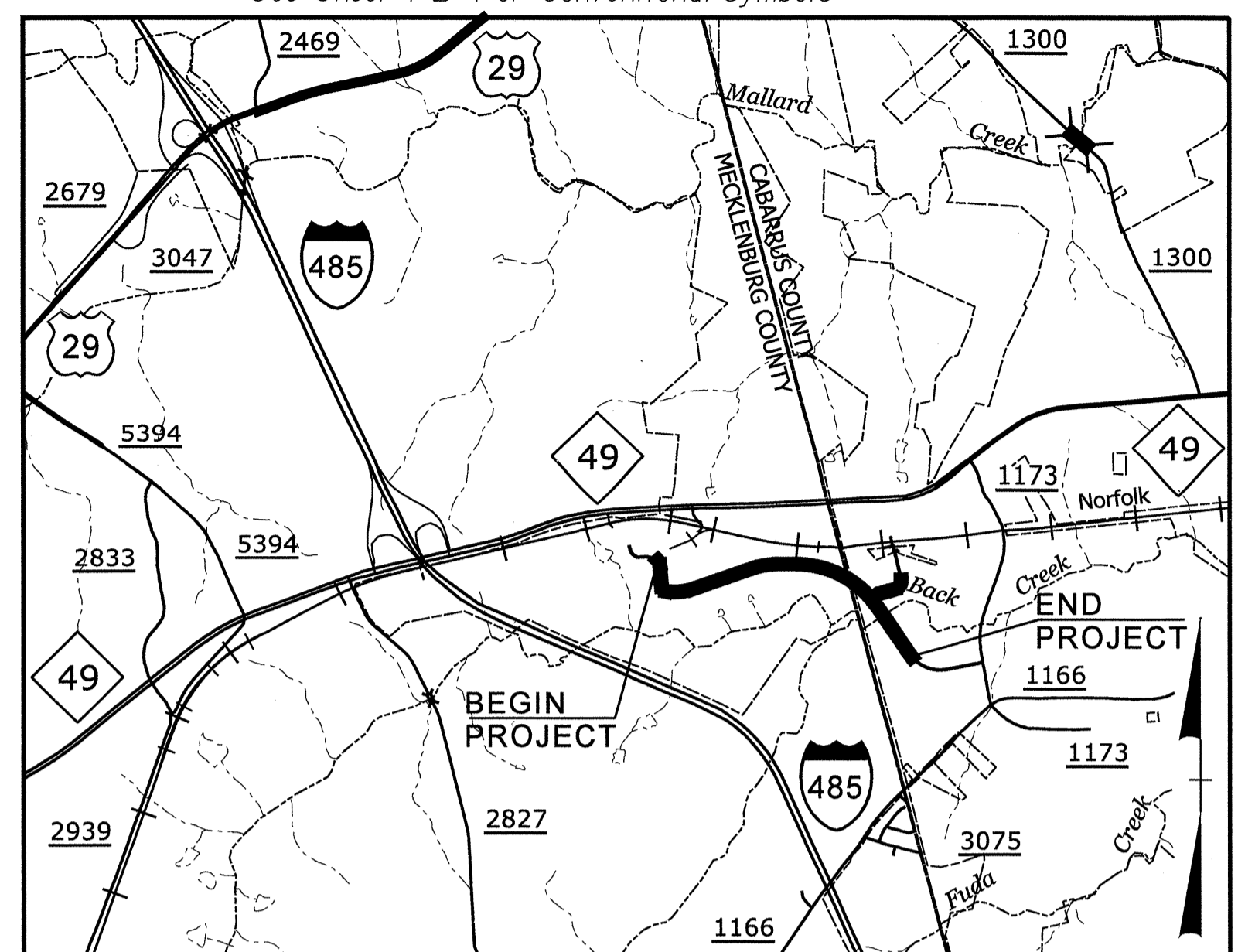


PCN 0503DEL_P21a1

TIP PROJECT: P-5208E

CONTRACT: C203209

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



SKETCH MAP SHOWING THE VICINITY OF STATE PROJECT P-5208E

STATE OF NORTH CAROLINA
NCDOT RAIL DIVISION

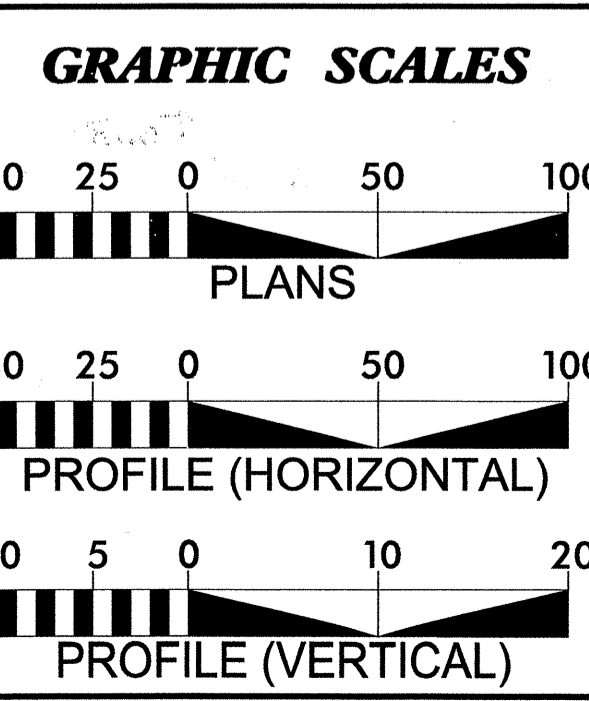
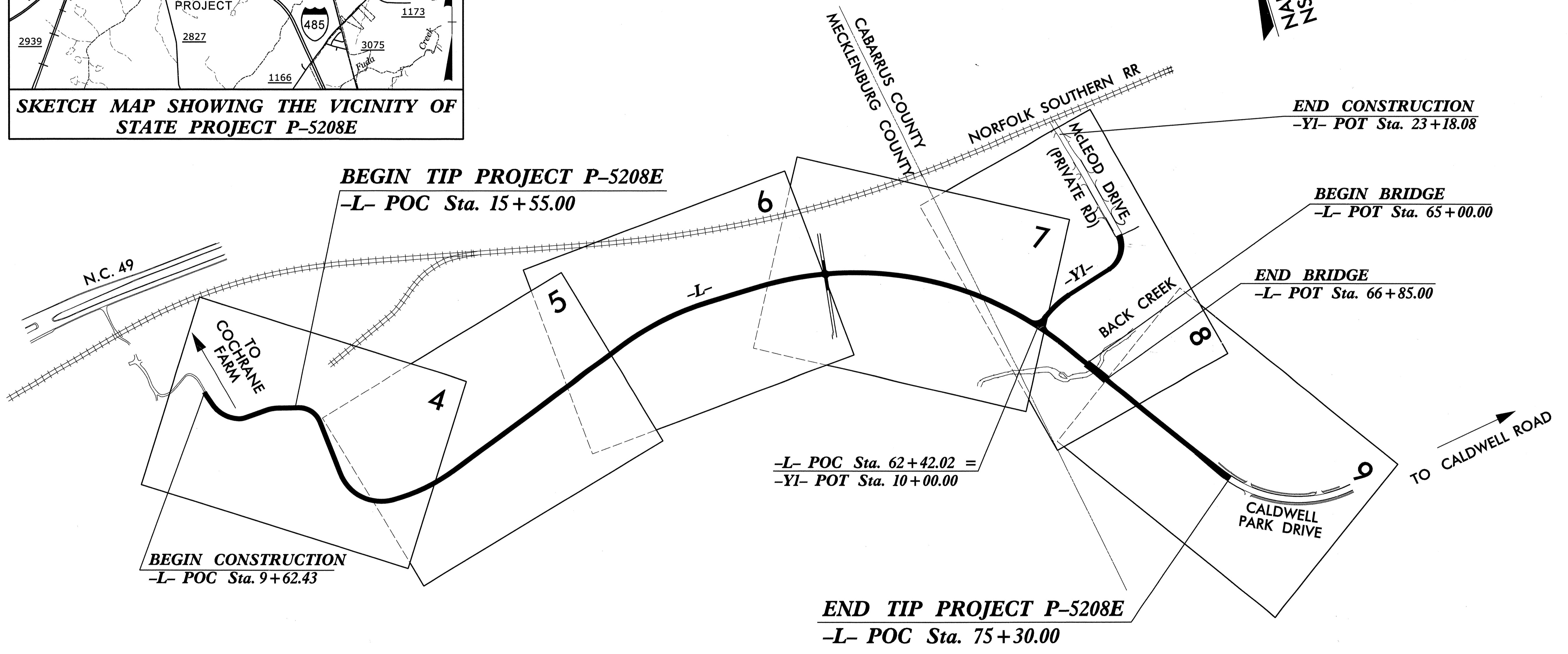
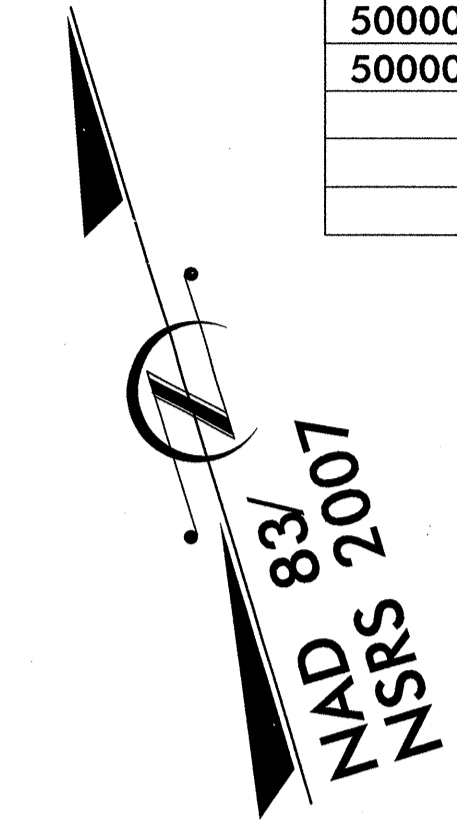
MECKLENBURG & CABARRUS COUNTIES

**LOCATION: CALDWELL PARK DRIVE EXTENSION
ON NEW LOCATION FROM COCHRANE
FARM PROPERTY TO EXISTING CALDWELL
PARK DRIVE**

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	P-5208E	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50000.1.STR20TIB		PE, UTIL PE	
50000.1.STR23T3		PE, UTIL PE	
43219.2.STR09P5208E		RW	
50000.3.STRO5T4A		UTIL CONST	
50000.3.STRO5T4A	FRA-FR-HSR-0006-10-01-00	CONST	



DESIGN DATA

ADT 2012 =	N/A
ADT 2035 =	700
DHV =	12 %
D =	85 %
T =	3 % *
V =	40 MPH
* 1% TTST + 2% DUALS	
FUNC CLASS=LOCAL	
SUB-REGIONAL TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT P-5208E	= 1.097 MILES
LENGTH STRUCTURES TIP PROJECT P-5208E	= 0.035 MILES
TOTAL LENGTH TIP PROJECT P-5208E	= 1.132 MILES

SANDRA STEPNEY, PE
NCDOT PROJECT ENGINEER

Prepared In the Office of:

Florence & Hutcheson
CONSULTING ENGINEERS
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: P-0285

2012 STANDARD SPECIFICATIONS

DAVID C. WALLER, PE
PROJECT ENGINEER

LETTING DATE: MAY 21, 2013

RIGHT OF WAY DATE: APRIL 30, 2012

HYDRAULICS ENGINEER

SEAL 26971
2-8-13

SIGNATURE: [Signature]

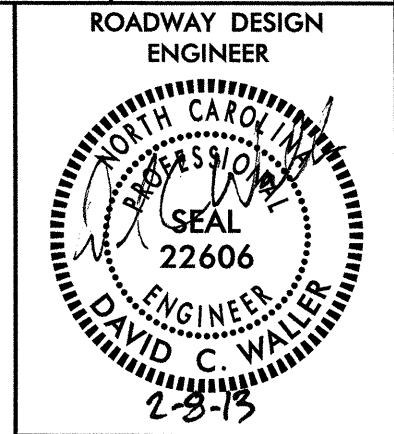
ROADWAY DESIGN ENGINEER

SEAL 22606
2-2-13

SIGNATURE: [Signature]

NC DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
PLANNING AND DEVELOPMENT

2/8/2013 R:\Roadway\Proj\p5208e_rdy_tsh.dgn Florence & Hutcheson, Inc.



0503DEL_P21a1

SHEET NUMBER	SHEET	
1	TITLE SHEET	
1-A	INDEX OF SHEETS, GENERAL NOTES & LIST OF STANDARDS	2012 ROADWAY ENGLISH STANDARD DRAWINGS
1-B	CONVENTIONAL PLAN SHEET SYMBOLS	The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:
1-C THRU 1-D	SURVEY CONTROL SHEET & RIGHT OF WAY EASEMENT TABLE	
1-E	CENTERLINE COORDINATE LIST	
2 THRU 2-A	PAVEMENT SCHEDULE, TYPICAL SECTIONS, SHOULDER BERM GUTTER DETAIL & UNDERCUT DETAILS	
2-B	DITCH DETAILS	
2-C	INTERSECTION DETAIL, PAVEMENT TRANSITION DETAIL	
2-D	DETAIL OF DRAINAGE INSTALLATION IN 2'-6" CURB & GUTTER	
3	SUMMARY OF QUANTITIES	
3-A	DRAINAGE SUMMARY	
3-B	GUARDRAIL SUMMARY	
3-C	EARTHWORK SUMMARY, PAVEMENT REMOVAL SUMMARY	
3-D	PARCEL INDEX	
4 THRU 9	PLAN SHEETS	
10 THRU 12	PROFILE SHEETS	
TMP-1 THRU TMP-4	TRAFFIC MANAGEMENT PLANS	
PMP-1 THRU PMP-4	PAVEMENT MARKING PLANS	
EC-1 THRU EC-15	EROSION CONTROL PLANS	
SIGN-1 THRU SIGN-4	SIGNING PLANS	
UC-1 THRU UC-7	UTILITY CONSTRUCTION PLANS	
X-1 THRU X-49	CROSS SECTIONS	
S-1 THRU S-36	STRUCTURE PLANS	

GENERAL NOTES: 2012 SPECIFICATIONS EFFECTIVE: 01-17-12 REVISED: 07/30/12

GRADE LINE: GRADING AND SURFACING: THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING: CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD 111.

SUPERELEVATION: ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION: ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

SIDE ROADS: THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

GUARDRAIL: THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING: SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

END BENTS: THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES: UTILITY OWNERS ON THIS PROJECT ARE Charlotte-Mecklenburg Utility Dept., Town of Harrisburg, Piedmont Natural Gas, Duke Energy, Verizon & Time Warner Cable. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS: ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.

SURVEY CONTROL SHEET

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "P3414-15" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 572927.0137(±) EASTING: 1490817.4654(±) ELEVATION: 700.64(±)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998439800

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "P3414-15" TO -L- STATION 7+66.66 IS
N 84°08'53.4" E 3409.654'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

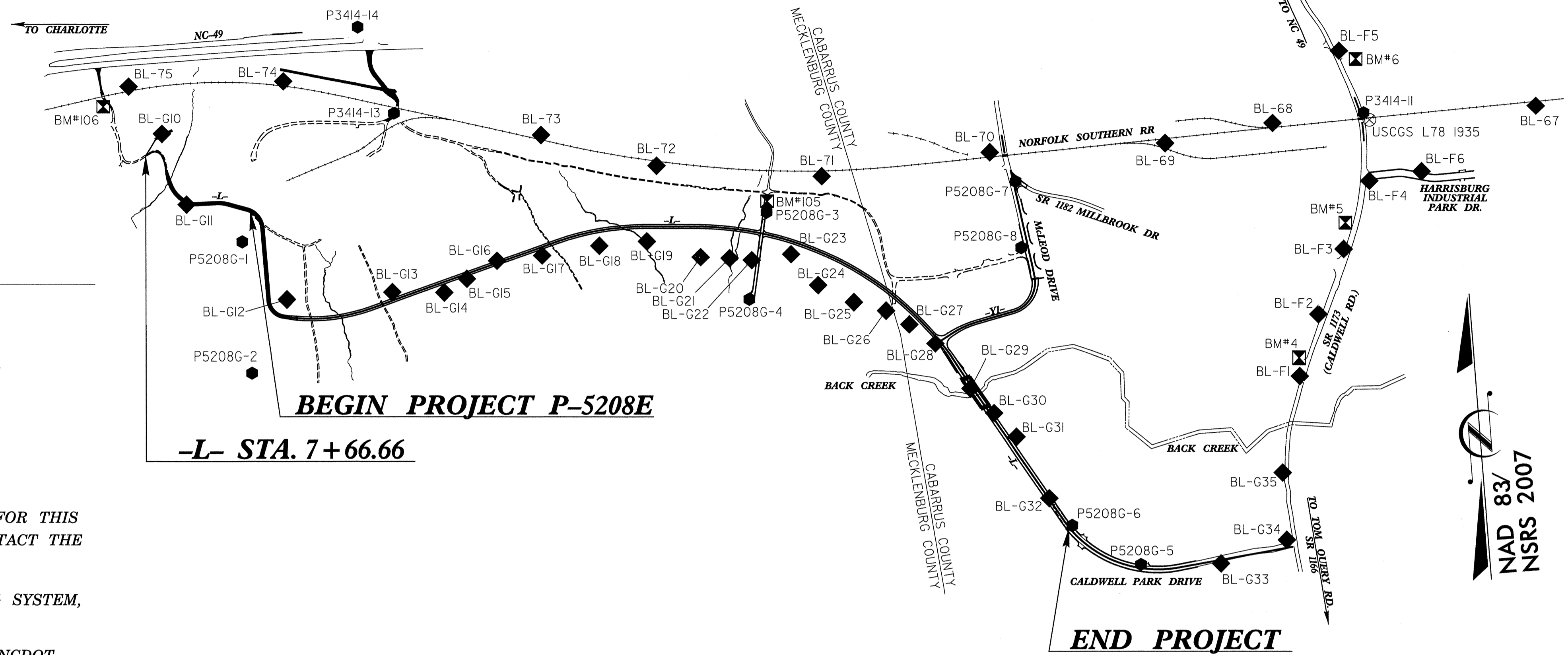
NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: [HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION](https://connect.ncdot.gov/resources/location)

THE FILES TO BE FOUND ARE AS FOLLOWS:
P5208E_LS_CONTROL.TXT
P5208E_LS_LOCAL.TXT
2. SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
3. PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM, UTILIZING THE NCGS RTN SYSTEM (VRS).

