



FLOODPLAIN STATEMENT OF FINDINGS

FOR

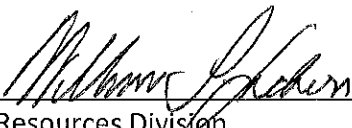
EXECUTIVE ORDER 11988 ("FLOODPLAIN MANAGEMENT")


NATCHEZ TRACE MULTI-USE TRAIL
PROJECT NATR 055898-3P18
200 FEET WEST OF LIVINGSTON ROAD TO MILEPOST 95.8
(APPROXIMATELY FROM MILEPOST 97.85 TO MILEPOST 95.8)

NATCHEZ TRACE PARKWAY

MADISON COUNTY, MISSISSIPPI

Recommended:  7/14/2010
Superintendent, Natchez Trace Parkway Date

Concurred:  7/19/2010
Chief, Water Resources Division Date

Approved:  7-27-10
Director, Southeast Region Date

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Executive Order 11988 ("Floodplain Management") requires the National Park Service (NPS) and other agencies to evaluate the likely impacts of actions in floodplains. It is NPS policy to preserve floodplain values and minimize potentially hazardous conditions associated with flooding. If a proposed action is in an applicable regulatory floodplain, then flood conditions and associated hazards must be quantified, and a formal Statement of Findings (SOF) must be prepared. The NPS *Procedural Manual #77-2, Floodplain Management* provides direction for the preparation of a floodplain SOF. This SOF has been prepared to comply with EO 11988 and with Procedural Manual #77-2.

PROPOSED ACTION

The National Park Service, in cooperation with the Federal Highway Administration (FHWA), is proposing to construct approximately 2.05 miles of multi-use trail, hereafter referred to as the trail, from milepost 95.8 to 200 feet west of Livingston Road (approximately milepost 97.85) within the Natchez Trace Parkway (NATR) boundaries. This project is being funded by Federal Lands Highway Program (FLHP) Category II funding for Congressionally Mandated Parkways.

The multi-use trail will follow the alignment identified in the September 1995 *Multi-Use Trail Study Environmental Assessment, Jackson, Mississippi, Natchez Trace Parkway*, subject to changes identified during design, and approved by the NPS. In a 1996 Finding of No Significant Impact (FONSI) the NPS approved the preferred alternative for building an approximately 21-mile long multi-use trail.

This section of multi-use trail will cross floodplains of Hanging Moss Creek and two unnamed streams. The part of the trail route that crosses those floodplains is shown on Location Map sheets D1 through D5, included in Appendix A.

The multi-use trail profile will closely match the existing ground elevations. The typical section of the multi-use trail will have a 10-foot wide paved travel surface with 2-foot wide unpaved shoulders. The trail will be constructed on compacted fill, including an aggregate base to existing ground or 24-inch depth minimum, which includes a cement-treated sub-base approximately 6 inches deep. This will be topped with a layer of Super Pave asphalt concrete pavement approximately 3 inches deep. A drawing of a typical section of the multi-use trail is included in Appendix A.

A double 8-foot span, 8-foot rise concrete box culvert will be installed to cross Hanging Moss Creek at Station 52+85 to Station 53+06. Station locations, such as Station 52+85 can be located on the Location Maps that illustrate the trail route located in Appendix A. Locations are identified by such stations throughout the document. A 10-foot span, 6-foot rise concrete box culvert will be installed to cross an unnamed stream located at approximately Station 124+50 to Station 124+60. A double 10-foot span, 6-foot rise concrete box culvert will also be installed to cross an unnamed stream located at approximately Station 134+05 to Station 134+25.

Floodplains

FEMA, as part of the Flood Map Modernization Initiative for Mississippi, is currently reviewing and updating the floodplain maps within the project area. The floodplains included in this SOF were not included on the FEMA Flood Insurance Rate Map (FIRM) for this county.

The culverts were designed for a 10-year event. However, Eastern Federal Lands Highway Division/FHWA (EFLHD/FHWA) did calculate the 100-year floodplains of the streams crossed by the trail extend north to south across the width of NATR property to accurately determine where culverts will be needed.

The Hanging Moss Creek stream channel is typically 16 feet wide. The 100-year flood width along Hanging Moss Creek is approximately 650 feet wide. The elevation of the Hanging Moss Creek 100-year floodplain just upstream of the trail is approximately 352.08 feet. All elevations in this document are ground elevations surveyed in the National Geodetic Vertical Datum 1929 (NGVD29).

The unnamed stream located at approximately Station 124+50 stream channel is typically 16 feet wide. The 100-year flood width along the unnamed stream is approximately 700 feet wide. The elevation of the unnamed stream 100-year floodplain just upstream of the trail is approximately 364.16 feet. All elevations in this document are ground elevations surveyed in the National Geodetic Vertical Datum 1929 (NGVD29).

The unnamed stream located at approximately Station 134+15 stream channel is typically 22 feet wide. The 100-year flood width along the unnamed stream is approximately 1,450 feet wide. The elevation of the unnamed stream 100-year floodplain just upstream of the trail is approximately 364.31 feet. All elevations in this document are ground elevations surveyed in the National Geodetic Vertical Datum 1929 (NGVD29).

Vegetation in the floodplains is a combination of trees, shrubs, and an herbaceous layer. Trees are predominantly sweet gum, black cherry, loblolly pine, water oak, and sassafras. Shrubs include Chinese privet and blackberry. The herbaceous layer is dominated by field garlic, strawberry, goldenrod, poison ivy, and Japanese honeysuckle. On the NATR roadway fill where the roadway crosses the floodplains the vegetation is perennial grasses, flowers, and other species associated with landscaping.

Justification for Use of the Floodplains

The 1987 *Comprehensive Trail Plan, Natchez Trace National Scenic Trail / Alabama-Mississippi-Tennessee* identified Jackson, Mississippi as one of three high use areas in which the NPS will build multi-use trails on NATR lands, but off of the NATR motor road. By the 1990s it had become apparent that the NATR motor road through the Jackson, Mississippi metropolitan area would be heavily traveled and would present serious safety concerns for bicyclists traveling on the NATR motor road.

To address that concern, a 1995 environmental assessment (EA) identified a multi-use trail route through those communities on NATR lands paralleling the motor road. The route included a segment of the trail north of the motor road between 200 feet west of Livingston Road and milepost 95.8.

