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09/08/99

TIP PROJECT: W-5512

CONTRACT: C203623

09-MAR-2015 11:40
J:\W-5512\Roadway\Proj\W5512_Rdy_TSH.dgn
$$$$USERNAME$$$$

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

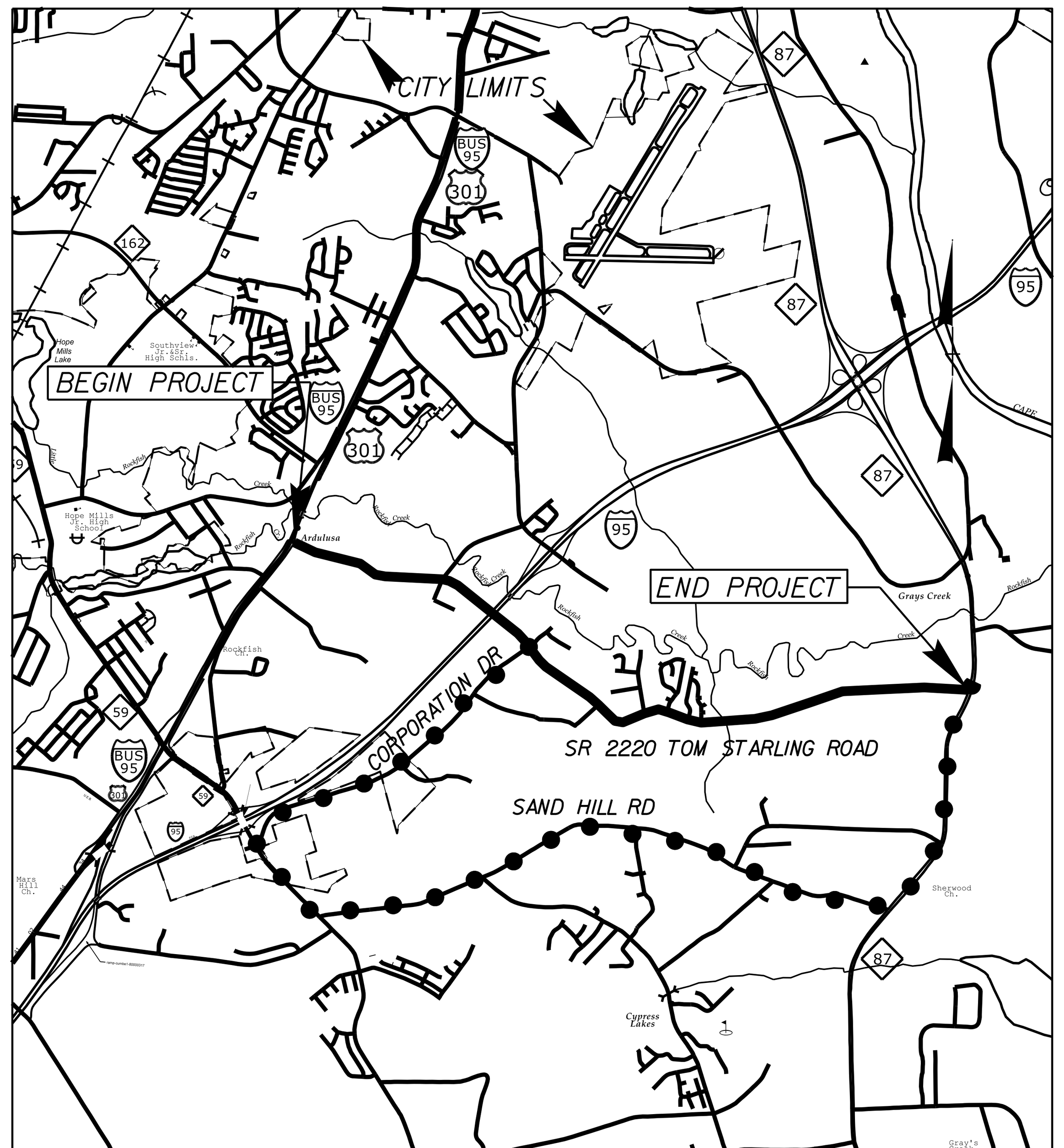
CUMBERLAND COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5512	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50079.1.1	HSIP-2220(5)	P.E.
50079.2.FD1	HSIP-2220(5)	R.O.W./UTILITY
50079.3.FD1	HSIP-2220(5)	CONSTR.

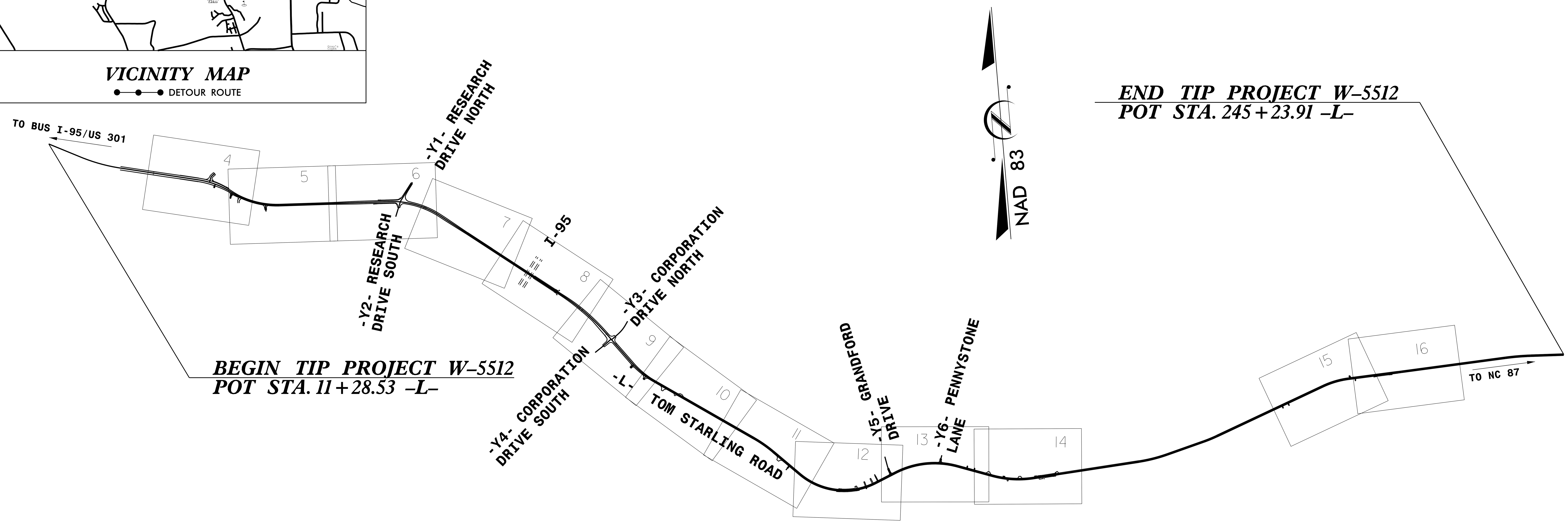
LOCATION: SR 2220 (TOM STARLING ROAD) FROM US 301 TO NC 87.

TYPE OF WORK: GRADING, DRAINAGE, AND PAVING.



VICINITY MAP

DETOUR ROUTE



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2014 = 3,651

DHV = 4 %
D = 51 %
T = 4 %
V = 60 MPH

FUNC CLASS =
LOCAL, RURAL
*SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT W-5512 = 4.431 MILES

TOTAL LENGTH OF TIP PROJECT W-5512 = 4.431 MILES

Prepared In the Office of:

PLANS PREPARED BY
PARSONS

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 30, 2014

LETTING DATE:
MAY 19, 2015

DAVID L. WILVER, P.E.
PROJECT ENGINEER

TIM D. GOINS, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 036683 ENGINEER MELANIE QUYNH-CHI NGUYEN

3/26/2015

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS

3/26/2015

SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS

Tim D. Goins, PE
3/26/2015

INDEX OF SHEETS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 10-31-2014

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED 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 III.

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.

SUBSURFACE PLANS:

SUBSURFACE PLANS ARE AVAILABLE FOR PORTIONS OF THE PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS IN RESURFACING AREAS

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE FAYETTEVILLE PWC - POWER,

DUKE ENERGY - POWER, S. RIVER PWC - POWER, CENTURYLINK - TELEPHONE,

TIME WARNER CABLE - CABLE TV, FAYETTEVILLE PWC - WATER,

PIEDMONT NATURAL GAS - GAS

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

EFF. 01-17-2012
REV. 10-30-2012

2012 ROADWAY ENGLISH STANDARD DRAWINGS

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:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
838.22	Reinforced Concrete Endwall - for Double and Triple 54" Pipes 90 Skew
838.27	Reinforced Concrete Endwall - for Single 60" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.52	Reinforced Brick Endwall - for Double and Triple 54" Pipes 90 Skew
838.57	Reinforced Brick Endwall - for Single 60" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.04	Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.05	Brick Open Throat Catch Basin - 12" thru 48" Pipe
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
862.01	Guardrail Placement
862.02	Guardrail Installation
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

02/03/15

PROJECT REFERENCE NO.	SHEET NO.
W-5512	1B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
W-5512	1C-1
Location and Surveys	

SURVEY CONTROL SHEET W-5512

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	59+75.00	-70.62	440263.1367	2029558.0744
L	61+50.00	-56.40	440215.5703	2029736.4863
L	134+59.36	95.16	435562.7823	2035368.4029
L	34+79.27	-60.00	440665.7559	2027165.7846
L	42+08.74	-60.00	440357.2448	2027798.3845
L	136+33.81	-50.00	435694.1977	2035556.6050
L	142+63.13	50.00	435788.0114	2036210.7038
L	151+51.77	50.00	435804.2872	2037042.8301
L	152+61.91	50.00	435766.4464	2037146.2677
L	152+58.66	29.98	435786.3702	2037150.0909
L	36+53.14	-60.00	440567.0550	2027319.1826
L	139+52.08	50.00	435669.8043	2035922.9887
L	128+62.52	-50.00	435959.8264	2034896.4348
L	128+32.48	-50.00	435981.0486	2034875.1639
L	137+41.23	50.00	435602.6935	2035671.1644
L	200+40.00	28.83	436340.4061	2041808.8217
L	200+40.00	45.00	436325.2317	2041814.4155
L	205+60.00	50.00	436499.5899	2042302.2411
L	207+40.00	40.00	436550.4510	2042467.9876
L	203+40.00	-30.79	436500.4838	2042069.4270
L	203+40.00	-42.00	436510.9959	2042065.5343
L	206+07.00	-46.00	436605.0768	2042319.1632
L	207+52.00	-50.00	436641.2197	2042465.5279
L	208+60.00	-44.00	436647.5997	2042577.6987
L	208+60.00	-29.77	436633.3975	2042578.6259
L	213+12.00	48.00	436576.3590	2043034.2568
L	213+12.00	30.77	436593.5675	2043033.4803

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	12+15.00	30.96	440287.4511	2029659.9656
Y1	11+95.00	-29.12	440267.3684	2029720.0207

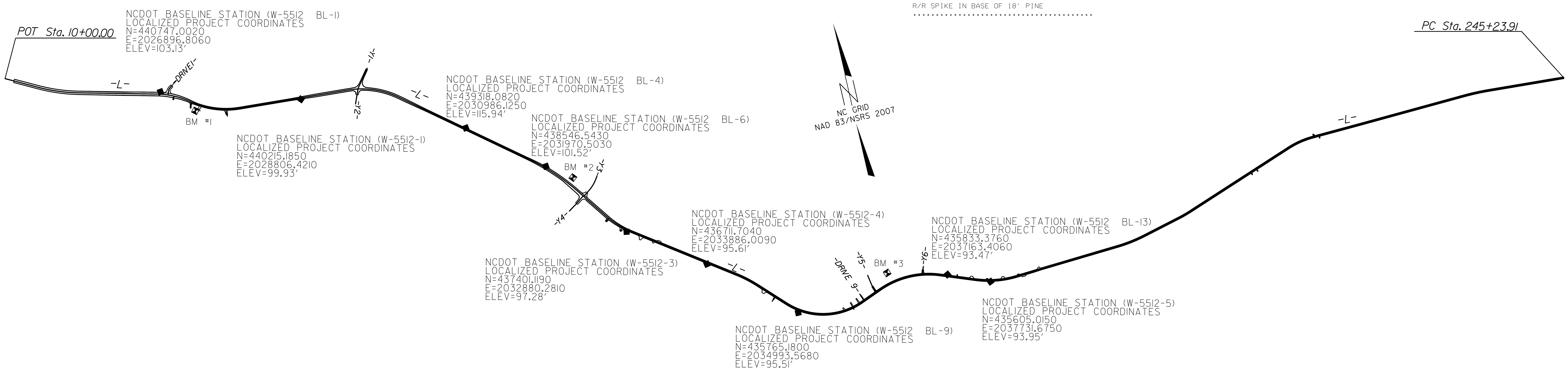
BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	W-5512 BL-1	440747.0020	2026896.8060	103.13	32+09.44	33.59 LT
2	W-5512 BL-2	440346.7890	2027425.8770	102.02	38+59.62	70.81 RT
3	W-5512 BL-3	440253.7840	2028073.0780	101.46	44+96.62	19.42 RT
101	W-5512-1	440215.1850	2028806.4210	99.93	52+30.98	19.16 RT
102	W-5512-2	440149.2120	2029864.1840	102.40	62+86.94	32.64 LT
4	W-5512 BL-4	439318.0820	2030986.1250	115.94	76+78.32	15.39 LT
5	W-5512 BL-5	438904.3360	2031519.1730	114.54	83+53.09	17.09 LT
6	W-5512 BL-6	438546.5430	2031970.5030	101.52	89+27.49	22.13 LT
7	W-5512 BL-7	438090.2790	2032378.1980	95.40	95+35.79	26.60 LT
103	W-5512-3	437401.1190	2032880.2810	97.28	103+84.99	29.05 RT
104	W-5512-4	436711.7040	2033886.0090	95.61	116+03.13	23.27 RT
8	W-5512 BL-8	436130.6880	2034622.8530	94.22	125+48.17	22.27 RT
9	W-5512 BL-9	435765.1800	2034993.5680	95.51	130+61.81	40.67 RT
10	W-5512 BL-10	435584.2610	2035414.6700	95.21	134+98.79	67.34 RT
11	W-5512 BL-11	435893.9630	2036076.1390	93.54	141+78.93	99.14 LT
12	W-5512 BL-12	436022.7330	2036609.8090	96.26	146+95.88	99.00 LT
13	W-5512 BL-13	435833.3760	2037163.4060	93.47	152+55.01	18.74 LT
105	W-5512-5	435605.0150	2037731.6750	93.95	158+65.43	16.75 RT

BM1 ELEVATION = 101.04
N 440380 E 2027319
L STATION 37+58.00 95 RIGHT
R/R SPIKE IN BASE OF 18" OAK

BM2 ELEVATION = 96.68
N 438309 E 2032308
L STATION 93+23.00 104 LEFT
R/R SPIKE IN BASE OF 15' PINE

BM3 ELEVATION = 92.75
N 436040 E 2036339
L STATION 144+54.00 152 LEFT
R/R SPIKE IN BASE OF 18' PINE



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "W-5512-4"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 436711.704(ft) EASTING: 2033886.009(ft)
ELEVATION: 95.61(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988681
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "W-5512-4" TO -L- STATION 10+00 IS
N62°41'31.08"W 10,225.30
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/*

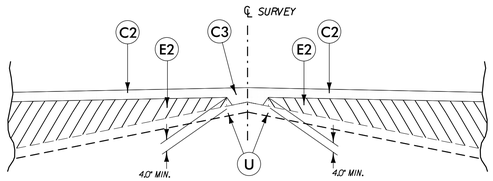
   THE FILES TO BE FOUND ARE AS FOLLOWS: W-5512_LS_CONTROL.TXT

   SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

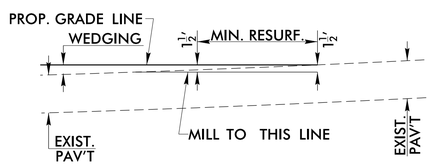
◎ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5 B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5 B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.
E1	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 4" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL ON THIS SHEET).

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



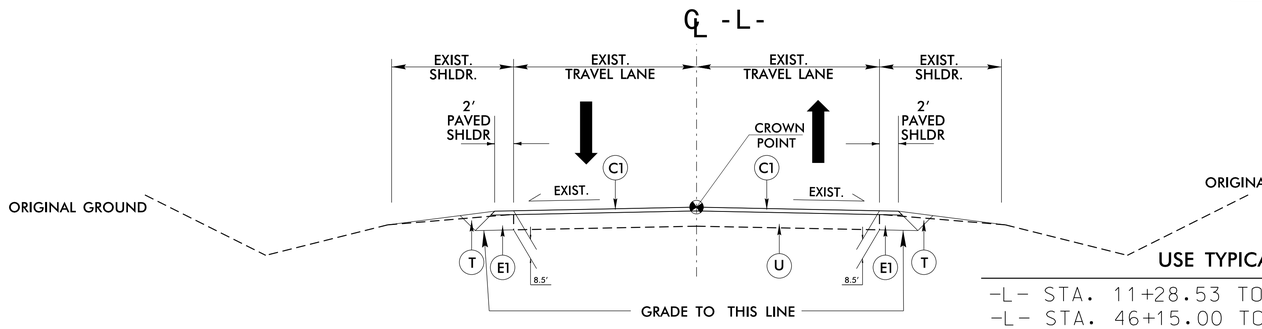
DETAIL SHOWING METHOD OF WEDGING



DETAIL OF INCIDENTAL MILLING

DETAIL OF MILLING APPROACHES AND CONSTRUCTION JOINTS

NOTE:
INCIDENTAL MILLING SHALL BE PERFORMED AT BRIDGES AND CONSTRUCTION JOINTS AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH DETAIL.

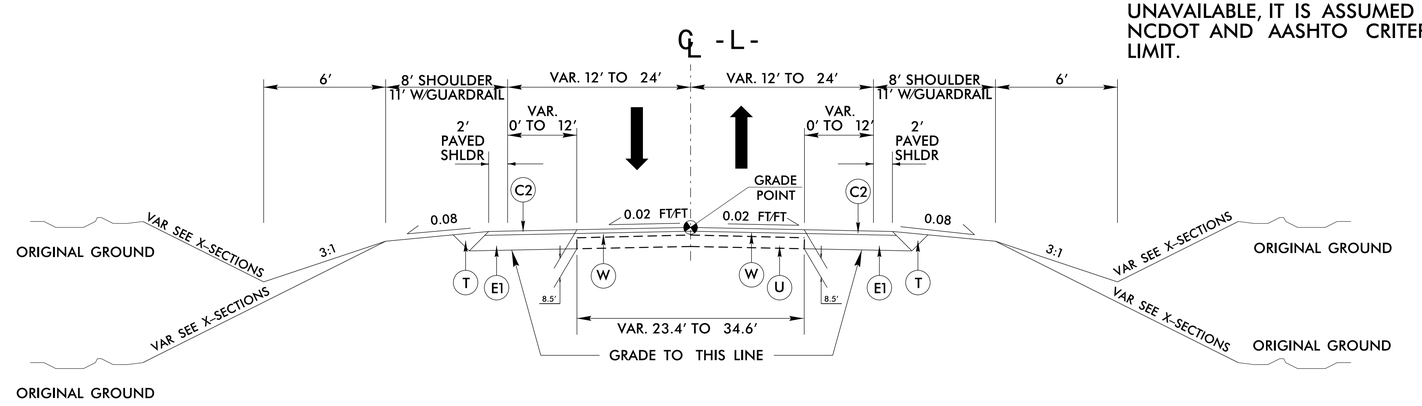


TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA. 11+28.53 TO STA. 30+25.00
-L- STA. 46+15.00 TO STA. 53+52.50
-L- STA. 70+60.00 TO STA. 78+63.00 (BEGIN BRIDGE)
-L- STA. 81+25.00 (END BRIDGE) TO STA. 84+95.14
-L- STA. 107+00.00 TO STA. 125+01.19
-L- STA. 165+00.00 TO STA. 197+45.00
-L- STA. 213+00.00 TO STA. 245+23.91

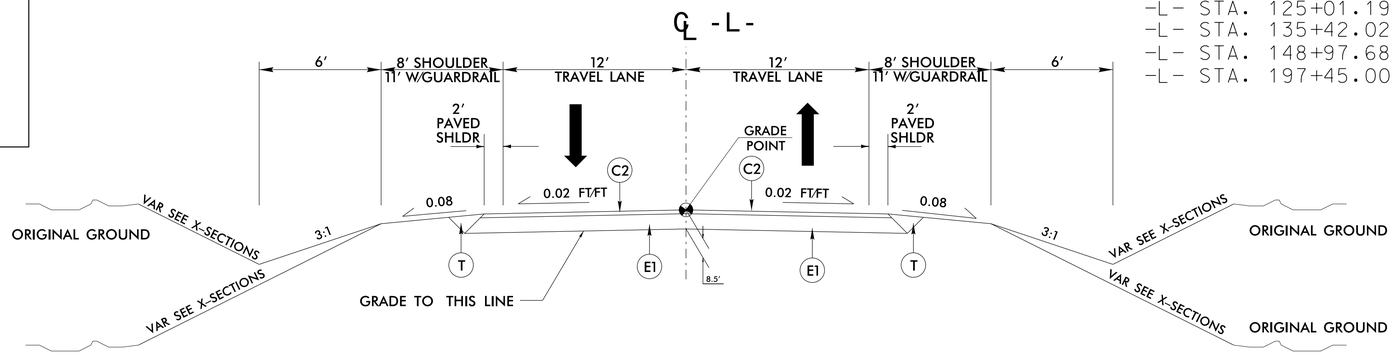
NOTE: IN RESURFACING AREAS WHERE SURVEY IS UNAVAILABLE, IT IS ASSUMED THE PROJECT SATISFIES NCDOT AND AASHTO CRITERIA FOR POSTED SPEED LIMIT.