MONUMENTS USED OR SET FOR PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT:

- INDICATES GEODETIC CONTROL MONUMENTS FOR HORIZONTAL CONTROL
- INDICATES BASELINE MONUMENTS FOR HORIZONTAL PROJECT CONTROL
- ⊠ INDICATES BENCHMARKS FOR VERTICAL CONTROL
- ⊕ INDICATES NGS GEODETIC MONUMENTS USED FOR HORIZONTAL CONTROL
- ⊙ INDICATES USGS BENCHMARKS



BL1 POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
EQ75	BL-75	573671.1494	1494112.6889	690.19	8+09.31	398.59 LT
BLG10	BL-G10	573398.0936	1494301.2000	673.64	8+36.74	105.17 LT
BLG11	BL-G11	572994.2484	1494441.2191	666.48	11+90.96	13.99 RT
1	P5208G-1	572782.7490	1494757.7390	680.34	17+49.96	121.44 RT
BLG12	BL-G12	572455.7883	1495011.3208	675.43	22-31.41	97.86 LT
BLG13	BL-G13	572496.2715	1495611.0366	679.49	28-77.40	44.84 LT
BLG14	BL-G14	572494.2410	1495906.4202	672.09	31+54.86	56.51 RT
BLG15	BL-G15	572571.9256	1496035.4607	679.90	33+02.52	26.80 RT
BLG16	BL-G16	572674.6537	1496206.7481	674.27	34+98.39	12.27 LT
BLG17	BL-G17	572704.8268	1496464.0926	670.03	37+50.87	45.96 RT
BLG18	BL-G18	572760.5864	1496789.2705	654.32	40+90.11	85.76 RT
BLG19	BL-G19	572785.6526	1497059.7601	637.23	43+78.22	85.45 RT
BLG20	BL-G20	572696.2458	1497365.7555	641.15	46+87.20	174.61 RT
BLG21	BL-G21	572690.9597	1497530.7240	632.88	48+69.61	168.71 RT
BLG22	BL-G22	572679.3552	1497656.2637	647.22	50+08.12	160.55 RT
BLG23	BL-G23	572712.5581	1497879.9189	672.19	52+30.43	71.39 RT
BLG24	BL-G24	572536.7479	1498033.7864	660.25	54+54.26	177.57 RT
BLG25	BL-G25	572440.3200	1498236.8683	665.59	57+02.10	162.08 RT
BLG26	BL-G26	572392.7282	1498419.9921	659.87	58+91.30	91.94 RT
BLG27	BL-G27	572315.8039	1498552.7952	650.87	60+48.27	60.72 RT
BLG28	BL-G28	572204.6489	1498781.2792	620.47	62+35.31	27.00 RT
BLG29	BL-G29	571954.4204	1498900.4331	606.73	65+57.06	11.59 RT
BLG30	BL-G30	571813.3951	1499034.9332	625.68	67+49.38	19.90 LT
BLG31	BL-G31	571677.2834	1499161.6212	645.29	69+33.24	47.71 LT
BLG32	BL-G32	571325.7264	1499348.4001	667.65	73+28.88	3.60 LT
6	P5208G-6	571170.4500	1499478.8570	675.81	75+32.69	21.06 LT
5	P5208G-5	570947.9730	1499699.5860	660.64	80+07.53	20.91 LT
BLG33	BL-G33	570953.5003	1500325.2135	648.60	84+67.71	20.29 RT
BLG34	BL-G34	571088.8002	1500700.1983	630.43	88+60.94	45.23 LT
BLG35	BL-G35	571473.2545	1500676.7101	608.81	OUTSIDE PROJECT LIMITS	
EQF1	BL-F1	572024.8982	1500775.0431	604.30	OUTSIDE PROJECT LIMITS	

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
P34149	P3414-9	574162.3541	1506986.4491	610.51	16-79.47	12183.05 LT
BL63	BL-63	573993.0230	1506301.8672	609.70	16-80.45	11484.71 LT
BL64	BL-64	573942.7297	1505320.4362	611.81	16-79.93	10503.20 LT
BL65	BL-65	573786.4207	1504296.0301	616.65	16-80.55	9468.28 LT
BL66	BL-66	573746.7595	1503421.1030	624.88	16-79.92	8593.78 LT
BL67	BL-67	573561.6555	1502118.5391	637.77	70+45.50	3552.23 LT
P341411	P3414-11	573520.1777	1501138.6901	648.83	65+26.97	2719.79 LT
BL68	BL-68	573459.3581	1500620.8578	651.17	63+51.77	2259.69 LT
BL69	BL-69	573344.8679	1500009.1839	657.23	62+14.51	1707.90 LT
BL70	BL-70	573293.4073	1499011.1322	654.09	58+18.06	981.75 LT
BL71	BL-71	573157.7204	1498054.5231	664.68	52+51.84	406.23 LT
BL72	BL-72	573217.8908	1497115.1322	673.06	44+33.58	346.79 LT
BL73	BL-73	573391.5827	1496458.1881	678.06	39+41.92	606.14 LT
P341413	P3414-13	573517.0917	1495622.0121	688.41	16+13.71	974.92 LT
BL74	BL-74	573702.2178	1494992.9133	690.05	15+36.66	764.92 LT
BL75	BL-75	573671.1494	1494112.6889	690.19	8+09.31	398.59 LT
BL76	BL-76	573462.9844	1493227.3625	692.72	OUTSIDE PROJECT LIMITS	
BL77	BL-77	573250.4812	1492554.1282	697.05	OUTSIDE PROJECT LIMITS	
BL78	BL-78	573136.5919	1491697.7891	700.00	OUTSIDE PROJECT LIMITS	
P341415	P3414-15	572927.0137	1490817.4654	700.64	OUTSIDE PROJECT LIMITS	

BL2 POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BLF5	BL-F5	573874.1983	1500999.0037	672.99	63+07.66	2810.91 LT
EQ11	P3414-11	573520.1777	1501138.6901	648.83	65+26.97	2719.79 LT
BLF4	BL-F4	573131.3088	1501171.0561	639.84	68+66.31	2527.14 LT
BLF3	BL-F3	572742.5686	1501025.1103	625.10	71+04.94	2187.33 LT
BLF2	BL-F2	572373.7576	1500881.2505	615.35	73+28.30	1860.48 LT
BLF1	BL-F1	572024.8982	1500775.0431	604.30	OUTSIDE PROJECT LIMITS	

BY2 POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
EQF4	BL-F4	573131.3088	1501171.0561	639.84	68+66.31	2527.14 LT
BLF6	BL-F6	573185.6688	1501467.8690	636.32	69+88.87	2802.88 LT

BY1G POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
EQG27	BL-G27	572315.8039	1498552.7952	650.87	OUTSIDE PROJECT LIMITS	
8	P5208G-8	572750.1980	1499190.8950	646.28	18+88.29	37.84 LT
7	P5208G-7	573126.9750	1499158.1490	650.70	22+63.08	12.00 RT

 BM4 ELEVATION = 610.31
 N 572125 E 1500771
 L STATION 74-72 1629 LEFT
 RR SPIKE IN 14" OAK

 BM5 ELEVATION = 637.97
 N 572892 E 1501035
 L STATION 69+87 2280 LEFT
 RR SPIKE IN 9" OAK

 BM6 ELEVATION = 669.30
 N 573828 E 1501094
 L STATION 63+44 2859 LEFT
 RR SPIKE IN 10" ELM

 BM105 ELEVATION = 664.51
 N 573014 E 1497744
 L STATION 50+27 185 LEFT
 RR-SPIKE SET IN FIRST JOINT OF CONC.
 C&G AT EOP ON EAST SIDE OF PRIVATE
 DRIVE LEADING TO SEWER PLANT. 165 +/-
 SOUTH OF TRACKS

 BM106 ELEVATION = 691.17
 N 573555 E 1493968
 L STATION 7+66.66
 N 40+43'29.7" W DIST 369.93
 RR-SPIKE SET IN NORTHERN MOST ROOT OF A
 48" RED OAK. TREE BEING SW 50' FROM A
 PRIVATE R/R CROSSING LEADING TO A 2
 STORY FRAME FARM HOUSE LYING 75' SOUTH
 OF TRACKS

 L78 ELEVATION = 644.64
 N 573478 E 1501172
 L STATION 65+81 2724 LEFT
 USCGS L78 1935

NOTE: DRAWING NOT TO SCALE

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 2/25/2013
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 Location and Surveys Unit

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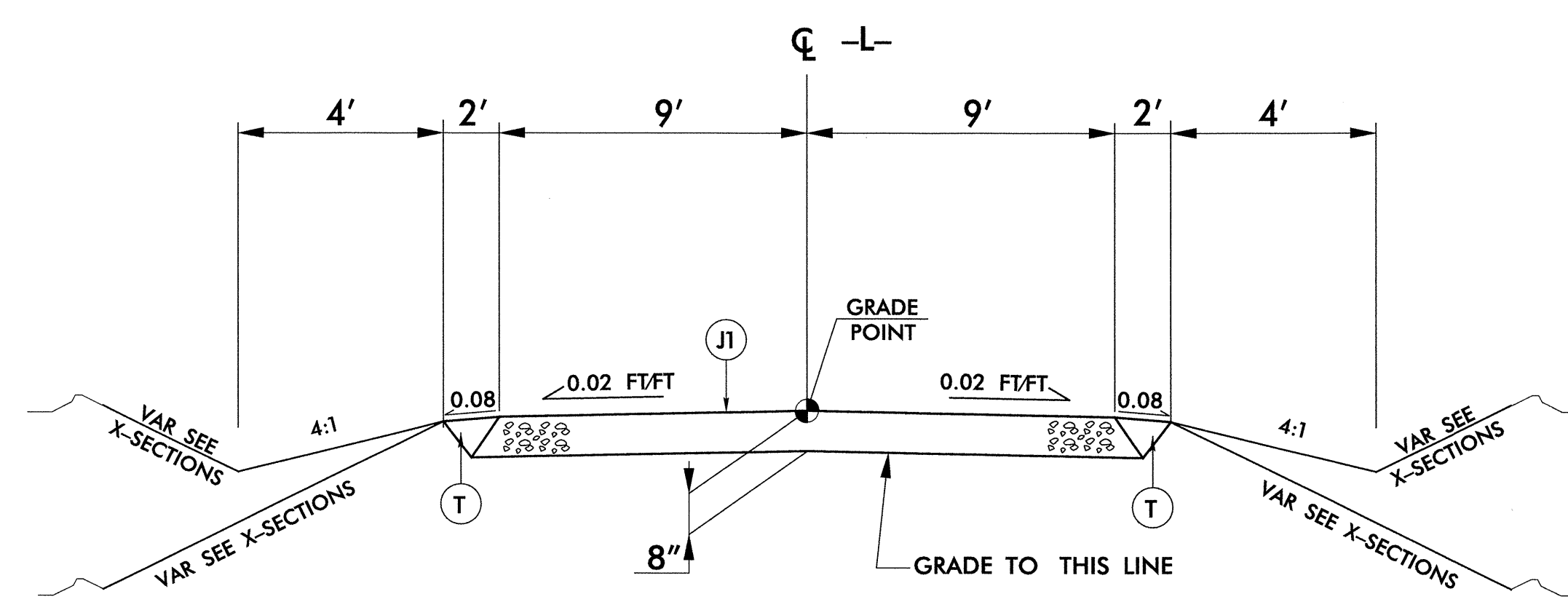
PAVEMENT SCHEDULE

C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.
J1	PROP. 8" AGGREGATE BASE COURSE
J2	PROP. VARIABLE DEPTH AGGREGATE BASE COURSE
P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YARD
R1	2'-6" CURB AND GUTTER
R2	SHOULDER BERM GUTTER
S	5" CONCRETE SIDEWALK
T	EARTH MATERIAL

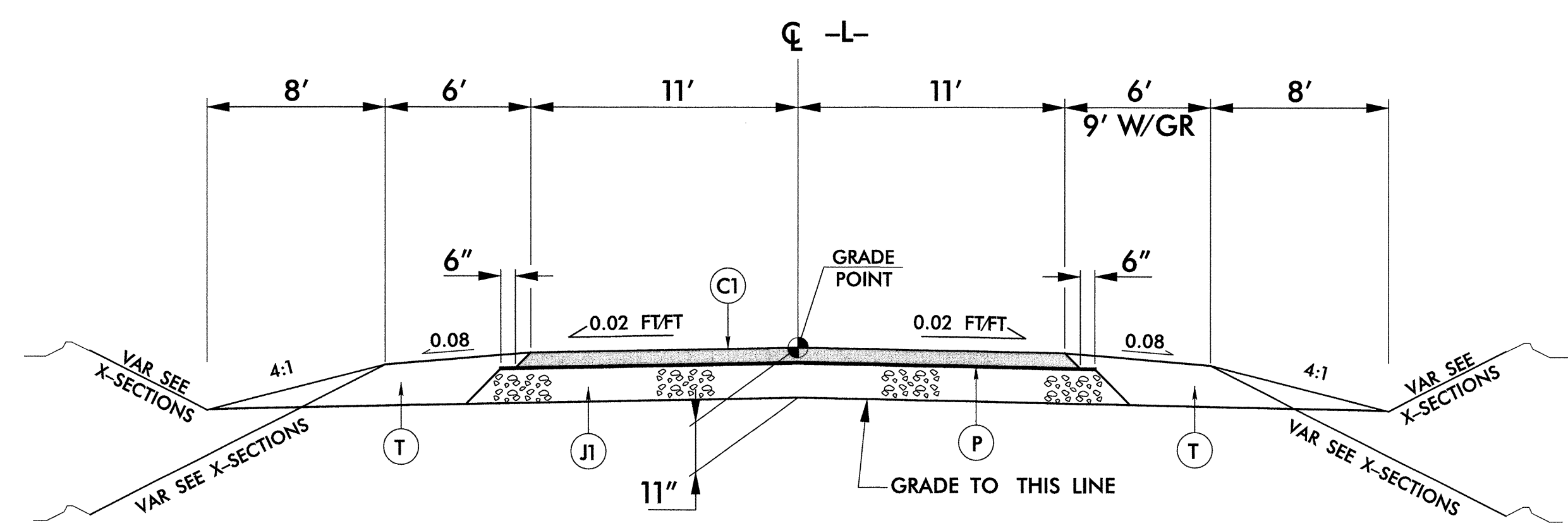
BITUMINOUS CONCRETE PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

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 CONSULTING ENGINEERS
 5121 Kingdom Way, Suite 100 Raleigh, NC 27607
 NC License No: P-0258

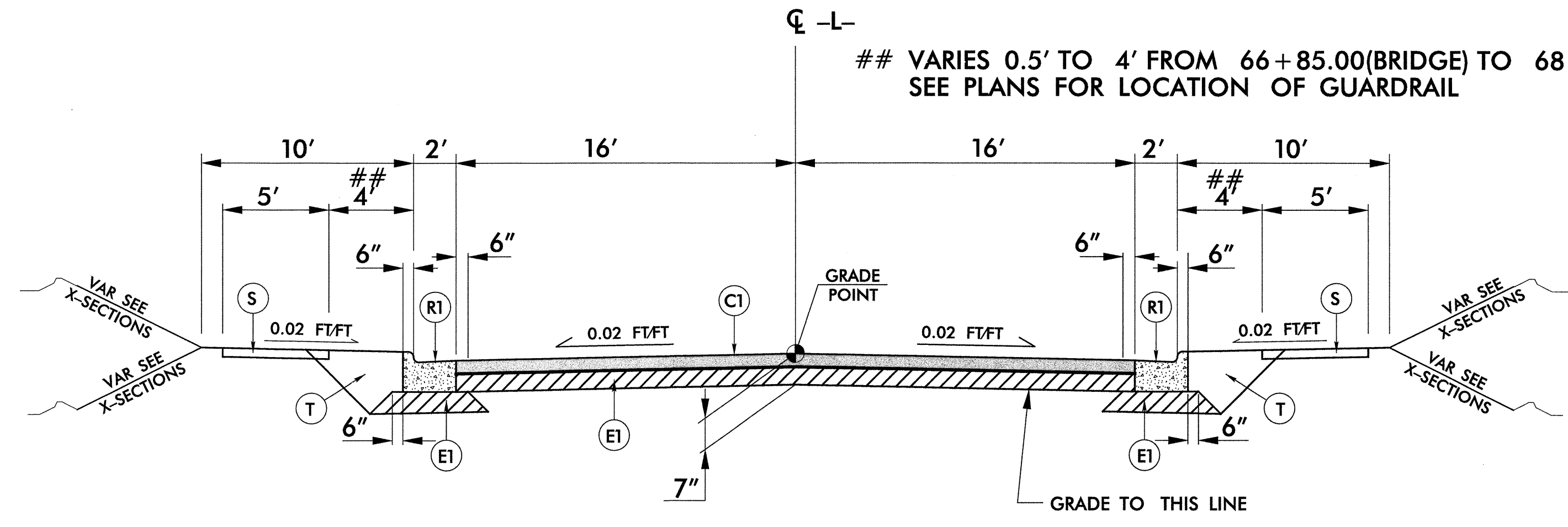
PROJECT REFERENCE NO. P-5208E	SHEET NO. 2
ROADWAY DESIGN ENGINEER DAVID C. WALLER SEAL 22606 12-8-13	PAVEMENT DESIGN ENGINEER CLARK S. MORRISON SEAL 22896 2/14/13



TYPICAL SECTION NO. 1
 -L- CALDWELL PARK DRIVE
 (DRIVEWAY ACROSS HISTORIC PROPERTY)
 USE TYPICAL SECTION NO. 1
 -L- STA 9+62.43 TO STA 23+00.00

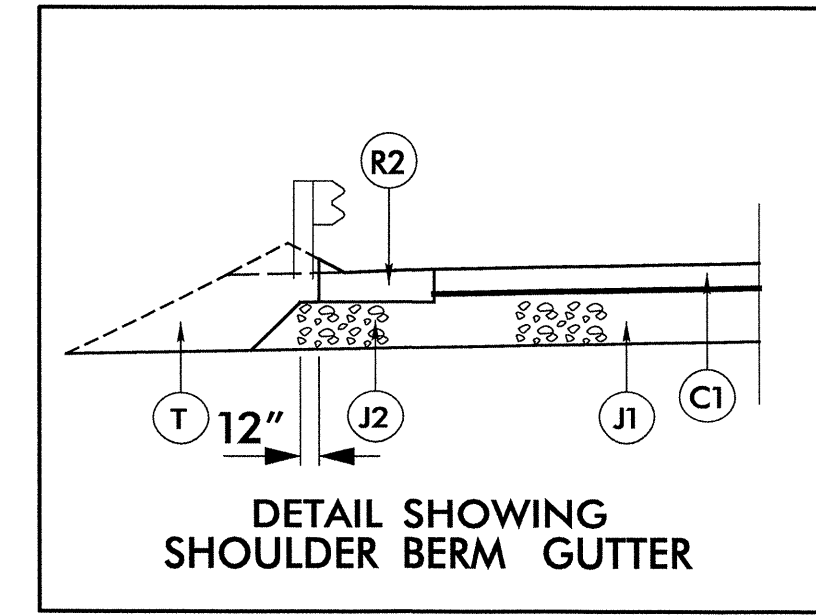


TYPICAL SECTION NO. 2
 -L- CALDWELL PARK DRIVE

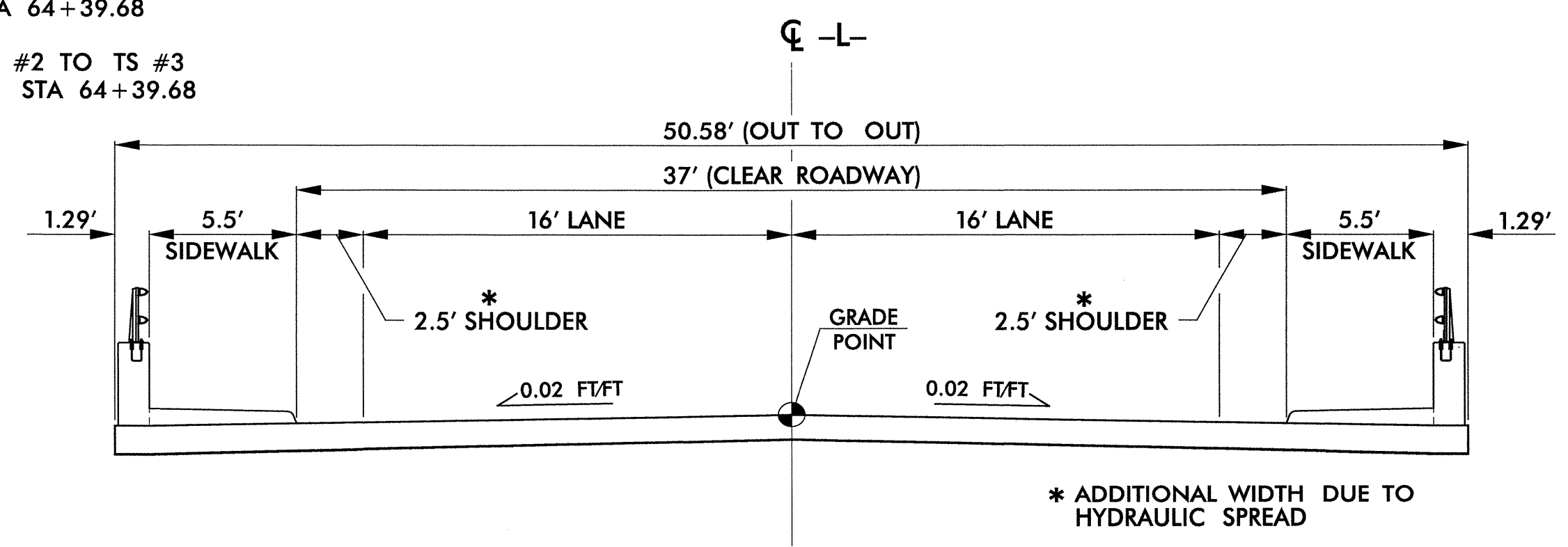


TYPICAL SECTION NO. 3
 -L- CALDWELL PARK DRIVE
 USE TYPICAL SECTION NO. 3
 -L- STA 64+39.68 TO STA 65+00.00 (BRIDGE)
 -L- STA 66+85.00 (BRIDGE) TO STA 75+30.00