In 1999 a Congressional Directive to the NPS directed NATR to construct a multi-use trail in conjunction with the construction of the NATR motor road. A Congressionally mandated feasibility study prepared in 2002 by EFLHD/FHWA in conjunction with the NPS identified the

Jackson, Mississippi metropolitan area as one of three NATR areas where the multi-use trail should be built, based on average daily traffic.

Any trail route along the motor road between 200 feet west of Livingston Road to milepost 95.8 must cross the floodplain of Hanging Moss Creek and the floodplains of the two abovementioned unnamed streams because they span the entire width of the NATR property boundary.

Investigation of Alternative Sites

Investigation of the project area has led to the determination that there are no alternative sites for a multi-use trail along the NATR motor road that could avoid crossing the floodplains of Hanging Moss Creek and the two unnamed streams. The trail cannot be constructed entirely upon the existing NATR roadway shoulder to cross the streams because the roadway shoulders are only six feet wide. That would not provide enough room for trail users or enough separation between trail users and vehicles for safety. Building the trail that close to the NATR motor road would require a 54-inch high barrier between the trail and the roadway and would not provide a pleasant or aesthetically pleasing experience for motorists or trail users.

In the 1995 EA an alternative of providing 4-foot wide paved lanes on the road shoulders on each side of the NATR motor road was considered but rejected. The alternative for paved shoulders was rejected for a number of reasons, primarily for safety.

Locating the trail on NATR property on either the north or the south side of the roadway would require crossing the floodplains because they flow across the entire width of the NATR property boundary.

Alternative floodplain crossing locations were investigated by the multi-use trail designers, and it was determined that to meet design requirements, the most suitable trail route is that depicted on Location Map Sheets D1 through D5 (included in Appendix A of this SOF). To meet the requirements of the Natchez Trace Comprehensive Trail Plan (1987), to make scenic qualities and nearness to cultural, natural, or recreational features a design consideration for the trail route, the trail is distanced from the NATR motor road as much as is feasible. The topography along the trail route will provide a profile grade of 5% or less, as required by the Americans with Disabilities Act. As much as is feasible, the trail as designed crosses the floodplains at their narrowest points.

Hydrologic Risk

The 100-year floodplains will be impacted during and after construction by placement of fill associated with grading and drainage work, and through a minimal increase in surface runoff from the paved trail. Compacted fill material will be placed at depths of approximately 5 to 6 feet on approximately 69,100 square feet (1.6 acre) of floodplain in this segment of multi-use trail. The unvegetated surfaces of the paved trail will not retain precipitation as well as the vegetated or unpaved areas they will cover. The paved trail will add approximately 2.58 acres of impervious surface within approximately 500 acres of NATR property between 200 feet west of Livingston Road and milepost 95.8. Drainage patterns will be maintained and conveyed through the trail embankment.

Conditions associated with flooding in the proposed project location are not considered hazardous. Review of the U.S. Geological Survey 7.5 minute topographic map, *Ridgeland Quadrangle, Mississippi*, indicated that the elevation levels decrease by approximately 20-30 feet over a distance of a mile along Hanging Moss Creek and the two unnamed streams in the vicinity of the project. The nature of flooding in this area is low velocity sheet flooding, which allows for adequate evacuation time and easy access to evacuation routes and areas outside of the 100-year floodplain.

EFLHD/FHWA provided information about flows and flood characteristics of the stream and tributaries. The proposed Hanging Moss Creek crossing was analyzed using FHWA Culvert Hydraulic Analysis Program-8 software, version 7.2 (HY-8). The modeling reference point on Hanging Moss Creek was at the existing Parkway culvert downstream of the proposed multi-use trail crossing. That culvert will be the controlling factor for flows in the vicinity of the proposed multi-use trail. Based on modeling, the 100-year floodplain has a flow depth of approximately 6.49 feet downstream of the parkway, 7.04 feet upstream of the parkway, and 8.35 feet upstream of the trail. The stream channel width is approximately 16 feet. Based on modeling from available data, the cross-section data downstream of the Parkway, the 100-year flood velocity of the stream channel for Hanging Moss Creek was estimated to be 2.0 feet/sec. This is an average velocity for the whole cross section – floodplains and main channel. The velocities upstream of the culverts will be much lower, due to ponding.

The proposed unnamed stream crossing located at approximately Station 124+50 was also analyzed using FHWA Culvert Hydraulic Analysis Program-8 (HY-8) software, version 7.2. The modeling reference point on this unnamed stream was at the existing Parkway culvert downstream of the proposed multi-use trail crossing. That culvert will be the controlling factor for flows in the vicinity of the proposed multi-use trail. Based on modeling, the 100-year floodplain has a flow depth of approximately 4.99 feet downstream of the parkway, 10.86 feet upstream of the parkway, and 11.48 feet upstream of the trail. The stream channel width is approximately 16 feet. Based on modeling from available data, the cross-section data downstream of the Parkway, the 100-year flood velocity of the stream channel for Hanging Moss Creek was estimated to be 5.9 feet/sec. This is an average velocity for the whole cross section – floodplains and main channel. The velocities upstream of the culverts will be much lower, due to ponding.

The proposed unnamed stream crossing located at approximately Station 134+15 was also analyzed using FHWA Culvert Hydraulic Analysis Program-8 (HY-8) software, version 7.2. The modeling reference point on this unnamed stream was at the existing Parkway culvert downstream of the proposed multi-use trail crossing. That culvert will be the controlling factor for flows in the vicinity of the proposed multi-use trail. Based on modeling, the 100-year floodplain has a flow depth of approximately 9.09 feet downstream of the parkway, 10.29 feet upstream of the parkway, and 10.83 feet upstream of the trail. The stream channel width is approximately 22 feet. Based on modeling from available data, the cross-section data downstream of the Parkway, the 100-year flood velocity of the stream channel for Hanging Moss Creek was estimated to be 2.2 feet/sec. This is an average velocity for the whole cross section – floodplains and main channel. The velocities upstream of the culverts will be much lower, due to ponding.

The hydrologic models indicated that there will be some negligible localized changes in the ability of the floodplains to convey and store floodwaters, but the trail and the box culverts spanning the streams and tributaries will not contribute to flooding.

Staff from EFLHD/FHWA advise that temporary disturbance from construction activities will impact an area approximately 10 percent greater than the area of permanent impact. In the Hanging Moss Creek 100-year floodplain the area of temporary impact will be approximately 8,700 square feet. The area of temporary disturbance in the 100-year floodplain of the unnamed stream located at approximately Station 124+50 will be approximately 26,500 square feet. The area of temporary disturbance in the 100-year floodplain of the unnamed stream located at approximately Station 134+15 will be approximately 41,000 square feet. Best management practices will be followed during and after construction, and areas of temporary disturbance will be returned to original condition as much as is practicable after construction.

