

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4430	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 (UPWARD ROAD) FROM US 176 (SPARTANBURG HWY) TO SR 1006 (HOWARD GAP ROAD)
TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS, CULVERT, AND STRUCTURES

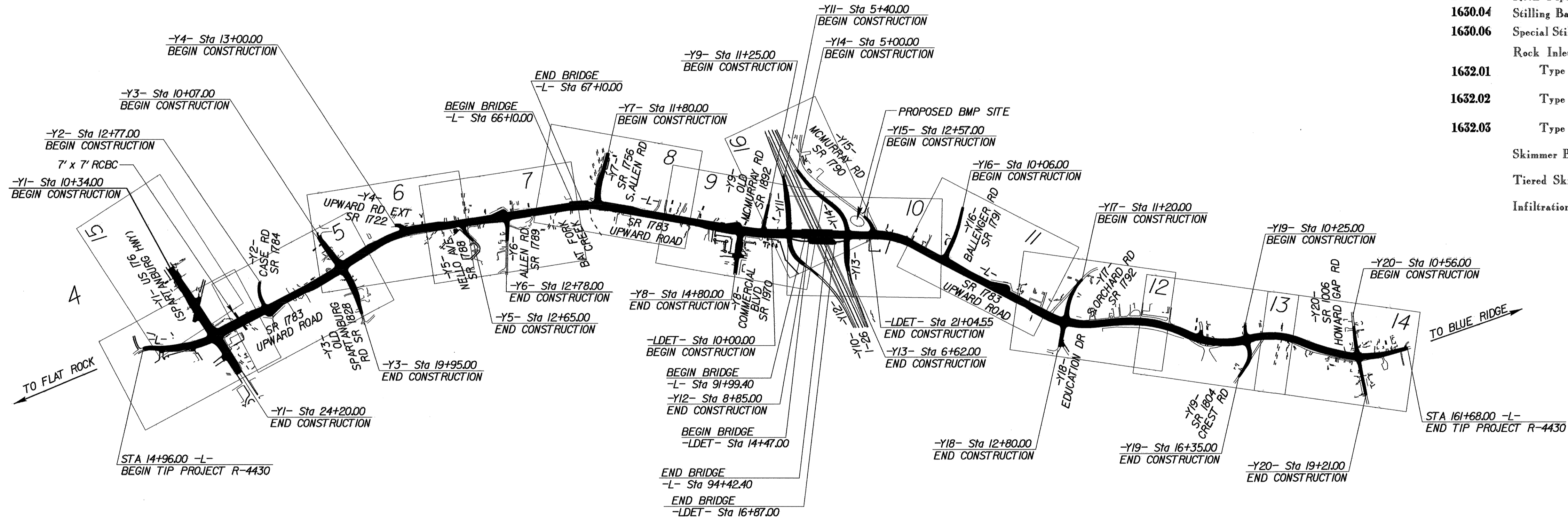
EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Silt Ditch	
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.01	Riser Basin	
	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-B	
	Wattle	
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	
1632.02	Type B	
1632.03	Type C	
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

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

**ENVIRONMENTALLY
SENSITIVE AREA(S) EXIST
ON THIS PROJECT**

*Refer To E. C. Special Provisions
for Special Considerations.*



TIP PROJECT: R-4430

GRAPHIC SCALE

0

PLANS

0

PROFILE (HORIZONTAL)

0

PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

Prepared In the Office of:
ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington St.
Raleigh, NC 27611
2006 STANDARD SPECIFICATIONS

Roadway Standard Drawings

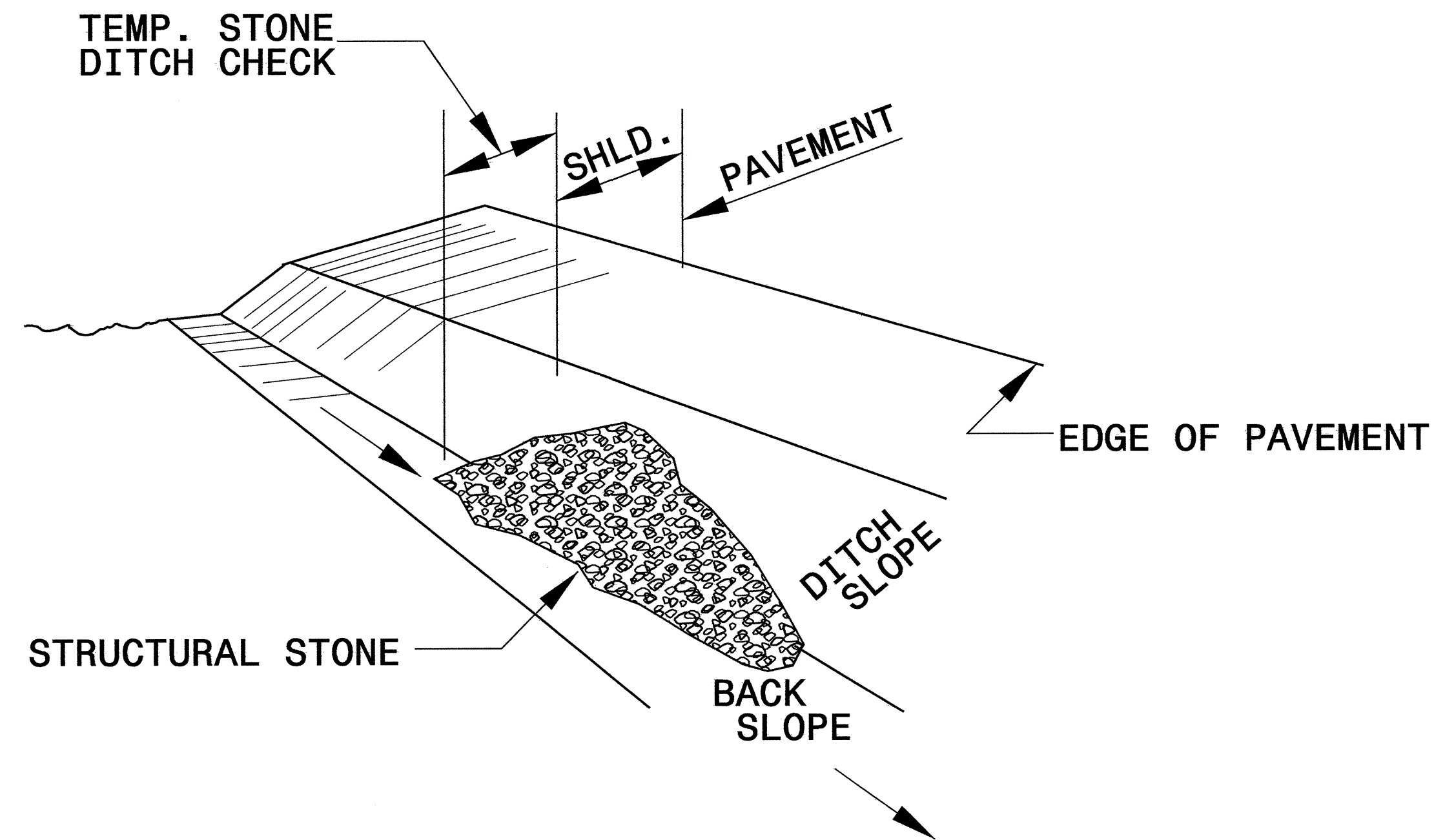
The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated July 18, 2006 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

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	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	

3:\01\43008 1410 jennifereparish A:\REF\228033

PROJECT REFERENCE NO. R-4430	SHEET NO. EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TEMPORARY ROCK SILT CHECK TYPE 'B' DETAIL

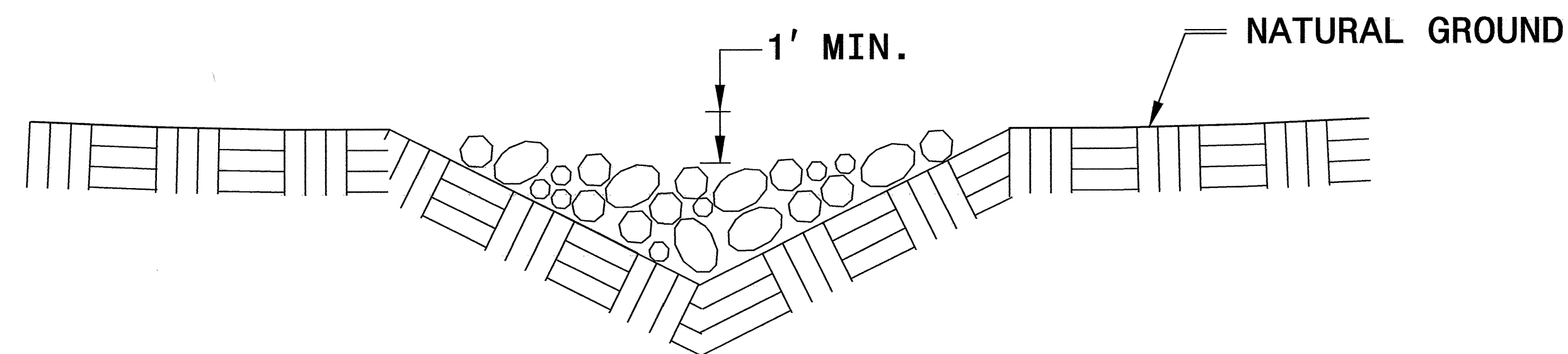


ISOMETRIC VIEW

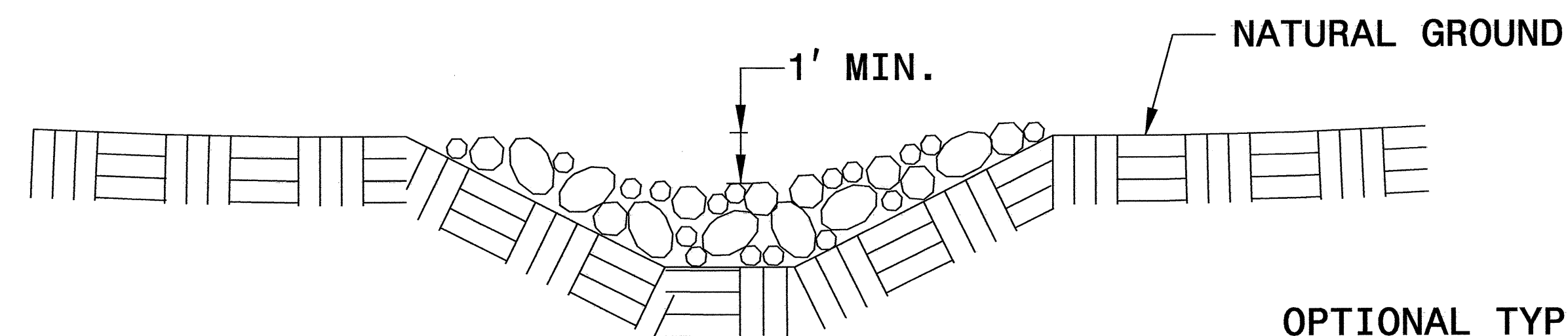
NOTES:

USE CLASS 'B' EROSION CONTROL STONE FOR STRUCTURAL STONE.

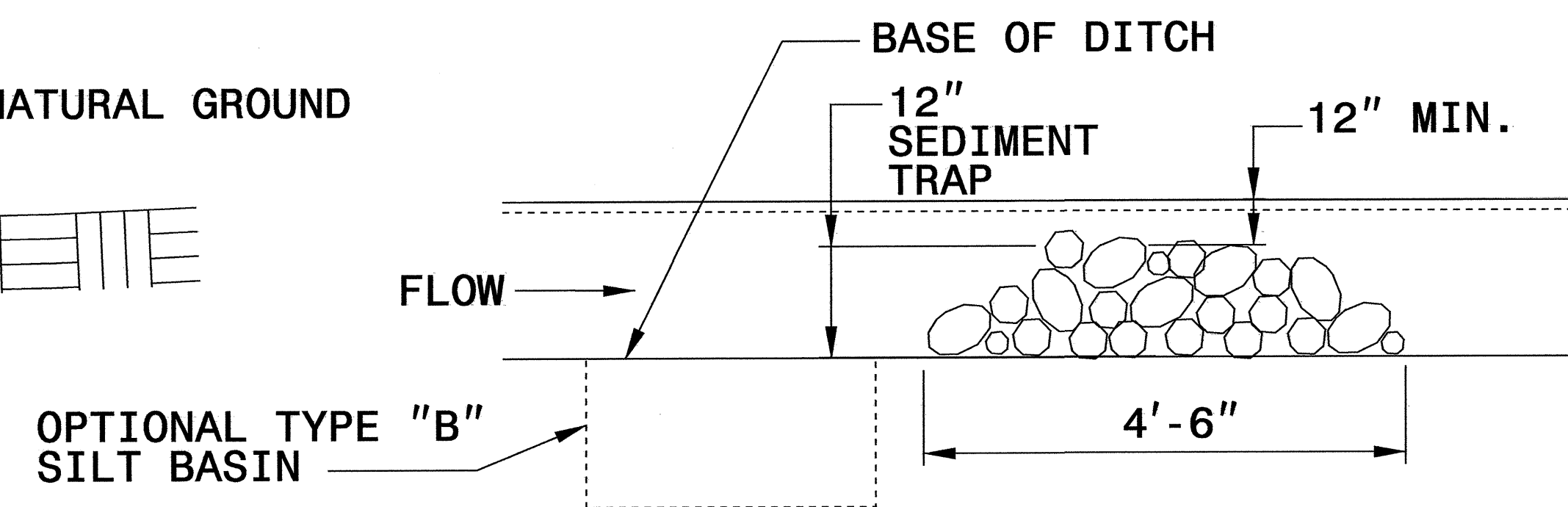
THE ENGINEER MAY DIRECT THE OPTION OF CLASS "A" STONE FOR SITES HAVING LESS THAN ONE (1) ACRE DRAINAGE AREA AND A DITCH GRADE LESS THAN 3%.



CROSS SECTION VEE DITCH



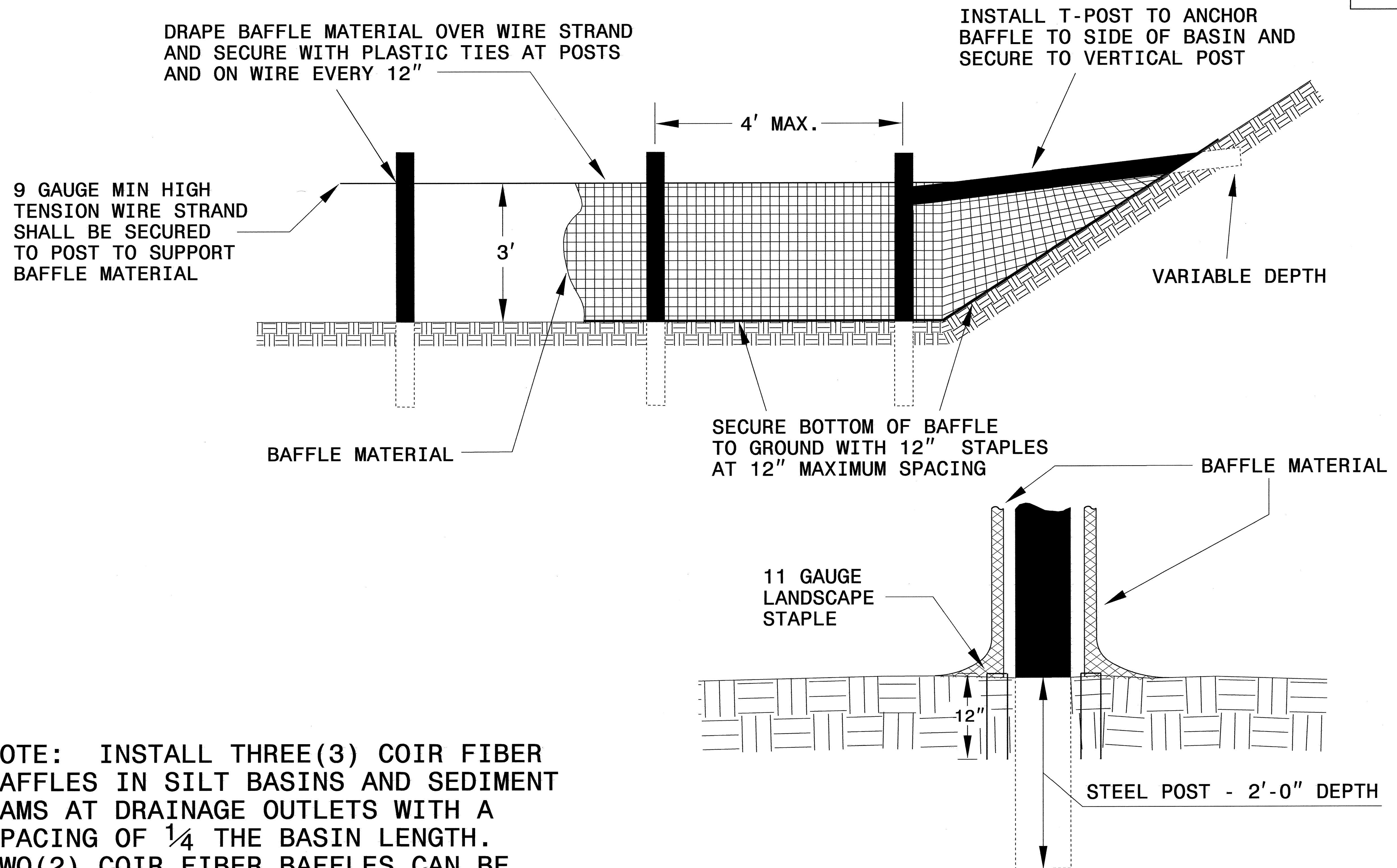
CROSS SECTION TRAPEZOIDAL DITCH



ELEVATION VIEW

PROJECT REFERENCE NO. R-4430	SHEET NO. EC-2A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

COIR FIBER BAFFLE DETAIL

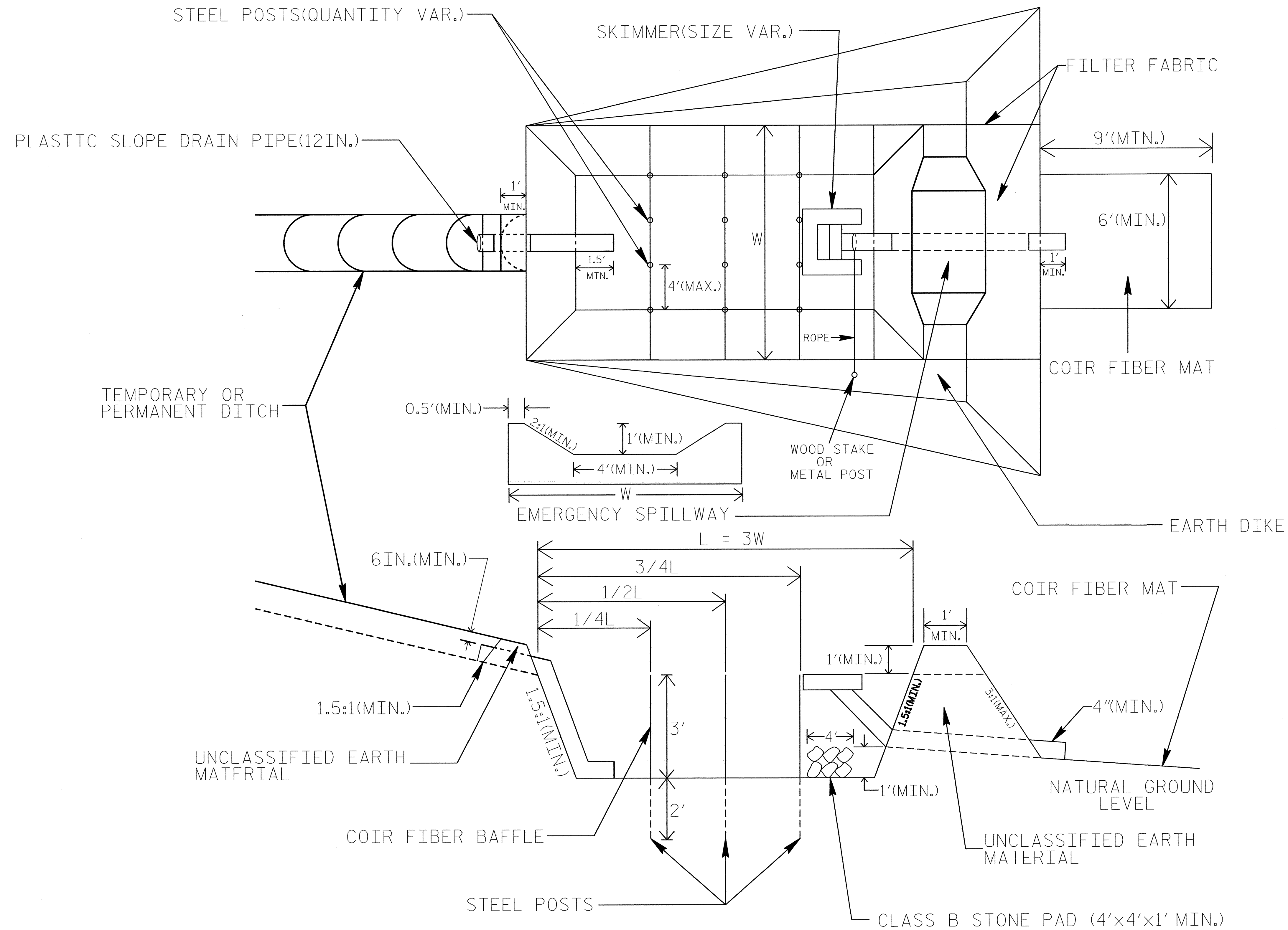


NOTE: INSTALL THREE (3) COIR FIBER BAFFLES IN SILT BASINS AND SEDIMENT DAMS AT DRAINAGE OUTLETS WITH A SPACING OF $\frac{1}{4}$ THE BASIN LENGTH. TWO (2) COIR FIBER BAFFLES CAN BE INSTALLED IN SILT BASINS AND DAMS LESS THAN 20 FT. IN LENGTH WITH A SPACING OF $\frac{1}{3}$ THE BASIN LENGTH.

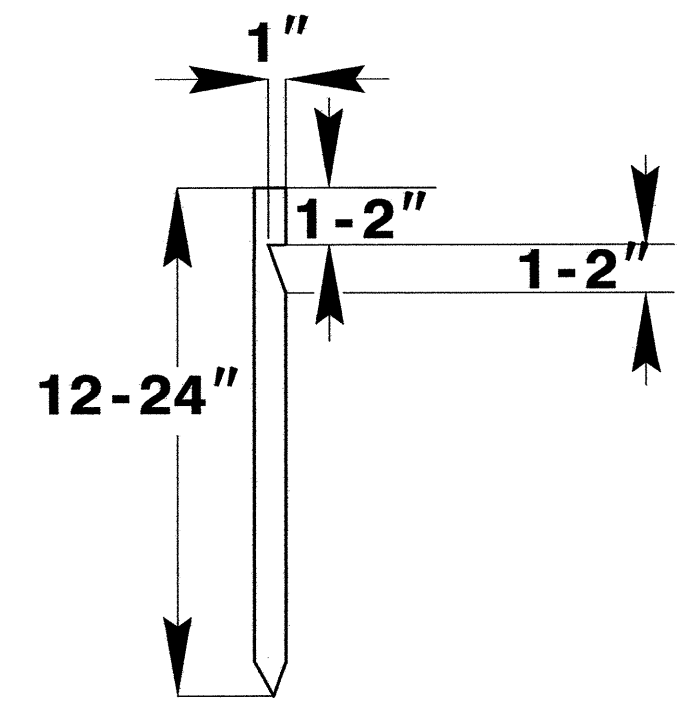
BAFFLE MATERIAL SHALL BE SECURED TO THE BOTTOM AND SIDES OF BASIN USING 12" LANDSCAPE STAPLES

SKIMMER BASIN WITH BAFFLES DETAIL

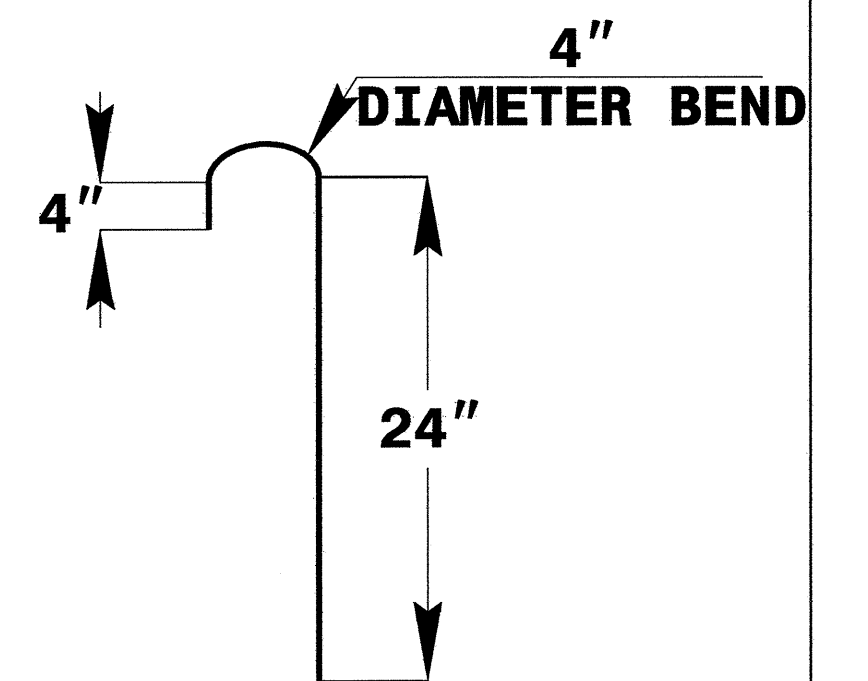
PROJECT REFERENCE NO. R-4430	SHEET NO. EC-2B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



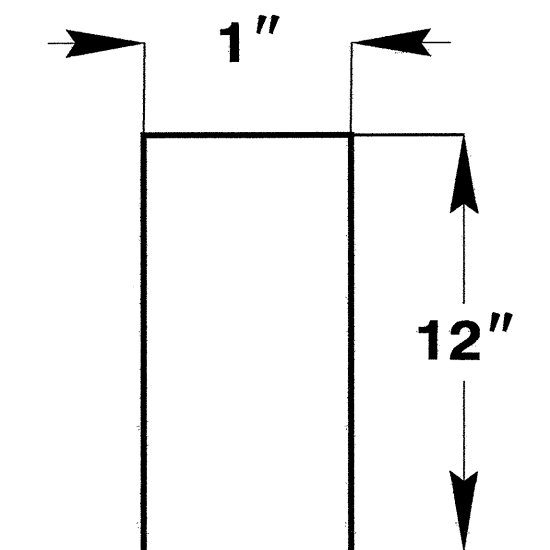
**2" x 2" (nominal)
WOODEN STAKE**



**#10 STEEL
REINFORCEMENT BAR**



**1" (nominal)
STAPLE**



**COIR FIBER MAT
ANCHOR OPTIONS**

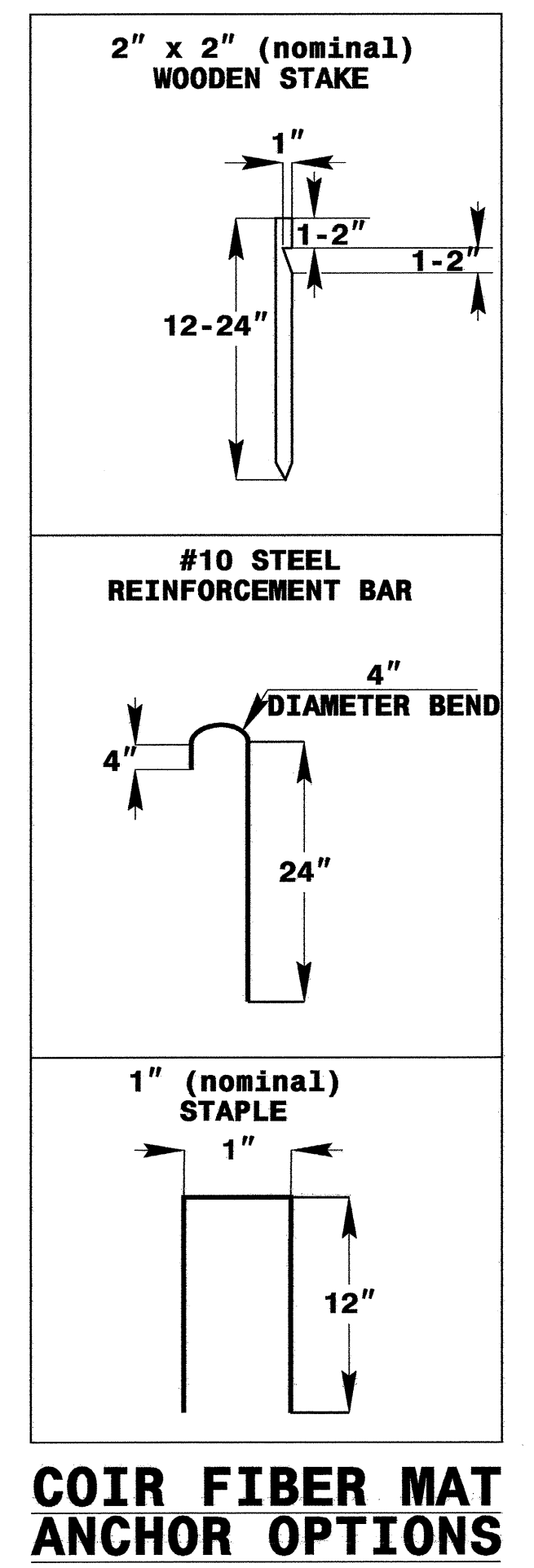
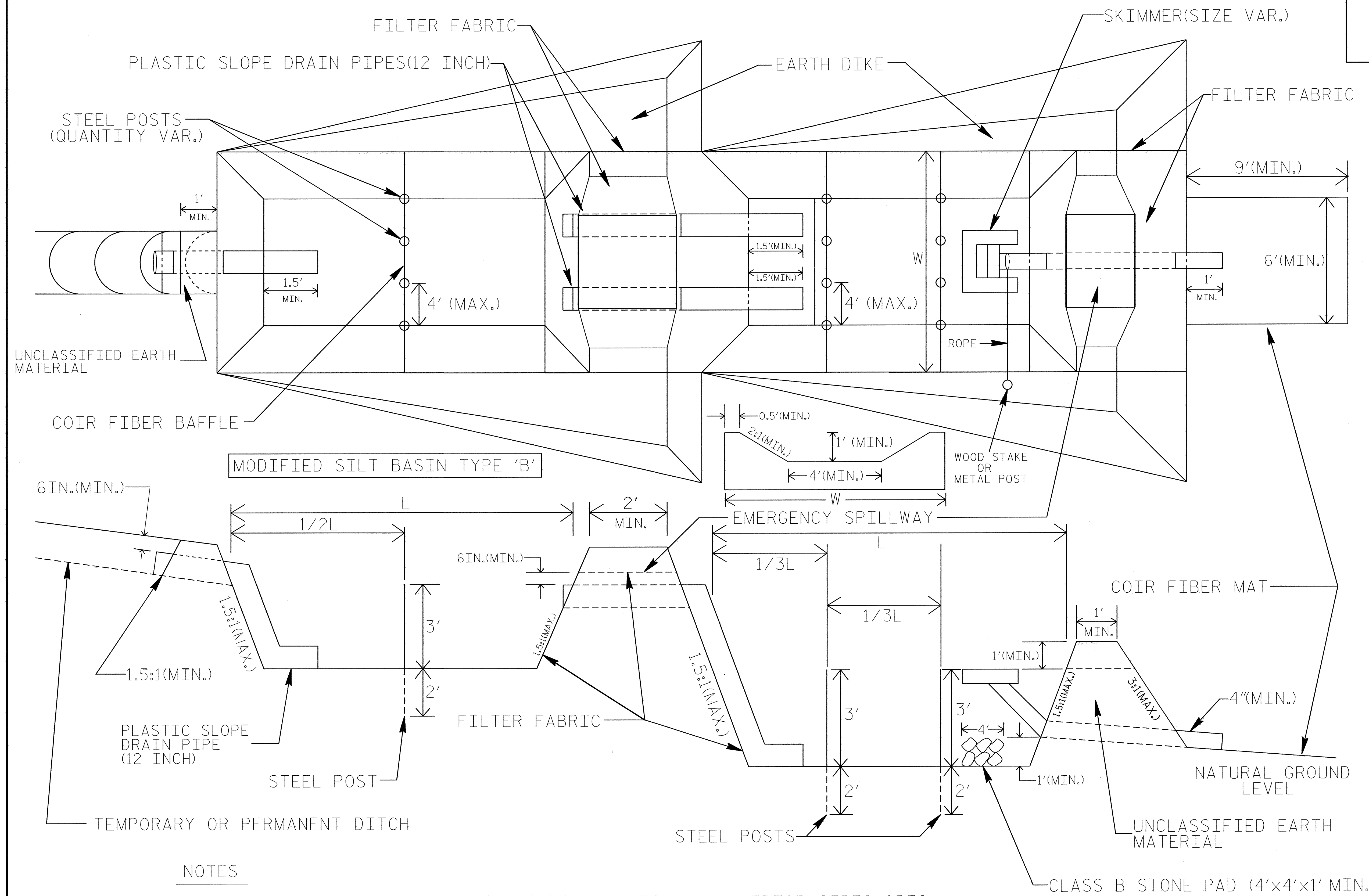
NOTES

1. SEED AND PLACE MATTING FOR EROSION CONTROL ON INTERIOR SIDESLOPES.
2. LIMIT EARTH DIKE HEIGHT TO 5 FT.
3. THE MINIMUM BASIN WIDTH SHALL BE 9 FT.
4. DETERMINE EMERGENCY SPILLWAY LENGTH (FT.) USING $Q/0.8$, WHERE Q IS FLOW RATE (CFS) INTO BASIN.

