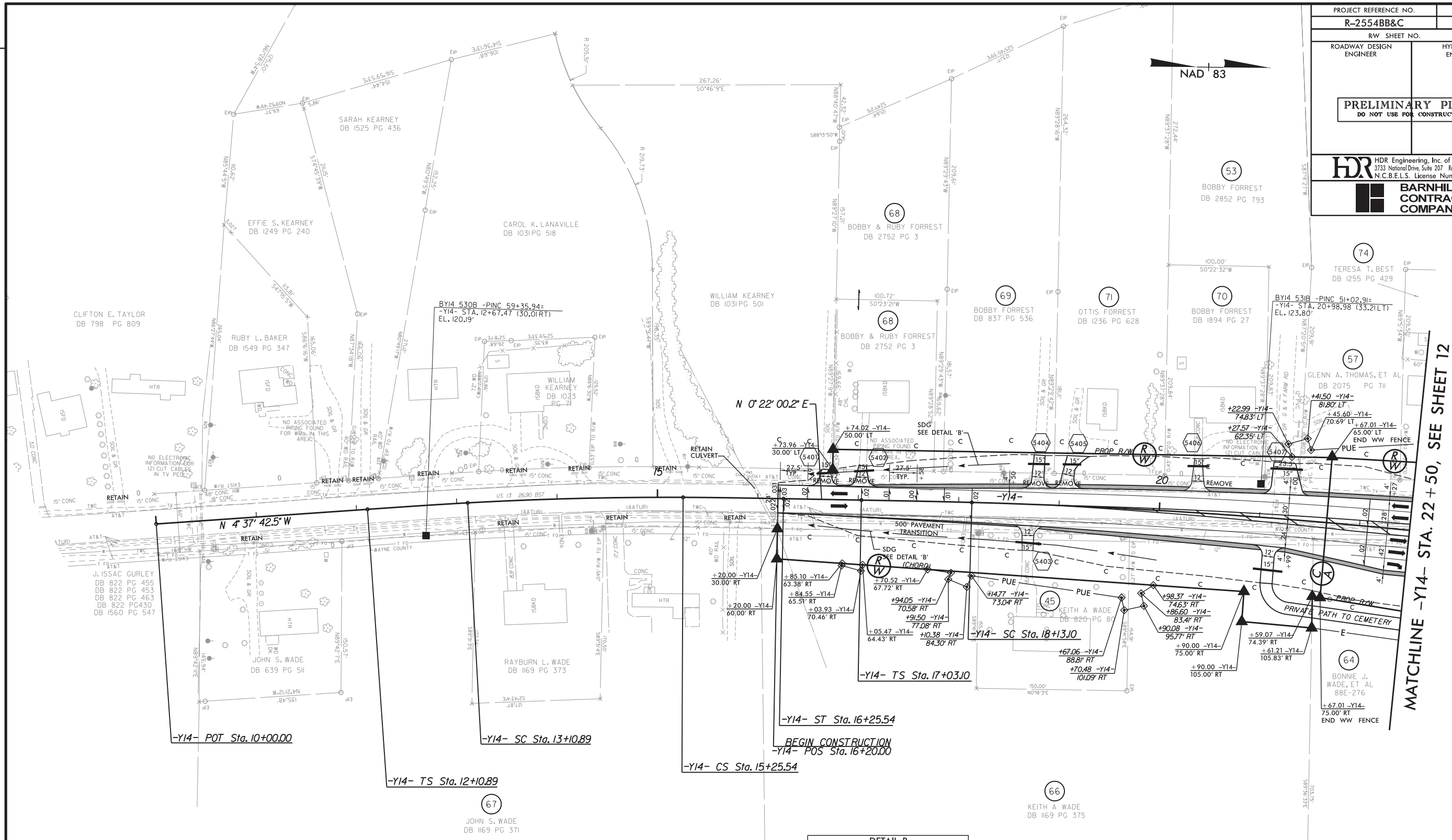
-SR10-	
PI Sta 11+21.78	PI Sta 12+76.82
$\Delta = 10^\circ 21' 01.6''$ (LT)	$\Delta = 2^\circ 25' 39.0''$ (RT)
D = 69' 52" 22.4'	D = 24' 48" 12.1'
L = 145.05'	L = 86.39'
T = 100.10'	T = 43.71'
R = 82.00'	R = 231.00'
V = 20 MPH	V = 30 MPH
e = 2 %	e = 2 %

REVISIONS

MATCHLINE
-Y12- STA. 20+00
SEE SHEET 7

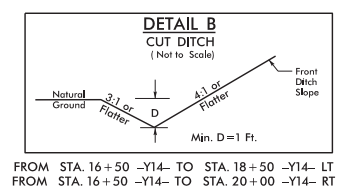
MATCHLINE
-SR10- STA. 14+40
SEE SHEET 7





MATCHLINE -Y14- STA. 22 + 50, SEE SHEET 12

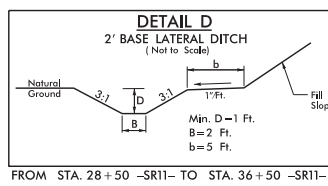
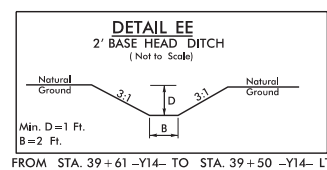
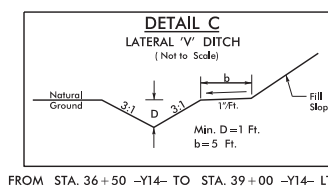
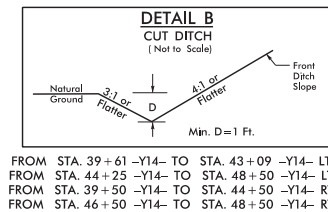
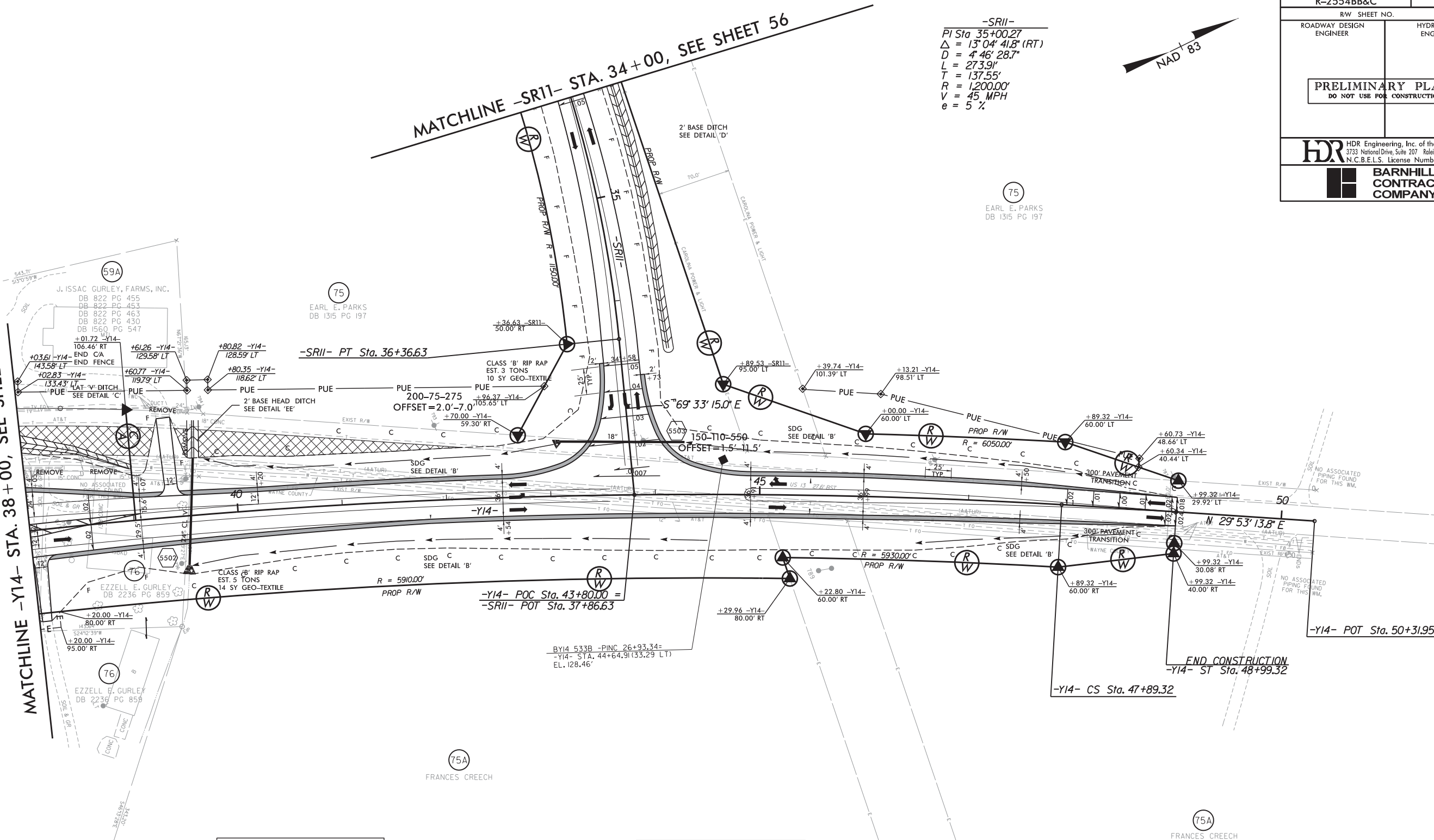
<i>-Y14-</i>		
<i>Pls Sta 12+77.56</i>	<i>Pl Sta 14+18.25</i>	<i>Pls Sta 15+58.87</i>
<i>Θs = 0° 47' 37.6"</i>	<i>Δ = 3° 24' 27.4" (RT)</i>	<i>Θs = 0° 47' 37.6"</i>
<i>Ls = 100.00'</i>	<i>D = 1° 35' 15.3"</i>	<i>Ls = 100.00'</i>
<i>LT = 66.67'</i>	<i>L = 214.64'</i>	<i>LT = 66.67'</i>
<i>ST = 33.33'</i>	<i>T = 107.35'</i>	<i>ST = 33.33'</i>
	<i>R = 3,609.00'</i>	
	<i>V = 50 MPH</i>	
	<i>e = RC</i>	
<i>Pls Sta 17+76.43</i>	<i>Pl Sta 33+32.60</i>	<i>Pls Sta 48+25.99</i>
<i>Θs = 0° 31' 33.9"</i>	<i>Δ = 28° 28' 05.8" (RT)</i>	<i>Θs = 0° 31' 33.9"</i>
<i>Ls = 110.00'</i>	<i>D = 0° 57' 23.5"</i>	<i>Ls = 110.00'</i>
<i>LT = 73.33'</i>	<i>L = 297.62'</i>	<i>LT = 73.33'</i>
<i>ST = 36.67'</i>	<i>T = 151.95'</i>	<i>ST = 36.67'</i>
	<i>R = 5,990.00'</i>	
	<i>V = 50 MPH</i>	
	<i>e = RC</i>	



DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 102 FOR -Y14- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

REVISIONS

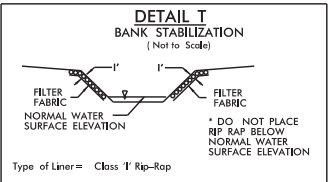
MATCHLINE -Y14- STA. 38+00, SEE SHEET 12



-Y14-

Sta	Sta	Sta
17+76.43	33+32.60	48+25.99
$\Delta = 0' 31' 33.9''$	$\Delta = 28' 28' 05.8''$ (RT)	$\Delta = 0' 31' 33.9''$
$L_s = 110.00'$	$D = 0' 57' 23.5''$	$L_s = 110.00'$
$LT = 73.33'$	$L = 2976.22'$	$LT = 73.33'$
$ST = 36.67'$	$T = 1519.50'$	$ST = 36.67'$
	$R = 5990.00'$	
	$V = 50$ MPH	
	$e = RC$	

PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 103 FOR -Y14- PROFILE.
SEE SHEET NO. 137 FOR -SR11- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

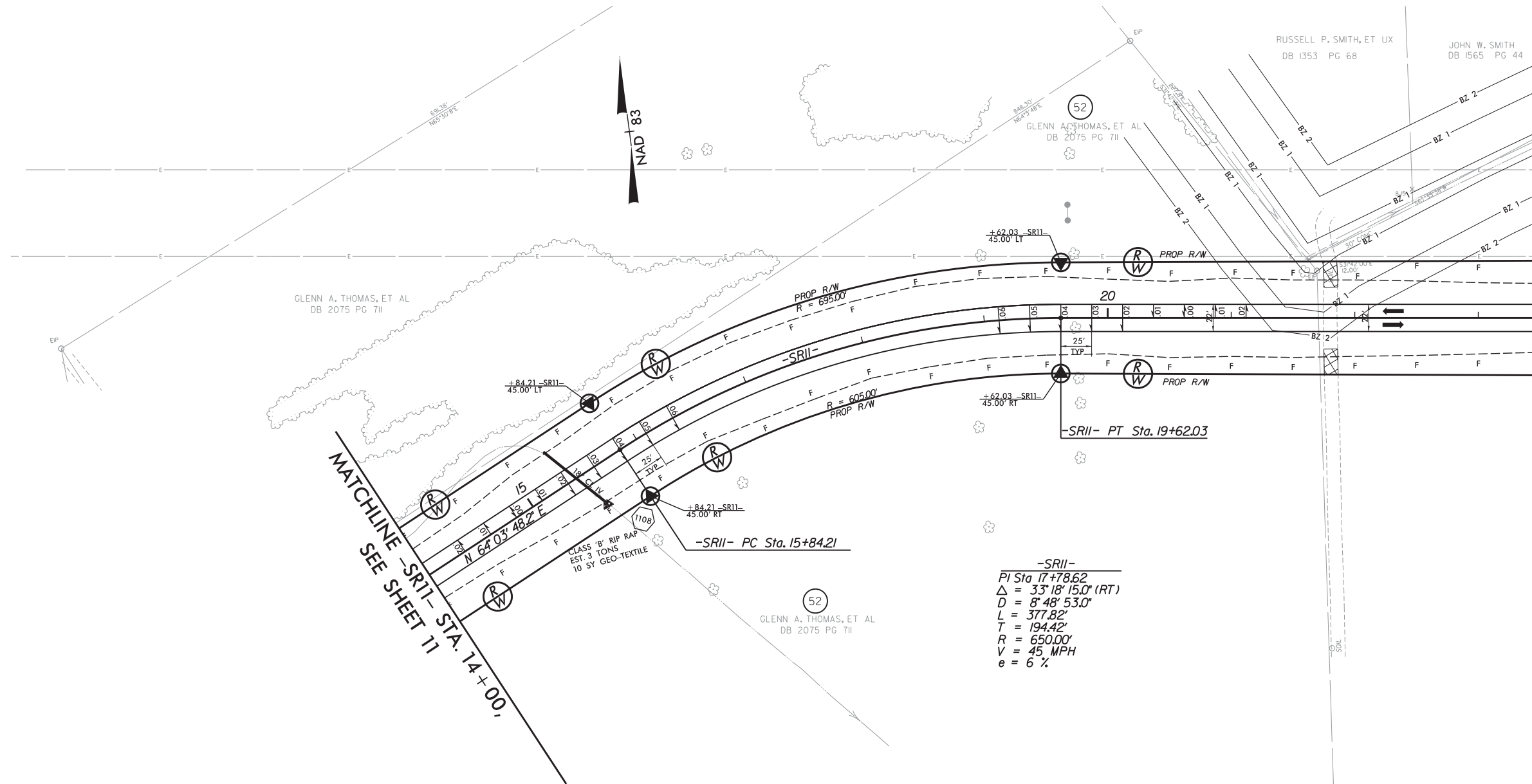


SEE SHEET NO. 137 FOR -SR11- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PLOT DRIVER: NCDOT_color_eng_50.plt
USER: bibby
FILE: \

PENTABLE: NCDOT_pshp.flx.tbl
DATE: 10/10/2012
TIME: 12:03:01 PM

REVISIONS

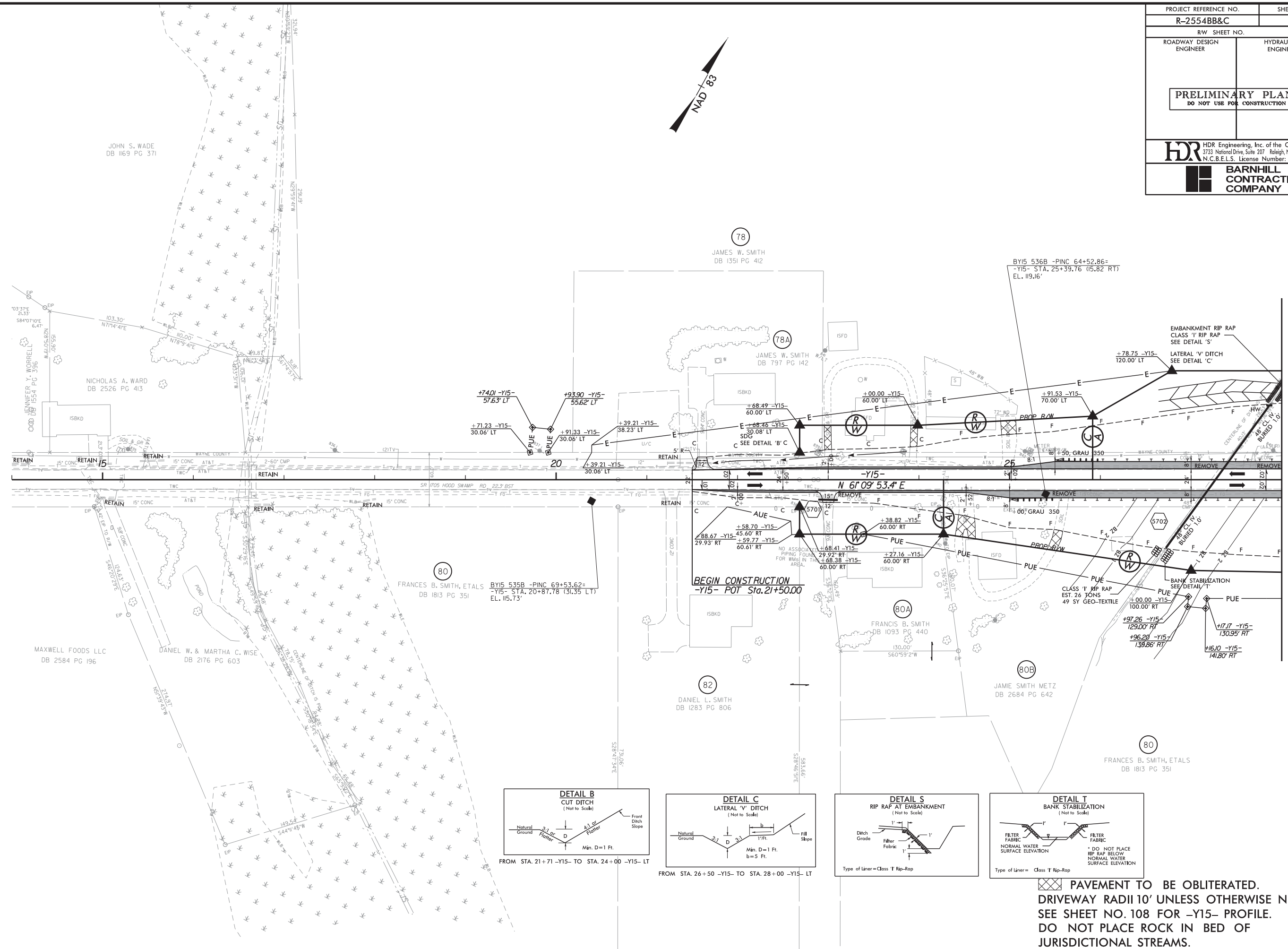


MATCHLINE -SR11- STA. 23 + 50, SEE SHEET 56

PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		57
R/W SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116		
 BARNHILL CONTRACTING COMPANY		

PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 137 FOR -SR11- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	58
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116	
 BARNHILL CONTRACTING COMPANY	



 PAVEMENT TO BE OBLITERATED.
 DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
 SEE SHEET NO. 108 FOR -Y15- PROFILE.
 DO NOT PLACE ROCK IN BED OF
 JURISDICTIONAL STREAMS.

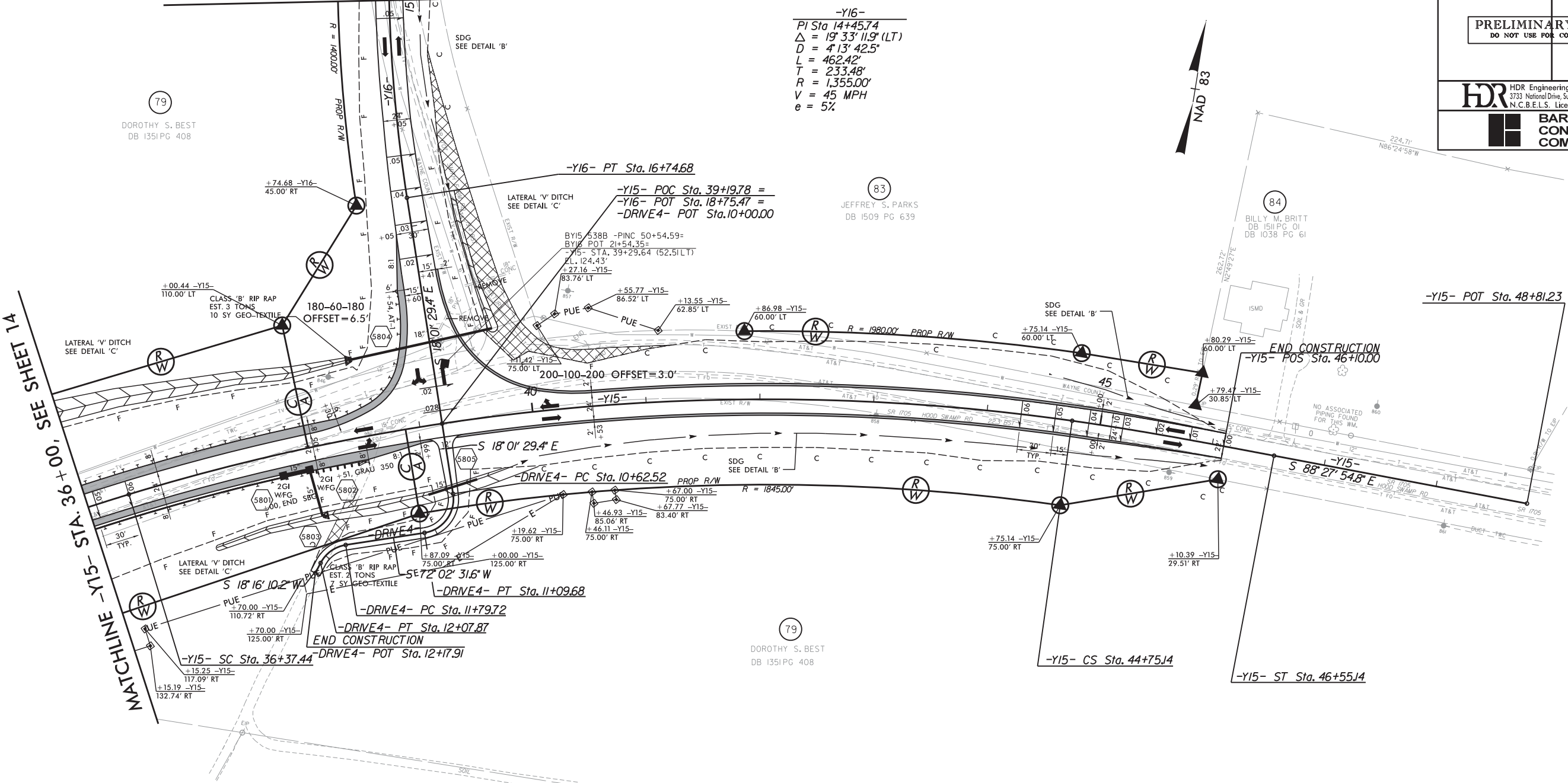
MATCHLINE -Y15- STA. 28+00, SEE SHEET 14

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PENTABLE: NCDOT_pshpfl.tbl
USER: blibby
DATE: 10/10/2012
TIME: 12:03:51 PM
FILE: \
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REVISIONS

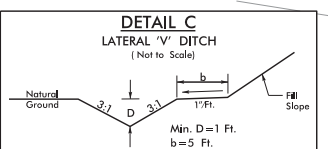
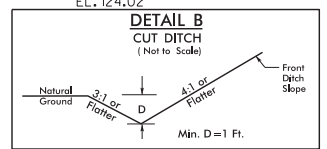
MATCHLINE -Y16- STA. 15+00, SEE SHEET 60

-Y16-
PI Sta 14+45.74
 $\Delta = 19^{\circ} 33' 11.9" (LT)$
 $D = 413' 42.5"$
 $L = 462.42'$
 $T = 233.48'$
 $R = 1,355.00'$
 $V = 45 \text{ MPH}$
 $e = 5\%$



-DRIVE4-
PI Sta 10+92.55 $\Delta = 90^{\circ} 04' 01.0" (RT)$
 $D = 190' 59' 09.4"$
 $L = 47.16'$
 $T = 30.04'$
 $R = 30.00'$
PI Sta 11+94.93 $\Delta = 53^{\circ} 46' 21.3" (LT)$
 $D = 190' 59' 09.4"$
 $L = 28.16'$
 $T = 15.21'$
 $R = 30.00'$

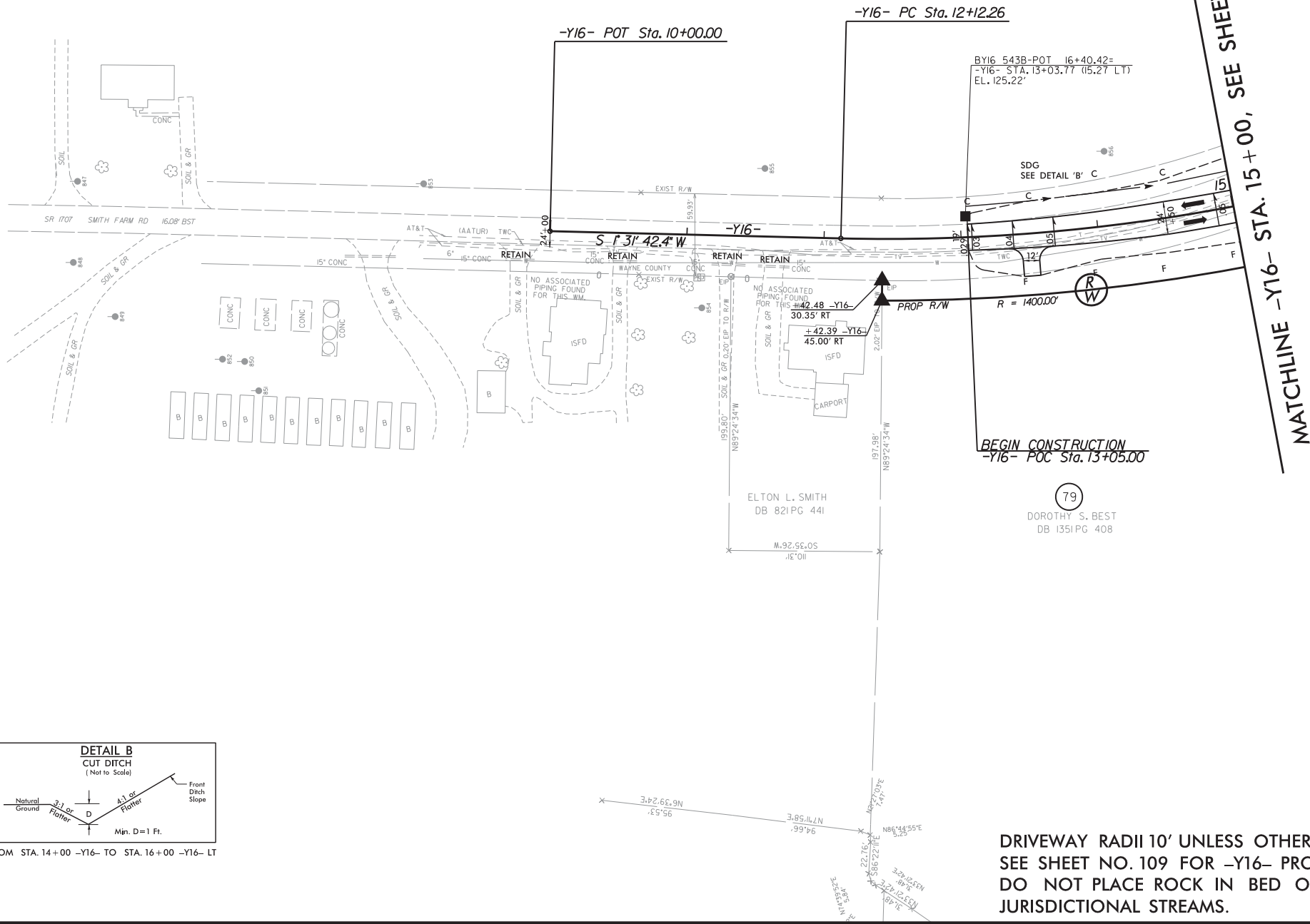
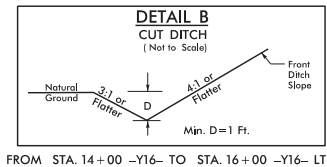
-Y15-
PIs Sta 35+77.45 $\Delta = 2^{\circ} 41' 08.7"$
 $Ls = 180.00'$
 $LT = 120.01'$
 $ST = 60.01'$
PI Sta 40+63.06 $\Delta = 24^{\circ} 59' 54.4" (RT)$
 $D = 2^{\circ} 59' 03.0"$
 $L = 837.71'$
 $T = 425.63'$
 $R = 1,920.00'$
 $V = 60 \text{ MPH}$
 $e = 6\%$
PIs Sta 45+35.15 $\Delta = 2^{\circ} 41' 08.7"$
 $Ls = 180.00'$
 $LT = 120.01'$
 $ST = 60.01'$



PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 108,109 FOR -Y15- PROFILE.
SEE SHEET NO. 109 FOR -Y16- PROFILE.
SEE SHEET NO. 145 FOR -DRIVE4- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

REVISIONS

TBM #17
-BL- STA. 350+60.58
1327.92 LT.
ELEV. = 128.81'
RR SPIKE IN 22" OAK
☒



-Y16-
PI Sta 14+45.74
 $\Delta = 19^\circ 33' 11.9''$ (LT)
 $D = 413' 42.5''$
 $L = 462.42'$
 $T = 233.48'$
 $R = 1,355.00'$
 $V = 45$ MPH
 $e = 5\%$

83

JEFFREY S. PARKS
DB 1509 PG 639

-Y16- PC Sta. 12+12.26

BY16 543B-POT 16+40.42=
-Y16- STA. 13+03.77 (15.27' LT)
EL. 125.22'

SDG
SEE DETAIL 'B' C

R = 1400.00'

BEGIN CONSTRUCTION
-Y16- POC Sta. 13+05.00

79

DOROTHY S. BEST
DB 1351 PG 408

DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 109 FOR -Y16- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

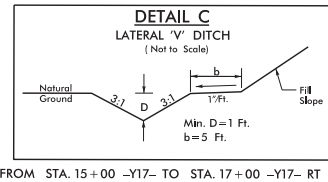
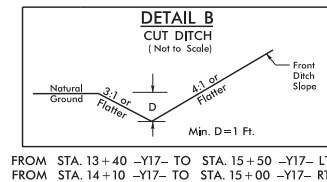
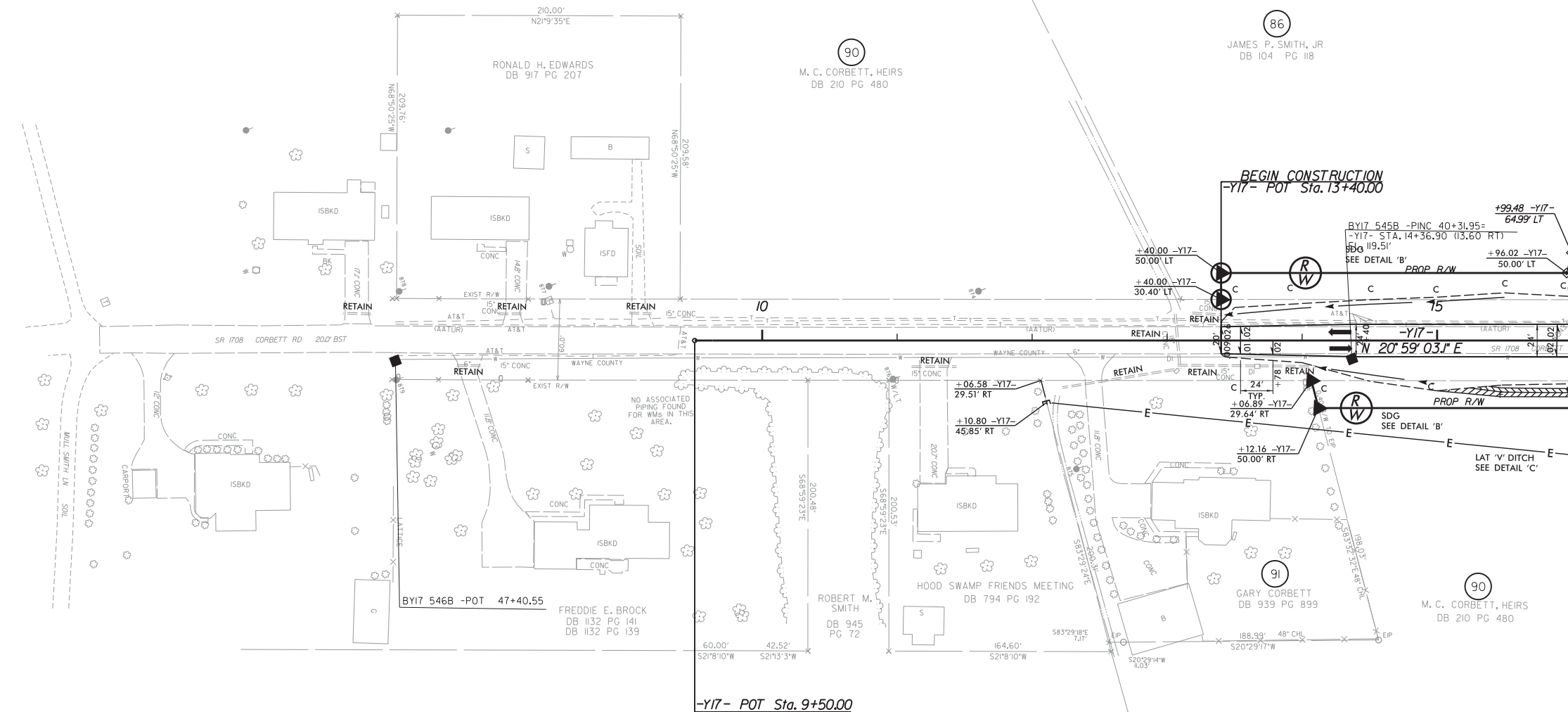
PROJECT REFERENCE NO.		SHEET NO.			
R-2554BB&C		60			
RW SHEET NO.					
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER			
<table border="1"><tr><td colspan="2">PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION</td></tr></table>				PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION					

PLOT DRIVER: NCDOT_color_eng_50.plt
USER: bibby
FILE: \

PENTABLE: NCDOT_pshp.flx.tbl
TIME: 12:06:28 PM

DATE: 10/10/2012

REVISIONS

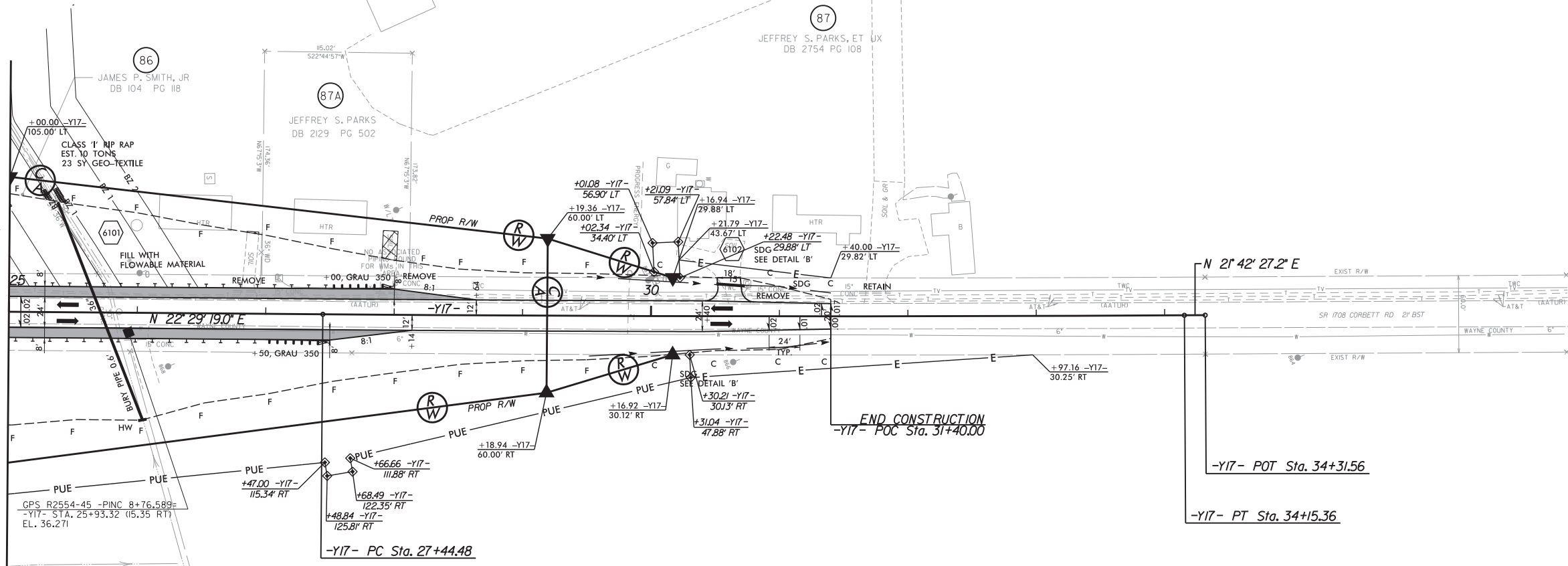


SEE SHEET NO. 110 FOR -Y17- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

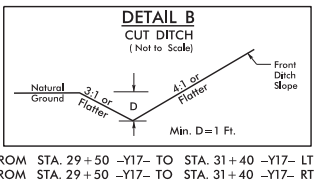
MATCHLINE -Y17- STA. 16+00, SEE SHEET 17

REVISIONS

MATCHLINE -Y17- STA. 25+00, SEE SHEET 17

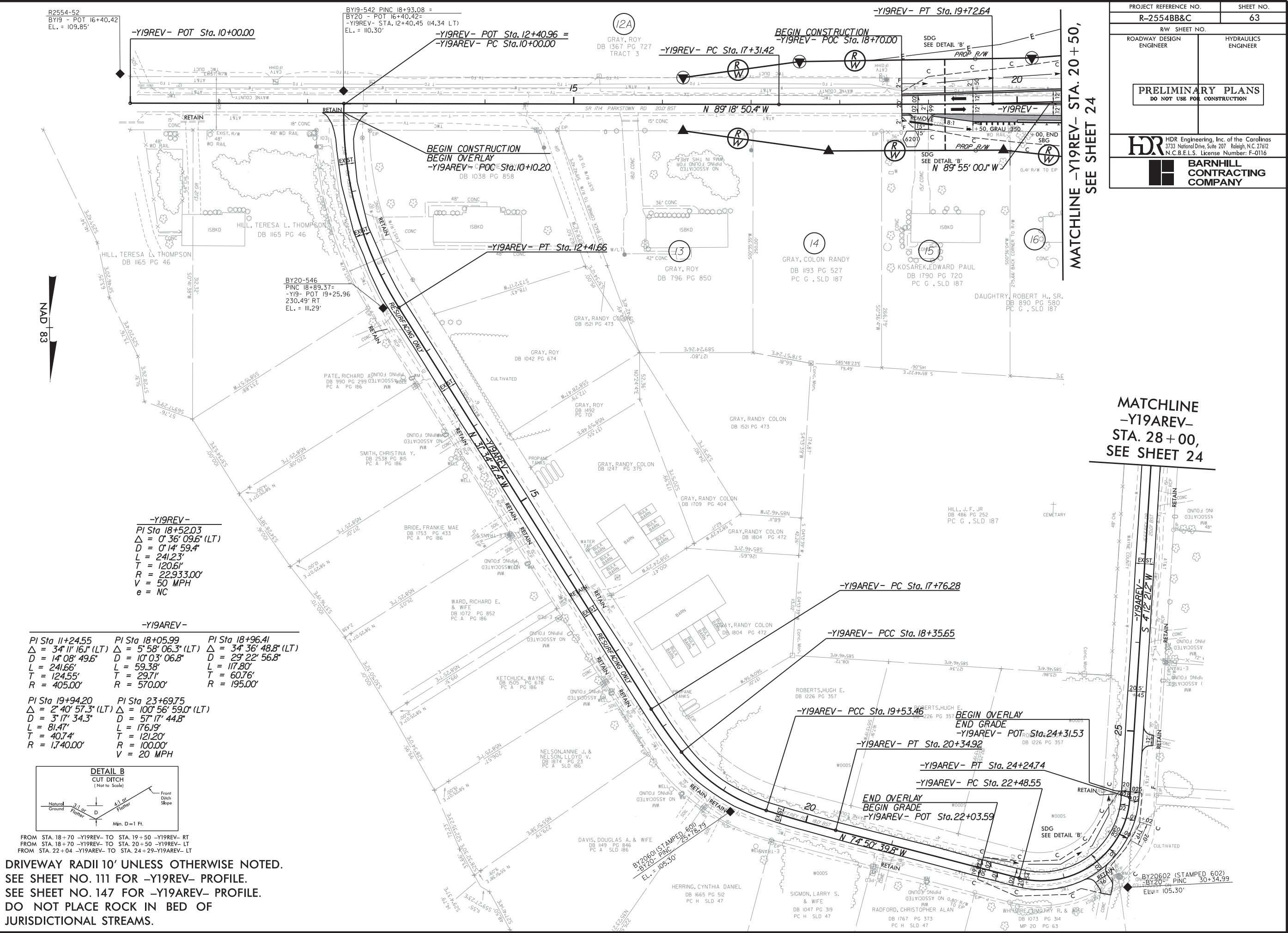


-Y17-
PI Sta 30+79.92
 $\Delta = 0^\circ 46' 51.9" (LT)$
 $D = 0^\circ 06' 59.1"$
 $L = 670.88'$
 $T = 335.45'$
 $R = 49,212.50'$
 $V = 50 \text{ MPH}$
 $e = NC$



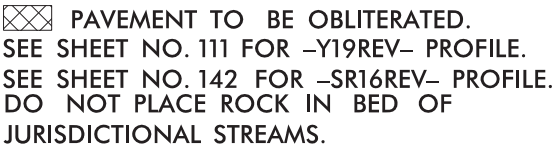
PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 110 FOR -Y17- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

REVISIONS



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 63	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116			
BARNHILL CONTRACTING COMPANY			

DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 111 FOR -Y19REV- PROFILE.
SEE SHEET NO. 147 FOR -Y19AREV- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.