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA. 30+25.00 TO STA. 36+82.18
-L- STA. 41+19.19 TO STA. 46+15.00
-L- STA. 53+52.50 TO STA. 70+60.00
-L- STA. 84+95.14 TO STA. 107+00.00
-L- STA. 125+01.19 TO STA. 130+88.26
-L- STA. 135+42.02 TO STA. 136+88.06
-L- STA. 148+97.68 TO STA. 165+00.00
-L- STA. 197+45.00 TO STA. 213+00.00



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

-L- STA. 36+82.18 TO STA. 41+19.19
-L- STA. 130+88.26 TO STA. 135+42.02
-L- STA. 136+88.06 TO STA. 139+89.64 BK.
-L- STA. 139+52.08 AH. TO STA. 148+97.68

PLANS PREPARED BY
PARSONS
5565 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27606
NC LICENSE NO.F-1276
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

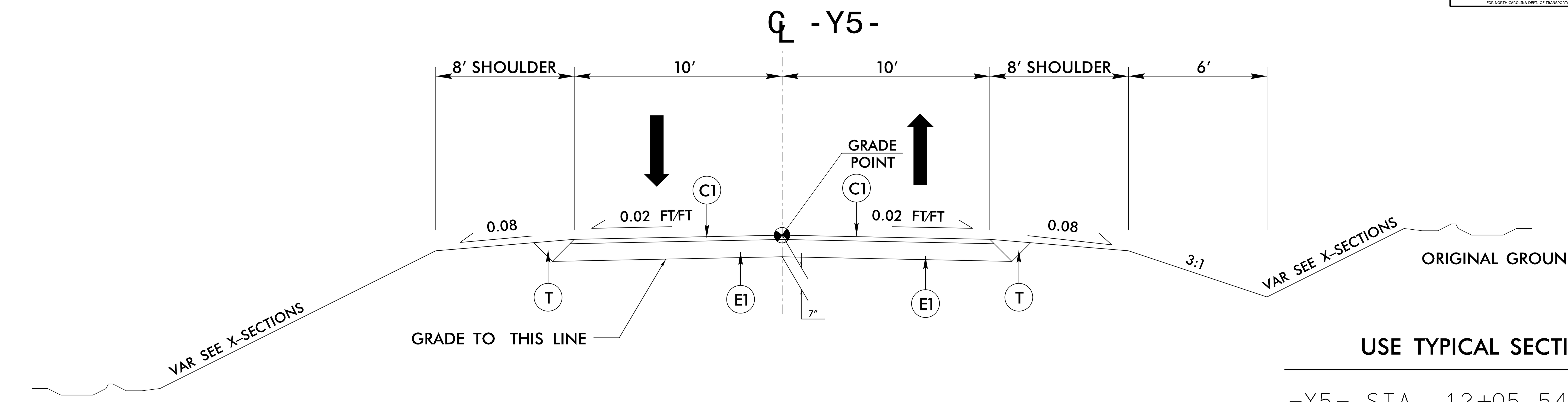
PROJECT REFERENCE NO.	SHEET NO.
W-5512	2A-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. JOINES
Jim D. Joines, PE
3/26/2015

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CHARLES MORRISON
Clark Morrison
4/1/2015

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5 B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.
E1	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 4" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT

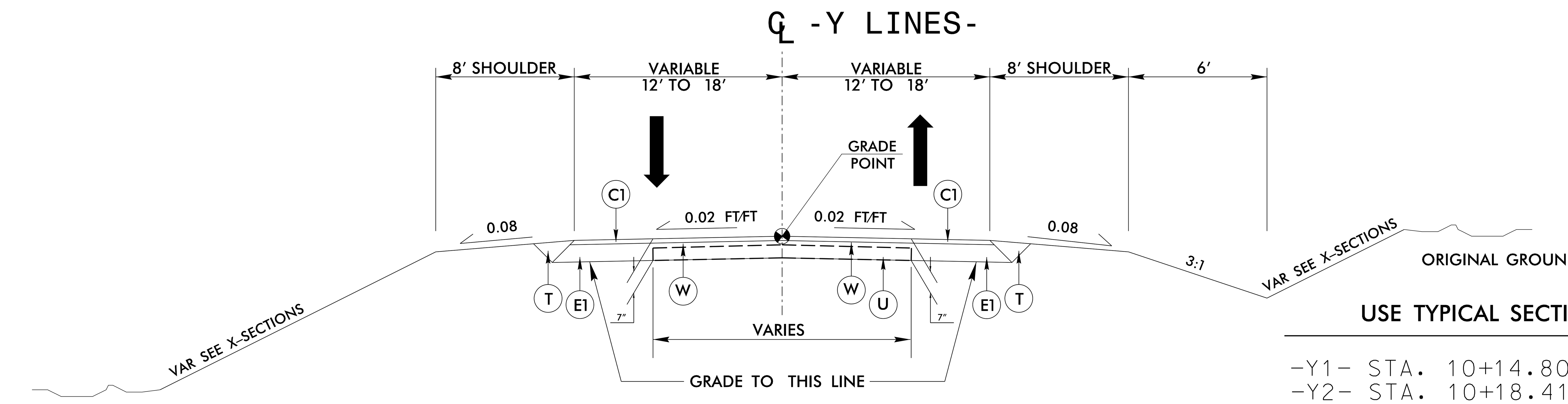
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

-Y5- STA. 12+05.54 TO STA. 12+57.71



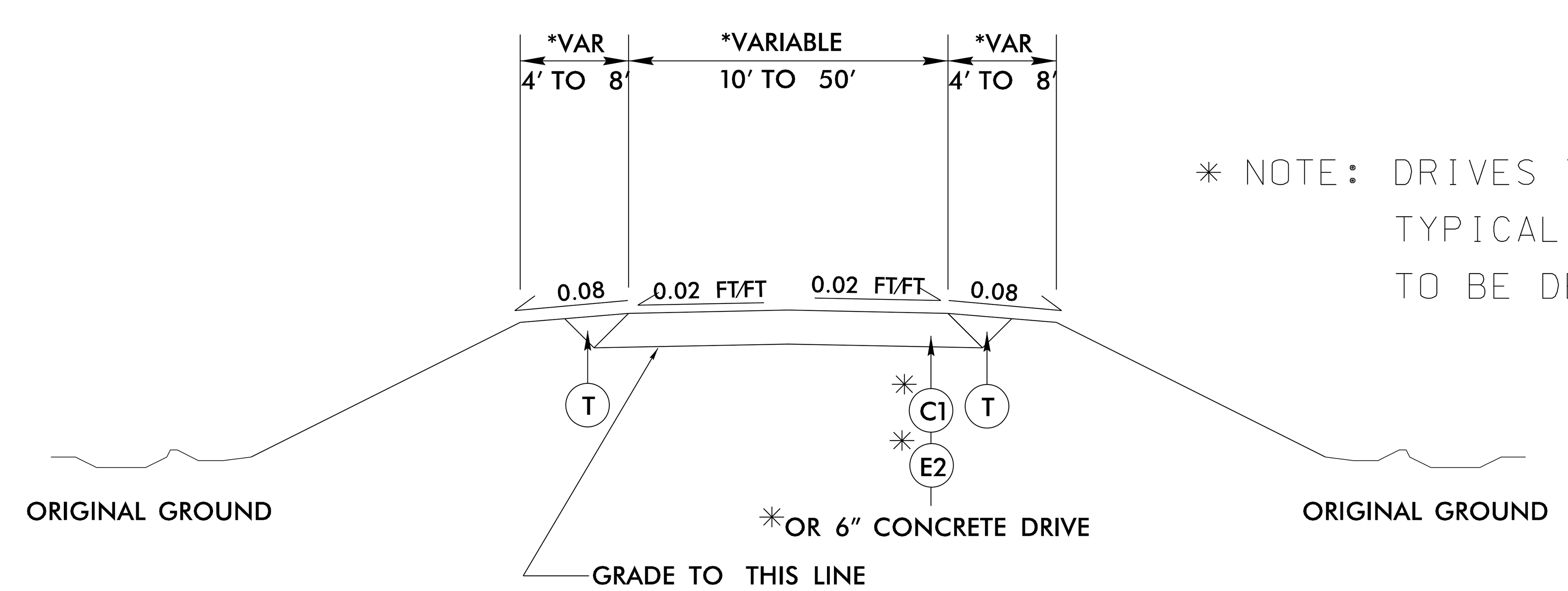
TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

-Y1- STA. 10+14.80 TO STA. 13+02.10
-Y2- STA. 10+18.41 TO STA. 10+82.00
* -Y3- STA. 12+75.10 TO STA. 13+26.49
* -Y4- STA. 10+18.00 TO STA. 11+42.01
-Y5- STA. 11+70.00 TO STA. 12+05.54
-Y6- STA. 10+50.00 TO STA. 11+03.14

* NOTE: OVERLAY ONLY WITH 1.5" (S9.5B)

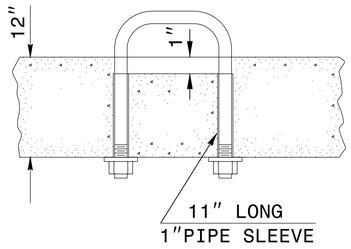
DRIVEWAY DETAIL



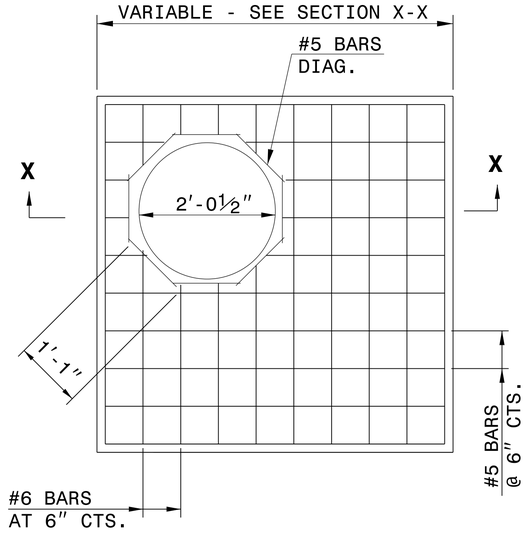
* NOTE: DRIVES TO BE BUILT USING NCDOT DRIVEWAY TYPICAL WIDTHS. DRIVEWAY DEPTHS AND MATERIALS TO BE DETERMINED BY THE RESIDENT ENGINEER.

5/14/99

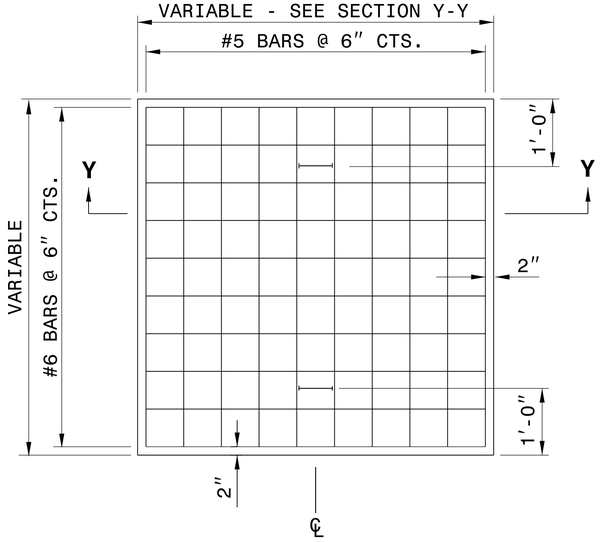
PROJECT REFERENCE NO.	SHEET NO.
W-5512	2D-1



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

FIELD VERIFY THE DIMENSIONS FOR THE EXISTING BOXES.

BILL OF MATERIALS

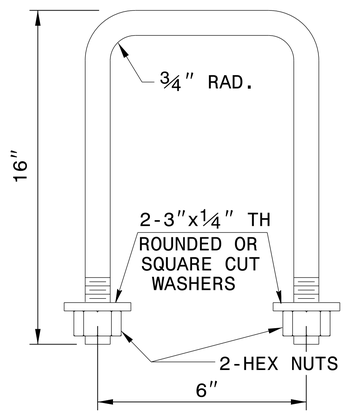
MASONRY	
TOP SLAB CONCRETE CLASS "A"	.037YDS^3 PER FT^2
BRICK MASONRY	.025YDS^3 PER FT^2
REINFORCING STEEL	7.64LBS PER FT^2

MANHOLE OPTION QUANTITIES

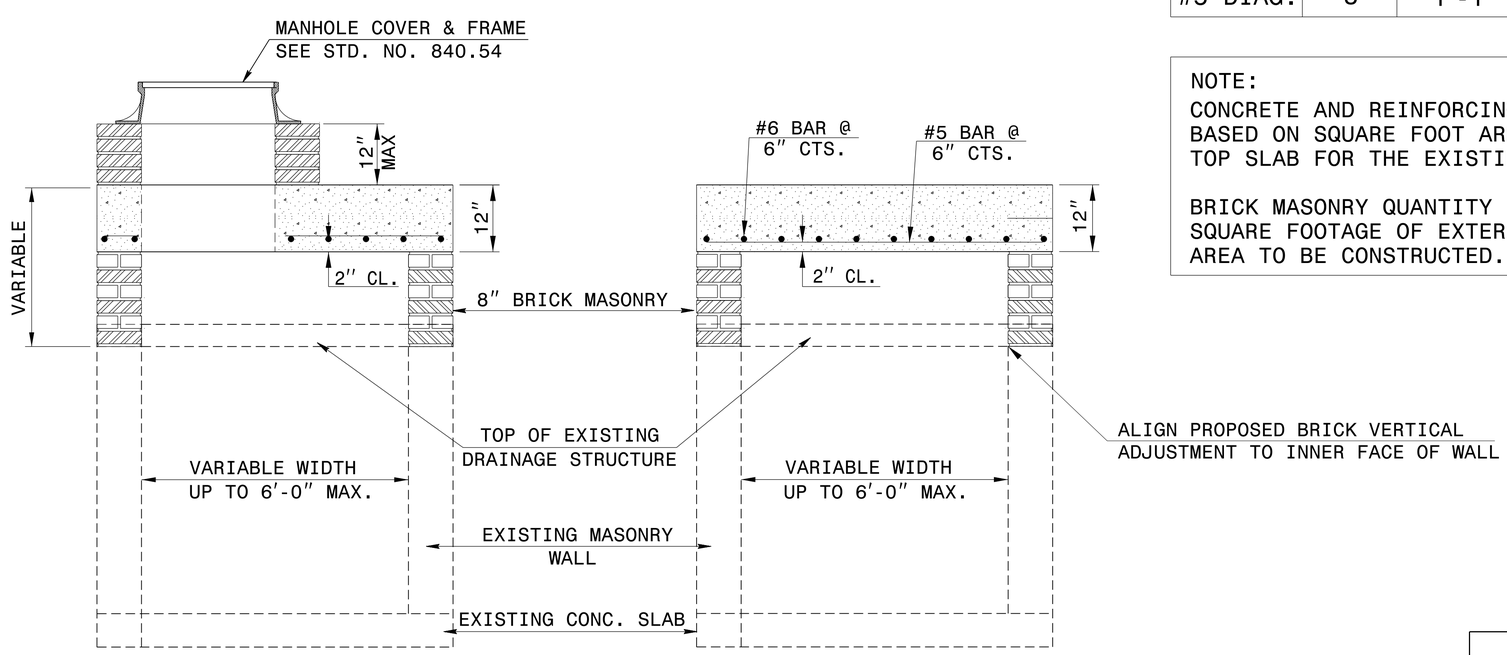
SIZE	QTY.	LENGTH	REINF. STEEL LBS.
#5 DIAG.	8	1'-1"	9.04

NOTE:
CONCRETE AND REINFORCING STEEL QUANTITIES BASED ON SQUARE FOOT AREA OF THE PROPOSED TOP SLAB FOR THE EXISTING DRAINAGE STRUCTURE.

BRICK MASONRY QUANTITY IS BASED ON THE TOTAL SQUARE FOOTAGE OF EXTERIOR WALL SURFACE AREA TO BE CONSTRUCTED.



DETAIL OF HANDLE



SECTION X-X **SECTION Y-Y**

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

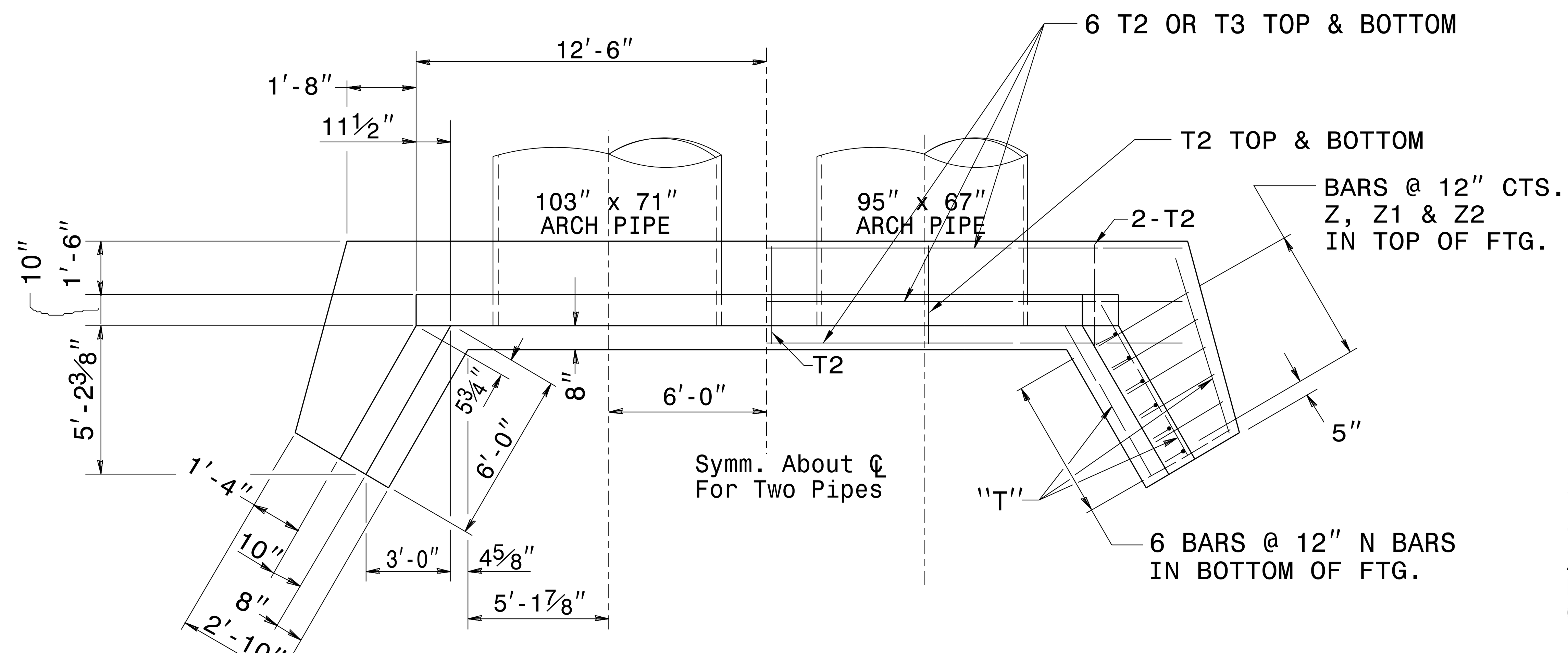
Joel Howerton
873F3D17DCDC45F
3/26/2015

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

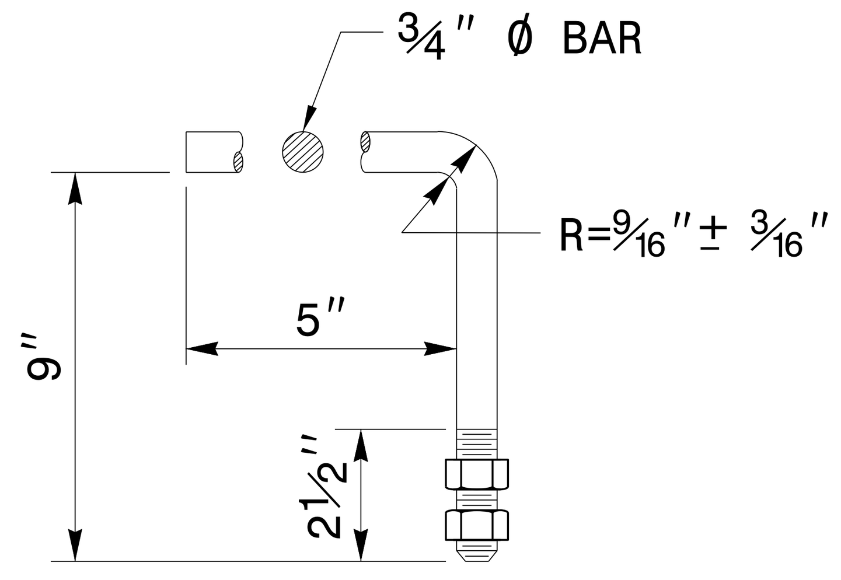
DETAIL TO CONVERT EXISTING TRAFFIC BEARING DROP INLET OR CATCH BASIN TO TRAFFIC BEARING JUNCTION BOX (MANHOLE OPTIONAL)

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

$$$$USERNAME$$$$ $$$$USER$$$$ $$$$SYSTIME$$$$



PLAN



HOOK BOLT

NOTE: CONSTRUCT HOOK BOLTS (ANCHORS) AT 2'-0" CTS. ALONG THE CIRCUMFERENCE OF THE 103"X 71" CSPA. EMBED THE HOOK BOLTS 6" IN DEPTH. THE GALVANIZED ¾" DIA. HOOK BOLTS MUST MEET ASTM A-307 OR ASTM A-836. BOTH BOLTS AND NUTS MUST BE IN ACCORDANCE WITH ASTM A-153 FOR GALVANIZING.

NOTES:

ALL CONCRETE TO BE CLASS "A".

ALL REINFORCING STEEL SHALL BE ASTMA615-GRADE 60.

ALL REINFORCING STEEL SHALL BE DEFORMED BARS. WHERE SPLICING OF REINFORCMENT IS NECESSARY, BARS ARE TO BE LAPPED 45 DIAMETERS. ALL DIMENSIONS RELATIVE TO REINFORCEMENT ARE TO CENTERS OF BARS.

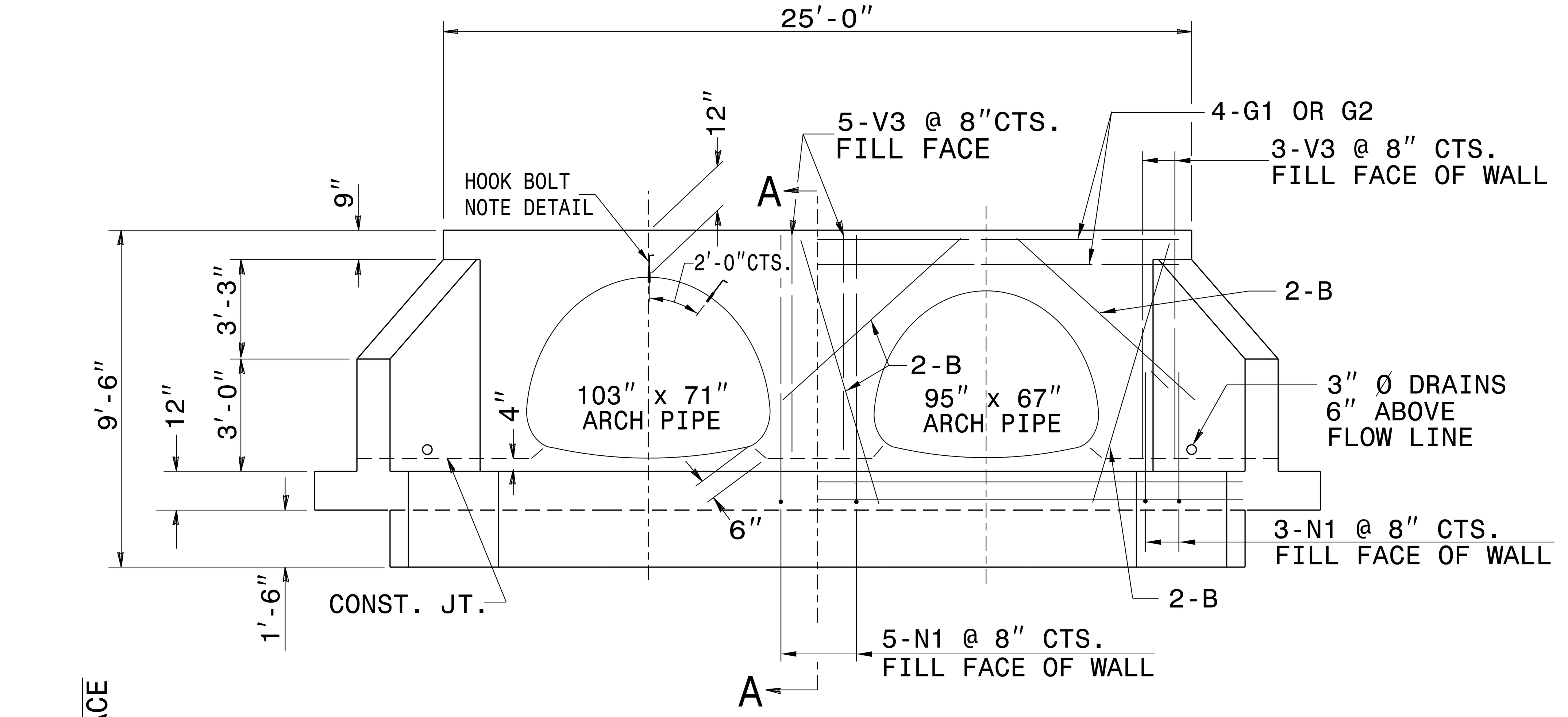
THE FOOTING, CURTAIN WALL AND 4" OF WALL ARE TO BE POURED IN ONE OPERATION ALLOWING NO TIME FOR INITIAL SET TO TAKE PLACE BETWEEN THEM. THE REMAINING WALL SHALL THEN BE POURED IN ONE OPERATION.

ALL EXPOSED CORNERS ARE TO BE CHAMFERED 1".

