



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

December 20, 2018

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

ATTN: Mr. Steve Kichefski
NCDOT Coordinator

Dear Sir:

Subject: **Application for an Individual Section 404 and Section 401 Water Quality Certification** for the US 321 Widening from north of US 70 interchange to Southwest Blvd. (SR 1933) interchange in Catawba, Burke, and Caldwell Counties. Federal Aid Project No. NHF-0321(25), Division 12, 13, and 11, TIP No. U-4700. Debit \$570 from WBS 35993.1.2.

The North Carolina Department of Transportation NCDOT proposes to widen US 321 to a six lane median divided facility from just north of the US 70 interchange in Hickory (Catawba County) to the Southwest Boulevard (SR 1933) interchange in Lenoir (Caldwell County). The proposed improvements involve approximately 14 miles of existing US 321 with a majority of the roadway located in Catawba and Caldwell Counties and 0.3 mile in Burke County. There are five municipalities that are located along the project corridor: City of Hickory, Town of Granite Falls, Town of Sawmills, Town of Hudson, and City of Lenoir.

Please see the enclosed ENG 4345, Division of Mitigation Services (DMS) mitigation acceptance letters, Effects Forms for 4(f) properties, State Historic Preservation Office (HPO) letter for archaeological sites, State Stormwater Management Plan (SMP), permit drawings, design plans, and preliminary plans for the above referenced project.

Purpose and Need:

Segments of US 321 between Hickory and Lenoir are currently experiencing congestion and operate at level of service (LOS) E and F. Also, a majority of intersections along the project area currently operate at LOS E and F. In 2035, 12 of 13 segments along the mainline and 16 of 18 intersections are projected to operate at LOS F.

The purpose of this project is to reduce congestion on US 321 in order to achieve LOS of D or better in the Design Year (2040).

PROJECT SCHEDULE

The project will be permitted in phases due to project size, funding and TIP schedule. Table 1 describes the proposed project sections and phasing. The impacts reported in this Individual Permit Application for Sections CA, CB and CC are based on final design. The proposed impacts for the remaining Sections A, B, and C are based on preliminary design. Preliminary design impacts have been calculated using preliminary slope stakes plus 25'. Permit modification requests will be submitted as the final design is completed for each of the remaining sections (A-C) according to the phasing dates provided in Table 1.

Table 1 – Project phasing for US 321 Widening (U-4700)

Section	Approximate Section Limits	Approximate Length	Construction Letting
U-4700CA	SR 1160 (Mount Herman Road) Intersection Upgrade	N/A	Jun 2019
U-4700CB	SR 1809/1952 (Pine Mountain Road) Intersection Upgrade	N/A	Jun 2019
U-4700CC	SR 1108 (Mission Road) Intersection Upgrade	N/A	Jun 2019
U-4700A	US 70 to US 321A	3.5 miles	Aug 2021
U-4700B	US 321A to SR 1108 (Mission Road)	7.2 miles	Jan 2030
U-4700C	SR 1108 (Mission Road) to SR 1933 (Southwest Blvd.)	3.3 miles	Jan 2030
TOTAL:		14 miles	

SUMMARY OF IMPACTS

Summary of Jurisdictional Impacts:

The preliminary projected impacts for the overall project will be approximately 0.7 acre of permanent wetland impacts, 5,950 linear feet of permanent stream impacts, and <0.01 acre of temporary stream impacts (see Tables 2 and 3 for a breakdown of impacts by Section).

Table 2 – Summary of Wetland Impacts for U-4700

Section	Design Stage	Wetland Impact Type	Wetland Impact Area (ac)	Wetland Impacts Requiring Mitigation (lf)
U-4700A	Preliminary	Permanent Fill	0.1*	0.1
U-4700B	Preliminary	Permanent Fill	0.2*	0.2
U-4700C	Preliminary	Permanent Fill	0.4*	0.4
U-4700CA	Final	Permanent Fill	--	0
U-4700CB	Final	Permanent Fill	--	0
U-4700CC	Final	Permanent Fill	--	0
Total			0.7	0.7

* Preliminary impacts are calculated using slope stakes +25'

Table 3 – Summary of Stream Impacts for U-4700

Section	Design Stage	Stream Impact Type	Impact Length (lf)	Temporary Impacts (ac)	Stream Impacts Requiring Mitigation (lf)
U-4700A	Preliminary	Permanent Fill	1,795	--	1,795*
U-4700B	Preliminary	Permanent Fill	3,055	--	3,055*
U-4700C	Preliminary	Permanent Fill	1,000	--	1,000*
U-4700CA	Final	Permanent Fill	--	--	0
		Temporary	--	--	
U-4700CB	Final	Permanent Fill	100	--	100**
		Temporary	--	<0.01	
U-4700CC	Final	Permanent Fill	--	--	0
		Temporary	--	--	
Total			5,950	<0.01	5,950

* Preliminary impacts are calculated using slope stakes +25° (temporary impacts TBD)

** See Table 5

Summary of Utility Impacts:

There will be no impacts associated with utility relocations in the CA, CB or CC Sections of this project. For Sections A, B, and C, the utility relocations will be determined at final design.

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 the unavoidable impacts. Mitigation for impacts resulting from Section A (preliminary design) and Section CB (final design impacts) is provided. It has been determined that onsite mitigation is not an option for this project and DMS will provide all required mitigation for these sections. See Tables 2 and 3 for a summary of impacts and Table 7 for a summary of proposed mitigation. These mitigable impacts include 0.1 acre of permanent wetland impact and 1,895 linear feet of permanent stream impact. Sections B and C are due to let post year, therefore no mitigation is proposed for these sections at this time.

NEPA DOCUMENT STATUS

An Environmental Assessment (EA) was completed for this project in February 2016. A Finding of No Significant Impact (FONSI) was completed in April 2018. Additional copies will be provided upon request.

In compliance with the NEPA/404 Merger Process, Concurrence Points 4B and 4C will be conducted for Sections A, B and C during the appropriate design stage.

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 impacted by this project area are located in the Catawba River Basin (HUC 03050101, within subbasin 03-08-32). No Outstanding Resource Waters (ORW), High Quality Waters (HQW), or Water Supply Waters (WS-I or WS-II) waters occur within 1.0 mile of the project area. Seven named streams as well as their unnamed tributaries are located within the impact area of this project (Table 4).

Wetland and stream determinations within U-4700 were conducted using the field delineation method outlined in the 1987 Corps of Engineers Wetland Delineation Manual and the 2012 Eastern Mountains and Piedmont Supplement. Mr. Steve Kichefski of the U.S. Army Corps of Engineers (USACE) and Mr. Dave Wanucha of the North Carolina Division of Water Resources (NCDWR) field verified the wetlands and surface waters on October 15, 2018.

Table 4 – Impacted project area streams

Stream Name	Stream Index Number	Best Usage Classification	Description
Frye Creek	11-54-1	WS-IV	From source to Horseford Creek
Catawba River (Lake Hickory)	11-(51), 11-(53)	WS-IV,B;CA	From Rhodhiss Dam to US 321 Bridge, From US 321 Bridge to NC 127
Gunpowder Creek	11-55-(4)	WS-IV; CA	From a point 0.8m downstream of Billy Branch to Catawba River (Lake Hickory)
Billy Branch	11-55-3	WS-IV	From source to Old Mill Pond, Gunpowder Creek
Little Gunpowder Creek	11-55-2-(2)	WS-IV	From US 321A to Gunpowder Creek
Gunpowder Creek	11-55-(1.5)	WS-IV	From a point 0.5m downstream of SR 1127 to a point 0.8m downstream of Billy Branch
Gunpowder Creek	11-55-(0.5)	C	From source to a point 0.5m downstream of SR 1127
Brushy Fork	11-55-1-1	C	From source to Angley Creek
Angley Creek	11-55-1	C	From source to Gunpowder Creek

303(d) Impaired Waters:

Gunpowder Creek (11-55-(1.5)) is currently listed on the North Carolina 2016 Final 303(d) list of impaired waters for having impaired benthos. The only unnamed tributary to this portion of Gunpowder Creek impacted within the project area is stream SAA within U-4700C and U-4700CB.

IMPACTS TO WATERS OF THE U.S.

Table 5 summarizes the impacts to jurisdictional water resources for the final design of U-4700CB. There are no wetland impacts within U-4700CB. There are no jurisdictional stream or wetland impacts for the final design of either U-4700CA or U-4700CC. Site numbers correspond with the permit (hydraulic) drawings included in this application. The stream and wetland numbers correspond to NRTR mapping. A brief description of each impact site will follow the table.

Table 5 – U-4700CB Stream Impacts

Permit Site	Stream Name/ NRTR ID	Status/ Class	Permanent		Temporary Channel Impacts (ac/lf)	ACOE Required Mitigation (lf)	DWR Required Mitigation (lf)
			Channel Impacts (lf/ac)	Bank Stabilization (lf/ac)			
1	UT to Gunpowder Creek SAA	Perennial WS-IV	32 (<0.01)	--	<0.01 (5)	32	0
2	UT to Gunpowder Creek SAA	Perennial WS-IV	68 (<0.01)	--	<0.01 (10)	68	0
Total Stream Impacts for U-4700CB:			100	0	<0.01 (15)	100	0
			100				

Permit Site 1: The extension of the existing 36” reinforced concrete pipe (RCP) to accommodate the new roadway slopes on the west side of US 321 will result in 32 linear feet (lf) of permanent stream impacts to SAA (16’ from the pipe itself, and 16’ from aligning the channel with the extension). Installation of this pipe extension will also result in <0.01 acre (5 lf) of temporary stream impacts.

Permit Site 2: The extension of the existing 36” reinforced concrete pipe (RCP) to accommodate the new roadway slopes on the east side of US 321 will result in 68 lf of permanent stream impacts to SAA. Installation of this pipe extension will also result in <0.01 acre (10 lf) of temporary stream impacts.

MORATORIUM

There are no trout waters or watersheds within the project area. 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 June 27, 2018, the USFWS lists three federally protected species for Catawba County, nine federally protected species for Burke County, and eight federally protected species for Caldwell County (Table 6).

Summary of Species with Habitat:

Northern long-eared bat: A memo documenting that NCDOT has satisfied the 4(d) requirements for this project with regard to this species was sent to USFWS on November 9, 2017.

Dwarf-flowered heartleaf: Multiple populations of dwarf-flowered heartleaf (DFHL) are present within the project area and Formal Section 7 Consultation was necessary for this species. A Biological Assessment (BA) was distributed for comment on November 30, 2018 and was submitted on December 20, 2018. It is anticipated that the USFWS will issue a Biological Opinion (BO) concurring with the biological conclusion of "May Affect, Likely to Adversely Affect" for this species.

Schweinitz’s sunflower: Walking visual surveys of all areas of potential habitat within Catawba County were conducted in September 2013, October 2015 and September 2018. No individuals of this species were identified within the project area and there are no known occurrences within 1.0 mile of the project.

Small whorled pogonia: Walking visual surveys of all areas of potential habitat within Burke County were conducted in June 2009, July 2013, and June 2018. No individuals of this species were identified within the project area and there are no known occurrences within 1.0 mile of the project.

White irisette: Walking visual surveys of all areas of potential habitat within Burke County were conducted in July 2013, and June 2018. No individuals of this species were identified within the project area and there are no known occurrences within 1.0 mile of the project.

Table 6 – Federally protected species listed for Catawba, Burke, and Caldwell Counties

Scientific Name	Common Name	County*	Federal Status**	Habitat Present	Biological Conclusion
<i>Clemmys muhlenbergii</i>	Bog turtle	B, Ca	T (S/A)	N/A	Not Required
<i>Glaucomys sabrinus coloratus</i>	Carolina northern flying squirrel	Ca	E	No	No Effect
<i>Myotis septentrionalis</i>	Northern long-eared bat	Ct, B, Ca	T	Yes	¹
<i>Corynorhinus townsendii virginianus</i>	Virginia big-eared bat	Ca	E	No	No Effect
<i>Microhexura montivaga</i>	Spruce-fir moss spider	Ca	E	No	No Effect
<i>Hexastylis naniflora</i>	Dwarf-flowered heartleaf	Ct, B, Ca	T	Yes	MALAA ²
<i>Liatris helleri</i>	Heller's blazing star	B, Ca	T	No	No Effect
<i>Hudsonia montana</i>	Mountain golden heather	B	T	No	No Effect
<i>Hedyotis purpurea</i> var. <i>montana</i>	Roan mountain bluet	Ca	E	No	No Effect
<i>Helianthus schweinitzii</i>	Schweinitz's sunflower	Ct	E	Yes	No Effect
<i>Isotria medeoloides</i>	Small whorled pogonia	B	T	Yes	No Effect
<i>Geum radiatum</i>	Spreading avens	B	E	No	No Effect
<i>Sisyrinchium dichotomum</i>	White irisette	B	E	Yes	No Effect
<i>Gymnoderma lineare</i>	Rock gnome lichen	B	E	No	No Effect

*Ct – Catawba County, B – Burke County, Ca – Caldwell County

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

¹ – Northern long-eared bat is consistent with the 4(d) rule

² – May Affect, Likely to Adversely Affect

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 2010. A Land Use Scenario Assessment LUSA was prepared in June 2017. Copies of these reports are available upon request. The LUSA concluded the following:

Residential and commercial development is likely to occur with or without the project but may be accelerated and enhanced by project improvements. Project improvements are expected to result in a 45 percent reduction in travel time along the length of the corridor, which may increase the attractiveness of the corridor for highway-oriented commercial development due to improved accessibility and mobility in the corridor. Both Hickory and Lenoir also have local incentives for redevelopment of vacant buildings and brownfields. The proposed project will change access to some existing business driveways and parking lots along the corridor through the addition of superstreet intersections, right-of-way acquisition, consolidation of driveways, and closures of median turns. Streams and other notable natural features are protected by state and local regulations. Population is not expected to grow beyond its current rates, while some growth in jobs is expected, and existing water and sewer infrastructure has capacity to handle future planned and anticipated developments. Overall, this project is expected to result in minor indirect effects and will not result in a notable change in impervious surface.

Examination of the five Probable Development Areas shows that the US 321 project could encourage growth targeted to highway users in certain areas and/or influence future growth along the existing US 321 corridor. However, development pressure along the corridor is present in the No-Build scenario as well based on the corridor’s role as a primary regional truck route and availability of water and sewer service. Federal, state and local zoning ordinances and land use plans direct growth and provide protections from development for human and natural environmental features within the Future Land Use Study Area (FLUSA) that include historic and cultural resources, protected populations, steep slope overlays, natural systems and other important features. Indirect land use impacts to these resources should be limited by the existing regulations in place.

Qualitative analyses of the probable development patterns in the FLUSA suggest that change in land use resulting from the project and subsequent private and public development actions is not likely to lead to a notable increase in impervious surface over the No-Build scenario. There are adopted ordinances and regulations to help mitigate potential water quality effects due to increased impervious surface coverage and increased water runoff. Every municipality within the FLUSA has a stormwater ordinance that establishes density and intensity standards for development.

Direct natural environmental impacts by the project would be addressed by avoidance, minimization, and mitigation, consistent with programmatic agreements with environmental resource and regulatory agencies during the permitting processes. Future development would be required to follow federal, state, and local regulations for the protection of water quality.

Based on the information analyzed, the analysis resulted in a minor concern for indirect effects associated with the project. Other planned transportation and infrastructure projects with the potential to influence development in the FLUSA are listed in section I.D. There are no major infrastructure projects underway or planned that would contribute to cumulative effects on resources in the FLUSA, and all of the localities in the FLUSA have zoning and stormwater ordinances to guide future development. Additional private development, in the form of commercial development along US 321 and residential development outside of the US 321 corridor, is expected to occur with or without the project.

The results of the LUSA show little divergence between the Build Scenarios and the No-Build Scenario for the project; however, the impacts from indirect and cumulative effects on the natural and cultural resources are still important considerations. Key takeaways from the analysis show that:

- Residential and commercial development is likely to occur with or without the project, with highway-oriented commercial development occurring along US 321 and residential development along the edges of the FLUSA.
- The rate of residential development in the FLUSA may increase in the Build scenario, which is expected to result in substantial travel time savings on US 321 between Hickory and Lenoir, particularly in PDAs 3, 4, and 5.
- According to local planners, the rate of development may be impacted by implementation of the project in PDAs 3, 4, and 5. Commercial development is being delayed in PDA 4 in areas where water and sewer expansions are on hold pending a decision on implementing improvements to US 321; however, once the project is in place, commercial development would be expected to occur at an accelerated pace due to improved mobility in the corridor.
- Land use resulting from the project and subsequent private and public development actions is not likely to lead to a notable increase in impervious surface over the No-Build scenario.

CULTURAL RESOURCES

Archaeological and Historic Architectural Resources:

Representatives of the North Carolina State Historic Preservation Office (SHPO), FHWA, and NCDOT met on March 10, 2015 and reached concurrence in the assessment of effects (attached) on three resources by the preliminary design.

- Houck's Chapel (CT0180 – NR) – No Adverse Effect with Commitments
- G. Haywood Hartley House (CW0231 – DE) – No Effect
- James Edgar Broyhill Estate (CW0251 – DE) – No Adverse Effect with Commitments

Following design changes and additional investigations of an expanded study area, a second effects consultation on March 20, 2018 (attached) established the final findings for four resources:

- Houck's Chapel (CT0180 – NR) – No Effect
- G. Haywood Hartley House (CW0231 – DE) – No Effect
- James Edgar Broyhill Estate (CW0251 – DE) – No Adverse Effect with Commitments
- Julius V. Stirewalt Farm (CW0832 – DE) – No Effect

The archaeological survey within the Area of Potential Effects (APE) was completed on July 24, 2015, and the results showed that none of the fifteen evaluated sites were determined to be eligible for the NRHP under any criteria and no further work necessary (SHPO concurred via letter December 22, 2015, attached). Supplemental archaeological field investigations were completed on August 30, 2017 to capture proposed project limits outside of the original archaeological APE. No new sites were identified.

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

Houck's Chapel, G. Haywood Hartley House, James Edgar Broyhill Estate, and Julius V. Stirewalt Farm are Section 4(f) properties, but since the Selected Alternative will not require right-of-way from these properties, no Section 4(f) impacts are anticipated for these resources.

There are no 6(f) resources within the project study area. No properties acquired or developed with the assistance of the Land and Water Conservation Funds exist on the project corridor.

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 impacting many wetlands and streams, and reduced impacts to these resources to the greatest extent practicable. Information regarding the avoidance and minimization efforts with regard to DFHL is detailed in the December 2018 BA. Other specific examples of avoidance and minimization measures include:

- Shifted a U-turn bulb within U-4700CB further south to avoid impacts to a stream and wetland.
- Selected a 22 and 30-foot median rather than a 46-foot median typical section.
- Added a bridge and increased slopes on the Grace Chapel Flyover ramp at Station 14+98 to minimize stream impacts.
- Added several retaining walls near Falls Avenue (northbound off-ramp, southbound on-ramp, and northbound on-ramp) to minimize impacts to both streams and dwarf-flowered heartleaf.
- Re-aligned the connector road from the Alex Lee Boulevard interchange to Sage Meadow Circle to avoid stream impacts and minimize property impacts.
- Removed Dudley Shoals Road loop to minimize stream impacts and avoid impacts to historical resources.
- Slopes at CP2A Hydraulic Sites 3, 5, 6 and 11 will be steepened to minimize stream impacts.
- Steepened slopes in the vicinity of several populations of DFHL (population numbers 24, 26, 32, 36, 48, and 51) to minimize impacts to these plants.
- Steepened slopes and tightened buffer to avoid impacts to a DFHL conservation area.
- Expressway gutter was added in two locations to minimize impacts to property and a Duke Energy Substation.
- Best Management Practices (BMPs) will be utilized during construction to attempt to reduce the stormwater impacts to receiving streams and wetlands due to erosion and runoff.

Compensation:

The NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent practicable as described above. Tables 2 and 3 summarize the wetland and stream impacts for each section of this project. This project will permanently impact 0.7 acre of wetlands, 5,950 linear feet of streams, and temporarily impact <0.1 acre of streams.

At this time, DMS will provide compensatory mitigation for Sections A, CA, CB, and CC impacts only as Sections B and C are not due to let within the next five years. Table 7 summarizes the total mitigation

needs at this time as 0.1 acre of wetland impacts and 1,895 linear feet of stream impacts. Compensatory mitigation for Sections B and C will be provided accordingly during the subsequent permit modifications. These modifications will occur when final design on the remaining Sections has been completed.

Table 7 – Summary of Mitigation Requested from DMS

Section	Design Stage	Wetland Impacts Requiring Mitigation (ac)	Stream Impacts Requiring Mitigation (ac)
U-4700A	Preliminary	0.1	1,795
U-4700CA	Final	0	0
U-4700CB	Final	0	100
U-4700CC	Final	0	0
Total		0.1	1,895

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

Sincerely,



Philip S. Harris III, P.E., C.P.M.
Environmental Analysis Unit Head

for

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 US 321 to a six lane median divided facility from just north of the US 70 interchange in Hickory (Catawba County) to the Southwest Boulevard (SR 1933) interchange in Lenoir (Caldwell County). The project is approximately 14 miles in length, and construction will be phased over six sections. See attached cover letter and permit drawings for more details regarding project phasing and stream and wetland impacts.

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

The purpose of this project is to reduce congestion on US 321 in order to achieve level of service (LOS) of D or better in the Design Year (2040).

Segments of US 321 between Hickory and Lenoir are currently experiencing congestion and operate at LOS E and F. Also, a majority of intersections along the project area currently operate at LOS E and F. In 2035, 12 of 13 segments along the mainline and 16 of 18 intersections are projected to operate at LOS F.

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 as well as bridge construction.

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

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

Carla Smith

SIGNATURE OF APPLICANT

12/20/18

DATE

SIGNATURE OF AGENT

DATE

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.



NORTH CAROLINA
Environmental Quality

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

TIM BAUMGARTNER
Director

December 14, 2018

Mr. Philip S. Harris, III, P.E.
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-4700CB, US 321 / SR 1809 / SR 1952 Intersection Upgrade to Superstreet Design, Caldwell 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 December 14, 2018, the impacts are located in CU 03050101 of the Catawba River basin in the and Northern Mountains (NM) Eco-Region, and are as follows:

Catawba 03050101 NM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	100.0	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 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
DMS Asset Management Supervisor

cc: Mr. Monte Matthews, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NCDWR
File: U-4700CB





NORTH CAROLINA
Environmental Quality

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Governor

MICHAEL S. REGAN
Secretary

TIM BAUMGARTNER
Director

December 7, 2018

Mr. Philip S. Harris, III, P.E.
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-4700A, US 321 Improvements from US 70 in Hickory to US 321A, Catawba, Burke and Caldwell Counties

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the compensatory stream and wetland mitigation for the subject project. Based on the information supplied by you on December 7, 2018, the impacts are located in CU 03050101 of the Catawba River basin in the Central Piedmont (CP) and Northern Mountains (NM) Eco-Regions, and are as follows:

Catawba 03050101 CP / NM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	1,795.0	0.100	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.

The impacts and associated mitigation needs were under projected by the NCDOT in the 2018 impact data. DMS will commit to implement sufficient compensatory stream and wetland mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of 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
DMS Asset Management Supervisor

cc: Mr. Monte Matthews, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NCDWR
File: U-4700A



Federal Aid #: **NHG-321(18)**

TIP#: **U-4700**

County: **Burke, Caldwell
and Catawba**

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS


Project Description: **Improvements to US 321 from US 70 in Hickory to
US 64/NC 18-90 in Lenoir.**

On **March 10, 2015** representatives of the

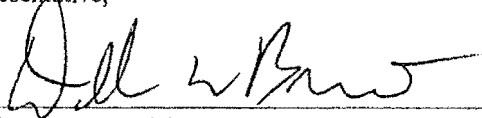
- North Carolina Department of Transportation (NCDOT)
- Federal Highway Administration (FHWA)
- North Carolina State Historic Preservation Office (HPO)
- Other

reviewed the subject project and agreed on the effects findings listed within the table on the reverse of this signature page.

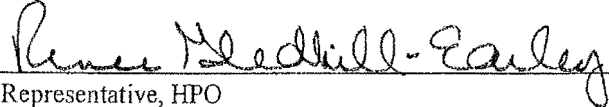
Signed:



Representative, 3-10-15
Date



FHWA, for the Division Administrator, or other Federal Agency 3-10-15
Date



Representative, HPO 3-10-15
Date

Federal Aid #: NHG-321(18)

TIP#: U-4700

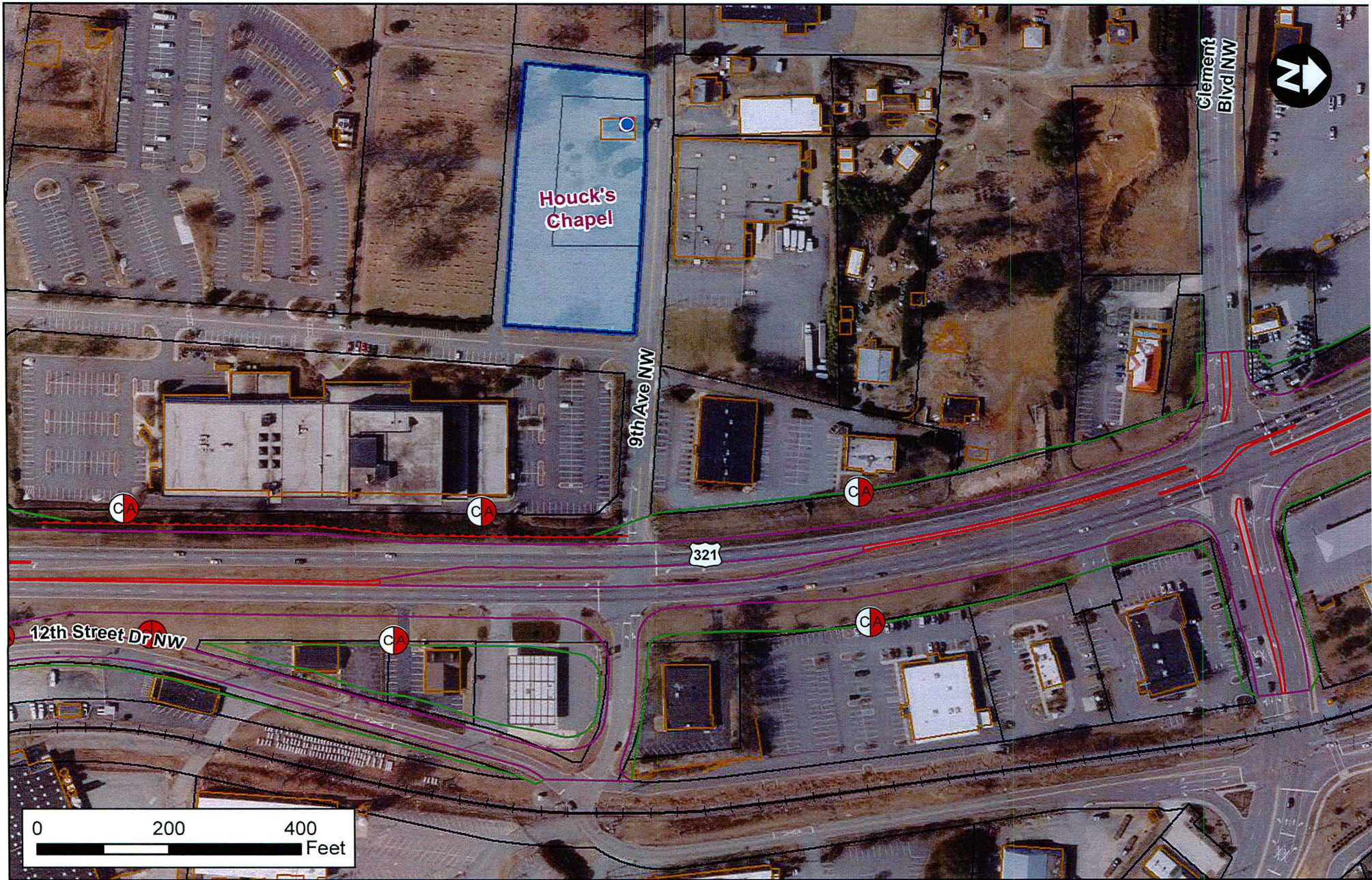
County: Burke, Caldwell and Catawba

4-6-18
DB
3-20-
Vep
Pye
3-20

Property and Status	Alternative	Effect Finding	Reasons
Houck's Chapel (CT0180- NR)	22' and 30'	No Adverse Effect with conditions No Effect	Nearby property within viewshed (Catawba County *Parcel ID: 279316748608, #901 Highway 321 NW, Hickory) to be acquired within the control-of-access boundary for the proposed Clement Boulevard interchange. To be noted on design plans and stated in NEPA document (green sheets) - property acquired for avoidance of impacts to Houck's Chapel; if ever sold, height of buildings/structures restricted to 25'!
G. Haywood Hartley House (CW0231 - DE)	22' and 30'	No Effect	Additional ROW will be acquired along SW side of US 321 adjacent to property, but none within the proposed NR boundary. Driveway entrance to property will be maintained as it currently exists (right-in, right-out).
James Edgar Broyhill Estate (CW0251 - DE)	22' and 30'	No Adverse Effect with conditions	Curb and gutter section (with 10-foot buffer within existing ROW) to replace previously recommended shoulder section with retaining wall. Median will transition to 22 feet before reaching property, and existing slope adjacent to property will be retained, grassed, and maintained by NCDOT. Existing main entrance to property on US 321, including flanking stone posts, will be retained. Existing access to Lenoir Golf Club and Hillhaven Place south of property on US 321 will be retained and improved to allow left-over turn.
			* Revised, proposed construction activities will neither physically, nor visually impact the property.

Initialed: NCDOT *[Signature]* FHWA *DB* HPO *[Signature]*

FHWA Intends to use the HPO's concurrence as a basis for a "de minimis" finding for the following properties, pursuant to Section 4(f):



- Property Lines
- National Register Historic District
- Proposed Control of Access
- Proposed Partial Control of Access
- National Register Site and Local Landmark

- Existing Building
- Proposed Slopestakes
- Proposed Concrete Structure
- Proposed Edge of Travel
- Proposed Retaining Wall
- Railroad

U-4700 - U.S. 321 Widening
HISTORIC EFFECTS CONSULTATION
Figure 2: Houck's Chapel (CT180 - NR)

CATAWBA, BURKE, AND CALDWELL COUNTIES



HISTORIC ARCHITECTURE AND LANDSCAPES ASSESSMENT OF EFFECTS FORM

Supplements Effects Form dated 10 March 2015

This form only pertains to Historic Architecture and Landscapes for this project. It is not valid for Archaeological Resources. You must consult separately with the Archaeology Group.

PROJECT INFORMATION

Project No:	U-4700	County:	Catawba, Burke, and Caldwell
WBS No.:	35993.1.2	Document Type:	
Fed. Aid No:	NHF-321(18)	Funding:	State <input checked="" type="checkbox"/> Federal
Federal Permit(s):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Permit Type(s):	USACE
Project Description: Widen and improve US 321 from US 70 in Hickory to SR 1933 (Southwest Boulevard) in Lenoir expanded study area (no off-site detour specified in review request). Project originally surveyed and evaluated 2010-11; effects consultation 2015 (not under PA).			

SUMMARY OF HISTORIC ARCHITECTURE AND LANDSCAPES REVIEW

DESCRIPTION OF REVIEW ACTIVITIES, RESULTS, AND CONCLUSIONS: Most of the expanded and amended sections of the project fall within the Area of Potential Effects originally studied in 2010-11 and 2015, and findings established at that time remain valid. The newly proposed interchange improvements around 2nd Avenue SW in Hickory (Catawba County), as well as the outermost extents of the Y-line improvements on Falls Avenue, Dudley Shoals Road, and Pinewood Road in Granite Shoals (Caldwell County) define the new areas requiring investigation. HPOWeb reviewed on 5-6 September 2017 and yielded multiple SS, one SL, and no NR, LD, or DE properties in these areas. Catawba and Caldwell Counties current GIS mapping, aerial photography, and tax information indicated the presence of multiple, predominantly commercial and residential resources dating from the 1900s to the 2010s (viewed 5-6 September 2017).

Almost all of the resources may be eliminated from further investigation as they are located beyond likely project impact or are unexceptional examples of their types (several also determined not NR-eligible in the original project study). Two resources required additional evaluation to determine their National Register eligibility: the First Church of God Hickory (CT1442) at #306 14th Street SW (Catawba PIN: 279208882097) and the Julius V. Stirewalt Farm (CW0832) at #102 Dudley Avenue (Caldwell PIN: 2775.08 97 3775). Bridge Numbers 13 (1969), 14 (1953), 133 (1955), 142 (1955), and 367 (1962) are not eligible for the National Register according to the NCDOT Historic Bridge Inventory as they are neither technologically nor aesthetically significant. While no comprehensive county architectural survey exists for Caldwell County, that for Catawba County (1977), as well as municipal surveys of Hickory (1979-1980 and 2014-2015) helped to identify the church noted above and other recorded properties in those sections of the expanded study area needing review. A July 27, 2017 site visit by NCDOT Historic Architecture, as well as Google Maps "Street View" and other visuals confirmed the presence and relative placement of resources (viewed 5-6 September 2017).

NCDOT Historic Architecture engaged AECOM Technical Services of North Carolina, Inc. to carry out a National Register assessment of the two properties identified above, presented in a February 2018 technical report available on Connect NCDOT (<https://connect.ncdot.gov>). In March 2018 the North Carolina Historic Preservation Office (HPO) concurred that the First Church of God Hickory is **not eligible**, but the Julius V. Stirewalt Farm is **eligible** for listing in the National Register (see attached

correspondence). HPO also agreed to the proposed National Register boundary for the latter property (see attached aerial). An effects consultation is required to address how the project may affect the eligible property.

ASSESSMENT OF EFFECTS

Property Name:	Julius V. Stirewalt Farm	Status:	DE
Survey Site No.:	CW0832	PIN:	2775.08 97 3775
Effects <input checked="checked" type="checkbox"/> No Effect <input type="checkbox"/> No Adverse Effect <input type="checkbox"/> Adverse Effect			
Explanation of Effects Determination: Proposed construction activities will neither physically, nor visually impact property.			
List of Environmental Commitments: —			

FHWA Intends to use the State Historic Preservation Office's concurrence as a basis for a "de minimis" finding for the following properties, pursuant to Section 4(f):

SUPPORT DOCUMENTATION

Map(s) Previous Survey Info. Photos Correspondence Design Plans

FINDING BY NCDOT AND STATE HISTORIC PRESERVATION OFFICE

Historic Architecture and Landscapes – ASSESSMENT OF EFFECTS

Vanessa C. Patrick

20 March 2018

NCDOT Architectural Historian

Date

Renee Hedkell-Early

3.20.18

State Historic Preservation Office Representative

Date

Muhammad C. Deen

3/27/18

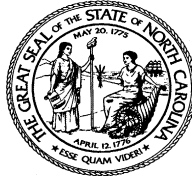
Federal Agency Representative

Date



- | | |
|---------------------------------------|--------------------------------|
| Determined Eligible Historic District | Proposed Slopestakes |
| Proposed Control of Access | Proposed Construction Easement |
| Proposed Partial Control of Access | Proposed Concrete Structure |
| Delineated Streams | Proposed Edge of Travel |
| Existing Building | Proposed Roadway Bridge |

U-4700 - U.S. 321 Widening
HISTORIC EFFECTS CONSULTATION
Figure 1: Julius V. Stirewalt Farm (CW0832)
 CATAWBA, BURKE, AND CALDWELL COUNTIES



**North Carolina Department of Natural and Cultural Resources
State Historic Preservation Office**

Ramona M. Bartos, Administrator

Governor Pat McCrory
Secretary Susan Kluttz

Office of Archives and History
Deputy Secretary Kevin Cherry

December 22, 2015

MEMORANDUM

TO: Matt Wilkerson
Office of Human Environment
NCDOT Division of Highways

FROM: Ramona M. Bartos

Re: for Ramona M. Bartos

SUBJECT: Intensive Archaeological Survey and Evaluation for US 321 Improvements from US 70 in Hickory to US64/NC18 in Lenoir, U-4700, Burke, Caldwell, and Catawba Counties, ER 06-0885

Thank you for your letter of November 24, 2015, transmitting the archaeological survey report by Bruce Idol and Matt Pare, TRC Environmental Corporation (TRC). The report meets our guidelines and those of the Secretary of the Interior.

During the course of the survey, seven sites and eight isolated finds were located within the project area. For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that archaeological sites 31CT259, 31CW464-31CW471, 31CW473-31CW475, and 31CW477 are not eligible for listing in the National Register of Historic Places. These sites do not retain sufficient subsurface integrity or artifact density to yield information important to history or prehistory. The portions of 31CW472 and 31CW476 within the APE also lack significant cultural deposits; however, the portions of these sites outside the project area have not been evaluated. Additional survey and evaluation at these locations will be necessary if project modifications expand the APE in these locations.

TRC has recommended that no further archaeological investigation be conducted in connection with this project. We concur with this recommendation since the project will not involve significant archaeological resources.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.



North Carolina Department of Transportation
 Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
 FOR NCDOT PROJECTS



(Version 2.08; Released April 2018)

WBS Element: 35993.1.1 **TIP No.:** U-4700-CB **County(ies):** Caldwell **Page** 1 **of** 1

General Project Information

WBS Element:	35993.1.1	TIP Number:	U-4700-CB	Project Type:	Roadway Widening	Date:	
NCDOT Contact:	Carla Dagnino		Contractor / Designer:	Vaughn & Melton Consulting Engineers			
Address:	Environmental Analysis Unit, NC Department of Transportation 1598 Mail Service Center Raleigh, NC 27699-1598		Address:	1318-F Patton Ave Asheville, NC 28806			
	Phone:	(919) 707-6110		Phone:	(828) 253-2796		
	Email:	cdagnino@ncdot.gov		Email:	bsridnour@vaughnmelton.com		
City/Town:	Hudson, NC		County(ies):	Caldwell			
River Basin(s):	Catawba		CAMA County?	No			
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	0.55	Surrounding Land Use:	Mixed Retail and Residential.					
Project Built-Up Area (ac.)	Proposed Project			Existing Site				
	9.3	ac.		7.5	ac.			
Typical Cross Section Description:	US 321: 2 @ 12' lanes each direction with 12' (10' paved, 2' grass) outer shoulders, 6' (4' paved, 2' grass) inner shoulders, and variable width median. SR 1809 West: 2 @ 12' eastbound lanes with curb and gutter, 4' utility strip, and 5' concrete sidewalk; 1 @ 12' westbound lane with 4' paved shoulder. SR 1809 East: 2 @ 12' lanes each direction, each with curb and gutter, 4' utility strip, and 5' concrete sidewalk			US 321: 2 @ 12' lanes each direction with paved shoulders, and variable width median. SR 1809: 2 @ 12' lanes each direction				
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	32000	Year:	2035	Existing:	20400	Year:	2015
General Project Narrative: (Description of Minimization of Water Quality Impacts)	NCDOT proposes to reconstruct the intersection of US 321 (Hickory Blvd.) and SR 1809 (Pine Mountain Road) from a traditional signalized intersection to a superstreet style intersection. This will improve traffic flow and accommodate the expected increases in ADT. Impacts to water quality will be minimized by utilizing existing outfalls and by utilizing open channels where possible. Additionally, offsite drainage passing through the NCDOT system in this area will be pretreated by the property owners per state and local stormwater management ordinances.							

