DGN 0102DEL_p10a6 0001ADD_p10a6

TIP PROJECT: P-5208H

CONTRACT: C203148

STATE OF NORTH CAROLINA
NCDOT RAIL DIVISION

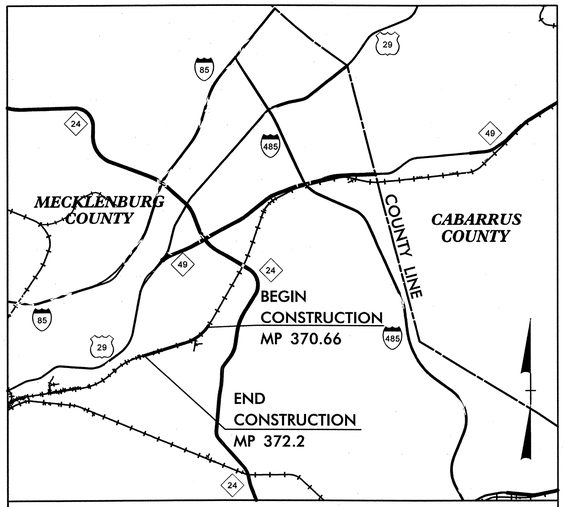
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	P-5208H	RR1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
50000.1.STR13T1B		PE, UTIL PE
50000.1.STR14T3		PE, UTIL PE
43219.2.STR09P5208		R/W
50000.3.STR08T4F	FRA-FR-HSR-0006-10-01-00	UTIL CONST, CONST

MECKLENBURG COUNTY

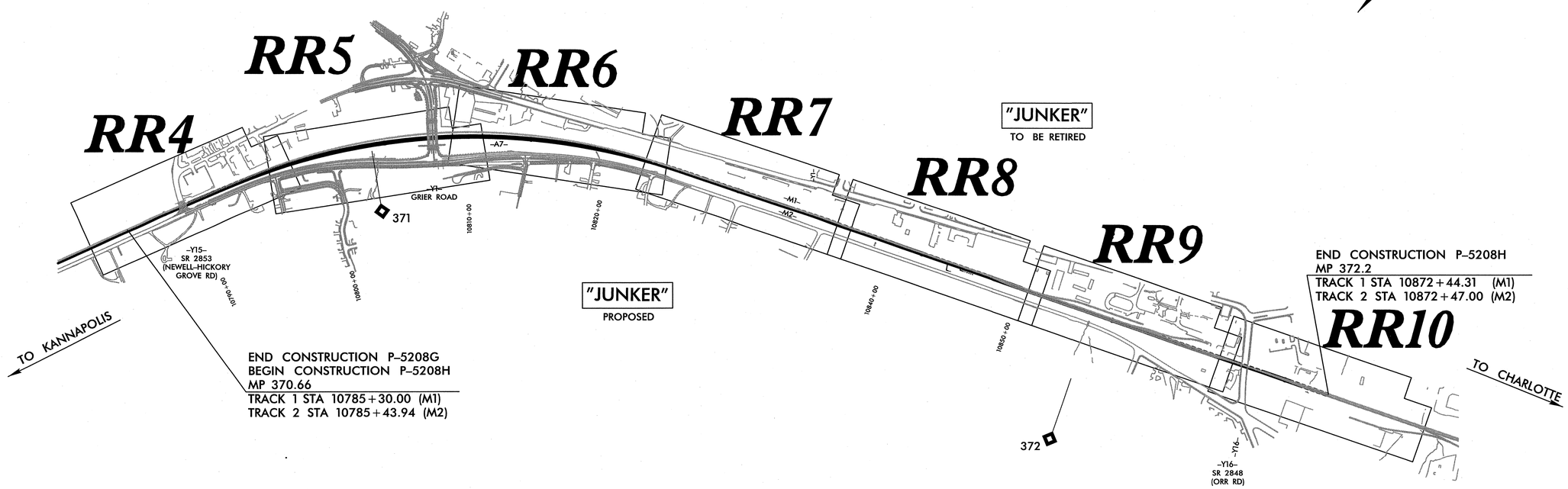
LOCATION: NCRR/NS MAINLINE RAILROAD ROADBED FROM NORTH OF NEWELL-HICKORY GROVE RD (SR 2853), MP 370.66 TO CP "JUNKER" (MP 372.2)

