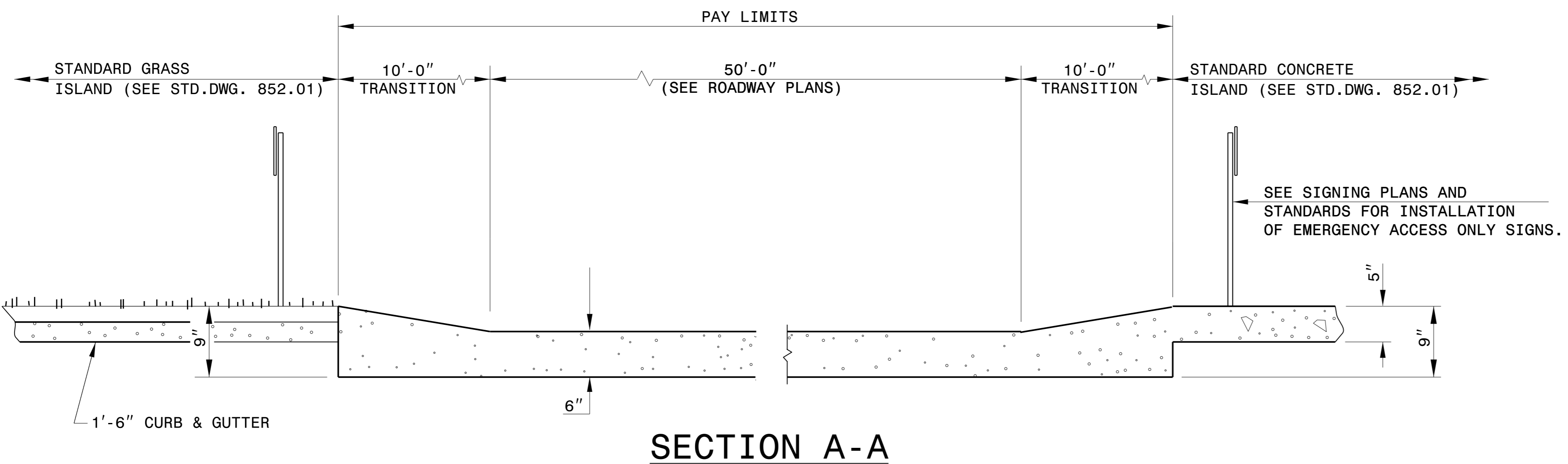
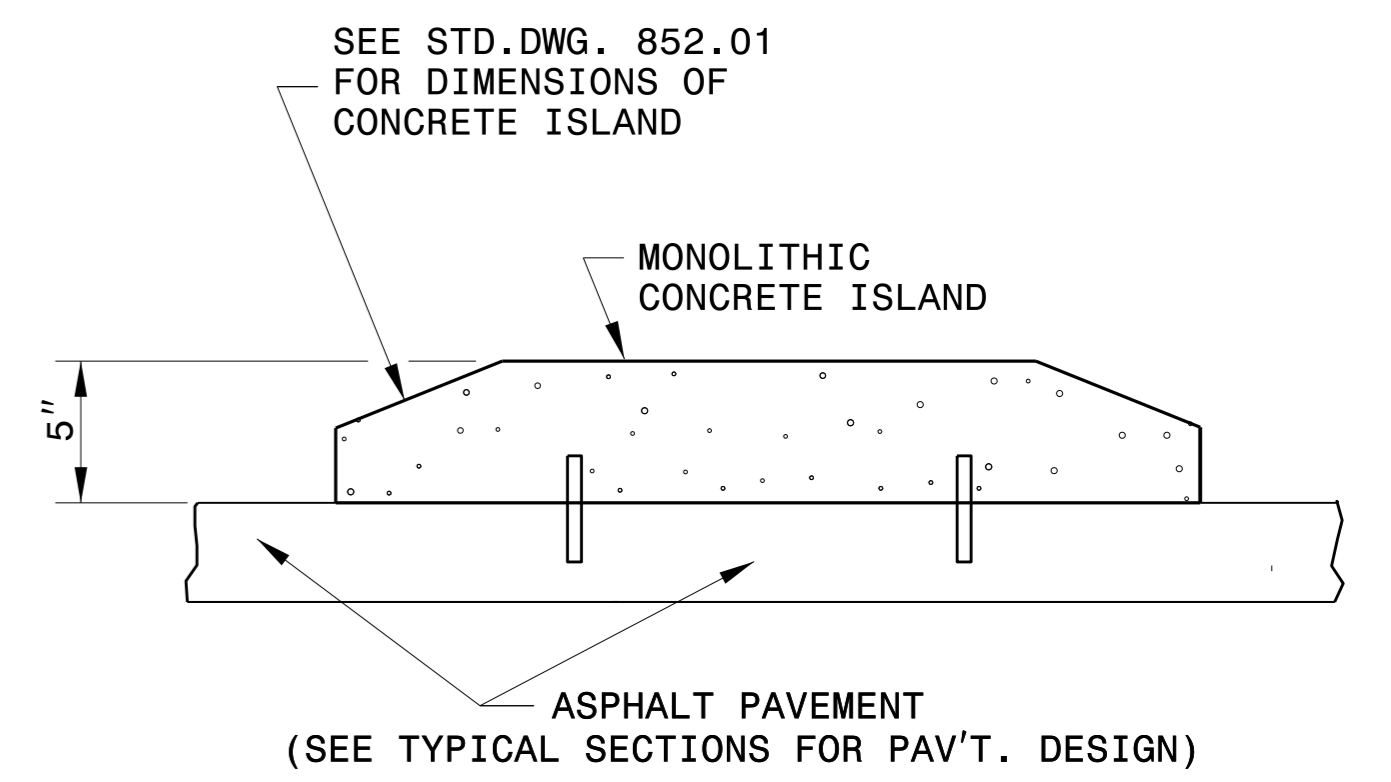


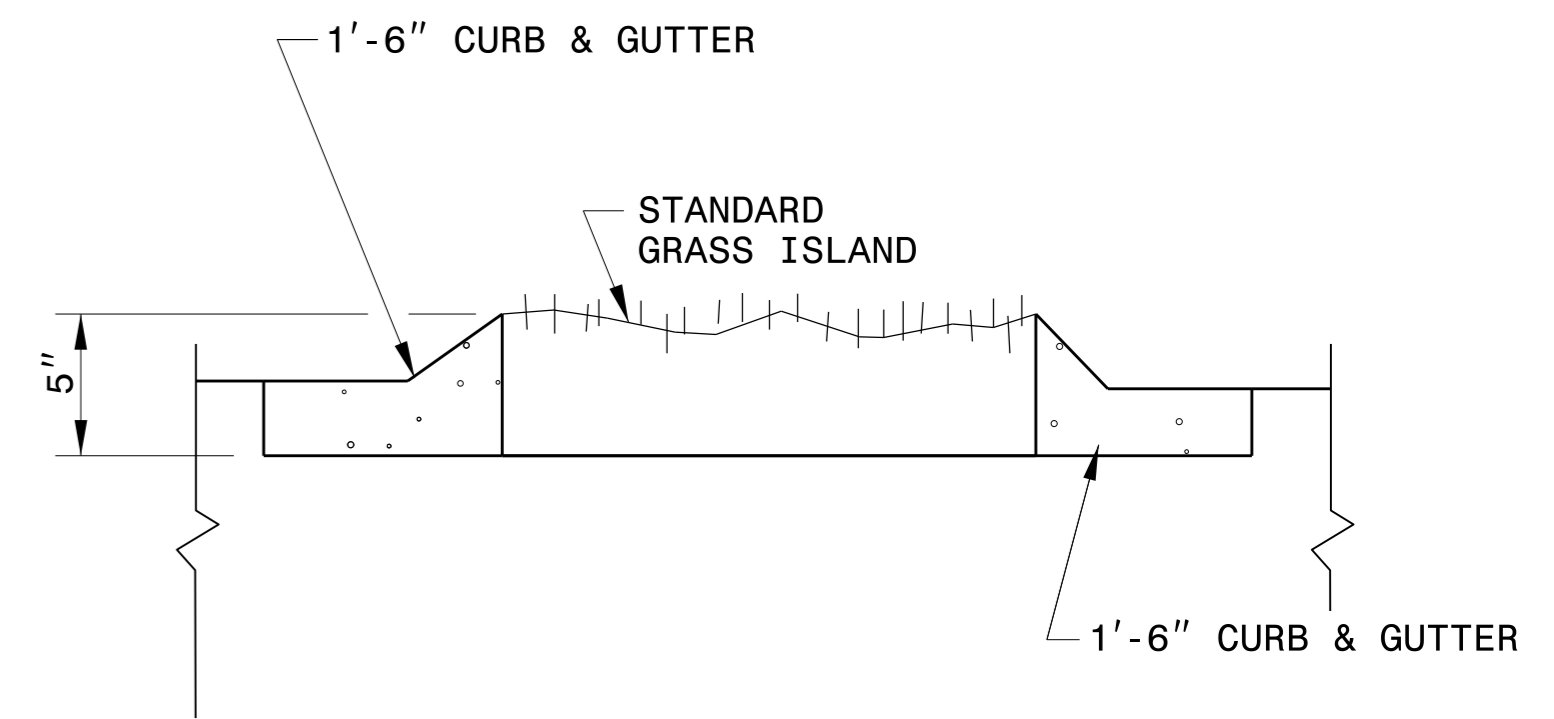
SECTION B-B



SECTION A-A



SECTION C-C



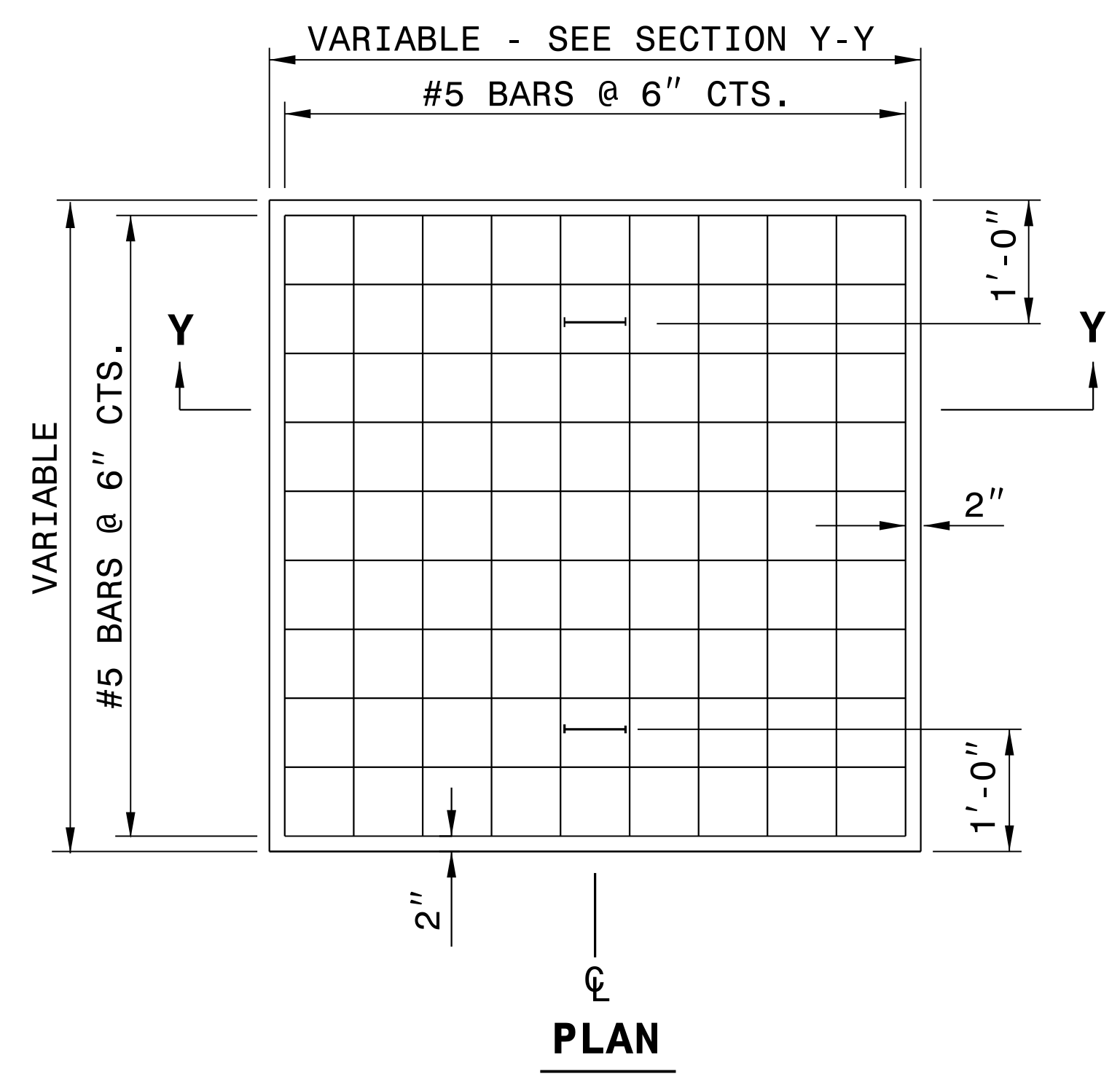
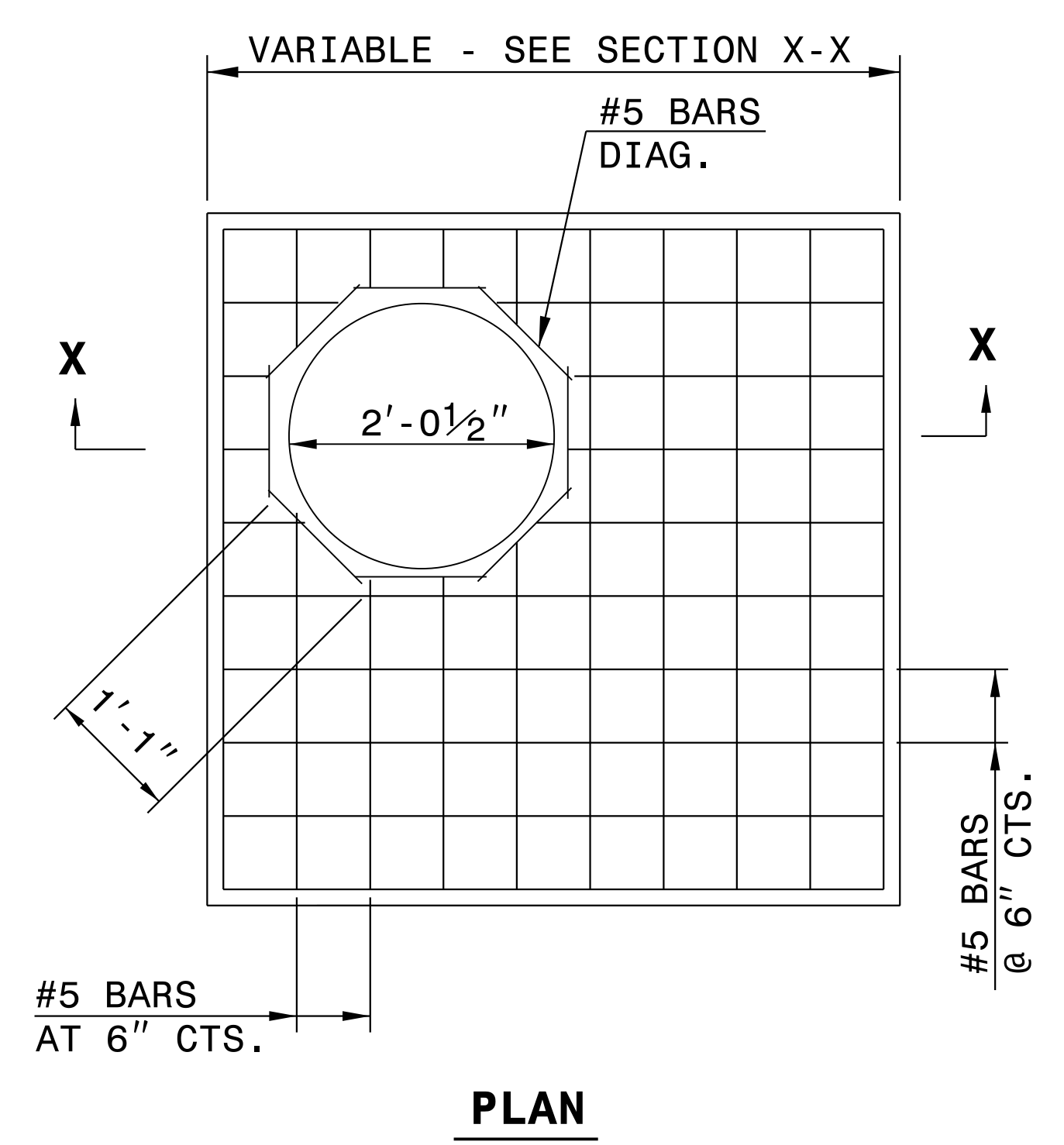
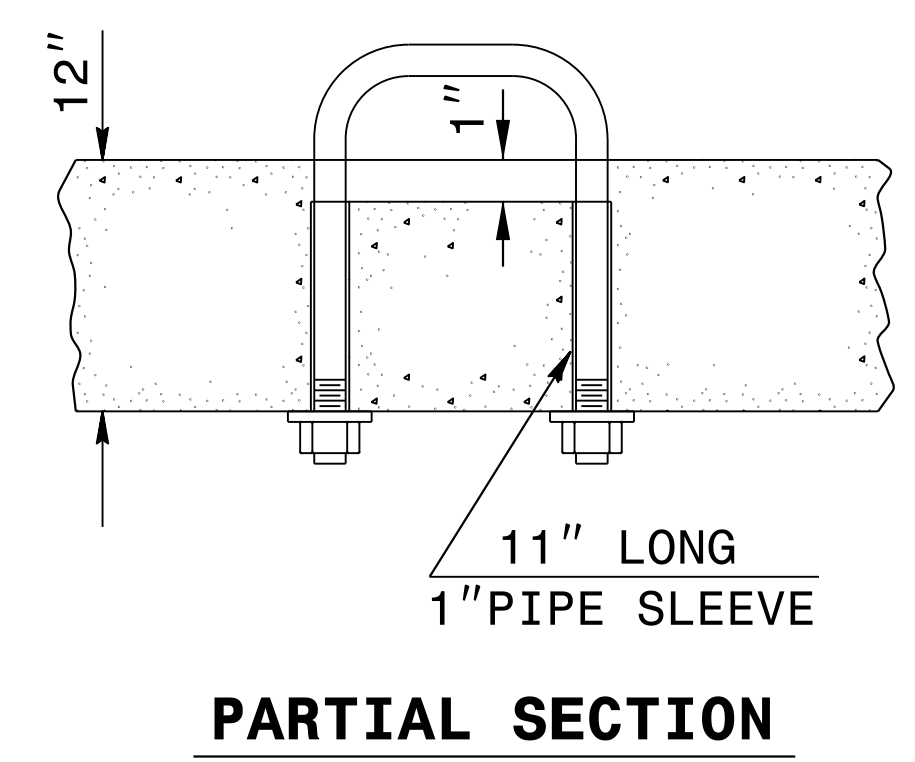
SECTION D-D

DETAIL OF EMERGENCY VEHICLE ACCESS

- NOTES:
- REFER TO SECTION 852 OF STANDARD SPECIFICATIONS FOR CONCRETE ISLANDS.
 - REFER TO STANDARD DRAWING 852.01 FOR CONTRACTION/EXPANSION JOINTS.
 - PLACE W6xW6 REINFORCING WIRE MESH IN THE BOTTOM 3RD OF THE EMERGENCY VEHICLE ACCESS PORTION OF THE CONCRETE ISLAND THAT MEETS SECTION 1070 OF THE STANDARD SPECIFICATIONS.

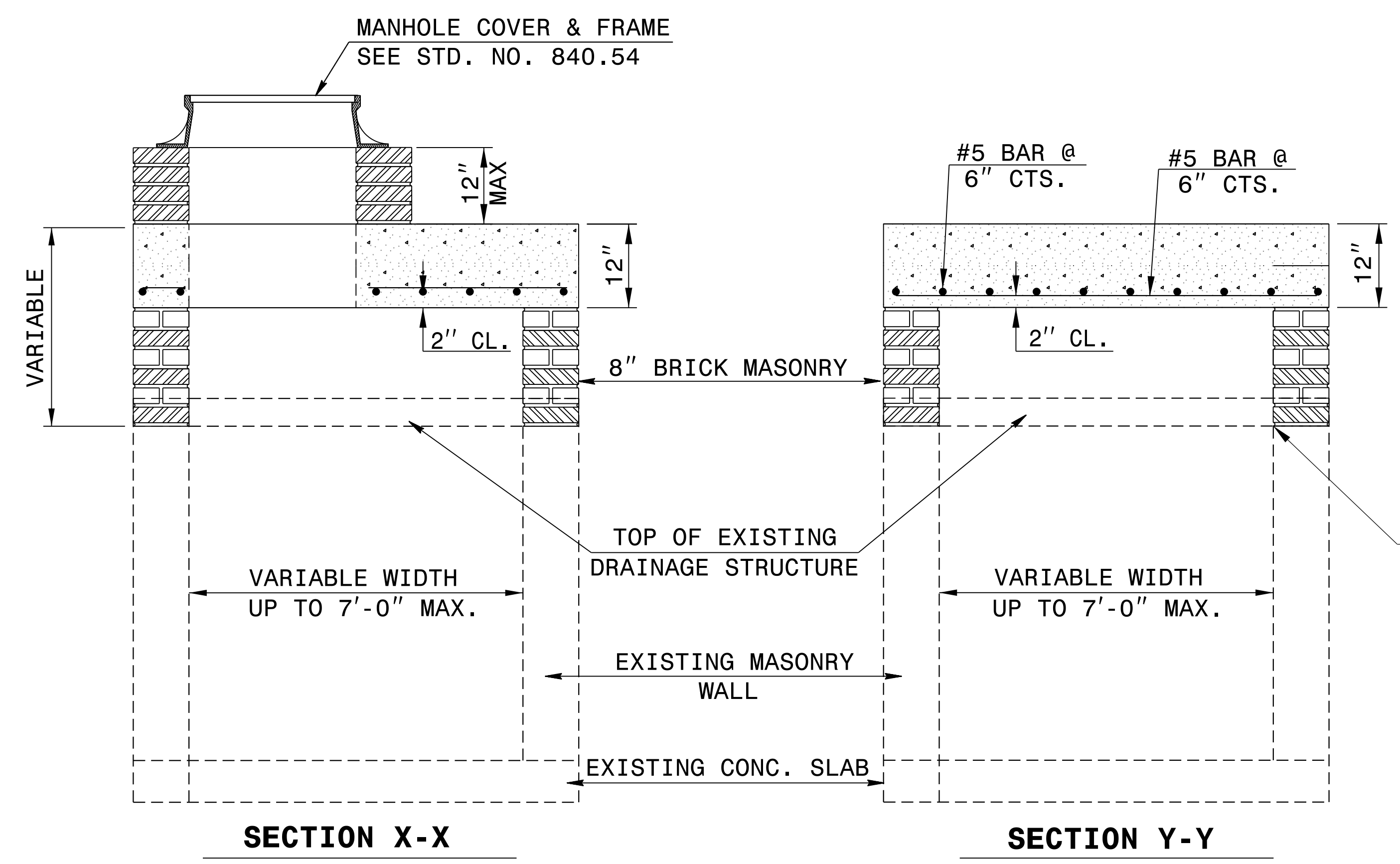
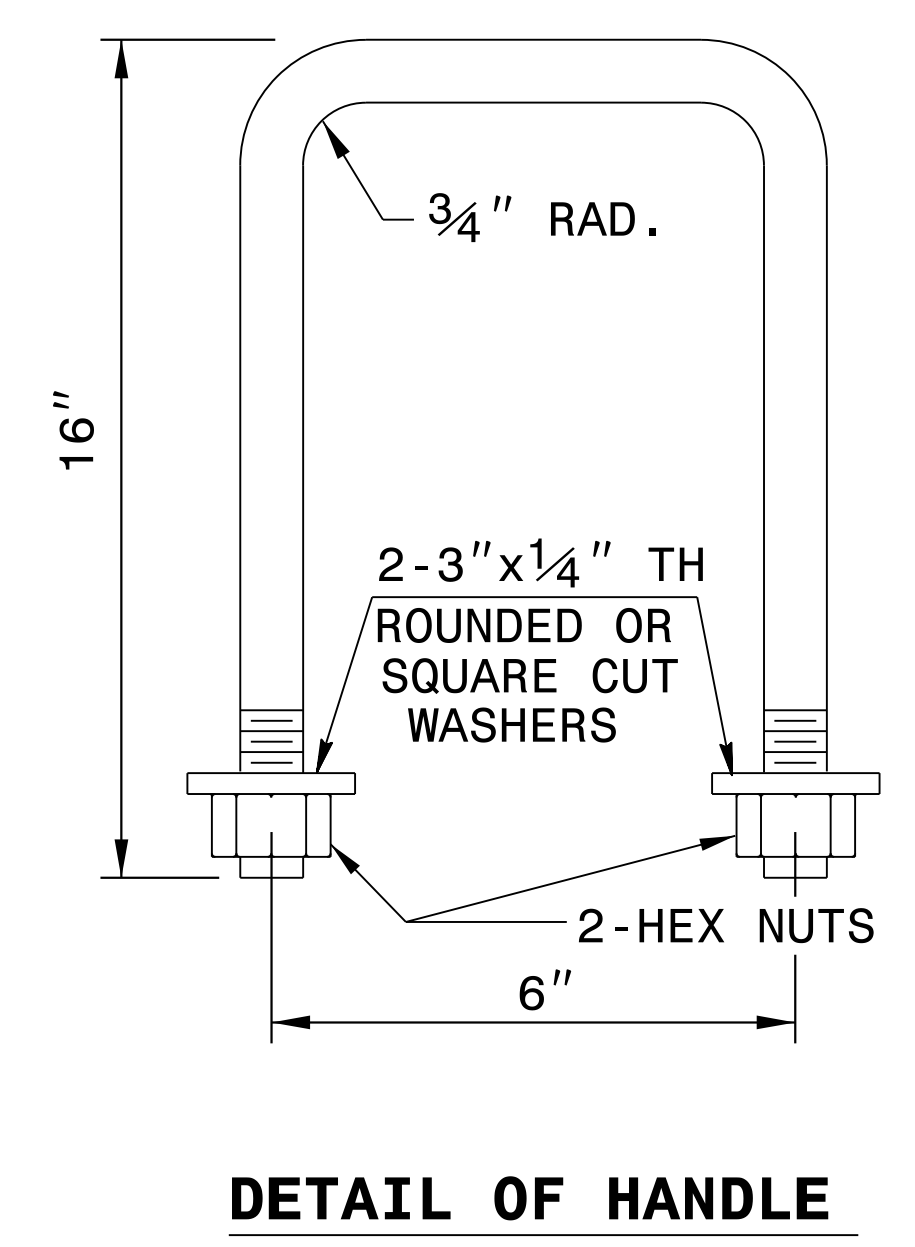
CONTRACT STANDARDS & DEVELOPMENT UNIT STANDARDS AND SPECIAL DESIGN Office 919-250-4128 FAX 919-250-4119	
EMERGENCY VEHICLE ACCESS FOR CONCRETE ISLAND	
ORIGINAL BY: _____	DATE: _____
MODIFIED BY: rnbritt	DATE: 04-12-2012
CHECKED BY: _____	DATE: _____
FILE SPEC.: rnbritt\metric\murbanu3810_emergency_access.dgn	

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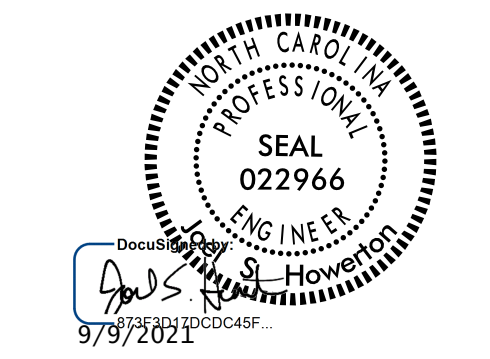
GENERAL NOTES:
 CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.
 FIELD VERIFY THE DIMENSIONS FOR THE EXISTING BOXES.

BILL OF MATERIALS			
MASONRY			
TOP SLAB CONCRETE CLASS "A"		.037YDS ³	PER FT ²
BRICK MASONRY		.025YDS ³	PER FT ²
REINFORCING STEEL		7.64LBS	PER FT ²
MANHOLE OPTION QUANTITIES			
SIZE	QTY.	LENGTH	REINF. STEEL LBS.
#5 DIAG.	8	1'-1"	9.04



NOTE:
 CONCRETE AND REINFORCING STEEL QUANTITIES BASED ON SQUARE FOOT AREA OF THE PROPOSED TOP SLAB FOR THE EXISTING DRAINAGE STRUCTURE.
 BRICK MASONRY QUANTITY IS BASED ON THE TOTAL SQUARE FOOTAGE OF EXTERIOR WALL SURFACE AREA TO BE CONSTRUCTED.

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CONTRACT STANDARDS AND DEVELOPMENT UNIT
 Office 919-707-6950 FAX 919-250-4119

DETAIL TO CONVERT EXISTING TRAFFIC BEARING DROP INLET OR CATCH BASIN TO TRAFFIC BEARING JUNCTION BOX (MANHOLE OPTIONAL)

ORIGINAL BY:	T.S.S.	DATE:	FEB. 2000
MODIFIED BY:	E.E.W.	DATE:	NOV. 2001
CHECKED BY:		DATE:	
FILE SPEC.:	w:ericward/usr/details/stand/box\boxtotb\jbe.dgn		

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04-SEP-2018 08:31 S:\Contracts\Special Details\Standard Drawings\Division 8\862D01 Impact Attenuator Sheets 1 and 2.dgn Jhowerton AT USD-292595

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

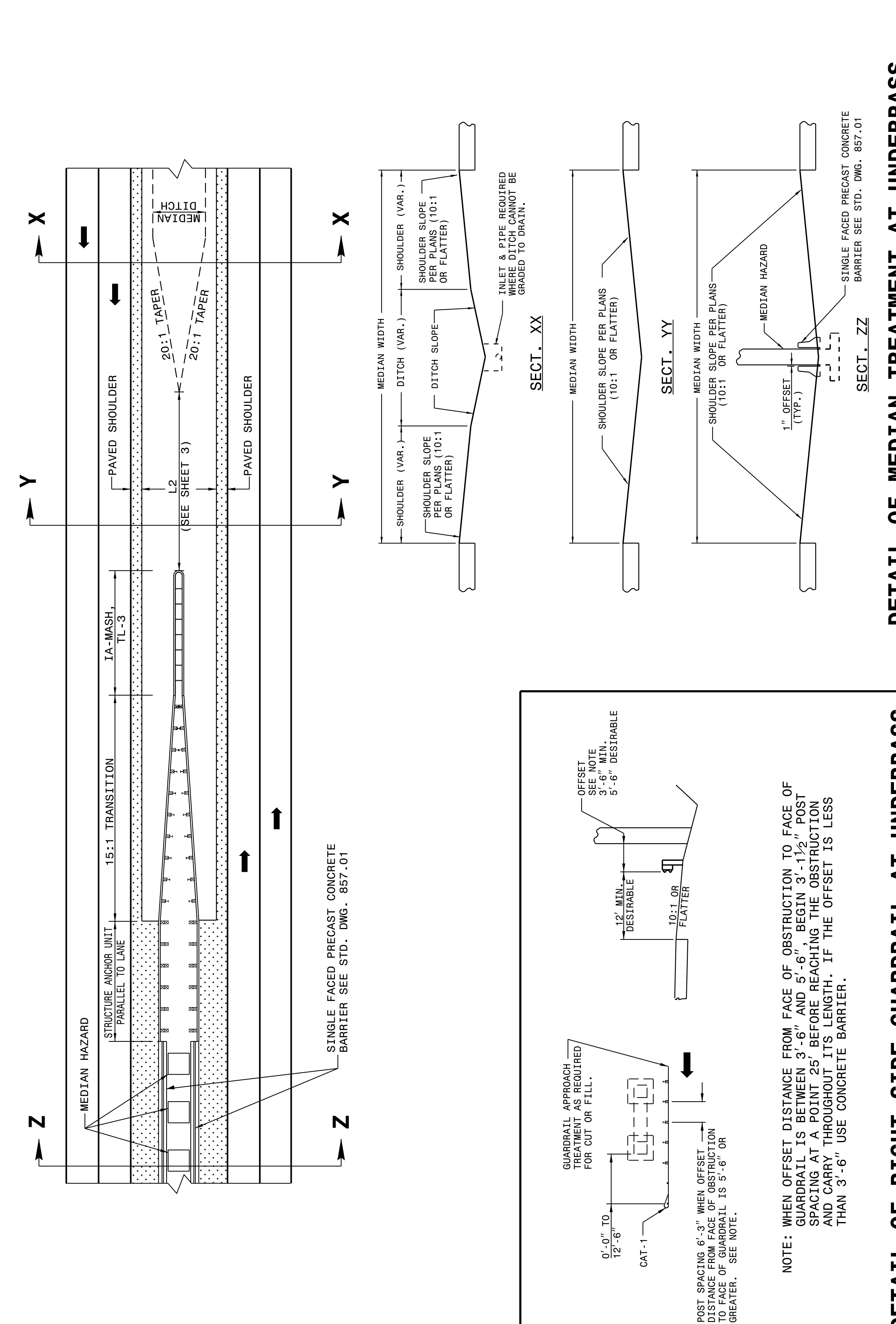
ROADWAY DETAIL DRAWING FOR GUARDRAIL PLACEMENT

SHEET 1 OF 11 862D01

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR GUARDRAIL PLACEMENT

SHEET 1 OF 11 862D01



DETAIL OF RIGHT SIDE GUARDRAIL AT UNDERPASS

DETAIL OF MEDIAN TREATMENT AT UNDERPASS

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

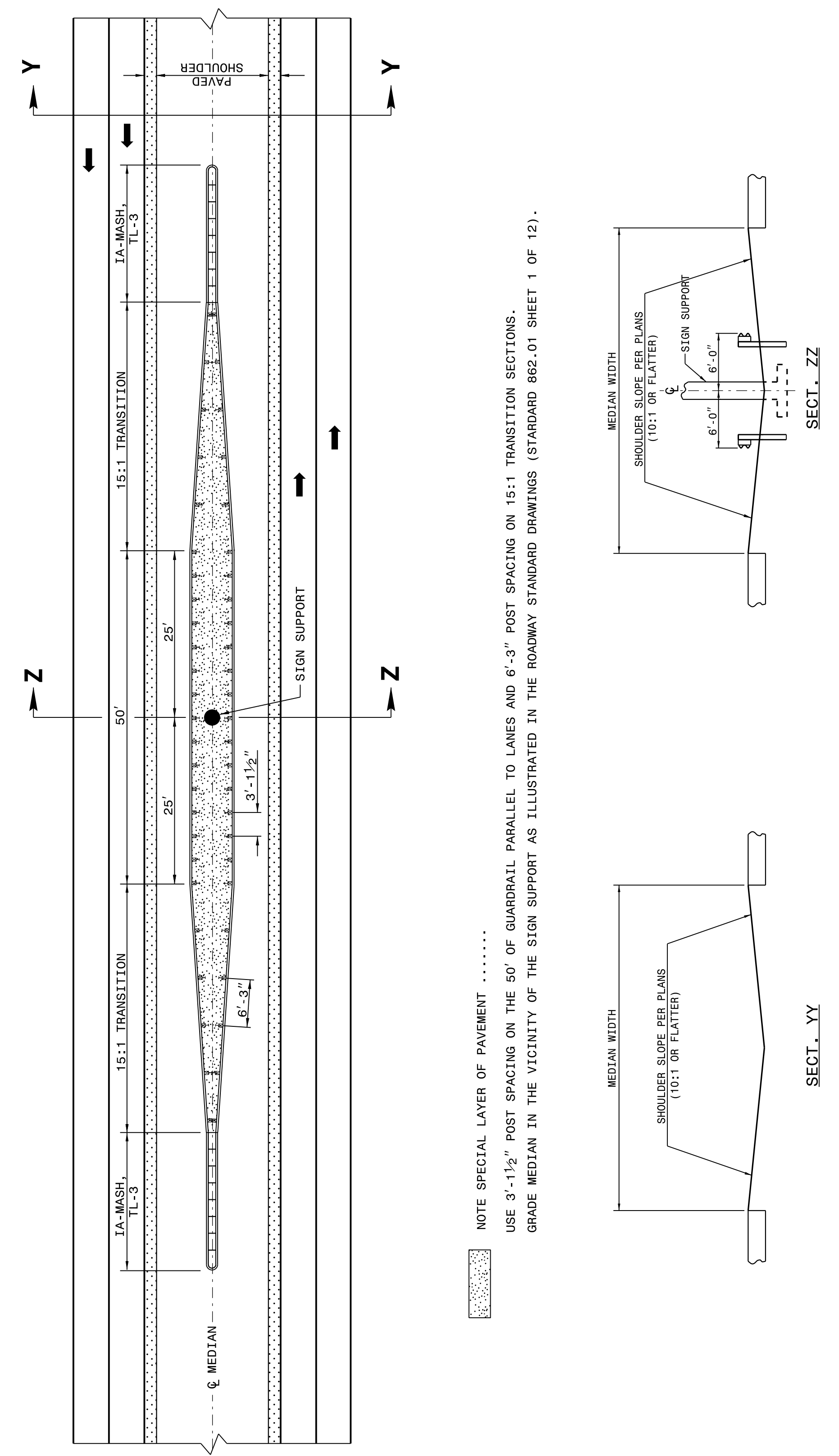
ROADWAY DETAIL DRAWING FOR GUARDRAIL PLACEMENT

SHEET 2 OF 11 862D01

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR GUARDRAIL PLACEMENT

SHEET 2 OF 11 862D01

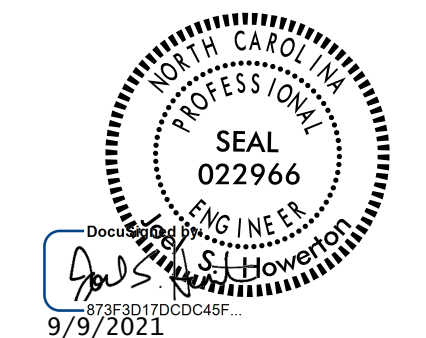


DETAIL OF GUARDRAIL AT MEDIAN SIGN SUPPORT

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 08-23-18
 MODIFIED BY: DATE:
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 jhowerton AT CSD-292595

5/14/99

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
**MINIMUM DEPTH
CONCRETE CATCH BASIN**
12" THRU 84" PIPE

SHEET 1 OF 2
840D02

SHEET 1 OF 2
840D02

GENERAL NOTES:
 USE CLASS "B" CONCRETE THROUGHOUT.
 PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
 OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12 CENTERS AS DIRECTED BY THE ENGINEER.
 USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
 IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
 USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
 FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.
 CONSTRUCT WITH PIPE CROWNS MATCHING.
 CHAMFER ALL EXPOSED CORNERS 1".
 ** FOR STRUCTURES WITH PIPE LARGER THAN 54", MAKE THE TOP SLAB 8" THICK.

SECTION X-X

SECTION Y-Y

SECTION J-J

SECTION M-M

PLAN

PLAN

DETAIL SHOWING METHOD OF RISER CONSTRUCTION

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
**MINIMUM DEPTH
CONCRETE CATCH BASIN**
12" THRU 84" PIPE

SHEET 1 OF 2
840D02

SHEET 2 OF 2
840D02

GENERAL NOTES:
 USE CLASS "B" CONCRETE THROUGHOUT.
 PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
 OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12 CENTERS AS DIRECTED BY THE ENGINEER.
 USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
 IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
 USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
 FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.
 CONSTRUCT WITH PIPE CROWNS MATCHING.
 CHAMFER ALL EXPOSED CORNERS 1".
 ** FOR STRUCTURES WITH PIPE LARGER THAN 54", MAKE THE TOP SLAB 8" THICK.