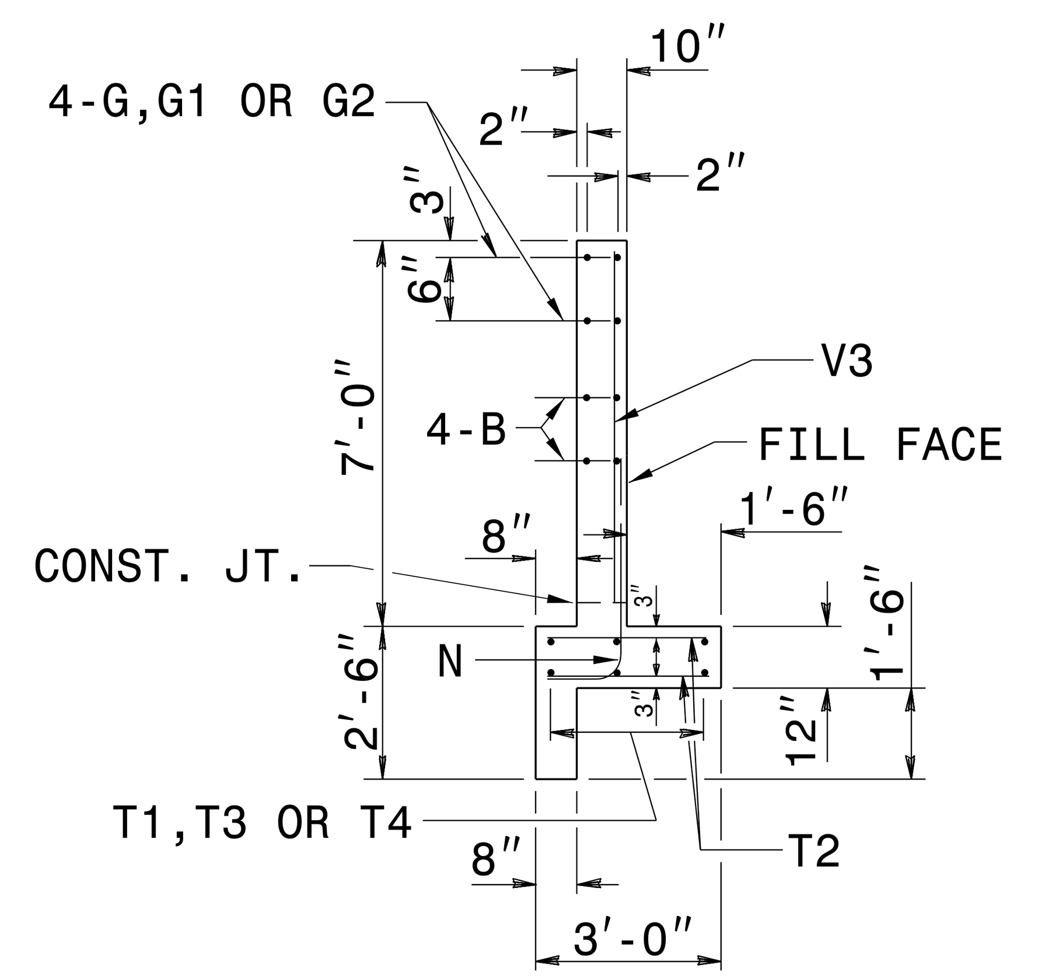
3" DIAMETER DRAINS SHALL BE PLACED IN WALL AS SHOWN AND BE 6" ABOVE NORMAL FLOW LINE.

ALL MATERIAL AND WORKMANSHIP AS PER N.C.DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.

THE EXTRA BARS ARE PROVIDED FOR HOLDING REINFORCING STEEL IN CORRECT POSITION IN WING.



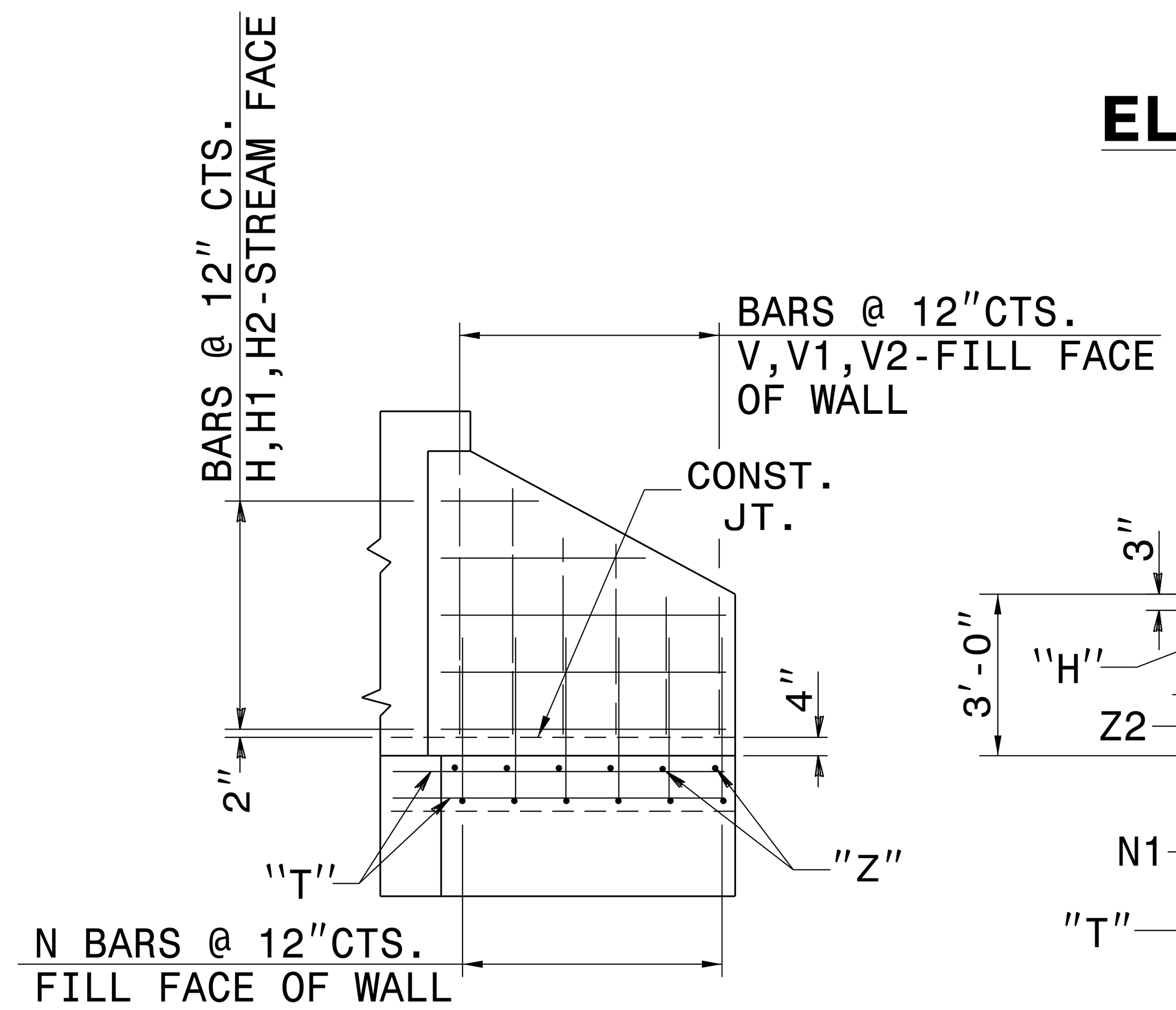
ELEVATION



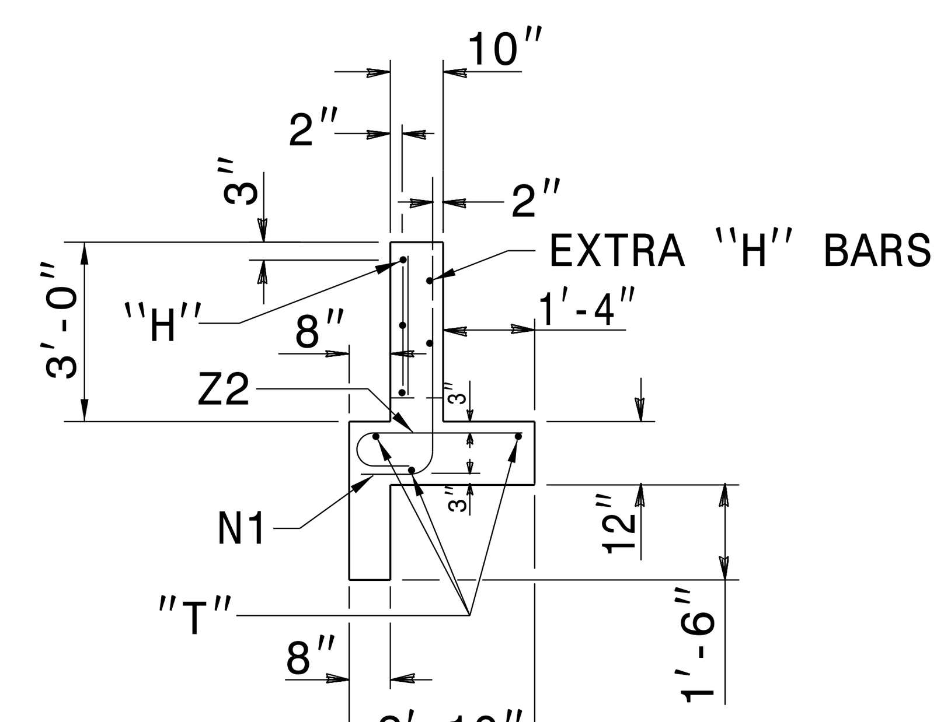
SECTION - AA

BILL OF MATERIAL FOR ENDWALL

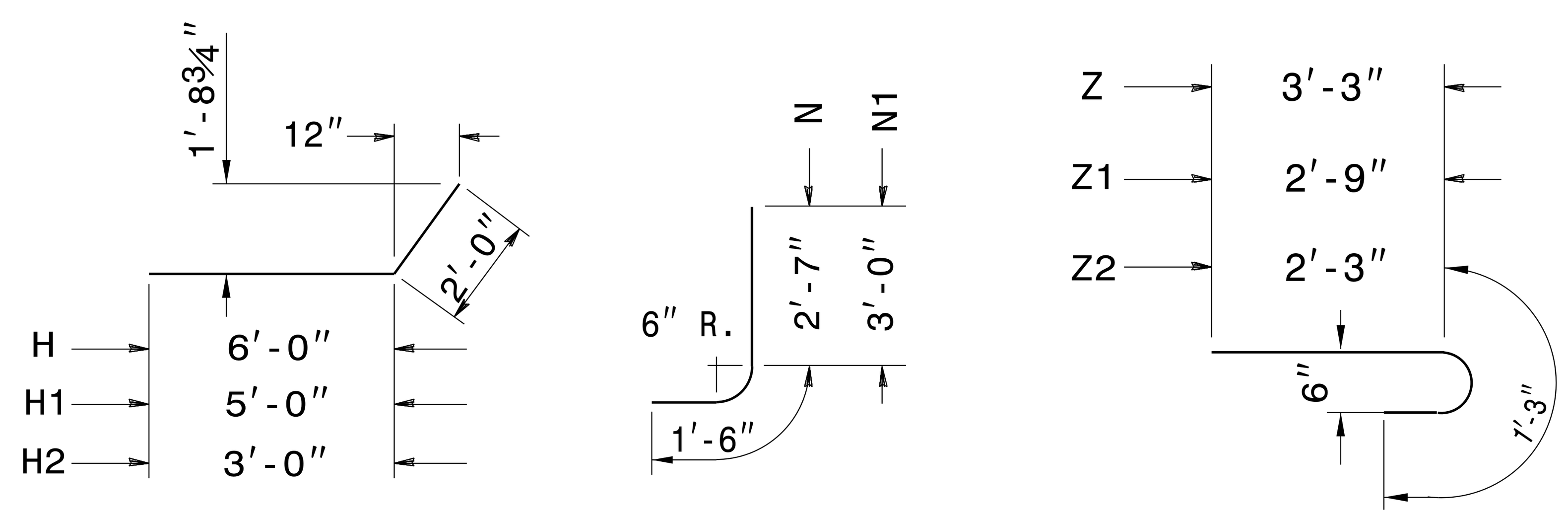
REINF. STEEL			2 PIPES	
BAR	SIZE	LENGTH	NO.	WEIGHT
B	#4	6'-6"	16	69
G	#5	12'-9"	-	-
G1	#5	13'-6"	8	113
G2	#5	19'-6"	-	-
H	#4	8'-0"	10	53
H1	#4	7'-0"	2	9
H2	#4	5'-0"	4	13
N	#4	4'-1"	12	33
N1	#5	4'-6"	11	52
T	#4	6'-0"	6	24
T1	#4	16'-0"	-	-
T2	#4	2'-9"	10	18
T3	#4	15'-0"	12	120
T4	#4	21'-0"	-	-
V	#4	4'-10"	6	19
V1	#4	3'-8"	6	15
V2	#4	2'-6"	4	7
V3	#4	6'-6"	11	48
Z	#4	4'-6"	4	19
Z1	#4	4'-0"	4	11
Z2	#4	3'-6"	4	9
REINF. STEEL LBS.				632
CON./R.C. CU. YDS			10.1	



WING ELEVATION



END OF WING

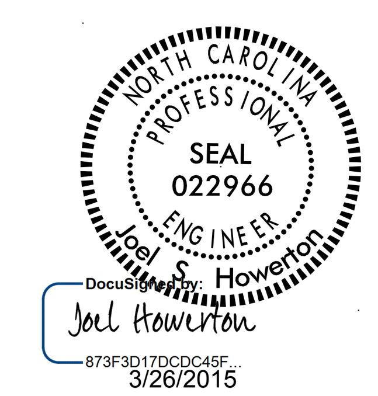


"H" BARS **"N" BARS** **"Z" BARS**

"H", "N", & "Z" BAR DIMENSIONS ARE OUT TO OUT.

DESIGN DATA

Specifications	A.A.S.H.T.O.
Steel in tension	20,000 LBS. PER SQ.IN.
Concrete in compression	1,200 LBS. PER SQ.IN.
Class "A" Concrete	SEE A.A.S.H.T.O.
Equiv. fluid pressure of earth	30 LBS.PER CU. FT.



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

DETAIL OF REINFORCED CONCRETE ENDWALL 103"X 71" & 95" x 67" ARCH

ORIGINAL BY: KKEMPF DATE: 8/2/10
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: KKEMPF\ENGLISH\852D0601.DGN

COMPUTED BY:	JMP	DATE:	2-2015
CHECKED BY:	TDG	DATE:	2-2015

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	UNDERCUT	EMBANK. +%	BORROW	WASTE
30+25 -L-	46+15 -L-	1,639		2,158	519	
* 33+55.18 -L- (LT)	35+99.91 -L- (LT)			91	91	
* 36+86.66 -L- (RT)	37+83.66 -L- (RT)			29	29	
SUBTOTALS:		1,639		2,278	639	
53+52.50 -L-	70+60 -L-	746		1,188	442	
10+15 -Y1-	13+02 -Y1-	5		871	866	
10+18 -Y2-	10+82 -Y2-	5		13	8	
* 56+70.45 -L- (RT)	60+02.44 -L- (RT)			74	74	
* 57+35.92 -L- (LT)	60+43.82 -L- (LT)			205	205	
SUBTOTALS:		756		2,350	1,594	
84+95 -L-	107+00 -L-	1,084		2,164	1,080	
SUBTOTALS:		1,084		2,164	1,080	
125+01 -L-	165+00 -L-	1,558		9,541	7,983	
11+70 -Y5-	12+58 -Y5-	8		175	167	
10+50 -Y6-	11+03 -Y6-	10		44	34	
* 134+26.15 -L- (RT)	137+44.51 -L- (RT)			188	188	
* 134+53.14 -L- (LT)	60+43.82 -L- (LT)			79	79	
* 162+95.92 -L- (LT)	165+53.05 -L- (LT)			76	76	
* 163+83.57 -L- (RT)	165+51.91 -L- (RT)			75	75	
SUBTOTALS:		1,576		10,178	8,602	
197+45 -L-	213+00 -L-	742		1,770	1,028	
* 212+35.91 -L- (RT)	214+98.38 -L- (RT)			49	49	
SUBTOTALS:		742		1,819	1,077	
PROJECT TOTALS:		5,797		18,788	12,991	
SHOULDER MATERIAL				1,438	1,438	
LOSS DUE TO CLEARING & GRUBBING		-579			579	
PROJECT TOTALS		5,218		20,225	15,007	
REPLACE TOP SOIL ON BORROW PIT					750	
GRAND TOTALS:		5,218			15,757	
SAY:		5,500			16,000	

* DENOTES ADDITIONAL QUANTITY FOR GUARDRAIL WIDENING

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

REMOVAL OF EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	35+64	41+33	RT	1,119.11
-L-	130+00	150+00	LT/RT	5,502.00
			TOTAL:	6,621.11
			SAY:	6,630

W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350 TL-2			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	III	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
-L-	33+55.18	35+99.91	LT	231.25	25.73		33+60.74		8	11	50						1						1							
-L-	36+86.66	37+77.95	RT	75.00	37.50		37+08.69	37+23.00	8	11													2							
-L-	56+70.45	60+02.44	RT	306.25	36.49		59+52.51	59+65.32	8	11	50						1						1							
-L-	57+35.92	60+43.82	LT	268.75	53.09		59+69.69	59+57.44	8	11		50					1						1							
-L-	82+04.42	86+00.27	LT	400.00			BRIDGE		8	11	50						1											122		
-L-	82+05.20	86+00.05	RT	400.00				BRIDGE	8	11		50					1											157		
-L-	134+26.15	137+44.51	RT	325.00			136+26.05	136+26.05	8	11	50	50					2													
-L-	134+53.14	136+91.11	LT	218.75	31.61		135+90.51	135+90.51	8	11		50					1						1							
-L-	162+95.92	165+53.05	LT	243.75	18.55		164+16.79	164+10.10	8	11		50					1						1							
-L-	163+83.57	165+51.91	RT	156.25	22.25		164+10.27	164+16.97	8	11		50					1						1							
-L-	212+35.91	214+98.38	RT	262.50			213+98.40	214+05.10	8	11	50	50					2													
TOTAL				2,887.50	225.22												12						8					279		
		DEDUCT FOR ANCHOR UNITS																												
		AT-1 8 @ 6.25' =		-50.00																										
		GRAU 350 12 @ 50' =		-600																										
SAY				2,237.50	237.50		4 EA ADDITIONAL GUARDRAIL POSTS										12						8					279		

COMPUTED BY:	MN	DATE:	1/5/2015
CHECKED BY:	TG	DATE:	1/5/2015

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
W-5512	3D-1

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL (FT/FT)
34+00 L	RT	401	404				
38+00 L	RT	501	405				
52+43 L	CL	603	604		97.67	97.47	0.00
52+43 L	CL	605	606		97.67	97.47	0.00
60+65 L	RT	601	602		97.50	97.03	0.03
94+90 L	RT	901	902		93.50	93.00	0.06
94+90 L	RT	902		95.7	93.00		
95+50 L	RT	903	908		92.00	91.52	0.02
101+79 L	RT	904	909		93.34	93.27	0.01
101+76 L	LT	910	905		92.35	92.15	0.02
101+85 L	RT	906	907		92.00	91.99	0.00
101+85 L	RT	906		95			
103+45 L	RT	1004	1001		96.40	96.30	
105+55 L	RT	1005	1002		96.7	96.6	
106+40 L	RT	1003	1006		95.2	95.1	
126+74 L	RT	1101	1103		91.9	91.8	
136+85 L	LT	1202	1208		91.9	91.8	
138+15 L	RT	1209	1203		89.4	94.1	
138+15 L	LT	1204	1210		90	89.8	
139+05 L	LT	1205	1211		91.8	91.7	
139+85 L	LT	1206	1212		91.9	91.7	
142+00 L	LT	1301	1306		90.7	90.6	
144+63 L	LT	1302					
145+50 L	CL	1303	1307		89.67	89.49	0.0027
153+80 L	LT	1304	1305		92	91.8	
155+60 L	LT	1401	1402		92.4	91.4	
158+00 L	LT	1403	1404		91.7	91.2	
160+10 L	LT	1405	1406		91	90.3	
162+71 L	LT	1415	1416		90	89.7	
209+05 L	LT	1503	1501		86.3	86.2	
209+80 L	RT	1502	1504		84.7	84.6	
214+22 L	CL	1601	1602		82.05	81.97	
SHEET TOTALS							

DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)

STATION	6"	12"	15"	18"	24"	30"	36"	42"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
34+00 L				48								X
38+00 L				56								X
103+45 L				16								X
105+55 L				16								X
106+40 L				8								X
126+74 L				36								X
136+85 L				56								X
138+15 L (RT)				24								X
138+15 L (LT)				32								X
139+05 L				40								X
139+85 L				28								X
153+80 L			44									X
155+60 L			96									X
158+00 L			52									X
160+10 L			100									X
162+71 L				32								X
209+05 L			36									X
209+80 L			16									X
SHEET TOTALS			344	392								

C.S. PIPE / R.C. PIPE CLASS III / R.C. PIPE CLASS IV

STATION	C.S. 12" (.064)	C.S. 15" (.064)	C.S. 18" (.064)	C.S. 24" (.064)	C.S. 30" (.079)	C.S. 36" (.079)	C.S. 42" (.109)	C.S. 48" (.109)	R.C. III 12"	R.C. III 15"	R.C. III 18"	R.C. III 24"	R.C. III 30"	R.C. III 36"	R.C. III 42"	R.C. III 48"	R.C. IV 12"	R.C. IV 15"	R.C. IV 18"	R.C. IV 24"	R.C. IV 30"	R.C. IV 36"	R.C. IV 42"	R.C. IV 48"
52+43 L (603-604)																			52					
52+43 L (605-606)																			52					
60+65 L											16													
94+90 L										4														
95+50 L				20																				
101+79 L											8													
101+76 L											12													
101+85 L												8												
142+00 L											52													
145+50 L																			60					
214+22 L														64										
SHEET TOTALS				20						4	88	8		64					164					

STATION	30" R.C. PIPE (CLASS V)	48" R.C. PIPE (CLASS V)	Trenchless Installation of 42" in Soil	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
101+85 L (906)								1	2.15							
214+22 L						3.4										
SHEET TOTALS						3.4		1	2.15							
									2.15 (SAY 2.5)							

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.20	T.B.J.B STD. 840.34	J.B. STD. 840.31 OR 840.32	CONCRETE FLUME	M.H. FRAME AND COVER STD. 840.54	BDO STD. 850.10	BDO STD. 850.11	PIPE CLEAN-OUT	PREFORMED SCOUR HOLE	FLOWABLE FILL C.Y.	CONVERT DI TO TBJB	CONVERT O.T.C.B TO JBMH	O.T.C.B STD. 840.04 OR 840.05	CORR. STEEL ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71
94+90 L (902)												1						1				
101+85 L (906)	1	1																				
144+63 L															1							
SHEET TOTALS	1	1										1			1			1				

STATION	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
34+00 L		26	SHEET 4, DRIVEWAY PIPE
38+00 L		20	SHEEET 5, DRIVEWAY PIPE
52+43 L (603-604)			SHEET 6, CROSS PIPE
52+43 L (605-606)		50	SHEET 6, CROSS PIPE
60+65 L	0.4465		SHEET 6, COLLAR/EXTEND
94+90 L (901-902)			SHEET 9, OEP EXTENSION
94+90 L (902)			SEE SP DETAIL 2D-1
95+50 L	0.5526		SHEET 9, COLLAR/EXTEND
101+79 L	0.4465		SHEET 9, COLLAR/EXTEND
101+76 L	0.4465		SHEET 9, COLLAR/EXTEND, RIP RAP PAD
101+85 L (906-907)	0.5526		REMOVE EXISTING OTCB, Collar/Extend
101+85 L (906)			SHEET 9
103+45 L	0.4465		SHEET 10, COLLAR/EXTEND
105+55 L	0.4465		SHEET 10, COLLAR/EXTEND
106+40 L	0.4465		SHEET 10, COLLAR/EXTEND
126+74 L		26	
142+00 L			SHEET 13
145+50 L			SHEET 13, CROSS PIPE
209+05 L			SHEET 15, DRIVE PIPE
209+80 L		21	SHEET 15, DRIVE PIPE
214+22 L		64	
SHEET TOTALS	3.7842	207	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY: MN DATE: 1/5/2015

CHECKED BY: TG DATE: 1/5/2015

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
W-5512	3D-2

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.