Waterbody Information

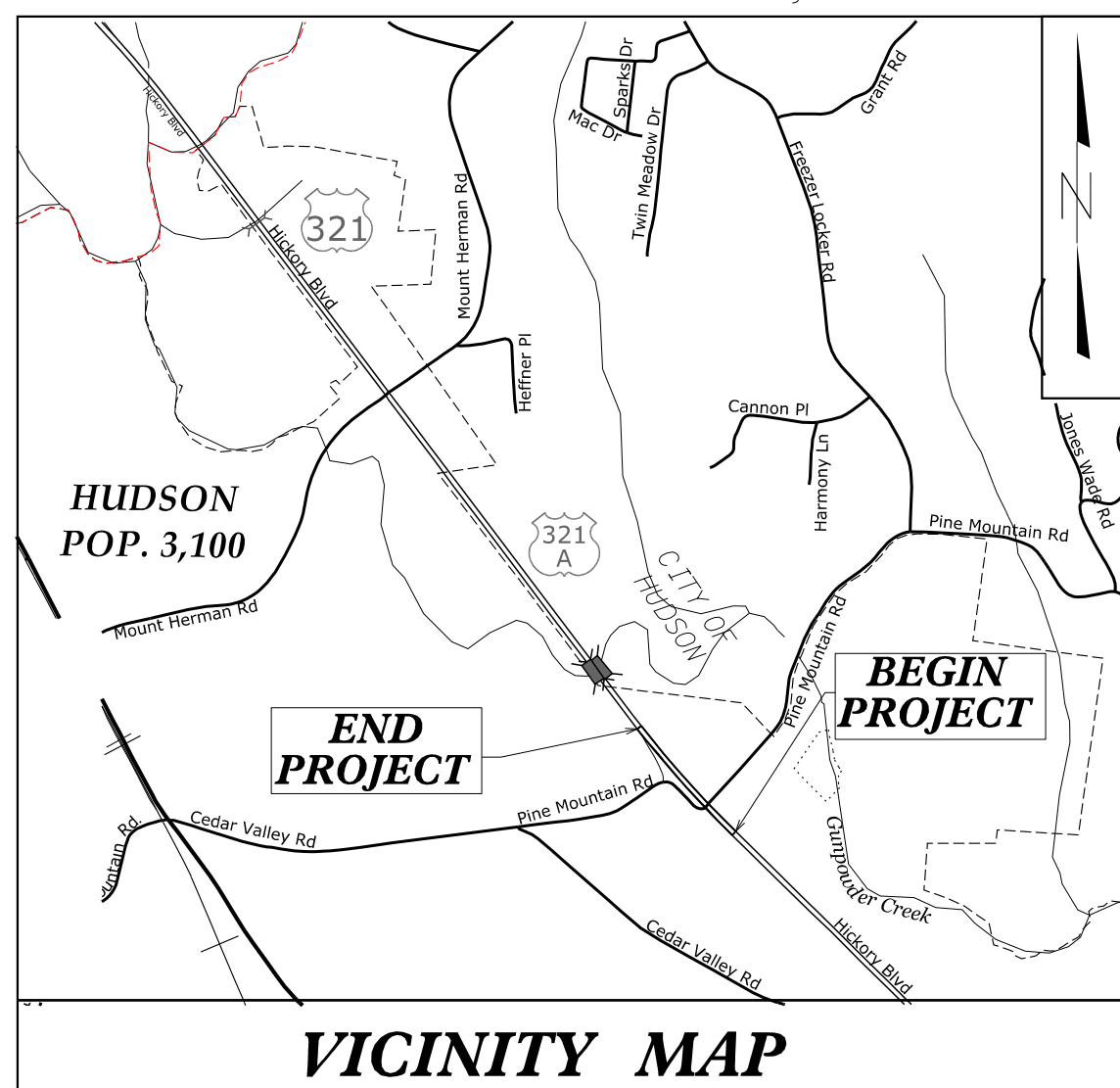
Surface Water Body (1):	Gunpowder Creek		NCDWR Stream Index No.:	11-55-(1.5)				
NCDWR Surface Water Classification for Water Body	Primary Classification:	Water Supply IV (WS-IV)						
	Supplemental Classification:	None						
Other Stream Classification:	None							
Impairments:	None							
Aquatic T&E Species?	No	Comments:						
NRTR Stream ID:	N/A						Buffer Rules in Effect:	Catawba
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?				N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)				
(If yes, provide justification in the General Project Narrative)								

09/08/19

TIP PROJECT: U-4700CB

CONTRACT:

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP

25% REVIEW PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

LOCATION: US 321 (HICKORY BLVD) AT SR 1809 (PINE MOUNTAIN ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND SIDEWALKS

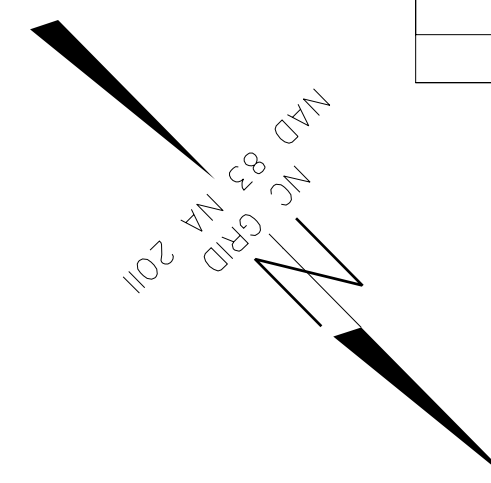
WETLAND AND SURFACE WATER IMPACTS PERMIT

V&M
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina
828-253-0785
919-977-9455

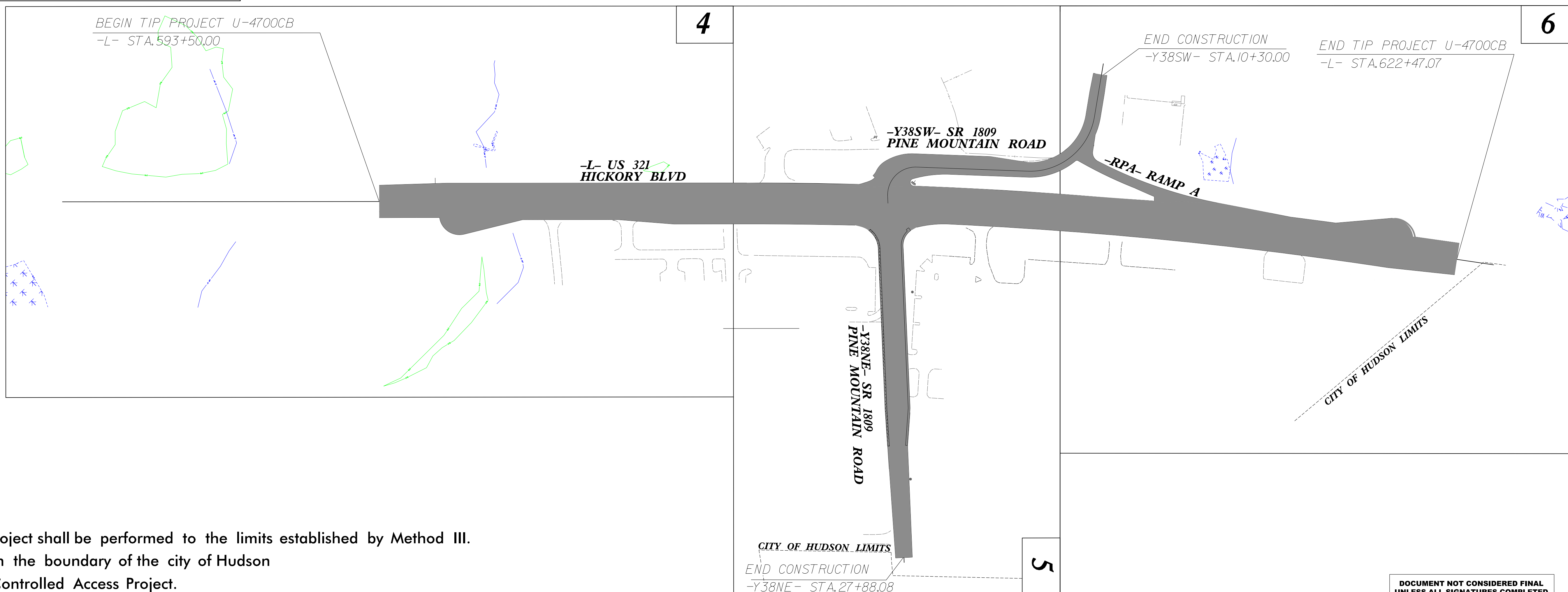
Boone, NC 828-255-9533
Tri-Cities, TN 423-467-8400
Knoxville, TN 865-546-5800
Spartanburg, SC 864-534-4715
Charleston, SC 843-934-5630
Wadesboro, NC 704-248-6600
Charlotte, NC 704-257-0488
Atlanta, GA 770-457-3509

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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4700CB	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35993.1.1	NHF-321(18)	PE	

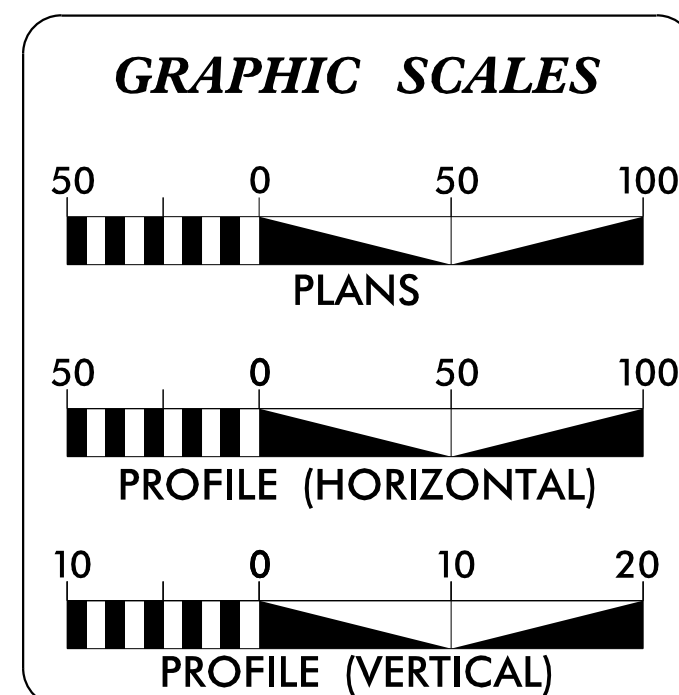


PERMIT DRAWING
SHEET 1 OF 10



Clearing on this project shall be performed to the limits established by Method III.
This project is within the boundary of the city of Hudson
This is a partially Controlled Access Project.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2015 =	32000
ADT 2035 =	20400
K =	%
D =	%
T =	% *
V =	60 MPH
* TTST =	6% DUAL
FUNC CLASS =	PRINCIPAL
ARTERIAL TIER	

PROJECT LENGTH

LENGTH ROADWAY PROJECT U-4700CB =	0.548 MI.
LENGTH STRUCTURE PROJECT U-4700CB =	0.000 MI.
TOTAL LENGTH OF PROJECT U-4700CB =	0.548 MI.

Prepared in the Office of:
VAUGHN & MELTON
1318-F PATTON AVE.
ASHEVILLE NC, 28806
FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: REECE SCHULER, PE, PLS
PROJECT ENGINEER

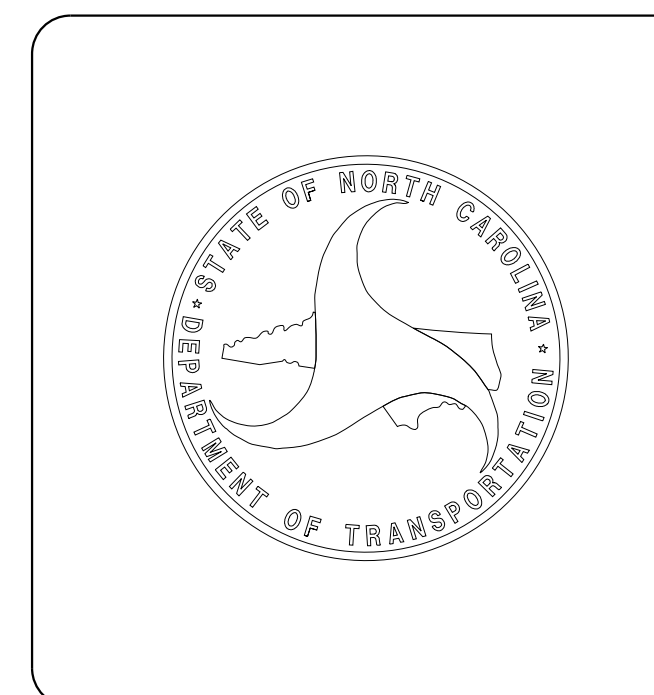
LETTING DATE: JOSHUA PHILLIPS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

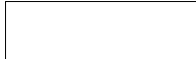

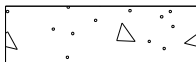



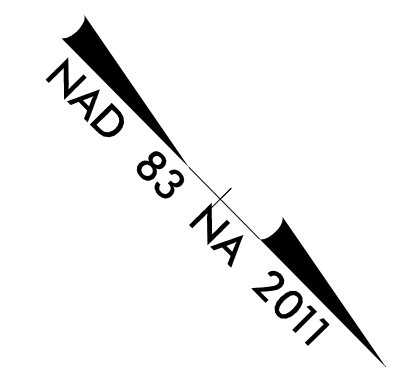
\$\$\$\$\$ SYSTEM TIME \$\$\$\$\$\$
\$\$\$\$\$ DONOR \$\$\$\$\$\$
\$\$\$\$\$ USERNAME \$\$\$\$\$\$

**PERMIT DRAWING
SHEET 2 OF 10**

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

LEGEND

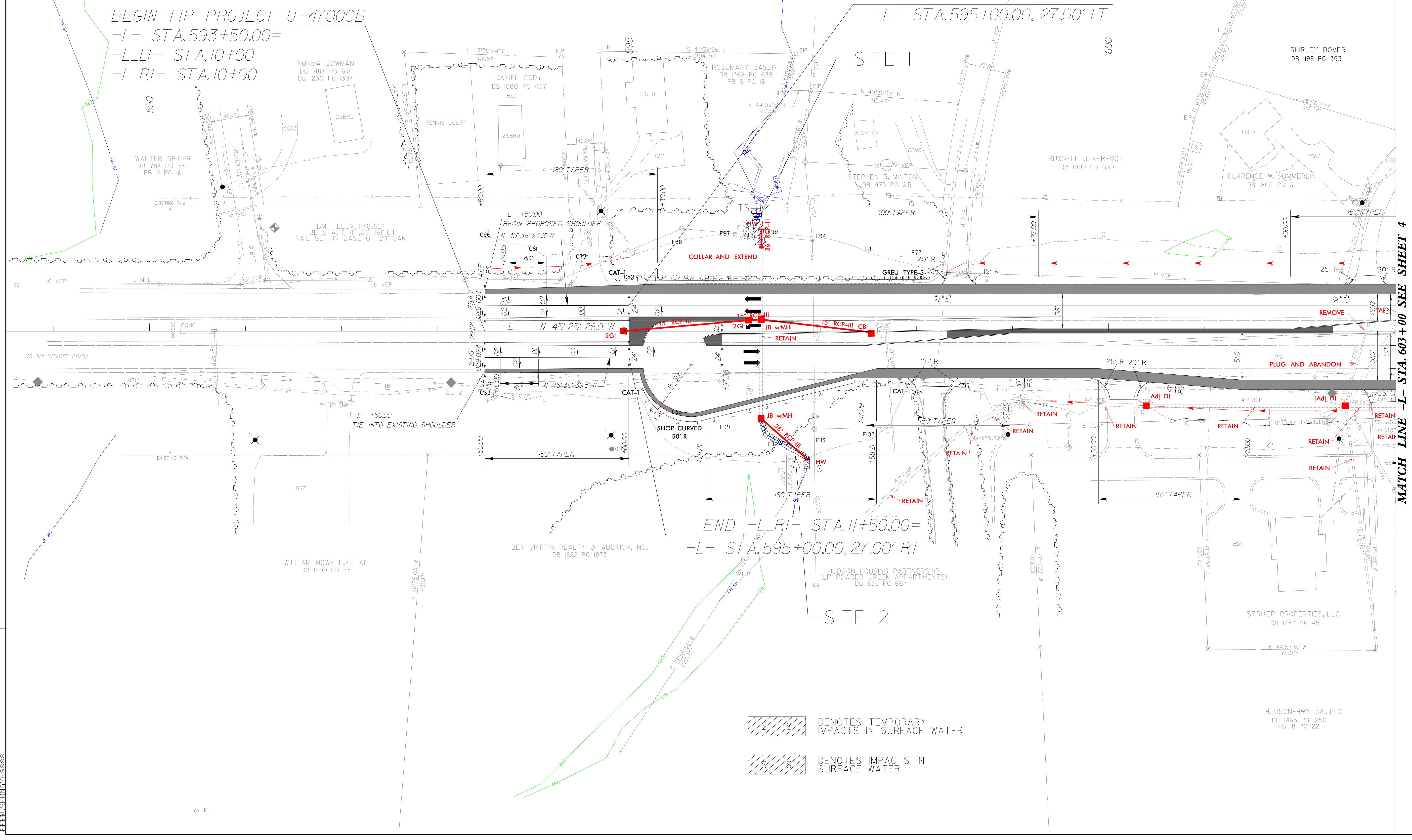
-  PROPOSED PAVEMENT
-  PROPOSED 5' MONOLITHIC ISLAND
-  PROPOSED CONCRETE SIDEWALK
-  PROPOSED FULL DEPTH PAVED SHOULDER



BEGIN TIP PROJECT U-4700CB

-L- STA. 593+50.00=
-L LI- STA. 10+00
-L RI- STA. 10+00

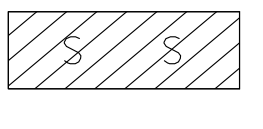
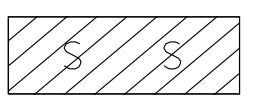
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-L- STA. 595+00.00, 27.00' LT



REVISIONS



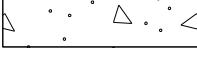

8/17/99

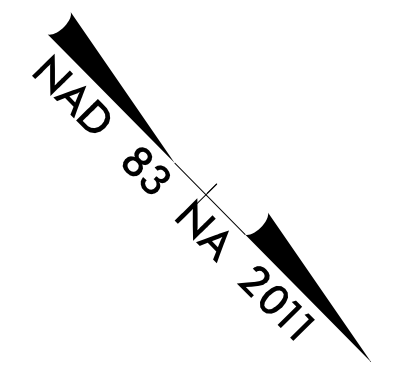
MATCH LINE -L- STA. 603+00 SEE SHEET 4

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

PERMIT DRAWING
SHEET 3 OF 10

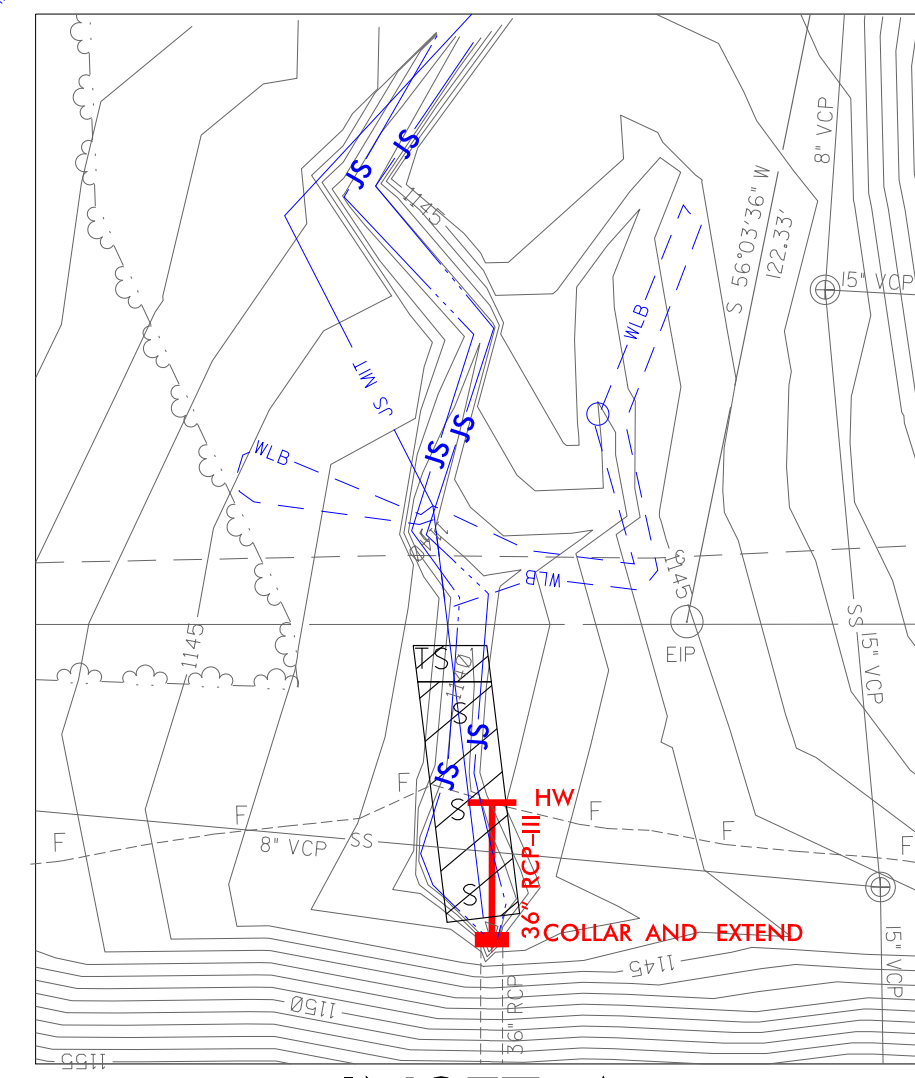
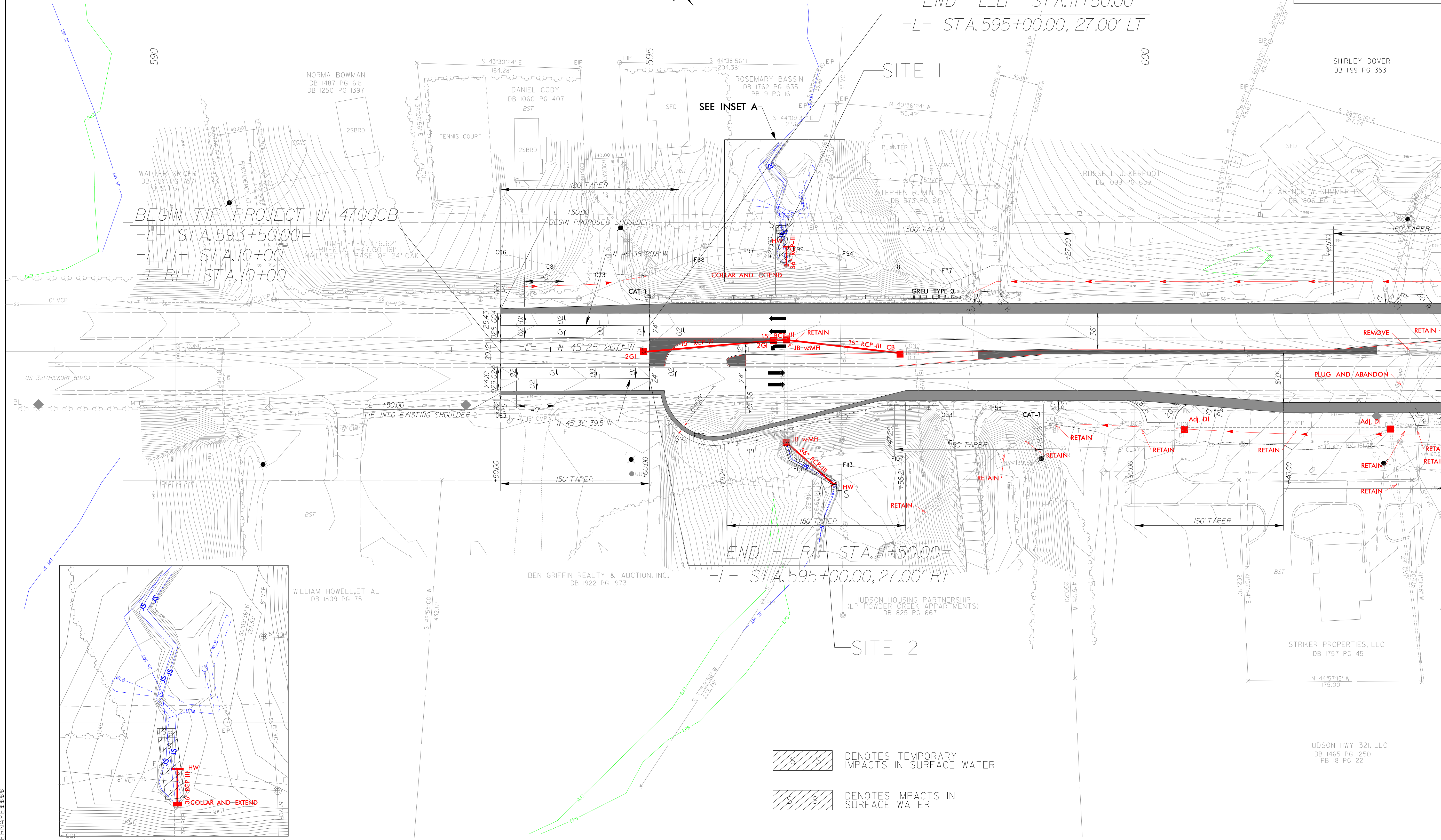
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

- LEGEND**
-  PROPOSED PAVEMENT
 -  PROPOSED 5" MONOLITHIC ISLAND
 -  PROPOSED CONCRETE SIDEWALK
 -  PROPOSED FULL DEPTH PAVED SHOULDER



8/17/99

REVISIONS







INSET A
NOT TO SCALE

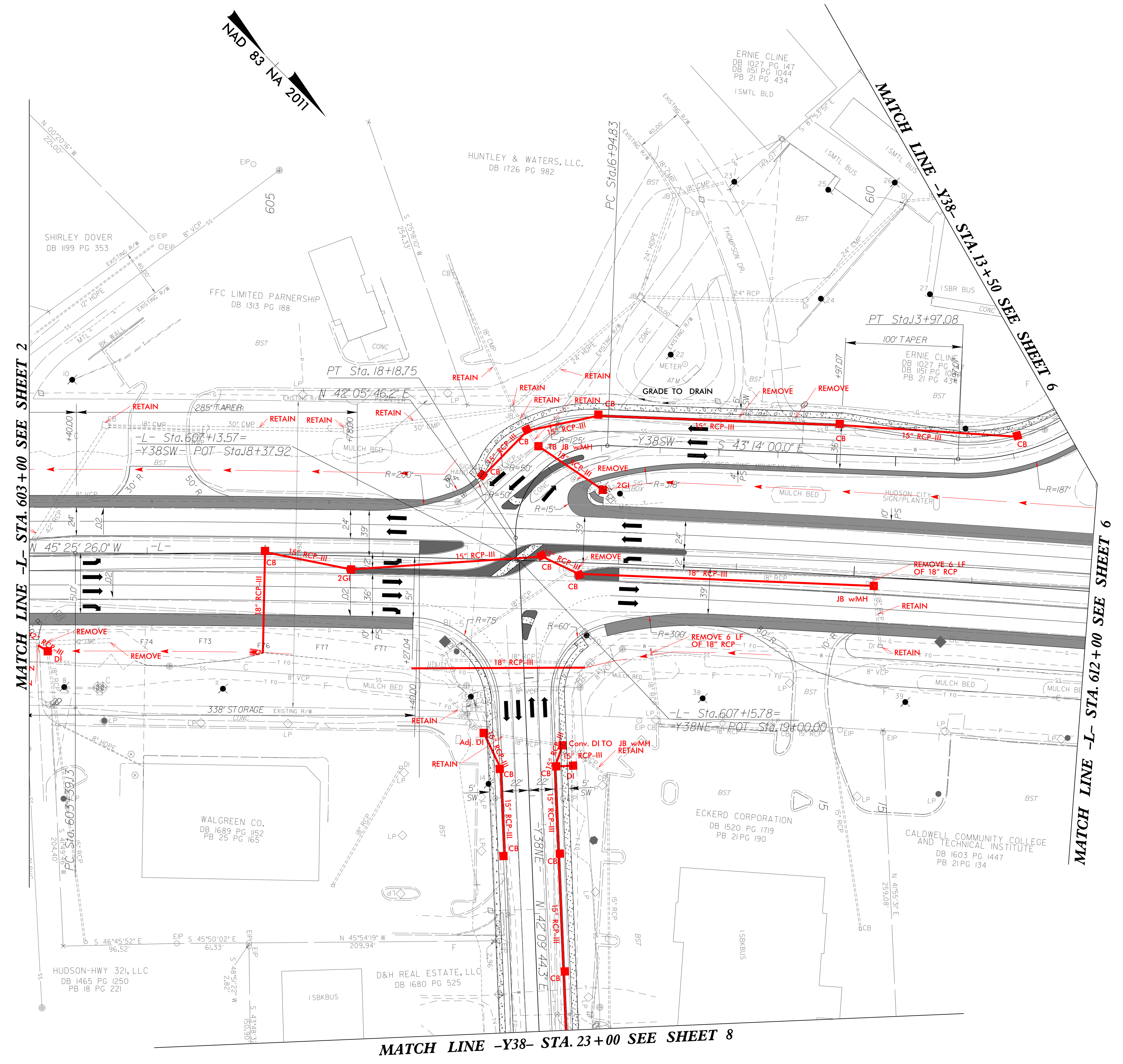
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**PERMIT DRAWING
SHEET 4 OF 10**

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

LEGEND

-  PROPOSED PAVEMENT
-  PROPOSED 5' MONOLITHIC ISLAND
-  PROPOSED CONCRETE SIDEWALK
-  PROPOSED FULL DEPTH PAVED SHOULDER



-L- CURVE DATA		-Y38SW- CURVE DATA	
PI Sta 611+89.94	$\Delta = 8^\circ 32' 11.4" (RT)$	PI Sta 12+98.54	$\Delta = 82^\circ 35' 00.0" (RT)$
D = 0° 30' 09.3"	L = 1,698.49'	PI Sta 17+76.20	$\Delta = 94^\circ 40' 13.8" (LT)$
T = 850.82'	R = 11,400.00'	D = 76° 23' 39.7"	L = 123.92'
		T = 153.70'	T = 81.38'
		R = 175.00'	R = 75.00'

8/17/99





8/17/99

REVISIONS

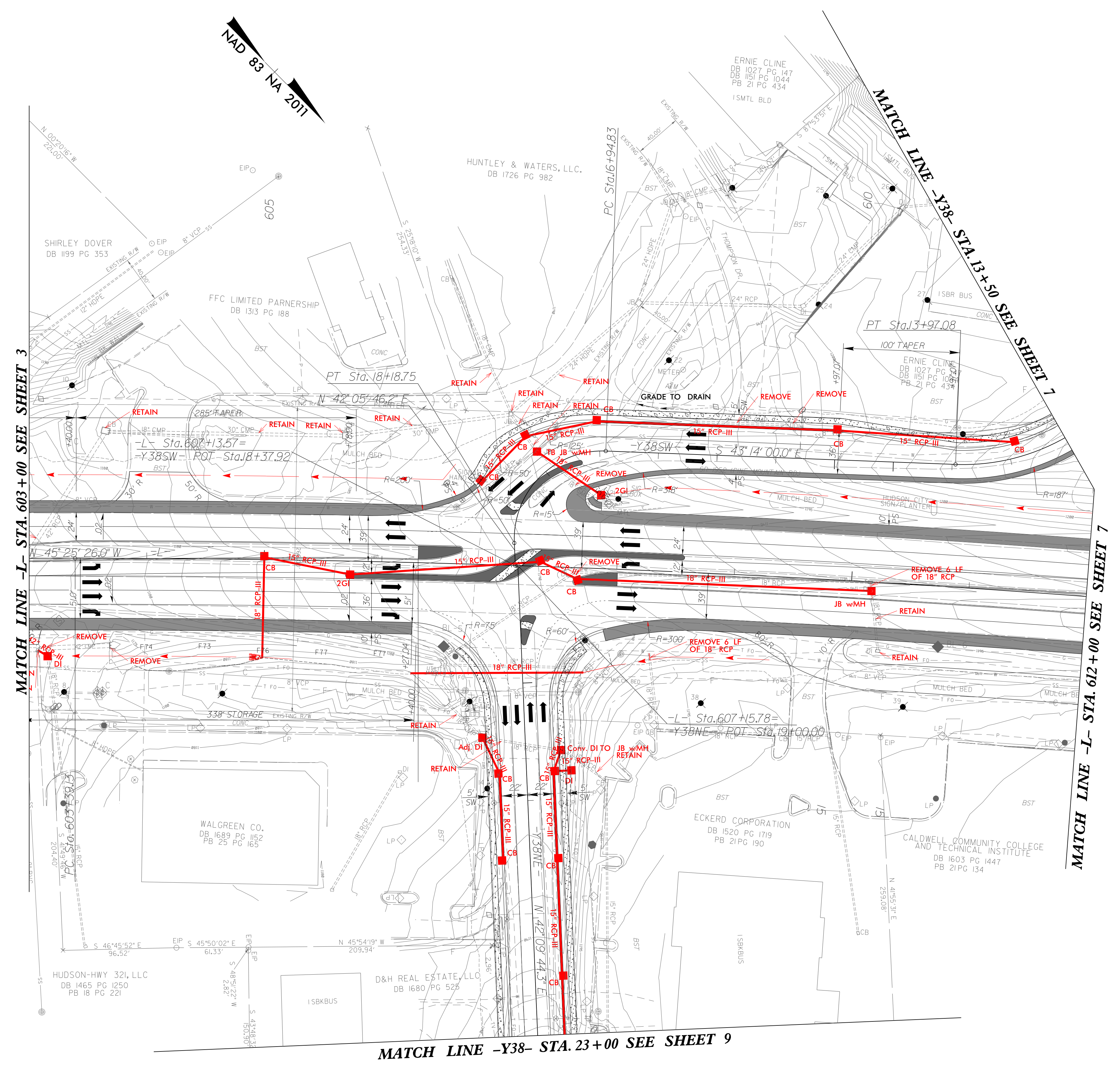
PERMIT DRAWING SHEET 5 OF 10

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LEGEND

-  PROPOSED PAVEMENT
-  PROPOSED 5" MONOLITHIC ISLAND
-  PROPOSED CONCRETE SIDEWALK
-  PROPOSED FULL DEPTH PAVED SHOULDER

REVISIONS



MATCH LINE -L- STA. 603+00 SEE SHEET 3

MATCH LINE -L- STA. 612+00 SEE SHEET 7

MATCH LINE -Y38- STA. 23+00 SEE SHEET 9

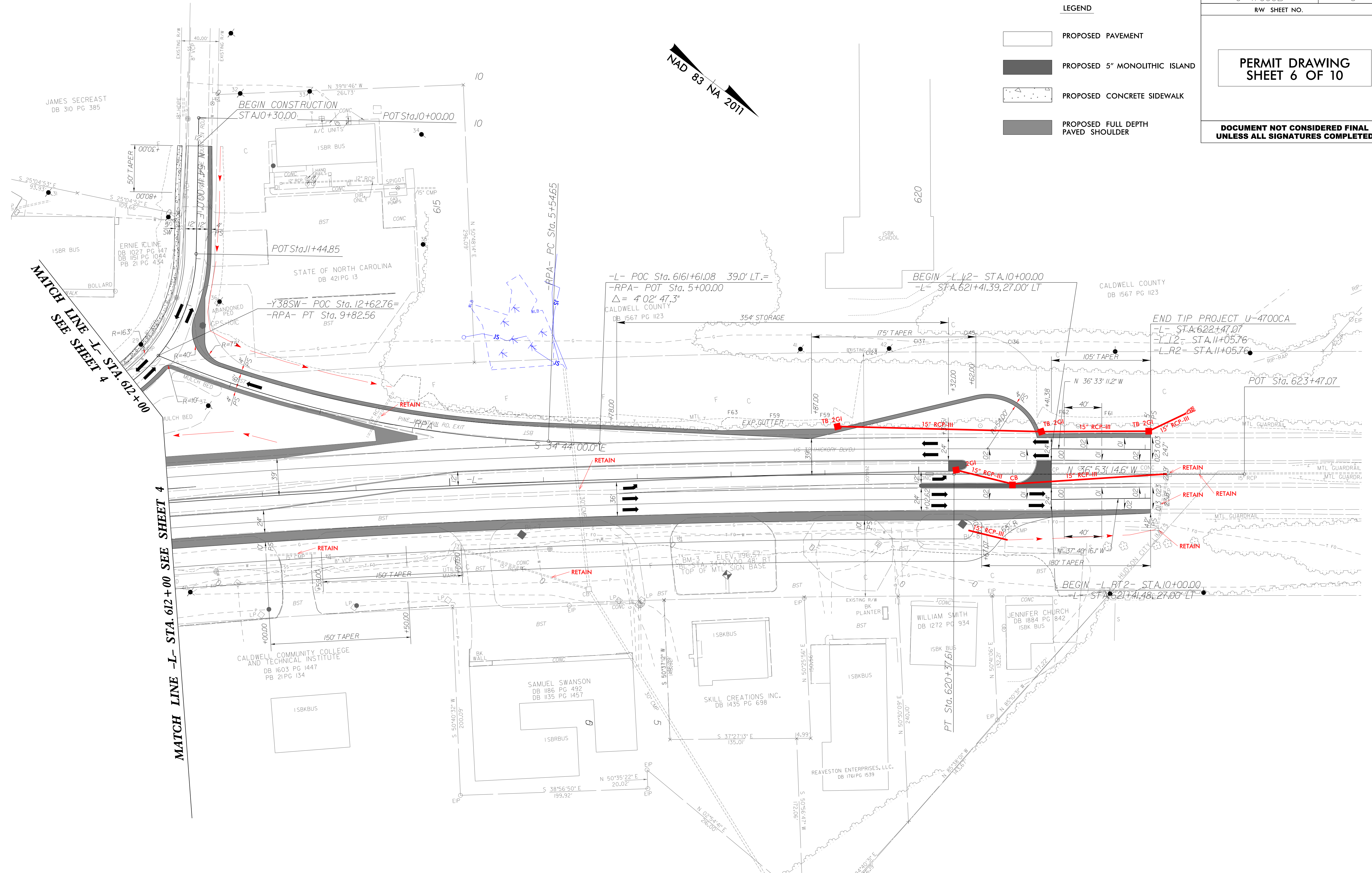
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$\Delta = 8^\circ 32' 11.4''$ (RT)	$\Delta = 82^\circ 35' 00.0''$ (RT)	$\Delta = 94^\circ 40' 13.8''$ (LT)	
$D = 0^\circ 30' 09.3''$	$D = 32^\circ 44' 25.6''$	$D = 76^\circ 23' 39.7''$	
$L = 1,698.49'$	$L = 252.24'$	$L = 123.92'$	
$T = 850.82'$	$T = 153.70'$	$T = 81.38'$	
$R = 11,400.00'$	$R = 175.00'$	$R = 75.00'$	

8/17/99

8/17/99

LEGEND

	PROPOSED PAVEMENT
	PROPOSED 5' MONOLITHIC ISLAND
	PROPOSED CONCRETE SIDEWALK
	PROPOSED FULL DEPTH PAVED SHOULDER



-L- CURVE DATA PI Sta 611+89.94 Δ = 8° 32' 11.4" (RT) D = 0° 30' 09.3" L = 1,698.49' T = 850.82' R = 11,400.00'	-Y38SW- CURVE DATA PI Sta 12+98.54 Δ = 82° 35' 00.0" (RT) D = 32° 44' 25.6" L = 252.24' T = 153.70' R = 175.00'	-RPA- CURVE DATA PI Sta 7+70.90 Δ = 20° 25' 52.3" (RT) D = 4° 46' 28.7" L = 427.91' T = 216.25' R = 1,200.00'
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REVISIONS

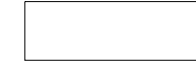



8/17/99

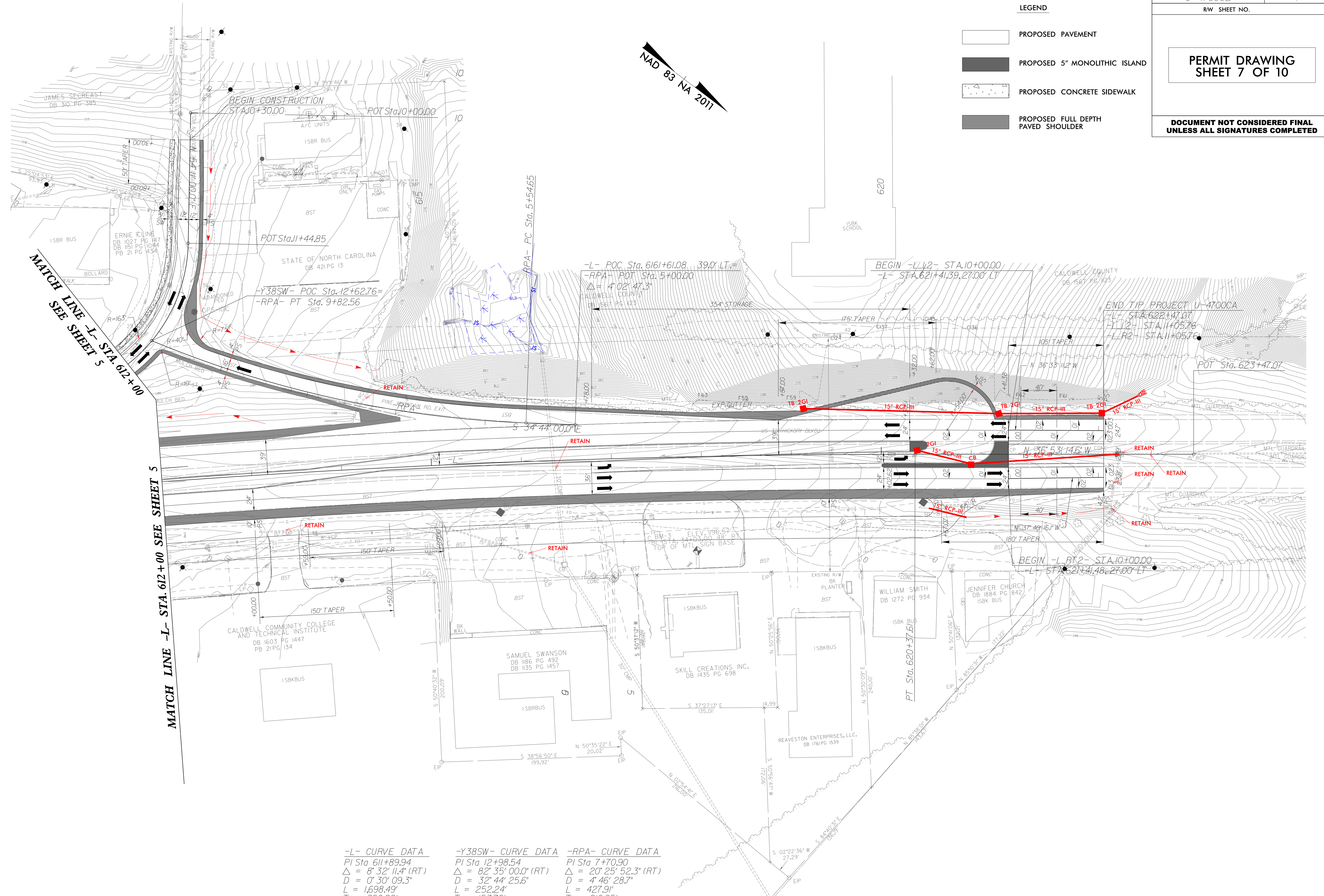
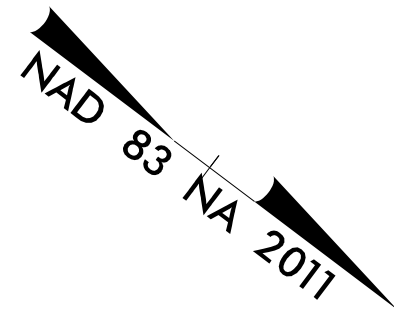
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 99. 08/17/99
 100. 08/17/99

**PERMIT DRAWING
SHEET 7 OF 10**

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

LEGEND

-  PROPOSED PAVEMENT
-  PROPOSED 5' MONOLITHIC ISLAND
-  PROPOSED CONCRETE SIDEWALK
-  PROPOSED FULL DEPTH PAVED SHOULDER



**MATCH LINE -L- STA. 612+00
SEE SHEET 5**

MATCH LINE -L- STA. 612+00 SEE SHEET 5

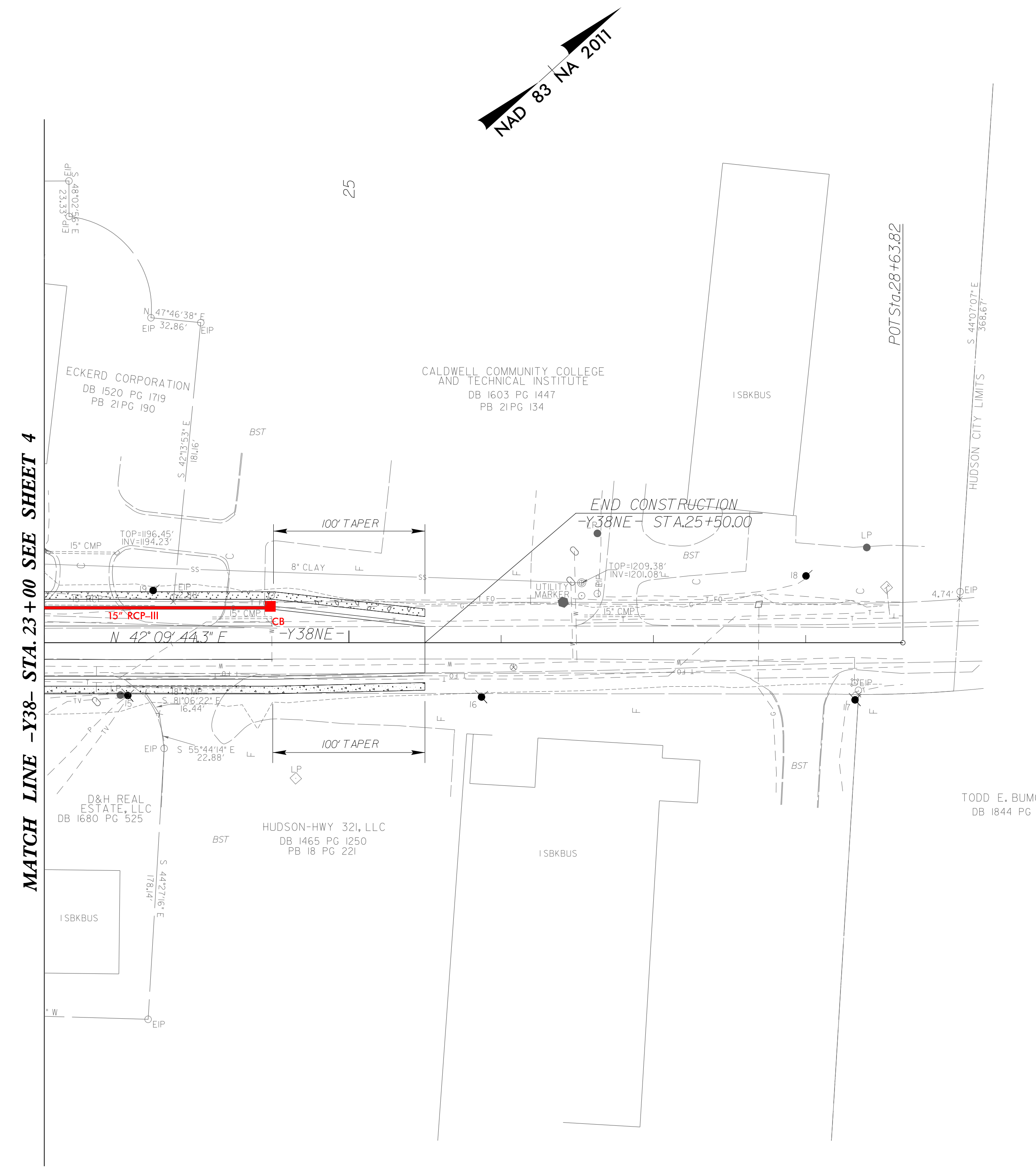
-L- CURVE DATA	-Y38SW- CURVE DATA	-RPA- CURVE DATA
PI Sta 611+89.94	PI Sta 12+98.54	PI Sta 7+70.90
$\Delta = 8^\circ 32' 11.4"$ (RT)	$\Delta = 82^\circ 35' 00.0"$ (RT)	$\Delta = 20^\circ 25' 52.3"$ (RT)
$D = 0^\circ 30' 09.3"$	$D = 32^\circ 44' 25.6"$	$D = 4^\circ 46' 28.7"$
$L = 1,698.49'$	$L = 252.24'$	$L = 427.91'$
$T = 850.82'$	$T = 153.70'$	$T = 216.25'$
$R = 11,400.00'$	$R = 175.00'$	$R = 1,200.00'$