USE TYPICAL SECTION NO. 2
 -L- STA 23+00.00 TO STA 64+39.68
 NOTE: TRANSITION FROM TS #2 TO TS #3
 -L- STA 62+56 +/- TO STA 64+39.68



DETAIL SHOWING SHOULDER BERM GUTTER
 -L- STA 62+80.00 TO STA 64+39.68 RT



TYPICAL SECTION NO. 4
 -L- CALDWELL PARK DRIVE
 USE TYPICAL SECTION NO. 4
 -L- STA 65+00.00 (BRIDGE) TO STA 66+85.00 (BRIDGE)

* ADDITIONAL WIDTH DUE TO HYDRAULIC SPREAD

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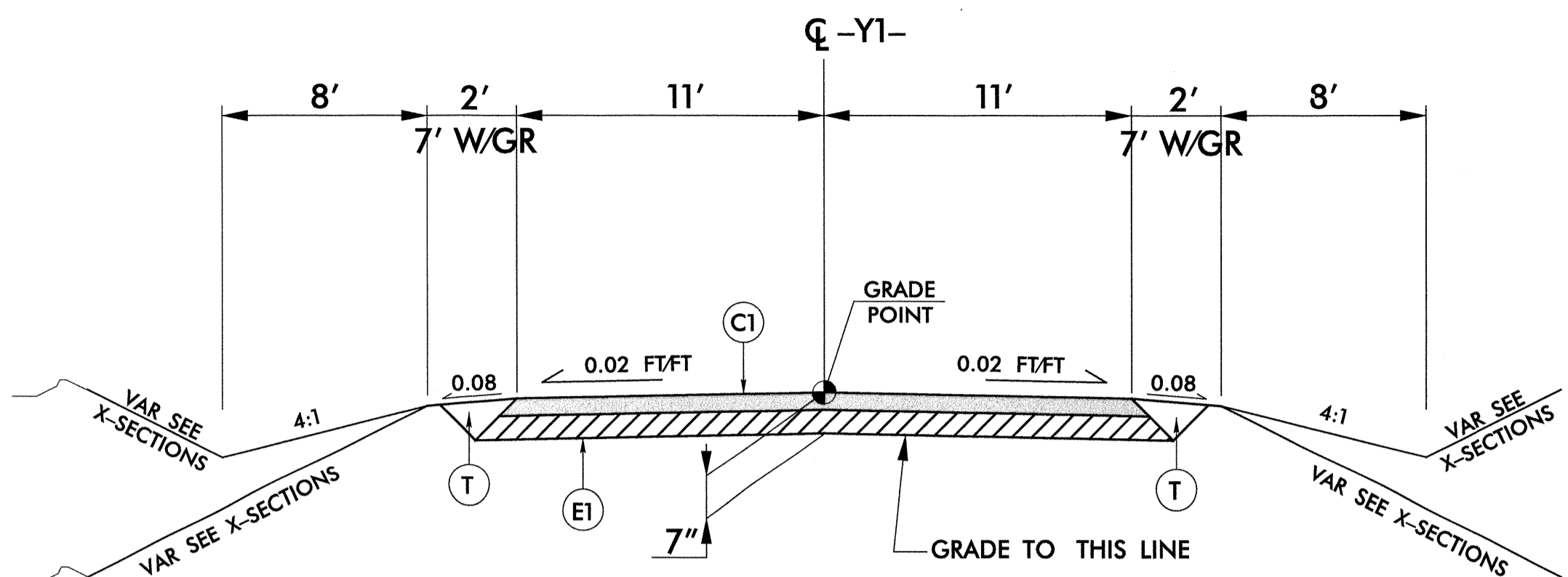
PAVEMENT SCHEDULE

C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.
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T	EARTH MATERIAL

BITUMINOUS CONCRETE PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

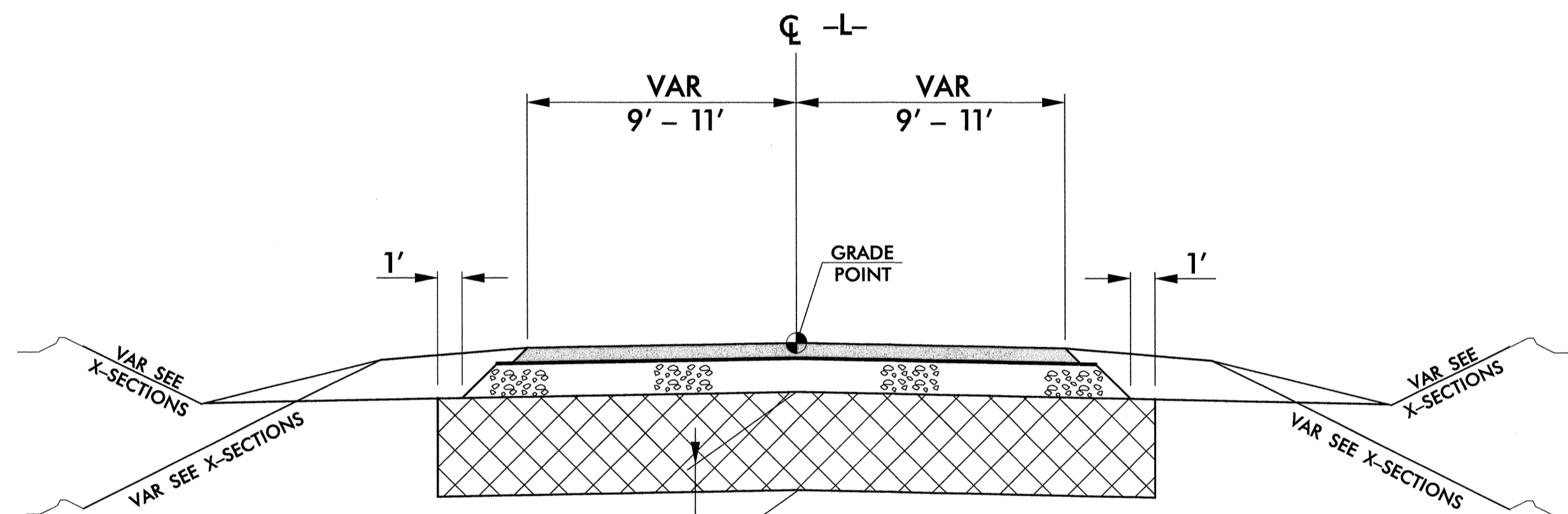
Florence & Hutcheson
CONSULTING ENGINEERS
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No. P-0258

PROJECT REFERENCE NO. P-5208E	SHEET NO. 2-A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER <i>David C. Waller</i>	PAVEMENT DESIGN ENGINEER <i>Clark S. Morrison</i>
SEAL 22606 2-9-13	SEAL 22898 2-14-13

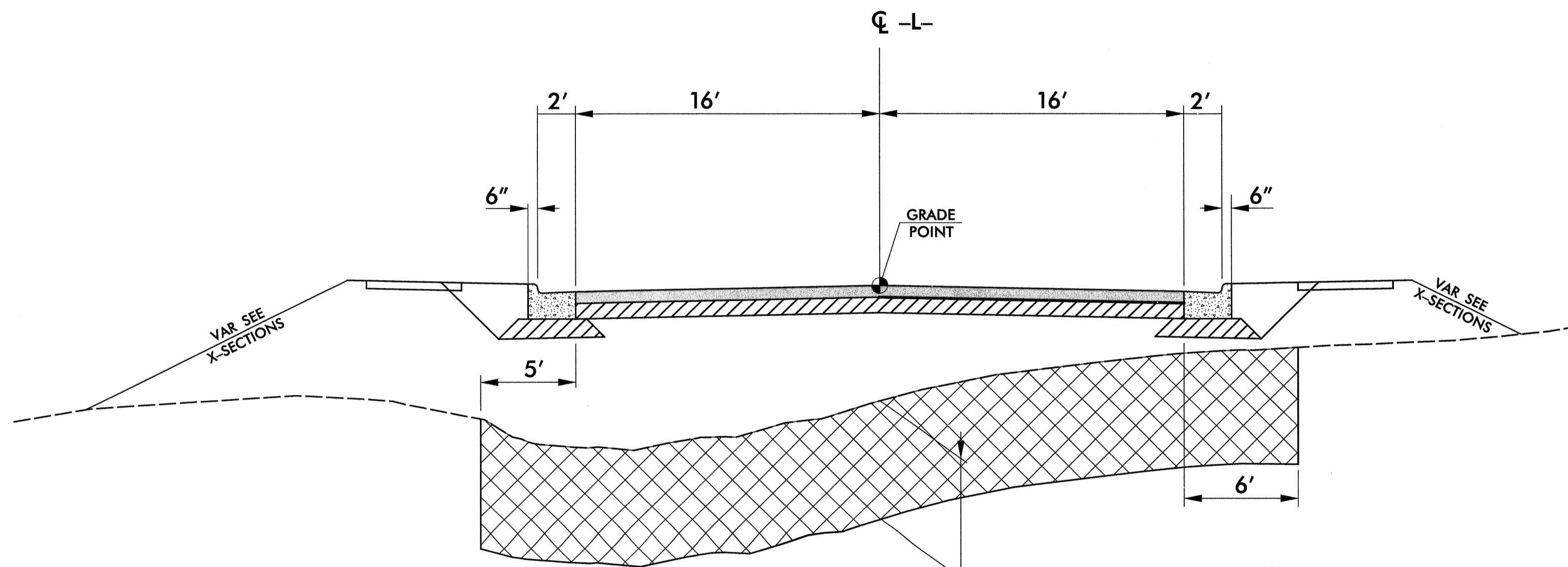


TYPICAL SECTION NO. 5
-Y1- McLEOD DRIVE

USE TYPICAL SECTION NO. 5
-Y1- STA 10+66.65 TO STA 17+00.00



UNDERCUT DETAIL NO. 1
(USE IN CONJUNCTION WITH T.S. NOS. 1 & 2)
-L- STA. 15+00 TO STA. 19+00
-L- STA. 21+50 TO STA. 23+00
-L- STA. 31+50 TO STA. 34+00
-L- STA. 41+00 TO STA. 43+00
-L- STA. 60+85 TO STA. 61+50

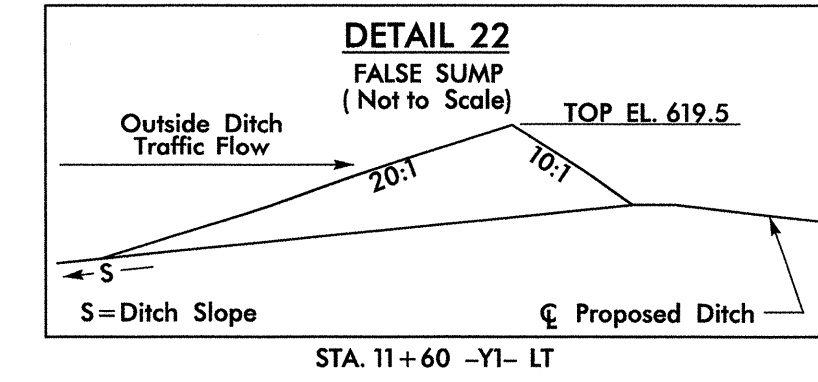
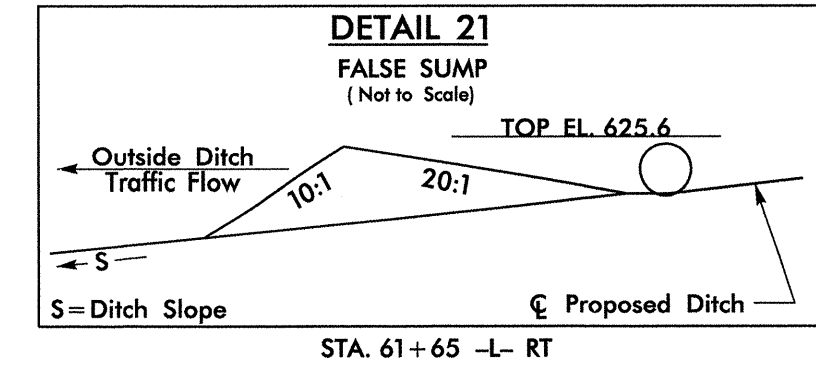
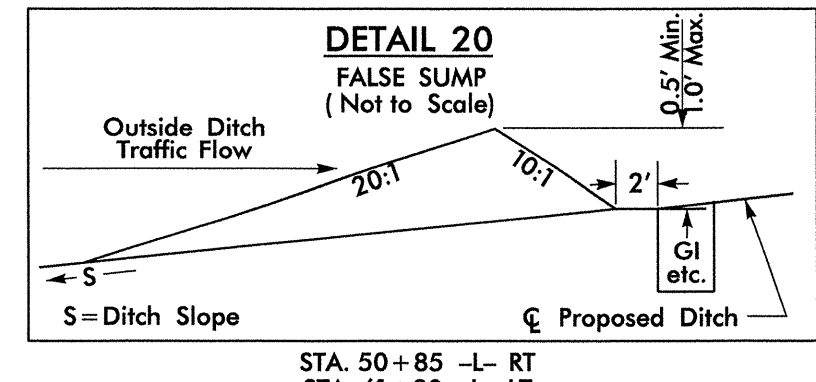
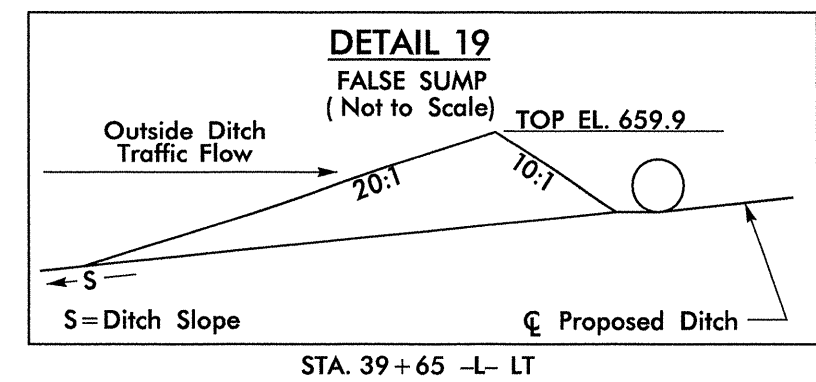
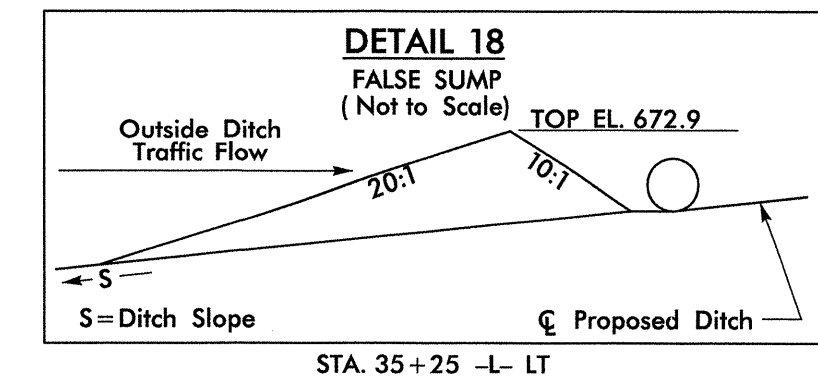
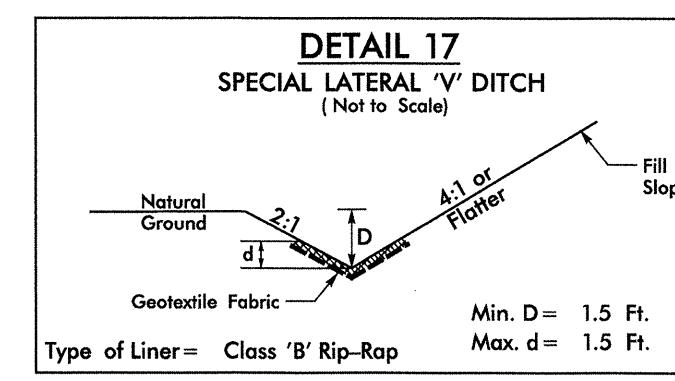
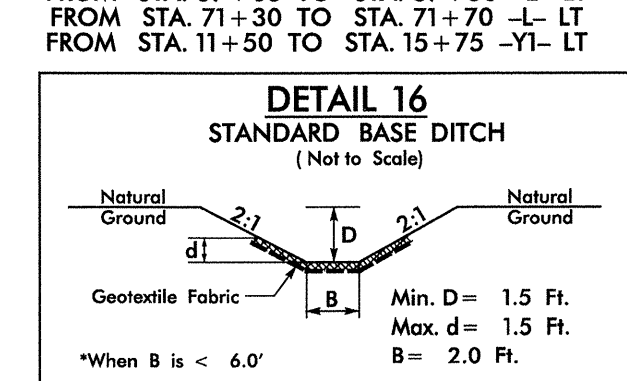
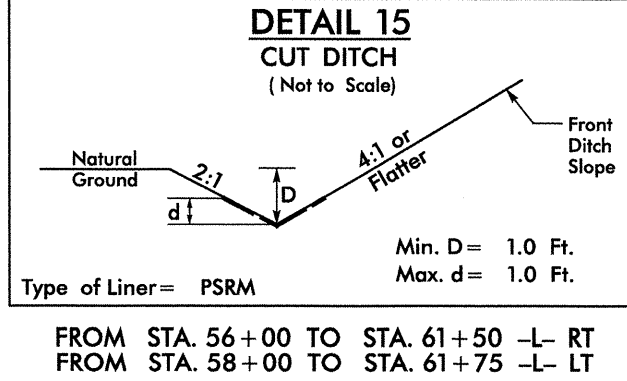
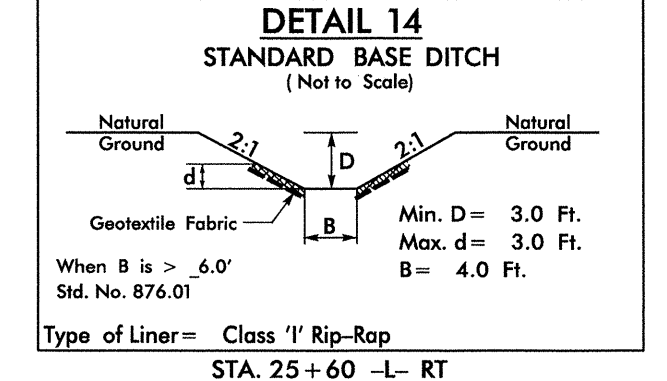
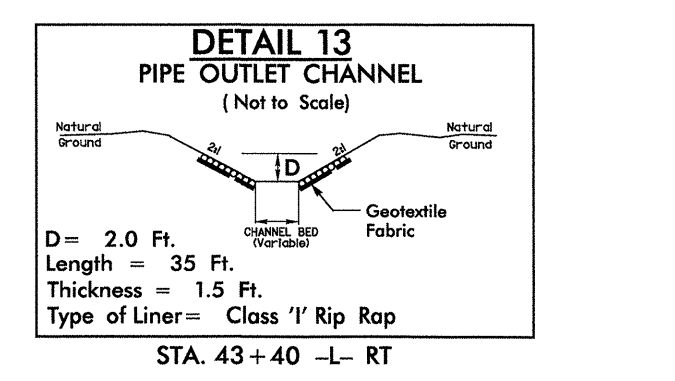
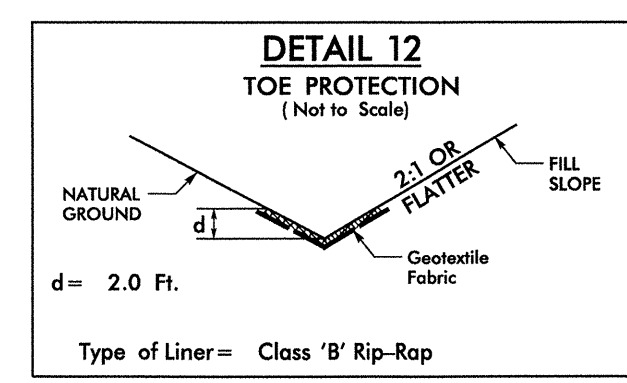
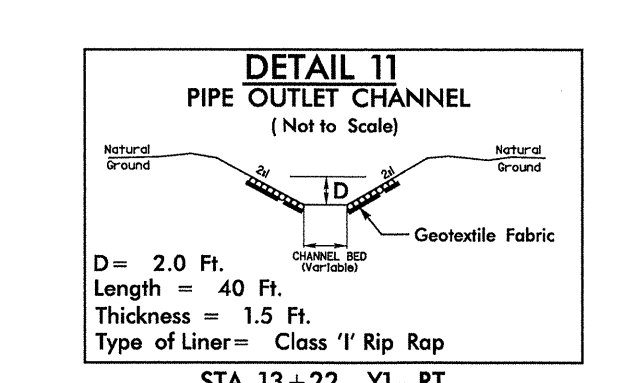
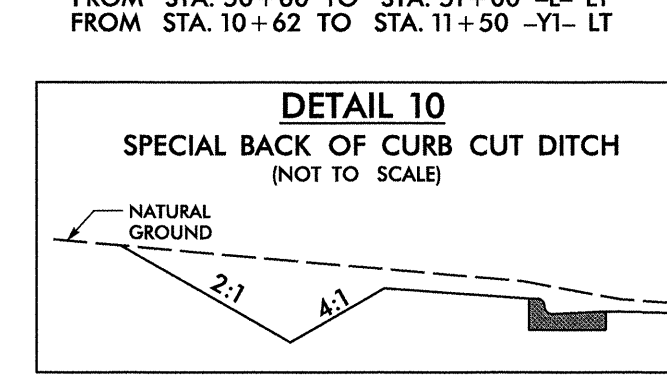
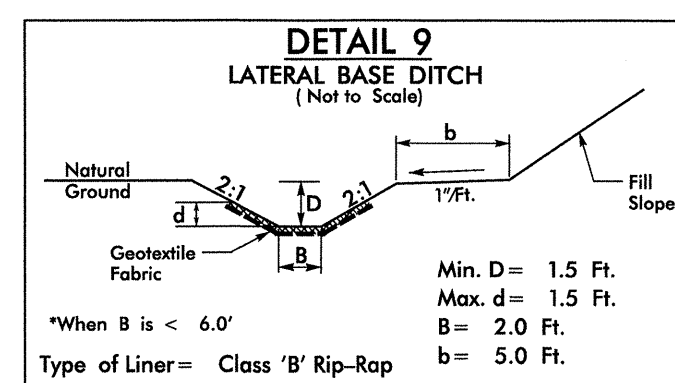
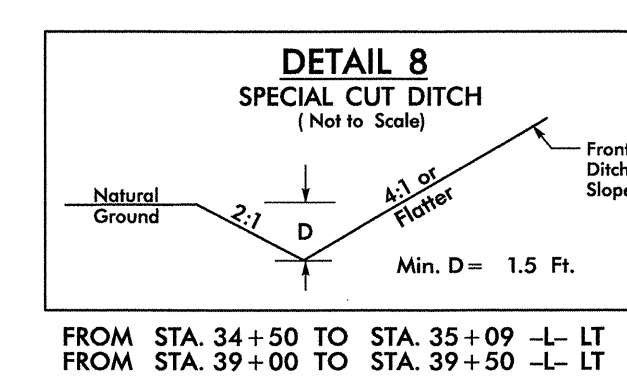
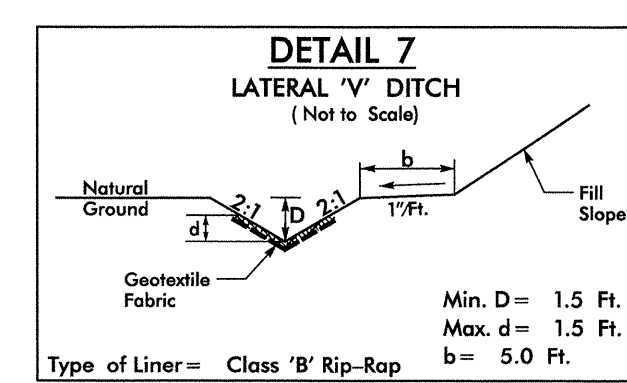
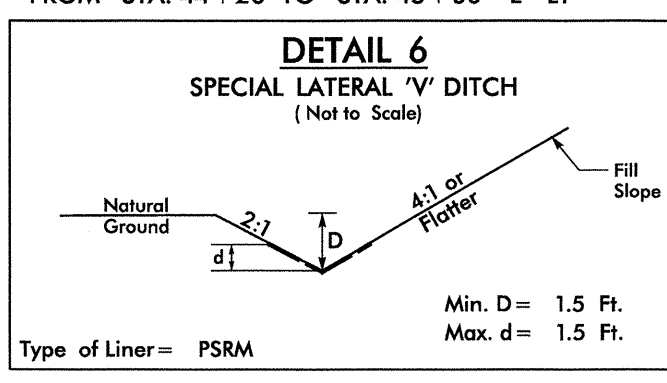
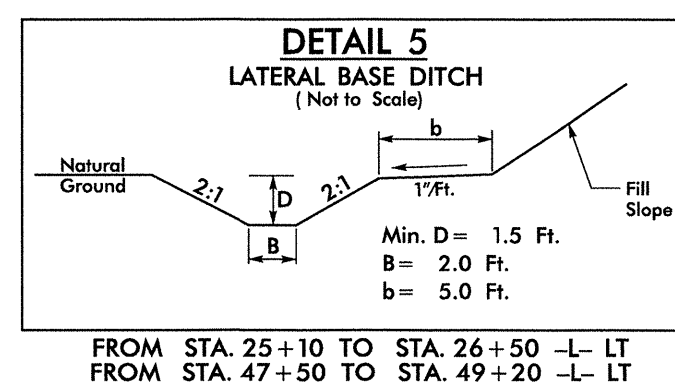
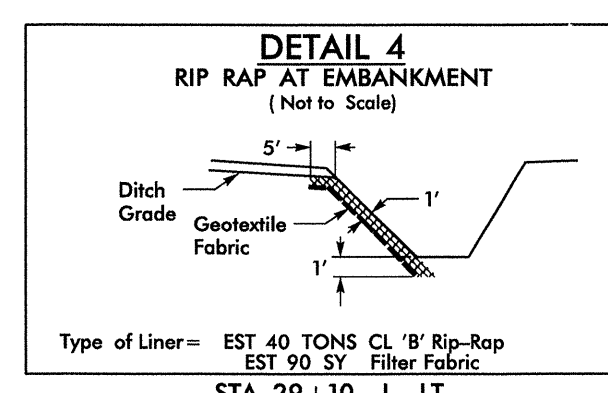
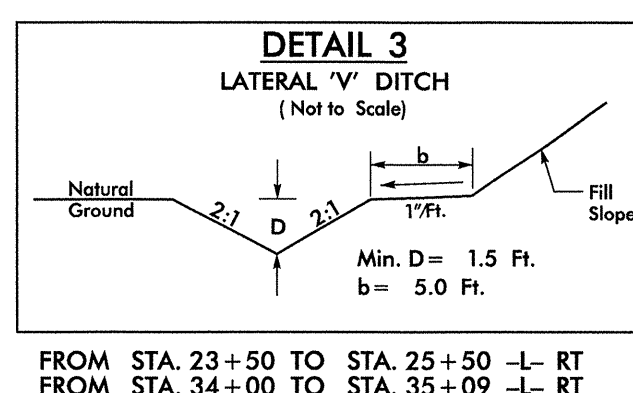
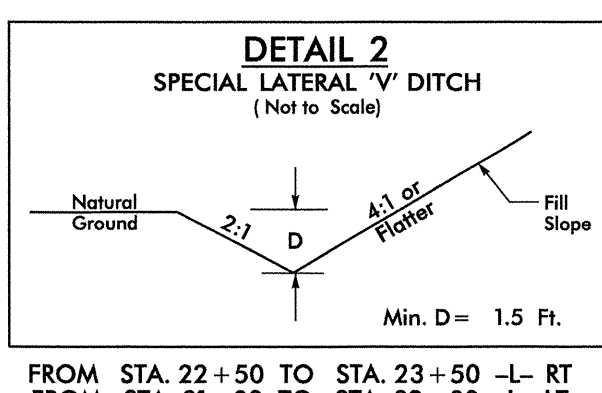
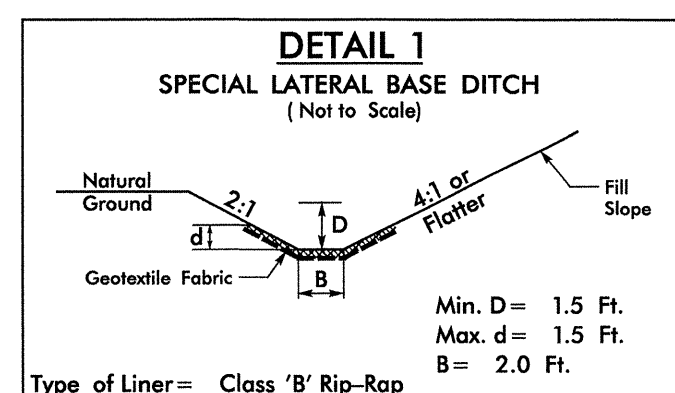