NOT TO SCALE

PROJECT REFERENCE NO. R-4430	SHEET NO. EC-2C
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TIERED SKIMMER BASIN DETAIL

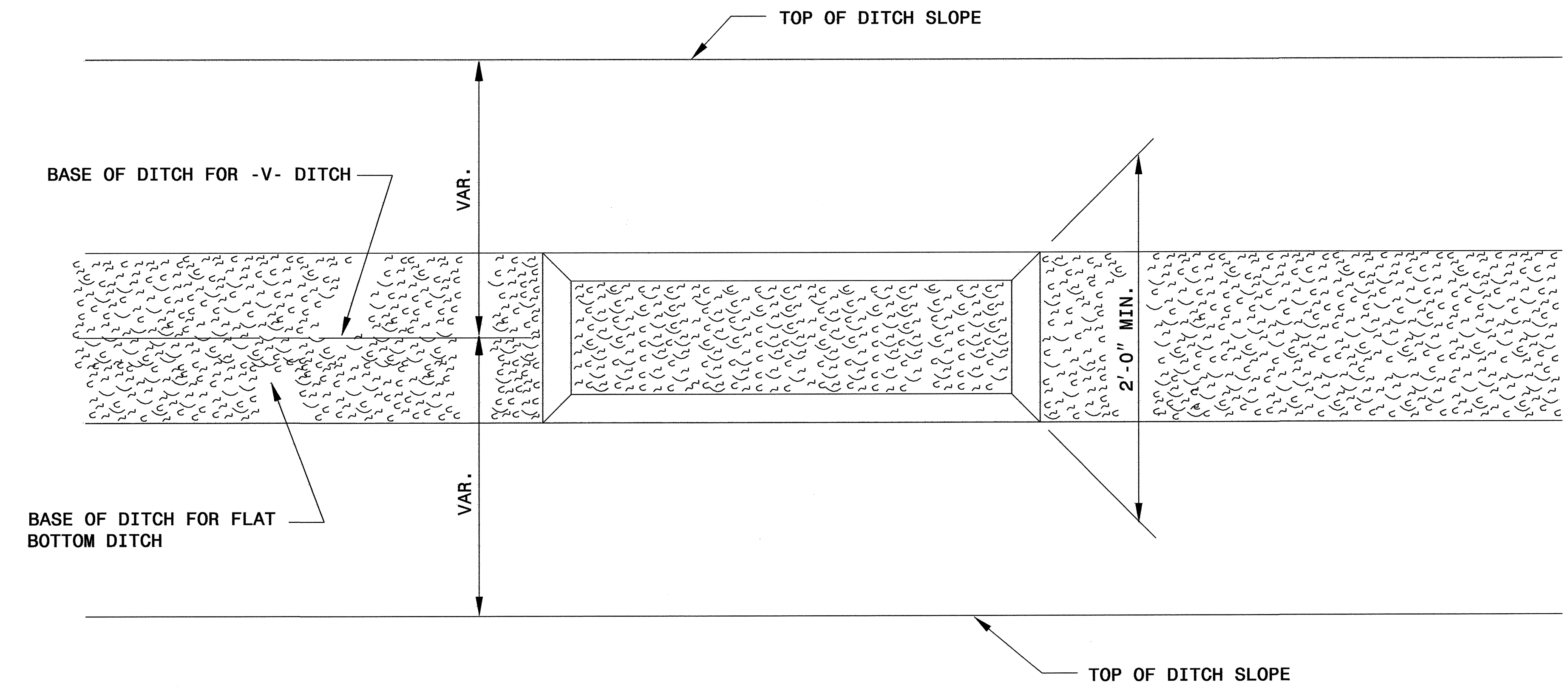


- NOTES**
1. SEED AND PLACE MATTING FOR EROSION CONTROL ON INTERIOR SIDESLOPES OF BASINS.
 2. LIMIT HEIGHT OF EARTH DIKES TO 5 FT.
 3. ADDITIONAL MODIFIED SILT BASINS TYPE 'B' MAY BE NEEDED DEPENDING ON SLOPE.
 4. THE MINIMUM BASIN WIDTHS SHALL BE 9 FT.
 5. DETERMINE EMERGENCY SPILLWAY LENGTHS (FT.) USING $Q/0.8$, WHERE Q IS FLOW RATE (CFS) INTO UPPER BASIN.

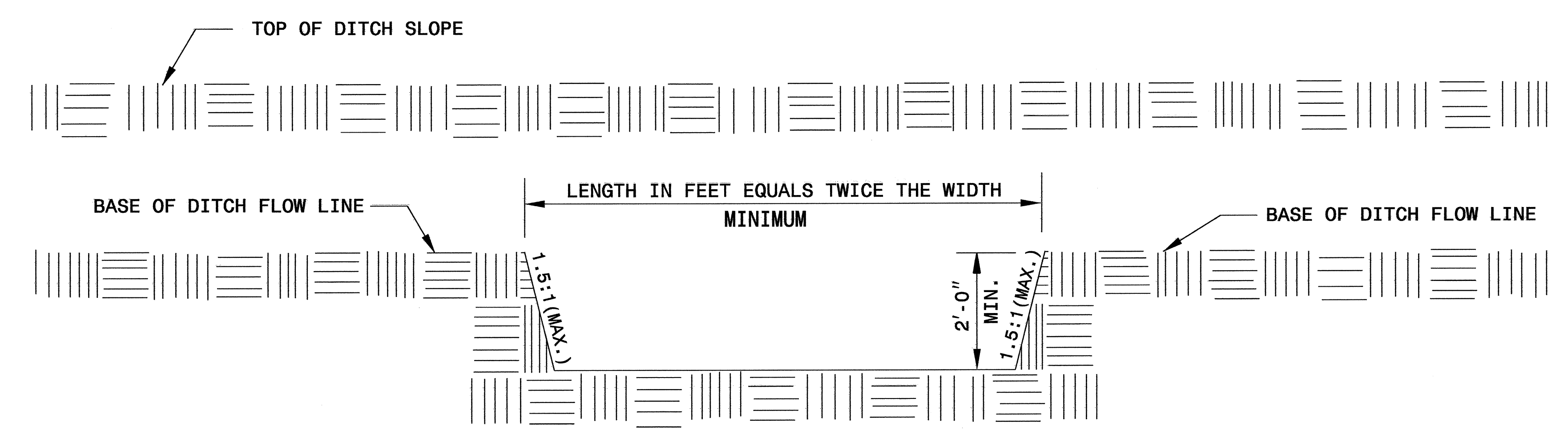
NOT TO SCALE

PROJECT REFERENCE NO. R-4430	SHEET NO. EC-2D
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SILT BASIN 'B' DETAIL



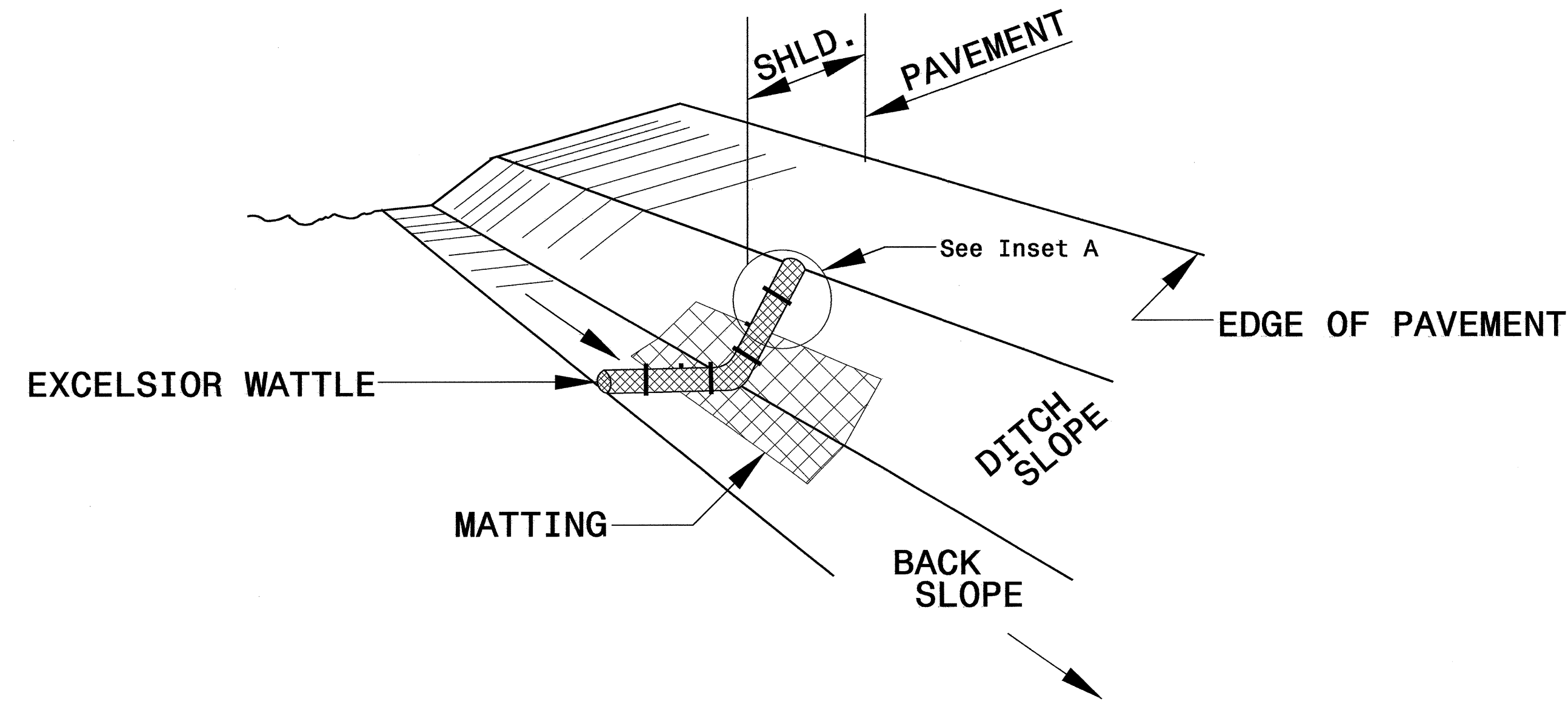
PLAN



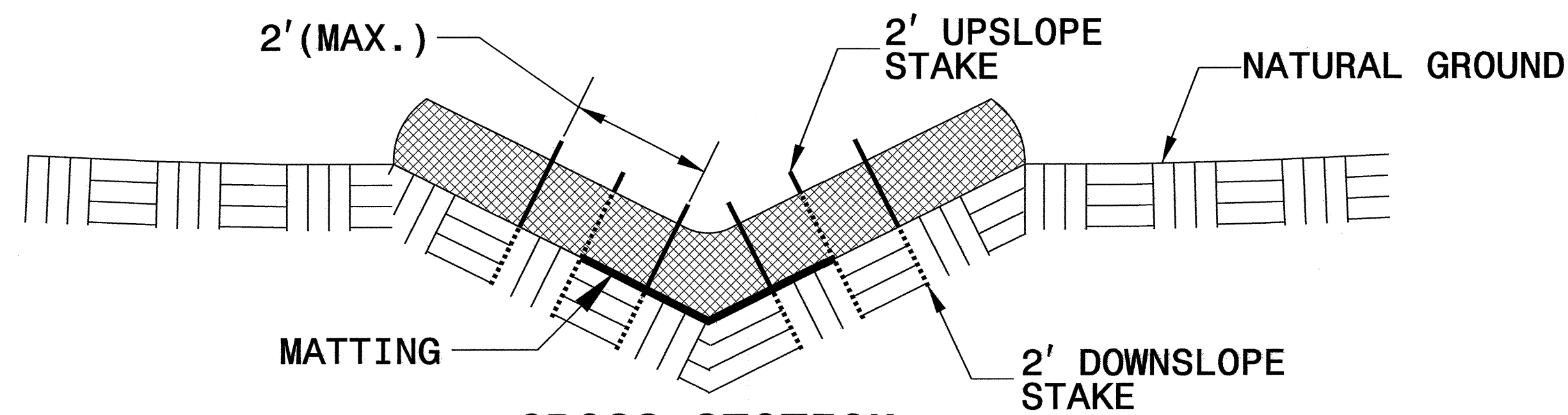
ELEVATION

PROJECT REFERENCE NO. R-4430	SHEET NO. EC-2E
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

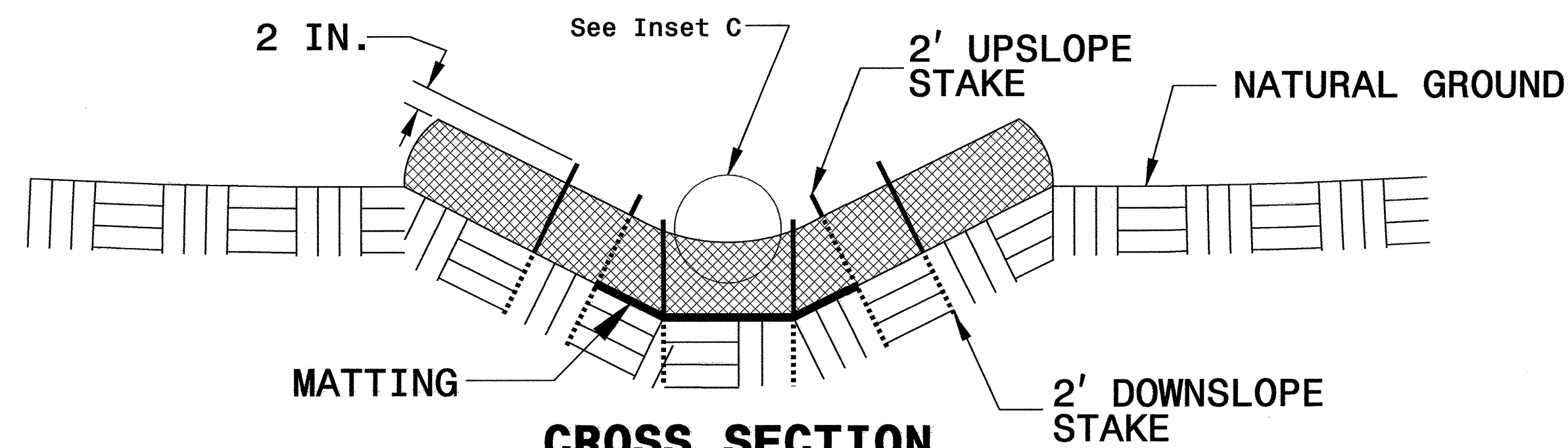
WATTLE WITH POLYACRYLAMIDE DETAIL



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. CROSS SECTION.

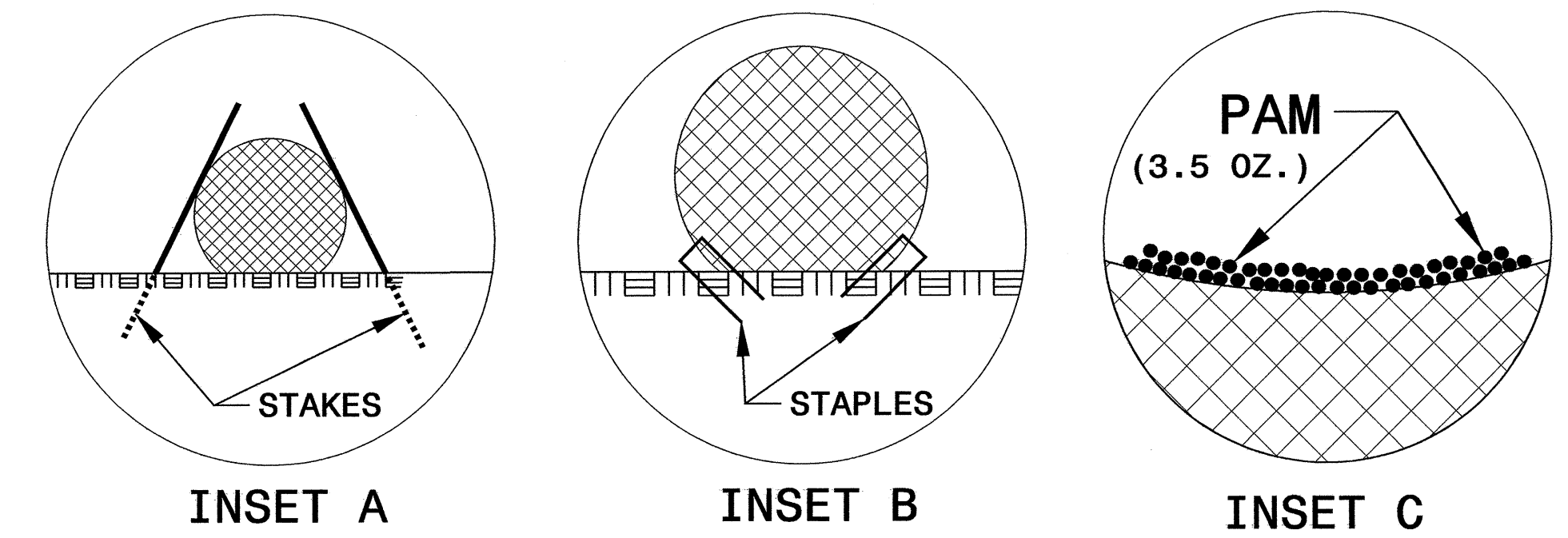
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

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.

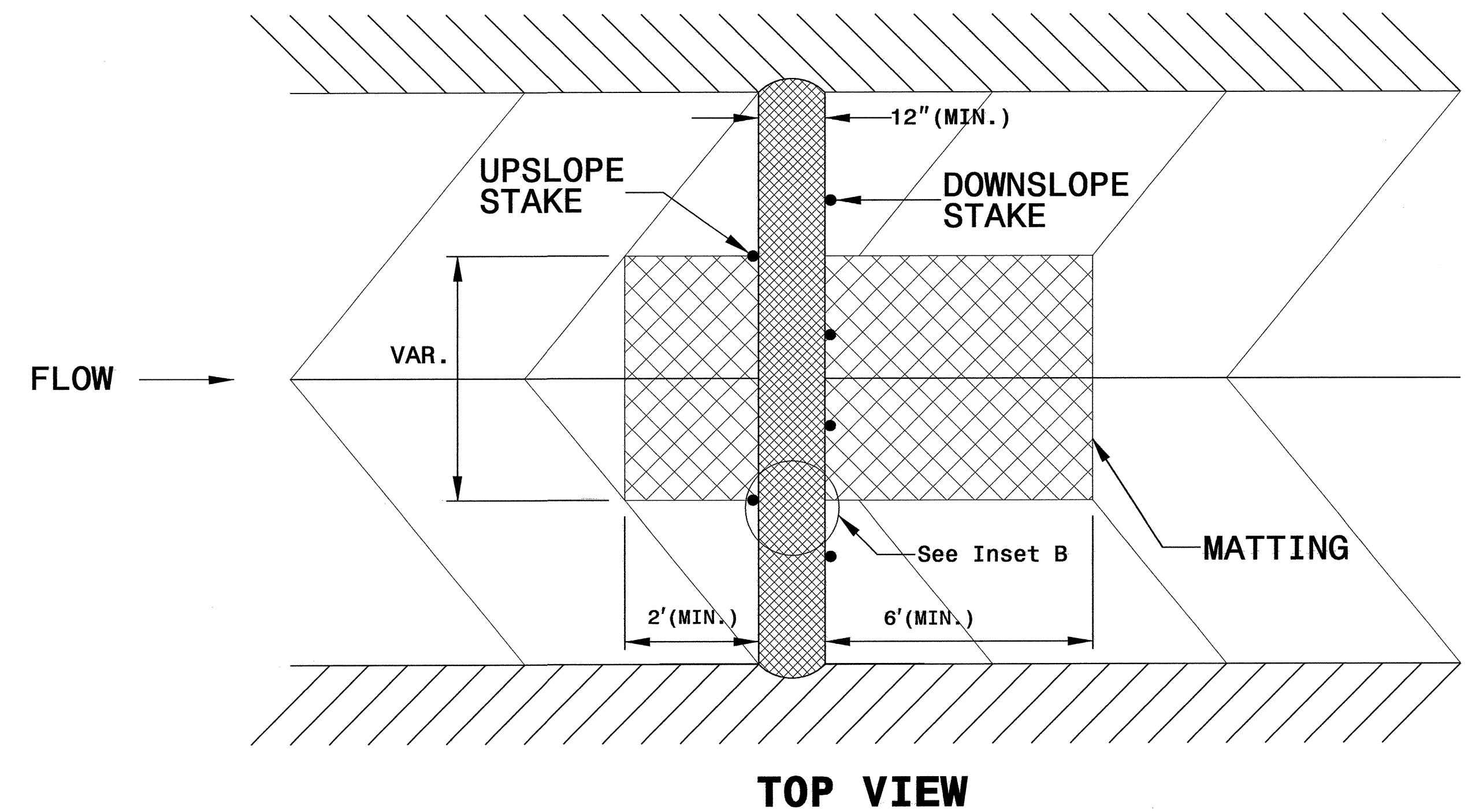
INITIALLY APPLY 3.5 OUNCES OF ANIONIC OR NEUTRALLY CHARGED POLYACRYLAMIDE (PAM) OVER WATTLE WHERE WATER WILL FLOW AND AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.25 IN.



INSET A

INSET B

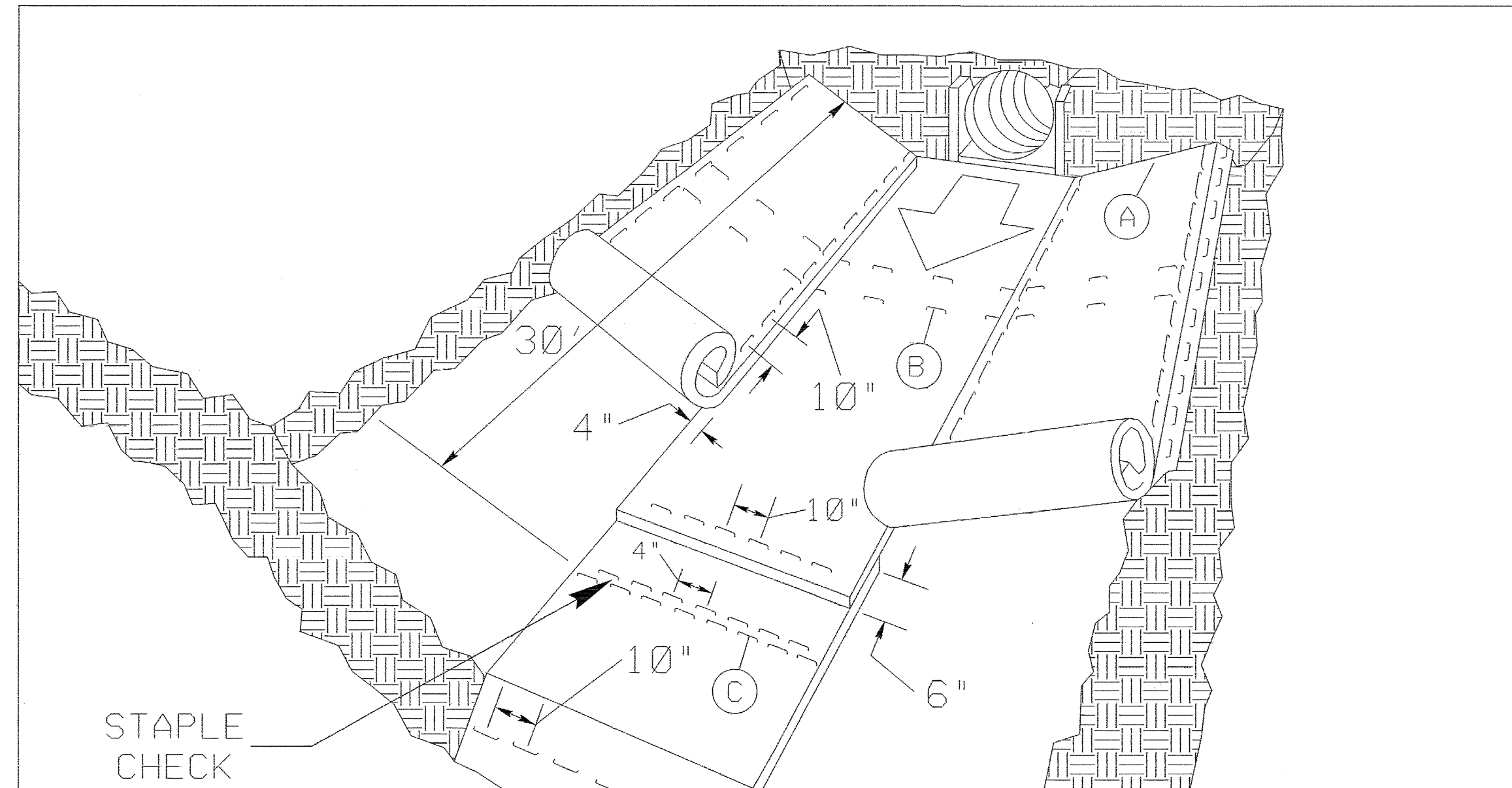
INSET C



TOP VIEW

PROJECT REFERENCE NO. R-4430	SHEET NO. EC-2F
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

MATTING INSTALLATION DETAIL



MATTING IN DITCHES

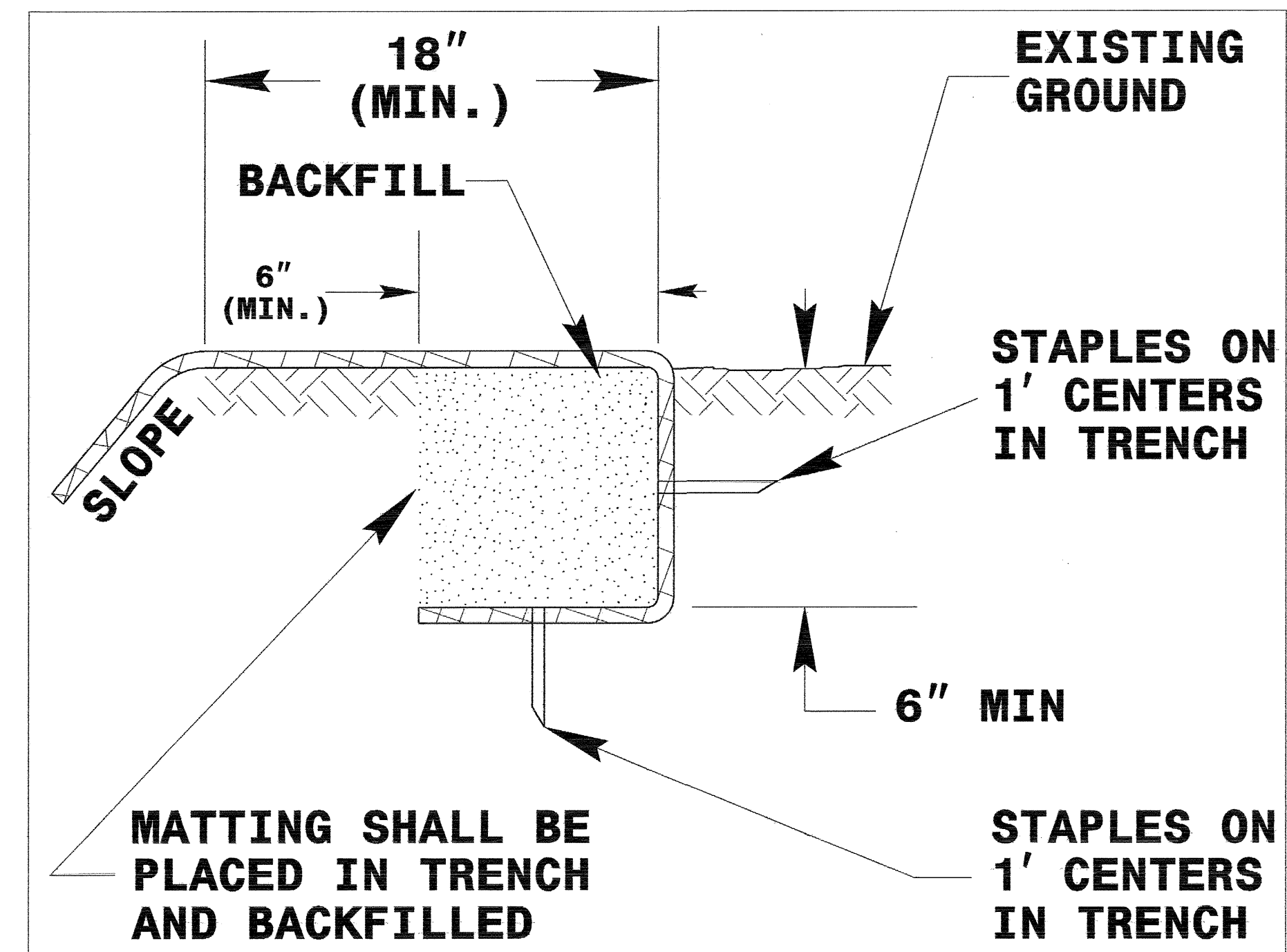
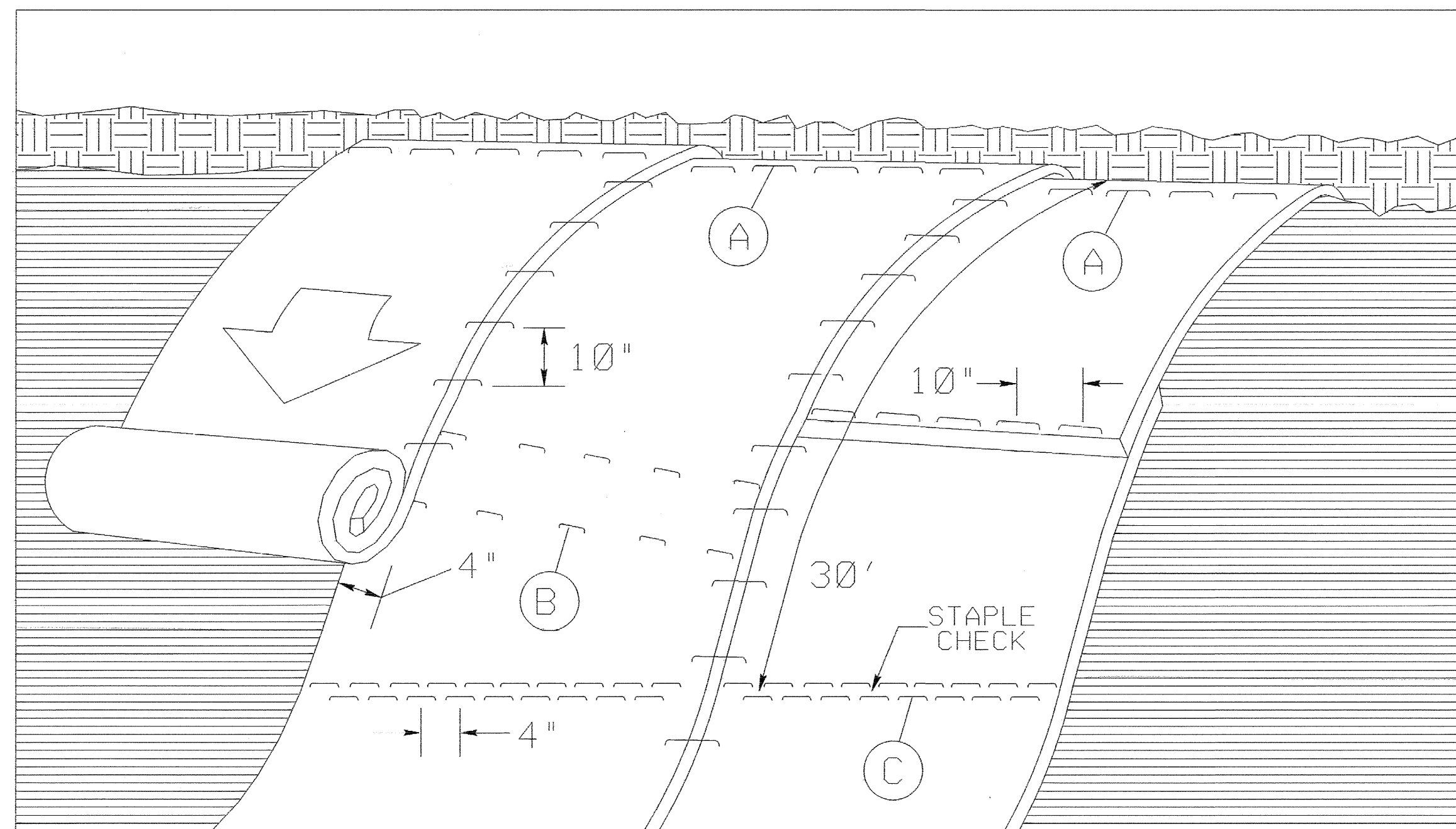