TYPE OF WORK: GRADING, DRAINAGE AND TRACKBED



VICINITY MAP

NAD 83/ NSRS 2007



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

Prepared In the Office of:

AECOM

NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 – (919) 854-6259(FAX)

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 2012

LETTING DATE: MAY 21, 2013

RILEY BIRMINGHAM, PE
RAIL PROJECT ENGINEER

JOHN KAMPRATH, PE
HYDRAULICS PROJECT ENGINEER

BRAD SMYTHE, PE
NCDOT PROJECT MANAGER

RAIL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 036222 ENGINEER RILEY W. BIRMINGHAM

SIGNATURE: Riley Birmingham P.E. 4/29/13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER JOHN M. KAMPRATH

SIGNATURE: John M. Kamprath P.E. 4/30/13

NC DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
DESIGN AND CONSTRUCTION

11:47:23 AM
R:\Rail\Sheets\Grier Rd Detour\P-5208H_RR_TSH.dgn
westmi

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RRI-A

RAIL DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 20022 ENGINEER R. E. BRINKLEY 4/16/13	NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER JOHN M. KAMENITZ 4/16/13

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
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Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

INDEX OF DRAWINGS AND GENERAL NOTES

SHEET NUMBER / SHEET

SHEET NUMBER	SHEET
RR1	COVER SHEET
RR1–A	INDEX OF DRAWINGS AND GENERAL NOTES
RR1–B	CONVENTIONAL PLAN SYMBOLS
RR1–C	CONVENTIONAL PLAN SYMBOLS (CONT'D) AND ABBREVIATIONS
RR1–D THRU RR1–F	SURVEY CONTROL SHEETS
RR2 THRU RR2–B	TYPICAL SECTIONS (RAIL)
RR2–C	DITCH DETAILS
RR2–D	HORIZONTAL CURVE GEOMETRY
RR2–E	PROPOSED MAIN TRACK #1 GEOMETRY
RR2–E	PROPOSED MAIN TRACK #2 GEOMETRY
RR2–F	PROPOSED GRIER DETOUR TRACK GEOMETRY
RR2–F	PROPOSED JUNKER DETOUR TRACK GEOMETRY
RR2–G	ROADBED TAPER DETAIL
RR2–H	ASPHALT UNDERLAYMENT DETAIL
RR2–I	RIGHT OF WAY GATE DETAIL
RR2–J	RAILROAD SIGNAL CABINET PAD AND TURNOUT MATERIAL LAYDOWN AREA DETAIL
RR2–K	NEWELL–HICKORY GROVE ROAD CROSSING CLOSURE DETAIL
RR2–L	SPECIAL TBDI DETAIL
RR4 THRU RR10	PLAN & PROFILE – MAIN TRACK #1 (M1)
RR11 THRU RR14	PROFILE – MAIN TRACK #2 (M2)
RR15 THRU RR17	PROFILE – DETOUR TRACK (A7)
X–1	CROSS SECTION INDEX (RAIL)
X–1B	CROSS SECTION SUMMARY (RAIL)
X–46 THRU X–48	PIPE PROFILES (RAIL)
X–49 THRU X–79	CROSS SECTIONS (RAIL)

GENERAL NOTES:

1. THIS CONTRACT INCLUDES ALL WORK REQUIRED TO CONSTRUCT THE RAILROAD ROADBED, UP TO TOP OF SUBBALLAST LAYER.
2. ALL TRACKWORK, INCLUDING BALLAST AND SIGNAL WORK, TO BE DONE BY NSR AND IS SHOWN IN PLANS FOR REFERENCE ONLY.
3. THE PROPOSED GRADE LINES (PGL) SHOWN DEPICT THE FINAL ELEVATION OF THE PROPOSED TOP OF LOW RAIL AT THE CENTERLINE OF TRACK, AS SHOWN ON THE TYPICAL SECTIONS. WHERE NO PROPOSED GRADE LINES ARE SHOWN, THE PROFILES SHOWN DEPICT THE EXISTING TOP OF LOW RAIL.
4. ALL RAILWAY ALIGNMENT CURVE DATA IS BASED ON CHORD DEFINITION. ALL ROADWAY ALIGNMENT CURVE DATA IS BASED ON THE ARC DEFINITION.
5. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE INVESTIGATION, LOCATION, SUPPORT, PROTECTION AND RESTORATION OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT. THEIR ACCURACY OR COMPLETENESS IS NOT GUARANTEED. THE CONTRACTOR SHALL VERIFY LOCATIONS WITH THE UTILITY COMPANIES AND/OR CALL THE NORTH CAROLINA ONE–CALL CENTER, INC. 1–800–632–4949 NOT LESS THAN 48 HOURS BEFORE STARTING EXCAVATION ACTIVITIES.
7. REFER TO SUBSURFACE EXPLORATION AND GEOTECHNICAL EVALUATION FOR ENGINEERING EVALUATION AND RECOMMENDATIONS.
8. THE CONTRACTOR SHALL COORDINATE OBTAINING ANY TEMPORARY CONSTRUCTION ENTRANCES AND DRIVEWAYS WITH APPROPRIATE LOCAL AND/OR STATE AGENCIES.
9. ALL 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".

