NPS NO.	REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
133 / 43,919	SE	TN	PRA-FOOT 8E15	A.1	113

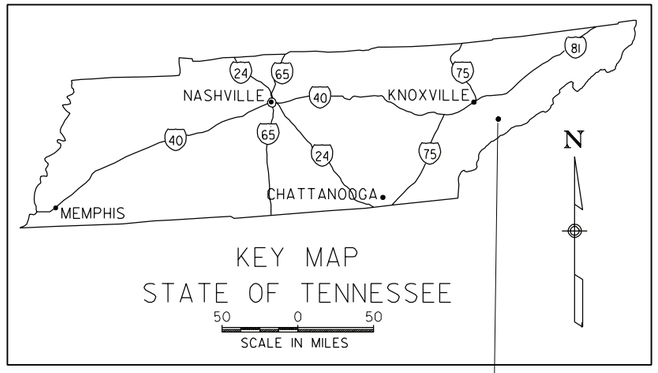
U.S. DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

GREAT SMOKY MOUNTAINS NATIONAL PARK

UNESCO

WORLD HERITAGE SITE



PROJECT PRA-FOOT 8E15

PLANS FOR PROPOSED

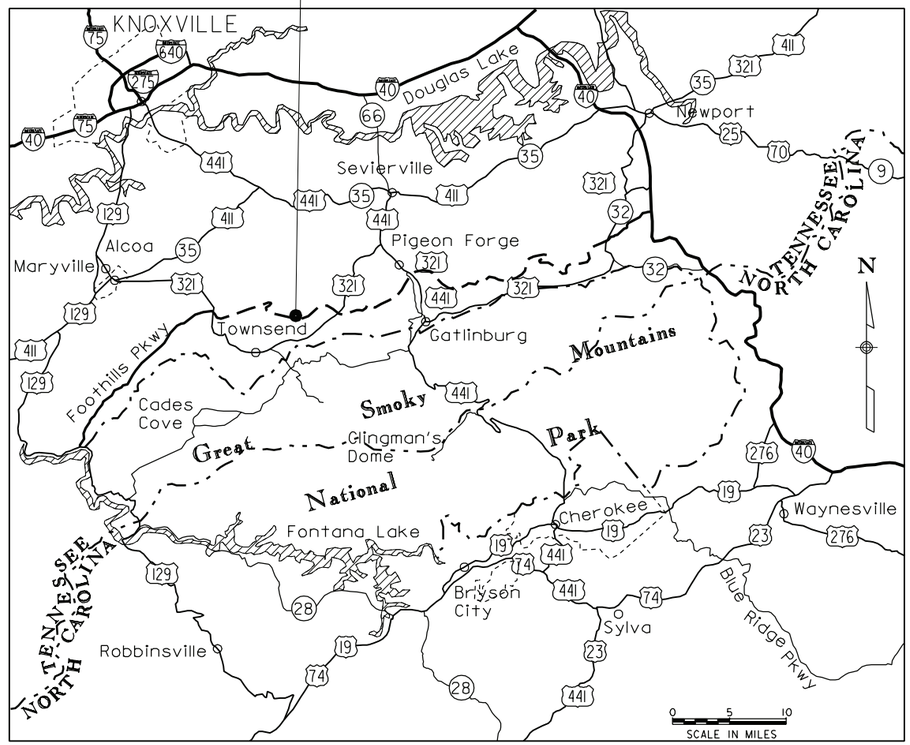
FOOTHILLS PARKWAY

PROJECT PRA-FOOT 8E15

CONSTRUCT SITE 1, SECTION 8E, "MISSING LINK" OF FOOTHILLS PARKWAY AND REPAIR BRIDGE OVER HAPPY HOLLOW ROAD

SEVIER COUNTY and BLOUNT COUNTY, TENNESSEE

PROJECT PRA-FOOT 8E15



INDEX TO SHEETS

SHEET No.	DESCRIPTION
A.1	Title Sheet
A.2	Convention Symbols and Abbreviations
A.3	Location Map
A.4	Survey Information Sheet
B.1-B.3	Typical Sections
C.1	Tabulation of Quantities
C.2	Construction Sign Schedule
D.1-D.2	Subsidence Repair & Shoulder Repair
D.3-D.6	Construction Plans and Profile
E.1-E.3	Drainage Plans and Profile
E.4-E.5	Drainage Cross Sections
F.1-F.3	Erosion Control Narrative and Plans
G.1	Traffic Control Plan
H.1-H.17	Standards and Details
J.1-J.49	Roadway Cross Sections
K.1-K.23	Bridge Plans

DESCRIPTION OF PROJECT

IMPROVEMENT:

Bridge over Happy Hollow Road (Structure #: 5460-205P):
Repair damaged beams & diaphragms and other work.

"Missing Link" alignment (767+10 to 779+00):
Construct reinforced fill, aggregate surfacing, drainage and other work.

PROJECT LENGTH: 1,190'

ROAD: 6" Aggregate Base

	Width	Type
SURFACE:	22' +/-	Surface treatment designation 2A
BASE:	22' +/-	Aggregate base, grading C or D
ROADBED:	22' +/-	Limestone rock fill

DESIGN DESIGNATION:

ADT (2008)	0
ADT (2028)	2,700
DHV	690
D	60/40
%Truck	1%
V (MPH)	30
C/A	None
e(max)	10%

SPECIFICATIONS:

"Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects", FP-03 U.S.Customary Units.

PLANS PREPARED BY

U.S. Department of Transportation
Federal Highway Administration

EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA
April, 2008

PROJECT MANAGER	LEAD DESIGNER
Craig Sanders	Thang Nguyen

PMIS NO. 51291

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NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	A.2

And	&
Average Daily Traffic	ADT
Baseline	℄
Centerline	℄ or C/L
Concrete	Conc.
Contracting Officer	CO
Cubic yard	cuyd or CY.
Design hour volume	DHV
Detail	det. or Det.
Diameter	Dia. or dia.
Directional Distribution	D
Edge of pavement	EOP
Elevation	elev.
Equivalent single axle load	ESAL
Excavation	exc.
Foot	ft
For example	e.g.
High density polyethylene	HDPE
Left	Lt. or LT
Lump sum	LPSM
Maximum	Max. or max.
Mile per hour	mph
Minimum	Min. or min.
Miscellaneous	misc.
Modified	mod.
Not applicable	N/A or n/a
Number	No. or no.
Offset from center line	Off.
Pavement	pvmt
Percent	%
Radius	R
Right	Rt.or RT
Shoulder	shldr
Speed	V
Square	sq
Square foot	sqft or SF
Square yard	sqyd or SY
Steel backed timber guardrail, type A	SBTA
Superelevation rate	e
Thousand	M
Typical	typ. or Typ.
Varies	var.
Yard	yd.

State boundary

Park boundary

Route number — 26 INTERSTATE; 25 U.S.; 694 STATE

Slope stake — Toe of fill; Top of cut; Transition

1 vertical : # horizontal (slopes flatter than 1V:1H) — 1:1.2

vertical : 1 horizontal (slopes steeper than 1V:1H) — 2:1

Roadway, existing

Trail

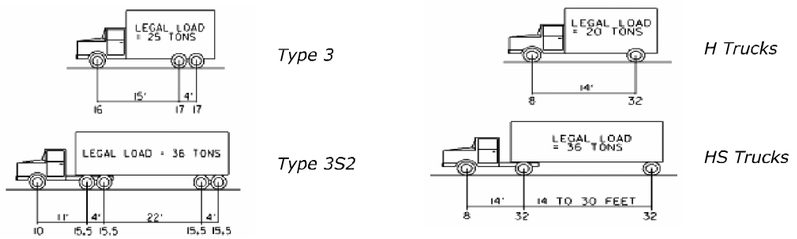
Paved ditch

Tree line; Tree

Water flow direction

Circular angle	Δ_c	Tangent to spiral	TS
Curve to Spiral	CS	Spiral to tangent	ST
Interior angle	Δ	Tangent of spiral (back)	Ts1
Length of curve	L	Tangent of spiral (forward)	Ts2
Length of spiral	Ls		
Point of intersection	PI	Rate of curvature	K
Point of tangency	PT	Vertical point of curvature	VPC
Radius of curve	R	Vertical point of tangent	VPT
Spiral angle	θ_s	Vertex of curvature	VC
Spiral to Curve	SC	Vertical point of intersection	VPI

Conventional Trucks:



	EXISTING	PROPOSED
Guardrail	No Symbol	
Culvert with drop inlet	No Symbol	
Culvert with end section	No Symbol	
Riprap	No Symbol	
Headwall	No Symbol	
Silt fence	No Symbol	SF — SF
Brush Barrier	No Symbol	
Slope drain	No Symbol	

NOTE:

Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.

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GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CONVENTIONAL SYMBOLS AND ABBREVIATIONS

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NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	A.3

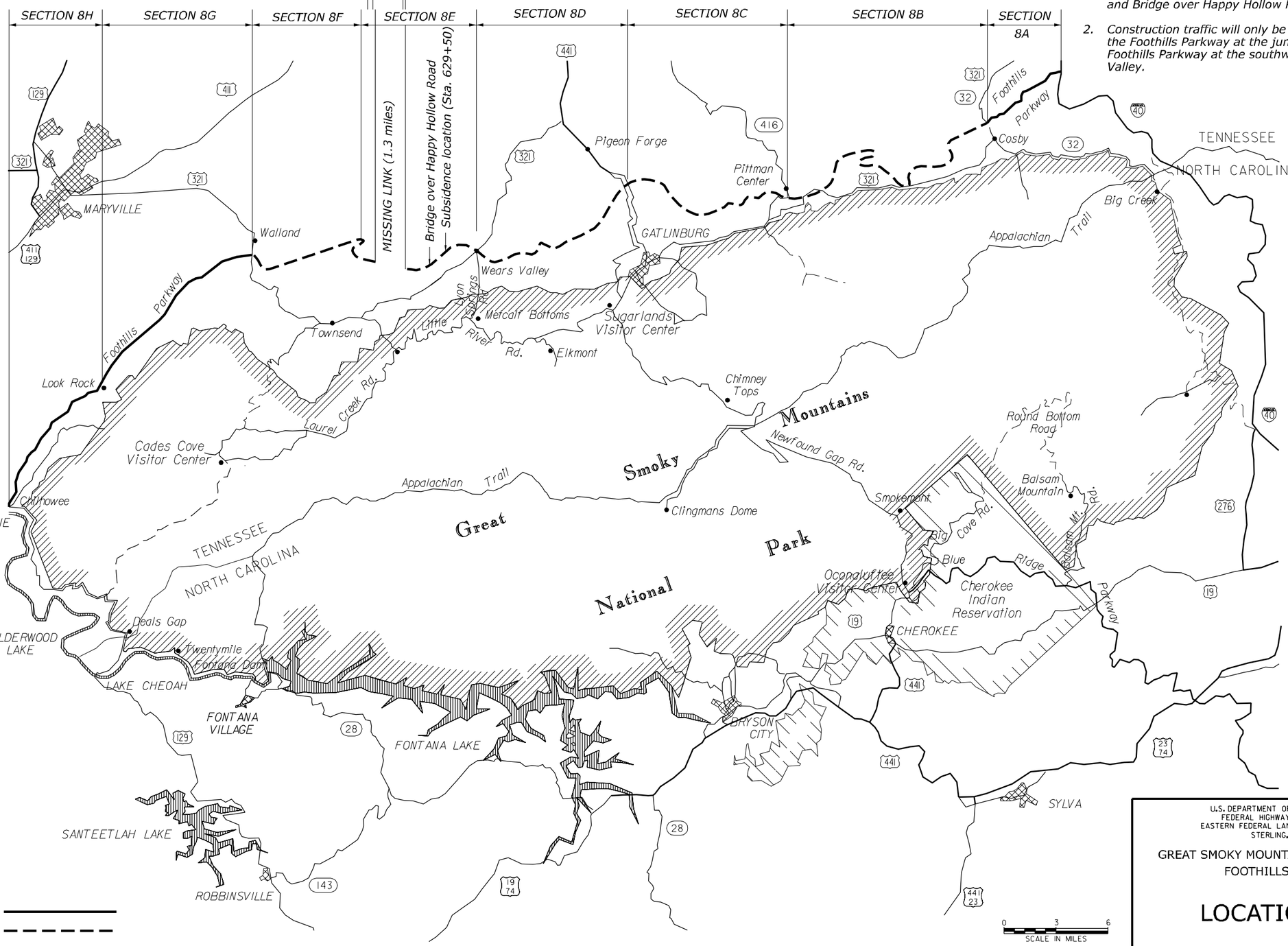
Final Paving of Sections E & F will be included under the Final Project of PRA-FOOT 8E (FUTURE)

BRIDGE no. 10, 9 & 8

PRA-FOOT 8E15
767+10 to 779+00
SITE no. 1

Note:

1. See sheet no. G.1 for location of construction entrance and Bridge over Happy Hollow Road.
2. Construction traffic will only be permitted to access the Foothills Parkway at the junction of US 321 and Foothills Parkway at the southwest ramp in Wears Valley.



Legend:

Parkway
Completed
Uncompleted

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FOOTHILLS PARKWAY

LOCATION MAP

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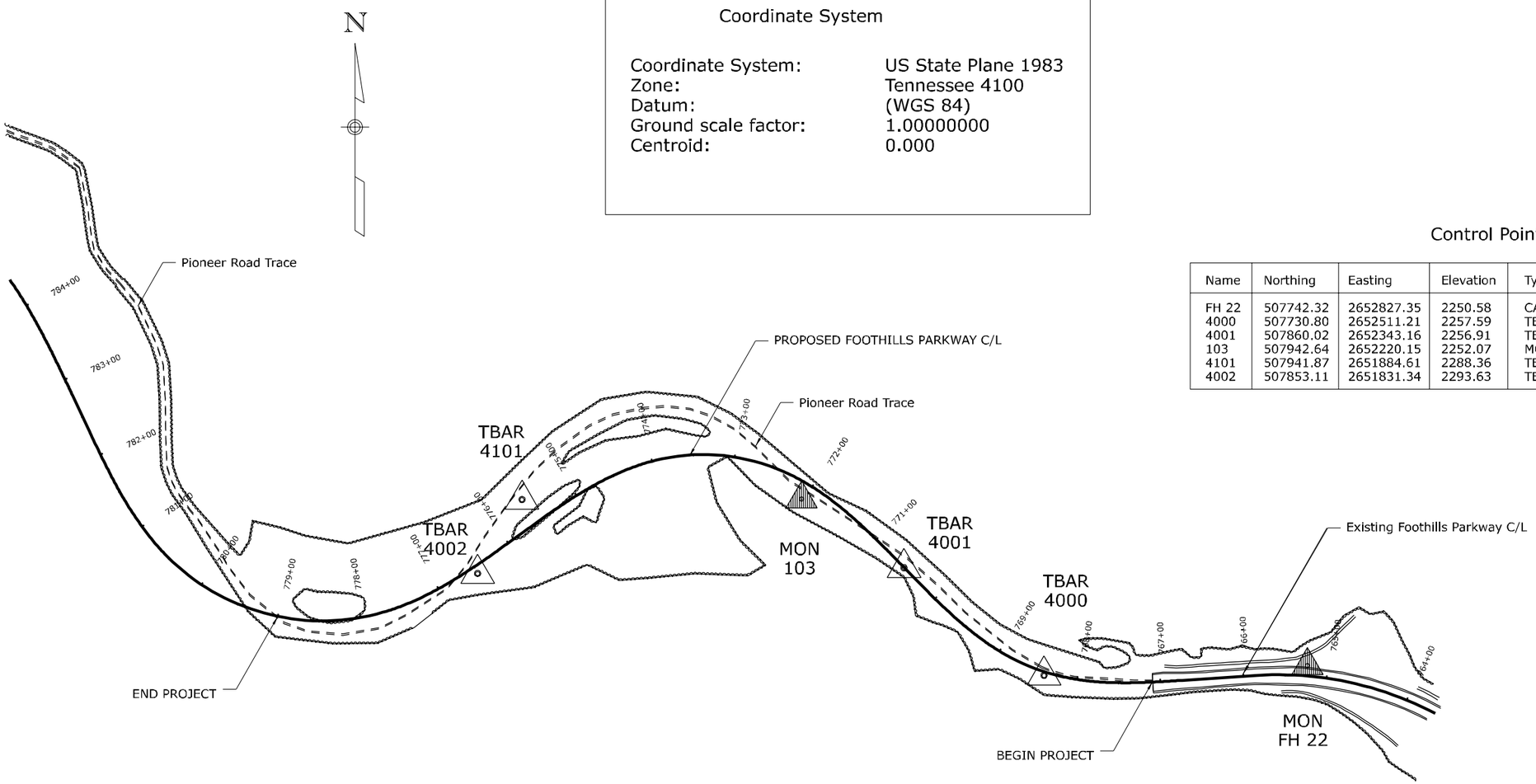
NPS No.	REG	STATE	PROJECT	SHEET NO.
133 / 43,919	SE	TN	PRA-FOOT 8E15	A.4

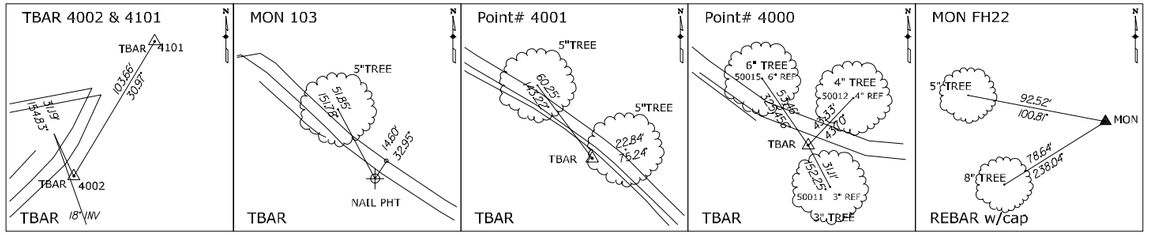
Coordinate System

Coordinate System:	US State Plane 1983
Zone:	Tennessee 4100
Datum:	(WGS 84)
Ground scale factor:	1.00000000
Centroid:	0.000



Control Points

Name	Northing	Easting	Elevation	Type	Stationing
FH 22	507742.32	2652827.35	2250.58	CAP;FHWA-FH22	765+23.32, 13.25' Rt.
4000	507730.80	2652511.21	2257.59	TBAR	768+39.55, 4.80' Lt.
4001	507860.02	2652343.16	2256.91	TBAR	770+52.43, 0.30' Lt.
103	507942.64	2652220.15	2252.07	MON	772+03.02, 19.11' Lt.
4101	507941.87	2651884.61	2288.36	TBAR	775+56.25, 32.69' Rt.
4002	507853.11	2651831.34	2293.63	TBAR	776+50.92, 8.92' Lt.



0 75 150
SCALE IN FEET

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FOOTHILLS PARKWAY

SURVEY INFORMATION SHEET

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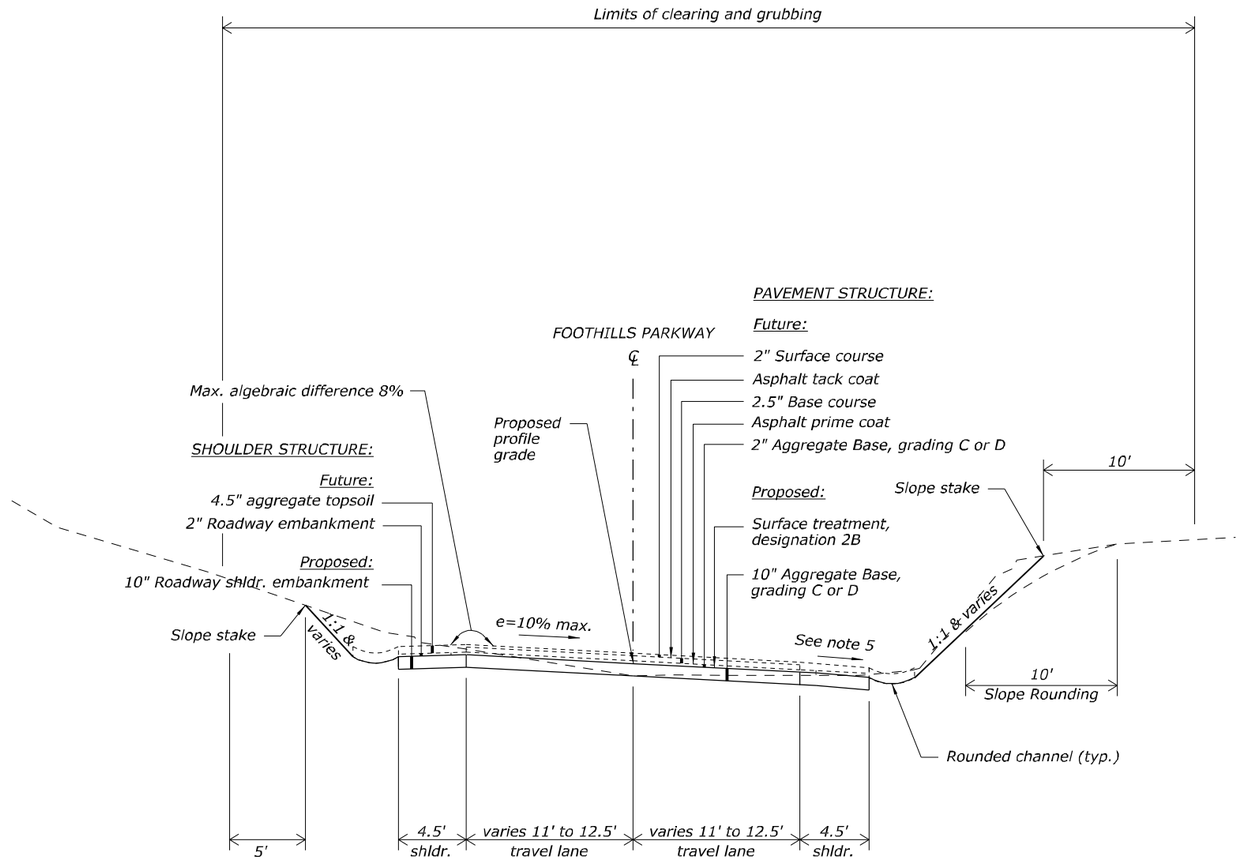
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	B.1



Notes:

1. Sample and test excavation material as described in SCR, subsection 204.
2. Apply surface treatment on travel lanes only.
3. Clearing and grubbing limits may be adjusted by the CO. Only grub areas necessary as approved by the CO.
4. Shoulder cross slope is 8% when e is 8% or less. Otherwise, match shoulder cross slope to e.
5. Conserve suitable non-pyritic material from roadway excavation for roadway shoulder embankment. Apply turf establishment in accordance with Section 625.

Station 767+10 to 768+00
Station 776+50 to 779+00

Not to scale

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GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

TYPICAL SECTION

Sheet 1 of 3

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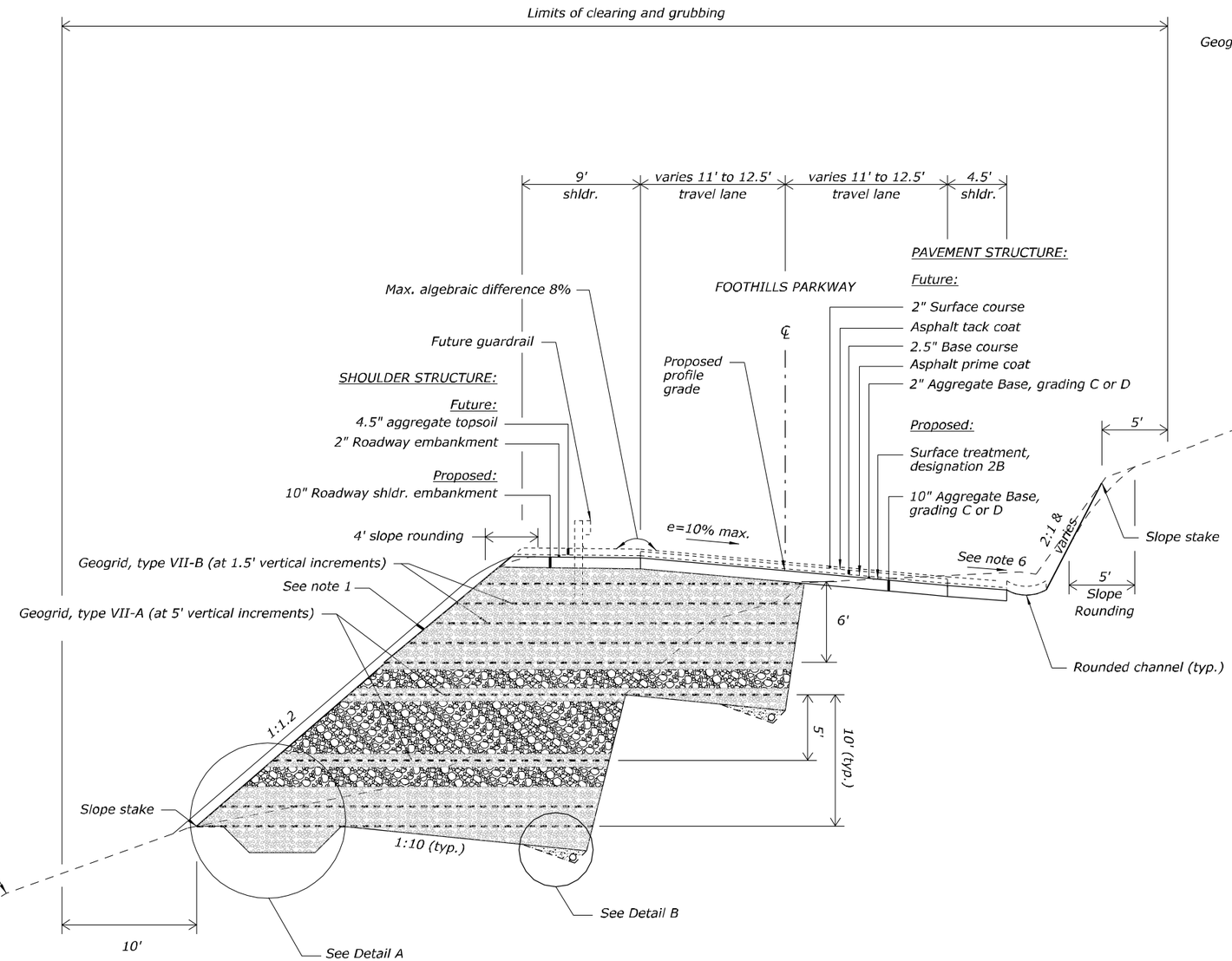
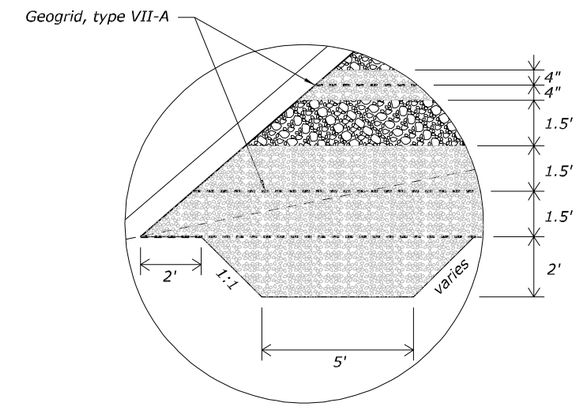
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	B.2





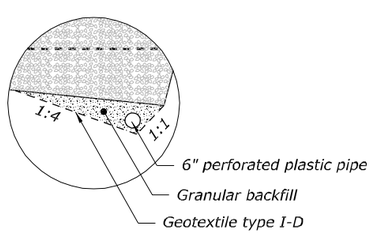
Detail A

Notes:

1. Conserve 8" to 10" of surface soil from existing slope prior to benching. Flush the finished fill slope face with 8" to 10" of conserved surface soil. Apply turf establishment in according to Section 625.
2. Sample and test excavation material as described in Subsection 204 of the Special Contract Requirements.
3. Apply surface treatment on travel lanes only.
4. Clearing and grubbing limits may be adjusted by the CO. Only grub areas necessary as approved by the CO.
5. Incorporate excess excavation material into shot rock fill. Conserve material in place until ready for use. Clear but do not grub existing slope until rock fill reaches respective bench.
6. Shoulder cross slope is 8% when e is 8% or less. Otherwise, match shoulder cross slope to e.
7. Conserve suitable non-pyritic material from roadway excavation for roadway shoulder embankment. Apply turf establishment on shoulder area in accordance with Section 625.
8. Construct underdrain plastic pipe to provide positive drainage (min. 2% grade). The maximum spacing between the outlet locations is 300 feet. Obtain approval by the CO of final pipe and outlet locations.

Legend:

- Limestone Shot Rock and material from benching and roadway excavation
- Select Limestone Shot Rock
- Granular backfill



Detail B

Station 768+00 to 771+00
Station 775+50 to 776+50

Not to scale

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GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

TYPICAL SECTION

Sheet 2 of 3

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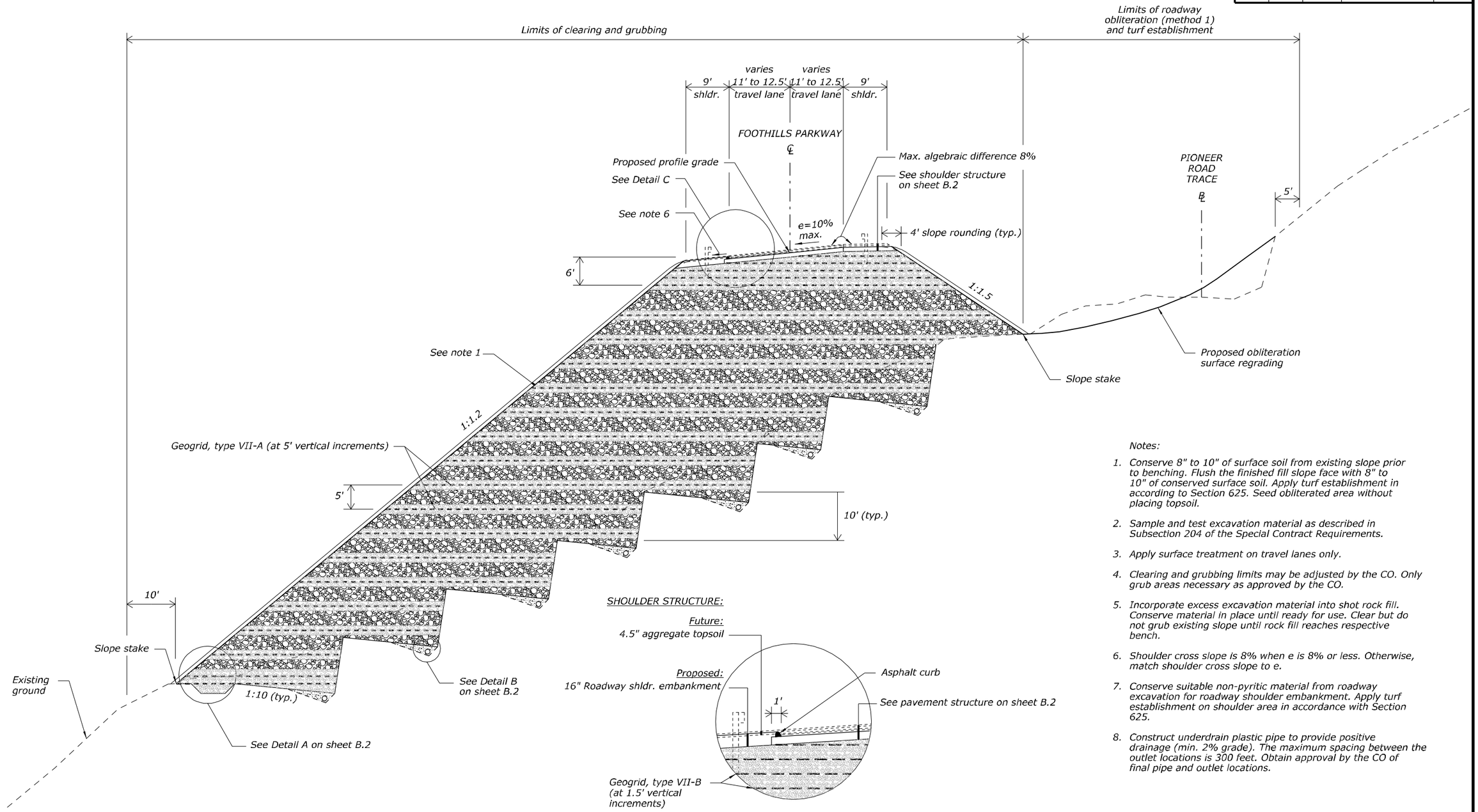
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	B.3



Detail C

Notes:

1. Conserve 8" to 10" of surface soil from existing slope prior to benching. Flush the finished fill slope face with 8" to 10" of conserved surface soil. Apply turf establishment in according to Section 625. Seed obliterated area without placing topsoil.
2. Sample and test excavation material as described in Subsection 204 of the Special Contract Requirements.
3. Apply surface treatment on travel lanes only.
4. Clearing and grubbing limits may be adjusted by the CO. Only grub areas necessary as approved by the CO.
5. Incorporate excess excavation material into shot rock fill. Conserve material in place until ready for use. Clear but do not grub existing slope until rock fill reaches respective bench.
6. Shoulder cross slope is 8% when e is 8% or less. Otherwise, match shoulder cross slope to e.
7. Conserve suitable non-pyritic material from roadway excavation for roadway shoulder embankment. Apply turf establishment on shoulder area in accordance with Section 625.
8. Construct underdrain plastic pipe to provide positive drainage (min. 2% grade). The maximum spacing between the outlet locations is 300 feet. Obtain approval by the CO of final pipe and outlet locations.

Station 771+00 to 773+50
Station 773+50 to 775+50 (with Pioneer Road Trace obliteration)

Not to scale

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GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

TYPICAL SECTION

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REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	C.1

ITEM	DESCRIPTION	UNIT	ALL	SITE 1	REPAIR AREA	BRIDGE	ESTIMATED QUANTITIES PLAN	ESTIMATED QUANTITIES BID SCHEDULE
	PLAN SHEET SECTION -------->>							
15101-0000	MOBILIZATION	LPSM					ALL	ALL
15201-0000	CONSTRUCTION SURVEY AND STAKING	LPSM					ALL	ALL
15401-0000	CONTRACTOR TESTING	LPSM					ALL	ALL
15703-2000	SOIL EROSION CONTROL, TEMPORARY TURF ESTABLISHMENT	ACRE	2				2.0	2.0
15705-0100	SOIL EROSION CONTROL, SILT FENCE (WIRE-BACKED SILT FENCE)	LNFT		1160	120		1280	1,300
15705-0200	SOIL EROSION CONTROL, BRUSH BARRIERS	LNFT		520			520	560
15705-0300	SOIL EROSION CONTROL, SLOPE DRAINS	LNFT		200			200	200
15706-0200	SOIL EROSION CONTROL, CHECK DAM	EACH		14			14	14
20101-0000	CLEARING AND GRUBBING	ACRE	2.5				2.5	2.5
20401-0000	ROADWAY EXCAVATION	CUYD		12401			12401	12,500
20451-1000	BORROW, ROCK (Select Limestone Shot Rock)	TON		25163			25163	25,300
20451-1000	BORROW, ROCK (Limestone Shot Rock)	TON		67613			67613	68,000
20701-0800	EARTHWORK GEOTEXTILE, TYPE II-B	SQYD			103		103	110
20701-1000	EARTHWORK GEOTEXTILE, TYPE III-A	SQYD			428		428	430
20703-0000	GEOGRID (type VII-A)	SQYD		27686			27686	28,000
20703-0000	GEOGRID (type VII-B)	SQYD		12444			12444	12,600
21101-1000	ROADWAY OBLITERATION, METHOD 1	SQYD		685			685	690
25102-3000	PLACED RIPRAP, CLASS 3	TON		56			56	60
30101-4000	AGGREGATE BASE GRADING C OR D	TON		1693	540		2233	2,300
40910-0700	SURFACE TREATMENT, DESIGNATION 2B	SQYD		4622	214		4836	5,000
55207-0000	REPAIR CONCRETE	LPSM					ALL	ALL
55222-0000	GROUT	CUFT			1053		1053	1,053
56101-0000	STRUCTURAL CONCRETE BONDING	LNFT			20		20	20
60201-0800	24-INCH PIPE CULVERT (PE SMOOTH WALL-SOLID WALL)	LNFT		52			52	54
60201-1000	36-INCH PIPE CULVERT (PE SMOOTH WALL-SOLID WALL)	LNFT		275			275	280
60210-1000	END SECTION FOR 36-INCH PIPE CULVERT	EACH		1			1	1
60403-0900	INLET, TYPE 4B	EACH		1			1	1
60403-1800	INLET, TYPE 6A MODIFIED	EACH		1			1	1
60510-0700	6-INCH COLLECTOR PIPE (including 6" perforated plastic pipe, geotextile type I-D, and granular backfill)	LNFT		5000			5000	5,000
60801-0500	PAVED WATERWAY, TYPE 5	SQYD		514			514	520
60901-2300	CURB, ASPHALT, 6-INCH DEPTH	LNFT		540			540	550
62011-0500	STONE MASONRY HEADWALL FOR 24-INCH PIPE CULVERT	EACH		1			1	1
62501-0000	TURF ESTABLISHMENT	ACRE		1.9	0.04		1.9	2.0
62901-1400	ROLLED EROSION CONTROL PRODUCT, TYPE 5.C	SQYD		281			281	281
62903-0000	CELLULAR CONFINEMENT SYSTEM	SQYD		220			220	220
63502-0600	TEMPORARY TRAFFIC CONTROL, BARRICADE TYPE 3	EACH		4			4	4
63502-1300	TEMPORARY TRAFFIC CONTROL, DRUM	EACH				17	17	20
63504-1000	TEMPORARY TRAFFIC CONTROL, CONSTRUCTION SIGN	SQFT	301.5				302	310
63701-0000	FIELD OFFICE	EACH	1				1	1
64705-1000	MITIGATION, AGRICULTURAL LIMESTONE	TON		1			1	1

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FOOTHILLS PARKWAY

TABULATION OF QUANTITIES

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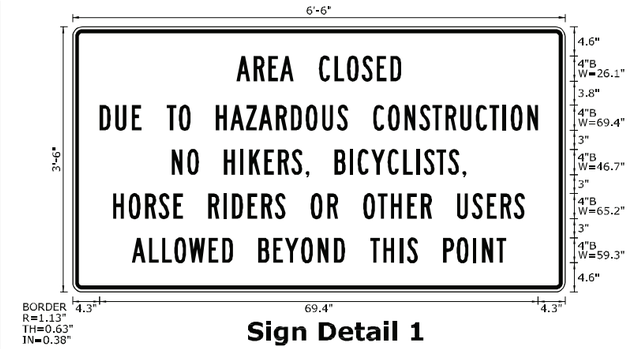
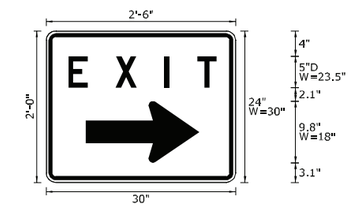
REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	C.2

CONSTRUCTION SIGNS

SPECIAL SIGN NO.	MUTCD NO.	SIGN TEXT	PANEL SIZE WIDTH (in)	PANEL SIZE HEIGHT (in)	PANEL SIZE AREA (sqft)	COLOR COMBINATION	QUANTITY	Pay Item 63504-1000 Temp. Traffic Control, Construction Signs Sqft	SUPPORT (NO PAY) ft	REMARKS
	G20-2	END ROAD WORK	36	18	4.5	Black on Orange	2	9	26	
	R11-2	ROAD CLOSED	48	30	10.0	Black on White	4	40		Mount on barricade
	W13-1	25 MPH	18	18	2.3	Black on Orange	2	4.5		Mount under sign W21-5
	W16-2	100 FEET	24	18	3.0	Black on Orange	2	6		Mount under sign W20-7a
	W20-1	ROAD WORK AHEAD	36	36	9.0	Black on Orange	2	18	26	
	W20-4	ONE LANE ROAD AHEAD	36	36	9.0	Black on Orange	2	18	26	
	W20-7a	FLAGGER SYMBOL	36	36	9.0	Black on Orange	2	18	26	
	W21-1a	WORKER SYMBOL	36	36	9.0	Black on Orange	2	18	26	
	W21-5	SHOULDER WORK	30	30	6.3	Black on Orange	2	12.5	26	
1		See Sign Detail 1	78	42	22.8	Black on White	6	136.5	156	
3		See Sign Detail 2	30	24	5.0	Black on White	1	5		Mount below sign R11-2
5		See Sign Detail 5	42	24	7.0	Black on White	1	7		Mount on first barricade
6		See Sign Detail 6	36	18	4.5	Black on White	2	9		
		Subtotal this Sheet			101.3		30	301.5	312	
		Rounded Total			*		*	310	*	



Sign Detail 1



Sign Detail 3

Sign Detail 5

Sign Detail 6

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FOOTHILLS PARKWAY

CONSTRUCTION SIGN SCHEDULE

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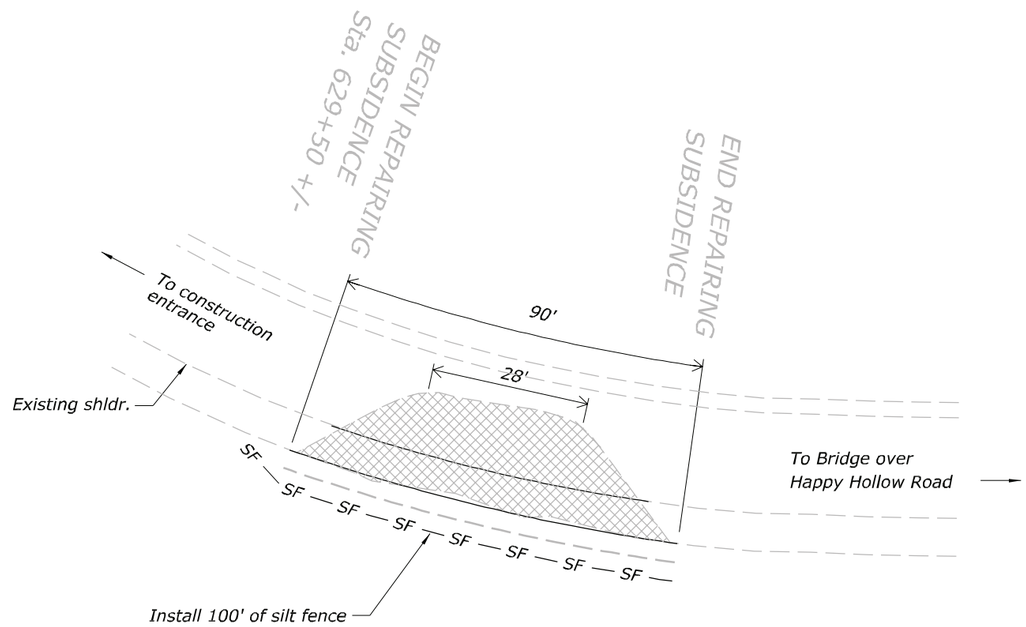
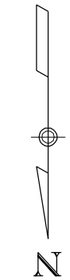
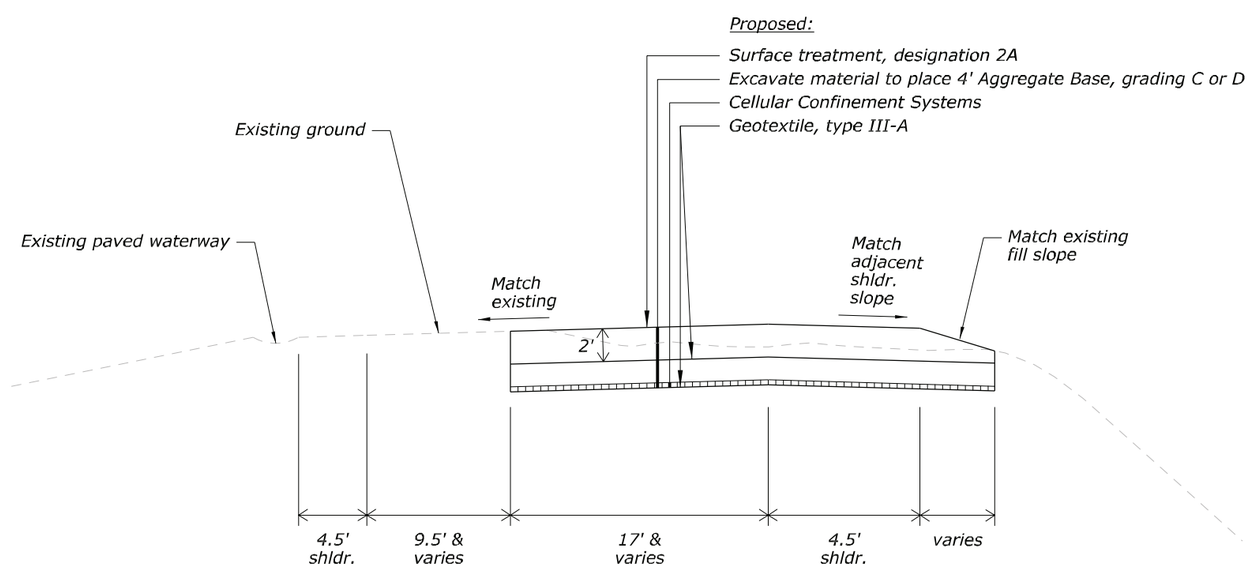
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	D.1





Notes:

1. *The CO will determine repairing limits to fit field conditions.*
2. *Apply surface treatment on travel lanes only.*



Typical Section

NO SCALE

Legend:

Limits of subsidence

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SUBSIDENCE REPAIR

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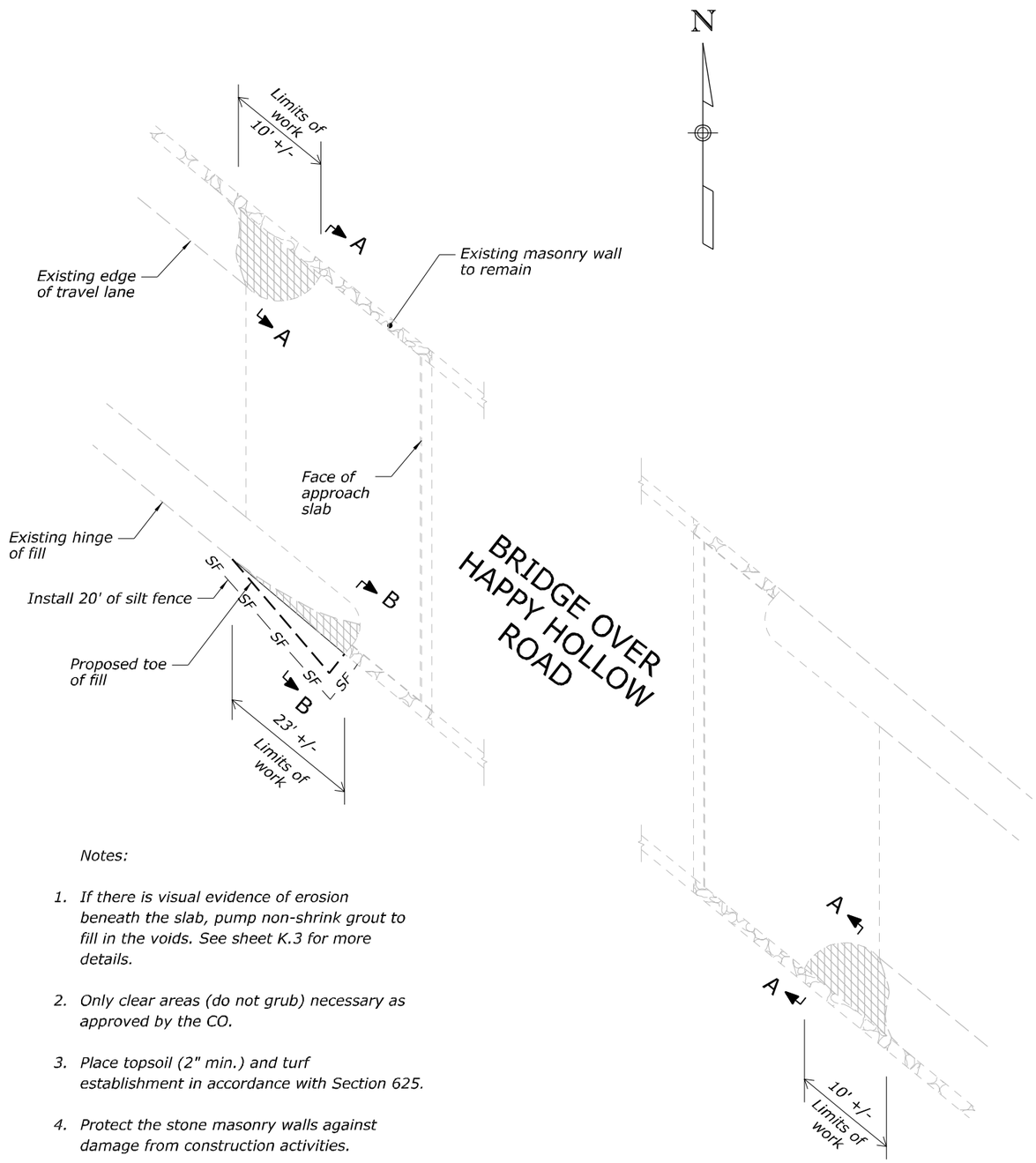
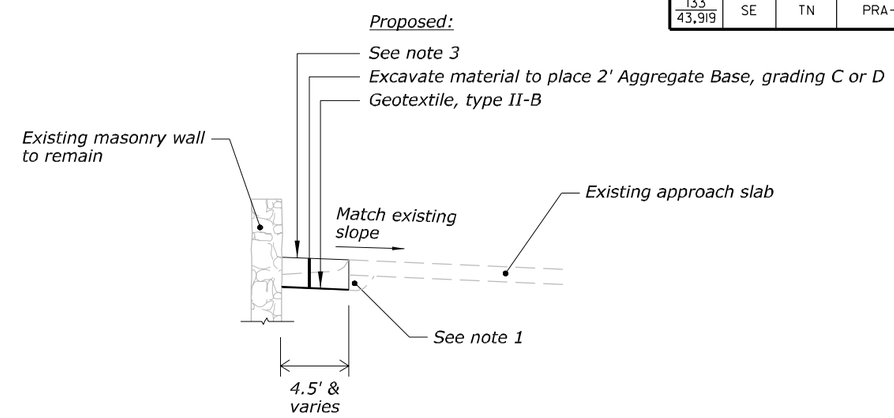
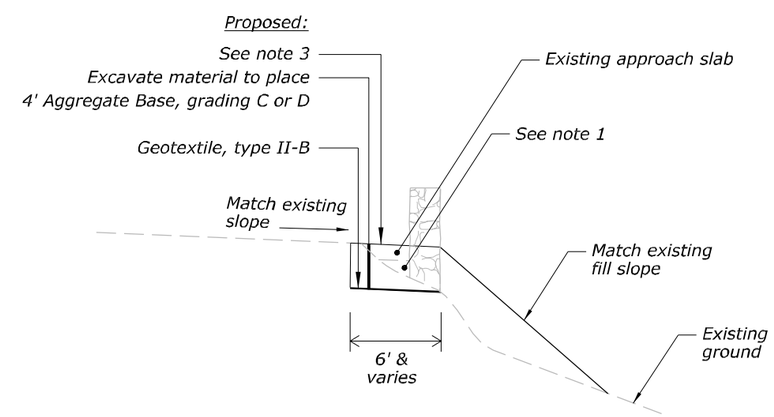
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	D.2





SECTION A - A



SECTION B - B

Notes:

1. If there is visual evidence of erosion beneath the slab, pump non-shrink grout to fill in the voids. See sheet K.3 for more details.
2. Only clear areas (do not grub) necessary as approved by the CO.
3. Place topsoil (2" min.) and turf establishment in accordance with Section 625.
4. Protect the stone masonry walls against damage from construction activities.

Legend:

Limits of shoulder repair

NO SCALE

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SHOULDER REPAIR

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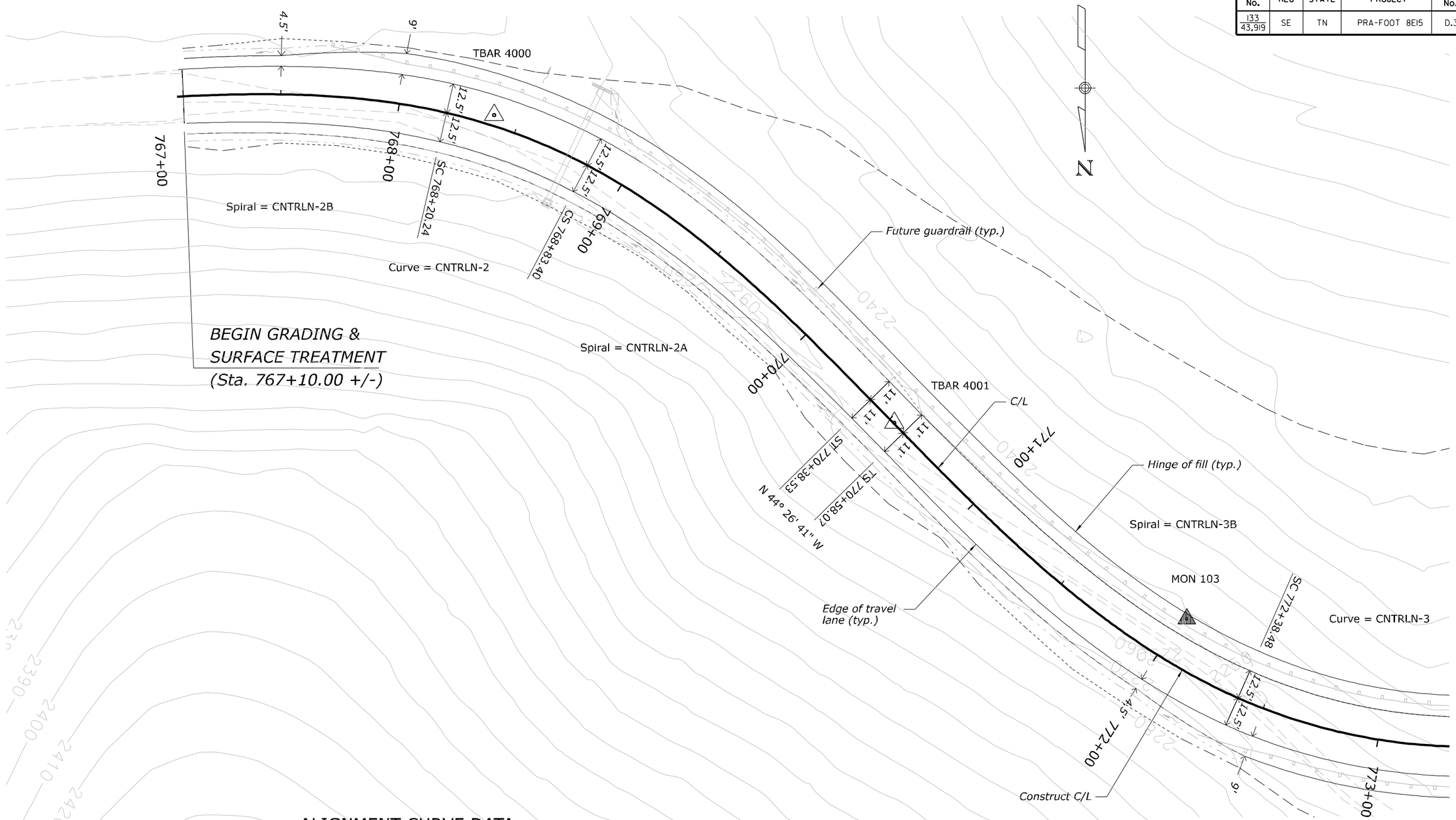
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	D.3



ALIGNMENT CURVE DATA

Spiral = CNTRLN-2B	Curve = CNTRLN-2	Spiral = CNTRLN-2A	Spiral = CNTRLN-3B	Curve = CNTRLN-3
PI 767+71.76	PI 768+51.99	PI 769+35.59	PI 771+79.26	PI 773+20.84
θs = 16° 53' 37"	Δ= 49° 17' 15" (RT)	θs = 17° 51' 17"	θs = 21° 38' 53"	Δ= 81° 21' 58" (LT)
Ls = 146.78'	Δc = 14° 32' 21" (RT)	Ls = 155.13'	Ls = 180.41'	Δc = 38° 04' 00" (LT)
	R = 248.91'			R = 238.75'
	Ts1 = 189.57'			Ts1 = 299.87'
	Ts2 = 192.79'			Ts2 = 299.88'
	L = 63.16'			L = 158.62'

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CONSTRUCTION PLAN

767+00 to 773+00

Sheet 1 of 2

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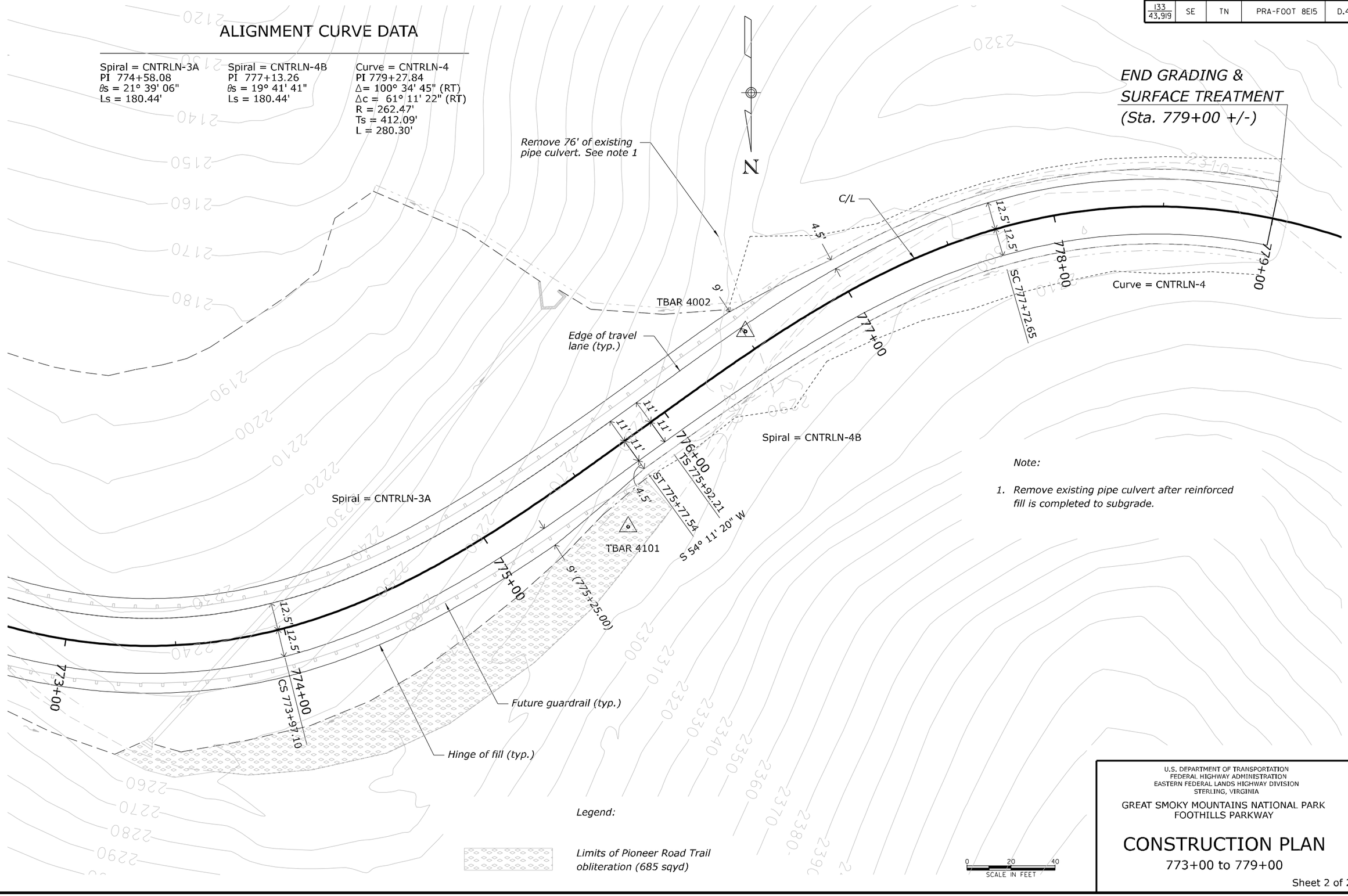
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	D.4

ALIGNMENT CURVE DATA

Spiral = CNTRLN-3A
PI 774+58.08
θs = 21° 39' 06"
Ls = 180.44'

Spiral = CNTRLN-4B
PI 777+13.26
θs = 19° 41' 41"
Ls = 180.44'

Curve = CNTRLN-4
PI 779+27.84
Δ= 100° 34' 45" (RT)
Δc = 61° 11' 22" (RT)
R = 262.47'
Ts = 412.09'
L = 280.30'



Note:

1. *Remove existing pipe culvert after reinforced fill is completed to subgrade.*

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CONSTRUCTION PLAN

773+00 to 779+00

Sheet 2 of 2

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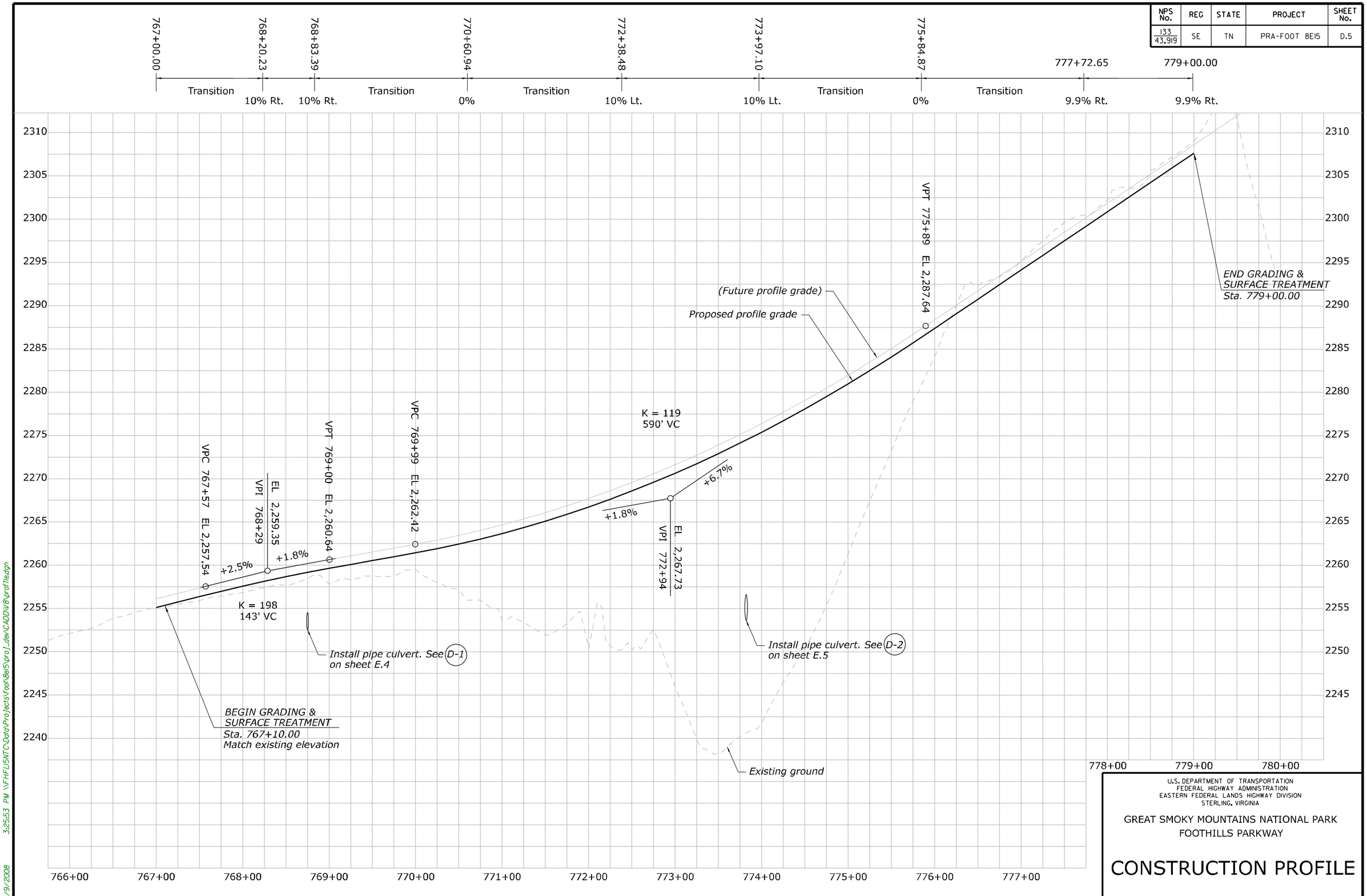
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	D.5



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GREAT SMOKY MOUNTAINS NATIONAL PARK
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CONSTRUCTION PROFILE

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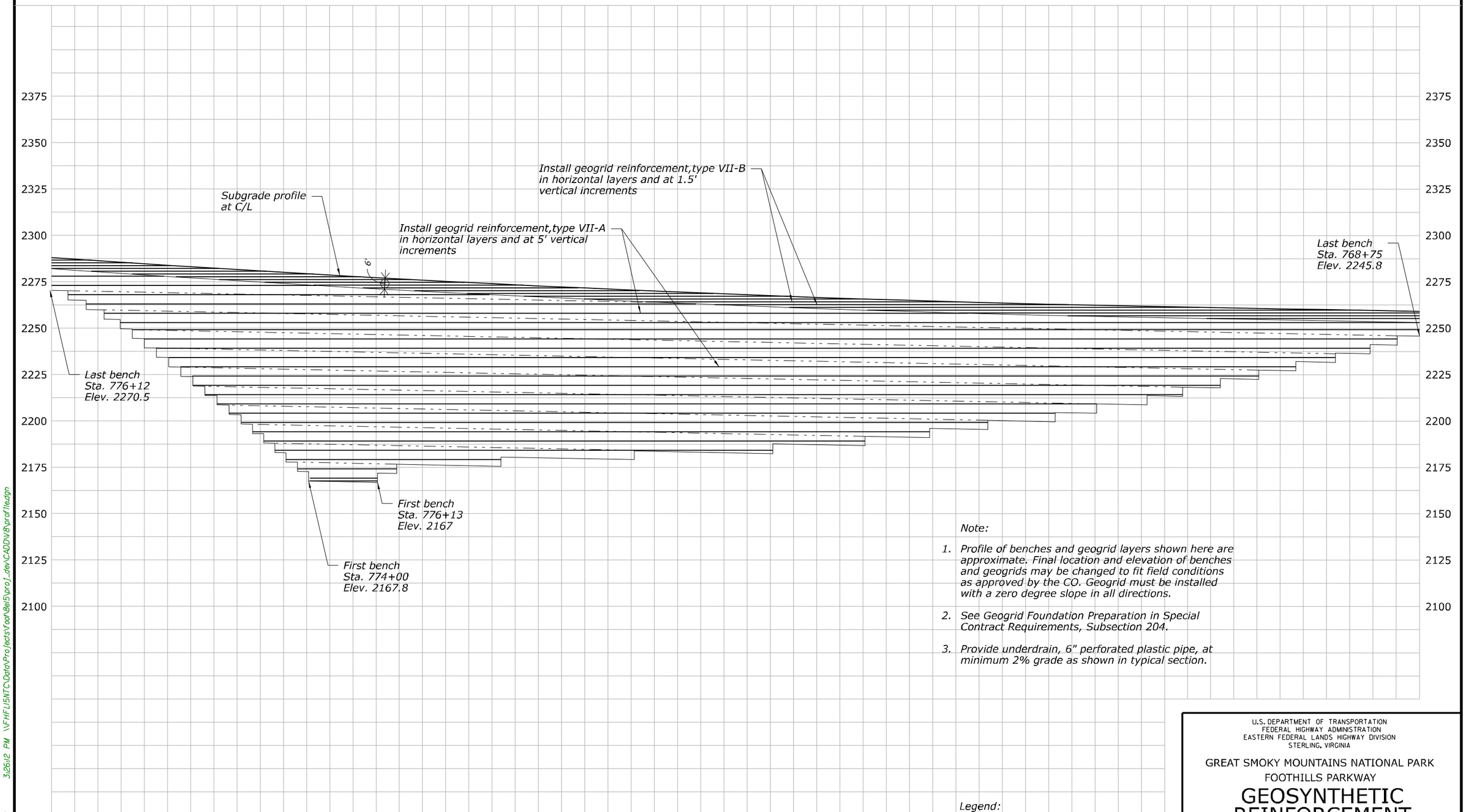
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	D.6



Note:

1. *Profile of benches and geogrid layers shown here are approximate. Final location and elevation of benches and geogrids may be changed to fit field conditions as approved by the CO. Geogrid must be installed with a zero degree slope in all directions.*
2. *See Geogrid Foundation Preparation in Special Contract Requirements, Subsection 204.*
3. *Provide underdrain, 6" perforated plastic pipe, at minimum 2% grade as shown in typical section.*

Legend:

— - - — *Proposed underdrain.*

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GEOSYNTHETIC REINFORCEMENT PROFILE

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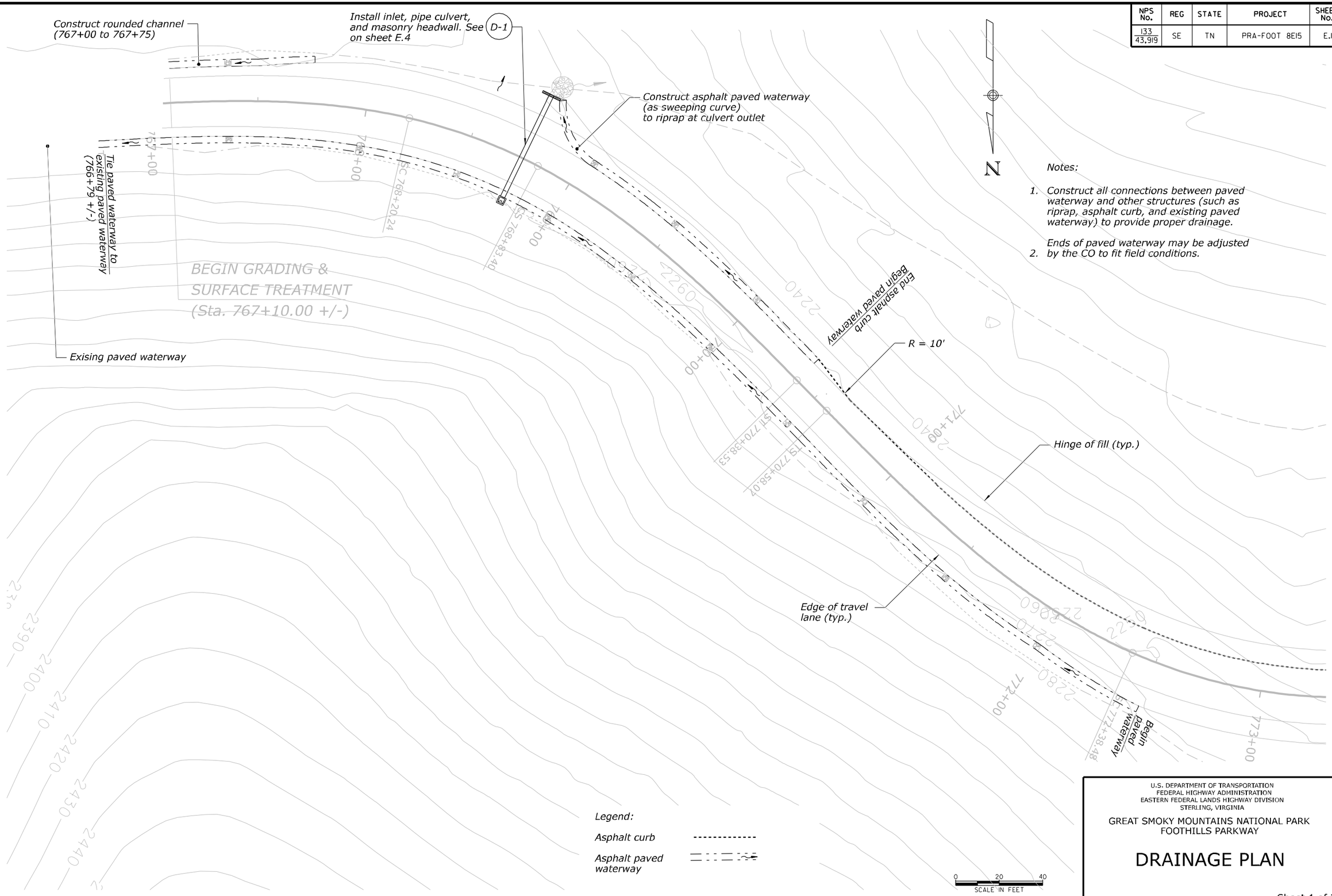
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	E.1



Notes:

1. Construct all connections between paved waterway and other structures (such as riprap, asphalt curb, and existing paved waterway) to provide proper drainage.
2. Ends of paved waterway may be adjusted by the CO to fit field conditions.

