



PAT McCRORY  
Governor

NICHOLAS J. TENNYSON  
Secretary

July 8, 2016

U. S. Army Corps of Engineers  
Regulatory Field Office  
151 Patton Avenue, Room 208  
Asheville, NC 28801-5006

ATTN: Mr. Steve Kichefski  
NCDOT Coordinator

Subject: **Application for Individual Section 404 and Section 401 Water Quality Certification** for the proposed widening of NC 273 (South Main Street) from Tuckaseege Road to Highland Street in Gaston County, Federal Aid Project No. STP-273-(1), Division 12, TIP No. U-3633, Debit \$570 from WBS 37649.1.1.

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to widen NC 273 (South Main Street) to a multi-lane facility from Tuckaseege Road (at Beatty Drive) to Highland Street (at A&E Drive) in Mount Holly in Gaston County. The project is approximately 1.3 miles in length.

Please see the enclosed ENG 4345, Division of Mitigation Services (DMS) mitigation acceptance letter, permit drawing review minutes (4B and 4C), State Historic Preservation Office (HPO) Concurrence Form, State Stormwater Management Plan (SMP), permit drawings, and design plans for the above referenced project.

Purpose and Need:

The purpose of this project is to increase system capacity and improve efficiency along NC 273 (South Main Street) for local and regional traffic, thereby improving mobility.

NC 273 is the primary north-south facility for local commuters serving the City of Mount Holly from Interstate 85 in east central Gaston County. Traffic volumes are expected to almost double by the design year of 2035 on this segment of NC 273. 2011 traffic volumes along the project ranged from 18,215 to 24,485 vehicles per day (vpd). In the design year 2035, traffic volumes are expected to range from 31,600 to 42,300 vpd. If this segment of NC 273 in Gaston County is not widened, it is expected that traffic volumes on the project will exceed the current capacity of the existing facility by at least 100%.



Summary of Jurisdictional Impacts:

This project will result in 1,096 linear feet of permanent stream impacts, 23 linear feet of stream bank stabilization, and 0.03 acre (186 linear feet) of temporary stream impacts. There are no wetlands within the project footprint.

Summary of Utility Impacts:

There will be no impacts associated with utility relocations for this project.

Summary of Mitigation:

The project has been designed to avoid and minimize impacts to jurisdictional areas throughout the National Environmental Policy Act (NEPA) and design processes. However, project impacts will necessitate compensatory mitigation for 1,096 linear feet of unavoidable stream impacts (see Table 1). It has been determined that onsite mitigation is not an option for this project. DMS will provide all required mitigation for this project.

### **NEPA DOCUMENT STATUS**

A Categorical Exclusion (CE) was completed for this project in August 2012. Additional copies will be provided upon request.

In compliance with the NEPA/404 Merger Process, Concurrence Points 4B and 4C were reached for U-3633 on May 9, 2012 and September 17, 2014, respectively.

### **PROJECT SCHEDULE**

This project calls for a letting date of January 17, 2017 and a review date of November 29, 2016; however, the let date may advance as additional funding becomes available.

### **INDEPENDENT UTILITY**

The subject project is in compliance with 23 CFR Part 771.111(f) which lists the Federal Highway Administration (FHWA) characteristics of independent utility of a project:

- (1) The project connects logical termini and is of sufficient length to address environmental matters on a broad scope,
- (2) The project is usable and a reasonable expenditure, even if no additional transportation improvements are made in the area;
- (3) The project does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

### **RESOURCE STATUS**

Waters within the project area are located in the Catawba River Basin (HUC 03050101). There are no Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply Waters (WS-I or WS-II) within 1.0 mile downstream of the project area. Streams that are impacted by this project include Fites Creek (Index #11-121-(1), Classification WS-IV) and three of its unnamed tributaries.

Stream determinations within U-3633 were conducted using the field determination method outlined in the 2010 NCDWR Stream ID Manual. Mr. Steve Lund of the U.S. Army Corps of Engineers (USACE) and Polly Lespinasse of the North Carolina Division of Water Quality (NCDWR) verified the water resources on September 28, 2009. An approved Jurisdictional Determination (JD) was

issued by the USACE on May 4, 2010 (Action ID 2010-0032). An additional intermittent stream (SE) was identified in the field in October 2013. This Section 404 Individual Permit application includes a request for a preliminary JD of the resources included in the U-3633 project area as the previous Approved JD expired in May 2015.

**303(d) Impaired Waters:**

The Catawba River (located <1.0m downstream) is currently listed on the 2014 Final and 2016 Draft 303(d) list of impaired waters for PCB Fish Tissue Advisory.

**IMPACTS TO WATERS OF THE U.S.**

Table 1 summarizes the impacts to jurisdictional water resources for U-3633. Site numbers correspond with the permit (hydraulic) drawings included in this application. The stream ID corresponds to the NRTR. A brief description of each impact site will follow the table.

**Table 1 – U-3633 Stream Impacts**

Site	Stream Name & Intermittent (I) or Perennial (P) <sup>1</sup>	Stream ID	Impact Type	Impact Length (linear feet)	Temporary Impacts (acres)	Mitigation Requirement <sup>2</sup> (linear feet)
1	UT to Fites Creek (I)	SE	Perm. Fill	15	--	USACE & DWR
			Bank Stabilization	--	--	--
			Temp Fill	--	<0.01 (14')	--
2	UT to Fites Creek (I)	SE	Perm. Fill	145*	--	USACE & DWR
			Bank Stabilization	--	--	--
			Temp Fill	--	--	--
3	UT to Fites Creek (P)	SB	Perm. Fill	68	--	USACE & DWR
			Bank Stabilization	--	--	--
			Temp Fill	--	0.01 (26')	--
4	UT to Fites Creek (P)	SB	Perm. Fill	7	--	USACE & DWR
			Bank Stabilization	10	--	DWR
			Temp Fill	--	<0.01 (21')	--
5	UT to Fites Creek (P)	SB	Perm. Fill	484	--	USACE & DWR
			Bank Stabilization	13	--	DWR
			Temp Fill	--	<0.01 (42')	--
6	Fites Creek (P)	Fites Creek	Perm. Fill	228	--	USACE & DWR
			Bank Stabilization	--	--	--
			Temp. Fill	--	0.02 (68')	--
7	UT to Fites Creek (P)	SD	Perm. Fill	149	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01 (15')	--
<b>Total Temporary Impacts:</b>				<b>--</b>	<b>0.03<sup>3</sup> (186')</b>	<b>--</b>
Total Perm. Impacts (Perm. Fill + Bank Stabilization):				<b>1,119</b>	<b>--</b>	<b>--</b>
Permanent Impacts Requiring DWR Mitigation:				<b>970</b>	<b>--</b>	<b>--</b>
Permanent Impacts Requiring USACE Mitigation:				<b>1,096</b>	<b>--</b>	<b>--</b>
<b>Total Impacts Requiring Mitigation:</b>				<b>1,096</b>	<b>--</b>	<b>†</b>

1 – All streams are Class WS-IV waters

2 – Mitigation for bank stabilization impacts required by DWR – not required by USACE

3 – Values are based on rounding, due to some of the individual impacts being <0.01 acre

† – Final mitigation requirement will be up to the USACE and DWR

\* – Of this 145', 43' is stream running through a concrete-lined channel

**Permit Site 1:** Water from stream SE will be routed into a 36” and then 42” reinforced concrete pipe (RCP) to converge with the pipe carrying SB under Y5. As a result of the rerouting at the inlet end of the 36” pipe, there will be 15 linear feet (lf) of permanent stream impacts and <0.01 ac (14lf) of temporary stream impacts to SE.

**Permit Site 2:** As a result of the rerouting of SE into a 36” and then 42” RCP, the portion of the channel east of the existing road will no longer be carrying the flow from SE. This permanent dewatering will result in 145 lf of permanent stream impacts to SE (these impacts include 43 lf of SE that currently flows through a concrete-lined channel).

**Permit Site 3:** The 42” RCP currently carrying stream SB under Y5 will be replaced and realigned with a 54” RCP. This pipe replacement and channel shift will result in 68 lf of permanent stream impacts and 0.01 ac (26 lf) of temporary stream impacts to SB.

**Permit Site 4:** The 42” pipe currently carrying stream SB under Y6 will be replaced with a 54” RCP with a headwall. This pipe replacement will result in 7 lf of permanent stream impacts, 10 lf of stream bank stabilization, and <0.01 ac (21 lf) of temporary stream impacts to SB.

**Permit Site 5:** A new 60” corrugated steel pipe (CSP) will be installed to carry stream SB under the new fill slopes resulting from the road widening in this location. This 60” CSP will result in 484 lf of permanent stream impacts, 13 lf of stream bank stabilization and <0.01 ac (42 lf) of temporary stream impacts to SB.

**Permit Site 6:** The existing triple-barrel reinforced concrete box culvert (RCBC) will be extended on both ends to accommodate the widening of NC 273. This culvert extension will result in 228 lf of permanent stream impacts (94 lf on the inlet side and 134 lf on the outlet side) and 0.02 ac (68 lf) of temporary stream impacts.

**Permit Site 7:** To accommodate the new roadway slopes resulting from widening NC 273, stream SD will be relocated to the west. This relocation will result in 149 lf of permanent stream impacts and <0.01 ac (15 lf) of temporary stream impacts to SD.

**MORATORIUM**

There are no trout waters within the project area and Gaston County is not a designated trout county. Therefore, no moratoria are required for this project.

**FEDERALLY PROTECTED SPECIES**

Plants and animals with Federal classification of Endangered (E) or Threatened (T) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of July 24, 2015, the USFWS lists four federally protected species for Gaston County (Table 2).

**Table 2 – Federally protected species listed for Gaston County**

Scientific Name	Common Name	Federal Status*	Habitat Present	Biological Conclusion
<i>Clemmys muhlenbergii</i>	Bog turtle	T (S/A)	No	Not Required
<i>Myotis septentrionalis</i>	Northern long-eared bat	T	Yes	May Affect
<i>Hexastylis naniflora</i>	Dwarf-flowered heartleaf	T	Yes	No Effect
<i>Helianthus schweinitzii</i>	Schweinitz’s sunflower	E	Yes	No Effect

\*T(S/A) - Threatened due to similarity of appearance, T – Threatened, E – Endangered



Summary of Species with Habitat:

Northern long-eared bat: A memo dated April 27, 2016 indicating that NCDOT has satisfied the 4(d) requirements for this project with regard to the northern long-eared bat was sent to Marella Buncick (USFWS) on April 27, 2016. No response was received back from USFWS within 30 days, therefore Section 7 has been satisfied for this species.

Dwarf-flowered heartleaf: This species was added to the list for Gaston County in 2015. Walking visual surveys of all areas of potential habitat were conducted by NCDOT biologists on April 8, 2016. No individuals of this species were identified within the project and there are no known occurrences within 1.0 mile of the project.

Schweinitz's sunflower: Surveys of all areas of suitable habitat were conducted in September 2009, September 2011, October 2013 and October 2015 by NCDOT biologists. No individuals of this species were identified within the project area during any of the surveys. There is one known occurrence of Schweinitz's sunflower just over 0.4 mile from the project area. Per e-mail communication with Marella Buncick (USFWS) on July 8, 2014, it was agreed that a No Effect conclusion was appropriate for this species.

**INDIRECT CUMULATIVE IMPACT ANALYSIS**

Existing rules for the 401 Water Quality Certification Program (15A NCAC 2H .0506(b)(4)) require that the DWR determine that a project “does not result in cumulative impacts, based on past or reasonably anticipated future impacts, that cause or will cause a violation of downstream water quality standards.”

An Indirect and Cumulative Effects Assessment (ICE) was completed for this project in August 2010. Copies of this report are available upon request. This report concluded the following:

Indirect Assessment:

The proposed widening of NC 273 (South Main Street) is not expected to result in indirect land use effects. The proposed widening would be limited to an approximate one-mile portion of NC 273. The project is not expected to substantially reduce average travel times along the corridor. Consequently, the potential for the proposed project to result in a change or increase in the relative attractiveness of the area is low. In addition, the Future Land Use Study Area (FLUSA) does not contain a large amount of developable land, and growth management controls affecting land development in the FLUSA are well established. For these reasons, the project is not expected to indirectly affect land use within the study area.

Cumulative Assessment:

This project has been evaluated using pre-screening criteria as noted in the NCDOT Guidance for Assessing the Indirect and Cumulative Impacts of Transportation Projects in North Carolina – Volume II: Practitioners Handbook. Based on a review of the Indirect and Cumulative Impact (ICI) Pre-Screening criteria, it is concluded that the widening project is not expected to significantly add, in a cumulative fashion, to effects associated with on-going regional economic growth and development. No major transportation or infrastructure projects have been identified in the FLUSA, and the proposed project is not anticipated to yield indirect land use effects. Accordingly, there is little potential for combined projects in the area to create a transportation or land use node, or to affect regional economic growth trends. In conclusion, the project is not expected to result in cumulative impacts.

## **CULTURAL RESOURCES**

### Section 4(f) and Section 6(f) Resources:

There are no Section 4(f) or Section 6(f) properties within the study area.

### Historic Architectural Resources:

The Historic Preservation Office (HPO) noted there was one district of historical or architectural importance within the general area of the project and recommended further evaluation of this district. A field survey of the Area of Potential Effects (APE) was conducted for the proposed project by an architectural historian and pursuant to Section 106 of the National Historic Preservation Act. All properties within the APE were evaluated for National Register eligibility. The architectural historian concluded that no properties within the project's APE were considered eligible for the National Register of Historic Places. There are no National Register-listed or Study Listed properties within the project's APE. On September 15, 2009, the State Historic Preservation Office (HPO) concurred that compliance with Section 106 of the National Historic Preservation Act has been completed for this project. Please see attached concurrence form from HPO.

### Archaeological Resources:

The Historic Preservation Office (HPO) noted that there are no known archaeological sites within the proposed project area (correspondence dated 6-17-06) and recommended no additional archaeological investigations. Therefore compliance with Section 106 of the National Preservation Act in regards to archaeological resources is complete and no further action is necessary.

## **FEMA COMPLIANCE**

The project has been coordinated with appropriate state and local officials and the Federal Emergency Management Agency (FEMA) to assure compliance with FEMA, state, and local floodway regulations.

## **WILD AND SCENIC RIVER SYSTEM**

The project will not impact any designated Wild and Scenic Rivers or any rivers included in the list of study rivers (Public Law 90-542, as amended).

## **MITIGATION OPTIONS**

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during the planning and NEPA compliance stages; minimization measures were incorporated as part of the project design.

### Avoidance and Minimization:

NCDOT has avoided and reduced impacts to streams to the greatest extent practicable. Specific examples of avoidance and minimization measures include:

- To avoid impacts to existing outfalls, drainage from the proposed roadway is separated from the existing site drainage.
- Hazardous Spill Basins will be utilized for stormwater discharge entering Fites Creek since it is within 0.5 miles of a Critical Area (CA) and the Catawba River which is a primary water resource.

- The extension of the RCBC carrying Fites Creek will be supplemented with a 66" pipe to assist with floodplain conveyance and accommodate the new roadway typical section.
- Sills and low flow benches will be utilized in the RCBC extension to maintain a low flow channel passing through the center barrel of the culvert.
- Best Management Practices (BMPs) will be utilized during construction to attempt to reduce the stormwater impacts to receiving streams due to erosion and runoff.

Compensation:

The NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent practicable as described above. Table 1 details the stream impacts and compensatory mitigation requirements for this project. This project will permanently impact 1,119 linear feet of streams (1,096 linear feet of permanent fill and 23 linear feet of bank stabilization), and temporarily impact 0.03 acre of streams.

The DMS will provide compensatory mitigation for the 1,096 linear feet of permanent stream impacts resulting from this project (as the USACE does not require mitigation for the small amounts of stream bank stabilization).

### REGULATORY APPROVALS

Section 404: Application is hereby made for a USACE Individual 404 Permit as required for the above-described activities.

Section 401: We are hereby requesting a 401 Water Quality Certification from the N. C. Division of Water Resources. In compliance with Section 143 215.3D(e) of the NCAC, we will provide \$570.00 to act as payment for processing the Section 401 permit application previously noted in this application (see Subject line).

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Erin Cheely at [ekcheely@ncdot.gov](mailto:ekcheely@ncdot.gov) or (919) 707-6108. A copy of this application and distribution list will also be posted on the NCDOT website at: <http://connect.ncdot.gov/resources/Environmental/Pages>.

Sincerely,



*PH*

Philip S. Harris III, P.E., C.P.M.  
Natural Environment Section Head

cc:  
NCDOT Permit Application Standard Distribution List







17. DIRECTIONS TO THE SITE

Please see attached vicinity map and cover letter

18. Nature of Activity (Description of project, include all features)

The North Carolina Department of Transportation (NCDOT) proposes to widen NC 273 (South Main Street) to a multi-lane facility from Tuckasee Road (at Beatty Drive) to Highland Street (at A&E Drive) in Mount Holly in Gaston County. The project is approximately 1.3 miles in length. See attached cover letter and permit drawings for more details regarding stream impacts and structures.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of this project is to increase system capacity and improve efficiency along NC 273 (South Main Street) for local and regional traffic, thereby improving mobility.

NC 273 is the primary north-south facility for local commuters serving the City of Mount Holly from Interstate 85 in east central Gaston County. Traffic volumes are expected to almost double by the design year of 2035 on this segment of NC 273. 2011 traffic volumes along the project ranged from 18,215 to 24,485 vehicles per day (vpd). In the design year 2035, traffic volumes are expected to range from 31,600 to 42,300 vpd. If this segment of NC 273 in Gaston County is not widened, it is expected that traffic volumes on the project will exceed the current capacity of the existing facility by at least 100%.

**USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED**

20. Reason(s) for Discharge

Impacts will result from widening the roadway and shoulders and lengthening/replacing hydraulic structures.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type	Type	Type
Amount in Cubic Yards	Amount in Cubic Yards	Amount in Cubic Yards

See attached cover letter.

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres

or

Linear Feet See attached cover letter.

23. Description of Avoidance, Minimization, and Compensation (see instructions)

See attached cover letter.

24. Is Any Portion of the Work Already Complete?  Yes  No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- See attached permit drawings.

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-


City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

\* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

 07-08-2016  
SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE  
For Philip S. Harris

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.



PAT MCCRORY  
Governor

DONALD R. VAN DER VAART  
Secretary

June 14, 2016

Mr. Philip S. Harris, III, P.E., CPM  
Project Development and Environmental Analysis Unit  
North Carolina Department of Transportation  
1598 Mail Service Center  
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

Subject: Mitigation Acceptance Letter:

**U-3633**, Widen NC 273 (South Main Street) from Tuskaseegee Road to Highland Street, Gaston County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the compensatory stream mitigation for the subject project. Based on the information supplied by you on June 10, 2016, the impacts are located in CU 03050101 of the Catawba River basin in the Southern Piedmont (SP) Eco-Region, and are as follows:

Catawba 03050101 SP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	1,096.0	0	0	0	0	0

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

DMS commits to implementing sufficient compensatory stream mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies in accordance with the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from DMS.

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

Sincerely,

James B. Stanfill  
Credit Management Supervisor

cc: Mr. Steve Kichefski, USACE – Asheville Regulatory Field Office  
Ms. Amy Chapman, NCDWR  
File: U-3633

**MINUTES OF INTERAGENCY 4B MEETING FOR PROJECT U-3633,  
GASTON COUNTY  
HELD ON 05/09/2012**

Team Members:

Stephen Morgan	NCDOT Hydraulics Unit (Present)
Liz Hair	USACE (Present, by phone)
Marella Buncick	USFWS (Present)
Polly Lespinasse	NCDWQ (Present)
Chris Militscher	EPA (Present, by phone)*
Michael Batuzich	FHWA (Present)*
Marla Chambers	NCWRC

Support Staff:

Carlas Sharpless	NCDOT Hydraulics Unit
Karen Gullede	NCDOT Hydraulics Unit
Erin Cheely	PDEA-NES
David Wainwright	NCDWQ
Dan Grissom	NCDOT – DIVISION 12
Mark Staley	REU
Charles Hunt	Structures
Laura Sutton	Structures
Amy Simes	DENR
Herman Edwards	Roadway
Angela Sanderson	PDEA*
Wilson Stroud	PDEA*
James Swinson	Utilities*
Shannon Ransom	Gaston Urban Area MPO*
Carla Dagnino	NES



NCDOT began the meeting at 2PM (The meeting was originally scheduled to begin at 3PM, but an earlier start was requested. The participants noted with an asterisk (\*) joined the meeting at approximately 3:00.)

NCDOT gave an overview of the project and discussed the design concept since the November 11, 2011 meeting in which the minimization efforts were discussed for the preferred alternative. At that meeting the impacts were summarized as 960 feet of linear impacts to jurisdictional streams. The current design will have permanent impacts of 865 feet. The project drainage design concept was then discussed sheet by sheet.

#### **Sheet 4**

No Comments

#### **Sheet 5**

NCDOT discussed -Y4- Sunset Drive, stating that there would be no impacts to the jurisdictional stream because improvements to the road ended before reaching the stream. NCDOT states that the stream flowing under -Y5- East Catawba Drive is a jurisdictional stream and the same one flowing under -Y4-. It wasn't shown completely on the plans due to limits of the topographic coverage.

NCDOT stated that the stream feature flowing under -L- (Station 32+00) through the existing 30" RCP was not jurisdictional on either the inlet or outlet side of the pipe. Division 12 asked for some clarification on the classification of the stream from the outlet to just before -Y5-. WRC and DWQ stated that it was not jurisdictional. NCDOT stated that stream impacts were limited to the area at -Y5-. NCDOT stated that there was significant bank erosion at the outlet of the existing 42" RCP and may include some stream re-alignment in the final plans.

DWQ inquired if there was erosion at the outlet of the existing 15" RCP left of -Y5- 18+30 and NCDOT replied that there was erosion. DWQ also asked if the existing 42" was to be extended, NCDOT replied that it (and the existing 36" RCP on the inlet) was to be replaced with a 48" RCP.

Division 12 inquired if the drainage from the proposed 18" RCP (from structure 521) was discharging directly into the stream. DWQ states that they prefer no direct discharge and requests alternate design to avoid direct discharge. Division 12 suggests looking into taking the discharge from structure 521 back against grade to the existing 30" RCP. NCDOT replies that they will look into doing this.

FWS inquired about the concrete paved ditch at the outlet of the existing 30" RCP and whether it would be retained or removed. NCDOT stated the current plans are to retain the concrete ditch. WRC requested it be removed. FWS inquired about not directly discharging the proposed 18" RCP (structure 522) into the stream and inquired about ditching it along -Y5-. NCDOT stated that they were not in favor of ditching because of the steep terrain and possible maintenance issues, but would investigate.

DWQ and WRC inquired about the proposed pipe system along -Y6- Forest Hills Drive and direct discharge into the jurisdictional stream. WRC inquired about other outlets and NCDOT stated that there were really no other options because all other outlets would discharge directly onto the property owner's yards and existing outlets were eroded.

NCDOT stated that the City of Mt Holly has received concerns from property owners about more discharge onto their properties (flooding). NCDOT states that because of the very steep terrain,

property owner concerns, possible maintenance issues, the best option is to pipe the discharge along -Y6-

USACE inquired whether the system could be shortened and a rip rap lined ditch used or outlet to the Duke Power easement. Division and NCDOT stated that the terrain is quite steep and either of those options may present future maintenance problems. NCDOT also stated that they could investigate the possibility of taking the discharge further down line (-L-) and possibly outlet to the proposed Hazardous Spill Basin. NCDOT also stated that another option might be to have 2 pipe systems – one for offsite drainage, using existing outlets and one for roadway drainage, using the proposed Hazardous Spill Basin as an outlet.

WRC inquired about the proximity of the fill slope to the existing pond located left of -L- station 38+00 and if it would be impacted. NCDOT stated that it would not be impacted and the current DI was being replaced.

Existing channel impacts to jurisdictional streams (permanent):

- -Y5- station 18+41: 62ft (1@48" RCP)
- -Y6- station 13+64: 15ft (1@48" RCP)

## **Sheet 6**

Division inquired about the quantity of water flowing in the jurisdictional stream and if it wasn't a lot, could it be diverted to the proposed Hazardous Spill Basin while the proposed Lateral Base Ditch was constructed. NCDOT and USACE stated this was not an option. NCDOT stated that the stream had a fairly large drainage area and associated discharge.

NCDOT noted that the proposed PSH right of -L- station 45+00 was mainly for offsite drainage and not in the best location because of the terrain and may require some bank stabilization. NCDOT discussed the two new driveway alignments and associated impacts to the jurisdictional stream. WRC and DWQ inquired as to why there had to be a pipe between the driveways. NCDOT stated that because of the fill slopes associated with the drives and -L- widening, there was not a lot of open area between the drives and a continuous pipe was the best option.

The distributed plans showed piping the stream under the drives right of -L- 46+40 to 48+55, and then day-lighting the stream with a realignment from -L- 48+55 to the tie-in at 51+00. There will be no direct discharges to the piped portion of the stream. NCDOT stated that Natural Stream Design (instead of piping) wasn't practicable due to the steepness of the terrain. The proposed realignment option for the jurisdictional stream would require the relocated stream to be very deep. The Division had construction, maintenance, and safety concerns with this option. The team agreed with these concerns and agreed that piping the entire stream in this area would be the best option. DWQ asked for difference in pipe length between the partially piped option and the fully piped option. The fully piped option would require 250' more pipe.

NCDOT stated that piping the stream may allow some grass swale treatment along the roadway fill, and any rerouted drainage from sheet 5 could be directed to these swales. Both the fully piped option and the partially piped option would tie in to the existing stream near the existing 48" pipe outlet right of -L- 50+82.

Existing channel impacts to jurisdictional stream (permanent):

- -L- station 46+00 to 51+00 Rt: 444ft

FWS inquired about the slope of the proposed 60" RCP and suggested a flatter slope and drop boxes to help dissipate energy. WRC expressed concerns of impairment due to the drop boxes. NCDOT stated that there would be minimal drop (i.e. not more than 6").

FWS expressed concern about the outlet of the proposed 60" RCP due to the length/slope of the pipe (erosion). FWS stated that there would not be much opportunity for sediment buildup inside the pipe and the velocity in the pipe would be erosive – effectively “cleaning” out the pipe during storm events. FWS inquired to whether the use of CSP might be an option to hold some sediment within the pipe. NCDOT stated that it could be investigated.

NCDOT discussed the existing triple 8ft wide X 12ft high reinforced concrete box culvert and stated that the best option was to replace it instead of extending on both ends (outlet would have required more stream re-alignment). NCDOT stated that the proposed replacement culvert would be a triple 10ft wide X 12ft high reinforced concrete box culvert with appropriate low flow benches.

Existing channel impacts to jurisdictional stream (Fites Creek) (permanent):

- -L- station 54+12: 159ft (3@10'x12' RCBC)
- -L- station 54+12: 80ft (bank stabilization)

WRC inquired about the small jurisdictional stream near the inlet and if Natural Stream Design could be incorporated instead of a straight ditch. DWQ and USACE stated that they would prefer something other than the 90 degree tie-in of the proposed stream relocation to Fites Creek. USACE also states that since the other jurisdictional stream is being piped that they prefer this stream to have some Natural Stream Design, if possible.

NCDOT stated that it may be possible to do some Natural Stream Design in order to obtain a better bankfull design. NCDOT stated that the existing stream is in a gully and possible has been re-aligned in the past based on the current condition, which includes head-cutting. NCDOT stated that stability is the main priority for the stream.

WRC inquired as to the amount of Natural Stream Design. FWS inquired whether the stream was perennial or not. DWQ and WRC stated that it was perennial. DWQ inquired if there were other liner options for the relocated jurisdictional stream than rip rap. NCDOT stated that cross rock vanes could be investigated, but that some sort of protection was needed at the tie-in to Fites Creek.

Existing channel impacts to jurisdictional stream (permanent):

- -L- station 54+50 to 55+50 Lt: 105ft (stream relocation)

NCDOT discussed the Hazardous Spill Basins on either side of Fites Creek on the outlet side of the proposed culvert. There were no comments on HSB's by other members.

NCDOT inquired whether a 4C Permit Review meeting would be needed. Consensus from members was yes.

### **Sheet 7, 8, 9, & 10**

No Comments

Meeting was concluded at 3:15PM

**MINUTES OF INTERAGENCY PERMIT DRAWING REVIEW MEETING (4C) FOR PROJECT  
U-3633,**

**GASTON COUNTY**

**HELD ON 09/17/2014**

**NCDOT STRUCTURE DESIGN CONFERENCE ROOM**

Team Members Present:

Stephen Morgan	NCDOT Hydraulics Unit
Steve Kichefski	USACE
Marella Buncick	USFWS
Marla Chambers	NCWRC
Alan Johnson	DWR
Mitch Batuzich	FHWA (by phone)

Support Staff Present:

Carlas Sharpless	NCDOT Hydraulics Unit
Karen Hefner	NCDOT Hydraulics Unit
Erin Cheely	NCDOT PDEA-NES
Laura Sutton	NCDOT Structures Management Unit
Nya Boayue	NCDOT Roadway Design Unit
Jason Moore	NCDOT Roadway Design Unit
Angela Sanderson	NCDOT PDEA
Phil Harris	NCDOT PDEA-NES
Alyson Tamer	NCDOT Roadside Environmental Unit
Carla Dagnino	NCDOT PDEA-NES

The meeting began at 10am.

NCDOT-Hydraulics gave an overview of the project. The purpose of the meeting was to review the permit drawings and discuss changes since the drainage concept (4B) meeting held on May 9, 2012.

The 4B meeting minutes and original design package was discussed. Prior to the meeting, a design comparison package was created and placed on the PDEA website to aid the team in reviewing the changes from the 4B plans. Comments from the meeting are listed below.

#### **Sheet 4; Permit Sheets 2, 3, 4**

Site 1 to be eliminated, not located in Jurisdictional Stream. NCDOT-PDEA stated that the Jurisdictional Stream starts near -Y4-.

#### **Sheet 5; Permit Sheets 5, 6, 7**

PDEA-NES stated that the stream at Sites 2 and 3 are Jurisdictional per review past summer. Previously at the 4B Meeting, the stream was not considered JS.

All Roadway Drainage is now piped to a Hazardous Spill Basin located at approximately Sta. 52+00 Rt. (Sheet 6) and kept separate from the jurisdictional stream. This revision addressed concerns about the roadway drainage being piped to stream crossings on -Y5- and -Y6-.

USACE inquired what is being discharged at Site 4. NCDOT-Hydraulics explained all offsite drainage is separated from roadway drainage.

At the 4B Meeting, the stream (Site 2) was piped across the road to the same outlet, just a different configuration.

USFWS inquired why offsite drainage was included. USACE inquired the need for Structure #545. NCDOT-Hydraulics stated that a separate drainage system is used for all offsite drainage to Site 4. All Roadway drainage is contained in a separate system. NCDOT-Hydraulics stated that Structure #545 is needed to pick up the offsite drainage at this point due to the terrain.

USFWS inquired about where stream is jurisdictional. NCDOT-PDEA explained the location of the JS features.