REVISIONS

-SR17REV-
PI Sta 11+55.14 PI Sta 20+28.58
 $\Delta = 94^\circ 12' 12.7''$ (RT) $\Delta = 51^\circ 23' 42.3''$ (LT)
D = 58' 12" 45.5' D = 6' 52" 41.7"
L = 161.83' L = 747.21'
T = 105.92' T = 400.85'
R = 98.42' R = 833.00'
V = 20 MPH V = 50 MPH
e = 2 % e = 6 %

SLEEPY CREEK FARMS, INC.
DB 963 PG 804

-SR17REV- PT Sta. 12+11.04

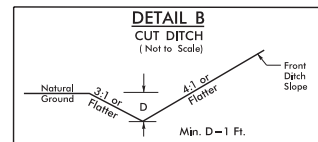
-SR17REV- PC Sta. 16+27.73

-SR17REV- PC Sta. 10+49.21

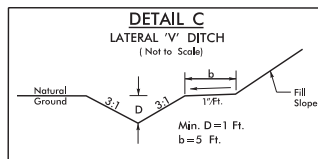
-Y22REV-
S 34° 26' 20.5" W

BEGIN CONSTRUCTION
-Y22REV- POT Sta. 17+52.50

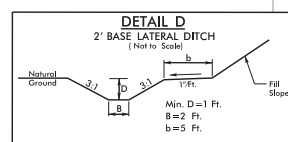
-Y22REV- POT Sta. 18+53.02 =
-SR17REV- POT Sta. 10+00.00



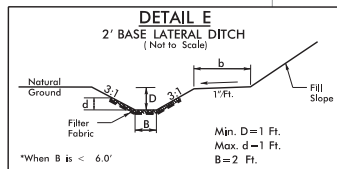
FROM STA. 15+00 -SR17REV- TO STA. 15+50 -SR17REV- RT
FROM STA. 15+00 -SR17REV- TO STA. 17+50 -SR17REV- LT
FROM STA. 19+00 -Y22REV- TO STA. 23+50 -Y22REV- RT



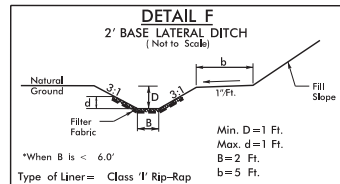
FROM STA. 15+50 -SR17REV- TO STA. 17+75 -SR17REV- RT



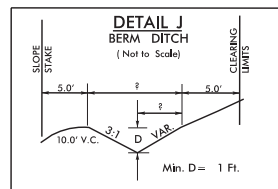
FROM STA. 10+50 -SR17REV- TO STA. 13+50 -SR17REV- RT



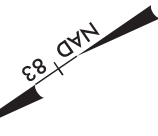
FROM STA. 13+50 -SR17REV- TO STA. 14+00 -SR17REV- RT



FROM STA. 14+00 -SR17REV- TO STA. 15+00 -SR17REV- RT



FROM STA. 15+55 -SR17REV- TO STA. 17+00 -SR17REV- LT



PROJECT REFERENCE NO. R-2554BB&C		SHEET NO. 65	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116		BARNHILL CONTRACTING COMPANY	

MATCHLINE
-SR17REV- STA. 17+50
SEE SHEET 31

MATCHLINE
-Y22REV- STA. 25+00
SEE SHEET 31

DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 116 FOR -Y22REV- PROFILE.
SEE SHEET NO. 143 FOR -SR17REV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

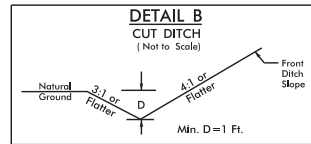
PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	66
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



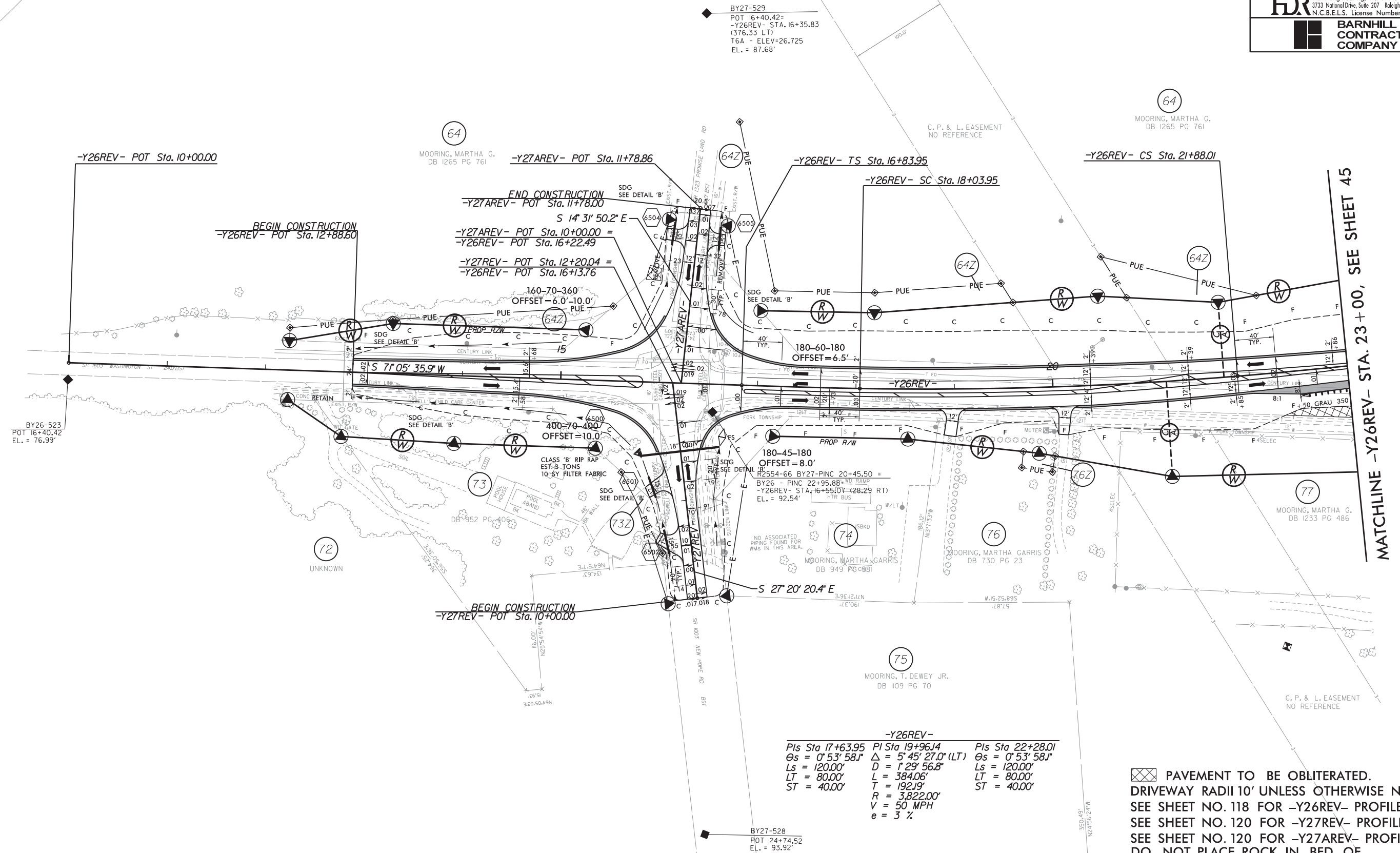
HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116



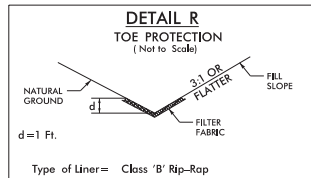
**BARNHILL
CONTRACTING
COMPANY**



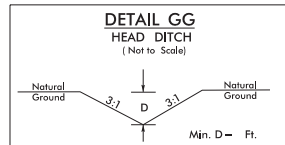
FROM STA. 13+00 -Y26REV- TO STA. 15+00 -Y26REV- LT
FROM STA. 13+00 -Y26REV- TO STA. 15+50 -Y26REV- RT
FROM STA. 10+50 -Y27REV- TO STA. 11+50 -Y27REV- LT
FROM STA. 10+50 -Y27REV- TO STA. 11+50 -Y27REV- RT
FROM STA. 10+20 -Y27AREV- TO STA. 11+78 -Y27AREV- LT
FROM STA. 10+50 -Y27AREV- TO STA. 11+78 -Y27AREV- RT



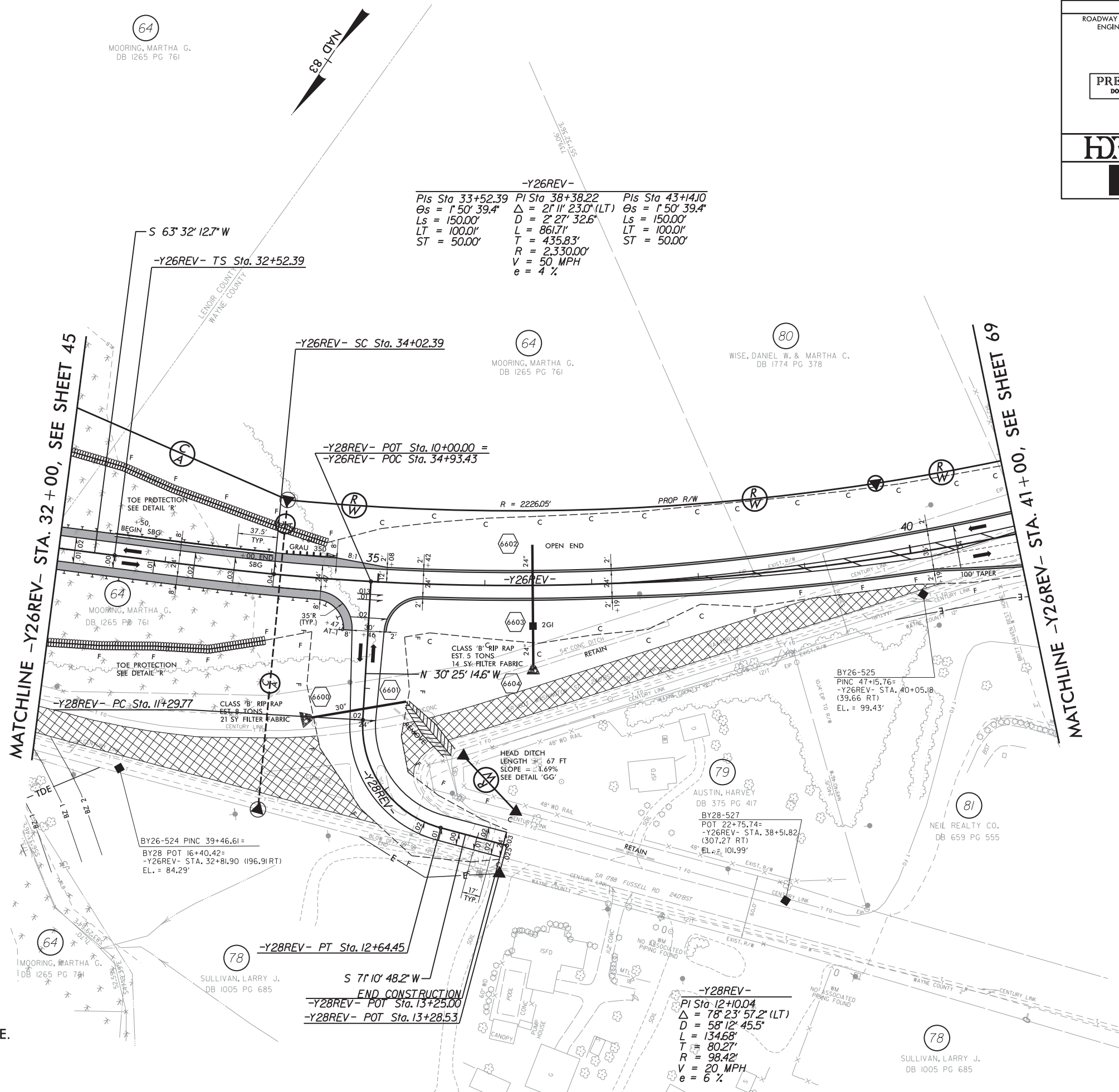
 PAVEMENT TO BE OBLITERATED.
 DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
 SEE SHEET NO. 118 FOR -Y26REV- PROFILE.
 SEE SHEET NO. 120 FOR -Y27REV- PROFILE.
 SEE SHEET NO. 120 FOR -Y27AREV- PROFILE.
 DO NOT PLACE ROCK IN BED OF
 JURISDICTIONAL STREAMS.



Type of Liner = Class 'B' Rip-Rap
FROM STA. 32+00 -Y26REV- TO STA. 34+50 -Y26REV- LT
FROM STA. 32+00 -Y26REV- TO STA. 34+00 -Y26REV- RT

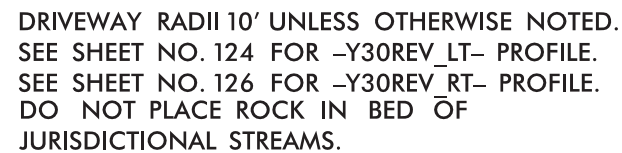
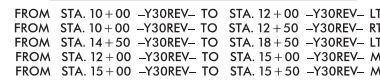


FROM STA. 11+10 -Y28REV- TO STA. 12+41 -Y28REV- LT

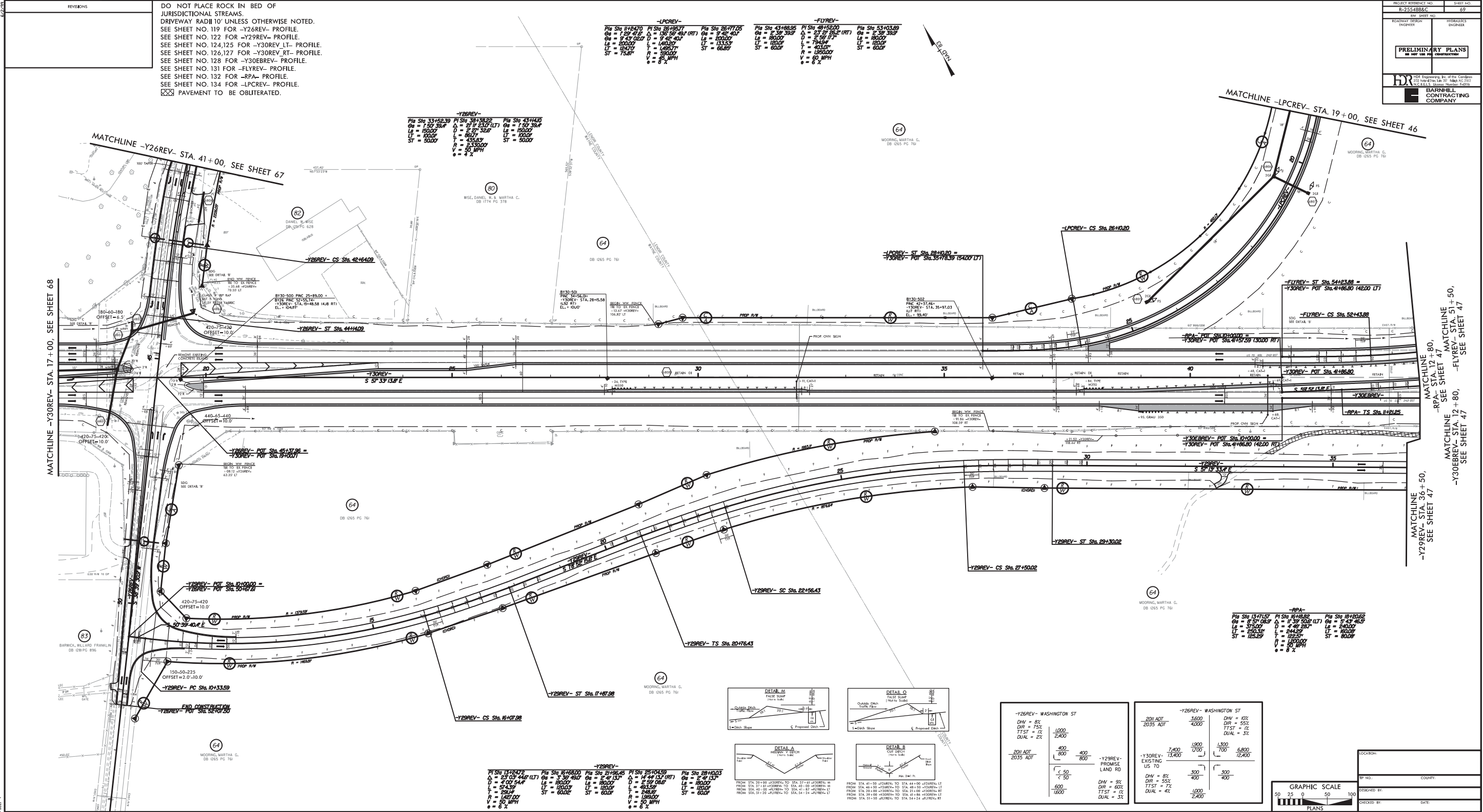


PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 118,119 FOR -Y26REV- PROFILE.
SEE SHEET NO. 121 FOR -Y28REV- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

REVISIONS



5/2/2019	REVISIONS



REVISIONS

MATCHLINE -Y29REV- STA. 46+00,
SEE SHEET 47

TBM N
-BL- STA 358+81.56
940.41' RT.
ELEV.= 104.26'
RR SPIKE IN SERVICE
POLE

-Y29REV- CS Sta. 47+04.76

-Y29REV- ST Sta. 48+84.76

-Y29REV-		
PIs Sta 39+31.34	PI Sta 43+55.66	PIs Sta 47+64.78
$\theta s = 3^{\circ} 36' 49.0''$	$\Delta = 28^{\circ} 38' 44.2''$ (RT)	$\theta s = 3^{\circ} 36' 49.0''$
$Ls = 180.00'$	$D = 4^{\circ} 00' 54.4''$	$Ls = 180.00'$
$LT = 120.03'$	$L = 713.44'$	$LT = 120.03'$
$ST = 60.02'$	$T = 364.34'$	$ST = 60.02'$
	$R = 1,427.00'$	
	$V = 50$ MPH	
	$e = 6 \%$	

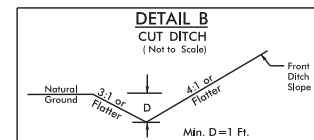
64
MOORING, MARTHA G.
DB 1265 PG 761

END CONSTRUCTION
-Y29REV- POT Sta. 52+27.00

R2554-69
PINC 45+83.77
EL. = 99.81'

-Y29REV- POT Sta. 52+28.81

64
MOORING, MARTHA G.
DB 1265 PG 761



FROM STA. 49+50 -Y29REV- TO STA. 52+00 -Y29REV- LT

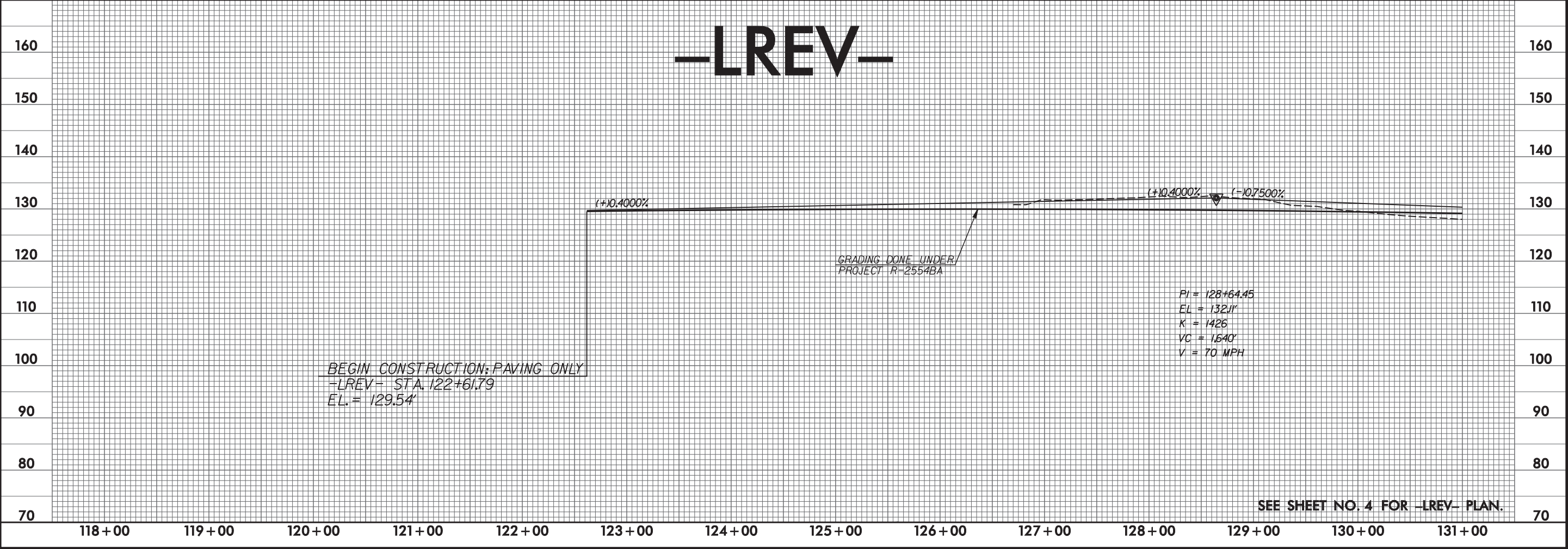
PAVEMENT TO BE OBLITERATED.
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
SEE SHEET NO. 123 FOR -Y29REV- PROFILE.
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		70
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
HDR		HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-01116
BARNHILL CONTRACTING COMPANY		

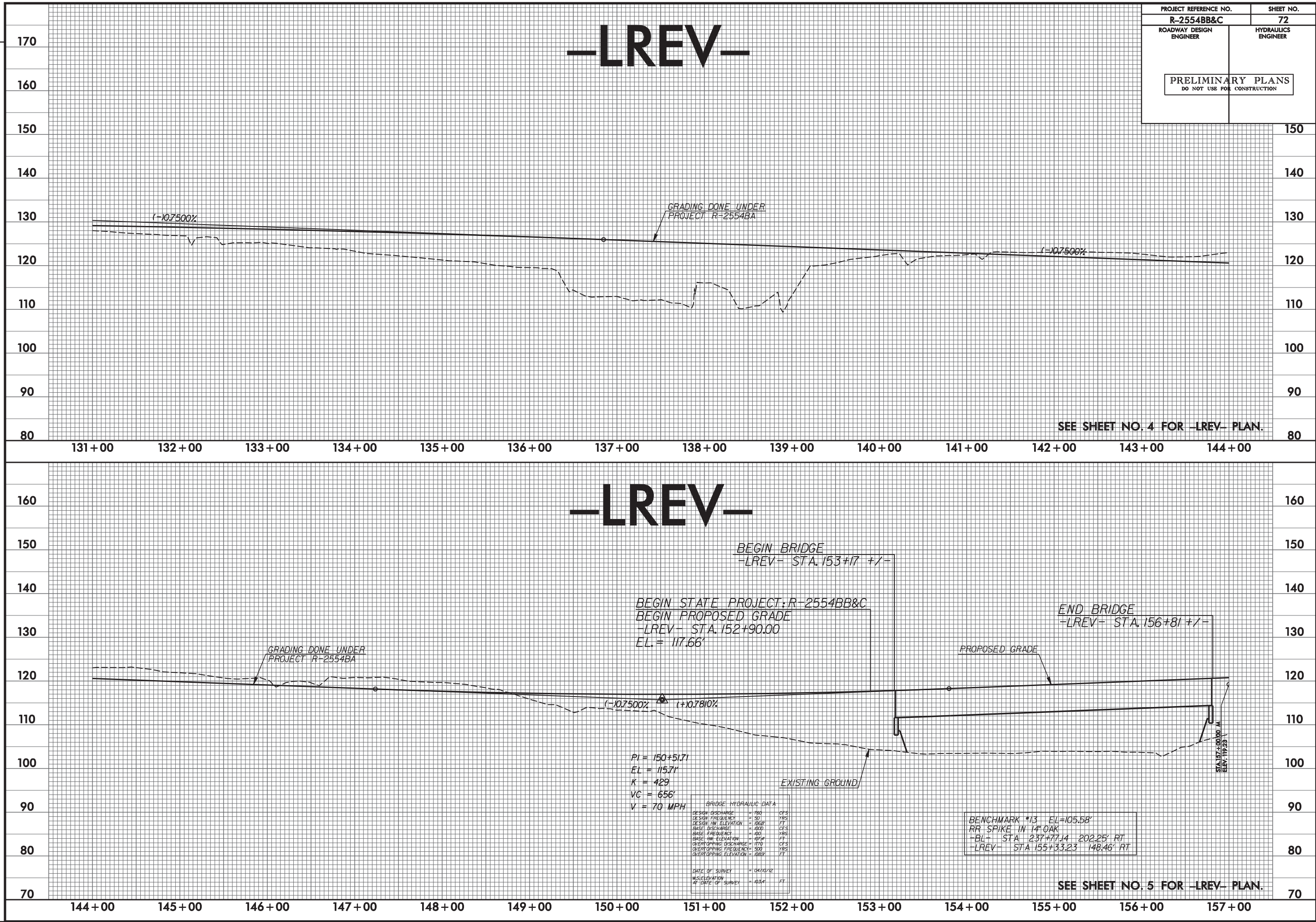
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DATE: 10/9/2012
TIME: 6:33:19 PM
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REVISIONS

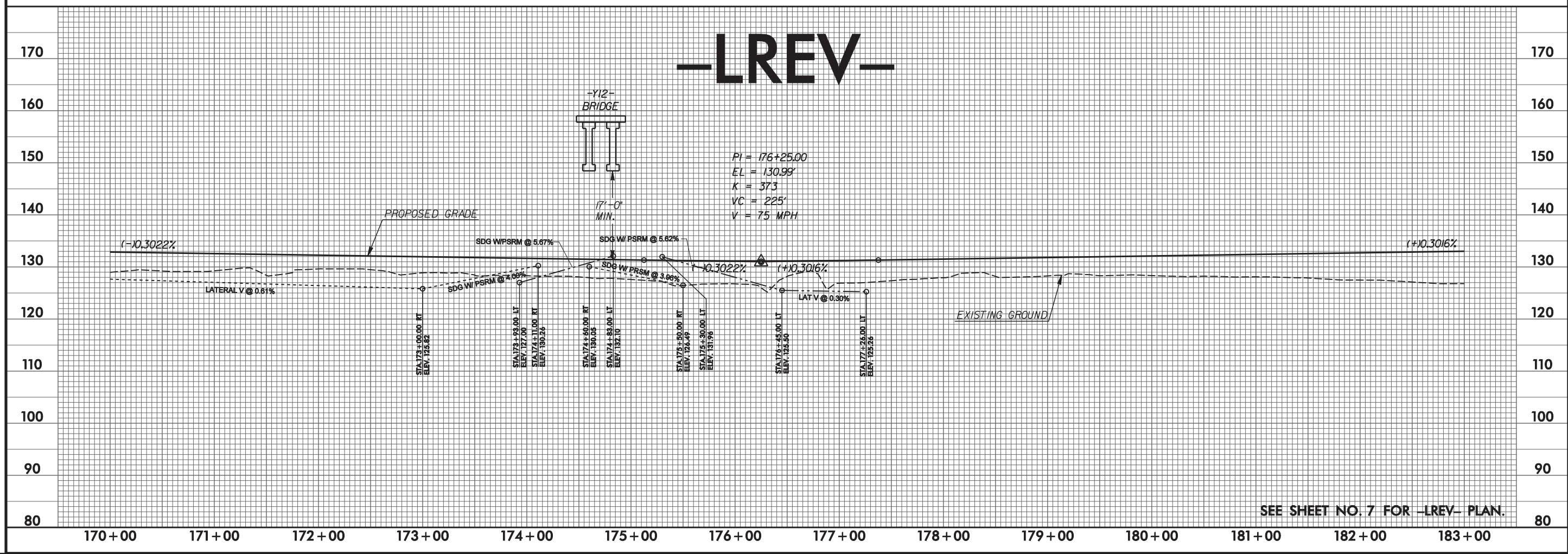
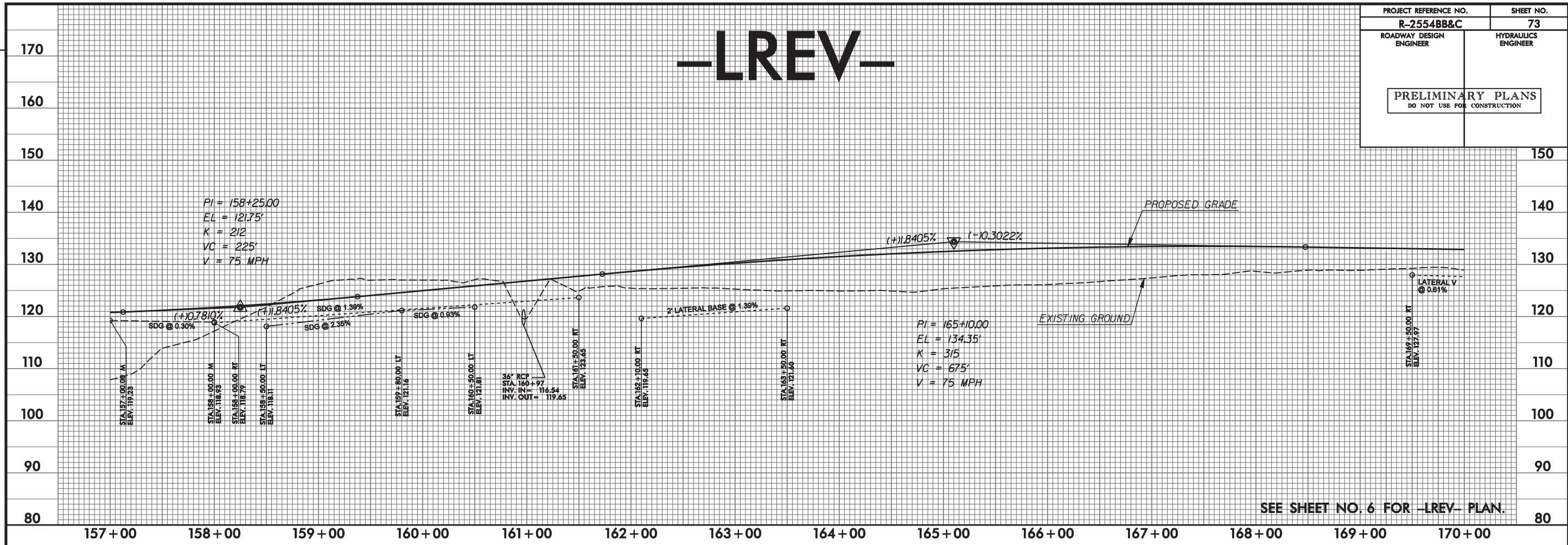
PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		71
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

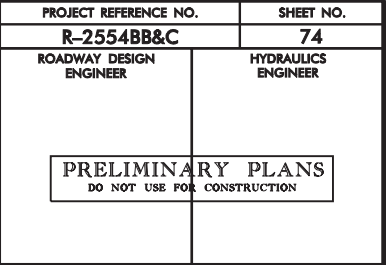


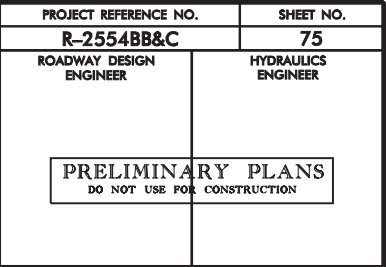
REVISIONS



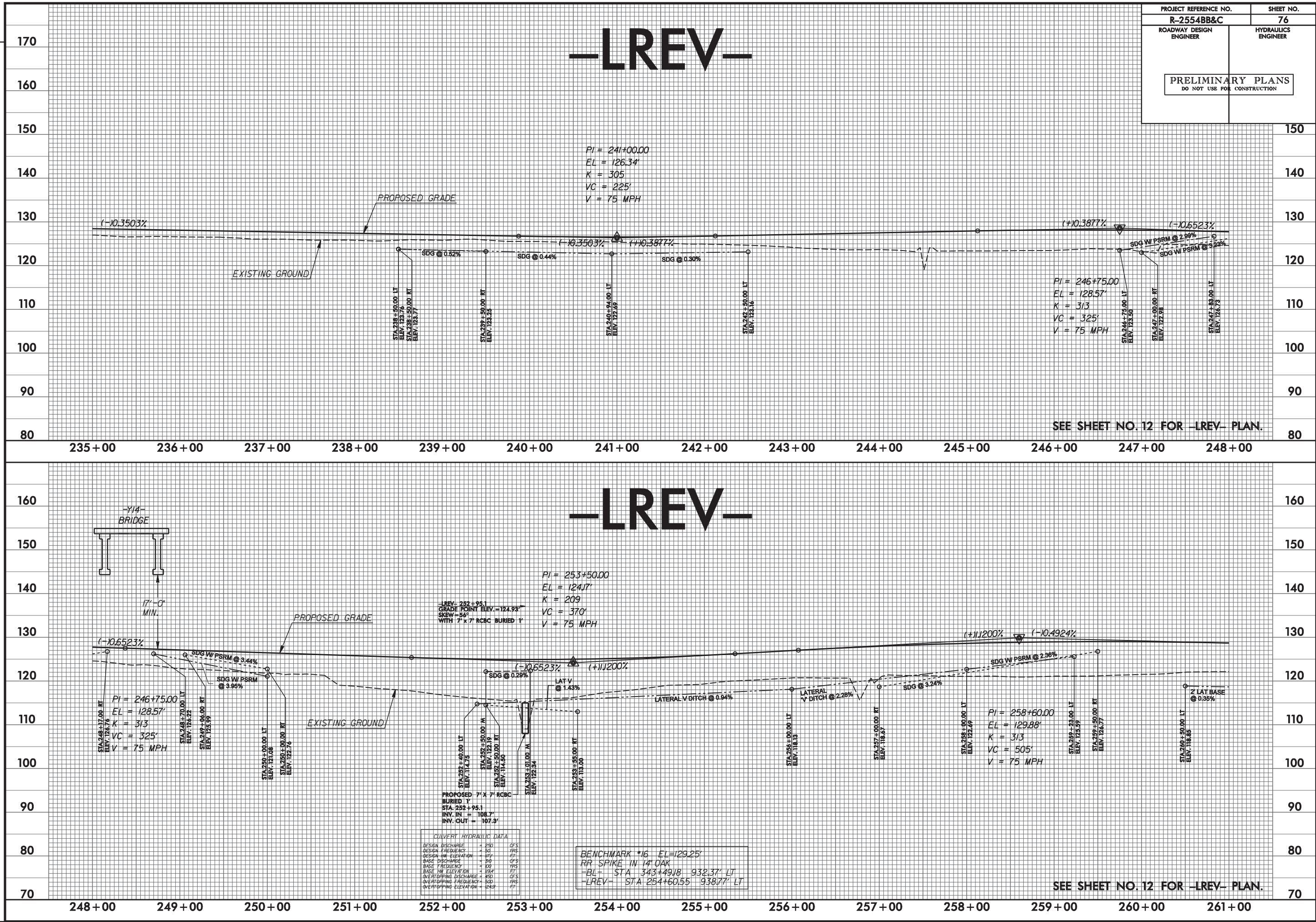
REVISIONS



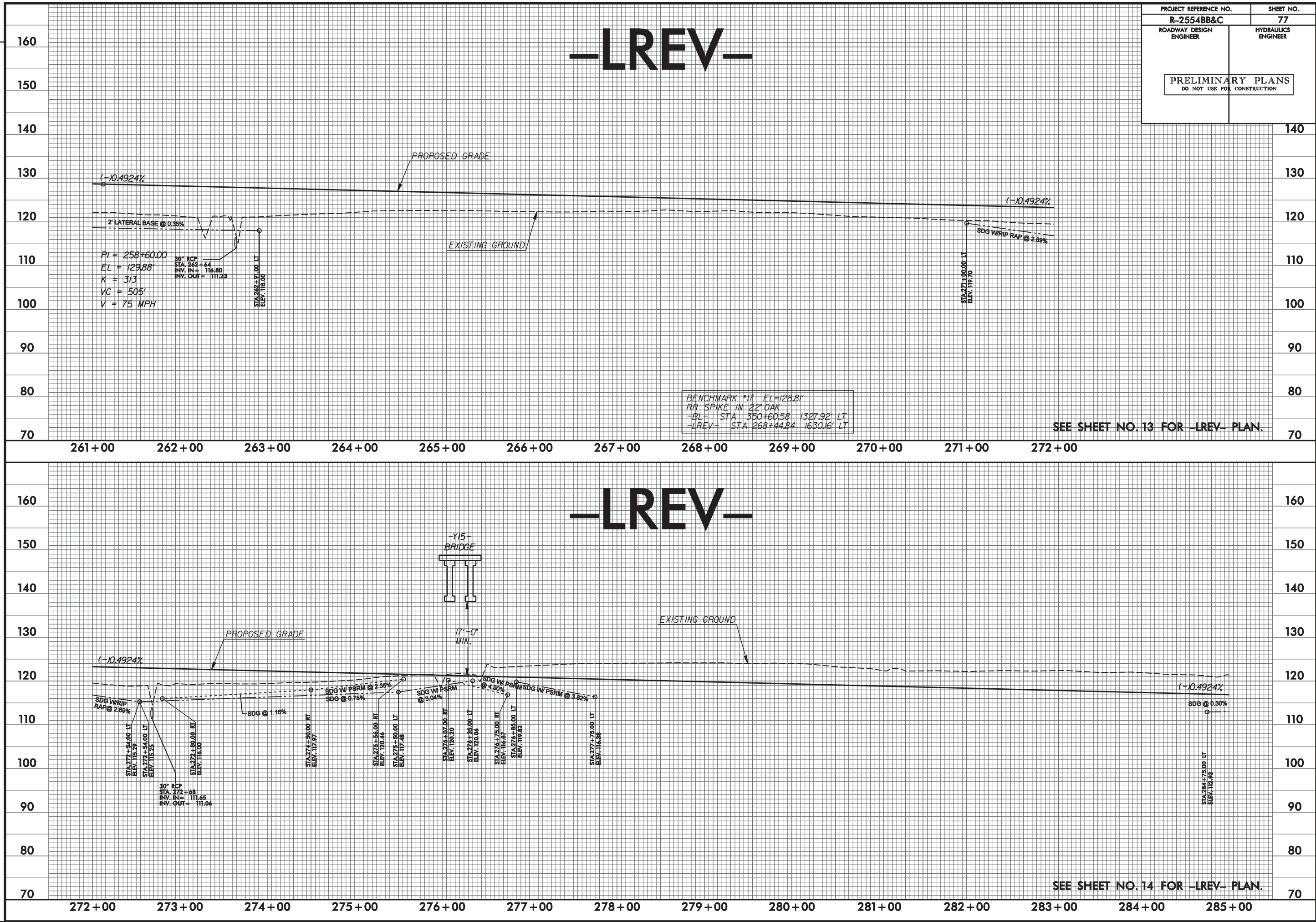




REVISIONS

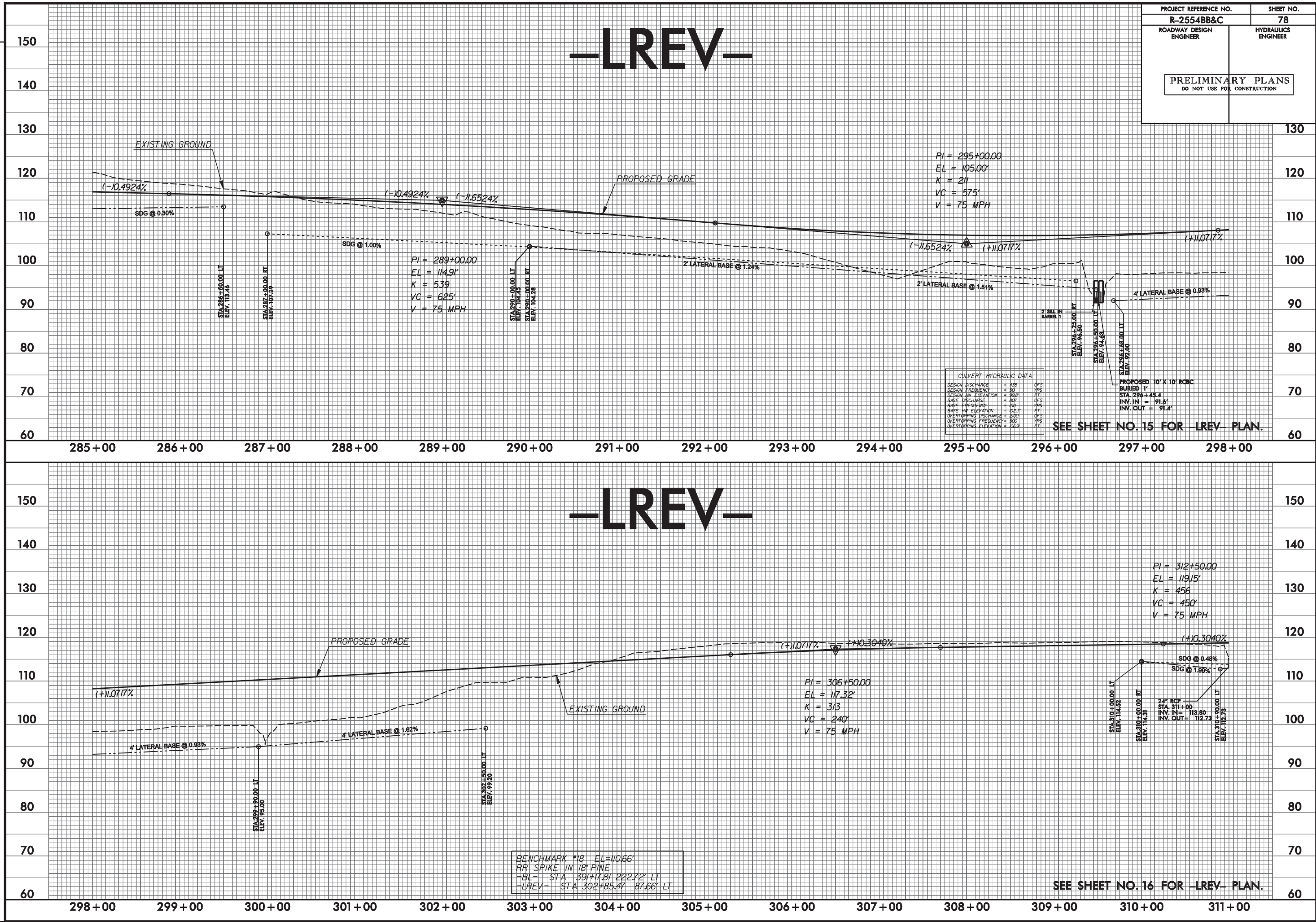


REVISIONS

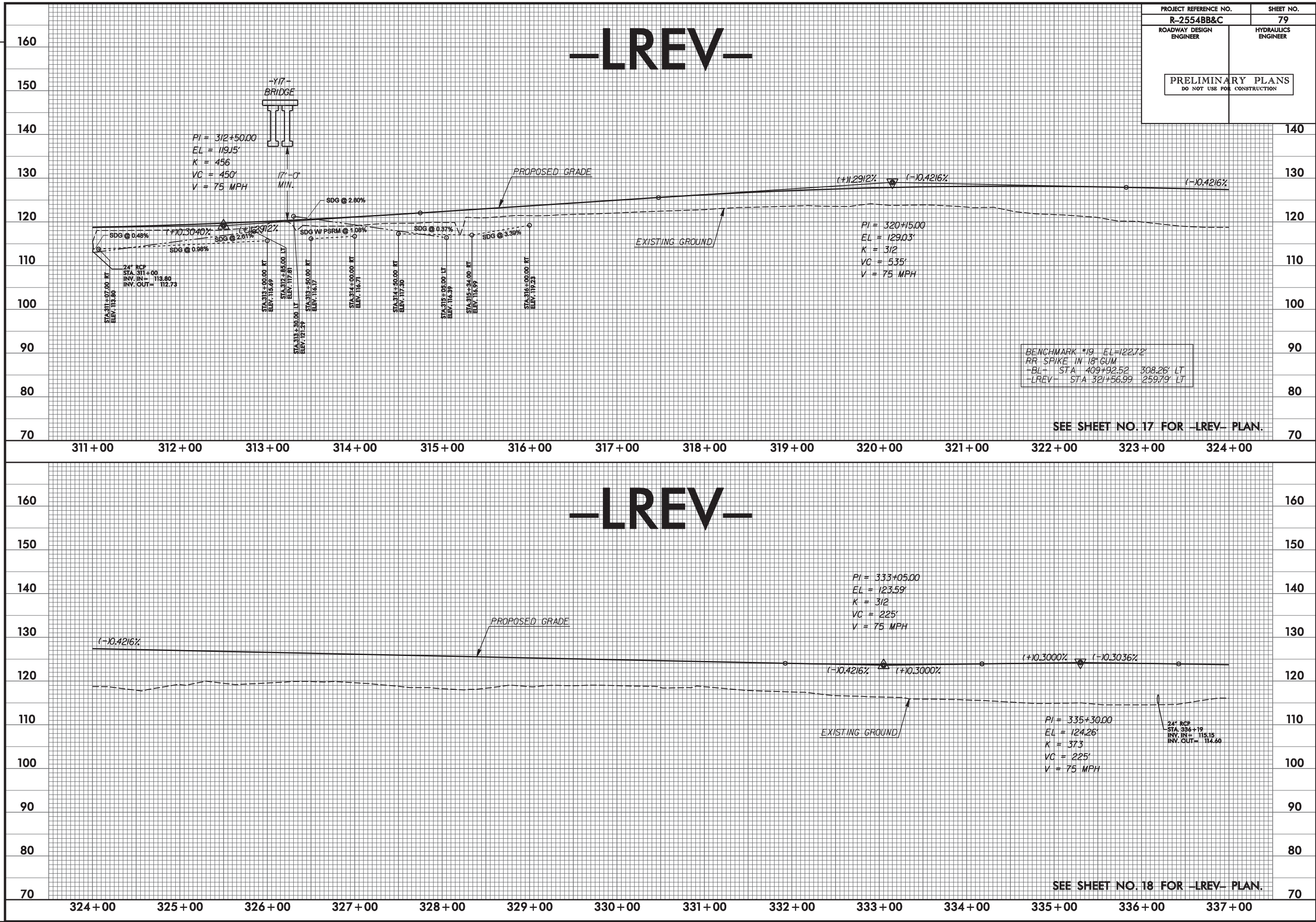


PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		77
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