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DRAINAGE PLAN

Sheet 1 of 2

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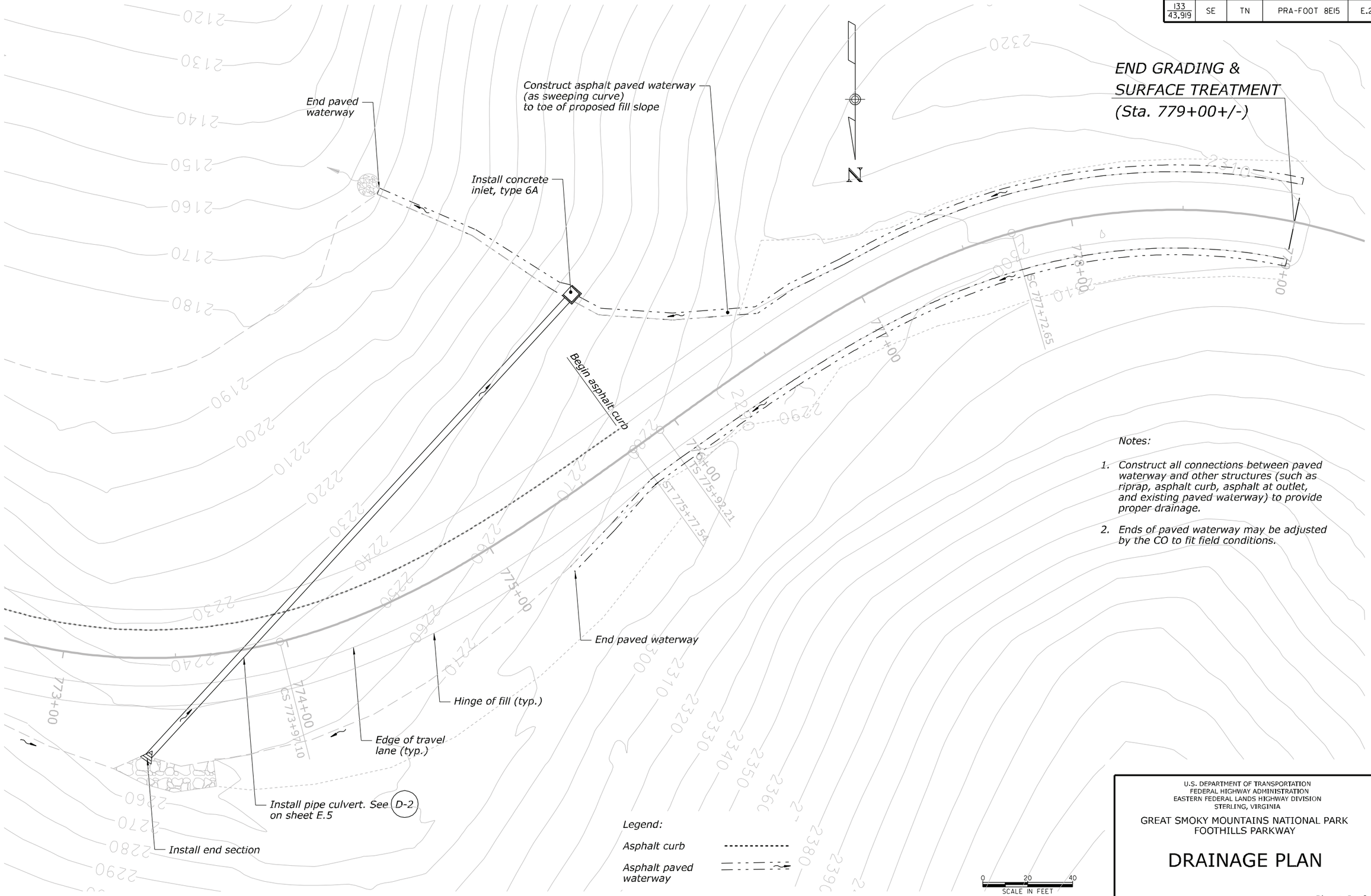
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	E.2



Notes:

1. Construct all connections between paved waterway and other structures (such as riprap, asphalt curb, asphalt at outlet, and existing paved waterway) to provide proper drainage.
2. Ends of paved waterway may be adjusted by the CO to fit field conditions.

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DRAINAGE PLAN

Sheet 2 of 2

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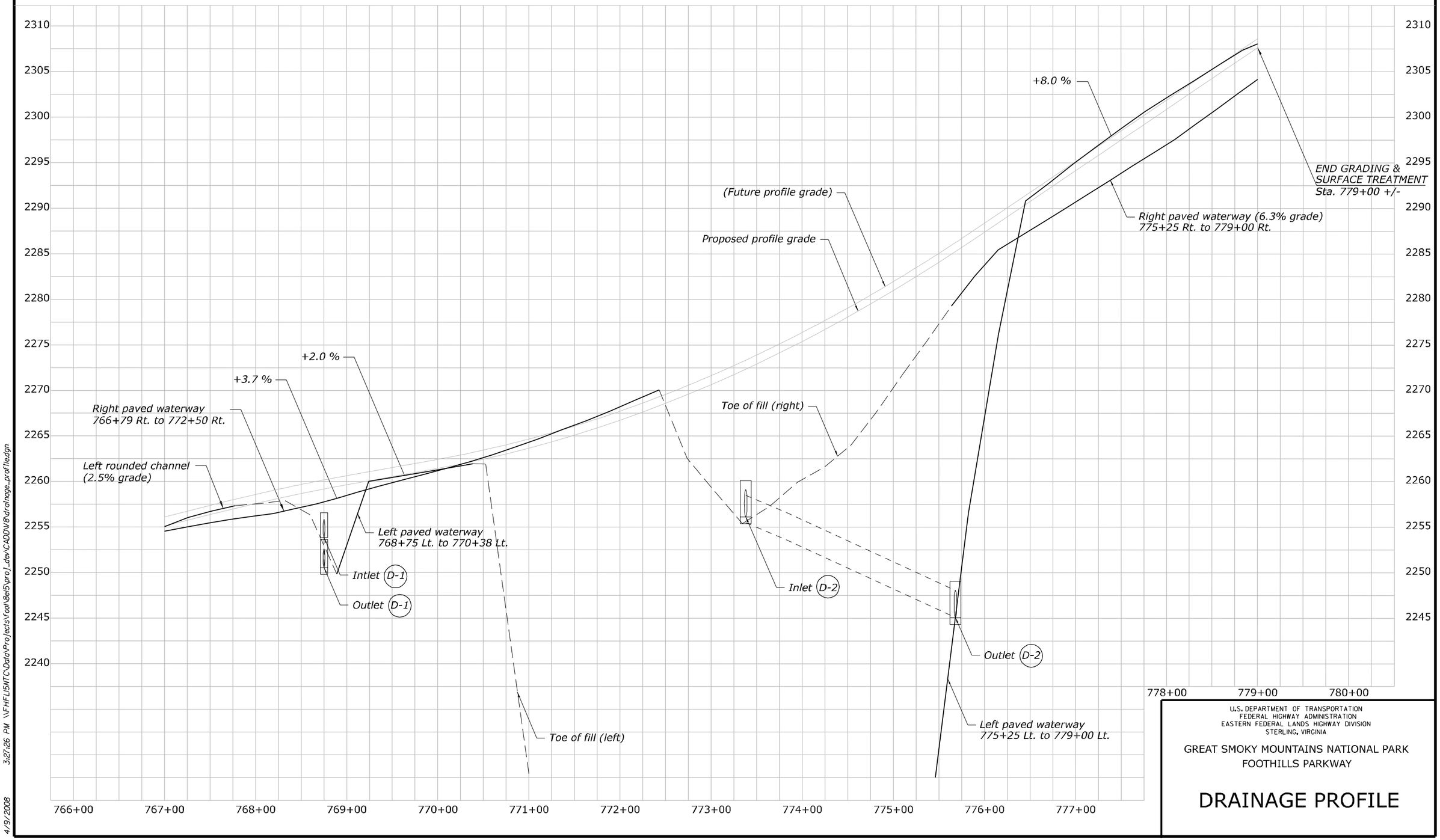
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	E.3



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DRAINAGE PROFILE

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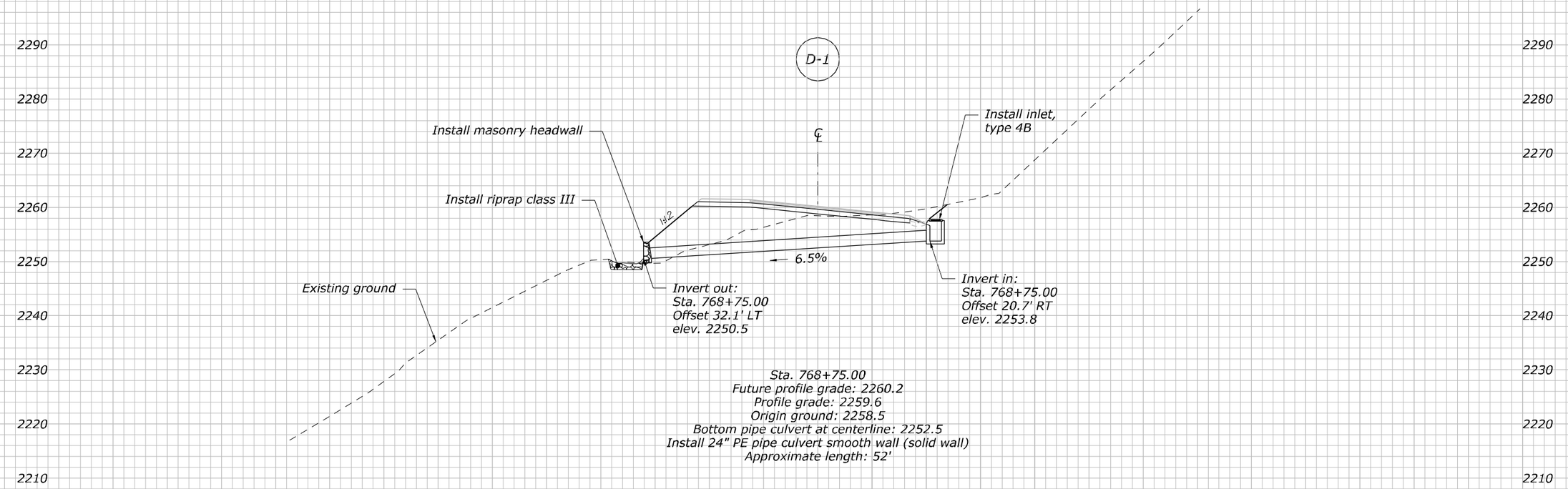
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	E.4



Design data:
Q (50 yrs) = 3.57 cfs
Headwater elev. < 1'

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DRAINAGE CROSS SECTION

Sheet 1 of 2

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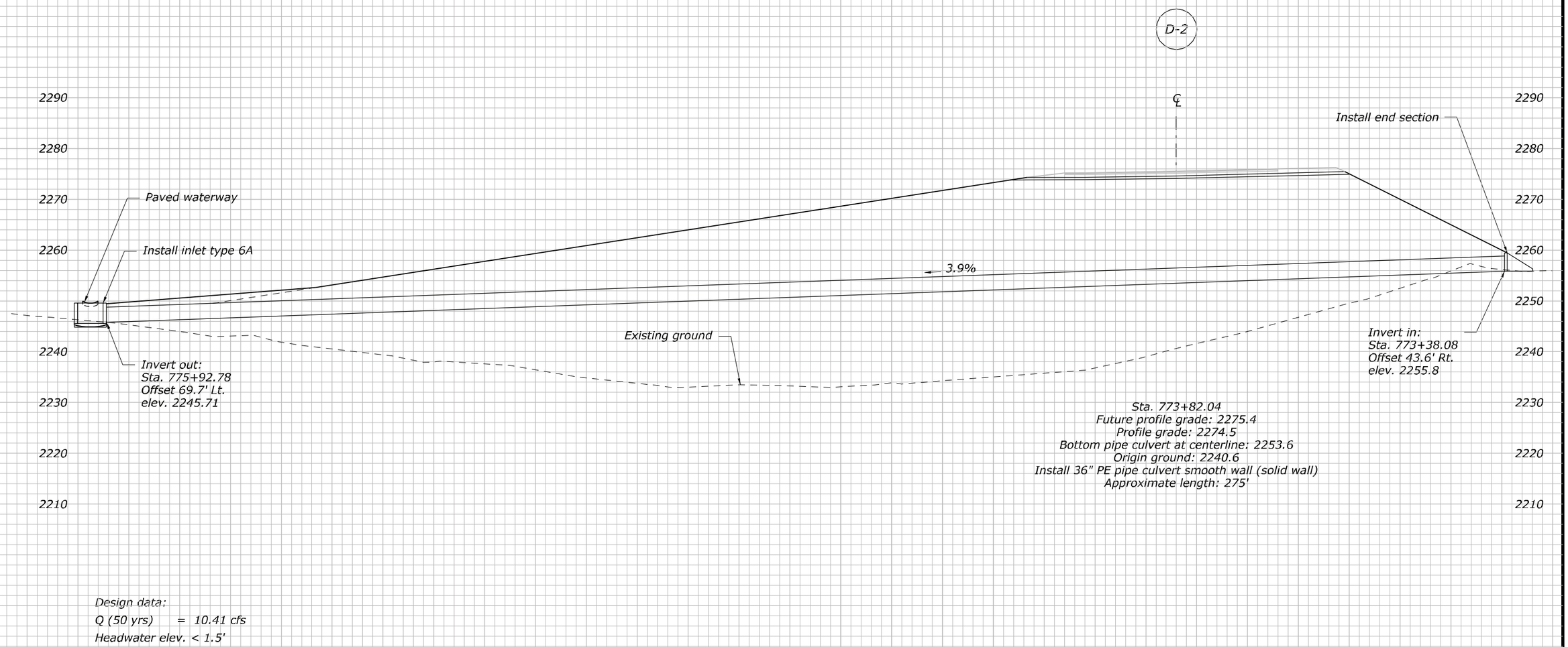
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	E.5



Design data:

Q (50 yrs) = 10.41 cfs

Headwater elev. < 1.5'

NO SCALE

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FOOTHILLS PARKWAY

DRAINAGE CROSS SECTION

Sheet 2 of 2

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NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43.919	SE	TN	PRA-FOOT 8E15	F.1

1. GENERAL GUIDELINES

The Erosion and Sediment Control (ESC) Plans are meant as a guideline for preventing erosion and controlling sediment. The work outlined in this narrative consists of applying measures throughout the life of the project to control erosion and minimize the sedimentation of rivers, streams, and impoundments such as lakes, reservoirs, bays, and coastal waters. The measures consist of stabilization and structural practices, stormwater controls, and other miscellaneous pollution prevention controls. Soil erosion control and turf establishment measures listed and referenced in this narrative are also defined and outlined in the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03, and the Special Contract Requirements.

Coordinate the installation, use, and removal of erosion and sediment control measures with roadway construction activities to assure economical, effective, and continuous erosion and sediment control. Employ temporary stabilization practices in incremental stages as construction proceeds.

Install all erosion and sediment control measures as shown in the ESC Plan or as directed by the Contracting Officer (CO). Do not modify the type, size, or location of any control or practice without approval from the CO.

Preventing initial soil erosion is much more effective than trying to control eroded sediment. Therefore, stabilize all disturbed areas immediately after construction activity has temporarily or permanently ceased.

Control only sediment-laden runoff generated by the project site.

Do not drive construction equipment across flowing waterways.

Do not allow construction vehicles to track sediment offsite of the project limits.

Do not allow any construction equipment to operate or access on the downslope side of perimeter control measures.

In general, preserve existing vegetation, trees, and shrubs when possible, and where specifically shown in the landscaping plans or as directed by the CO.

2. SITE DESCRIPTION

A. NATURE OF ACTIVITY

Roadway: Construct site no. 1 (a portion of the "Missing Link", from Sta. 767+00 to Sta. 779+00) on Foothills Parkway. The work will include grading, aggregate surfacing, drainage and other work.

Bridge over Happy Hollow Road: Repair damaged beams & diaphragms.

B. SEQUENCE OF CONSTRUCTION

Unless otherwise noted, sequence of construction phasing applies to all areas of work.

* PHASE I (ESTABLISH PERIMETER CONTROLS):

A pre-construction meeting is required with the Contractor, the CO, and any pertinent field personnel. This meeting must occur at least one week prior to the start of any site activity.

Prior to any clearing, grubbing, and excavation; construct perimeter controls to ensure that any disturbed sediment does not leave the project site. Perimeter controls include silt fence, brush berms or other approved measures.

* PHASE II (INTERMEDIATE CONTROLS/STABILIZATION):

Obtain CO's approval before installing any controls not specified in the ESC Plan. The CO may direct the installation of certain controls in order to prevent or mitigate potential or existing erosion problems.

Apply temporary turf establishment on uncompleted disturbed areas that will remain exposed for more than 14 calendar days or as directed by the CO.

Immediately apply permanent turf establishment to the finished slopes and ditches according to Sections 624 and 625.

To control erosion during the time periods between seeding seasons, as shown in Section 625, apply temporary mulch in lieu of temporary turf establishment.

At the end of each day's grading operations, shape earthwork to minimize and control erosion from storm runoff.

When directed by the CO, apply temporary mulch to all disturbed slopes at the end of each day's grading operations.

Install temporary inlet protection where shown on the ESC Plan and as directed by the CO. Install temporary inlet protection at any proposed inlet susceptible of receiving sediment-laden water.

Provide silt fence around all stockpiled roadway material. Apply temporary mulch or temporary turf establishment to stockpiles remaining in place longer than 14 days or when directed by the CO.

* PHASE III (FINAL CONTROLS/STABILIZATION):

After completion of roadway construction and landscaping, do the following as directed by the CO:

Maintain temporary erosion control until a uniform 70% vegetative cover of erosion resistant perennial species has been achieved.

Where necessary, replace eroded topsoil and reapply permanent turf establishment to disturbed areas where vegetation has not established.

Remove silt fence and inlet protection only after all upslope areas are stabilized and vegetation is well established.

Remove all perimeter controls, silt fence, stabilized construction entrances, and other erosion and sediment control measures when directed by the CO.

Stabilize all areas that are disturbed due to the removal of sediment control devices.

C. SITE INFORMATION

* NAME OF RECEIVING WATERS:

Runoff from this project will be filtered through the adjacent natural vegetation prior to being collected by surrounding drainage waterways. The main receiving water is Smith Hollow which turns into Brickey Branch then Little River.

* TOTAL AREA OF SITE:
Pre-construction impervious area (acre): 0.00
Post construction impervious area (acre): 0.95

3. LOCATION OF SPECIAL RESOURCES OR PROBLEM AREAS

Prior to any construction activities, install silt fence or other measures as shown on the ESC Plan, and as directed by the CO. Follow the sequence of construction for erosion and sediment control measures outlined in 2.B. above.

4. LIST OF STABILIZATION PRACTICES

A. TEMPORARY

Temporary stabilization practices used on this project include temporary seeding, matting, preservation of existing vegetation, and other approved measures. Apply temporary turf establishment at the application rates in accordance to Section 157 of the SCR.

B. PERMANENT

Permanent stabilization practices used on this project include permanent seeding, mulching, preservation of existing vegetation, matting and other approved measures. Apply permanent turf establishment at the application rates shown in the table or according to Section 625 of the SCR. Anchor mulch with an approved stabilizing emulsion tackifier containing no solvents or other diluting agents toxic to plant or animal life. Apply tackifier at a rate of 150 gal/acre. Refer to Section 713 of the FP-03 Standard Specifications for a list of approved tackifiers.

5. LIST OF STRUCTURAL PRACTICES

Structural practices used on this project include naturally occurring vegetative filter strips, silt fence, culvert inlet/outlet protection measures, and other approved measures.

6. INSPECTION AND MAINTENANCE PROCEDURES FOR CONTROLS

Inspect, maintain, and clean all erosion and sediment control measures according to Section 157. Check erosion and sediment control measures at least weekly, but also within 24 hours after a rain of 0.5-inch or more, and daily during wet weather. Clean erosion and sediment control measures when half full of sediment. Repair measures as necessary. Replace erosion and sediment control measures that cannot be maintained and those that are damaged by construction operations. If visible sedimentation is found off-site, take immediate measures to clean up the site. Maintain written records of inspection and repairs. Provide the CO with copies every month and the entire record at the completion of the project.

7. CHANGES TO THE APPROVED PLAN

Any revisions, major or minor, to the approved ESC Plan must be submitted to the CO for review and approval. Revisions must be in compliance with the Tennessee Erosion & Sediment Control Handbook http://www.state.tn.us/environment/wpc/sed ero controlhandbook/

Revisions to the listed seed mixtures and application rates are subject to the approval of the CO and the National Park Service GRSM-NPS. Refer to Section 625 of the SCR for more information.

LEGEND:

- Check dam
- SF — SF Silt fence
- Brush barrier
- Riprap channel
- Loose riprap at outlet
- Channel stabilization w/ matting (Erosion Control Product, type 5.C)

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EROSION CONTROL NARRATIVE

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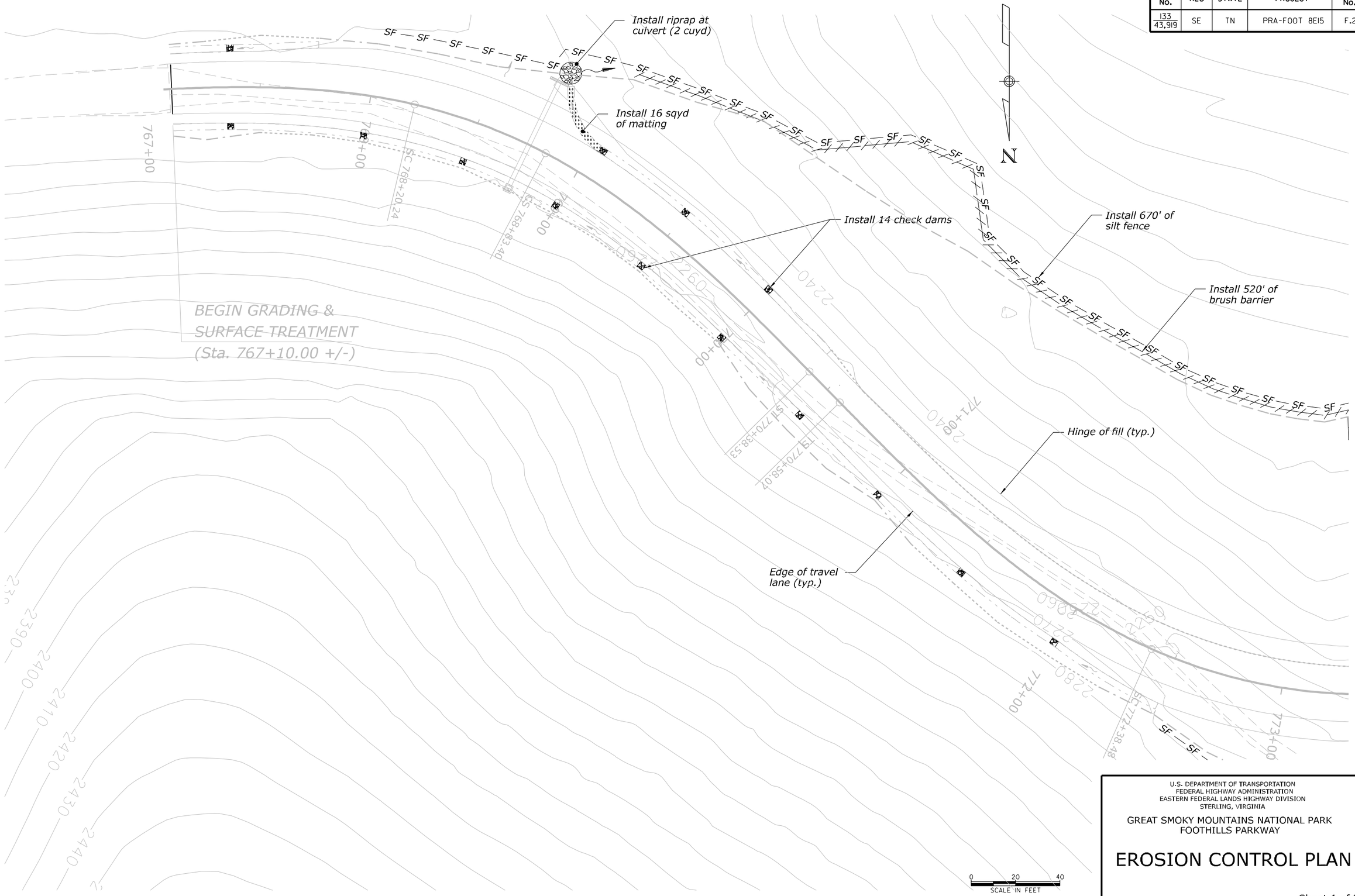
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	F.2



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GREAT SMOKY MOUNTAINS NATIONAL PARK
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EROSION CONTROL PLAN

Sheet 1 of 2

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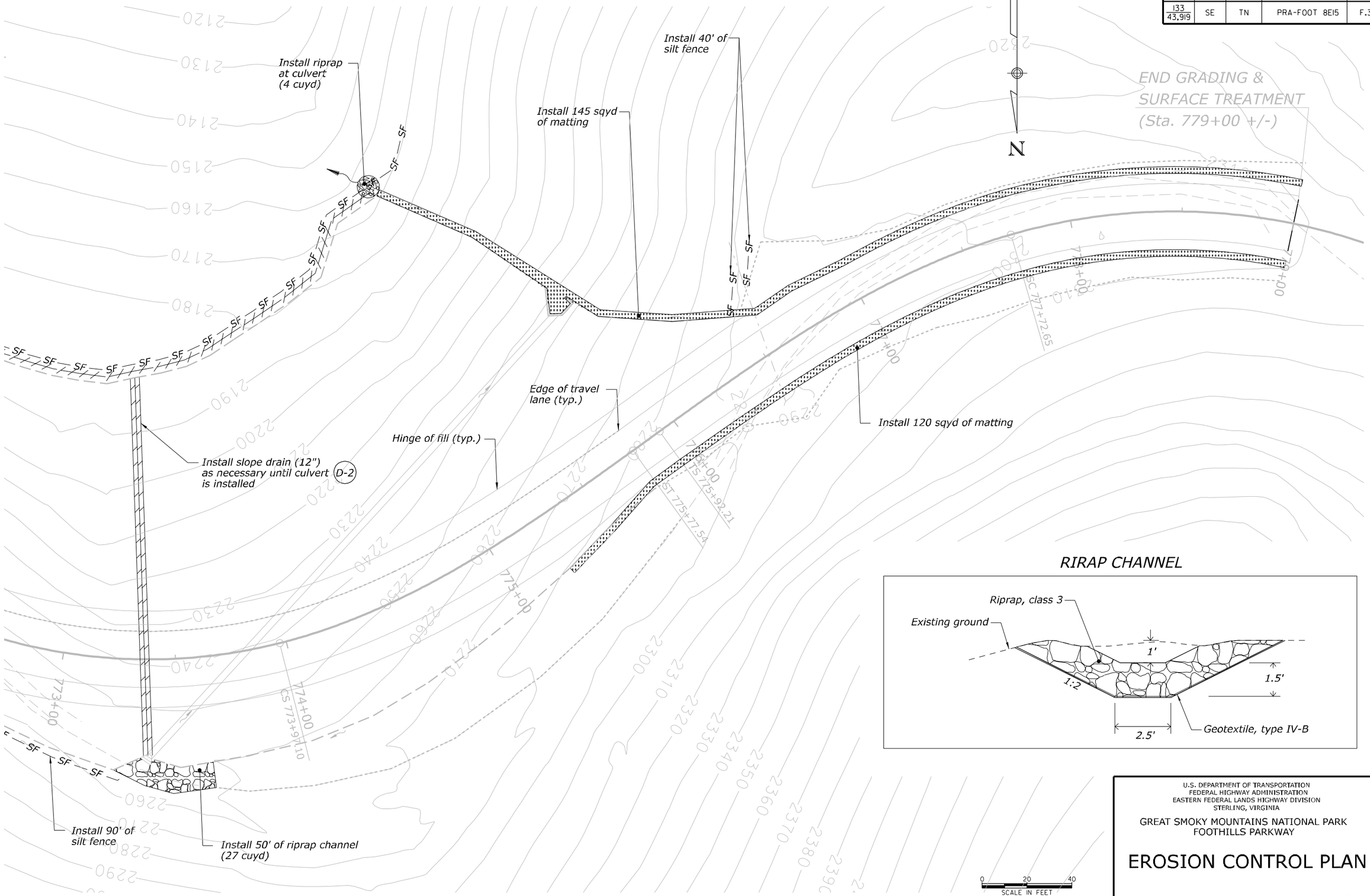
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	F.3



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GREAT SMOKY MOUNTAINS NATIONAL PARK
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EROSION CONTROL PLAN

Sheet 2 of 2

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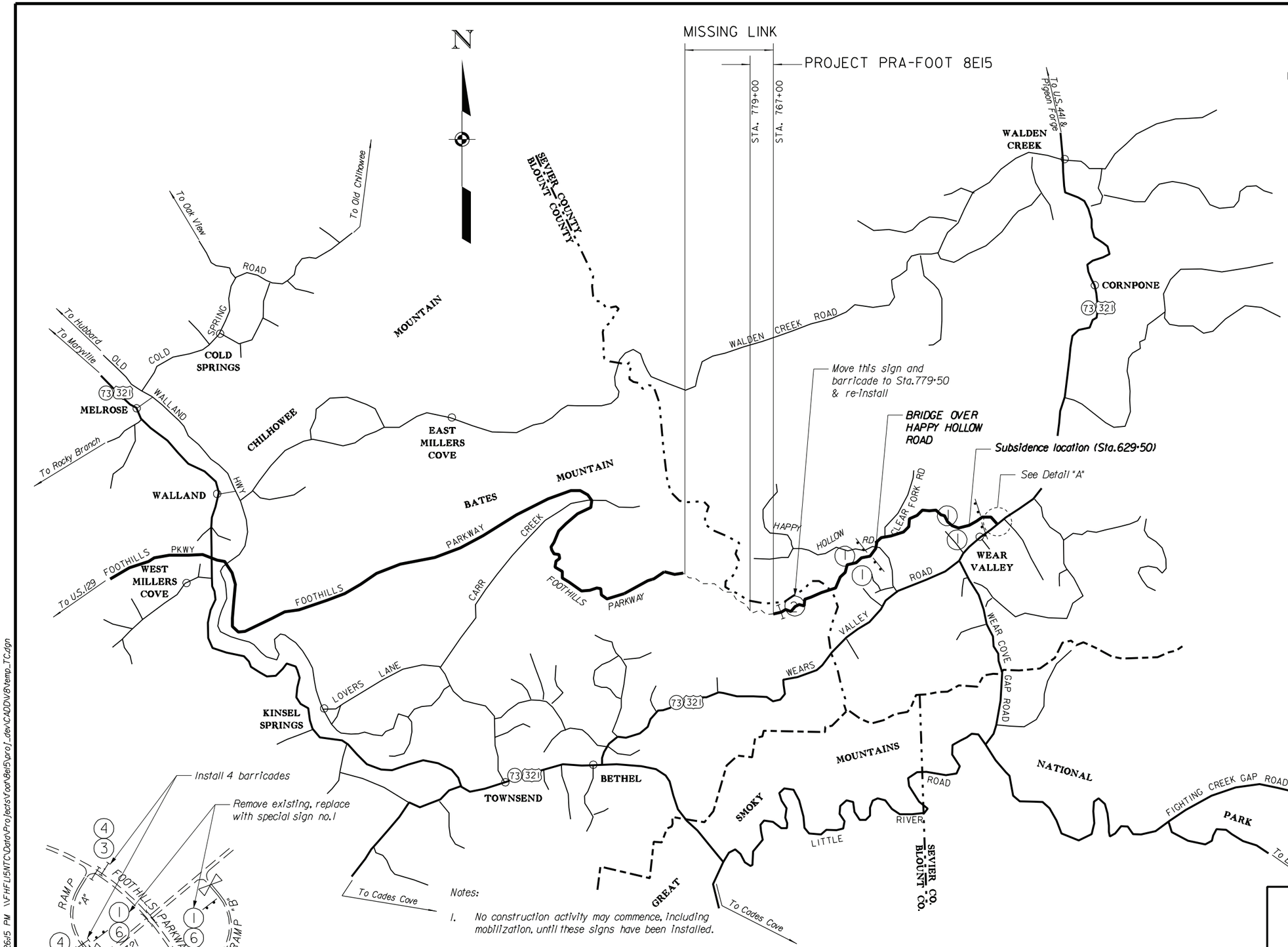
NPS No.	REG	STATE	PROJECT	SHEET No.
133 / 43,919	SE	TN	PRA-FOOT 8E15	G.1



LEGEND:

1. AREA CLOSED DUE TO HAZARDOUS CONSTRUCTION
NO HIKERS, BICYCLISTS, HORSE RIDERS OR OTHER USERS ALLOWED BEYOND THIS POINT
Special sign no.1

2. ACCESS BEYOND THIS POINT STRICTLY PROHIBITED DUE TO HAZARDOUS CONSTRUCTION
(Existing sign to be relocated)

3. EXIT ⇨
Special sign no.3

4. ROAD CLOSED

5. NO UNAUTHORIZED VEHICLES BEYOND THIS POINT
Special sign no.5

6. EFFECTIVE DATE --/--/--
Special sign no.1

Construction sign
Barricade, Type III
Existing gate

Notes:

1. *No construction activity may commence, including mobilization, until these signs have been installed.*
2. *Reinstall existing signs at Wears Valley road following completion of the project.*
3. *Use only the southwest ramp (ramp "A") at the junction of US 321 and Foothills Parkway in Wears Valley to access the Foothills Parkway.*

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GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

TRAFFIC CONTROL PLAN

FOR HIKERS, CYCLISTS, HORSE RIDERS, AND OTHER USERS

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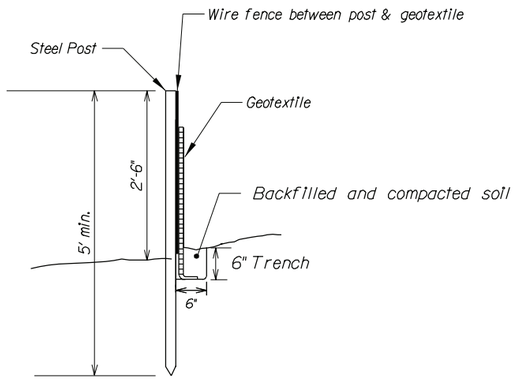
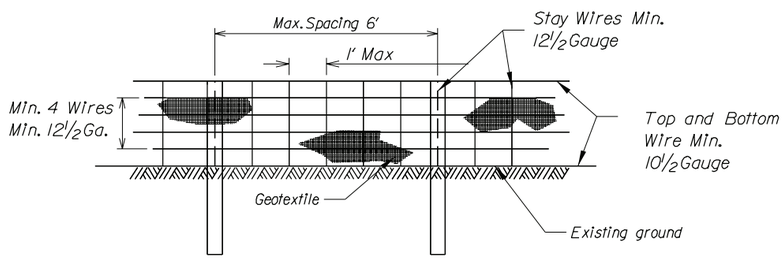
REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.1

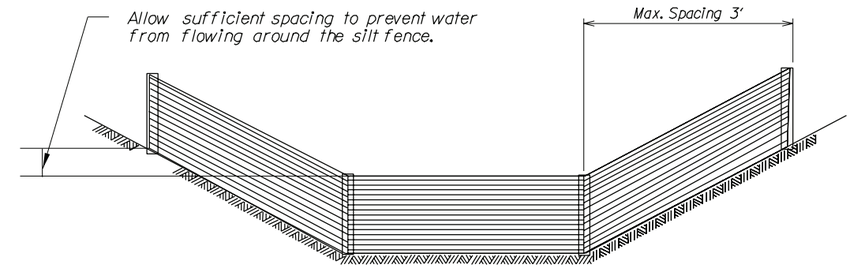




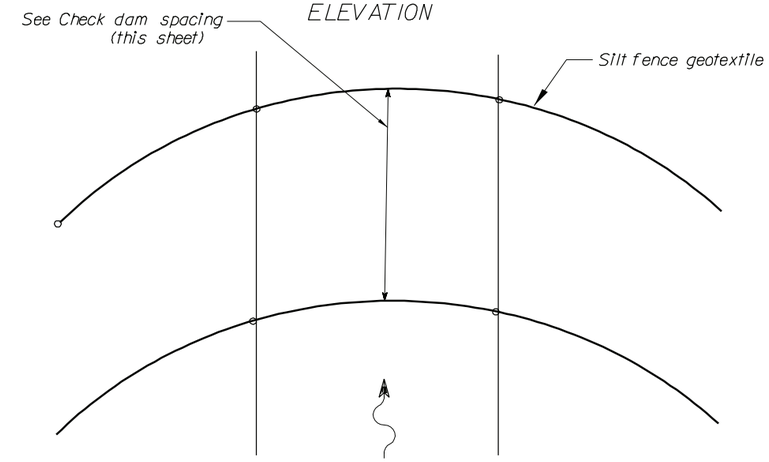
SILT FENCE ELEVATION

DITCH GRADE (G) *	CHECK DAM SPACING(S)
2%	75'
3%	50'
4%	40'
5%	30'
6%	25'

* Do not use Check Dams below 2% or above 6% ditch grades

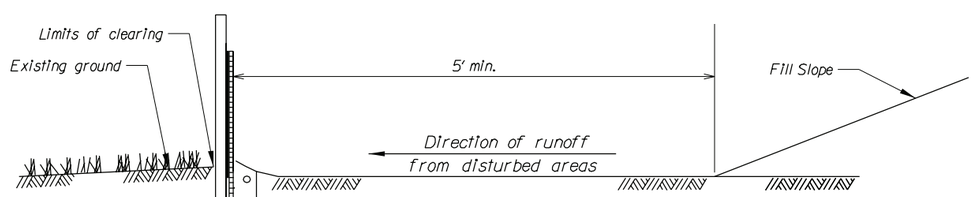


ELEVATION

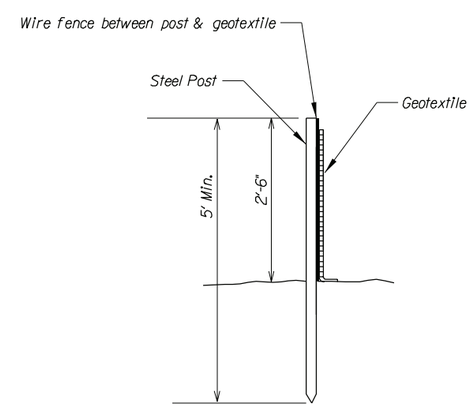


PLAN

SILT FENCE INSTALLATION IN A DRAINAGE DITCH



SILT FENCE INSTALLATION AT TOE OF FILL



SILT FENCE INSTALLATION FOR TREE PROTECTION

Notes:

1. Furnish steel posts, minimum length of 5 feet. Geotextile shall be a minimum width of 3 feet.

NO SCALE

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

U.S. CUSTOMARY DETAIL

WIRE-BACKED SILT FENCE

DETAIL APPROVED FOR USE

REVISED: 06/99 04/07

DETAIL E157-02A

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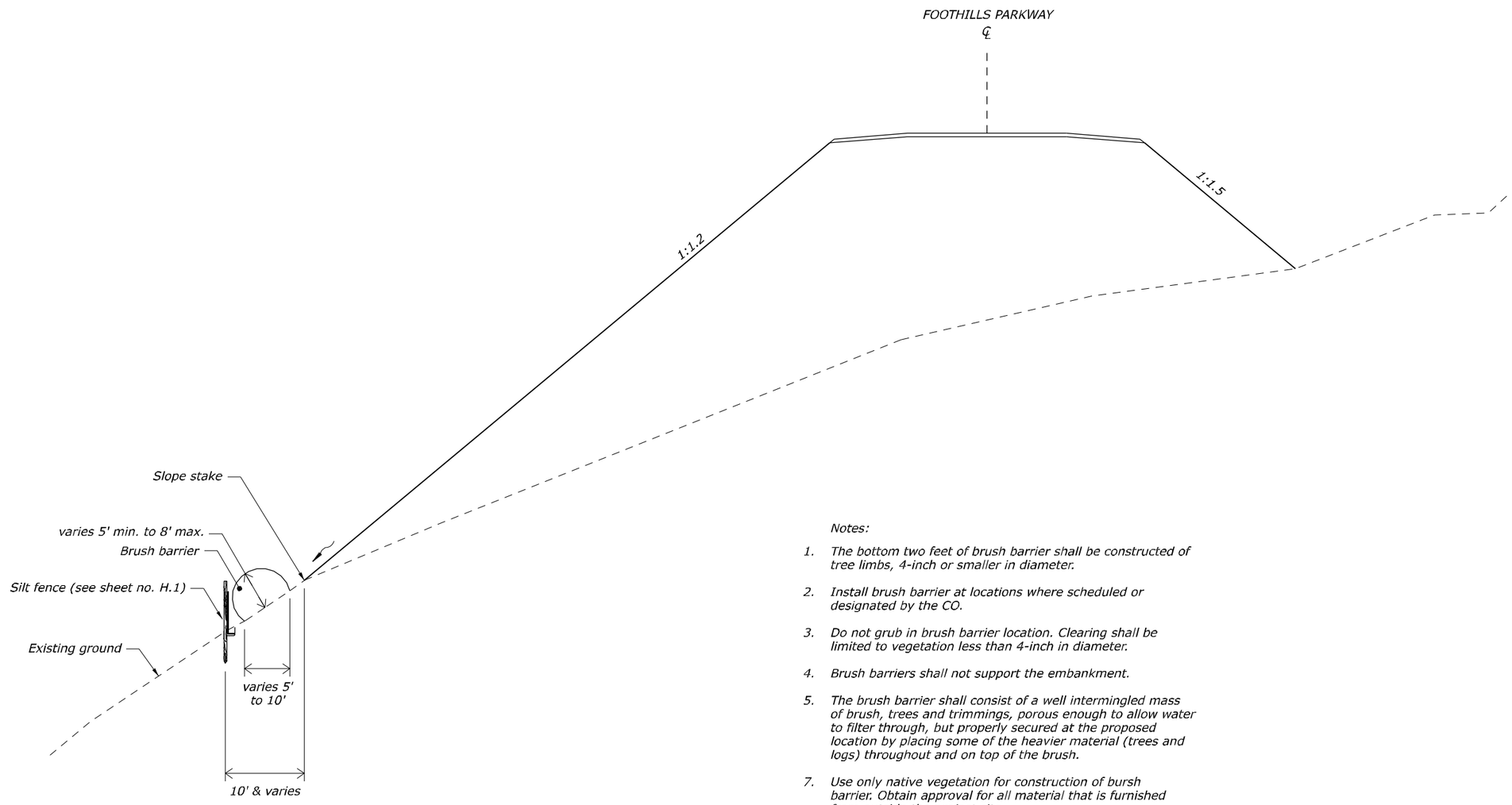
REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.2



Notes:

1. The bottom two feet of brush barrier shall be constructed of tree limbs, 4-inch or smaller in diameter.
2. Install brush barrier at locations where scheduled or designated by the CO.
3. Do not grub in brush barrier location. Clearing shall be limited to vegetation less than 4-inch in diameter.
4. Brush barriers shall not support the embankment.
5. The brush barrier shall consist of a well intermingled mass of brush, trees and trimmings, porous enough to allow water to filter through, but properly secured at the proposed location by placing some of the heavier material (trees and logs) throughout and on top of the brush.
7. Use only native vegetation for construction of bursh barrier. Obtain approval for all material that is furnished from outside the project site.
8. Brush, trees and trimmings shall be cut of lengths not to exceed 10 feet.
9. Inspect brush barriers for damage weekly and after significant rainfalls. Repair any damage immediately.
10. Remove sediment and dispose properly when accumulations reach half the height of the brush barrier.

NO SCALE

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

U.S. CUSTOMARY DETAIL

BRUSH BARRIER

DETAIL APPROVED FOR USE

REVISED:

DETAIL
E157-A

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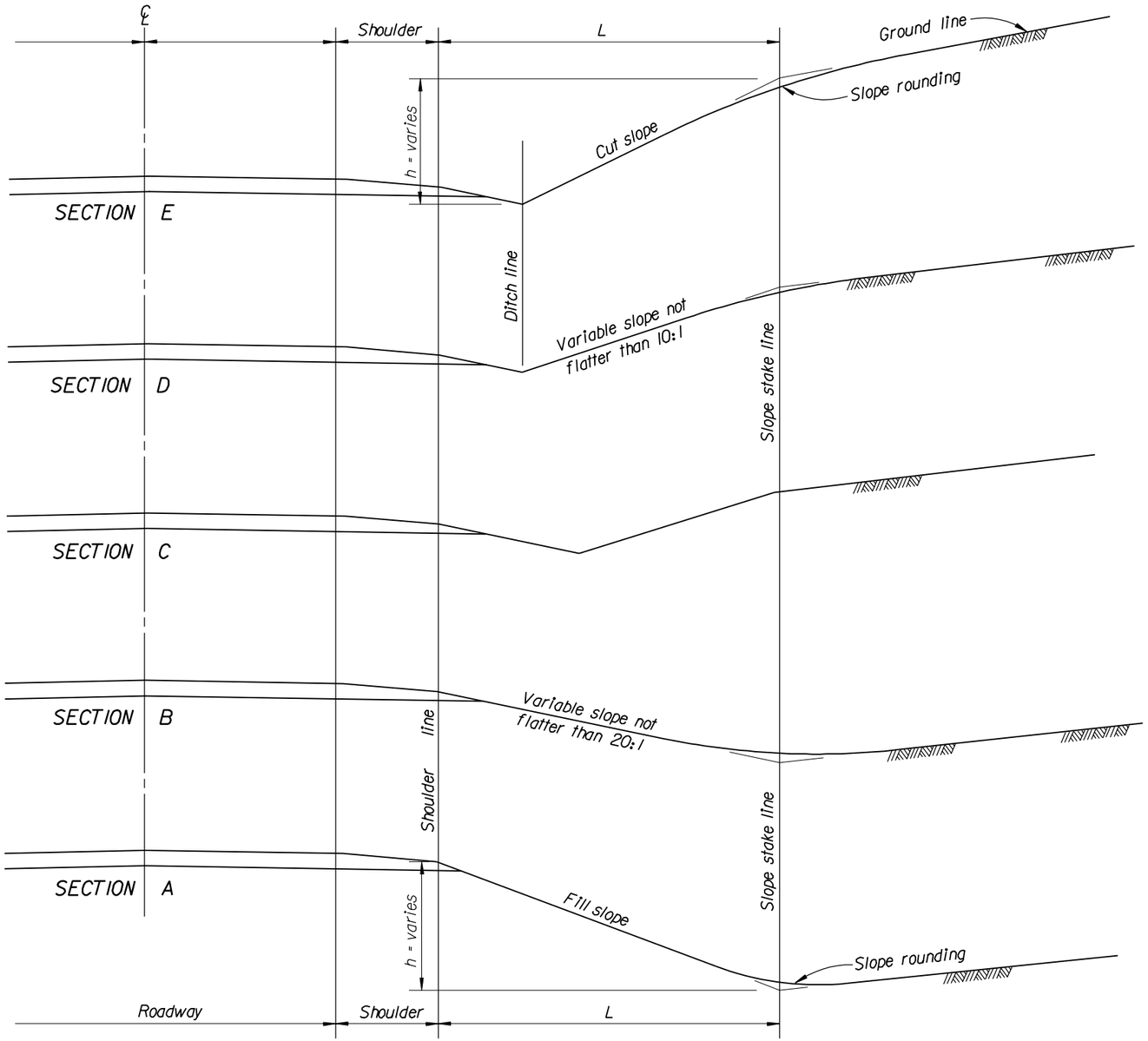
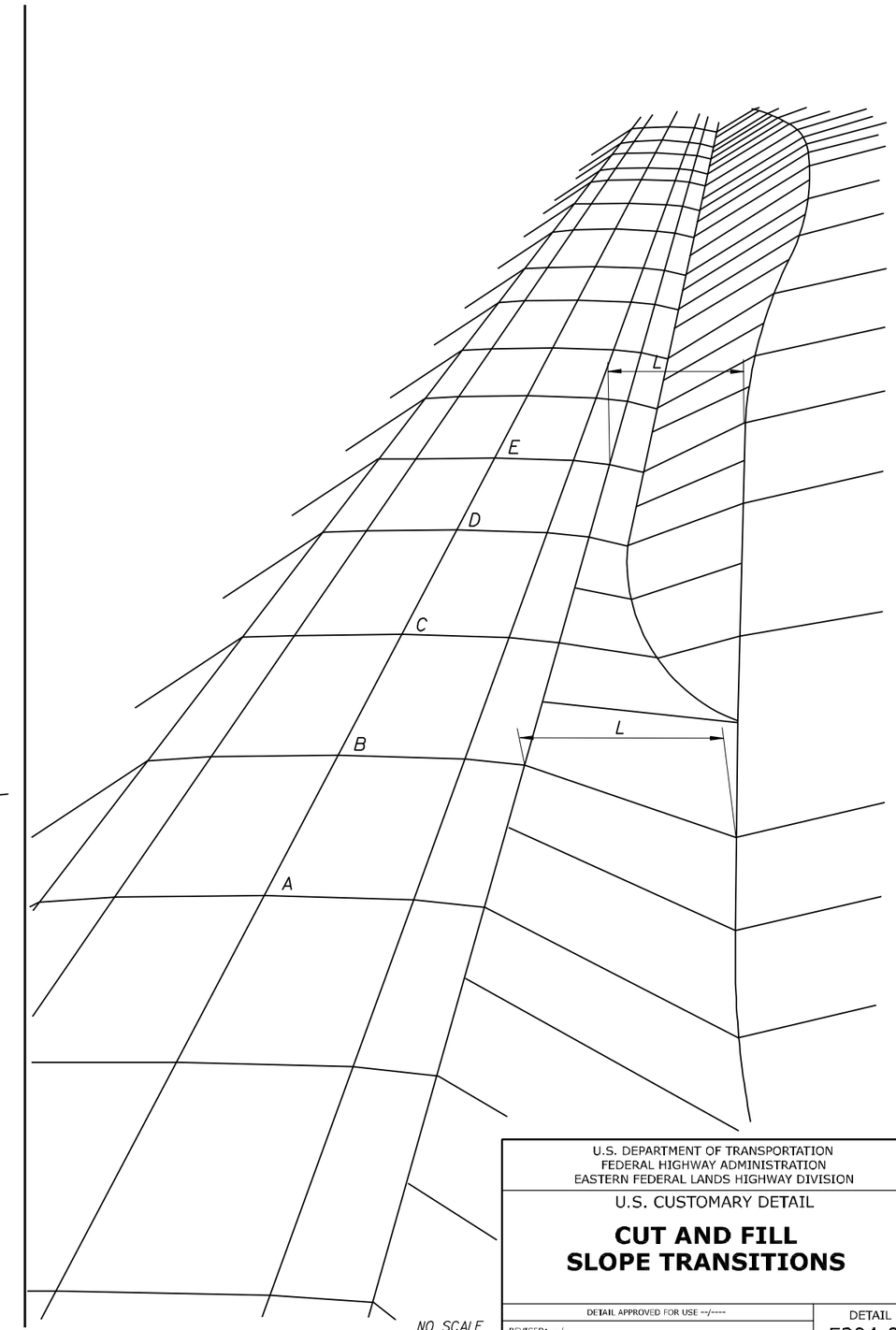
REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.3



Note :

Distance L is to be maintained as the distance to slope stakes to establish the blend of cut and fill slopes into the original ground.



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

U.S. CUSTOMARY DETAIL

CUT AND FILL SLOPE TRANSITIONS

DETAIL APPROVED FOR USE --/----

REVISED: --/--

DETAIL
E204-01

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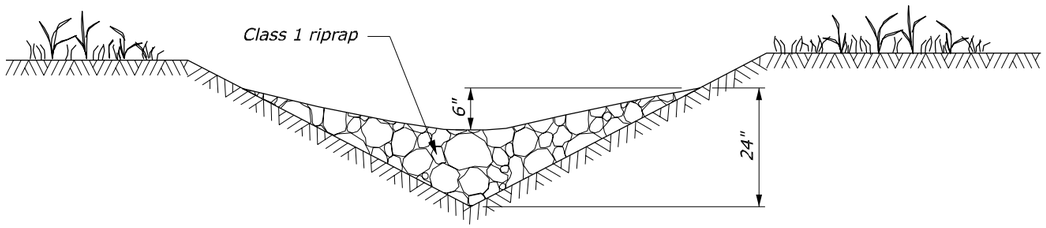
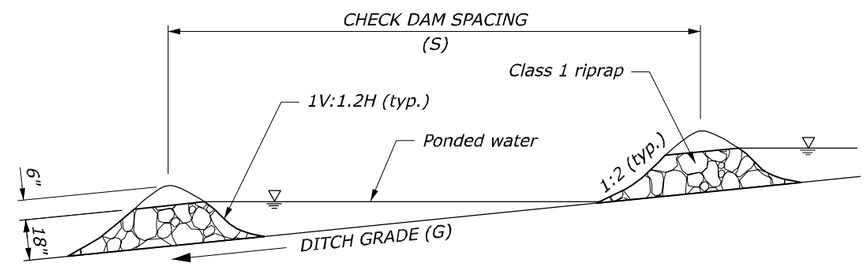
REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.4



CROSS SECTION

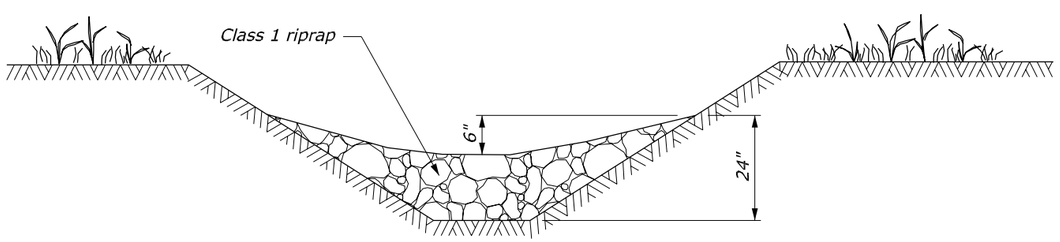
V DITCH



PROFILE VIEW

DITCH

Note:
1. Choke riprap with #57 stone.



CROSS SECTION

TRAPEZOIDAL DITCH

DITCH GRADE * (G)	CHECK DAM SPACING S (ft)
2%	75
3%	50
4%	40
5%	30
6%	25

* Do not use Check Dams below 2% or above 6% ditch grades

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY STANDARD

CHECK DAM

STANDARD APPROVED FOR USE 6/2005
REVISED: 6/2007

STANDARD
157-6

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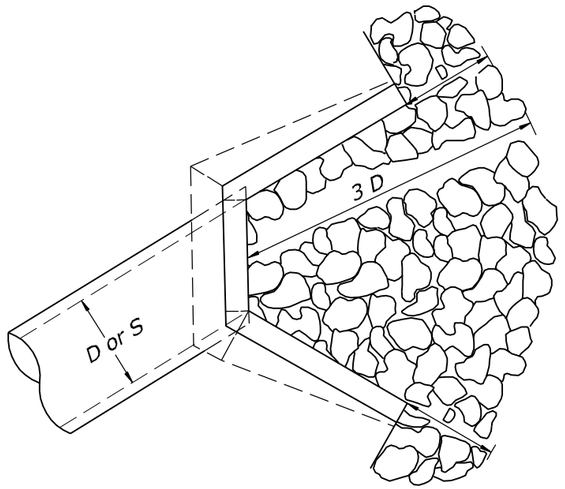
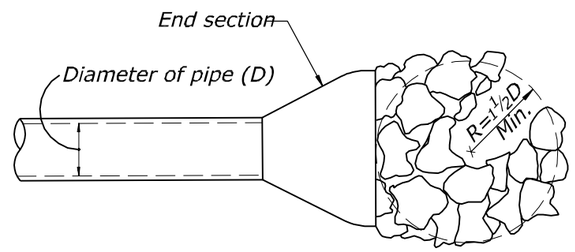
REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.5

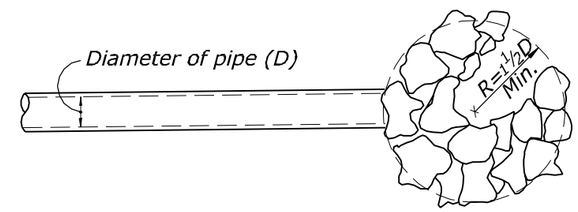
DEPTH (d)	
Riprap Class	Depth (d)-(in)
1	12
2	18
3	24
4	30
5	42
6	48



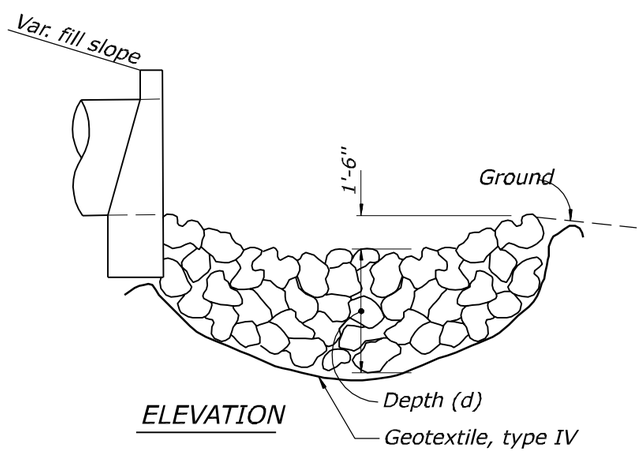
PLAN



PLAN

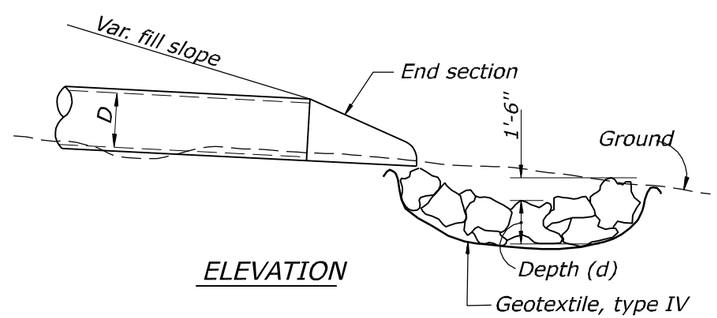


PLAN



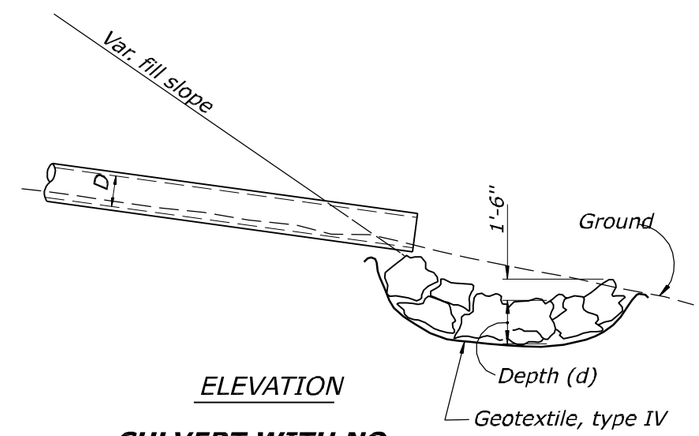
ELEVATION

CULVERT WITH HEADWALL



ELEVATION

CULVERT WITH END SECTION



ELEVATION

CULVERT WITH NO END TREATMENT

NOTE:
For arch or elliptical pipes, use equivalent diameter for (D) dimension

NO SCALE

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

U.S. CUSTOMARY DETAIL

LOOSE RIPRAP AT CULVERT

DETAIL APPROVED FOR USE

REVISED: 05/07

DETAIL
E251-01

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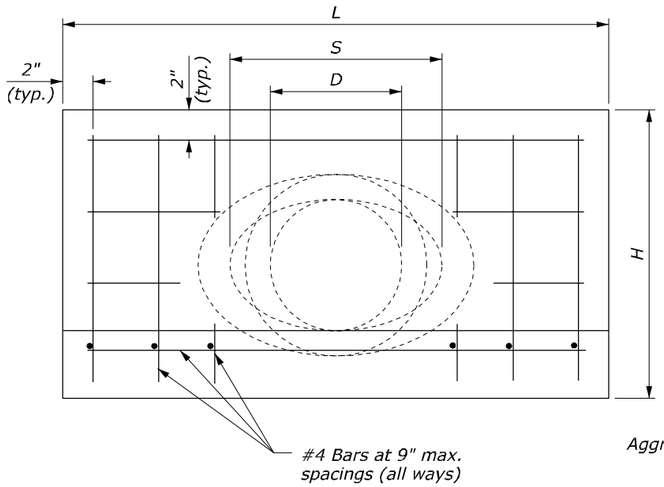
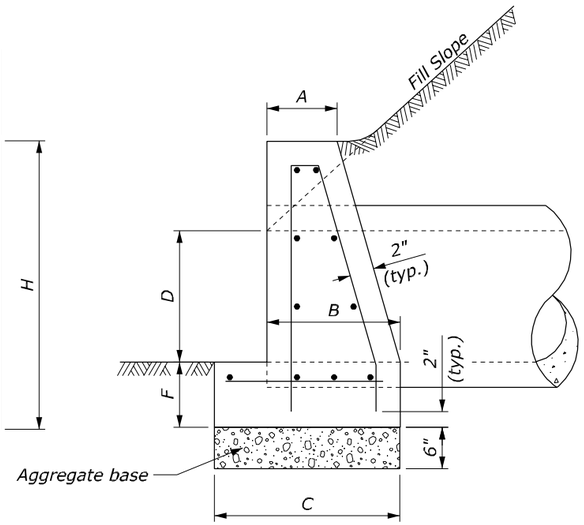
REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.6

NOTE:

1. All headwalls are oriented parallel to the roadway centerline unless otherwise indicated in the plans or by the CO.
2. When pipes are on a skew, adapt and lengthen headwalls as directed.
3. Chamfer all exposed corners not rounded to ¾".
4. Quantities shown are for one headwall with pipe at right angles.
5. Construct headwalls using dimensions shown under values for 1V:1.5H slope, unless otherwise designated by the CO.



FRONT ELEVATION



SIDE ELEVATION

HEADWALL FOR CIRCULAR PIPE

	DIAMETER OF PIPE CULVERT					
	6"	15"	18"	21" or 24"	27" or 30"	33" or 36"
A	0'-6"	0'-8"	0'-9"	0'-11"	1'-0"	1'-0"
B	0'-9"	1'-1"	1'-3"	1'-6"	1'-9"	2'-0"
C	1'-2"	1'-7"	1'-9"	2'-2"	2'-6"	2'-9"
D	1'-0"	1'-3"	1'-6"	2'-0"	2'-6"	3'-0"
F	0'-6"	0'-8"	0'-8"	0'-9"	0'-9"	0'-9"
H	2'-0"	2'-11"	3'-2"	3'-9"	4'-3"	4'-9"
L	3'-8"	5'-0"	6'-0"	8'-0"	10'-0"	12'-0"
CUBIC YARDS OF CONCRETE						
Conc. Pipe	0.241	0.492	0.697	1.319	2.067	2.947
C.M. Pipe	0.257	0.521	0.739	1.398	2.198	3.145

HEADWALL FOR ELLIPTICAL PIPE

	SIZE OF ELLIPTICAL PIPE CULVERT (SPAN x RISE)									
	23" x 14"	30" x 19"	34" x 22"	38" x 24"	42" x 27"	45" x 29"	49" x 32"	53" x 34"	60" x 38"	68" x 43"
A	0'-8"	0'-9"	0'-10"	0'-10"	0'-11"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
B	1'-2"	1'-5"	1'-6"	1'-8"	1'-9"	1'-10"	1'-11"	1'-11"	1'-11"	2'-0"
C	1'-8"	1'-11"	2'-1"	2'-4"	2'-5"	2'-7"	2'-8"	2'-9"	3'-3"	3'-6"
D	1'-2"	1'-7"	1'-10"	2'-0"	2'-3"	2'-5"	2'-8"	2'-10"	3'-2"	3'-7"
F	0'-8"	0'-8"	0'-9"	0'-9"	0'-9"	0'-9"	0'-9"	0'-9"	0'-9"	0'-9"
H	2'-10"	3'-3"	3'-7"	3'-9"	4'-0"	4'-2"	4'-5"	4'-7"	4'-11"	5'-4"
L	5'-5"	7'-2"	8'-6"	9'-2"	10'-2"	10'-11"	12'-1"	12'-11"	13'-0"	13'-0"
S	1'-11"	2'-6"	2'-10"	3'-2"	3'-6"	3'-9"	4'-1"	4'-5"	5'-0"	5'-8"
CUBIC YARDS OF CONCRETE										
Conc. Pipe	0.502	0.855	1.236	1.500	1.811	2.101	2.512	2.801	2.969	2.904

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY STANDARD

CONCRETE HEADWALL FOR SMALL PIPE CULVERT

STANDARD APPROVED FOR USE 6/2005

REVISED:

STANDARD 601-4

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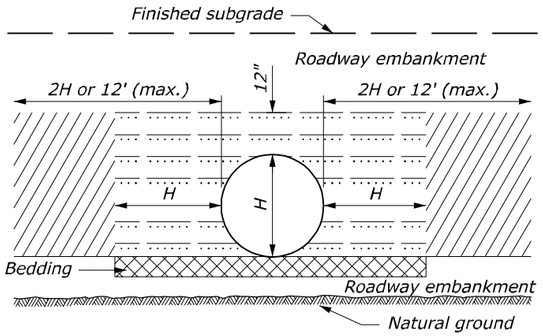
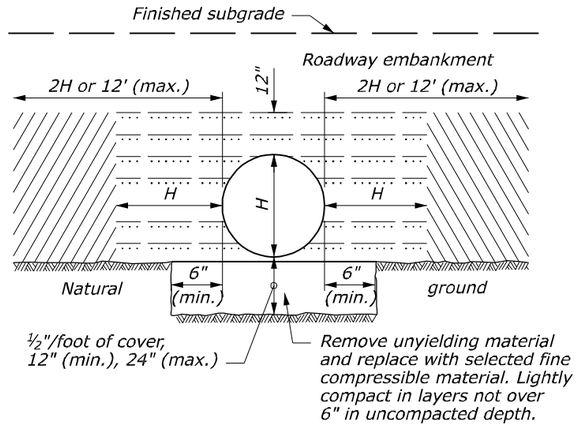
REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.7

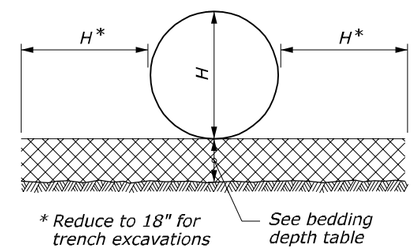


ABOVE NATURAL GROUND



ON UNYIELDING MATERIAL

BEDDING DEPTH	
PIPE SIZE (H)	DEPTH
12" to 54"	4"
> 54"	6"

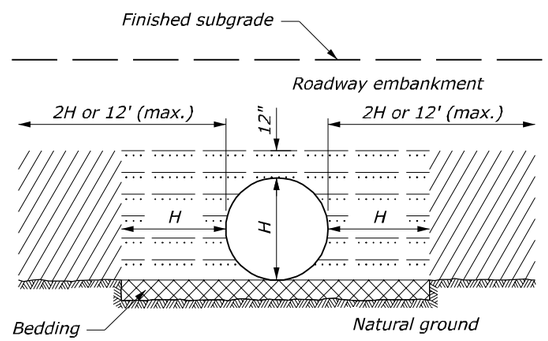


PIPE BEDDING

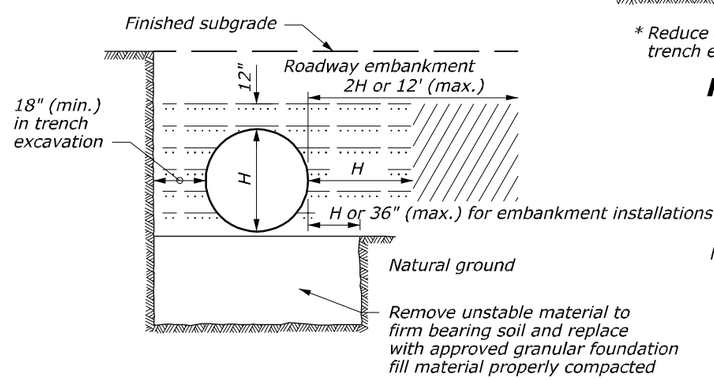
NOTE:

1. When directed, camber pipe culverts upward from a chord through the inlet and outlet inverts an ordinate amount equal to 1% of the pipe length. Develop camber on a parabolic curve. If the midpoint elevation on the parabolic curve as designed exceeds the elevation of the inlet invert, reduce the amount of camber or increase the pipe culvert gradient.