RAILROAD OPERATIONS:

1. THE CONTRACTOR SHALL NOT ENTER ONTO RAILROAD RIGHT OF WAY WITHOUT PERMISSION FROM NCRR AND AN APPOINTED NORFOLK SOUTHERN FLAGMAN ON DUTY.
2. THE CONTRACTOR SHALL NOT INTERRUPT THE OPERATIONS OF THE RAILROAD WITHOUT PRIOR APPROVAL OF THE RAILROAD REPRESENTATIVE.

DGN 0102DEL_p10a6
USER: wesley
DATE: 4/16/2013
TIME: 8:50:35 AM
DGN: R:\Rail\Sheets\Grier Rd Detour\P-5208H_RR-GN01.dgn

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RRI-B

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 — PCM
- 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
- 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:

- Existing Track — NS
- 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.

0102DEL_P10a6

USER: westml
DATE: 2/25/2013
TIME: 8:39AM AM
DGN: R:\Roll\Sheets\Grfx Rd Detail\P-5208H_RR-SHX02.dgn

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RRI-C

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27610
(919) 854-6200 - fax 854-6259FAX0

CONVENTIONAL PLAN SHEET SYMBOLS (cont'd) AND ABBREVIATIONS

RAILROADS:

Existing Track to be Retained
Existing Track to be Shifted
Existing Track to be Removed
Proposed Detour Track
Proposed Track
Proposed Turnout
Turnout Label
Curve Label
Curve Information — Dc=x°xx' / Ea=x.x" / Ls=xxx'
Profile Grade Line
Milepost — H-64 / STA. X+XX

ABBREVIATIONS:

TRACK ALIGNMENT - HORIZONTAL:

CD	Cant Deficiency
CS	Curve to Spiral
Dc	Degree of Curvature
Ea	Actual Superelevation (Inches)
Eu	Unbalance Elevation (Inches)
I	Curve Intersection Angle
L	Length of Curve
Ls	Length of Spiral
PC	Point of Curvature
PI	Point of Intersection
PI/TO	Point of Intersection / Turnout
POL	Point on Line
PS	Point of Switch
PT	Point on Tangent
R	Radius
SC	Spiral to Curve
ST	Spiral to Tangent
TO	Turnout
TS	Tangent to Spiral
X	Spiral Tangent Length to Offset
Y	Spiral Tangent Offset

TRACK ALIGNMENT - VERTICAL:

EL	Elevation
L	Vertical Curve Length
R	Rate of Change
T/R	Top of Rail
VPC	Vertical Point of Curve
VPI	Vertical Point of Intersection
VPT	Vertical Point of Tangent

ROAD ALIGNMENT - HORIZONTAL

PINC	Point of Intersection No Curve
POT	Point on Tangent
POC	Point on Curve
POS	Point on Spiral

DRAINAGE:

CIP	Cast Iron Pipe
BCCMP	Bituminous Coated Corrugated Metal Pipe
INV.	Invert
RCB	Reinforced Concrete Box Culvert
RCP	Reinforced Concrete Pipe
SCP	Steel Casing Pipe
STB	Stone Box Culvert
SYFF	Square Yards Filter Fabric
WSP	Welded Steel Pipe

MISCELLANEOUS:

ABS	Absolute
AVE	Avenue
AH	Ahead
BK	Back
℄	Baseline
BLDG	Building
BLVD	Boulevard
CB	Catch Basin
℄	Centerline
CLR	Clear
CONC	Concrete
DWG	Drawing
E	East
EL	Elevation
ESMT	Easement
EXIST	Existing
EB	East Bound
FT	Feet
FND	Foundation
GRD	Ground
HW	Headwall
HORIZ	Horizontal
LT	Left
LH	Lefthand
MIN	Minimum
MOW	Maintenance of Way
MP	Milepost
MPH	Miles Per Hour
N	North
N/A	Not Applicable
NB	North Bound
NO.	Number
NCRR	North Carolina Railroad
NS	Norfolk Southern Railway
PAV'T	Pavement
PGL	Profile Grade Line
PROP	Proposed
RD	Road
RT	Right
RR	Railroad
RH	Righthand
R/W	Right-of-Way
REQ'D	Required
S	South
SEG	Segment
STA	Station
SR	State Route
SHLDR	Shoulder
SHT	Sheet
SWM	Storm Water Management
TRK	Track
V	Velocity (MPH)
VERT	Vertical
W	West
W/	With
WB	West Bound

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR1-D
Location and Surveys	

SURVEY CONTROL SHEET

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "P3414-15"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 572927.0137(ft) EASTING: 1490817.4654(ft)
ELEVATION: 700.64(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998439800
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "P3414-15" TO -M1- STATION 10514+34.70 IS
N 87°17'45.6" E 9058.457'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/*

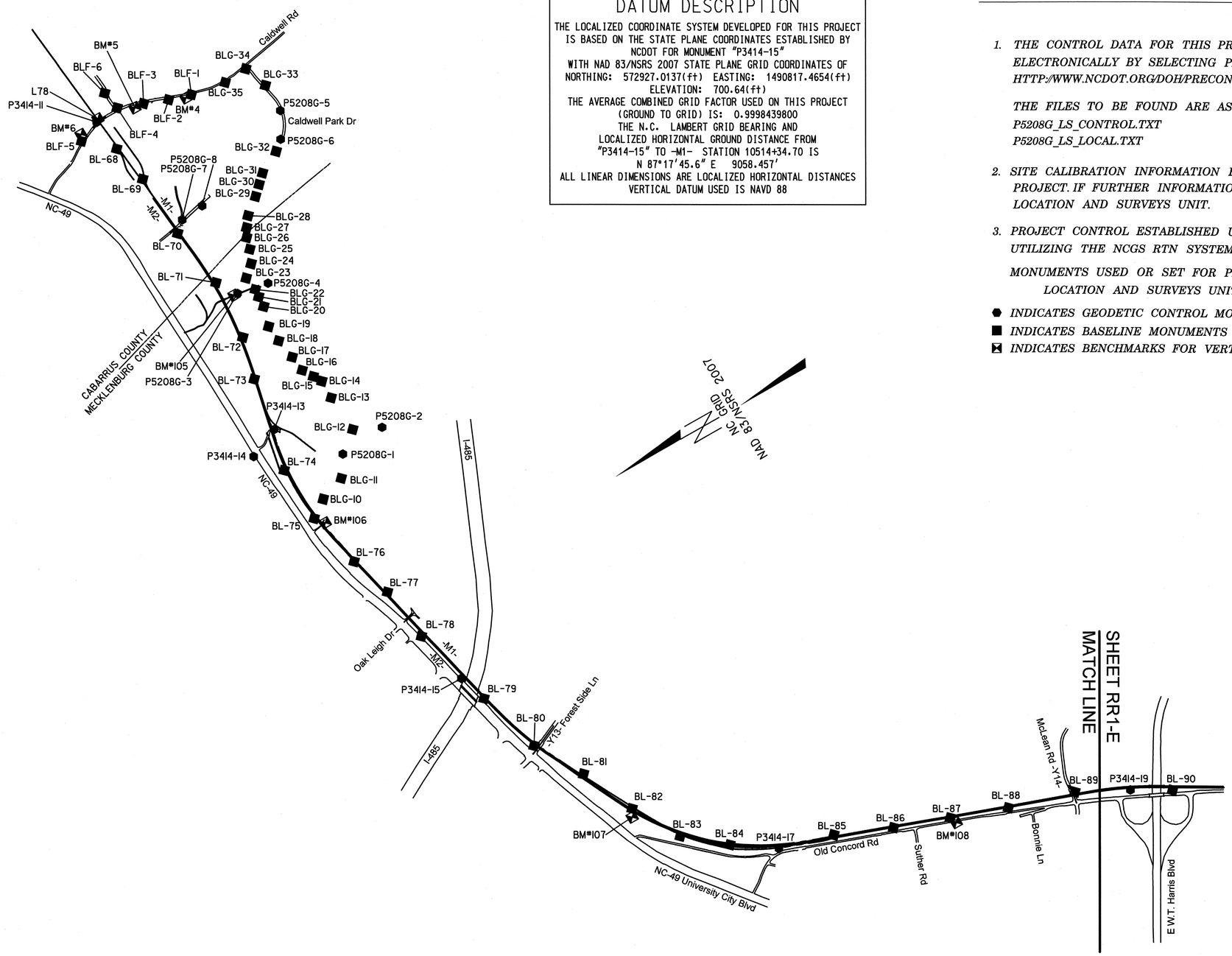
   THE FILES TO BE FOUND ARE AS FOLLOWS:
   P5208G_LS_CONTROL.TXT
   P5208G_LS_LOCAL.TXT