DIAGRAM (A)



MATTING ON SLOPES

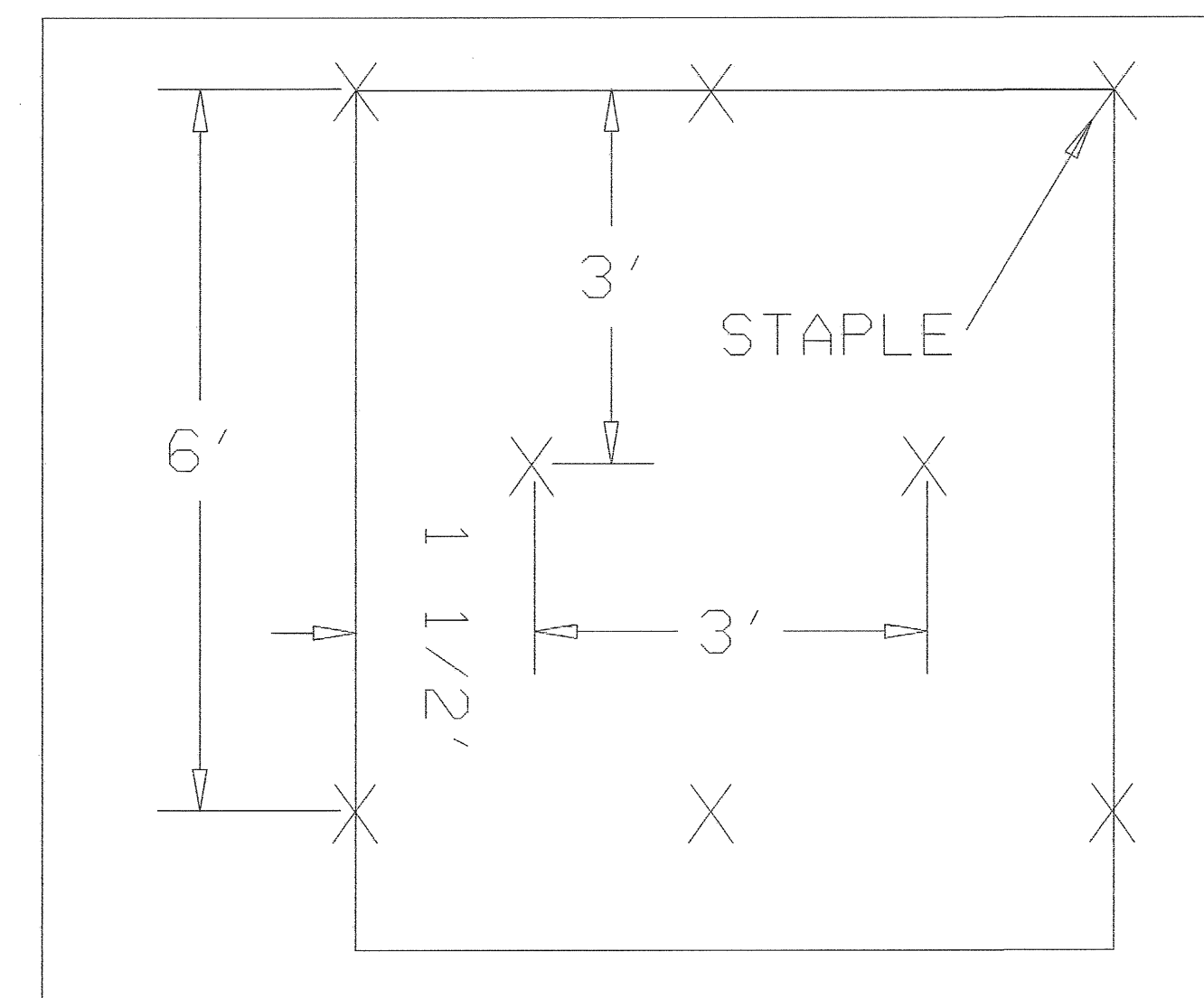


DIAGRAM (B)

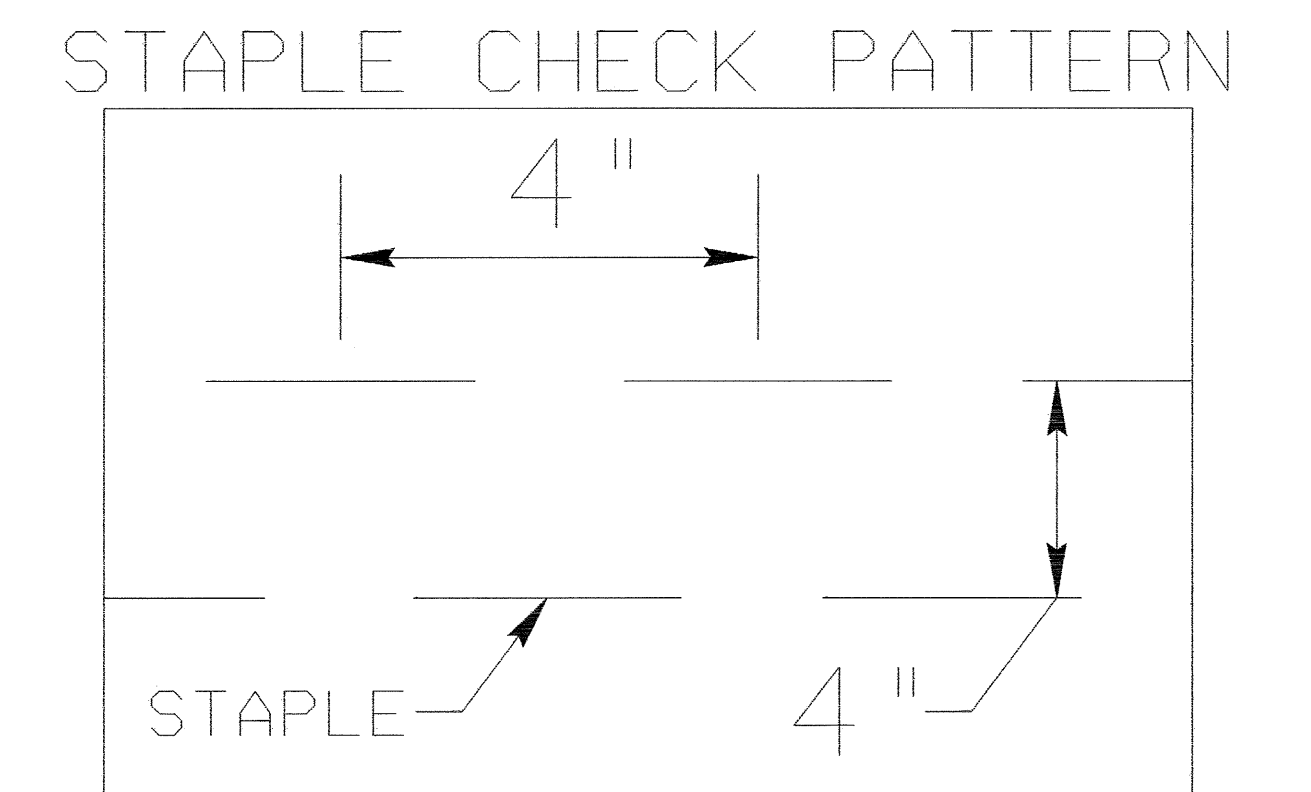


DIAGRAM (C)

NOTES:

THIS DETAIL APPLIES TO STRAW, EXCELSIOR, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.

STAPLES SHALL BE NO. 11 GAUGE STEEL WIRE FORMED INTO A "U" SHAPE WITH A MINIMUM THROAT WIDTH OF 1 INCH AND NOT LESS THAN 6 INCHES IN LENGTH.

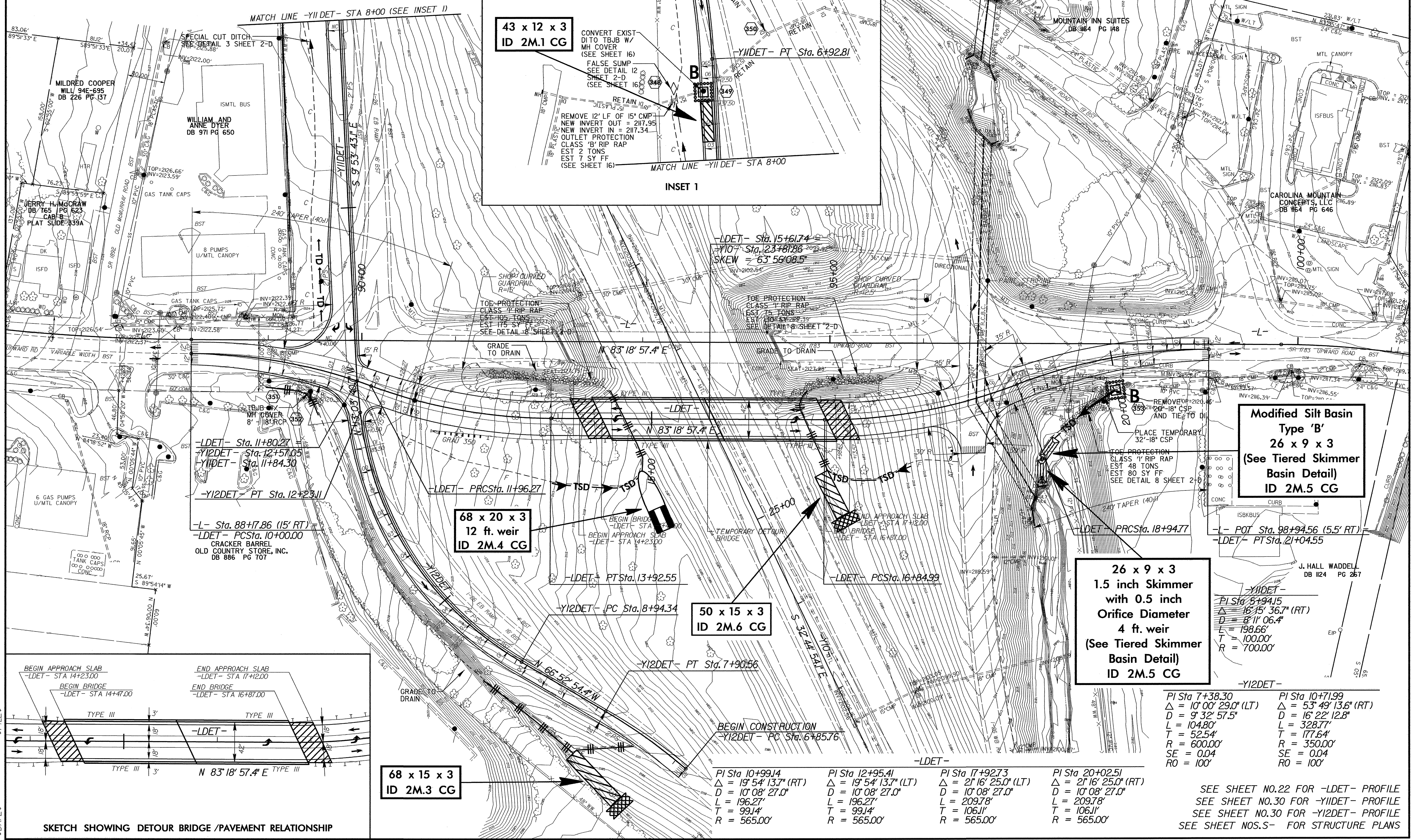
NOT TO SCALE

DETOUR

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 2M

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

PROJECT REFERENCE NO. R-4430	SHEET NO. EC-4/CONST.2M
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



38 x 10 x 3
ID 2M.2 CG

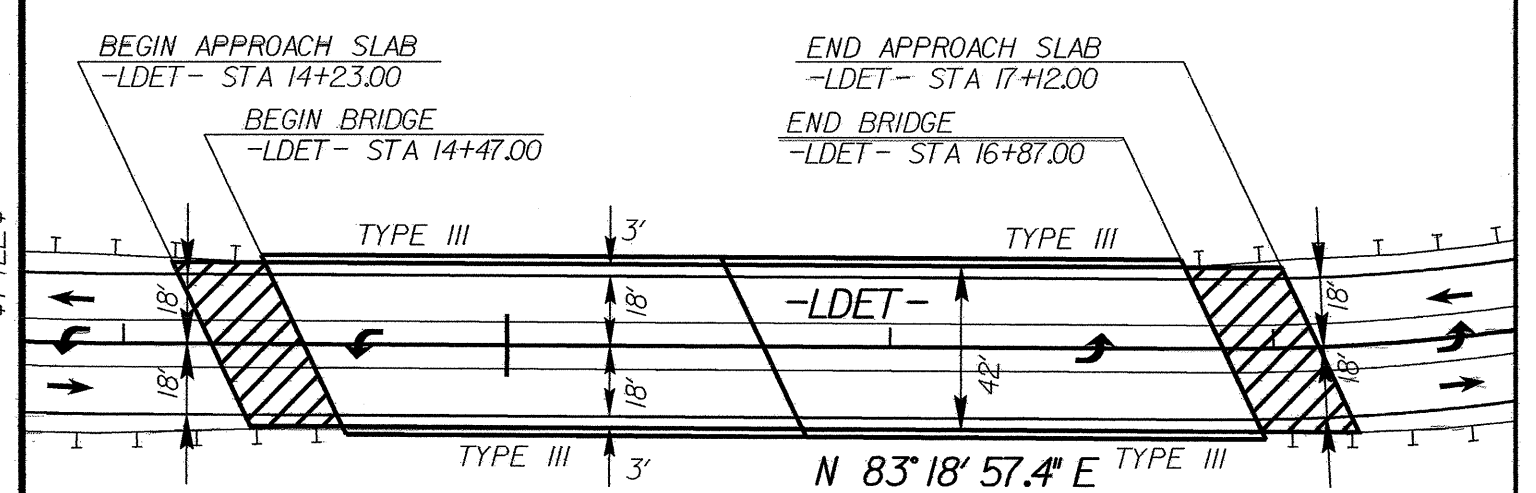
43 x 12 x 3
ID 2M.1 CG

68 x 20 x 3
12 ft. weir
ID 2M.4 CG

50 x 15 x 3
ID 2M.6 CG

Modified Silt Basin
Type 'B'
26 x 9 x 3
(See Tiered Skimmer
Basin Detail)
ID 2M.5 CG

26 x 9 x 3
1.5 inch Skimmer
with 0.5 inch
Orifice Diameter
4 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 2M.5 CG



68 x 15 x 3
ID 2M.3 CG

PI Sta 10+99.14 Δ = 19° 54' 13.7" (RT) D = 10' 08' 27.0" L = 196.27' T = 99.14' R = 565.00'	PI Sta 12+95.41 Δ = 19° 54' 13.7" (LT) D = 10' 08' 27.0" L = 196.27' T = 99.14' R = 565.00'	PI Sta 17+92.73 Δ = 21° 16' 25.0" (LT) D = 10' 08' 27.0" L = 209.78' T = 106.11' R = 565.00'	PI Sta 20+02.51 Δ = 21° 16' 25.0" (RT) D = 10' 08' 27.0" L = 209.78' T = 106.11' R = 565.00'
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PI Sta 7+38.30 Δ = 10° 00' 29.0" (LT) D = 9' 32' 57.5" L = 104.80' T = 52.54' R = 600.00' SE = 0.04 RO = 100'	PI Sta 10+71.99 Δ = 53° 49' 13.6" (RT) D = 16' 22' 12.8" L = 328.77' T = 177.64' R = 350.00' SE = 0.04 RO = 100'
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SEE SHEET NO.22 FOR -LDET- PROFILE
SEE SHEET NO.30 FOR -YI-DETOUR- PROFILE
SEE SHEET NOS.S- FOR STRUCTURE PLANS

\$FILE\$
\$DATE\$

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

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

52 x 12 x 3
ID 4.1 CG

56 x 11 x 3
ID 4.5 CG

65 x 15 x 3
1.5 inch Skimmer
with 0.875 inch
Orifice Diameter
7 ft. weir
ID 4.6 CG

54 x 12 x 3
ID 4.8 CG

72 x 20 x 3
ID 4.7 CG

40 x 10 x 3
ID 4.2 CG

36 x 10 x 3
ID 4.4 CG

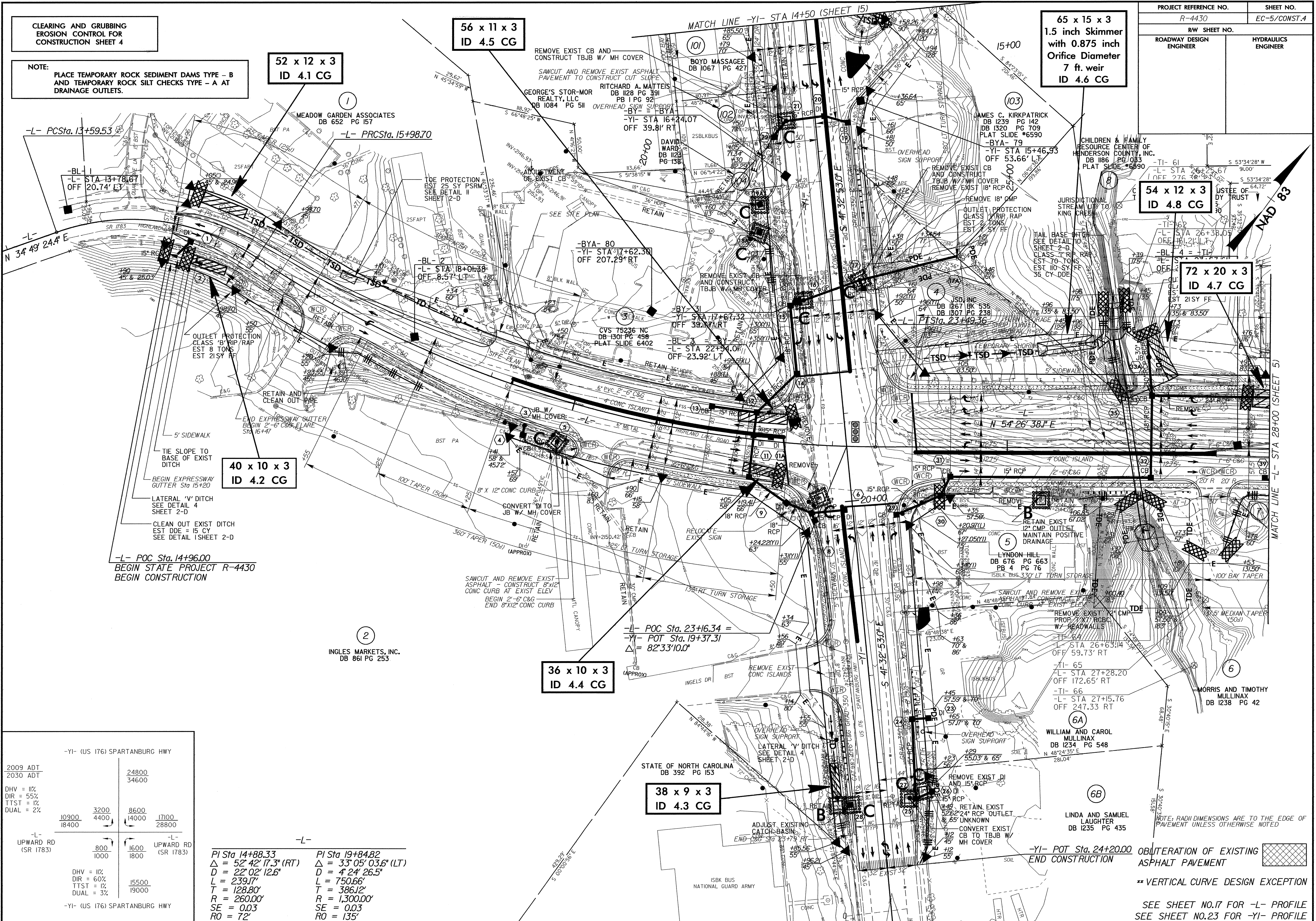
38 x 9 x 3
ID 4.3 CG

OBILITERATION OF EXISTING
ASPHALT PAVEMENT

** VERTICAL CURVE DESIGN EXCEPTION

SEE SHEET NO.17 FOR -L- PROFILE
SEE SHEET NO.23 FOR -YI- PROFILE

PROJECT REFERENCE NO. R-4430	SHEET NO. EC-5/CONST.4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-YI- (US 176) SPARTANBURG HWY	
2009 ADT 2030 ADT	24800 34600
DHV = 11% DIR = 55% TTST = 1% DUAL = 2%	
10900 18400	3200 4400 8600 17100 14000 28800
-L- UPWARD RD (SR 1783)	-L- UPWARD RD (SR 1783)
800 1000	1600 1800
DHV = 11% DIR = 60% TTST = 1% DUAL = 3%	15500 19000
-YI- (US 176) SPARTANBURG HWY	

PI Sta 14+88.33 Δ = 52° 42' 17.3" (RT) D = 22' 02' 12.6" L = 239.17' T = 128.80' R = 260.00' SE = 0.03 RO = 72'	PI Sta 19+84.82 Δ = 33° 05' 03.6" (LT) D = 4' 24' 26.5" L = 750.66' T = 386.12' R = 1,300.00' SE = 0.03 RO = 135'
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\$FILES\$

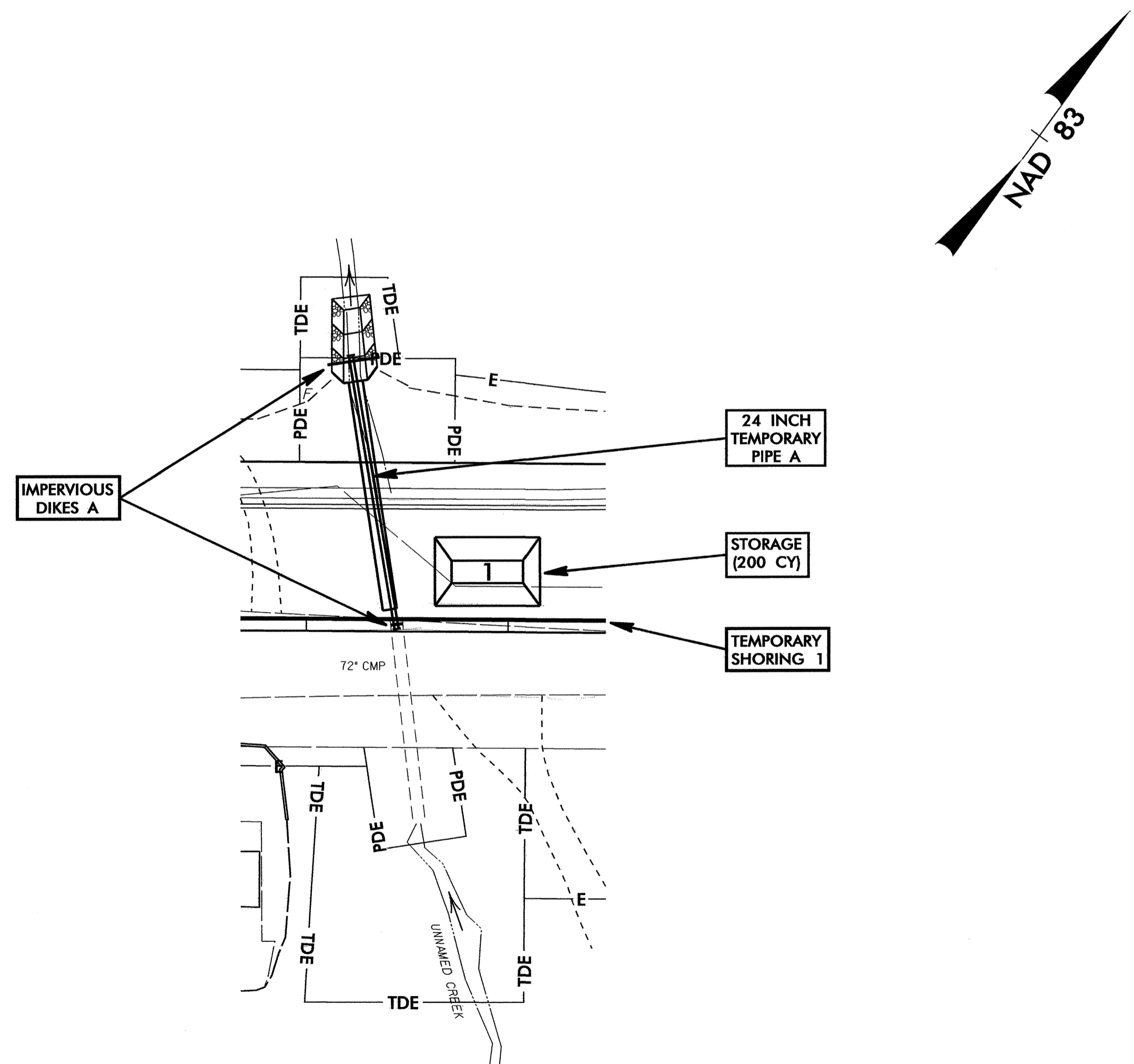
\$DATE\$

CULVERT CONSTRUCTION SEQUENCE STA. 26 + 43 -L-

PROJECT REFERENCE NO. R-4430	SHEET NO. EC-6/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

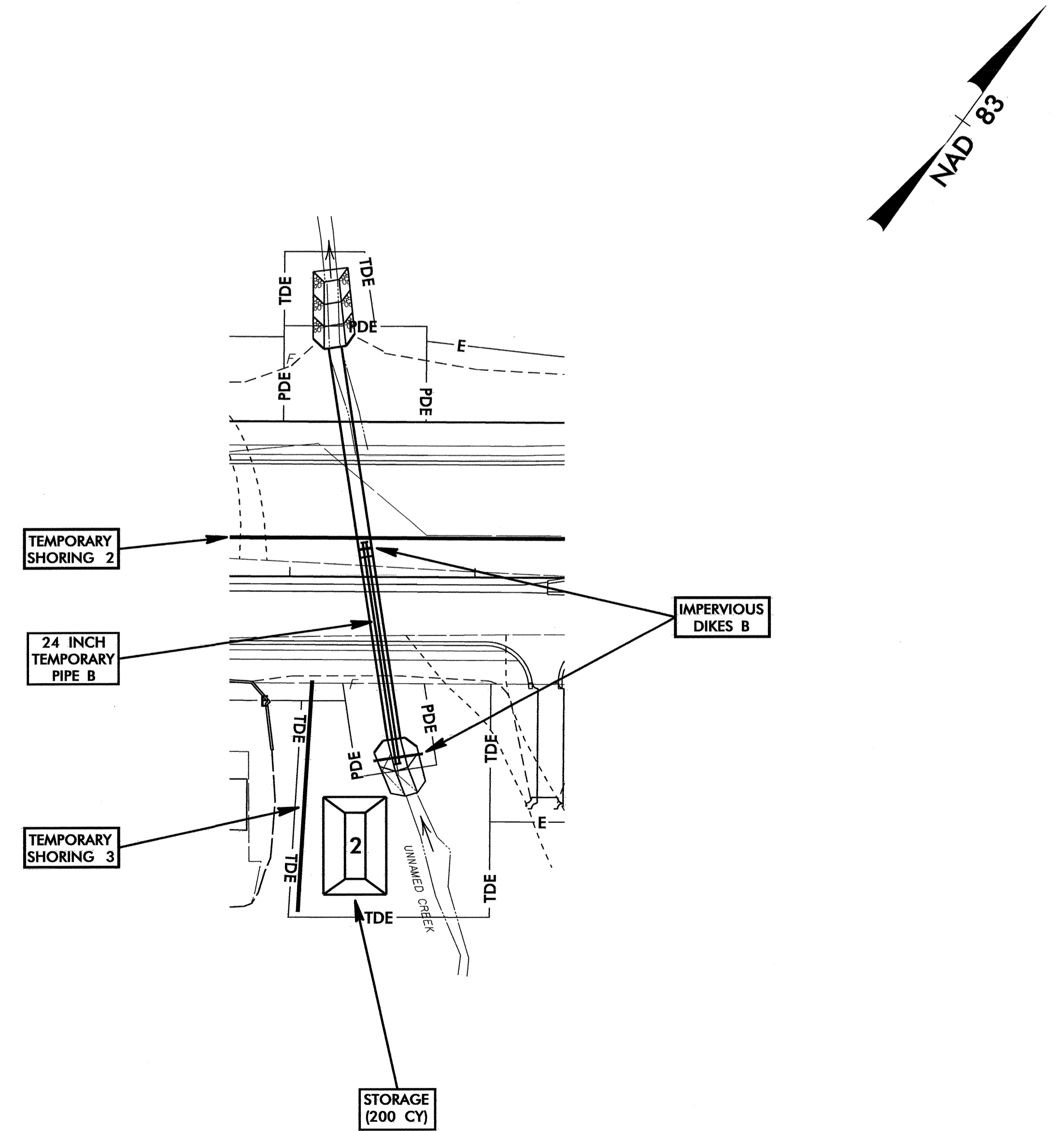
PHASE I

1. INSTALL TEMPORARY SHORING 1, MAINTAINING TRAFFIC ON EXISTING ROADWAY.
2. REMOVE DOWNSTREAM PORTION OF EXISTING EMBANKMENT AND DOWNSTREAM PORTION OF EXISTING 72" CMP.
3. CONSTRUCT STILLING BASIN 1 (200 CY).
4. CONSTRUCT IMPERVIOUS DIKES A AND INSTALL 24" TEMPORARY PIPE A, DIVERTING FLOW THROUGH THE TEMPORARY PIPE.
5. CONSTRUCT DOWNSTREAM PORTION OF THE PROPOSED CULVERT AND DOWNSTREAM CHANNEL IMPROVEMENTS, INCLUDING REQUIRED RIPRAP ON CHANNEL BANKS.