2. H equals the diameter of all round pipe culverts or the rise dimension of all pipe arch culverts.

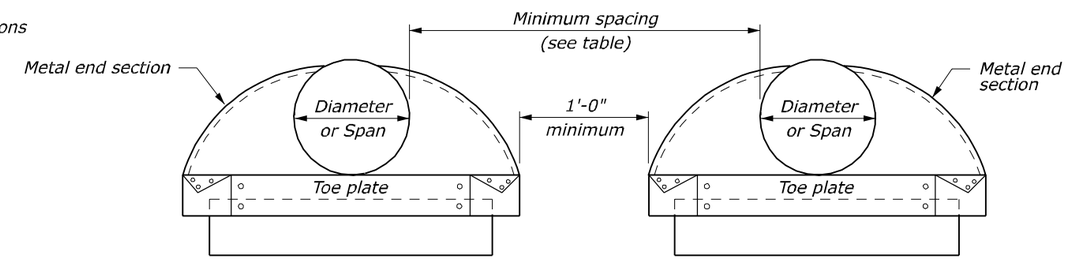


ON NATURAL GROUND



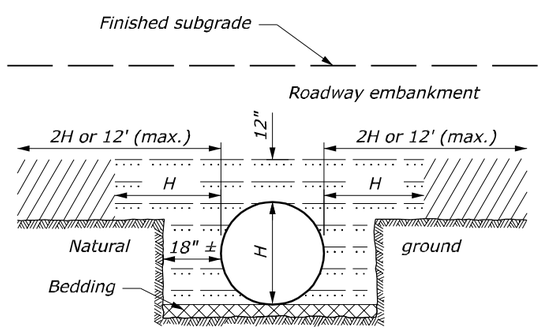
ON UNSTABLE MATERIAL

MINIMUM SPACING	
DIAMETER or SPAN	SPACING
UP to 48"	24"
48" and UP	Half diameter or span OR 36" whichever is less

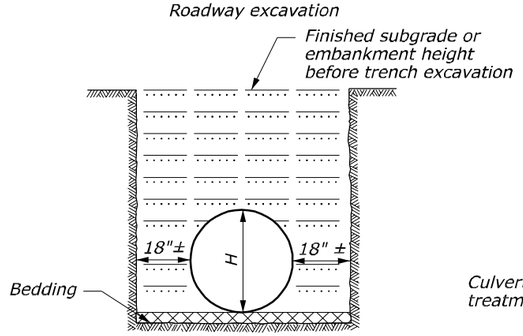


ELEVATION

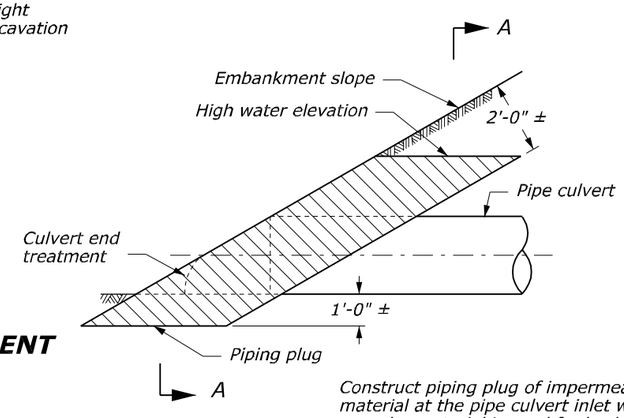
MULTIPLE PIPE INSTALLATION



ABOVE AND BELOW NATURAL GROUND



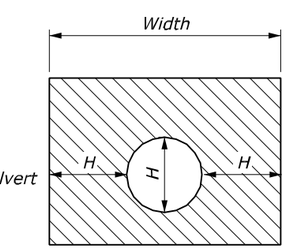
BELOW NATURAL GROUND OR TRENCH EXCAVATION IN EMBANKMENT



Construct piping plug of impermeable backfill material at the pipe culvert inlet where granular material is used for backfill. Width may be adjusted to tie into impervious material.

PIPING PLUG

NO SCALE



SECTION A-A

Bedding material (uncompacted)

Embankment material placed in layers not exceeding 6" compacted depth.

Compacted backfill material placed in layers not exceeding 6" compacted depth meeting the following:
Metal Pipe: Maximum particle size = 3"
Soil classification: A-1, A-2, or A-3
Plastic Pipe: Maximum particle size: 1½"
Soil classification: A-1, A-2-4, A-2-5, or A-3
Or lean concrete backfill in accordance with Section 614.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY STANDARD

METAL AND PLASTIC PIPE CULVERT BEDDING

STANDARD APPROVED FOR USE 12/1993
REVISED: 4/1994 6/2005

STANDARD 602-3

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REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.8

POLYETHYLENE (PE) PLASTIC ROUND PIPE CULVERT

FILL HEIGHT TABLE AND MINIMUM CELL CLASSIFICATION NUMBER PER ASTM D 3350

SMOOTH WALL (SOLID WALL)

PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	CELL CLASSIFICATION NUMBER 335434C — MINIMUM WALL THICKNESS (INCHES) 0.607	0.857	0.923	1.154	1.385	1.292	1.477
		MAXIMUM FILL HEIGHT (FEET)						
12	12	57						
18	12		52					
24	12			38				
30	12				38			
36	12					38		
42	12						27	
48	12							27

CORRUGATED

PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	CELL CLASS. NO. 315412C	CELL CLASS. NO. 324420C
		MAXIMUM FILL HEIGHT (FEET)	
12	12	11	10
15	12	11	10
18	12	12	10
24	12	12	10
30	12	12	10
36	12	11	10

RIBBED

PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	CELL CLASS. NO. 334433C	CELL CLASS. NO. 335434C
		MAXIMUM FILL HEIGHT (FEET)	
18	12	18	24
24	12	22	28
30	12	22	28
36	12	25	31
42	12	21	27
48	12	21	26

NOTE:

1. When directed, camber pipe culverts upward from a chord through the inlet and outlet inverts an ordinate amount equal to 1% of the pipe length. Develop camber on a parabolic curve. If the midpoint elevation on the parabolic curve as designed exceeds the elevation of the inlet invert, reduce the amount of camber or increase the pipe culvert gradient.
2. Measure minimum cover from the top of the pipe culvert to the subgrade for flexible pavements, and to the top of the pavement for rigid pavements. Measure maximum fill height from the top of the pipe to the top of the pavement for both flexible and rigid pavement.

POLYVINYL CHLORIDE (PVC) PLASTIC ROUND PIPE CULVERT

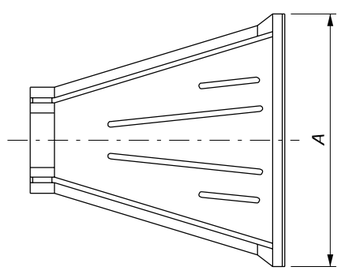
FILL HEIGHT TABLE AND MINIMUM CELL CLASSIFICATION NUMBER PER ASTM D 1784

SMOOTH WALL (SOLID WALL)

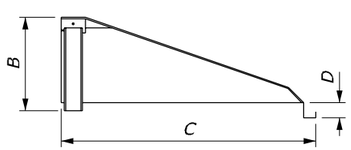
PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	CELL CLASS. NO. 12454 — MINIMUM WALL THICKNESS (INCHES) 0.358	0.438	CELL CLASS. NO. 12364 — 0.358	0.438
		MAXIMUM FILL HEIGHT (FEET)			
12	12	65		69	
15	12		62		66

RIBBED

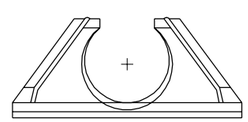
PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	CELL CLASS. NO. 12454C	CELL CLASS. NO. 12364C
		MAXIMUM FILL HEIGHT (FEET)	
12	12	37	26
15	12	32	22
18	12	33	23
24	12	29	21
30	12	28	20
36	12	27	19
42	12	26	18
48	12	24	17



TOP



SIDE



FRONT

END SECTION DIMENSIONS

PIPE SIZE DIAMETER INCHES	DIMENSIONS INCHES A	B	C	D
12	42	14.5	33	6
15	46	24.5	45.5	6
18	54	29	55	6
24	64	37	65	6
30	88	36	63.5	6
36	88	43	66.5	6

PLASTIC PIPE END SECTION

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY STANDARD

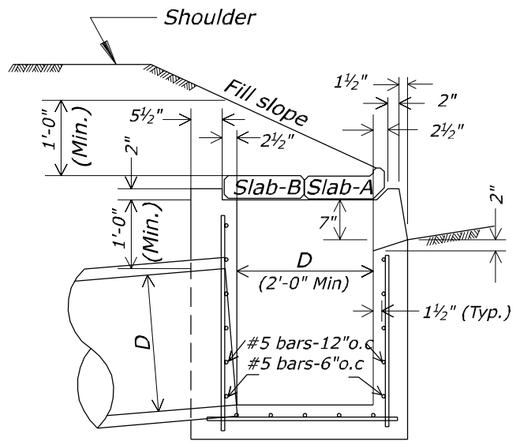
PLASTIC PIPE CULVERT

STANDARD APPROVED FOR USE 12/1993
REVISED: 4/1994 6/2005

STANDARD 602-5

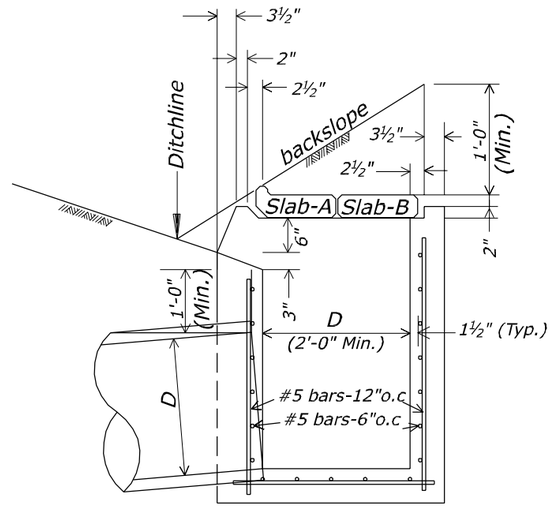
4/10/2008 7:19:42 AM \\FHFL15NTC\Data\Projects\root\8e15\proj_dev\CADD\Std-Det\st60205.dgn

REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.9



Shape to drain

TYPE - 4A

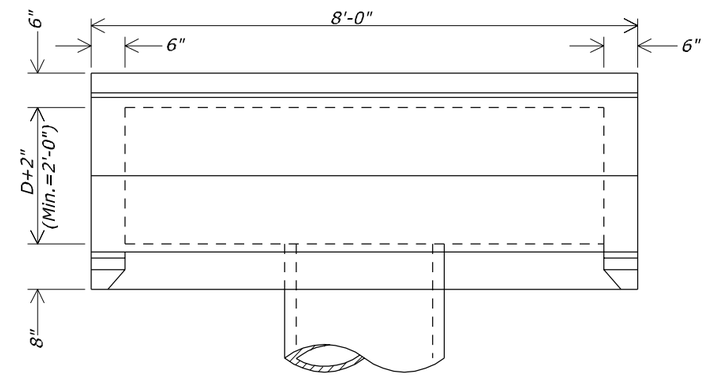


Shape to drain

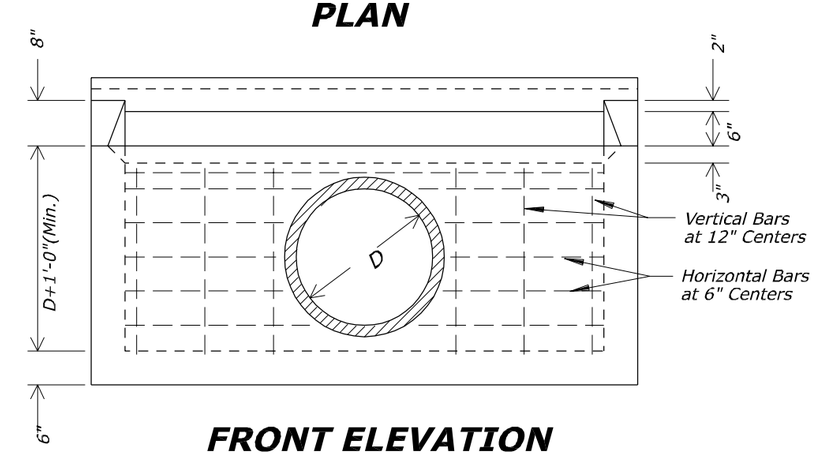
TYPE - 4B

Notes:

1. At the option of the Contractor, walls less than 4 feet deep may be of concrete or concrete block.
2. Inlets to be parallel to roadway centerline and grade. For pipes on skew, adjust inlets as directed.
3. Ditch or paved waterways to be warped and widened near inlets as directed by the CO, to facilitate drainage and to protect slopes at ends of inlets.
4. For payment purposes, one slab A plus one slab B or two slabs B constitute one concrete cover.

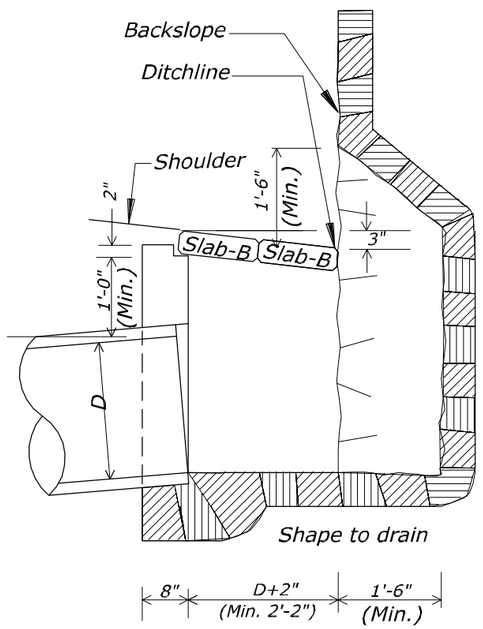


PLAN



FRONT ELEVATION

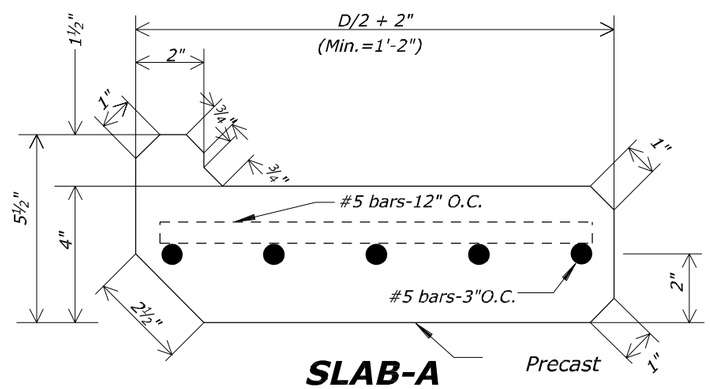
(Type 4B, shown, other types comparable)



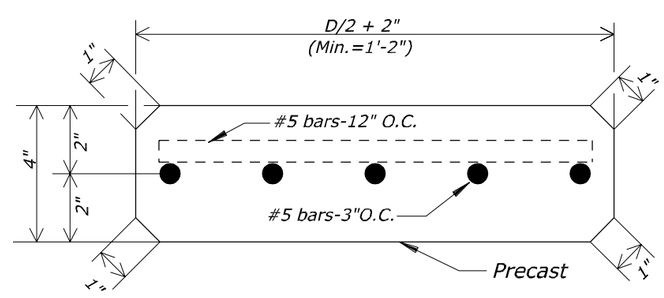
Shape to drain

TYPE - 4C

Note:
In rock without backwall or floor.
Reinforce same as Type 4A



SLAB-A



SLAB-B

Length of slabs 8'-0"

NO SCALE

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

U.S. CUSTOMARY DETAIL

INLET, TYPE 4A, 4B, and 4C

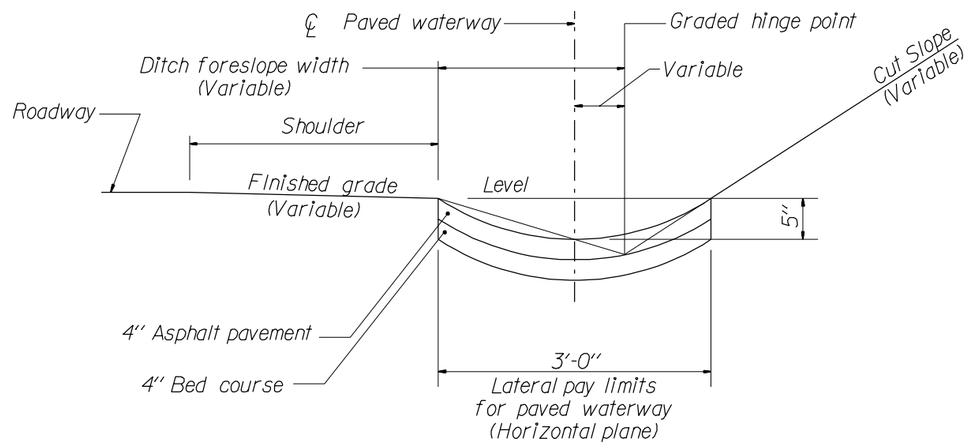
DETAIL APPROVED FOR USE

REVISED: 10/07

DETAIL E604-01

4/10/2008 7:20:15 AM \\FHFLISNT\C\Data\Projects\for8el5\proj_dev\CADD\Std-Det\sf6040i_detail.dgn

REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.10

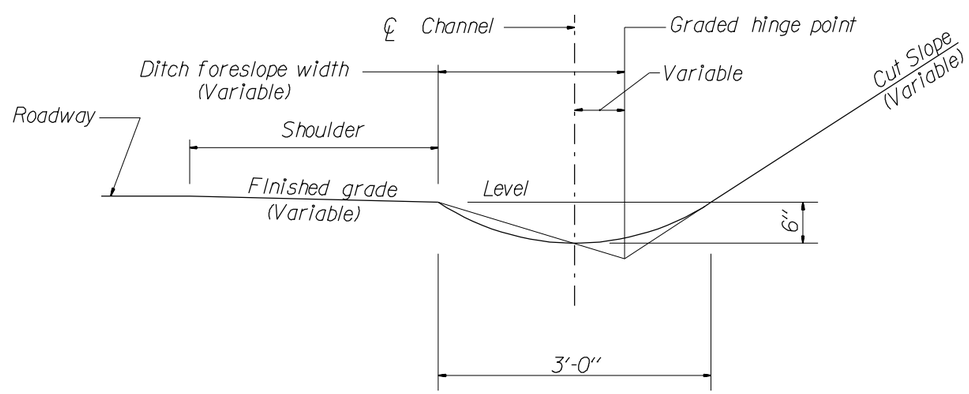


PAVED WATERWAY

NOTES:

1. The approximate shape of the paved waterway and rounded channel are an arc with a radius of 2.9 feet.

2. At inlets and other special locations, widen and shape paved waterway to drain.



ROUNDED CHANNEL

NO SCALE

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

DETAIL

PAVED WATERWAY
AND
ROUNDED CHANNEL

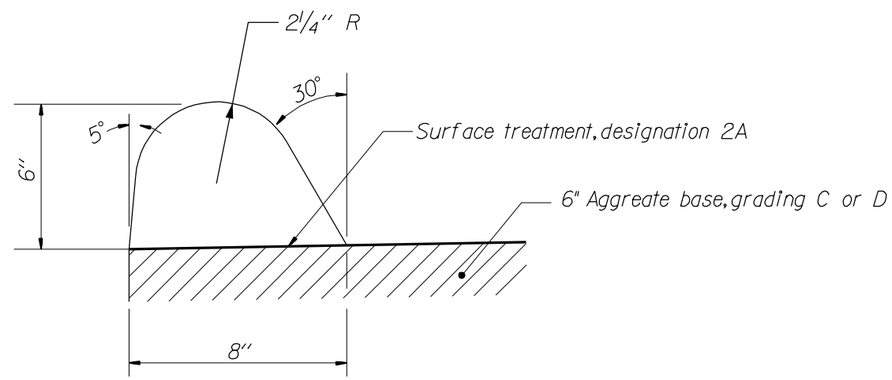
DETAIL APPROVED FOR USE --/----

REVISED:

DETAIL
E608-2A

4/10/2008 7:21:04 AM \\FHFL15NTC\Data\Projects\Foot8el5\proj_dev\CADD\Std-Det\d608x2Adgn

REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.11



ASPHALT CONCRETE CURB
6-INCH DEPTH
(NON-MOUNTABLE)

Asphalt tack coat may be rapid curing liquid asphalt or emulsified asphalt.

NO SCALE

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

DETAIL

ASPHALT CURB

DETAIL APPROVED FOR USE --/----

REVISED:

DETAIL
E609-1A

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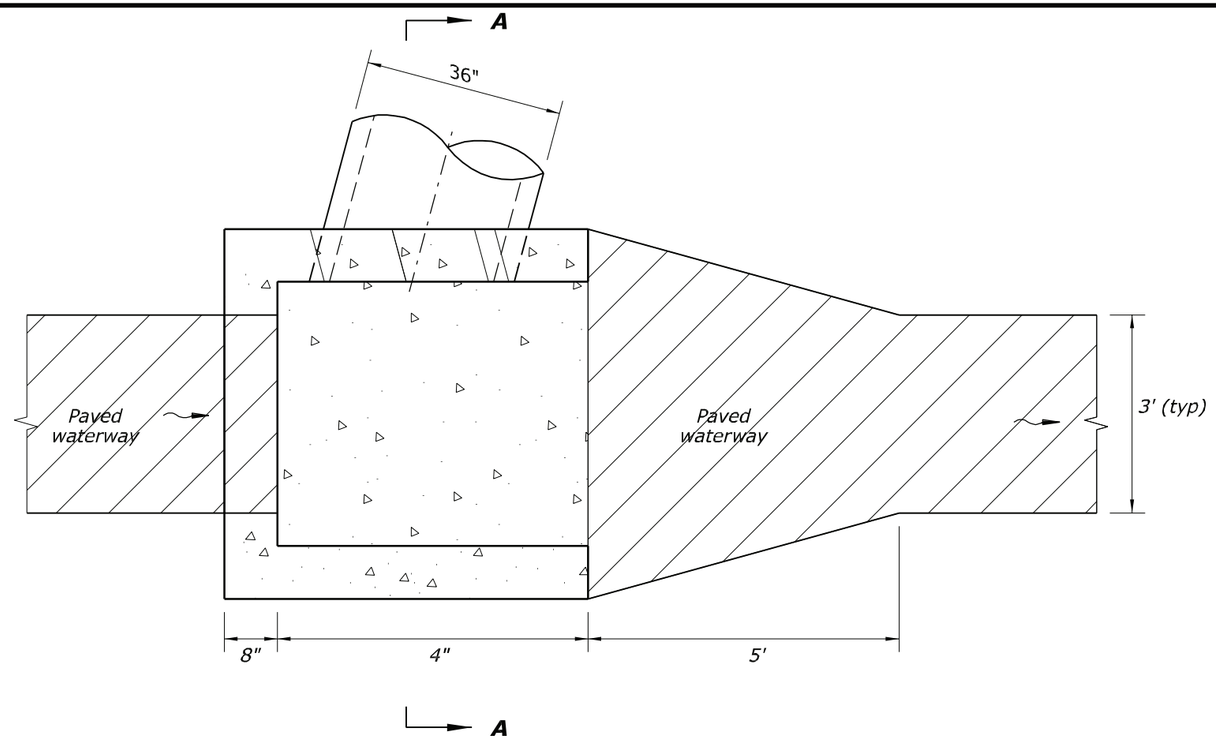
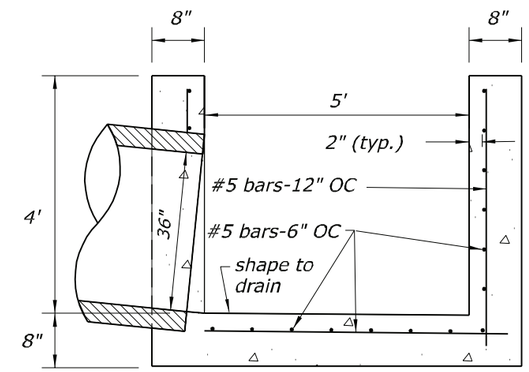
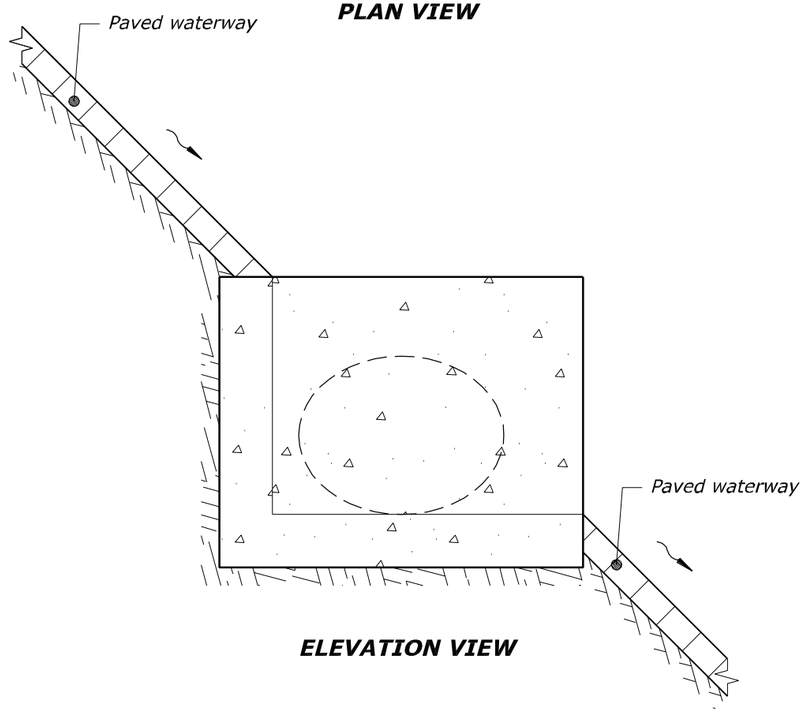
REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.12





SECTION A-A

PLAN VIEW



ELEVATION VIEW

NO SCALE

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

U.S. CUSTOMARY DETAIL

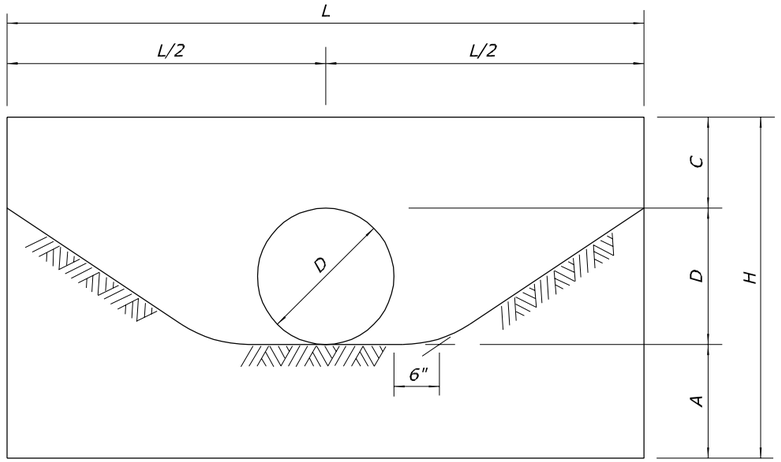
INLET, TYPE 6A (MODIFIED 3 SIDED)

DETAIL APPROVED FOR USE

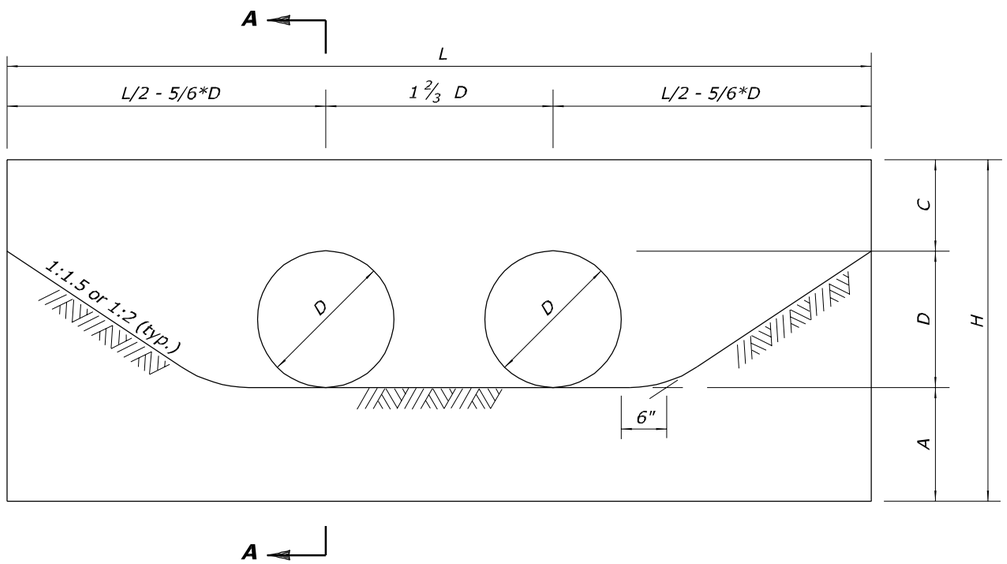
DETAIL E604-5A

4/30/2008 10:43:24 AM \\FHFL15NTC\DataProjects\Kat\Bell5\proj_dev\CADD\Std-Det\sf60405_detail.dgn

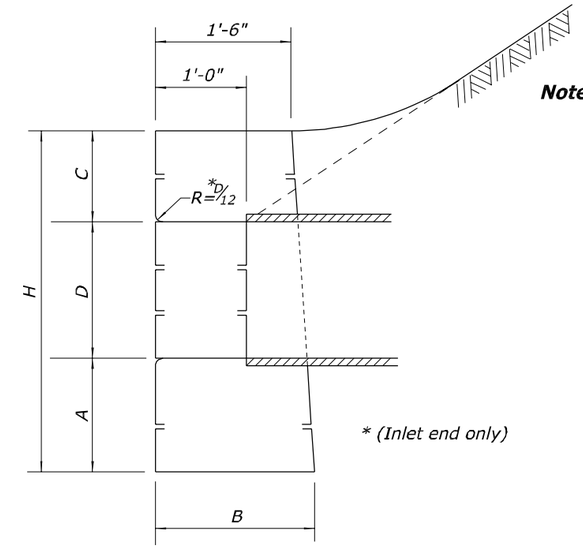
REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.13



SINGLE



DOUBLE



SECTION A-A

Notes:

1. *All headwalls are oriented parallel to the roadway centerline unless otherwise indicated on the plans or by the CO.*
2. *When pipes are on skew, adapt and lengthen headwalls as directed.*
3. *Quantities shown in the table are for one headwall with pipe at right angles.*
4. *Construct headwalls using the dimensions shown 1 ½ :1 slopes unless otherwise designated by the CO.*

	VALUES FOR 1½:1 SLOPES								VALUES FOR 2:1 SLOPES							
	SINGLE				DOUBLE				SINGLE				DOUBLE			
D (In.)	18"	24"	30"	36"	18"	24"	30"	36"	18"	24"	30"	36"	18"	24"	30"	36"
L or L'	7'-0"	10'-0"	13'-0"	16'-0"	9'-6"	13'-4"	17'-2"	21'-0"	8'-6"	12'-4"	16'-2"	20'-0"	11'-0"	15'-8"	20'-4"	25'-0"
H	3'-9"	4'-10"	5'-11"	7'-0"	3'-9"	4'-10"	5'-11"	7'-0"	3'-9"	4'-10"	5'-11"	7'-0"	3'-9"	4'-10"	5'-11"	7'-0"
B	1'-9"	2'-0"	2'-5"	2'-10"	1'-9"	2'-0"	2'-5"	2'-10"	1'-9"	2'-0"	2'-5"	2'-10"	1'-9"	2'-0"	2'-5"	2'-10"
A (min.)	1'-3"	1'-6"	1'-9"	2'-0"	1'-3"	1'-6"	1'-9"	2'-0"	1'-3"	1'-6"	1'-9"	2'-0"	1'-3"	1'-6"	1'-9"	2'-0"
C	1'-0"	1'-4"	1'-8"	2'-0"	1'-0"	1'-4"	1'-8"	2'-0"	1'-0"	1'-4"	1'-8"	2'-0"	1'-0"	1'-4"	1'-8"	2'-0"
Stone(CY)	1.45	2.87	5.14	8.28	1.89	3.66	6.47	10.37	1.78	3.60	6.50	10.53	2.22	4.39	7.83	12.62

NO SCALE

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

U.S. CUSTOMARY DETAIL

STONE MASONRY HEADWALLS FOR SMALL PIPE CULVERTS

STANDARD APPROVED FOR USE --/---

REVISED: 03/07

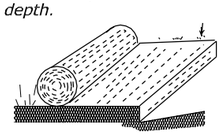
DETAIL E620-01

4/10/2008 7:22:49 AM \\FHFL15\TC\Data\Projects\800%20Ft%20Bridge\Sheets\Dgns\Details\Stg2001_detail.dgn

REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.14

Install matting along the bottom of all ditches and up the side slopes as follows:

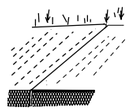
Step 1: Bury the top end of the mat strip in a trench 6" or more in depth.

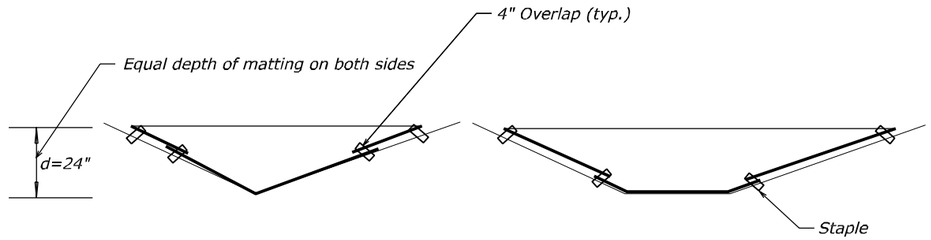


Step 2: Tamp the trench full of soil. Secure with row of fasteners: 6" spacing, 4" down from the trench.

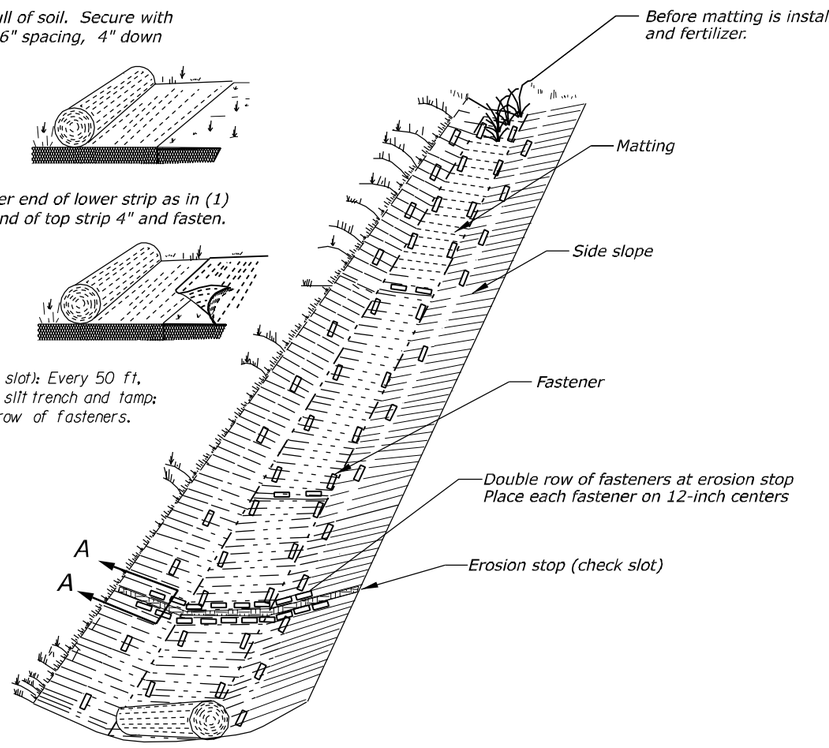
Step 3: Overlap- bury upper end of lower strip as in (1) and (2). Overlap end of top strip 4" and fasten.

Step 4: Erosion stop (check slot): Every 50 ft, bury fold of mat in slit trench and tamp; fasten with double row of fasteners. See Section A-A





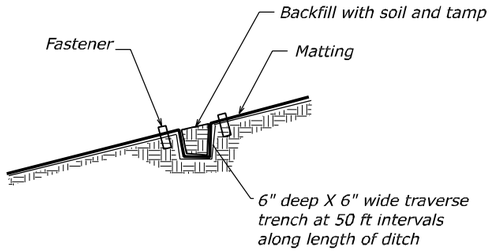
CROSS SECTION THROUGH V AND FLAT BOTTOM DITCHES



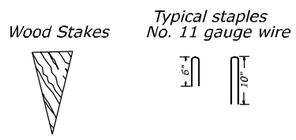
DETAIL FOR PERMANENTLY STABILIZING DITCHES WITH MATTING

NOTE:

1. *Apply seed, fertilizer, and mulch, as directed in the plans and special contract requirements, before placing matting.*



SECTION A-A
Erosion Stop (Check Slot) Detail



DETAIL A
Typical Ground Fasteners

NO SCALE

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

U.S. CUSTOMARY DETAIL

DITCH STABILIZATION WITH MATTING

DETAIL APPROVED FOR USE

REVISED: 06/00 10/07

DETAIL E629-02

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REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.15

LENGTH AND SPACING TABLE

APPROACH SPEED*	MINIMUM TAPER LENGTH**	LENGTH OF BUFFER SPACE	CHANNELIZING DEVICE		
			TAPER AREA	BUFFER SPACE	WORK SPACE
MPH	FEET	FEET	SPACING IN FEET		
25	Shoulder taper formula:	155	25	50	50
30	$L = \frac{WS^2}{180}$ for $S \leq 40$ MPH	200	30	60	60
35	$L = \frac{WS}{3}$ for $S \geq 45$ MPH	250	35	70	70
40	Where:	305	40	80	80
45	L = Minimum length of taper	360	45	90	90
50	W = Width of offset in feet S = Numerical value of posted speed limit or 85 percentile speed prior to work in miles per hour	425	50	100	100
55		495	55	110	110

* Approach speed based on the regulatory posted speed, not the advisory speed.

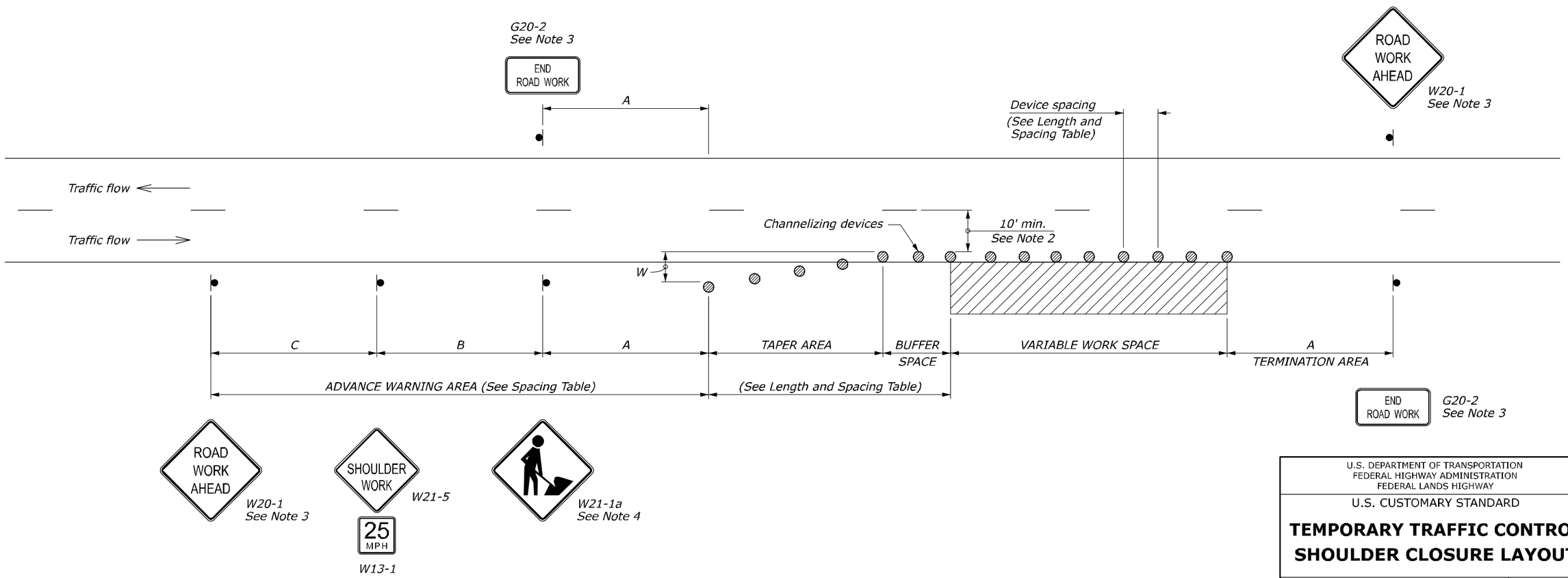
** Lengthen taper as needed to provide minimum of three channelizing devices in taper at required spacing.

SIGN SPACING TABLE

ROAD TYPE	DISTANCE BETWEEN SIGNS IN FEET		
	A	B	C
Urban 40 MPH and less	100	100	100
Urban 45 MPH and greater	350	350	350
Rural	500	500	500
Expressway/Freeway	1000	1500	2640

NOTE:

1. Final location and spacing of signs and devices may be changed to fit field conditions as approved by the CO.
2. For project specific minimum width, refer to Special Contract Requirements, Section 156.
3. If shoulder closure is completely within the project limits, eliminate the "ROAD WORK AHEAD" (W20-1) and "END ROAD WORK" (G20-2) signs.
4. Remove or cover Workers symbol sign (W21-1a) when workers are not present.
5. Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.
6. If signs will be in place more than 72 consecutive hours, use ground-mounted post.



NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY STANDARD

TEMPORARY TRAFFIC CONTROL SHOULDER CLOSURE LAYOUT

STANDARD APPROVED FOR USE 6/2005

REVISED:
DRAFT: 1/2007

STANDARD
635-10

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REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.16

LENGTH AND SPACING TABLE

APPROACH SPEED*	LENGTH OF BUFFER SPACE	CHANNELIZING DEVICE		
		TAPER AREA	BUFFER SPACE	WORK SPACE
MPH	FEET	SPACING IN FEET		
25	155	20	50	50
30	200	20	60	60
35	250	20	70	70
40	305	20	80	80
45	360	20	90	90
50	425	20	100	100
55	495	20	110	110

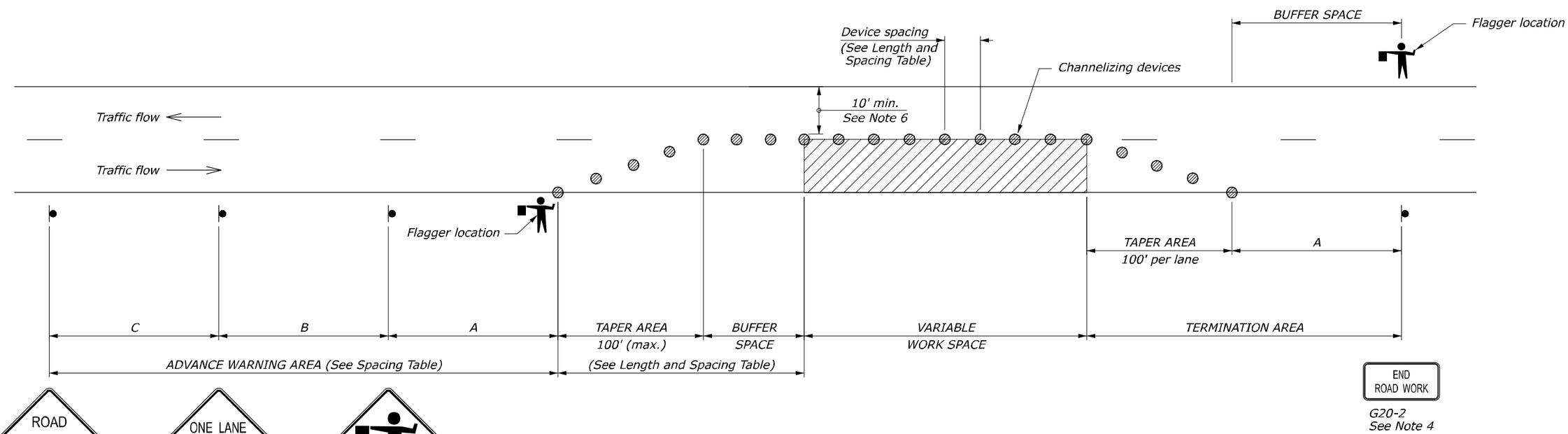
* Approach speed based on the regulatory posted speed, not the advisory speed.

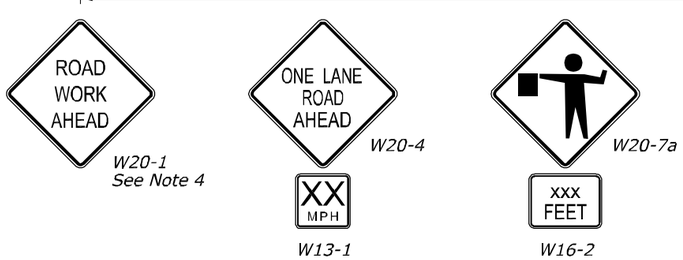
SIGN SPACING TABLE

ROAD TYPE	DISTANCE BETWEEN SIGNS IN FEET		
	A	B	C
Urban 40 MPH and less	100	100	100
Urban 45 MPH and greater	350	350	350
Rural	500	500	500
Expressway/Freeway	1000	1500	2640

NOTE:

1. Signs are shown for one direction of travel only. Place devices similar to those depicted for the opposite direction of travel.
2. Final location and spacing of signs and devices may be changed to fit field conditions as approved by the CO.
3. For pilot car operation, mount the PILOT CAR FOLLOW ME (G20-4) sign at a conspicuous location on the rear of vehicle. Prominently display the name of the contractor on the pilot car.
4. If closure is completely within the project limits, eliminate the "ROAD WORK AHEAD" (W20-1) and "END ROAD WORK" (G20-2) signs.
5. For night time flagging operation, provide floodlighting at flagger stations.
6. For project specific minimum width, refer to Special Contract Requirements, Section 156.
7. Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.
8. If signs will be in place more than 72 consecutive hours, use ground-mounted post.





NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY STANDARD

TEMPORARY TRAFFIC CONTROL SINGLE LANE CLOSURE LAYOUT (WITH FLAGGERS)

STANDARD APPROVED FOR USE 6/2005

REVISED:
DRAFT: 1/2007

STANDARD 635-6

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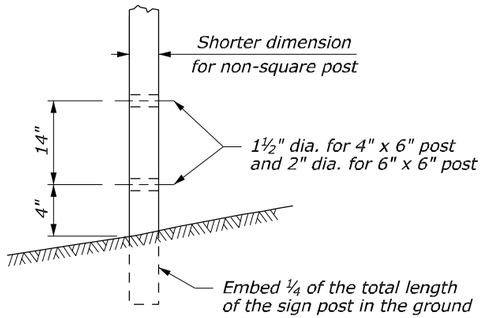
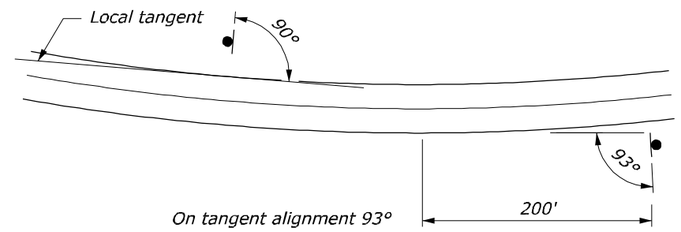
REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	H.17

NOTE:

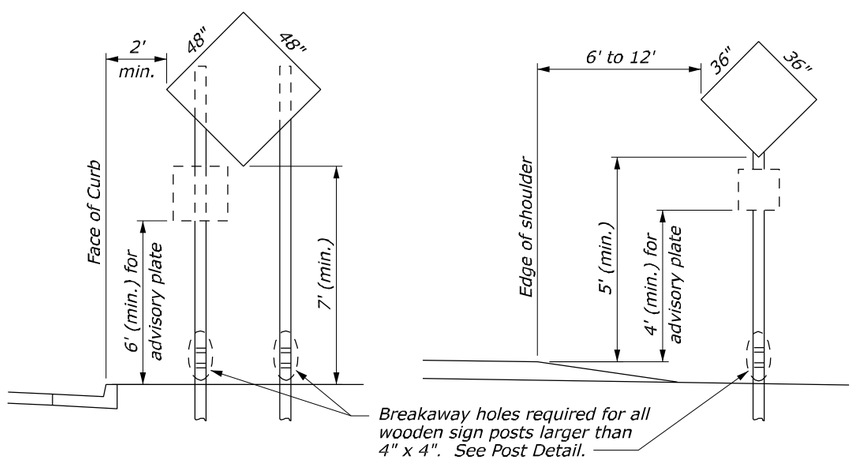
1. Use Type III or higher type sheeting on all signs and channelizing devices. Warning lights are not normally needed on devices with Type III or higher type sheeting, but may be beneficial to attract the drivers attention in fog or other special conditions. When used, apply the appropriate type of warning light (Type A, B, C, or D) per the MUTCD Chapter 6F.
2. Ensure all sign supports exposed to impact by traffic meet the requirements of NCHRP-350 for crash worthiness.
3. Do not store traffic control devices along the roadway when not in use. Cover post-mounted signs when not applicable.
4. State standards may be used as an alternative if approved by the CO.



POST DETAIL



SIGN INSTALLATION ANGLE



NOTE: Mount signs with area 9 sqft and under on a single 4" x 4" wood post. Use double wood posts for signs wider than 36" or signs with an area over 9 sqft. Steel may be used in lieu of wood posts (See Note #2).

SIGN PLACEMENT

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY STANDARD

TEMPORARY TRAFFIC CONTROL SIGN INSTALLATION

STANDARD APPROVED FOR USE 6/2005

REVISED:
DRAFT: 1/2007

STANDARD
635-14

4/14/2008 8:16:40 AM \\FHFL15NTC\Data\Projects\foot\8e15\proj_dev\CADD\Std-Det\st63514.dgn

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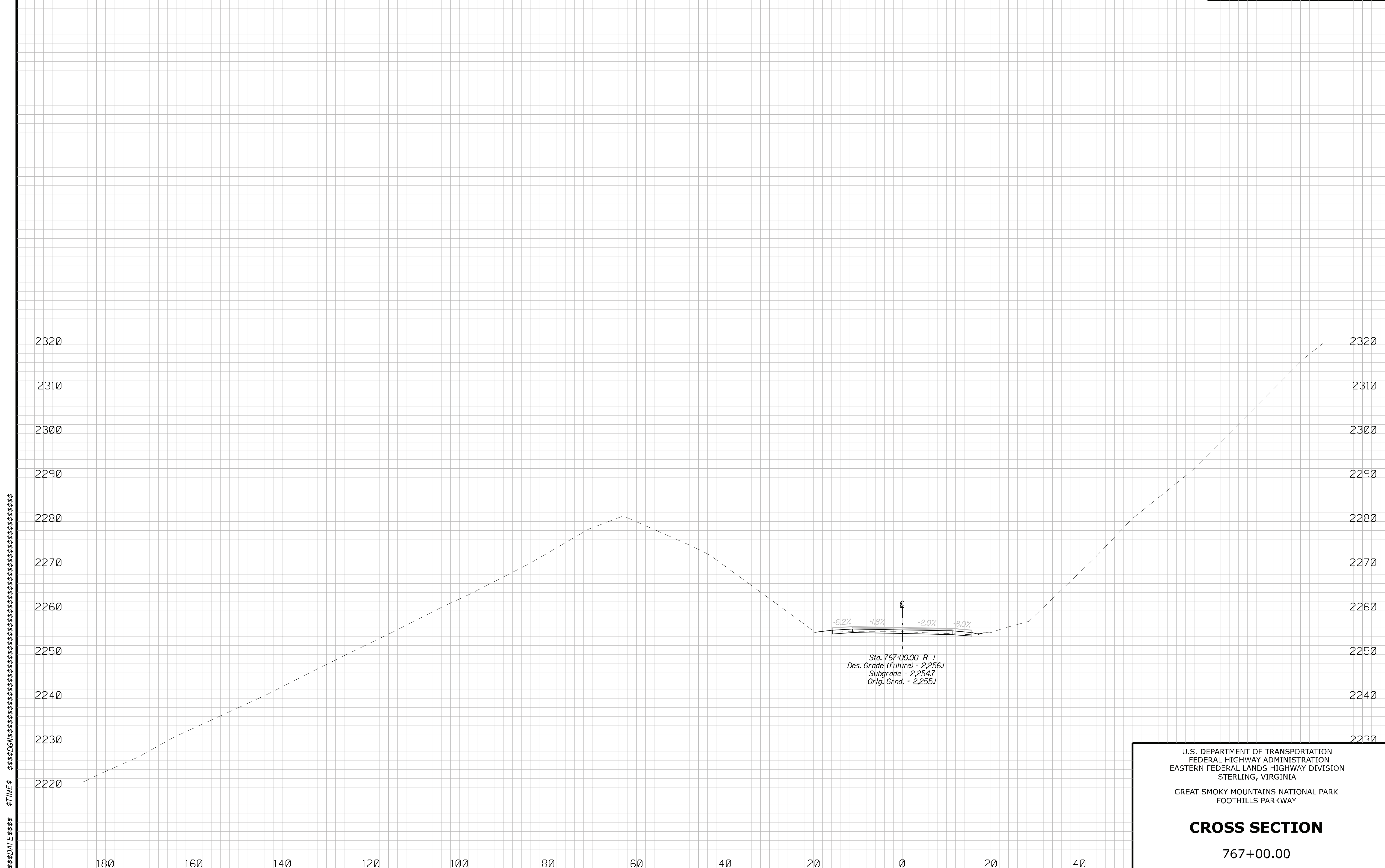
SE	TN	PRA-FOOT 8E15	J.1



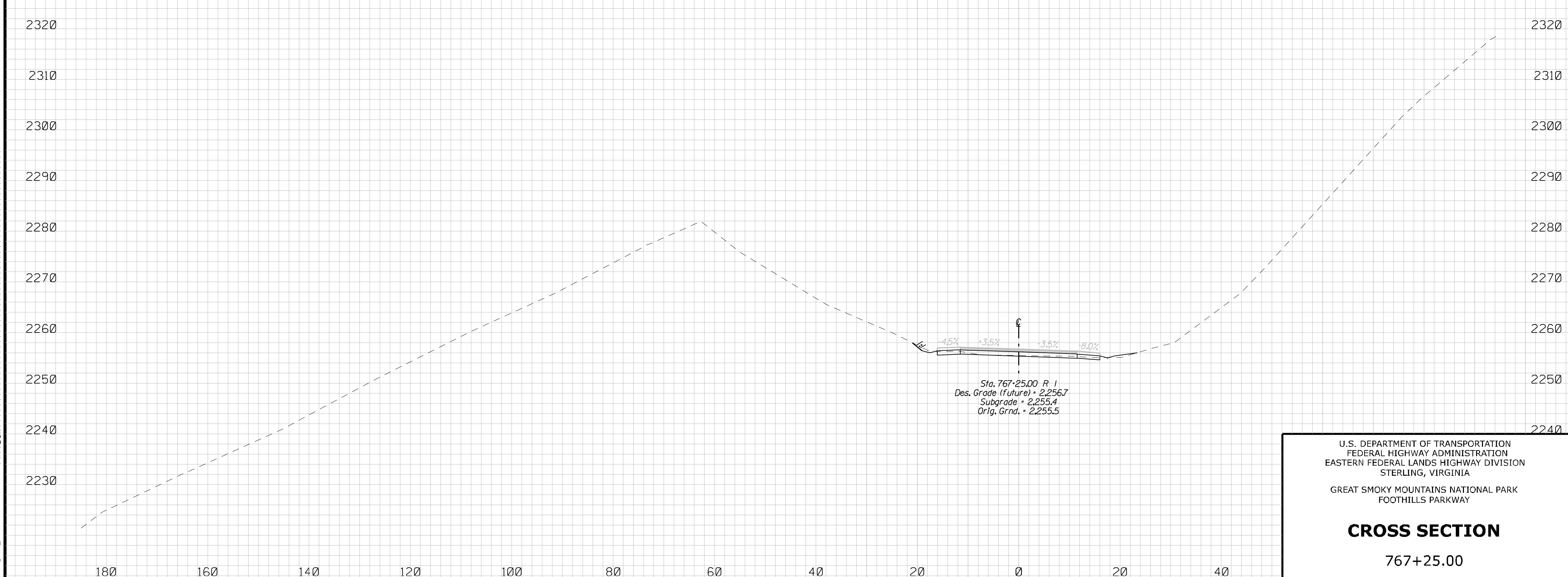
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

767+00.00

REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	J.2



$$$$DATE$$$$ $TIME$ $$$$DGN$$

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

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

767+25.00

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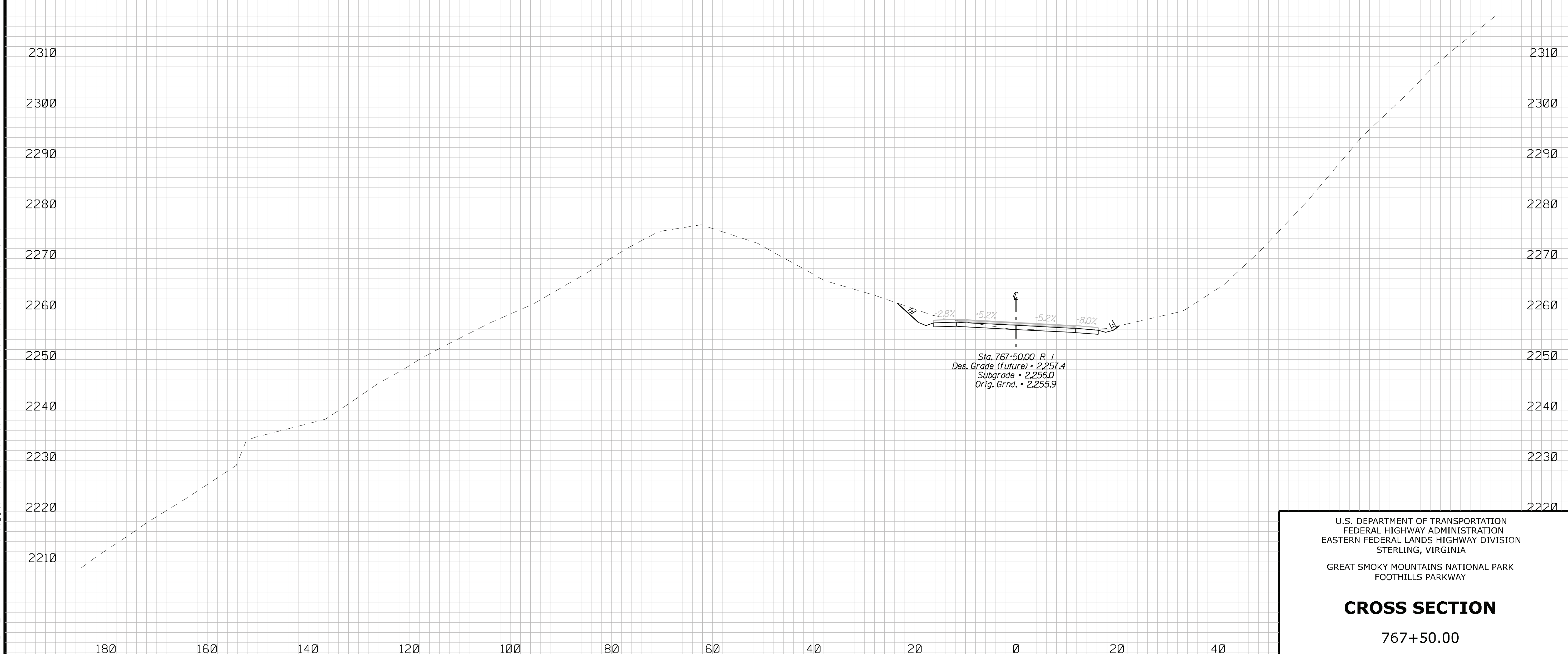

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

767+50.00

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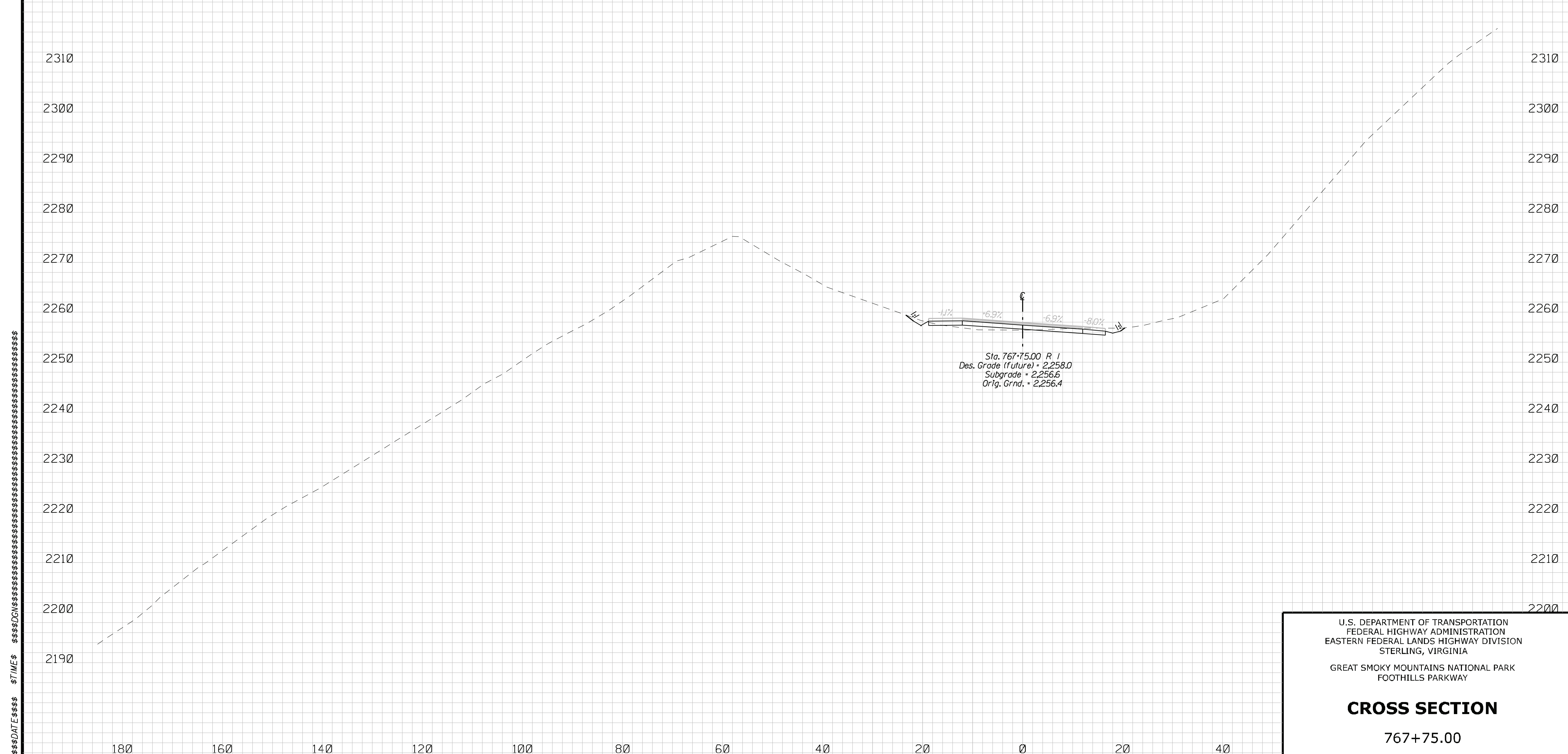

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

767+75.00

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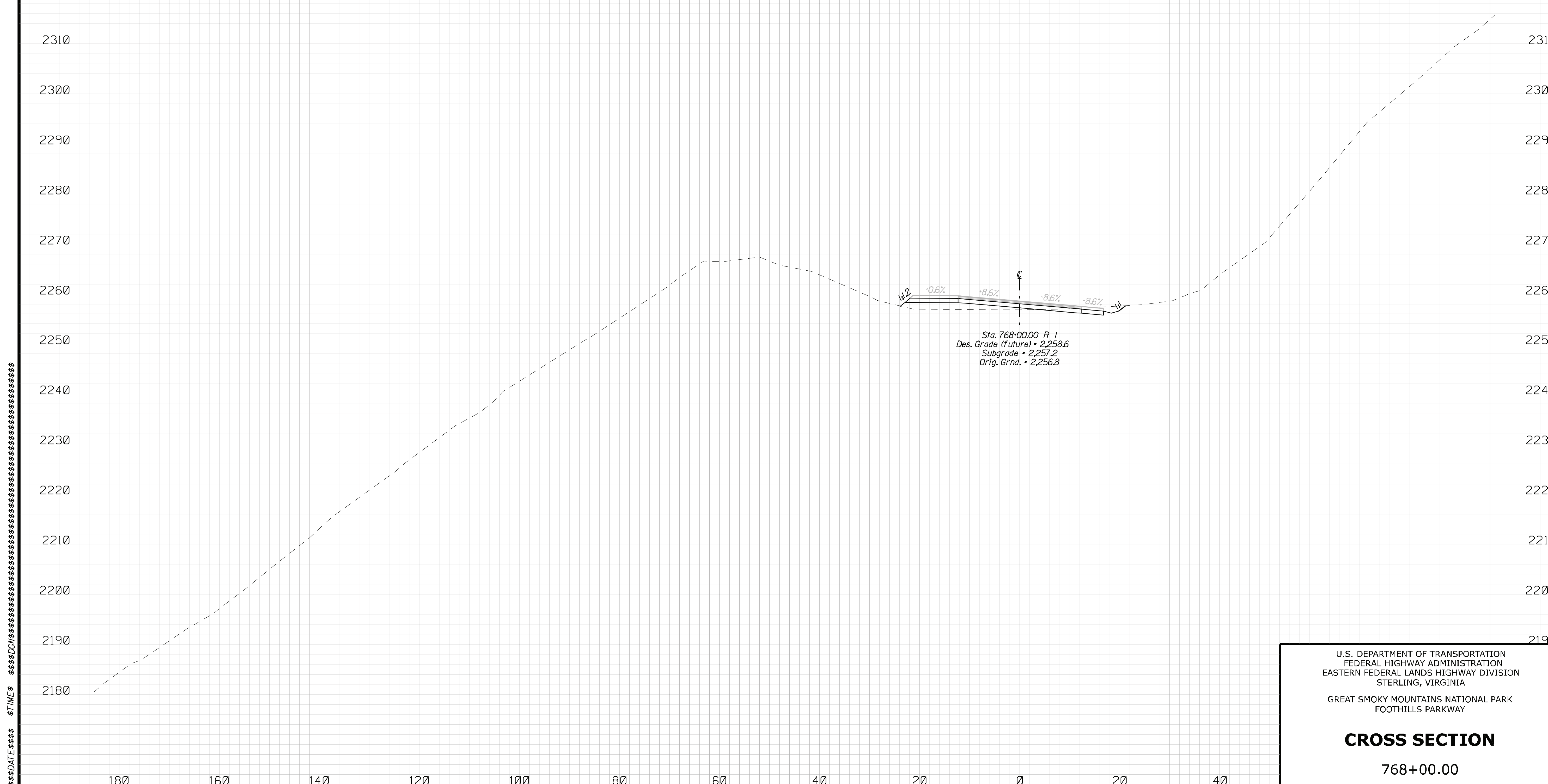

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

768+00.00

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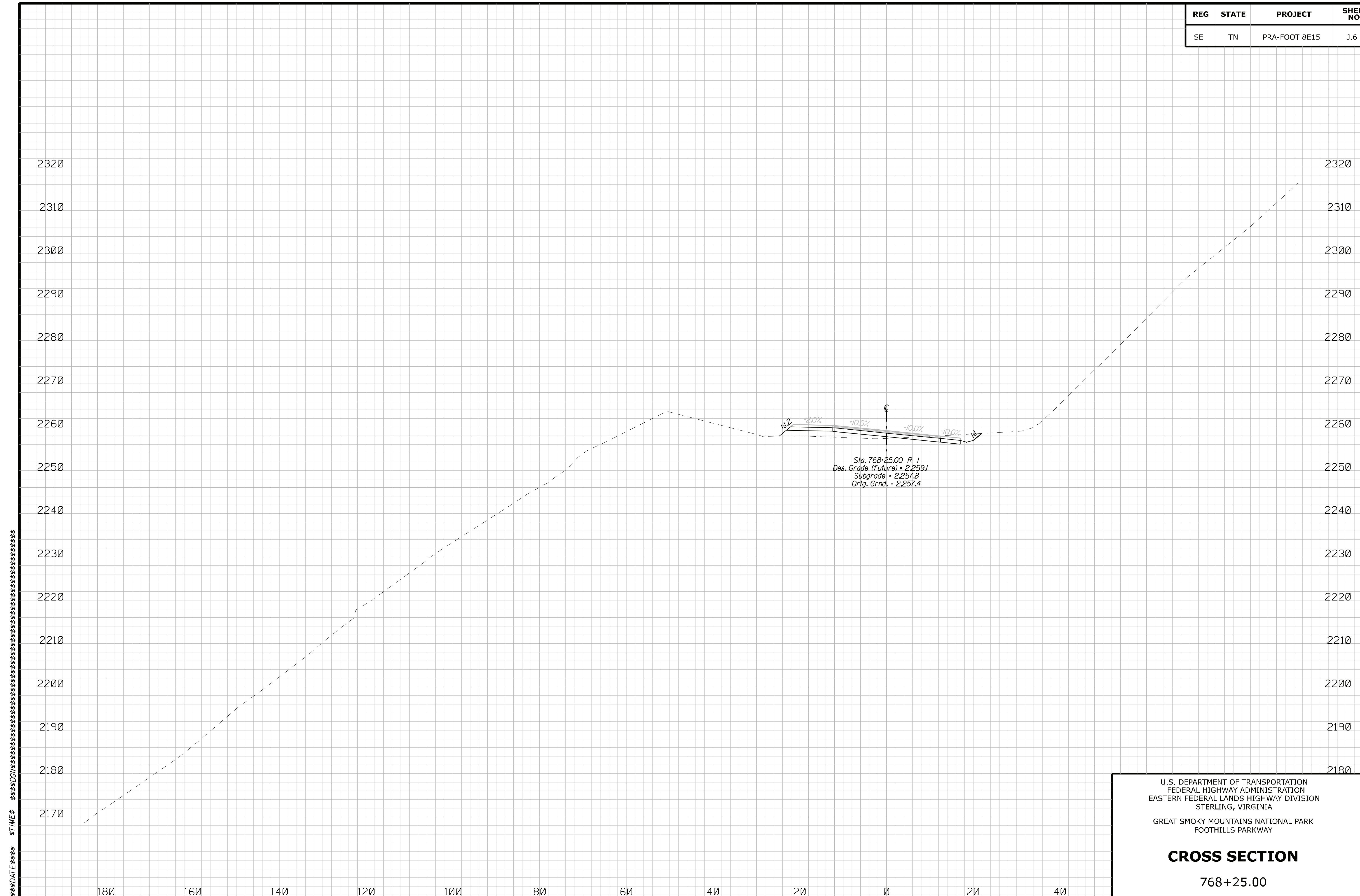

