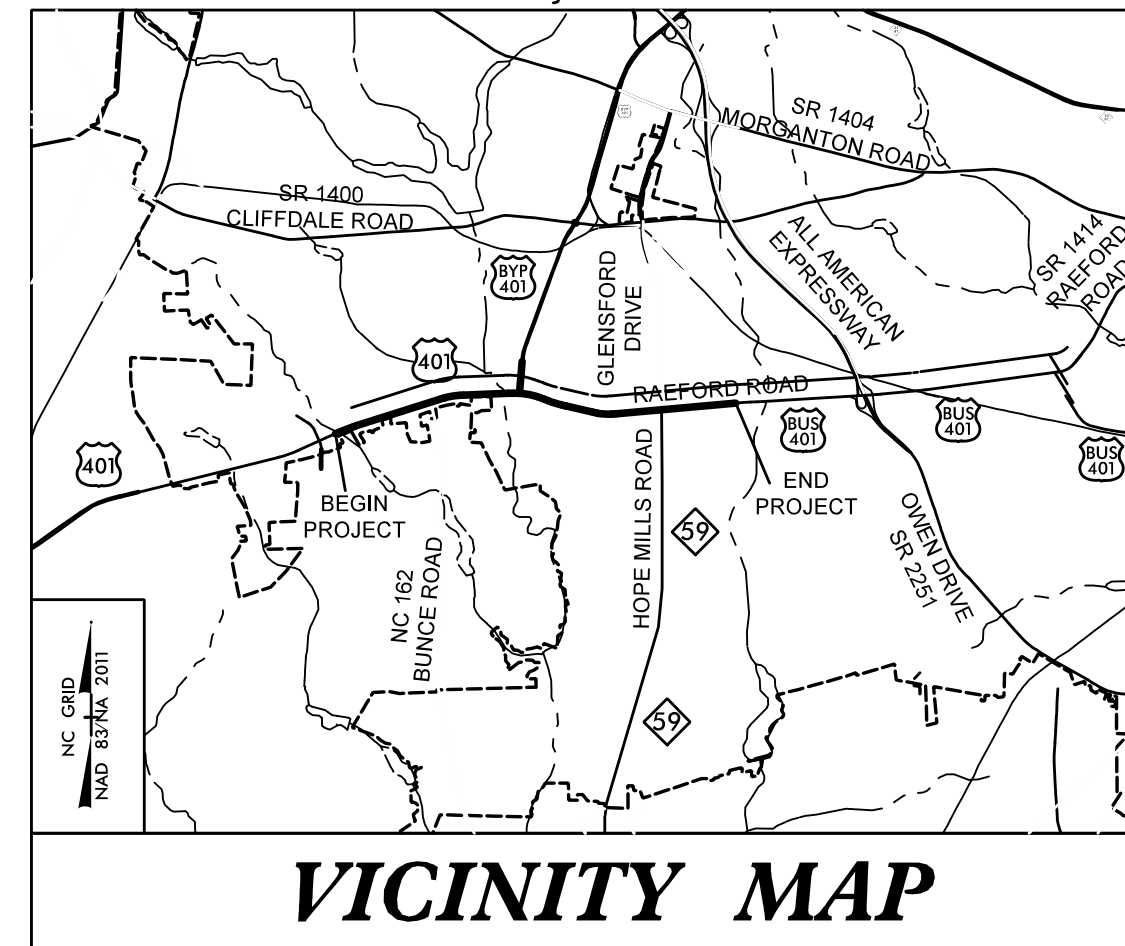


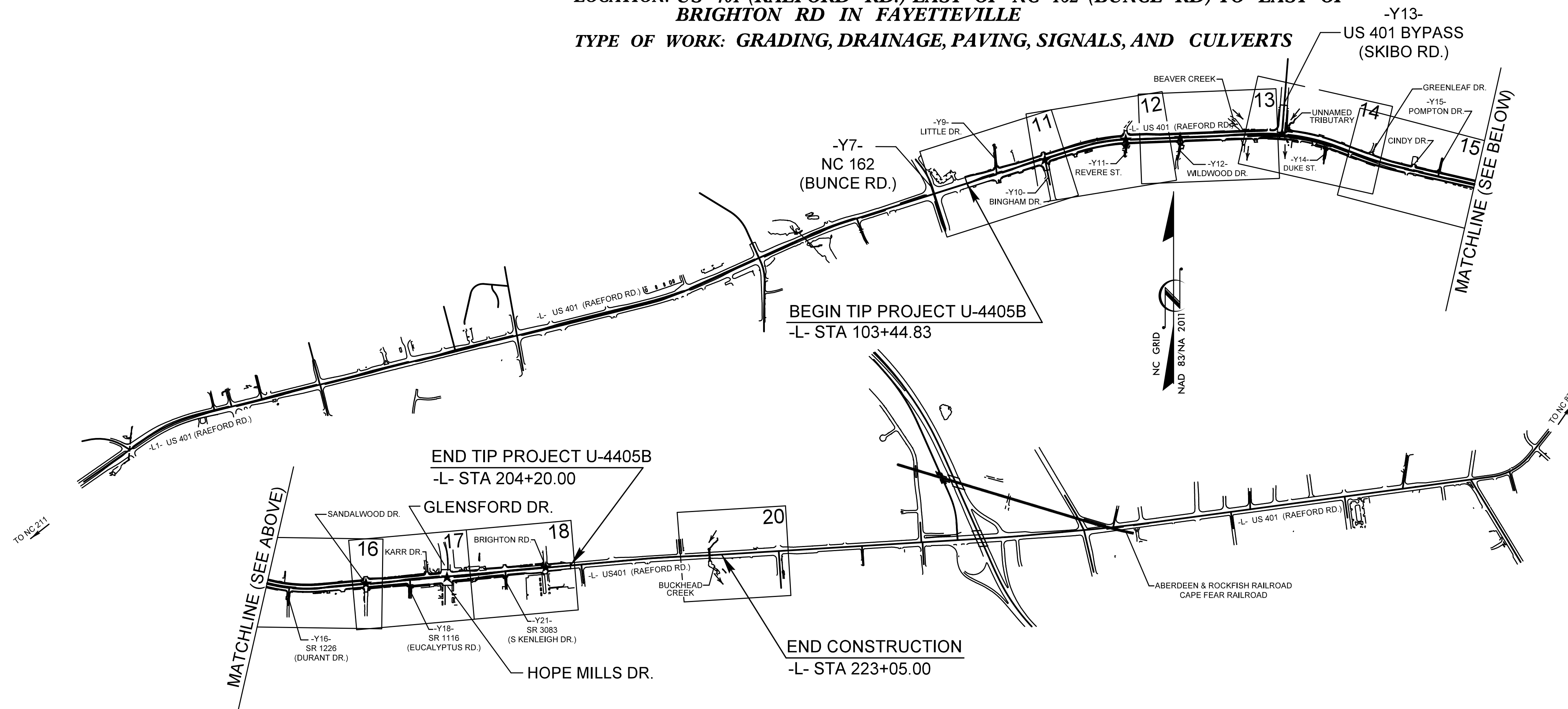
TIP PROJECT: U-4405B

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



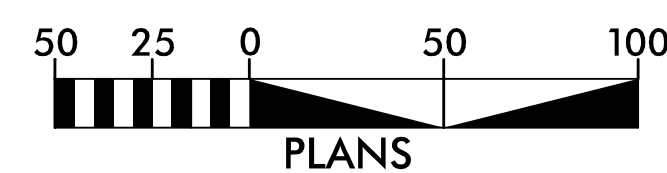
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
**PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL**
CUMBERLAND COUNTY

**LOCATION: US 401 (RAEFORD RD.) EAST OF NC 162 (BUNCE RD) TO EAST OF
BRIGHTON RD IN FAYETTEVILLE**
TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS, AND CULVERTS



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

GRAPHIC SCALE



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY
WITH THE REGULATIONS SET FORTH BY THE NCG 010000 GENERAL
STORMWATER CONSTRUCTION PERMIT ISSUED BY THE NORTH
CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION
OF ENERGY, MINERAL, AND LAND RESOURCES.



VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606



Prepared In the Office of:
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

Designed by:

REID B. ROBOL, PE
NAME

3409
LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

The "Roadway Standard Drawings"- Roadway Design Unit - N. C.
Department of Transportation - Raleigh, N. C., dated January 2024
and the latest revision thereto are applicable to this project and by
reference hereby are considered a part of these plans.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

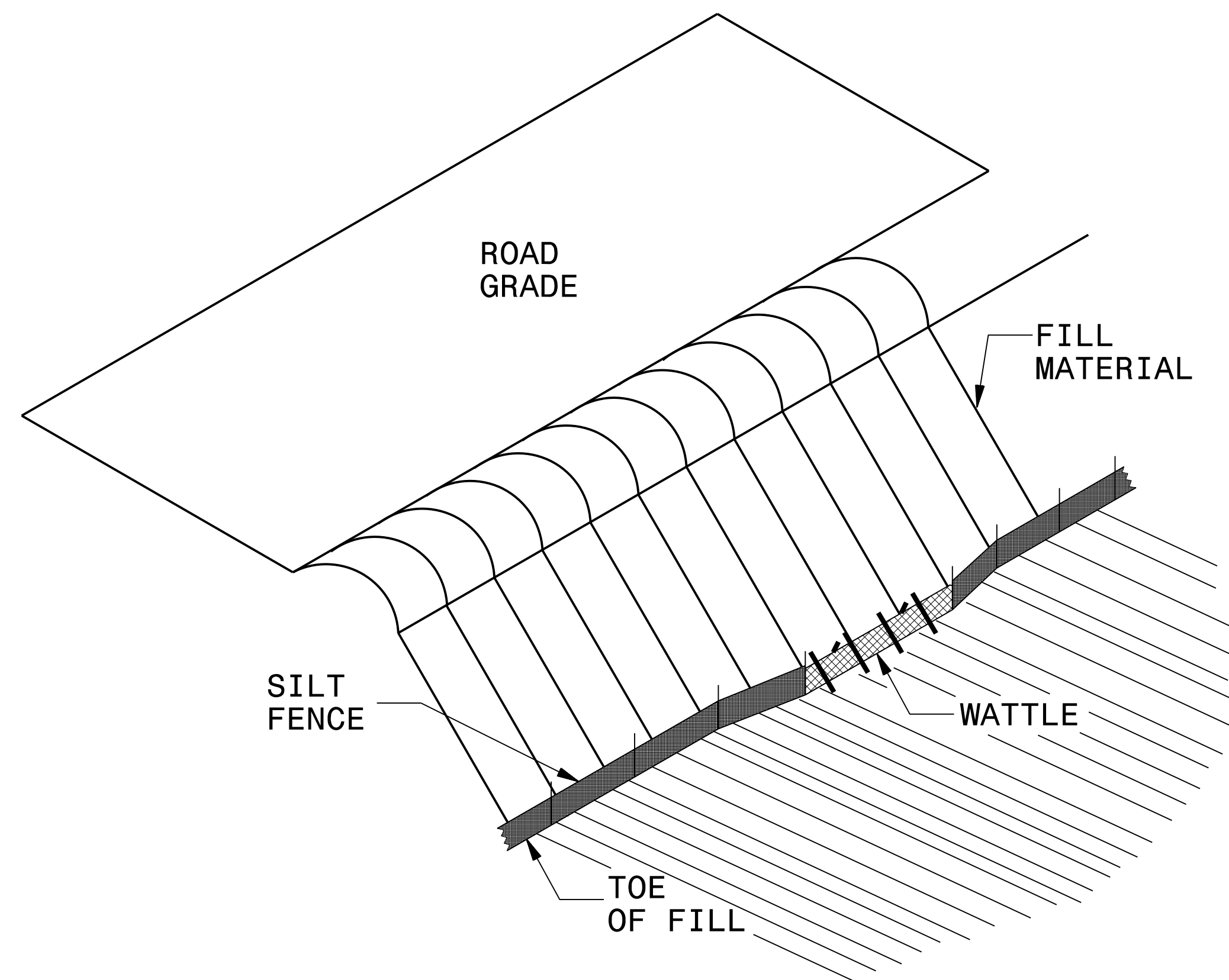
PROJECT REFERENCE NO. U-4405B	SHEET NO. EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

EROSION & SEDIMENT CONTROL LEGEND

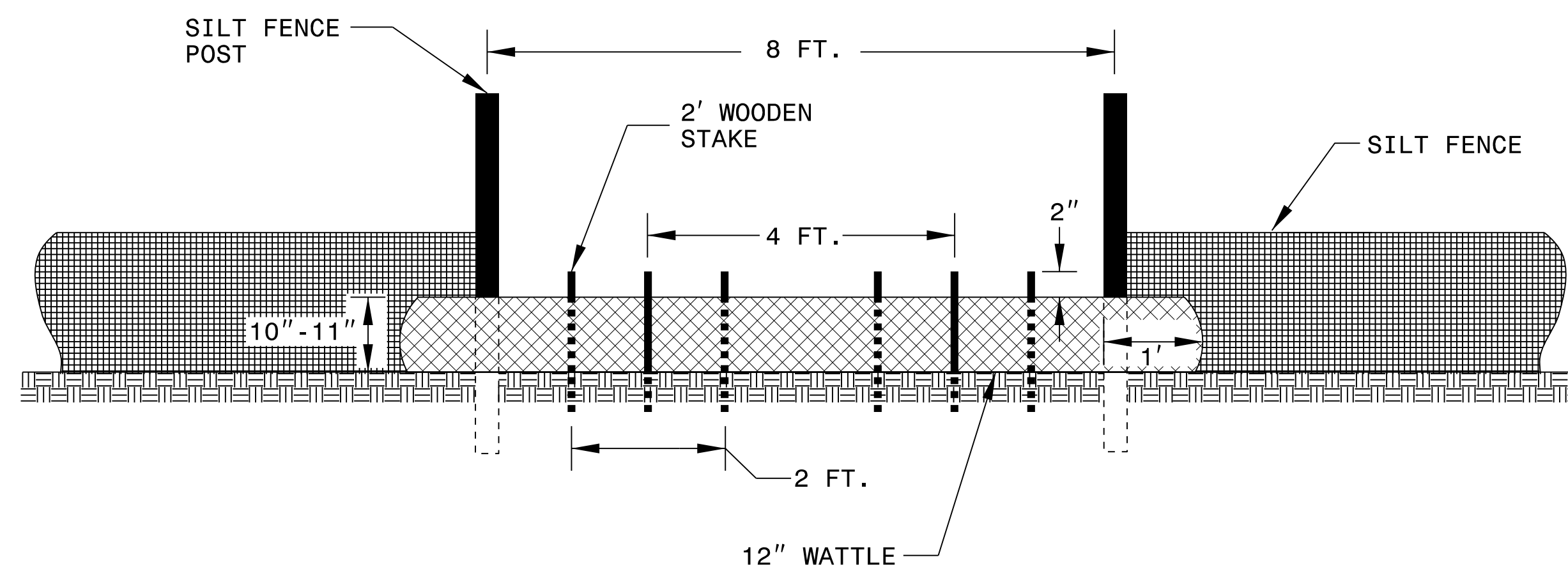
Std. #	Description	Symbol	Std. #	Description	Symbol
1605.01	Temporary Silt Fence		1633.01	Temporary Rock Silt Check Type A	
1606.01	Special Sediment Control Fence		1633.02	Temporary Rock Silt Check Type B	
1622.01	Temporary Berms and Slope Drains		1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1630.02	Silt Basin Type B		1634.01	Temporary Rock Sediment Dam Type A	
1630.03	Temporary Silt Ditch		1634.02	Temporary Rock Sediment Dam Type B	
1630.04	Stilling Basin		1635.01	Rock Pipe Inlet Sediment Trap Type A	
1630.05	Temporary Diversion		1635.02	Rock Pipe Inlet Sediment Trap Type B	
1630.06	Special Stilling Basin		1636.01	Excelsior Wattle Check	
1630.07	Skimmer Basin		1636.01	Excelsior Wattle Check with Flocculant	
1630.08	Tiered Skimmer Basin		1636.01	Coir Fiber Wattle Check	
1630.09	Earthen Dam with Skimmer		1636.01	Coir Fiber Wattle Check with Flocculant	
	Infiltration Basin		1636.02	Silt Fence Excelsior Wattle Break	
	Rock Inlet Sediment Trap:			Silt Fence Coir Fiber Wattle Break	
1632.01	Type A		1636.03	Excelsior Wattle Barrier	
1632.02	Type B		1636.03	Coir Fiber Wattle Barrier	
1632.03	Type C				

SILT FENCE COIR FIBER WATTLE BREAK DETAIL

PROJECT REFERENCE NO. <i>U-4405B</i>	SHEET NO. <i>EC-3A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



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.

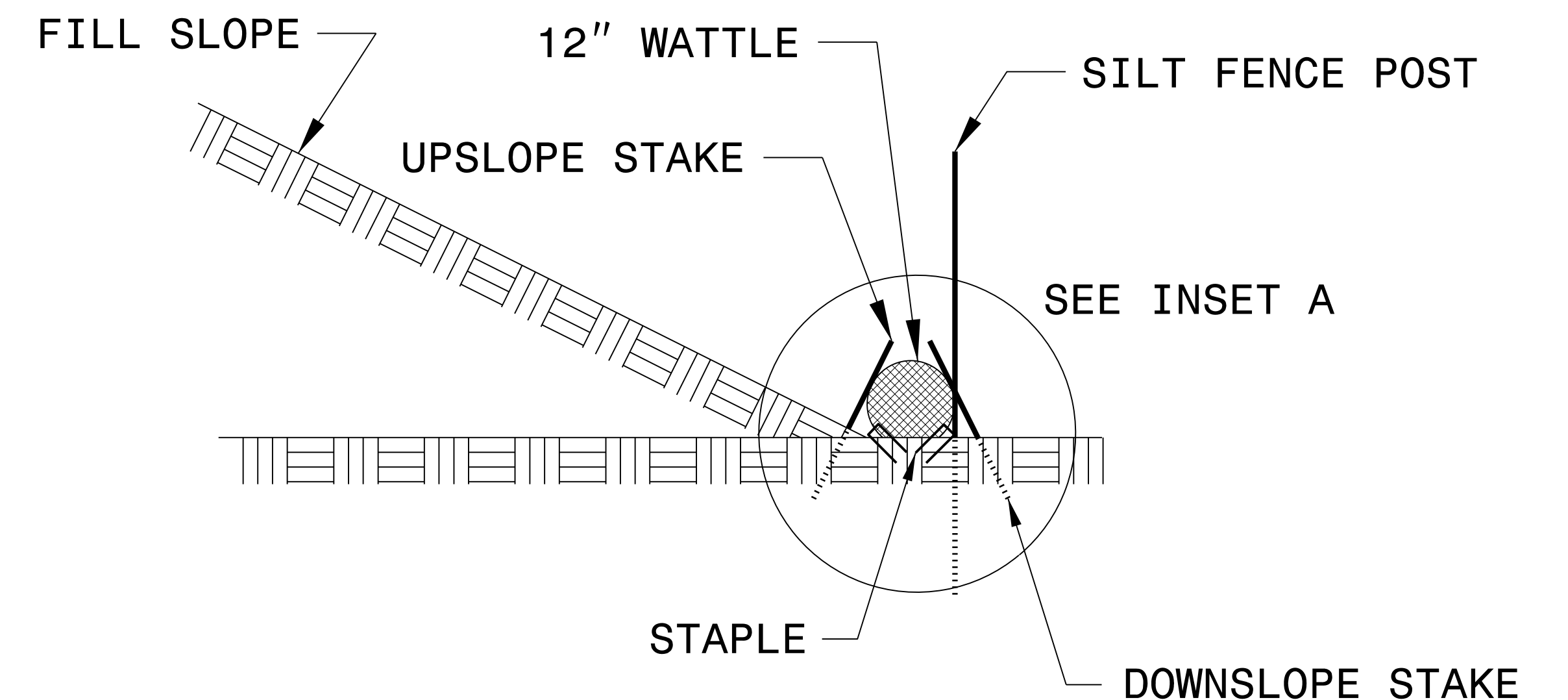
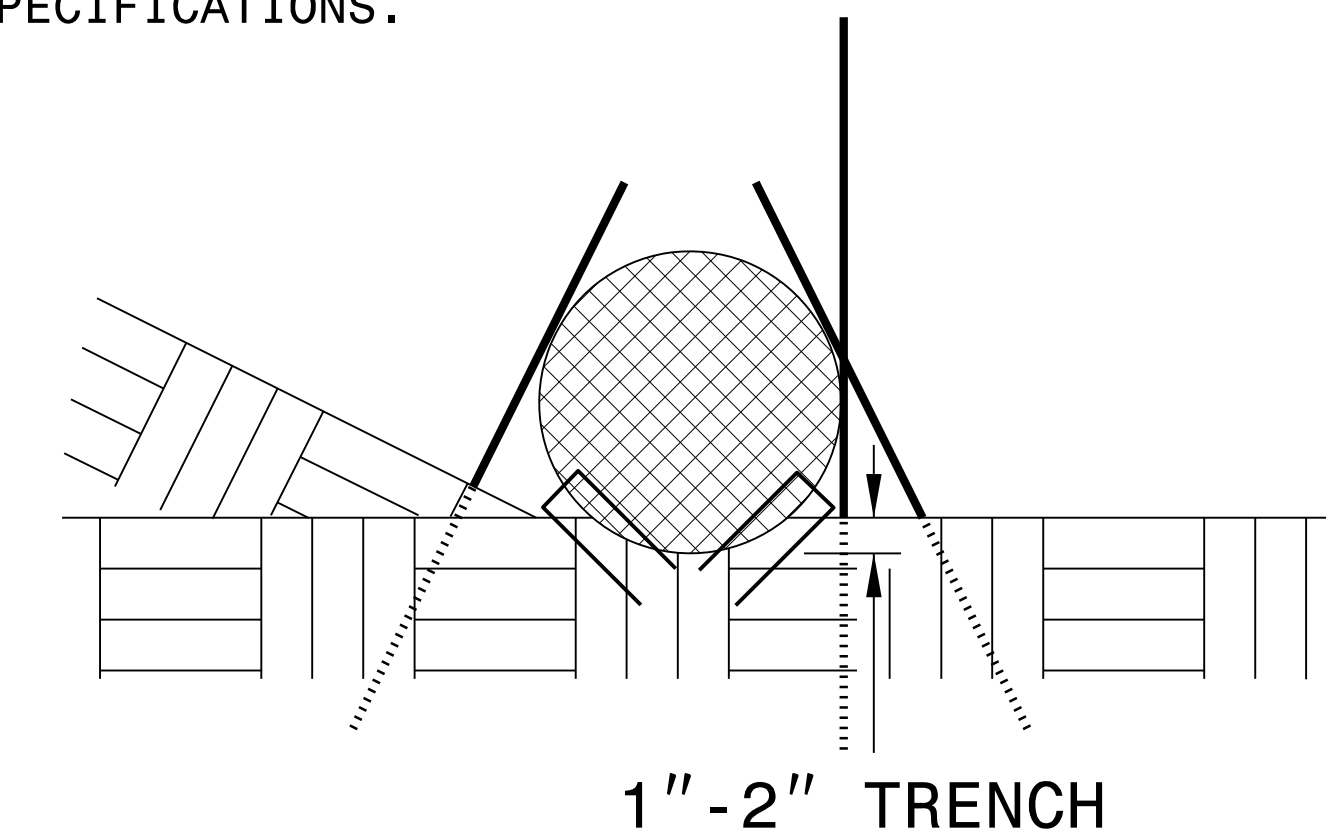
PROVIDE STAPLES MADE OF 11 GAUGE STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 6" IN LENGTH.

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

BORROW PIT DEWATERING BASIN DETAIL

PROJECT REFERENCE NO. U-4405B	SHEET NO. EC-3B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

GENERAL NOTES:

DETERMINE BORROW PIT DEWATERING BASIN SIZE USING $V = 8.0203 * Q * T$, WHERE V IS VOLUME (FT³), Q IS PUMP FLOW RATE (GPM), AND T IS DEWATERING TIME (HR). USE MAXIMUM FLOW RATE OF 1000 GPM AND A MINIMUM DEWATERING TIME OF 2 HOURS.

RISER SHALL BE A NON-PERFORATED, SMOOTH OR CORRUGATED MATERIAL WITH A FLASHBOARD OPTION.

CONSTRUCT THE COIR FIBER BAFFLE IN ACCORDANCE WITH ROADWAY STANDARD DRAWING 1640.01 AND WITH MATERIAL THAT MEETS THE SPECIFICATIONS OF ROADWAY STANDARD 1640-14.

PROVIDE 5' STEEL POSTS OF THE SELF-FASTENER ANGLE STEEL TYPE. INSTALL STEEL POSTS WITH NO MORE THAN 3' OF THE POST APPEARING ABOVE THE GROUND.

ATTACH THE COIR FIBER MAT TO THE STEEL POSTS WITH WIRE OR OTHER ACCEPTABLE MEANS AND STAPLED INTO THE BOTTOM AND SIDE SLOPES OF THE BASIN WITH 12" STAPLES.

INSTALL TYPE 2 GEOTEXTILE ON SIDESLOPES AND BOTTOM OF BASIN AT INLET AS SHOWN IN THE DETAIL.

USE THE TYPICAL SECTION SHOWN FOR THE BORROW PIT DEWATERING BASIN AS A GUIDE. THE BASIN MAY HAVE ANY TYPE CONFIGURATION AS LONG AS SUFFICIENT VOLUME IS PROVIDED AND PROVISIONS ARE MADE FOR A NON-PERFORATED RISER.

