TIP PROJECT: U-2412B & U-2524AE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2412B & U-2524AE	EC-1	

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

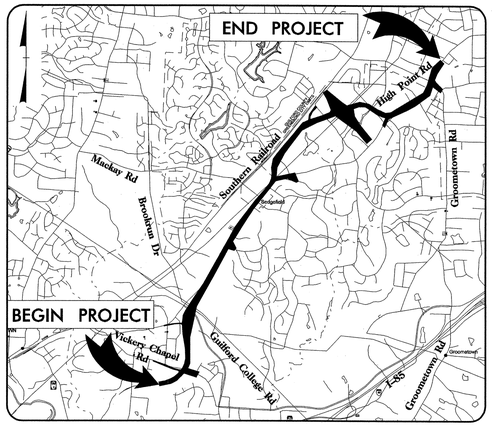
GUILFORD COUNTY

LOCATION: ***SR 4121 (GREENSBORO /HIGH POINT ROAD) FROM SR 4228 (VICKERY CHAPEL ROAD) TO SR 1424 (HILLTOP ROAD) & GREENSBORO WESTERN LOOP INTERCHANGE AT SR 4121 (HIGH POINT ROAD)***

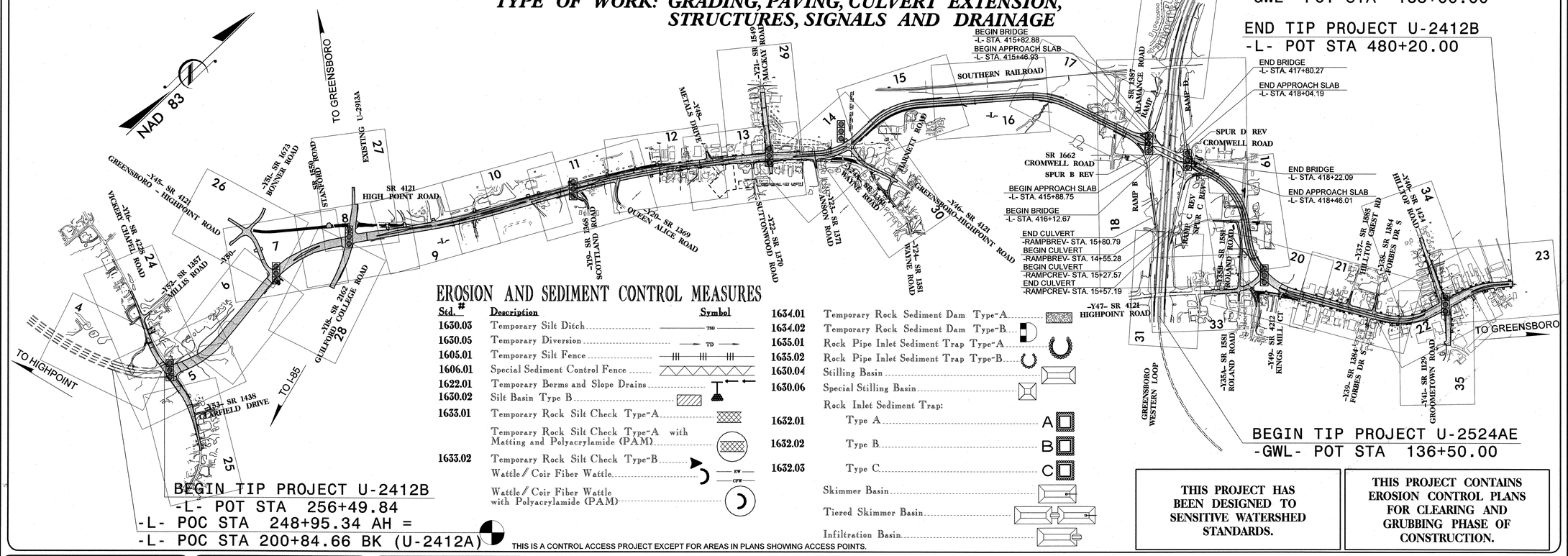
TYPE OF WORK: ***GRADING, PAVING, CULVERT EXTENSION, STRUCTURES, SIGNALS AND DRAINAGE***

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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



VICINITY MAP



EROSION AND SEDIMENT CONTROL MEASURES

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

THIS IS A CONTROL ACCESS PROJECT EXCEPT FOR AREAS IN PLANS SHOWING ACCESS POINTS.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

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

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

CHARLES HEAFNER, PE
PROJECT DESIGN ENGINEER

640
LEVEL IIIA CERTIFICATION NUMBER

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

Prepared In the Office of:

PARSONS BRINCKERHOFF
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

2012 STANDARD SPECIFICATIONS

Roadway Standard Drawings

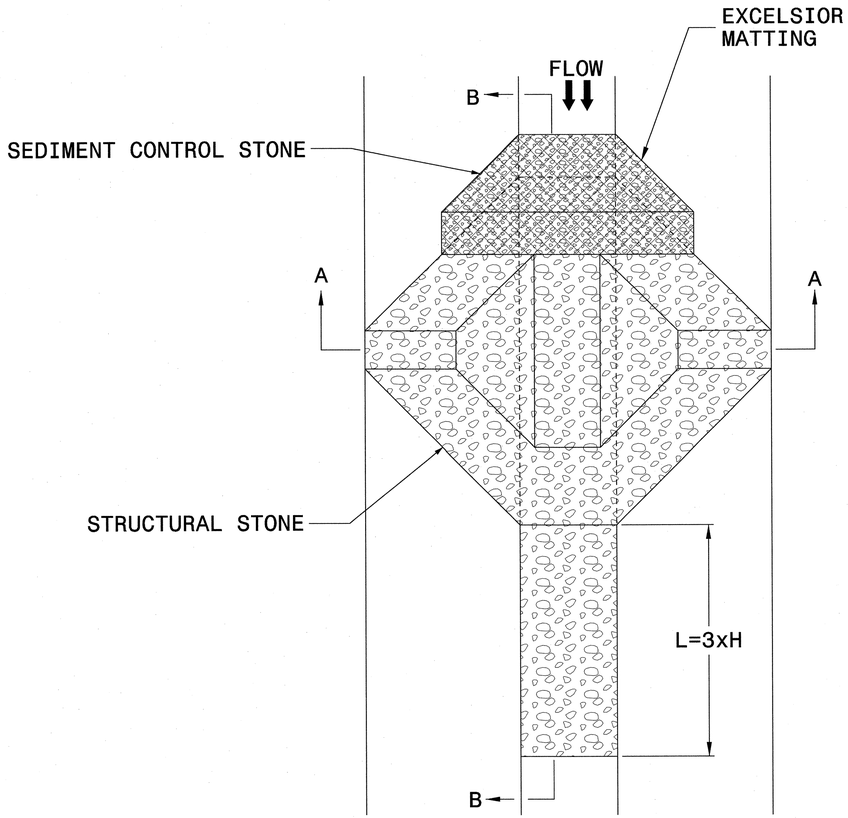
The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1605.01	Temporary Silt Fence	1632.01	Rock Inlet Sediment Trap Type A
1606.01	Special Sediment Control Fence	1632.02	Rock Inlet Sediment Trap Type B
1622.01	Temporary Berms and Slope Drains	1632.03	Rock Inlet Sediment Trap Type C
1630.02	Silt Basin Type B	1633.01	Temporary Rock Silt Check Type A
1630.03	Temporary Silt Ditch	1633.02	Temporary Rock Silt Check Type B
1630.04	Stilling Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.05	Temporary Diversion	1634.02	Temporary Rock Sediment Dam Type B
1630.06	Special Stilling Basin	1635.01	Rock Pipe Inlet Sediment Trap Type A
1631.01	Matting Installation	1635.02	Rock Pipe Inlet Sediment Trap Type B
		1645.01	Temporary Stream Crossing

20-APR-2012 10:24
U:\U-2412B_U-2524AE_ErosionControl\U-2412B_ec_tsh.dgn
AT N-ARCHIL D-08025

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



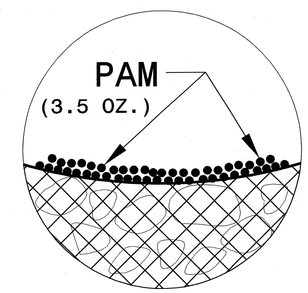
PLAN

NOTES

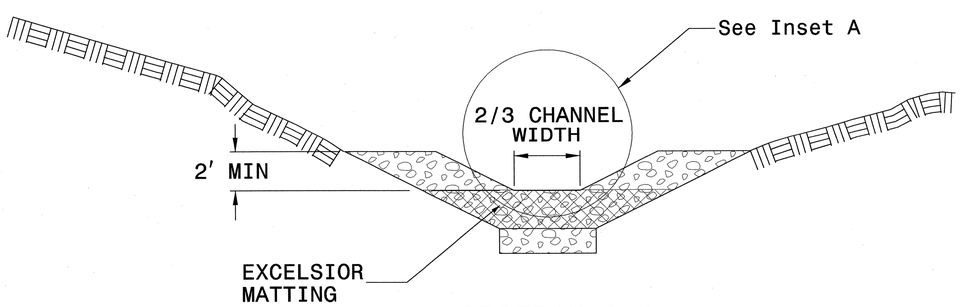
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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

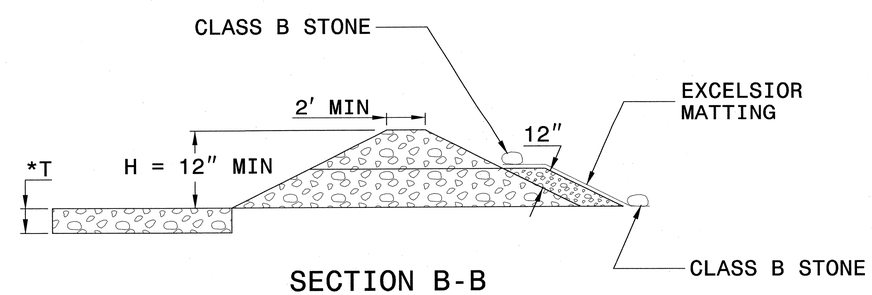
INITIALLY APPLY 3.5 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



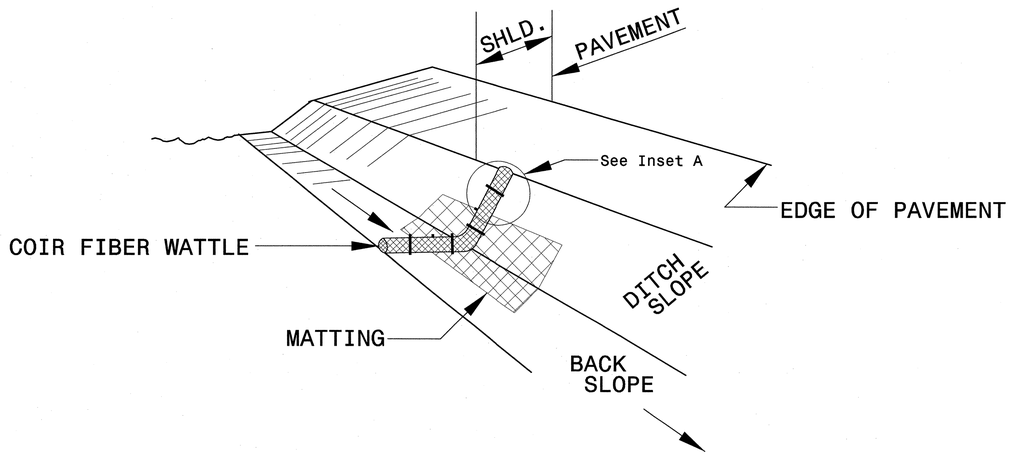
SECTION B-B

*T = 12" MIN., 18" MAX.

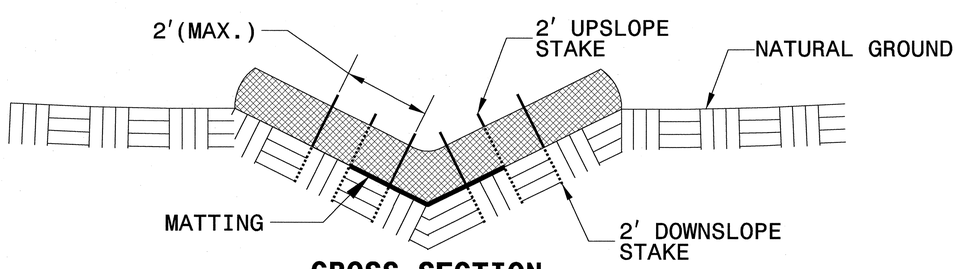
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

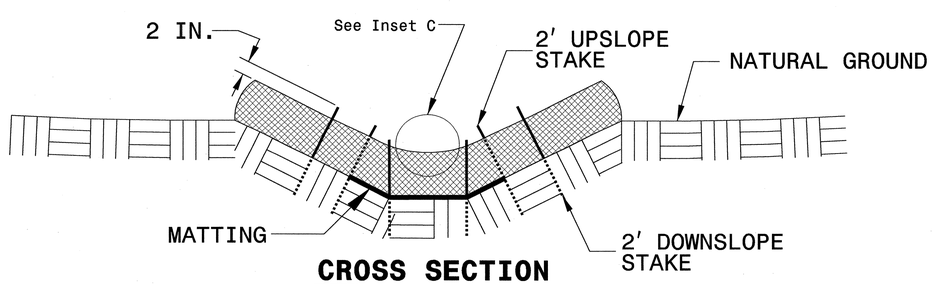
COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

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

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

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

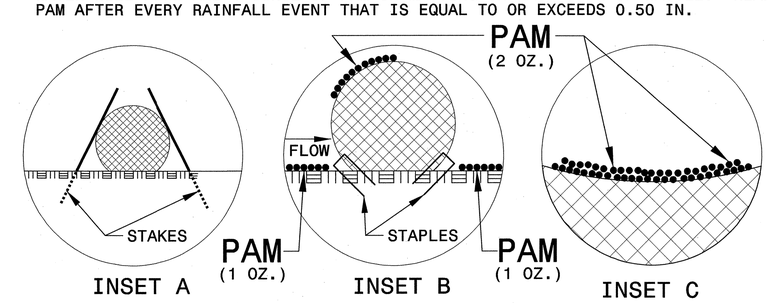
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

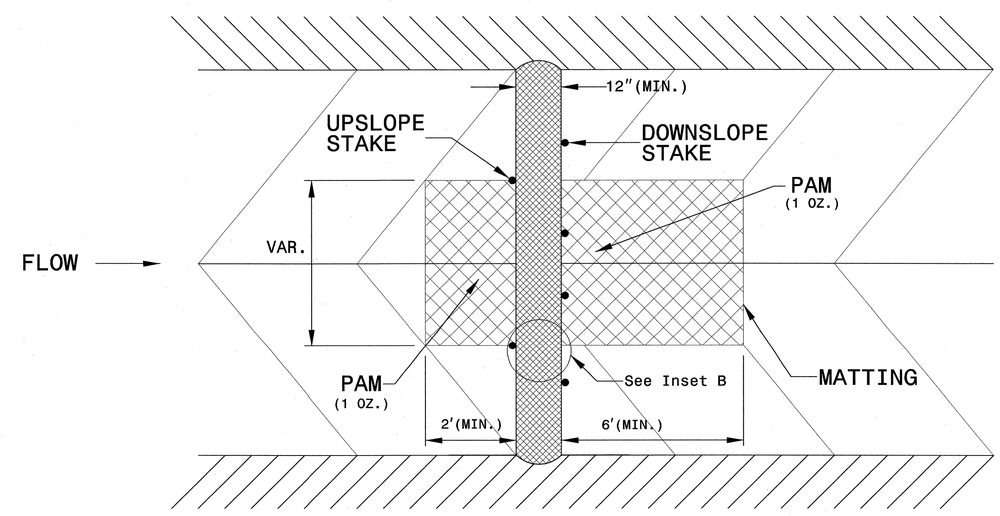
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

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

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

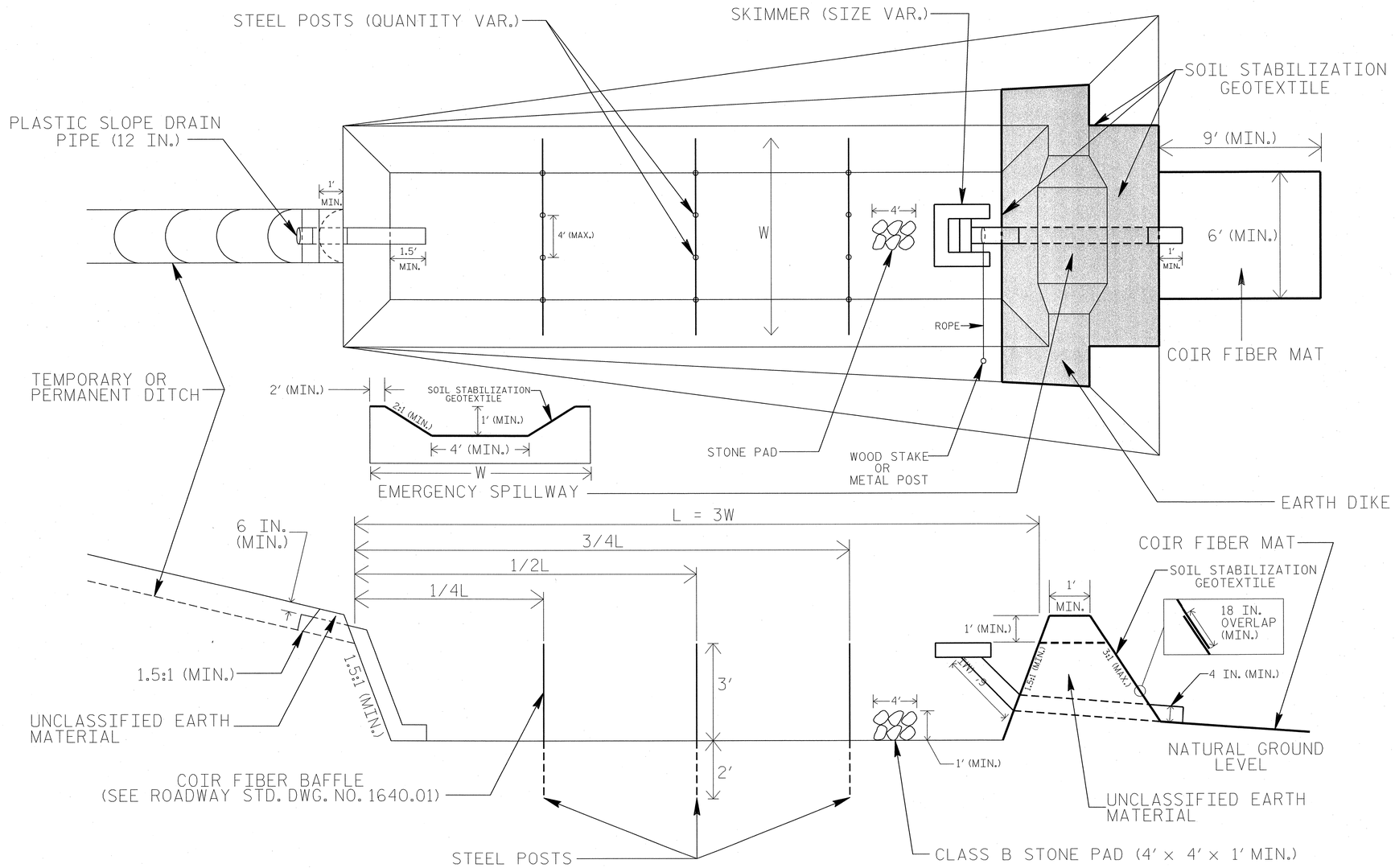


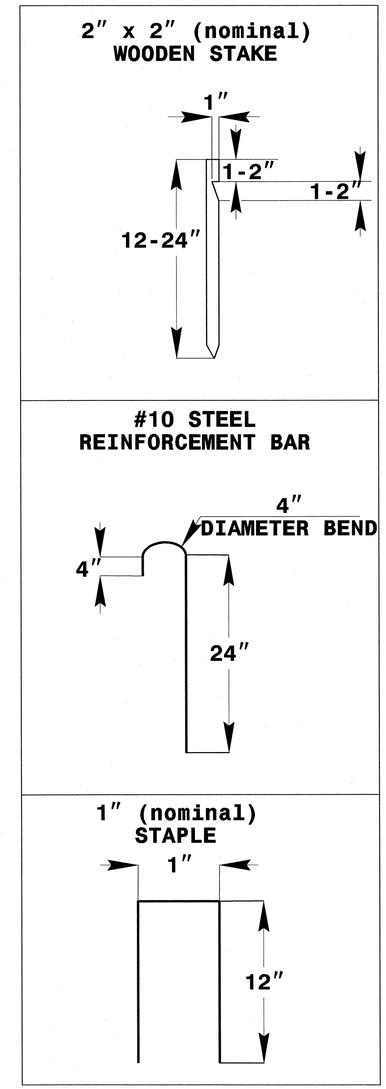


TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SKIMMER BASIN WITH BAFFLES DETAIL





COIR FIBER MAT ANCHOR OPTIONS

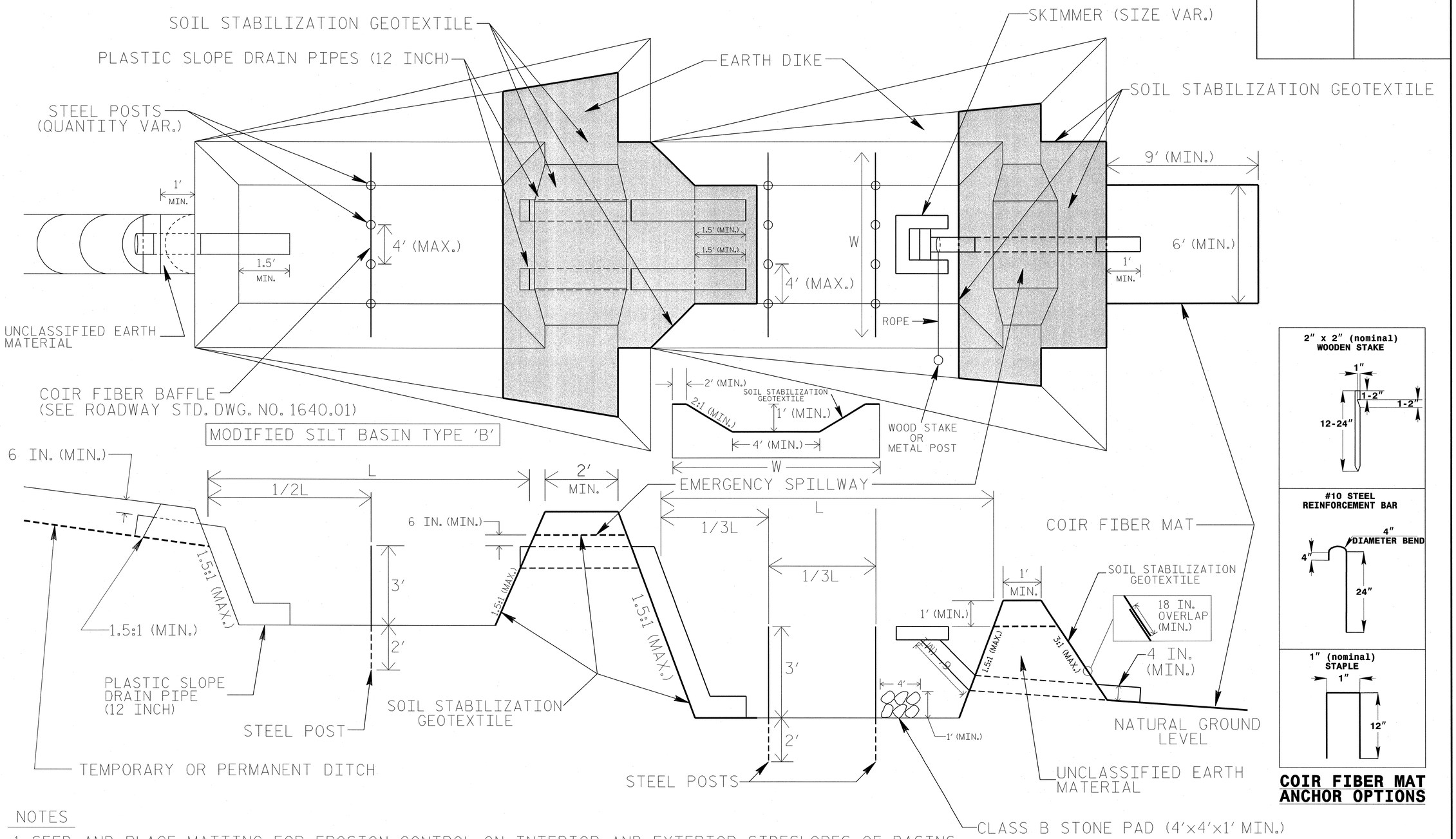
NOTES

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

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-2C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TIERED SKIMMER BASIN DETAIL



COIR FIBER MAT ANCHOR OPTIONS

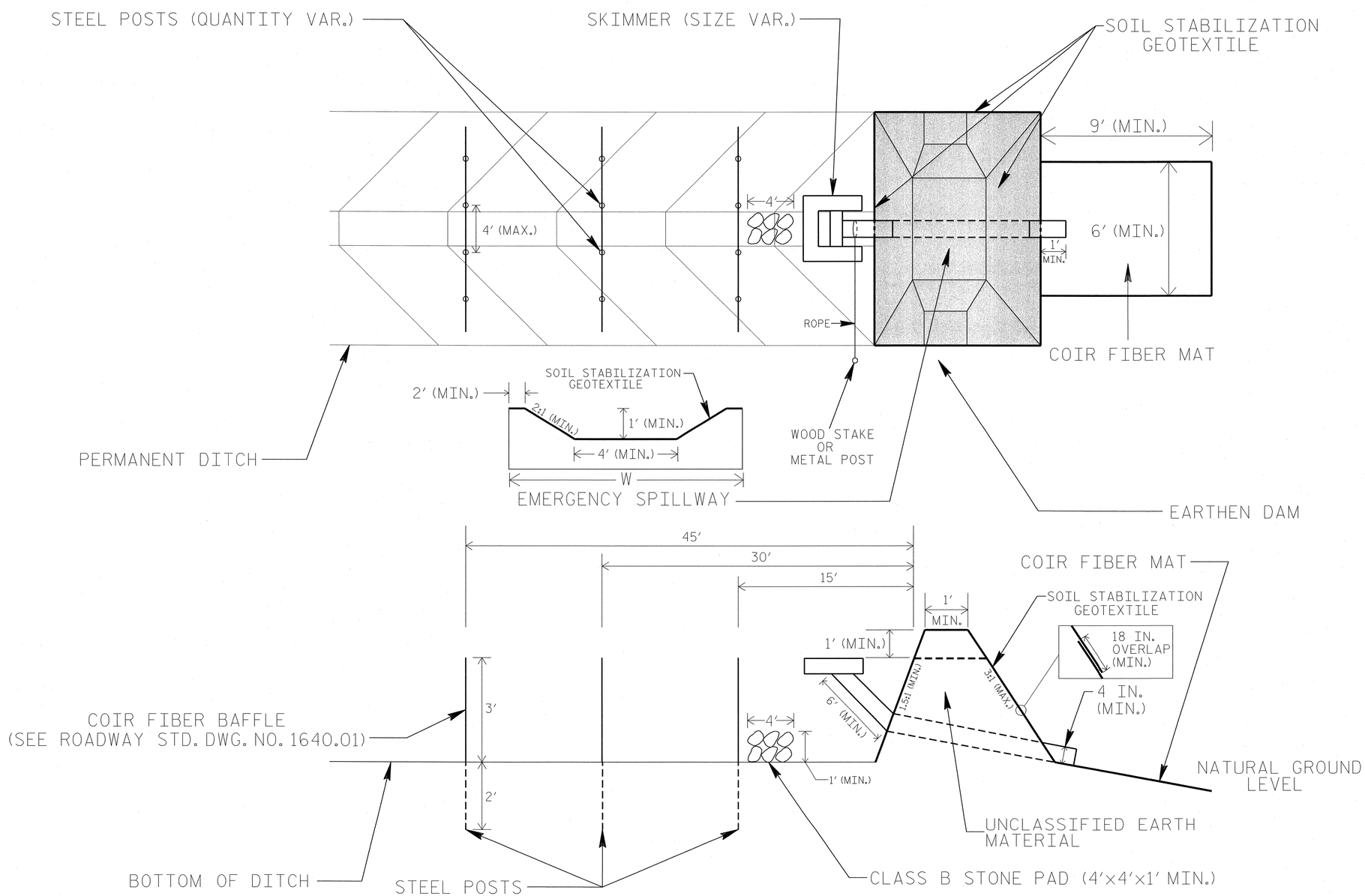
NOTES

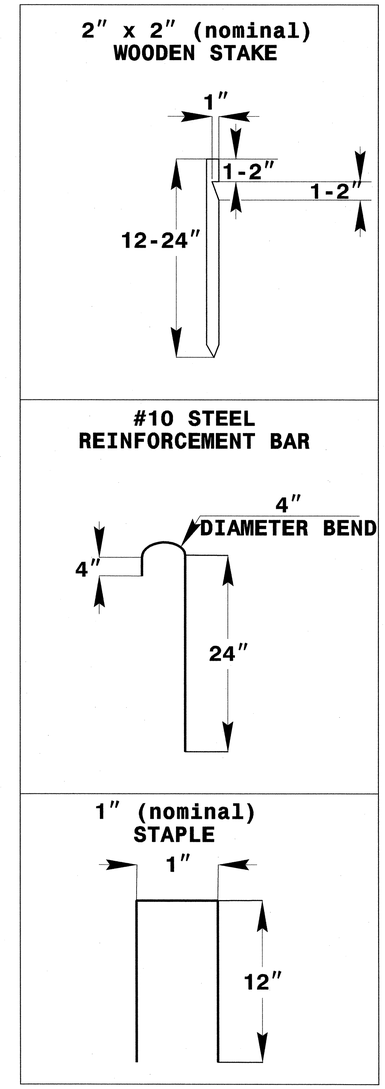
1. SEED AND PLACE MATTING FOR EROSION CONTROL ON INTERIOR AND EXTERIOR SIDESLOPES OF BASINS.
2. LIMIT HEIGHT OF EARTH DIKES TO 5 FT.
3. ADDITIONAL MODIFIED SILT BASINS TYPE 'B' MAY BE NEEDED DEPENDING ON SLOPE.
4. FOR BASIN DEPTHS OF 3FT., THE MINIMUM BASIN WIDTHS SHALL BE 9 FT.
5. DETERMINE EMERGENCY SPILLWAY LENGTHS (FT.) USING Q/0.8, WHERE Q IS FLOW RATE (CFS) INTO UPPER BASIN.
6. SOIL STABILIZATION GEOTEXTILE FOR EMERGENCY SPILLWAYS SHALL BE ONE CONTINUOUS PIECE OF MATERIAL OR OVERLAPPED 18 IN. (MIN.).

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-2D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

EARTHEN DAM WITH SKIMMER





COIR FIBER MAT ANCHOR OPTIONS

NOTES

1. LIMIT EARTHEN DAM HEIGHT TO 5 FT.
2. DETERMINE EMERGENCY SPILLWAY LENGTH (FT.) USING Q/0.8, WHERE Q IS FLOW RATE (CFS) INTO BASIN.
3. SOIL STABILIZATION GEOTEXTILE FOR EMERGENCY SPILLWAY SHALL BE ONE CONTINUOUS PIECE OF MATERIAL OR OVERLAPPED 18 IN. (MIN.).

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
5	-L-	255+50	256+00	MED	50
5	-L-	258+00	261+00	LT	215
5	-L-	261+00	262+26	LT	90
5	-Y16-	30+50	32+00	LT	105
5	-Y16-	35+85	38+50	LT	190
5	-Y16-	38+50	39+00	LT	40
5	-Y16-	30+50	33+00	RT	175
5	-Y16-	33+00	33+50	RT	35
5	-Y16-	33+50	34+00	RT	55
7	-L-	280+00	285+00	LT	250
7	-Y45R-	21+00	22+50	LT	125
7	-Y45R-	21+00	21+50	RT	45
8	-L-	289+12	289+25	LT	50
10	-L-	313+65	313+89	LT	80
11	-Y20-	11+00	12+65	RT	120
11	-Y20-	12+65	13+15	RT	35
11	-Y20-	12+00	12+65	LT	50
11	-Y20-	12+65	13+15	LT	35
14	-L-	359+10	360+39	RT	95
14	-L-	364+50	365+00	RT	40
14	-L-	366+50	367+00	LT	35
14	-L-	367+00	370+00	LT	405
14	-L-	366+00		LT	100
14	-Y46-	11+50	13+50	LT	140
15	-L-	370+50	371+40	RT	65
15	-L-	382+00	383+00	RT	135
16	-L-	383+00	383+75	RT	55
16	-L-	388+50	389+80	RT	95
16	-L-	389+00	389+50	RT	40
16	-L-	389+50	390+50	LT	75

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
16	-L-	390+50	391+50	LT	70
16	-L-	393+50	394+50	RT	85
16	-L-	388+50	389+00	LT	50
17	-L-	402+50	406+00	LT	470
17	-L-	401+50	405+50	RT	540
18	-SPURAREV-	20+80	21+50	LT	35
18	-SPURBREV-	26+20	26+40	RT	10
18	-SPURCREV-	22+00	23+20	RT	90
18	-SPURCREV-	23+20	25+94	RT	200
18	-SPURCREV-	25+94	27+90	RT	140
18	-SPURDREV-	25+00	25+90	LT	65
18	-RAMPAREV-	16+18	18+00	RT	205
18	-RAMPBREV-	24+85	25+50	LT	35
18	-RAMPCREV-	13+80	14+80	RT	125
18	-RAMPCREV-	17+50	20+50	RT	405
18	-RAMPCREV-	23+75	25+03	LT	90
18	-RAMPDREV-	15+50	21+00	LT	505
18	-RAMPDREV-	20+00	22+50	RT	335
18	-GWL-	145+00	148+50	LT	470
18	-GWL-	169+50	173+00	LT	470
19	-L-	432+85	433+25	LT	30
19	-L-	433+50	437+00	LT	470
19	-Y350-	10+50	12+00	LT	125
19	-Y350-	10+50	11+00	RT	45
20	-Y350-	18+70	19+50	RT	85
20	-Y350-	19+50	21+00	RT	140
20	-Y350-	21+00	21+50	RT	50
20	-Y350-	18+50	21+50	LT	245
20	-L-	437+00	437+50	LT	70
20	-L-	437+50	438+00	LT	50

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
20	-L-	438+00	440+75	LT	345
20	-L-	437+60	438+50	RT	115
20	-L-	438+50	440+00	RT	190
20	-Y47-	20+50	21+00	RT	25
20	-Y47-	22+00	23+00	RT	50
20	-Y47-	23+00	23+45	RT	25
20	-Y35A-	10+50	11+50	LT	85
21	-Y37-	11+00	12+50	LT	125
21	-Y37-	11+00	12+50	RT	125
24	-Y16-	22+00	24+00	LT	140
24	-Y16-	24+00	24+50	LT	60
24	-Y16-	25+50	26+50	LT	95
24	-Y16-	22+50	25+50	RT	305
25	-Y16-	39+00	39+80	LT	60
25	-Y16-	39+00	40+50	RT	170
25	-Y16-	40+50	41+65	RT	85
25	-Y16-	41+65	42+50	RT	60
26	-Y45R-	17+50	19+00	RT	125
26	-Y51-	12+50	13+00	RT	40
30	-Y46-	13+50	14+25	LT	55
30	-Y24-	12+25	13+00	RT	55
30	-Y24-	13+00	14+00	RT	70
30	-Y24-	12+50	13+00	LT	35
30	-Y24-	13+00	13+50	LT	45
30	-Y24-	13+50	14+50	LT	85
30	-Y24-	14+00	14+50	RT	45
31	-GWL-	137+00	139+00	LT	270
31	-GWL-	140+00	145+00	LT	670
31	-GWL-	137+75	138+90	LT	85
32	-GWL-	176+50	181+00	RT	225

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
			SUBTOTAL		12,595
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					94,840
				TOTAL	107,435
				SAY	121,000

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-3B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

PERMANENT SOIL REINFORCEMNT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
5	-L-	254+50	255+50	RT	100
5	-L-	257+57	258+00	LT	25
7	-Y45R-	21+50	22+50	RT	85
8	-L-	293+50	294+00	LT	35
8	-L-	294+00	295+48	LT	110
8	-L-	295+52	296+05	LT	40
11	-Y19R-	12+09	13+00	LT	65
15	-L-	370+00	370+50	RT	40
15	-L-	371+40	372+00	RT	45
18	-L-	410+00	410+50	LT	35
18	-RAMPAREV-	21+50	22+00	RT	25
18	-RAMPCREV-	17+00	17+50	RT	35
20	-Y49-	10+50	12+50	RT	100
24	-Y16-	26+50	30+50	LT	280
24	-Y16-	27+00	30+50	RT	245
25	-Y16-	41+82	42+50	LT	35
25	-Y16-	42+50	43+00	LT	35
26	-Y45R-	16+70	16+90	RT	20
26	-Y45R-	16+90	17+50	RT	50
30	-Y24-	10+50	11+75	RT	90
			SUBTOTAL		1,495
	ADDITIONAL PSRM TO BE INSTALLED				3,130
				TOTAL	4,625
				SAY	4,630

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-3C

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

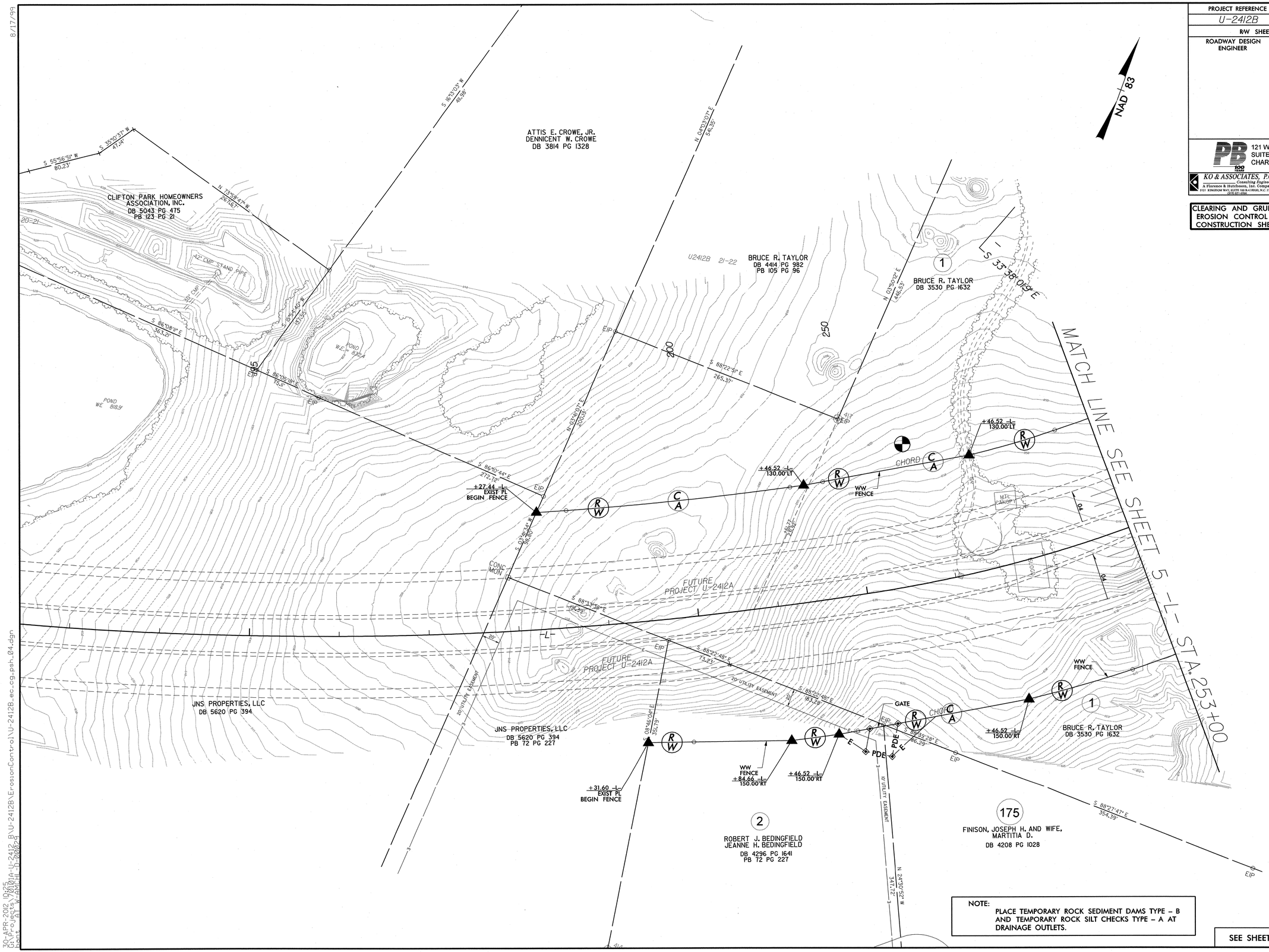
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
121 KINGSTON WAY, SUITE 160 RALEIGH, N.C. 27607
(919) 857-0200

25 0 25 50
1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4



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

SEE SHEET 36 FOR -L- PROFILE

8/17/99
30-APR-2012 10:25
C:\PF_Jobs\2010\10010A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_04.dgn
bmt: 01 W-AMCHI n 20029

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-05/CONST.05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