SECTION R-R

SECTION S-S

PLAN OF TOP SLAB

DOWEL

ELEVATION

ELEVATION

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AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 Std.840.01	DATE:
MODIFIED BY: E.E. WARD	DATE: 3-1-02
CHECKED BY:	DATE:
FILE SPEC.: s:Special Details/jhowerton/840d02.dgn	



* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

PIPE D.	DIMENSIONS OF BOX AND PIPE			COVER DIMENSION			MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN (BASED ON MIN. HEIGHT, H, WITH NO RISER) *			DEDUCTIONS						
	SPAN	WIDTH	MIN. HEIGHT	E	F	H	BAR-S-U NO.	BAR-S-V LENGTH	BAR-S-W NO.	TOTAL LBS.	TOP SLAB	BOTTOM SLAB	TOT. CONC. FOR MINIMUM HEIGHT, H C.M.	R.C.		
12"	3'-0"	2'-2"	2'-0"	..	2'-0"	2'-3"	..	..	..	..	0.235	0.772	0.015	0.026		
15"	3'-0"	2'-2"	2'-0"	..	2'-3"	2'-6"	..	..	..	..	0.235	0.829	0.023	0.036		
18"	3'-0"	2'-2"	2'-0"	..	2'-6"	3'-1"	..	..	..	..	0.235	0.887	0.033	0.049		
24"	3'-0"	2'-2"	3'-10"	..	3'-1"	3'-10"	..	..	..	..	0.235	1.001	0.059	0.085		
30"	3'-0"	2'-2"	3'-4"	1'-2"	4'-4"	4'-4"	4	1'-5"	2	4'-1"	39	0.123	0.347	1.433	0.092	0.127
36"	3'-0"	2'-2"	3'-10"	1'-8"	4'-10"	4'-10"	4	1'-11"	3	4'-7"	43	0.161	0.432	1.714	0.132	0.178
42"	3'-0"	2'-2"	4'-5"	2'-2"	5'-5"	5'-5"	5	2'-5"	4	5'-2"	47	0.200	0.543	1.738	0.180	0.243
48"	3'-0"	2'-2"	5'-0"	2'-10"	6'-0"	6'-0"	5	3'-1"	4	5'-9"	51	0.235	0.667	2.052	0.235	0.317
54"	3'-0"	2'-2"	5'-7"	3'-5"	6'-7"	6'-7"	6	3'-8"	5	6'-4"	56	0.289	0.802	2.387	0.287	0.401
60"	3'-0"	2'-2"	6'-3"	4'-1"	7'-3"	7'-3"	6	4'-4"	5	7'-0"	61	0.340	0.973	2.722	0.363	0.546
66"	3'-0"	2'-2"	6'-11"	4'-9"	7'-11"	7'-11"	7	5'-0"	6	7'-8"	66	0.391	1.160	3.057	0.440	0.655
72"	3'-0"	2'-2"	7'-6"	5'-3"	8'-6"	8'-6"	7	5'-6"	6	8'-3"	72	0.442	1.340	3.392	0.524	0.774
78"	3'-0"	2'-2"	8'-1"	6'-1"	9'-1"	9'-1"	8	6'-2"	7	8'-10"	78	0.493	1.530	3.727	0.615	0.893
84"	3'-0"	2'-2"	8'-9"	6'-7"	9'-9"	9'-9"	8	6'-10"	7	9'-6"	84	0.544	1.760	4.062	0.713	1.010

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DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

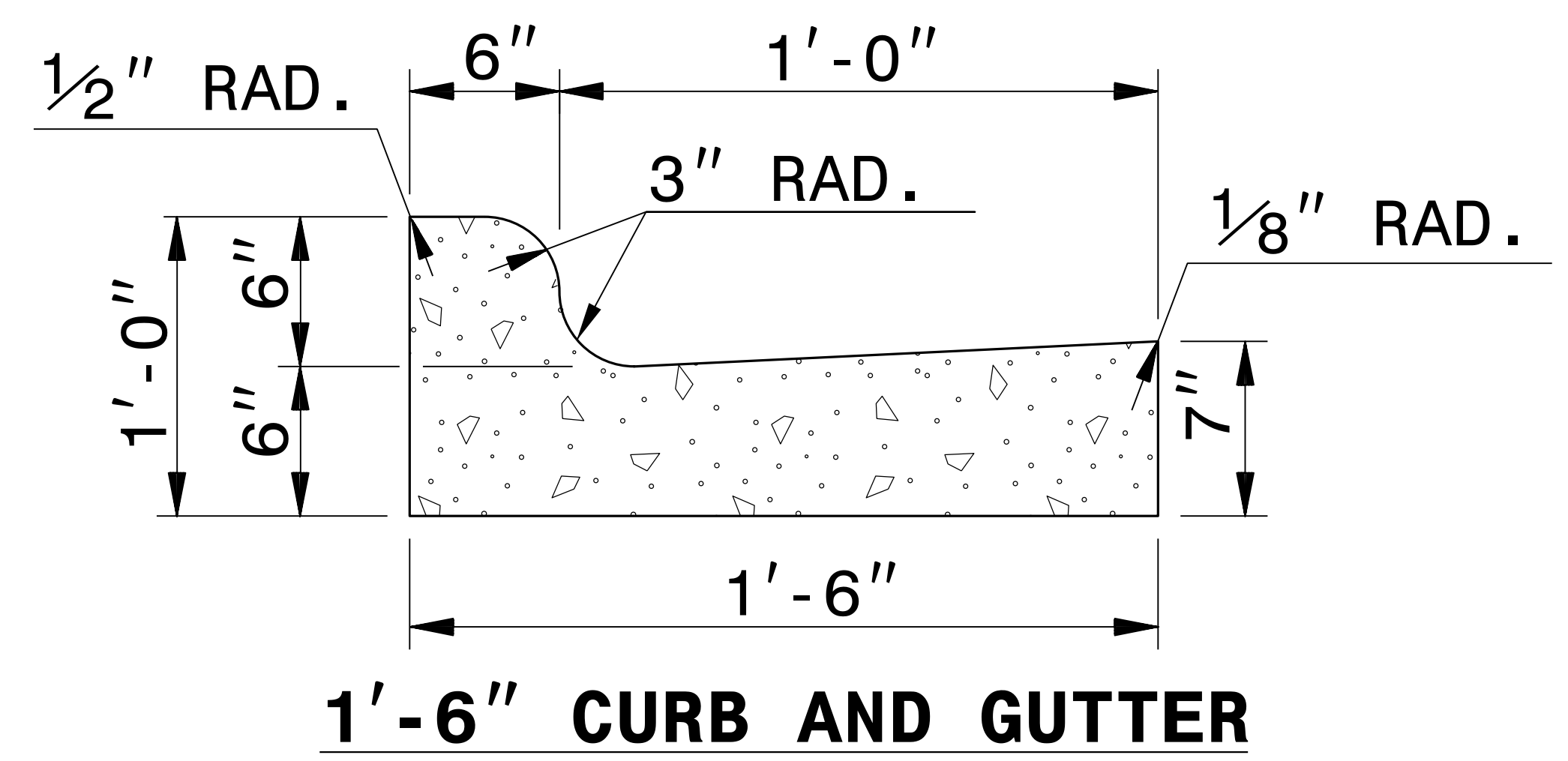
ROADWAY DETAIL DRAWING FOR
1'-6" CONCRETE CURB & GUTTER

SHEET 1 OF 3
846d01

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
1'-6" CONCRETE CURB & GUTTER

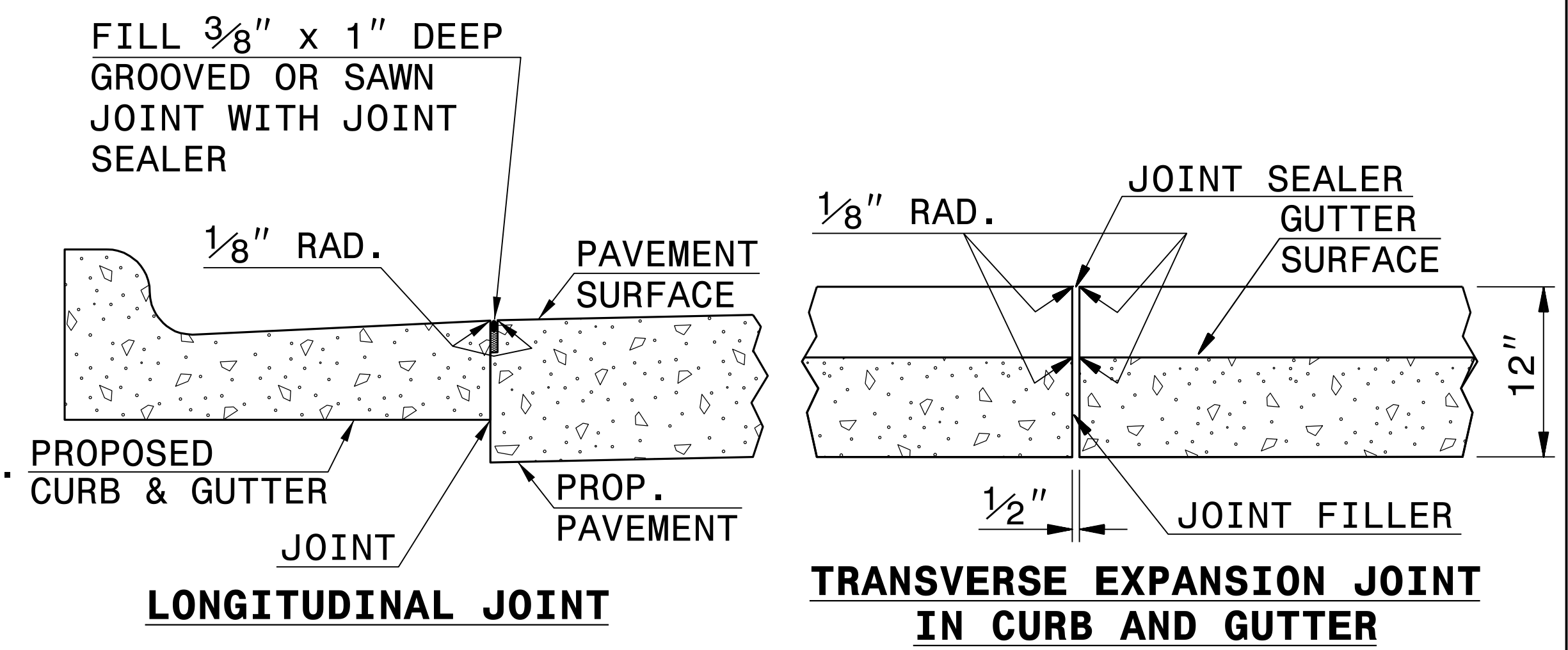
SHEET 1 OF 3
846d01



SECTION VIEW

GENERAL NOTES:

- PLACE CONTRACTION JOINTS AT 10' INTERVALS, EXCEPT THAT A 15' SPACING MAY BE USED WHEN A MACHINE IS USED OR WHEN SATISFACTORY SUPPORT FOR THE FACE FORM CAN BE OBTAINED WITHOUT THE USE OF TEMPLATES AT 10' INTERVALS.
- JOINT SPACING MAY BE ALTERED IF REQUIRED BY THE ENGINEER.
- CONTRACTION JOINTS MAY BE INSTALLED WITH THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS.
- CONSTRUCT NON-TEMPLATE FORMED JOINTS A MIN. OF 1 1/2" DEEP.
- FILL ALL CONSTRUCTION JOINTS WITH JOINT FILLER AND SEALER.
- SPACE EXPANSION JOINTS AT 90' INTERVALS AND ADJACENT TO ALL RIGID OBJECTS.



SECTION VIEW OF JOINTS

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howerton AT USD-252595

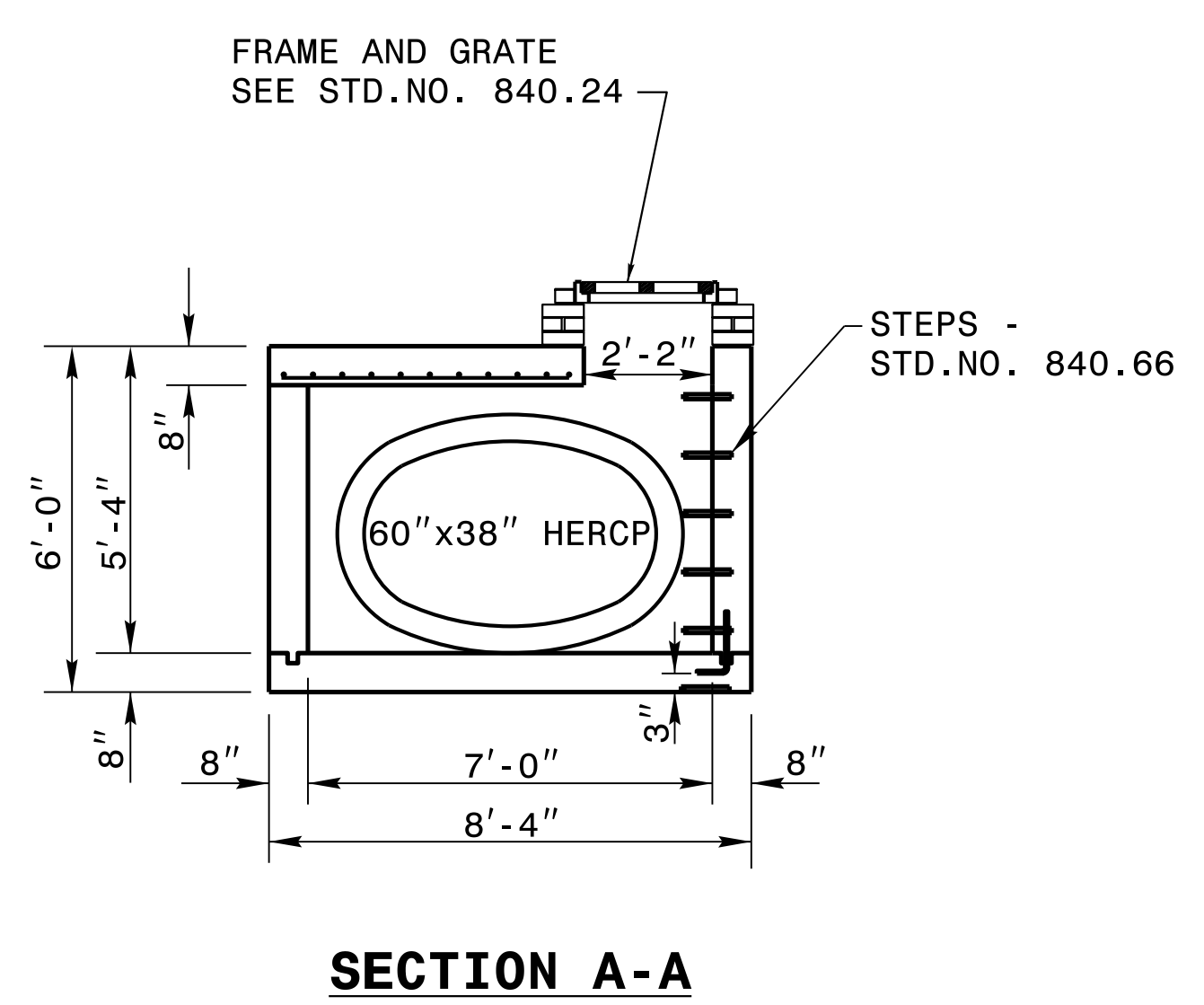
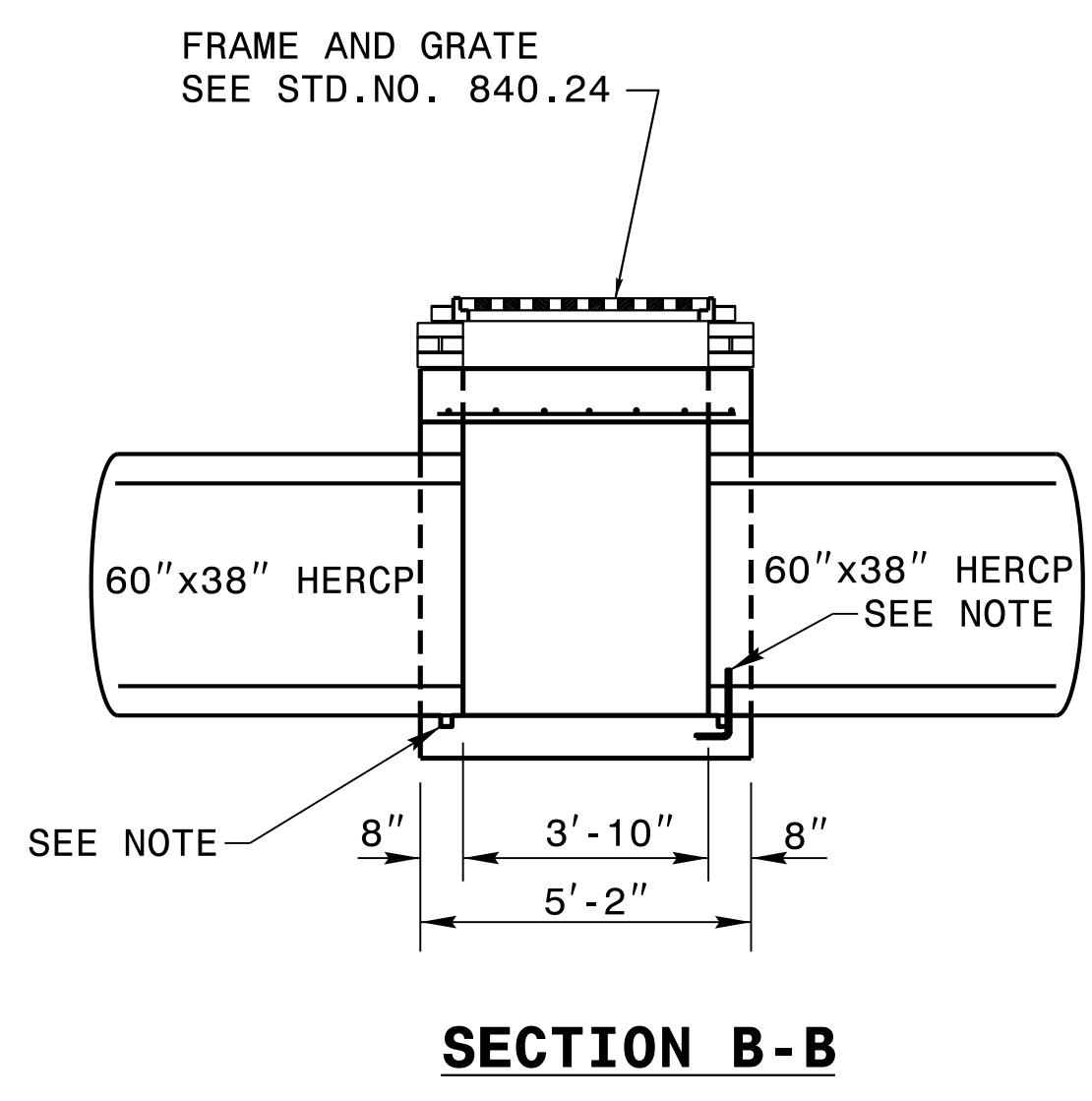


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Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: kkempf DATE: 11/13/08
 MODIFIED BY: DATE:
 CHECKED BY: DATE:
 FILE SPEC.: details\howerton\846d01 Modified SBG.dgn



GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

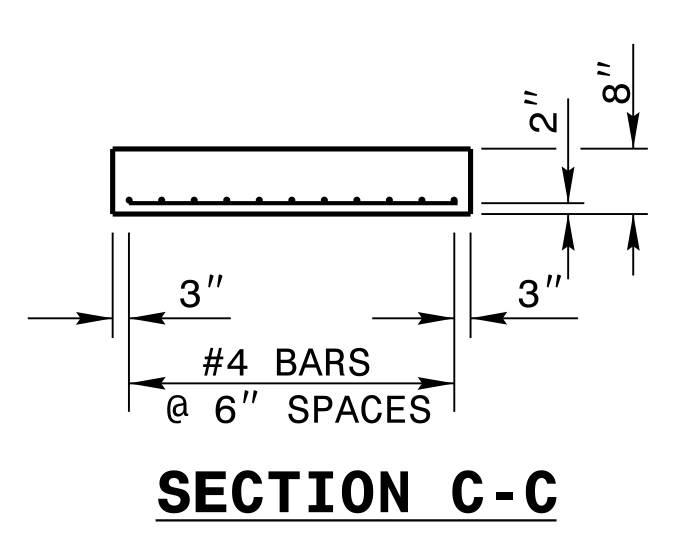
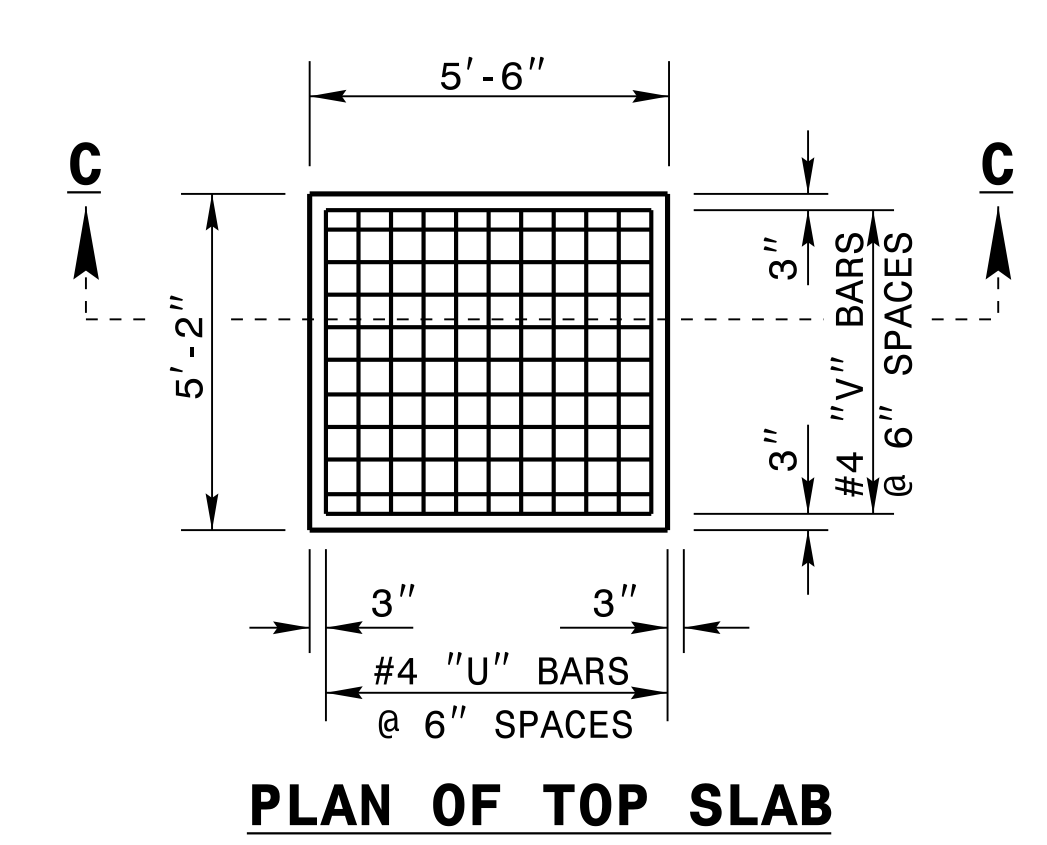
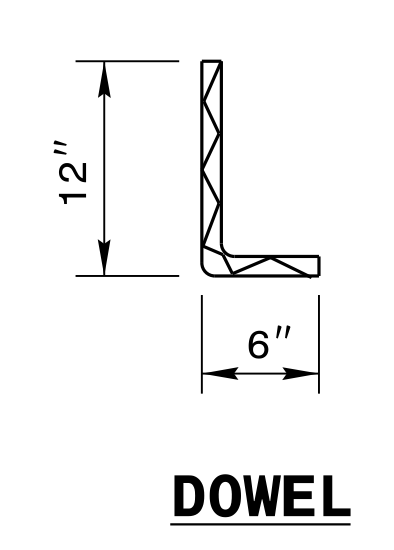
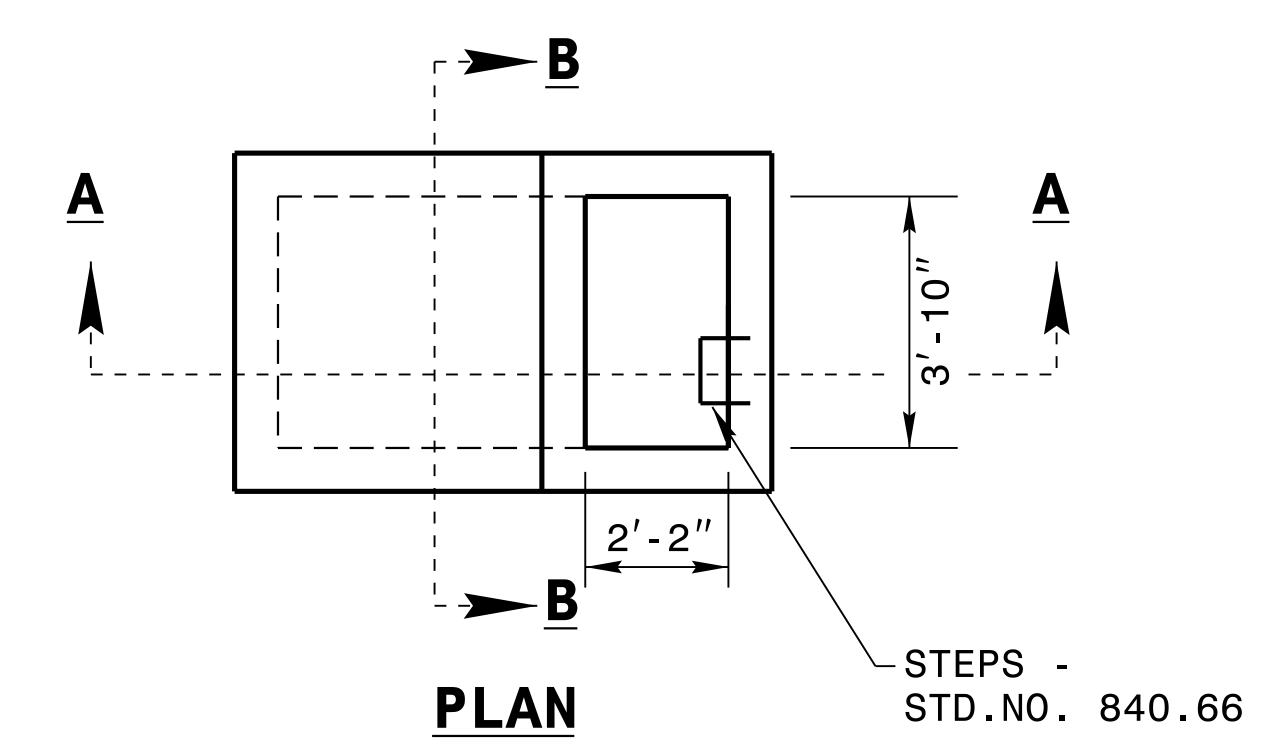
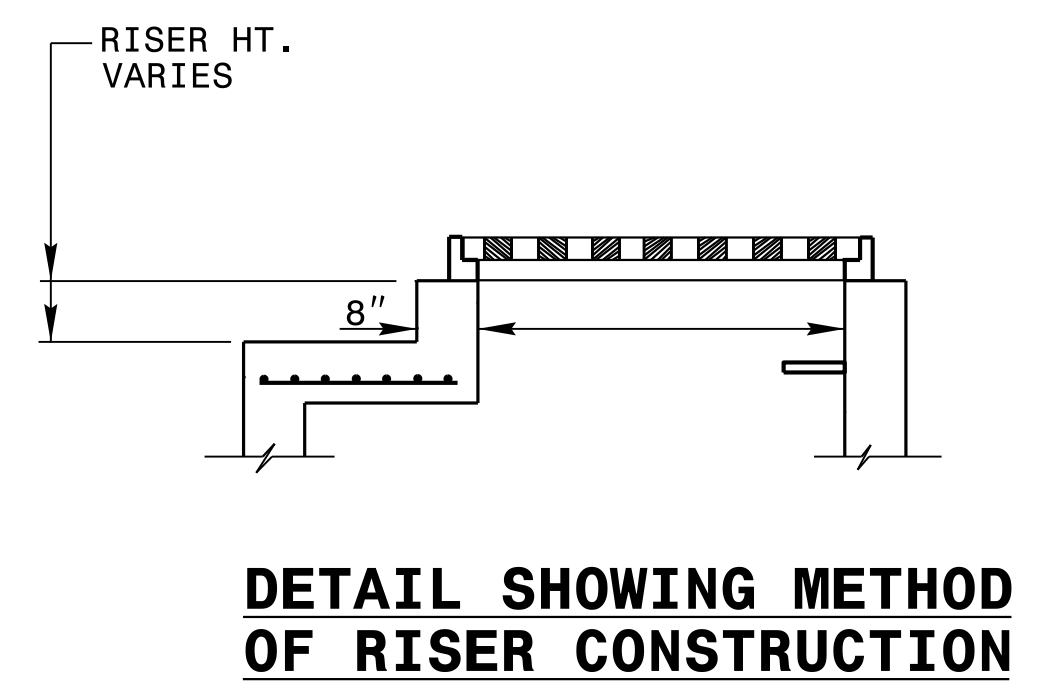
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

INSTALL STD 840.24 FRAME AND GRATE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

CONSTRUCT WITH PIPE CROWNS MATCHING.

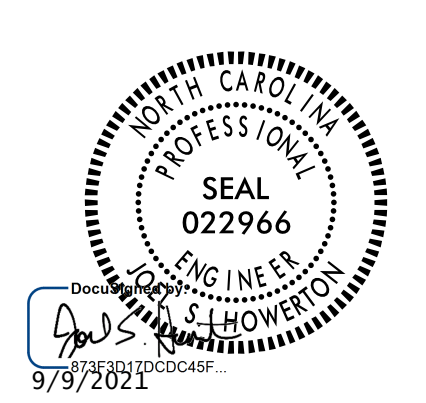
CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.



BILL OF MATERIAL FOR CATCH BASIN				
REINF. STEEL		1 PIPE		
BAR	SIZE	LENGTH	NO.	WEIGHT
U	#4	4'-8"	11	34
V	#4	5'-0"	11	37
REINF. STEEL LBS.				71
CLASS "B" CONCRETE		CU. YDS.	4.8	
PIPE DEDUCTION		-1.0		
2-60"x38" HERCP				
TOTAL CLASS "B" CONCRETE				3.8

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 kkempf AT CSD-292596

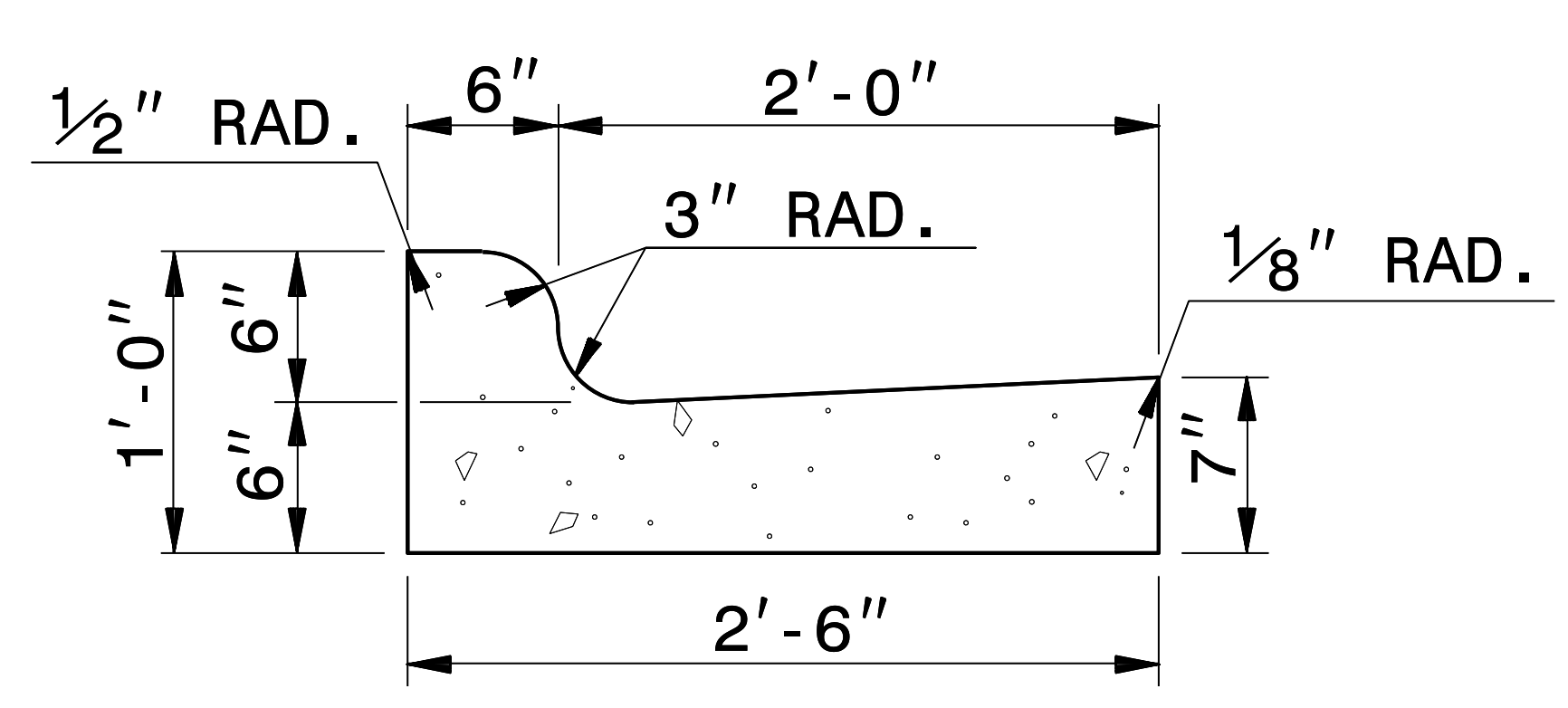


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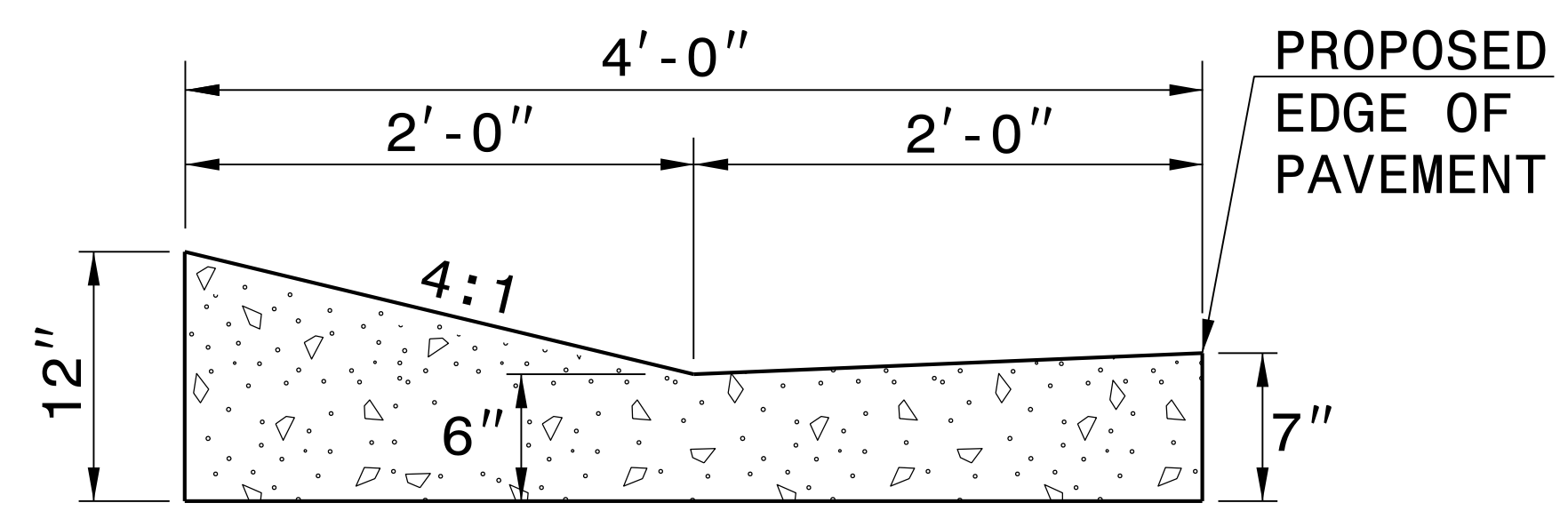
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Office 919-707-6950 FAX 919-250-4119

**GRATED DROP INLET
W/ 60"X38" HERCP**

ORIGINAL BY: kakempf DATE: 01-04-19
 MODIFIED BY: DATE:
 CHECKED BY: DATE:
 FILE SPEC.: special_details/kekmpf/english/2gi hepipe 60x38.dgn



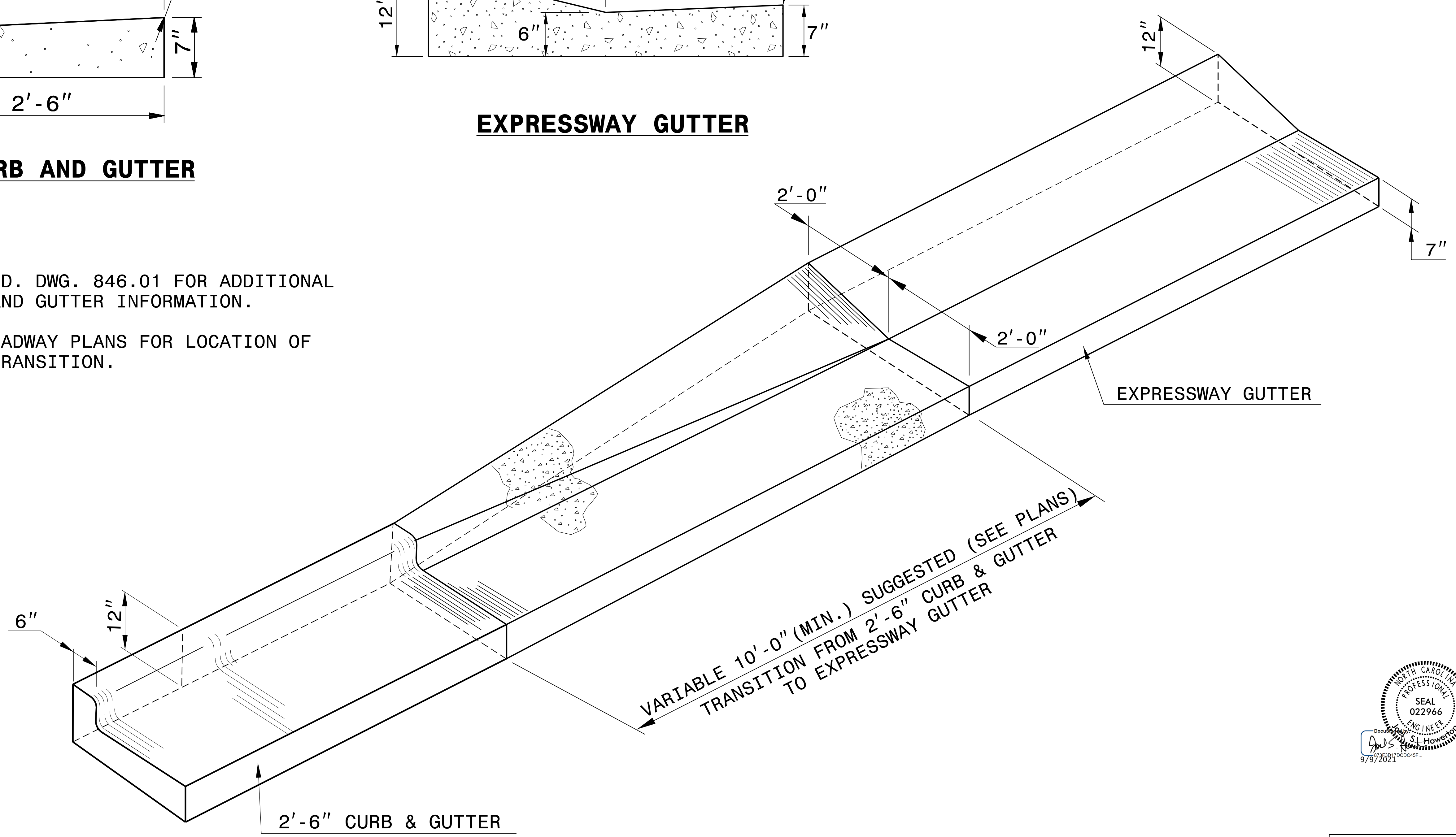
2'-6" CURB AND GUTTER



EXPRESSWAY GUTTER

NOTE: SEE STD. DWG. 846.01 FOR ADDITIONAL CURB AND GUTTER INFORMATION.

SEE ROADWAY PLANS FOR LOCATION OF CURB TRANSITION.