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

3. *PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM, UTILIZING THE NCGS RTN SYSTEM (VRS).*

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

- ⬢ *INDICATES GEODETIC CONTROL MONUMENTS FOR HORIZONTAL CONTROL*
- ■ *INDICATES BASELINE MONUMENTS FOR HORIZONTAL PROJECT CONTROL*
- ⧗ *INDICATES BENCHMARKS FOR VERTICAL CONTROL*



NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR1-E
Location and Surveys	

SURVEY CONTROL SHEET

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "P3414-15"
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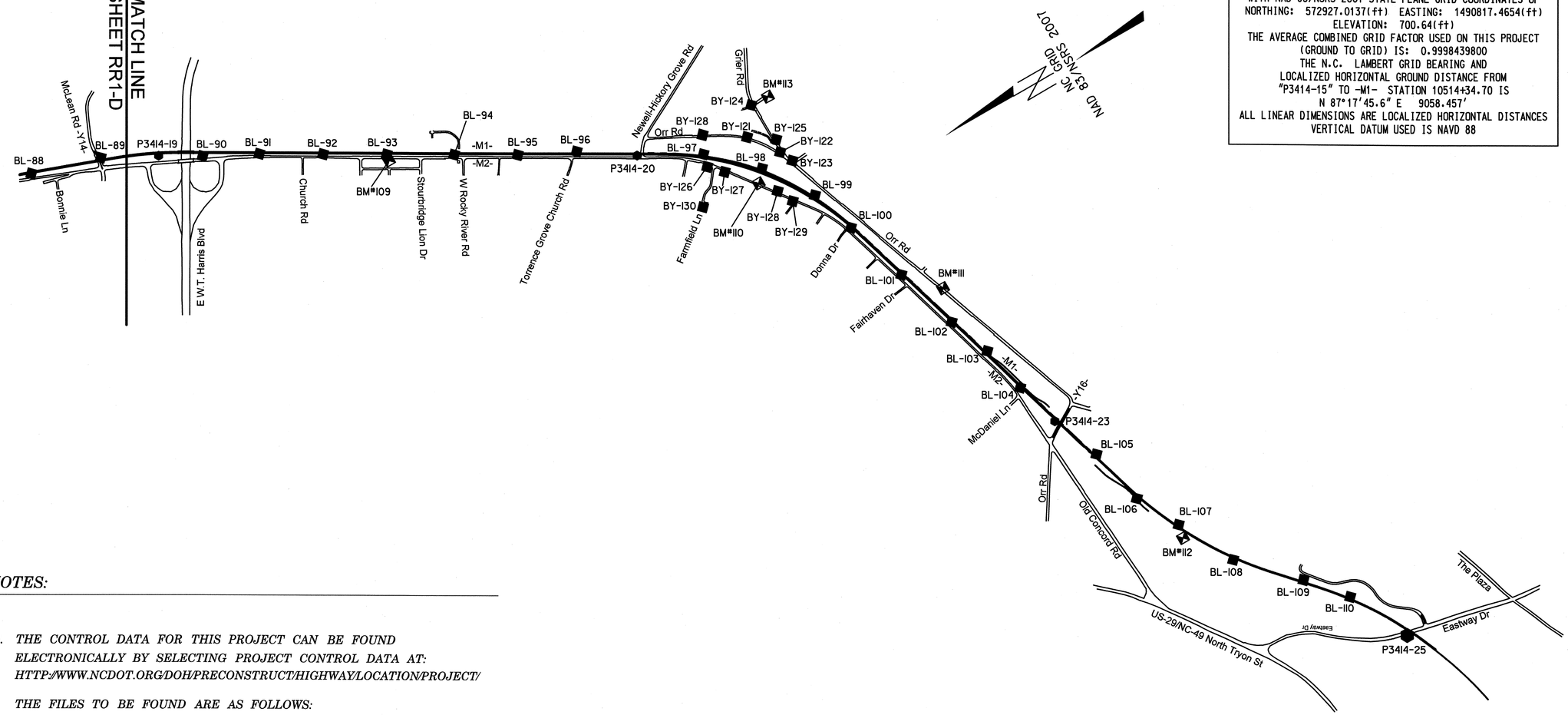