NCDOT-Hydraulics discussed the -Y5- crossing and the erosion problems at the outlet of the pipe. NCDOT plans to re-align the pipe and stabilize the stream banks.

NCDENR asked how energy would be dissipated through the offsite drainage system that terminates along -Y5-. NCDOT-Hydraulics stated that using a JB to drop the pipe, laying the pipe on a flat grade, and an increase of pipe size from 42" to 54" will help dissipate energy through the system.

#### **Sheet 6; Permit Sheets 8, 9, 10, 11, 12**

##### **Site 5**

NCDOT-Hydraulics discussed the pipe relocation and the elimination of the pipe system on -Y6- at Site 5. 4C plans shows the upgraded pipe crossing at -Y6- only. No comments were made.

##### **Site 6**

Stream relocation for Site 6 was deemed not feasible due to the steep terrain. An area in this location was identified for a hazardous spill basin (HSB). It was noted that alternative pipe can

be used outside roadway fill. It is the decision of the roadway contractor about which material to use. Previously, the team asked about using CSP with ridges to retain bed material.

USACE inquired if the 60" would have to be RCP. USFWS suggested that it should be noted that the pipe material should be one which will retain bed material and provide for energy dissipation. NCDOT-Hydraulics stated that alternative pipe was called for on the current plans. NCWRC suggests CSP.

NCWRC inquired if stream was intermittent or perennial. NCDOT-PDEA stated that the stream is intermittent between -Y4- and -Y5- and perennial downstream of -Y5-.

USACE inquired about the existing pipe sizes of driveway pipes located along the stream. Existing driveway pipes were noted of being 48" in diameter.

HSB/Berm is required because Fites Creek is a water supply watershed. Roadway drainage is discharged through the HSB.

#### Site 7

At the 4B Meeting, the plan was to replace the culvert. Due to traffic control issues, it was decided that the culvert could be extended and supplemented with a 66" pipe.

USFWS stated there is some confusion about what's going on at the culvert site and why there is a need for a separate pipe. USFWS also suggested that if the culvert is replaced, the need for a separate pipe could be eliminated.

NCDOT-Structures inquired about any constructability issues with the installation of the 66" pipe, soil consolidation and installation method. NCDOT Construction thinks it will be a Bore/Jack installation. NCDOT-Structures stated adding another barrel is an option if an open cut was to be used for installation. NCDOT-Roadway inquired whether the 66" pipe should be shifted because of constructability concerns. It is suggested shifting the pipe for a distance of 4ft -5ft. NCDOT-Hydraulics may adjust the location of the 66" overflow pipe slightly upon consultation with Division Construction.

NCWRC inquired if the existing stream is using 1 or 2 barrels. The plans look like it is using 2 barrels. NCDOT-Hydraulics stated that since there are no sills in the existing culvert, the stream could be using any barrel, depending on the flow at that time. 66" pipe is in floodplain and is required due to using sills in proposed culvert extensions.

USFWS stated that the floodplain benches could not be seen on the plans and that the impacts look to be larger than culvert. NCDOT-Hydraulics stated that the floodplain benches are on the inlet and outlet of the proposed culvert extensions.

USACE inquired about the width from TB to TB outside of the influence of the culvert area.

USACE stated that a single bench is what appears to have naturally formed at the culvert now.

NCWRC inquired about erosion problems on the outlet of the culvert/pipe.

USFWS suggested carrying a floodplain bench to beneath 66" pipe to help alleviate any erosion problems during high flows.

Site 8:

NCWRC requested that the tributary to Fites Creek be relocated so it comes in at less than a 90 degree angle. USFWS stated that the stream ties in at a narrow portion of Fites Creek. NCWRC asked if there was a concern about erosion issues on the opposite side of Fites Creek due to the tributary connection.

NCDOT-NES noted that the incoming stream is very small with limited geomorphology.

NCDOT-Hydraulics stated stability was not a concern. The tributary has likely been realigned in the past and is not currently causing any erosion concerns. Also the existing tributary ties to Fites Creek at an adverse (greater than 90 degree) angle.

With no further comments, the meeting adjourned at 11:15am.

**CONCURRENCE FORM FOR PROPERTIES NOT ELIGIBLE FOR THE NATIONAL REGISTER OF HISTORIC PLACES**

*Project Description:* Widen NC 273 (South Main Street) in Mount Holly from Tuckasee Road to Highland Street at South Main Street

On **15 September 2009**, representatives of the

- North Carolina Department of Transportation (NCDOT)
- Federal Highway Administration (FHWA)
- North Carolina State Historic Preservation Office (HPO)
- Other

Reviewed the subject project at historic architectural resources photograph review session/consultation and

All parties present agreed

- There are no properties over fifty years old within the project's Area of Potential Effects (APE).
- There are no properties less than fifty years old which are considered to meet Criteria Consideration G within the project's APE.
- There are properties over fifty years old within the project's APE, but based on the historical information available and the photographs of each property, the properties identified as 1-52 are considered not eligible for the National Register and no further evaluation of them is necessary. Photographs of these properties are attached.
- There are no National Register-listed or Study Listed properties within the project's APE.
- All properties greater than 50 years of age located in the APE have been considered at this consultation, and based upon the above concurrence, all compliance for historic architecture with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.
- More information is requested on properties \_\_\_\_\_.

Signed:

*Carroll Moley* 15 SEPT. 2009  
 Representative, NCDOT Date

\_\_\_\_\_  
 FHWA, for the Division Administrator, or other Federal Agency Date

\_\_\_\_\_  
 Representative, HPO Date

*Renee Medhill-Early* 9-15-09  
 State Historic Preservation Officer Date





**North Carolina Department of Transportation**  
**Highway Stormwater Program**  
**STORMWATER MANAGEMENT PLAN**  
 FOR LINEAR ROADWAY PROJECTS



(Version 1.2; Released July 2012)

**Project/TIP No.:** U-3633      **County(ies):** Gaston      **Page** 1 **of** 4

**General Project Information**

<b>Project No.:</b>	U-3633	<b>Project Type:</b>	Existing location	<b>Date:</b>	6/30/2014
<b>NCDOT Contact:</b>	Stephen Morgan, PE	<b>Contractor / Designer:</b>	Carlas Sharpless, PE		
<b>Address:</b>	1590 Mail Service Center Raleigh, NC 27699-1590	<b>Address:</b>	1590 Mail Service Center Raleigh, NC 27699-1590		
<b>Phone:</b>	919-707-6739	<b>Phone:</b>	919-707-6750		
<b>Email:</b>	smorgan@ncdot.gov	<b>Email:</b>	csharpless@ncdot.gov		
<b>City/Town:</b>	Mt. Holly	<b>County(ies):</b>	Gaston		
<b>River Basin(s):</b>	Catawba	<b>CAMA County?</b>	No		
<b>Primary Receiving Water:</b>	Fites Creek	<b>NCDWQ Stream Index No.:</b>	11-121-(1)		
<b>NCDWQ Surface Water Classification for Primary Receiving Water</b>	<b>Primary:</b>	Water Supply IV (WS-IV)			
	<b>Supplemental:</b>				
<b>Other Stream Classification:</b>					
<b>303(d) Impairments:</b>					
<b>Buffer Rules in Effect</b>					

**Project Description**

<b>Project Length (lin. Miles or feet):</b>	1.3 miles	<b>Surrounding Land Use:</b>	Urban, business and residential		
	<b>Proposed Project</b>		<b>Existing Site</b>		
<b>Project Built-Upon Area (ac.)</b>	19.00 ac.		9.92 ac.		
<b>Typical Cross Section Description:</b>	4-12 foot travel lanes with raised monolithic islands and variable turn lanes, Curb and Gutter section with 4' sidewalks on both sides.				
<b>Average Daily Traffic (veh/hr/day):</b>	<b>Design/Future:</b>	42,300 (2035)	<b>Existing:</b>	26,800 (2014)	

**General Project Narrative:**

U-3633 is a widening project to upgrade NC 273 from a 2-lane facility to a 4-lane divided facility with curb and gutter and sidewalks. To avoid impacts to existing outfalls, drainage from the proposed roadway is separated from the existing site drainage. Hazardous Spill Basins are required for stormwater discharge entering Fites Creek since it is within 0.5 mile of the Catawba River which is a primary water source. The proposed project also requires the extension of the existing 3@ 8'x12' RCBC and supplement with a 66" pipe to accommodate the new roadway typical section. Sills and Low Flow Benches will be utilized in the existing streambed channel to maintain a low flow channel passing through the center barrel of the culvert. Several streams also had to be realigned or piped as a result of the widening of the highway.

**References**



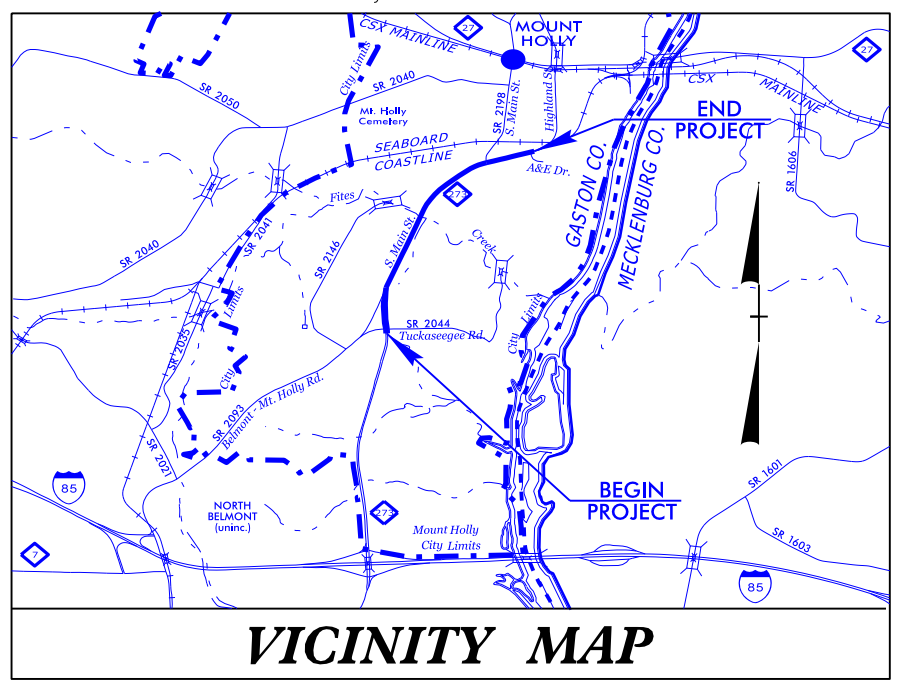




**TIP PROJECT: U-3633**

**CONTRACT:**

See Sheet 1-A For Index of Sheets  
See Sheet 1-B For Conventional Symbols  
See Sheet 1-C For Survey Control Sheet

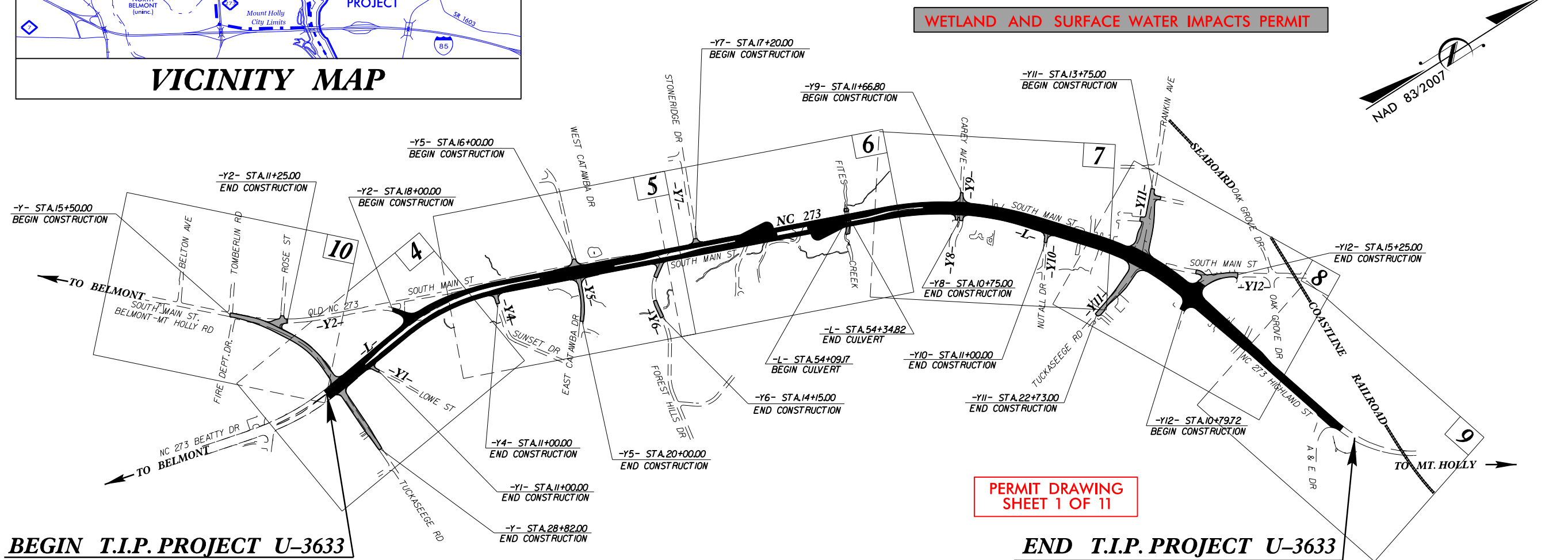
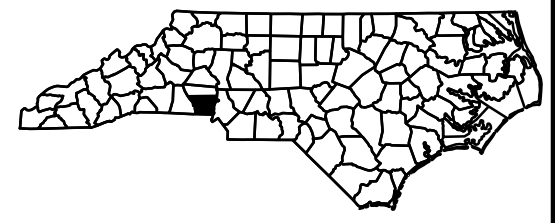


**VICINITY MAP**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**GASTON COUNTY**

**LOCATION: MOUNT HOLLY - NC 273 (SOUTH MAIN STREET) FROM TUCKASEEGE ROAD AT BEATTY DRIVE TO HIGHLAND STREET AT A&E DRIVE**  
**TYPE OF WORK: WIDENING, GRADING, DRAINAGE, PAVING, RESURFACING, & CULVERT.**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3633	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
37649.1.1	STP-0273(1)	PE	
37649.2.FRI	STP-0273(1)	RW	
37649.2.FRUI	STP-0273(1)	UTIL	



**WETLAND AND SURFACE WATER IMPACTS PERMIT**

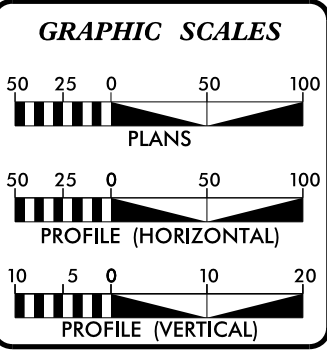
**PERMIT DRAWING SHEET 1 OF 11**

**BEGIN T.I.P. PROJECT U-3633**  
**-L- STA. 18 + 65.00**

**END T.I.P. PROJECT U-3633**  
**-L- STA. 91 + 00.00**

THIS IS NOT A CONTROL OF ACCESS PROJECT  
THIS PROJECT IS WITHIN THE MT. HOLLY MUNICIPAL BOUNDARIES.  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION



**DESIGN DATA**

ADT 2014 =	26,800
ADT 2035 =	42,300
K =	10 %
D =	55 %
T =	4 % *
V =	50 MPH
* TTST =	2 DUAL 2
FUNC CLASS =	URBAN COLLECTOR
REGIONAL TIER	

**PROJECT LENGTH**

LENGTH ROADWAY T.I.P. PROJECT U-3633 =	1.365 MI
LENGTH STRUCTURE T.I.P. PROJECT U-3633 =	0.005 MI
TOTAL LENGTH OF T.I.P. PROJECT U-3633 =	1.370 MI

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

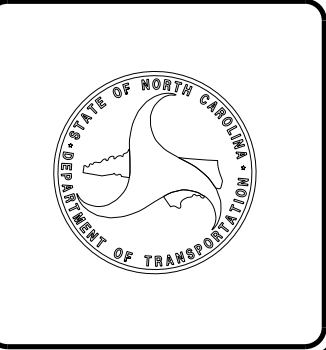
2012 STANDARD SPECIFICATIONS	
<b>RIGHT OF WAY DATE:</b> NOVEMBER 25, 2014	<b>JAMES A. SPEER, PE</b> PROJECT ENGINEER
<b>LETTING DATE:</b> JANUARY 17, 2017	<b>NYA BOAYUE, PE</b> PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

**ROADWAY DESIGN ENGINEER**

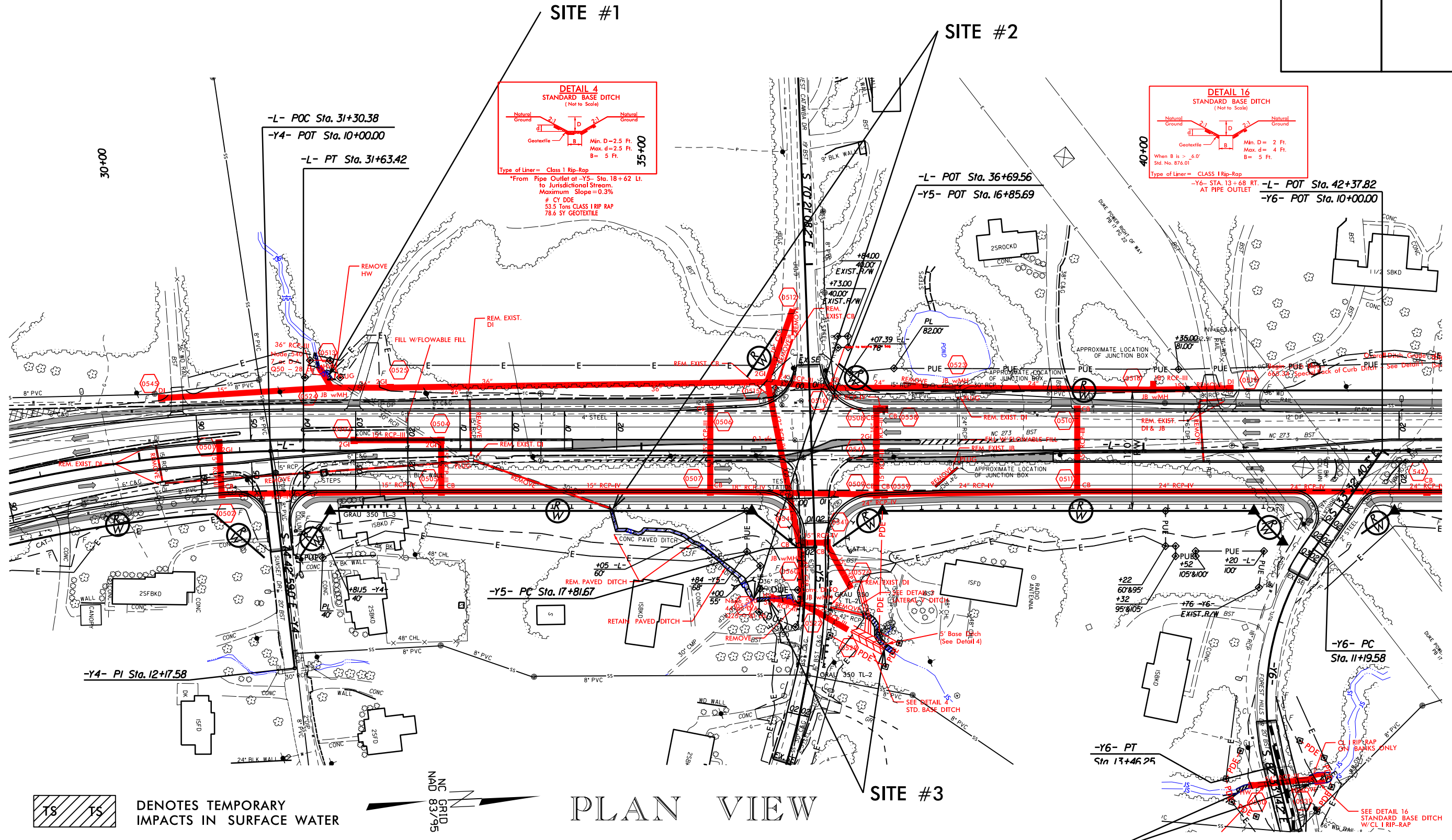
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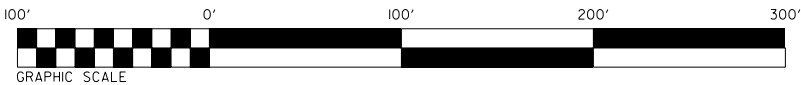
PROJECT REFERENCE NO.	SHEET NO.
U-3633	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

PLAN VIEW



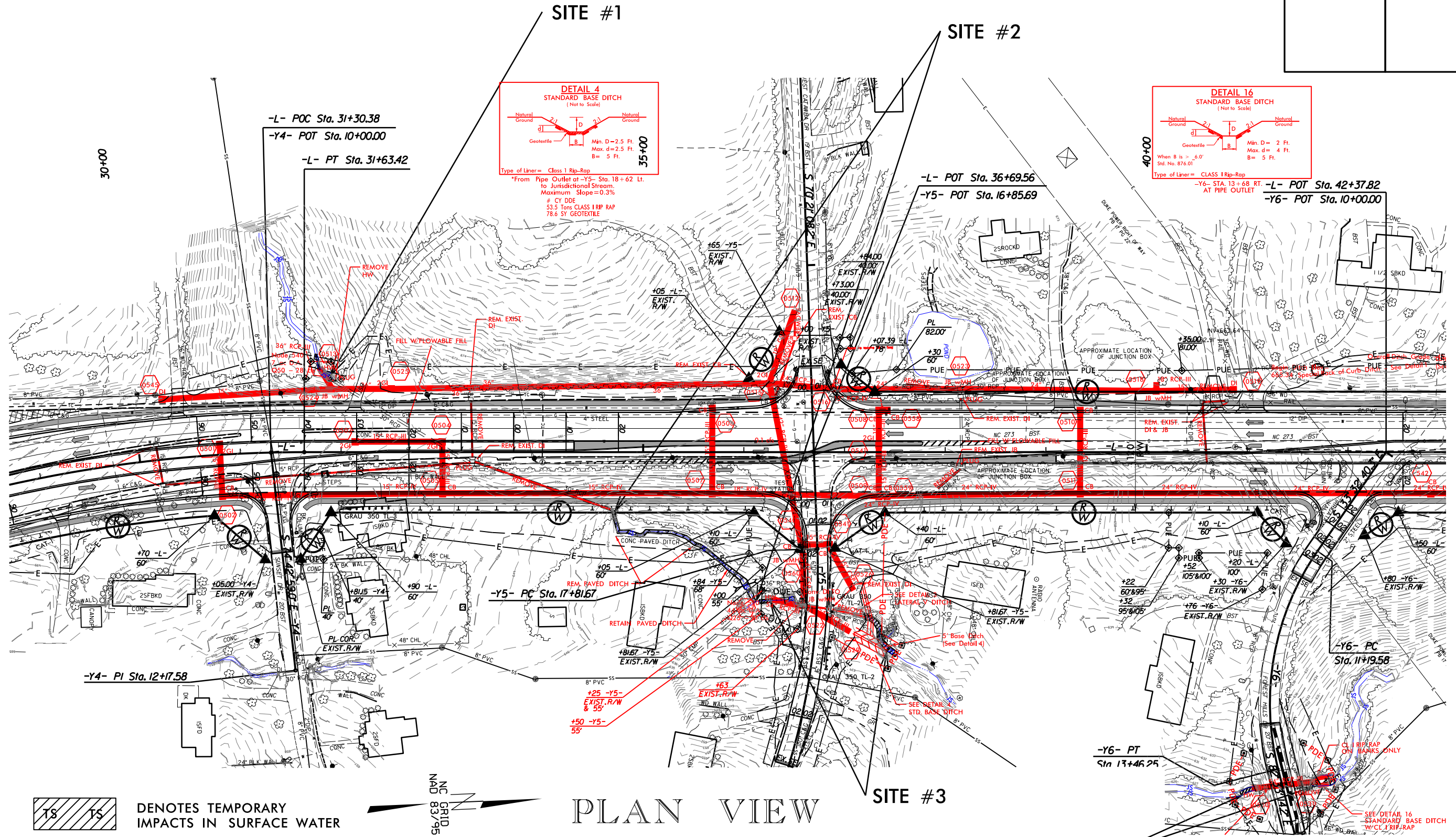
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**PERMIT DRAWING SHEET 2 OF 11**

5/14/99



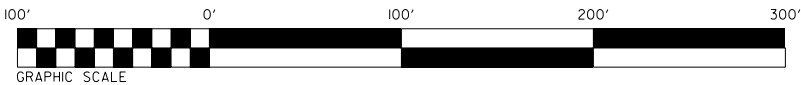
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U-3633	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

PLAN VIEW



Scale: 1" = 100'

PERMIT DRAWING SHEET 3 OF 11

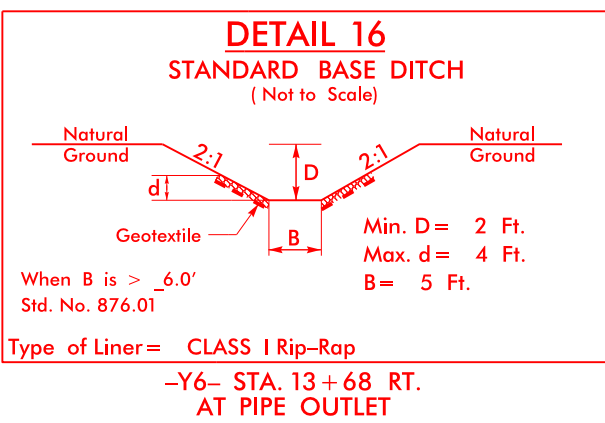
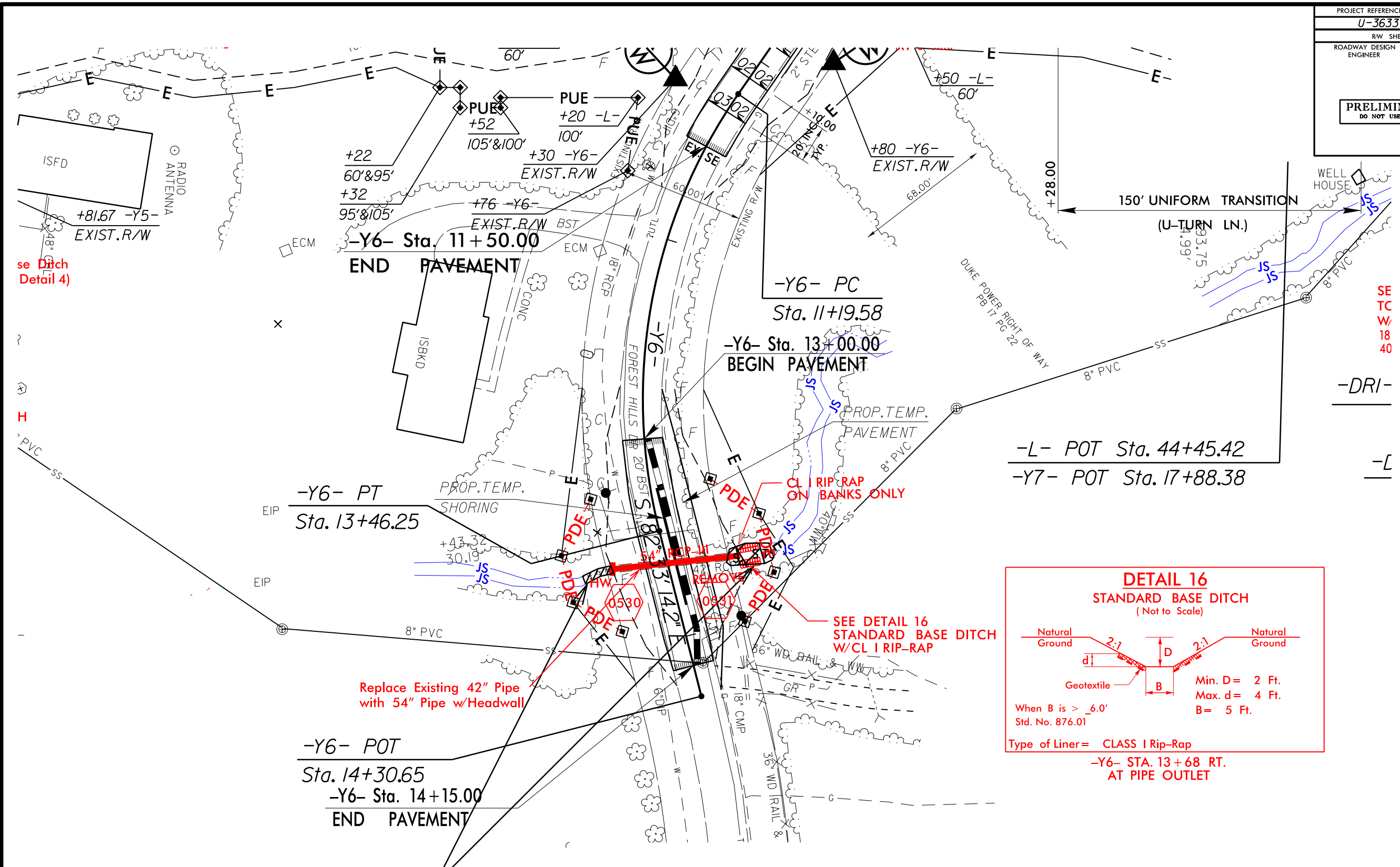
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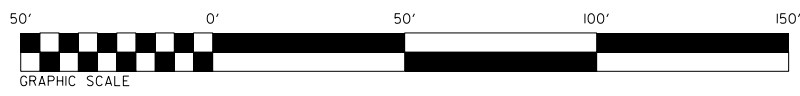


PROJECT REFERENCE NO. <b>U-3633</b>	SHEET NO. <b>5</b>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

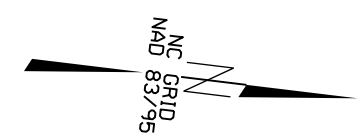


# SITE #4 PLAN VIEW ENLARGEMENT

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



Scale: 1" = 50'