UNDERCUT DETAIL NO. 2
(USE IN CONJUNCTION WITH T.S. NO. 3)
-L- STA. 69+75 TO STA. 75+00

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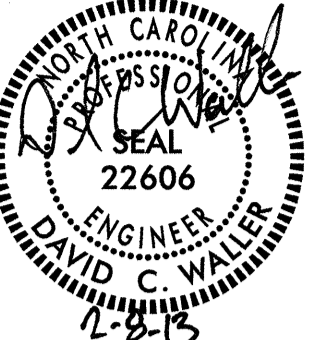
DITCH DETAILS

PROJECT REFERENCE NO. P-5208E	SHEET NO. 2-B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER DAVID C. WALLER 22606 12-8-13	HYDRAULICS ENGINEER JOSHUA G. DALTON 26971 2-8-13

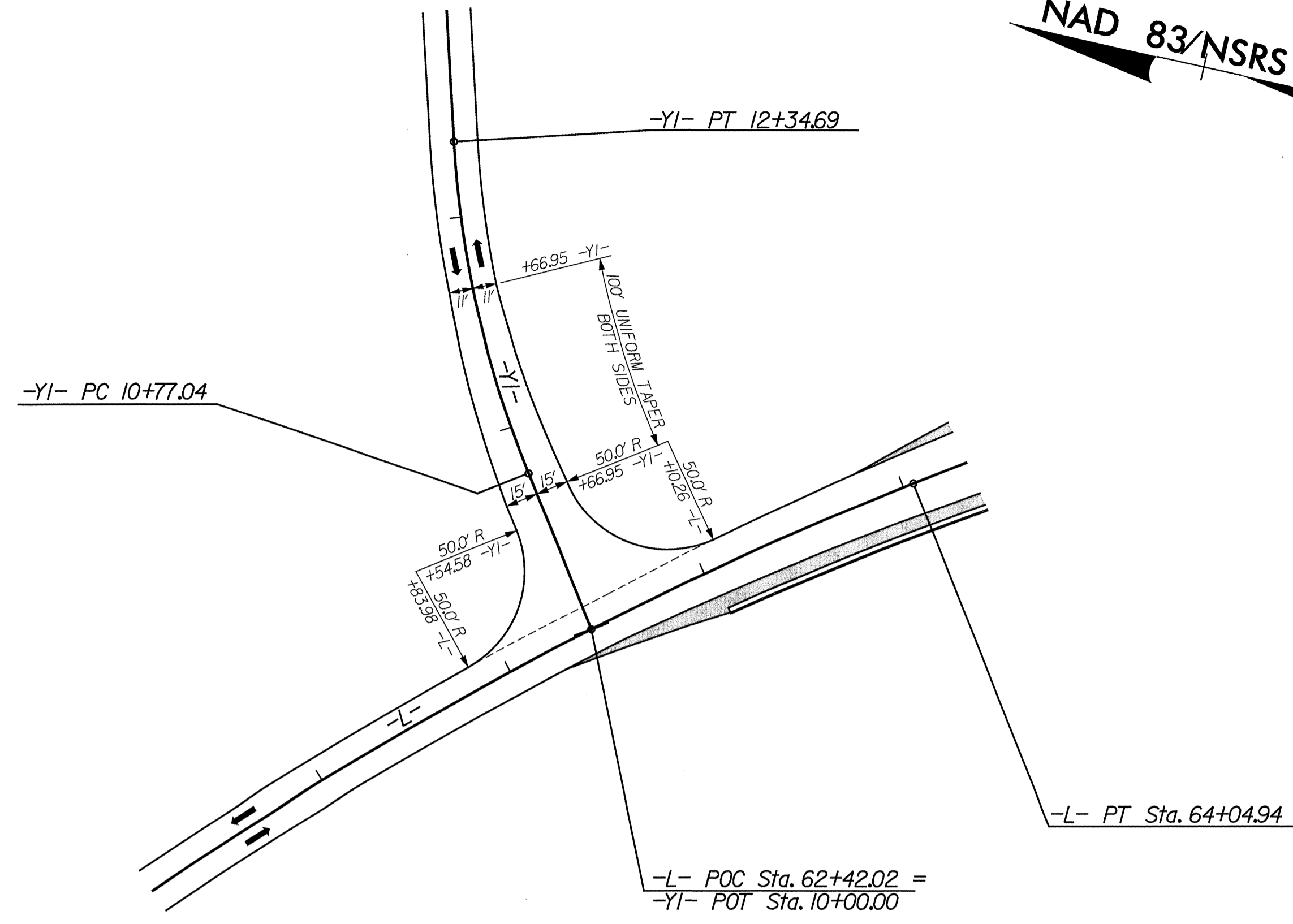


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Florence & Hutcheson

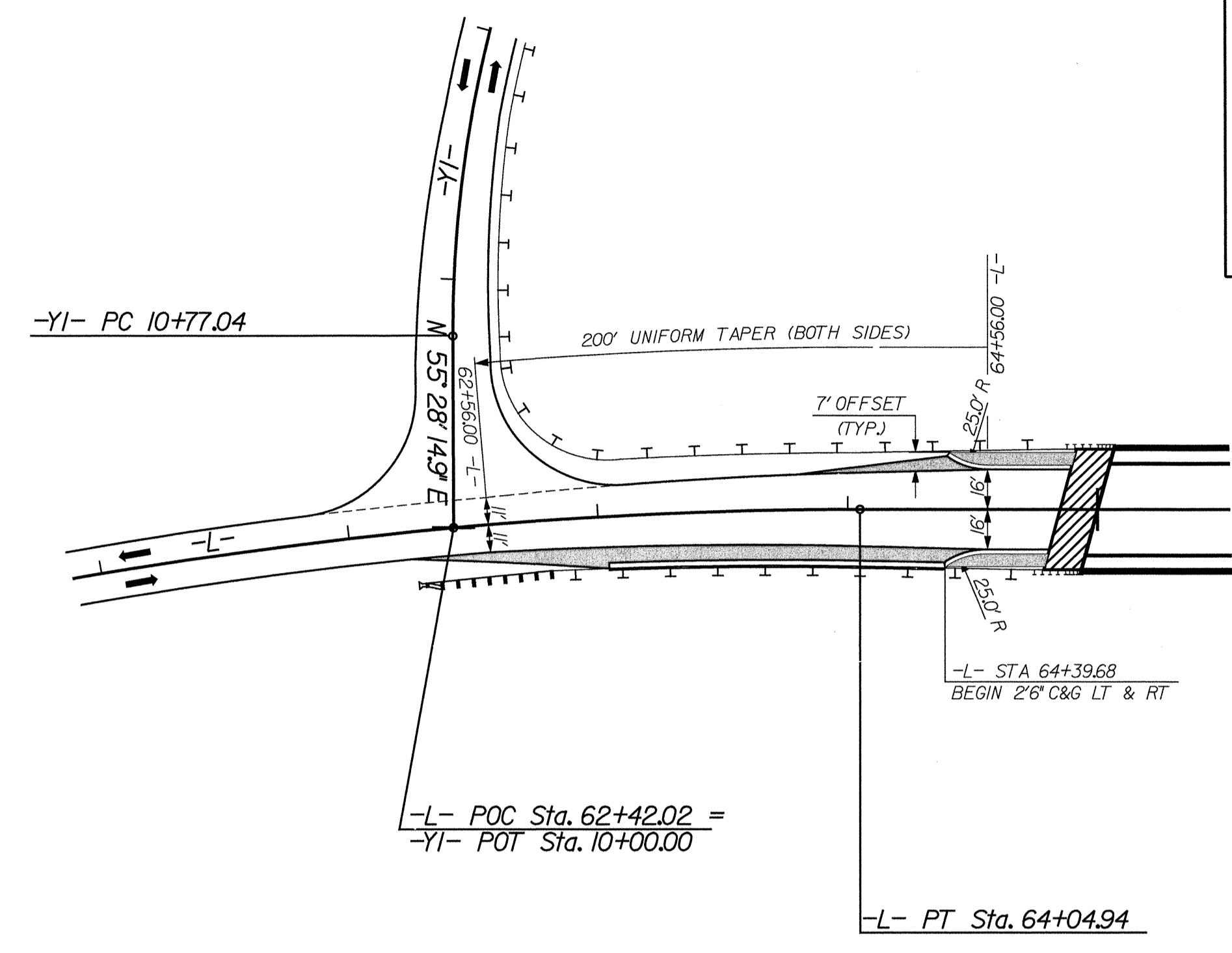
0503DEL_P21a1

PROJECT REFERENCE NO. P-5208E	SHEET NO. 2-C
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	

NAD 83/NSRS 2007



INTERSECTION DETAIL
-Y1-



PAVEMENT TRANSITION DETAIL
-L-

NAD 83/NSRS 2007

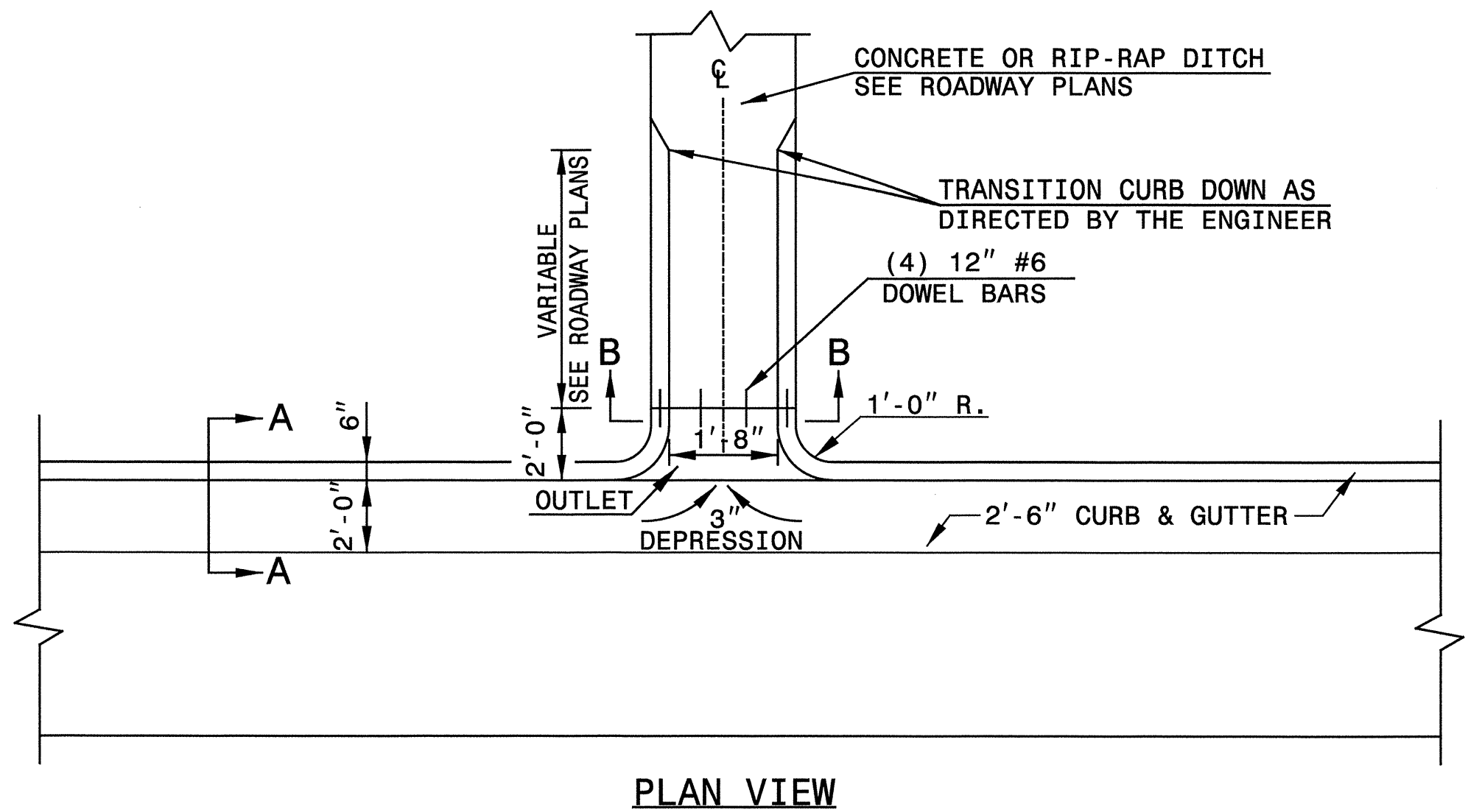
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Florence & Hutcheson, Inc.