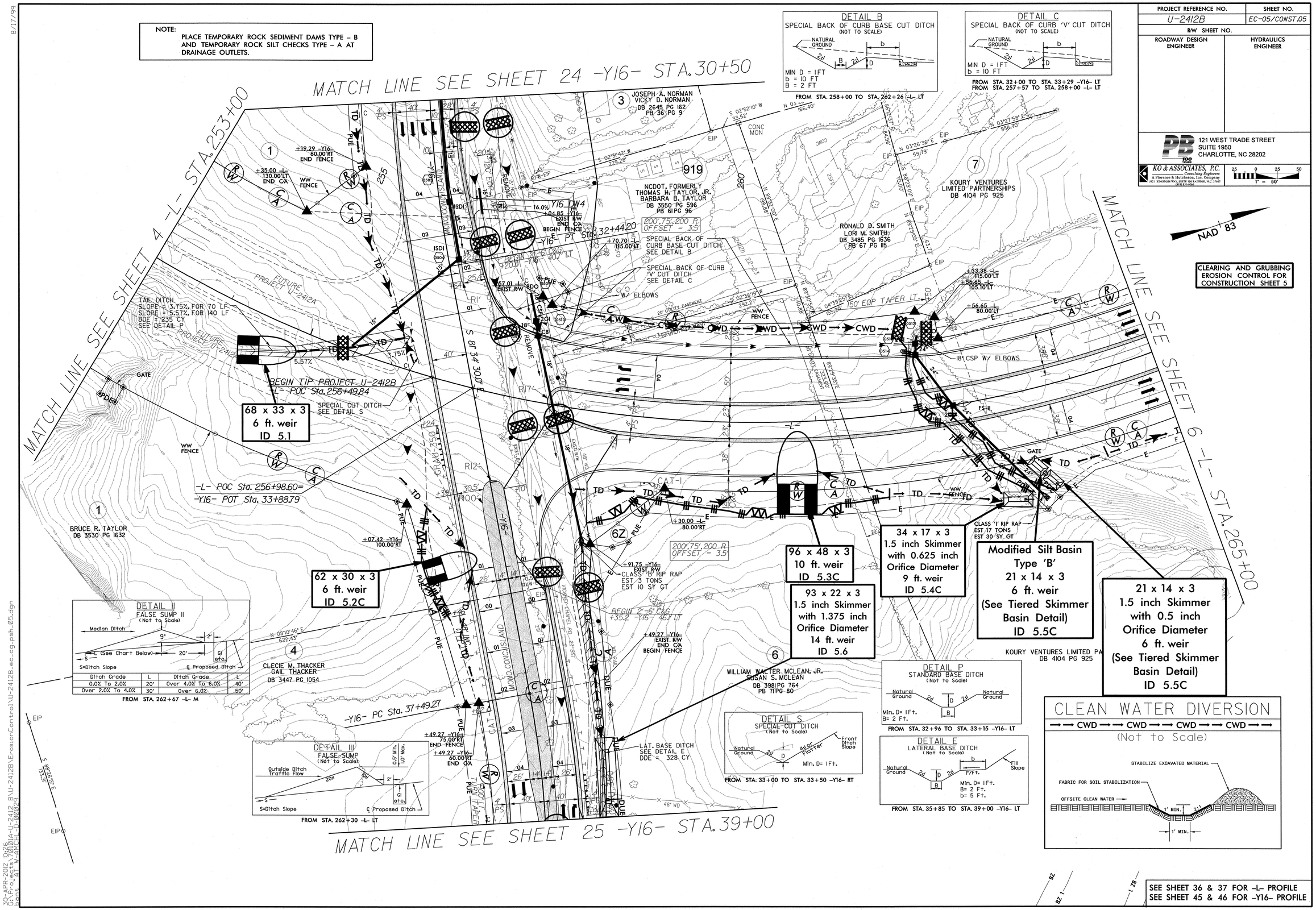
KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
8121 KINGSTON WAY, SUITE 160 RALEIGH, N.C. 27607
(919) 851-0966

25 0 25 50
1" = 50'

NAD 83

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

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 5



SEE SHEET 36 & 37 FOR -L- PROFILE
SEE SHEET 45 & 46 FOR -Y16- PROFILE

8/17/99

30-APR-2012 10:06
S:\Projects\2010-U-2412 BY\U-2412B\ErosionControl\U-2412B_ec_cg_psh_05.dgn
User: WAMCH-D00029

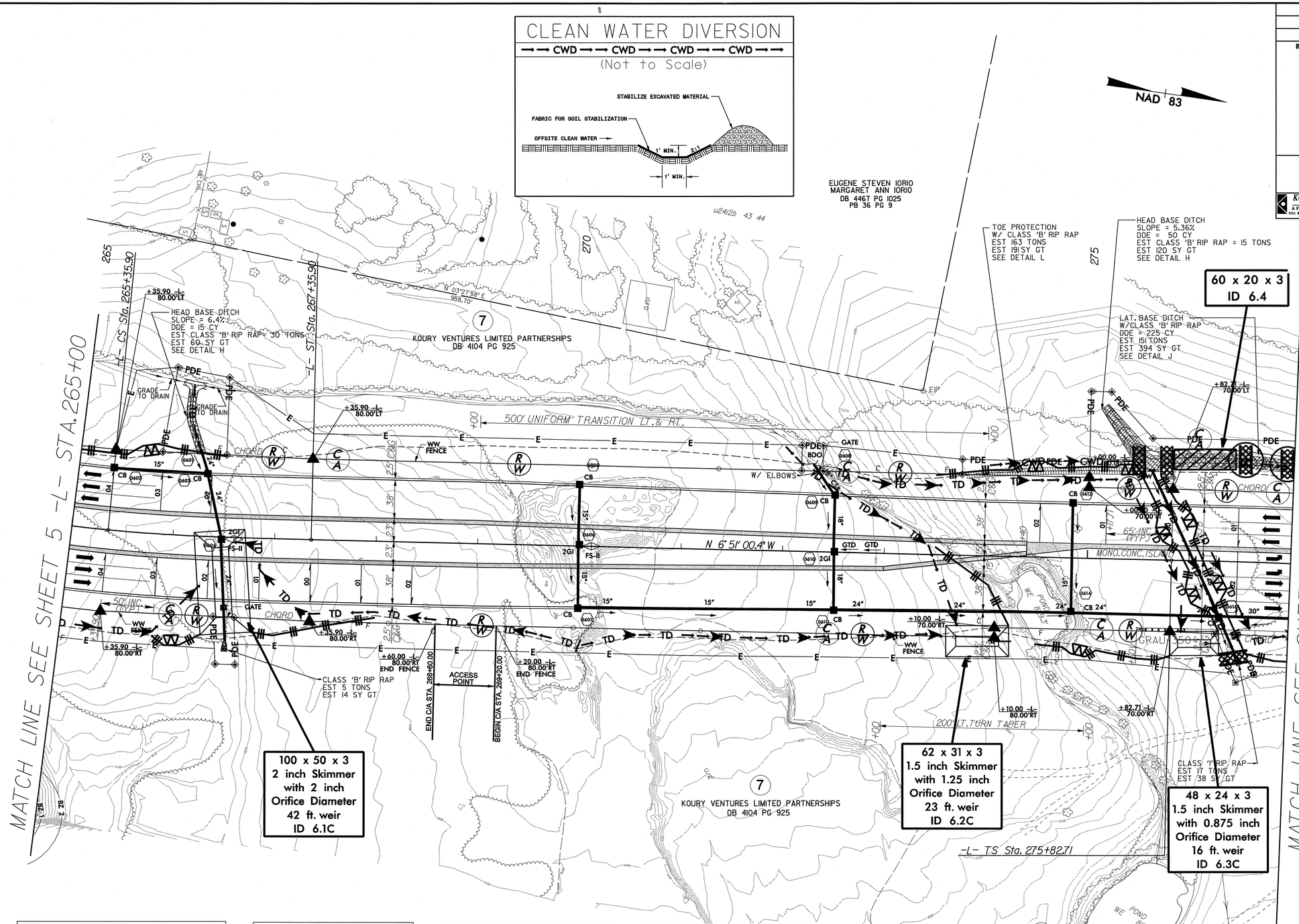
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-06/CONST.06
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

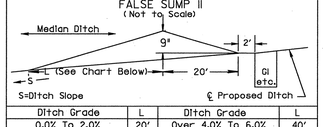
KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0566

25 0 25 50
1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 6



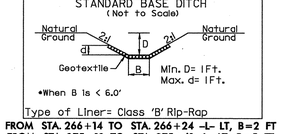
DETAIL II
FALSE SUMP II
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

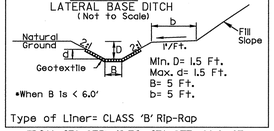
FROM STA. 266+50 -L- M
FROM STA. 270+00 -L- M

DETAIL H
STANDARD BASE DITCH
(Not to Scale)



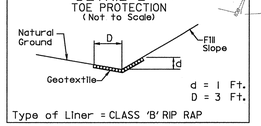
Type of Liner= Class 'B' Rip-Rap
FROM STA. 266+14 TO STA. 266+24 -L- LT, B=2 FT
FROM STA. 275+12 TO STA. 275+61 -L- LT, B=5 FT

DETAIL J
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 275+61 TO STA. 277+00-L- LT

DETAIL L
TOE PROTECTION
(Not to Scale)



Type of Liner = CLASS 'B' RIP RAP
FROM STA. 273+80 TO STA. 275+61 -L- LT

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

SEE SHEET 37 FOR -L- PROFILE

8/17/99
03-MAY-2012 09:23
h:\projects\U2412A-U-2412B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_06.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-07/CONST.07
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3121 KINGTON WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 821-0066

25 0 25 50
1" = 50'

NAD 83

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 7

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

CLEAN WATER DIVERSION

→→ CWD →→ CWD →→ CWD →→ CWD →→

(Not to Scale)

DETAIL N
SPECIAL CUT DITCH
(Not to Scale)

Type of Liner= PSRM

FROM STA. 22+50 TO STA. 23+00 –Y45R– LT

DETAIL O
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

Type of Liner= PSRM

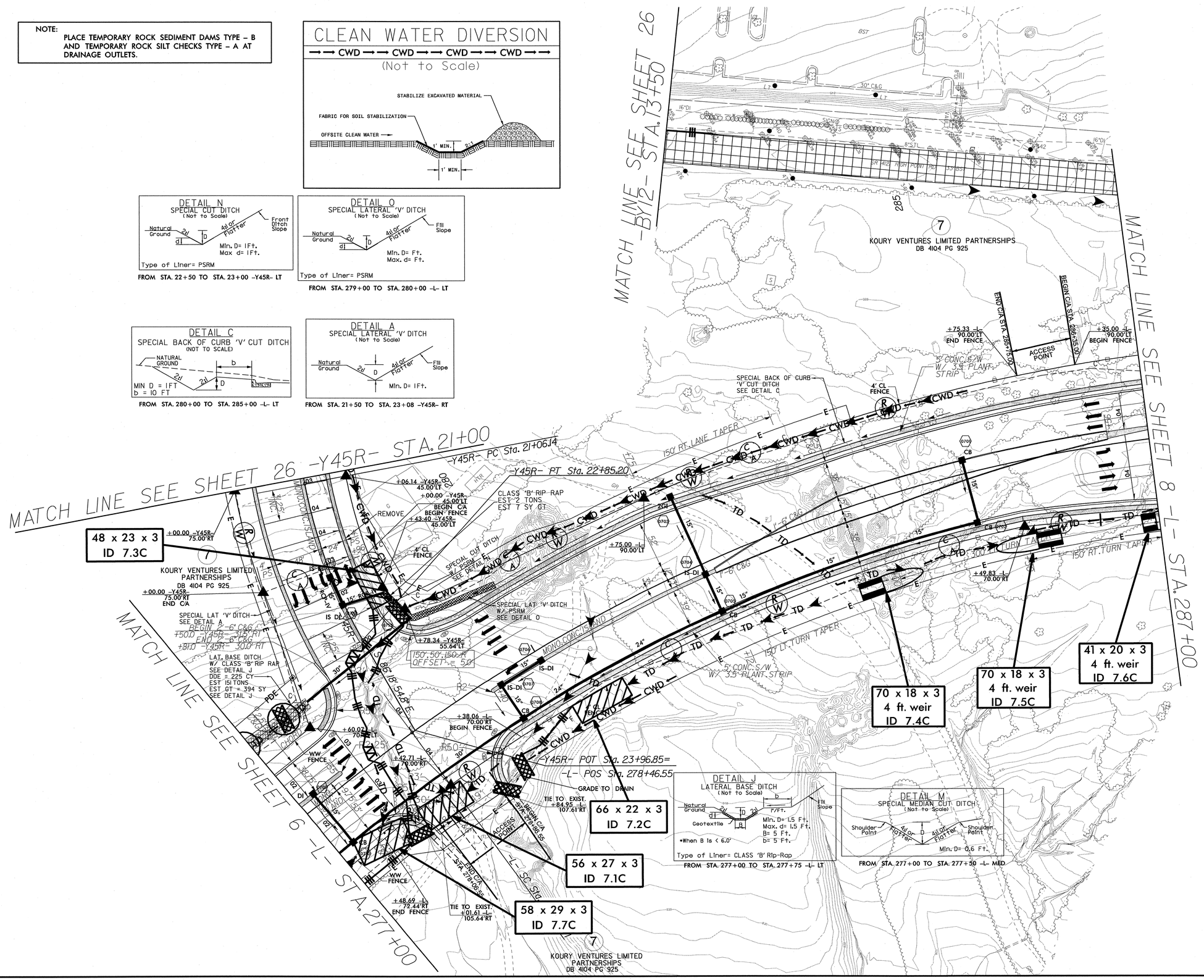
FROM STA. 279+00 TO STA. 280+00 –L– LT

DETAIL C
SPECIAL BACK OF CURB 'V' CUT DITCH
(NOT TO SCALE)

FROM STA. 280+00 TO STA. 285+00 –L– LT

DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 21+50 TO STA. 23+08 –Y45R– RT



DETAIL J
LATERAL BASE DITCH
(Not to Scale)

Type of Liner= CLASS 'B' Rip-Rap

FROM STA. 277+00 TO STA. 277+75 –L– LT

DETAIL M
SPECIAL MEDIAN CUT DITCH
(Not to Scale)

FROM STA. 277+00 TO STA. 277+50 –L– MED

PAVEMENT REMOVAL

SEE SHEET 37 FOR –L– PROFILE
SEE SHEET 53 FOR –Y45R– PROFILE

8/17/99

30-APR-2012 10:26
G:\Projects\70101A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_07.dgn
pbpaul W-AMPHI-D-0002-9

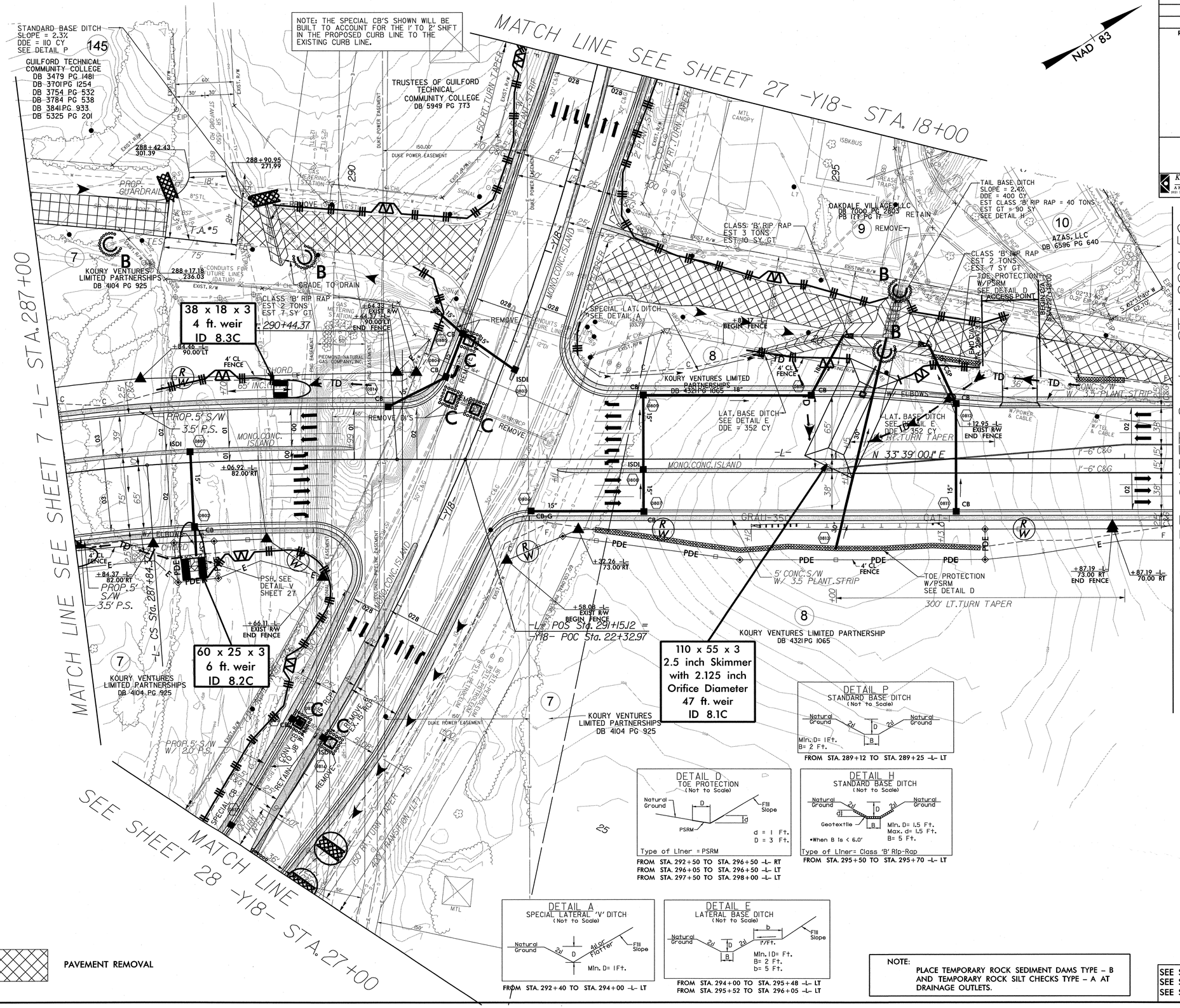
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-08/CONST.08
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3021 KINGSTON WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0296

25 0 25 50
1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 8



DETAIL P
STANDARD BASE DITCH
(Not to Scale)
Natural Ground, 2d, D, 2d, Natural Ground, B
Min. D= 1 Ft.
B= 2 Ft.
FROM STA. 289+12 TO STA. 289+25 -L- LT

DETAIL D
TOE PROTECTION
(Not to Scale)
Natural Ground, D, Fill Slope, d, PSRM
d = 1 Ft.
D = 3 Ft.
Type of Liner = PSRM
FROM STA. 292+50 TO STA. 296+50 -L- RT
FROM STA. 296+05 TO STA. 296+50 -L- LT
FROM STA. 297+50 TO STA. 298+00 -L- LT

DETAIL H
STANDARD BASE DITCH
(Not to Scale)
Natural Ground, 2d, D, 2d, Natural Ground, d, Geotextile, B
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 5 Ft.
*When B Is < 6.0'
Type of Liner= Class 'B' Rip-Rap
FROM STA. 295+50 TO STA. 295+70 -L- LT

DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 2d, D, 4d or Flatter, Fill Slope
Min. D= 1 Ft.
FROM STA. 292+40 TO STA. 294+00 -L- LT

DETAIL E
LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 2d, D, 2d, B, b, 1'/Ft., Fill Slope
Min. D= 1 Ft.
B= 2 Ft.
b= 5 Ft.
FROM STA. 294+00 TO STA. 295+48 -L- LT
FROM STA. 295+52 TO STA. 296+05 -L- LT

PAVEMENT REMOVAL

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

SEE SHEET 2-G FOR INTERSECTION DETAIL
SEE SHEET 37 & 38 FOR -L- PROFILE
SEE SHEET 47 FOR -Y18- PROFILE

8/17/99
30-APR-2012 10:26
G:\Projects\U2412A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_08.dgn
Rent: AT W-AMPHI-D-2000

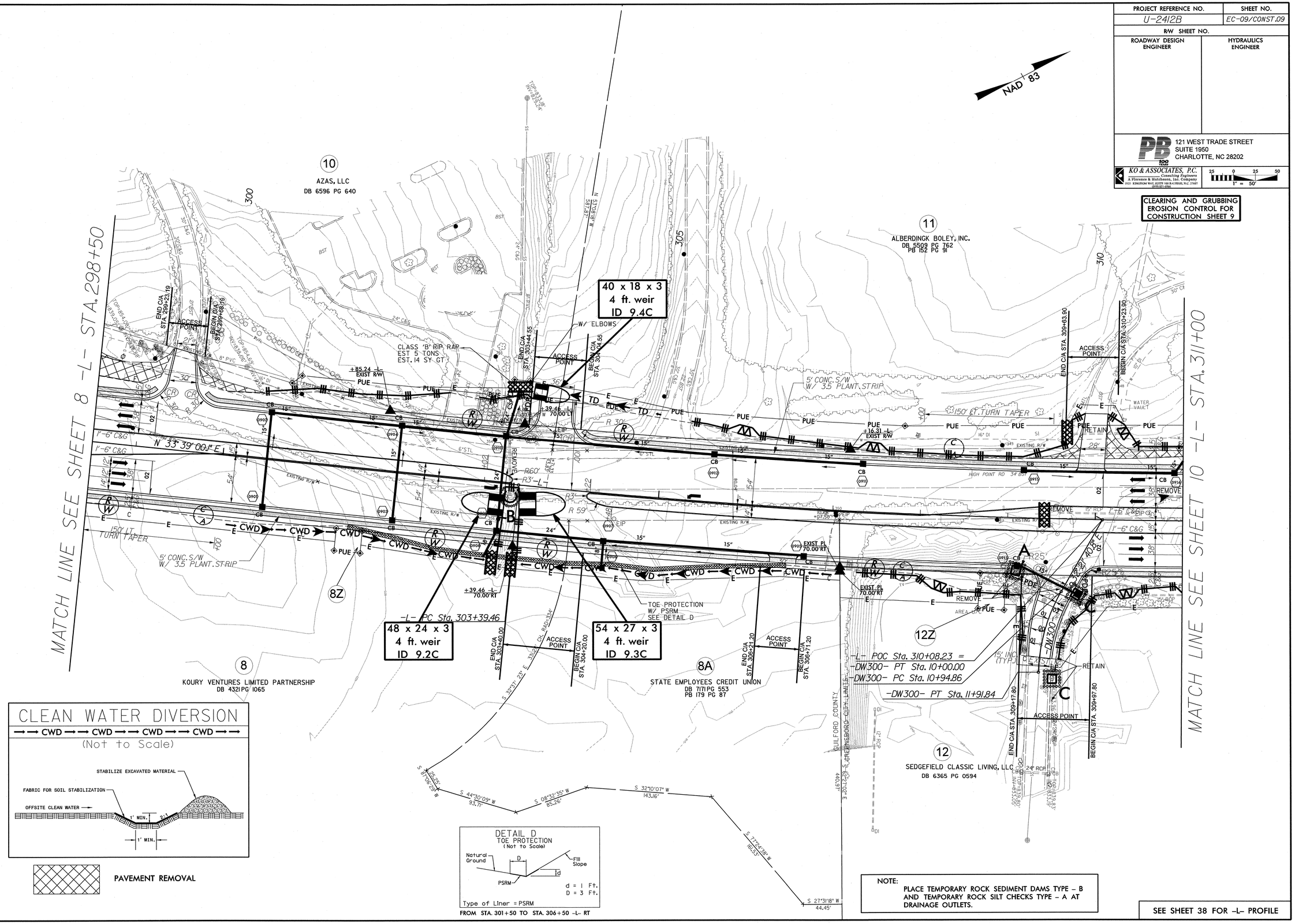
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-09/CONST.09
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3123 EDWINBOW WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-1912

1" = 50'

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 9



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

SEE SHEET 38 FOR -L- PROFILE

8/17/99
30-APR-2012 10:26
G:\Projects\0401A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_09.dgn
Root: AT W-AMCH1-D-0002-9

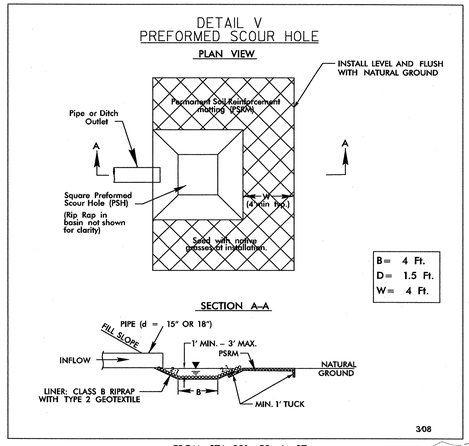
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-10/CONST.10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 121 WEST TRADE STREET SUITE 1950 CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C. Consulting Engineers A Florence & Hutcheson, Inc. Company 3121 KINGSTON WAY, SUITE 100 RALEIGH, N.C. 27603 (919) 831-0266

25 0 25 50
1" = 50'

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 10



FROM STA. 321+50 -L- RT

54 x 27 x 3
1.5 inch Skimmer
with 1.125 inch
Orifice Diameter
19 ft. weir
ID 10.1

NAD 83

SEQUA CHEMICALS, INC.
DB 4543 PG 939

11 ALBERDINGK BOLEY, INC.
DB 5509 PG 762
PB 152 PG 91

CLASS 'B' RIP RAP
EST. 5 TONS
EST. 14 SY GT

CLASS 'B' RIP RAP
EST. 2 TONS
EST. 7 SY GT

BASE TAIL DITCH
SLOPE = 0.5%
DDE = 30 CY
SEE DETAIL P

GUILFORD MEMORIAL PARK INC
DB 2809 PG 859

14 MORGAN PROPERTIES INC
DB 2795 PG 449

16 GUILFORD MEMORIAL PARK INC
DB 1264 PG 508

DO NOT DISTURB LIGHT & LANDSCAPING, EASEMENT ONLY FOR DRIVEWAY CONNECTION

MATCH LINE SEE SHEET 9 -L- STA. 311+00

MATCH LINE SEE SHEET 11 -L- STA. 322+00

-L- PT STA. 311+73.40

5' CONC. S/W W/ 3.5' PLANT. STRIP

N 27° 49' 22.9" E

180' LEFT TURN TAPER

150' LT. TURN TAPER

ACCESS POINT

END C/A STA. 319+70.00

BEGIN C/A STA. 320+30.00

PSH SEE DETAIL V

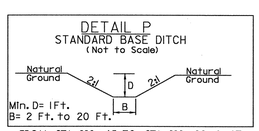
12Z 12 SEDGEFIELD CLASSIC LIVING, LLC
DB 6365 PG 0594

12 SEDGEFIELD CLASSIC LIVING, LLC
DB 6365 PG 0594

15 SEDGEFIELD BAPTIST CHURCH
DB 5174 PG 237

GUILFORD COUNTY
GREENSBORO CITY LIMITS

KENNETH R. ROSE
DB 2428 PG 45



FROM STA. 313+65 TO STA. 313+89 -L- LT

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

SEE SHEET 38 & 39 FOR -L- PROFILE

8/17/99

30-APR-2012 10:26
G:\Projects\2012\A-U-2412B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_10.dgn
Plot Scale: 1:1000
Plot Date: 4/30/2012
User: ATWARCHI

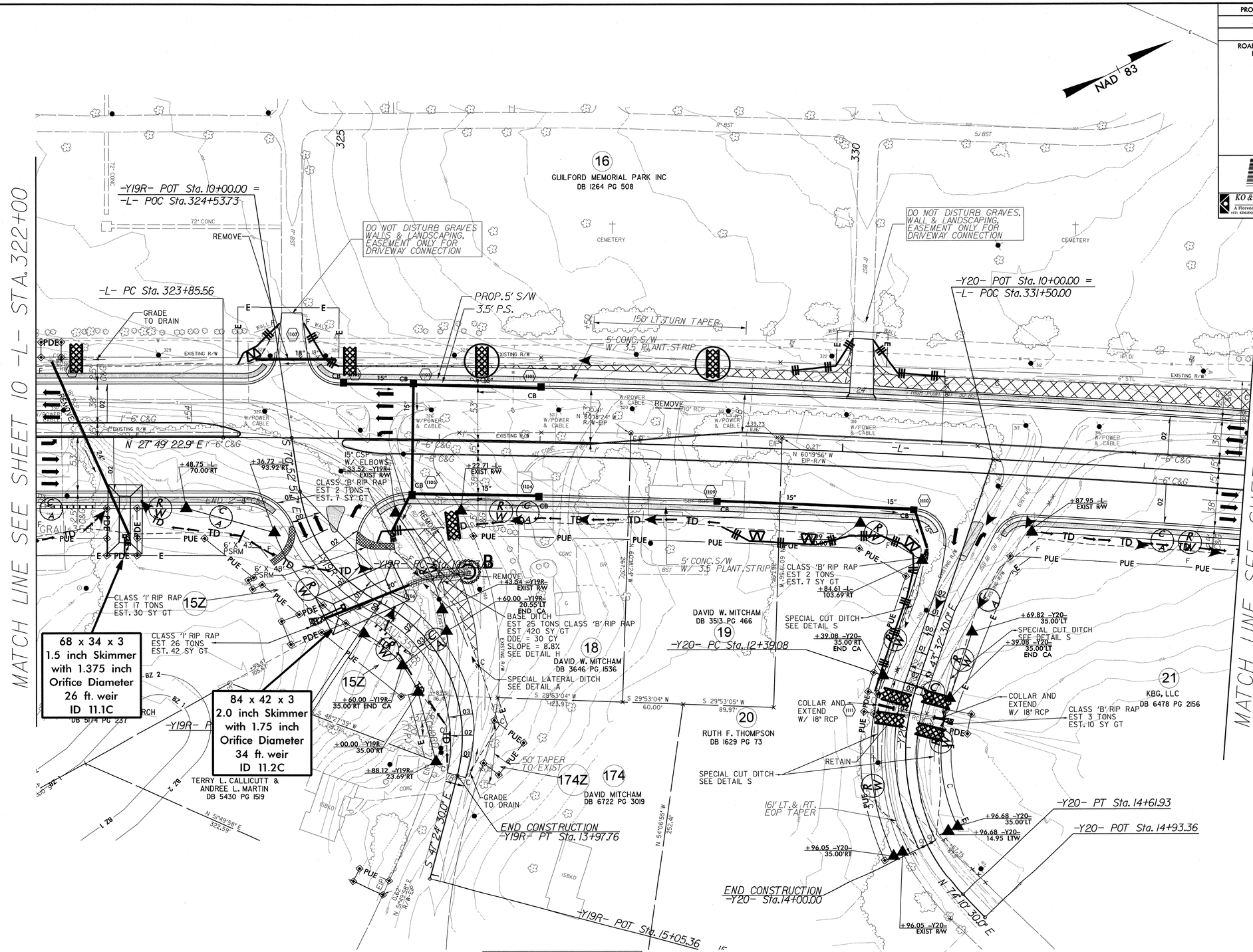
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-11/CONST.11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

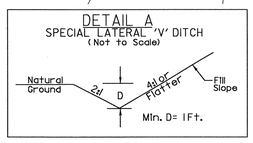
KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3121 KINGSTON WAY, SUITE 150 RALEIGH, N.C. 27607
(919) 571-0966

25 0 25 50
1" = 50'

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 11

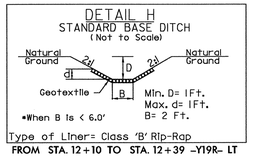


DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 11+54 TO STA. 13+00 -Y19R- LT

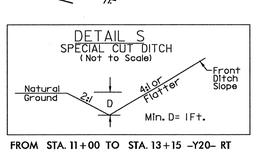
DETAIL H
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class 'B' Rip-Rap

FROM STA. 12+10 TO STA. 12+39 -Y19R- LT

DETAIL S
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 11+00 TO STA. 13+15 -Y20- RT
FROM STA. 12+00 TO STA. 13+15 -Y20-LT

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

PAVEMENT REMOVAL

SEE SHEETS 2-G AND 2-H FOR INTERSECTION DETAILS
SEE SHEET 39 FOR -L- PROFILE
SEE SHEET 48 FOR -Y19R- PROFILE
SEE SHEET 48 FOR -Y20- PROFILE

8/17/99

30-APR-2012 19:27
C:\Projects\2012\01A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_11.dgn
Const. ST W-AMCH_H-0002-2

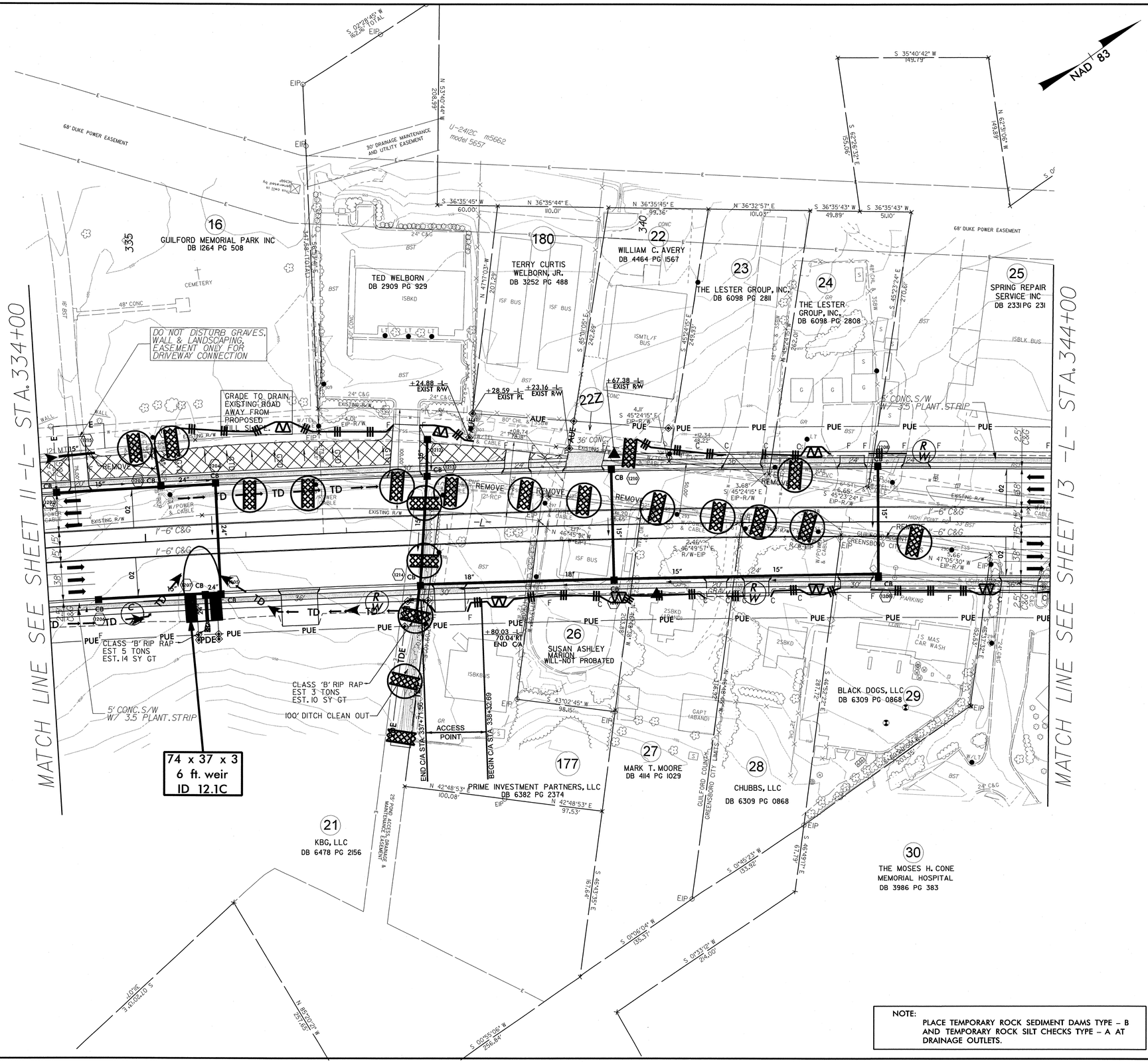
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-12/CONSTJ2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
(919) 870-0580

1" = 50'

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 12



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

SEE SHEET 2-G FOR ACCESS POINTS IN PARTIAL CONTROL
SEE SHEET 39 FOR -L- PROFILE

8/17/99

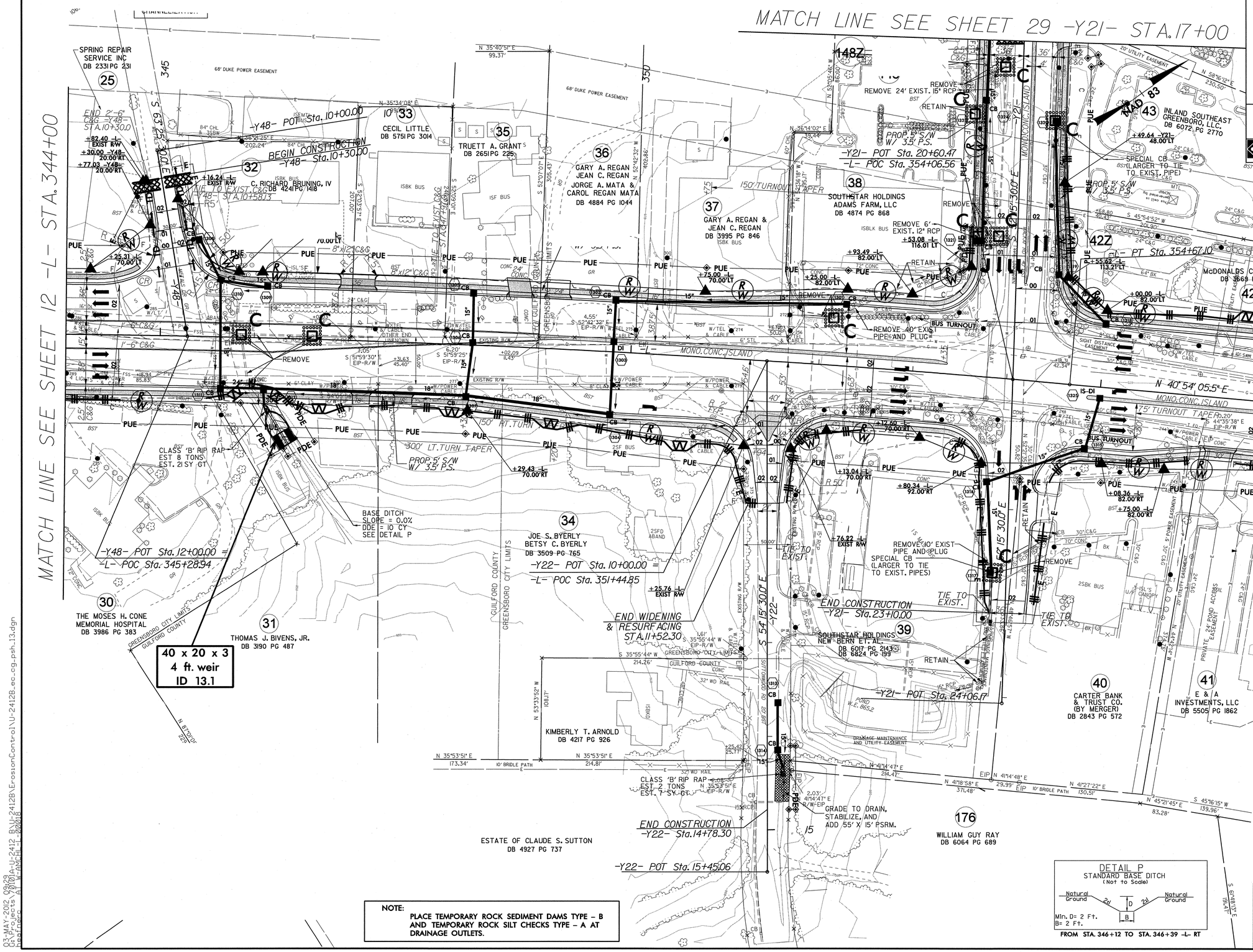
30-APR-2012 10:27
C:\Projects\2012\A-U-2412B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_12.dgn
Part AT WATCHH-D-00025

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-13/CONST.13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0966

25 0 25 50
1" = 50'



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

SEE SHEETS 2-H AND 2-I FOR INTERSECTION DETAILS
SEE SHEET 39 & 40 FOR -L- PROFILE
SEE SHEET 54 FOR -Y48- PROFILE
SEE SHEET 49 FOR -Y22- PROFILE
SEE SHEET 48 & 49 FOR -Y21- PROFILE

8/17/99

03-MAY-2012 09:29
C:\Projects\U2412A-U-2412 BU\2412B\ErosionControl\U-2412B_ec_cg_psh_13.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-14/CONST.14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
231 KONGSTON WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0066

25 0 25 50
1" = 50'

NAD 83

44 x 29 x 3
1.5 inch Skimmer
with 1.25 inch
Orifice Diameter
21 ft. weir
(See Tiered Skimmer
Basin Detail)
ID 14.2

Modified Silt Basin
Type 'B'
44 x 29 x 3
(See Tiered Skimmer
Basin Detail)
ID 14.2

91 x 45 x 3
10 ft. weir
ID 14.1C

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 14

DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

Natural Ground, 2:1, D, 4:1 or Flatter, Fill Slope
Min. D= 1Ft.

FROM STA. 359+10 TO STA. 360+39 -L- RT
FROM STA. 363+60 TO STA. 366+70 -L- LT

DETAIL E
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, b, 1':1Ft., Fill Slope, B
Min. D= 1Ft.
B= 2 Ft.
b= 5 Ft.

FROM STA. 364+50 TO STA. 365+00 -L- RT

DETAIL H
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, d, 2:1, Natural Ground, Geotextile, B
Min. D= 1Ft.
Max. d= 1Ft.
B= Ft.
•When B is < 6.0'
Type of Liner= Class 'B' Rip-Rap

FROM STA. 364+50 -L- RT (B=2')

DETAIL P
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, Natural Ground, B
Min. D= 1Ft.
B= 2 Ft.

FROM STA. 366+00 -L- LT

DETAIL S
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground, 2:1 or Flatter, D, 4:1 or Flatter, Front Ditch Slope
Min. D= 1Ft.