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   P5208G_LS_CONTROL.TXT
   P5208G_LS_LOCAL.TXT

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3. PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM, UTILIZING THE NCGS RTN SYSTEM (VRS).

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

- ⬢ INDICATES GEODETIC CONTROL MONUMENTS FOR HORIZONTAL CONTROL
- ■ INDICATES BASELINE MONUMENTS FOR HORIZONTAL PROJECT CONTROL
- ⧗ INDICATES BENCHMARKS FOR VERTICAL CONTROL

NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR1-F
Location and Surveys	

SURVEY CONTROL SHEET

****
BM4 ELEVATION = 610.31
N 572125 E 1500771
M1 STATION 10512+35
S 36+22'3.48" E DIST 1526.84
RR SPIKE IN 14" OAK
****
****
BM5 ELEVATION = 637.97
N 572892 E 1501035
M1 STATION 10512+35
S 68+25'35.28" E DIST 1257.45
RR SPIKE IN 9" OAK
****
****
BM6 ELEVATION = 669.30
N 573828 E 1501094
M1 STATION 10512+35
N 68+56'3.58" E DIST 1316.34
RR SPIKE IN 10" ELM
****
****
BM105 ELEVATION = 664.51
N 573014 E 1497744
M1 STATION 10533+59 176 LEFT
RR-SPIKE SET IN FIRST JOINT OF CONC.
C&G AT EOP ON EAST SIDE OF PRIVATE
DRIVE LEADING TO SEWER PLANT. 165 +/-
SOUTH OF TRACKS
****
****
BM106 ELEVATION = 691.17
N 573555 E 1493968
M1 STATION 10571+98 51 LEFT
RR-SPIKE SET IN NORTHERN MOST ROOT OF A
48" RED OAK. TREE BEING SW 50' FROM A
PRIVATE R/R CROSSING LEADING TO A 2
STORY FRAME FARM HOUSE LYING 75' SOUTH
OF TRACKS
****
****
BM107 ELEVATION = 729.21
N 571705 E 1487615
M1 STATION 10638+30 100 RIGHT
RR-SPIKE SET IN SOUTHWESTERN ROOT OF
24" FORKED ASHE LYING IN SW CORNER OF
PARKING LOT FOR BUCKWILD
****
****
BM108 ELEVATION = 747.49
N 567371 E 1485018
M1 STATION 10689+45 117 RIGHT
RR-SPIKE FOUND IN POWER POLE. *148486 &
056625 POLE LIES +/- 18' NORTH OF EOP
OF OLD CONCORD RD.
****
****
BM109 ELEVATION = 759.18
N 561813 E 1482323
M1 STATION 10751+63 119 RIGHT
RR-SPIKE SET IN SW ROOT OF A 60" WILLOW
OAK TREE. TREE IS 12' NW OF LIGHT POLE
& 10' NORTH OF CONC. SIDEWALK
****
****
BM110 ELEVATION = 776.25
N 557185 E 1479279
M1 STATION 10807+87 174 RIGHT
RR-SPIKE SET IN POWER POLE 12' SOUTH OF
EOP OF OLD CONCORD RD. POLE IS ACROSS
RD FROM BRANCH HILL FARMS 7217 OLD
CONCORD RD
****
****
BM111 ELEVATION = 768.10
N 555581 E 1476544
M1 STATION 10839+79 253 LEFT
RR-SPIKE SET BETWEEN EOP & C&G
SOUTHSIDE OF ORR RD. DIRECTLY UNDER A
HIGH TENSION POWERLINE
****
****
BM112 ELEVATION = 770.54
N 554327 E 1471529
M1 STATION 10512+35
S 56+07'11.25" W DIST 34132.34
*5 REBAR SET IN TOP OF BANK 85' NORTH
OF TRACKS. POINT IS 200' WEST OF STEIN
FABRIC CO. 300' EAST OF STORAGE BUILDING
****
****
BM113 ELEVATION = 804.33
N 556424 E 1480324
M1 STATION 10805+28 1087 LEFT
CHISELED SQUARE ON TOP BACK OF CURB
****
****
L78 ELEVATION = 644.64
N 573478 E 1501172
M1 STATION 10512+35
N 84+35'6.23" E DIST 1312.32
USCGS L78 1935
****

