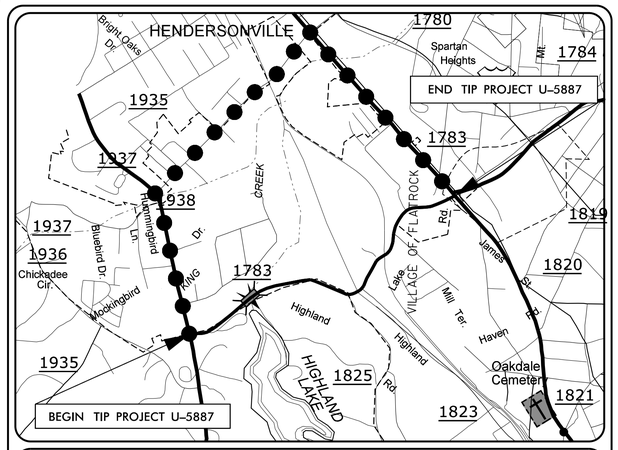
PROJECT: U-5887

TIP



VICINITY MAP

NOT TO SCALE

9/3/2020

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5887	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

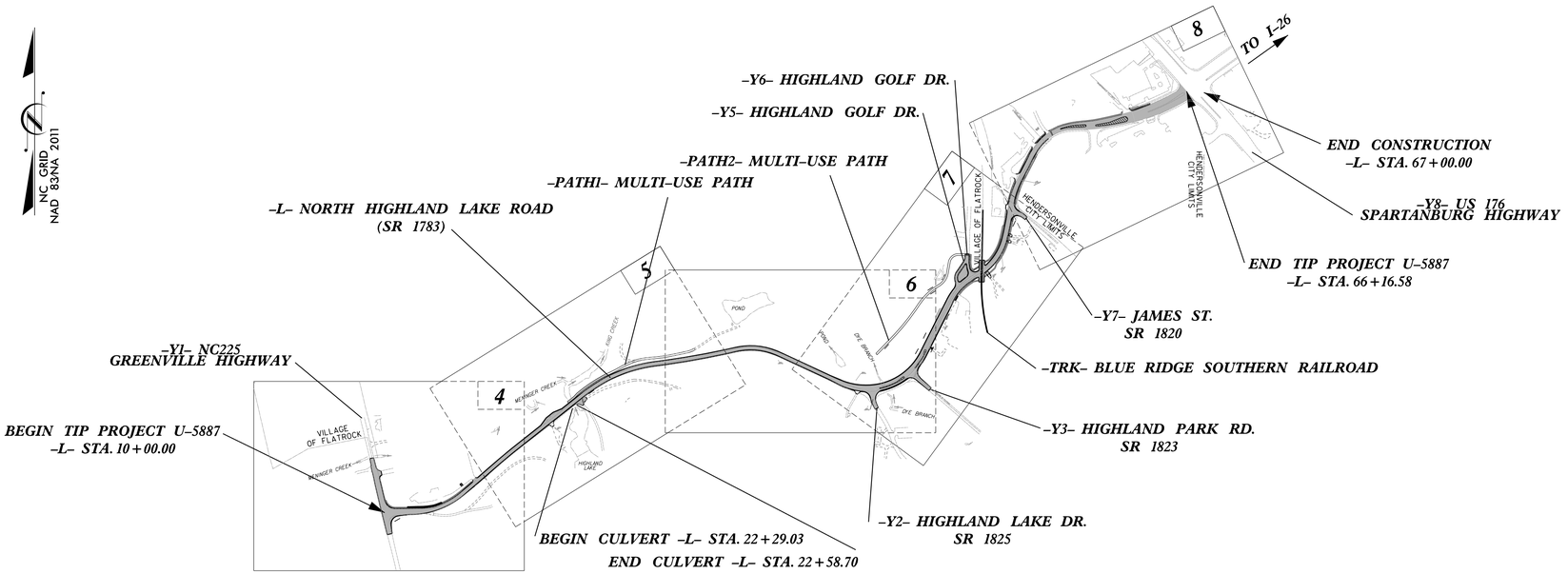
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

HENDERSON COUNTY

LOCATION: *SR 1783 (NORTH HIGHLAND LAKE ROAD) FROM NC225 TO WEST OF US 176*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, SIGNALS, SIGNING, CULVERT, AND RETAINING WALLS*



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	EW CFW
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	SK
	Tiered Skimmer Basin	SK
	Infiltration Basin	SK

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

GRAPHIC SCALE

50 25 0 50 100

PLANS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

V&M Vaughn & Melton
Consulting Engineers
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828-253-2796

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Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3590

Prepared in the Office of:

VAUGHN & MELTON, INC.

1318-F PATTON AVENUE ASHEVILLE, NC 28806 PHONE (828)253-2796

Designed by:

JARED PHILPOT ***4199***

NAME *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2018 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

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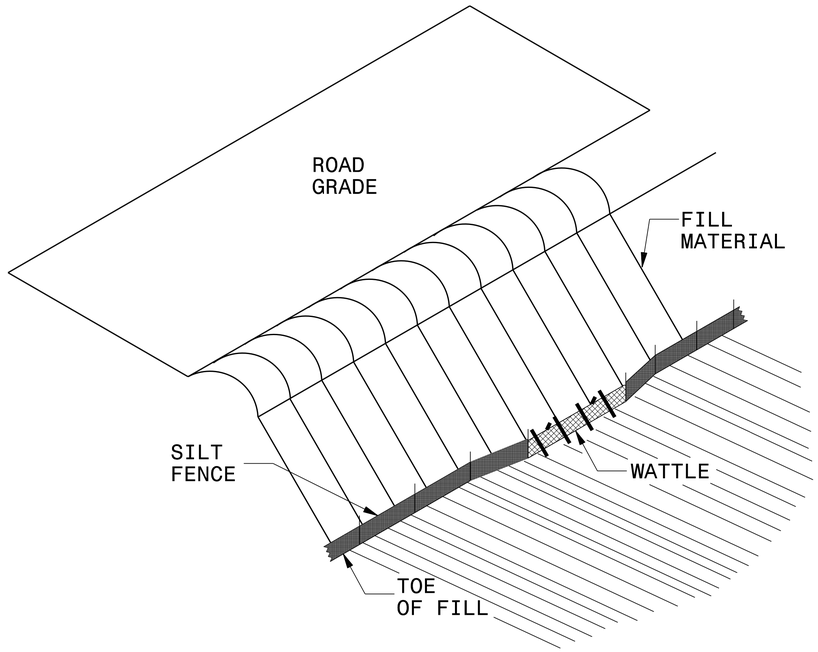
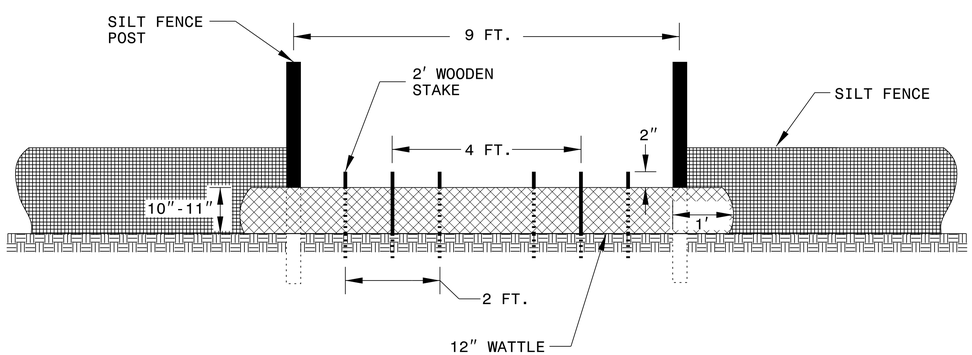
9/3/2020

PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-2

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLE ON TOE OF SLOPE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

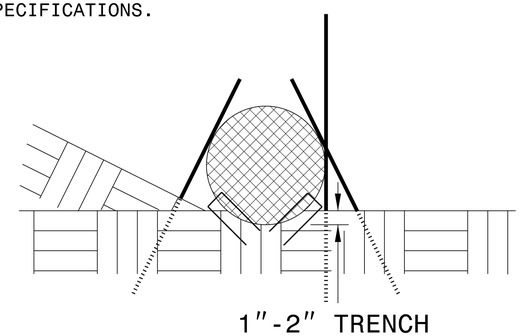
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

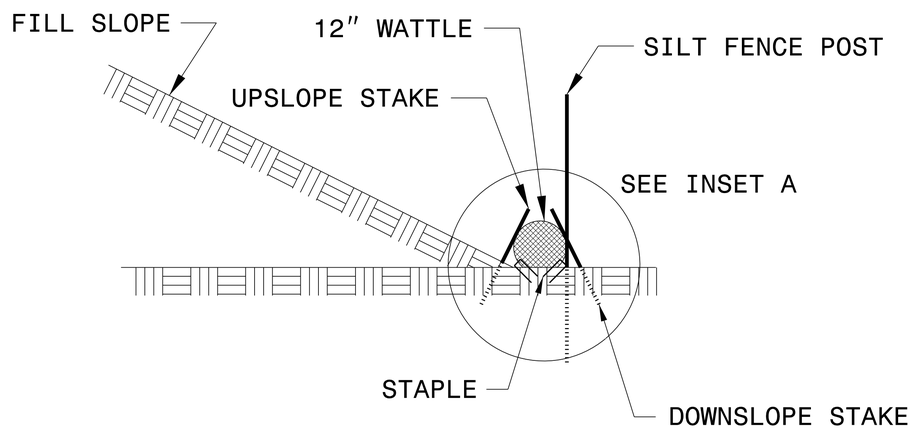
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A



