

09/08/09

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

# STATE OF NORTH CAROLINA RAIL DIVISION

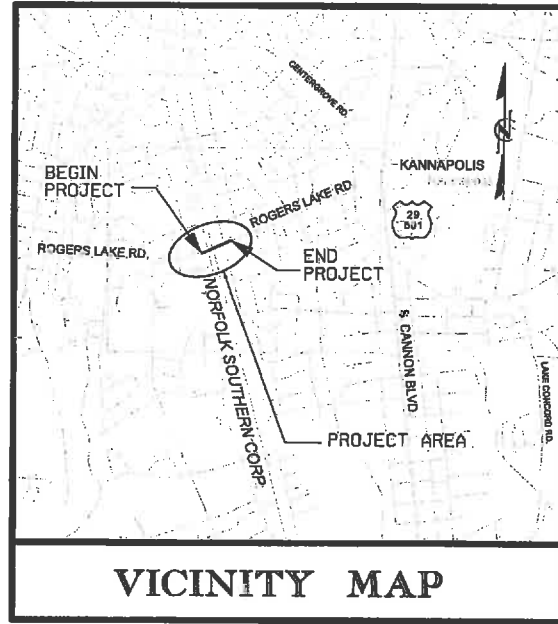
## CABARRUS COUNTY

**LOCATION: ROGERS LAKE ROAD WIDENING AND  
NORFOLK SOUTHERN RR CROSSING IMPROVEMENTS  
NS RAILWAY CROSSING NO. 724408Y**

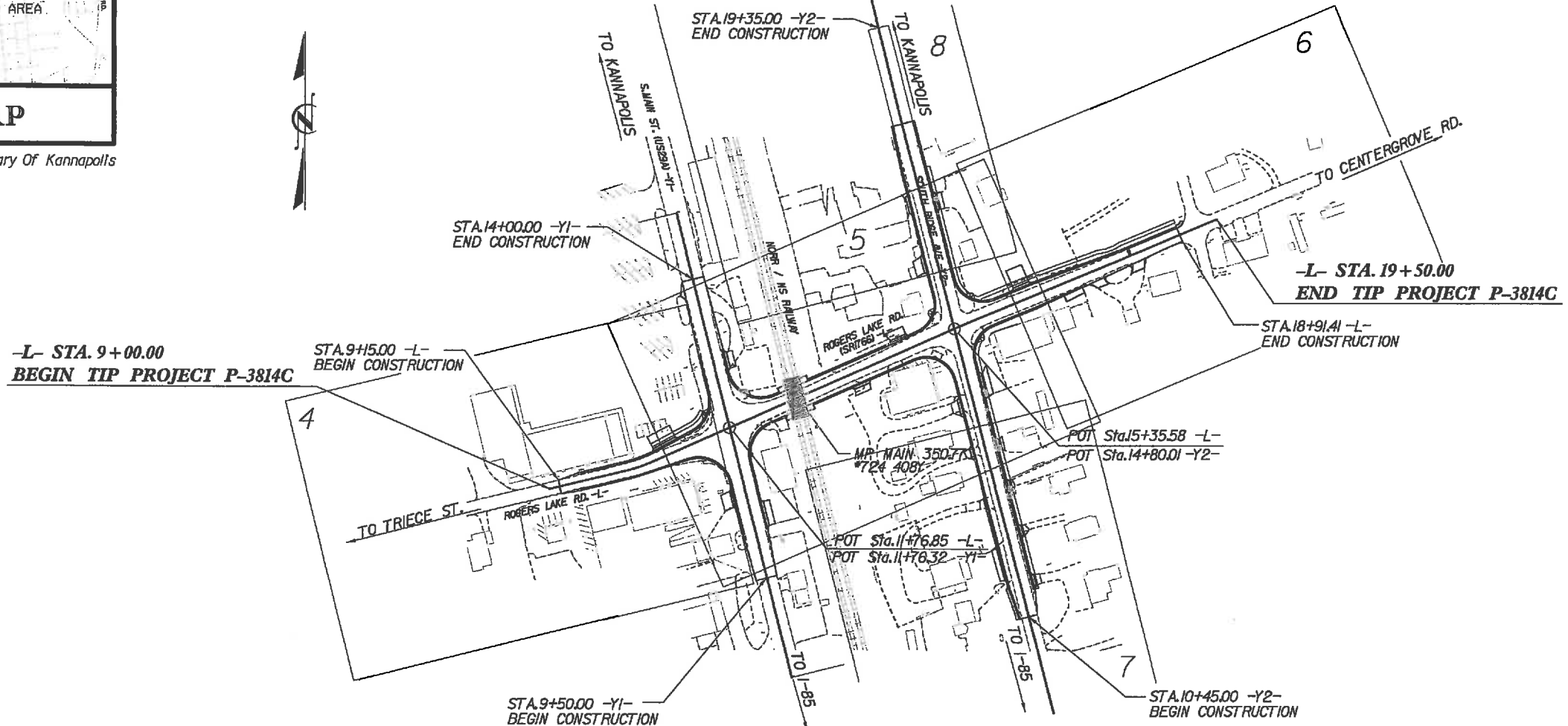
**TYPE OF WORK: GRADING, PAVING, DRAINAGE,  
PAVEMENT MARKING AND MARKERS,  
EROSION CONTROL & TRAFFIC CONTROL**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	P-3814C	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DIS. CATEGORY	
34312.3.1		PRELIM. ENG.	
34312.2.2		RW	
34312.3.7	STP-0005 (154)	CONST.	

**TIP PROJECT: P-3814C**



This Project Is Within The Municipal Boundary Of Kannapolis

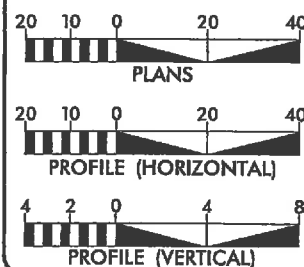


**LAYOUT PLAN**  
NTS

**FINAL PLANS  
FOR CONSTRUCTION**

NCDOT CONTACT:  
PROJECT ENGINEER: DAN HAVENER, PE  
RAIL DIVISION 919-715-8797

### GRAPHIC SCALES



### DESIGN DATA

ADT 2001 = 8200  
 ADT 2025 = 11,200  
 DHV = 10 %  
 D = 60 %  
 T = 1 % \*  
 V = 30 MPH  
 \* TTST 0 % DUAL 1%

### PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT P-3814C = 0.199 mi  
 TOTAL LENGTH OF TIP PROJECT P-3814C = 0.199 mi.

Plans Prepared for NCDOT by:

**Gannett Fleming**  
 GANNETT FLEMING, INC.  
 301 S. McDOWELL STREET, SUITE 1000  
 CHARLOTTE, NORTH CAROLINA 28204-2644  
 PHONE: 704-375-2400 FAX: 704-372-9361  
 NC LIC. NO. P-4279

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
DEC. 1, 2008

LETTING DATE:  
APR. 17, 2013

THOMAS W. LAMBERT, P.E.  
PROJECT ENGINEER

WILLIAM T. WENTZIEN, P.E.  
PROJECT DESIGN ENGINEER

HYDRAULICS  
ENGINEER

SIGNATURE:  
ROADWAY  
DESIGN  
ENGINEER



RAIL DIVISION  
STATE OF NORTH CAROLINA



APPROVED  
DIVISION ADMINISTRATOR  
DATE

3/18/2013 10:35:56 AM \\s01\US\_sht1\_cover.dgn

**CONTRACT: 34312**

8/17/99

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

PREPARED BY  
**Gannett Fleming**  
GANNETT FLEMING, INC.  
301 S. McDOWELL STREET, SUITE 1008  
CHARLOTTE, NORTH CAROLINA 28204  
PHONE: 704-375-2438 FAX: 704-332-9361  
NC LIC NO.: F-0270

3/20/13	NONE	MAR 2013	BYG	TWL
SPCL PROJ. NO.	SCALE	DATE	DRAWN BY	CHECKED BY

THIS DRAWING WAS ORIGINALLY ISSUED  
BY THOMAS W. LAMBERT, PE 17643 ON 3/8/13  
REGISTERED ENGINEER (NO PE NO.) DATE

PROJECT REFERENCE NO. P-3814C	SHEET NO. 1A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

**INDEX OF SHEETS**

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2 THRU 2A	TYPICAL SECTIONS
2B	DETAILS
3	SUMMARY OF QUANTITIES AND EARTHWORK SUMMARY
3A THRU 3B	DRAINAGE SUMMARY
3C	RIGHT-OF-WAY SUMMARY
4 THRU 8	PLAN
9 THRU 11	PROFILES
12 THRU 13	STORM DRAINAGE PROFILES
TCP-1 THRU TCP-8	TRAFFIC CONTROL PLANS
PM-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-3	EROSION CONTROL PLANS
SIG-1 THRU SIG-8	SIGNAL PLANS
X-1A	CROSS-SECTIONS SUMMARY SHEET
X-1 THRU X-10	CROSS-SECTIONS

**GENERAL NOTES**

GENERAL NOTES:

2012 SPECIFICATIONS  
EFFECTIVE: 01-17-2012  
REVISED: 07-30-2012

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 II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 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.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

TEMPORARY SHORING:

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

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT WHERE NOTED ON THE PLANS.

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05.

**STANDARD DRAWINGS**

2012 ROADWAY ENGLISH STANDARD DRAWINGS  
EFF. 01-17-2012  
REV. 10-30-2012

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	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superlevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
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	
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - For Use With Pipes Under 42"
840.35	Traffic Bearing Grated Drop Inlet - For Cast Iron Double Frame and Grate
840.51	Brick Manhole - 12" thru 36" Pipe
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.03	Driveway Turnout - Drop Curb Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
850.01	Concrete Paved Ditches
876.02	Guide for Rip Rap at Pipe Outlets
DIVISION 15 - UTILITIES	
1515.01	Water Meter
1515.02	Fire Hydrant

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09/05/09

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	○
Property Corner	⊗
Property Monument	□
Parcel/Sequence Number	123
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	-o-o-o-
Proposed Chain Link Fence	-□-□-□-
Proposed Barbed Wire Fence	-◇-◇-◇-
Existing Wetland Boundary	-w-w-w-
Proposed Wetland Boundary	-w-w-w-
Existing Endangered Animal Boundary	-a-a-a-
Existing Endangered Plant Boundary	-p-p-p-

### BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	⊙
Well	⊕
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	-w-w-w-
Proposed Lateral, Tail, Head Ditch	→
False Sump	⊕

### RAILROADS:

Standard Gauge	_____
RR Signal Milepost	○
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	_____
Proposed Right of Way Line with Iron Pin and Cap Marker	⊕
Proposed Right of Way Line with Concrete or Granite Marker	⊕
Existing Control of Access	⊕
Proposed Control of Access	⊕
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 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 Wheel Chair Ramp	⊕
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	_____

### EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	_____
Bridge Wing Wall, Head Wall and End Wall	_____
MINOR:	
Head and End Wall	_____
Pipe Culvert	_____
Footbridge	_____
Drainage Box: Catch Basin, DI or JB	□
Paved Ditch Gutter	_____
Storm Sewer Manhole	⊕
Storm Sewer	_____

### UTILITIES:

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

### TELEPHONE:

Existing Telephone Pole	⊕
Proposed Telephone Pole	⊕
Telephone Manhole	⊕
Telephone Booth	⊕
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	⊕
Recorded U/G Telephone Cable	_____
Designated U/G Telephone Cable (S.U.E.*)	_____
Recorded U/G Telephone Conduit	_____
Designated U/G Telephone Conduit (S.U.E.*)	_____
Recorded U/G Fiber Optics Cable	_____
Designated U/G Fiber Optics Cable (S.U.E.*)	_____

### WATER:

Water Manhole	⊕
Water Meter	⊕
Water Valve	⊕
Water Hydrant	⊕
Recorded U/G Water Line	_____
Designated U/G Water Line (S.U.E.*)	_____
Above Ground Water Line	_____

### TV:

TV Satellite Dish	⊕
TV Pedestal	⊕
TV Tower	⊕
U/G TV Cable Hand Hole	⊕
Recorded U/G TV Cable	_____
Designated U/G TV Cable (S.U.E.*)	_____
Recorded U/G Fiber Optic Cable	_____
Designated U/G Fiber Optic Cable (S.U.E.*)	_____

### GAS:

Gas Valve	⊕
Gas Meter	⊕
Recorded U/G Gas Line	_____
Designated U/G Gas Line (S.U.E.*)	_____
Above Ground Gas Line	_____

### SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	_____
Above Ground Sanitary Sewer	_____
Recorded SS Forced Main Line	_____
Designated SS Forced Main Line (S.U.E.*)	_____

### MISCELLANEOUS:

Utility Pole	⊕
Utility Pole with Base	⊕
Utility Located Object	⊕
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line	_____
U/G Tank; Water, Gas, Oil	□
AG Tank; Water, Gas, Oil	□
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

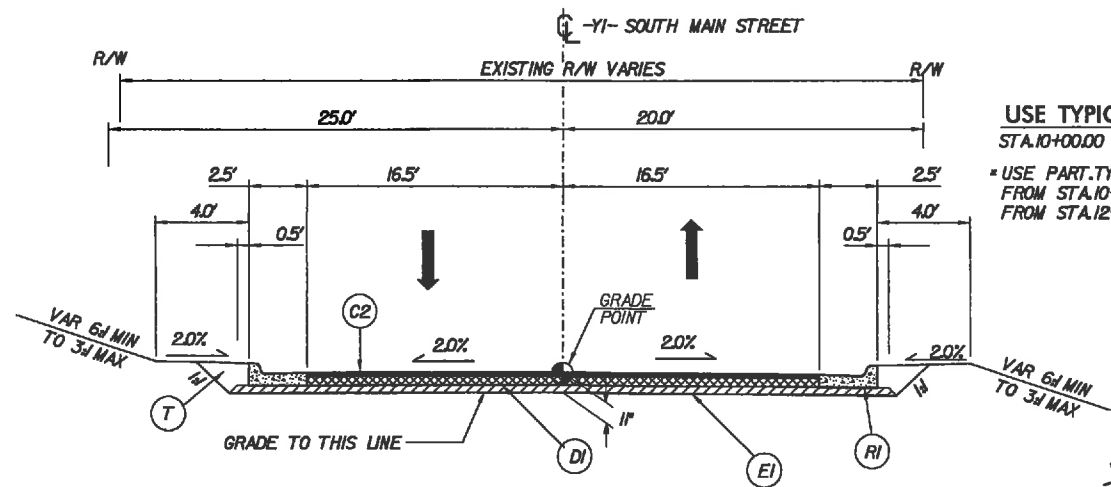
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3/8/2013  
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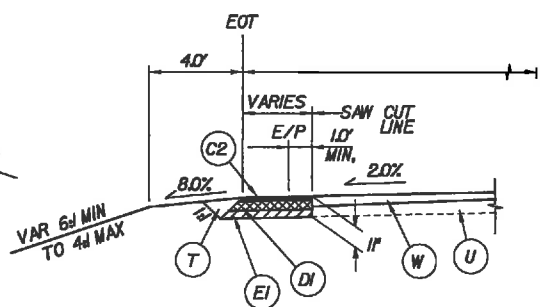
REVISIONS



**TYPICAL SECTION NO. 4**

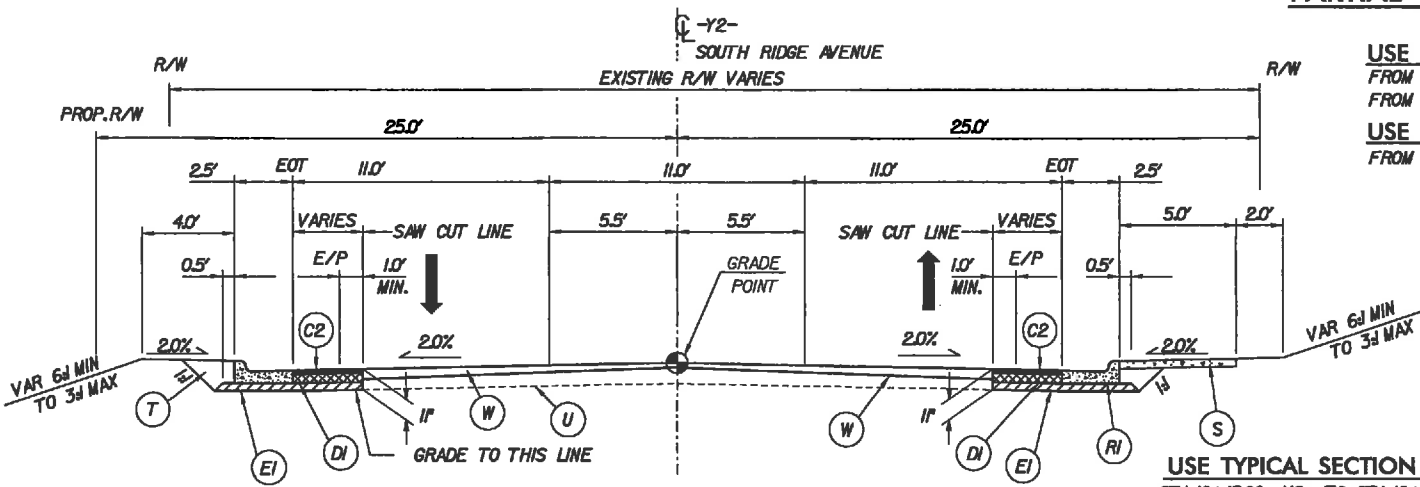
NOTE: SEE PLANS FOR SUPERELEVATION RATES AND TRANSITIONS. SEE PLANS FOR SIDEWALK LOCATION & DIMENSIONS. SEE CROSS SECTIONS FOR DITCH LOCATIONS. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS MARKED OTHERWISE.

USE TYPICAL SECTION NO. 4  
STA.10+00.00 -Y1- TO STA.13+30.00 -Y1-  
\* USE PART.TYP.SECT.NO.4A  
FROM STA.10+00.00 TO STA.10+20.00 LT & RT  
FROM STA.12+90.00 TO STA.13+30.00 LT & RT



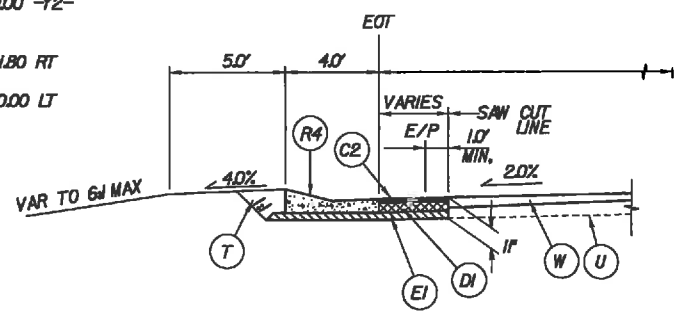
**PARTIAL TYPICAL SECTION NO. 4A**

NTS  
USE WITH TYPICAL SECTION NO. 4  
FROM STA.10+00.00 TO STA.10+20.00 -Y1- LT & RT  
FROM STA.12+90.00 TO STA.13+30.00 -Y1- LT & RT  
USE WITH TYPICAL SECTION NO. 5  
FROM STA.10+45.00 TO STA.10+81.80 -Y2- RT



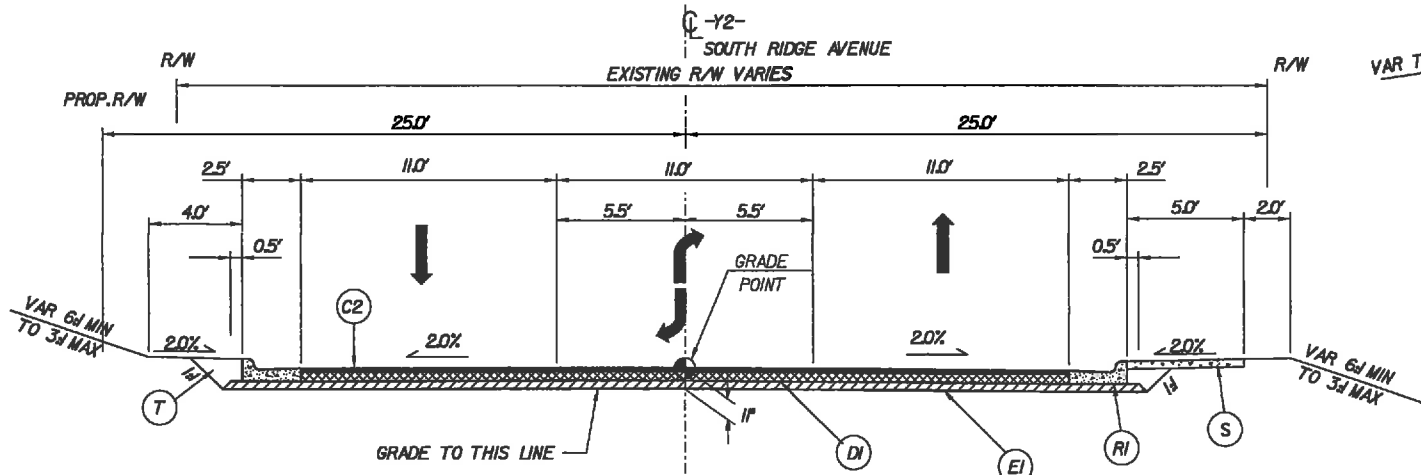
**TYPICAL SECTION NO. 5**

USE TYPICAL SECTION NO. 5  
STA.10+45.00 -Y2- TO STA.12+86.00 -Y2-  
STA.16+48.00 -Y2- TO STA.17+90.00 -Y2-  
\* USE PART.TYP.SECT.NO.4A  
FROM STA.10+45.00 TO STA.10+81.80 RT  
USE PART.TYP.SECT.NO.5A  
FROM STA.11+03.00 TO STA.12+30.00 LT



**PARTIAL TYPICAL SECTION NO. 5A**

NTS  
USE WITH TYPICAL SECTION NO. 5  
STA.11+03.00 TO STA.12+30.00 -Y2- LT



**TYPICAL SECTION NO. 6**

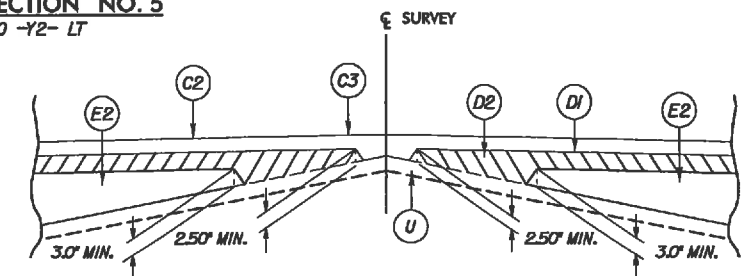
USE TYPICAL SECTION NO. 6  
STA.12+86.00 -Y2- TO STA.16+48.00 -Y2-

PREPARED BY  
**Gannett Fleming**  
GANNETT FLEMING, INC.  
301 S. McDOWELL STREET, SUITE 1008  
CHARLOTTE, NORTH CAROLINA 28204  
PHONE: 704-375-2438 FAX: 704-332-9361  
NC LIC NO.: F-0270

PROJECT REFERENCE NO. P-3814C	SHEET NO. 2A
R/W SHEET NO.	HYDRAULICS ENGINEER

3804130 NONE MAR 2013 BWC TWL  
WFC PROJ. NO. SCALE DATE OWNER BY CHECKED BY  
THIS DRAWING WAS ORIGINALLY ISSUED  
BY THOMAS W. LAMBERT, PE 17643 ON 3/8/2013  
REGISTERED ENGINEER (NC PE NO.) DATE

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1/2" ASPH. CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD.
C2	PROP. APPROX. 3" ASPH. CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPH. CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YARD PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.5' OR GREATER THAN 2.0' IN DEPTH.
D1	PROP. APPROX. 4" ASPH. CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD IN ONE LAYER.
D2	PROP. VAR. DEPTH ASPH. CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5' OR GREATER THAN 4.0' IN DEPTH.
E1	PROP. APPROX. 4" ASPH. CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD IN ONE LAYER.
E2	PROP. VAR. DEPTH ASPH. CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3.0' OR GREATER THAN 5.5' IN DEPTH.
M	MILLING, 1/2" THICKNESS
R1	2'-6" CONCRETE CURB & GUTTER.
R2	2'-0" VALLEY GUTTER
R3	8' x 6" MEDIAN CURB
R4	EXPRESSWAY GUTTER
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT
W	SEE PAVEMENT WEDGING DETAIL.