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

768+25.00

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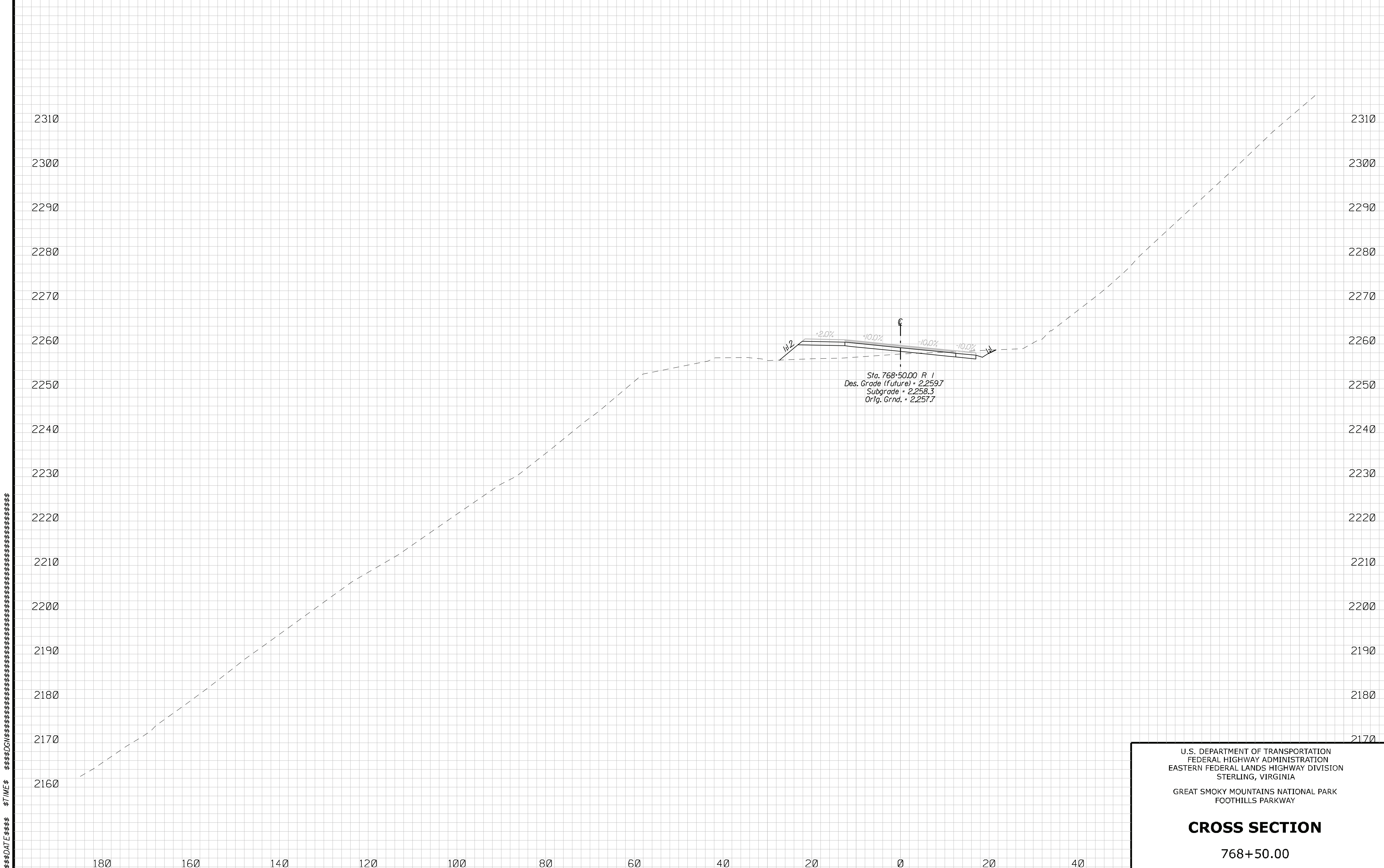

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

768+50.00

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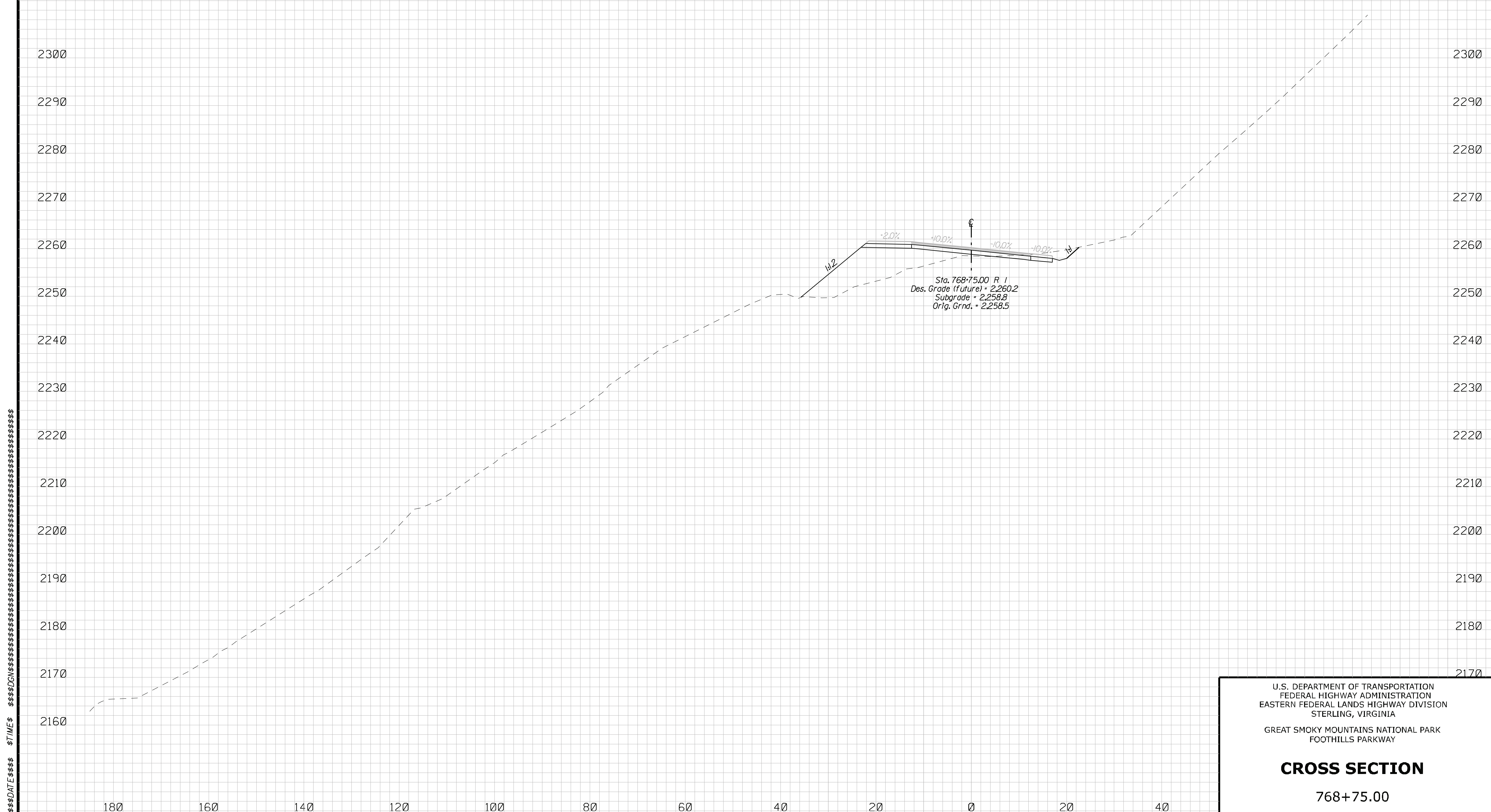

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

768+75.00

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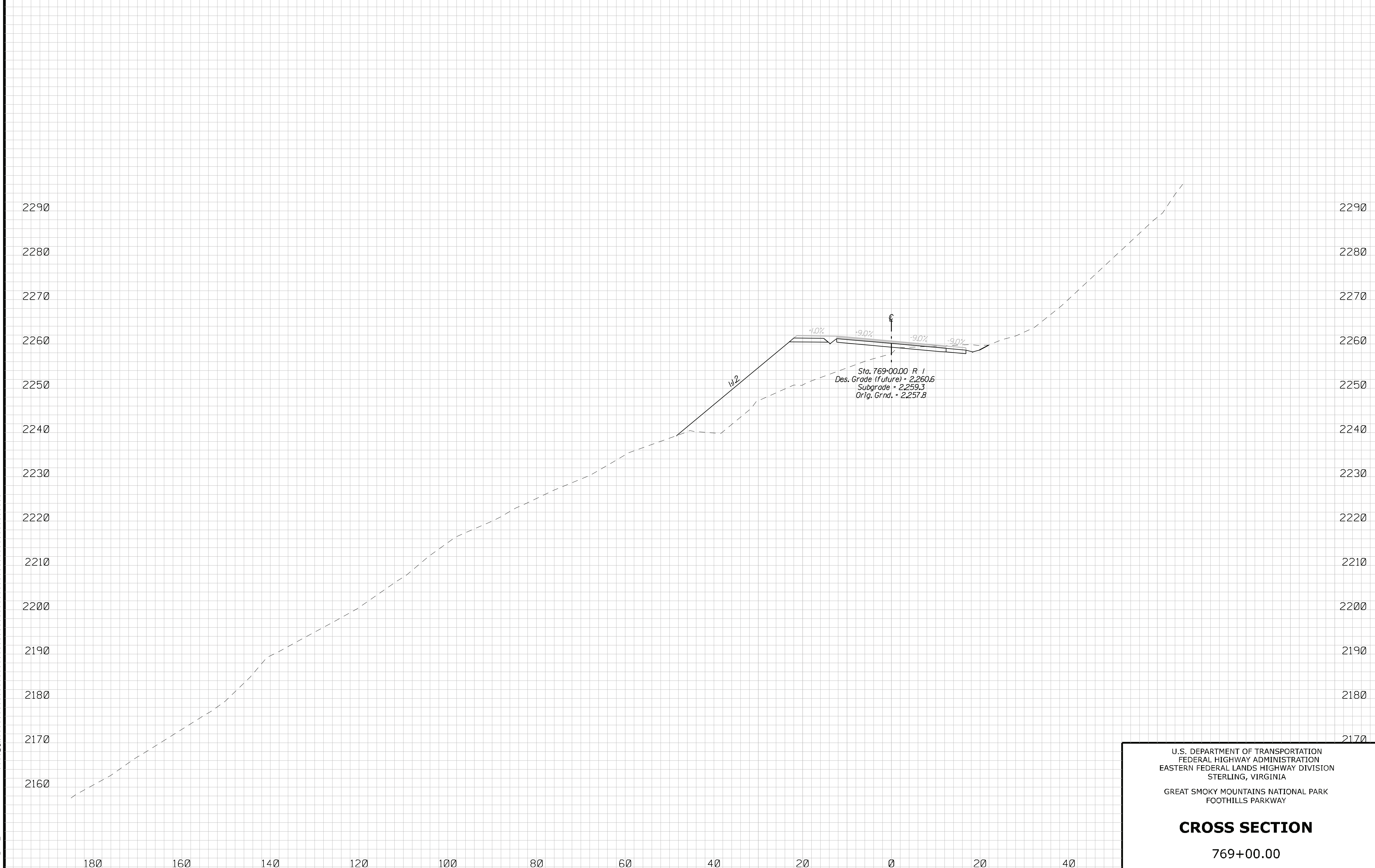

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

769+00.00

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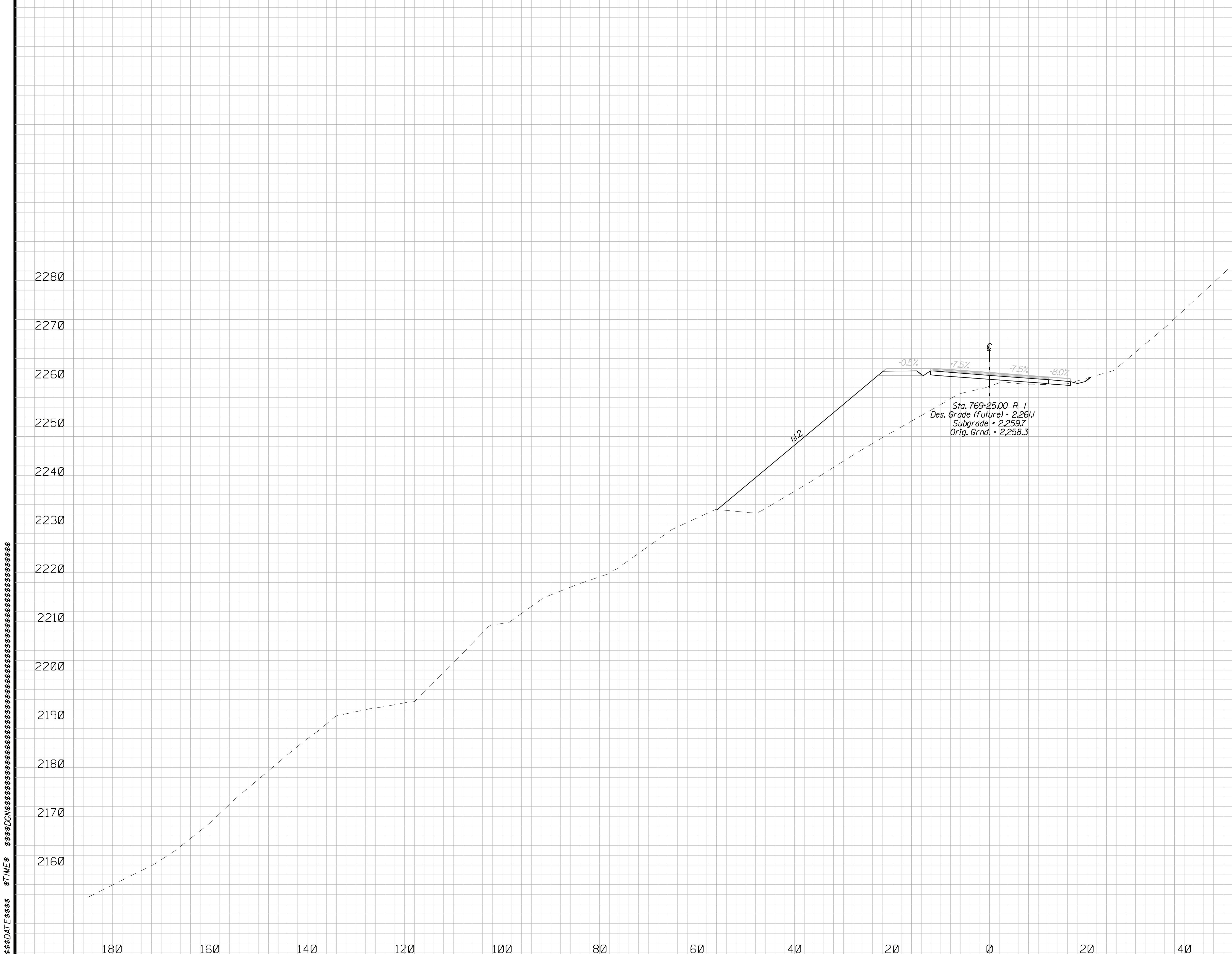

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

769+25.00

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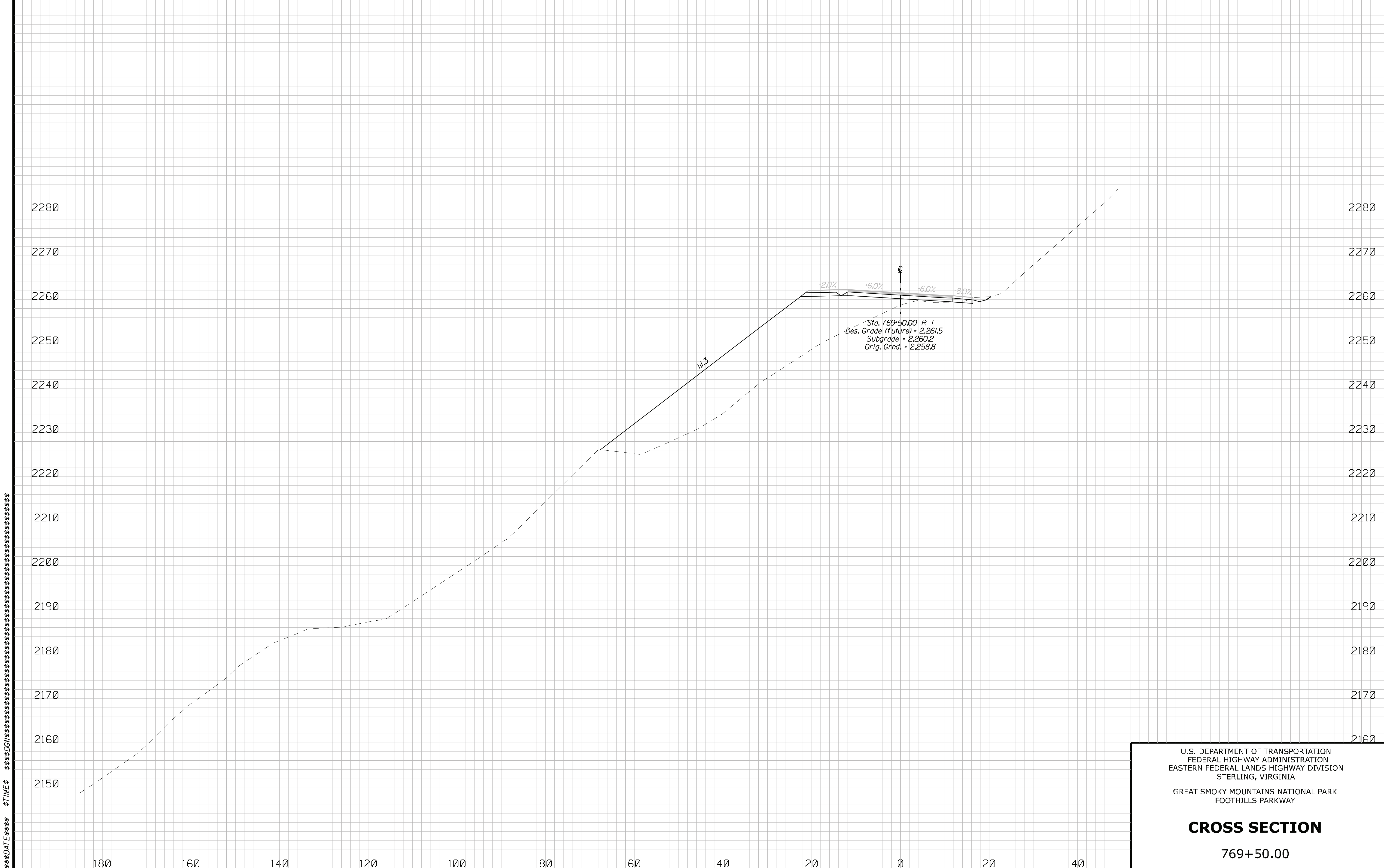

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FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

769+50.00

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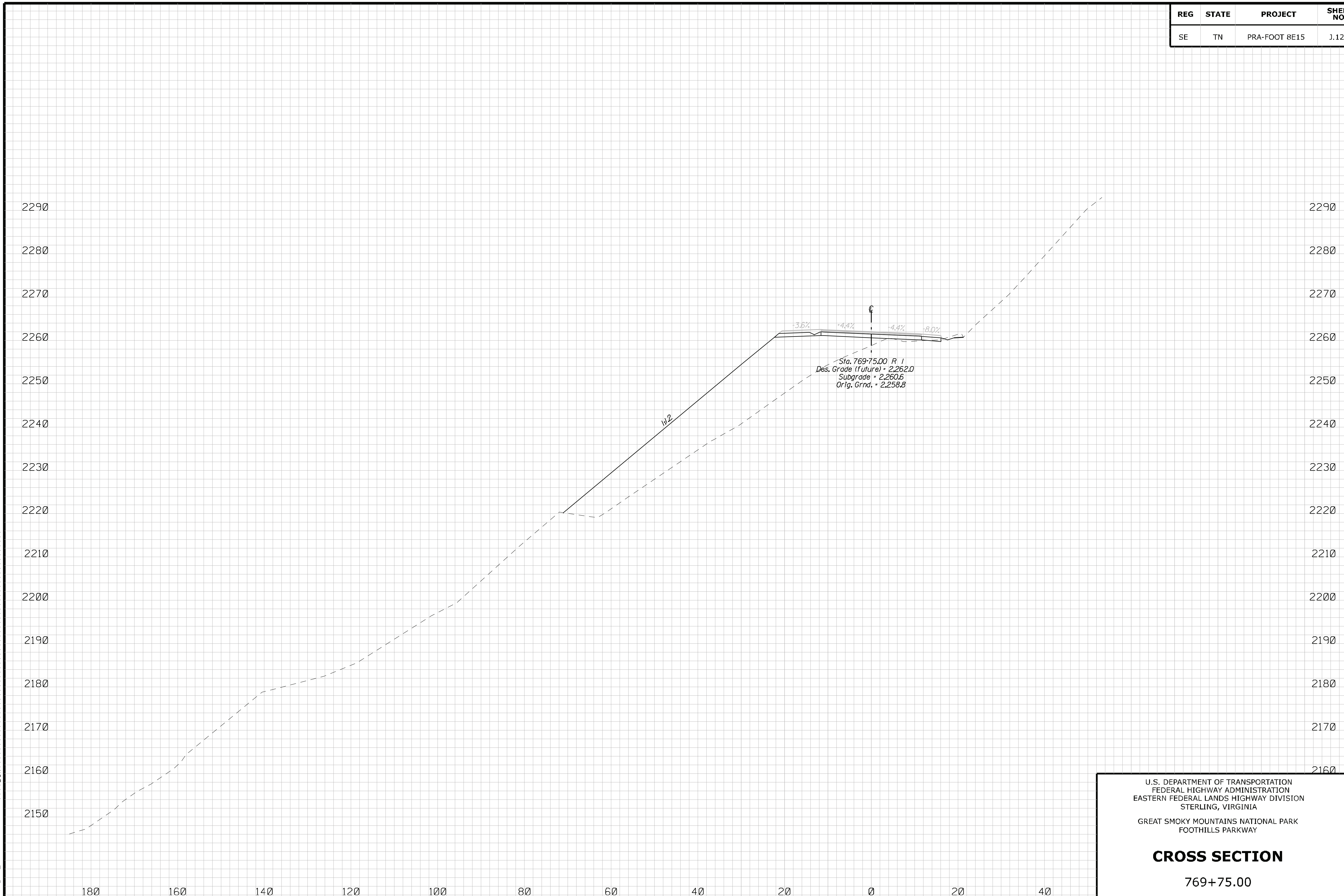

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

769+75.00

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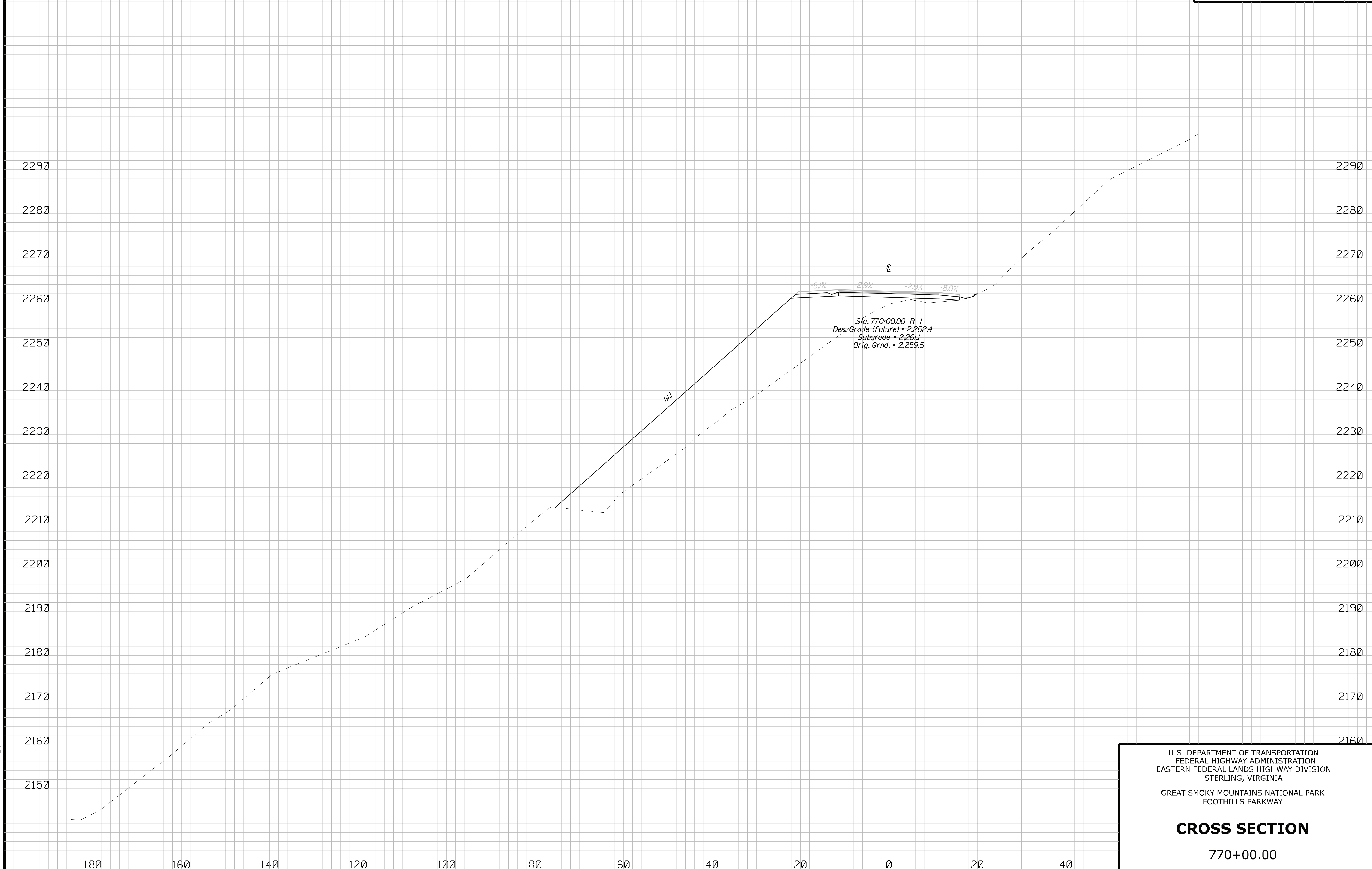

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

770+00.00

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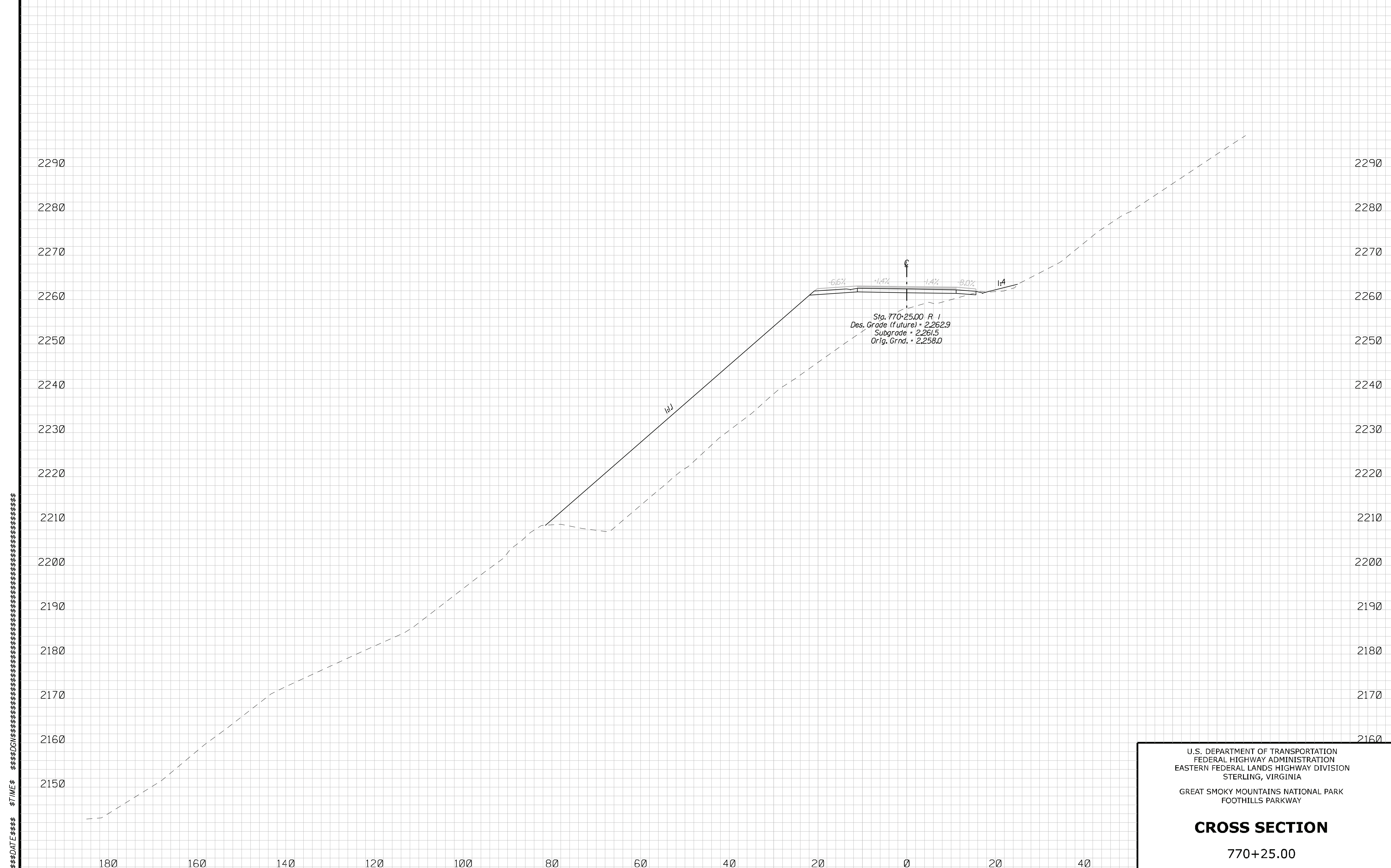

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

770+25.00

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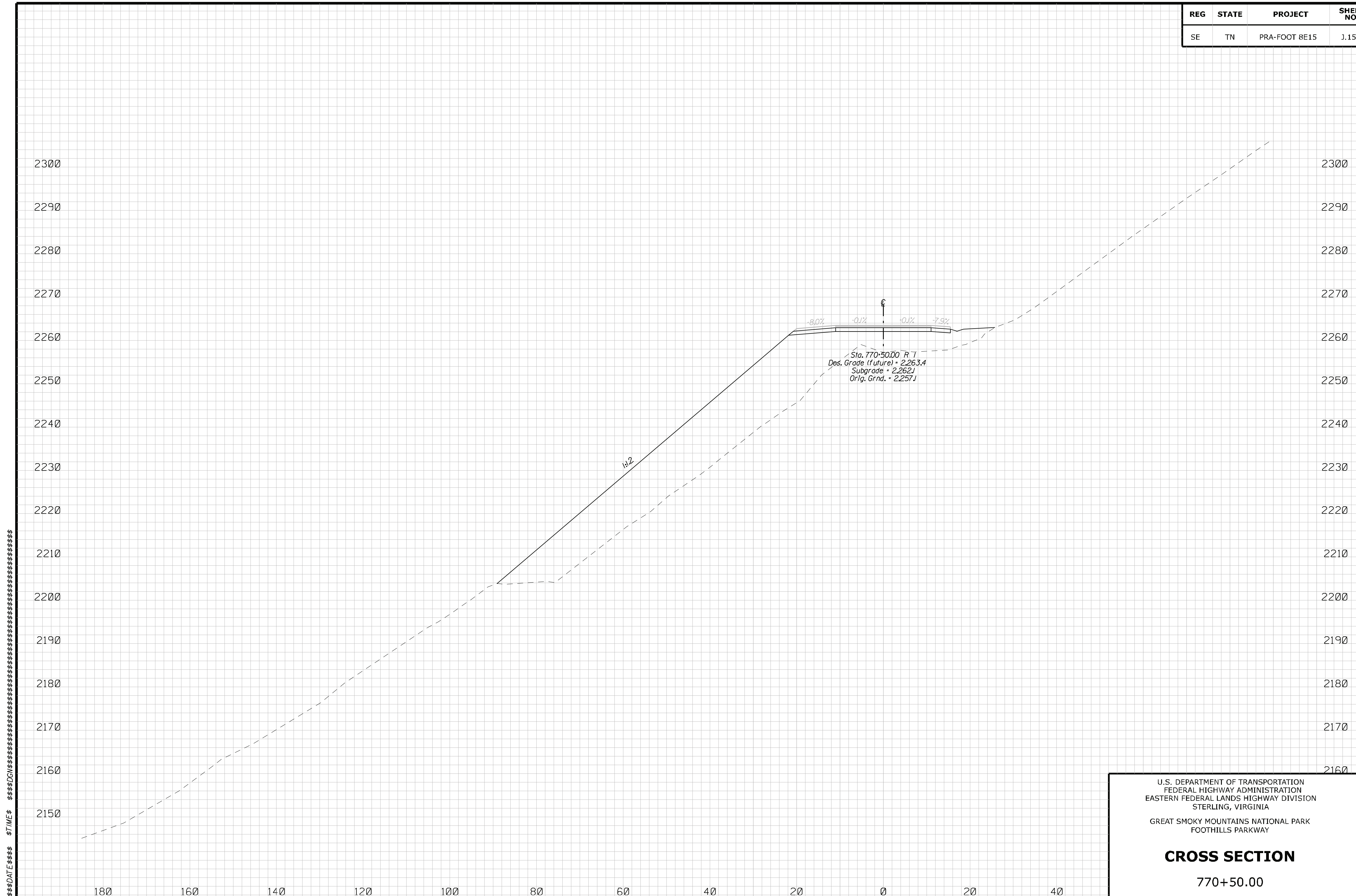

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

770+50.00

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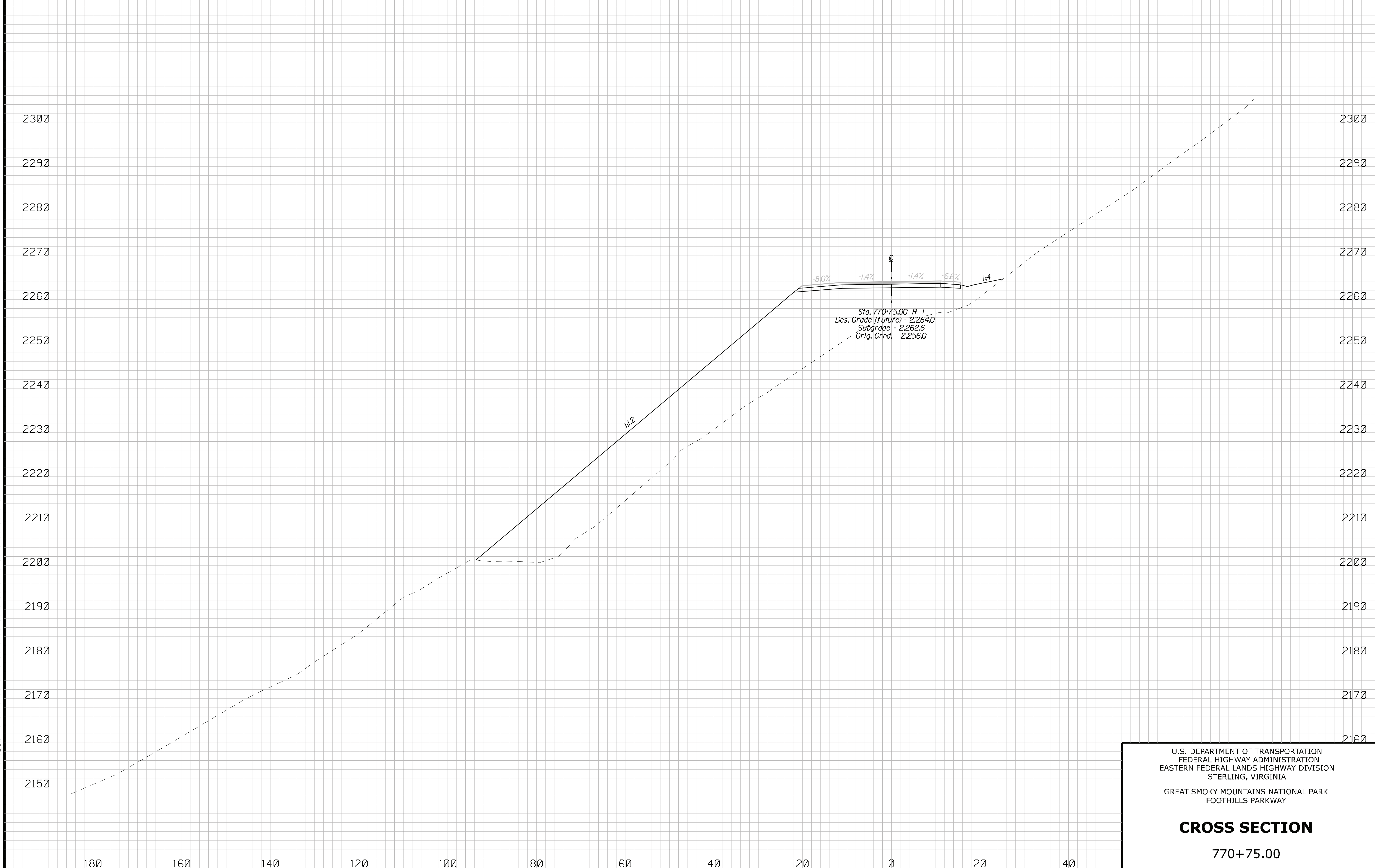

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

770+75.00

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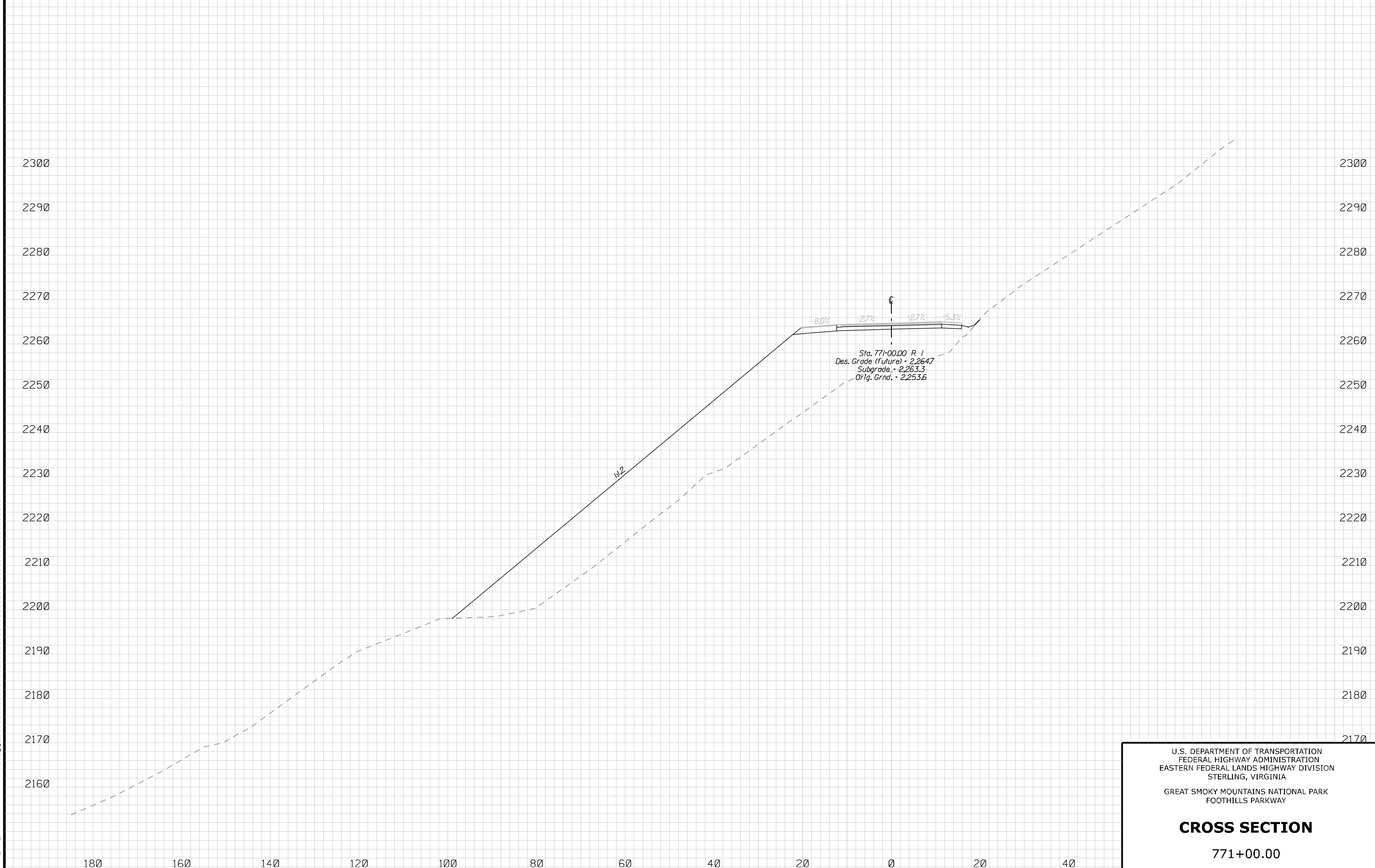

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

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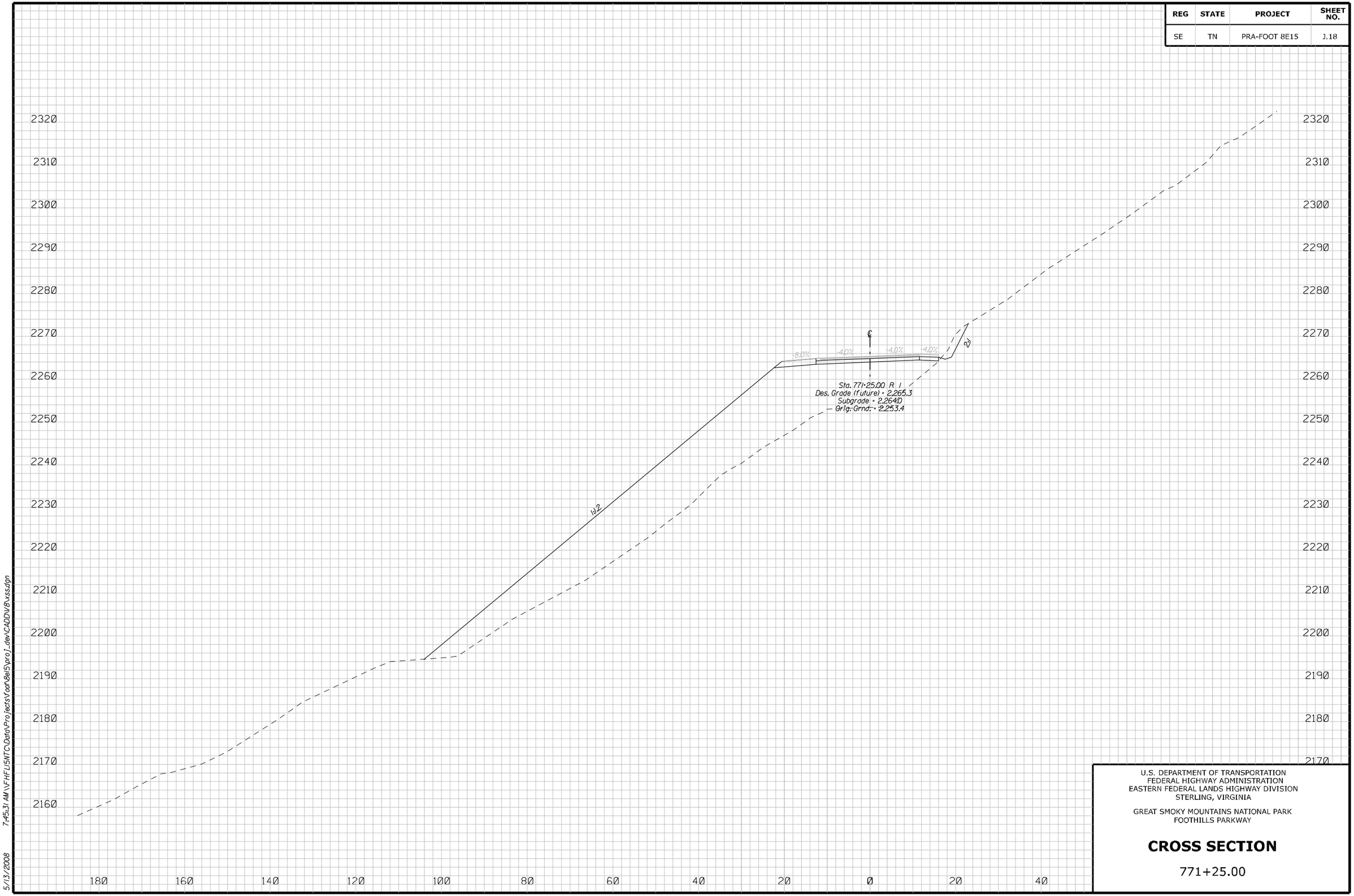

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

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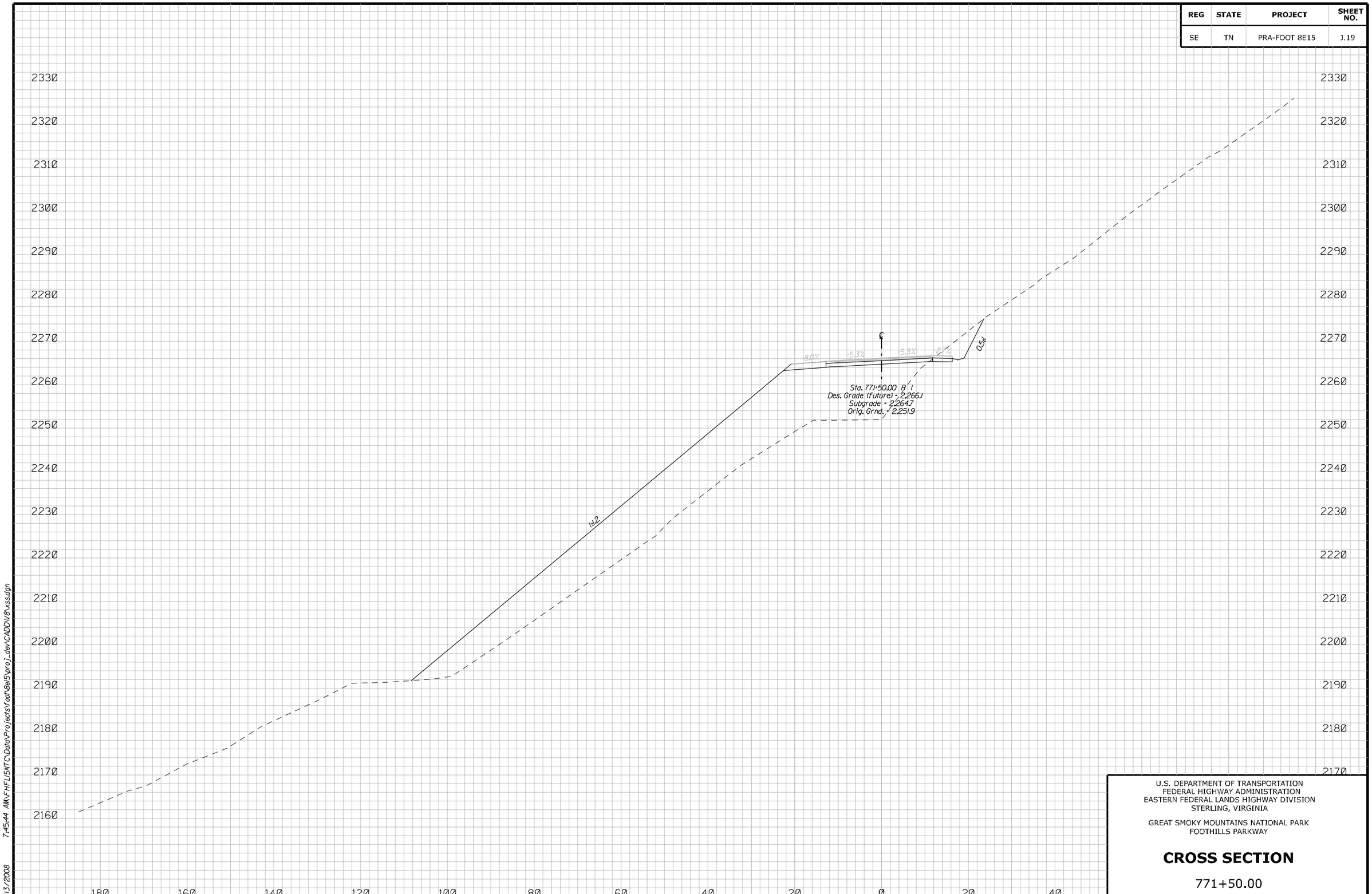

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

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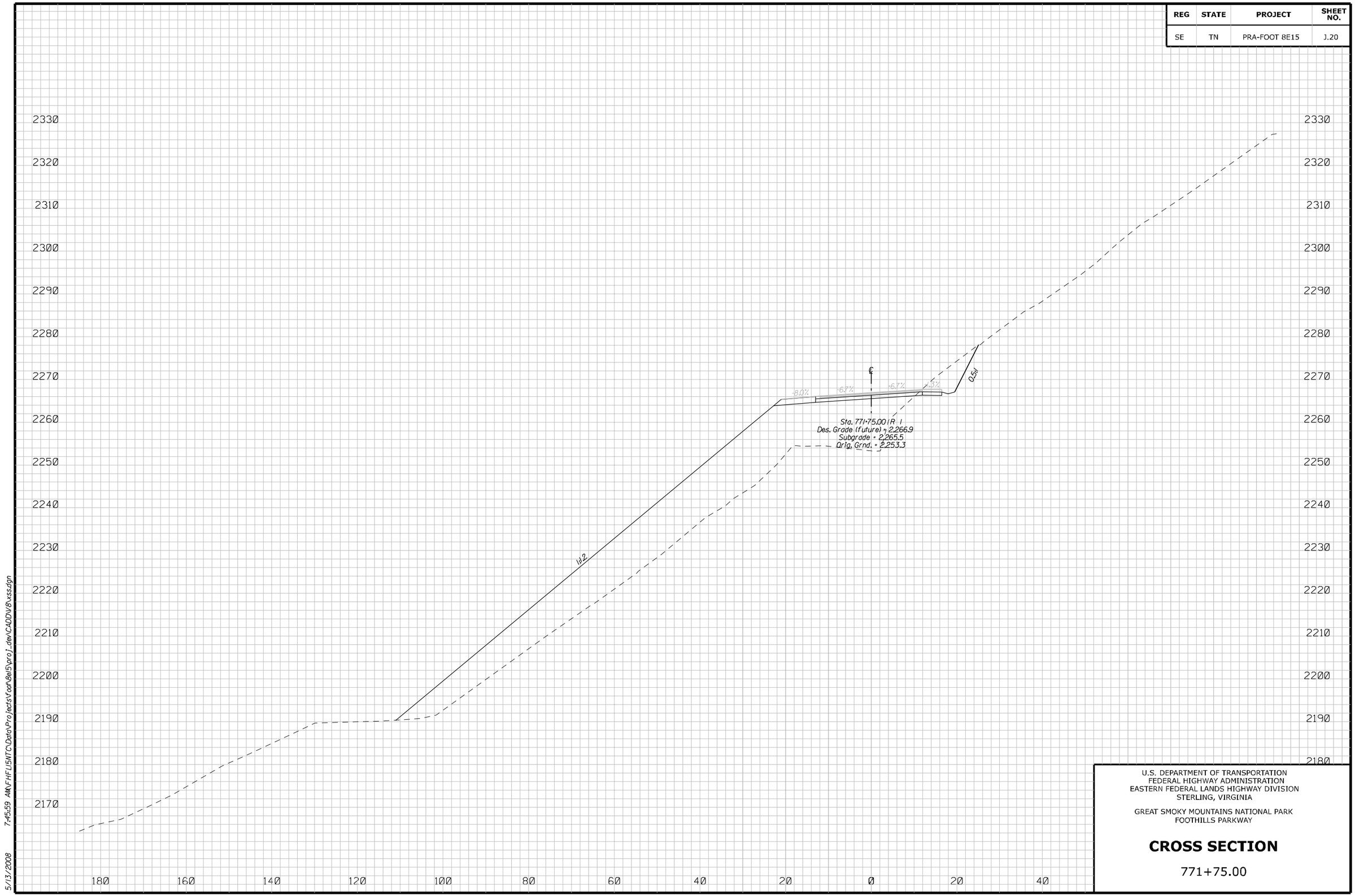

U.S. DEPARTMENT OF TRANSPORTATION
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EASTERN FEDERAL LANDS HIGHWAY DIVISION
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GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

771+75.00

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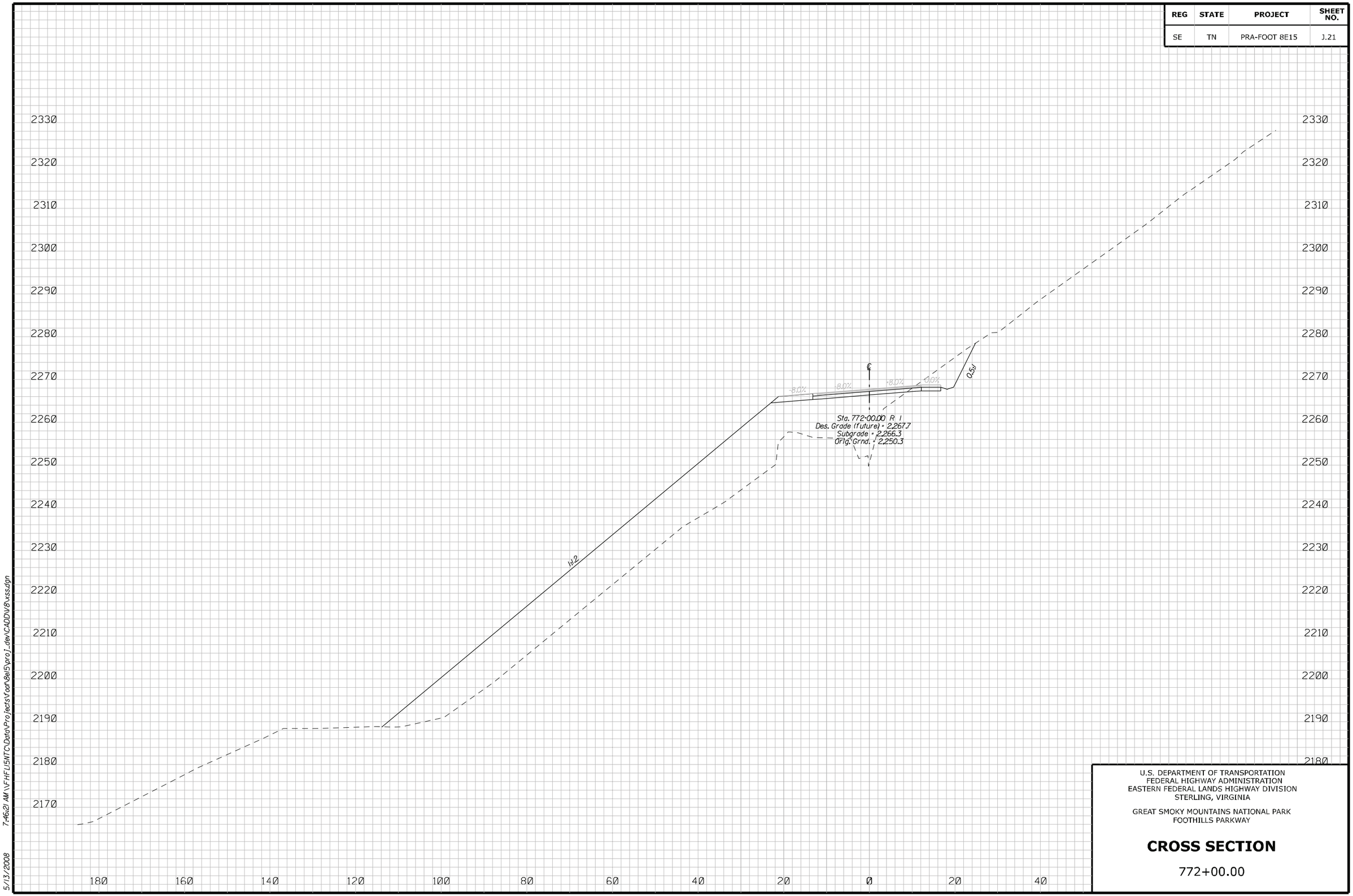

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

772+00.00

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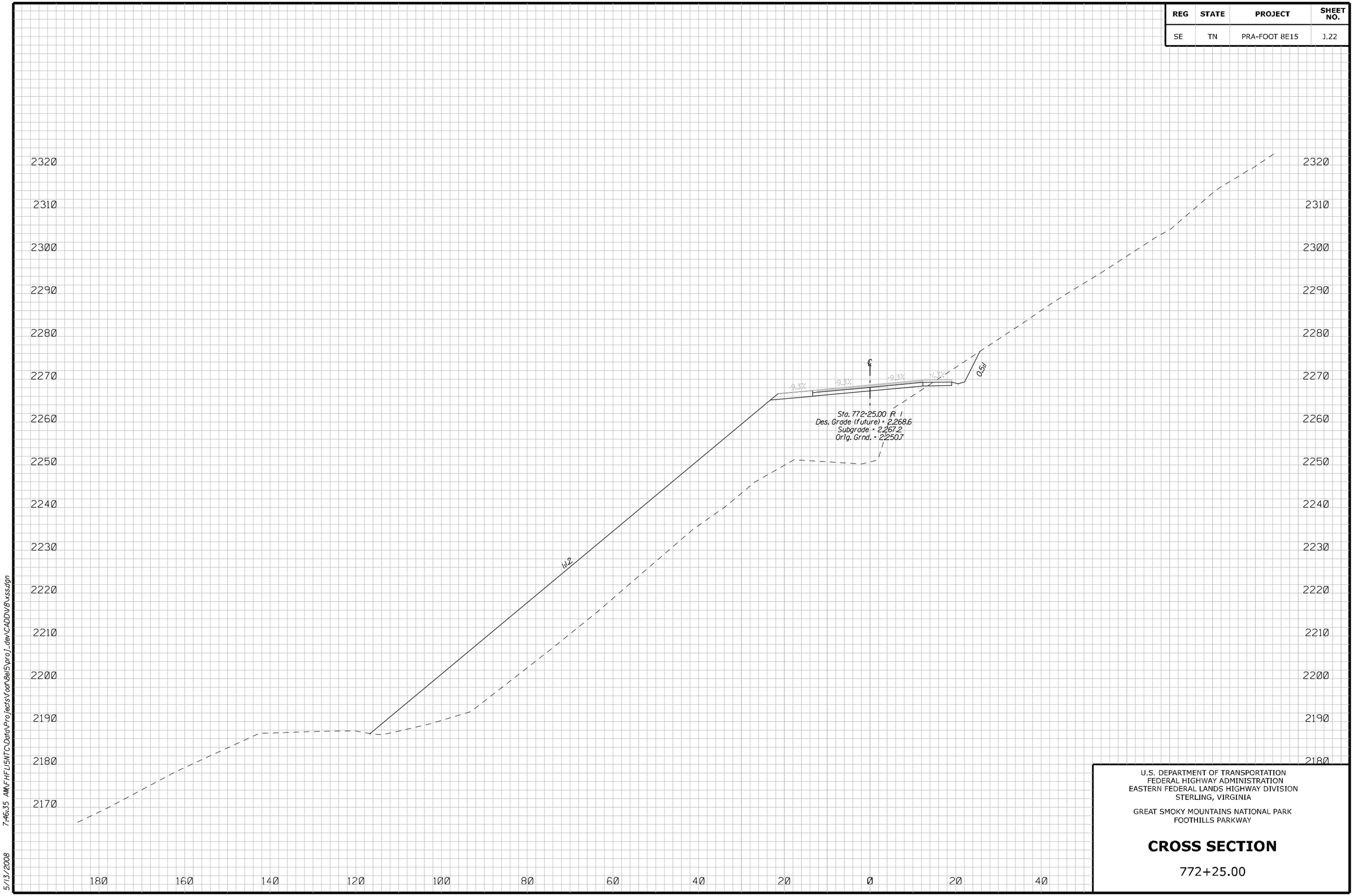

U.S. DEPARTMENT OF TRANSPORTATION
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STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

772+25.00

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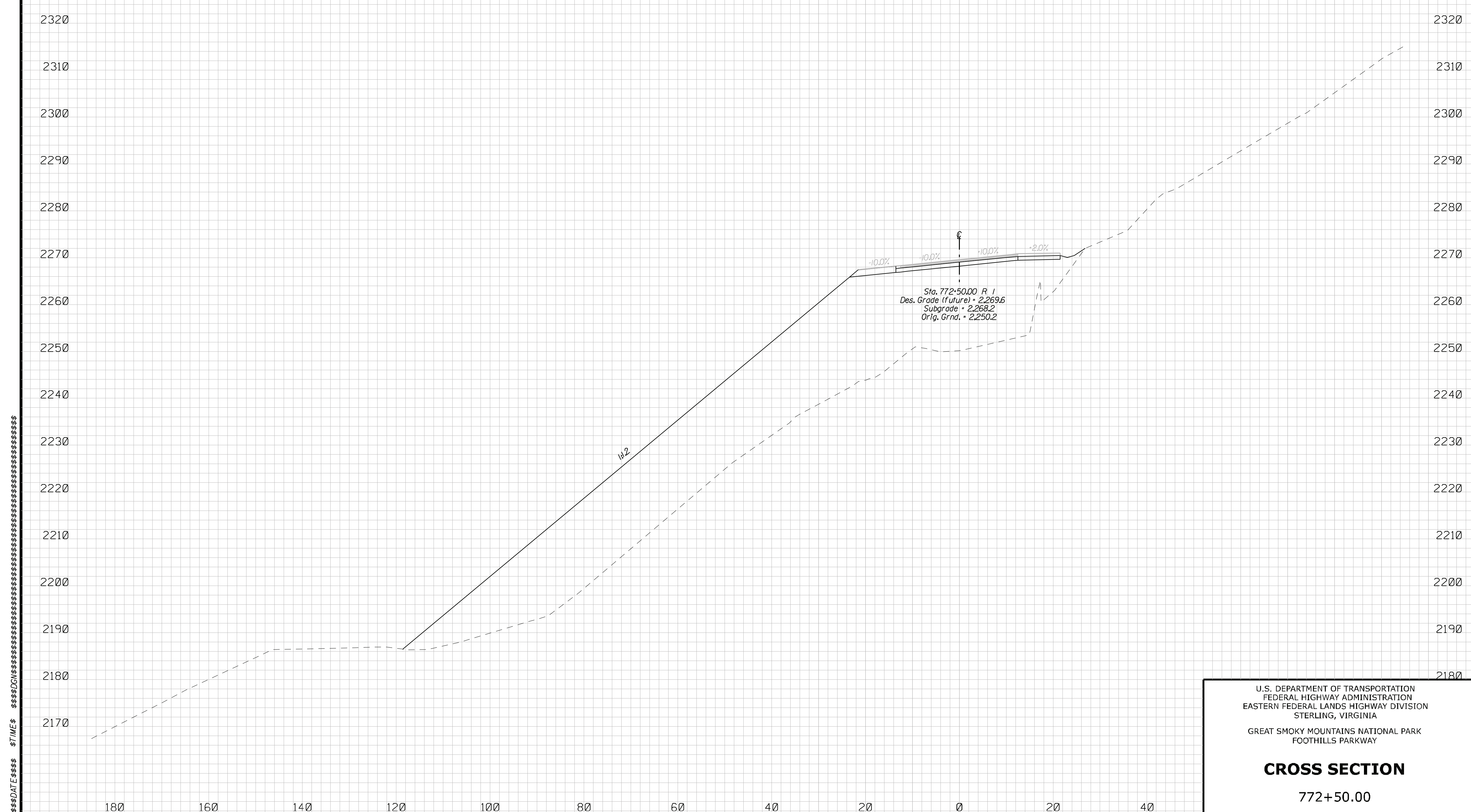

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

772+50.00

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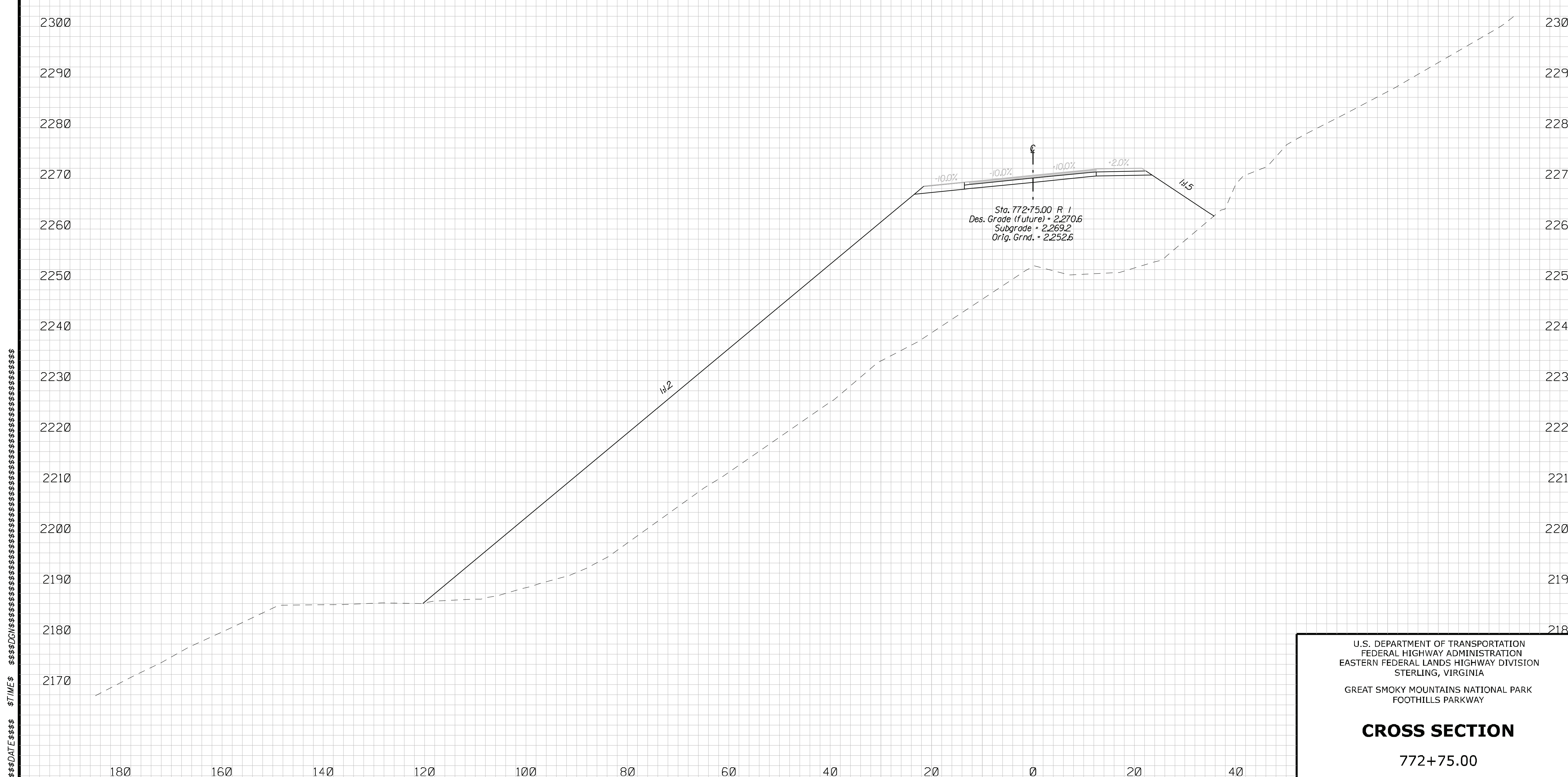