The impact of the project on 100-year floodplains will be minimal. There will be very little change in the ability of a floodplain to convey floodwaters, or its values and functions. The NATR motor road is near the multi-use trail route and is situated at least 1 foot above 100-year floodplain elevations. Because it is at least 1 foot above the 100-year floodplain, the NATR motor road would provide an evacuation route during a flood event.

MITIGATIVE ACTIONS

Mitigation will be provided by incorporating methods for protecting life and minimizing damage through appropriate procedures. Mitigation during and after construction will include sustainable design principles, appropriate elevations for the finished trail and box culverts, and Best Management Practices such as those presented in FHWA publications such as the *Work Zone Best Practices Guidebook*, and *Best Management Practices for Erosion and Sediment Control*.

The multi-use trail will be designed to minimize the adverse environmental impacts on natural floodplain values and to minimize potential risk to lives and property. The floodplain environment will be maintained as close to its natural state as is possible using all practicable means.

The box culverts and the trail will be designed to minimize scouring, deposition, or other damage to floodplains. Placement of fill on floodplains will be minimized. Free natural drainage and natural contours will be preserved to the extent practicable during design and construction.

Topsoil will be protected during construction and reused, except where it is heavily contaminated with exotic/invasive species. Topsoil contaminated with such species will be disposed of outside NATR boundaries, to preclude the further spread of exotic/invasive species in disturbed areas of the project. The project area will be revegetated when construction is complete. Grading activities will be minimized and compaction in revegetated areas will be kept to a minimum. Construction activities will be curtailed beyond the project limits to ensure that soil is not unduly compacted in floodplain areas.

These mitigation measures will be in accordance with the NPS floodplain guidelines and with Executive Order 11988 (“Floodplain Management”). The facilities in the proposed project will be designed to be consistent with the intent of the standards and criteria of the National Flood Insurance Program (44 CFR Part 60), to protect life and property from the effects of flooding.

COMPLIANCE

Box culverts for the NATR multi-use trail will be constructed and installed on or adjacent to the 100-year floodplains of Hanging Moss Creek and two unnamed streams. The 100-year floodplains and the streams will be impacted through fill operations associated with grading and drainage work required for construction. There will be some minimal, negligible localized changes in the ability of the floodplain to convey and store floodwaters, but the trail and the box culverts spanning the creeks and tributaries will not contribute to flooding.

Section 401 of the Clean Water Act is a certification by the state that the project impacts to water quality will not exceed the state’s water quality standards. Section 404 of the Clean Water Act requires a permit for any activity that may result in the discharge of dredged or fill material into navigable waters. Therefore, Section 401 and Section 404, and National Pollution Discharge Elimination System (NPDES) permits will be required for this project.

Section 401, Section 404, and NPDES permits will complete the requirements for federal and state permitting for this section of the multi-use trail. The 1995 environmental assessment and its finding of no significant impact (FONSI), and this SOF for Executive Order 11988 and *Procedural Manual #77-2*, combined with a wetland SOF for Executive Order 11990 (“Protection of Wetlands”) and *Procedural Manual #77-1, Wetland Protection*, will complete the requirements for the National Environmental Policy Act.

CONCLUSION

The proposed multi-use trail will be constructed on NATR lands, and Hanging Moss Creek and two unnamed streams flow across the entire width of the NATR property boundary. The National Park Service concludes that there is no other practicable alternative for the development proposed. With the trail and its box culverts designed to prevent or reduce flood damage, the risk to life and property will be minimized.

There will be no significant effect on natural or beneficial floodplain values. Mitigation will include good design through sustainable design principles, appropriate siting, and Best Management Practices during and after construction. The National Park Service finds the proposal to be consistent with Executive Order 11988.

REFERENCES CITED

- 1987 "Comprehensive Trail Plan, Natchez Trace National Scenic Trail, Alabama, Mississippi, Tennessee." Report developed in conjunction with the NATR GMP. On file at NATR Headquarters.
- 1995 "Multi-use Trail Study, Environmental Assessment, Natchez Trace Parkway, Jackson MS; with 1996 FONSI." On file at NATR Headquarters.
- 1999 National Park Service – Construction. Natchez Trace Parkway Construction.
- 2002 "Procedural Manual #77-2, National Park Service, Floodplain Management."
- 2002 "Trail Feasibility Study." By Eastern Federal Highway Division, Federal Highway Administration, in conjunction with the National Park Service. On file at NATR Headquarters.
- 2007 Memo to Files "Adequacy of National Environmental Policy Act Documentation, Multi-Use Trail, Hinds and Madison Counties, Mississippi." On file at NATR Headquarters.