**DETAIL SHOWING METHOD OF WEDGING**















8/17/99

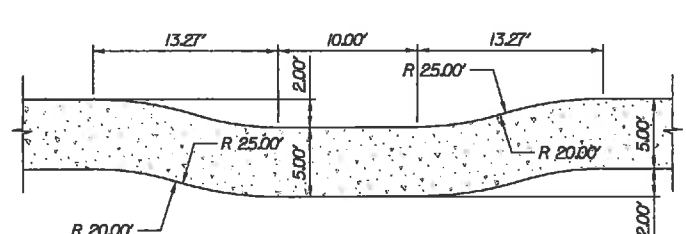
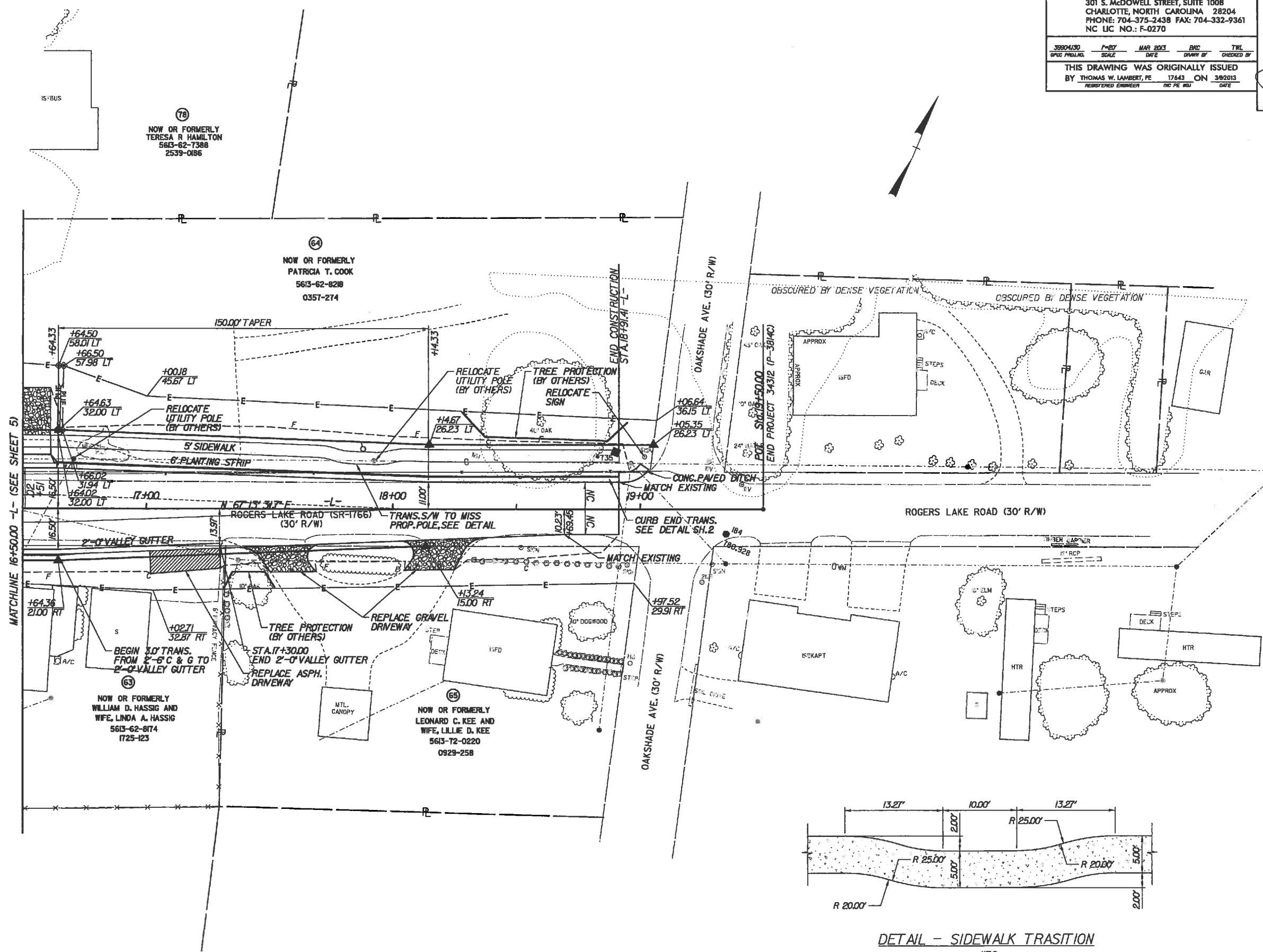
PREPARED BY  
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 CHARLOTTE, NORTH CAROLINA 28204  
 PHONE: 704-375-2438 FAX: 704-332-9361  
 NC LIC NO.: F-0270

3980430 P-07 MAR 2013 BNC TBL  
 SPEC. PRELIM. SCALE DATE DRAWN BY CHECKED BY

THIS DRAWING WAS ORIGINALLY ISSUED  
 BY THOMAS W. LAMBERT, PE 17643 ON 3/9/2013  
 REGISTERED ENGINEER INC. PE. REG. DATE

PROJECT REFERENCE NO. P-3814C	SHEET NO. 6
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

3/8/13



SEE SHEET 9 FOR PROFILE -L-

REVISIONS

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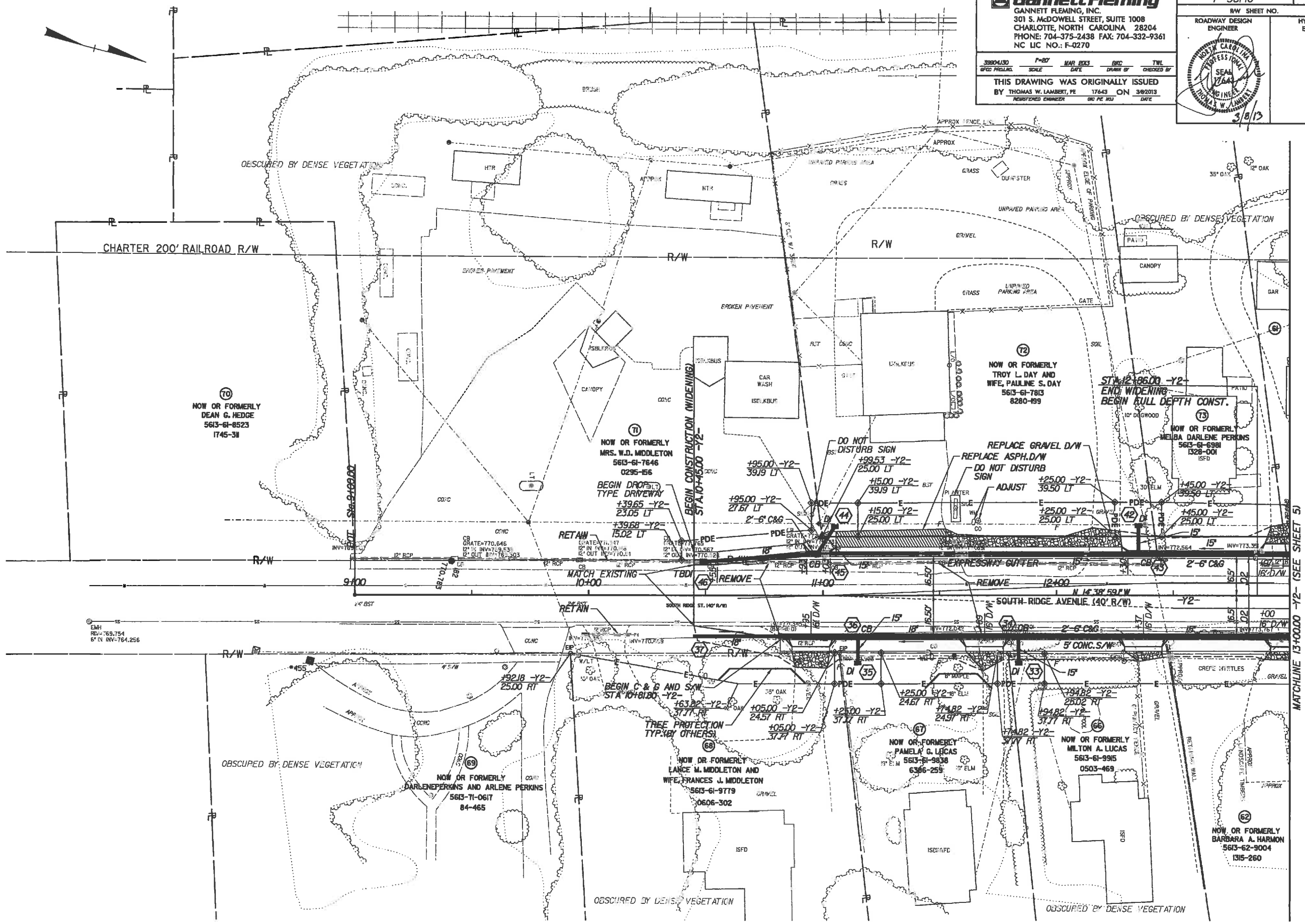
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 PHONE: 704-375-2438 FAX: 704-332-9361  
 NC LIC NO.: F-0270

38804/30	F-07	MAR 2003	BRC	TWL
DATE PLOTTED:	SCALE	DATE	DRAWN BY	CHECKED BY

THIS DRAWING WAS ORIGINALLY ISSUED  
 BY THOMAS W. LAMBERT, PE 17643 ON 3/20/03  
 REGISTERED ENGINEER DRG PE 001 DATE

PROJECT REFERENCE NO. P-3814C	SHEET NO. 7
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

3/8/13



REVISIONS

3/8/2013  
R:\38546130\dgn\as\_ah47.dgn

SEE SHEET 10 & 11 FOR PROFILE -Y2-

MATCHLINE 13+00.00 -Y2- (SEE SHEET 5)



8/17/99

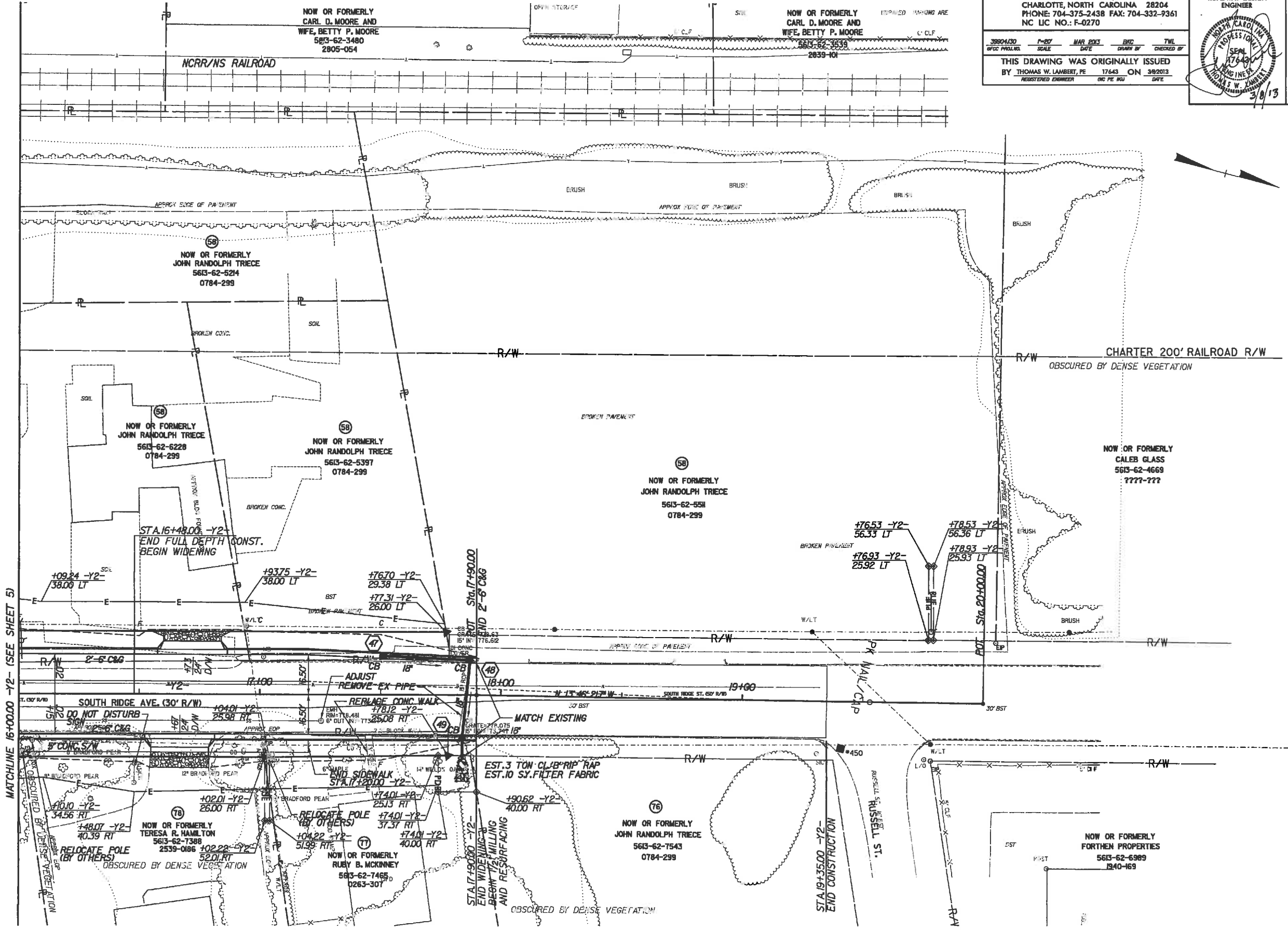
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 PHONE: 704-375-2438 FAX: 704-332-9361  
 NC LIC NO.: F-0270

3880420	P-87	MAR 2013	BWC	TWL
BY: THOMAS W. LAMBERT, PE	SCALE	DATE	DRAWN BY	CHECKED BY
REGISTERED ENGINEER		17643	ON	3/8/2013
		DATE		

THIS DRAWING WAS ORIGINALLY ISSUED  
 BY THOMAS W. LAMBERT, PE ON 3/8/2013  
 REGISTERED ENGINEER DATE

PROJECT REFERENCE NO. P-3814C	SHEET NO. 8
HWY SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

3/8/13



REVISIONS

3/8/2013  
K:\3655\38138\VDgn\us\_ah18.dgn

SEE SHEET 10 & 11 FOR PROFILE -Y2-

5/28/99

# ROGERS LAKE ROAD

BM D 3  
RR SPIKE IN PP  
-L- STA 15+57.44, 20.01' LT  
ELEV 781.03

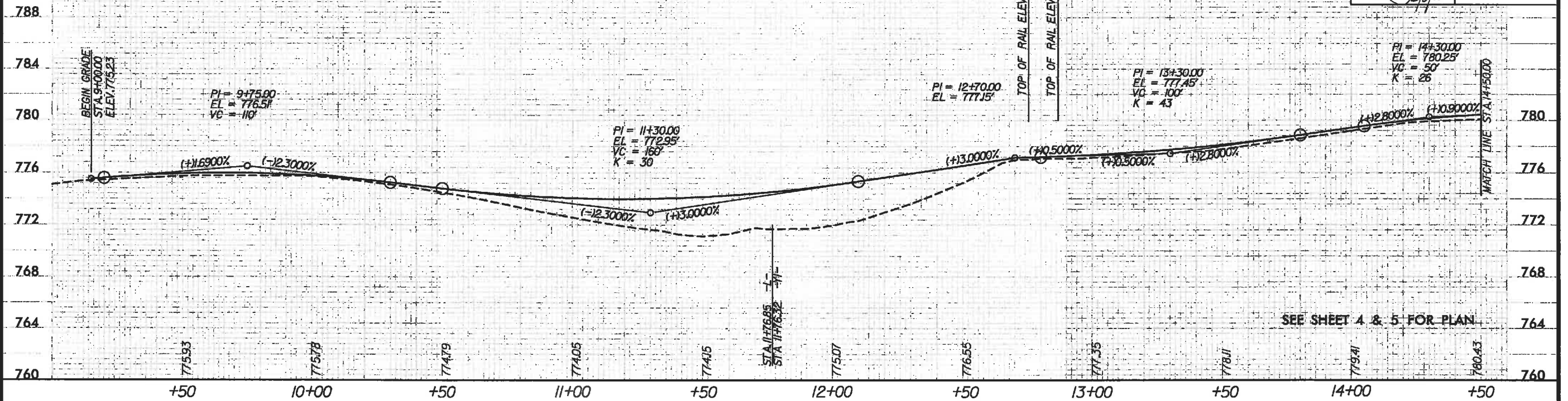
PREPARED BY  
**Gannett Fleming**  
GANNETT FLEMING, INC.  
301 S. McDOWELL STREET, SUITE 1008  
CHARLOTTE, NORTH CAROLINA 28204  
PHONE: 704-375-2438 FAX: 704-392-9361  
NC LIC NO.: F-0270

3880430	P-20 HOR	MAR 99	ERC	TWL
SPC PHILLIPS	SCALE	DATE	DRAWN BY	CHECKED BY

THIS DRAWING WAS ORIGINALLY ISSUED  
BY THOMAS W. LAMBERT, PE 17643 ON 3/8/2013  
REGISTERED ENGINEER OIC PE NO DATE

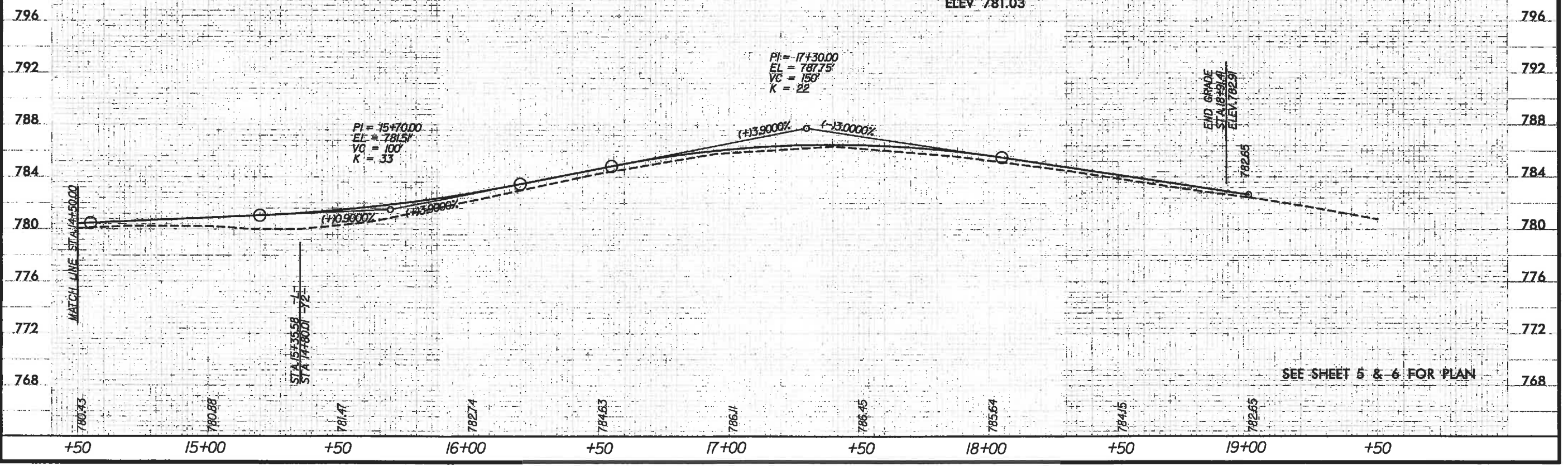
PROJECT REFERENCE NO. P-3814C	SHEET NO. 9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PROFESSIONAL SEAL  
THOMAS W. LAMBERT  
REGISTERED ENGINEER  
3/8/13