REVISIONS

8/17/99

SYNTHETIC CONSTRUCTION MATERIAL

PROJECT REFERENCE NO. U-4700CB SHEET NO. 8
RW SHEET NO.
**PERMIT DRAWING
SHEET 8 OF 10**
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED







- LEGEND**
- PROPOSED PAVEMENT
 - PROPOSED 5" MONOLITHIC ISLAND
 - PROPOSED CONCRETE SIDEWALK
 - PROPOSED FULL DEPTH PAVED SHOULDER

8/17/99

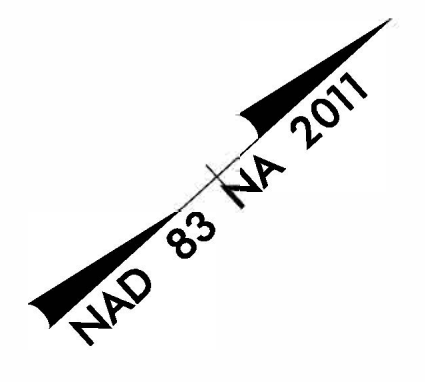
**PERMIT DRAWING
SHEET 9 OF 10**

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

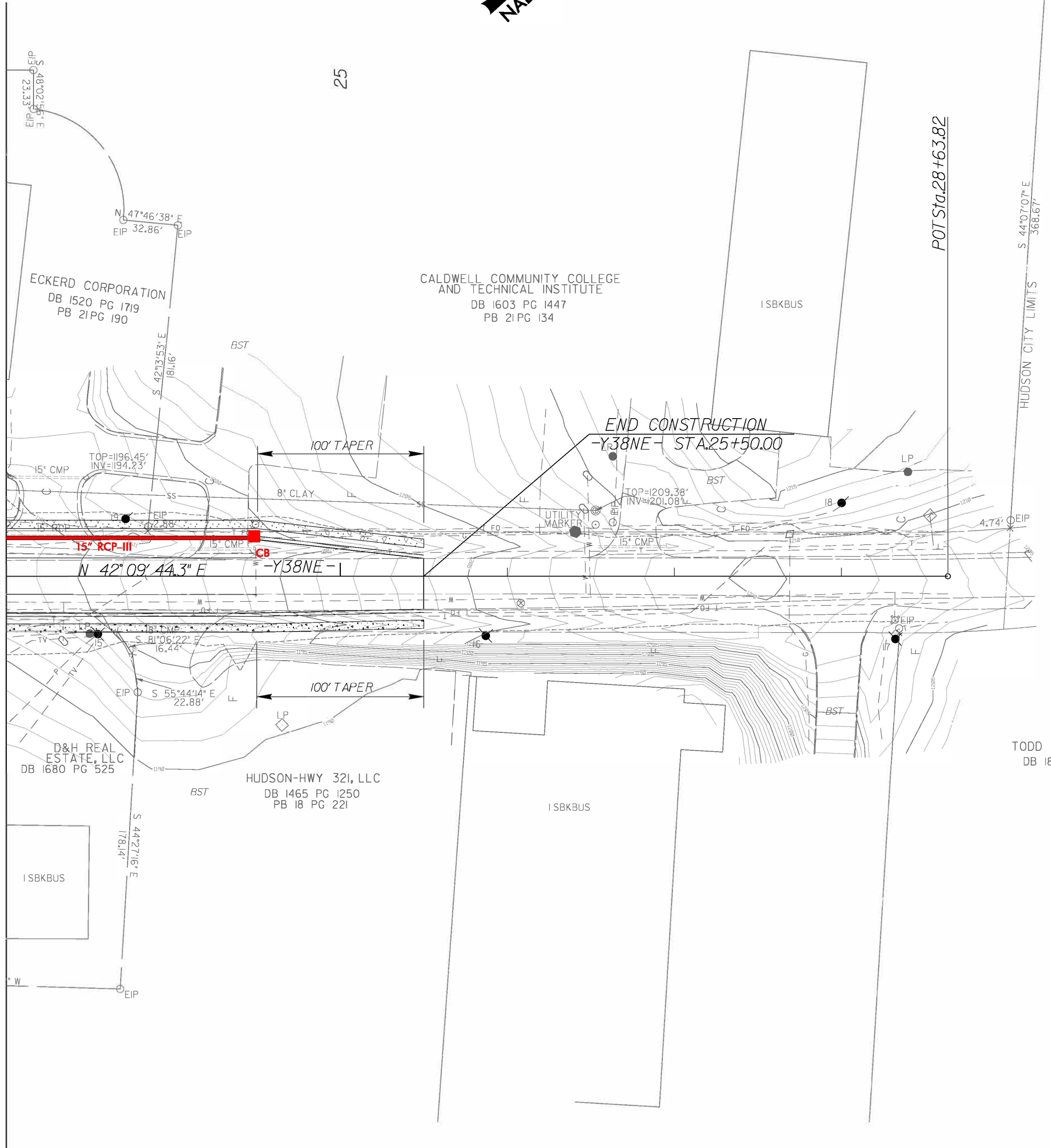
LEGEND

-  PROPOSED PAVEMENT
-  PROPOSED 5" MONOLITHIC ISLAND
-  PROPOSED CONCRETE SIDEWALK
-  PROPOSED FULL DEPTH PAVED SHOULDER

REVISIONS



MATCH LINE -Y38- STA. 23 + 00 SEE SHEET 5



8/17/09

8/17/09 8:17 AM

WETLAND AND SURFACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS					
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)	
1	596+36 90' LT	1 @ 36" RCP							< 0.01		16		
	596+35 107' LT	Channel Relocation							< 0.01		16		
	596+33 123' LT	Const. Area							< 0.01			5	
2	597+08 84' RT	Fill							< 0.01		68		
	597+19 120' RT	Const. Area								< 0.01		10	
TOTALS*:									0.01	< 0.01	100	15	0

*Rounded totals are sum of actual impacts

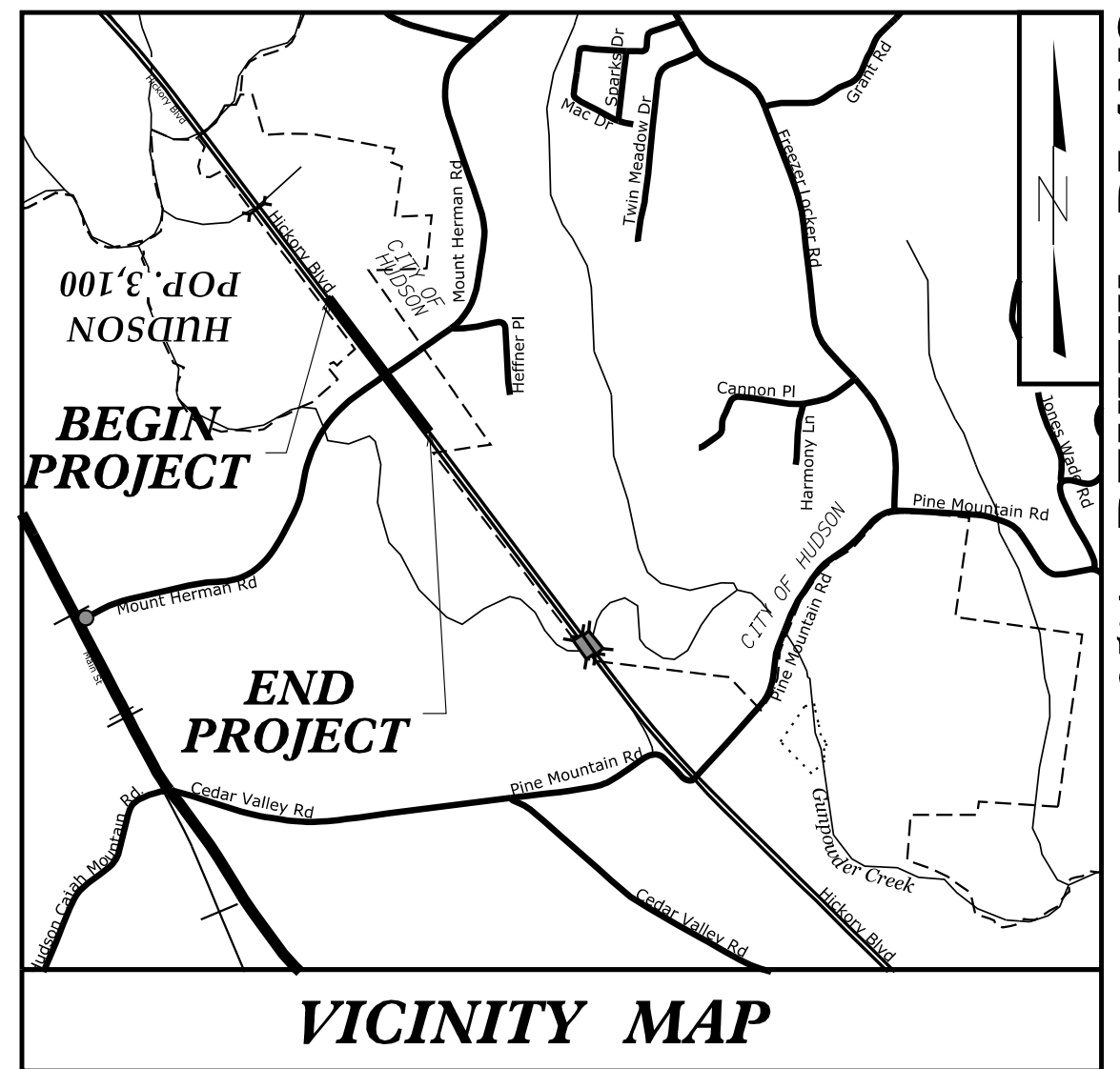
NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 10/18/18
 CALDWELL
 U-4700CB
 35993.1.1
 SHEET 10 OF 10

09/08/19
 12/19/2018
 V:\Asheville\transportation\31535-10 U-4700CA\Roadway\Proj\U4700CA.Rdy.tsh.dgn
 User:rmschuler

CONTRACT: TIP PROJECT: U-4700CA

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

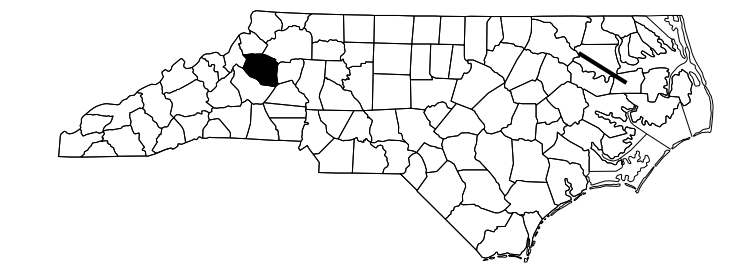


STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
CALDWELL COUNTY

V&M
Vaughn & Melton
 Consulting Engineers
 Asheville, North Carolina
 828-253-1795
 99-977-9455

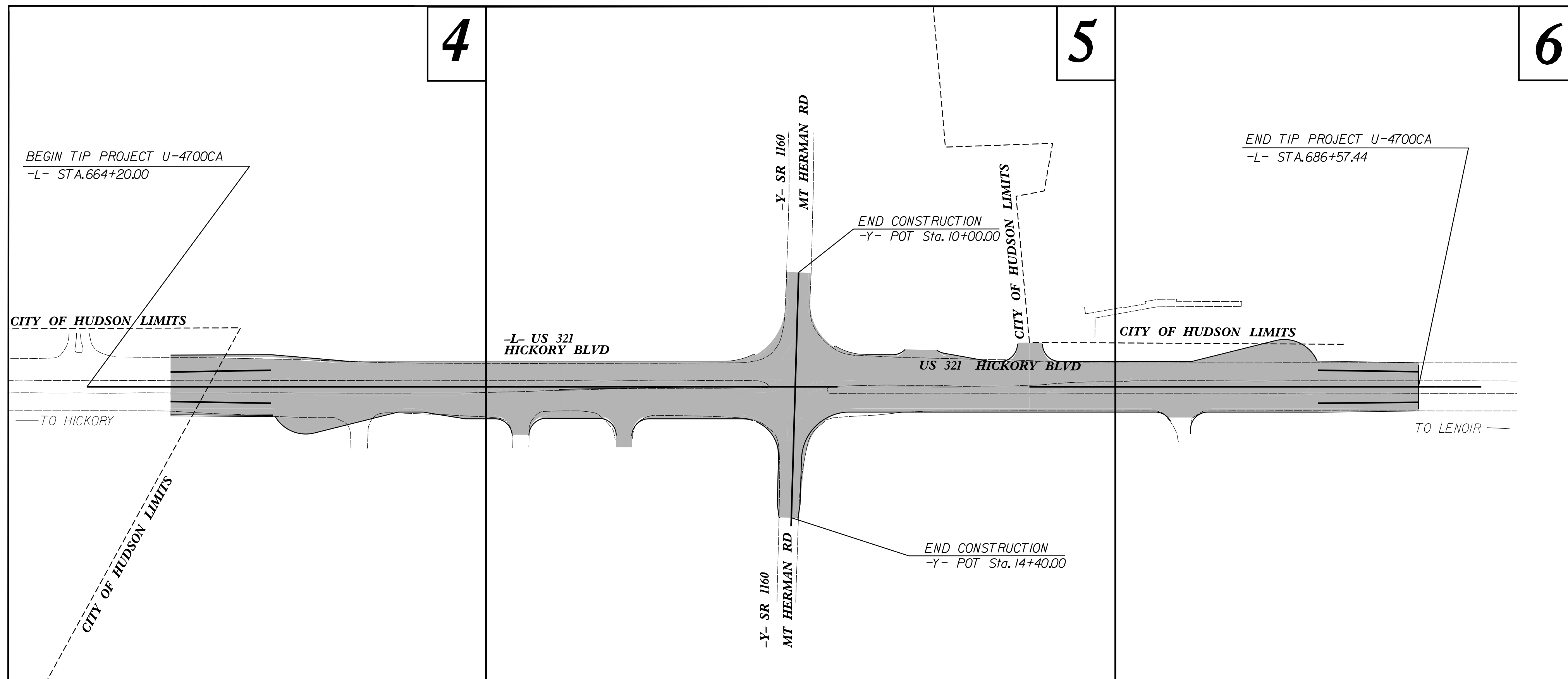
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 Tri-Cities, TN 423-467-8401
 Knoxville, TN 865-546-5800
 Spartanburg, SC 864-534-4715
 Charleston, SC 843-934-5650
 Middleburg, FL 904-248-6600
 Raleigh, NC 919-777-9455
 Charlotte, NC 704-357-0488
 Atlanta, GA 770-427-2509
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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4700CA	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35993.1.10	NHF-321(18)	PE	



LOCATION: US 321 (HICKORY BLVD) AT SR 1160 (MOUNT HERMAN ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND SIGNALS

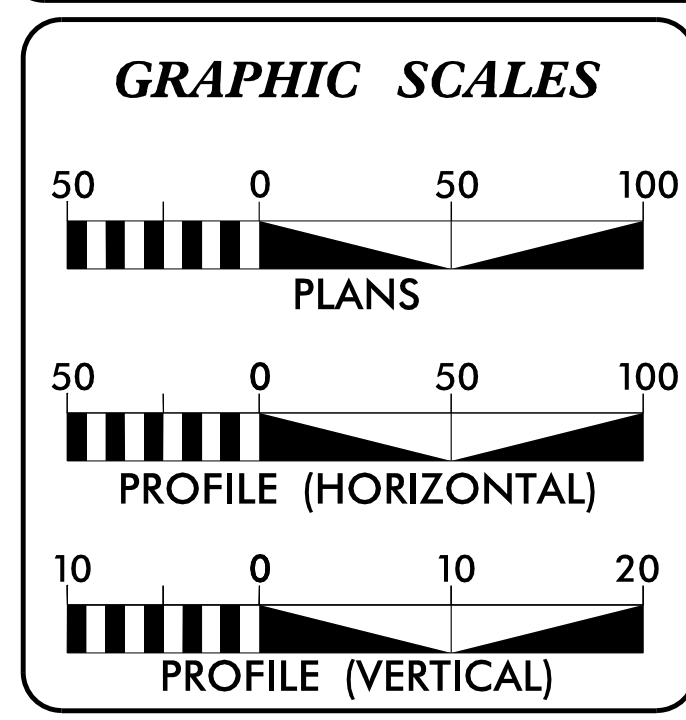


Clearing on this project shall be performed to the limits established by Method III.

This project is within the boundary of the city of Hudson

This is a partially Controlled Access Project.

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
 DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2015 = 32500
 ADT 2035 = 44100
 K = 8 %
 D = 55 %
 T = 6 % *
 V = 60 MPH
 * TTST = 6% DUAL = 3%
 FUNC CLASS =
 PRINCIPAL
 ARTERIAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT U-4700CA = 0.424 MI.
 LENGTH STRUCTURE PROJECT U-4700CA = 0.000 MI.
 TOTAL LENGTH OF PROJECT U-4700CA = 0.424 MI.

Prepared in the Office of:
VAUGHN & MELTON
 1318-F PATTON AVE.
 ASHEVILLE NC, 28806
 FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: REECE SCHULER, PE, PLS
 PROJECT ENGINEER

LETTING DATE: JOSHUA PHILLIPS
 PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

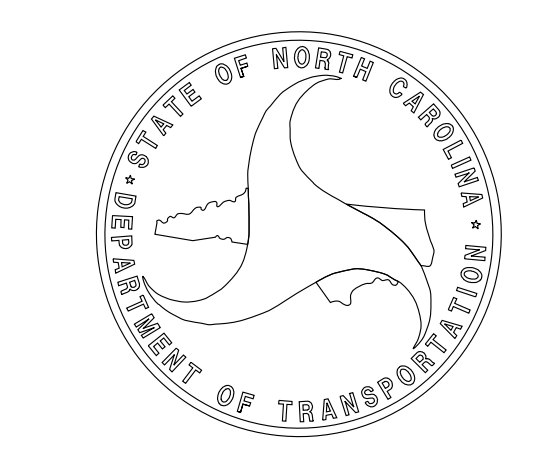
P.E.

SIGNATURE: _____

ROADWAY DESIGN ENGINEER

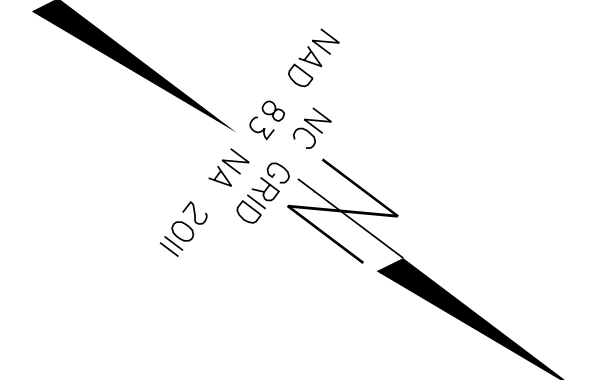
P.E.

SIGNATURE: _____



PROJECT REFERENCE NO.	SHEET NO.
U-4700CA	4
RW SHEET NO.	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

FOR PROFILE OF LINE -L- SEE SHEET 7
 FOR PROFILE OF LINE -Y- SEE SHEET 8
 FOR ISLAND AND INTERSECTION DETAILS SEE SHEET 2B

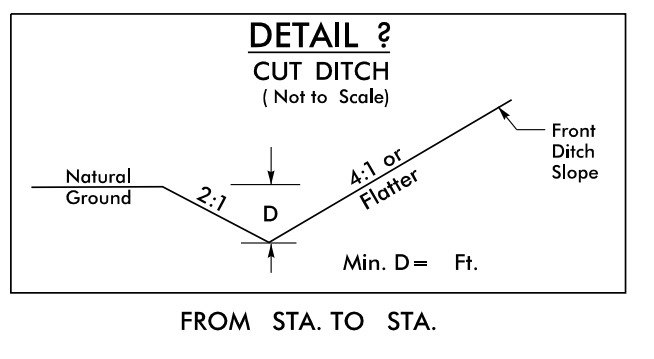
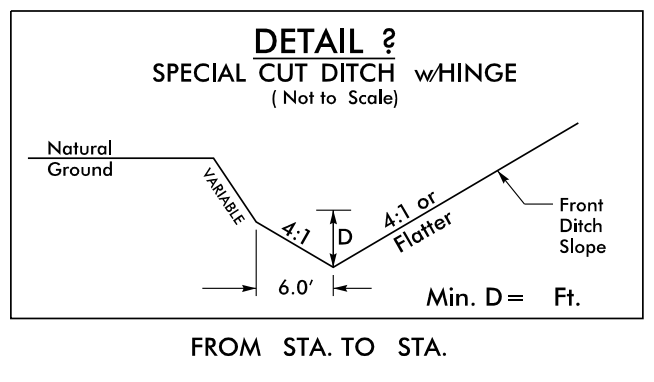
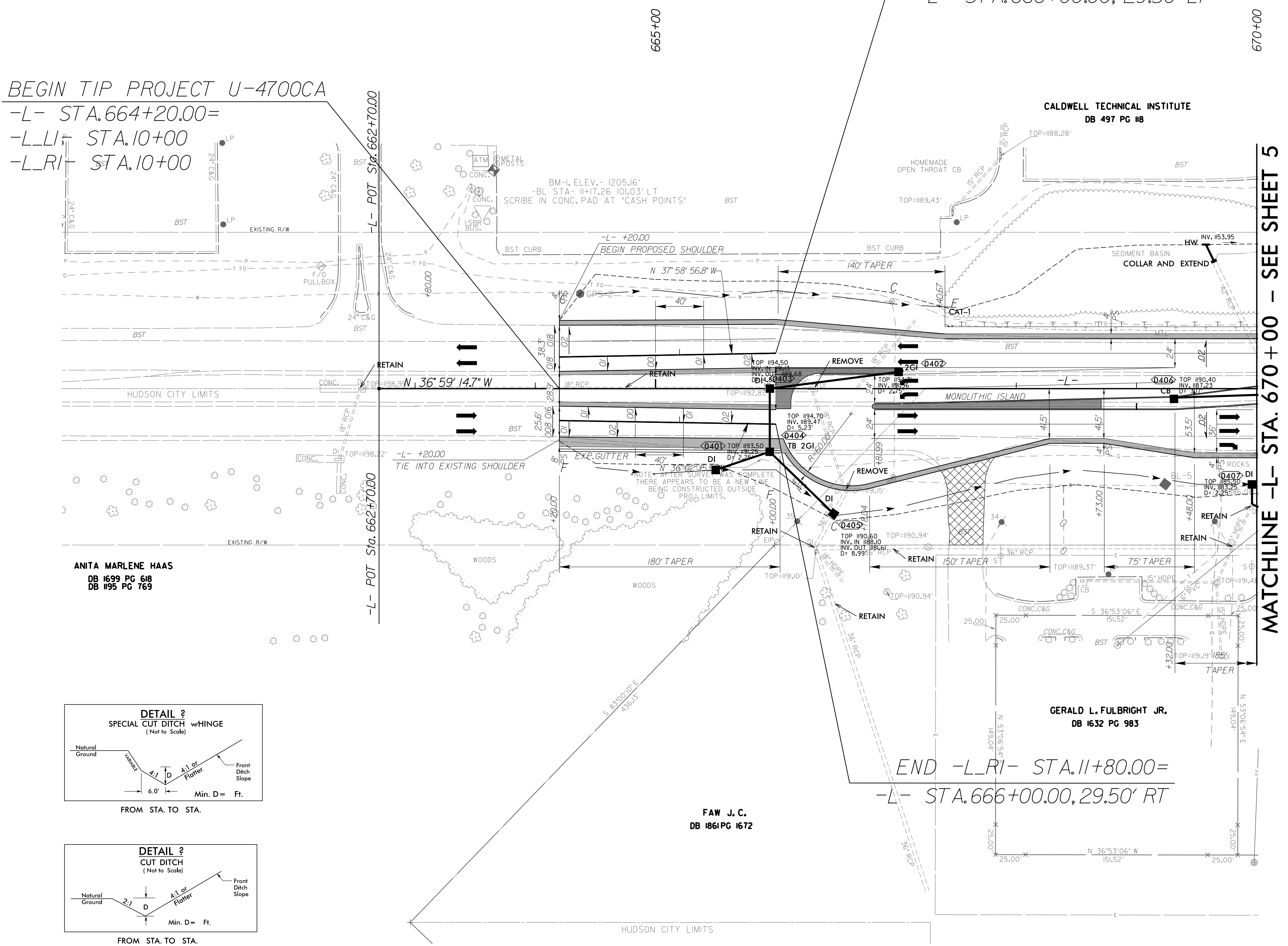


BEGIN TIP PROJECT U-4700CA
 -L- STA. 664+20.00=
 -L_LI- STA. 10+00
 -L_RI- STA. 10+00

END -L_LI- STA. 11+80.00=
 -L- STA. 666+00.00, 29.50' LT

MATCHLINE -L- STA. 670+00 - SEE SHEET 5

- LEGEND**
- PROPOSED PAVEMENT
 - PROPOSED 5" MONOLITHIC ISLAND
 - PROPOSED CONCRETE SIDEWALK
 - PROPOSED FULL DEPTH PAVED SHOULDER



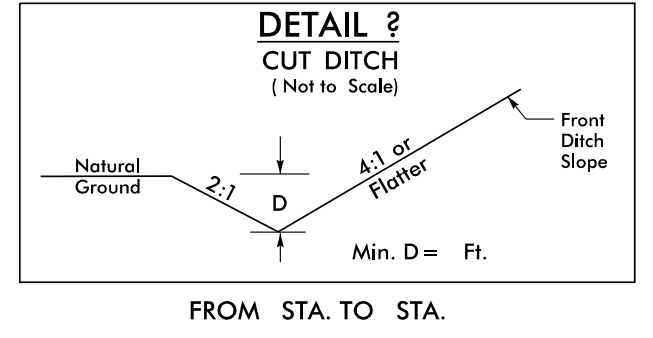
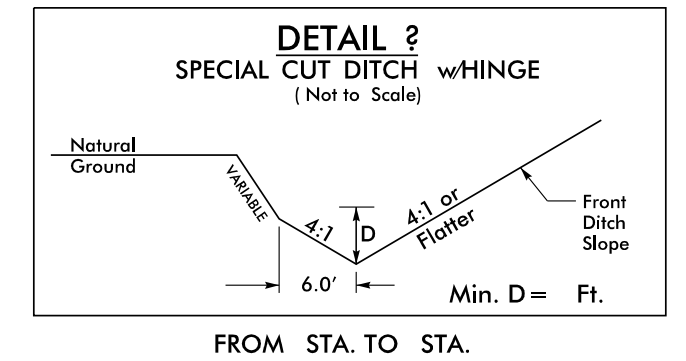
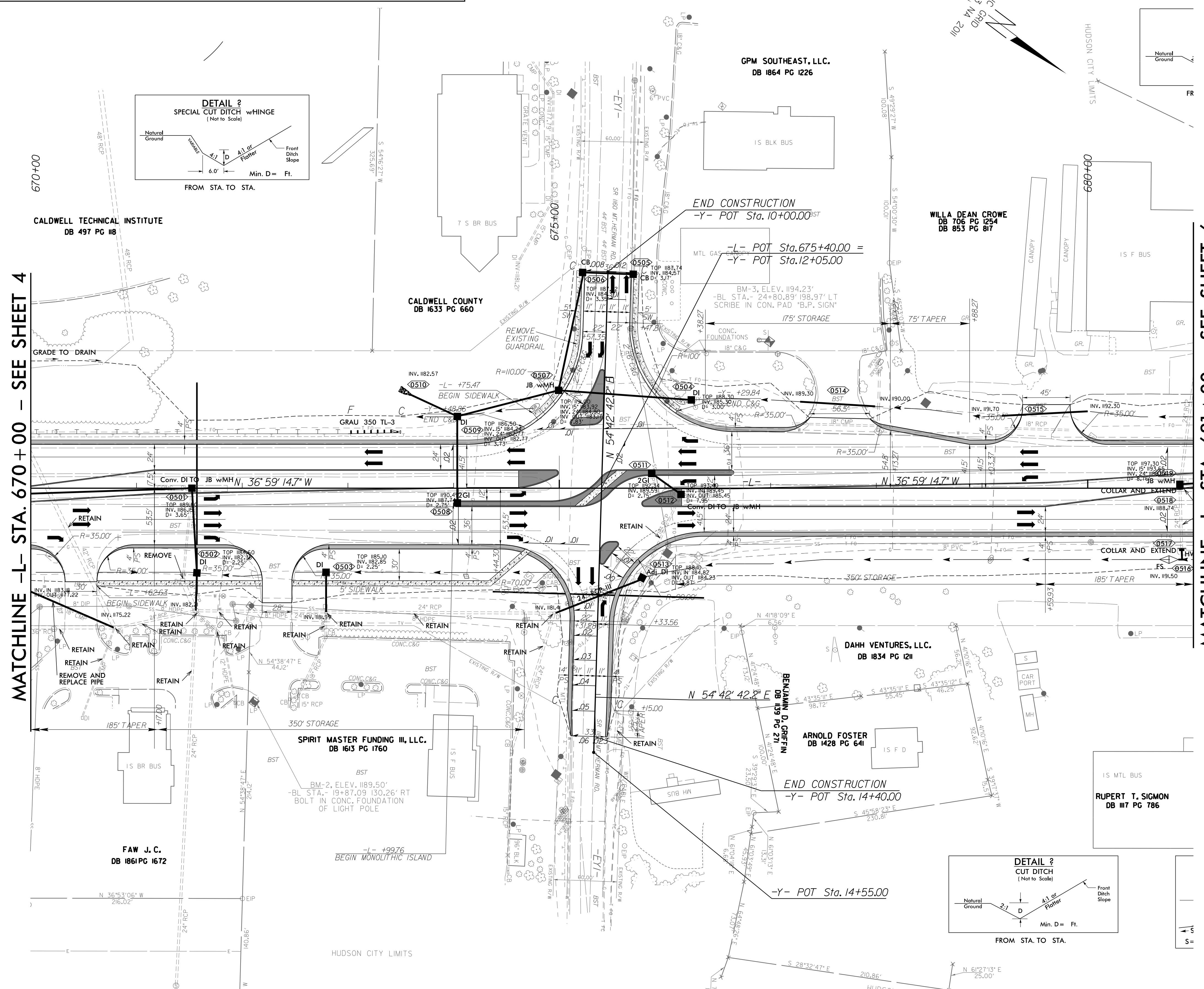
8/17/99

11/20/2016 10:25:49 AM V:\CA\Information\31535-10 U-4700CA\Roadway\Proj\U4700CA_Rdy.psh_4.dgn

FOR PROFILE OF LINE -L- SEE SHEET 7
 FOR PROFILE OF LINE -Y- SEE SHEET 8
 FOR ISLAND AND INTERSECTION DETAILS SEE SHEET 2B

8/17/19

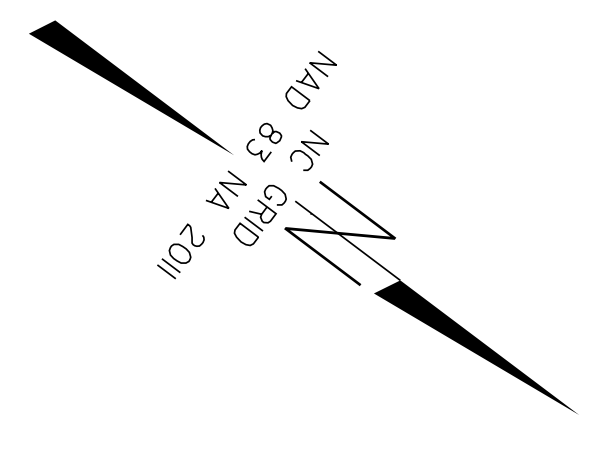
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- LEGEND**
- PROPOSED PAVEMENT
 - PROPOSED 5' MONOLITHIC ISLAND
 - PROPOSED CONCRETE SIDEWALK
 - PROPOSED FULL DEPTH PAVED SHOULDER

MATCHLINE -L- STA. 670+00 - SEE SHEET 4

MATCHLINE -L- STA. 681+00 - SEE SHEET 6



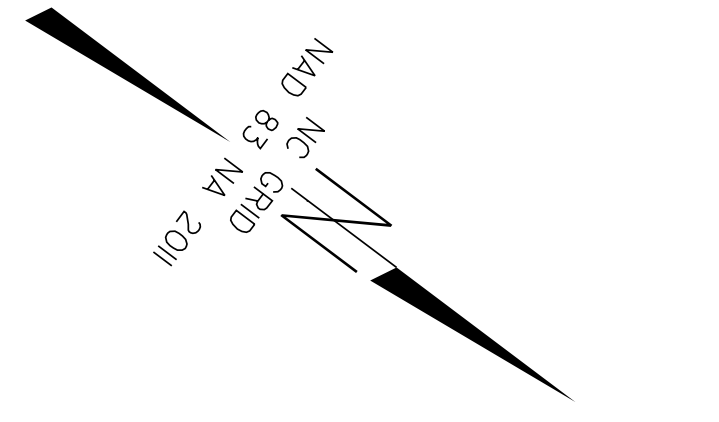
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PROJECT REFERENCE NO. U-4700CA	SHEET NO. 6
RW SHEET NO.	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

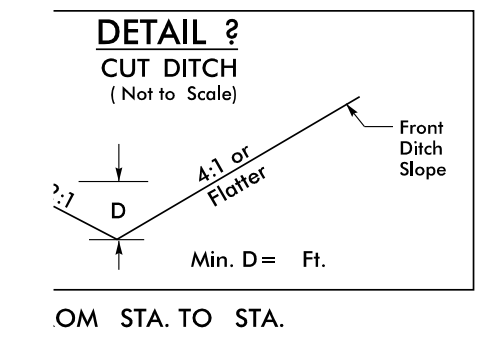
FOR PROFILE OF LINE -L- SEE SHEET 7
FOR ISLAND AND INTERSECTION DETAILS SEE SHEET 2B

LEGEND

- PROPOSED PAVEMENT
- PROPOSED 5' MONOLITHIC ISLAND
- PROPOSED CONCRETE SIDEWALK
- PROPOSED FULL DEPTH PAVED SHOULDER



ROM STA. TO STA.



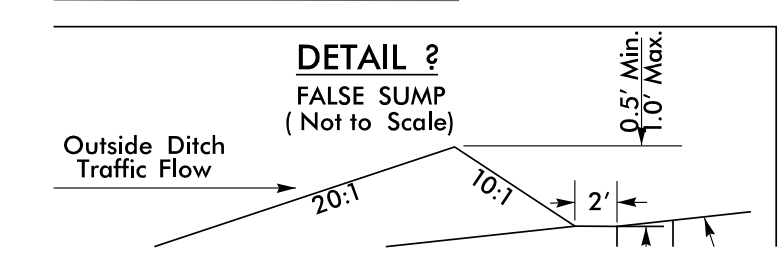
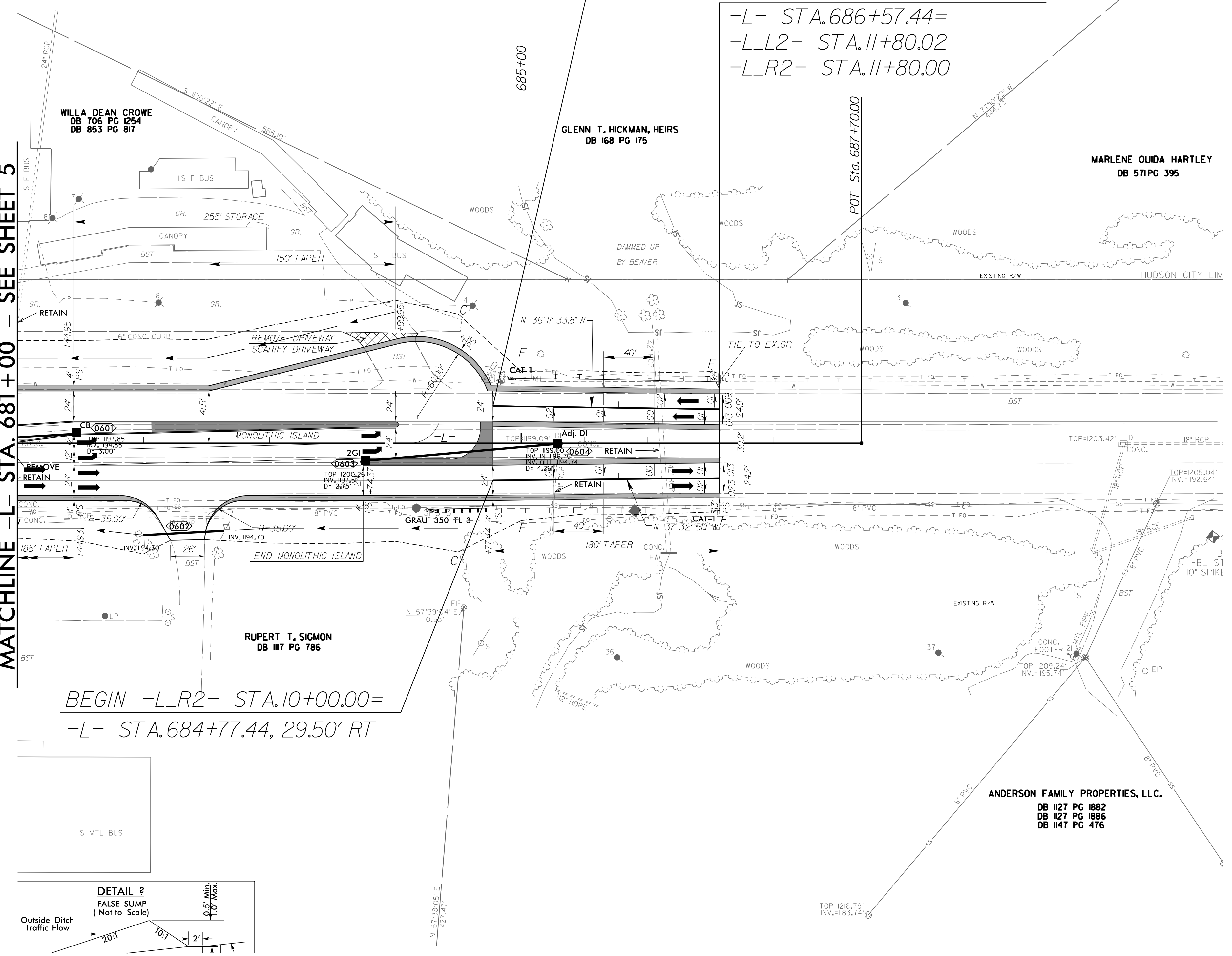
OM STA. TO STA.

BEGIN -L-L2- STA.10+00.00=
-L- STA.684+77.44, 29.50' RT

END TIP PROJECT U-4700CA
-L- STA.686+57.44=
-L-L2- STA.11+80.02
-L-R2- STA.11+80.00

MATCHLINE -L- STA. 681+00 - SEE SHEET 5

BEGIN -L-R2- STA.10+00.00=
-L- STA.684+77.44, 29.50' RT

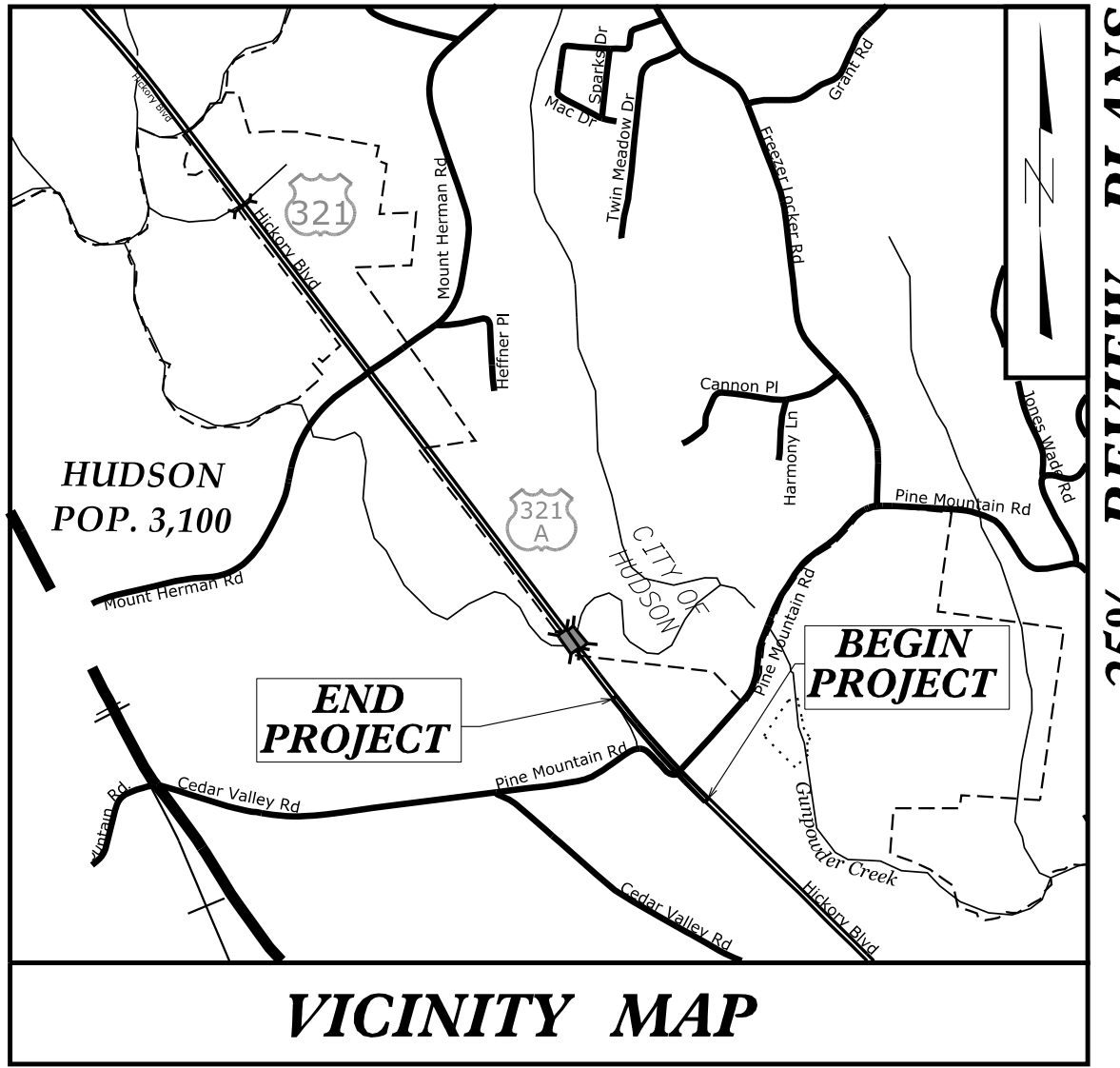


8/17/99

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09, 08/2/99

CONTRACT: U-4700CB



See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

**LOCATION: US 321 (HICKORY BLVD) AT
SR 1809 (PINE MOUNTAIN ROAD)**

TYPE OF WORK: GRADING, PAVING AND SIGNALS

V&M
Vaughn & Melton
Consulting Engineers

Asheville, NC
828-253-2798
919-977-9495

Boone, NC
828-255-9933
717-01166, TN
423-467-8400
825-546-5800

Chapel Hill, NC
919-977-9495

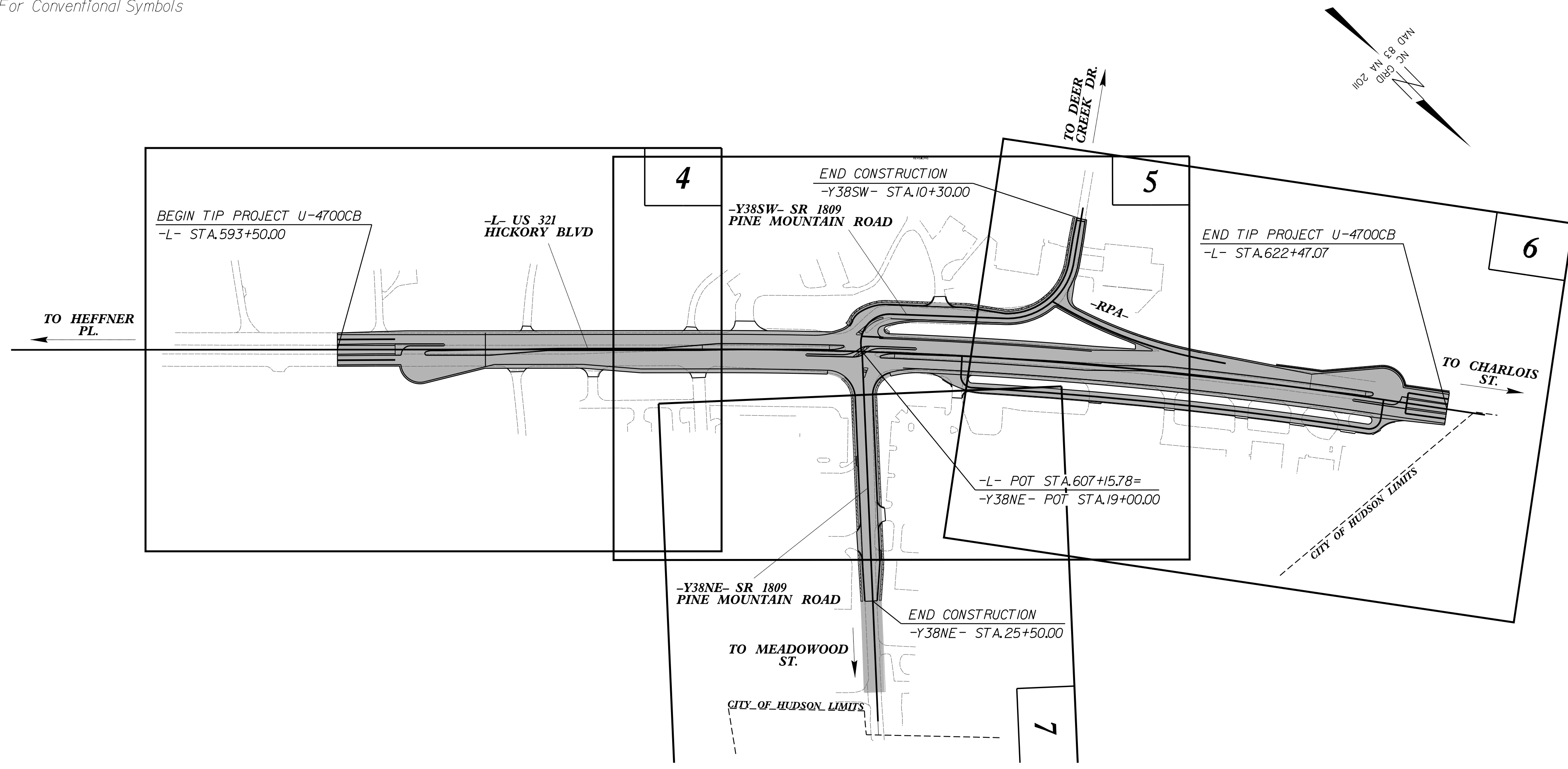
Charlotte, NC
704-351-0488

Charlotte, NC
704-351-0488

Atlanta, GA
770-627-3509

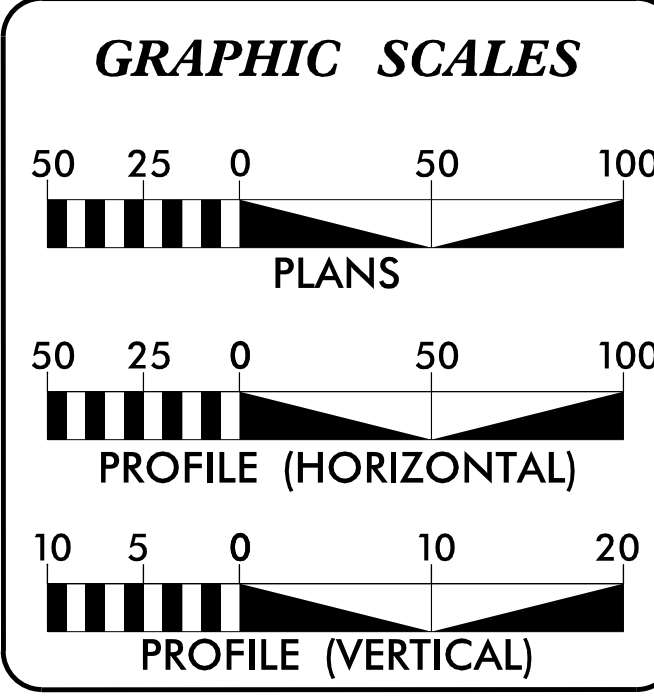
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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4700CB	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35993.1.11	NHF-321(18)	P.E.	



INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT: U-4700CB



DESIGN DATA

ADT 2019 = 34100
ADT 2039 = 45900
K = 8 %
D = 55 %
T = 6 % *
V = 60 MPH
* TTST = 3 DUAL 3
FUNC CLASS =
PRINCIPAL ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT U-4700CB= 0.549 MI.
LENGTH STRUCTURE PROJECT U-4700CB= 0.000 MI.
TOTAL LENGTH OF PROJECT U-4700CB= 0.549 MI.

Prepared in the Office of:
VAUGHN & MELTON
1318-F PATTON AVE.
ASHEVILLE NC, 28806
FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: REECE SCHULER, PE, PLS
PROJECT ENGINEER

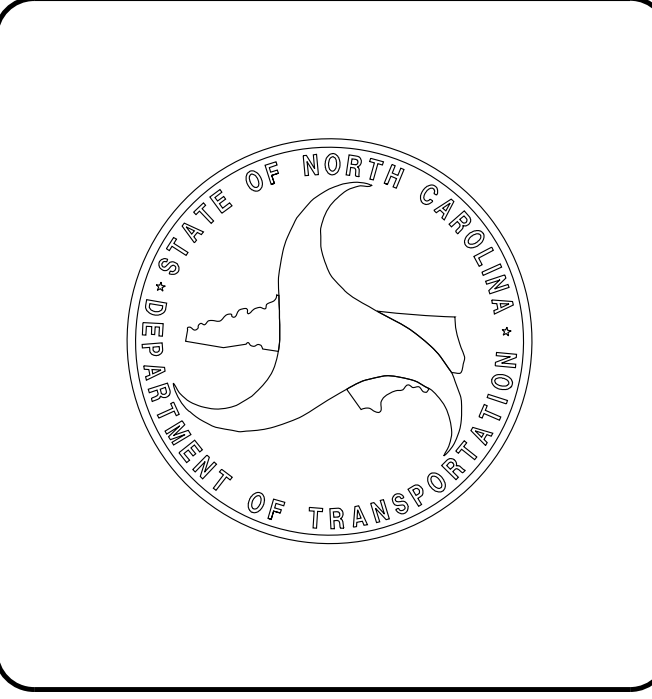
LETTING DATE: JARED PHILPOT
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



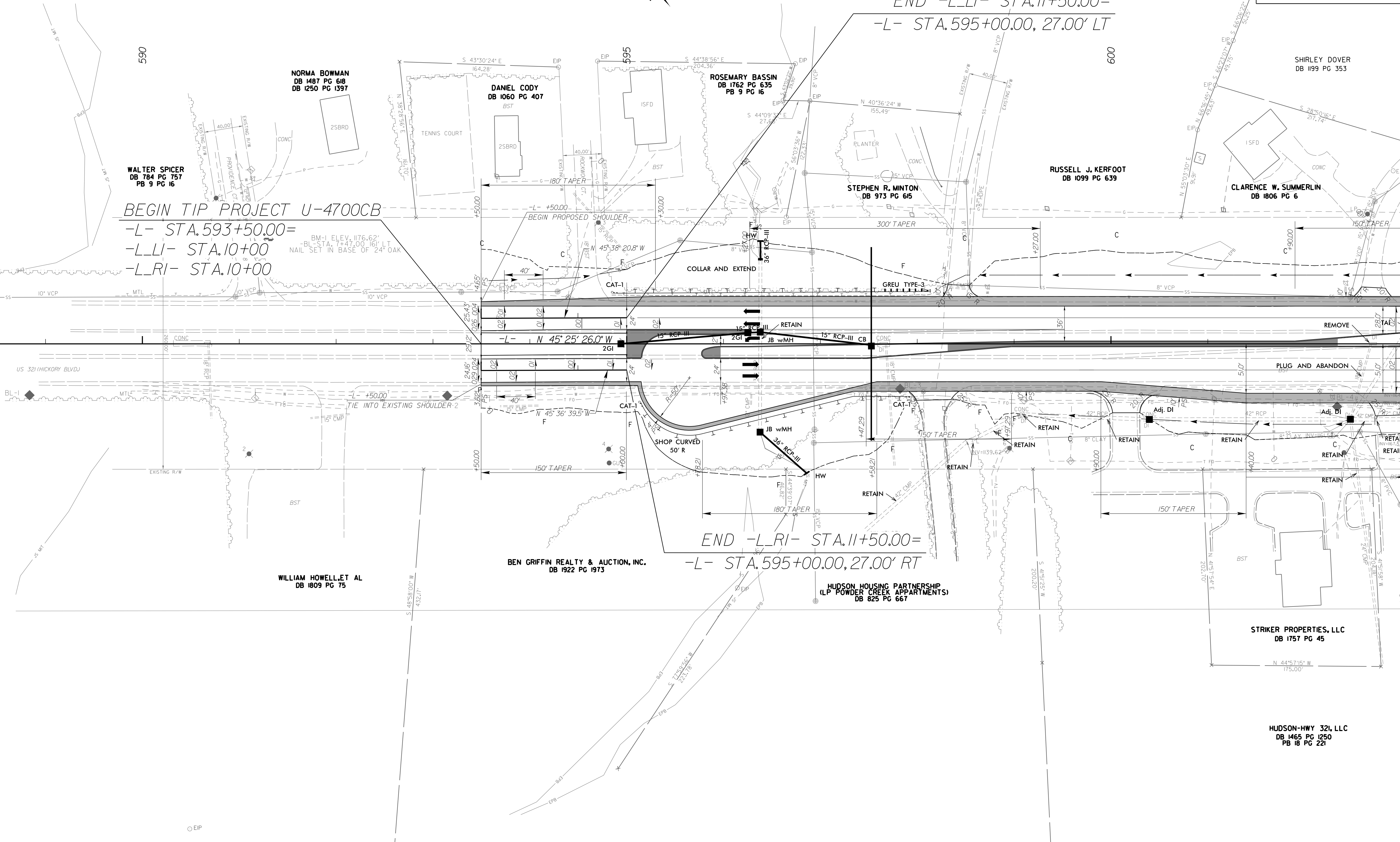
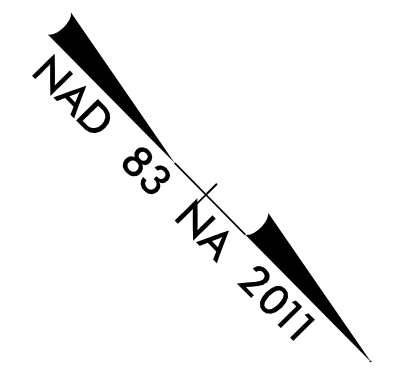
12/19/2018, V:\Asheville\Transportation\31535-13 U4700CB\Roadway\Proj\U4700CB_Rdy...TSH.dgn User:rmischuler

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

LEGEND

- PROPOSED PAVEMENT
- PROPOSED 5" MONOLITHIC ISLAND
- PROPOSED CONCRETE SIDEWALK
- PROPOSED FULL DEPTH PAVED SHOULDER



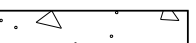



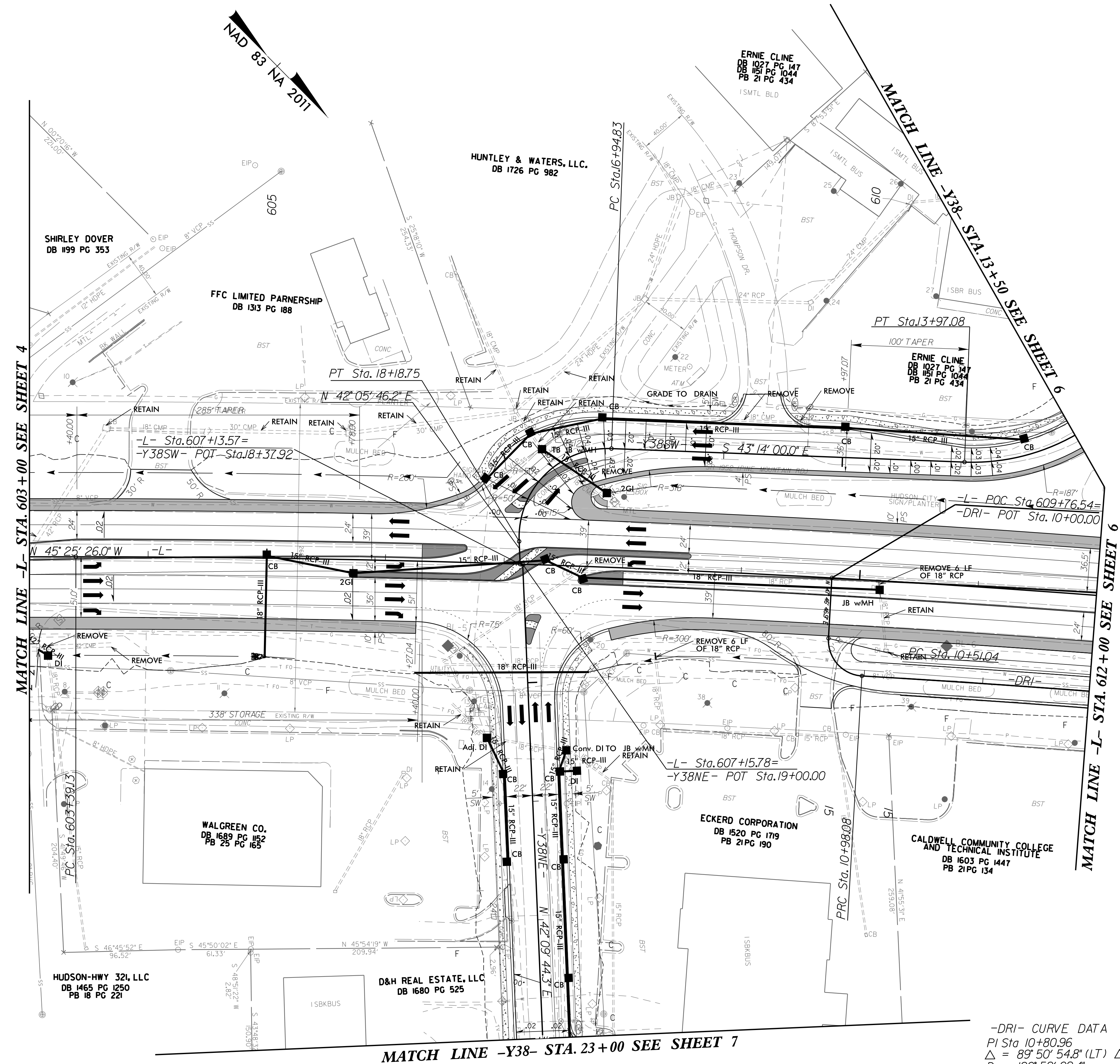
MATCH LINE -L- STA. 603+00 SEE SHEET 5

8/17/19

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11/20/2016 10:51:31 AM
V:\CA\Transportation\31535-13 U4700CB\Roadway\Proj\U4700CB.RDY_psh04.dgn

LEGEND

-  PROPOSED PAVEMENT
-  PROPOSED 5' MONOLITHIC ISLAND
-  PROPOSED CONCRETE SIDEWALK
-  PROPOSED FULL DEPTH PAVED SHOULDER



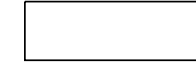

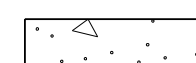

-DRI- CURVE DATA	
PI Sta 10+80.96	
$\Delta = 89^{\circ} 50' 54.8''$ (LT) Δ	
$D = 190^{\circ} 59' 09.4''$	
$L = 47.04'$	$L = 1,036.20'$
$T = 29.92'$	$T = 518.46'$
$R = 30.00'$	$R = 11,319.00'$
-L- CURVE DATA	
PI Sta 611+89.94	
$\Delta = 8^{\circ} 32' 11.4''$ (RT) Δ	
$D = 0^{\circ} 30' 09.3''$	
$L = 1,698.49'$	
$T = 850.82'$	
$R = 11,400.00'$	
-Y38SW- CURVE DATA	
PI Sta 12+98.54	PI Sta 17+76.20
$\Delta = 82^{\circ} 35' 00.0''$ (RT) Δ	$\Delta = 82^{\circ} 40' 13.8''$ (LT) Δ
$D = 32^{\circ} 44' 25.6''$	$D = 10^{\circ} 23' 39.7''$
$L = 252.24'$	$L = 630.239'$
$T = 153.70'$	$T = 81.38'$
$R = 175.00'$	$R = 75.00'$

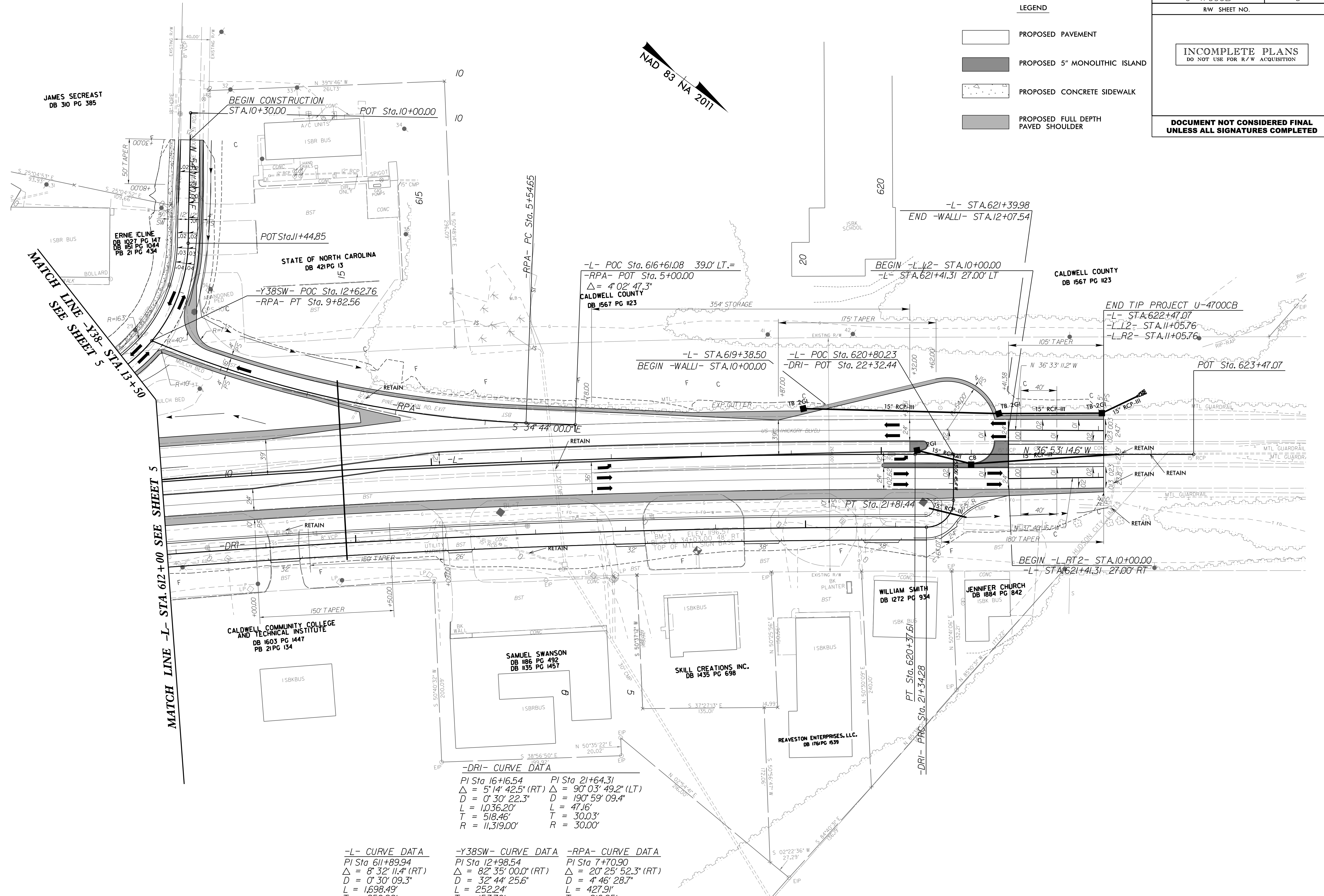
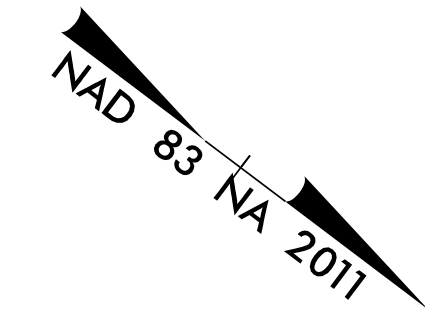
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INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

LEGEND

-  PROPOSED PAVEMENT
-  PROPOSED 5" MONOLITHIC ISLAND
-  PROPOSED CONCRETE SIDEWALK
-  PROPOSED FULL DEPTH PAVED SHOULDER



JAMES SECREAST
DB 310 PG 385

ERNIE CLINE
DB 1027 PG 147
DB 185 PG 1044
PB 21 PG 434

STATE OF NORTH CAROLINA
DB 421 PG 13

CALDWELL COMMUNITY COLLEGE
AND TECHNICAL INSTITUTE
DB 1603 PG 1447
PB 21 PG 134

SAMUEL SWANSON
DB 1186 PG 492
DB 1135 PG 1457

SKILL CREATIONS INC.
DB 1435 PG 698

WILLIAM SMITH
DB 1272 PG 934

JENNIFER CHURCH
DB 1884 PG 842

REAVESTON ENTERPRISES, LLC.
DB 1161 PG 1539

-DRI- CURVE DATA
 PI Sta 16+16.54 PI Sta 21+64.31
 $\Delta = 5^{\circ}14'42.5"$ (RT) $\Delta = 90^{\circ}03'49.2"$ (LT)
 $D = 0^{\circ}30'22.3"$ $D = 190^{\circ}59'09.4"$
 $L = 1,036.20'$ $L = 47.16'$
 $T = 518.46'$ $T = 30.03'$
 $R = 11,319.00'$ $R = 30.00'$

-L- CURVE DATA
 PI Sta 611+89.94
 $\Delta = 8^{\circ}32'11.4"$ (RT)
 $D = 0^{\circ}30'09.3"$
 $L = 1,698.49'$
 $T = 850.82'$
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-Y38SW- CURVE DATA
 PI Sta 12+98.54
 $\Delta = 82^{\circ}35'00.0"$ (RT)
 $D = 32^{\circ}44'25.6"$
 $L = 252.24'$
 $T = 153.70'$
 $R = 175.00'$

-RPA- CURVE DATA
 PI Sta 7+70.90
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 $D = 4^{\circ}46'28.7"$
 $L = 427.91'$
 $T = 216.25'$
 $R = 1,200.00'$

MATCH LINE -Y38- STA. 13+50
SEE SHEET 5

MATCH LINE -L- STA. 612+00
SEE SHEET 5

END TIP PROJECT U-4700CB
 -L- STA. 622+47.07
 -L12- STA. 11+05.76
 -L-R2- STA. 11+05.76

POT Sta. 623+47.07

-L- STA. 621+39.98
END -WALLI- STA. 12+07.54

BEGIN -L12- STA. 10+00.00
-L- STA. 621+41.31 27.00' LT

-L- STA. 619+38.50
BEGIN -WALLI- STA. 10+00.00

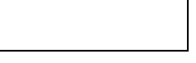

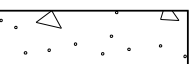

-L- POC Sta. 620+80.23
-DRI- POT Sta. 22+32.44

BEGIN -L RT2- STA. 10+00.00
-L- STA. 621+41.31 27.00' RT

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

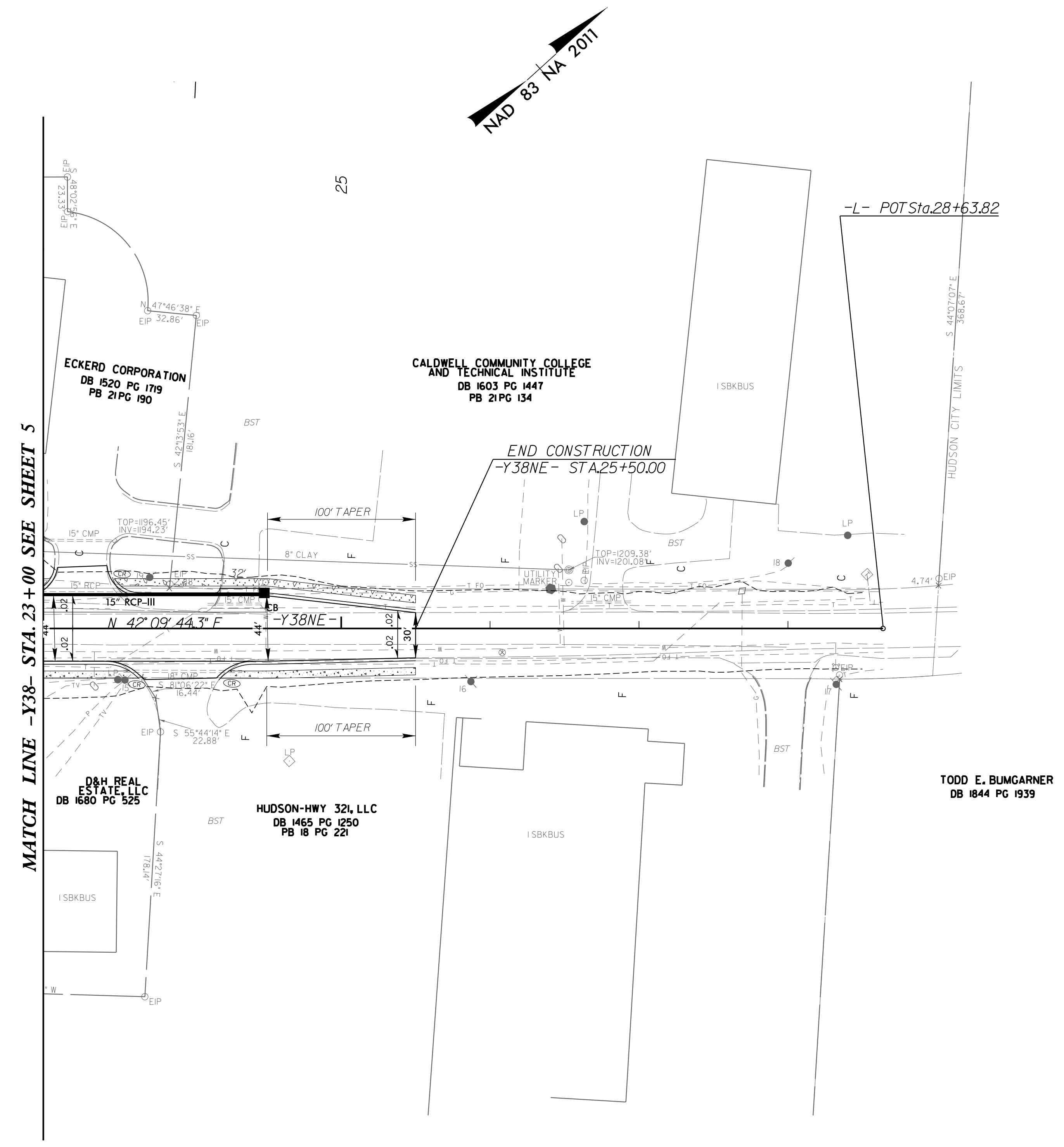
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UNLESS ALL SIGNATURES COMPLETED

LEGEND

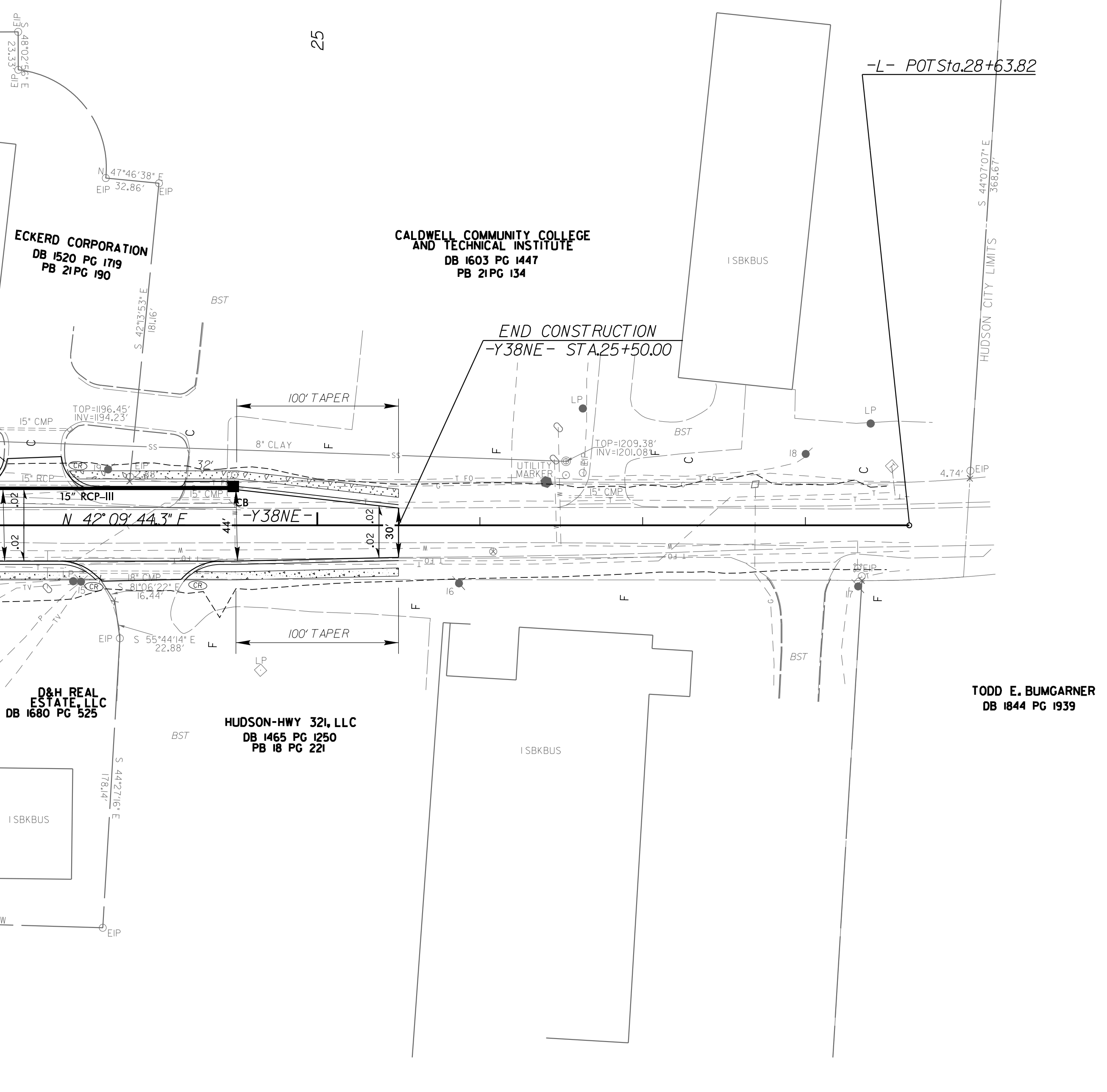
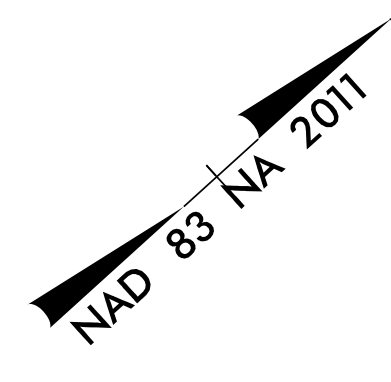
-  PROPOSED PAVEMENT
-  PROPOSED 5' MONOLITHIC ISLAND
-  PROPOSED CONCRETE SIDEWALK
-  PROPOSED FULL DEPTH PAVED SHOULDER

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User: jimbrown



MATCH LINE -Y38- STA. 23 + 00 SEE SHEET 5



ECKERD CORPORATION
DB 1520 PG 1719
PB 21 PG 190

CALDWELL COMMUNITY COLLEGE
AND TECHNICAL INSTITUTE
DB 1603 PG 1447
PB 21 PG 134

D&H REAL ESTATE, LLC
DB 1680 PG 525

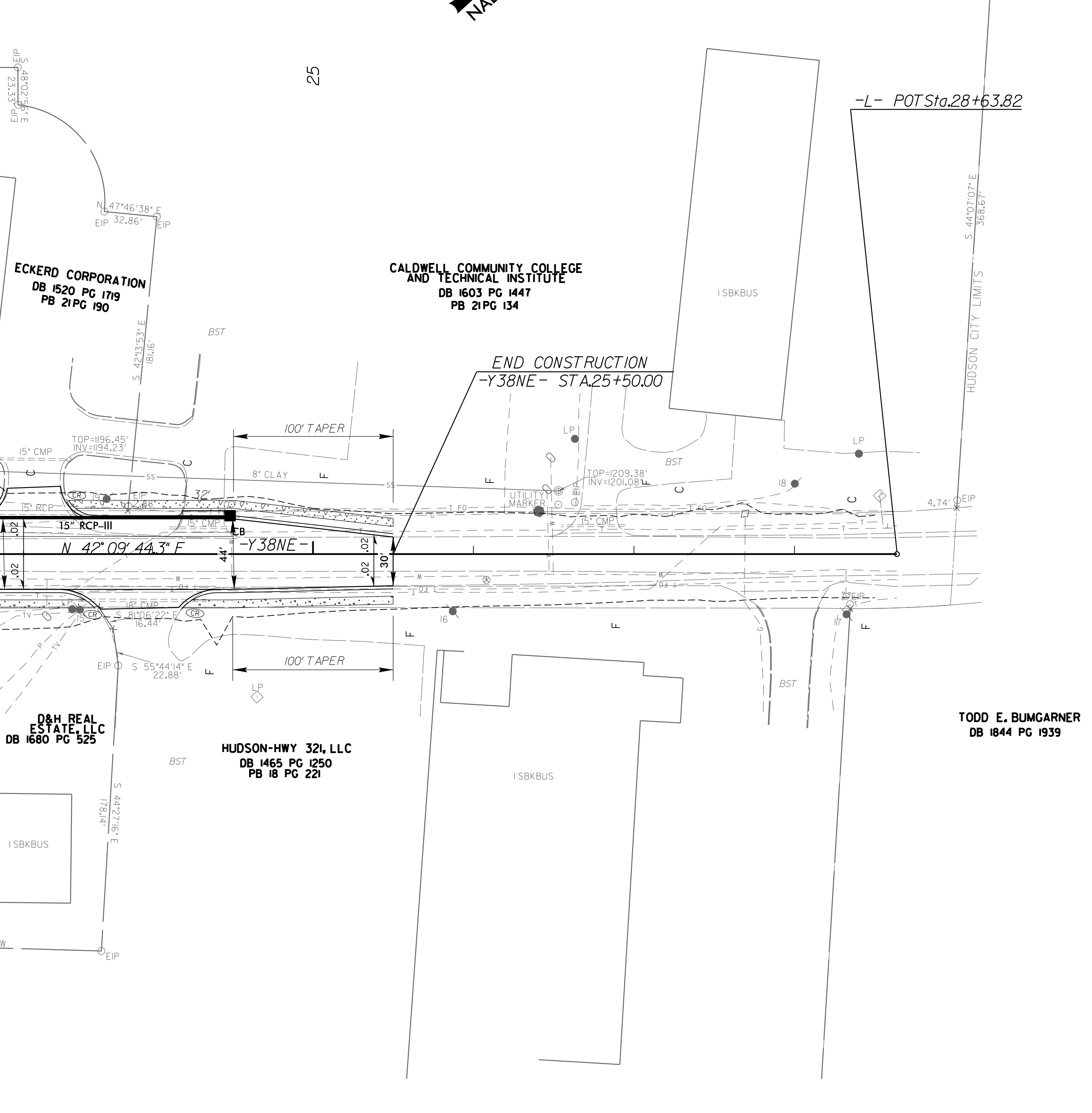
HUDSON-HWY 321, LLC
DB 1465 PG 1250
PB 18 PG 221

TODD E. BUMGARNER
DB 1844 PG 1939

END CONSTRUCTION
-Y38NE- STA. 25+50.00

-L- POT Sta. 28+63.82

HUDSON CITY LIMITS

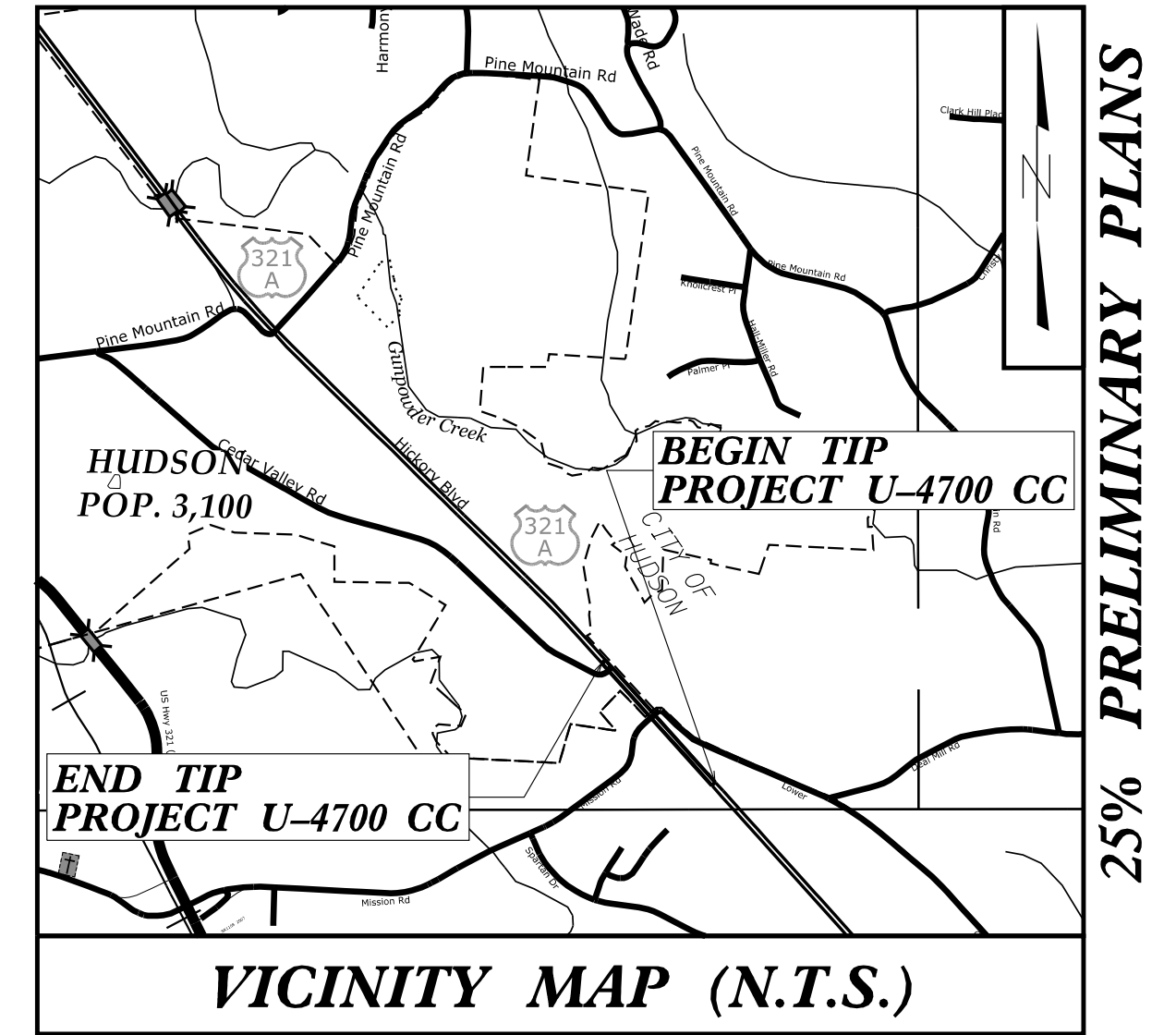


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12/19/2018
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User:rmischler

CONTRACT: U-4700CC

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CALDWELL COUNTY

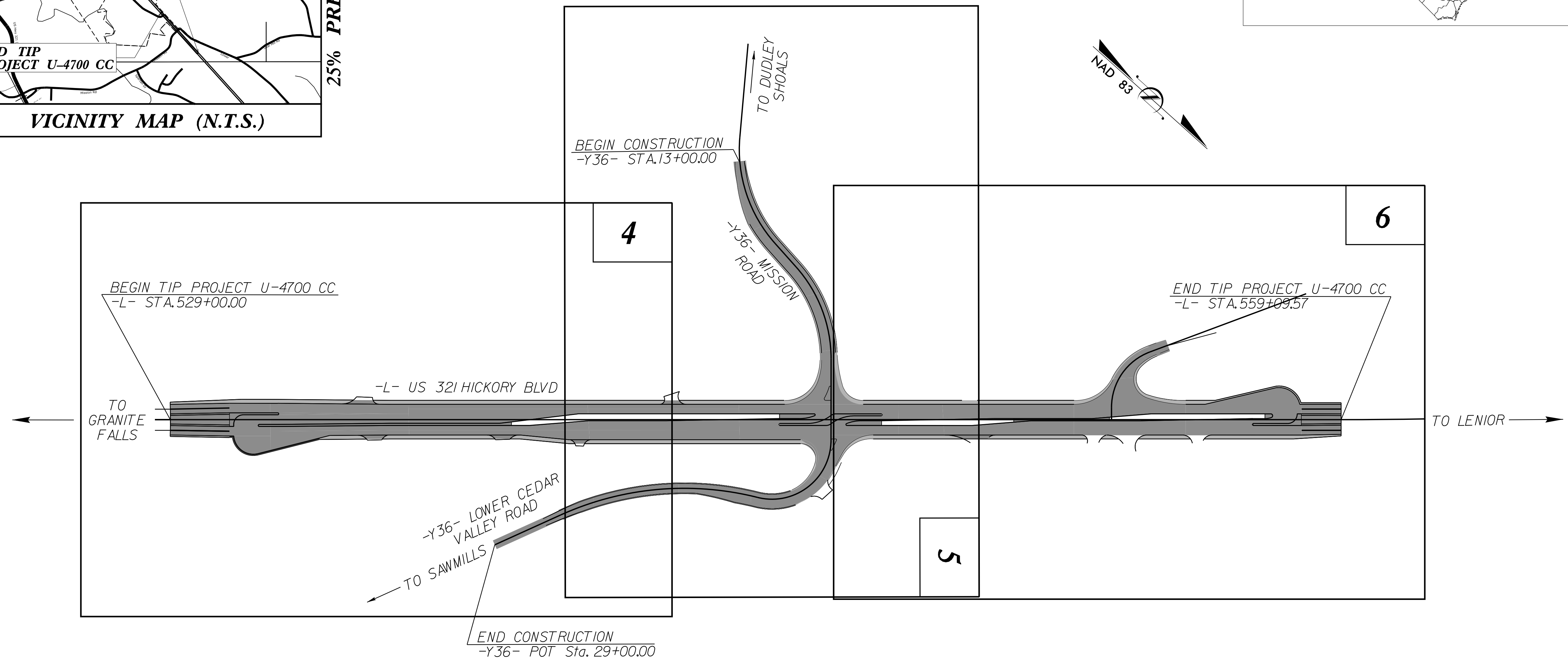
LOCATION: US 321 (HICKORY BLVD) AT MISSION ROAD
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND SIGNALS

V&M
Vaughan & Melton
Consulting Engineers
Asheville, NC
828-253-2796
99-971-9455

Blount, NC 828-356-9833
Fayetteville, NC 910-437-8400
Greenville, NC 864-546-1800
Spartanburg, SC 864-574-4775
Charlotte, NC 704-371-0488
Raleigh, NC 919-871-9455

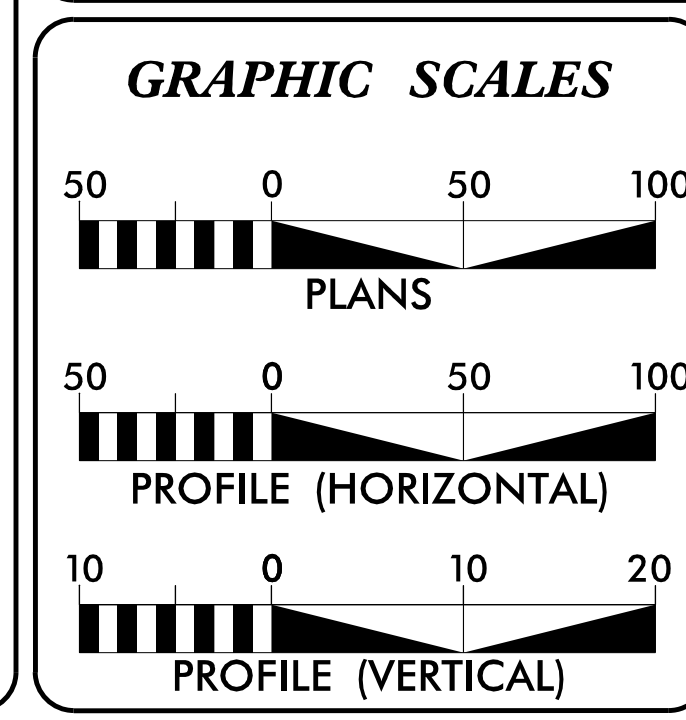
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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4700CC	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35993.1.12	NHF-321(18)	PE	



Clearing on this project shall be performed to the limits established by Method III.
This project is within the boundary of the city of Hudson
This is a partially Controlled Access Project.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2015 =	32,000
ADT 2035 =	47,300
K =	10 %
D =	65 %
T =	9 % *
V =	60 MPH
* TTST =	2 DUAL 7
FUNC CLASS =	PRINCIPAL ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY PROJECT U-4700CC =	0.570 MI.
LENGTH STRUCTURE PROJECT U-4700CC =	0.000 MI.
TOTAL LENGTH OF PROJECT U-4700CC =	0.570 MI.