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

STATION	LOCATION (LT, RT, OR CL)*	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS IV R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE	CLASS IV R.C. PIPE (UNLESS NOTED OTHERWISE) THICKNESS OR GAUGE	C.S. PIPE SIZE	C.S. PIPE THICKNESS OR GAUGE	STRUCTURAL PLATE PIPE SIZE	STRUCTURAL PLATE PIPE THICKNESS OR GAUGE	REINFORCED ENDWALLS WITH R.C. - C.Y.	REINFORCED ENDWALLS WITH C.S. - C.Y.	MASONRY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR 840.02	FRAMES, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	J.B. STD. 840.31 OR 840.32		60" RCP-III	95"X67" CSAP, 14 GUAGE, 0.0747" Thick	103"X71" CSAP, 14 GUAGE, 0.0747" Thick	REINFORCED CONCRETE ENDWALLS FOR CSPA (SEE SHEET 2D-2) CUBIC YARDS						REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & Size	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72		PIPE REMOVAL LIN. FT.	REMARKS
								54" 60" 66" 72" 78" 84"		54" 60" 66" 72"	.109 .138 .168 SHOP ELON-GATED .138 .168 .138 .168 .138 .168 .139 .168	60" 66" 72"	12 10 12 10 12 10																																	
37+10 L	CL	402	403	-	93.75	93.57		120						7.1																												48	
127+23 L	CL	1102	1104	-	81.52	81.27								5.7												84														60	
136+13 L	CL	1207	1201	-	80.28	82.00																					92		20.2											124	ENDWALL, SEE SP DETAIL 2D-2
164+14 L	CL	1407	1410	-	82.00	81.82																						60	20.2											98	ENDWALL, SEE SP DETAIL 2D-2
SHEET TOTALS								120						12.8												84	92	60	40.4											330	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY: A.F. Riggs, JR. DATE: 2/4/15
CHECKED BY: _____ DATE: _____

(2/4/15)

PROJECT NO.	SHEET NO.
50079.1.1 (W-5512)	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
L	141+50	150+00	RT	UD	
CONTINGENCY					850
				TOTAL LF:	850

***UD = Underdrain**
***BD = Blind Drain**
***SD = Subsurface Drain**

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for for Soil Stabilization	Stabilizer Aggregate TONS	Select Granular Material CY
L	143+50	148+00					2500		
	CONTINGENCY				500	1000	1000		2500
	CONTINGENCY		AST						
				TOTAL CY/TONS/SY:	500	1000	3500	0	2500

***ASU = Aggregate Subgrade**
***AST = Aggregate Stabilization**

***NOTE: Total square yards of Geotextile for Soil Stabilization is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.**

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
W-5512	3P-1

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	CHARLOTTE E TRUELOVE
2	4	GCCFC 2006-GG7 STARLING INDUSTRIAL LLC
3	5 & 6	KATHERINE McGEACHY
4	5	CAPE FEAR DISTRIBUTION LTD
5	6 & 7	WASTE MANAGEMENT OF THE CAROLINAS, INC.
6	9	CCBCC OPERATIONS LLC
7	10	P SQUARED OF NORTH CAROLINA, LLC
8	11	PAUL PAPPY, LLC
9	11	CAROLINA TELEPHONE & TELEGRAPH
10	11	NITTA GELATIN USA, INC
11	12	TEW FAMILY LLC
12	12	DOUGLAS R & WIFE DEBRA WARD
13	12 & 13	CUMBERLAND COUNTY
14	12	KENNETH W TEW
15	12	MICHAEL T REISINGER
16	7	CUMBERLAND COUNTY
17	13	JERRY TEW, SR
18	13 & 14	LISA ANDERSON
19	13	CLINTON E SYKES
20	13	SOUTHWOOD ASSOCIATES INC
20A	13	SOUTHWOOD ASSOCIATES INC
21	13	TARA N INGRAM
22	13	CHICAGO TITLE INSURANCE CO.
23	13	MURIEL CULBRETH
24	13	ALFRED J MORRIS
25	13	PATRICIA A. LEAHY
26	15	LINDA JOHNSON
27	15	JAMES FRANKLIN BAKER & THOMAS HARVEY BAKER
28	16	COLD STREAM DEVELOPERS, LLC
29	15 & 16	A. E. TOLAR JR
30	14	STEPHEN MCGRATH
31	14	DENIS LEAHY
32	14	LARRY M SPRUILL
33	14	PATRICIA A. LEAHY
34	14	KEVIN WILLIAMSON
35	14	DONALD MATTHEWS
36	15	COLD STREAM DEVELOPERS, LLC
37	15	BOYD DALE PARSONS JR

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

PLANS PREPARED BY:
PARSONS
5540 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27606
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS
Tim D. Goins, PE
3/26/2015

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE QUE CHI NGUYEN
Melanie Nguyen
3/26/2015

REVISIONS

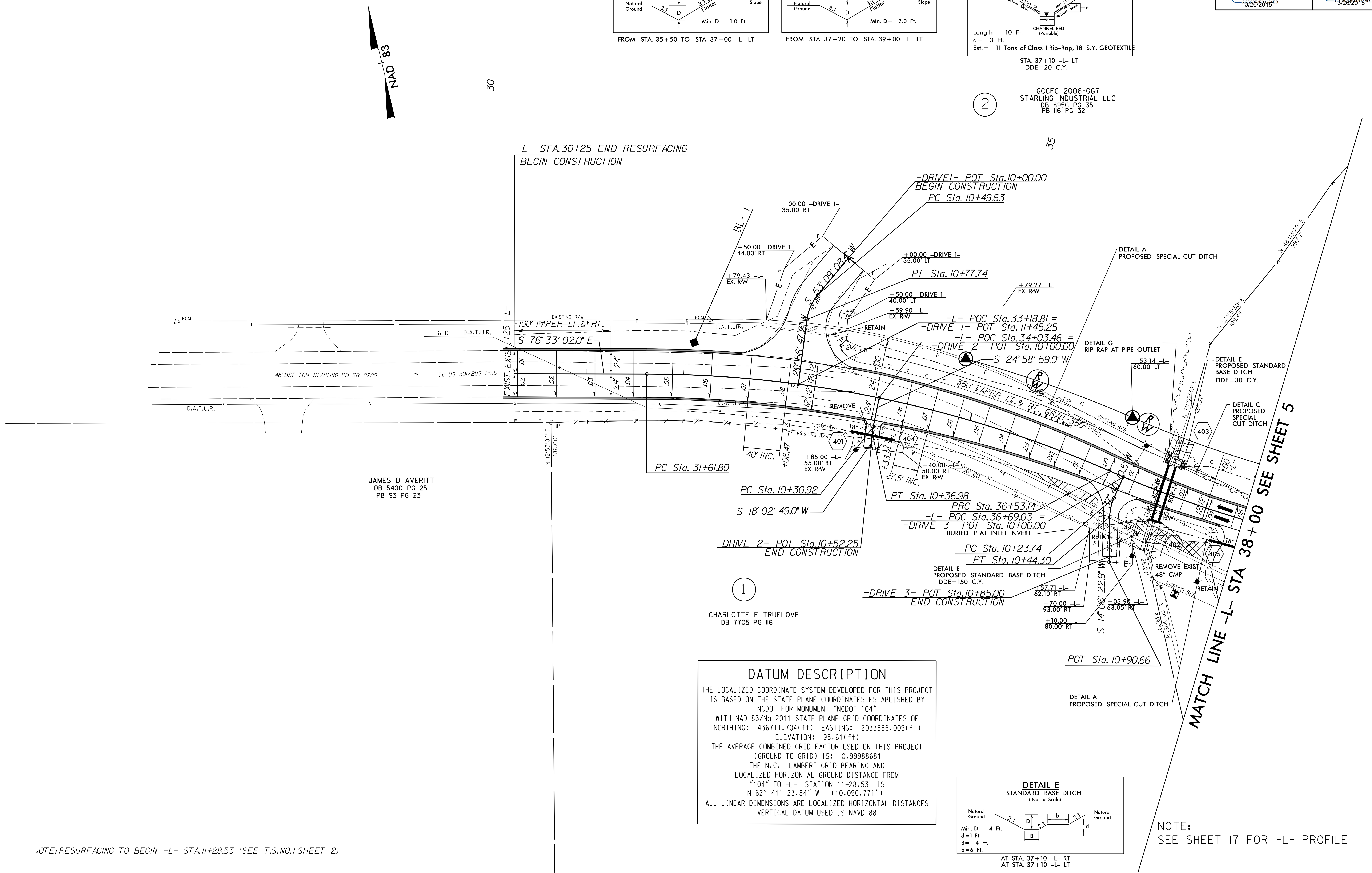
8/17/99

-L-	-DRIVE 1-	-DRIVE 2-	-DRIVE 3-
PI Sta 34+10.96	PI Sta 10+64.07	PI Sta 10+33.95	PI Sta 10+34.17
Δ = 23° 27' 35.8" (RT)	Δ = 32° 12' 21.2" (LT)	Δ = 6° 56' 10.0" (LT)	Δ = 23° 33' 47.7" (LT)
D = 4° 46' 28.7"	D = 114° 35' 29.6"	D = 114° 35' 29.6"	D = 114° 35' 29.6"
L = 491.34'	L = 28.10'	L = 6.05'	L = 20.56'
T = 249.16'	T = 14.43'	T = 3.03'	T = 10.43'
R = 1,200.00'	R = 50.00'	R = 50.00'	R = 50.00'
R.O. = 320'			
SE = 0.08			

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground; 3:1; D; 3:1 or Flatter; Front Ditch Slope; Min. D = 1.0 Ft.
FROM STA. 35+50 TO STA. 37+00 -L- LT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground; 3:1; D; 3:1 or Flatter; Front Ditch Slope; Min. D = 2.0 Ft.
FROM STA. 37+20 TO STA. 39+00 -L- LT

DETAIL G
PIPE OUTLET CHANNEL
(Not to Scale)
Natural Ground; CHANNEL BED (Variable)
Length = 10 Ft.
d = 3 Ft.
Est. = 11 Tons of Class I Rip-Rap, 18 S.Y. GEOTEXTILE
STA. 37+10 -L- LT
DDE = 20 C.Y.


NAD 83
30
35
GCCFC 2006-GG7
STARLING INDUSTRIAL LLC
DB 8956 PG 35
PB 116 PG 32
-L- STA. 30+25 END RESURFACING
BEGIN CONSTRUCTION
-DRIVE1- POT Sta. 10+00.00
BEGIN CONSTRUCTION
PC Sta. 10+49.63
PT Sta. 10+77.74
-L- POC Sta. 33+18.81 =
-DRIVE 1- POT Sta. 11+45.25
-L- POC Sta. 34+03.46 =
-DRIVE 2- POT Sta. 10+00.00
S 24° 58' 59.0" W
S 53° 09' 08.4" W
S 20° 56' 47.9" W
S 76° 33' 02.0" E
100' TAPER LT. & RT.
360' TAPER LT. & RT.
48' BST TOM STARLING RD SR 2220
TO US 301/BUS I-95
PC Sta. 31+61.80
PC Sta. 10+30.92
S 18° 02' 49.0" W
-DRIVE 2- POT Sta. 10+52.25
END CONSTRUCTION
PT Sta. 10+36.98
PRC Sta. 36+53.14
-L- POC Sta. 36+69.03 =
-DRIVE 3- POT Sta. 10+00.00
BURIED 1' AT INLET INVERT
PC Sta. 10+23.74
PT Sta. 10+44.30
DETAIL E
PROPOSED STANDARD BASE DITCH
DDE = 150 C.Y.
-DRIVE 3- POT Sta. 10+85.00
END CONSTRUCTION
POT Sta. 10+90.66
S 14° 06' 22.9" W
DETAIL A
PROPOSED SPECIAL CUT DITCH
DETAIL G
RIP RAP AT PIPE OUTLET
DETAIL E
PROPOSED STANDARD BASE DITCH
DDE = 30 C.Y.
DETAIL C
PROPOSED SPECIAL CUT DITCH
REMOVE EXIST. 48" CMP
RETAIN
REMOVE
JAMES D AVERITT
DB 5400 PG 25
PB 93 PG 23
CHARLOTTE E TRUELOVE
DB 7705 PG 116
MATCH LINE -L- STA 38+00 SEE SHEET 5

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "NCDOT 104"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 436711.704(ft) EASTING: 2033886.009(ft)
ELEVATION: 95.61(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988681
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "104" TO -L- STATION 11+28.53 IS N 62° 41' 23.84" W (10,096.771')
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

DETAIL E
STANDARD BASE DITCH
(Not to Scale)
Natural Ground; 2:1; D; b; d; B
Min. D = 4 Ft.
d = 1 Ft.
B = 4 Ft.
b = 6 Ft.
AT STA. 37+10 -L- RT
AT STA. 37+10 -L- LT

NOTE:
SEE SHEET 17 FOR -L- PROFILE

NOTE: RESURFACING TO BEGIN -L- STA. 11+28.53 (SEE T.S.NO.1 SHEET 2)

PLANS PREPARED BY:
PARSONS
5540 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27606
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
W-5512	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS	NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE QUE CHI NGUYEN
DocuSigned by: Tim D. Goins, PE 3/26/2015	DocuSigned by: Melanie Nguyen 3/26/2015

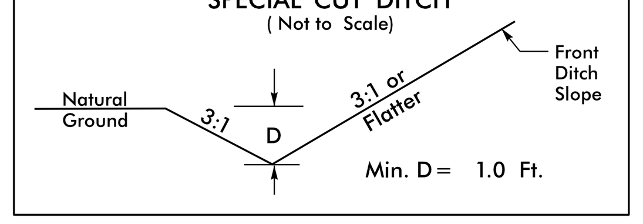
REVISIONS

8/17/99

-L-		-DRIVE 4-
PI Sta 34+10.96	PI Sta 40+18.60	PI Sta 10+41.18
Δ = 23° 27′ 35.8″ (RT)	Δ = 33° 52′ 34.8″ (LT)	Δ = 17° 19′ 26.3″ (LT)
D = 4° 46′ 28.7″	D = 4° 46′ 28.7″	D = 229° 10′ 59.2″
L = 491.34′	L = 709.50′	L = 7.56′
T = 249.16′	T = 365.46′	T = 3.81′
R = 1,200.00′	R = 1,200.00′	R = 25.00′
R.O. = 220.00′	R.O. = 220.00′	
S.E. = .08	S.E. = .08	

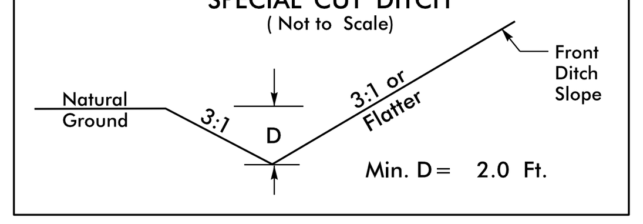
NAD 83

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

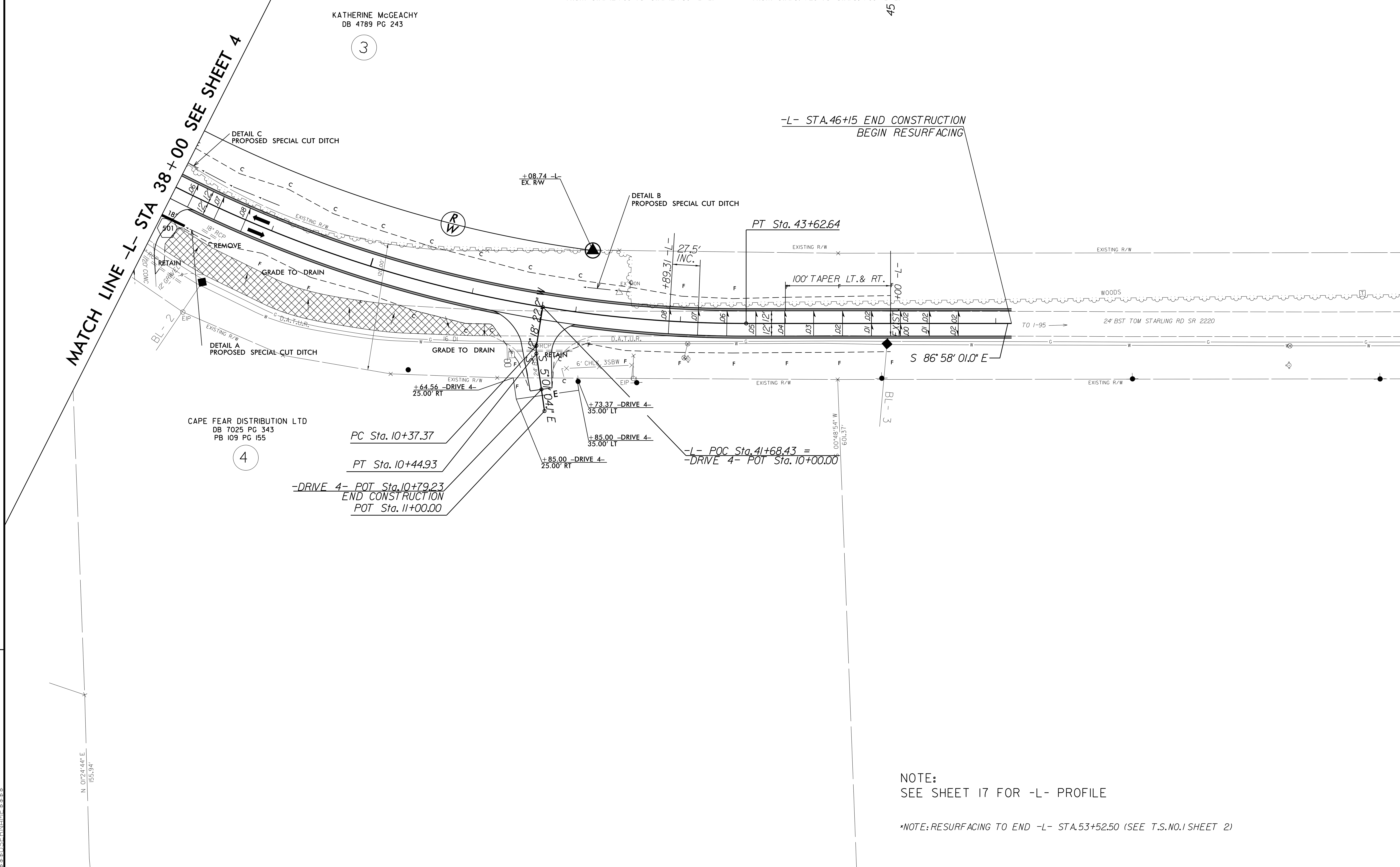


FROM STA. 42+00 TO STA. 42+50 -L- LT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 37+20 TO STA. 39+00 -L- LT



NOTE:
SEE SHEET 17 FOR -L- PROFILE

*NOTE: RESURFACING TO END -L- STA. 53+52.50 (SEE T.S. NO. 1 SHEET 2)

09-MAR-2015 11:41
J:\W-5512\Roadway\Proj\W-5512_Rdy_PSH_05.DGN
$$$$USERNAME$$$$

8/17/99

REVISIONS

PLANS PREPARED BY :
PARSONS
5540 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27606
NC LICENSE NO: F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

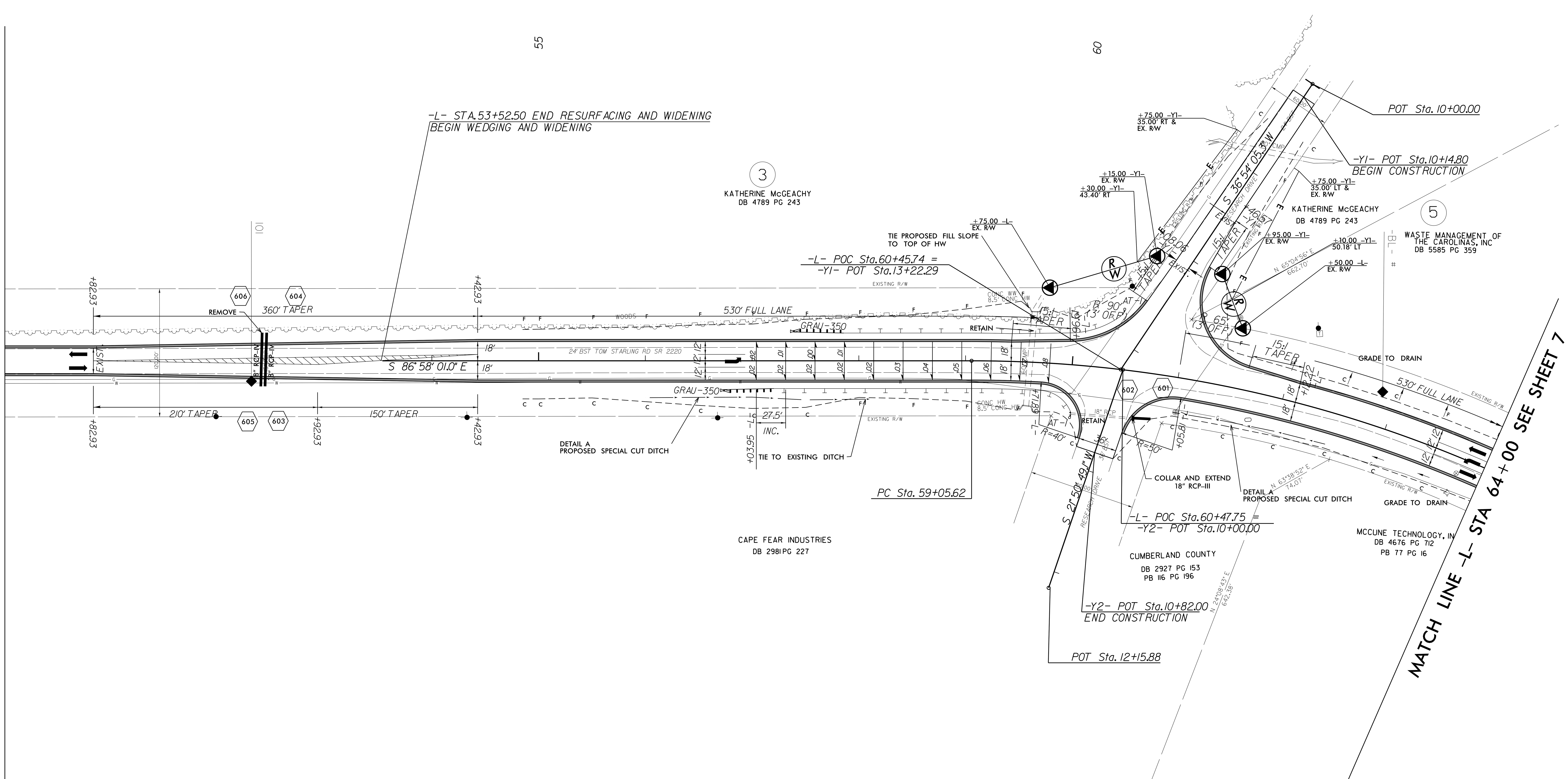
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
W-5512	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS; DocuSigned by: Jim D. Goins, PE; AC8C052B032A4EB...; 3/26/2015	NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE QUE CHI NGUYEN; DocuSigned by: Melanie Nguyen; C9130B3C99674BD...; 3/26/2015

-L-

PI Sta 62+83.16
△ = 34° 55′ 46.1″ (RT)
D = 4° 46′ 28.7″
L = 731.56′
T = 377.55′
R = 1,200.00′
R.O. = 220′
SE = 0.08

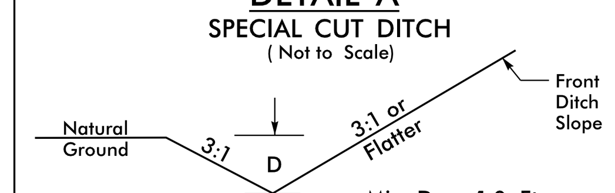
NAD 83



*NOTE: RESURFACING TO BEGIN -L- STA.46+15 (SEE T.S.NO.1 SHEET 2)