PHASE II

6. INSTALL TEMPORARY SHORING 2 AND REMOVE STILLING BASIN 1.
7. BACKFILL OVER COMPLETED PORTION OF PROPOSED CULVERT - FROM TEMPORARY SHORING 2 TO THE OUTLET - AND CONSTRUCT ROADWAY ON THIS SECTION. SHIFT TRAFFIC.
8. INSTALL TEMPORARY SHORING 3 AND REMOVE EXISTING CARWASH EMBANKMENT AS NEEDED TO CONSTRUCT STILLING BASIN 2 (200 CY).
9. REMOVE UPSTREAM PORTION OF EXISTING EMBANKMENT AND UPSTREAM PORTION OF EXISTING 72" CMP.
10. REMOVE IMPERVIOUS DIKES A AND 24" TEMPORARY PIPE A.
11. CONSTRUCT IMPERVIOUS DIKES B AND INSTALL 24" TEMPORARY PIPE B, DIVERTING FLOW THROUGH THE TEMPORARY PIPE AND COMPLETED DOWNSTREAM PORTION OF THE PROPOSED CULVERT.
12. CONSTRUCT UPSTREAM PORTION OF THE PROPOSED CULVERT AND UPSTREAM CHANNEL IMPROVEMENTS.
13. REMOVE IMPERVIOUS DIKES B, 24" TEMPORARY PIPE B, AND STILLING BASIN 2.
14. BACKFILL REMAINDER OF ROADWAY AND CARWASH EMBANKMENTS, REMOVE ANY ABOVE GROUND PORTIONS OF TEMPORARY SHORING 2 AND 3, AND COMPLETE ROADWAY.



CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 6

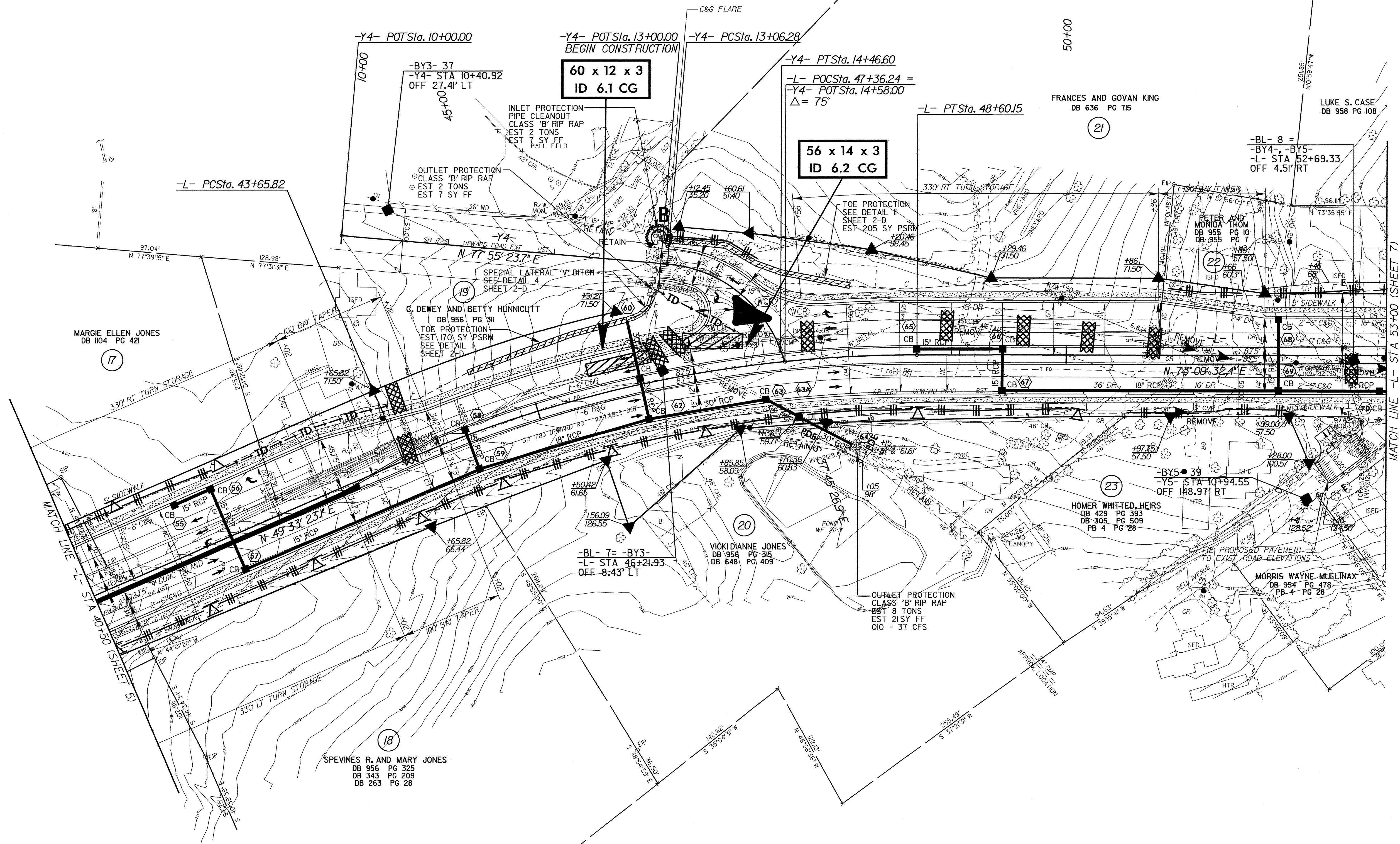
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

2009 ADT 2030 ADT	DHV = 11% DIR = 60% TTST = 1% DUAL = 2%	-Y4- (SR 1722) UPWARD RD EXT
		3700 5800
	DHV = 10% DIR = 55% TTST = 2% DUAL = 3%	
		200 3500 19300 300 5500 32200
-L- UPWARD RD (SR 1783)		-L- UPWARD RD (SR 1783)

-L-
PI Sta 46+16.54
 $\Delta = 23' 36" 09.3" (RT)$
D = 4' 46" 28.7"
L = 494.33'
T = 250.72'
R = 1,200.00'
SE = 0.04
RO = 192'

-Y4-
PI Sta 13+84.87
 $\Delta = 64' 19" 09.04" (RT)$
D = 45' 50" 11.8"
L = 140.32'
T = 78.59'
R = 125.00'
SE = NC
RO = NONE

PROJECT REFERENCE NO. R-4430	SHEET NO. EC-8/CONST.6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



\$FILE\$
\$DATE\$

** VERTICAL CURVE DESIGN EXCEPTION
SEE SHEET NO.18 FOR -L- PROFILE
SEE SHEET NO.24 FOR -Y4- PROFILE

**CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 7**

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

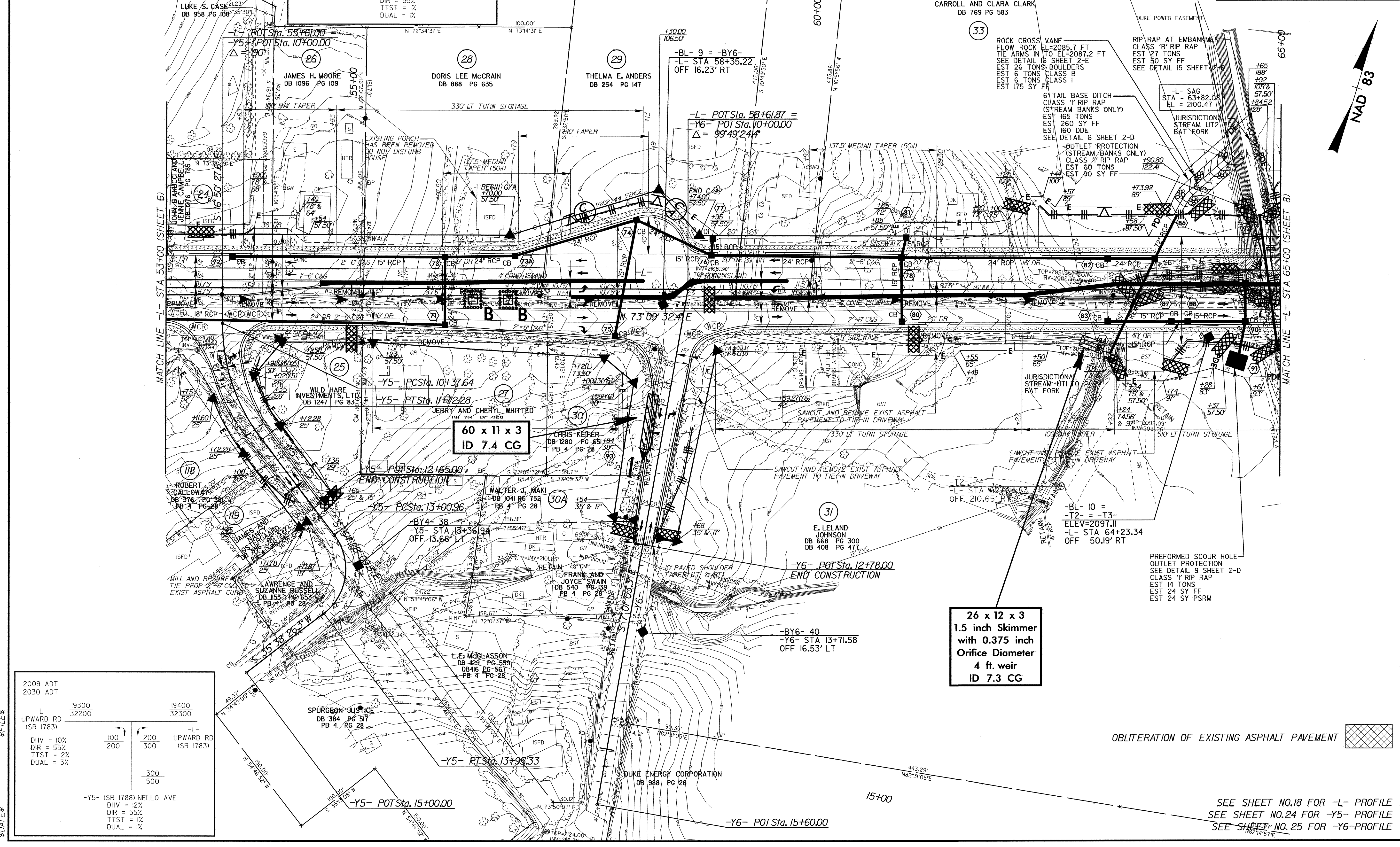
2009 ADT 2030 ADT		19400 32300		20900 35100	
-L- UPWARD RD (SR 1783)		800 1600	2400 4400	-L- UPWARD RD (SR 1783)	
DHV = 10% DIR = 55% TTST = 2% DUAL = 3%					
		3200 6000			

-Y5-
PI Sta 11+07.49
 $\Delta = 37' 37" 42.2"$ (LT)
D = 27' 56" 57.0"
L = 134.63'
T = 69.84'
R = 205.00'
SE = RC
RO = SEE PLANS

PI Sta 13+61.08
 $\Delta = 90' 06" 36.1"$ (RT)
D = 95' 29" 34.7"
L = 94.36'
T = 60.12'
R = 60.00'
SE = EXISTING
RO = EXISTING

-Y6- (SR 1789) ALLEN RD
DHV = 12%
DIR = 55%
TTST = 1%
DUAL = 1%

PROJECT REFERENCE NO. R-4430	SHEET NO. EC-9/CONST.7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



\$FILE\$

\$DATE\$

2009 ADT 2030 ADT		19300 32200		19400 32300	
-L- UPWARD RD (SR 1783)		100 200	200 300	-L- UPWARD RD (SR 1783)	
DHV = 10% DIR = 55% TTST = 2% DUAL = 3%					
		300 500			

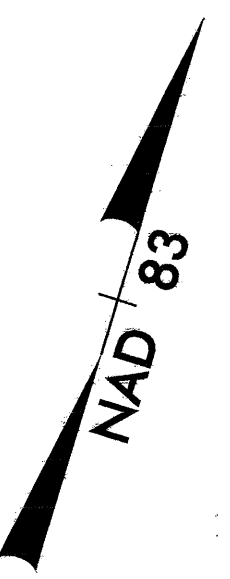
-Y5- (SR 1788) NELLO AVE
DHV = 12%
DIR = 55%
TTST = 1%
DUAL = 1%

**26 x 12 x 3
1.5 inch Skimmer
with 0.375 inch
Orifice Diameter
4 ft. weir
ID 7.3 CG**

**60 x 11 x 3
ID 7.4 CG**

OBLITERATION OF EXISTING ASPHALT PAVEMENT

SEE SHEET NO.18 FOR -L- PROFILE
SEE SHEET NO.24 FOR -Y5- PROFILE
SEE SHEET NO.25 FOR -Y6- PROFILE

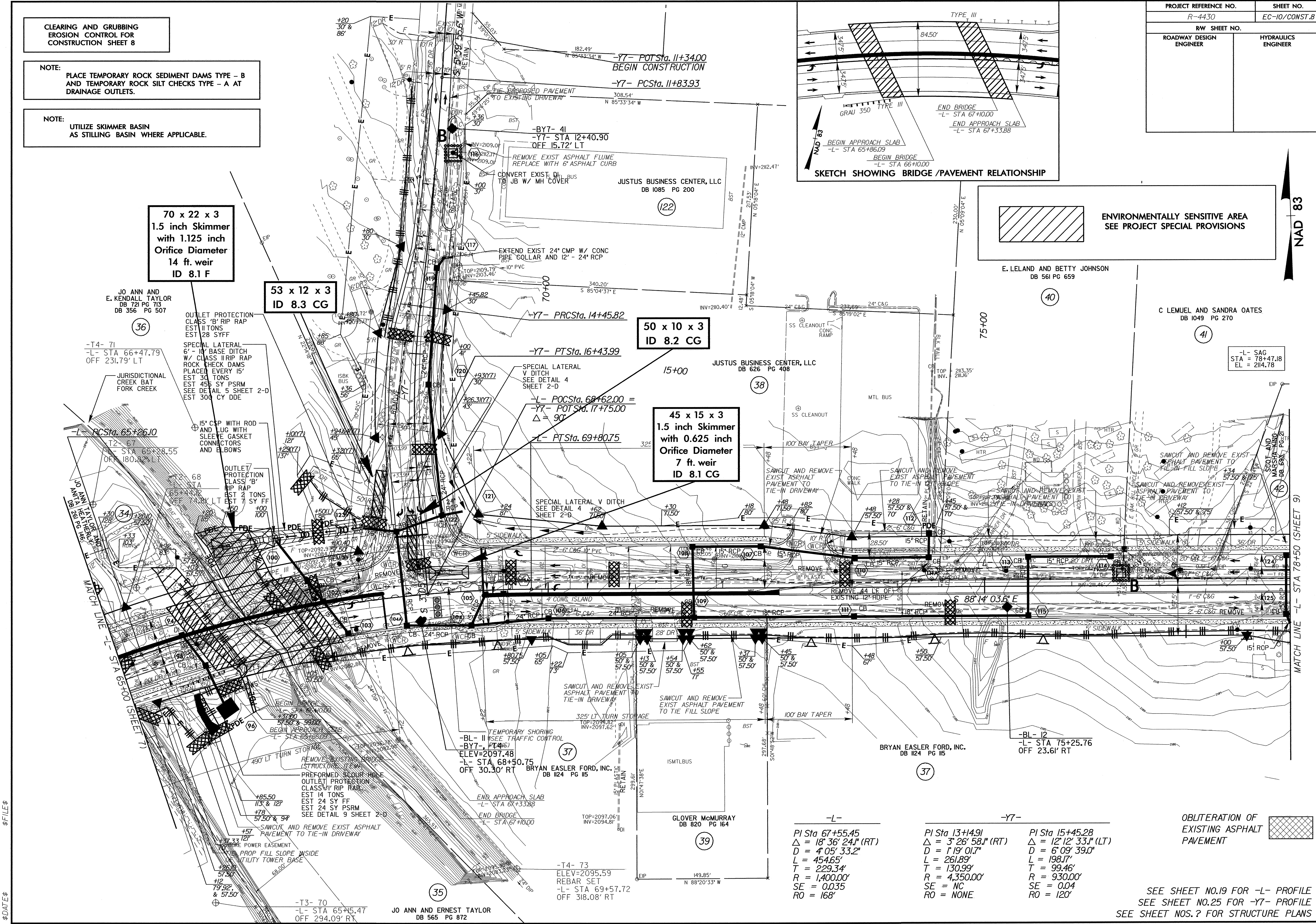
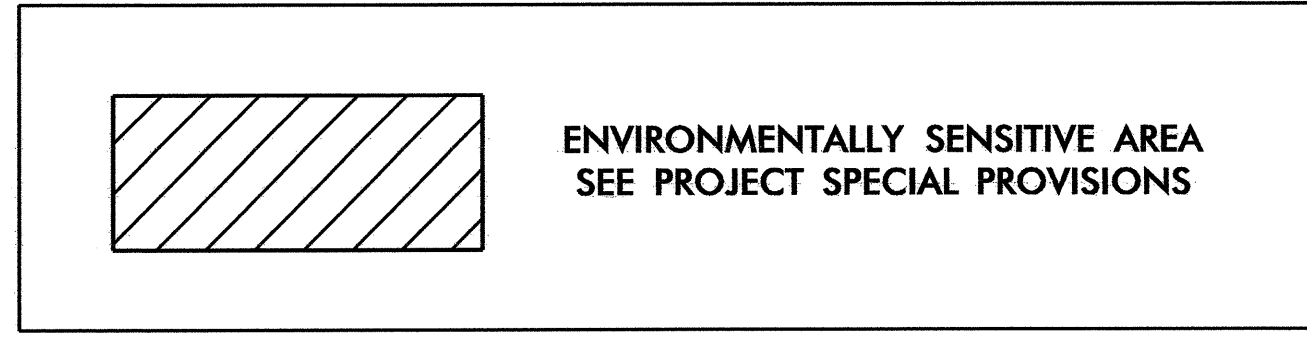
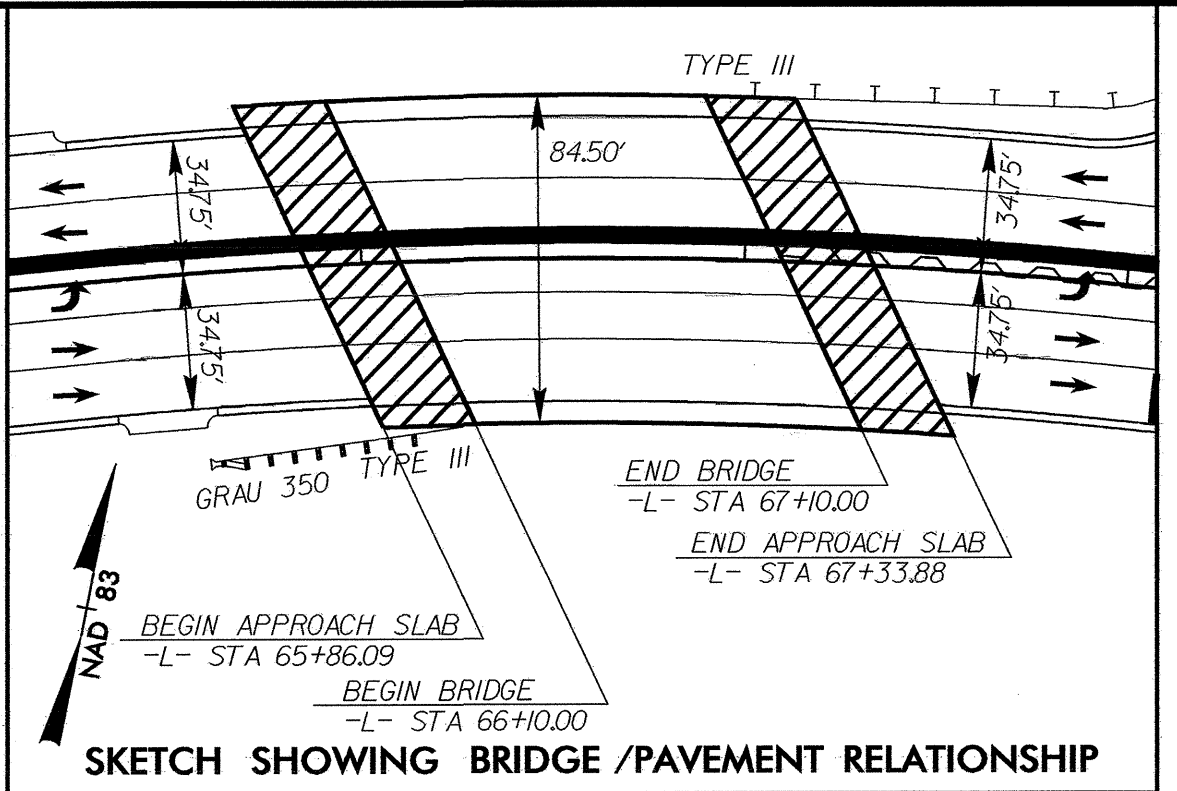


CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 8

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

NOTE:
UTILIZE SKIMMER BASIN
AS STILLING BASIN WHERE APPLICABLE.

PROJECT REFERENCE NO. R-4430		SHEET NO. EC-10/CONST.8	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER			



\$FILES
\$DATES

-L-	-Y7-	
PI Sta 67+55.45	PI Sta 13+14.91	PI Sta 15+45.28
$\Delta = 18' 36" 24.1" (RT)$	$\Delta = 3' 28' 58.1" (RT)$	$\Delta = 12' 12' 33.1" (LT)$
$D = 4' 05' 33.2"$	$D = 1' 19' 01.7"$	$D = 6' 09' 39.0"$
$L = 454.65'$	$L = 261.89'$	$L = 198.17'$
$T = 229.34'$	$T = 130.99'$	$T = 99.46'$
$R = 1,400.00'$	$R = 4,350.00'$	$R = 930.00'$
$SE = 0.035$	$SE = NC$	$SE = 0.04$
$RO = 168'$	$RO = NONE$	$RO = 120'$

OBLITERATION OF
EXISTING ASPHALT
PAVEMENT

SEE SHEET NO.19 FOR -L- PROFILE
SEE SHEET NO.25 FOR -Y7- PROFILE
SEE SHEET NOS. ? FOR STRUCTURE PLANS

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 9

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

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

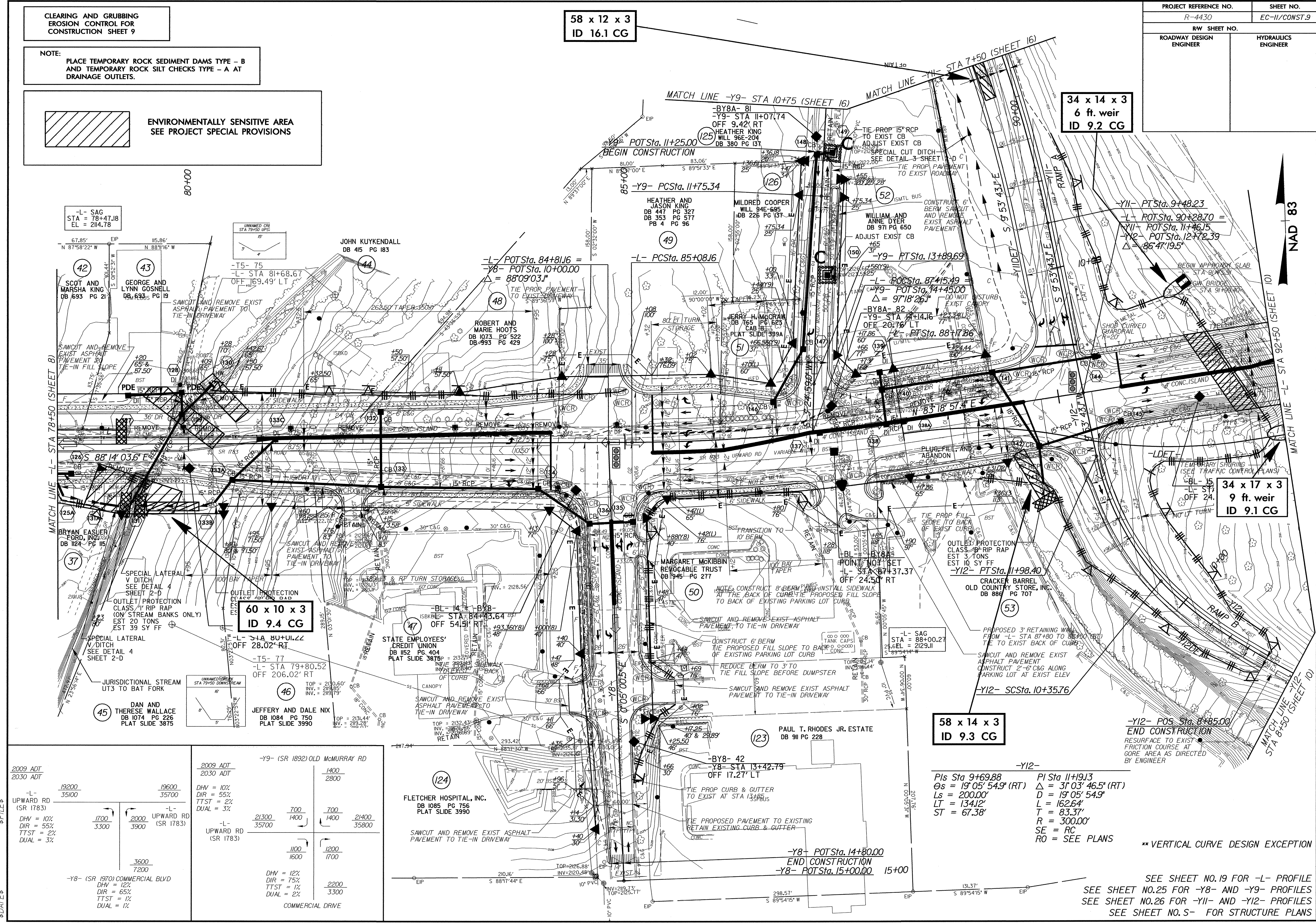
58 x 12 x 3
ID 16.1 CG

34 x 14 x 3
6 ft weir
ID 9.2 CG

34 x 17 x 3
9 ft weir
ID 9.1 CG

58 x 14 x 3
ID 9.3 CG

PROJECT REFERENCE NO. R-4430	SHEET NO. EC-II/CONSTR.9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



<p>2009 ADT 2030 ADT</p> <p>-L- UPWARD RD (SR 1783)</p> <p>DHV = 10% DIR = 55% TTST = 2% DUAL = 3%</p> <p>1700 3300</p> <p>2000 3900</p> <p>UPWARD RD (SR 1783)</p>	<p>2009 ADT 2030 ADT</p> <p>-L- UPWARD RD (SR 1783)</p> <p>DHV = 10% DIR = 55% TTST = 2% DUAL = 3%</p> <p>700 1400</p> <p>700 1400</p> <p>2100 3500</p> <p>2100 3500</p>	<p>2009 ADT 2030 ADT</p> <p>-L- UPWARD RD (SR 1783)</p> <p>DHV = 10% DIR = 55% TTST = 2% DUAL = 3%</p> <p>1100 1600</p> <p>1200 1700</p>	<p>2009 ADT 2030 ADT</p> <p>-L- UPWARD RD (SR 1783)</p> <p>DHV = 10% DIR = 55% TTST = 2% DUAL = 3%</p> <p>1100 1600</p> <p>1200 1700</p>
<p>-Y8- (SR 1970) COMMERCIAL BLVD</p> <p>DHV = 12% DIR = 75% TTST = 1% DUAL = 1%</p> <p>3600 7200</p>	<p>-Y9- (SR 1892) OLD McMURRAY RD</p> <p>DHV = 10% DIR = 55% TTST = 2% DUAL = 3%</p> <p>2100 3500</p> <p>1400 2800</p>	<p>COMMERCIAL DRIVE</p> <p>DHV = 12% DIR = 75% TTST = 1% DUAL = 2%</p> <p>2200 3300</p>	<p>COMMERCIAL DRIVE</p> <p>DHV = 12% DIR = 75% TTST = 1% DUAL = 2%</p> <p>2200 3300</p>

SEE SHEET NO. 19 FOR -L- PROFILE
SEE SHEET NO. 25 FOR -Y8- AND -Y9- PROFILES
SEE SHEET NO. 26 FOR -Y11- AND -Y12- PROFILES
SEE SHEET NO. S- FOR STRUCTURE PLANS

** VERTICAL CURVE DESIGN EXCEPTION

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 10

UTILIZE DRY DETENTION POND AS
SILT BASIN DURING CONSTRUCTION.