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

772+75.00

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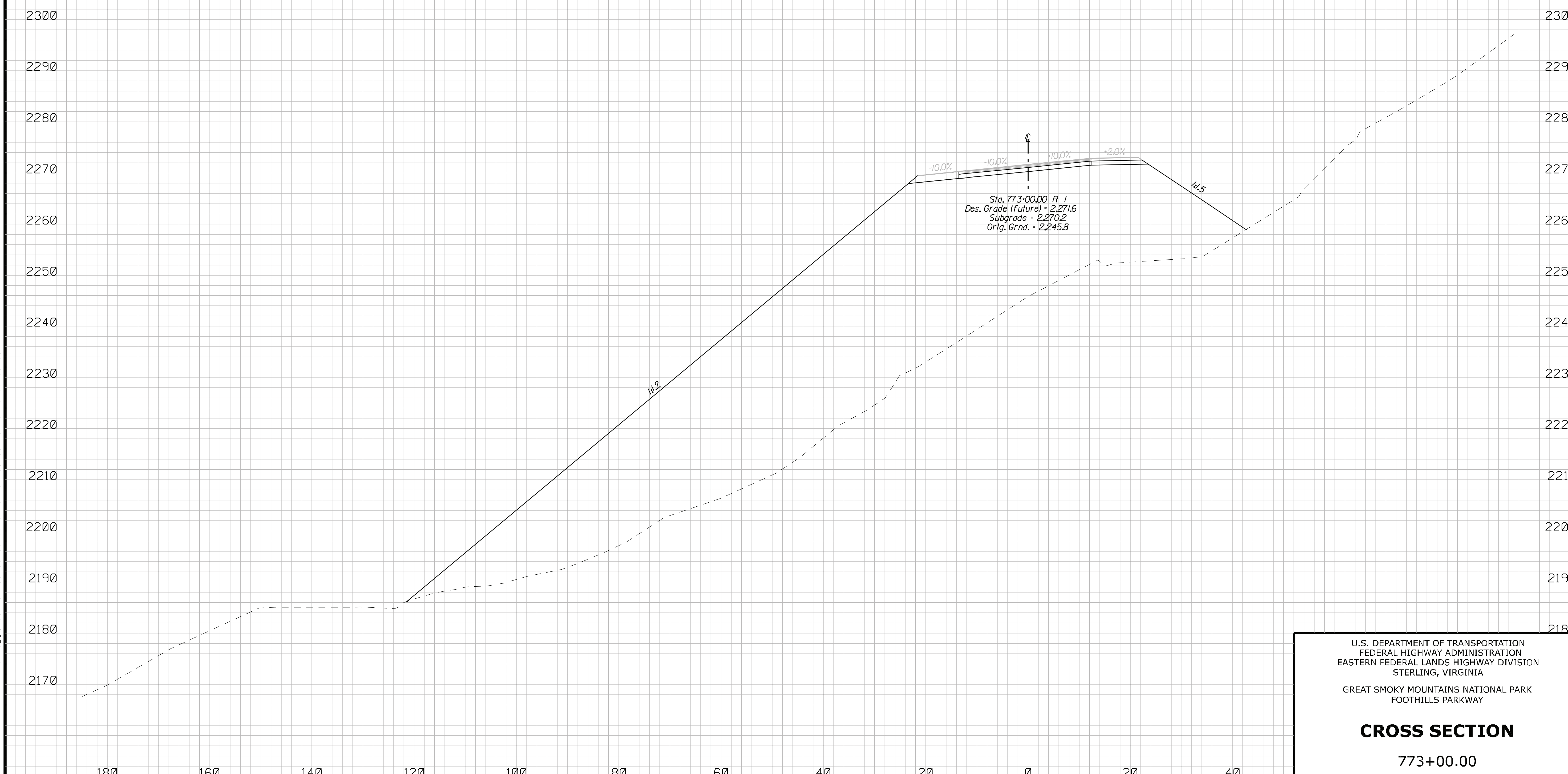

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

773+00.00

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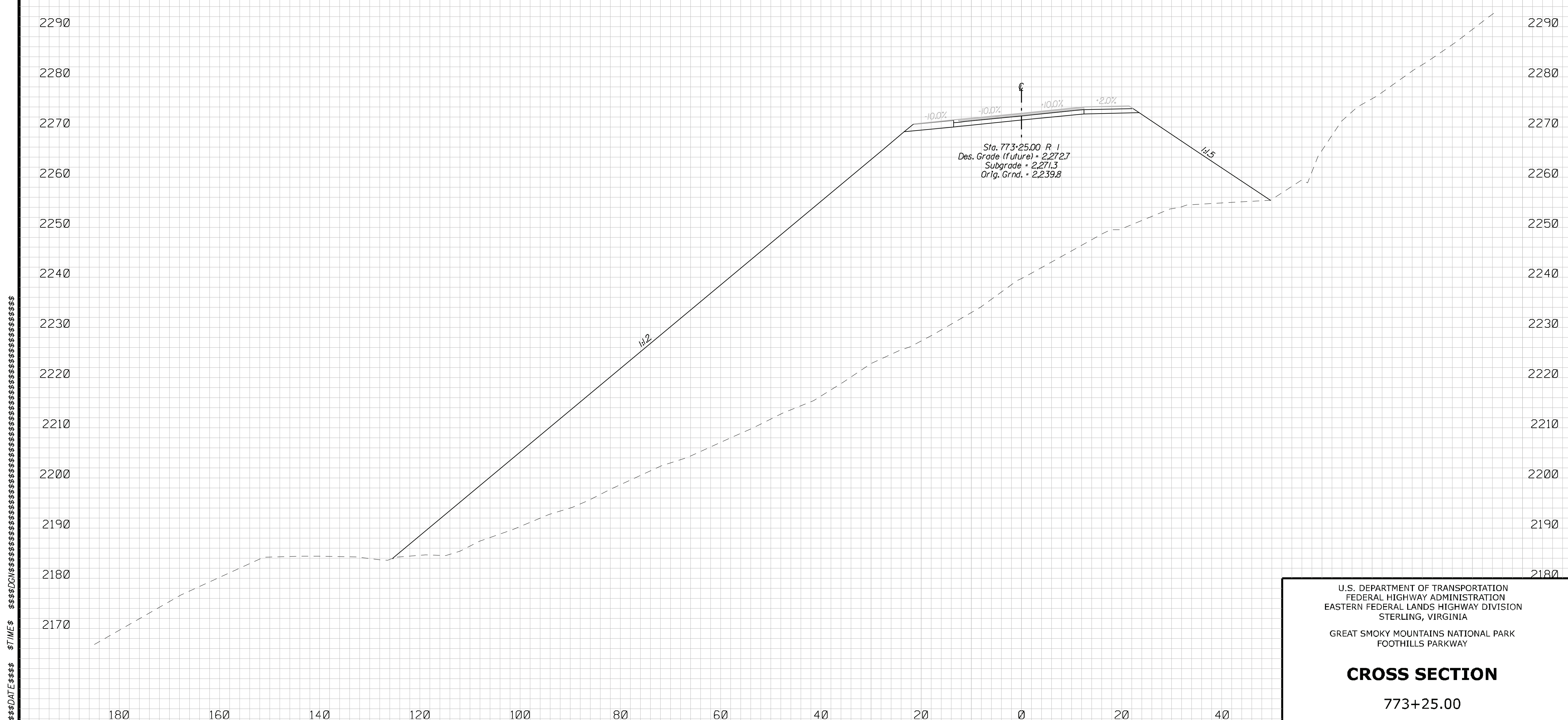

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

773+25.00

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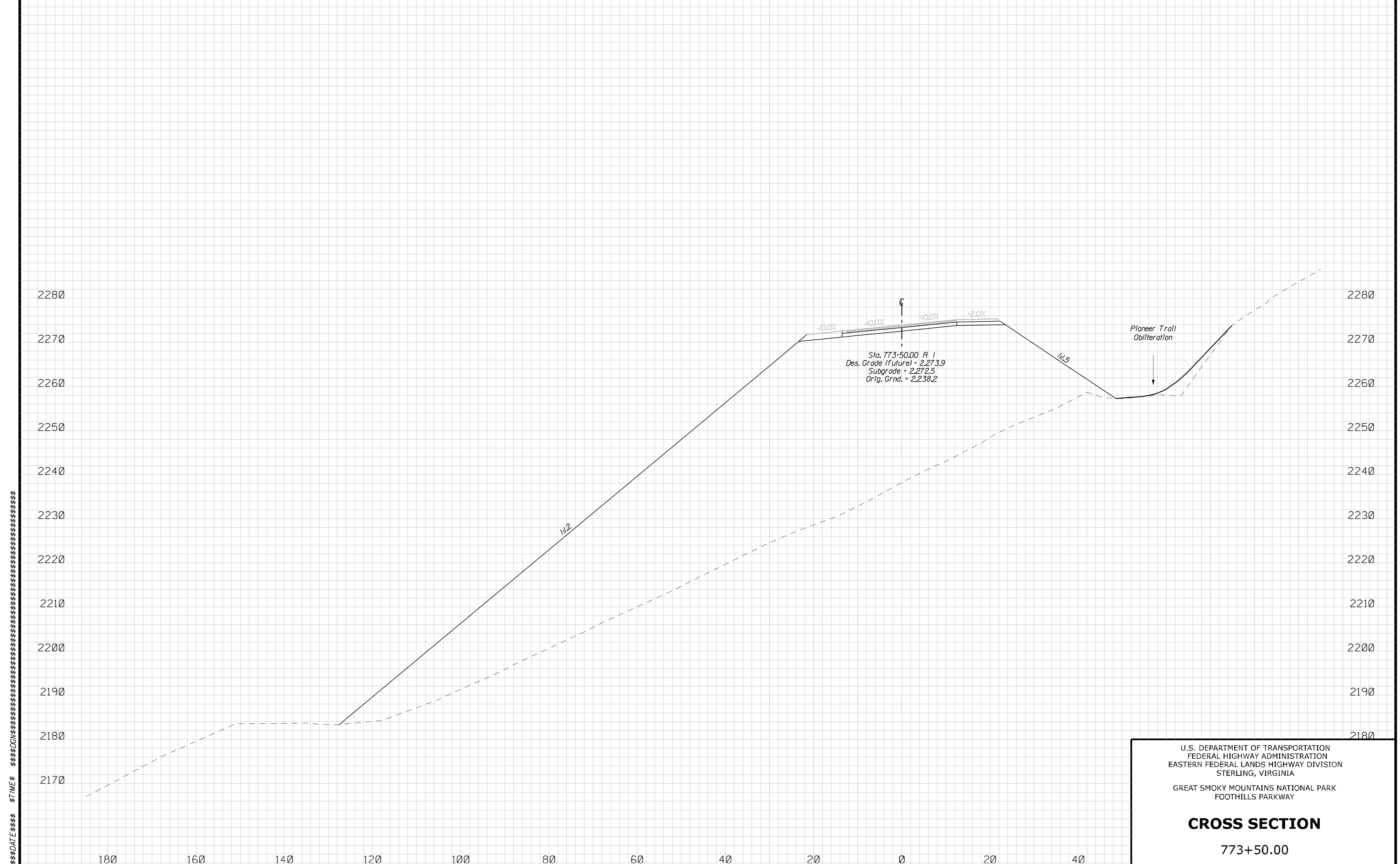

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

773+50.00

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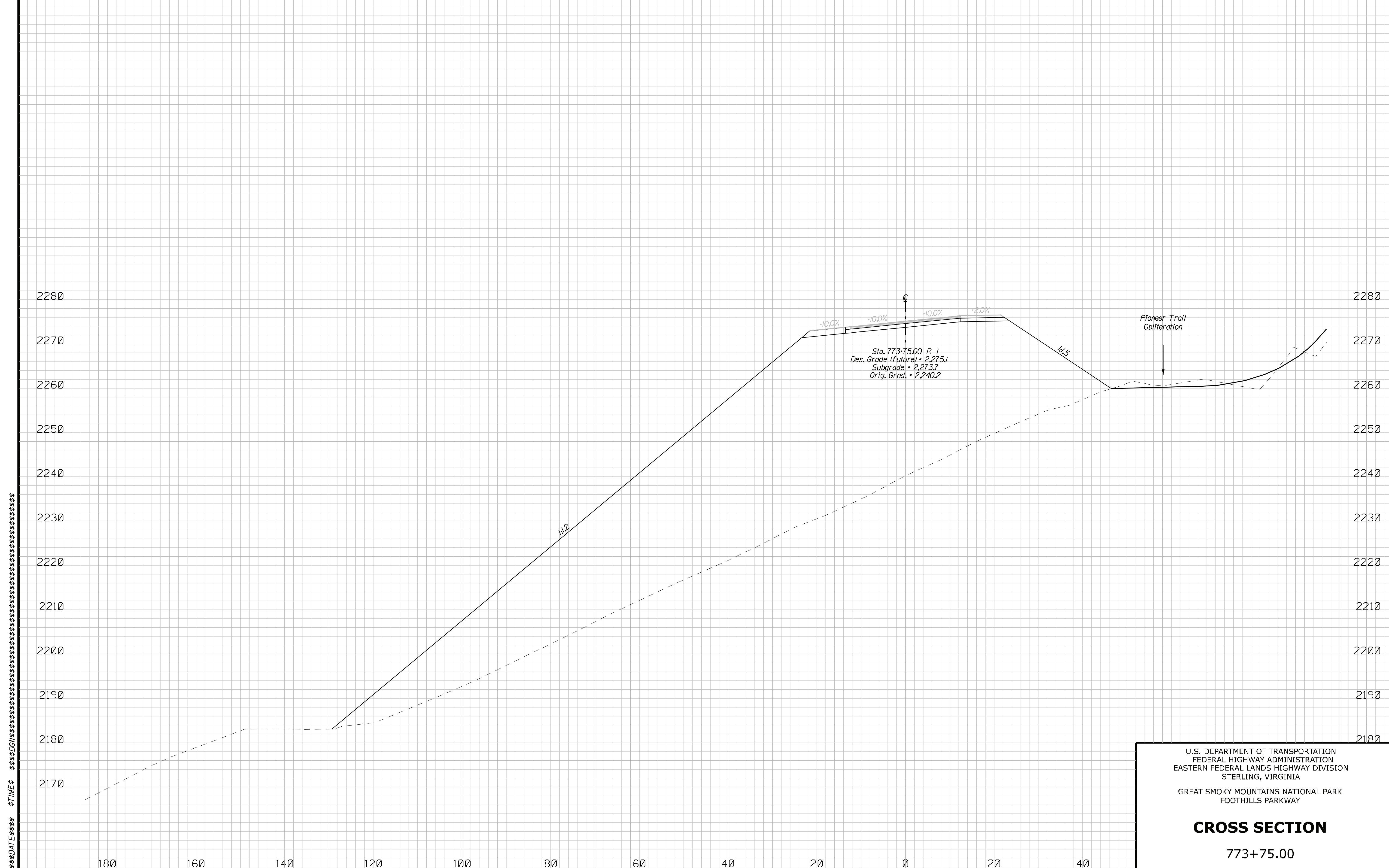

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

773+75.00

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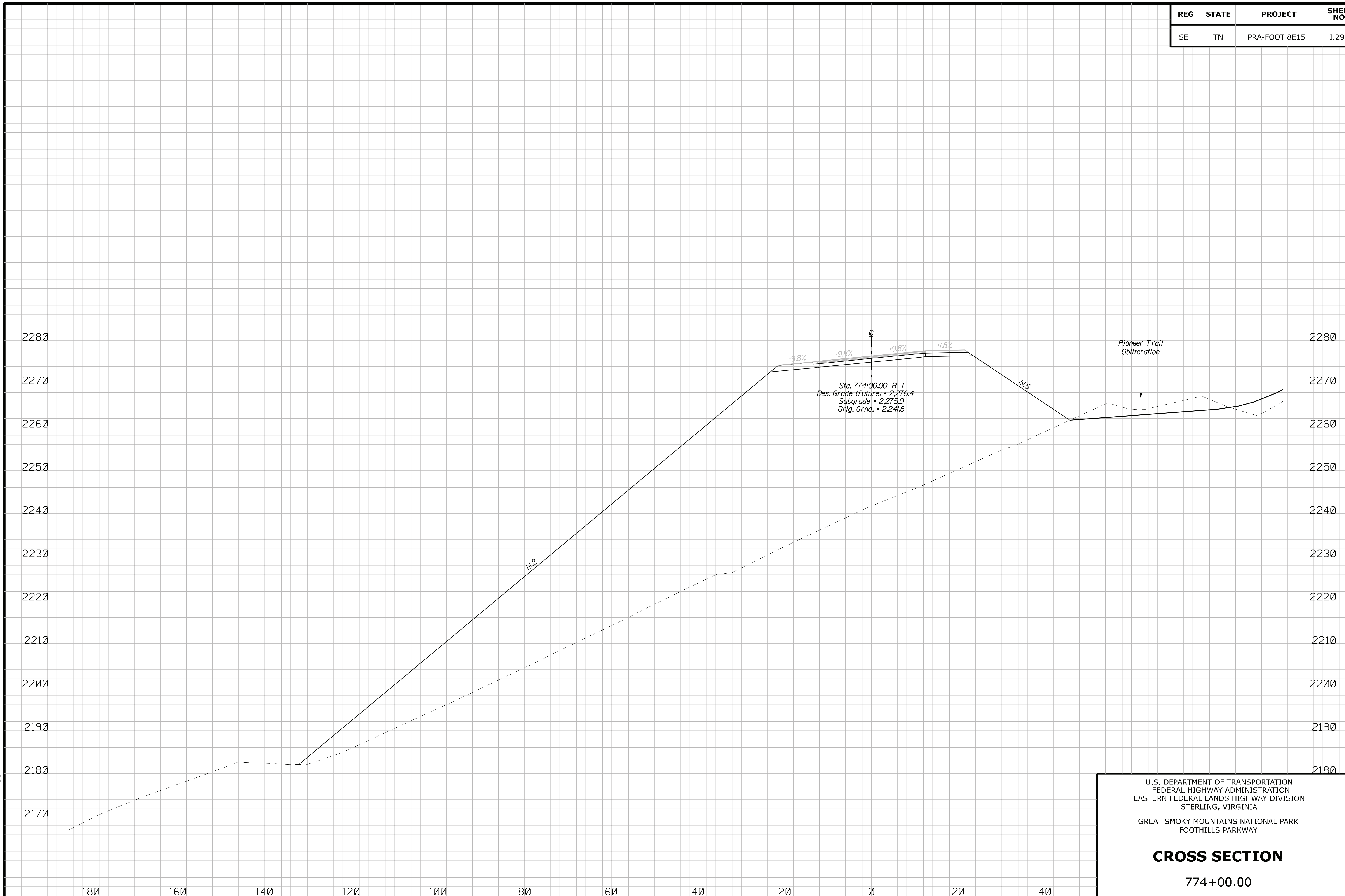

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

774+00.00

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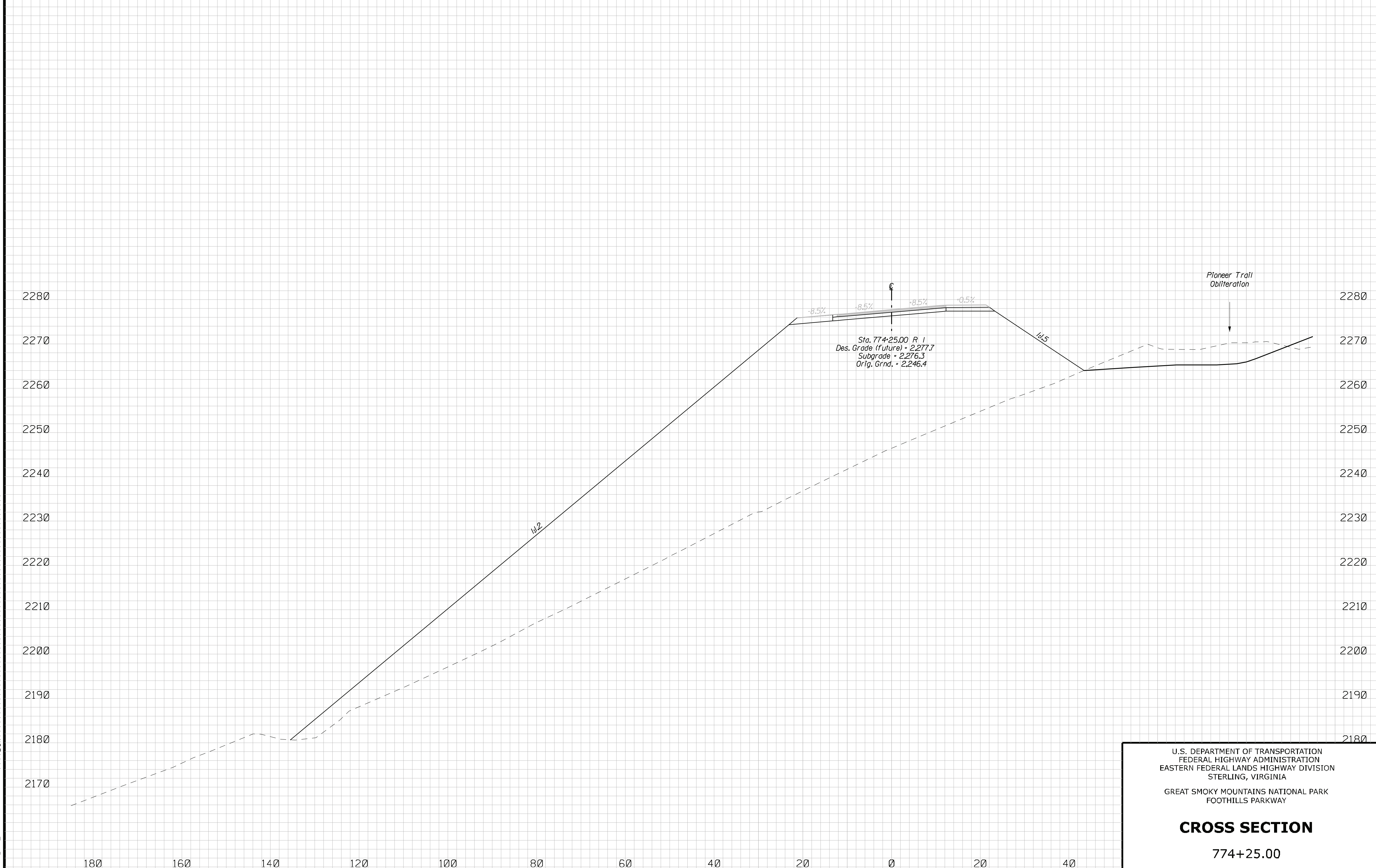


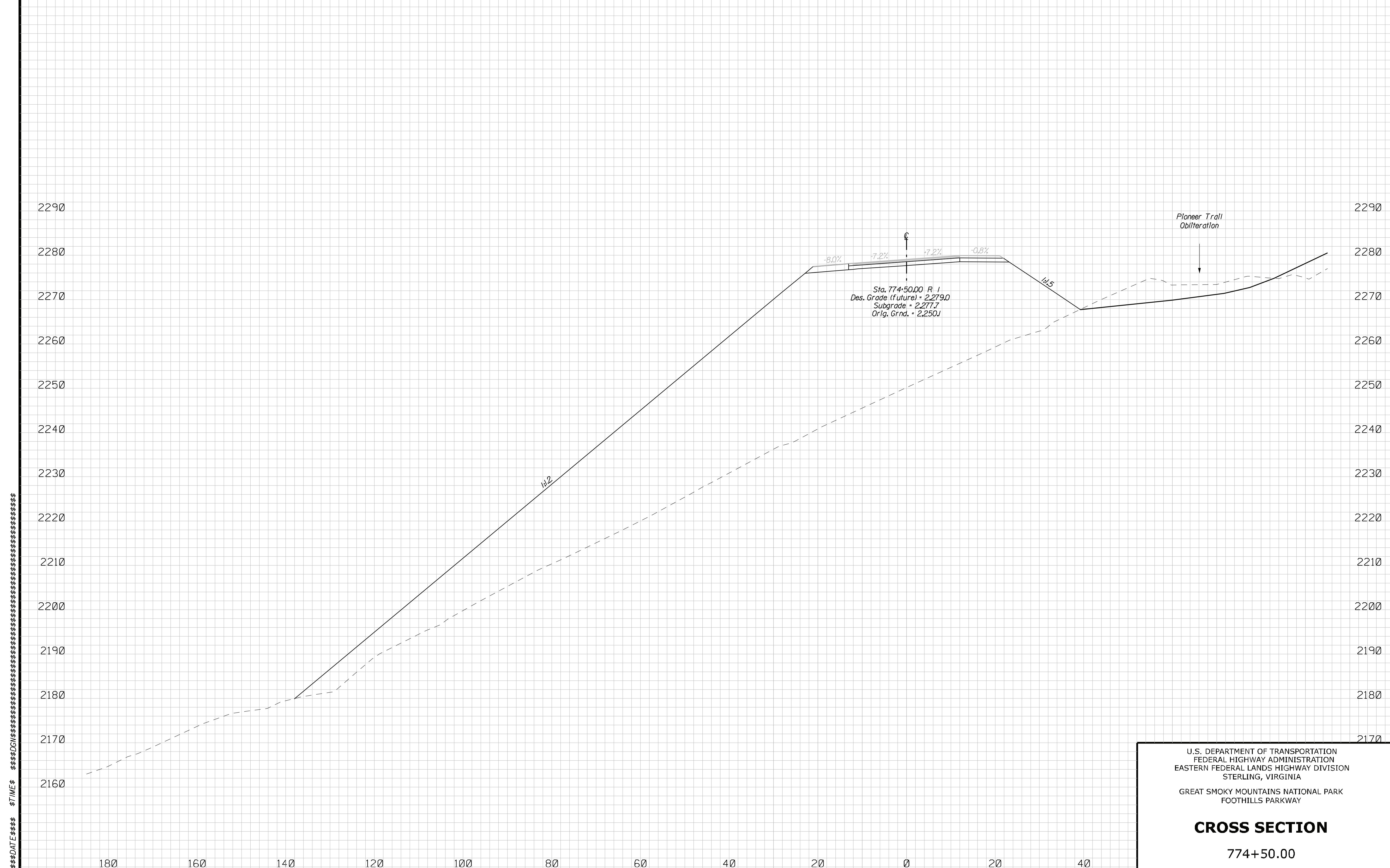
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

774+25.00

REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	J.31



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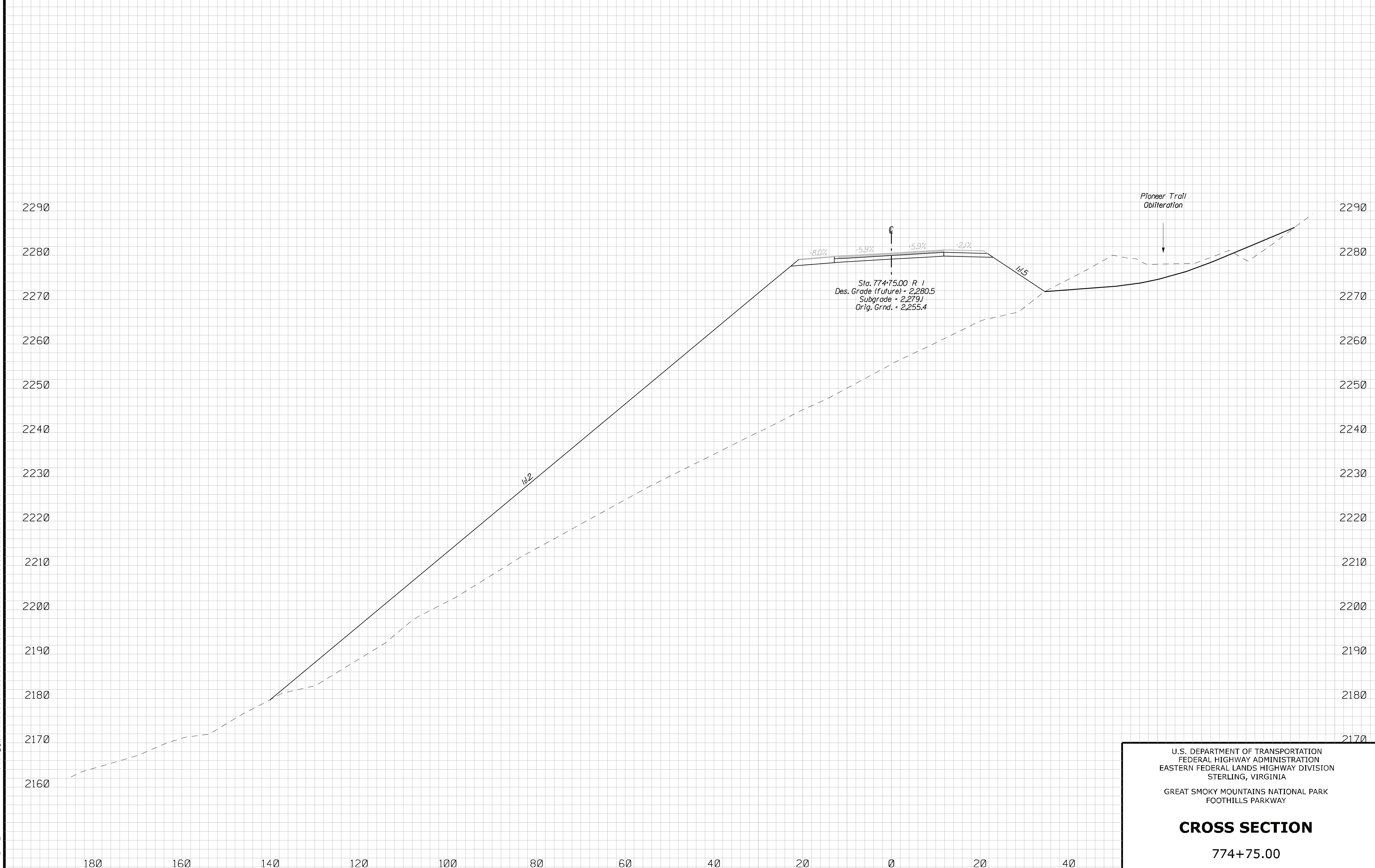
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

774+50.00

REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	J.32



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GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

774+75.00

REG	STATE	PROJECT	SHEET NO.
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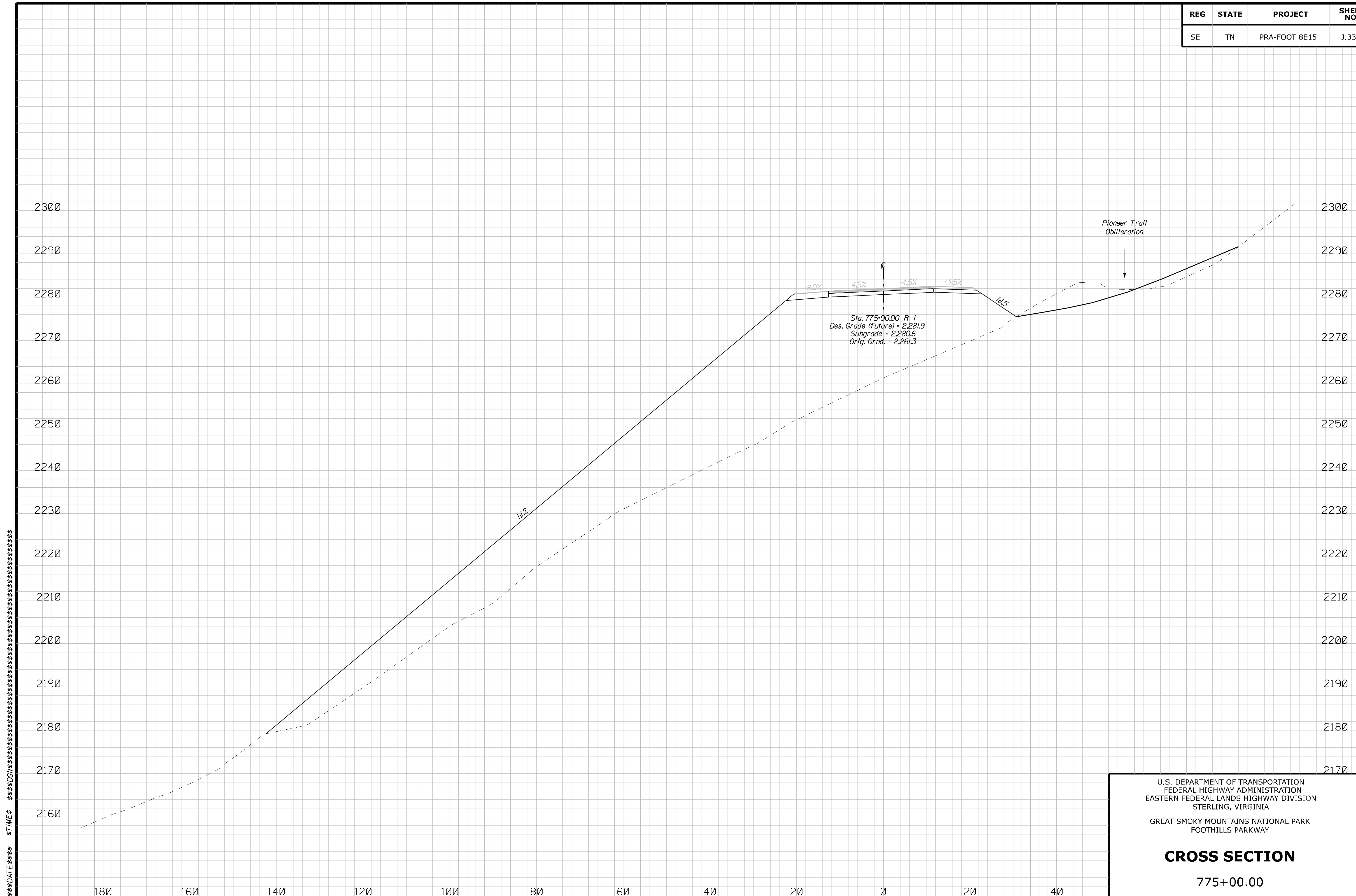

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FOOTHILLS PARKWAY

CROSS SECTION

775+00.00

REG	STATE	PROJECT	SHEET NO.
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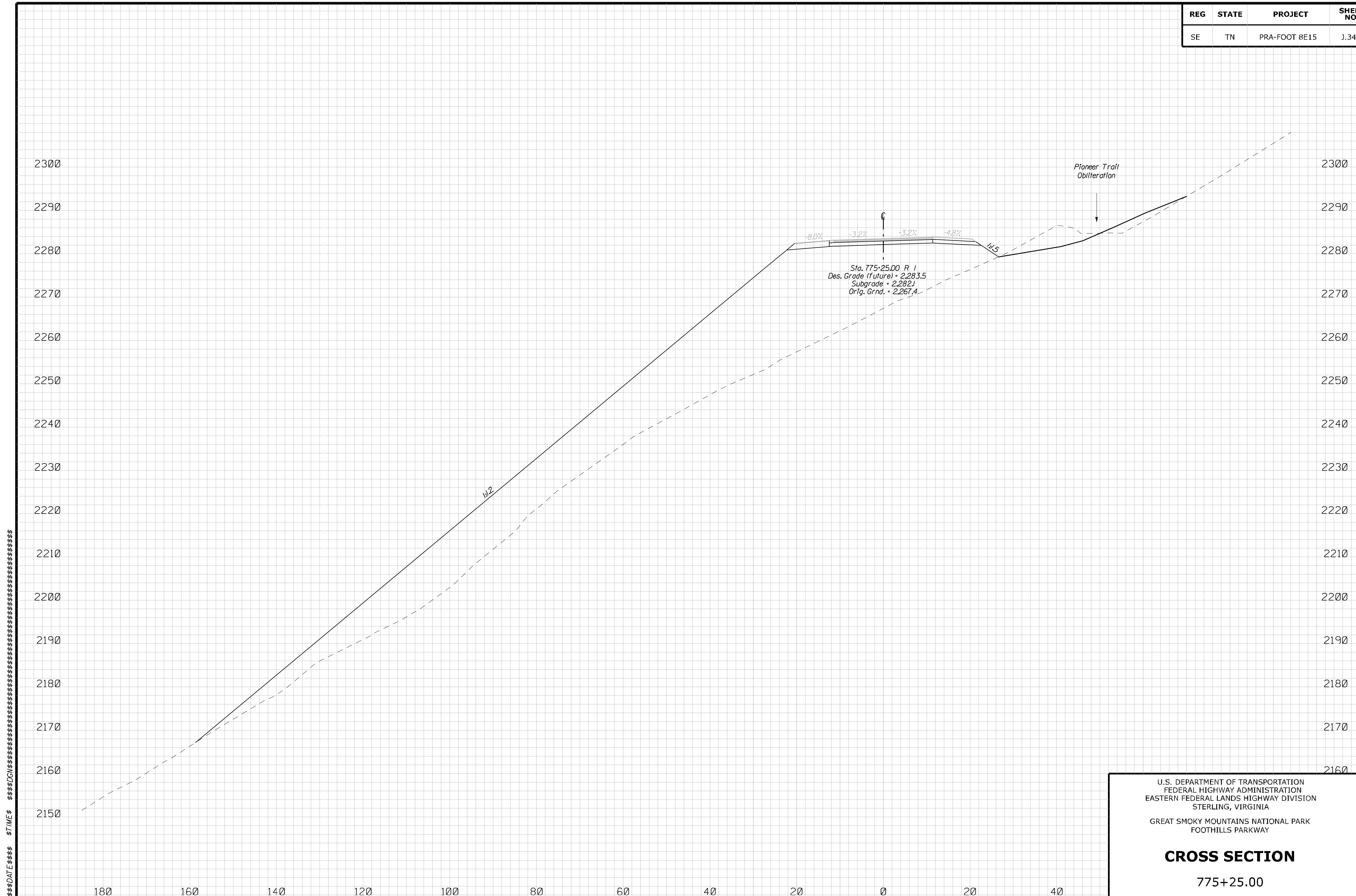

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CROSS SECTION

775+25.00

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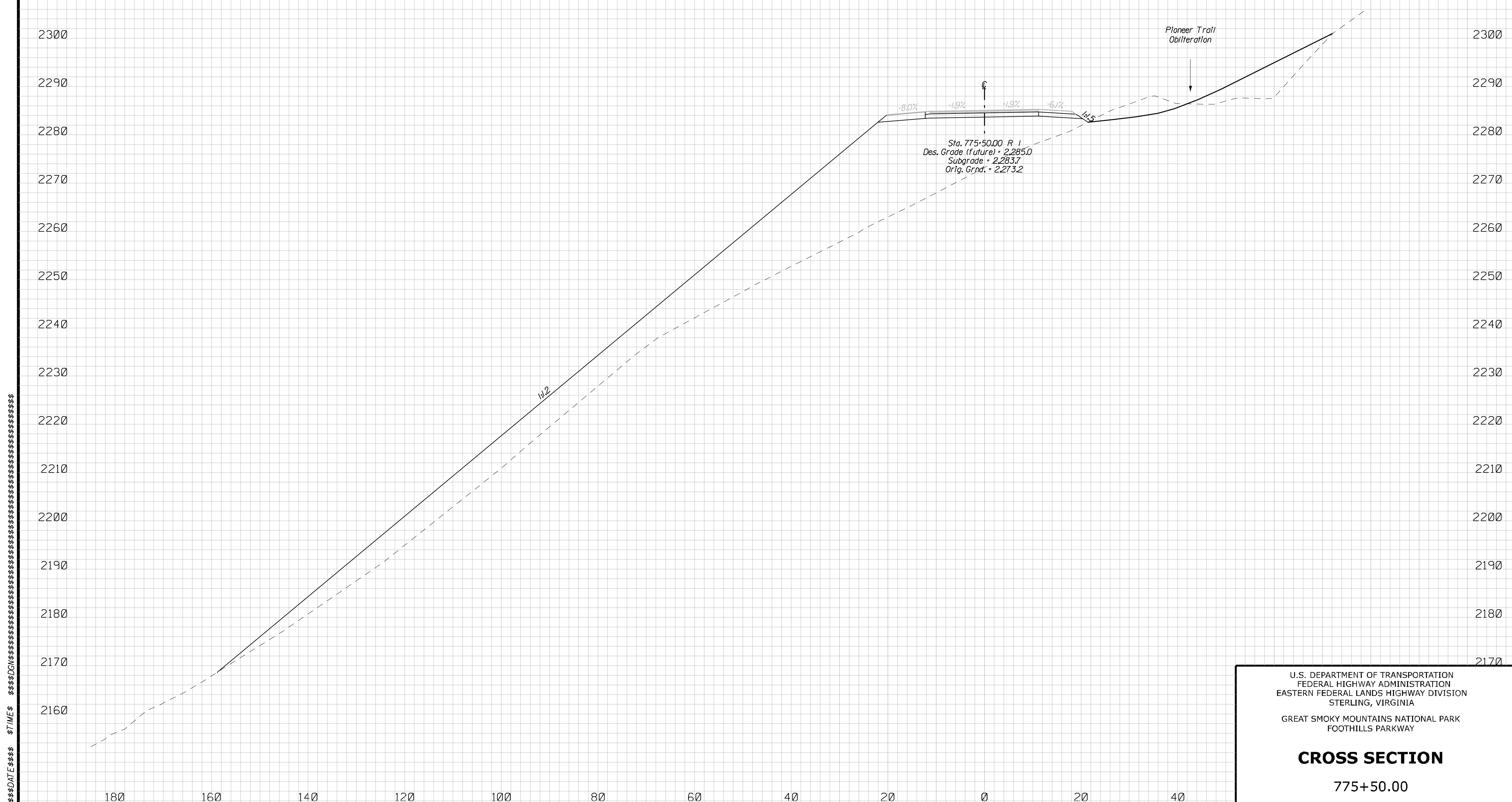

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GREAT SMOKY MOUNTAINS NATIONAL PARK
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CROSS SECTION

775+50.00

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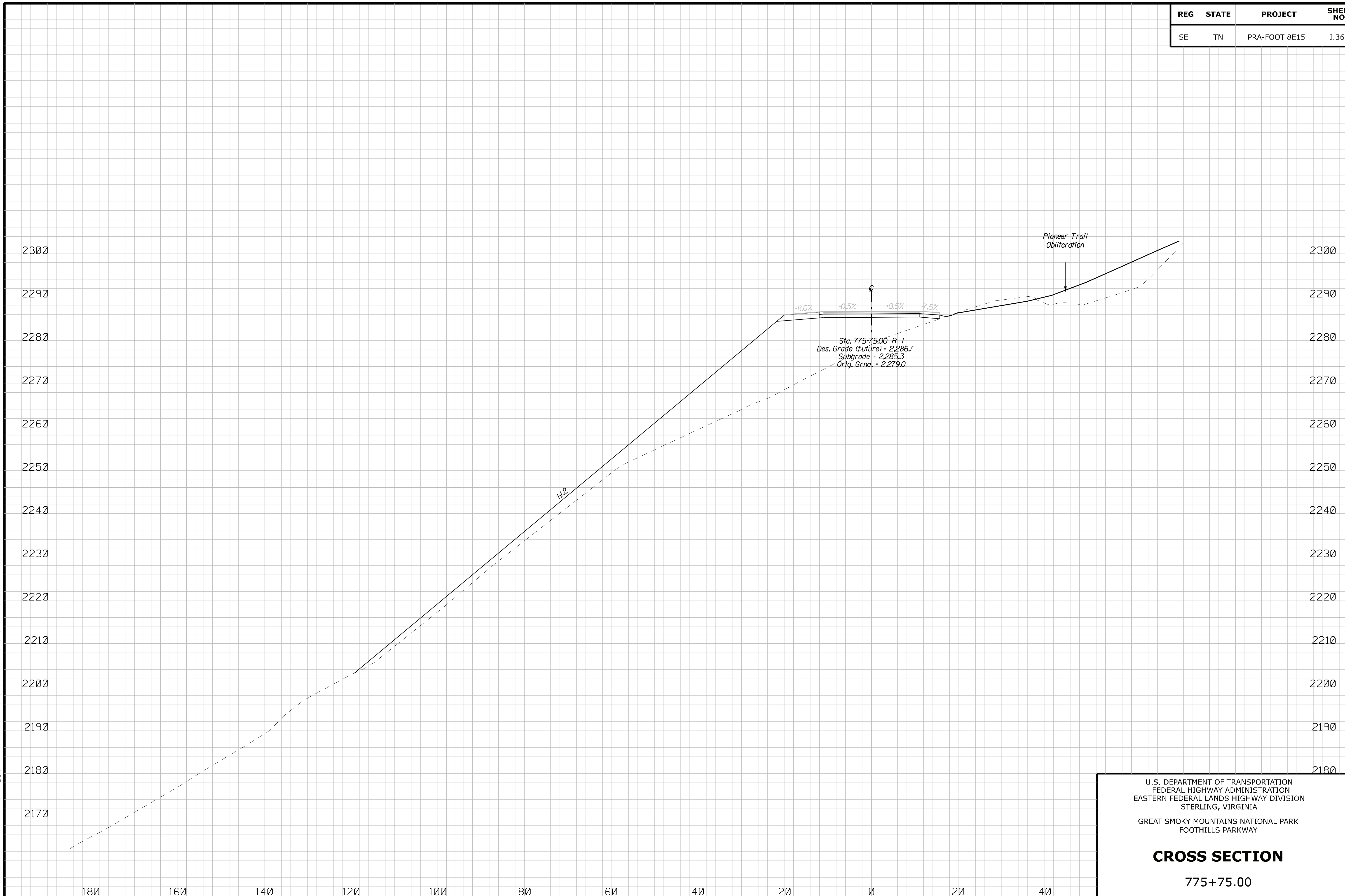

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CROSS SECTION

775+75.00

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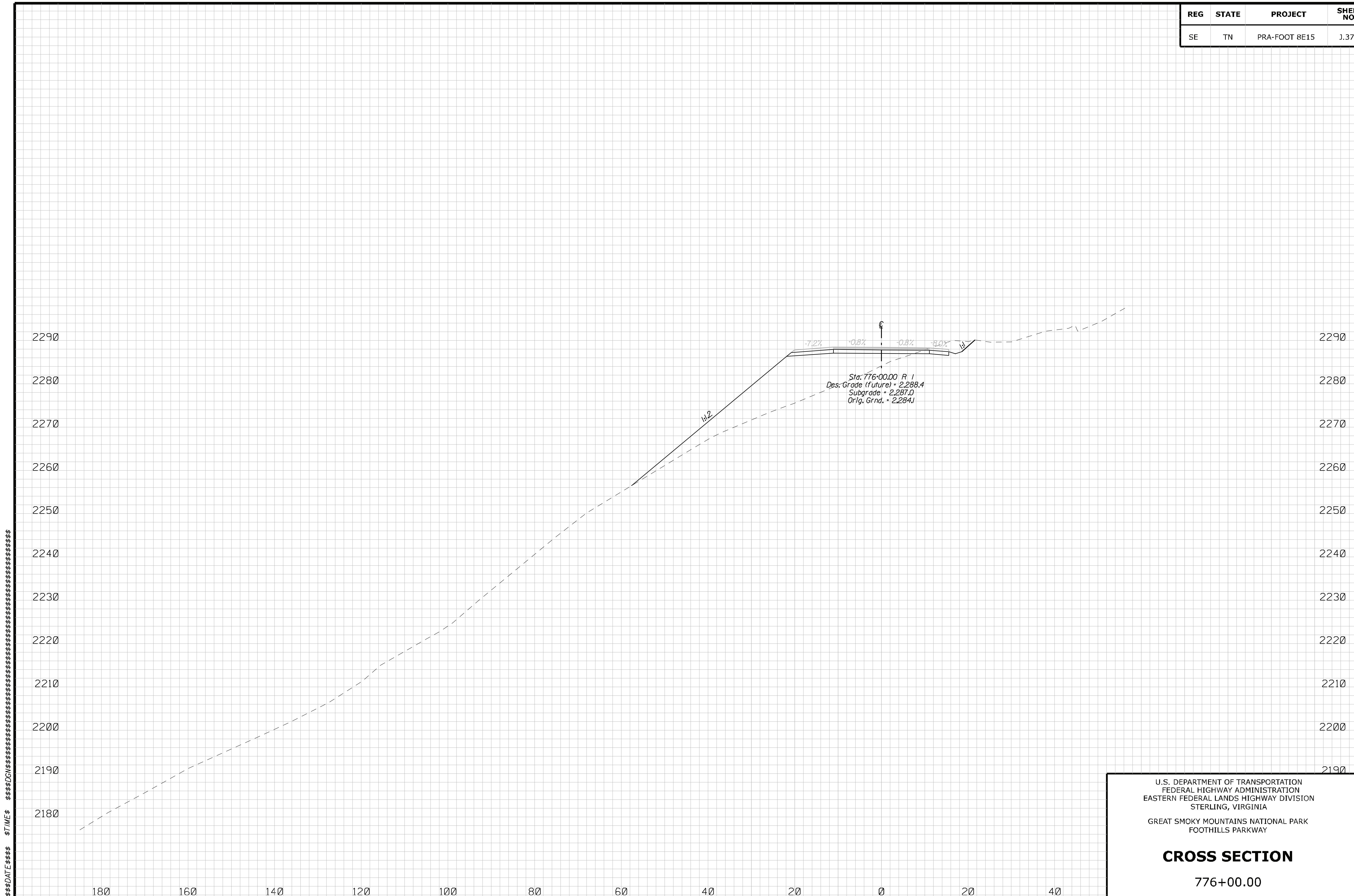

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FOOTHILLS PARKWAY

CROSS SECTION

776+00.00

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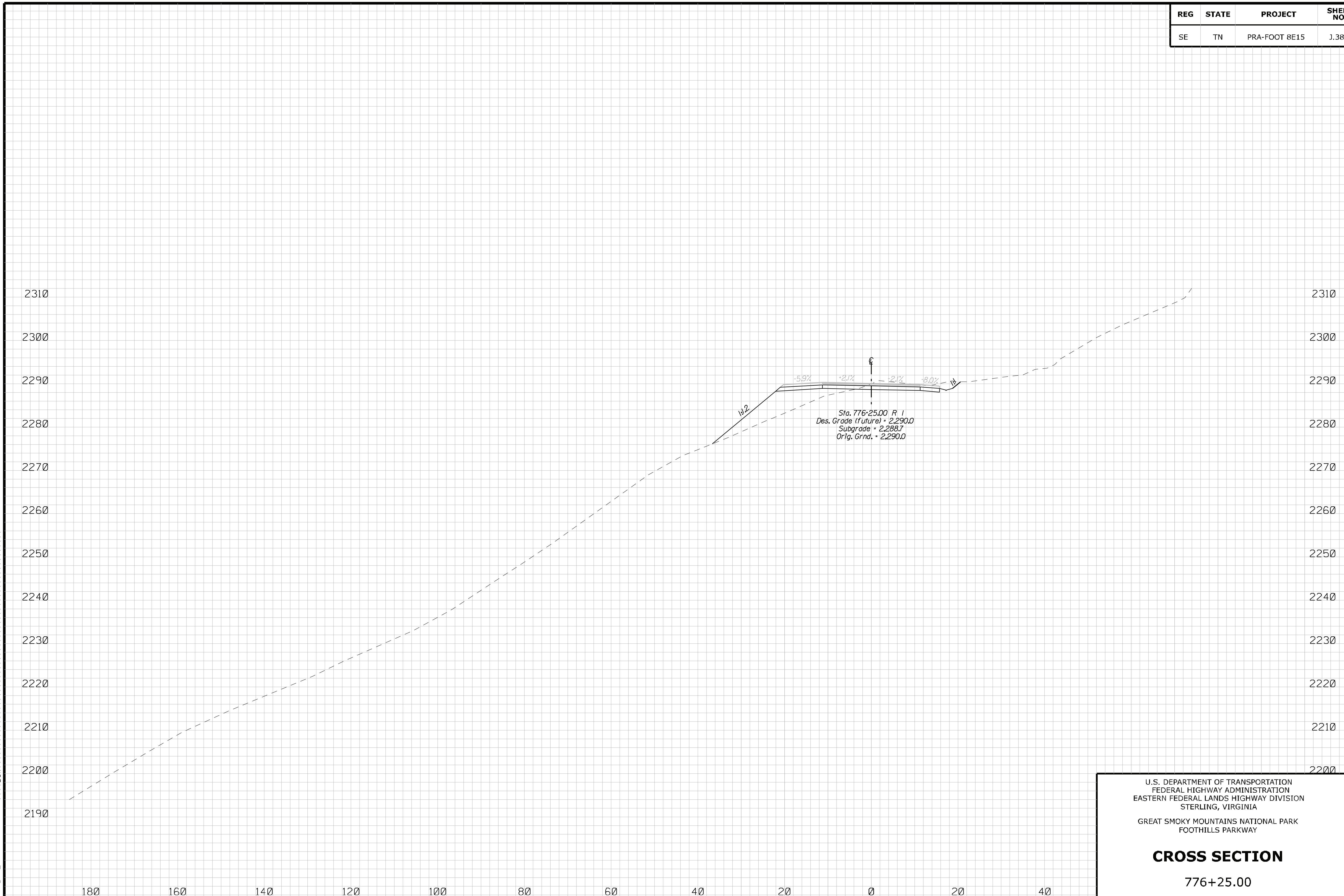

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CROSS SECTION

776+25.00

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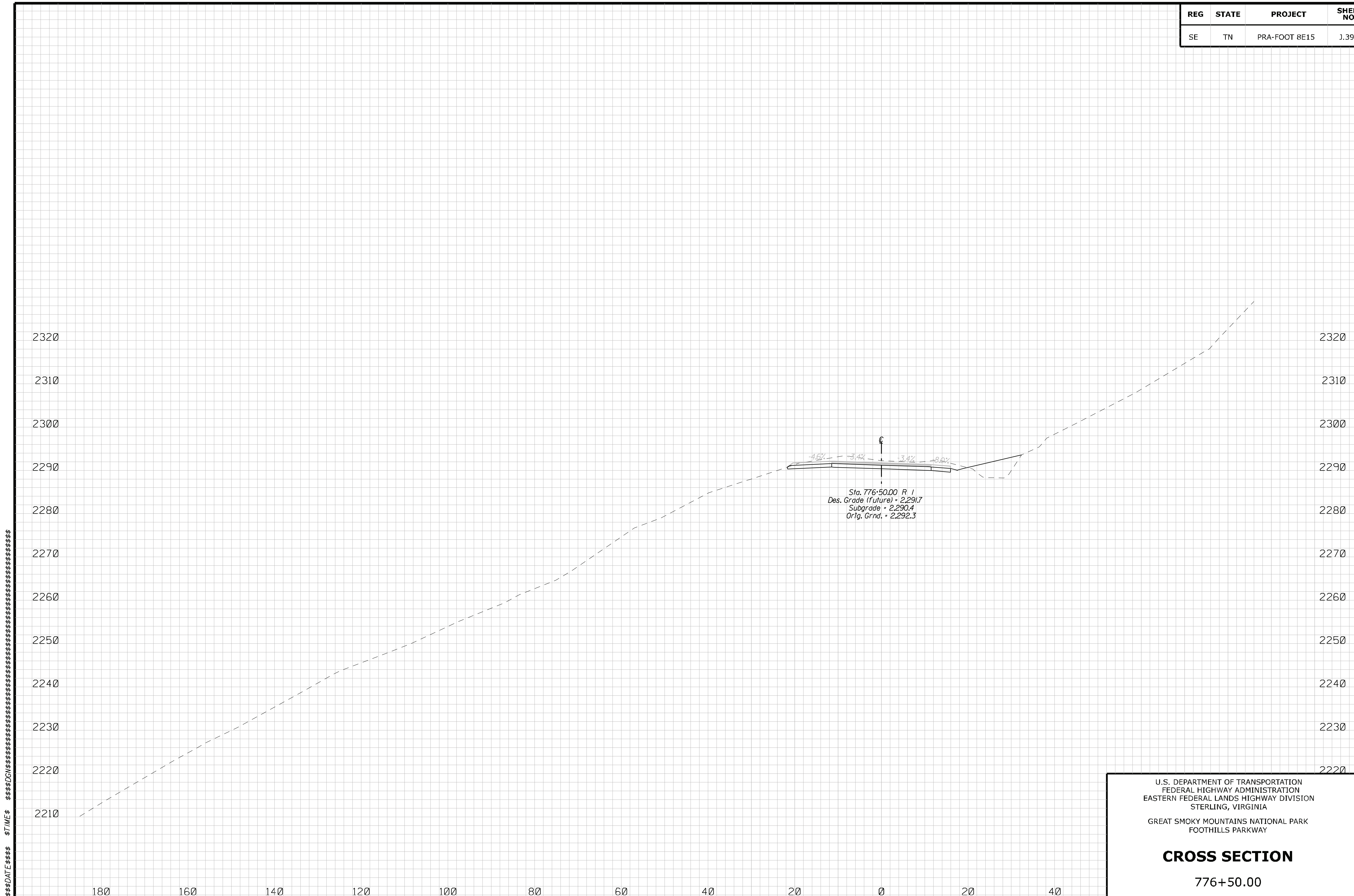

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CROSS SECTION

776+50.00

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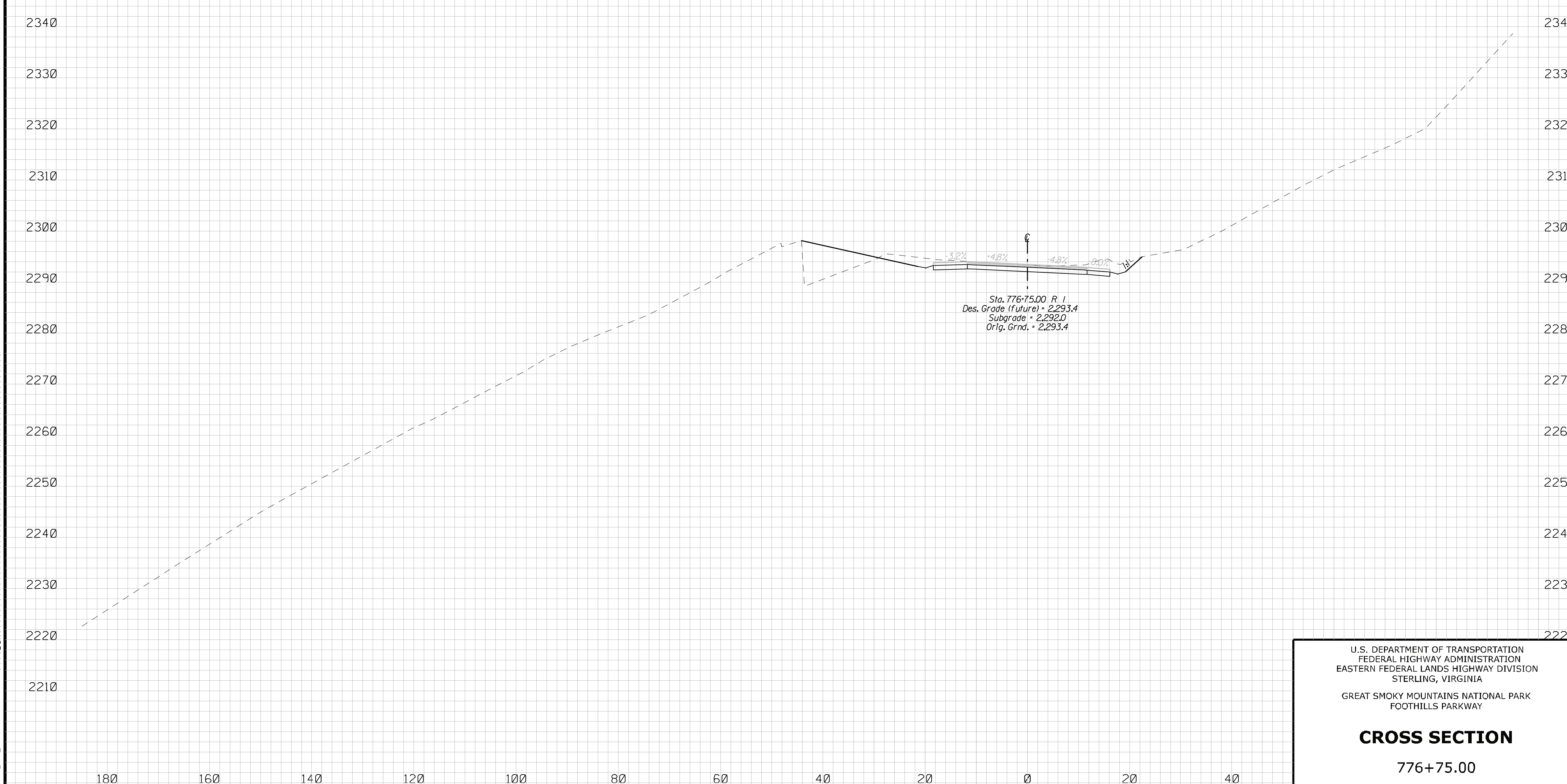

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GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

776+75.00

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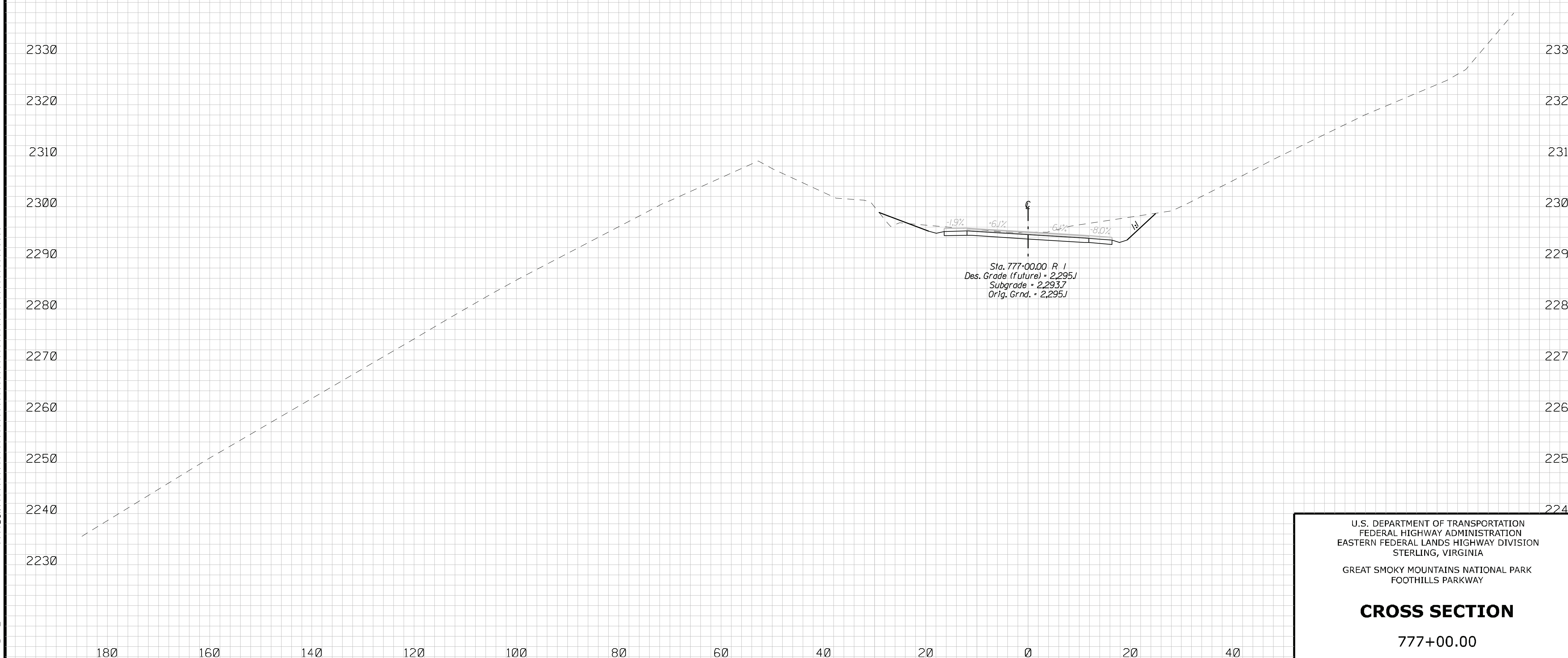

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FOOTHILLS PARKWAY

CROSS SECTION

777+00.00

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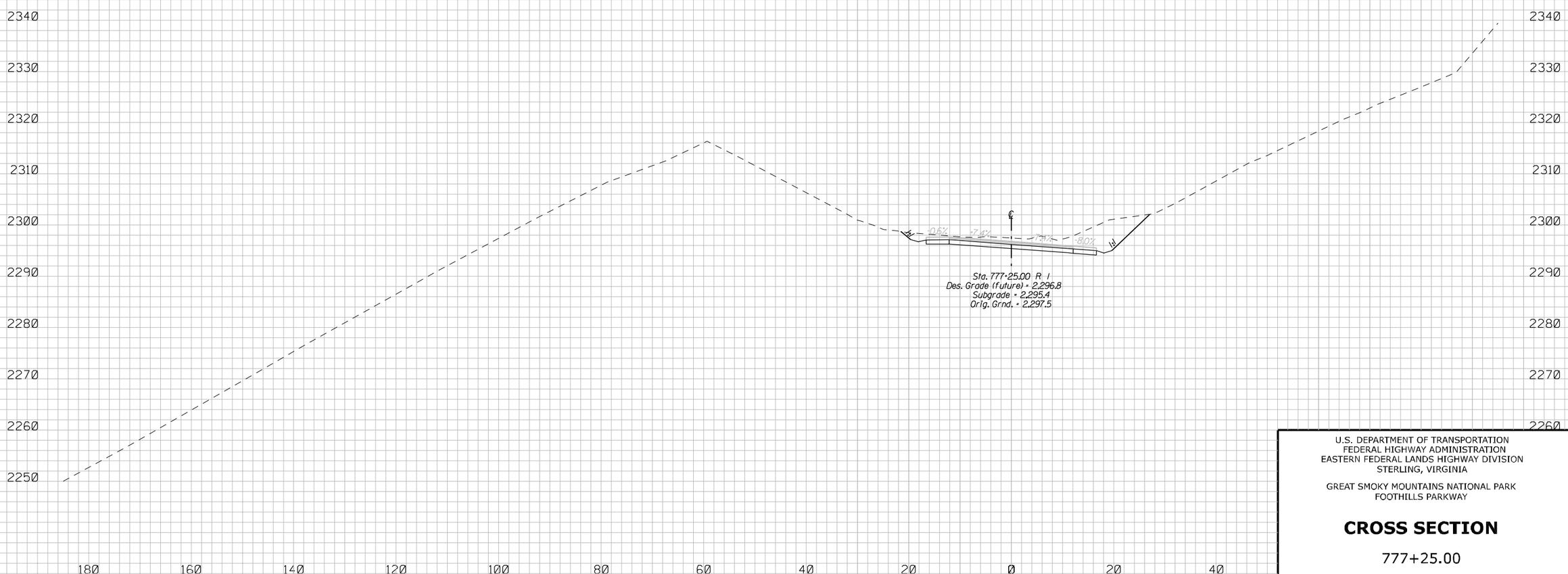

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CROSS SECTION

777+25.00

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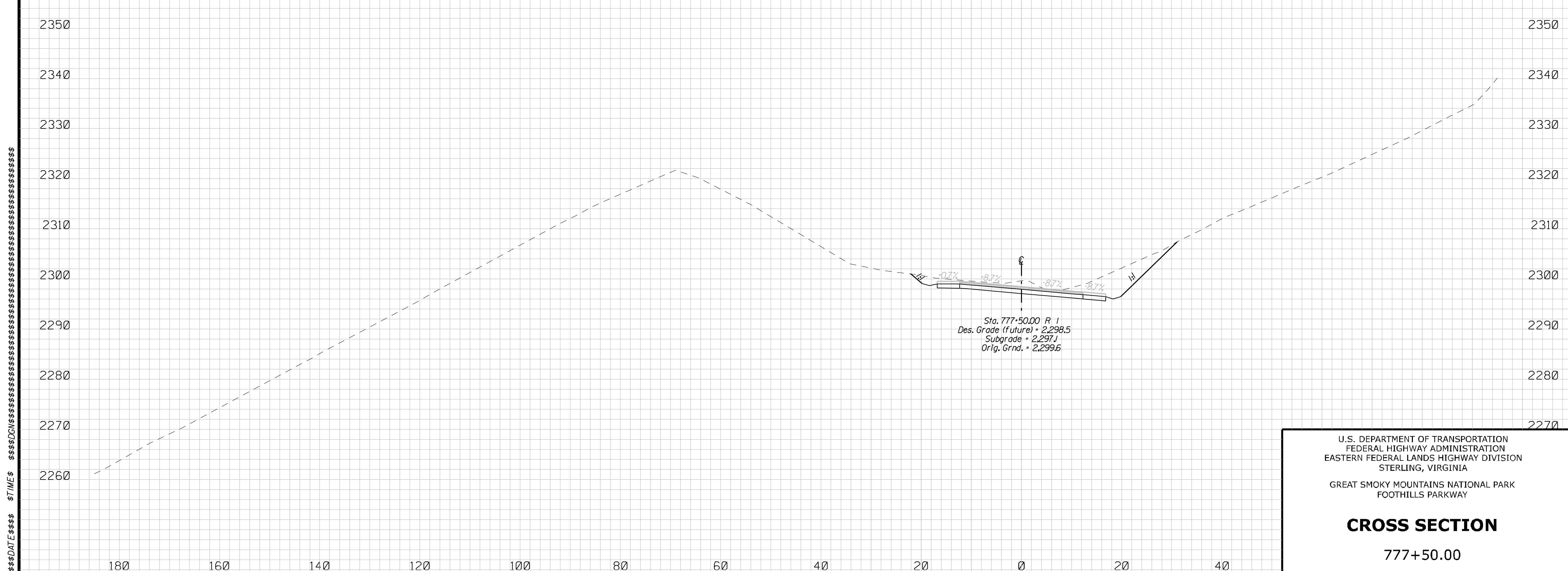

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FOOTHILLS PARKWAY

CROSS SECTION

777+50.00

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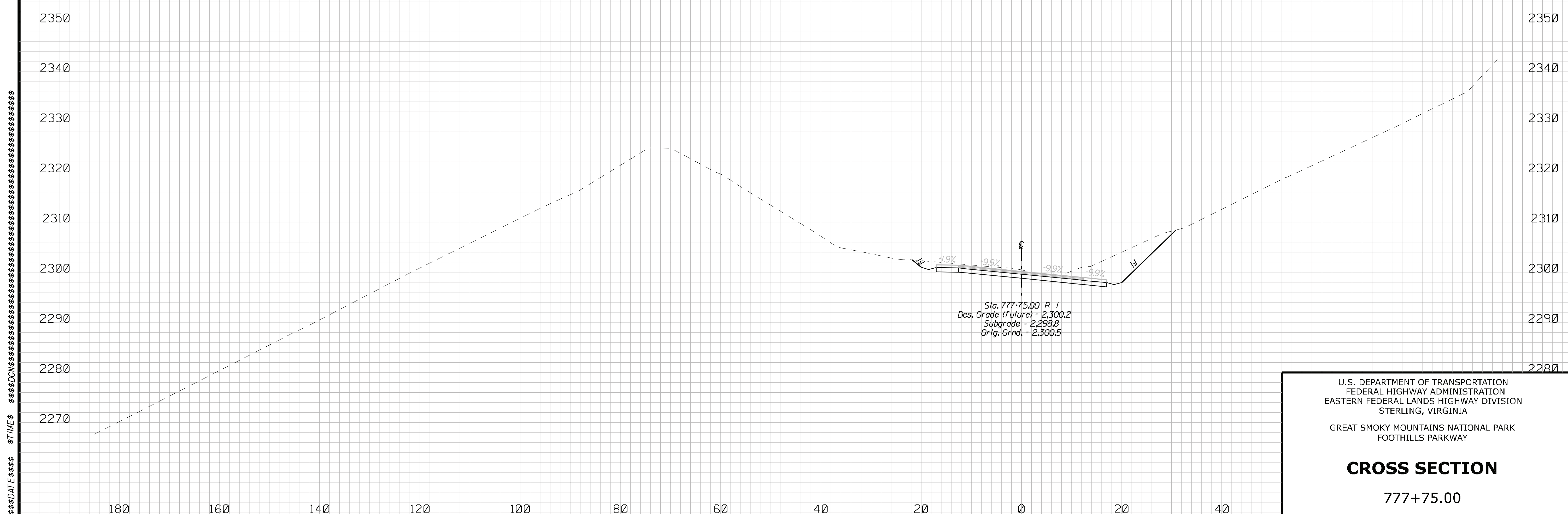