DETAIL A

SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 56+00 TO STA. 57+50 -L- RT
FROM STA. 61+00 TO STA. 62+50 -L- RT

NOTE:
SEE SHEETS 17 & 18 FOR -L- PROFILE
SEE SHEET 23 FOR -Y1- & -Y2- PROFILE

09-MAR-2015 11:41
J:\W-5512\Roadway\Proj\W-5512_Rdy_PSH_06.DGN
$$$$USERNAME$$$$

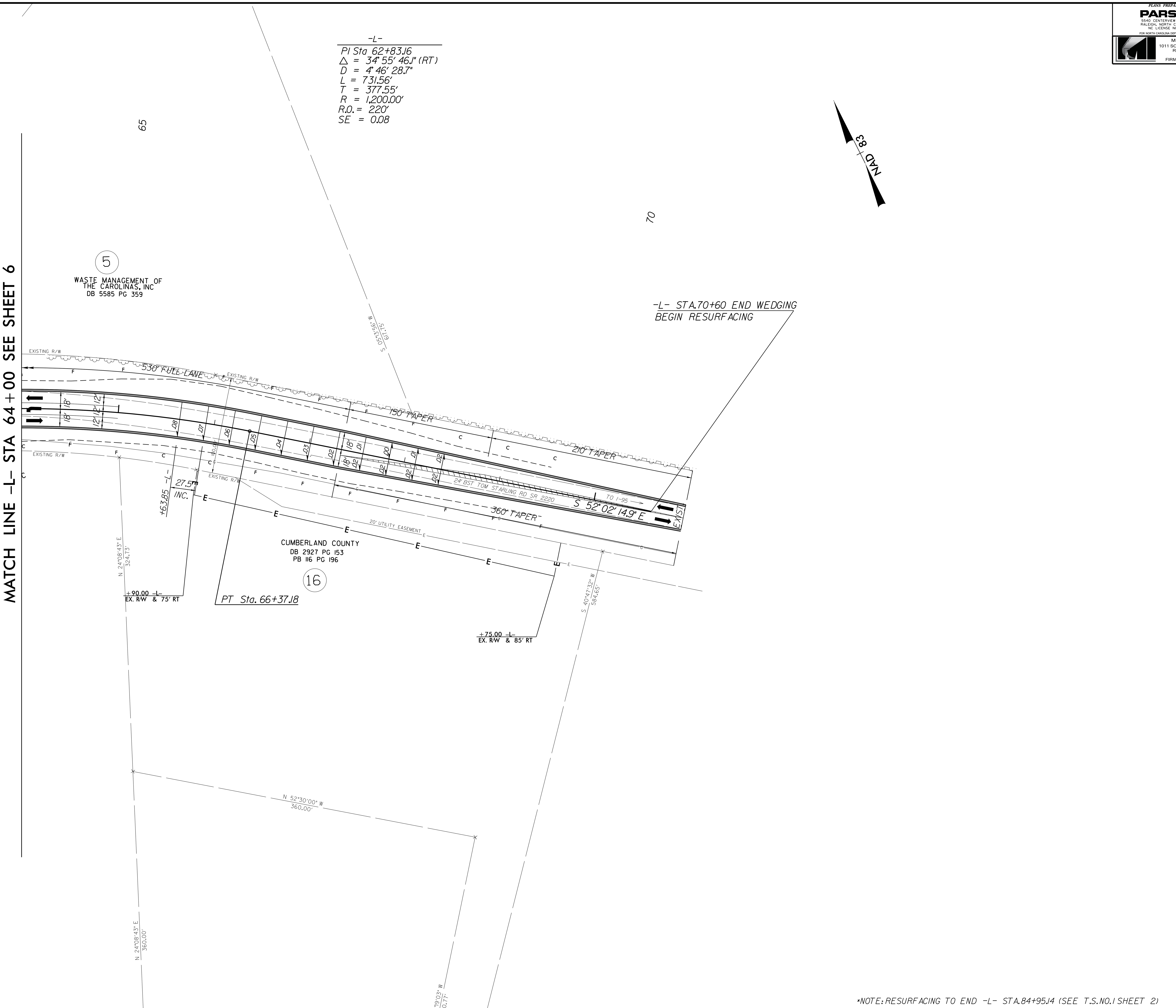
PLANS PREPARED BY:
PARSONS
5540 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27606
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
W-5512	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS	NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE QUE-CHI NGUYEN
Tim D. Goins, PE 3/26/2015	Melanie Nguyen 3/26/2015

REVISIONS



*NOTE: RESURFACING TO END -L- STA.84+95.14 (SEE T.S.NO.1 SHEET 2)

NOTE:
SEE SHEET 18 FOR -L- PROFILE

8/17/99

09-MAR-2015 11:41
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$$$$USERNAME$$$$

PLANS PREPARED BY
PARSONS
5540 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27606
NC LICENSE No. F-0246

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
W-5512	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS — Tim D. Goins, PE — 3/26/2015	NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE QUE CHI NGUYEN — Melanie Nguyen — 3/26/2015

REVISIONS

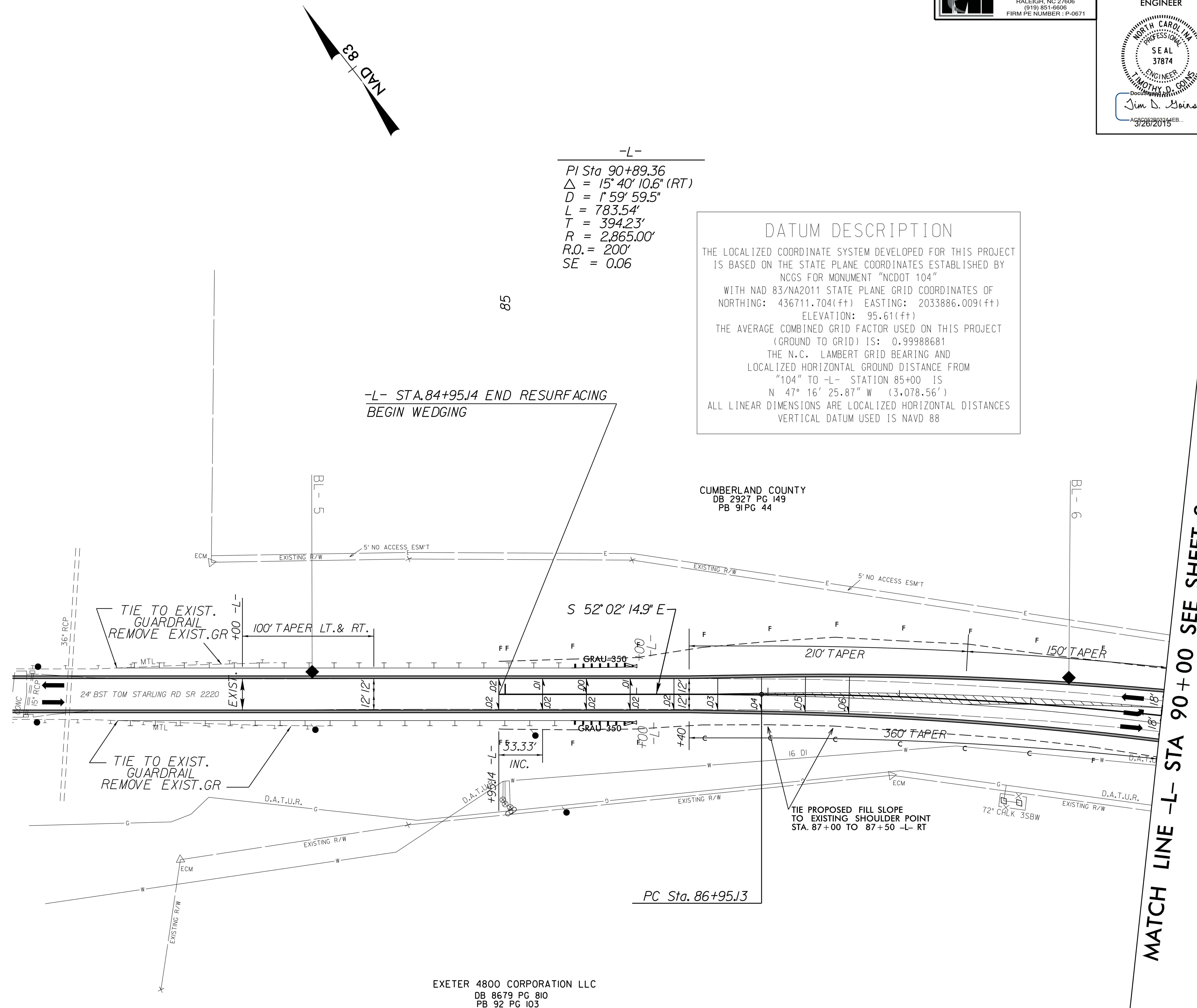
8/17/99

-L-
PI Sta 90+89.36
Δ = 15° 40' 10.6" (RT)
D = 1° 59' 59.5"
L = 783.54'
T = 394.23'
R = 2,865.00'
R.O. = 200'
SE = 0.06

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "NCDOT 104" WITH NAD 83/NA2011 STATE PLANE GRID COORDINATES OF NORTHING: 436711.704(ft) EASTING: 2033886.009(ft) ELEVATION: 95.61(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988681
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "104" TO -L- STATION 85+00 IS N 47° 16' 25.87" W (3,078.56')
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

MATCH LINE -L- STA 77+00 SEE SHEET 7



MATCH LINE -L- STA 90+00 SEE SHEET 9

NOTE:
SEE SHEETS 18 & 19 FOR -L- PROFILE

*NOTE: RESURFACING TO BEGIN -L- STA.70+60 (SEE T.S. NO. 1 SHEET 2)

09-MAR-2015 11:41
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$$$$USERNAME$$$$

8/17/99

REVISIONS

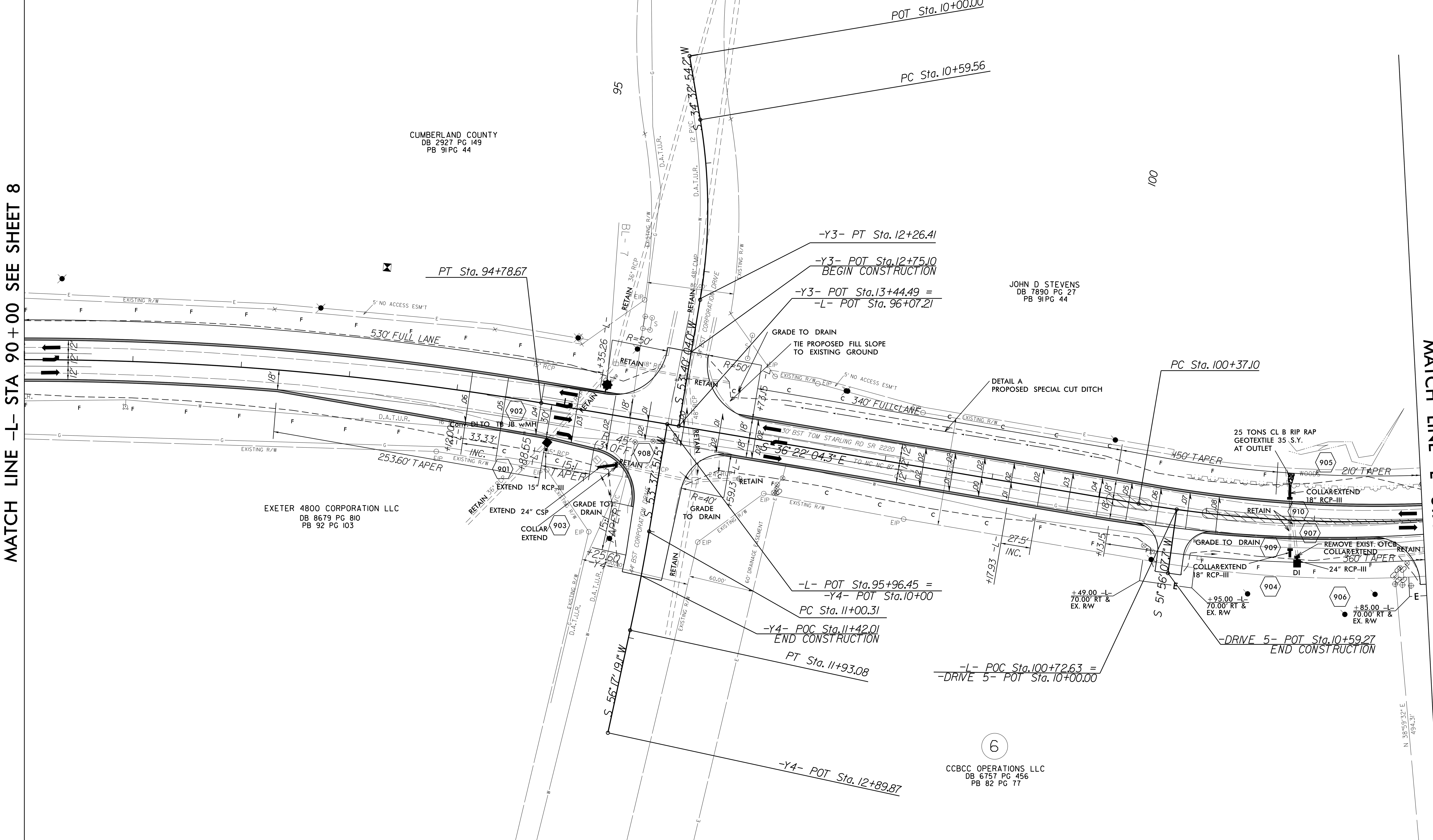
PLANS PREPARED BY:
PARSONS
5540 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27606
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

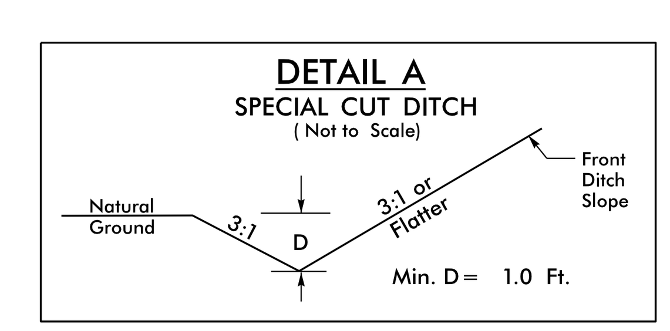
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
W-5512	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS	NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE QUE CHI NGUYEN
Tim D. Goins, PE 3/26/2015	Melanie Nguyen 3/26/2015

-L-		-Y3-	-Y4-
PI Sta 90+89.36	PI Sta 102+37.69	PI Sta 11+43.76	PI Sta 11+46.71
△ = 15° 40' 10.6" (RT)	△ = 18° 58' 47.3" (LT)	△ = 19° 07' 09.9" (RT)	△ = 2° 39' 27.6" (RT)
D = 1° 59' 59.5"	D = 4° 46' 28.7"	D = 11° 27' 33.0"	D = 2° 51' 53.2"
L = 783.54'	L = 397.51'	L = 166.85'	L = 92.77'
T = 394.23'	T = 200.59'	T = 84.21'	T = 46.39'
R = 2,865.00'	R = 1,200.00'	R = 500.00'	R = 2,000.00'
R.O. = 200'	R.O. = 220'		
SE = 0.06	SE = 0.08		





NOTE:
SEE SHEET 19 FOR -L- PROFILE

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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5512	10
R/W SHEET NO.	

PLANS PREPARED BY: PARSONS
5540 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27606
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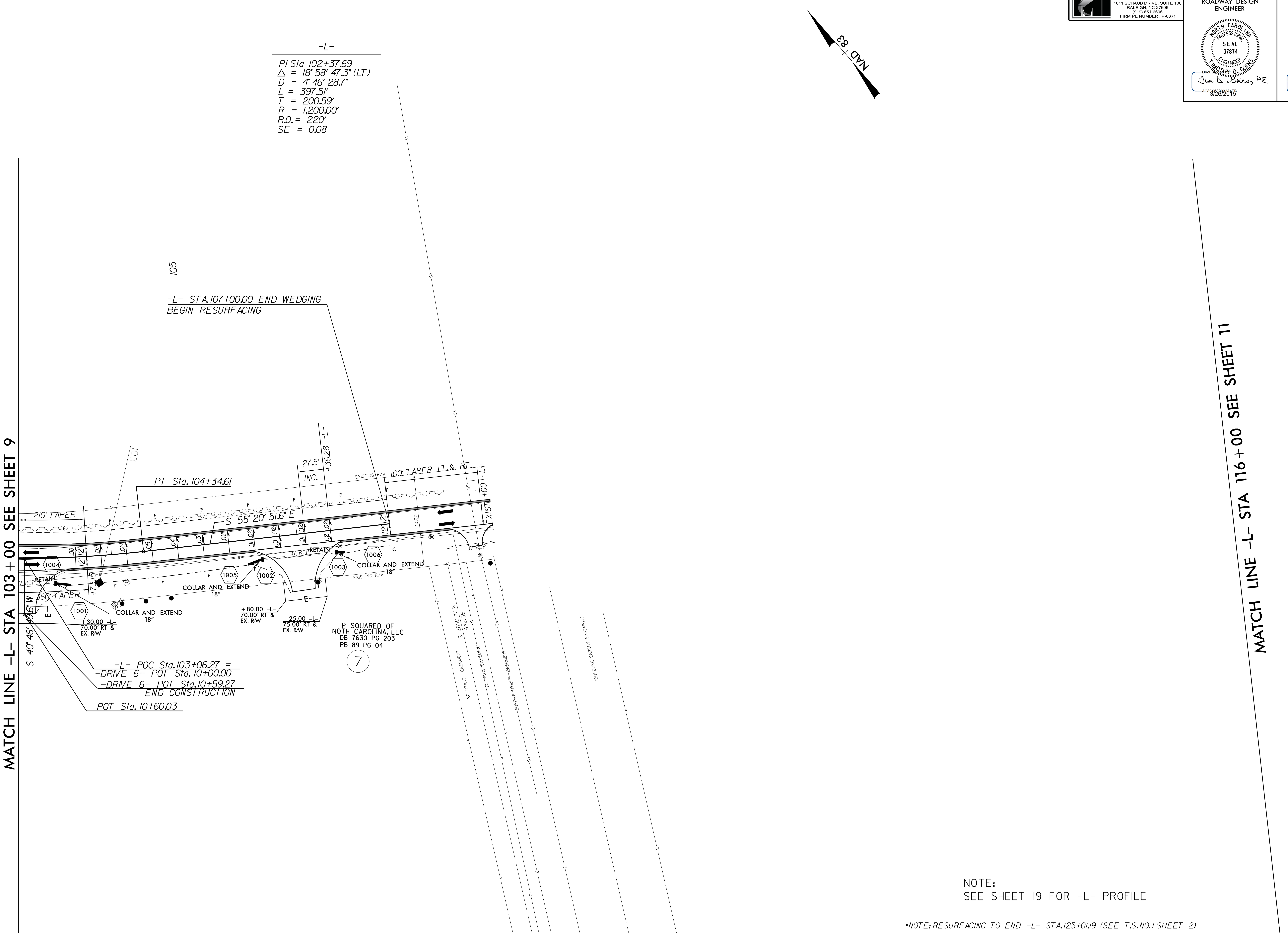
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 37874 TIMOTHY D. GOINS — Jim D. Goins, PE — 3/26/2015

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038683 MELANIE QUE CHI NGUYEN — Melanie Nguyen — 3/26/2015

REVISIONS

8/17/99



NOTE:
SEE SHEET 19 FOR -L- PROFILE

*NOTE: RESURFACING TO END -L- STA.125+01.19 (SEE T.S.NO.1 SHEET 2)

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$$$$USERNAME$$$$

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8/17/99

REVISIONS

PLANS PREPARED BY:
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5540 CENTERVIEW DR., SUITE 217
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NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

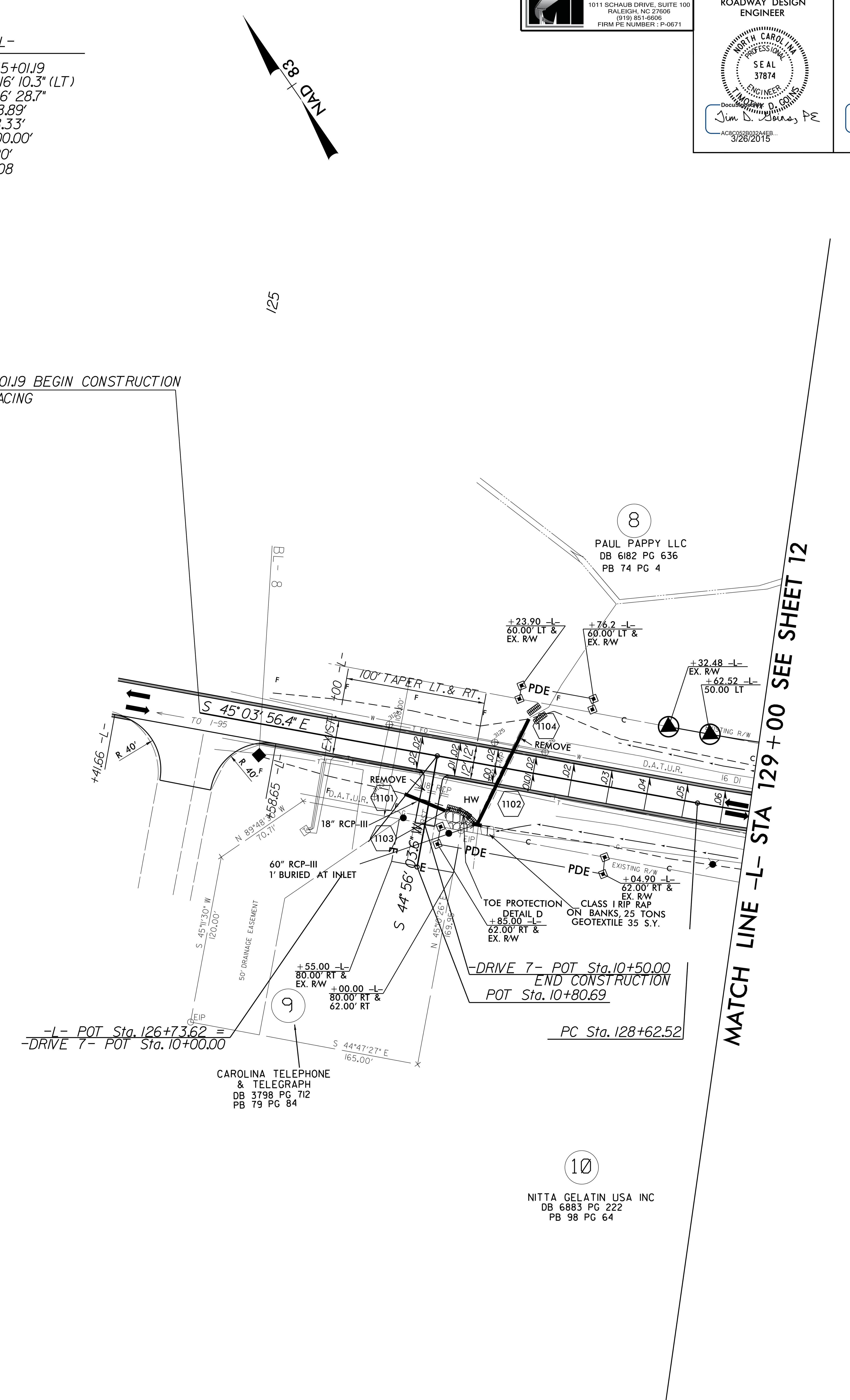
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
W-5512	11
R/W SHEET NO.	