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: REECE SCHULER, PE, PLS
PROJECT ENGINEER

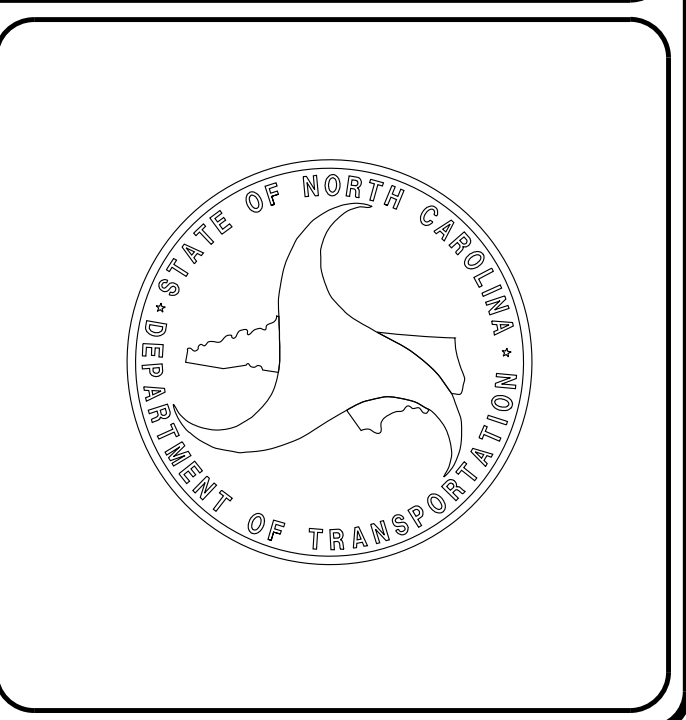
LETTING DATE: DANIEL ALMUETI, EIT
PROJECT DESIGN ENGINEER
JUNE 2019

HYDRAULICS ENGINEER

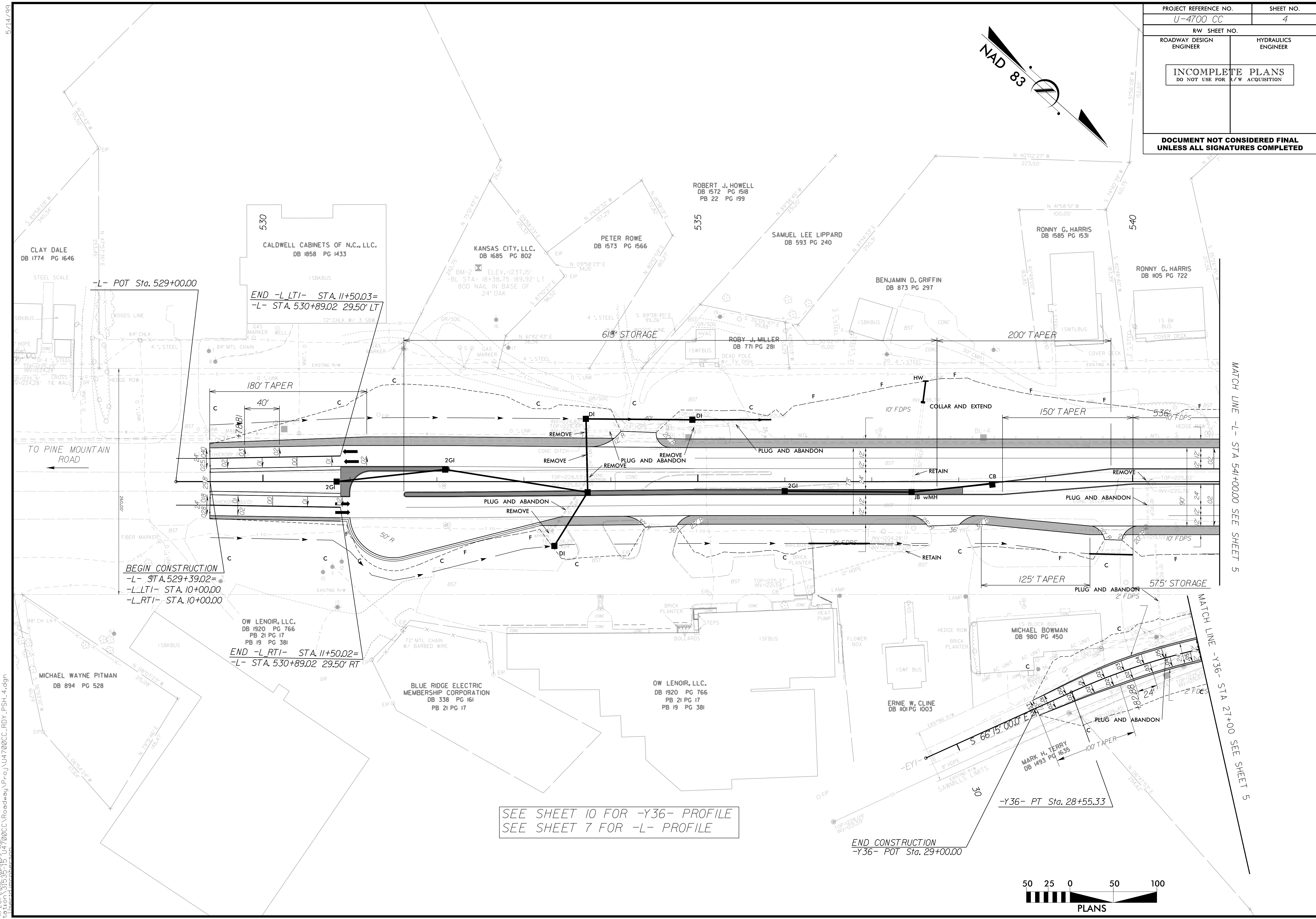
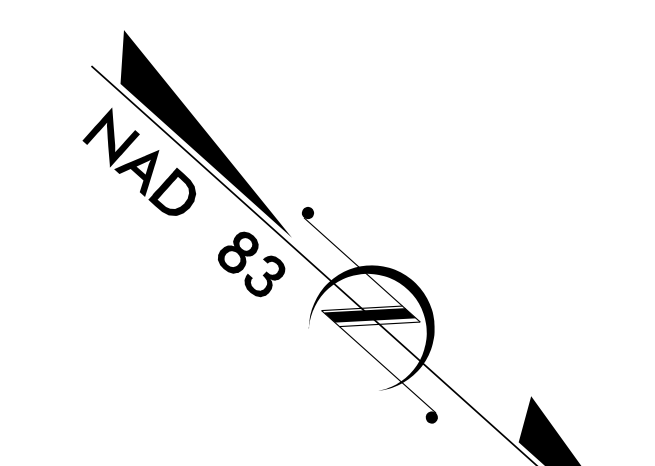
SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

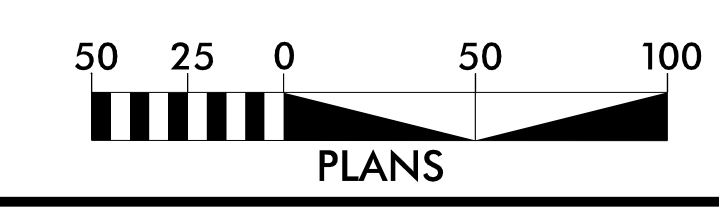
SIGNATURE: _____ P.E.



PROJECT REFERENCE NO.	SHEET NO.
U-4700 CC	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



SEE SHEET 10 FOR -Y36- PROFILE
 SEE SHEET 7 FOR -L- PROFILE

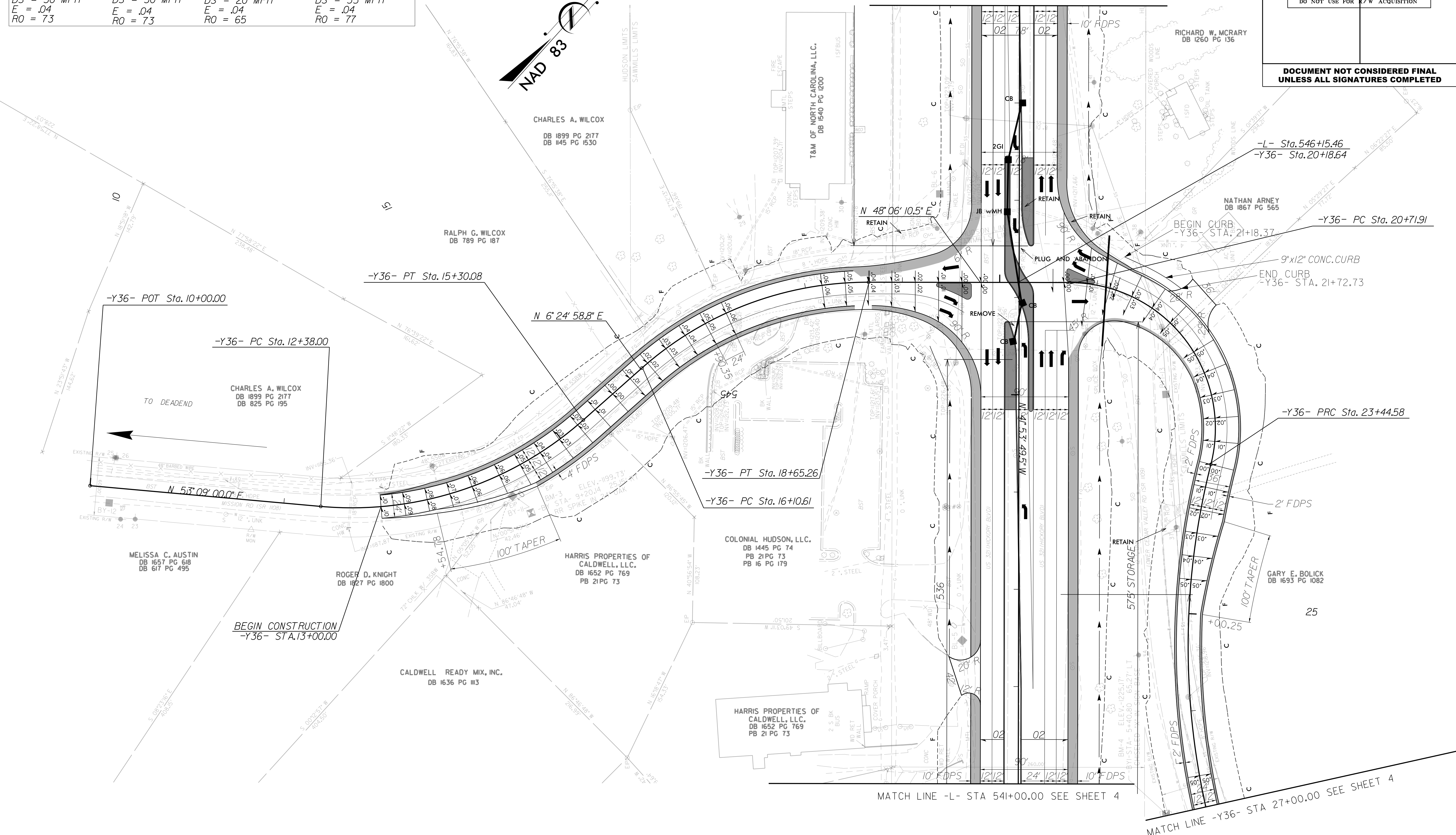
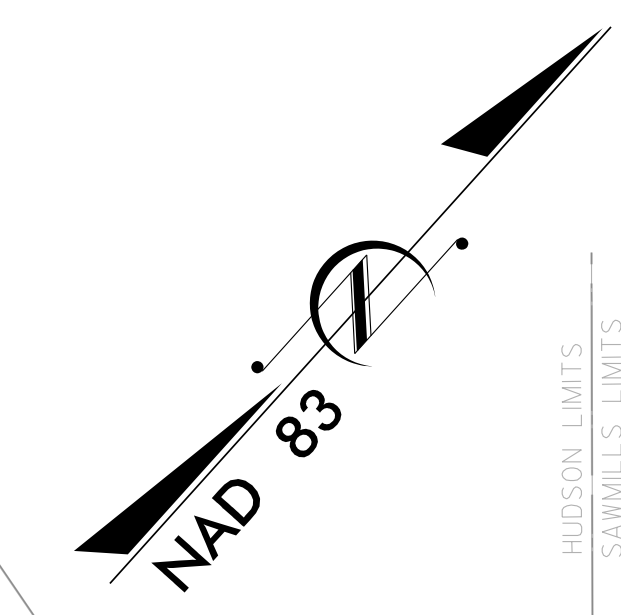


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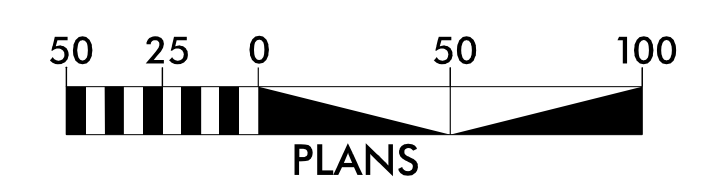
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U-4700 CC	5
RW SHEET NO.	
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-Y36- CURVE DATA

PI Sta 13+92.72 Δ = 46° 44' 01.2" (LT) D = 16' 00' 00.0" L = 292.09' T = 154.72' R = 358.10' DS = 30 MPH E = .04 RO = 73	PI Sta 17+43.87 Δ = 41° 41' 11.8" (RT) D = 16' 22' 12.8" L = 254.65' T = 133.26' R = 350.00' DS = 30 MPH E = .04 RO = 73	PI Sta 22+64.43 Δ = 104° 09' 08.3" (RT) D = 38' 11' 49.9" L = 272.67' T = 192.52' R = 150.00' DS = 20 MPH E = .04 RO = 65	PI Sta 26+10.02 Δ = 38° 30' 18.8" (LT) D = 7' 32' 20.1" L = 510.75' T = 265.44' R = 760.00' DS = 35 MPH E = .04 RO = 77
--	--	---	---

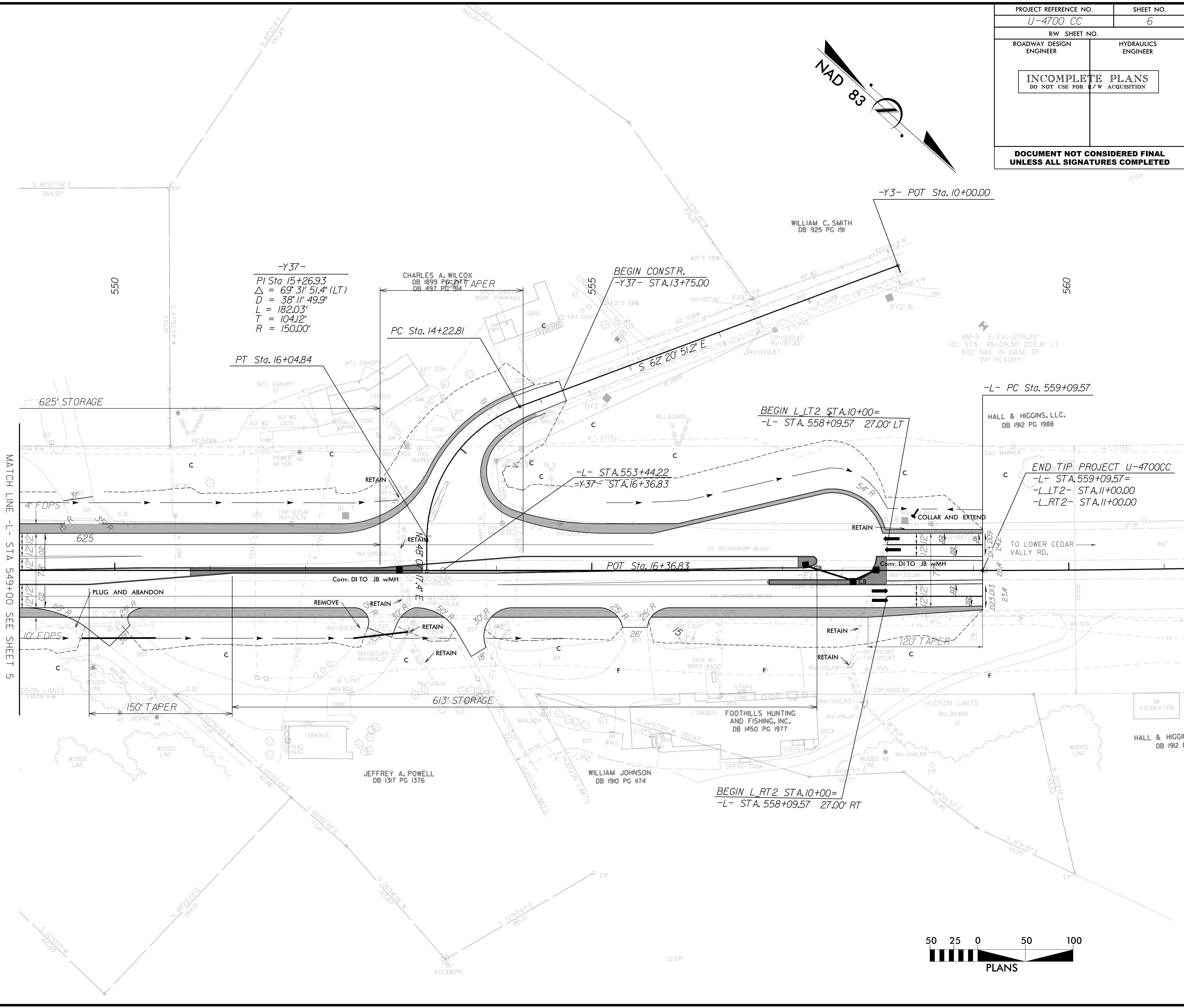
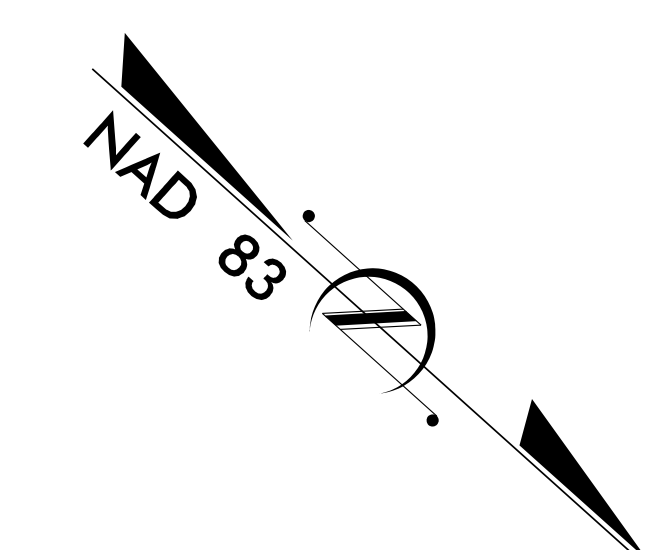


SEE SHEET 9 FOR -Y36- PROFILE
SEE SHEET 7 FOR -L- PROFILE



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PROJECT REFERENCE NO.	SHEET NO.
U-4700 CC	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR E/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



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 PI Sta 15+26.93
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 $D = 38^{\circ} 11' 49.9''$
 $L = 182.03'$
 $T = 104.12'$
 $R = 150.00'$

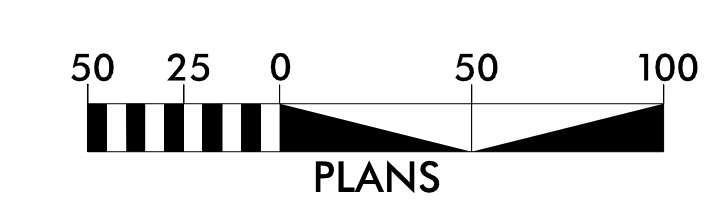
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 -Y37- STA.13+75.00

BEGIN L LT2 STA.10+00=
 -L- STA. 558+09.57 27.00' LT

-L- PC Sta. 559+09.57

END TIP PROJECT U-4700CC
 -L- STA. 559+09.57=
 -L-LT2- STA. 11+00.00
 -L-RT2- STA. 11+00.00

BEGIN L RT2 STA.10+00=
 -L- STA. 558+09.57 27.00' RT



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STIP No. U-4700 A, B, and C

Preliminary Plans

Proposed U.S. 321 Widening

From U.S. 70 in Hickory to Southwest Boulevard in

Lenoir Catawba, Burke, and Caldwell Counties

The following tables summarize the anticipated impacts to jurisdictional resources on the U.S. 321 project corridor. This assumes a 6-lane superstreet from north of U.S. 70 to Southwest Boulevard. All impacts were calculated using a 25' buffer of the slope stakes of the preliminary designs, and are based on delineated jurisdictional resources.

- Table 1 summarizes the impacts to delineated streams. The site numbers refer to locations with proposed or existing hydraulic structures that have the potential to impact existing streams.
- Table 2 summarizes the impacts to delineated wetlands.

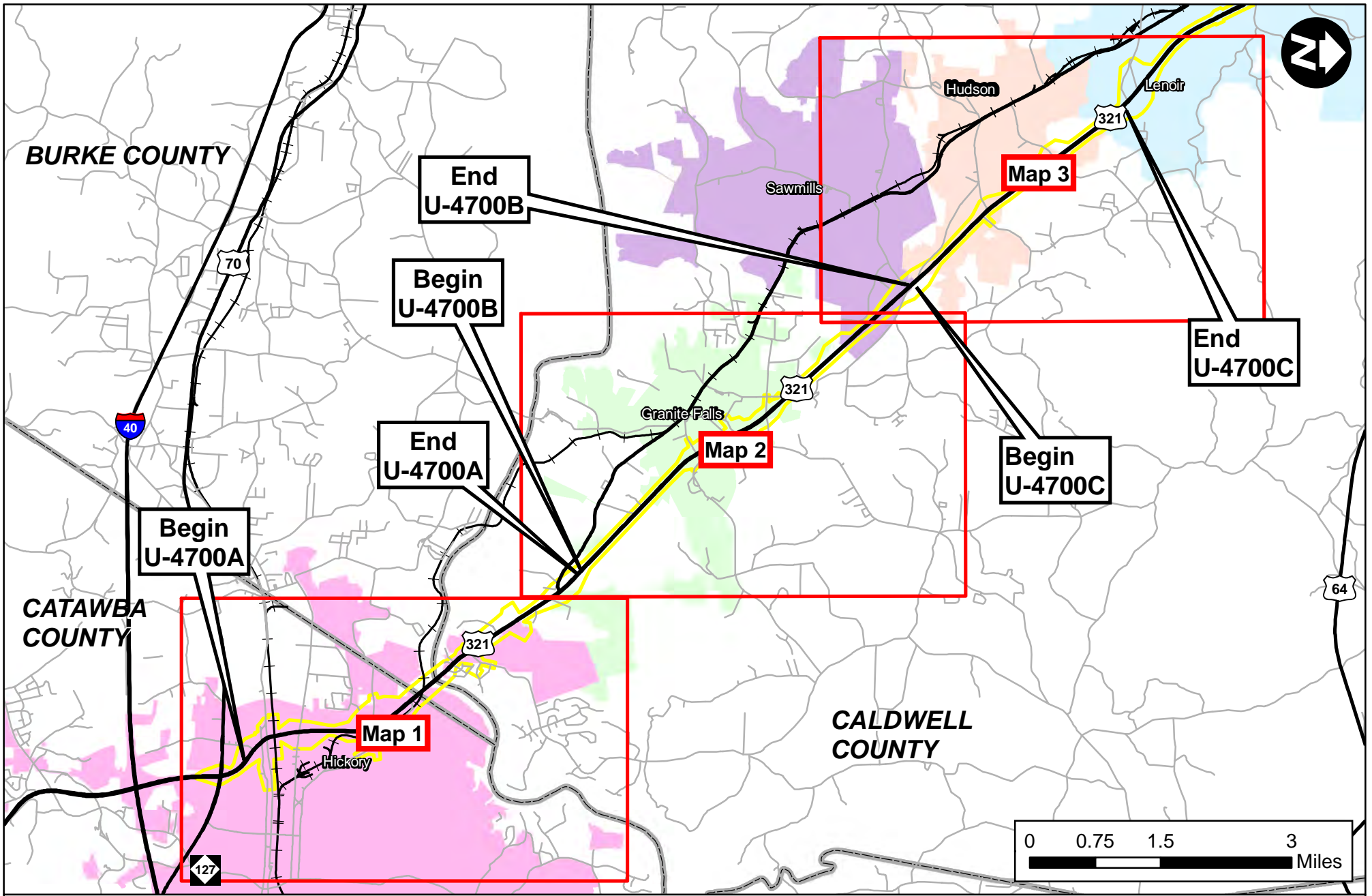
The figure numbers in the tables refer to the figures following the tables.

Table 1: Itemized Stream Impacts

Section	Figure	Map ID	Stream Name	Impact (feet)
A	1	Frye Creek	Frye Creek	125
	2	SB	UT to Catawba River	45
	3A	SB	UT to Catawba River	690
	3B	Catawba River	Catawba River	0
	4	SC	UT to Catawba River	0
	4	SC	UT to Catawba River	300
	5	SRR	UT to Catawba River	370
	6	SQQ	UT to Catawba River	40
	6	SRR	UT to Catawba River	225
Section A Stream Impact Sub-total				1,795
B	7	SF	UT to Gunpowder Creek	230
	8	SJ	UT to Gunpowder Creek	40
	9	SK	UT to Gunpowder Creek	120
	10	SM	UT to Gunpowder Creek	100
	11	SN	UT to Gunpowder Creek	280
	13	SO	UT to Gunpowder Creek	365
	14	Billy Branch	Billy Branch	305
	14	SP	UT to Billy Branch	180
	15	SQ	UT to Little Gunpowder Creek	130
	16	Little Gunpowder Creek	Little Gunpowder Creek	145
	16	SR	UT to Little Gunpowder Creek	170
	16	SS	UT to Little Gunpowder Creek	65
	17	ST	UT to Little Gunpowder Creek	30
	17	STA	UT to Little Gunpowder Creek	85
	18	SU	UT to Little Gunpowder Creek	65
	19	SV	UT to Little Gunpowder Creek	110
	20	SW	UT to Little Gunpowder Creek	540
20	SX	UT to Little Gunpowder Creek	50	
20	SY	UT to Little Gunpowder Creek	45	
Section B Stream Impact Sub-total				3,055
C	22	SZ	UT to Gunpowder Creek	85
	23	SAA	UT to Gunpowder Creek	115
	24	SBB	UT to Gunpowder Creek	70
	25	Gunpowder Creek	Gunpowder Creek	55
	25	Gunpowder Creek	Gunpowder Creek	0
	26	SDD	UT to Gunpowder Creek	20
	27	SEE	UT to Gunpowder Creek	150
	27	SLL	UT to Gunpowder Creek	185
	28	Brushy Fork	Brushy Fork	120
	29	Anglely Creek	Anglely Creek	200
Section C Stream Impact Sub-total				1,000
U-4700 Project Stream Impact Total				5,850

Table 2: Itemized Wetlands Impacts

Section	Figure	Map ID	Impact (acres)
A	3A	WA	0.1
Section A Wetland Impact Sub-total			0.1
B	13	WF	<0.1
	16	WFA	0.1
	20	WG	<0.1
Section B Wetland Impact Sub-total			0.2
C	21	WP	0.1
	24	WI	0.1
	27	WKA	<0.1
	27	WK	0.1
Section C Wetland Impact Sub-total			0.4
U-4700 Project Wetland Impact Total			0.7

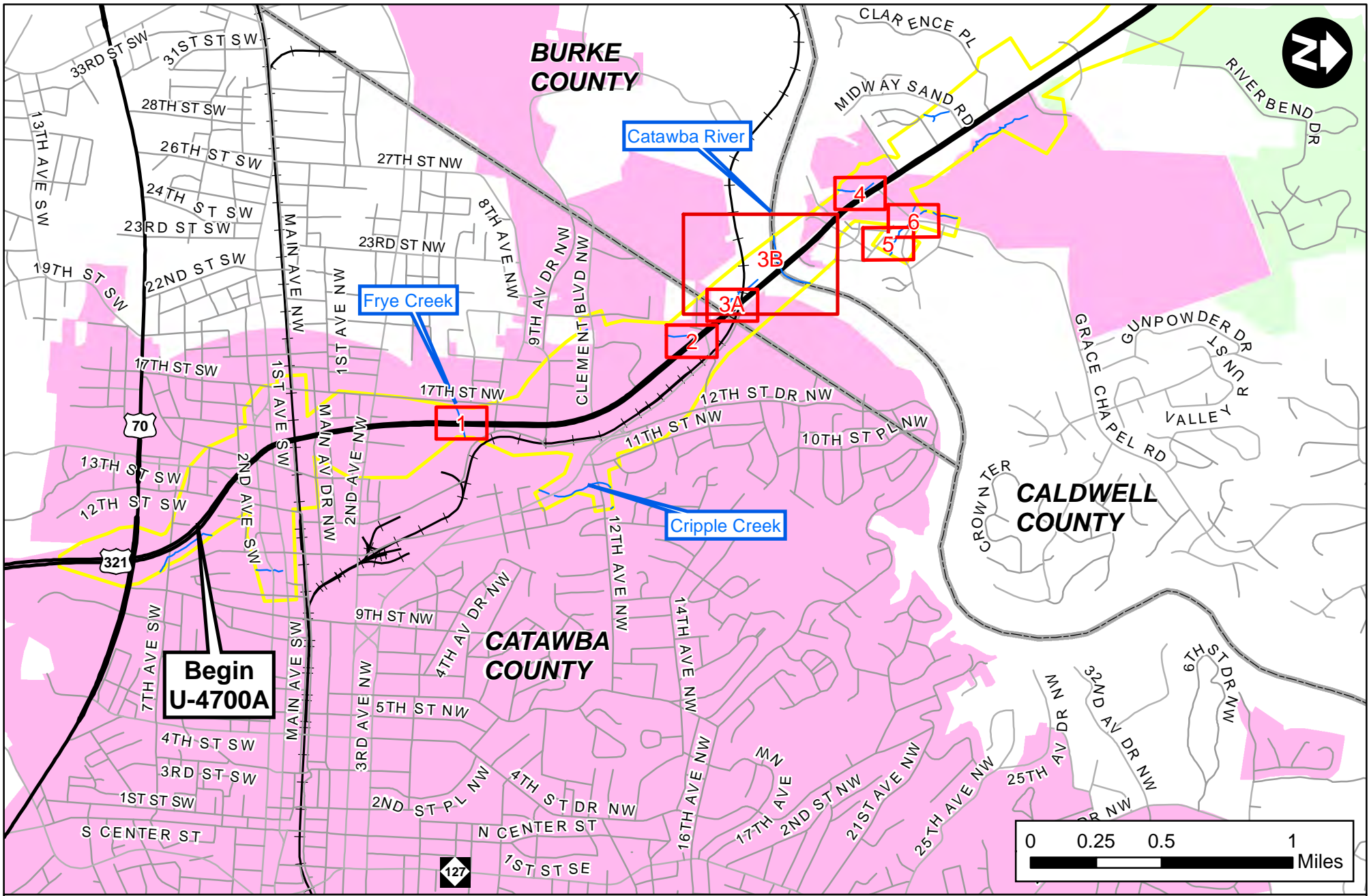


- Town of Granite Falls
- City of Hickory
- Town of Hudson
- City of Lenoir
- Town of Sawmills
- U-4700 Project Area

U-4700 - U.S. 321 Widening

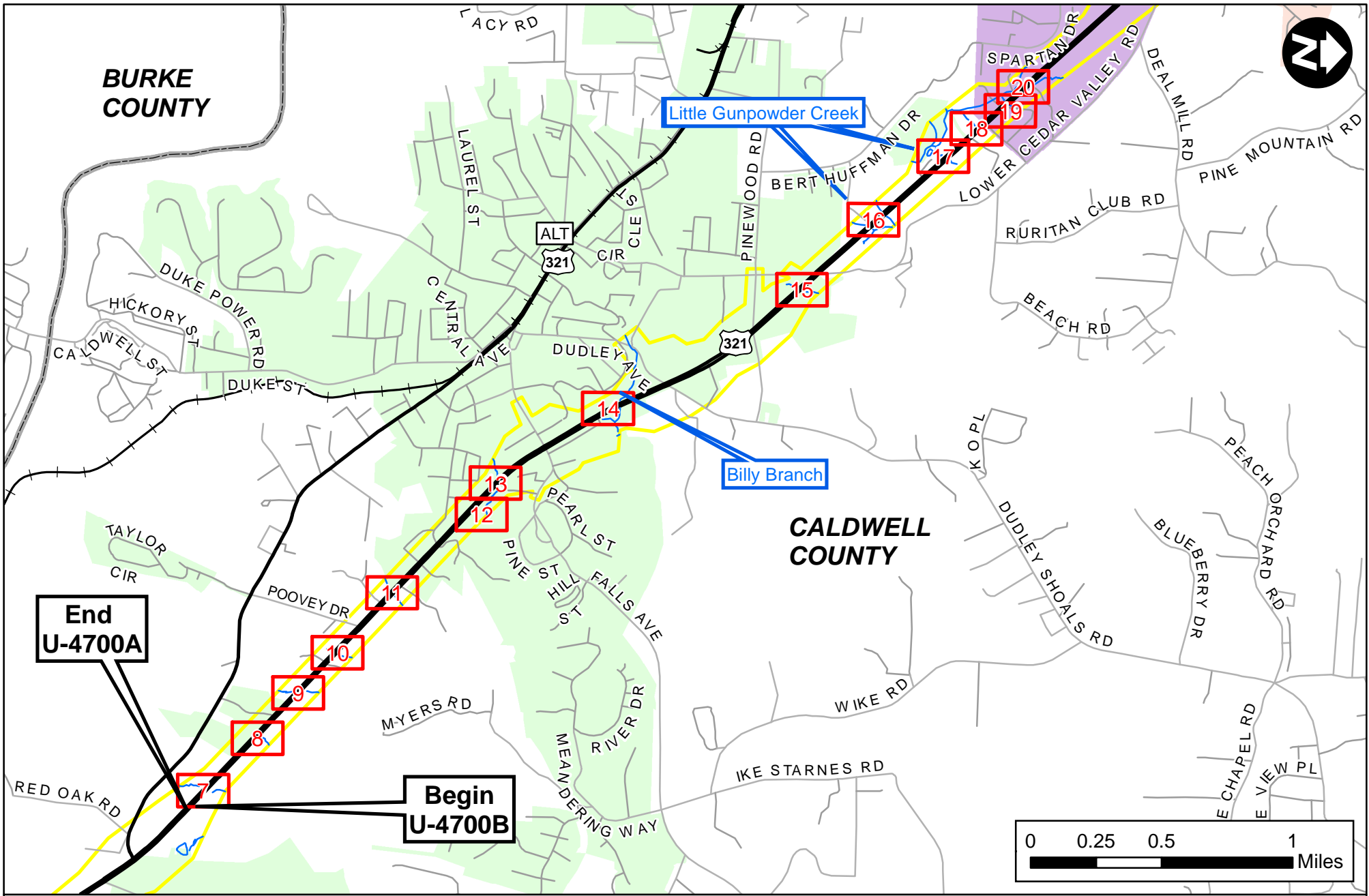
Project Overview
Impacts to Jurisdictional Resources

Burke, Caldwell, and Catawba Counties



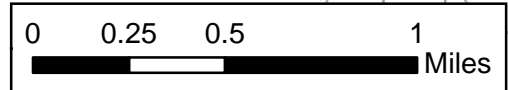
- Delineated Stream
- Town of Granite Falls
- City of Hickory
- U-4700 Project Area
- Permit Figure Extents 1-29

U-4700 - U.S. 321 Widening
Map 1
Impacts to Jurisdictional Resources
Catawba, Burke, and Caldwell Counties



**End
U-4700A**

**Begin
U-4700B**

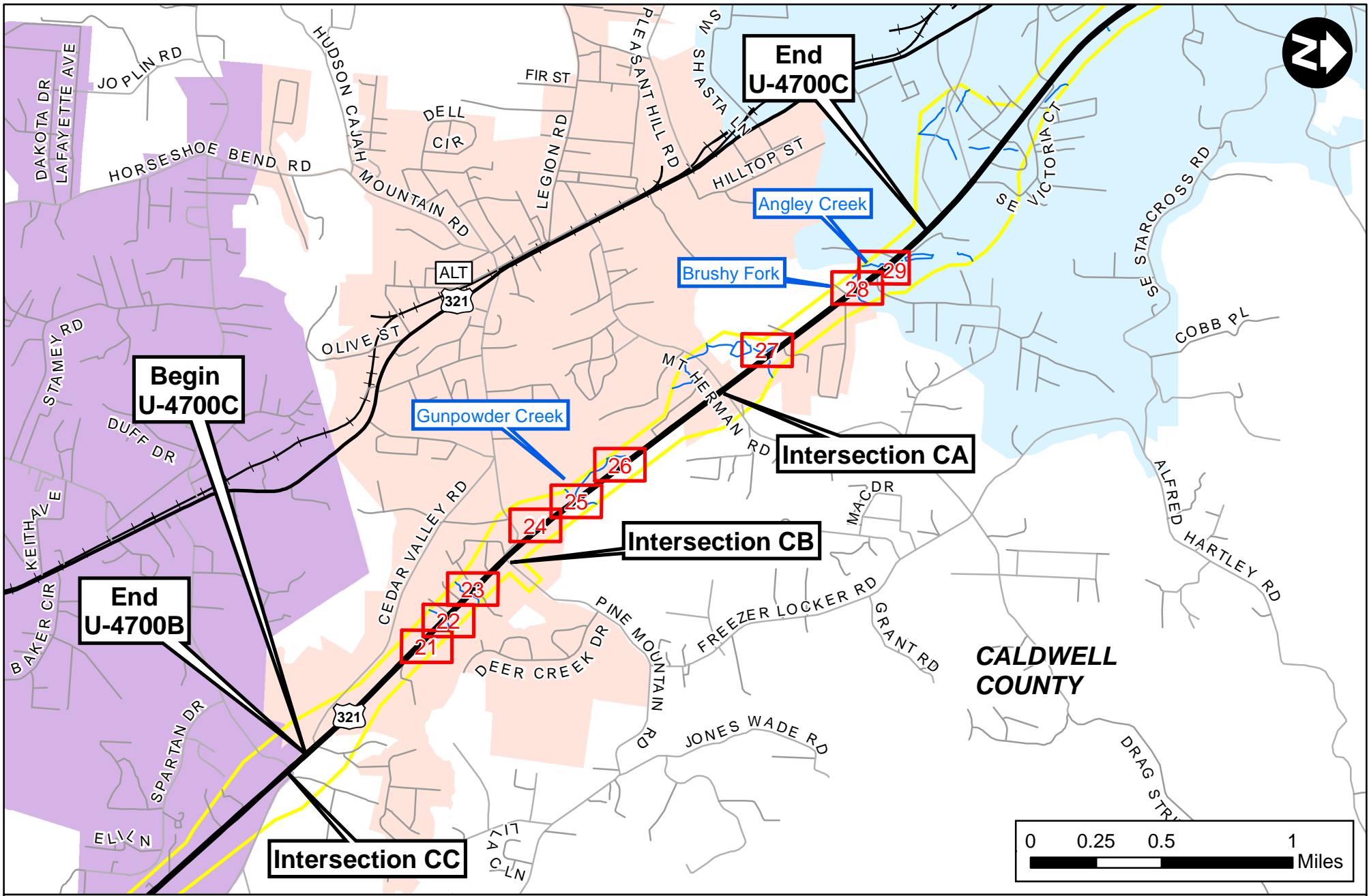


- Delineated Stream
- Town of Granite Falls
- Town of Hudson
- Town of Sawmills
- U-4700 Project Area
- Permit Figure Extents 1-29