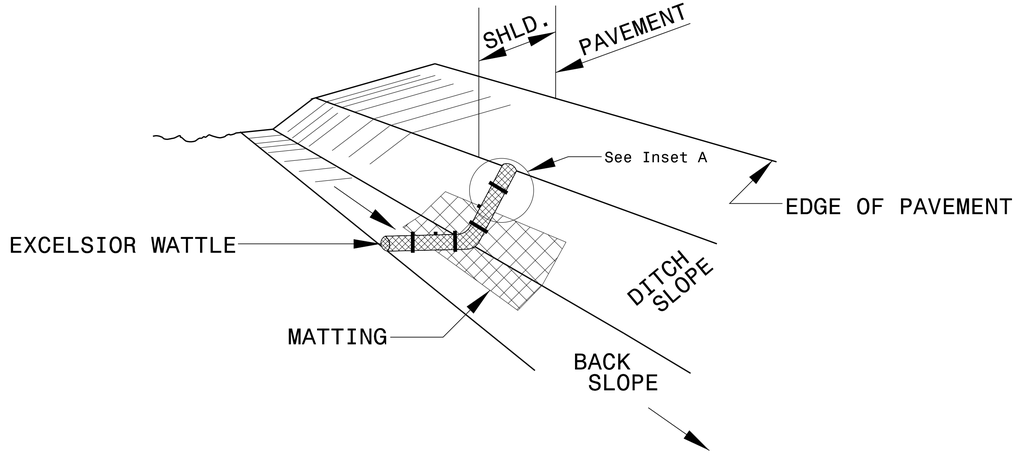


SIDE VIEW

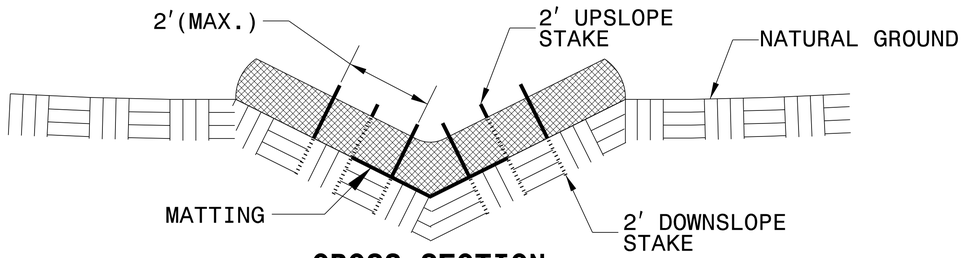
9/3/2020

PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-2A

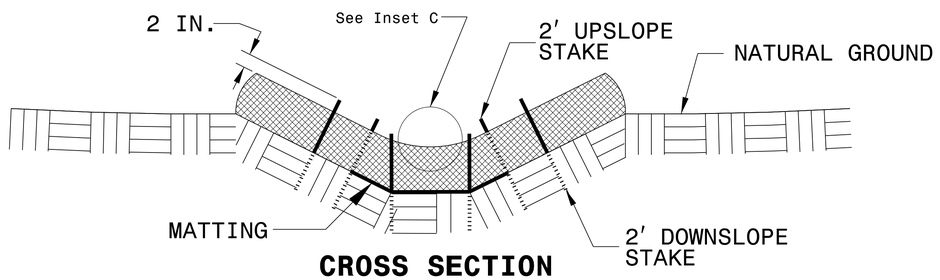
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

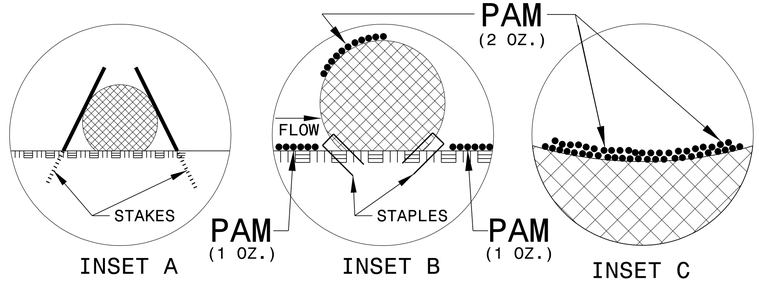
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

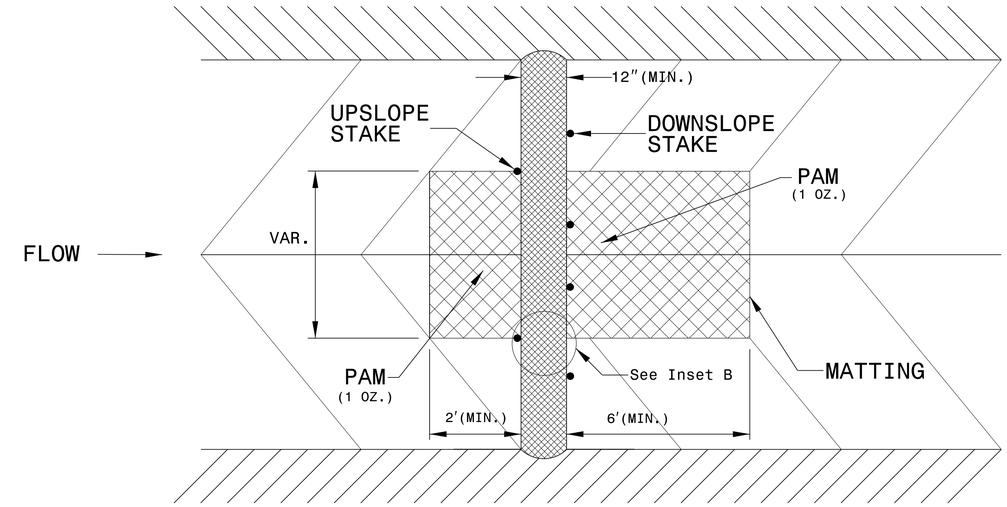
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



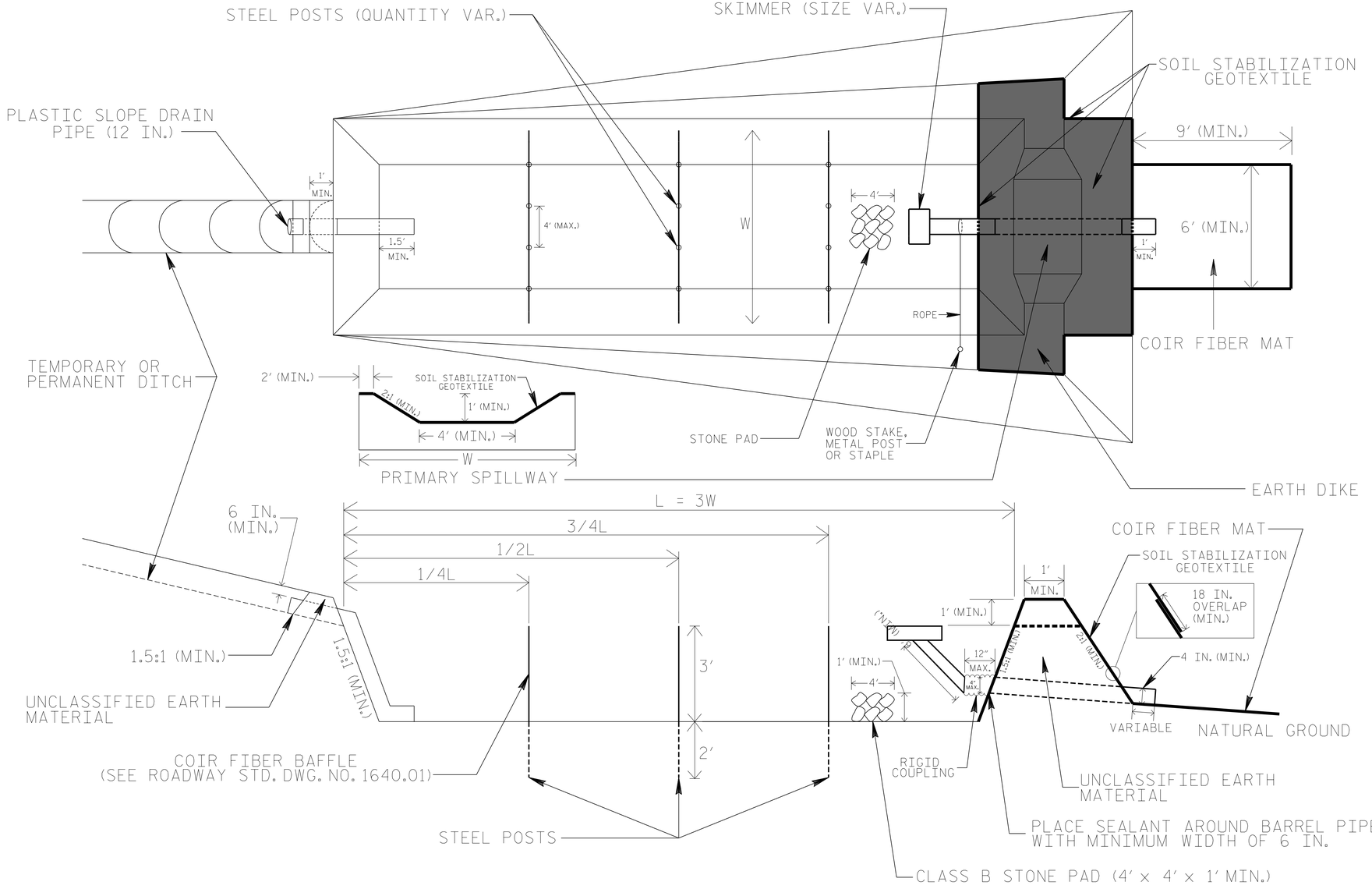


TOP VIEW

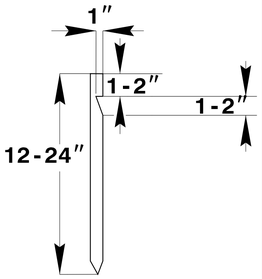
9/3/2020

PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

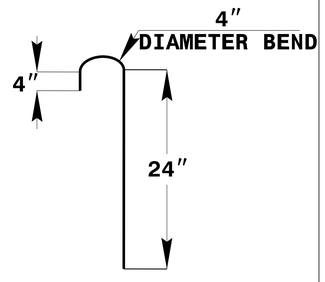
SKIMMER BASIN WITH BAFFLES DETAIL



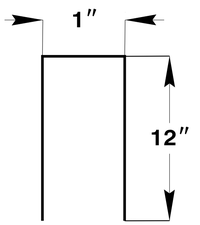
2" x 2" (nominal) WOODEN STAKE



#10 STEEL REINFORCEMENT BAR



1" (nominal) STAPLE



COIR FIBER MAT ANCHOR OPTIONS

NOTES

1. SEED AND PLACE MATTING FOR EROSION CONTROL ON INTERIOR AND EXTERIOR SIDESLOPES.
2. LIMIT EARTH DIKE HEIGHT TO 5 FT.
3. FOR BASIN DEPTH OF 3 FT., THE MINIMUM BASIN WIDTH SHALL BE 9 FT.
4. DETERMINE PRIMARY SPILLWAY WEIR LENGTH (FT.) USING Q/0.8, WHERE Q IS FLOW RATE (CFS) INTO BASIN.
5. PLASTIC SLOPE DRAIN PIPE AT INLET OF BASIN MAY BE REPLACED BY FILTRATION GEOTEXTILE OR TARP AS DIRECTED.
6. SOIL STABILIZATION GEOTEXTILE FOR PRIMARY SPILLWAY SHALL BE ONE CONTINUOUS PIECE OF MATERIAL OR OVERLAPPED 18 IN. (MIN.).