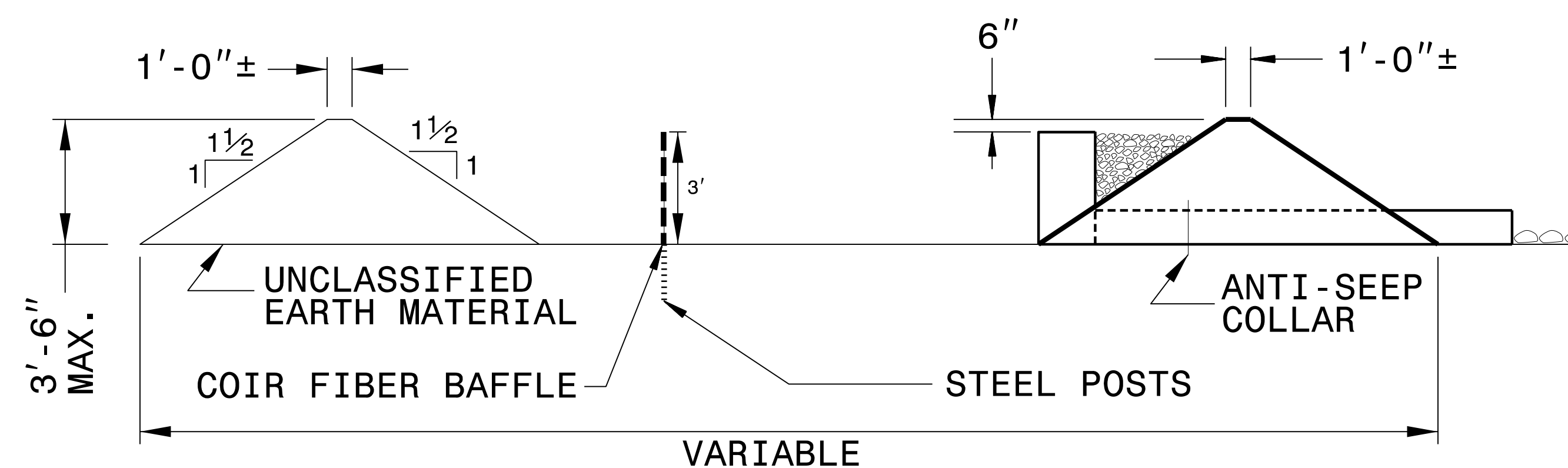
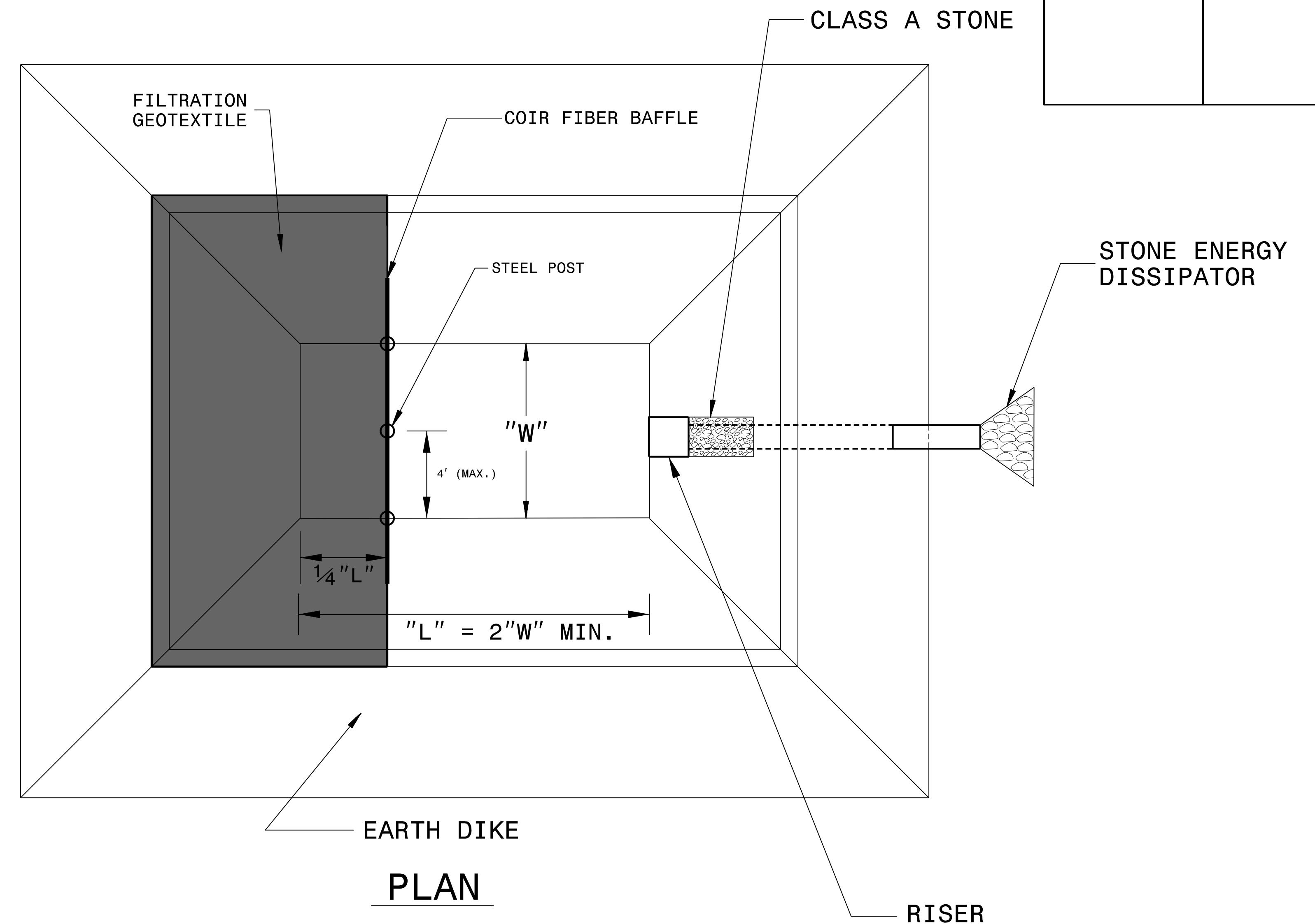
DO NOT EXCEED 3½ FT. IN HEIGHT FOR THE EARTH DIKES REQUIRED FOR BORROW PIT DEWATERING BASIN.

THE BORROW PIT DEWATERING BASIN SIZE IS VARIABLE AND DEPENDENT ON SPECIFIC SITE REQUIREMENTS AS WELL AS PROPOSED CONSTRUCTION OPERATIONS.

SUBMIT THE SIZE, LOCATION AND RISER PIPE MATERIAL FOR APPROVAL PRIOR TO CONSTRUCTION.

PUMP THE EFFLUENT INTO THE BORROW PIT DEWATERING BASIN TO A MAXIMUM DEPTH OF 6 IN. BELOW TOP OF EARTH DIKE.

PROVIDE A STONE ENERGY DISSIPATOR PAD AT THE OUTLET OF THE PUMP DISCHARGE HOSE AND OUTLET OF THE RISER BARREL IN ACCORDANCE WITH ROADWAY STANDARD DRAWING 876.02 FOR OUTLET W/O DITCH.

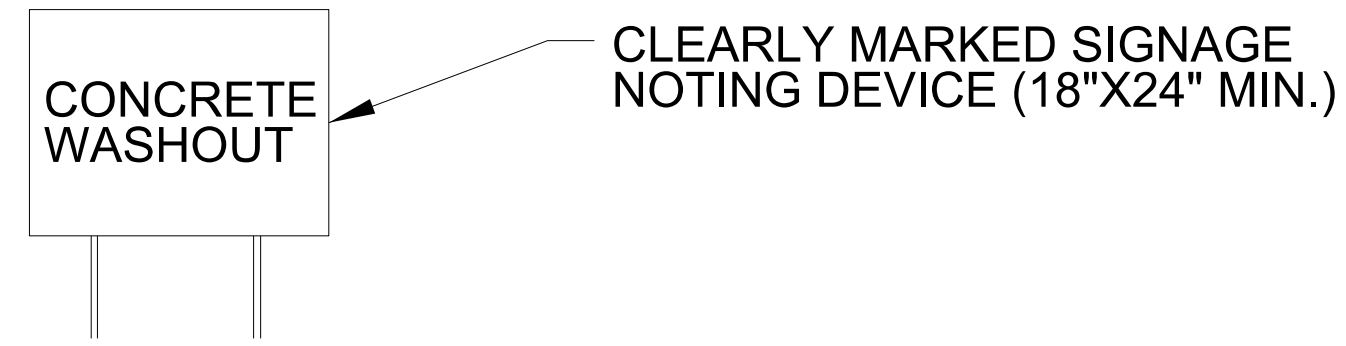
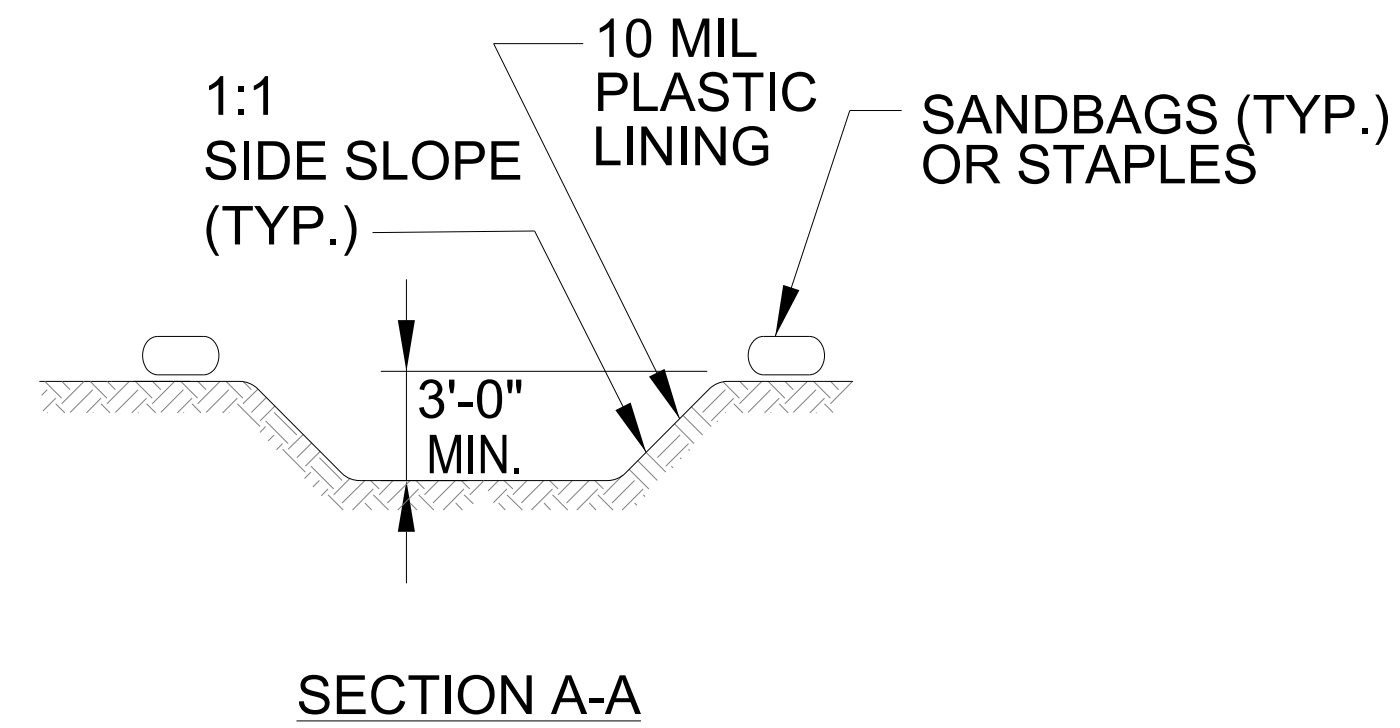
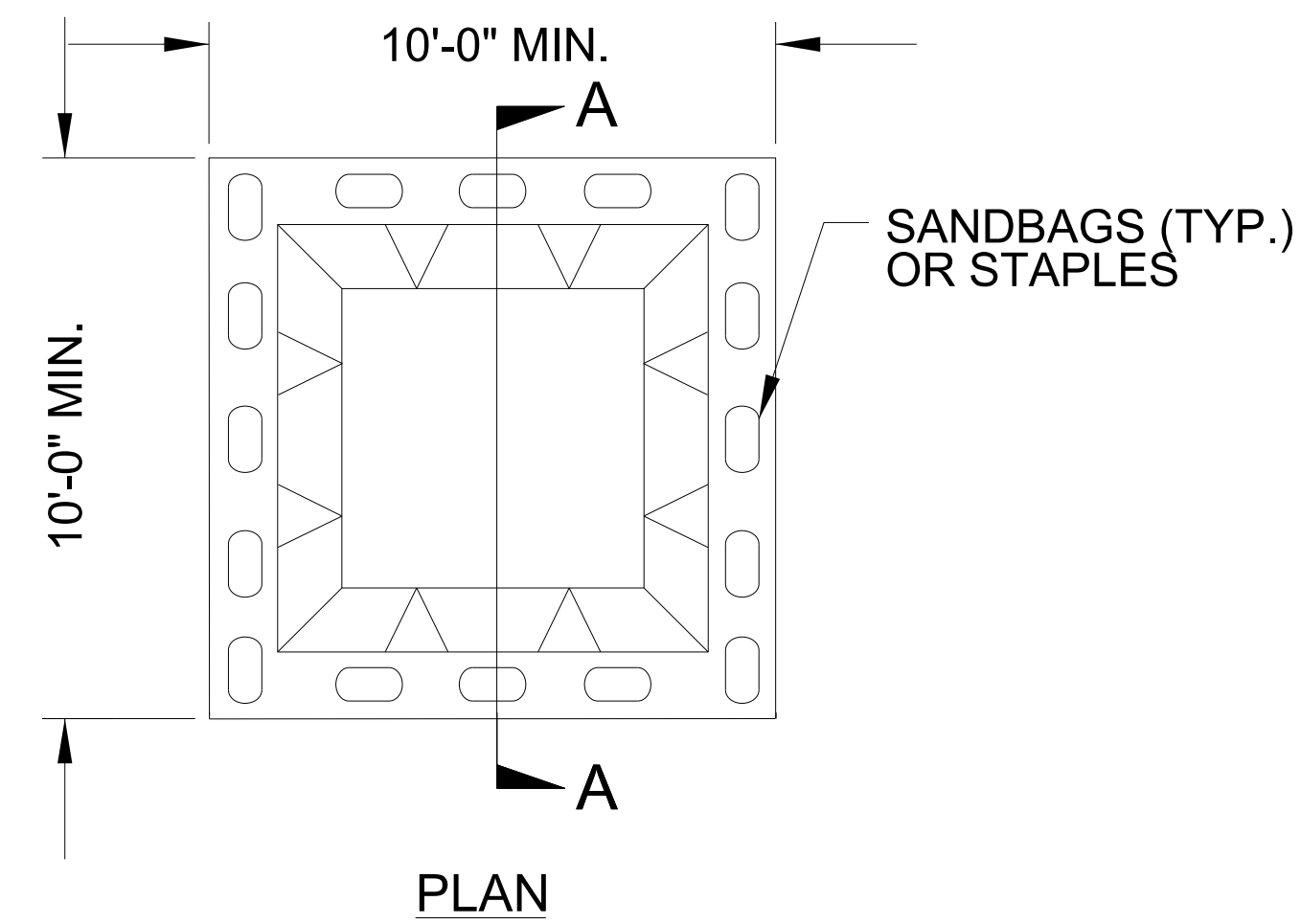


TYPICAL SECTION VIEW

NOT TO SCALE

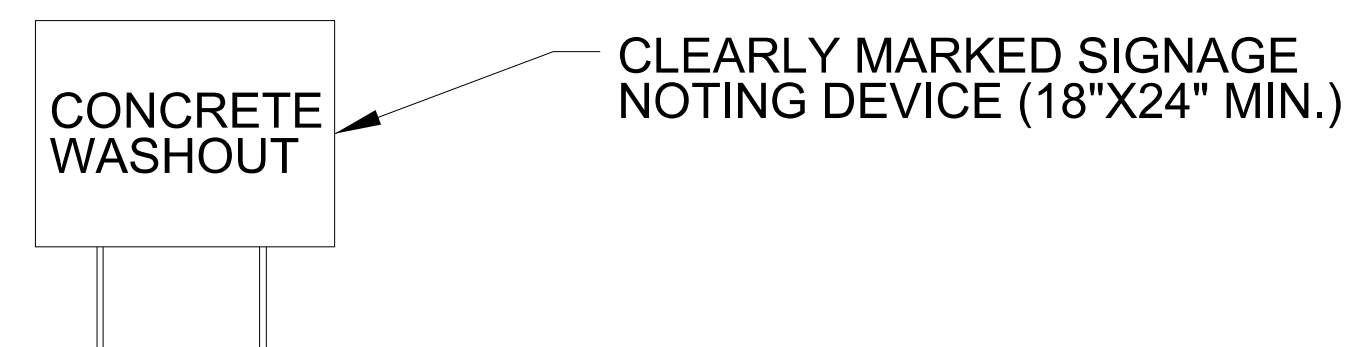
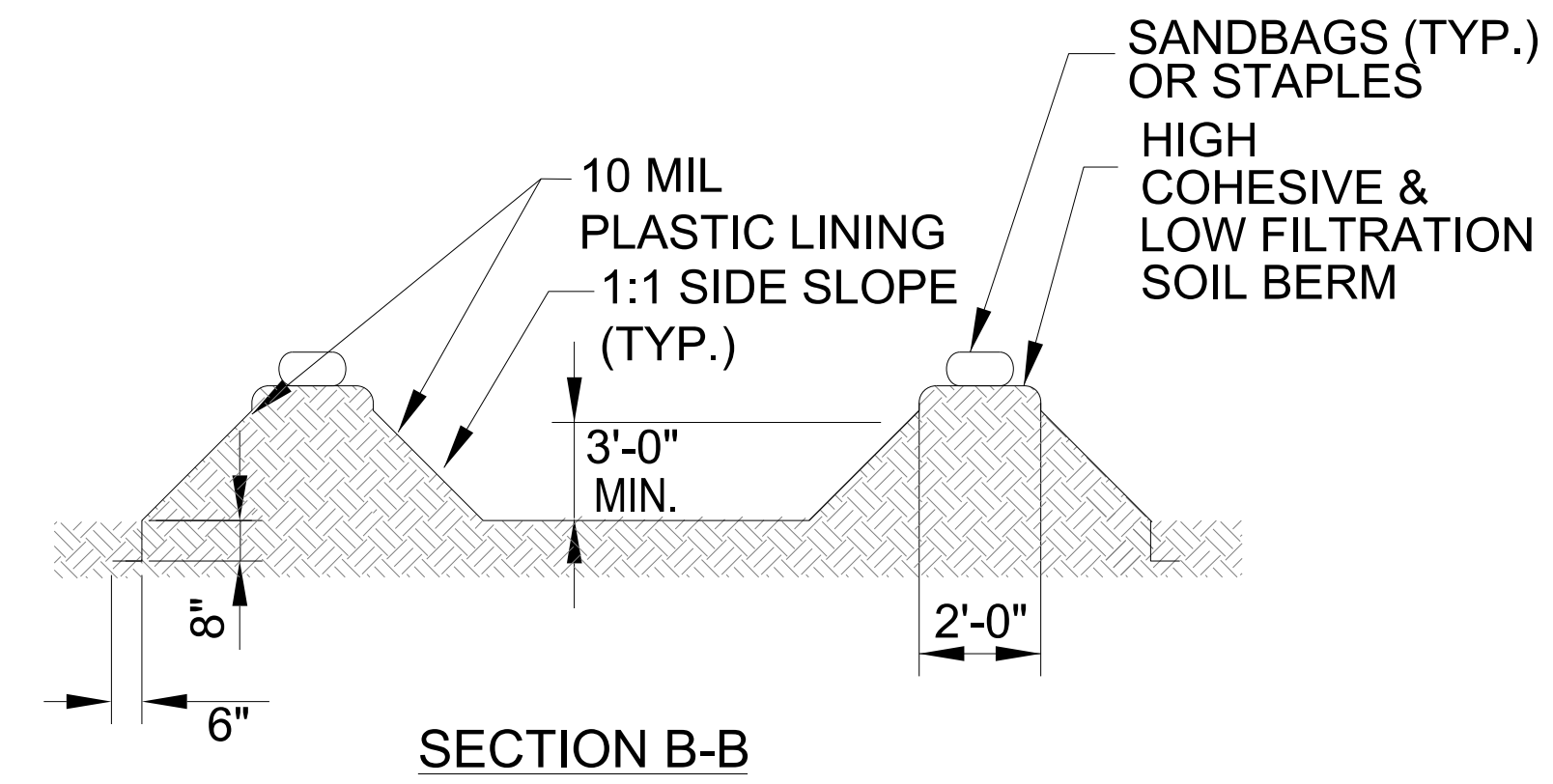
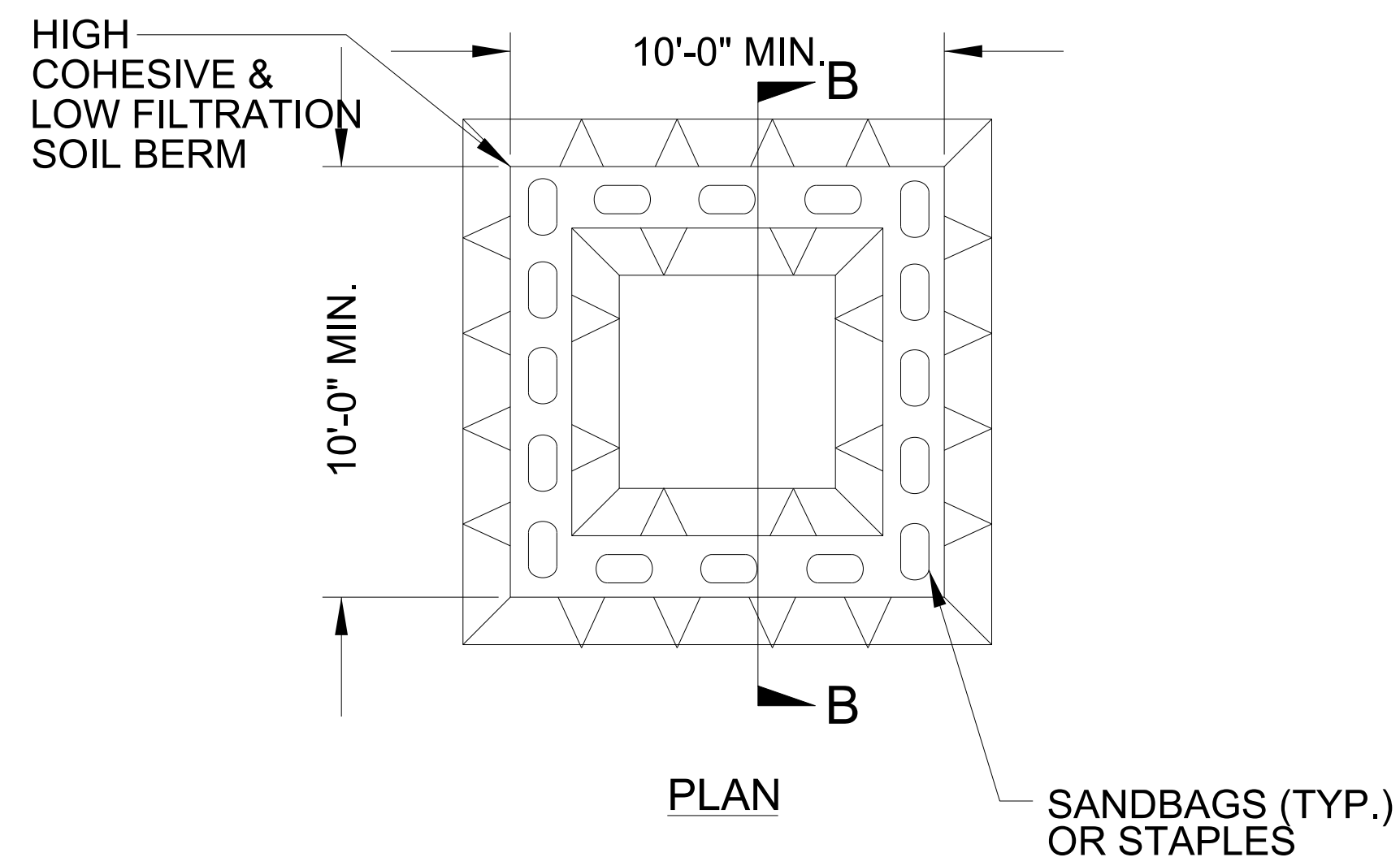
PROJECT REFERENCE NO. <i>U-4405B</i>	SHEET NO. <i>EC-3C</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



BELOW GRADE WASHOUT STRUCTURE
NOT TO SCALE

- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
 3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.



ABOVE GRADE WASHOUT STRUCTURE
NOT TO SCALE

- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
 3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

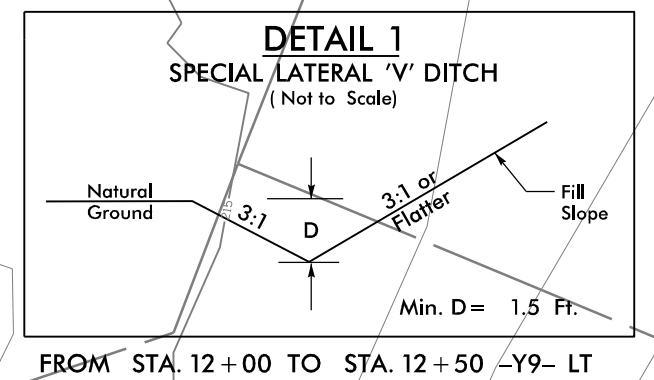
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>U-4405B</i>	SHEET NO. <i>EC-3E</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
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 TO 4:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH WITH SLOPES STEEPER THAN 4:1. 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES

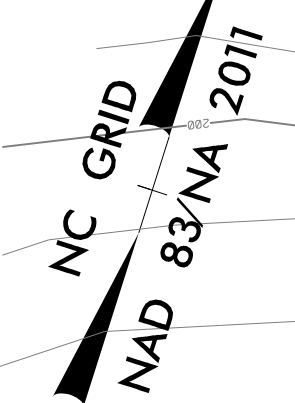
PROJECT REFERENCE NO. U-4405B	SHEET NO. EC-4/CONST.11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 11

INSTALL FABRIC INSERT INLET PROTECTION
DEVICE IN LIEU OF ROCK INLET SEDIMENT
TRAP TYPE 'C' AS DIRECTED TO AVOID
PONDING OF RUNOFF IN ROADWAY OPEN TO
PUBLIC TRAFFIC

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

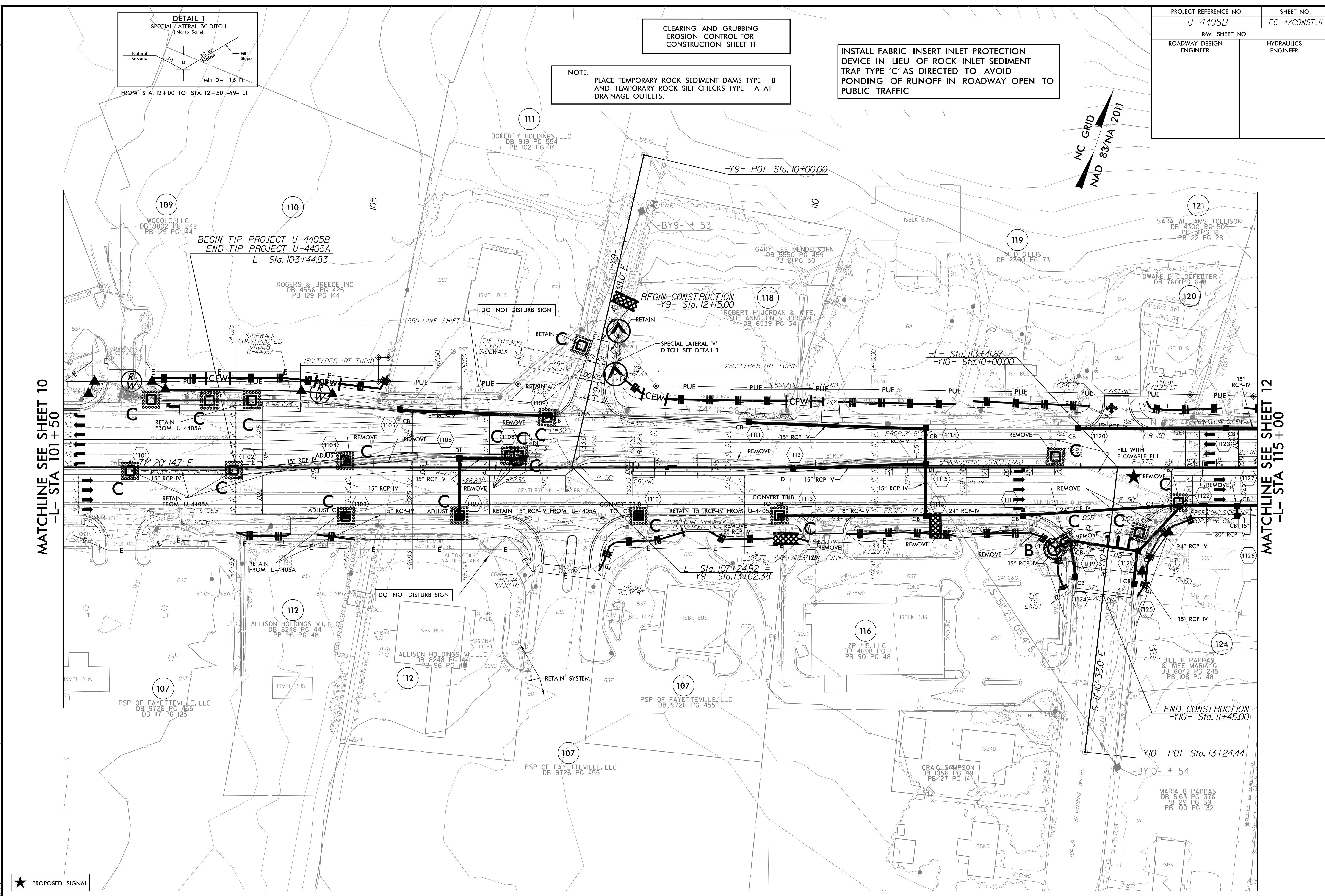


8/17/09

10/8/2024
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11/11/2024

- ★ PROPOSED SIGNAL
- ▬ PROP CONC SIDEWALK

** A DESIGN EXCEPTION FOR LANE WIDTH IS
REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00



MATCHLINE SEE SHEET 10
-L- STA 101+50

MATCHLINE SEE SHEET 12
-L- STA 115+00

NOTE: SEE SHEET 36 FOR -L- PROFILE
SEE SHEET 47 FOR -Y9- PROFILE
SEE SHEET 47 FOR -Y10- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-5/CONST.12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