ISOMETRIC VIEW OF TRANSITION

VARIABLE 10'-0" (MIN.) SUGGESTED (SEE PLANS) TRANSITION FROM 2'-6" CURB & GUTTER TO EXPRESSWAY GUTTER

EXPRESSWAY GUTTER

2'-6" CURB & GUTTER



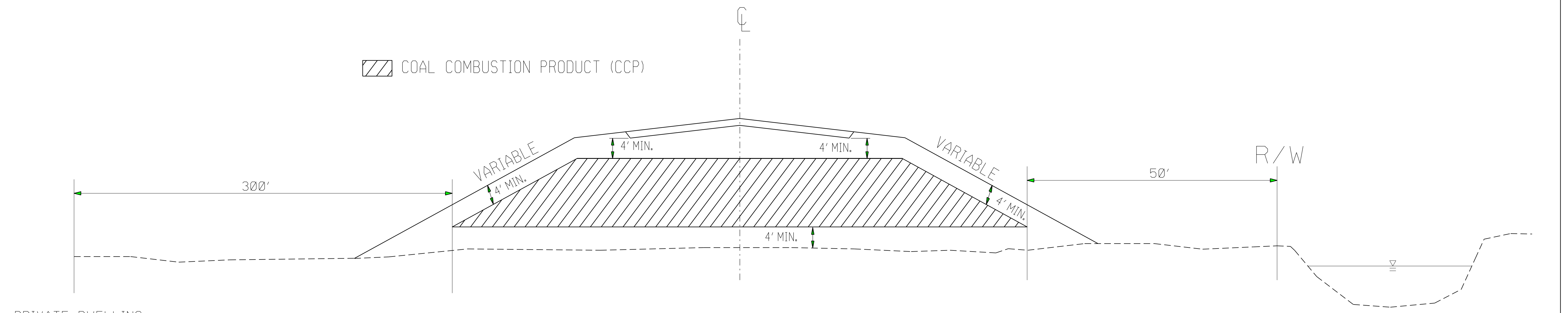
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CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
DETAIL OF 2'-6" CURB & GUTTER TO EXPRESSWAY GUTTER TRANSITION SECTION	
ORIGINAL BY: T.S. Spell	DATE: 8-13-02
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: w:usr/details/stand/cgtransit.dgn	

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COAL COMBUSTION PRODUCT PLACEMENT



PRIVATE DWELLING
OR WELL

PERENNIAL STREAM, OTHER SURFACE
WATER BODY OR *WETLAND

*(OBTAIN PERMISSION FROM ARMY
CORPS OF ENGINEERS)

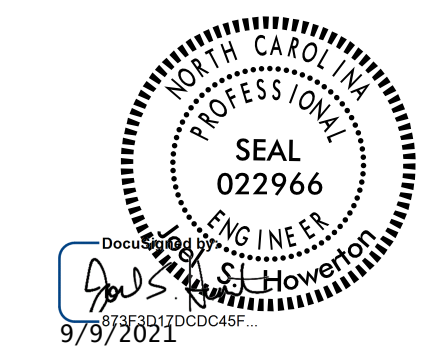
PLACE CCP IN HATCHED AREA IN ACCORDANCE
WITH THE PROJECT SPECIAL PROVISIONS

PLACE CCP A MINIMUM OF 5' ABOVE
SEASONAL HIGH GROUND WATER

PLACE AT LOCATIONS AS APPROVED BY THE ENGINEER

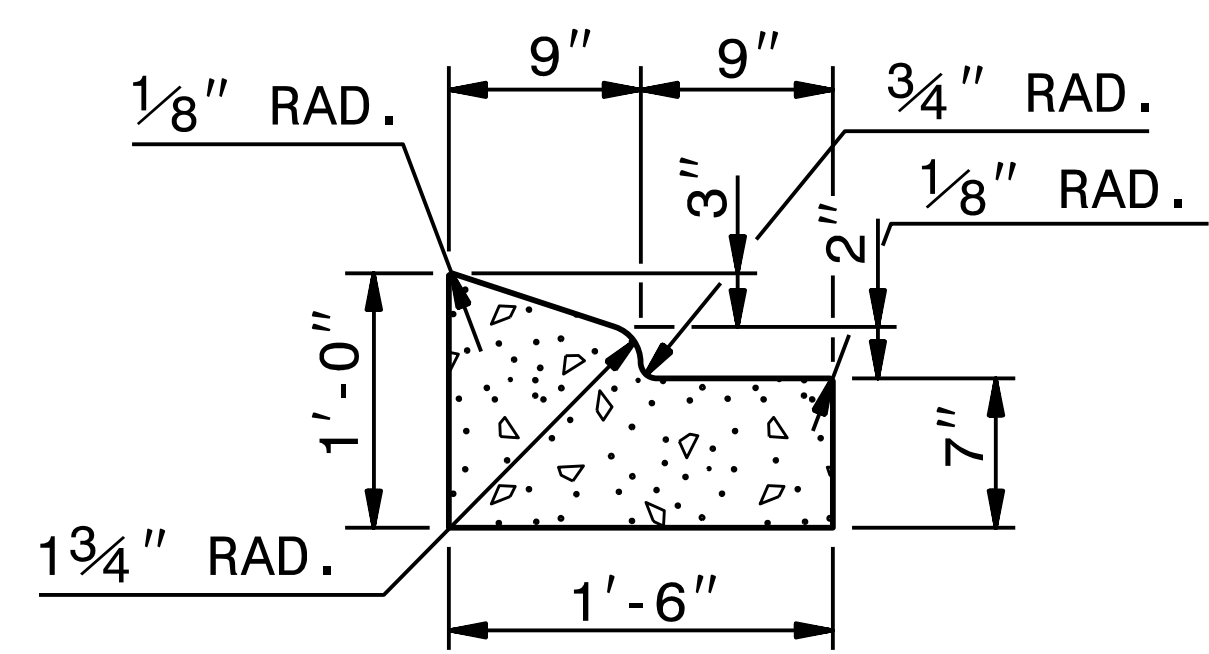
PLACE SOIL BORROW MATERIAL ON THE OUTSIDE
OF CCP AS EACH LIFT OF CCP IS PLACED

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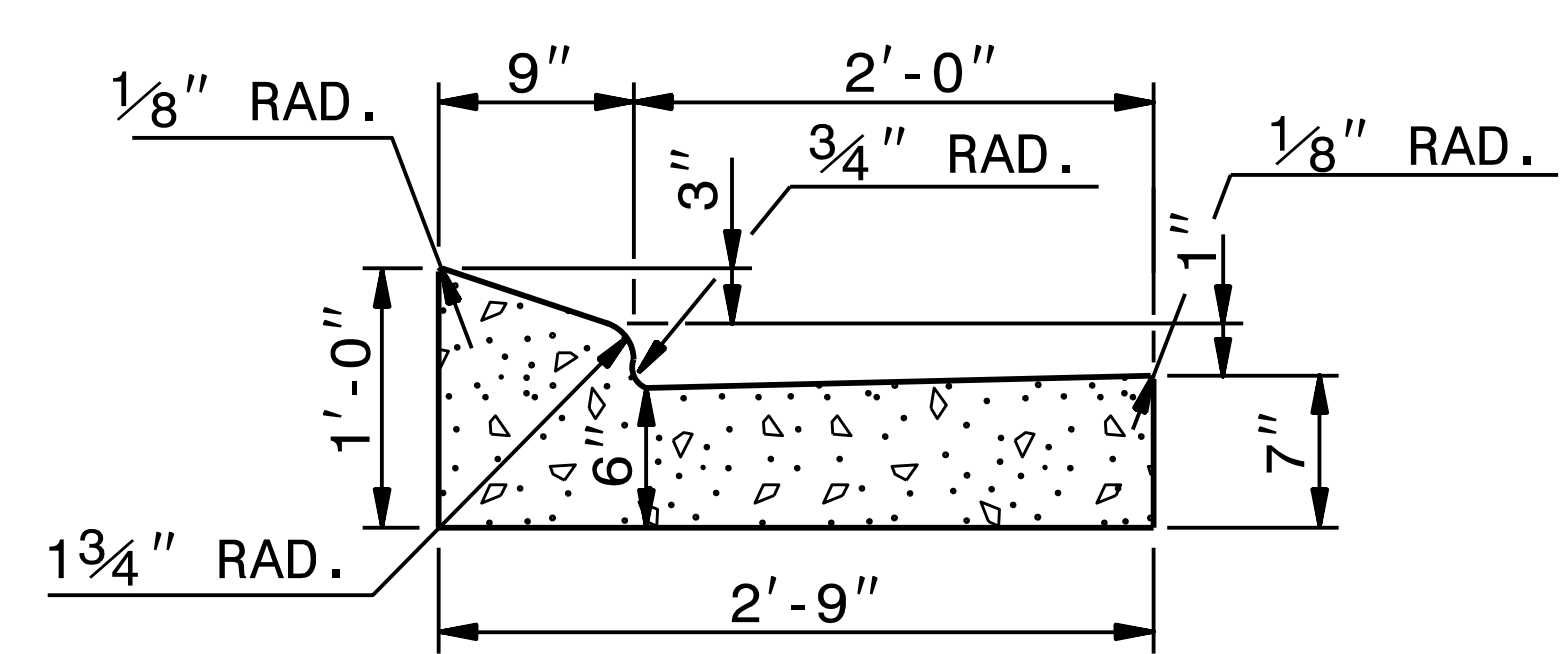


CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950 FAX 919-250-4119	
COAL COMBUSTION PRODUCT PLACEMENT DETAIL	
ORIGINAL BY: J.S.H.	DATE: 3/16/15
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: joel/coal combustion material detail.dgn	

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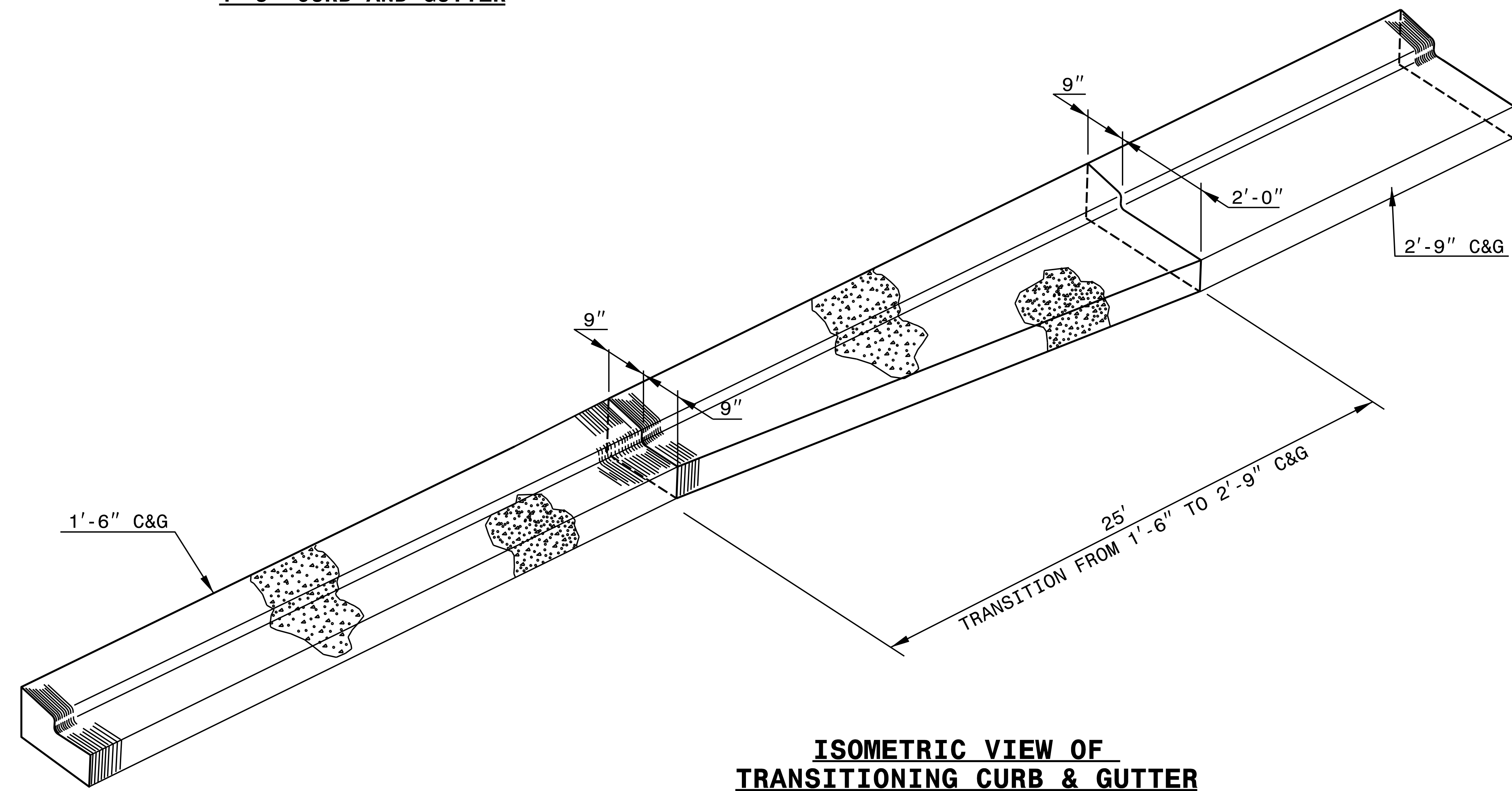
1'-6" CURB AND GUTTER



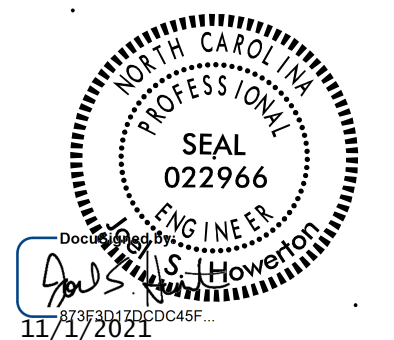
2'-9" CURB AND GUTTER

NOTE: SEE STD. DWG. 846.01 FOR ADDITIONAL CURB AND GUTTER INFORMATION.

SEE ROADWAY PLANS FOR LOCATION OF CURB TRANSITION.



ISOMETRIC VIEW OF TRANSITIONING CURB & GUTTER

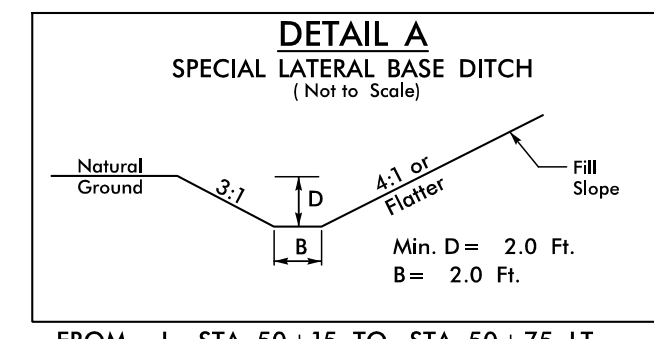


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

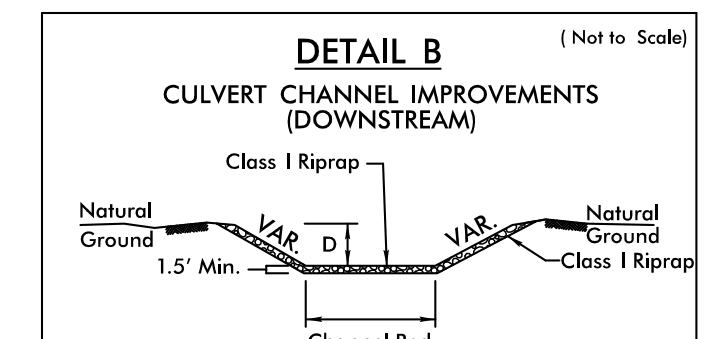
CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
DETAIL OF 1'-6" TO 2'-9" CURB & GUTTER TRANSITION SECTION	
ORIGINAL BY: T.S. SPELL	DATE: NOV. 26, 2001
MODIFIED BY: T.S. SPELL	DATE: JAN. 23, 2007
CHECKED BY:	DATE:
FILE SPEC.: DS174:\usr\details\stand\catransit.dgn	

DRAINAGE DETAILS

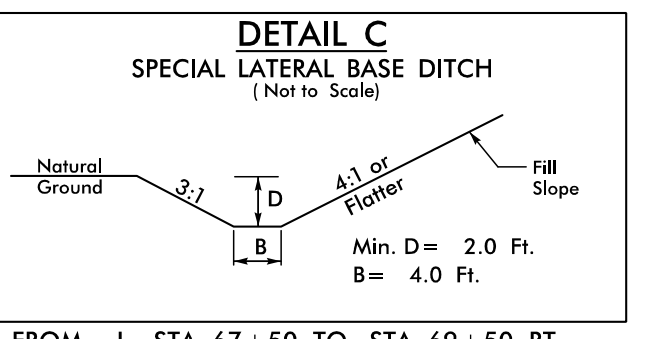
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



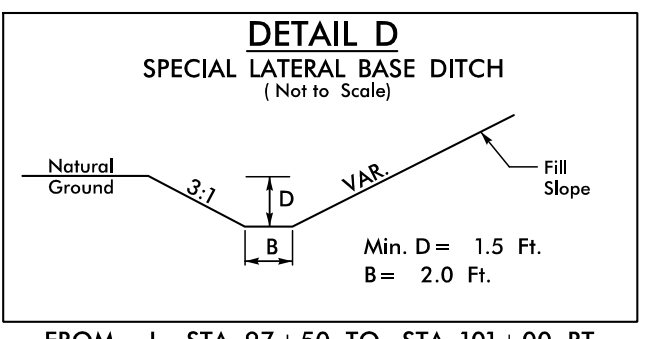
FROM -L- STA. 50+15 TO STA. 50+75 LT
 FROM -YREV- STA. 8+00 TO STA. 17+00 LT
 FROM -YREV- STA. 17+00 TO STA. 21+85 LT



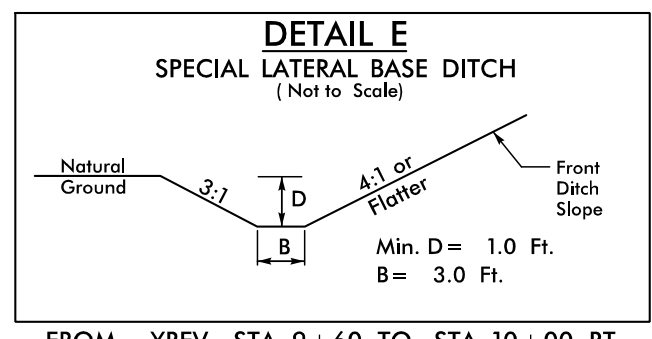
D = Varies (To Top of Bank)
 EST. 20 CY EXCAVATION
 EST. 90 TONS CLASS I RIPRAP
 EST. 130 SY GEOTEXTILE FABRIC
 -L- STA. 225+78 RT



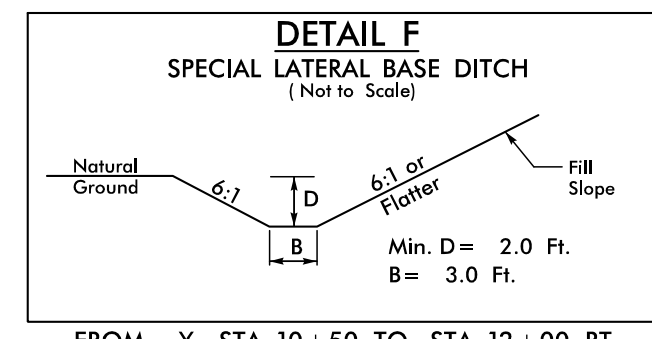
FROM -L- STA. 67+50 TO STA. 69+50 RT
 FROM -L- STA. 70+30 TO STA. 77+65 RT
 FROM -L- STA. 218+30 TO STA. 220+65 RT
 FROM -L- STA. 221+85 TO STA. 223+50 RT
 FROM -L- STA. 320+50 TO STA. 327+60 LT
 FROM -Y- STA. 8+00 TO STA. 30+00 LT
 FROM -Y- STA. 32+20 TO STA. 34+00 RT



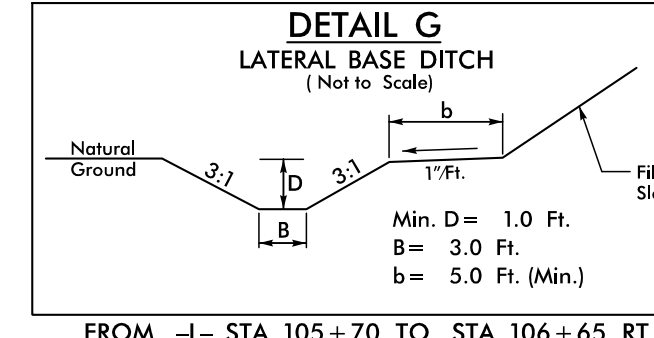
FROM -L- STA. 97+50 TO STA. 101+00 RT
 FROM -L- STA. 101+00 TO STA. 103+25 RT
 FROM -L- STA. 385+80 TO STA. 388+50 LT
 FROM -L- STA. 391+85 TO STA. 394+65 RT
 FROM -L- STA. 397+85 TO STA. 399+45 LT
 FROM -L- STA. 404+50 TO STA. 408+50 RT
 FROM -L- STA. 408+25 TO STA. 413+00 LT
 FROM -Y22- STA. 27+80 TO STA. 30+85 RT



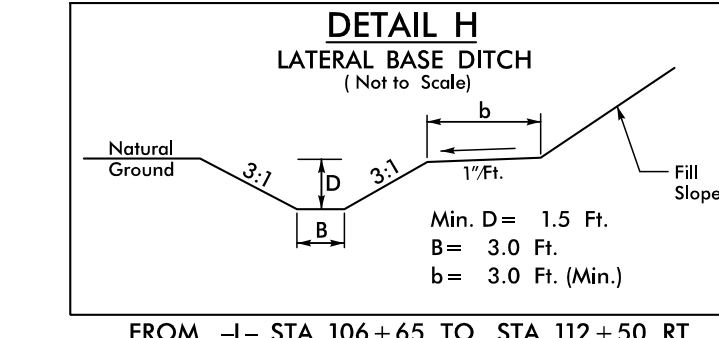
FROM -YREV- STA. 9+60 TO STA. 10+00 RT



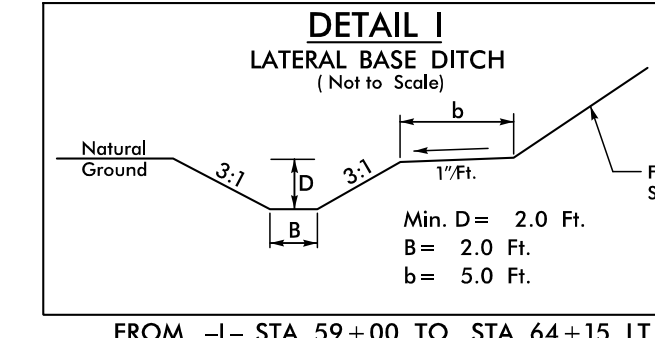
FROM -Y- STA. 10+50 TO STA. 12+00 RT



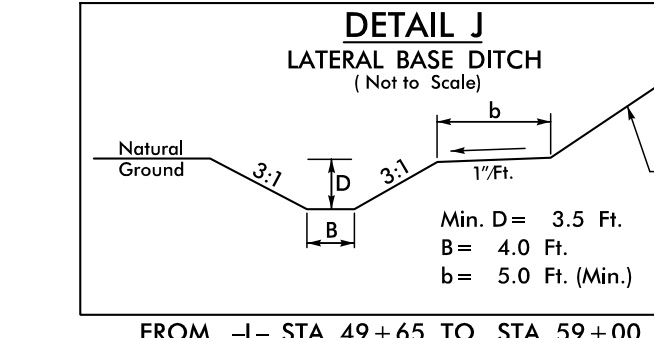
FROM -L- STA. 105+70 TO STA. 106+65 RT
 FROM -L- STA. 112+50 TO STA. 115+00 RT
 FROM -L- STA. 115+00 TO STA. 116+00 RT



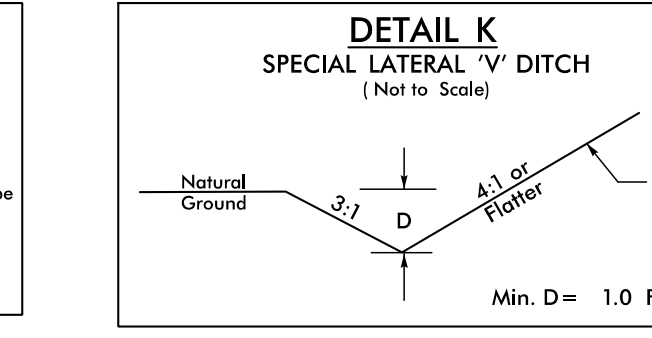
FROM -L- STA. 106+65 TO STA. 112+50 RT



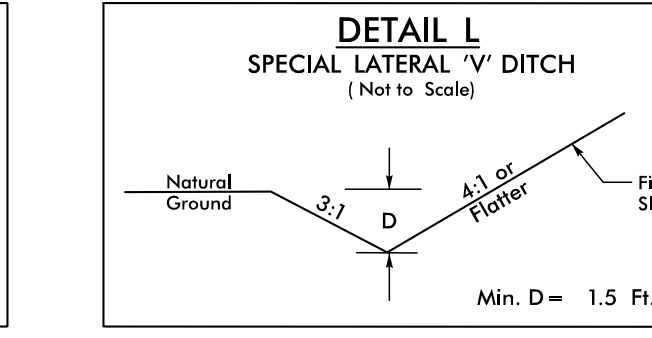
FROM -L- STA. 59+00 TO STA. 64+15 LT



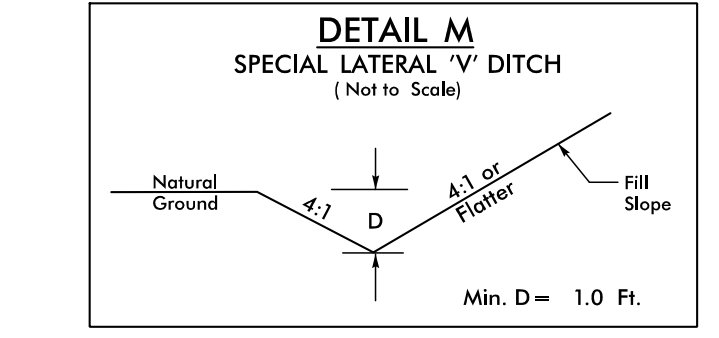
FROM -L- STA. 49+65 TO STA. 59+00 RT
 FROM -L- STA. 59+00 TO STA. 69+20 RT
 FROM -L- STA. 70+78 TO STA. 73+00 LT
 FROM -L- STA. 64+15 TO STA. 65+26 LT



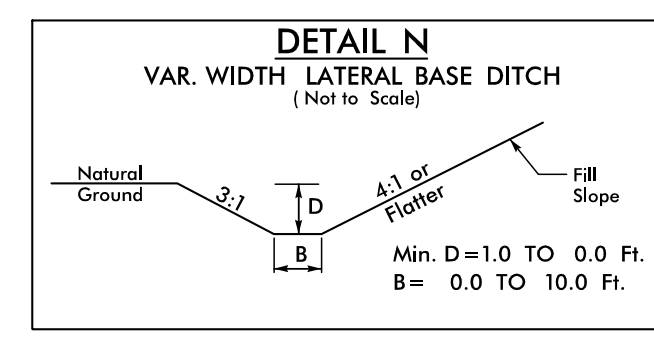
FROM -L- STA. 80+75 TO STA. 81+80 RT
 FROM -L- STA. 87+00 TO STA. 90+00 RT
 FROM -L- STA. 94+68 TO STA. 100+80 RT
 FROM -L- STA. 205+50 TO STA. 206+50 RT
 FROM -L- STA. 237+00 TO STA. 238+93 RT
 FROM -L- STA. 228+00 TO STA. 232+30 RT
 FROM -L- STA. 309+50 TO STA. 309+92 RT
 FROM -YREV- STA. 16+72 TO STA. 17+00 RT
 FROM -YREV- STA. 12+36 TO STA. 15+00 RT
 FROM -YREV- STA. 10+50 TO STA. 11+90 RT
 FROM -YREV- STA. 17+00 TO STA. 16+00 LT
 FROM -YB- STA. 13+50 TO STA. 18+50 LT
 FROM -Y4- STA. 10+95 TO STA. 11+75 LT
 FROM -Y6- STA. 10+75 TO STA. 11+25 LT
 FROM -Y6- STA. 10+75 TO STA. 11+25 RT
 FROM -Y11- STA. 12+25 TO STA. 12+75 LT
 FROM -Y11- STA. 12+25 TO STA. 12+75 RT
 FROM -Y12- STA. 11+55 TO STA. 13+00 LT
 FROM -Y12- STA. 11+55 TO STA. 12+80 RT
 FROM -Y13- STA. 10+80 TO STA. 11+38 LT
 FROM -Y15- STA. 10+75 TO STA. 11+50 LT
 FROM -Y15- STA. 10+75 TO STA. 11+50 RT
 FROM -Y18- STA. 10+66 TO STA. 11+50 LT
 FROM -Y18- STA. 10+70 TO STA. 11+50 RT
 FROM -Y19- STA. 11+00 TO STA. 12+25 LT
 FROM -Y22- STA. 15+50 TO STA. 20+50 LT
 FROM -Y22- STA. 14+00 TO STA. 18+00 RT
 FROM -Y22- STA. 24+50 TO STA. 30+75 LT
 FROM -Y22- STA. 25+50 TO STA. 27+50 RT
 FROM -Y24- STA. 11+00 TO STA. 13+00 RT



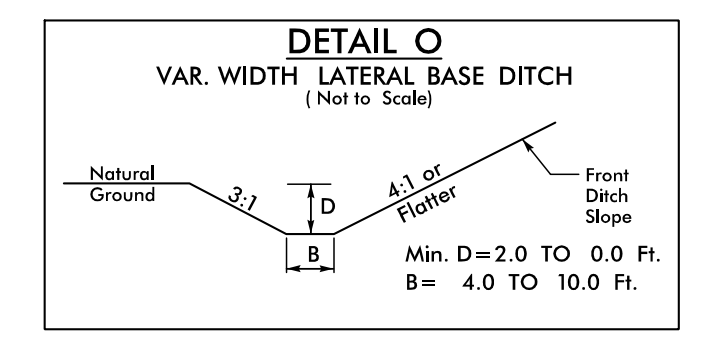
FROM -L- STA. 92+00 TO STA. 97+50 RT
 FROM -L- STA. 148+00 TO STA. 148+70 LT
 FROM -L- STA. 395+15 TO STA. 396+50 RT
 FROM -L- STA. 400+00 TO STA. 400+50 LT
 FROM -L- STA. 400+00 TO STA. 404+50 RT
 FROM -L- STA. 402+50 TO STA. 405+50 LT
 FROM -L- STA. 407+00 TO STA. 408+25 LT
 FROM -YB- STA. 16+00 TO STA. 20+50 LT
 FROM -YB- STA. 20+50 TO STA. 23+00 RT



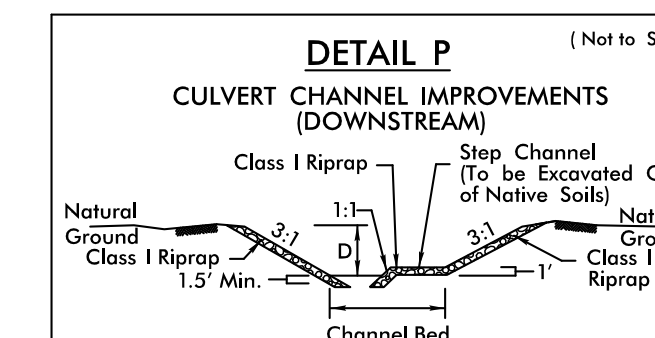
FROM -L- STA. 90+50 TO STA. 91+65 LT
 FROM -L- STA. 211+62 TO STA. 213+80 LT
 FROM -L- STA. 213+00 TO STA. 213+80 LT



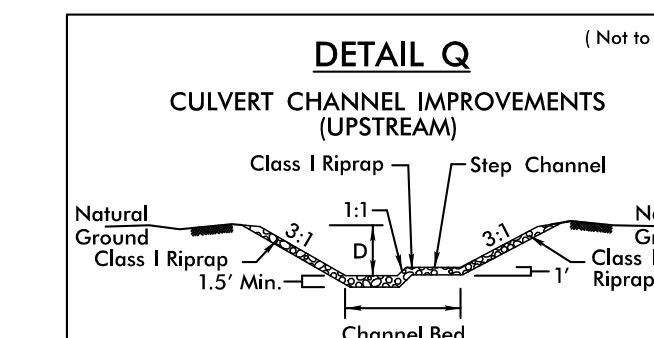
FROM -L- STA. 86+50 TO STA. 87+00 LT
 FROM -L- STA. 216+00 TO STA. 216+50 RT
 FROM -L- STA. 225+00 TO STA. 225+65 LT



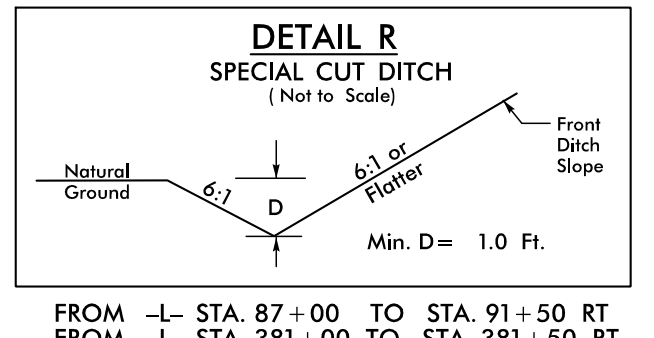
FROM -YREV- STA. 7+70 TO STA. 8+00 LT



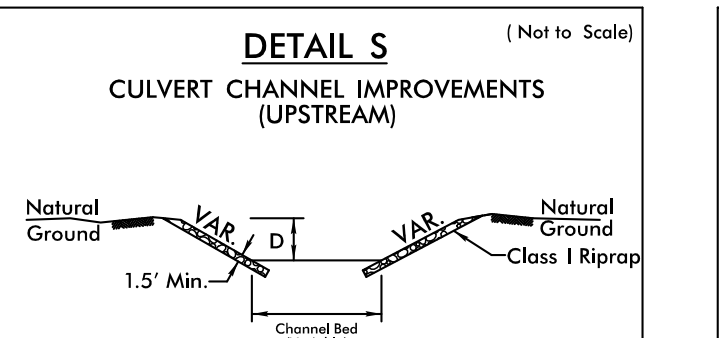
D = Varies (To Top of Bank)
 EST. 20 CY EXCAVATION
 EST. 35 TONS CLASS I RIPRAP
 EST. 55 SY GEOTEXTILE FABRIC
 -L- STA. 64+15 LT



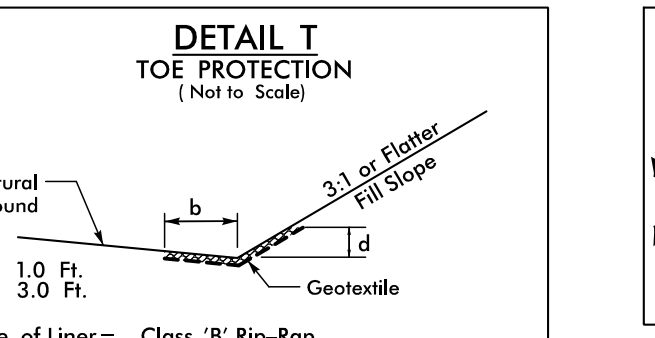
D = Varies (To Top of Bank)
 EST. 35 CY EXCAVATION
 EST. 135 TONS CLASS I RIPRAP
 EST. 120 SY GEOTEXTILE FABRIC
 -L- STA. 64+15 RT



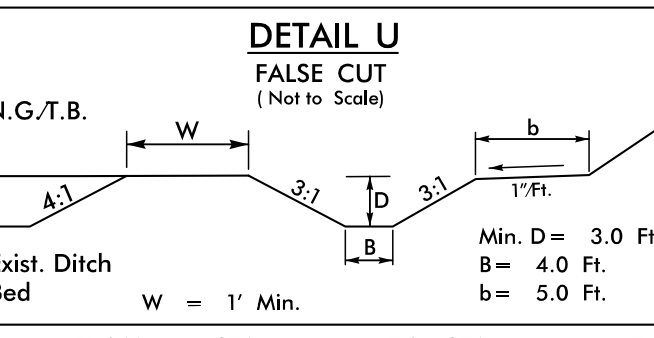
FROM -L- STA. 87+00 TO STA. 91+50 RT
 FROM -L- STA. 381+00 TO STA. 381+50 RT



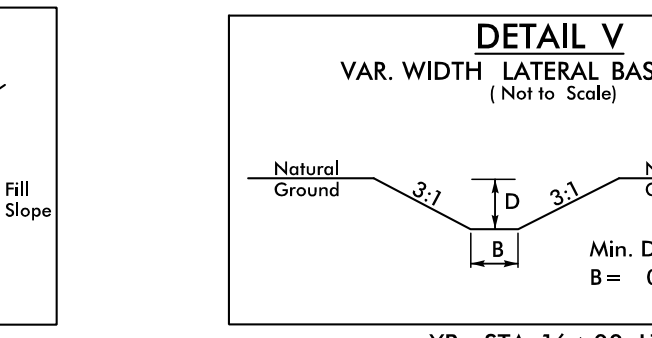
D = Varies (To Top of Bank)
 EST. 40 CY EXCAVATION
 EST. 45 TONS CLASS I RIPRAP
 EST. 75 SY GEOTEXTILE FABRIC
 -L- STA. 226+23 RT



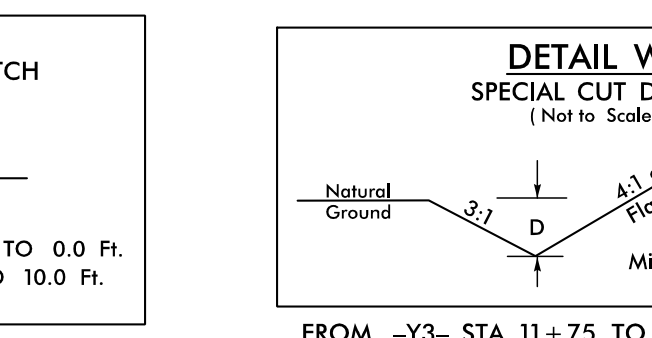
Type of Liner = Class 'B' Rip-Rap
 FROM -L- STA. 117+00 TO STA. 137+00 RT
 FROM -L- STA. 226+50 TO STA. 226+75 RT
 FROM -L- STA. 255+00 TO STA. 257+30 LT
 FROM -L- STA. 265+00 TO STA. 267+00 LT
 FROM -L- STA. 353+50 TO STA. 356+00 RT
 FROM -L- STA. 366+70 TO STA. 369+10 LT
 FROM -Y22- STA. 23+25 TO STA. 24+00 LT



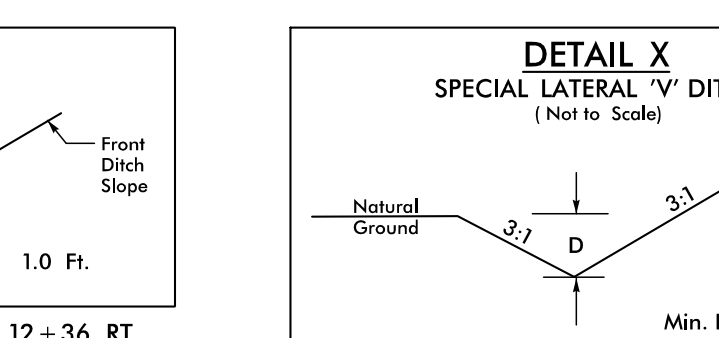
FROM -L- STA. 205+50 TO STA. 209+00 LT



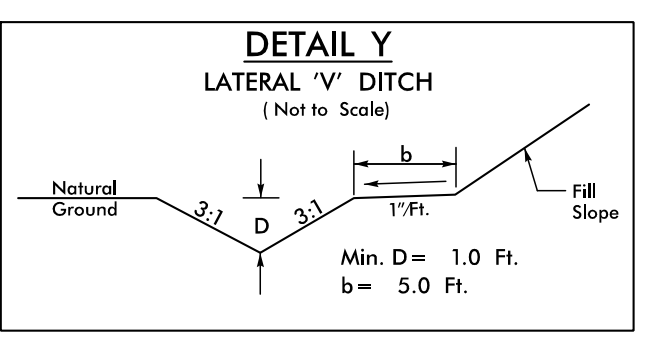
-YB- STA. 16+00 LT.