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

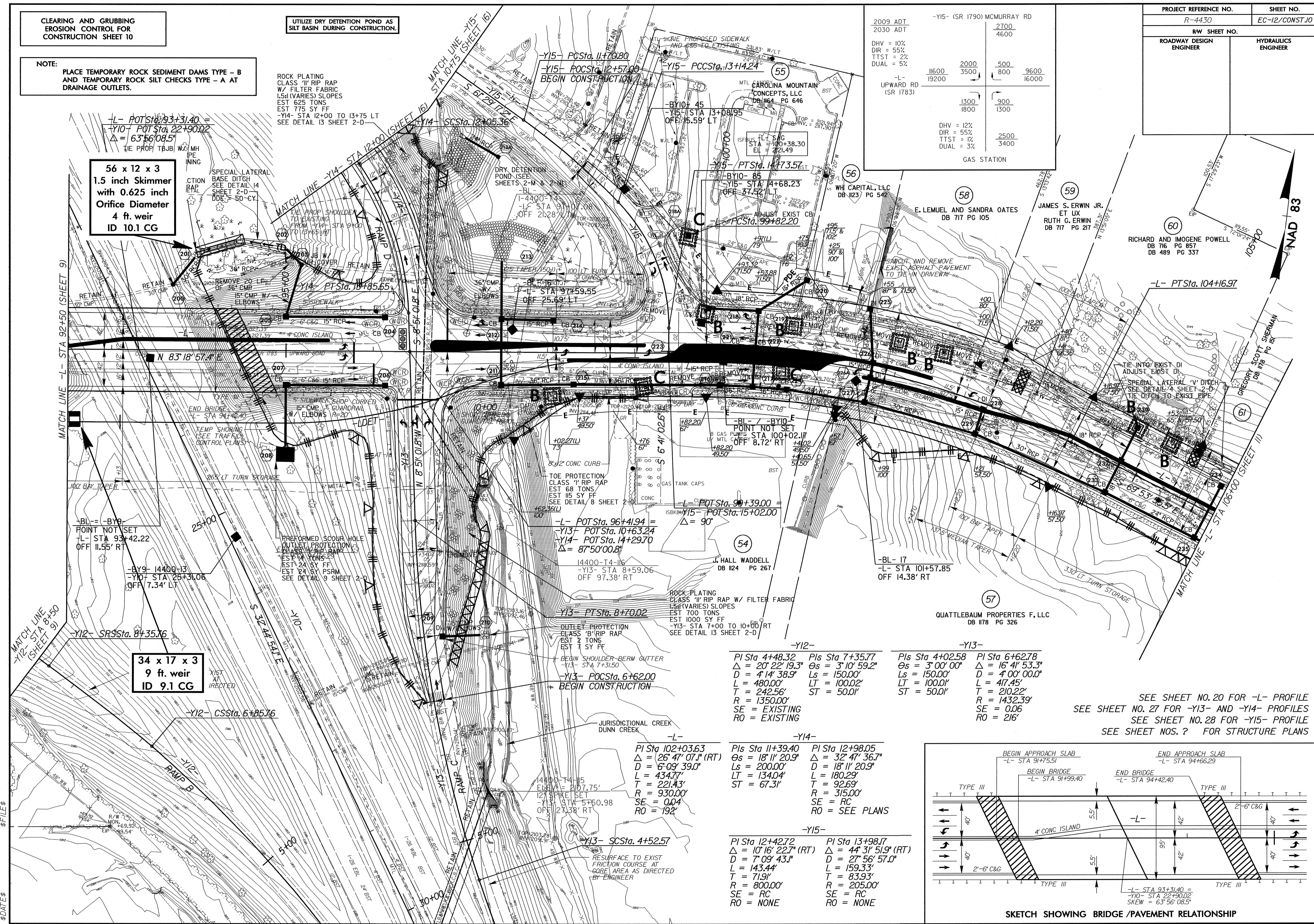
ROCK PLATING
CLASS #1 RIP RAP
W/ FILTER FABRIC
1.5H (VARIES) SLOPES
EST 625 TONS
EST 775 SY FF
-Y14- STA 12+00 TO 13+75 LT
SEE DETAIL 13 SHEET 2-D

56 x 12 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 10.1 CG

34 x 17 x 3
9 ft. weir
ID 9.1 CG

2009 ADT	-Y15- (SR 1790) MCMURRAY RD	
2030 ADT	2700	4600
DHV = 10%	2000	500
DIR = 55%	3500	800
TTST = 2%	19200	9600
DUAL = 5%	1800	1300
	1300	900
	1800	1300
	2500	3400
	GAS STATION	

PROJECT REFERENCE NO.	SHEET NO.
R-4430	EC-12/CONST-10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-Y12-

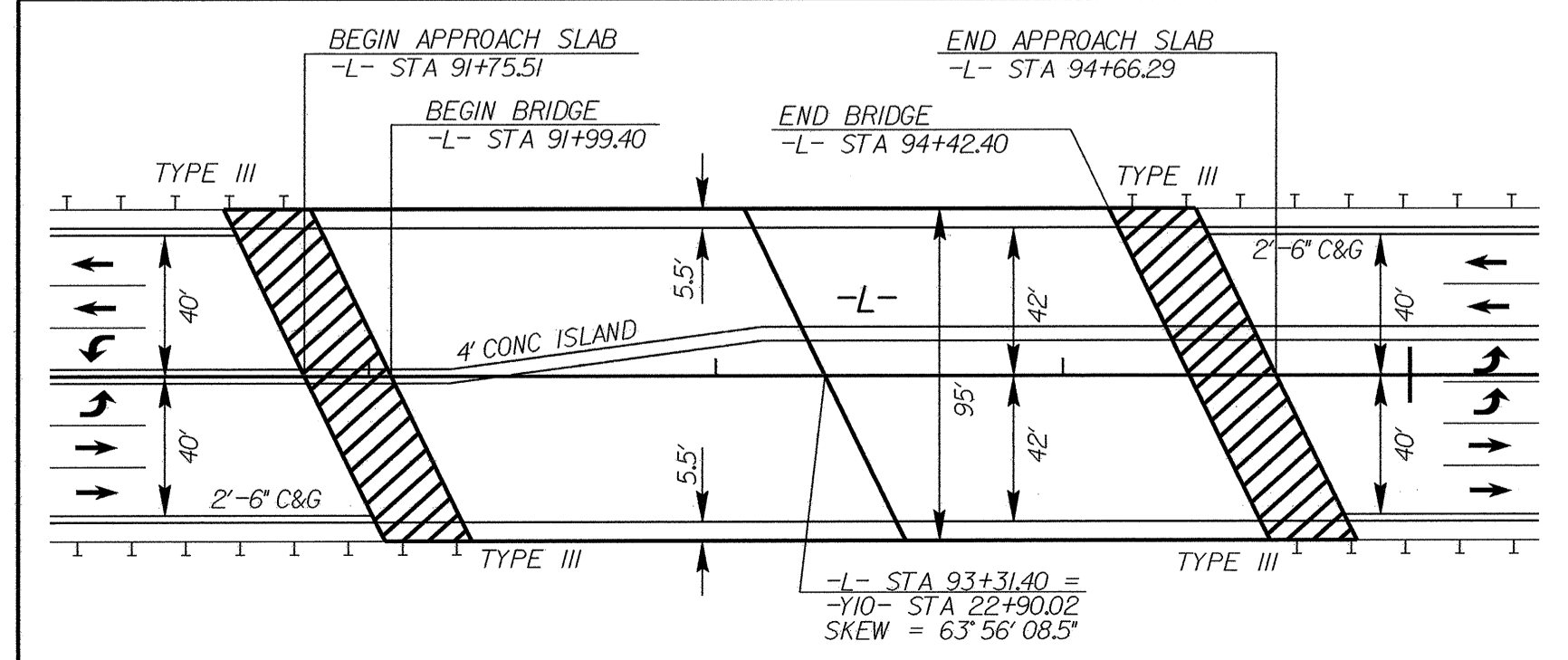
PI Sta 4+48.32	PI Sta 7+35.77	PI Sta 4+02.58	PI Sta 6+62.78
$\Delta = 20' 22' 19.3"$	$\Delta = 32' 47' 36.7"$	$\Delta = 3' 00' 00"$	$\Delta = 16' 41' 53.3"$
$D = 414' 38.9"$	$D = 1500.00'$	$D = 150.00'$	$D = 4' 00' 00.0"$
$L = 480.00'$	$L = 100.02'$	$L = 100.01'$	$L = 47.45'$
$T = 242.56'$	$T = 50.01'$	$T = 210.22'$	$T = 1432.29'$
$R = 1350.00'$		$R = 92.69'$	$R = 315.00'$
SE = EXISTING		SE = RC	SE = 0.06
RO = EXISTING		RO = EXISTING	RO = 216'

-Y14-

PI Sta 11+39.40	PI Sta 12+98.05
$\Delta = 18' 11' 20.9"$	$\Delta = 32' 47' 36.7"$
$D = 200.00'$	$D = 18' 11' 20.9"$
$L = 134.04'$	$L = 180.29'$
$T = 67.31'$	$T = 92.69'$
	$R = 315.00'$
	SE = RC
	RO = SEE PLANS

-Y15-

PI Sta 12+42.72	PI Sta 13+98.17
$\Delta = 10' 16' 22.7"$ (RT)	$\Delta = 44' 31' 51.9"$ (RT)
$D = 7' 09' 43.1"$	$D = 27' 56' 57.0"$
$L = 143.44'$	$L = 159.33'$
$T = 71.91'$	$T = 83.93'$
$R = 800.00'$	$R = 205.00'$
SE = RC	SE = RC
RO = NONE	RO = NONE



SEE SHEET NO. 20 FOR -L- PROFILE
SEE SHEET NO. 27 FOR -Y13- AND -Y14- PROFILES
SEE SHEET NO. 28 FOR -Y15- PROFILE
SEE SHEET NOS. ? FOR STRUCTURE PLANS

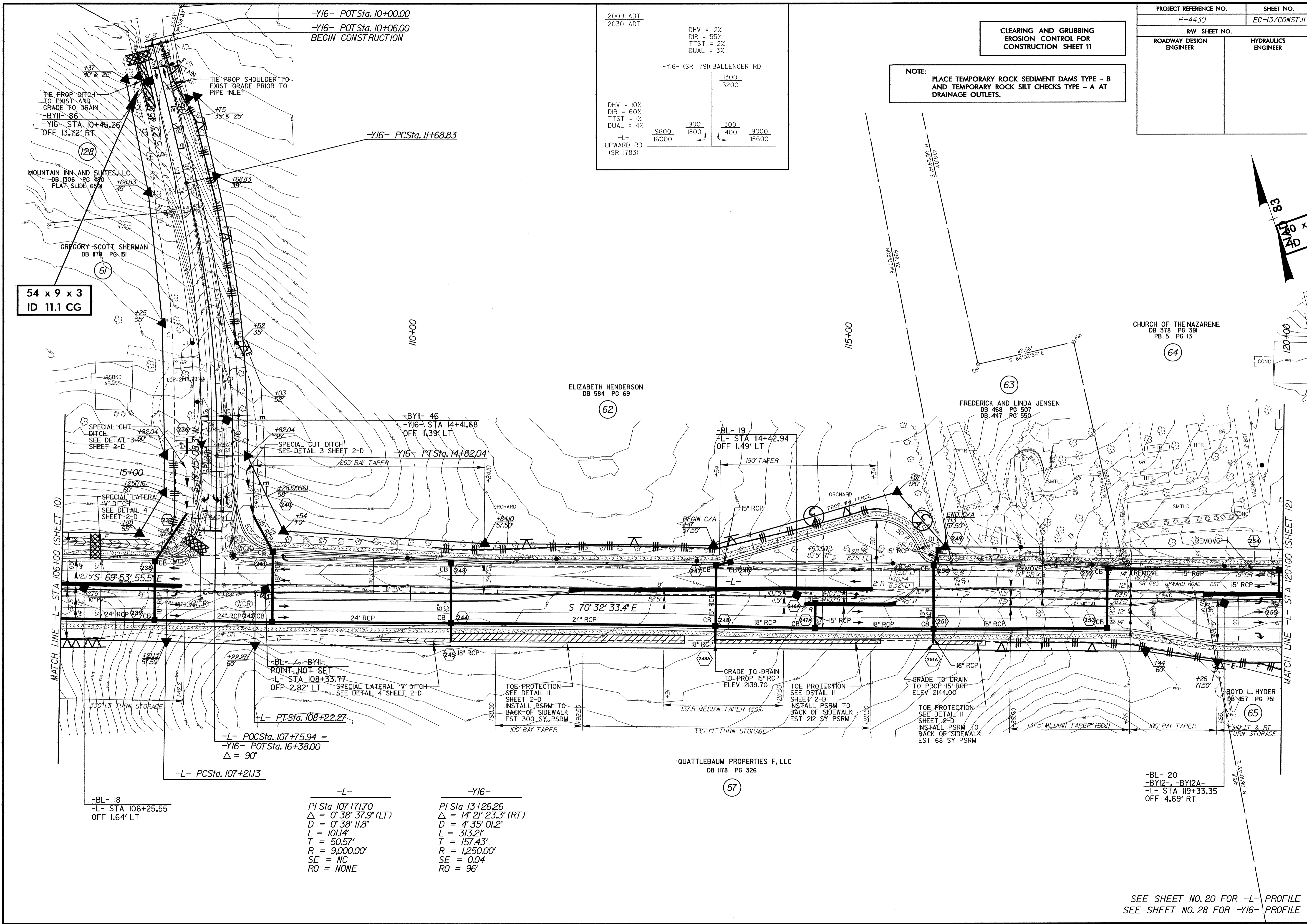
SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP

PROJECT REFERENCE NO. R-4430		SHEET NO. EC-13/CONST.II	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

**CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 11**

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

2009 ADT 2030 ADT	DHW = 12% DIR = 55% TTST = 2% DUAL = 3%			
	-Y16- (SR 179) BALLENGER RD			
	1300	3200		
DHW = 10% DIR = 60% TTST = 1% DUAL = 4%	9600	900	300	9000
-L- UPWARD RD (SR 1783)	16000	1800	1400	15600



54 x 9 x 3
ID 11.1 CG

\$FILES\$
 \$DATES\$

-L-	-Y16-
PI Sta 107+71.70 Δ = 0' 38' 37.9" (LT) D = 0' 38' 11.8" L = 101.14' T = 50.57' R = 9,000.00' SE = NC RO = NONE	PI Sta 13+26.26 Δ = 14' 21' 23.3" (RT) D = 4' 35' 01.2" L = 313.21' T = 157.43' R = 1,250.00' SE = 0.04 RO = 96'

SEE SHEET NO. 20 FOR -L- PROFILE
SEE SHEET NO. 28 FOR -Y16- PROFILE

**CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 12**

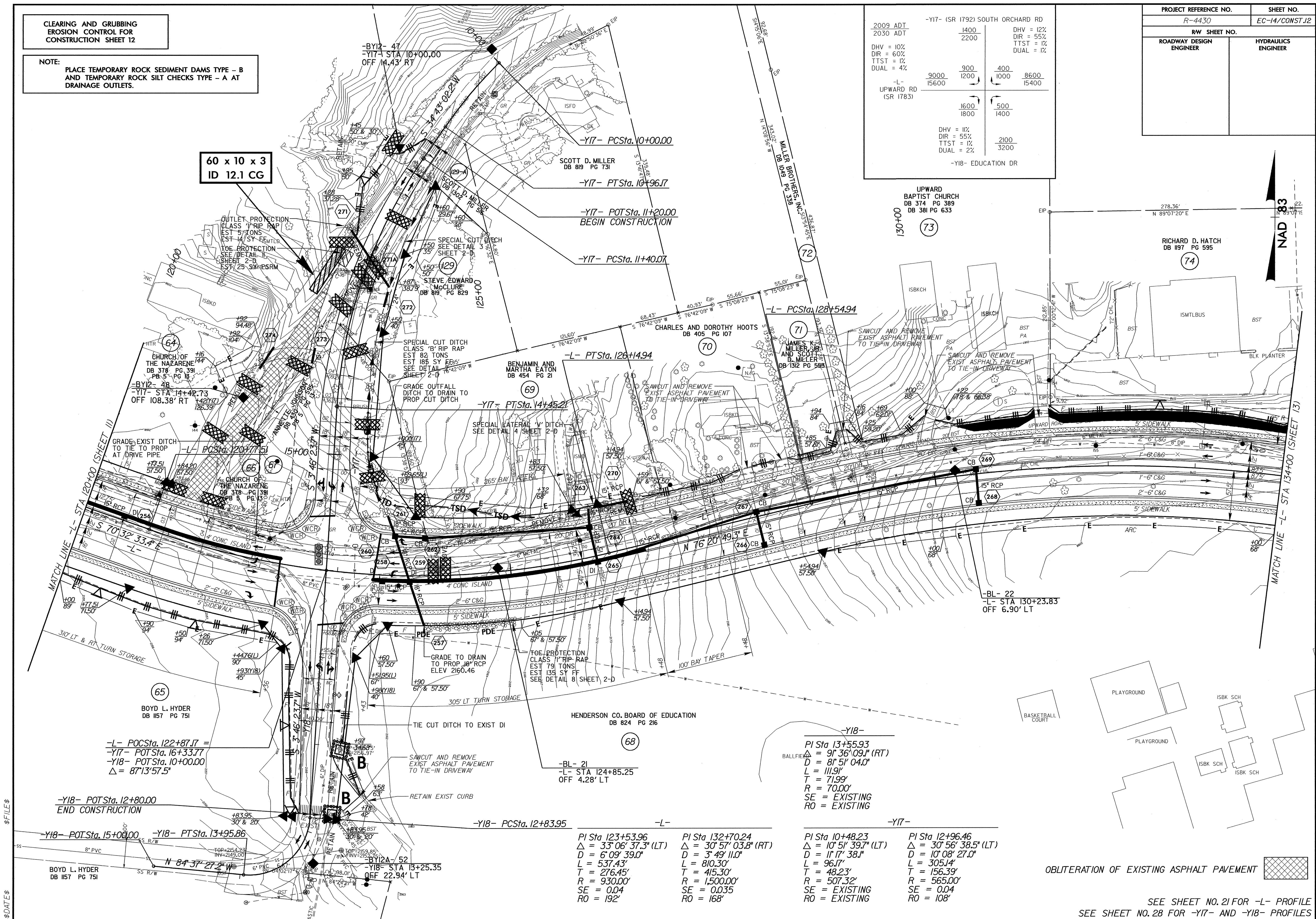
NOTE:

PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

60 x 10 x 3
ID 12.1 CG

2009 ADT	-Y17- (SR 1792) SOUTH ORCHARD RD		DHW = 12%	
2030 ADT	1400	2200	DIR = 55%	
			TTST = 1%	
			DUAL = 1%	
	9000	900	400	8600
	15600	1200	1000	15400
	1600	500		
	1800	1400		
			2100	3200
			-Y18- EDUCATION DR	

PROJECT REFERENCE NO.	SHEET NO.
R-4430	EC-14/CONST.12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



UPWARD
BAPTIST CHURCH
DB 374 PG 389
DB 381 PG 633

RICHARD D. HATCH
DB 1197 PG 595

BENJAMIN AND
MARTHA EATON
DB 454 PG 21

CHURCH OF
THE NAZARENE
DB 378 PG 391
PB 5 PG 18

CHURCH OF
THE NAZARENE
DB 378 PG 391
PB 5 PG 18

BOYD L. HYDER
DB 1157 PG 751

HENDERSON CO. BOARD OF EDUCATION
DB 824 PG 216

-Y18-
PI Sta 13+55.93
Δ = 91° 36' 09.1" (RT)
D = 81' 51" 04.0"
L = 111.9'
T = 71.99'
R = 70.00'
SE = EXISTING
RO = EXISTING

PI Sta 123+53.96
Δ = 33° 06' 37.3" (LT)
D = 6' 09" 39.0"
L = 537.43'
T = 276.45'
R = 930.00'
SE = 0.04
RO = 192'

PI Sta 132+70.24
Δ = 30° 57' 03.8" (RT)
D = 3' 49" 11.0"
L = 810.30'
T = 415.30'
R = 1,500.00'
SE = 0.035
RO = 168'

PI Sta 10+48.23
Δ = 10° 51' 39.7" (LT)
D = 11' 17" 38.1"
L = 96.17'
T = 48.23'
R = 507.32'
SE = EXISTING
RO = EXISTING

PI Sta 12+96.46
Δ = 30° 56' 38.5" (LT)
D = 10' 08" 27.0"
L = 305.14'
T = 156.39'
R = 565.00'
SE = 0.04
RO = 108'

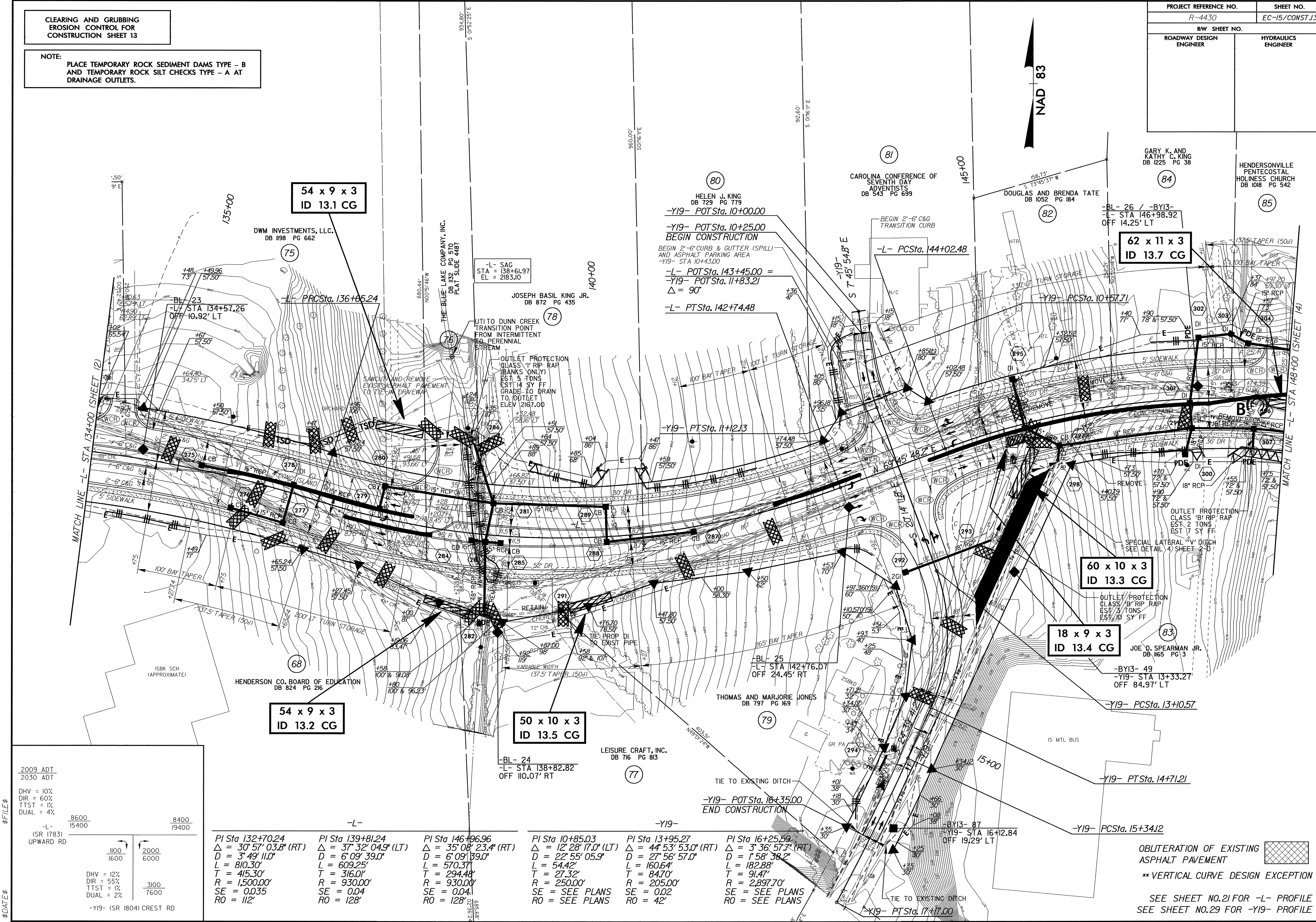
OBLITERATION OF EXISTING ASPHALT PAVEMENT

SEE SHEET NO. 21 FOR -L- PROFILE
SEE SHEET NO. 28 FOR -Y17- AND -Y18- PROFILES

**CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 13**

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

PROJECT REFERENCE NO. R-4430		SHEET NO. EC-15/CONST.13	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	



2009 ADT
2030 ADT

DHV = 10%
DIR = 60%
TTST = 1%
DUAL = 4%

8600 15400	8400 19400
-L- (SR 1783) UPWARD RD	-Y19- (SR 1804) CREST RD

DHV = 12%
DIR = 55%
TTST = 1%
DUAL = 2%

1100 1600	2000 6000
3100 7600	

-L- PI Sta 132+70.24 Δ = 30° 57' 03.8" (RT) D = 3' 49' 11.0" L = 810.30' T = 415.30' R = 1,500.00' SE = 0.035 RO = 112'	-L- PI Sta 139+81.24 Δ = 37° 32' 04.9" (LT) D = 6' 09' 39.0" L = 609.25' T = 316.01' R = 930.00' SE = 0.04 RO = 128'	-L- PI Sta 146+96.96 Δ = 35° 08' 23.4" (RT) D = 6' 09' 39.0" L = 570.37' T = 294.48' R = 205.00' SE = 0.04 RO = 128'	-L- PI Sta 10+85.03 Δ = 12° 28' 17.0" (LT) D = 22' 55' 05.9" L = 54.42' T = 27.32' R = 250.00' SE = SEE PLANS RO = SEE PLANS	-Y19- PI Sta 13+95.27 Δ = 44° 53' 53.0" (RT) D = 27' 56' 57.0" L = 160.64' T = 84.70' R = 205.00' SE = 0.02 RO = 42'	-Y19- PI Sta 16+25.59 Δ = 3° 36' 57.7" (RT) D = 1' 58' 38.2" L = 182.88' T = 9.47' R = 2,897.70' SE = SEE PLANS RO = SEE PLANS
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OBLITERATION OF EXISTING ASPHALT PAVEMENT

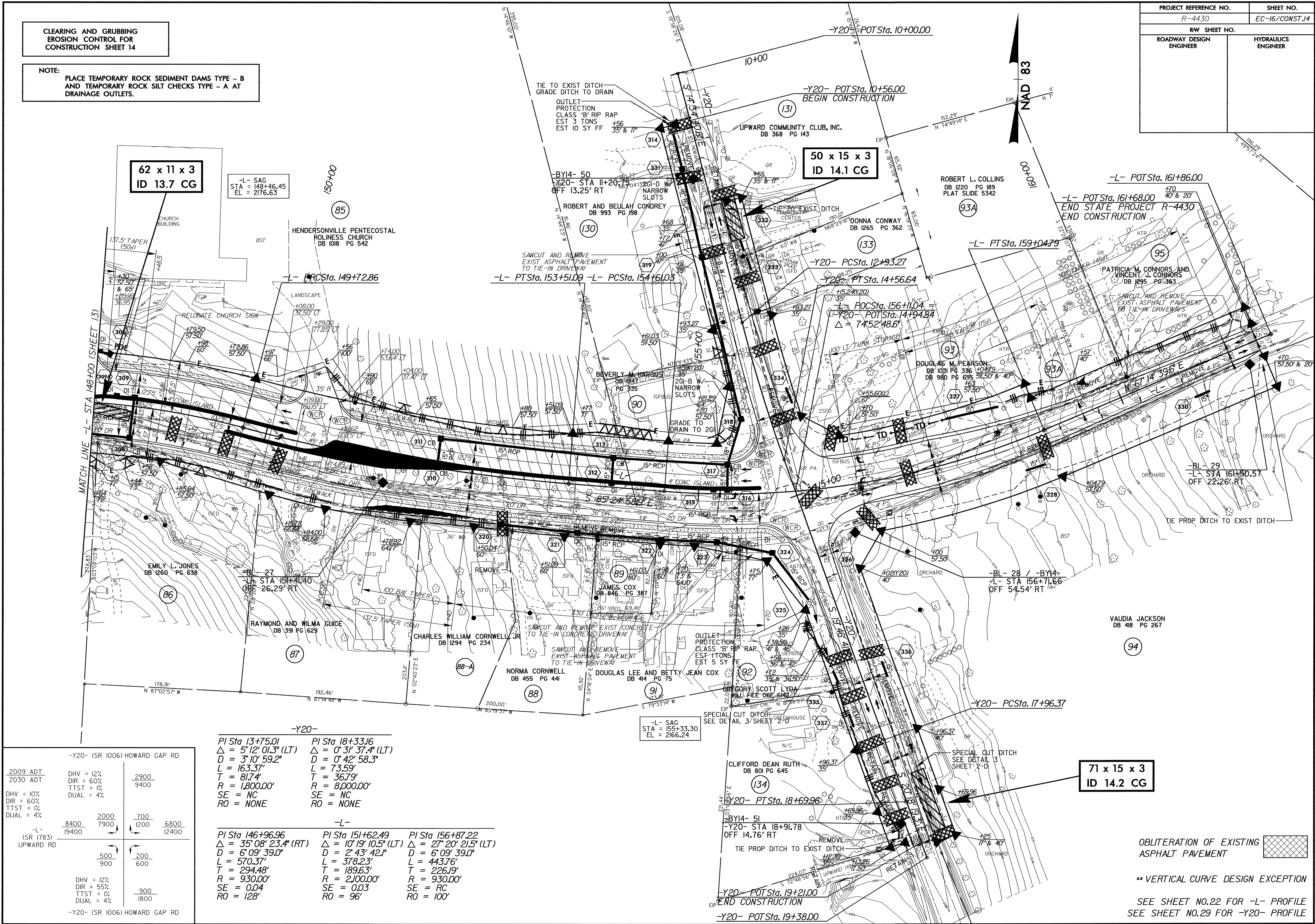
** VERTICAL CURVE DESIGN EXCEPTION

SEE SHEET NO.21 FOR -L- PROFILE
SEE SHEET NO.29 FOR -Y19- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-4430	EC-16/CONST 14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 14

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



2009 ADT 2030 ADT	DHV = 12% DIR = 60% TTST = 1% DUAL = 4%	2900 9400
DHV = 10% DIR = 60% TTST = 1% DUAL = 4%		
-L- (SR 1783) UPWARD RD		8400 2000 700 6800 19400 7900 1200 12400
		500 200 900 600
	DHV = 12% DIR = 55% TTST = 1% DUAL = 4%	900 1800
-Y20- (SR 1006) HOWARD GAP RD		

-Y20-	
PI Sta 13+75.01 Δ = 5' 12" 01.3" (LT) D = 3' 10' 59.2" L = 163.37' T = 81.74' R = 1,800.00' SE = NC RO = NONE	PI Sta 18+33.16 Δ = 0' 31' 37.4" (LT) D = 0' 42' 58.3" L = 73.59' T = 36.79' R = 8,000.00' SE = NC RO = NONE
-L-	
PI Sta 146+96.96 Δ = 35' 08' 23.4" (RT) D = 6' 09' 39.0" L = 570.37' T = 294.48' R = 930.00' SE = 0.04 RO = 128'	PI Sta 151+62.49 Δ = 10' 19' 10.5" (LT) D = 2' 43' 42.1" L = 378.23' T = 189.63' R = 2,100.00' SE = 0.03 RO = 96'
PI Sta 156+87.22 Δ = 27' 20' 21.5" (LT) D = 6' 09' 39.0" L = 443.76' T = 226.19' R = 930.00' SE = RC RO = 100'	

-L- SAG
STA = 153+33.30
EL = 2166.24

71 x 15 x 3
ID 14.2 CG

OBLITERATION OF EXISTING
ASPHALT PAVEMENT

** VERTICAL CURVE DESIGN EXCEPTION

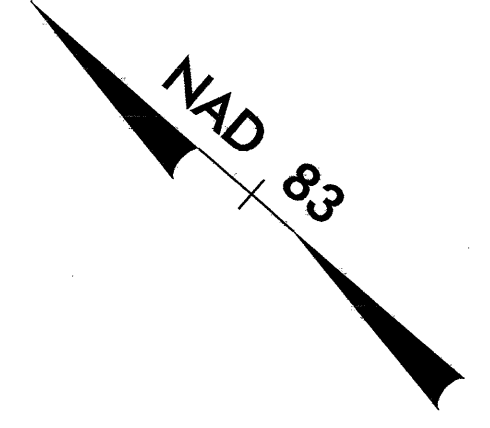
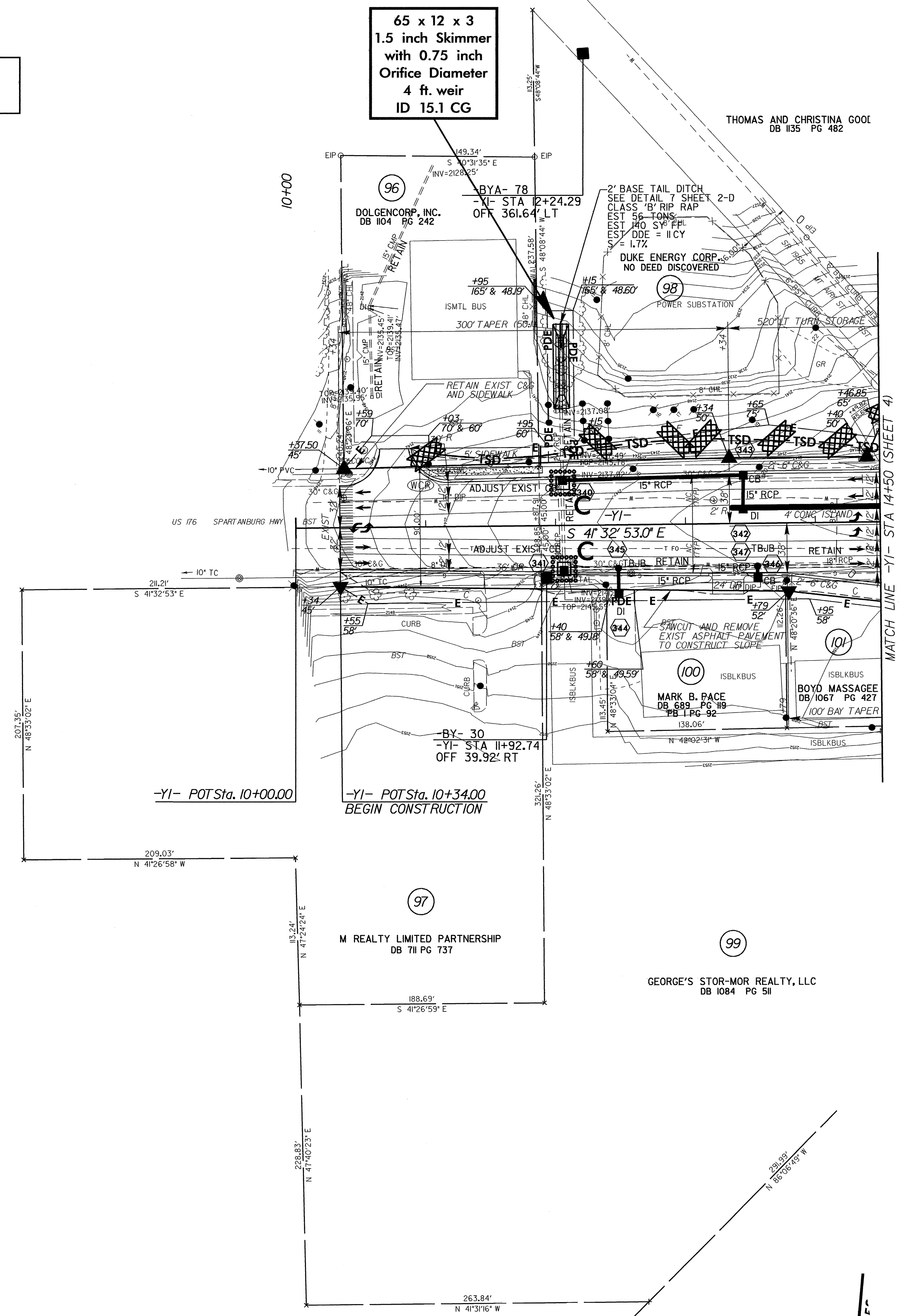
SEE SHEET NO.22 FOR -L- PROFILE
SEE SHEET NO.29 FOR -Y20- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-4430	EC-17/CONST.15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 15