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

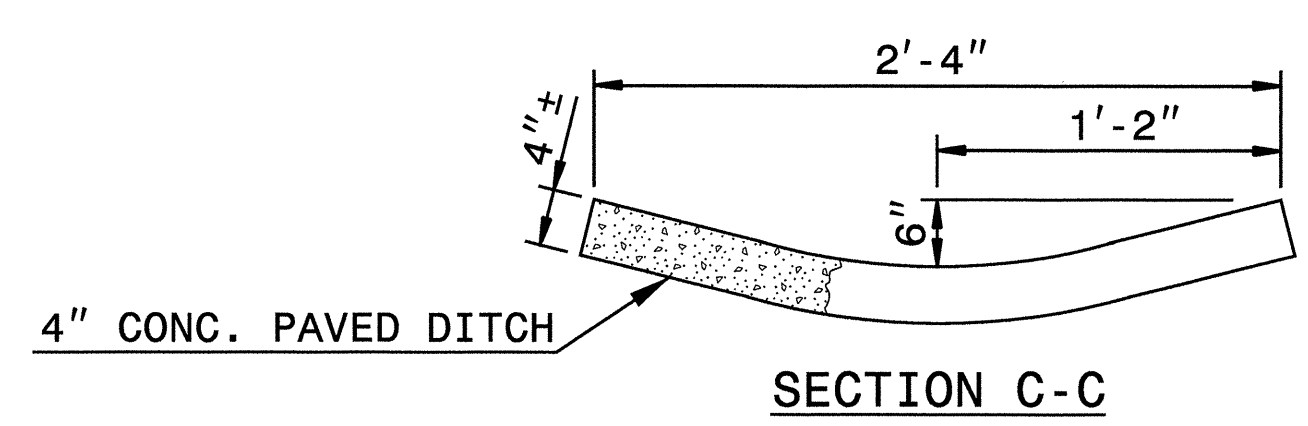
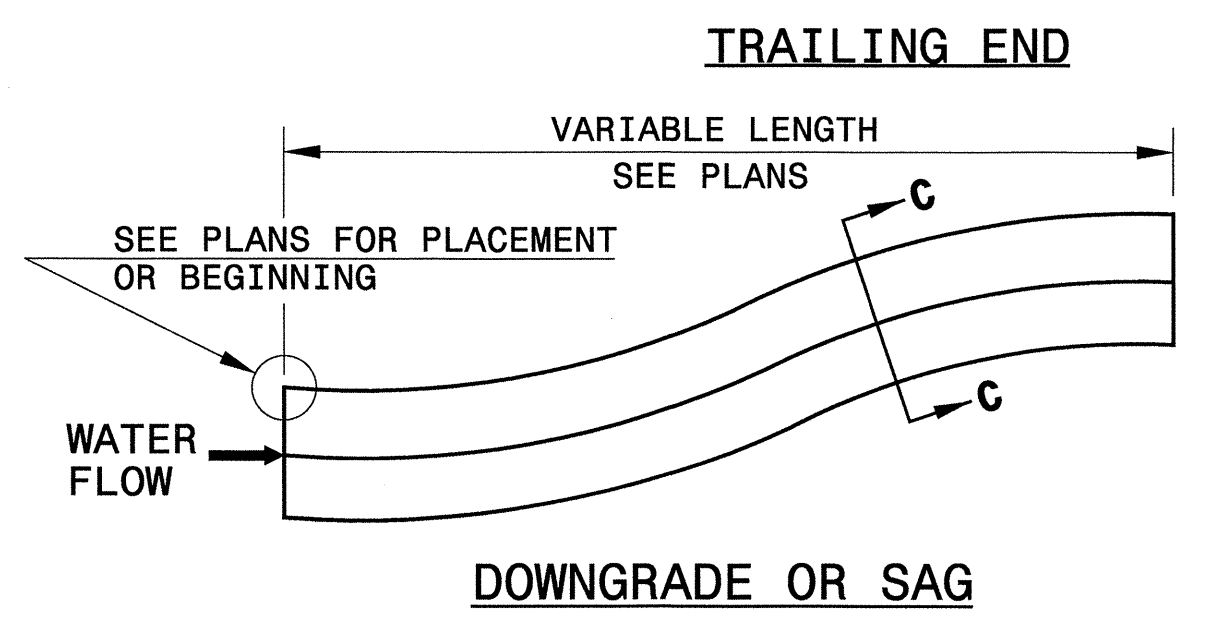
ENGLISH DETAIL DRAWING FOR
2'-6" CURB AND GUTTER
DRAINAGE INSTALLATION IN

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

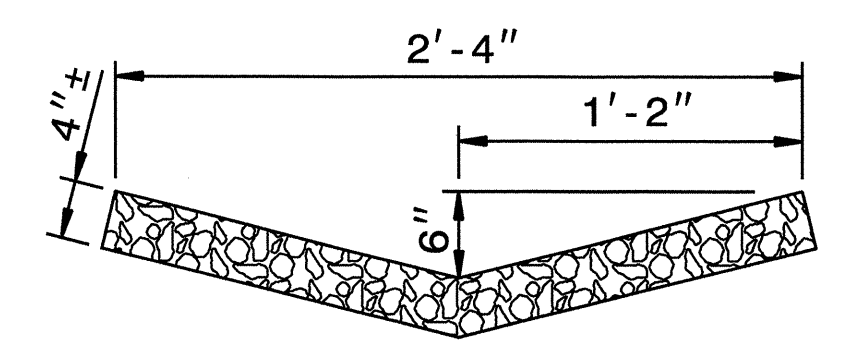
ENGLISH DETAIL DRAWING FOR
2'-6" CURB AND GUTTER
DRAINAGE INSTALLATION IN



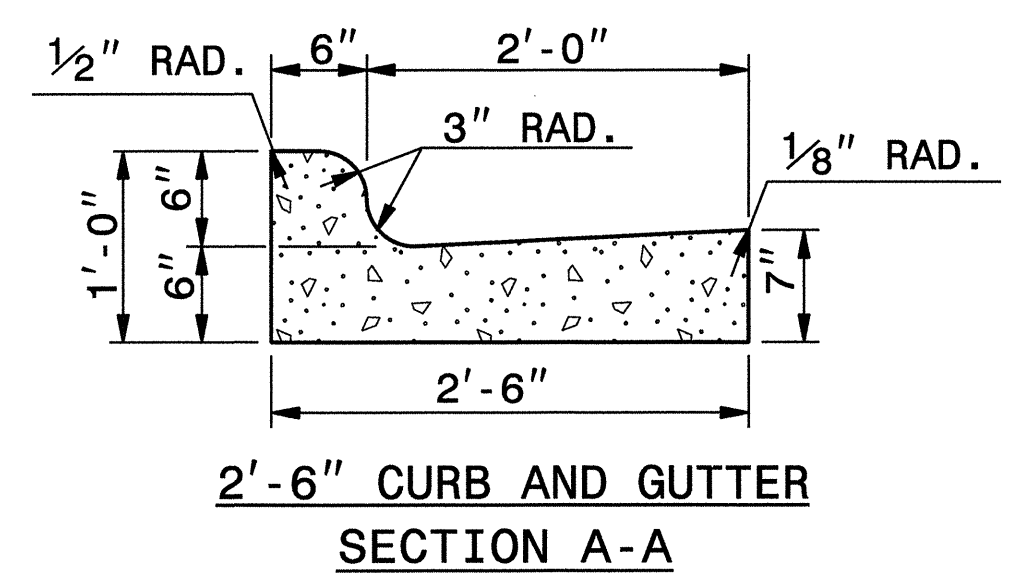
PLAN VIEW



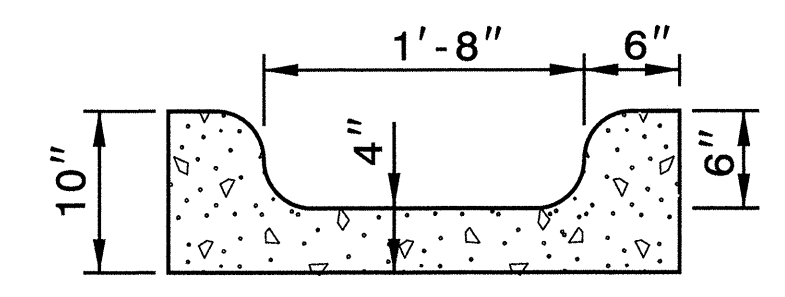
SECTION C-C



RIP-RAP LINED DITCH



2'-6" CURB AND GUTTER
SECTION A-A



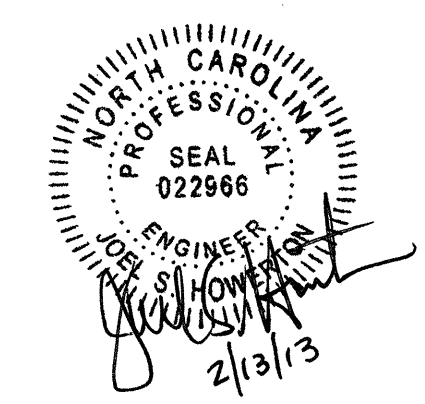
SECTION B-B

NOTES:

- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18" PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

SHEET 1 OF 1
C&GDTCH

SHEET 1 OF 1
C&GDTCH



DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: E.E. Ward	DATE: 3-12-02
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: w:\details\stand\modifiedflume.dgn	

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5/14/99

SUMMARY OF QUANTITIES

ItemNumber	Sec #	Quantity	Unit	Description
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ItemNumber	Sec #	Quantity	Unit	Description
362800000-E	876	320	TON	RIP RAP, CLASS I
363500000-E	876	230	TON	RIP RAP, CLASS II
364900000-E	876	1,440	TON	RIP RAP, CLASS B
365600000-E	876	8,225	SY	GEOTEXTILE FOR DRAINAGE
402500000-E	901	38.5	SF	CONTRACTOR FURNISHED, TYPE *** SIGN (E)
407200000-E	903	63	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
407800000-E	903	6	EA	SUPPORTS, 2-LB STEEL U-CHANNEL
410200000-N	904	11	EA	SIGN ERECTION, TYPE E
440000000-E	1110	224	SF	WORK ZONE SIGNS (STATIONARY)
440500000-E	1110	96	SF	WORK ZONE SIGNS (PORTABLE)
441000000-E	1110	80	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
443000000-N	1130	20	EA	DRUMS
443500000-N	1135	40	EA	CONES
444500000-E	1145	120	LF	BARRICADES (TYPE III)
445500000-N	1150	60	DAY	FLAGGER
451600000-N	1180	30	EA	SKINNY DRUM
465000000-N	1251	75	EA	TEMPORARY RAISED PAVEMENT MARKERS
477000000-E	1205	860	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)
481000000-E	1205	79,546	LF	PAINT PAVEMENT MARKING LINES (4")
483500000-E	1205	54	LF	PAINT PAVEMENT MARKING LINES (24")
485000000-E	1205	430	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
490000000-N	1251	90	EA	PERMANENT RAISED PAVEMENT MARKERS
567200000-N	1515	1	EA	RELOCATE FIRE HYDRANT
576800000-N	1520	1	EA	SANITARY SEWER CLEAN-OUT
600000000-E	1605	3,000	LF	TEMPORARY SILT FENCE
600600000-E	1610	655	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	1,450	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	800	TON	SEDIMENT CONTROL STONE
601500000-E	1615	40	ACR	TEMPORARY MULCHING
601800000-E	1620	1,200	LB	SEED FOR TEMPORARY SEEDING
602100000-E	1620	6	TON	FERTILIZER FOR TEMPORARY SEEDING
602400000-E	1622	2,000	LF	TEMPORARY SLOPE DRAINS
602900000-E	SP	200	LF	SAFETY FENCE
603000000-E	1630	5,100	CY	SILT EXCAVATION
603600000-E	1631	27,490	SY	MATTING FOR EROSION CONTROL
603700000-E	SP	200	SY	COIR FIBER MAT
603800000-E	SP	1,290	SY	PERMANENT SOIL REINFORCEMENT MAT
604200000-E	1632	675	LF	1/4" HARDWARE CLOTH
604600000-E	1636	100	LF	TEMPORARY PIPE FOR STREAM CROSSING
607000000-N	1639	6	EA	SPECIAL STILLING BASINS
607101000-E	SP	2,000	LF	WATTLE
607102000-E	SP	355	LB	POLYACRYLAMIDE (PAM)
607103000-E	1640	1,100	LF	COIR FIBER BAFFLE
607105000-E	SP	10	EA	*** SKIMMER (1-1/2")
607105000-E	SP	1	EA	*** SKIMMER (2")
608400000-E	1660	30	ACR	SEEDING & MULCHING
608700000-E	1660	20	ACR	MOWING
609000000-E	1661	400	LB	SEED FOR REPAIR SEEDING
609300000-E	1661	1	TON	FERTILIZER FOR REPAIR SEEDING
609600000-E	1662	800	LB	SEED FOR SUPPLEMENTAL SEEDING
610800000-E	1665	24	TON	FERTILIZER TOPDRESSING
611450000-N	1667	10	MHR	SPECIALIZED HAND MOWING
611700000-N	SP	25	EA	RESPONSE FOR EROSION CONTROL

000100000-N	800	Lump Sum		MOBILIZATION
000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
002200000-E	225	76,560	CY	UNCLASSIFIED EXCAVATION
002900000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (65+92.50-L-)
005000000-E	226	2	ACR	SUPPLEMENTARY CLEARING & GRUBBING
005700000-E	226	13,960	CY	UNDERCUT EXCAVATION
006300000-N	SP	Lump Sum		GRADING
013400000-E	240	1,000	CY	DRAINAGE DITCH EXCAVATION
019400000-E	SP	6,000	CY	SELECT GRANULAR MATERIAL, CLASS III
019600000-E	270	9,500	SY	GEOTEXTILE FOR SOIL STABILIZATION
031800000-E	300	200	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES
032000000-E	300	620	SY	FOUNDATION CONDITIONING GEOTEXTILE
033520000-E	305	160	LF	15" DRAINAGE PIPE
033530000-E	305	680	LF	18" DRAINAGE PIPE
033540000-E	305	324	LF	24" DRAINAGE PIPE
033570000-E	305	424	LF	42" DRAINAGE PIPE
033580000-E	305	84	LF	48" DRAINAGE PIPE
033585000-E	305	4	EA	*** DRAINAGE PIPE ELBOWS (15")
033585000-E	305	3	EA	*** DRAINAGE PIPE ELBOWS (18")
044820000-E	310	136	LF	15" RC PIPE CULVERTS, CLASS IV
044830000-E	310	36	LF	18" RC PIPE CULVERTS, CLASS IV
099500000-E	340	20	LF	PIPE REMOVAL
109950000-E	505	750	CY	SHALLOW UNDERCUT
109970000-E	505	2,200	TON	CLASS IV SUBGRADE STABILIZATION
112100000-E	520	6,700	TON	AGGREGATE BASE COURSE
122000000-E	545	100	TON	INCIDENTAL STONE BASE
127500000-E	600	4,120	GAL	PRIME COAT
148900000-E	610	1,340	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
151900000-E	610	2,730	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
157500000-E	620	225	TON	ASPHALT BINDER FOR PLANT MIX
200000000-N	806	39	EA	RIGHT OF WAY MARKERS
220900000-E	838	20	CY	ENDWALLS
228600000-N	840	12	EA	MASONRY DRAINAGE STRUCTURES
236600000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.24
236700000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.29
237400000-N	840	4	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
237400000-N	840	4	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
239600000-N	840	1	EA	FRAME WITH COVER, STD 840.54
254900000-E	846	1,760	LF	2'-6" CONCRETE CURB & GUTTER
255600000-E	846	160	LF	SHOULDER BERM GUTTER
257000000-N	SP	1	EA	MODIFIED CONCRETE FLUME
259100000-E	848	980	SY	4" CONCRETE SIDEWALK
303000000-E	862	2,487.5	LF	STEEL BM GUARDRAIL
304500000-E	862	112.5	LF	STEEL BM GUARDRAIL, SHOP CURVED
310500000-N	862	6	EA	STEEL BM GUARDRAIL TERMINAL SECTIONS
315000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
319500000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
321500000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
327000000-N	SP	17	EA	GUARDRAIL ANCHOR UNITS, TYPE 320

COMPUTED BY: HWB DATE: 2-4-2013

CHECKED BY: DCW DATE: 2-5-2013

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
SUMMARY NO. 1					
-L- 9+62.43 TO 30+00.00	4914	1018	7717	2973	1188
TOTAL SUMMARY NO. 1	4914	1018	7717	2973	1188
SUMMARY NO. 2					
-L- 30+00.00 TO 65+00.00 (BRIDGE)	81207	2257	46569		36895
-YI- 10+50.00 TO 17+00.00	466		16540	16074	
TOTAL SUMMARY NO. 2	81673	2257	63109	16074	36895
SUMMARY NO. 3					
-L- 66+85.00 (BRIDGE) TO 75+30.00	640	2478	18950	18706	2874
TOTAL SUMMARY NO. 3	640	2478	18950	18706	2874
SUB-TOTAL SUMMARY NOS. 1 thru 3	87227	5753	89776	37753	40957
LOSS DUE TO CLEARING & GRUBBING	-10680			10680	
ADDITIONAL UNDERCUT		8200	9840	9840	8200
MATERIAL FOR SHOULDER CONSTRUCTION			600	600	
WASTE IN LIEU OF BORROW				-29723	-29723
PROJECT TOTALS	76547	13953	100216	29150	19434
EST. FOR REPLACING TOPSOIL ON BORROW PITS				1457	
GRAND TOTALS	76547	13953	100216	30607	19434
SAY	76560	13960		30650	

SELECT GRANULAR MATERIAL = 6000 CY CL III
 CL IV SUBGRADE STABILIZATION = 2200 TONS
 DRAINAGE DITCH EXCAVATION = 1000 CY
 GEOTEXTILE FOR SOIL STABILIZATION = 8000 SY
 EST. SHALLOW UNDERCUT = 750 CY
 PAVEMENT STRUCTURE VOLUME = 1540 CY

Note: Approximate quantities only. Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	STATION TO STATION	QUANTITY (SQ. YDS)
-YI-	22+27.30 - 23+28.08	130