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FOOTHILLS PARKWAY

CROSS SECTION

777+75.00

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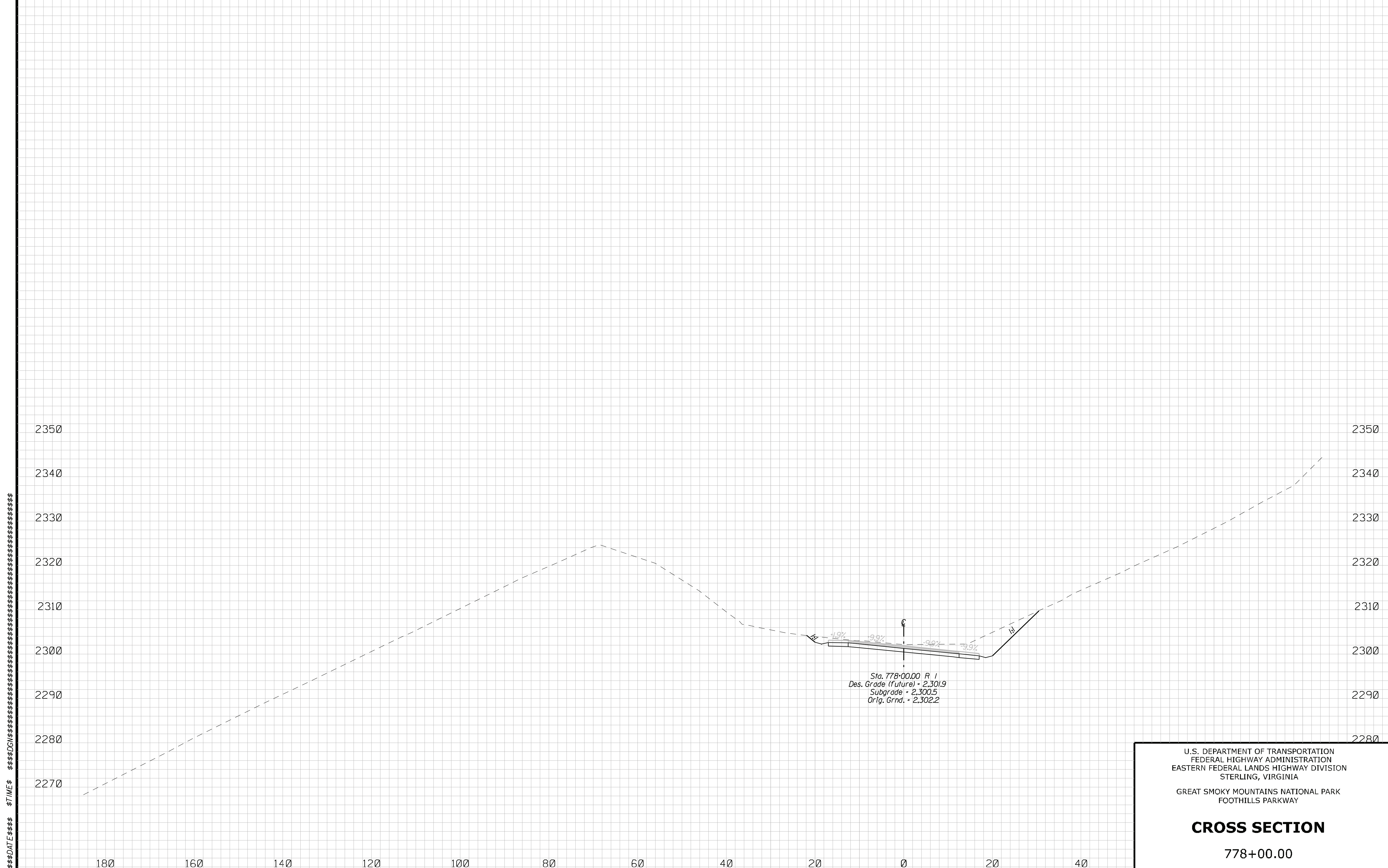

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FOOTHILLS PARKWAY

CROSS SECTION

778+00.00

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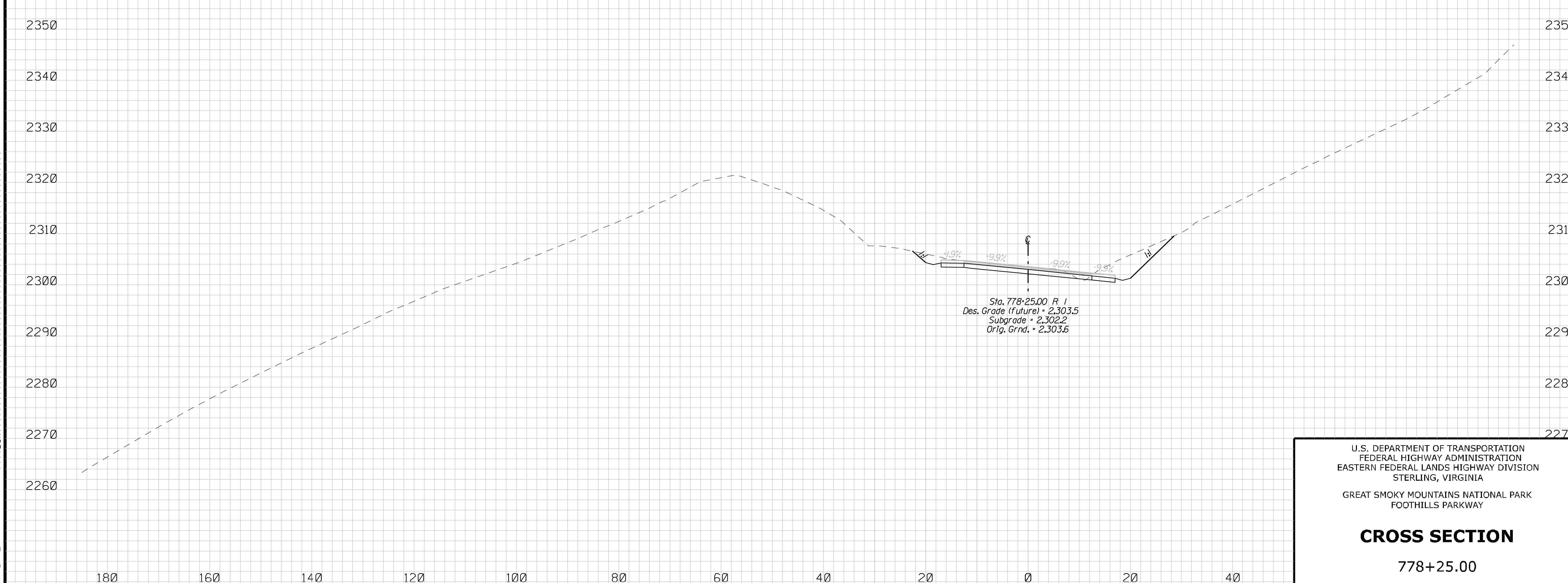

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FOOTHILLS PARKWAY

CROSS SECTION

778+25.00

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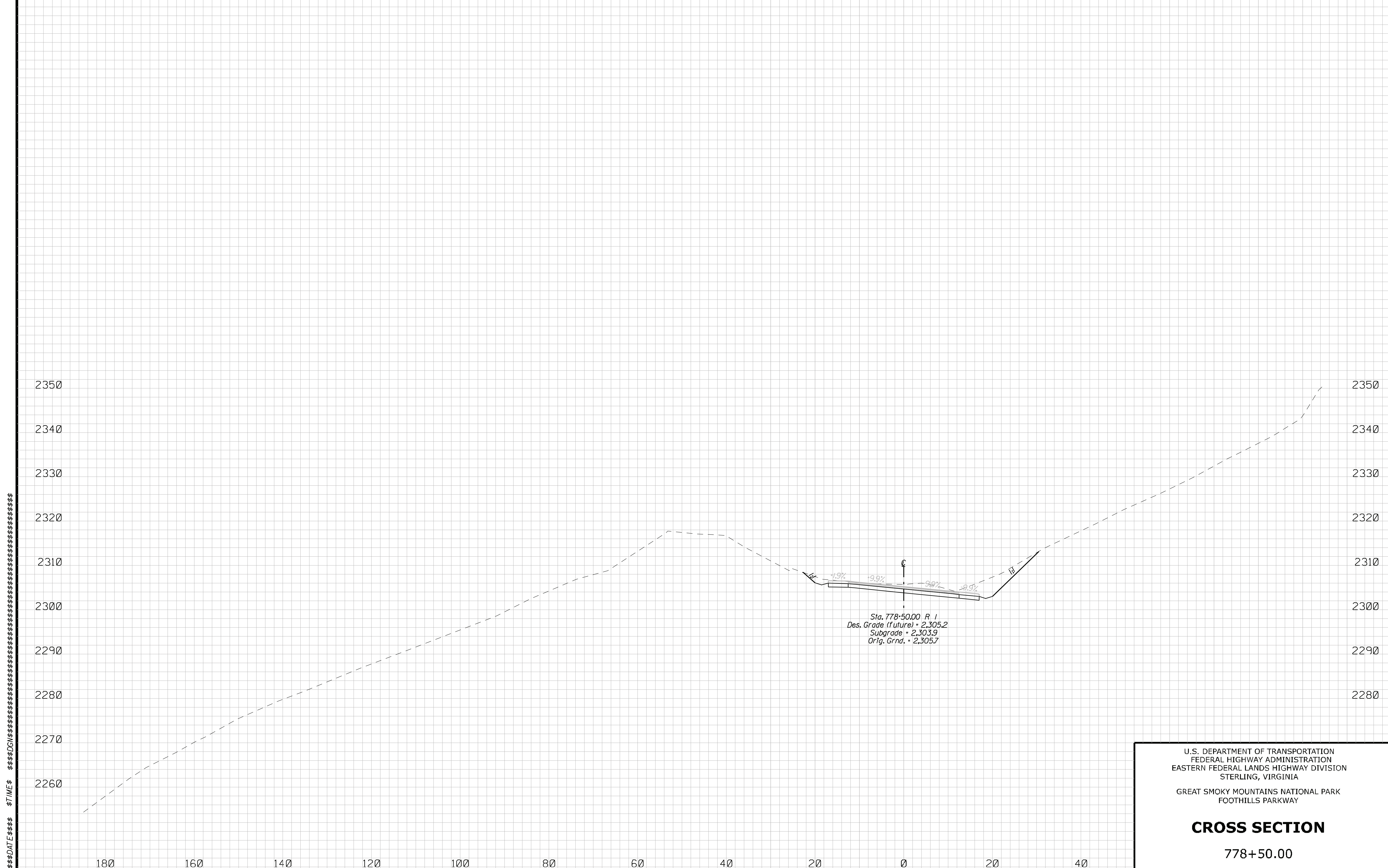

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GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

778+50.00

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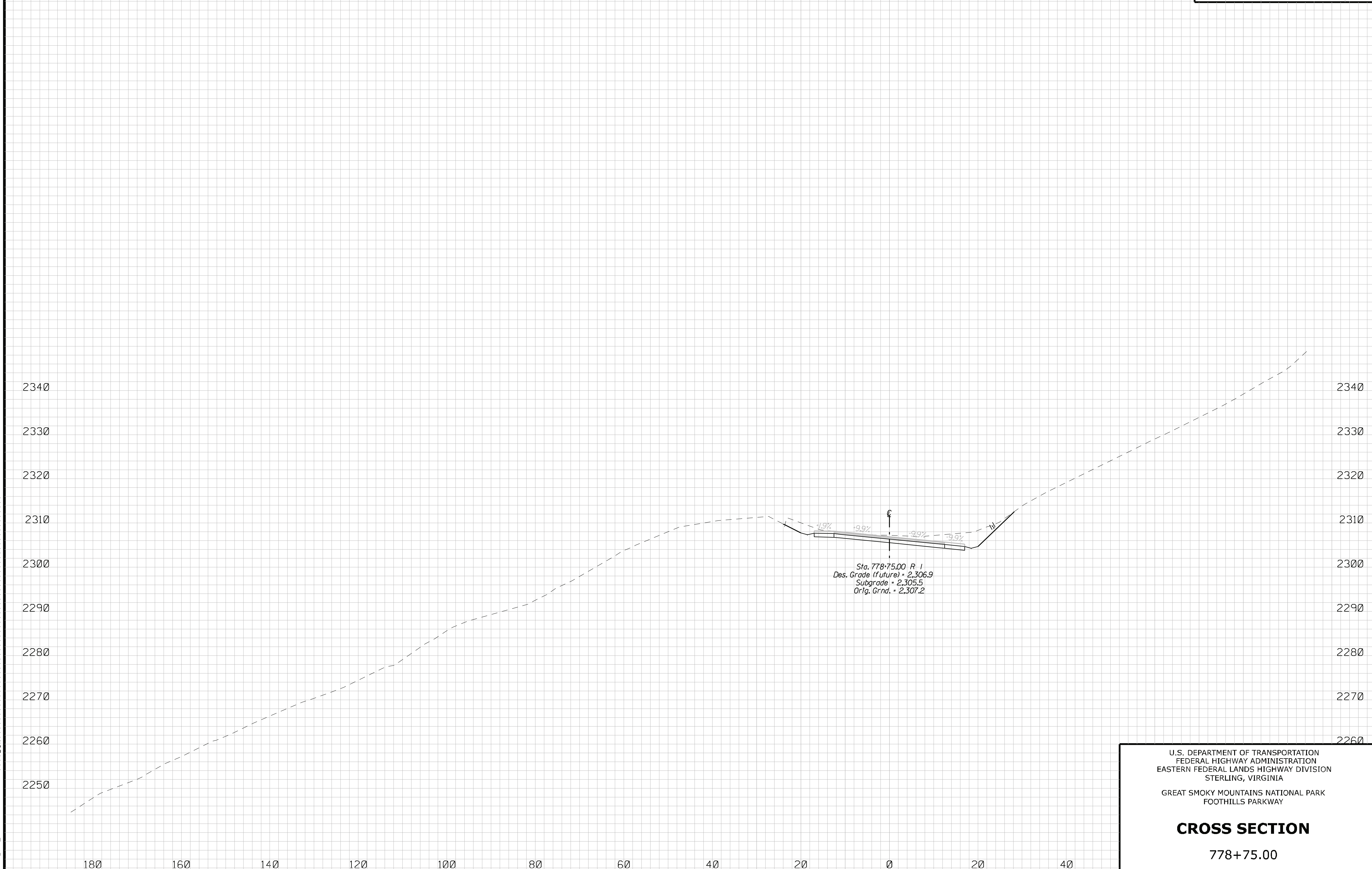

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FOOTHILLS PARKWAY

CROSS SECTION

778+75.00

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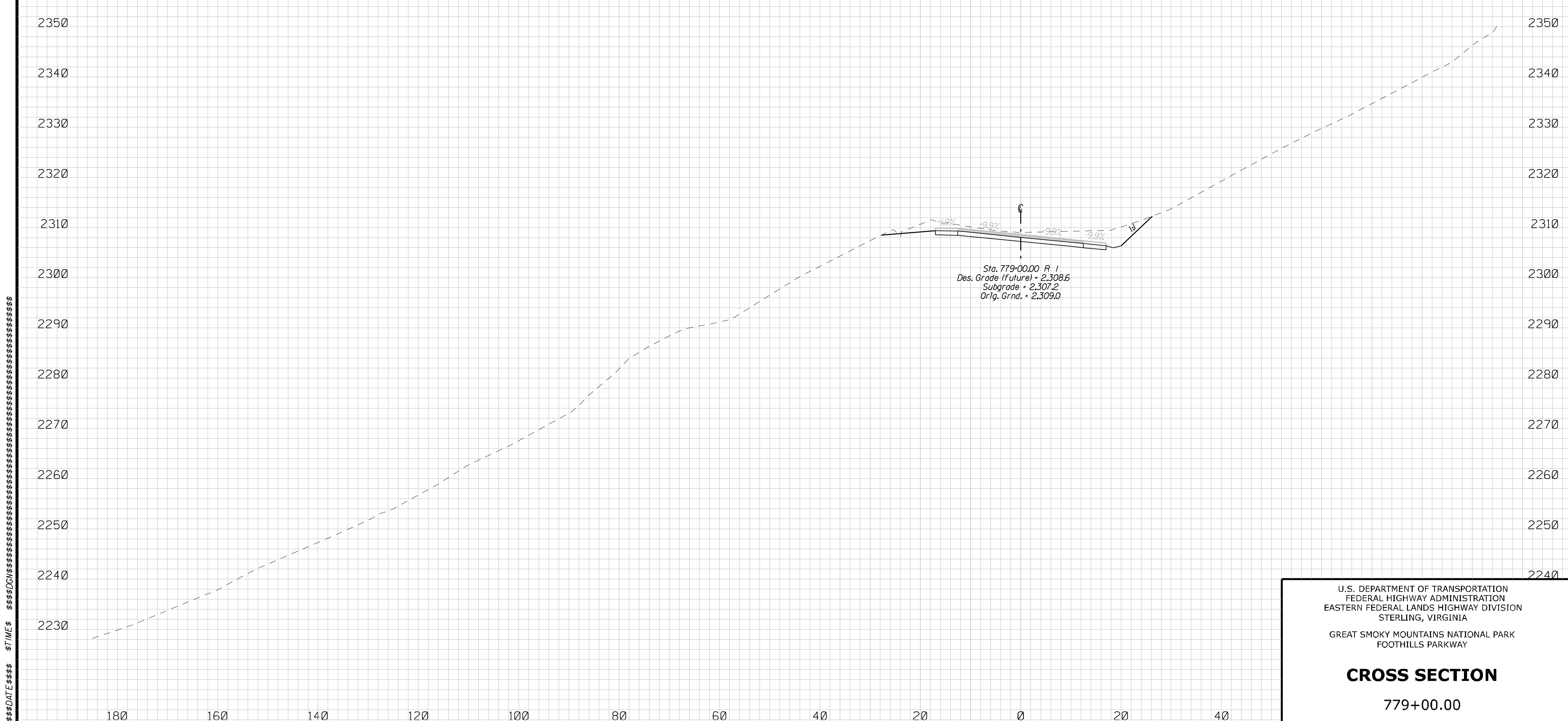

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GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

CROSS SECTION

779+00.00

REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K1

GENERAL NOTES:

A. SPECIFICATIONS:
1. Design:
AASHTO Standard Specifications for Highway Bridges, Seventeenth Edition, 2003.
2. Construction:
Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03 U.S. Customary Units.

B. DESIGN LOADS:
1. Dead loads:
a. Unit weight of superstructure concrete, including reinforcing steel: 155 pcf.
b. Unit weight of substructure concrete, including reinforcing steel: 150 pcf.
c. Future wearing surface: 25 psf.
2. Live loads:
a. HS20 and impact load for design truck
b. 30 mph highway design speed for centrifugal force
3. Wind loads:
In accordance with AASHTO Standard Specifications
4. Thermal forces: Ambient Temperature = 68 deg. F
For design:

5. Differential temperature:
In accordance with Appendix A of National Cooperative Highway Research Program Report 276 "Thermal Effects in Concrete Bridge Superstructures."

6. Creep and Shrinkage:
a. Strains calculated in accordance with CEB - FIP
b. Mean annual relative humidity for design: 70%
7. Seismic Design:
a. Seismic design calculated in accordance with AASHTO Guide Specifications for Seismic Design of Highway Bridges
b. Seismic Performance Zone 2 based on an Acceleration Coefficient of 0.10g

C. Materials:
1. Structural Concrete:
Grout - 28 days design strengths f'c = 3.0 ksi for undermining repair at West Abutment and approach slabs.
Chamfer all exposed corners 3/4 in. unless otherwise noted.

2. Reinforcing steel:
AASHTO M 31, Grade 60 deformed, Epoxy-coated.
Provide 2 in. minimum concrete cover unless otherwise noted.
Lap splices a minimum of 30 bar diameters, unless otherwise noted.

3. Construction: Dimensions are based on as-built drawings of Foothills Parkway over Happy Hollow Road. Verify all dimensions in the field prior to proceeding with construction and ordering any materials. Errors resulting from not verifying field dimensions, shall be corrected by the Contractor at no expense to the government.
The contractor shall construct structurally adequate debris shields and/or falsework to prevent debris falling from work areas onto the ground below. All removed material shall become the property of the contractor and shall be removed from the site and disposed of on spoil areas approved by the "CO".

4. COMPOSITE STRENGTHENING SYSTEM:
Tyfo Fibrwrap System as supplied by Fyfe Company, Nancy Ridge Technology Center, 6310 Nancy Ridge Drive, Suite 103, San Diego, CA 92121. Telephone: 858-642-0694, or approved equal.

a. SYSTEM MATERIALS:
Composite fabric: Tyfo SCH-41, unidirectional.

b. Epoxy saturant: Tyfo S epoxy surface primer.

c. Primer/Filler: Tyfo WS thickened epoxy for protective seal coat, filling voids, and primer where needed.

d. Finish coat: Tyfo U, Polyurethane Finish Coat and match the color of the surrounding concrete.

SCOPE OF WORK

1. Repair the damaged south side exterior beam and diaphragm at Pier No. 4 (west of Happy Hollow Road) with the Composite Strengthening System.
2. Repair concrete cracks/spalls by the guide on Sheet K-2 or directed by CO.
3. Fill undermining at West Abutment and approach slabs with non-shrink grout.
4. Install expansion material to the opening between the approach slab and wingwall or parapet wall.
5. Remove vegetation from pier column and slab fascia at Spans #2 and #3 or directed by CO.

SHEET INDEX

1. General Notes
2. Concrete Repair
3. Abutment Erosion Repair
4. to 23. As-Built Drawings

Structure Number 5460 - 205P

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

FOOTHILLS PARKWAY

BRIDGE ON FOOTHILLS PARKWAY

OVER HAPPY HOLLOW ROAD

GENERAL NOTES

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	LK	J.K.Penrod	No Scale	HONG CHEN	1 of 23	DECEMBER 2007	

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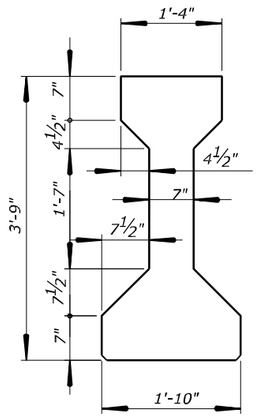
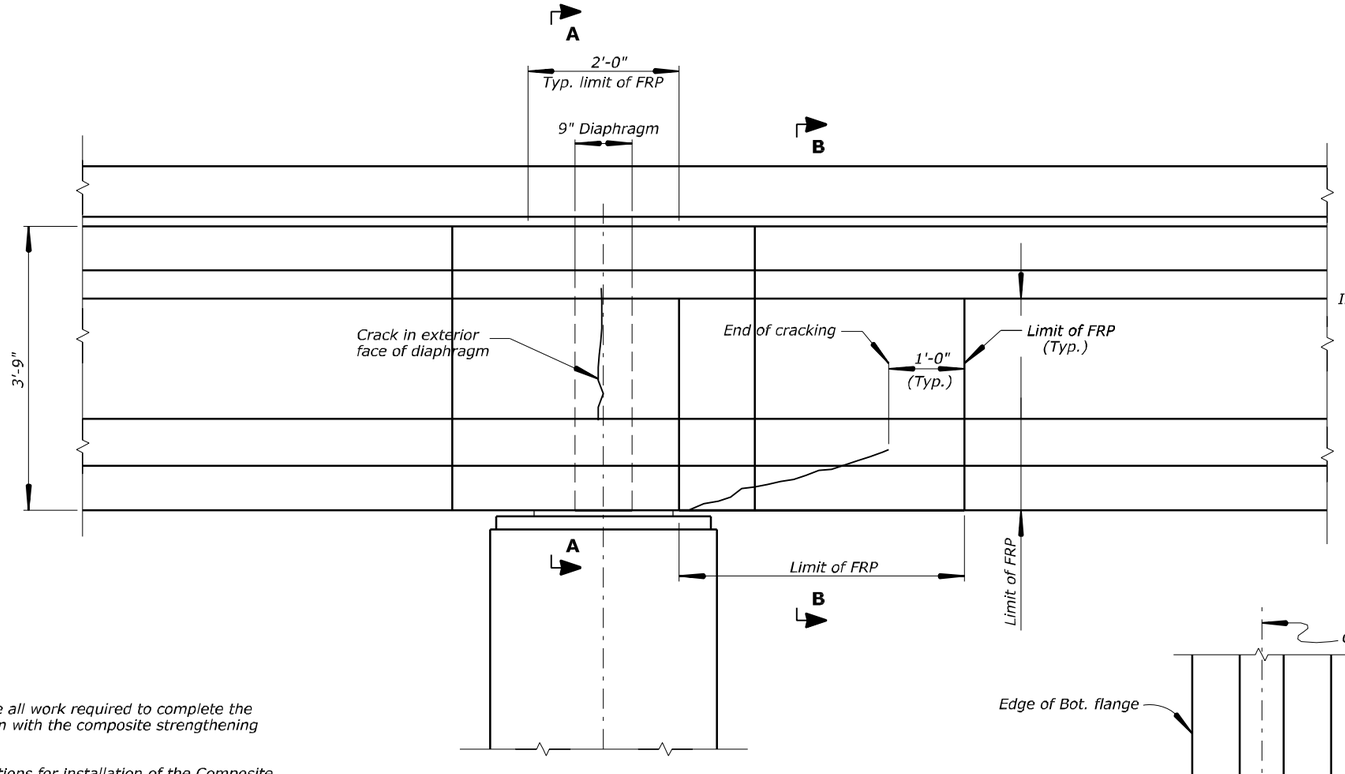
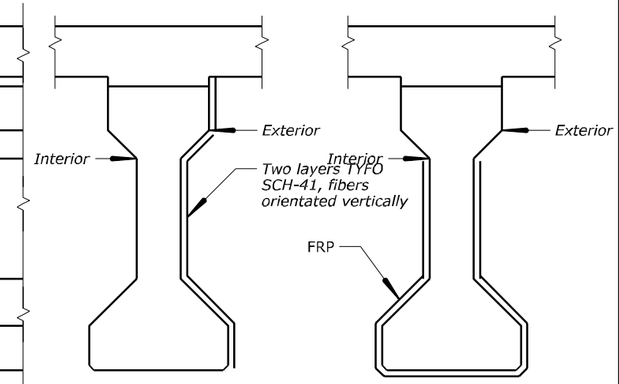
REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K.2



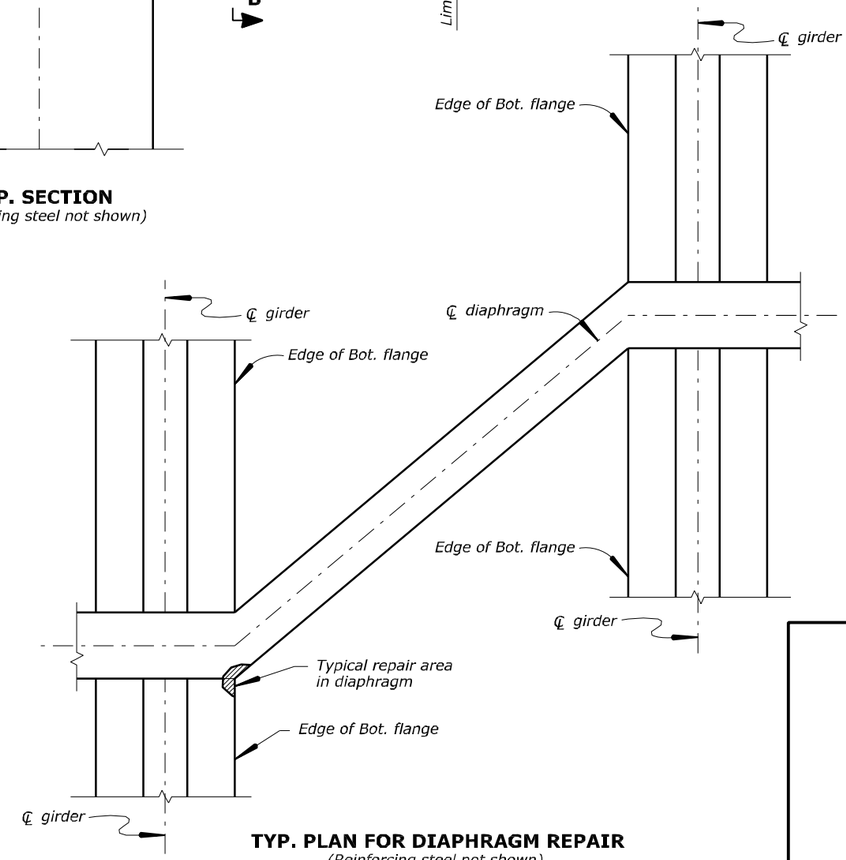
AASHTO TYPE III



TYP. SECTION
(Reinforcing steel not shown)



SECTION A-A **SECTION B-B**



TYP. PLAN FOR DIAPHRAGM REPAIR
(Reinforcing steel not shown)

Work Requirements:

The concrete repair work shall consist of the all work required to complete the damaged beams and diaphragms restoration with the composite strengthening system.

1. *Follow the manufacturer's recommendations for installation of the Composite Strengthening System.*
2. *A manufacturer's representative will be present during installation of the system.*
3. *Access bridge site and maintain traffic control for work operations. Control and contain all dust, debris, and wasted materials generated during repair work.*
4. *Dimensions for designated repair areas are approximate. Remove loose, deteriorated concrete and broken strand segments without damaging adjacent areas of the beams.*
5. *Thoroughly clean all contact concrete surfaces. Any exposed reinforcement should be cleaned and prepared by abrasive cleaning. Remove all remnants of hydraulic fluid stain.*
6. *Restore beam sections, as specified on the drawings, to original shape using dimensionally stable concrete repair materials capable of achieving a minimum compressive strength of 5,000 psi within 24 hours.*
7. *Prepare concrete surfaces for bonding according to the manufacturer's recommendations.*
8. *Prime surface areas with thickened epoxy, according to manufacturer's recommendations.*
9. *Inject uneven voids and recesses using a thickened epoxy according to manufacturer's recommendations.*
10. *Apply FRP Tyfo SCH Carbon and SEH Glass Fibrwrap Systems to beam areas according to the manufacturer's recommendations.*
11. *Roll or press out entrapped air according to the manufacturer's recommendation.*
12. *Detail edges and splices of Fibrwrap for finish with thickened epoxy according to the manufacturer's recommendation, and as directed by the CO.*
13. *Apply finish coat to the composite system as directed by the CO and according to manufacturer's recommendation..*
14. *Dispose of all debris and waste materials off of government property.*
15. *Restore all areas of the work site disturbed by Contractor's operations.*

Notes:

1. *Cracks in the diaphragms and girders less than 1/8" shall be surface sealed.*
2. *Cracks in the diaphragms with widths more than 1/8" but less than or equal to 1/2", shall be repaired by epoxy injection.*
3. *Cracks in the interior diaphragms exceeding 1/2" shall be repaired with a concrete grout.*
4. *Cracks in the girders with widths more than 1/8" but less than or equal to 1/4" shall be repaired by epoxy injection.*
5. *Cracks in the girders with widths exceeding 1/4" shall be repaired by the composite strengthening system.*
6. *Cracks in the exterior diaphragm exceeding 1/2" shall be repaired by the composite strengthening system shown in section A-A.*

Structure Number 5460 - 205P

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

FOOTHILLS PARKWAY

BRIDGE ON FOOTHILLS PARKWAY

OVER HAPPY HOLLOW ROAD

CONCRETE REPAIRS

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	LK	J.K.Penrod	No Scale	HONG CHEN	2 of 23	AUGUST 2007	

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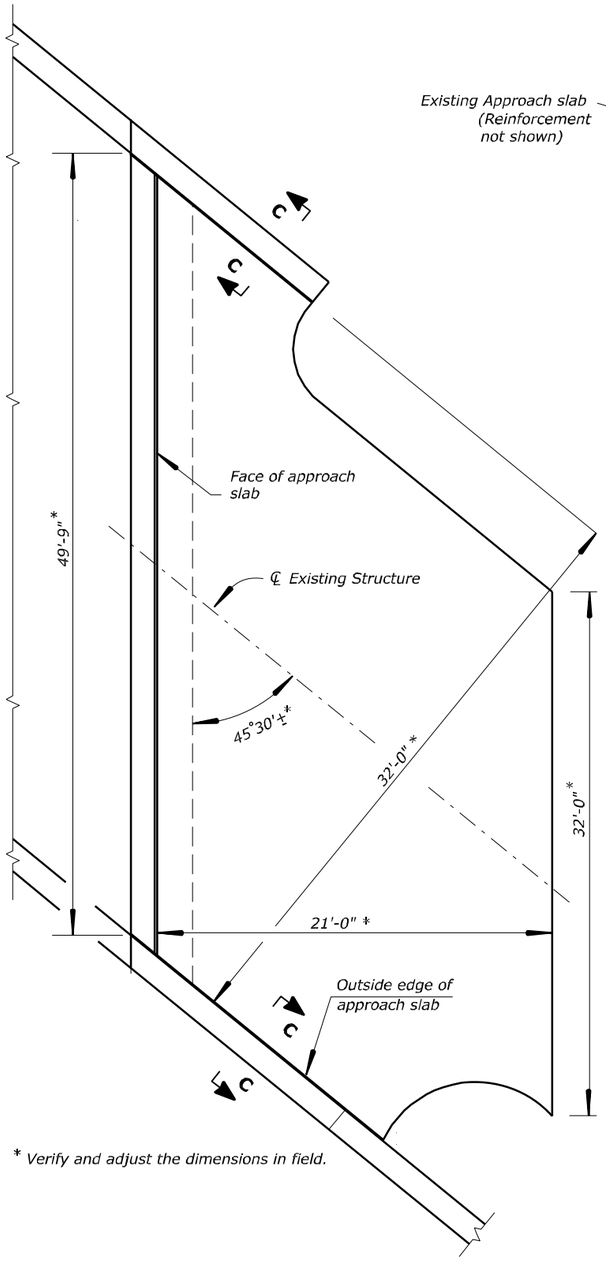
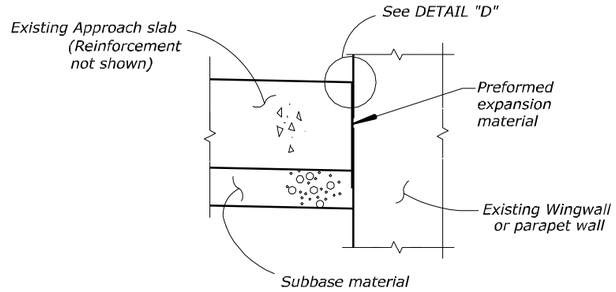
REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K3

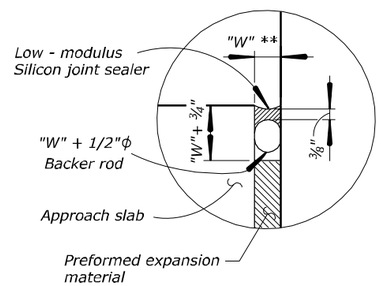


* Verify and adjust the dimensions in field.

PLAN - WEST ABUTMENT
Scale: ¼" = 1'-0"
East abutment similiar.

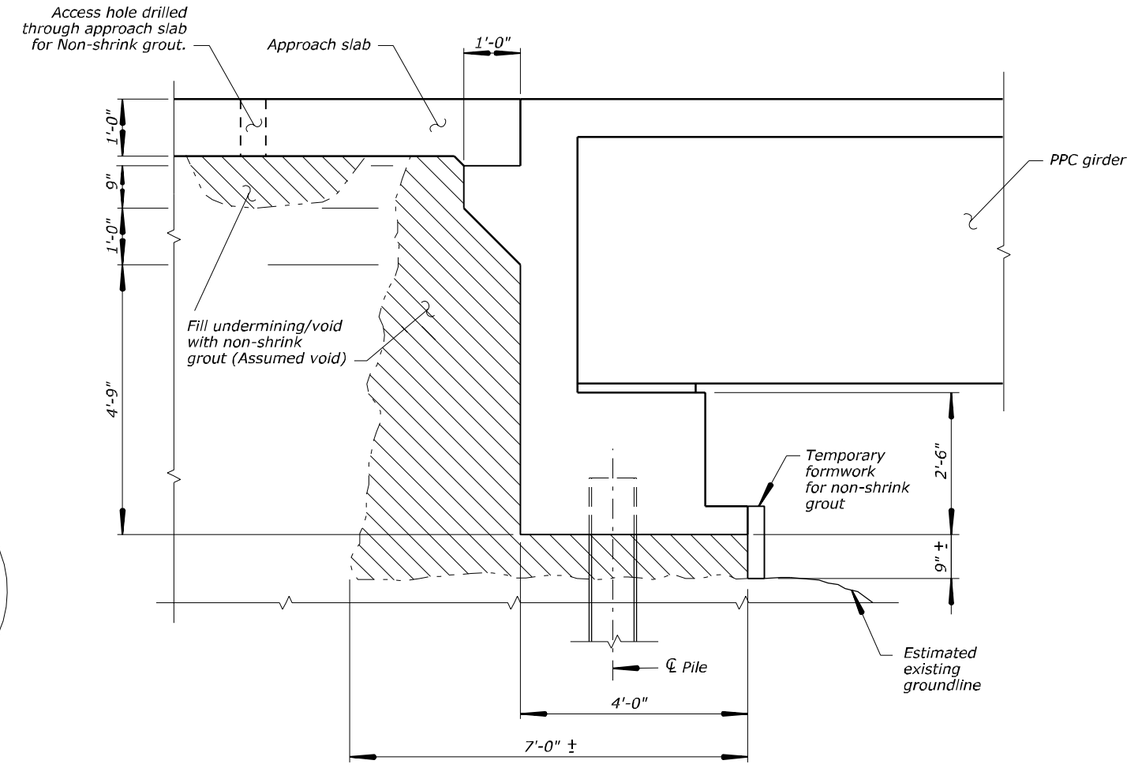


SECTION C-C



DETAIL "D"

** "W" - Opening before installation of expansion material.



SECTION @ HOLE
Scale: ¾" = 1'-0"
(Reinf. steel not shown)

LEGEND:

- Limits of undercutting deterioration
- Area of non-shrink grout fill

Notes:

1. *Install temporary formwork for non-shrink grout.*
2. *Located voids under approach slab. Fill the voids with non-shrink grout.*
3. *Locate and avoid all rebar prior to drilling any access holes in approach slab.*
4. *Pump non-shrink grout into the erosion hole beneath the approach slabs and pile cap. Do not overpressure to avoid damaging structures when pumping. High pressure may result in destabilizing the abutment wall.*
5. *Backfill access holes with non-shrink grout.*
6. *Begin construction of subgrade stabilization and installation of expansion joint material between approach slab and wingwall/parapet wall following completion of non-shrink grout placement.*

Structure Number 5460 - 205P

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FOOTHILLS PARKWAY

BRIDGE ON FOOTHILLS PARKWAY

OVER HAPPY HOLLOW ROAD

ABUTMENT EROSION REPAIR

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	LK	J.K.Penrod	As noted	HONG CHEN	3 of 23	DECEMBER 2007	

2/29/2008 10:24:58 AM M:\Projects\Foot\8e15\bridge\Bridge Over Happy Hollow Road\MicrostaUnderminingRepair.dgn

AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

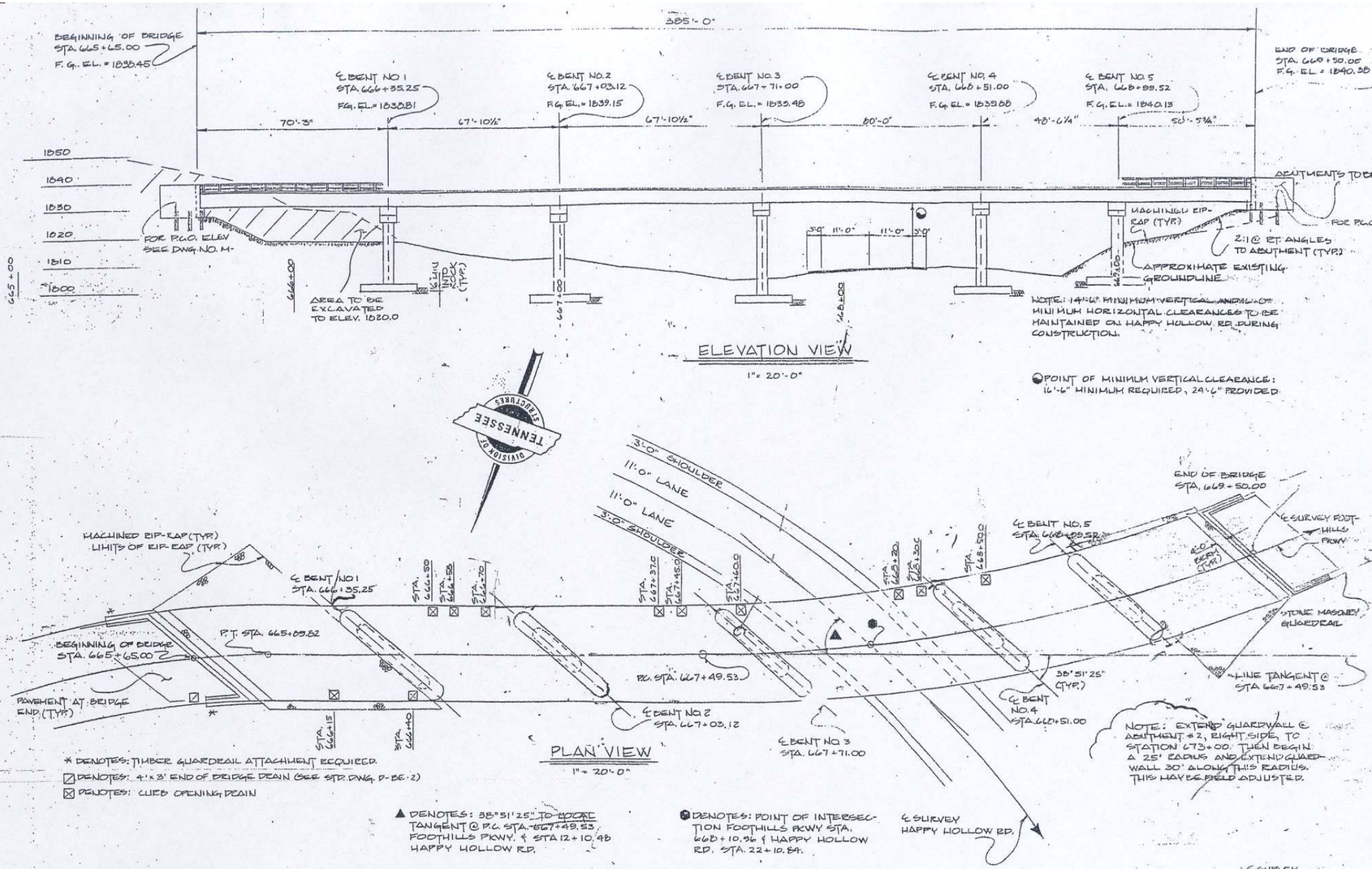
REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K4

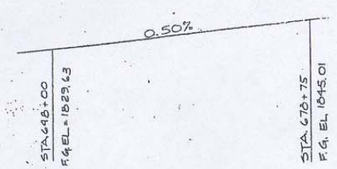
CONST. NO. 78085-3618-84

PROJECT NO.	YEAR	SHEET NO.
PRA-0865	1988	

REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION
1	7-11-88	CEM	REV. DATES





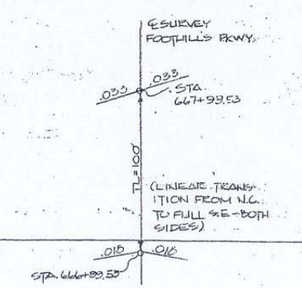
GRADE SKETCH - FOOTHILLS PKWY.

CURVE NO. 1
CURVE DATA (FOOTHILLS PKWY.)

P.C. STA. 662+86.30
P.I. STA. 664+50.71
P.T. STA. 665+89.82
Δ = 54°38' RT.
D = 18°00'
T = 164.41'
L = 305.52'
R = 318.31'
E = 39.95'
S.E. = 0.093 ft/ft
TL = 170'

CURVE NO. 2
CURVE DATA (FOOTHILLS PKWY.)

P.C. STA. 667+49.53
P.I. STA. 670+04.25
P.T. STA. 672+53.69
Δ = 20°10' RT.
D = 4°00'
T = 254.72'
L = 504.17'
R = 1432.39'
E = 22.47'
S.E. = 0.033 ft/ft
TL = 100'



DETAIL OF S.E.
TRANSITION (CURVE 2)

LIST OF DRAWINGS

	DWG NO.	LAST REV. DATE
LAYOUT OF BRIDGE	M-206-46	7-11-88
GEN. NOTES & EST. QUANTITIES	M-206-47	7-11-88
FOUNDATION DATA	M-206-48	
SUPERSTRUCTURE	M-206-49	
SUPERSTRUCTURE DETAILS	M-206-50	
MISC. DETAILS	M-206-50A	
BRIDGE SCREED	M-206-51	
PRE. I-BEAM DETAILS B1-B7	M-206-52	
PRE. I-BEAM DETAILS B8-B11	M-206-53	
PRE. I-BEAM DETAILS B12-B15	M-206-54	
ABUTMENT NO. 1	M-206-55	
ABUTMENT NO. 1 DETAILS	M-206-56	
ABUTMENT NO. 2	M-206-57	
ABUTMENT NO. 2 DETAILS	M-206-58	
ABUTMENT NO. 1 & 2 DETAILS	M-206-59	7-11-88
BENTS NO. 1 & 2	M-206-60	
BENTS NO. 3, 4 & 5	M-206-61	
BILL OF STEEL	M-206-62	
BILL OF STEEL	M-206-63	
BILL OF STEEL	M-206-64	

LIST OF STD. DWGS.

	DWG NO.	LAST REV. DATE
REINF. BAR SUPPORT DETAIL FOR CONCRETE SLABS	K-80-14	08-27-76
REINF. CONCRETE PAVEMENT @ BRIDGE ENDS	K-86-144	7-17-81
MISC. ABUTMENT & DECK DETAILS	K-85-150	6-25-87
STD. PRECAST, PRESTRESSED BRIDGE DECK PANELS DESIGN CRITERIA	M-164-24	1-11-88
STD. PRECAST, PRESTRESSED BRIDGE DECK PANELS GENERAL DETAILS	M-164-25	1-11-88
*STD. PILE DETAILS	M-174-50	

NO.	LAST REV. DATE	SPECIAL PROVISIONS
105A	7-21-87	APPROVAL OF SHOP DRAWINGS
604	11-06-87	CONCRETE STRUCTURES
604C	1-26-88	STRUCTURAL CONCRETE
604P	11-11-85	PRECAST PRESTRESSED BRIDGE DECK PANELS
604R	9-08-87	RIDEABILITY OF BRIDGE DECKS AND ROADWAY APPROACHES
907A	3-25-86	EPOXY-COATED REINF. STEEL
709	5-04-87	MACHINED RIP-RAP
604D	11-7-83	REG. COLORED CONCRETE
615	5-18-88	PRECAST PRESTRESSED CONCRETE BRIDGE MEMBERS
204-11	11-04-85	STRUCTURE EXCAVATION

* THIS STANDARD IS TO BE PRINTED WITH PLANS.

32' ROADWAY WITH SPECIAL ALUMINUM RAIL

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

LAYOUT OF BRIDGE
FOOTHILLS PARKWAY
OVER HAPPY HOLLOW ROAD
BRIDGE ID NO. 780182001
STATION 668+10.96
SEVIER COUNTY
1988

SIGNED BY T.E. HUFF DATE 1-88
AWN BY L. WITKILL DATE 1-88
PERVISED BY FIELDS & WOODS DATE 1-88
ECKED BY E. MELTON DATE 5-88

CORRECT Edward P. Wilson ENGINEER OF STRUCTURES
APPROVED Louis Evans DIRECTOR OF HIGHWAYS

M-206-46

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	4 of 23	December 2007	

ACTUAL DESIGN FILE : K4-PRA-FOOT-8E15-ASBI.dgn

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AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K5

CONST. NO. 78075-3618-84

PROJECT NO.	YEAR	SHEET NO.
PRA-08E5	1988	

REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION
1	7-11-88	[illegible]	Remove [illegible] end, change [illegible] by item
2	8-10-[illegible]	[illegible]	Precast Beam [illegible] Steel

GENERAL NOTES

FRICTION PILES: TO BE HP10X42. AFTER EXCAVATION TO THE PROPOSED FOOTING ELEVATIONS, A TEST PILE SHALL BE DRIVEN AT EACH SUB-STRUCTURE AT THE LOCATION DESIGNATED ON DRAWING NUMBER M-206-55. A LOAD TEST WILL THEN BE APPLIED TO THE TEST PILE ON ABUTMENT NO. 1. FROM THE RESULTS OF THE LOAD TEST THE ENGINEER OF STRUCTURES WILL DETERMINE FINAL PILE TIP ELEVATIONS. FOR PILE DESIGN LOADS, CUT-OFF ELEVATIONS AND TIP ELEVATIONS SEE TABLE ON DRAWING NUMBER M-206-55.

SPECIFICATIONS: STANDARD ROAD AND BRIDGE SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION. (MARCH 1981 EDITION).

LOADING: HS 20-44

DESIGN SPECIFICATIONS: AASHTO 1983 EDITION WITH ADDENDA.

CONCRETE: TO BE CLASS 'A' (CAST-IN-PLACE) F'c = 3000 PSI. EXCEPT BRIDGE DECK.

CLASS A CONCRETE FOR BRIDGE DECKS SHALL BE IN ACCORDANCE WITH SECTION 604 OF THE STANDARD SPECIFICATIONS EXCEPT AS MODIFIED BY SPECIAL PROVISION 604-C.

BRIDGE DECK FORMS: BRIDGE DECK FORMS FOR CONCRETE DECKS SHALL BE CONSTRUCTED USING EITHER REMOVABLE FORMS OR PERMANENT FORMS. PERMANENT FORMS MAY BE EITHER REMAIN-IN-PLACE STEEL OR PRECAST, PRESTRESSED CONCRETE PANELS. IN EITHER CASE, FORMS SHALL BE ATTACHED BY MEANS OTHER THAN WELDING TO SUPPORT MEMBERS. THE CONTRACTOR SHALL TAKE STEPS TO ASSURE THE STABILITY OF THE EXTERIOR GIRDER AGAINST TWISTING OR OVERTURNING DURING SLAB POURING OPERATIONS. WHEN THE WIDTH OF THE OVERHANG EXCEEDS THE DEPTH OF THE EXTERIOR GIRDER, DETAILS AND DESIGN CALCULATIONS FOR THE CANTILEVER SUPPORT SYSTEM SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

REINFORCING STEEL: TO BE ASTM A615 GRADE 60. STANDARD CRSI HOOK DETAILS APPLY UNLESS OTHERWISE NOTED ON BILL OF STEEL. SPACING DIMENSIONS ARE CENTER TO CENTER UNLESS OTHERWISE NOTED ON DETAIL DRAWINGS. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, REINFORCEMENT SHALL BE PLACED WITHIN A TOLERANCE OF + ½". • (THE SUFFIX E, FOR BARS SO MARKED, DENOTES EPOXY COATED REINFORCEMENT.) SEE SPECIAL PROVISION 907A.

SPECIAL NOTE - FOOTING FOR BENTS: AFTER EXCAVATION TO ROCK FOR FOOTING HAS BEEN COMPLETED, HOLES 6' DEEP SHALL BE DRILLED AT POINTS DESIGNATED BY THE ENGINEER. FROM THE RESULTS OBTAINED, THE ENGINEER SHALL DETERMINE THE FINAL FOOTING ELEVATIONS. NO REINFORCING STEEL FOR BENT COLUMNS SHALL BE ORDERED UNTIL FINAL FOOTING ELEVATIONS HAVE BEEN DETERMINED.

STONE TIE SYSTEM: VERTICAL STONE SURFACES SHALL BE TIED TO THE ABUTMENT WALL & RETAINING WALLS WITH DOVETAIL ANCHORS AND DOVETAIL ANCHOR SLOTS. TIES SHALL BE 24" O.C. LATERALLY AND 16" O.C. VERTICALLY. ANCHORS SHALL BE 1"X3½"X16" GAUGE, GALVANIZED, AND CORRUGATED. ANCHORS SHALL BE AA202 AS MANUFACTURED BY THE AA WIRE PRODUCTS COMPANY OR APPROVED EQUAL. ANCHOR BOLTS SHALL BE 1"X1" WITH ⅝" THROAT, 22 OR 24 GAUGE, GALVANIZED. ANCHOR SLOTS SHALL BE AA100 AS MANUFACTURED BY THE AA WIRE COMPANY OR APPROVED EQUAL. THE COST OF STONE TIES SHALL BE INCLUDED IN THE PRICE BID FOR STONE SURFACE.

NOTE: THE FILLS AT THE ENDS OF THE BRIDGE SHALL BE IN PLACE AND THOROUGHLY COMPACTED BEFORE ANY ABUTMENT PILES ARE DRIVEN.

BRIDGE DECK SURFACE FINISH: TO BE IN ACCORDANCE WITH NOTE (B), SHEET 2, OF SPECIAL PROVISION 604.

SPECIAL NOTE: FOUNDATIONS FOR BENTS SHALL BE EXCAVATED TO THE BOTTOM OF FOOTING ELEVATIONS SHOWN: ROD SOUNDINGS SHALL THEN BE MADE AS DIRECTED BY THE ENGINEER. FROM THE RESULTS OBTAINED THE ENGINEER WILL DECIDE IF PILES WILL BE USED OR THE FOOTINGS CARRIED TO ROCK. COST OF ROD SOUNDINGS TO BE INCLUDED IN ITEMS BID ON. NO REINFORCING STEEL FOR BENT COLUMNS SHALL BE ORDERED UNTIL FINAL ELEVATIONS HAVE BEEN DETERMINED.

PILES AT ALL SUBSTRUCTURES SHALL BE EQUIPPED WITH APF 23 LB. HARD-BITE, DFP 23 LB. HARD-BITE, VERSA-BITE 25 LBS. VB310P, OR I.C.E. 23 LB. ROCK-BITE DRIVING TIPS OR APPROVED EQUAL WELDED TO THE PILE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. THE COST OF THE DRIVING TIPS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PILES.

BRIDGE RAIL SYSTEM: BUILD BRIDGE RAIL ACCORDING TO DWG. NO. M-206-50A.

SHOP DRAWINGS: SEE SPECIAL PROVISION NO. 105A.

RIP-RAP: MACHINED RIP-RAP SHALL BE CLASS A-2 IN ACCORDANCE WITH SPECIAL PROVISION 709 AND SHALL BE PAID FOR UNDER ITEM 709-05.07.

NON-PAY ITEMS: ONLY ITEMS SHOWN ON THE PROPOSAL AS PAY ITEMS WILL BE PAID FOR. COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, AND INCIDENTALS FOR THE ENTIRE CONTRACT SHALL BE INCLUDED IN THE PRICE BID FOR PAY ITEMS.

COLORED CONCRETE: SEE SPECIAL PROVISION NO. 604D.

FINISHING CONCRETE SURFACES: IN ADDITION TO FINISHING CONCRETE SURFACES AS SET OUT IN SEC. 604.22 OF THE STANDARD SPECIFICATIONS, ALL EXPOSED SURFACES OF THE SUPERSTRUCTURE INCLUDING THE CURB AND BRIDGERAIL, BENT COLUMNS, AND ALL EXPOSED SURFACES OF THE ABUTMENT EXCEPT THE PARTS COVERED WITH A ROCK FACE SHALL RECEIVE A CLASS II FINISH. COST TO BE INCLUDED IN ITEMS 604-03.01 AND 604-01.12.

FALSEWORK OVER TRAFFIC: IN ALL CASES WHEN FALSEWORK MUST BE USED TO CONSTRUCT STRUCTURES OVER HIGHWAY AND RAILWAY TRAFFIC, THE CONTRACTOR SHALL SUBMIT DETAILED WORKING DRAWINGS TO THE ENGINEER FOR REVIEW. THE FALSEWORK DRAWINGS SHALL INCLUDE SIZES AND MATERIAL FOR ALL MEMBERS AND SHALL INCLUDE A SUPERSTRUCTURE PLACING DIAGRAM SHOWING PROPOSED CONCRETE PLACING SEQUENCE AND CONSRUTCTION JOINT LOCATIONS. UPON REQUEST, THE CONTRACTOR SHALL FURNISH COPIES OF THE DESIGN CALCULATIONS TO THE ENGINEER FOR EXAMINATION. THESE DRAWINGS SHALL BE PREPARED AND SIGNED BY AN ENGINEER REGISTERED IN THE STATE OF TENNESSEE. THE FALSEWORK SHALL BE CONSTRUCTED SUBSTANTIALLY TO THE FALSEWORK DRAWINGS. AS STATED IN ARTS. 107.14 AND 107.18 OF THE STANDARD SPECIFICATIONS. BY REVIEW OF THESE DRAWINGS THE ENGINEER SHALL ASSUME NO LIABILITY UPON HIMSELF OR THE STATE NOR SHALL THIS REVIEW RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR THE SUFFICIENCY OF THE FALSEWORK AND FORMS. THE COST SHALL BE INCLUDED IN BRIDGE ITEMS BID ON.

ALTERNATE PILES: THE CONTRACTOR MAY USE PILING OF A DIFFERENT MATERIAL OR CONFIGURATION FROM THAT SHOWN ON THE PLANS PROVIDED THE SUBSTITUTION MEETS MINIMUM DESIGN STANDARDS AND SPECIFICATIONS, AND IS APPROVED BY THE ENGINEER.

ESTIMATED QUANTITIES

ITEM NUMBERS	204-11	204-05	604-01.12	604-02.03	604-03.01	604-03.02		612-02.	606-02.03	615-01.03	620-01	709-05.07	710-09.01	710-09.02	606-02.01	606-02.02
ITEM	BRIDGE EXCAVATION (UNCLASSIFIED) (13) C.Y. (1)	ROCK DRILLING (BRIDGES) L.F.	CLASS 'A' CONCRETE (BRIDGE DECK) C.Y. (8)	EPOXY COATED REINFORCING STEEL LB.	CLASS 'A' CONCRETE (BRIDGES) (11) C.Y. (8)	STEEL BAR REINFORCEMENT (BRIDGES) LB.		NON-UNIFORM COURSE STONE MASONRY △ (12) C.Y. (7)	STEEL PILES (10 INCH) L.F.	PRESTRESSED CONCRETE I-BEAM (TYPE III) L.F. (3)	ALUMINUM RAILING L.F.	MACHINED RIP - RAP (CLASS A-2) TONS (9)	6" PERF. PIPE WITH VERTICAL DRAIN SYSTEM L.F. (4)	6" PIPE UNDERDRAIN L.F.	TEST PILES (STEEL PILES, 10 INCH) L.F.	LOADING TEST (STEEL PILES, 10 INCH) EA.
SUPERSTRUCTURE			382	102,860	31	5,830										
ABUTMENT NO.1	65				25	4,750		7	600				69	19	60	1
BENT NO.1	321	36			119	16,920										
BENT NO.2	199	36			126	17,846										
BENT NO.3	200	36			128	18,153										
BENT NO.4	235	36			123	16,764										
BENT NO.5	320	36			118	16,039										
ABUTMENT NO.2	56				23	4,521		87	600				66	19	60	
PAVEMENT @ BRIDGE ENDS				6,394	71	8,245										
	1396	180	382	109,259	769	109,068		94	1,200	1502	823	303	135	38	120	1

NOTES:

(1) EXCAVATION BASED ON EXISTING GROUND AT BENTS AND FINAL PROFILE AT ABUTMENTS.

(2) COST OF BRIDGE RAIL ENDPOST IS TO BE INCLUDED IN THE COST OF THE BRIDGE RAIL SYSTEM.

(3) NOTE: COST OF ELASTOMERIC PADS, RUBBER BONDING CEMENT, AND DOWEL BARS OR ANCHOR BOLTS TO BE INCLUDED IN THE COST OF PRESTRESSED BEAM.

(4) NOTE: COST OF POLYETHYLENE SHEETING AND ALL MISCELLANEOUS ITEMS NECESSARY FOR INSTALLATION TO BE INCLUDED IN COST OF PERFORATED PIPE.

(5) NOTE: THE COST OF WATER STOPS, BITUMINOUS-FIBERBOARD, ETC., AND ALL MISCELLANEOUS JOINT MATERIAL TO BE INCLUDED IN BRIDGE ITEMS BID ON.

(6) NOTE: THE COST OF 8 THREADED STEEL INSERTS AND 8 7/8" DIA. X 10½" HEX HEAD BOLTS, (A307), TO BE INCLUDED IN BRIDGE ITEMS BID ON.

(7) RUSTIC MASONARY (CLASS B) TO BE GRANDFATHER MOUNTAIN STONE ~~AND/OR LIMESTONE SIMILAR IN CHARACTOR TO LITTLE RIVER & 321/PARKWAY~~ @ WALLAND.

(8) COST OF PIGMENTS FOR COLORING CONCRETE WILL BE INCLUDED IN THE COST OF CLASS 'A' CONCRETE.

(9) MACHINED RIP-RAP (CLASS A-2) TO BE HAND-PLACED.

(10) ~~NOTE: SQUARE YARD FOR PAVEMENT AT BRIDGE ENDS SHALL BE MEASURED AS ROAD SURFACE AREA AND SHALL INCLUDE ALL CONCRETE, REINFORCING STEEL, PILES, JOINT MATERIAL, NOTCH FOR ROADWAY DRAIN, SURFACE FINISH AS PER SP604 AND ANY OTHER INCIDENTALS NECESSARY FOR COMPLETE INSTALLATION.~~ △

(11) NOTE: COST OF 11 BRIDGE DECK DRAINS TO BE INCLUDED IN THE UNIT PRICE BID FOR CLASS 'A' CONCRETE.

(12) NOTE: ITEM 612-02 SHALL INCLUDE THE CONCRETE CORE, FOOTING, REINFORCING STEEL, EXCAVATION, LABOR AND ALL MISC. MATERIALS FOR CONSTRUCTION OF GUARDWALL & PLACEMENT OF MASONARY. FOR DETAILS SEE DWG. NO. M-206-50A. △

(13) NOTE: PRICE BID FOR ITEM 204-11, BRIDGE EXCAVATION (UNCLASSIFIED) SHALL BE FULL COMPENSATION FOR ALL EXCAVATION, REGARDLESS OF CLASSIFICATION FOR THE STRUCTURE. THE EXCAVATION SHALL BE MEASURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT NO PERCENT INCREASE WILL BE ALLOWED FOR EXTRA DEPTH EXCAVATION.

DESIGNED BY E. MELTON DATE 3-88
DRAWN BY K.L. FRANKENFIELD DATE 4-88
SUPERVISED BY FIELDS & WOODS DATE 4-88
CHECKED BY ____ DATE ____

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

ESTIMATED QUANTITIES AND GENERAL NOTES
FOOTHILLS PARKWAY OVER HAPPY HOLLOW ROAD
STATION 668+10.96
SEVIER COUNTY
1988

CORRECT Edward P. Wasserman, ENGINEER OF STRUCTURES
APPROVED [signature], DIRECTOR OF HIGHWAYS

M-206-47

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	5 of 23	December 2007	

1/8/2008 5:30:32 PM M:\Projects\foot\8e15\bridge\DIST\ASBUILTS\K5-PRA-FOOT-8E15-ASB2.dgn ACTUAL DESIGN FILE : K5-PRA-FOOT-8E15-ASB2.DGN

AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

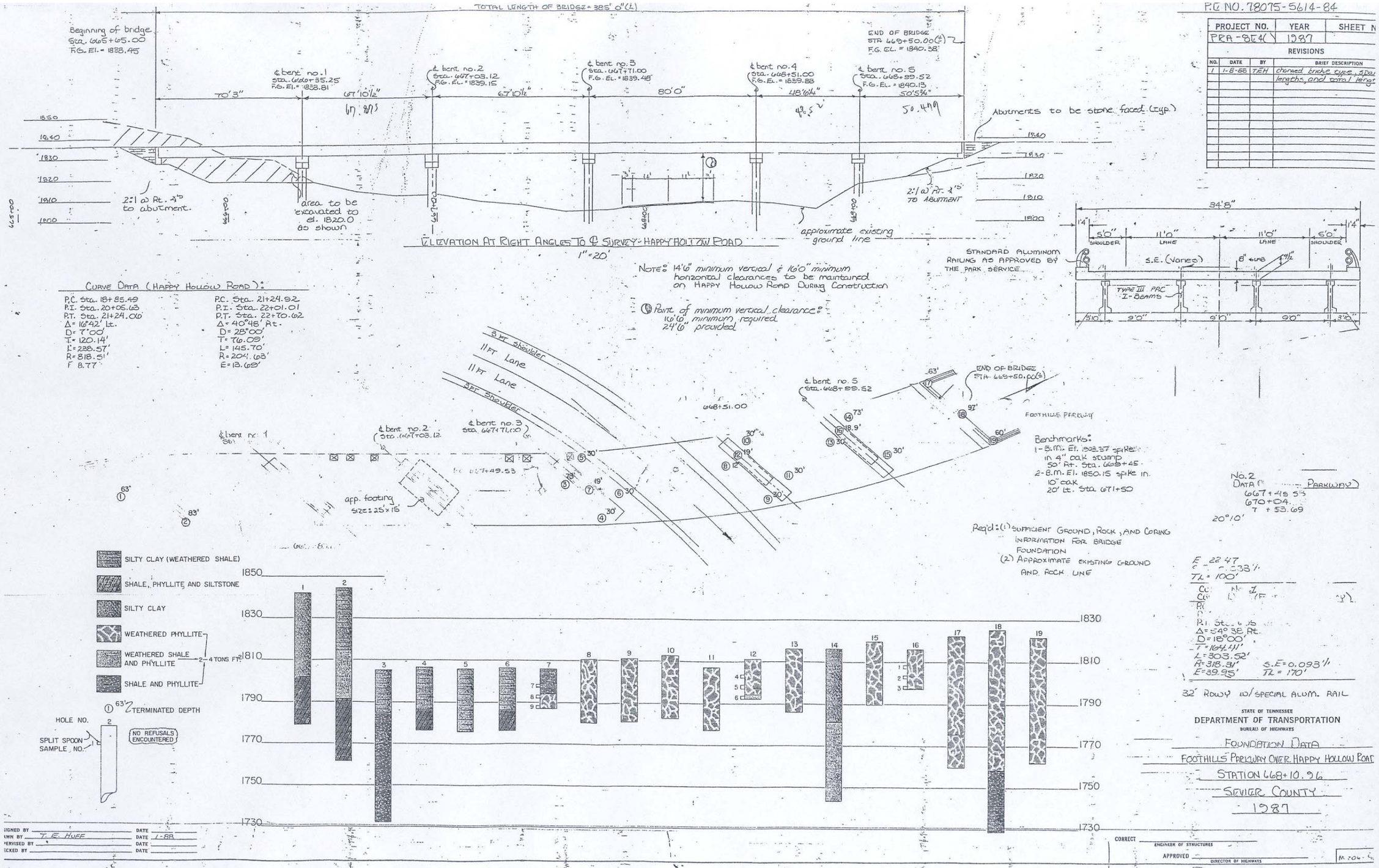
REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K6

P.C. NO. 78075-5614-84

PROJECT NO.	YEAR	SHEET N
PRA-8E4( )	1987	

REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION
1	1-8-88	TEH	changed bridge type, span lengths, and total length



NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	6 of 23	December 2007	

ACTUAL DESIGN FILE : K6-PRA-FOOT-8E15-ASB3.DGN

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AS-BUILT DRAWING (FOR INFORMATION ONLY)

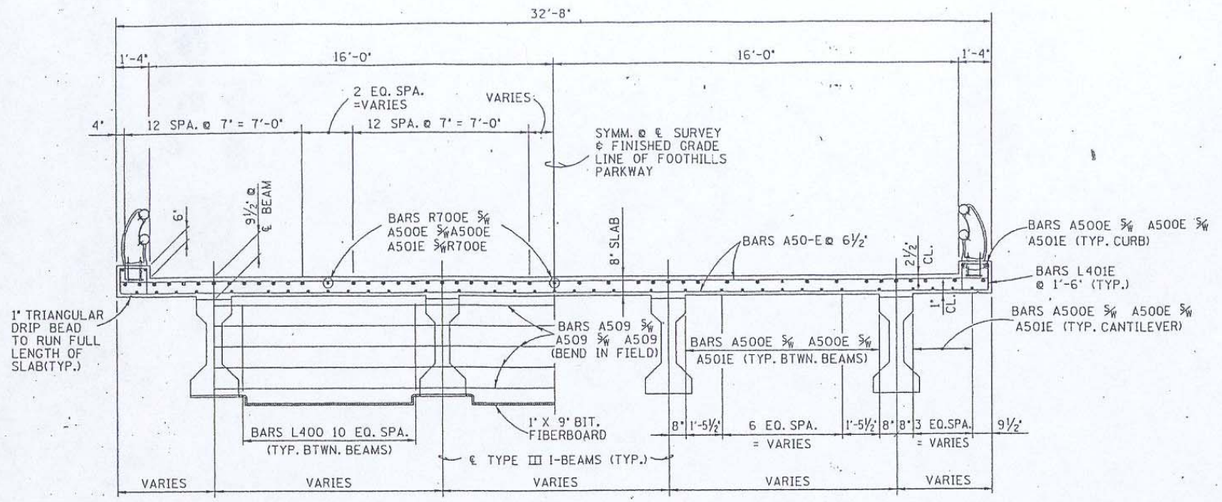
Structure No. 5460-205P

REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K7

CONST. NO.	78075-3618-84	
PROJECT NO.	YEAR	SHEET NO.
PRA-08E5	1988	

REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION



TYP. @ SUPPORT

TYP. @ MID-SPAN

TYPICAL CROSS-SECTION

(LOOKING FORWARD ON ℄ SURVEY)

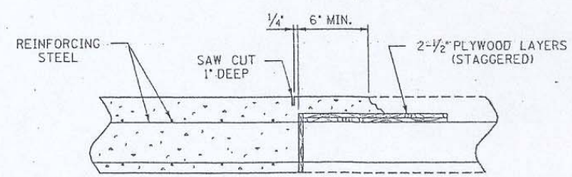
NOTE: NO PORTION OF THE CURB SHALL BE POURED UNTIL THE ENTIRE DECK SLAB IS IN PLACE.