FROM STA. 367+00 TO STA. 370+00 -L- RT
FROM STA. 11+00 TO STA. 12+50 -Y23- RT
FROM STA. 11+00 TO STA. 12+50 -Y23- LT
FROM STA. 11+50 TO STA. 13+50 -Y46- LT

MATCH LINE SEE SHEET 13 -L- STA. 357+00

MATCH LINE SEE SHEET 15 -L- STA. 370+00

MATCH LINE SEE SHEET 30 -Y46- STA. 13+50

-Y23- POT Sta. 10+00.00 = -L- POS Sta. 360+68.84

-Y46- POT Sta. 10+00.00 = -L- POC Sta. 366+01.06

-Y23- POT Sta. 12+50.00

-Y46- PC Sta. 11+21.41

-L- TS Sta. 359+77.98

-L- SC Sta. 362+37.98

-L- CS Sta. 366+45.45 END PROP. C&G

-L- ST Sta. 369+05.45

-L- TS Sta. 369+87.89

END WIDENING & RESURFACING STA. 12+00.00

End Construction

PAVEMENT REMOVAL

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

SEE SHEETS 2-I AND 2-J FOR INTERSECTION DETAILS
SEE SHEET 40 FOR -L- PROFILE
SEE SHEET 49 FOR -Y23- PROFILE
SEE SHEET 53 FOR -Y46- PROFILE

8/17/99

30-APR-2012 10:27
G:\Projects\70101A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_14.dgn
Paul Ast W-AMHIL-D-000029

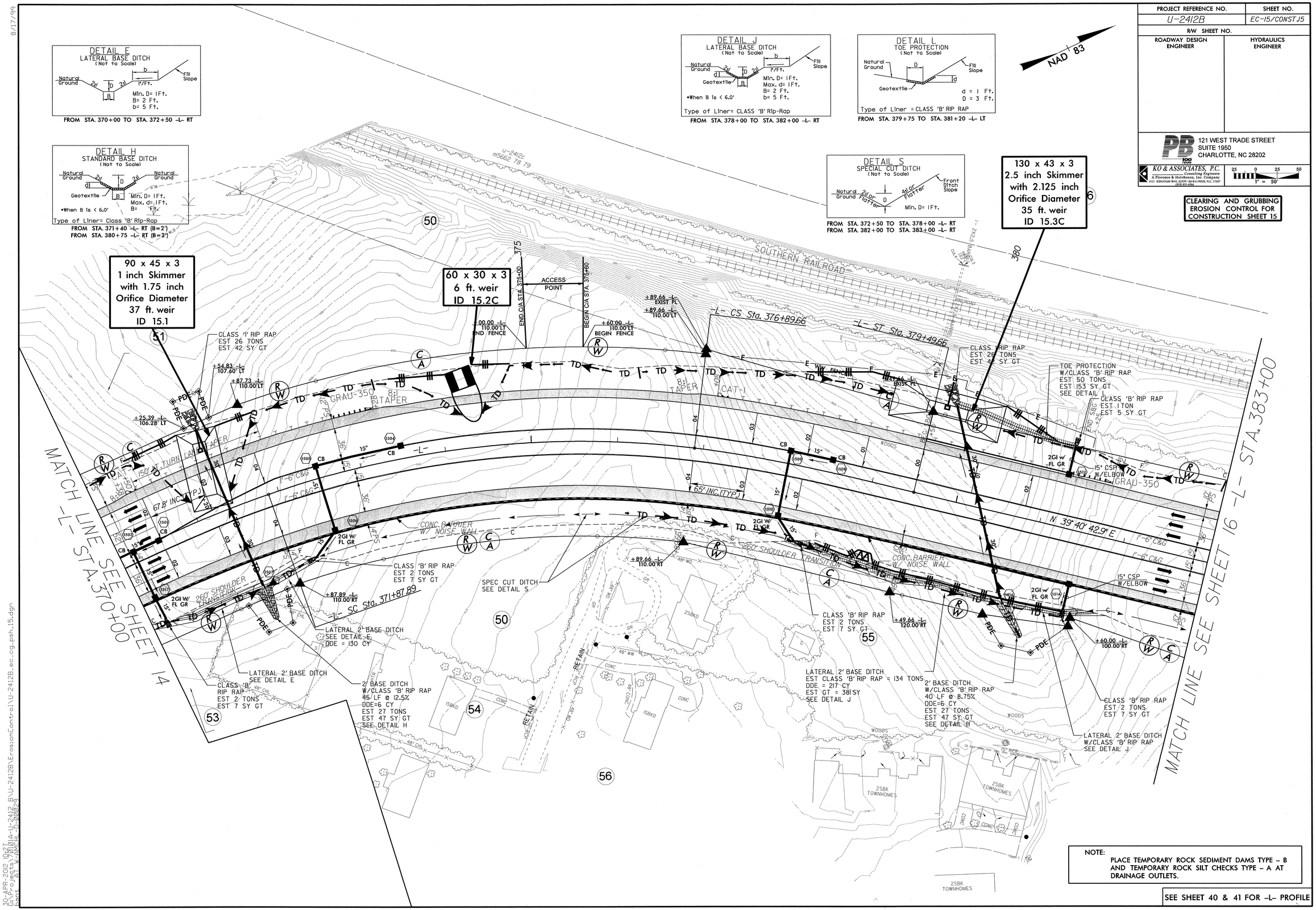
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-15/CONST.J5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGSTON WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 571-4266

25 0 25 50
1" = 50'

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 15



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

SEE SHEET 40 & 41 FOR -L- PROFILE

8/17/99
30-APR-2012 10:27
G:\Projects\2010\A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_15.dgn
pbtest A1 W-AMCHI D-00029

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-16/CONST.16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
511 KINGDOM WAY, SUITE 110 RALEIGH, N.C. 27601
(919) 821-1266

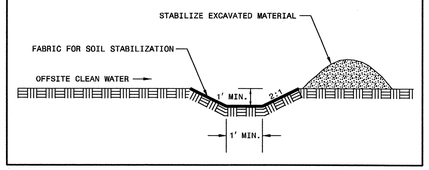
1" = 50'

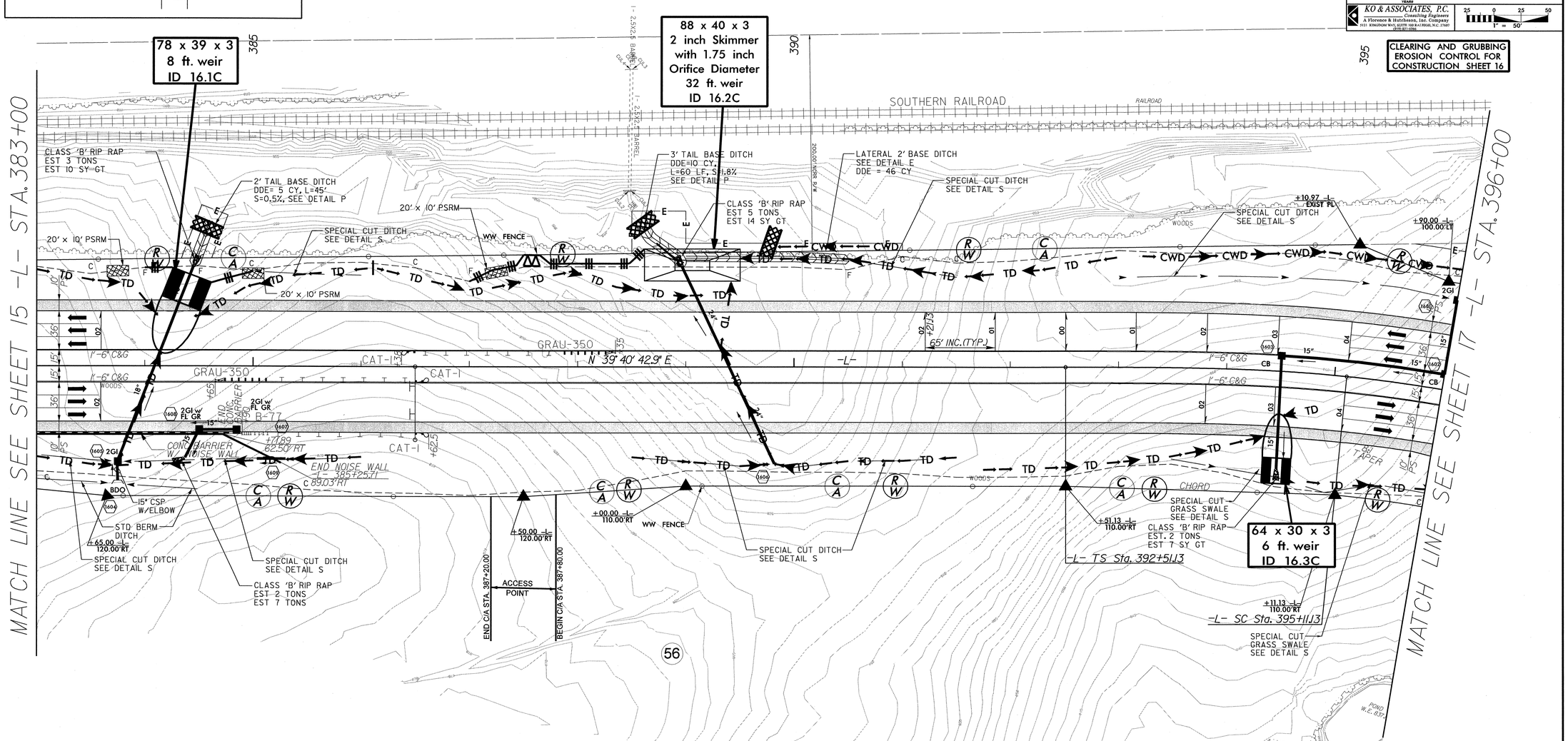
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 16

CLEAN WATER DIVERSION

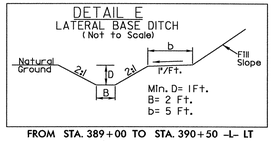
→→ CWD →→ CWD →→ CWD →→ CWD →→

(Not to Scale)



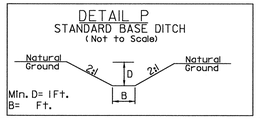


DETAIL E
LATERAL BASE DITCH
(Not to Scale)



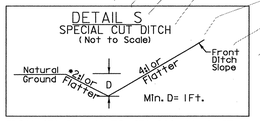
FROM STA. 389+00 TO STA. 390+50 -L- LT

DETAIL P
STANDARD BASE DITCH
(Not to Scale)



FROM STA. 384+45 TO STA. 384+60 -L- LT B=2'
FROM STA. 388+50 TO STA. 389+00 -L- LT B=3'

DETAIL S
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 383+00 TO STA. 386+00 -L- RT
FROM STA. 385+00 TO STA. 386+00 -L- LT
FROM STA. 388+50 TO STA. 391+50 -L- RT
FROM STA. 390+50 TO STA. 391+50 -L- LT
FROM STA. 393+00 TO STA. 396+00 -L- LT
FROM STA. 393+50 TO STA. 396+35 -L- RT*
*USE 3:1 BACK SLOPE FOR GRASS SWALE

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

SEE SHEET 41 FOR -L- PROFILE

8/17/99
30-APR-2012 10:27
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Paint: FAT W-EAM-HH-JD-MMDG9

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-17/CONST.17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 121 WEST TRADE STREET SUITE 1950 CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C. Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607 (919) 851-1912

25 0 25 50
1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 17

INSTALL PIPE(S) IN JURISDICTIONAL AREAS ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

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

ENVIRONMENTALLY SENSITIVE AREA SEE PROJECT SPECIAL PROVISIONS

CLEAN WATER DIVERSION

→→ CWD →→ CWD →→ CWD →→ CWD →→

(Not to Scale)

STABILIZE EXCAVATED MATERIAL
FABRIC FOR SOIL STABILIZATION
OFFSITE CLEAN WATER →
4' MIN. 2:1
1' MIN.

DETAIL F
SPECIAL CUT DITCH w/HINGE
(Not to Scale)

Natural Ground, 2:1, SY, D, 4:1 or Flatter, Front Ditch Slope, 3.0', Min. D= 1 Ft.

FROM STA. 398+50 TO STA. 401+40 –L– RT, S=3:1
FROM STA. 405+50 TO STA. 408+00 –L– RT, S=6:1
FROM STA. 406+00 TO STA. 408+00 –L– LT, S=6:1

DETAIL L
TOE PROTECTION
(Not to Scale)

Natural Ground, D, Fill Slope, d, Geotextile
d = 1 Ft.
D = 3 Ft.
Type of Liner = CLASS 'B' RIP RAP

FROM STA. 396+50 TO STA. 398+50 –L– LT

DETAIL S
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground, 2:1, D, 4:1 or Flatter, Front Ditch Slope
Min. D= 1 Ft.

FROM STA. 401+00 TO STA. 402+50 –L– LT

DETAIL P
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, Natural Ground, B
Min. D= 1 Ft.
B= 4 Ft.

FROM STA. 397+90 –L– LT

DETAIL X
PROPOSED OUTLET CHANNEL
(Not to Scale)

W, D, Geotextile, Geotextile
W= 4 Ft.
D= 2 Ft.
Type of Liner = CLASS 'I' RIP RAP

FROM STA. 397+30 –L– RT

MATCH LINE SEE SHEET 16 –L– STA. 396+00

MATCH LINE SEE SHEET 18 –L– STA. 408+00

SPECIAL CUT 5' BASE DITCH SEE DETAIL Y

4' BASE DITCH DDE=10 CY L=30' S=4.67% SEE DETAIL P

BURY INVERT 0.8'

TOE PROTECTION W/CLASS 'B' RIP RAP EST 70 TONS EST 210 SY GT SEE DETAIL L

SPECIAL CUT DITCH SEE DETAIL S

SPECIAL CUT DITCH SEE DETAIL F

SPECIAL CUT GRASS SWALE SEE DETAIL F

SPECIAL CUT DITCH SEE DETAIL F

WW FENCE

CHORD

GRAD-350

8:1 TAPER

65' INC.(TYP.)

–L– N 70°02'30.1" E

–L– ST Sta. 399+00.04

–L– ST Sta. 402+00.04

FS-III SEE DETAIL 2GI

FS-I SEE DETAIL

CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GT

30 LF OF CLASS 'I' RIP RAP ON BANKS ONLY, EST 48 TONS SEE DETAIL X EST 55 SY GT DDE=4 CY

END C/A STA. 400+70.00

ACCESS POINT

BEGIN C/A STA. 401+30.00

48 x 24 x 3
1.5 inch Skimmer with 0.875 inch Orifice Diameter
16 ft. weir
ID 17.1C

82 x 41 x 3
2 inch Skimmer with 1.625 inch Orifice Diameter
33 ft. weir
ID 17.2C

DETAIL Y
SPECIAL CUT BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, B, 4:1 or Flatter, Front Ditch Slope
Min. D= 1 Ft.
B= 5 Ft.

FROM STA. 398+60 TO STA. 400+00 –L– LT

DETAIL I
FALSE SUMP
(Not to Scale)

Outside Ditch Traffic Flow, 10:1, 20:1, 0.5' Min., 1.0' Max., 2.0', GI etc., S = Ditch Slope, ℄ Proposed Ditch

FROM STA. 396+45 –L– RT

DETAIL III
FALSE SUMP
(Not to Scale)

Outside Ditch Traffic Flow, 20:1, 10:1, 2', 0.5' Min., 1.0' Max., GI etc., S=Ditch Slope, ℄ Proposed Ditch

FROM STA. 396+10 –L– LT
FROM STA. 398+40 –L– RT
FROM STA. 401+30 –L– RT

PAVEMENT REMOVAL

SEE SHEET 41 & 42 FOR –L– PROFILE

8/17/99

03-MAY-2012 09:29
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ecfrenc (Al Wendell - 2001)

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-17A/CONST.17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

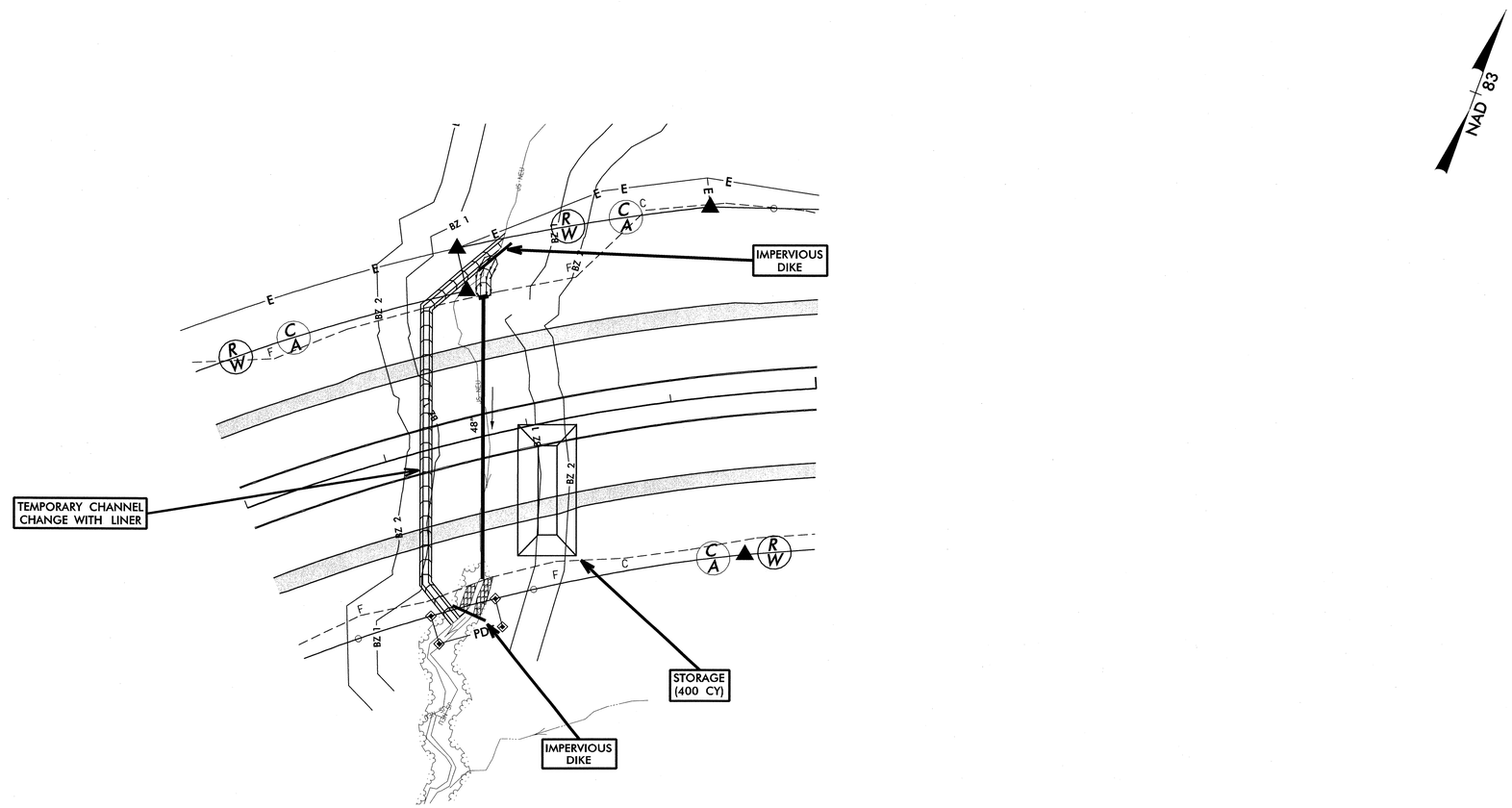
PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
7121 KRODDOCK WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-8966

25 0 25 50
1" = 50'

CULVERT CONSTRUCTION SEQUENCE
STA. 397 + 69 –L–

1. CONSTRUCT STILLING BASIN (400 CY).
2. CONSTRUCT TEMPORARY CHANNEL CHANGE WITH LINER (4 FT. BASE, 3 FT. DEEP, 2:1 SIDE SLOPES).
3. CONSTRUCT IMPERVIOUS DIKES, DIVERTING FLOW THROUGH TEMPORARY CHANNEL CHANGE.
4. CONSTRUCT PROPOSED CULVERT AND INLET/OUTLET CHANNEL IMPROVEMENTS.
5. REMOVE IMPERVIOUS DIKES AND TEMPORARY CHANNEL CHANGE, ALLOWING FLOW THROUGH CULVERT
6. REMOVE STILLING BASIN AND COMPLETE ROADWAY.



8/17/99
30-APR-2012 10:28
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bent_all_V-AMCHL-D-20002g

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-18/CONST.18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 1928
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

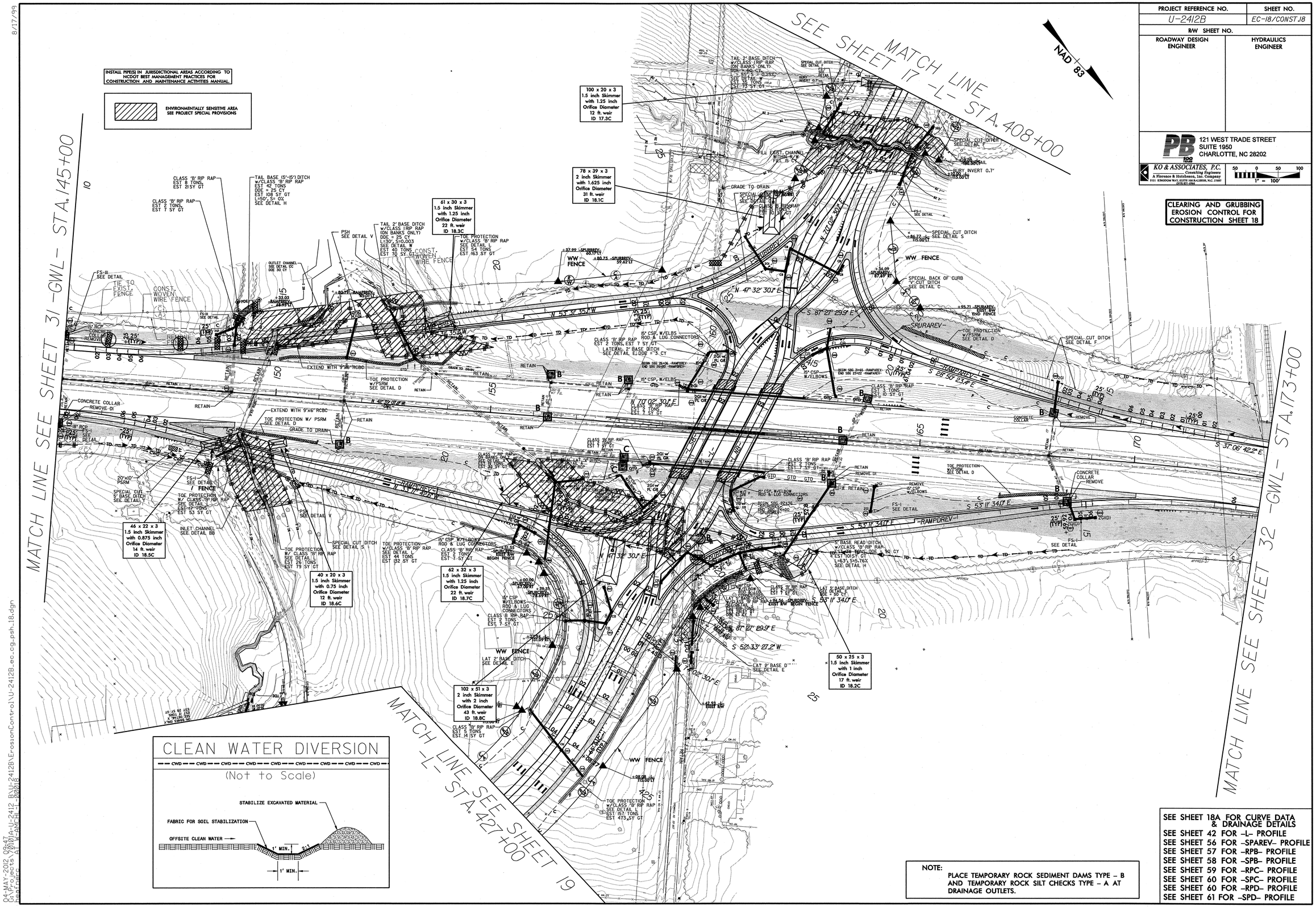
KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
8121 RESEARCH WAY, SUITE 100 RALEIGH, N.C. 27615
(919) 872-0962

1" = 100'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 18

INSTALL PIPE(S) IN JURISDICTIONAL AREAS ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

ENVIRONMENTALLY SENSITIVE AREA SEE PROJECT SPECIAL PROVISIONS



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

SEE SHEET 18A FOR CURVE DATA & DRAINAGE DETAILS
SEE SHEET 42 FOR –L– PROFILE
SEE SHEET 56 FOR –SPAREV– PROFILE
SEE SHEET 57 FOR –RPB– PROFILE
SEE SHEET 58 FOR –SPB– PROFILE
SEE SHEET 59 FOR –RPC– PROFILE
SEE SHEET 60 FOR –SPC– PROFILE
SEE SHEET 60 FOR –RPD– PROFILE
SEE SHEET 61 FOR –SPD– PROFILE

8/17/99
04-MAY-2012 09:47
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bcarnes AT WANGELL - 00016

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-18A/CONST.18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

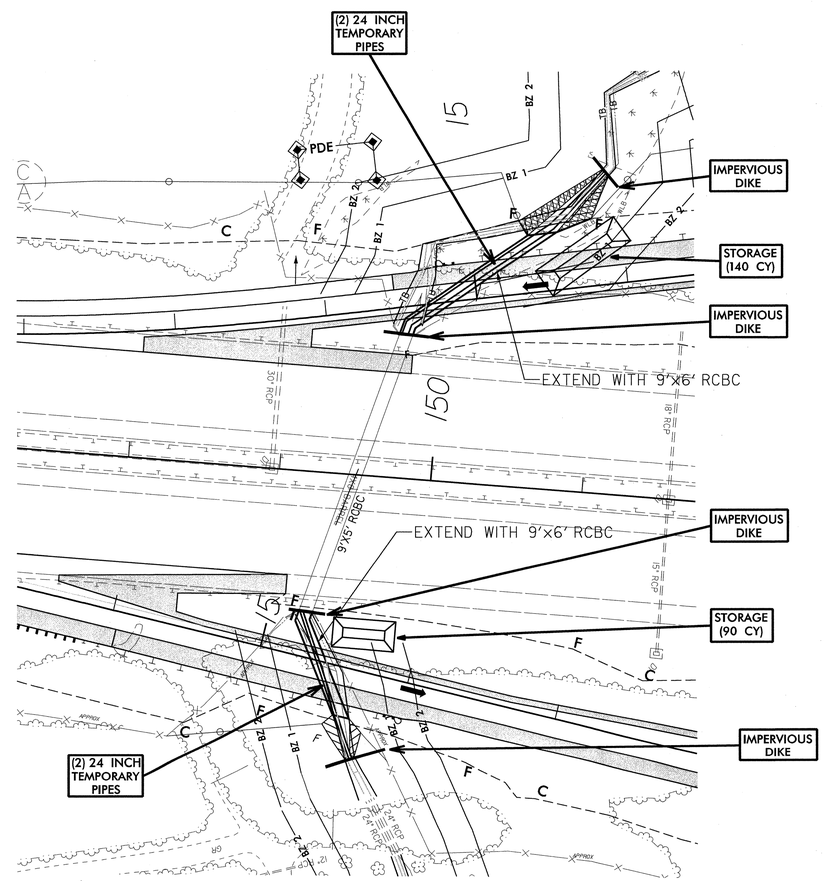
PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGSTON WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0506

25 0 25 50
1" = 50'

CULVERT CONSTRUCTION SEQUENCE
STA. 149 + 50 –GWL–

1. CONSTRUCT STILLING BASINS (90 CY AND 140 CY).
2. CONSTRUCT IMPERVIOUS DIKES AND INSTALL TWO 24" TEMPORARY PIPES TO ALLOW FLOW THROUGH WORK AREA.
3. CONSTRUCT PROPOSED CULVERT EXTENSIONS AND INLET/OUTLET CHANNEL IMPROVEMENTS.
4. REMOVE IMPERVIOUS DIKES AND TEMPORARY PIPES ALLOWING FLOW THROUGH CULVERT.
5. REMOVE STILLING BASINS AND COMPLETE ROADWAY.



30-APR-2012 10:28
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bart.gray@AMCHI.com

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-19/CONST.19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGSTON WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0966

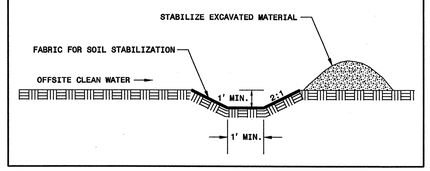
25 0 25 50
1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 19

CLEAN WATER DIVERSION

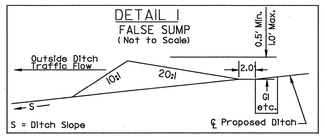
→→ CWD →→ CWD →→ CWD →→ CWD →→

(Not to Scale)



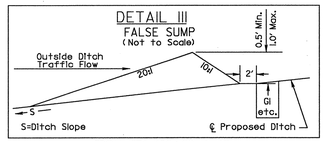
ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

DETAIL I
FALSE SUMP
(Not to Scale)



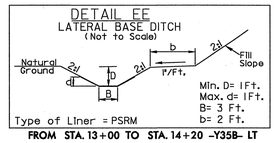
FROM STA. 431+80 -L- RT

DETAIL III
FALSE SUMP
(Not to Scale)



FROM STA. 429+90 -L- LT
FROM STA. 432+00 -L- LT
FROM STA. 18+50 -Y35B- RT

DETAIL EE
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 13+00 TO STA. 14+20 -Y35B- LT

DETAIL FF
FALSE CUT
(Not to Scale)

FROM STA. 431+50 TO STA. 433+50 LT

DETAIL DD
TOE PROTECTION
(Not to Scale)

FROM STA. 432+27 TO 433+23 -L- RT

DETAIL Z
BERM BASE DITCH
(Not to Scale)

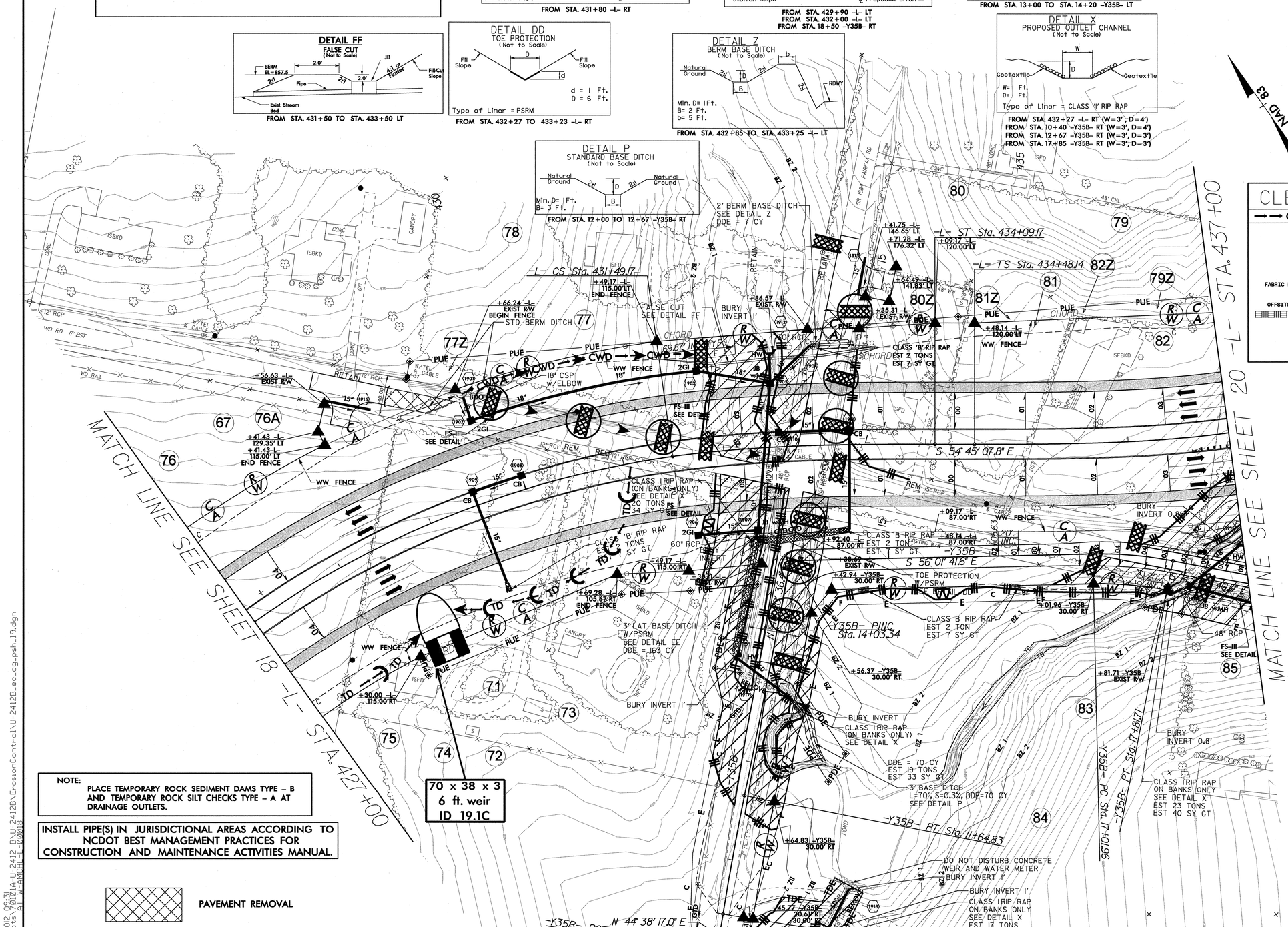
FROM STA. 432+85 TO STA. 433+25 -L- LT

DETAIL X
PROPOSED OUTLET CHANNEL
(Not to Scale)

FROM STA. 432+27 -L- RT (W=3', D=4')
FROM STA. 10+40 -Y35B- RT (W=3', D=4')
FROM STA. 12+67 -Y35B- RT (W=3', D=3')
FROM STA. 17+85 -Y35B- RT (W=3', D=3')

DETAIL P
STANDARD BASE DITCH
(Not to Scale)

FROM STA. 12+00 TO 12+67 -Y35B- RT



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

INSTALL PIPE(S) IN JURISDICTIONAL AREAS ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

PAVEMENT REMOVAL

SEE SHEET 42 & 43 FOR -L- PROFILE

8/17/99
03-MAY-2012 09:31
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pbarrence

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-19A/CONST.19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

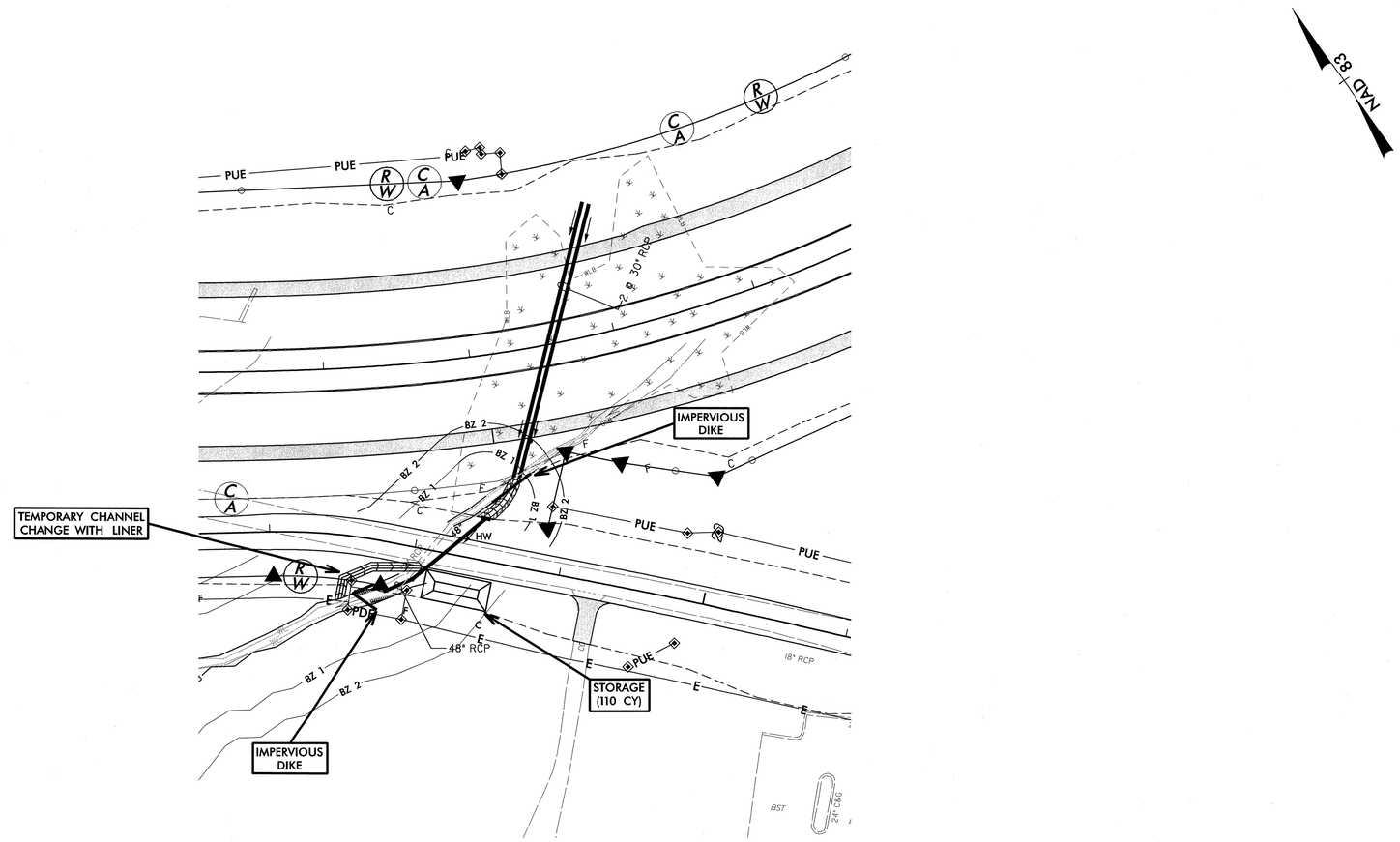
PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGSTON WAY, SUITE 100 RALEIGH, N.C. 27609
(919) 872-5500

25 0 25 50
1" = 50'

CULVERT CONSTRUCTION SEQUENCE
STA. 18 + 20 –Y35BR–

1. CONSTRUCT STILLING BASIN (110 CY).
2. CONSTRUCT TEMPORARY CHANNEL CHANGE WITH LINER (2 FT. BASE, 3 FT. DEEP, 2:1 SIDE SLOPES).
3. CONSTRUCT IMPERVIOUS DIKES, DIVERTING FLOW THROUGH TEMPORARY CHANNEL CHANGE.
4. CONSTRUCT PROPOSED CULVERT AND INLET/OUTLET CHANNEL IMPROVEMENTS.
5. REMOVE IMPERVIOUS DIKES AND TEMPORARY CHANNEL CHANGE, ALLOWING FLOW THROUGH CULVERT
6. REMOVE STILLING BASIN AND COMPLETE ROADWAY.