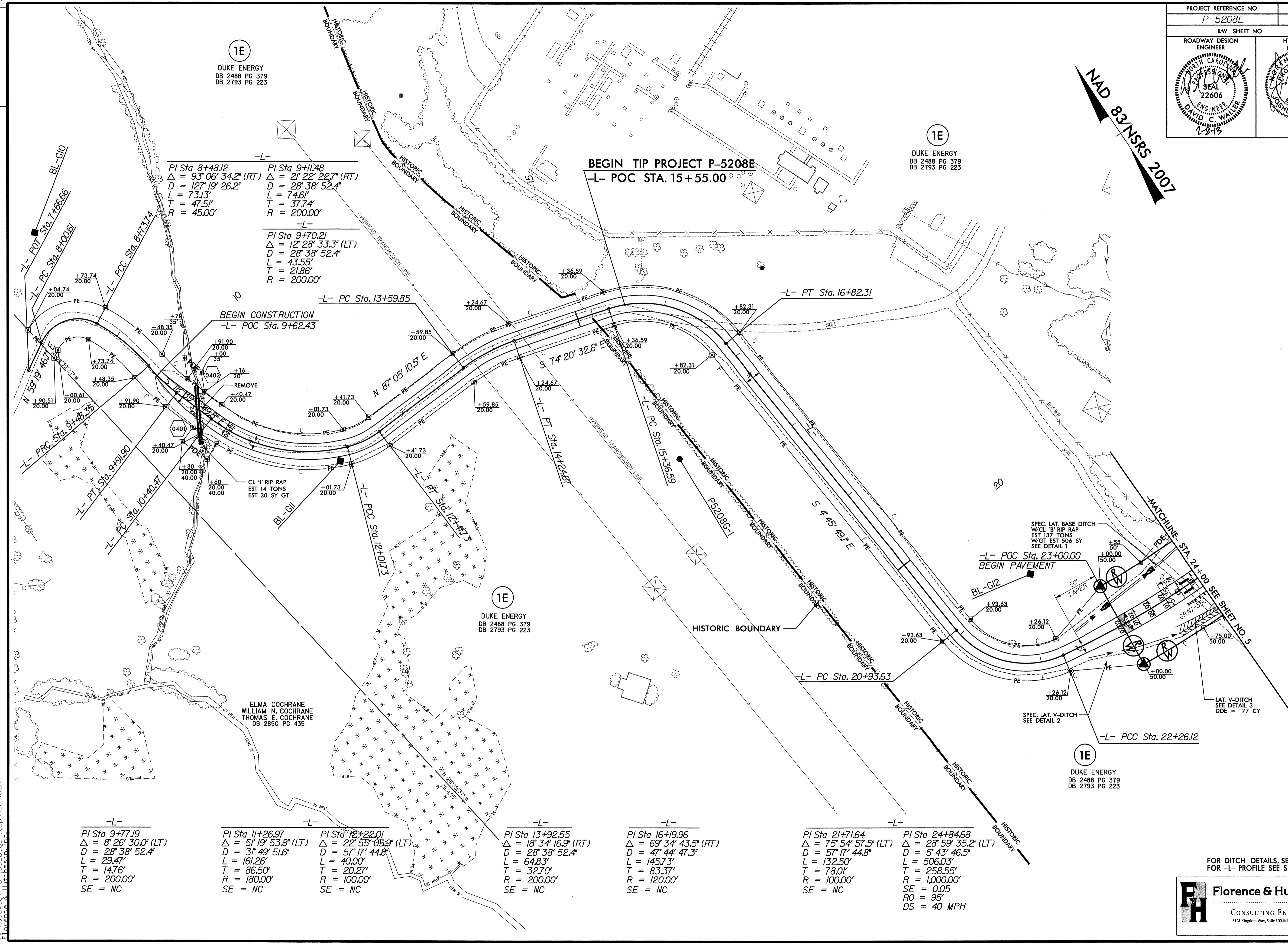
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PROJECT REFERENCE NO. P-5208E	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER DAVID C. WALKER 22606 1-8-13	HYDRAULICS ENGINEER JOSHUA G. DATTON 26971 2-8-13

NAD 83 NSRS 2007



1E
DUKE ENERGY
DB 2488 PG 379
DB 2793 PG 223

1E
DUKE ENERGY
DB 2488 PG 379
DB 2793 PG 223

1E
DUKE ENERGY
DB 2488 PG 379
DB 2793 PG 223

1E
DUKE ENERGY
DB 2488 PG 379
DB 2793 PG 223

PI Sta 8+48.12
Δ = 93° 06' 34.2" (RT)
D = 127' 19" 26.2"
L = 73.13'
T = 47.51'
R = 45.00'

PI Sta 9+11.48
Δ = 21° 22' 22.7" (RT)
D = 28' 38" 52.4"
L = 74.61'
T = 37.74'
R = 200.00'

PI Sta 9+70.21
Δ = 12° 28' 33.3" (LT)
D = 28' 38" 52.4"
L = 43.55'
T = 21.86'
R = 200.00'

L-
PI Sta 9+77.19
Δ = 8° 26' 30.0" (LT)
D = 28' 38" 52.4"
L = 29.47'
T = 14.76'
R = 200.00'
SE = NC

L-
PI Sta 11+26.97
Δ = 51° 19' 53.8" (LT)
D = 31' 49" 51.6"
L = 161.26'
T = 86.50'
R = 180.00'
SE = NC

L-
PI Sta 12+22.01
Δ = 22° 55' 05.9" (LT)
D = 57' 17" 44.8"
L = 40.00'
T = 20.27'
R = 100.00'
SE = NC

L-
PI Sta 13+92.55
Δ = 18° 34' 16.9" (RT)
D = 28' 38" 52.4"
L = 64.83'
T = 32.70'
R = 200.00'
SE = NC

L-
PI Sta 16+19.96
Δ = 69° 34' 43.5" (RT)
D = 47' 44" 47.3"
L = 145.73'
T = 83.37'
R = 120.00'
SE = NC

L-
PI Sta 21+71.64
Δ = 75° 54' 57.5" (LT)
D = 57' 17" 44.8"
L = 132.50'
T = 78.01'
R = 100.00'
SE = NC

L-
PI Sta 24+84.68
Δ = 28° 59' 35.2" (LT)
D = 5' 43" 46.5"
L = 506.03'
T = 258.55'
R = 1,000.00'
SE = 0.05
RO = 95'
DS = 40 MPH

SPEC. LAT. BASE DITCH
W/CL 'B' RIP RAP
EST 137 TONS
W/GT EST 506 SY
SEE DETAIL 1

L- POC Sta. 23+00.00
BEGIN PAVEMENT

SPEC. LAT. V-DITCH
SEE DETAIL 2

FOR DITCH DETAILS, SEE SHEET 2-B
FOR -L- PROFILE SEE SHEET 10

Florence & Hutcheson
CONSULTING ENGINEERS
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No. P-0265

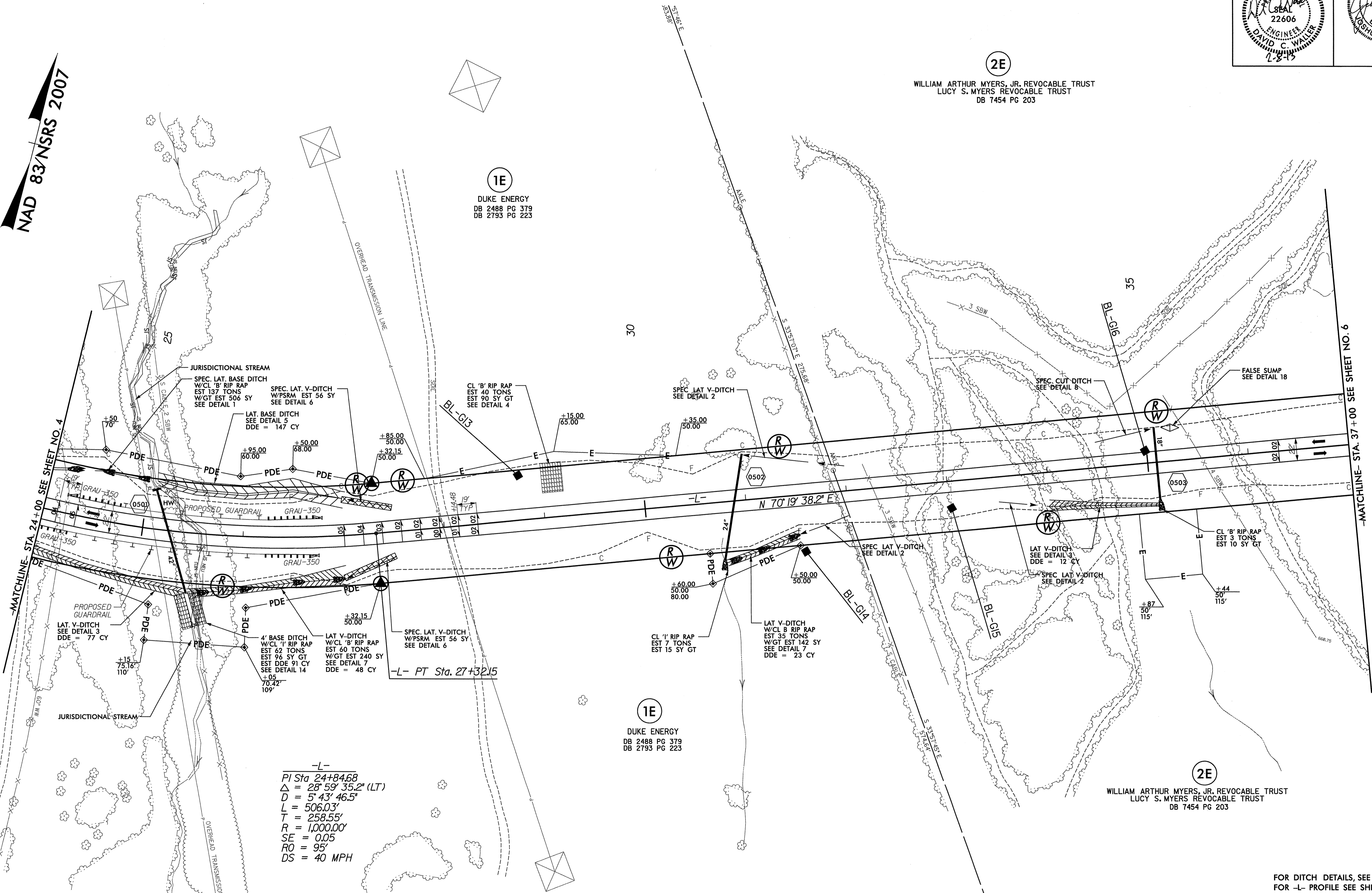
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0503DEL_P21a1

PROJECT REFERENCE NO. P-5208E		SHEET NO. 5	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER DAVID C. WALKER 22606 2-8-13		HYDRAULICS ENGINEER KATHA G. DALTON 26971 2-8-13	

NAD 83/NSRS 2007

2E
WILLIAM ARTHUR MYERS, JR. REVOCABLE TRUST
LUCY S. MYERS REVOCABLE TRUST
DB 7454 PG 203



1E
DUKE ENERGY
DB 2488 PG 379
DB 2793 PG 223

1E
DUKE ENERGY
DB 2488 PG 379
DB 2793 PG 223

2E
WILLIAM ARTHUR MYERS, JR. REVOCABLE TRUST
LUCY S. MYERS REVOCABLE TRUST
DB 7454 PG 203

-L-

PI Sta 24+84.68
 $\Delta = 28^\circ 59' 35.2''$ (LT)
 $D = 5' 43' 46.5''$
 $L = 506.03'$
 $T = 258.55'$
 $R = 1,000.00'$
 $SE = 0.05$
 $RO = 95'$
 $DS = 40$ MPH

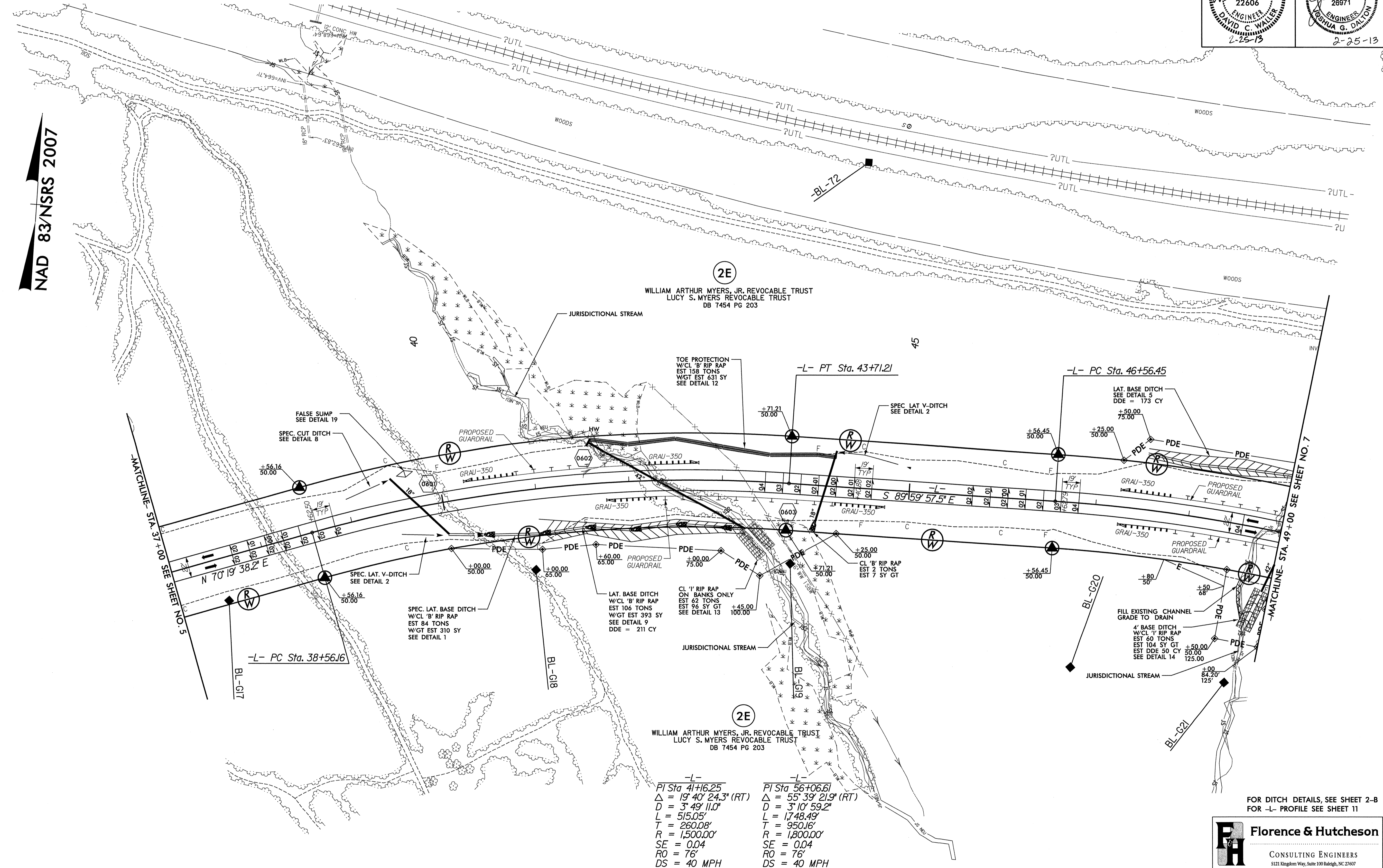
FOR DITCH DETAILS, SEE SHEET 2-B
FOR -L- PROFILE SEE SHEET 10

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CONSULTING ENGINEERS
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: P-0288

2/8/2013
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David C. Walker, P.E.

0503 DEL - P21a1

NAD 83/NSRS 2007



2E
WILLIAM ARTHUR MYERS, JR. REVOCABLE TRUST
LUCY S. MYERS REVOCABLE TRUST
DB 7454 PG 203

2E
WILLIAM ARTHUR MYERS, JR. REVOCABLE TRUST
LUCY S. MYERS REVOCABLE TRUST
DB 7454 PG 203

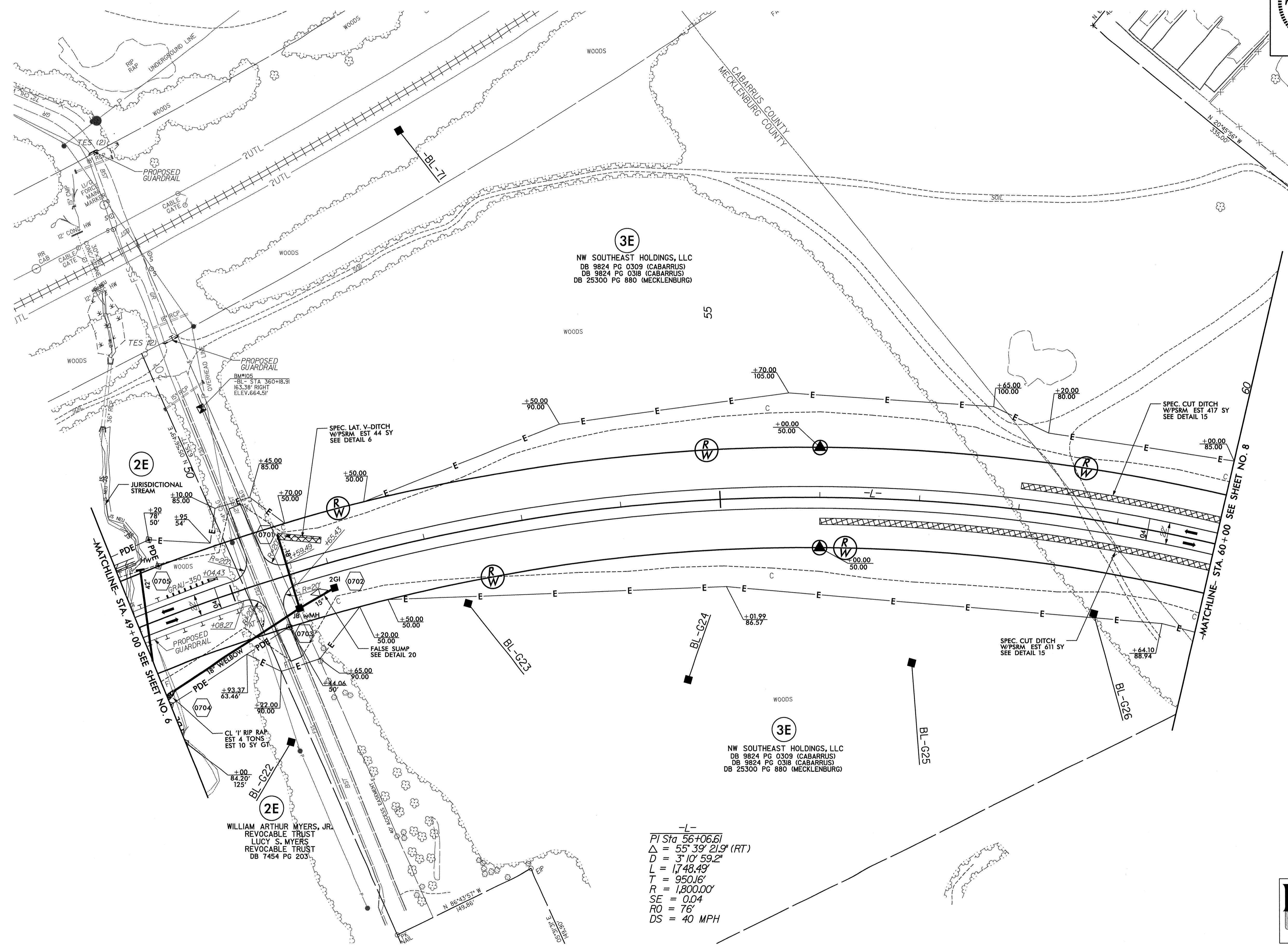
-L-	-L-
PI Sta 41+16.25	PI Sta 56+106.61
$\Delta = 19' 40' 24.3''$ (RT)	$\Delta = 55' 39' 21.9''$ (RT)
D = 3' 49' 11.0"	D = 3' 10' 59.2"
L = 515.05'	L = 1,748.49'
T = 260.08'	T = 950.16'
R = 1,500.00'	R = 1,800.00'
SE = 0.04	SE = 0.04
RO = 76'	RO = 76'
DS = 40 MPH	DS = 40 MPH

FOR DITCH DETAILS, SEE SHEET 2-B
FOR -L- PROFILE SEE SHEET 11

2/25/2013
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0503DEL_P21a1

PROJECT REFERENCE NO. P-5208E	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER DAVID C. WALLER 22606 7-8-13	HYDRAULICS ENGINEER JOSHUA G. DALY 26971 9-8-13



NAD 83/NRS 2007

3E
NW SOUTHEAST HOLDINGS, LLC
DB 9824 PG 0309 (CABARRUS)
DB 9824 PG 0318 (CABARRUS)
DB 25300 PG 880 (MECKLENBURG)