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

65 x 12 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
ID 15.1 CG



\$FILE\$

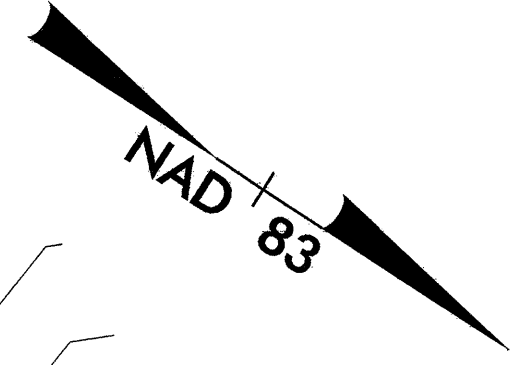
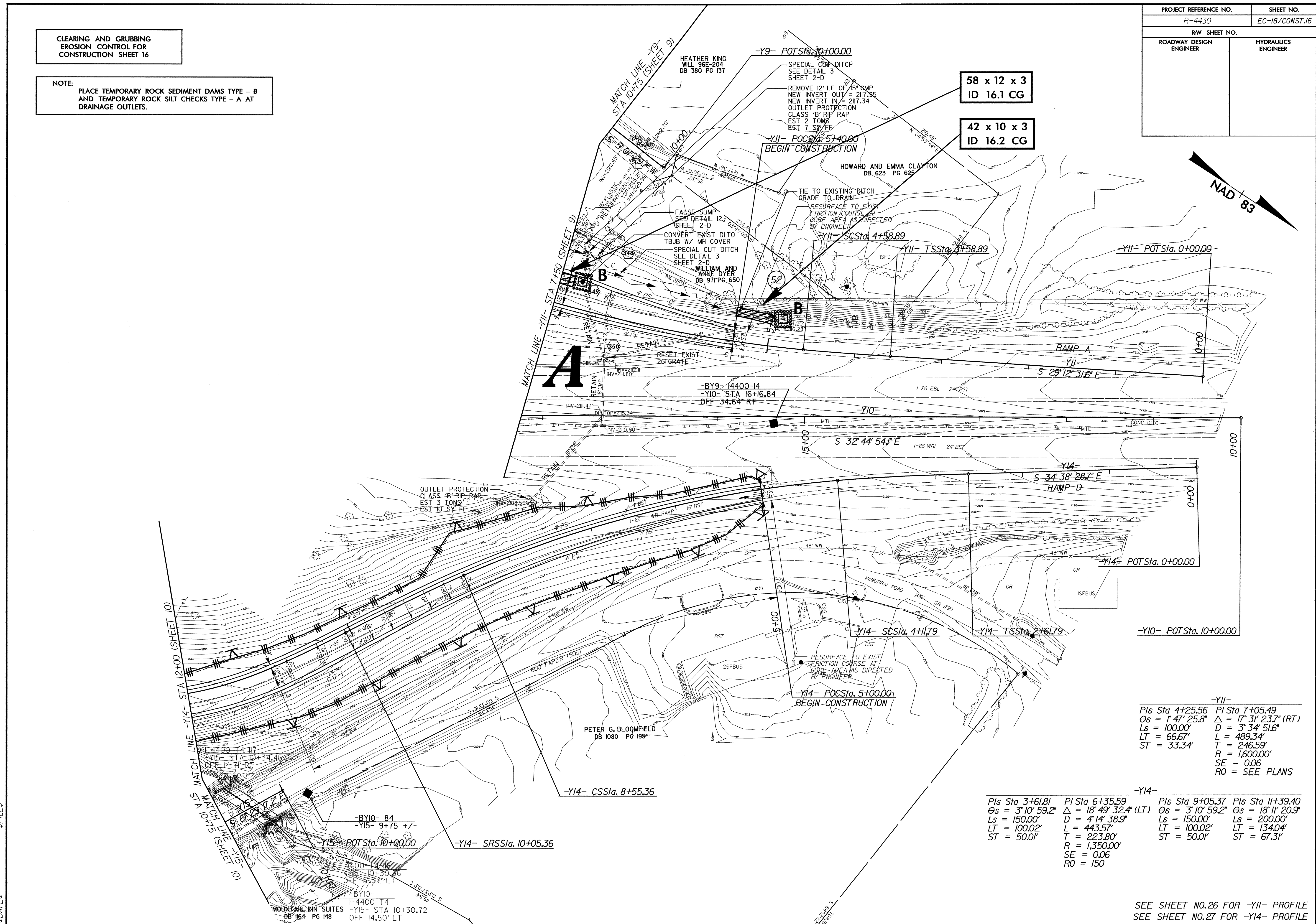
\$DATE\$

SEE SHEET NO.23 FOR -YI- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-4430	EC-18/CONST.16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 16

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



-Y11-

PIs Sta 4+25.56	PI Sta 7+05.49
Os = 1' 47" 25.8"	Δ = 17' 31" 23.7" (RT)
Ls = 100.00'	D = 3' 34" 51.6"
LT = 66.67'	L = 489.34'
ST = 33.34'	T = 246.59'
	R = 1,600.00'
	SE = 0.06
	RO = SEE PLANS

-Y14-

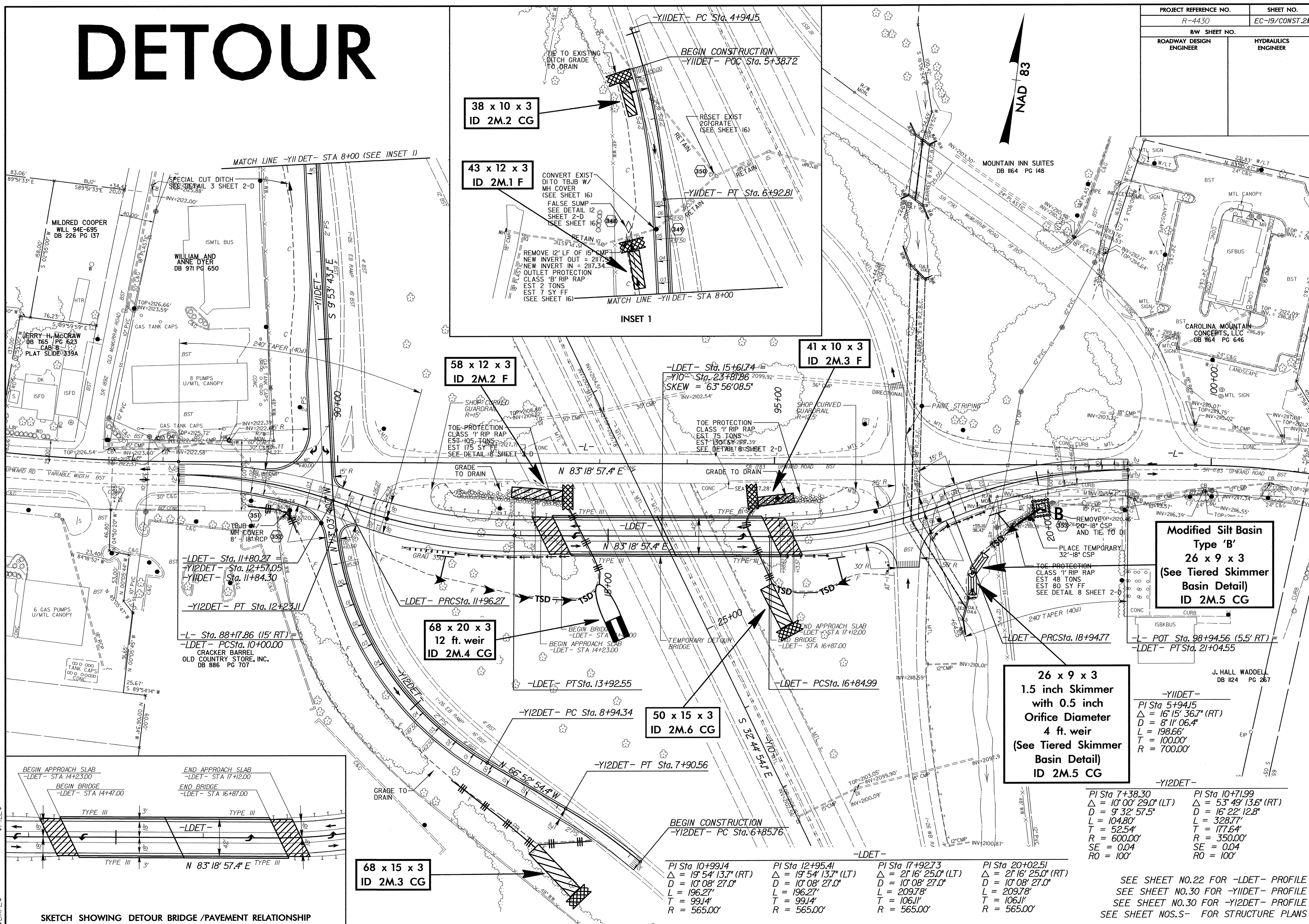
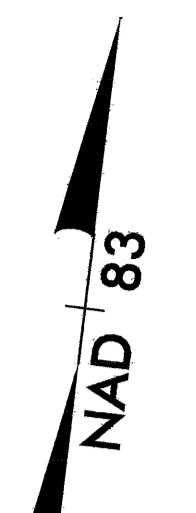
PIs Sta 3+61.81	PI Sta 6+35.59	PIs Sta 9+05.37	PIs Sta 11+39.40
Os = 3' 10" 59.2"	Δ = 18' 49" 32.4" (LT)	Os = 3' 10" 59.2"	Os = 18' 11" 20.9"
Ls = 150.00'	D = 4' 14" 38.9"	Ls = 150.00'	Ls = 200.00'
LT = 100.02'	L = 443.57'	LT = 100.02'	LT = 134.04'
ST = 50.01'	T = 223.80'	ST = 50.01'	ST = 67.31'
	R = 1,350.00'		
	SE = 0.06		
	RO = 150		

SEE SHEET NO.26 FOR -Y11- PROFILE
SEE SHEET NO.27 FOR -Y14- PROFILE

\$DATE\$ \$FILE\$

DETOUR

PROJECT REFERENCE NO.	SHEET NO.
R-4430	EC-19/CONST.2M
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	



**38 x 10 x 3
ID 2M.2 CG**

**43 x 12 x 3
ID 2M.1 F**

**58 x 12 x 3
ID 2M.2 F**

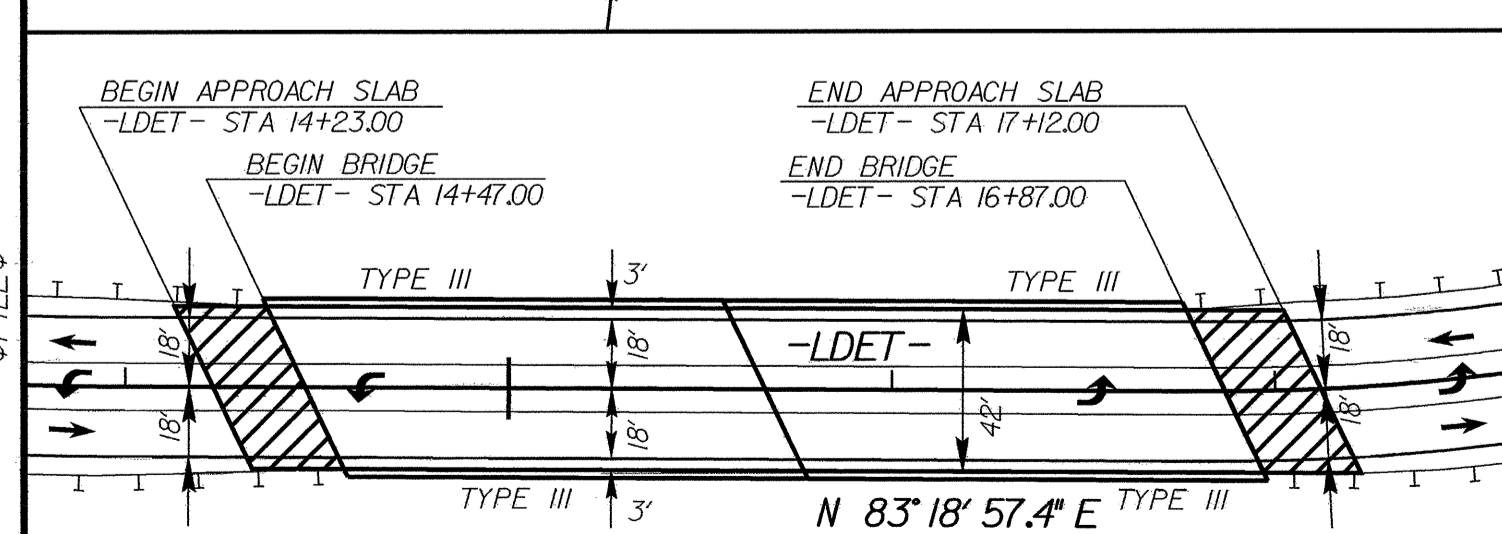
**41 x 10 x 3
ID 2M.3 F**

**68 x 20 x 3
12 ft. weir
ID 2M.4 CG**

**50 x 15 x 3
ID 2M.6 CG**

**26 x 9 x 3
1.5 inch Skimmer
with 0.5 inch
Orifice Diameter
4 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 2M.5 CG**

**Modified Silt Basin
Type 'B'
26 x 9 x 3
(See Tiered Skimmer
Basin Detail)
ID 2M.5 CG**



SKETCH SHOWING DETOUR BRIDGE /PAVEMENT RELATIONSHIP

**68 x 15 x 3
ID 2M.3 CG**

BEGIN CONSTRUCTION
-YI2DET- PC Sta. 6+85.76

PI Sta 10+99.14 Δ = 19° 54' 13.7" (RT) D = 10' 08' 27.0" L = 196.27' T = 99.14' R = 565.00'	PI Sta 12+95.41 Δ = 19° 54' 13.7" (LT) D = 10' 08' 27.0" L = 196.27' T = 99.14' R = 565.00'	PI Sta 17+92.73 Δ = 21° 16' 25.0" (LT) D = 10' 08' 27.0" L = 209.78' T = 106.11' R = 565.00'	PI Sta 20+02.51 Δ = 21° 16' 25.0" (RT) D = 10' 08' 27.0" L = 209.78' T = 106.11' R = 565.00'
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-YI2DET- PI Sta 7+38.30 Δ = 10° 00' 29.0" (LT) D = 9' 32' 57.5" L = 104.80' T = 52.54' R = 600.00' SE = 0.04 RO = 100'	PI Sta 10+71.99 Δ = 53° 49' 13.6" (RT) D = 16' 22' 12.8" L = 328.77' T = 177.64' R = 350.00' SE = 0.04 RO = 100'
--	---

SEE SHEET NO.22 FOR -LDET- PROFILE
SEE SHEET NO.30 FOR -YI2DET- PROFILE
SEE SHEET NO.30 FOR -YI2DET- PROFILE
SEE SHEET NOS.S- FOR STRUCTURE PLANS

DATE \$ FILE \$

PROJECT REFERENCE NO. R-4430	SHEET NO. EC-20/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

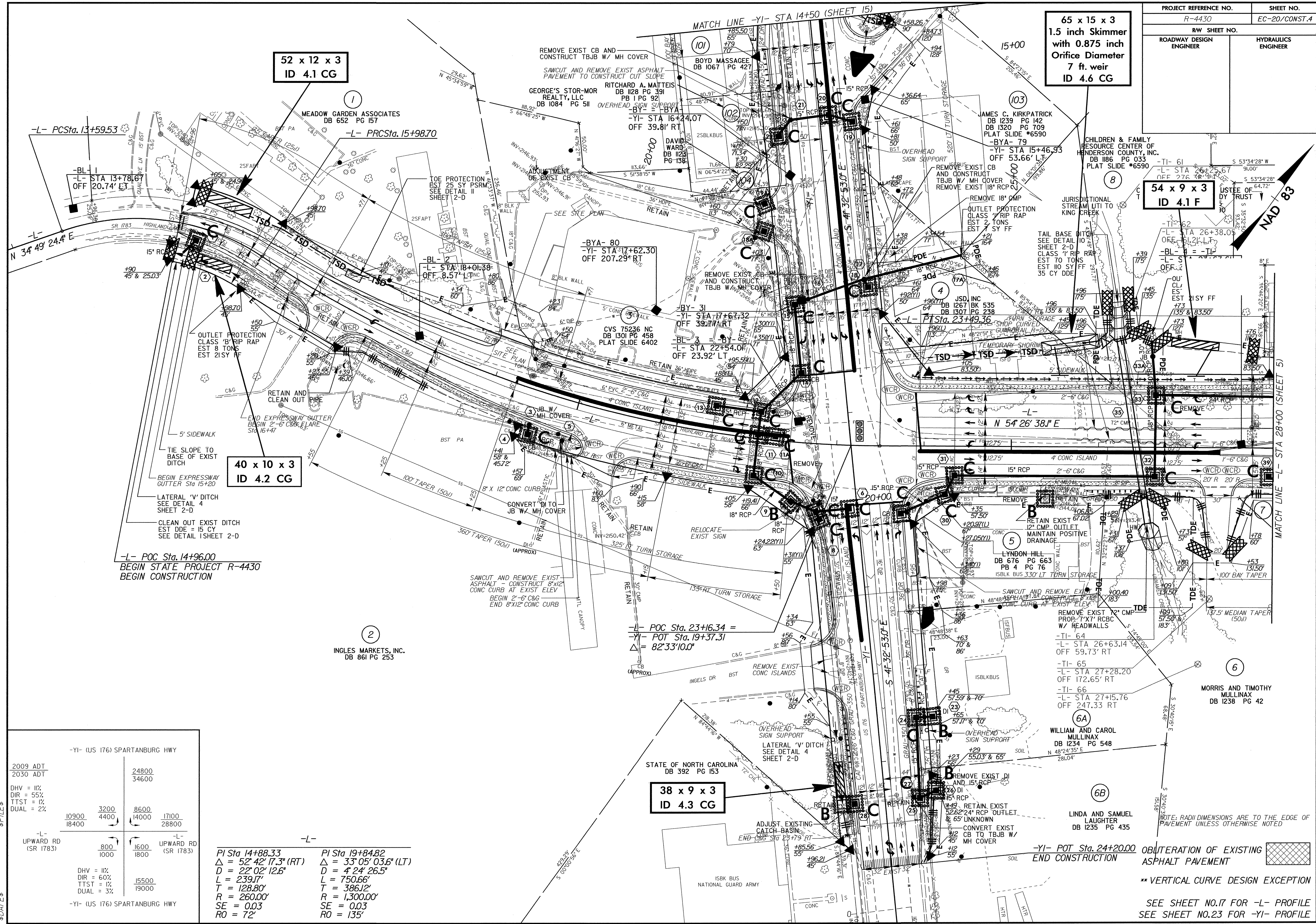
65 x 15 x 3
1.5 inch Skimmer
with 0.875 inch
Orifice Diameter
7 ft. weir
ID 4.6 CG

54 x 9 x 3
ID 4.1 F

52 x 12 x 3
ID 4.1 CG

40 x 10 x 3
ID 4.2 CG

38 x 9 x 3
ID 4.3 CG



-YI- (US 176) SPARTANBURG HWY	
2009 ADT	24800
2030 ADT	34600
DHV = 11%, DIR = 55%, TTST = 1%, DUAL = 2%	
10900	3200
18400	4400
	8600
	17100
	28800
-L- UPWARD RD (SR 1783)	
800	1600
1000	1800
DHV = 11%, DIR = 60%, TTST = 1%, DUAL = 3%	
	15500
	19000
-YI- (US 176) SPARTANBURG HWY	

PI Sta 14+88.33 Δ = 52° 42' 17.3" (RT) D = 22° 02' 12.6" L = 239.17' T = 128.80' R = 260.00' SE = 0.03 RO = 72'	PI Sta 19+84.82 Δ = 33° 05' 03.6" (LT) D = 4° 24' 26.5" L = 750.66' T = 386.12' R = 1,300.00' SE = 0.03 RO = 135'
--	--

NOTE: RADI DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED

OBTERATION OF EXISTING ASPHALT PAVEMENT

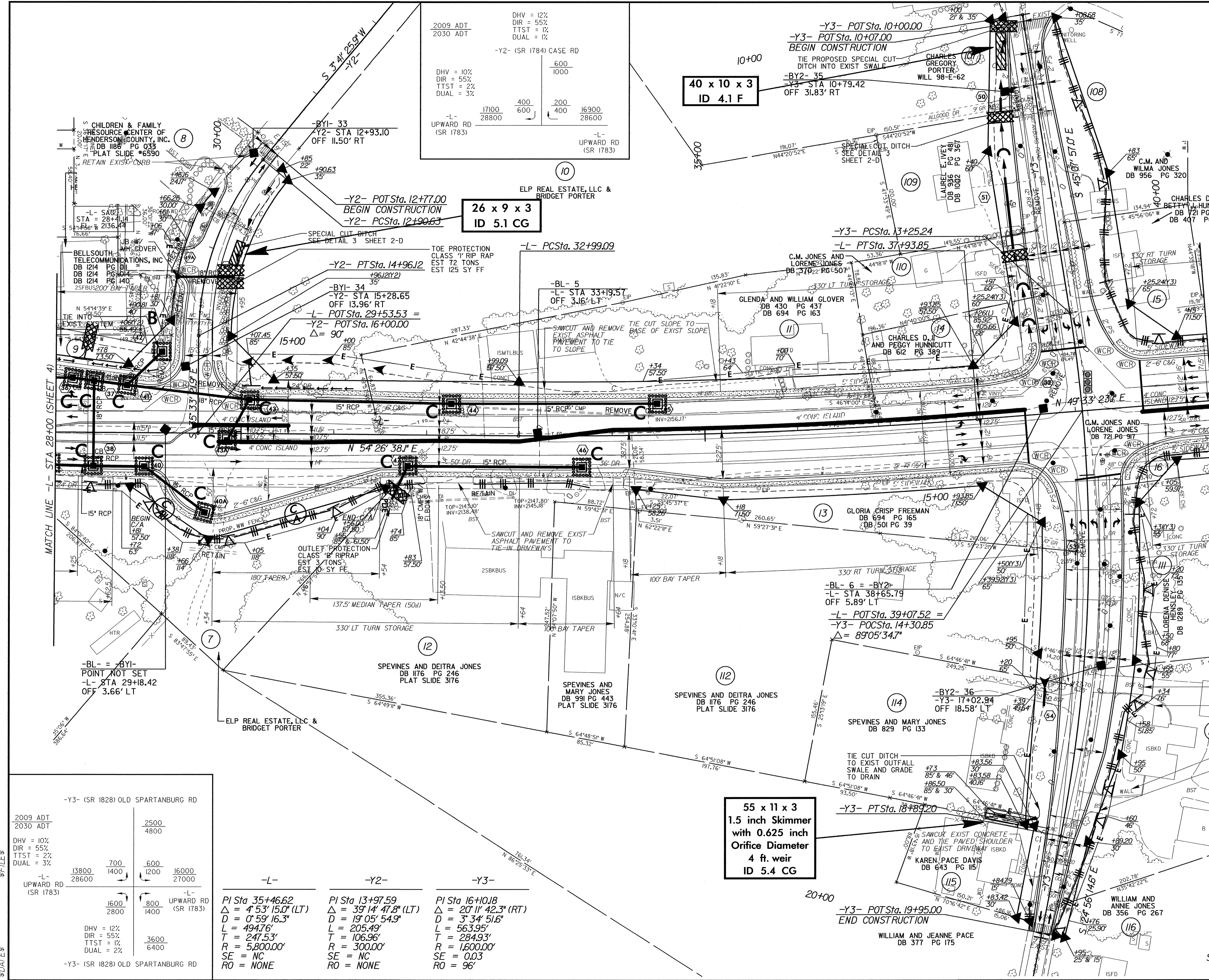
** VERTICAL CURVE DESIGN EXCEPTION

SEE SHEET NO.17 FOR -L- PROFILE
SEE SHEET NO.23 FOR -YI- PROFILE

\$FILE\$

\$DATE\$

PROJECT REFERENCE NO.	SHEET NO.
R-4430	EC-21/CONST.5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



2009 ADT	DHW = 10%		DIR = 55%		TTST = 2%		DUAL = 3%	
2030 ADT	DHW = 10%		DIR = 55%		TTST = 2%		DUAL = 3%	
	600	1000	1700	2800	400	200	1600	2800
	UPWARD RD (SR 1783)		UPWARD RD (SR 1783)					

40 x 10 x 3
ID 4.1 F

26 x 9 x 3
ID 5.1 CG

55 x 11 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 5.4 CG

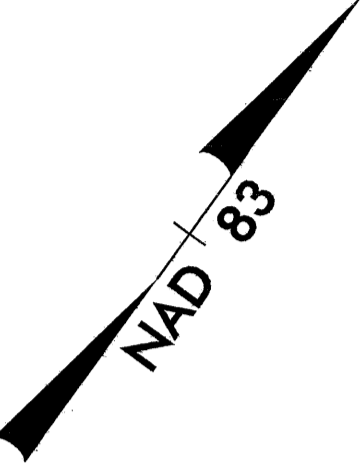
2009 ADT	DHW = 10%		DIR = 55%		TTST = 2%		DUAL = 3%	
2030 ADT	DHW = 10%		DIR = 55%		TTST = 2%		DUAL = 3%	
	13800	700	600	16000	1600	800	27000	
	UPWARD RD (SR 1783)		UPWARD RD (SR 1783)					
		3600	6400					
		DHW = 12%	3600	6400				
		DIR = 55%						
		TTST = 1%						
		DUAL = 2%						

-L-	-Y2-	-Y3-
PI Sta 35+46.62	PI Sta 13+97.59	PI Sta 16+10.18
$\Delta = 4^{\circ} 53' 15.0''$ (LT)	$\Delta = 39^{\circ} 14' 47.8''$ (LT)	$\Delta = 20^{\circ} 11' 42.3''$ (RT)
$D = 0^{\circ} 59' 16.3''$	$D = 19^{\circ} 05' 54.9''$	$D = 3^{\circ} 34' 51.6''$
$L = 494.76'$	$L = 205.49'$	$L = 563.95'$
$T = 247.53'$	$T = 106.96'$	$T = 284.93'$
$R = 5,800.00'$	$R = 300.00'$	$R = 1,600.00'$
SE = NC	SE = NC	SE = 0.03
RO = NONE	RO = NONE	RO = 96'

OBLITERATION OF EXISTING ASPHALT PAVEMENT

** VERTICAL CURVE DESIGN EXCEPTION

SEE SHEET NO.17 FOR -L- PROFILE
SEE SHEET NO.23 FOR -Y2- PROFILE
SEE SHEET NO.24 FOR -Y3 PROFILE

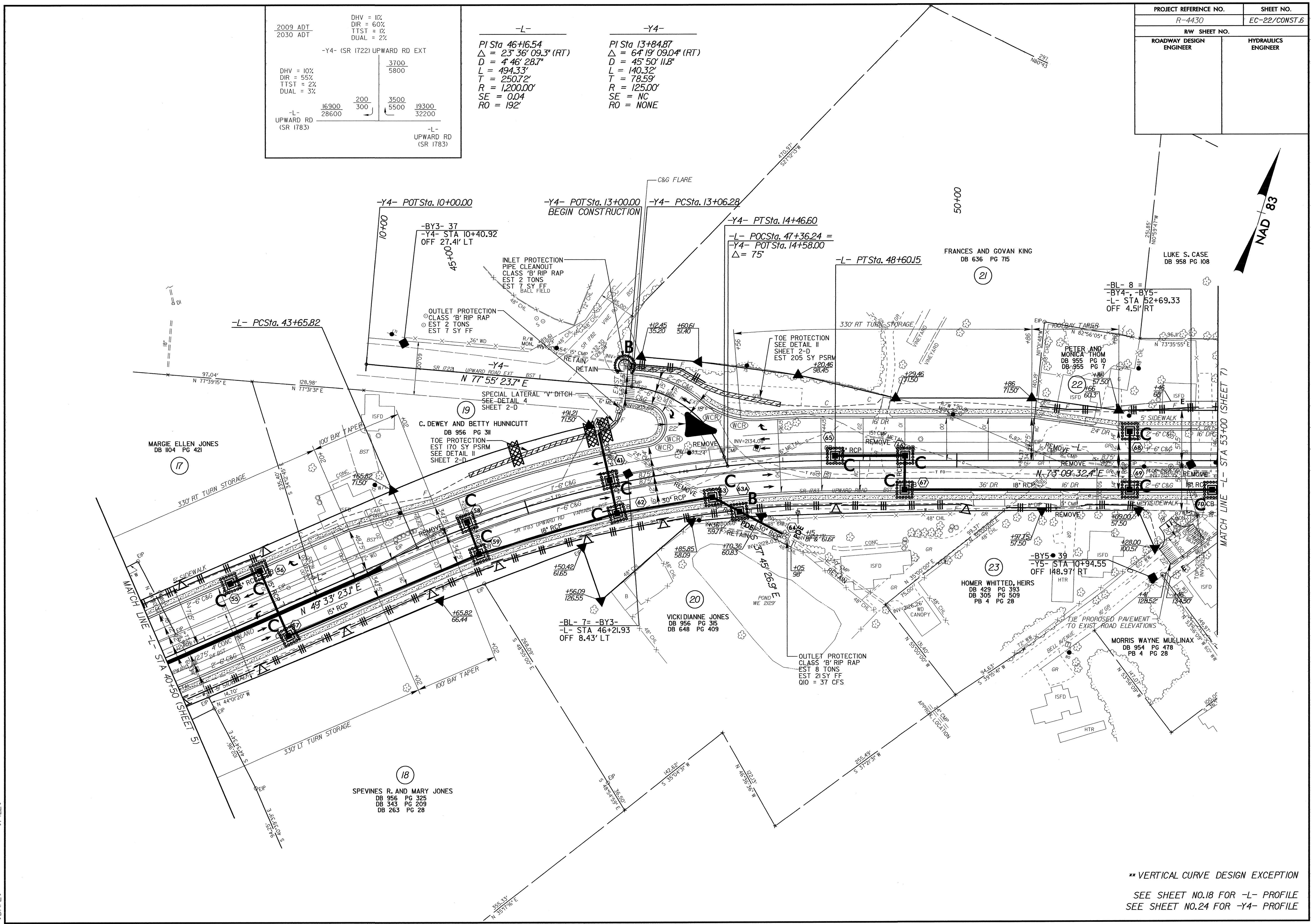


PROJECT REFERENCE NO.	SHEET NO.
R-4430	EC-22/CONST.6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