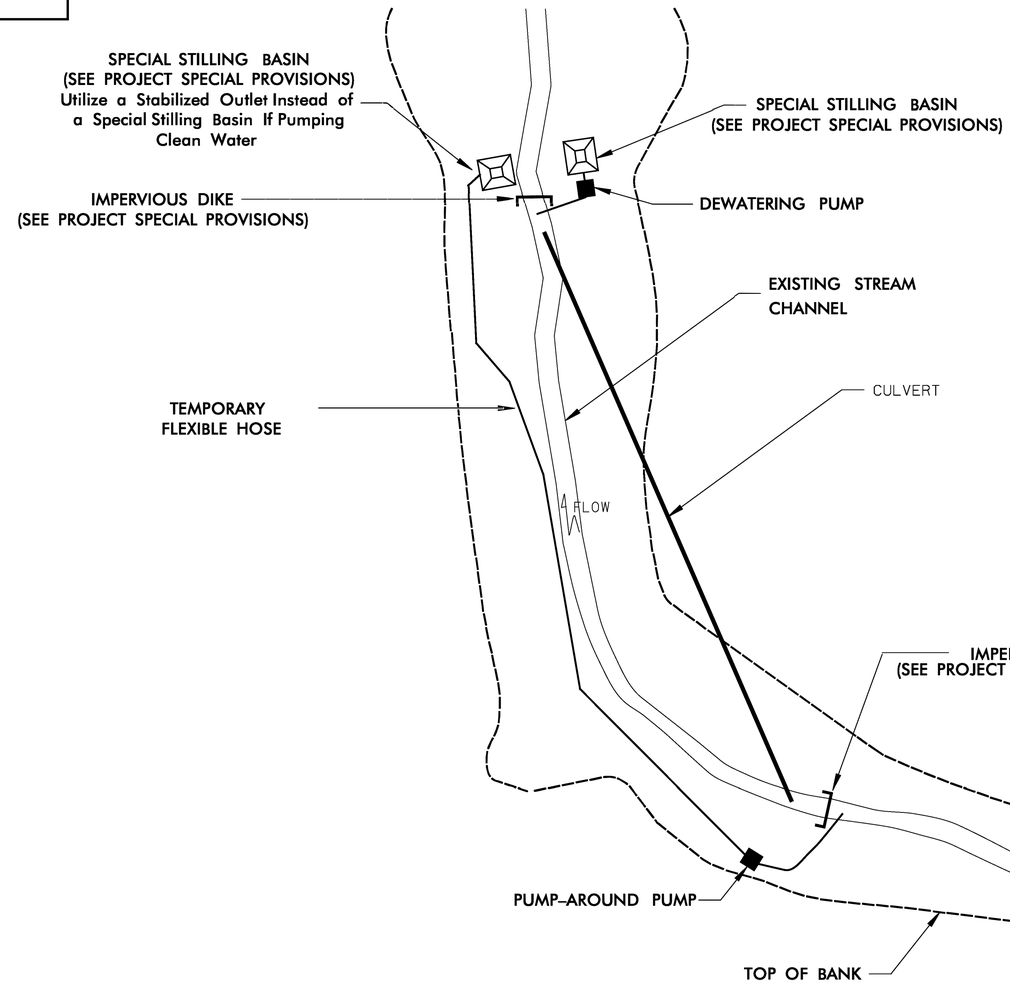
NOT TO SCALE

9/3/2020

PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-2C
R/W SHEET NO.	

EXAMPLE OF PUMP–AROUND OPERATION

NOTES:
1) All excavation shall be performed in only dry or isolated areas of the work zone.
2) Impervious dikes are to be used to isolate work from stream flow when necessary.
3) Maintenance of stream flow operations shall be incidental to the work. This includes polyethylene sheeting, diversion pipes, pumps and hoses.
4) Pumps and hoses shall be of sufficient size to dewater the work area.



SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA

1. INSTALL SPECIAL STILLING BASIN(S).
2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA. AREA TO BE DEWATERED SHALL BE EQUAL TO ONE DAY'S WORK.
5. INSTALL CULVERT(S) IN ACCORDANCE WITH THE PLANS.
6. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE. (DOWNSTREAM IMPERVIOUS DIKES FIRST).
7. REMOVE SPECIAL STILLING BASIN(S) AND BACKFILL. STABILIZE DISTURBED AREA WITH SEED AND MULCH.

9/3/2020

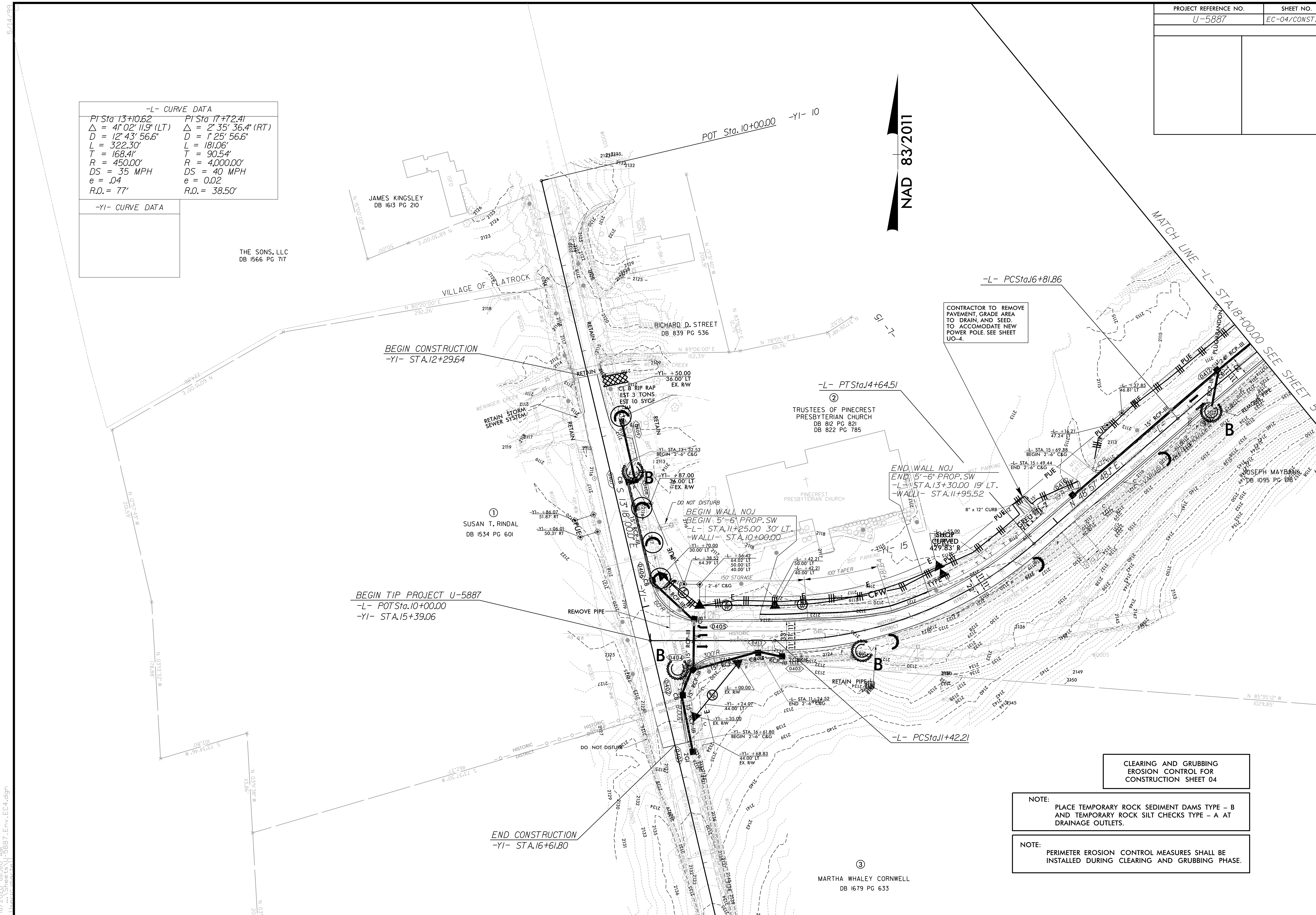
PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-03

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-04/CONST.04



-L- CURVE DATA	
PI Sta 13+10.62	PI Sta 17+72.41
△ = 41° 02' 11.9" (LT)	△ = 2° 35' 36.4" (RT)
D = 12° 43' 56.6"	D = 1° 25' 56.6"
L = 322.30'	L = 181.06'
T = 168.41'	T = 90.54'
R = 450.00'	R = 4,000.00'
DS = 35 MPH	DS = 40 MPH
e = .04	e = 0.02
R.O. = 77'	R.O. = 38.50'

-Y1- CURVE DATA

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

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PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-05/CONST.05

-PATH- CURVE DATA					
PI Sta 10+47.80 △ = 7° 35' 17.9" (LT) D = 7° 56' 55.5" L = 95.47' T = 47.80' R = 720.82'	PI Sta 11+46.85 △ = 14° 47' 16.1" (RT) D = 14° 28' 14.3" L = 102.19' T = 51.38' R = 395.95'	PI Sta 12+13.96 △ = 10° 15' 15.0" (RT) D = 3° 32' 20.5" L = 32.51' T = 16.30' R = 181.67'	PI Sta 13+25.14 △ = 5° 23' 15.4" (LT) D = 4° 29' 16.5" L = 120.05' T = 60.07' R = 1,276.67'	PI Sta 14+19.79 △ = 0° 54' 59.4" (RT) D = 1° 19' 18.8" L = 69.33' T = 34.67' R = 4,334.39'	PI Sta 14+73.67 △ = 15° 12' 19.1" (LT) D = 39° 47' 48.2" L = 38.21' T = 19.22' R = 143.97'

-L- CURVE DATA	
PI Sta 25+51.45 △ = 31° 13' 26.0" (RT) D = 7° 09' 43.1" L = 435.97' T = 223.54' R = 800.00' DS = 40 MPH e = 0.04 R.O. = 77'	PI Sta 29+89.65 △ = 5° 40' 53.6" (LT) D = 1° 15' 33.3" L = 451.19' T = 225.78' R = 4,550.00' DS = 40 MPH e = 0.02 R.O. = 38.50'