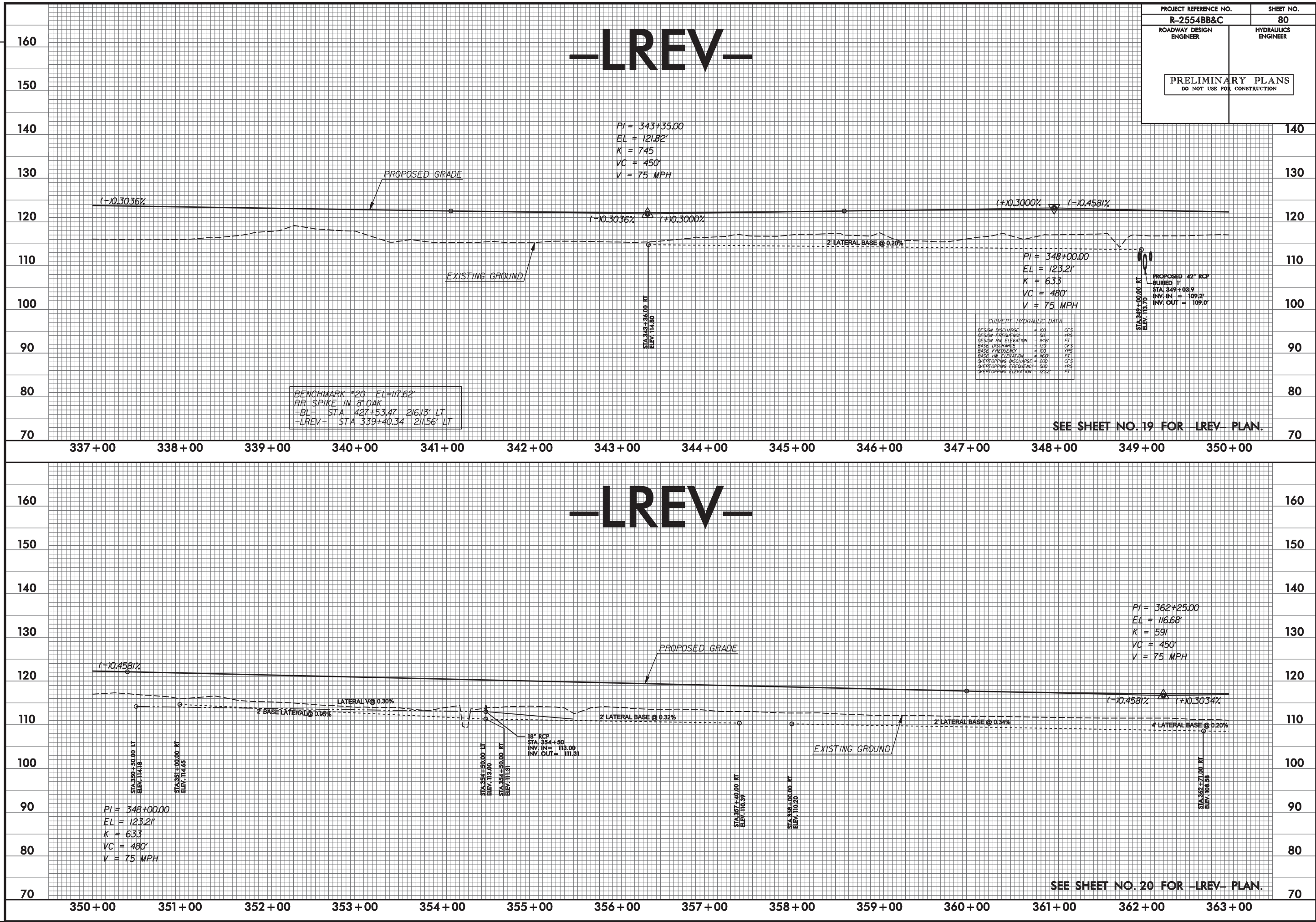
REVISIONS

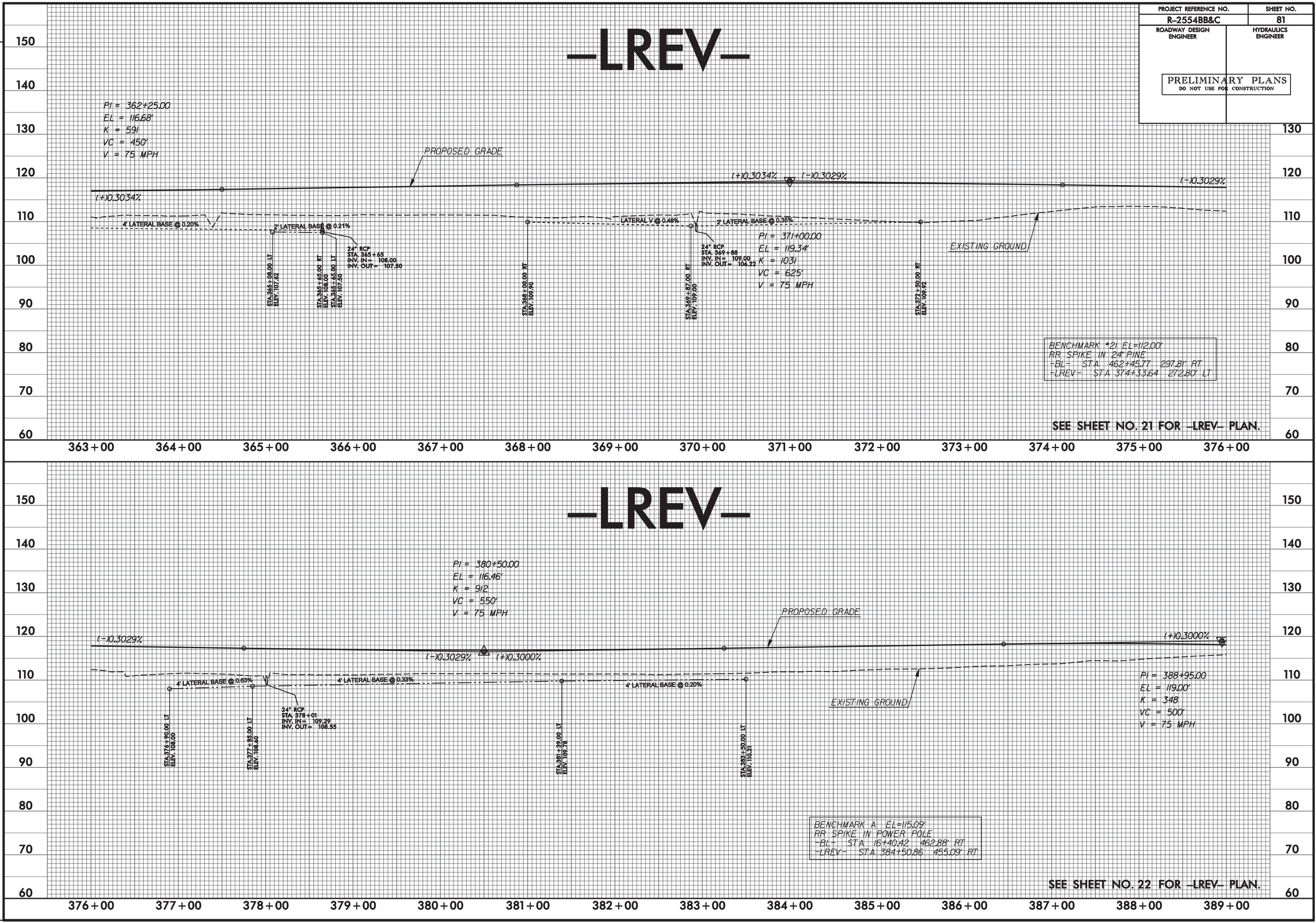


REVISIONS

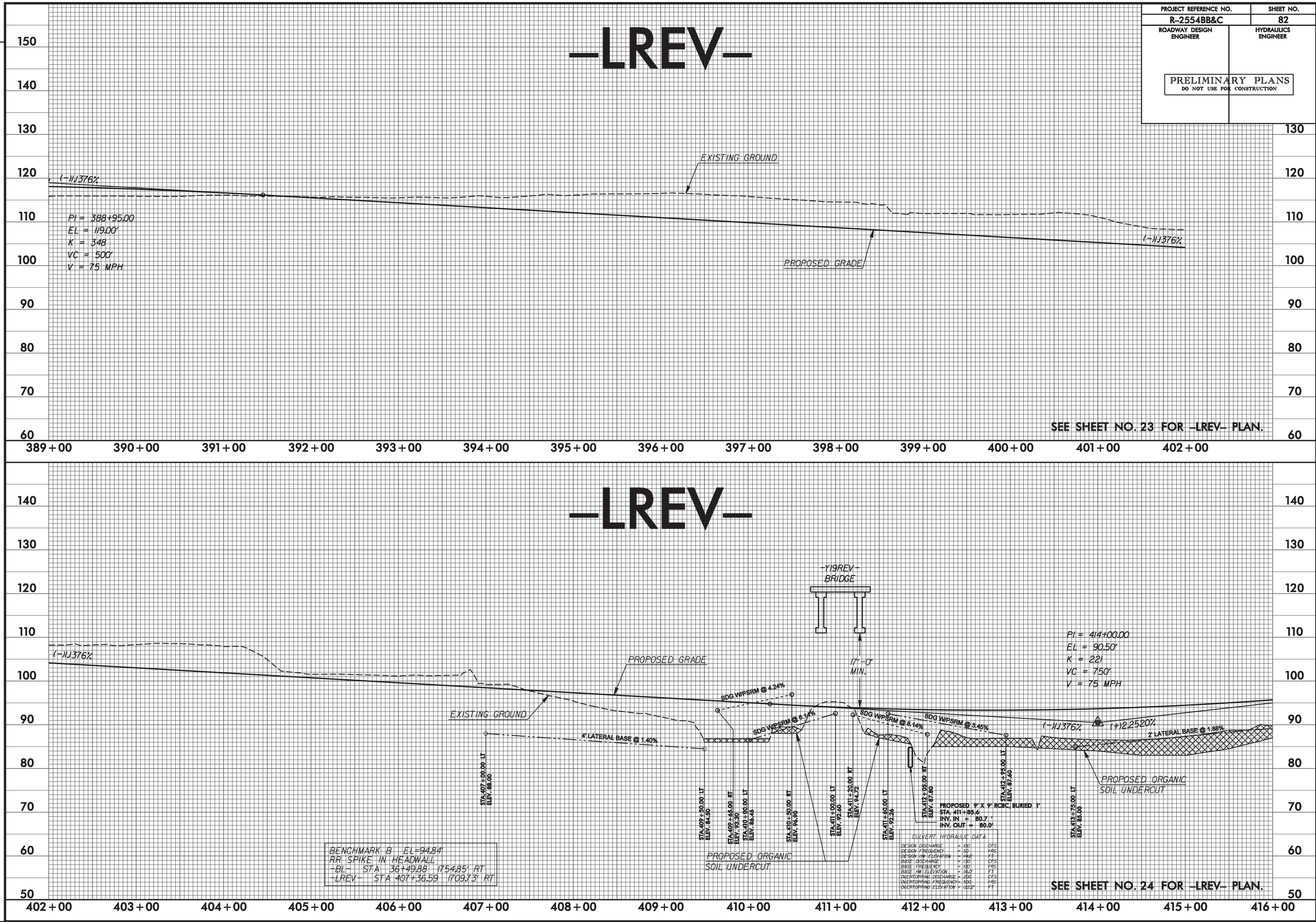


REVISIONS





REVISIONS

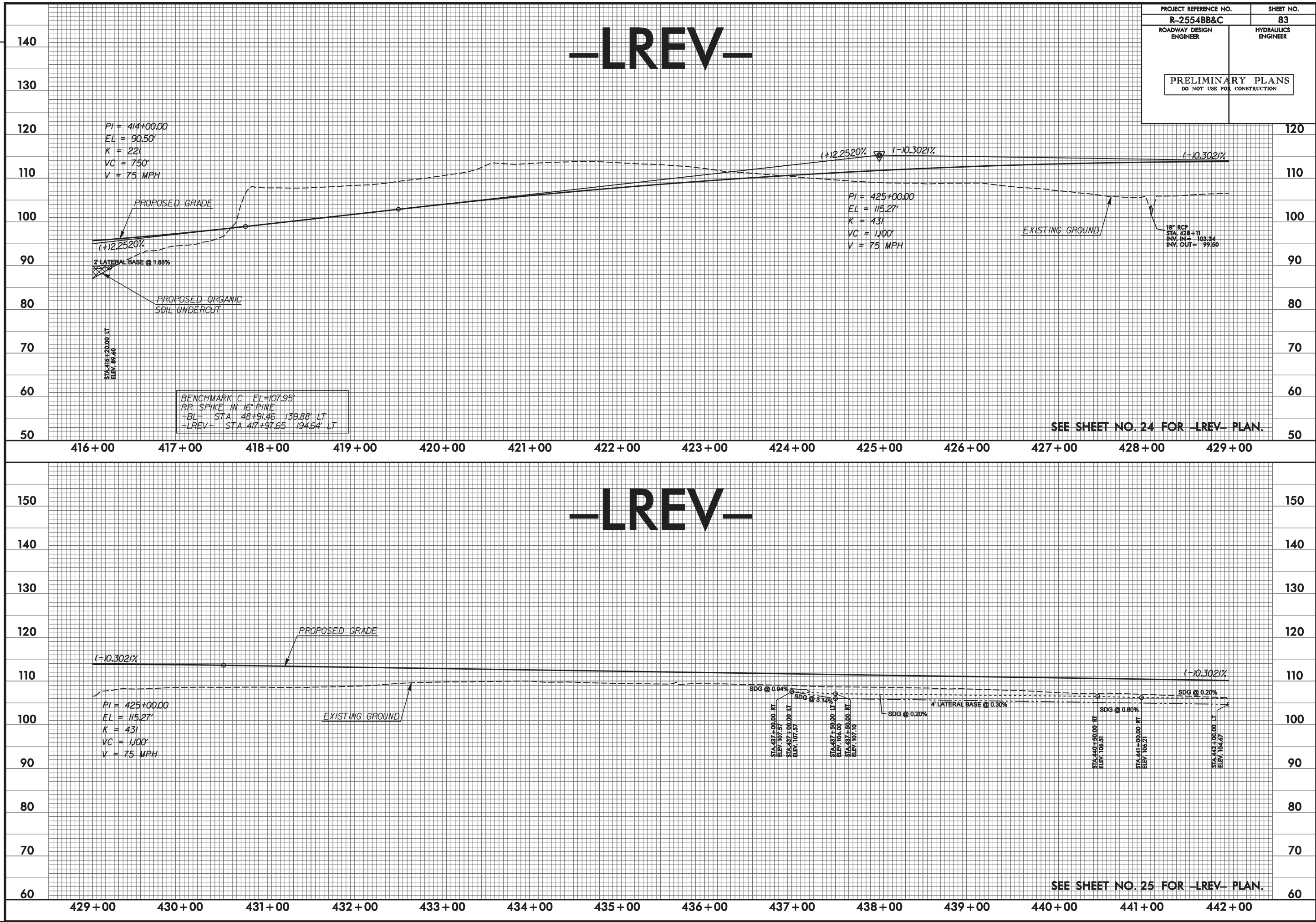


PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		82
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

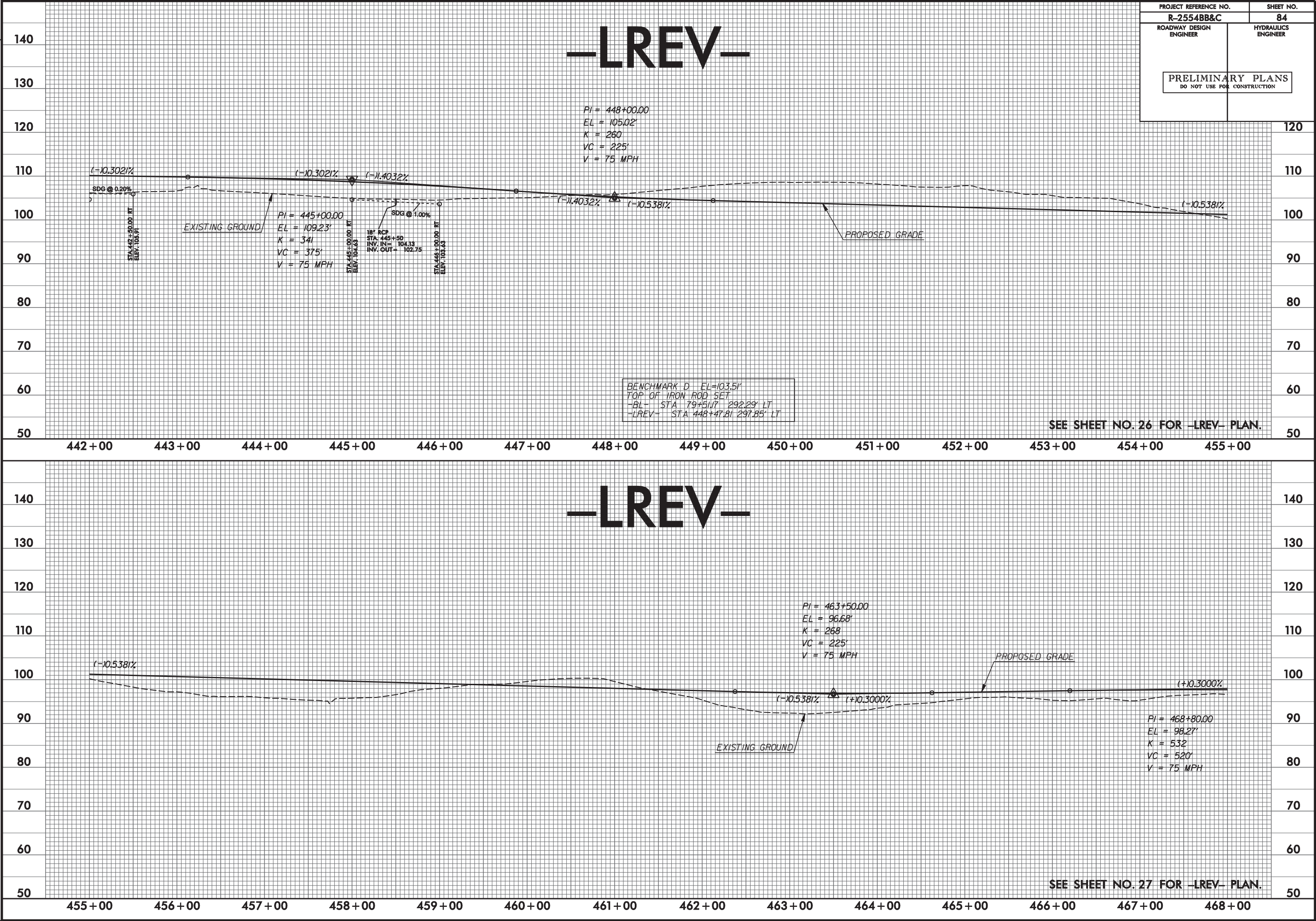
SEE SHEET NO. 23 FOR -LREV- PLAN.

SEE SHEET NO. 24 FOR -LREV- PLAN.

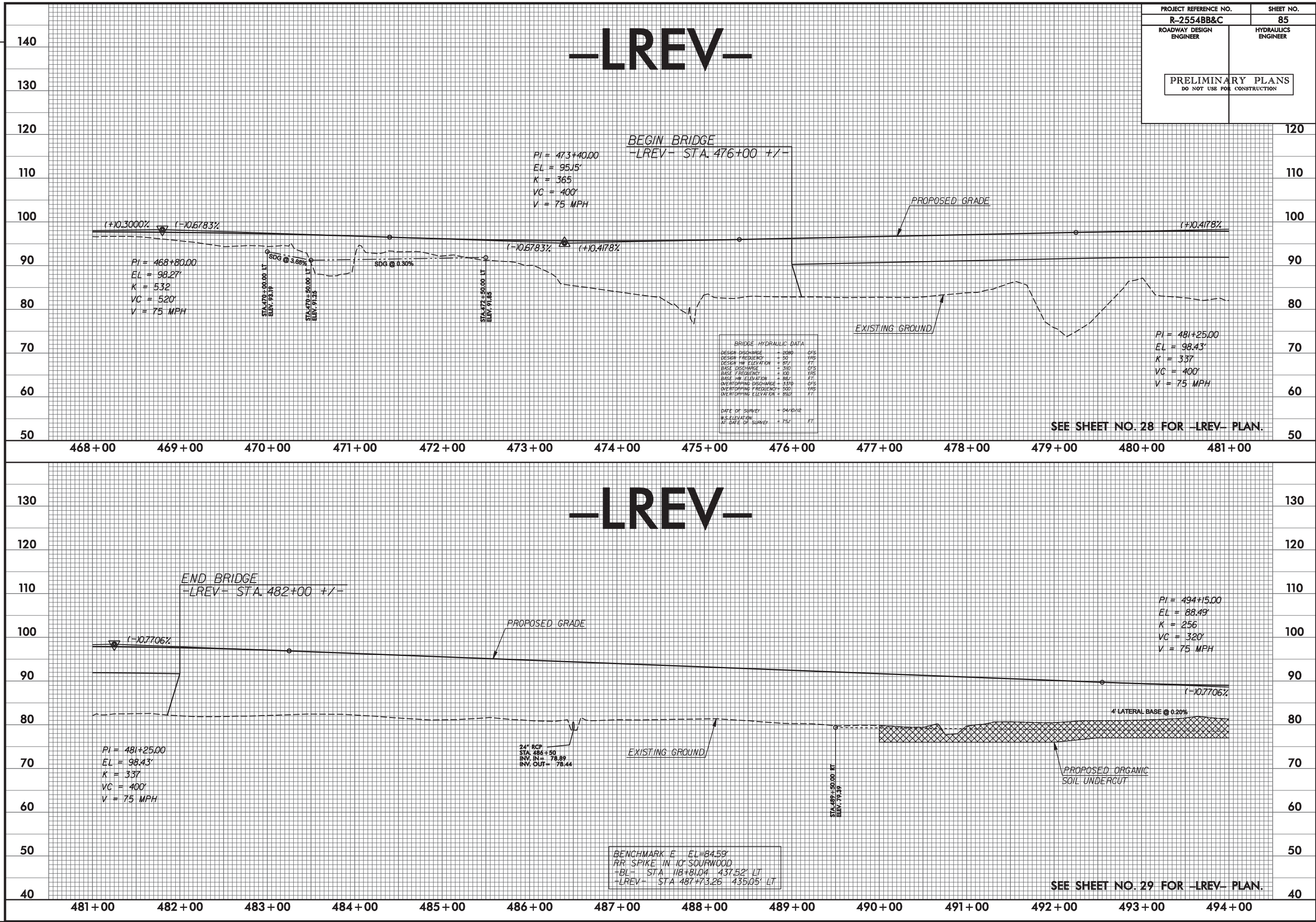
REVISIONS

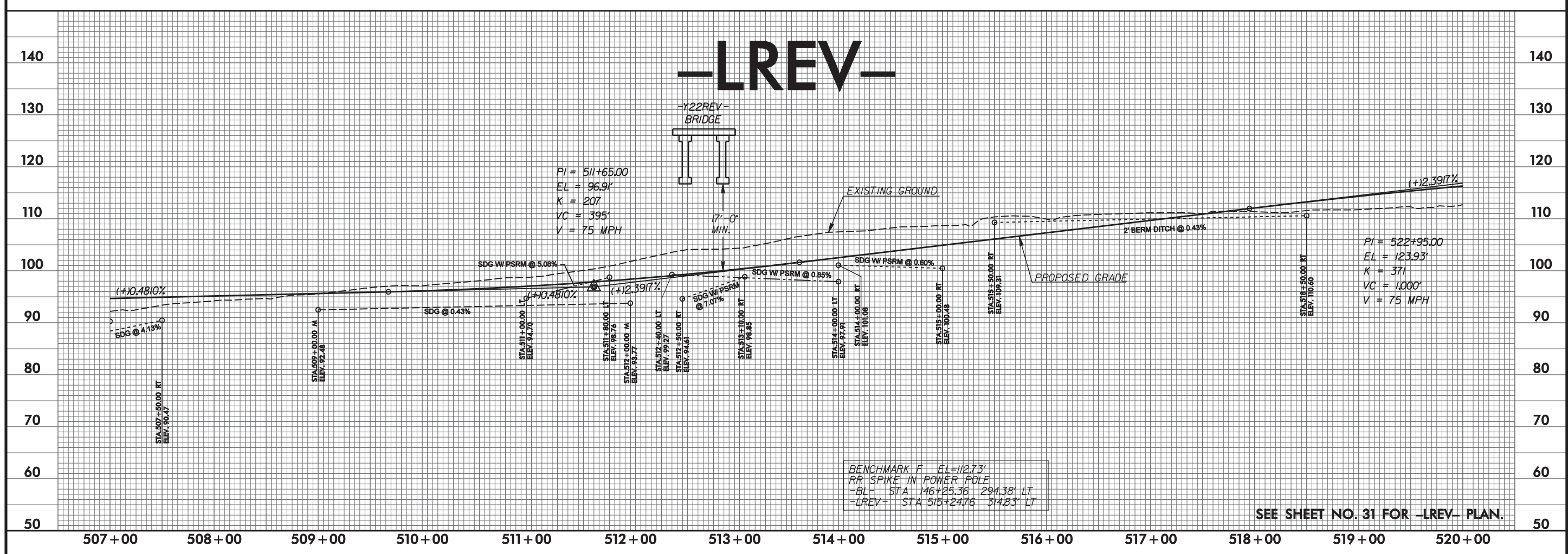
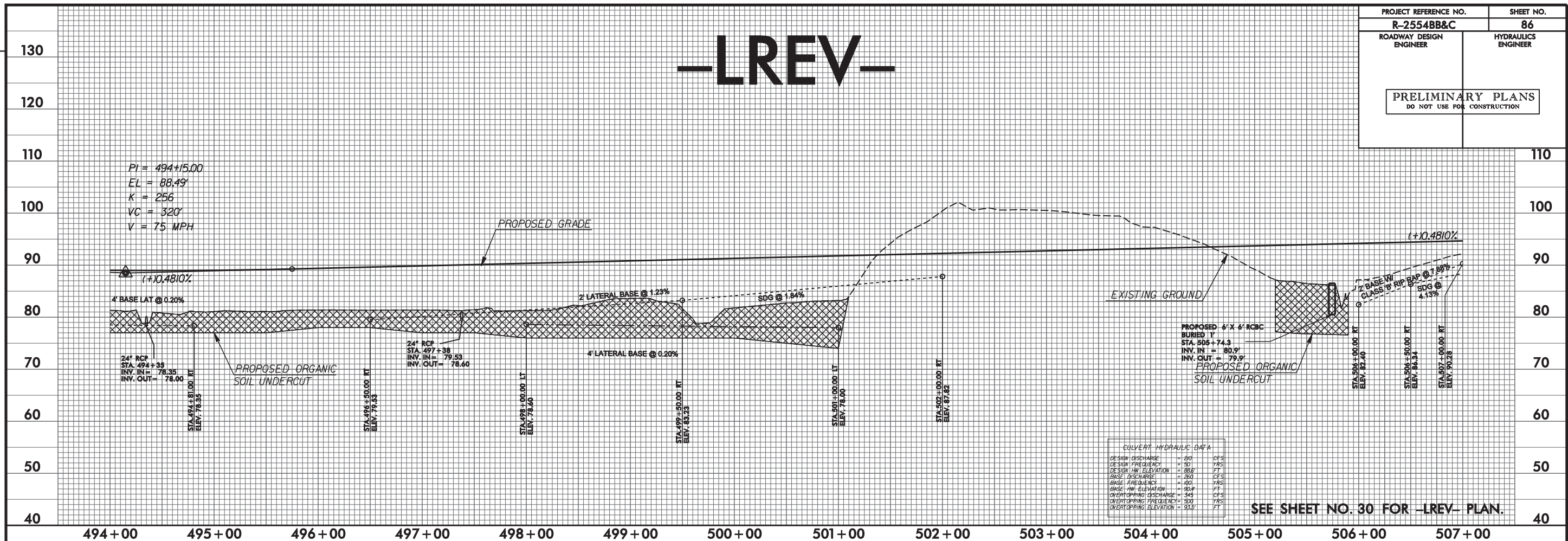


REVISIONS

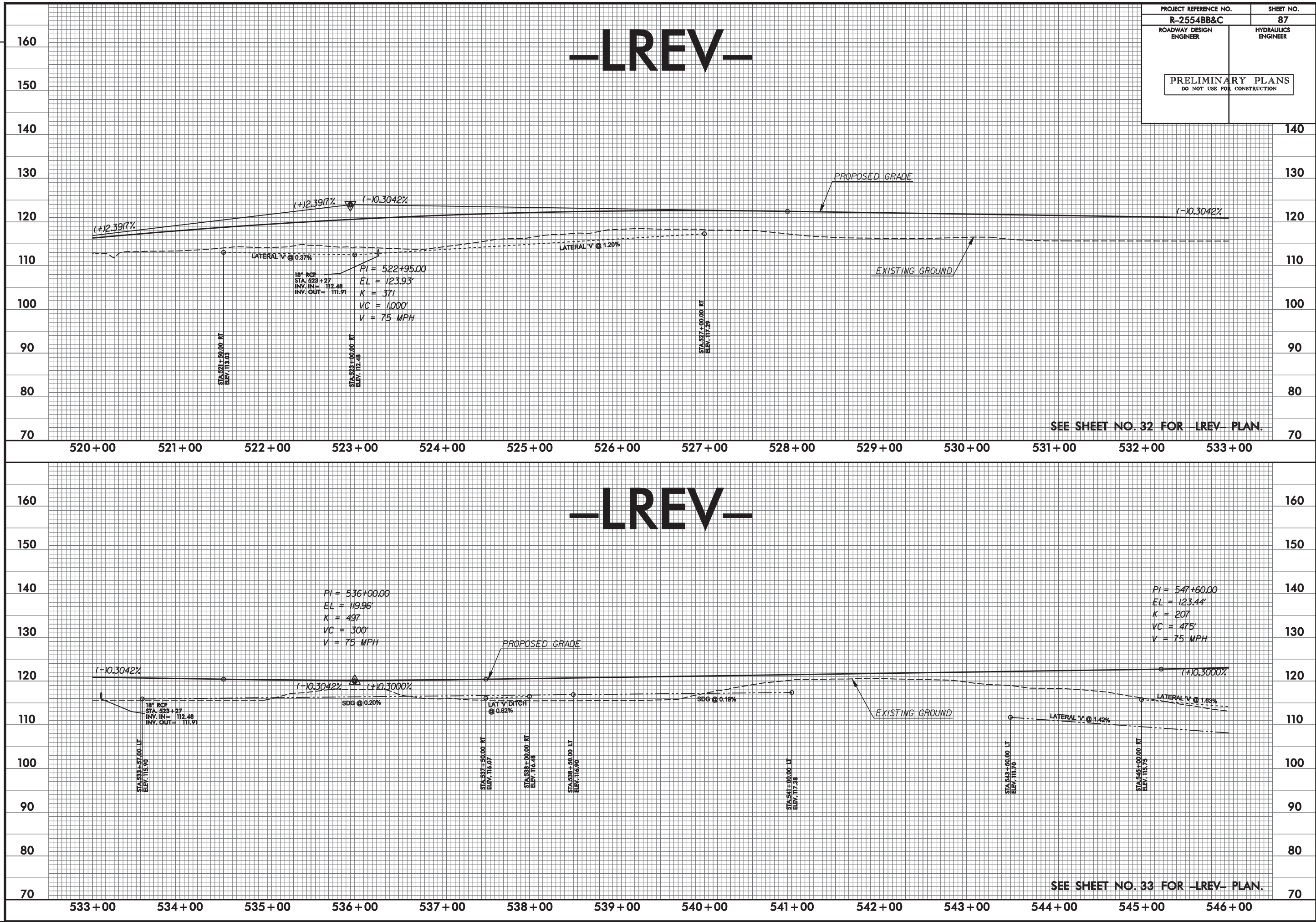


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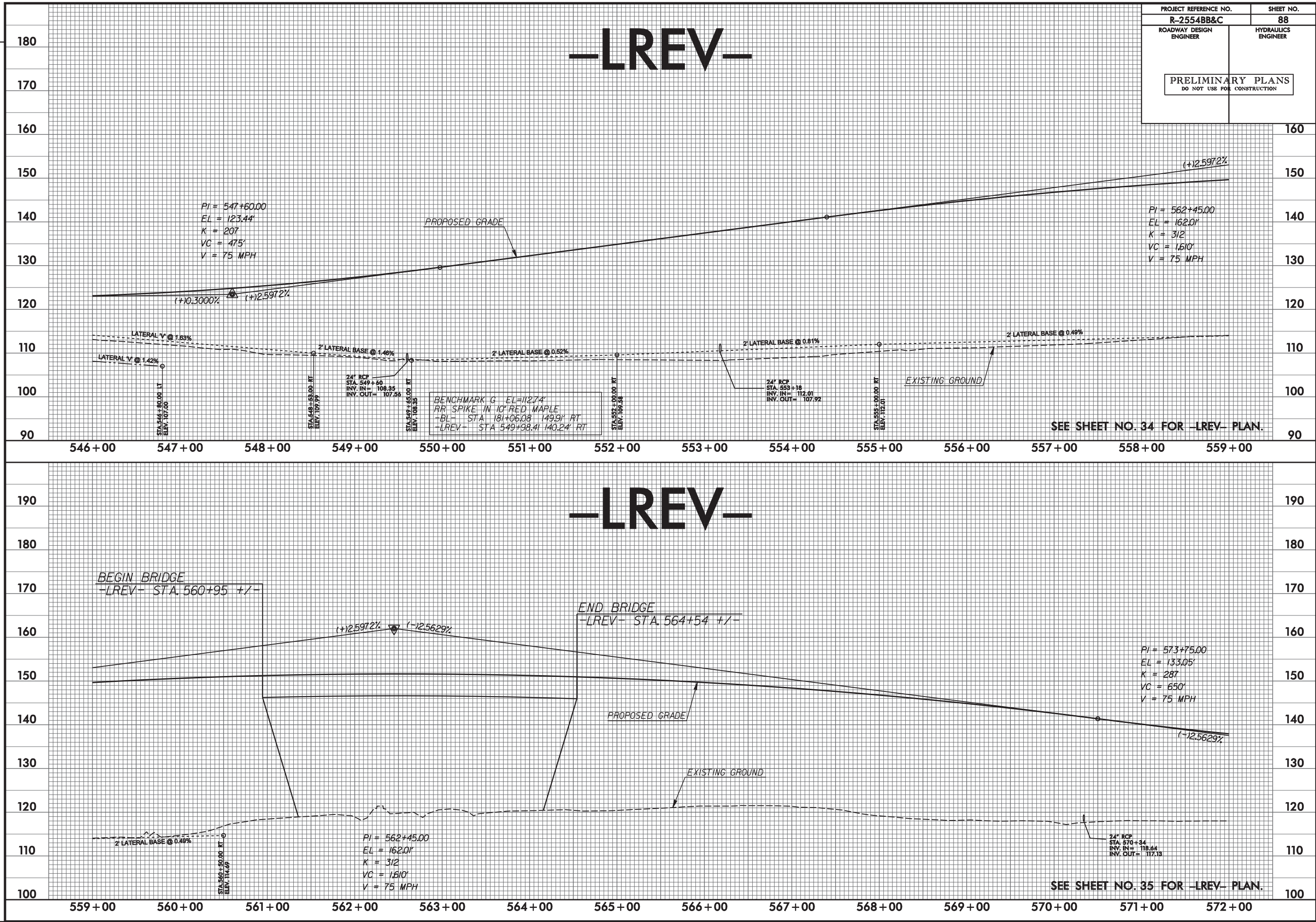


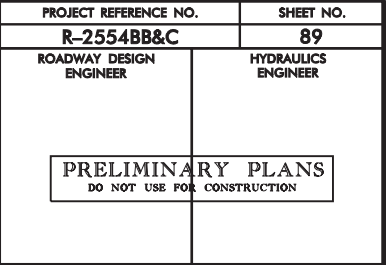


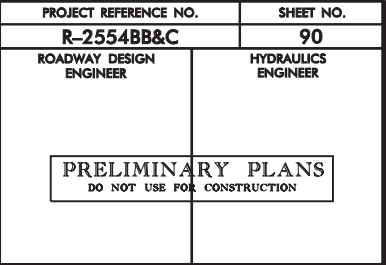
REVISIONS

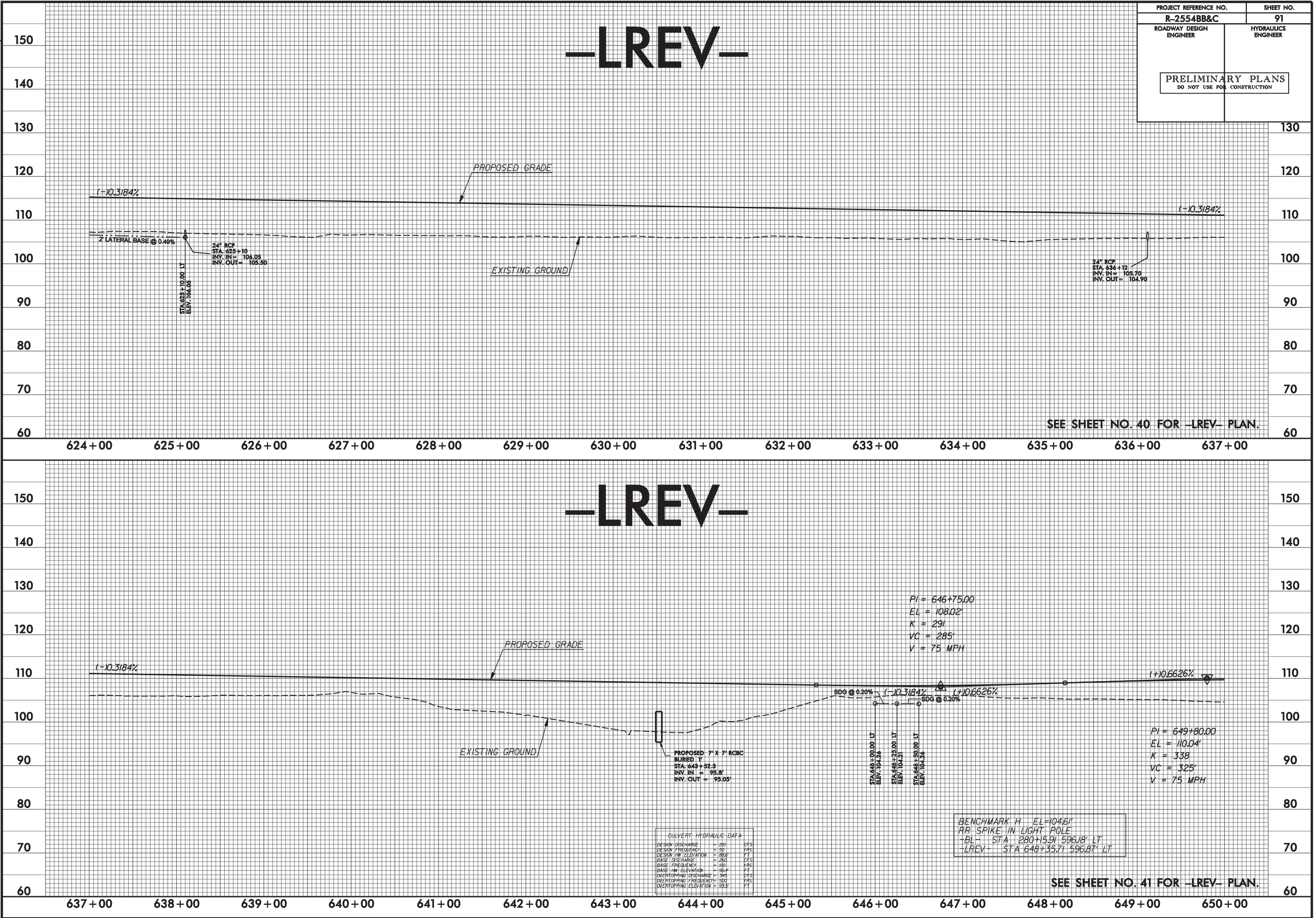


REVISIONS

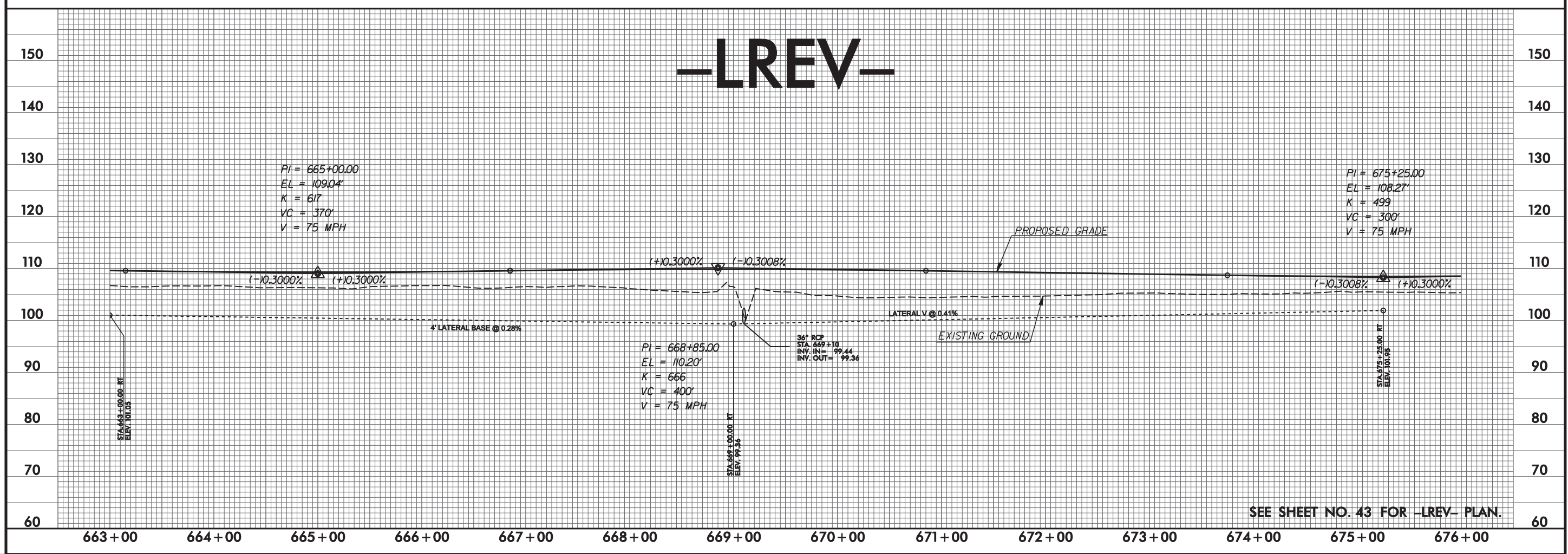
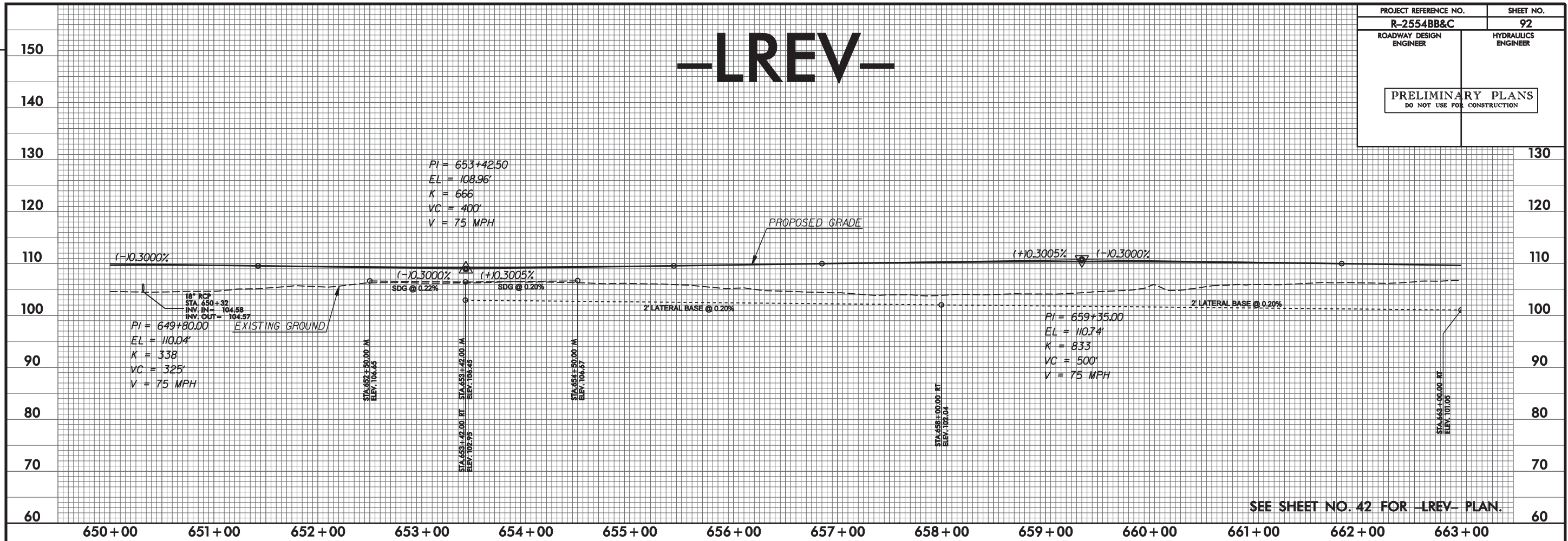








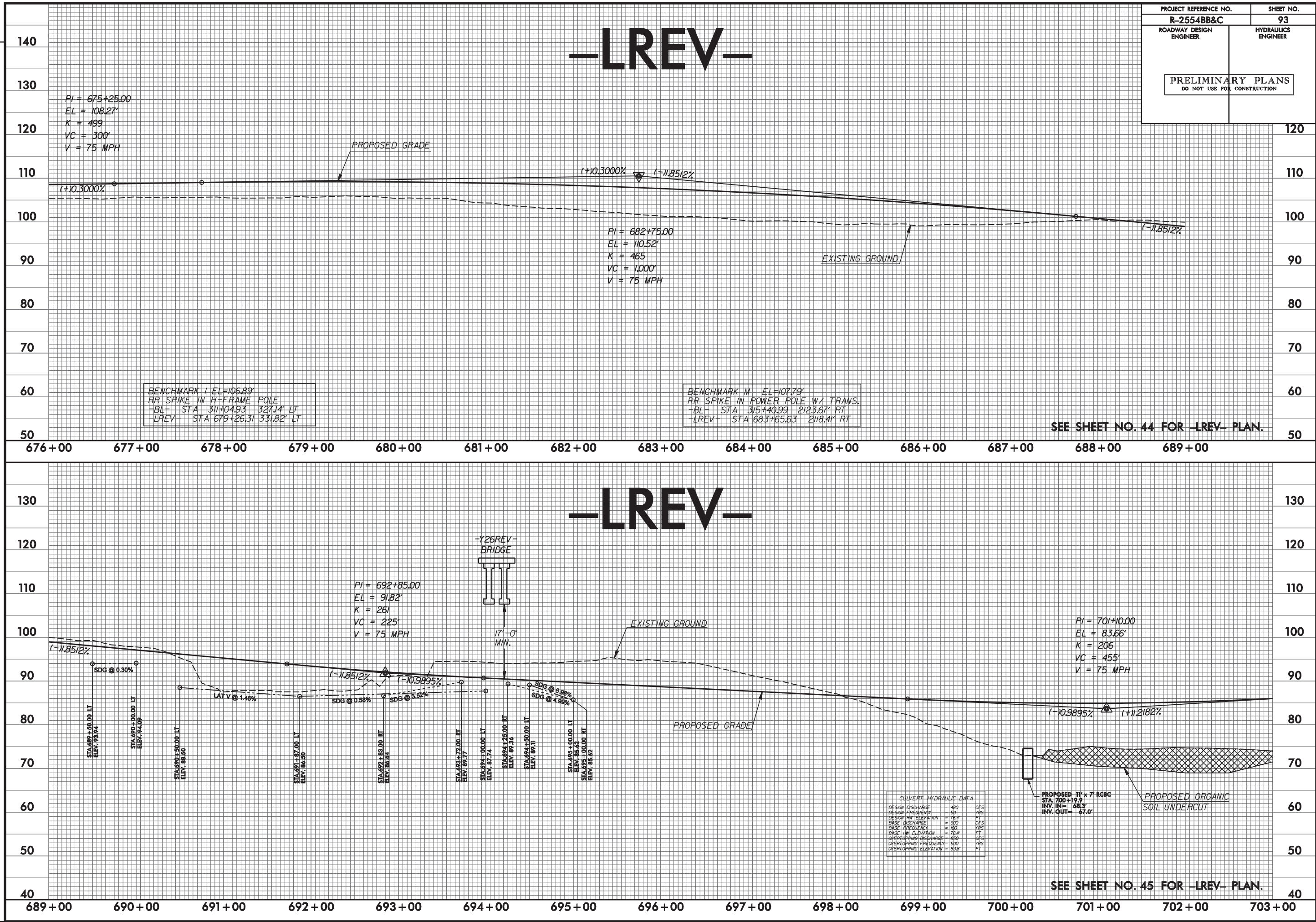
PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	92
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