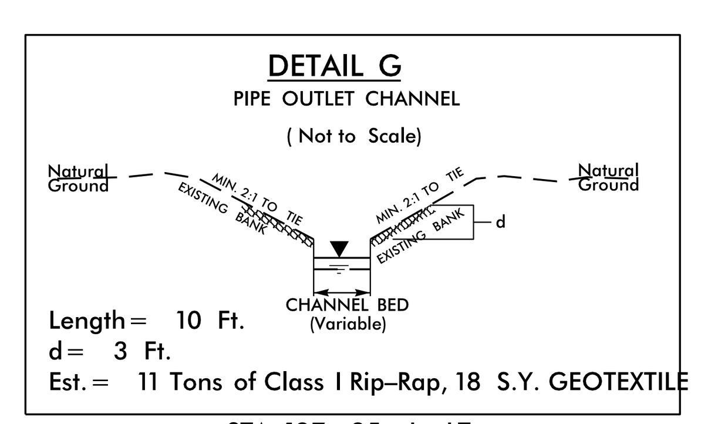
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS	NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE DUE CHI NGUYEN
Jim D. Goins, PE 3/26/2015	Melanie Nguyen 3/26/2015

-L-
PI Sta 135+01.19
Δ = 67° 16' 10.3" (LT)
D = 4° 46' 28.7"
L = 1,408.89'
T = 798.33'
R = 1,200.00'
R.O. = 220'
SE = 0.08

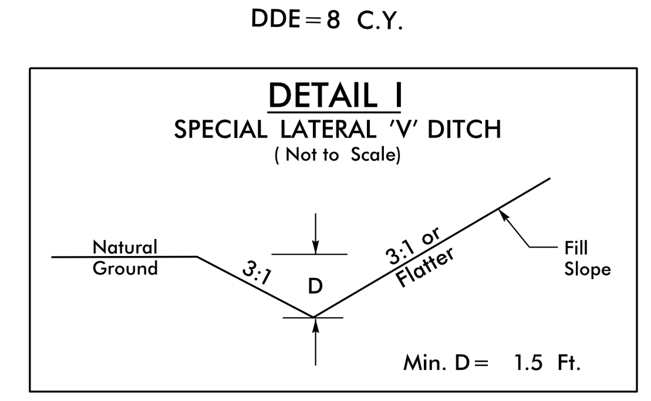
MATCH LINE -L- STA 116+00 SEE SHEET 10



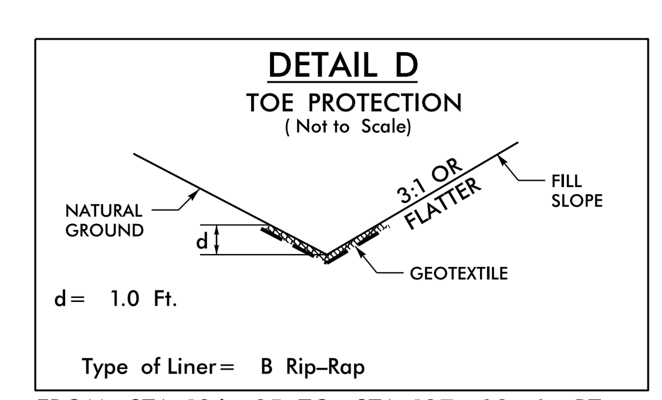
MATCH LINE -L- STA 129+00 SEE SHEET 12



STA. 127+25 -L- LT
DDE = 8 C.Y.



FROM STA. 127+20 TO STA. 129+50 -L- RT



FROM STA. 126+85 TO STA. 127+08 -L- RT
RIP RAP = 9 TONS
GEOTEXTILE = 25 S.Y.

NOTE:
SEE SHEET 20 FOR -L- PROFILE

*NOTE: RESURFACING TO BEGIN -L- STA.107+00 (SEE T.S.NO.1 SHEET 2)

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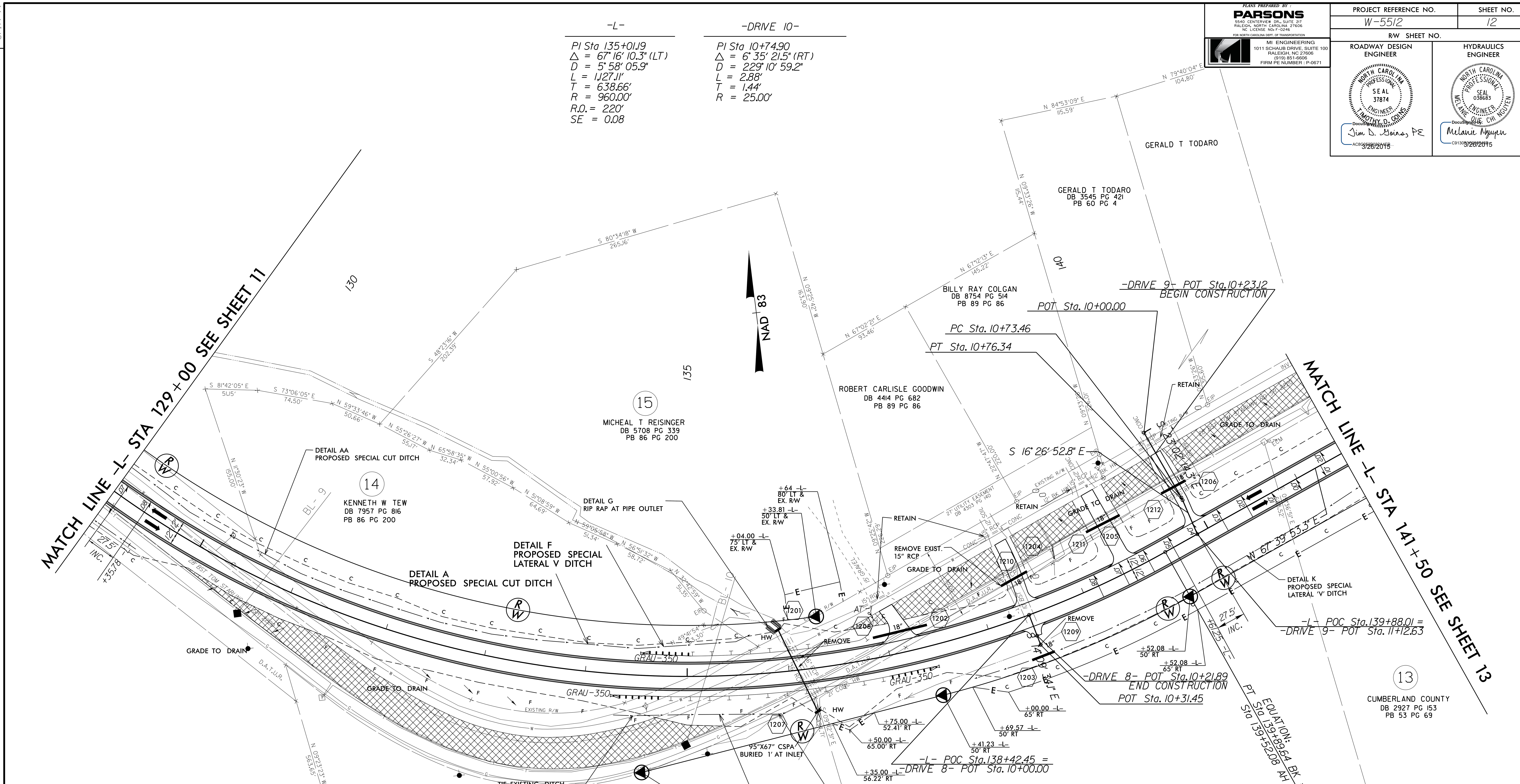

DETAIL AA
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground 2:1 D 3:1 or Flatter Front Ditch Slope
Min. D = 1.0 Ft.
FROM STA. 128+00 TO STA. 129+74 -L- LT
FROM STA. 130+35 TO STA. 132+00 -L- LT

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground 3:1 D 3:1 or Flatter Front Ditch Slope
Min. D = 1.0 Ft.
FROM STA. 132+50 TO STA. 134+00 -L- LT

DETAIL I
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground 3:1 D 3:1 or Flatter Fill Slope
Min. D = 1.5 Ft.
FROM STA. 127+20 TO STA. 129+50 -L- RT

DETAIL F
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground 3:1 D 3:1 or Flatter Fill Slope
Min. D = 1.0 Ft.
FROM STA. 135+00 TO STA. 135+50 -L- RT

DETAIL G
PIPE OUTLET CHANNEL
(Not to Scale)
Natural Ground — CHANNEL BED (Variable) — Natural Ground
Length = 10 Ft.
d = 3 Ft.
Est. = 11 Tons of Class I Rip-Rap, 18 S.Y. GEOTEXTILE
STA. 136+13 -L- LT
DDE = 8 C.Y.

DETAIL K
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground 2:1 D 3:1 or Flatter Fill Slope
Min. D = 1.0 Ft.
FROM STA. 138+00 TO STA. 141+50 -L- RT

NOTE:
SEE SHEET 20 FOR -L- PROFILE

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8/17/99

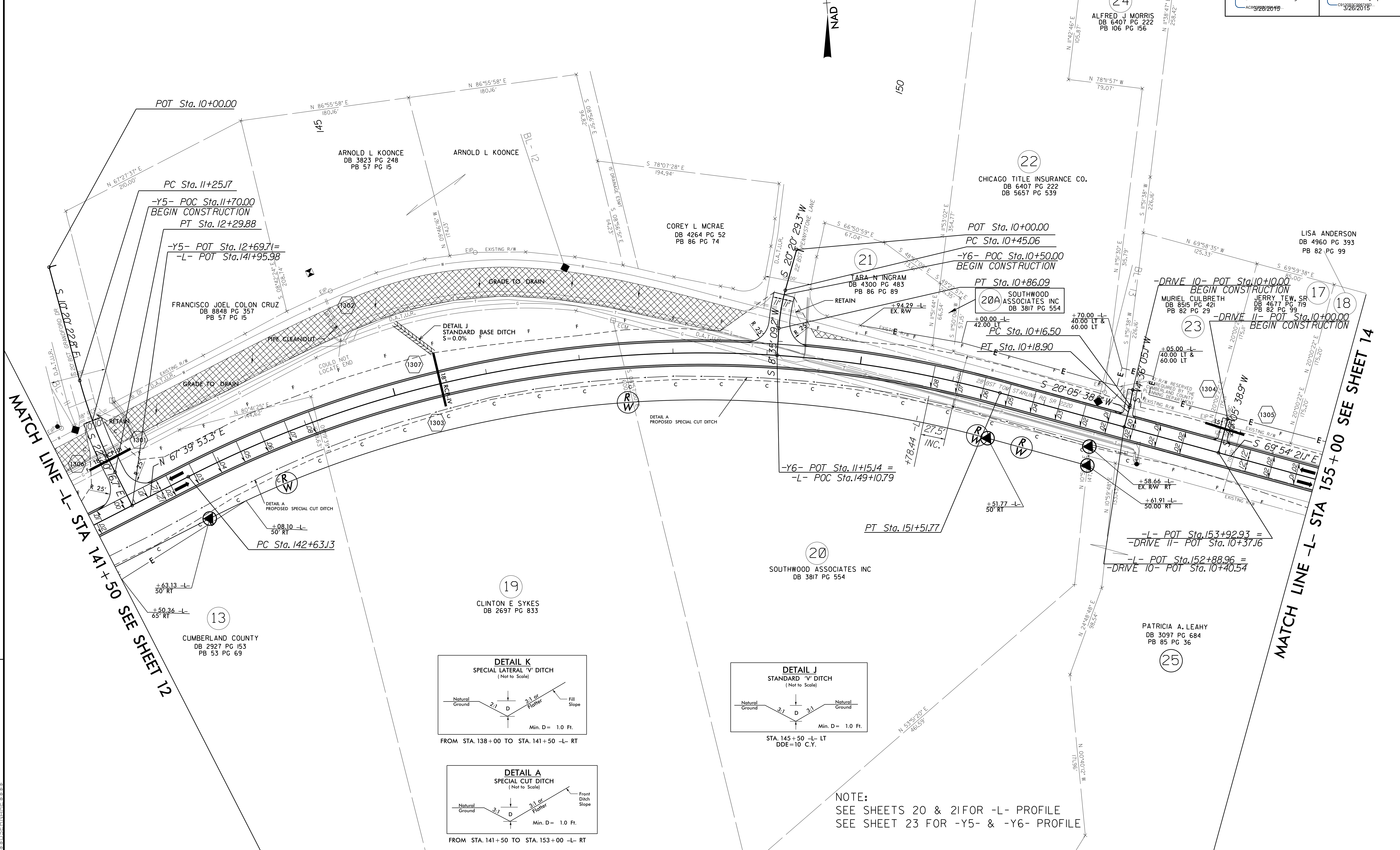
REVISIONS

-L-	-Y5-	-Y6-	-DRIVE 12-
PI Sta 147+28.94	PI Sta 11+77.72	PI Sta 10+65.65	PI Sta 10+17.70
Δ = 42° 25' 45.6" (RT)	Δ = 11° 59' 53.9" (LT)	Δ = 11° 45' 20.1" (LT)	Δ = 5° 29' 33.8" (RT)
D = 4° 46' 28.7"	D = 11° 27' 33.0"	D = 28° 38' 52.4"	D = 229° 10' 59.2"
L = 888.64'	L = 104.70'	L = 41.03'	L = 2.40'
T = 465.80'	T = 52.54'	T = 20.59'	T = 1.20'
R = 1,200.00'	R = 500.00'	R = 200.00'	R = 25.00'
R.O. = 220'			
SE = 0.08			

PLANS PREPARED BY:
PARSONS
5540 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27606
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PER NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
W-5512	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 37874 — Tim D. Goins, PE — 3/26/2015	SEAL 038683 — Melanie Nguyen — 3/26/2015


NAD 83
POT Sta. 10+00.00
PC Sta. 11+25.17
-Y5- POC Sta.11+70.00
BEGIN CONSTRUCTION
PT Sta. 12+29.88
-Y5- POT Sta. 12+69.71=
-L- POT Sta.141+95.98
ARNOLD L KOONCE
DB 3823 PG 248
PB 57 PG 15
ARNOLD L KOONCE
COREY L MCRAE
DB 4264 PG 52
PB 86 PG 74
22
CHICAGO TITLE INSURANCE CO.
DB 6407 PG 222
DB 5657 PG 539
24
ALFRED J MORRIS
DB 6407 PG 222
PB 106 PG 156
LISA ANDERSON
DB 4960 PG 393
PB 82 PG 99
FRANCISCO JOEL COLON CRUZ
DB 8848 PG 357
PB 57 PG 15
GRADE TO DRAIN
PIPE CLEANOUT
DETAIL J
STANDARD BASE DITCH
S=0.0%
COULD NOT LOCATE END
21
TARA N INGRAM
DB 4300 PG 483
PB 86 PG 89
20A
SOUTHWOOD ASSOCIATES INC
DB 3817 PG 554
POT Sta. 10+00.00
PC Sta. 10+45.06
-Y6- POC Sta.10+50.00
BEGIN CONSTRUCTION
PT Sta. 10+86.09
PC Sta. 10+16.50
PT Sta. 10+18.90
-DRIVE 10- POT Sta.10+10.00
BEGIN CONSTRUCTION
MURIEL CULBRETH
DB 8515 PG 421
PB 82 PG 29
JERRY TEW, SR
DB 4677 PG 719
PB 82 PG 99
-DRIVE 11- POT Sta.10+00.00
BEGIN CONSTRUCTION
17
18
23
S 20°05' 38.9" W
S 69°54' 21.1" E
N 61°39' 53.3" E
DETAIL A
PROPOSED SPECIAL CUT DITCH
+08.10 -L-
50' RT
PC Sta. 142+63.13
+63.13 -L-
50' RT
+50.36 -L-
65' RT
-Y6- POT Sta. 11+15.14 =
-L- POC Sta.149+10.79
PT Sta. 151+51.77
+51.77 -L-
50' RT
+58.66 -L-
EX. R/W RT
+61.91 -L-
50.00 RT
-L- POT Sta.153+92.93 =
-DRIVE 11- POT Sta. 10+37.16
-L- POT Sta.152+88.96 =
-DRIVE 10- POT Sta. 10+40.54
13
CUMBERLAND COUNTY
DB 2927 PG 153
PB 53 PG 69
19
CLINTON E SYKES
DB 2697 PG 833
20
SOUTHWOOD ASSOCIATES INC
DB 3817 PG 554
PATRICIA A. LEAHY
DB 3097 PG 684
PB 85 PG 36
25
MATCH LINE -L- STA 141+50 SEE SHEET 12
MATCH LINE -L- STA 155+00 SEE SHEET 14
DETAIL K
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Fill Slope
3:1 or Flatter
Min. D= 1.0 Ft.
FROM STA. 138+00 TO STA. 141+50 -L- RT
DETAIL J
STANDARD 'V' DITCH
(Not to Scale)
Min. D= 1.0 Ft.
STA. 145+50 -L- LT
DDE=10 C.Y.
DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Front Ditch Slope
Min. D= 1.0 Ft.
FROM STA. 141+50 TO STA. 153+00 -L- RT

NOTE:
SEE SHEETS 20 & 21 FOR -L- PROFILE
SEE SHEET 23 FOR -Y5- & -Y6- PROFILE

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8/17/99

REVISIONS

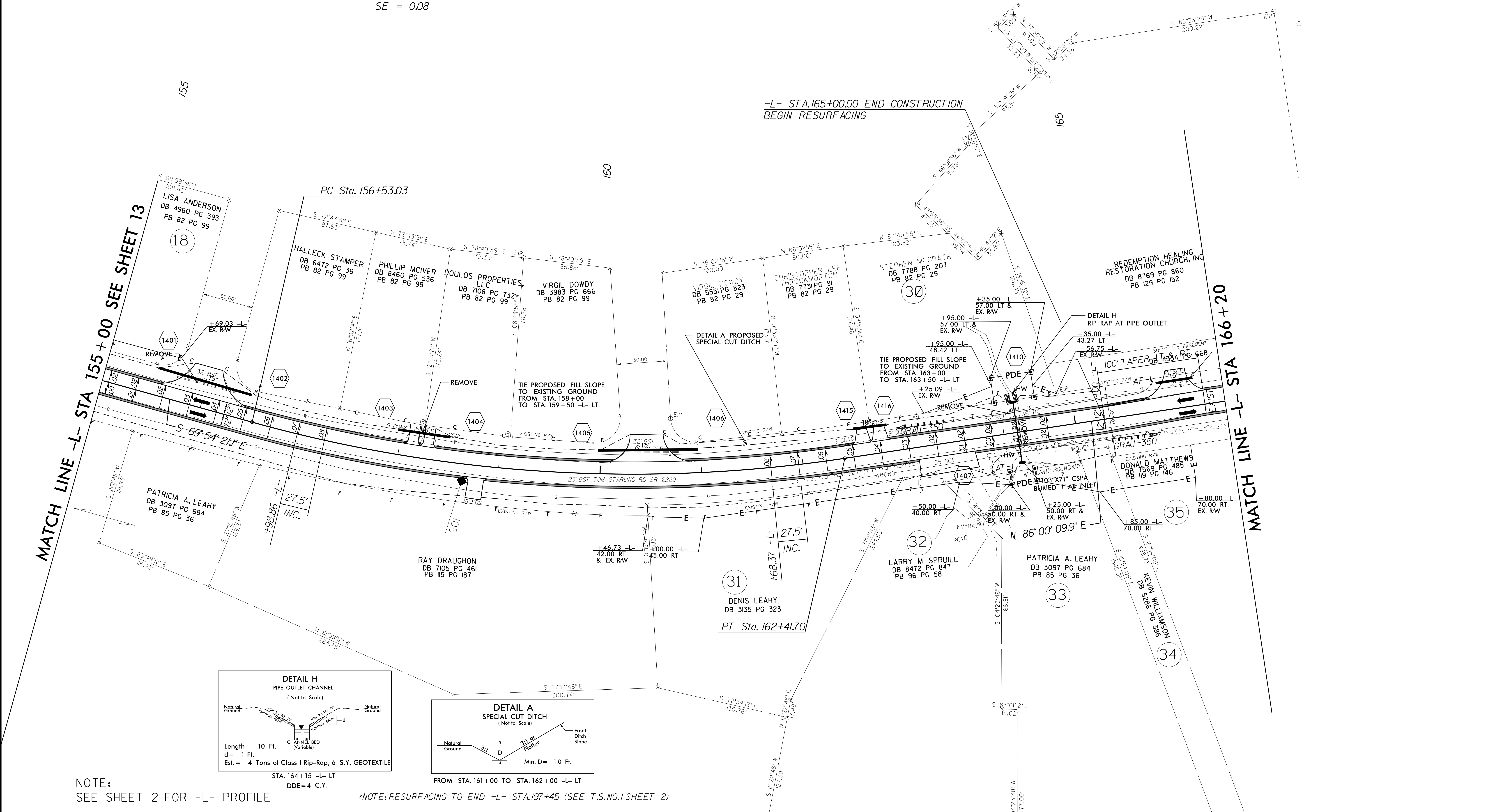
PLANS PREPARED BY:
PARSONS
5540 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27606
NC LICENSE NO.: F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
W-5512	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS — Jim D. Goins, PE 3/26/2015	NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE QUE CHI NGUYEN — Melanie Nguyen 3/26/2015

NAD 83

-L-
PI Sta 159+51.78
Δ = 24° 05' 29.0" (LT)
D = 4° 05' 33.2"
L = 588.66'
T = 298.75'
R = 1,400.00'
R.O. = 220'
SE = 0.08



MATCH LINE -L- STA 155+00 SEE SHEET 13
MATCH LINE -L- STA 166+20
-L- STA.165+00.00 END CONSTRUCTION
BEGIN RESURFACING
PC Sta. 156+53.03
PT Sta. 162+41.70
S 69° 54' 21.1" E
N 86° 00' 09.9" E
23' BST TOM STARLING RD SR 2220
LISA ANDERSON DB 4960 PG 393 PB 82 PG 99
HALLECK STAMPER DB 6472 PG 36 PB 82 PG 99
PHILLIP MCIVER DB 8460 PG 536 PB 82 PG 99
DOULOS PROPERTIES, LLC DB 7108 PG 732 PB 82 PG 99
VIRGIL DOWDY DB 3983 PG 666 PB 82 PG 99
VIRGIL DOWDY DB 5551 PG 823 PB 82 PG 29
CHRISTOPHER LEE THROCKMORTON DB 7731 PG 91 PB 82 PG 29
STEPHEN MCGRATH DB 7788 PG 207 PB 82 PG 29
REDEMPTION HEALING RESTORATION CHURCH, INC DB 8769 PG 860 PB 129 PG 152
DONALD MATTHEWS DB 7569 PG 485 PB 119 PG 146
PATRICIA A. LEAHY DB 3097 PG 684 PB 85 PG 36
RAY DRAUGHON DB 7105 PG 461 PB 115 PG 187
DENIS LEAHY DB 3135 PG 323
LARRY M SPRUILL DB 8472 PG 847 PB 96 PG 58
KEVIN WILLIAMSON DB 5286 PG 386
DETAIL A PROPOSED SPECIAL CUT DITCH
DETAIL H RIP RAP AT PIPE OUTLET
TIE PROPOSED FILL SLOPE TO EXISTING GROUND FROM STA. 158+00 TO STA. 159+50 -L- LT
TIE PROPOSED FILL SLOPE TO EXISTING GROUND FROM STA. 163+00 TO STA. 163+50 -L- LT
100' TAPER
103"X71" CSPA BURIED 1' AT INLET
REMOVE
DETAIL H
PIPE OUTLET CHANNEL
(Not to Scale)
Natural Ground
CHANNEL BED (Variable)
Length = 10 Ft.
d = 1 Ft.
Est. = 4 Tons of Class I Rip-Rap, 6 S.Y. GEOTEXTILE
STA. 164+15 -L- LT
DDE = 4 C.Y.
DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
3:1 or Flatter
Min. D = 1.0 Ft.
FROM STA. 161+00 TO STA. 162+00 -L- LT

NOTE:
SEE SHEET 21 FOR -L- PROFILE

*NOTE: RESURFACING TO END -L- STA.197+45 (SEE T.S. NO.1 SHEET 2)