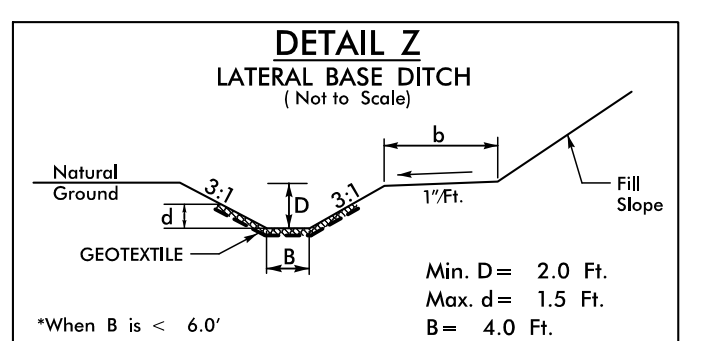
FROM -Y3- STA. 11+75 TO STA. 12+36 RT
 FROM -Y3- STA. 11+75 TO STA. 12+36 LT



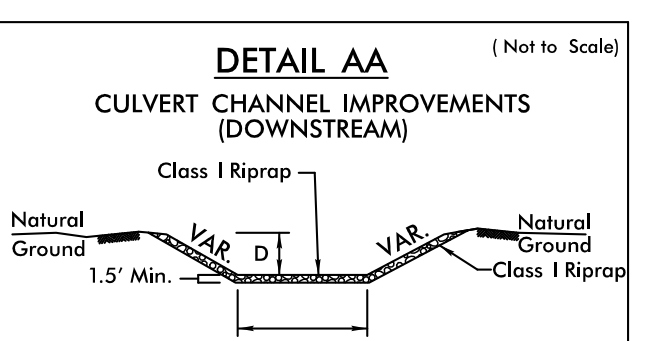
FROM -L- STA. 300+95 TO STA. 301+50 RT
 FROM -Y9- STA. 10+90 TO STA. 12+00 LT
 FROM -Y9- STA. 11+00 TO STA. 12+00 RT
 FROM -Y24- STA. 11+25 TO STA. 12+72 LT



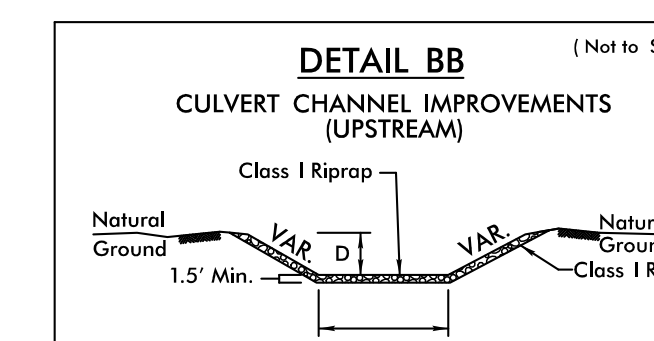
FROM -L- STA. 214+58 TO STA. 216+00 RT
 FROM -L- STA. 221+00 TO STA. 225+00 LT
 FROM -L- STA. 227+50 TO STA. 228+25 RT
 FROM -L- STA. 233+25 TO STA. 235+50 RT
 FROM -L- STA. 317+25 TO STA. 319+40 RT
 FROM -Y11- STA. 11+02 TO STA. 12+25 LT
 FROM -Y11- STA. 11+07 TO STA. 12+25 RT
 FROM -Y22- STA. 21+35 TO STA. 23+23 LT
 FROM -Y22- STA. 18+00 TO STA. 23+10 RT
 FROM -Y22- STA. 23+14 TO STA. 25+00 RT



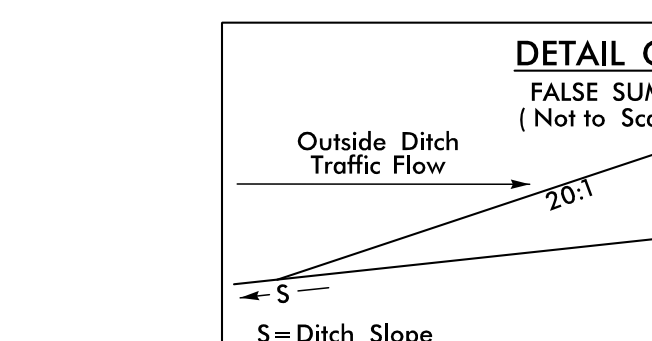
FROM -L- STA. 223+50 TO STA. 225+66 RT
 FROM -L- STA. 246+00 TO STA. 253+50 RT



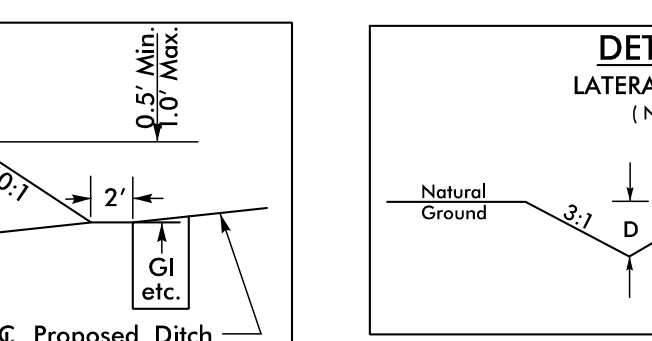
D = Varies (To Top of Bank)
 EST. 95 CY EXCAVATION
 EST. 125 TONS CLASS I RIPRAP
 EST. 160 SY GEOTEXTILE FABRIC



D = Varies (To Top of Bank)
 EST. 85 CY EXCAVATION
 EST. 90 TONS CLASS I RIPRAP
 EST. 140 SY GEOTEXTILE FABRIC

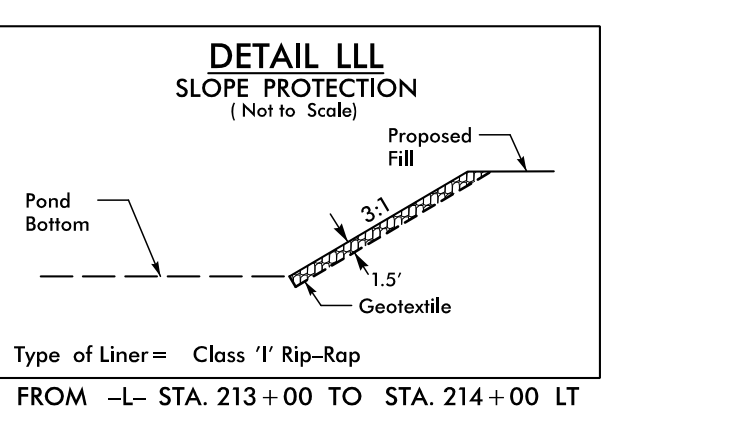
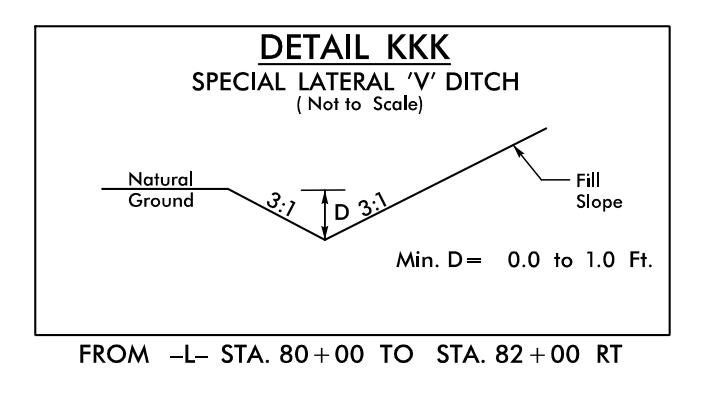
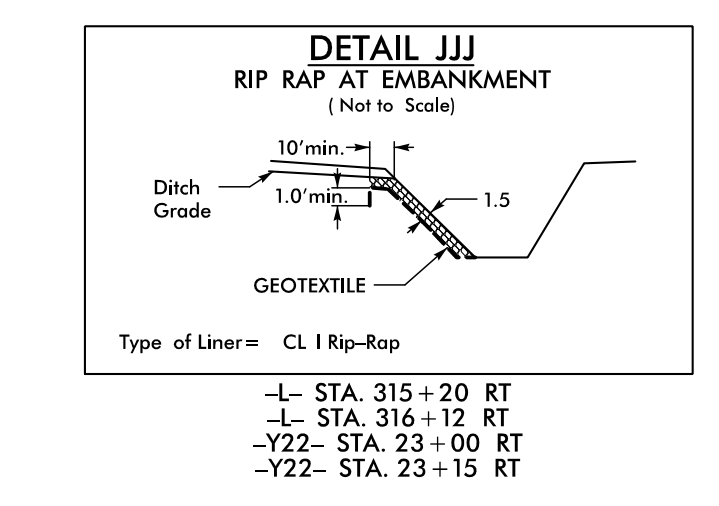
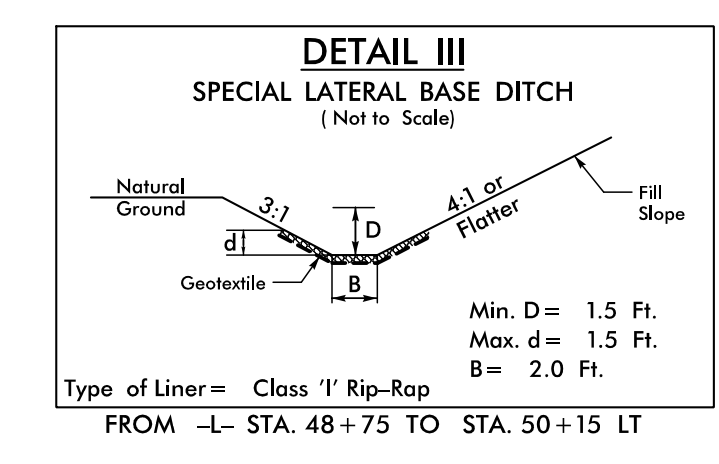
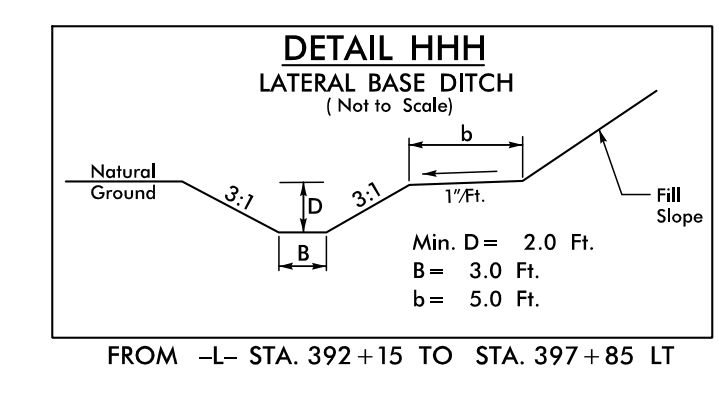
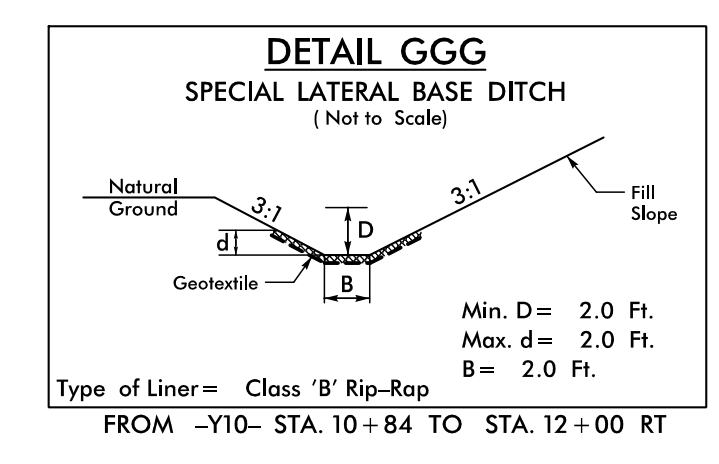
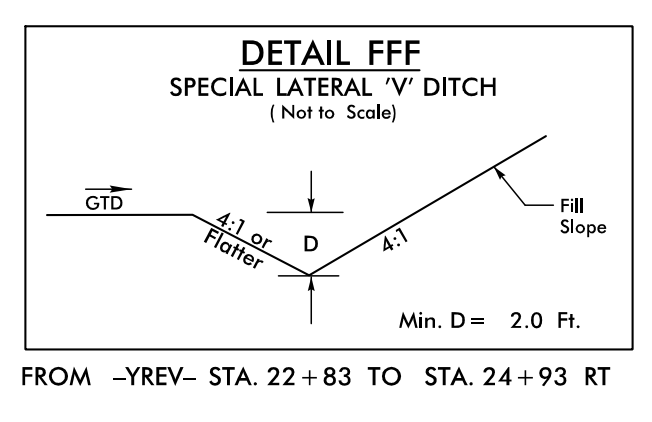
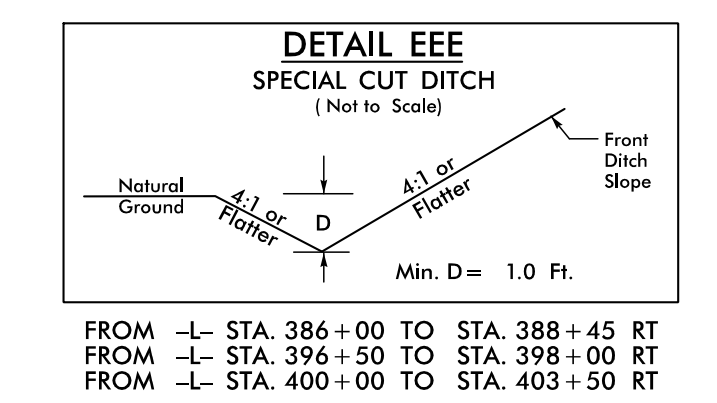
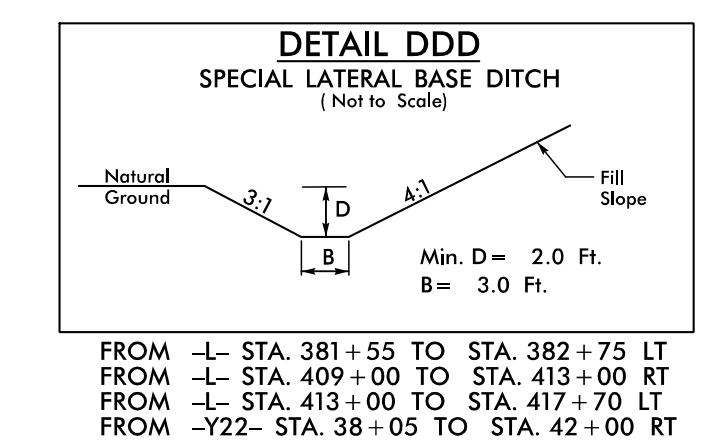
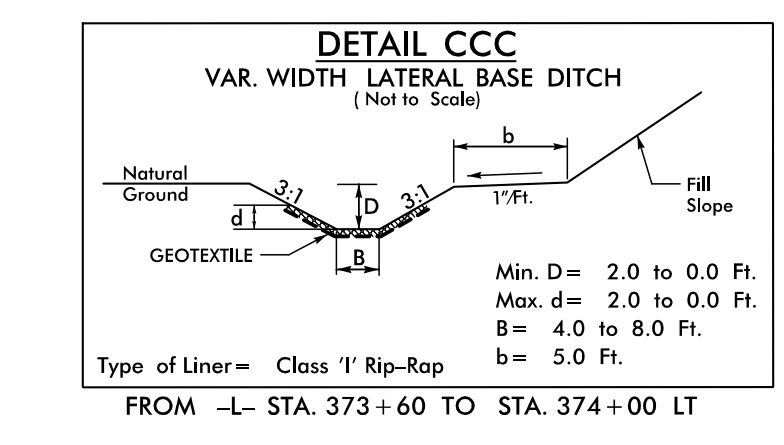
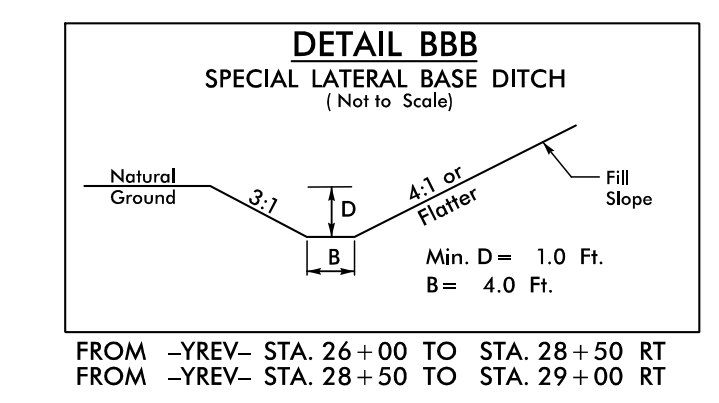
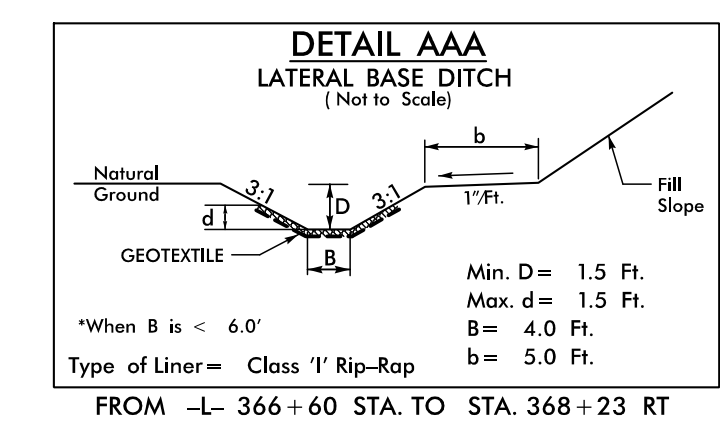
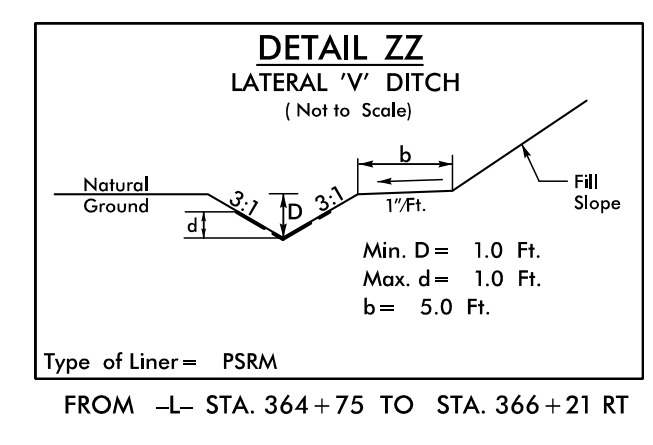
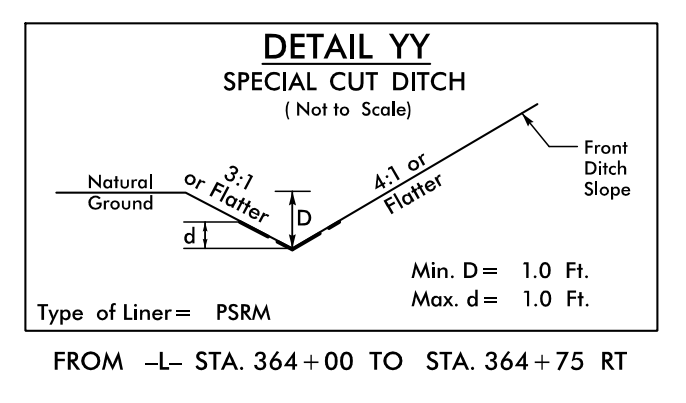
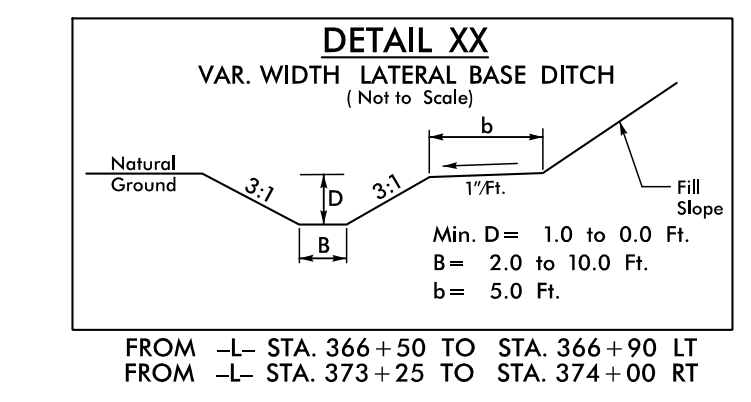
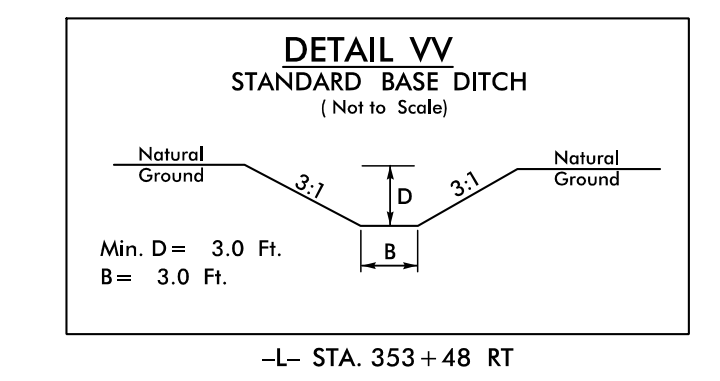
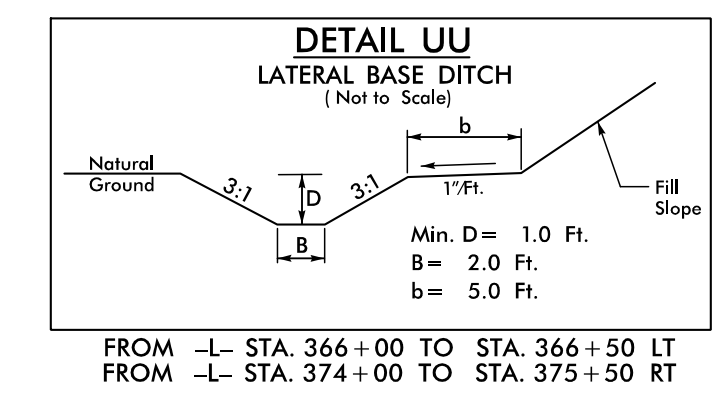
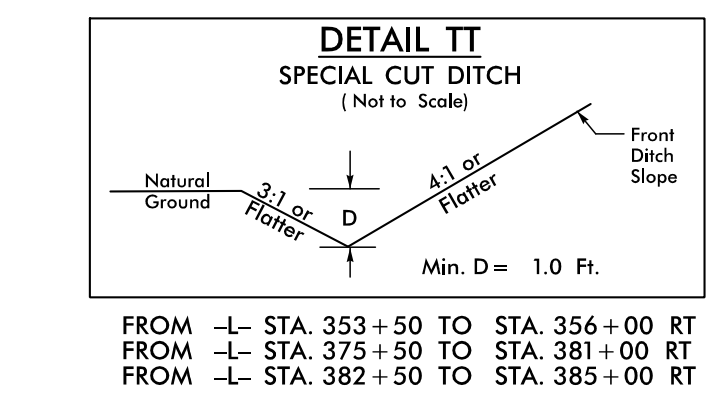
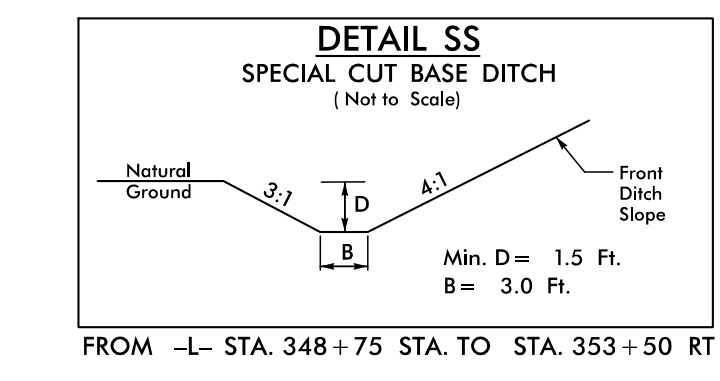
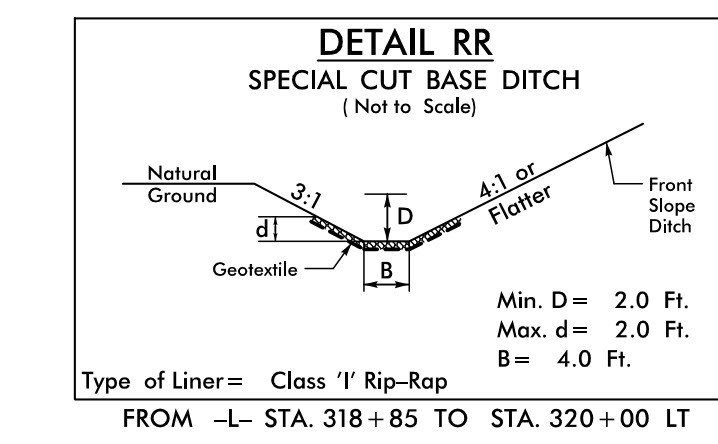
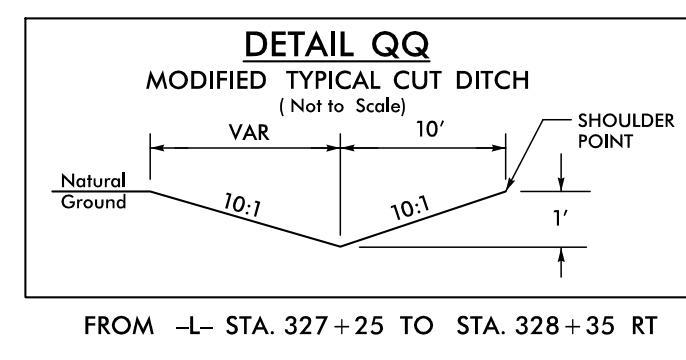
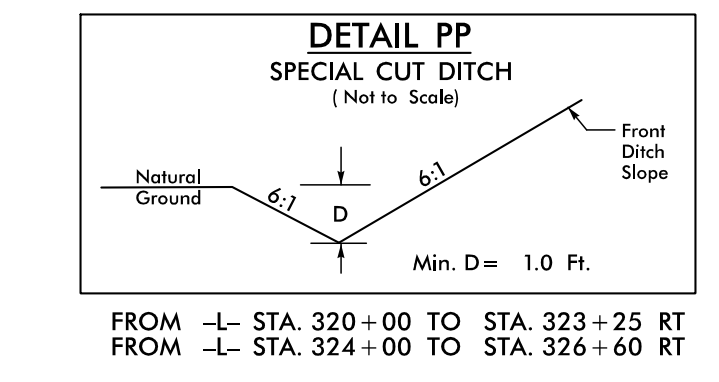
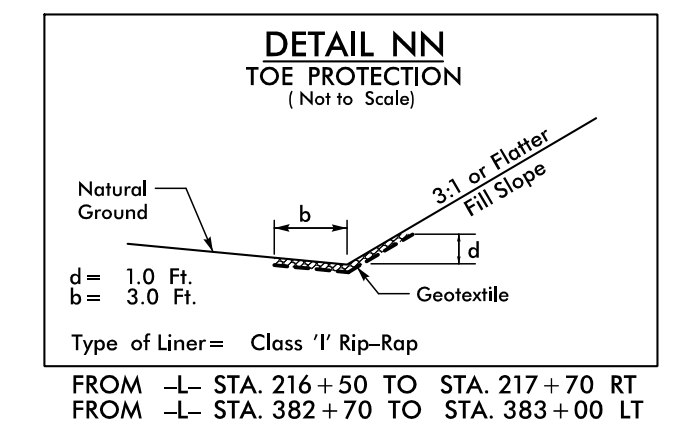
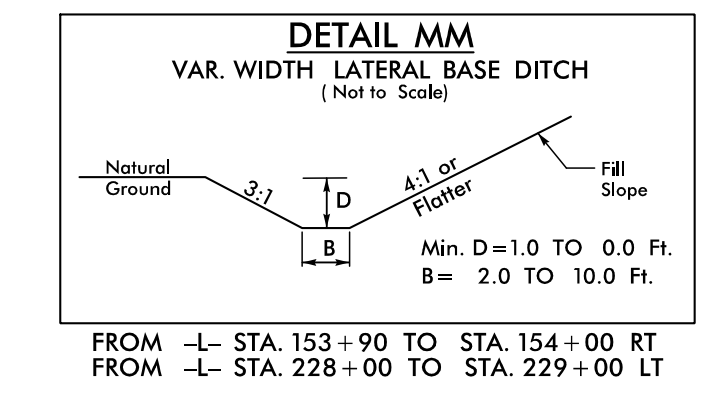
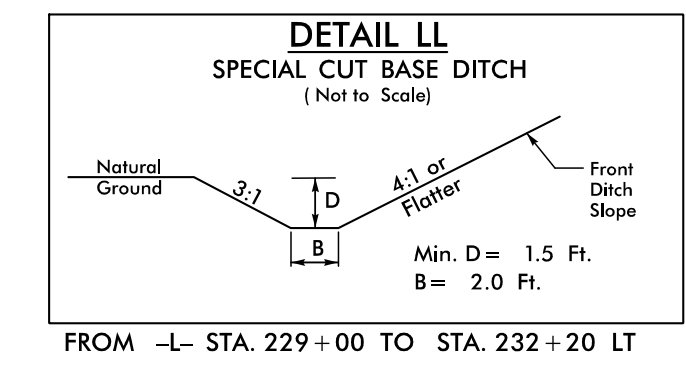
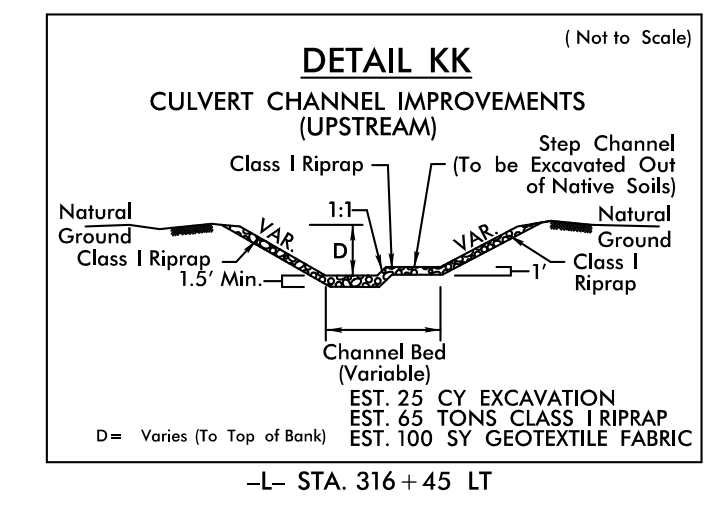
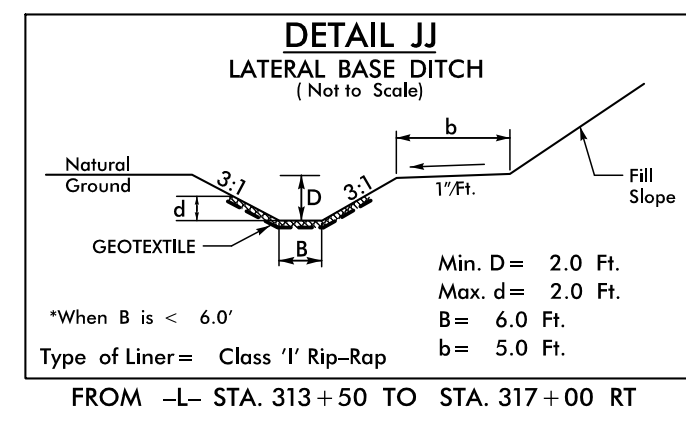
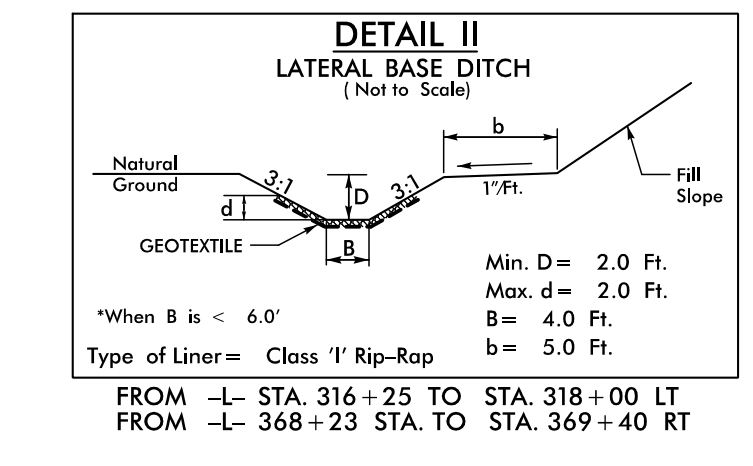
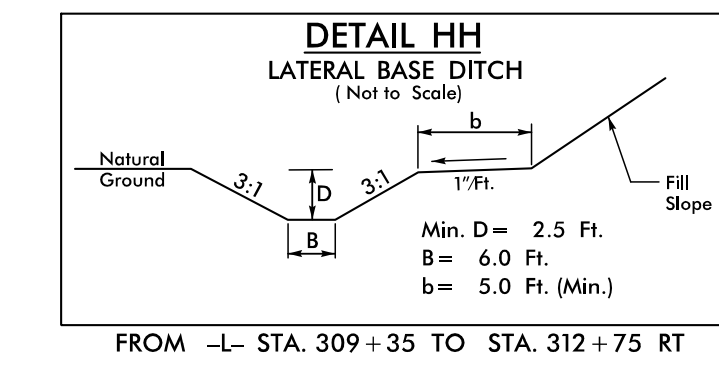
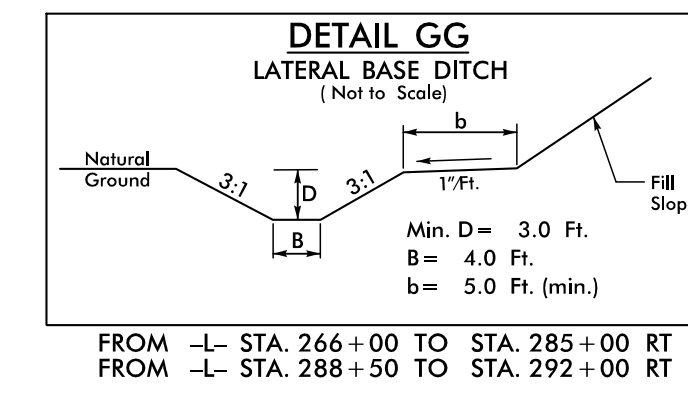
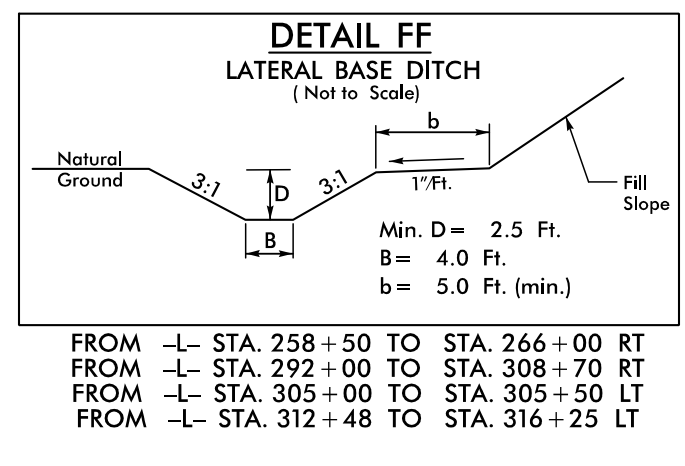
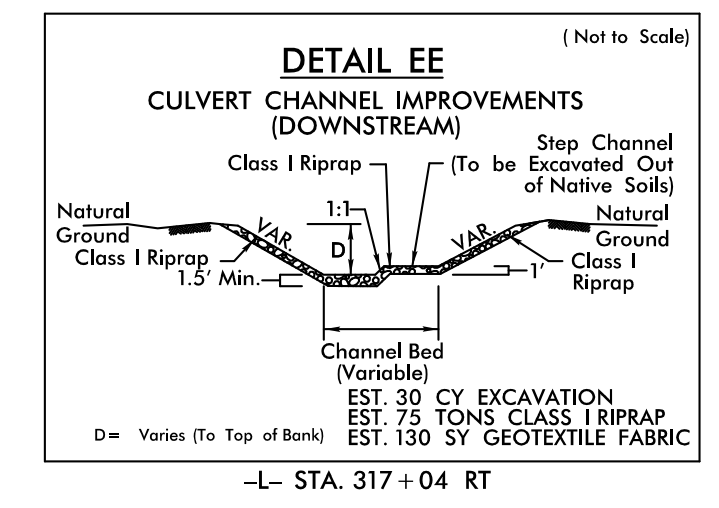