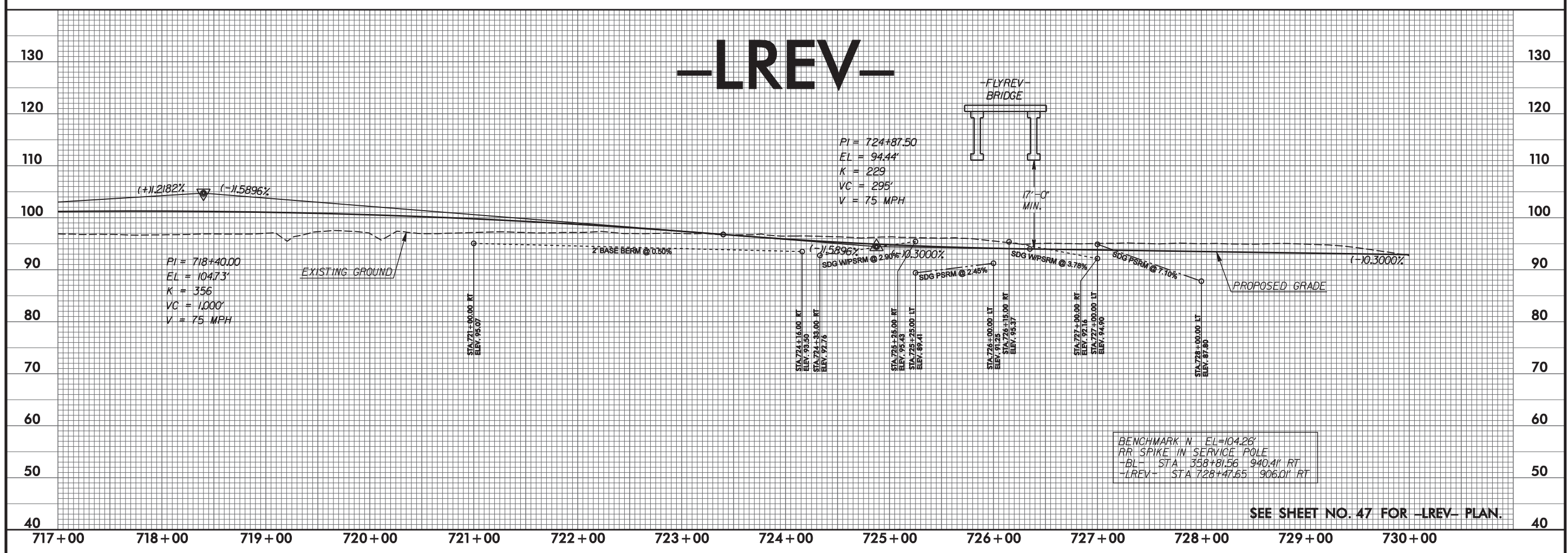
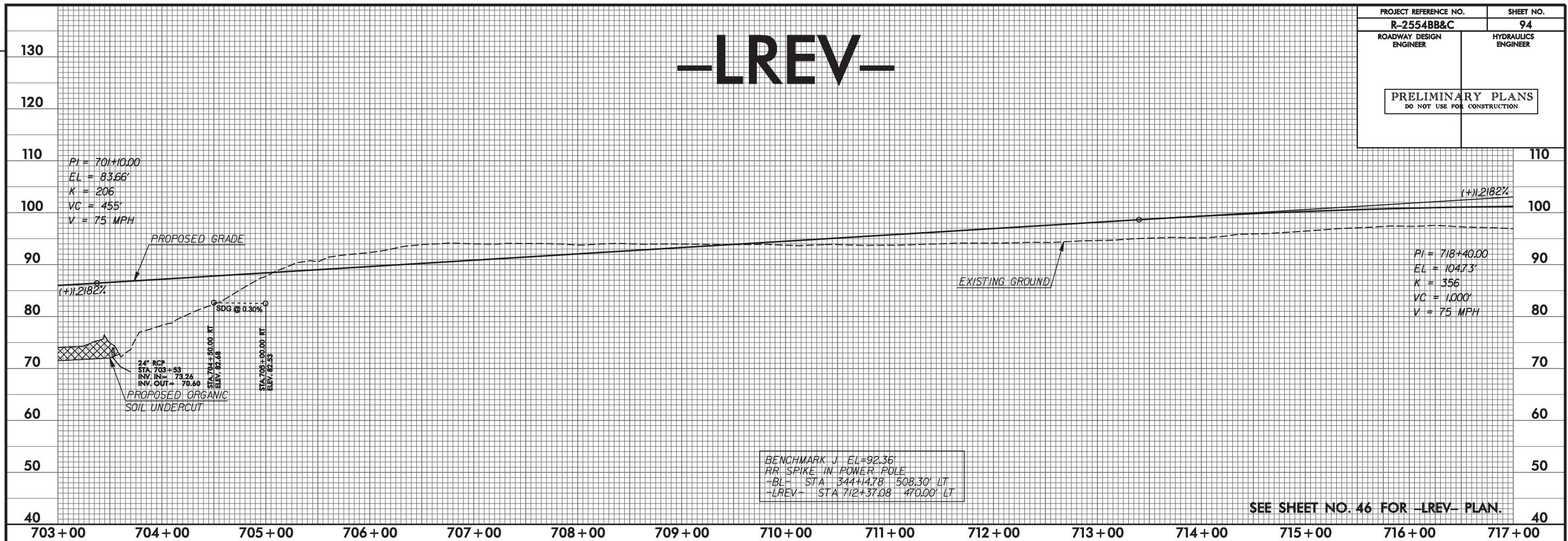
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REVISIONS

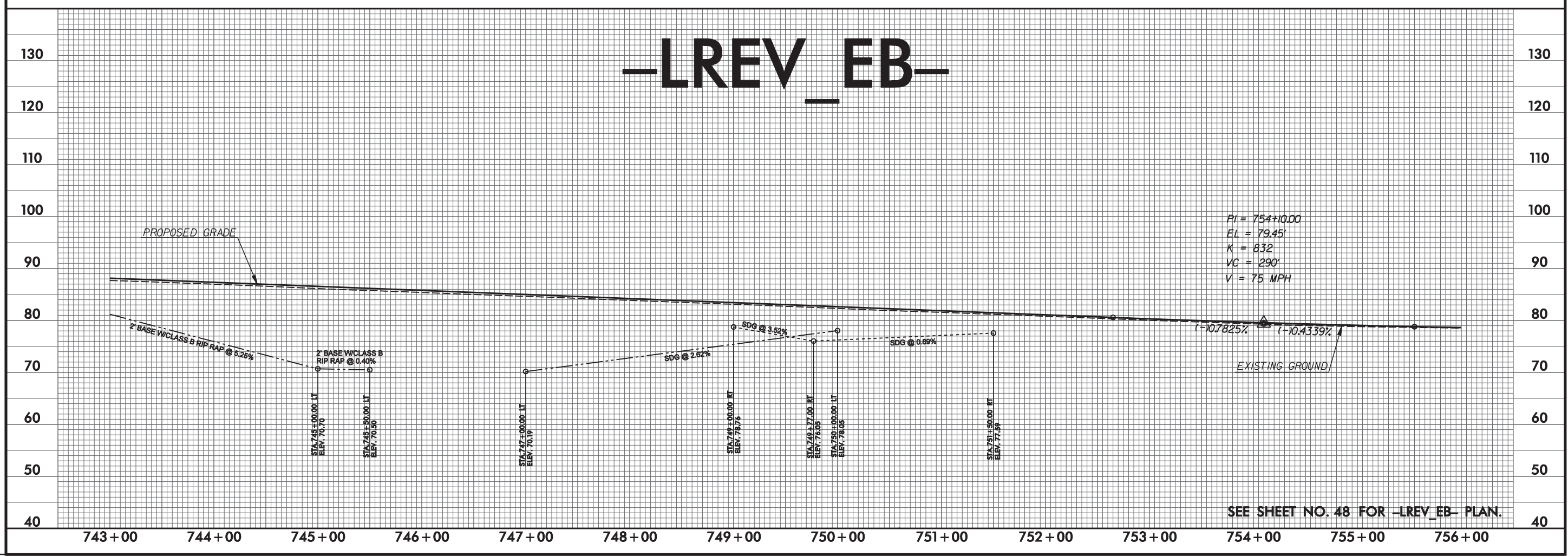
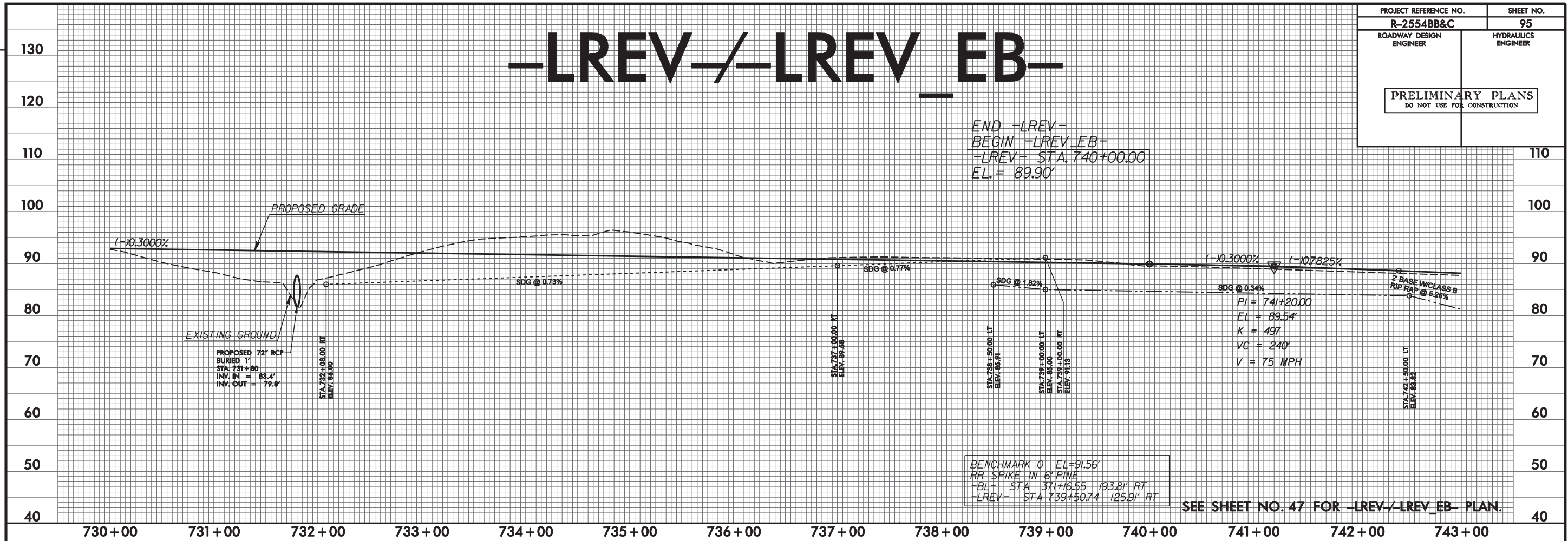
REVISIONS

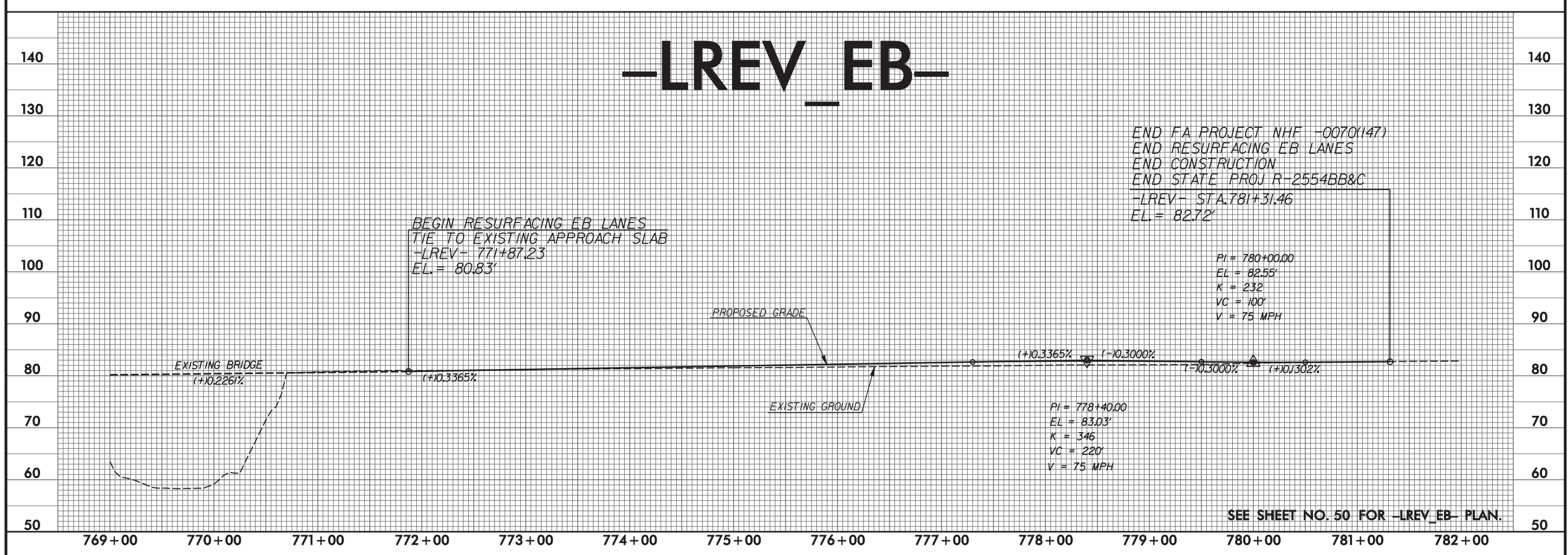
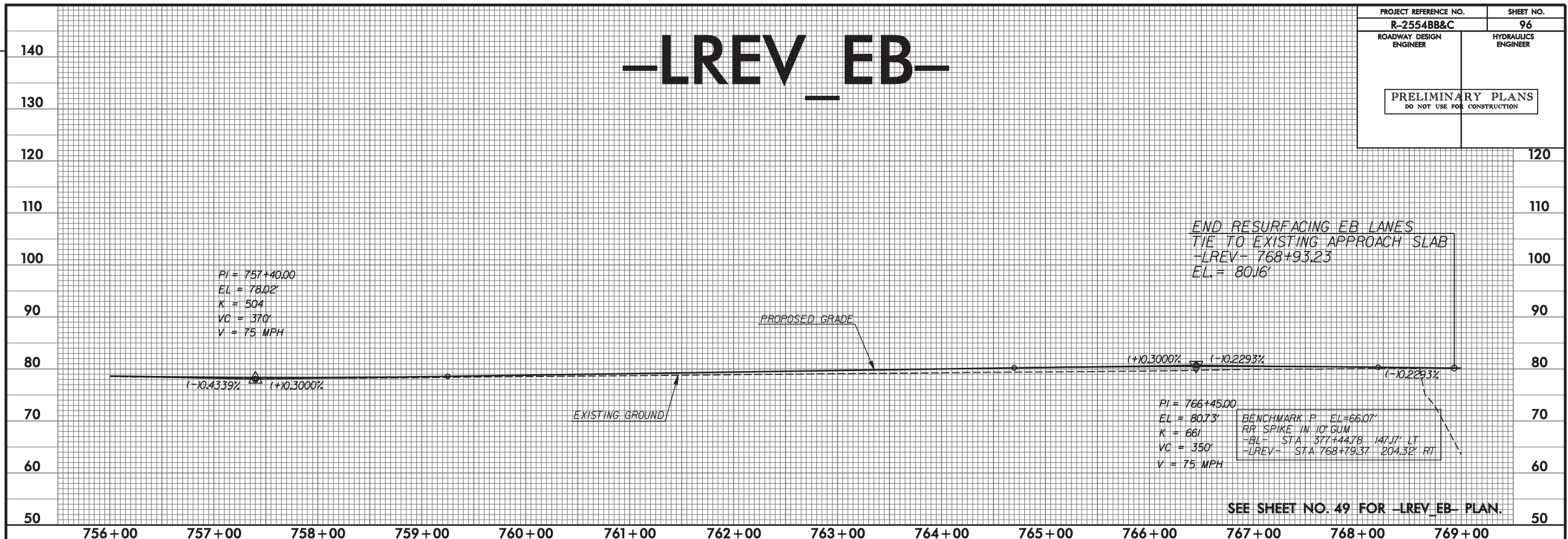


PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	94
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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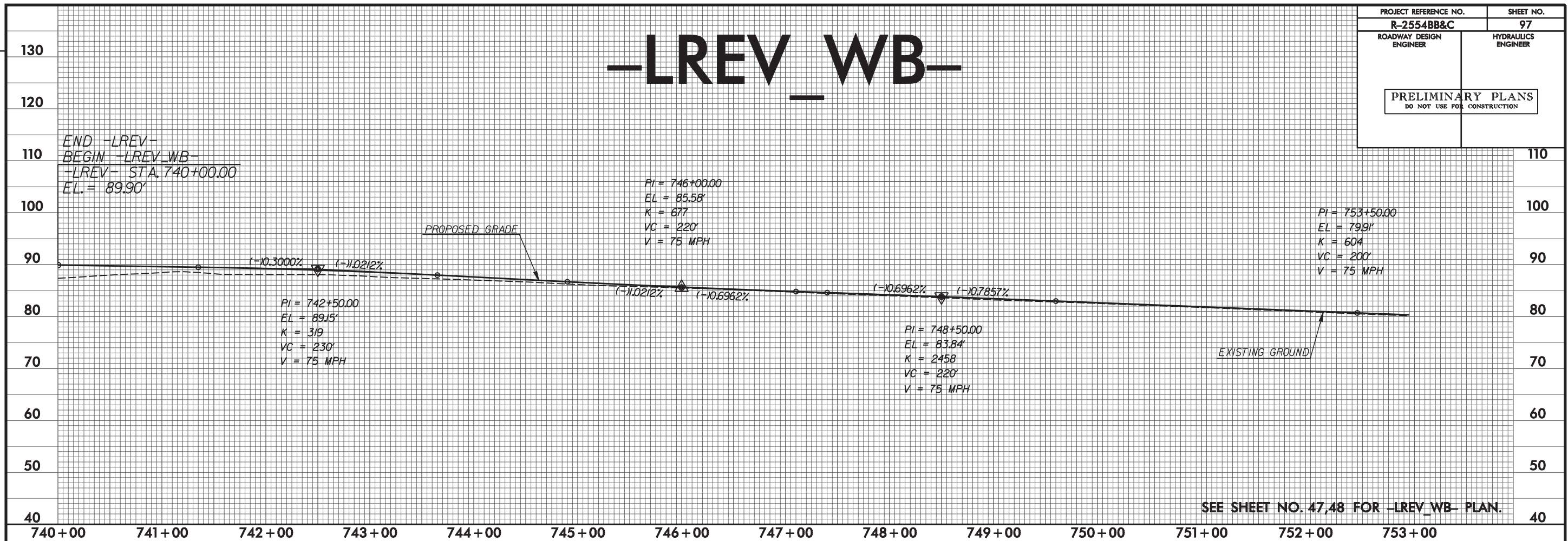




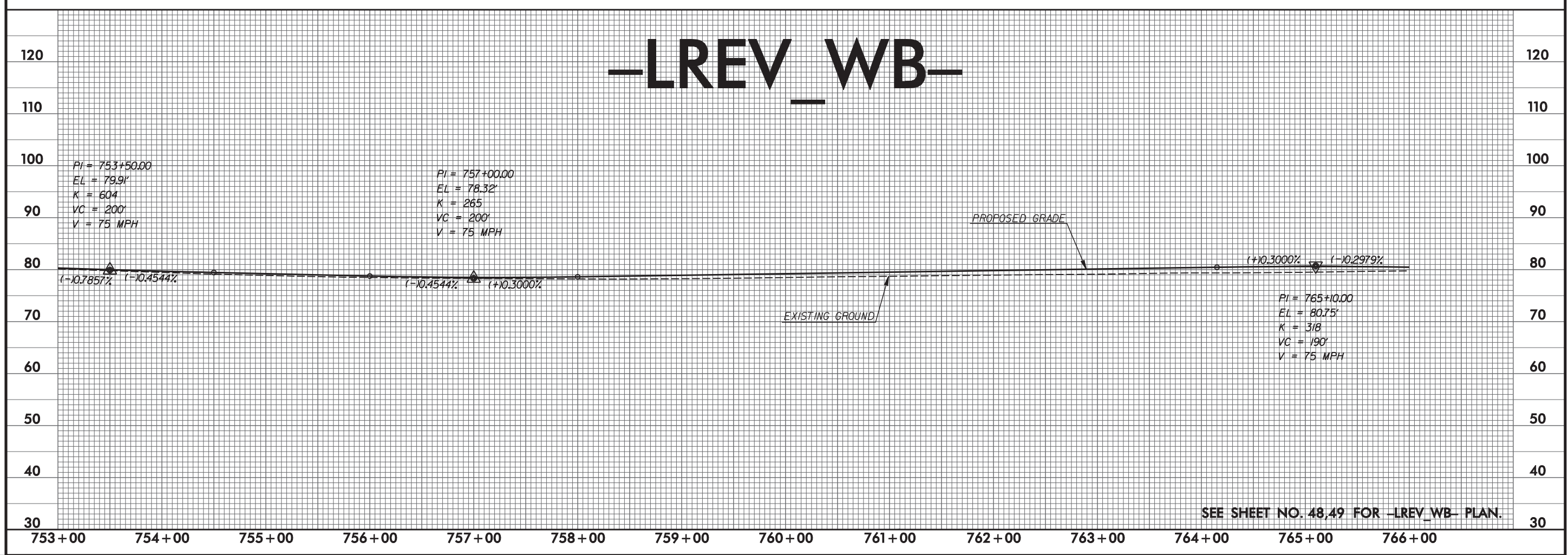
PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	97
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

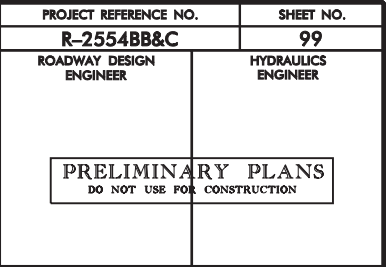


SEE SHEET NO. 47,48 FOR -LREV WB- PLAN.



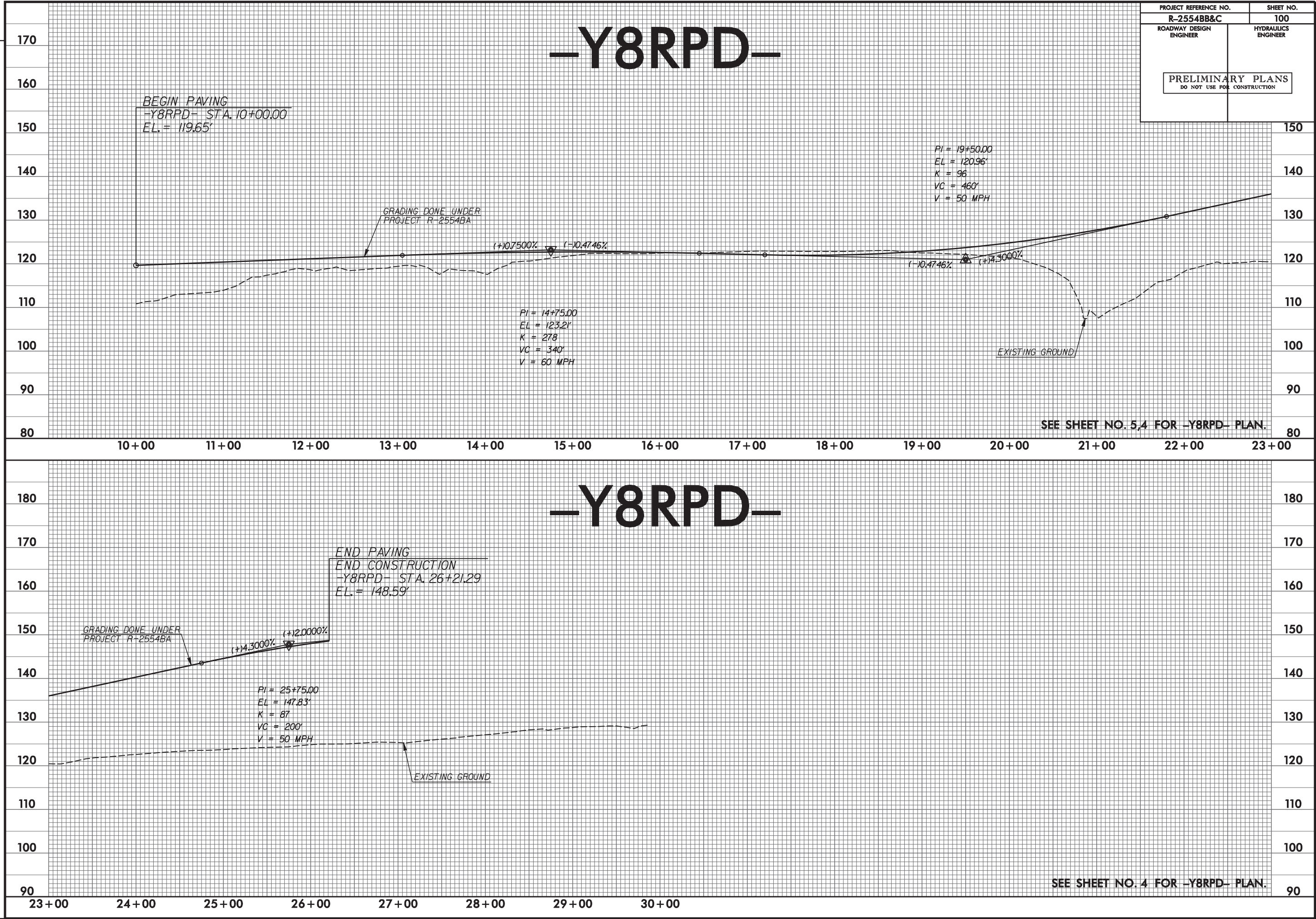
SEE SHEET NO. 48,49 FOR -LREV_WB- PLAN.

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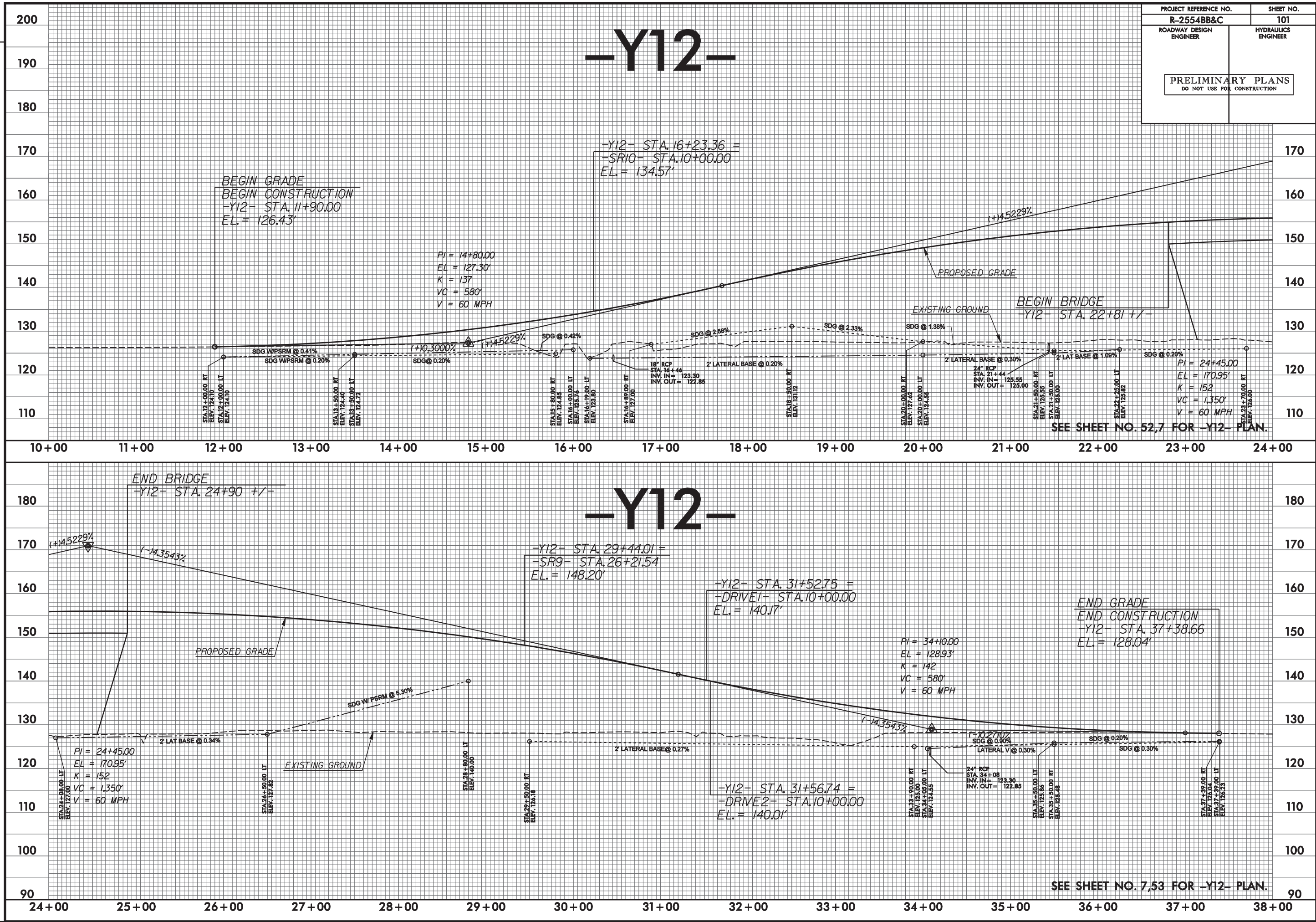


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DATE: 10/9/2012
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REVISIONS

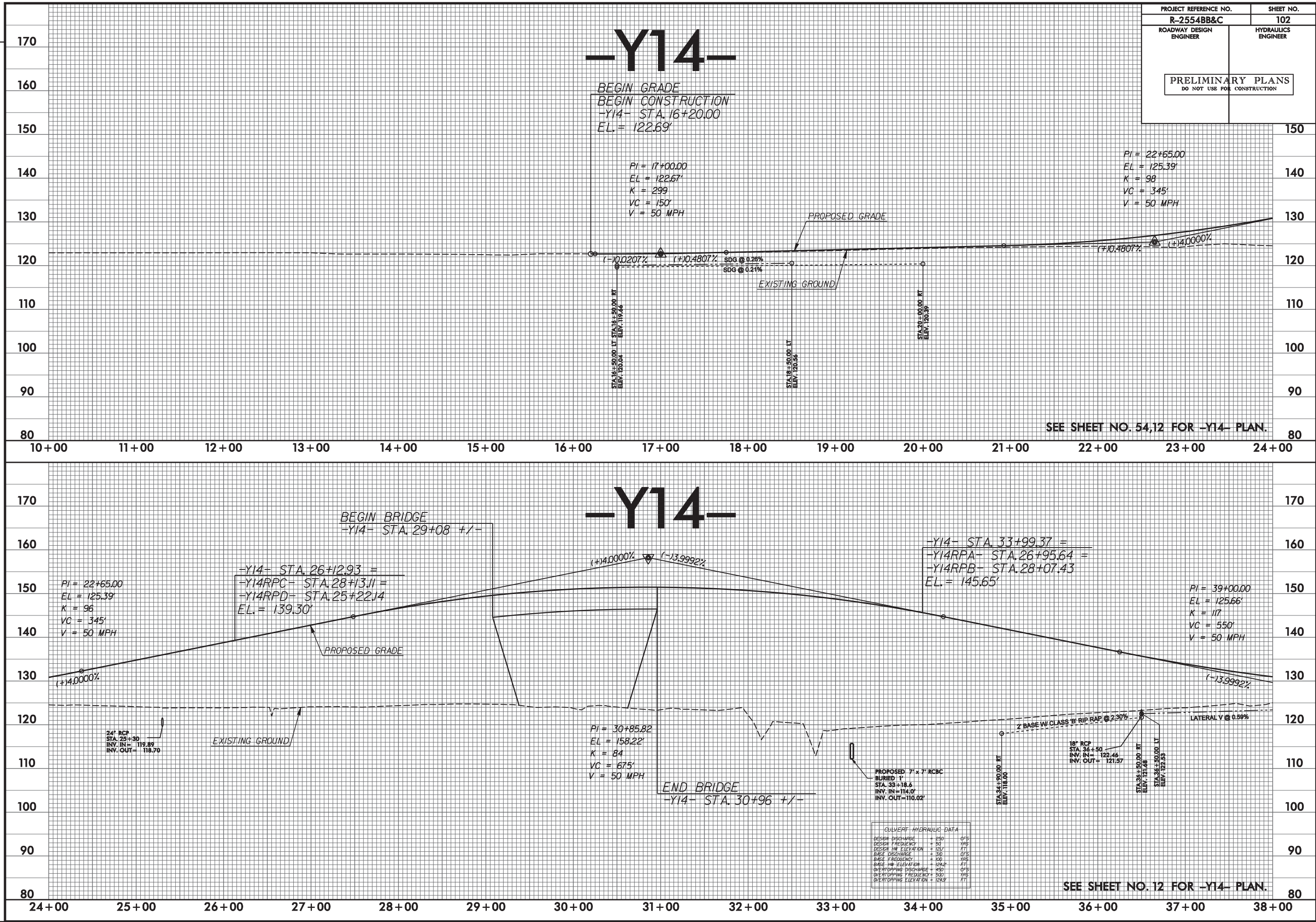


REVISIONS



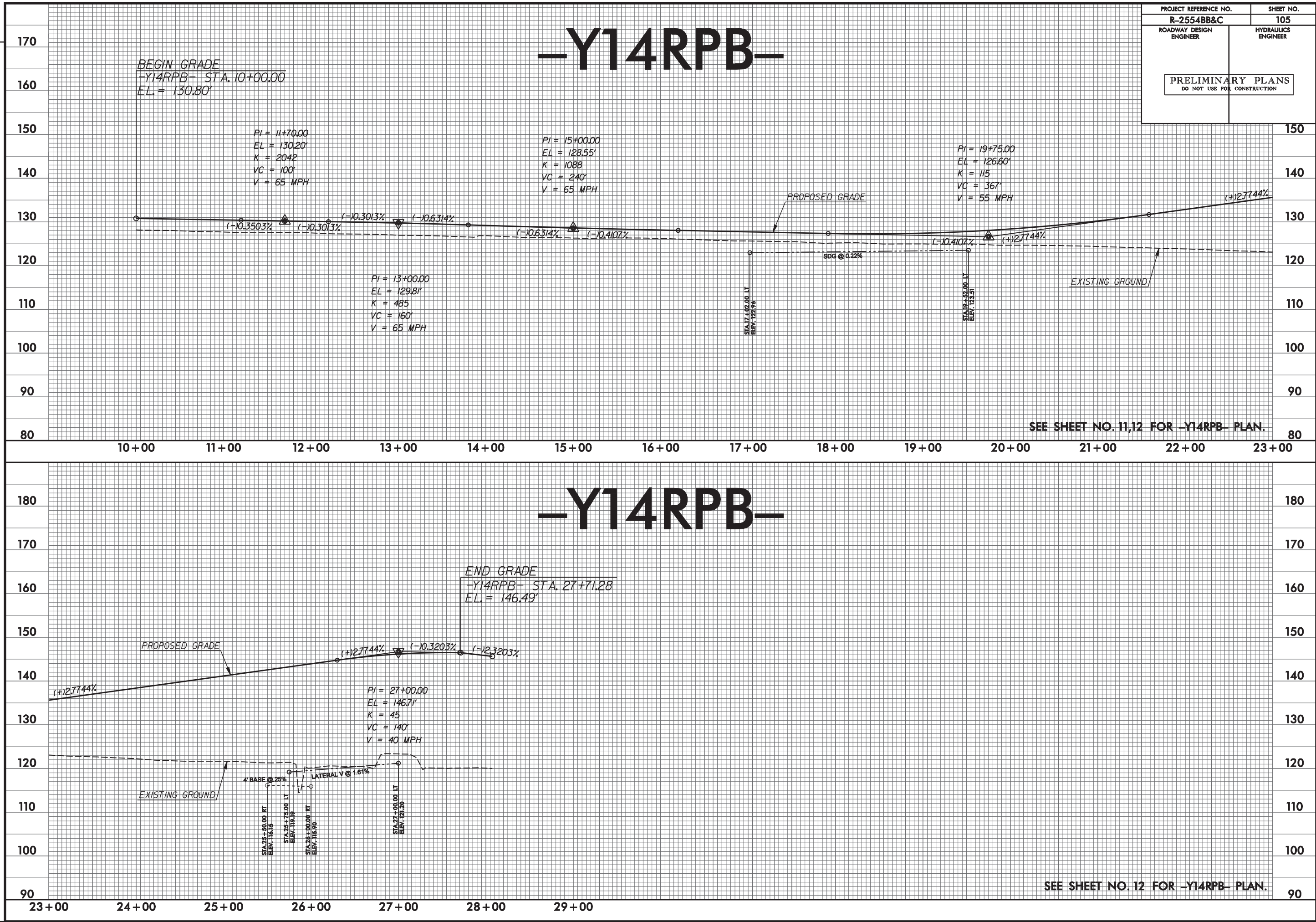
PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		101
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

REVISIONS

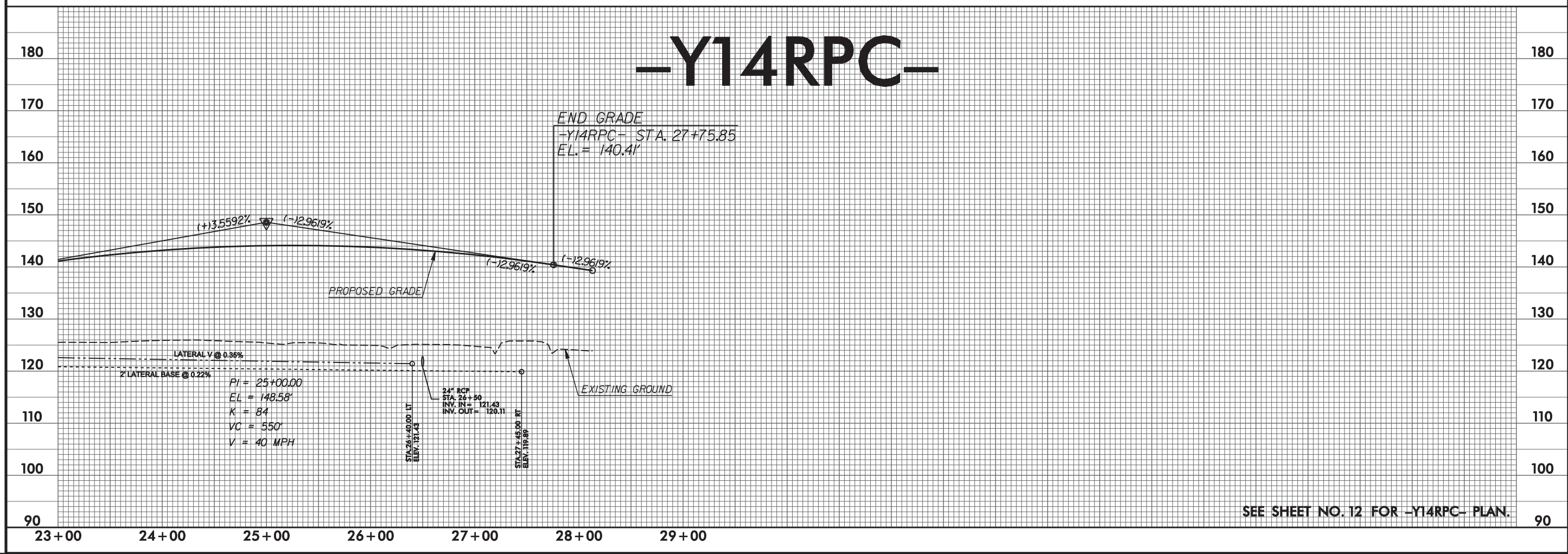
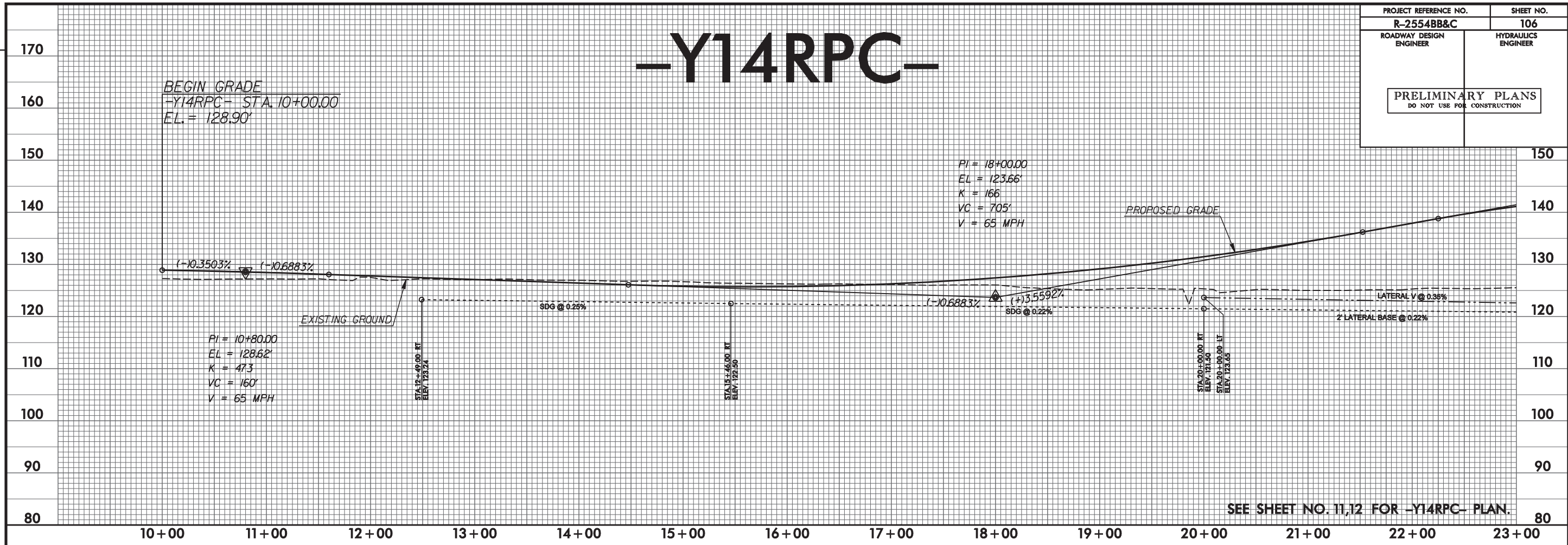


PROJECT REFERENCE NO.		SHEET NO.	
R-2554BB&C		102	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