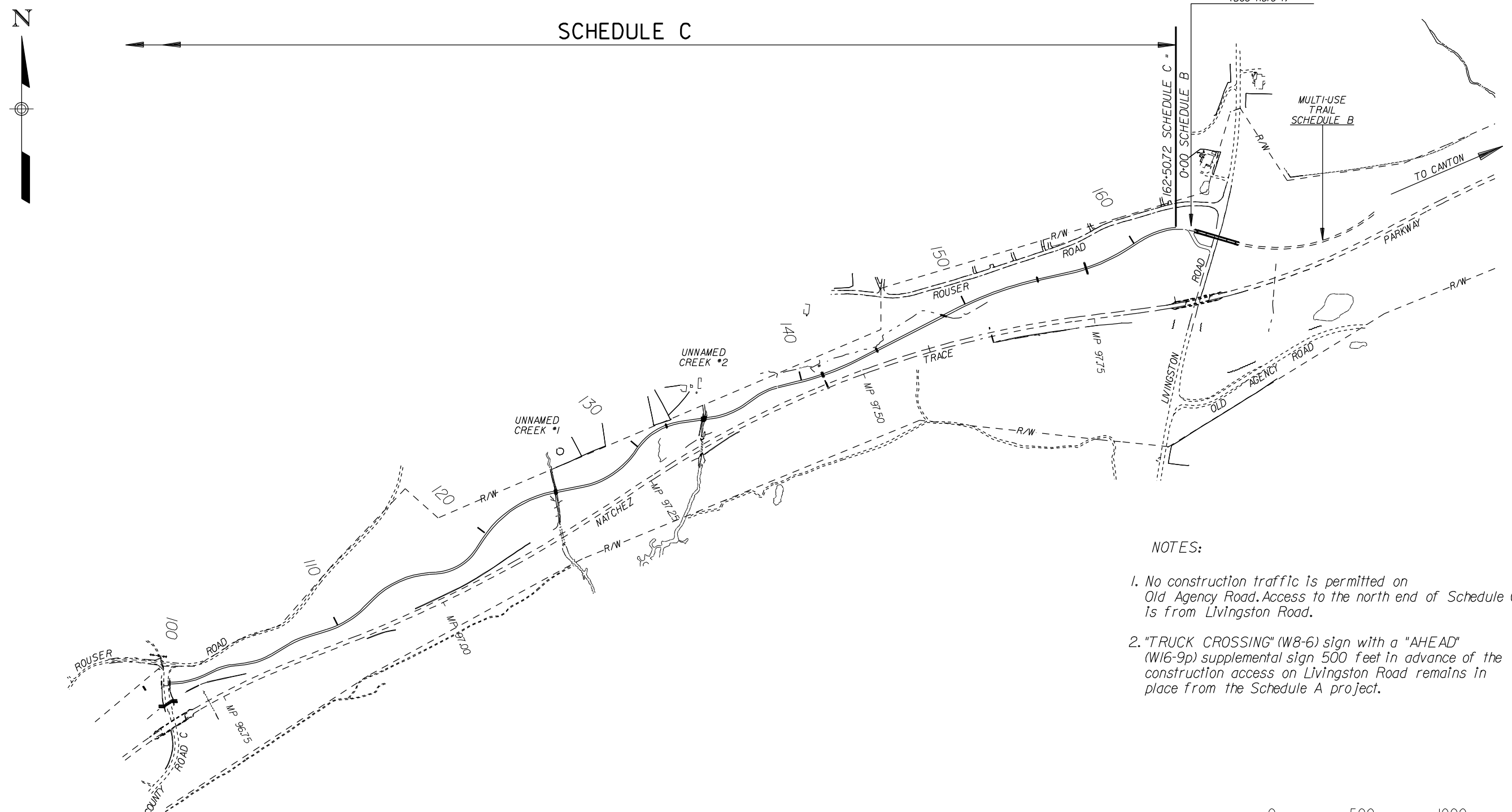
APPENDIX A

**Location Map Sheets D1 through D5
Depicting the Trail Route**

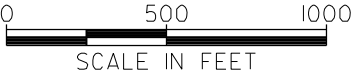
and

Typical Section Showing Trail Construction Design

PMIS NO.	NPS NO.	REG	STATE	PROJECT	SHEET NO.
55898	604 42999	SE	MS	PRA-NATR 3P17,18	A4



- NOTES:
1. No construction traffic is permitted on Old Agency Road. Access to the north end of Schedule C is from Livingston Road.
 2. "TRUCK CROSSING" (W8-6) sign with a "AHEAD" (W16-9p) supplemental sign 500 feet in advance of the construction access on Livingston Road remains in place from the Schedule A project.



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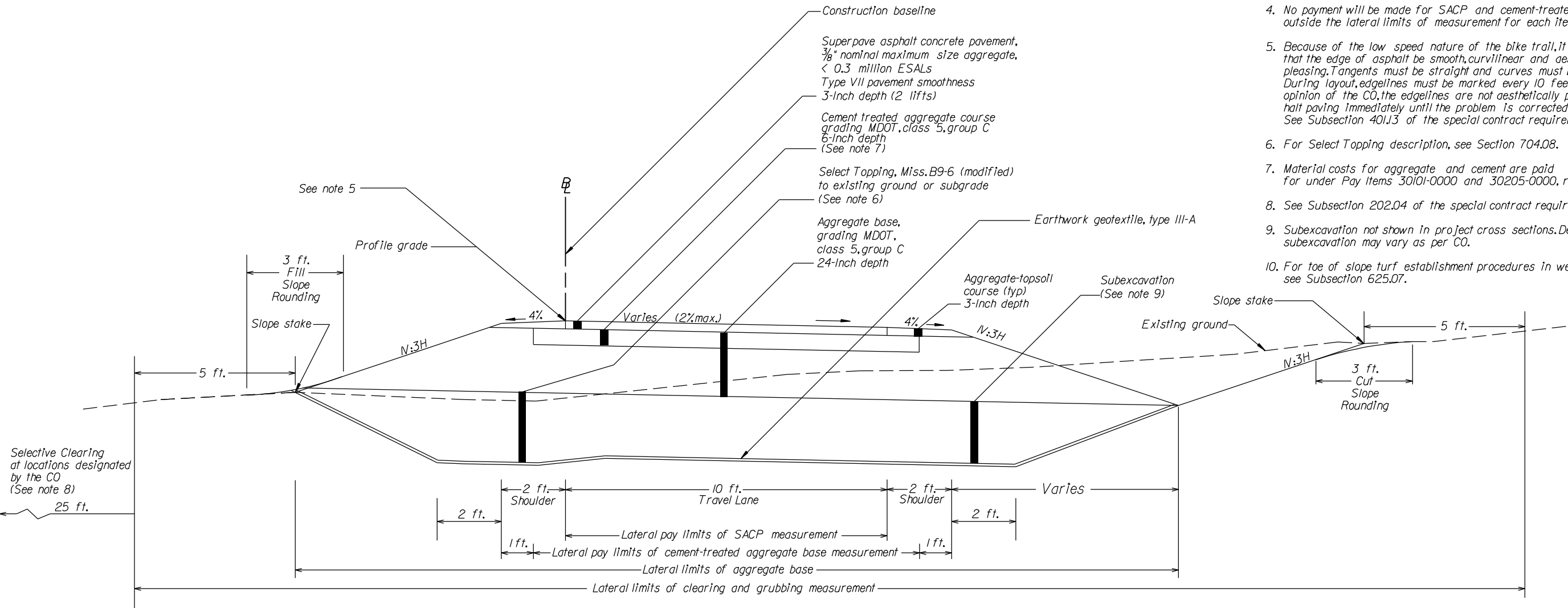
NATCHEZ TRACE PARKWAY

**LOCATION MAP
(SCHEDULE C)**

Notes:

PNIS NO.	NPS NO.	REG	STATE	PROJECT	SHEET NO.
55898	604 42999	SE	MS	PRA-NATR 3P17,18	A8

1. Cement-treated base consists of 4% by weight of ordinary portland cement.
2. Minimum ditch grades are 0.5%. Adjust ditches to provide for proper drainage as directed by the CO.
3. Provide turf establishment on the shoulders. Provide topsoil 4-inch depth, and turf establishment on all other disturbed areas except the paved multi-use trail.
4. No payment will be made for SACP and cement-treated base outside the lateral limits of measurement for each item.
5. Because of the low speed nature of the bike trail, it is critical that the edge of asphalt be smooth, curvilinear and aesthetically pleasing. Tangents must be straight and curves must be uniform. During layout, edgelines must be marked every 10 feet. If, in the opinion of the CO, the edgelines are not aesthetically pleasing, halt paving immediately until the problem is corrected. See Subsection 401.13 of the special contract requirements.
6. For Select Topping description, see Section 704.08.
7. Material costs for aggregate and cement are paid for under Pay Items 30101-0000 and 30205-0000, respectively.
8. See Subsection 202.04 of the special contract requirements.
9. Subexcavation not shown in project cross sections. Depth of subexcavation may vary as per CO.
10. For toe of slope turf establishment procedures in wetland areas, see Subsection 625.07.



MULTI-USE TRAIL
(50+00 to 162+57.13)

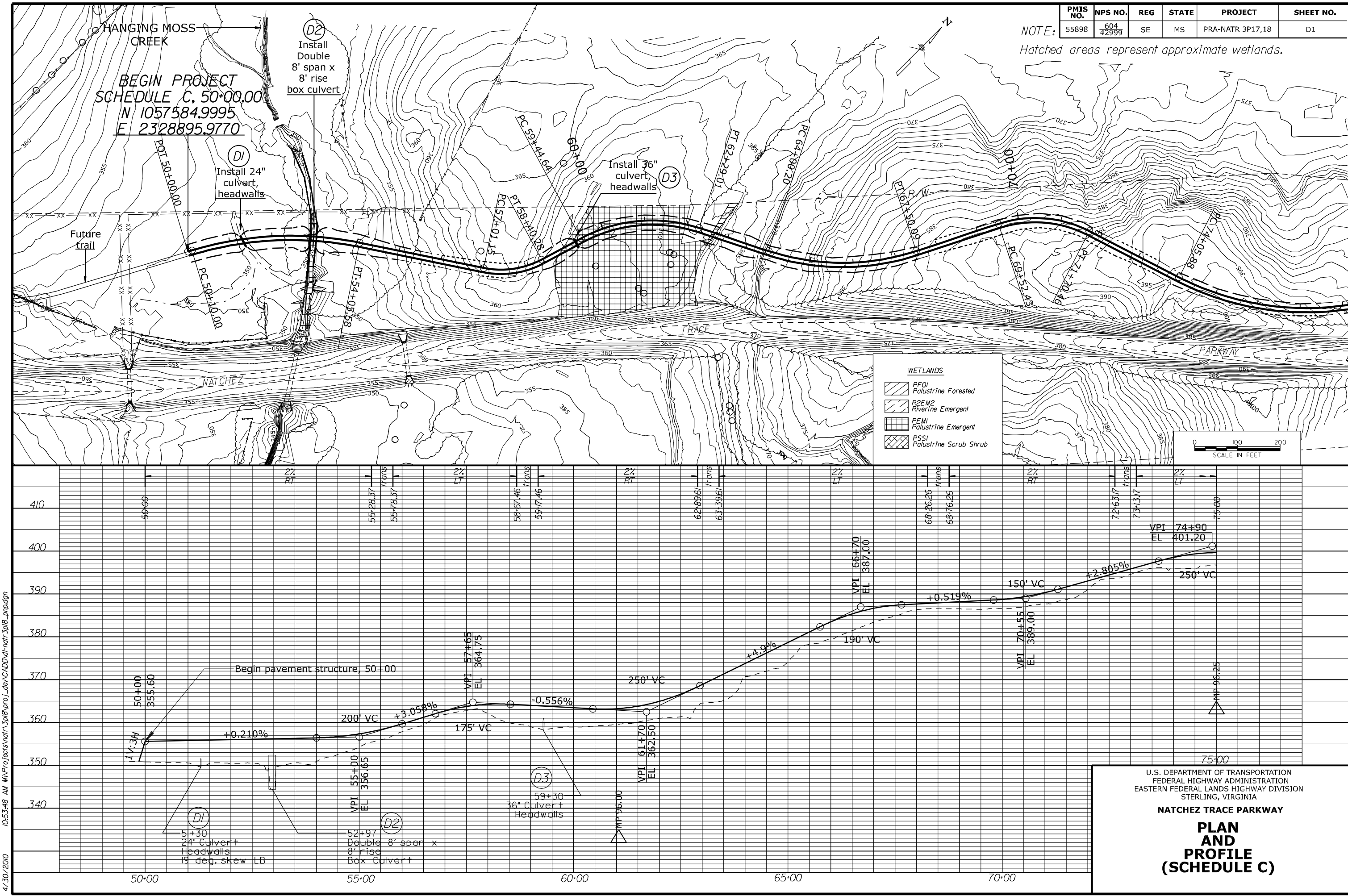


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TYPICAL SECTION
(SCHEDULE C)