NOTE: WHEN POURING CURB, PROVISIONS SHALL BE MADE FOR SETTING ANCHOR BOLTS FOR BRIDGE RAIL. THE CURB SHALL NOT BE POURED UNTIL THE SLAB IS POURED AND CURED. ALSO SEE DRAWING NO. M-206-50A.

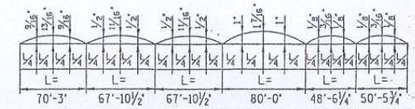
NOTE: SUPPORT DIAPHRAGMS SHALL BE POURED CONCURRENTLY WITH THE DECK SLAB AND INCLUDED IN THE QUANTITY FOR ITEM 604-01.12.

NOTE: ALL GIRDERS TO BE SUPPORTED DURING CONSTRUCTION OF SLAB TO PREVENT ROTATION.

NOTE: SLAB CONSTRUCTION JOINTS MAY BE LOCATED AT THE CONTRACTOR'S OPTION EXCEPT NO JOINT MAY BE LOCATED CLOSER THAN 1/5 SPAN LENGTH FROM AN INTERIOR SUPPORT. THE CONTRACTOR SHALL MAKE ADEQUATE PROVISIONS DURING PLACEMENT OF SLAB TO PREVENT THE EXTERIOR BEAM FROM TWISTING. NO EQUIPMENT SHALL BE PERMITTED ON THE BRIDGE UNTIL ALL POURS ARE MADE AND THE CONCRETE IS PROPERLY CURED. ALL SLAB CONSTRUCTION JOINTS SHALL BE IN ACCORDANCE WITH THE SLAB CONSTRUCTION JOINT DETAIL SHOWN BELOW.

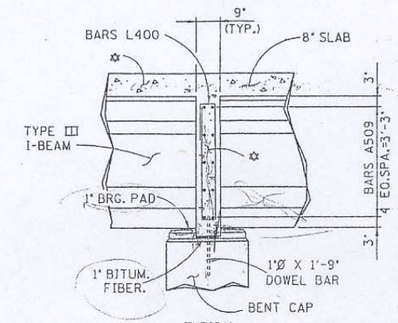


SLAB CONSTRUCTION JOINT DETAIL

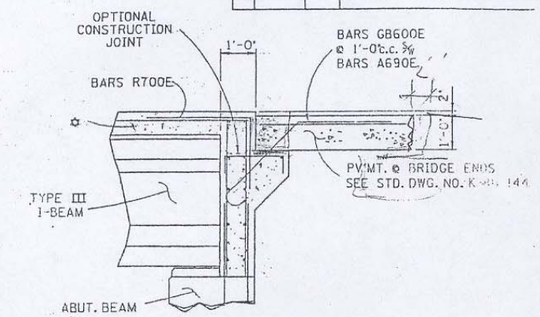


DEAD LOAD CORRECTION CURVE

THIS CURVE IS FOR DEAD LOAD SLAB AND ALL DEAD LOADS THAT ARE APPLIED AFTER SLAB IS IN PLACE.



TYPICAL @ SUPPORT

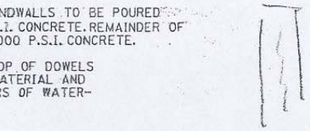


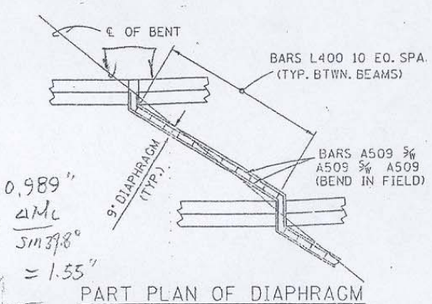
TYP. SECTION

TYPICAL @ ENDWALL

✡ DENOTES: DIAPHRAGMS, FILLER AND THE TOP 12" OF ENDWALLS TO BE POURED MONOLITHICALLY WITH BRIDGE DECK USING 4,500 P.S.I. CONCRETE. REMAINDER OF ENDWALL, ROADWAY BRACKET & WINGWALLS TO BE 3,000 P.S.I. CONCRETE.

SPECIAL NOTE FOR DOWEL BARS AT BENTS: TOP OF DOWELS TO BE COVERED WITH ½" OF COMPRESSIBLE MATERIAL AND THE 9" PROJECTION WRAPPED WITH TWO LAYERS OF WATER-PROOF PAPER.



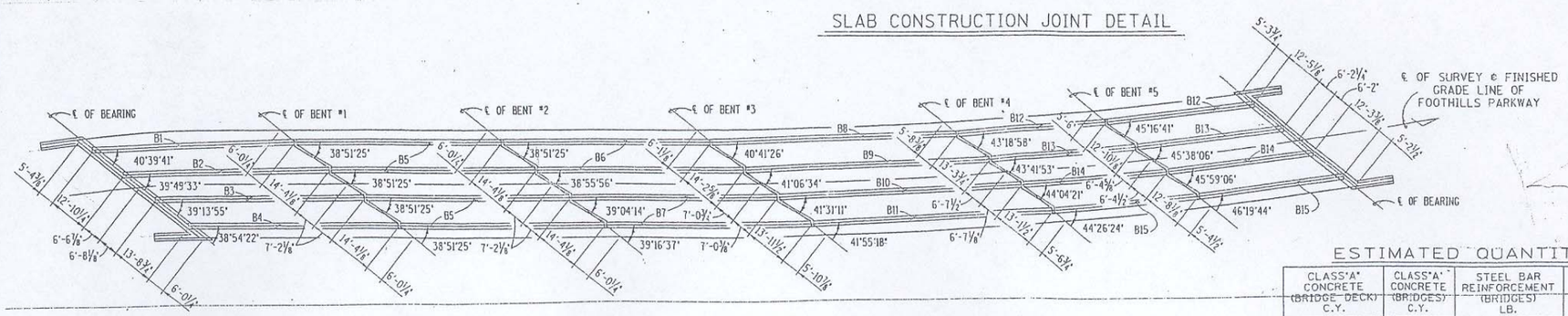


$\Delta M_L = 0.989''$

$\Delta V_{JT} = \frac{\Delta M_L}{\sin 39.8°} = 1.55''$

39.8°

PART PLAN OF DIAPHRAGM



FRAMING PLAN

NOTE: OUTSIDE EDGE OF SLAB AND BRIDGE RAIL TO CONFORM TO HORIZONTAL CURVE.

ESTIMATED QUANTITIES

CLASS "A" CONCRETE (BRIDGE DECK) C.Y.	CLASS "A" CONCRETE (BRIDGES) C.Y.	STEEL BAR REINFORCEMENT (BRIDGES) LB.	EPOXY-COATED REINFORCING STEEL (BRIDGES) LB.
382	31	5,830	102,860

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

SUPERSTRUCTURE
FOOTHILLS PARKWAY OVER
HAPPY HOLLOW ROAD
STATION 668+10.96
SEVIER COUNTY
1988

DESIGNED BY E. MELTON DATE 3-88
DRAWN BY K.L. FRANKENFIELD DATE 3-88
SUPERVISED BY FIELDS & WOODS DATE 3-88
CHECKED BY DATE

CORRECT Edward P. Wilkerson
ENGINEER OF STRUCTURES
APPROVED Louis Evans
ASSISTANT CHIEF ENGINEER

M-206-49

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	7 of 23	December 2007	

ACTUAL DESIGN FILE : K7-PRA-FOOT-8E15-ASB4.DGN

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AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

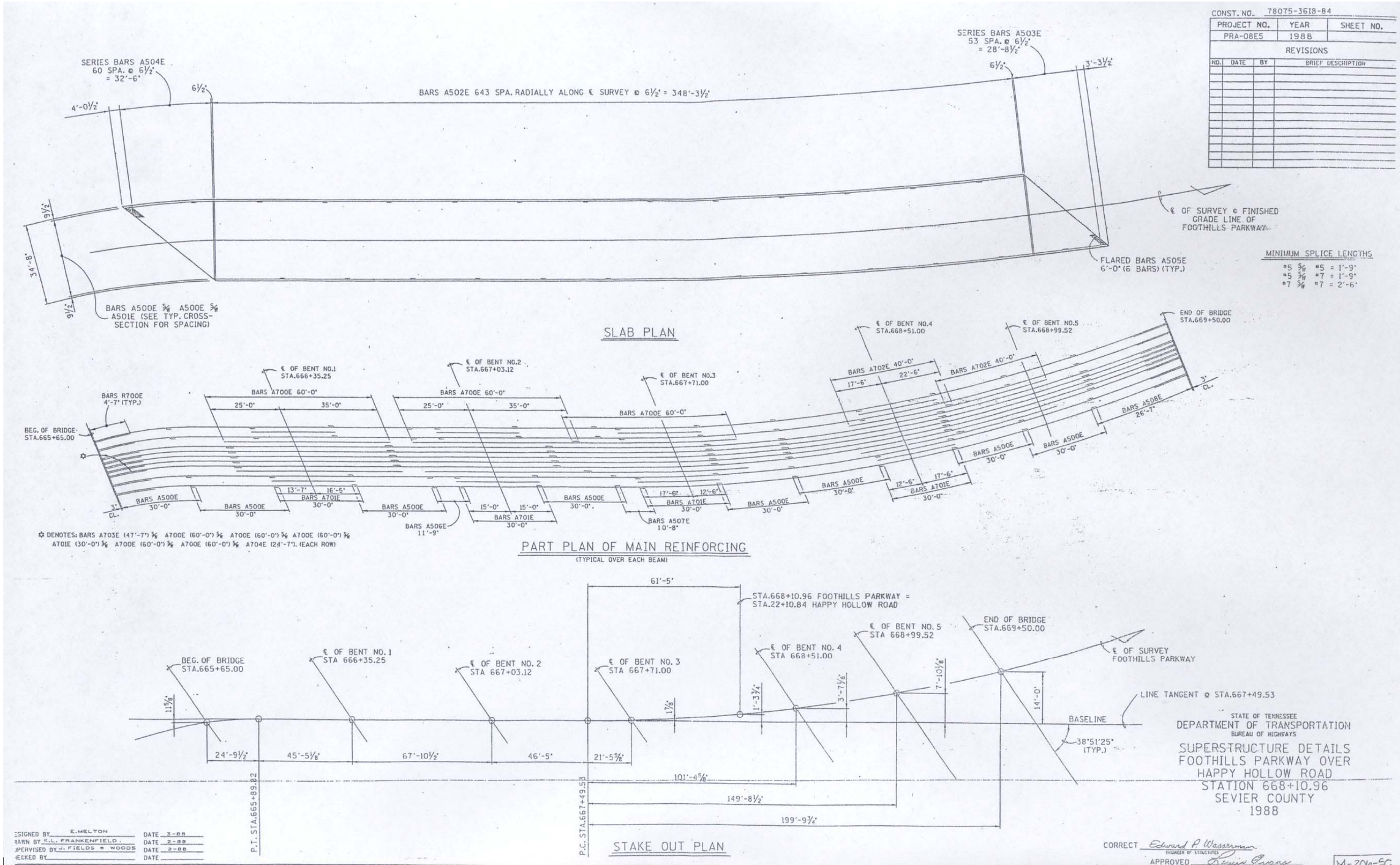
REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K8

CONST. NO. 78075-3618-84

PROJECT NO.	YEAR	SHEET NO.
PRA-08E5	1988	

REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION



NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	8 of 23	December 2007	

ACTUAL DESIGN FILE : K8-PRA-FOOT-8E15-ASB5.DGN

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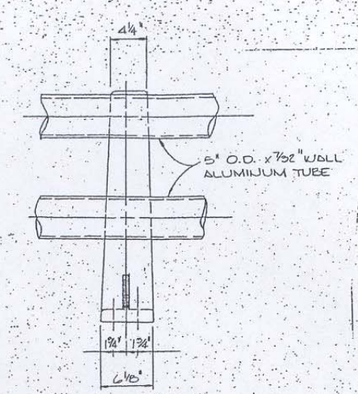
AS-BUILT DRAWING (FOR INFORMATION ONLY)

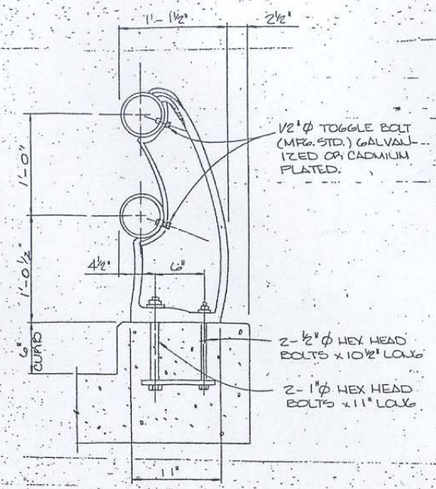
Structure No. 5460-205P

REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K9

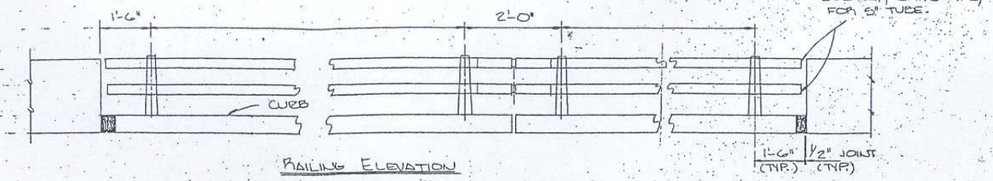
CONST. NO. 180E5-3116-14

TYPE	YEAR	PROJECT NO.
	1988	PRA-OBEC

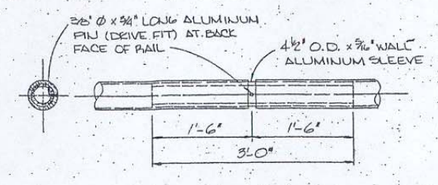




POST DETAILS



RAILING ELEVATION



RAIL SPLICE DETAIL

POST AND RAILING NOTES

POSTS SHALL BE ALUMINUM ALLOY PERMANENT MOLD CASTINGS, ALLOY A344-T4.

RAILS AND SLEEVES TO BE ALUMINUM ALLOY EXTRUDED TUBE 6061-T6).

ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325 AND SHALL BE GALVANIZED IN CONFORMITY WITH ASTM A153.

POSTS ARE TO BE SET NORMAL TO GRADE SO THAT RAILS WILL BE PARALLEL TO GRADE.

PROVIDE ALUMINUM SHIMS AS REQUIRED FOR ALIGNMENT OF POST.

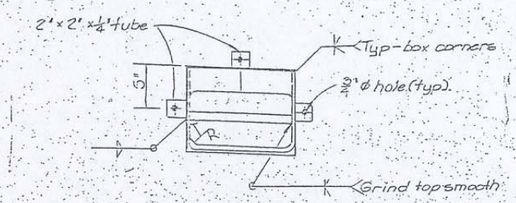
THE POSTS FURNISHED MAY DEVIATE SLIGHTLY FROM THE CONFIGURATION SHOWN, EXCEPT FOR HEIGHT, IN ORDER THAT AN AVAILABLE COMMERCIAL CASTING MAY BE USED. THE CASTINGS USED MUST CONFORM WITH THE REQUIREMENTS OF THE DESIGN SPECIFICATIONS (AASHTO '89) AND MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO BEING FABRICATED.

RAILS SHALL BE CONTINUOUS OVER AT LEAST THREE POSTS, AND SPLICE JOINTS FOR TOP AND BOTTOM RAIL STAGGERED EXCEPT AT EXPANSION JOINTS. (ONLY ONE RAIL SPLICED IN ANY PANEL).

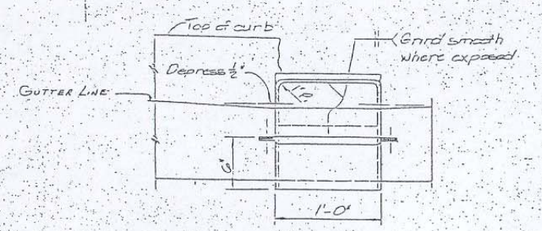
RAILS ON CURVED ALIGNMENT SHALL BE SHOP BENT TO THE REQUIRED RADIUS.

STEEL ANCHOR PLATES SHALL CONFORM TO ASTM A36.

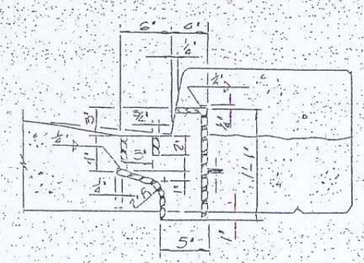
ALUMINUM BRIDGE RAIL AND RELATED HARDWARE SHALL RECEIVE A 80 GRIT SANDBLAST FINISH.



PLAN



ELEVATION



SECTION

SCUPPER DETAILS

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

FOOTHILLS PARKWAY
OVER HAPPY HOLLOW RD
STATION 6+68.10 ±
MISCELLANEOUS DETAIL
SEVIER COUNTY
1988

BY: _____

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	9 of 23	December 2007	

ACTUAL DESIGN FILE : K9-PRA-FOOT-8E15-ASB6.DGN

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AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K10

CONST. NO. 78075-3618-84

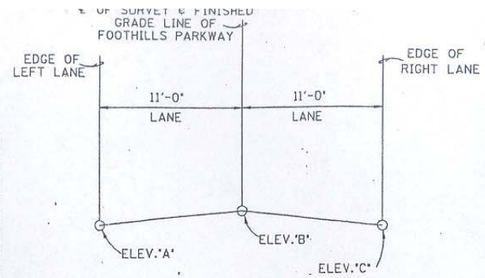
PROJECT NO.	YEAR	SHEET NO.
PRA-08E5	1988	

REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION

(BEFORE BEGINNING OF BRIDGE)

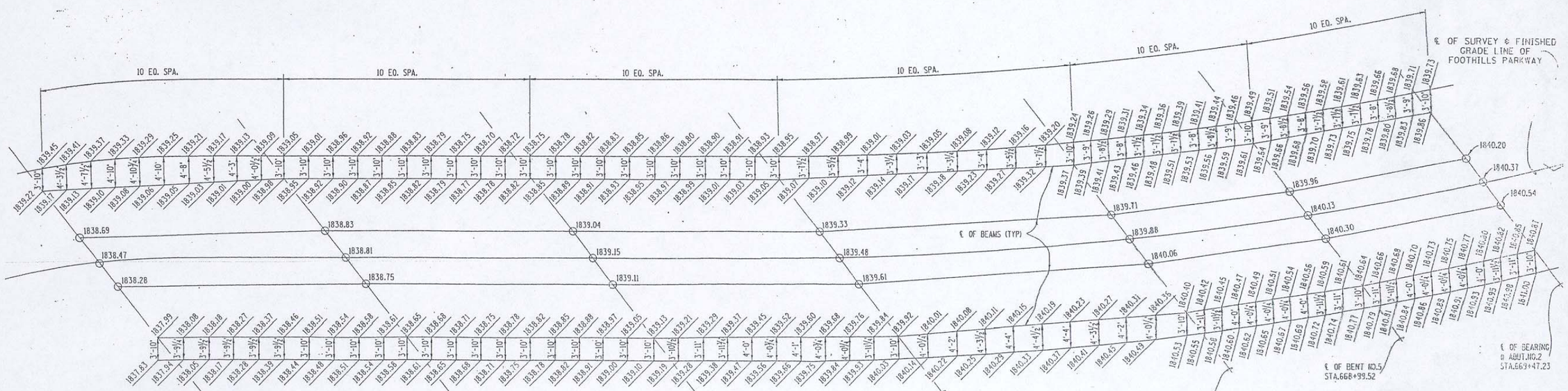
STATION	ELEV.'A'	ELEV.'B'	ELEV.'C'
662+50.00	1837.03	1836.88	1836.68
662+75.00	1837.34	1837.01	1836.68
663+00.00	1837.64	1837.13	1836.62
663+25.00	1837.95	1837.26	1836.57
663+50.00	1838.25	1837.38	1836.51
663+75.00	1838.53	1837.51	1836.49
664+00.00	1838.65	1837.63	1836.60
664+25.00	1838.78	1837.76	1836.73
664+50.00	1838.90	1837.88	1836.86
664+75.00	1839.03	1838.01	1836.99
665+00.00	1839.15	1838.13	1837.11
665+25.00	1839.14	1838.26	1837.38
665+50.00	1839.08	1838.38	1837.68



ROADWAY CROSS-SECTION

(BEYOND END OF BRIDGE)

STATION	ELEV.'A'	ELEV.'B'	ELEV.'C'
669+50.00	1840.02	1840.38	1840.75
669+75.00	1840.14	1840.51	1840.87
670+00.00	1840.27	1840.63	1840.99
670+25.00	1840.40	1840.76	1841.12
670+50.00	1840.52	1840.88	1841.24
670+75.00	1839.64	1841.00	1841.36
671+00.00	1839.76	1841.13	1841.49
671+25.00	1840.90	1841.26	1841.62
671+50.00	1841.02	1841.38	1841.74
671+75.00	1841.14	1841.51	1841.87
672+00.00	1841.26	1841.63	1841.99
672+25.00	1841.51	1841.75	1841.99
672+50.00	1841.68	1841.88	1841.98



BRIDGE SCREED

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

BRIDGE SCREED
FOOTHILLS PARKWAY OVER
HAPPY HOLLOW ROAD
STATION 668+10.96
SEVIER COUNTY
1988

DESIGNED BY E. MELTON DATE 3-88
DRAWN BY K.L. FRANKENFIELD DATE 3-88
SUPERVISED BY FIELDS & WOODS DATE 3-88
CHECKED BY DATE

CORRECT Edward P. Wiseman
ENGINEER OF STRUCTURES
APPROVED David Evans
ASSISTANT CHIEF ENGINEER

M-206-E

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	10 of 23	December 2007	

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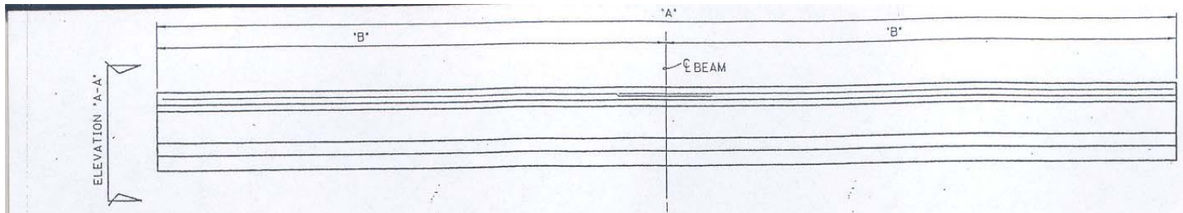
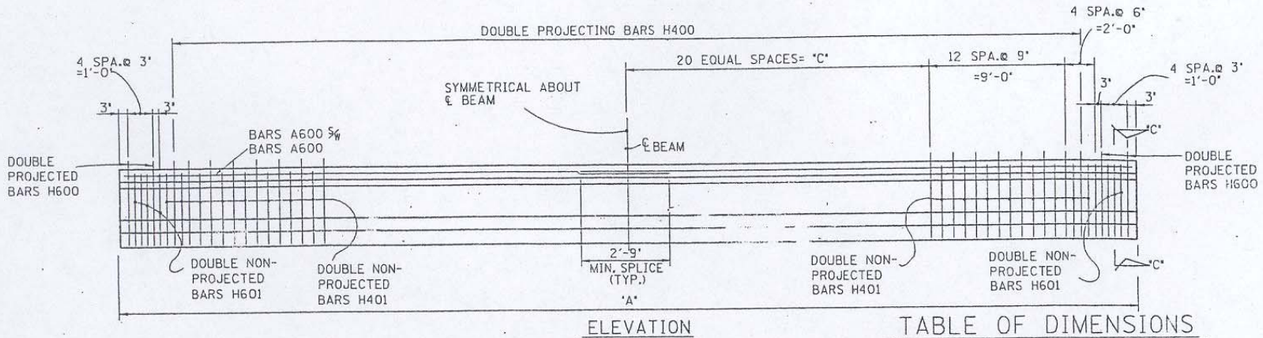
AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

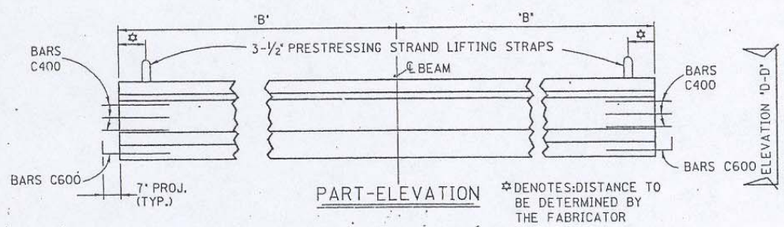
REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K11



ELEVATION

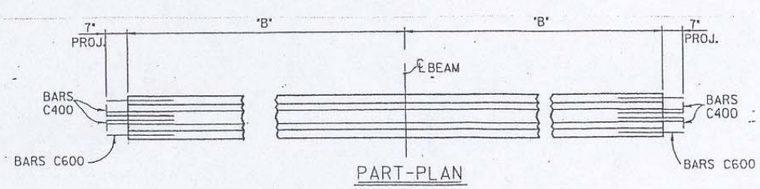


ELEVATION
(SHOWING STIRRUP BAR ARRANGEMENT)

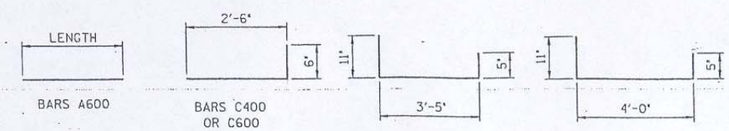


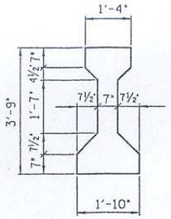
PART-ELEVATION

✡ DENOTES: DISTANCE TO BE DETERMINED BY THE FABRICATOR

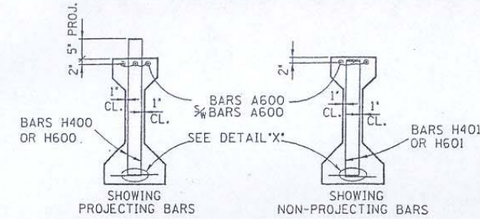


PART-PLAN

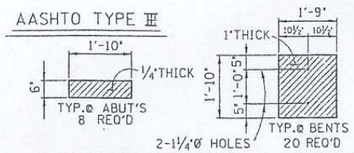




AASHTO TYPE III



SECTION "C-C"



ELASTOMERIC BEARING PAD DETAILS

DETAIL "X"

ESTIMATED QUANTITIES
(PER BEAM)

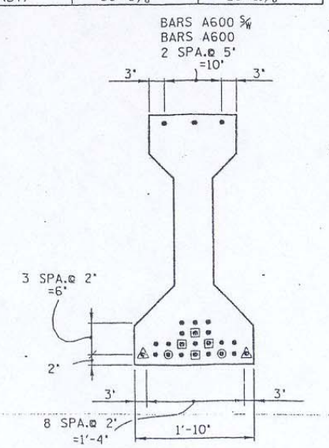
BEAM NO.	NO. BEAMS REQ'D.	PRESTRESSING STRANDS (STRESS-RELIEVED) LB.	CLASS "A" CONCRETE C.Y.	REINFORCING STEEL LB.	PRESTRESSING STRANDS (LOW RELAXATION) LB.
B1	1	836	9.5	1069	766
B2	1	850	9.6	1069	779
B3	1	861	9.8	1069	789
B4	1	867	9.8	1069	795
B5	4	852	9.7	1069	781
B6	2	854	9.7	1069	783
B7	2	849	9.6	1069	778

TABLE OF DIMENSIONS

'A'	'B'	'C'
65'-10" (B1)	32'-11"	20'-5"
66'-11 1/2" (B2)	33'-5 3/4"	20'-11 3/4"
67'-9 3/4" (B3)	33'-10 7/8"	21'-4 7/8"
68'-3 1/2" (B4)	34'-1 3/4"	21'-7 3/4"
67'-1 1/2" (B5)	33'-6 3/4"	21'-0 3/4"
67'-1 1/2" (B5)	33'-6 3/4"	21'-0 3/4"
67'-1 1/2" (B5)	33'-6 3/4"	21'-0 3/4"
67'-1 1/2" (B5)	33'-6 3/4"	21'-0 3/4"
67'-3" (B6)	33'-7 1/2"	21'-1 1/2"
67'-3" (B6)	33'-7 1/2"	21'-1 1/2"
66'-10 1/4" (B7)	33'-5 1/8"	20'-11 1/8"
66'-10 1/4" (B7)	33'-5 1/8"	20'-11 1/8"

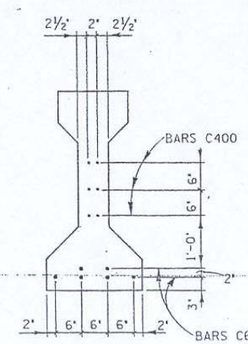
BILL OF STEEL
(PER BEAM)

BAR	SIZE	NO. REQ'D.	LENGTH
A600	6	6	35'-5"
C400	4	12	3'-0"
C600	6	12	3'-0"
H400	4	110	5'-4"
H401	4	32	4'-9"
H600	6	8	5'-4"
H601	6	16	4'-9"

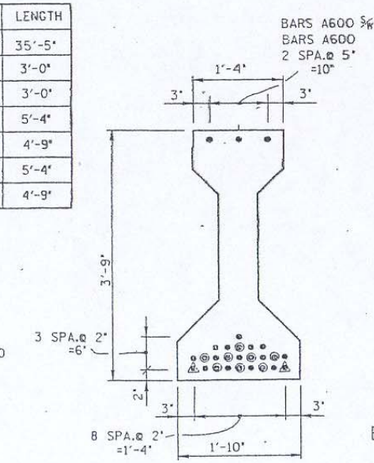


LOW-RELAXATION ALTERNATE

▼ DENOTES BOND BREAK 7'-6" FROM ENDS
▲ DENOTES BOND BREAK 11'-0" FROM ENDS
■ DENOTES BOND BREAK 5'-0" FROM ENDS



ELEVATION "D-D"



ELEVATION "A-A"

◎ DENOTES BOND BREAK 6'-0" FROM ENDS
△ DENOTES BOND BREAK 9'-0" FROM ENDS

CONST. NO. 78075-3618-84

PROJECT NO.	YEAR	SHEET NO.
PRA-08E5	1988	

REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION

NOTES:

1) THE TOP OF ALL BEAMS TO BE ROUGH FLOATED. AT APPROXIMATELY THE TIME OF INITIAL SET, THE TOP OF THE BEAMS WILL ALSO BE SCRUBBED TRANSVERSELY WITH A COARSE WIRE BRUSH TO REMOVE ALL LAITANCE AND PRODUCE A ROUGH SURFACE. WHERE PRECAST SLAB PANELS ARE TO BE USED AND SET ON FELT PADS, THE OUTER TWO INCHES OF THE TOP FLANGE MAY BE TROWELED.
2) MILD STEEL REINFORCING SHALL BE ASTM A615 GRADE 60.
3) ALL PRESTRESSING STRANDS TO BE 1/2" ø ASTM GRADE 270K, 7 WIRE UNCOATED STRESS-RELIEVED PRESTRESSING STRANDS OR STRESS-RELIEVED LOW RELAXATION PRESTRESSING STRANDS.
4) ALL BEAMS ARE AASHTO-PCI STANDARD TYPE III.
5) AFTER THE BEAM IS REMOVED FROM THE PRESTRESSING BED, BARS C600 AND C400 SHALL BE BENT A SUFFICIENT AMOUNT SO AS TO PERMIT THE "C" BARS OF ADJOINING BEAM TO MESH WHEN IN THE ERECTED POSITION.
6) THE PRESTRESSING STRANDS SHALL BE LEFT PROJECTING 3" ± FROM THE ENDS OF THE BEAMS. THERE SHALL NOT BE ANY PROTECTIVE COATING PLACED ON THE ENDS OF THE BEAMS OR ON THE PROJECTING STRANDS.
7) THE CONCRETE FOR THIS CONSTRUCTION SHALL BE OF SUCH PROPERTIES AS TO ATTAIN A COMPRESSIVE STRENGTH OF NOT LESS THAN (5,300 ± PSI) AT THE AGE OF 28 DAYS AND STRESS TRANSFER SHALL NOT BE MADE TO THE BRIDGE MEMBER UNTIL THE TEST SPECIMENS INDICATE THAT THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF AT LEAST (4,000 ± PSI). SEE GENERAL NOTES FOR CONCRETE FINISHING NOTE. IF LOW RELAXATION ALTERNATE IS USED, BEAM CONCRETE STRENGTH SHALL BE AT LEAST 5300 PSI AND THE RELEASE STRENGTH SHALL BE AT LEAST 4000 PSI.
8) AN INITIAL FORCE OF 28,936 LBS SHALL BE APPLIED TO EACH STRAND IN ALL BEAMS USING STRESS RELIEVED STRANDS OR 31,003 LBS. ON ALL BEAMS USING LOW RELAXATION STRANDS.
9) ELASTOMERIC BEARING PADS TO BE 1/4"X6"X1'-10" AT EACH ABUTMENT AND 1"X1'-9"X1'-10" AT EACH BENT.
10) PRESTRESSING STRANDS SHALL NOT BE GREATER THAN NOMINAL 1/2" DIAMETER.
11) COST OF ELASTOMERIC PADS, AND XX DOWEL BARS AND RUBBER BONDING CEMENT TO BE INCLUDED IN THE COST OF PRESTRESSED BEAM.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

PRESTRESSED BEAM DETAILS
BEAMS B1, B2, B3, B4, B5, B6, & B7
FOOTHILLS PARKWAY OVER
HAPPY HOLLOW ROAD
STATION 668+10.96
SEVIER COUNTY
1988

DESIGNED BY E. MELTON DATE 2-88
DRAWN BY DAVID FERGUSON DATE 3-88
SUPERVISED BY FIELDS & WOODS DATE 3-88
CHECKED BY DATE

CORRECT Edward P. Wasserman
ENGINEER OF STRUCTURES
APPROVED Louis Evans
DIRECTOR OF HIGHWAYS

M-206-5

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	11 of 23	December 2007	

ACTUAL DESIGN FILE : K11-PRA-FOOT-8E15-ASBB.DGN
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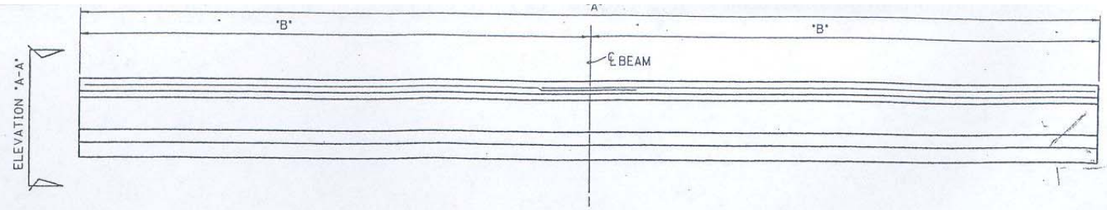
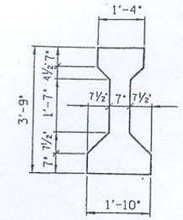
AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

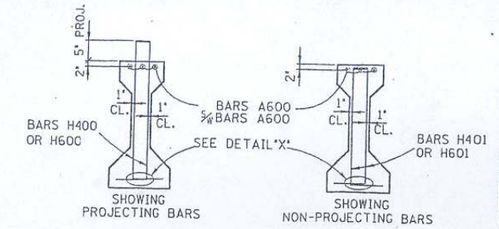
REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K12



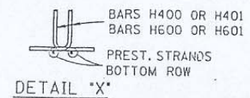
ELEVATION



AASHTO TYPE III



SECTION "C-C"

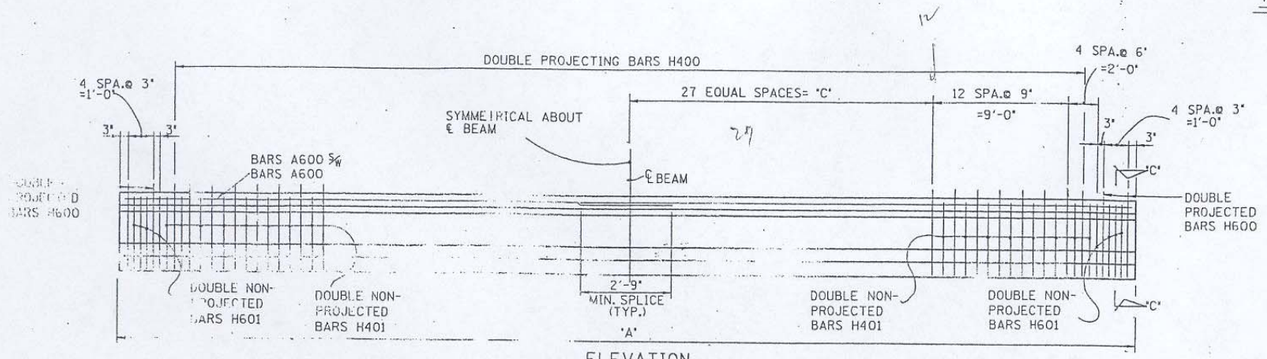


DETAIL "X"

CONST. NO. 78075-3618-84		
PROJECT NO.	YEAR	SHEET NO.
PRA-OBE5	1988	

REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION



ELEVATION
(SHOWING STIRRUP BAR ARRANGEMENT)

ESTIMATED QUANTITIES
(PER-BEAM)

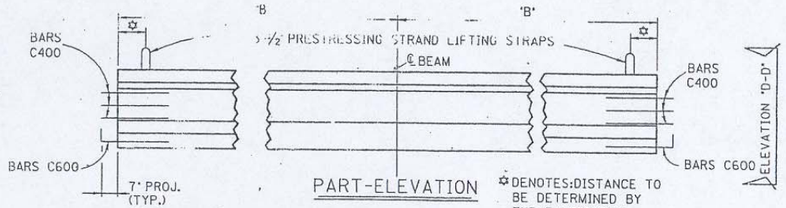
BEAM NO.	NO. BEAMS REQ'D.	PRESTRESSING STRANDS (STRESS-RELIEVED) LB.	CLASS "A" CONCRETE C.Y.	REINFORCING STEEL LB.	PRESTRESSING STRANDS (LOW RELAXATION) LB.
B8	1	1188	11.6	1222	1103
B9	1	1177	11.5	1222	1093
B10	1	1167	11.4	1222	1084
B11	1	1158	11.3	1222	1076

NOTE: COST OF ELASTOMERIC PADS, AND--DOWEL BARS AND RUBBER BONDING CEMENT TO BE INCLUDED IN THE COST OF PRESTRESSED BEAM.

NOTES:

1) THE TOP OF ALL BEAMS TO BE ROUGH FLOATED. AT APPROXIMATELY THE TIME OF INITIAL SET, THE TOP OF THE BEAMS WILL ALSO BE SCRUBBED TRANSVERSELY WITH A COARSE WIRE BRUSH TO REMOVE ALL LAITANCE AND PRODUCE A ROUGH SURFACE. WHERE PRECAST SLAB PANELS ARE TO BE USED AND SET ON FELT PADS, THE OUTER TWO INCHES OF THE TOP FLANGE MAY BE TROWELED.
2) MILD STEEL REINFORCING SHALL BE ASTM A615 GRADE 60.
3) ALL PRESTRESSING STRANDS TO BE ½" ø ASTM GRADE 270K, 7 WIRE UNCOATED STRESS-RELIEVED PRESTRESSING STRANDS OR STRESS-RELIEVED LOW RELAXATION PRESTRESSING STRANDS.
4) ALL BEAMS ARE AASHTO-PCI STANDARD TYPE III.
5) AFTER THE BEAM IS REMOVED FROM THE PRESTRESSING BED, BARS C600 AND C400 SHALL BE BENT A SUFFICIENT AMOUNT SO AS TO PERMIT THE "C" BARS OF ADJOINING BEAM TO MESH WHEN IN THE ERECTED POSITION.
6) THE PRESTRESSING STRANDS SHALL BE LEFT PROJECTING 3" ± FROM THE ENDS OF THE BEAMS. THERE SHALL NOT BE ANY PROTECTIVE COATING PLACED ON THE ENDS OF THE BEAMS OR ON THE PROJECTING STRANDS.
7) THE CONCRETE FOR THIS CONSTRUCTION SHALL BE OF SUCH PROPERTIES AS TO ATTAIN A COMPRESSIVE STRENGTH OF NOT LESS THAN (5,300 ± PSI) AT THE AGE OF 28 DAYS AND STRESS TRANSFER SHALL NOT BE MADE TO THE BRIDGE MEMBER UNTIL THE TEST SPECIMENS INDICATE THAT THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF AT LEAST (4,000 ± PSI). SEE GENERAL NOTES FOR CONCRETE FINISHING NOTE. IF LOW RELAXATION ALTERNATE IS USED, BEAM CONCRETE STRENGTH SHALL BE AT LEAST 5300 PSI AND THE RELEASE STRENGTH SHALL BE AT LEAST 4000 PSI.
8) AN INITIAL FORCE OF 28,936 LBS SHALL BE APPLIED TO EACH STRAND IN ALL BEAMS USING STRESS RELIEVED STRANDS OR 31,003 LBS. ON ALL BEAMS USING LOW RELAXATION STRANDS.
9) ELASTOMERIC BEARING PADS TO BE ¼"X6"X1'-10" AT EACH ABUTMENT AND 1"X1'-9"X1'-10" AT EACH BENT.
10) PRESTRESSING STRANDS SHALL NOT BE GREATER THAN NOMINAL ½" DIAMETER.

SEE DRAWING NO.X-XXX-XXX FOR ELASTOMERIC PAD DETAILS



PART-ELEVATION

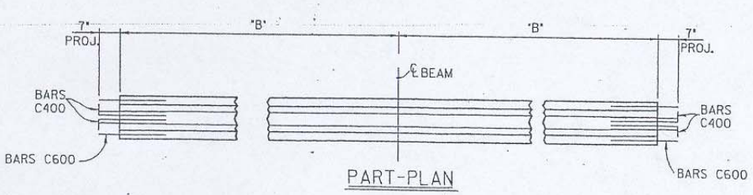
✡ DENOTES DISTANCE TO BE DETERMINED BY THE FABRICATOR

TABLE OF DIMENSIONS

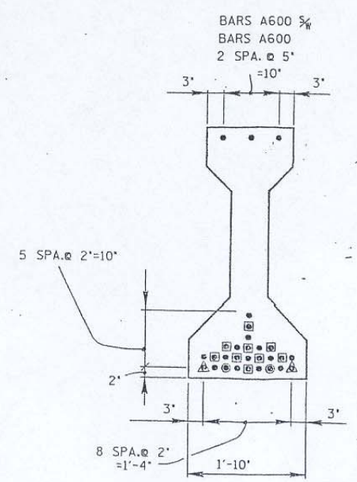
"A"	"B"	"C"
80'-3" (B8)	40'-1½"	27'-7½"
79'-6⅞" (B9)	39'-9 7/16"	27'-3½"
78'-11" (B10)	39'-5½"	26'-11½"
78'-3½" (B11)	39'-1¾"	26'-7¾"

BILL OF STEEL
(PER BEAM)

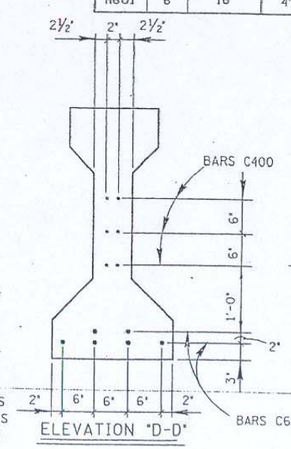
BAR	SIZE	NO.REQ'D.	LENGTH
A600	6	6	41'-4"
C400	4	12	3'-0"
C600	6	12	3'-0"
H400	4	138	5'-4"
H401	4	32	4'-9"
H600	6	8	5'-4"
H601	6	16	4'-9"



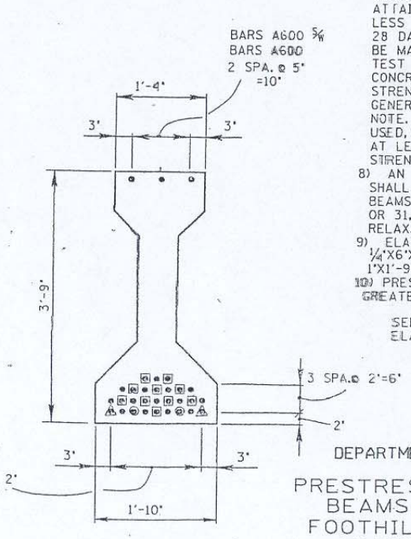
PART-PLAN



LOW-RELAXATION ALTERNATE

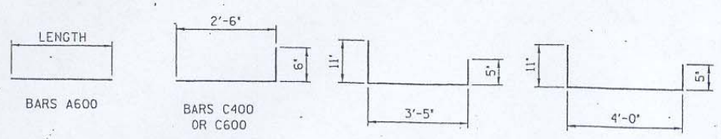


ELEVATION "D-D"



ELEVATION "A-A"

● DENOTES BOND BREAK 11'-6" FROM ENDS
▲ DENOTES BOND BREAK 21'-0" FROM ENDS
■ DENOTES BOND BREAK 6'-0" FROM ENDS



● DENOTES BOND BREAK 15'-0" FROM ENDS
▲ DENOTES BOND BREAK 28'-0" FROM ENDS
■ DENOTES BOND BREAK 7'-0" FROM ENDS

DESIGNED BY E. MELTON DATE 2-88
DRAWN BY DAVID FERGUSON DATE 3-88
SUPERVISED BY FIELDS & WOODS DATE 3-88
CHECKED BY DATE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

PRESTRESSED BEAM DETAILS
BEAMS B8,B9,B10,& B11
FOOTHILLS PARKWAY OVER
HAPPY HOLLOW ROAD
STATION 668+10.96
SEVIER COUNTY
1988

CORRECT Edward P. Wasserman
ENGINEER OF STRUCTURES
APPROVED Kevin Evans
DIRECTOR OF HIGHWAYS

M-206-53

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	12 of 23	December 2007	

ACTUAL DESIGN FILE : K12-PRA-FOOT-8E15-ASB9.DGN
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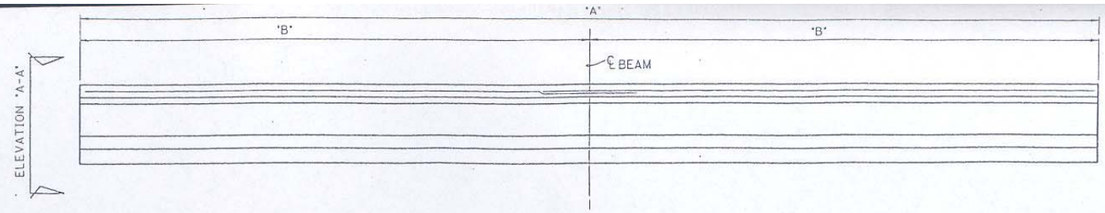
1/8/2008

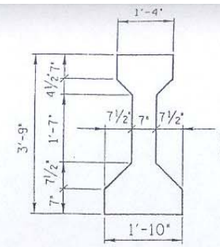
AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

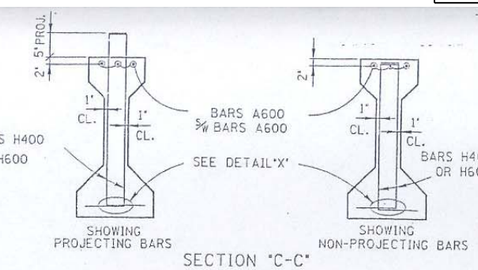
REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K13



ELEVATION



AASHTO TYPE III

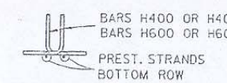


SECTION "C-C"

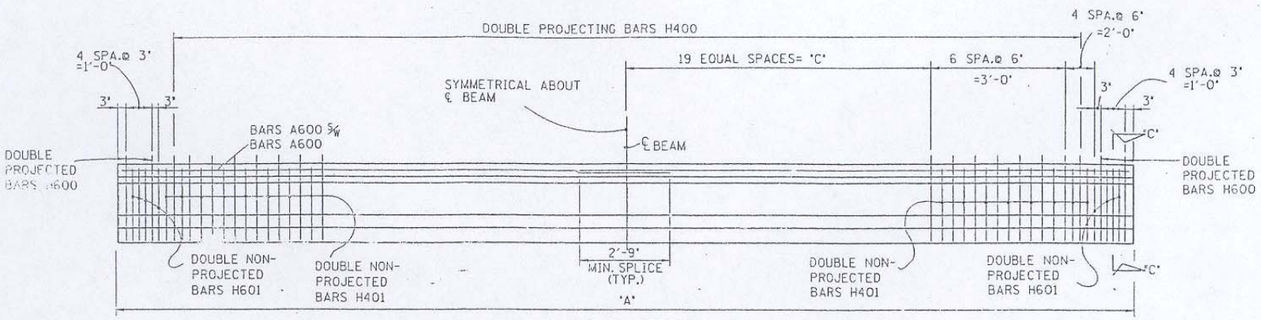
CONST. NO.	78075-3618-84	
PROJECT NO.	YEAR	SHEET NO.
PRA-08E5	1988	

REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION



DETAIL "X"



ELEVATION

(SHOWING STIRRUP BAR ARRANGEMENT)

ESTIMATED QUANTITIES

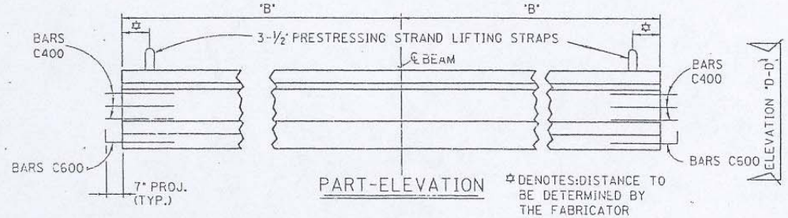
(PER-BEAM)

BEAM NO.	NO. BEAMS REQ'D.	PRESTRESSING STRANDS (STRESS-RELIEVED) LB.	CLASS "A" CONCRETE C.Y.	REINFORCING STEEL LB.	PRESTRESSING STRANDS (LOW RELAXATION) LB.
B12	2	256	7.0	894	307
B13	2	254	6.9	894	305
B14	2	252	6.9	894	303
B15	2	251	6.8	894	301

NOTES:

1) THE TOP OF ALL BEAMS TO BE ROUGH FLOATED. AT APPROXIMATELY THE TIME OF INITIAL SET, THE TOP OF THE BEAMS WILL ALSO BE SCRUBBED TRANSVERSELY WITH A COARSE WIRE BRUSH TO REMOVE ALL LAITANCE AND PRODUCE A ROUGH SURFACE. WHERE PRECAST SLAB PANELS ARE TO BE USED AND SET ON FELT PADS, THE OUTER TWO INCHES OF THE TOP FLANGE MAY BE TROWELED.
2) MILD STEEL REINFORCING SHALL BE ASTM A615 GRADE 60.
3) ALL PRESTRESSING STRANDS TO BE ½" ø ASTM GRADE 270K, 7 WIRE UNCOATED STRESS-RELIEVED PRESTRESSING STRANDS OR STRESS-RELIEVED LOW RELAXATION PRESTRESSING STRANDS.
4) ALL BEAMS ARE AASHTO-PCI STANDARD TYPE III
5) AFTER THE BEAM IS REMOVED FROM THE PRESTRESSING BED, BARS C600 AND C400 SHALL BE BENT A SUFFICIENT AMOUNT SO AS TO PERMIT THE "C" BARS OF ADJOINING BEAM TO MESH WHEN IN THE ERECTED POSITION.
6) THE PRESTRESSING STRANDS SHALL BE LEFT PROJECTING 3" ± FROM THE ENDS OF THE BEAMS. THERE SHALL NOT BE ANY PROTECTIVE COATING PLACED ON THE ENDS OF THE BEAMS OR ON THE PROJECTING STRANDS.
7) THE CONCRETE FOR THIS CONSTRUCTION SHALL BE OF SUCH PROPERTIES AS TO ATTAIN A COMPRESSIVE STRENGTH OF NOT LESS THAN (5,300 ± PSI) AT THE AGE OF 28 DAYS AND STRESS TRANSFER SHALL NOT BE MADE TO THE BRIDGE MEMBER UNTIL THE TEST SPECIMENS INDICATE THAT THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF AT LEAST (4,000 ± PSI). SEE GENERAL NOTES FOR CONCRETE FINISHING NOTE. IF LOW RELAXATION ALTERNATE IS USED, BEAM CONCRETE STRENGTH SHALL BE AT LEAST 5300 PSI AND THE RELEASE STRENGTH SHALL BE AT LEAST 4000 PSI.
8) AN INITIAL FORCE OF 28,936 LBS SHALL BE APPLIED TO EACH STRAND IN ALL BEAMS USING STRESS RELIEVED STRANDS OR 31,003 LBS. ON ALL BEAMS USING LOW RELAXATION STRANDS.
9) ELASTOMERIC BEARING PADS TO BE ¼"X6"X1'-10" AT EACH ABUTMENT AND 1"X1'-9"X1'-10" AT EACH BENT.
10) PRESTRESSING STRANDS SHALL NOT BE GREATER THAN NOMINAL ½" DIAMETER.
11) COST OF ELASTOMERIC PADS, AND XX DOWEL BARS AND RUBBER BONDING CEMENT TO BE INCLUDED IN THE COST OF PRESTRESSED BEAM.

SEE DRAWING NO.X-XXX-XXX
FOR ELASTOMERIC PAD DETAILS



PART-ELEVATION

✡ DENOTES: DISTANCE TO BE DETERMINED BY THE FABRICATOR

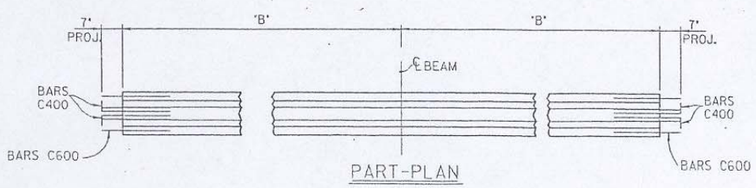
TABLE OF DIMENSIONS

"A"	"B"	"C"
48'-3¼" (B12)	24'-1⅝"	19'-7⅝"
48'-3¼" (B12)	24'-1⅝"	19'-7⅝"
47'-11¼" (B13)	23'-11⅝"	19'-5⅝"
47'-11¼" (B13)	23'-11⅝"	19'-5⅝"
47'-7¼" (B14)	23'-9⅝"	19'-3⅝"
47'-7¼" (B14)	23'-9⅝"	19'-3⅝"
47'-4" (B15)	23'-8"	19'-2"
47'-4" (B15)	23'-8"	19'-2"

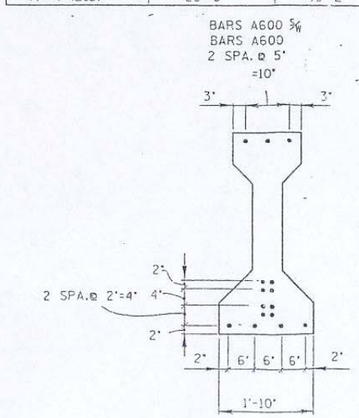
BILL OF STEEL

(PER BEAM)

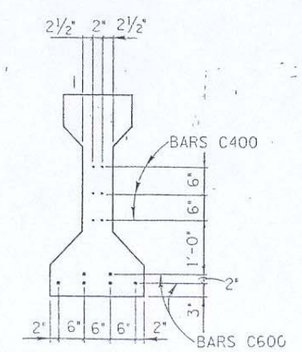
BAR	SIZE	NO. REQ'D.	LENGTH
A600	6	6	25'-5"
C400	4	12	3'-0"
C600	6	12	3'-0"
H400	4	86	5'-4"
H401	4	32	4'-9"
H600	6	8	5'-4"
H601	6	16	4'-9"



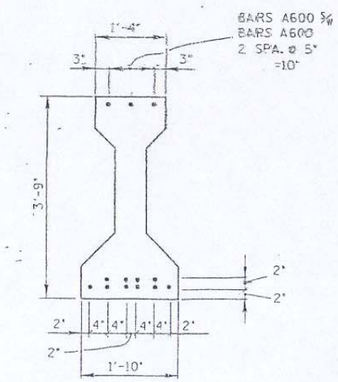
PART-PLAN



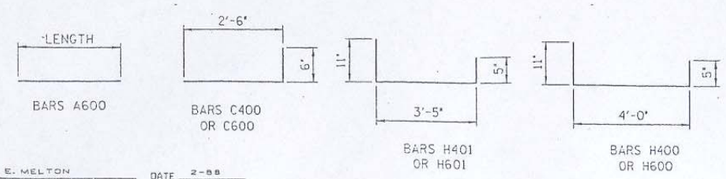
LOW-RELAXATION ALTERNATE



ELEVATION "D-D"



ELEVATION "A-A"



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

PRESTRESSED BEAM DETAILS
BEAMS B12, B13, B14, & B15
FOOTHILLS PARKWAY OVER
HAPPY HOLLOW ROAD
STATION 668+10.96
SEVIER COUNTY
1988

SIGNED BY E. MELTON DATE 2-88
AWN BY DAVID FERGUSON DATE 3-88
PERVISED BY FIELDS & WOODS DATE 3-88
ECKED BY DATE

CORRECT Edward P. Wasserman
ENGINEER OF STRUCTURES
APPROVED Louis Evans
DIRECTOR OF HIGHWAYS

M-206-54

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	13 of 23	December 2007	

ACTUAL DESIGN FILE : K13-PRA-FOOT-8E15-ASBILD.DGN

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AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K14

CONST. NO. 78075-3618-84

PROJECT NO.	YEAR	SHEET NO.
PRA-08E5	1988	

REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION

NOTES: ✳ DENOTES: 9" LEDGE FOR STONE MANSONARY

NOTE: RISER BLOCKS TO BE POURED MONOLITHICALLY WITH ABUTMENT BEAM.

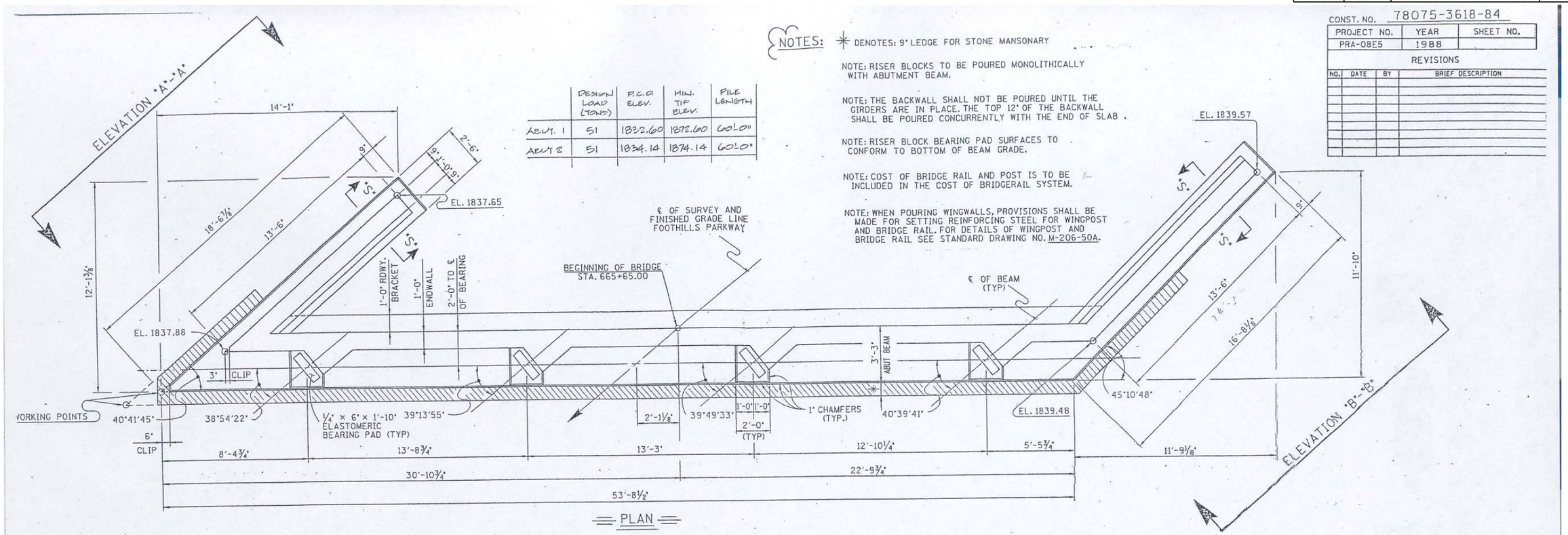
NOTE: THE BACKWALL SHALL NOT BE POURED UNTIL THE GIRDERS ARE IN PLACE. THE TOP 12" OF THE BACKWALL SHALL BE POURED CONCURRENTLY WITH THE END OF SLAB.

NOTE: RISER BLOCK BEARING PAD SURFACES TO CONFORM TO BOTTOM OF BEAM GRADE.

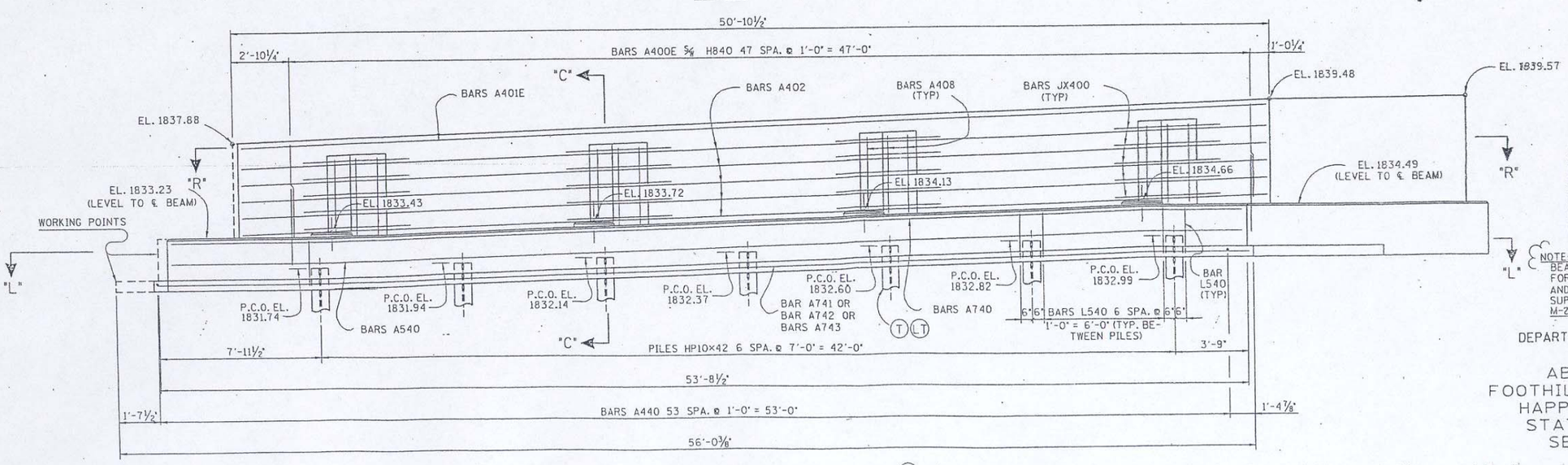
NOTE: COST OF BRIDGE RAIL AND POST IS TO BE INCLUDED IN THE COST OF BRIDGERAIL SYSTEM.

NOTE: WHEN POURING WINGWALLS, PROVISIONS SHALL BE MADE FOR SETTING REINFORCING STEEL FOR WINGPOST AND BRIDGE RAIL. FOR DETAILS OF WINGPOST AND BRIDGE RAIL SEE STANDARD DRAWING NO. M-206-50A.

	DESIGN LOAD (TONS)	P.C.O. ELEV.	MIN. TIP ELEV.	PILE LENGTH
ABUT. 1	51	1832.60	1872.60	60'-0"
ABUT 2	51	1834.14	1874.14	60'-0"



PLAN



ELEVATION
(LOOKING BACK ON SURVEY)

(T) DENOTES: TEST PILE
(LT) DENOTES: LOAD TEST PILE

ESTIMATED QUANTITIES	
CLASS "A" CONCRETE	STELL BAR REINFORCEMENT
C.Y.	LB.
25	4,521

NOTE: THESE QUANTITIES ARE FOR ABUTMENT BEAM AND ABUTMENT WINGS ONLY. QUANTITIES FOR ENDWALL, WINGWALLS, ROADWAY BRACKET, AND PARAPET SUPPORTS TO BE INCLUDED IN SUPERSTRUCTURE QUANTITIES ON DRAWING NO. M-206-29

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

ABUTMENT NO. 1
FOOTHILLS PARKWAY OVER
HAPPY HOLLOW RAOD
STATION 668+10.96
SEVIER COUNTY
1988

DESIGNED BY T. HUFF DATE 1-88
DRAWN BY S. R. LEWIS DATE 4-88
SUPERVISED BY J. FIELDS & WOODS DATE 4-88
CHECKED BY E. WELTON DATE 6-88

CORRECT Edward P. Wasserman
ENGINEER OF STRUCTURES
APPROVED Louis Evans
DIRECTOR OF HIGHWAYS

M-206-55

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	14 of 23	December 2007	

ACTUAL DESIGN FILE : K14-PRA-FOOT-8E15-ASBUILDGN
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AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

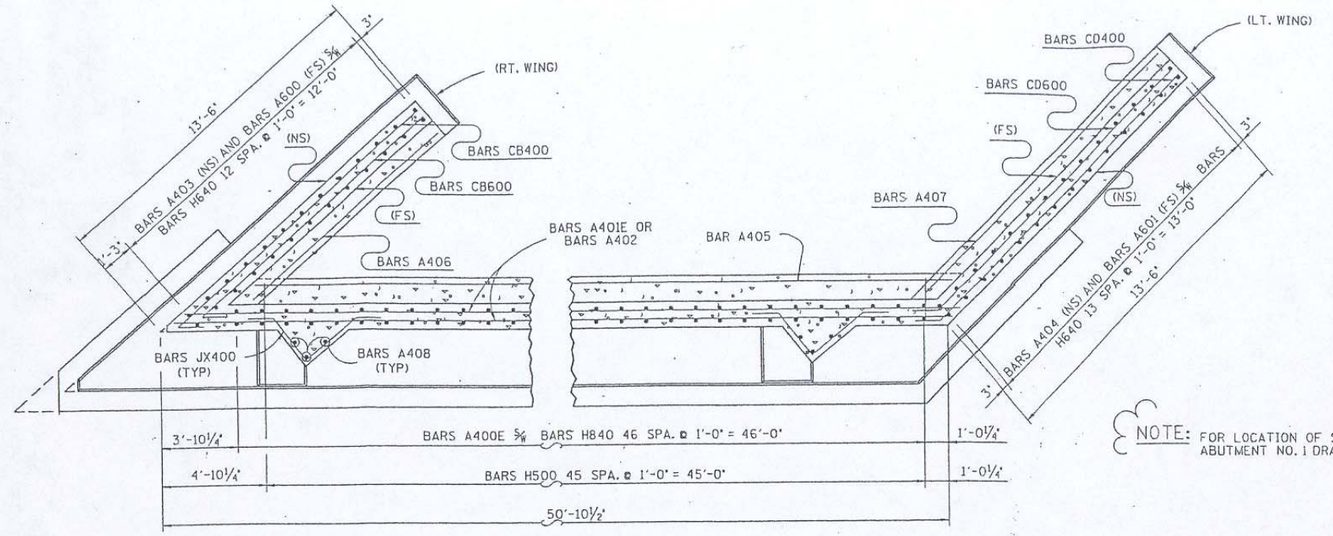
REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K15

CONST. NO. 78075-3618-84

PROJECT NO.	YEAR	SHEET NO.
PRA-08E5	1988	

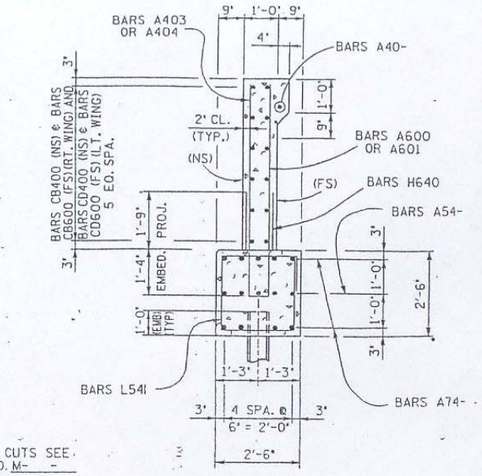
REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION

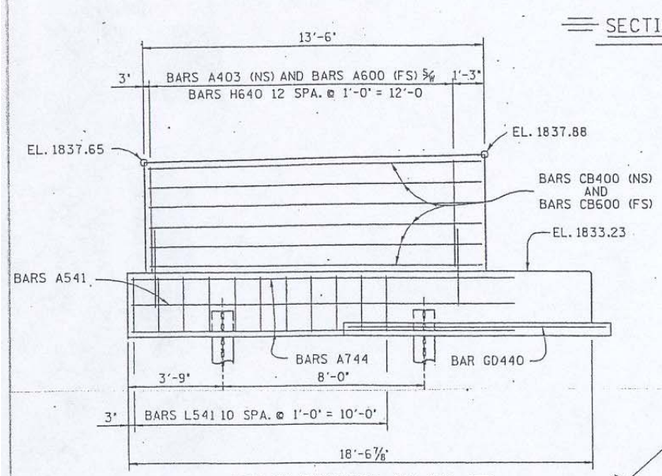


SECTION "R"-"R"

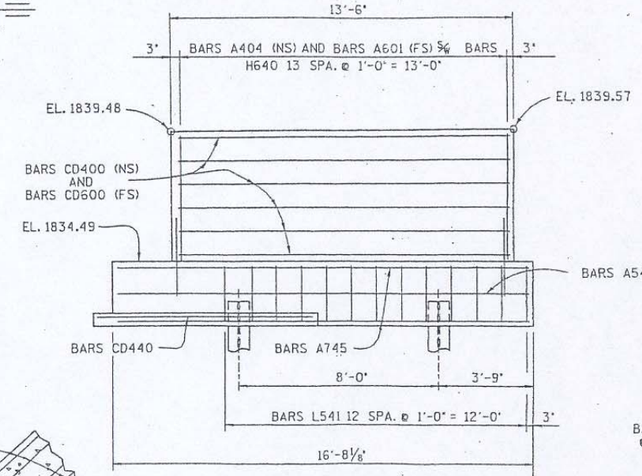
NOTE: FOR LOCATION OF SECTION CUTS SEE ABUTMENT NO. 1 DRAWING NO. M- -



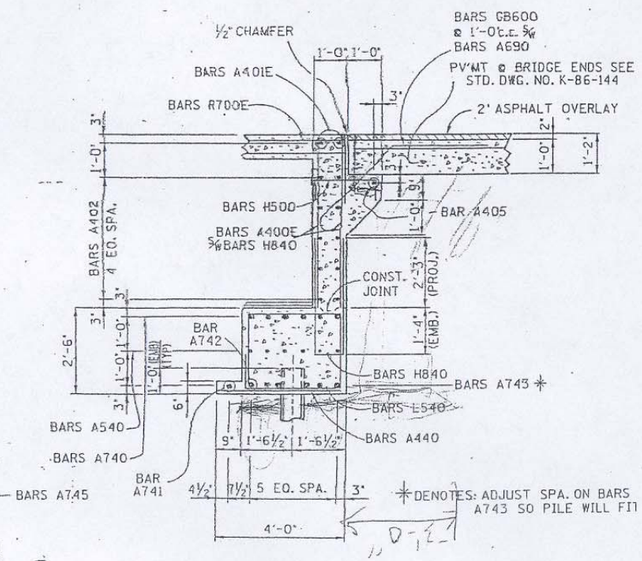
SECTION "S"-"S"



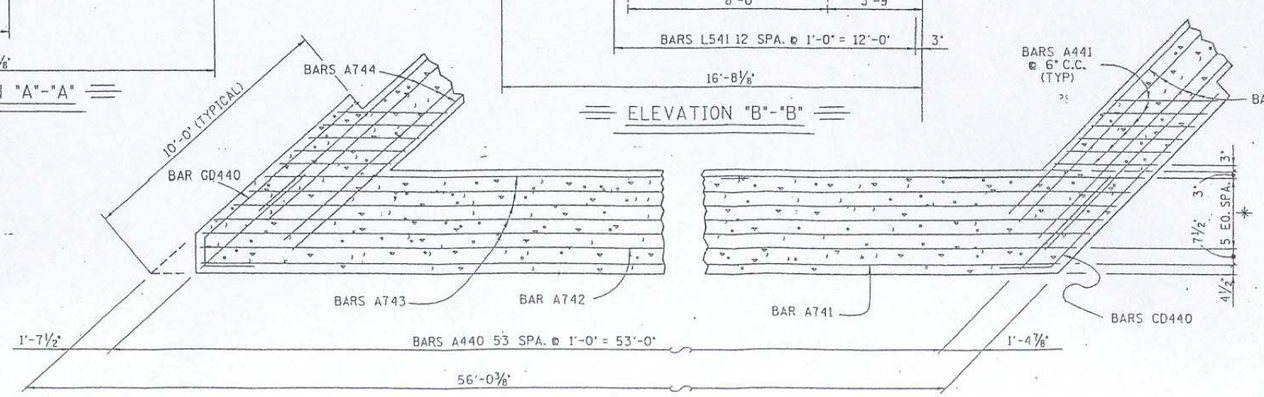
ELEVATION "A"-"A"



ELEVATION "B"-"B"



SECTION "C"-"C"



SECTION "L"-"L"

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

ABUTMENT NO. 1 DETAILS
FOOTHILLS PARKWAY OVER
HAPPY HOLLOW ROAD
STATION 668+10.96
SEVIER COUNTY
1988

DESIGNED BY	T. HUFF	DATE 1-88
DRAWN BY	S. R. LEWIS	DATE 4-88
SUPERVISED BY	J. FIELDS & R. WOODS	DATE 4-88
CHECKED BY	E. MELTON	DATE 6-88

CORRECT Edward P. Wiseman
ENGINEER OF STRUCTURES
APPROVED Louis Evans
ASSISTANT CHIEF ENGINEER

M-206 Sh

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	15 of 23	December 2007	

ACTUAL DESIGN FILE : K15-PRA-FOOT-8E15-ASBI2.DGN

M:\Projects\foot\8e15\bridge\DIST\ASBUILTS\K15-PRA-FOOT-8E16-ASBI2.dgn 6:08:05 PM 1/8/2008

AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K16

NOTES: * DENOTES: 9" LEDGE FOR STONE MASONRY

NOTE: RISER BLOCKS TO BE POURED MONOLITHICALLY WITH ABUTMENT BEAM.