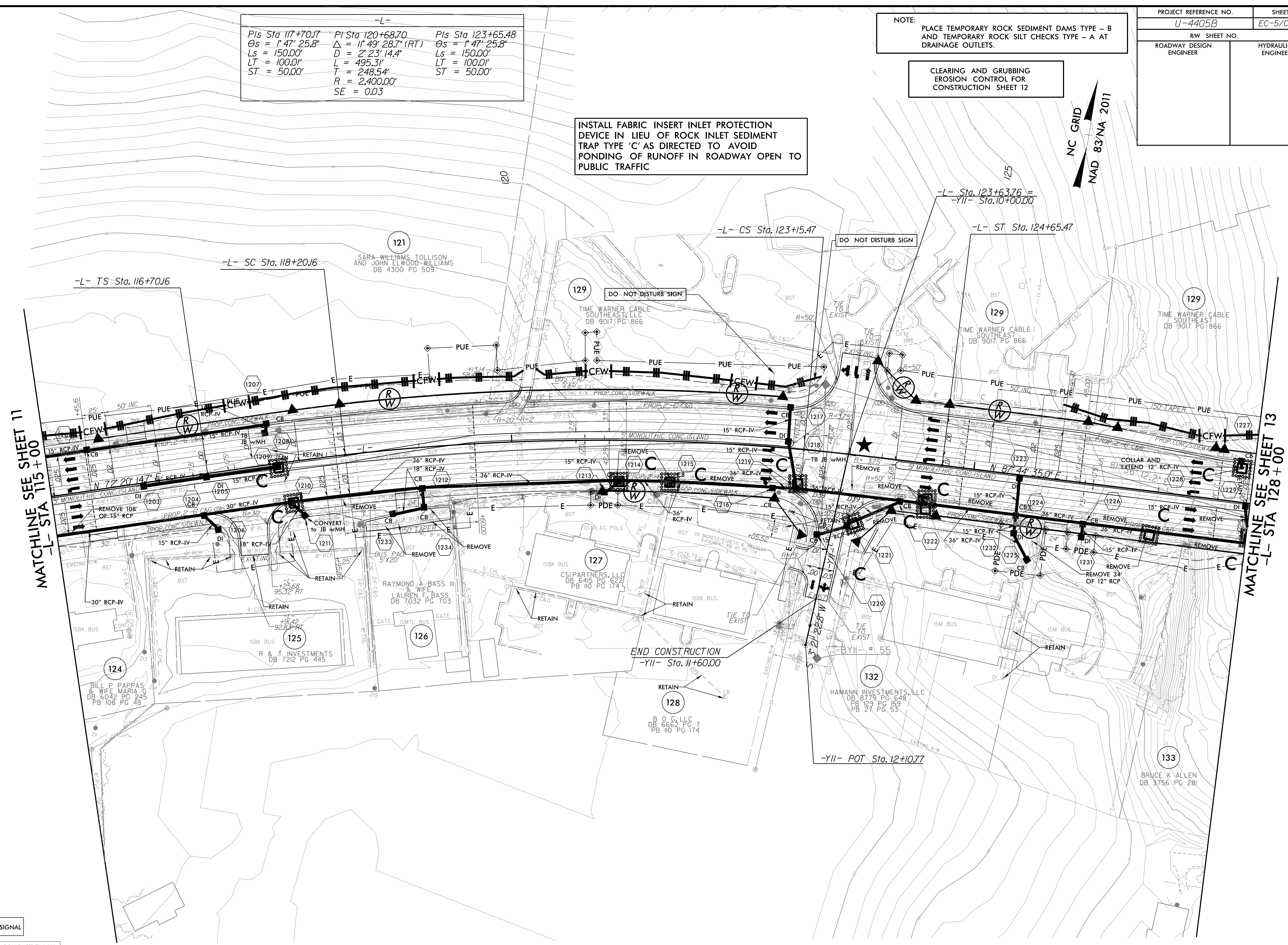
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 12

INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED TO AVOID PONDING OF RUNOFF IN ROADWAY OPEN TO PUBLIC TRAFFIC

-L-		
Pls Sta 117+70.17	Pls Sta 120+68.70	Pls Sta 123+65.48
$\Theta_s = 1^\circ 47' 25.8''$	$\Delta = 11^\circ 49' 28.7''$ (RT)	$\Theta_s = 1^\circ 47' 25.8''$
$L_s = 150.00'$	$D = 2^\circ 23' 14.4''$	$L_s = 150.00'$
$LT = 100.00'$	$L = 495.31'$	$LT = 100.00'$
$ST = 50.00'$	$T = 248.54'$	$ST = 50.00'$
	$R = 2,400.00'$	
	$SE = 0.03$	

NC GRID
NAD 83/NA 2011



REVISIONS

★ PROPOSED SIGNAL

▬ PROP CONC SIDEWALK

** A DESIGN EXCEPTION FOR LANE WIDTH IS REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

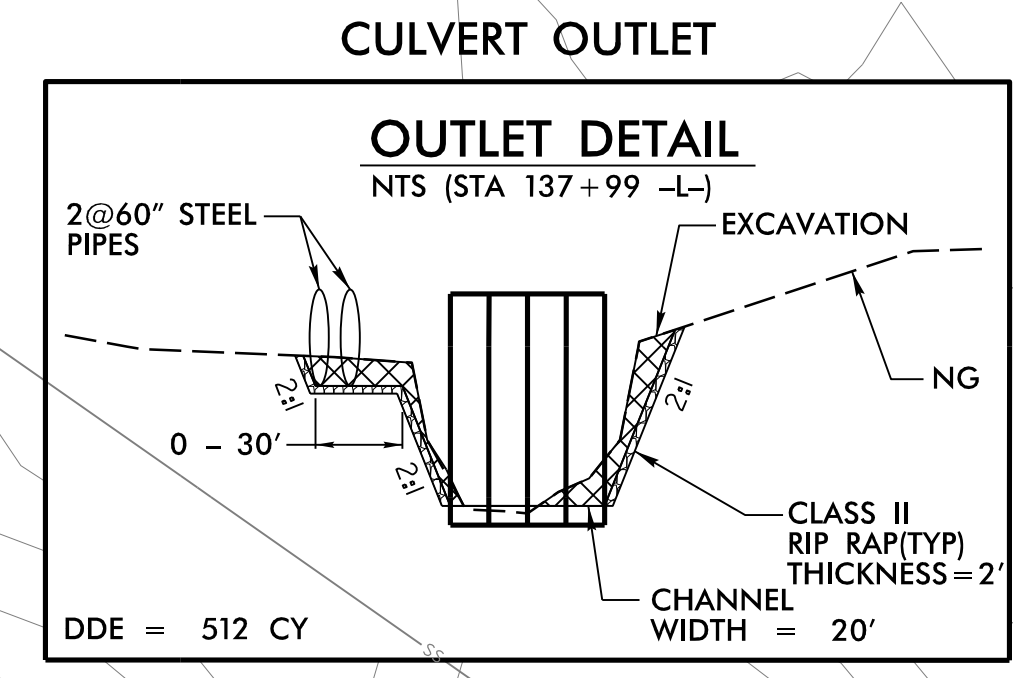
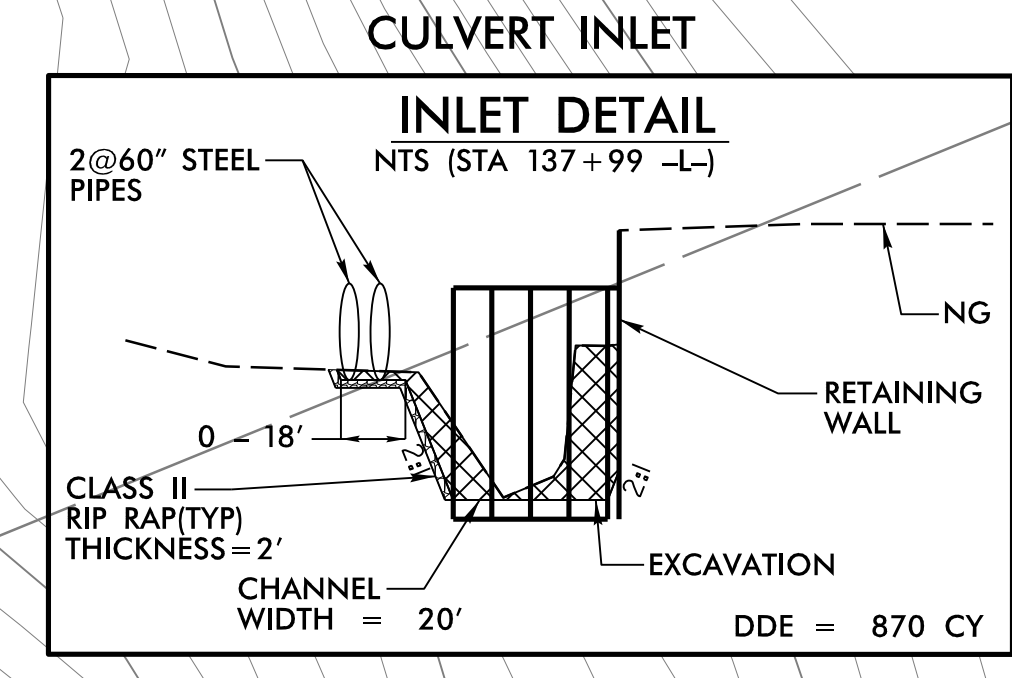
NOTE: SEE SHEET 36 & 37 FOR -L- PROFILE
SEE SHEET 47 FOR -YII- PROFILE

10/8/2024 10:44:05_REU_EC_psh_12.CG.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-6/CONST.13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L-
 PIs Sta 139+95.56 PI Sta 144+71.01
 $\Delta s = 1' 43' 07.9"$ $\Delta = 19' 18' 58.8" (RT)$
 $Ls = 150.00'$ $D = 2' 17' 30.6"$
 $LT = 100.00'$ $L = 842.83'$
 $ST = 50.00'$ $T = 425.45'$
 $SE = 0.03$

CLEARING AND GRUBBING
 EROSION CONTROL FOR
 CONSTRUCTION SHEET 13

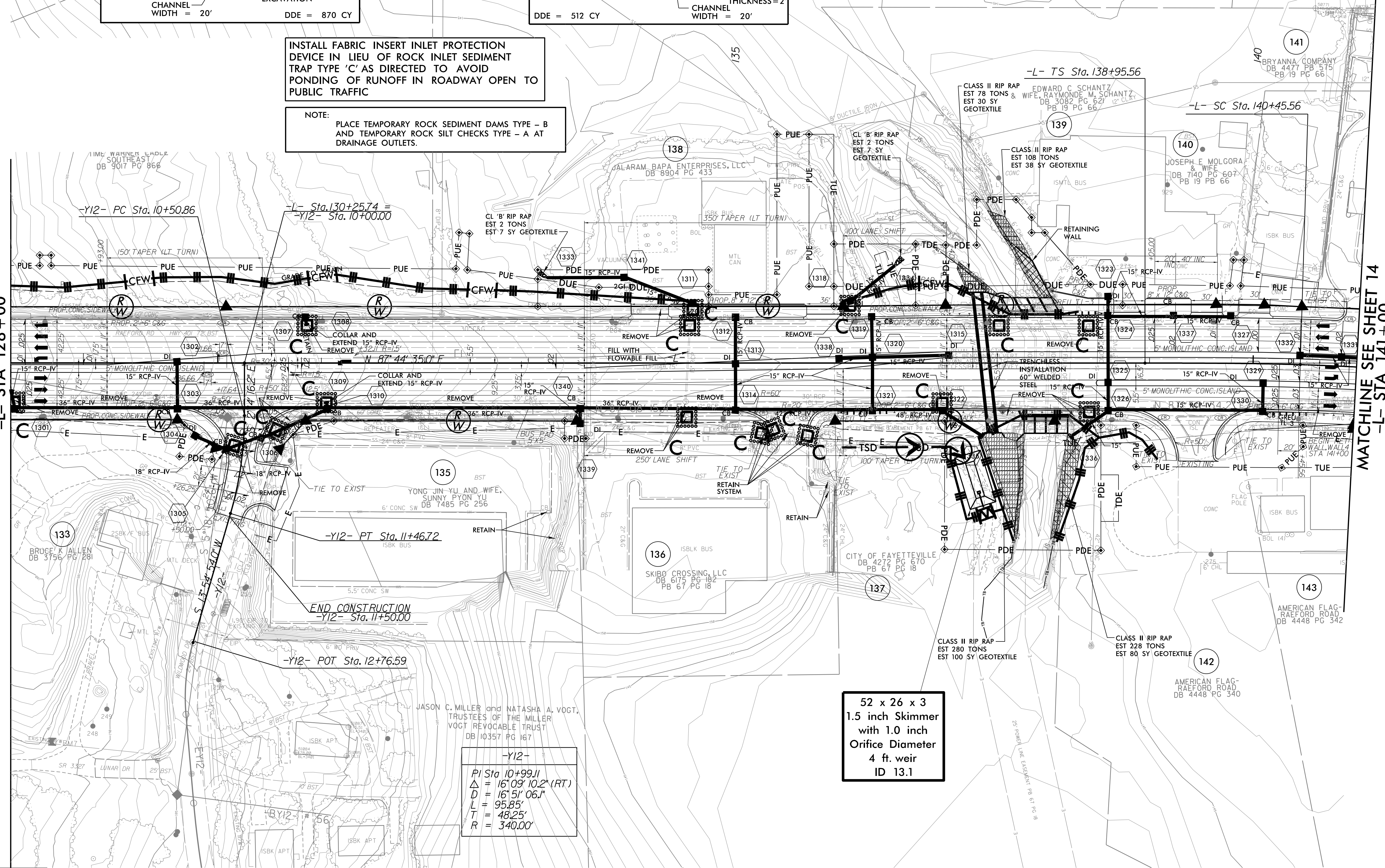


INSTALL FABRIC INSERT INLET PROTECTION
 DEVICE IN LIEU OF ROCK INLET SEDIMENT
 TRAP TYPE 'C' AS DIRECTED TO AVOID
 PONDING OF RUNOFF IN ROADWAY OPEN TO
 PUBLIC TRAFFIC

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

MATCHLINE SEE SHEET 12
 -L- STA 128+00

MATCHLINE SEE SHEET 14
 -L- STA 141+00



-Y12-
 PIs Sta 10+99.11
 $\Delta = 16' 09' 10.2" (RT)$
 $D = 16' 51' 06.1"$
 $L = 95.85'$
 $T = 48.25'$
 $R = 340.00'$

52 x 26 x 3
 1.5 inch Skimmer
 with 1.0 inch
 Orifice Diameter
 4 ft. weir
 ID 13.1

NOTE: SEE SHEET 37 FOR -L- PROFILE
 SEE SHEET 47 FOR -Y12- PROFILE

8/17/99
 10/8/2024
 U:\4405\REV\EC_psh_13.CG.dgn
 13:58:11
 ** A DESIGN EXCEPTION FOR LANE WIDTH IS
 REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-7/CONST.13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

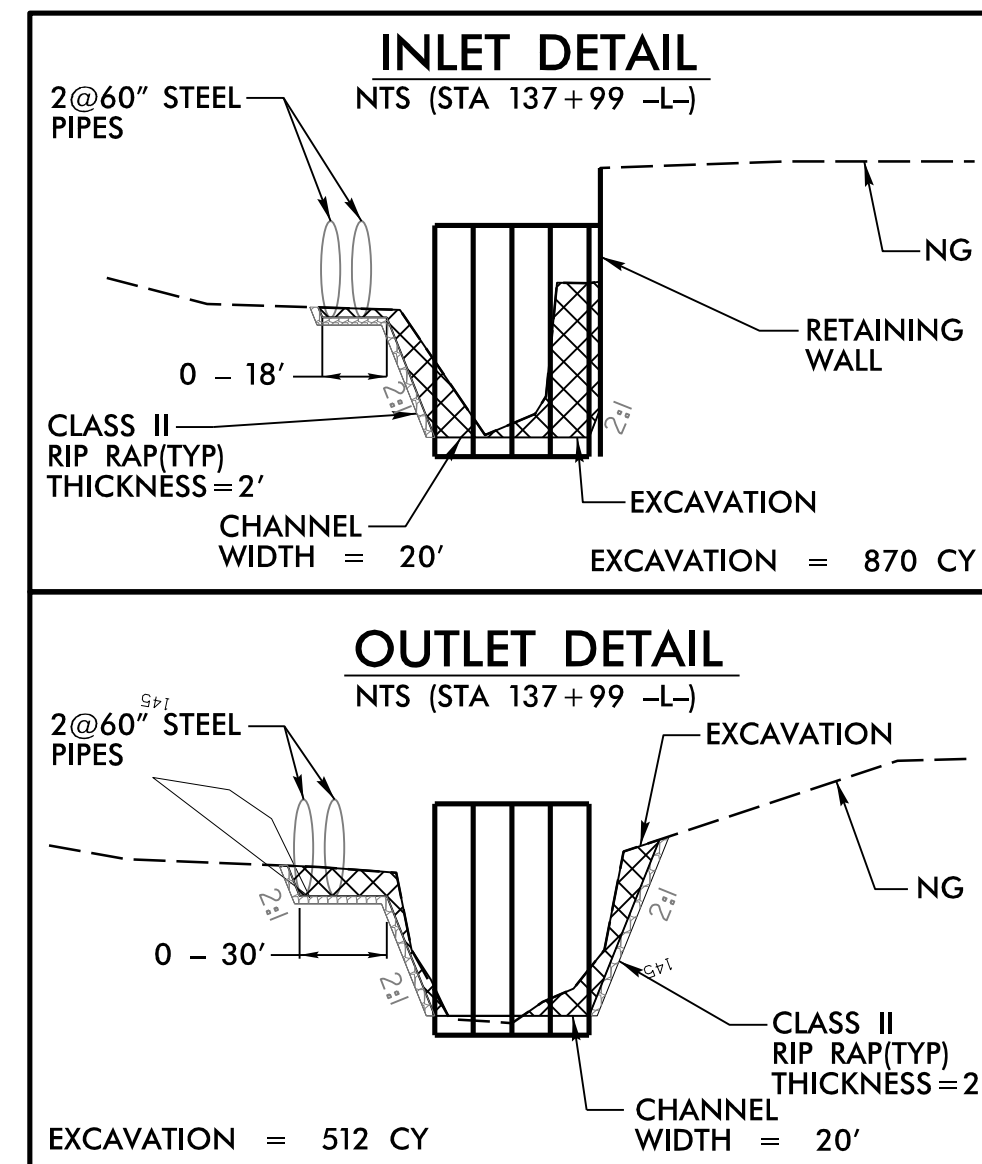
CULVERT CONSTRUCTION SEQUENCE STA. 137+99 -L-

PHASE I

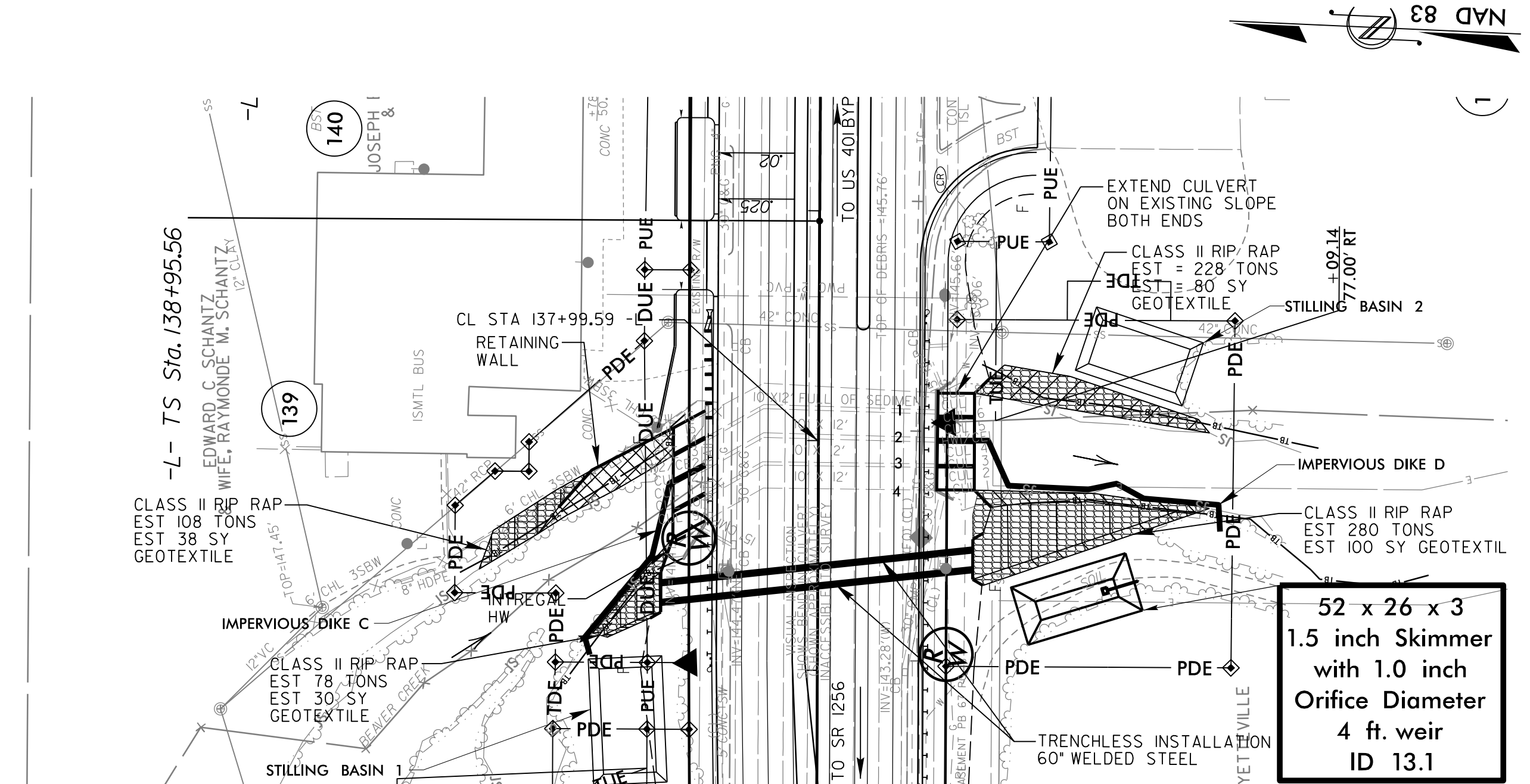
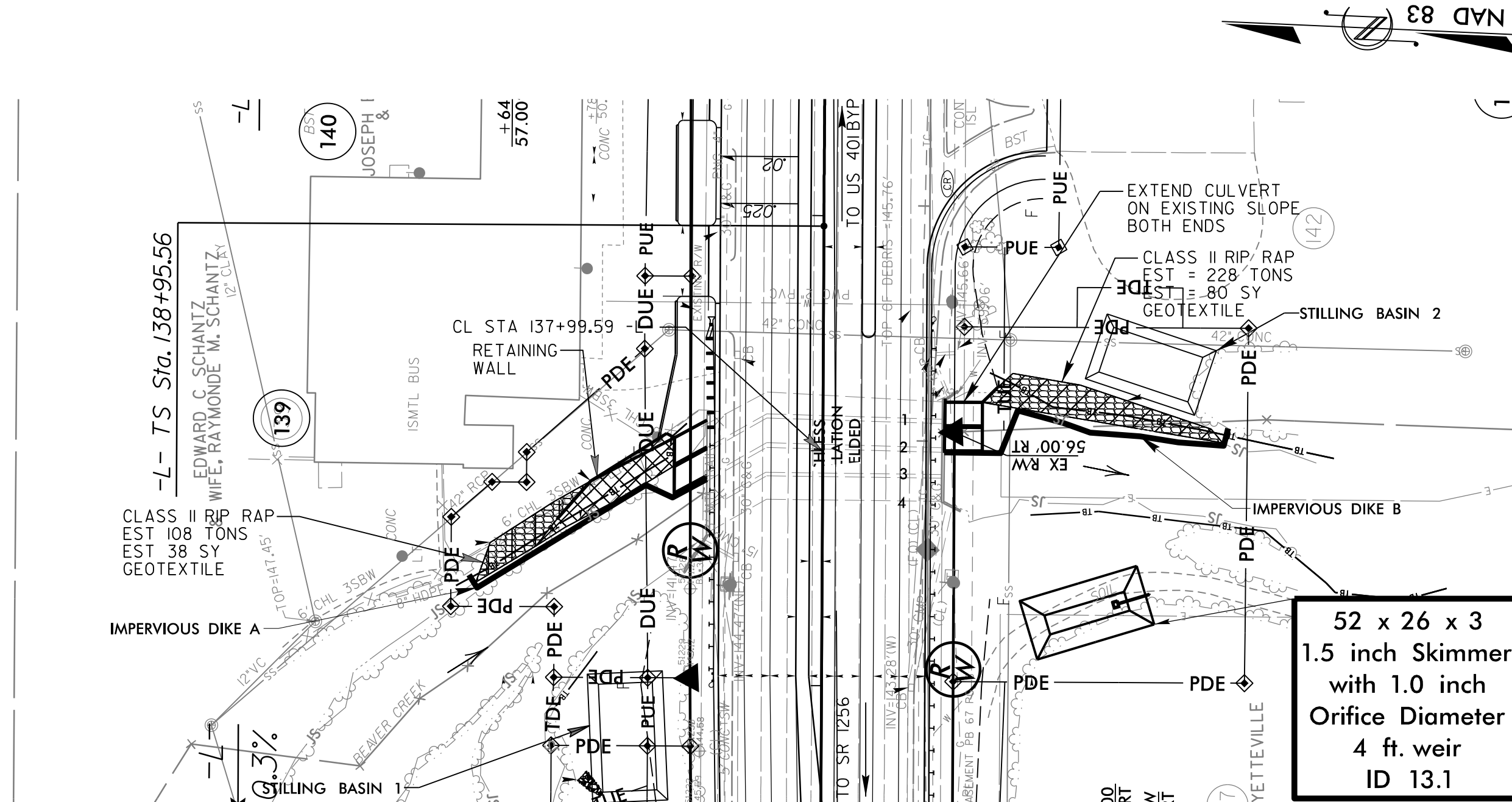
1. CONSTRUCT STILLING BASINS, MINIMUM VOLUME REQUIRED: UPSTREAM (1)=145 CY; DOWNSTREAM (2) EAST=78 CY; DOWNSTREAM WEST=UTILIZE SKIMMER BASIN 13.1
2. CONSTRUCT IMPERVIOUS DIKES A AND B
3. DIVERT WATER INTO BARRELS #3 AND #4 OF EXISTING 4@10'X12' RCBC
4. EXTEND BARRELS #1 AND #2 OF EXISTING 4@10'X12' RCBC ON BOTH ENDS
5. CONSTRUCT RETAINING WALL ON UPSTREAM EAST BANK
6. CONSTRUCT EAST BANK AT INLET AND OUTLET AND STABILIZE
7. REMOVE IMPERVIOUS DIKES A AND B