# ROGERS LAKE ROAD

BM D 3  
RR SPIKE IN PP  
-L- STA 15+57.44, 20.01' LT  
ELEV 781.03



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5/28/99

# -Y2- SOUTH RIDGE AVENUE

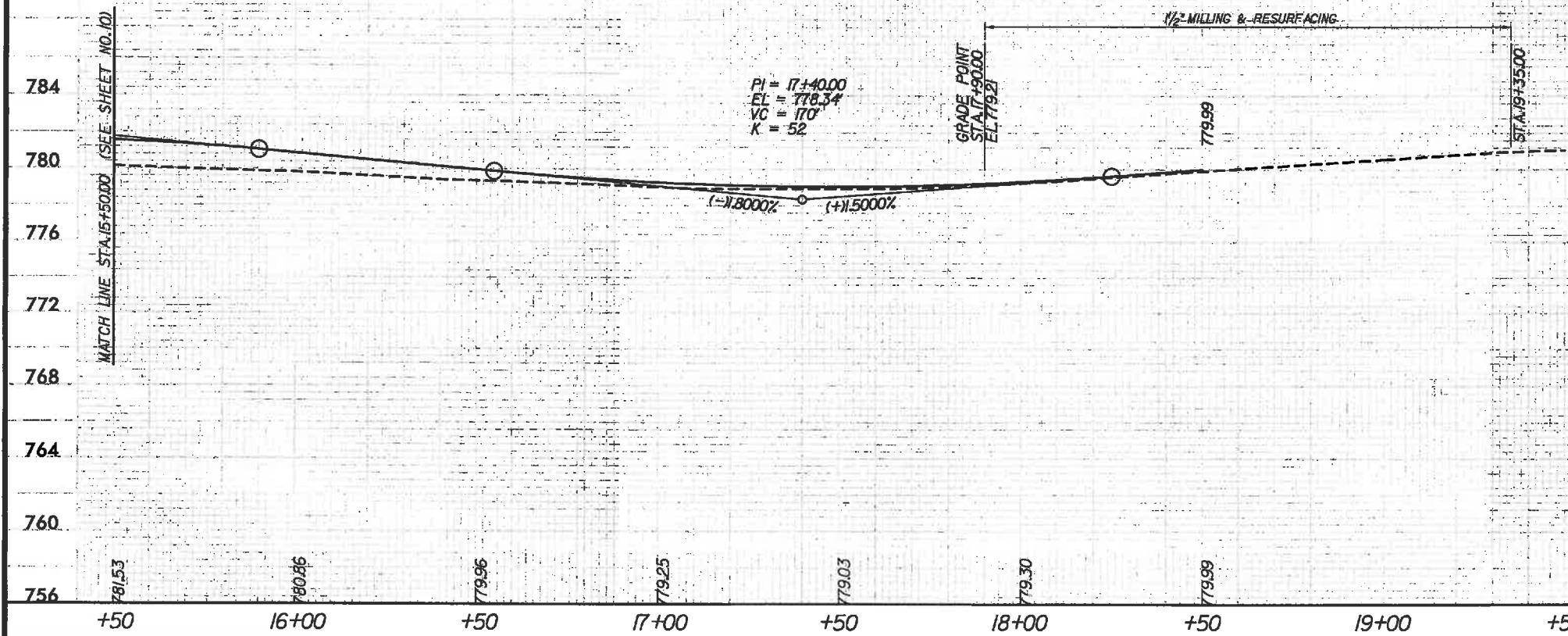
BM D 3  
RR SPIKE IN PP  
-L- STA 15+57.44, 20.01' LT  
ELEV 781.03

PREPARED BY  
**Gannett Fleming**  
GANNETT FLEMING, INC.  
301 S. McDOWELL STREET, SUITE 1008  
CHARLOTTE, NORTH CAROLINA 28204  
PHONE: 704-375-2438 FAX: 704-332-9361  
NC LIC NO.: F-0270

38804/SD SPEC. PREPARED	1-27-99 SCALE	MAR 2003 DATE	ERIC DRAWN BY	TWL CHECKED BY
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BY THOMAS W. LAMBERT, PE 17643 ON 3/20/13  
REGISTERED ENGINEER ENG PE NO. DATE

PROJECT REFERENCE NO. P-3814C SHEET NO. 11  
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER



SEE SHEET 8 FOR PLAN

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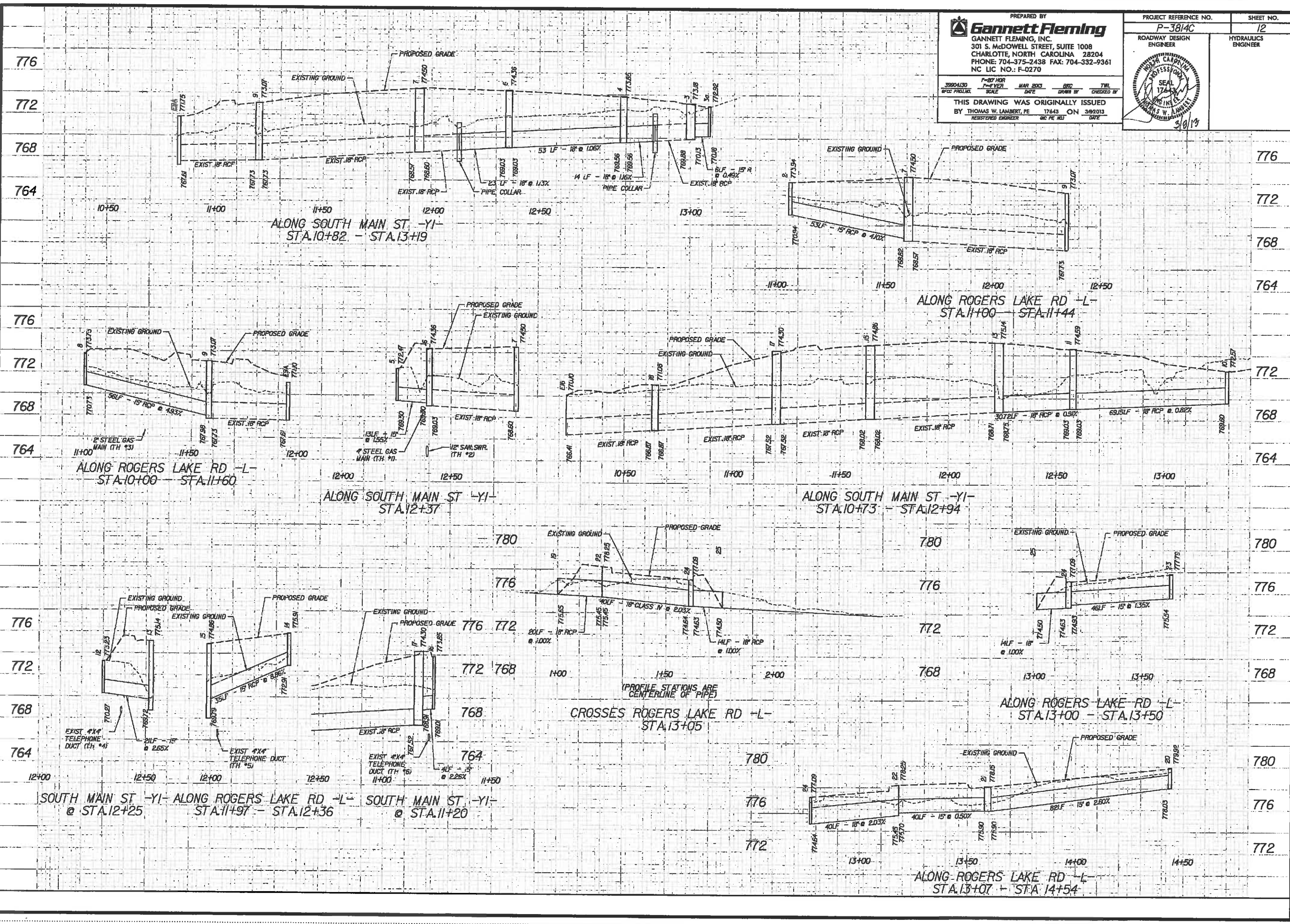


PREPARED BY  
**Gannett Fleming**  
 GANNETT FLEMING, INC.  
 301 S. McDOWELL STREET, SUITE 1008  
 CHARLOTTE, NORTH CAROLINA 28204  
 PHONE: 704-375-2438 FAX: 704-332-9361  
 NC LIC NO.: F-0270

PROJECT REFERENCE NO. P-3814C	SHEET NO. 12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

THIS DRAWING WAS ORIGINALLY ISSUED  
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 REGISTERED ENGINEER INC PE REG DATE

3/8/13



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8/17/99

PREPARED BY  
**Gannett Fleming**  
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 CHARLOTTE, NORTH CAROLINA 28204  
 PHONE: 704-375-2438 FAX: 704-332-9361  
 NC LIC. NO.: E-0270

PROJECT REFERENCE NO. P-3814C SHEET NO. TCP-1

RW SHEET NO. ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

3/20/13  
 3/8/13

3/20/13 NONE MAR 2013 WTW TWL  
 DATE SCALE DATE DRAWN BY CHECKED BY

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 REGISTERED ENGINEER ENG. PE. NO. DATE

# PLAN FOR PROPOSED TRAFFIC CONTROL, MARKING & DELINEATION

## ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS"-ROADWAY DESIGN UNIT-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
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1101.01	STATIONARY WORK ZONE SIGNS - MOUNTING HT. & LAT. CLEARANCE
1101.02	PORTABLE WORK ZONE SIGNS - MOUNTING HT. & LAT. CLEARANCE
1115.01	FLASHING ARROW PANELS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES - TYPE I, II, III & PERMANENT
1150.01	FLAGGERS
1160.01	TEMPORARY CRASH CUSHION - REFLECTIVE END TREATMENT
1165.01	TRUCK MOUNTED IMPACT ATTENUATOR - DELINEATION
1170.01	PORTABLE CONCRETE BARRIER
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - DIVIDED & UNDIVIDED ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - THRU LANE DROPS
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	PAVEMENT MARKER SPACING
1251.01	RAISED PAVEMENT MARKERS (TEMPORARY & PERMANENT)
1261.01	GUARDRAIL AND BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS
1264.02	PLACEMENT OF OBJECT MARKERS

THESE DRAWINGS SHALL BE USED IN THE EVENT THAT A PARTICULAR SITUATION IS NOT ADEQUATELY ADDRESSED IN THESE TRAFFIC CONTROL PLANS

## INDEX OF SHEETS

SHEET NO.	TITLE
TCP-1 THRU TCP-7	TRAFFIC CONTROL PLAN SHEETS
PMI	FINAL PAVEMENT MARKING PLAN / SIGNING PLAN

## PHASING

### PHASE 1

Step 1  
 Install Advance Construction Warning signs ("ROAD CONSTRUCTION AHEAD" - W20-1) throughout the project as shown on sheet TCP-4. Install erosion control devices throughout the project in accordance with the erosion control plans.

Step 2  
 Post detour signs as shown on sheet TCP-2, including portable changeable message signs. Place signs and barricades to close Rogers Lake Road (-L-) between S. Ridge Avenue (-Y2-) and S. Main Street (-Y1-).

Step 3  
 Construct the Improvements on Rogers Lake Road (-L-) between S. Ridge Avenue (-Y2-) and S. Main Street (-Y1-) as shown on sheet TCP-4 including storm drainage facilities, curb and gutter, sidewalk, new pavement, final grading and seeding and mulching. Coordinate with Norfolk-Southern Railway to construct the new grade crossing and install crossing protection.

### PHASE 2

Work must be complete on Phase 1 before beginning work on Phase 2.

Step 1  
 Post additional detour signs as shown on sheet TCP-3. Place signs and barricades to close S. Main Street (-Y1-) between Lawrence Avenue and Trice Street.

Step 2  
 Flagging traffic as necessary, construct the connection of Rogers Lake Road (-L-) and the improvements to S. Main Street (-Y1-) including storm drainage facilities, curb and gutter, sidewalk, asphalt wearing, final grading and seeding and mulching. Construct the new pavement up to and including the final surface course.

Step 3  
 Install the final thermoplastic pavement markings and raised reflective markers on S. Main Street (-Y1-), and Rogers Lake Road (-L-) west of S. Ridge Avenue (-Y2-) in accordance with sheet PM-1. Maintain the detour of Rogers Lake Road (-L-) as depicted on sheet TCP-2.

### PHASE 3

All work in Phases 1, and 2 must be complete before beginning Phase 3.

Step 1  
 Install new and revised detour signing for S. Ridge Avenue (-Y2-) and Rogers Lake Road (-L-) to close S. Ridge Avenue at Rogers Lake Road (-L-) and Rogers Lake Road (-L-) east of S. Ridge Avenue (-Y2-) as shown on sheets TCP-2 and TCP-6. Remove and relocate signs and channelizing devices as necessary to reopen S. Main Street (-Y1-).

Step 2  
 Construct the remainder of the improvements to Rogers Lake Road (-L-) as well as the improvements to S. Ridge Avenue (-Y2-) including curb and gutter, sidewalk, final grading and seeding and mulching. Construct the new pavement up to and including the final surface course.

Step 3  
 Flagging traffic as necessary, place the final layer of surface course throughout the remainder of the project. Install the final thermoplastic pavement markings and raised reflective markers throughout the remainder of the project in accordance with sheet PM-1. Remove detour signing and reopen S. Ridge Avenue (-Y2-) and Rogers Lake Road (-L-) to traffic.

Step 4  
 Remove all temporary signs and channelizing devices. Remove all temporary erosion control devices.

## LEGEND

### GENERAL

- DIRECTION OF TRAFFIC FLOW
- NORTH ARROW
- P.V.M.T. MARKING
- EXIST EOP
- ROAD CLOSED FOR CONSTRUCTION
- WORK AREA

### TRAFFIC CONTROL DEVICES

- TYPE I BARRICADE
- TYPE II BARRICADE
- TYPE III BARRICADE
- CONE
- DRUM
- PORTABLE CONCRETE BARRIER
- FLASHING ARROW PANEL (TYPE C)
- TYPE 'B' WARNING LIGHT
- STATIONARY SIGN
- PORTABLE SIGN
- WARNING FLAGS
- CRASH CUSHION
- CHANGEABLE MESSAGE SIGN
- TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)
- POLICE
- FLAGGER

REVISIONS

3/8/2013  
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8/17/99

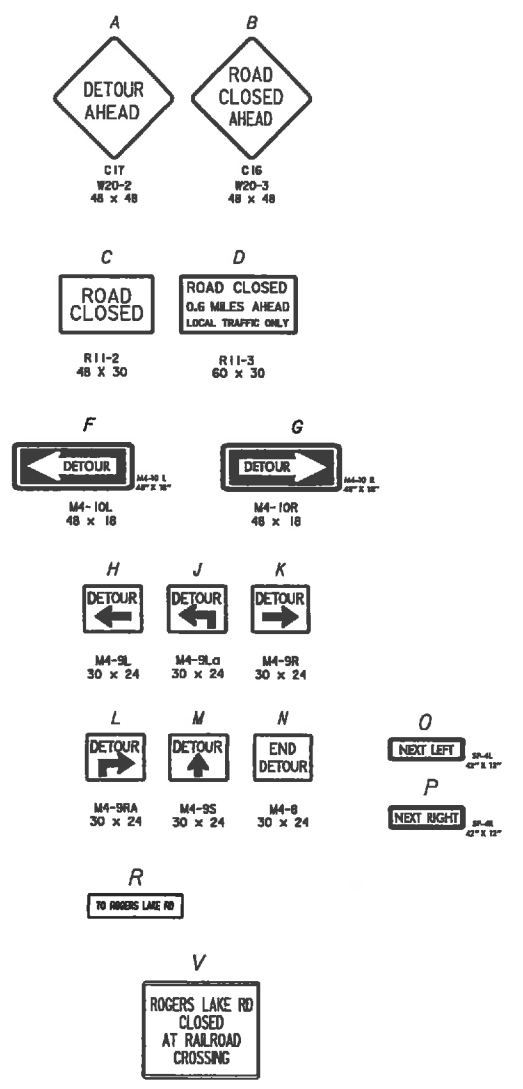
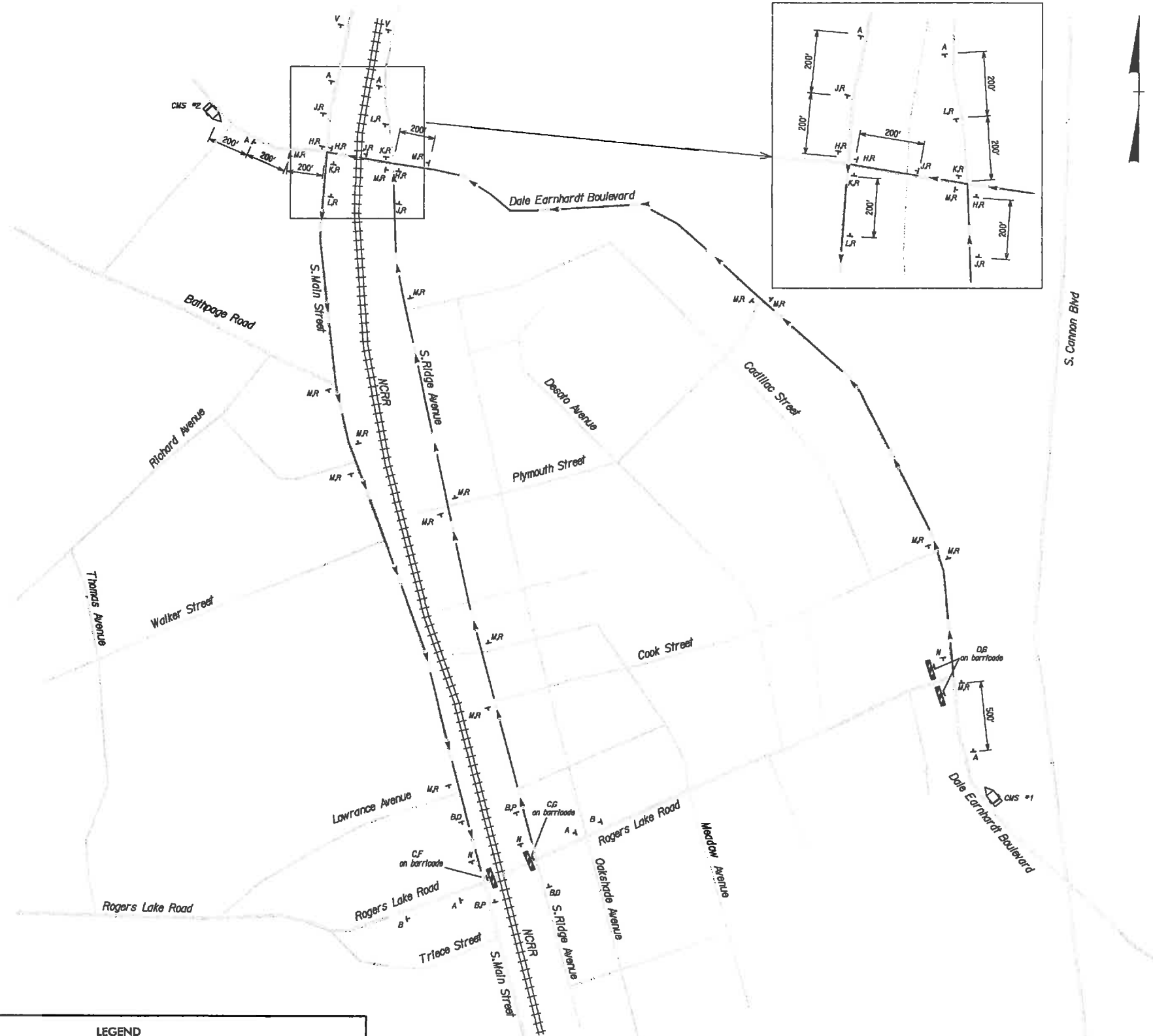
PREPARED BY  
**Gannett Fleming**  
 GANNETT FLEMING, INC.  
 301 S. McDOWELL STREET, SUITE 1008  
 CHARLOTTE, NORTH CAROLINA 28204  
 PHONE 704-375-2438 FAX: 704-332-9361  
 NC LIC NO.: F-0270