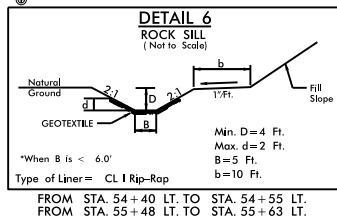
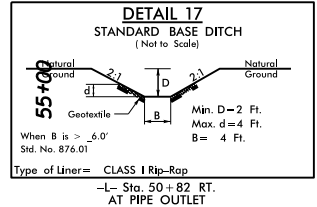
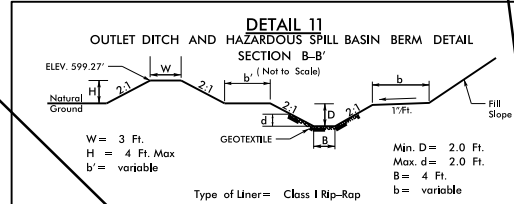
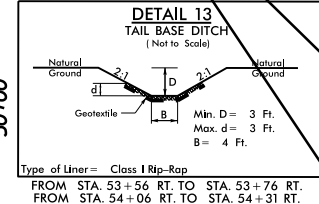
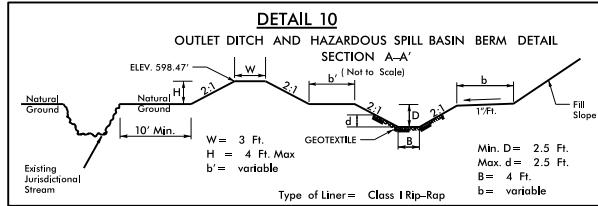
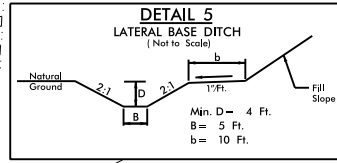
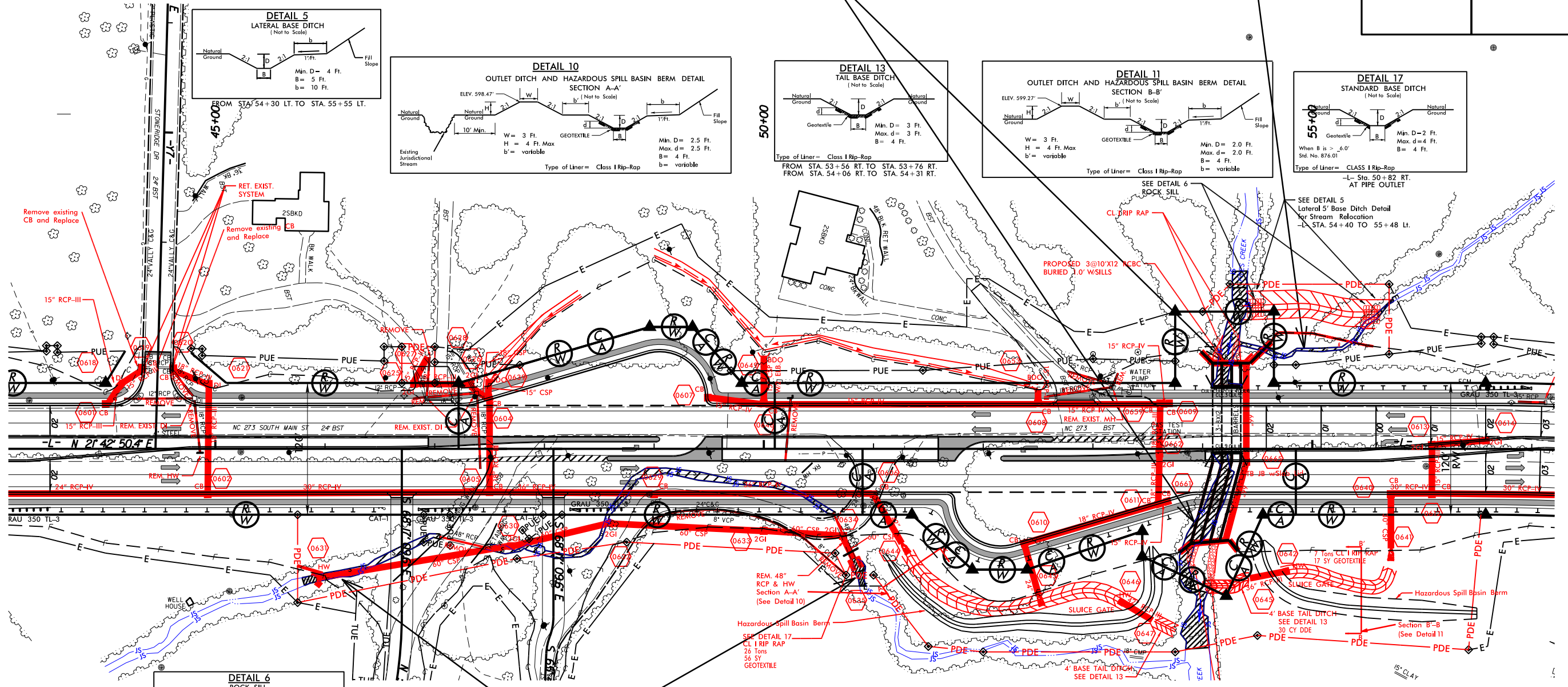
**PERMIT DRAWING SHEET 5 OF 11**

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-3633	6
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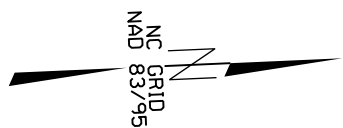
SITE #6

SITE #7



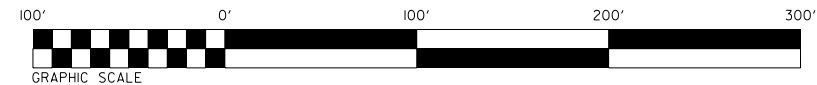
SITE #5

PLAN VIEW



DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER



Scale: 1" = 100'

PERMIT DRAWING  
SHEET 6 OF 11

5/14/99





5/14/99

PROJECT REFERENCE NO. SHEET NO.

U-3633 6

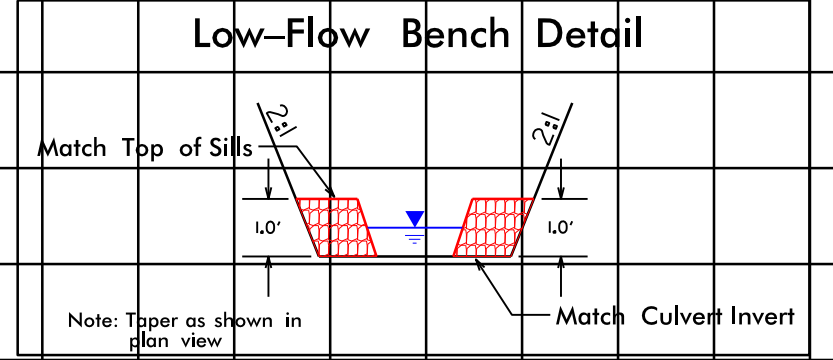
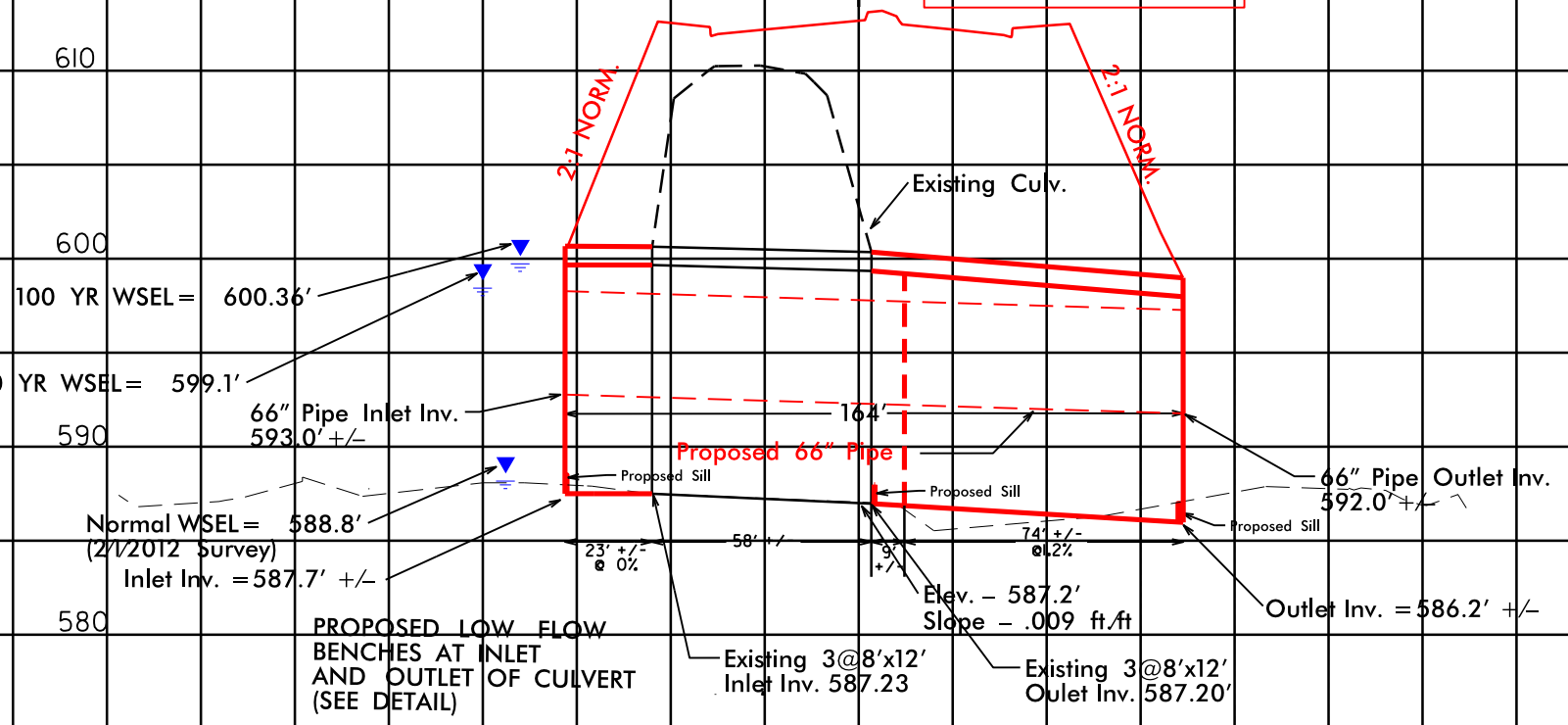
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION

# SITE 6 Profile and Sill Details

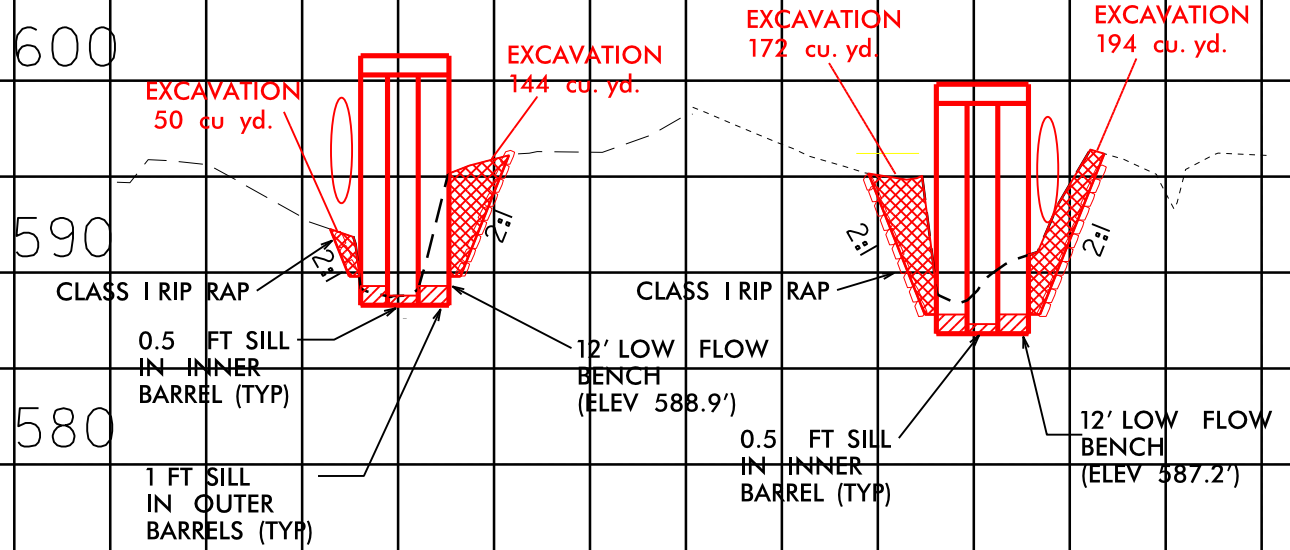
150' LT 100' LT 50' LT C 50' RT 100' RT 150' RT

Station 54+22 -L-  
Elevation = 612.72'  
3@8'x12' RCBC  
Extend 3@8'x12' w/Sills



- Culvert Sill Locations**
1. Place Sills at Culvert Outlet
  2. Place Sills 82' from Culvert Outlet
  3. Place Sills at Culvert Inlet

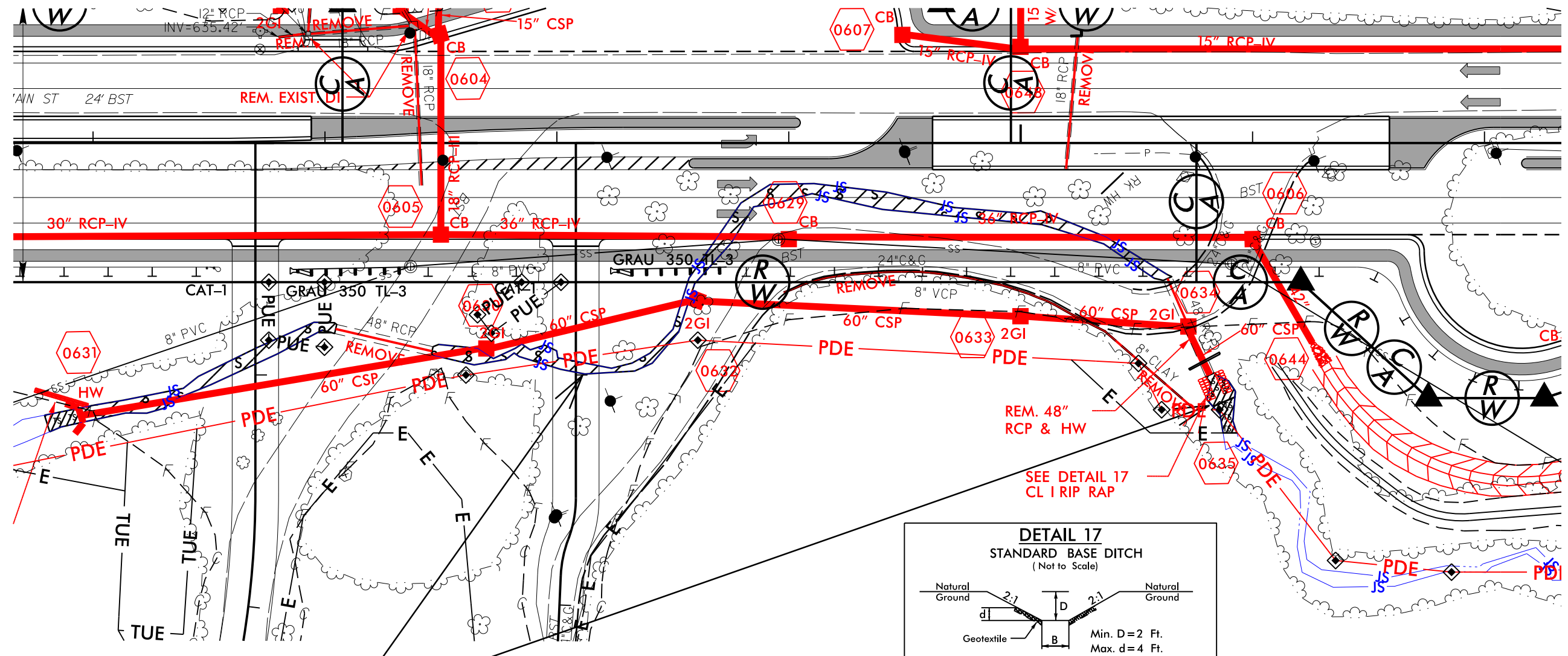
## CULVERT INLET CULVERT OUTLET



PERMIT DRAWING SHEET 8 OF 11

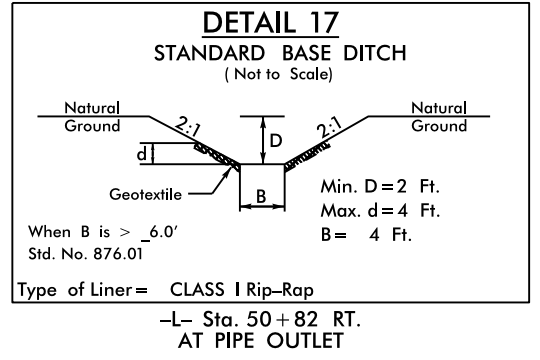
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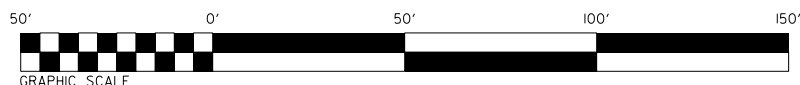


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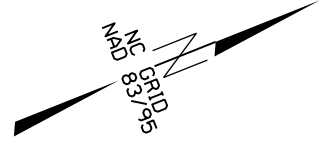
**PLAN VIEW  
ENLARGEMENT**



DENOTES TEMPORARY IMPACTS IN SURFACE WATER  
 DENOTES IMPACTS IN SURFACE WATER



Scale: 1" = 50'



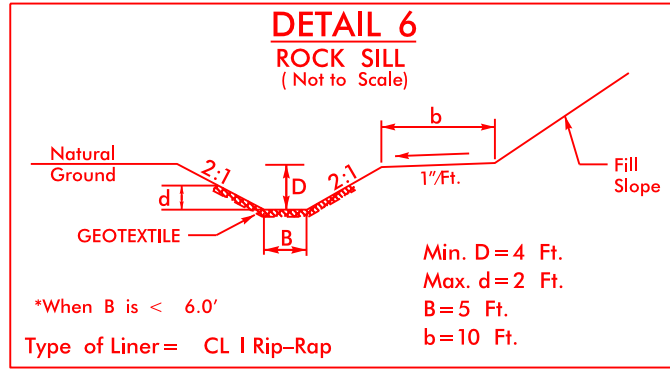
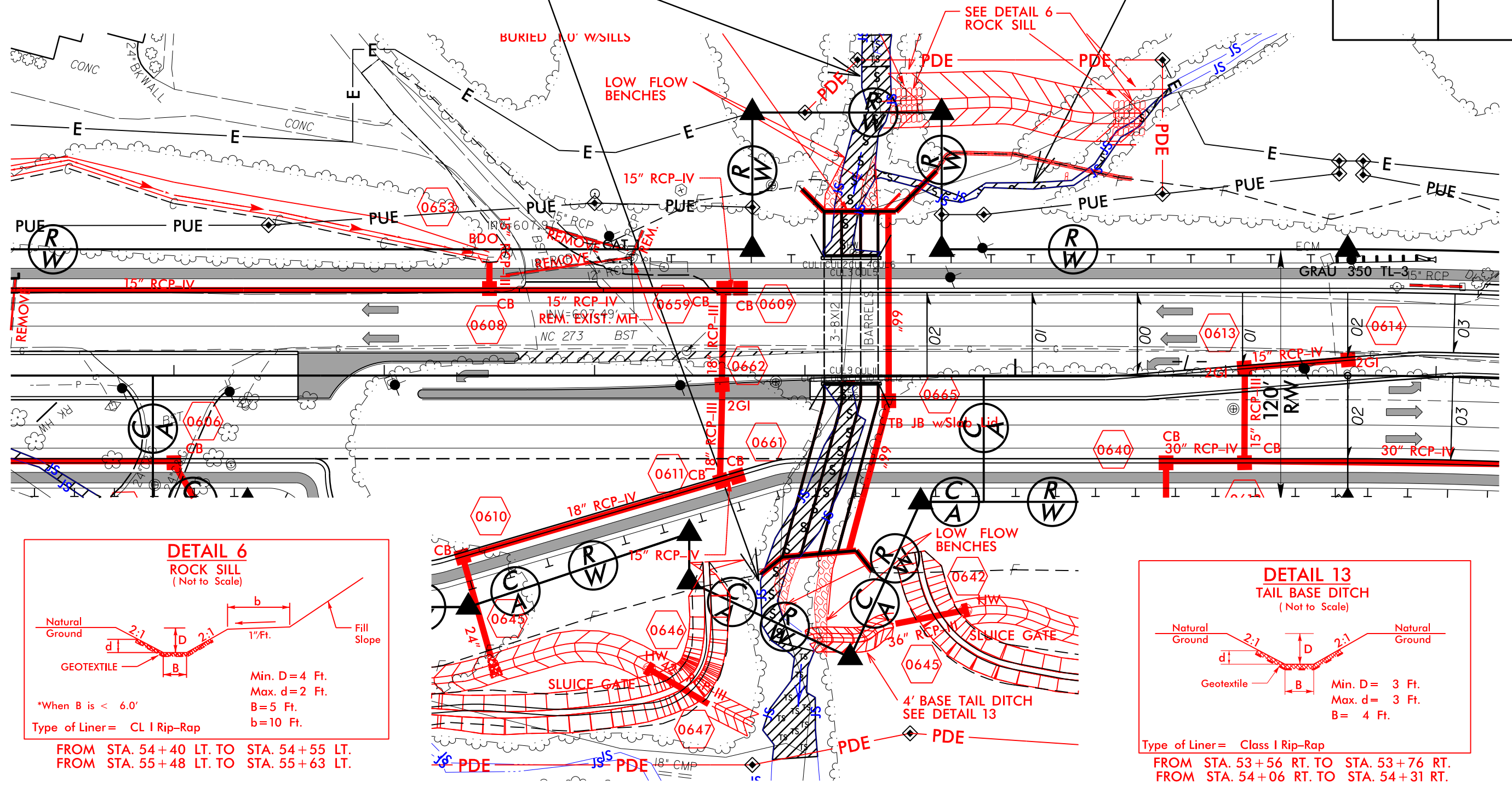
**PERMIT DRAWING  
SHEET 9 OF 11**

5/14/99  
TIME  
SHEET NO. 9 OF 11  
DATE  
5/14/99  
TIME  
SHEET NO. 9 OF 11  
DATE

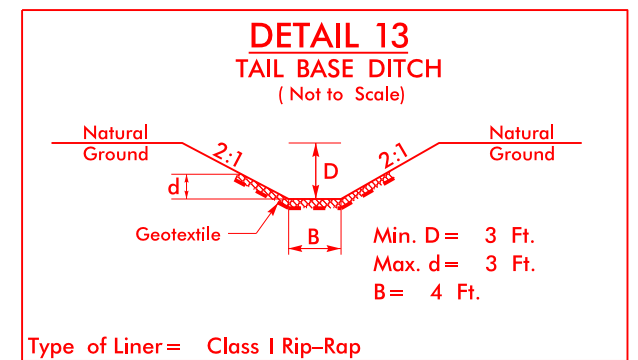
PROJECT REFERENCE NO. U-3633	SHEET NO. 6
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

# SITE #6

# SITE #7



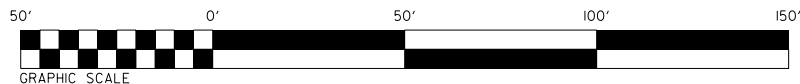
FROM STA. 54+40 LT. TO STA. 54+55 LT.  
FROM STA. 55+48 LT. TO STA. 55+63 LT.



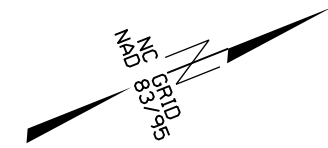
FROM STA. 53+56 RT. TO STA. 53+76 RT.  
FROM STA. 54+06 RT. TO STA. 54+31 RT.

## PLAN VIEW ENLARGEMENT

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



Scale: 1" = 50'



**PERMIT DRAWING**  
**SHEET 10 OF 11**

5/14/99  
SYSTEMS  
CONSTRUCTION  
ENGINEERING



09/08/99

See Sheet 1-A For Index of Sheets  
See Sheet 1-B For Conventional Symbols  
See Sheet 1-C For Survey Control Sheet

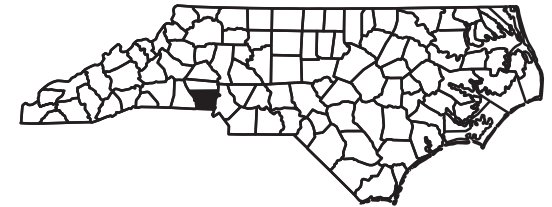
# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## GASTON COUNTY

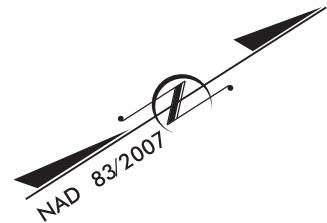
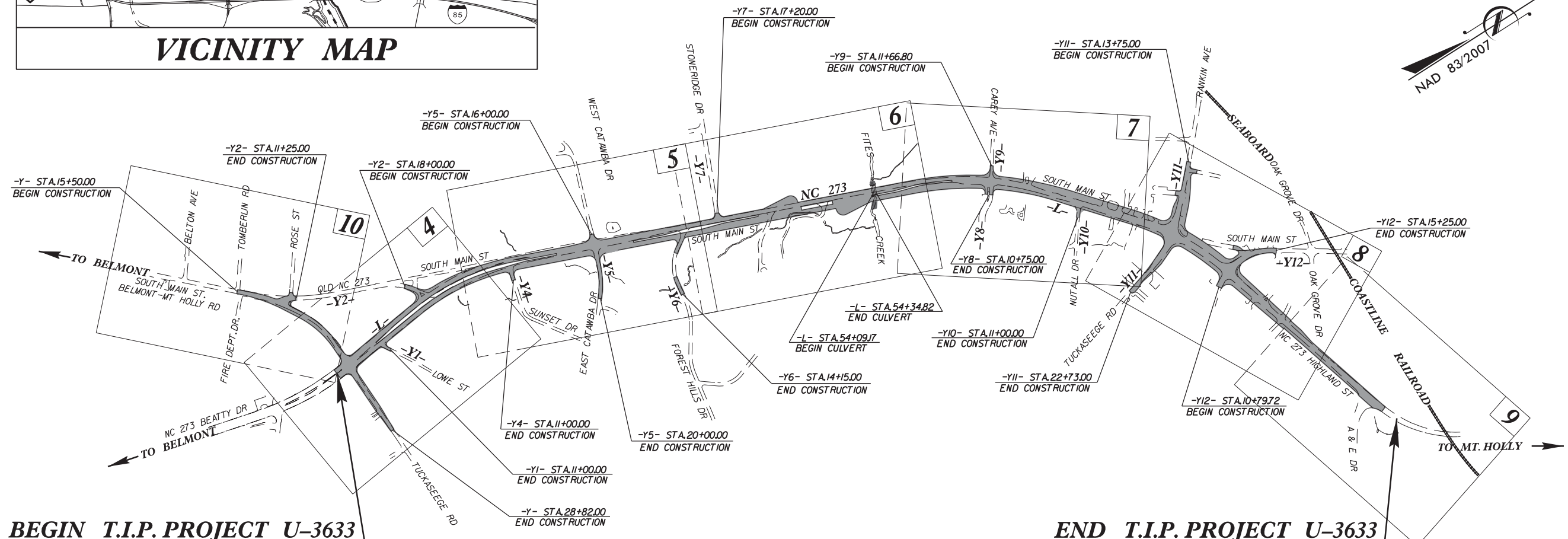
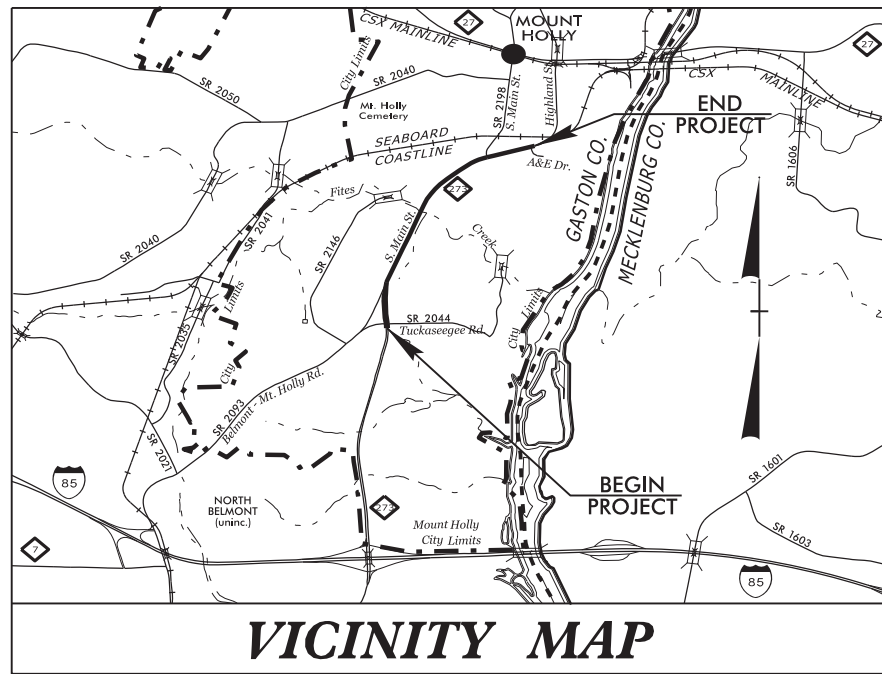
**LOCATION: MOUNT HOLLY - NC 273 (SOUTH MAIN STREET) FROM  
TUCKASEEGE ROAD AT BEATTY DRIVE TO HIGHLAND  
STREET AT A&E DRIVE**

**TYPE OF WORK: WIDENING, GRADING, DRAINAGE, PAVING, RESURFACING,  
& CULVERT.**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3633	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
37649.1.1	STP-0273(1)	PE	
37649.2.FRI	STP-0273(1)	R/W	
37649.2.FRUI	STP-0273(1)	UTIL	



**TIP PROJECT: U-3633**



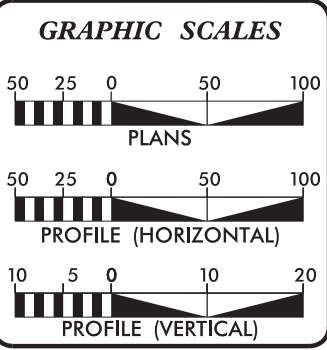
**BEGIN T.I.P. PROJECT U-3633**  
**-L- STA. 18 + 65.00**

**END T.I.P. PROJECT U-3633**  
**-L- STA. 91 + 00.00**

THIS IS NOT A CONTROL OF ACCESS PROJECT  
THIS PROJECT IS WITHIN THE MT. HOLLY MUNICIPAL BOUNDARIES.  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

**CONTRACT:**



**DESIGN DATA**

ADT 2014 =	26,800
ADT 2035 =	42,300
K =	10 %
D =	55 %
T =	4 % *
V =	50 MPH
* TTST =	2 DUAL 2
FUNC CLASS =	URBAN COLLECTOR
REGIONAL TIER	

**PROJECT LENGTH**

LENGTH ROADWAY T.I.P. PROJECT U-3633 =	1.365 MI
LENGTH STRUCTURE T.I.P. PROJECT U-3633 =	0.005 MI
TOTAL LENGTH OF T.I.P. PROJECT U-3633 =	1.370 MI

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

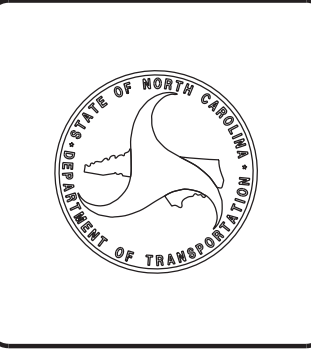
2012 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: NOVEMBER 25, 2014	JASON MOORE, PE PROJECT ENGINEER
LETTING DATE: DECEMBER 15, 2015	NYA BOAYUE, PE PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

**ROADWAY DESIGN ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.



01-DEC-2014 12:14  
R:\Roadway\Proj\U-3633\_rdy\_tsh.dgn  
\$\$\$\$\$USERNAME\$\$\$\$\$



8/17/99

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C THRU 1-D	SURVEY CONTROL SHEETS
2 THRU 2-B	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-C	TRAFFIC FORECAST
3	SUMMARY OF QUANTITIES
3A THRU 3-H	SUMMARY OF DRAINAGE QUANTITIES
3-I	SUMMARY OF GUARDRAIL
3-J	EARTHWORKSUMMARY, AND ASPHALT PAVEMENT REMOVAL SUMMARY
3-K	PARCEL INDEX SHEET
4 THRU 10	PLAN SHEET
11 THRU 17	PROFILE SHEET
TCP-1 THRU TCP-	TRAFFIC CONTROL PLANS
PM-1 THRU PM-	PAVEMENT MARKING PLANS
L-1 THRU L-	LANDSCAPE PLANS
RF-1 THRU RF-	REFORESTATION PLANS
EC-1 THRU EC-	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-	SIGNING PLANS
U-1 THRU U-	UTILITIES PLANS
X-1 THRU X-83	CROSS-SECTIONS
S-1 THRU S-	STRUCTURE PLANS

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	○ EP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	②③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	--- WLB ---
Proposed Wetland Boundary	WLB
Existing Endangered Animal Boundary	--- EAB ---
Existing Endangered Plant Boundary	--- EPB ---
Known Soil Contamination: Area or Site	☠ ☠
Potential Soil Contamination: Area or Site	☠ ?

## BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	⊙
Small Mine	⊗
Foundation	□
Area Outline	□
Cemetery	⊕
Building	□
School	□
Church	⊕
Dam	▬

## HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
Jurisdictional Stream	--- JS ---
Buffer Zone 1	--- BZ 1 ---
Buffer Zone 2	--- BZ 2 ---
Flow Arrow	←
Disappearing Stream	-----
Spring	○
Wetland	⊙
Proposed Lateral, Tail, Head Ditch	▬
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 Marker	-----
Existing Control of Access	○
Proposed Control of Access	○
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Drainage / Utility Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed Aerial Utility Easement	-----

## ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	--- C ---
Proposed Slope Stakes Fill	--- F ---
Proposed Curb Ramp	○ CR
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	□ CB
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	AATUR
End of Information	E.O.I.



# SURVEY CONTROL SHEET

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
5	BL-5	560397.5710	1395300.3440	678.44	95+08.32	7835.71 RT
6	BL-6	560942.5960	1395433.8060	697.50	13+93.57	38.61 RT
7	BL-7	561549.0820	1395456.1290	694.87	19+90.24	43.88 RT
8	BL-8	561776.1890	1395425.3590	695.47	22+19.40	48.75 RT
2	U3633-2	562337.2380	1395289.4640	695.12	27+82.39	58.82 LT
9	BL-9	562625.6830	1395437.6960	698.44	30+92.39	26.50 RT
10	BL-10	563222.3620	1395577.3550	668.28	36+99.84	62.66 LT
11	BL-11	563657.5480	1395819.8480	662.23	41+93.86	1.62 RT
12	BL-12	563933.1220	1395874.7130	658.81	44+70.18	49.37 LT
13	BL-13	564387.9160	1396105.6860	617.68	49+78.16	3.05 LT
14	BL-14	564744.2370	1396243.3920	608.84	53+68.14	6.94 LT
15	BL-15	565163.2230	1396381.8480	618.59	57+97.91	38.57 LT
47	USGS 1949 RESET	565272.7730	1396434.0140	623.51	59+16.62	43.35 LT
16	BL-16	565446.6180	1396549.6610	627.63	61+21.01	39.55 LT
17	BL-17	565843.1440	1397040.4640	647.09	67+46.84	33.36 RT
18	BL-18	566267.5970	1397473.0880	672.10	73+44.98	42.72 LT
3	U3633-3	566377.6880	1397749.2980	674.90	76+35.73	32.38 LT
19	BL-19	566502.9220	1398397.4780	651.61	82+91.93	27.56 RT
4	U3633-4	566687.3860	1399072.0340	624.08	89+89.77	36.84 RT
20	BL-20	567030.2580	1399473.6460	626.32	95+08.32	20.93 RT

BY POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
21	BY-21	560767.2280	1394240.8290	726.25	OUTSIDE PROJECT LIMITS	
22	BY-22	560913.5190	1394444.3260	720.86	12+00.53	19.95 RT
23	BY-23	561203.5970	1394658.7320	712.55	15+66.20	27.17 LT
24	BY-24	561407.8380	1394903.7480	706.95	18+78.25	33.09 LT
E07	BL-7	561549.0820	1395456.1290	694.87	24+40.62	40.84 LT
25	BY-25	561505.5080	1396119.7930	677.25	31+03.01	19.07 RT

BY1 POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
E08	BL-8	561776.1890	1395425.3590	695.47	10+56.76	26.67 LT
26	BY1-26	561908.4570	1395729.5240	699.56	13+91.78	8.61 RT

BY2 POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
E024	BY-24	561407.8380	1394903.7480	706.95	10+86.76	32.91 RT
1	U3633-1	561535.8780	1394911.7570	704.37	12+00.50	26.19 LT
27	BY2-27	561908.6890	1395122.1820	696.89	16+28.10	23.03 RT
E02	U3633-2	562337.2380	1395289.4640	695.12	OUTSIDE PROJECT LIMITS	

BY4 POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
E09	BL-9	562625.6830	1395437.6960	698.44	10+23.67	39.45 RT
28	BY4-28	562683.3930	1395793.5510	662.25	13+76.65	11.22 RT

BY5 POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
29	BY5-29	563377.0310	1394980.2080	697.48	OUTSIDE PROJECT LIMITS	
30	BY5-30	563270.2720	1395395.3660	680.03	14+27.23	13.09 LT
E010	BL-10	563222.3620	1395577.3550	668.28	16+24.15	32.52 LT
31	BY5-31	562977.8360	1395992.9630	665.61	21+03.10	16.78 LT

BY6 POINT	DESC.	NORTH	EAST	ELEVATION	Y6 STATION	OFFSET
E011	BL-11	563657.5480	1395819.8480	662.23	10+26.38	35.20 RT
32	BY6-32	563486.3280	1396016.8950	638.03	12+79.08	14.74 RT
33	BY6-33	563446.3560	1396318.3420	648.79	15+77.72	15.78 LT

BY7 POINT	DESC.	NORTH	EAST	ELEVATION	Y7 STATION	OFFSET
34	BY7-34	564095.2940	1396301.2180	686.78	12+20.95	22.89 RT
E012	BL-12	563933.1220	1395874.7130	658.81	17+38.34	23.38 LT

BY8 POINT	DESC.	NORTH	EAST	ELEVATION	Y8/Y9 STATION	OFFSET
36	BY9-36	565605.1020	1396385.3590	625.17	Y9 10+02.38	12.86 LT
E016	BL-16	565446.6180	1396549.6610	627.63	Y9 12+27.83	23.03 RT
35	BY8-35	565286.8250	1396783.9600	622.54	Y8 12+53.94	25.27 LT

BY10 POINT	DESC.	NORTH	EAST	ELEVATION	Y10 STATION	OFFSET
E017	BL-17	565843.1440	1397040.4640	647.09	10+40.36	35.45 LT
37	BY10-37	565631.3120	1397245.6210	651.83	13+32.75	10.55 RT

BY11 POINT	DESC.	NORTH	EAST	ELEVATION	Y11 STATION	OFFSET
48	MADORA	566623.6010	1395742.4640	654.06	OUTSIDE PROJECT LIMITS	
38	BY11-38	566795.3500	1396889.1030	676.36	10+11.36	24.12 LT
39	BY11-39	566498.9060	1397154.6060	675.17	14+07.11	18.90 RT
E018	BL-18	566267.5970	1397473.0880	672.10	17+96.20	41.42 LT
40	BY11-40	565686.2720	1397631.4590	668.26	23+86.93	28.33 RT

BY12 POINT	DESC.	NORTH	EAST	ELEVATION	Y12 STATION	OFFSET
41	BY12-41	567834.3570	1398096.7270	638.60	OUTSIDE PROJECT LIMITS	
42	BY12-42	566704.0710	1397875.3870	657.91	15+22.59	18.87 LT
E03	U3633-3	566377.6880	1397749.2980	674.90	12+16.39	95.32 LT
46	BY12-46	566198.8050	1397989.4640	674.88	OUTSIDE PROJECT LIMITS	

BY13 POINT	DESC.	NORTH	EAST	ELEVATION	Y13 STATION	OFFSET
43	BY13-43	561951.4090	1394264.5530	733.23	OUTSIDE PROJECT LIMITS	
E022	BY-22	560913.5190	1394444.3260	720.86	OUTSIDE PROJECT LIMITS	

BY14 POINT	DESC.	NORTH	EAST	ELEVATION	Y14A STATION	OFFSET
44	BY14-44	561287.5870	1394494.2120	723.23	10+27.31	15.43 RT
E023	BY-23	561203.5970	1394658.7320	712.55	12+09.20	16.80 LT

BY15 POINT	DESC.	NORTH	EAST	ELEVATION	Y15 STATION	OFFSET
45	BY15-45	561584.4640	1394646.7920	707.59	10+04.33	13.19 RT
E024	BY-24	561407.8380	1394903.7480	706.95	OUTSIDE PROJECT LIMITS	

.....  
 ELEVATION = 689.01  
 N 561801 E 1395502  
 L STATION 14+61 95 RIGHT  
 RR SPIKE IN 15' SWEET GUM  
 .....  
 ELEVATION = 699.74  
 N 561778 E 1395491  
 L STATION 22+05 105 RIGHT  
 RR SPIKE IN 24' OAK  
 .....  
 ELEVATION = 671.08  
 N 562662 E 1395290  
 L STATION 30+81 125 LEFT  
 RR SPIKE IN 16' OAK  
 .....  
 ELEVATION = 651.54  
 N 563454 E 1395841  
 L STATION 40+12 97 RIGHT  
 RR SPIKE IN 20' OAK  
 .....  
 ELEVATION = 599.61  
 N 564465 E 1396322  
 L STATION 51+30 169 RIGHT  
 RR SPIKE IN 22' OAK  
 .....  
 ELEVATION = 633.32  
 N 565530 E 1396505  
 Y9 STATION 11+44 19 LEFT  
 RR SPIKE IN 30' OAK  
 .....  
 ELEVATION = 669.40  
 N 565973 E 1397520  
 Y11 STATION 20+78 56 RIGHT  
 RR SPIKE IN 10' MAPLE  
 .....  
 ELEVATION = 674.36  
 N 566154 E 1398023  
 L STATION 78+36 260 RIGHT  
 RR SPIKE IN 12' OAK  
 .....  
 ELEVATION = 649.05  
 N 566519 E 1398751  
 L STATION 86+36 109 RIGHT  
 RR SPIKE IN 27' OAK  
 .....  
 ELEVATION = 619.71  
 N 566913 E 1399498  
 L STATION 94+31 186 RIGHT  
 RR SPIKE IN 32' OAK  
 .....  
 ELEVATION = 709.83  
 N 561880 E 1394635  
 Y STATION 14+61 41 RIGHT  
 RR SPIKE IN 28' OAK  
 .....  
 ELEVATION = 689.57  
 N 561547 E 1395878  
 Y STATION 28+62 28 LEFT  
 RR SPIKE IN POWER POLE  
 .....  
 ELEVATION = 697.44  
 N 563324 E 1395804  
 Y5 STATION 10+80  
 S 66°26'30.7" W DIST 54.71  
 RR SPIKE IN 20' OAK  
 .....  
 ELEVATION = 676.08  
 N 566674 E 1397030  
 Y11 STATION 12+03 31 LEFT  
 RR SPIKE IN 28' OAK  
 .....  
 ELEVATION = 668.66  
 N 566764 E 1398047  
 Y12 STATION 16+68 90 RIGHT  
 RR SPIKE IN 30' OAK  
 .....

**DATUM DESCRIPTION**  
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NGS FOR MONUMENT "MADORA" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 566623.601(ft) EASTING: 1395742.464(ft) ELEVATION: 654.06(ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999846  
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "MADORA" TO -L- STATION 19+51.40 PT IS S 3°38'08.0" W 5128.693'  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

SEE SHEET 1C FOR NOTES.





# SURVEY CONTROL SHEET

## Right of Way and Permanent Easement Monuments

- Preliminary -

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	18+65.00	50.00	561422.8178	1395475.4340
L	18+65.00	-50.00	561415.6604	1395375.6905
L	20+12.00	-60.00	561558.1441	1395350.3777
L	20+30.00	60.00	561590.4978	1395467.3275
L	21+75.00	60.00	561734.4375	1395449.8244
L	22+25.00	60.00	561784.0719	1395443.7888
L	24+93.44	-60.00	562036.0590	1395292.2632
L	24+93.44	60.00	562050.5443	1395411.3857
L	25+16.61	-60.00	562060.1148	1395289.5489
L	30+70.00	60.00	562594.6347	1395462.7528
L	31+90.00	60.00	562703.3169	1395502.6867
L	36+05.00	-73.26	563138.1708	1395532.4249
L	36+10.00	60.00	563093.5147	1395658.0756
L	37+30.00	-60.00	563249.3966	1395590.9874
L	37+40.00	60.00	563214.2902	1395706.1722
L	41+10.00	60.00	563558.0358	1395843.0624
L	42+50.00	60.00	563688.1017	1395894.8587
L	44+00.00	-60.00	563871.8549	1395838.8697
L	44+00.00	-60.00	563871.8549	1395838.8697
L	45+10.00	-60.00	563974.0495	1395879.5668
L	47+21.77	-60.00	564170.7928	1395957.9161
L	48+95.74	-111.00	564351.2870	1395974.8992
L	49+35.00	-111.00	564387.7612	1395989.4244
L	49+80.00	-60.00	564410.6994	1396053.4544
L	51+35.00	60.00	564510.3041	1396222.2853
L	51+90.00	110.00	564542.9028	1396289.0860
L	52+40.00	110.00	564589.3549	1396307.5847
L	53+45.00	75.00	564699.8534	1396313.9154
L	53+45.00	98.00	564691.3440	1396335.2834
L	53+75.00	-60.00	564777.6711	1396199.5939
L	53+75.00	-125.00	564801.7194	1396139.2062
L	54+21.50	134.00	564749.0967	1396397.0319
L	54+55.00	60.00	564807.5977	1396340.6769
L	54+65.00	-60.00	564861.2849	1396232.8915
L	54+65.00	-125.00	564885.3332	1396172.5038
L	56+58.06	60.00	564996.2504	1396415.8043
L	56+58.06	-60.00	565040.6473	1396304.3192
L	60+75.00	60.00	565352.0433	1396604.9869
L	61+00.00	-60.00	565440.8558	1396520.5078
L	61+75.00	-60.00	565503.3075	1396566.1683
L	62+00.00	60.73	565449.2977	1396676.9923
L	62+45.67	60.00	565484.2403	1396704.1003
L	65+85.34	-60.00	565809.8145	1396856.9277
L	65+85.34	-55.00	565806.0025	1396860.1632
L	65+85.34	60.00	565718.3258	1396934.5796
L	66+73.00	60.00	565775.0492	1397001.4106
L	67+65.00	60.74	565834.0174	1397072.0314
L	72+08.00	-55.00	566204.5983	1397346.2048
L	73+80.00	-70.00	566308.7985	1397492.0688
L	74+37.65	-70.00	566335.7719	1397545.8493
L	74+39.69	60.00	566219.3858	1397603.8017
L	76+75.00	60.00	566301.6468	1397814.6019
L	78+10.00	60.00	566338.8305	1397943.1844
L	78+61.22	-60.00	566468.3036	1397959.3294
L	83+90.09	-60.00	566614.1519	1398467.6842
L	86+22.03	60.00	566562.7691	1398723.7233

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	16+56.00	68.50	561207.1055	1395496.4742
L	16+59.00	50.00	561211.0717	1395478.1400
L	16+66.00	70.00	561217.4234	1395498.4397
L	16+69.00	50.00	561221.3478	1395478.5844
L	18+00.00	-60.00	561352.2652	1395369.0455
L	18+00.00	-50.00	561352.6101	1395379.0394
L	18+12.00	-64.00	561363.6801	1395364.6096
L	18+20.00	60.00	561377.0724	1395488.1427
L	18+20.00	50.00	561376.6133	1395478.1530
L	18+25.00	-50.00	561376.8745	1395378.0285
L	20+20.00	-60.00	561566.0856	1395349.4121
L	20+77.00	-75.00	561620.8582	1395327.6412
L	20+77.00	-60.00	561622.6688	1395342.5315
L	21+45.00	60.00	561704.6569	1395453.4457
L	21+45.00	76.00	561706.5883	1395469.3287
L	21+50.00	-80.00	561692.7208	1395313.8659
L	21+50.00	-75.00	561693.3244	1395318.8293
L	21+75.00	-60.00	561719.9522	1395330.7018
L	21+75.00	-80.00	561717.5380	1395310.8481
L	22+90.00	60.00	561848.5966	1395435.9426
L	22+90.00	80.00	561851.0108	1395455.7964
L	25+93.00	75.00	562145.9952	1395418.4054
L	26+15.00	85.00	562167.0511	1395427.6015
L	26+27.53	60.00	562178.2590	1395402.3065
L	31+65.00	-72.89	562729.2557	1395369.9793
L	31+70.00	-90.00	562740.2321	1395355.9309
L	31+90.00	-90.00	562758.8130	1395363.3304
L	32+00.00	-72.92	562761.7831	1395382.9011
L	37+11.16	-75.00	563237.4411	1395570.0807
L	40+22.00	60.00	563476.2801	1395810.5047
L	40+22.00	95.00	563463.3310	1395843.0212
L	40+32.00	105.00	563468.9217	1395856.0114
L	40+32.00	95.00	563472.6214	1395846.7210
L	40+44.00	-77.00	563547.4054	1395691.3654
L	40+52.00	100.00	563489.3524	1395858.7656
L	40+52.00	105.00	563487.5025	1395863.4109
L	41+20.00	100.00	563552.5273	1395883.9238
L	43+46.00	-88.00	563832.0459	1395792.8779
L	43+46.00	-94.00	563834.2657	1395787.3037
L	43+56.00	-94.00	563843.5561	1395791.0034
L	43+56.00	-88.00	563841.3363	1395796.5777
L	44+88.00	-91.00	563965.0798	1395842.6270
L	44+88.00	-85.00	563962.8600	1395848.2013
L	45+75.00	140.00	563960.4426	1396089.4235
L	45+75.00	60.00	563990.0405	1396015.1001
L	46+70.00	-79.42	564129.8809	1395920.7213
L	46+70.00	-93.00	564134.9054	1395908.1042
L	46+90.00	85.00	564087.6310	1396080.8732
L	46+94.00	60.00	564100.5965	1396059.1270
L	47+00.00	-93.00	564162.7767	1395919.2034
L	47+00.00	-78.56	564157.4356	1395932.6155
L	47+10.00	88.00	564105.1019	1396091.0598
L	47+14.00	60.00	564119.1773	1396066.5265
L	47+75.00	100.00	564161.0500	1396126.2565
L	47+77.55	-76.35	564228.6625	1395963.3612
L	47+80.00	74.00	564175.3145	1396103.9513
L	47+86.00	82.00	564177.9290	1396113.6035
L	47+99.00	60.00	564198.1459	1396097.9742
L	48+16.00	60.00	564213.9397	1396104.2638
L	48+75.00	85.00	564259.5038	1396149.3183
L	49+70.16	-71.15	564405.6824	1396039.4497
L	50+00.00	90.00	564373.7842	1396200.2102
L	50+65.00	95.00	564432.3221	1396228.9037
L	50+75.00	115.00	564434.2131	1396251.1843
L	51+00.00	115.00	564457.4391	1396260.4336
L	51+50.00	180.00	564479.8429	1396339.3200
L	52+00.00	185.00	564524.4452	1396362.4639
L	53+75.00	185.00	564687.0276	1396427.2093
L	53+75.00	-70.62	564781.5993	1396189.7300
L	54+00.00	-125.00	564824.9455	1396148.4555

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	54+25.00	-150.00	564857.4209	1396134.4788
L	54+50.00	170.00	564762.2554	1396441.0217
L	54+65.00	-69.82	564864.9181	1396223.7684
L	55+70.00	-150.00	564992.1320	1396188.1250
L	55+70.00	-81.89	564966.9319	1396251.4050
L	56+58.00	-92.00	565052.4292	1396274.5671
L	56+75.00	60.00	565011.4628	1396421.9410
L	56+75.00	185.00	564964.1826	1396537.6544
L	57+61.00	90.00	565075.2282	1396482.4056
L	57+65.00	60.00	565091.3346	1396456.8060
L	57+92.00	-76.00	565174.0558	1396345.5072
L	57+92.00	90.00	565101.9301	1396495.0193
L	57+94.00	-84.00	565179.4123	1396339.2102
L	57+95.00	60.00	565117.5806	1396469.2634
L	58+00.00	-70.00	565178.9121	1396354.5310
L	58+04.00	-80.00	565187.0397	1396347.3735
L	59+36.00	-60.00	565298.3242	1396429.4665
L	59+36.00	-65.00	565300.8314	1396425.1406
L	59+75.00	74.00	565263.3642	1396564.5283
L	59+80.00	60.00	565274.7668	1396555.0812
L	59+85.00	78.00	565269.4710	1396572.9465
L	59+90.00	67.00	565279.3367	1396566.1058
L	61+96.00	92.00	565427.0200	1396699.2739
L	61+96.00	87.00	565430.0939	1396695.3304
L	62+70.00	88.00	565484.2808	1396740.5785
L	62+70.00	95.00	565479.7657	1396745.9277
L	62+82.00	88.00	565493.0027	1396747.9879
L	62+82.00	95.00	565488.4538	1396753.3084
L	64+48.00	-76.00	565725.7305	1396741.1094
L	64+50.00	-60.00	565715.7560	1396753.7901
L	64+57.00	-78.00	565733.7050	1396746.4108
L	64+59.00	-68.00	565727.9784	1396754.8677
L	64+72.00	78.00	565631.8408	1396865.5086
L	64+74.00	88.00	565625.9341	1396873.8013
L	64+82.00	72.00	565642.8093	1396868.3286
L	64+85.00	87.00	565633.8845	1396880.7225
L	65+04.00	60.00	565666.0819	1396875.6317
L	65+04.00	70.00	565658.7418	1396882.4231
L	65+56.00	-68.00	565796.0689	1396828.7326
L	65+56.00	-75.00	565801.3352	1396824.1210
L	65+65.00	-75.00	565807.4817	1396831.1738
L	65+65.00	-68.00	565802.1936	1396835.7603
L	67+72.00	60.68	565838.5930	1397077.3293
L	68+11.00	-70.00	565963.4617	1397022.4997
L	68+14.00	-80.00	565973.0270	1397018.3160
L	68+21.00	-66.00	565966.8831	1397032.7122
L	68+24.00	-76.00	565976.4484	1397028.5284
L	68+40.00	-55.00	565970.7915	1397054.3160
L	69+80.00	62.63	565971.7012	1397237.1731
L	69+95.00	79.00	565968.9295	1397259.2002
L	69+95.00	7		

# SURVEY CONTROL SHEET

## Right of Way and Permanent Easement Monuments

- Preliminary -

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y	15+90.68	35.00	561177.5190	1394720.1900
Y	19+02.18	35.00	561361.5349	1394959.1000
Y	19+20.00	-37.62	561433.2763	1394938.0143
Y	19+63.97	35.00	561392.5860	1395012.5195
Y	21+96.49	-35.00	561532.9893	1395208.4804
Y	22+65.11	35.00	561468.9414	1395282.5381
Y	22+65.11	-35.00	561538.9202	1395280.8140
Y	23+15.00	-35.00	561540.1491	1395330.6931
Y	23+20.00	35.00	561470.2935	1395337.4157
Y	24+80.00	40.00	561469.2358	1395497.4903
Y	24+85.00	-40.00	561549.3347	1395500.5184
Y	29+12.87	-30.00	561549.8752	1395928.5025
Y	29+12.93	-40.00	561559.8747	1395928.3190
Y	29+21.39	40.00	561480.1073	1395938.7453
Y	29+21.68	30.00	561490.1105	1395938.7928

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y6	10+80.00	-30.00	563648.8844	1395903.8189
Y6	11+30.00	30.00	563573.2018	1395882.2817

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y11	14+44.29	-65.00	566533.7768	1397239.5477
Y11	14+65.00	-45.00	566504.8854	1397240.6963
Y11	15+39.53	55.00	566381.3209	1397224.0226
Y11	15+40.00	-60.32	566462.9848	1397305.4405
Y11	15+40.13	25.00	566402.2346	1397245.5397
Y11	16+05.01	55.00	566335.4313	1397269.9835
Y11	17+20.00	55.00	566253.7919	1397350.9612
Y11	17+45.00	-60.00	566317.0283	1397450.2143
Y11	19+39.86	-45.00	566136.5569	1397562.9744
Y11	19+48.26	35.00	566097.8075	1397492.4823
Y11	20+11.35	-45.00	566070.6536	1397590.6771
Y11	20+11.35	35.00	566039.6529	1397516.9278
Y11	21+07.19	-45.00	565975.3747	1397624.3258
Y11	21+07.19	35.00	565953.1858	1397547.4645
Y11	21+25.23	25.00	565938.6275	1397562.0757
Y11	21+25.29	35.00	565935.7900	1397552.4848
Y11	21+71.00	-25.00	565908.5229	1397622.0083
Y11	21+95.00	-25.00	565885.4645	1397629.4650
Y11	22+20.88	-40.00	565864.7564	1397651.0557
Y11	22+45.86	25.00	565822.7316	1397595.5334
Y11	22+45.89	20.00	565824.0916	1397600.3449

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y	21+00.00	46.00	561433.4005	1395132.8371
Y	21+00.00	35.00	561443.9098	1395129.5884
Y	21+63.00	35.00	561458.4256	1395187.0820
Y	22+75.00	-35.00	561539.1639	1395290.7053
Y	24+74.27	-54.00	561563.0662	1395489.4464
Y	24+74.94	50.00	561459.1143	1395492.6809
Y	24+87.00	-54.00	561563.3797	1395502.1730
Y	24+87.00	-40.00	561549.3840	1395502.5178

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y6	11+76.00	30.00	563534.4697	1395915.6805

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y7	17+00.00	30.00	563899.2589	1395818.3785
Y7	17+00.00	-30.00	563954.3646	1395842.1138

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y7	16+96.00	-30.00	563955.9470	1395838.4401

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	10+75.00	10.00	561754.2894	1395459.9719
Y1	10+90.00	-10.00	561779.1684	1395462.4268

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y8	10+70.00	50.00	565355.9341	1396617.2911
Y8	10+70.00	-50.00	565435.0270	1396678.4820

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	10+60.00	-34.72	561413.0161	1394831.0872
Y2	11+35.00	-30.66	561482.5919	1394875.9601
Y2	11+35.00	29.34	561451.3525	1394927.1869

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y8	10+84.00	-30.00	565408.9192	1396678.6227
Y8	10+87.00	-50.00	565421.3257	1396694.7167
Y8	11+62.00	-22.00	565338.5786	1396725.5155
Y8	11+62.00	-42.00	565350.0154	1396741.9229

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	11+00.00	17.50	562626.7357	1395517.1158
Y4	11+00.00	-17.50	562660.4979	1395526.3417

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y9	11+90.00	20.00	565470.7438	1396520.3767
Y9	11+90.00	-20.00	565503.5399	1396543.2767

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	11+00.00	-36.00	562678.3453	1395531.2187
Y4	11+05.00	-17.50	562659.1800	1395531.1649
Y4	11+10.00	-40.00	562679.5679	1395541.9194
Y4	11+16.00	-17.50	562656.2806	1395541.7759

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y9	11+52.00	20.00	565492.4993	1396489.2207
Y9	11+60.00	40.00	565471.5232	1396484.3312
Y9	11+73.00	20.00	565480.4765	1396506.4384
Y9	11+78.00	35.00	565465.3177	1396501.9520

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	15+65.00	30.00	563183.3686	1395500.6217
Y5	16+00.00	-30.00	563228.1070	1395553.7581
Y5	17+81.67	-17.50	563155.2514	1395720.6463
Y5	17+81.67	17.50	563122.2892	1395708.8780

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y10	11+00.00	-25.00	565797.9279	1397079.9819
Y10	11+00.00	25.00	565758.7146	1397048.9606

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	15+73.00	-30.00	563237.1854	1395528.3301
Y5	15+74.00	-40.00	563246.2669	1395532.6342
Y5	15+83.00	-30.00	563233.8231	1395537.7478
Y5	15+84.00	-40.00	563242.9045	1395542.0520
Y5	17+81.00	60.00	563082.4882	1395693.9585
Y5	18+59.00	17.50	563092.8363	1395778.0761

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y10	11+12.00	-25.00	565790.5510	1397089.3393

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y11	15+08.00	25.00	566424.6886	1397222.7278
Y11	15+30.00	-58.22	566468.5825	1397296.7910
Y11	15+30.00	-74.00	566479.8182	1397307.8699
Y11	15+39.97	33.00	566396.6575	1397239.0017
Y11	15+40.00	-74.00	566472.7148	1397315.0632
Y11	16+37.73	55.00	566312.2016	1397293.0249
Y11	17+40.00	79.08	566222.6338	1397347.9486
Y11	19+33.00	-66.00	566151.0177	1397579.6756
Y11	19+33.00	-52.90	566145.9418	1397567.6003
Y11	19+38.00	56.11	566099.0895	1397469.0440
Y11	19+45.00	-65.00	566139.5678	1397583.4039
Y11	19+45.00	-58.00	566136.8552	1397576.9508
Y11	20+72.64	-45.00	566010.1728	1397613.4808
Y11	20+72.95	-53.00	566012.3999	1397621.1715
Y11	22+57.00	-20.00	565824.5102	1397641.8575
Y11	22+57.00	-38.00	565829.5027	1397659.1513
Y11	22+67.50	-38.00	565819.4147	1397662.0636
Y11	22+67.50	-20.00	565814.4221	1397644.7698
Y11	22+78.00	20.00	565793.2397	1397609.2514
Y11	22+78.00	40.00	565787.6925	1397590.0362

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y12	10+90.00	45.00	566309.5877	1397926.8450
Y12	13+42.00	-51.87	566532.0521	1397773.8507
Y12	14+30.00	-35.00	566626.0387	1397812.8512
Y12	14+95.68	-35.00	566690.7994	1397846.9572
Y12	15+25.00	-30.00	566712.2973	1397867.5168

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y12	10+77.00	80.00	566315.6794	1397963.6810
Y12	10+78.00	50.00	566301.6534	1397937.1429

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y15	12+24.00	15.00	561451.5329	1394821.6862
Y15	12+24.00	-15.00	561475.5656	1394839.6425

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NGS FOR MONUMENT "MADORA"

WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 566623.601(FT) EASTING: 1395742.464(FT) ELEVATION: 654.06(FT)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999846

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "MADORA" TO -L- STATION 19+51.40 PT IS S 3°38'08.0" W 5128.693'

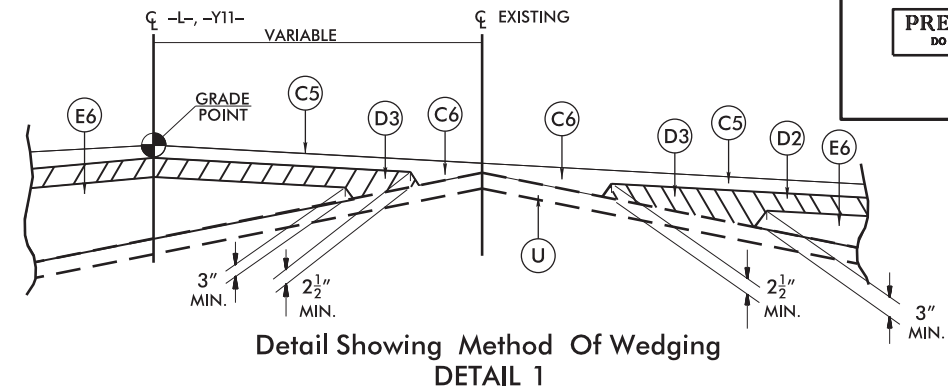
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

SEE SHEET 1C FOR NOTES.