PHASE II

8. CONSTRUCT IMPERVIOUS DIKES C AND D
9. DIVERT WATER INTO BARRELS #1 AND #2 OF EXISTING 4@10'X12' RCBC
10. EXTEND BARRELS #3 AND #4 OF EXISTING 4@10'X12' RCBC ON BOTH ENDS
11. INSTALL 2@60" WELDED STEEL PIPES BY TRENCHLESS METHOD
12. CONSTRUCT WEST BANK AT INLET AND OUTLET AND STABILIZE
13. REMOVE IMPERVIOUS DIKES C AND D AND STILLING BASINS 1 AND 2
14. COMPLETE ROADWAY



NOTE: CONTRACTOR MAY SWITCH THE PHASING AND INSTALL THE 60" PIPES FIRST



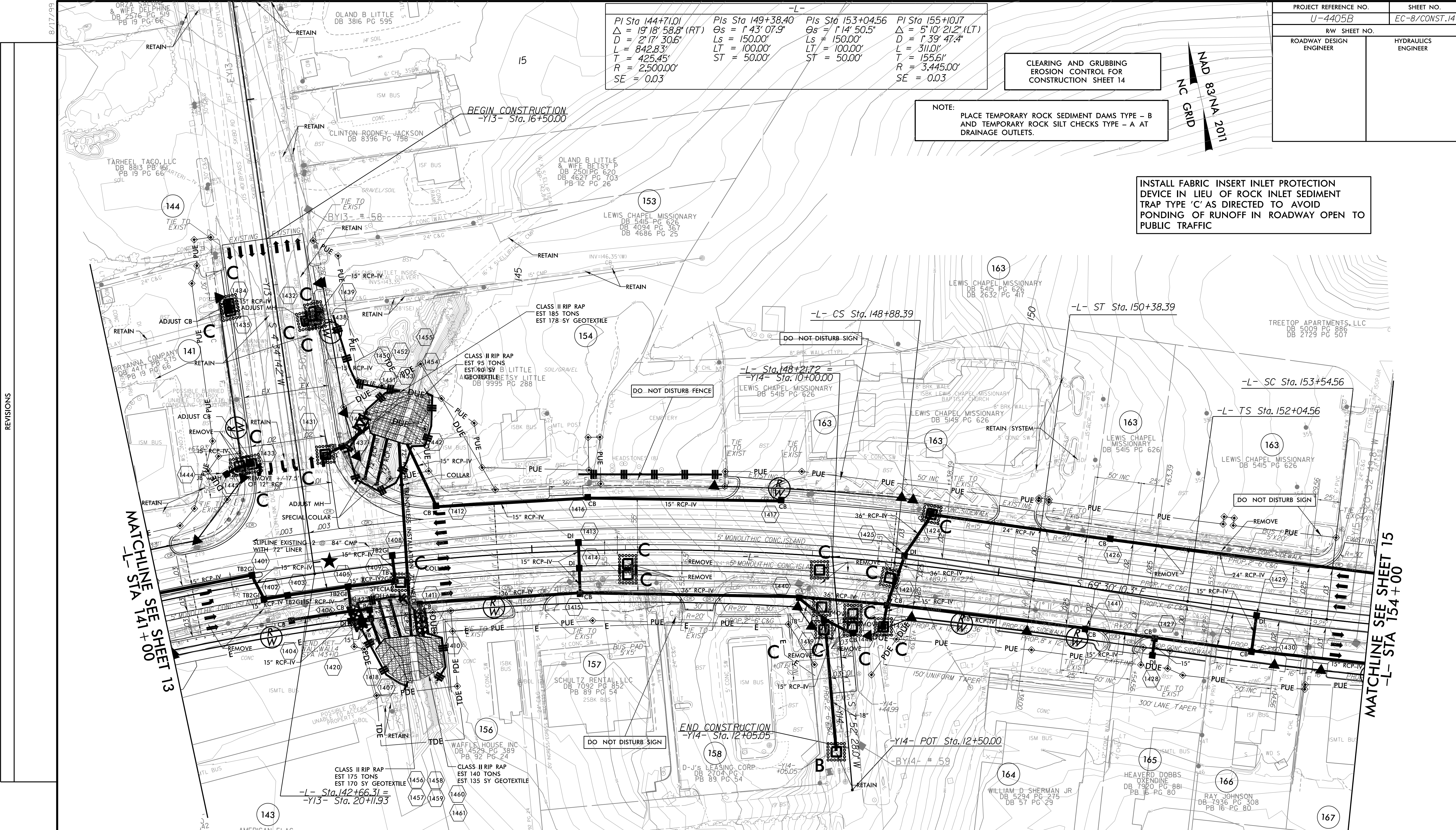
PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-8/CONST.14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PI Sta 144+71.01 $\Delta = 19' 18" 58.8" (RT)$ $D = 2' 17" 30.6"$ $L = 842.83'$ $T = 425.45'$ $R = 2,500.00'$ $SE = 0.03$	Pls Sta 149+38.40 $\Theta_s = 1' 43" 07.9"$ $Ls = 150.00'$ $LT = 100.00'$ $ST = 50.00'$	Pls Sta 153+04.56 $\Theta_s = 1' 14" 50.5"$ $Ls = 150.00'$ $LT = 100.00'$ $ST = 50.00'$	PI Sta 155+10.17 $\Delta = 5' 10" 21.2" (LT)$ $D = 1' 39" 47.4"$ $L = 311.01'$ $T = 155.61'$ $R = 3,445.00'$ $SE = 0.03$
---------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------

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.

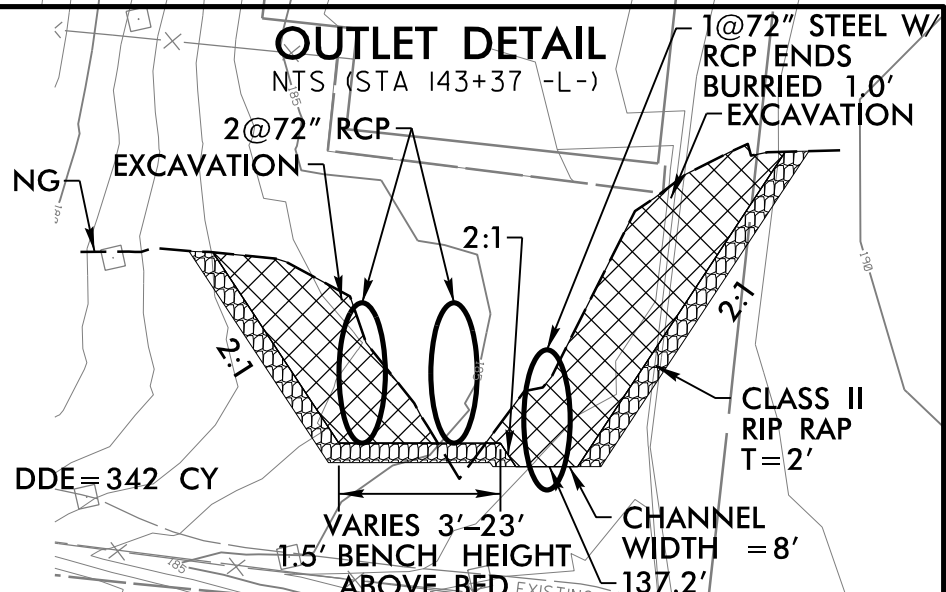
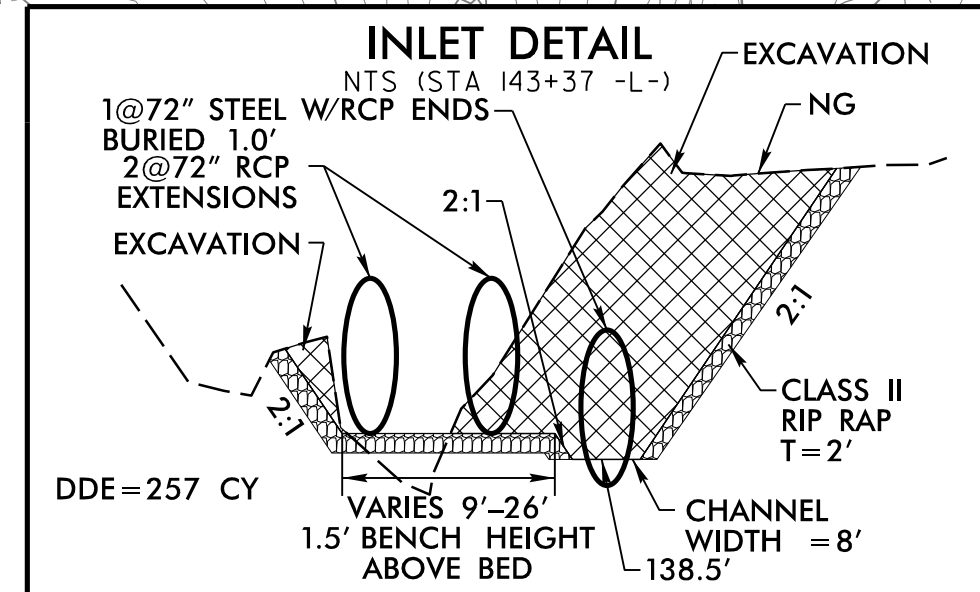
INSTALL FABRIC INSERT INLET PROTECTION
DEVICE IN LIEU OF ROCK INLET SEDIMENT
TRAP TYPE 'C' AS DIRECTED TO AVOID
PONDING OF RUNOFF IN ROADWAY OPEN TO
PUBLIC TRAFFIC



REVISIONS

MATCHLINE SEE SHEET 13
-L- STA 141+00

MATCHLINE SEE SHEET 15
-L- STA 154+00



NOTE: SEE SHEET 37 & 38 FOR -L- PROFILE
SEE SHEET 47 FOR -Y13- PROFILE
SEE SHEET 48 FOR -Y14- PROFILE

★ PROPOSED SIGNAL
— PROP CONC SIDEWALK
** A DESIGN EXCEPTION FOR LANE WIDTH IS
REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

10/8/2024
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CULVERT CONSTRUCTION SEQUENCE STA. 143+37 -L-

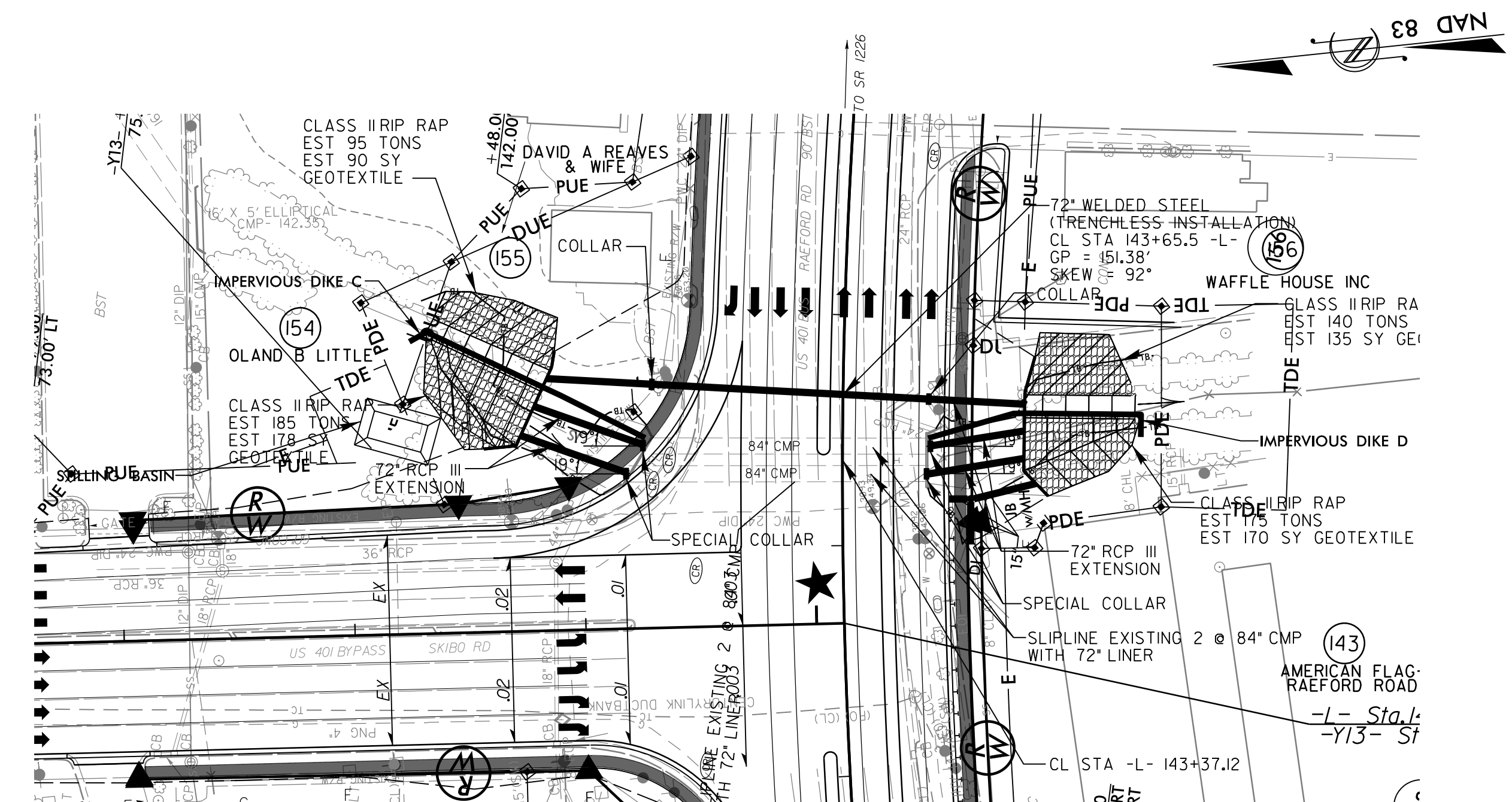
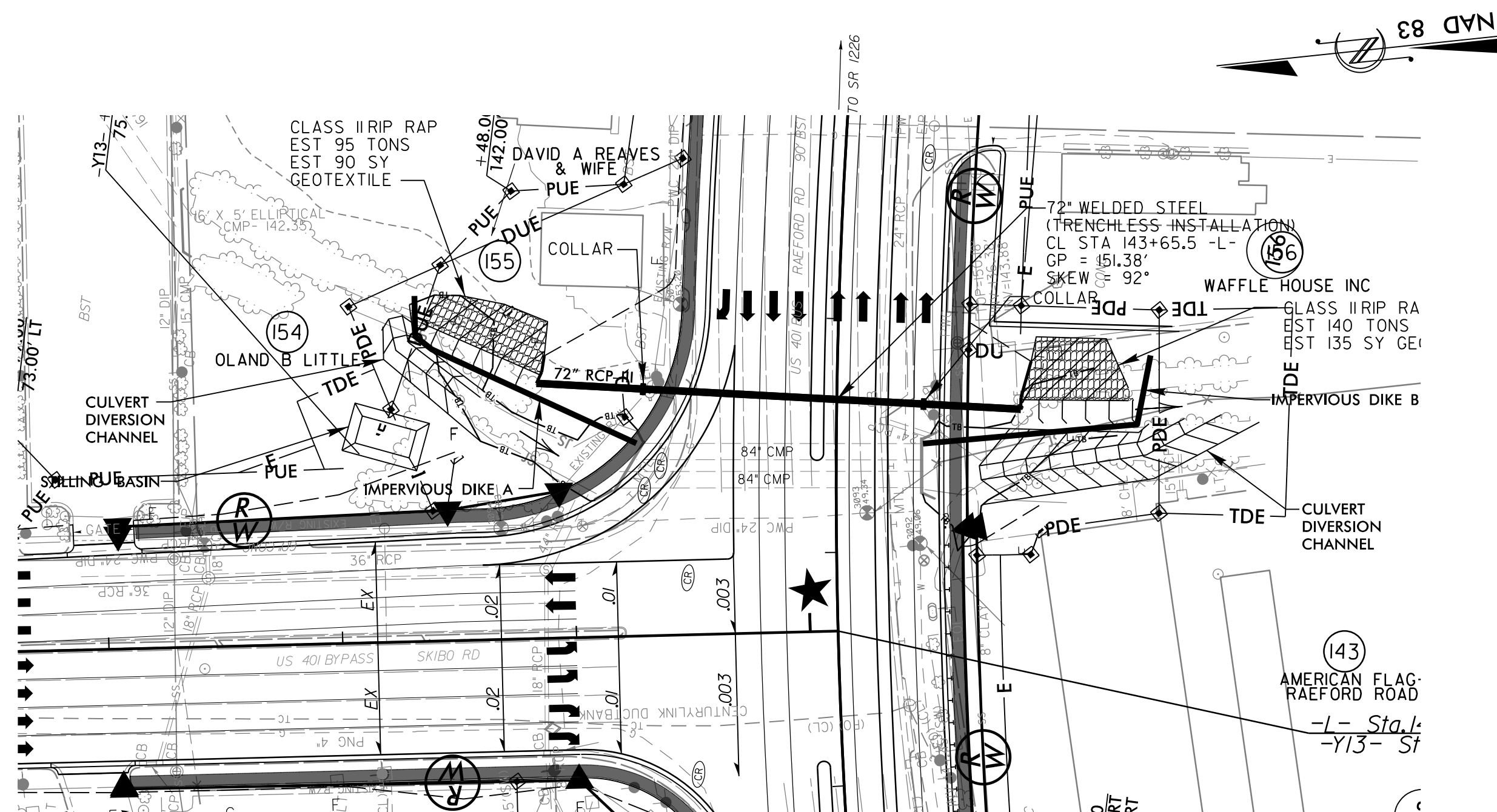
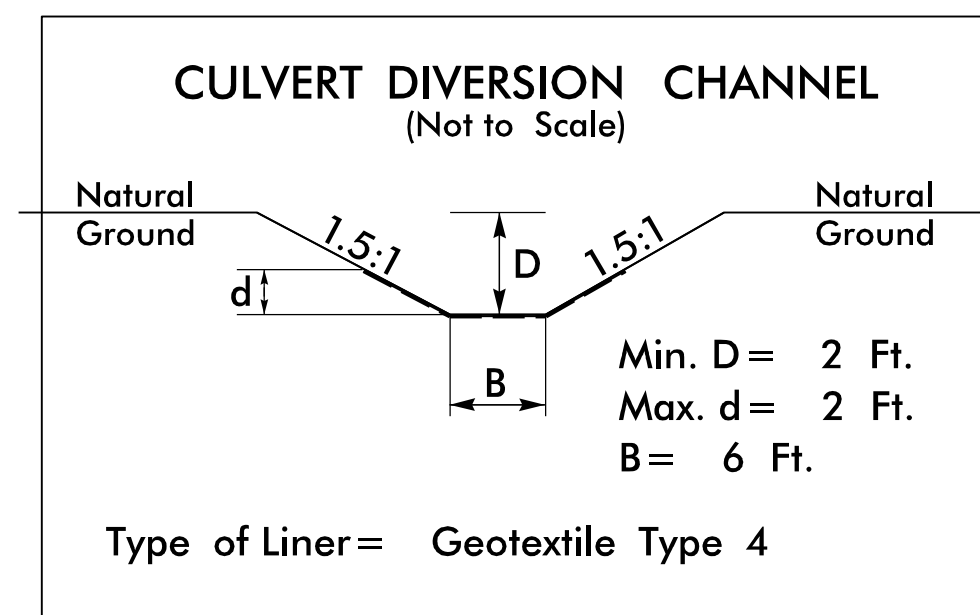
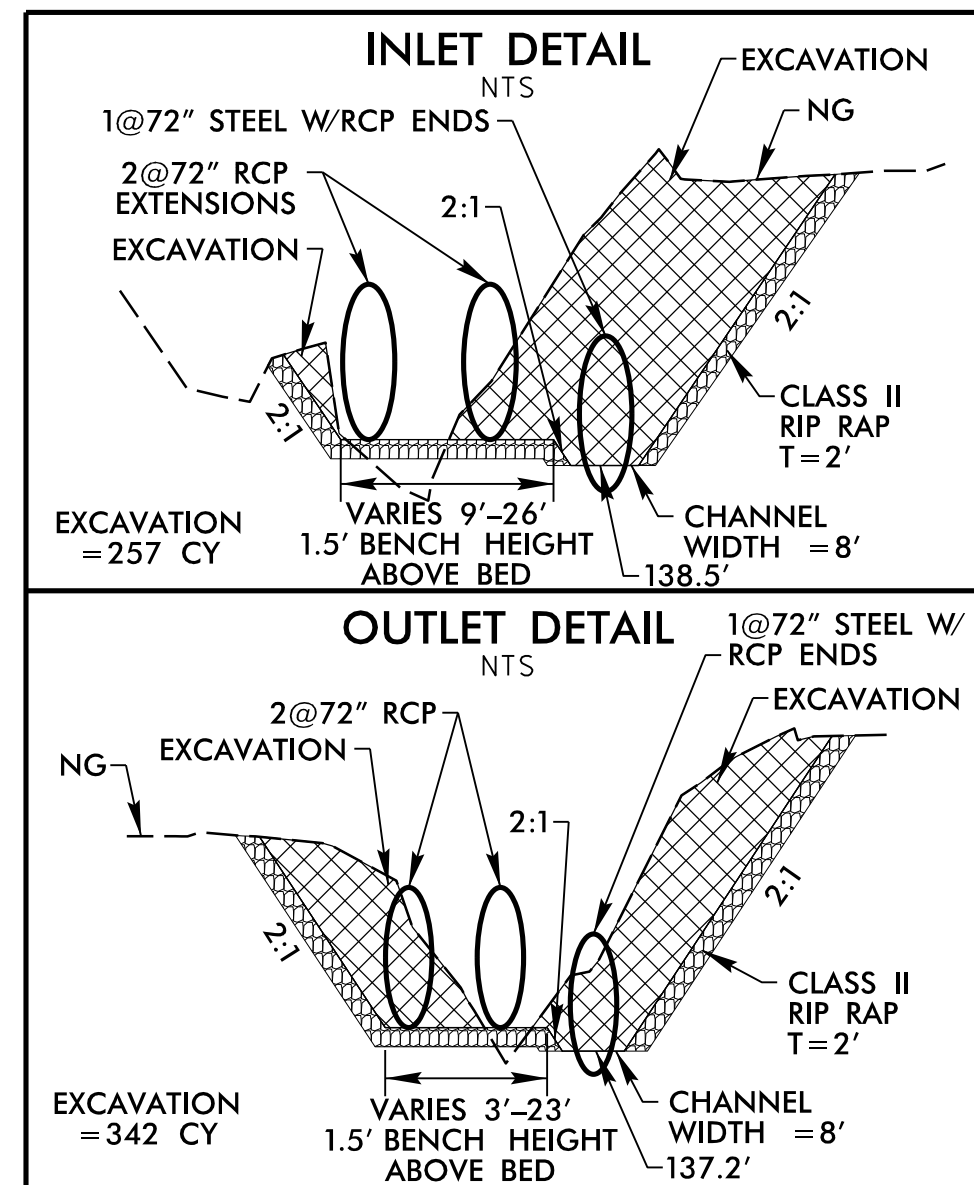
PROJECT REFERENCE NO. U-4405B	SHEET NO. EC-9/CONST.14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PHASE I

1. CONSTRUCT STILLING BASIN, MINIMUM VOLUME REQUIRED:UPSTREAM = 30 CY, DOWNSTREAM = UTILIZE SPECIAL STILLING BASIN(S)
2. INSTALL PROPOSED 72" WELDED STEEL PIPE BY TRENCHLESS METHOD
3. CONSTRUCT CULVERT DIVERSION CHANNELS AND IMPERVIOUS DIKES A AND B
4. DIVERT FLOW INTO CULVERT DIVERSION CHANNELS AND EXISTING 2@84" CMPs.
5. COLLAR AND EXTEND PROPOSED 72" RCP ON BOTH ENDS
6. CONSTRUCT EAST BANK AT INLET AND OUTLET AND STABILIZE
7. REMOVE CULVERT DIVERSION CHANNELS AND IMPERVIOUS DIKES A AND B

PHASE II

8. CONSTRUCT IMPERVIOUS DIKES C AND D AND DIVERT FLOW INTO PROPOSED 72" PIPE
9. CONSTRUCT BENCHES AND WEST BANKS AT INLET AND OUTLET AND STABILIZE
10. INSTALL 72" LINER IN EXISTING 2@84" CMP
11. COLLAR AND EXTEND EXISTING 2@84" CMP WITH 72" RCP EXTENTIONS ON BOTH ENDS
12. REMOVE IMPERVIOUS DIKES C AND D, STILLING BASIN, AND ANY REMAINING SPECIAL STILLING BASIN(S)
13. COMPLETE ROADWAY



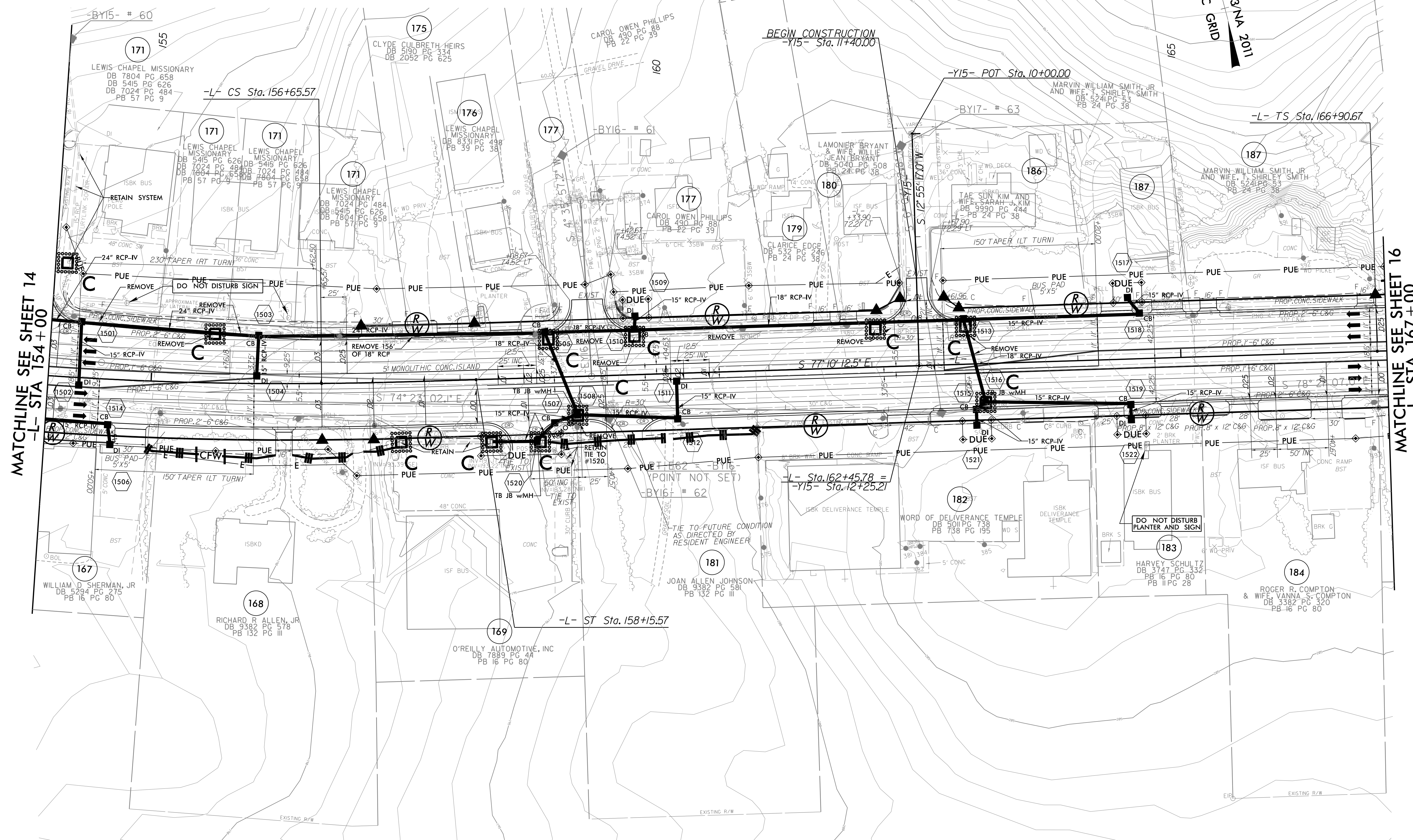
PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-10/CONST.15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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.

INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED TO AVOID PONDING OF RUNOFF IN ROADWAY OPEN TO PUBLIC TRAFFIC

PI Sta 155+10.17 Δ = 5'10" 21.2" (LT) D = 1'39" 47.4" L = 311.0' T = 155.6' R = 3,445.00' SE = 0.03	Pls Sta 157+15.57 Os = 1'14" 50.5" Ls = 150.00' LT = 100.00' ST = 50.00'	Pls Sta 167+90.68 Os = 2'14" 59.4" Ls = 150.00' LT = 100.00' ST = 50.00'
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8/17/99

REVISIONS

10/8/2024
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15:15:11

PROP CONC SIDEWALK
** A DESIGN EXCEPTION FOR LANE WIDTH IS REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

NOTE: SEE SHEET 38 FOR -L- PROFILE
SEE SHEET 48 FOR -Y15- PROFILE

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.

INSTALL FABRIC INSERT INLET PROTECTION
DEVICE IN LIEU OF ROCK INLET SEDIMENT
TRAP TYPE 'C' AS DIRECTED TO AVOID
PONDING OF RUNOFF IN ROADWAY OPEN TO
PUBLIC TRAFFIC

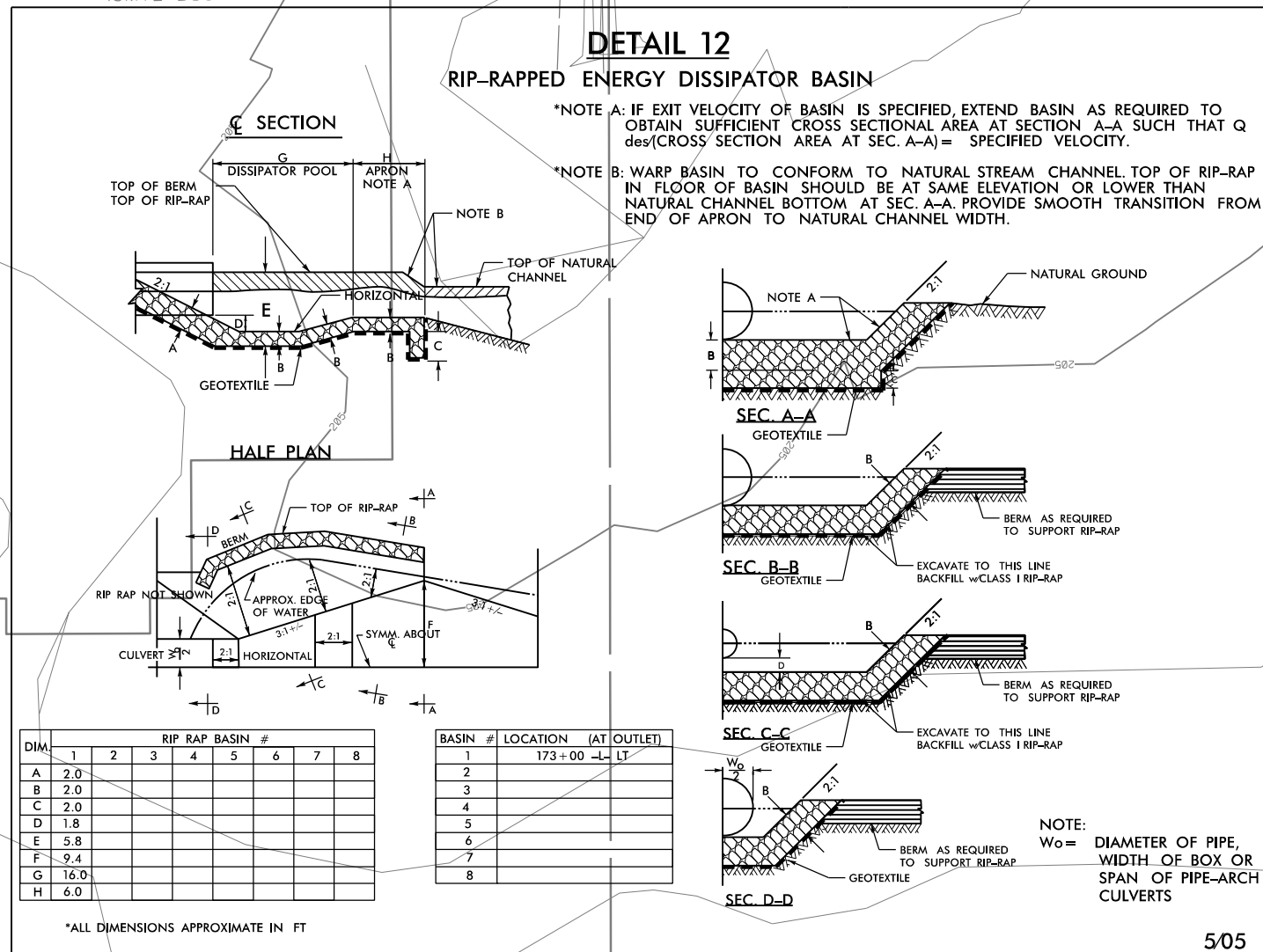
NAD 83/NA 2011
NC GRID

-L-
PIs Sta 167+90.68 PI Sta 170+65.98 PIs Sta 173+39.22
Os = 2'14'59.4" Δ = 13'27'18.9" (LT) Os = 2'14'59.4"
Ls = 150.00' D = 2'59'59.2" Ls = 150.00'
LT = 100.01' L = 448.54' LT = 100.01'
ST = 50.01' T = 225.31' ST = 50.01'
R = 1910.00' SE = 0.03

MATCHLINE SEE SHEET 15
-L- STA 167+00

MATCHLINE SEE SHEET 17
-L- STA 180+00

-Y16-
PI Sta 11+23.85
Δ = 3'32'29.4" (LT)
D = 5'43'46.5"
L = 61.81'
T = 30.92'
R = 1,000.00'



REVISIONS

8/17/99

10/8/2024
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16:11:11

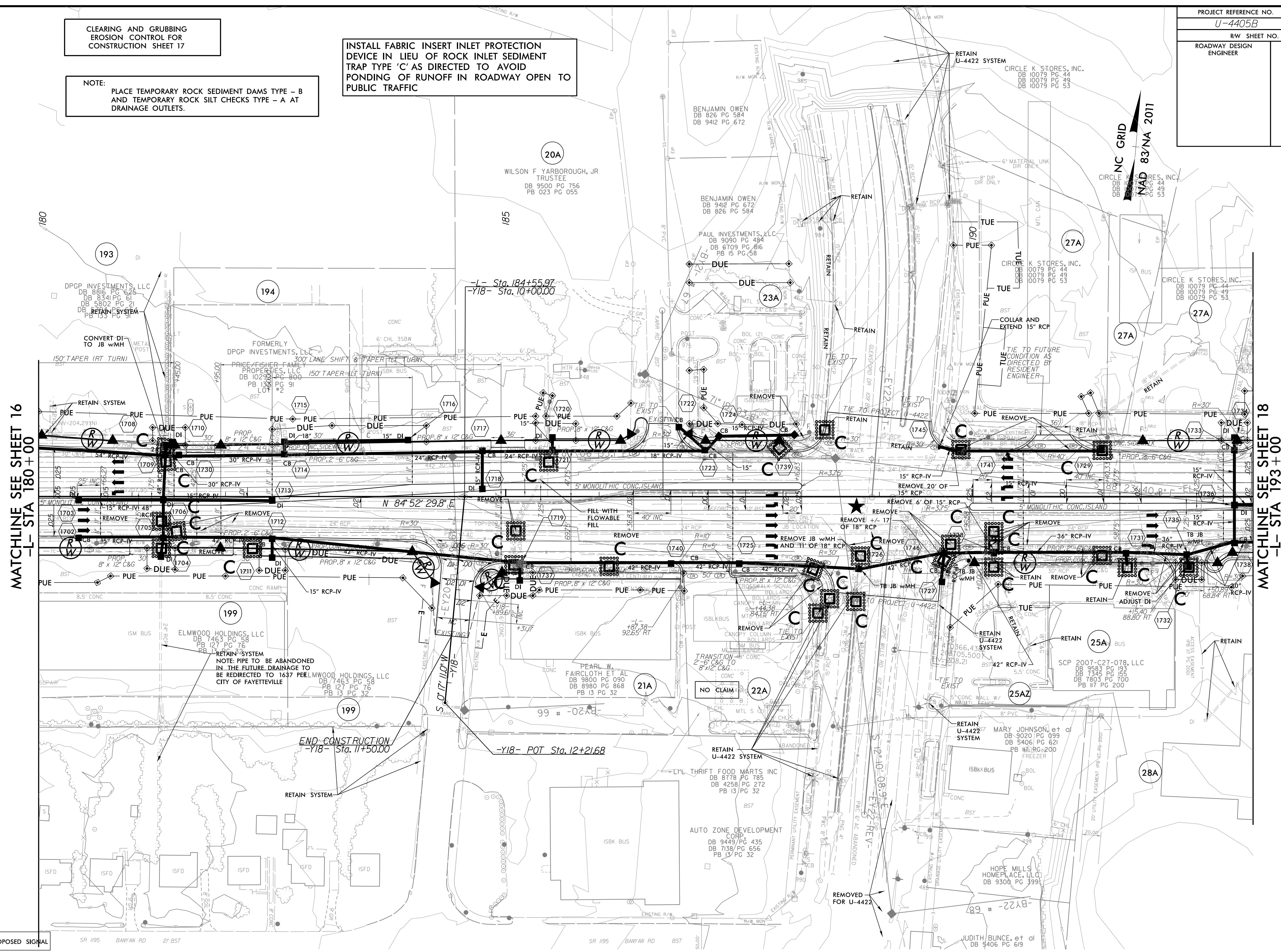
★ PROPOSED SIGNAL
██ PROP CONC SIDEWALK
** A DESIGN EXCEPTION FOR LANE WIDTH IS
REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-12/CONST.17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 17

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

INSTALL FABRIC INSERT INLET PROTECTION
DEVICE IN LIEU OF ROCK INLET SEDIMENT
TRAP TYPE 'C' AS DIRECTED TO AVOID
PONDING OF RUNOFF IN ROADWAY OPEN TO
PUBLIC TRAFFIC



MATCHLINE SEE SHEET 16
-L- STA 180+00

MATCHLINE SEE SHEET 18
-L- STA 193+00

REVISIONS

★ PROPOSED SIGNAL

■ PROP CONC SIDEWALK

** A DESIGN EXCEPTION FOR LANE WIDTH IS
REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

NOTE: SEE SHEET 39 FOR -L- PROFILE
SEE SHEET 48 FOR -Y18- PROFILE

10/8/2024
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17:11:11

8/17/09

PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-13/CONST.18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 18

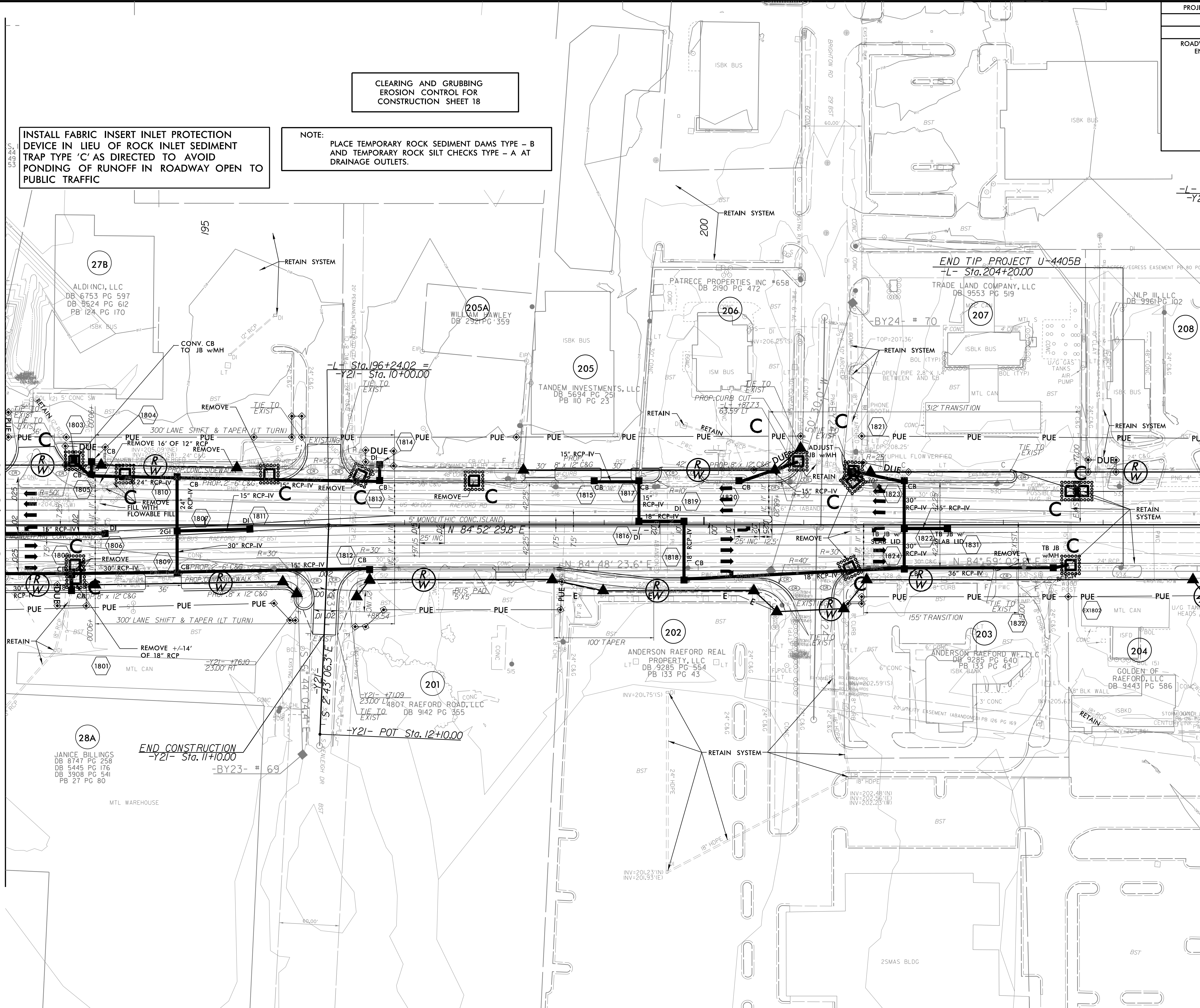
INSTALL FABRIC INSERT INLET PROTECTION
DEVICE IN LIEU OF ROCK INLET SEDIMENT
TRAP TYPE 'C' AS DIRECTED TO AVOID
PONDING OF RUNOFF IN ROADWAY OPEN TO
PUBLIC TRAFFIC

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

NC GRID
NAD 83/NA 2011

MATCHLINE SEE SHEET 17
-L- STA 193+00

MATCHLINE SEE SHEET 19
-L- STA 205+00



REVISIONS

★ PROPOSED SIGNAL

■ PROP CONC SIDEWALK

** A DESIGN EXCEPTION FOR LANE WIDTH IS
REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

NOTE: SEE SHEET 39 FOR -L- PROFILE
SEE SHEET 48 FOR -Y21- PROFILE

8/17/99

10/8/2024
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18/08/2024

PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-14/CONST.20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

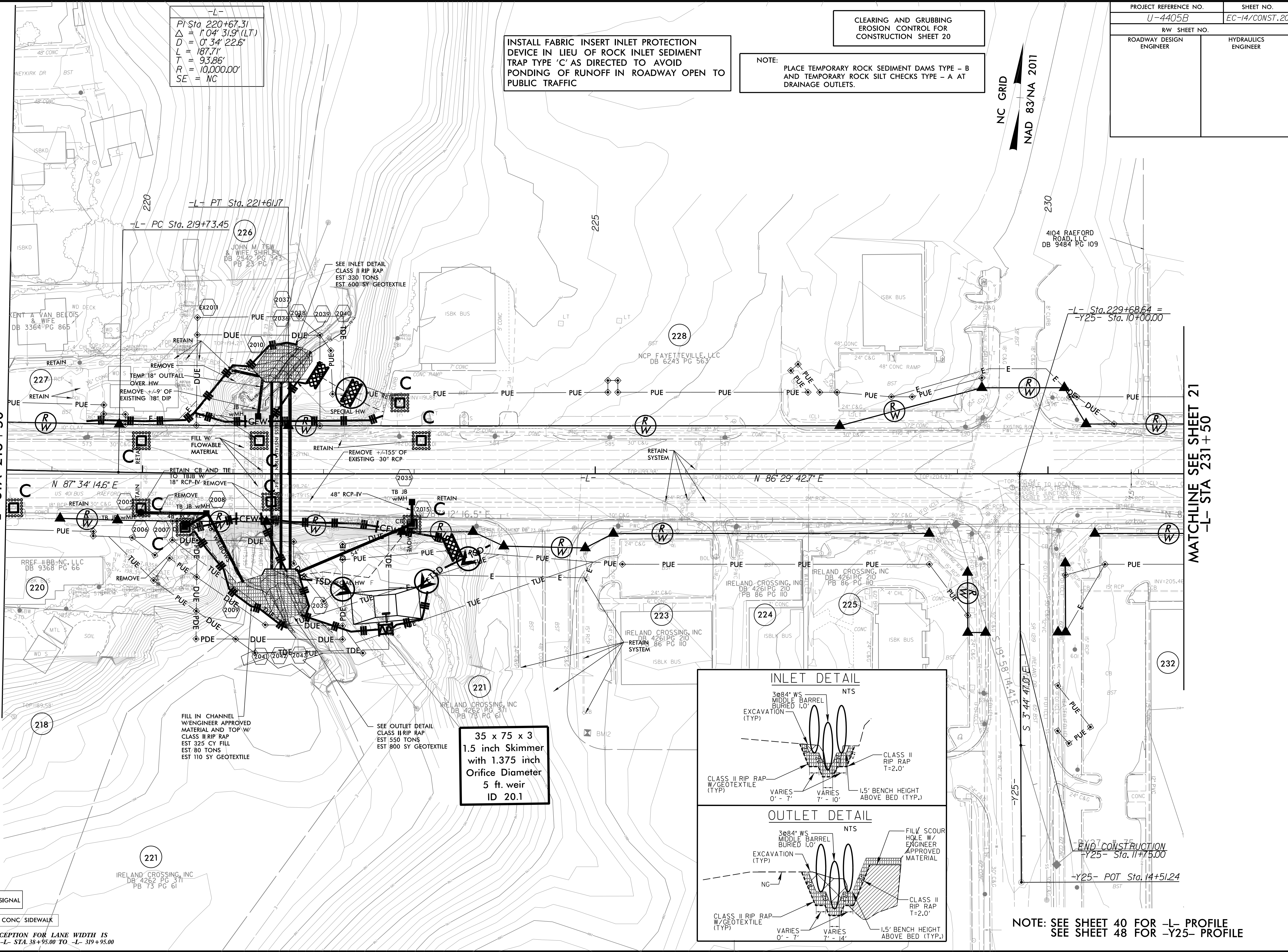
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 20

INSTALL FABRIC INSERT INLET PROTECTION
DEVICE IN LIEU OF ROCK INLET SEDIMENT
TRAP TYPE 'C' AS DIRECTED TO AVOID
PONDING OF RUNOFF IN ROADWAY OPEN TO
PUBLIC TRAFFIC

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

NC GRID
NAD 83/NA 2011

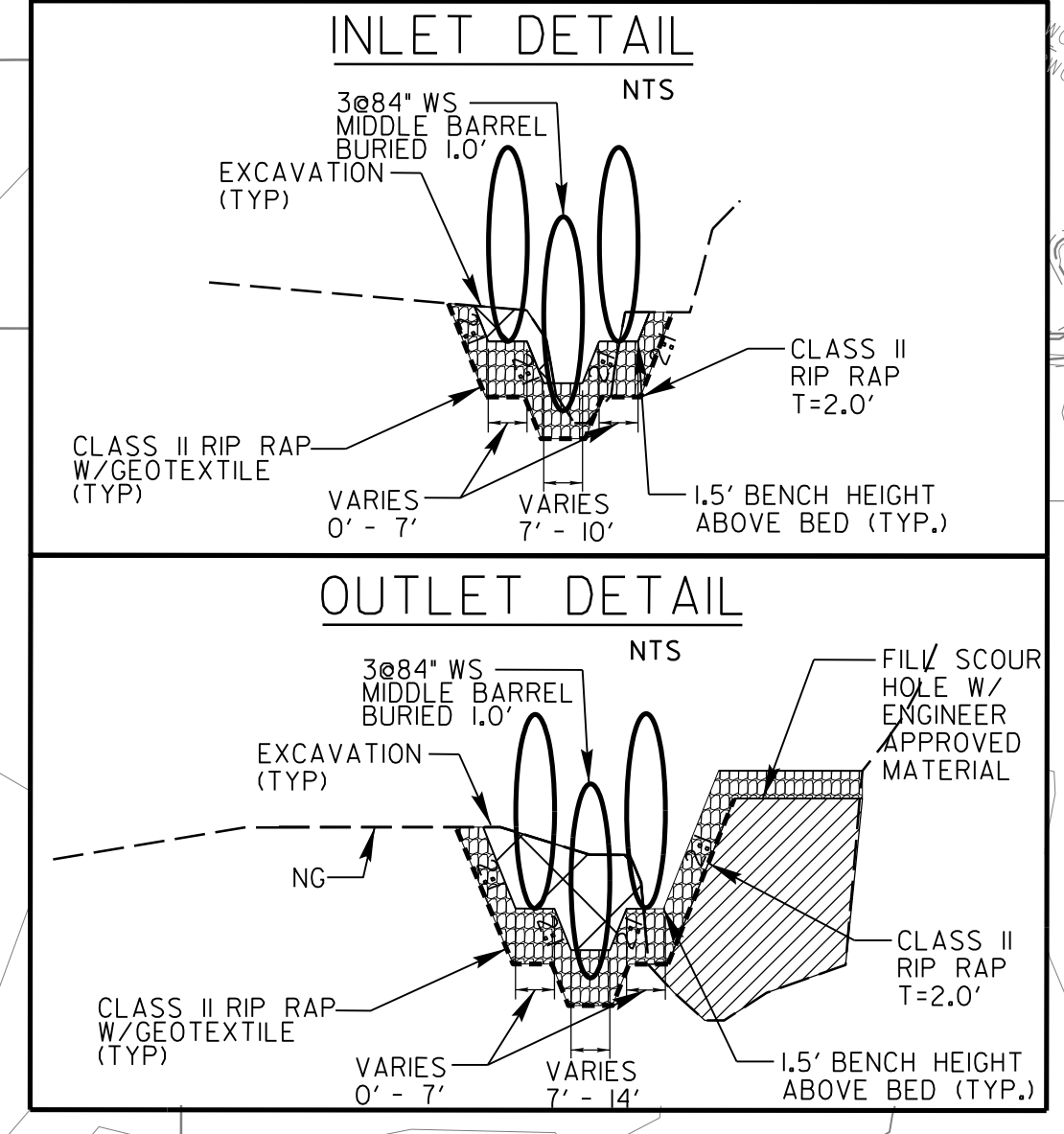
-L-
PI Sta. 220+67.31
 $\Delta = 1^{\circ}04'31.9" (LT)$
 $D = 0^{\circ}34'22.6"$
 $L = 187.71'$
 $T = 93.86'$
 $R = 10,000.00'$
 $SE = NC$



MATCHLINE SEE SHEET 19
-L- STA 218+50

MATCHLINE SEE SHEET 21
-L- STA 231+50

35 x 75 x 3
1.5 inch Skimmer
with 1.375 inch
Orifice Diameter
5 ft. weir
ID 20.1



END CONSTRUCTION
-Y25- Sta. 11+75.00
-Y25- POT Sta. 14+51.24

NOTE: SEE SHEET 40 FOR -L- PROFILE
SEE SHEET 48 FOR -Y25- PROFILE

- ★ PROPOSED SIGNAL
- ▬ PROP CONC/ SIDEWALK

** A DESIGN EXCEPTION FOR LANE WIDTH IS
REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-15/CONST.20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