PROJECT REFERENCE NO. P-3814C	SHEET NO. TCP-2
RW SHEET NO.	HYDRAULICS ENGINEER

ROADWAY DESIGN ENGINEER  
 PROFESSIONAL SEAL  
 17643  
 3/8/13

3804/30 SPEC. PROVISION	NONE SCALE	MAR 2013 DATE	WTW DRAWN BY	TWL CHECKED BY
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THIS DRAWING WAS ORIGINALLY ISSUED  
 BY THOMAS W. LAMBERT, PE 17643 ON 3/9/2013  
 REGISTERED ENGINEER DATE



**LEGEND**

—>— Detour Routes

⊥ Stationary Sign

⊥ Portable Changeable Message Sign (CMS)

MESSAGE 1  
ROGERS LAKE RD  
CLOSED

MESSAGE 2  
AT  
RAILROAD  
CROSSING

MESSAGE 3  
FOLLOW  
DETOUR

PORTABLE CHANGEABLE MESSAGE SIGN (CMS)  
 MESSAGES - CMS #1, #2

REVISIONS

8/17/99

8/17/09

PREPARED BY  
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 NC LIC NO.: F-0270

PROJECT REFERENCE NO.  
**P-3814C**

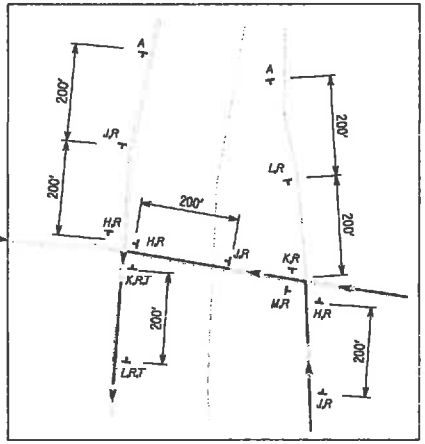
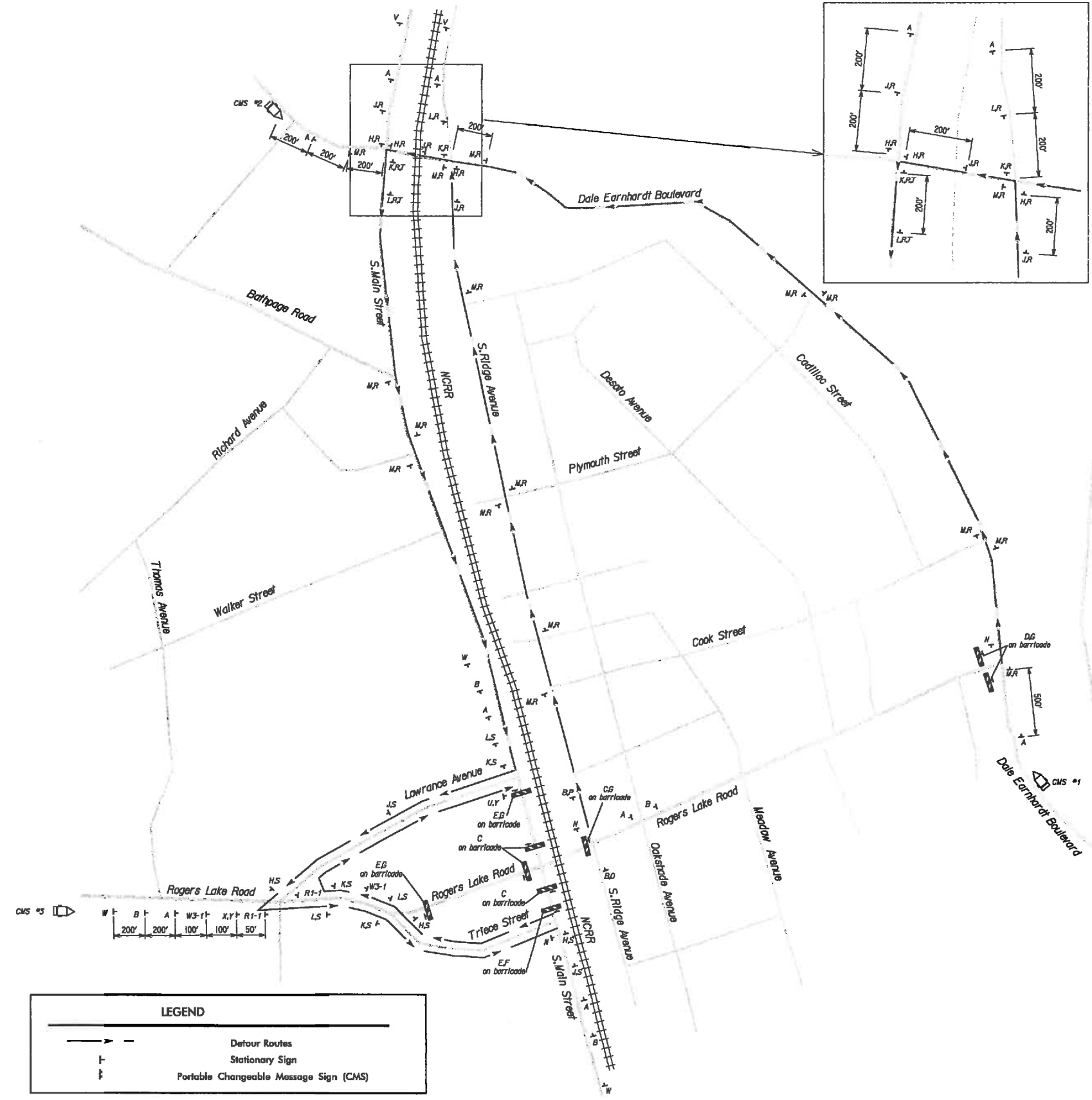
SHEET NO.  
**TCP-3**

R/W SHEET NO.  
 ROADWAY DESIGN ENGINEER  
 HYDRAULICS ENGINEER

38904/30 NONE MAR 2003 WTW TBL  
 SFC/D PROJ/NG SCALE DATE DRAWN BY CHECKED BY

THIS DRAWING WAS ORIGINALLY ISSUED  
 BY THOMAS W. LAMBERT, PE 17643 ON 3/8/2013  
 REGISTERED ENGINEER INC PE NO. DATE

3/8/13



**A** DETOUR AHEAD C17 1820-2 48 x 48

**B** ROAD CLOSED AHEAD C16 1820-3 48 x 48

**C** ROAD CLOSED R11-2 48 x 30

**D** ROAD CLOSED 0.6 MILES AHEAD LOCAL TRAFFIC ONLY R11-3 60 x 30

**E** ROAD CLOSED THRU TRAFFIC R11-4 60 x 30

**F** DETOUR M4-10L 48 x 18

**G** DETOUR M4-10R 48 x 18

**H** DETOUR M4-9L 30 x 24

**J** DETOUR M4-9L 30 x 24

**K** DETOUR M4-9R 30 x 24

**L** DETOUR M4-9RA 30' x 24"

**M** DETOUR M4-9S 30' x 24"

**N** END DETOUR M4-9 30' x 24"

**O** NEXT LEFT M4-10 48' x 12"

**P** NEXT RIGHT M4-10 48' x 12"

**R** TO ROGERS LAKE RD

**S** TO MAIN ST

**T** TO RIDGE AVENUE

**U** END DETOUR MAIN ST

**V** ROGERS LAKE RD CLOSED AT RAILROAD CROSSING

**W** MAIN ST. CLOSED AT ROGERS LAKE RD

**X** DETOUR TO MAIN ST NORTH SOUTH

**Y** DETOUR TO RIDGE AVE

MESSAGE 1 ROGERS LAKE RD CLOSED

MESSAGE 2 AT RAILROAD CROSSING

MESSAGE 3 FOLLOW DETOUR

PORTABLE CHANGEABLE MESSAGE SIGN (CMS) MESSAGES - CMS #1, #2

MESSAGE 1 MAIN ST CLOSED

MESSAGE 2 AT ROGERS LAKE RD

MESSAGE 3 FOLLOW DETOUR

PORTABLE CHANGEABLE MESSAGE SIGN (CMS) MESSAGES - CMS #3

**LEGEND**

— Detour Routes

— Stationary Sign

— Portable Changeable Message Sign (CMS)

REVISIONS

8/17/09

8/17/99

PREPARED BY  
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 CHARLOTTE, NORTH CAROLINA 28204  
 PHONE: 704-375-2438 FAX: 704-332-9361  
 NC LIC NO.: F-0270

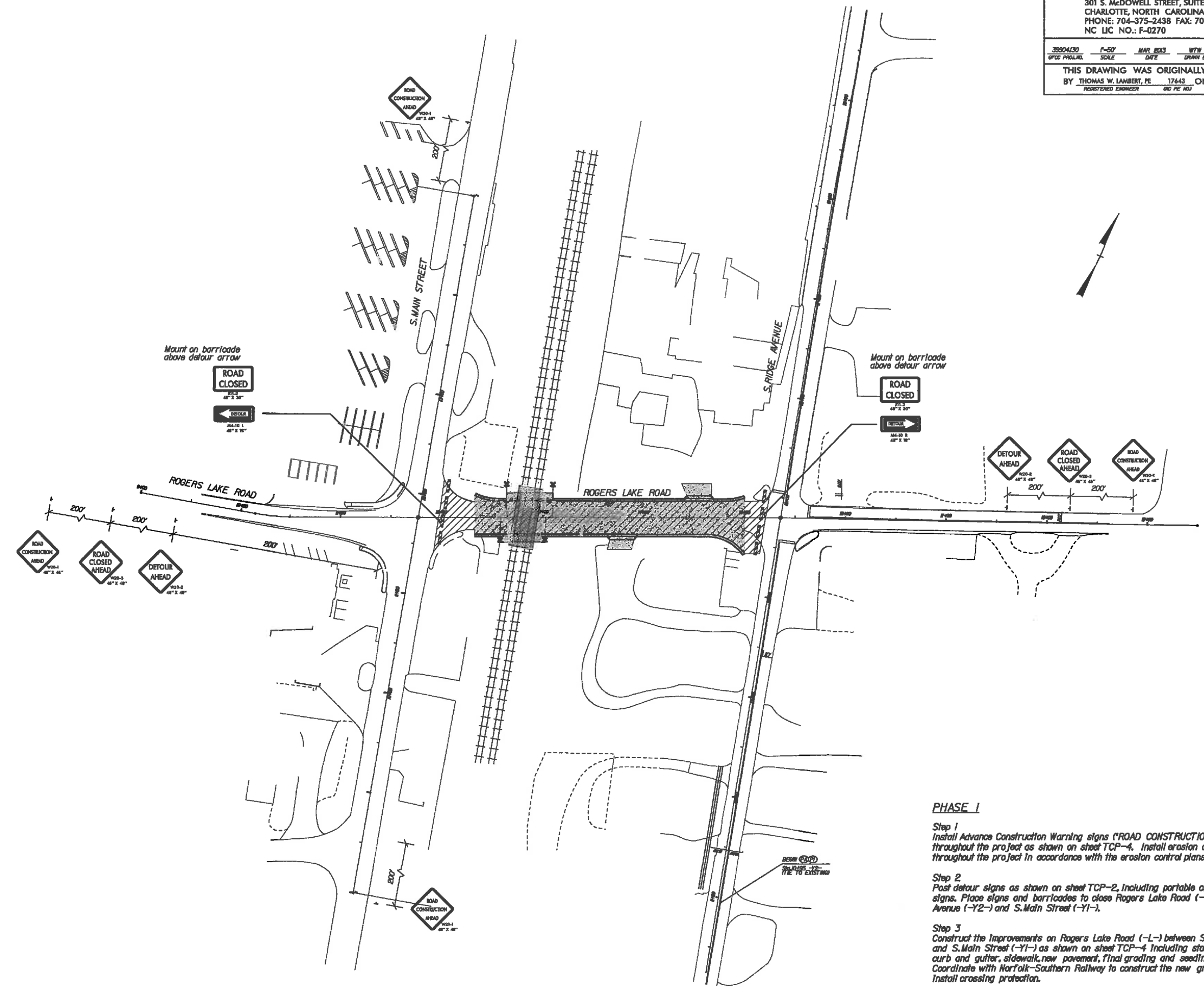
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DATE PLOTTED	SCALE	DATE	DRAWN BY	CHECKED BY

THIS DRAWING WAS ORIGINALLY ISSUED  
 BY THOMAS W. LAMBERT, PE 17643 ON 3/9/2013  
 REGISTERED ENGINEER 610 PE NO. DATE

PROJECT REFERENCE NO. P-3814C	SHEET NO. TCP-4
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

3/8/13

REVISIONS



**PHASE I**

- Step 1  
Install Advance Construction Warning signs ("ROAD CONSTRUCTION AHEAD" - W20-1) throughout the project as shown on sheet TCP-4. Install erosion control devices throughout the project in accordance with the erosion control plans.
- Step 2  
Post detour signs as shown on sheet TCP-2, including portable changeable message signs. Place signs and barricades to close Rogers Lake Road (-L-) between S. Ridge Avenue (-Y2-) and S. Main Street (-Y1-).
- Step 3  
Construct the Improvements on Rogers Lake Road (-L-) between S. Ridge Avenue (-Y2-) and S. Main Street (-Y1-) as shown on sheet TCP-4 including storm drainage facilities, curb and gutter, sidewalk, new pavement, final grading and seeding and mulching. Coordinate with Norfolk-Southern Railway to construct the new grade crossing and install crossing protection.

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8/17/99

REVISIONS

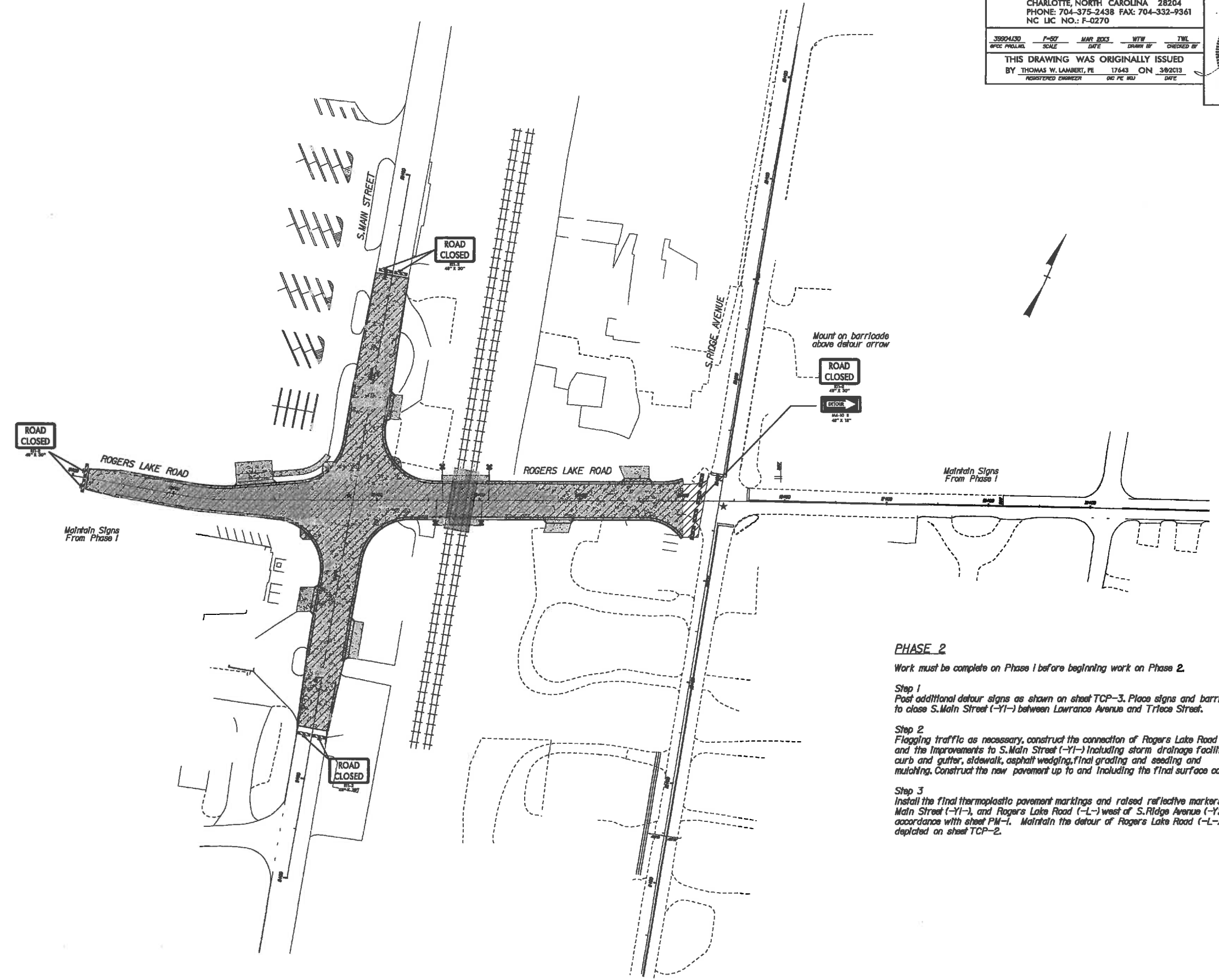
3/18/2013  
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PREPARED BY  
**Gannett Fleming**  
 GANNETT FLEMING, INC.  
 301 S. McDOWELL STREET, SUITE 1008  
 CHARLOTTE, NORTH CAROLINA 28204  
 PHONE: 704-375-2438 FAX: 704-332-9361  
 NC LIC NO.: F-0270

PROJECT REFERENCE NO. P-3814C	SHEET NO. TCP-5
R/W SHEET NO. ROADWAY/DESIGN ENGINEER	HYDRAULICS ENGINEER

33804330 P-507 MAR 2003 WTW TWL  
 SCALE DATE DRAWN BY CHECKED BY  
 THIS DRAWING WAS ORIGINALLY ISSUED  
 BY THOMAS W. LAMBERT, PE 17643 ON 3/9/2013  
 REGISTERED ENGINEER OIG PE 001 DATE

Professional Engineer Seal: THOMAS W. LAMBERT, PE 17643, State of North Carolina, expires 12/31/13.



**PHASE 2**

Work must be complete on Phase 1 before beginning work on Phase 2.

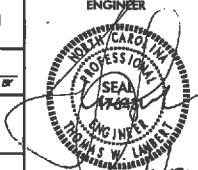
- Step 1  
Post additional detour signs as shown on sheet TCP-3. Place signs and barricades to close S. Main Street (-Y1-) between Lawrence Avenue and Trieca Street.
- Step 2  
Flagging traffic as necessary, construct the connection of Rogers Lake Road (-L-) and the Improvements to S. Main Street (-Y1-) including storm drainage facilities, curb and gutter, sidewalk, asphalt wedging, final grading and seeding and mulching. Construct the new pavement up to and including the final surface course.
- Step 3  
Install the final thermoplastic pavement markings and raised reflective markers on S. Main Street (-Y1-), and Rogers Lake Road (-L-) west of S. Ridge Avenue (-Y2-) in accordance with sheet PM-1. Maintain the detour of Rogers Lake Road (-L-) as depicted on sheet TCP-2.