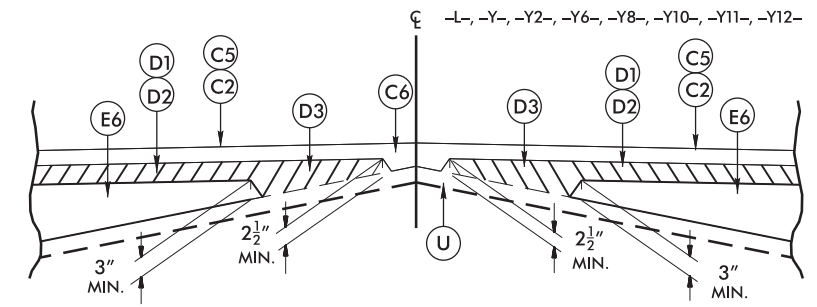
# PAVEMENT SCHEDULE (PRELIMINARY)

PROJECT REFERENCE NO. <b>U-3633</b>	SHEET NO. <b>2</b>
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

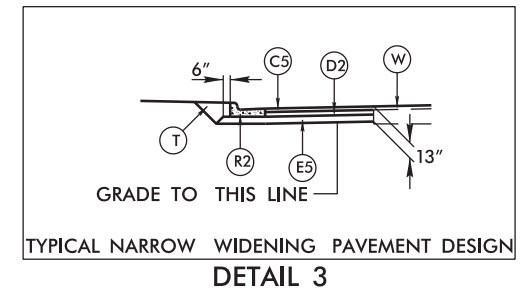
	E4	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
C2	E5	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	E6	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
		J1
		PROP. 8" AGGREGATE BASE COURSE.
C5	R1	1'-6" CONCRETE CURB AND GUTTER.
C6	R2	2'-6" CONCRETE CURB AND GUTTER.
D1	R3	5" MONOLITHIC CONCRETE ISLAND (KEYED IN).
D2	S	4" CONCRETE SIDEWALK.
D3	T	EARTH MATERIAL.
E1	U	EXISTING PAVEMENT.
E2	V	MILLING ASPHALT PAVEMENT
E3	W	WEDGING (SEE DETAIL 1 AND DETAIL 2)



**Detail Showing Method Of Wedging  
DETAIL 1**

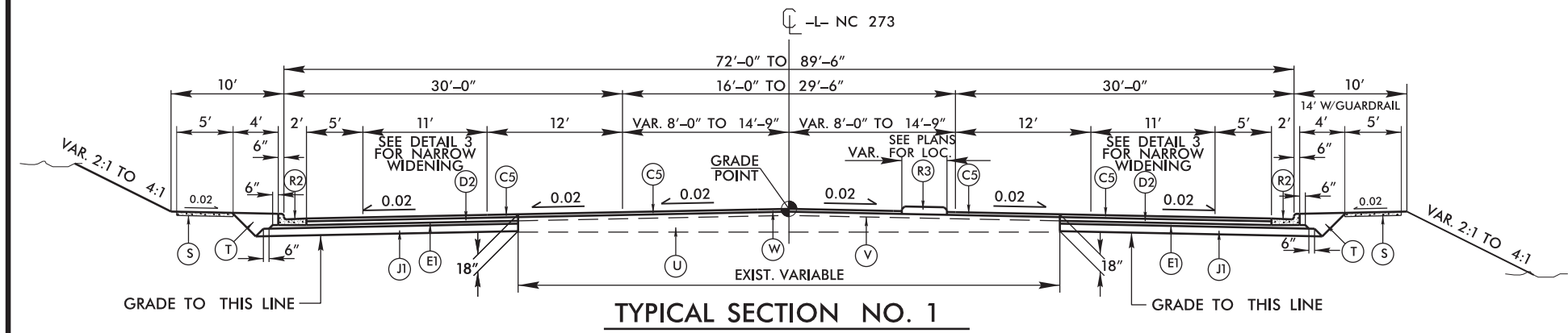


**Detail Showing Method of Wedging  
DETAIL 2**



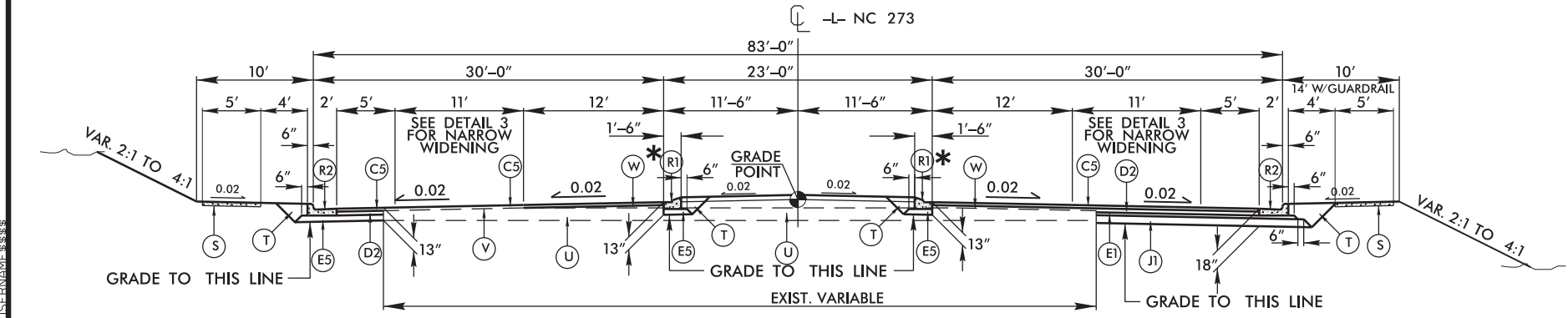
**TYPICAL NARROW WIDENING PAVEMENT DESIGN  
DETAIL 3**

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



**TYPICAL SECTION NO. 1**

USE TYPICAL SECTION NO. 1  
-L- STA. 18+65.00 TO 23+30.00  
-L- STA. 59+04.45 TO 82+10.00



**TYPICAL SECTION NO. 2**

\* SAWCUT EXISTING PAVEMENT WHEN CURB AND GUTTER IS PLACED AT THE FACE OF EXISTING PAVEMENT. USE NARROW WIDENING PAVEMENT DESIGN AS NEEDED.

USE TYPICAL SECTION NO. 2  
-L- STA. 23+30.00 TO 59+04.45

NOTE: TEMPORARY PAVEMENT ("C5" & "E5")  
SEE TRAFFIC CONTROL PLANS FOR LOCATION:  
-L- STA. 31+61.22 TO 32+79.06  
-L- STA. 26+56.81 TO 31+01.44

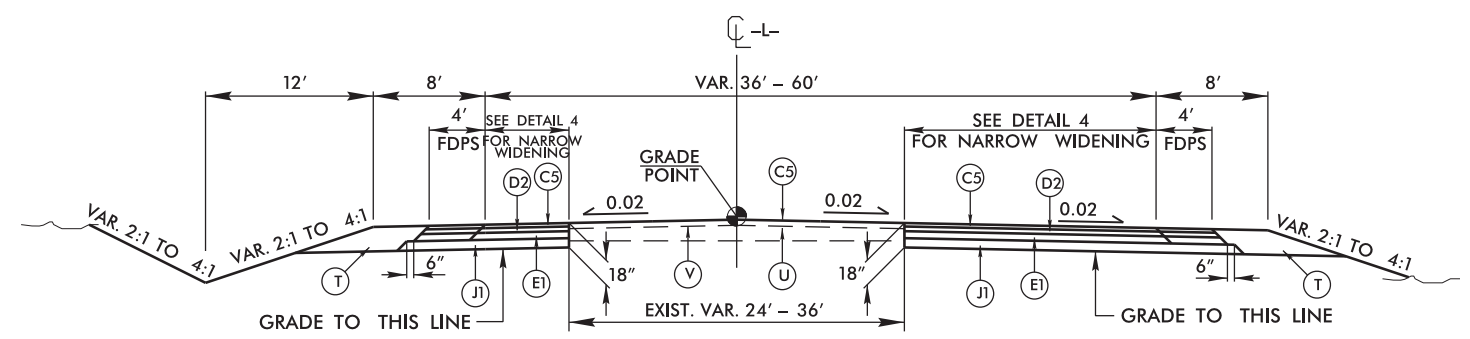
6/2/99

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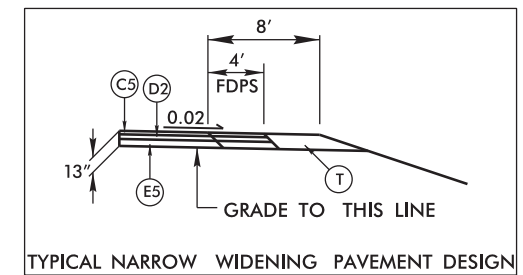


PROJECT REFERENCE NO. <b>U-3633</b>	SHEET NO. <b>2-A</b>
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

PAVEMENT SCHEDULE PRELIMINARY PAVEMENT DESIGN	
C2	3" SF9.5A
C3	VAR. DEPTH SF9.5A
C5	3" S9.5B
C6	VAR. DEPTH S9.5B
D1	2 1/2" I19.0B
D2	4" I19.0B
D3	VAR. DEPTH I19.0B
E1	3" B25.0B
E2	4" B25.0B
E3	4 1/2" B25.0B
E4	5 1/2" B25.0B
E5	6" B25.0B
E6	VAR. DEPTH B25.0B
J1	8" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MONO. CONC. ISL
S	SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

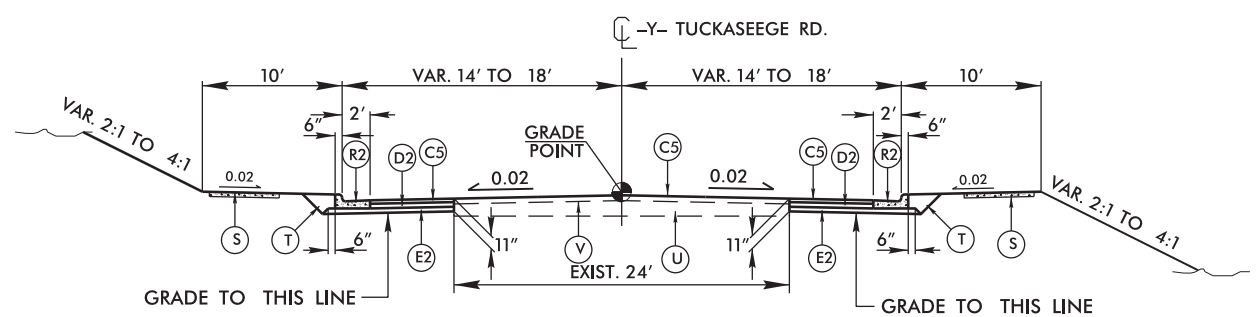


**TYPICAL SECTION NO. 3**



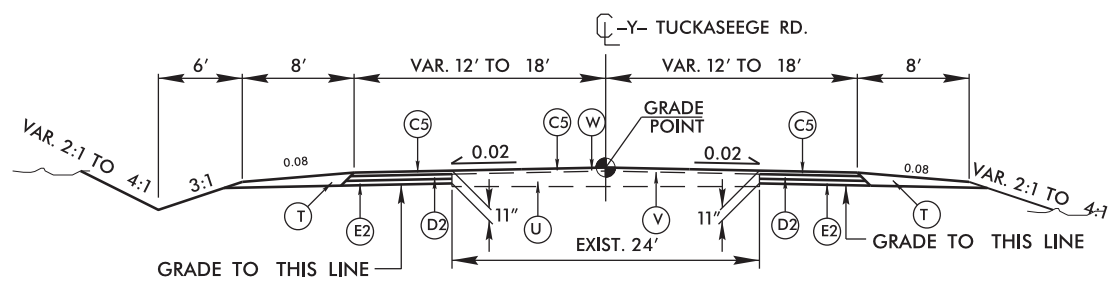
**TYPICAL NARROW WIDENING PAVEMENT DESIGN  
DETAIL 4**

USE TYPICAL SECTION NO. 3  
-L- STA 82+10.00 TO 90+00.00



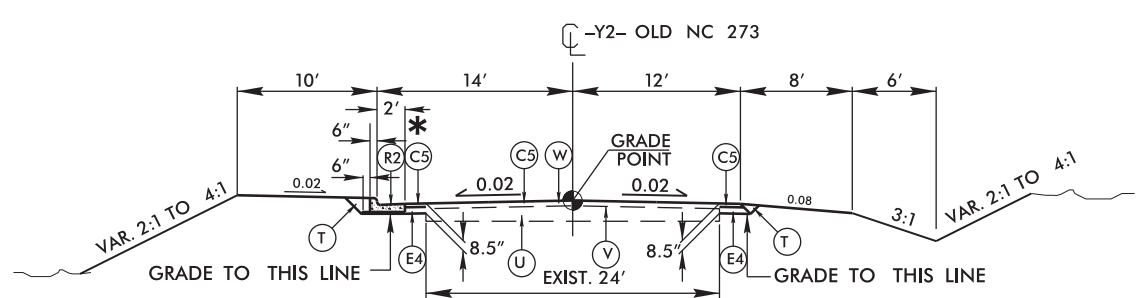
**TYPICAL SECTION NO. 4**

USE TYPICAL SECTION NO. 4  
-Y- STA 15+50.00 TO 23+64.31  
-Y- STA 24+36.65 TO 24+74.10  
NOTE: -Y- STA. 15+50.00 TO 15+84.32  
TO BE MILLED AND RESURFACED



**TYPICAL SECTION NO. 5**

USE TYPICAL SECTION NO. 5  
-Y- STA. 24+74.10 TO 28+82.00



**TYPICAL SECTION NO. 6**

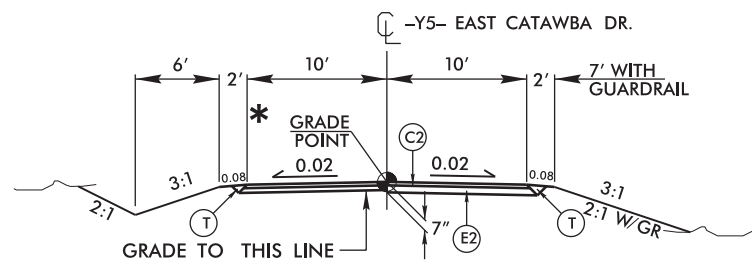
USE TYPICAL SECTION NO. 6  
-Y2- STA. 10+22.61 TO 11+25.00  
-Y2- STA. 14+75.00 TO 19+35.15

\* SAWCUT EXISTING PAVEMENT WHEN CURB AND GUTTER IS PLACED AT THE FACE OF EXISTING PAVEMENT. USE NARROW WIDENING PAVEMENT DESIGN AS NEEDED.

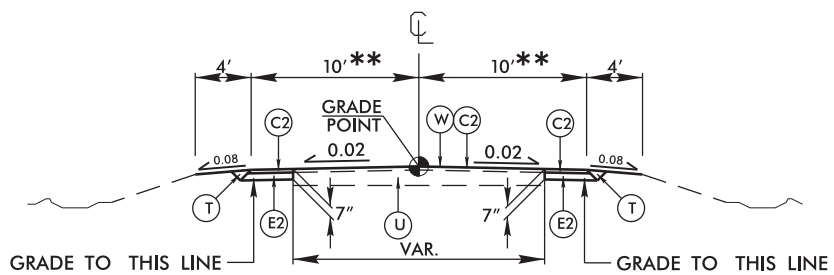
6/2/99

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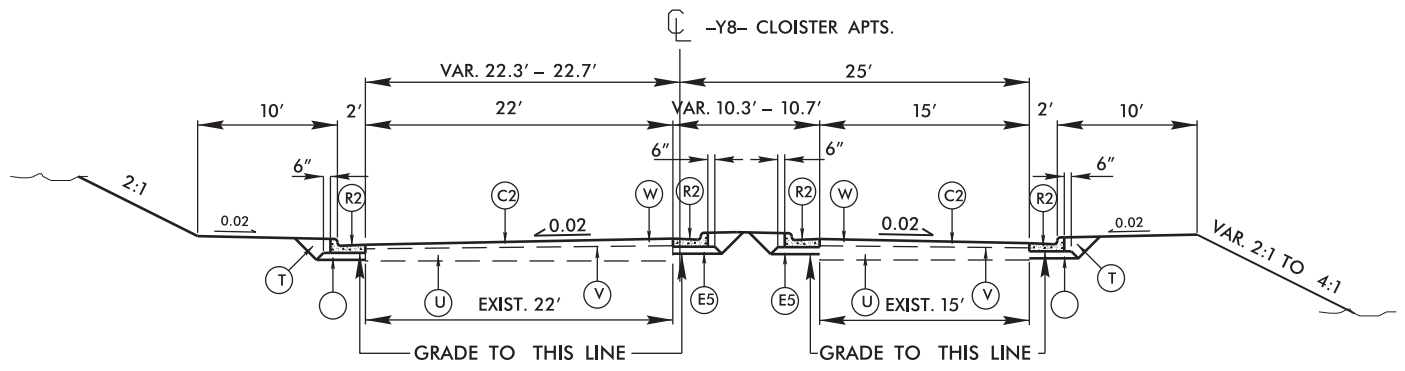
PROJECT REFERENCE NO. <b>U-3633</b>	SHEET NO. <b>2-B</b>
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



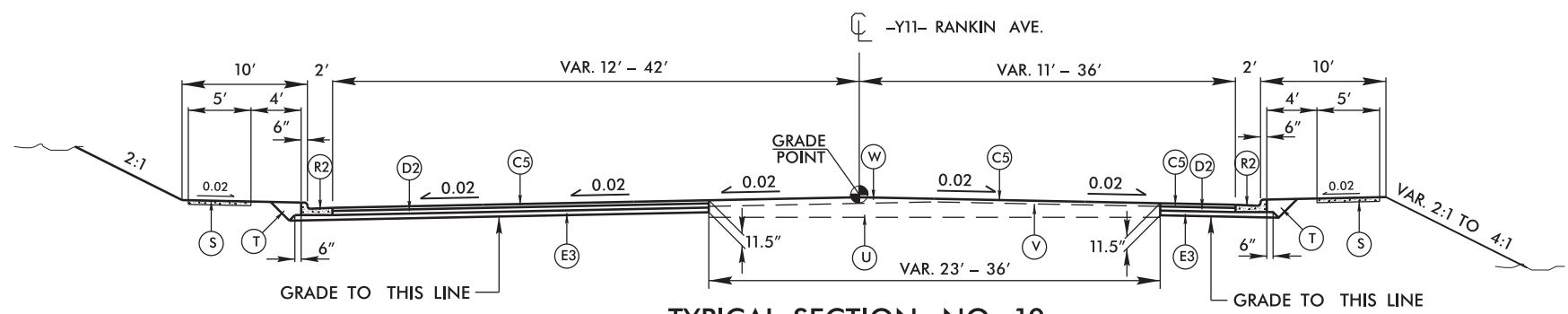
**TYPICAL SECTION NO. 7**



**TYPICAL SECTION NO. 8**



**TYPICAL SECTION NO. 9**



**TYPICAL SECTION NO. 10**

USE TYPICAL SECTION NO. 7  
 -Y5- STA. 16+00.00 TO 16+46.16  
 -Y5- STA. 17+25.21 TO 19+50.00

\* SAWCUT EXISTING PAVEMENT WHEN CURB AND GUTTER IS PLACED AT THE FACE OF EXISTING PAVEMENT. USE NARROW WIDENING PAVEMENT DESIGN AS NEEDED.

USE TYPICAL SECTION NO. 8  
 -Y1- STA. 10+41.70 TO 11+00.00  
 -Y4- STA. 10+39.66 TO 11+00.00  
 -Y6- STA. 10+48.07 TO 11+50.00  
 -Y6- STA. 13+00.00 TO 14+15.00  
 -Y7- STA. 17+00.00 TO 17+48.86  
 -Y9- STA. 11+66.80 TO 12+28.32  
 -Y10- STA. 10+43.42 TO 11+00.00

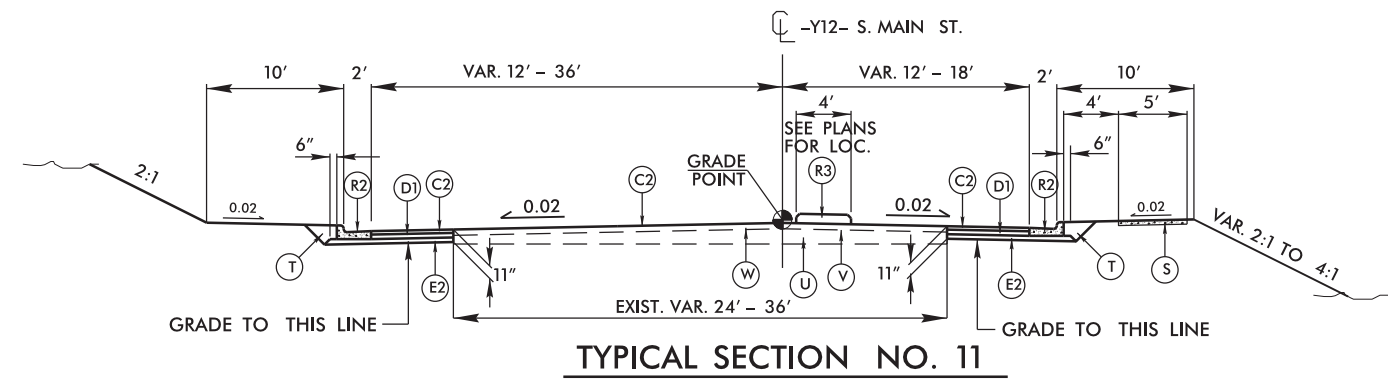
\*\* NOTE: USE 12' LANES FOR -Y7-  
 USE 8' LANES FOR -Y9-

USE TYPICAL SECTION NO. 9  
 -Y8- STA. 10+39.51 TO 10+75.00

USE TYPICAL SECTION NO. 10  
 -Y11- STA. 14+00.00 TO 17+14.10  
 -Y11- STA. 19+32.59 TO 22+73.00  
 NOTE: RETAIN EXIST. C&G RT. -Y11- STA. 14+00.00 TO 15+63.00

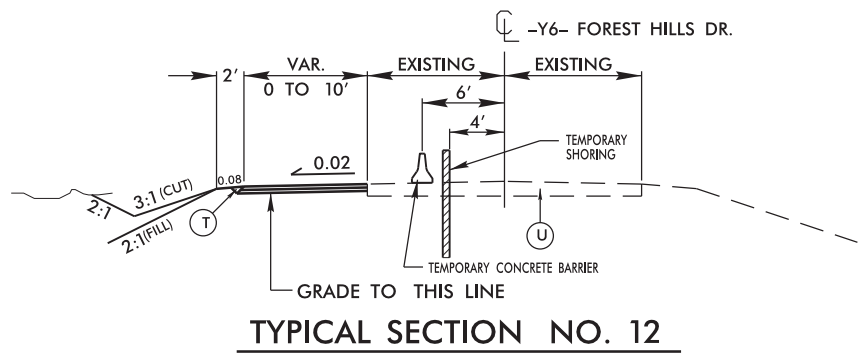
PAVEMENT SCHEDULE	
PRELIMINARY PAVEMENT DESIGN	
C2	3" SF9.5A
C3	VAR. DEPTH SF9.5A
C5	3" S9.5B
C6	VAR. DEPTH S9.5B
D1	2 1/2" I19.0B
D2	4" I19.0B
D3	VAR. DEPTH I19.0B
E1	3" B25.0B
E2	4" B25.0B
E3	4 1/2" B25.0B
E4	5 1/2" B25.0B
E5	6" B25.0B
E6	VAR. DEPTH B25.0B
J1	8" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MONO. CONC. ISL
S	SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

PROJECT REFERENCE NO. <b>U-3633</b>	SHEET NO. <b>2-C</b>
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



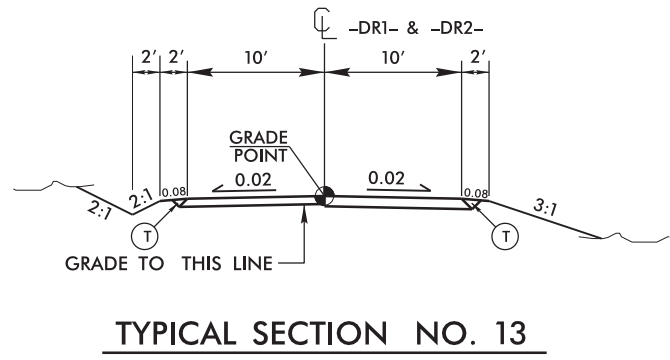
**TYPICAL SECTION NO. 11**

USE TYPICAL SECTION NO. 11  
-Y12- STA. 12+90.79 TO 15+25.00



**TYPICAL SECTION NO. 12**

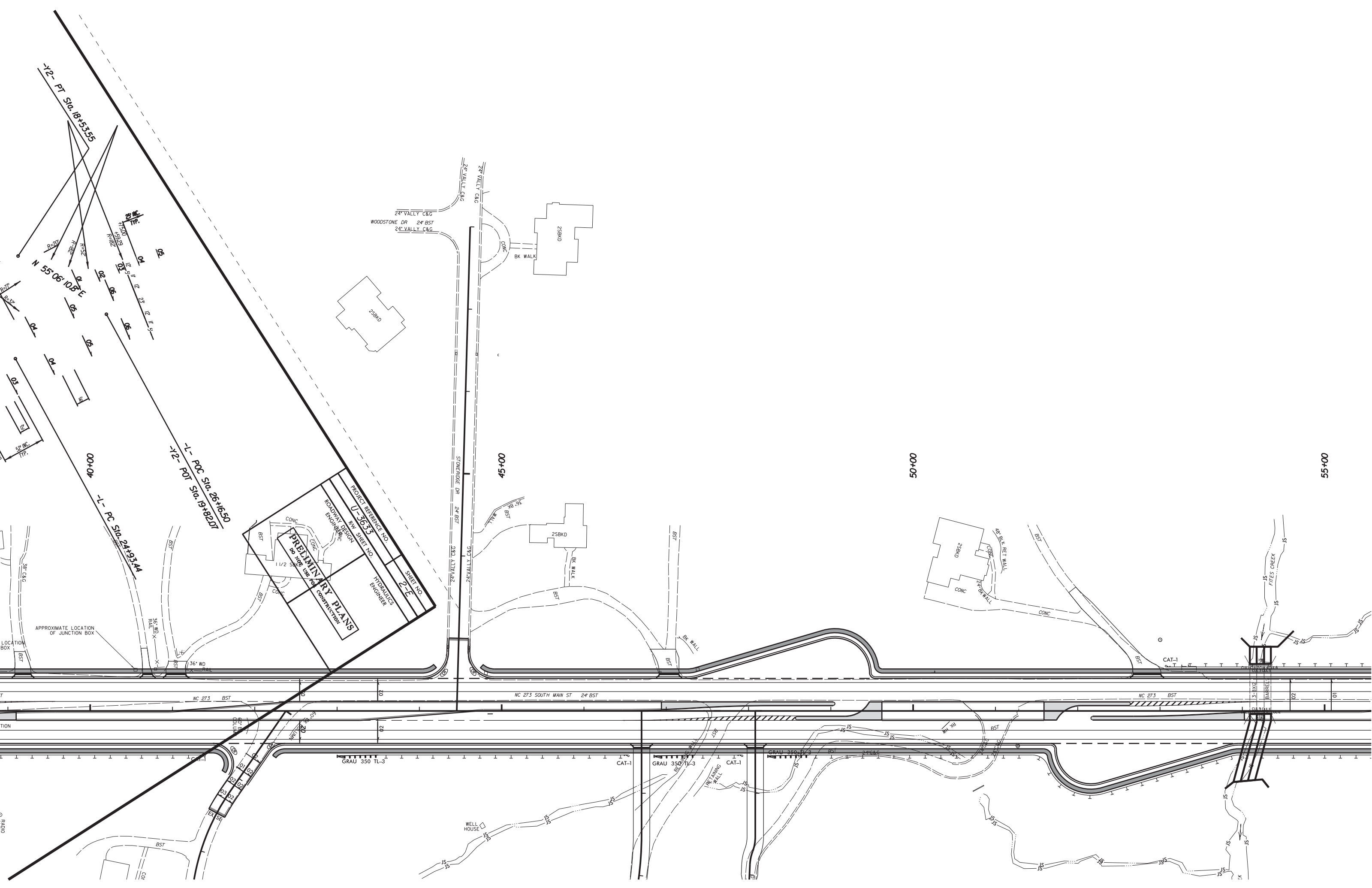
USE TYPICAL SECTION NO. 12  
-Y6- STA. 12+75.00 TO 14+30.00  
SEE TMP PLANS FOR INSTALLATION OF 54" RCP



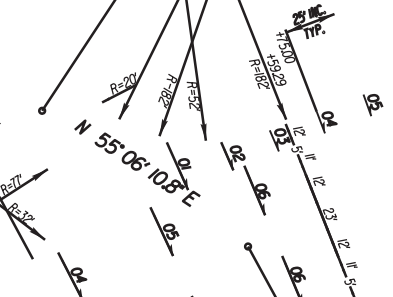
**TYPICAL SECTION NO. 13**

USE TYPICAL SECTION NO. 13  
-Y5- STA. 17+69.19 TO 19+50.00

PAVEMENT SCHEDULE <small>PRELIMINARY PAVEMENT SECTION</small>	
C2	3" SF9.5A
C3	VAR. DEPTH SF9.5A
C5	3" S9.5B
C6	VAR. DEPTH S9.5B
D1	2 1/2" I19.0B
D2	4" I19.0B
D3	VAR. DEPTH I19.0B
E1	3" B25.0B
E2	4" B25.0B
E3	4 1/2" B25.0B
E4	5 1/2" B25.0B
E5	6" B25.0B
E6	VAR. DEPTH B25.0B
J1	8" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MONO. CONC. ISL
S	SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING



Y2- PT Sta. 18+53.55



-L- PC Sta. 26+16.50  
-Y2- POT Sta. 19+82.01

-L- PC Sta. 24+93.44

PROJECT REFERENCE NO.  
**U-3633**

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

SHEET NO.  
**22E**

**PRELIMINARY PLANS**

CONC. 1/2\"/>

WOODSTONE DR 24' BST  
24' VALLY C&G  
24' VALLY C&G

STONEIDGE DR 24' BST  
24' VALLY C&G

45+00

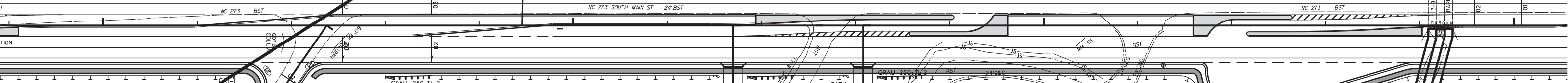
50+00

55+00

25BKD BK WALK

25BKD BK WALK

APPROXIMATE LOCATION OF JUNCTION BOX



0' RADIOS





**STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS**

**PARCEL INDEX SHEET**

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	KRISHNA INC.
3	4 & 10	WANDA W. MCELVEEN AND RONALD S. WOOLWINE
4	4	EARL A. CUNNINGHAM
5	4	JOEL R. AND PATRICIA P. HUBBARD
6	4 & 10	DONALD AND CHERYL DOSTER
7	4	W & B CORPERATION
8	4	DAN M. BOYD III
9	4	BEEBE ENTERPRISES, LLC
10	4	AUTEN INVESTMENT PROPERTY MANAGEMENT PARTNERSHIP, JEAN B. AUTEN
11	4	VU VAN-THUONG AND LISA TRINH
12	4	ROBERT S. AND EDWINA G. WESTON
13	4	DAVID L. AND CLEMMIE D. MARROW
14	4	NOAH H. HUFFSTETLER III
15	4 & 5	EDWARD C. AND CONNIE MAULDIN
16	4	BOYD F. AUTEN
17	4	BRYCE C. AND COLLEEN B. BEACH, TIMOTHY C. AND LISA A. BEACH
18	4	JIMMY L. AND NANCY S. RAGAN
19	4	JOHN ANDERSON
20	4	KENNETH R. AND AMY M. HARRIS
21	4	MERIDITH H. MCBRYDE
22	4	CORA LEE K. GOSNELL HEIRS
23	5	MACON A. ALBERTSON AND WIFE, DEBBIE D. ALBERTSON
24	4	RICHARD E. AND ANN C. BROWNE
25	5	ROBERT I. CONNELL
26	5 & 6	HARVEY L. AND CAROL R. THOMAS
27	5	JIMMY M. AND JEAN CLYBURN
28	5	JEFFREY A. AND LEAH Y. ROBERSON
29	5	LESTER O. AND RUTH B. MUNDY
30	5	MARY VANESSA S. WEBB
31	5	COMAVA, LLC
32	5	JOHNSON GULZAR AND WIFE, KIMBERLY D. SIGMON
33	5	DALE K. AND CARRIE H. FENNELL
34	5 & 6	JOHN AND JENNIFER SUTTLE
35	6	R. CRANDELL JR. AND MARY M. YON
36	6	DAVID C. FLETCHER DAVID C. FLETCHER
37	6	CARLOS F. AND MYRTLE A. DAVID
38	6	ROBERT N. AND SUE G. NEFF
39	6	MATTHEW G. AND KATHERINE M. MALTA39
40	6 & 7	CHRISTOPHER B. AND PAMELA LOFTIN
41	6 & 7	WILLIAM A. WHITMAN
42	6 & 7	RAUL C. AND ELENA P. AIZCORBE
43	6 & 7	TRIANGLE REAL ESTATE OF GASTONIA, INC
44	6 & 7	LINDA J. ROBINSON
45	6 & 7	ROBERT O. AND ANN A. WYATT
46	7	J.P. AND LOUISE S. GUIN
47	7	WILLIAM H. STEWART JR
48	7	RAYMOND J. DIMMER
48	7	RAYMOND J. DIMMER
49	7	THE DALES GROUP, LLC
50	7	THE DALES GROUP, LLC
51	7	THE DALES GROUP, LLC
52	7	HARRELL H. JR AND JOANNE S. RICK
53	7	FREDDIE W. WHITE TRUST
54	7	HUBERT R. BROOME SR AND HUBERT R. BROOME JR
55	7 & 8	MCDONALD'S CORPORATION
59	7	TRIANGLE REAL ESTATE OF GASTONIA, INC
60	7	ANDREW S. AND DAWN H. WILLIAMS

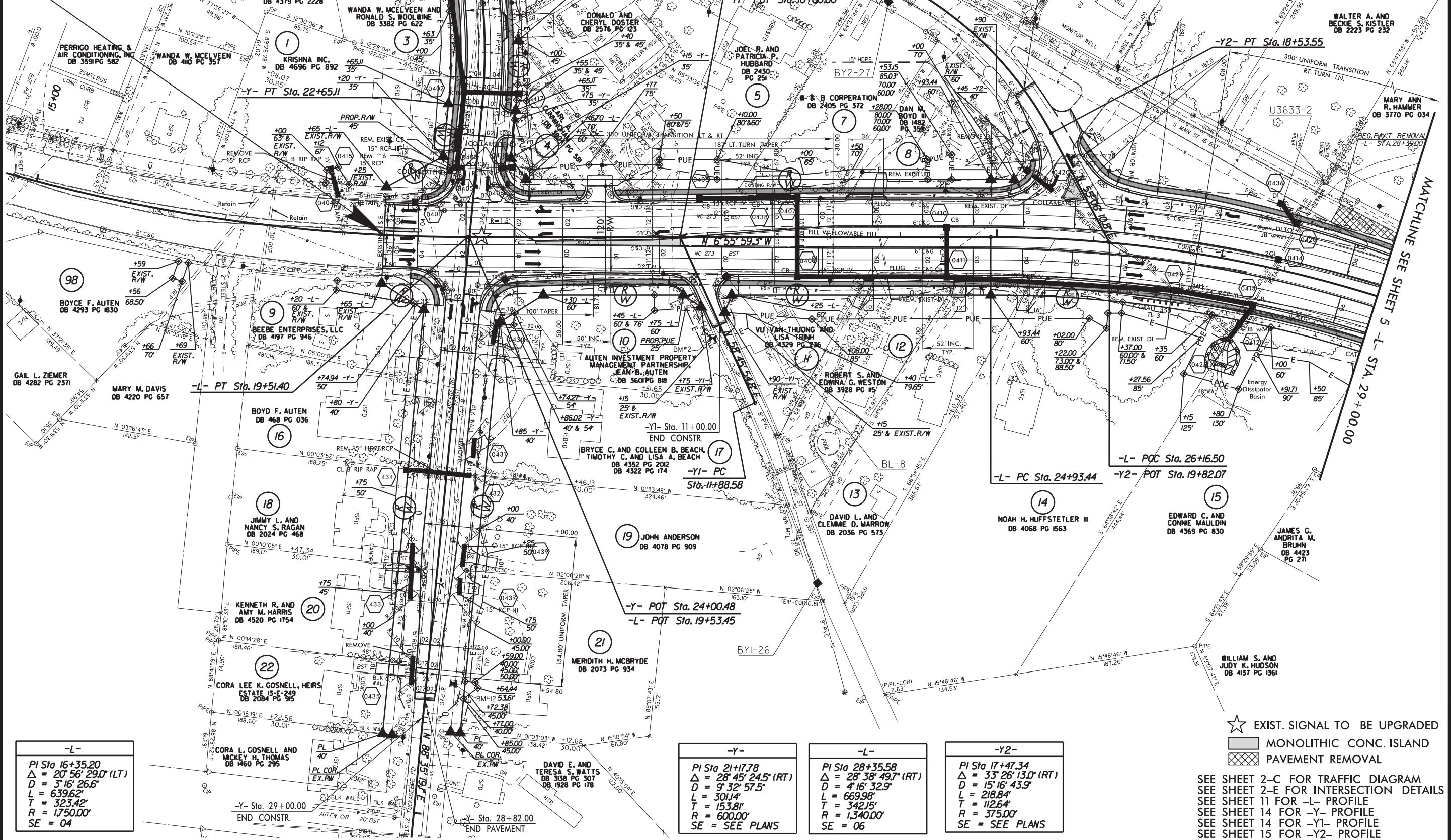
PARCEL No.	SHEET No.	PROPERTY OWNER NAME
61	7	ANDREW WILLIAMS, ET AL
62	7	1942, LLC
63	7	LARRY D. AND PATRICIA COX
64	7	LARRY D. AND PATRICIA COX
65	7	LARRY D. AND PATRICIA COX
66	8	WEB-WOOD, INC WEB-WOOD, INC
67	8	RALPH J. AND VINETA M. BEATTY
68	8	MOUNT HOLLY CHURCH OF GOD
68A	8	RICHARD M. AND LUCY R. PENEGAR
68B	8	TRUSTEES OF MT. HOLLY CHURCH OF GOD
68C	8	GREGORY S. AND RITA H. FARMER
68D	8	KEVIN AND CORRINA DEVIN
69	8	DORTHY W. BEATTY
70	8	NATVARLAL B. AND SARALABEN N. PATEL
71	8	ALVIN RANKIN JR
72	8	DONALD R. AND EVELYN R. FLOYD
73	8	ANGELA FOX-PUTNAM
74	8	FRANKE A. BELL
75	8	LTR, LLC
76	8	ROBERT C. WHITT
77	7 & 8	FIRST GASTON BANK
78	7 & 8	THE DALES GROUP, LLC
79	8	MOUNT HOLLY CAPITAL, LLC
80	8	GREGORY S. AND CLARA P. FARMER
81	8	SPRINGS CROSSING, LLC
82	8	KONSTANTINOS I. AND MARIA PITSONIS
82A	8	KONSTANTINOS I. AND MARIA PITSONIS
83	8 & 9	AMERICAN AND EFIRD MILLS, INC.
85	10	KRISHA INC.
86	10	NANCY M. DUNCAN
87	10	NATALIE KINNEY
88	10	PHILIP D. AND DARLENE H. HARRIS
89	10	LAURA A. FERGUSON
90	10	CITY OF MOUNT HOLLY
91	10	CITY OF MOUNT HOLLY
92	10	SYLVIA HELLARD
94	10	EDD, LLC
95	10	JAMES A. AND WANDA W. MCELVEEN
96	8	GREGORY S. FARMER
97	8	MT. HOLLY BOARD OF ALCOHOLIC
98	4	BRUCE F. AUTEN

PROJECT REFERENCE NO.	SHEET NO.
U-3633	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b>	
DO NOT USE FOR CONSTRUCTION	
<b>DOCUMENT NOT CONSIDERED FINAL</b>	
UNLESS ALL SIGNATURES COMPLETED	

**BEGIN T.I.P. PROJECT U-3633**  
**-L- POC STA. 18+65.00**

**MATCHLINE SEE SHEET 10 -Y- STA. 21+00.00**

R/W REV. ADDED PUE & REVISED TCE ON PARCEL #21 NE 1/30/15  
 R/W REV. COMBINED PARCEL #1, 2 & CHANGED NAME INCREASED DRIVEWAY WIDTH FOR PARCEL #8 FROM 20' TO 36'; CHANGE NAME FOR PARCEL #22 NE 8/14/15  
 R/W REV. REPOSITIONED PROPERTY LINE BETWEEN PARCELS #4 & #6 TO THE CORRECT POSITION AS INDICATED BY PARCEL #6 DEED  
 (DP/PG 2576/123 AND CORRECTED DB/PG 497/917) 2/10/16



<b>-L-</b>
PI Sta 16+35.20
$\Delta = 20' 56' 29.0''$ (LT)
$D = 3' 16' 26.6''$
$L = 639.62'$
$T = 323.42'$
$R = 1750.00'$
SE = 04

<b>-Y-</b>
PI Sta 21+17.78
$\Delta = 28' 45' 24.5''$ (RT)
$D = 9' 32' 57.5''$
$L = 3011.4'$
$T = 153.81'$
$R = 6000.00'$
SE = SEE PLANS

<b>-L-</b>
PI Sta 28+35.58
$\Delta = 28' 38' 49.7''$ (RT)
$D = 4' 16' 32.9''$
$L = 669.98'$
$T = 342.15'$
$R = 1,340.00'$
SE = 06

<b>-Y2-</b>
PI Sta 17+47.34
$\Delta = 33' 26' 13.0''$ (RT)
$D = 15' 16' 43.9''$
$L = 218.84'$
$T = 112.64'$
$R = 375.00'$
SE = SEE PLANS

- ★ EXIST. SIGNAL TO BE UPGRADED
- MONOLITHIC CONC. ISLAND
- ▨ PAVEMENT REMOVAL

SEE SHEET 2-C FOR TRAFFIC DIAGRAM  
 SEE SHEET 2-E FOR INTERSECTION DETAILS  
 SEE SHEET 11 FOR -L- PROFILE  
 SEE SHEET 14 FOR -Y- PROFILE  
 SEE SHEET 14 FOR -Y1- PROFILE  
 SEE SHEET 15 FOR -Y2- PROFILE

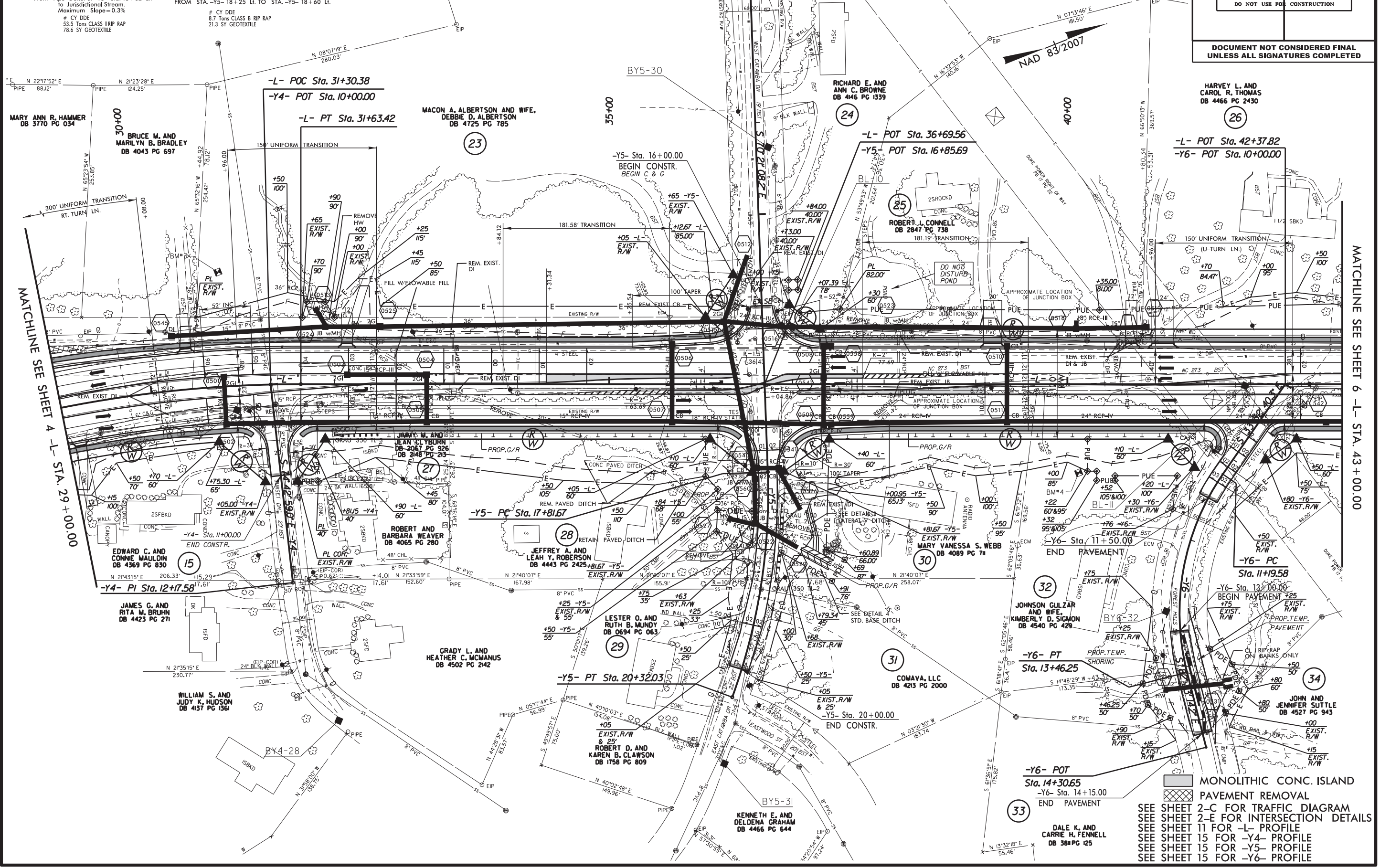
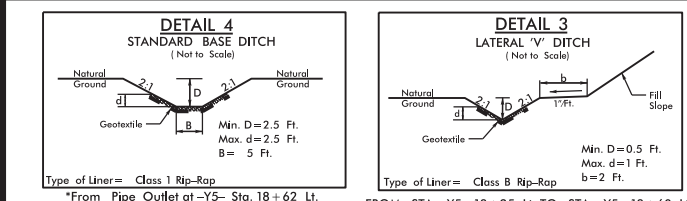
REVISIONS

10-FEB-2016 10:17 R:\Roadway\Projects\U-3633\Fd\j-psh4.dgn  
 8/17/99



PROJECT REFERENCE NO. <b>U-3633</b>	SHEET NO. <b>5</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

-Y5-	-Y6-
PI Sta 19+08.42 Δ = 22° 04' 06.7" (RT) D = 8' 48" 53.0" L = 250.36' T = 126.75' R = 650.00'	PI Sta 12+40.37 Δ = 49° 00' 33.9" (LT) D = 2' 37" 15.8" L = 226.67' T = 120.79' R = 265.00'
SE = SEE PLANS	



REVISIONS  
 R/W REV. ADDED REVISED PUE TO DUE ON PARCEL \*25 & REVISED THE PUE TO DUE ON PARCEL \*28 Ne 1/30/15  
 R/W REV. CHANGE OWNERS NAME FOR PARCEL \*23 & \*32 Ne 8/14/15  
 R/W REV. CONVERTED A PORTION OF THE PROPOSED TCE FOR PARCEL \*30 TO A PDE Ne 11/3/15

MATCHLINE SEE SHEET 4 -L- STA. 29+00.00

MATCHLINE SEE SHEET 6 -L- STA. 43+00.00

MONOLITHIC CONC. ISLAND  
 PAVEMENT REMOVAL  
 SEE SHEET 2-C FOR TRAFFIC DIAGRAM  
 SEE SHEET 2-E FOR INTERSECTION DETAILS  
 SEE SHEET 11 FOR -L- PROFILE  
 SEE SHEET 15 FOR -Y4- PROFILE  
 SEE SHEET 15 FOR -Y5- PROFILE  
 SEE SHEET 15 FOR -Y6- PROFILE

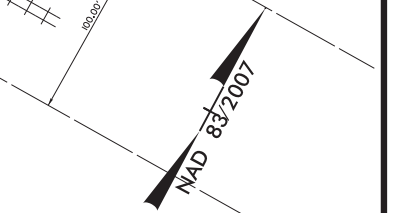








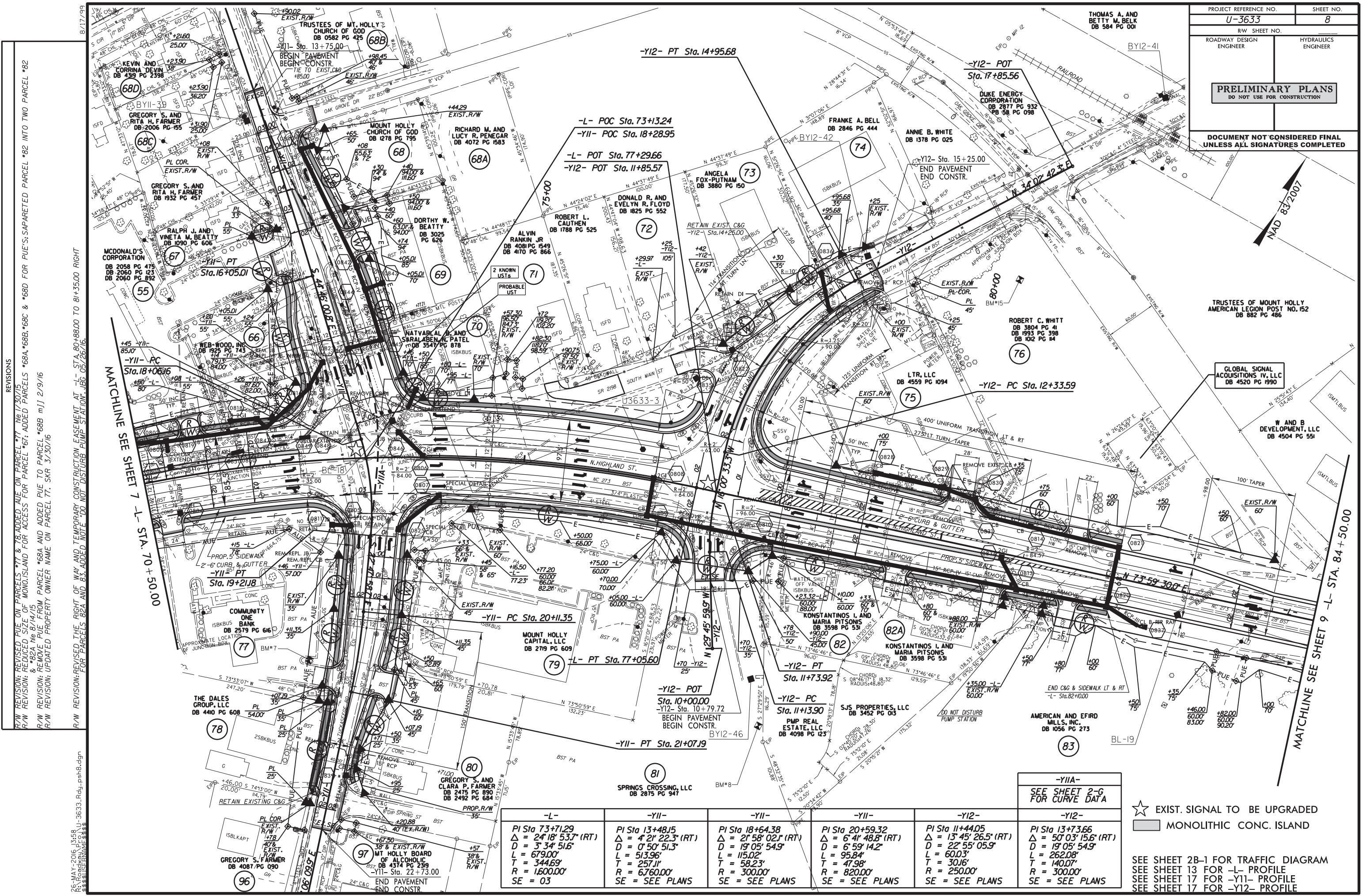




TRUSTEES OF MOUNT HOLLY AMERICAN LEGION POST NO. 152 DB 882 PG 486

GLOBAL SIGNAL ACQUISITIONS IV, LLC DB 4520 PG 1990

W AND B DEVELOPMENT, LLC DB 4504 PG 551



REVISIONS  
 R/W REVISION: REVISED PUE ON PARCELS 77 & 78, ADDED AUE ON PARCEL 77, THE 17/30/15  
 R/W REVISION: REDUCED SIZE OF MOUND ISLAND FOR ACCESS FOR PARCEL 67; ADDED PARCELS 68A, 68B, 68C & 68D FOR PUES; SAPARETED PARCEL \*82 INTO TWO PARCEL \*82 & 82A, 16.8/14/15  
 R/W REVISION: REMOVE PUE FROM PARCEL \*68A AND ADDED PUE TO PARCEL \*68B m/jj 2/9/16  
 R/W REVISION: UPDATED PROPERTY OWNER NAME ON PARCEL 77. SKR 3/30/16  
 R/W REVISION: REVISED THE RIGHT OF WAY AND TEMPORARY CONSTRUCTION EASEMENT AT -L- STA. 80+88.00 TO 81+35.00 RIGHT FOR PARCELS 82A AND 83, ADDED NOTE "DO NOT DISTURB PUMP STATION" JBG 05/26/16  
 26-MAY-2016 13:58 R:\Roadway\p\p\U-3633\_Rdw\_psh8.dgn

-L-	-YII-	-YII-	-YII-	-YI2-	-YI2-
PI Sta 73+71.29	PI Sta 13+48.15	PI Sta 18+64.38	PI Sta 20+59.32	PI Sta 11+44.05	PI Sta 13+73.66
$\Delta = 24' 18" 53.7" (RT)$	$\Delta = 4' 21" 22.3" (RT)$	$\Delta = 21' 58" 02.1" (RT)$	$\Delta = 6' 41" 48.8" (RT)$	$\Delta = 13' 45" 26.5" (RT)$	$\Delta = 50' 03" 15.6" (RT)$
D = 3' 34" 51.6"	D = 0' 50" 51.3"	D = 19' 05" 54.9"	D = 6' 59" 14.2"	D = 22' 55" 05.9"	D = 19' 05" 54.9"
L = 679.00'	L = 513.96'	L = 115.02'	L = 95.84'	L = 60.03'	L = 262.08'
T = 344.69'	T = 257.11'	T = 58.23'	T = 47.98'	T = 30.16'	T = 140.07'
R = 1600.00'	R = 6760.00'	R = 300.00'	R = 820.00'	R = 250.00'	R = 300.00'
SE = 03	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS

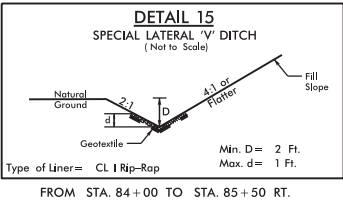
★ EXIST. SIGNAL TO BE UPGRADED

■ MONOLITHIC CONC. ISLAND

SEE SHEET 2B-1 FOR TRAFFIC DIAGRAM  
 SEE SHEET 13 FOR -L- PROFILE  
 SEE SHEET 17 FOR -YII- PROFILE  
 SEE SHEET 17 FOR -YI2- PROFILE

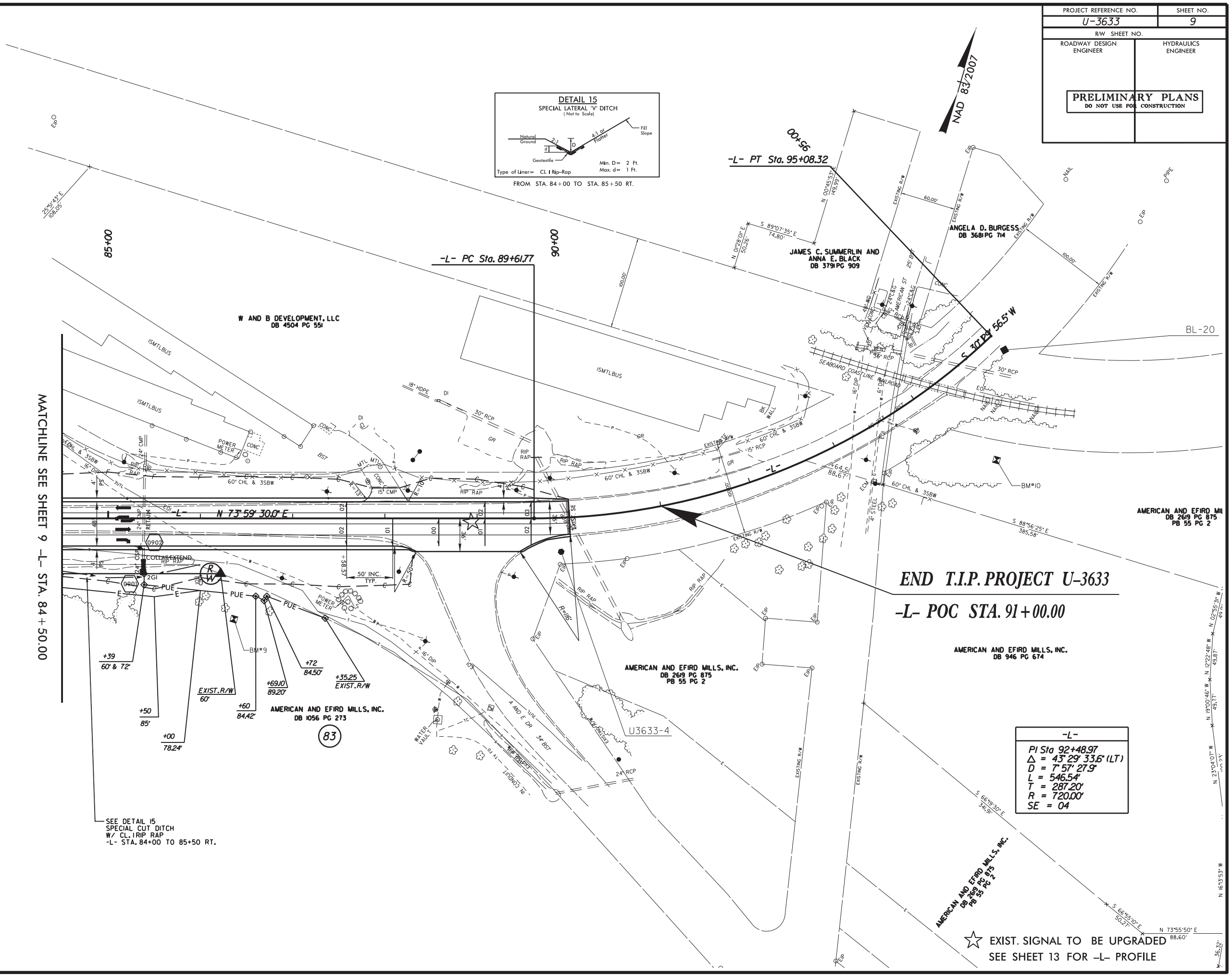


PROJECT REFERENCE NO. <b>U-3633</b>	SHEET NO. <b>9</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



MATCHLINE SEE SHEET 9 -L- STA. 84+50.00

REVISIONS



-L-  
 PI Sta 92+48.97  
 $\Delta = 43^{\circ} 29' 33.6''$  (LT)  
 $D = 7^{\circ} 57' 27.9''$   
 $L = 546.54'$   
 $T = 287.20'$   
 $R = 720.00'$   
 $SE = 04$

SEE DETAIL 15  
 SPECIAL CUT DITCH  
 W/ CL 1 RIP RAP  
 -L- STA. 84+00 TO 85+50 RT.