NAD 83/2011

BEGIN PATH
-L- STA. 24+86.34=
-PATH- PC Sta.10+00.00

-L- PC Sta.23+27.90

-L- PT Sta.18+62.92

-L- 20

-L- 25

-PATH- 10

-PATH- 15

70 x 35 x 3
1.5 inch Skimmer
with 1.375 inch
Orifice Diameter
8 ft. weir
ID 5.1B

-PATH- PRC Sta.10+95.47

-PATH- PCC Sta.11+97.66

-PATH- PT Sta.12+30.17

-PATH- PC Sta.12+65.07

-PATH- PRC Sta.13+85.12

-PATH- PRC Sta.14+54.45

-PATH- PT Sta.14+92.66

-PATH- PT Sta.15+27.87

-L- PC Sta.27+63.87

② TRUSTEES OF PINECREST PRESBYTERIAN CHURCH
DB 812 PG 821
DB 822 PG 785

④ THE VILLAGE OF FLAT ROCK
DB 1538 PG 202

④ THE VILLAGE OF FLAT ROCK
DB 1538 PG 202

⑤ ADDISON BROWN
DB 1664 PG 371
DB 1658 PG 462

⑥ KERRY P. LINDSEY
DB 1499 PG 564
DB 823 PG 95

JOSEPH MAYBANK
DB 1095 PG 618

MATCH LINE -L- STA.18+00.00 SEE SHEET 4

MATCH LINE -L- STA.30+00.00 SEE SHEET 6

BEGIN CULVERT
-L- STA. 22+29.03

END CULVERT
-L- STA. 22+58.70

CL B RIP RAP
EST 3 TONS
EST 10 SYCF

CL 1 RIP RAP
EST 14 TONS
EST 30 SYCF

CL B RIP RAP
EST 10 TONS
EST 28 SYCF

CL B RIP RAP
EST 1 TON
EST 5 SYCF

CONSPAN ARCH CULVERT

SHOP CURVED 20.00' R

SHOP CURVED 813.00' R

LATERAL BASE DITCH
SEE DETAIL 2

REMOVE PIPE

24" RCP-III

18" RCP-III

GREU TL-2

10' PROP. MUP

2'-6" C&G

SINGLE PAVED SHOULDER

PLACE INCIDENTAL STONE

RESURFACE DRIVE WITH ASPHALT

DO NOT DISTURB

TIE TO EXISTING PATH

HIGHLAND LAKE

MEMINGER CREEK

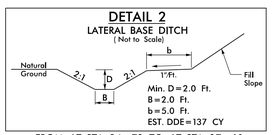
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 05

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

NOTE:
UTILIZE TEMPORARY SEDIMENT BASIN OR SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

DETAIL 2
LATERAL BASE DITCH
(Not to Scale)



Min. D = 2.0 Ft.
B = 2.0 Ft.
b = 5.0 Ft.
EST. DDE = 137 CY

FROM LT STA. 24+72 TO LT STA. 27+60

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8/17/99

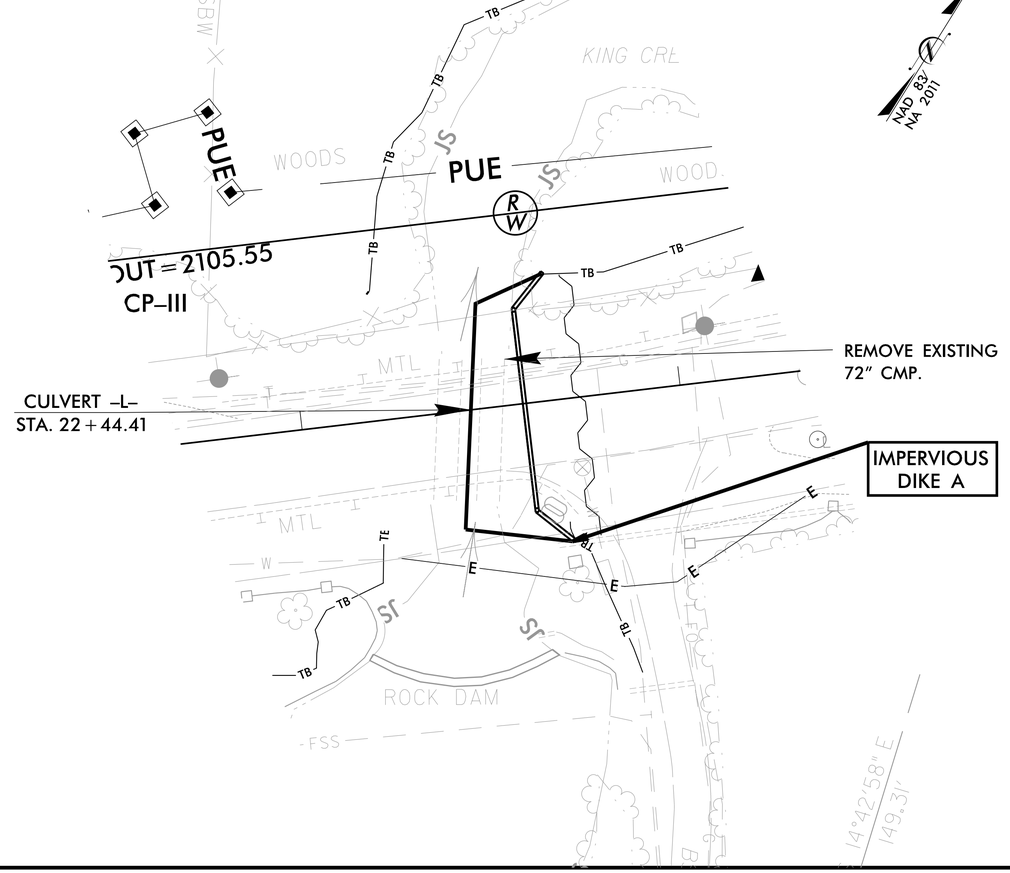
9/3/2020

PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-5A/CONST.05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CULVERT CONSTRUCTION SEQUENCE STA. 22 + 44 –L–

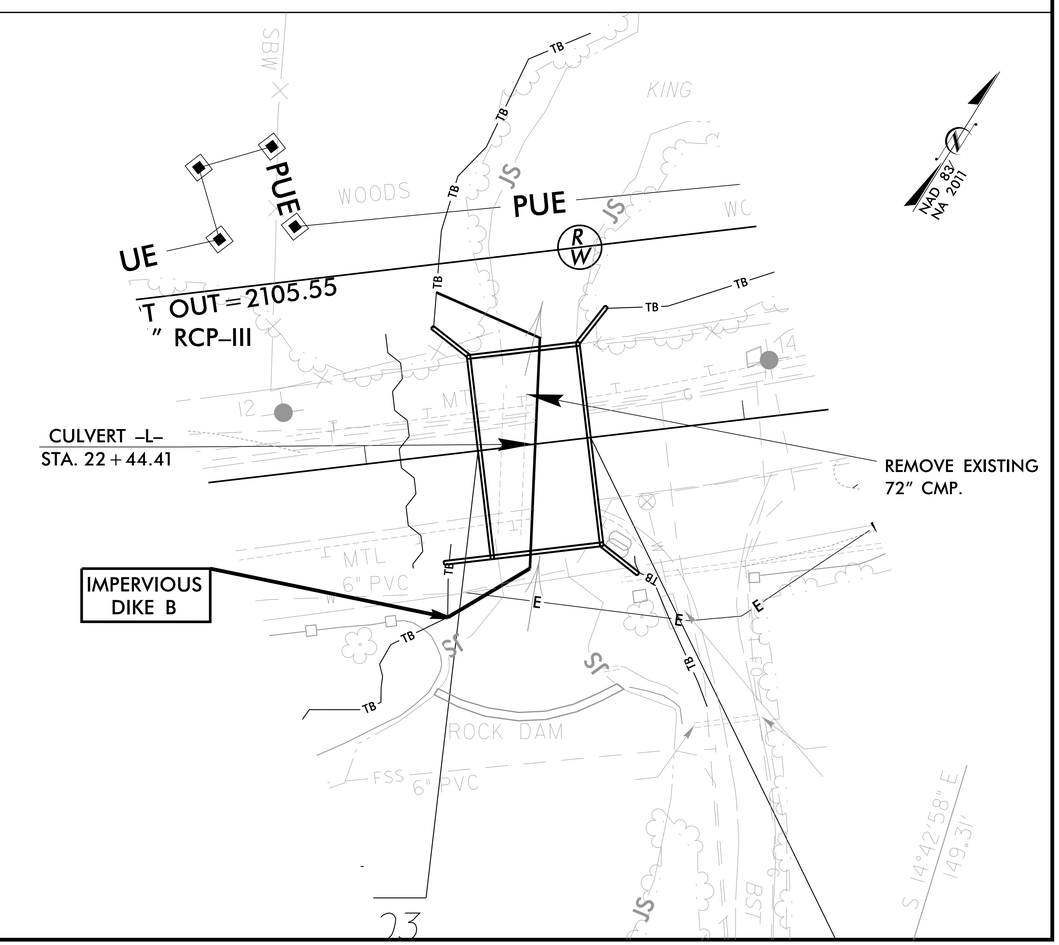
PHASE I

1. UTILIZE SPECIAL STILLING BASIN(S) AND PUMP AS NEEDED DURING CULVERT CONSTRUCTION.
2. INSTALL TEMPORARY SHORING.
3. INSTALL IMPERVIOUS DIKE A AS SHOWN.
4. REMOVE EXISTING 72" CMP BEHIND THE IMPERVIOUS DIKE.
5. INSTALL PROPOSED 28' x 7' CONSPAN ARCH CULVERT FOOTING, AND PORTION OF HEADWALL, AND ENDWALL. (SEE TMP CONSTRUCTION)



PHASE II

1. UTILIZE SPECIAL STILLING BASIN(S) AND PUMP AS NEEDED DURING CULVERT CONSTRUCTION.
2. INSTALL TEMPORARY SHORING
3. INSTALL IMPERVIOUS DIKE B AS SHOWN.
4. REMOVE EXISTING 72" CMP BEHIND THE IMPERVIOUS DIKE.
5. INSTALL PROPOSED 28' x 7' CONSPAN ARCH CULVERT FOOTING, AND PORTION OF HEADWALL, AND ENDWALL. (SEE TMP CONSTRUCTION)
6. INSTALL CULVERT STRUCTURE AND RETURN ALL NATIVE STONE TO CREEK.