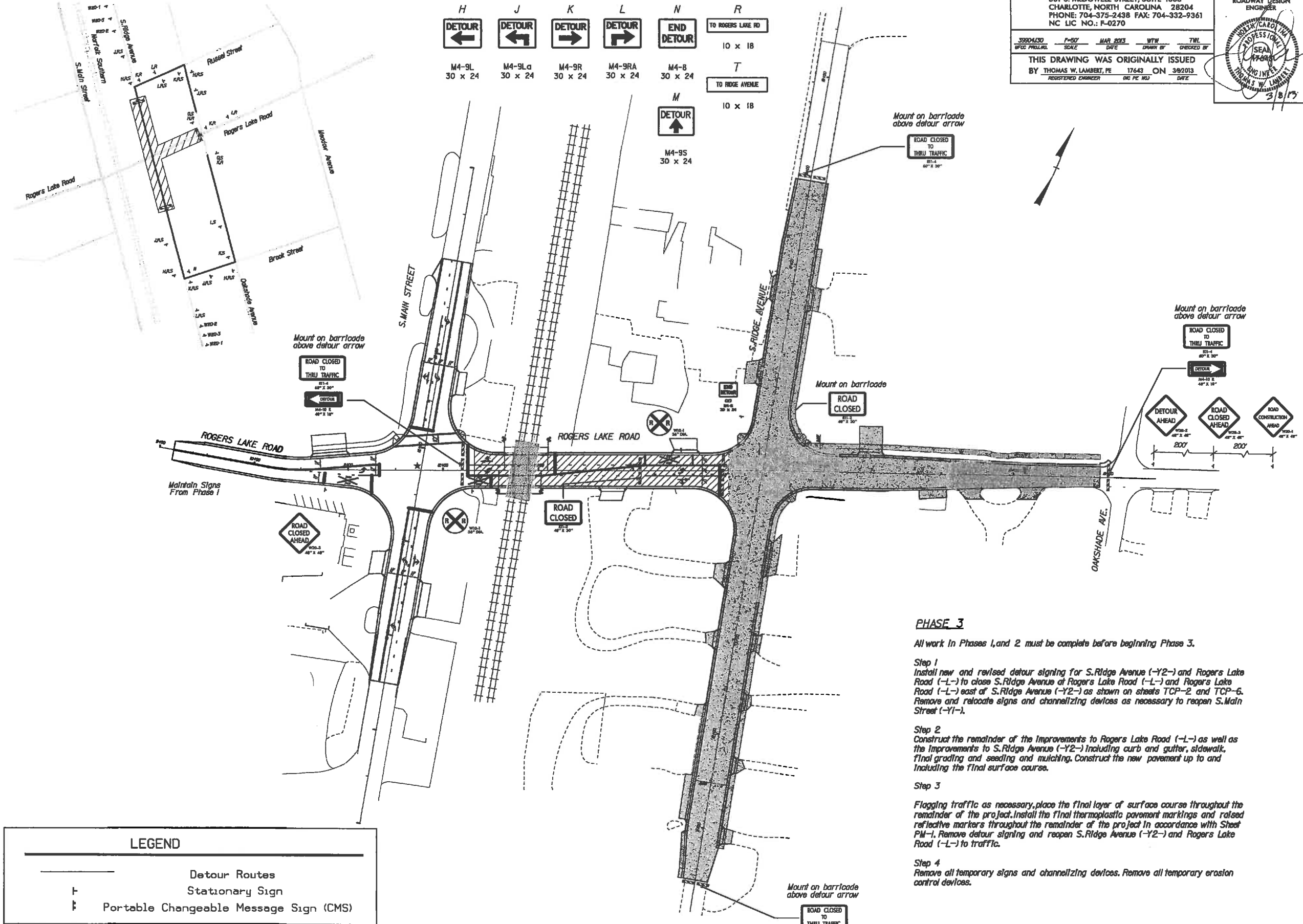


8/17/99

REVISIONS

3/18/2013  
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PREPARED BY		PROJECT REFERENCE NO.	SHEET NO.
GANNETT FLEMING, INC. 301 S. McDOWELL STREET, SUITE 1008 CHARLOTTE, NORTH CAROLINA 28204 PHONE: 704-375-2438 FAX: 704-332-9361 NC LIC NO.: F-0270		P-3814C	TCP-6
ROADWAY DESIGN ENGINEER		RW SHEET NO.	HYDRAULICS ENGINEER
			
3880430 SFC PROJECT	F-87 SCALE	MAR 2003 DATE	WTW DRAWN BY
THIS DRAWING WAS ORIGINALLY ISSUED BY THOMAS W. LAMBERT, PE 17643 ON 3/8/2013 <small>REGISTERED ENGINEER      DRG. P.C. MW      DATE</small>			



**PHASE 3**

All work in Phases 1, and 2 must be complete before beginning Phase 3.

**Step 1**  
Install new and revised detour signing for S. Ridge Avenue (-Y2-) and Rogers Lake Road (-L-) to close S. Ridge Avenue at Rogers Lake Road (-L-) and Rogers Lake Road (-L-) east of S. Ridge Avenue (-Y2-) as shown on sheets TCP-2 and TCP-6. Remove and relocate signs and channelizing devices as necessary to reopen S. Main Street (-Y1-).

**Step 2**  
Construct the remainder of the improvements to Rogers Lake Road (-L-) as well as the improvements to S. Ridge Avenue (-Y2-) including curb and gutter, sidewalk, final grading and seeding and mulching. Construct the new pavement up to and including the final surface course.

**Step 3**  
Flagging traffic as necessary, place the final layer of surface course throughout the remainder of the project. Install the final thermoplastic pavement markings and raised reflective markers throughout the remainder of the project in accordance with Sheet PM-1. Remove detour signing and reopen S. Ridge Avenue (-Y2-) and Rogers Lake Road (-L-) to traffic.

**Step 4**  
Remove all temporary signs and channelizing devices. Remove all temporary erosion control devices.

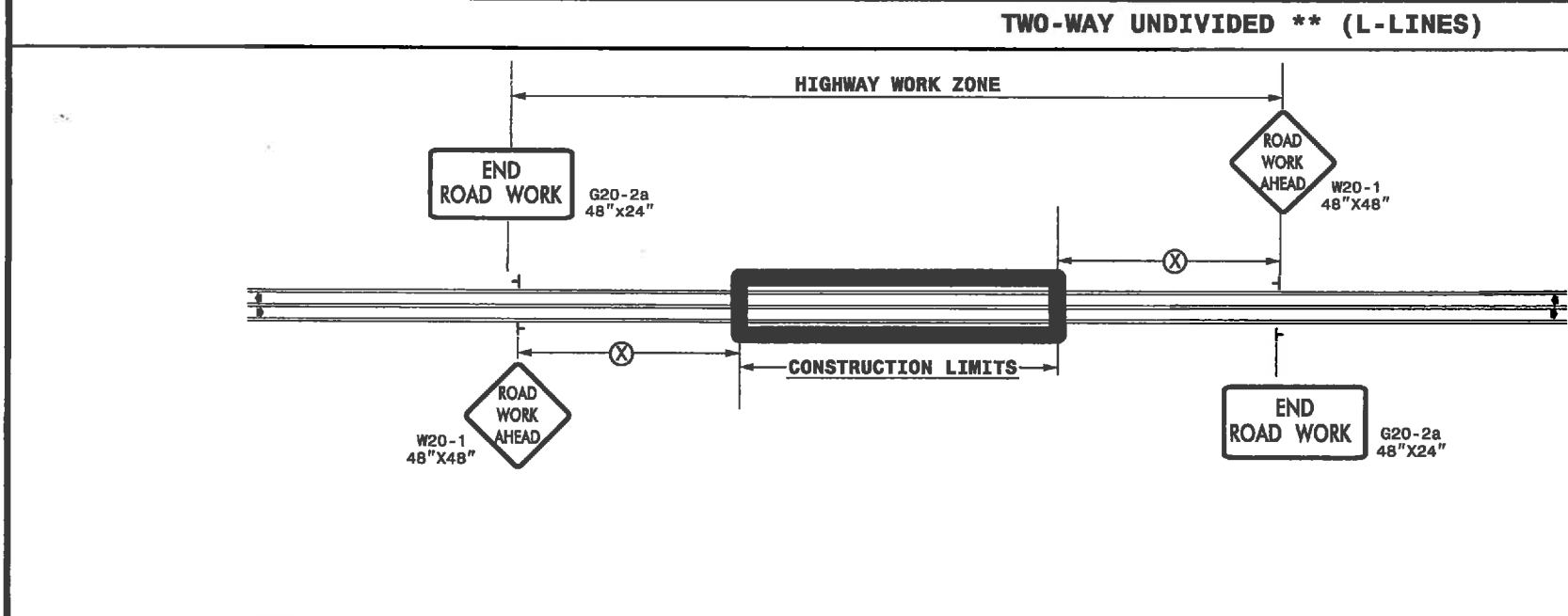
8/17/99

PREPARED BY  
**Gannett Fleming**  
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 301 S. McDOWELL STREET, SUITE 1008  
 CHARLOTTE, NORTH CAROLINA 28204  
 PHONE: 704-375-2438 FAX: 704-332-9361  
 NC LIC NO.: F-0270

39904/30 NONE MAR 2003 BTW TWL  
 SCALE DATE DRAWN BY CHECKED BY

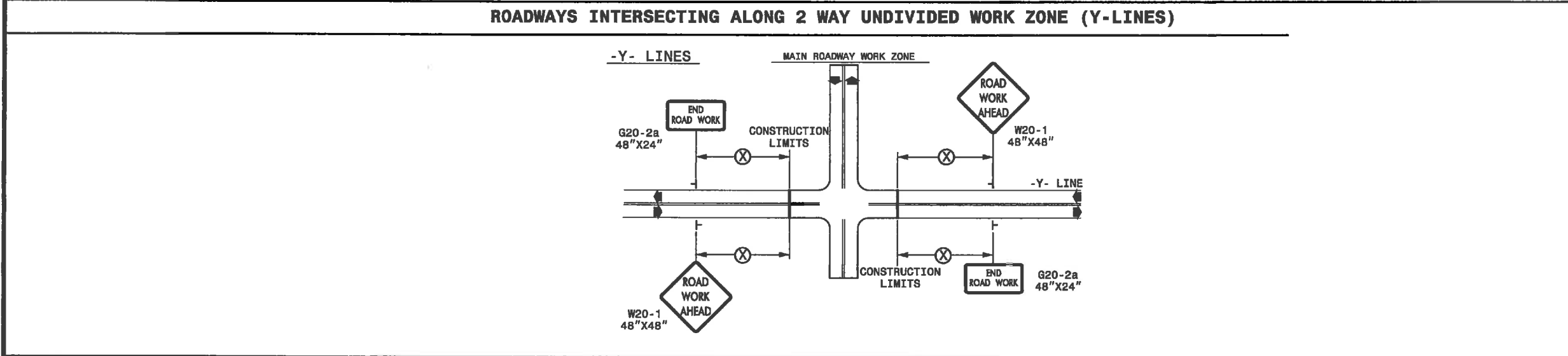
THIS DRAWING WAS ORIGINALLY ISSUED  
 BY THOMAS W. LAMBERT, PE 17643 ON 3/9/2013  
 REGISTERED ENGINEER INC PE REG DATE

PROJECT REFERENCE NO. P-3814C	SHEET NO. TCP-7
R/W SHEET NO.	HYDRAULICS ENGINEER



POSTED SPEED LIMIT (M.P.H.)	RECOMMENDED MINIMUM SIGN SPACING
≤ 50	500'
≥ 55	1000'

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



DETAIL DRAWING FOR  
 TWO-WAY UNDIVIDED  
 WORK ZONE WARNING SIGNS

**GENERAL NOTES**

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCED WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK.
- SIGNS SHOWN ARE REQUIRED FOR WORK ZONES THAT WILL REMAIN IN EFFECT OVERNIGHT. FOR SHORT-TERM DAILY MAINTENANCE TYPE OPERATIONS, THIS SIGNING APPLICATION IS OPTIONAL; MAY USE ONLY APPLICABLE ROADWAY STANDARD DRAWINGS INSTEAD. HOWEVER, IF THIS SIGNING APPLICATION IS USED, SIGNS MAY BE PORTABLE MOUNTED.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE 3LB STEEL U-CHANNEL POST OR 4" X 4" WOOD POST FOR ALL WORK ZONE SIGNS. 3LB STEEL U-CHANNEL POSTS MUST MEET THE REQUIREMENTS OF STANDARD SPECIFICATION SECTION 1094-1(B), MAY BE GALVANIZED STEEL, OR MAY BE PAINTED GREEN BY THE POST MANUFACTURER. SQUARE STEEL TUBING POSTS HAVING EQUIVALENT STRENGTH OF THE 3 LB STEEL U-CHANNEL POST ARE ALSO ACCEPTABLE FOR USE. ERECT SIGNS PER ROADWAY STANDARD DRAWING 1110.01. PAYMENT FOR WOOD POSTS, 3LB STEEL U-CHANNEL AND SQUARE STEEL TUBING POSTS WITH SIGNS WILL BE MADE ACCORDING TO STANDARD SPECIFICATION "WORK ZONE SIGNS" SECTION 1110.
- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1110.01. REMOVE ENTIRE POST WHEN REMOVING SIGNS WITH SPLICED POSTS.
- DO NOT BACK BRACE SIGN SUPPORTS.
- \*\* TWO-WAY UNDIVIDED ADVANCE WARNING SIGN CONFIGURATION MAY BE USED ON URBAN MULTI-LANE FACILITIES WHERE CONDITIONS LIMIT THE USE OF DUAL MOUNTED SIGNS AS DETERMINED BY THE ENGINEER.

**LEGEND**

STATIONARY SIGN  
 DIRECTION OF TRAFFIC FLOW

SHEET 1 OF 1

DETAIL DRAWING FOR TWO-WAY UNDIVIDED AND URBAN FREEWAYS ADVANCED WORK ZONE WARNING SIGNS

SCALE: NONE		REVISIONS	
DATE:		7-98	10/01
DWG. BY:		10-98	03/04
DESIGN BY:		01/01	11/04
REVIEWED BY:			

REVISIONS

3/8/2013 R:\365546130\ADgn\TCP\us-TCP\_ah7.dgn

8/17/99

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 301 S. McDOWELL STREET, SUITE 1008  
 CHARLOTTE, NORTH CAROLINA 28204  
 PHONE: 704-375-2438 FAX: 704-332-9361  
 NC LIC NO.: F-0270

PROJECT REFERENCE NO.  
 P-3814C

SHEET NO.  
 TCP-8

R/W SHEET NO.  
 ROADWAY DESIGN ENGINEER  
 HYDRAULICS ENGINEER

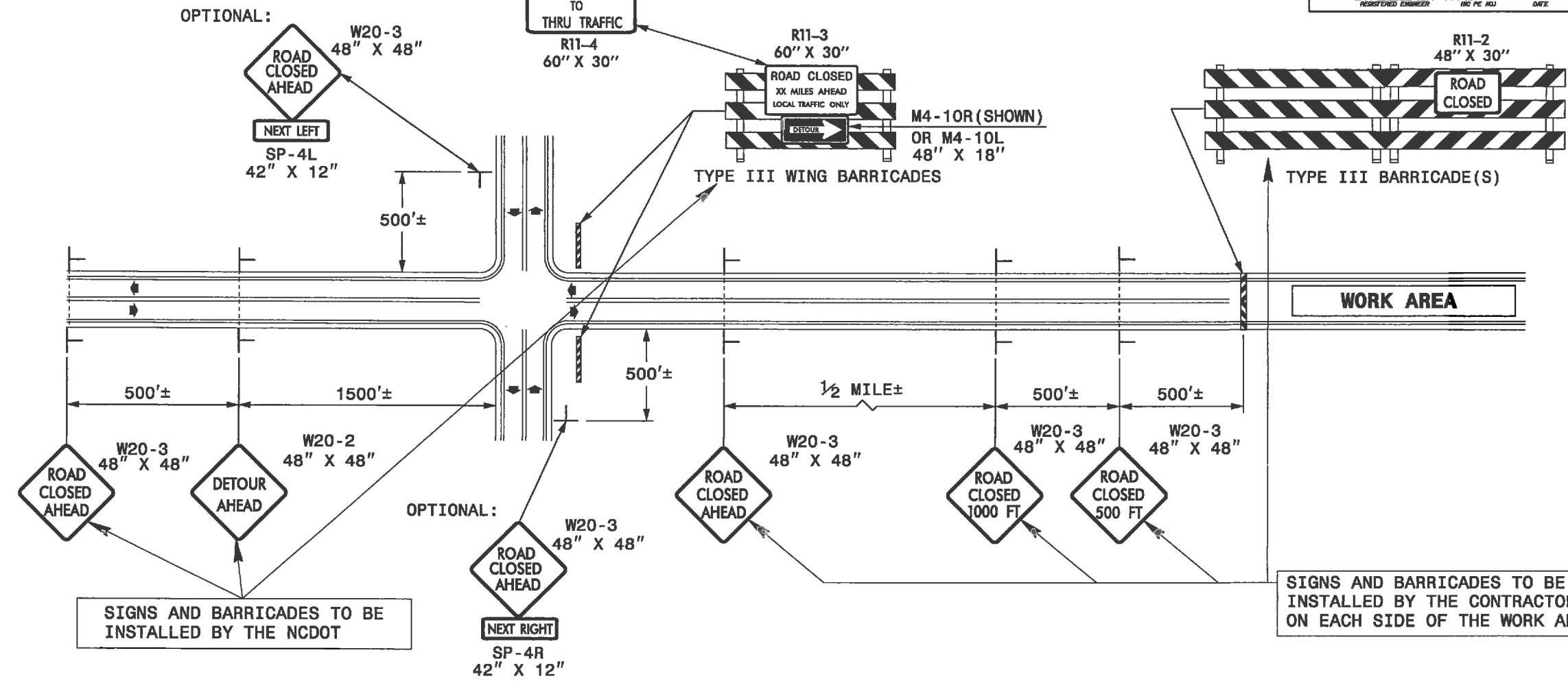
38204/30 NONE MAR 2003 TWB TWL  
 DATE DATE DRAWN BY CHECKED BY

THIS DRAWING WAS ORIGINALLY ISSUED  
 BY THOMAS W. LAMBERT, PE 17643 ON 3/20/13  
 REGISTERED ENGINEER (NO PE NO) DATE

3/8/13

NOTE: USE SIGN R11-4 IF 1 MILE OR LESS TO ROAD CLOSURE.

NOTE: WING BARRICADES WITH SIGN R11-3 SHOULD ALSO BE USED AT SIDE ROADS BETWEEN THE DETOUR POINT AND THE POINT OF CLOSURE.



**GENERAL NOTES**

- 1-IF NECESSARY USE THIS STD. FOR TWO-LANE, TWO-WAY, AND MULTILANE DIVIDED AND UNDIVIDED ROADWAYS.
- 2-INSTALLATION OF DETOUR ROUTING PANELS, TEMPORARY ROUTE MARKERS, DESTINATION SIGNS, AND ANY NECESSARY MODIFICATIONS TO EXISTING OR PROPOSED REGULATORY OR WARNING SIGNS WILL BE MADE BY NCDOT FORCES UNLESS OTHERWISE DESIGNATED IN THE PLANS. PROVIDE A MINIMUM 21 CALENDAR DAY NOTICE TO STATE FORCES BEFORE A ROADWAY IS CLOSED TO TRAFFIC SUCH THAT THE NECESSARY PROVISIONS CAN BE MADE TO INSTALL DETOUR ROUTE SIGNS, INFORM LOCAL EMERGENCY AND LAW ENFORCEMENT PERSONNEL, SCHOOLS, OR ANY OTHER PARTIES AFFECTED BY THE ROAD CLOSURE.
- 3-INSTALL SIGNS BEFORE THE BARRICADES WHEN CLOSING THE ROADWAY TO TRAFFIC. REMOVE BARRICADES BEFORE SIGNS WHEN OPENING THE ROADWAY TO TRAFFIC. INSTALL/REMOVE SIGNS AND BARRICADES WITHIN THE SAME CALENDAR DAY.
- 4-USE ADDITIONAL TYPE III BARRICADES IN STAGGERED LOCATIONS SUPPLEMENTED WITH SIGN R11-4 "ROAD CLOSED TO THRU TRAFFIC" IN THE EVENT THAT TRAFFIC MUST BE MAINTAINED BEYOND THE DETOUR POINT.
- 5-DO NOT DISPLAY FRACTIONS OR DECIMALS ON SIGN R11-3 "ROAD CLOSED XX MILES AHEAD".
- 6-POSITION WING BARRICADES ON THE SHOULDERS AND SLOPE THE STRIPES DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING.
- 7-USE PORTABLE SIGNS IF ROAD CLOSURE IS TO BE IMPLEMENTED FOR LESS THAN ONE DAY OR FOR EMERGENCIES.