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 8/17/99

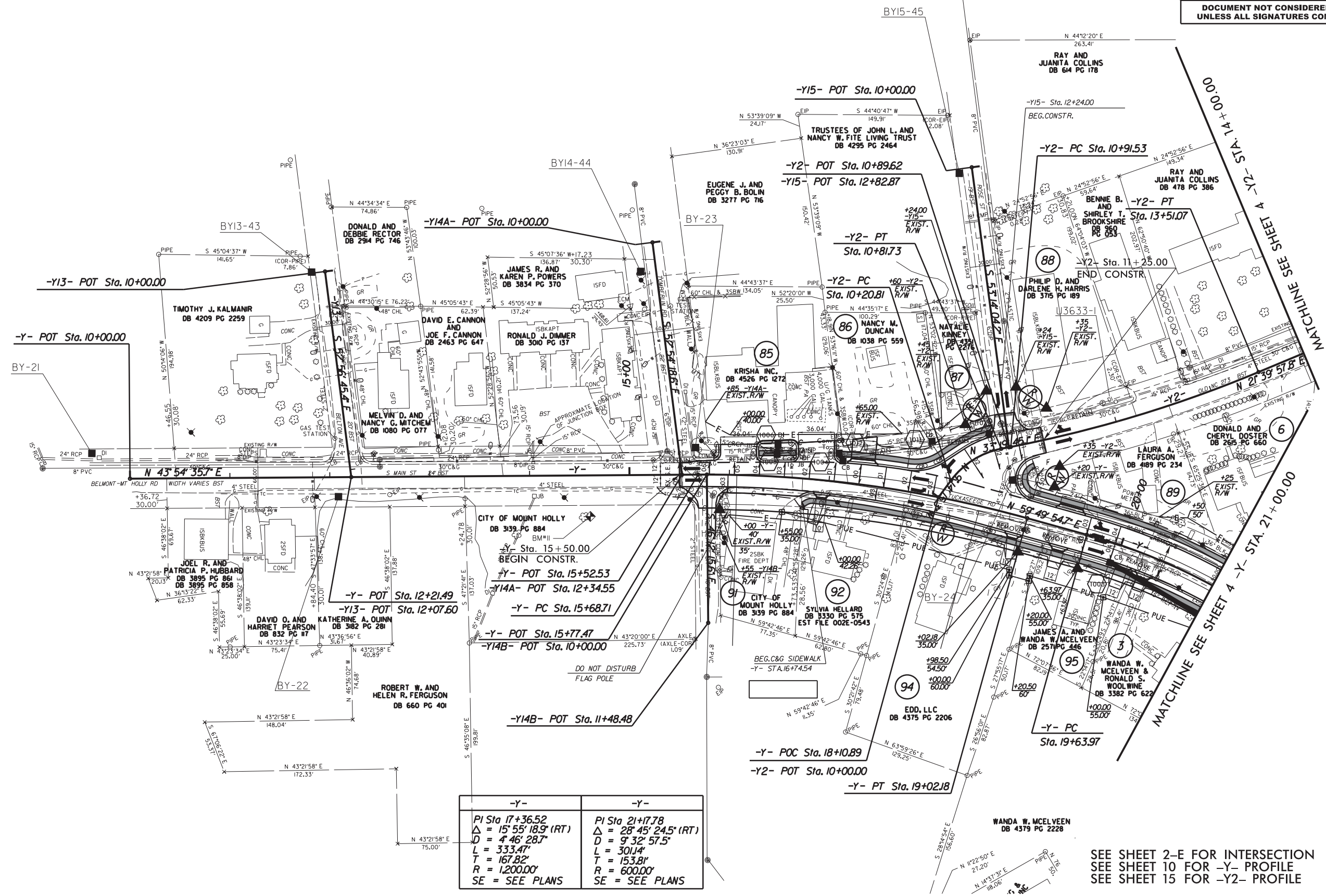
★ EXIST. SIGNAL TO BE UPGRADED  
 SEE SHEET 13 FOR -L- PROFILE



-Y2-	-Y2-
PI Sta 10+52.76 Δ = 42° 34' 00.4" (RT) D = 69° 52' 22.4" L = 60.92' T = 31.94' R = 82.00' SE = SEE PLANS	PI Sta 12+21.75 Δ = 11° 39' 47.3" (LT) D = 4° 29' 37.6" L = 259.54' T = 130.22' R = 1,275.00' SE = SEE PLANS



R/W REV. REVISED PUE ON PARCEL #95 HE 1/30/15  
 R/W REV. COMBINED PARCEL #92 & #93 INTO ONE PARCEL #92 & REVISED OWNER NAME, REVISED OWNER NAME, PARCEL #94 HE 8/14/15  
 R/W REV. SHIFT CURRENT DRIVEWAY ACCESS PINT TO ALIGN WITH PROPERTY OWNERS' EXISTING DRIVEWAY ON PARCEL #86 M/J 2/10/16

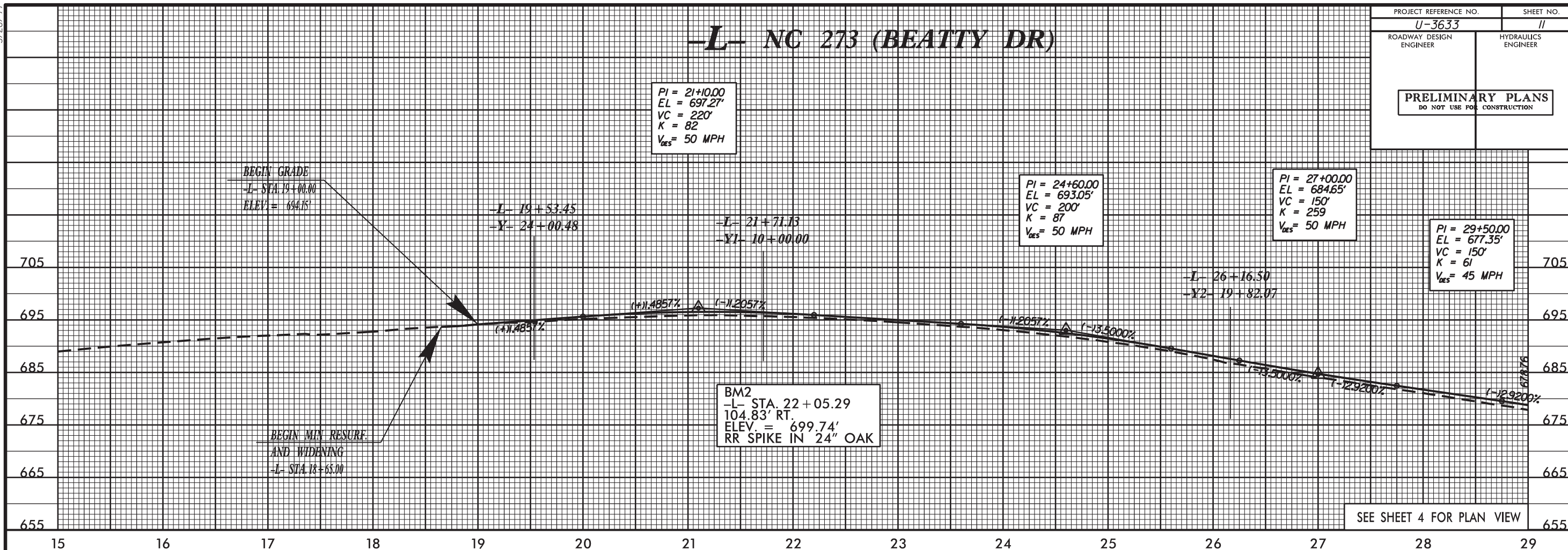


-Y-	-Y-
PI Sta 17+36.52 Δ = 15° 55' 18.9" (RT) D = 4° 46' 28.7" L = 333.47' T = 167.82' R = 1,200.00' SE = SEE PLANS	PI Sta 21+17.78 Δ = 28° 45' 24.5" (RT) D = 9° 32' 57.5" L = 301.4' T = 153.81' R = 600.00' SE = SEE PLANS

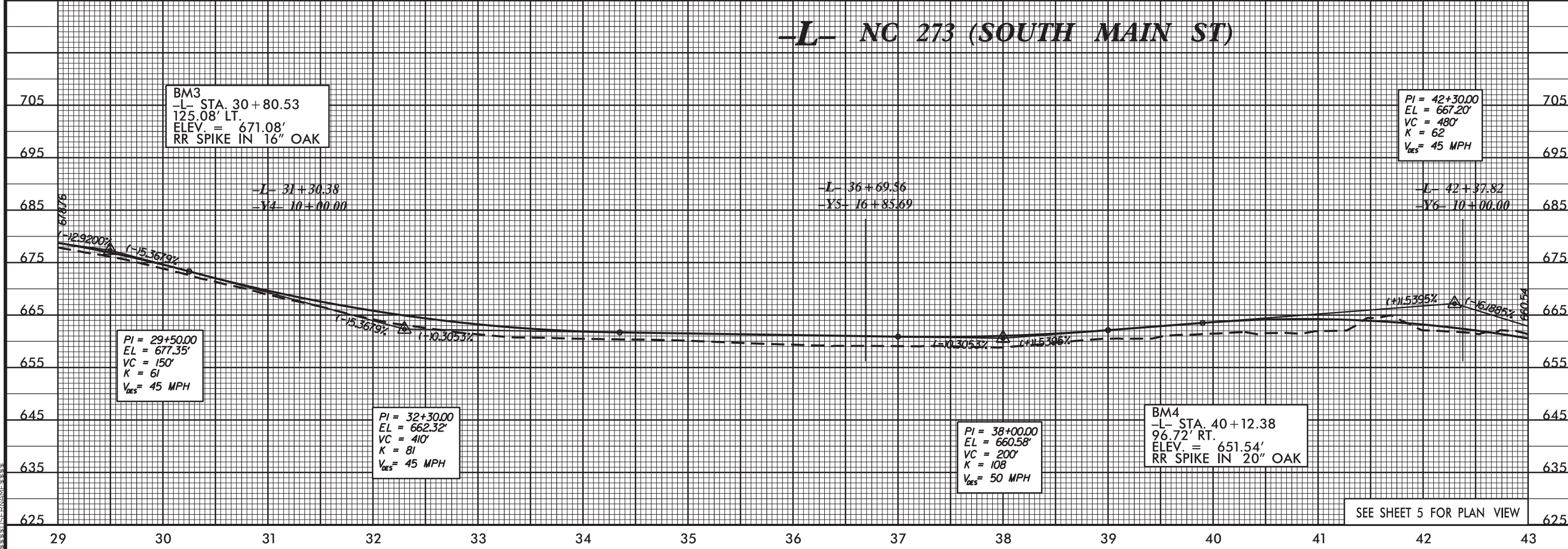
SEE SHEET 2-E FOR INTERSECTION DETAILS  
 SEE SHEET 10 FOR -Y- PROFILE  
 SEE SHEET 15 FOR -Y2- PROFILE

10-FEB-2016 10:17  
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 \$\$\$\$

## -L- NC 273 (BEATTY DR)



## -L- NC 273 (SOUTH MAIN ST)



5/28/99

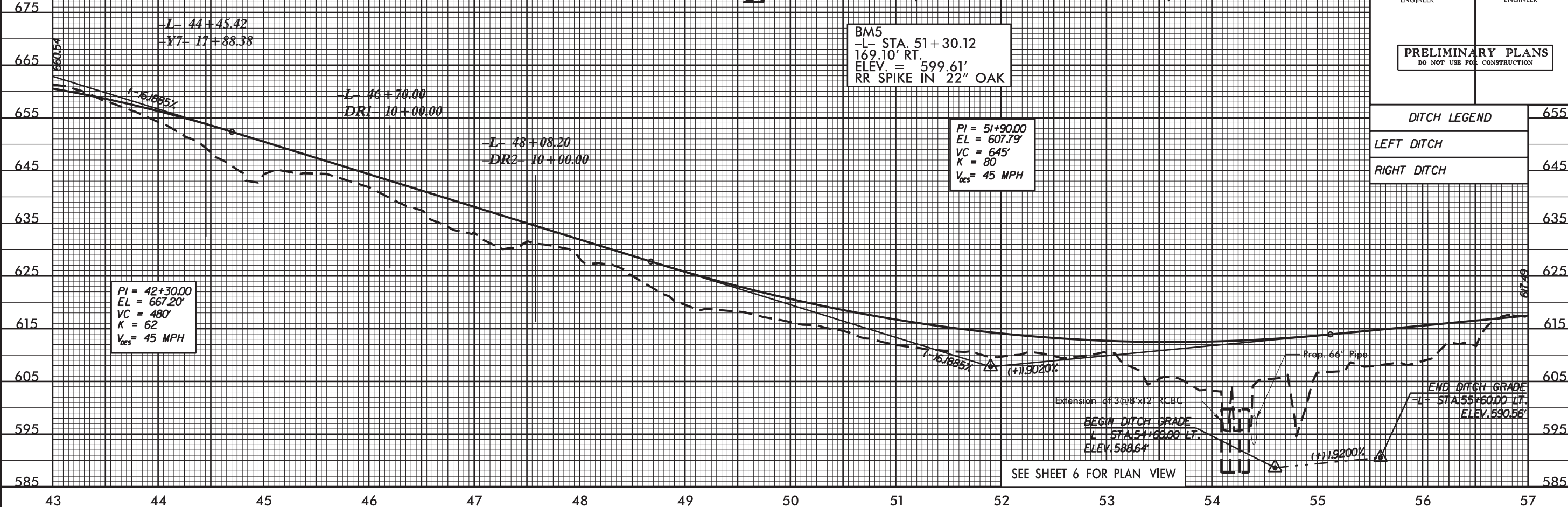
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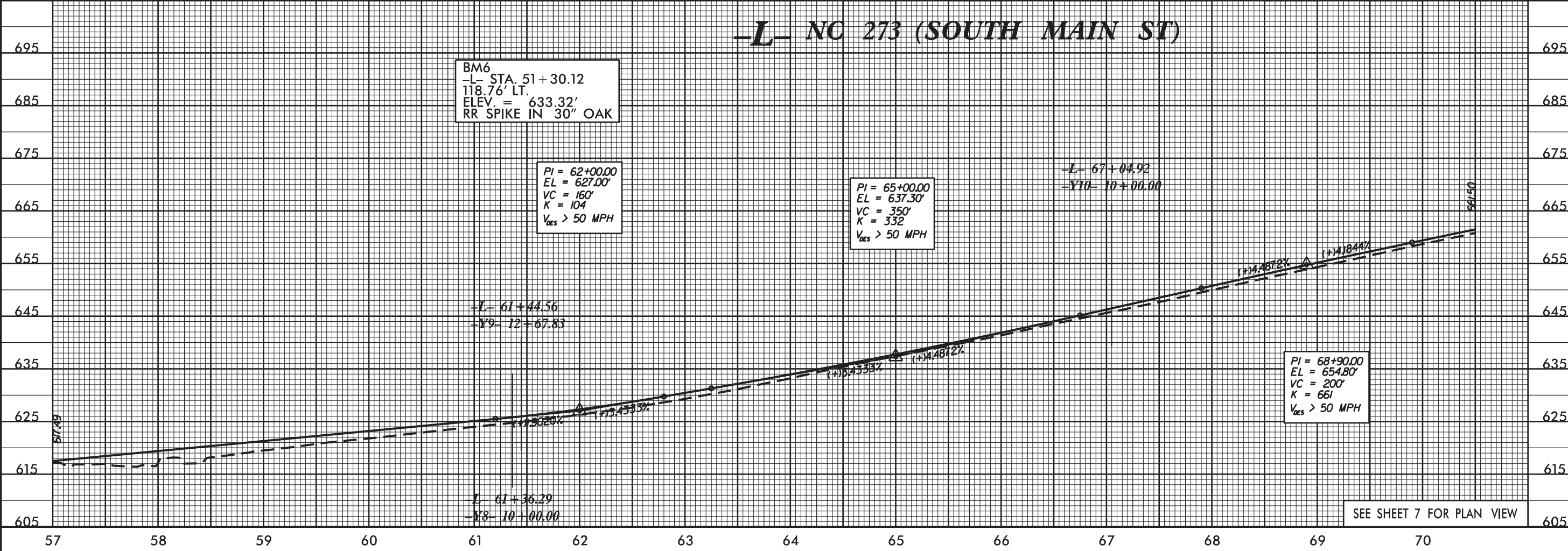
5/28/99

# -L- NC 273 (SOUTH MAIN ST)

PROJECT REFERENCE NO. U-3633	SHEET NO. 12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



# -L- NC 273 (SOUTH MAIN ST)

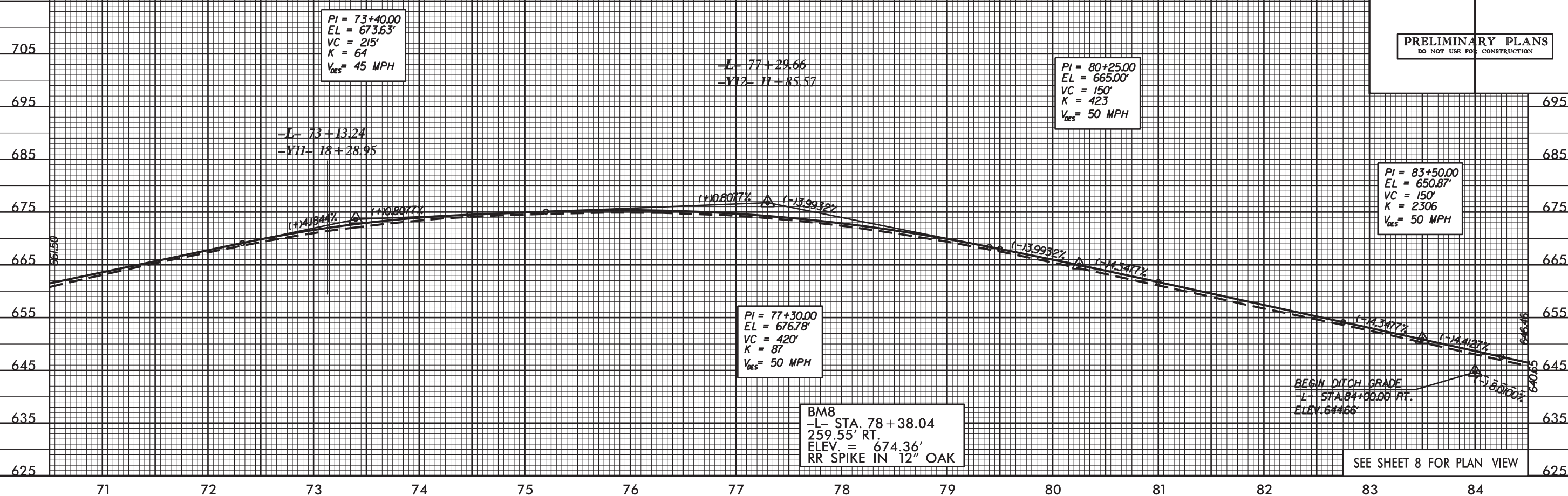


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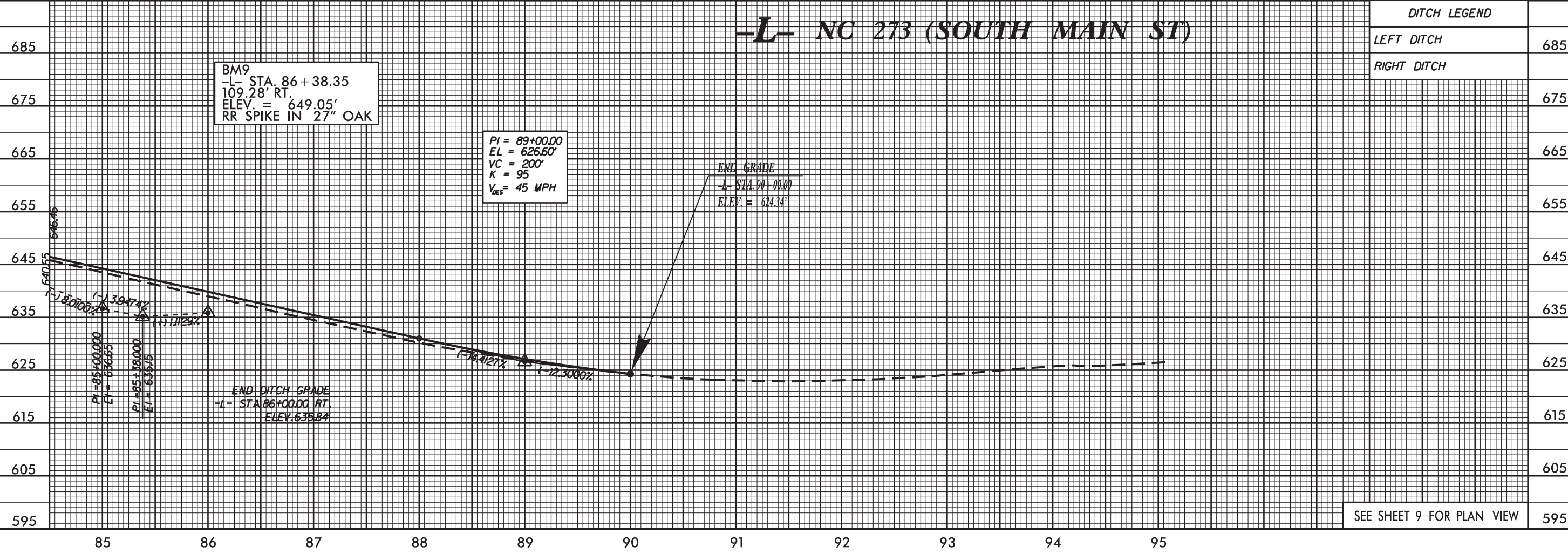
5/28/99

PROJECT REFERENCE NO. U-3633	SHEET NO. 13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

# -L- NC 273 (SOUTH MAIN ST)



# -L- NC 273 (SOUTH MAIN ST)

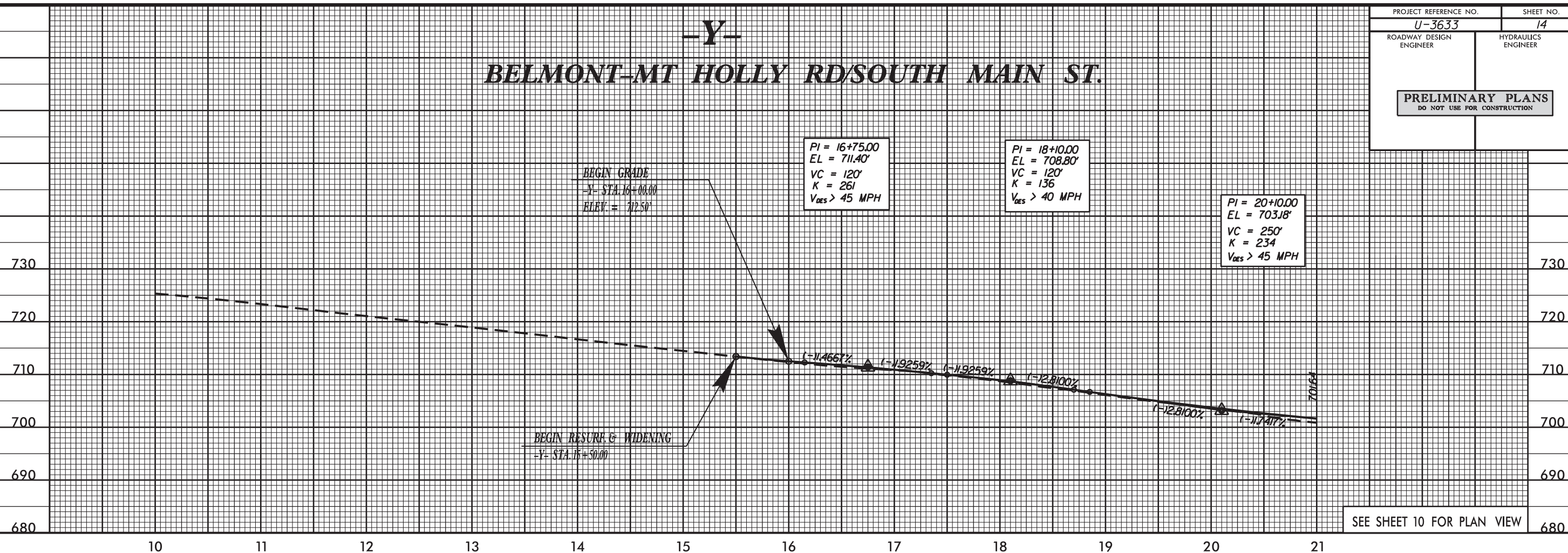


DITCH LEGEND	
LEFT DITCH	685
RIGHT DITCH	675

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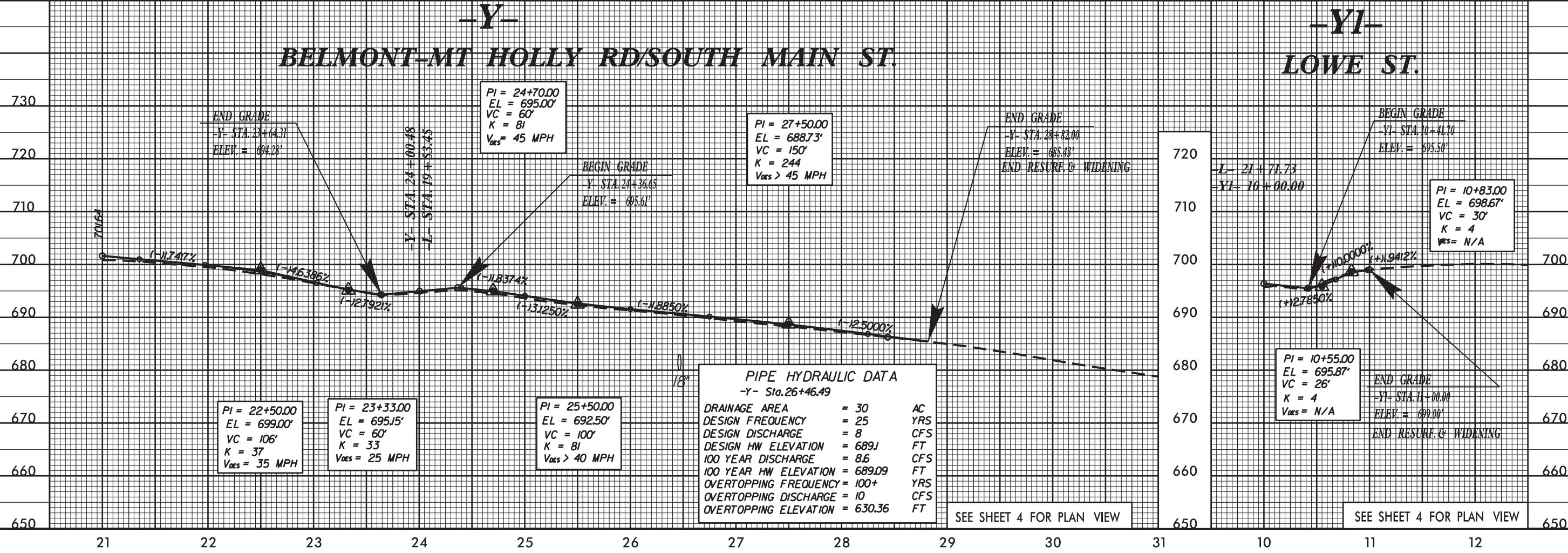


**-Y-**  
**BELMONT-MT HOLLY RD/SOUTH MAIN ST.**



**-Y-**  
**BELMONT-MT HOLLY RD/SOUTH MAIN ST.**

**-YI-**  
**LOWE ST.**



**PIPE HYDRAULIC DATA**  
-Y- Sta. 26+46.49

DRAINAGE AREA	= 30	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 8	CFS
DESIGN HW ELEVATION	= 689.1	FT
100 YEAR DISCHARGE	= 8.6	CFS
100 YEAR HW ELEVATION	= 689.09	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 10	CFS
OVERTOPPING ELEVATION	= 630.36	FT

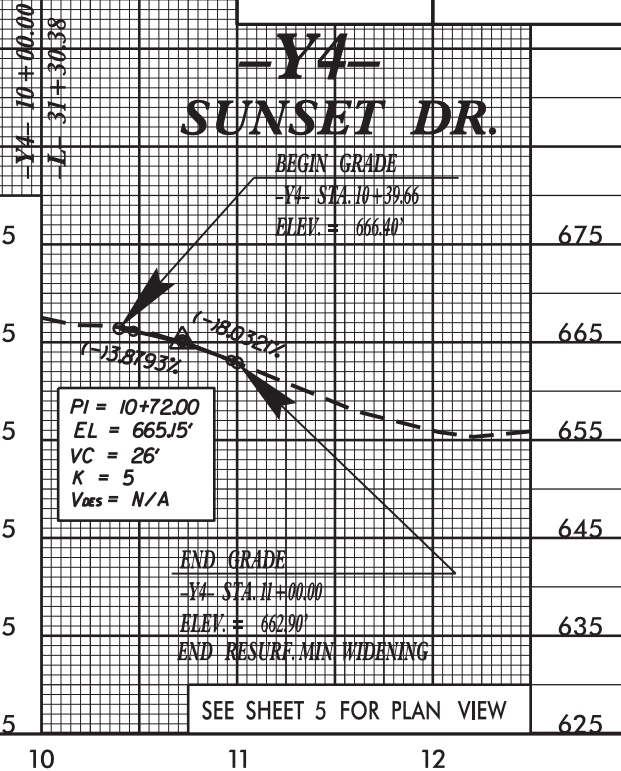
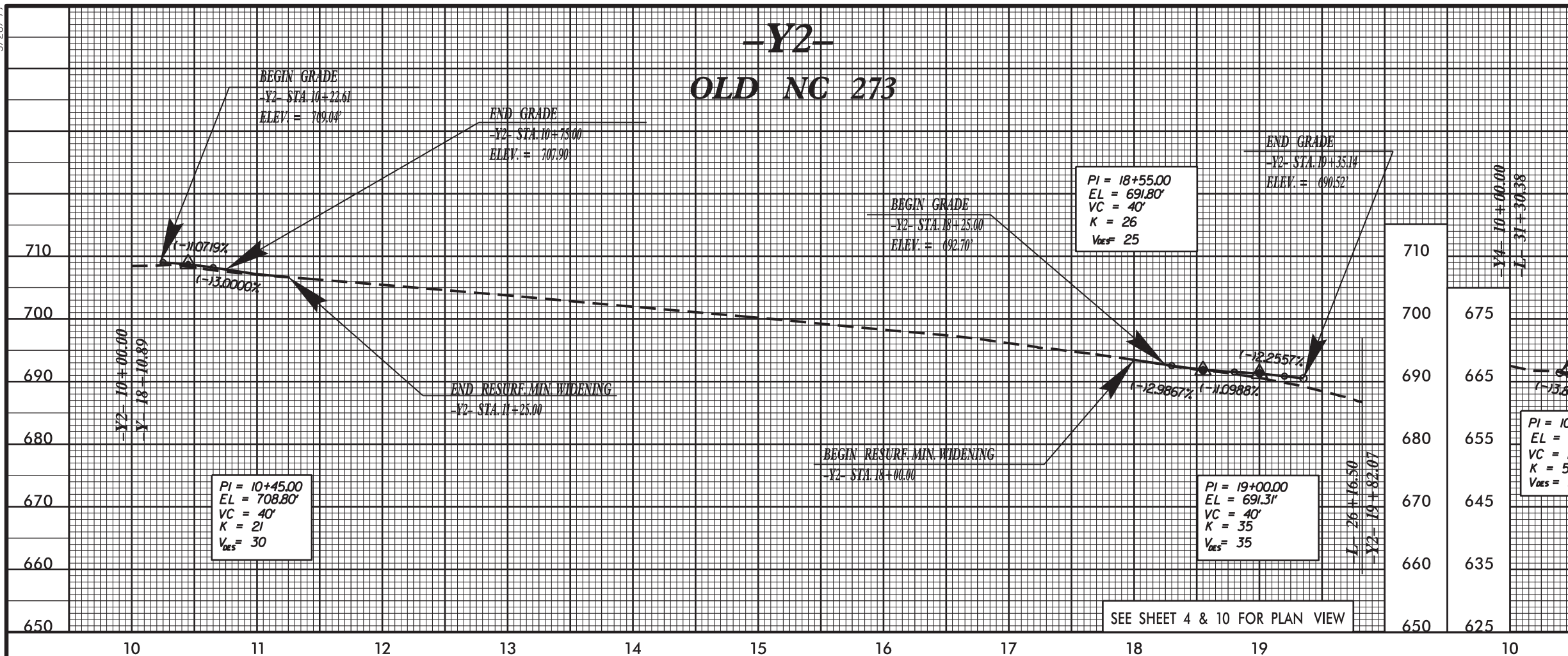
PI = 22+50.00 EL = 699.00' VC = 106' K = 37 V <sub>des</sub> = 35 MPH	PI = 23+33.00 EL = 695.15' VC = 60' K = 33 V <sub>des</sub> = 25 MPH	PI = 25+50.00 EL = 692.50' VC = 100' K = 81 V <sub>des</sub> > 40 MPH
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## -Y2- OLD NC 273

