National Park Service
U.S. Department of the Interior

Natchez Trace Parkway
Mississippi

FLOODPLAIN STATEMENT OF FINDINGS

FOR

EXECUTIVE ORDER 11988 ("FLOODPLAIN MANAGEMENT")

NATCHEZ TRACE MULTI-USE TRAIL
PROJECT NATR 055898-3P19
A BRIDGE OVER COUNTY LINE ROAD AND TRAIL FROM
200 FEET WEST OF COUNTY LINE ROAD TO MILEPOST 96.0
(APPROXIMATELY FROM MILEPOST 95.0 TO MILEPOST 96.0)

NATCHEZ TRACE PARKWAY

MADISON COUNTY, MISSISSIPPI

Recommended: _____ 1/11/12
Cameron H. Sholly, Superintendent — Date

Concurred: _____ (for) 1/13/12
Gary Rosenlieb, Acting Chief of Water Resources Division — Date

Approved: _____ 1/23/12
For David Vela, Southeast Regional Director — 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 one mile of multi-use trail, hereafter referred to as the trail, including a bridge over County Line Road from 200 feet west of County Line Road (approximately milepost 95.0) to milepost 96.0 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 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 one unnamed, small drainage area. The part of the trail route that crosses those floodplains is shown on Location Map sheets A3, D1, and D2, 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 24-inch culvert will be installed to provide drainage at Station 55+21. Station locations, such as Station 55+21, can be located on the Location Maps (See Appendix A) that illustrate the trail route. Locations are identified by such stations throughout the document. A 36-inch culvert will be installed to cross an unnamed stream located at approximately Station 71+73. Another 24-inch culvert will be installed to provide drainage at approximately Station 90+97.

At approximately Station 91+14 the multi-use trail will be routed to travel adjacent to the motor road, crossing Hanging Moss Creek, and will go back to an alignment away from the motor road at approximately Station 101+00. This segment is a realignment for a trail segment described previously in the *Floodplain Statement of Findings for Executive Order 11988 ("Floodplain Management") Natchez Trace Multi-Use Trail Project NATR 055989-3P18, 200 Feet West of Livingston Road to Milepost 95.8 Natchez Trace Parkway, Madison County, Mississippi*

(3P18 Floodplain SOF). In the 3P18 Floodplain SOF, this segment was located away from the motor road. A double 8-foot span, 8-foot rise concrete box culvert was to be installed to cross Hanging Moss Creek. The installation of the concrete box culvert would have contributed to floodplain impacts described in the 3P18 Floodplain SOF (NPS 2010). The realignment along the motor road will keep this trail segment out of the floodplain, minimizing floodplain impacts.

Another 36-inch culvert will be installed to provide drainage at approximately Station 101+41.

Floodplains

The Federal Emergency Management Agency (FEMA), as part of the Flood Map Modernization Initiative for Mississippi, completed the review and update of the floodplain maps within the project area in 2010. Other than Hanging Moss Creek south of the motor road, the floodplains included in this SOF were not included on the FEMA Flood Insurance Rate Map (FIRM) for Madison County (Figure 1).