2009 ADT 2030 ADT	DHV = 11% DIR = 60% TTST = 1% DUAL = 2%	
		-Y4- (SR 1722) UPWARD RD EXT
		3700 5800
DHV = 10% DIR = 55% TTST = 2% DUAL = 3%		
		200 300
		3500 5500
		19300 32200
-L- UPWARD RD (SR 1783)		-L- UPWARD RD (SR 1783)

-L-
PI Sta 46+16.54
Δ = 23° 36' 09.3" (RT)
D = 4' 46" 28.7"
L = 494.33'
T = 250.72'
R = 1,200.00'
SE = 0.04'
RO = 192'

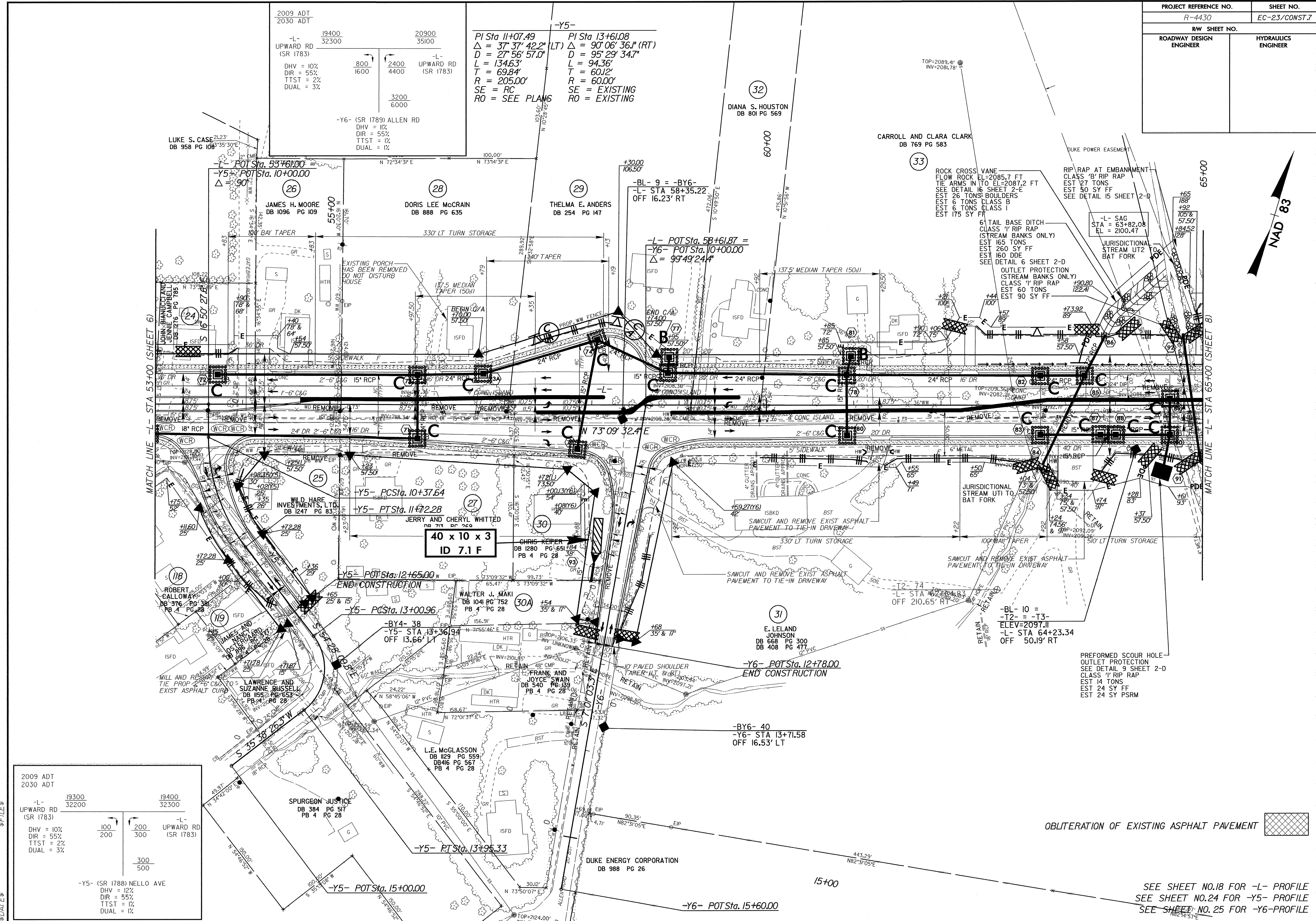
-Y4-
PI Sta 13+84.87
Δ = 64° 19' 09.04" (RT)
D = 45' 50" 11.8"
L = 140.32'
T = 78.59'
R = 125.00'
SE = NC
RO = NONE



\$FILE\$
\$DATE\$

** VERTICAL CURVE DESIGN EXCEPTION
SEE SHEET NO.18 FOR -L- PROFILE
SEE SHEET NO.24 FOR -Y4- PROFILE

PROJECT REFERENCE NO. R-4430	SHEET NO. EC-23/CONST.7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



2009 ADT 2030 ADT	19400 32300	20900 35100
-L- UPWARD RD (SR 1783)	800 1600	2400 4400
DHV = 10% DIR = 55% TTST = 2% DUAL = 3%		-L- UPWARD RD (SR 1783)
		3200 6000

PI Sta 11+07.49
 $\Delta = 37' 37'' 42.2''$ (LT)
 $D = 27' 56'' 57.0''$
 $L = 134.63'$
 $T = 69.84'$
 $SE = 205.00'$
 $RO = SEE PLANS$

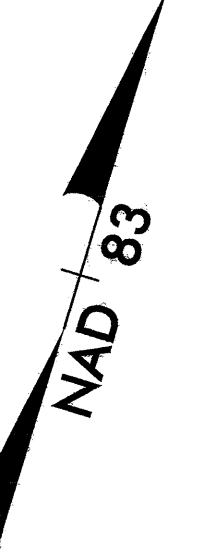
-Y5-
 PI Sta 13+61.08
 $\Delta = 90' 06'' 36.1''$ (RT)
 $D = 95' 29'' 34.7''$
 $L = 94.36'$
 $T = 60.12'$
 $SE = EXISTING$
 $RO = EXISTING$

2009 ADT 2030 ADT	19300 32200	19400 32300
-L- UPWARD RD (SR 1783)	100 200	200 300
DHV = 10% DIR = 55% TTST = 2% DUAL = 3%		-L- UPWARD RD (SR 1783)
		300 500

-Y5- (SR 1788) NELLO AVE
 DHV = 12%
 DIR = 55%
 TTST = 1%
 DUAL = 1%

OBLITERATION OF EXISTING ASPHALT PAVEMENT

SEE SHEET NO.18 FOR -L- PROFILE
 SEE SHEET NO.24 FOR -Y5- PROFILE
 SEE SHEET NO.25 FOR -Y6- PROFILE



MATCH LINE -L- STA 53+00 (SHEET 6)

MATCH LINE -L- STA 65+00 (SHEET 8)

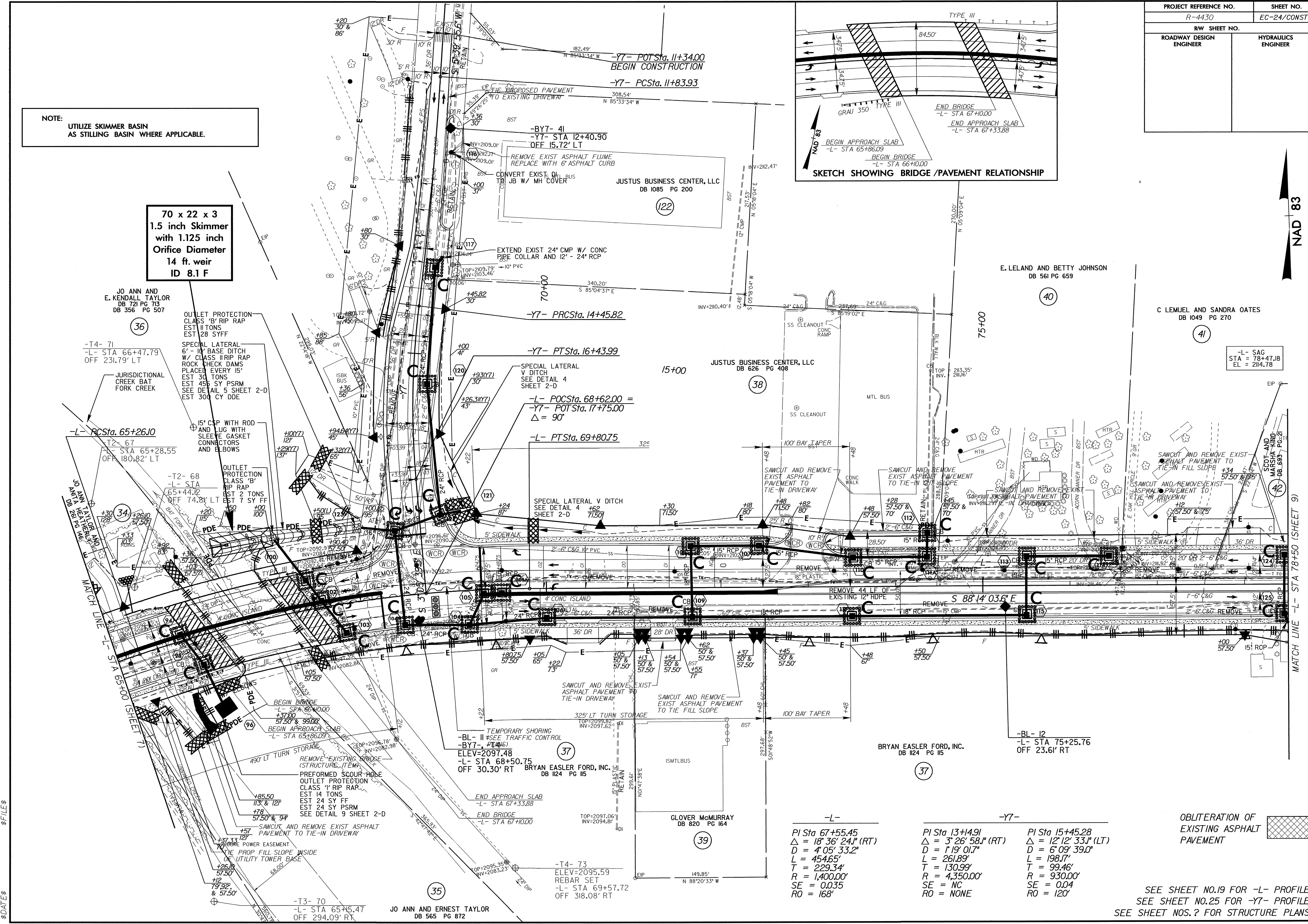
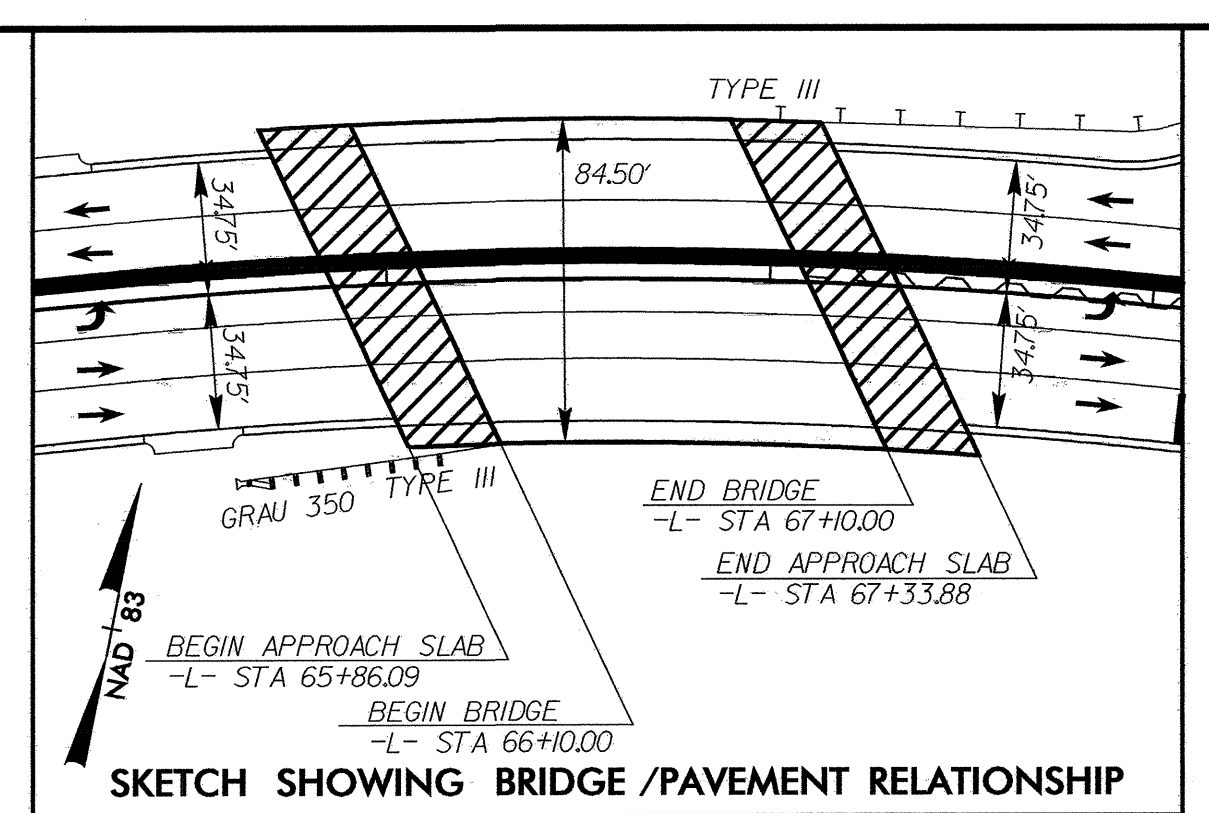
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\$ DATE \$

PROJECT REFERENCE NO.	SHEET NO.
R-4430	EC-24/CONST.8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NOTE: UTILIZE SKIMMER BASIN AS STILLING BASIN WHERE APPLICABLE.

70 x 22 x 3
1.5 inch Skimmer
with 1.125 inch
Orifice Diameter
14 ft. weir
ID 8.1 F



NAD 83

MATCH LINE -L- STA 78+50 (SHEET 9)

-L-	-Y7-
PI Sta 67+55.45	PI Sta 13+14.91
$\Delta = 18' 36" 24" (RT)$	$\Delta = 3' 26' 58" (RT)$
$D = 4' 05' 33.2"$	$\Delta = 12' 12' 33" (LT)$
$L = 454.65'$	$D = 6' 09' 39.0"$
$T = 229.34'$	$L = 198.17'$
$R = 1,400.00'$	$T = 99.46'$
$SE = 0.035$	$R = 930.00'$
$RO = 168'$	$SE = NC$
	$RO = 120'$

OBLITERATION OF EXISTING ASPHALT PAVEMENT

SEE SHEET NO.19 FOR -L- PROFILE
SEE SHEET NO.25 FOR -Y7- PROFILE
SEE SHEET NOS. ? FOR STRUCTURE PLANS

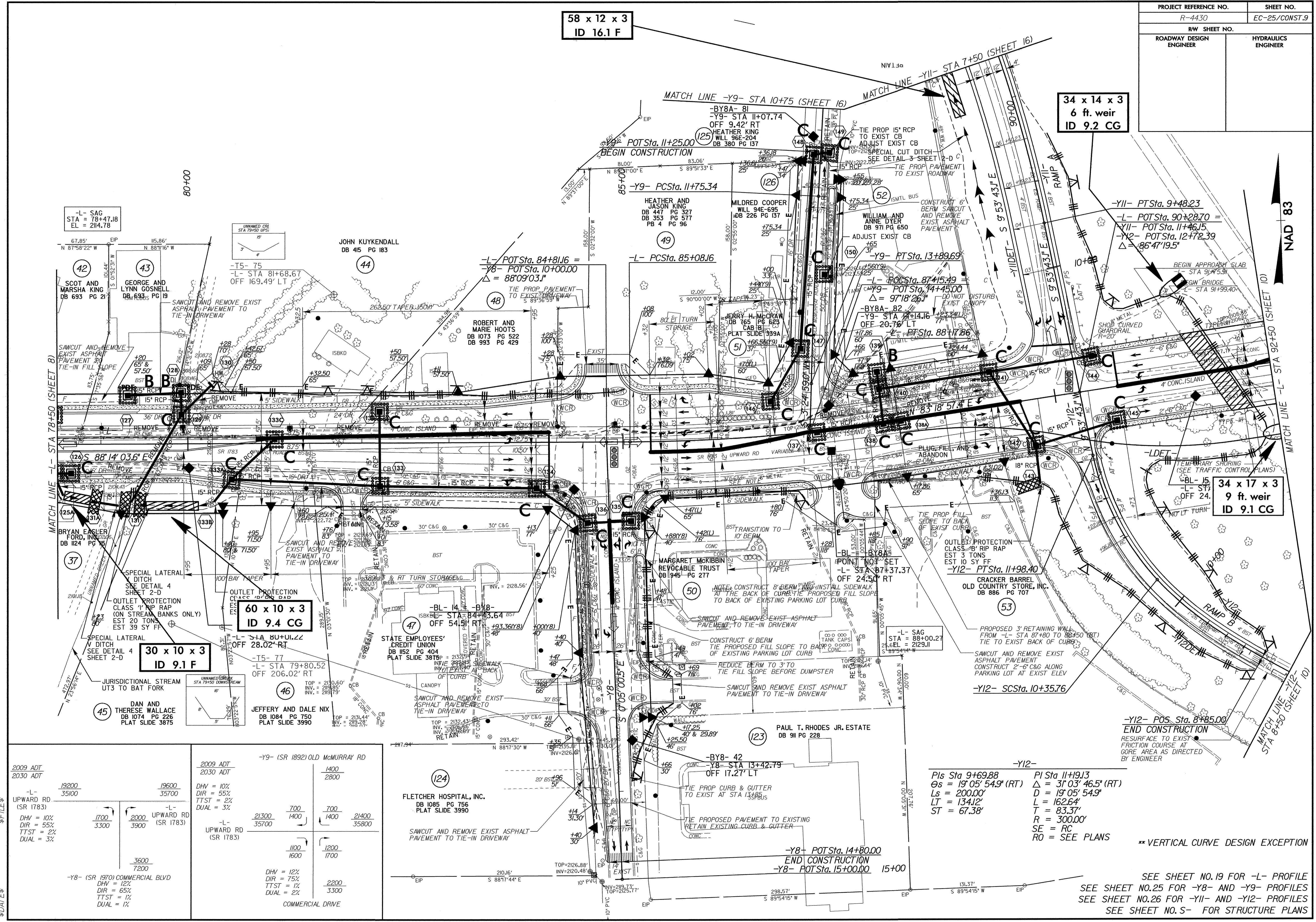
DATE\$

58 x 12 x 3
ID 16.1 F

34 x 14 x 3
6 ft. weir
ID 9.2 CG

34 x 17 x 3
9 ft. weir
ID 9.1 CG

PROJECT REFERENCE NO. R-4430	SHEET NO. EC-25/CONST.9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



<p>2009 ADT 2030 ADT</p> <p>-L- UPWARD RD (SR 1783)</p> <p>DHV = 10%, DIR = 55%, TTST = 2%, DUAL = 3%</p> <p>1700 3300</p> <p>2000 3900</p> <p>UPWARD RD (SR 1783)</p> <p>3600 7200</p> <p>-Y8- (SR 1970) COMMERCIAL BLVD</p> <p>DHV = 12%, DIR = 65%, TTST = 1%, DUAL = 1%</p>	<p>-Y9- (SR 1892) OLD McMURRAY RD</p> <p>2030 ADT</p> <p>DHV = 10%, DIR = 55%, TTST = 2%, DUAL = 3%</p> <table border="1"> <tr> <td>1400</td> <td>2800</td> </tr> <tr> <td>21300</td> <td>1400</td> </tr> <tr> <td>35700</td> <td>1400</td> </tr> <tr> <td>700</td> <td>700</td> </tr> <tr> <td>1400</td> <td>21400</td> </tr> <tr> <td>1100</td> <td>1200</td> </tr> <tr> <td>1600</td> <td>1700</td> </tr> </table> <p>COMMERCIAL DRIVE</p> <p>DHV = 12%, DIR = 75%, TTST = 1%, DUAL = 2%</p>	1400	2800	21300	1400	35700	1400	700	700	1400	21400	1100	1200	1600	1700
1400	2800														
21300	1400														
35700	1400														
700	700														
1400	21400														
1100	1200														
1600	1700														

-Y12-
Pls Sta 9+69.88
Os = 19° 05' 54.9" (RT)
Ls = 200.00'
LT = 134.12'
ST = 67.38'

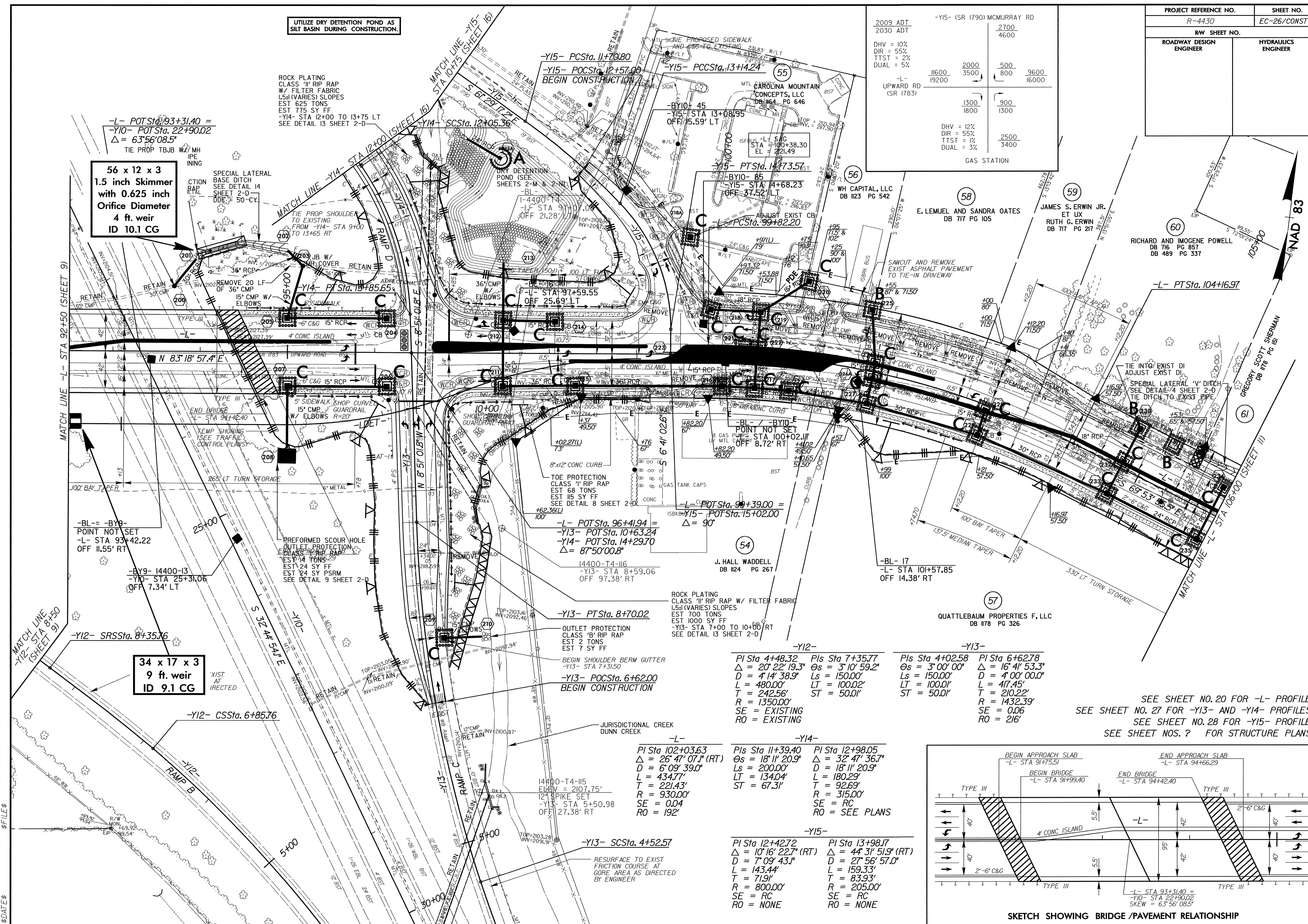
-Y12-
Pl Sta 11+19.13
Δ = 3' 03' 46.5" (RT)
D = 19° 05' 54.9"
L = 162.64'
T = 83.37'
R = 300.00'
SE = RC
RO = SEE PLANS

** VERTICAL CURVE DESIGN EXCEPTION

SEE SHEET NO. 19 FOR -L- PROFILE
SEE SHEET NO. 25 FOR -Y8- AND -Y9- PROFILES
SEE SHEET NO. 26 FOR -Y11- AND -Y12- PROFILES
SEE SHEET NO. S- FOR STRUCTURE PLANS

2009 ADT	-Y15- (SR 1790) MCMURRAY RD	
2030 ADT	2700	4600
DHV = 10%		
DIR = 55%		
TTST = 27		
DUAL = 5%		
	11600	2000
	19200	3500
	500	800
	9600	16000
	1300	900
	1800	1300
		2500
		3400
	GAS STATION	
DHV = 12%		
DIR = 55%		
TTST = 17		
DUAL = 3%		

UTILIZE DRY DETENTION POND AS SILT BASIN DURING CONSTRUCTION.



56 x 12 x 3
1.5 inch Skimmer
with 0.625 inch
Orifice Diameter
4 ft. weir
ID 10.1 CG

34 x 17 x 3
9 ft. weir
ID 9.1 CG

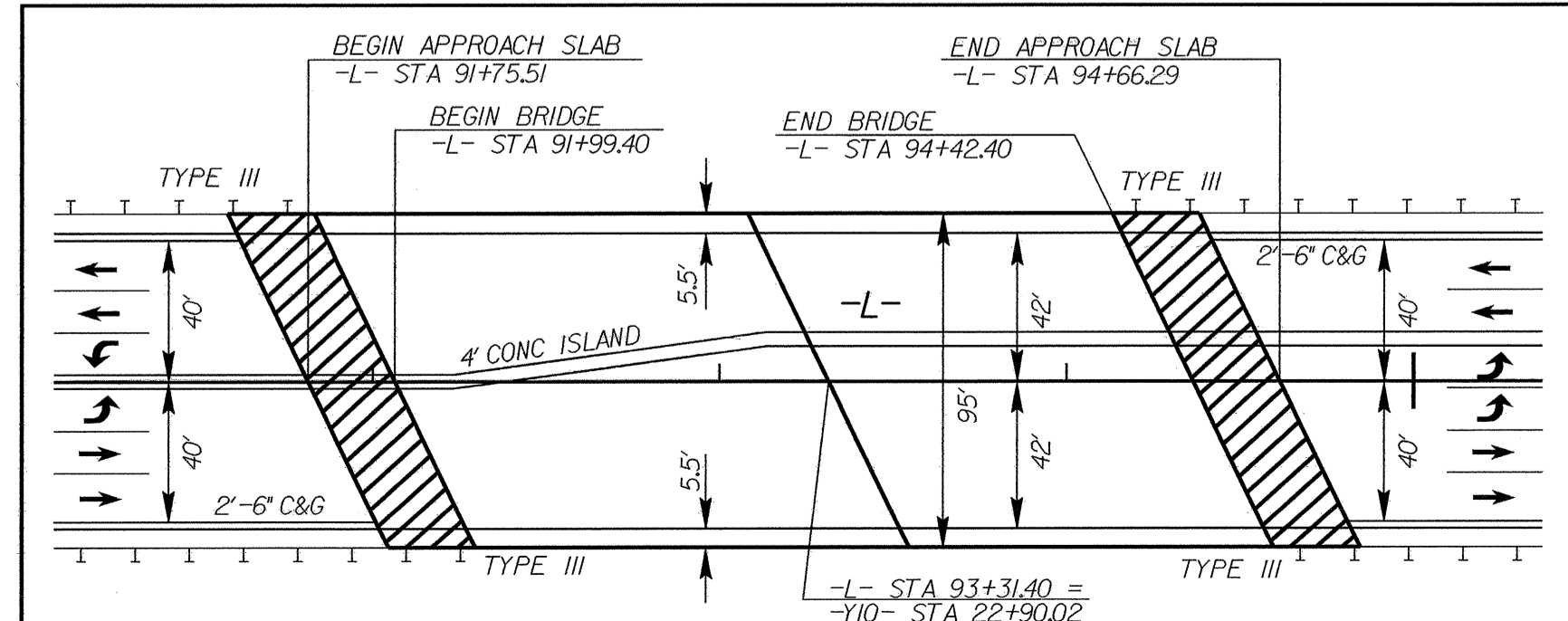
-L- POT Sta. 96+41.94 =
-Y13- POT Sta. 10+63.24
-Y14- POT Sta. 14+29.70
Δ = 87°50'00.8"

-Y13- PT Sta. 8+70.02
OUTLET PROTECTION
CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY FF
BEGIN SHOULDER BERM GUTTER
-Y13- STA 7+31.50
-Y13- POC Sta. 6+62.00
BEGIN CONSTRUCTION

-L-
PI Sta 102+03.63
Δ = 26°47'07.1" (RT)
D = 6°09'39.0"
L = 434.77'
T = 221.43'
R = 930.00'
SE = 0.04
RO = 192'

-Y14-
PI Sta 12+39.40
Δs = 18°11'20.9"
Ls = 200.00'
LT = 134.04'
ST = 67.31'
PI Sta 12+98.05
Δ = 32°47'36.7"
D = 18°11'20.9"
L = 180.29'
T = 92.69'
R = 315.00'
SE = RC
RO = SEE PLANS

-Y15-
PI Sta 12+42.72
Δ = 10°16'22.7" (RT)
D = 7°09'43.1"
L = 143.44'
T = 71.91'
R = 800.00'
SE = RC
RO = NONE
PI Sta 13+98.17
Δ = 44°31'51.9" (RT)
D = 27°56'57.0"
L = 159.33'
T = 83.93'
R = 205.00'
SE = RC
RO = NONE