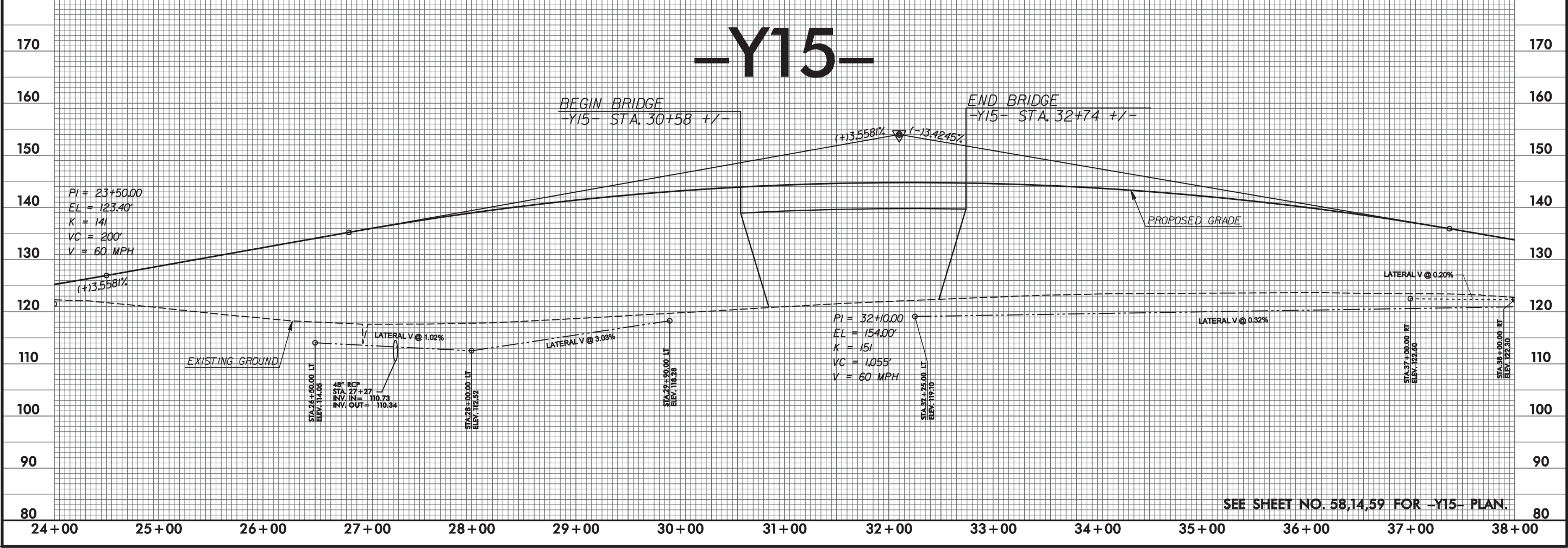
REVISIONS



REVISIONS



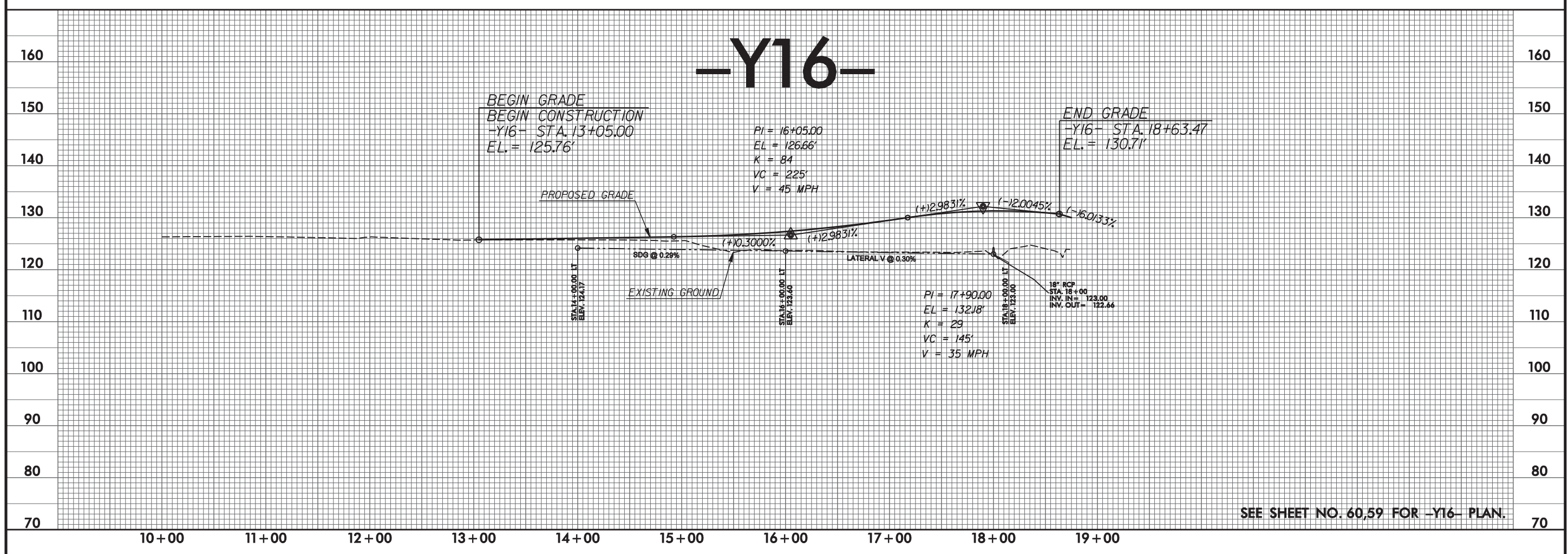
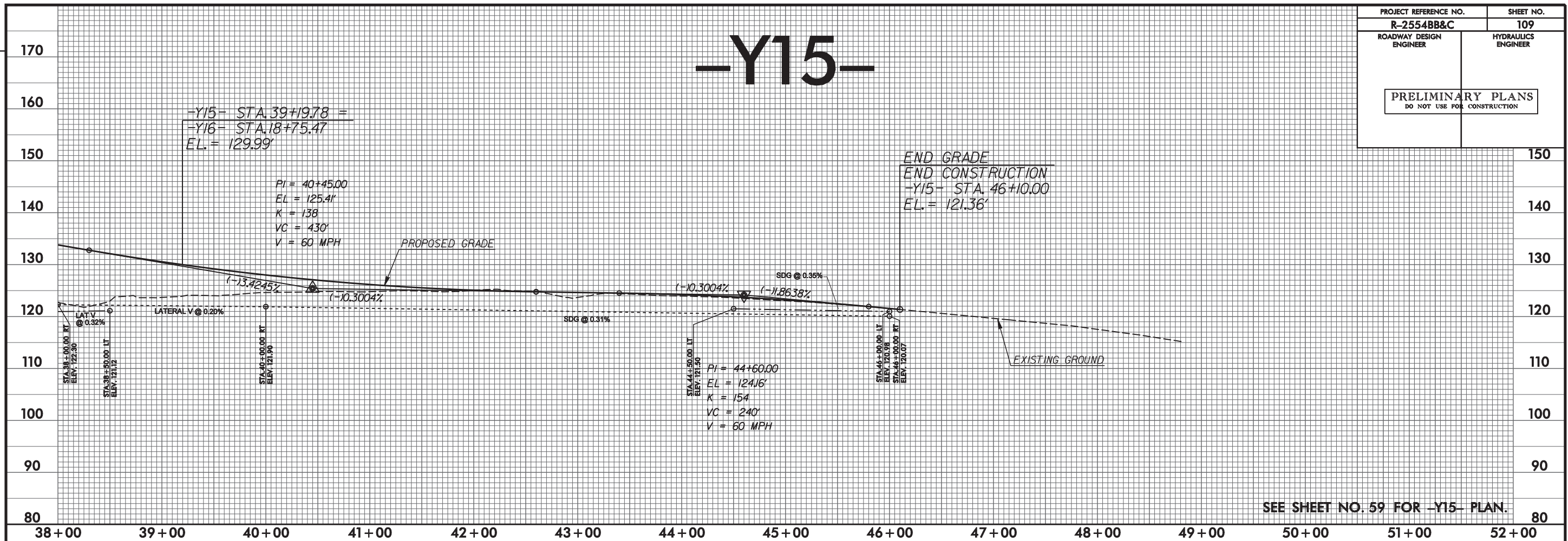
PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		106
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		



PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	109
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

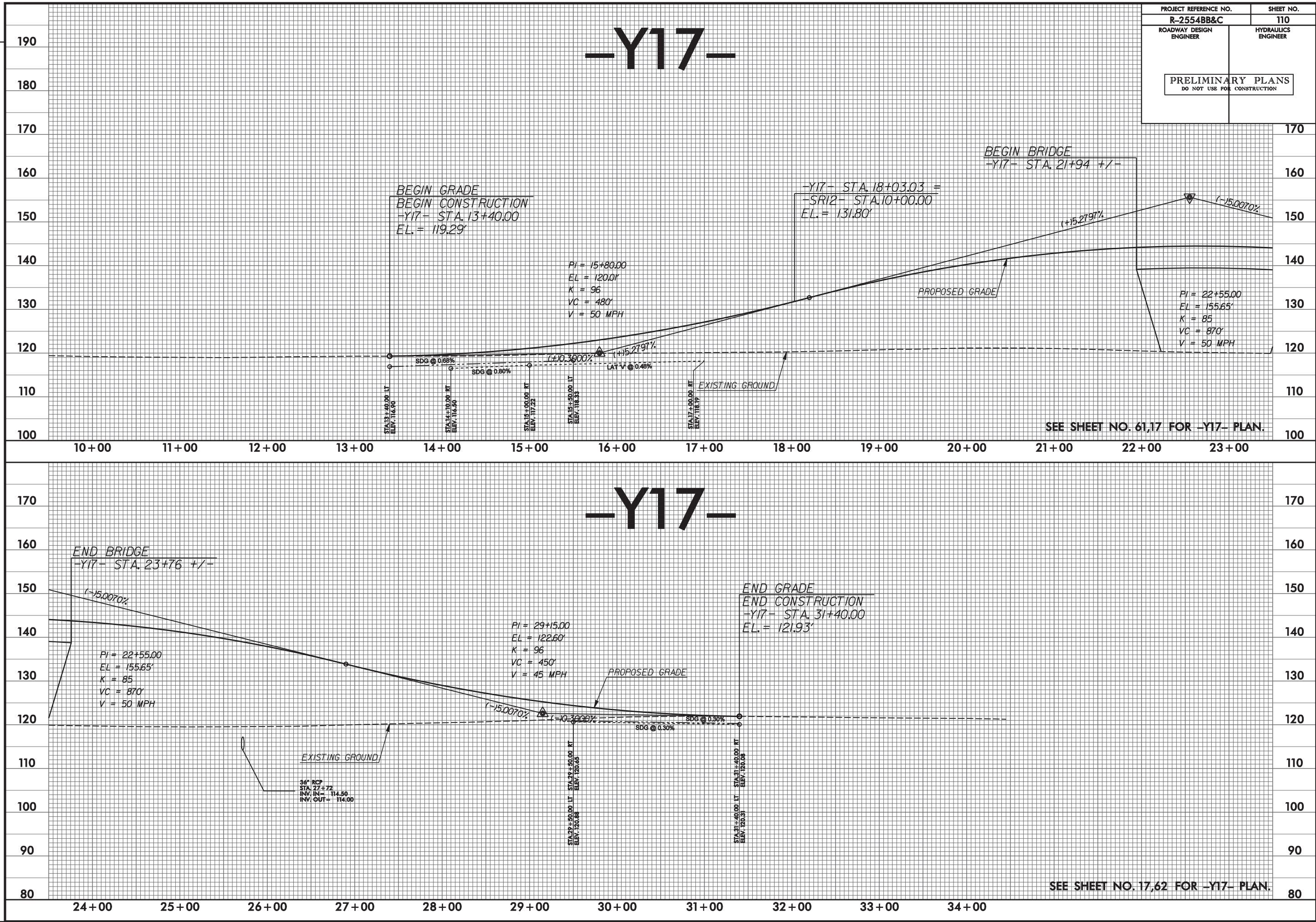
PRELIMINARY PLANS

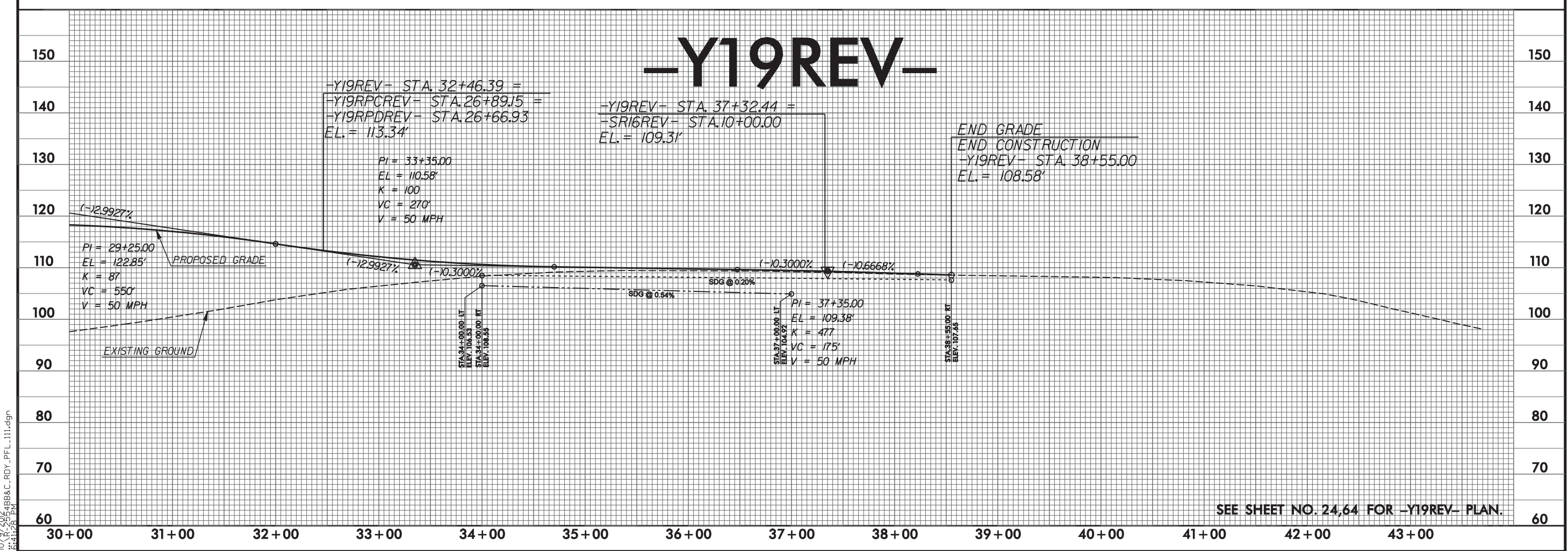
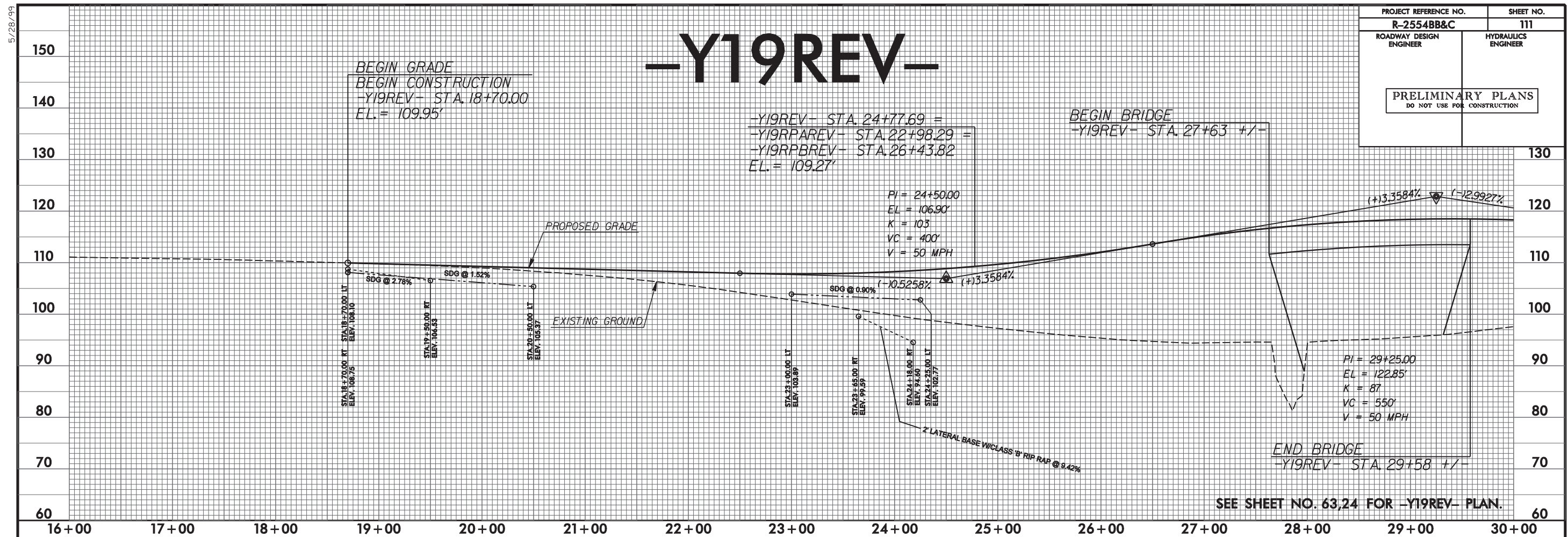
DO NOT USE FOR CONSTRUCTION

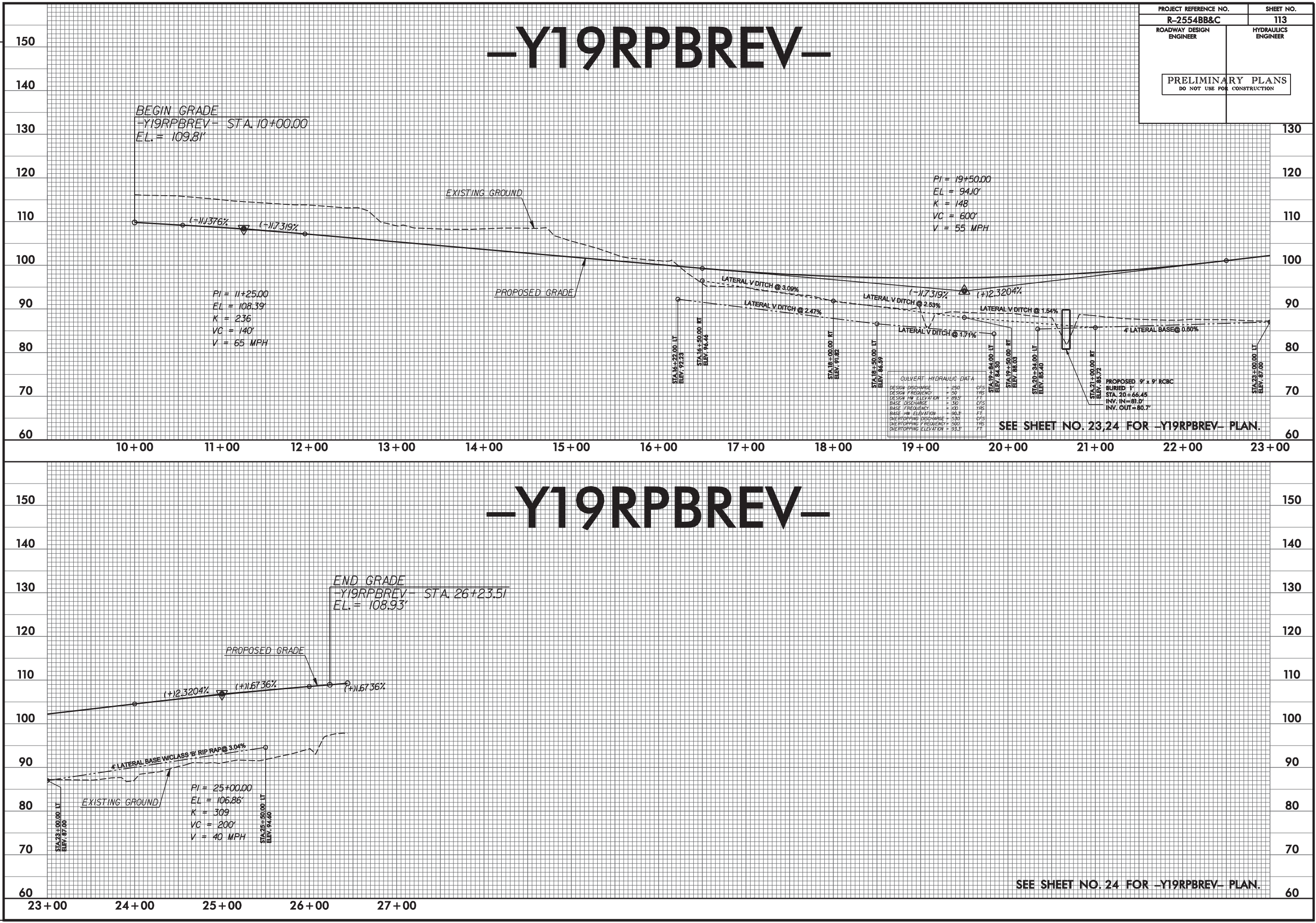


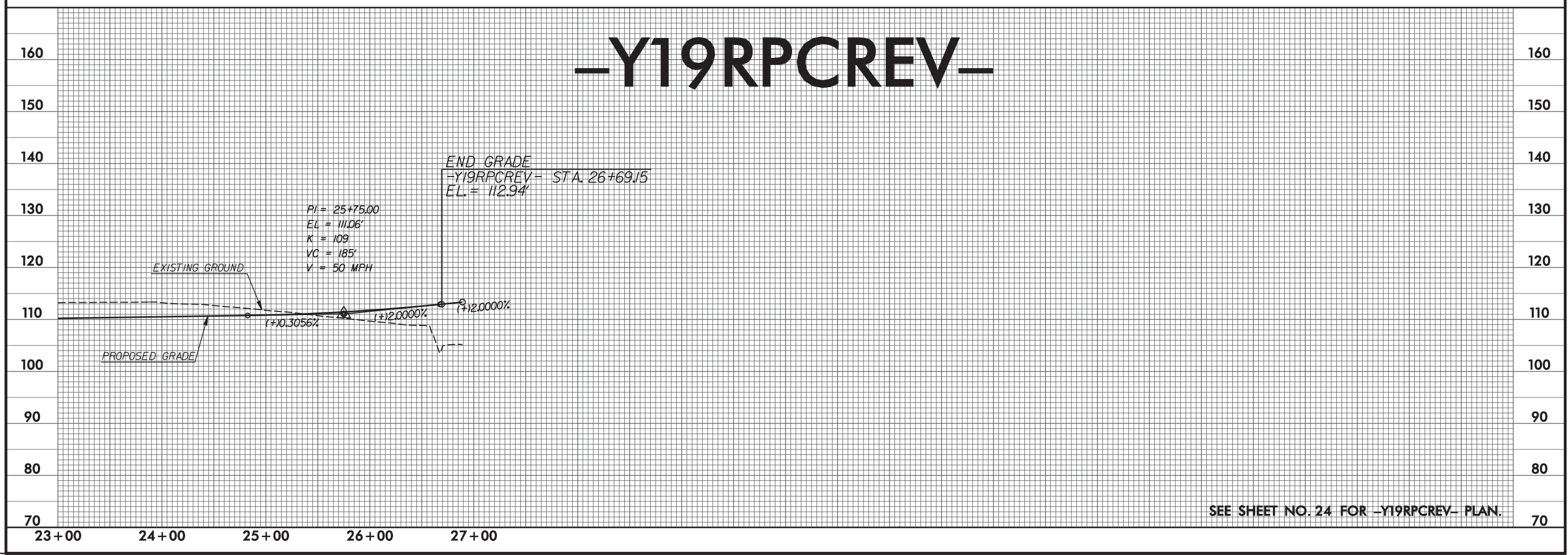
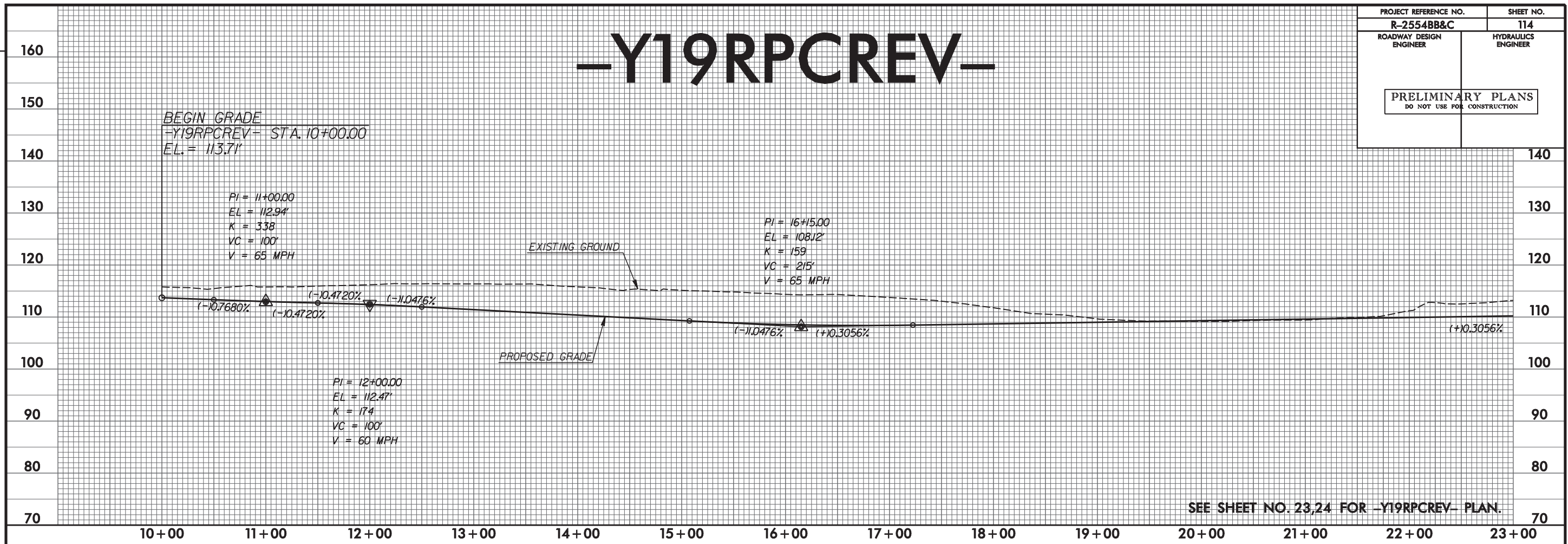
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REVISIONS

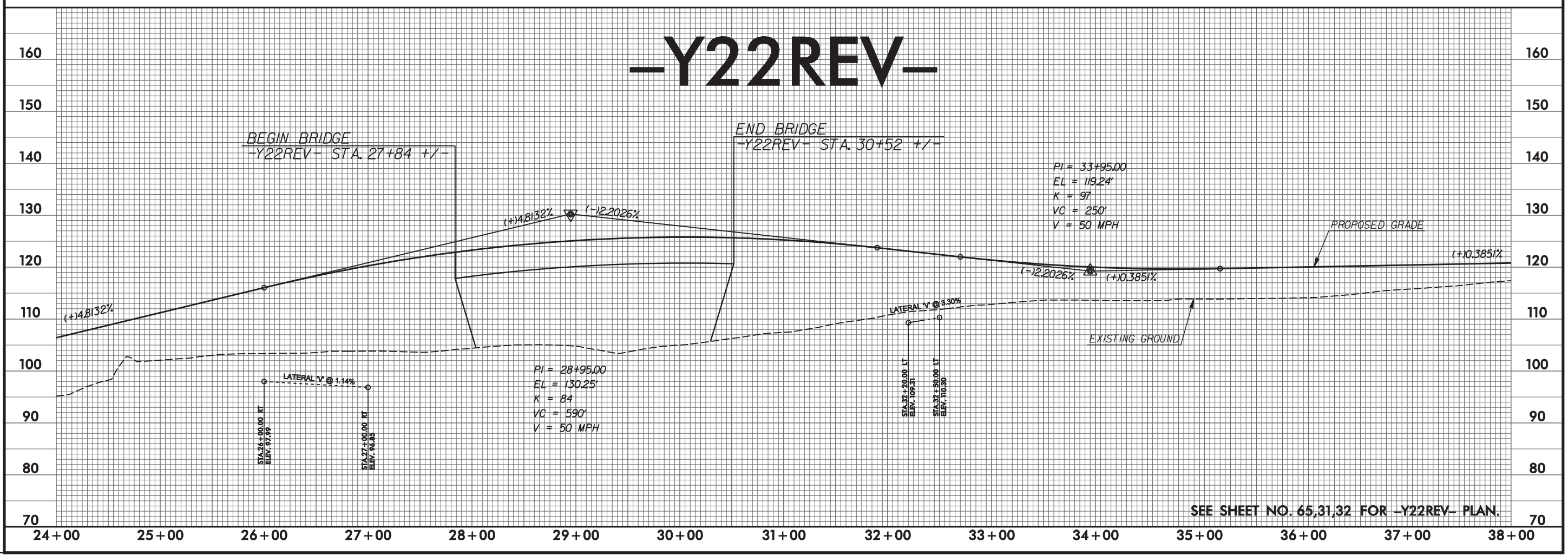
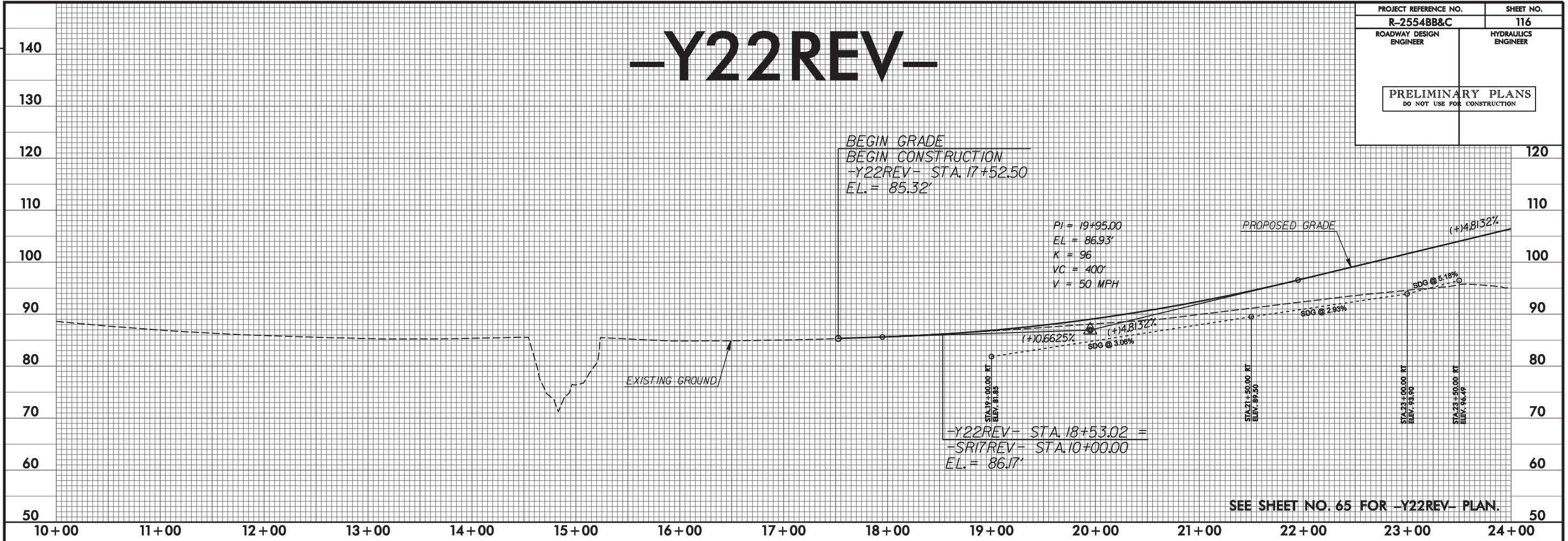






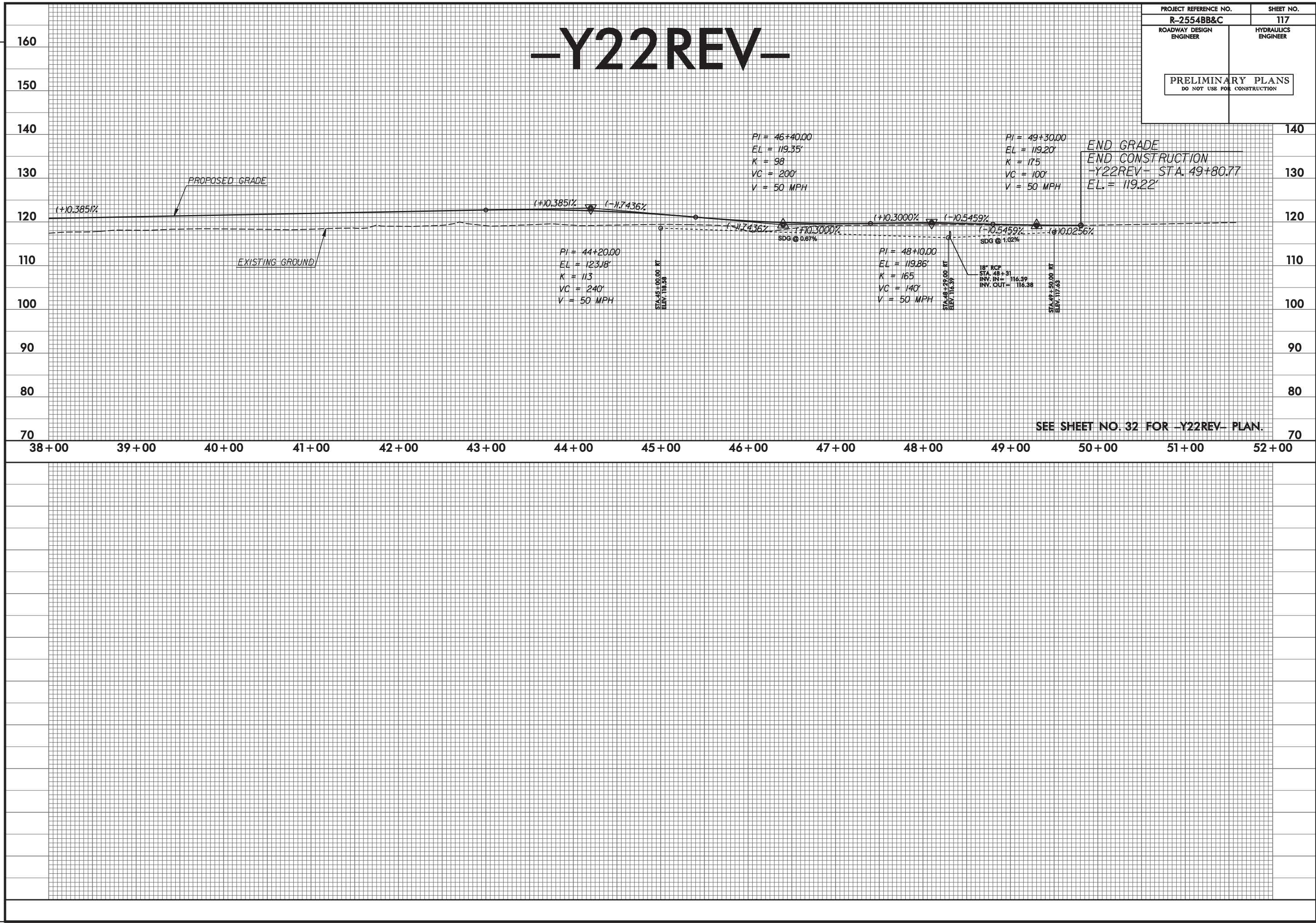


PROJECT REFERENCE NO.	SHEET NO.
R-2554B8&C	116
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

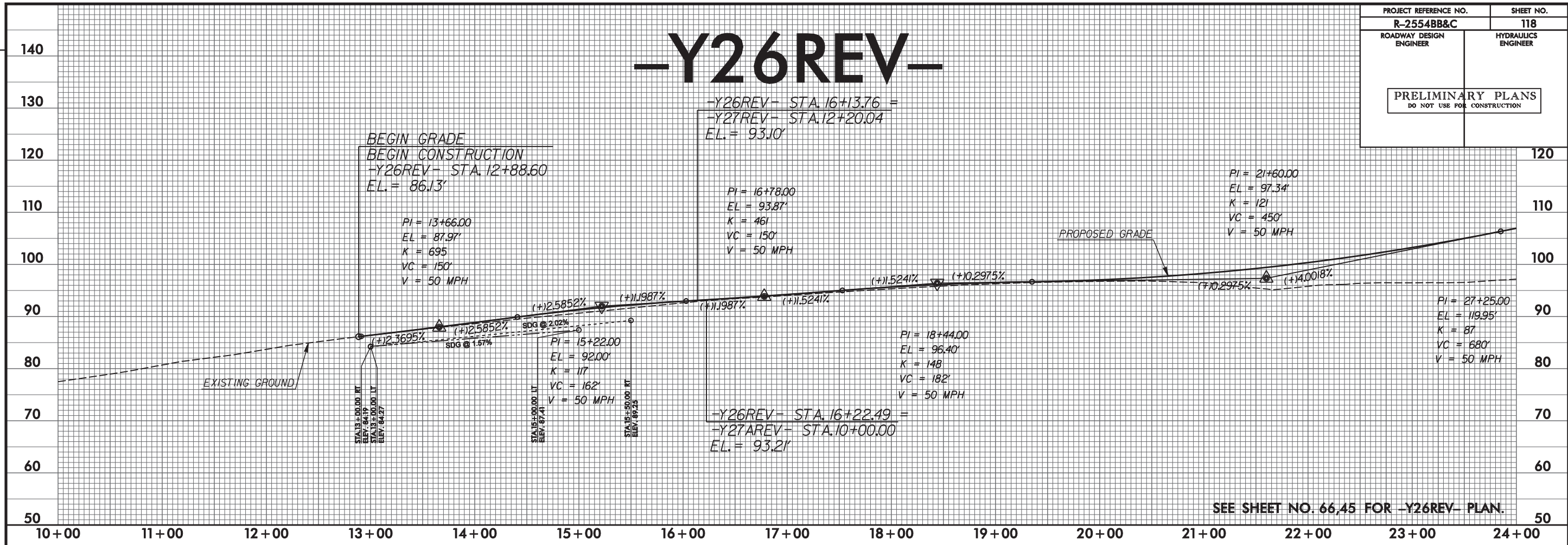


REVISIONS

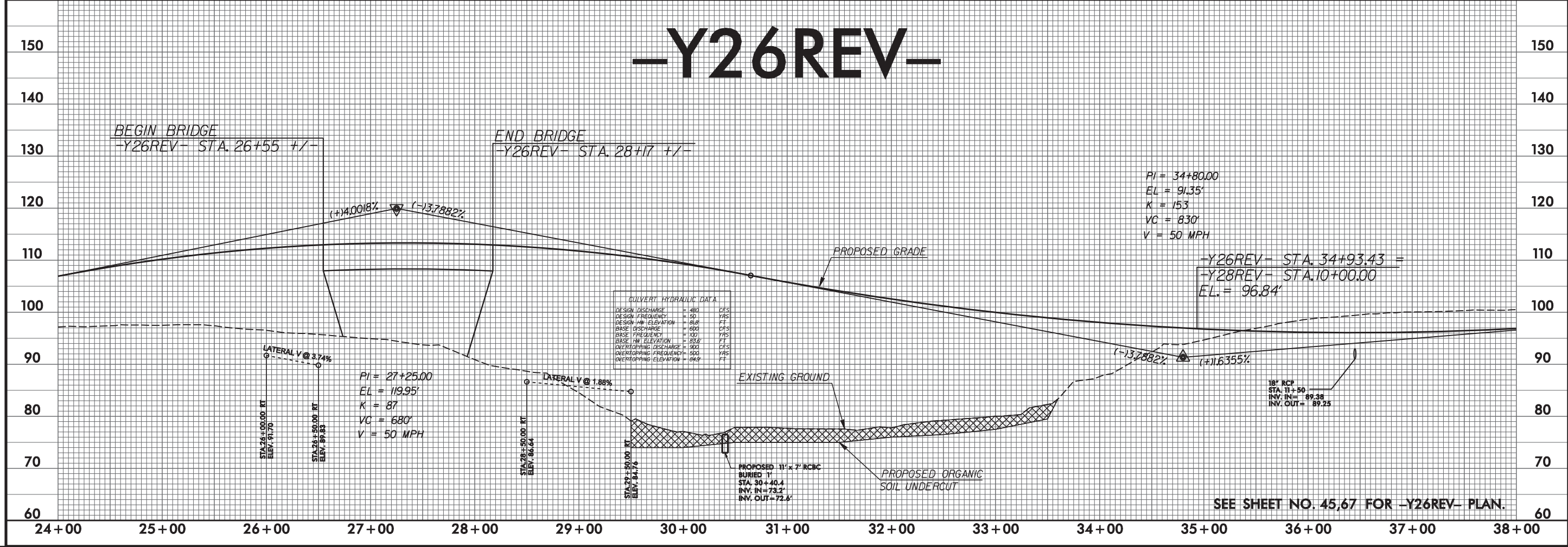
REVISIONS



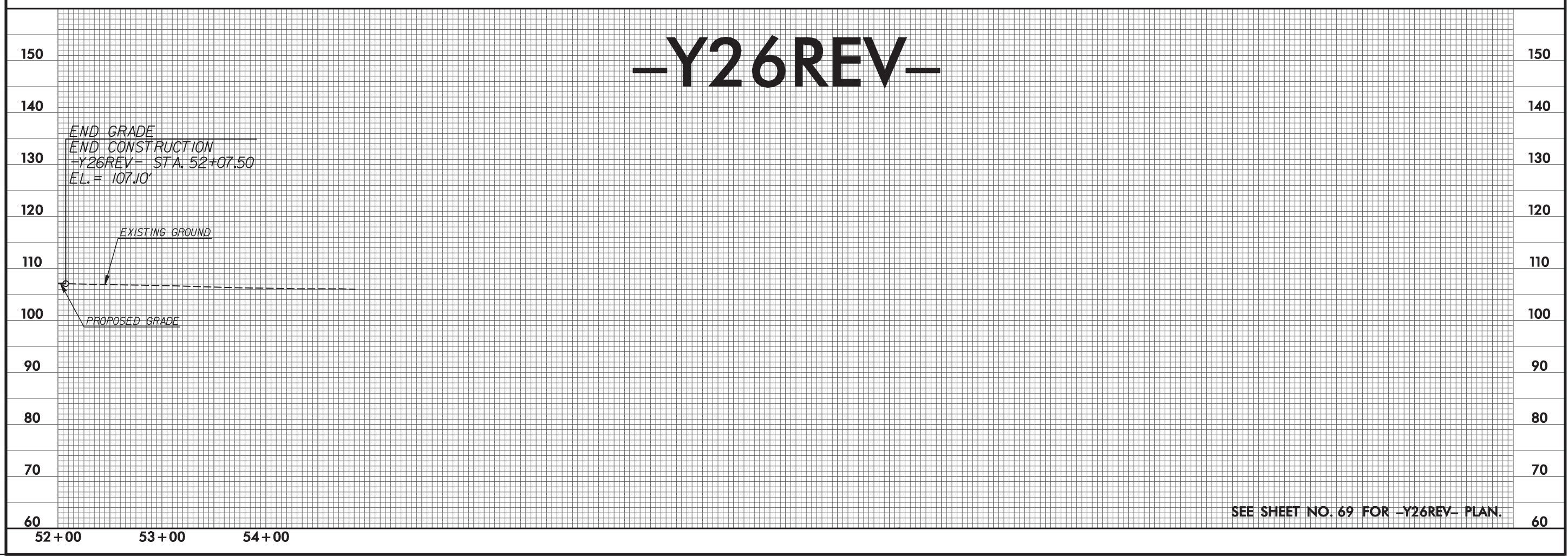
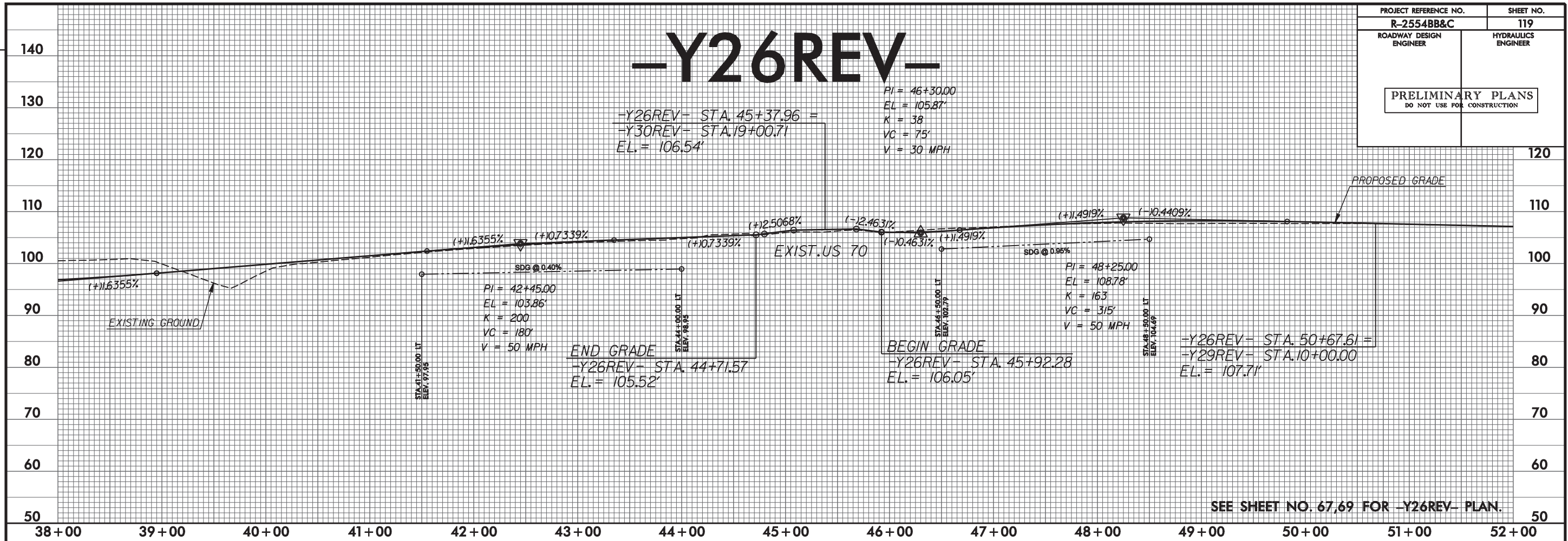
REVISIONS