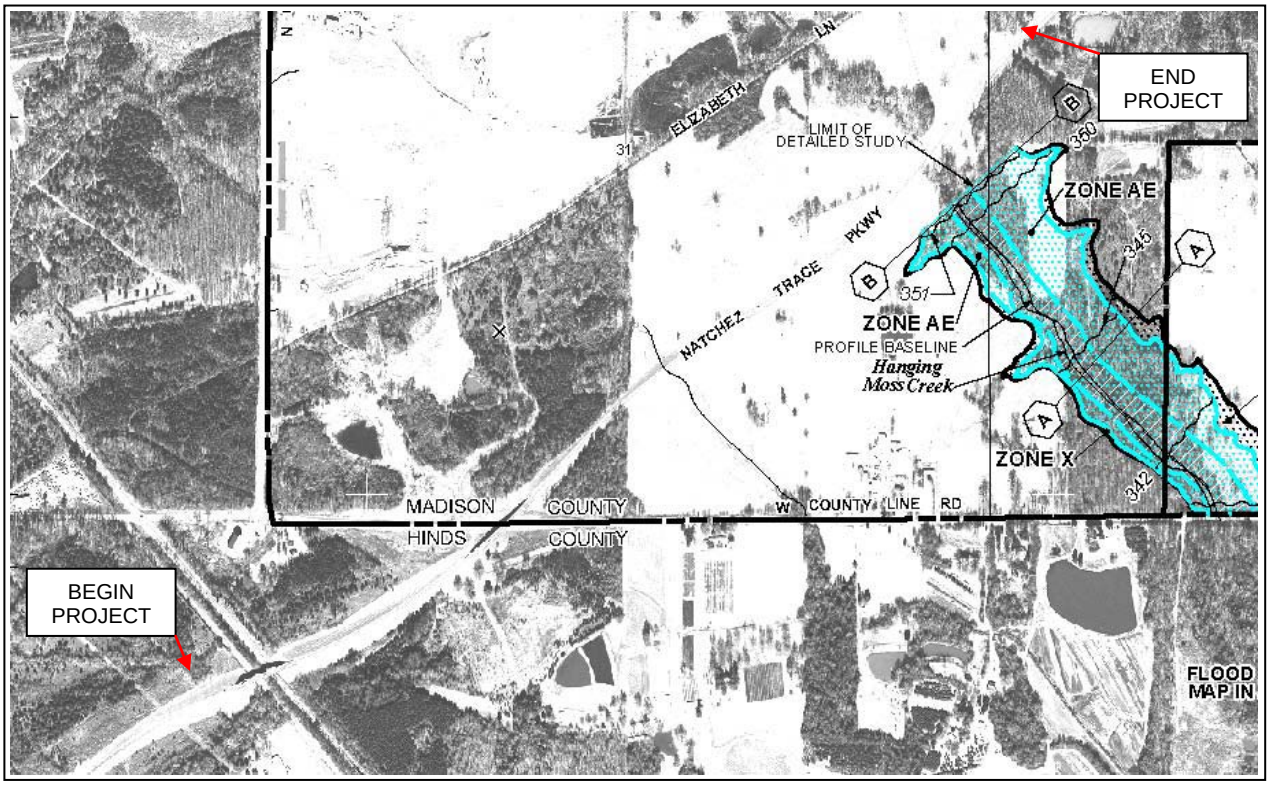

Figure 1. FEMA Flood Insurance Rate Map for Madison and Hinds counties (FEMA 2010).

The culverts were designed for a 10-year flow event. The 24-inch culvert at 55+21, the 24-inch culvert at 90+97, and the 36-inch culvert at 101+41 will be installed to improve drainage past the trail.

The stream bed channel for the unnamed stream at 71+73 is approximately 6 feet wide. The mapping of this channel shows no blue line along the drainage, which means that there is no constant standing or flowing water in this drainage channel. Based on a 10-year flood elevation of 370.8 feet (calculated using FHWA Culvert Hydraulic Analysis Program-8 software, version 7.2) (HY-8) the flooding width just upstream of this 36-inch pipe is approximately 200 feet.

Eastern Federal Lands Highway Division/FHWA (EFLHD/FHWA) calculated the 100-year floodplain of Hanging Moss Creek, which is crossed by the trail and extends north to south across the width of NATR property. The Hanging Moss Creek stream channel is typically 16 feet wide. The 100-year flood width along Hanging Moss Creek is approximately 650 feet. 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).

Vegetation in the floodplain 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 landscaping species.

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, including a bridge over County Line Road from 200 feet west of County Line Road (approximately milepost 95.0) to milepost 96.0.

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 milepost 95.0 and milepost 96.0 must cross the floodplain of Hanging Moss Creek and the floodplain of the abovementioned, unnamed stream 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 floodplain of the

unnamed stream. The trail cannot be constructed entirely upon the existing NATR roadway shoulder to cross the stream because the grass 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. There should be no disturbance in the creek as a result of this realignment.

The NATR roadway shoulder over Hanging Moss Creek is wider, approximately 39 feet wide. The headwall for the drainage structure is further away from the edge of pavement, and the slope is also significantly flatter between the edge of pavement and the headwall, allowing for trail users and motorists to use the same road bench without conflict. This section of the motor road was constructed with wider shoulders to accommodate cattle underpass structures. The width of the shoulder will allow the grading of the trail to take place on top of the existing drainage structure without modification and within present standards of separation between the trail and the motor road.