8/17/99

30-APR-2012 10:23
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pbct PAT W AMCH D-00029

8/17/99

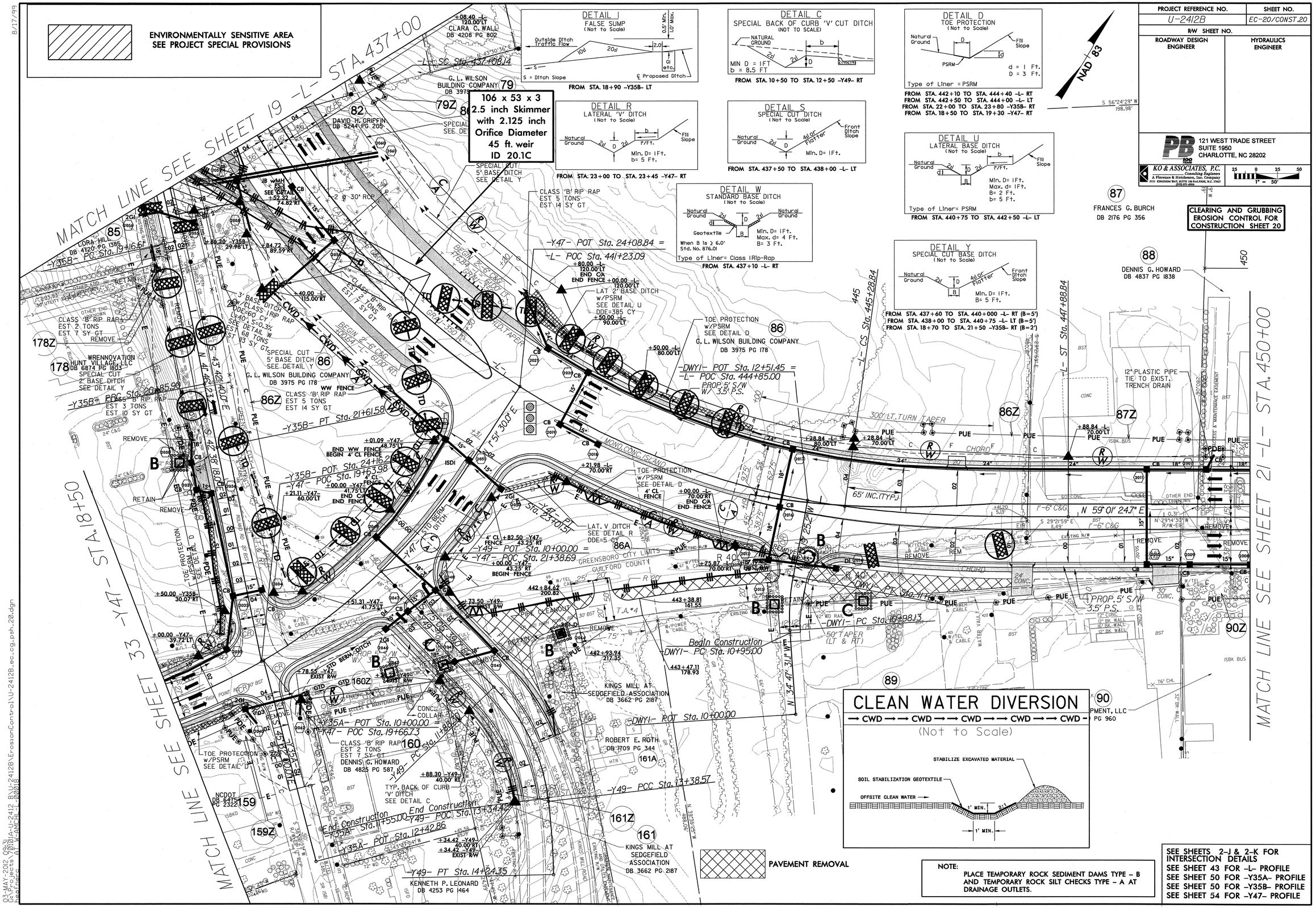
ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-20/CONST.20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 528
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3131 KINGSTON WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6066

25 0 25 50
1" = 50'



DETAIL I
FALSE SUMP
(Not to Scale)

FROM STA. 18+90 -Y35B- LT

DETAIL C
SPECIAL BACK OF CURB 'V' CUT DITCH
(NOT TO SCALE)

FROM STA. 10+50 TO STA. 12+50 -Y49- RT

DETAIL D
TOE PROTECTION
(Not to Scale)

FROM STA. 442+10 TO STA. 444+40 -L- RT
FROM STA. 442+50 TO STA. 444+00 -L- LT
FROM STA. 22+00 TO STA. 23+80 -Y35B- RT
FROM STA. 18+50 TO STA. 19+30 -Y47- RT

DETAIL R
LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 23+00 TO STA. 23+45 -Y47- RT

DETAIL S
SPECIAL CUT DITCH
(Not to Scale)

FROM STA. 437+50 TO STA. 438+00 -L- LT

DETAIL U
LATERAL BASE DITCH
(Not to Scale)

FROM STA. 440+75 TO STA. 442+50 -L- LT

DETAIL W
STANDARD BASE DITCH
(Not to Scale)

FROM STA. 437+10 -L- RT

DETAIL Y
SPECIAL CUT BASE DITCH
(Not to Scale)

FROM STA. 437+60 TO STA. 440+000 -L- RT (B=5')
FROM STA. 438+00 TO STA. 440+75 -L- LT (B=5')
FROM STA. 18+70 TO STA. 21+50 -Y35B- RT (B=2')

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

SEE SHEETS 2-J & 2-K FOR INTERSECTION DETAILS
SEE SHEET 43 FOR -L- PROFILE
SEE SHEET 50 FOR -Y35A- PROFILE
SEE SHEET 50 FOR -Y35B- PROFILE
SEE SHEET 54 FOR -Y47- PROFILE

03-MAY-2012 09:31
CE:Projects X:\TIP\U-U-2412 R:\U-2412B\ErosionControl\U-2412B_ec_cg_psh_20.dgn
bpowell CLWRMCHL1 8.00.18

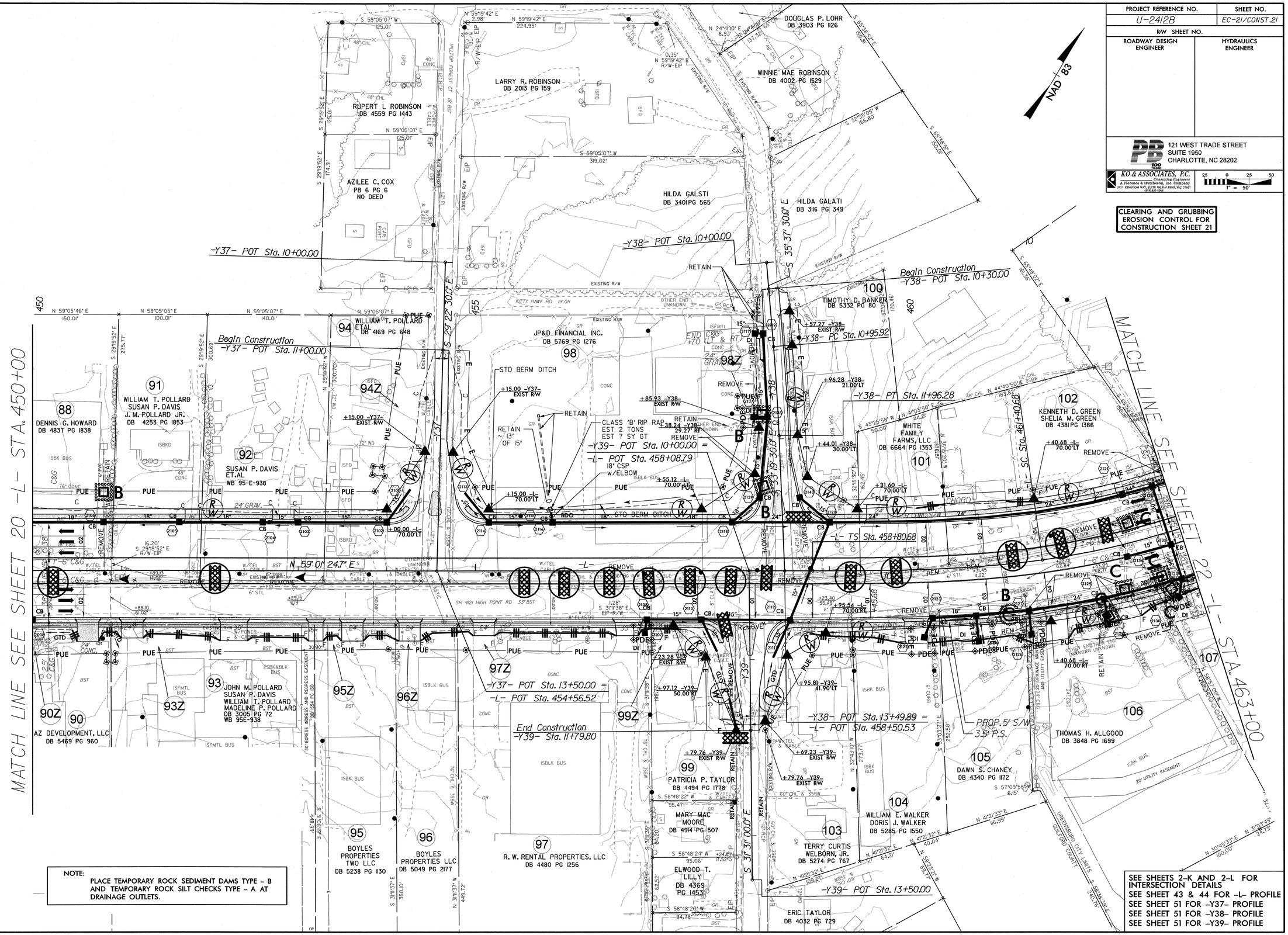
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-21/CONST.21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutchison, Inc. Company
811 KINGSTON WAY, SUITE 100 RALEIGH, N.C. 27603
(919) 831-0966

25 0 25 50
1" = 50'

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 21



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

SEE SHEETS 2-K AND 2-L FOR INTERSECTION DETAILS
SEE SHEET 43 & 44 FOR -L- PROFILE
SEE SHEET 51 FOR -Y37- PROFILE
SEE SHEET 51 FOR -Y38- PROFILE
SEE SHEET 51 FOR -Y39- PROFILE

8/17/99

30-APR-2012 10:30
G:\Projects\2012\A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_21.dgn
Pages AT W-AMCHI-D-0000-3

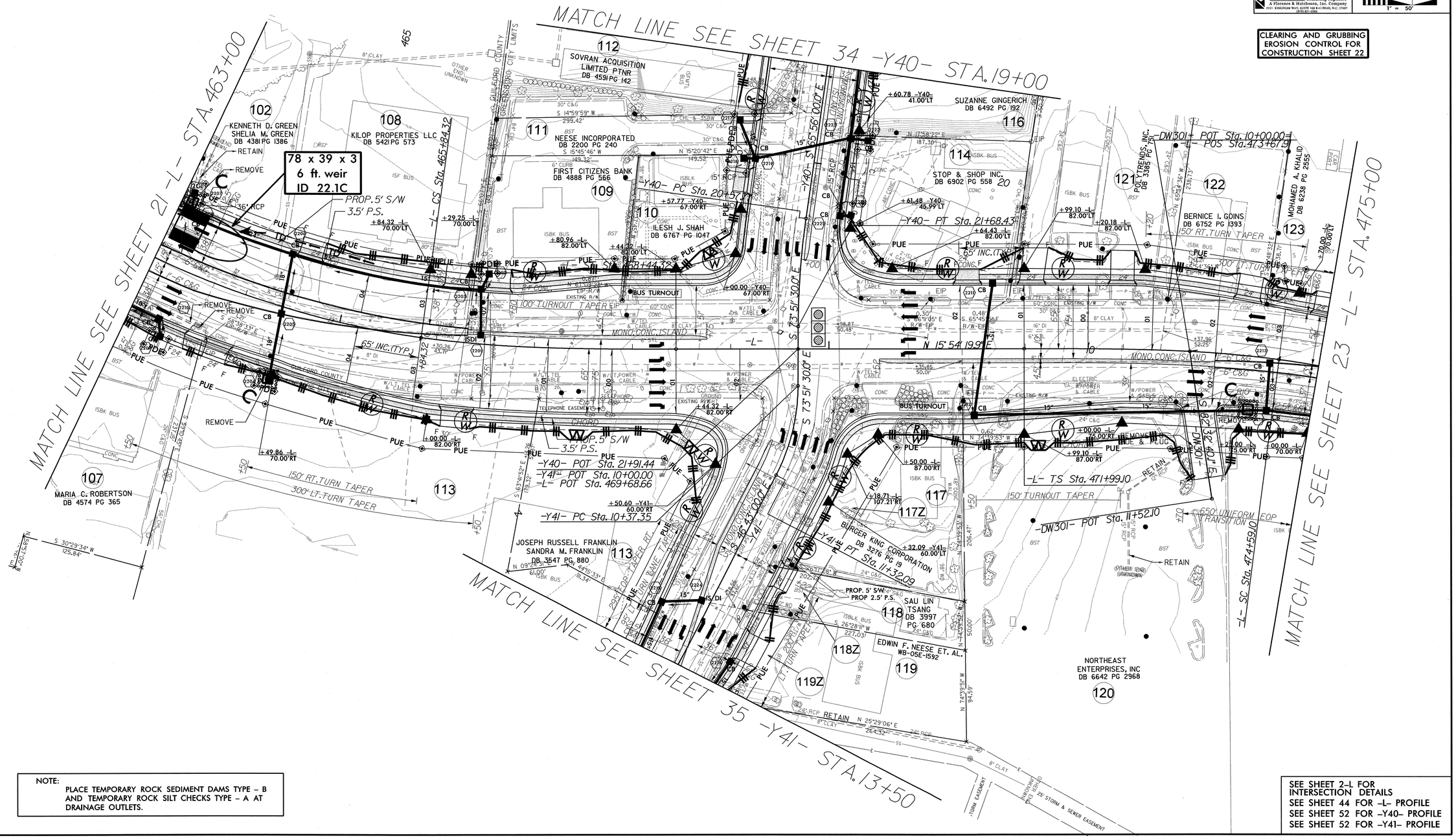
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-22/CONST.22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
P.O. KINGMAN WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 821-1096

25 0 25 50
1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 22



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

SEE SHEET 2-L FOR INTERSECTION DETAILS
SEE SHEET 44 FOR -L- PROFILE
SEE SHEET 52 FOR -Y40- PROFILE
SEE SHEET 52 FOR -Y41- PROFILE

8/17/99
30-APR-2012 10:30
G:\Projects\70101A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_22.dgn
User: AT W-AMHI-TI-20009

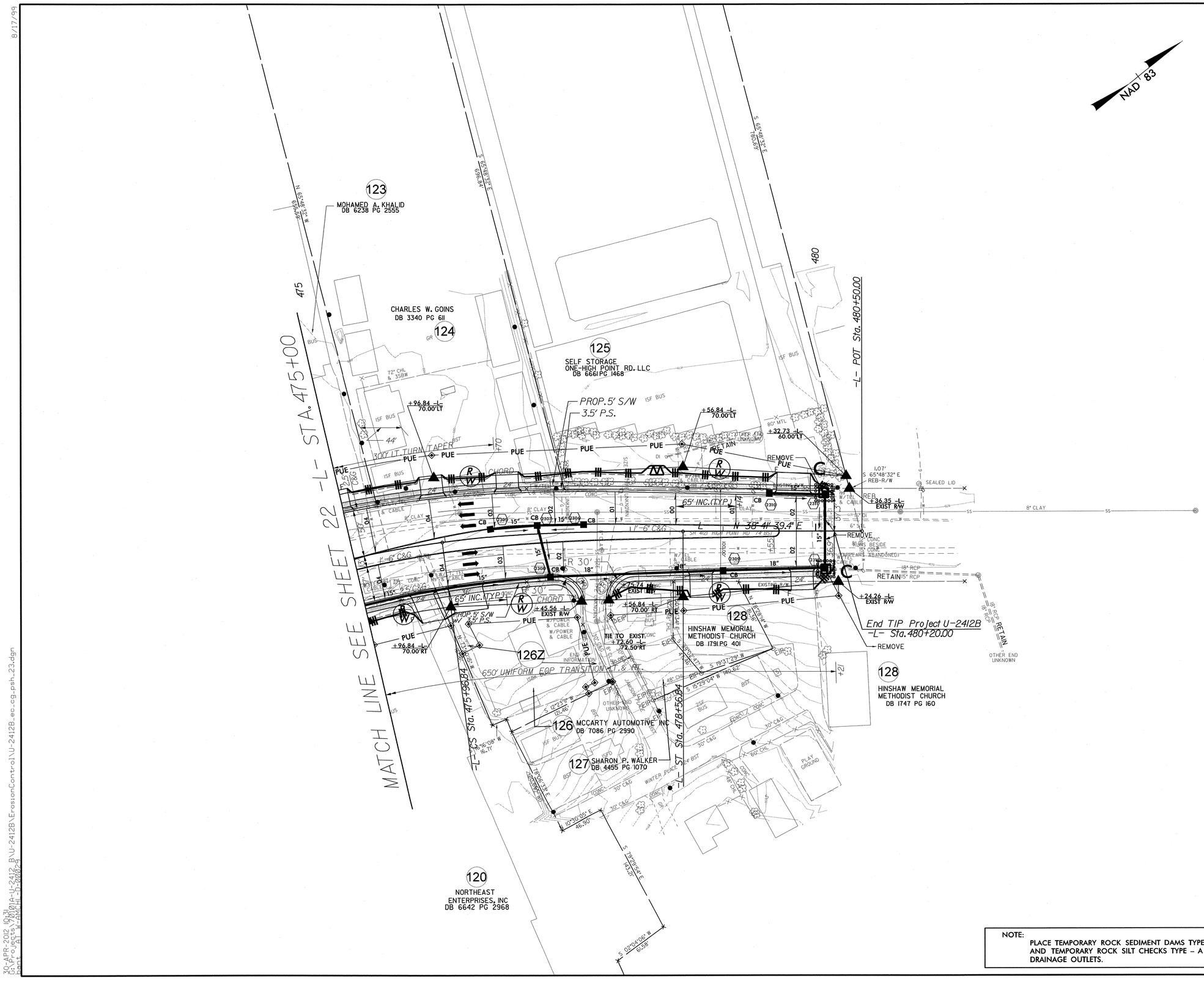
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-23/CONST.23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
P.O. KINGTON WAY, SUITE 500 RALEIGH, N.C. 27607
(919) 67-0768

25 0 25 50
1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 23



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

SEE SHEET 44 FOR –L– PROFILE

8/17/99
30-APR-2012 10:31
G:\Projects\70101A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_23.dgn
pbpatt W-AMCHI-D-00002-9

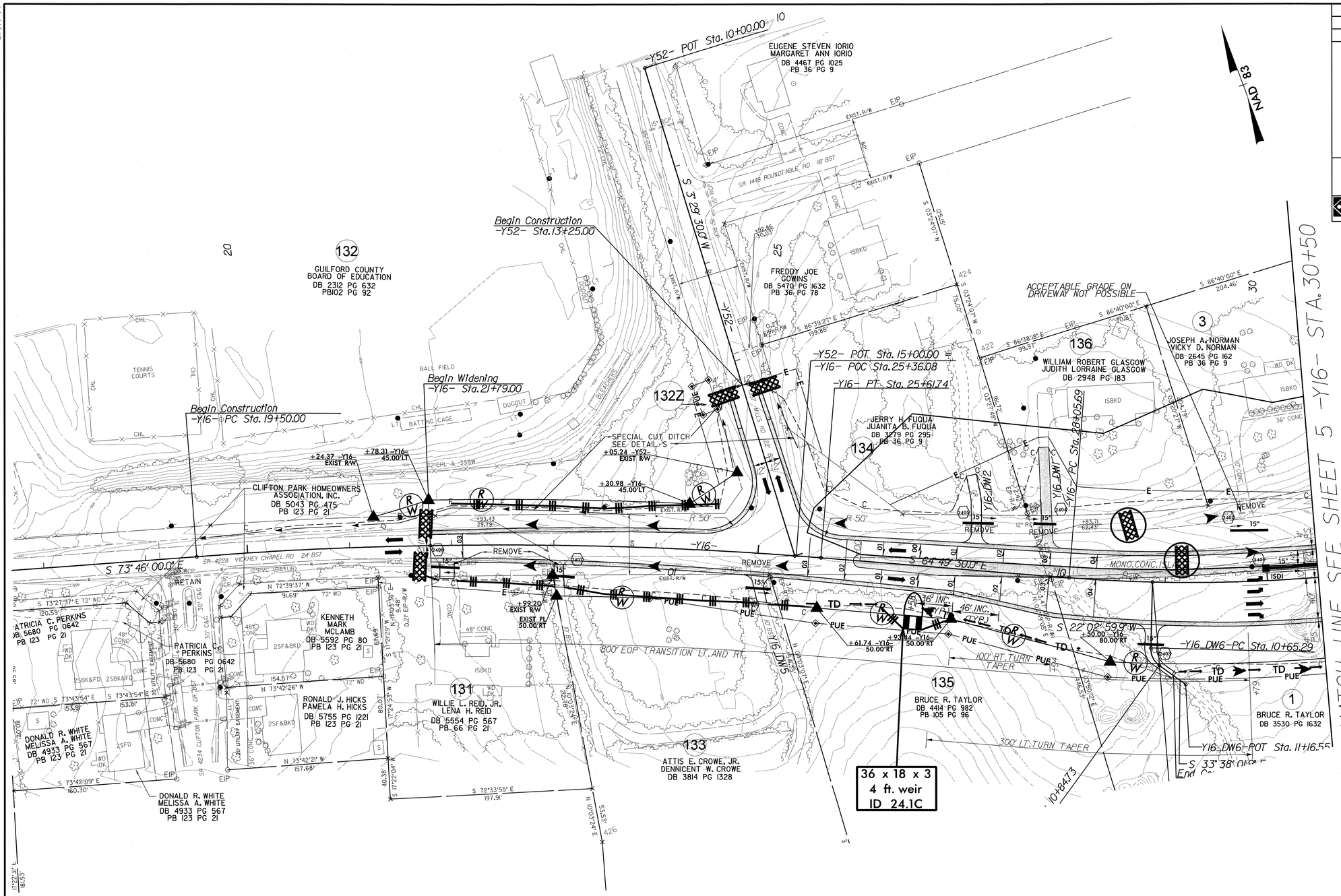
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-24/CONST.24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

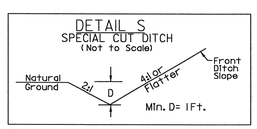
PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
621 KINGSTON WAY, SUITE 100 RALEIGH, N.C. 27601
(919) 851-0586

1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 24





FROM STA. 13+00 TO STA. 14+00 -Y52- RT
FROM STA. 13+00 TO STA. 14+00 -Y52- LT
FROM STA. 19+50 TO STA. 24+00 -Y16- LT

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

SEE SHEET 45 FOR -Y16- PROFILE
SEE SHEET 55 FOR -Y52- PROFILE

8/17/99
30-APR-2012 10:31
G:\Projects\2011A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_24.dgn
User: AT W-AMCHI-D-00029

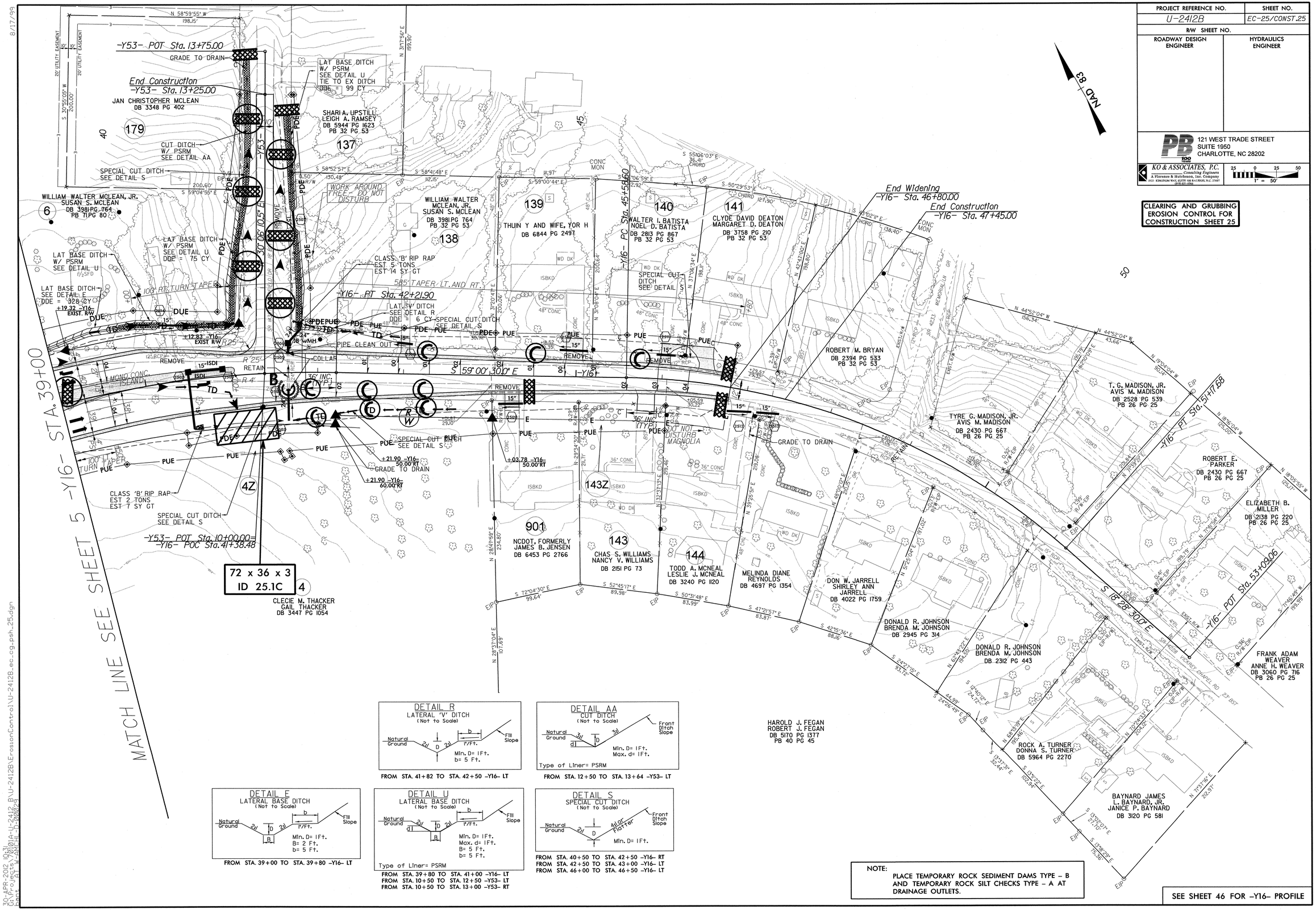
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-25/CONST.25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3121 EDWINCOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0568

1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 25



FROM STA. 41+82 TO STA. 42+50 -Y16- LT

FROM STA. 12+50 TO STA. 13+64 -Y53- LT

FROM STA. 39+00 TO STA. 39+80 -Y16- LT

FROM STA. 39+80 TO STA. 41+00 -Y16- LT
FROM STA. 10+50 TO STA. 12+50 -Y53- LT
FROM STA. 10+50 TO STA. 13+00 -Y53- RT

FROM STA. 40+50 TO STA. 42+50 -Y16- RT
FROM STA. 42+50 TO STA. 43+00 -Y16- LT
FROM STA. 46+00 TO STA. 46+50 -Y16- LT

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

SEE SHEET 46 FOR -Y16- PROFILE

8/17/99
30-APR-2012 10:31
C:\Projects\70101A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_25.dgn
pbatt_at_w-alm1h_h-00029

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-26/CONST.26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

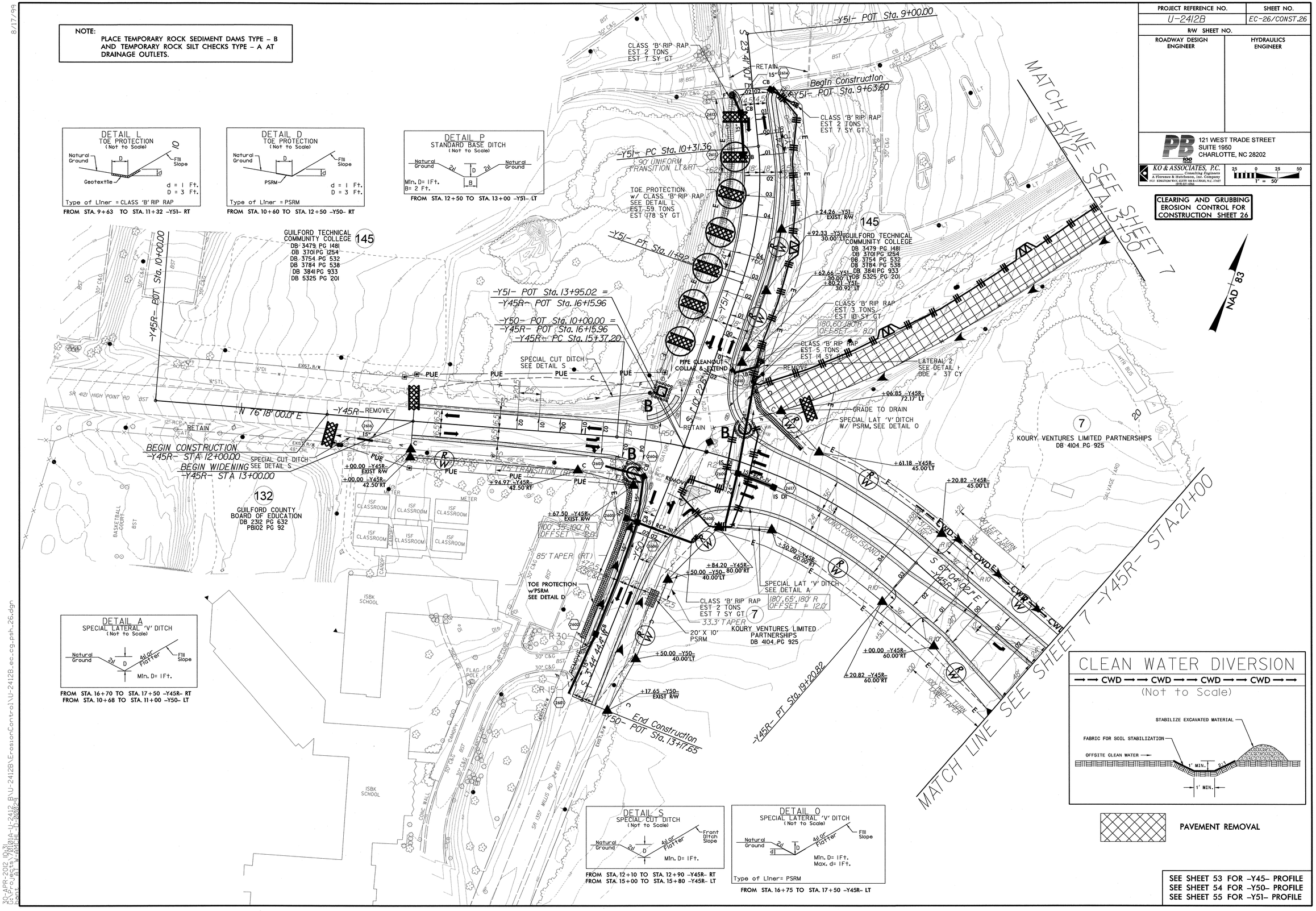
PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
831 KINGSTOWN WAY, SUITE 100 RALEIGH, N.C. 27603
(919) 831-0566

25 0 25 50
1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 26

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



FROM STA. 16+70 TO STA. 17+50 -Y45R- RT
FROM STA. 10+68 TO STA. 11+00 -Y50- LT

FROM STA. 12+50 TO STA. 13+00 -Y51- LT

FROM STA. 9+63 TO STA. 11+32 -Y51- RT

FROM STA. 10+60 TO STA. 12+50 -Y50- RT

FROM STA. 12+10 TO STA. 12+90 -Y45R- RT
FROM STA. 15+00 TO STA. 15+80 -Y45R- LT

FROM STA. 16+75 TO STA. 17+50 -Y45R- LT

PAVEMENT REMOVAL

SEE SHEET 53 FOR -Y45- PROFILE
SEE SHEET 54 FOR -Y50- PROFILE
SEE SHEET 55 FOR -Y51- PROFILE

8/17/99

30-APR-2012 10:31
G:\Projects\70101A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_26.dgn
pbarr AT W-AMCH-D-00002-3

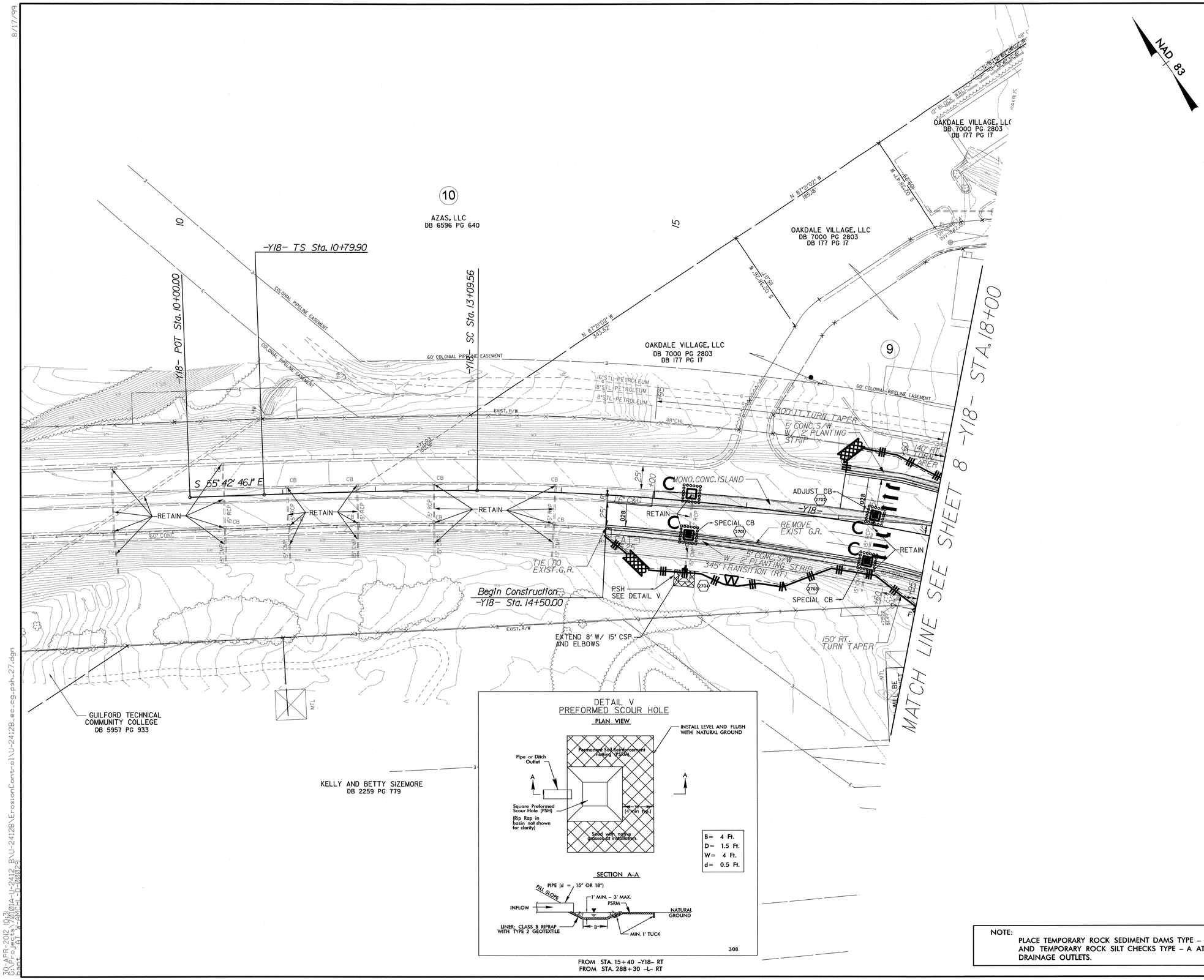
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-27/CONST.27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
1121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27603
(919) 851-0366

25 0 25 50
1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 27



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

SEE SHEET 47 FOR -Y18- PROFILE

8/17/99
30-APR-2012 10:31
C:\PROJECT\U2412B\01A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_27.dgn
bent JST W-AMHI -D-00029

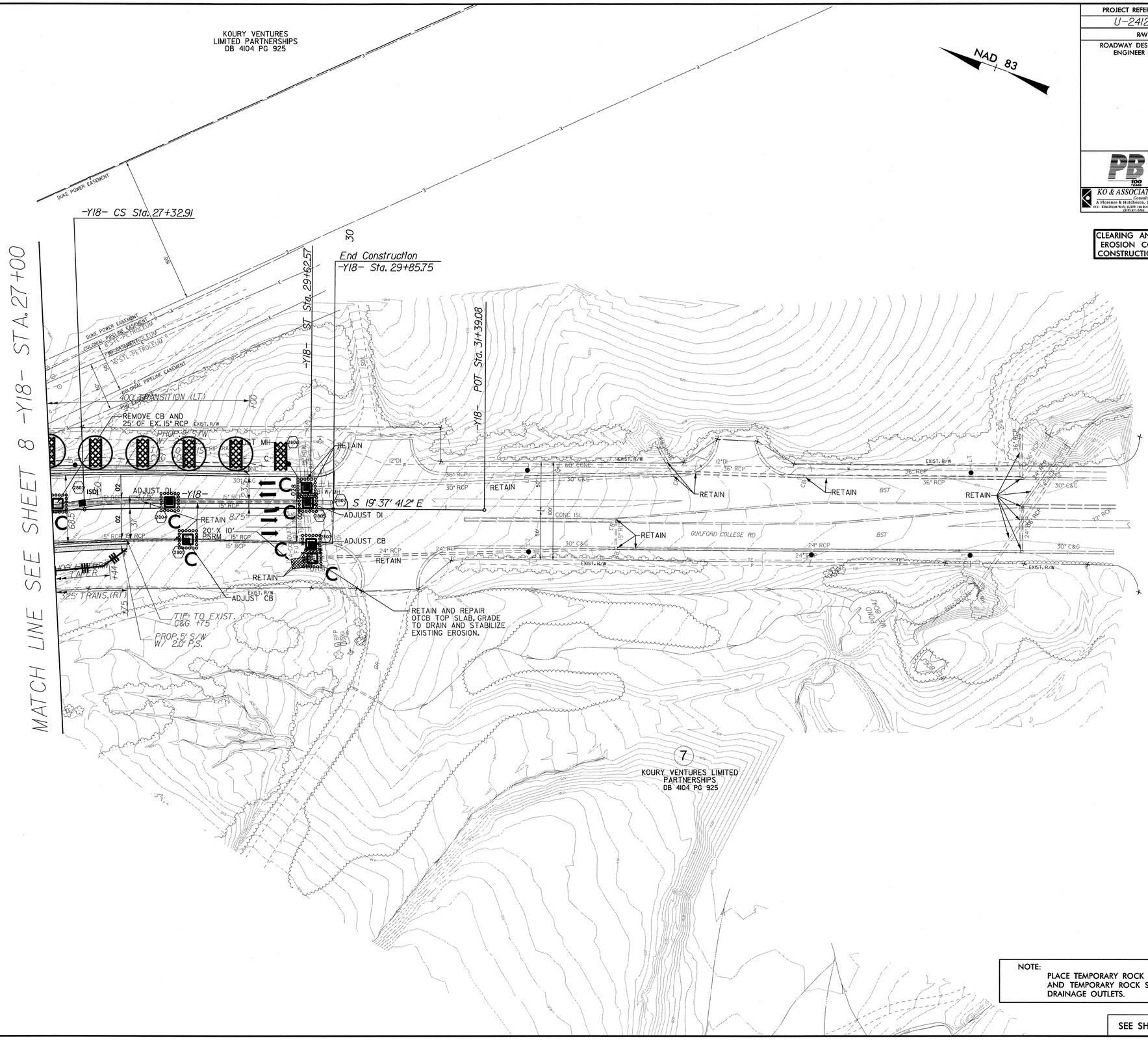
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-28/CONST.28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
121 KINGSTOWN WAY, SUITE 100 RALEIGH, N.C. 27603
(919) 851-1886

25 0 25 50
1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 28



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

SEE SHEET 47 FOR –Y18– PROFILE

8/17/99
30-APR-2012 10:31
C:\Projects\7010\A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_28.dgn
PART: AT WEAKLEY

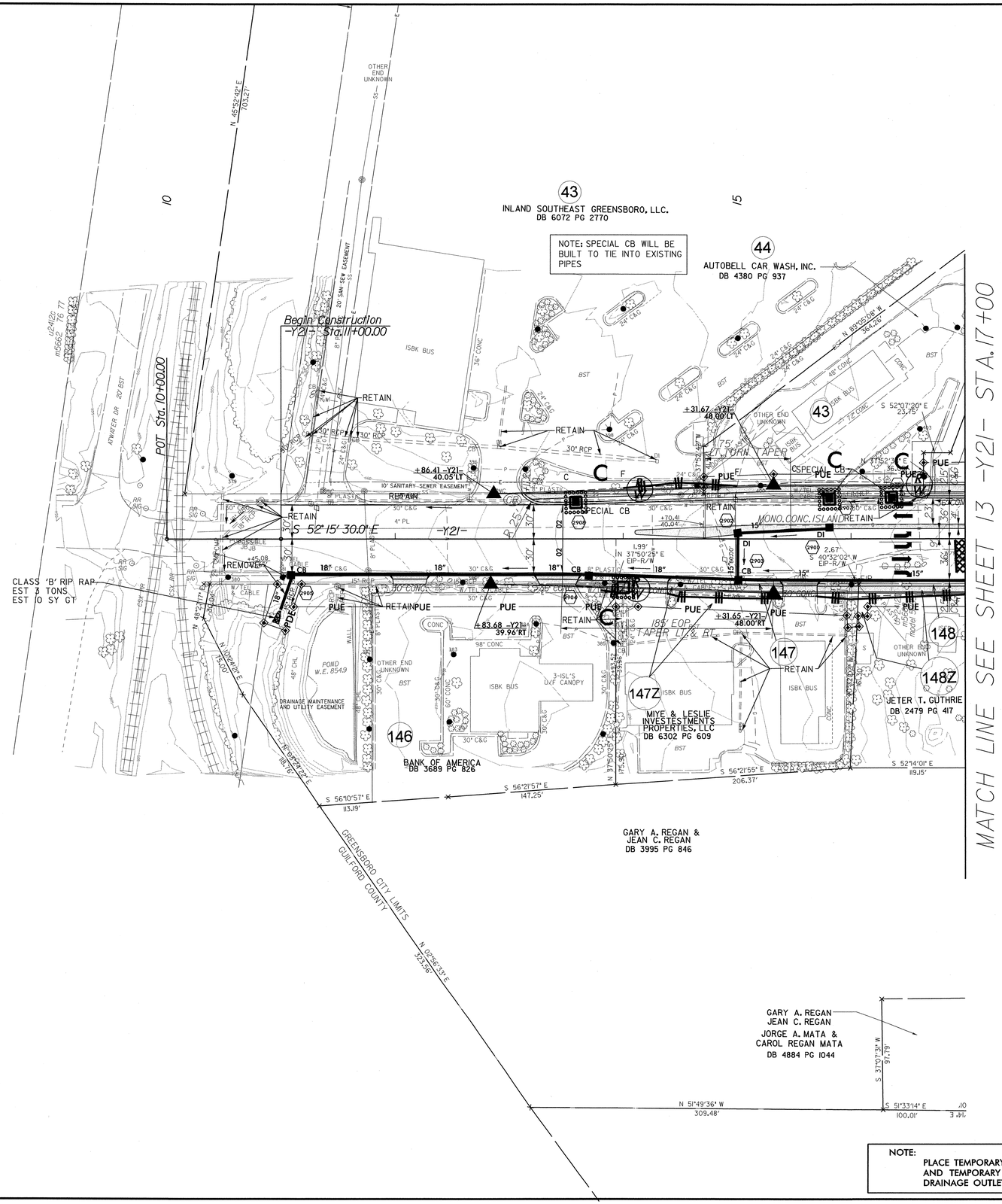
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-29/CONST.29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGFORM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6966

25 0 25 50
1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 29



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

SEE SHEET 48 & 49 FOR -Y21- PROFILE

8/17/99
30-APR-2012 10:32
C:\pwworking\pb1\d0202829\U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_29.dgn
Cont: 1 Pos: 1 W-MCHL D-20020-9