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PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-06/CONST.06

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 06

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

NOTE:
UTILIZE TEMPORARY SEDIMENT BASIN OR SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

NAD 83/2011

-PATH- CURVE DATA

PI Sta 15+80.21	PI Sta 18+86.15	PI Sta 20+76.38	PI Sta 24+40.99	PI Sta 25+50.50
△ = 14° 29' 52.0" (RT)	△ = 31° 10' 20.1" (RT)	△ = 5° 27' 37.7" (RT)	△ = 0° 39' 37.4" (RT)	△ = 35° 04' 14.3" (LT)
D = 28° 38' 52.4"	D = 15° 15' 24.5"	D = 3° 00' 49.4"	D = 0° 26' 33.2"	D = 51° 52' 40.9"
L = 50.61'	L = 204.32'	L = 181.19'	L = 149.22'	L = 67.60'
T = 25.44'	T = 104.76'	T = 90.66'	T = 74.61'	T = 34.90'
R = 200.00'	R = 375.54'	R = 1,901.16'	R = 12,946.48'	R = 110.44'

-L- CURVE DATA

PI Sta 29+89.65	PI Sta 33+43.23	PI Sta 41+75.15
△ = 5° 40' 53.6" (LT)	△ = 37° 44' 26.7" (RT)	△ = 88° 07' 38.1" (LT)
D = 1° 15' 33.3"	D = 15° 16' 43.9"	D = 16° 22' 12.8"
L = 451.19'	L = 247.01'	L = 538.34'
T = 225.78'	T = 128.17'	T = 338.74'
R = 4,550.00'	R = 375.00'	R = 350.00'
DS = 40 MPH	DS = 35 MPH	DS = 30 MPH **
e = NC	e = 0.04	e = 0.04
R.O. = 38.50'	R.O. = 77'	R.O. = 77'

-Y2- CURVE DATA

PI Sta 10+76.31	PI Sta 12+28.67
△ = 32° 25' 54.8" (LT)	△ = 14° 21' 00.0" (RT)
D = 38° 11' 49.9"	D = 10° 03' 06.8"
L = 84.91'	L = 142.76'
T = 43.62'	T = 71.76'
R = 150.00'	R = 570.00'
DS = 15 MPH	DS = 15 MPH
e = NC	e = NC
R.O. = 24'	R.O. = 24'

** DESIGN EXCEPTION FOR HORIZONTAL CURVE REQUIRED

-PATH- PT Sta.16+05.38
-PATH- PC Sta.15+54.77
-PATH- PC Sta.17+81.40
-PATH- PCC Sta.19+85.71
-PATH- PT Sta.21+66.90
-PATH- PC Sta.23+66.38
-PATH- PRC Sta.25+19.25
END PATH
-PATH- PT STA.25+83.20=
-L- STA.40+39.84
TIE TO EXISTING PATH
-L- PRC Sta.32+16.06
-L- PT Sta.34+62.07
-L- PC Sta.38+36.41
-L- STA.40+18.35=
-Y2- POT Sta.10+00.00
-Y2- POT Sta.10+18.50
-Y2- PC Sta.10+32.68
-Y2- PT Sta.12+99.68
-Y2- POT Sta.13+47.32
-Y2- PC Sta.11+17.66
-Y2- POT Sta.11+56.92

MATCH LINE -L- STA.30+00.00 SEE SHEET 5
MATCH LINE -L- STA.42+00.00 SEE SHEET 7

N 64°51'55.1" E
N 79°21'47.1" E
S 64°52'49.2" E
S 65°09'36.4" E
S 19°14'00.0" E
S 33°35'00.0" E

SHOP CURVED 388.00' R
SHOP CURVED 334.11' RT
SHOP CURVED 374.00' R
SHOP CURVED 46.00' R

CL B RIP RAP EST 5 TONS EST 5 SYGF
CL B RIP RAP EST 1 TONS EST 5 SYGF
CL B RIP RAP EST 3 TONS EST 11 SYGF

THE VILLAGE OF FLAT ROCK
DB 1538 PG 202

KERRY P. LINDSEY
DB 1499 PG 564
DB 823 PG 95

DEXTER THOMPSON
DB 492 PG 609
DB 479 PG 188

HIGHLAND LAKE INC.
DB 999 PG 99

QUARTER MOON, LLC
DB 1156 PG 599

TRUSTEES OF
THE COAD FAMILY TRUST
DB 1273 PG 773

JANELL FIX
DB 1634 PG 238

TERRY JACKSON
DB 757 PG 369

HWY 95" x 67" ARCH PIPE CULVERT

3/11/2025 5:09:31 AM
U-5887_Env_EC6.dgn
[Default Imperial]

8/17/99

9/3/2020

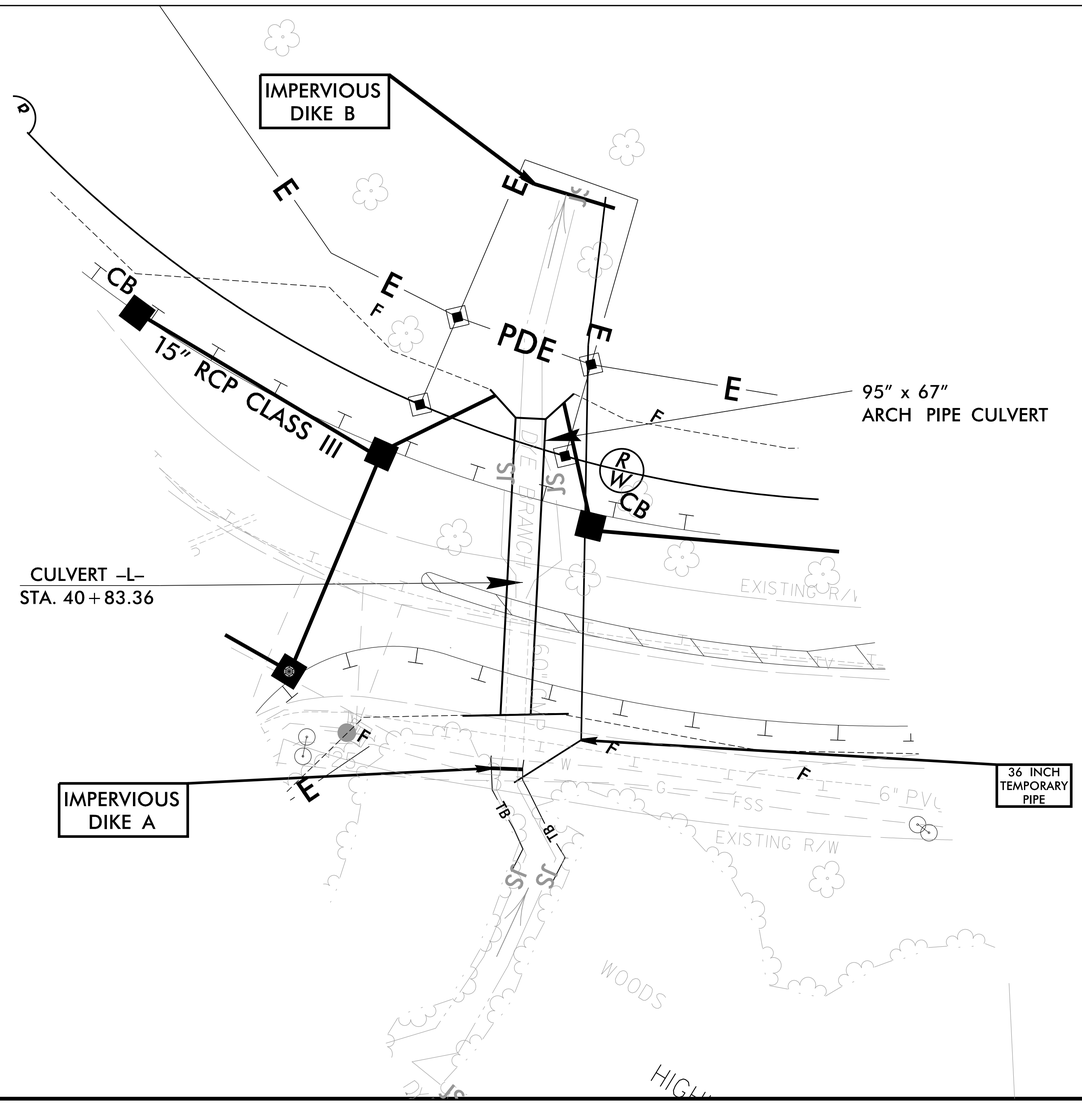
PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-6A/CONST.06
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CULVERT CONSTRUCTION SEQUENCE STA. 40+83 –L–

PHASE I

1. UTILIZE SPECIAL STILLING BASIN(S) AS NEEDED DURING CULVERT CONSTRUCTION.
2. INSTALL IMPERVIOUS DIKES A AND B AS SHOWN.
3. INSTALL PUMP AND 36" TEMPORARY PIPE AS SHOWN.
4. INSTALL CULVERT, HEADWALLS, AND DOWN STREAM CHANNEL IMPROVEMENTS.