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 floodplain because they spread 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 A3, D1, and D2, included in Appendix A. 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 located as far from the NATR motor road 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

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. The unvegetated surfaces of the paved trail will not retain precipitation as well as the vegetated or unpaved areas they will replace. The paved trail will add approximately 1.2 acres of impervious surface within approximately 91 acres of NATR property from 200 feet west of County Line Road to milepost 96.0. 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*, indicate that the elevation levels decrease by approximately 20-30 feet

over a distance of a mile along Hanging Moss Creek and the unnamed stream 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 crossings were analyzed using HY-8 software. The following flows are predicted at the culverts for a 10-year storm event:

24-inch culvert at Station 55+21 = 3.0 cubic feet per second

36-inch culvert at Station 71+73 = 55.7 cubic feet per second

24-inch culvert at Station 90+97 = 12.6 cubic feet per second

36-inch culvert at Station 101+41 = 16.8 cubic feet per second

The hydrologic models indicated that there will be some negligible, localized changes in the ability of the floodplain to convey and store floodwaters, but the trail and the culverts spanning the streams and tributaries will not contribute to flooding. Due to the realignment of the trail to run adjacent to the motor road, there will be no area of temporary impact within the floodplain of Hanging Moss Creek. Best management practices will be followed during and after construction.

There will be no impact on 100-year floodplains from the proposed project. There will be very little change in the ability of a floodplain to convey floodwaters and very little change in their 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 during and after construction will include sustainable design principles, appropriate elevations for the finished trail and box culverts, and Best Management Practices (BMPs) such as those presented in FHWA publications such as the *Work Zone Best Practices Guidebook*, and *Best Management Practices for Erosion and Sediment Control*. BMPs may include, but are not limited to, silt fence, inlet/outlet protection (stabilizing with riprap that provides erosion protection, velocity dissipation, and an incidental degree of aeration), and check dams. The riprap placement at culvert inlets/outlets would be a permanent BMP. Vegetative erosion and sediment control measures include applying turf establishment on disturbed areas that will remain exposed for more than 21 days within 14 days.

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 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 in an appropriate manner, to preclude the further spread of exotic/invasive species in disturbed areas of the project and outside of the park. 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

Culverts for the NATR multi-use trail will be constructed and installed on or adjacent to the 100-year floodplain of Hanging Moss Creek and the floodplain of one unnamed stream. The 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 culverts being installed in the unnamed stream and along the trail to improve drainage will not contribute to flooding.

The proposed actions may impact waters of the United States as defined by the Clean Water Act and are therefore subject to review by the U.S. Army Corps of Engineers. Section 401 of the Clean Water Act is a certification by the state that the project impacts to water quality will not exceed those allowed under the state's water quality standards. Section 404 of the Clean Water Act requires a permit for any activity which may result in the discharge of dredged or fill material into navigable waters. Therefore, a modification to the existing Section 401, Section 404, and NPDES permits may be required for this project. Modification to the existing Section 401, Section 404, and NPDES permits will complete the requirements for federal and state permitting for this segment of the 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 will cross Hanging Moss Creek and an unnamed stream. The National Park Service concludes that there is no other practicable alternative for the development proposed. Risk to life and property will be minimized by designing the trail and its box culverts to prevent or reduce flood damage.

There will be no significant effect on floodplain values. Mitigation will include the application of sustainable design principles, appropriate site selection, and Best Management Practices during

and after construction. The National Park Service finds the proposal to be consistent with Executive Order 11988.

REFERENCES CITED

Eastern Federal Lands Highway Division, Federal Highway Administration

2002 "Trail Feasibility Study." By Eastern Federal Lands Highway Division, Federal Highway Administration, in conjunction with the National Park Service. On file at NATR Headquarters.

National Park Service

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."

2007 Memo to Files "Adequacy of National Environmental Policy Act Documentation, Multi-Use Trail, Hinds and Madison Counties, Mississippi." On file at NATR Headquarters.

2010 Natchez Trace Multi-Use Trail. Project NATR 055898-3P18, Milepost 95.8 to 200 Feet West of Livingston Road (Approximately from Milepost 95.8 to Milepost 97.85). Floodplain Statement of Findings. Approved July 27, 2010. On file at NATR.