BL

POINT	DESC.	NORTH	EAST	ELEVATION	M1 STATION	OFFSET
P341411	P3414-11	573520.1777	1501138.6901	648.83	OUTSIDE PROJECT LIMITS	
BL68	BL-68	573459.3581	1500620.8578	651.17	OUTSIDE PROJECT LIMITS	
BL69	BL-69	573344.8679	1500009.1839	657.23	OUTSIDE PROJECT LIMITS	
BL70	BL-70	573293.4073	1499011.1322	654.09	10520+91.14	27.19 RT
BL71	BL-71	573157.7204	1498054.5231	664.68	10530+54.67	30.15 LT
BL72	BL-72	573217.8908	1497115.1322	673.06	10539+92.57	26.02 LT
BL73	BL-73	573391.5827	1496458.1881	678.06	10546+70.00	26.14 RT
P341413	P3414-13	573517.0917	1495622.0121	688.41	10555+13.59	32.88 LT
BL74	BL-74	573702.2178	1494992.9133	690.05	10561+63.06	47.30 RT
BL75	BL-75	573671.1494	1494112.6889	690.19	10570+35.72	40.01 RT
BL76	BL-76	573462.9844	1493227.3625	692.72	10579+42.00	23.91 RT
BL77	BL-77	573250.4812	1492554.1282	697.05	10586+46.20	26.23 LT
BL78	BL-78	573136.5919	1491697.7891	700.00	10595+05.55	62.12 RT
P341415	P3414-15	572927.0137	1490817.4654	700.64	10604+10.47	62.98 RT
BL79	BL-79	572780.4626	1490369.0049	707.60	10608+80.72	24.72 RT
BL80	BL-80	572475.7546	1489339.0620	713.21	10619+51.06	36.59 RT
BL81	BL-81	572028.0885	1488571.0706	715.45	10628+35.60	39.63 LT
BL82	BL-82	571638.8727	1487733.0143	721.71	10637+60.17	14.82 LT
BL83	BL-83	571205.1341	1486986.3357	726.04	10646+17.69	57.27 RT
BL84	BL-84	570599.7682	1486481.5880	730.27	10653+98.67	16.04 RT
P341417	P3414-17	569970.3231	1486048.3878	733.05	10661+55.26	59.76 RT
BL85	BL-85	569121.2539	1485806.6274	731.74	10670+30.59	24.90 LT
BL86	BL-86	568259.0206	1485437.8376	728.77	10679+66.99	26.27 RT
BL87	BL-87	567413.2248	1485130.2276	734.92	10688+66.99	25.59 RT
BL88	BL-88	566549.6535	1484814.8711	736.84	10697+86.34	26.10 RT
BL89	BL-89	565532.1285	1484503.5886	740.16	10708+48.93	29.95 LT
P341419	P3414-19	564767.3493	1484098.3476	746.59	10717+13.55	49.32 RT
BL90	BL-90	564198.5802	1483766.2571	741.15	10723+75.15	62.40 RT
BL91	BL-91	563445.5634	1483372.1772	748.22	10732+24.31	26.95 RT
BL92	BL-92	562620.0636	1482894.8638	753.85	10741+77.87	27.32 RT
BL93	BL-93	561795.8522	1482419.4826	756.94	10751+29.35	26.66 RT
BL94	BL-94	560920.1481	1481915.4659	759.54	10761+39.74	25.03 RT
BL95	BL-95	560098.3441	1481438.8177	766.49	10770+89.77	26.67 RT
BL96	BL-96	559309.7252	1481042.7146	773.31	10779+70.77	24.83 LT
BL97	BL-97	557685.4301	1480064.9284	783.82	10798+63.10	37.60 LT
BL98	BL-98	557032.8087	1479445.3543	788.25	10807+55.47	49.39 LT
BL99	BL-99	556545.0187	1478706.5784	785.81	10816+32.96	41.52 LT
BL100	BL-100	556319.0049	1478016.8249	777.22	10823+55.18	23.72 RT
BL101	BL-101	556018.9122	1477029.2367	770.42	10833+88.10	25.85 RT
BL102	BL-102	555719.7865	1476042.9376	764.94	10844+18.76	25.29 RT
BL103	BL-103	555472.3296	1475402.9360	762.10	10851+03.01	26.14 LT
BL104	BL-104	555314.4321	1474690.0481	762.20	10858+31.07	29.27 RT
P341423	P3414-23	555114.4441	1474002.6373	764.75	10865+46.86	38.06 RT
BL105	BL-105	554820.7271	1473262.7232	767.44	10873+40.19	29.28 LT
BL106	BL-106	554627.5193	1472388.2306	768.59	OUTSIDE PROJECT LIMITS	
BL107	BL-107	554283.8404	1471731.9959	759.22	OUTSIDE PROJECT LIMITS	
BL108	BL-108	553839.6463	1470869.6242	758.23	OUTSIDE PROJECT LIMITS	
BL109	BL-109	553076.4911	1470089.7245	761.21	OUTSIDE PROJECT LIMITS	
BL110	BL-110	552594.0702	1469525.6179	769.64	OUTSIDE PROJECT LIMITS	
P341425	P3414-25	552140.0827	1468608.2140	793.74	OUTSIDE PROJECT LIMITS	