-L- STA. 211+75



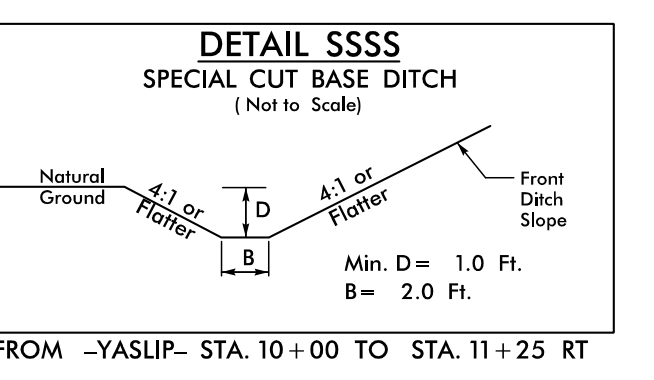
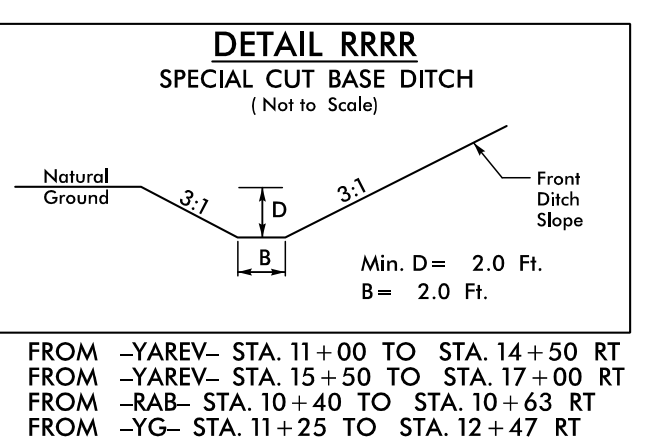
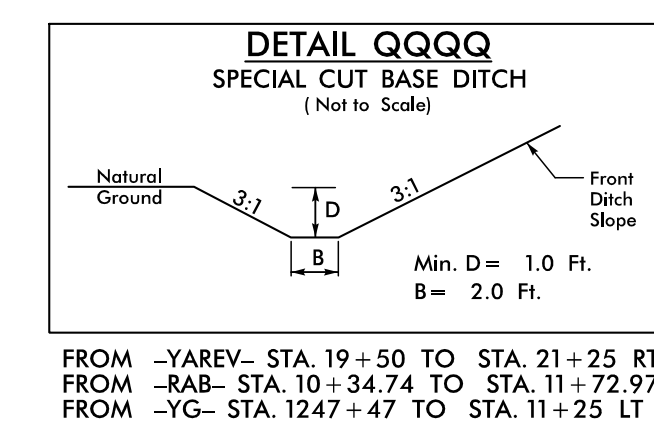
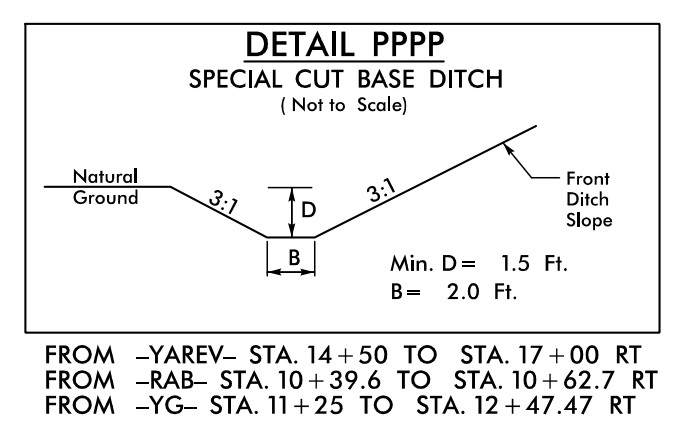
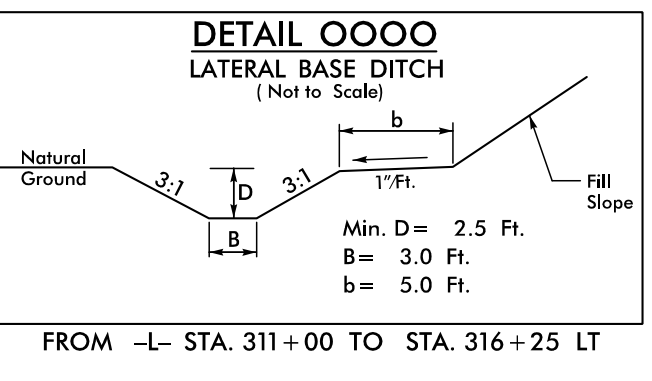
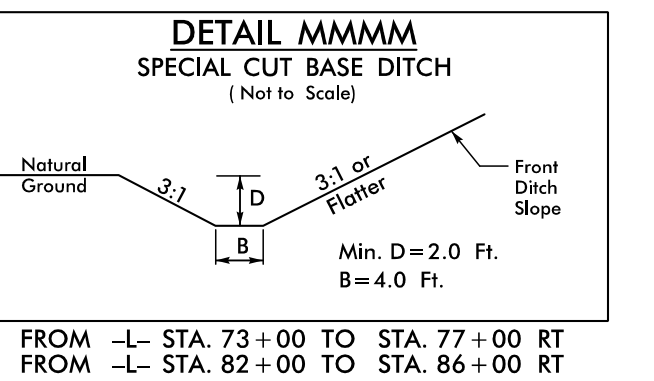
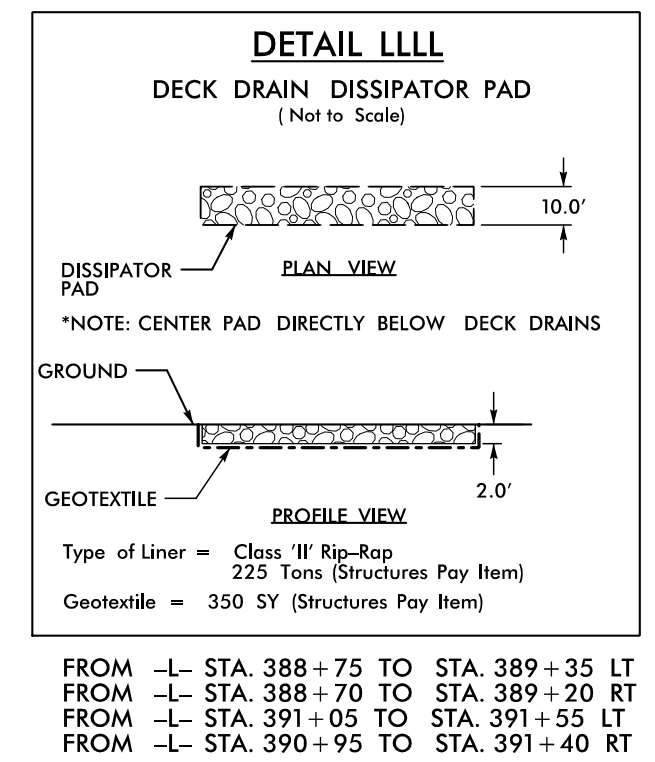
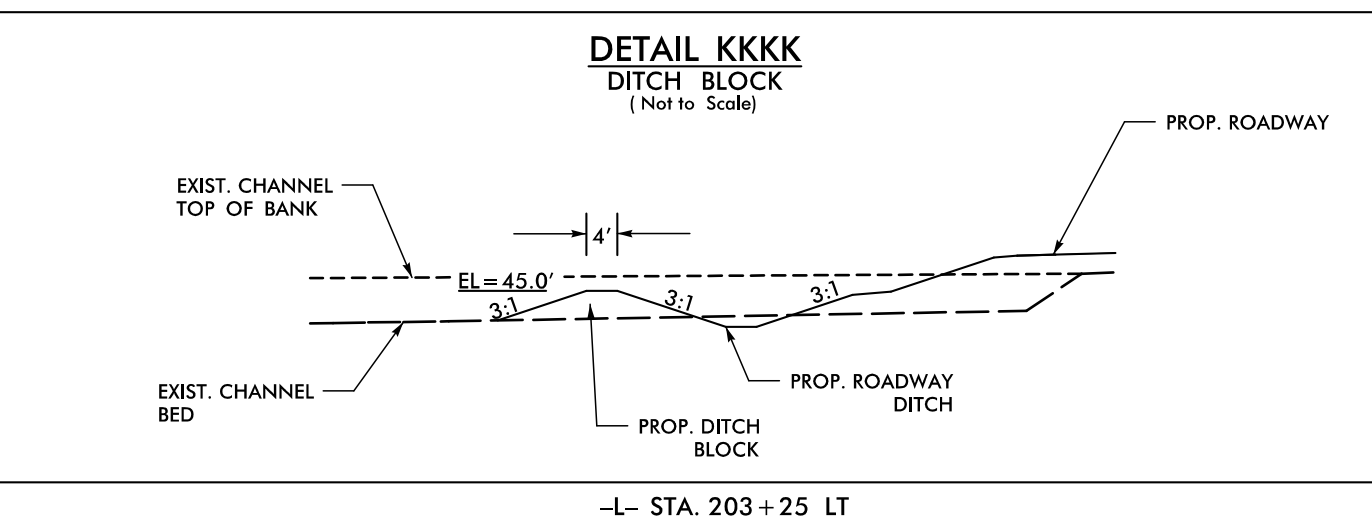
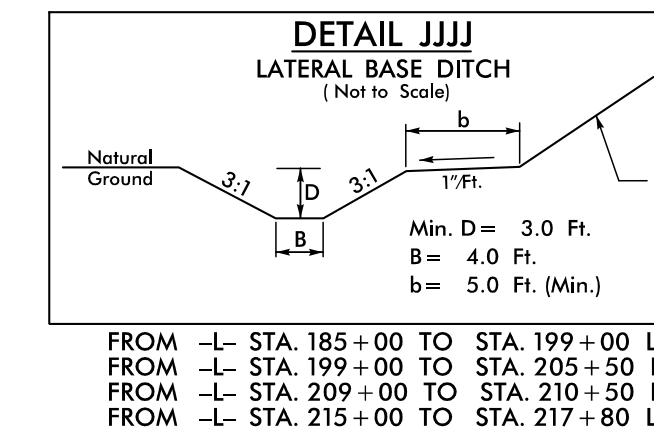
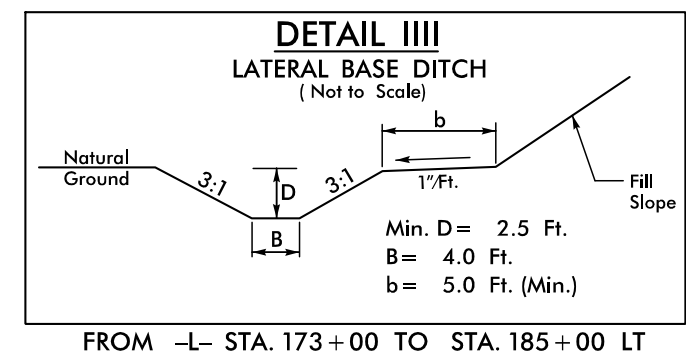
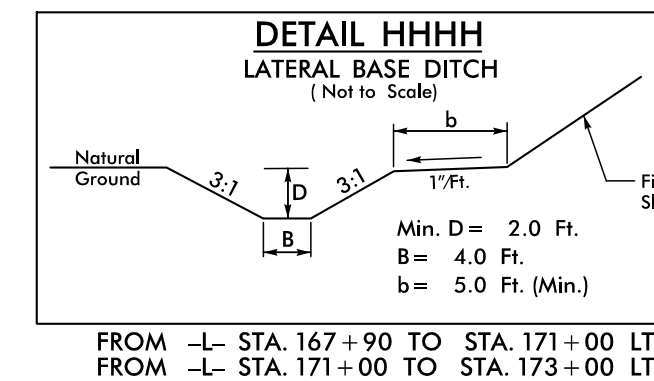
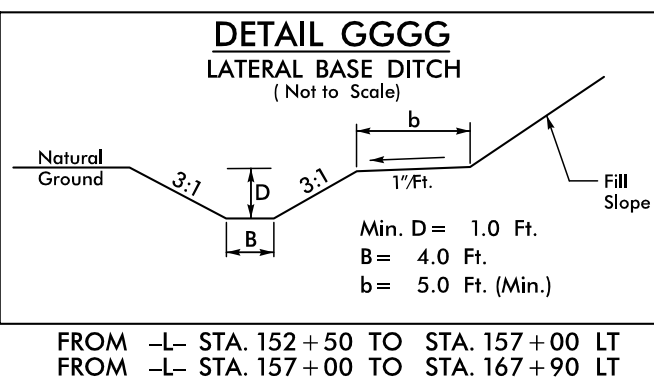
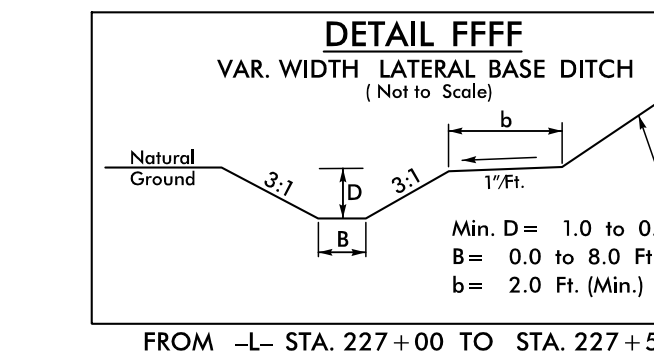
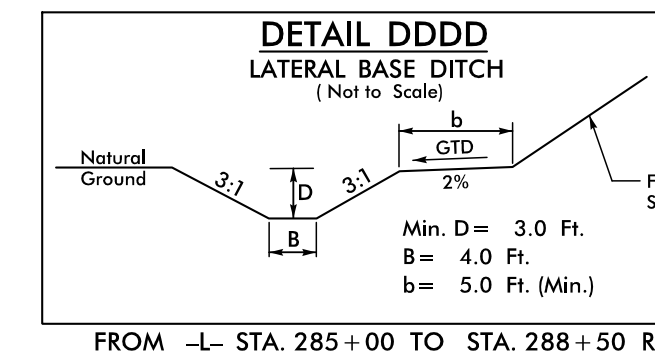
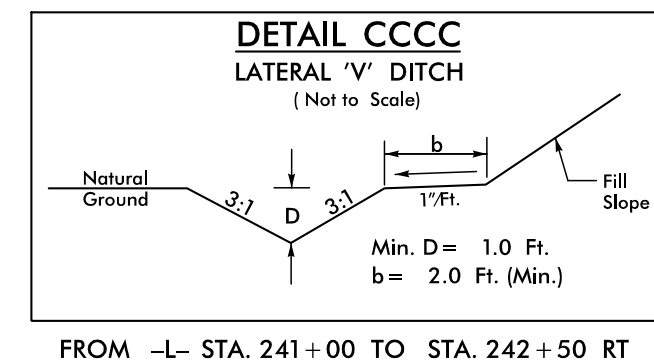
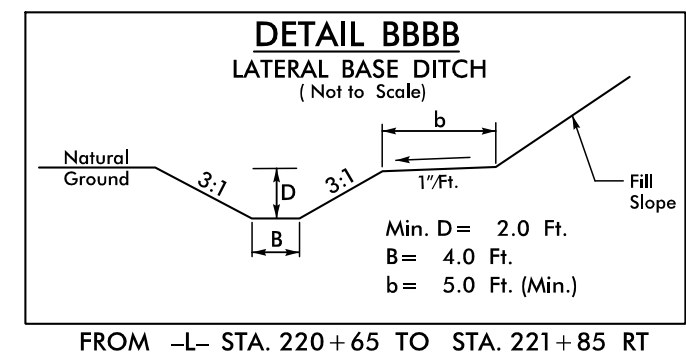
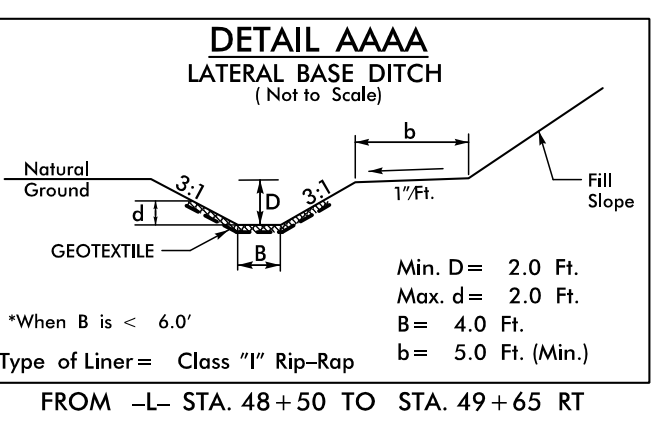
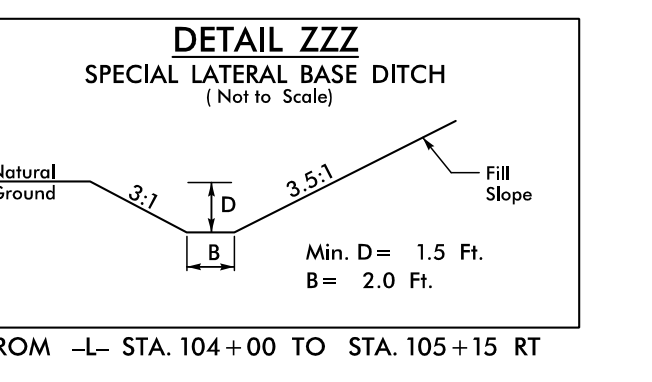
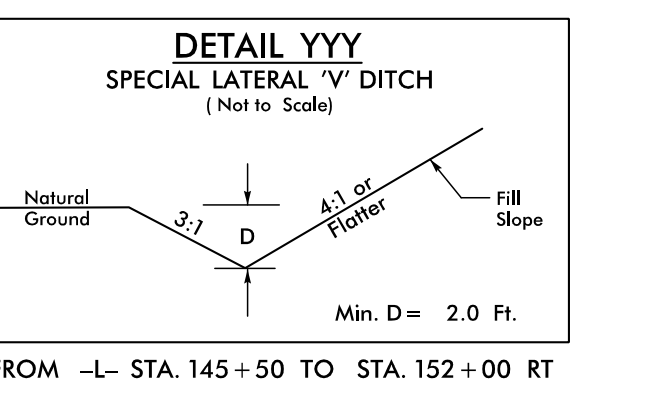
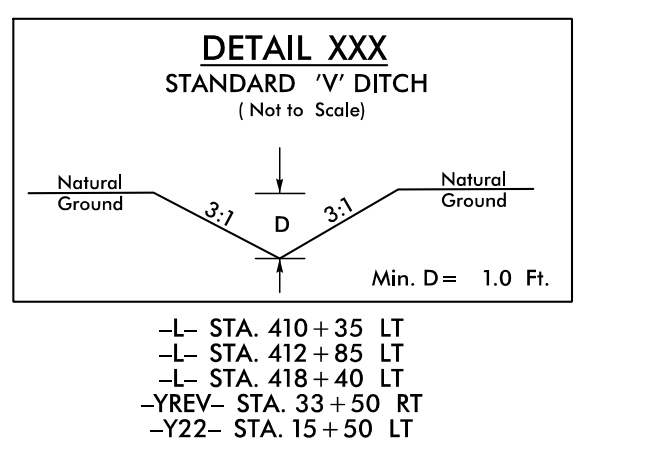
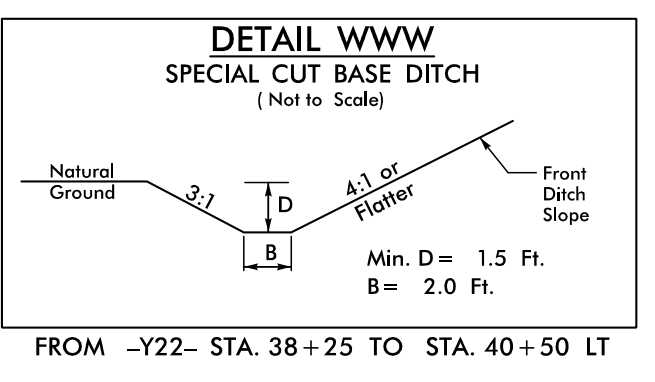
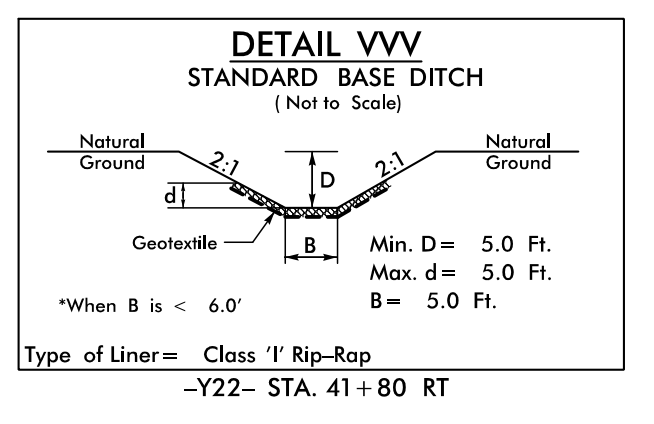
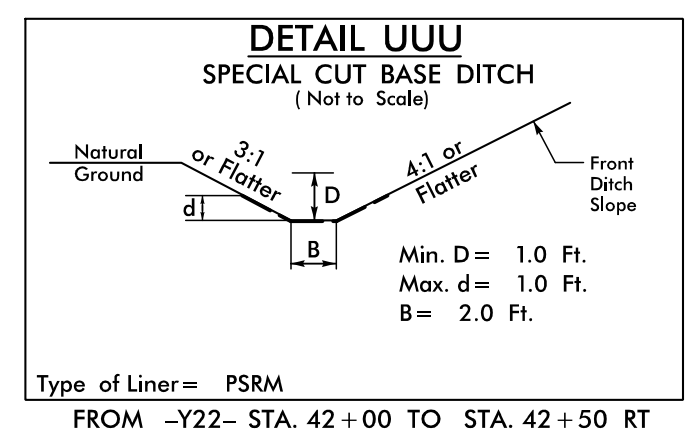
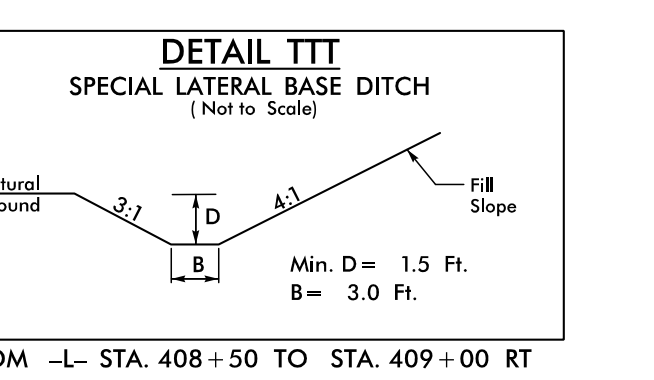
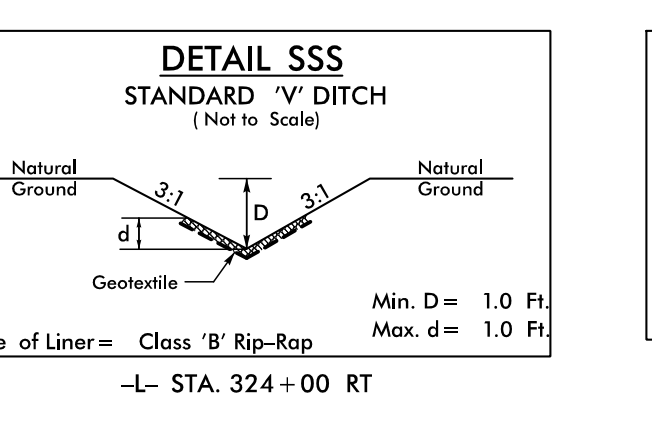
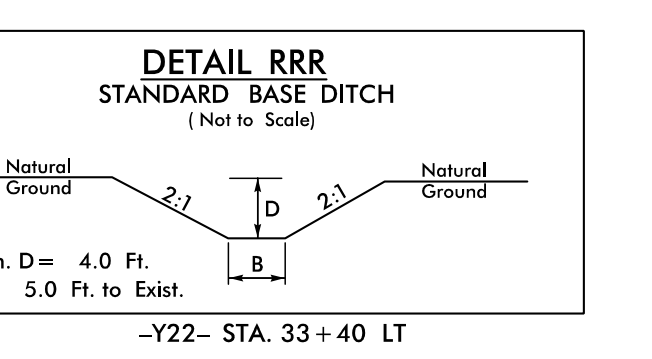
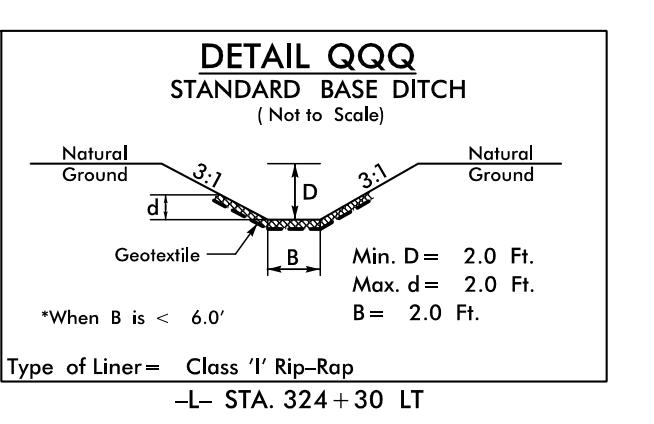
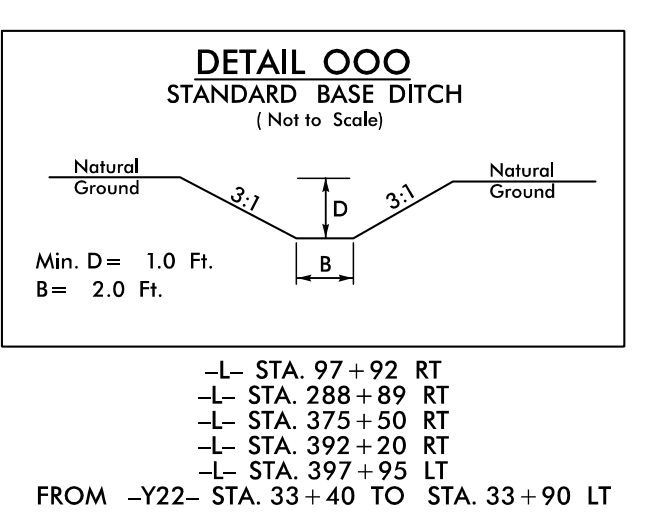
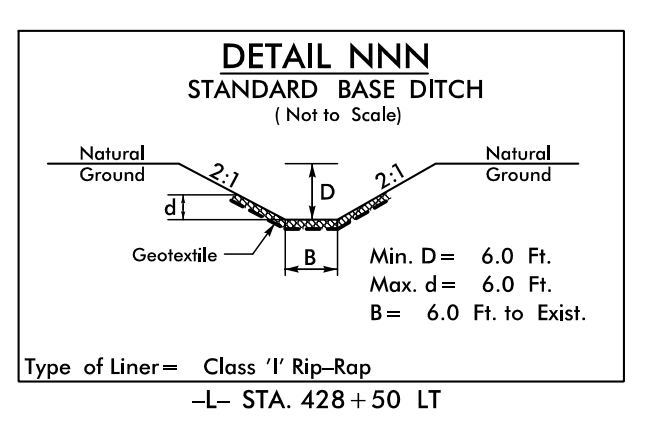
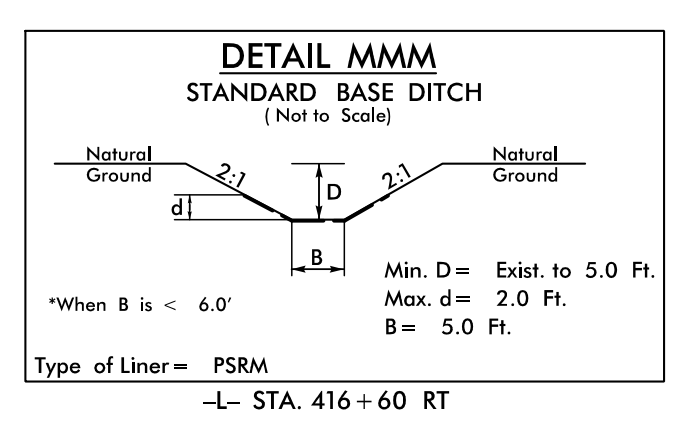
FROM -L- STA. 148+70 TO STA. 152+50 LT
 FROM -L- STA. 242+50 TO STA. 246+00 RT
 FROM -YREV- STA. 23+50 TO STA. 28+00 LT

DRAINAGE DETAILS

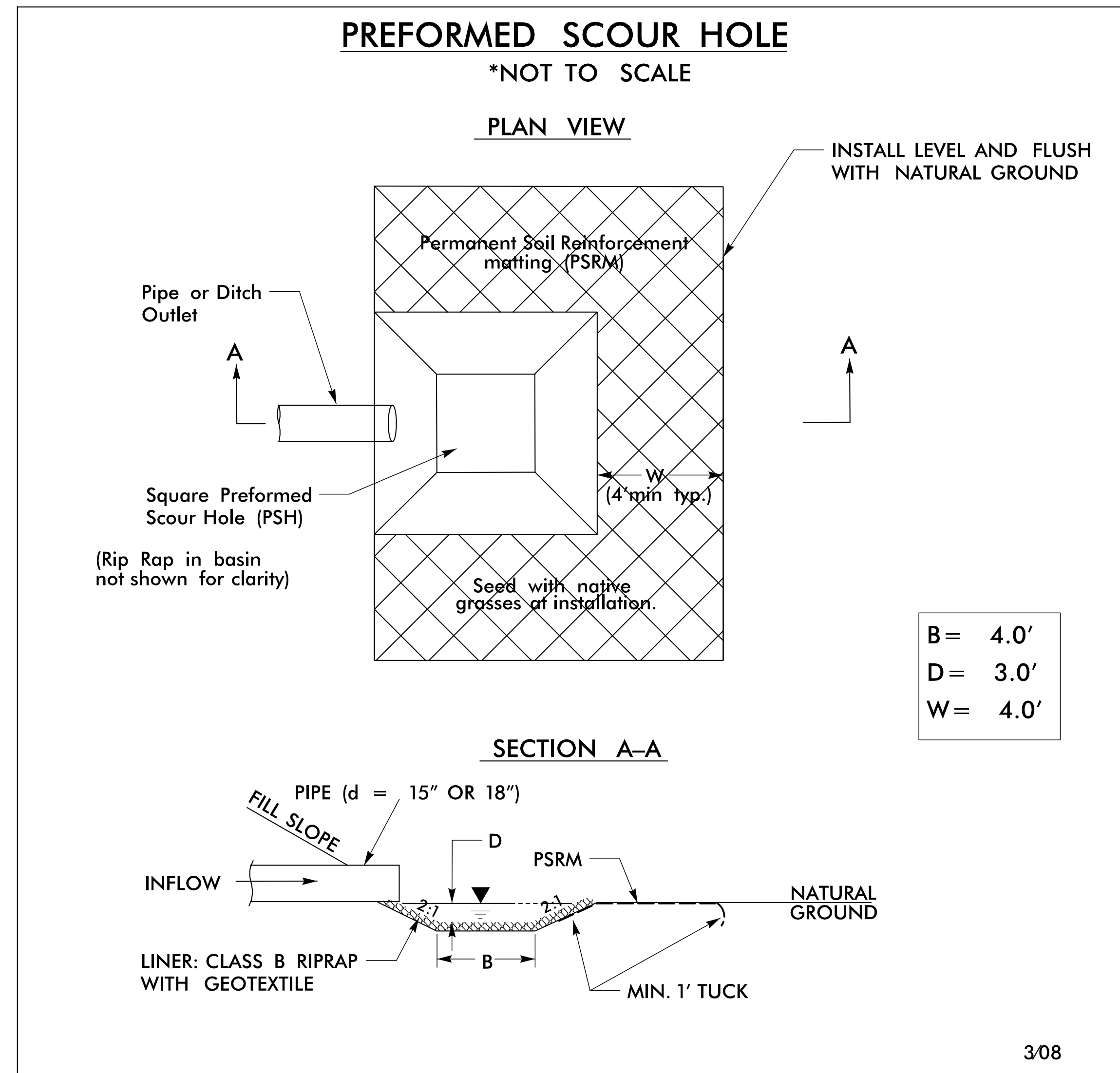


DRAINAGE DETAILS


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

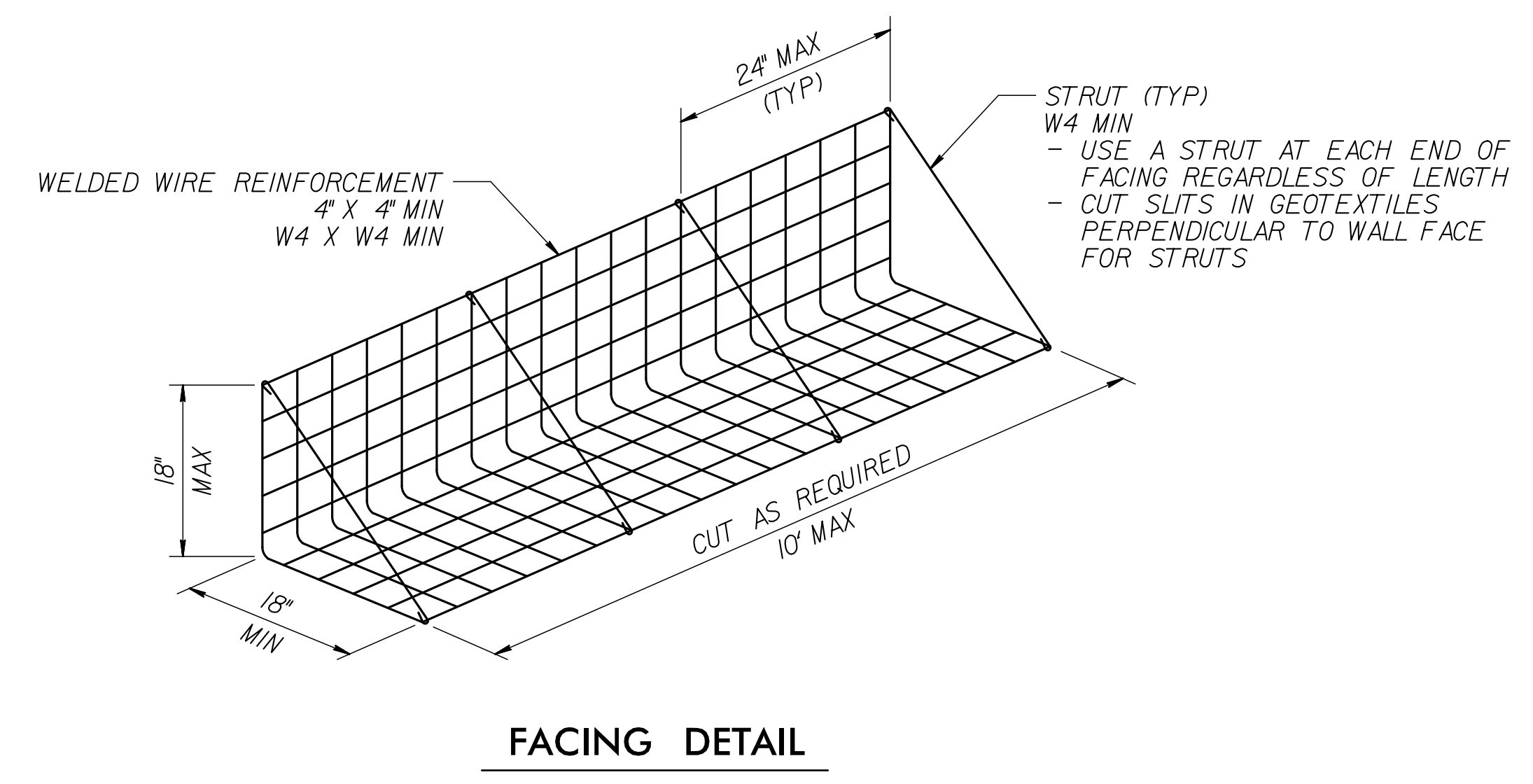
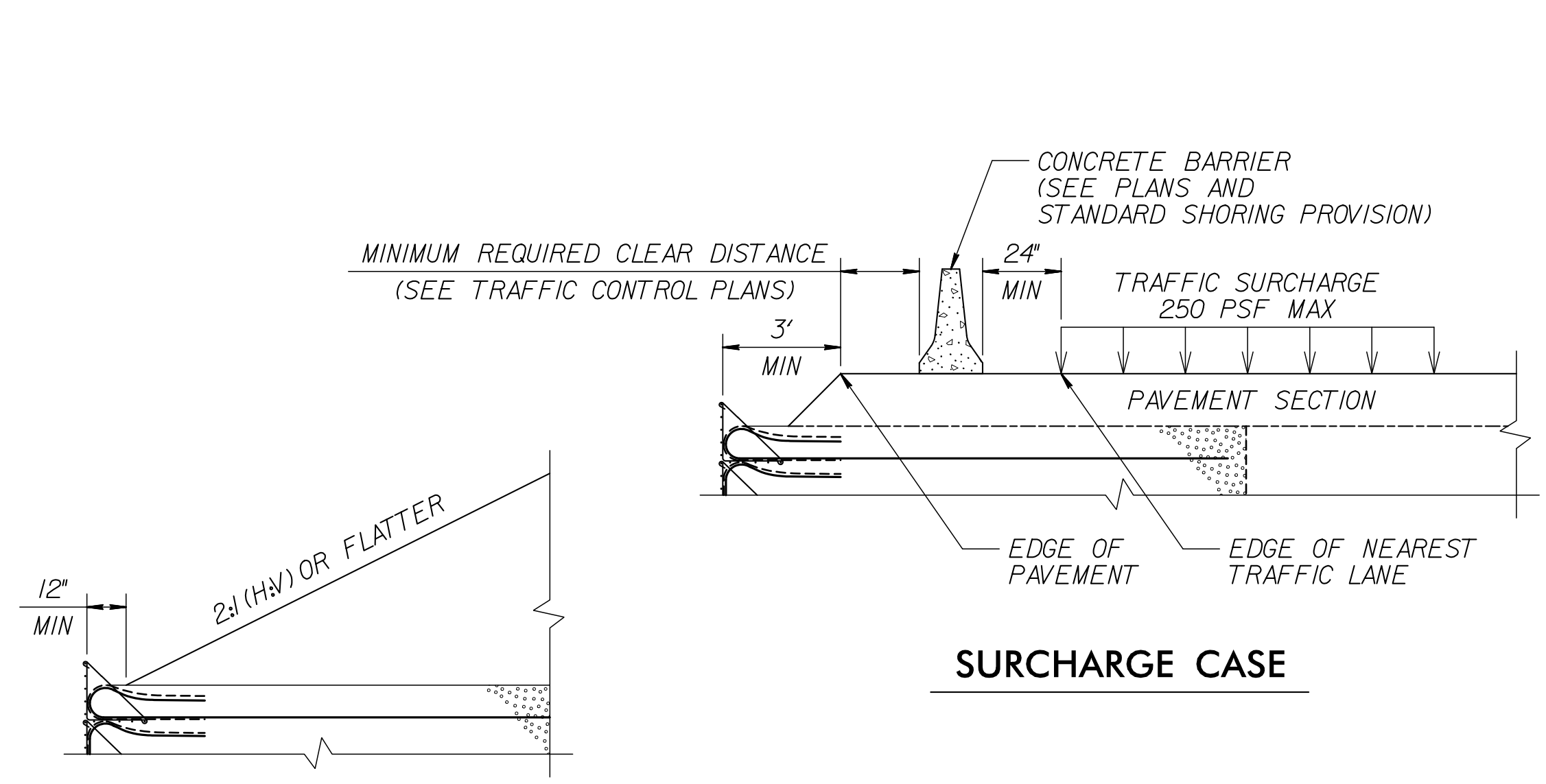


PROJECT REFERENCE NO.	SHEET NO.
R-5021	2D-4
RW SHEET NO.	
	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



-L- STA. 84+26 LT
 -L- STA. 219+96 LT
 -L- STA. 370+62 RT

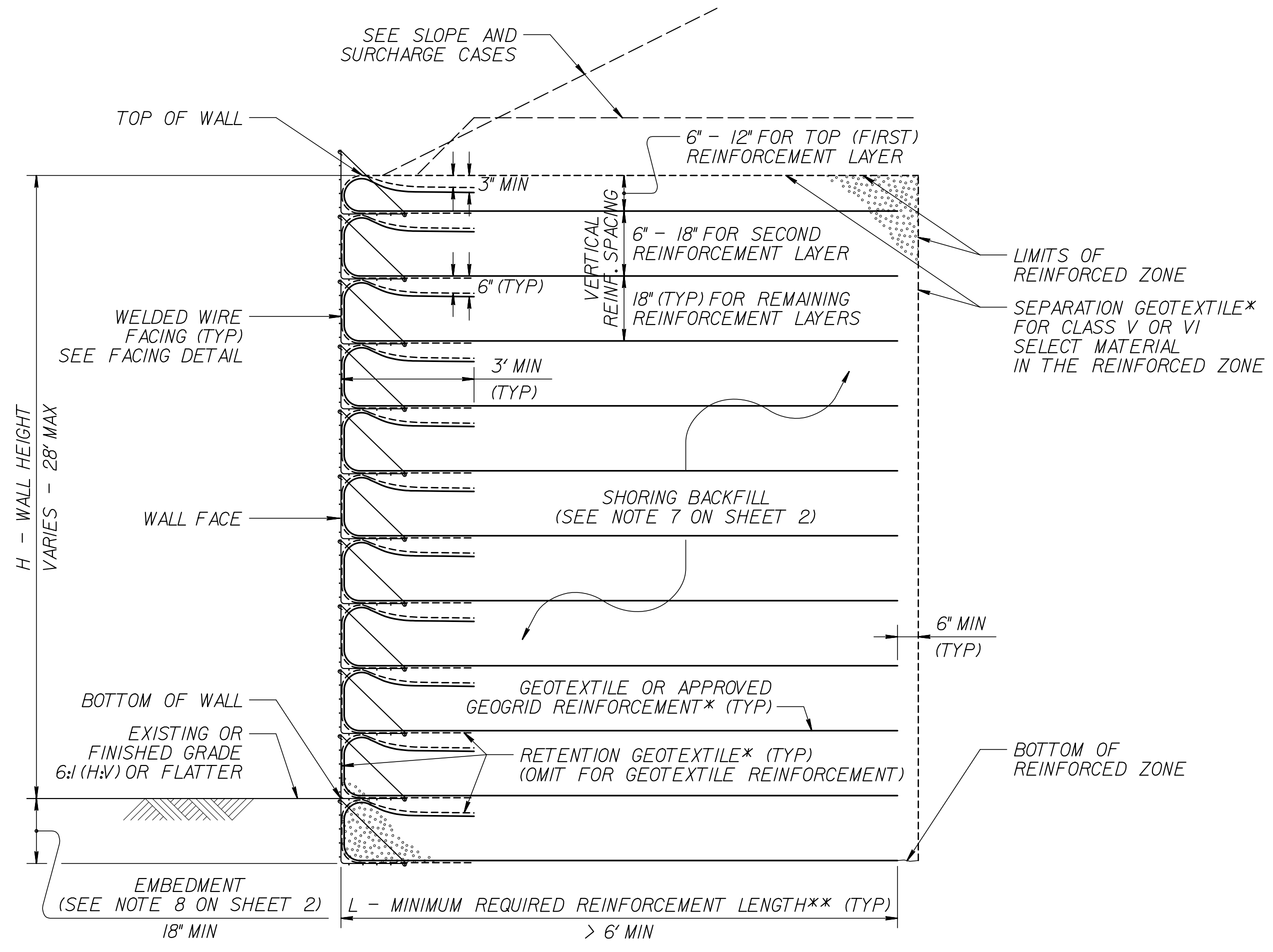
PROJECT REFERENCE NO. R-5021	SHEET NO. 2G-1
GEOTECHNICAL ENGINEER 	ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



SLOPE CASE

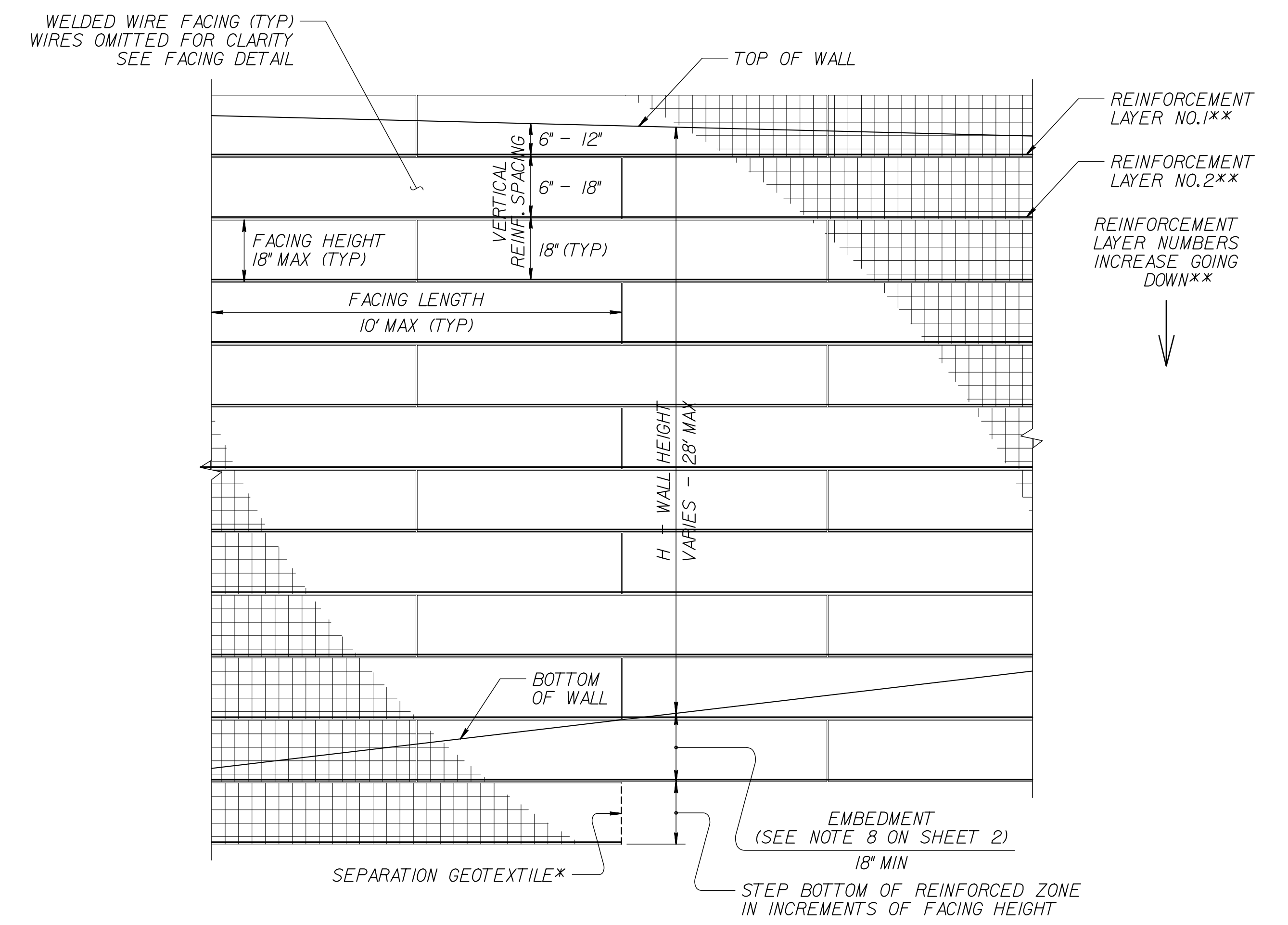
SURCHARGE CASE

FACING DETAIL



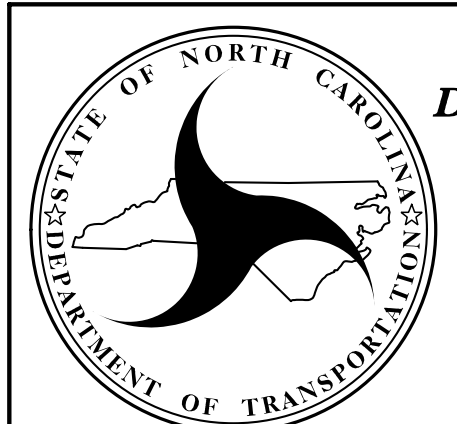
STANDARD TEMPORARY WALL


(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
 *SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
 **SEE REINFORCEMENT TABLES ON SHEET 3.