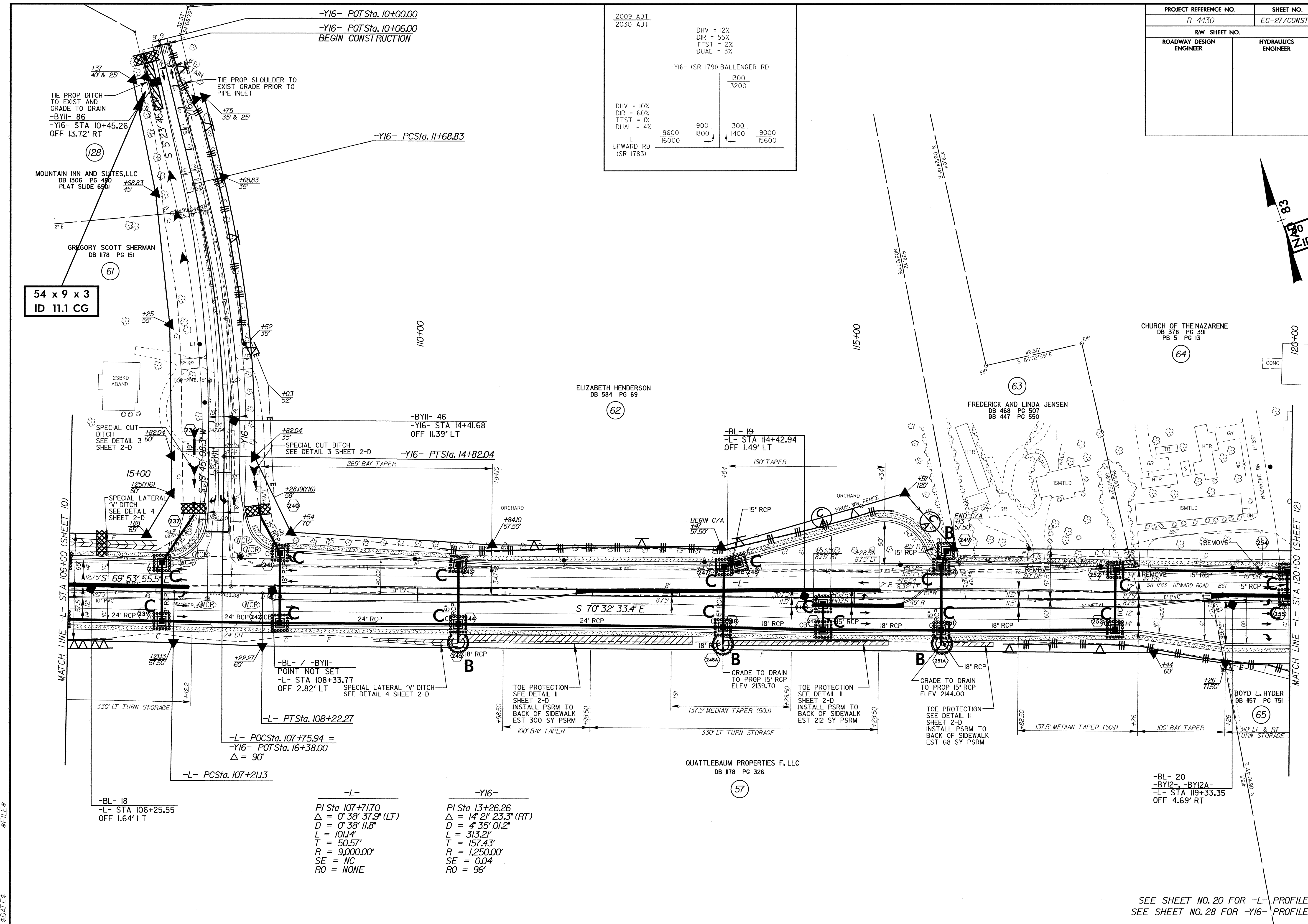
SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP

SEE SHEET NO. 20 FOR -L- PROFILE
SEE SHEET NO. 27 FOR -Y13- AND -Y14- PROFILES
SEE SHEET NO. 28 FOR -Y15- PROFILE
SEE SHEET NOS. ? FOR STRUCTURE PLANS

FILES
DATES

PROJECT REFERENCE NO.		SHEET NO.
R-4430		EC-27/CONST.II
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

2009 ADT	DHW = 12%		DIR = 55%		TTST = 2%		DUAL = 3%									
2030 ADT	DHW = 10%		DIR = 60%		TTST = 1%		DUAL = 4%									
-Y16- (SR 179) BALLENGER RD																
			1300													
			3200													
<table border="0" style="width: 100%; text-align: center;"> <tr> <td>9600</td> <td>900</td> <td>300</td> <td>9000</td> </tr> <tr> <td>16000</td> <td>1800</td> <td>1400</td> <td>15600</td> </tr> </table>									9600	900	300	9000	16000	1800	1400	15600
9600	900	300	9000													
16000	1800	1400	15600													
-L- UPWARD RD (SR 1783)																



54 x 9 x 3
ID 11.1 CG

\$DATE\$

-Y16- POTSta. 10+00.00
-Y16- POTSta. 10+06.00
BEGIN CONSTRUCTION

TIE PROP SHOULDER TO EXIST GRADE PRIOR TO PIPE INLET
TIE PROP DITCH TO EXIST AND GRADE TO DRAIN
-BY11- 86
-Y16- STA 10+45.26
OFF 13.72' RT

MOUNTAIN INN AND SLITES, LLC
DB 1306 PG 490
PLAT SLIDE 6501

GREGORY SCOTT SHERMAN
DB 1178 PG 151

ELIZABETH HENDERSON
DB 584 PG 69

FREDERICK AND LINDA JENSEN
DB 468 PG 507
DB 447 PG 550

CHURCH OF THE NAZARENE
DB 378 PG 391
PB 5 PG 13

BOYD L. HYDER
DB 1157 PG 751

QUATTLEBAUM PROPERTIES F, LLC
DB 1178 PG 326

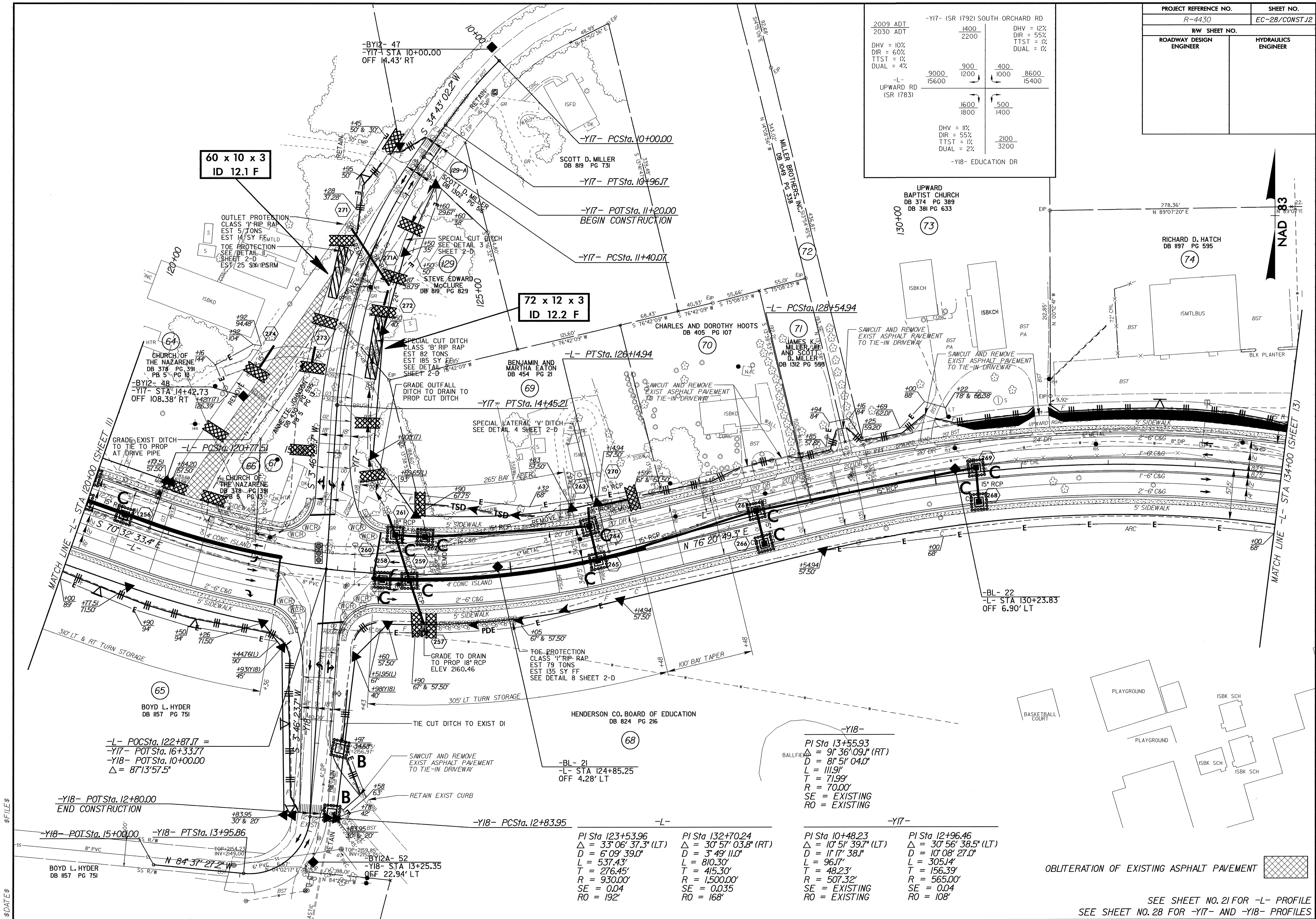
<p>-L-</p> <p>PI Sta 107+71.70 Δ = 0° 38' 37.9" (LT) D = 0' 38' 11.8" L = 101.14' T = 50.57' R = 9,000.00' SE = NC RO = NONE</p>	<p>-Y16-</p> <p>PI Sta 13+26.26 Δ = 14° 21' 23.3" (RT) D = 4' 35' 01.2" L = 313.21' T = 157.43' R = 1,250.00' SE = 0.04 RO = 96'</p>
--	--

-BL- 20
-BY12- -BY12A-
-L- STA 119+33.35
OFF 4.69' RT

SEE SHEET NO. 20 FOR -L- PROFILE
SEE SHEET NO. 28 FOR -Y16- PROFILE

PROJECT REFERENCE NO.		SHEET NO.	
R-4430		EC-28/CONST.12	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

2009 ADT	-Y17- (SR 1792) SOUTH ORCHARD RD			
2030 ADT	1400	2200	DHV = 12% DIR = 55% TTST = 1% DUAL = 1%	
	900	1200	400	8600
	15600	15600	1000	15400
	-L- UPWARD RD (SR 1783)			
	1600	1800	500	1400
	DHV = 11% DIR = 55% TTST = 1% DUAL = 2%			
	2100	3200		
	-Y18- EDUCATION DR			



-Y18-
PI Sta 13+55.93
BALLPIE Δ = 9° 36' 09.1" (RT)
D = 81' 5" 04.0"
L = 111.9'
T = 71.99'
R = 70.00'
SE = EXISTING
RO = EXISTING

-L-
PI Sta 123+53.96
Δ = 3° 06' 37.3" (LT)
D = 6' 09' 39.0"
L = 53.43'
T = 276.45'
R = 930.00'
SE = 0.04
RO = 192'

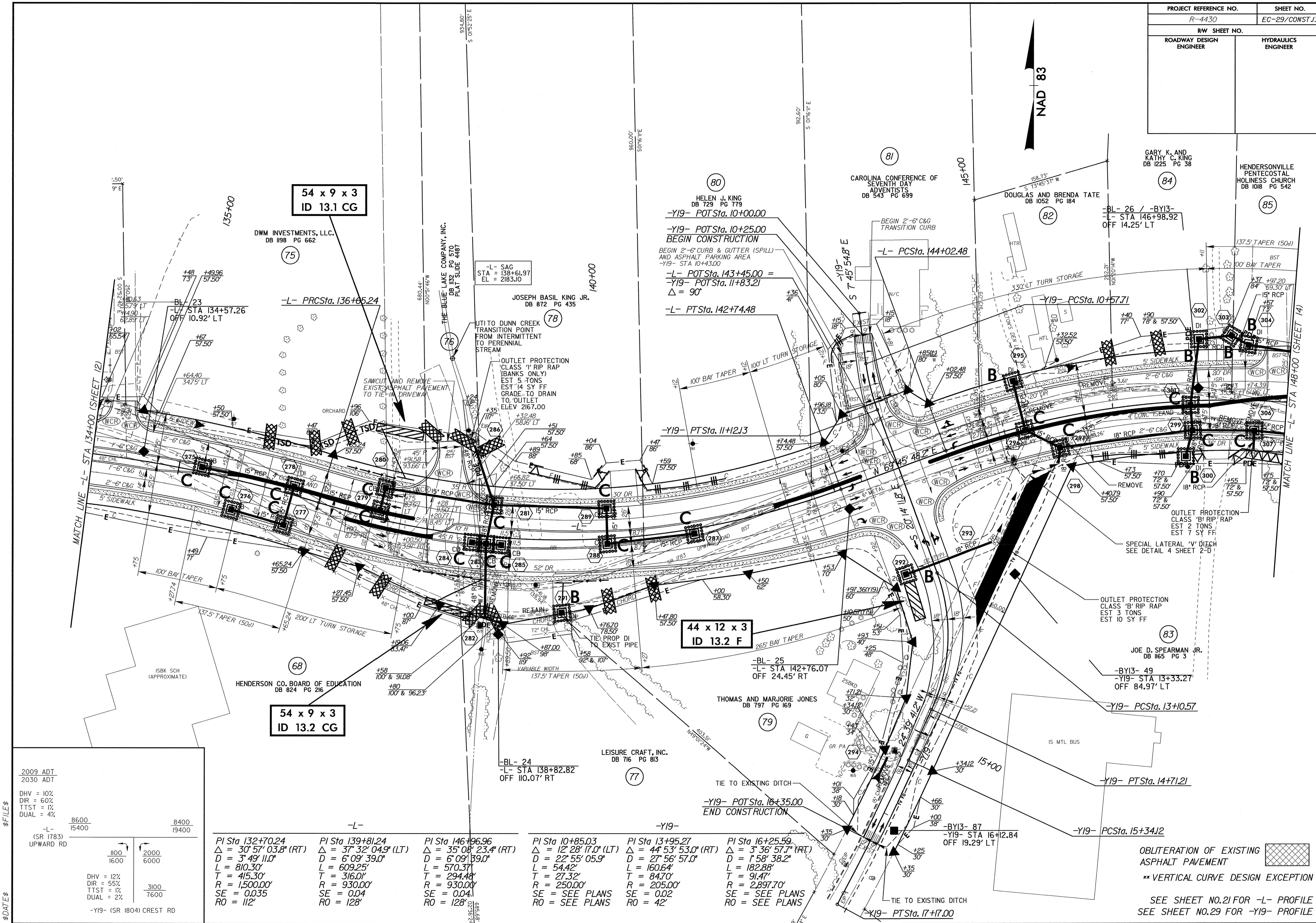
PI Sta 132+70.24
Δ = 30° 57' 03.8" (RT)
D = 3' 49' 11.0"
L = 810.30'
T = 415.30'
R = 1,500.00'
SE = 0.035
RO = 168'

-Y17-
PI Sta 10+48.23
Δ = 10° 51' 39.7" (LT)
D = 11' 17' 38.1"
L = 96.17'
T = 48.23'
R = 507.32'
SE = EXISTING
RO = EXISTING

PI Sta 12+96.46
Δ = 30° 56' 38.5" (LT)
D = 10' 08' 27.0"
L = 305.14'
T = 156.39'
R = 565.00'
SE = 0.04
RO = 108'

OBLETION OF EXISTING ASPHALT PAVEMENT

SEE SHEET NO. 21 FOR -L- PROFILE
SEE SHEET NO. 28 FOR -Y17- AND -Y18- PROFILES



2009 ADT
2030 ADT

DHV = 10%
DIR = 60%
TTST = 12
DUAL = 4%

8600 (SR 1783) UPWARD RD	2000 6000	8400 19400
	3100 7600	

DHV = 12%
DIR = 55%
TTST = 12
DUAL = 2%

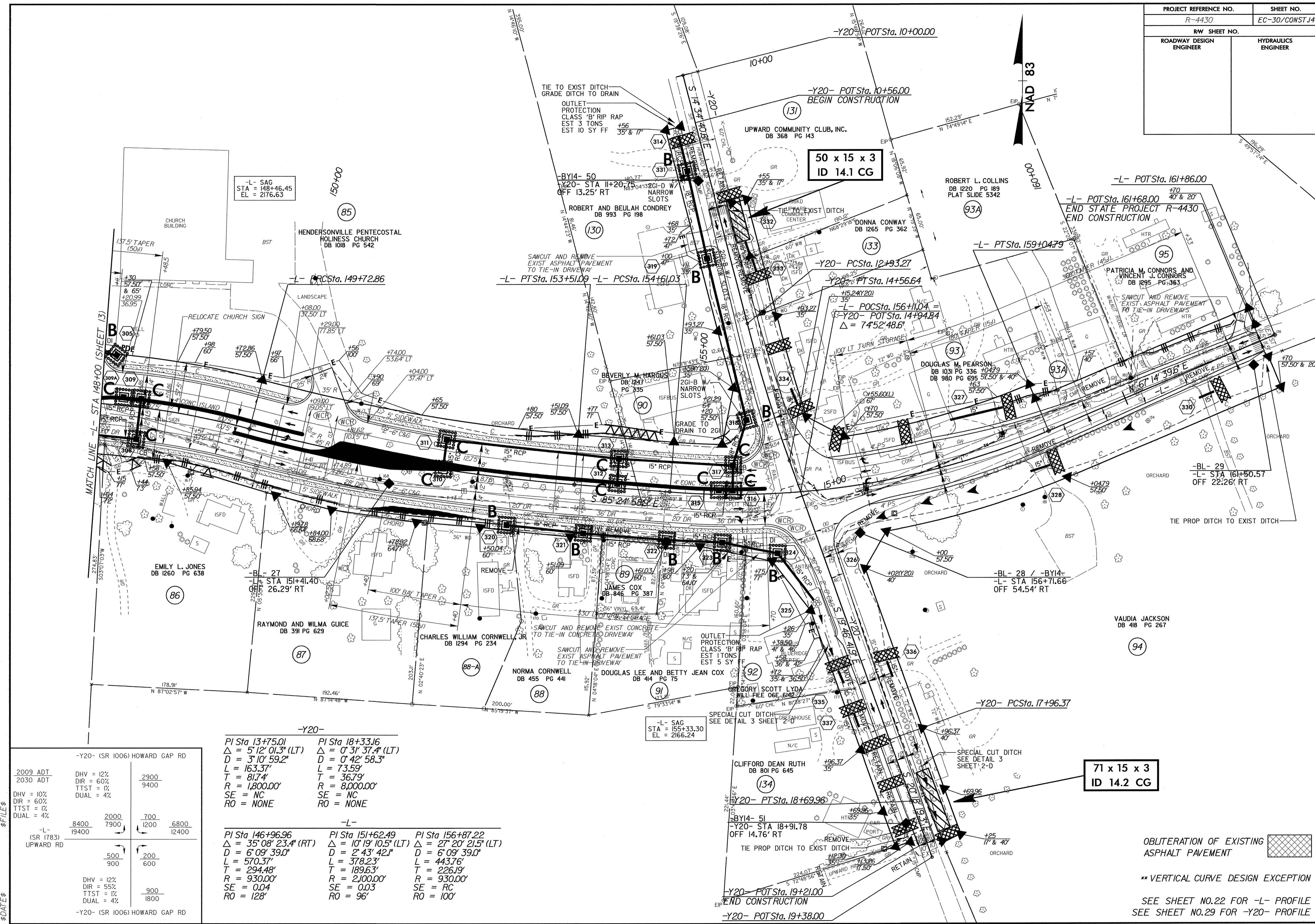
-Y19- (SR 1804) CREST RD

-L- PI Sta 132+70.24 $\Delta = 30' 57" 03.8" (RT)$ $D = 3' 49" 11.0"$ $L = 810.30'$ $T = 415.30'$ $R = 1,500.00'$ $SE = 0.035$ $RO = 112'$	-L- PI Sta 139+81.24 $\Delta = 37' 32" 04.9" (LT)$ $D = 6' 09" 39.0"$ $L = 609.25'$ $T = 316.01'$ $R = 930.00'$ $SE = 0.04$ $RO = 128'$	-L- PI Sta 146+96.96 $\Delta = 35' 08" 23.4" (RT)$ $D = 6' 09" 39.0"$ $L = 570.37'$ $T = 294.48'$ $R = 930.00'$ $SE = 0.04$ $RO = 128'$	-Y19- PI Sta 10+85.03 $\Delta = 12' 28" 17.0" (LT)$ $D = 22' 55" 05.9"$ $L = 54.42'$ $T = 27.32'$ $R = 250.00'$ $SE = SEE PLANS$ $RO = SEE PLANS$	-Y19- PI Sta 13+95.27 $\Delta = 44' 53" 53.0" (RT)$ $D = 27' 56" 57.0"$ $L = 160.64'$ $T = 84.70'$ $R = 205.00'$ $SE = 0.02$ $RO = 42'$	-Y19- PI Sta 16+25.59 $\Delta = 3' 36" 57.7" (RT)$ $D = 1' 58" 38.2"$ $L = 182.88'$ $T = 91.47'$ $R = 2,897.70'$ $SE = SEE PLANS$ $RO = SEE PLANS$
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OBLITERATION OF EXISTING ASPHALT PAVEMENT

** VERTICAL CURVE DESIGN EXCEPTION

SEE SHEET NO.21 FOR -L- PROFILE
SEE SHEET NO.29 FOR -Y19- PROFILE



2009 ADT
2030 ADT

DHV = 12%	DIR = 60%	TTST = 1%	DUAL = 4%
2900	9400		

DHV = 10%
DIR = 60%
TTST = 1%
DUAL = 4%

8400	2000	700	6800
19400	7900	1200	12400

-L- (SR 1783)
UPWARD RD

500	200
900	600

DHV = 12%
DIR = 55%
TTST = 1%
DUAL = 4%

-Y20- (SR 1006) HOWARD GAP RD

-Y20-

PI Sta 13+75.01 $\Delta = 5' 12'' 01.3''$ (LT) D = 3' 10' 59.2" L = 163.37' T = 81.74' R = 1,800.00' SE = NC RO = NONE	PI Sta 18+33.16 $\Delta = 0' 31' 37.4''$ (LT) D = 0' 42' 58.3" L = 73.59' T = 36.79' R = 8,000.00' SE = NC RO = NONE
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-L-

PI Sta 146+96.96 $\Delta = 35' 08'' 23.4''$ (RT) D = 6' 09' 39.0" L = 570.37' T = 294.48' R = 930.00' SE = 0.04 RO = 128'	PI Sta 151+62.49 $\Delta = 10' 19' 10.5''$ (LT) D = 2' 43' 42.1" L = 378.23' T = 189.63' R = 2,100.00' SE = 0.03 RO = 96'	PI Sta 156+87.22 $\Delta = 27' 20' 21.5''$ (LT) D = 6' 09' 39.0" L = 443.76' T = 226.19' R = 930.00' SE = RC RO = 100'
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71 x 15 x 3
ID 14.2 CG

50 x 15 x 3
ID 14.1 CG

OBLITERATION OF EXISTING ASPHALT PAVEMENT

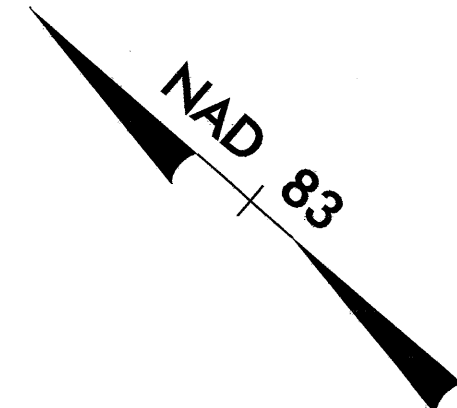
** VERTICAL CURVE DESIGN EXCEPTION

SEE SHEET NO.22 FOR -L- PROFILE
SEE SHEET NO.29 FOR -Y20- PROFILE

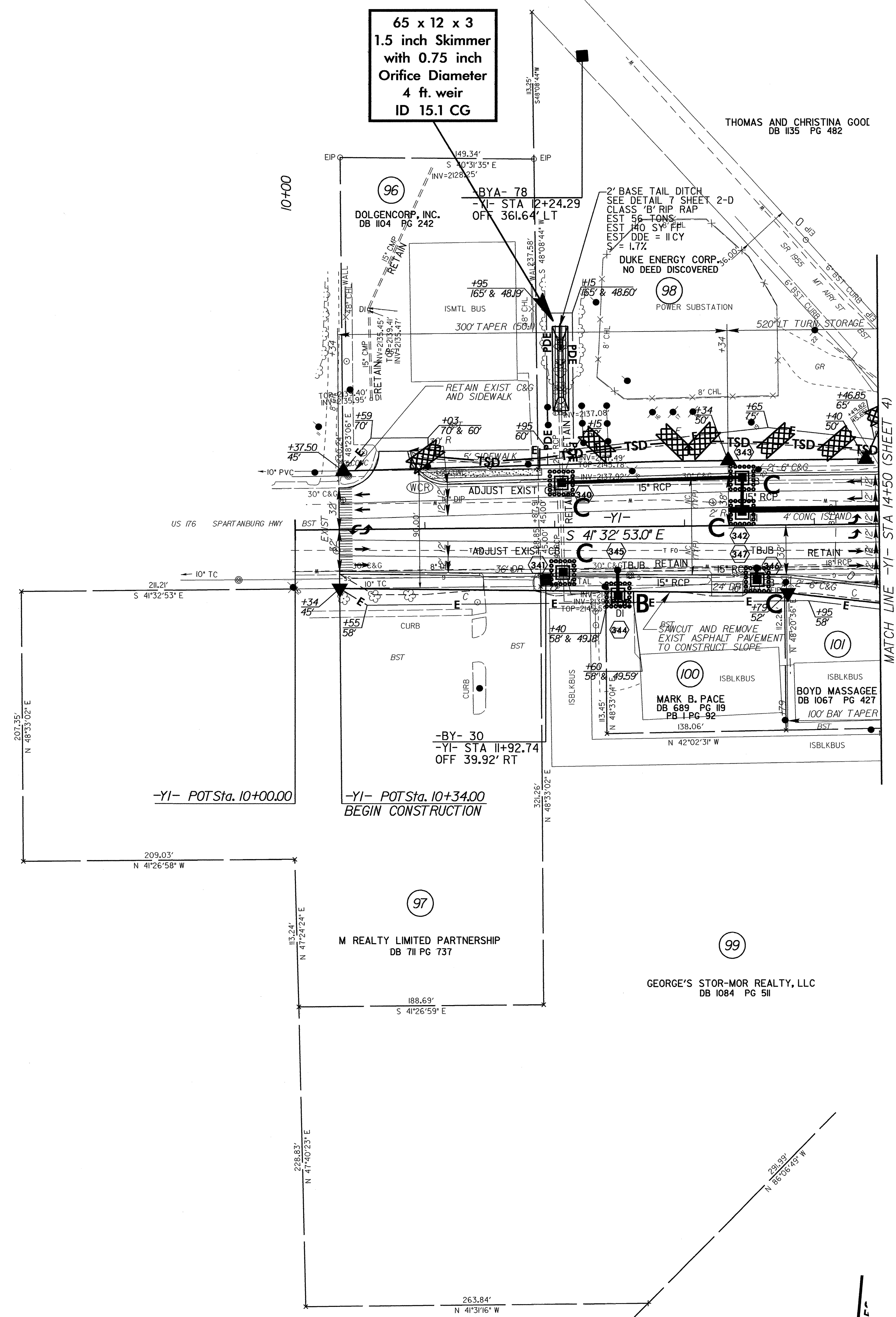
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\$DATE\$

PROJECT REFERENCE NO.	SHEET NO.
R-4430	EC-31/CONST.15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



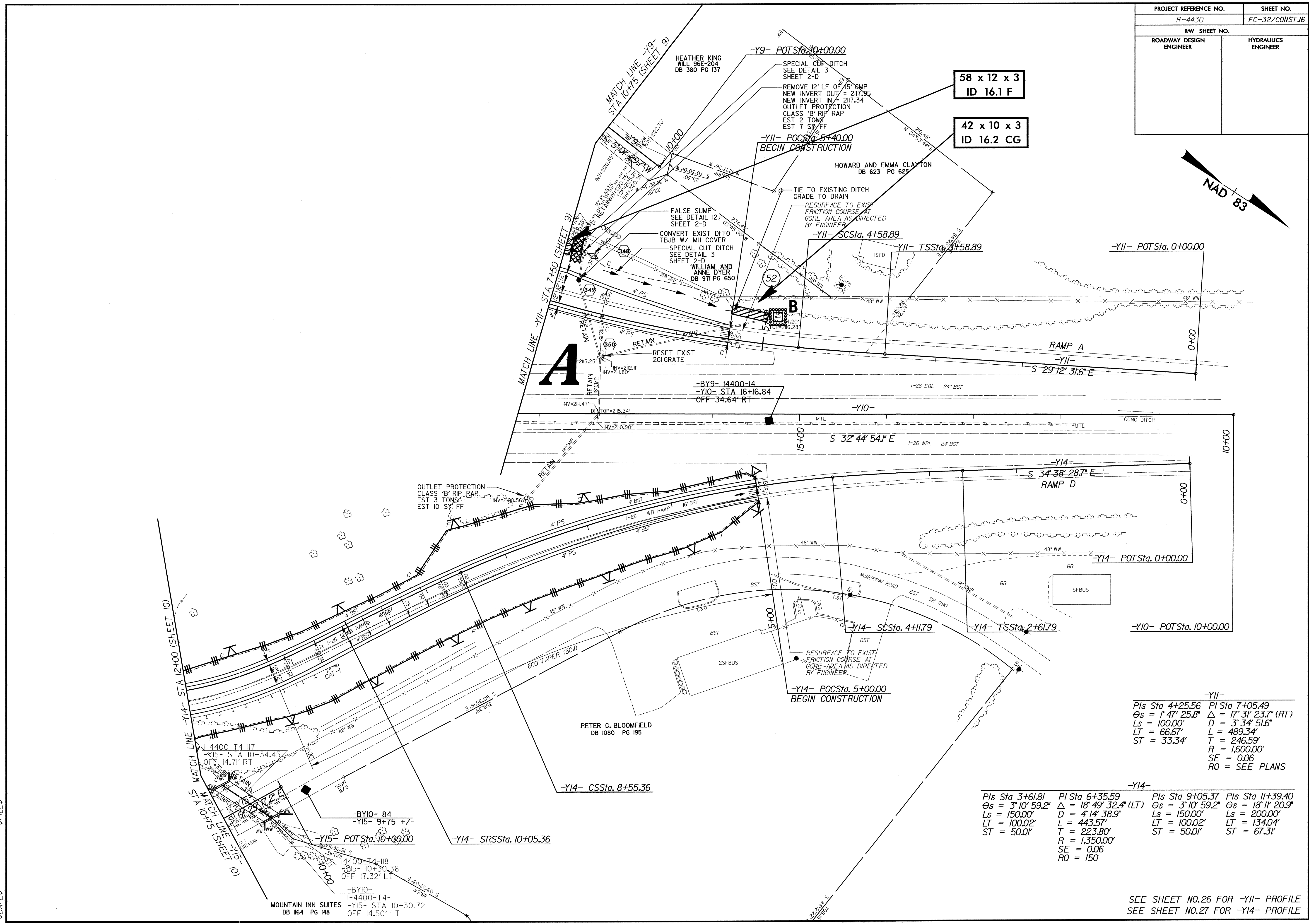
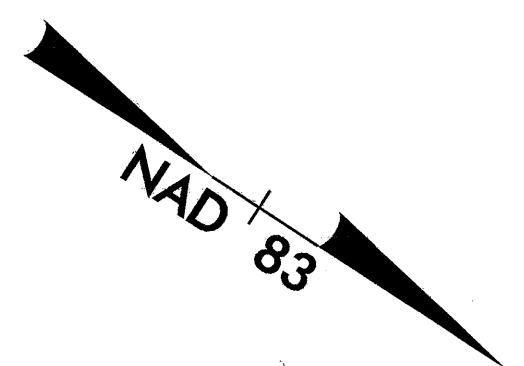
65 x 12 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
ID 15.1 CG



\$DATE\$ \$FILE\$

SEE SHEET NO.23 FOR -YI- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-4430	EC-32/CONST.16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-YII-
 Pls Sta 4+25.56 PI Sta 7+05.49
 $\Theta_s = 1^\circ 47' 25.8''$ $\Delta = 17' 31'' 23.7''$ (RT)
 $L_s = 100.00'$ $D = 3' 34'' 51.6''$
 $LT = 66.67'$ $L = 489.34'$
 $ST = 33.34'$ $T = 246.59'$
 $R = 1,600.00'$
 $SE = 0.06$
 $RO = \text{SEE PLANS}$

-YII-
 Pls Sta 3+61.81 PI Sta 6+35.59
 $\Theta_s = 3^\circ 10' 59.2''$ $\Delta = 18^\circ 49' 32.4''$ (LT)
 $L_s = 150.00'$ $D = 4' 14'' 38.9''$
 $LT = 100.02'$ $L = 443.57'$
 $ST = 50.01'$ $T = 223.80'$
 $R = 1,350.00'$
 $SE = 0.06$
 $RO = 150$

SEE SHEET NO.26 FOR -YII- PROFILE
 SEE SHEET NO.27 FOR -YII- PROFILE

\$DATE\$
 \$FILE\$