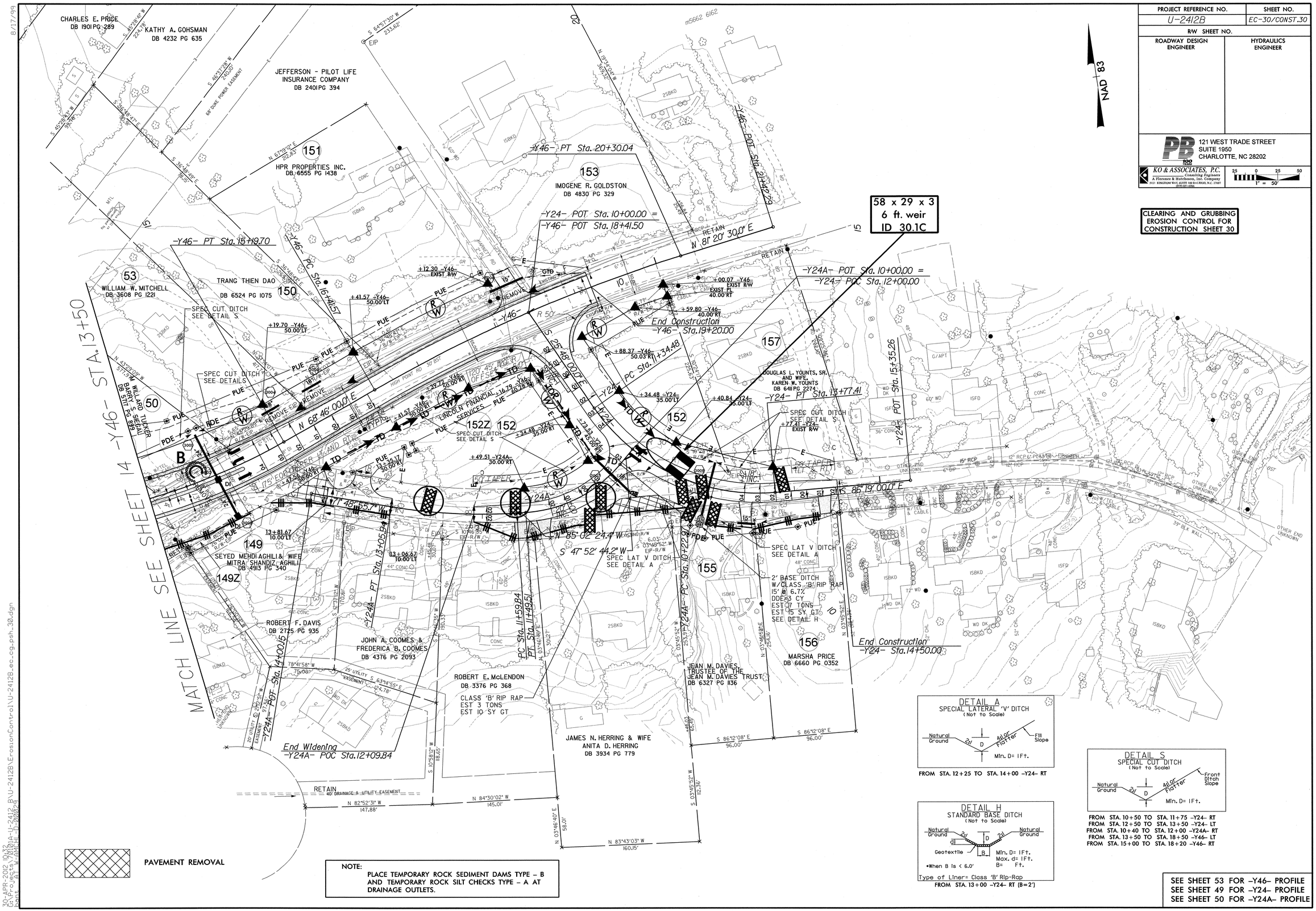
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-30/CONST.30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0966

1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 30



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

DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 12+25 TO STA. 14+00 –Y24– RT

DETAIL S
SPECIAL CUT DITCH
(Not to Scale)

FROM STA. 10+50 TO STA. 11+75 –Y24– RT
FROM STA. 12+50 TO STA. 13+50 –Y24– LT
FROM STA. 10+40 TO STA. 12+00 –Y24A– RT
FROM STA. 13+50 TO STA. 18+50 –Y46– LT
FROM STA. 15+00 TO STA. 18+20 –Y46– RT

DETAIL H
STANDARD BASE DITCH
(Not to Scale)

Type of Liner= Class 'B' Rip-Rap
FROM STA. 13+00 –Y24– RT (B=2')

SEE SHEET 53 FOR –Y46– PROFILE
SEE SHEET 49 FOR –Y24– PROFILE
SEE SHEET 50 FOR –Y24A– PROFILE

8/17/99

30-APR-2012 10:32
G:\Projects\70101A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_30.dgn
pbarr W-AMHILI D-000029

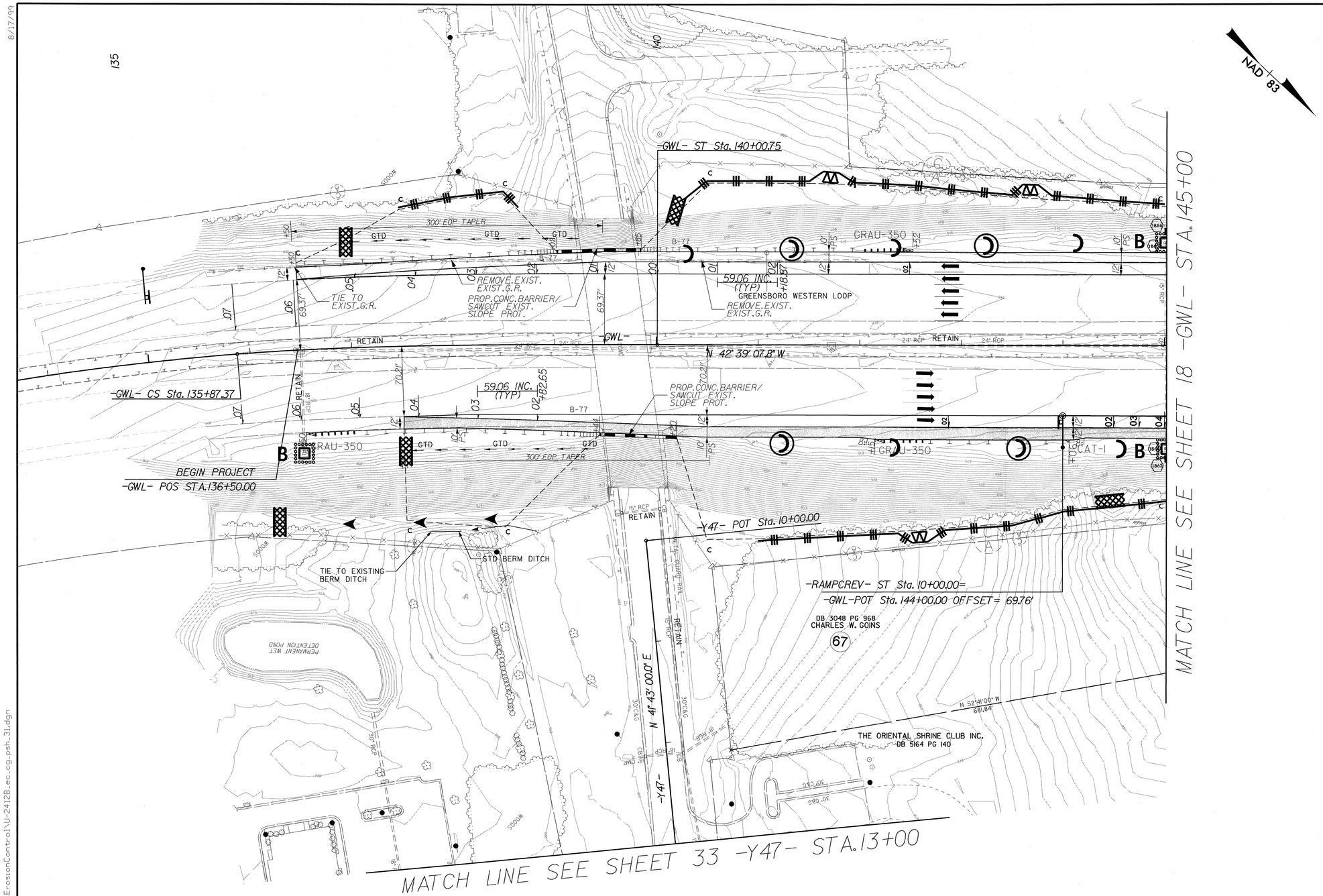
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-31/CONST.31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3121 KINGSTON WAY, SUITE 150 RALEIGH, N.C. 27603
(919) 871-0966

1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 31



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

SEE SHEET 54 FOR –Y47– PROFILE

8/17/99
30-APR-2012 10:32
G:\Projects\70101A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_31.dgn
Rpnt: AT W-AMCHI-PP-00002

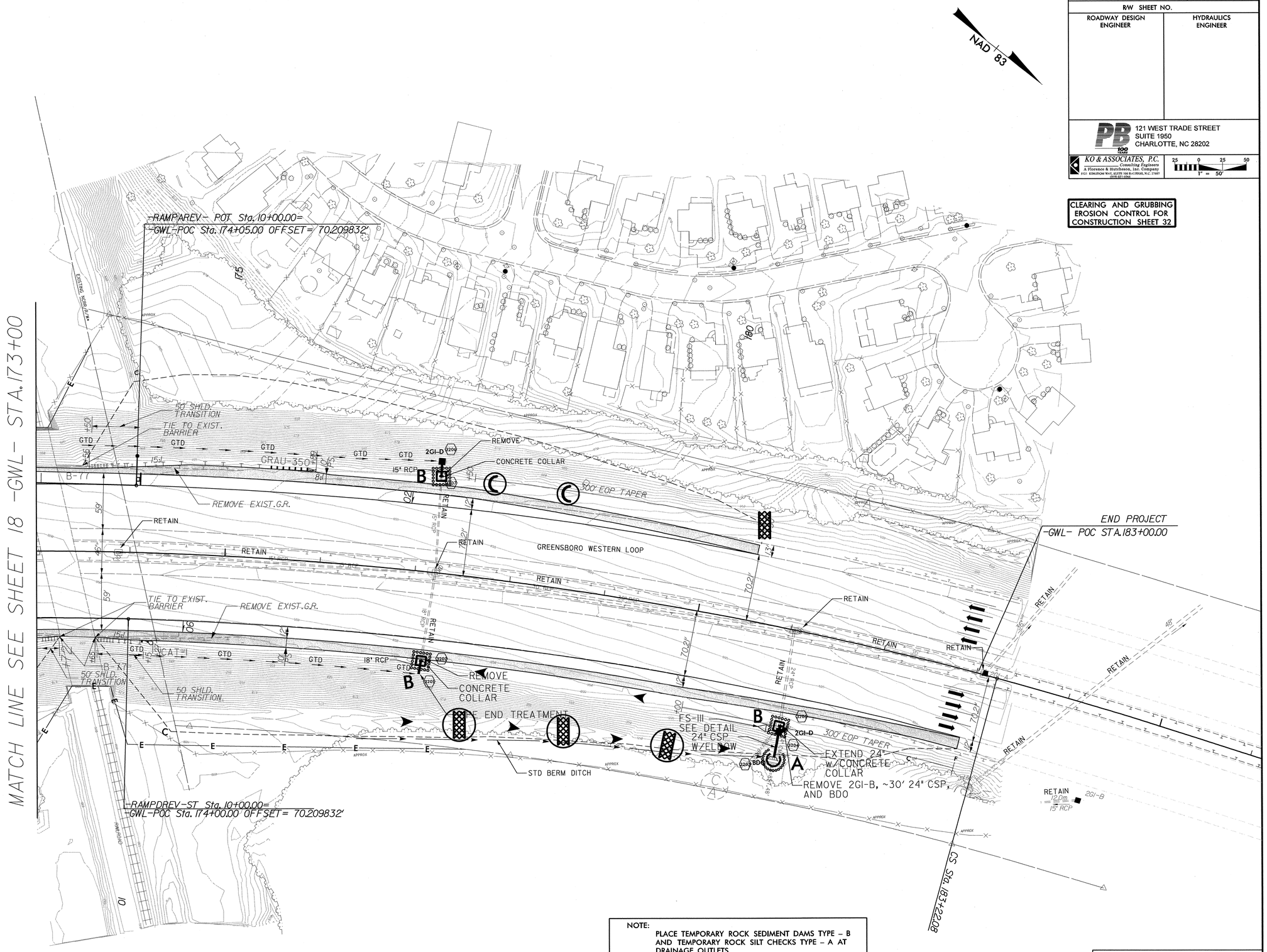
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-32/CONST.32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
1121 KNIGHTON ROAD, ALTON SQUARE, N.C. 27601
(919) 851-1912

25 0 25 50
1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 32



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

SEE SHEET 56 FOR –RPAREV– PROFILE
SEE SHEET 60 FOR –RPD– PROFILE

8/17/99
30-APR-2012 10:32
G:\Projects\U2412A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_32.dgn
Users: AT W-AMHI-TI-00029

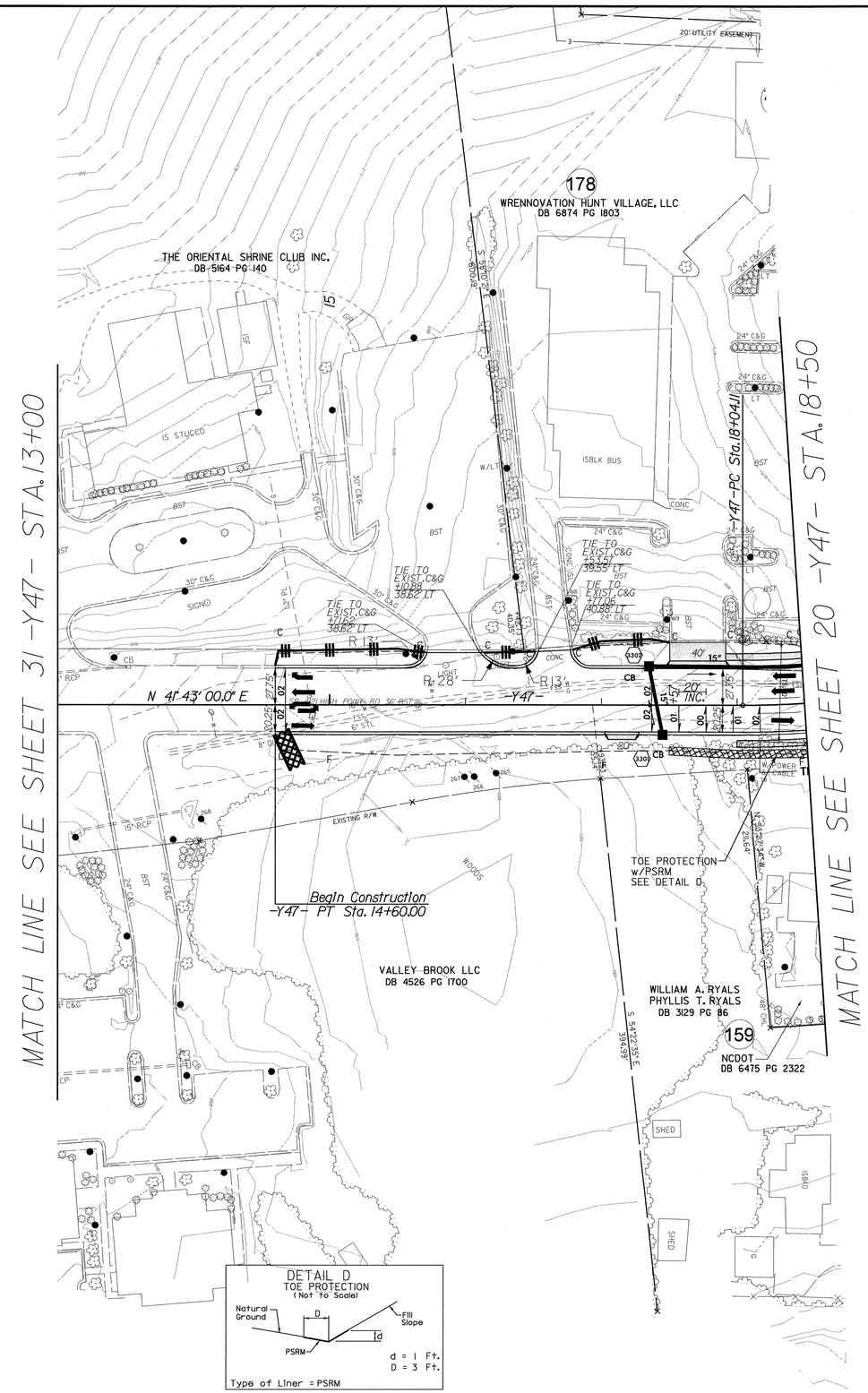
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-33/CONST.33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
1111 KINGSTOWN WAY, SUITE 100 RALEIGH, N.C. 27603
(919) 821-0566

25 0 25 50
1" = 50'

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 33



FROM STA. 17+50 TO STA. 18+50 -Y47- RT

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

SEE SHEET 54 FOR –Y47– PROFILE

8/17/99
30-APR-2012 10:32
G:\Projects\2012\A-U-2412 B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_33.dgn
Part AT W-ANCHI-D-00025

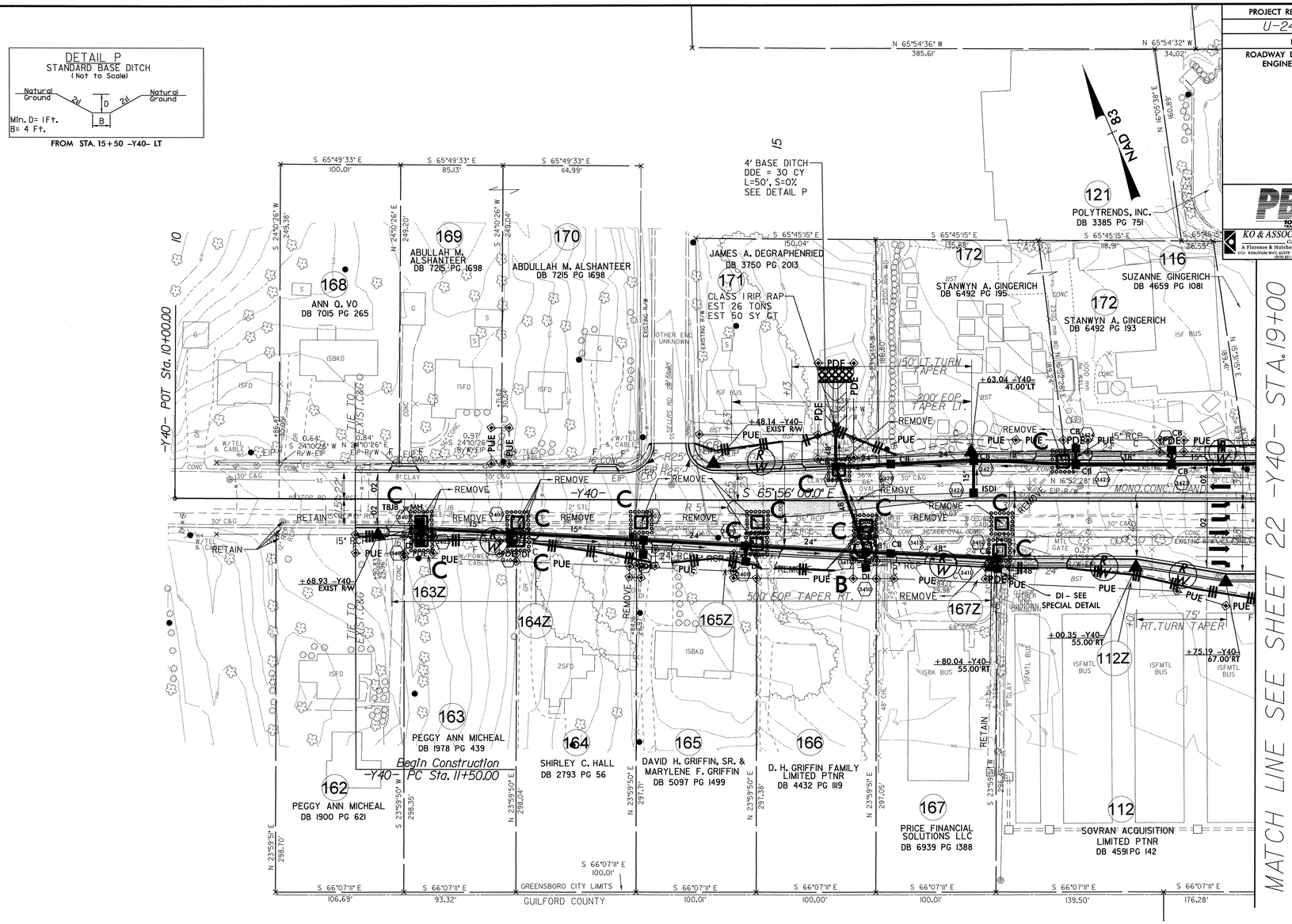
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-34/CONST.34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3121 RINGWOOD WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0566

1" = 50'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 34



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

SEE SHEET 53 FOR -Y40- PROFILE

8/17/99
30-APR-2012 10:32
G:\PROJECTS\U-2412A-U-2412_B\U-2412B\Erosion(Control)\U-2412B_ec_cg_psh_34.dgn
PDOT_ECS_V8.dgn
AT W.AMPHI_D-20029

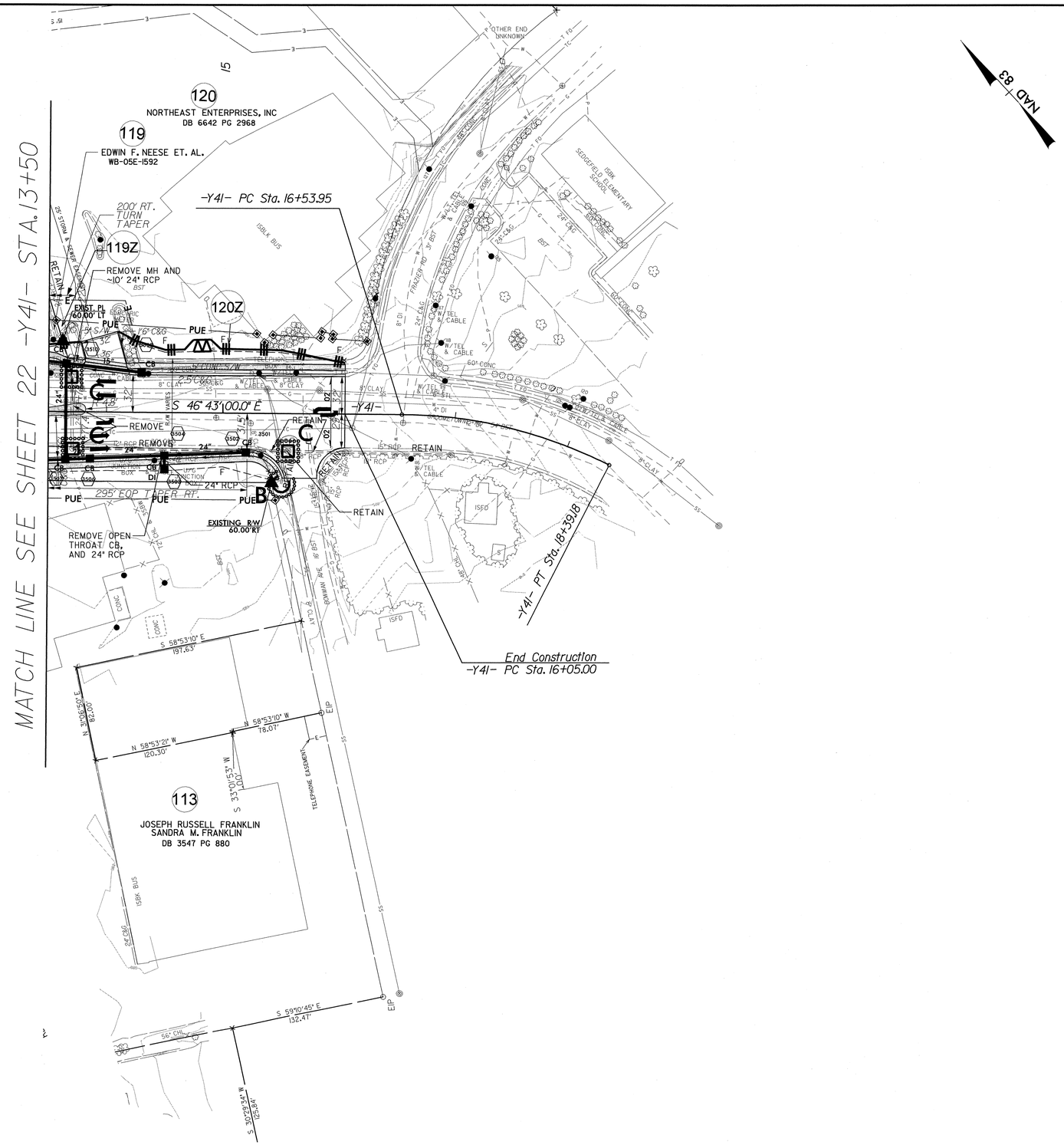
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-35/CONST.35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
111 KINGSTOWN WAY, SUITE 100 RALEIGH, N.C. 27603
(919) 821-0566

25 0 25 50
1" = 50'

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 35



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

SEE SHEET 52 FOR –Y41– PROFILE

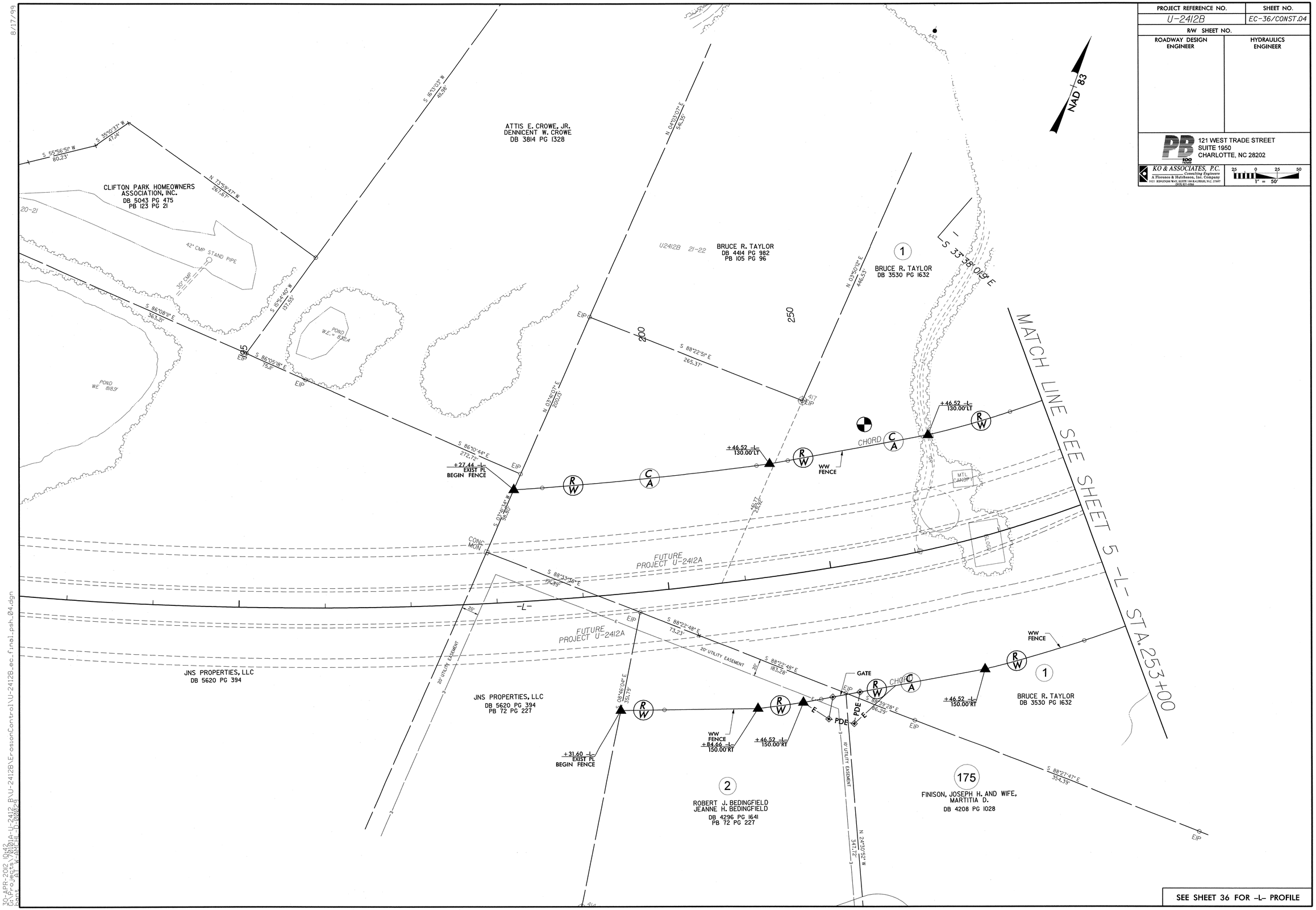
8/17/99
30-APR-2012 10:33
G:\Projects\70101A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_cg_psh_35.dgn
part A1 W-AMCH-P-00029

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-36/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3121 ROXBORO WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 821-0566

25 0 25 50
1" = 50'



SEE SHEET 36 FOR -L- PROFILE

8/17/99

30-APR-2012 10:42
C:\PROJECTS\U2412A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_final_psh_04.dgn
bent-jat W-AMEHI-D-00029

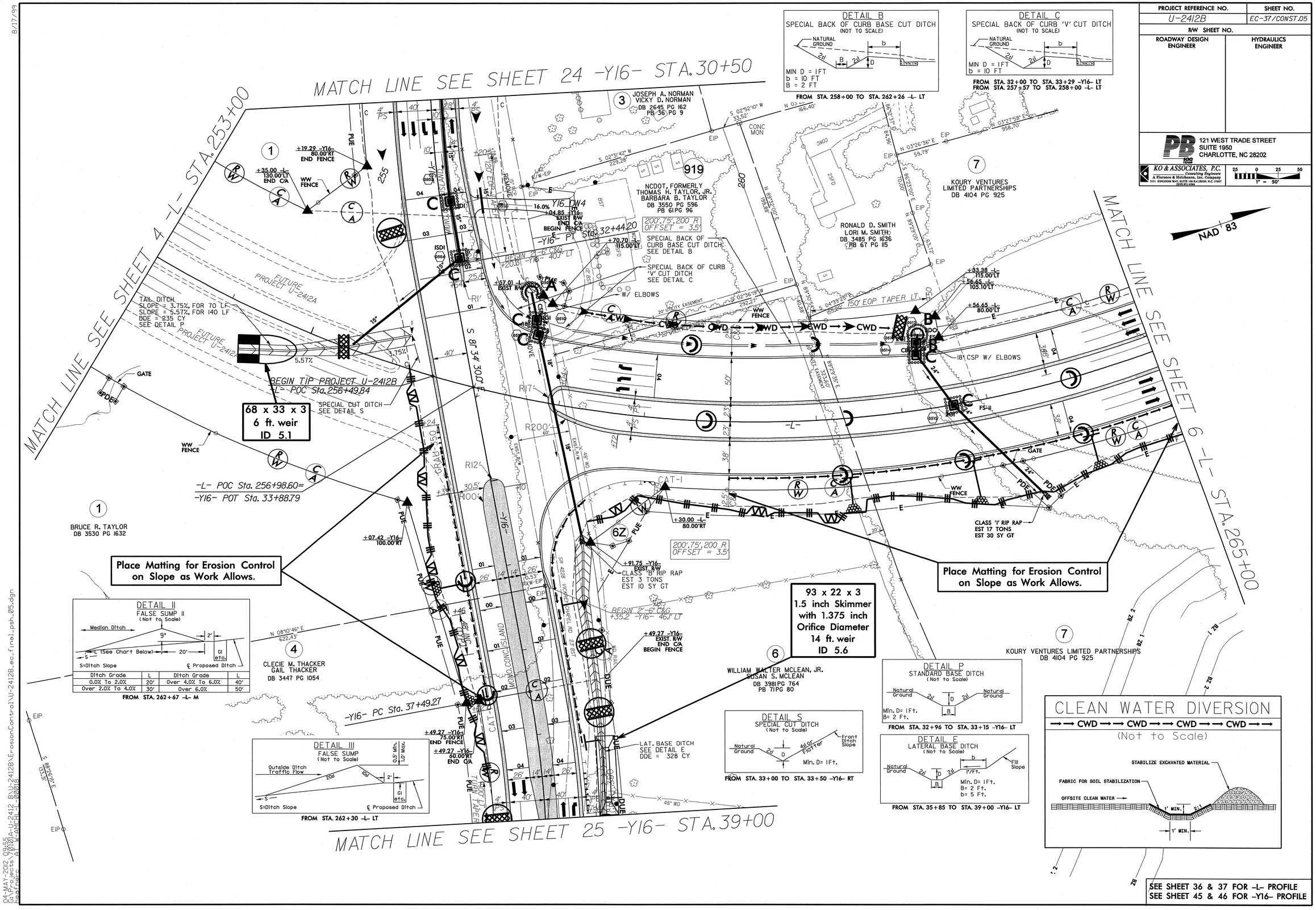
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-37/CONST.05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
1121 KINGDOM WAY, SUITE 190 RALEIGH, N.C. 27603
(919) 851-0966

1" = 50'

NAD 83



SEE SHEET 36 & 37 FOR -L- PROFILE
SEE SHEET 45 & 46 FOR -Y16- PROFILE

8/17/99

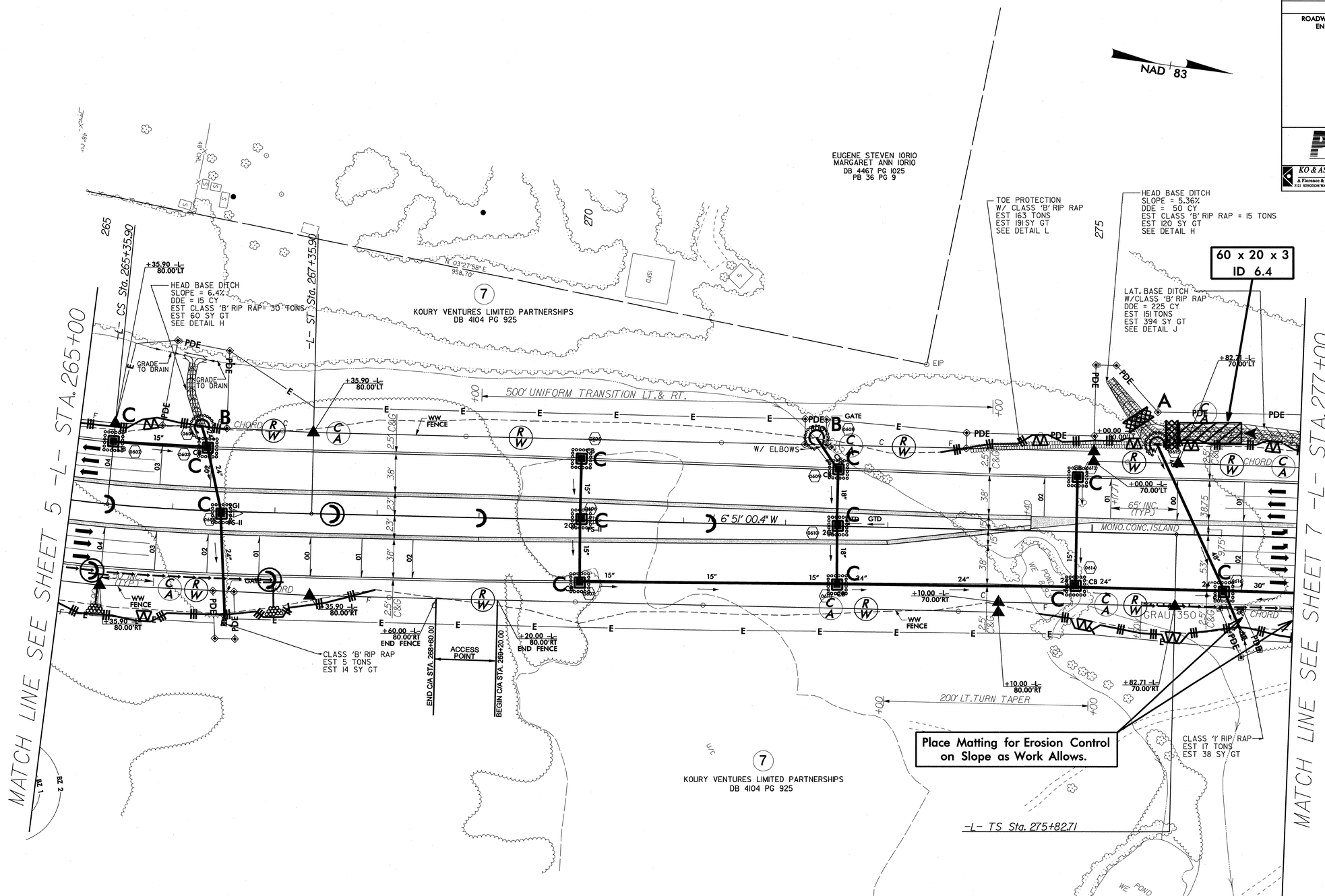
04-MAY-2012 09:55
C:\Projects\2012A-U-2412 BU\U-2412B\ErosionControl\U-2412B_ec_final_psh_05.dgn
bestfarc AT W-ANCHL L 00016

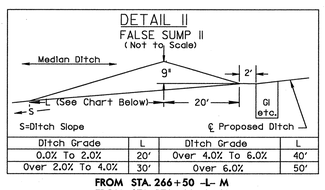
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-38/CONST.06
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3151 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-1912

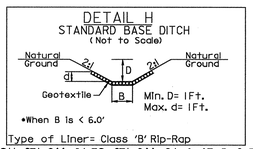
25 0 25 50
1" = 50'



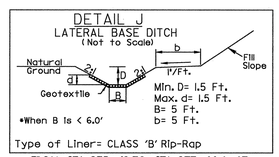


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

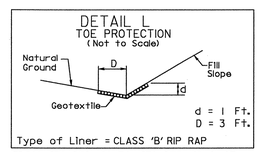
FROM STA. 266+50 -L- M
FROM STA. 270+00 -L- M



FROM STA. 266+14 TO STA. 266+24 -L- LT, B=2 FT
FROM STA. 275+12 TO STA. 275+61 -L- LT, B=5 FT



FROM STA. 275+61 TO STA. 277+00-L- LT



FROM STA. 273+80 TO STA. 275+61 -L- LT

SEE SHEET 37 FOR -L- PROFILE

8/17/99
03-MAY-2012 09:24
G:\Projects\2012\U-2412 B\U-2412B\ErosionControl\U-2412B_ec_final_psh_06.dgn
bcatrenes

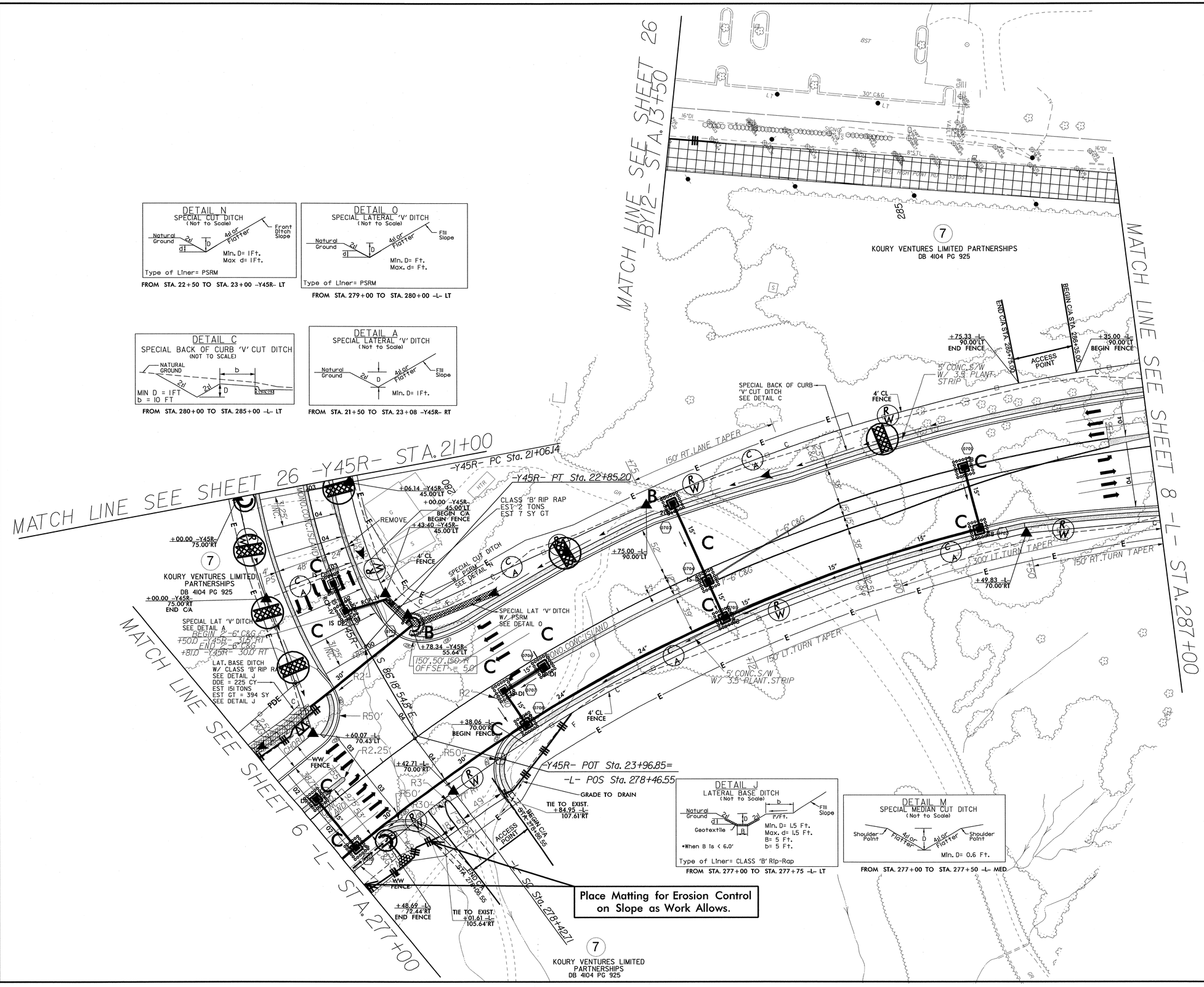
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-39/CONST.07
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
9121 RESEARCH WAY, SUITE 100 RALEIGH, N.C. 27617
(919) 831-0266

1" = 50'

NAD 83



DETAIL N
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground; 2d; d; D; 4d or Flatter; Front Ditch Slope

Min. D= 1Ft.
Max d= 1Ft.