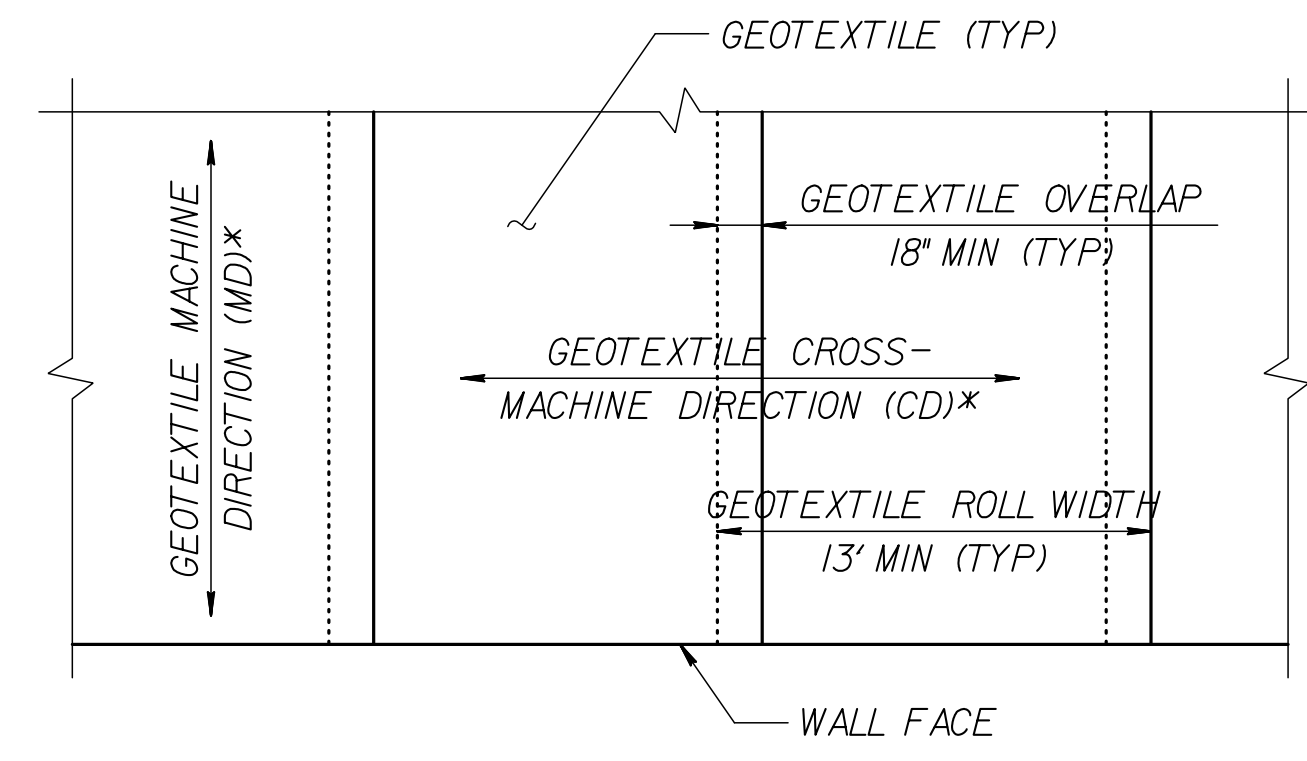


STANDARD TEMPORARY WALL - PARTIAL ELEVATION

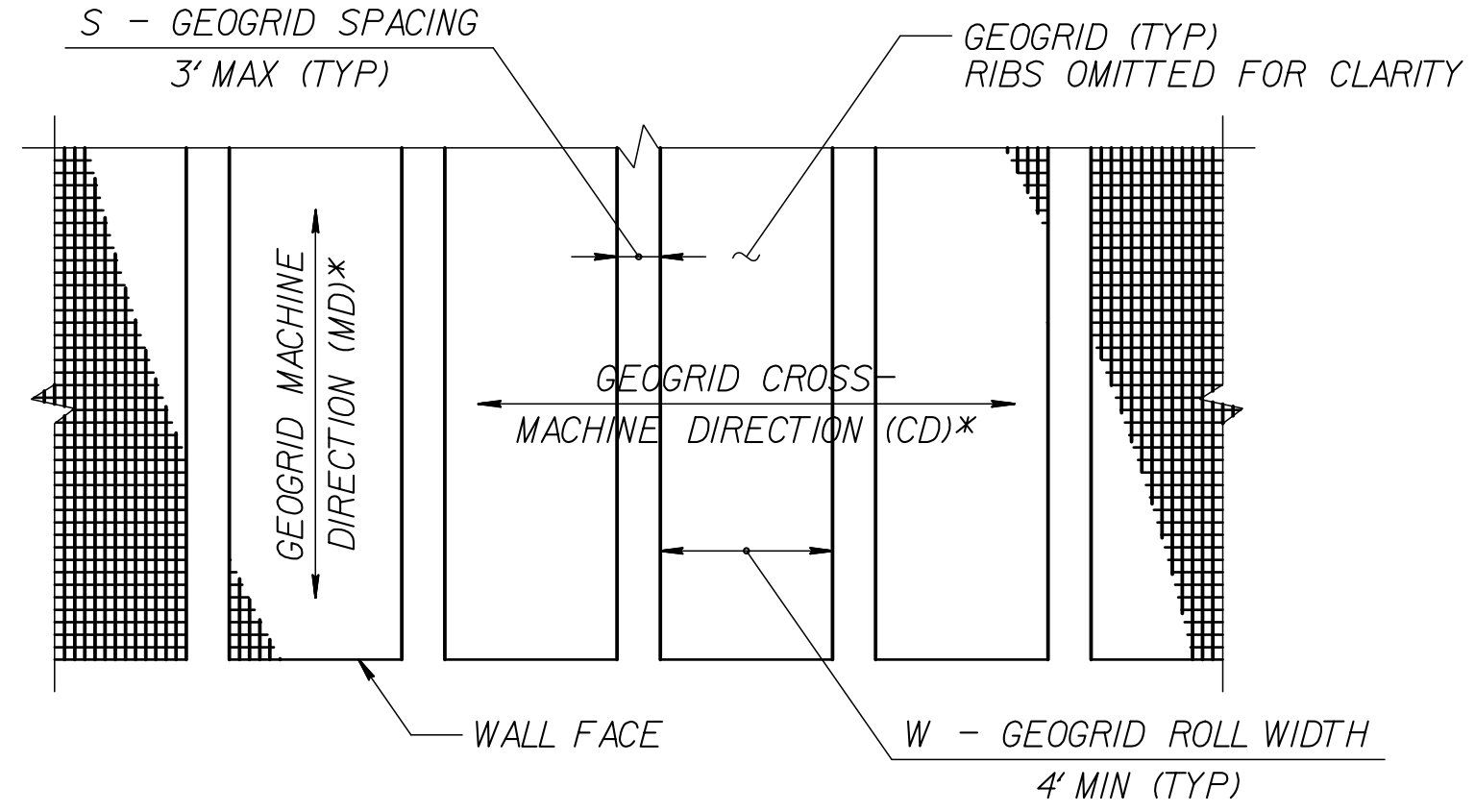
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
 **SEE REINFORCEMENT TABLES ON SHEET 3.

 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT	STANDARD DETAIL NO. 1801.02
	STANDARD TEMPORARY WALL SHEET 1 OF 3

PROJECT REFERENCE NO. R-5021		SHEET NO. 2G-2	
GEOTECHNICAL ENGINEER 		ENGINEER _____ SIGNATURE DATE	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

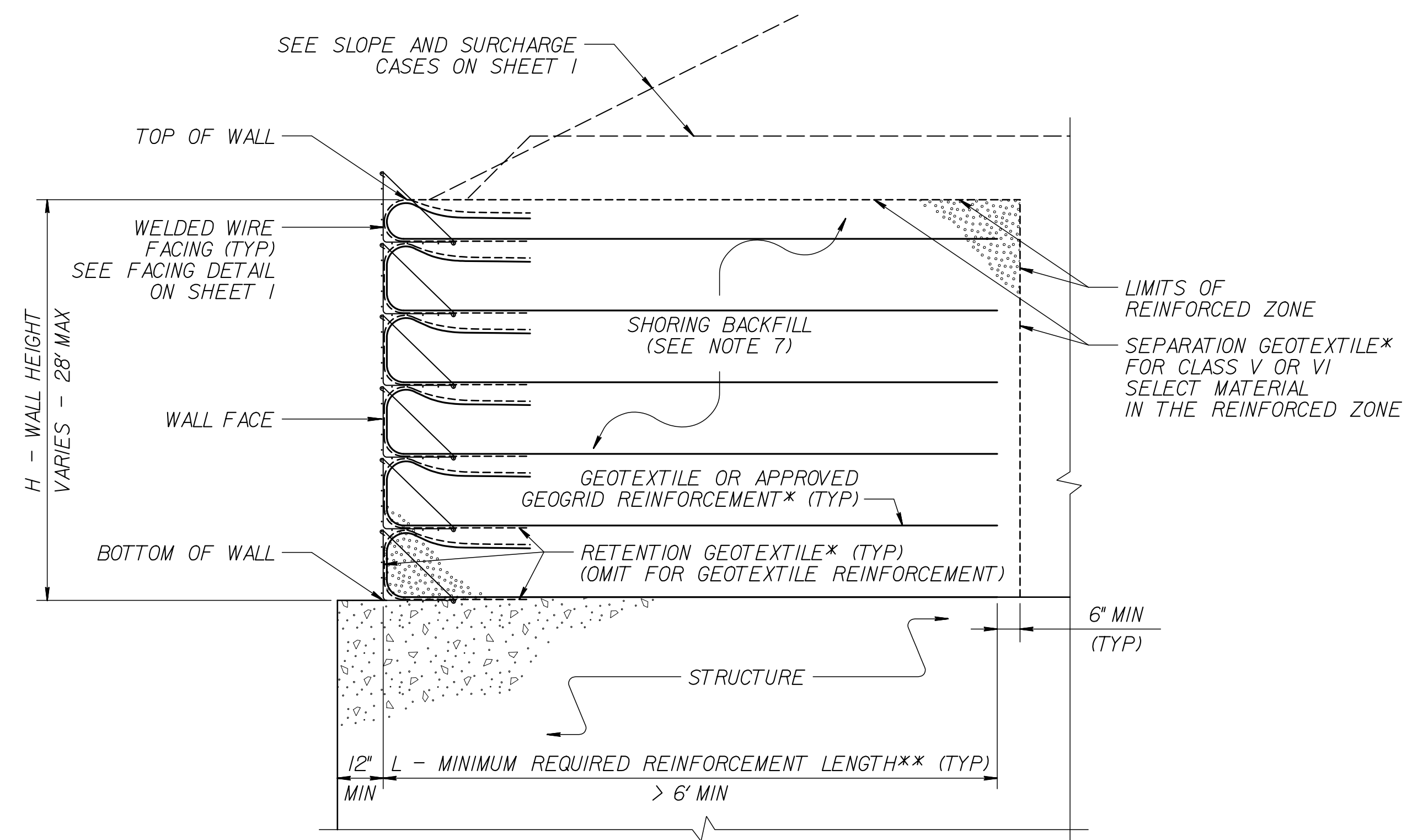


GEOTEXTILE PLACEMENT
(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)



GEOGRID PLACEMENT
(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT - $\frac{W}{W+S} \times 100 \geq 80\%$, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS
(PLAN VIEW)
*SEE NOTE 12.



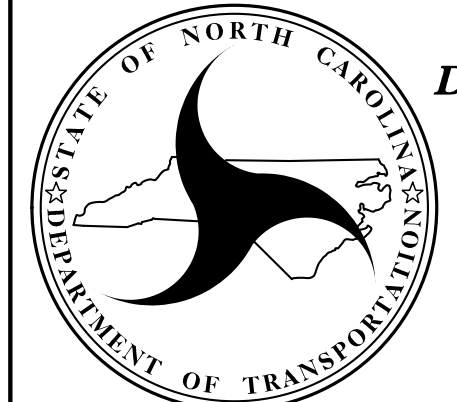
TEMPORARY WALL ON STRUCTURE DETAIL
*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ PSF
- DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
- DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
- USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER IS ABOVE BOTTOM OF REINFORCED ZONE.
- DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
- EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
- DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
- GEOGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR SHORT-TERM DESIGN STRENGTHS FOR A 3-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM:
connect.ncdot.gov/resources/Materials/Pages/Materials-Manual-by-Manual.aspx
DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE I OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

- IF THE WEBSITE DOES NOT LIST A SHORT-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID, USE A SHORT-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 3.5 FOR THE GEOGRID REINFORCEMENT.
- FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
 - AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
- W (REINFORCEMENT ROLL WIDTH) \geq (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
- REINFORCEMENT STRENGTH IN CD \geq MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
 - SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM:
connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
 - DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
 - FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
 - DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
 - CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
 - FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
 - FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.



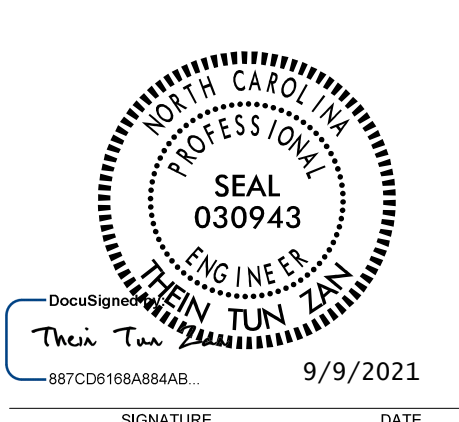
**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**

**GEOTECHNICAL
ENGINEERING UNIT**

STANDARD DETAIL NO. 1801.02

**STANDARD
TEMPORARY WALL
SHEET 2 OF 3**

DATE: 11-19-13

PROJECT REFERENCE NO. R-5021	SHEET NO. 2G-3
	ENGINEER
SIGNATURE: <i>Thien Tun Tan</i> DATE: 9/9/2021	SIGNATURE: _____ DATE: _____
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																									
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
SLOPE CASE	> 0	CLASS II, TYPE I, CLASS III, CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27	
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H ≥ 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22	
	> 7 FOR H < 20' > 10 FOR H ≥ 20'	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21	
		CLASS II, TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20	
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19	

L - MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)
(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

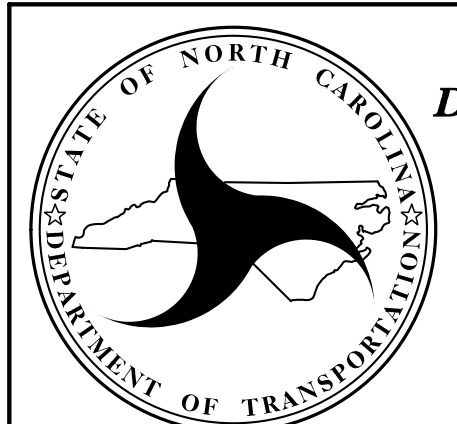
REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT
SHORT-TERM DESIGN STRENGTH (LB/FT)
(SEE NOTE 10 ON SHEET 2.)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD
(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

<i>STANDARD DETAIL NO. 1801.02</i>
STANDARD TEMPORARY WALL SHEET 3 OF 3
DATE: 11-19-13

COMPUTED BY: DTK DATE:9/28/21
 CHECKED BY: DATE:

PROJECT NO. R-5021 SHEET NO. 3B-3

SUMMARY OF EARTHWORK

Quantities are approximate only. The Resident Engineer will recross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid.

Station	Station	Uncl. Excav.	Undercut	Embank. +%	Borrow	Waste
SUMMARY #1						
-L- STA 47+50 LT	-L- STA 77+50 LT	349	47	35,492	35,143	47
-L- STA 61+50 LT	-L- STA 77+50 LT	0	0	-24,542	-24,542	0
-L- STA 47+50 RT	-L- STA 77+50 RT	526		21,475	20,949	
-L- STA 61+50 RT	-L- STA 77+50 RT	0	0	-23,774	-23,774	0
-L- STA 61+50 LT	-L- STA 77+50 LT	0	0	24,344	24,344	0
-L- STA 61+50 RT	-L- STA 77+50 RT	48	0	24,143	24,095	0
-YA- STA 10+00	-YA- STA 22+00	1,529	0	17,088	15,559	0
-YA- STA 10+00	-YA- STA 22+00	-1,529	0	-17,088	-15,559	0
-YAREV- STA 11+00	-YAREV- STA 17+00	0	0	13,252	13,252	0
-YAREV- STA 19+50	-YAREV- STA 22+50	625	0	2,815	2,190	0
-YASLIP- STA 10+00	-YASLIP- STA 12+25	1,386		368		1,018
-YE- STA 10+00	-YE- STA 13+00	30		1,812	1,782	
-YF- STA 10+25	-YF- STA 13+00	15		820	805	
-YG- 11+00	-YG- 13+00	4	0	1,653	1,649	0
-RAB- 10+00	-RAB- 14+00	0	0	12,365	12,365	0
SUMMARY #1	SUBTOTAL	2,983	47	90,223	88,258	1,065
SUMMARY #2						
-L- STA 77+50 LT	-L- STA 107+50 LT	555	96	39,305	38,750	96
-L- STA 77+50 LT	-L- STA 78+00 LT	0	0	-999	-999	0
-L- STA 77+50 LT	-L- STA 78+00 LT	0	0	935	935	0
-YREV- STA 8+00	-YREV- STA 30+50	6,301	1,261	101,231	94,930	1,261
-YB- STA 10+00	-YB- STA 24+00	591		23,677	23,086	
-YC- STA 10+00	-YC- STA 11+25	18		126	108	
-YD- STA 10+00	-YD- STA 12+50	11		2,391	2,380	
-DRW01- STA 10+00	-DRW01- STA 11+50	19				19
SUMMARY #2	SUBTOTAL	7,495	1,357	166,666	159,190	1,376
SUMMARY #2						
-L- STA 77+50 RT	-L- STA 107+50 RT	3,453		15,293	11,840	
-L- STA 77+50 RT	-L- STA 78+00 RT	0	0	-999	-999	0
-L- STA 77+50 RT	-L- STA 78+00 RT	0	0	935	935	0
-YREV- STA 32+50	-YREV- STA 52+00.00	15,118	956	85,863	70,745	956
SUMMARY #2	SUBTOTAL	18,571	956	101,092	82,521	956
SUMMARY #3						
-L- STA 107+50 LT	-L- STA 137+50 LT		9,736	71,378	71,378	9,736
-Y1A- STA 10+00	-Y1A- STA 12+16	10		477	467	
SUMMARY #3	SUBTOTAL	10	9,736	71,855	71,845	9,736
SUMMARY #3						
-L- STA 107+50 RT	-L- STA 137+50 RT		338	44,802	44,802	338
SUMMARY #3	SUBTOTAL		338	44,802	44,802	338
SUMMARY #3	SHEET TOTAL	29,059	12,434	474,638	446,616	13,471

Station	Station	Uncl. Excav.	Undercut	Embank. +%	Borrow	Waste
SUMMARY #4						
-L- STA 137+50 LT	-L- STA 167+50 LT	185	2,761	56,127	55,942	2,761
-Y1C- STA 10+00	-Y1C- STA 15+00	6		1,081	1,075	
SUMMARY #4						
-L- STA 137+50 RT	-L- STA 167+50 RT	1,233	227	33,521	32,288	227
-Y1- STA 10+00		12		106	94	
-Y2- STA 10+00	-Y2- STA 15+00			610	610	
SUMMARY #4	SUBTOTAL	1,436	2,988	91,445	90,009	2,988
SUMMARY #5						
-L- STA 167+50 LT	-L- STA 197+50 LT		10,331	86,752	86,752	10,331
-L- STA 167+50 RT	-L- STA 197+50 RT		392	55,526	53,526	392
SUMMARY #5	SUBTOTAL		10,723	142,278	140,278	10,723
SUMMARY #6						
-L- STA 197+50 LT	-L- STA 227+50 LT		144	36,157	36,157	144
-Y2A- STA 10+00	-Y2A- STA 12+25	61		297	236	
-Y3- STA 9+00	-Y3- STA 12+50	430		555	125	
SUMMARY #6						
-L- STA 197+50 RT	-L- STA 227+50 RT	1,818		15,296	13,478	
-Y3- STA 13+75	-Y3- STA 19+25	246			246	
-Y4- STA 11+00	-Y4- STA 11+75	74		18	56	
SUMMARY #6	SUBTOTAL	2,629	144	52,323	49,996	446
SUMMARY #7						
-L- STA 227+50 LT	-L- STA 257+50 LT	1,081	4,383	31,716	30,635	4,383
-Y5- STA 10+00	-Y5- STA 11+00	60		25	35	
SUMMARY #7	SUBTOTAL	1,141	4,383	31,741	30,635	4,418
SHEET TOTAL		5,206	18,238	317,787	310,918	18,575

COMPUTED BY: CRG DATE: 10/9/18
 CHECKED BY: DW DATE: 08/24/2021

PROJECT NO.	SHEET NO.
R-5021	3B-4

SUMMARY OF EARTHWORK

Quantities are approximate only. The Resident Engineer will recross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the

Station	Station	Uncl. Excav.	Undercut	Embank. +%	Borrow	Waste
SUMMARY #7						
-L- STA 227+50 RT	-L- STA 257+50 RT	1,900	93	14,565	12,665	93
-Y5A- STA 10+00	-Y5A- STA 12+50	238		148		91
-Y5B- STA 10+00	-Y5B- STA 11+50	220				220
-Y6- STA 10+75	-Y6- STA 12+50	77		103	27	
-Y7- STA 10+75	-Y7- STA 12+50	14		625	611	
SUMMARY #7 SUBTOTAL		2,449	93	15,440	13,302	404
SUMMARY #8						
-L- STA 257+50 LT	-L- STA 287+50 LT		6,481	59,232	59,232	6,481
SUMMARY #8 SUBTOTAL			6,481	59,232	59,232	6,481
SUMMARY #8						
-L- STA 257+50 RT	-L- STA 287+50 RT		893	39,625	39,625	893
SUMMARY #8 SUBTOTAL			893	39,625	39,625	893
SUMMARY #9						
-L- STA 287+50 LT	-L- STA 317+50 LT	2,659	2,363	46,493	43,834	2,363
-L- STA 306+50 LT	-L- STA 311+50 LT	0	0	680	680	0
-Y9A- STA 10+00	-Y9A- STA 12+50	13		1,262	1,249	
SUMMARY #9 SUBTOTAL		2,672	2,363	48,435	45,763	2,363
SUMMARY #9						
-L- STA 287+50 RT	-L- STA 317+50 RT	74	47	30,640	30,566	47
-Y8- STA 10+00	-Y8- STA 12+50	1		523	522	
-Y9- STA 10+75	-Y9- STA 12+50	260		366	106	
-Y10- STA 10+50	-Y10- STA 12+00	132	66	360	228	66
-Y11- STA 11+00	-Y11- STA 14+00	113		836	723	
SUMMARY #9 SUBTOTAL		580	113	32,725	32,145	113
SHEET TOTAL		5,701	9,943	195,457	190,067	10,254

Station	Station	Uncl. Excav.	Undercut	Embank. +%	Borrow	Waste
SUMMARY #10						
-L- STA 317+50 LT	-L- STA 347+50 LT	3,893		3,488		405
-Y12- STA 11+00	-Y12- STA 12+75	545		5		540
-Y13- STA 10+50	-Y13- STA 11+25	45		20		25
-Y14A- STA 40+50	-Y14A- STA 70+00	1,235	1,911	90,340	89,105	1,911
-Y14E- STA 10+25	-Y14E- STA 11+25	5		435	430	
-Y14F- STA 10+00	-Y14F- STA 12+25			4,125	4,125	
-Y14D- STA 10+00	-Y14D- STA 24+50	1,023		24,661	23,638	
-Y14G- STA 10+00	-Y14G- STA 14+00	95		452	357	
SUMMARY #10 SUBTOTAL		6,837	1,911	127,556	121,689	2,881
SUMMARY #10						
-L- STA 317+50 RT	-L- STA 347+50 RT	1,890		1,310		580
-Y14- STA 10+50	-Y14- STA 12+00	79		28		51
-Y14B- STA 10+00	-Y14B- STA 13+50	92		196	104	
-Y14A- STA 25+00	-Y14A- STA 39+00	603		42,833	42,230	
-Y14C- STA 23+50	-Y14C- STA 25+00	23		93	70	
SUMMARY #10 SUBTOTAL		2,687		44,460	42,404	631
SUMMARY #11						
-L- STA 347+50 LT	-L- STA 368+72 LT	959		9,882	8,923	
-Y16- STA 10+00	-Y16- STA 12+00	89		18		71
-Y17- STA 10+00	-Y17- STA 11+25	73		318	245	
-Y17A- STA 10+00	-Y17A- STA 12+50	53		1,388	1,335	
SUMMARY #11 SUBTOTAL		1,174		11,606	10,503	71
SUMMARY #11						
-L- STA 347+50 RT	-L- STA 368+72 RT	3,289	356	5,446	2,157	356
-Y15- STA 10+00	-Y15- STA 12+00	454	201	256		399
-Y17- STA 12+75	-Y17- STA 13+25	128		6		122
SUMMARY #11 SUBTOTAL		3,871	557	5,708	2,157	877
SUMMARY #12						
-L- STA 370+12 LT	-L- STA 388+56.54 LT	962	763	16,550	15,588	763
-Y19REV- STA 10+00	-Y19REV- STA 13+25	275		172		103
SUMMARY #12 SUBTOTAL		1,237	763	16,722	15,588	866
SHEET TOTAL		15,806	3,231	206,052	192,341	5,326

COMPUTED BY: DTK DATE:9/28/21
 CHECKED BY: DATE:

PROJECT NO.	SHEET NO.
R-5021	3B-5

SUMMARY OF EARTHWORK

Quantities are approximate only. The Resident Engineer will re-cross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the

Station	Station	Uncl. Excav.	Undercut	Embank. +%	Borrow	Waste
<u>SUMMARY #12</u>						
-L- STA 370+12 RT	-L- STA 388+56.54 RT	2,049	19	5,166	3,117	19
-Y18A- STA 10+39	-Y18A- STA 10+89	2		97	95	
SUMMARY #12	SUBTOTAL	2,051	19	5,263	3,212	19
<u>SUMMARY #13</u>						
-L- STA 391+65.97 LT	-L- 422+00.00 LT	195	250	15,668	15,473	250
-Y21- STA 10+00	-Y21- STA 11+00	12		103	91	
SUMMARY #13	SUBTOTAL	207	250	15,771	15,564	250
<u>SUMMARY #13</u>						
-L- STA 391+65.97 RT	-L- 422+00.00 RT	1,892	351	6,675	4,783	351
-Y20- STA 10+75	-Y20- STA 12+25	15		133	118	
-Y21- STA 12+00	-Y21- STA 13+00	6		26	20	
SUMMARY #13	SUBTOTAL	1,913	351	6,834	4,921	351
<u>SUMMARY #14</u>						
-L- STA 422+00.00 LT	-L- STA 431+00.00 LT	464		341		123
-Y22- STA 14+00	-Y22- STA 34+50	4,590		8,398	3,808	
-Y22A- STA 10+00	-Y22A- STA 12+00	66		40		26
-Y23- STA 11+00	-Y23- STA 13+50	7		272	265	
-Y24- STA 11+00	-Y24- STA 13+00	164		556	392	
SUMMARY #14	SUBTOTAL	5,291	0	9,607	4,465	149
<u>SUMMARY #14</u>						
-L- STA 422+00.00 RT	-L- STA 431+00.00 RT	259		273	14	0
-Y22- STA 36+00	-Y22- STA 42+50	193		506	313	
-YREVTCP1- STA 10+00	-YREVTCP1- STA 18+00	2,610		201	0	2,409
SUMMARY #14	SUBTOTAL	3,062	0	980	327	2,409
SHEET TOTAL		12,524	620	38,455	28,489	3,178

Station	Station	Uncl. Excav.	Undercut	Embank. +%	Borrow	Waste
TOTAL FROM SHEET 1		29,059	12,434	474,638	446,616	13,471
TOTAL FROM SHEET 2		5,206	18,238	317,787	310,918	18,575
TOTAL FROM SHEET 3		5,701	9,943	195,457.00	190,067	10,254
TOTAL FROM SHEET 4		15,806	3,231	206,052.00	192,341	5,326
TOTAL FROM SHEET 5		12,524	620	38,455.00	28,489	3,178
TOTAL		68,296	44,466	1,232,389	1,168,431	50,804
TOTAL		68,296	44,466	1,232,389	1,168,431	50,804
LOSS DUE TO CLEARING & GRUBBING		-3,100			3,100	
UNSUITABLE MATERIAL		23,400				23,400
ADDITIONAL UNDERCUT			7,000	8,750	8,750	7,000
EST. SHOULDER MATERIAL				20,113	20,113	
SELECT GRANULAR MATERIAL IN LIEU OF BORROW				-67,750	-67,750	
WASTE IN LIEU OF BORROW					-6,338	-6,338
PROJECT TOTAL		88,596	51,466	1,193,502	1,126,306	74,866
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					56,316	
GRAND TOTAL		88,596	51,466	1,193,502	1,182,622	74,866
SAY		90,000	55,000		1,200,000	

-L- PAVEMENT STRUCTURE VOLUME = 8,718 CY
 -YREV- PAVEMENT STRUCTURE VOLUME = 1,082 CY
 -Y22- PAVEMENT STRUCTURE VOLUME = 702 CY

TOTAL UNCLASSIFIED EXCAVATION - ACCEPTABLE BUT NOT AS EMBANKMENT OR BACKFILL (NOT TO BE USED IN THE TOP 3' OF EMBANKMENT): 500 CY
 -L- STA. 69+25 TO STA. 71+25
 -L- STA. 72+75 TO STA. 74+70

TOTAL DDE: 74,900 CY

COMPUTED BY: ABH DATE: 1/3/19
 CHECKED BY: JM DATE: 8/19/2021

PROJECT NO.
 R-5021

SHEET NO.
 3B-7

PAVEMENT REMOVAL SUMMARY
 IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
TEMPORARY PAVEMENT (CONTINUED)							
L	60+19.65	78+00.67	RT	1527.61			
L	147+63.89	153+23.54	RT	188.06			
L	204+67.26	205+46.73	RT	120.38			
L	241+52.62	243+28.40	RT	78.96			
L	252+85.24	264+96.45	RT	750.60			
L	310+46.94	12+75.25 -Y11-, RT	RT	1616.24			
L	372+95.70	376+51.26	RT	464.69			
L	386+98.26	388+48.70 R2	RT	72.66			
L	391+74.58 R2	393+07.15 R2	RT	71.43			
YREV	29+58.23	30+71.10	LT	46.60			
	29+64.56	30+59.57	RT	110.01			
	33+90.52	36+79.84	RT	115.88			
	44+23.35	46+27.49	RT	401.46			
Y11	10+46.55	13+10.47	LT	436.92			
Y12	12+33.56	13+38.39	RT	155.80			
Y17	12+42.20	13+31.06	LT	178.27			
Y22	33+38.90	34+90.93	LT	762.69			
		SUBTOTAL SHEET 2:		7,098.26	0.00		
		TOTAL FROM SHEET 1		12397.93	63,807.60		
		TOTAL FROM SHEET 2		7098.26	0.00		
		TOTAL:		19,496.19	63,807.60		
		SAY:		19,500	63,810		

COMPUTED BY(UPDATED): JM DATE: 9/30/2021
 CHECKED BY: DMW 9/30/2021

PROJECT NO.
 R-5021

SHEET NO.
 3B-8

SUMMARY OF HYDRAULIC RIP RAP & DDE QUANTITIES

LINE	SIDE	STATION	STATION	RIP RAP CLASS				GEO (SY)	PSRM (SY)	DDE (CY)	DETAIL	COMMENT
				I	II	A	B					
-L-	LT	48+73	50+15	135				240			III	SPECIAL LATERAL DITCH
-L-	LT	51+00	65+00						9,401		A, I	SPECIAL LATERAL DITCH, LATERAL BASE DITCH
-L-	LT	59+50					8	21				AT OUTLET, 30" PIPE
-L-	LT	64+03	64+27	125				160		95	AA	CULVERT CHANNEL IMPROVEMENTS (DOWNSTREAM)
-L-	LT	65+26		11				22				AT OUTLET, 30" PIPE
-L-	LT	83+60	83+93	35				55		20	P	CULVERT CHANNEL IMPROVEMENTS (DOWNSTREAM)
-L-	LT	85+52					1	5				AT OUTLET, 15" PIPE
-L-	LT	86+49					5	12			N	VAR. WIDTH LATERAL BASE DITCH
-L-	LT	90+01					2	7				AT OUTLET, 15" PIPE
-L-	LT	100+59	100+70	15				30				AT OUTLETS, 18" & 36" PIPES
-L-	LT	106+19	106+36	15				30				AT OUTLET, 36" PIPE
-L-	LT	149+00	204+50						9,563		DD, GGGG, HHHH, IIII, JJJJ	LATERAL 'V' DITCH, LATERAL BASE DITCH
-L-	LT	167+88		25				45				AT OUTLET, 36" PIPE
-L-	LT	184+84		15				30				AT OUTLET, 36" PIPE
-L-	LT	193+43		15				30				AT OUTLET, 36" PIPE
-L-	LT	194+82		25				45				AT OUTLET, 36" PIPE
-L-	LT	203+73		20				39				AT OUTLET, 42" PIPE
-L-	LT	205+50		20				39				AT OUTLET, 42" PIPE
-L-	LT	205+50	210+00						1,193		JJJJ	LATERAL BASE DITCH
-L-	LT	206+00		25				45				AT OUTLET, 36" PIPE
-L-	LT	213+02	214+02	85				150			LLL	SLOPE PROTECTION
-L-	LT	215+00	217+50						878		JJJJ	LATERAL BASE DITCH
-L-	LT	215+01		26				50				AT OUTLET, 38" PIPE
-L-	LT	217+78		33				62				AT OUTLET, 54" PIPE
-L-	LT	221+00	225+50						1,543		Y, N	LATERAL 'V' DITCH, VAR. WIDTH LATERAL BASE DITCH
-L-	LT	225+66					5	12				VAR. WIDTH LATERAL BASE DITCH
-L-	LT	225+87					1	5				AT OUTLET, 15" PIPE
-L-	LT	226+05	226+45	45				75		40	S	CULVERT CHANNEL IMPROVEMENTS (UPSTREAM)
-L-	LT	228+00					5	12				VAR. WIDTH LATERAL BASE DITCH
-L-	LT	231+00					2	7				AT OUTLET, 15" PIPE
-L-	LT	232+20					3	10				AT OUTLET, 18" PIPE
-L-	LT	254+99	257+29				80	230			T	TOE PROTECTION
-L-	LT	265+00	267+00				70	180			T	TOE PROTECTION
-L-	LT	305+00	305+50						117			
-L-	LT	306+58		20				39				AT OUTLET, 42" PIPE
-L-	LT	304+86	305+54						1,183		FF	LATERAL BASE DITCH
-L-	LT	307+00	311+50						2,397		EEEE	THIS LATERAL BASE DITCH WAS REMOVED. TURN LANE CHANGED FROM SHLDR TO CG
-L-	LT	307+00	311+50						-2,397		EEEE	
-L-	LT	312+48		30				60				AT OUTLET, 48" PIPE
-L-	LT	312+50	318+00	220				380		2,678	OO, II	LATERAL BASE DITCH
-L-	LT	314+01		26				50				AT OUTLET, 48" PIPE
-L-	LT	316+18	316+63	65				100		25	KK	CULVERT CHANNEL IMPROVEMENTS (UPSTREAM)
-L-	LT	318+84	320+02	170				280			RR	SPECIAL CUT BASE DITCH
-L-	LT	324+13	324+37	80				140		25	QQQ	STANDARD BASE DITCH
-L-	LT	327+00					11	28				AT OUTLET, 36" PIPE
-L-	LT	329+50		10				23				AT OUTLET, 36" PIPE
-L-	LT	333+34					2	7				AT OUTLET, 15" PIPE
-L-	LT	343+50					3	7				AT OUTLET, 18" PIPE
-L-	LT	346+82					2	7				AT OUTLET, 15" PIPE
-L-	LT	366+73	368+83				85	240			T	TOE PROTECTION
-L-	LT	373+97		7				11				AT OUTLET, 30" PIPE
-L-	LT	382+50	382+82						60		VV	STANDARD BASE DITCH
-L-	LT	384+36					2	7				AT OUTLET, 15" PIPE
-L-	LT	392+50	397+50						1,378		HHH	LATERAL BASE DITCH
-L-	LT	393+38					2	7				AT OUTLET, 15" PIPE
-L-	LT	395+50					2	7				AT OUTLET, 15" PIPE
-L-	LT	397+50					2	7				AT OUTLET, 15" PIPE
-L-	LT	397+82	398+13						50		OOO	STANDARD BASE DITCH