**LEGEND**

— STATIONARY SIGN

← DIRECTION OF TRAFFIC FLOW

TEMPORARY ROAD CLOSURE  
 CLOSURE BEYOND DETOUR POINT

SCALE	-NA-		REVISIONS
DATE	1-13-10		
DWG. BY	TWB		
APPROVED	RWB		

REVISIONS

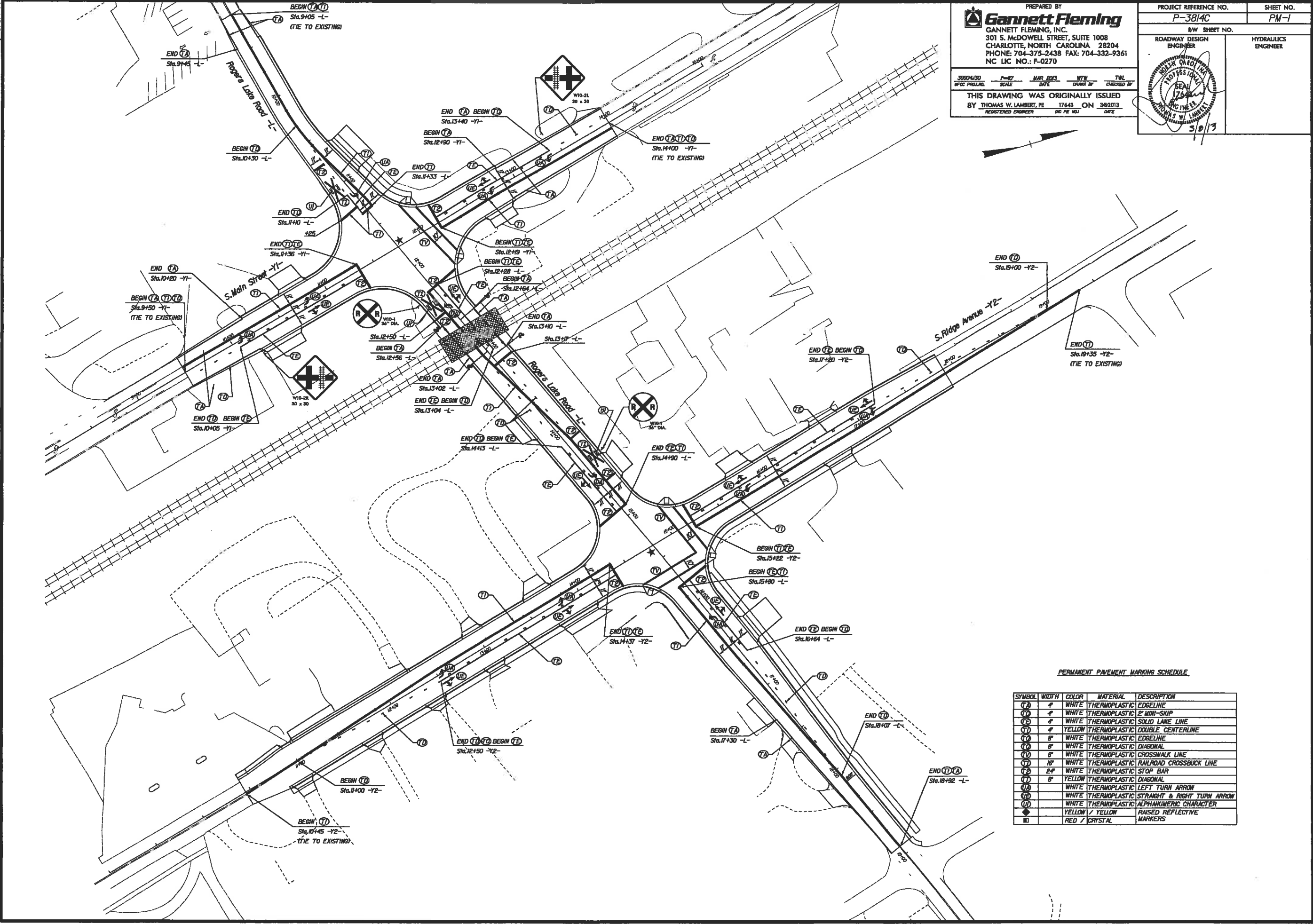
3/8/2013 R:\38596\38596.dgn

8/17/99

PREPARED BY  
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 NC LIC NO.: F-0270

PROJECT REFERENCE NO. P-3814C	SHEET NO. PM-1
R/W SHEET NO.	HYDRAULICS ENGINEER

3890430 P-07 MAR 2013 WTW TWL  
 SCALE DATE DRAWN BY CHECKED BY  
 THIS DRAWING WAS ORIGINALLY ISSUED  
 BY THOMAS W. LAMBERT, PE 17643 ON 3/8/2013  
 REGISTERED ENGINEER OR PE NO. DATE

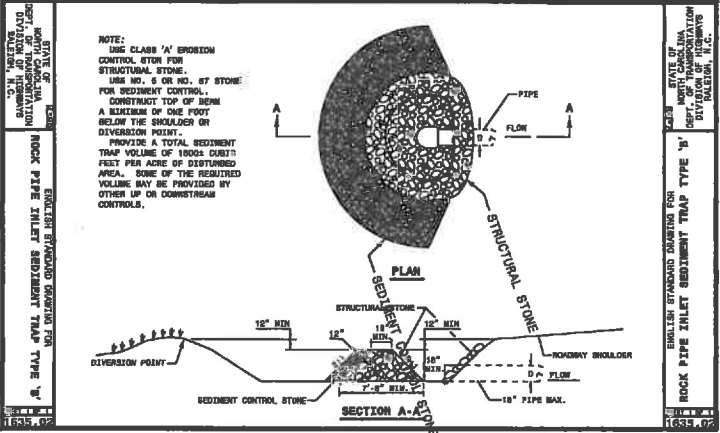
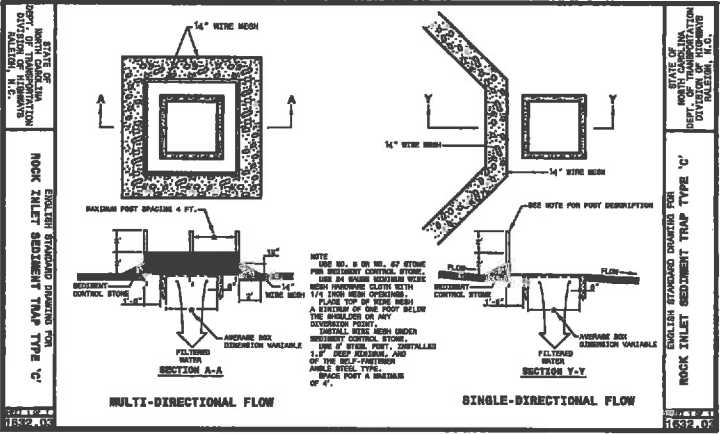
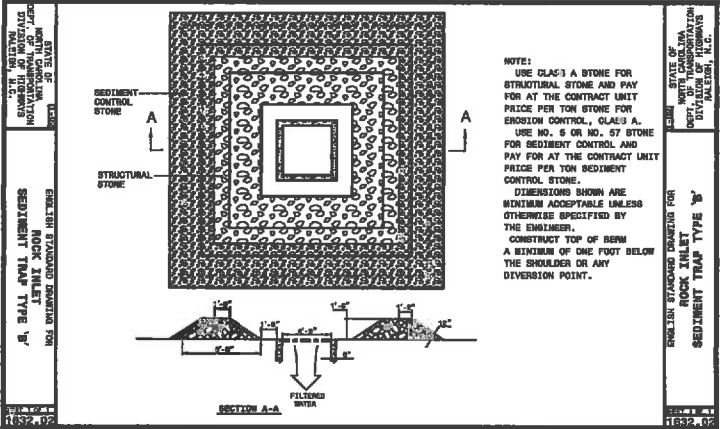
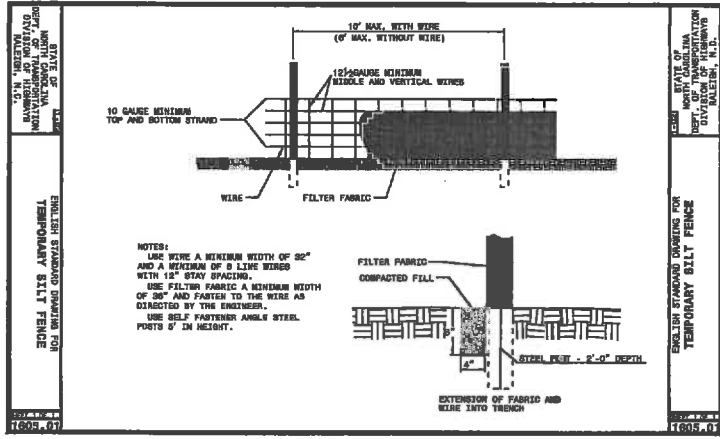


REVISIONS

PERMANENT PAVEMENT MARKING SCHEDULE

SYMBOL	WIDTH	COLOR	MATERIAL	DESCRIPTION
(TA)	4"	WHITE	THERMOPLASTIC	EDGE LINE
(TB)	4"	WHITE	THERMOPLASTIC	2' MINI-SKIP
(TC)	4"	WHITE	THERMOPLASTIC	SOLID LANE LINE
(TD)	4"	YELLOW	THERMOPLASTIC	DOUBLE CENTERLINE
(TE)	6"	WHITE	THERMOPLASTIC	EDGE LINE
(TF)	6"	WHITE	THERMOPLASTIC	DIAGONAL
(TG)	6"	WHITE	THERMOPLASTIC	CROSSWALK LINE
(TH)	18"	WHITE	THERMOPLASTIC	RAILROAD CROSSBUCK LINE
(TI)	24"	WHITE	THERMOPLASTIC	STOP BAR
(TJ)	6"	YELLOW	THERMOPLASTIC	DIAGONAL
(TK)		WHITE	THERMOPLASTIC	LEFT TURN ARROW
(TL)		WHITE	THERMOPLASTIC	STRAIGHT & RIGHT TURN ARROW
(TM)		WHITE	THERMOPLASTIC	ALPHANUMERIC CHARACTER
(TN)		YELLOW / YELLOW		RAISED REFLECTIVE MARKERS
(TO)		RED / CRYSTAL		MARKERS

8/17/99



### SEEDING SCHEDULE (SEASONAL)

	EARLY SUMMER SEASON	STEEP SLOPES
<b>SEEDING MIXTURE</b>	40 lbs/acre of German millet 80 lbs/acre of tall fescue	120 lbs/acre Rye (grain) 80 lbs/acre tall fescue
<b>SEEDING DATES</b>	May 1 - August 15 <i>Refer/fertilize if growth is not fully adequate.</i> Apply 4000 lbs/acre straw or equivalent hydroseeding.	October 25 - December 30 <i>Between December 30 - February 15, add 50 lbs/acre of annual Kobe lespedeza.</i> Apply 4000 lbs/acre straw or equivalent hydroseeding.
<b>SEEDING AMENDMENTS</b>	Apply lime and fertilizer per soil tests, or 2000 lbs/acre limestone and 750 lbs/acre 10-10-10 fertilizer.	Apply lime and fertilizer per soil tests, or 2000 lbs/acre limestone and 750 lbs/acre 10-10-10 fertilizer.

### SEEDING SCHEDULE

	GENTLE SLOPES	STEEP SLOPES
<b>SEEDING MIXTURE</b>	80 lbs/acre of tall fescue	100 lbs/acre tall fescue 30 lbs/acre Sarfosa lespedeza (unseeded after August 15) 10 lbs/acre Kobe lespedeza
<b>SEEDING DATES</b>	FALL: August 25 - October <i>Late winter: February 15 - April 15</i> To seed spring seeding into June, add 15 lbs/acre tilled Bermudagrass <i>Overseeding of Kobe lespedeza over fall-seeded tall fescue is very effective.</i>	FALL: August 25 - October 15 <i>Late winter: February 15 - April 15</i> To seed spring seeding into June, add 15 lbs/acre tilled Bermudagrass <i>Overseeding of Kobe lespedeza over fall-seeded tall fescue is very effective.</i>
<b>SEEDING AMENDMENTS</b>	Apply lime and fertilizer per soil tests, or 4000 lbs/acre limestone and 1000 lbs/acre 10-10-10 fertilizer.	Apply lime and fertilizer per soil tests, or 4000 lbs/acre limestone and 1000 lbs/acre 10-10-10 fertilizer.

**NOTE 1:** Ground Cover—Wherever land disturbing activity is undertaken on a tract comprising more than one (1) acre, a ground cover sufficient to restrain erosion must be planted or provided within 15 working days or 90 calendar days following completion of construction or development.

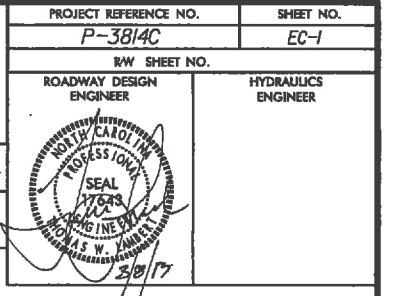
**NOTE 2:** Graded slopes and fills—Within 15 working days or 30 calendar days, or completion of any phase of grading, whichever period is shorter, slopes shall be planted or otherwise provided with ground cover, devices, or structures sufficient to restrain erosion.

PREPARED BY  
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PHONE: 704-375-2438 FAX: 704-332-9361  
NC LIC NO.: F-0270

PROJECT REFERENCE NO. P-3814C  
SHEET NO. EC-1  
RW SHEET NO.  
ROADWAY DESIGN ENGINEER  
HYDRAULICS ENGINEER

35804/30 NONE MAR 2003 GFC TWL  
SHEET NUMBER SCALE DATE DRAWN BY CHECKED BY

THIS DRAWING WAS ORIGINALLY ISSUED  
BY THOMAS W. LAMBERT, PE 17643 ON 3/8/2013  
REGISTERED ENGINEER GFC PE NO. DATE



**Permanent Soil Reinforcement Mat:**

**Description:**  
This work consists of furnishing and placing Permanent Soil Reinforcement Mat, of the type specified, over previously prepared areas or ditches.

**Materials:**  
The product shall be a permanent erosion control reinforcement mat and shall be constructed of synthetic or a combination of synthetic and coconut fibers evenly distributed throughout the mat between a bottom UV stabilized netting and a heavy duty UV stabilized top net. The matting shall be stitched together with UV stabilized polypropylene thread to form a permanent three-dimensional structure. The mat shall have the following minimum physical properties:

Property	Test Method	Value	Unit
Light Penetration	ASTM D4567	9	%
Thickness	ASTM D6525	0.40	in
Mass Per Unit Area	ASTM D6566	0.55	lb/yd <sup>2</sup>
Tensile Strength	ASTM D4818	385	lb/ft
Elongation (Minimum)	ASTM D4818	49	%
Porosity	ASTM D1777	>70	%
UV Stability -	ASTM D4355	>80	%
Perfority (Permanent Net)	ECTC Guidelines	>85	%
Minimum Permissible Shear Stress (Vegetative)	Performance Bench Test	>8.0	lb/ft <sup>2</sup>
Maximum Allowable Velocity	Performance Bench Test	>16.0	ft/s

\*ASTM D1682 Tensile Strength and % strength retention of material after 1000 hours of exposure.

Submit a certification (Type 1, 2, or 3) from the manufacturer showing:

- (a) the chemical and physical properties of the mat used, and
- (b) conformance of the mat with this specification.

**Construction Methods:**  
Matting shall be installed in accordance with Subarticle 1631-3(b) of the Standard Specifications.

All areas to be protected with the mat shall be brought to final grade and seeded in accordance with Section 1640 of the Standard Specifications. The surface of the soil shall be smooth, firm, stable and free of rocks, debris, roots or other obstructions that would prevent the mat from lying in direct contact with the soil surface. Areas where the mat is to be placed will not need to be mulched.

**Measurement and Payment:**  
Payment for Permanent Soil Reinforcement Mat will be included in the contract bid price for Lump Sum for Erosion Control. Such payment shall be full compensation for furnishing and installing the mat, including overlaps, and for all required maintenance.

**WATLES WITH POLYACRYLAMIDE (PAM):**

**Description:**  
Wattles are tubular products consisting of erodible fibers encased in synthetic netting. Wattles are used on slopes or channels to intercept runoff and act as a velocity break. Wattles are to be placed at locations shown on the plans or as directed. Installation shall follow the detail provided in the plans and as directed. Work includes furnishing materials, installation of wattles, matting installation, PAM application, and removing wattles.

**Materials:**  
Wattle shall meet the following specifications:  
100% Curled Wood (Eucalyptus) Fibers  
Minimum Diameter - 12 in.  
Minimum Density - 2.5 lb/ft<sup>3</sup> +/- 10%  
Net Material - Synthetic  
Net Openings - 1 in. x 1 in.  
Net Configuration - Tightly Encased  
Minimum Weight - 20 lb. +/- 10% per 10 ft. length

**Wooden Stakes:**  
Provide hardwood stakes a minimum of 2-8' long with a 2 in. x 2 in. nominal square cross section. One end of the stake must be sharpened or beveled to facilitate driving down into the underlying soil.

Matting shall meet the requirements of section 1640-8 of the Standard Specifications, or shall meet specifications provided elsewhere in this contract.

Provide staple made of 0.125" diameter new steel wire formed into a U shape not less than 12" in length with a throat of 1" in width.

Polyacrylamide (PAM) shall be applied in powder form and shall be anionic or neutrally charged. Soil samples shall be obtained in areas where the wattles will be placed, and from outside material used to construct roadway, and analyzed for the appropriate PAM flocculant to be utilized with seeds/wattles.

**Construction Methods:**  
Wattles shall be secured to the soil by wire staples approximately every 1 linear foot and at the end of each section of wattle. A minimum of 4 stakes shall be installed on the downstream side of the wattle with a maximum spacing of 2 linear feet along the wattle, and according to the detail. Install a minimum of 2 stakes on the upstream side of the wattle according to the detail provided in the plans. Stakes shall be driven into the ground a minimum of 10 in. with no more than 2 in. projecting from the top of the wattle. Drive stakes at an angle according to the detail provided in the plans.

Install wattles to the top of the ditch according to the detail provided in the plans. Overlap adjoining sections of wattles a minimum of 6 in.

Installation of matting shall be in accordance with the detail provided in the plans, and in accordance with section 1631-3(b) of the Standard Specifications, or in accordance with specifications provided elsewhere in this contract.

Apply PAM over the lower center portion of the wattle where the water is going to flow over at a rate of 3.5 ounces per wattle. PAM applications shall be done during construction activities after every rainfall event that is equal to or exceeds 0.50 in.

The Contractor shall maintain the wattles until the project is accepted or until the wattles are removed, and shall remove and dispose of all accumulations at the wattles when so directed in accordance with the requirements of Section 1630 of the Standard Specifications.

The quantity of wattles, wooden stakes, staples, matting and PAM as measured above will be paid for at contract price for "Lump Sum for Erosion Control". Such price and payment will be full compensation for all work covered by this provision, including but not limited to, furnishing all materials, placing and maintaining the wattle(s), and removal and disposal of all accumulations and wattle.

REVISIONS

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8/17/99

# WATTLE WITH POLYACRYLAMIDE DETAIL

PREPARED BY  
**Gannett Fleming**  
 GANNETT FLEMING, INC.  
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 PHONE: 704-375-2438 FAX: 704-332-9361  
 NC LIC NO.: F-0270