Type of Liner= PSRM

FROM STA. 22+50 TO STA. 23+00 -Y45R- LT

DETAIL O
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

Natural Ground; 2d; d; D; 4d or Flatter; Fill Slope

Min. D= Ft.
Max. d= Ft.

Type of Liner= PSRM

FROM STA. 279+00 TO STA. 280+00 -L- LT

DETAIL C
SPECIAL BACK OF CURB 'V' CUT DITCH
(NOT TO SCALE)

NATURAL GROUND; 2d; 2d; b; D; 2' MIN. SPA.

MIN D = 1FT
b = 10 FT

FROM STA. 280+00 TO STA. 285+00 -L- LT

DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

Natural Ground; 2d; D; 4d or Flatter; Fill Slope

Min. D= 1Ft.

FROM STA. 21+50 TO STA. 23+08 -Y45R- RT

DETAIL J
LATERAL BASE DITCH
(Not to Scale)

Natural Ground; 2d; d; D; 2d; B; b; P/Ft.; Geotextile; Fill Slope

Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 5 Ft.
b= 5 Ft.

*When B Is < 6.0'

Type of Liner= CLASS 'B' Rip-Rap

FROM STA. 277+00 TO STA. 277+75 -L- LT

DETAIL M
SPECIAL MEDIAN CUT DITCH
(Not to Scale)

Shoulder Point; 4d or Flatter; D; 4d or Flatter; Shoulder Point

Min. D= 0.6 Ft.

FROM STA. 277+00 TO STA. 277+50 -L- MED

PAVEMENT REMOVAL

SEE SHEET 37 FOR -L- PROFILE
SEE SHEET 53 FOR -Y45R- PROFILE

8/17/99

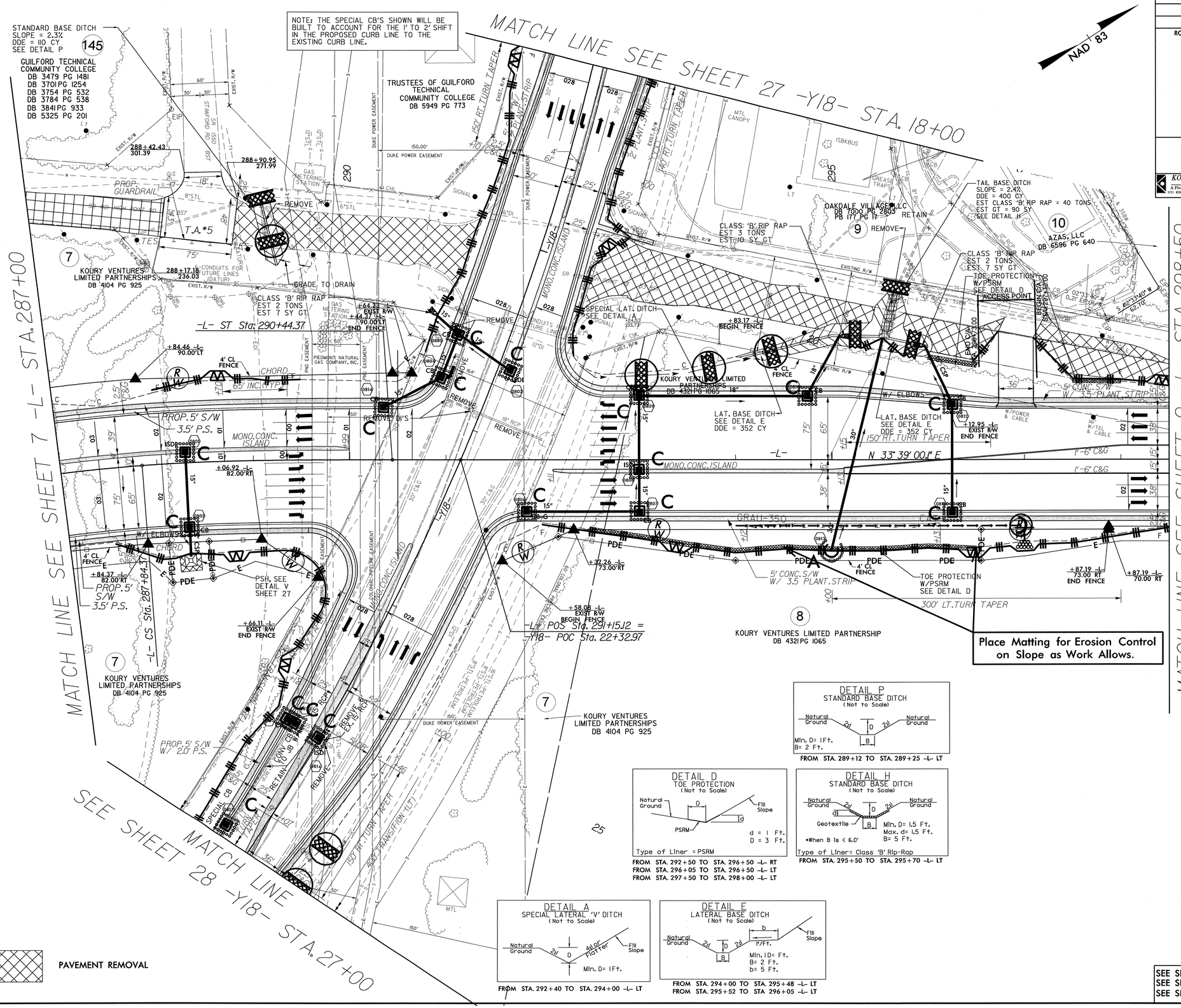
30-APR-2012 10:42
C:\pwworking\pb1\d0101a-u-2412_b\u-2412b\ErosionControl\u-2412b_ec_final_psh_07.dgn
User: ATS W. ANCHI
Date: D 2002a

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-40/CONST.08
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
1121 KINGSTON WAY, SUITE 108 RALEIGH, N.C. 27603
(919) 851-0966

1" = 50'



DETAIL P
STANDARD BASE DITCH
(Not to Scale)

FROM STA. 289+12 TO STA. 289+25 -L- LT

DETAIL D
TOE PROTECTION
(Not to Scale)

FROM STA. 292+50 TO STA. 296+50 -L- RT
FROM STA. 296+05 TO STA. 296+50 -L- LT
FROM STA. 297+50 TO STA. 298+00 -L- LT

DETAIL H
STANDARD BASE DITCH
(Not to Scale)

FROM STA. 295+50 TO STA. 295+70 -L- LT

DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 292+40 TO STA. 294+00 -L- LT

DETAIL E
LATERAL BASE DITCH
(Not to Scale)

FROM STA. 294+00 TO STA. 295+48 -L- LT
FROM STA. 295+52 TO STA. 296+05 -L- LT

SEE SHEET 2-G FOR INTERSECTION DETAIL
SEE SHEET 37 & 38 FOR -L- PROFILE
SEE SHEET 47 FOR -Y18- PROFILE

8/17/99

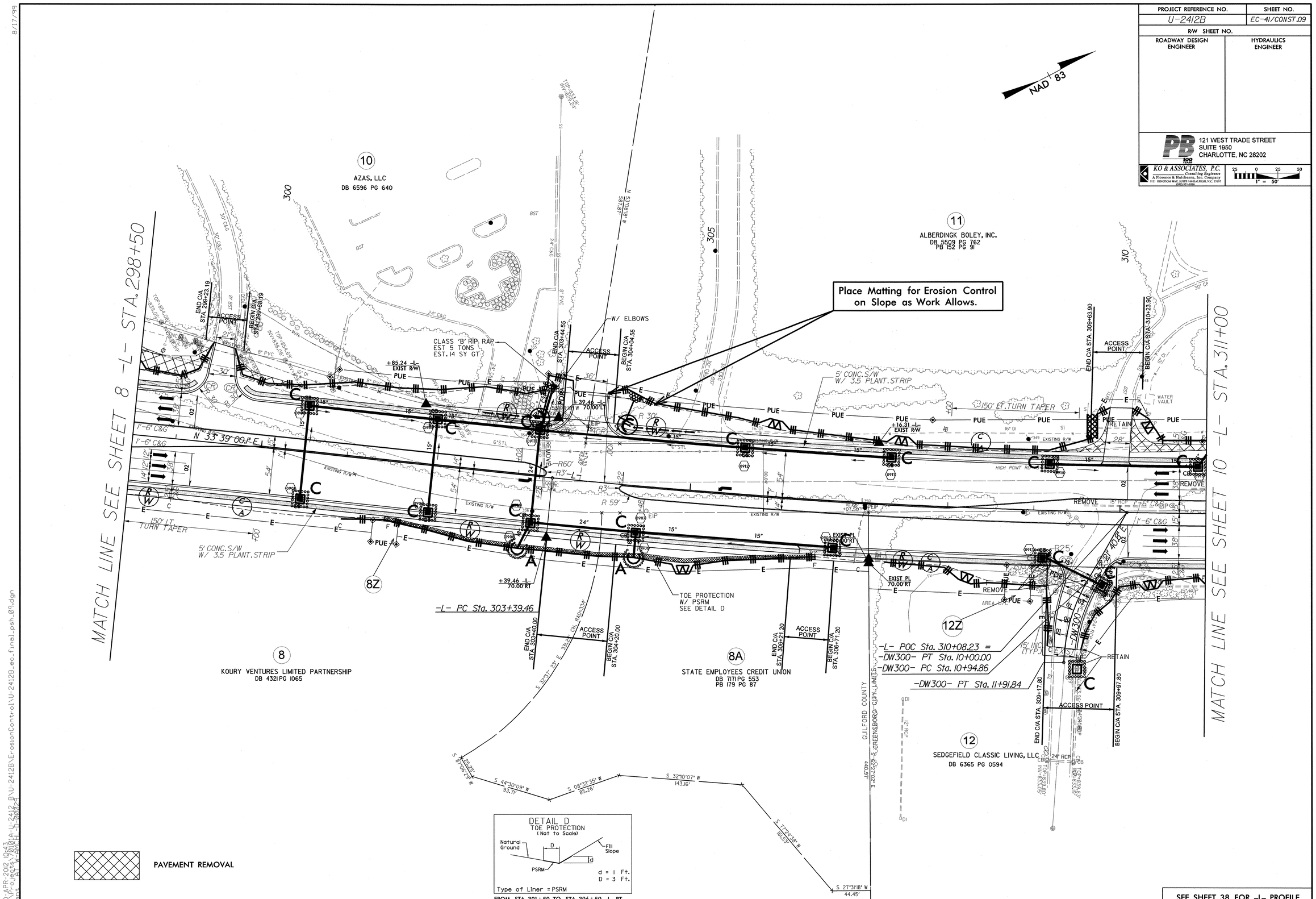
30-APR-2012 10:43
G:\Projects\2012A-U-2412 B\U-2412B\ErosionControl\U-2412B_ec_final.psh_08.dgn
User: AT W.AMCHI_D-0002g

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-41/CONST.09
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-1066

25 0 25 50
1" = 50'



8/17/99

30-APR-2012 10:43
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bart.o.eck W AMCHI-D 00029

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-42/CONST.10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

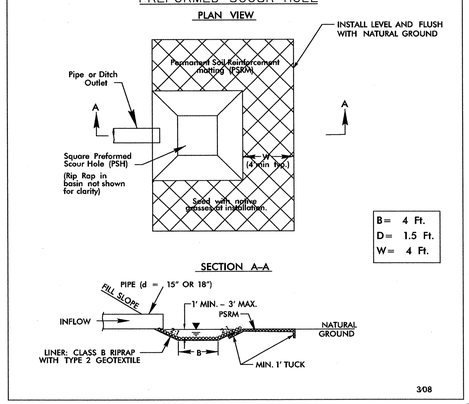
PB 121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3121 KINGSTON WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 831-0566

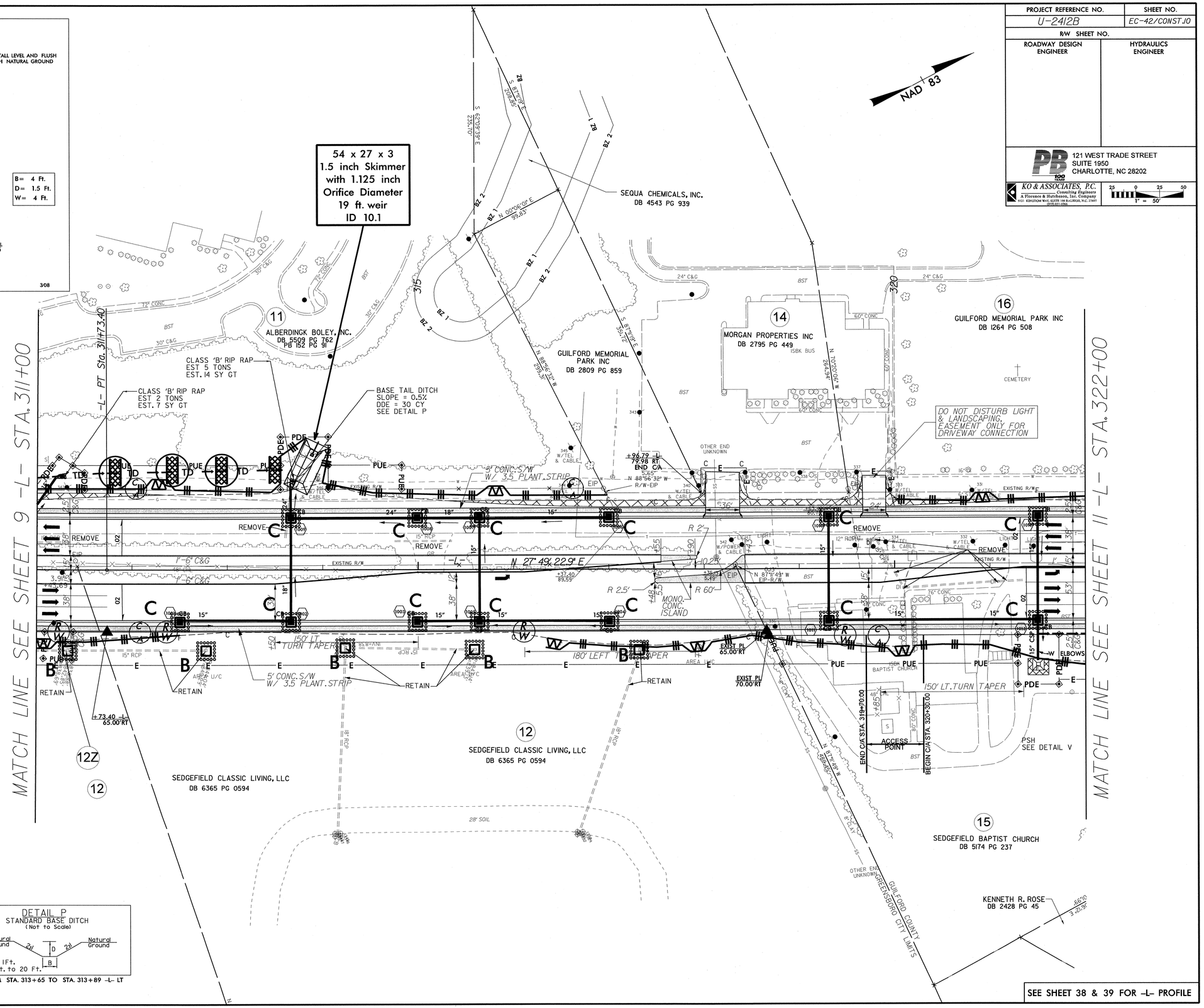
25 0 25 50
1" = 50'

8/17/99

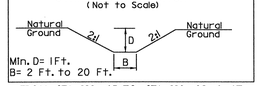
DETAIL V
PREFORMED SCOUR HOLE



FROM STA. 321+50 -L- RT



DETAIL P
STANDARD BASE DITCH
(Not to Scale)



FROM STA. 313+65 TO STA. 313+89 -L- LT

SEE SHEET 38 & 39 FOR -L- PROFILE

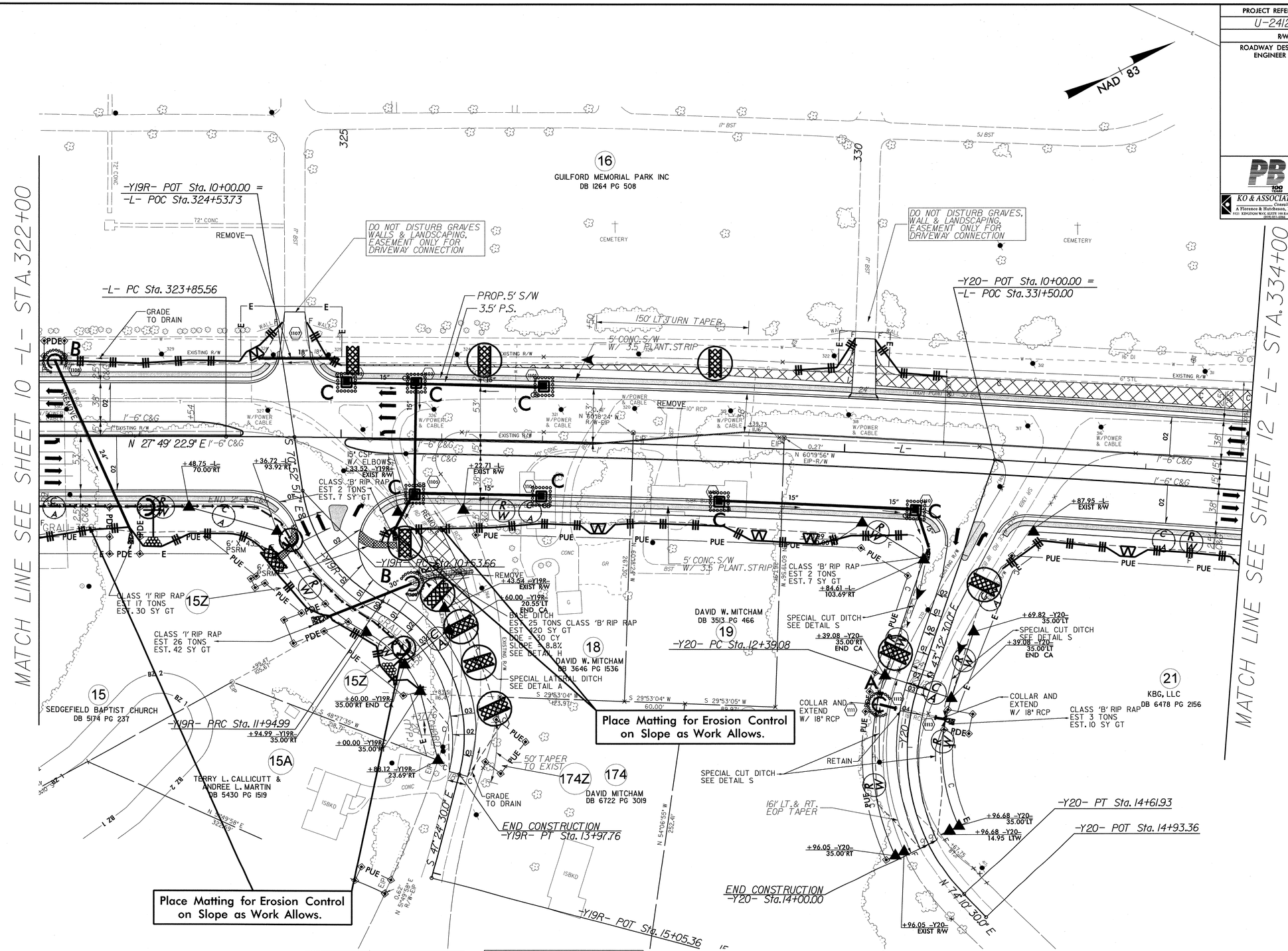
30-APR-2012 10:13
C:\Projects\U-2412\U-2412B\ErosionControl\U-2412B_ec_final_psh_10.dgn
Part 1 of 1 W ANCHI D 0002

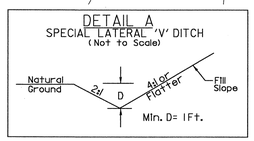
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-43/CONST.11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

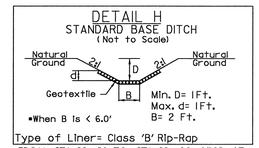
KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3131 KINGSDOWN WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-1912

25 0 25 50
1" = 50'

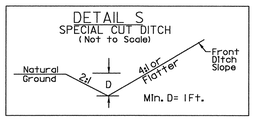




FROM STA. 11+54 TO STA. 13+00 -Y19R- LT



FROM STA. 12+10 TO STA. 12+39 -Y19R- LT



FROM STA. 11+00 TO STA. 13+15 -Y20- RT
FROM STA. 12+00 TO STA. 13+15 -Y20-LT

PAVEMENT REMOVAL

SEE SHEETS 2-G AND 2-H FOR INTERSECTION DETAILS
SEE SHEET 39 FOR -L- PROFILE
SEE SHEET 48 FOR -Y19R- PROFILE
SEE SHEET 48 FOR -Y20- PROFILE

8/17/99

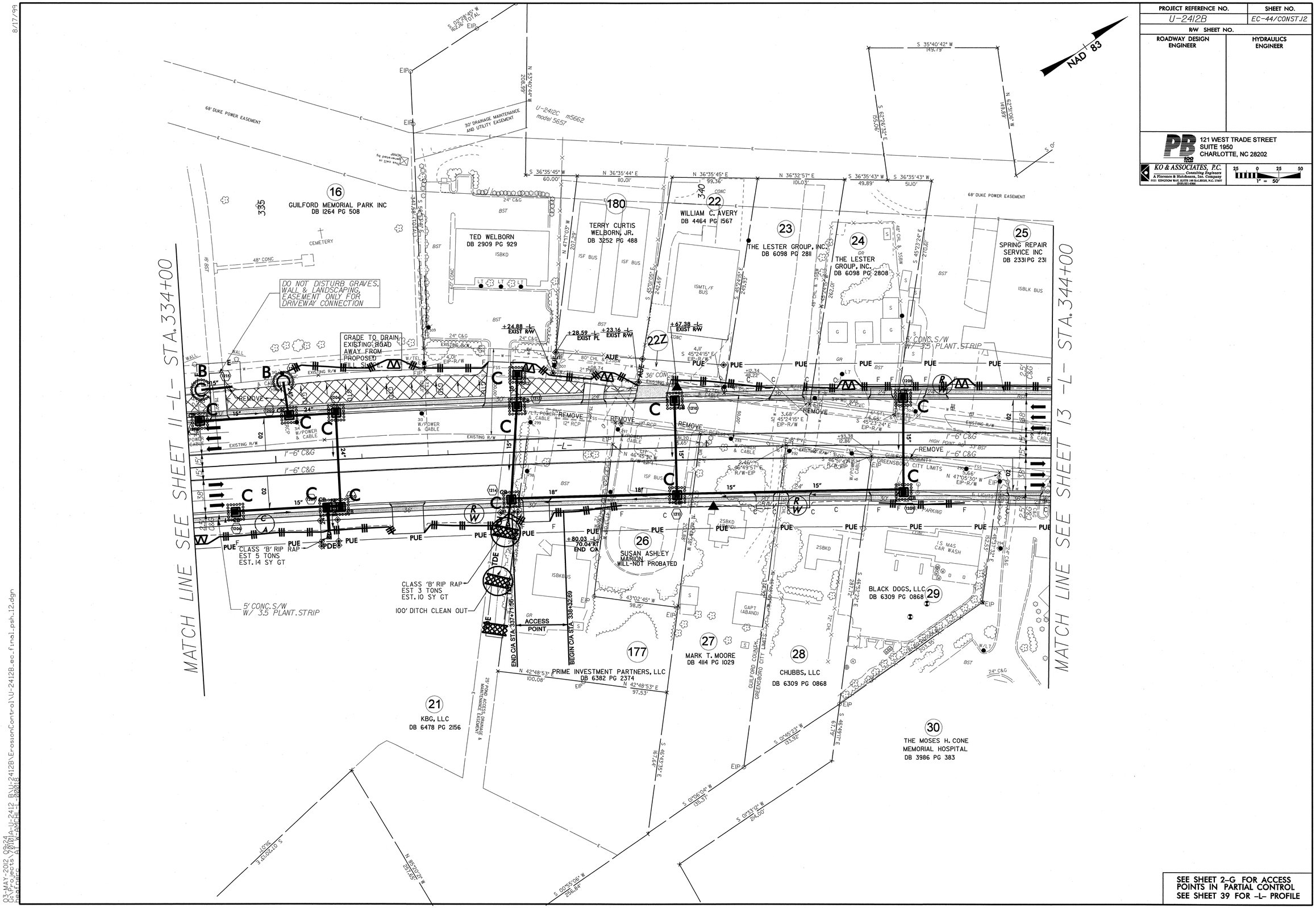
30-APR-2012 10:43
G:\Projects\2010\A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_final_psh_11.dgn
Dgnt: A1 W-ANSI-H D-00025

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-44/CONST12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5011 KINGSTON WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-9966

1" = 50'



SEE SHEET 2-G FOR ACCESS POINTS IN PARTIAL CONTROL
SEE SHEET 39 FOR -L- PROFILE

8/17/99

03-MAY-2012 09:24
G:\Projects\70101A-U-2412 BW\U-2412B\ErosionControl\U-2412B_ec_final_psh12.dgn
testfarr 41 W-AMCHIL 0.00018

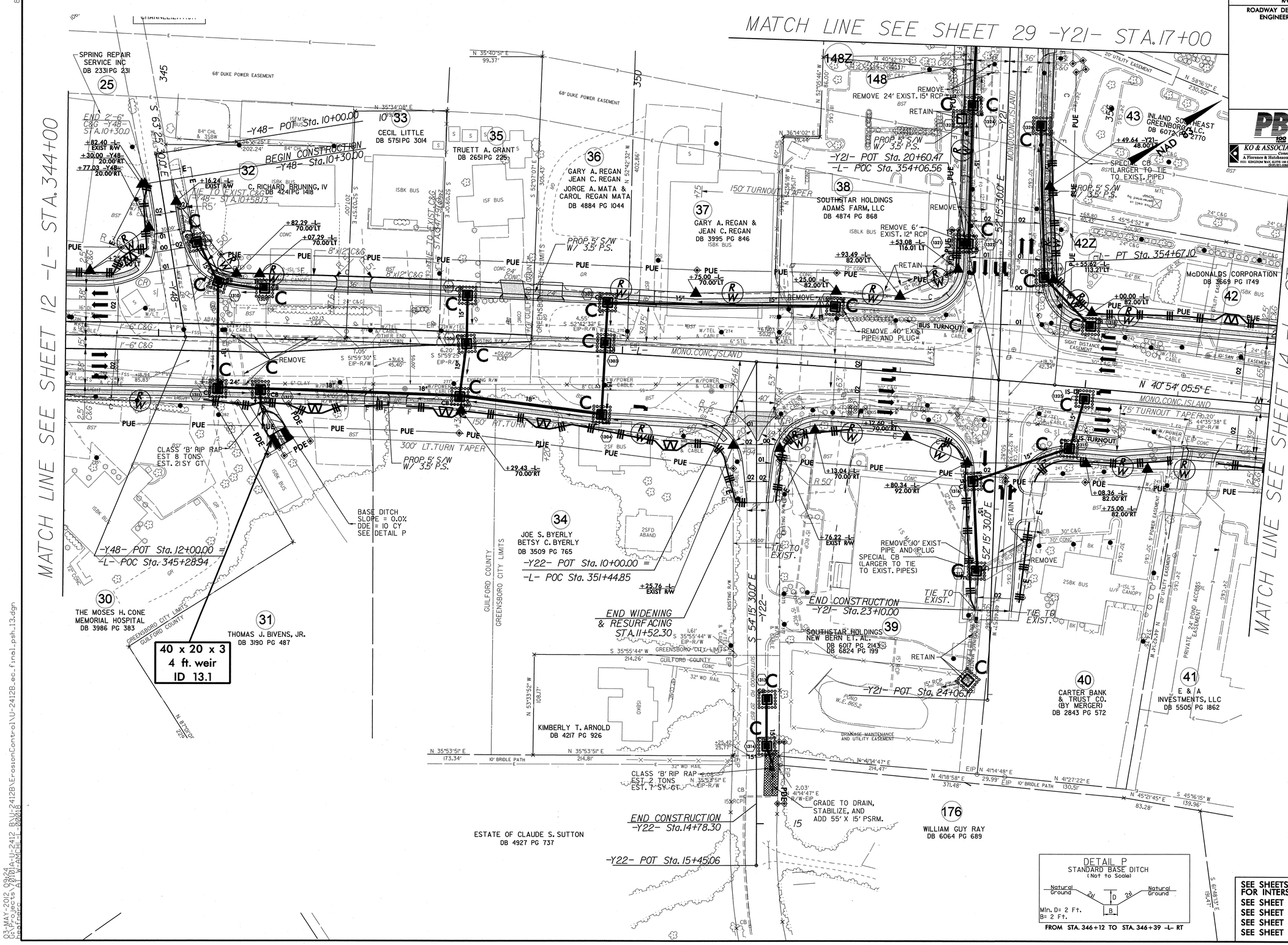
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-45/CONST13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
1011 KIDDERMAN WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0900

1" = 50'



SEE SHEETS 2-H AND 2-I FOR INTERSECTION DETAILS
SEE SHEET 39 & 40 FOR -L- PROFILE
SEE SHEET 54 FOR -Y48- PROFILE
SEE SHEET 49 FOR -Y22- PROFILE
SEE SHEET 48 & 49 FOR -Y21- PROFILE

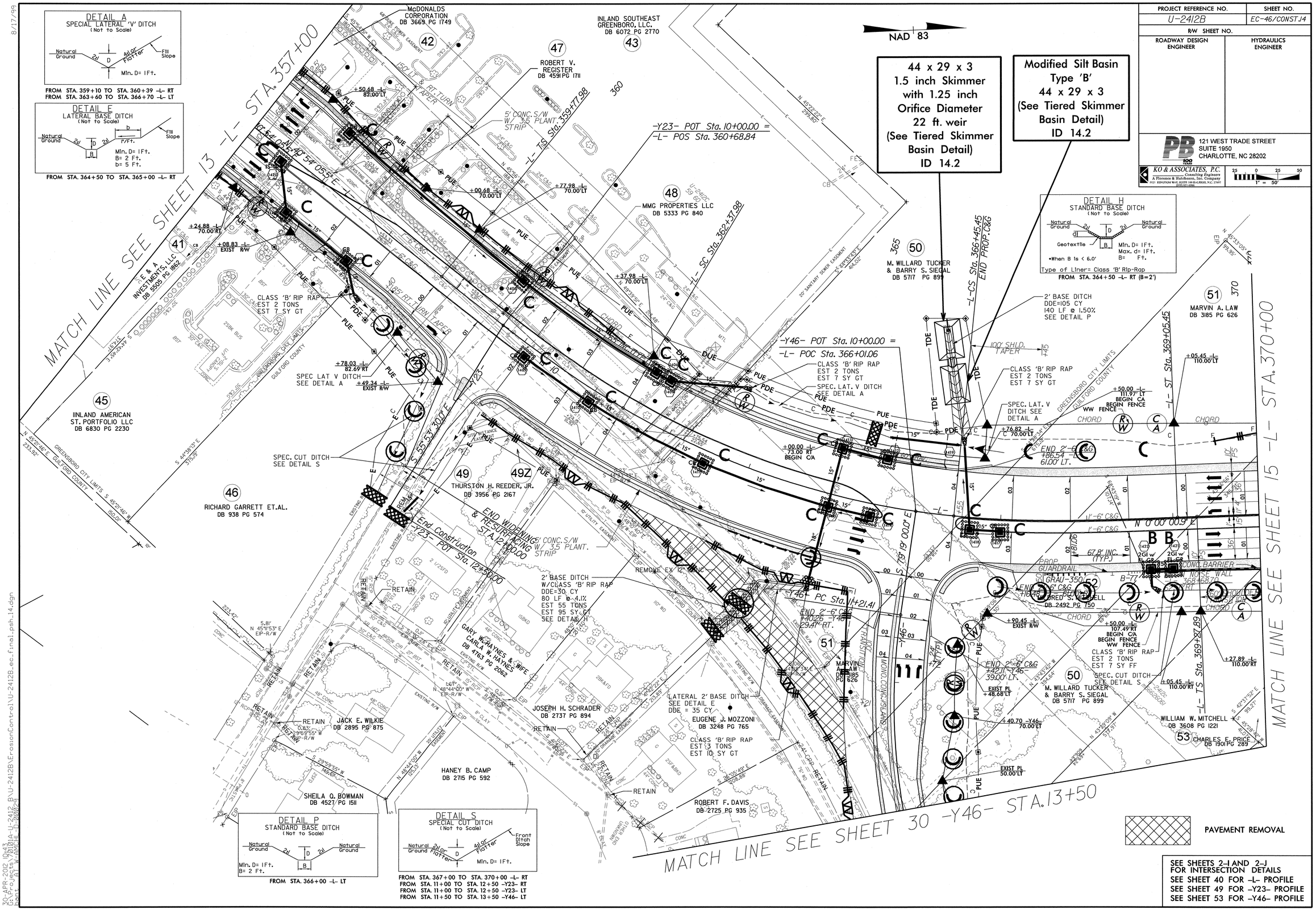
03-MAY-2012 09:24
U:\Projects\2010A_U-2412 BDU-2412B\ErosionControl\U-2412B_ec_final_psh_13.dgn
pashford

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-46/CONST.14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
A Florence & Hutcheson, Inc. Company
Consulting Engineers
3121 REDWOOD WAY GREENSBORO N.C. 27407
(919) 851-2000

1" = 50'



SEE SHEETS 2-I AND 2-J FOR INTERSECTION DETAILS
SEE SHEET 40 FOR -L- PROFILE
SEE SHEET 49 FOR -Y23- PROFILE
SEE SHEET 53 FOR -Y46- PROFILE

8/17/99

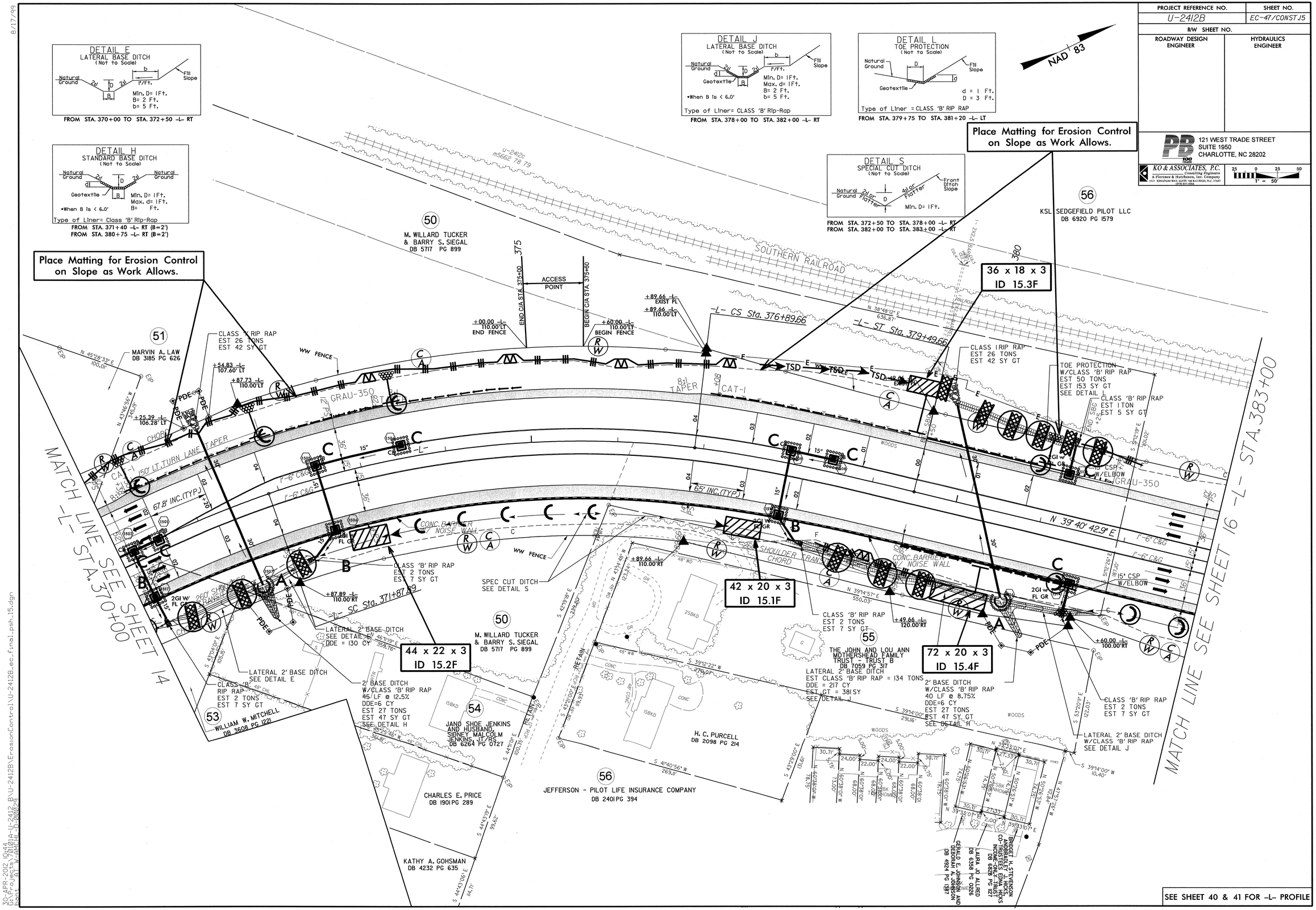
30-APR-2012 10:43
C:\Projects\2012\U-2412 B\U-2412B\Erosion Control\U-2412B_ec_final_psh_14.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-47/CONST.J5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3121 KINGSTOWN WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0566

25 0 25 50
1" = 50'



8/17/99

30-APR-2012 10:44
C:\PROJECTS\U-2412B\U-2412B\ErosionControl\U-2412B_ec_final_psh15.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-48/CONST J6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

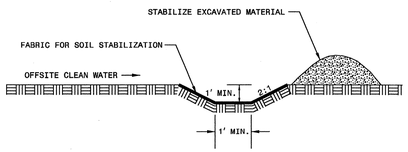
KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGSTON WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-1912

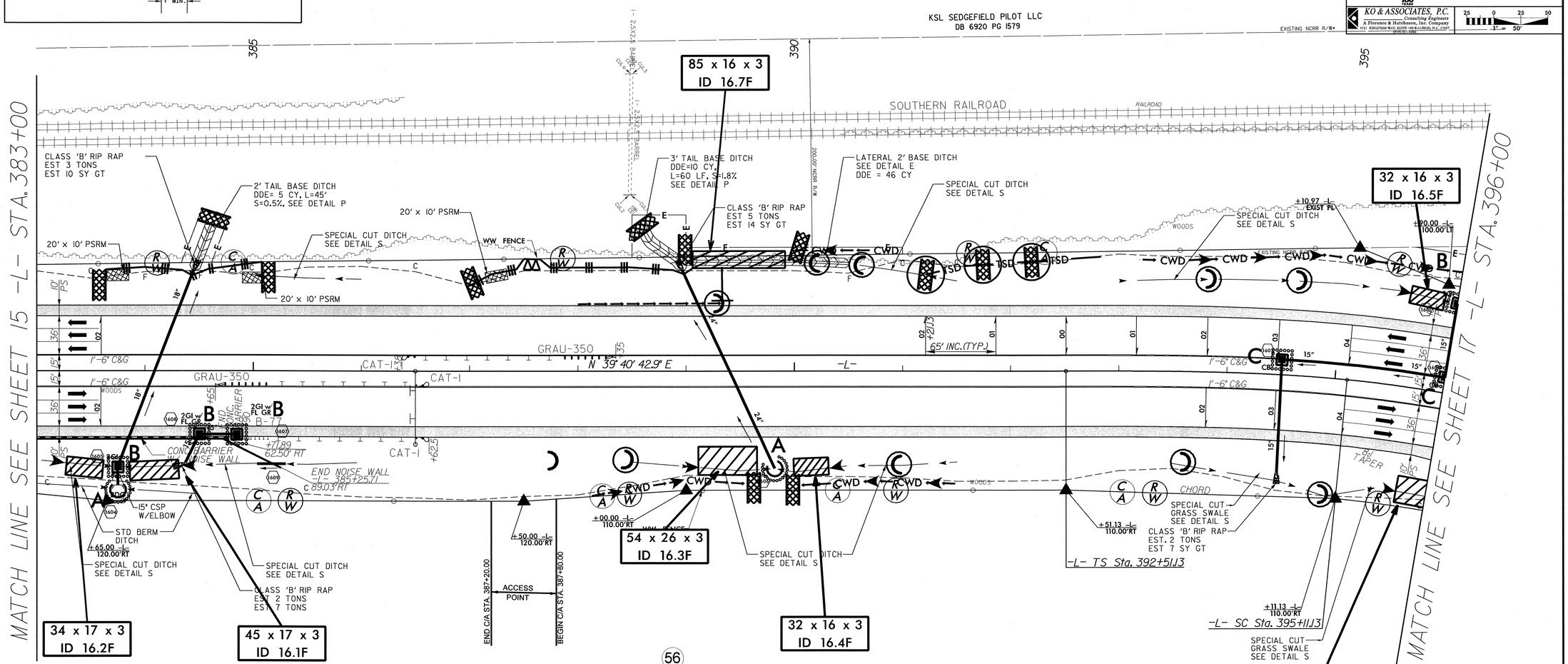
25 0 25 50
1" = 50'