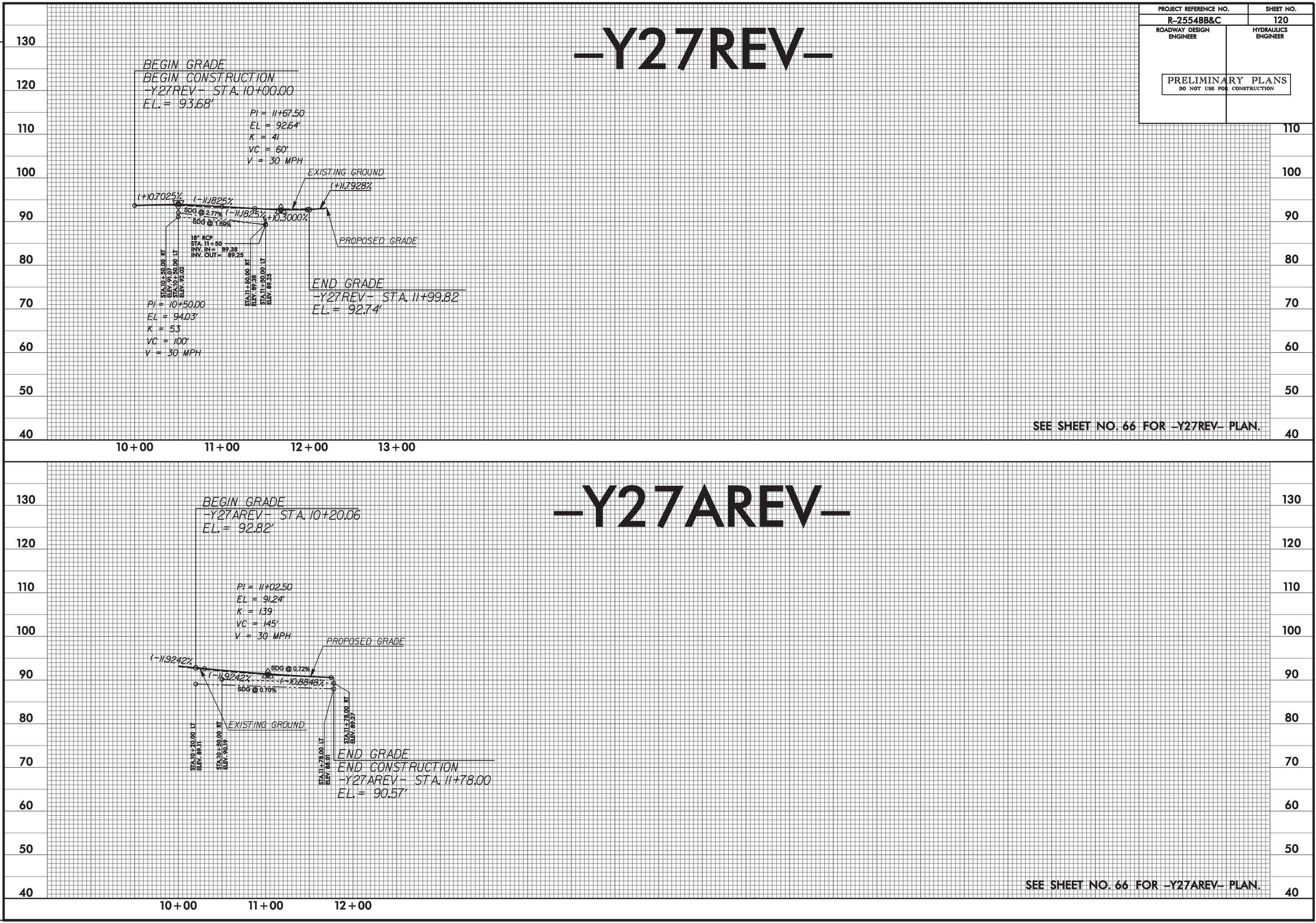


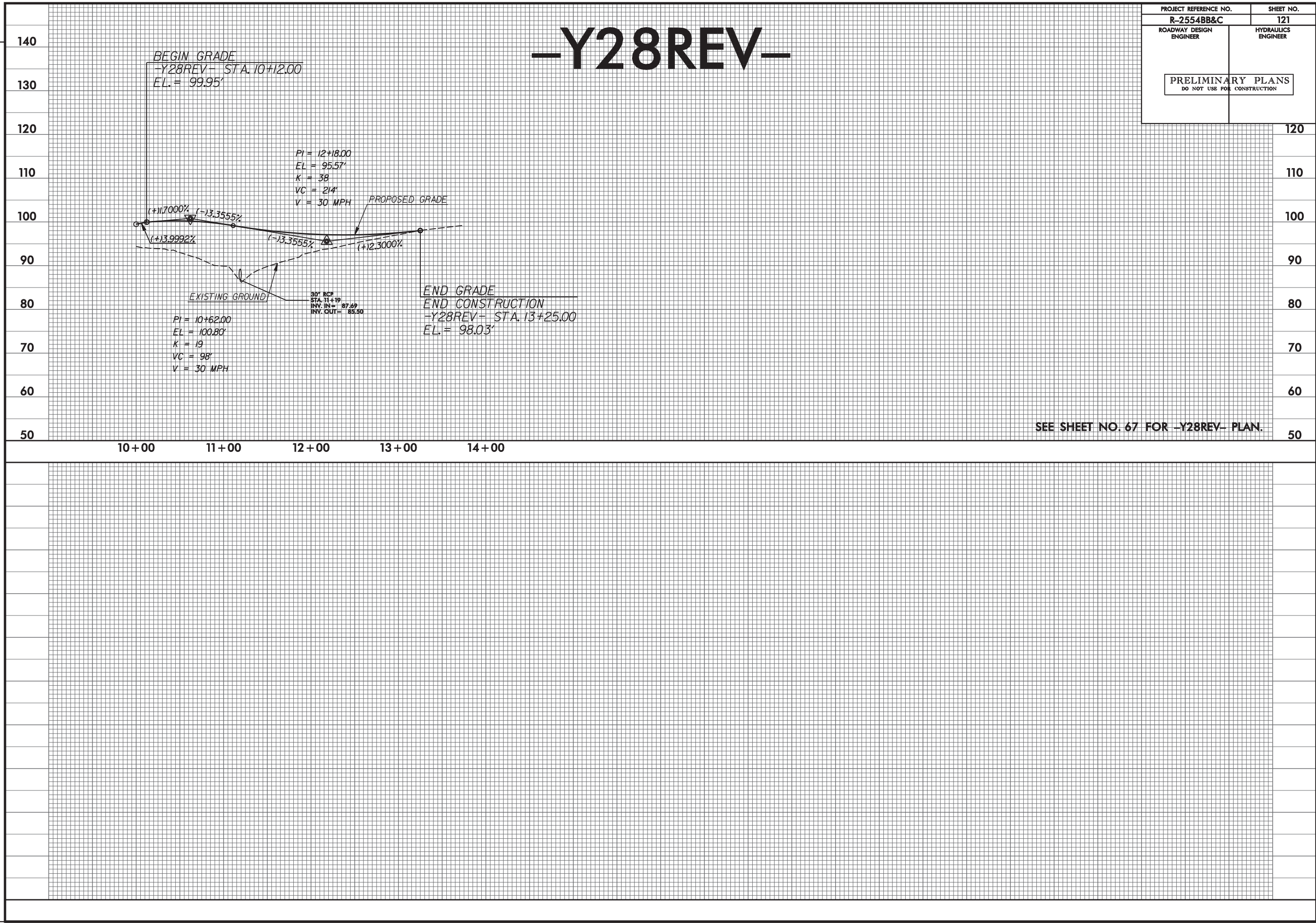
PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		118
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		



CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 480	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 81.6	FT
BASE DISCHARGE	= 1000	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 83.8	FT
OVERTOPPING DISCHARGE	= 900	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 84.9	FT

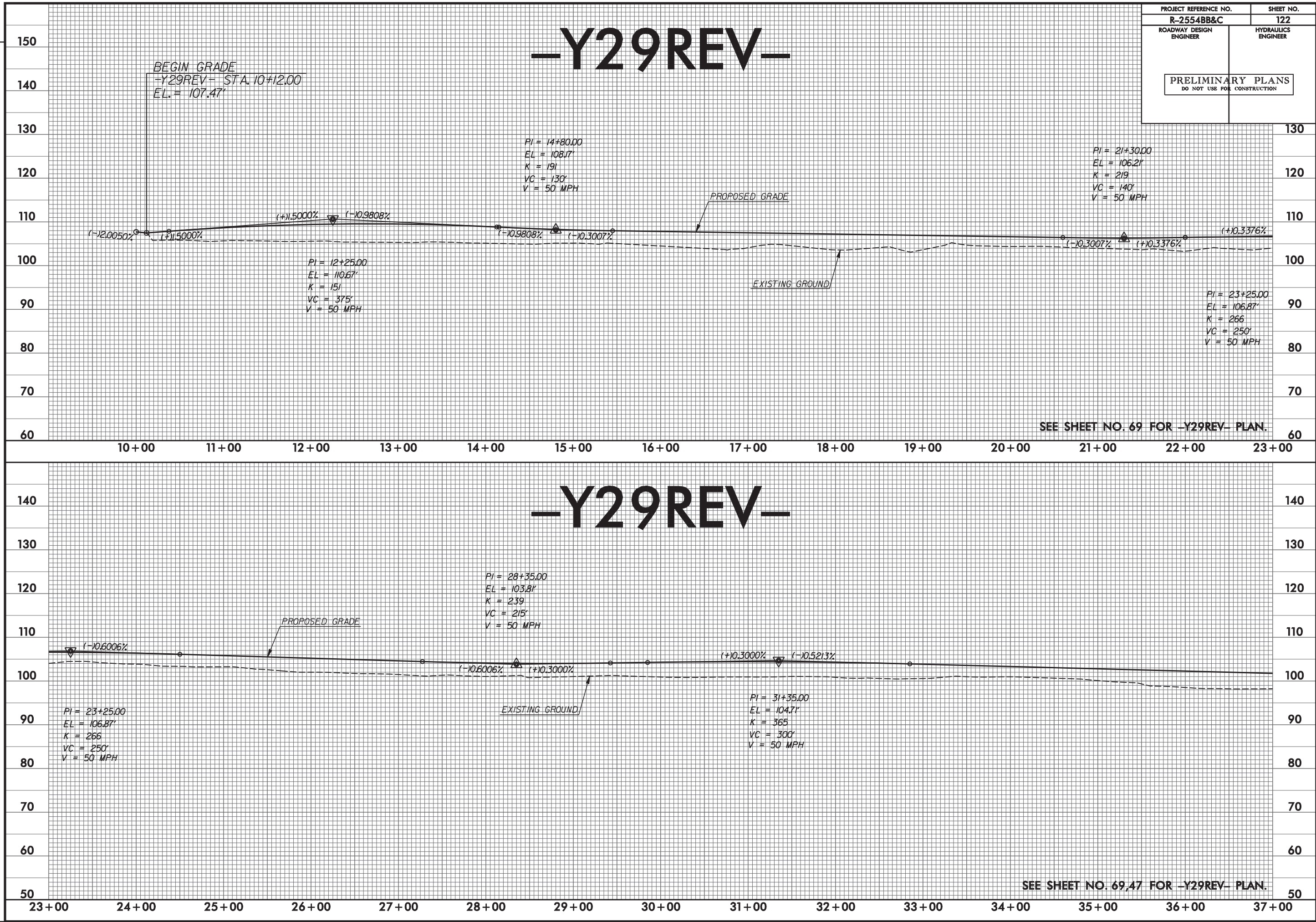




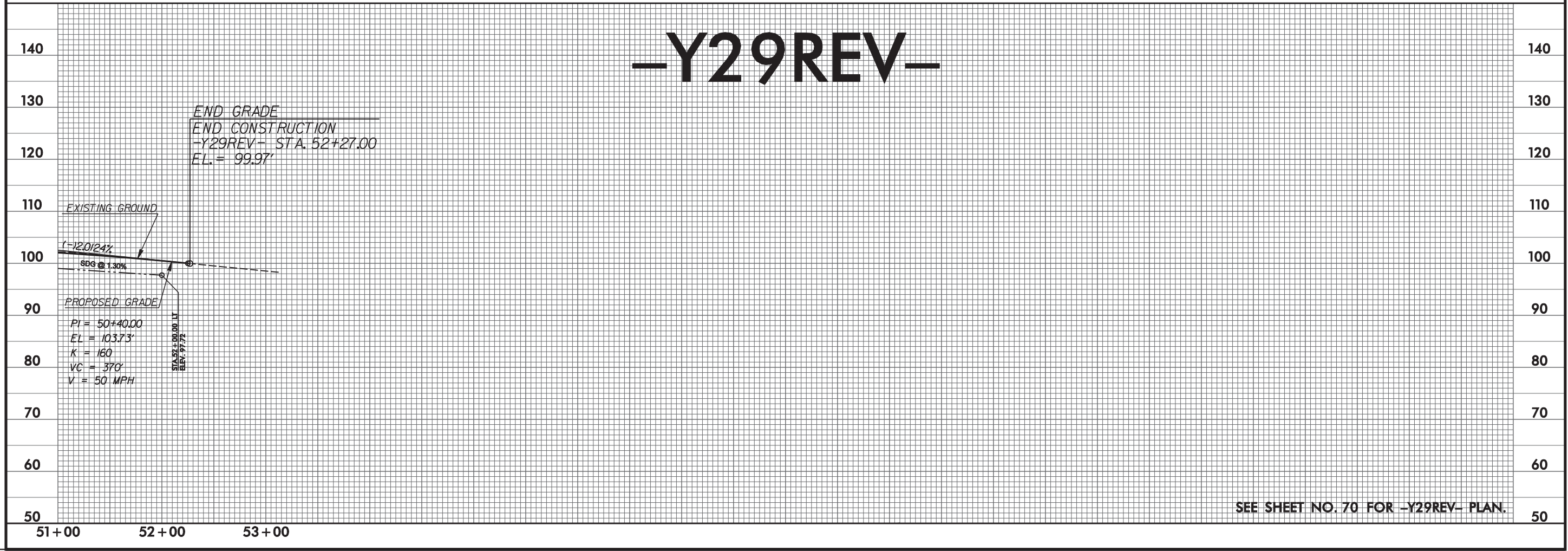


PROJECT REFERENCE NO.		SHEET NO.	
R-2554BB&C		121	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

REVISIONS

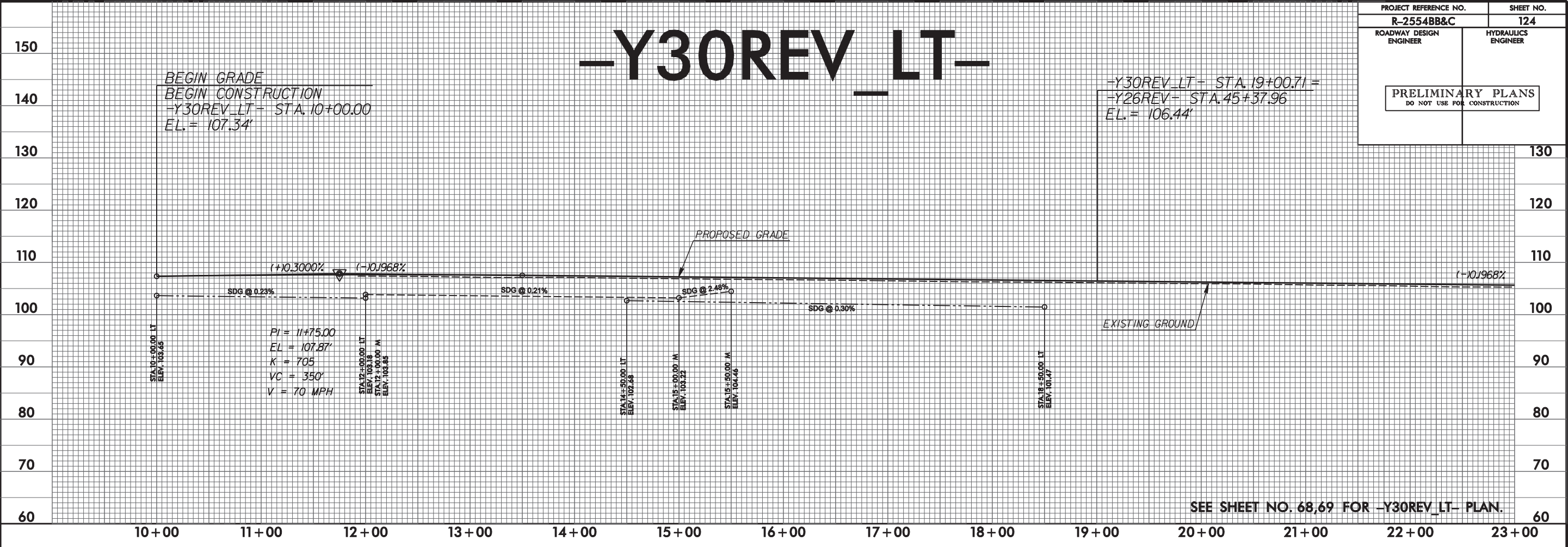


$PI = 50+40.00$ $EL = 103.73'$ $K = 160$ $VC = 370'$ $V = 50 \text{ MPH}$ FOR -Y29REV- PLAN.	120
	110
	100
	90
	80
	70
	60
	50
	40
	30

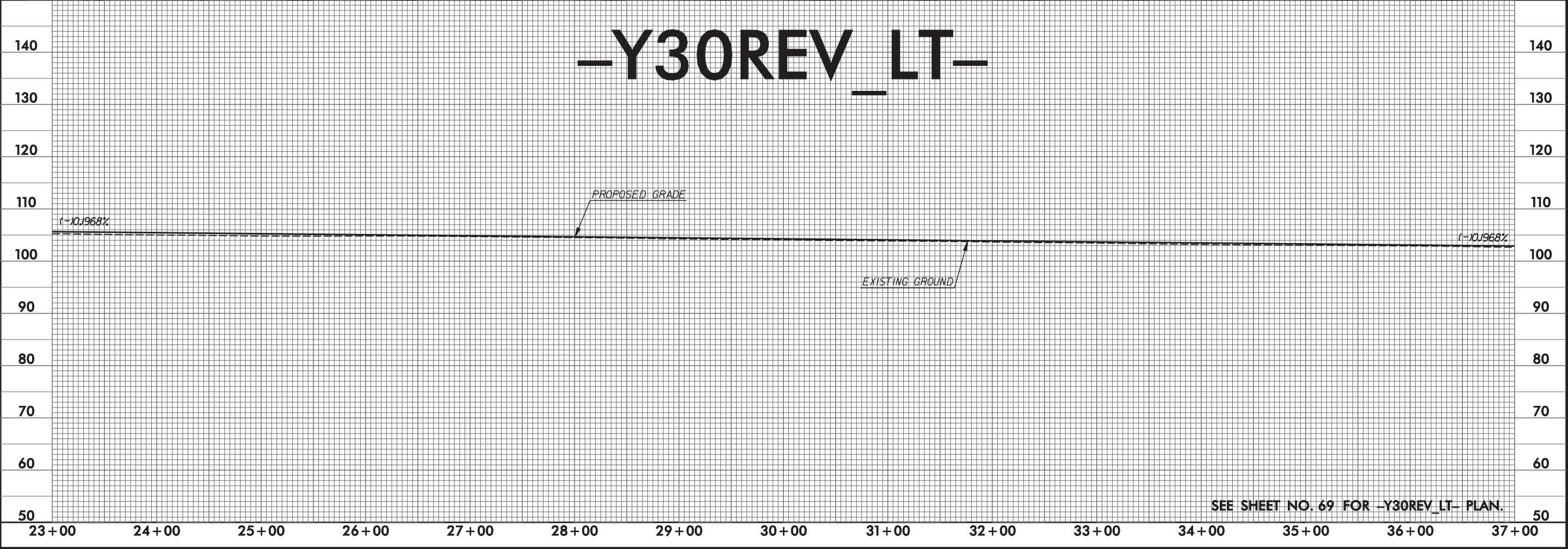


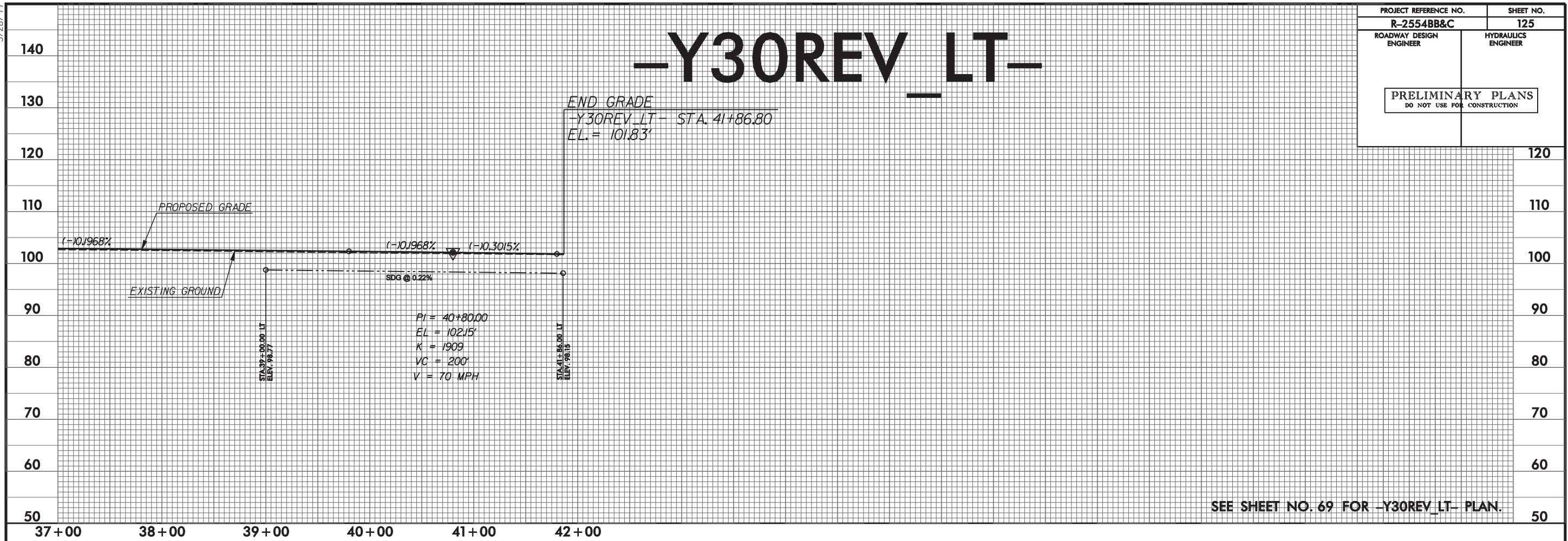
5/28/99

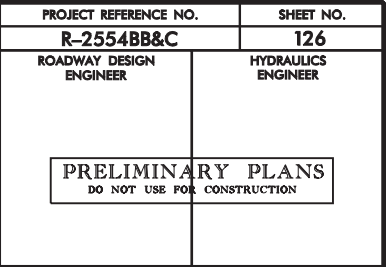
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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

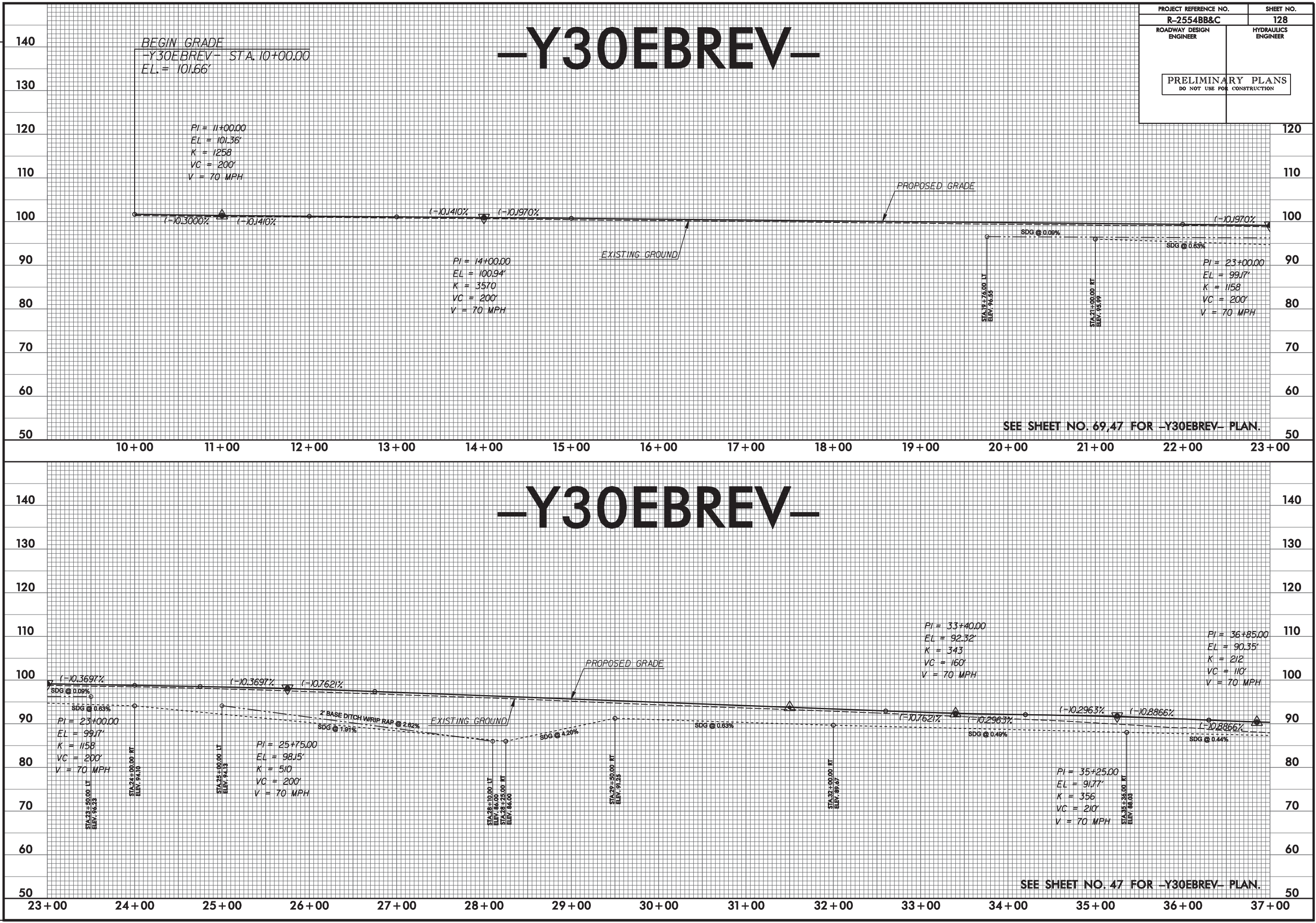


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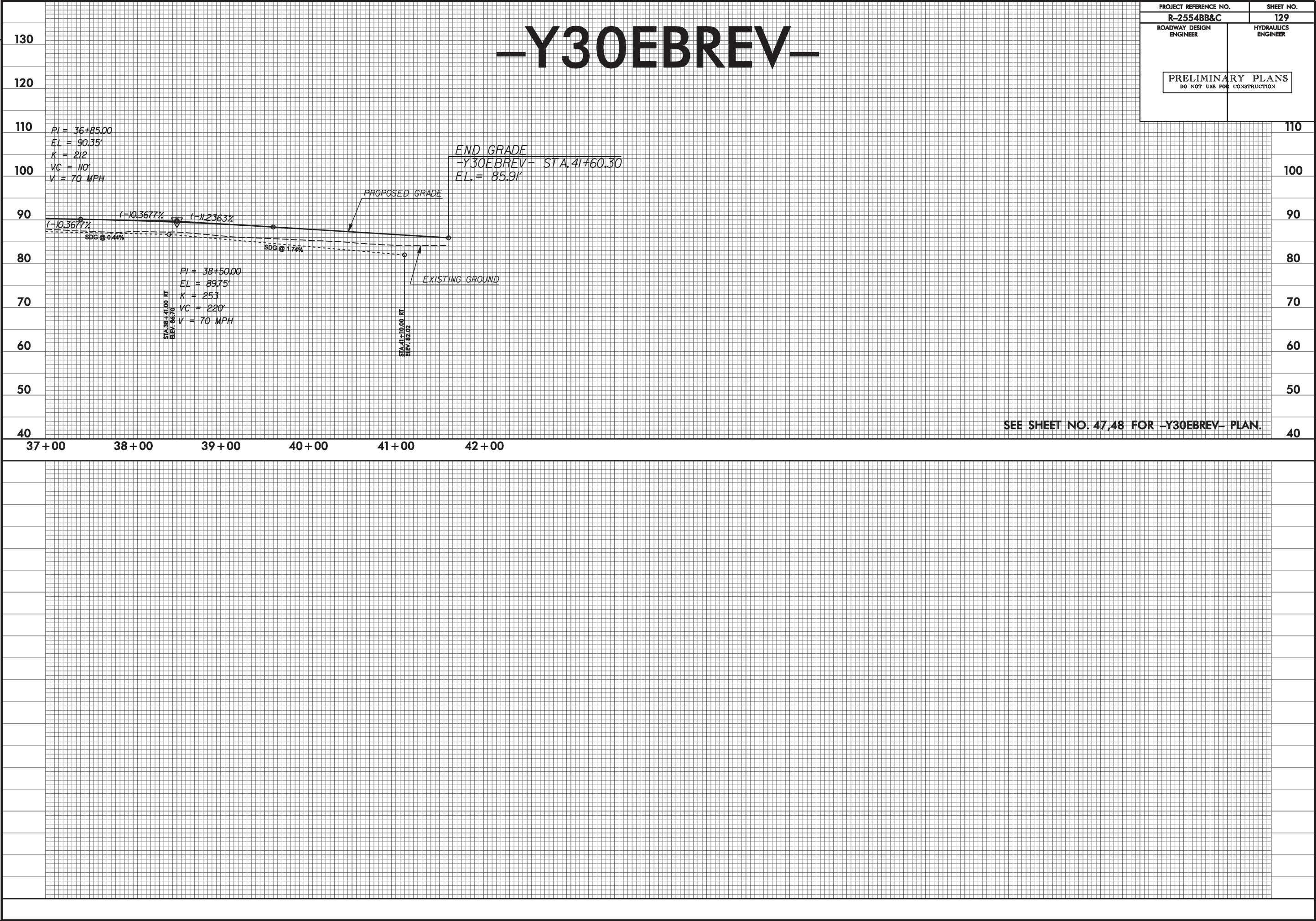




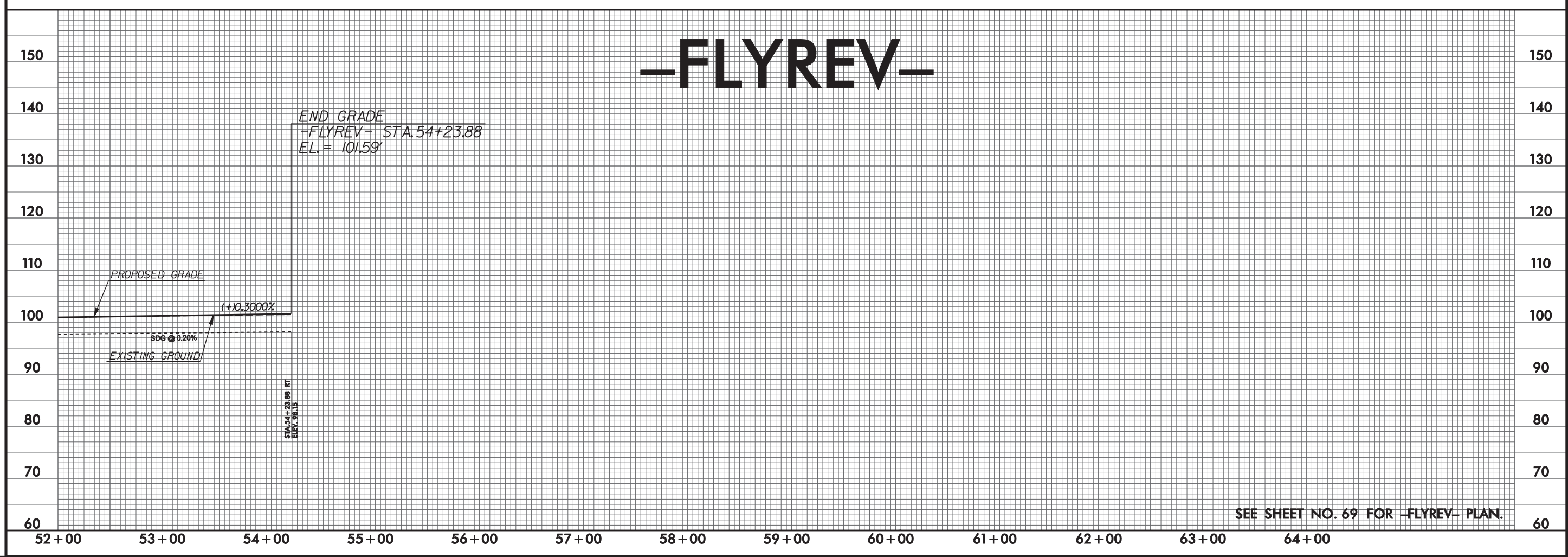
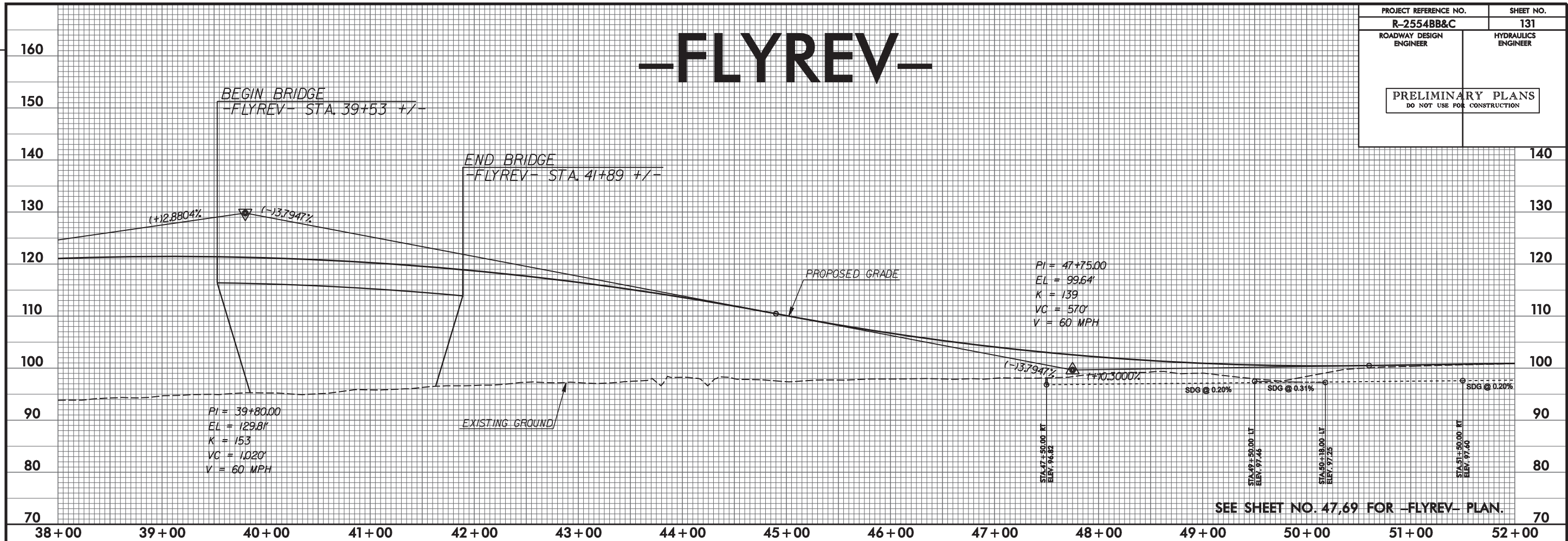




REVISIONS

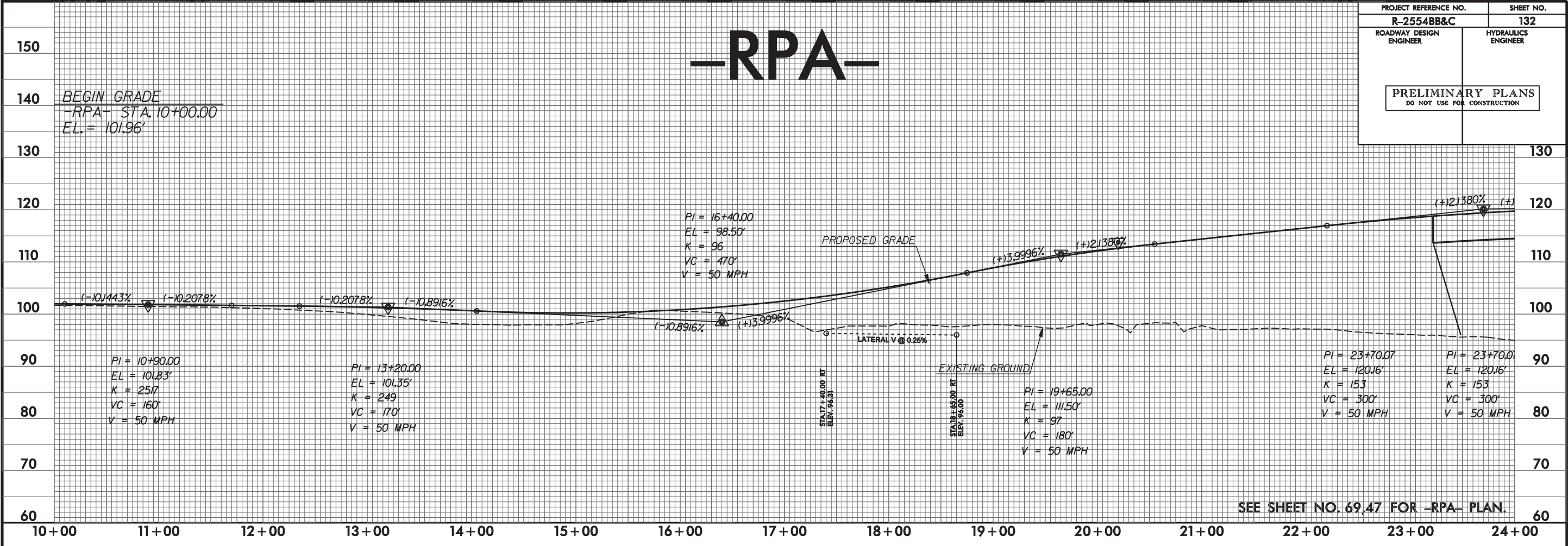


PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	131
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

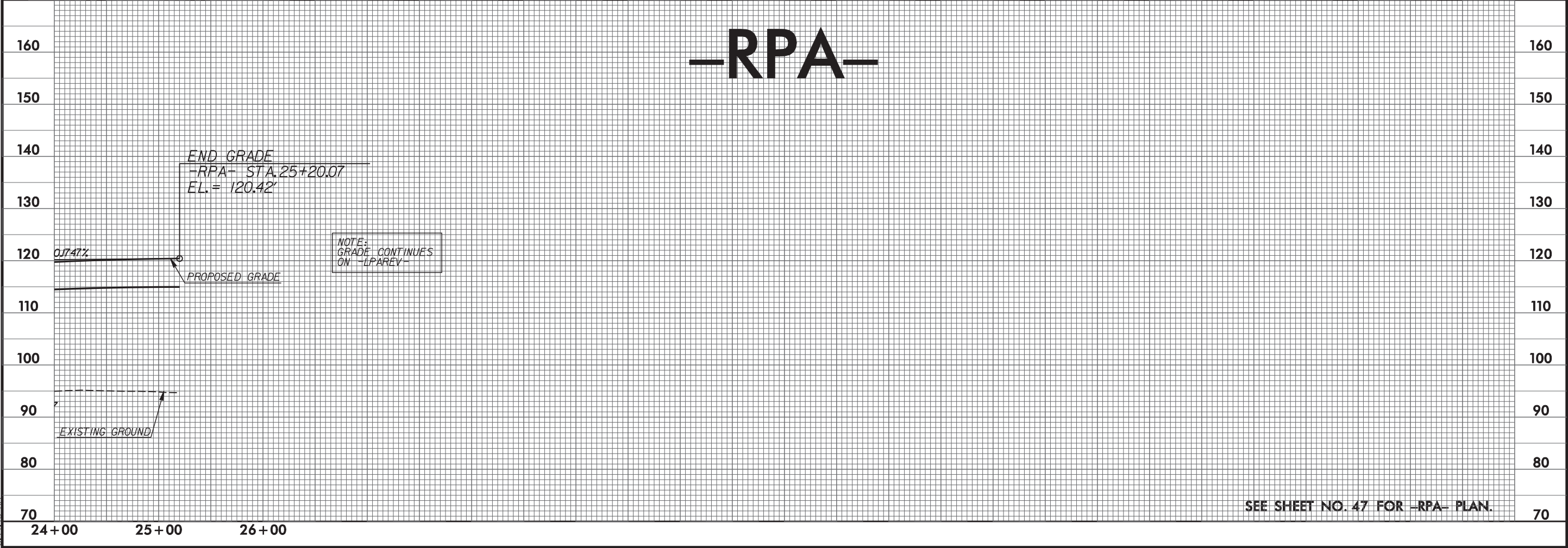


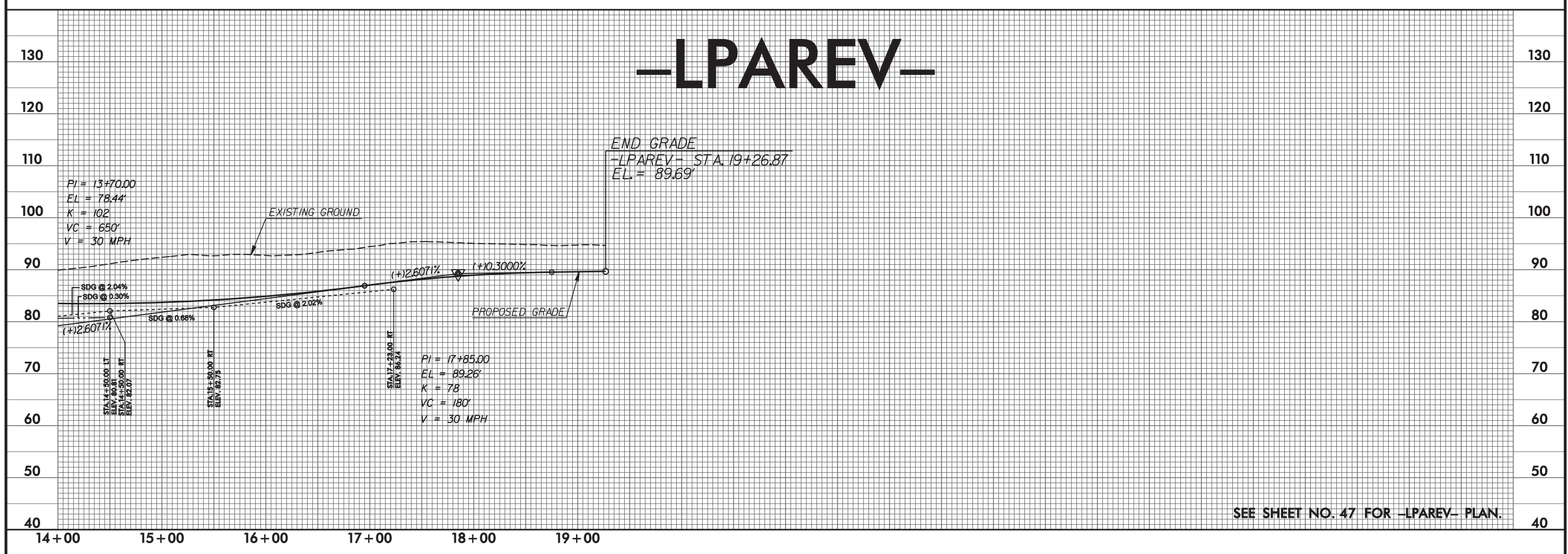
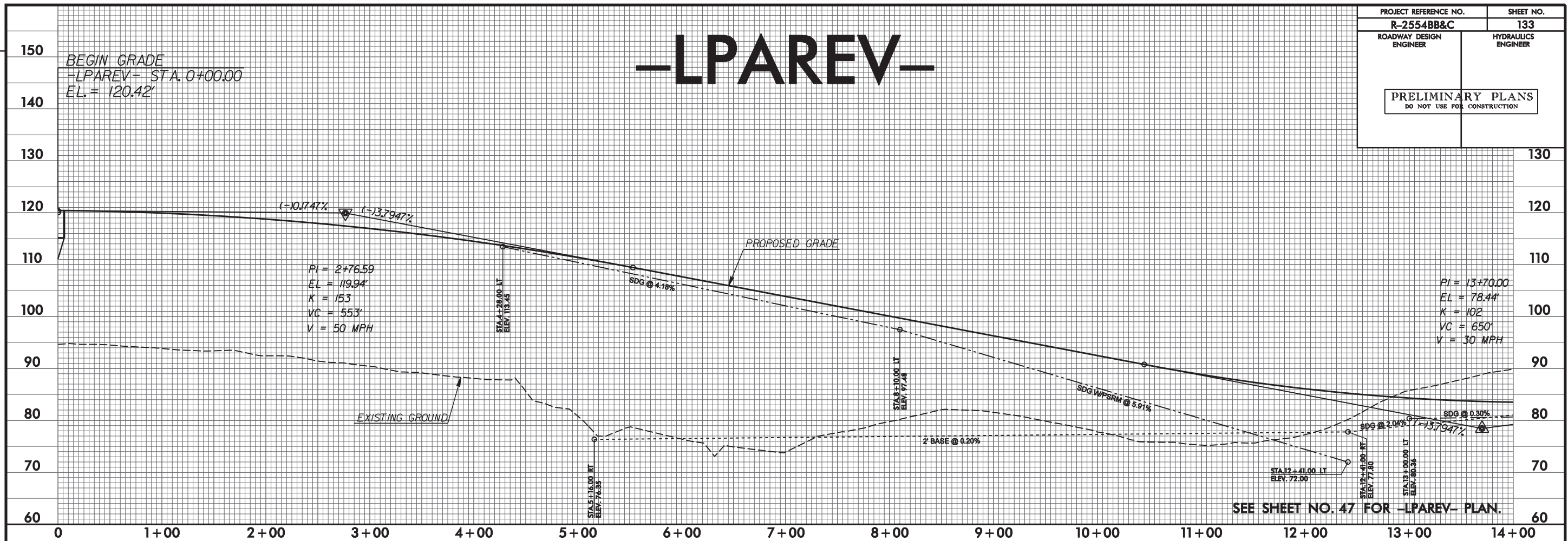
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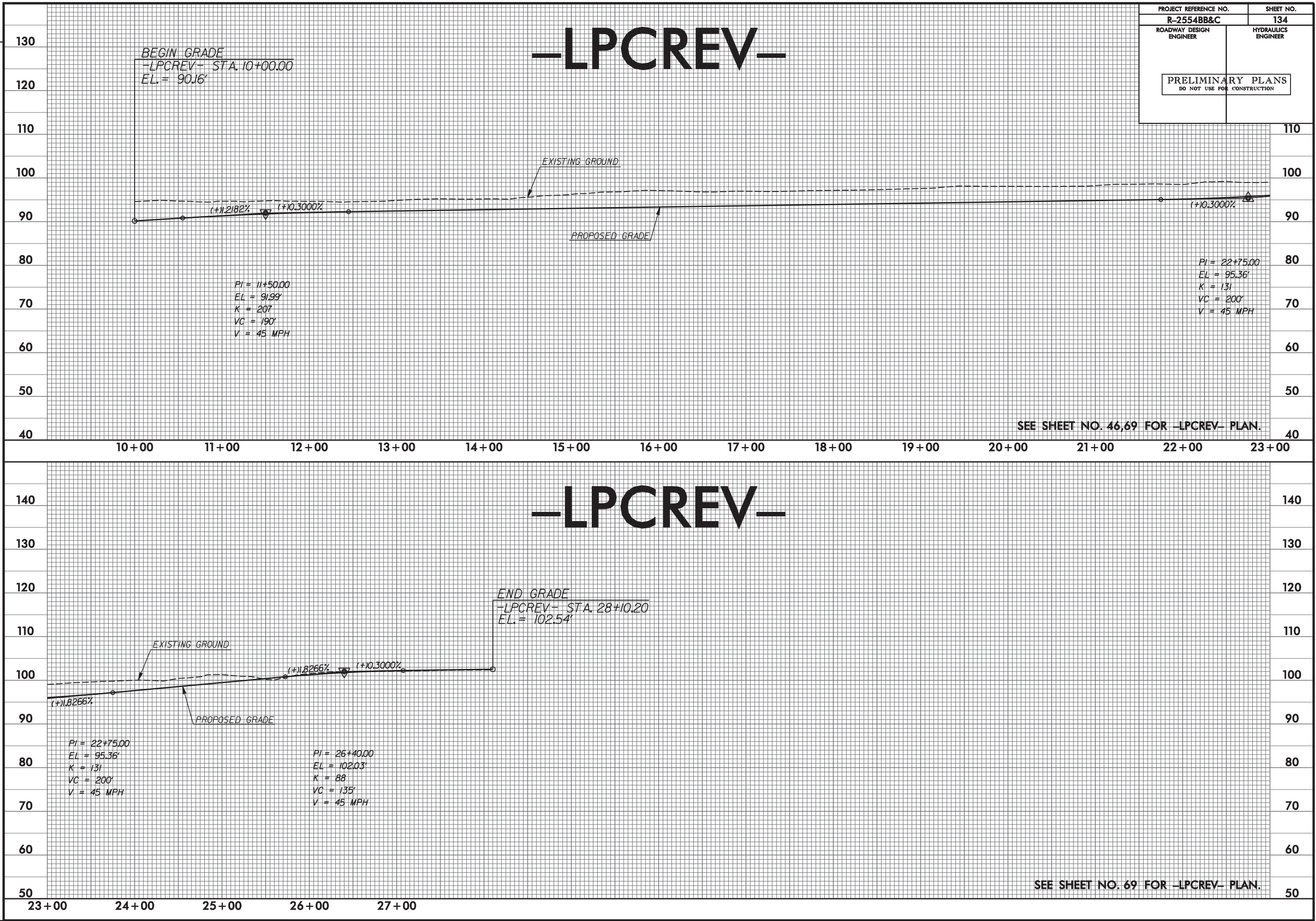
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R-2554BB&C		132
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