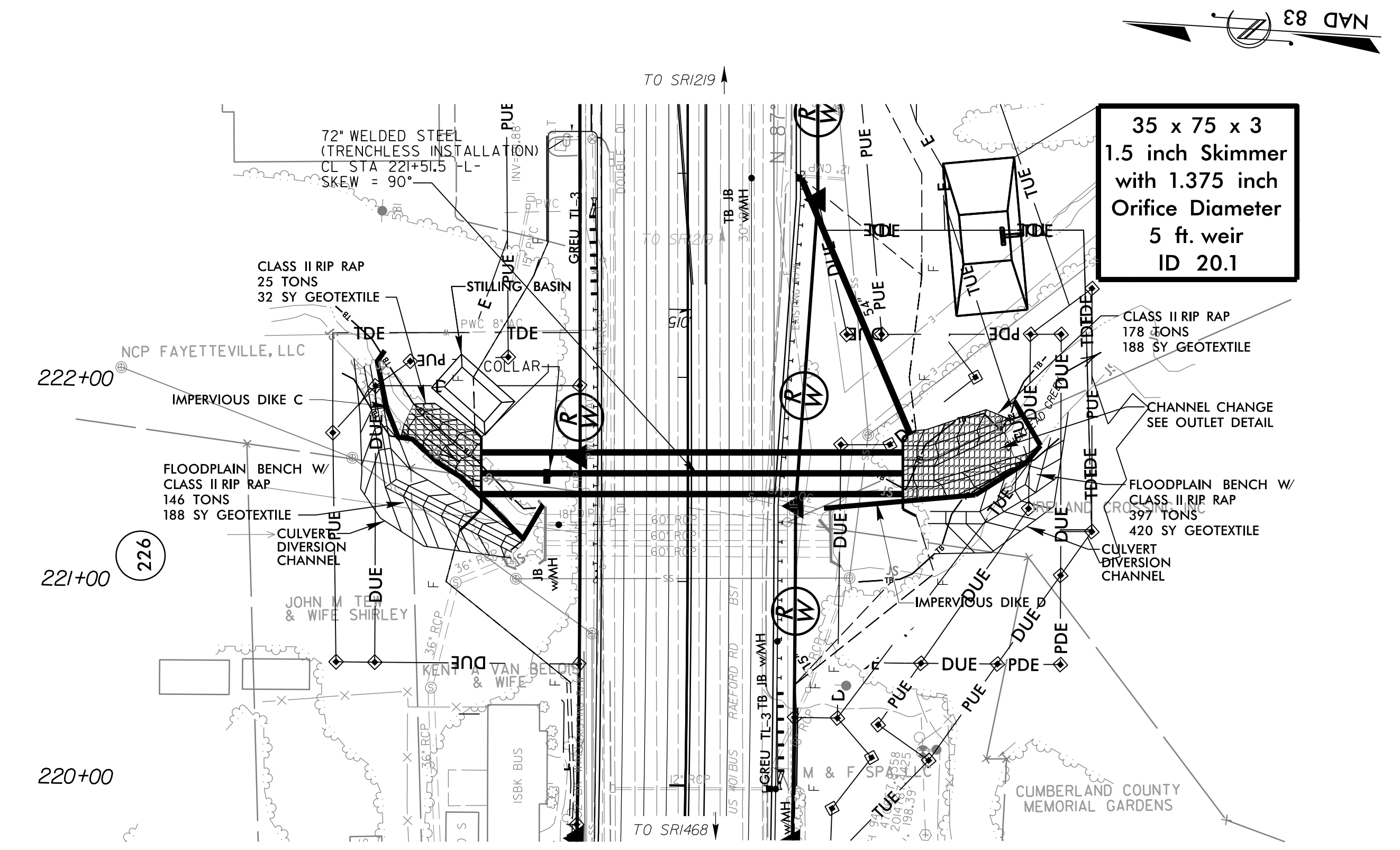
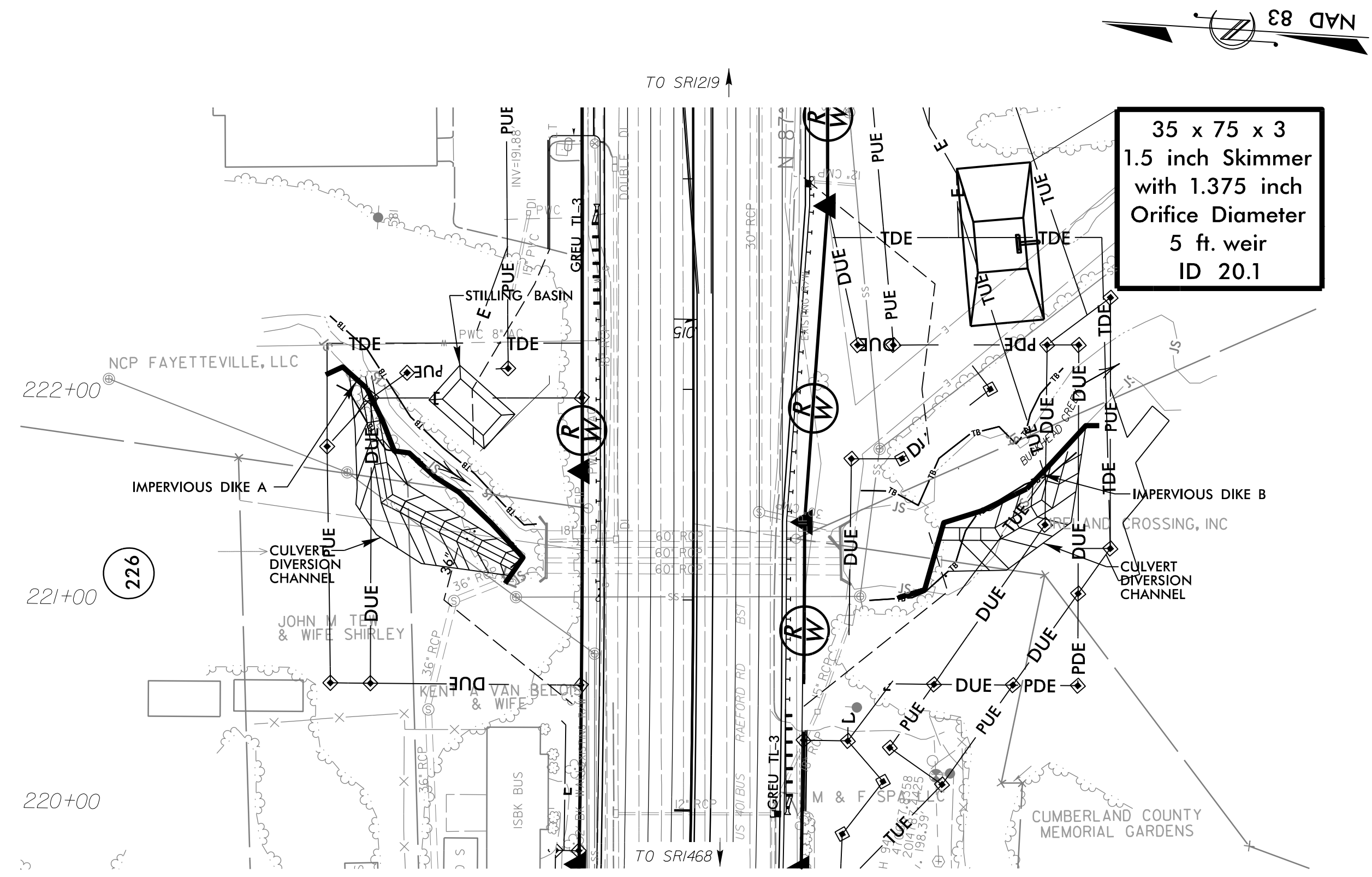
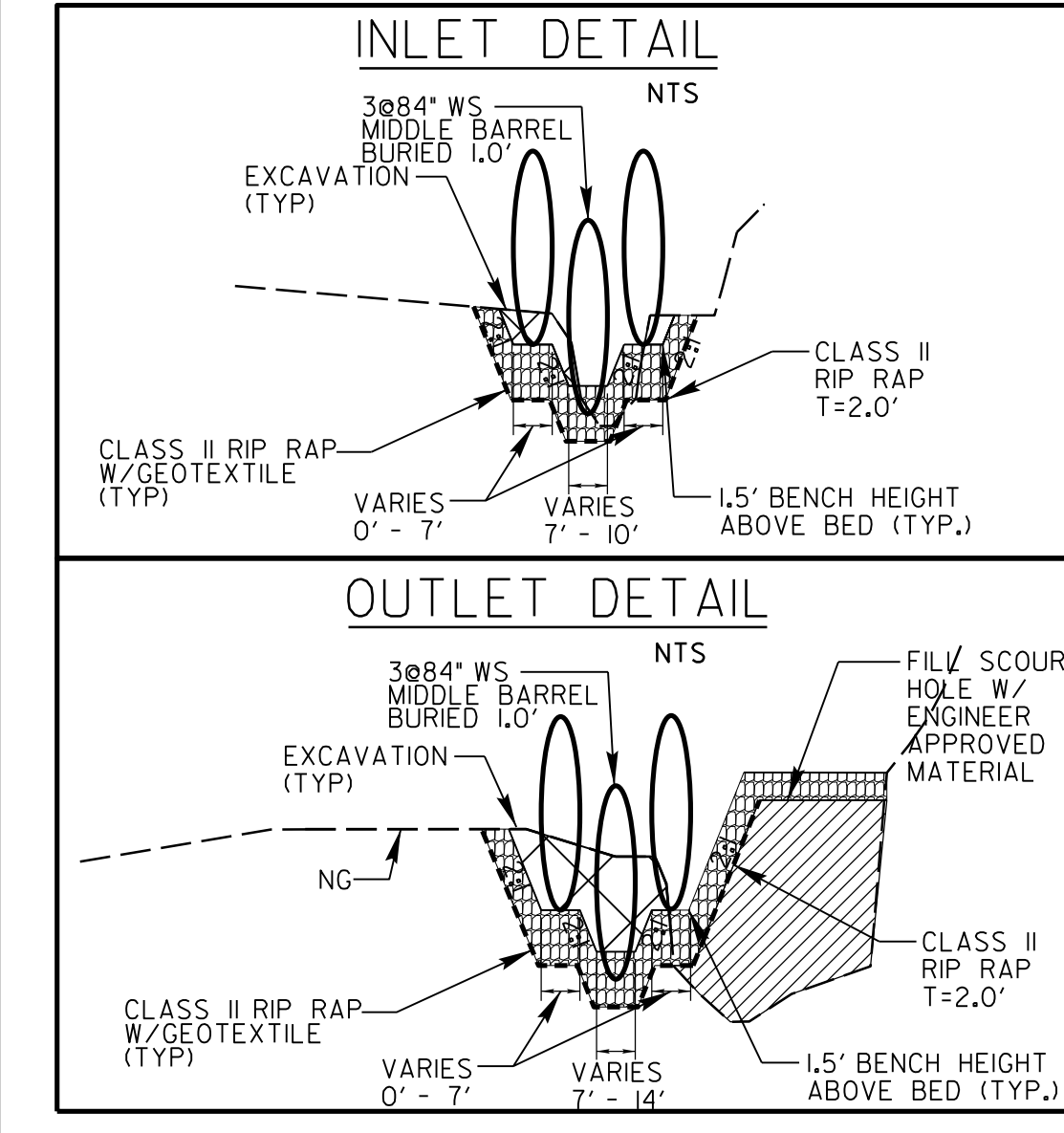
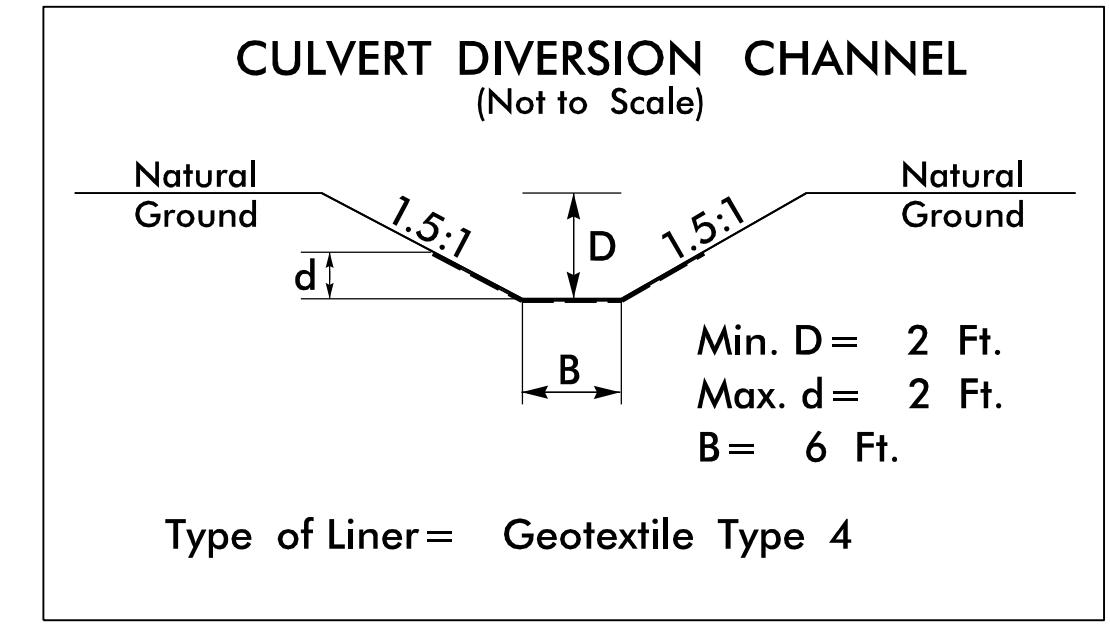
CULVERT CONSTRUCTION SEQUENCE STA. 221+53 -L-

PHASE I

1. CONSTRUCT STILLING BASINS, MINIMUM VOLUME REQUIRED:UPSTREAM = 37 CY, DOWNSTREAM = 154 CY (UTILIZE SKIMMER BASIN 20.1 AS DOWNSTREAM STILLING BASIN), UTILIZE PUMP AROUND OPERATION AS NECESSARY
2. CONSTRUCT IMPERVIOUS DIKES A AND B AND MAINTAIN FLOW IN THE EXISTING CHANNEL AND EXISTING CULVERT
3. DEWATER WORK AREA
4. CONSTRUCT CULVERT DIVERSION CHANNELS
5. BEGIN PHASE II

PHASE II

6. REMOVE IMPERVIOUS DIKES A AND B, THEN CONSTRUCT IMPERVIOUS DIKES C AND D
7. DIVERT FLOW INTO CULVERT DIVERSION CHANNELS AND EXISTING 60" RCPS
8. DEWATER WORK AREA AND INSTALL 3@72" WELDED STEEL PIPE BY TRENCHLESS METHOD
9. CONSTRUCT CHANNEL AND EAST BANK UPSTREAM AND DOWNSTREAM
10. BEGIN PHASE III

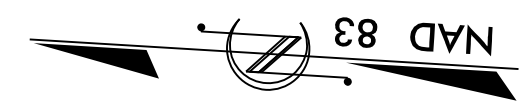
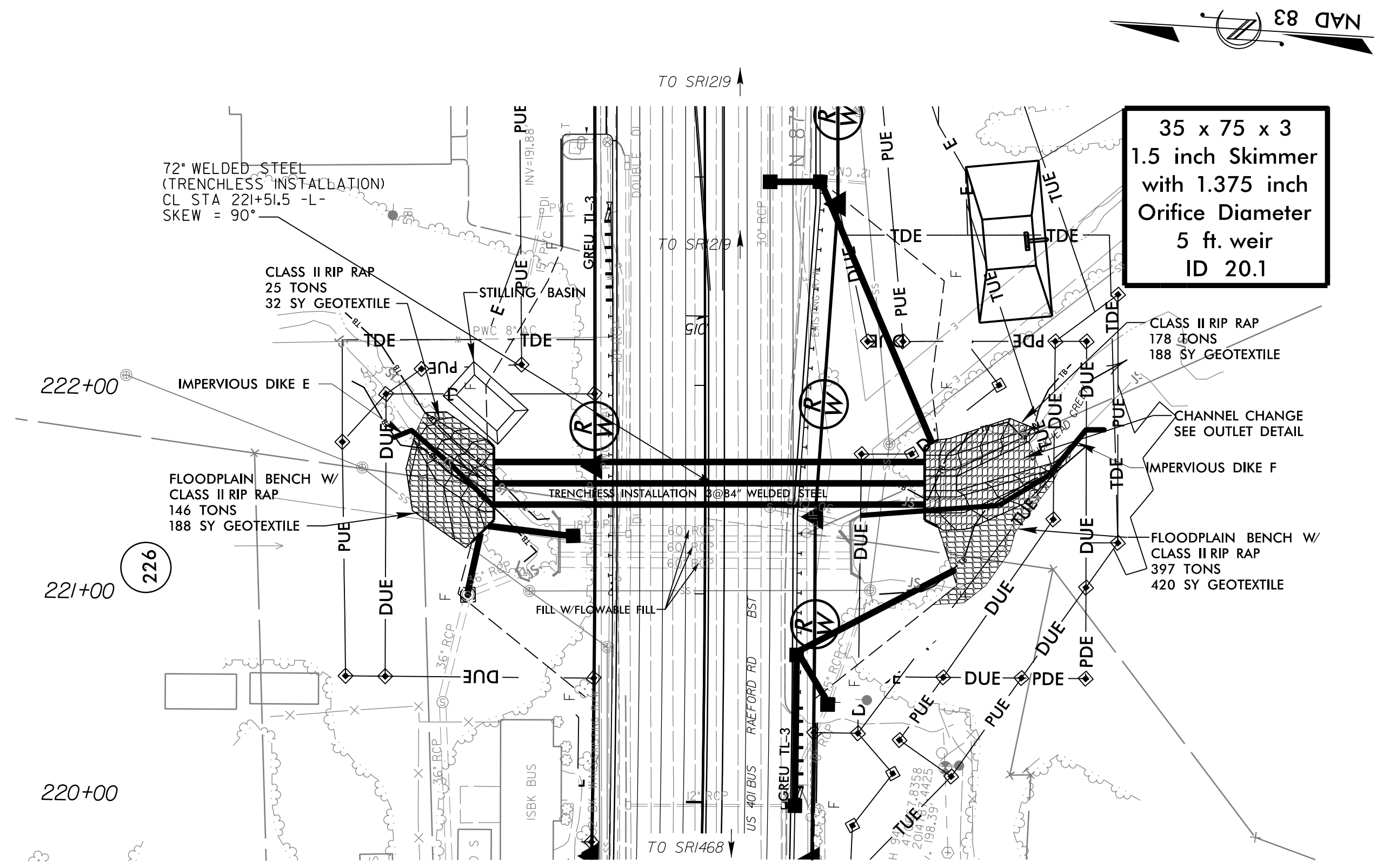
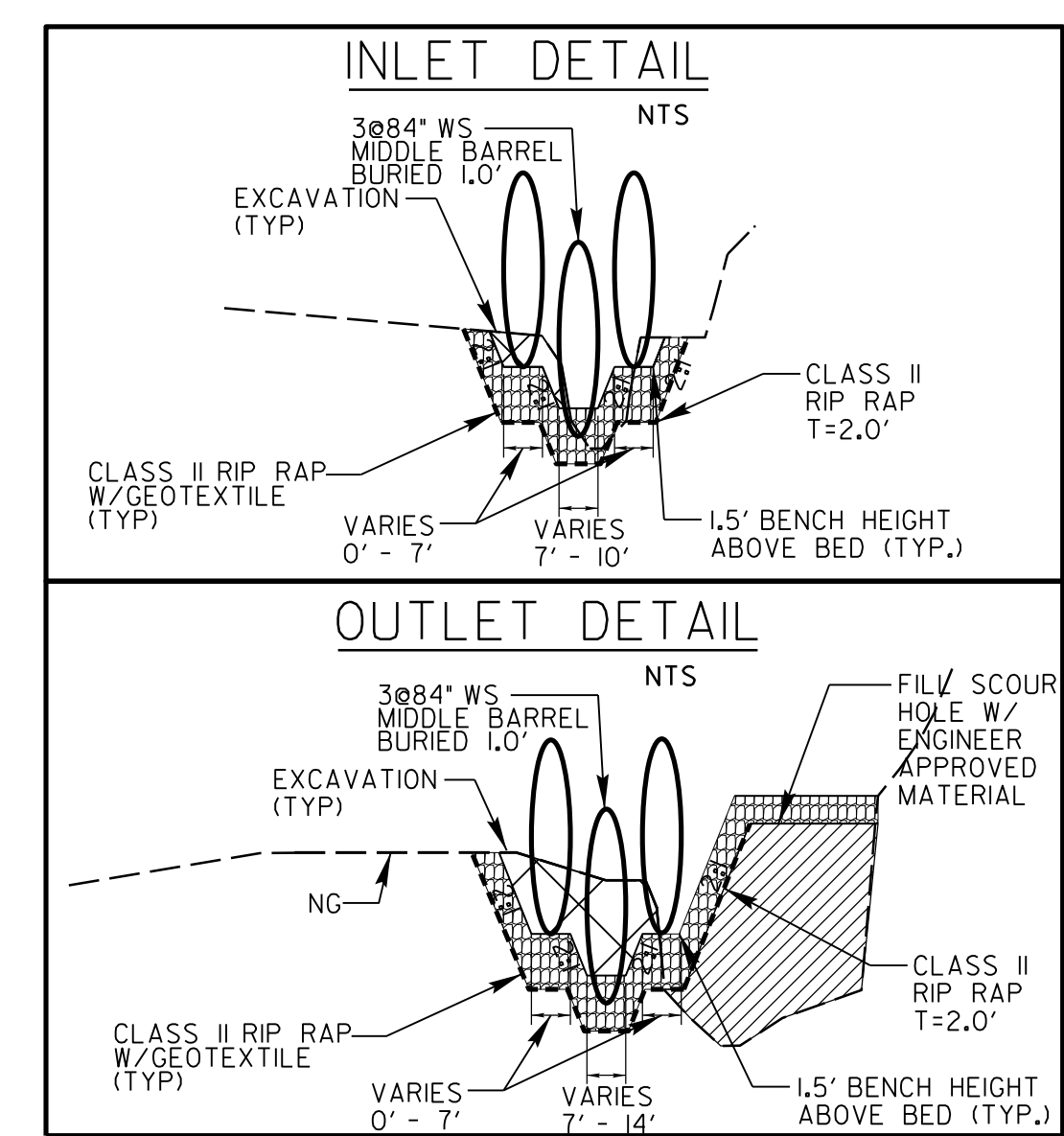


PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-16/CONST.20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

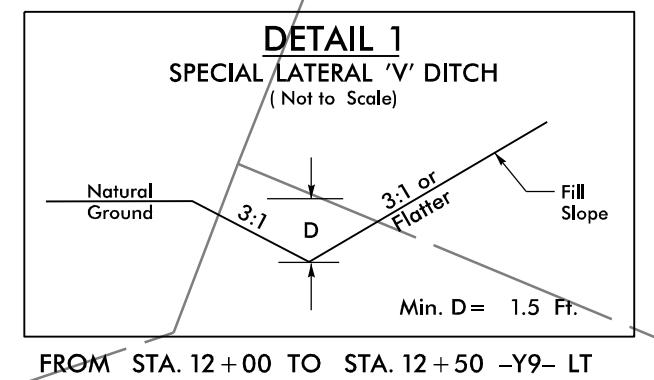
CULVERT CONSTRUCTION SEQUENCE STA. 221+53 -L-

PHASE III

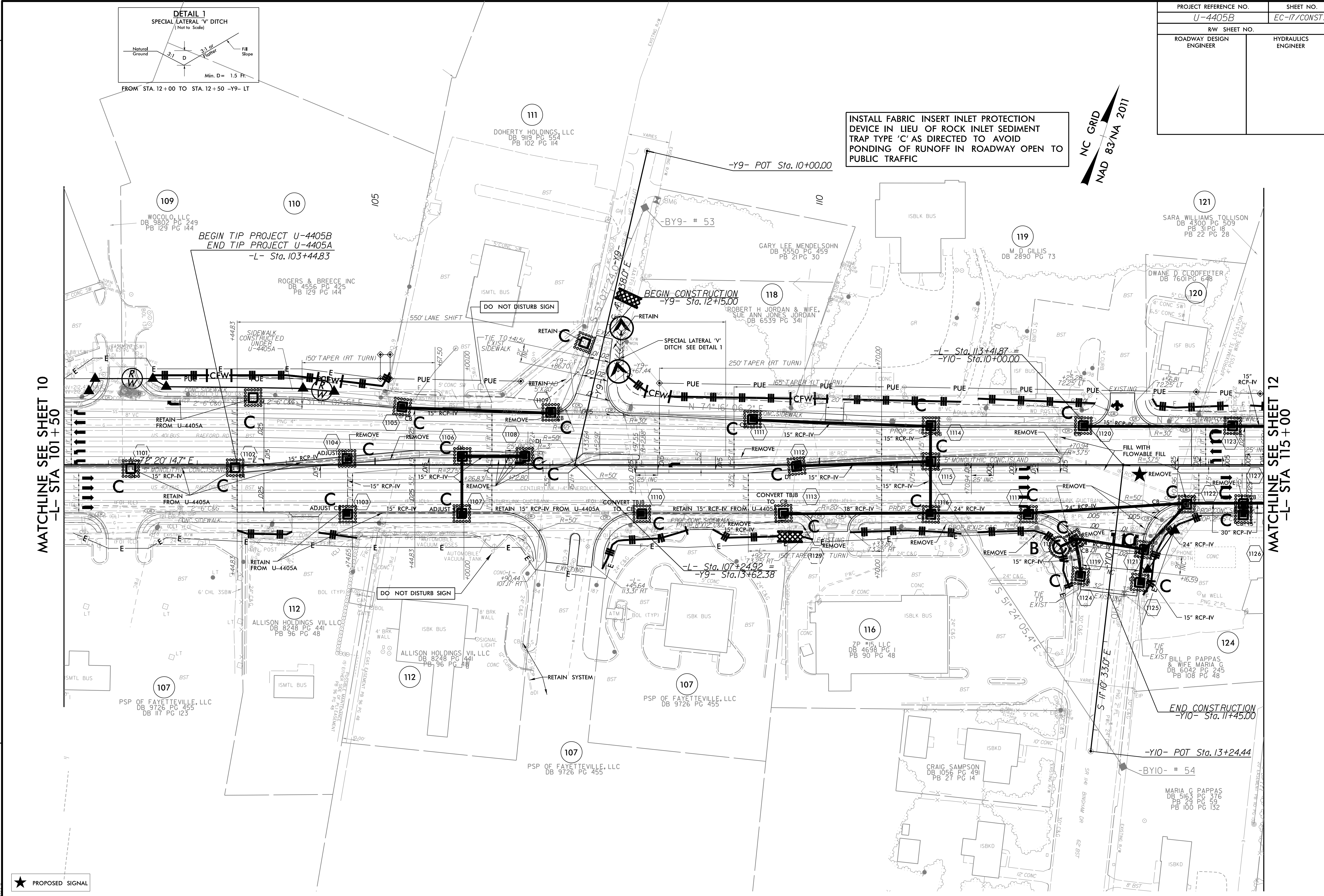
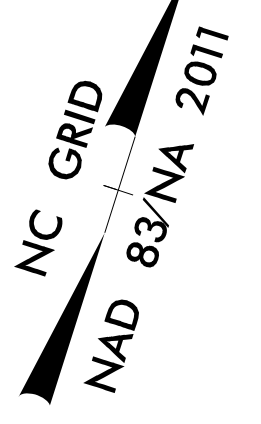
11. REMOVE IMPERVIOUS DIKES C AND D, THEN CONSTRUCT IMPERVIOUS DIKES E AND F, DIVERTING FLOW THROUGH 3@72" PIPES
 12. CONSTRUCT WEST SIDE OF BANK AT INLET AND OUTLET AND STABILIZE
 13. REMOVE IMPERVIOUS DIKES E AND F AND STILLING BASIN
 14. COMPLETE DRAINAGE AND ROADWAY
- NOTE: FILL EXISTING 60" RCPS WITH FLOWABLE FILL



PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-17/CONST.11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED TO AVOID PONDING OF RUNOFF IN ROADWAY OPEN TO PUBLIC TRAFFIC