3E
NW SOUTHEAST HOLDINGS, LLC
DB 9824 PG 0309 (CABARRUS)
DB 9824 PG 0318 (CABARRUS)
DB 25300 PG 880 (MECKLENBURG)

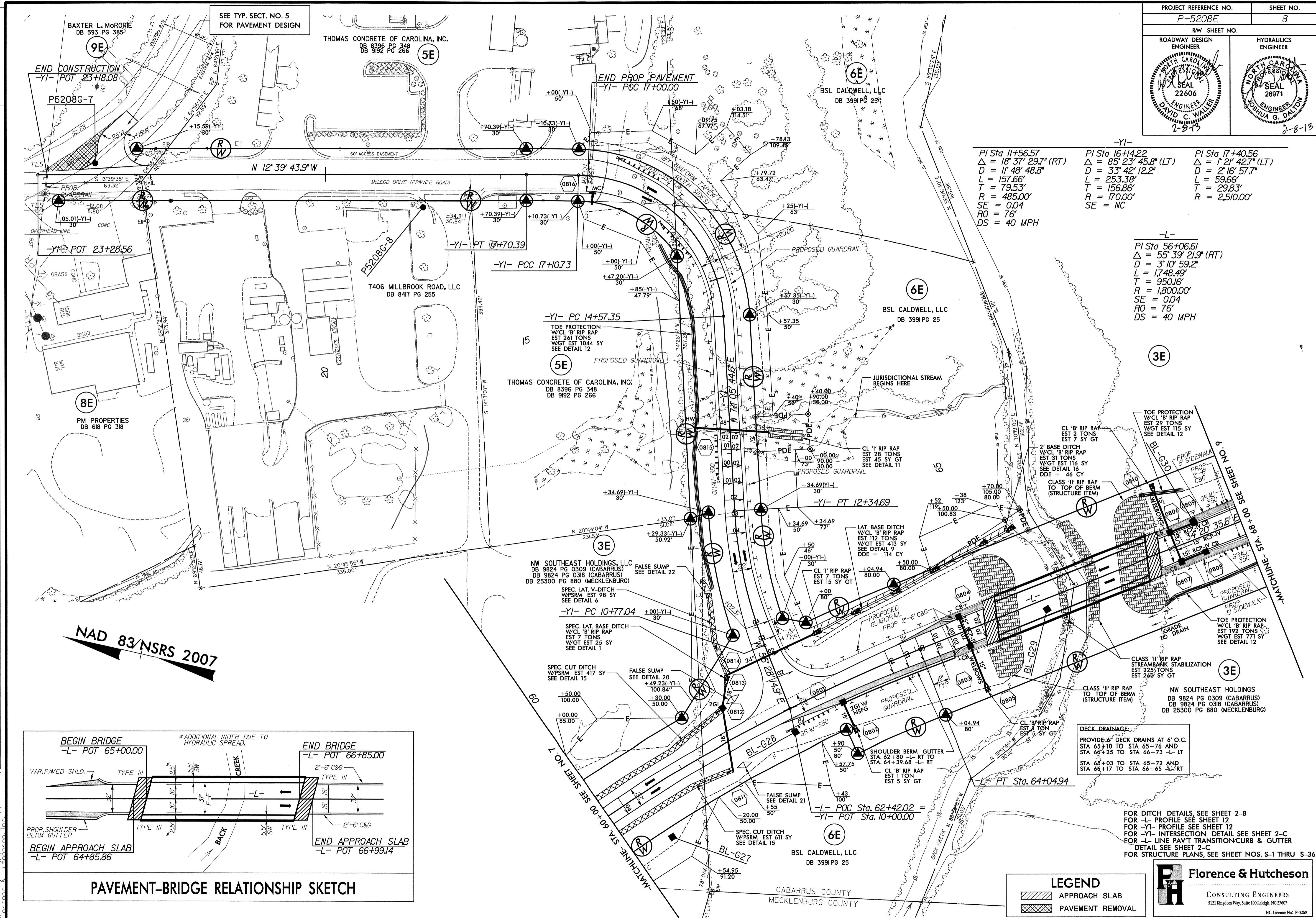
-L-
PI Sta 56+06.61
 $\Delta = 55^{\circ} 39' 21.9''$ (RT)
 $D = 3^{\circ} 10' 59.2''$
 $L = 1,748.49'$
 $T = 950.16'$
 $R = 1,800.00'$
 $SE = 0.04$
 $RO = 76'$
 $DS = 40$ MPH

FOR DITCH DETAILS, SEE SHEET 2-B
FOR -L- PROFILE SEE SHEET 11

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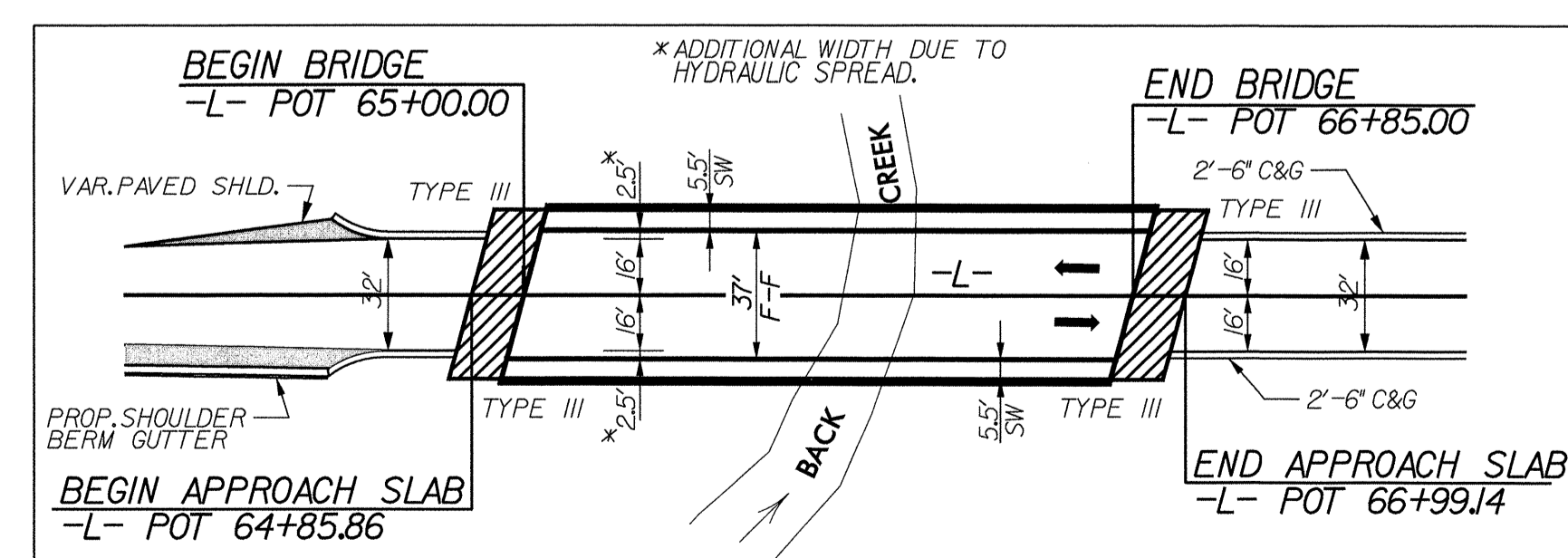


-YI-
 PI Sta 11+56.57
 $\Delta = 18' 37" 29.7" (RT)$
 $D = 1' 48" 48.8"$
 $L = 157.66'$
 $T = 79.53'$
 $R = 485.00'$
 $SE = 0.04$
 $RO = 76'$
 $DS = 40 MPH$

-YI-
 PI Sta 16+14.22
 $\Delta = 85' 23' 45.8" (LT)$
 $D = 33' 42" 12.2"$
 $L = 253.38'$
 $T = 156.86'$
 $R = 170.00'$
 $SE = NC$

-YI-
 PI Sta 17+40.56
 $\Delta = 1' 21' 42.7" (LT)$
 $D = 2' 16" 57.7"$
 $L = 59.66'$
 $T = 29.83'$
 $R = 2,510.00'$

-L-
 PI Sta 56+06.61
 $\Delta = 55' 39" 21.9" (RT)$
 $D = 3' 10" 59.2"$
 $L = 1,748.49'$
 $T = 950.16'$
 $R = 1,800.00'$
 $SE = 0.04$
 $RO = 76'$
 $DS = 40 MPH$



PAVEMENT-BRIDGE RELATIONSHIP SKETCH

LEGEND
 APPROACH SLAB
 PAVEMENT REMOVAL

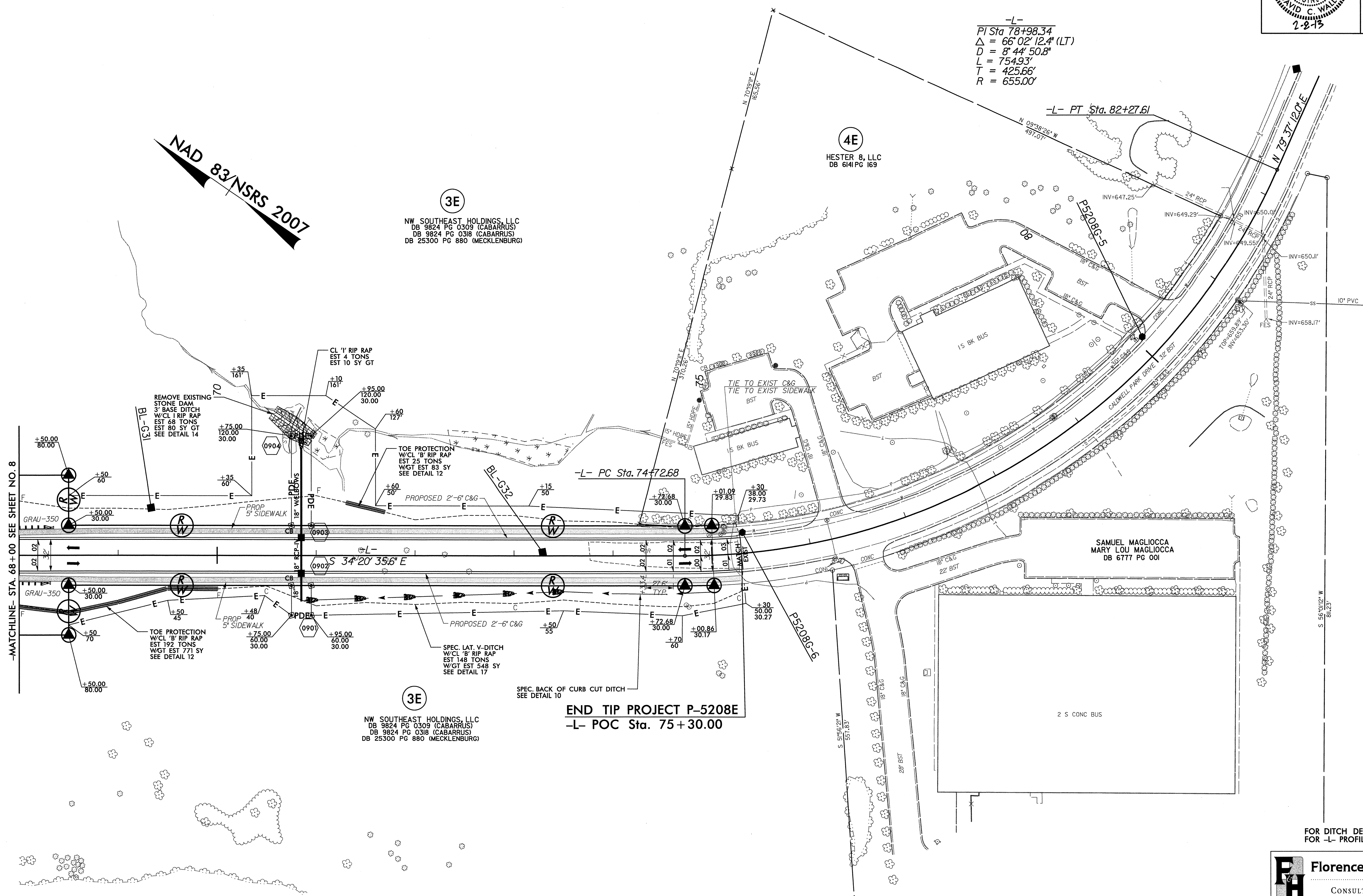
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 CONSULTING ENGINEERS
 5121 Kingdom Way, Suite 100 Raleigh, NC 27607
 NC License No. P-0285

REVISIONS
 11-26-2012 Parcel 3E & 4E - Name Change
 11-27-2012 Added Parcel 8E & 9E Eliminated Parcel 7E
 12-10-2012 Parcels 8E & 9E, Revised RW to tie into existing Millbrook Rd. RW

2/8/2013
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0503DEL_P21a1

PROJECT REFERENCE NO. P-5208E		SHEET NO. 9	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

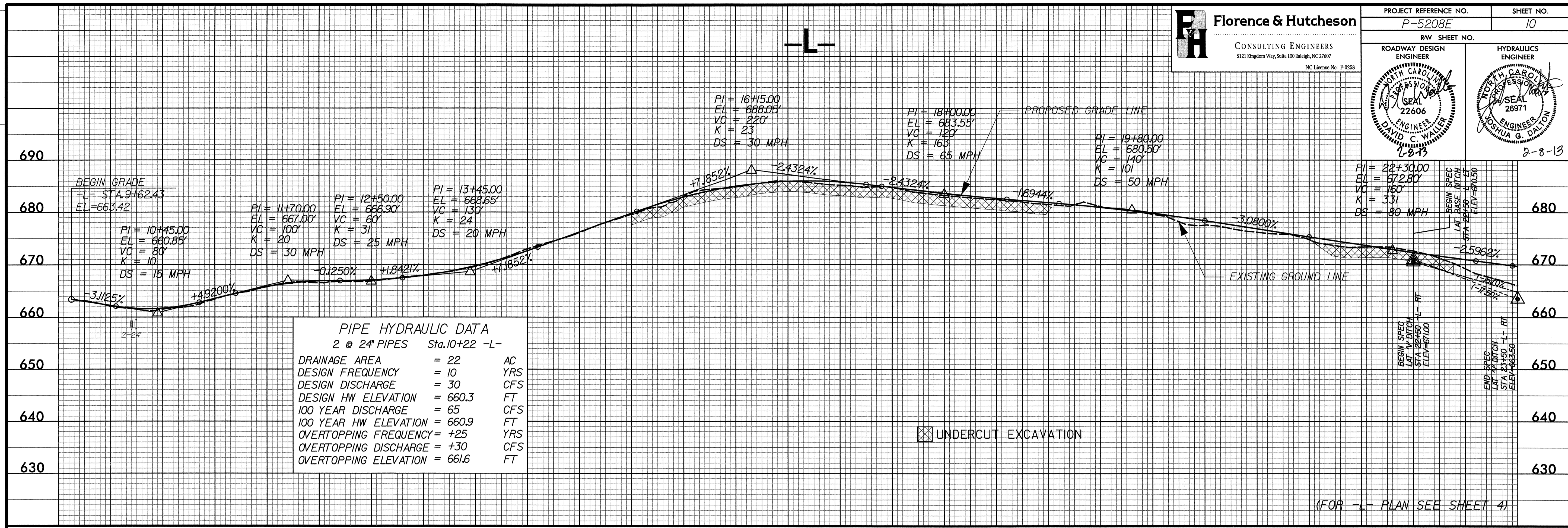


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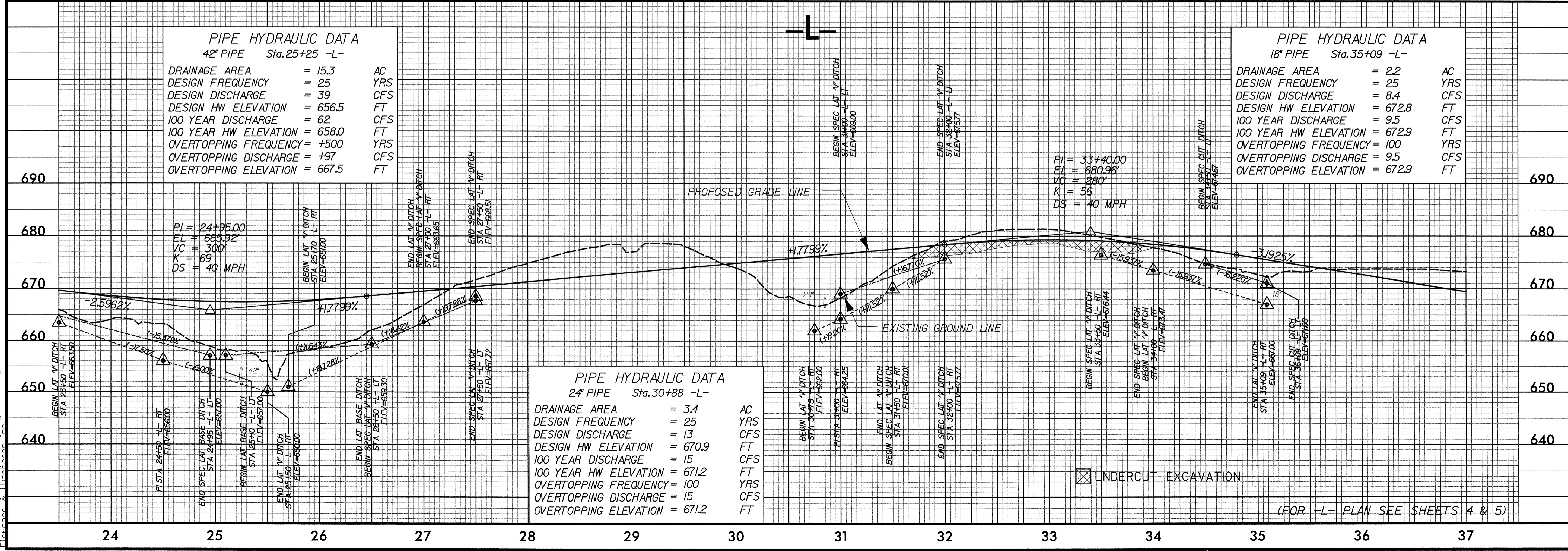
FOR DITCH DETAILS, SEE SHEET 2-B
FOR -L- PROFILE SEE SHEET 12

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NC License No: P-0258

0503DEL_P21a1



PIPE HYDRAULIC DATA		
2 @ 24" PIPES Sta.10+22 -L-		
DRAINAGE AREA	= 22	AC
DESIGN FREQUENCY	= 10	YRS
DESIGN DISCHARGE	= 30	CFS
DESIGN HW ELEVATION	= 660.3	FT
100 YEAR DISCHARGE	= 65	CFS
100 YEAR HW ELEVATION	= 660.9	FT
OVERTOPPING FREQUENCY	= +25	YRS
OVERTOPPING DISCHARGE	= +30	CFS
OVERTOPPING ELEVATION	= 661.6	FT



PIPE HYDRAULIC DATA		
42" PIPE Sta.25+25 -L-		
DRAINAGE AREA	= 15.3	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 39	CFS
DESIGN HW ELEVATION	= 656.5	FT
100 YEAR DISCHARGE	= 62	CFS
100 YEAR HW ELEVATION	= 658.0	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= +97	CFS
OVERTOPPING ELEVATION	= 667.5	FT

PIPE HYDRAULIC DATA		
24" PIPE Sta.30+88 -L-		
DRAINAGE AREA	= 3.4	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 13	CFS
DESIGN HW ELEVATION	= 670.9	FT
100 YEAR DISCHARGE	= 15	CFS
100 YEAR HW ELEVATION	= 671.2	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 15	CFS
OVERTOPPING ELEVATION	= 671.2	FT

PIPE HYDRAULIC DATA		
18" PIPE Sta.35+09 -L-		
DRAINAGE AREA	= 2.2	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 8.4	CFS
DESIGN HW ELEVATION	= 672.8	FT
100 YEAR DISCHARGE	= 9.5	CFS
100 YEAR HW ELEVATION	= 672.9	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 9.5	CFS
OVERTOPPING ELEVATION	= 672.9	FT

(FOR -L- PLAN SEE SHEETS 4 & 5)

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PIPE HYDRAULIC DATA
18" PIPE Sta. 39+75 -L-