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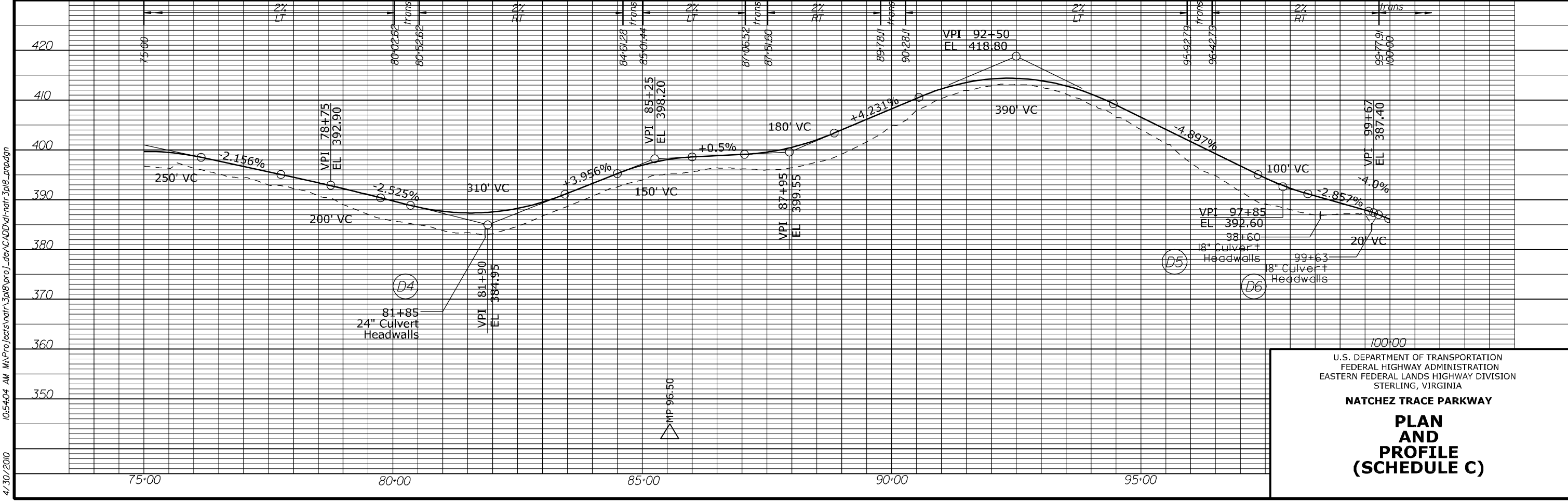
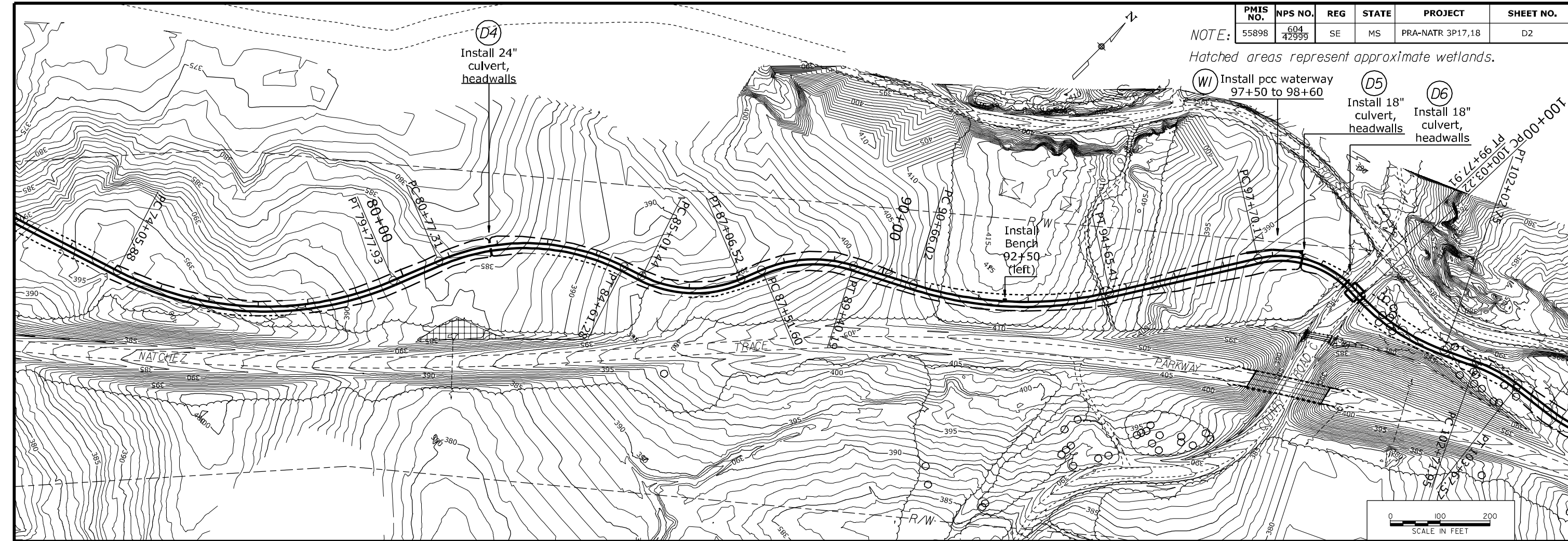
NOTE: Hatched areas represent approximate wetlands.

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NATCHEZ TRACE PARKWAY

PLAN AND PROFILE (SCHEDULE C)

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NOTE: Hatched areas represent approximate wetlands.