MATCHLINE SEE SHEET 10
-L- STA 101 + 50

MATCHLINE SEE SHEET 12
-L- STA 115 + 00

★ PROPOSED SIGNAL

▬ PROP CONC SIDEWALK

** A DESIGN EXCEPTION FOR LANE WIDTH IS REQUIRED FOR -L- STA. 38 + 95.00 TO -L- 319 + 95.00

NOTE: SEE SHEET 36 FOR -L- PROFILE
SEE SHEET 47 FOR -Y9- PROFILE
SEE SHEET 47 FOR -Y10- PROFILE

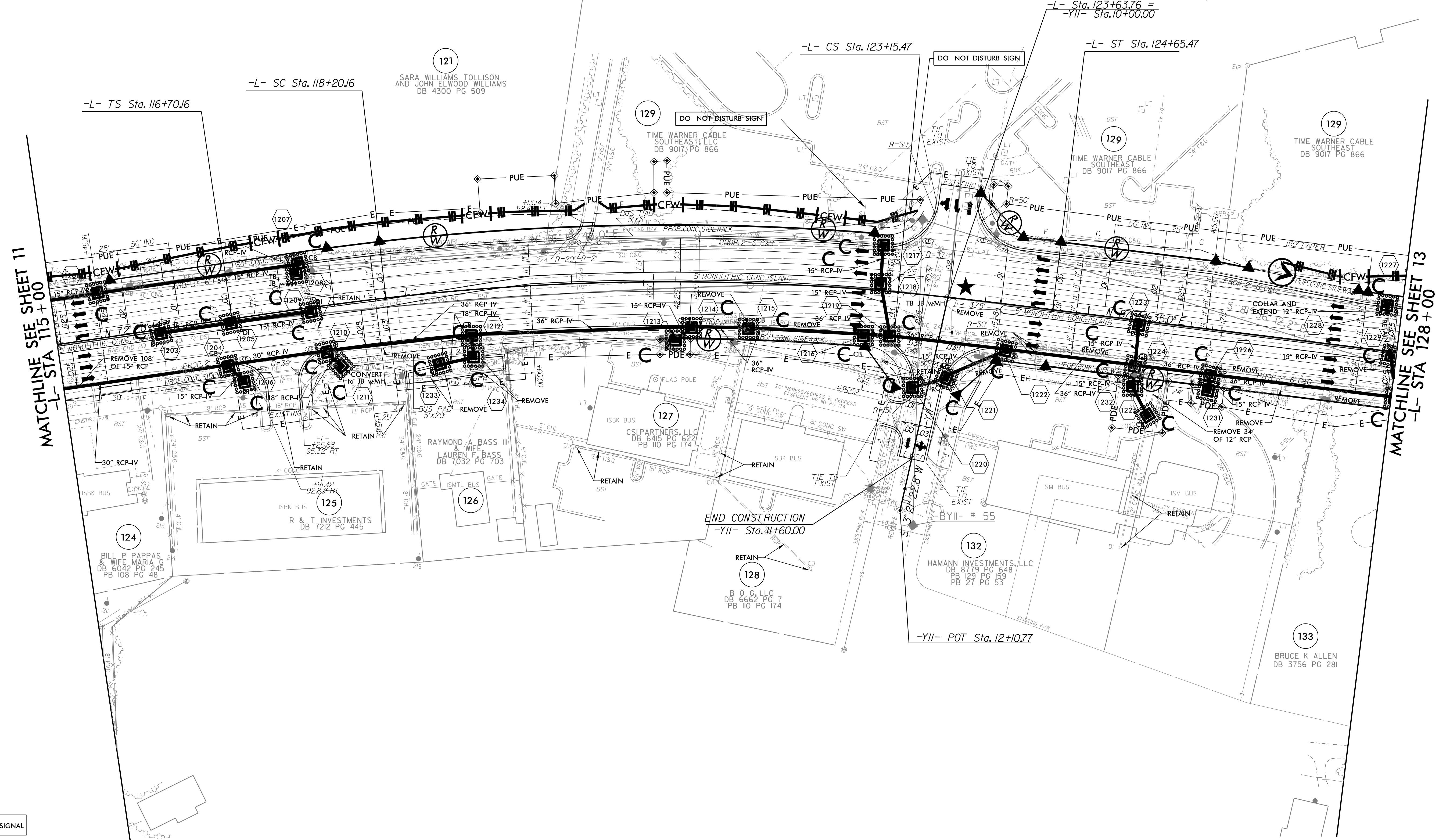
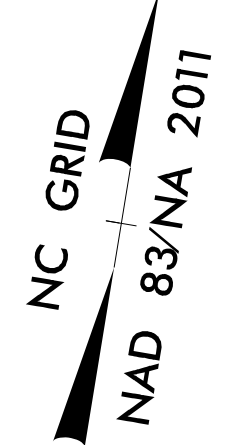
REVISIONS

10/8/2024
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8/17/19

PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-18/CONST.12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L-		
PIs Sta 117+70.17	PI Sta 120+68.70	PIs Sta 123+65.48
$\Theta_s = 1^\circ 47' 25.8''$	$\Delta = 11^\circ 49' 28.7''$ (RT)	$\Theta_s = 1^\circ 47' 25.8''$
$L_s = 150.00'$	$D = 2^\circ 23' 14.4''$	$L_s = 150.00'$
$LT = 100.00'$	$L = 495.31'$	$LT = 100.00'$
$ST = 50.00'$	$T = 248.54'$	$ST = 50.00'$
	$SE = 0.03$	

INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED TO AVOID PONDING OF RUNOFF IN ROADWAY OPEN TO PUBLIC TRAFFIC



★ PROPOSED SIGNAL

▬ PROP CONC SIDEWALK

** A DESIGN EXCEPTION FOR LANE WIDTH IS REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

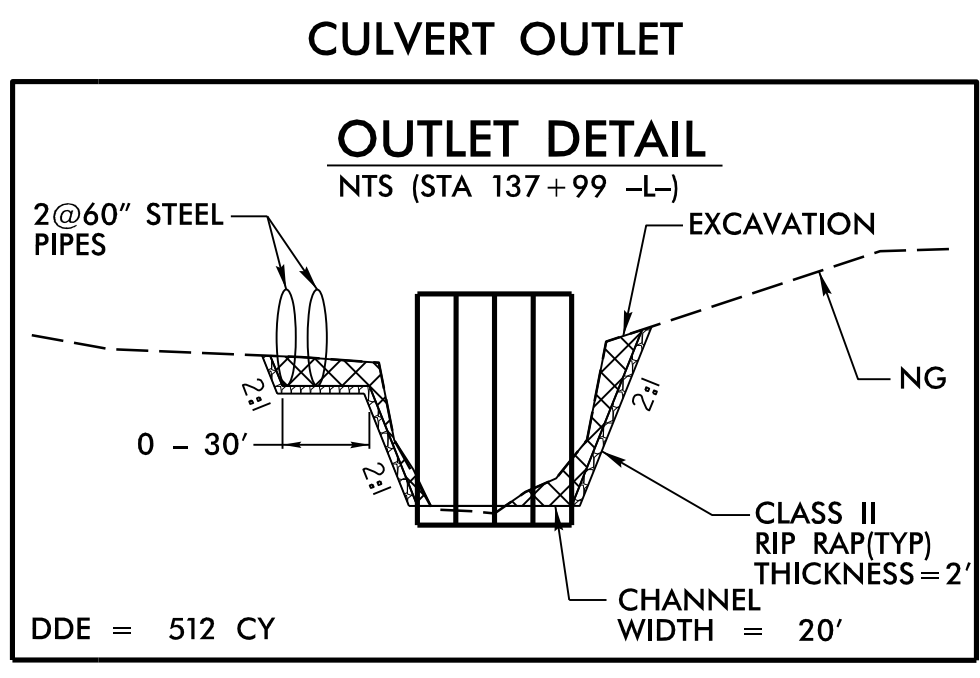
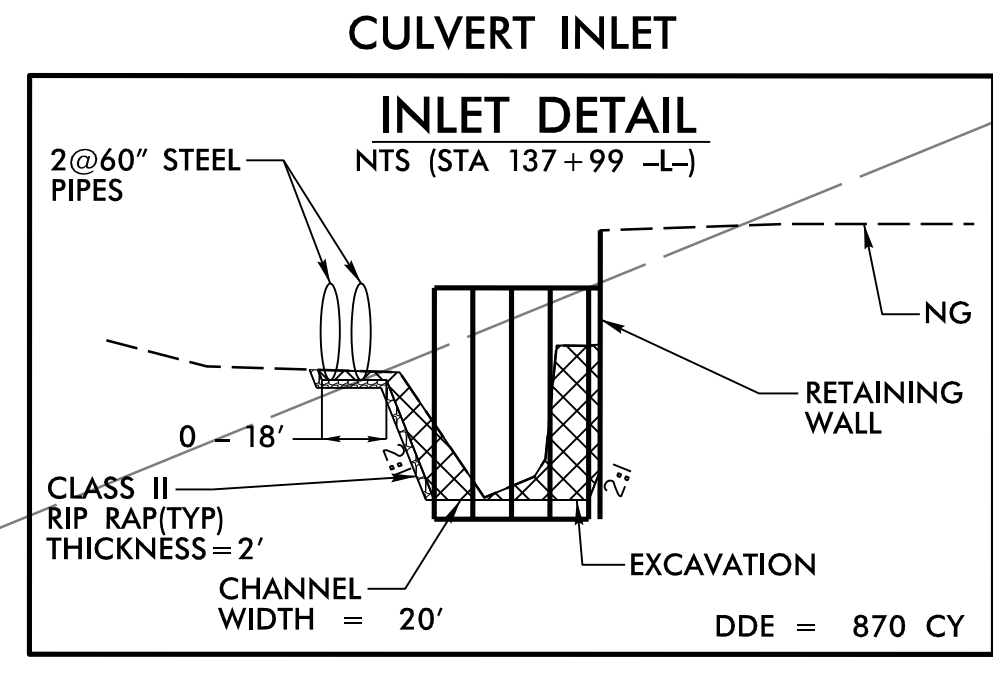
NOTE: SEE SHEET 36 & 37 FOR -L- PROFILE
SEE SHEET 47 FOR -YII- PROFILE

REVISIONS

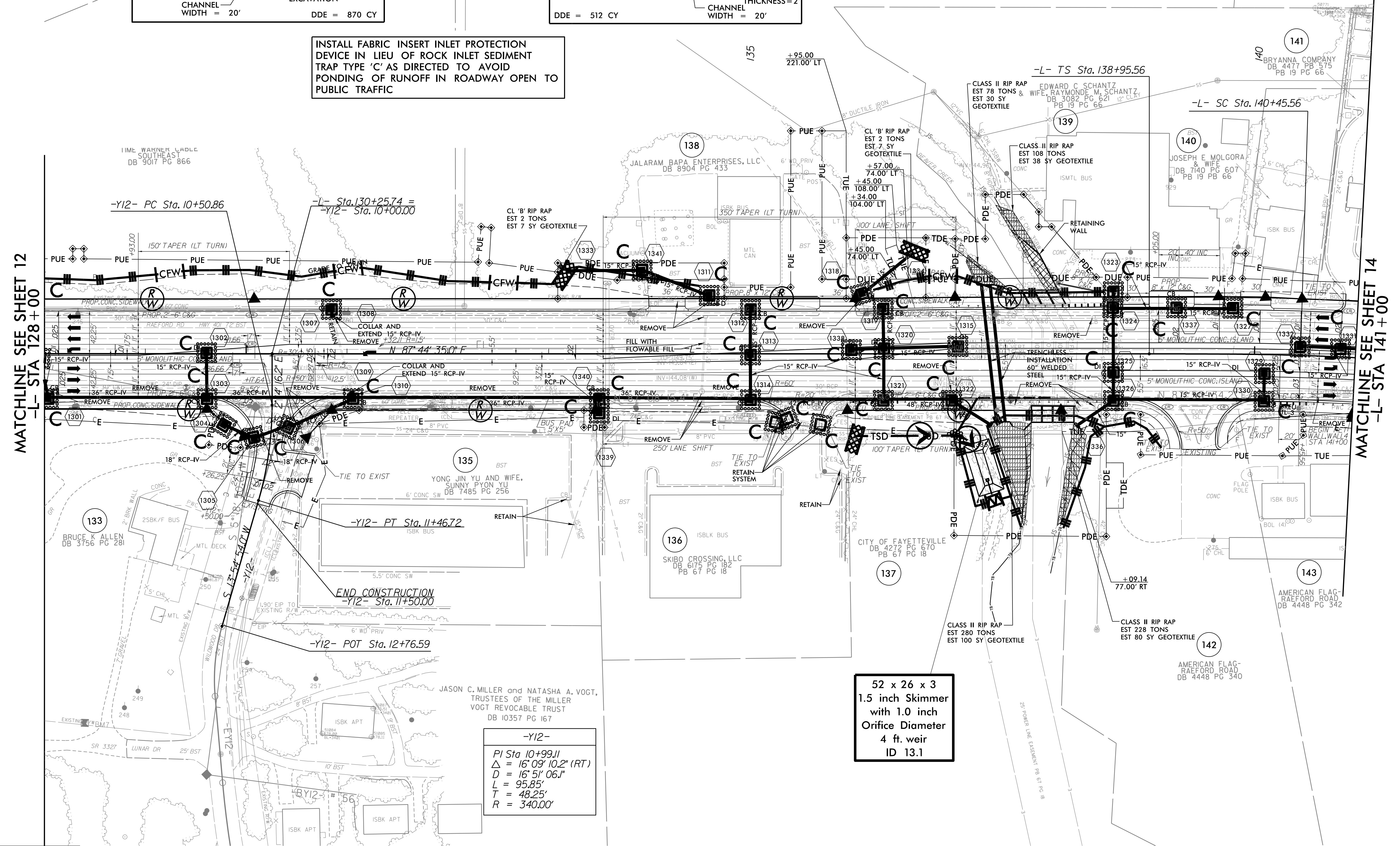
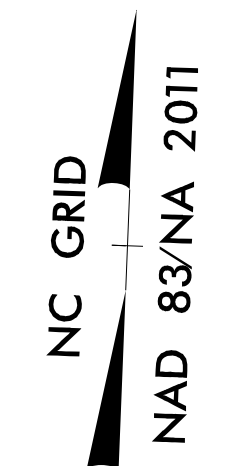
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10/8/2024
U-4405B_REU_EC_psh_12_Final.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-19/CONST.13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L-
 Pts Sta 139+95.56 PI Sta 144+71.01
 $\Theta_s = 1^{\circ} 43' 07.9''$ $\Delta = 19^{\circ} 18' 58.8''$ (RT)
 $L_s = 150.00'$ $D = 2^{\circ} 17' 30.6''$
 $LT = 100.00'$ $L = 842.83'$
 $ST = 50.00'$ $T = 425.45'$
 $R = 2,500.00'$
 $SE = 0.03$



INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED TO AVOID PONDING OF RUNOFF IN ROADWAY OPEN TO PUBLIC TRAFFIC



MATCHLINE SEE SHEET 12 -L- STA 128+00

MATCHLINE SEE SHEET 14 -L- STA 141+00

-Y12-
 PI Sta 10+99.11
 $\Delta = 16^{\circ} 09' 10.2''$ (RT)
 $D = 16^{\circ} 51' 06.1''$
 $L = 95.85'$
 $T = 48.25'$
 $R = 340.00'$

52 x 26 x 3
 1.5 inch Skimmer
 with 1.0 inch
 Orifice Diameter
 4 ft. weir
 ID 13.1

NOTE: SEE SHEET 37 FOR -L- PROFILE
 SEE SHEET 47 FOR -Y12- PROFILE

REVISIONS

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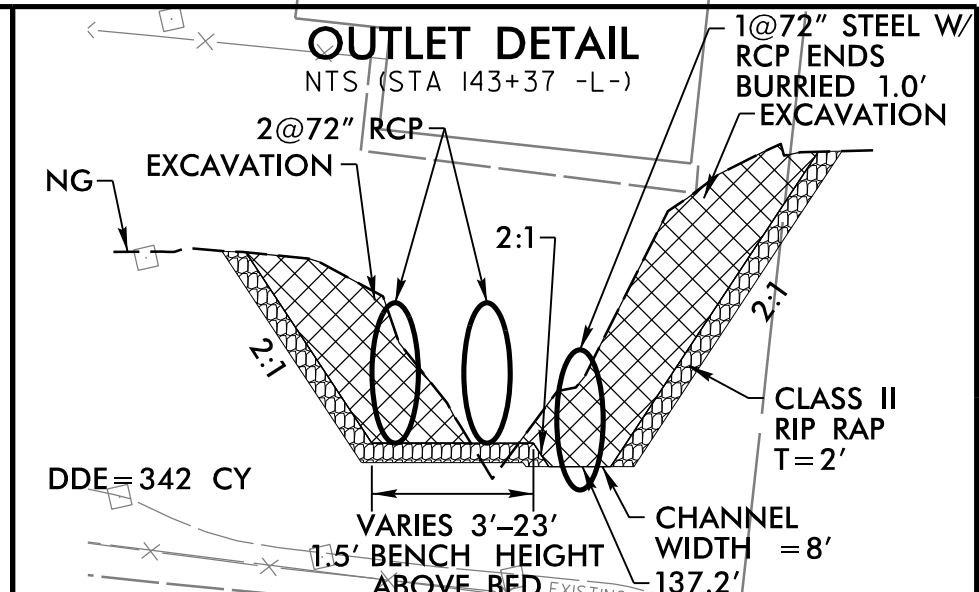
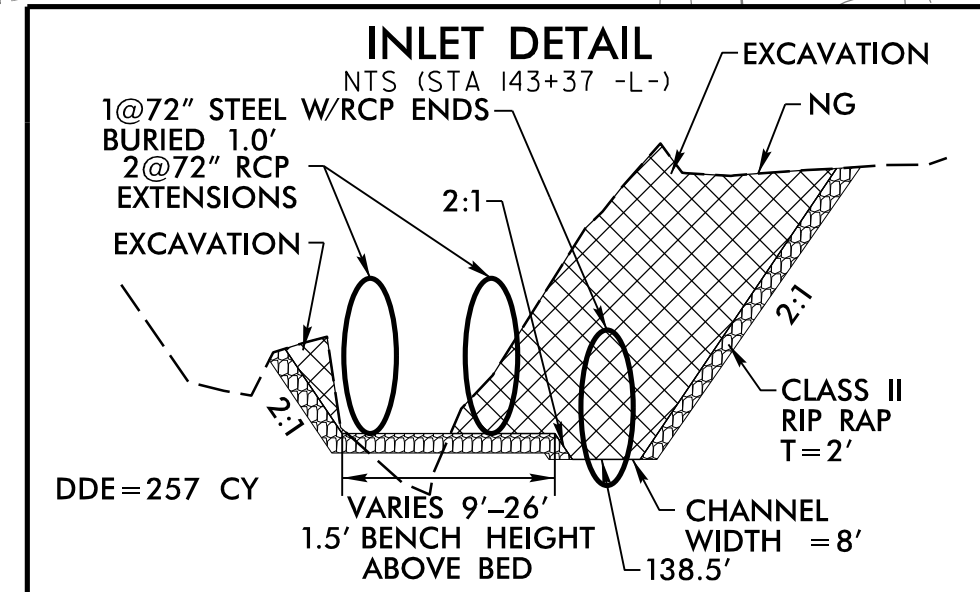
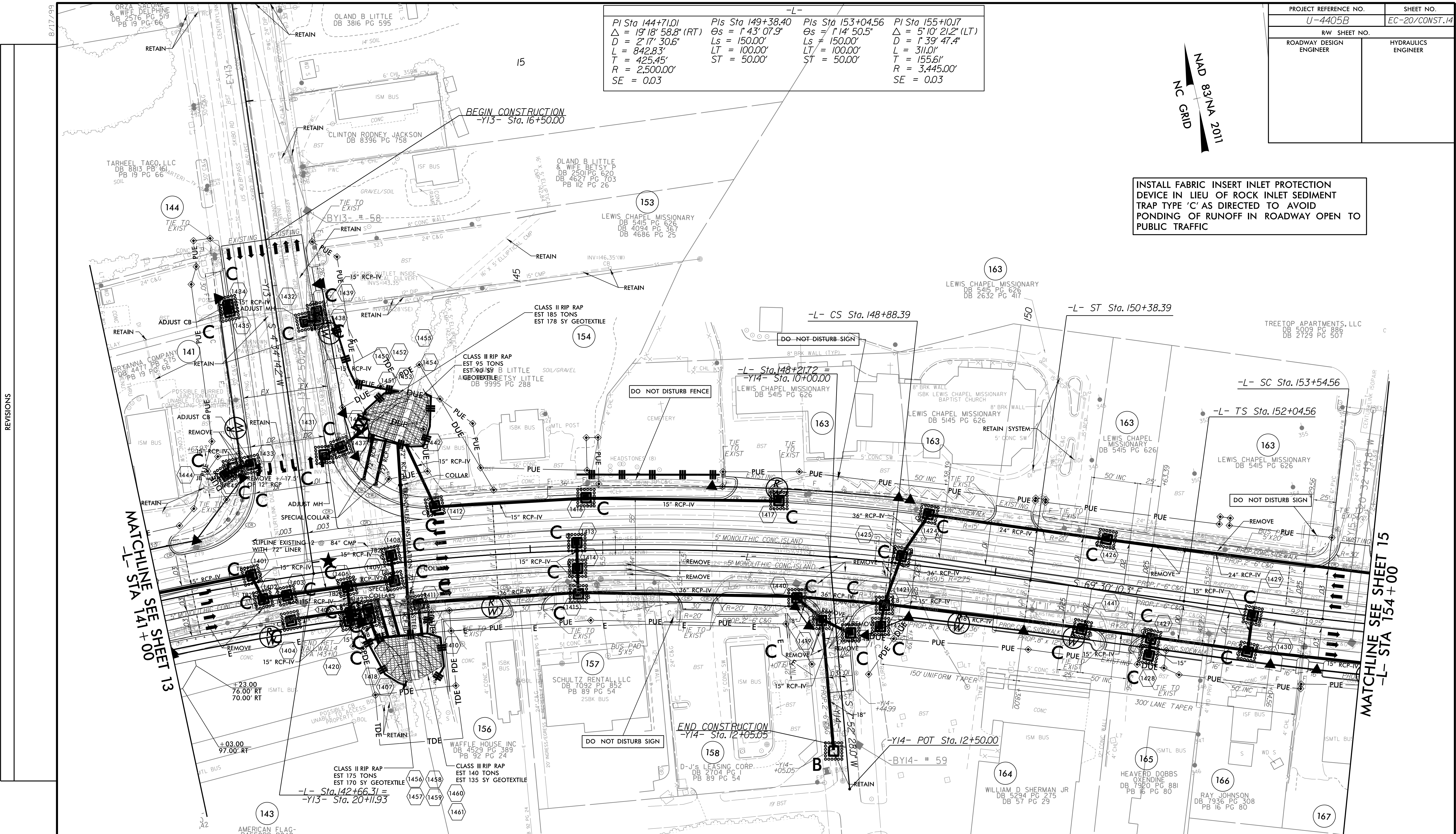
** A DESIGN EXCEPTION FOR LANE WIDTH IS REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-20/CONST.14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PI Sta 144+71.01 $\Delta = 19' 18" 58.8" (RT)$ $D = 2' 17" 30.6"$ $L = 842.83'$ $T = 425.45'$ $R = 2,500.00'$ $SE = 0.03$	Pls Sta 149+38.40 $\Theta_s = 1' 43" 07.9"$ $Ls = 150.00'$ $LT = 100.00'$ $ST = 50.00'$	Pls Sta 153+04.56 $\Theta_s = 1' 14" 50.5"$ $Ls = 150.00'$ $LT = 100.00'$ $ST = 50.00'$	PI Sta 155+10.17 $\Delta = 5' 10" 21.2" (LT)$ $D = 1' 39" 47.4"$ $L = 311.01'$ $T = 155.61'$ $R = 3,445.00'$ $SE = 0.03$
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NAD 83/NA 2011
NC GRID

INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED TO AVOID PONDING OF RUNOFF IN ROADWAY OPEN TO PUBLIC TRAFFIC



NOTE: SEE SHEET 37 & 38 FOR -L- PROFILE
SEE SHEET 47 FOR -Y13- PROFILE
SEE SHEET 48 FOR -Y14- PROFILE

REVISIONS

MATCHLINE SEE SHEET 13
-L- STA 141+00

MATCHLINE SEE SHEET 15
-L- STA 154+00

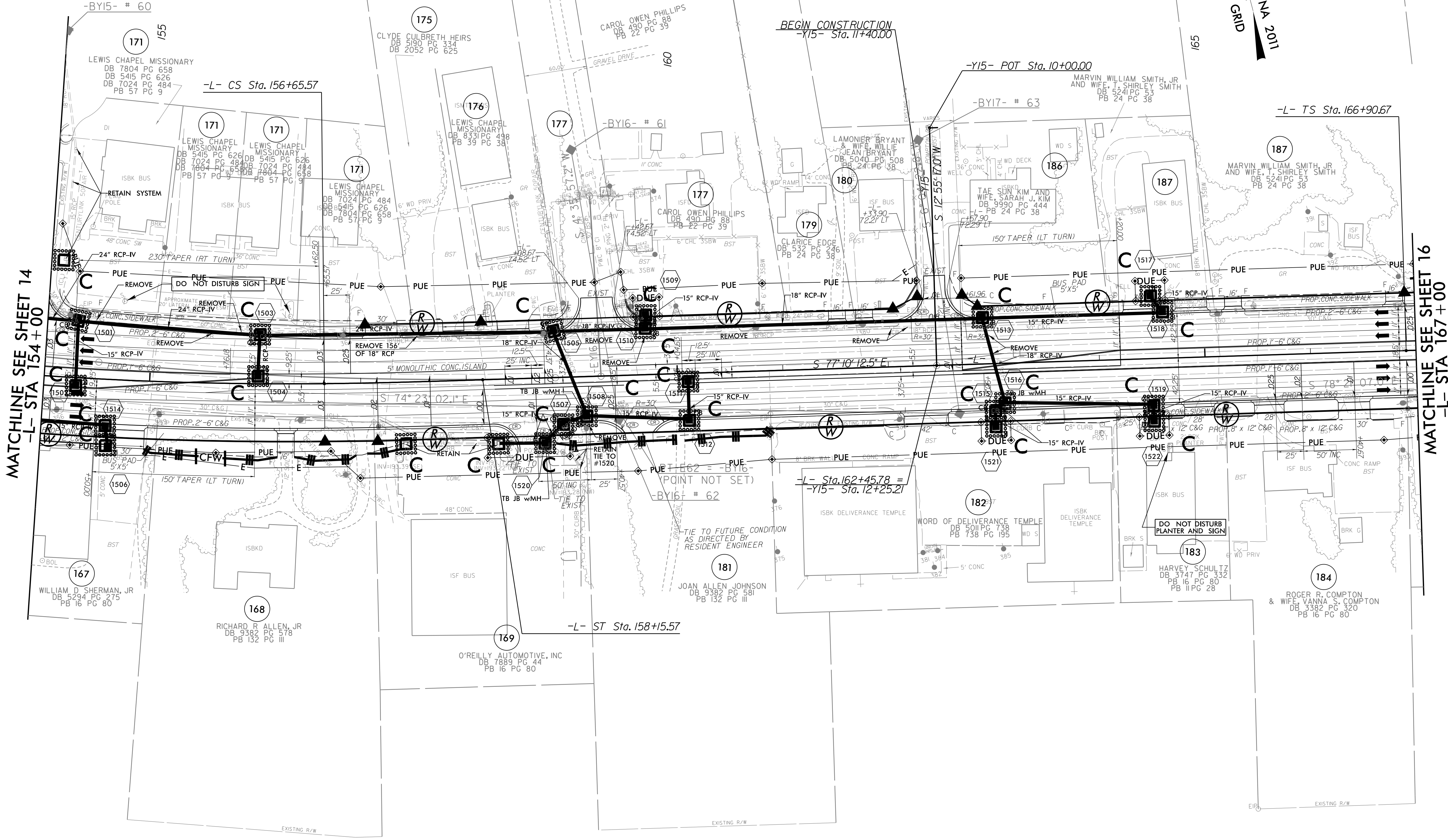
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★ PROPOSED SIGNAL
— PROP CONC SIDEWALK
** A DESIGN EXCEPTION FOR LANE WIDTH IS REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-21/CONST.15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

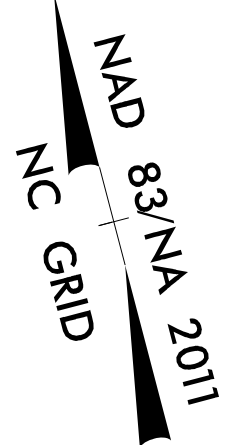
-L-		
PI Sta 155+10.17	Pls Sta 157+15.57	Pls Sta 167+90.68
$\Delta = 5' 10" 21.2" (LT)$	$\Theta_s = 1' 14" 50.5"$	$\Theta_s = 2' 14" 59.4"$
$D = 1' 39" 47.4"$	$L_s = 150.00'$	$L_s = 150.00'$
$L = 311.0'$	$LT = 100.00'$	$LT = 100.0'$
$T = 155.6'$	$ST = 50.00'$	$ST = 50.0'$
$R = 3,445.00'$		
$SE = 0.03$		

INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED TO AVOID PONDING OF RUNOFF IN ROADWAY OPEN TO PUBLIC TRAFFIC



MATCHLINE SEE SHEET 14
-L- STA 154+00

MATCHLINE SEE SHEET 16
-L- STA 167+00



REVISIONS

PROP CONC SIDEWALK

** A DESIGN EXCEPTION FOR LANE WIDTH IS REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

NOTE: SEE SHEET 38 FOR -L- PROFILE
SEE SHEET 48 FOR -Y15- PROFILE

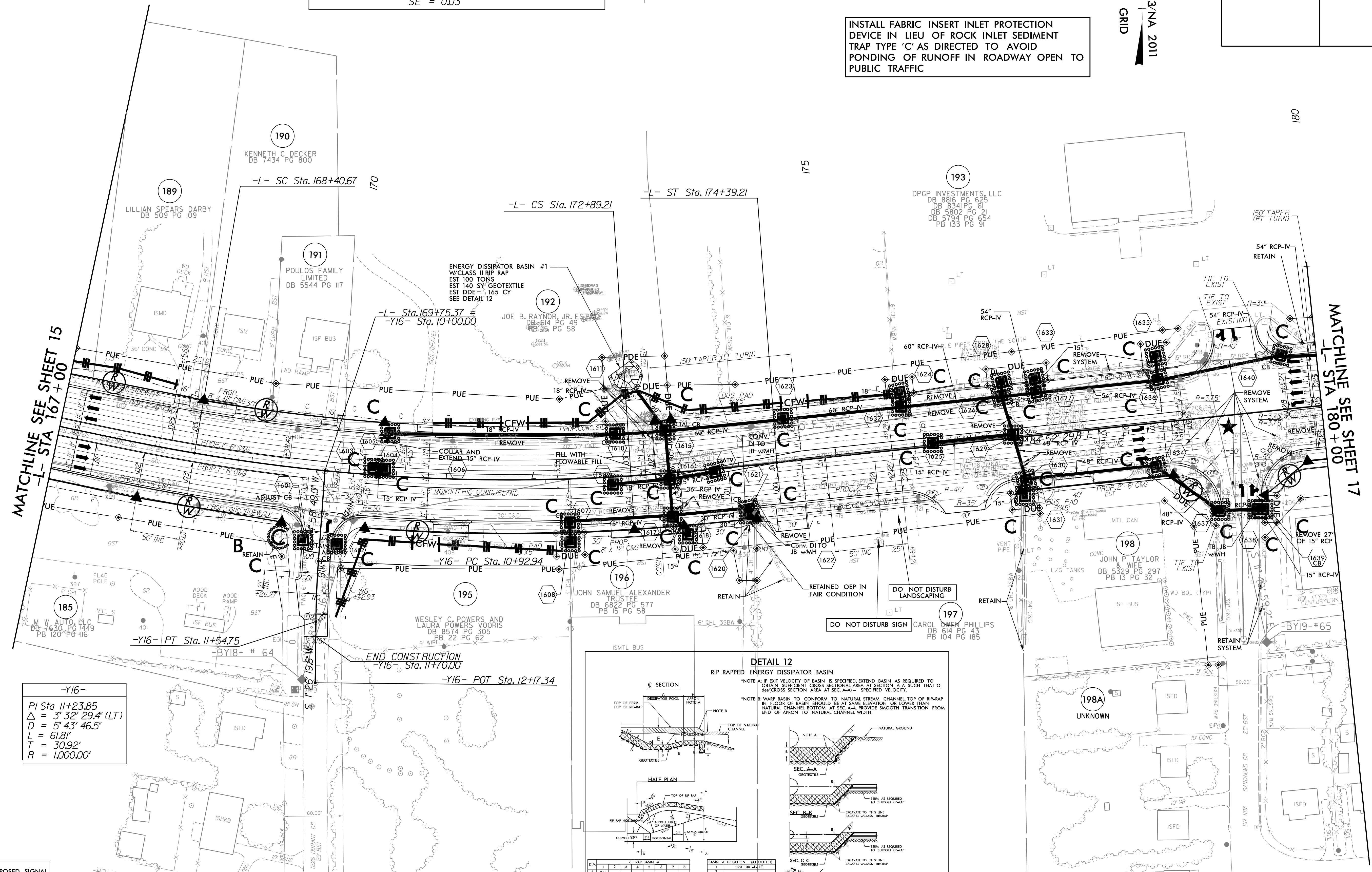
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NAD 83/NA 2011
NC GRID

-L-

Pls Sta 167+90.68	Pls Sta 170+65.98	Pls Sta 173+39.22
$\Theta_s = 2' 14' 59.4"$	$\Delta = 13' 27' 18.9"$ (LT)	$\Theta_s = 2' 14' 59.4"$
$L_s = 150.00'$	$D = 2' 59' 59.2"$	$L_s = 150.00'$
$LT = 100.01'$	$L = 448.54'$	$LT = 100.01'$
$ST = 50.01'$	$T = 225.31'$	$ST = 50.01'$
	$R = 1,910.00'$	
	$SE = 0.03$	

INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED TO AVOID PONDING OF RUNOFF IN ROADWAY OPEN TO PUBLIC TRAFFIC

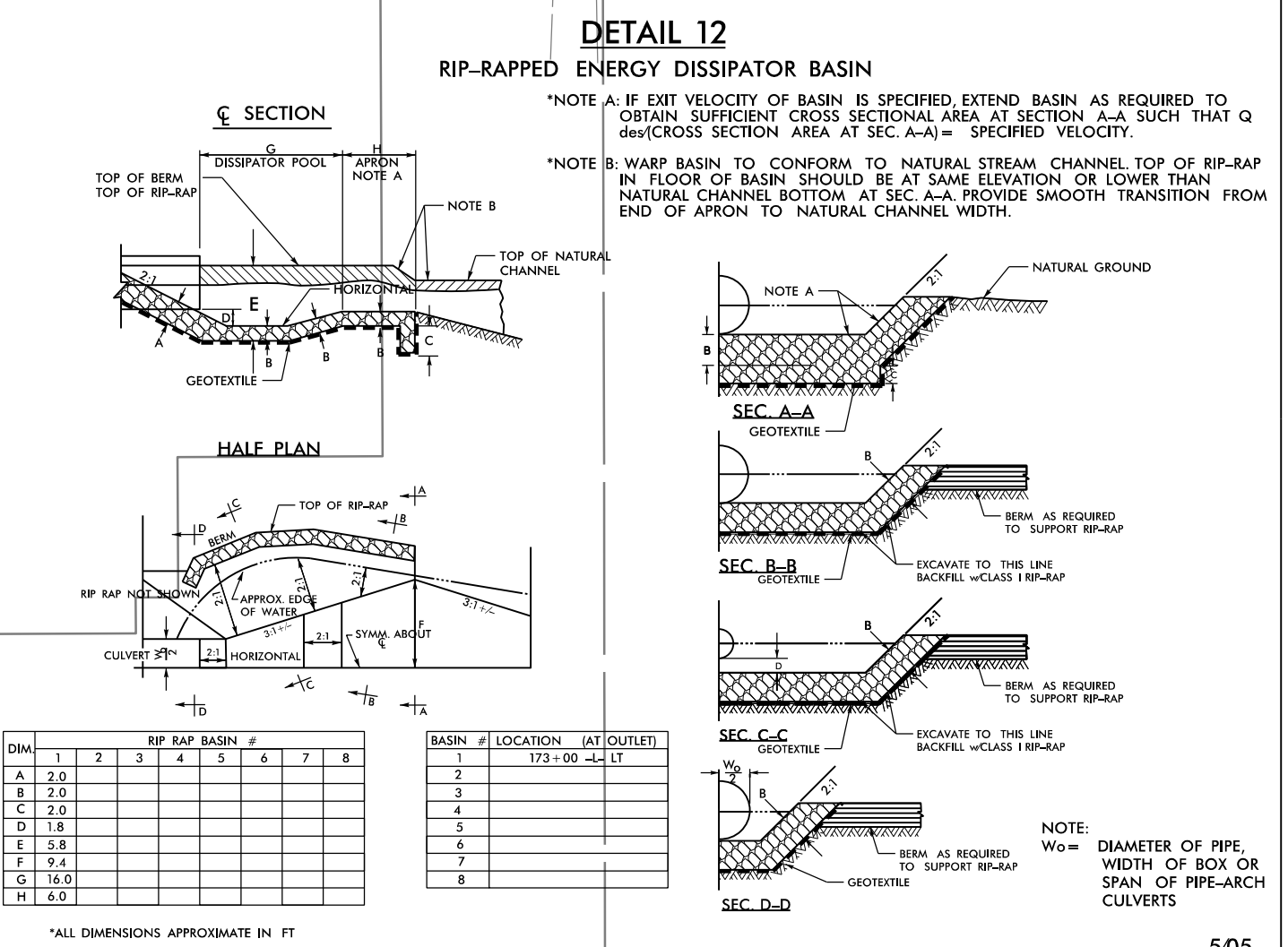


MATCHLINE SEE SHEET 15
-L- STA 167+00

MATCHLINE SEE SHEET 17
-L- STA 180+00

-Y16-

PI Sta 11+23.85
$\Delta = 3' 32' 29.4"$ (LT)
$D = 5' 43' 46.5"$
$L = 61.8'$
$T = 30.92'$
$R = 1,000.00'$



★ PROPOSED SIGNAL

▬ PROP CONC SIDEWALK

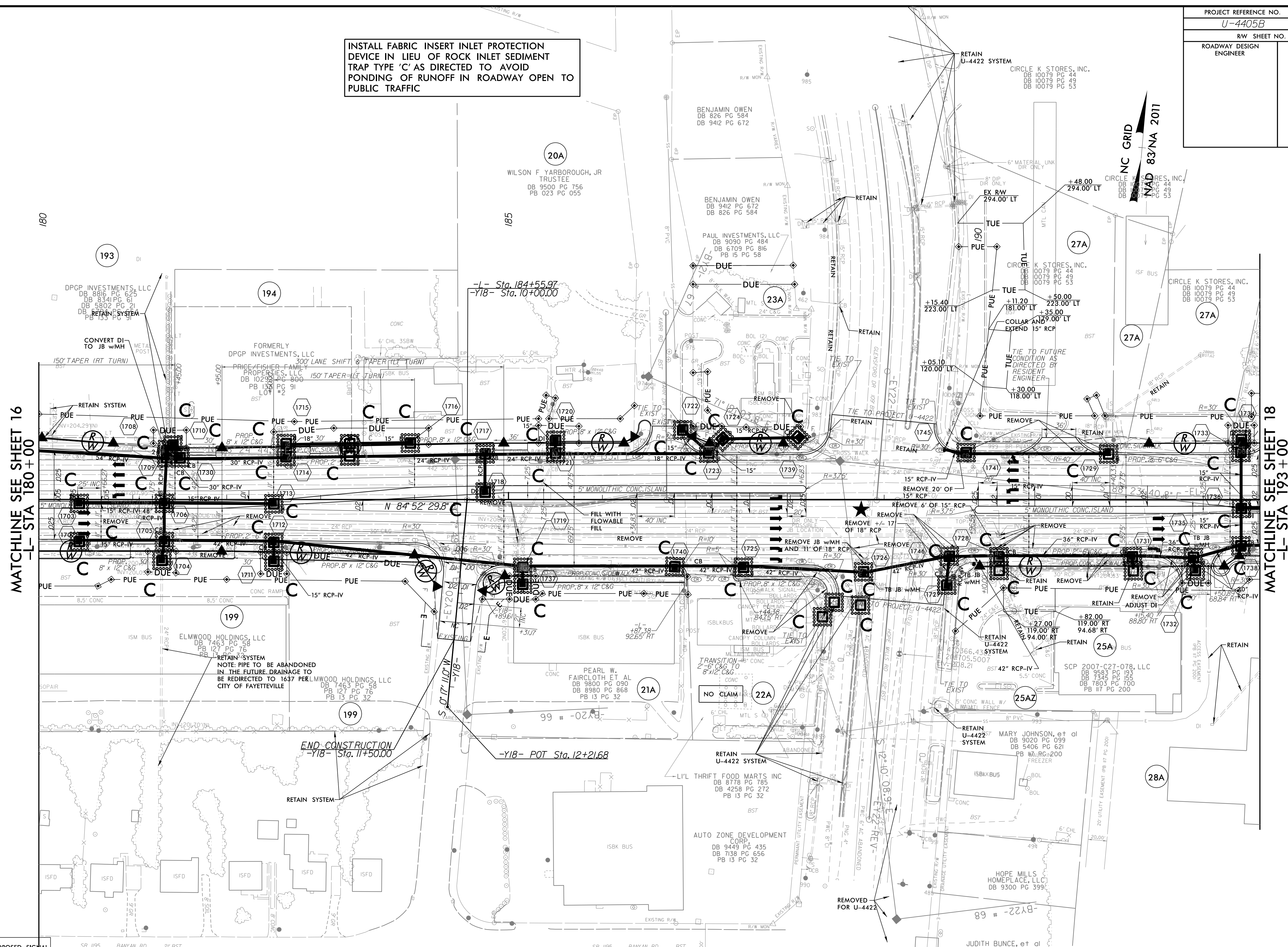
** A DESIGN EXCEPTION FOR LANE WIDTH IS REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

NOTE: SEE SHEET 38 & 39 FOR -L- PROFILE
SEE SHEET 48 FOR -Y16- PROFILE

8/17/99
 REVISIONS
 10/8/2024
 U:\4405\REV_EC_psh_16_Final.dgn
 5/16/2024

PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-23/CONST.17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED TO AVOID PONDING OF RUNOFF IN ROADWAY OPEN TO PUBLIC TRAFFIC



MATCHLINE SEE SHEET 16
-L- STA 180+00

MATCHLINE SEE SHEET 18
-L- STA 193+00

NOTE: SEE SHEET 39 FOR -L- PROFILE
SEE SHEET 48 FOR -Y18- PROFILE

★ PROPOSED SIGNAL
 ■ PROP CONC SIDEWALK
 ** A DESIGN EXCEPTION FOR LANE WIDTH IS REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

REVISIONS

8/17/99
 10/8/2024
 U-4405B_REU_EC_psh_17_Final.dgn

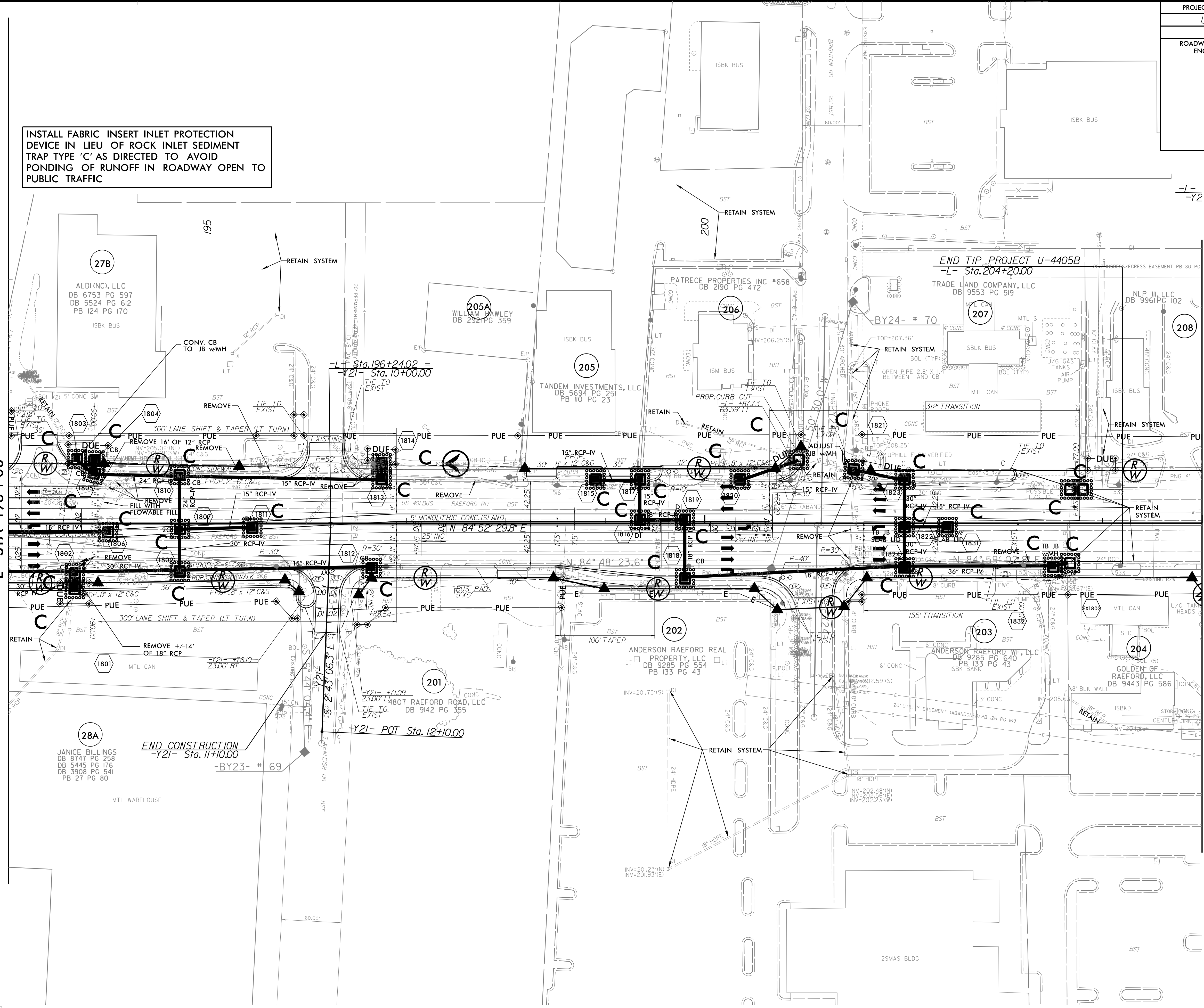
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U-4405B	EC-24/CONST.18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NC GRID
NAD 83/NA 2011

INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED TO AVOID PONDING OF RUNOFF IN ROADWAY OPEN TO PUBLIC TRAFFIC

MATCHLINE SEE SHEET 17
-L- STA 193+00

MATCHLINE SEE SHEET 19
-L- STA 205+00



REVISIONS

★ PROPOSED SIGNAL

■ PROP CONC SIDEWALK

** A DESIGN EXCEPTION FOR LANE WIDTH IS REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

NOTE: SEE SHEET 39 FOR -L- PROFILE
SEE SHEET 48 FOR -Y21- PROFILE

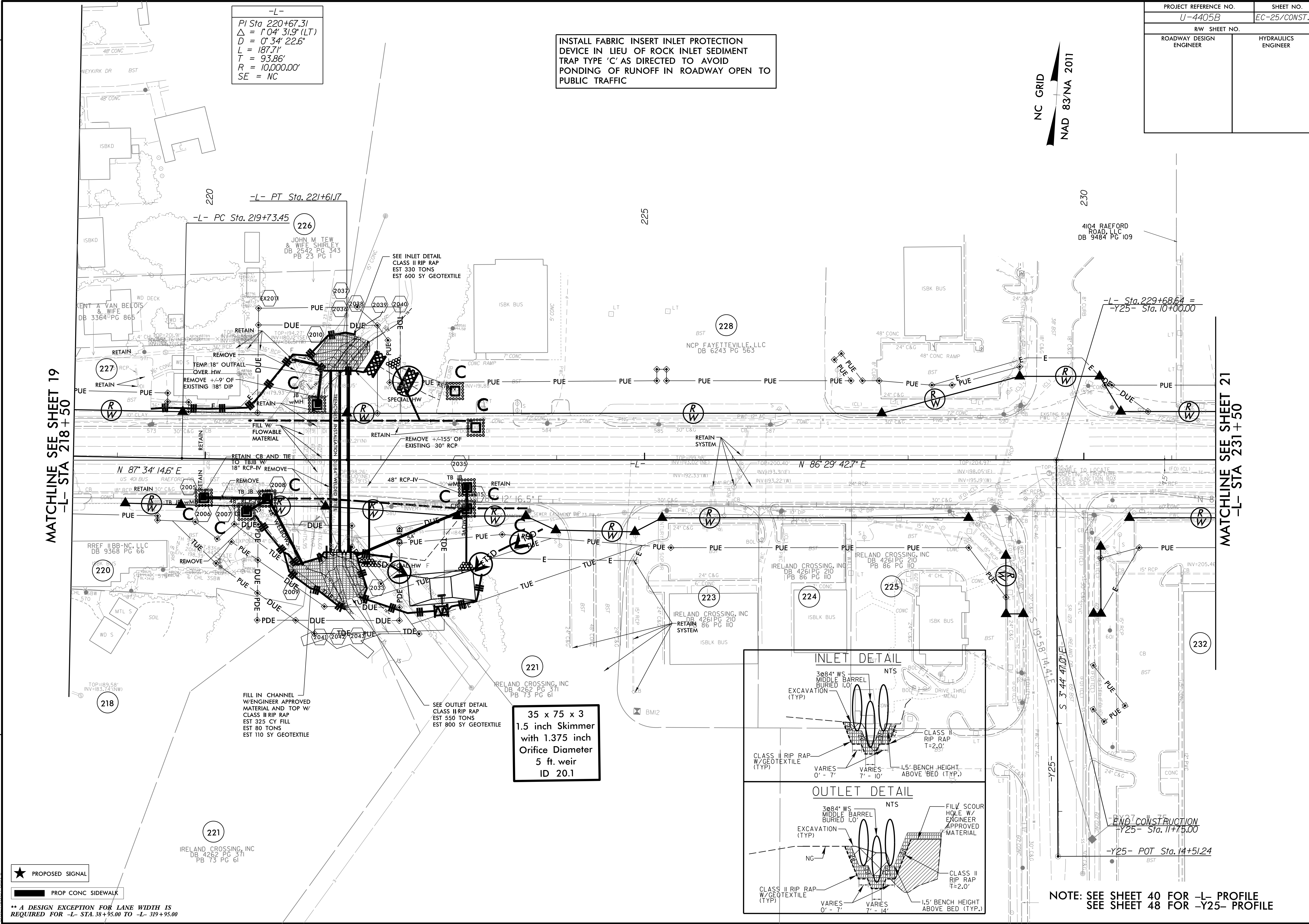
8/17/99
10/8/2024
U-4405B_REU_EC_psh_18_Final.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-4405B	EC-25/CONST.20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NC GRID
NAD 83/NA 2011

-L-
PI Sta 220+67.31
 $\Delta = 1^{\circ}04'31.9"$ (LT)
 $D = 0^{\circ}34'22.6"$
 $L = 187.71'$
 $T = 93.86'$
 $R = 10,000.00'$
SE = NC

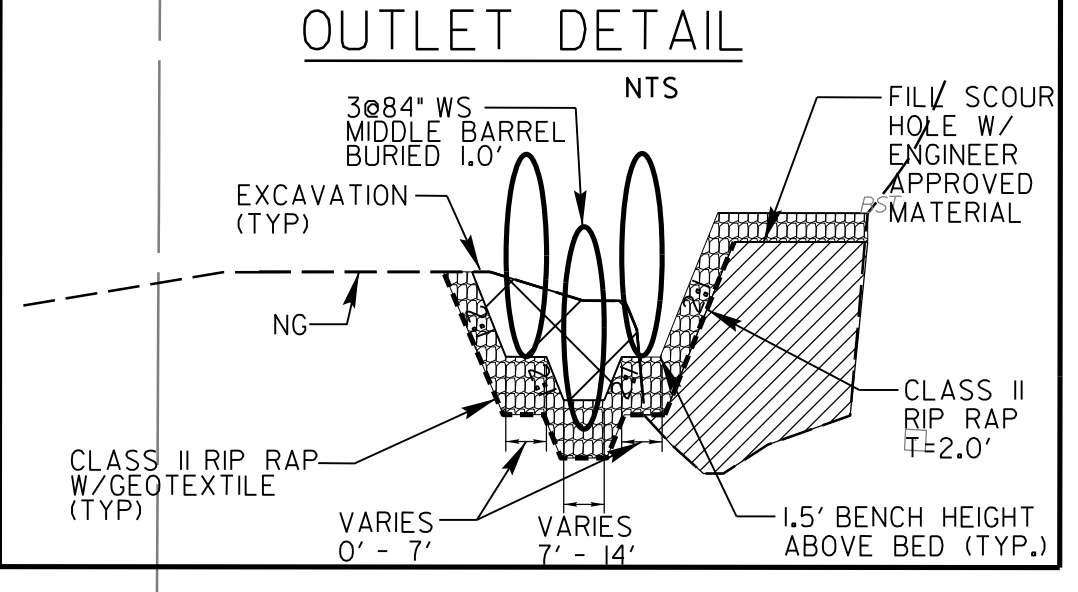
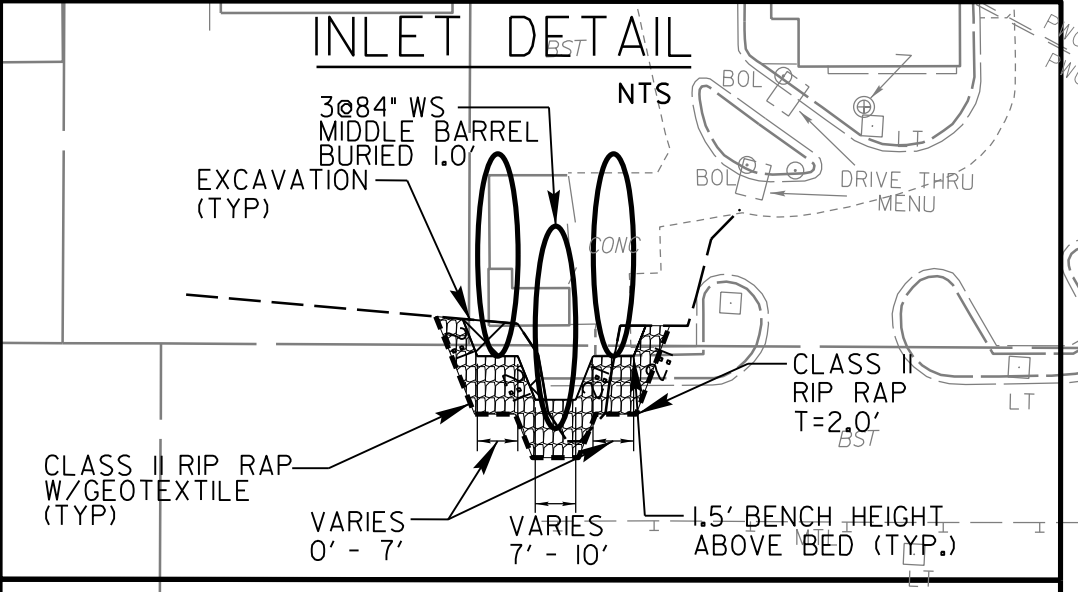
INSTALL FABRIC INSERT INLET PROTECTION DEVICE IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE 'C' AS DIRECTED TO AVOID PONDING OF RUNOFF IN ROADWAY OPEN TO PUBLIC TRAFFIC



MATCHLINE SEE SHEET 19
-L- STA 218+50

MATCHLINE SEE SHEET 21
-L- STA 231+50

35 x 75 x 3
1.5 inch Skimmer
with 1.375 inch
Orifice Diameter
5 ft. weir
ID 20.1



END CONSTRUCTION
-Y25- Sta. 11+75.00

NOTE: SEE SHEET 40 FOR -L- PROFILE
SEE SHEET 48 FOR -Y25- PROFILE

REVISIONS

- ★ PROPOSED SIGNAL
- ▬ PROP CONC SIDEWALK

** A DESIGN EXCEPTION FOR LANE WIDTH IS REQUIRED FOR -L- STA. 38+95.00 TO -L- 319+95.00

10/8/2024 10:44:05_REU_EC_psh_20_Final.dgn 8/17/99