(SEE TMP FOR DETOUR DURING CONSTRUCTION)



PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-07/CONST.07

NAD 83/2011

MATCH LINE -L- STA.42+00.00 SEE SHEET 6

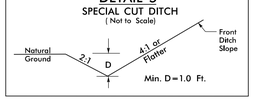
MATCH LINE -L- STA.55+00.00 SEE SHEET 8

VILLAGE OF FLAT ROCK HENDERSON COUNTY

HENDERSONVILLE CITY LIMITS

③ THE VILLAGE OF FLAT ROCK
DB 1538 PG 202

DETAIL 5
SPECIAL CUT DITCH
(Not to Scale)



FROM PATH 2 STA. 11+00 TO STA. 14+50 RT

-Y6 POT Sta.10+00.00

-TRK- PT STA.10+00.00

-L- PC Sta.47+04.34

-Y5- PT Sta.11+39.47

BEGIN CONSTRUCTION
-Y6- STA.11+60.00

-Y5- PT Sta.10+90.42

-Y5- STA.10+00.00=
-Y6- STA.11+86.46

-L- PRC Sta.53+43.00

-L- PT Sta.43+74.75

-L- STA.53+30.36=
-Y5- PT Sta.10+00.00

-Y6 PC Sta.12+00.31

-L- CC Sta.51+47.70

-Y6- PT Sta.12+88.01

-L- STA.48+83.56=
-Y6- POT Sta.12+94.91

-L- STA.47+89.80=
-Y5- PT Sta.11+79.50

-L- STA.49+46.80=
-TRK- STA.13+43.54

-Y7- PC Sta.10+14.79

-Y7 PT Sta.10+88.72

END CONSTRUCTION
-Y7- STA.11+00.00

-L- STA.42+49.50=
-Y3- POT Sta.10+00.00

END CONSTRUCTION
-Y3- STA.11+50.00

-TRK- PT STA.13+84.79

-L- PRC Sta.49+05.30

-TRK- PRC STA.15+10.01

-TRK- PRC STA.16+84.72

-Y7 POT Sta.13+23.89

SPECIAL CUT DITCH
SEE DETAIL 5

CUT DITCH
SEE DETAIL 4

HIGHLAND GOLF VILLAS HOMEOWNERS ASSOC. INC.
DB 1150 PG 499

⑮ ROWN, LLC
DB 1383 PG 132

MARK R. GMYREK
DB 1322 PG 368

JAMES GILLIAM
DB 1059 PG 646

⑪

INGLES MARKETS INC.
DB 861 PG 253

⑭

CHARLES GUDGER
DB 1499 PG 600

⑫

VICTOR BULLARD
DB 1499 PG 600

⑩

MILDRED H. COOPER
DB 1318 PG 562

⑨

DONALD HUNTER
DB 678 PG 503

JIMMY DALE FREEMAN
DB 1250 PG 120

⑧

HIGHLAND LAKE INC.
DB 999 PG 99

⑦

SHOP CURVES 41.00' RAD.-1

RETAIN STORM SEWER SYSTEM

RETAIN

CB RIP RAP
EST 11 TONS
EST 28 SYGF

CB RIP RAP
EST 3 TONS
EST 10 SYGF

COLLAR AND EXTEND & INLET

RETAIN PIPE

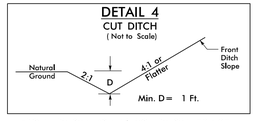
REMOVE PIPE

PLACE INCIDENTAL STONE

DO NOT DISTURB

HISTORIC DISTRICT

DETAIL 4
CUT DITCH
(Not to Scale)



FROM RT STA. 49+76 TO RT STA. 50+95

-Y5- CURVE DATA	-Y6- CURVE DATA	-Y7- CURVE DATA
PI Sta 11+16.71	PI Sta 12+45.45	PI Sta 10+52.77
Δ = 51° 05' 31.9" (LT)	Δ = 33° 29' 53.9" (LT)	Δ = 32° 35' 04.2" (RT)
D = 104° 10' 26.9"	D = 38° 11' 49.9"	D = 44° 04' 25.2"
L = 49.04'	L = 87.70'	L = 73.93'
T = 26.29'	T = 45.14'	T = 38.00'
R = 55.00'	R = 150.00'	R = 130.00'
DS = SC	DS = SC	DS = SC
e = NC	e = NC	e = NC
R.O. = 24'	R.O. = 24'	R.O. = 24'

-L- CURVE DATA			
PI Sta 48+08.49	PI Sta 50+47.67	PI Sta 52+75.13	PI Sta 54+76.00
Δ = 37° 08' 33.1" (RT)	Δ = 50° 02' 43.2" (LT)	Δ = 6° 29' 13.7" (LT)	Δ = 21° 16' 34.3" (RT)
D = 18° 28' 57.0"	D = 18° 47' 07.8"	D = 3° 08' 22.2"	D = 11° 01' 06.3"
L = 200.96'	L = 266.40'	L = 206.63'	L = 193.10'
T = 104.15'	T = 142.37'	T = 103.43'	T = 97.67'
R = 310.00'	R = 305.00'	R = 1,825.00'	R = 550.00'
DS = 30 MPH **	DS = 30 MPH **	DS = 40 MPH	DS = 35 MPH
e = 0.04	e = 0.04	e = 0.02	e = 0.04
R.O. = 77'	R.O. = 77'	R.O. = 38.50'	R.O. = 77'

R=5' AND OFFSET 15' FOR 2'-6" C&G AT -TRK-

** DESIGN EXCEPTION FOR HORIZONTAL CURVE REQUIRED

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 07

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

NOTE:
INSTALL FABRIC INSERT INLET PROTECTION IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED.

5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-08/CONST.08

-L- PT Sta.55+22.52

-L- PRC Sta.59+87.97

-L- PC Sta.56+73.60

END GRADE TIE TO EXISTING -L- STA.58+00.00

-L- STA.55+00.00 SEE SHEET 7

END TIP PROJECT U-5887 -L- STA.66+16.58

-L- STA.66+77.14 -Y8- STA.14+96.30

TIE TO EX. SIDEWALK AND C&G

RETAIN EX. ISLAND

SEE MEDIAN ISLAND DETAIL

RETAIN STORM SEWER SYSTEM

RESET FENCE

DO NOT DISTURB

RETAIN

PUE

15" RCP-III

18" RCP-III

24" RCP-III

-L- 27.08' O/O E

-L- 60

-L- 75' STORAGE 255' TAPER

-L- 25' STORAGE 255' TAPER

-L- 33

-L- 11

-L- 11

-L- 33

-L- 11

-L- 11

-L- 33

-L- 11

-L- 11

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-09/CONST.04

-L- CURVE DATA	
PI Sta 13+10.62	PI Sta 17+72.41
△ = 41° 02' 11.9" (LT)	△ = 2° 35' 36.4" (RT)
D = 12° 43' 56.6"	D = 1° 25' 56.6"
L = 322.30'	L = 181.06'
T = 168.41'	T = 90.54'
R = 450.00'	R = 4,000.00'
DS = 35 MPH	DS = 40 MPH
e = .04	e = 0.02
R.O. = 77'	R.O. = 38.50'

-Y1- CURVE DATA

NAD 83/2011

MATCH LINE -L- STA.18+00.00 SEE SHEET 5

JAMES KINGSLEY
DB 1613 PG 210

THE SONS, LLC
DB 1566 PG 717

VILLAGE OF FLATROCK

RICHARD D. STREET
DB 839 PG 536

TRUSTEES OF PINECREST PRESBYTERIAN CHURCH
DB 812 PG 821
DB 822 PG 785

JOSEPH MAYBANK
DB 1095 PG 618

① SUSAN T. RINDAL
DB 1534 PG 601

③ MARTHA WHALEY CORNWELL
DB 1679 PG 633

POT Sta. 10+00.00 -Y1- 10

-L- PCSta.16+81.86

-L- PTSta.14+64.51

BEGIN CONSTRUCTION
-Y1- STA.12+29.64

BEGIN TIP PROJECT U-5887
-L- POTSta.10+00.00
-Y1- STA.15+39.06

END CONSTRUCTION
-Y1- STA.16+61.80

-L- PCSta.11+42.21

END WALL NO.1
END STA.13+30.09 W/9' LT.
-WALL1- STA.13+95.52 LT.
-WALL1- STA.11+95.52

BEGIN WALL NO.1
BEGIN WALL NO.1 PROP. SW
-L- STA.14+25.00 30.0' LT
-WALL1- STA.14+00.00

CONTRACTOR TO REMOVE PAVEMENT, GRADE AREA TO DRAIN, AND SEED. TO ACCOMODATE NEW POWER POLE. SEE SHEET UO-4.

REMOVE PIPE

RETAIN PIPE

RETAIN

RETAIN STORM SEWER SYSTEM

CL B RIP RAP
EST 3 TONS
EST 10 SYDS

DO NOT DISTURB

MENINGER CREEK

PLUG & ABANDON

REMOVE PIPE

NOTE:
INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED.

FINAL GRADE
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

Place Matting for Erosion Control on Slopes as Work Allows.

INSTALL MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.

5/18/2020 8:46:10 AM
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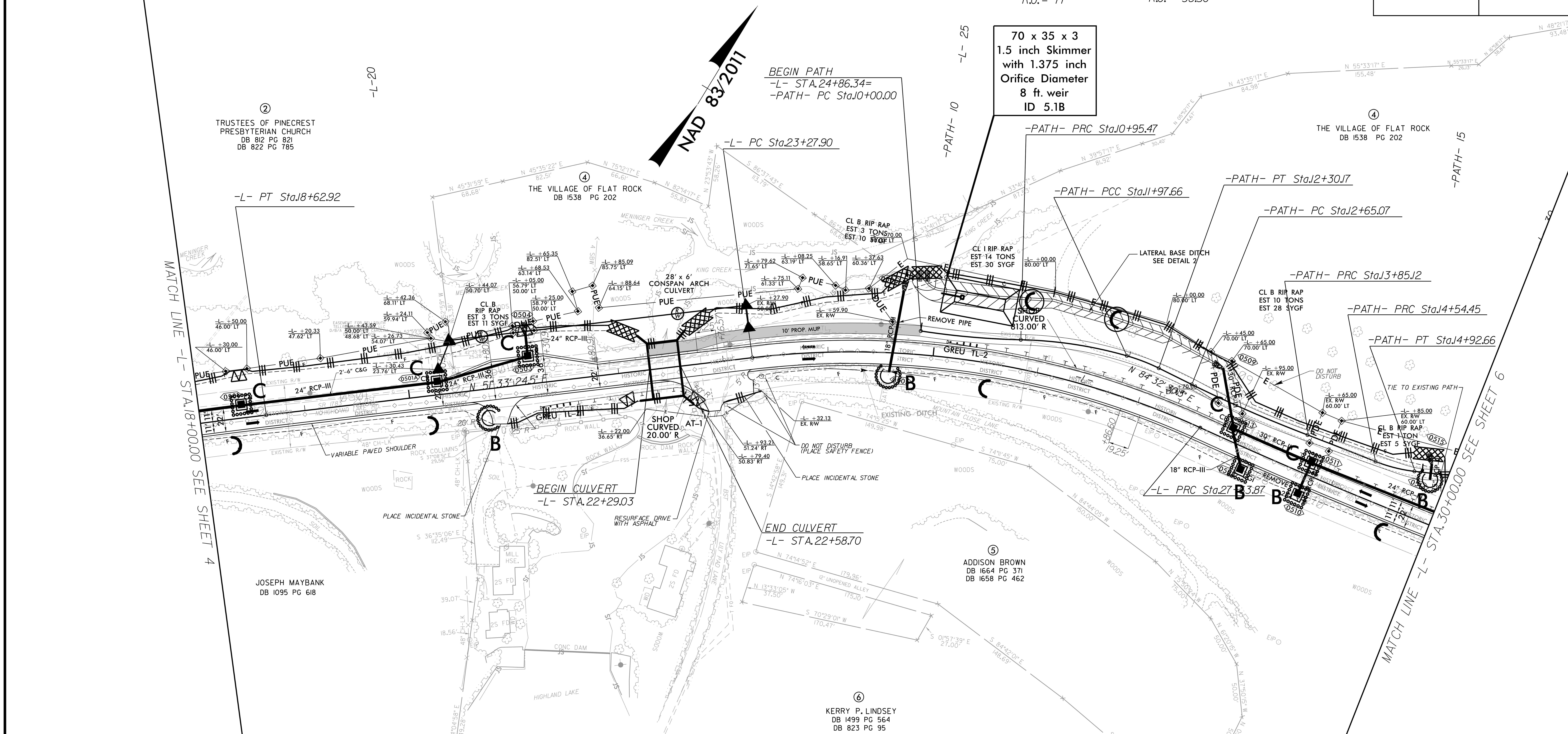
User:mpfeil

PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-10/CONST.05

-PATH- CURVE DATA						-L- CURVE DATA	
PI Sta 10+47.80	PI Sta 11+46.85	PI Sta 12+13.96	PI Sta 13+25.14	PI Sta 14+19.79	PI Sta 14+73.67	PI Sta 25+51.45	PI Sta 29+89.65
Δ = 7° 35′ 17.9″ (LT)	Δ = 14° 47′ 16.1″ (RT)	Δ = 10° 15′ 15.0″ (RT)	Δ = 5° 23′ 15.4″ (LT)	Δ = 0° 54′ 59.4″ (RT)	Δ = 15° 12′ 19.1″ (LT)	Δ = 31° 13′ 26.0″ (RT)	Δ = 5° 40′ 53.6″ (LT)
D = 7° 56′ 55.5″	D = 14° 28′ 14.3″	D = 31° 32′ 20.5″	D = 4° 29′ 16.5″	D = 1° 19′ 18.8″	D = 39° 47′ 48.2″	D = 7° 09′ 43.1″	D = 1° 15′ 33.3″
L = 95.47′	L = 102.19′	L = 32.51′	L = 120.05′	L = 69.33′	L = 38.21′	L = 435.97′	L = 451.19′
T = 47.80′	T = 51.38′	T = 16.30′	T = 60.07′	T = 34.67′	T = 19.22′	T = 223.54′	T = 225.78′
R = 720.82′	R = 395.95′	R = 181.67′	R = 1,276.67′	R = 4,334.39′	R = 143.97′	R = 800.00′	R = 4,550.00′
						DS = 40 MPH	DS = 40 MPH
						e = 0.04	e = 0.02
						R.O. = 77′	R.O. = 38.50′



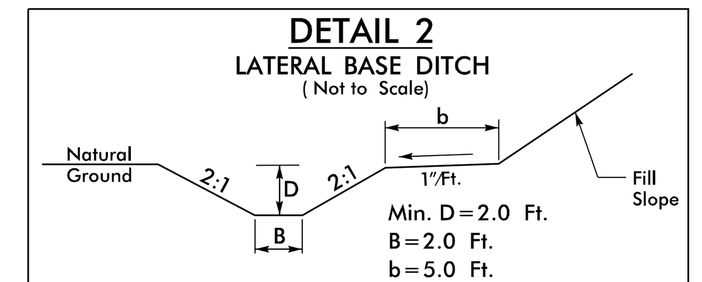
NOTE:
INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED.

FINAL GRADE
EROSION CONTROL FOR
CONSTRUCTION SHEET 05

Place Matting for Erosion Control on Slopes as Work Allows.

INSTALL MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.

DETAIL 2
LATERAL BASE DITCH
(Not to Scale)



FROM LT STA. 24+72 TO LT STA. 27+60

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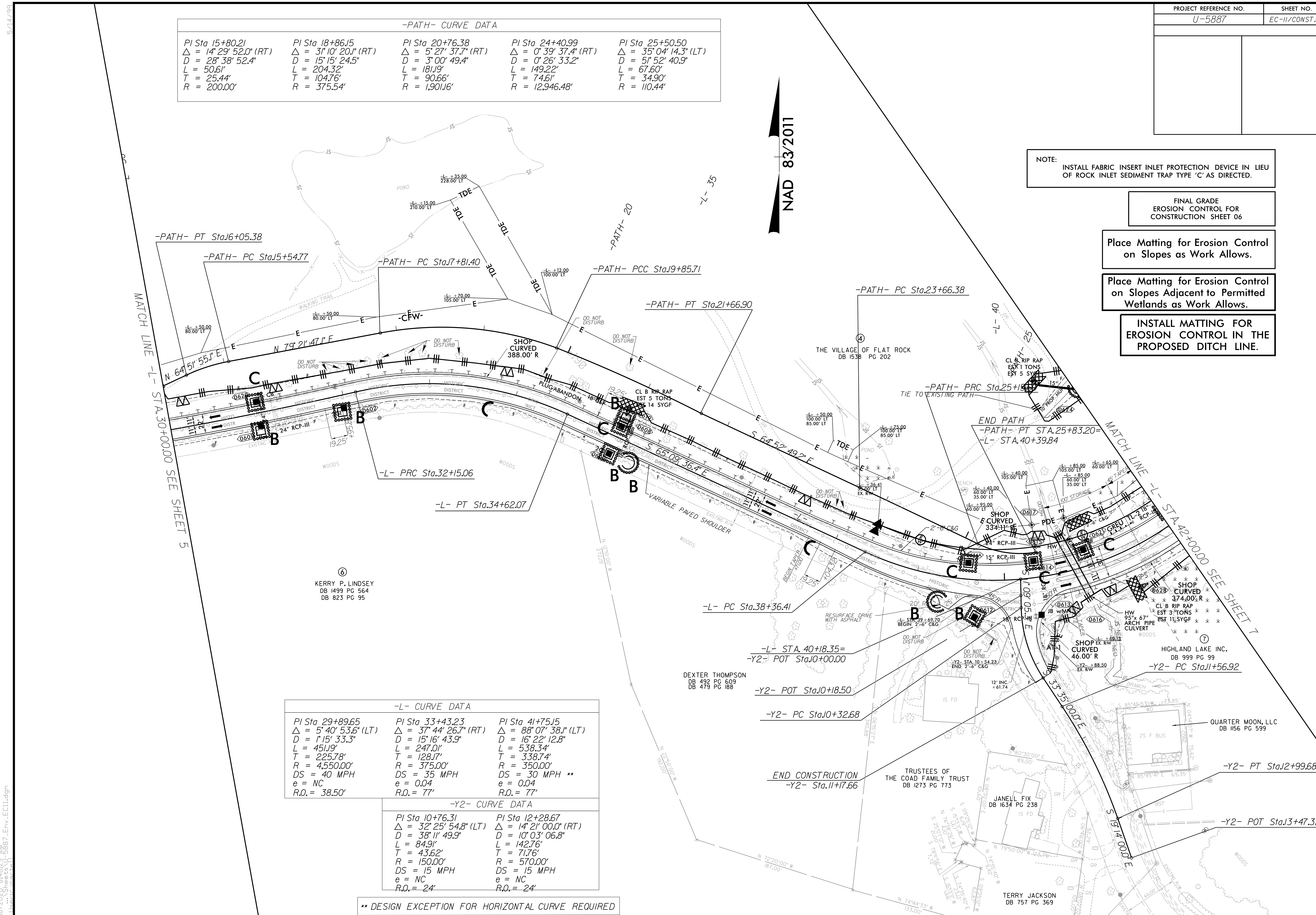
PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-11/CONST.06



-PATH- CURVE DATA

PI Sta 15+80.21	PI Sta 18+86.15	PI Sta 20+76.38	PI Sta 24+40.99	PI Sta 25+50.50
Δ = 14° 29' 52.0" (RT)	Δ = 31° 10' 20.1" (RT)	Δ = 5° 27' 37.7" (RT)	Δ = 0° 39' 37.4" (RT)	Δ = 35° 04' 14.3" (LT)
D = 28° 38' 52.4"	D = 15° 15' 24.5"	D = 3° 00' 49.4"	D = 0° 26' 33.2"	D = 51° 52' 40.9"
L = 50.61'	L = 204.32'	L = 181.19'	L = 149.22'	L = 67.60'
T = 25.44'	T = 104.76'	T = 90.66'	T = 74.61'	T = 34.90'
R = 200.00'	R = 375.54'	R = 1,901.16'	R = 12,946.48'	R = 110.44'

NOTE: INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED.

FINAL GRADE EROSION CONTROL FOR CONSTRUCTION SHEET 06

Place Matting for Erosion Control on Slopes as Work Allows.

Place Matting for Erosion Control on Slopes Adjacent to Permitted Wetlands as Work Allows.

INSTALL MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.