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 / 106,101	SE	MS	PRA-NATR 3P19	A3

BEGIN PROJECT
50+00 NATR 3P19

END PROJECT
102+97.62 NATR 3P19 =
120+00 3P18 REALIGNMENT

NATR 3P19

N

EXISTING MULTI-USE TRAIL NATR 3P18 REALIGNMENT

MP 96.00

MP 95.75

MP 95.50

MP 95.25

MP 95.00

MP 94.75

MP 94.50

100

90

80

70

60

50

R/W

PARKWAY

ILLINOIS CENTRAL RAILROAD

HILDA DRIVE

COUNTY LINE ROAD

TRACE

NATCHEZ

Install bridge over Countyline Road

FUTURE MULTI-USE TRAIL

0 500 1000
SCALE IN FEET

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

NATCHEZ TRACE PARKWAY

LOCATION MAP
50+00 TO 102+97.62

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PMIS NO.	NPS NO.	REG	STATE	PROJECT	SHEET NO.
55898	604 106,101	SE	MS	PRA-NATR 3P19	D1

BEGIN PROJECT
NATR 3P19, 50+00.00
N 1054590.3119
E 2325549.6476

Future trail NATR 3P20

Install barbed wire fence
Install 28 ft gate
Install construction access (west) (to remain)

Install bridge

Install construction access (east) (obliterate)

Install 24" culvert, headwalls (D1)

Baseline

Install 36" culvert, headwalls (D2)

Edge of Pavement

ABANDONED

COUNTY LINE ROAD

NATCHEZ TRACE PARKWAY

PC 50+00.00

PC 58+94.35

PT 63+19.43

PC 66+12.57

PT 68+81.10

PC 69+47.55

PT 71+28.73

PC 71+98.38

PT 73+64.49

PC 75+67.44

0 100 200
SCALE IN FEET

1% LT | Trans | 2% RT | Trans | 2% LT | Trans | 2% RT | Trans | 2% LT | Trans | 2% RT

50+00 380.17

VPI 52+30
EL 383.39

+1.400% | -1.400% | 240' VC | +2.987% | 150' VC | +1.123% | 300' VC | -1.786% | 260' VC | -4.834% | 370' VC | +3.832%

380' VC

Construct Bridge
(50+61.71 to 54+01.71)

Existing ground

D1
55+21
24" Culvert
Headwalls
31deg. skew LF
Inv. el. = 369.88

VPI 56+40
EL 377.65

VPI 60+20
EL 389.00

VPI 64+65
EL 394.00

Profile grade

VPI 67+45
EL 389.00

VPI 71+65
EL 368.70

D2
71+73
36" Culvert
Headwalls
21deg. skew LB
Inv. el. = 366.16

MP 95.00

MP 95.25

50+00 | 54+51.71 | 55+01.71 | 64+40.98 | 64+90.98 | 68+89.33 | 69+39.33 | 71+38.56 | 71+88.56 | 74+40.97 | 74+90.97 | 75+00

400 | 390 | 380 | 370 | 360 | 350 | 340 | 330

50+00 | 55+00 | 60+00 | 65+00 | 70+00 | 75+00

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

NATCHEZ TRACE PARKWAY

PLAN AND PROFILE

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PMIS NO.	NPS NO.	REG	STATE	PROJECT	SHEET NO.
55898	604 106,101	SE	MS	PRA-NATR 3P19	D2

N

Baseline

Edge of Pavement

D3 Install 24" culvert, headwalls

END PROJECT NATR 3P19, 102+97.62

Existing trail NATR 3P18 realignment

D4 Install 36" culvert, headwalls

PC 71+86.35
PT 73+64.49
PC 75+67.44
PT 79+48.09
80+00
PC 80+90.57
PT 82+97.62
PC 85+52.27
PT 88+17.88
90+00
PC 91+14.07
PCC 92+76.01
100+00
PCC 100+58.34
PT 102+20.33
POT 102+97.62

NATCHEZ TRACE PARKWAY

0 100 200
SCALE IN FEET

2% RT
2% LT
5.00%
75+00
79+24.33
80+44.33
83+99.95
84+99.95
89+67.94
90+17.94
102+45.97
102+95.97
102+97.62

VPI 77+30
EL 390.35
+3.832%
450' VC
-3.451%
Profile grade
180' VC
VPI 86+50
EL 358.60
Existing ground
-1.188%
110' VC
+1.294%
VPI 89+70
EL 354.80
100' VC
VPI 92+25
EL 358.10
-0.800%
VPI 97+00
EL 354.30
300' VC
VPI 99+75
EL 359.10
+1.745%
100' VC
+0.495%
260' VC
+1.874%
102+97.62
362.63
VPI 101+58
EL 360.00
MP 96.00
101+41.62
D4 36" Culvert Headwalls
67 deg. skew LB
Inv. el. = 354.55
MP 95.50
MP 95.75
D3 90+97.62
24" Culvert Headwalls
Inv. el. = 352.33