U-4700 - U.S. 321 Widening

**Map 2
Impacts to Jurisdictional Resources**

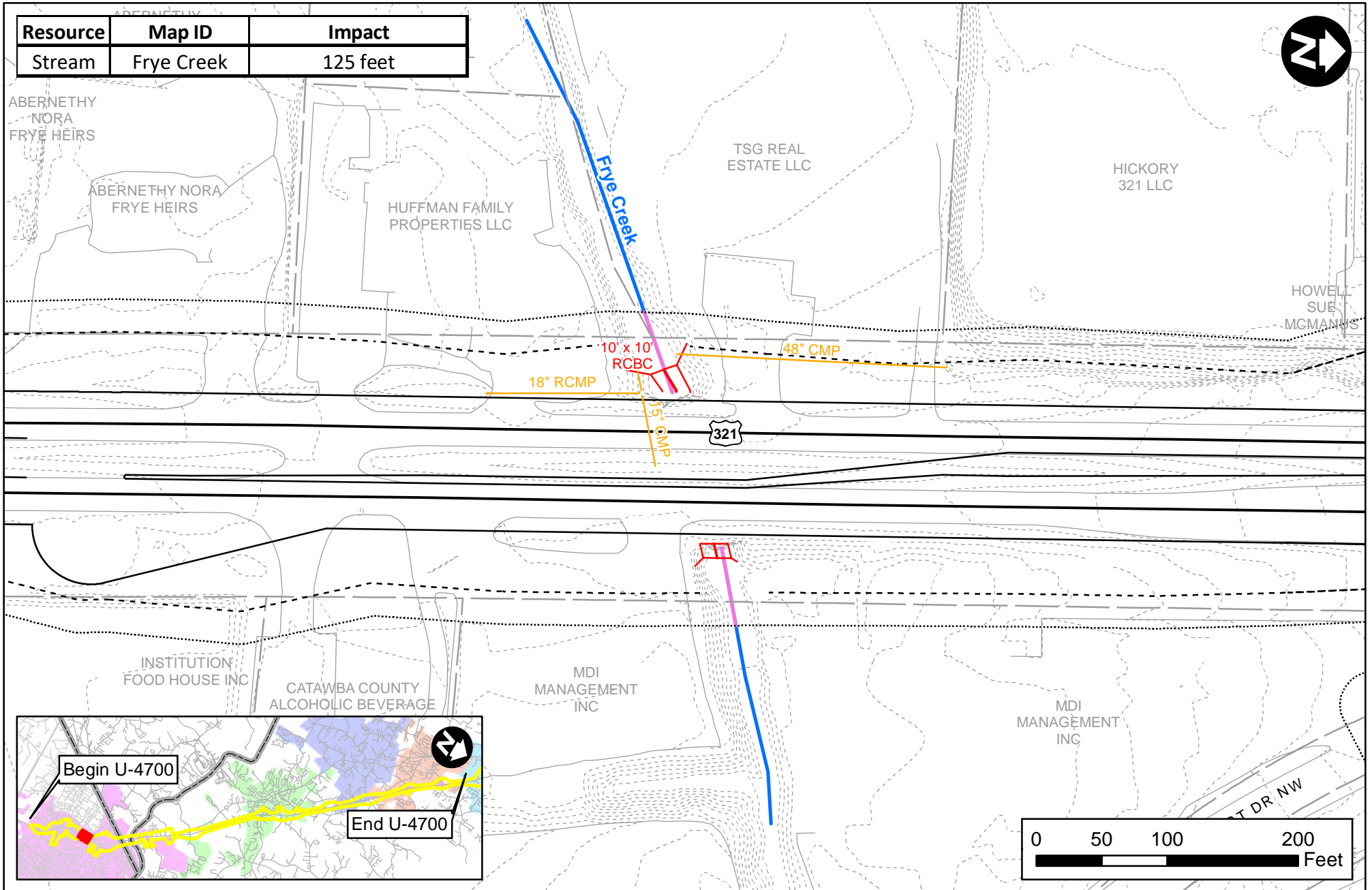
Burke and Caldwell Counties



- Delineated Stream
- Town of Hudson
- City of Lenoir
- Town of Sawmills
- U-4700 Project Area
- Permit Figure Extents 1-29

U-4700 - U.S. 321 Widening
Map 3
Impacts to Jurisdictional Resources
Caldwell County

Resource	Map ID	Impact
Stream	Frye Creek	125 feet



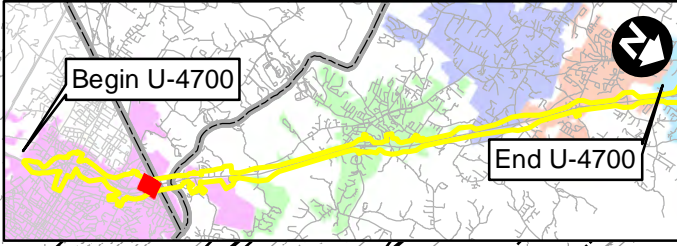
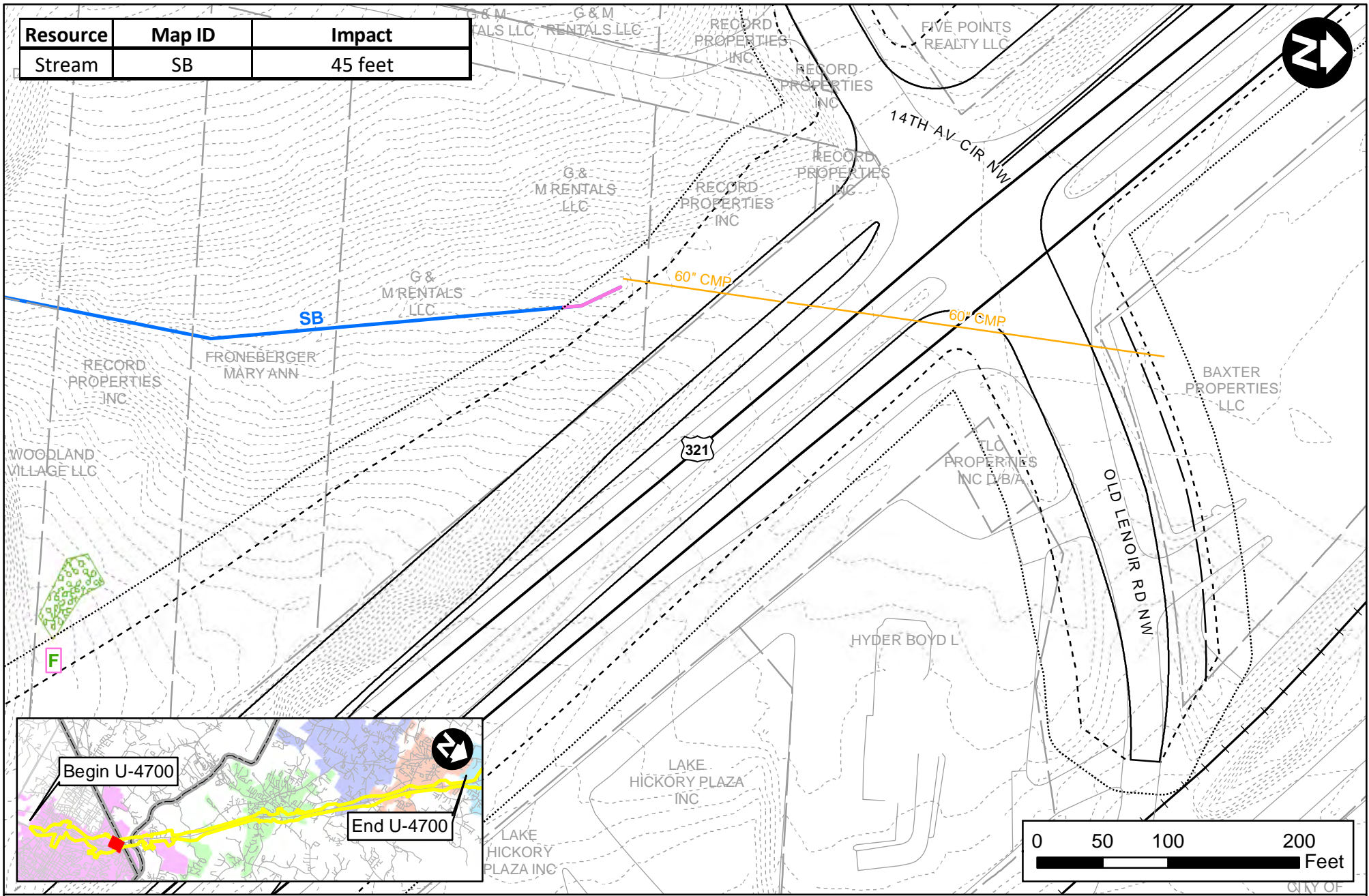
- Existing Roadway
- - - Existing Property Lines
- Proposed Hydraulic Structure
- Existing Drainage Structure
- Proposed Roadway
- - - Proposed Slope Stakes
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- ⋯ 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening

Figure 1
Impacts to Jurisdictional Resources

Catawba County

Resource	Map ID	Impact
Stream	SB	45 feet



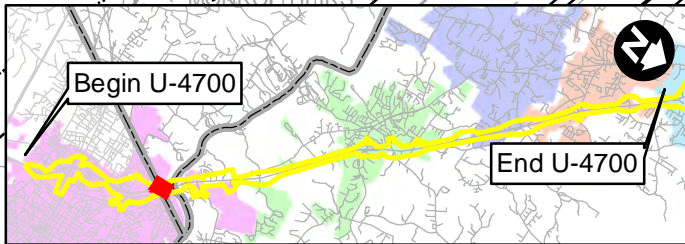
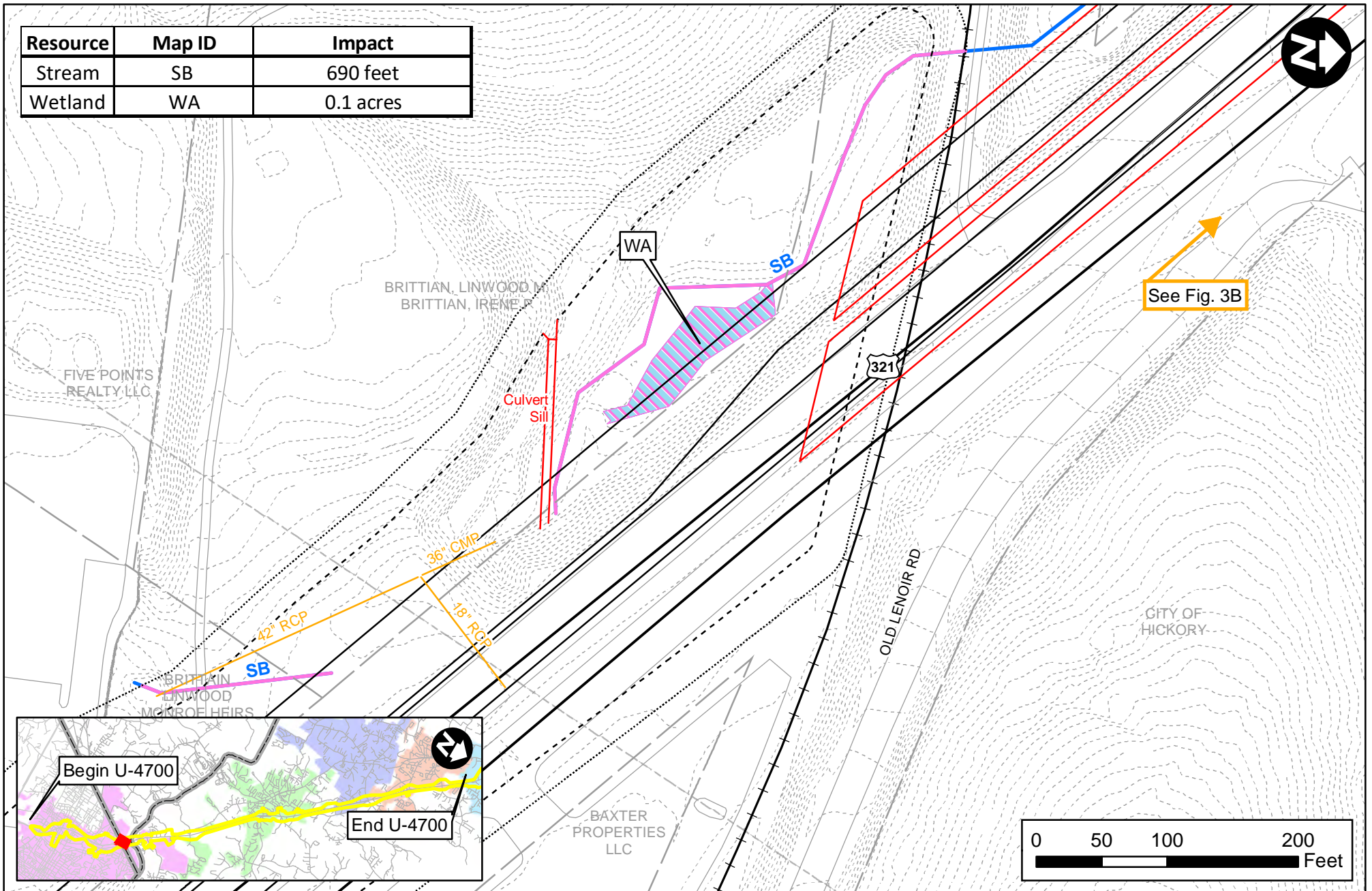
- Existing Roadway
- - - Existing Property Lines
- Existing Drainage Structure
- Proposed Roadway
- - - Proposed Slope Stakes
- - - Proposed Right of Way
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- Dwarf-flowered Heartleaf Population
- Dwarf-flowered Heartleaf Impact
- 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening

Figure 2
Impacts to Jurisdictional Resources

Catawba County

Resource	Map ID	Impact
Stream	SB	690 feet
Wetland	WA	0.1 acres



- Existing Roadway
- Existing Property Lines
- Proposed Hydraulic Structure
- Existing Drainage Structure
- Proposed Roadway
- - - Proposed Slope Stakes
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- ▨ Wetland Impact
- ▨ Delineated Wetland
- ⋯ 25' Slope Stakes Buffer

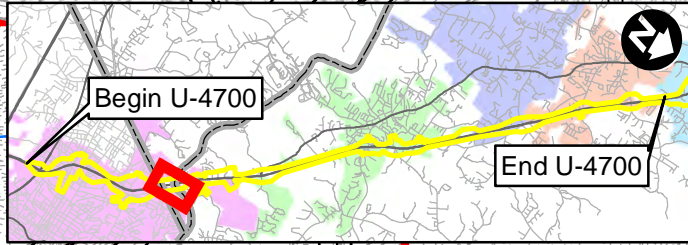
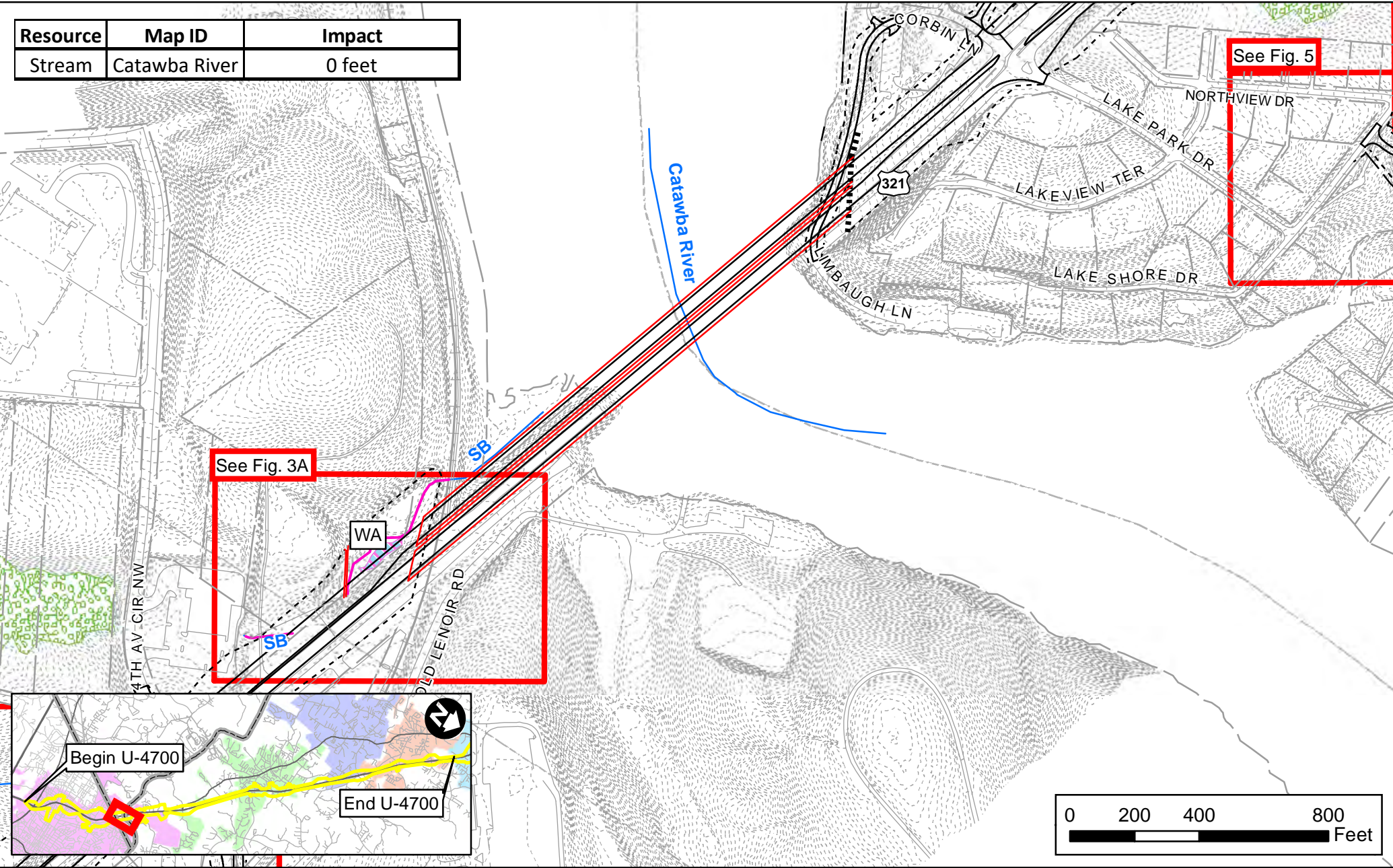


U-4700 - U.S. 321 Widening

Figure 3A
Impacts to Jurisdictional Resources

Burke and Catawba County

Resource	Map ID	Impact
Stream	Catawba River	0 feet



- | | | |
|-----------------------------|------------------------------|---|
| Stream Impact | Proposed Hydraulic Structure | Dwarf Flower Heartleaf (DFH) Population |
| Delineated Stream | Proposed Roadway | Wetland Impact |
| Existing Property Lines | Proposed Retaining Wall | Delineated Wetland |
| Railroad | Proposed Right of Way | |
| Existing Drainage Structure | Proposed Slope Stakes | |

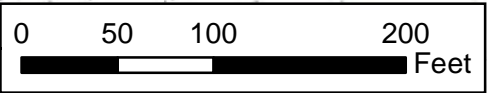
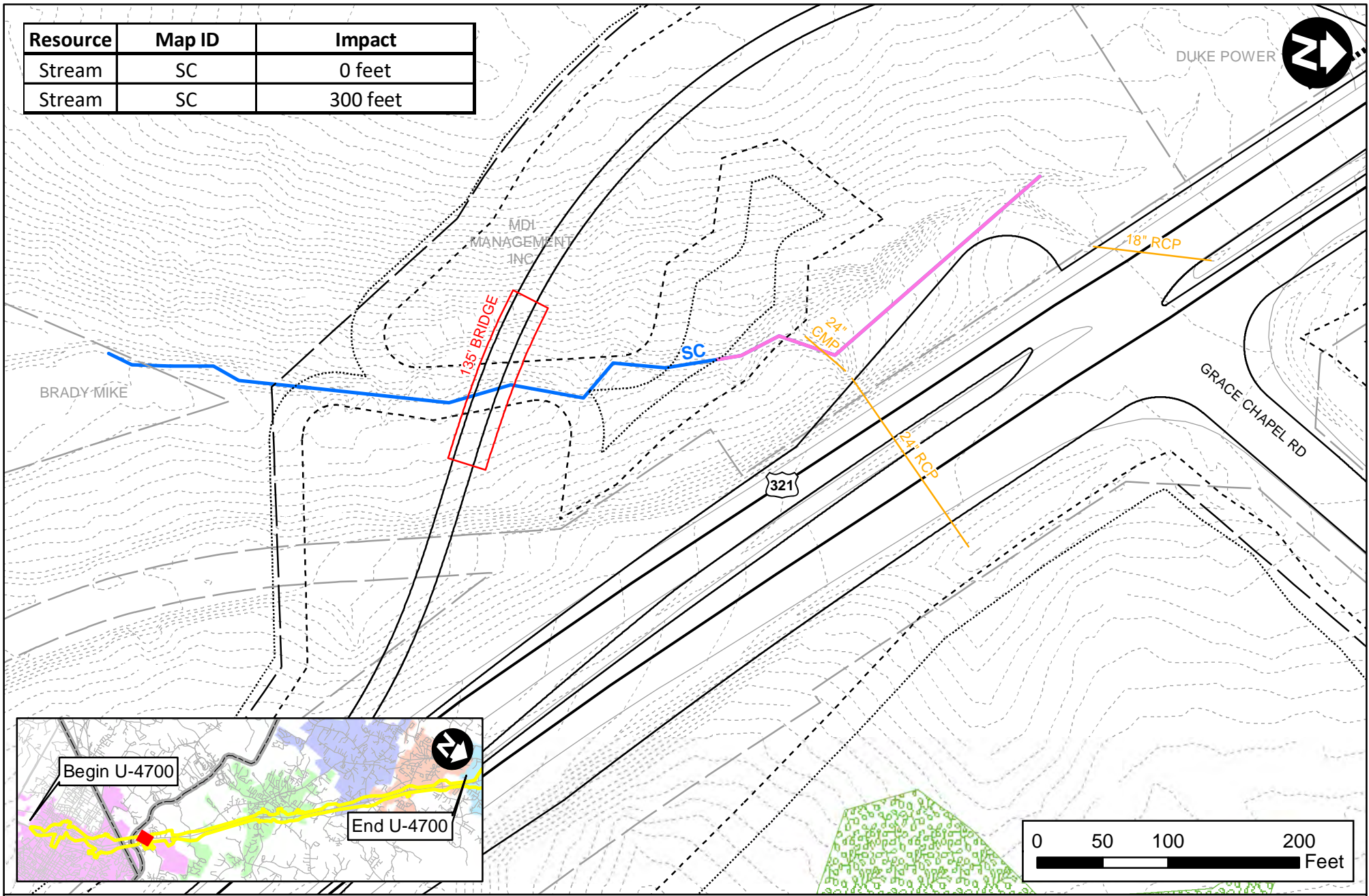


U-4700 - U.S. 321 Widening

Figure 3B
Impacts to Jurisdictional Resources

Burke and Caldwell Counties

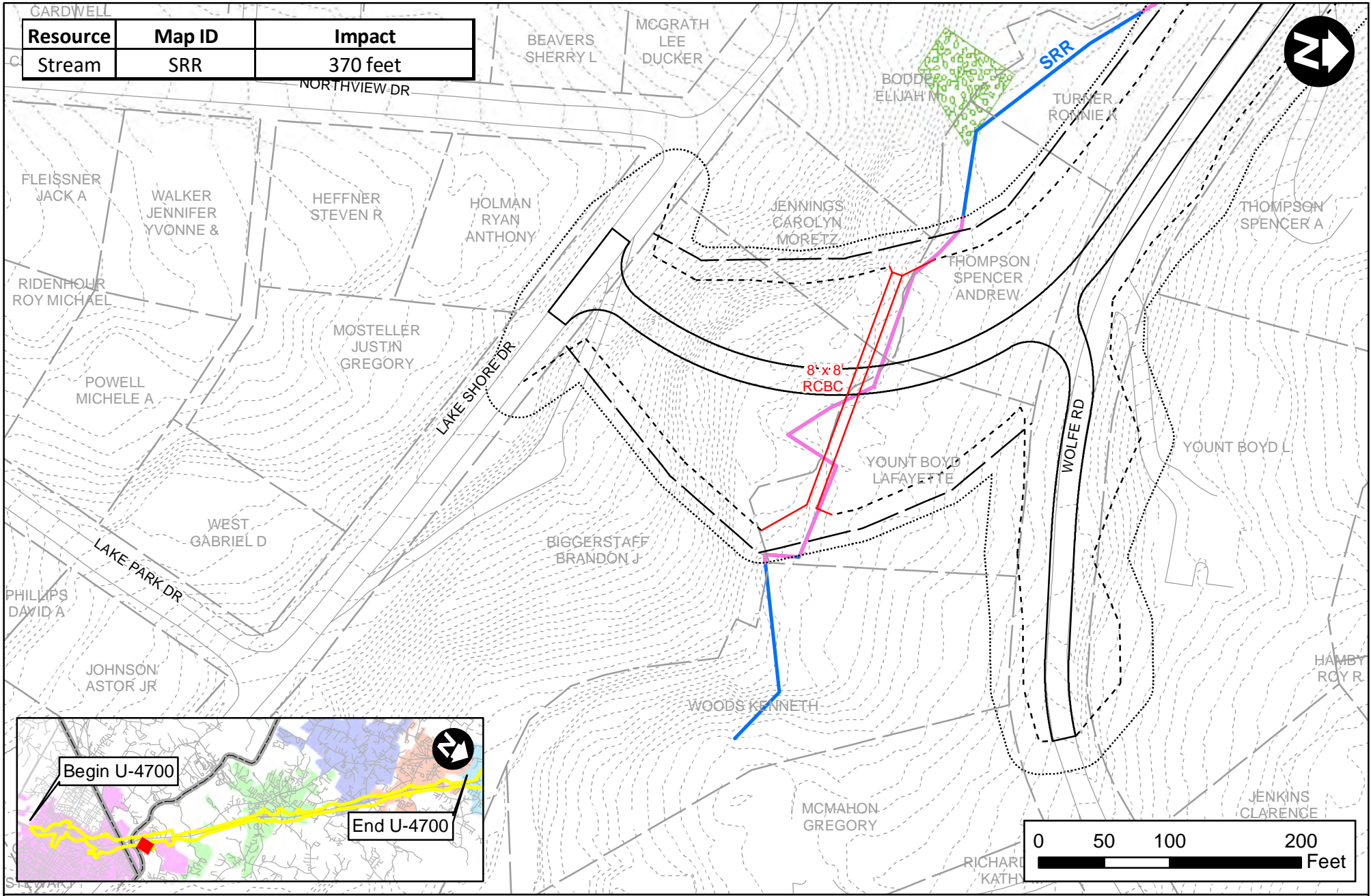
Resource	Map ID	Impact
Stream	SC	0 feet
Stream	SC	300 feet



- Existing Roadway
- - - Existing Property Lines
- Proposed Slope Stakes
- - - Proposed Right of Way
- Proposed Hydraulic Structure
- - - Contour Lines (2')
- Existing Drainage Structure
- Delineated Stream
- Proposed Roadway
- Stream Impact
- Proposed Retaining Wall
- Dwarf-flowered Heartleaf Population
- 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening
Figure 4
Impacts to Jurisdictional Resources
Caldwell County

Resource	Map ID	Impact
Stream	SRR	370 feet



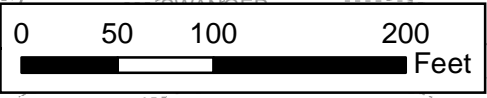
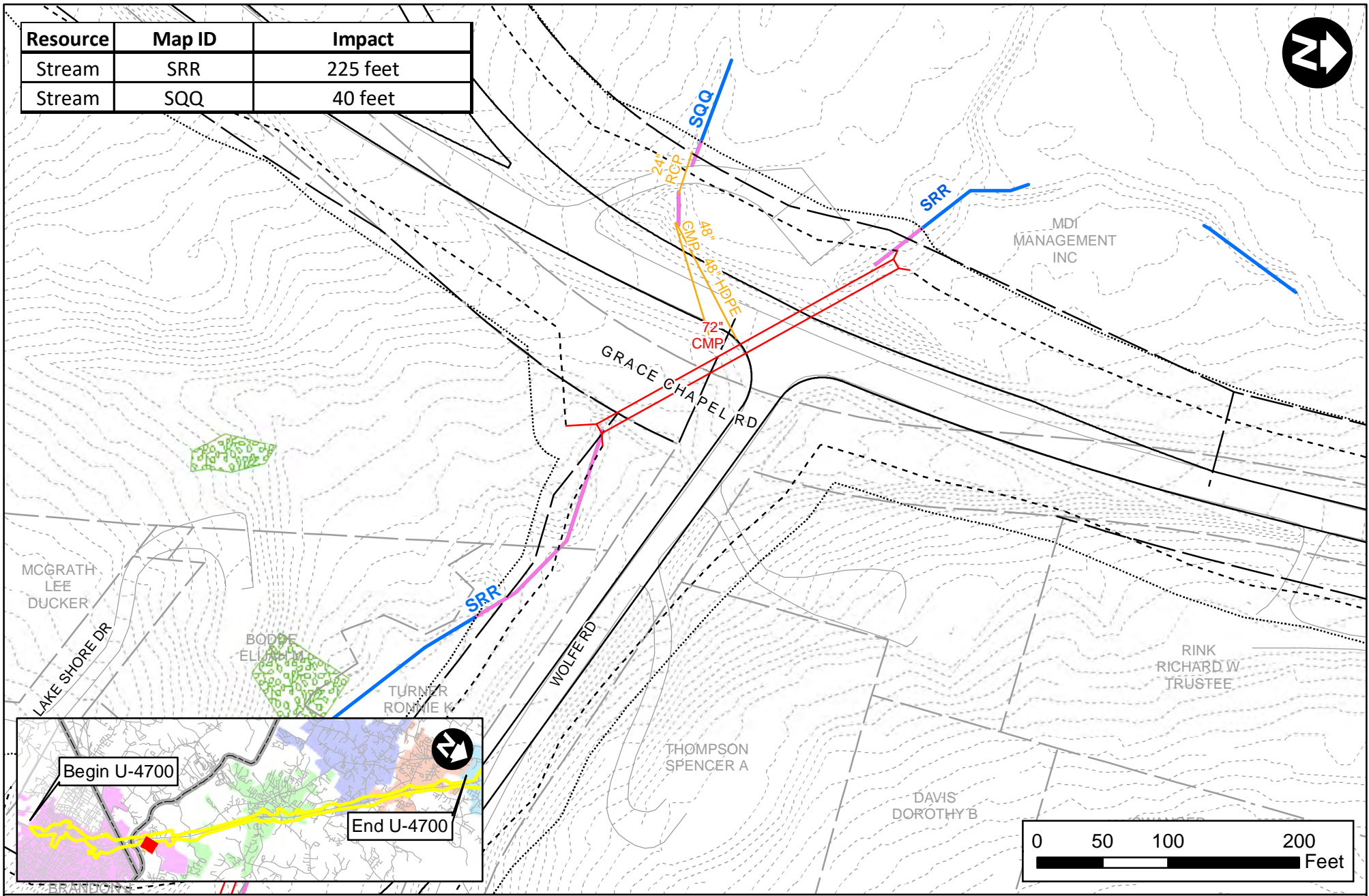
- Existing Roadway
- Existing Property Lines
- Proposed Hydraulic Structure
- Proposed Roadway
- - - Proposed Slope Stakes
- Proposed Right of Way
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- Dwarf-flowered Heartleaf Population
- - - 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening

Figure 5
Impacts to Jurisdictional Resources

Caldwell County

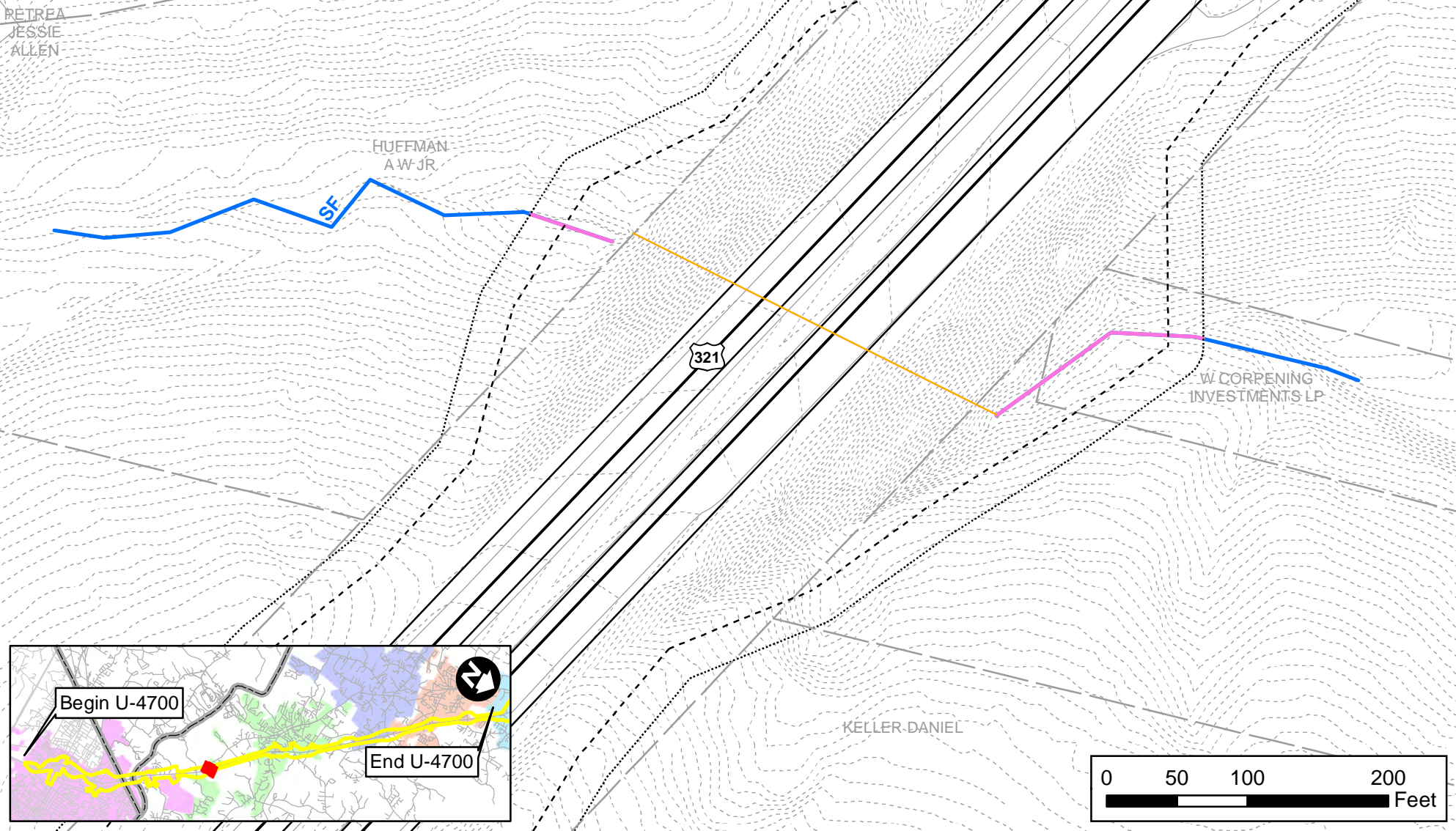
Resource	Map ID	Impact
Stream	SRR	225 feet
Stream	SQQ	40 feet



- Existing Roadway
- Existing Property Lines
- Proposed Hydraulic Structure
- Existing Drainage Structure
- Proposed Roadway
- - - Proposed Slope Stakes
- Proposed Right of Way
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- Dwarf-flowered Heartleaf Population
- 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening
Figure 6
Impacts to Jurisdictional Resources
Caldwell County

Resource	Map ID	Impact
Stream	SF	230 feet

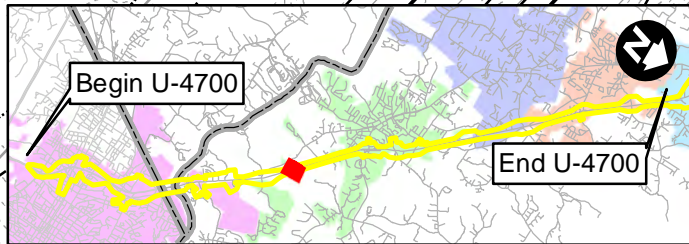
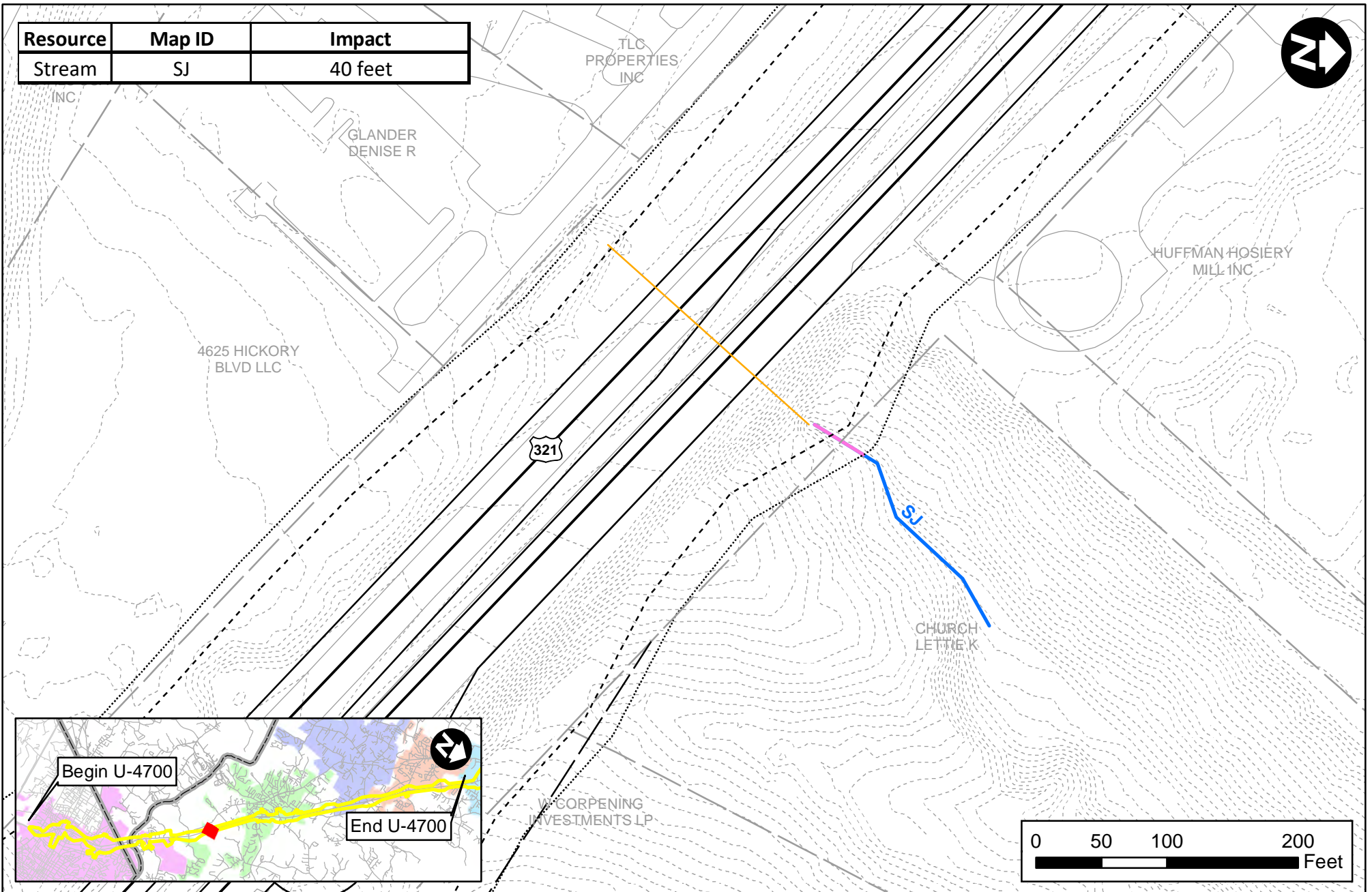


- Existing Roadway
- Existing Property Lines
- Existing Drainage Structure
- Proposed Roadway
- - - Proposed Slope Stakes
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- ⋯ 25' Slope Stakes Buffer



U-4700 - U.S. 321 Widening
Figure 7
Impacts to Jurisdictional Resources
Caldwell County

Resource	Map ID	Impact
Stream	SJ	40 feet



- Existing Roadway
- Existing Property Lines
- Existing Drainage Structure
- Proposed Roadway
- Proposed Slope Stakes
- Proposed Right of Way
- Contour Lines (2')
- Delineated Stream
- Stream Impact
- 25' Slope Stakes Buffer

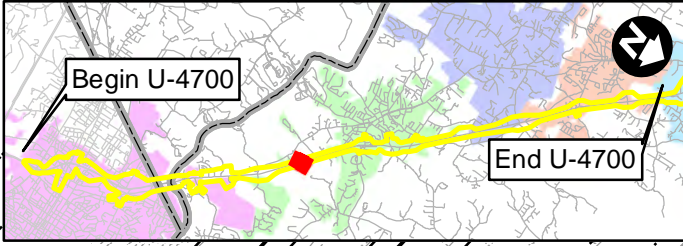
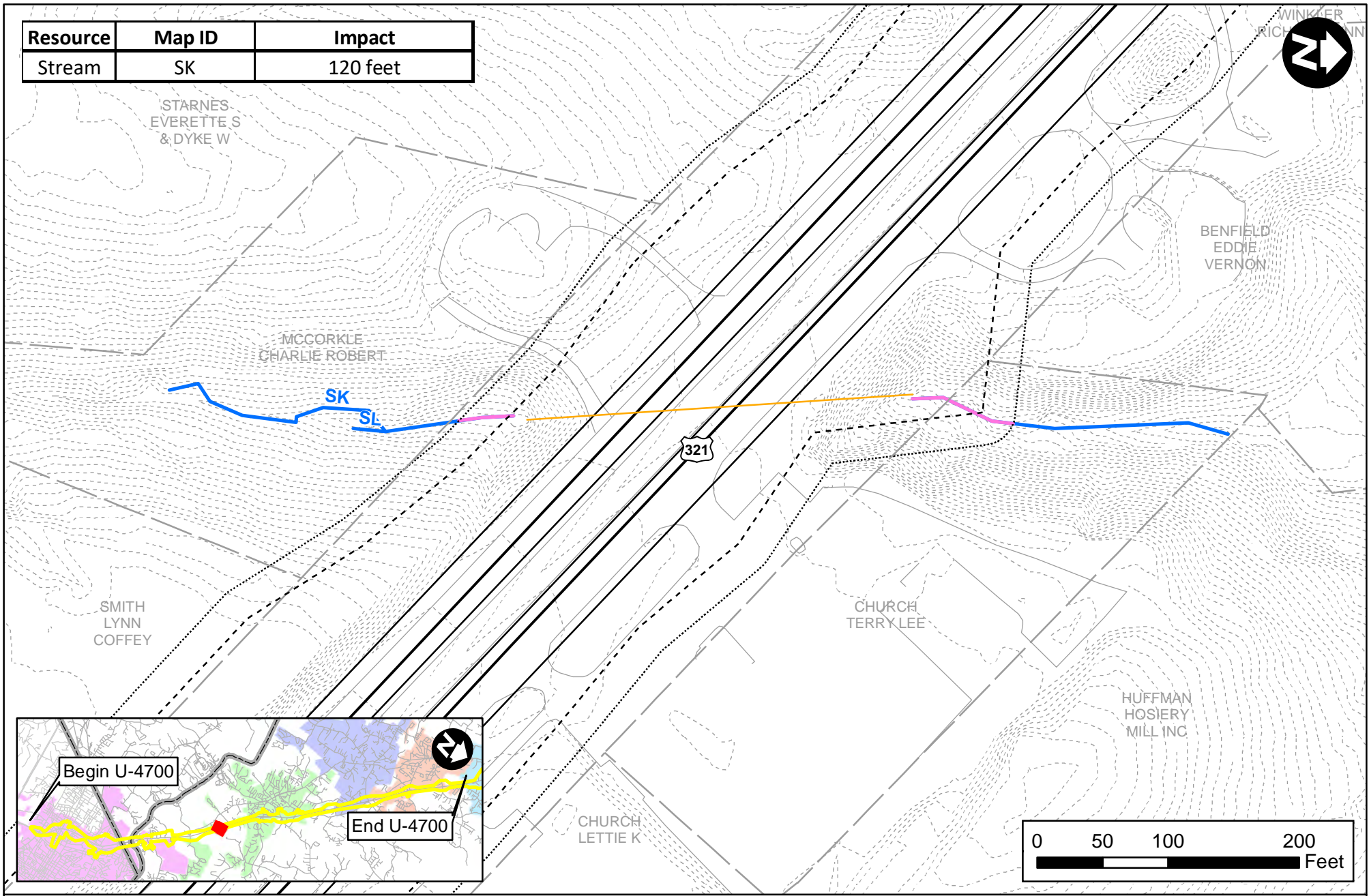