-L- CURVE DATA

PI Sta 29+89.65	PI Sta 33+43.23	PI Sta 41+75.15
Δ = 5° 40' 53.6" (LT)	Δ = 37° 44' 26.7" (RT)	Δ = 88° 07' 38.1" (LT)
D = 1° 15' 33.3"	D = 15° 16' 43.9"	D = 16° 22' 12.8"
L = 451.19'	L = 247.01'	L = 538.34'
T = 225.78'	T = 128.17'	T = 338.74'
R = 4,550.00'	R = 375.00'	R = 350.00'
DS = 40 MPH	DS = 35 MPH	DS = 30 MPH **
e = NC	e = 0.04	e = 0.04
R.O. = 38.50'	R.O. = 77'	R.O. = 77'

-Y2- CURVE DATA

PI Sta 10+76.31	PI Sta 12+28.67
Δ = 32° 25' 54.8" (LT)	Δ = 14° 21' 00.0" (RT)
D = 38° 11' 49.9"	D = 10° 03' 06.8"
L = 84.91'	L = 142.76'
T = 43.62'	T = 71.76'
R = 150.00'	R = 570.00'
DS = 15 MPH	DS = 15 MPH
e = NC	e = NC
R.O. = 24'	R.O. = 24'

** DESIGN EXCEPTION FOR HORIZONTAL CURVE REQUIRED

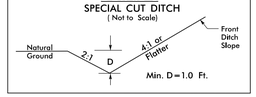
5/8/2020 8:48:29 AM ...\Sheets\U-5887_Env_EC11.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-12/CONST.07

NAD 83/2011

③
THE VILLAGE OF FLAT ROCK
DB 1538 PG 202

DETAIL 5
SPECIAL CUT DITCH
(Not to Scale)



FROM PATH 2 STA. 11+00 TO STA. 14+50 RT

-Y6 POT Sta.10+00.00

-TRK- PT STA.10+00.00

-L- PC Sta.47+04.34

-Y5- PT Sta.11+39.47

BEGIN CONSTRUCTION
-Y6- STA.11+60.00

-L- PRC Sta.53+43.00

-Y5- PT Sta.10+90.42

-Y5- STA.10+00.00=
-Y6- STA.11+86.46

-L- PT Sta.43+74.75

-Y6 PC Sta.12+00.31

-L- STA.53+30.36= PT Sta.10+00.00

-L- STA.42+00.00 SEE SHEET 6

-L- STA.55+00.00 SEE SHEET 8

-Y6- PT Sta.12+88.01

-L- STA.48+83.56=
-Y6- POT Sta.12+94.91

-L- STA.47+89.80=
-Y5- PT Sta.11+79.50

-L- STA.42+49.50=
-Y3- POT Sta.10+00.00

-L- STA.49+46.80=
-TRK- STA.13+43.54

-Y7- PC Sta.10+14.79

-Y7 PT Sta.10+88.72

END CONSTRUCTION
-Y7- STA.11+00.00

END CONSTRUCTION
-Y3- STA.11+50.00

-TRK- PT STA.13+84.79

-L- PRC Sta.49+05.30

-TRK- PRC STA.15+10.01

-TRK- PRC STA.16+84.72

-Y7 POT Sta.13+23.89

SPECIAL CUT DITCH
SEE DETAIL 5

CUT DITCH
SEE DETAIL 4

CL B RIP RAP
EST 11 TONS
EST 28 SYGF

CL B RIP RAP
EST 3 TONS
EST 10 SYGF

RETAIN STORM SEWER SYSTEM

RETAIN

REMOVE PIPE

COLLAR AND EXTEND & RETAIN PIPE & INLET

MATCH LINE -L- STA.42+00.00 SEE SHEET 6

MATCH LINE -L- STA.55+00.00 SEE SHEET 8

VILLAGE OF FLAT ROCK

HENDERSON COUNTY

HENDERSONVILLE CITY LIMITS

HIGHLAND GOLF VILLAS HOMEOWNERS ASSOC. INC.
DB 1150 PG 499

⑮ ROWN, LLC
DB 1383 PG 132

MARK R. GMYREK
DB 1322 PG 368 ⑬

JAMES GILLESPIE
DB 1059 PG 646 ⑪

INGLES MARKETS INC.
DB 861 PG 253 ⑭

CHARLES GUDGER
DB 1499 PG 600 ⑫

VICTOR BULLARD
DB 1499 PG 600 ⑩

MILDRED H. COOPER
DB 1318 PG 562 ⑨

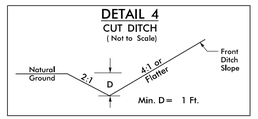
DONALD HUNTER
DB 678 PG 503

JIMMY DALE FREEMAN
DB 1250 PG 120 ⑧

HIGHLAND LAKE INC.
DB 999 PG 99 ⑦

SHOP CURVED 41.00' RAT.-1

DETAIL 4
CUT DITCH
(Not to Scale)



FROM RT STA. 49+76 TO RT STA. 50+95

-Y5- CURVE DATA	-Y6- CURVE DATA	-Y7- CURVE DATA
PI Sta 11+16.71	PI Sta 12+45.45	PI Sta 10+52.77
Δ = 51° 05' 31.9" (LT)	Δ = 33° 29' 53.9" (LT)	Δ = 32° 35' 04.2" (RT)
D = 104° 10' 26.9"	D = 38° 11' 49.9"	D = 44° 04' 25.2"
L = 49.04'	L = 87.70'	L = 73.93'
T = 26.29'	T = 45.14'	T = 38.00'
R = 55.00'	R = 150.00'	R = 130.00'
DS = SC	DS = SC	DS = SC
e = NC	e = NC	e = NC
R.O. = 24'	R.O. = 24'	R.O. = 24'

-L- CURVE DATA			
PI Sta 48+08.49	PI Sta 50+47.67	PI Sta 52+75.13	PI Sta 54+76.00
Δ = 37° 08' 33.1" (RT)	Δ = 50° 02' 43.2" (LT)	Δ = 6° 29' 13.7" (LT)	Δ = 21° 16' 34.3" (RT)
D = 18° 28' 57.0"	D = 18° 47' 07.8"	D = 3° 08' 22.2"	D = 11° 01' 06.3"
L = 200.96'	L = 266.40'	L = 206.63'	L = 193.10'
T = 104.15'	T = 142.37'	T = 103.43'	T = 97.67'
R = 310.00'	R = 305.00'	R = 1,825.00'	R = 550.00'
DS = 30 MPH **	DS = 30 MPH **	DS = 40 MPH	DS = 35 MPH
e = 0.04	e = 0.04	e = 0.02	e = 0.04
R.O. = 77'	R.O. = 77'	R.O. = 38.50'	R.O. = 77'

R=5' AND OFFSET 15' FOR 2'-6" C&G AT -TRK-

** DESIGN EXCEPTION FOR HORIZONTAL CURVE REQUIRED

FINAL GRADE EROSION CONTROL FOR CONSTRUCTION SHEET 07

Place Matting for Erosion Control on Slopes as Work Allows.

Place Matting for Erosion Control on Slopes Adjacent to Permitted Wetlands as Work Allows.

INSTALL MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.

NOTE:
INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED.

5/14/99

12/17/2020 10:58:55 AM
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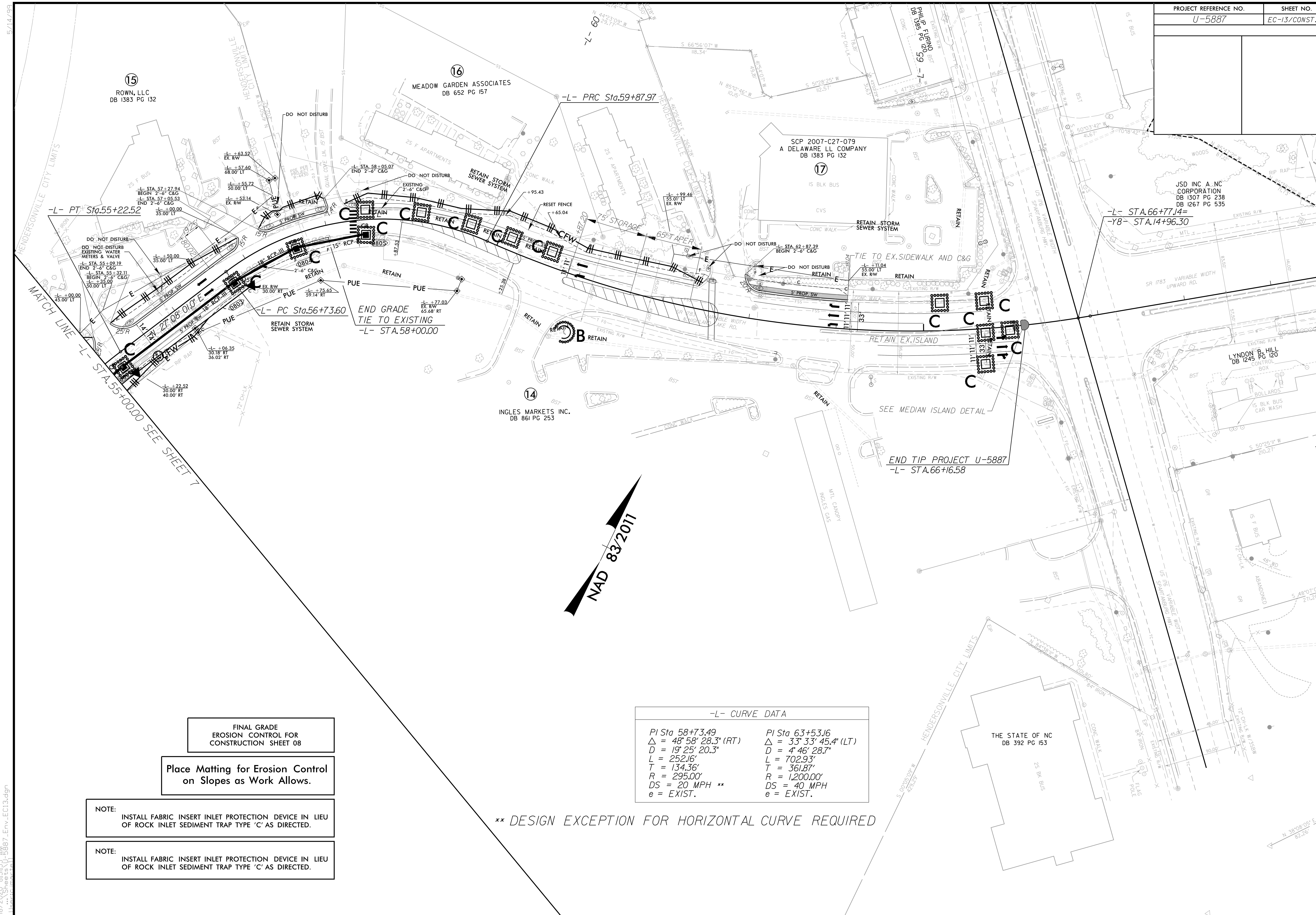
User:jmpeel

PROJECT REFERENCE NO.	SHEET NO.
U-5887	EC-13/CONST.08



FINAL GRADE
EROSION CONTROL FOR
CONSTRUCTION SHEET 08

Place Matting for Erosion Control on Slopes as Work Allows.

NOTE:
INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED.

NOTE:
INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED.

-L- CURVE DATA

PI Sta 58+73.49	PI Sta 63+53.16
Δ = 48° 58' 28.3" (RT)	Δ = 33° 33' 45.4" (LT)
D = 19° 25' 20.3"	D = 4° 46' 28.7"
L = 252.16'	L = 702.93'
T = 134.36'	T = 361.87'
R = 295.00'	R = 1,200.00'
DS = 20 MPH **	DS = 40 MPH
e = EXIST.	e = EXIST.

** DESIGN EXCEPTION FOR HORIZONTAL CURVE REQUIRED

5/18/2020 8:54:35 AM
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