## -Y4- SUNSET DR.

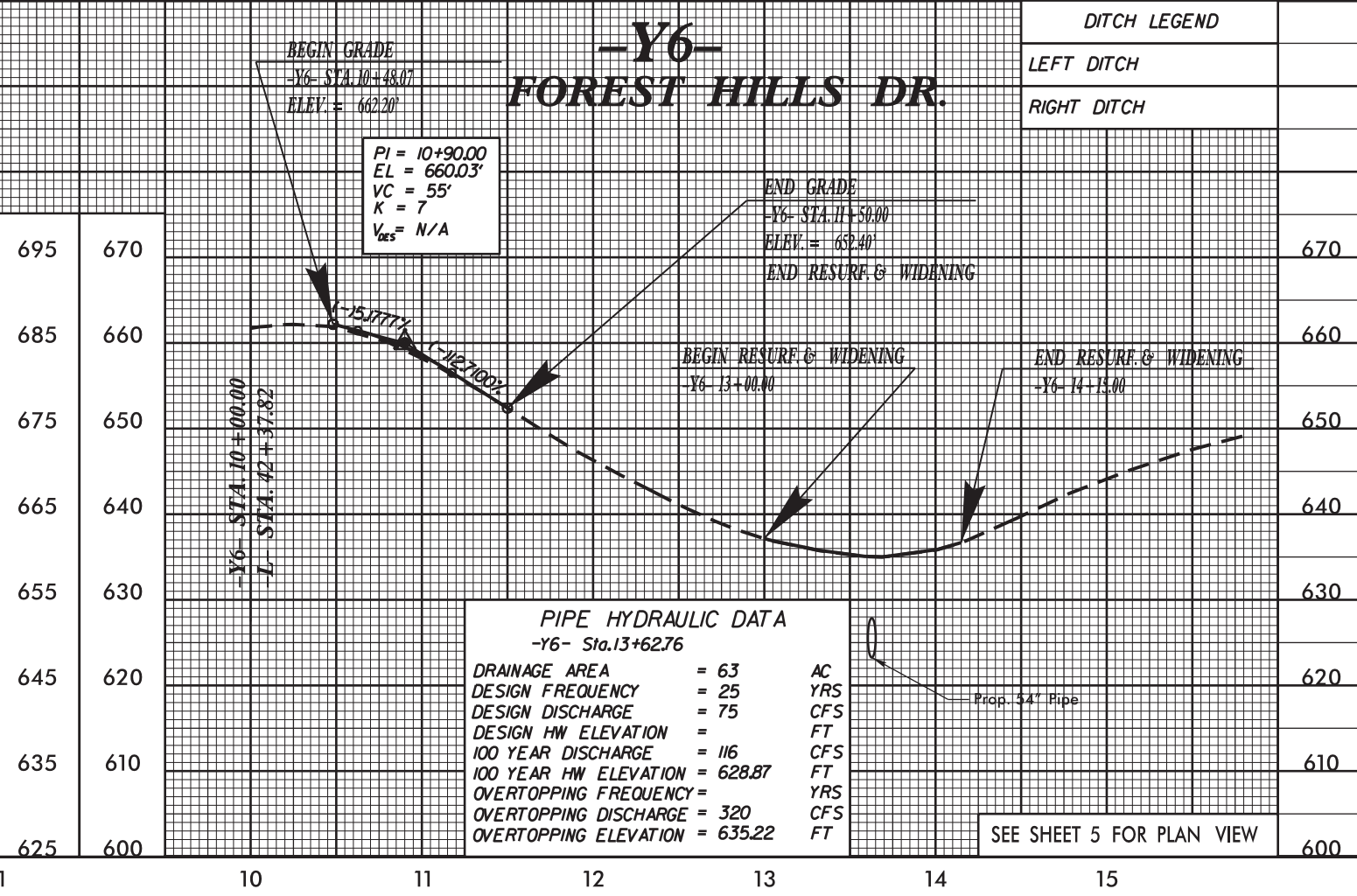
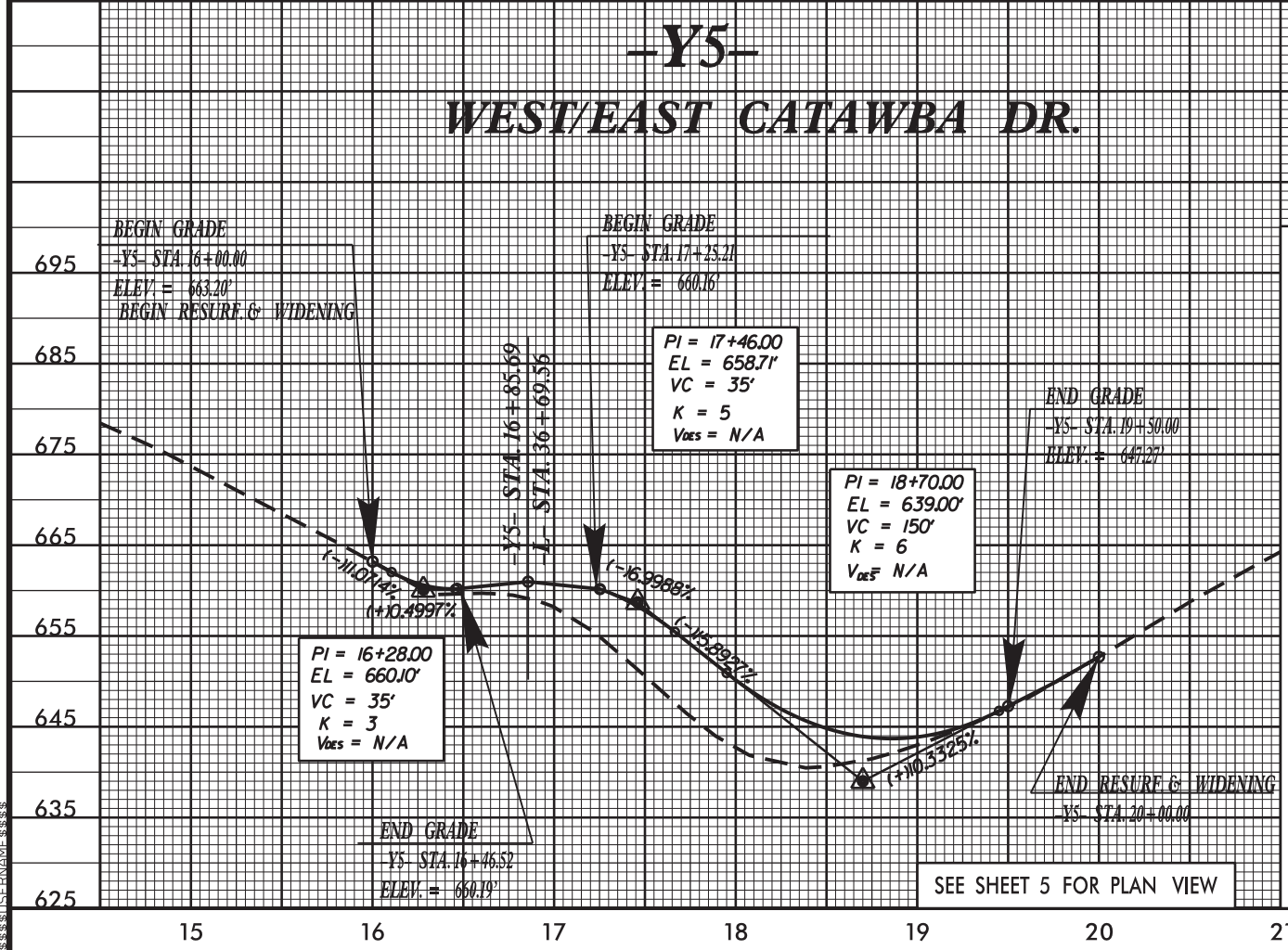


## -Y5- WEST/EAST CATAWBA DR.

## -Y6- FOREST HILLS DR.

**DITCH LEGEND**

LEFT DITCH	
RIGHT DITCH	



**PIPE HYDRAULIC DATA**  
-Y6- Sta. 13+62.76

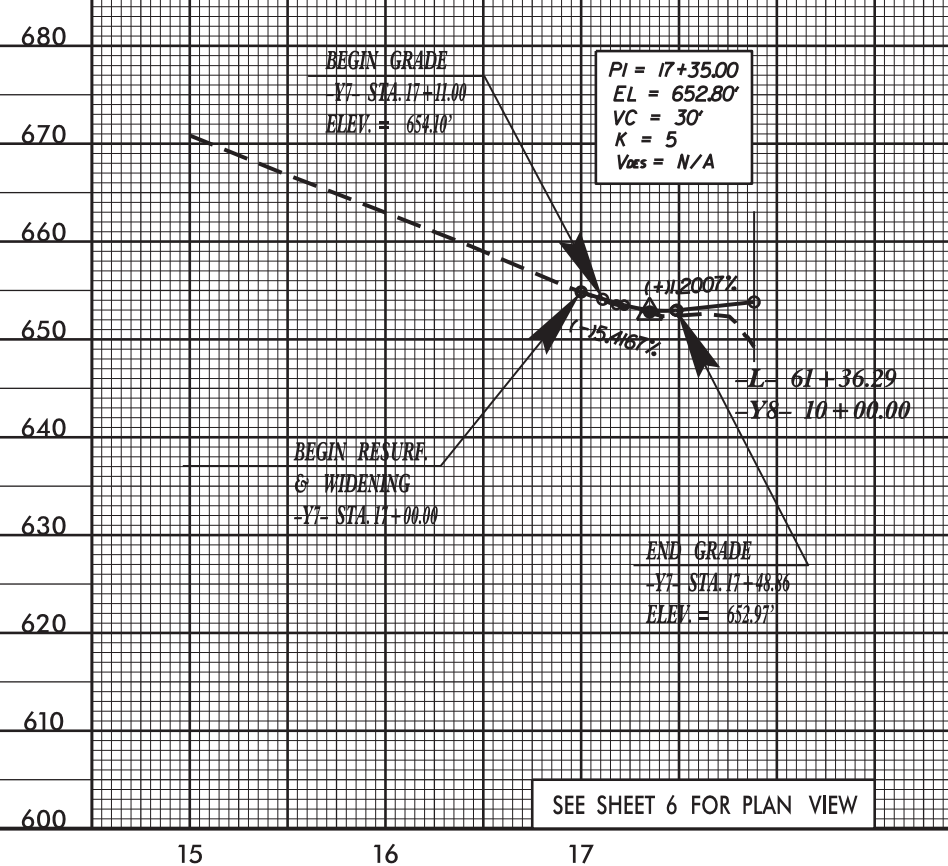
DRAINAGE AREA	= 63	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 75	CFS
DESIGN HW ELEVATION	= 116	FT
100 YEAR DISCHARGE	= 116	CFS
100 YEAR HW ELEVATION	= 628.87	FT
OVERTOPPING FREQUENCY	=	YRS
OVERTOPPING DISCHARGE	= 320	CFS
OVERTOPPING ELEVATION	= 635.22	FT

Prop. 54" Pipe

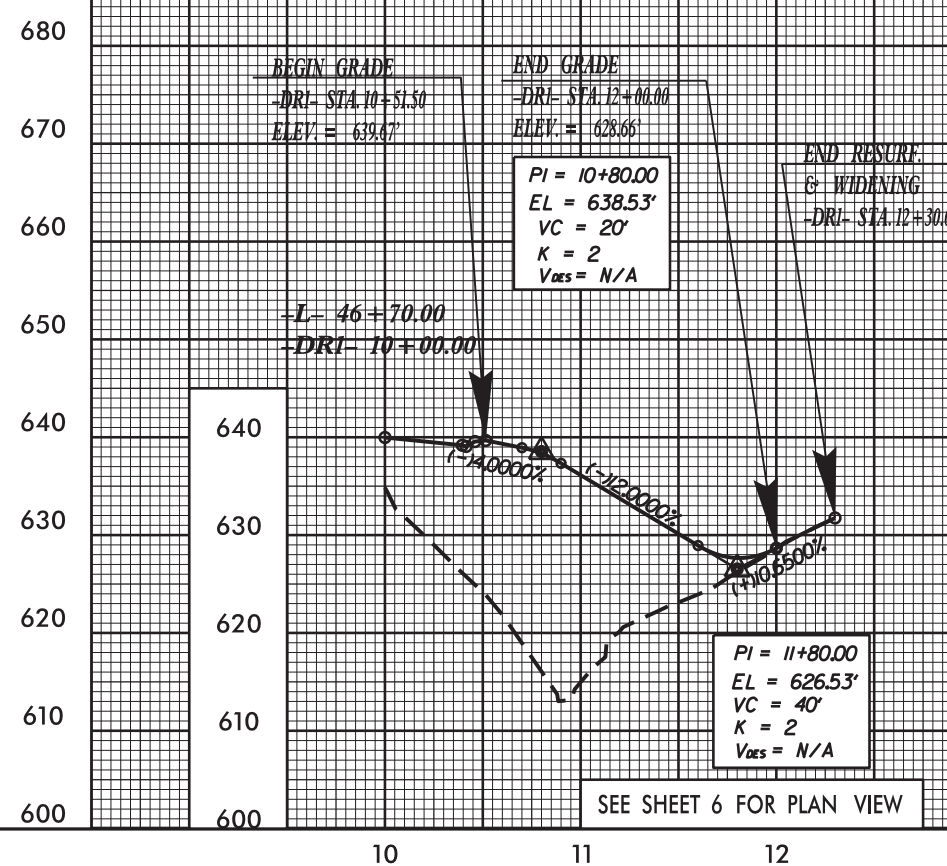
5/28/99

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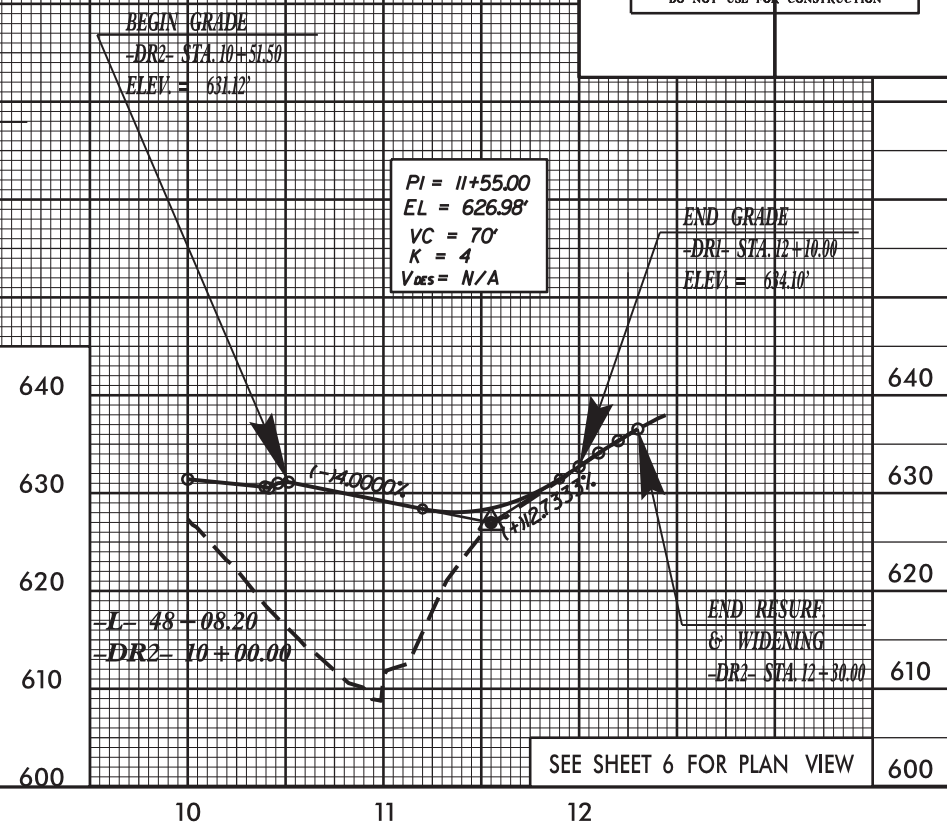
### -Y7- STONERIDGE DR.



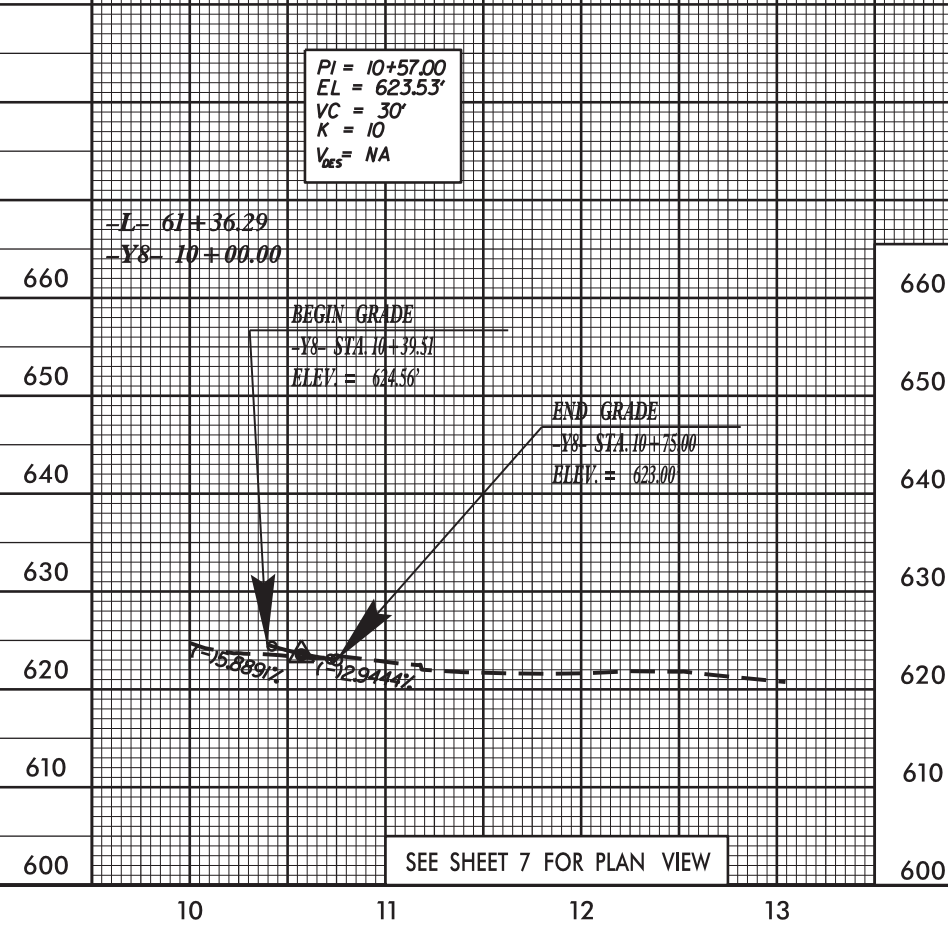
### -DRI-



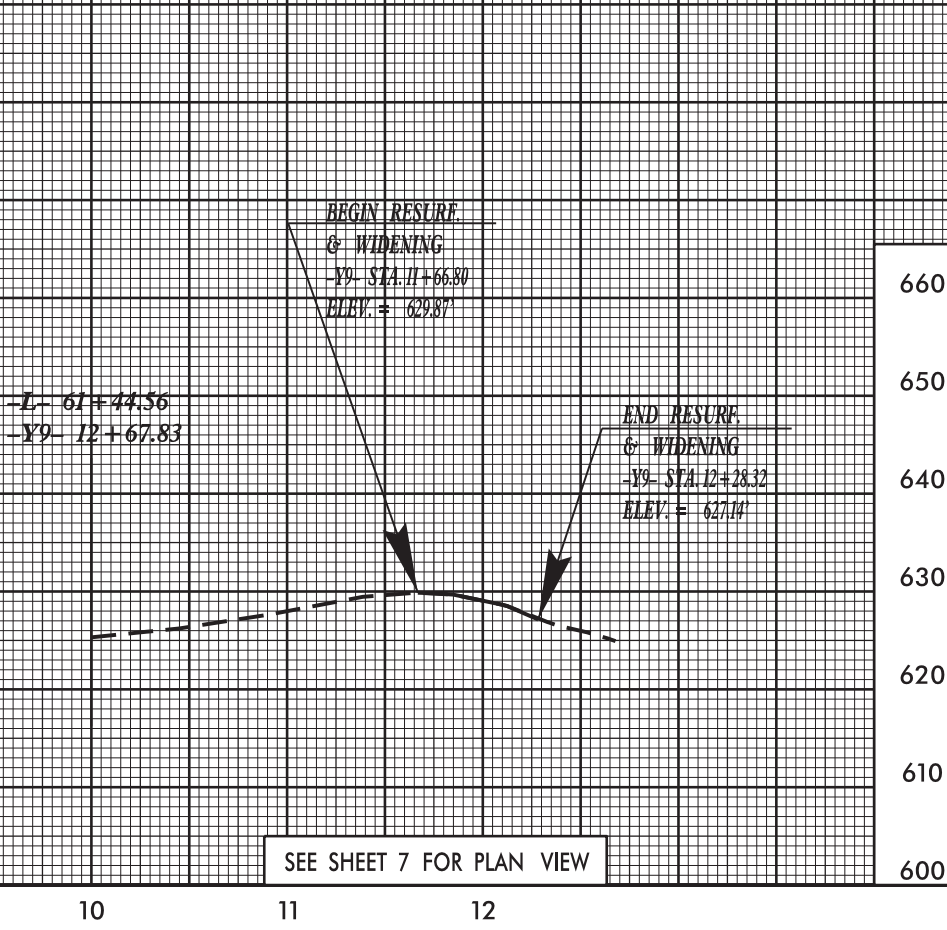
### -DR2-



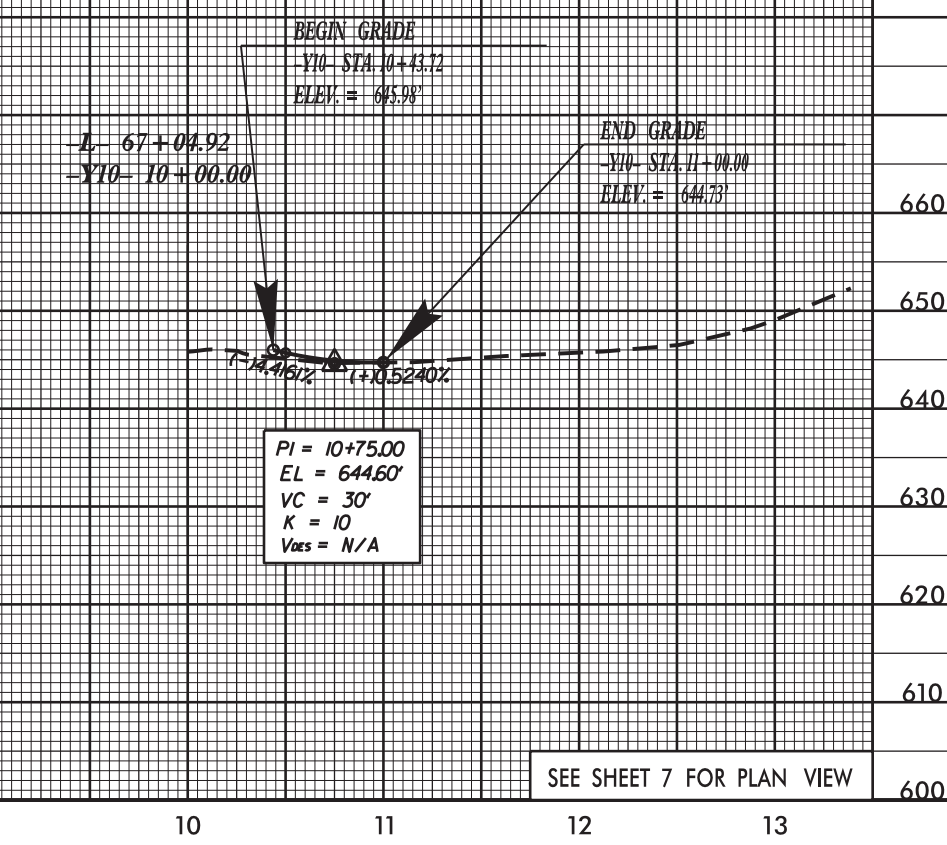
### -Y8-



### -Y9- CAREY AVE.



### -Y10- NUTALL DR.



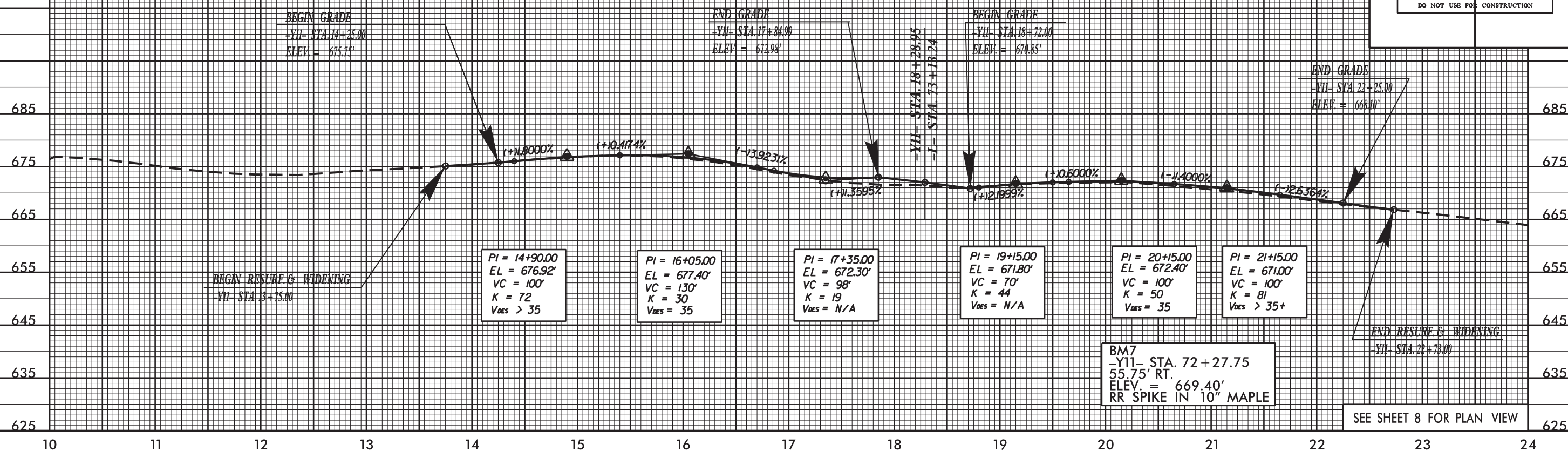
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 \$\$\$\$SYSTRANS\$\$\$\$



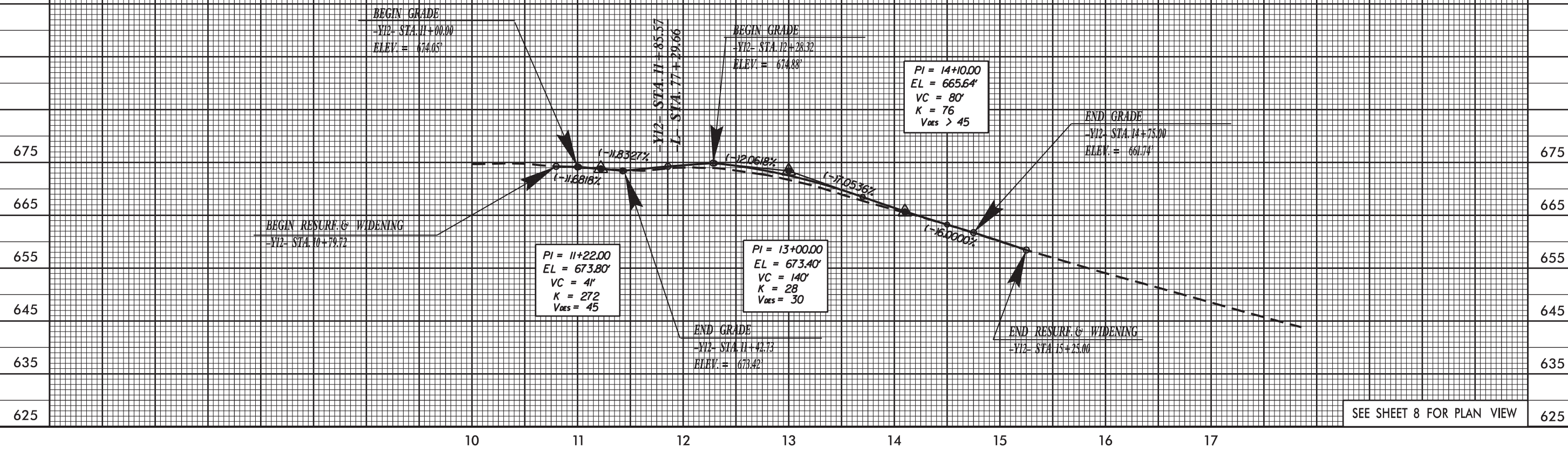
5/28/99

# -Y11- RANKIN AVE/TUCKASEE RD.

PROJECT REFERENCE NO. U-3633	SHEET NO. 17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



# -Y12- SOUTH MAIN ST.



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5/28/99 11:58:33 AM