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8/17/99

REVISIONS

PLANS PREPARED BY:
PARSONS
5540 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27606
NC LICENSE NO.F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

MI ENGINEERING
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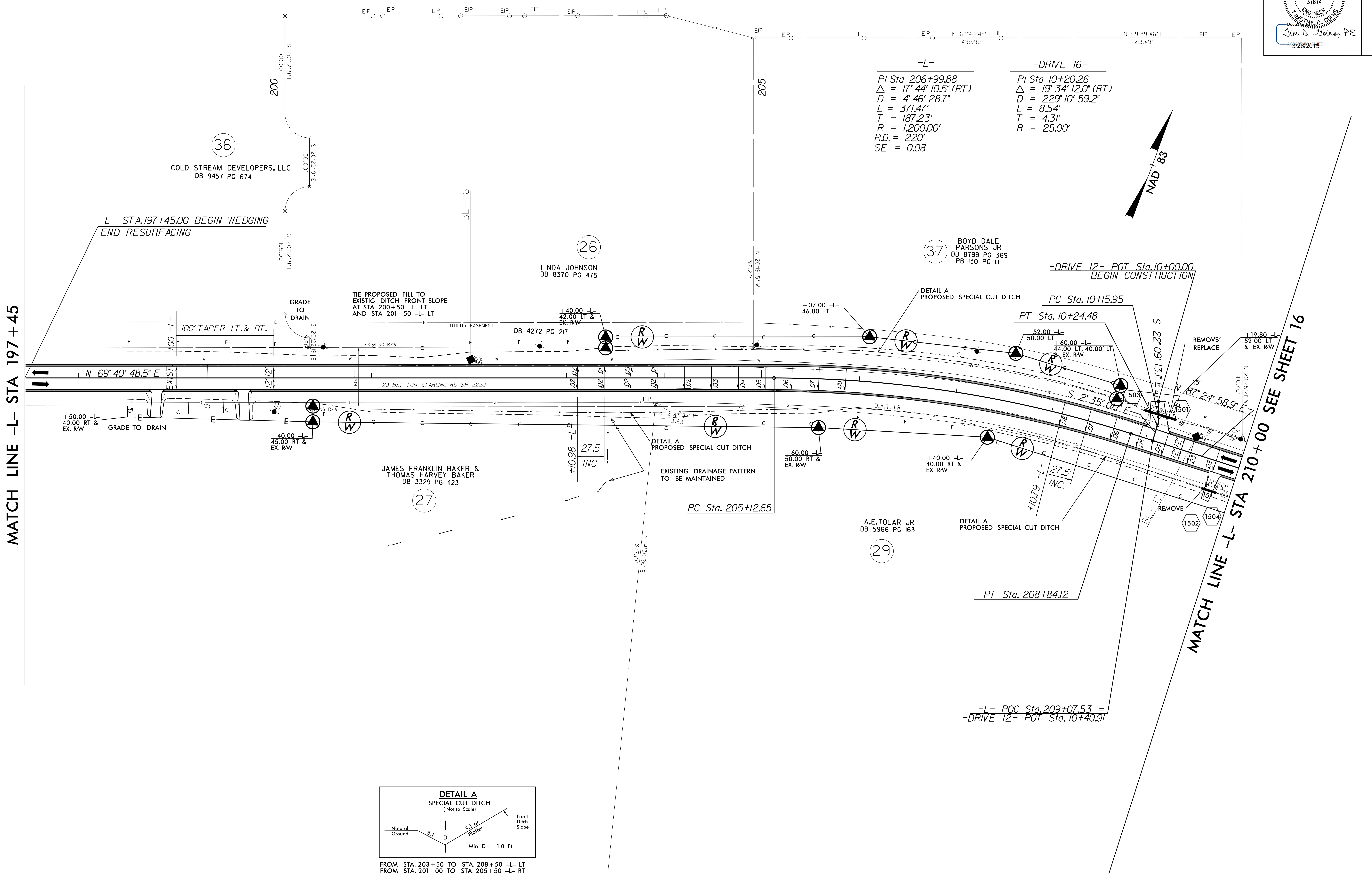
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
W-5512	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS — Jim D. Goins, PE — 3/26/2015	NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE QUE CHI NGUYEN — Melanie Nguyen — 3/26/2015



MATCH LINE -L- STA 197+45
MATCH LINE -L- STA 210+00 SEE SHEET 16
-L-
PI Sta 206+99.88
Δ = 17° 44' 10.5" (RT)
D = 4° 46' 28.7"
L = 371.47'
T = 187.23'
R = 1,200.00'
R.O. = 220'
SE = 0.08
-DRIVE 16-
PI Sta 10+20.26
Δ = 19° 34' 12.0" (RT)
D = 229° 10' 59.2"
L = 8.54'
T = 4.31'
R = 25.00'
NAD 83
COLD STREAM DEVELOPERS, LLC
DB 9457 PG 674
LINDA JOHNSON
DB 8370 PG 475
BOYD DALE PARSONS JR
DB 8799 PG 369
PB 130 PG III
JAMES FRANKLIN BAKER & THOMAS HARVEY BAKER
DB 3329 PG 423
A.E.TOLAR JR
DB 5966 PG 163
DB 4272 PG 217
-L- STA.197+45.00 BEGIN WEDGING
END RESURFACING
100' TAPER LT.& RT.
N 69° 40' 48.5" E
23' BST TOM STARLING RD SR 2220
GRADE TO DRAIN
TIE PROPOSED FILL TO EXISTIG DITCH FRONT SLOPE AT STA 200+50 -L- LT AND STA 201+50 -L- LT
DETAIL A PROPOSED SPECIAL CUT DITCH
EXISTING DRAINAGE PATTERN TO BE MAINTAINED
PC Sta. 205+12.65
PT Sta. 208+84.12
-DRIVE 12- POT Sta.10+00.00
BEGIN CONSTRUCTION
PC Sta. 10+15.95
PT Sta. 10+24.48
-L- POC Sta.209+07.53 =
-DRIVE 12- POT Sta. 10+40.91
REMOVE/ REPLACE
REMOVE
S 2° 35' 01" E
N 87° 24' 58.9" E
DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
3:1 or Flatter
Min. D= 1.0 Ft.
FROM STA. 203+50 TO STA. 208+50 -L- LT
FROM STA. 201+00 TO STA. 205+50 -L- RT
FROM STA. 207+50 TO STA. 213+00 -L- RT

NOTE:
SEE SHEET 22 FOR -L- PROFILE

*NOTE: RESURFACING TO BEGIN -L- STA.165+00.00 (SEE T.S.NO.1 SHEET 2)

09-MAR-2015 11:41
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$$$$USERNAME$$$$

PLANS PREPARED BY:
PARSONS
5540 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27606
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

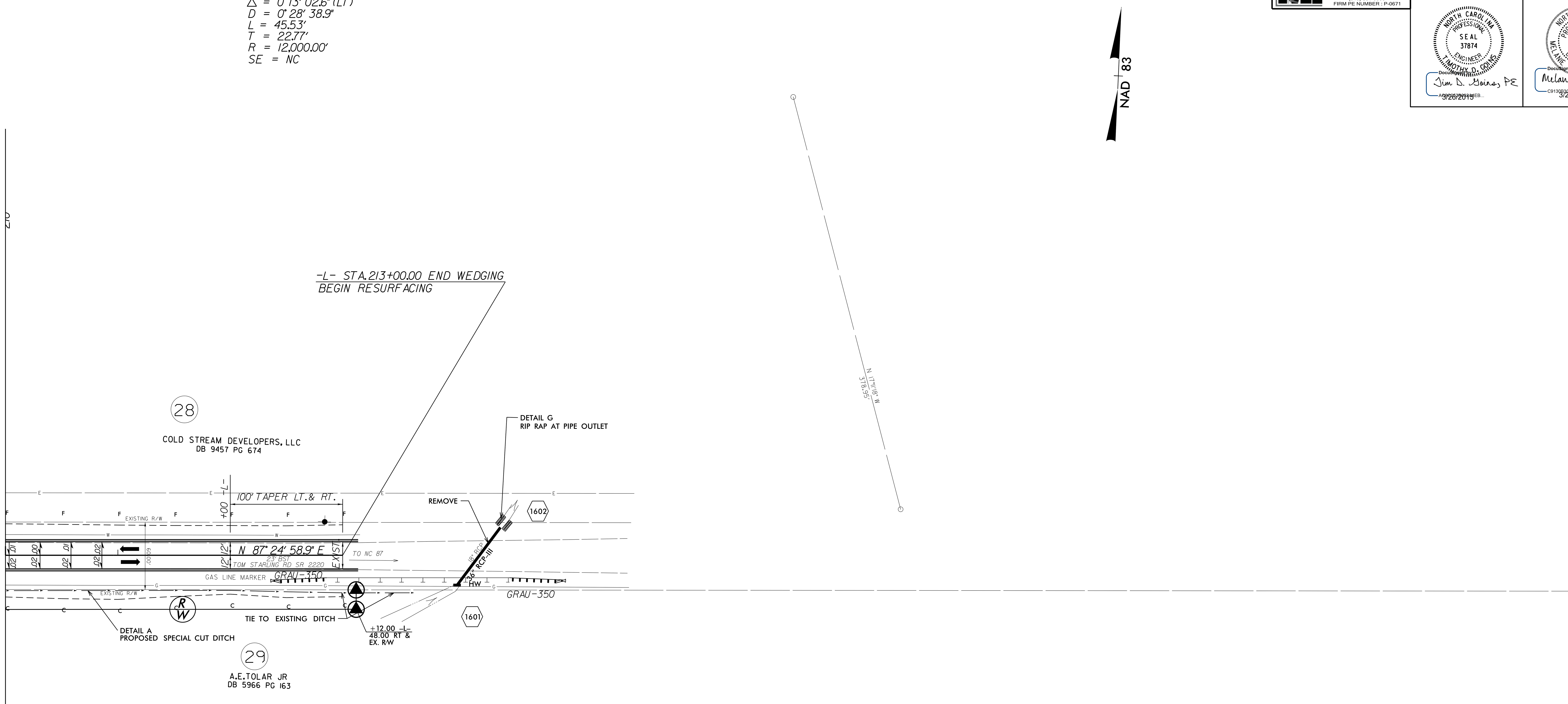
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
W-5512	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Tim D. Goins, PE — 3/26/2015
Melanie Nguyen — 3/26/2015

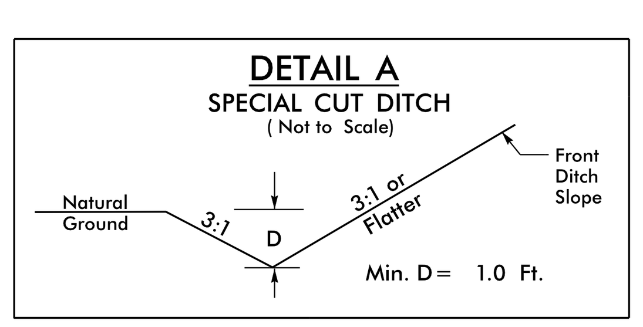
-L-

PI Sta 216+04.01
△ = 0° 13' 02.6" (LT)
D = 0° 28' 38.9"
L = 45.53'
T = 22.77'
R = 12,000.00'
SE = NC

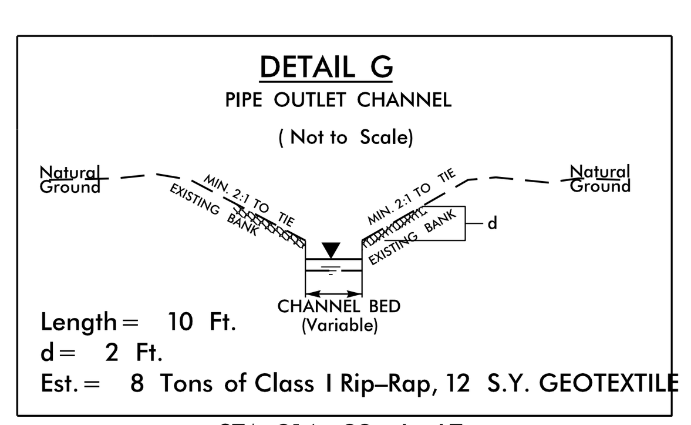


MATCH LINE -L- STA 210+00 SEE SHEET 15

REVISIONS



FROM STA. 207+50 TO STA. 213+00 -L- RT



STA. 214+22 -L- LT
DDE=5 C.Y.

NOTE:
SEE SHEET 22 FOR -L- PROFILE

*NOTE: RESURFACING TO END -L- STA.245+23.91 (SEE T.S.NO.1 SHEET 2)

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PROJECT REFERENCE NO.	SHEET NO.
W-5512	17

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS	NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE QUE CHI NGUYEN
DocuSigned by: Jim D. Goins, PE AC8C052B032A4EB... 3/26/2015	DocuSigned by: Melanie Nguyen C9130B3C996748D... 3/26/2015

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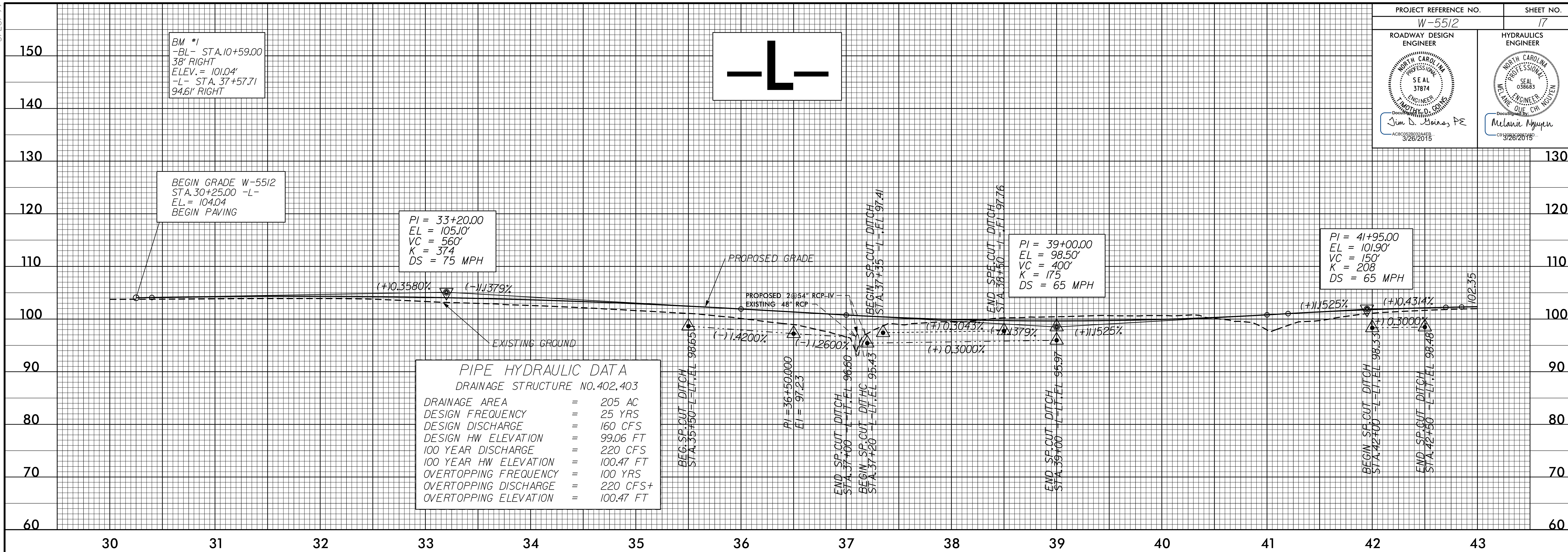
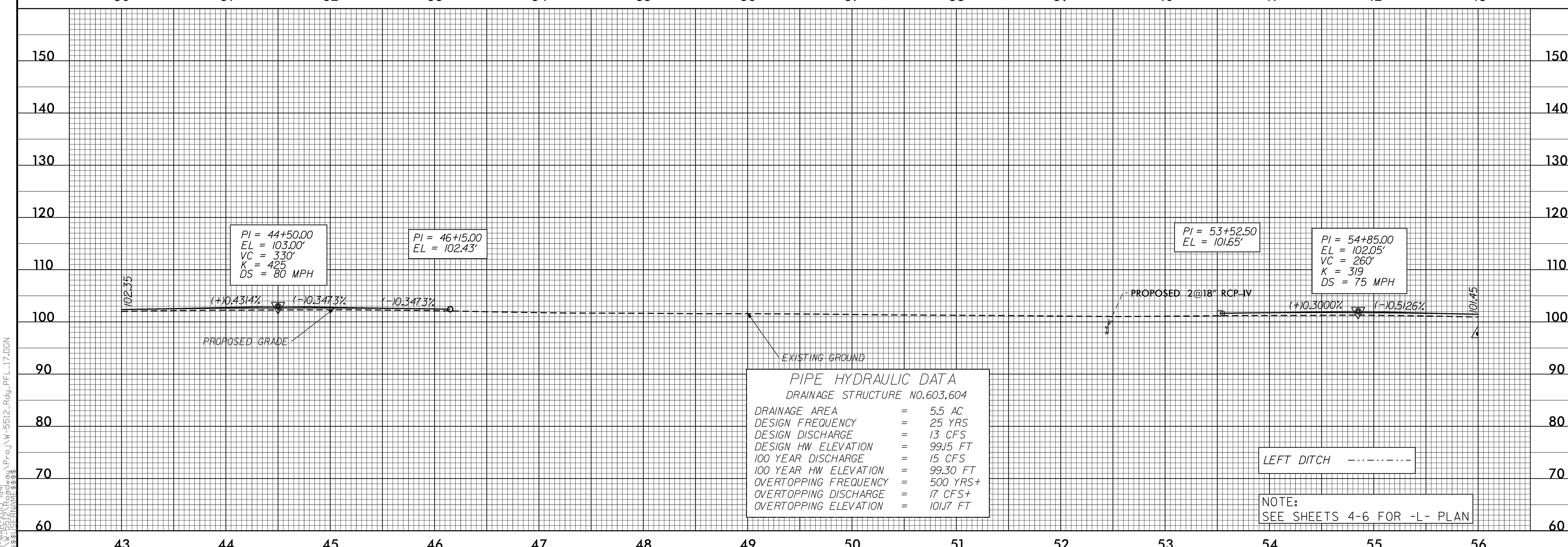


PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.402,403

DRAINAGE AREA	=	205 AC
DESIGN FREQUENCY	=	25 YRS
DESIGN DISCHARGE	=	160 CFS
DESIGN HW ELEVATION	=	99.06 FT
100 YEAR DISCHARGE	=	220 CFS
100 YEAR HW ELEVATION	=	100.47 FT
OVERTOPPING FREQUENCY	=	100 YRS
OVERTOPPING DISCHARGE	=	220 CFS+
OVERTOPPING ELEVATION	=	100.47 FT



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.603,604

DRAINAGE AREA	=	5.5 AC
DESIGN FREQUENCY	=	25 YRS
DESIGN DISCHARGE	=	13 CFS
DESIGN HW ELEVATION	=	99.15 FT
100 YEAR DISCHARGE	=	15 CFS
100 YEAR HW ELEVATION	=	99.30 FT
OVERTOPPING FREQUENCY	=	500 YRS+
OVERTOPPING DISCHARGE	=	17 CFS+
OVERTOPPING ELEVATION	=	101.17 FT

NOTE:
SEE SHEETS 4-6 FOR -L- PLAN

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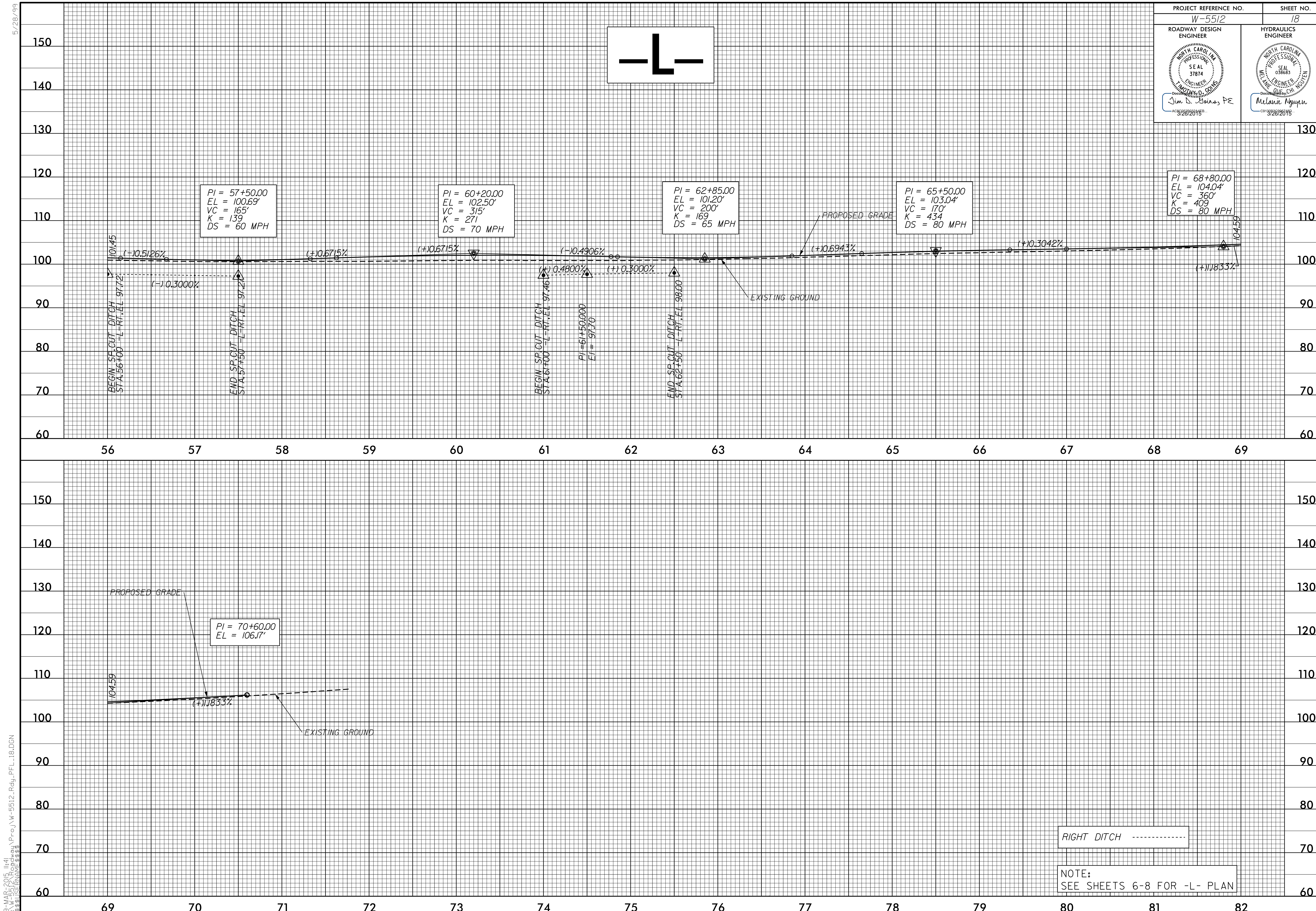