U-4700 - U.S. 321 Widening

Figure 8
Impacts to Jurisdictional Resources

Caldwell County

Resource	Map ID	Impact
Stream	SK	120 feet

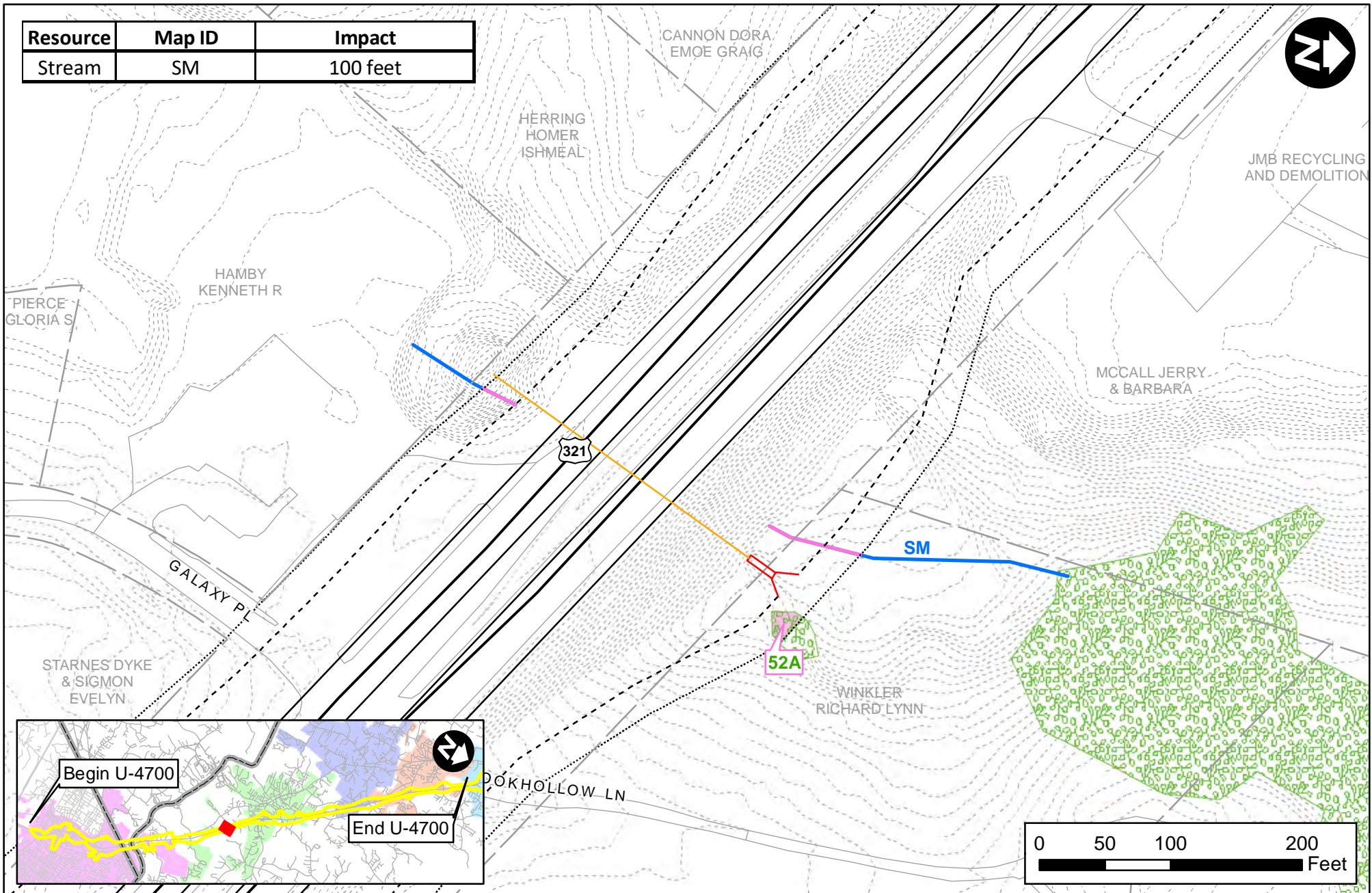


- Existing Roadway
- Existing Property Lines
- Existing Drainage Structure
- Proposed Roadway
- Proposed Slope Stakes
- Contour Lines (2')
- Delineated Stream
- Stream Impact
- 25' Slope Stakes Buffer



U-4700 - U.S. 321 Widening
Figure 9
Impacts to Jurisdictional Resources
Caldwell County

Resource	Map ID	Impact
Stream	SM	100 feet



- Existing Roadway
- - - Existing Property Lines
- Proposed Hydraulic Structure
- Existing Drainage Structure
- Proposed Roadway
- - - Proposed Slope Stakes
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- Dwarf-flowered Heartleaf Population
- Dwarf-flowered Heartleaf Impact
- ⋯ 25' Slope Stakes Buffer

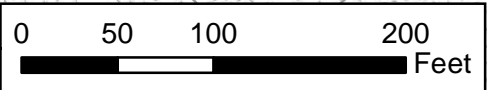
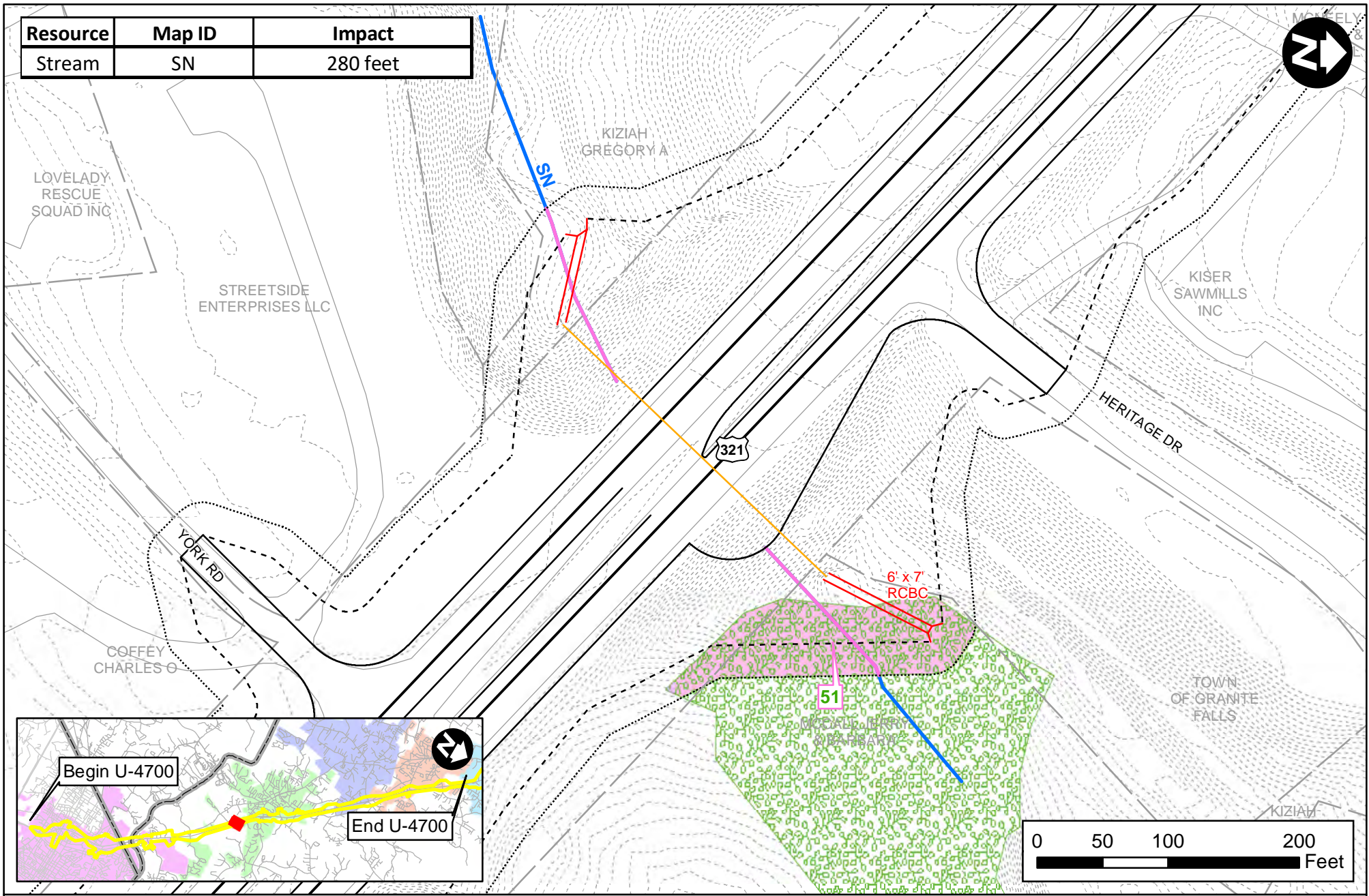


U-4700 - U.S. 321 Widening

Figure 10
Impacts to Jurisdictional Resources

Caldwell County

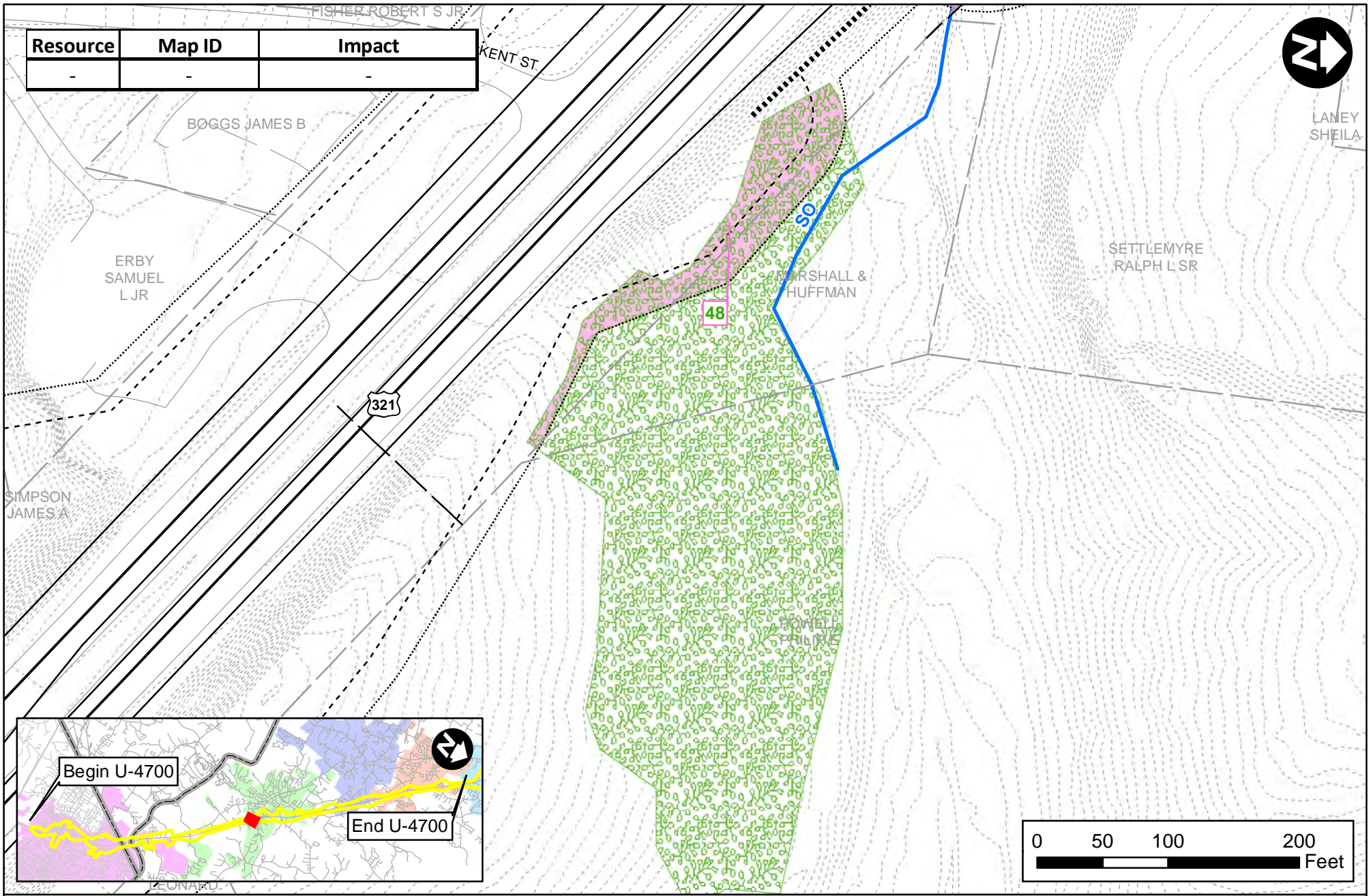
Resource	Map ID	Impact
Stream	SN	280 feet



- Existing Roadway
- - - Existing Property Lines
- Proposed Hydraulic Structure
- Existing Drainage Structure
- Proposed Roadway
- - - Proposed Slope Stakes
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- Dwarf-flowered Heartleaf Population
- Dwarf-flowered Heartleaf Impact
- ⋯ 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening
Figure 11
Impacts to Jurisdictional Resources
Caldwell County

Resource	Map ID	Impact
-	-	-



- Existing Roadway
- - Existing Property Lines
- Proposed Roadway
- Proposed Retaining Wall
- - - Proposed Slope Stakes
- - - Proposed Right of Way
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- Dwarf-flowered Heartleaf Population
- Dwarf-flowered Heartleaf Impact
- 25' Slope Stakes Buffer

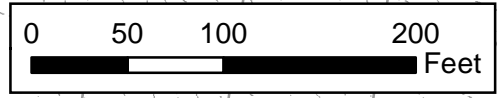
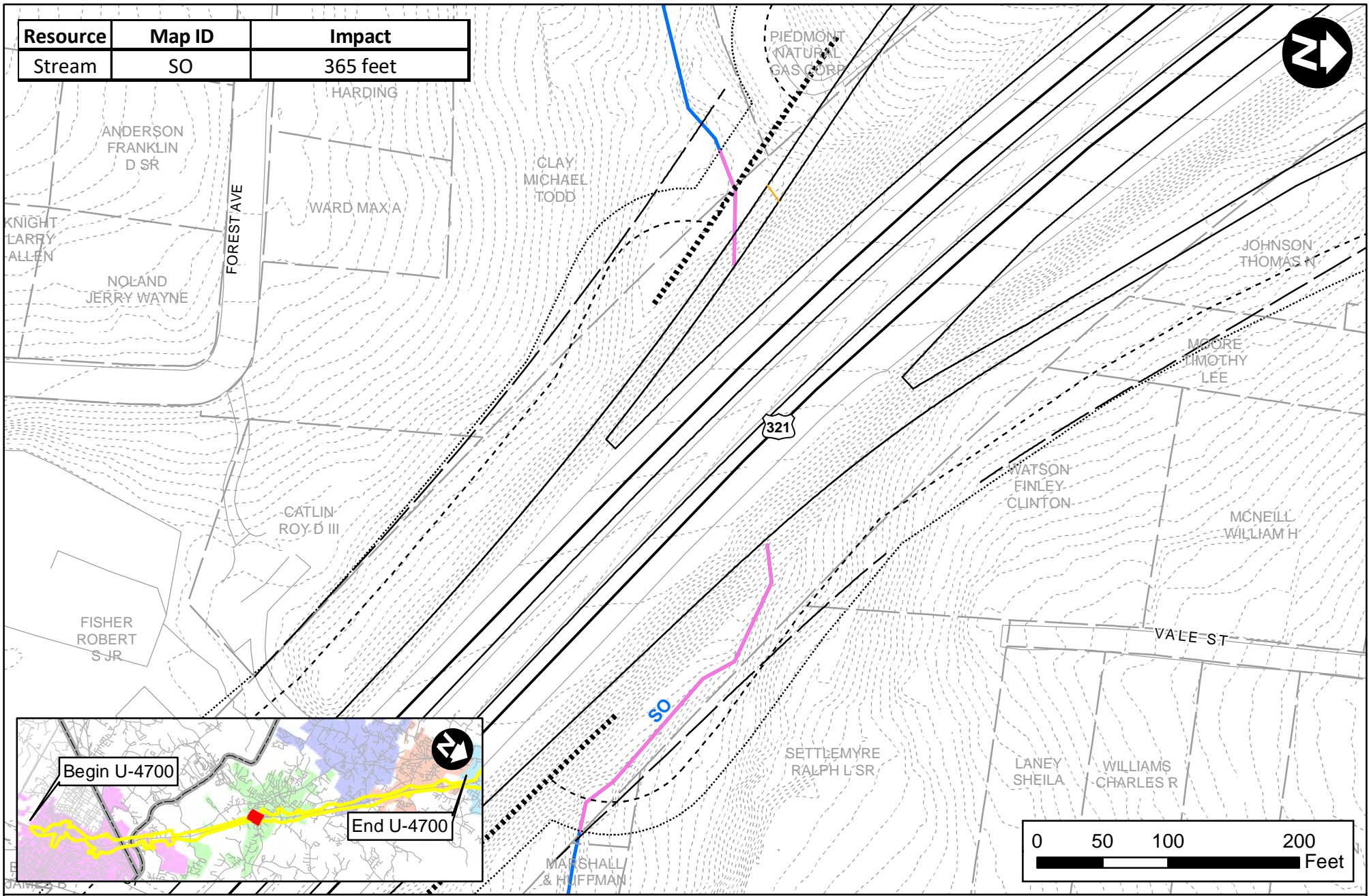


U-4700 - U.S. 321 Widening

Figure 12
Impacts to Jurisdictional Resources

Caldwell County

Resource	Map ID	Impact
Stream	SO	365 feet

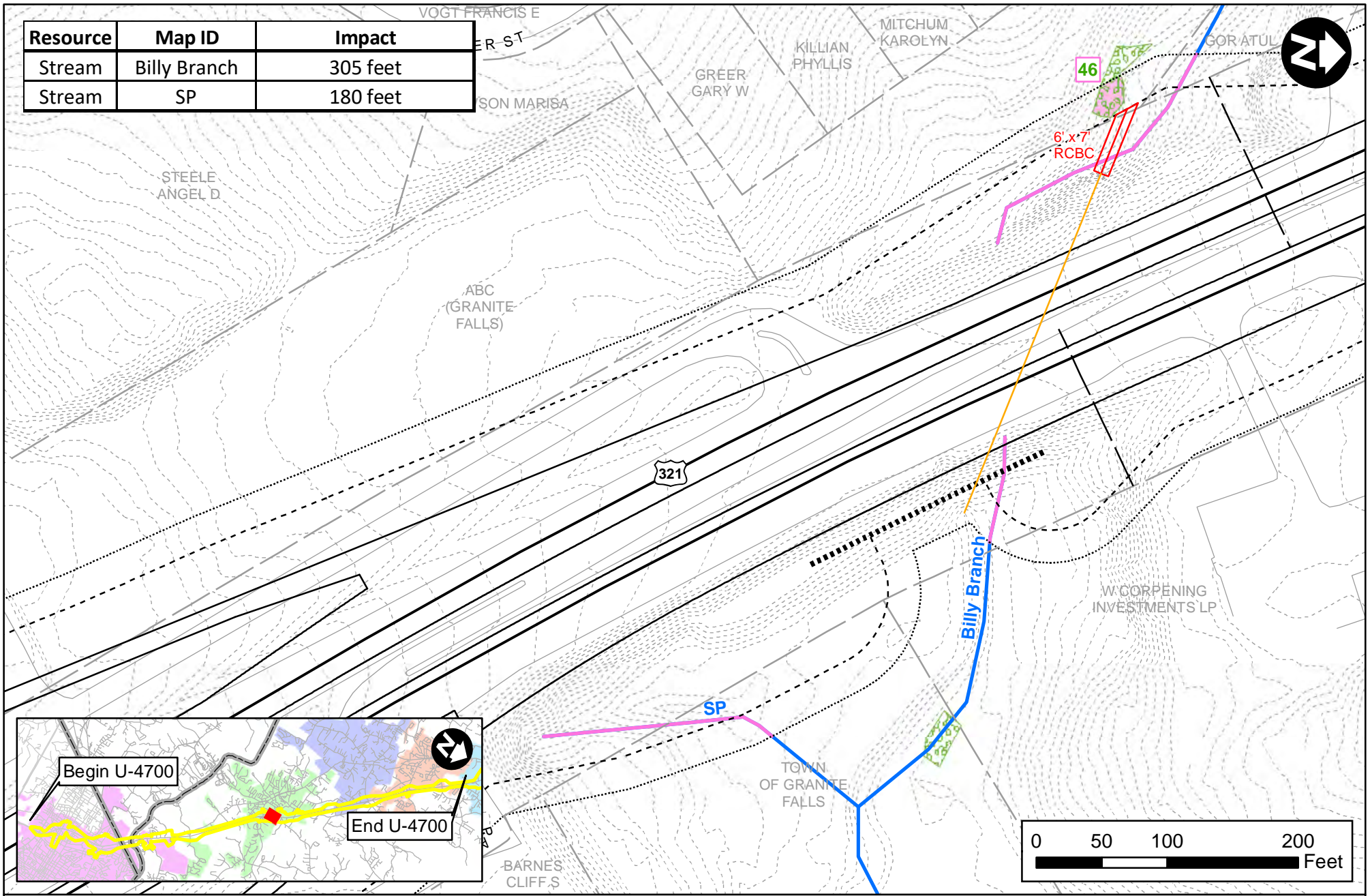


- Existing Roadway
- Existing Property Lines
- Existing Drainage Structure
- Proposed Roadway
- Proposed Retaining Wall
- - - - Proposed Slope Stakes
- - - - Proposed Right of Way
- - - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- 25' Slope Stakes Buffer



U-4700 - U.S. 321 Widening
Figure 13
Impacts to Jurisdictional Resources
Caldwell County

Resource	Map ID	Impact
Stream	Billy Branch	305 feet
Stream	SP	180 feet



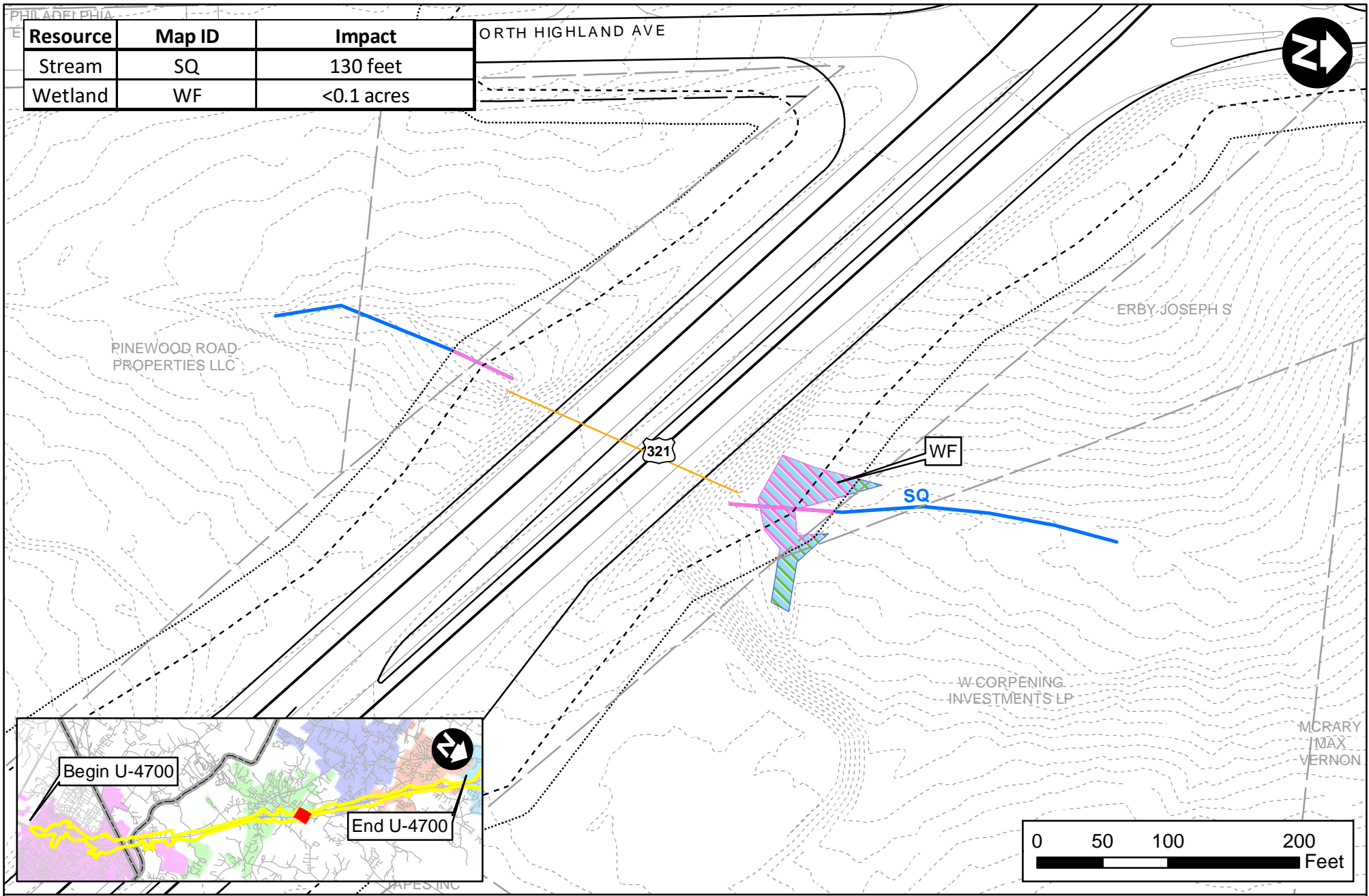
- Existing Roadway
- - - Existing Property Lines
- Proposed Hydraulic Structure
- Existing Drainage Structure
- Proposed Roadway
- Proposed Retaining Wall
- - - Proposed Slope Stakes
- Proposed Right of Way
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- Dwarf-flowered Heartleaf Population
- Dwarf-flowered Heartleaf Impact
- 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening

Figure 14
Impacts to Jurisdictional Resources

Caldwell County

Resource	Map ID	Impact
Stream	SQ	130 feet
Wetland	WF	<0.1 acres

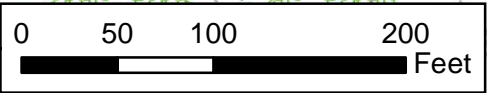
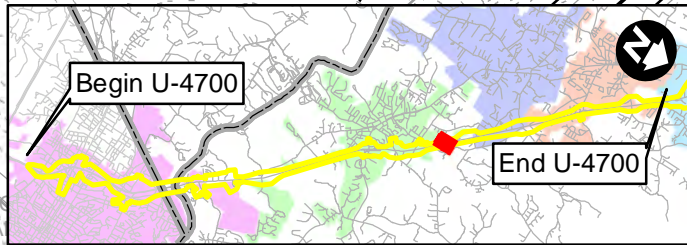
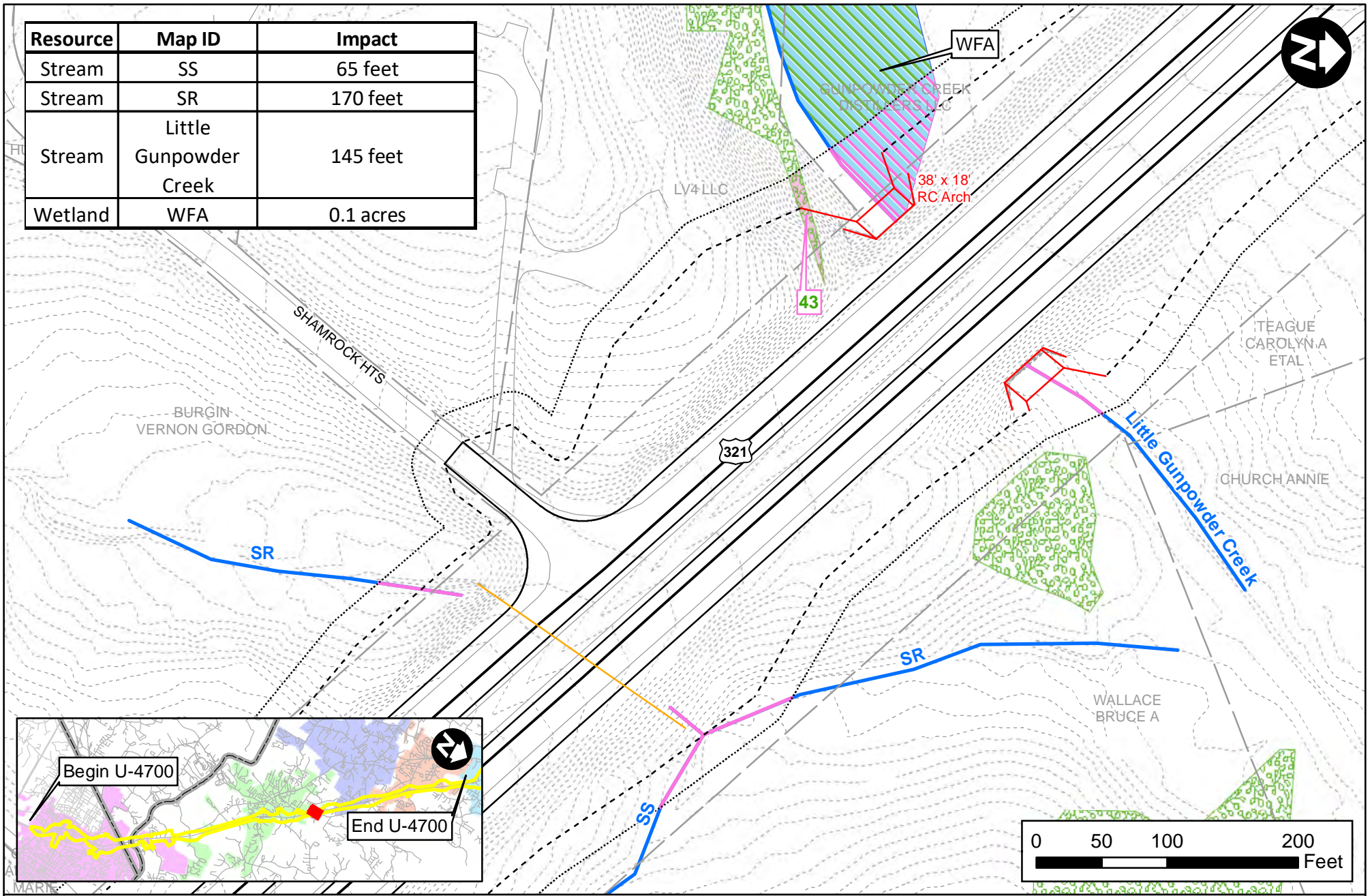


- Existing Roadway
- Existing Property Lines
- Existing Drainage Structure
- Proposed Roadway
- Proposed Slope Stakes
- Proposed Right of Way
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- ▨ Wetland Impact
- ▨ Delineated Wetland
- ⋯ 25' Slope Stakes Buffer



U-4700 - U.S. 321 Widening
Figure 15
Impacts to Jurisdictional Resources
Caldwell County

Resource	Map ID	Impact
Stream	SS	65 feet
Stream	SR	170 feet
Stream	Little Gunpowder Creek	145 feet
Wetland	WFA	0.1 acres



- Existing Roadway
- Existing Property Lines
- Proposed Hydraulic Structure
- Existing Drainage Structure
- Proposed Roadway
- Proposed Slope Stakes
- Contour Lines (2')
- Delineated Stream
- Stream Impact
- Wetland Impact
- Delineated Wetland
- Dwarf-flowered Heartleaf Population
- Dwarf-flowered Heartleaf Impact
- 25' Slope Stakes Buffer

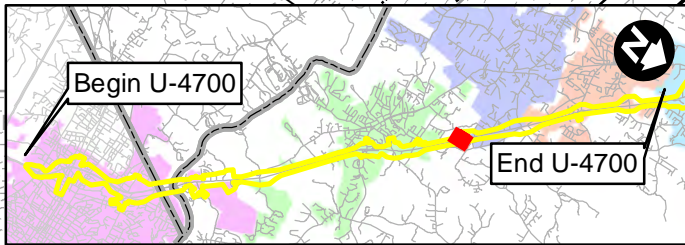
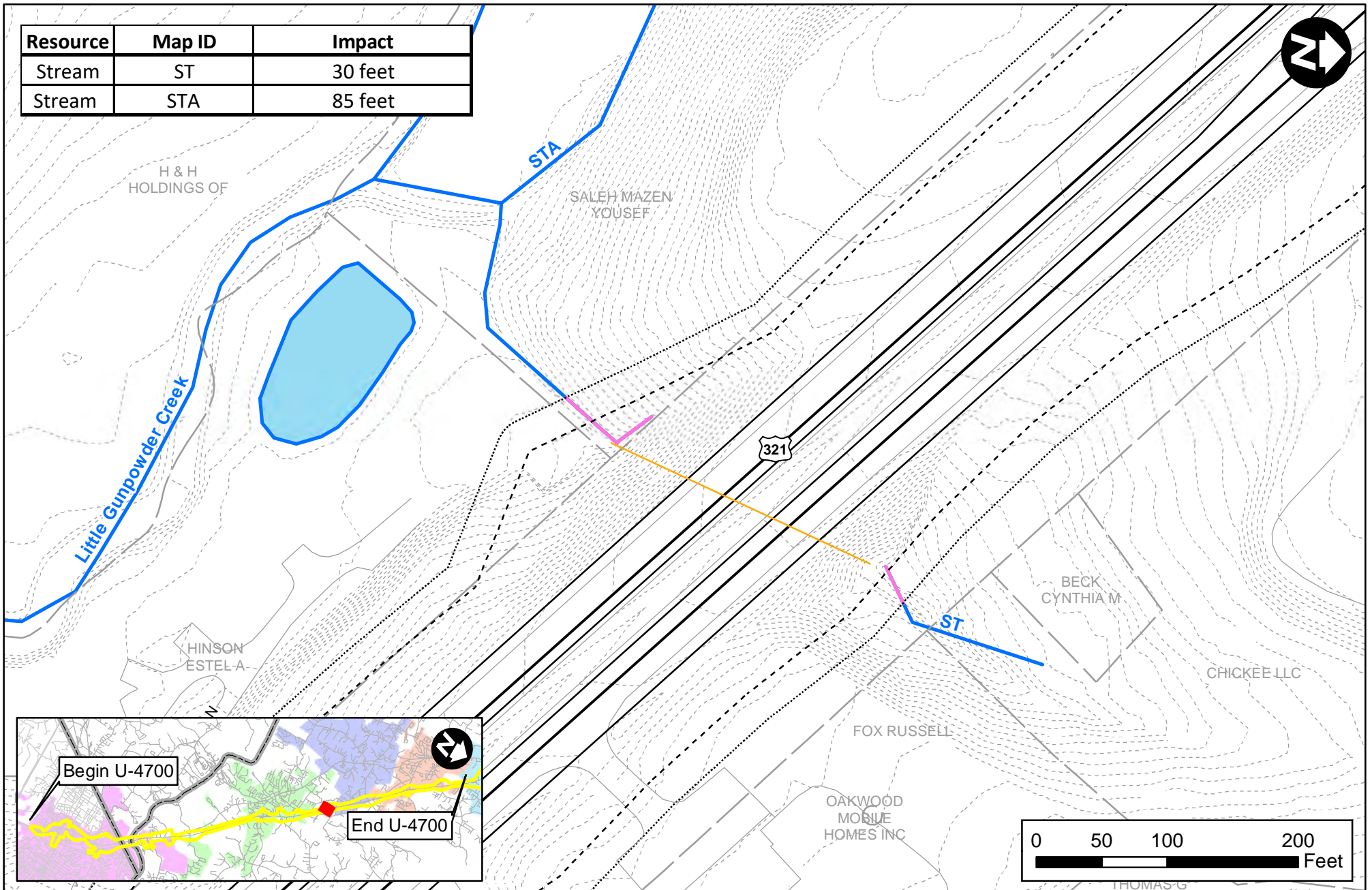


U-4700 - U.S. 321 Widening

**Figure 16
Impacts to Jurisdictional Resources**

Caldwell County

Resource	Map ID	Impact
Stream	ST	30 feet
Stream	STA	85 feet



- Existing Roadway
- - Existing Property Lines
- Existing Drainage Structure
- Proposed Roadway
- - - Proposed Slope Stakes
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- Delineated Body of Water
- - - 25' Slope Stakes Buffer

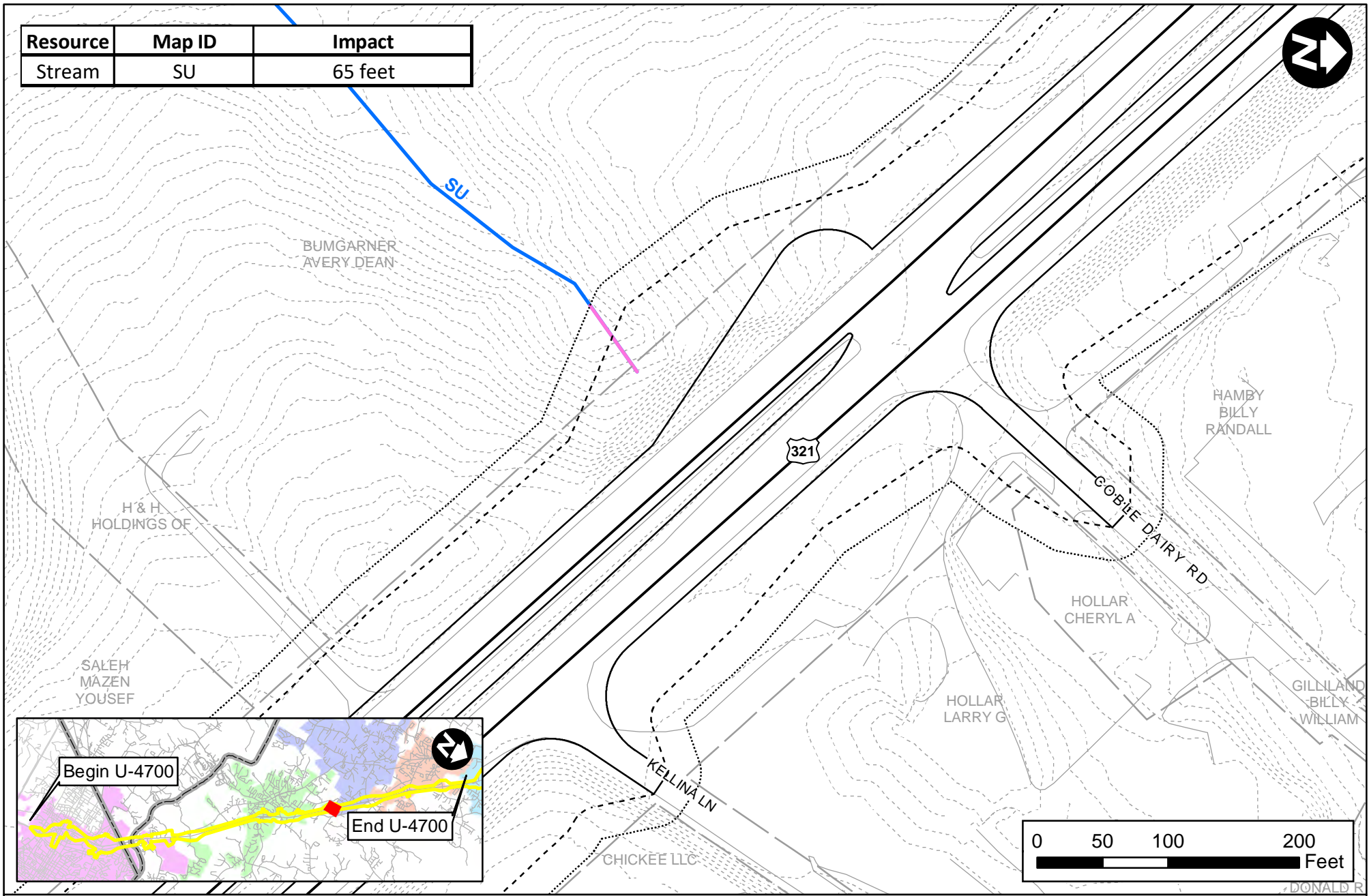


U-4700 - U.S. 321 Widening

Figure 17
Impacts to Jurisdictional Resources

Caldwell County

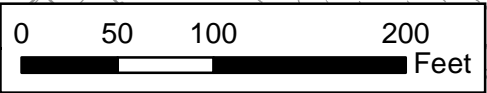
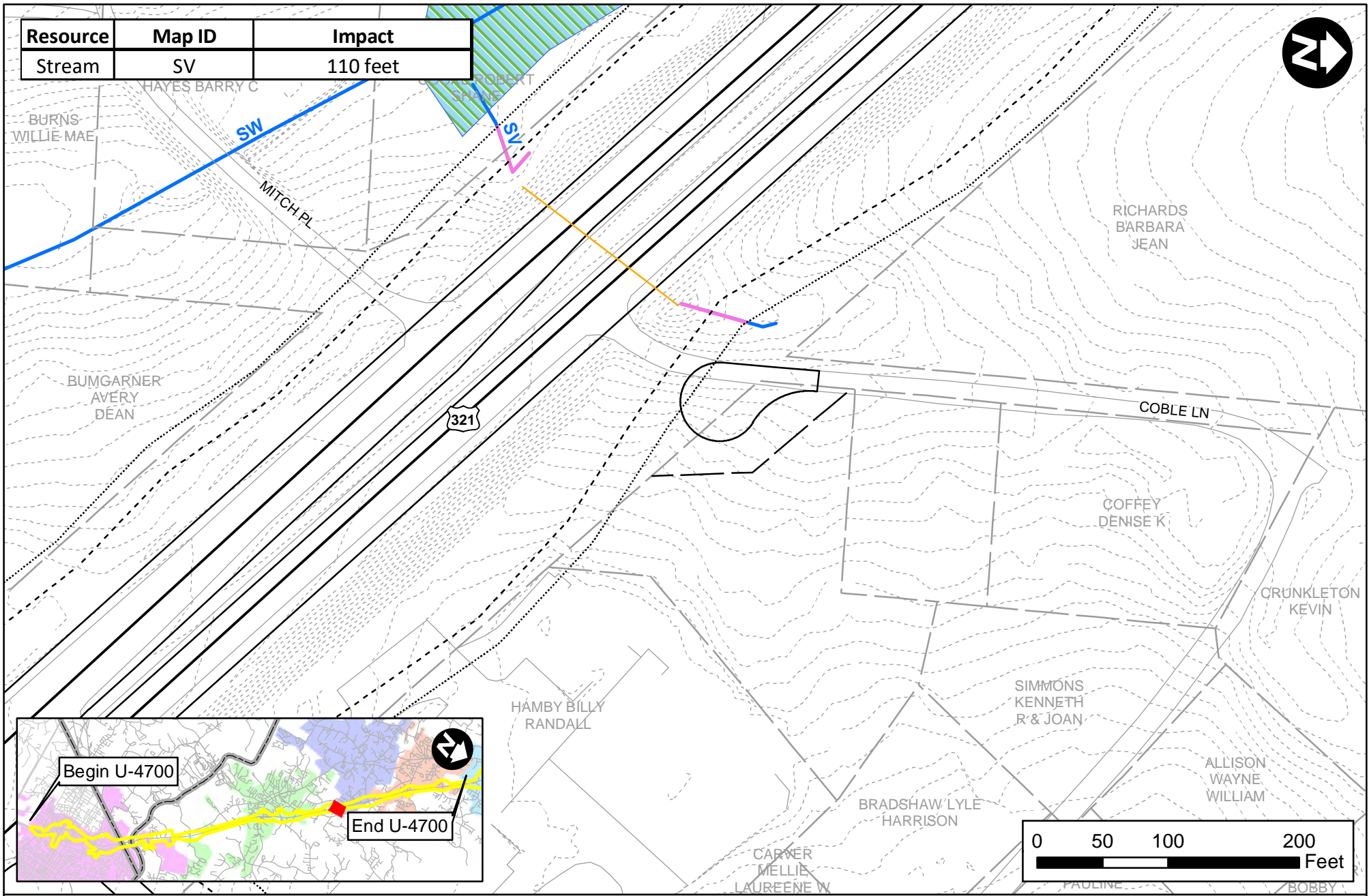
Resource	Map ID	Impact
Stream	SU	65 feet



- Existing Roadway
- - Existing Property Lines
- Proposed Roadway
- - - Proposed Slope Stakes
- Contour Lines (2')
- Delineated Stream
- Stream Impact
- 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening
Figure 18
Impacts to Jurisdictional Resources
Caldwell County