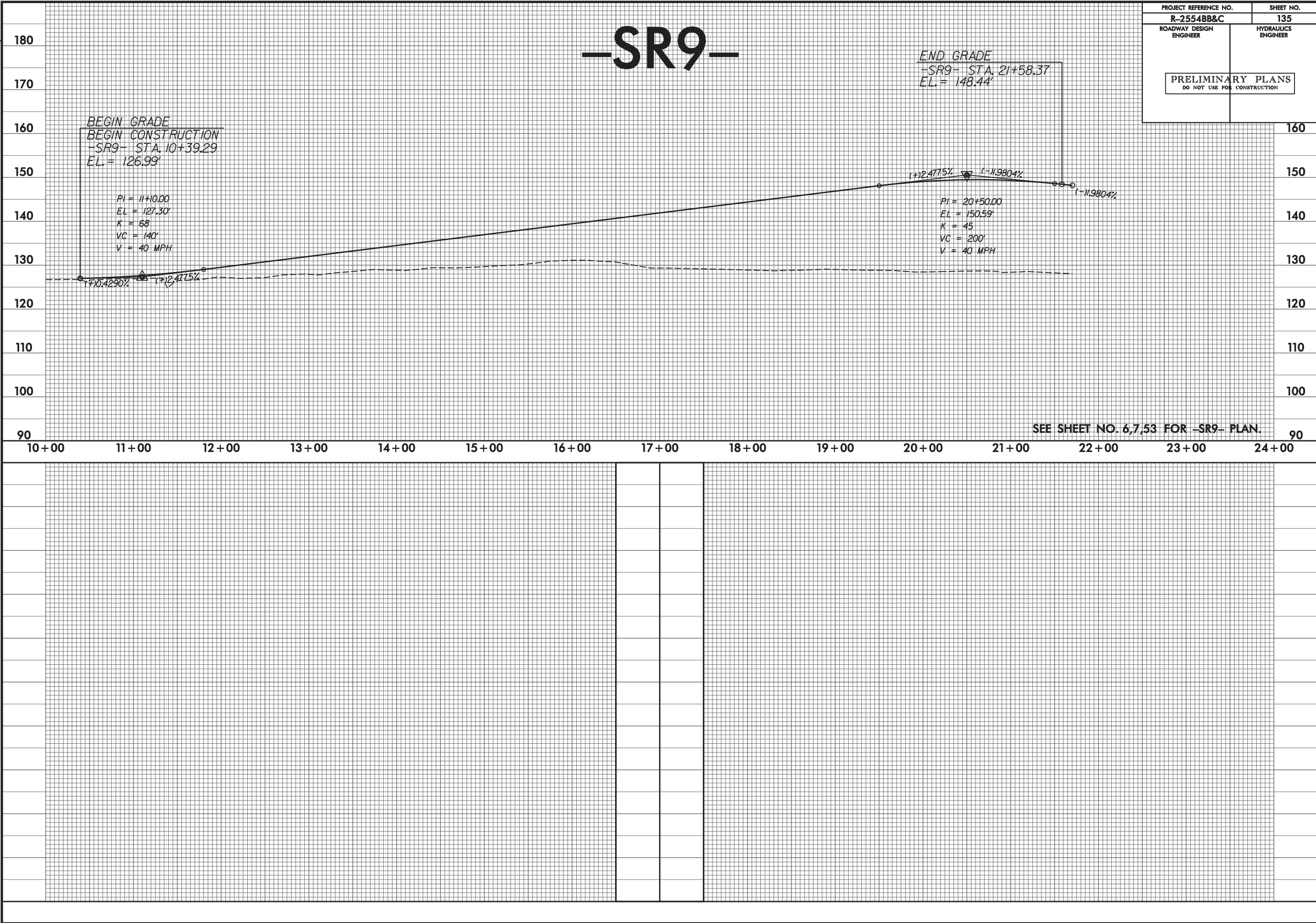


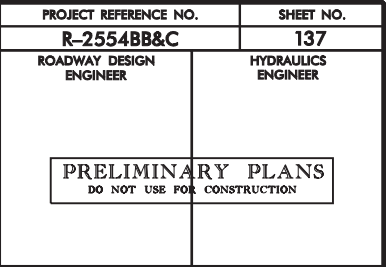
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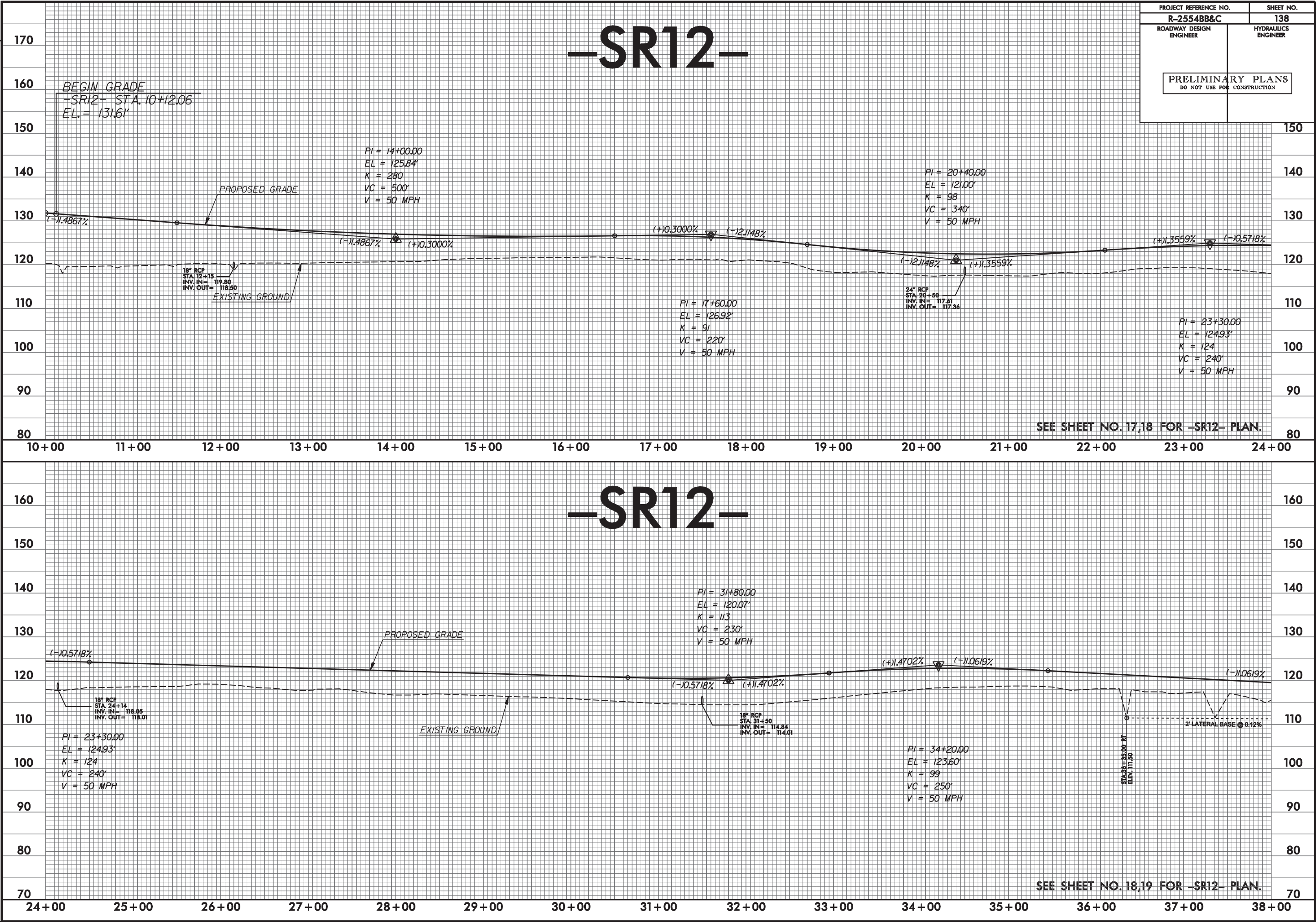




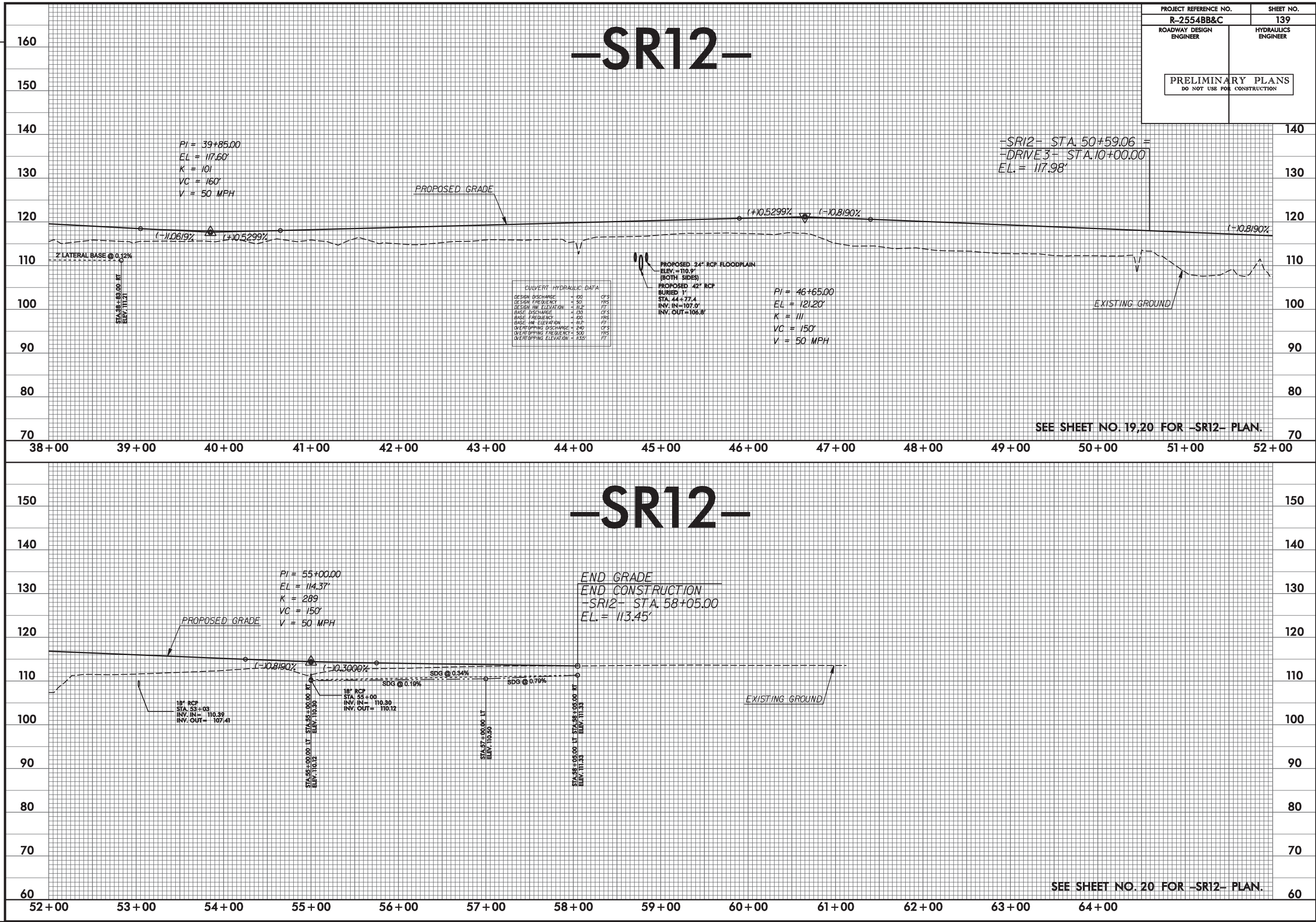


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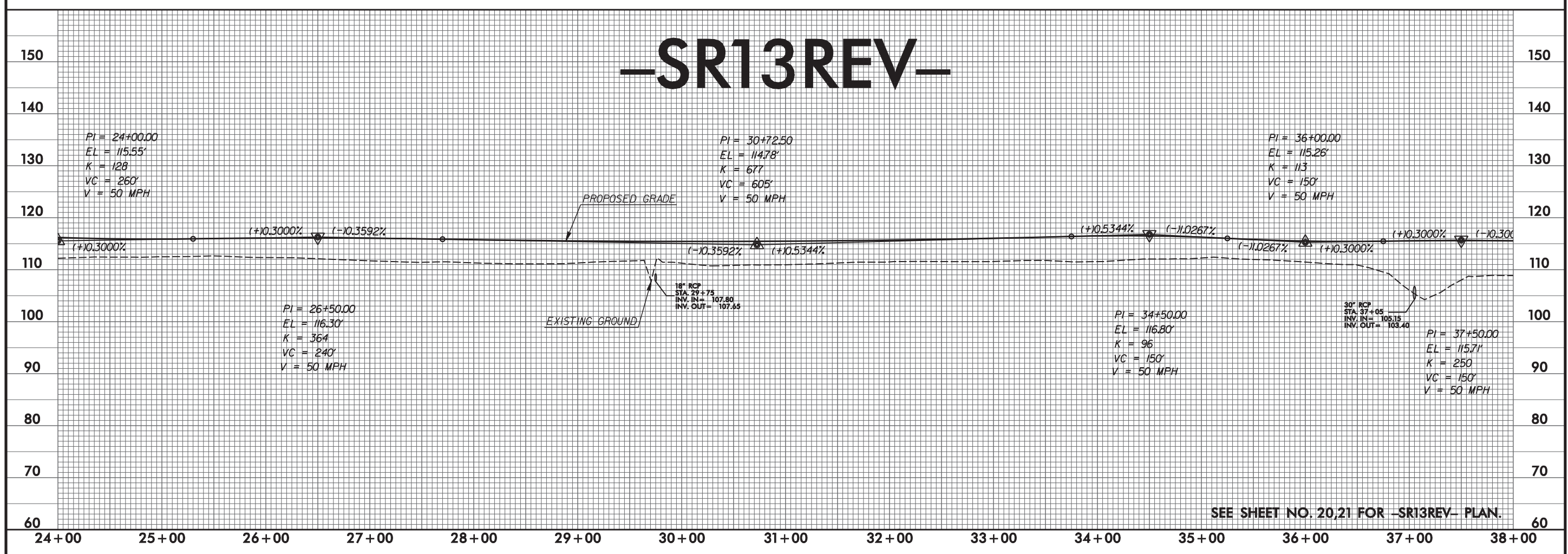
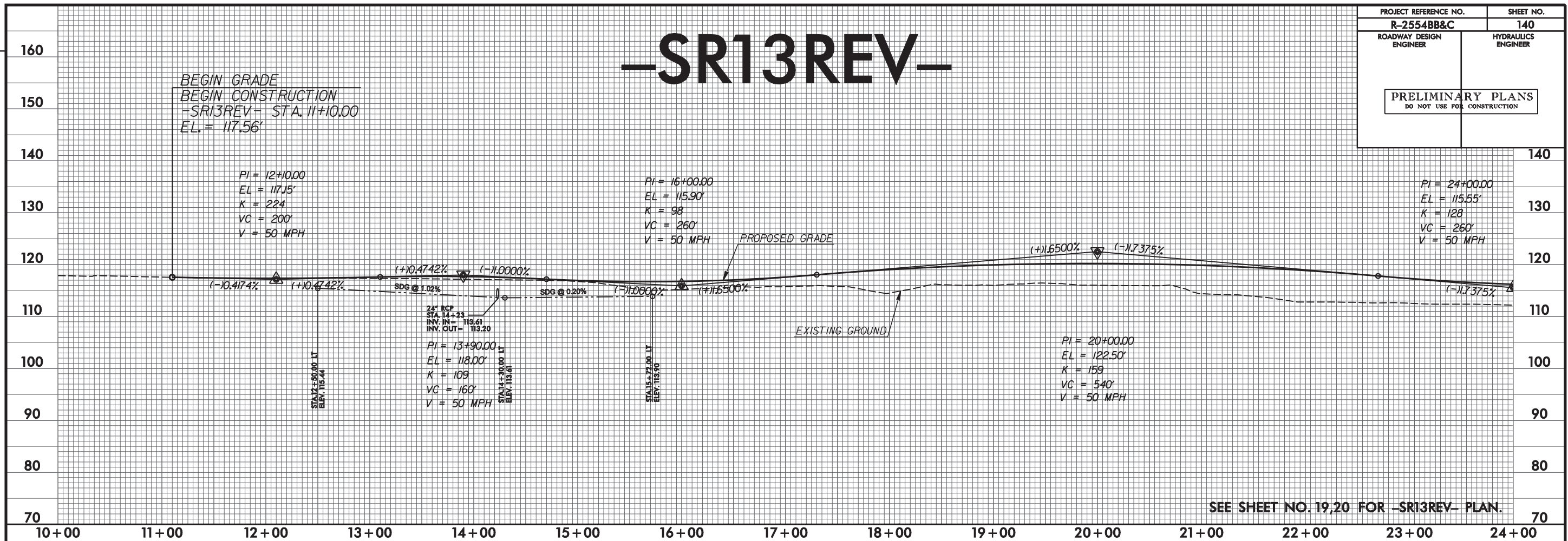
REVISIONS



REVISIONS

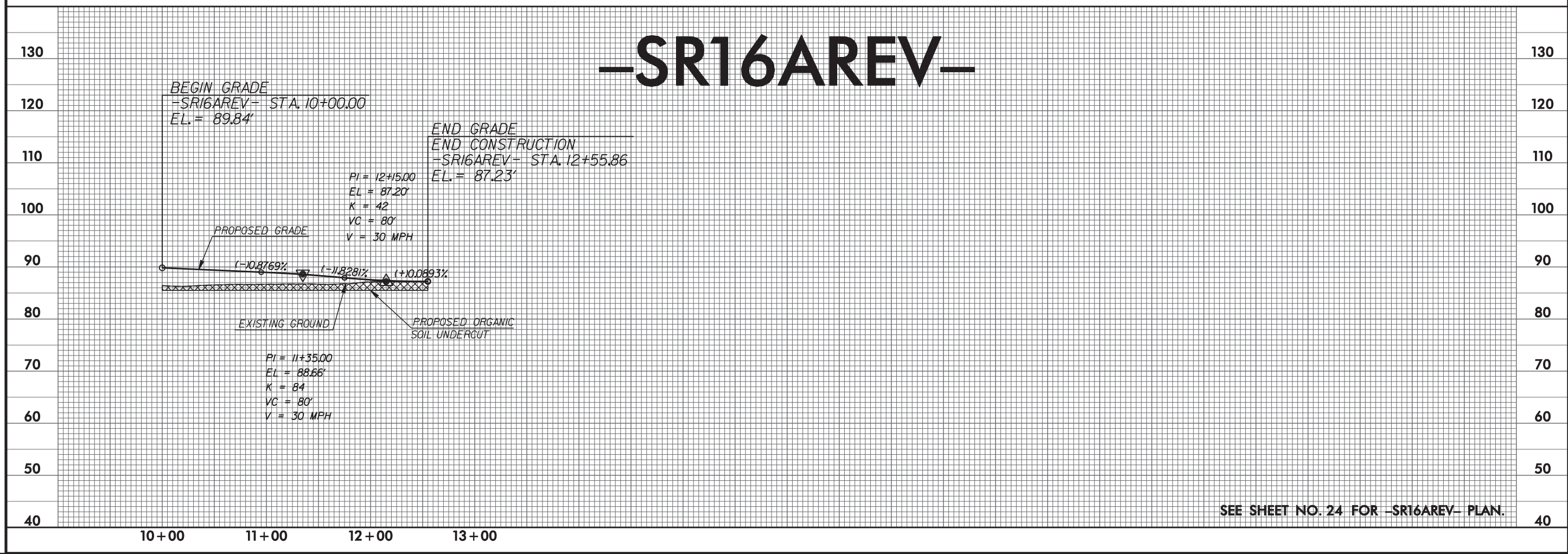
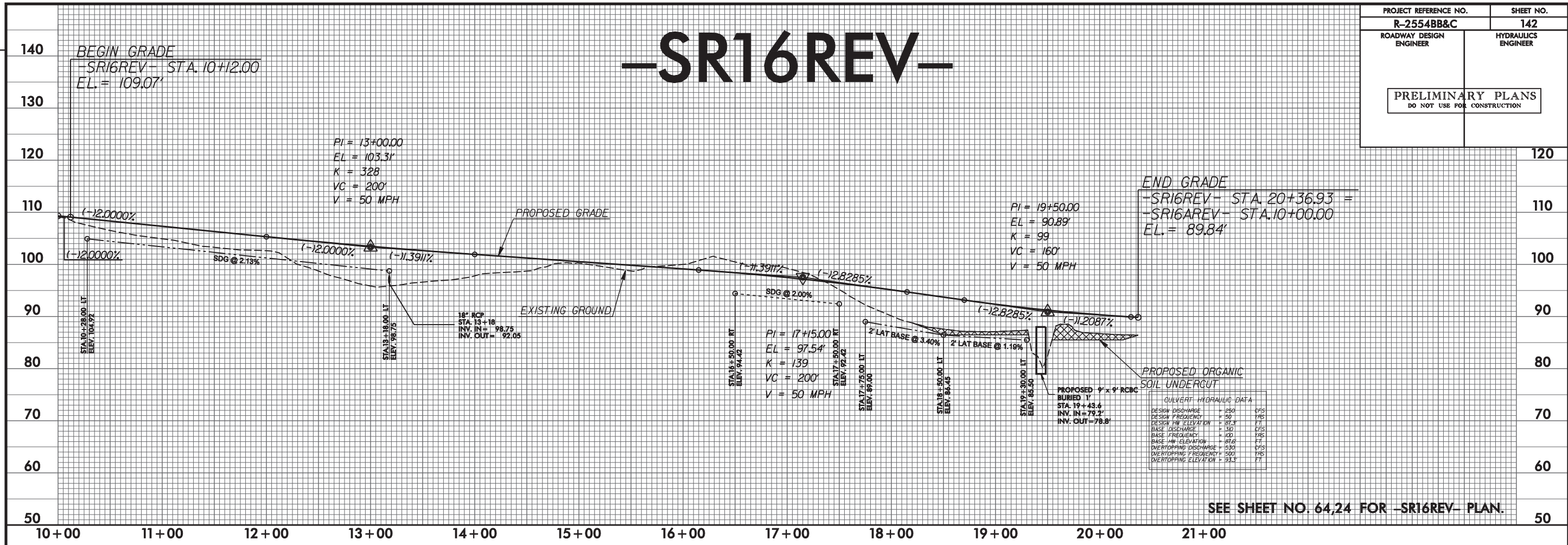


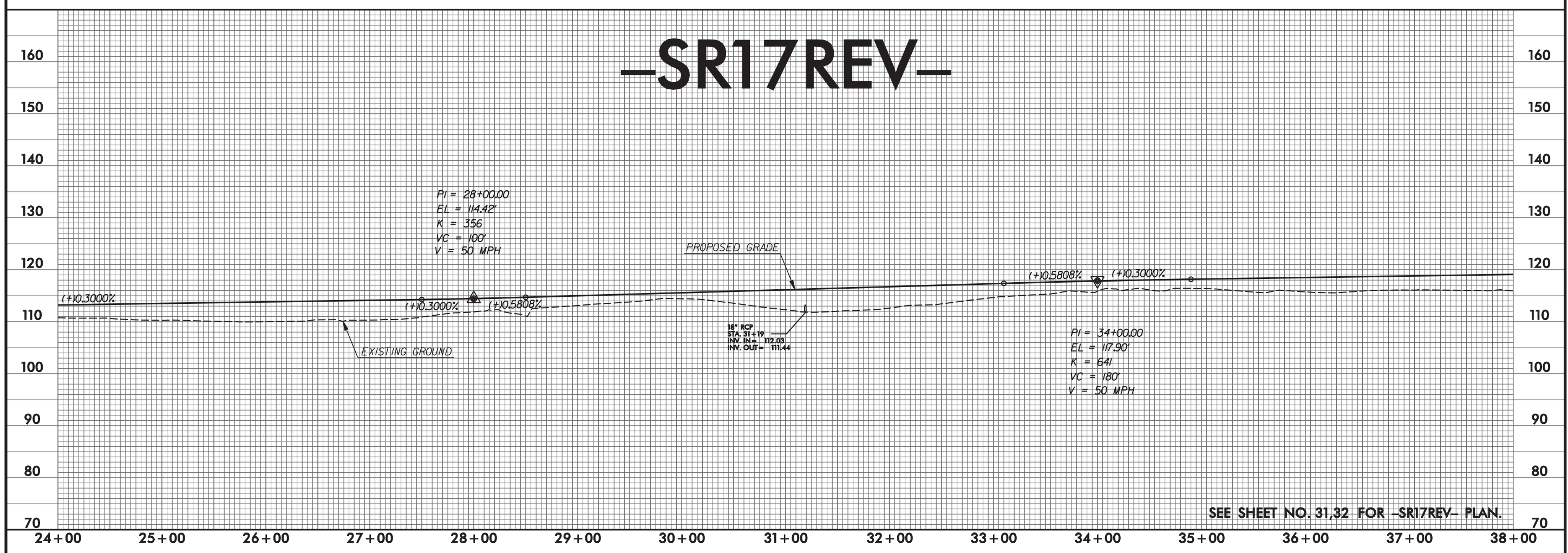
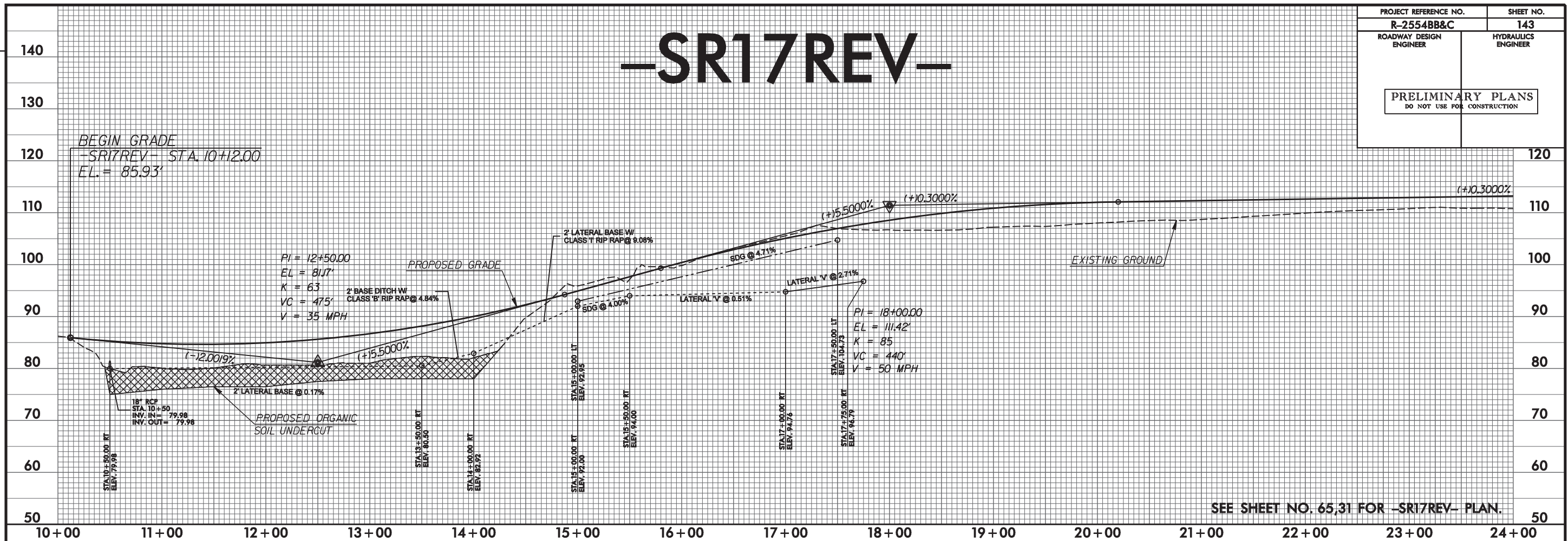
PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	140
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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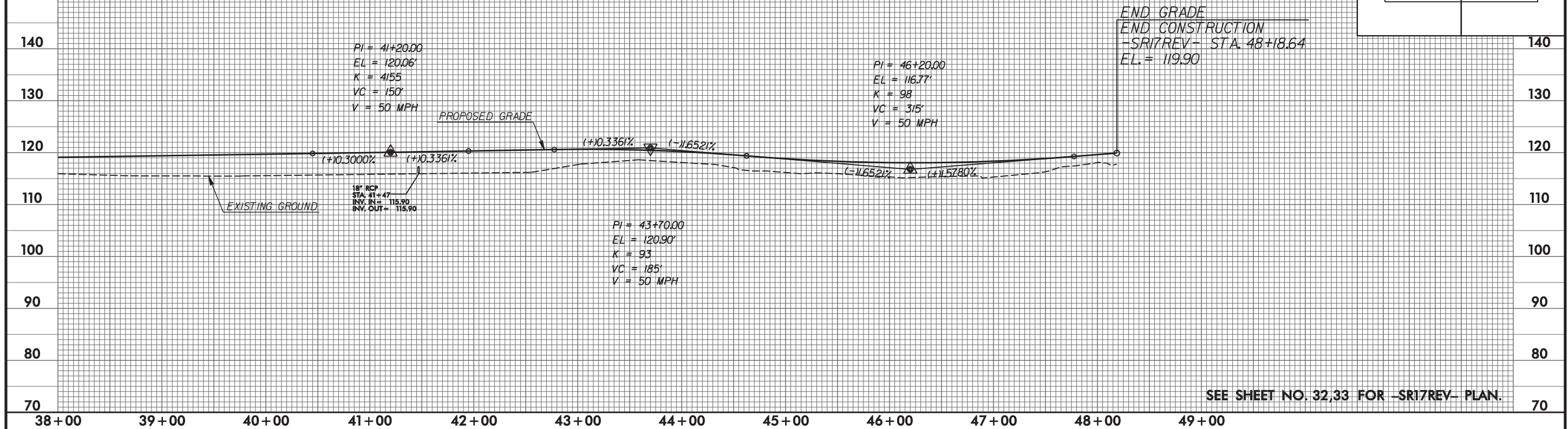
REVISIONS

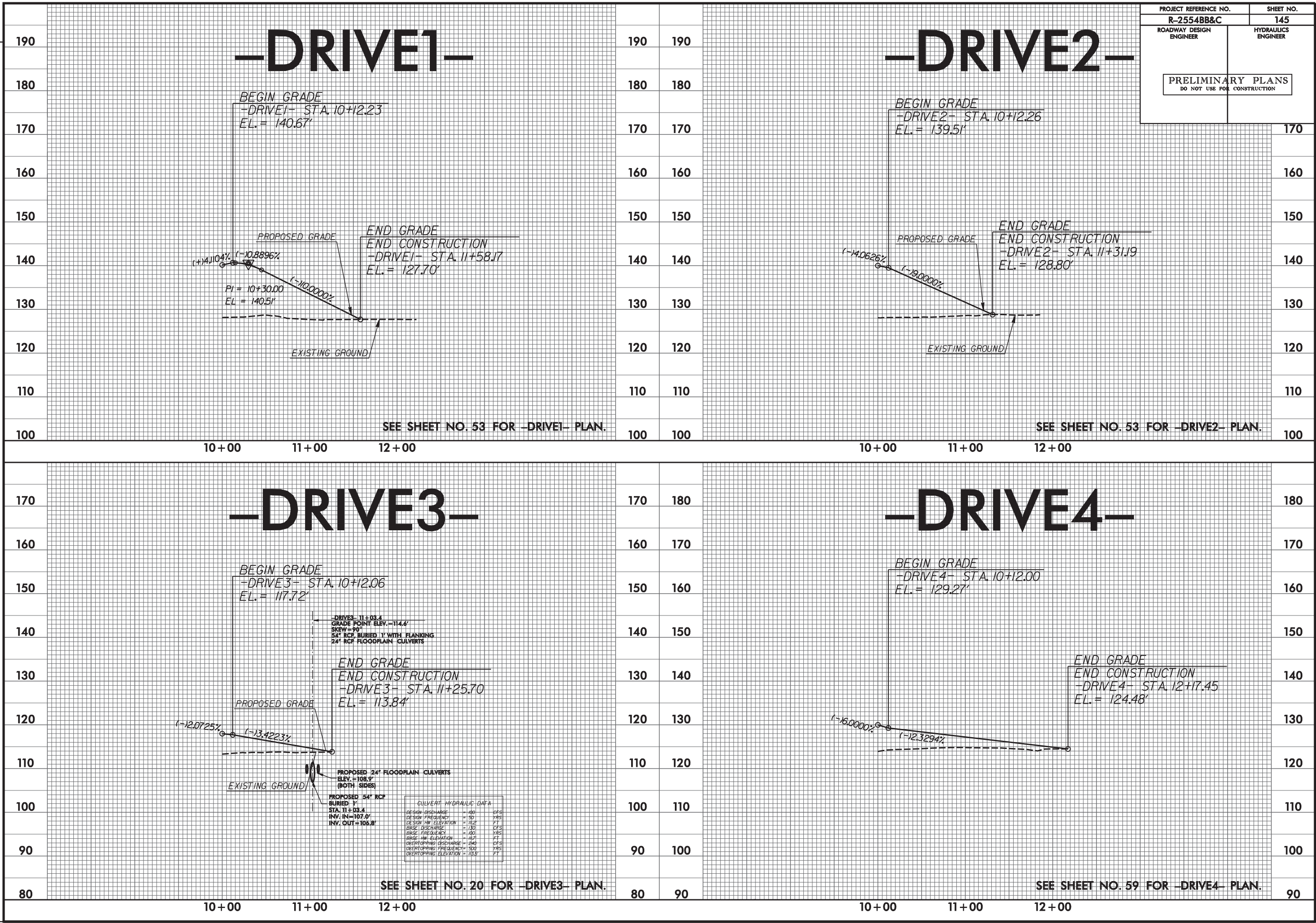


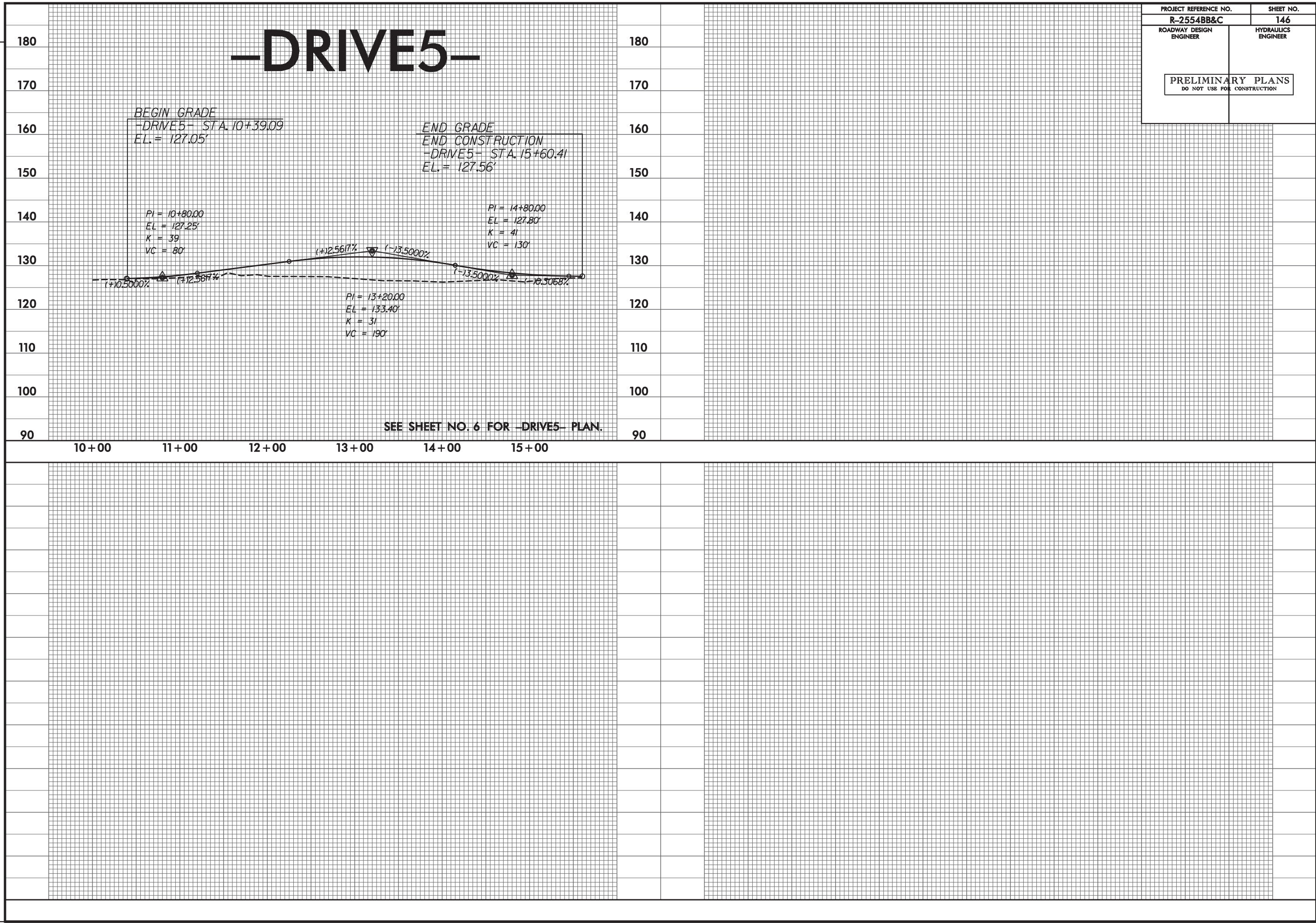


—SR17REV—

PROJECT REFERENCE NO.	SHEET NO.
R-2554BB&C	144
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	







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 BB	153+00/157+34-LREV-	Bridge	0.07	*<0.01			1.26					
3 BB	244+33/255+95 -LREV-	7' X 7' Culverts						0.14	0.02	1197	176	
4 BB	296+26 / 302+83 -LREV-	(2) 10' X 10' Culvert						0.12	0.01	**965	45	
6 BB	335+74 / 337+19 -LREV-	Roadway Fill	0.14			0.02						
7 BB	336+68 / 340+55 -LREV-	Roadway Fill	0.23			0.07						
9 BB	11+00 -SR13REV- / 54+00 -SR12-	Roadway Fill						0.12	<0.01	**1763	10	1322
10 BB	37+29 / 38+45 -SR13REV-	30" RCP	0.02			0.03		<0.01	<0.01	14	16	
		Bank Stabilization						0.01		26		
12 BB	28+17 / 29+18 -SR11-	54" RCP						0.01		94		
		Bank Stabilization						<0.01		41		
13 BB	26+58 /27+15 -Y15-	48" RCP						<0.01	<0.01	75	9	
		Bank Stabilization						<0.01		13		
1C	405+27/416+09 -LREV-	9' X 9' / 10' X 8' Culverts						0.22	0.02	956	100	
		Fill in Pond						0.15				
2C	16+16/16+97 -Y19RPBREV-	Fill in Pond						0.06				
3C	413+17/416+76 -LREV-	Roadway Fill						0.03	<0.01	**712	30	
		Fill in Pond						0.07				
		Bank Stabilization						<0.01		12		
4C	469+76/481+68 -LREV-	Roadway Fill	0.39					0.05	<0.01	489	4	
		Mitigation							0.03		89	1038
		Work Bridge							*<0.01		*58	
5C	505+27 / 506+07 -LREV-	6' X 6' Culvert						0.03	0.01	273	29	
6C	526+80 / 534+93 -LREV-	Roadway Fill	1.72			0.12						
7C	547+25 / 557+29 -LREV-	Roadway Fill	2.80			0.24						
8C	597+09 / 599+86 -LREV-	Roadway Fill	0.16			0.06						
9C	604+62 / 611+75 -LREV-	Roadway Fill	2.01			0.25						
		Pond						0.29				
10C	641+00 / 644+35 -LREV-	7' X 7' Culvert	1.03		0.03	0.19		0.01	<0.01	288	37	
11C	698+77 / 704+07 -LREV-	11' X 7' Culvert	1.48		0.02	0.22		0.12	0.01	346	40	
12C	12+51 / 34+02 -FLYREV-	Roadway Fill	3.99			0.51		0.04	<0.01	394	10	
		Bank Stabilization						<0.01		19		
13C	754+57/773+80 -LREV-	Roadway Fill	0.73			0.14						
14C	29+09 / 34+18 -Y26REV-	11' X 7' Culvert	2.05		0.07	0.20		0.08	0.02	365	81	
TOTALS:			16.82	<0.01	0.12	2.05	1.26	1.55	0.12	8042	734	2360

*Temporary impacts are due to temporary work bridge. Work bridge spans are a minimum of 20' long with five 1' X 1' H-piles per bent.

** Selected Permit Sites that have stream relocations.

-Site 4BB has 600 linear feet of stream relocation.

-Site 9BB has 199 linear feet of stream relocation.

-Site 3C has 245 linear feet of stream relocation.