CLEAN WATER DIVERSION

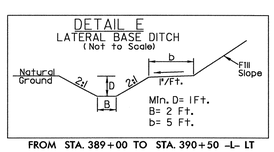
→→ CWD →→ CWD →→ CWD →→ CWD →→

(Not to Scale)

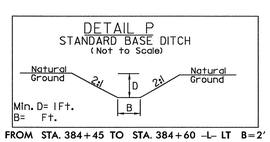




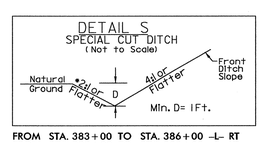
56
KSL SEDGEFIELD PILOT LLC
DB 6920 PG 1579



FROM STA. 389+00 TO STA. 390+50 -L- LT



FROM STA. 384+45 TO STA. 384+60 -L- LT B=2'
FROM STA. 388+50 TO STA. 389+00 -L- LT B=3'



FROM STA. 383+00 TO STA. 386+00 -L- RT
FROM STA. 385+00 TO STA. 386+00 -L- LT
FROM STA. 388+50 TO STA. 391+50 -L- RT
FROM STA. 390+50 TO STA. 391+50 -L- LT
FROM STA. 393+00 TO STA. 396+00 -L- LT
FROM STA. 393+50 TO STA. 396+35 -L- RT*
*USE 3:1 BACK SLOPE FOR GRASS SWALE

SEE SHEET 41 FOR -L- PROFILE

8/17/99
30-APR-2012 10:44
S:\Proj\ec_2010\A-U-2412_BU-2412B\ErosionControl\U-2412B_ec_final_psh_16.dgn
Port: AT W-2MCHI h-2002c

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-49/CONST.J7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0562

25 0 25 50
1" = 50'

8/17/99

DETAIL F
SPECIAL CUT DITCH w/HINGE
(Not to Scale)

FROM STA. 398+50 TO STA. 401+40 -L- RT, S=3:1
FROM STA. 405+50 TO STA. 408+00 -L- RT, S=6:1
FROM STA. 406+00 TO STA. 408+00 -L- LT, S=6:1

DETAIL P
STANDARD BASE DITCH
(Not to Scale)

FROM STA. 397+90 -L- LT

DETAIL L
TOE PROTECTION
(Not to Scale)

Type of Liner = CLASS 'B' RIP RAP

FROM STA. 396+50 TO STA. 398+50 -L- LT

DETAIL X
PROPOSED OUTLET CHANNEL
(Not to Scale)

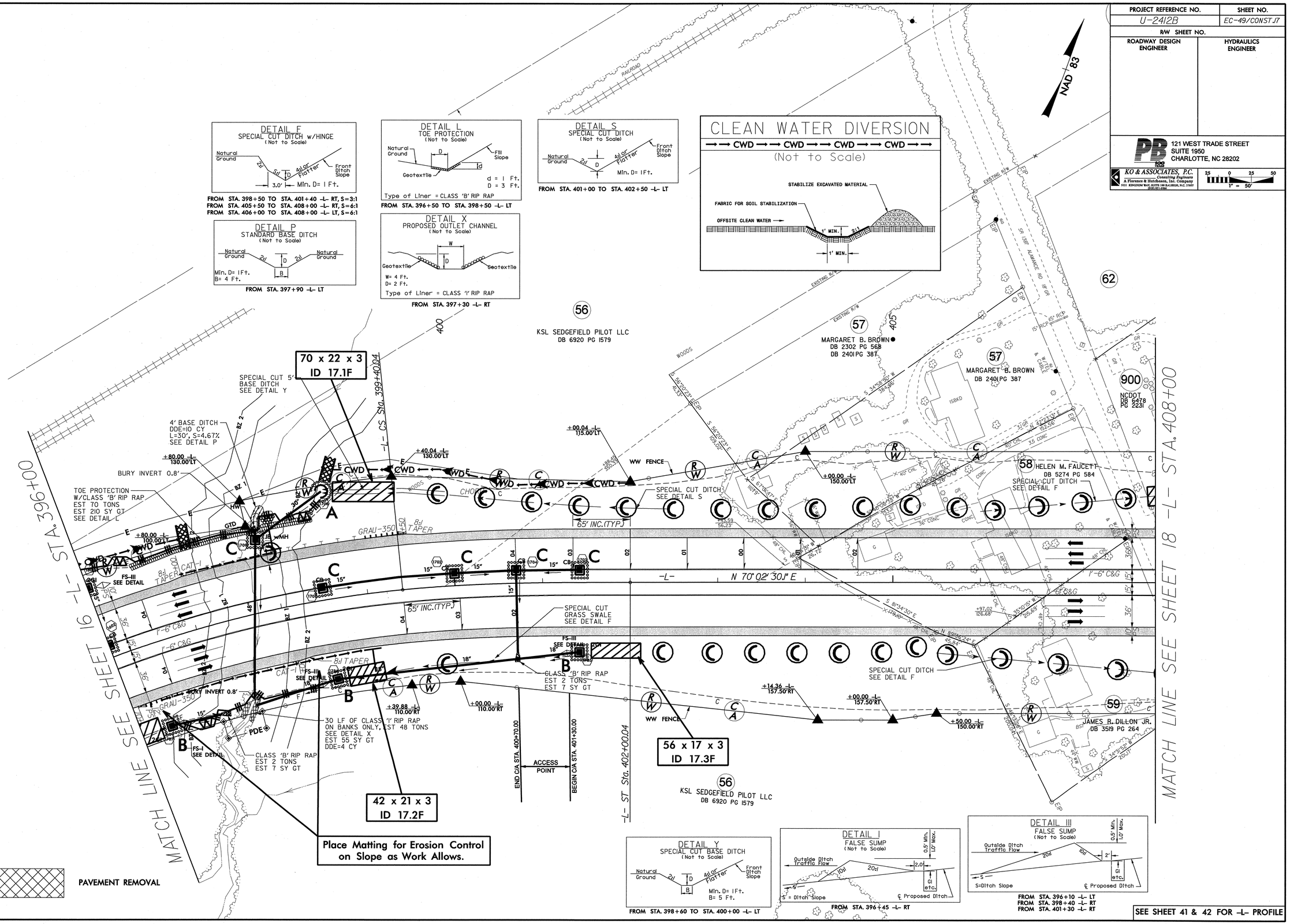
Type of Liner = CLASS '1' RIP RAP

FROM STA. 397+30 -L- RT

DETAIL S
SPECIAL CUT DITCH
(Not to Scale)

FROM STA. 401+00 TO STA. 402+50 -L- LT

CLEAN WATER DIVERSION
→→ CWD →→ CWD →→ CWD →→ CWD →→
(Not to Scale)



DETAIL Y
SPECIAL CUT BASE DITCH
(Not to Scale)

FROM STA. 398+60 TO STA. 400+00 -L- LT

DETAIL I
FALSE SUMP
(Not to Scale)

FROM STA. 396+45 -L- RT

DETAIL III
FALSE SUMP
(Not to Scale)

FROM STA. 396+10 -L- LT
FROM STA. 398+40 -L- RT
FROM STA. 401+30 -L- RT

SEE SHEET 41 & 42 FOR -L- PROFILE

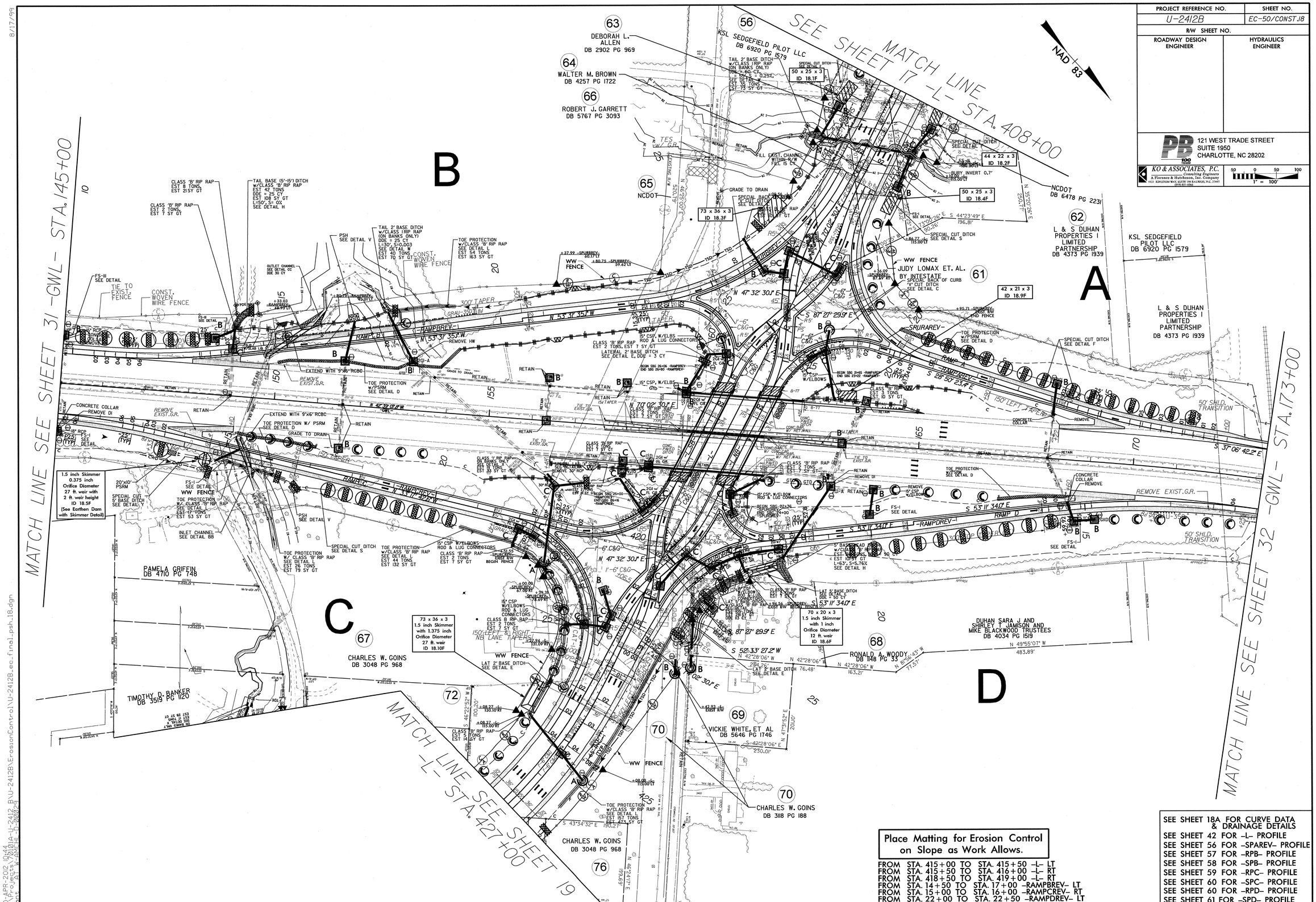
03-MAY-2012 09:25
C:\Projects\70101A-U-2412 BYU-2412B\ErosionControl\U-2412B_ec_final_psh_17.dgn
Centers AT W.AMOAH 1 00016

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-50/CONST.18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
1111 KENILWORTH WAY, SUITE 100 RALEIGH, N.C. 27603
(919) 831-0566

1" = 100'



8/17/99

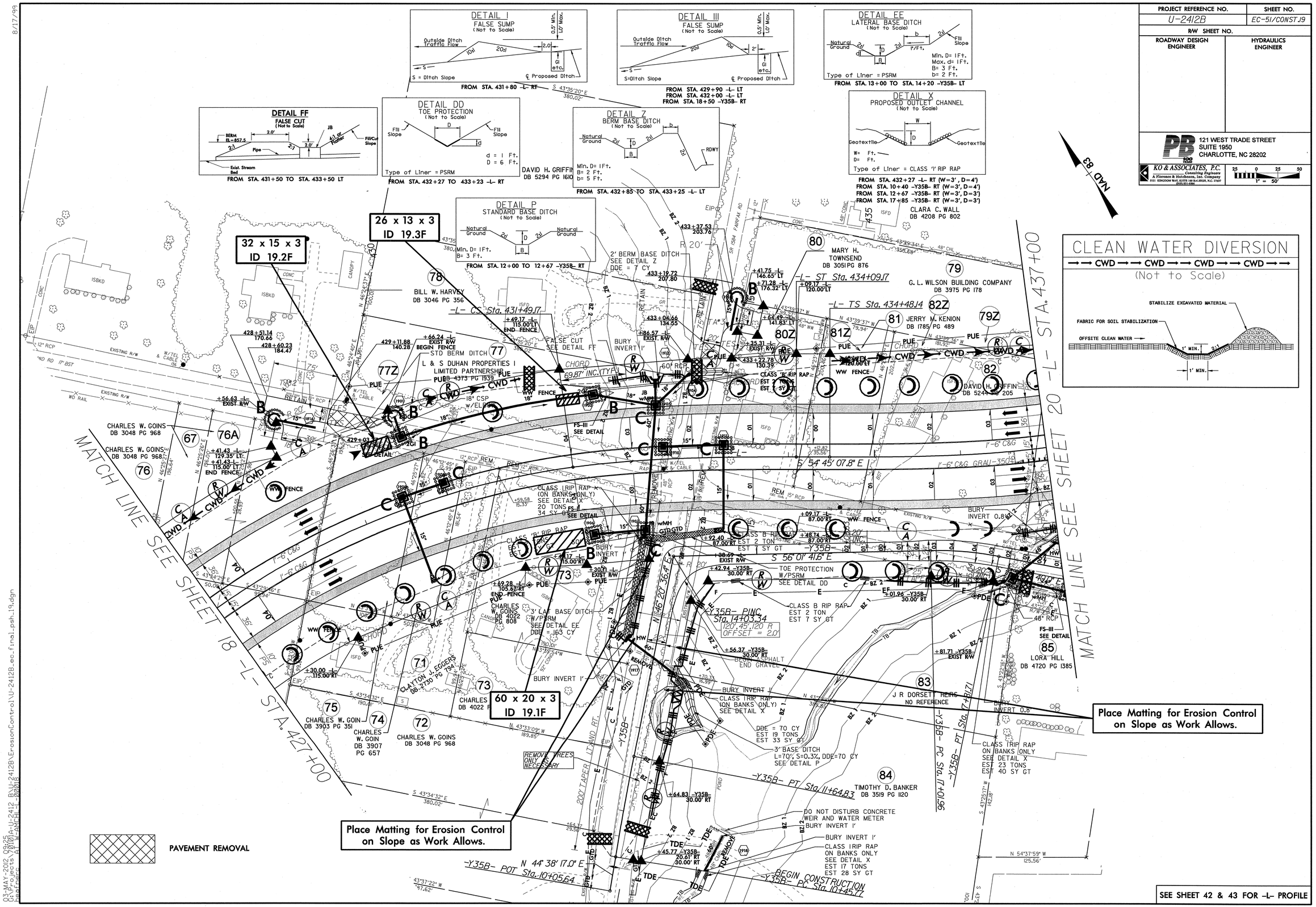
30-APR-2012 19:41
USER: jsmith
DGN: ...\U-2412_B\U-2412B\ErosionControl\U-2412B_ec_final_psh_18.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-51/CONST.19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
801 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27603
(919) 851-0566

1" = 50'



8/17/99

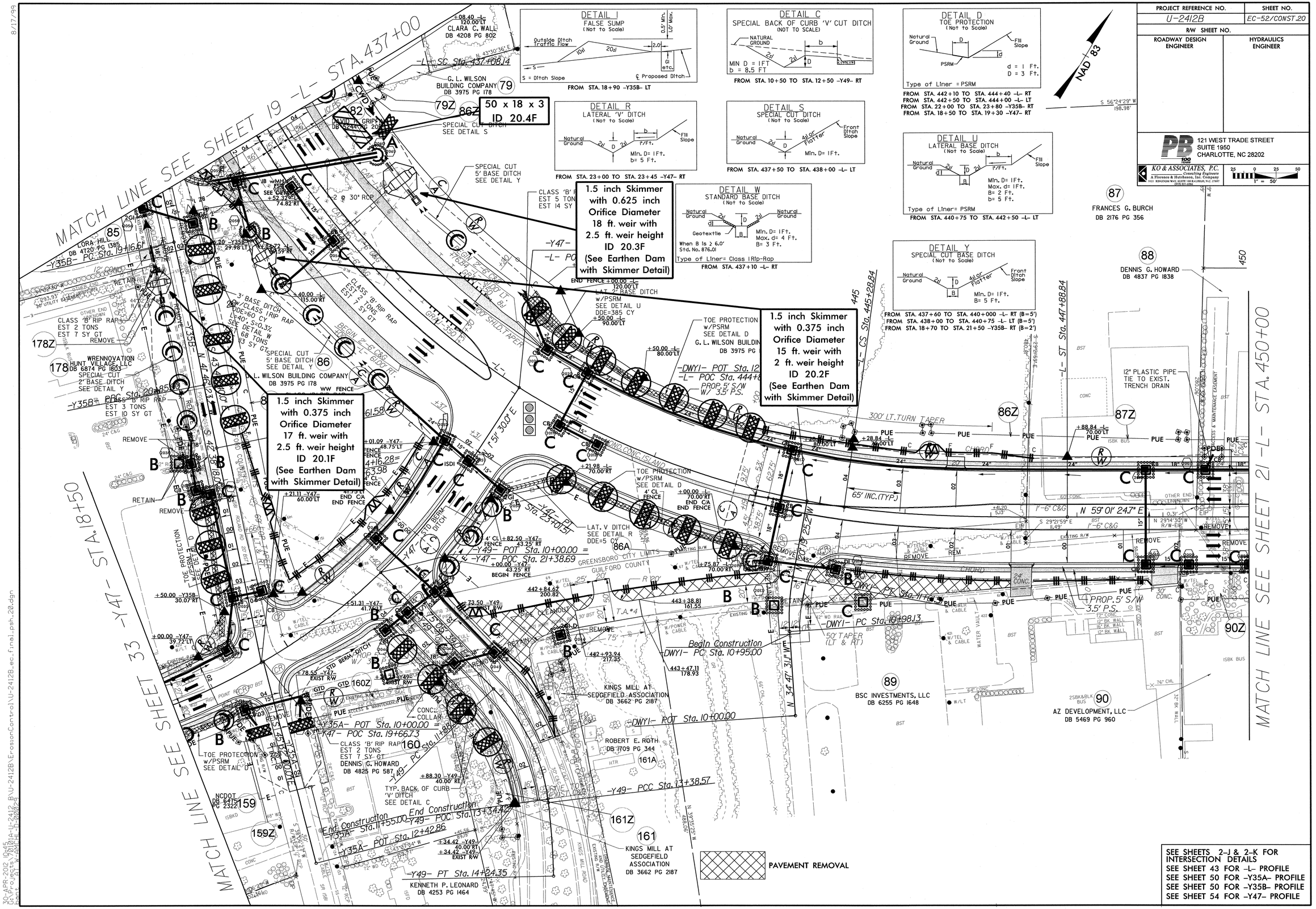
03-MAY-2012 09:25
G:\Projects\70101A-U-2412 BU\U-2412B\ErosionControl\U-2412B_ec_final_psh_19.dgn
Leathers, Al W. Mcnitt, P. 20018

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-52/CONST.20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
1121 KENJUMAN WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6066

1" = 50'



SEE SHEETS 2-J & 2-K FOR INTERSECTION DETAILS
SEE SHEET 43 FOR -L- PROFILE
SEE SHEET 50 FOR -Y35A- PROFILE
SEE SHEET 50 FOR -Y35B- PROFILE
SEE SHEET 54 FOR -Y47- PROFILE

8/17/99

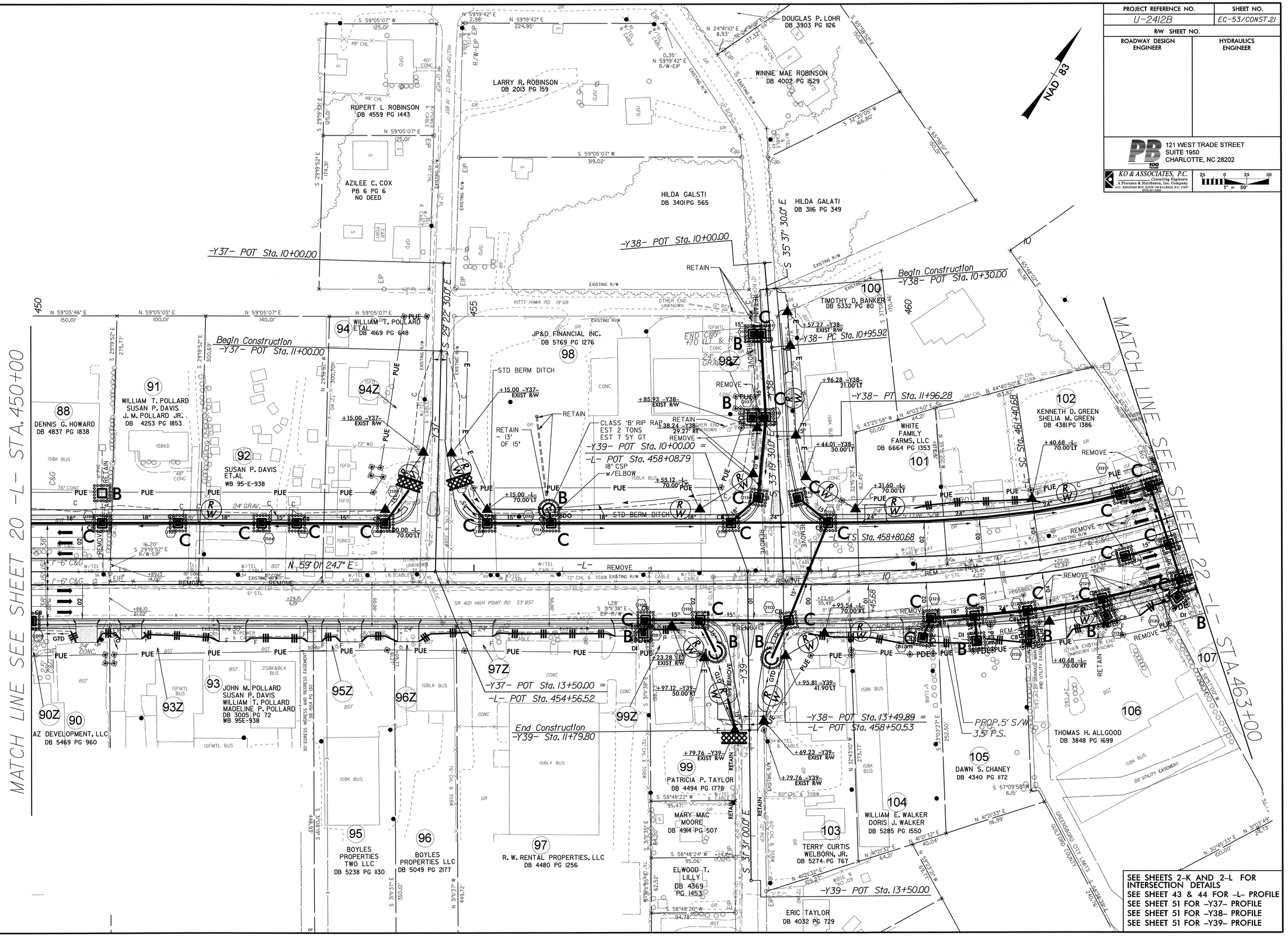
30-APR-2012 10:45
C:\pwworking\ppb\d0157016\U-2412_B\U-2412BErosionControl\U-2412B_ec_final_psh_20.dgn
Project: U-2412B
Part: A, W, AQ, HI, D, 00029

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-53/CONST.21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3121 KONDOM WAY, SUITE 100 RALEIGH, N.C. 27603
(919) 872-1362

25 0 25 50
1" = 50'



8/17/99

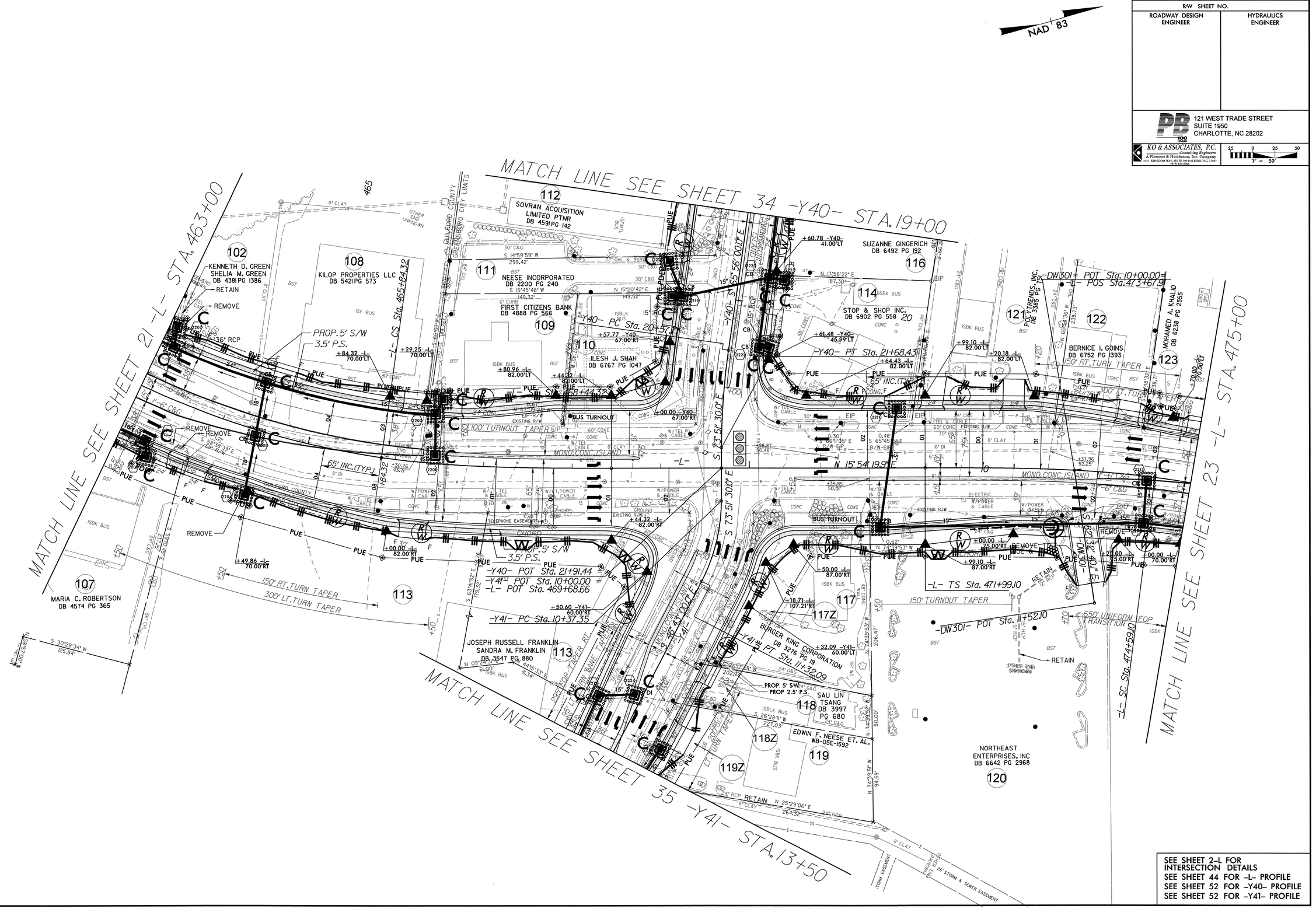
30-APR-2012 10:16
SCALE: 1:50 PLOT DATE: 8/17/99
DGN: U-2412A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_final_psh_21.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-54/CONST.22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
8121 KENDORM WAY, SUITE 100 RALEIGH, N.C. 27607
919-851-1912

25 0 25 50
1" = 50'



SEE SHEET 2-L FOR INTERSECTION DETAILS
SEE SHEET 44 FOR -L- PROFILE
SEE SHEET 52 FOR -Y40- PROFILE
SEE SHEET 52 FOR -Y41- PROFILE

8/17/99

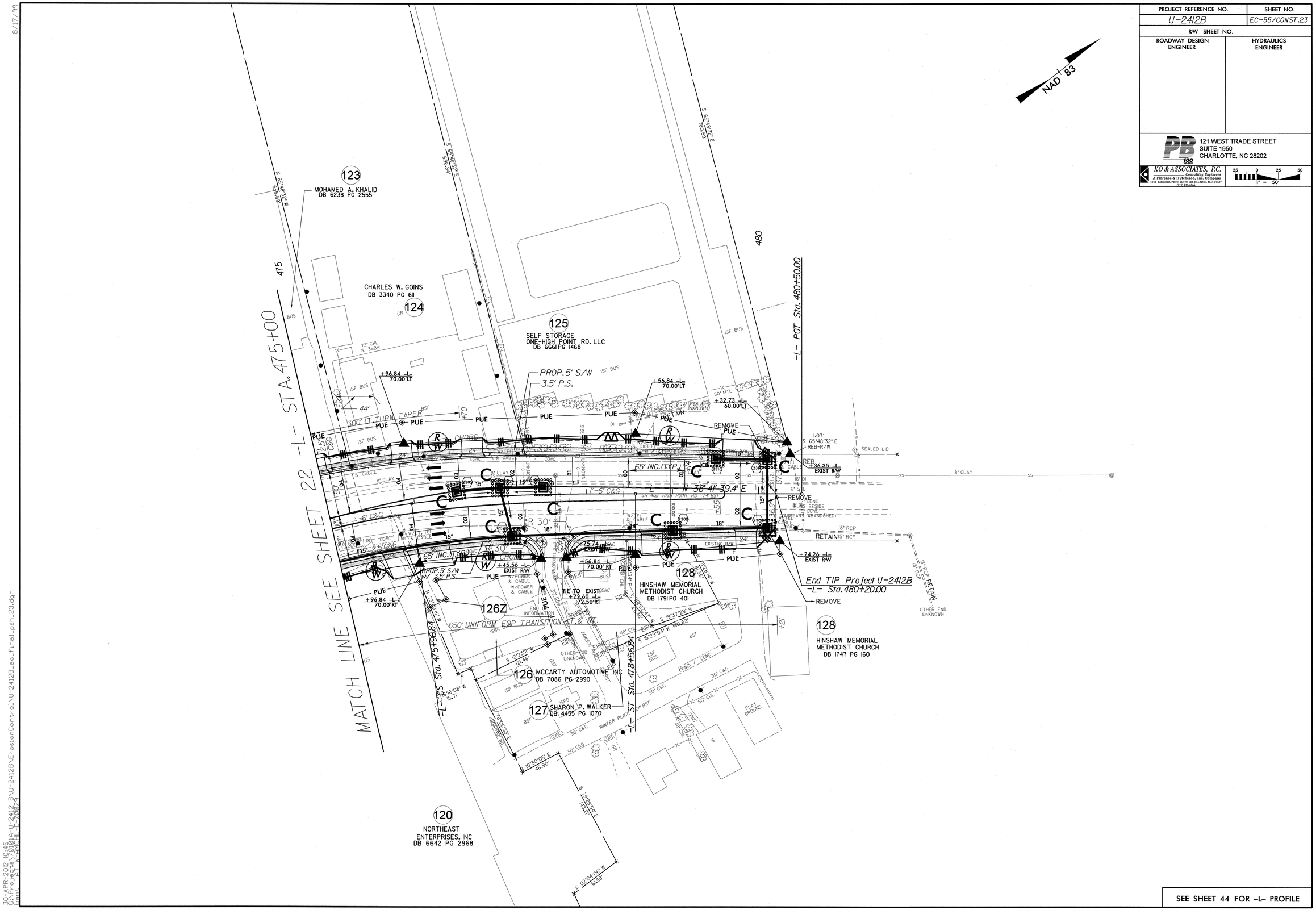
30-APR-2012 10:46
C:\pwworking\sta\dia0\d0819012\U-2412_BNU-2412B\ErosionControl\U-2412B_ec_final_psh_22.dgn
bank: AT W-AMCHI 10-20029

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-55/CONST.23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
1121 KENILWORTH AVE, SUITE 100 CHARLOTTE, N.C. 27207
(704) 331-1065

25 0 25 50
1" = 50'

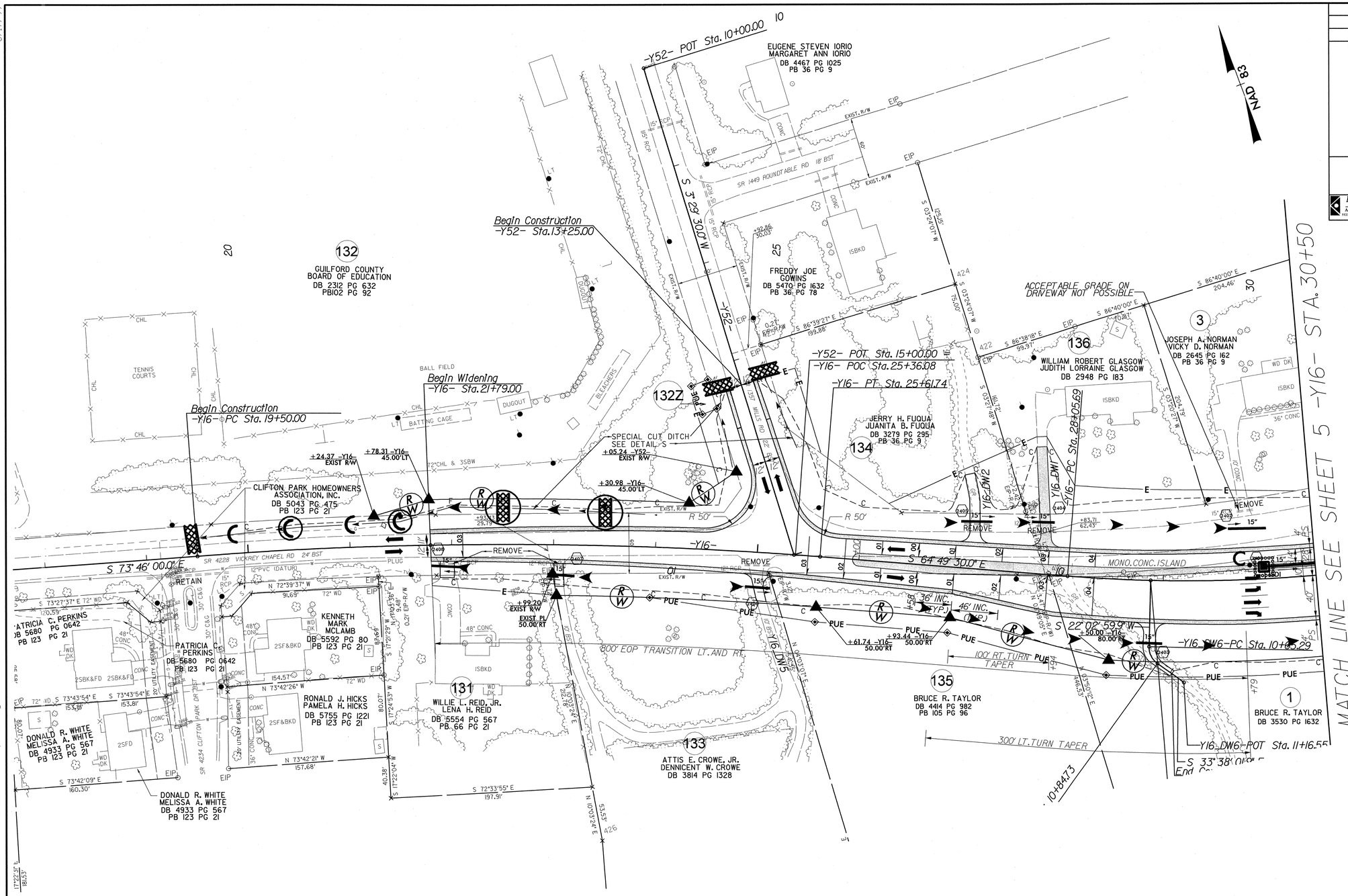


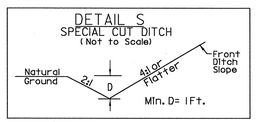
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-56/CONST.24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3121 BONIFOON WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 831-0366

1" = 50'





FROM STA. 13+00 TO STA. 14+00 -Y52- RT
FROM STA. 13+00 TO STA. 14+00 -Y52- LT
FROM STA. 19+50 TO STA. 24+00 -Y16- LT

SEE SHEET 45 FOR -Y16- PROFILE
SEE SHEET 55 FOR -Y52- PROFILE

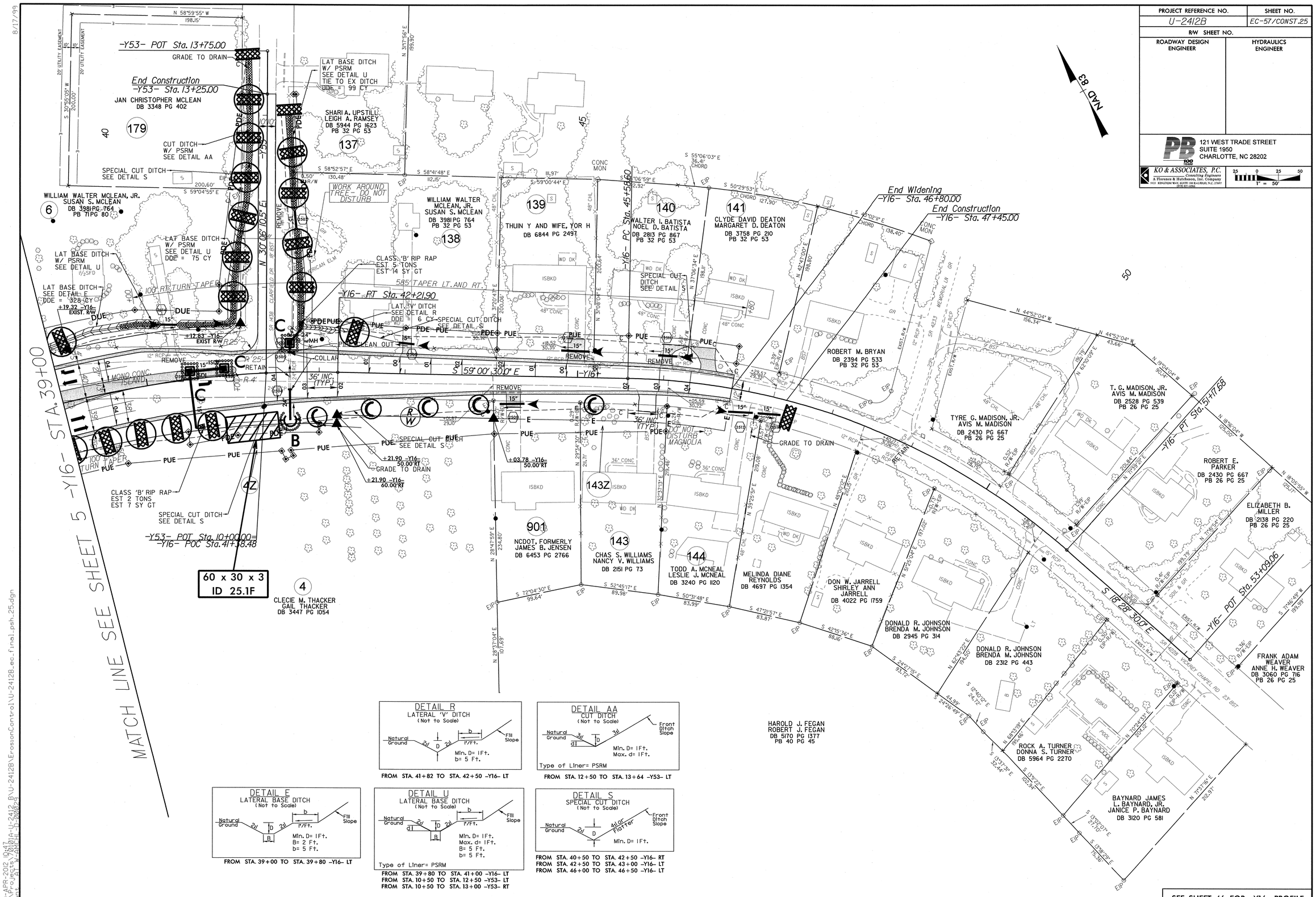
30-APR-2012 15:17
C:\pwworking\ldd\d0101a\U-2412_BN\U-2412BV_ErosionControl\U-2412B_ec_final_psh_24.dgn
Plot Scale: 1 in. = 50 ft.
Plot Date: 4/23/2012
User: ANCHI

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-57/CONST.25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3131 KINGSDOWN WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0565

25 0 25 50
1" = 50'