400
390
380
370
360
350
340
330
75+00
80+00
85+00
90+00
95+00

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NATCHEZ TRACE PARKWAY

PLAN AND PROFILE

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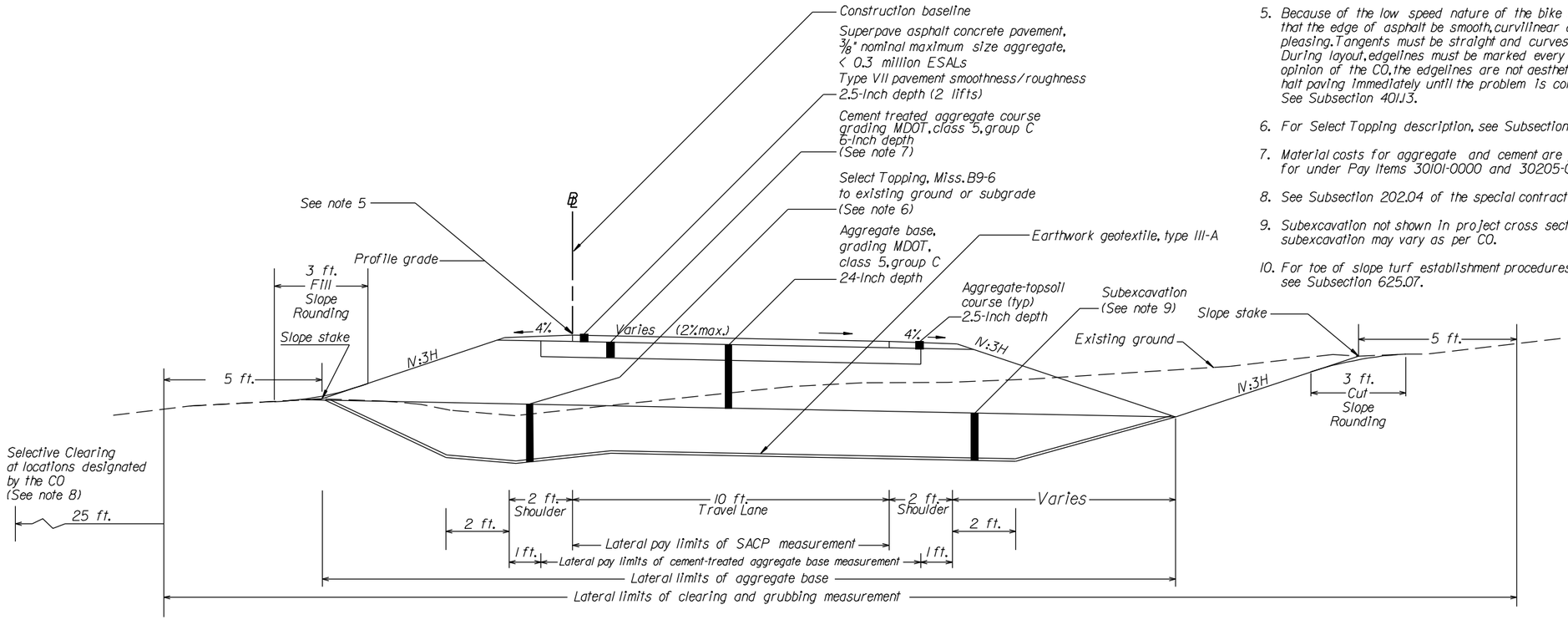
PMIS NO.	NPS NO.	REG	STATE	PROJECT	SHEET NO.
55898	604 106,101	SE	MS	PRA-NATR 3P19	A4

Notes:

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.
6. For Select Topping description, see Subsection 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 102+97.62)

0 2 4
SCALE IN FEET

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
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NATCHEZ TRACE PARKWAY

TYPICAL SECTION

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