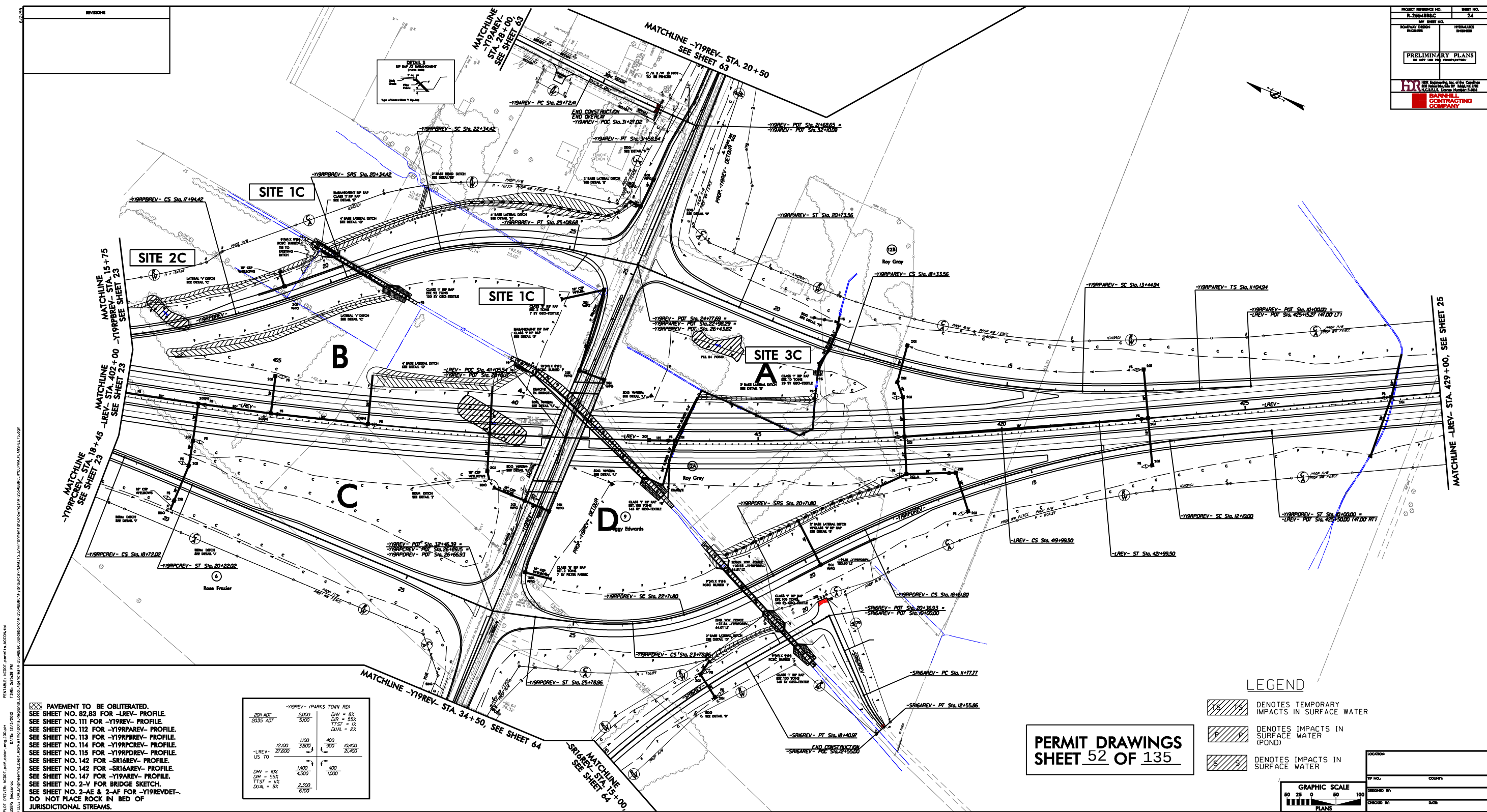
--Total stream relocation = 1,044 linear feet

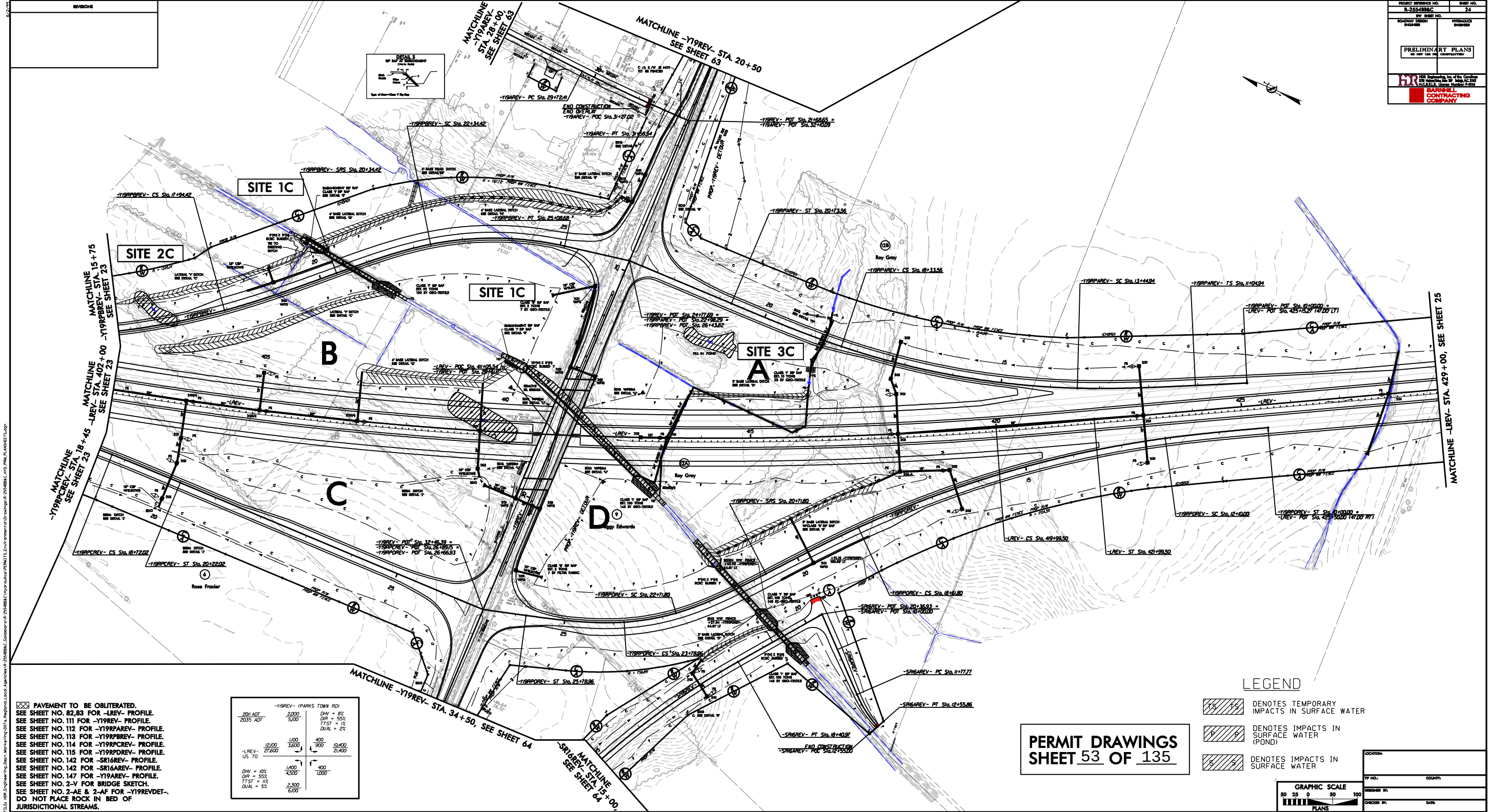
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAYNE/LENOIR COUNTIES
WBS - 34461.3.8 (R-2554BB&C)

10 OF 135
SHEET

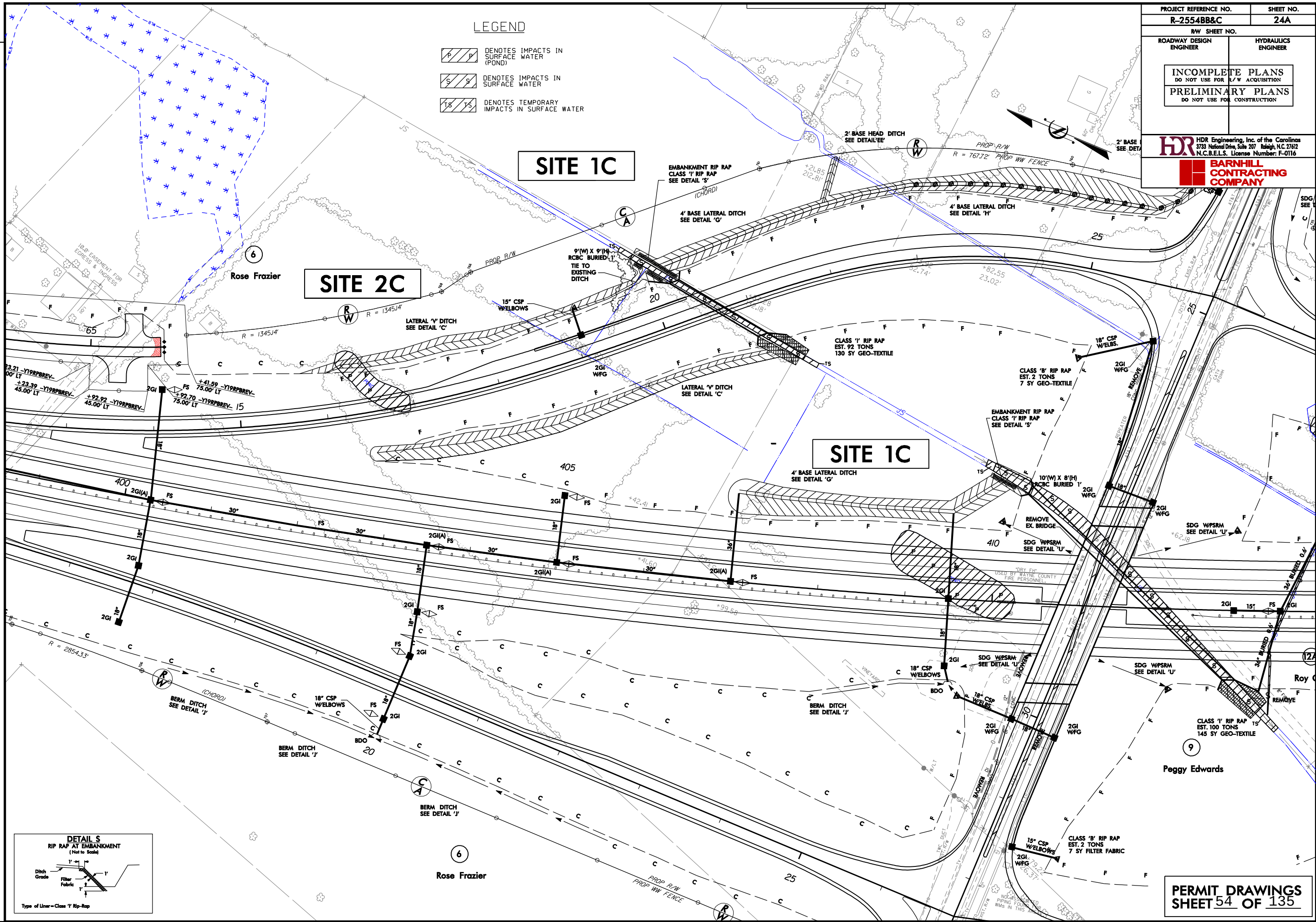
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REVISIONS



LEGEND

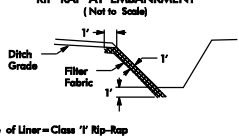
- DENOTES IMPACTS IN SURFACE WATER (POND)
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 1C

SITE 2C

SITE 1C

DETAIL S



PERMIT DRAWINGS
SHEET 54 OF 135

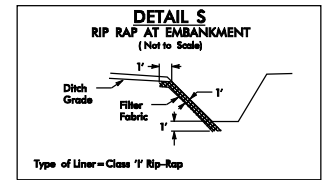
PERMIT DRAWINGS
SHEET 55 OF 135

	DENOTES IMPACTS IN SURFACE WATER (POND)
	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 1C

SITE 2C

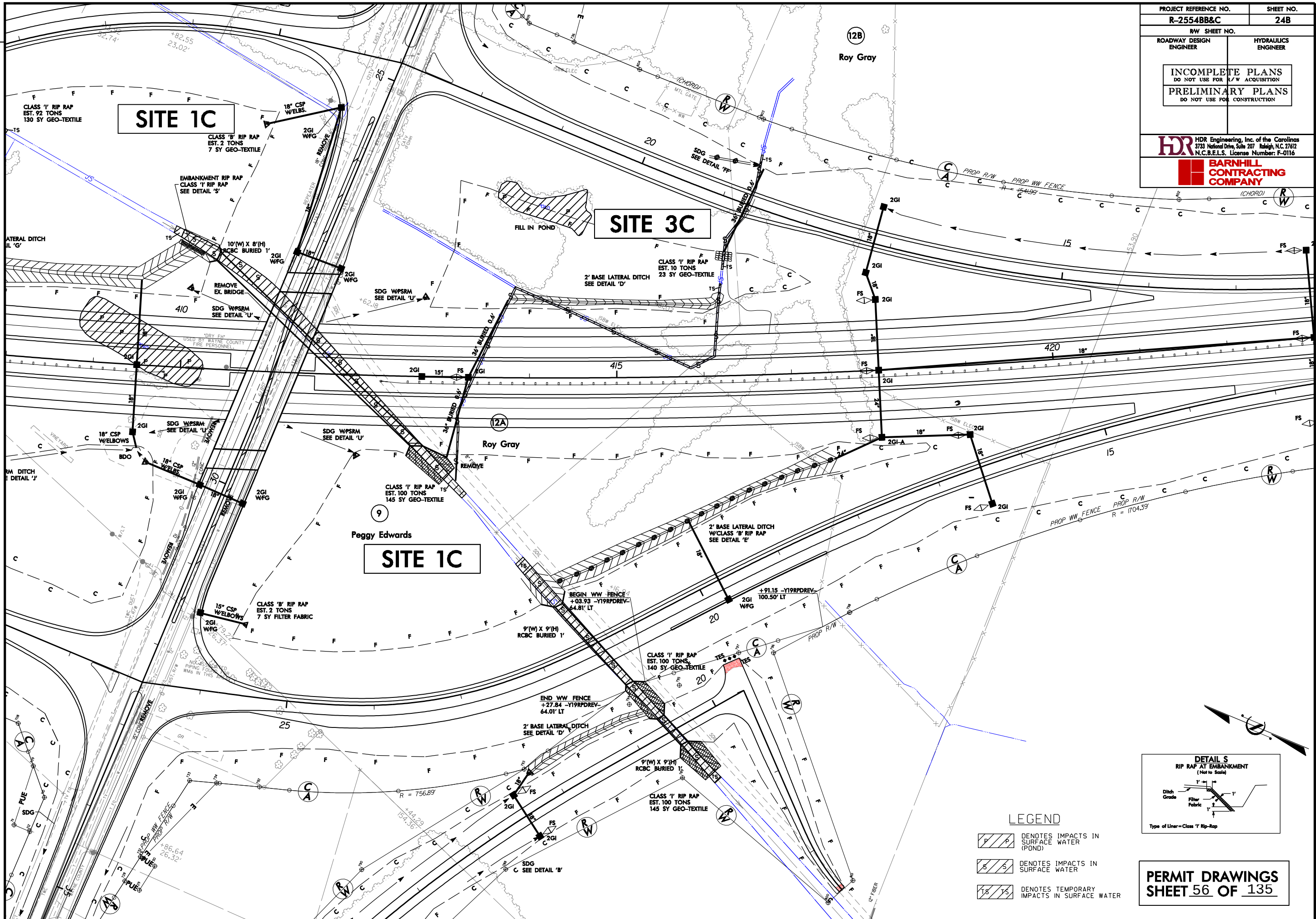
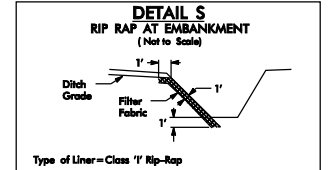
SITE 1C



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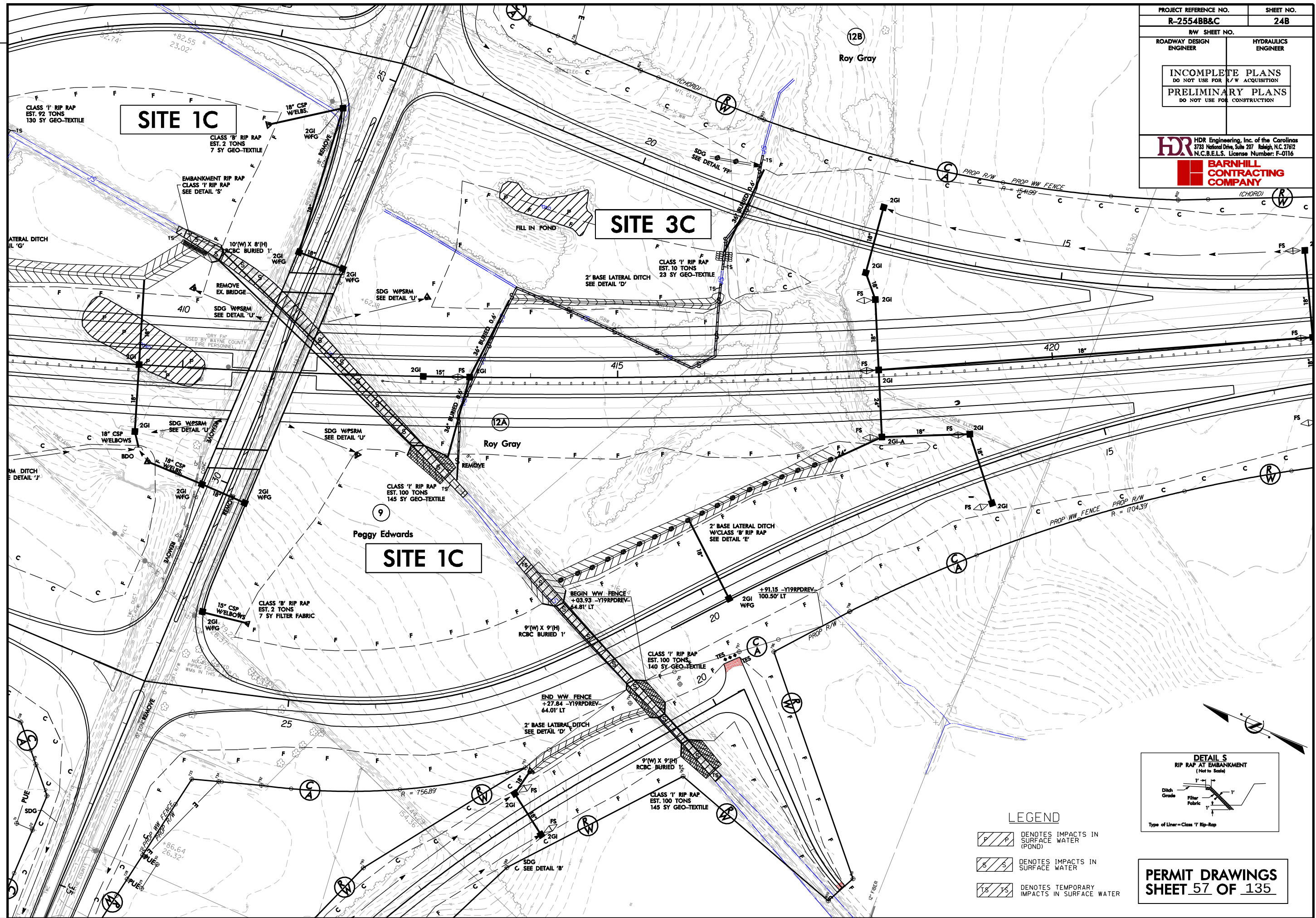
PERMIT DRAWINGS
SHEET 56 OF 135

	DENOTES IMPACTS IN SURFACE WATER (POND)
	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER



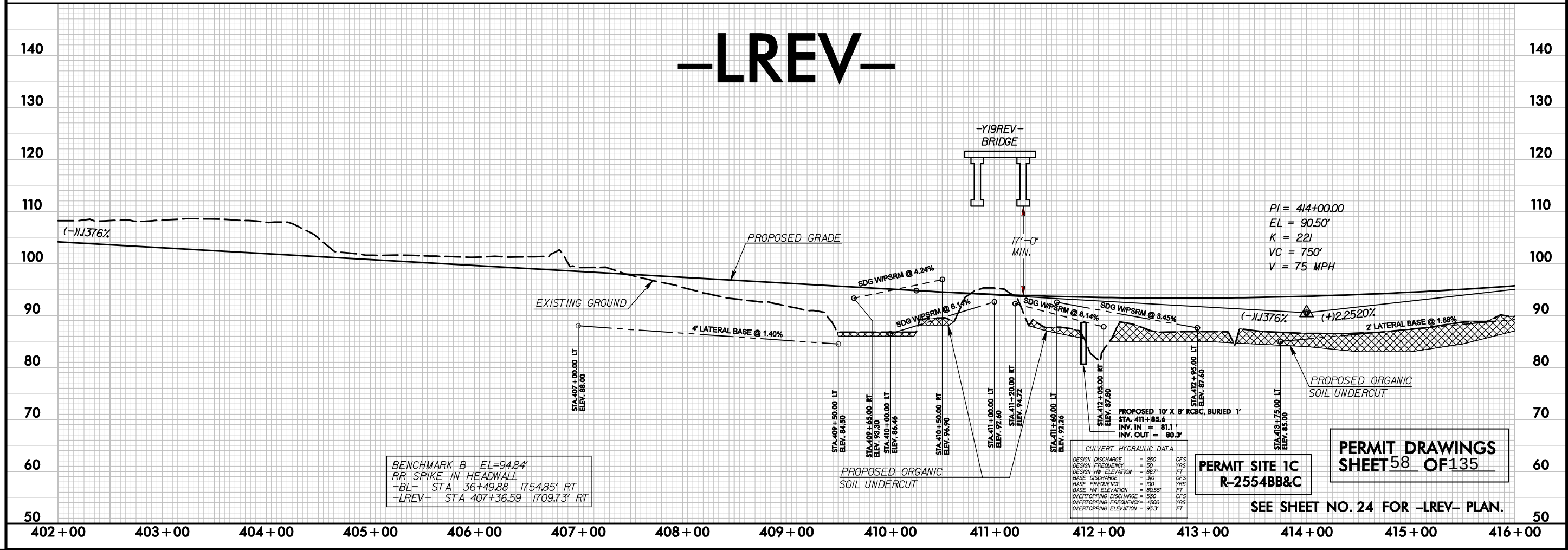
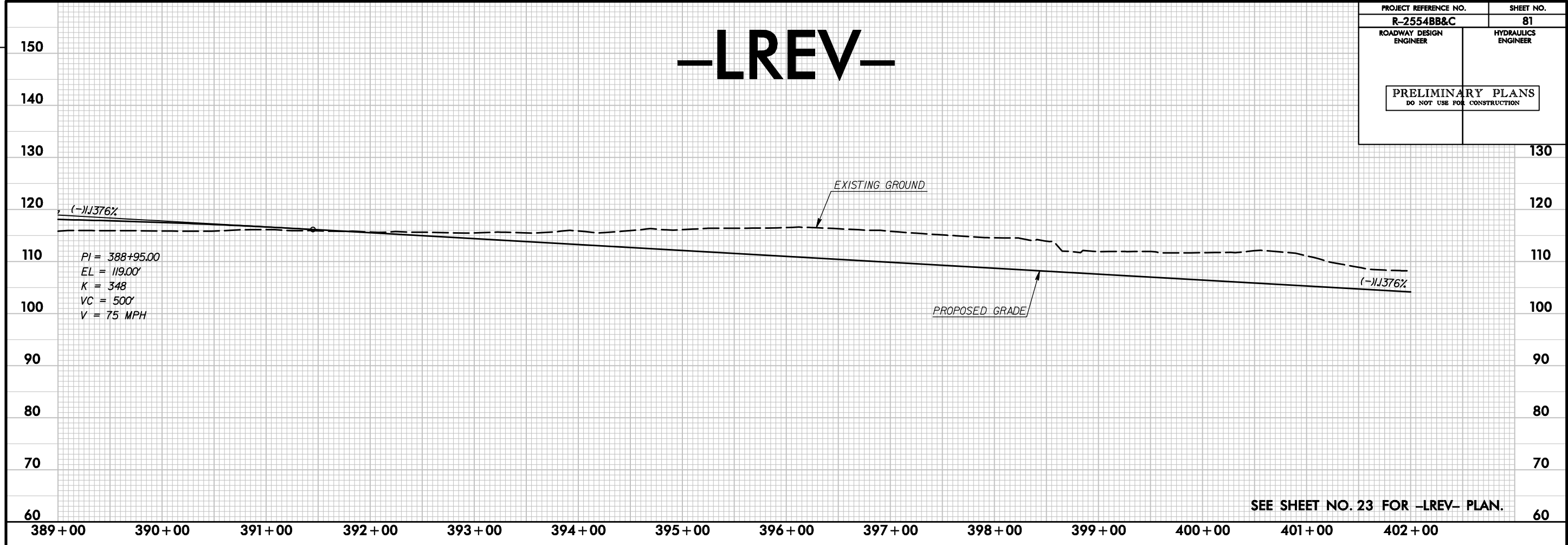
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REVISIONS



REVISIONS

PROJECT REFERENCE NO.		SHEET NO.
R-2554BB&C		81
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		



CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 250	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 88.7'	FT
BASE DISCHARGE	= 310	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 88.55'	FT
OVERTOPPING DISCHARGE	= 530	CFS
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING ELEVATION	= 93.3'	FT

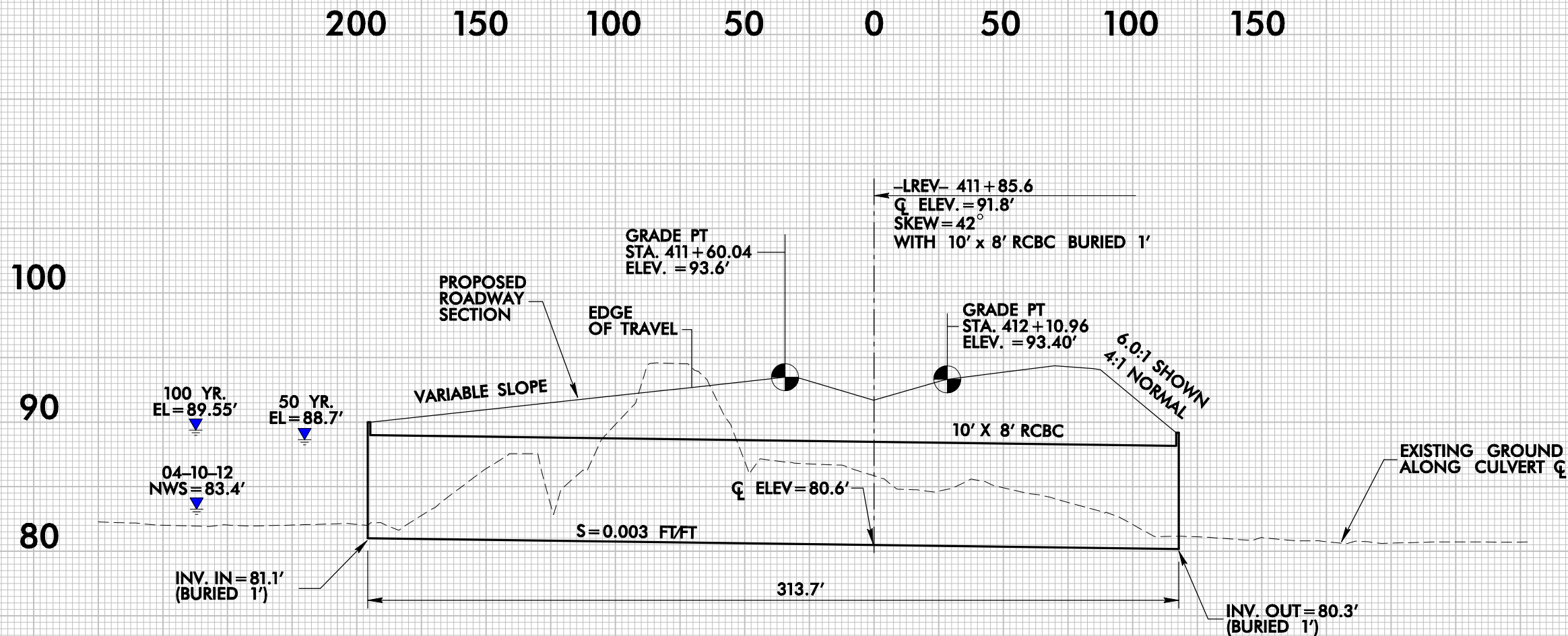
PERMIT SITE 1C
R-2554BB&C

PERMIT DRAWINGS
SHEET 58 OF 135

REVISIONS

SITE 1C R-2554BB&C

PROJECT REFERENCE NO. R-2554BB&C	SHEET NO. CSR 6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



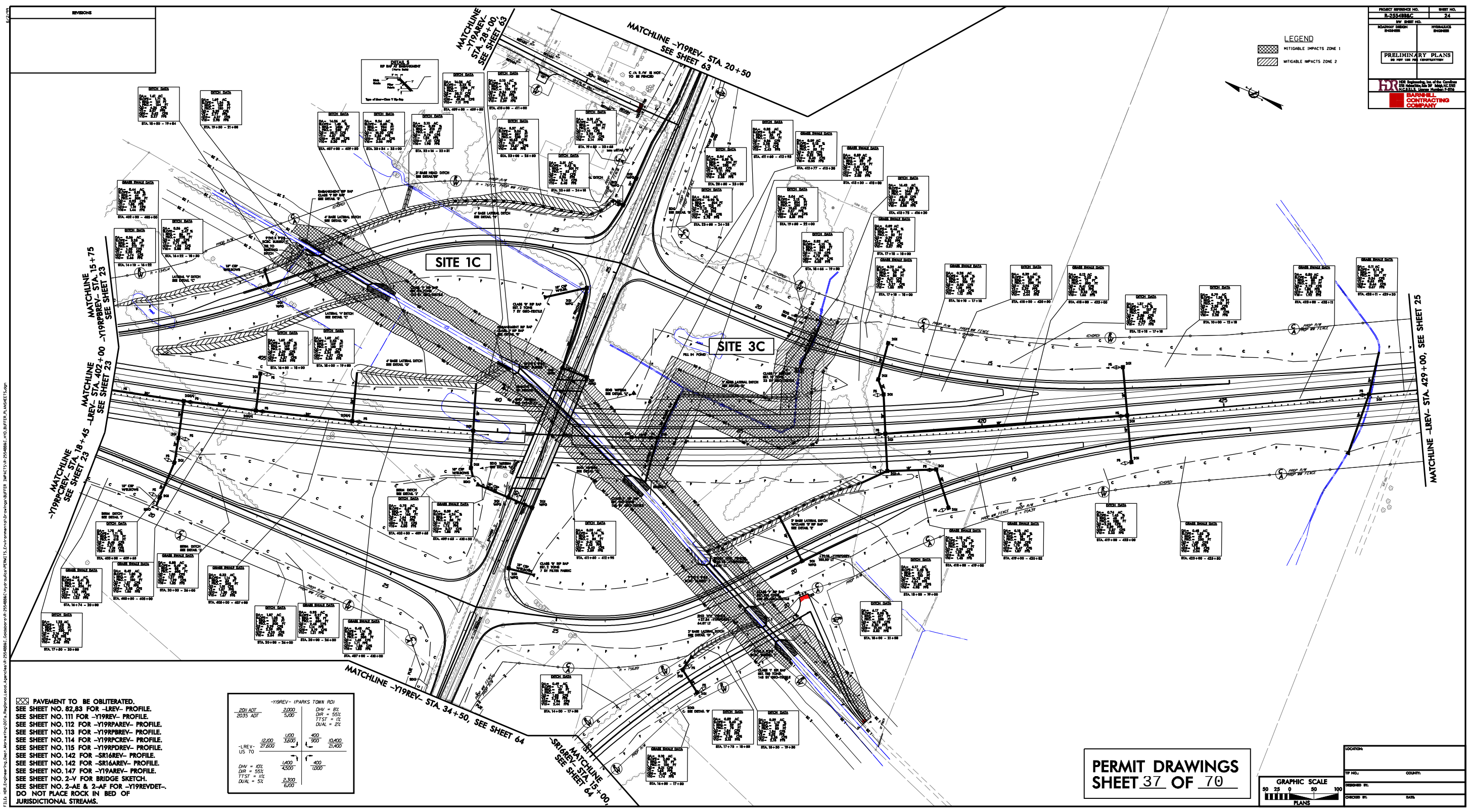
PROFILE ALONG Q OF CULVERT

WSEL TABLE

YEAR	DISCHARGE (CFS)	EXISTING WSEL	REVISED WSEL
10	140	87.8'	87.3'
50	250	89.0'	88.7'
100	310	89.39'	89.55'
500	450	90.0'	92.2'

* DATA OBTAINED FROM STA. 861 (US TOE)

PERMIT DRAWINGS
SHEET 63 OF 135

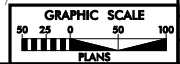


PROJECT REFERENCE NO.	SHEET NO.
8-2554BAC	24
BY SHEET NO.	
ROADWAY DESIGN	HYDRAULIC
BRIDGE	BRIDGE
PRELIMINARY PLANS	
NO COPY FOR CONSTRUCTION	
BARNETT CONTRACTING COMPANY	

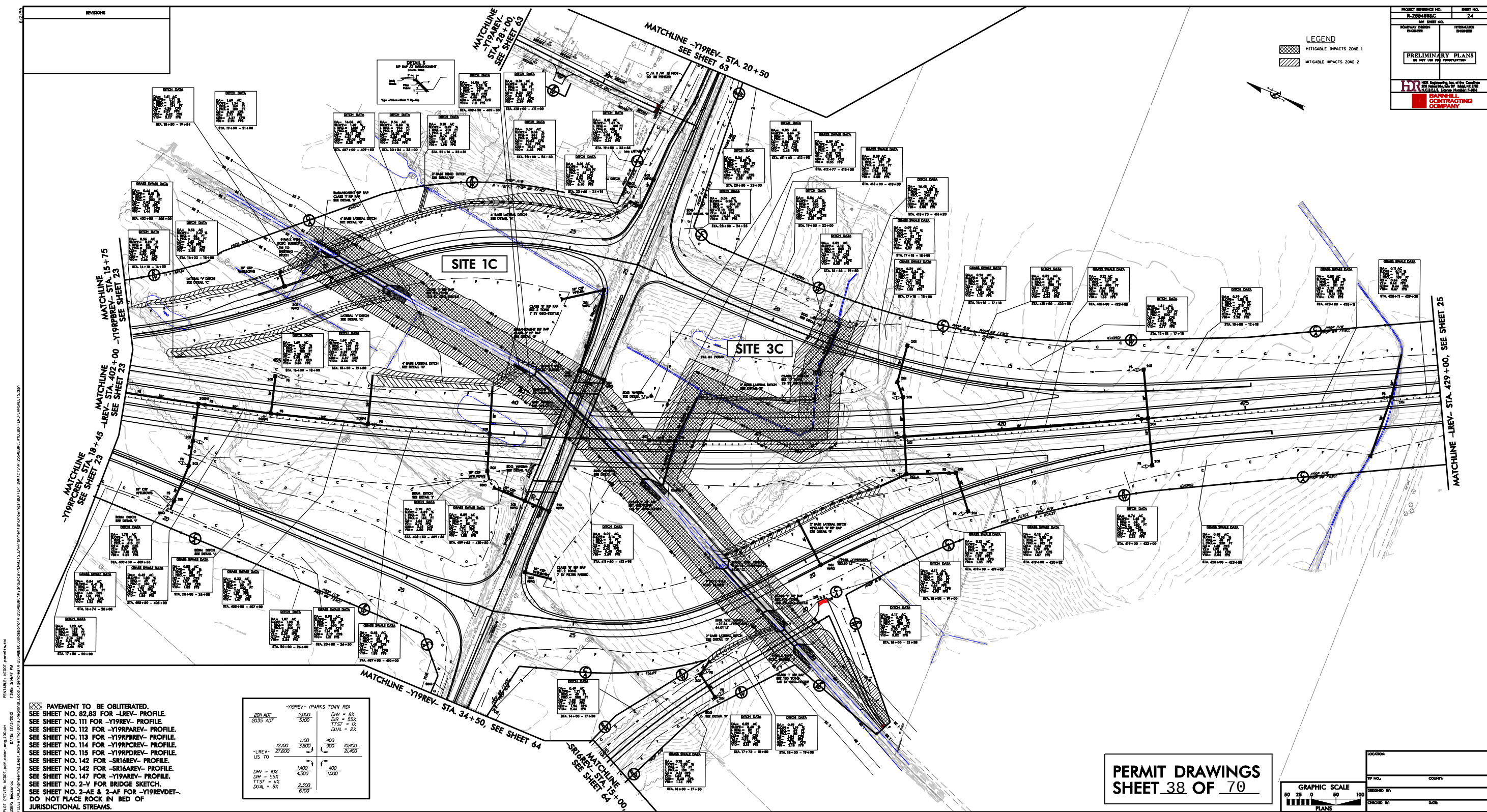
PAVEMENT TO BE OBLITERATED.
SEE SHEET NO. 82.83 FOR -LREV- PROFILE.
SEE SHEET NO. 111 FOR -Y19REV- PROFILE.
SEE SHEET NO. 112 FOR -Y19RPREV- PROFILE.
SEE SHEET NO. 113 FOR -Y19RPREV- PROFILE.
SEE SHEET NO. 114 FOR -Y19RPCREV- PROFILE.
SEE SHEET NO. 115 FOR -Y19RPREV- PROFILE.
SEE SHEET NO. 142 FOR -SK16REV- PROFILE.
SEE SHEET NO. 142 FOR -SK16REV- PROFILE.
SEE SHEET NO. 147 FOR -Y19AREV- PROFILE.
SEE SHEET NO. 2-V FOR BRIDGE SKETCH.
SEE SHEET NO. 2-AE & 2-AF FOR -Y19REVDET-
DO NOT PLACE ROCK IN BED OF
JURISDICTIONAL STREAMS.

-Y19REV- (PARKS TOWN RD)	
2011 AOT	2000
2035 AOT	5000
-LREV- US 70	
12,400	1,000
21,600	3,600
D/W = 10%	
D/W = 55%	400
T/ST = 1%	10,400
DUAL = 2%	21,400
D/W = 10%	
D/W = 55%	1,400
T/ST = 1%	4,000
DUAL = 5%	2,300
	6,000

PERMIT DRAWINGS
SHEET 37 OF 70

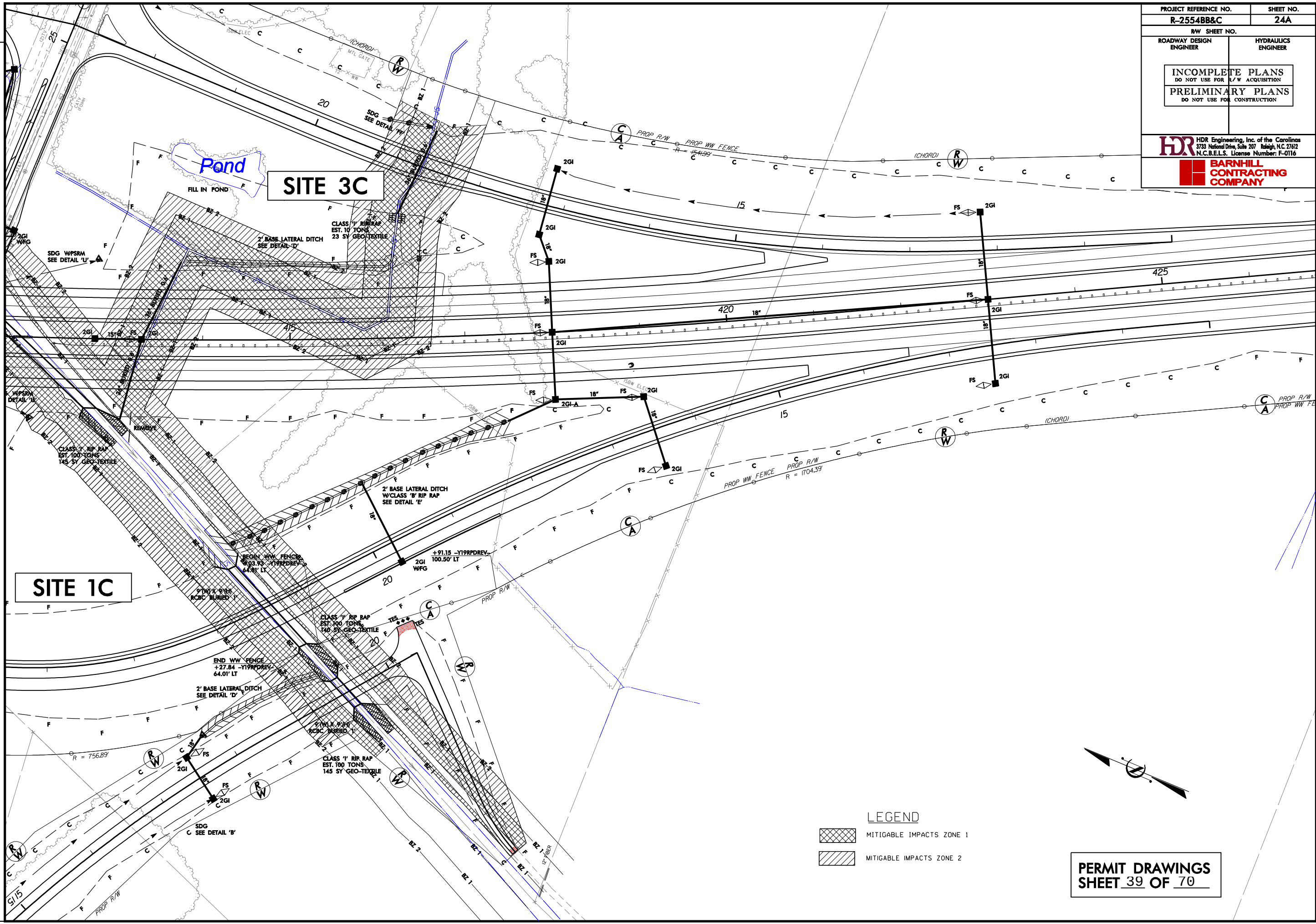


LOCATION	
TP NO.	COUNTY
DRAWN BY:	CHECKED BY:
DATE:	DATE:



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REVISIONS

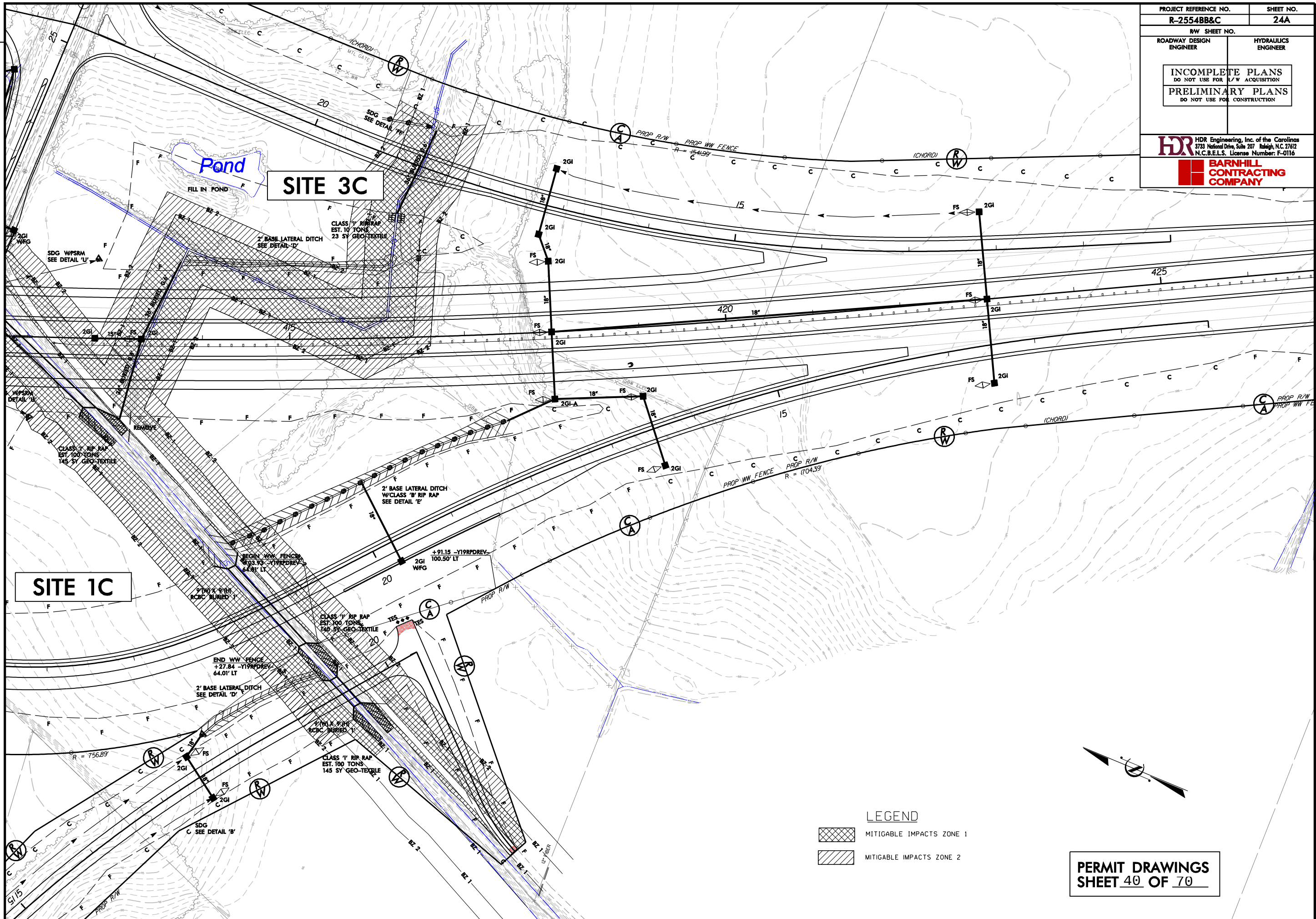


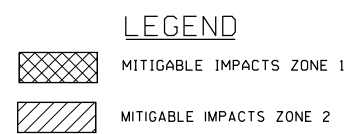
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RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			
BARNHILL CONTRACTING COMPANY			

LEGEND

	MITIGABLE IMPACTS ZONE 1
	MITIGABLE IMPACTS ZONE 2

PERMIT DRAWINGS
SHEET 39 OF 70

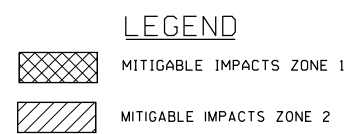




SITE 1C

PERMIT DRAWINGS
SHEET 41 OF 70

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SITE 1C

PERMIT DRAWINGS
SHEET 42 OF 70

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