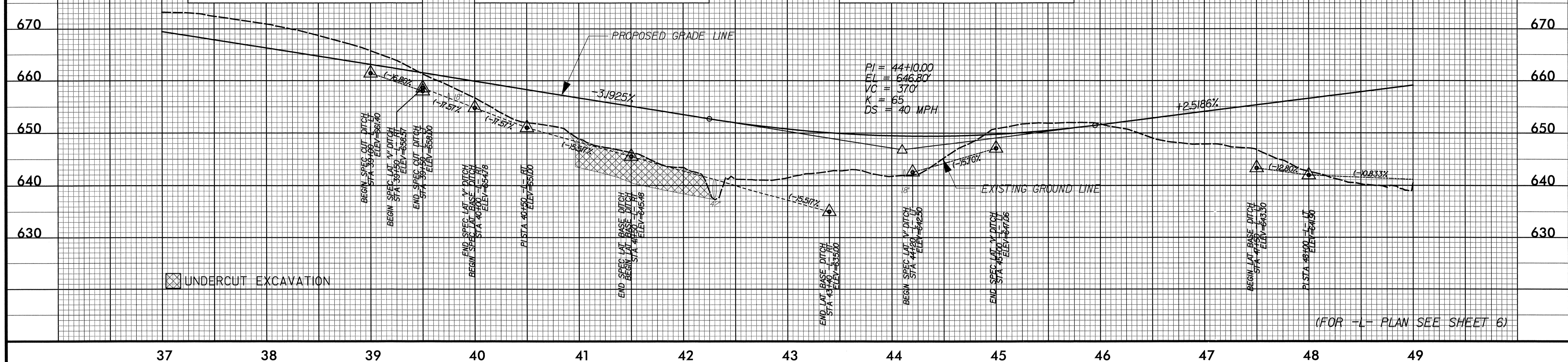
DRAINAGE AREA	= 2.5	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 8.6	CFS
DESIGN HW ELEVATION	= 659.8	FT
100 YEAR DISCHARGE	= 9.6	CFS
100 YEAR HW ELEVATION	= 659.9	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 9.6	CFS
OVERTOPPING ELEVATION	= 659.9	FT

PIPE HYDRAULIC DATA
42" PIPE Sta. 42+30 -L-

DRAINAGE AREA	= 21.3	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 49	CFS
DESIGN HW ELEVATION	= 643.9	FT
100 YEAR DISCHARGE	= 77	CFS
100 YEAR HW ELEVATION	= 645.4	FT
OVERTOPPING FREQUENCY	= +100	YRS
OVERTOPPING DISCHARGE	= +77	CFS
OVERTOPPING ELEVATION	= 646.1	FT

PIPE HYDRAULIC DATA
18" PIPE Sta. 44+12 -L-

DRAINAGE AREA	= 1.4	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 5.4	CFS
DESIGN HW ELEVATION	= 643.8	FT
100 YEAR DISCHARGE	= 6.0	CFS
100 YEAR HW ELEVATION	= 643.9	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= +10.1	CFS
OVERTOPPING ELEVATION	= 646.5	FT

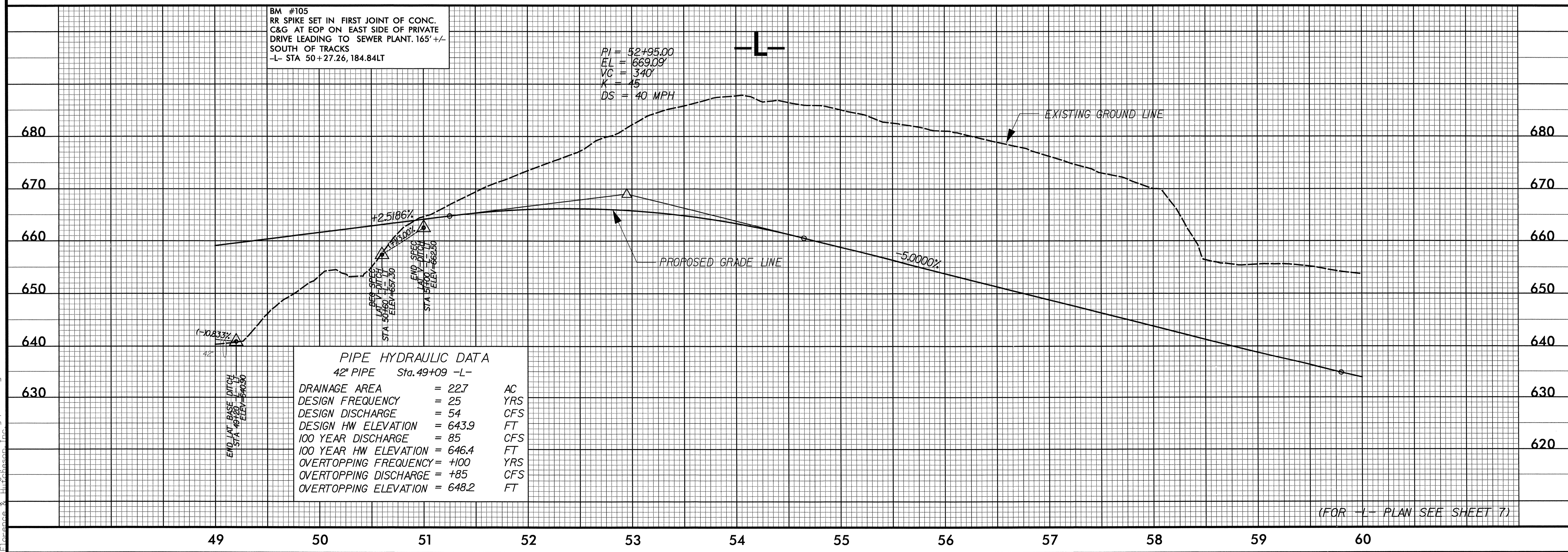


BM #105
RR SPIKE SET IN FIRST JOINT OF CONC.
C&G AT EOP ON EAST SIDE OF PRIVATE
DRIVE LEADING TO SEWER PLANT. 165' +/-
SOUTH OF TRACKS
-L- STA 50+27.26, 184.84LT

PI = 52+95.00
EL = 669.09
VC = 340'
K = 45
DS = 40 MPH

PIPE HYDRAULIC DATA
42" PIPE Sta. 49+09 -L-

DRAINAGE AREA	= 22.7	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 54	CFS
DESIGN HW ELEVATION	= 643.9	FT
100 YEAR DISCHARGE	= 85	CFS
100 YEAR HW ELEVATION	= 646.4	FT
OVERTOPPING FREQUENCY	= +100	YRS
OVERTOPPING DISCHARGE	= +85	CFS
OVERTOPPING ELEVATION	= 648.2	FT



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Florence & Hutcheson, Inc.

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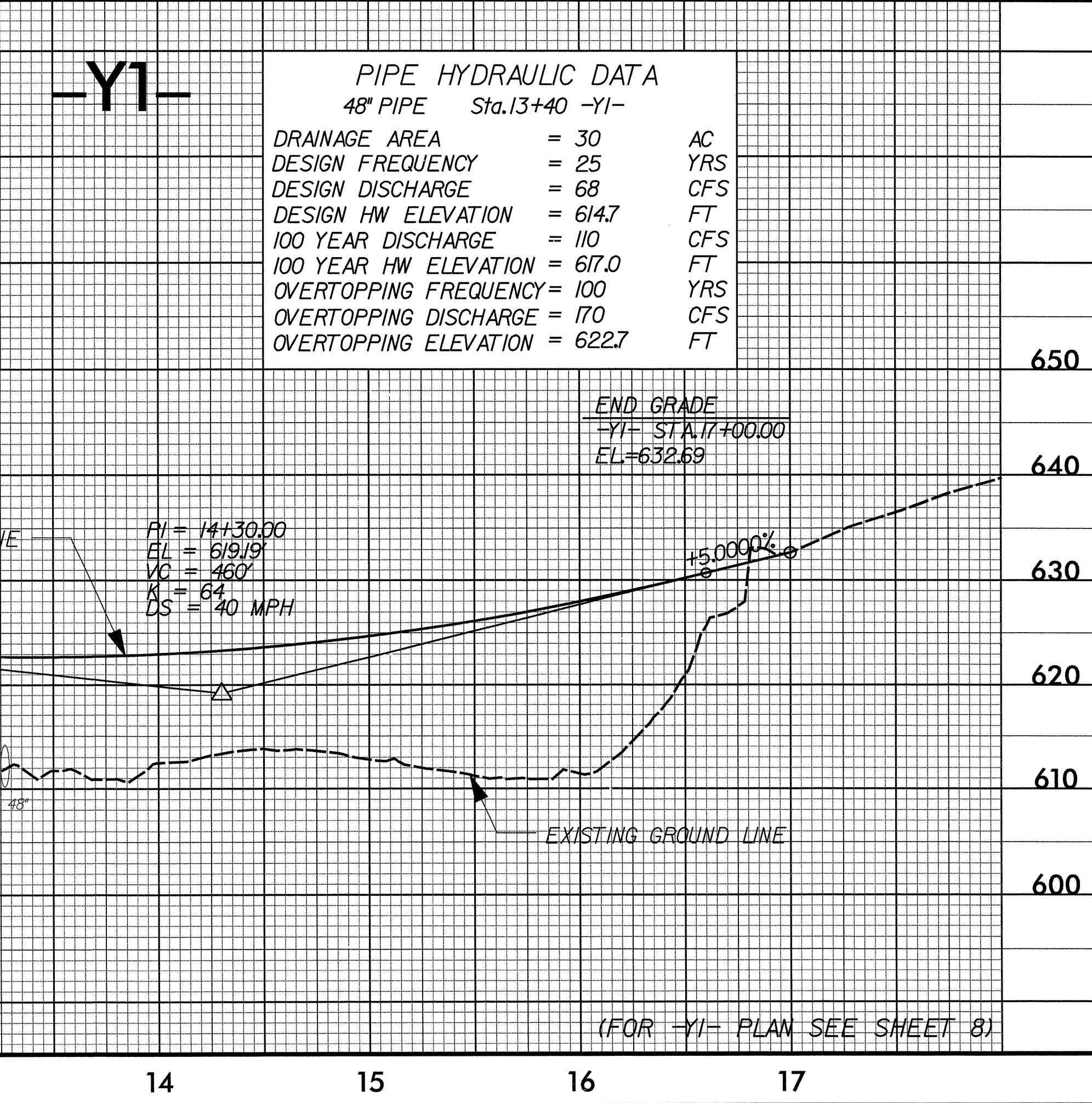
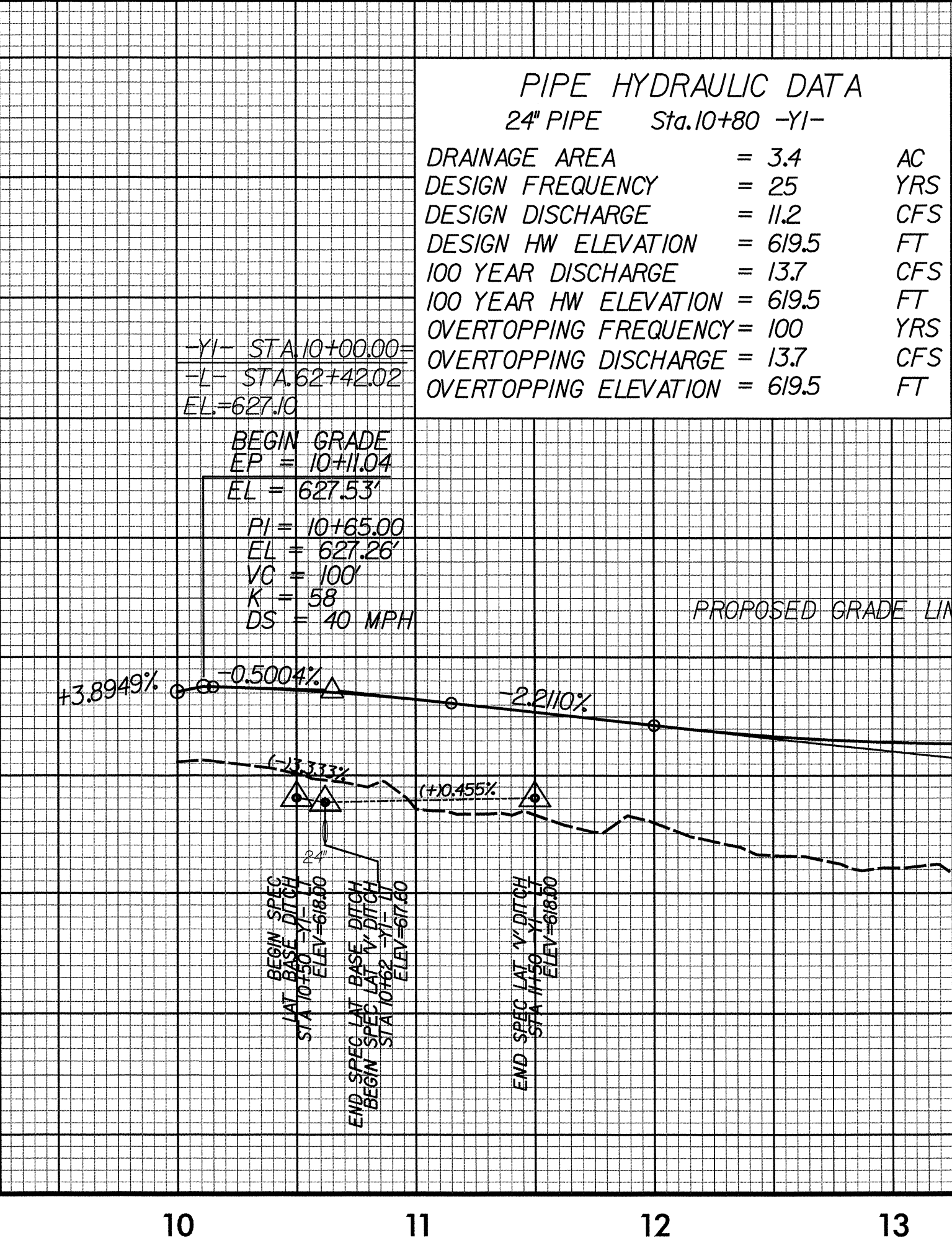
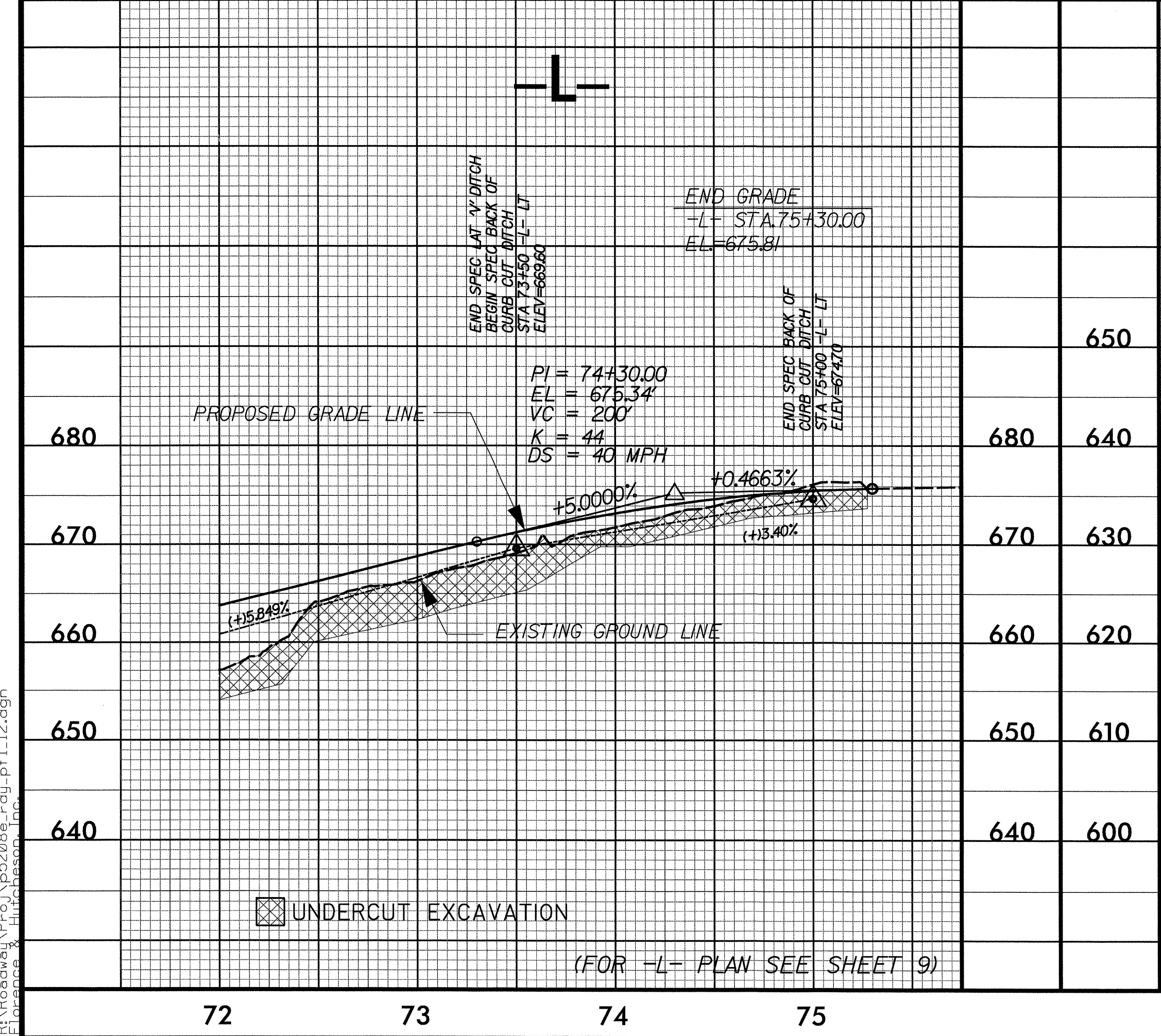
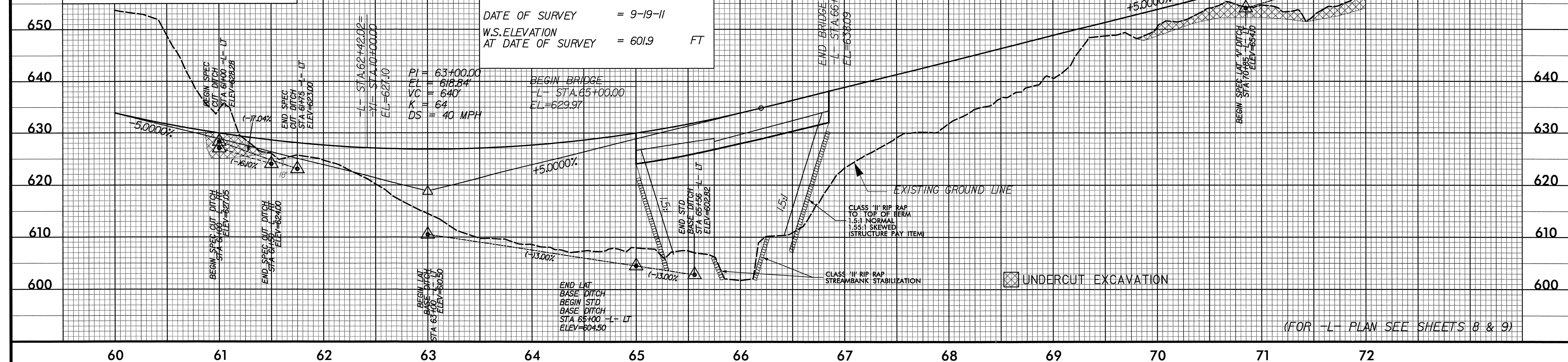
PIPE HYDRAULIC DATA
 18" PIPE Sta.61+61 -L-

DRAINAGE AREA	= 1.6	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 6.1	CFS
DESIGN HW ELEVATION	= 625.4	FT
100 YEAR DISCHARGE	= 6.9	CFS
100 YEAR HW ELEVATION	= 625.5	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 6.9	CFS
OVERTOPPING ELEVATION	= 625.6	FT

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2550	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 611.7	FT
BASE DISCHARGE	= 3450	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 612.9	FT
OVERTOPPING DISCHARGE	= +4720	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 626.8	FT

DATE OF SURVEY = 9-19-11
 W.S. ELEVATION AT DATE OF SURVEY = 601.9 FT



2/8/2013
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