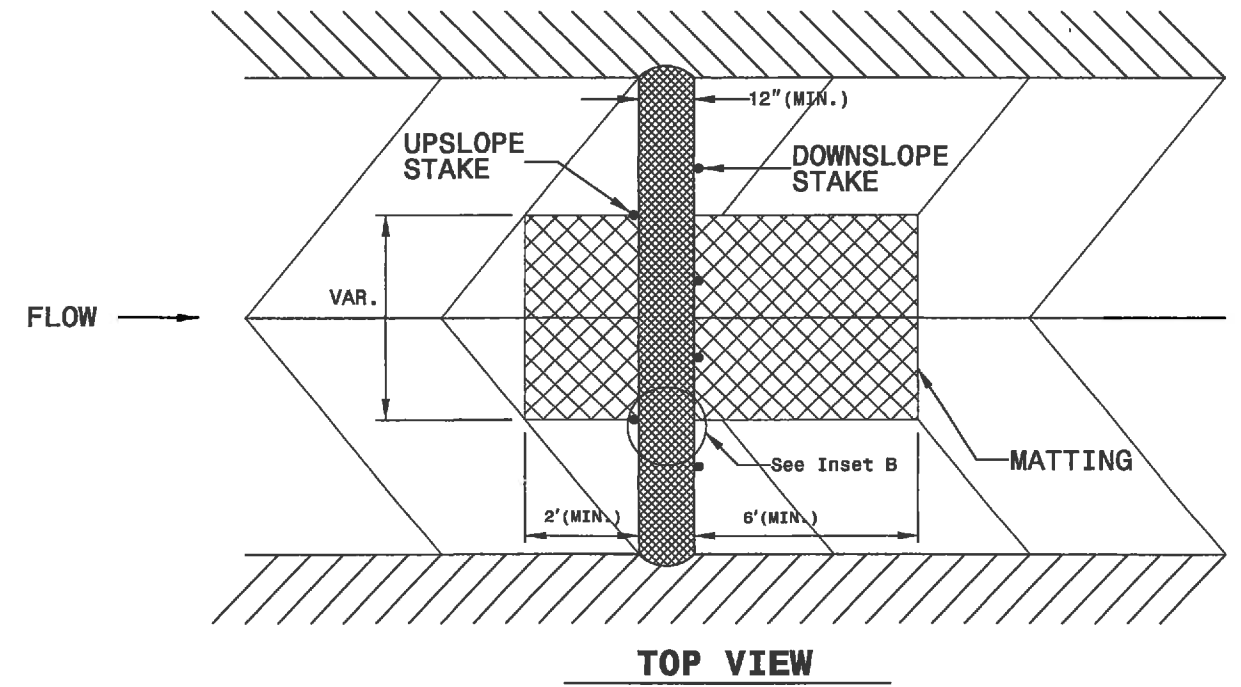
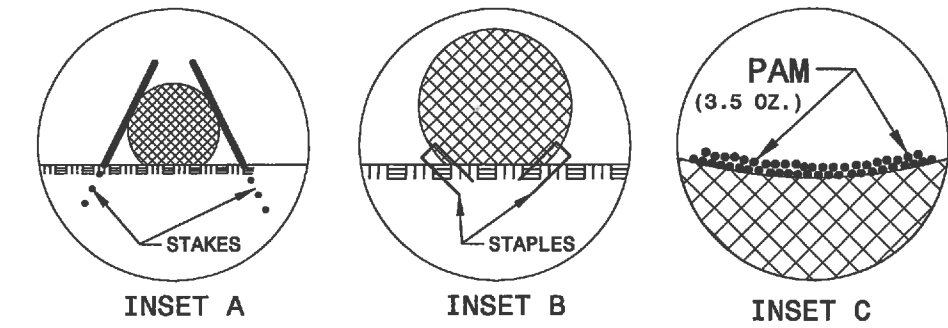
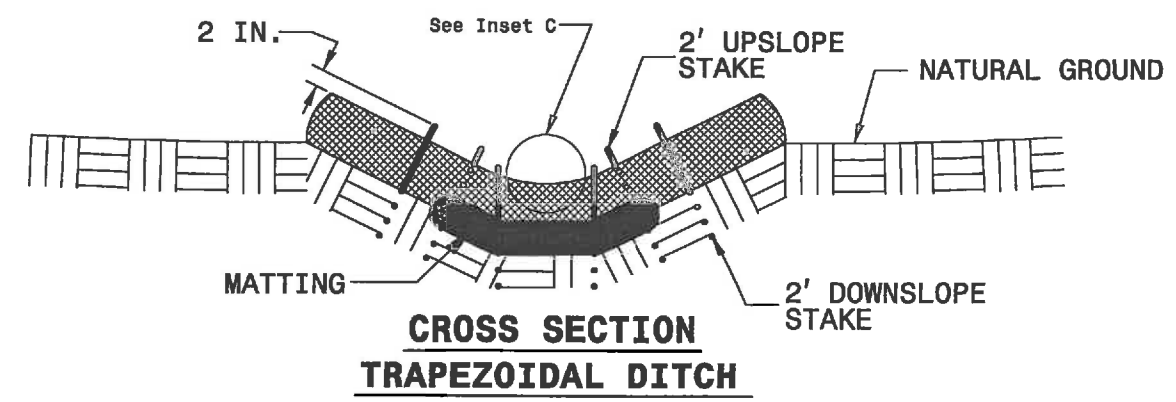
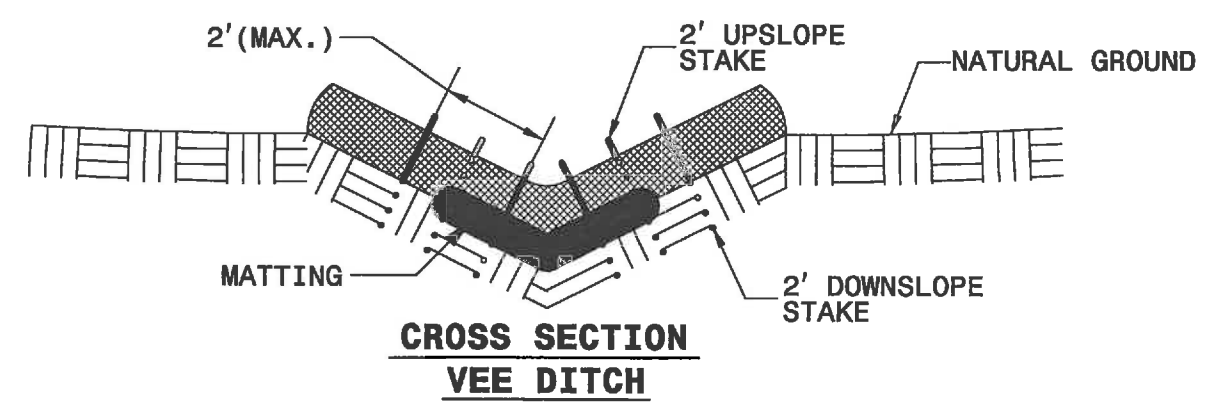
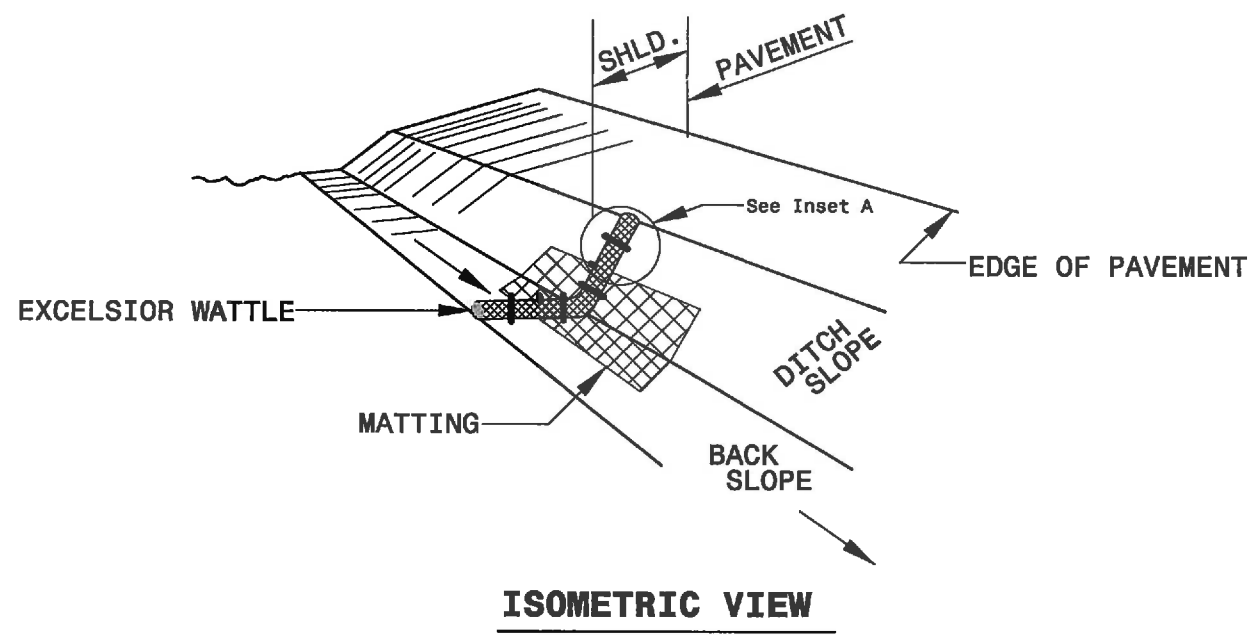
PROJECT REFERENCE NO. P-3814C	SHEET NO. EC-2
HW SHEET NO.	HYDRAULICS ENGINEER

DATE	BY	SCALE	DATE	BY	DATE
3/20/13	THW				

THIS DRAWING WAS ORIGINALLY ISSUED  
 BY THOMAS W. LAMBERT, PE 17643 ON 3/8/2013  
 REGISTERED ENGINEER OR PE HW DATE

### NOTES:

- USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. CROSS SECTION.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.
- PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
- INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
- INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.
- PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.
- INITIALLY APPLY 3.5 OUNCES OF ANIONIC OR NEUTRALLY CHARGED POLYACRYLAMIDE (PAM) OVER WATTLE WHERE WATER WILL FLOW AND AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



REVISIONS

3/8/2013  
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8/17/99

PREPARED BY  
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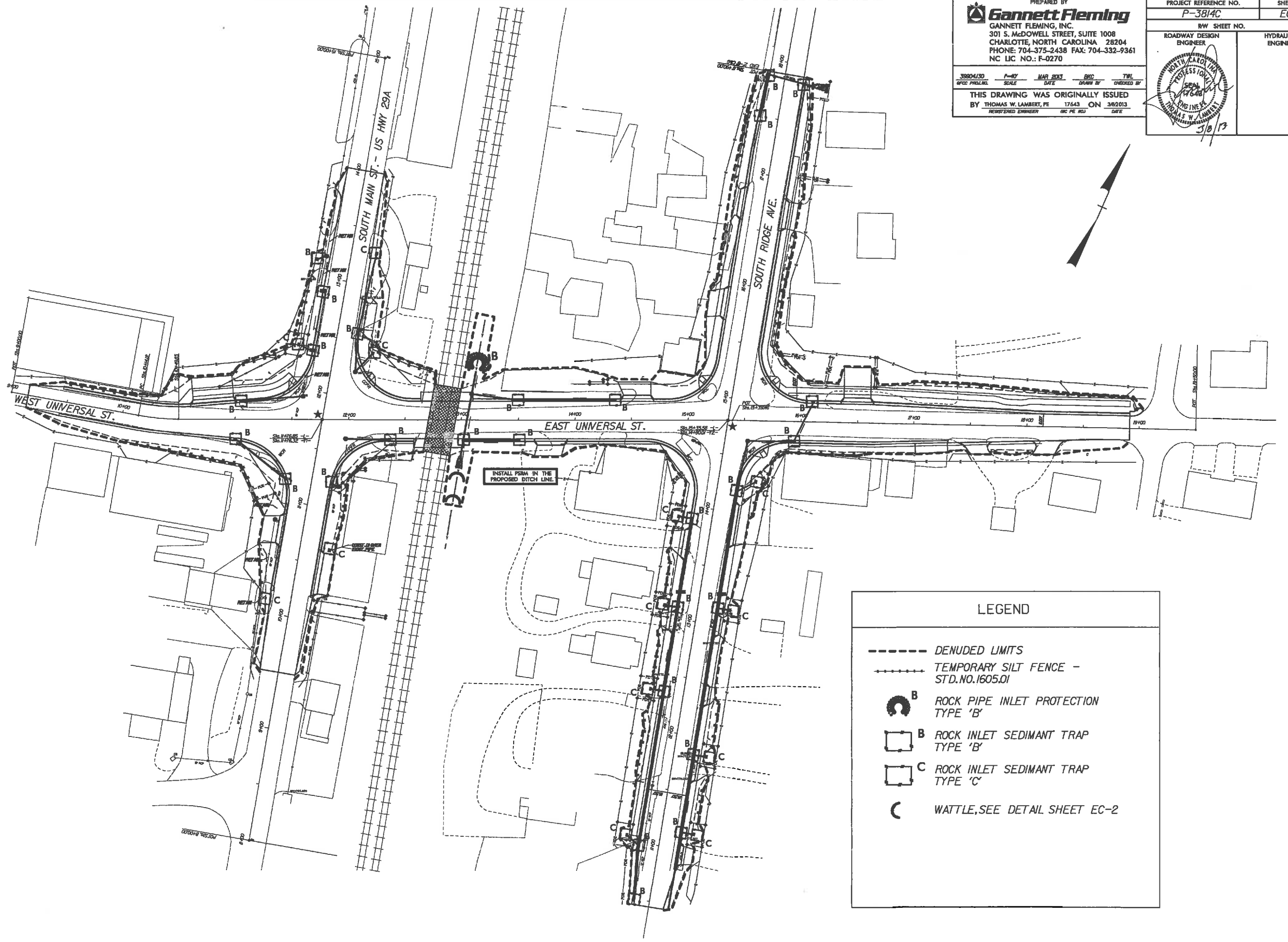
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SPEC. PRELIM.	SCALE	DATE	DRAWN BY	CHECKED BY

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 BY THOMAS W. LAMBERT, PE 17643 ON 3/8/2013  
 REGISTERED ENGINEER INC. PE NO. DATE

PROJECT REFERENCE NO. P-3814C	SHEET NO. EC-3
R/W SHEET NO.	HYDRAULICS ENGINEER

ROADWAY DESIGN ENGINEER

REVISIONS



LEGEND

- DENUDED LIMITS
- - - - - TEMPORARY SILT FENCE - STD.NO.1605.01
- B ROCK PIPE INLET PROTECTION TYPE 'B'
- B ROCK INLET SEDIMENT TRAP TYPE 'B'
- C ROCK INLET SEDIMENT TRAP TYPE 'C'
- WATTLE, SEE DETAIL SHEET EC-2

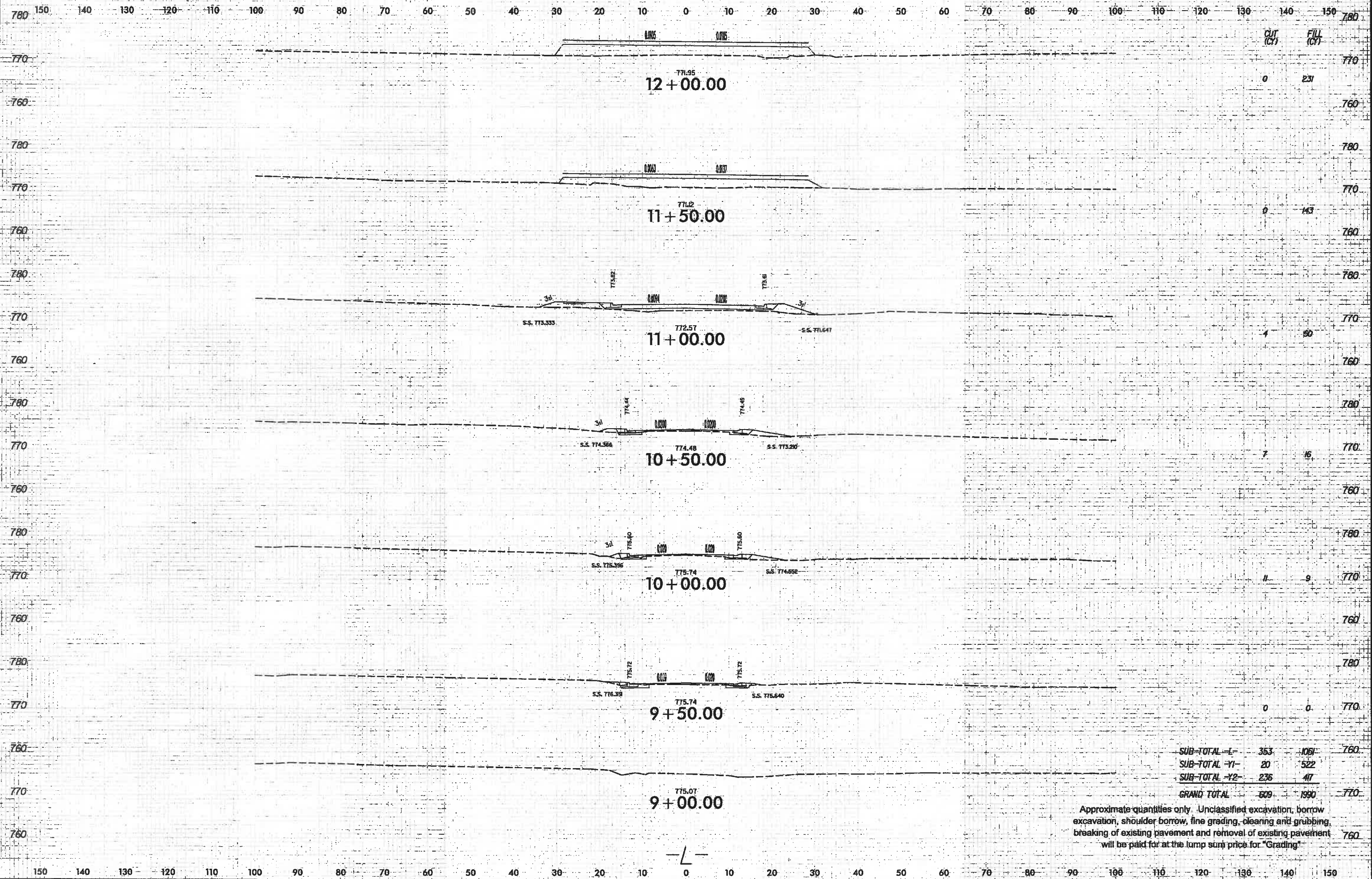
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 Project



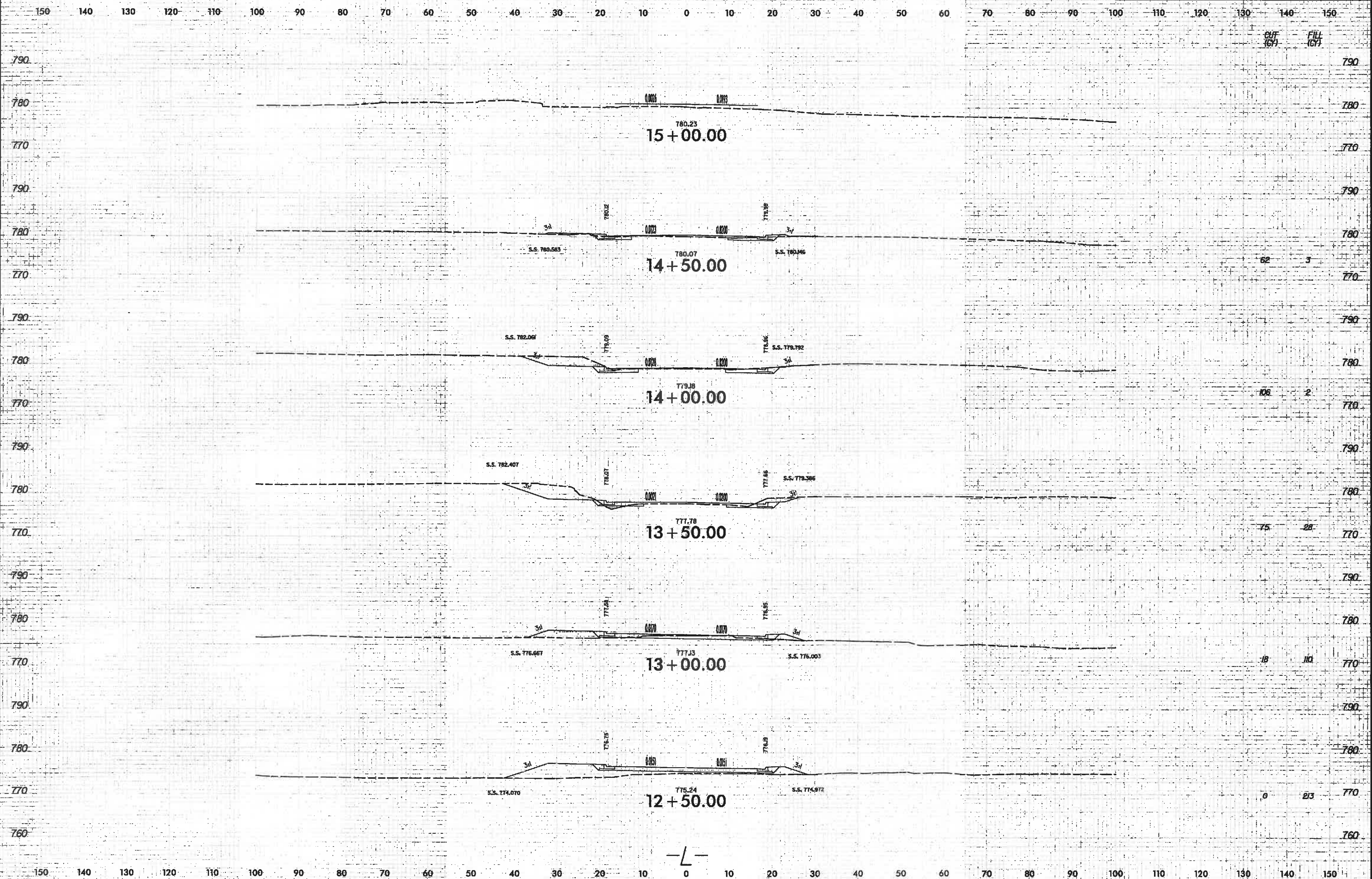
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SUB-TOTAL -Y1-	20	522	
SUB-TOTAL -Y2-	236	47	
GRAND TOTAL	609	1990	770

Approximate quantities only. Unclassified excavation, borrow excavation, shoulder borrow, fine grading, clearing and grubbing, breaking of existing pavement and removal of existing pavement will be paid for at the lump sum price for "Grading".





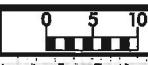
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PROJECT