LINE	SIDE	STATION	STATION	RIP RAP CLASS				GEO (SY)	PSRM (SY)	DDE (CY)	DETAIL	COMMENT	
				I	II	A	B						
-L-	LT	399+44						2	7			AT OUTLET, 15" PIPE	
-L-	LT	410+22	410+47							30	XXX	STANDARD 'V' DITCH	
-L-	LT	412+78	412+95							10	XXX	STANDARD 'V' DITCH	
-L-	LT	418+27	418+47							16	XXX	STANDARD 'V' DITCH	
-L-	LT	428+33	428+71	110					175		80	NNN	STANDARD BASE DITCH
-L-	RT	49+00	66+00	180					250	10,240	AAAA, J, BBBB	LATERAL BASE DITCH	
-L-	RT	63+99	64+32	90					140		85	BB	CULVERT CHANNEL IMPROVEMENTS (UPSTREAM)
-L-	RT	65+25						2	7				AT OUTLET, 15" PIPE
-L-	RT	67+25						2	7				AT OUTLET, 15" PIPE
-L-	RT	69+15						13	35				AT OUTLET, 15" PIPE
-L-	RT	72+50						2	7				AT OUTLET, 36" PIPE
-L-	RT	74+70						2	7				AT OUTLET, 36" PIPE
-L-	RT	83+51	83+99	135					120		35	Q	CULVERT CHANNEL IMPROVEMENTS (UPSTREAM)
-L-	RT	97+89	97+91								10	OOO	STANDARD BASE DITCH
-L-	RT	105+76						5	14				AT OUTLET, 24" PIPE
-L-	RT	106+00	116+00							1,180		G, H	SPECIAL LATERAL DITCH, LATERAL BASE DITCH
-L-	RT	107+16						8	21				AT OUTLET, 30" PIPE
-L-	RT	117+00	126+50					290	850			T	TOE PROTECTION
-L-	RT	145+52						2	7				AT OUTLET, 15" PIPE
-L-	RT	145+87						2	7				AT OUTLET, 15" PIPE
-L-	RT	150+44						2	7				AT OUTLET, 24" PIPE
-L-	RT	153+12						5	14				AT OUTLET, 24" PIPE
-L-	RT	153+50	154+00					24	64		60	I, MM	LATERAL BASE DITCH, VAR. WIDTH LATERAL BASE DITCH
-L-	RT	214+58						2	7				AT OUTLET, 15" PIPE
-L-	RT	215+00	216+00								399	Y, N	LATERAL 'V' DITCH, VAR. WIDTH LATERAL BASE DITCH
-L-	RT	216+50						5	12				VAR. WIDTH LATERAL BASE DITCH
-L-	RT	216+76	217+79	60					135			NN	TOE PROTECTION
-L-	RT	218+26		26					50				AT OUTLET, 38" PIPE
-L-	RT	221+00	221+50								325	BBBB	LATERAL BASE DITCH
-L-	RT	224+00	225+50	130					250		782	Z	LATERAL BASE DITCH
-L-	RT	225+56	225+96	90					130		20	B	CULVERT CHANNEL IMPROVEMENTS (DOWNSTREAM)
-L-	RT	226+49	226+80					15	40			T	TOE PROTECTION
-L-	RT	227+00	228+00								157	FFFF, Y	VAR. WIDTH LATERAL BASE DITCH, LATERAL 'V' DITCH
-L-	RT	229+59						3	10				AT OUTLET, 18" PIPE
-L-	RT	232+33						2	7				AT OUTLET, 15" PIPE
-L-	RT	234+50	235+50								137	Y	LATERAL 'V' DITCH
-L-	RT	240+25						3	10				AT OUTLET, 18" PIPE
-L-	RT	240+50	253+50							1,061		CCCC, DD, Z	
-L-	RT	241+00						2	7				AT OUTLET, 15" PIPE
-L-	RT	258+50	290+00								7,671	FF, GG, DDDD,	LATERAL BASE DITCH
-L-	RT	258+73		26					50				AT OUTLET, 48" PIPE
-L-	RT	265+93	266+07	15					30				AT OUTLET, 30" PIPE (2)
-L-	RT	270+52							2	7			AT OUTLET, 15" PIPE
-L-	RT	272+18							2	7			AT OUTLET, 15" PIPE
-L-	RT	288+78	289+00								12	OOO	STANDARD BASE DITCH
-L-	RT	288+80		26					50				AT OUTLET, 38" PIPE
-L-	RT	291+09		26					50				AT OUTLET, 48" PIPE
-L-	RT	291+50	294+50								553	FF	LATERAL BASE DITCH
-L-	RT	296+00	299+50								1,117	FF	LATERAL BASE DITCH
-L-	RT	296+00		26					50				AT OUTLET, 38" PIPE
-L-	RT	301+50	303+50								466	FF	LATERAL BASE DITCH
-L-	RT	301+50		26					50				AT OUTLET, 48" PIPE
-L-	RT	301+80						2	7				AT OUTLET, 15" PIPE
-L-	RT	304+40		26					50				AT OUTLET, 38" PIPE
-L-	RT	304+50	305+00								258		
3B-8 TOTAL:				2290	0	0	692	5796	0	52,953			

COMPUTED BY(UPDATED): JM DATE: 9/30/2021
 CHECKED BY: DMW 9/30/2021

PROJECT NO.
 R-5021

SHEET NO.
 3B-9

SUMMARY OF HYDRAULIC RIP RAP & DDE QUANTITIES

LINE	SIDE	STATION	STATION	RIP RAP CLASS				GEO (SY)	PSRM (SY)	DDE (CY)	DETAIL	COMMENT
				I	II	A	B					
-L-	RT	307+24		26				50			AT OUTLET, 48" PIPE	
-L-	RT	307+50	308+50						698			
-L-	RT	310+50	312+50						1,541	HH	LATERAL BASE DITCH	
-L-	RT	310+64		33				62			AT OUTLET, 54" PIPE	
-L-	RT	312+53						2	7		AT OUTLET, 15" PIPE	
-L-	RT	313+50	315+00	260				430	714	JJ	LATERAL BASE DITCH	
-L-	RT	315+20		25				45		JJJ	RIP RAP AT EMBANKMENT	
-L-	RT	316+12		25				45		JJJ	RIP RAP AT EMBANKMENT	
-L-	RT	316+50	319+00	165				280	1,318	JJ, Y	LATERAL BASE DITCH, LATERAL 'V' DITCH	
-L-	RT	316+87	317+31	75				130	30	EE	CULVERT CHANNEL IMPROVEMENTS (DOWNSTREAM)	
-L-	RT	323+92	324+14					30	80		STANDARD 'V' DITCH	
-L-	RT	325+50						2	7		AT OUTLET, 18" PIPE	
-L-	RT	326+62						2	7		AT OUTLET, 15" PIPE	
-L-	RT	349+75						2	7		AT OUTLET, 30" PIPE	
-L-	RT	350+22		15				30			AT OUTLET, 36" PIPE	
-L-	RT	352+05		15				30			AT OUTLET, 36" PIPE	
-L-	RT	353+39	353+59						50	VV	STANDARD BASE DITCH	
-L-	RT	353+48		15				30			AT OUTLET, 36" PIPE	
-L-	RT	355+06						2	7		AT OUTLET, 15" PIPE	
-L-	RT	356+17						2	7		AT OUTLET, 15" PIPE	
-L-	RT	361+51						2	7		AT OUTLET, 15" PIPE	
-L-	RT	364+00	366+22						175	YY, ZZ	CUT DITCH, LATERAL 'V' DITCH	
-L-	RT	366+50	369+50	360				640	172	AAA, II	LATERAL BASE DITCH	
-L-	RT	373+40	373+66	20				30		MM	VAR. WIDTH LATERAL BASE DITCH	
-L-	RT	374+13		7				15			AT OUTLET, 24" PIPE	
-L-	RT	375+38	375+67						90	OOO	STANDARD BASE DITCH	
-L-	RT	382+24	383+03						75	XXX	STANDARD 'V' DITCH	
-L-	RT	388+09						2	7		AT OUTLET, 15" PIPE	
-L-	RT	392+02						2	7		AT OUTLET, 15" PIPE	
-L-	RT	392+08	392+28						30	OOO	STANDARD BASE DITCH	
-L-	RT	401+02						2	7		AT OUTLET, 15" PIPE	
-L-	RT	405+12						2	7		AT OUTLET, 15" PIPE	
-L-	RT	416+51	416+83						460	40	MMM	STANDARD BASE DITCH
-YAREV-	LT	19+85						2	7		AT OUTLET, 15" PIPE	
-YAREV-	RT	11+90						2	7		AT OUTLET, 15" PIPE	
-YAREV-	RT	12+85						2	7		AT OUTLET, 15" PIPE	
-YAREV-	RT	14+50						2	7		AT OUTLET, 15" PIPE	
-YAREV-	RT	15+89						2	7		AT OUTLET, 15" PIPE	
-YASLIP-	RT	11+25						2	7		AT OUTLET, 15" PIPE	
-YREV-	LT	7+71	10+29							O, A	VAR. WIDTH LATERAL BASE DITCH, SPECIAL LATERAL BASE DITCH	
-YREV-	LT	7+71	7+82	10				20			VAR WIDTH LATERAL BASE DITCH	
-YREV-	LT	10+16		11				22			AT OUTLET, 36" PIPE	
-YREV-	LT	15+96		11				22			AT OUTLET, 36" PIPE	
-YREV-	LT	17+27		11				22			AT OUTLET, 36" PIPE	
-YREV-	LT	20+85						5	14		AT OUTLETS, 15" AND 24" PIPES	
-YREV-	LT	21+86						3	10		AT OUTLET, 24" PIPE	
-YREV-	LT	23+50	26+50						256	DD	LATERAL 'V' DITCH	
-YREV-	RT	9+46	10+14									
-YREV-	RT	9+46	9+60	10				20			SPECIAL LATERAL BASE DITCH	
-YREV-	RT	10+01		11				22			AT OUTLET, 30" PIPE	
-YREV-	RT	29+36						2	7		AT OUTLET, 15" PIPE	
-YREV-	RT	33+47	33+53						35	XXX	STANDARD 'V' DITCH	
-YREV-	RT	33+50						2	7		AT OUTLET, 15" PIPE	
-YREV-	RT	36+40						1	5		AT OUTLET, 15" PIPE	
-YREV-	RT	38+50						2	7		AT OUTLET, 15" PIPE	
-YREV-	RT	42+60						2	7		AT OUTLET, 15" PIPE	

LINE	SIDE	STATION	STATION	RIP RAP CLASS				GEO (SY)	PSRM (SY)	DDE (CY)	DETAIL	COMMENT	
				I	II	A	B						
-YREV-	RT	45+25						2	7			AT OUTLET, 15" PIPE	
-YB-	LT	15+96	16+04					6	15			VAR. WIDTH SPECIAL LATERAL BASE DITCH	
-YB-	LT	16+00						5	14			AT OUTLET, 24" PIPE	
-YB-	LT	22+16						1	5			AT OUTLET, 15" PIPE	
-YD-	LT	12+00						5	14			AT OUTLET, 24" PIPE	
-YD-	RT	12+14						2	7			AT OUTLETS, 15" AND 24" PIPES	
-YG-	RT	12+47						5	14			AT OUTLET, 24" PIPES	
-Y11-	RT	11+25	12+00							193	Y	LATERAL 'V' DITCH	
-Y11-	LT	11+25	12+00							193	Y	LATERAL 'V' DITCH	
-Y14A-	LT	29+50	34+50	90					130		738	HHH, SSSS, LATERAL BASE DITCH	
-Y14A-	LT	29+51						2	7			AT OUTLET, 15" PIPE	
-Y14A-	LT	31+02						2	7			AT OUTLET, 15" PIPE	
-Y14A-	LT	34+12						2	7			AT OUTLET, 15" PIPE	
-Y14A-	LT	34+49						8	21			AT OUTLET, 30" PIPE	
-Y14A-	LT	55+74						2	7			AT OUTLET, 15" PIPE	
-Y14A-	LT	60+50	65+00							947	QQQQ	LATERAL BASE DITCH	
-Y14A-	LT	61+48						2	7			AT OUTLET, 15" PIPE	
-Y14A-	LT	62+97						2	7			AT OUTLET, 15" PIPE	
-Y14A-	RT	42+73	42+83							5	XXX	STANDARD 'V' DITCH	
-Y14A-	RT	42+78						2	7			AT OUTLET, 15" PIPE	
-Y14A-	RT	44+99						2	7			AT OUTLET, 15" PIPE	
-Y14A-	RT	48+69	48+87							25	XXX	STANDARD 'V' DITCH	
-Y14A-	RT	48+72						2	7			AT OUTLET, 15" PIPE	
-Y14A-	RT	51+75	51+81							3	XXX	STANDARD 'V' DITCH	
-Y14A-	RT	51+78						2	7			AT OUTLET, 15" PIPE	
-Y14A-	RT	56+00	58+50							288	QQQQ	LATERAL BASE DITCH	
-Y14D-	LT	16+60						2	7			AT OUTLET, 15" PIPE	
-Y14D-	LT	18+59						2	7			AT OUTLET, 15" PIPE	
-Y14D-	LT	19+29						2	7			AT OUTLET, 15" PIPE	
-Y14D-	LT	20+14						2	7			AT OUTLET, 15" PIPE	
-Y14D-	LT	20+69						2	7			AT OUTLET, 15" PIPE	
-Y14D-	LT	22+00						2	7			AT OUTLET, 15" PIPE	
-Y14D-	LT	22+00	22+50							10	Y	LATERAL 'V' DITCH	
-Y14G-	LT	12+00						1	5			AT OUTLET, 15" PIPE	
-Y22-	LT	15+31	15+57							35	XXX	STANDARD 'V' DITCH	
-Y22-	LT	21+34						3	10			AT OUTLET, 18" PIPE	
-Y22-	LT	21+50	23+00							359	Y	LATERAL 'V' DITCH	
-Y22-	LT	23+18	23+31	33					62			LATERAL 'V' DITCH AND AT OUTLET, 54" PIPE	
-Y22-	LT	23+26	24+00					25	75			TOE PROTECTION	
-Y22-	LT	32+84	33+54							315	RRR	STANDARD BASE DITCH	
-Y22-	LT	33+41						33		62		AT OUTLET, 54" PIPE	
-Y22-	LT	33+54	33+91							30	OOO	STANDARD BASE DITCH	
-Y22-	RT	18+50	25+00							1,046	Y	LATERAL 'V' DITCH	
-Y22-	RT	23+00						6		14		JJJ	RIP RAP AT EMBANKMENT
-Y22-	RT	23+15						6		14		JJJ	RIP RAP AT EMBANKMENT
-Y22-	RT	42+00	42+50							100	17	UUU	SPECIAL CUT BASE DITCH
-Y24-	RT	12+55							5	14			SPECIAL LATERAL 'V' DITCH
-RAB-	RT	12+31							1	5			AT OUTLET, 15" PIPE
-RAB-	RT	13+00							1	5			AT OUTLET, 15" PIPE
(PER GEOTECH MEMO FOR ROCK EMBANKMENTS)								40	40				

3B-8 TOTAL:	2,290	0	0	692	5,796	0	52,953
3B-9 TOTAL:	1,273	0	40	223	2,806	735	9,261
TOTAL:	3,563	0	40	915	8,602	735	62,214
SAY:	3,565	0	40	915	8,605	735	62,215

COMPUTED BY: Allen Hodges, P.E. DATE: 9/29/2021
CHECKED BY: Kase Schalois, P.E. DATE: 9/29/2021

PROJECT NO. SHEET NO.
R-5021 3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Drainage Pipe, C.S. Pipe, Ductile Iron Pipe, R.C. Pipe Class IV, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Abbreviations. Includes a SHEET TOTALS row at the bottom.

RALL207

COMPUTED BY: Allen Hodges, P.E. DATE: 9/29/2021
CHECKED BY: Kase Schalois, P.E. DATE: 9/29/2021

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO. R-5021 SHEET NO. 3D-23

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54 INCHES & OVER)

Main data table with columns for Line & Station, Offset, Structure Number, Drainage Pipe, R.C. Pipe Class III, IV, V, Misc. Pipe, Endwalls, Reinforced Endwalls, Drainage Structure, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Remarks. Includes sub-totals for SHEET TOTALS and PROJECT TOTALS.

ABBREVIATIONS table listing materials like C.A.A. CORRUGATED ALUMINIUM ALLOY, C.B. CATCH BASIN, C.S. CORRUGATED STEEL, D.I. DROP INLET, G.D.I. GRATED DROP INLET, H.D.P.E. HIGH DENSITY POLYETHYLENE, J.B. JUNCTION BOX, M.H. MANHOLE, N.S. NARROW SLOT, P.V.C. POLYVINYL CHLORIDE, R.C. REINFORCED CONCRETE, T.B.D.I. TRAFFIC BEARING DROP INLET, T.B.J.B. TRAFFIC BEARING JUNCTION BOX, W.S. WIDE SLOT.

REMARKS

SHEET TOTALS and PROJECT TOTALS summary rows. SHEET TOTALS: 288, 488, 1240, 408, 452, 348, 84, 62,690, 80,011, 13, 9, 4, 1, 3, 1, 2, 1, 2, 2, 1, 1, 1, 2, 696. PROJECT TOTALS: 288, 488, 1240, 408, 452, 348, 84, 62,690, 80,011, 13, 9, 4, 1, 3, 1, 2, 1, 2, 2, 1, 1, 1, 2, 696.

**STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS**

PARCEL INDEX SHEET

PROJ. REFERENCE NO.	SHEET NO.
R-5021	3P-1

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4, 5	GEORGE COLBY & SUSAN G. COLBY, TRUSTEE
2	4, 5, 34, 34A	SOUTH SHORE REAL ESTATE, LLC.
3	5	MDI MANAGEMENT, INC.
3A	5	MDI MANAGEMENT, INC.
3B	5	MDI MANAGEMENT, INC.
3C	5	MDI MANAGEMENT, INC.
3D	5	MDI MANAGEMENT, INC.
3E	5	MDI MANAGEMENT, INC.
3F	5, 6	MDI MANAGEMENT, INC.
3G	6, 33	MDI MANAGEMENT, INC.
3H	33	MDI MANAGEMENT, INC.
3I	33	MDI MANAGEMENT, INC.
3J	33	MDI MANAGEMENT, INC.
3K	32, 33	MDI MANAGEMENT, INC.
3L	32	MDI MANAGEMENT, INC.
4	6	MICHAEL D. RICHARDS, ET UX
5	6, 33	MIDWAY LANDING, LLC.
6	6	JAMES E. MCCRACKEN, ET UX
7	6, 7	SHREMSHOCK INVESTMENTS, LLC.
8	6,7	LYNN L. FISHER, TRUSTEE
8A	7	LYNN L. FISHER, TRUSTEE
9	7	C. L. SMITH, CONSTRUCTION, INC.
10	7	ELTON H. SOLES, ET UX
11	7	SOUTHPORT HOSPITALITY, LLC.
12	7	T & G REAL ESTATE SERVICES, INC.
13	7	RICHARD C. INGRAM
14	7	QUAINTANCE, INC
14A	7	QUAINTANCE, INC
15	7	JAMES M. SMITH & CORENE WILLIAMS
16	7	QUILLA MAE HOLDEN
17	7	SHARON A. HICKS
18Z	7	CHARLES B. HAWLEY
19	7, 8	SIGNATURE CONSTRUCTION GROUP
19A	8	TWO ELEVEN, LLC
20	7, 8, 9	PINE FOREST DEVELOPMENT COMPANY
20A	8	EQUITY INVESTMENTS ASSOCIATION, LLC.
21	8	LIMPOPO, LLC.
22	8, 9, 10, 11, 12, 13	RESERVE DEVELOPMENT CO LLC
23	9	TODD SOSEBEE
24	9, 10	JOHN GARY ALLISON JUNE A. MCCALL
25	10	RHONDA E. PUETT, ET UX
26	10	WILLIAM E. BOSTIC, JR.
27	11	SOUTHEASTERN HOLDING GROUP, LLC.
28	11	D. H. GRIFFIN, ET UX
29	12, 13	JONES HOLDING NC, LLC.
30	13, 14, 15	ST JAMES DEVELOPMENT CO., LLC.
30A	15, 16	ST JAMES DEVELOPMENT CO., LLC.
31	13	CENTERLINE DEVELOPMENT, INC.
32	13, 14	T & G REAL ESTATE SERVICES, INC.
33	14	T & G REAL ESTATE SERVICES, INC.
34	14, 15	HARBOR DEVELOPMENT CORP., ETAL
35Z	15	TOWN OF ST. JAMES
36Z	15, 16	ST. JAMES PLANTATION PROPERTY OWNERS' ASSOC., INC.
37	15, 16	CANAL ASSOCIATION LLC
38	16	ROBERT B. MCHENRY, SR. ET UX
39	16	HARBOR DEVELOPMENTS CORP. ET ALS
40	16, 17	DOWNEAST INDUSTRIES, INC.
41	16, 17	ST. JAMES DEVELOPMENT CO., LLC.
41A	18, 19, 20, 21	ST. JAMES DEVELOPMENT CO., LLC.
42Z	17	BRUNSWICK ELECTRIC MEMBERSHIP CORP.

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
43	17	FIRST TROY SPE., LLC.
44	17	ST. JAMES SQUARE OFFICE PARK ASSOC.
45	17, 18	ST. JAMES SQUARE OF WILMINGTON, LLC.
46	17, 18	ARBOR CREEK COMMUNITY ASSOC., INC.
47		NO CLAIM
48	18	MJV HOLDING CO., LLC.
49	18	OLIVER J. FOWLER, ET AL
50	18, 19	VERNON R. EAKINS, ET UX
51	19	PAT NEWTON PROPERTIES, LLC.
52	19	ST. JAMES SQUARE OF WILMINGTON, LLC.
53	19, 20, 21, 22	CLAUDIA S. ROBINETTE EXEC. & LOIS M. SMITH
54	19, 20	ARGIRO F. MOE, ET AL
55	20	VINCENZO PANNULLO, ET UX
56	21	THOMAS R. OVERTON, ET UX
56A	21	KENT BERRY, ET AL
57	21	CAPE FEAR MEMORIAL PARK, INC.
58	21	SENTRY BUSINESS PARK, A CONDOMINIUM
59	21	JTM DEVELOPMENT, INC.
60Z	21, 22	CMC MARKETING, INC.
61	22	ISLAND CONTRACTING, INC.
62	22	FAMILY EMERGENCY TEEN SHELTER, INC.
63	22	JOY ASSEMBLY OF GOD
64Z	22	HAYWOOD EQUITY GROUP LIMITED PARTNERSHIP
64B	23	HAYWOOD EQUITY GROUP LIMITED PARTNERSHIP
65	22	PAT NEWTON PROPERTIES, LLC.
66	22, 23	ST. PETER'S EVANGELICAL LUTHERAN CHURCH
67	23	MILLIKEN PROPERTIES
68	23	DONALD T. TEDDER
69	23	TKC ENTERPRISES, INC.
70Z	23	TERRY W. KLUTZ, ET UX
72	23	PAT NEWTON PROPERTIES, LLC.
73Z	23	WILLARD G. ATKINSON, ET UX
74	23	GRACE CHRISTIAN FELLOWSHIP AND MINISTRIES, INC.
75	23	DONALD STEPHENSON, ET AL
76	23	SUSAN D. NANCE, ET AL
77	23, 24	EDGAR N. HUTT
78	23	GRACE CHRISTIAN FELLOWSHIP AND MINISTRIES, INC.
79Z	23, 24	BRUNSWICK CHURCH OF CHRIST
80	24, 36, 37	MDI MANAGEMENT, LLC
80A	24, 24A, 36	SOUTHPORT MARKETPLACE I, LLC
80B	36	OAK ISLAND BUILDER, LLC
81	24	BELLAMY PROPERTIES, LLC
82	24	J B F INVESTMENTS, LLC
83	24	GATEWAY HOSPITALITY SOUTHPORT, LLC
84Z	25	FRANK GARDNER, JR., ET UX
85	25	JUNE SMITH, ET UX
86	25, 26	MARY G. SMITH
87	25	JS SOUTH, LLC
87A	25, 26	JS SOUTH, LLC
88	26	ARC BJSPTNCOOI, LLC
89	26	TOMMY L. INC.
90	26	C-3 INVESTMENTS OF NC, INC.
91	26	JS SOUTH, LLC
92	26	GLT PROPERTIES, LLC
93Z	26	SECURITY SAVINGS BANK
94	26, 27	JAMES W. SMITH, ET UX
95	26	FIRST BANK
96	26	CBEC INVESTMENTS, LLC
96A	26	BRUNSWICK COUNTY
97Y	26, 27	J S SOUTH, LLC.

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

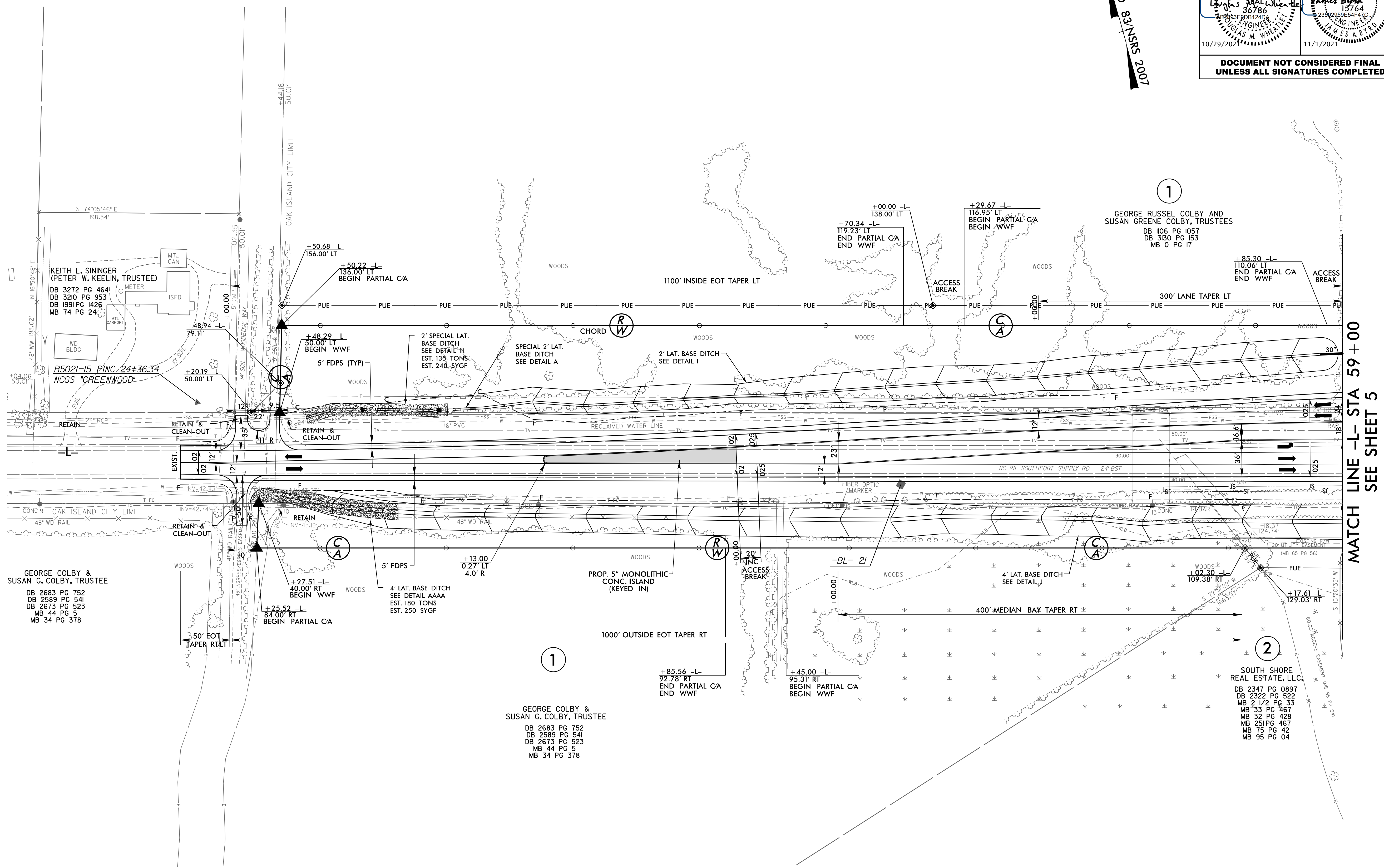
PARCEL No.	SHEET No.	PROPERTY OWNER NAME
98	27	CATHOLIC HOUSING CORP.
99Y	27	WILLIAM T. JONES ET UX
99AZ	27, 28	WILLIAM T. JONES ET UX
100Z	27	GERALDINE JONES, ET AL
101	27, 28	ROMAN CATHOLIC DIOCESE OF RALEIGH
102Z	28, 29	CAROLINA POWER & LIGHT COMPANY
103	28	ROAPST HOLDING CO., LLC.
104	29	WAL-MART REAL ESTATE BUSINESS TRUST
105	29	PERRY'S SOUTHPORT PROPERTIES, LLC
105A	29	SOUTHPORT (TIDEWATER) WMS, LLC.
106	29	JOHN A. McCLOSKEY, ET UX
107	29	BLAKE FAMILY PROPERTIES, LLC.
108	29	MURPHY OIL USA, INC.
109	29	ADMIRAL HOLDINGS LLC
110	29, 30	TONY WEHBE
111	30	JAMES F. FAIRCLOTH, ET UX
112	29, 30	1658 NORTH HOWE STREET, INC.
113	30	ASSURED QUALITY HOLDINGS, LLC. SERIES 2
114	30	GEORGE E. CLEWIS, ET UX
115	30	PAZZO HOLDINGS, LLC.
116	30	OKBI INVESTMENTS, LLC.
117	30	BETHEL BAPTIST CHURCH
118	30	DR. CHRISTOPHER J. MOSHOURES
119	30	TITAN CAROLINA CONCRETE, LLC.
120	30, 31, 40	PELICAN COMPANIES INC
121	30	JGG CORPORATION
122	30, 31	WILKINSON PROPERTIES
123	31	QUALITY OIL CO., LLC.
124	31	EVIA CORP.
125	31	SOUTHPORT PROPERTY, LLC.
126	31, 39	BALD HEAD ISLAND LIMITED
127	31	SOUTHPORT LAND, LLC.
128	31	THREE SIXTY FIVE LLC
129	31	NO CLAIM
130	31	NO CLAIM
131	31	NO CLAIM
132	31	NO CLAIM
133	31	NO CLAIM
134	31	NO CLAIM
135	31	NO CLAIM
136	31	NO CLAIM
138	32	RAY ROSE
139	32	ANDREW W. PACZUSKI
140	32	W. EVAN FERRELL
141	32	LINDA S. BOWLING
142	32	VINCENT L. BAKER
143	33	VINCENT L. BAKER, ET UX
144	33	ATLANTIC TELEPHONE MEMBERSHIP CORP.
145	33	DANIEL B. BOWLING, ET AL
146	34, 34A	ST. JAMES PLANTATION. POA, INC
147	38	ALLEN CLEMMONS, HEIRS
148	38	CAROLYN G. HANKINS
148A	38	CAROLYN G. HANKINS
149	38	WILLIE L. GORE
150	38	EUGENE W. GORE
151	38	BARBARA G. HENRY
152	38	AL-CLAYESE P. FRINK
153	38	NO CLAIM
154	38	KIMBERLY ANN SKIPPER
155	38	BRYAN C. SATTERWHITE

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
156	38	S & G HOLDINGS, LLC.
157	38, 39	THALIE JACKSON, HEIRS
158	38	SAUNDRA J. JACKSON
159	38	CAROL V. SMITH
160	39	MARY ETTA JACKSON DAVIS
161	39	JACQUELINE G. CARTER
162	39	JUNIOUS JACKSON, JR., ET AL
163	39	E. W. GORE RENTAL, LLC.
164	39	JANICE JACKSON
165	39	DR. CHRISTOPHER J. MOSHOURES
166	39	KENNETH R. STEWART, ET UX
167	40	BROWNS CHURCH
167	40	SMITHVILLE CROSSING, LLC.
168Z	40	CARDINAL BUILDERS COMPANY
169	31	NO CLAIM
170	31	NO CLAIM
171	21	NO CLAIM (COMBINED WITH PARCEL 58)
172	35	NO CLAIM
173	35	VNC SOUTHPORT LLC
174	35	FOOD LION LLC
175	35	NO CLAIM
176	35	NO CLAIM
177	24, 35	NC DEPARTMENT OF TRANSPORTATION
178	24	NO CLAIM
179	35	FOOD LION LLC
180	35	NO CLAIM
181	-	NO CLAIM
182	24A, 35	LIVE OAK VILLAGE SHOPPING CENTER, LLC.
183	35	NO CLAIM
184	35	133 PROPERTIES, LLC.
185	24A, 36	BRUNSWICK ELECTRIC MEMBERSHIP CORP.
186	36, 37, 37A	TRI CITY, INC.
187	24A, 25, 36	LOWES HOME CENTERS, INC.
188	24A, 25	NATIONS BANK
189	5, 6, 34	NC DEPARTMENT OF TRANSPORTATION
190	-	NO CLAIM
191	37A	ALLEN J. EARP, ETAL.
910	5, 6, 34	NC DEPARTMENT OF TRANSPORTATION

5/14/99

PROJECT REFERENCE NO. R-5021	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

NAD 83/NSRS 2007



MATCH LINE -L- STA 59 + 00
SEE SHEET 5

NOTE:

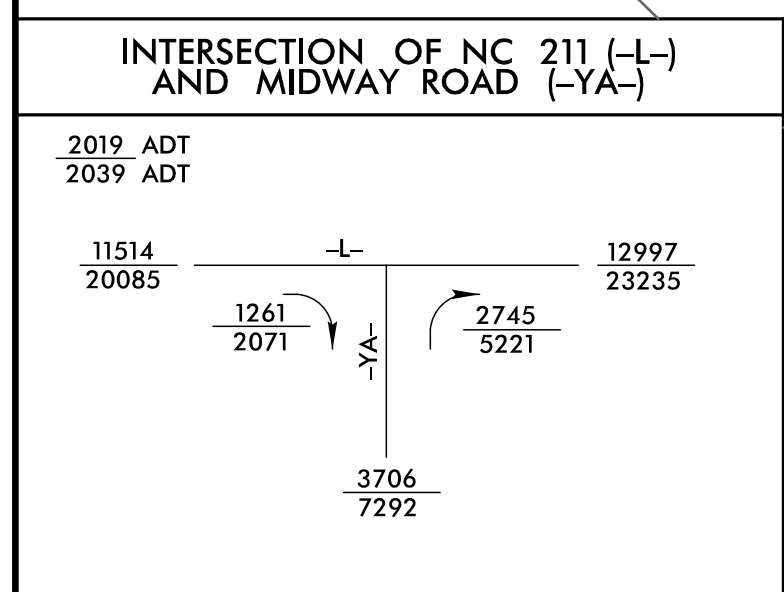
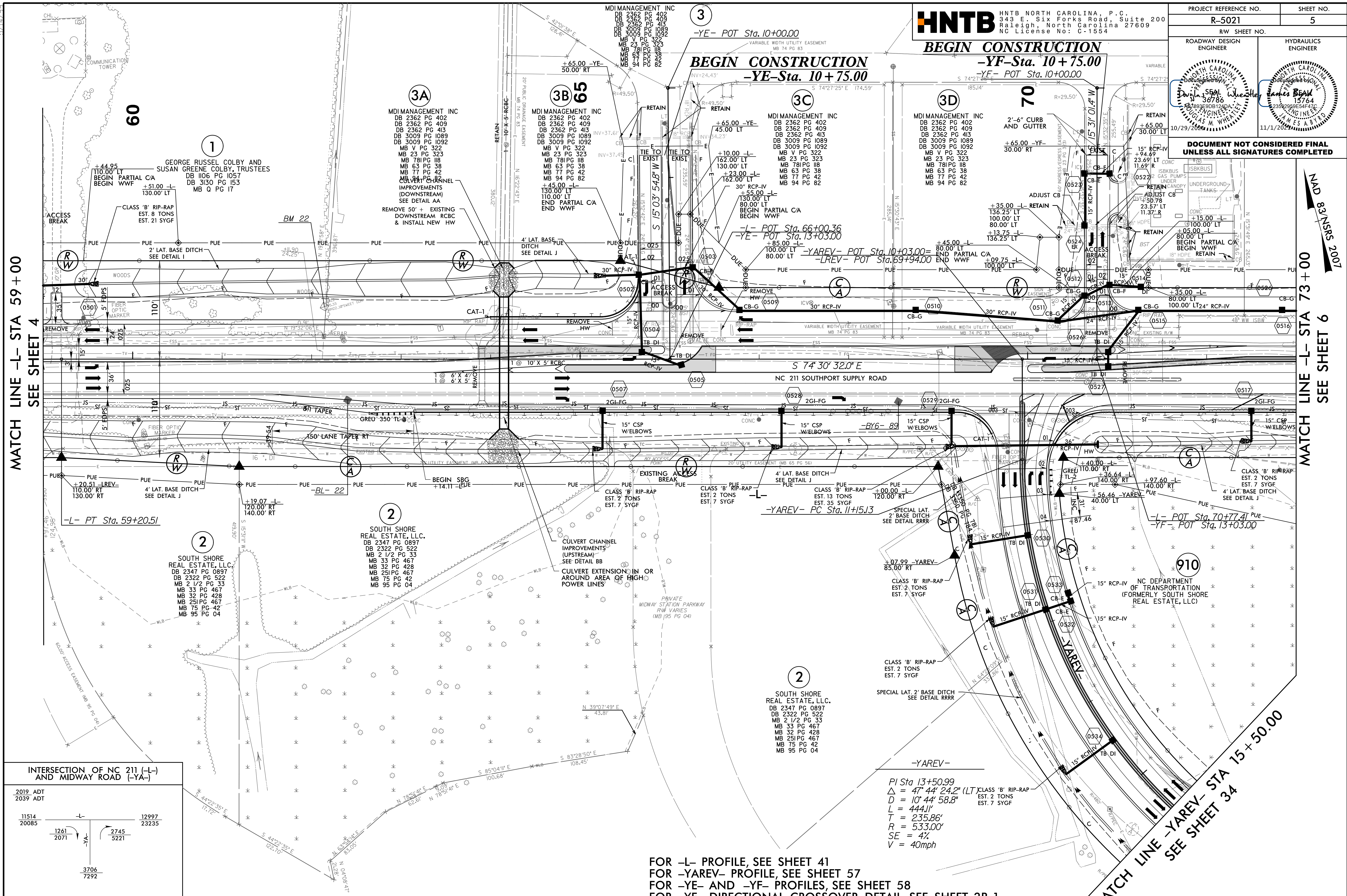
1. ALL DRIVEWAY RADII ARE 20' UNLESS NOTED ON PLANS.
2. PAVED TURNOUTS FOR SHOULDER SECTION SHOULD EXTEND 50' UNLESS NOTED ON PLANS.

FOR -L- PROFILE, SEE SHEET 41
FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 THRU 2D-3

30-SEP-2021 09:18
R-5021-RD1_PSH4.dgn

PROJECT REFERENCE NO. R-5021	SHEET NO. 5
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	HYDRAULICS ENGINEER <i>[Signature]</i>

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



NOTE:

- ALL DRIVEWAY RADII ARE 20' UNLESS NOTED ON PLANS.
- PAVED TURNOUTS FOR SHOULDER SECTION SHOULD EXTEND 50' UNLESS NOTED ON PLANS.