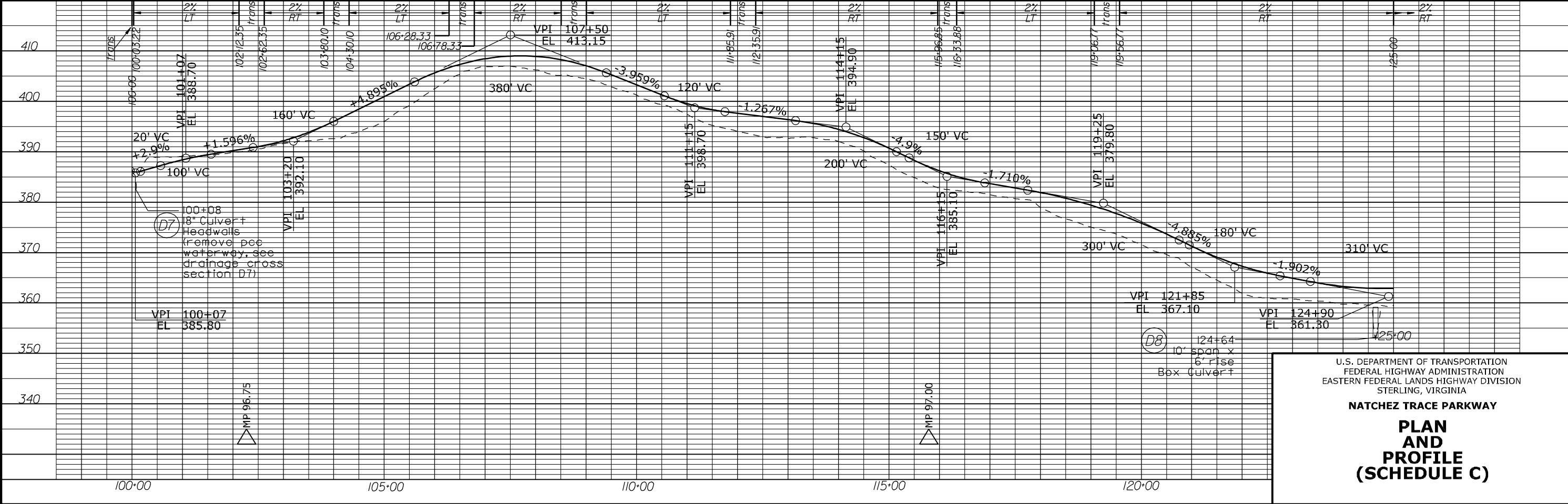
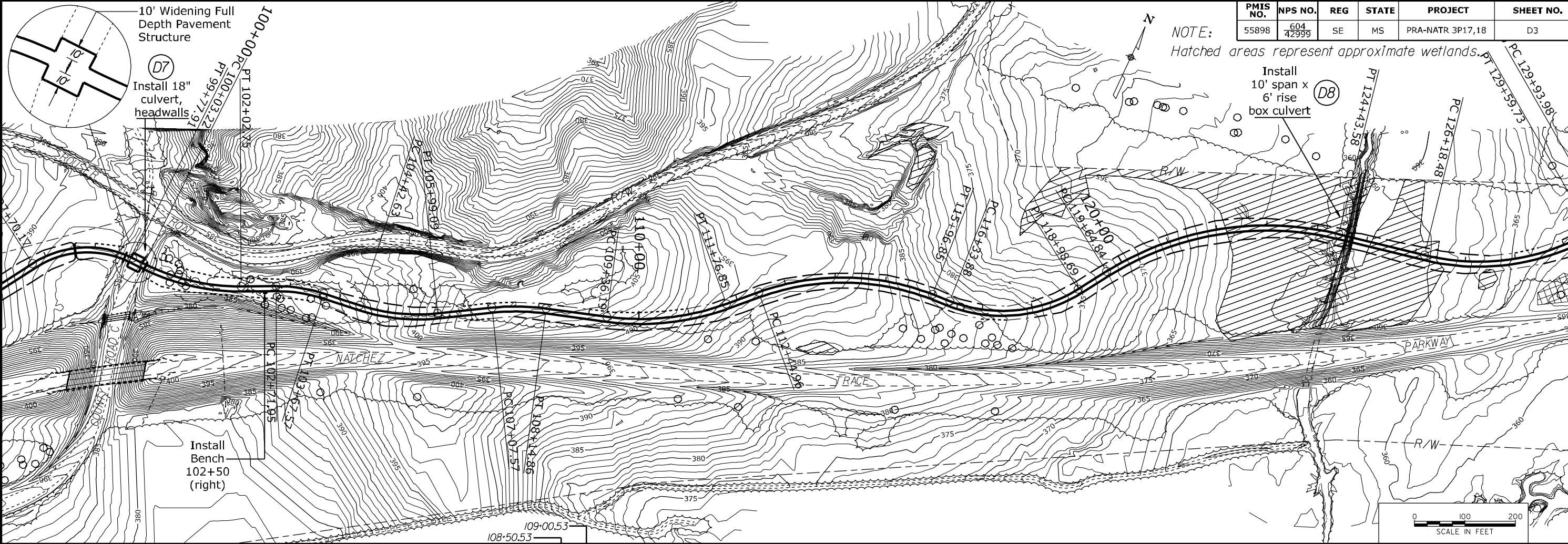
- (W) Install pcc waterway 97+50 to 98+60
- (D5) Install 18" culvert, headwalls
- (D6) Install 18" culvert, headwalls

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NATCHEZ TRACE PARKWAY

**PLAN
AND
PROFILE
(SCHEDULE C)**

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NOTE: Hatched areas represent approximate wetlands.