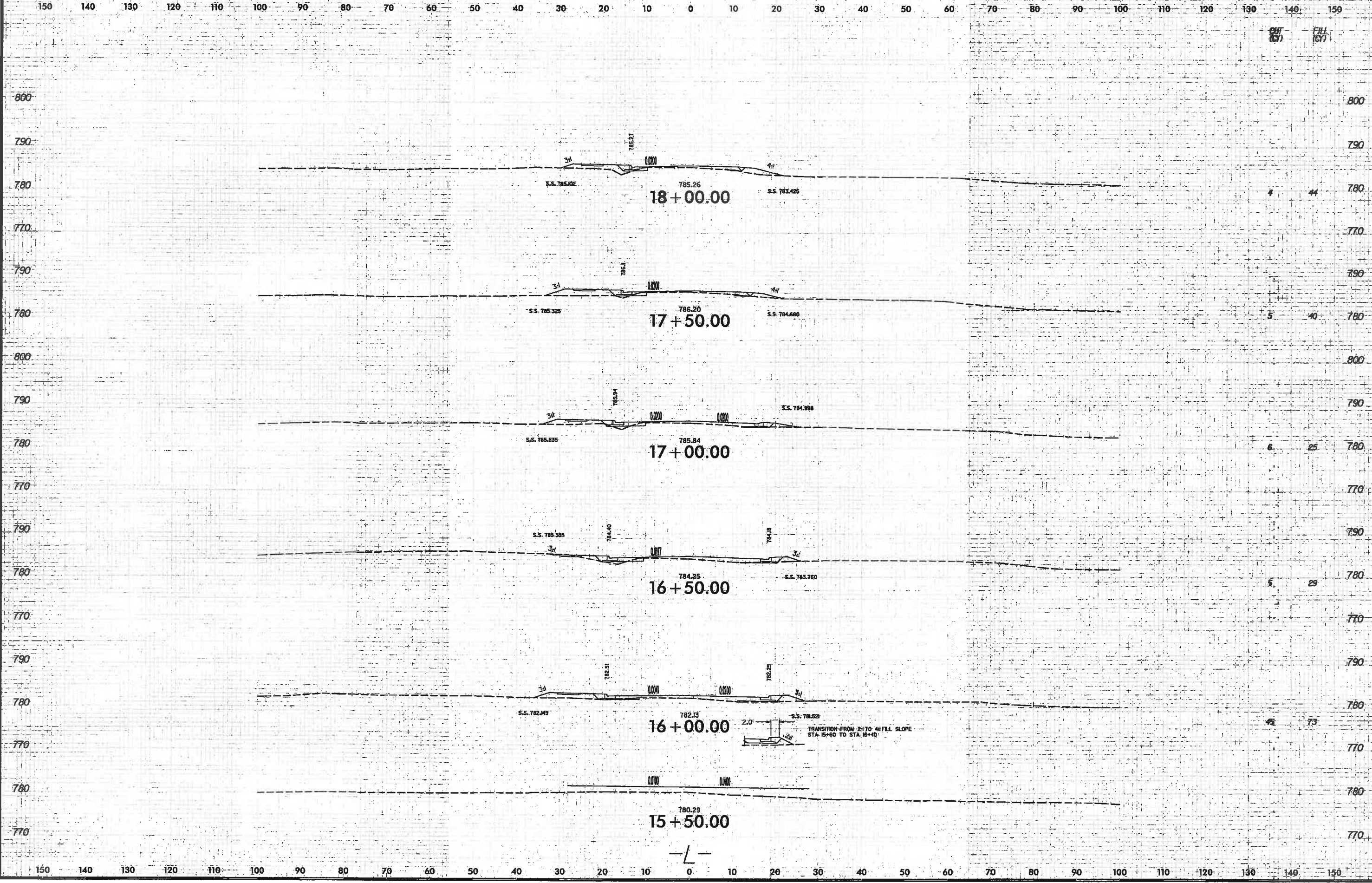
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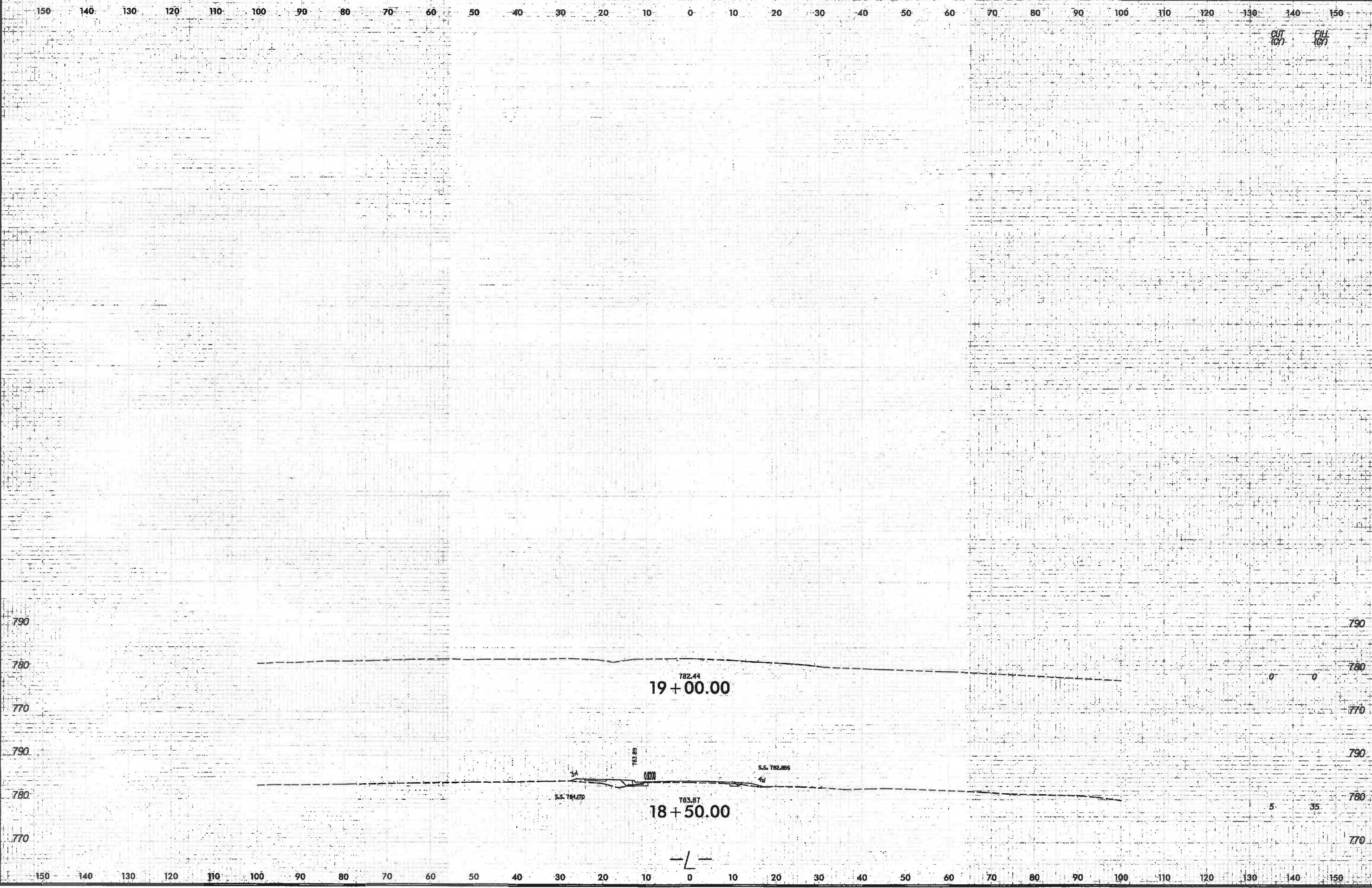
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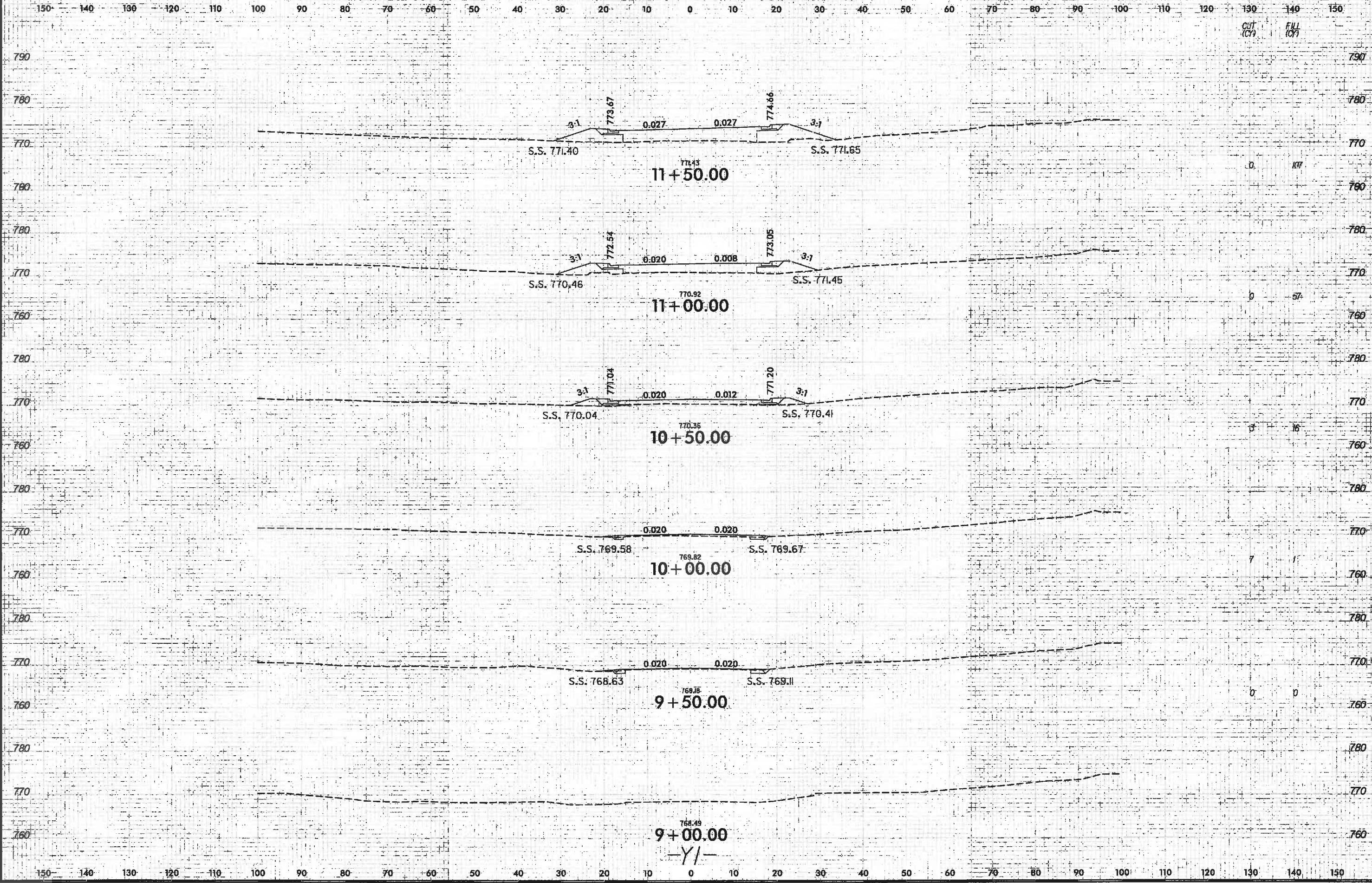


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PROJ. REFERENCE NO.  
P-3814C

SHEET NO.  
X-5



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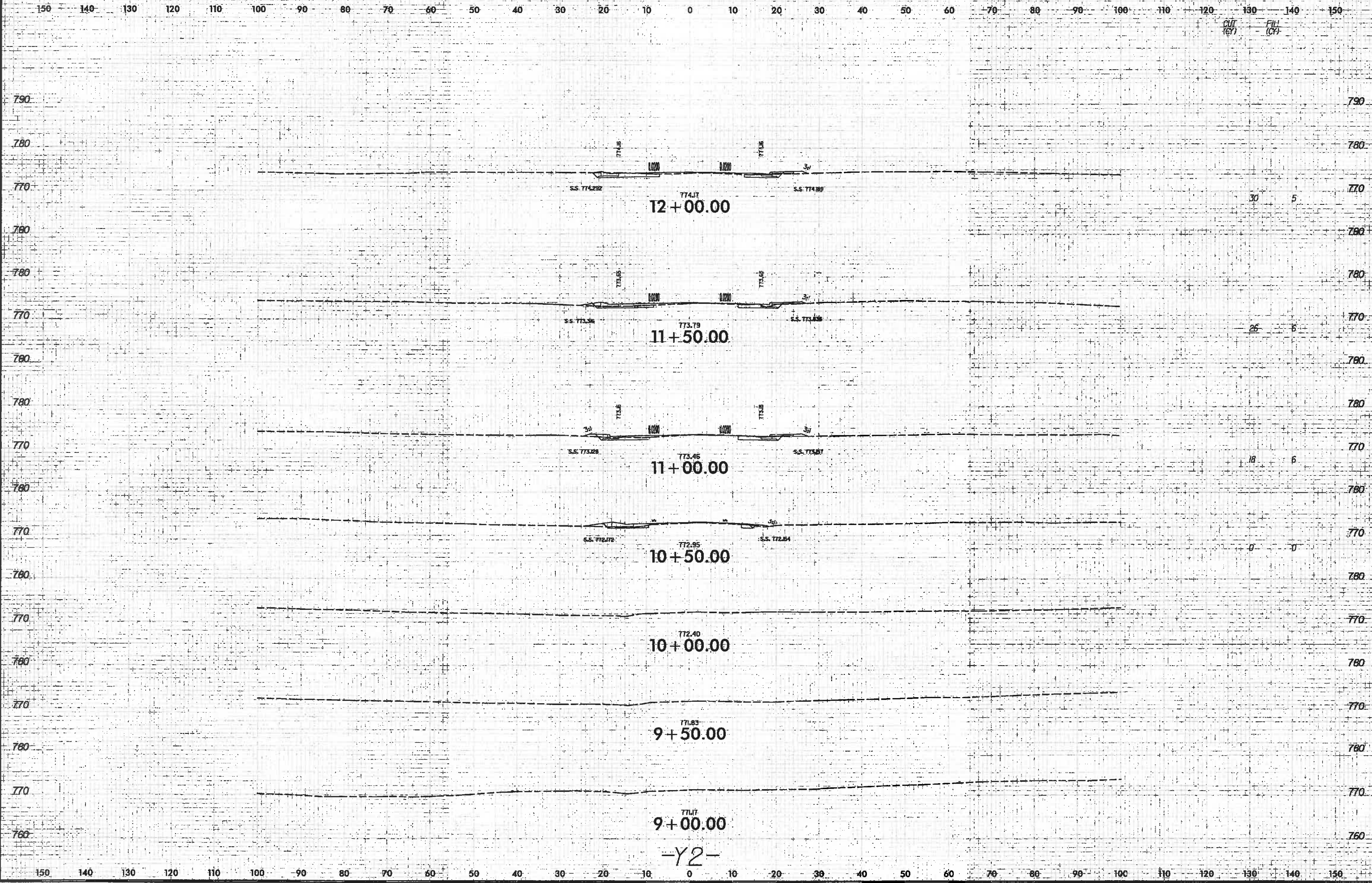




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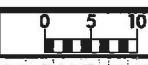


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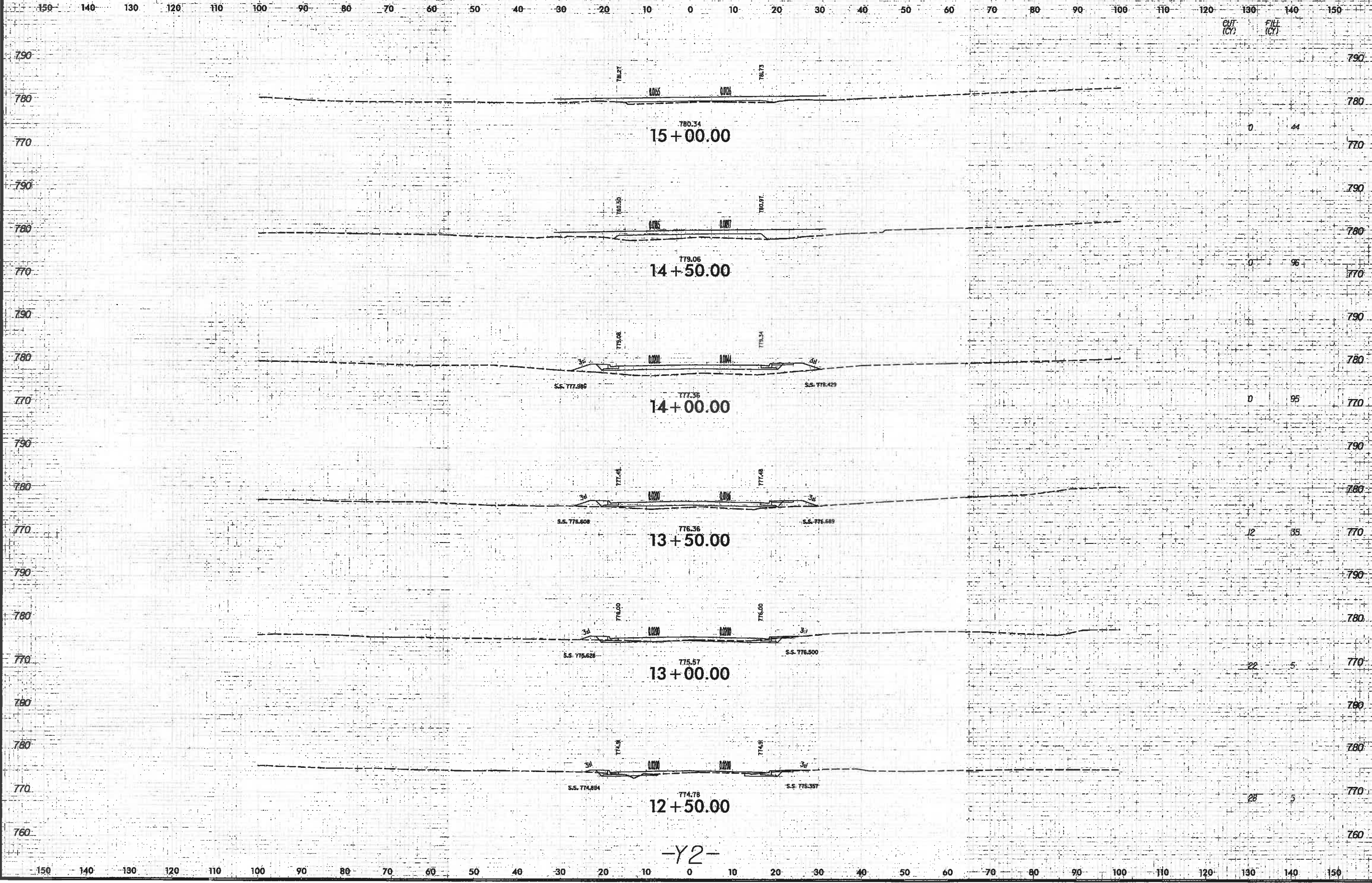
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8/23/99



PROJ. REFERENCE NO.	SHEET NO.
P-3814C	X-8

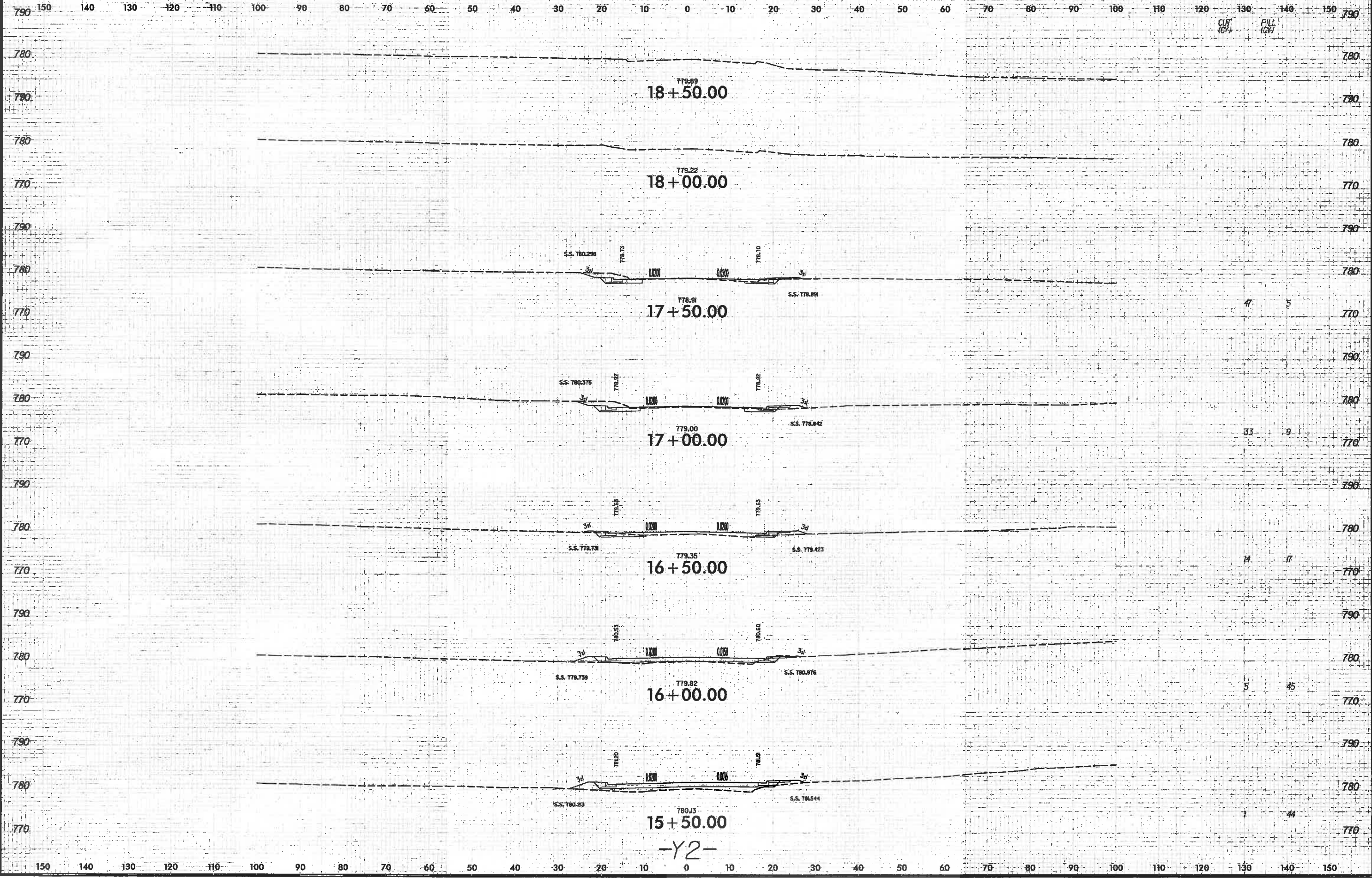


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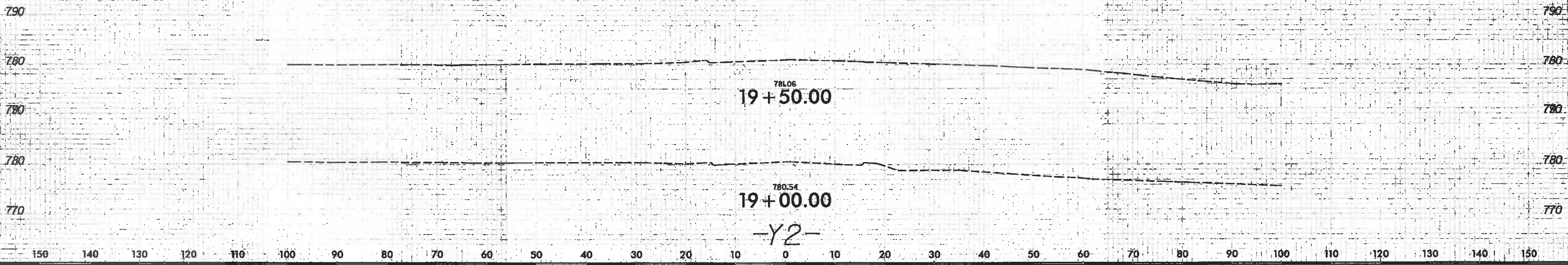
8/23/99



PROJ. REFERENCE NO.  
P-3814C

SHEET NO.  
X-10

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