PROJECT REFERENCE NO.	SHEET NO.
W-5512	19

ROADWAY DESIGN ENGINEER — SEAL 37874 — Tim D. Goins, PE — 3/26/2015

HYDRAULICS ENGINEER — SEAL 036603 — Melanie Nguyen — 3/26/2015

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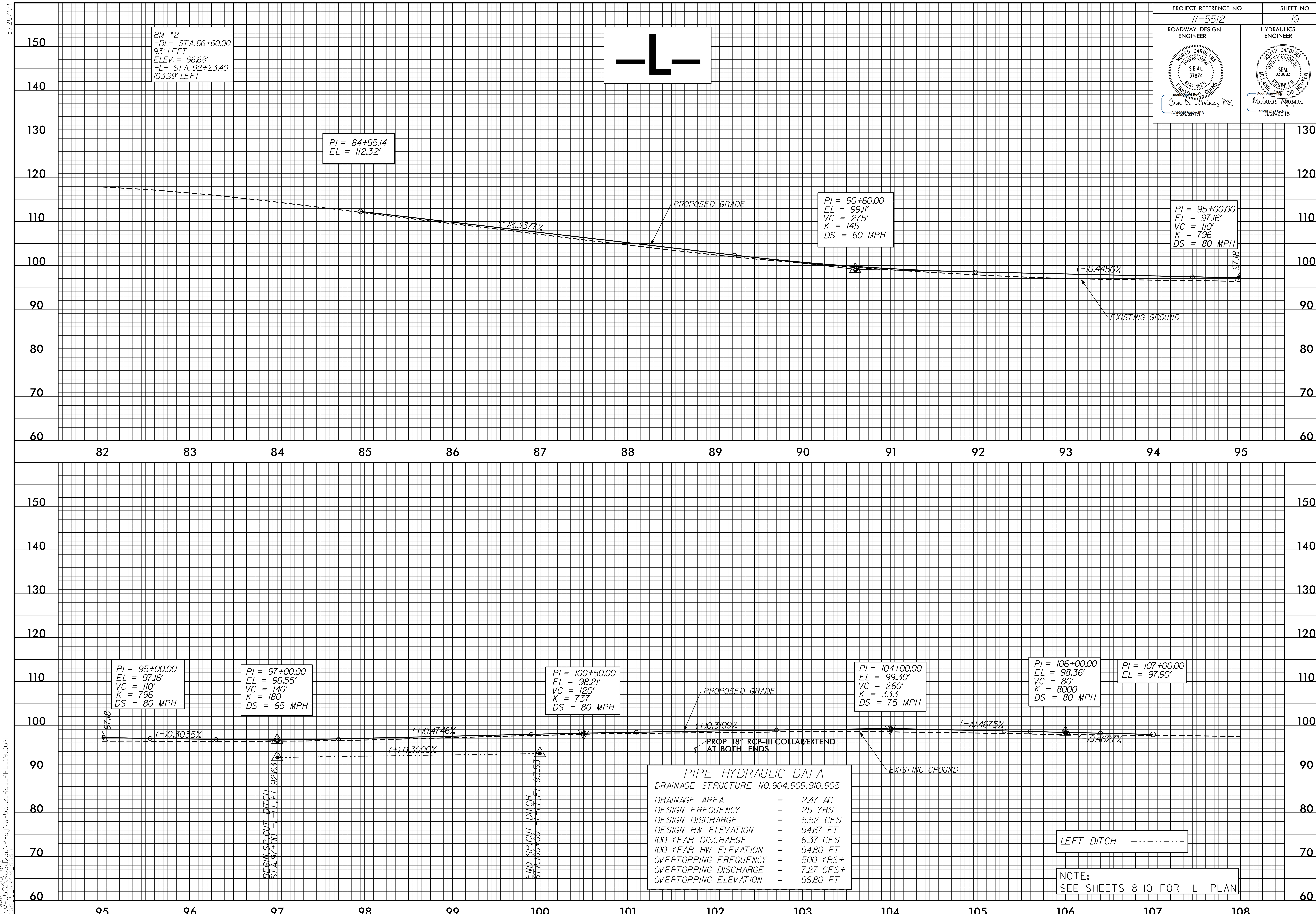

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 904, 909, 910, 905

DRAINAGE AREA	=	2.47 AC
DESIGN FREQUENCY	=	25 YRS
DESIGN DISCHARGE	=	5.52 CFS
DESIGN HW ELEVATION	=	94.67 FT
100 YEAR DISCHARGE	=	6.37 CFS
100 YEAR HW ELEVATION	=	94.80 FT
OVERTOPPING FREQUENCY	=	500 YRS+
OVERTOPPING DISCHARGE	=	7.27 CFS+
OVERTOPPING ELEVATION	=	96.80 FT

NOTE:
SEE SHEETS 8-10 FOR -L- PLAN

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PROJECT REFERENCE NO.	SHEET NO.
W-5512	20

ROADWAY DESIGN ENGINEER — Jim D. Goins, PE — 3/26/2015

HYDRAULICS ENGINEER — Melanie Nguyen — 3/26/2015

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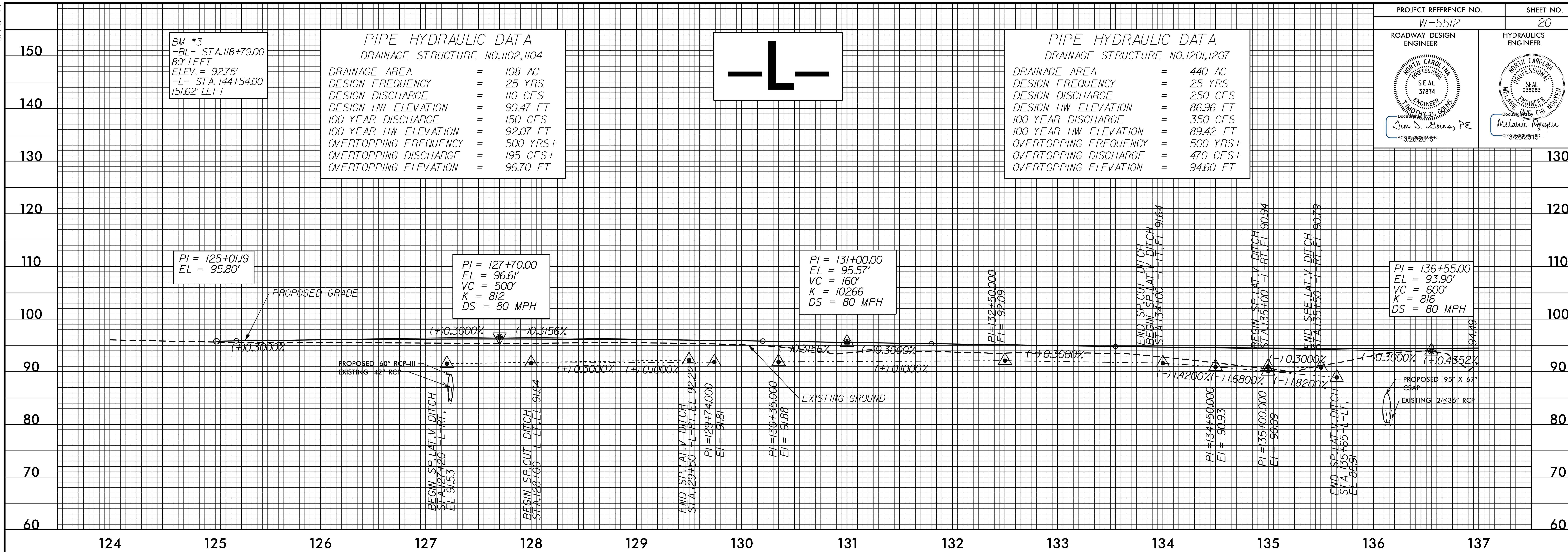
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.1102,1104

DRAINAGE AREA	=	108 AC
DESIGN FREQUENCY	=	25 YRS
DESIGN DISCHARGE	=	110 CFS
DESIGN HW ELEVATION	=	90.47 FT
100 YEAR DISCHARGE	=	150 CFS
100 YEAR HW ELEVATION	=	92.07 FT
OVERTOPPING FREQUENCY	=	500 YRS+
OVERTOPPING DISCHARGE	=	195 CFS+
OVERTOPPING ELEVATION	=	96.70 FT

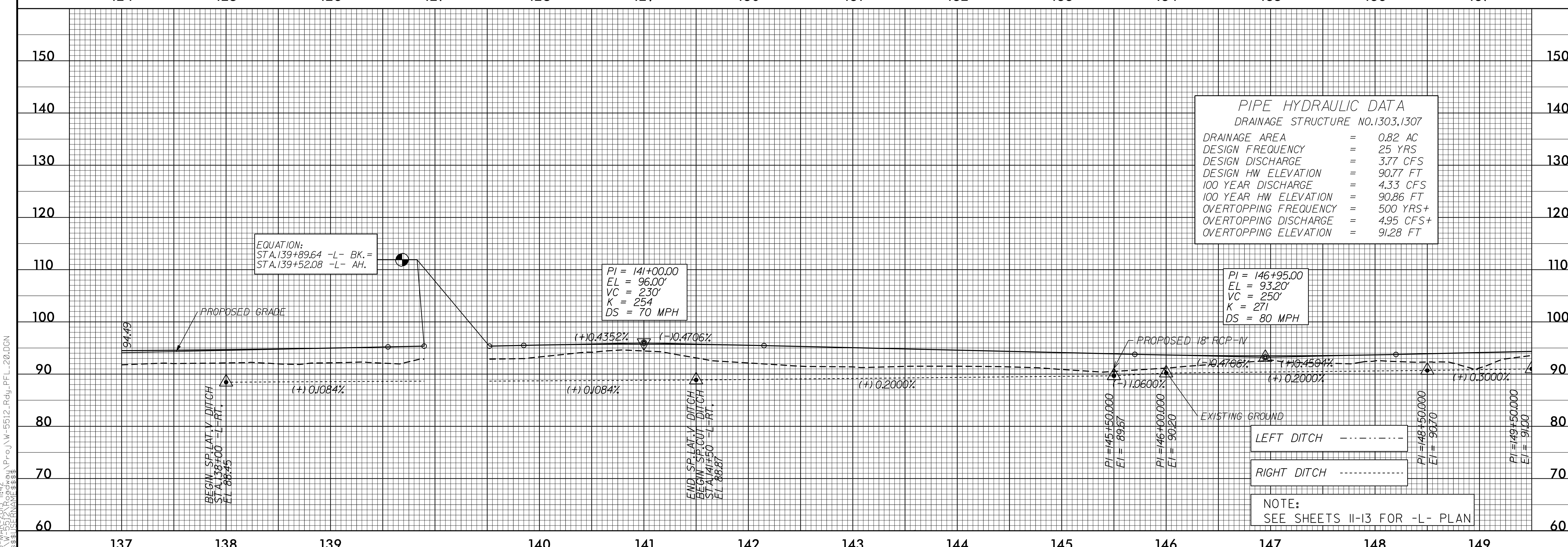
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.1201,1207

DRAINAGE AREA	=	440 AC
DESIGN FREQUENCY	=	25 YRS
DESIGN DISCHARGE	=	250 CFS
DESIGN HW ELEVATION	=	86.96 FT
100 YEAR DISCHARGE	=	350 CFS
100 YEAR HW ELEVATION	=	89.42 FT
OVERTOPPING FREQUENCY	=	500 YRS+
OVERTOPPING DISCHARGE	=	470 CFS+
OVERTOPPING ELEVATION	=	94.60 FT



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.1303,1307

DRAINAGE AREA	=	0.82 AC
DESIGN FREQUENCY	=	25 YRS
DESIGN DISCHARGE	=	3.77 CFS
DESIGN HW ELEVATION	=	90.77 FT
100 YEAR DISCHARGE	=	4.33 CFS
100 YEAR HW ELEVATION	=	90.86 FT
OVERTOPPING FREQUENCY	=	500 YRS+
OVERTOPPING DISCHARGE	=	4.95 CFS+
OVERTOPPING ELEVATION	=	91.28 FT



NOTE:
SEE SHEETS 11-13 FOR -L- PLAN

PROJECT REFERENCE NO.	SHEET NO.
W-5512	21

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS — Jim D. Goins, PE — 3/26/2015	NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE CHI NGUYEN — Melanie Nguyen — 3/26/2015

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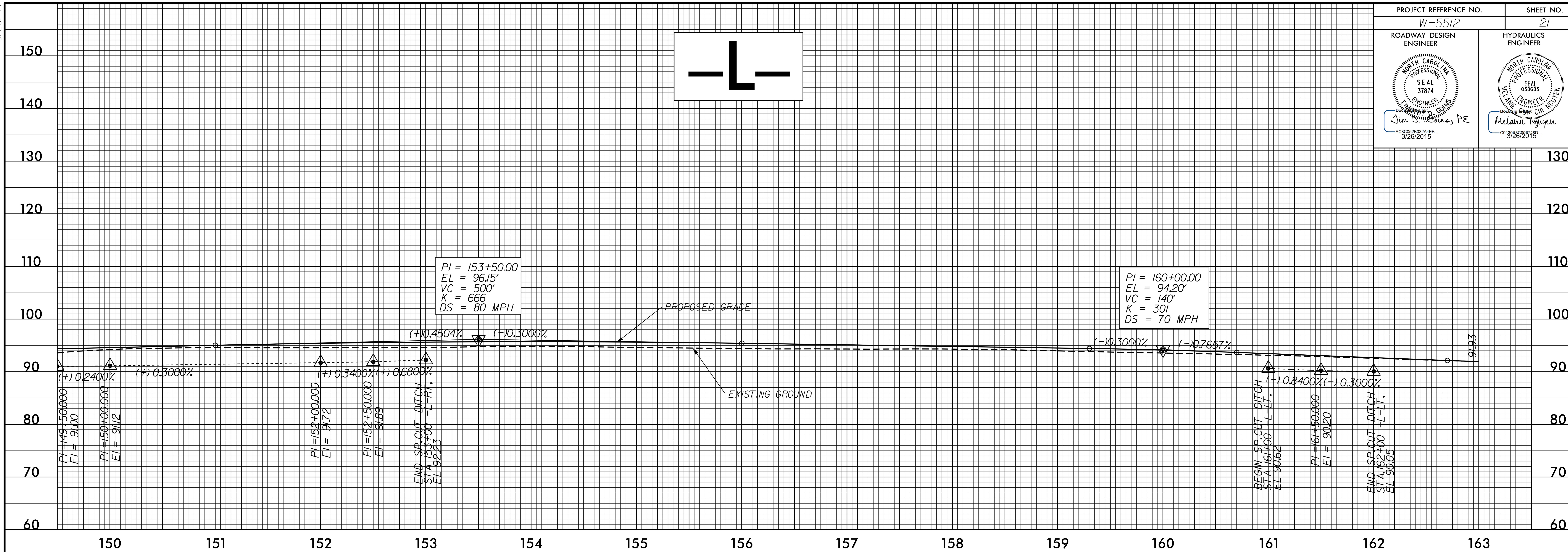

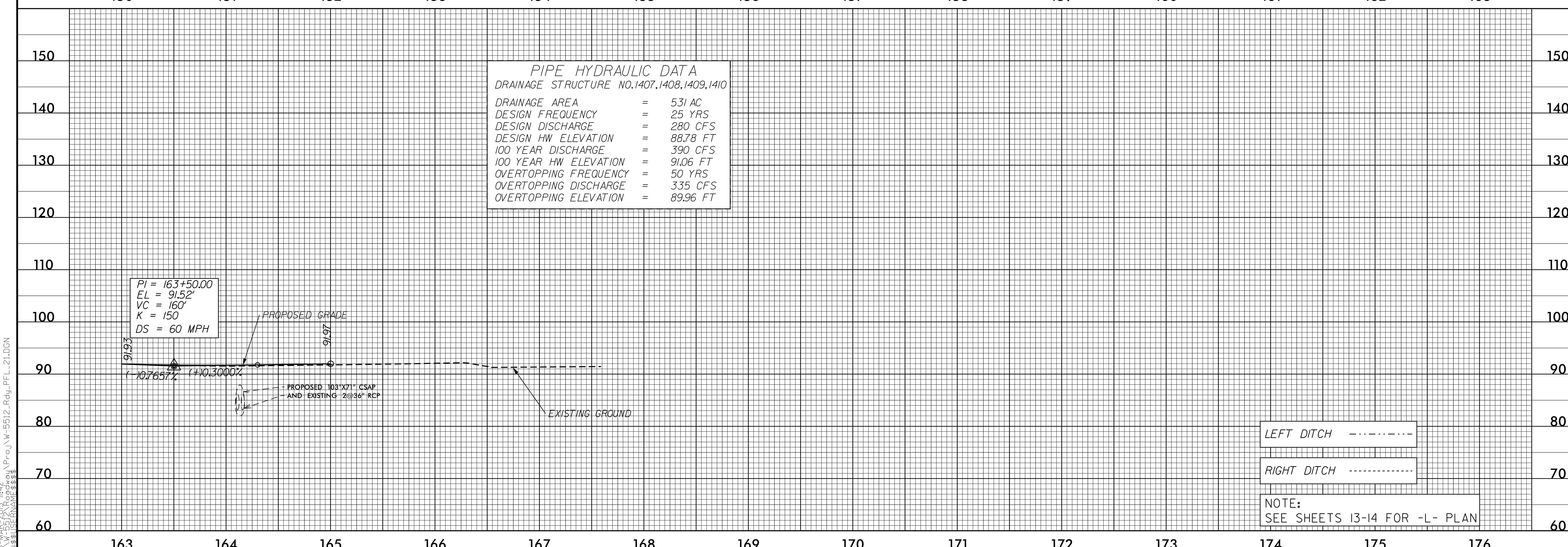

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.1407,1408,1409,1410

DRAINAGE AREA	=	531 AC
DESIGN FREQUENCY	=	25 YRS
DESIGN DISCHARGE	=	280 CFS
DESIGN HW ELEVATION	=	88.78 FT
100 YEAR DISCHARGE	=	390 CFS
100 YEAR HW ELEVATION	=	91.06 FT
OVERTOPPING FREQUENCY	=	50 YRS
OVERTOPPING DISCHARGE	=	335 CFS
OVERTOPPING ELEVATION	=	89.96 FT

LEFT DITCH -··-··-··-

RIGHT DITCH - - - - - - - -

NOTE:
SEE SHEETS 13-14 FOR -L- PLAN

PROJECT REFERENCE NO.	SHEET NO.
W-5512	22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS — Jim D. Goins, PE — 3/26/2015	NORTH CAROLINA PROFESSIONAL SEAL 038683 ENGINEER MELANIE CHI NGUYEN — Melanie Nguyen — 3/26/2015

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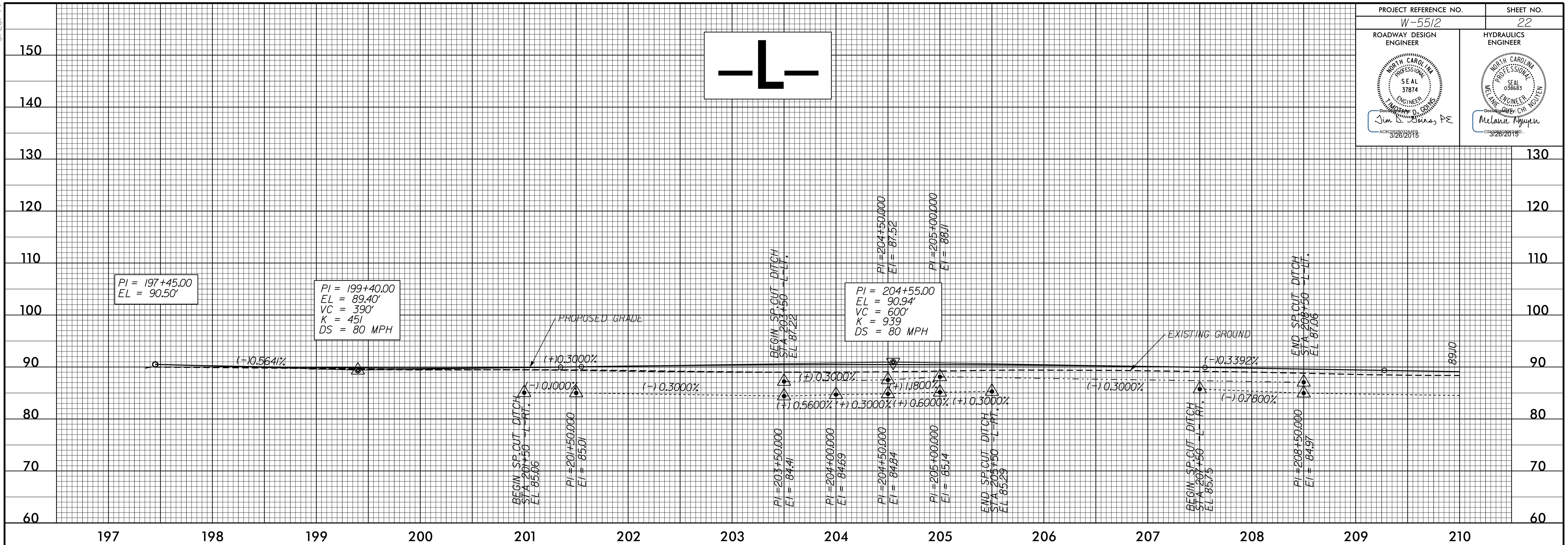

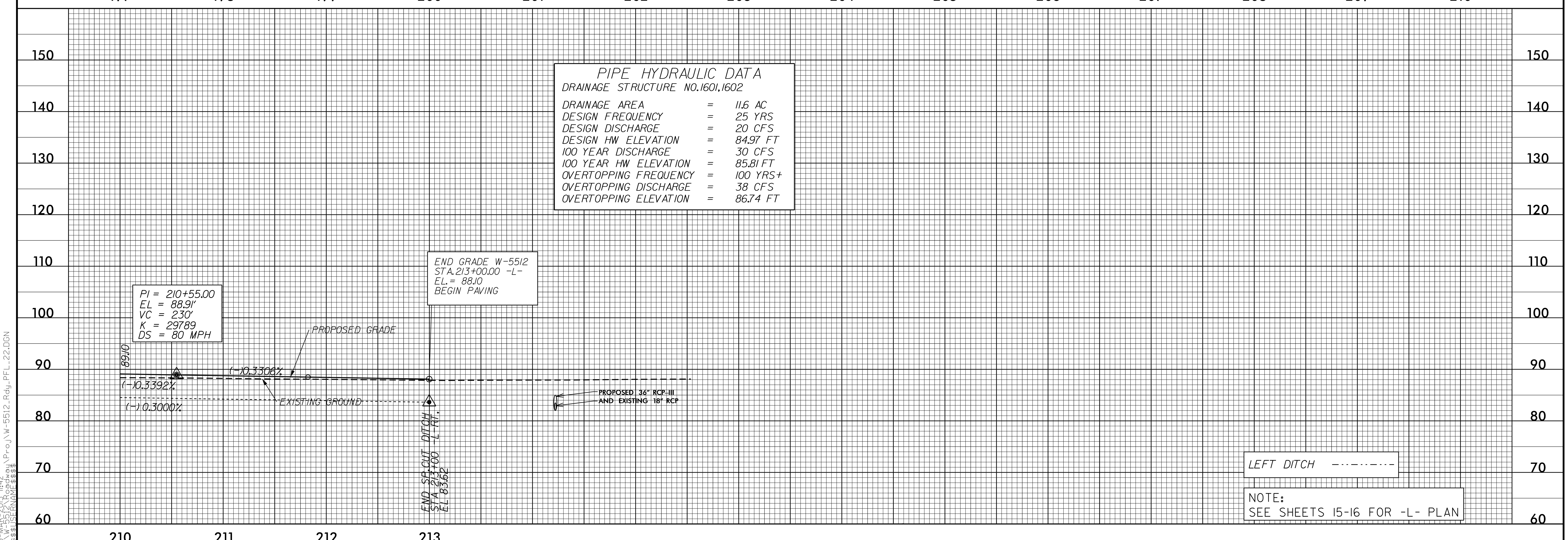

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.1601,1602

DRAINAGE AREA	=	11.6 AC
DESIGN FREQUENCY	=	25 YRS
DESIGN DISCHARGE	=	20 CFS
DESIGN HW ELEVATION	=	84.97 FT
100 YEAR DISCHARGE	=	30 CFS
100 YEAR HW ELEVATION	=	85.81 FT
OVERTOPPING FREQUENCY	=	100 YRS+
OVERTOPPING DISCHARGE	=	38 CFS
OVERTOPPING ELEVATION	=	86.74 FT

NOTE:
SEE SHEETS 15-16 FOR -L- PLAN

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PROJECT REFERENCE NO.	SHEET NO.
W-5512	23

ROADWAY DESIGN ENGINEER — SEAL 37874, TIMOTHY D. GOINS — Tim D. Goins, PE — 3/26/2015

HYDRAULICS ENGINEER — SEAL 038683, MELANIE QUE CHI NGUYEN — Melanie Nguyen — 3/26/2015