FROM STA. 41+82 TO STA. 42+50 -Y16- LT

FROM STA. 12+50 TO STA. 13+64 -Y53- LT

FROM STA. 39+00 TO STA. 39+80 -Y16- LT

FROM STA. 39+80 TO STA. 41+00 -Y16- LT
FROM STA. 10+50 TO STA. 12+50 -Y53- LT
FROM STA. 10+50 TO STA. 13+00 -Y53- RT

FROM STA. 40+50 TO STA. 42+50 -Y16- RT
FROM STA. 42+50 TO STA. 43+00 -Y16- LT
FROM STA. 46+00 TO STA. 46+50 -Y16- LT

SEE SHEET 46 FOR -Y16- PROFILE

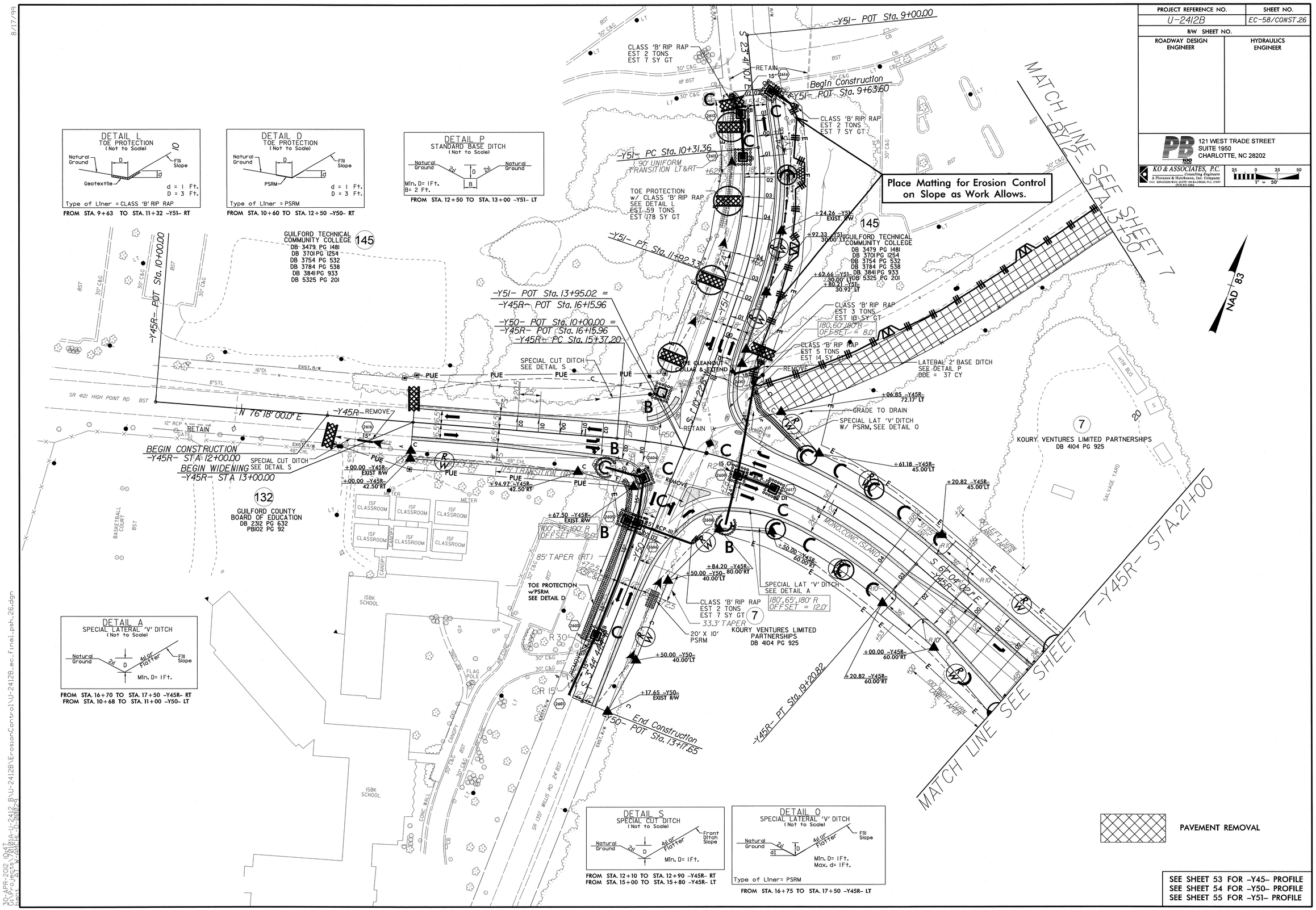
8/17/99
30-APR-2012 10:47
G:\Projects\2012\U-2412 BYU-24128\ErosionControl\U-2412B_ec_final_psh_25.dgn
Port: AT W AMCHILL D 00002

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-58/CONST.26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3121 EDMONDS WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0066

25 0 25 50
1" = 50'



SEE SHEET 53 FOR -Y45- PROFILE
SEE SHEET 54 FOR -Y50- PROFILE
SEE SHEET 55 FOR -Y51- PROFILE

8/17/99

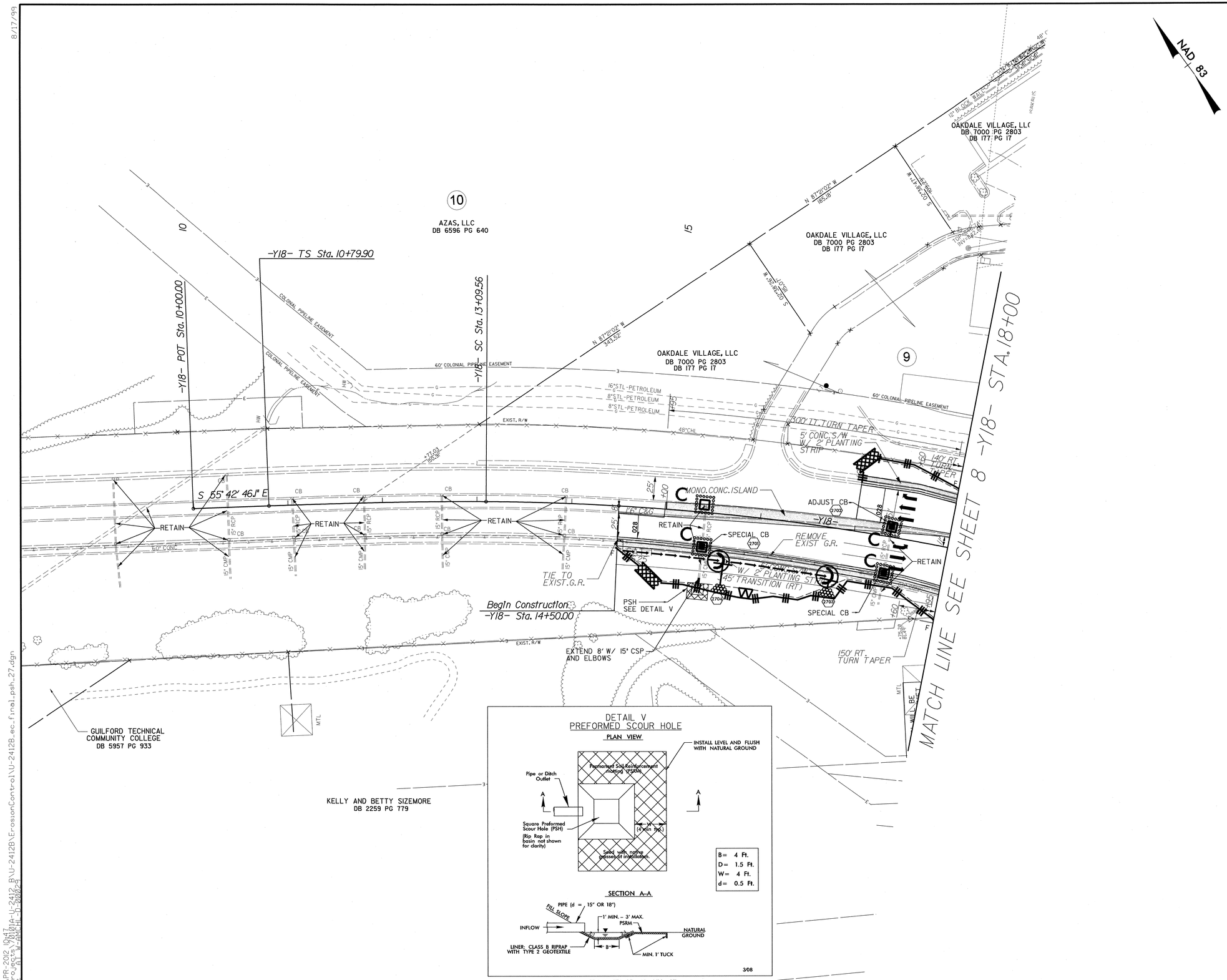
30-APR-2012 19:47
C:\Projects\U-2412B\01A-U-2412_B\U-2412B\ErosionControl\U-2412B_ec_final_psh_26.dgn
bent_01 W-AMEHL -D-2000-9

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-59/CONST.27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3121 RINGPOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 571-0566

1" = 50'



DETAIL V
PREFORMED SCOUR HOLE

PLAN VIEW

B=	4 Ft.
D=	1.5 Ft.
W=	4 Ft.
d=	0.5 Ft.

SECTION A-A

3-08

FROM STA. 15+40 -Y18- RT
FROM STA. 288+30 -L- RT

SEE SHEET 47 FOR -Y18- PROFILE

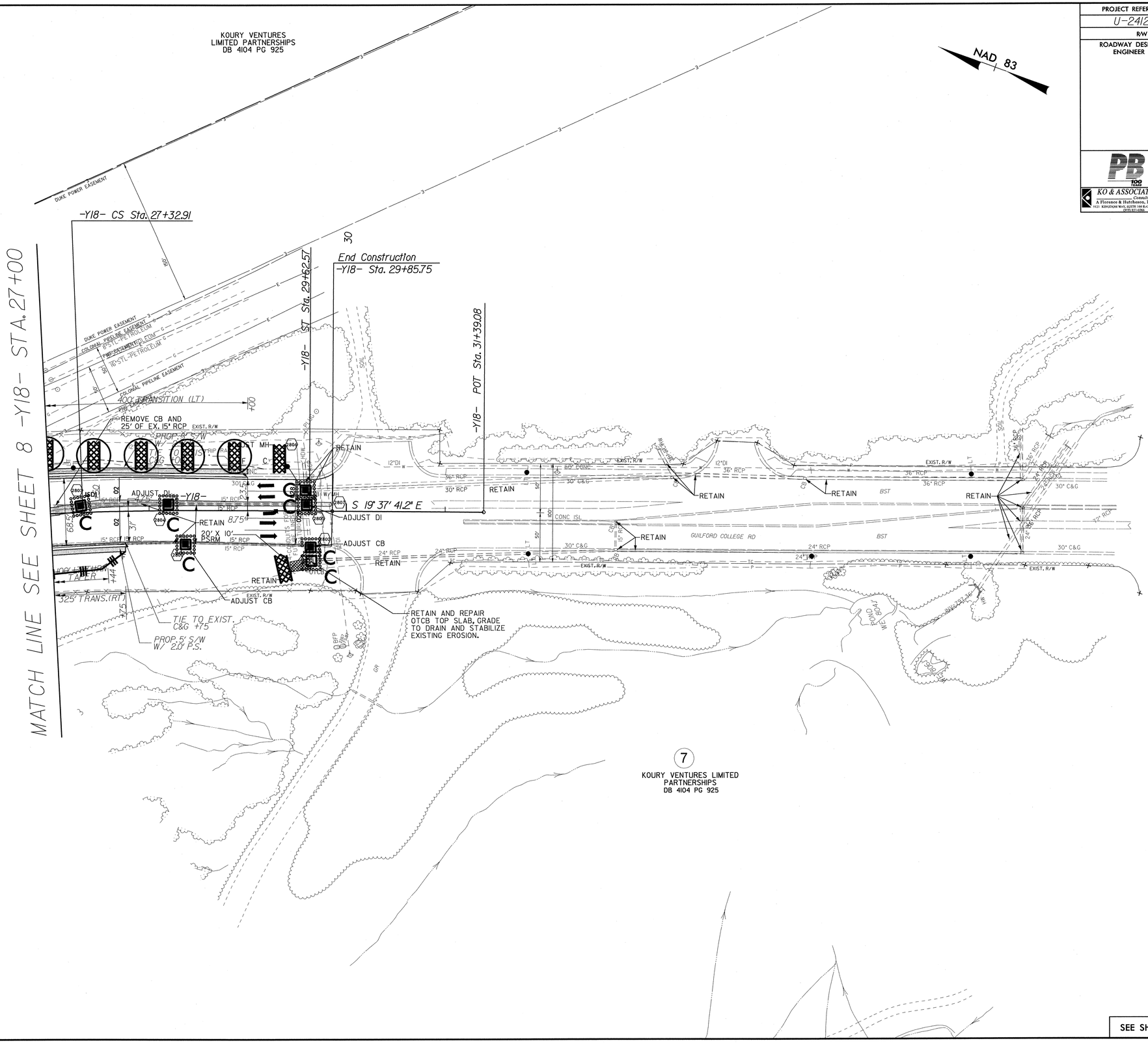
8/17/99
30-APR-2012 10:47
U:\PROJECTS\U-2412B\U-2412B\ErosionControl\U-2412B_ec_final_psh_27.dgn
DGN: ec_ATS_W-ANCH_D_2002a

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-60/CONST.28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
4121 SIMONTON WAY, SUITE 100 RALEIGH, N.C. 27603
(919) 831-0266

1" = 50'



SEE SHEET 47 FOR -Y18- PROFILE

30-APR-2012 10:47
S:\Projects\U2412B\01A-U-2412 B\U-2412B\ErosionControl\U-2412B_ec_final_psh_28.dgn
User: ATS W/AMCH ID-00002-9

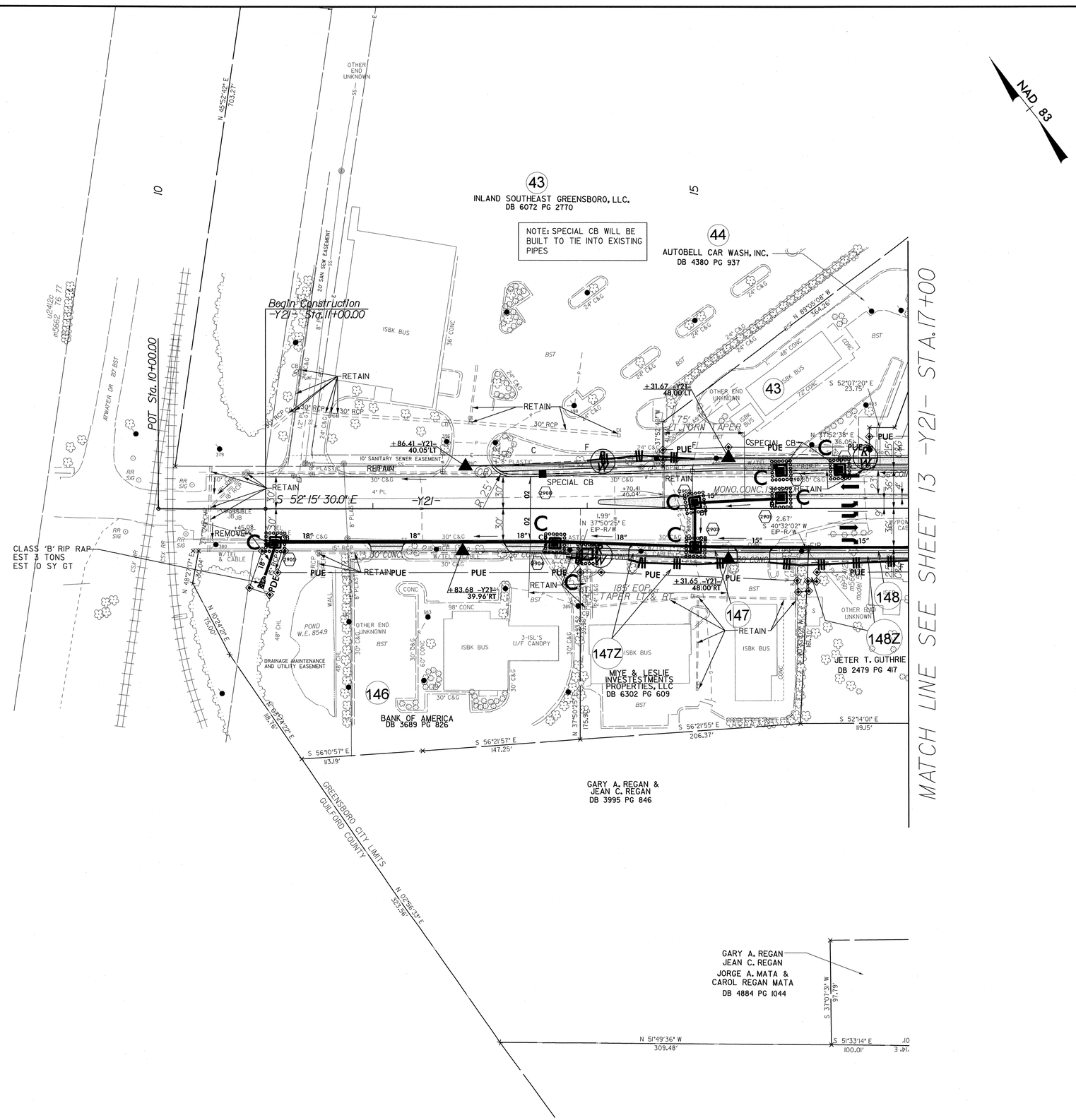
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-61/CONST.29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGSTOWN WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0565

25 0 25 50
1" = 50'



8/17/99

30-APR-2012 10:47
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Cont 261 W-AMCHI n-00029

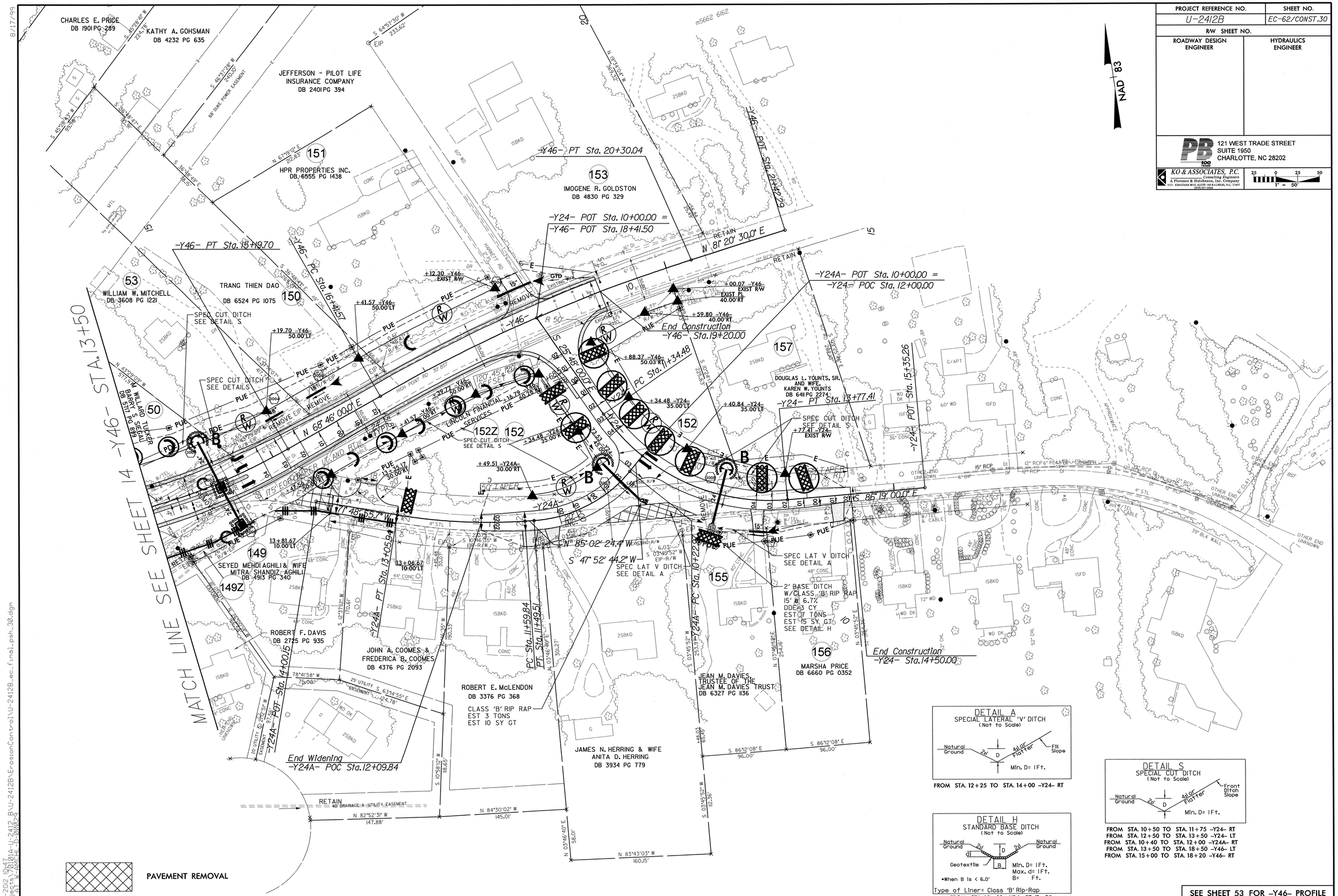
PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-62/CONST.30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
9121 KONTOVER WAY, SUITE 100 RALEIGH, N.C. 27617
(919) 571-0066

1" = 50'

NAD 83



DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 12+25 TO STA. 14+00 -Y24- RT

DETAIL S
SPECIAL CUT DITCH
(Not to Scale)

FROM STA. 10+50 TO STA. 11+75 -Y24- RT
FROM STA. 12+50 TO STA. 13+50 -Y24- LT
FROM STA. 10+40 TO STA. 12+00 -Y24A- RT
FROM STA. 13+50 TO STA. 18+50 -Y46- LT
FROM STA. 15+00 TO STA. 18+20 -Y46- RT

DETAIL H
STANDARD BASE DITCH
(Not to Scale)

FROM STA. 13+00 -Y24- RT (B=2')

SEE SHEET 53 FOR -Y46- PROFILE
SEE SHEET 49 FOR -Y24- PROFILE
SEE SHEET 50 FOR -Y24A- PROFILE

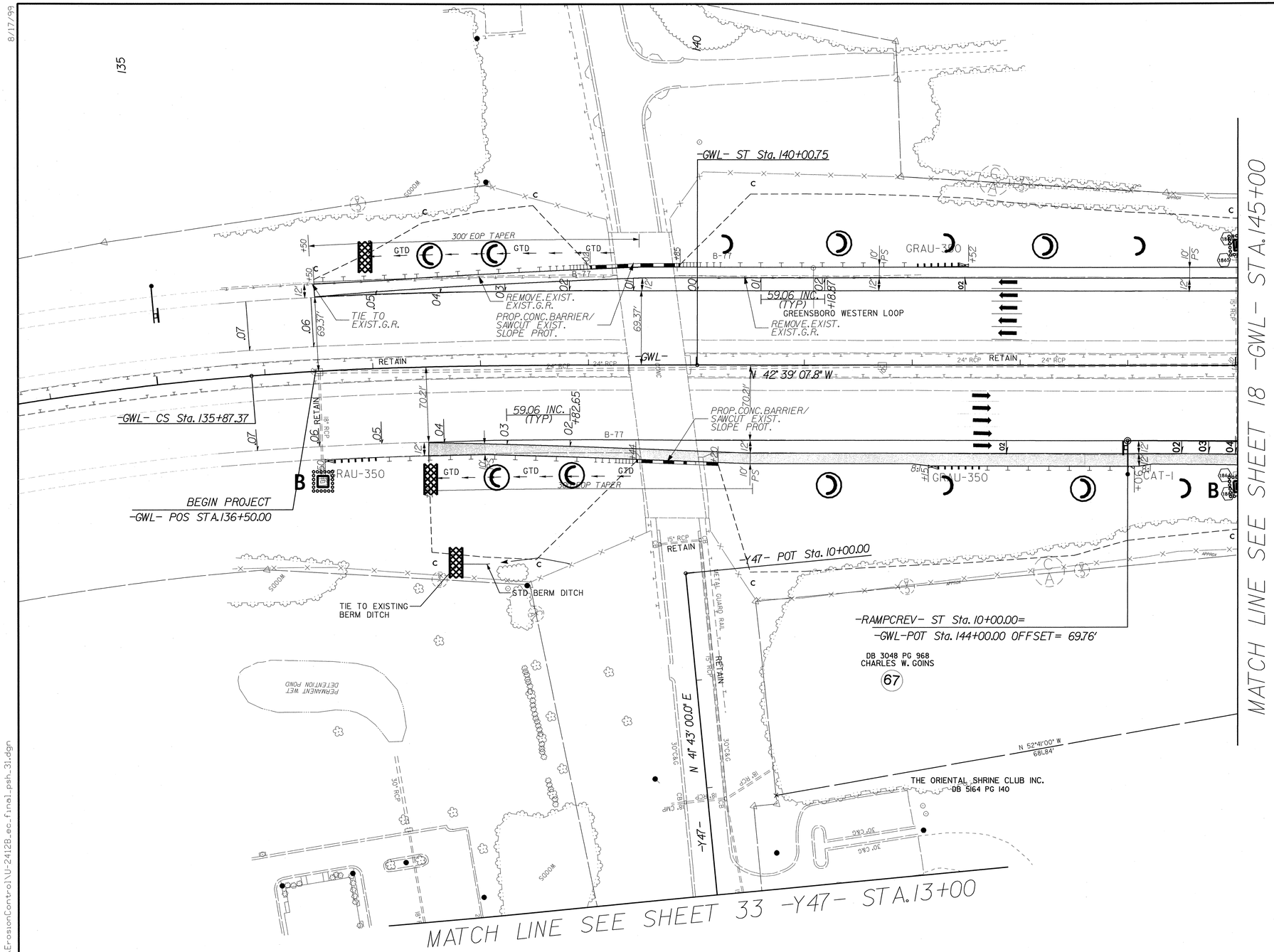
8/17/99
30-APR-2012 10:41
G:\Projects\2012\U-2412 BU\U-2412B\ErosionControl\U-2412B_ec_final_psh_30.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-63/CONST.31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
... Consulting Engineers
A Florence & Hutcheson, Inc. Company
3121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27604
(919) 231-0962

25 0 25 50
1" = 50'



SEE SHEET 54 FOR -Y47- PROFILE

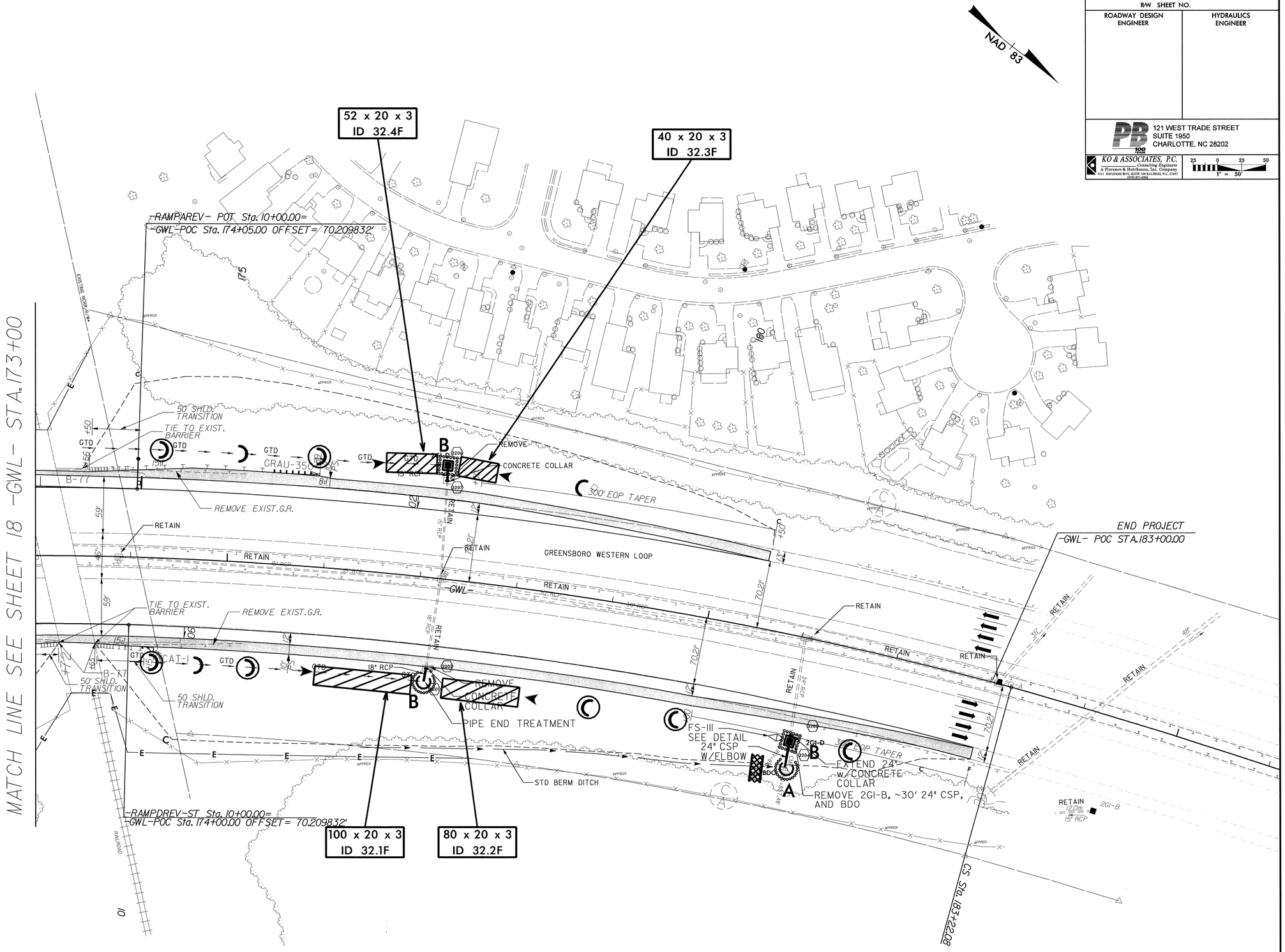
8/17/99
30-APR-2012 10:48
s:\projects\U-2412B\EC\U-2412B_ec_final_psh_31.dgn
PB1 W/AMCH D-00629

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-64/CONST.32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
9121 KINGSTON WAY, SUITE 100 RALEIGH, N.C. 27617
(919) 537-0962

25 0 25 50
1" = 50'



SEE SHEET 56 FOR -RPAREV- PROFILE
SEE SHEET 60 FOR -RPD- PROFILE

8/17/99

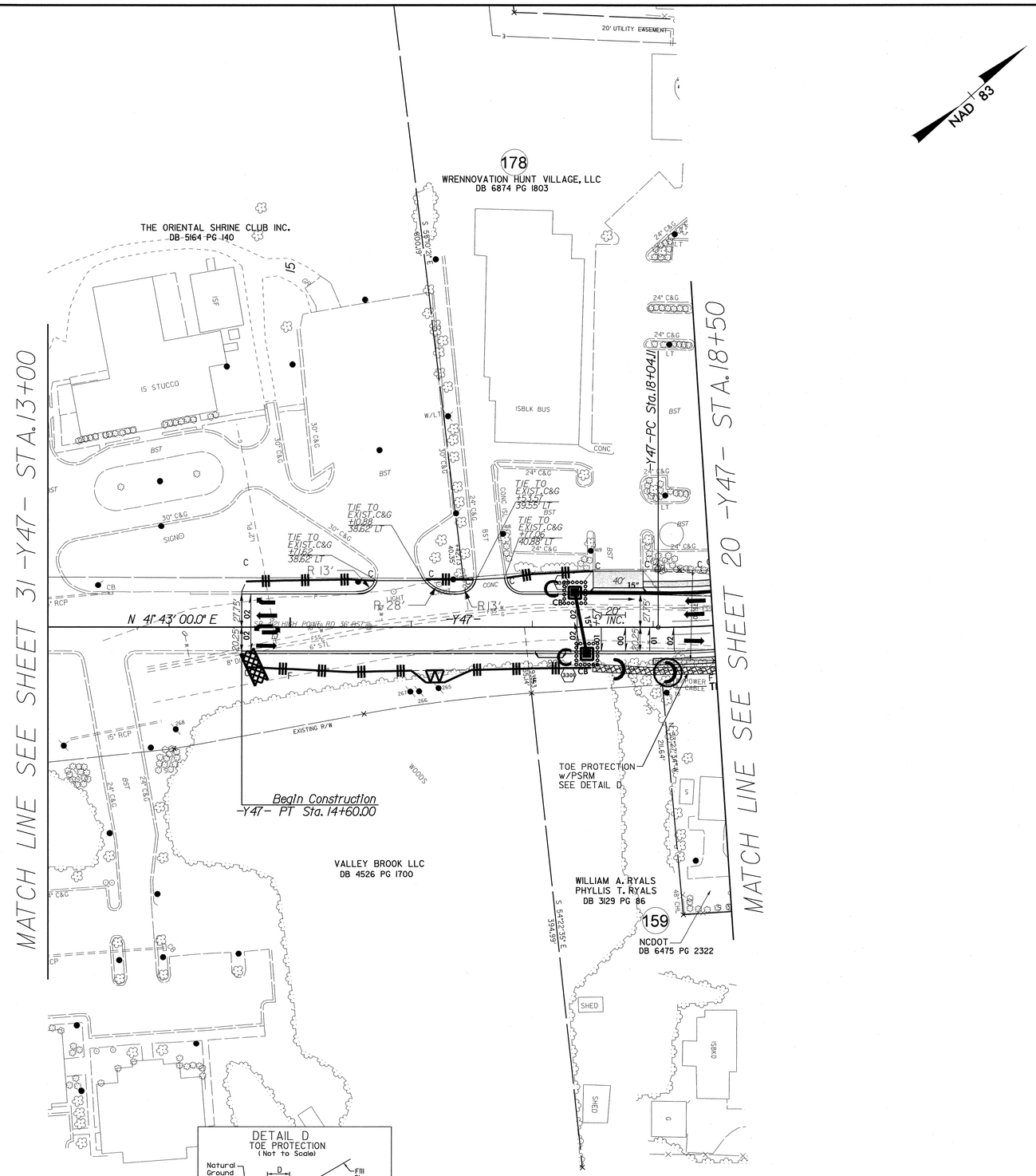
30-APR-2012 10:18
S:\Proj\2412B\U-2412_B\U-2412B\ErosionControl\U-2412B_ec_final_psh_32.dgn
Rport: AT_W_ANCHI_D_00029

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-65/CONST.33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGFORD WAY, SUITE 100 RALEIGH, N.C. 27603
(919) 851-1912

25 0 25 50
1" = 50'



SEE SHEET 54 FOR -Y47- PROFILE

8/17/99

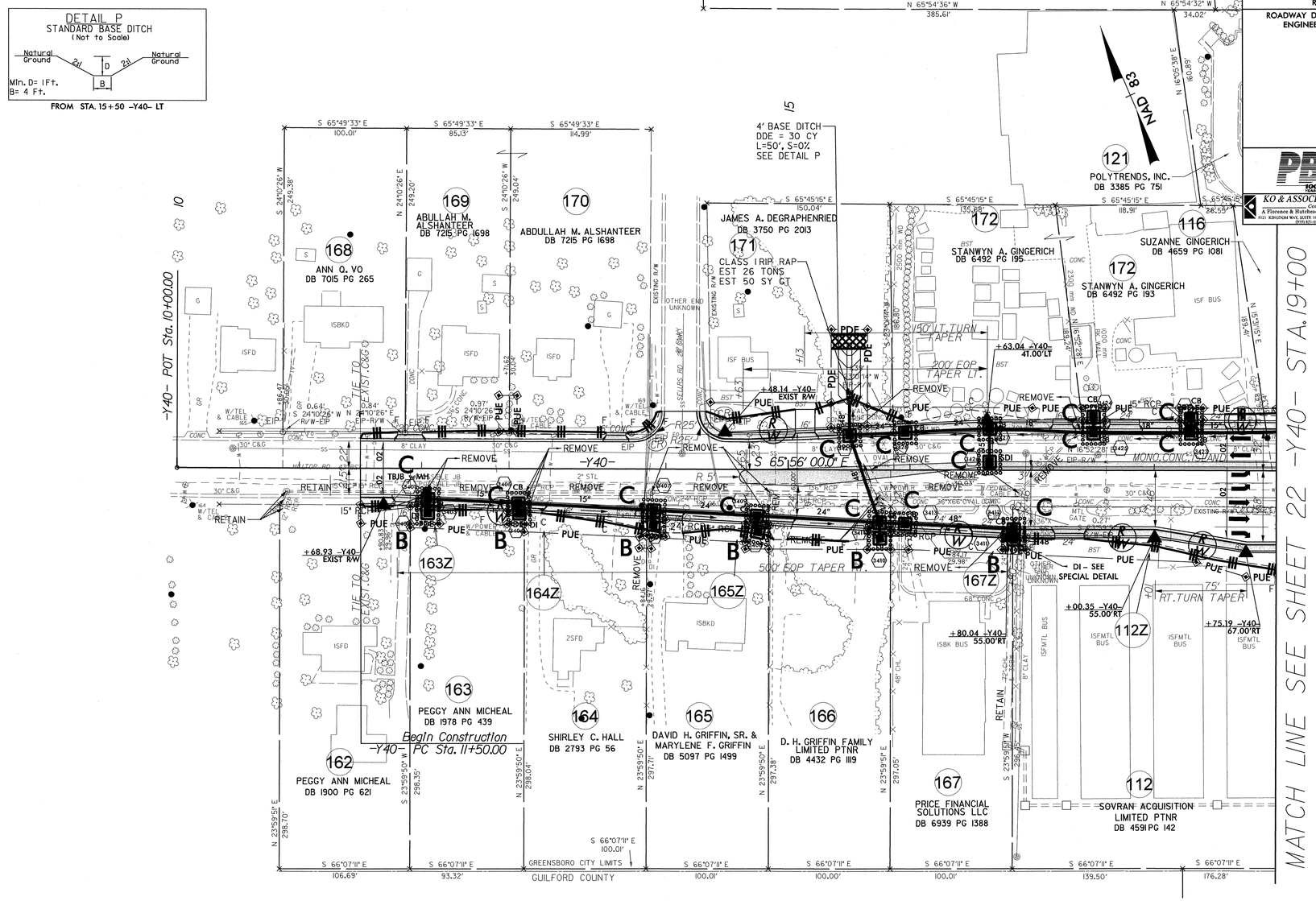
30-APR-2012 10:48
C:\Projects\2010\A-U-2412 B\U-2412B\ErosionControl\U-2412B_ec_final_psh_33.dgn
cbrit AT WMCH-D-2002S

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-66/CONST.34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
3121 KINGSTON WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-9965

25 0 25 50
1" = 50'



SEE SHEET 53 FOR -Y40- PROFILE

8/17/99

30-APR-2012 10:18
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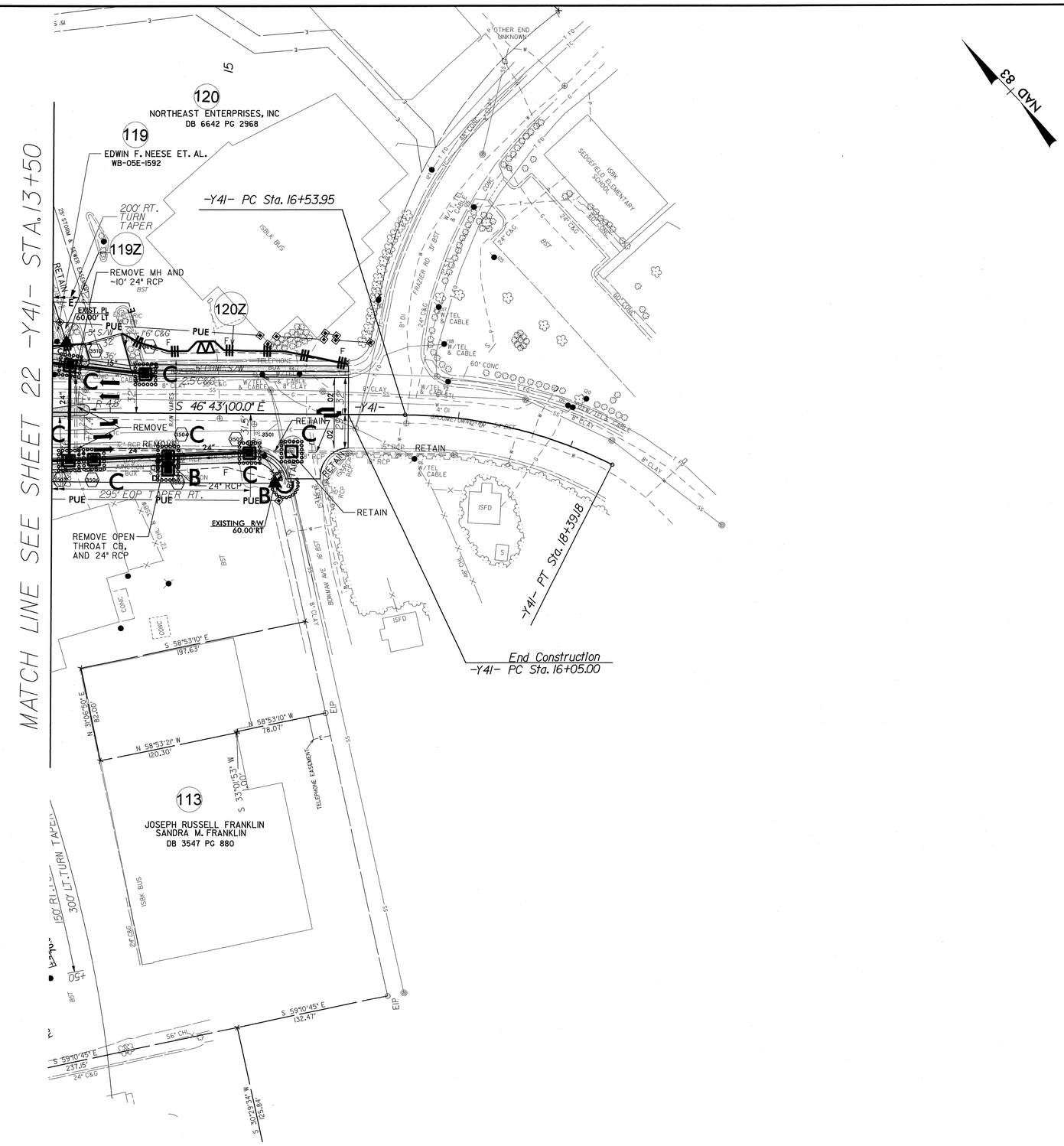
User: AT W ANCHI
PB Project Manager

PROJECT REFERENCE NO.	SHEET NO.
U-2412B	EC-67/CONST.35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PB 100 YEARS
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
4151 RAMGHORN WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-0266

25 0 25 50
1" = 50'



SEE SHEET 52 FOR -Y41- PROFILE

8/17/99
30-APR-2012 10:48
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bart AT W-ANCHL D-00029