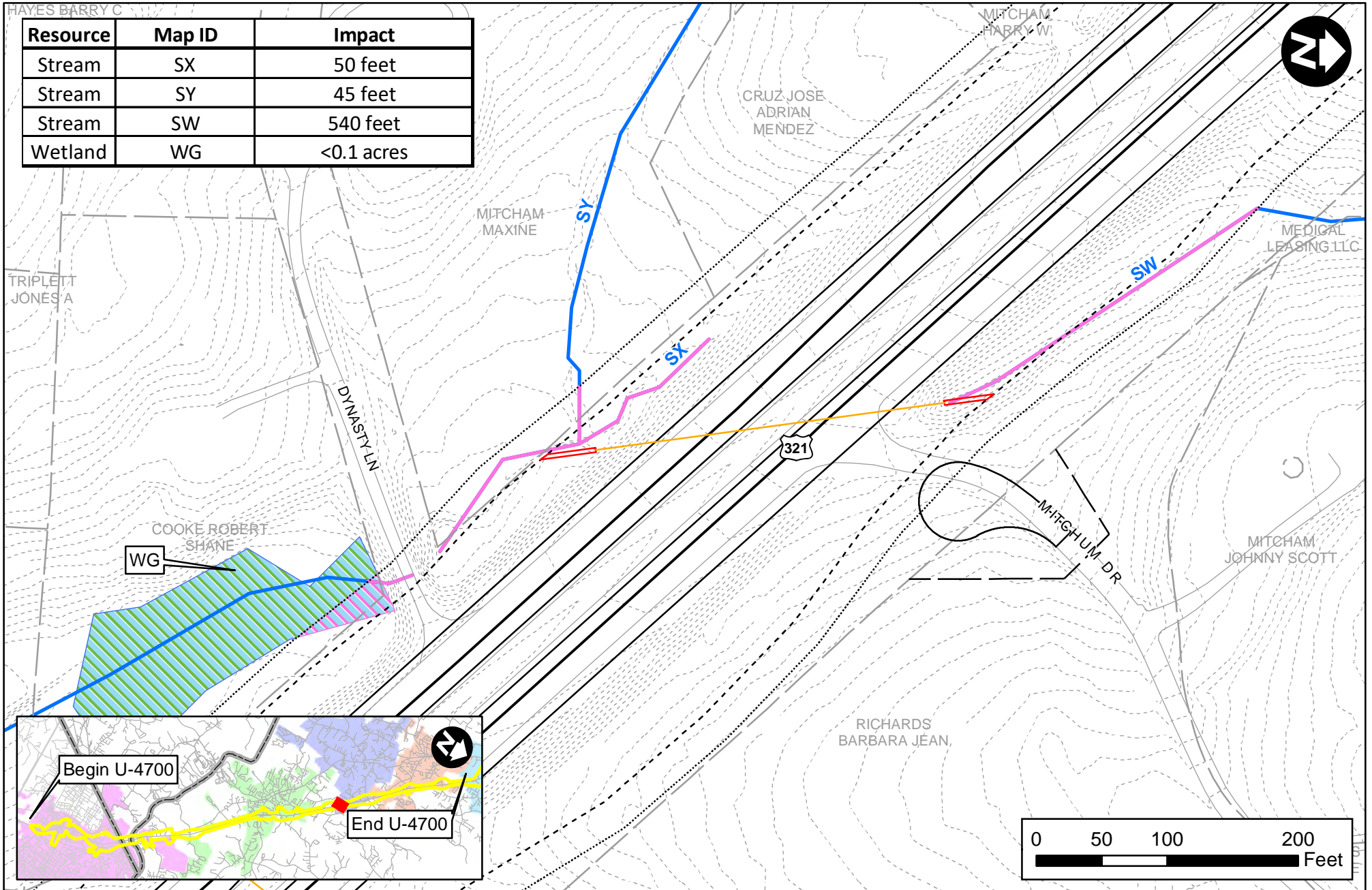
Resource	Map ID	Impact
Stream	SV	110 feet



- Existing Roadway
- Existing Property Lines
- Existing Drainage Structure
- Proposed Roadway
- - - Proposed Slope Stakes
- Proposed Right of Way
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- ▨ Delineated Wetland
- ⋯ 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening
Figure 19
Impacts to Jurisdictional Resources
Caldwell County

Resource	Map ID	Impact
Stream	SX	50 feet
Stream	SY	45 feet
Stream	SW	540 feet
Wetland	WG	<0.1 acres



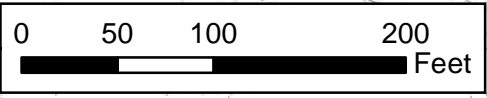
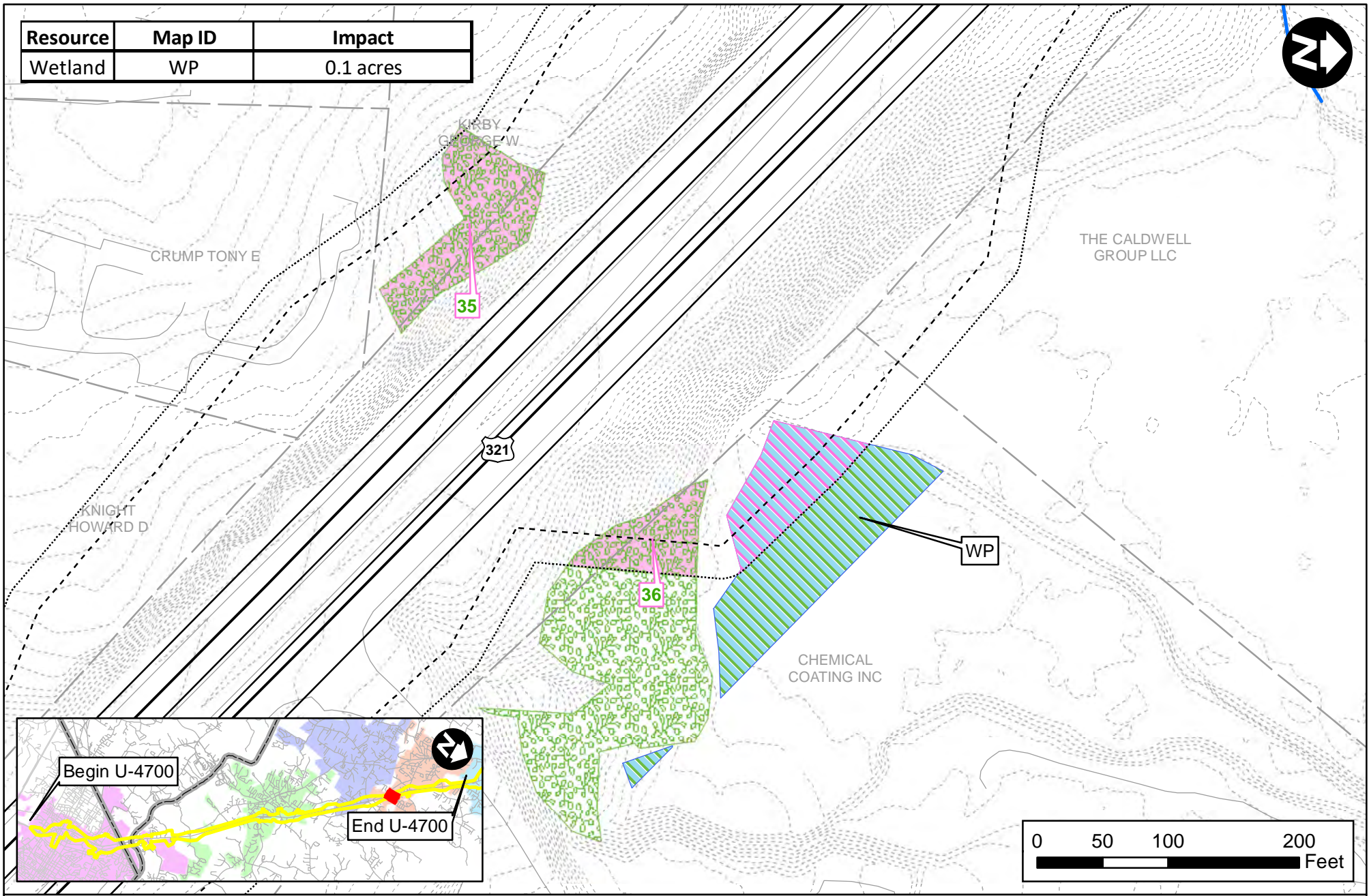
- Existing Roadway
- Existing Property Lines
- Proposed Hydraulic Structure
- Existing Drainage Structure
- Proposed Roadway
- - - Proposed Slope Stakes
- - - Proposed Right of Way
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- ▨ Wetland Impact
- ▨ Delineated Wetland
- ▨ 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening

Figure 20
Impacts to Jurisdictional Resources

Caldwell County

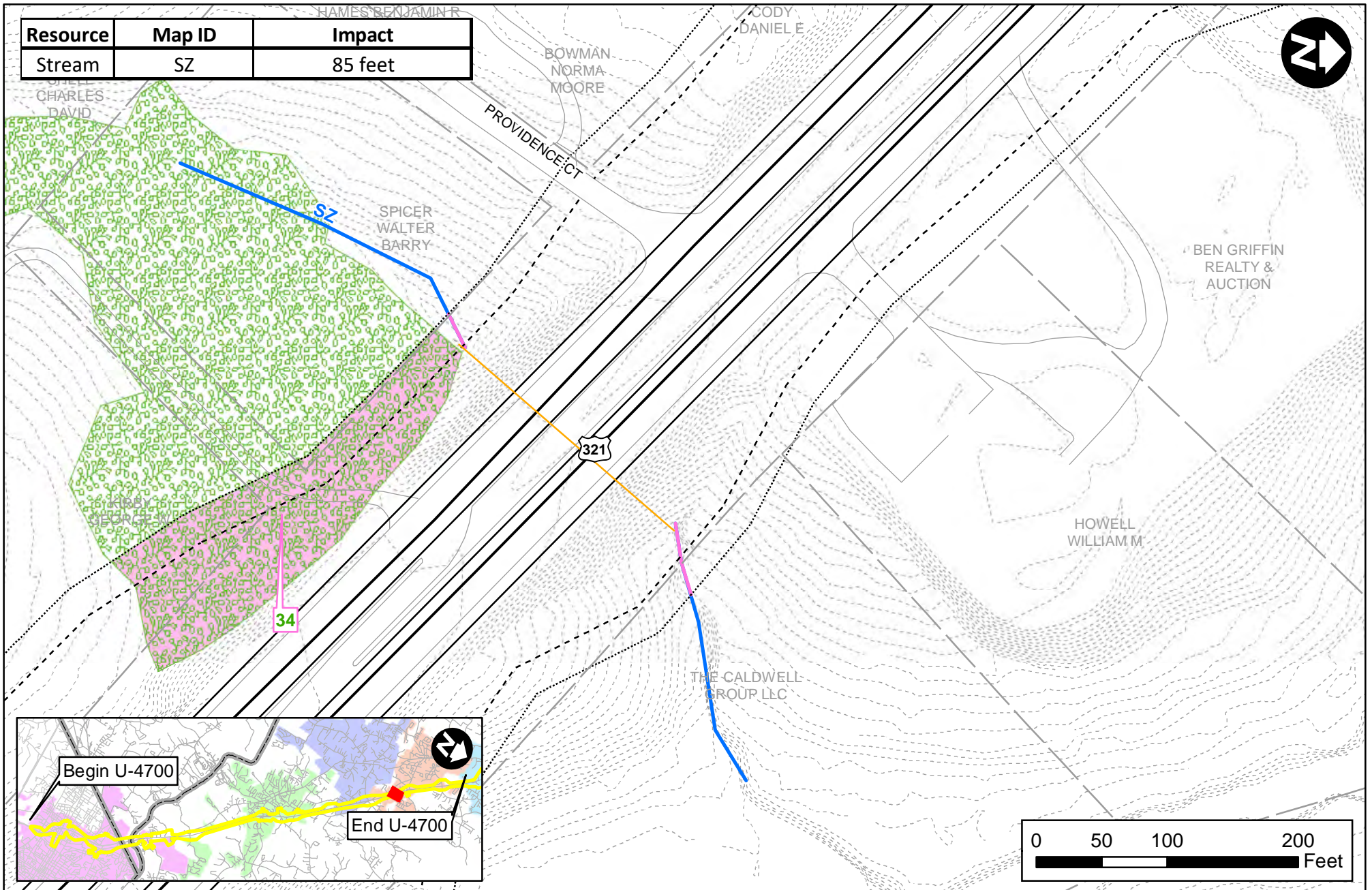
Resource	Map ID	Impact
Wetland	WP	0.1 acres



- Existing Roadway
- - - Existing Property Lines
- Proposed Roadway
- - - Proposed Slope Stakes
- - - Contour Lines (2')
- Delineated Stream
- ▨ Wetland Impact
- ▨ Delineated Wetland
- ▨ Dwarf-flowered Heartleaf Population
- ▨ Dwarf-flowered Heartleaf Impact
- ▨ 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening
Figure 21
Impacts to Jurisdictional Resources
Caldwell County

Resource	Map ID	Impact
Stream	SZ	85 feet



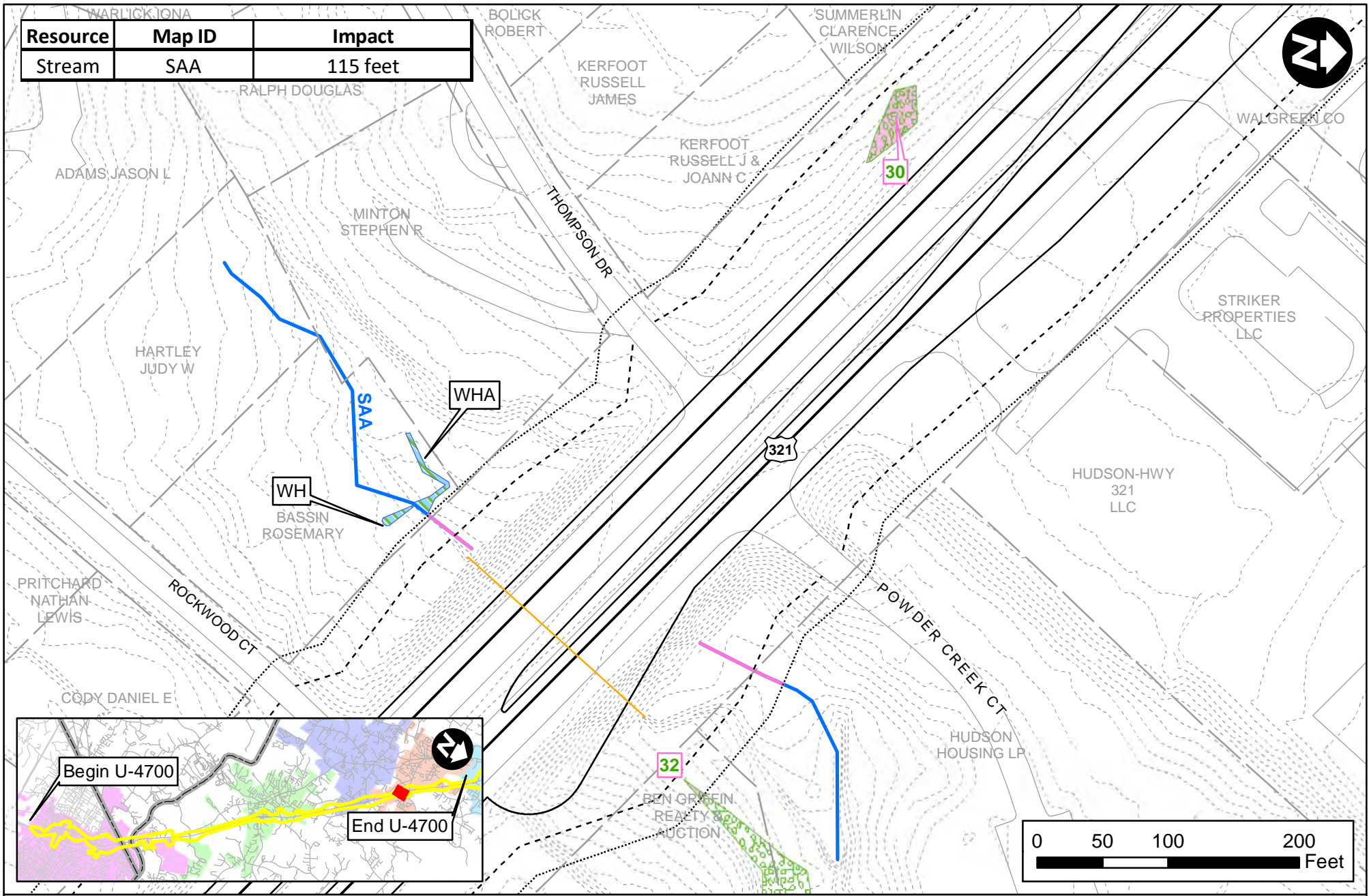
- Existing Roadway
- - - Existing Property Lines
- Existing Drainage Structure
- Proposed Roadway
- - - Proposed Slope Stakes
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- Dwarf-flowered Heartleaf Population
- Dwarf-flowered Heartleaf Impact
- 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening

Figure 22
Impacts to Jurisdictional Resources

Caldwell County

Resource	Map ID	Impact
Stream	SAA	115 feet

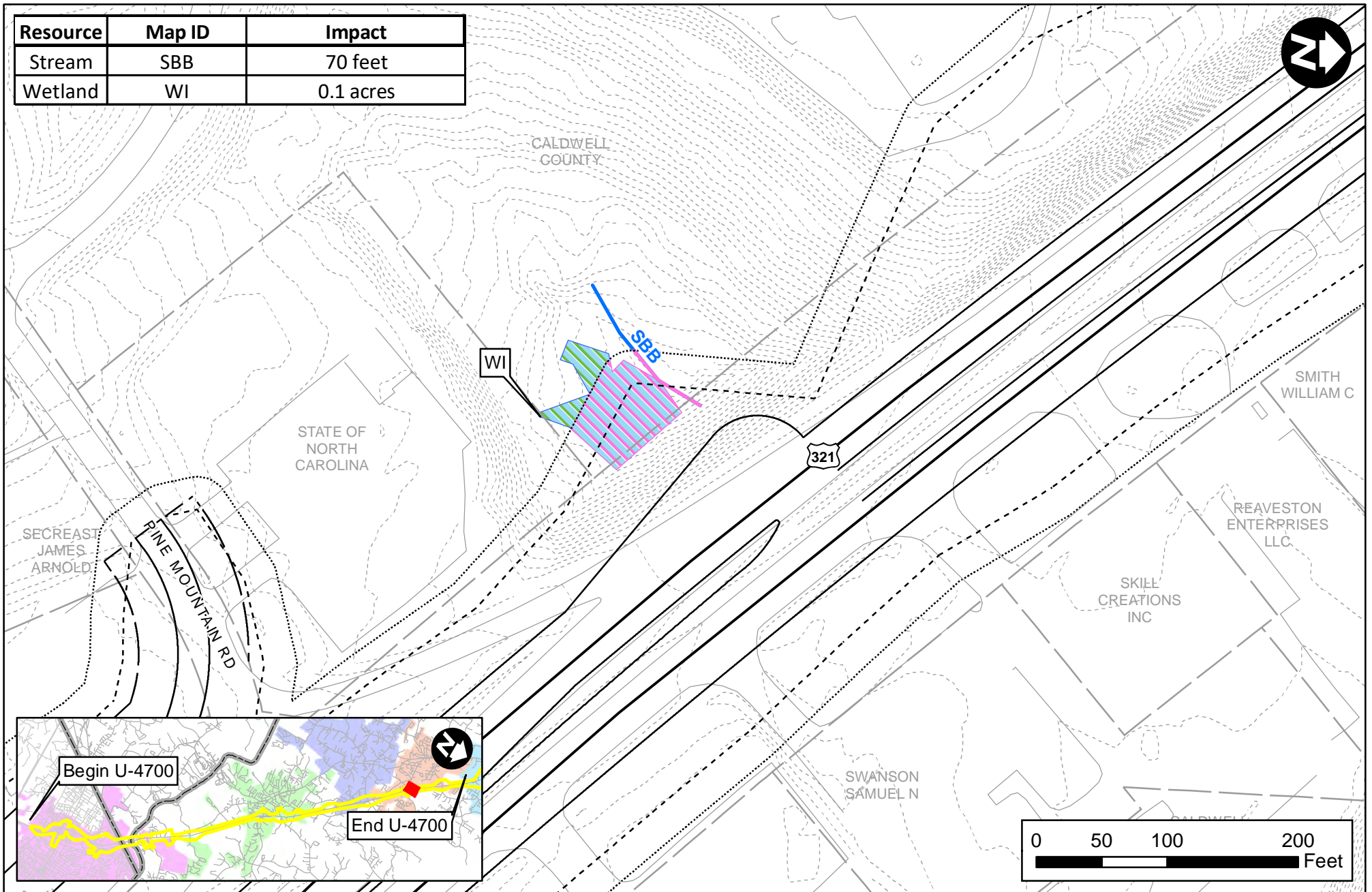


- Existing Roadway
- Existing Property Lines
- Existing Drainage Structure
- Proposed Roadway
- - - Proposed Slope Stakes
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- ▨ Delineated Wetland
- ▨ Dwarf-flowered Heartleaf Population
- ▨ Dwarf-flowered Heartleaf Impact
- ▨ 25' Slope Stakes Buffer



U-4700 - U.S. 321 Widening
Figure 23
Impacts to Jurisdictional Resources
Caldwell County

Resource	Map ID	Impact
Stream	SBB	70 feet
Wetland	WI	0.1 acres



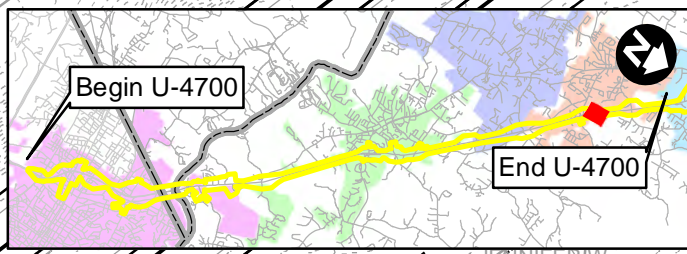
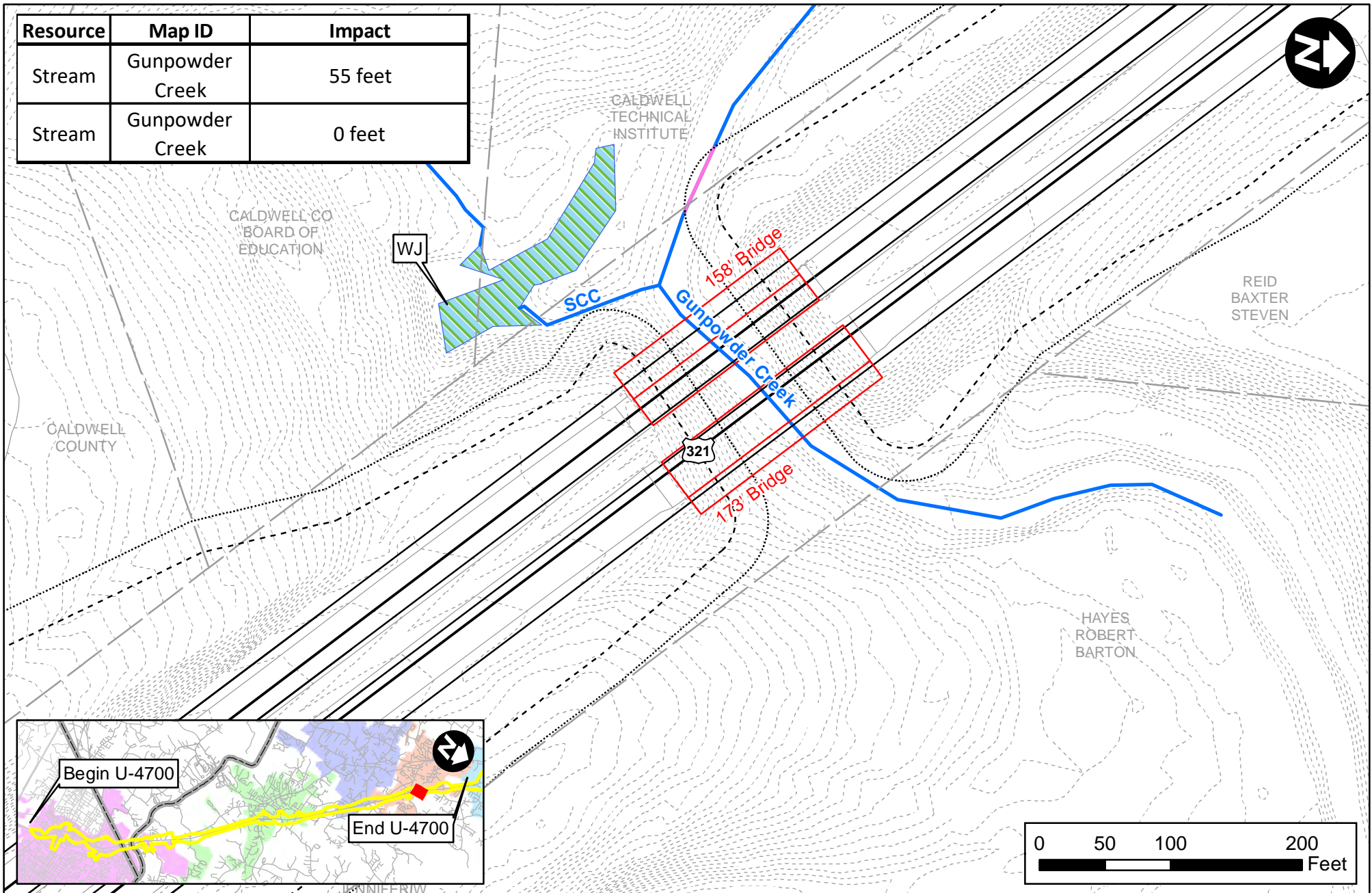
- Existing Roadway
- Existing Property Lines
- Proposed Roadway
- - - Proposed Slope Stakes
- Proposed Roadway
- Proposed Right of Way
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- Wetland Impact
- Delineated Wetland
- 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening

Figure 24
Impacts to Jurisdictional Resources

Caldwell County

Resource	Map ID	Impact
Stream	Gunpowder Creek	55 feet
Stream	Gunpowder Creek	0 feet

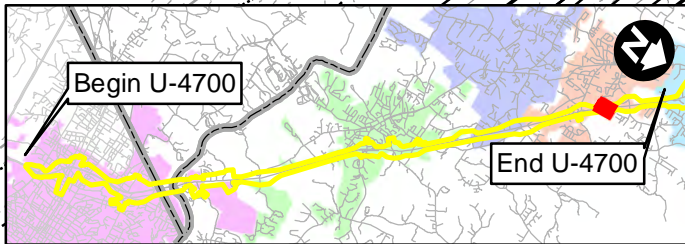
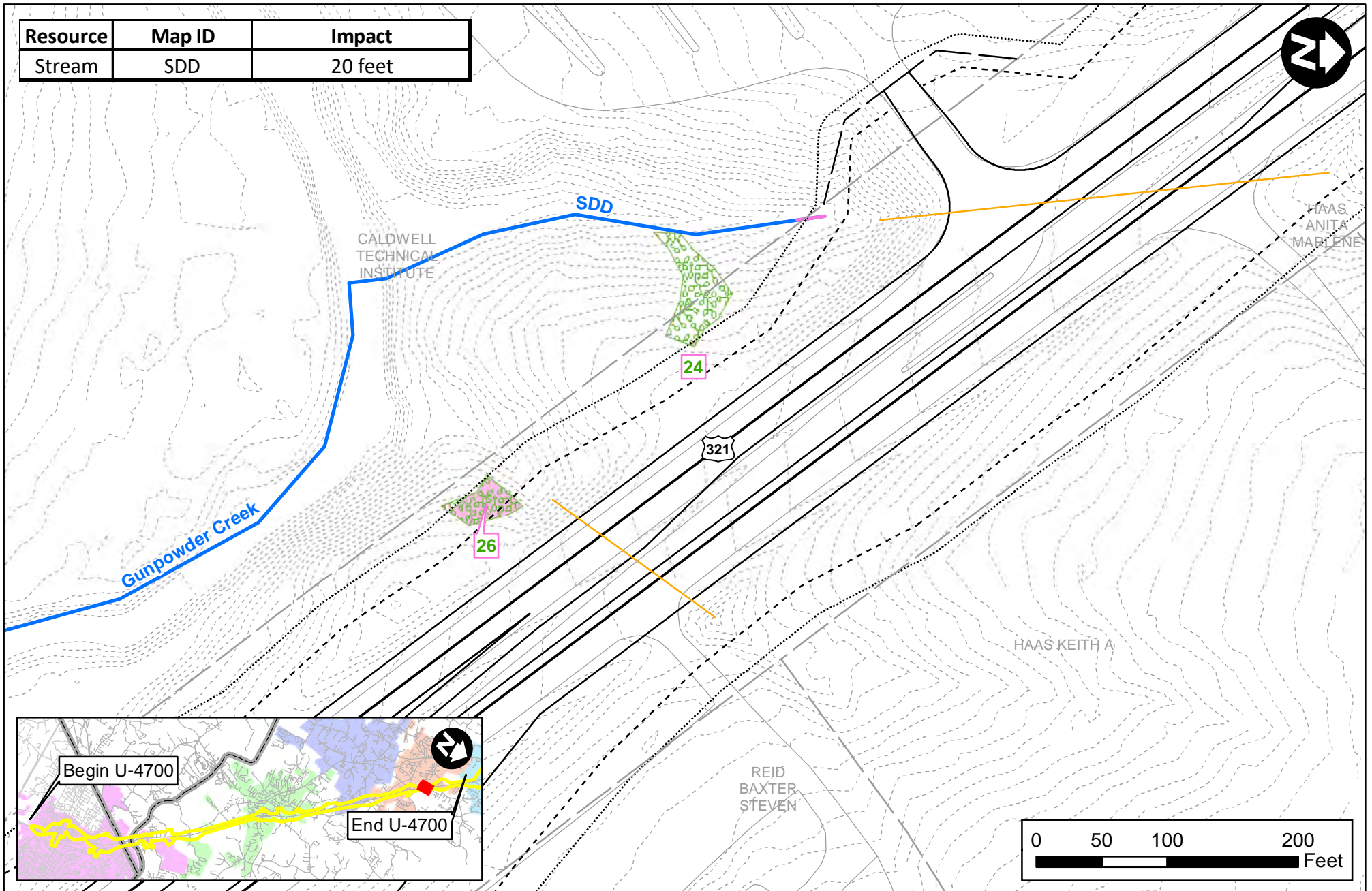


- Existing Roadway
- Existing Property Lines
- Proposed Hydraulic Structure
- Proposed Roadway
- - - Proposed Slope Stakes
- Proposed Roadway
- - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- ▨ Delineated Wetland
- ⋯ 25' Slope Stakes Buffer



U-4700 - U.S. 321 Widening
Figure 25
Impacts to Jurisdictional Resources
Caldwell County

Resource	Map ID	Impact
Stream	SDD	20 feet



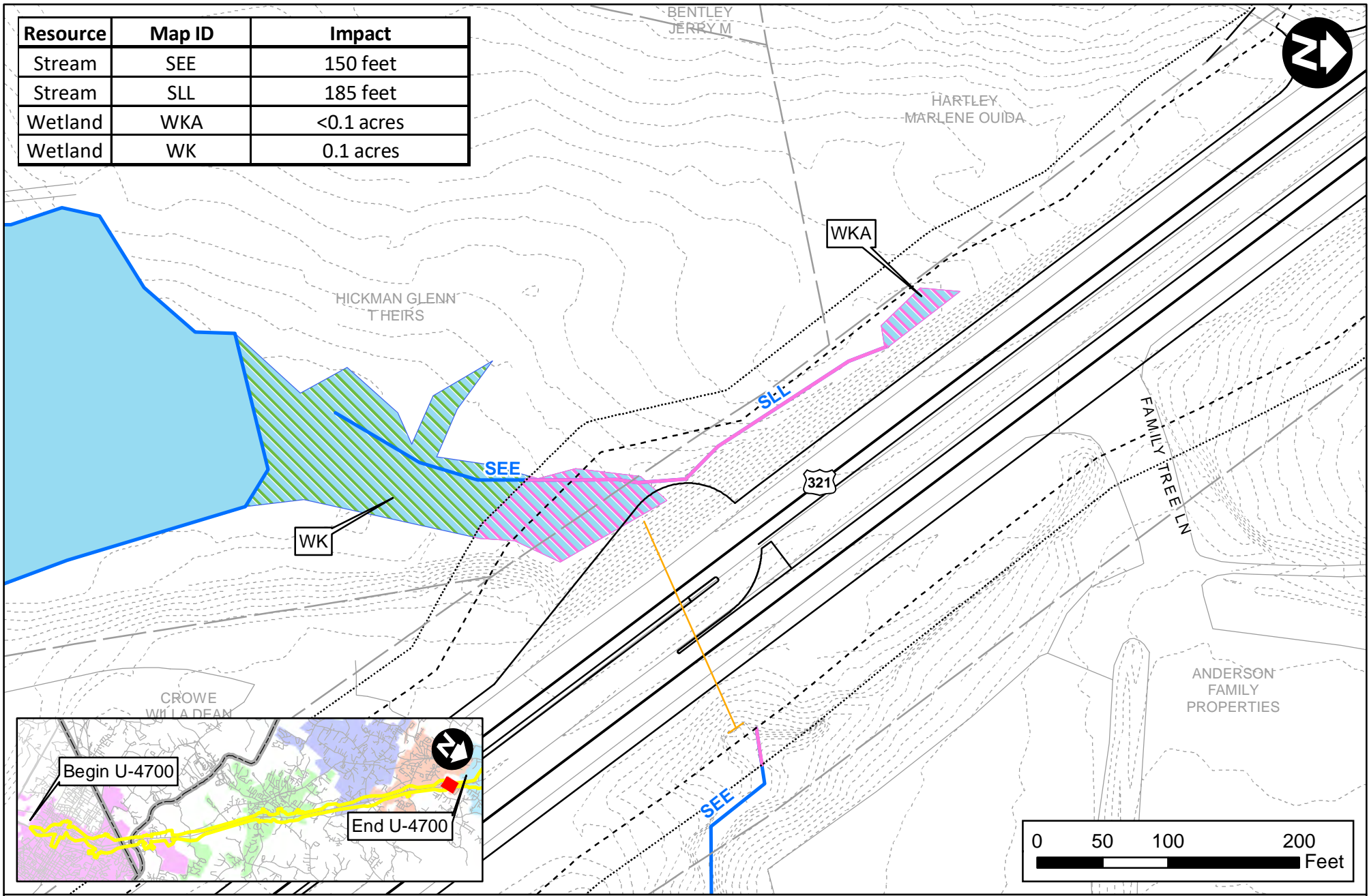
- Existing Roadway
- Existing Property Lines
- Existing Drainage Structure
- Proposed Roadway
- Contour Lines (2')
- Delineated Stream
- Stream Impact
- Dwarf-flowered Heartleaf Population
- Dwarf-flowered Heartleaf Impact
- 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening

Figure 26
Impacts to Jurisdictional Resources

Caldwell County

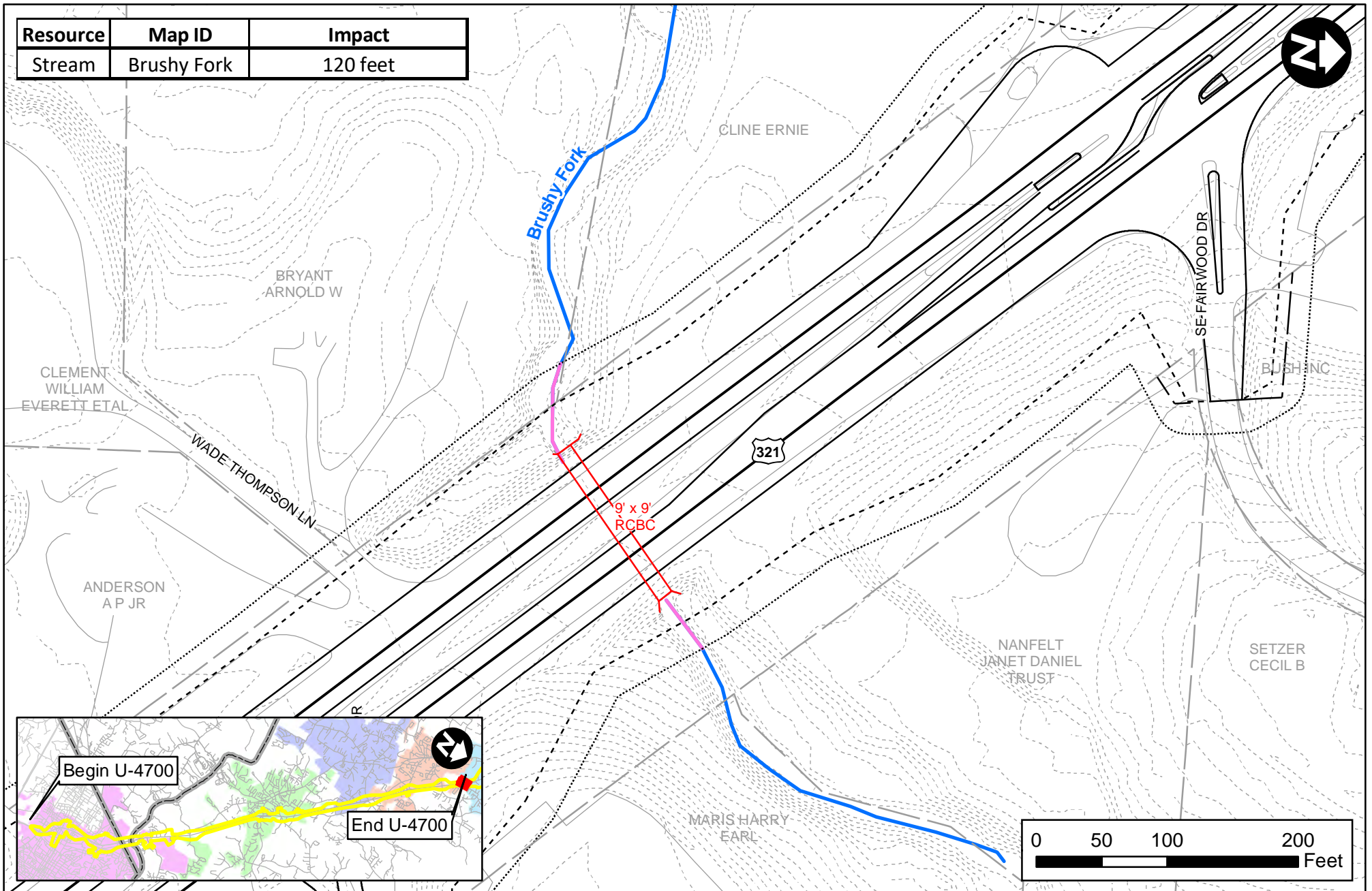
Resource	Map ID	Impact
Stream	SEE	150 feet
Stream	SLL	185 feet
Wetland	WKA	<0.1 acres
Wetland	WK	0.1 acres



- Existing Roadway
- Existing Property Lines
- Existing Drainage Structure
- Proposed Roadway
- Contour Lines (2')
- Delineated Stream
- Stream Impact
- ▨ Wetland Impact
- ▨ Delineated Wetland
- ▨ Delineated Body of Water
- ⋯ 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening
Figure 27
Impacts to Jurisdictional Resources
Caldwell County

Resource	Map ID	Impact
Stream	Brushy Fork	120 feet



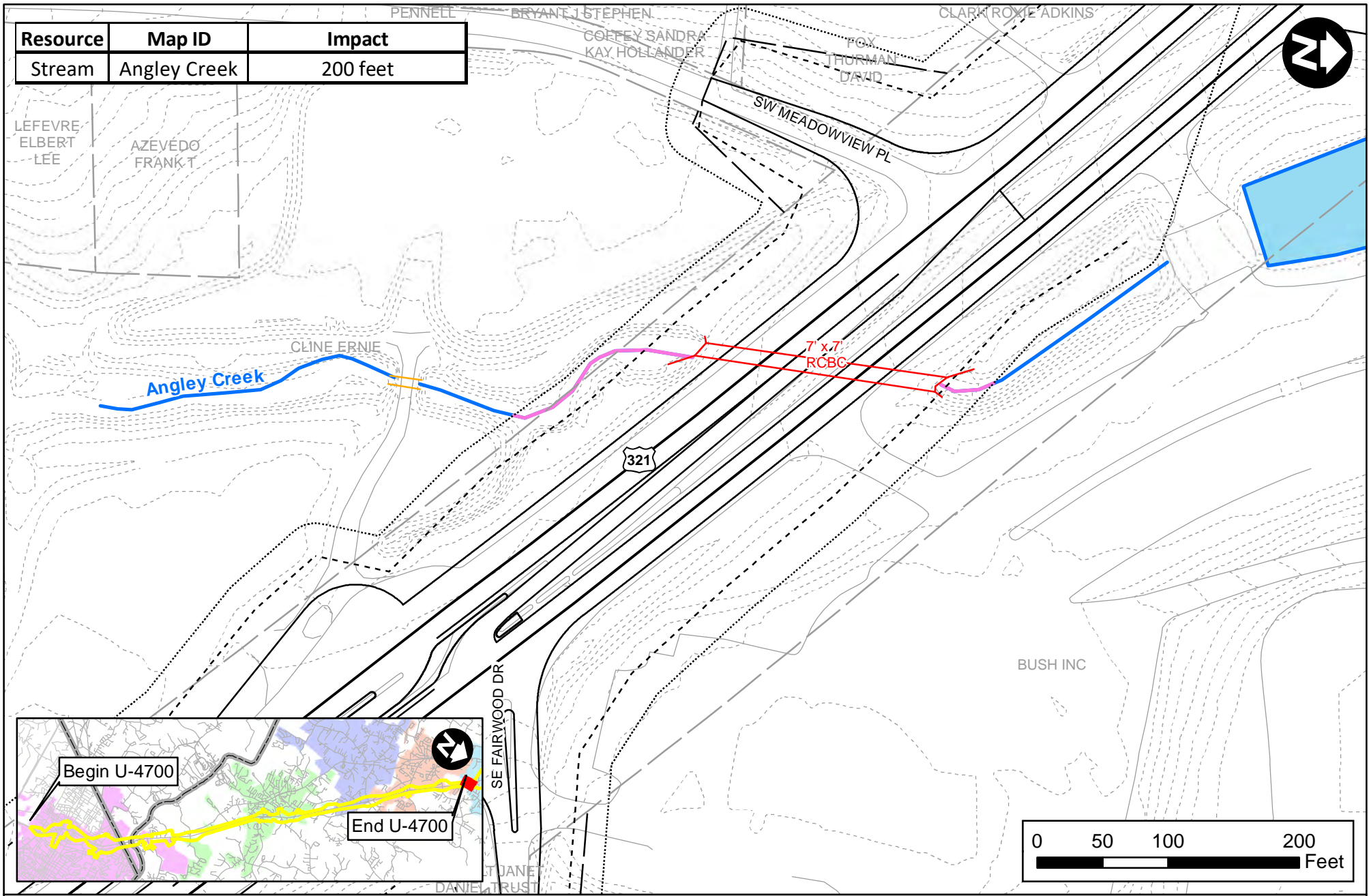
- Existing Roadway
- Existing Property Lines
- Proposed Hydraulic Structure
- Proposed Roadway
- Contour Lines (2')
- Delineated Stream
- Stream Impact
- 25' Slope Stakes Buffer

U-4700 - U.S. 321 Widening

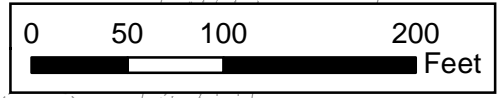
Figure 28
Impacts to Jurisdictional Resources

Caldwell County

Resource	Map ID	Impact
Stream	Angley Creek	200 feet



- Existing Roadway
- - Existing Property Lines
- Proposed Hydraulic Structure
- Existing Drainage Structure
- Proposed Roadway
- - - - Contour Lines (2')
- Delineated Stream
- Stream Impact
- Delineated Body of Water
- - - - 25' Slope Stakes Buffer



U-4700 - U.S. 321 Widening
Figure 29
Impacts to Jurisdictional Resources
Caldwell County