FOR -L- PROFILE, SEE SHEET 41
 FOR -YAREV- PROFILE, SEE SHEET 57
 FOR -YF- AND -YF- PROFILES, SEE SHEET 58
 FOR -YE- DIRECTIONAL CROSSOVER DETAIL, SEE SHEET 2B-1
 FOR CULVERT PLANS, SEE SHEETS C1-1 THRU C1-4
 FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 THRU 2D-3
 FOR EMERGENCY MEDIAN CROSSOVER DETAIL, SEE SHEET 2B-10

-YAREV-

PI Sta 13+50.99
 $\Delta = 47' 44" 24.2"$ (LT)
 $D = 10' 44" 58.8"$
 $L = 444.1'$
 $T = 235.86'$
 $R = 533.00'$
 $SE = 4\%$
 $V = 40\text{mph}$

30-SEP-2021 09:56
 N:\Roadway\Projects\R-5021-RDY_PSH5.dgn
 HNTB

MATCH LINE -L- STA 73+00
 SEE SHEET 6

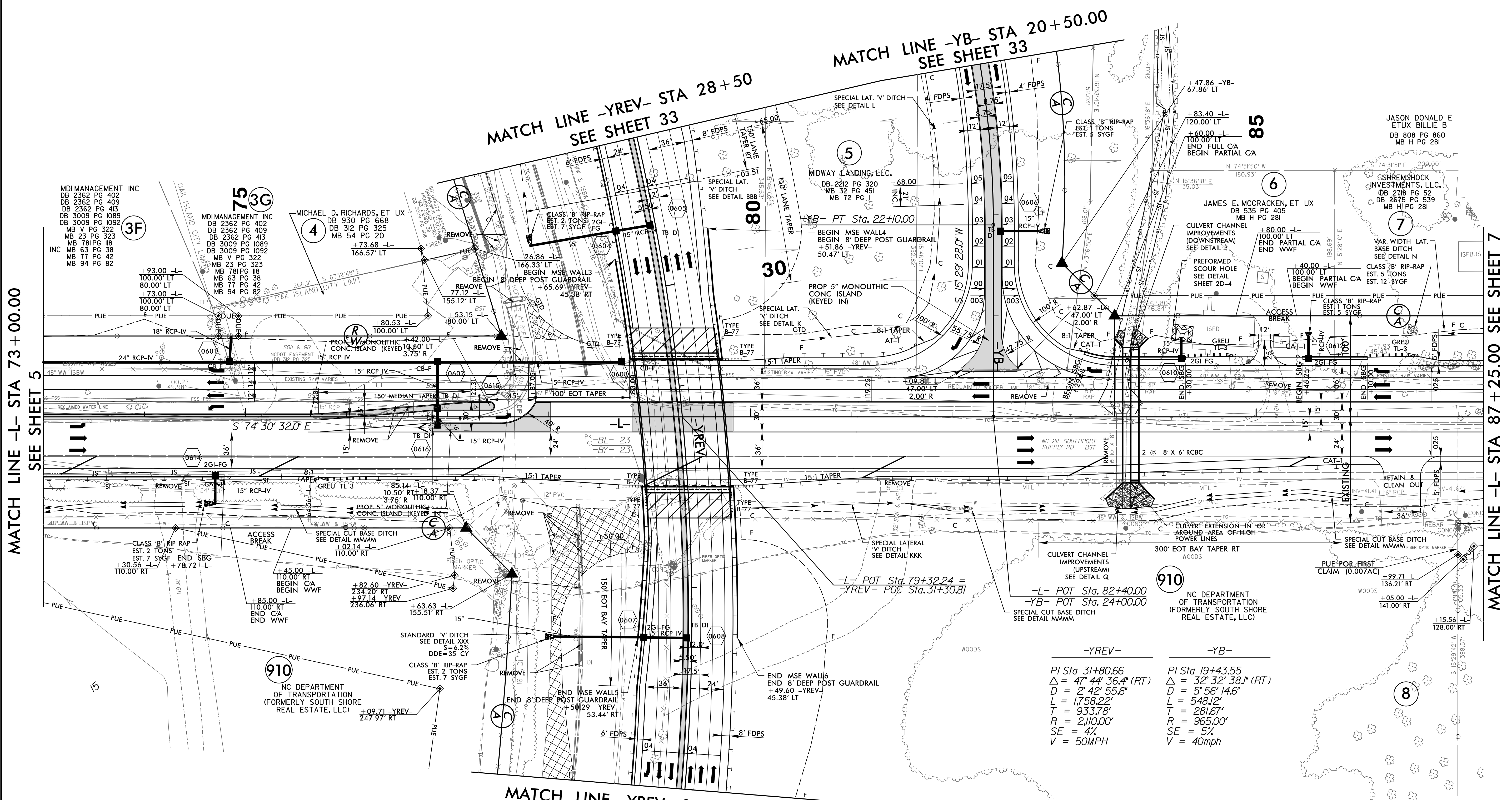
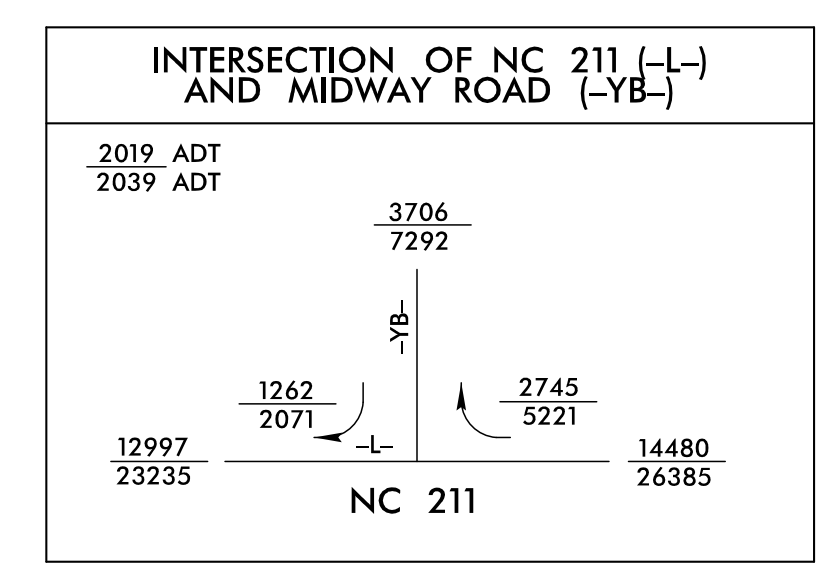
MATCH LINE -L- STA 59+00
 SEE SHEET 4

5/14/2019

FOR BRIDGE SKETCH, SEE SHEET 2B-5
 FOR INTERCHANGE OVERVIEW, SEE SHEET 2B-7
 FOR -L- PROFILE, SEE SHEET 42
 FOR -YREV- PROFILE, SEE SHEET 55 & 56
 FOR -YB- PROFILE, SEE SHEET 57
 FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 THRU 2D-3
 FOR RETAINING WALL PLANS, SEE SHEETS W-3 THRU W-7
 FOR CULVERT PLANS, SEE SHEETS C2-1 THRU C2-5
 FOR STRUCTURE PLANS, SEE SHEET S3-1 AND S3-25

HNTB HNTB NORTH CAROLINA, P.C.
 343 E. Six Forks Road, Suite 200
 Raleigh, North Carolina 27609
 NC License No: C-1554

PROJECT REFERENCE NO. R-5021	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCH LINE -L- STA 73+00.00
SEE SHEET 5

MATCH LINE -L- STA 87+25.00
SEE SHEET 7

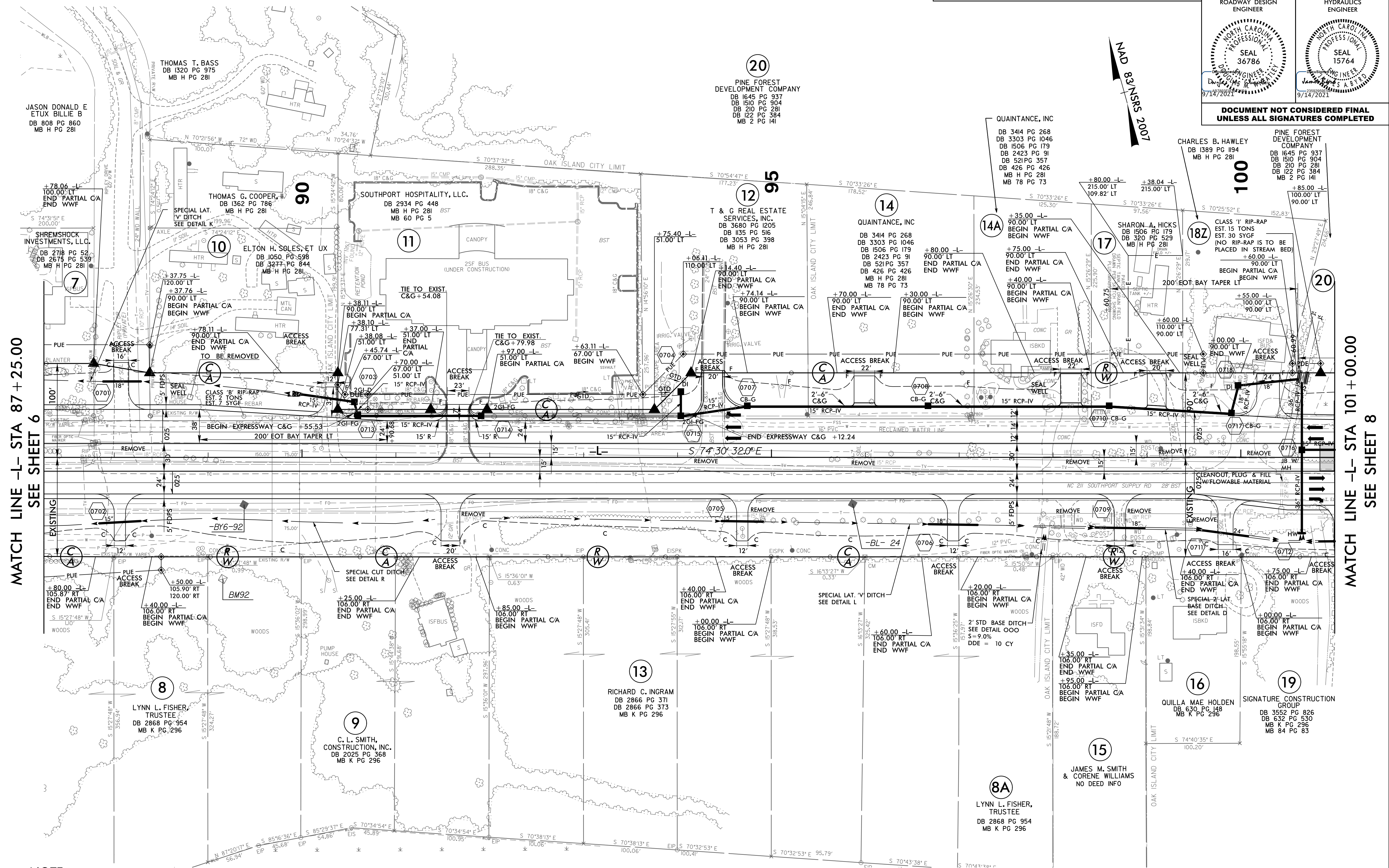
MATCH LINE -YREV- STA 35+00.00
SEE SHEET 34

NOTE:
 1. ALL DRIVEWAY RADII ARE 20' UNLESS NOTED ON PLANS.
 2. PAVED TURNOUTS FOR SHOULDER SECTION SHOULD EXTEND 50' UNLESS NOTED ON PLANS.

02-NOV-2021 14:08
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5/14/2021

PROJECT REFERENCE NO. R-5021		SHEET NO. 7	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



MATCH LINE -L- STA 87 + 25.00
SEE SHEET 6

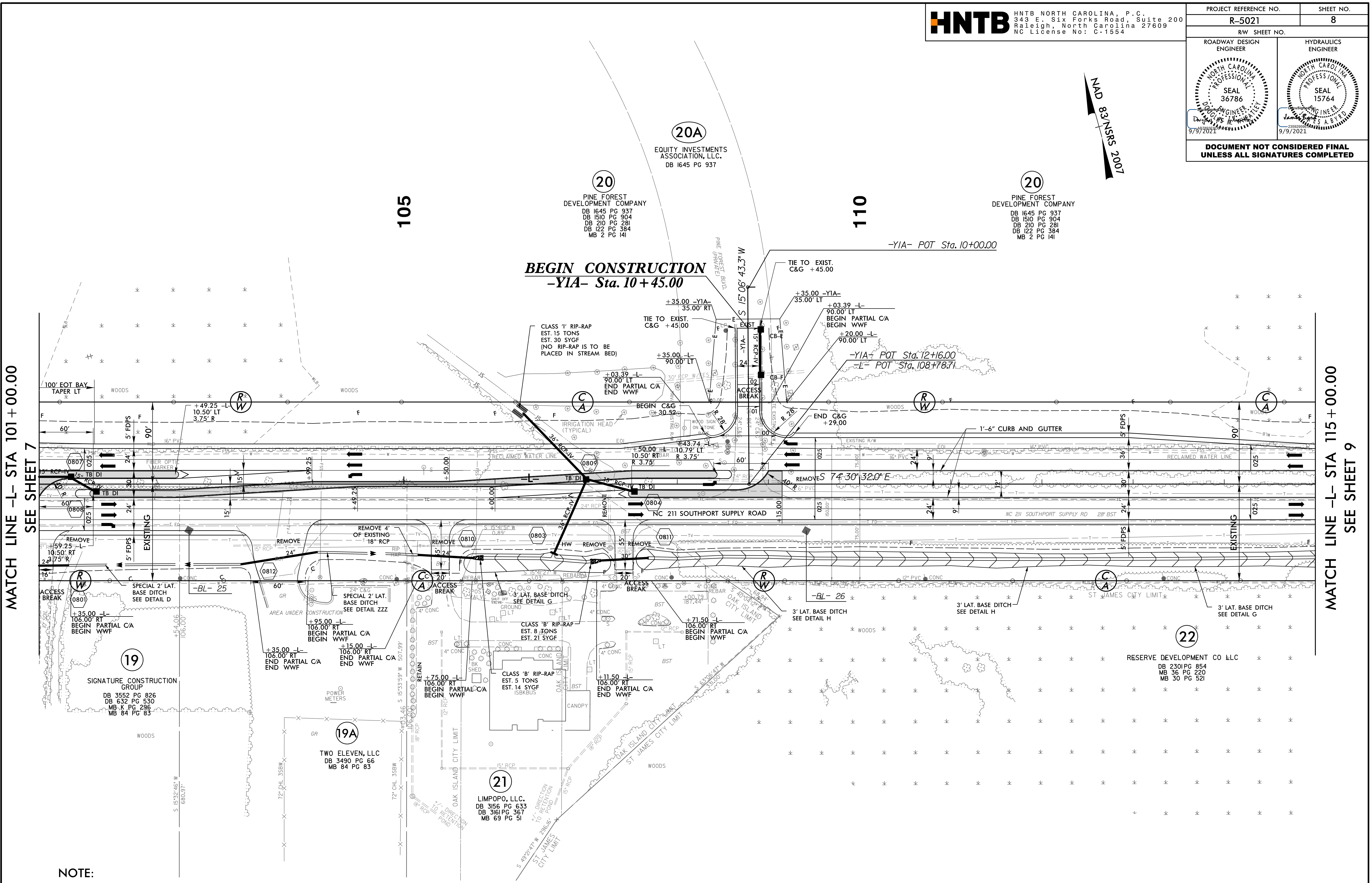
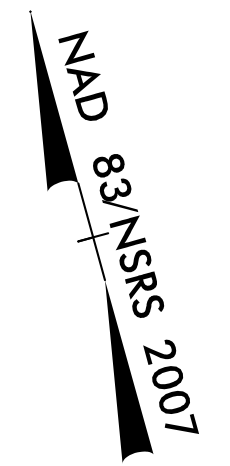
MATCH LINE -L- STA 101 + 00.00
SEE SHEET 8

- NOTE:**
1. ALL DRIVEWAY RADII ARE 20' UNLESS NOTED ON PLANS.
 2. PAVED TURNOUTS FOR SHOULDER SECTION SHOULD EXTEND 50' UNLESS NOTED ON PLANS.

FOR -L- PROFILE, SEE SHEET 42
FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 THRU 2D-3

14 SEP 2021 14:09
R-5021_RDY_PSH7.dgn

PROJECT REFERENCE NO. R-5021	SHEET NO. 8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCH LINE -L- STA 101+00.00
SEE SHEET 7

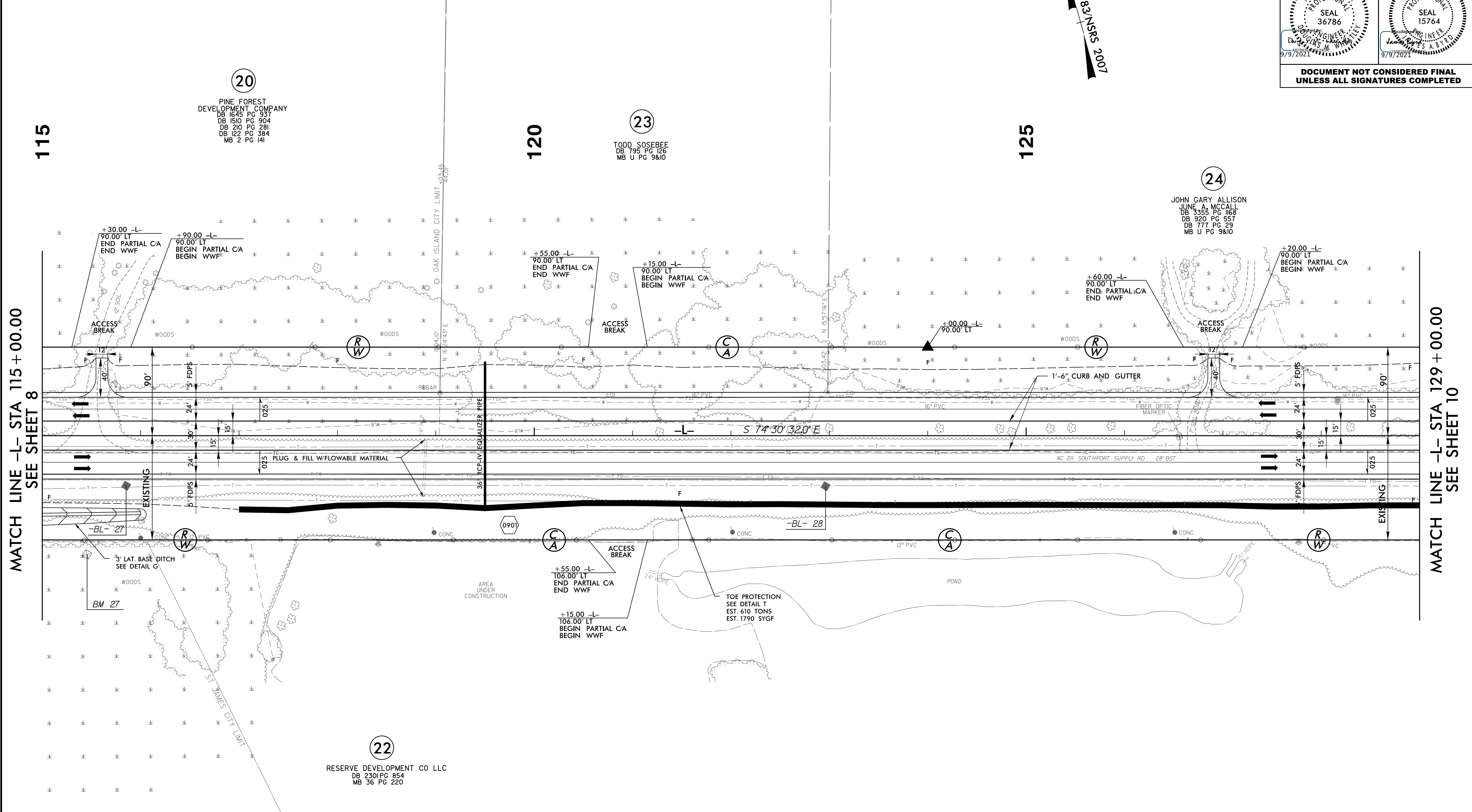
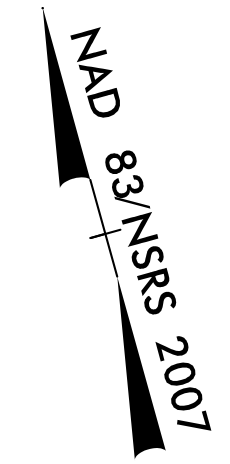
MATCH LINE -L- STA 115+00.00
SEE SHEET 9

- NOTE:**
1. ALL DRIVEWAY RADII ARE 20' UNLESS NOTED ON PLANS.
 2. PAVED TURNOUTS FOR SHOULDER SECTION SHOULD EXTEND 50' UNLESS NOTED ON PLANS.

FOR -YIA- PROFILE, SEE SHEET 59
 FOR -L- PROFILE, SEE SHEET 43
 FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 THRU 2D-3

5/14/2021

PROJECT REFERENCE NO. R-5021		SHEET NO. 9
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



MATCH LINE -L- STA 115 + 00.00
SEE SHEET 8

MATCH LINE -L- STA 129 + 00.00
SEE SHEET 10

NOTE:

1. ALL DRIVEWAY RADII ARE 20' UNLESS NOTED ON PLANS.
2. PAVED TURNOUTS FOR SHOULDER SECTION SHOULD EXTEND 50' UNLESS NOTED ON PLANS.
3. DEWATERING, TURBIDITY CURTAIN AND IMPERVIOUS DIKE WILL BE USED TO DEWATER AREAS OF STANDING WATER AT STA 118+50 TO 123+00 TO ALLOW UNDERCUT AND BACKFILL TO OCCUR IN THE DRY.

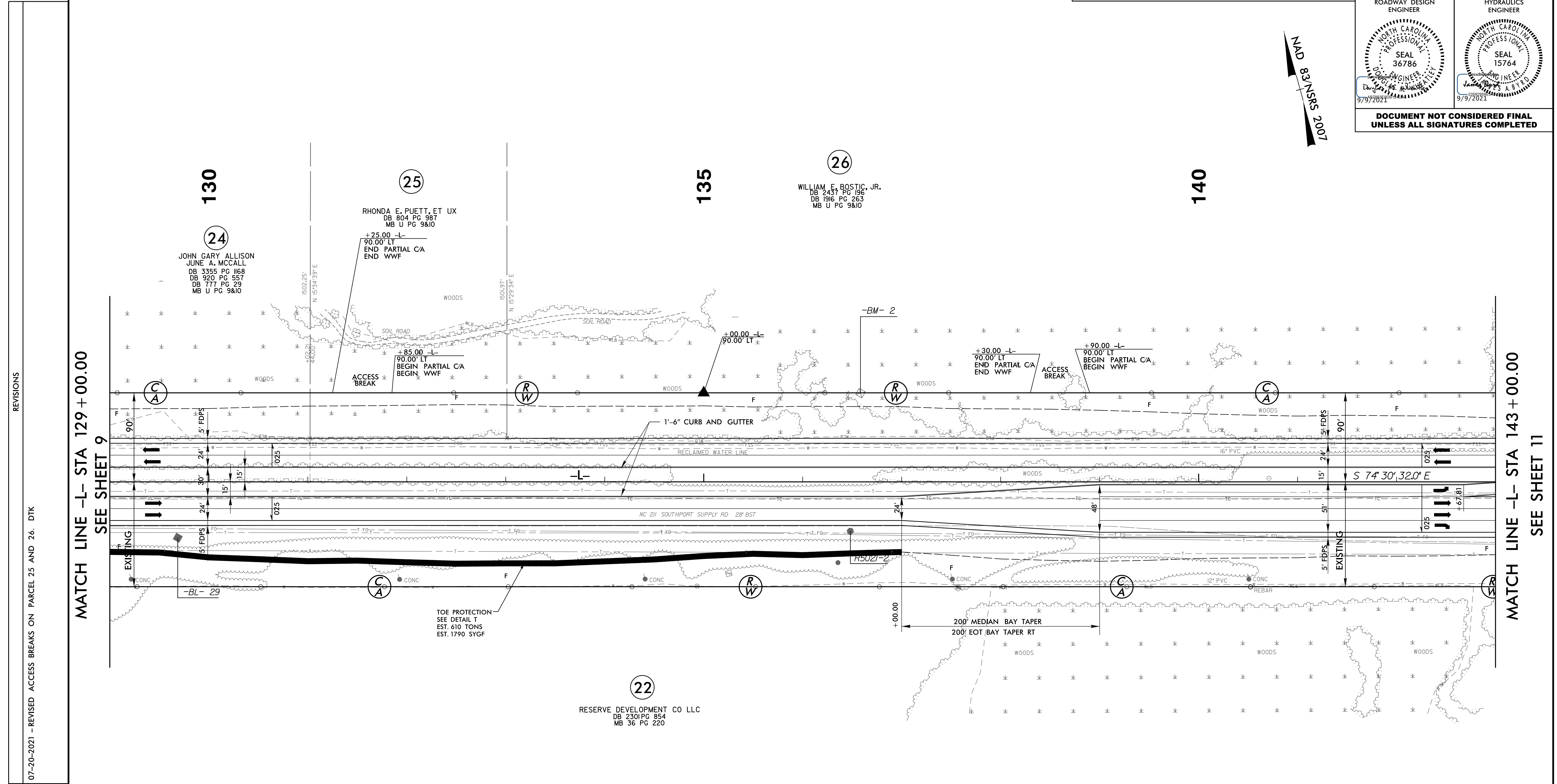
FOR -L- PROFILE, SEE SHEET 43
FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 THRU 2D-3

22-JUL-2021 09:56
\\regdway\p-co\jnr-5021_RDY_PSH9.dgn

5/14/20

PROJECT REFERENCE NO. R-5021	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

MAD 8/31/2007



REVISIONS

07-20-2021 - REVISED ACCESS BREAKS ON PARCEL 25 AND 26. DTK

MATCH LINE -L- STA 129 + 00.00
SEE SHEET 9

MATCH LINE -L- STA 143 + 00.00
SEE SHEET 11

NOTE:

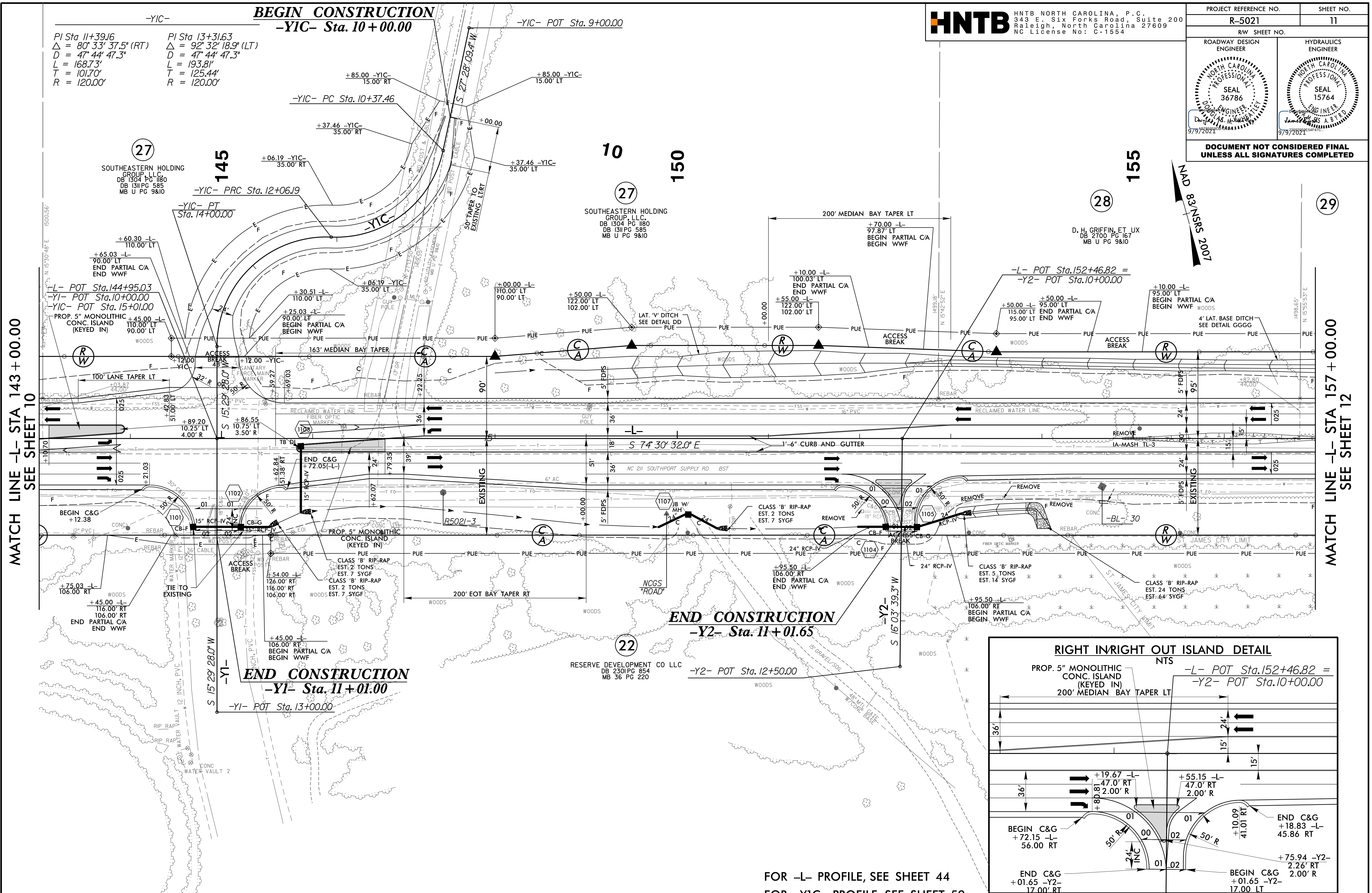
1. ALL DRIVEWAY RADII ARE 20' UNLESS NOTED ON PLANS.
2. PAVED TURNOUTS FOR SHOULDER SECTION SHOULD EXTEND 50' UNLESS NOTED ON PLANS.
3. DEWATERING, TURBIDITY CURTAIN AND IMPERVIOUS DIKE WILL BE USED TO DEWATER AREAS OF STANDING WATER AT STA 133+50 TO 138+50 TO ALLOW UNDERCUT AND BACKFILL TO OCCUR IN THE DRY.

FOR -L- PROFILE, SEE SHEET 44
 FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 THRU 2D-3

22-JUL-2021 09:56
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5/14/19

PROJECT REFERENCE NO. R-5021	SHEET NO. 11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



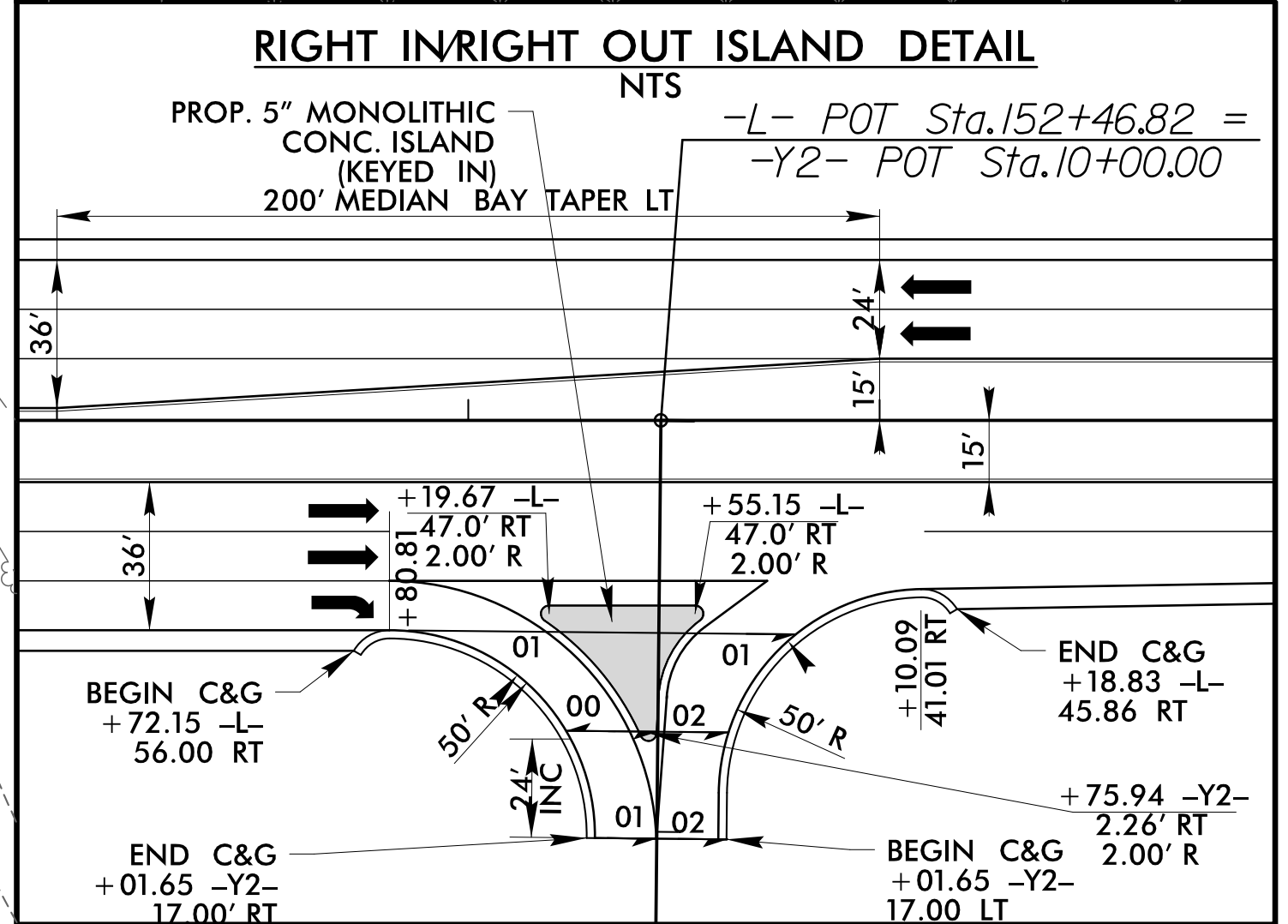
BEGIN CONSTRUCTION
-YIC- Sta. 10+00.00

PI Sta 11+39.16
 $\Delta = 80^\circ 33' 37.5''$ (RT)
 $D = 47' 44' 47.3''$
 $L = 168.73'$
 $T = 101.70'$
 $R = 120.00'$

PI Sta 13+31.63
 $\Delta = 92^\circ 32' 18.9''$ (LT)
 $D = 47' 44' 47.3''$
 $L = 193.81'$
 $T = 125.44'$
 $R = 120.00'$

END CONSTRUCTION
-Y2- Sta. 11+01.65

END CONSTRUCTION
-Y1- Sta. 11+01.00



- NOTE:**
- ALL DRIVEWAY RADII ARE 20' UNLESS NOTED ON PLANS.
 - PAVED TURNOUTS FOR SHOULDER SECTION SHOULD EXTEND 50' UNLESS NOTED ON PLANS.

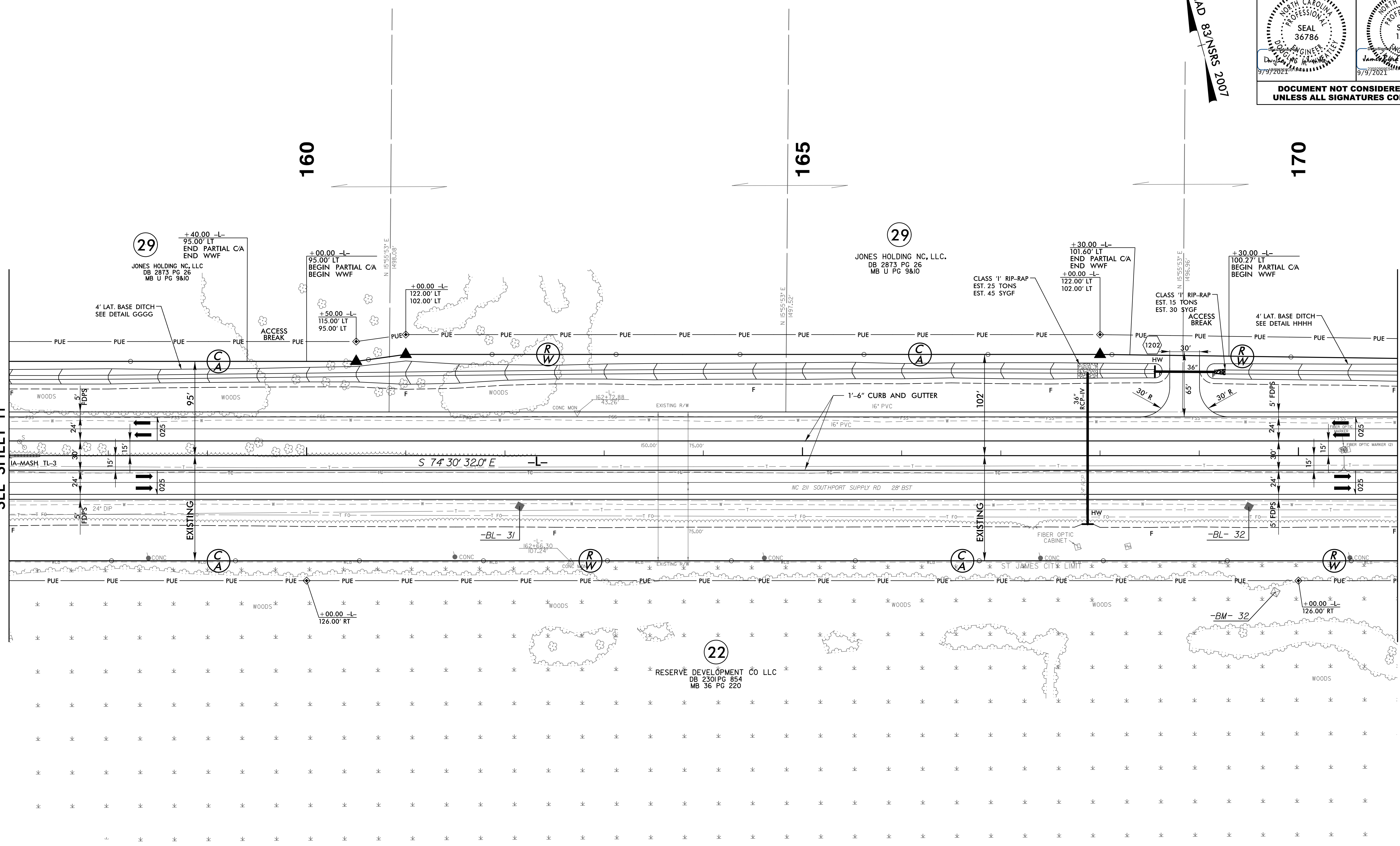
- FOR -L- PROFILE, SEE SHEET 44
 FOR -YIC- PROFILE, SEE SHEET 59
 FOR -Y1- PROFILE, SEE SHEET 59
 FOR -Y2- PROFILE, SEE SHEET 60
 FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 THRU 2D-3

22-JUL-2021 09:56
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PROJECT REFERENCE NO. R-5021	SHEET NO. 12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

MATCH LINE -L- STA 157 + 00.00
SEE SHEET 11

MATCH LINE -L- STA 171 + 00.00
SEE SHEET 13



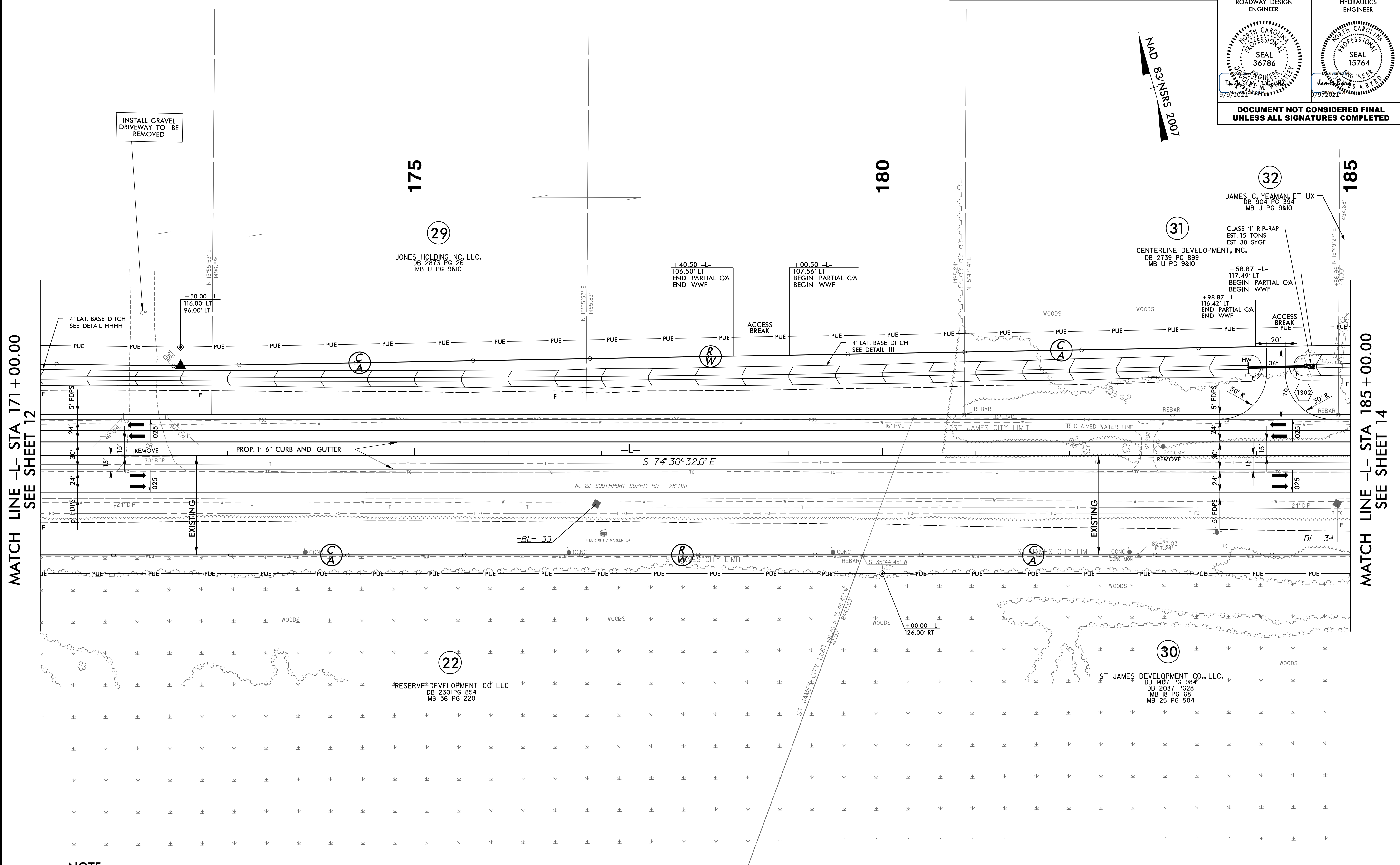
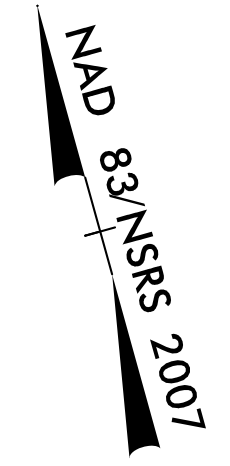
NOTE:

1. ALL DRIVEWAY RADII ARE 20' UNLESS NOTED ON PLANS.
2. PAVED TURNOUTS FOR SHOULDER SECTION SHOULD EXTEND 50' UNLESS NOTED ON PLANS.

FOR -L- PROFILE, SEE SHEET 45
 FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 THRU 2D-3

5/14/2021

PROJECT REFERENCE NO. R-5021	SHEET NO. 13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCH LINE -L- STA 171 + 00.00
SEE SHEET 12

MATCH LINE -L- STA 185 + 00.00
SEE SHEET 14

- NOTE:**
1. ALL DRIVEWAY RADII ARE 20' UNLESS NOTED ON PLANS.
 2. PAVED TURNOUTS FOR SHOULDER SECTION SHOULD EXTEND 50' UNLESS NOTED ON PLANS.

FOR -L- PROFILE, SEE SHEET 45
 FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 THRU 2D-3

22-JUL-2021 09:56
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 JML