NOTE: THE BACKWALL SHALL NOT BE POURED UNTIL THE GIRDERS ARE IN PLACE. THE TOP 12" OF THE BACKWALL SHALL BE POURED CONCURRENTLY WITH THE END OF SLAB.

NOTE: RISER BLOCK BEARING PAD SURFACES TO CONFORM TO BOTTOM OF BEAM GRADE.

NOTE: COST OF BRIDGE RAIL AND POST IS TO BE INCLUDED IN THE COST OF BRIDGERAIL SYSTEM.

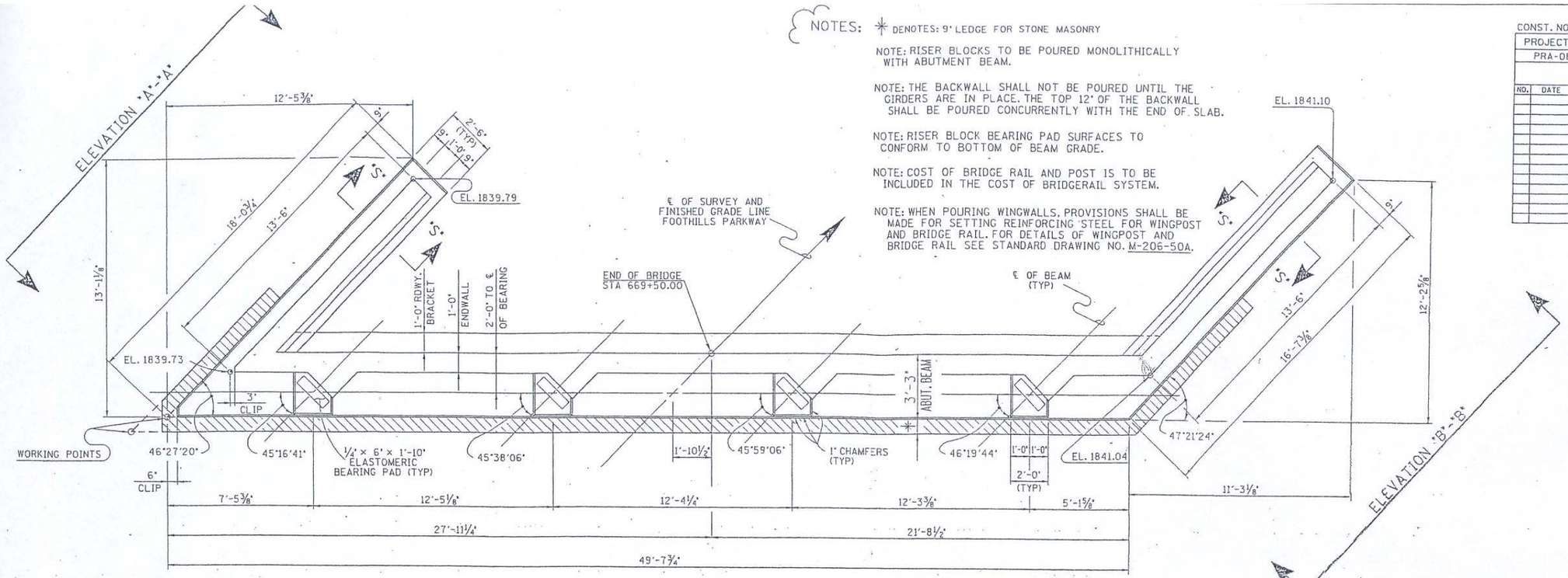
NOTE: WHEN POURING WINGWALLS, PROVISIONS SHALL BE MADE FOR SETTING REINFORCING STEEL FOR WINGPOST AND BRIDGE RAIL. FOR DETAILS OF WINGPOST AND BRIDGE RAIL SEE STANDARD DRAWING NO. M-206-50A.

CONST. NO. 78075-3618-84

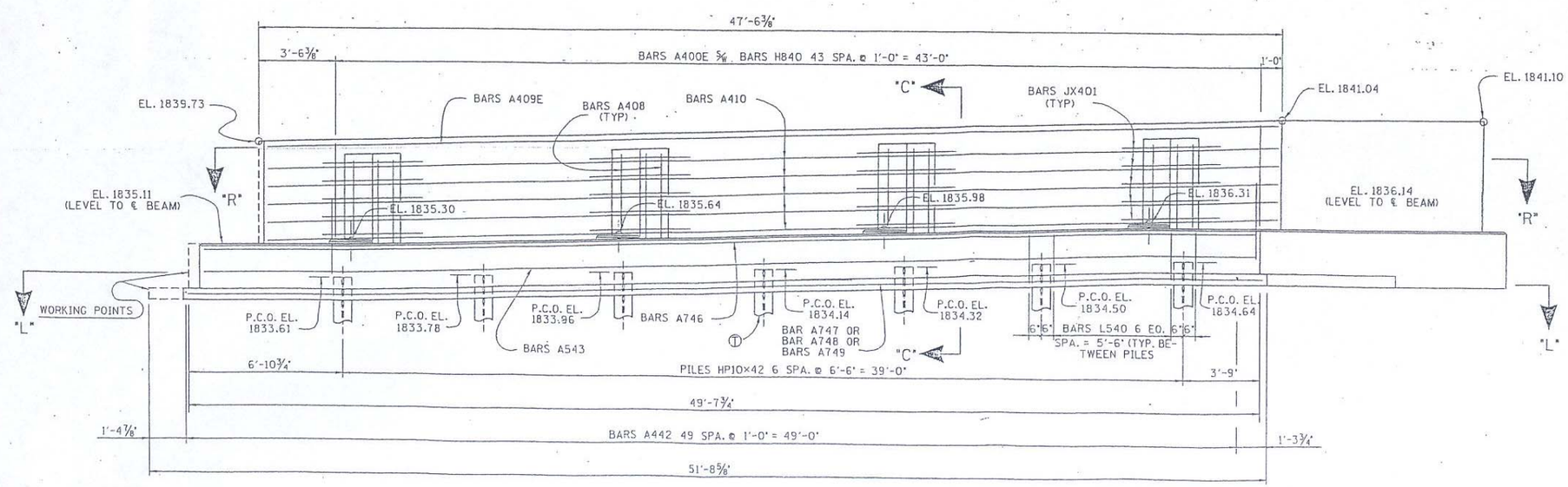
PROJECT NO.	YEAR	SHEET NO.
PRA-08E5	1988	

REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION



PLAN



ELEVATION

(LOOKING FORWARD ON SURVEY)

T DENOTES: TEST PILE

ESTIMATED QUANTITIES	
CLASS "A" CONCRETE C.Y.	STEEL BAR REINFORCEMENT LB.
23	4750

NOTE: THESE QUANTITIES ARE FOR ABUTMENT BEAM AND ABUTMENT WINGS ONLY. QUANTITIES FOR ENDWALL WINGWALLS, ROADWAY BRACKET, AND PARAPET SUPPORT TO BE INCLUDED IN SUPERSTRUCTURE QUANTITIES ON DRAWING NO. M-206-49

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

ABUTMENT NO. 2
FOOTHILLS PARKWAY OVER
HAPPY HOLLOW ROAD
STATION 668+10.96
SEVIER COUNTY
1988

DESIGNED BY	T. HUFF	DATE	1-88
DRAWN BY	S. R. LEWIS	DATE	4-88
SUPERVISED BY	J. FIELDS & WOODS	DATE	4-88
CHECKED BY	E. MELTON	DATE	6-88

CORRECT Edward P. Wasserman
ENGINEER OF STRUCTURES
APPROVED
CHIEF ENGINEER

M-206-5

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	16 of 23	December 2007	

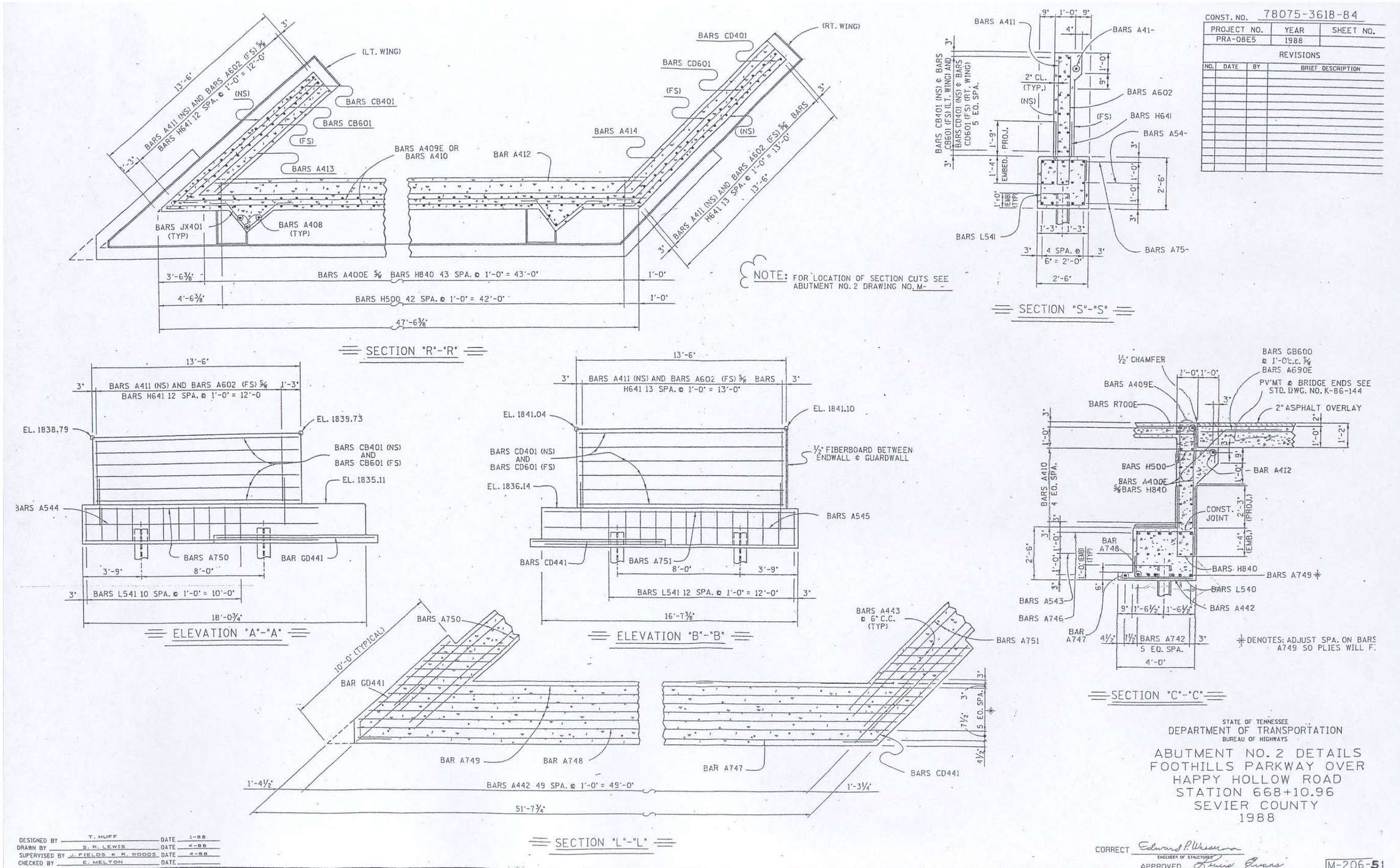
ACTUAL DESIGN FILE : K16-PRA-FOOT-8E15-ASBI3.DGN

M:\Projects\Foot\8e15\bridge\DIST\ASBUILTS\K16-PRA-FOOT-8E16-ASBI3.dgn 6:11:10 PM 1/8/2008

AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K17



NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	17 of 23	December 2007	

ACTUAL DESIGN FILE : K17-PRA-FOOT-8E15-ASBI4.DGN

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AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

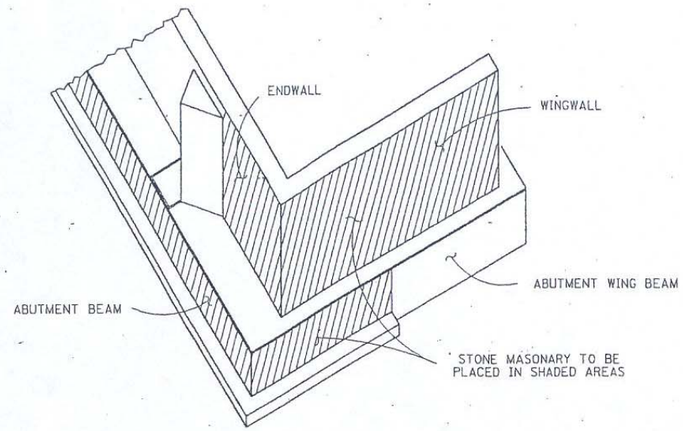
REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K18

CONST. NO. 78075-3618-84

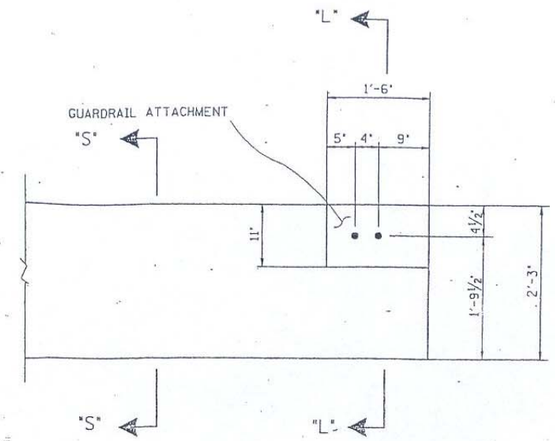
PROJECT NO.	YEAR	SHEET NO.
PRA-08E5	1988	

REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION
1	7-11-88	GEM	REV. MASONRY

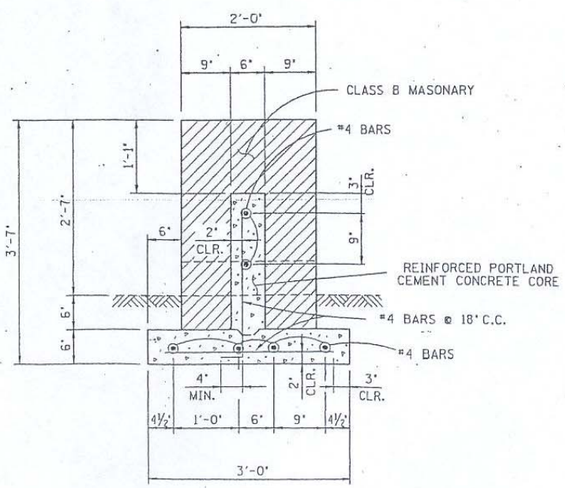


STONE MASONRY LOCATION SKETCH



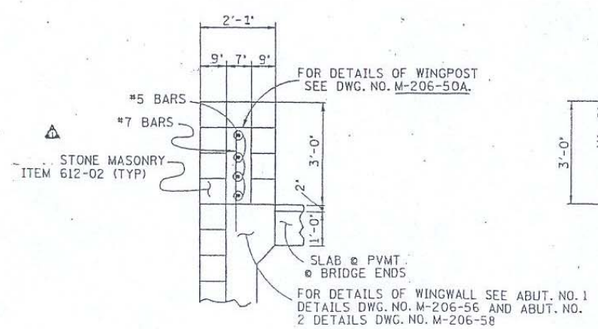
ELEVATION OF WINGPOST

(OMIT WINGPOST GUARDRAIL ATTACHMENT ON ABUTMENT NO. 2 RIGHT WING)

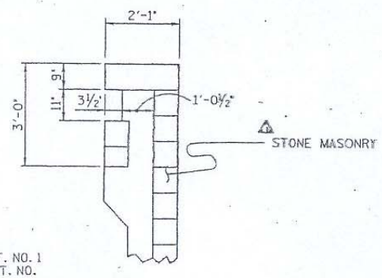


SECTION THRU GUARDWALL

(GUARDWALL TO BE USED @ ABUT. NO. 2 RIGHT WING ONLY)



SECTION "S"-"S"



SECTION "L"-"L"

DESIGNED BY T. HUFF DATE 1-88
DRAWN BY S. R. LEWIS DATE 4-88
SUPERVISED BY FIELDS & WOODS DATE 4-88
CHECKED BY E. MELTON DATE 6-88

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

ABUTMENT NO. 1 AND 2 DETAILS
FOOTHILLS PARKWAY OVER
HAPPY HOLLOW ROAD
STATION 668+10.96
SEVIER COUNTY
1988

CORRECT Edward P. Wheeler
ENGINEER OF STRUCTURES
APPROVED Louis Evans
CHIEF ENGINEER

M-206-59

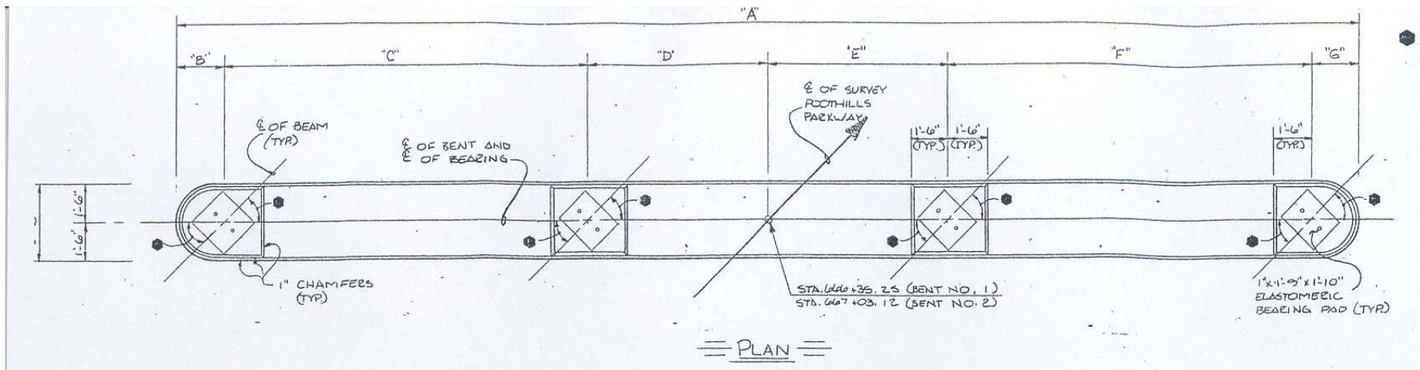
NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	18 of 23	December 2007	

ACTUAL DESIGN FILE : K18-PRA-FOOT-8E15-ASBI5.DGN
1/9/2008 6:52:30 AM M:\Projects\Foot\8e15\bridge\DIST\ASBUILTS\K18-PRA-FOOT-8E16-ASBI5.dgn

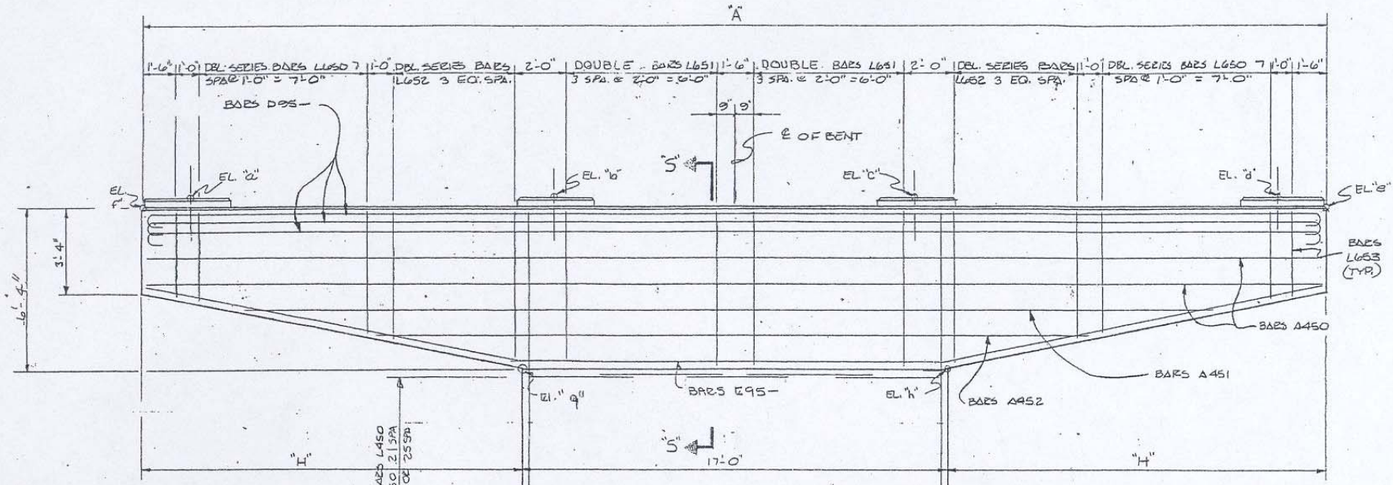
AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K19



PLAN



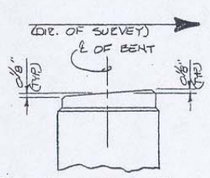
ELEVATION
(LOOKING FORWARD ON SURVEY)

NOTES: WHEN POURING CAP BEAM, PROVISIONS SHALL BE MADE FOR SETTING DOWEL BARS. IF THE CONTRACTOR ELECTS TO DRILL THE HOLES FOR THE DOWEL BARS, THE REINFORCING STEEL SHALL BE PLACED SO AS NOT TO INTERFERE WITH THE DRILLING. DOWEL FOR PROJECTION IS 9".

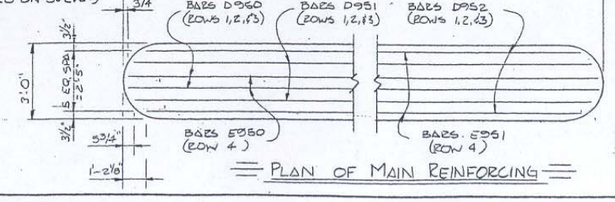
RISER BLOCKS TO BE POURED MONOLITHICALLY WITH CAP BEAM.

RISER BLOCK BEARING PAD SURFACE TO CONFORM TO BOTTOM OF BEAM GRADE.

COLUMN STEEL TO EXTEND 5'-1" INTO CAP BEAM.

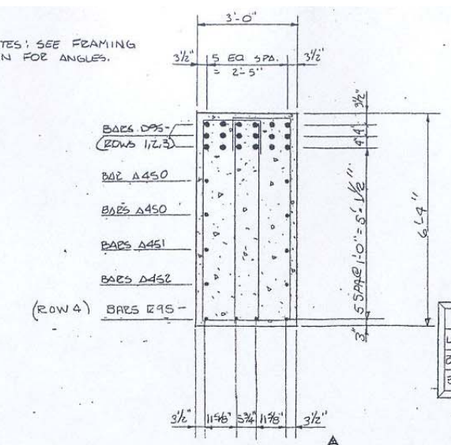


RIS BLOCK SLOPE DETAIL

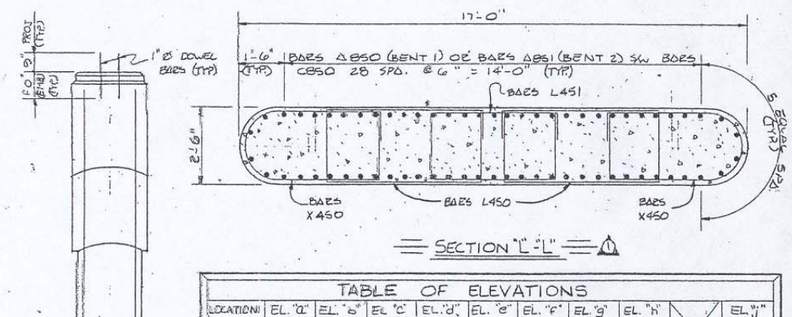


PLAN OF MAIN REINFORCING

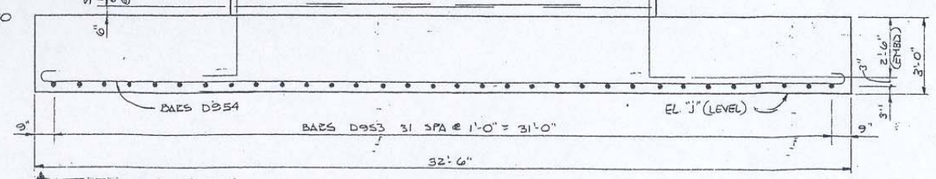
DENOTES; SEE FRAMING PLAN FOR ANGLES.

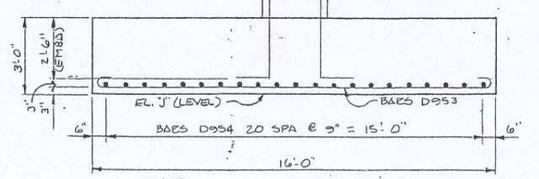


SECTION "S"-"S"

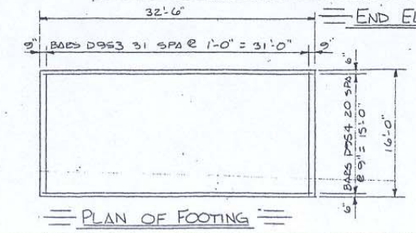


SECTION "L"-"L"





END ELEVATION



PLAN OF FOOTING

CONST. NO. 78075-3618-04

PROJECT NO.	YEAR	SHEET NO.
PRA-OBE5	1988	

REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION
1	8-10-88	[illegible]	Revised Cap Geometry

TABLE OF DIMENSIONS

LOCATION	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"	DIM. "F"
BENT NO. 1	46'-9 1/8"	1'-10 9/16"	14'-4 1/8"	7'-2 1/8"	7'-2 1/8"	14'-4 1/8"
BENT NO. 2	46'-9 1/8"	1'-10 9/16"	14'-4 1/8"	7'-2 1/8"	7'-2 1/8"	14'-4 1/8"

DIM "G"	DIM "H"
1'-10 9/16"	14'-10 1/2"
1'-10 9/16"	14'-10 1/2"

TABLE OF ELEVATIONS

LOCATION	EL. "a"	EL. "b"	EL. "c"	EL. "d"	EL. "e"	EL. "f"	EL. "g"	EL. "h"		EL. "J"
BENT NO. 1	1834.36	1834.21	1834.13	1834.03	1833.86	1833.86	1827.92	1827.52		1803.00
BENT NO. 2	1834.20	1834.42	1834.49	1834.51	1834.03	1834.03	1827.70	1827.70		1799.00

ESTIMATED QUANTITIES

	CLASS "A" CONCRETE C.Y.	STEEL BAR REINFORCEMENT
BENT NO. 1	119	16,920
BENT NO. 2	126	17,846

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

BENTS NO. 1 AND 2
FOOTHILLS PARKWAY OVER
HAPPY HOLLOW ROAD
STATION 668+10.96
SEVIER COUNTY
1988

DESIGNED BY T.E. HUFF DATE 1-88
DRAWN BY S.R. LEWIS DATE 2-88
SUPERVISED BY FIELDS & WOODS DATE 2-88
CHECKED BY E. MELTON DATE 4-88

CORRECT Edward P. Wasserman
ENGINEER OF STRUCTURES
APPROVED Louis Guess
DIRECTOR OF HIGHWAYS

M-206-60

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	19 of 23	December 2007	

ACTUAL DESIGN FILE : K19-PRA-FOOT-8E15-ASB16.DGN
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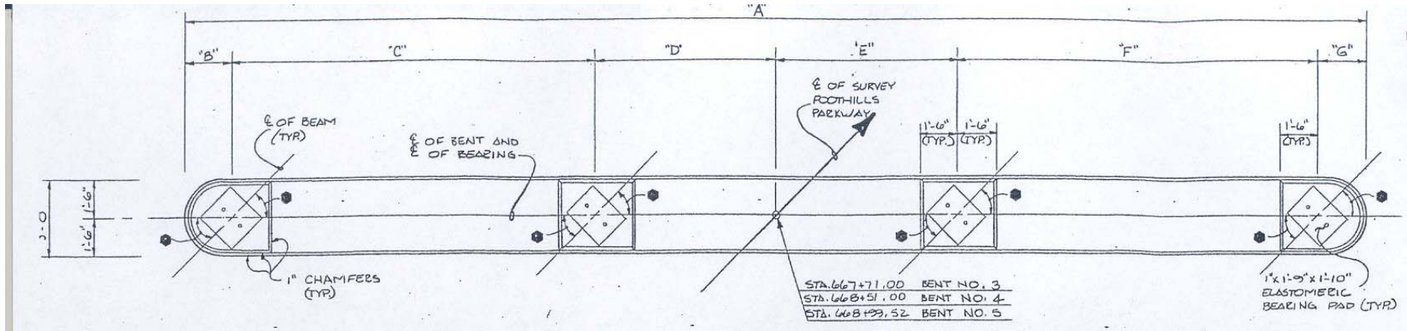
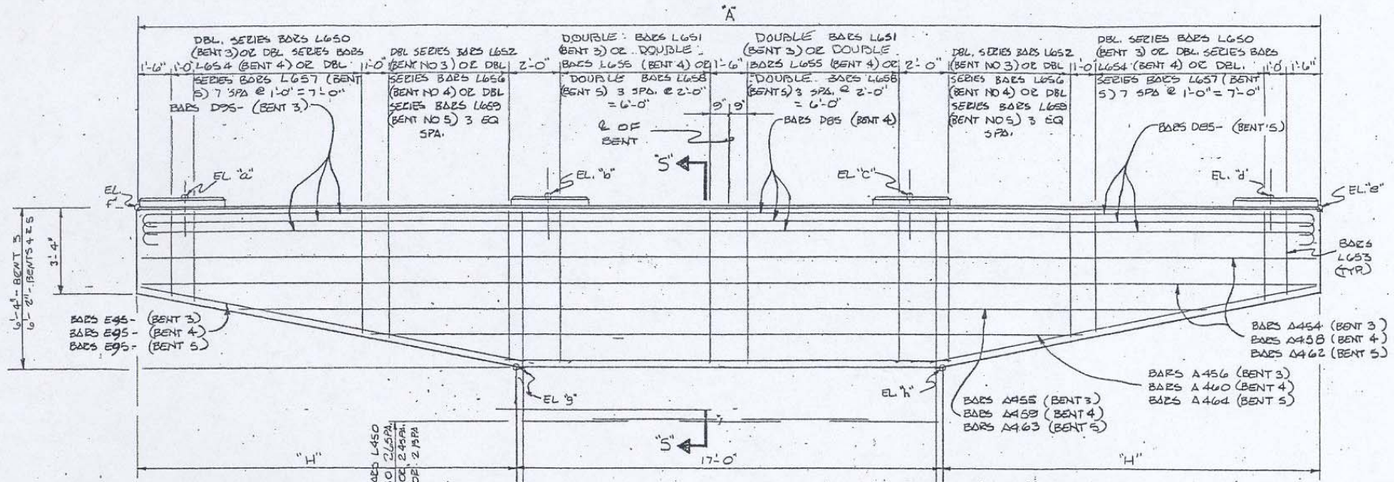
AS-BUILT DRAWING (FOR INFORMATION ONLY)

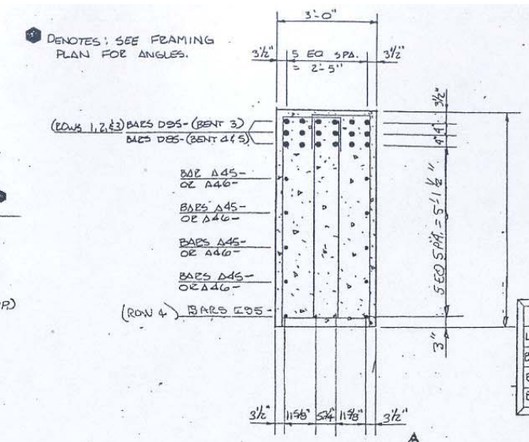
Structure No. 5460-205P

REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K20



PLAN





SECTION "5"-"5"

CONST. NO. 78075-3618-84

PROJECT NO.	YEAR	SHEET NO.
PRA-0BES.	1988	

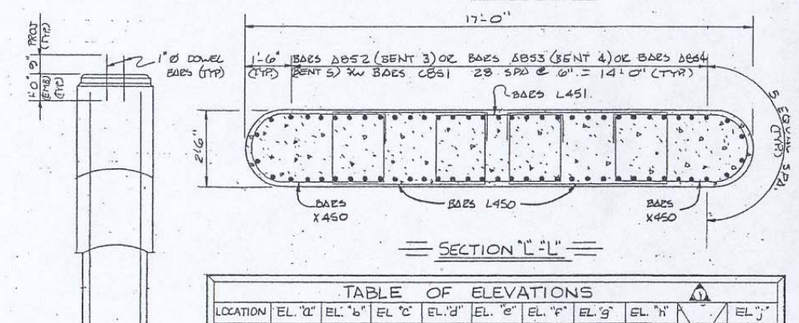
REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION
1	8-10-89	[illegible]	Revised Cap Geometry

TABLE OF DIMENSIONS

LOCATION	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"	DIM. "F"
BENT NO 3	45'-9"	1'-7⅛"	14'-2⅝"	7'-0¾"	7'-0⅞"	13'-11½"
BENT NO 4	42'-10½"	1'-6"	13'-3¾"	6'-7½"	6'-7⅛"	13'-1½"
BENT NO 5	41'-5½"	1'-6"	12'-10⅛"	6'-4⅝"	6'-4½"	12'-8½"

DIM "G"	DIM "H"
1'-10⅝"	14'-4½"
1'-8⅝"	12'-11⅛"
1'-8⅛"	12'-2¾"



SECTION "L"-"L"

TABLE OF ELEVATIONS

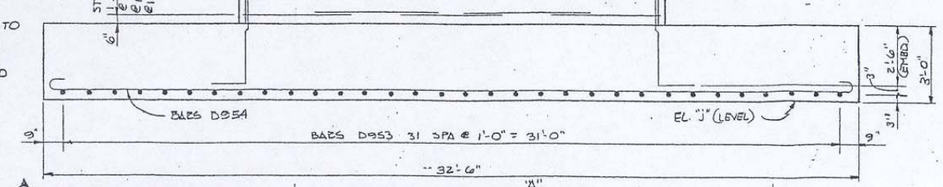
LOCATION	EL. "a"	EL. "b"	EL. "c"	EL. "d"	EL. "e"	EL. "f"	EL. "g"	EL. "h"		EL. "j"
BENT NO. 3	1834.43	1834.71	1834.99	1835.30	1835.13	1834.19	1828.76	1828.50		1798.00
BENT NO. 4	1834.75	1835.09	1835.44	1835.78	1835.61	1834.51	1828.37	1829.11		1801.00
BENT NO. 5	1834.99	1835.34	1835.66	1836.02	1835.85	1834.74	1828.89	1829.35		1804.00

OTES: WHEN POURING CAP BEAM, PROVISIONS WILL BE MADE FOR SETTING DOWEL BARS. F THE CONTRACTOR ELECTS TO DRILL THE OLES FOR THE DOWEL BARS, THE REIN-DRCING STEEL SHALL BE PLACED SO AS NOT O INTERFERE WITH THE DRILLING. DOWEL AR PROJECTION IS 9".

RISER BLOCKS TO BE POURED MONOLITHI-ALLY WITH CAP BEAM.

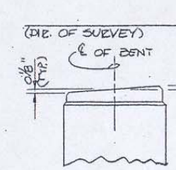
RISER BLOCK BEARING PAD SURFACE TO ONFORM TO BOTTOM OF BEAM GRADE.

COLUMN STEEL TO EXTEND 41.10½ INTO AP BEAM. (B-3)

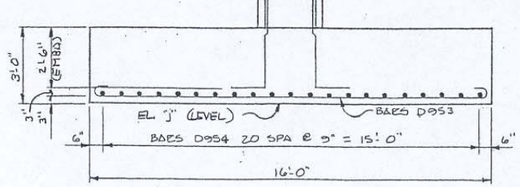


ELEVATION

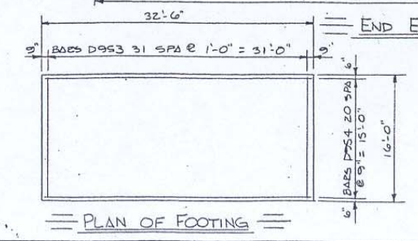
(LOOKING FORWARD ON SURVEY)



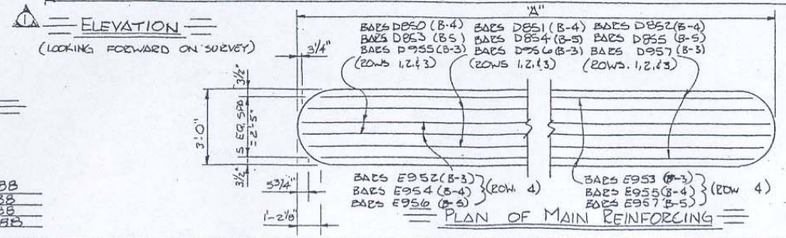
RIS. BLOCK SLOPE DETAIL



END ELEVATION



PLAN OF FOOTING



PLAN OF MAIN REINFORCING

ESTIMATED QUANTITIES

	CLASS "A" CONCRETE C.Y.	STEEL BAR REINFORCEMENT
BENT NO. 3	128	18,153
BENT NO. 4	123	16,764
BENT NO. 5	118	16,039

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

BENTS NO. 3, 4 AND 5
FOOTHILLS PARKWAY OVER
HAPPY HOLLOW ROAD
STATION 668+10.96
SEVIER COUNTY
1988

CORRECT Edward P. Wasserman
ENGINEER OF STRUCTURES
APPROVED E. Louis Guess
DIRECTOR OF HIGHWAYS

M-206-61

DESIGNED BY T.E. HUFF DATE 1-88
DRAWN BY S.R. LEWIS DATE 2-88
SUPERVISED BY FIELDS & WOODS DATE 4-88
CHECKED BY E. MELTON DATE 6-88

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	20 of 23	December 2007	

ACTUAL DESIGN FILE : K20-PRA-FOOT-8E15-ASBIT.DGN
M:\Projects\foot\8e15\bridge\DIST\ASBUILT\K20-PRA-FOOT-8E16-ASBIT.dgn 6:49:10 AM 1/9/2008

AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K21

CONST. NO. 78075-3618-84

PROJECT NO.	YEAR	SHEET NO.
PRA-08E5	1988	

REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION

BILL OF STEEL

SUPERSTRUCTURE (EPOXY)

BAR	LOCATION	SIZE	NO. REQ'D	BENDING DIMENSIONS A	B	C	D	LENGTH
A400E	ENDWALL	4	182					4'-7"
A401E	ENDWALL	4	2					50'-6"
A409E	ENDWALL	4	2					47'-2"
A500E	SLAB	5	674					30'-0"
A501E	SLAB	5	42					18'-0"
A502E	SLAB	5	1288					34'-4"
SERIES A503E	SLAB	5	2	LENGTH VARIES FROM 33'-10" TO 3'-2" IN INC. OF 7" (54 BARS)				999'-0"
SERIES A504E	SLAB	5	2	LENGTH VARIES FROM 33'-10" TO 3'-5" IN INC. OF 6 1/8" (61 BARS)				1136'-2"
A505E	SLAB	5	24					6'-0"
A506E	SLAB	5	16					11'-9"
A507E	SLAB	5	16					10'-8"
A508E	SLAB	5	16					26'-7"
A700E	SLAB	7	124					60'-0"
A701E	SLAB	7	96					30'-0"
A702E	SLAB	7	16					40'-0"
A703E	SLAB	7	20					47'-7"
A704E	SLAB	7	20					24'-7"
C8600E	ENDWALL @ P.A.B.E.	6	66	2'-9"	3'-1 1/2"	2'-2 1/2"		6'-7"
L401E	CURB & SLAB	4	514	1'-0"	1'-0"	10"		4'-8"
R700E	SLAB & ENDWALL	7	78	4'-7"	2'-7"			7'-2"

SUPERSTRUCTURE (NON-EPOXY)

BAR	LOCATION	SIZE	NO. REQ'D	BENDING DIMENSIONS A	B	C	D	LENGTH
A402	ENDWALL	4	10					50'-6"
A403	WINGWALLS	4	13					4'-3"
A404	WINGWALLS	4	14					4'-10"
A405	ROADWAY BRACKET	4	1					47'-1"
A406	PARAPET SUPPORT	4	1					10'-0"
A407	PARAPET SUPPORT	4	1					13'-1"
A408	BEAM STOP	4	24					3'-9"
A410	ENDWALL	4	10					47'-2"
A411	WINGWALLS	4	27					4'-5"
A412	ROADWAY BRACKET	4	1					44'-3"
A413	PARAPET SUPPORT	4	1					10'-6"
A414	PARAPET SUPPORT	4	1					13'-5"
A509	DIAPHRAGM	5	150					16'-0"
A600	WINGWALLS	6	13					4'-3"
A601	WINGWALLS	6	14					4'-10"
A602	WINGWALLS	6	27					4'-5"
CB400	WINGWALLS	4	5	12'-9"	1'-0"	9 1/8"		13'-9"
CB401	WINGWALLS	4	5	12'10"	1'-0"	8 1/4"		13'-10"
CB600	WINGWALLS	6	5	11'-4"	1'-0"	9 1/8"		12'-4"
CB601	WINGWALLS	6	5	11'-7"	1'-0"	8 1/4"		12'-7"
CD400	WINGWALLS	4	6	13'-2"	1'-0"	8 1/2"		14'-2"
CD401	WINGWALLS	4	6	13'-2"	1'-0"	8 1/8"		14'-2"
CD600	WINGWALLS	6	6	13'-0"	1'-0"	8 1/2"		14'-0"
CD601	WINGWALLS	6	6	13'-0"	1'-0"	8 1/8"		14'-0"
H500	ENDWALL & RDWY.BKT.	5	89	1'-8"	6"			2'-8"
JX400	BEAM STOP	4	20	1'-0"	2'-6"	2'-0"	7 3/4"	6'-6"
JX401	BEAM STOP	4	20	1'-0"	2'-0"	2'-0"	8 3/4"	6'-0"
L400	DIAPHRAGM	4	165	5"	1'-0"	3'-4"		8'-6"

ABUTMENT NO.1

BAR	LOCATION	SIZE	NO. REQ'D	BENDING DIMENSIONS A	B	C	D	LENGTH
A440	ABUT.BEAM & LEDGE	4	54					4'-1"
A441	WING BEAM & LEDGE	4	11					3'-6"
A540	ABUTMENT BEAM	5	6					53'-4"
A541	ABUT. & WING BEAM	5	5					15'-4"
A542	ABUT. & WING BEAM	5	5					16'-4"
A740	ABUTMENT BEAM	7	6					53'-4"
A741	LEDGE	7	1					54'-0"
A742	ABUTMENT BEAM	7	1					55'-0"
A743	ABUTMENT BEAM	7	5					55'-8"
A744	ABUT. & WING BEAM	7	9					15'-4"
A745	ABUT. & WING BEAM	7	9					16'-4"
CD440	LEDGE	4	1	9'-6"	2'-0"	1'-4 1/8"		11'-6"
GD440	LEDGE	4	1	2'-0"	1'-0"	7'-4"		10'-4"
H640	WING BEAM	6	27	8"	3'-1"			6'-10"
H840	ABUTMENT BEAM	8	48	8"	3'-7"			7'-10"
L540	ABUTMENT BEAM	5	44	2'-11"	1'-0"	2'-2"		11'-2"
L541	WING BEAM	5	24	2'-2"	1'-0"	2'-2"		9'-8"

PAVEMENT @ BRIDGE ENDS ABUT. NO.1

BAR	LOCATION	SIZE	NO. REQ'D	BENDING DIMENSIONS A	B	C	D	LENGTH
A490E	TOP SLAB	4	25					41'-10"
A690E	SLAB	6	59					24'-2"
A1190E	SLAB (DRAINS)	11	4					6'-0"
L590E	FOOTING & SLAB	5	40	1'-2"	1'-0"	2'-2"		7'-8"
A491	BOTTOM SLAB	4	25					41'-10"
A790	FOOTING & SLAB	7	8					41'-10"
A990	SLAB	9	30					24'-2"
L591	FOOTING	5	40	1'-2"	1'-0"	2'-2"		7'-8"

ABUTMENT NO.2

BAR	LOCATION	SIZE	NO. REQ'D	BENDING DIMENSIONS A	B	C	D	LENGTH
A442	ABUT.BEAM & LEDGE	4	50					3'-11"
A443	WING BEAM & LEDGE	4	10					3'-5"
A543	ABUTMENT BEAM	5	6					49'-3"
A544	ABUT. & WING BEAM	5	5					15'-4"
A545	ABUT. & WING BEAM	5	5					16'-3"
A746	ABUTMENT BEAM	7	6					49'-3"
A747	LEDGE	7	1					50'-2"
A748	ABUTMENT BEAM	7	1					50'-9"
A749	ABUTMENT BEAM	7	5					51'-3"
A750	ABUT. & WING BEAM	7	9					15'-4"
A751	ABUT. & WING BEAM	7	9					16'-3"
CD441	LEDGE	4	1	9'-6"	2'-0"	1'-4"		11'-6"
GD441	LEDGE	4	1	2'-0"	1'-0"	7'-6"		10'-6"
H641	ABUT. & WING BEAM	6	27	8"	3'-3"			7'-2"
H841	ABUTMENT BEAM	8	44	8"	3'-7"			7'-10"
[illegible]	ABUTMENT BEAM	5	44	2'-11"	1'-0"	2'-2"		11'-2"
L541	ABUT. & WING BEAM	5	24	2'-2"	1'-0"	2'-2"		9'-8"

PAVEMENT @ BRIDGE ENDS ABUT. NO.2

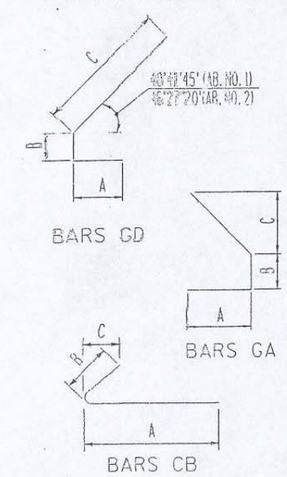
BAR	LOCATION	SIZE	NO. REQ'D	BENDING DIMENSIONS A	B	C	D	LENGTH
A490E	TOP SLAB	4	25					39'-7"
A690E	SLAB	6	59					24'-2"
L590E	FOOTING & SLAB	5	38	1'-2"	1'-0"	2'-2"		7'-8"
A491	SLAB	4	25					39'-7"
A790	FOOTING & SLAB	7	8					39'-7"
A990	SLAB	9	30					24'-2"
L591	FOOTING	5	38	1'-2"	1'-0"	2'-2"		7'-8"

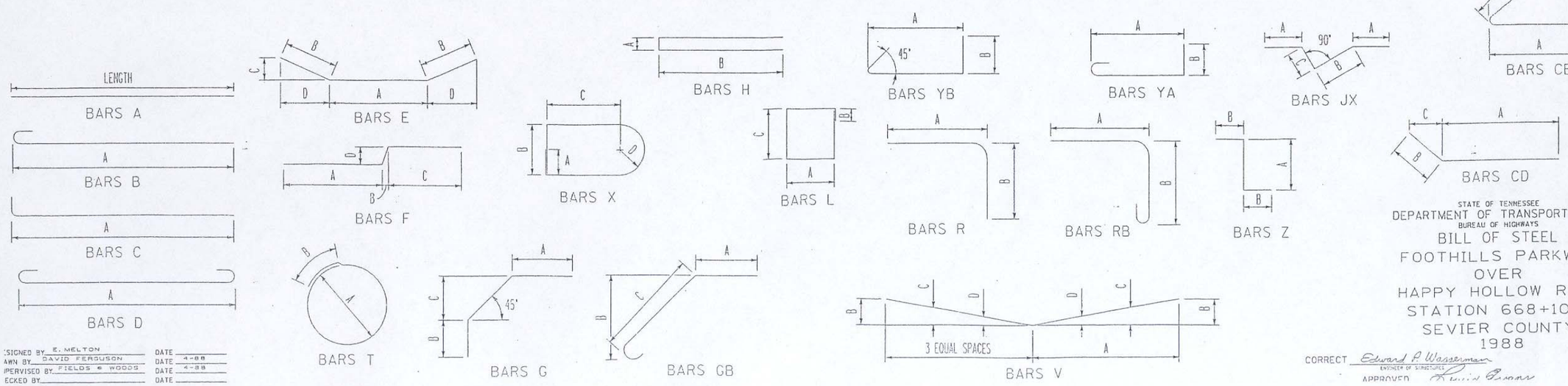
REINFORCING STEEL CODE

TYPE	SIZE	SERIES
A	5	06

NOTE: DIMENSIONS SHOWN ON THIS SHEET ARE OUTSIDE TO OUTSIDE OF BAR. STANDARD C.R.S.I. HOOK DETAILS SHALL APPLY, EXCEPT AS NOTED.

NOTE: THE SUFFIX E, FOR BARS SO MARKED, DENOTES EPOXY COATED REINFORCEMENT.





SIGNED BY E. MELTON DATE
AWN BY DAVID FERGUSON DATE 4-88
PERVISED BY FIELDS & WOODS DATE 4-88
ECKED BY DATE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS
BILL OF STEEL
FOOTHILLS PARKWAY
OVER
HAPPY HOLLOW ROAD
STATION 668+10.96
SEVIER COUNTY
1988

CORRECT Edward P. Wasserman
ENGINEER OF STRUCTURES
APPROVED

M-205-62

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	21 of 23	December 2007	

ACTUAL DESIGN FILE : K21-PRA-FOOT-8E15-ASBILDGN
1/9/2008 6:47:55 AM M:\Projects\foot\8e15\bridge\DIST\ASBUILT\SK21-PRA-FOOT-8E16-ASBILDGN

AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K22

CONST. NO. 78075-3618-84

PROJECT NO.	YEAR	SHEET NO.
PRA-08E5	1988	

REVISIONS

NO.	DATE	BY	BRIEF DESCRIPTION
1	8-10-88	WRW	General Revisions

BILL OF STEEL

BENT NO.1

BAR	LOCATION	SIZE	NO. REQ'D	BENDING DIMENSIONS A	B	C	D	LENGTH
A450	CAP	4	4					44'-4"
A451	CAP	4	2					38'-9"
A452	CAP	4	2					28'-9"
A850	COLUMN	8	66					26'-8"
C850	COLUMN & FOOTING	8	66	7'-5"				8'-9"
D950	CAP	9	6	46'-2"				48'-8"
D951	CAP	9	6	45'-9"				48'-3"
D952	CAP	9	6	44'-4"				46'-10"
D953	FOOTING	9	32	15'-6"				18'-0"
D954	FOOTING	9	21	32'-0"				34'-6"
E950	CAP	9	2	17'-0"	14'-11"	3'-0"	14'-1 7/8"	46'-11"
E951	CAP	9	2	17'-0"	14'-0"	3'-0"	13'-9 3/8"	45'-1"
L450	COLUMN	4	44	5'-2"	1'-0"	2'-2"		15'-8"
L451	COLUMN	4	22	4'-2"	1'-0"	2'-2"		13'-8"
SERIES				1'-8"	1'-0"	*	DIM 'C'	
L650	CAP	6	4	VARIES FROM 3'-6 1/8" TO 4'-11 1/8" IN INC. OF 2 7/8" (8 BARS)				102'-2"
L651	CAP	6	16	1'-8"	1'-0"	6'-0 1/8"		16'-5"
SERIES				1'-8"	1'-0"	*	DIM 'C'	
L652	CAP	6	4	VARIES FROM 5'-1 1/2" TO 5'-11 1/2" IN INC. OF 5" (4 BARS)				61'-4"
L653	CAP	6	4	1'-8"	1'-0"	3'-1"		10'-6"
X450	COLUMN	4	44	1'-0"	2'-2"	3'-4"	1'-1"	13'-3"

BENT NO.2

BAR	LOCATION	SIZE	NO. REQ'D	BENDING DIMENSIONS A	B	C	D	LENGTH
A450	CAP	4	4					44'-4"
A451	CAP	4	2					38'-9"
A452	CAP	4	2					28'-9"
	CAP							
A851	COLUMN	8	66					30'-10"
C850	COLUMN & FOOTING	8	66	7'-5"				8'-9"
D950	CAP	9	6	46'-2"				48'-8"
D951	CAP	9	6	45'-9"				48'-3"
D952	CAP	9	6	44'-4"				46'-10"
D953	FOOTING	9	32	15'-6"				18'-0"
D954	FOOTING	9	21	32'-0"				34'-6"
E950	CAP	9	2	17'-0"	14'-11"	3'-0"	14'-1 7/8"	46'-11"
E951	CAP	9	2	17'-0"	14'-0"	3'-0"	13'-9 3/8"	45'-1"
L450	COLUMN	4	52	5'-2"	1'-0"	2'-2"		15'-8"
L451	COLUMN	4	26	4'-2"	1'-0"	2'-2"		13'-8"
SERIES				1'-8"	1'-0"	*	DIM 'C'	
L650	CAP	6	4	VARIES FROM 3'-6 1/8" TO 4'-11 1/8" IN INC. OF 2 7/8" (8 BARS)				102'-2"
L651	CAP	6	16	1'-8"	1'-0"	6'-0 1/8"		16'-5"
SERIES				1'-8"	1'-0"	*	DIM 'C'	
L652	CAP	6	4	VARIES FROM 5'-1 1/2" TO 5'-11 1/2" IN INC. OF 5" (4 BARS)				61'-4"
L653	CAP	6	4	1'-8"	1'-0"	3'-1"		10'-6"
X450	COLUMN	4	52	1'-0"	2'-2"	3'-4"	1'-1"	13'-3"

BENT NO.3

BAR	LOCATION	SIZE	NO. REQ'D	BENDING DIMENSIONS A	B	C	D	LENGTH
A454	CAP	4	4					43'-5"
A455	CAP	4	2					38'-0"
A456	CAP	4	2					28'-2"
A852	COLUMN	8	66					32'-4"
C851	COLUMN & FOOTING	8	66	7'-11"				9'-3"
D953	FOOTING	9	32	15'-6"				18'-0"
D954	FOOTING	9	21	32'-0"				34'-6"
D955	CAP	9	6	45'-2"				47'-8"
D956	CAP	9	6	44'-9"				47'-3"
D957	CAP	9	6	43'-5"				45'-11"
E952	CAP	9	2	17'-0"	14'-3"	3'-0"	14'-1 1/2"	45'-6"
E953	CAP	9	2	17'-0"	13'-1 1/2"	3'-0"	12'-11 1/2"	43'-3"
L450	COLUMN	4	54	5'-2"	1'-0"	2'-2"		15'-8"
L451	COLUMN	4	27	4'-2"	1'-0"	2'-2"		13'-8"
SERIES				1'-8"	1'-0"	*	DIM 'C'	
L650	CAP	6	4	VARIES FROM 3'-5 1/8" TO 4'-10 5/8" IN INC. OF 2 7/8" (8 BARS)				101'-2"
L651	CAP	6	16	1'-8"	1'-0"	6'-0 1/8"		16'-5"
SERIES				1'-8"	1'-0"	*	DIM 'C'	
L652	CAP	6	4	VARIES FROM 5'-1 1/8" TO 6'-0 1/4" IN INC. OF 4 1/2" (4 BARS)				61'-2"
L653	CAP	6	4	1'-8"	1'-0"	3'-1"		10'-6"
X450	COLUMN	4	54	1'-0"	2'-2"	3'-4"	1'-1"	13'-3"

BENT NO.4

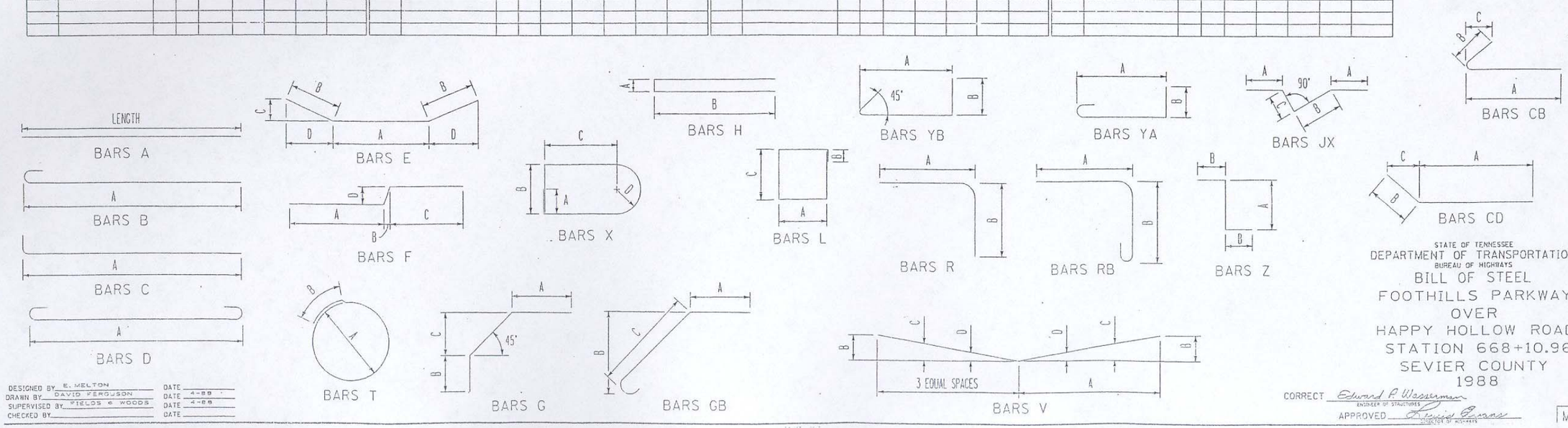
BAR	LOCATION	SIZE	NO. REQ'D	BENDING DIMENSIONS A	B	C	D	LENGTH
A458	CAP	4	4					40'-6"
A459	CAP	4	2					35'-7"
A460	CAP	4	2					26'-5"
A853	COLUMN	8	66					29'-8"
C851	COLUMN & FOOTING	8	66	7'-11"				9'-3"
D850	CAP	8	6	42'-4"				44'-2"
D851	CAP	8	6	41'-11				43'-9"
D852	CAP	8	6	40'-6"				42'-4"
D953	FOOTING	9	32	15'-6"				18'-0"
D954	FOOTING	9	21	32'-0"				34'-6"
E954	CAP	9	2	17'-0"	12'-11"	2'-6"	12'-9"	42'-10"
E955	CAP	9	2	17'-0"	11'-10"	2'-10"	11'-7"	40'-8"
L450	COLUMN	4	50	5'-2"	1'-0"	2'-2"		15'-8"
L451	COLUMN	4	25	4'-2"	1'-0"	2'-2"		13'-8"
L653	CAP	6	4	1'-8"	1'-0"	3'-1"		10'-6"
SERIES				1'-8"	1'-0"	*	DIM 'C'	
L654	CAP	6	4	VARIES FROM 3'-6 3/8" TO 5'-1 1/8" IN INC. OF 5 1/8" (8 BARS)				103'-11"
L655	CAP	6	16	1'-8"	1'-0"	5'-10 1/2"		16'-1"
SERIES				1'-8"	1'-0"	*	DIM 'C'	
L656	CAP	6	4	VARIES FROM 5'-3 3/4" TO 5'-9 1/2" IN INC. OF 3" (4 BARS)				61'-3"
X450	COLUMN	4	50	1'-0"	2'-2"	3'-4"	1'-1"	13'-3"

REINFORCING STEEL CODE

TYPE	SIZE	SERIES
A	5	06

NOTE: DIMENSIONS SHOWN ON THIS SHEET ARE OUTSIDE TO OUTSIDE OF BAR. STANDARD C.R.S.I. HOOK DETAILS SHALL APPLY. EXCEPT AS NOTED.

NOTE: THE SUFFIX E. FOR BARS SO MARKED, DENOTES EPOXY COATED REINFORCEMENT.



DESIGNED BY E. MELTON DATE
DRAWN BY DAVID FERGUSON DATE 4-88
SUPERVISED BY FIELDS & WOODS DATE 4-88
CHECKED BY DATE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

BILL OF STEEL
FOOTHILLS PARKWAY
OVER
HAPPY HOLLOW ROAD
STATION 668+10.96
SEVIER COUNTY
1988

CORRECT Edward R. Wasserman
ENGINEER OF STRUCTURES
APPROVED
DIRECTOR OF HIGHWAYS

M-206-63

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	22 of 23	December 2007	

ACTUAL DESIGN FILE : K22-PRA-FOOT-8E15-ASBI9.DGN
M:\Projects\foot\8e15\bridge\DIST\ASBUILT\K22-PRA-FOOT-8E16-ASBI9.dgn
6:46:35 AM
1/9/2008

AS-BUILT DRAWING (FOR INFORMATION ONLY)

Structure No. 5460-205P

REGION	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8E15	K23

BILL OF STEEL

BENT NO.5 △1

BAR	LOCATION	SIZE	NO. REQ'D	BENDING DIMENSIONS A	B	C	D	LENGTH
A462	CAP	4	4					39'-1"
A463	CAP	4	2					34'-5"
A464	CAP	4	2					25'-6"
A854	COLUMN	8	66					26'-10"
C851	COLUMN & FOOTING	8	66	7'-11"				9'-3"
D853	CAP	8	6	40'-11				42'-9"
D854	CAP	8	6	40'-6"				42'-4"
D855	CAP	8	6	39'-1"				40'-11"
D953	FOOTING	9	32	15'-6"				18'-0"
D954	FOOTING	9	21	32'-0"				34'-6"
E956	CAP	9	2	17'-0"	12'-3"	2'-10"	12'-11"	41'-6"
E957	CAP	9	2	17'-0"	11'-2"	2'-10"	10'-11"	39'-4"
L450	COLUMN	4	44	5'-2"	1'-0"	2'-2"		15'-3"
L451	COLUMN	4	22	4'-2"	1'-0"	2'-2"		13'-3"
L653	CAP	6	4	1'-8"	1'-0"	3'-1"		10'-6"
SERIES				1'-8"	1'-0"	*	DIM."C"	
L657	CAP	6	4	VARIES FROM 3'-7 7/8" TO 5'-2 1/2" IN INC. OF 3 1/16" (18 BARS)				105'-2"
L658	CAP	6	16	1'-8"	1'-0"	5'-10 3/8"		16'-1"
SERIES				1'-8"	1'-0"	*	DIM."C"	
L659	CAP	6	4	VARIES FROM 5'-5 1/4" TO 5'-9 3/8" IN INC. OF 2 3/8" (4 BARS)				62'-3"
X450	COLUMN	4	44	1'-0"	2'-2"	3'-4"	1'-1"	13'-3"

CONST. NO. 78075-3618-84

PROJECT NO.	YEAR	SHEET NO.
PRA-08E5	1988	

REVISIONS

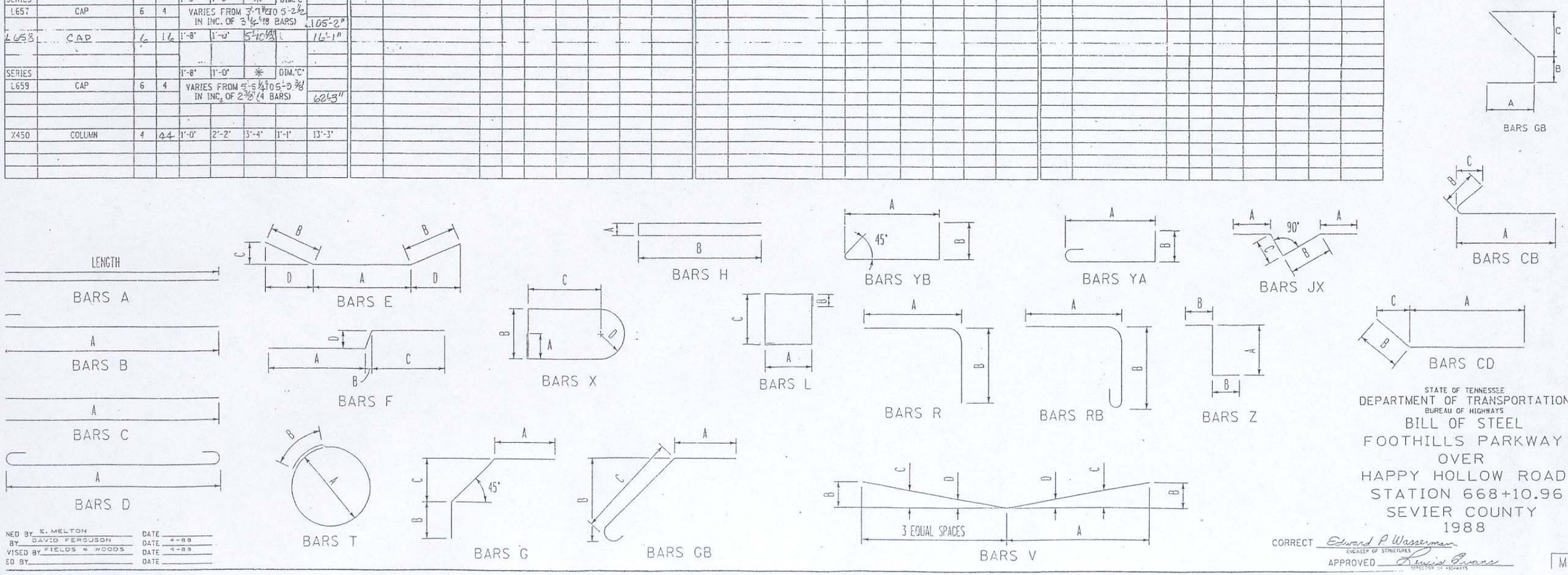
NO.	DATE	BY	BRIEF DESCRIPTION
1	8-10-22	MRW	General Revisions

REINFORCING STEEL CODE

TYPE	SIZE	SERIES
A	5	06

NOTE: DIMENSIONS SHOWN ON THIS SHEET ARE OUTSIDE TO OUTSIDE OF BAR. STANDARD C.R.S.I. HOOK DETAILS SHALL APPLY. EXCEPT AS NOTED.

NOTE: THE SUFFIX E. FOR BARS SO MARKED, DENOTES EPOXY COATED REINFORCEMENT.



NED BY E. MELTON DATE
BY DAVID FERGUSON DATE 4-88
VISED BY FIELDS & WOODS DATE 4-88
ED BY DATE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

BILL OF STEEL
FOOTHILLS PARKWAY
OVER
HAPPY HOLLOW ROAD
STATION 668+10.96
SEVIER COUNTY
1988

CORRECT Edward P. Wasserman
ENGINEER OF STRUCTURES
APPROVED David Evans
DIRECTOR OF HIGHWAYS

M-206-64

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								LK	EMA	J.K. Penrod	No Scale	HONG CHEN	23 of 23	December 2007	

ACTUAL DESIGN FILE : K23PRA-FOOT-8E15-ASB20.DGN
1/9/2008 6:43:33 AM M:\Projects\Foot\8e15\bridge\DIST\ASBUILTS\K23-PRA-FOOT-8E16-ASB20.dgn