D8

D7

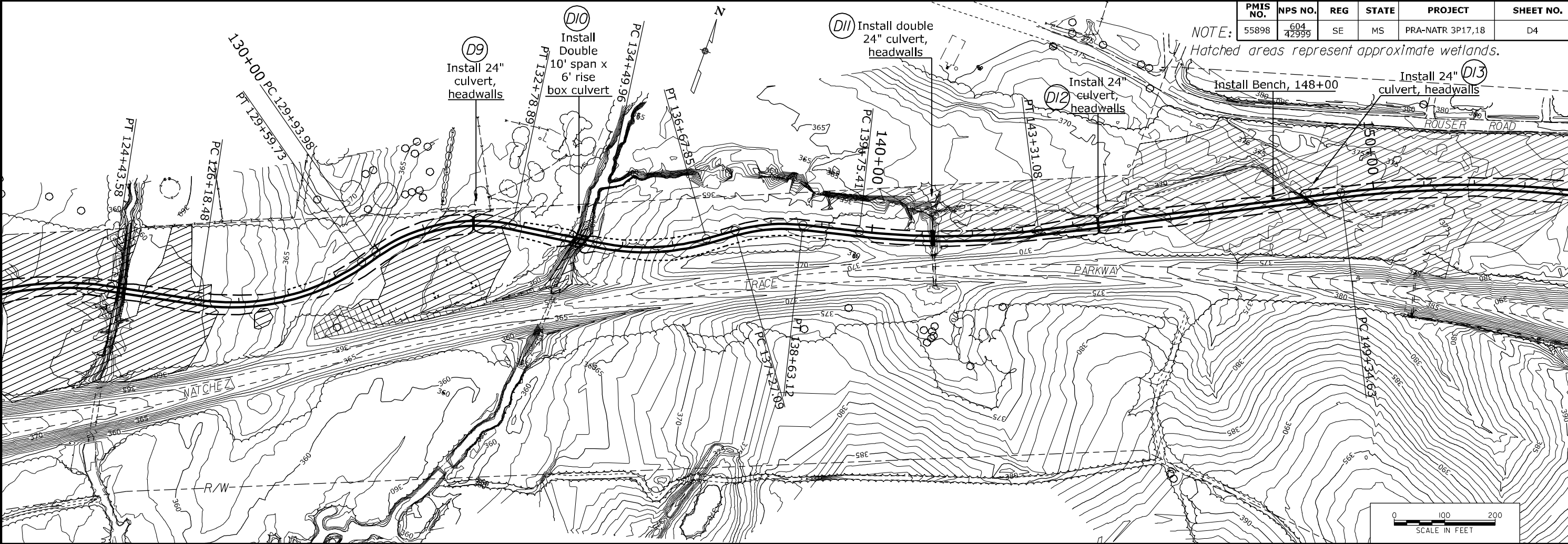
D8

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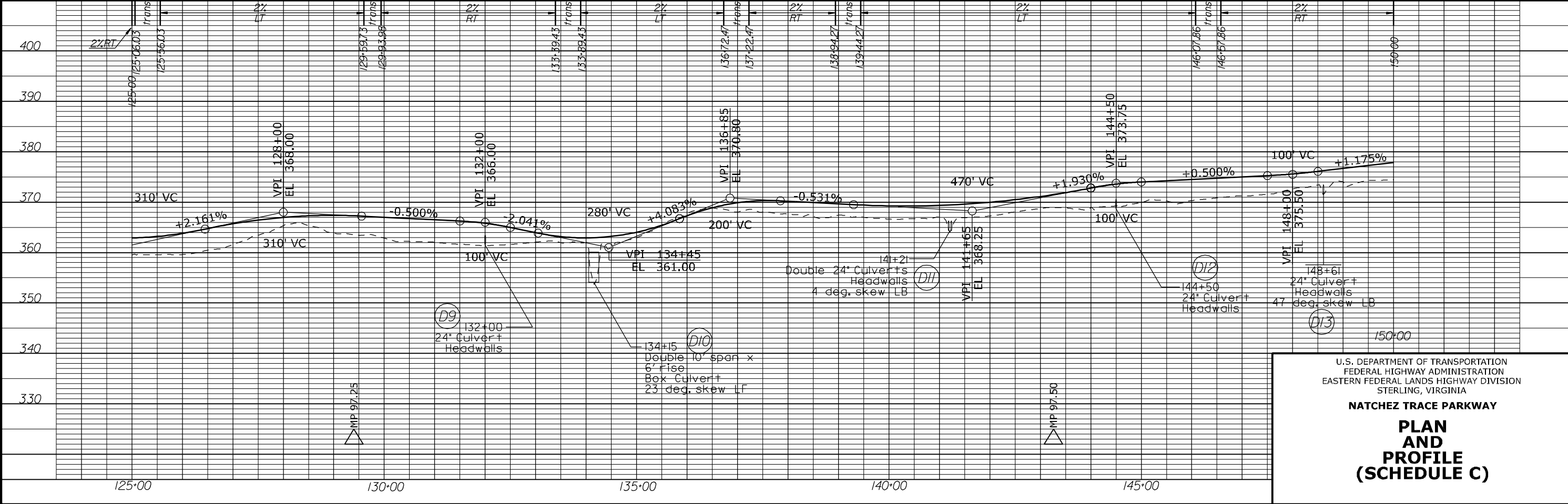
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NOTE: Hatched areas represent approximate wetlands.

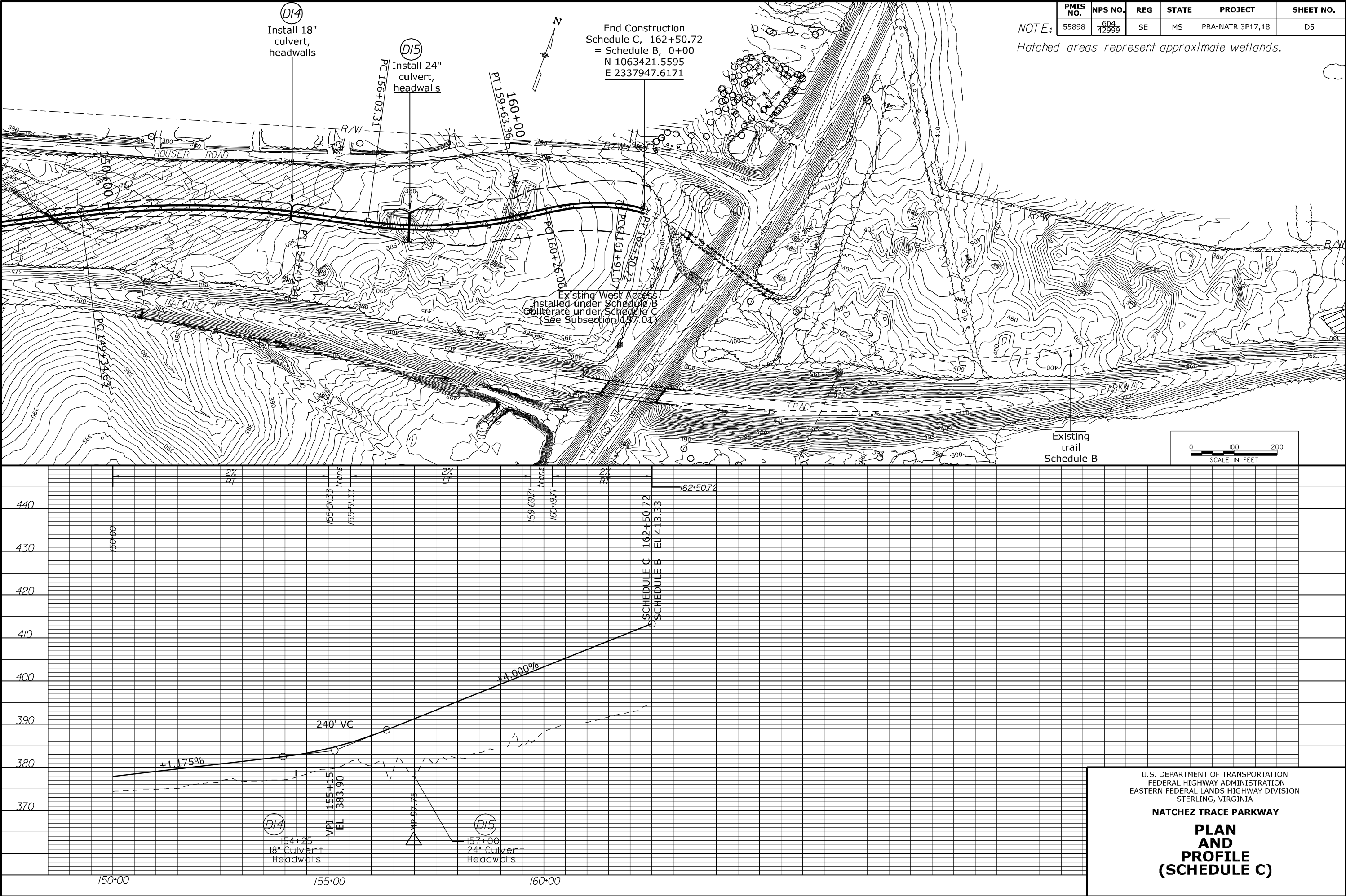


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**PLAN
AND
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(SCHEDULE C)**

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PMIS NO.	NPS NO.	REG	STATE	PROJECT	SHEET NO.
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NOTE: Hatched areas represent approximate wetlands.



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**PLAN
AND
PROFILE
(SCHEDULE C)**



As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. Administration.

National Park Service 604/102616

June 2010

United States Department of the Interior ✧ National Park Service