BL1

POINT	DESC.	NORTH	EAST	ELEVATION	M1 STATION	OFFSET
EQ75	BL-75	573671.1494	1494112.6889	690.19	10570+35.72	40.01 RT
BLG10	BL-G10	573398.0936	1494301.2000	673.64	10568+76.95	253.79 LT
BLG11	BL-G11	572994.2484	1494441.2191	666.48	10567+56.82	668.01 LT
1	P5208G-1	572782.7490	1494757.7390	680.34	10563+63.90	985.10 LT
BLG12	BL-G12	572455.7883	1495011.3208	675.43	10559+78.76	1189.74 LT
BLG13	BL-G13	572496.2715	1495611.0366	679.49	10553+02.46	1031.80 LT
BLG14	BL-G14	572494.2410	1495906.4202	672.09	10550+13.69	969.62 LT
BLG15	BL-G15	572571.9256	1496035.4607	679.90	10549+04.60	865.75 LT
BLG16	BL-G16	572674.6537	1496206.7481	674.27	10547+59.72	728.27 LT
BLG17	BL-G17	572704.8268	1496464.0926	670.03	10545+21.44	643.64 LT
BLG18	BL-G18	572760.5864	1496789.2705	654.32	10542+35.67	527.28 LT
BLG19	BL-G19	572785.6526	1497059.7601	637.23	10539+90.37	461.79 LT
BLG20	BL-G20	572696.2458	1497365.7555	641.15	10536+98.01	516.96 LT
BLG21	BL-G21	572690.9597	1497530.7240	632.88	10535+44.99	509.59 LT
BLG22	BL-G22	572679.3552	1497656.2637	647.22	10534+28.44	514.13 LT
BLG23	BL-G23	572712.5581	1497879.9189	672.19	10532+23.76	474.55 LT
BLG24	BL-G24	572536.7479	1498033.7864	660.25	10530+84.18	650.69 LT
BLG25	BL-G25	572440.3200	1498236.8683	665.59	10529+06.26	753.21 LT
BLG26	BL-G26	572392.7282	1498419.9921	659.87	10527+48.16	811.70 LT
BLG27	BL-G27	572315.8039	1498552.7952	650.87	10526+35.53	899.27 LT
BLG28	BL-G28	572204.6489	1498701.2792	620.47	10525+08.32	1024.07 LT
BLG29	BL-G29	571954.4204	1498900.4331	606.73	10523+38.84	1293.33 LT
BLG30	BL-G30	571813.3951	1499034.9332	625.68	10522+19.54	1447.43 LT
BLG31	BL-G31	571677.2834	1499161.6212	645.29	10521+07.51	1595.84 LT
BLG32	BL-G32	571325.7264	1499348.4001	667.65	10519+57.84	1964.73 LT
6	P5208G-6	571170.4500	1499478.8570	675.81	10518+44.03	2132.59 LT
5	P5208G-5	570947.9730	1499869.5860	660.64	10514+78.23	2394.03 LT
BLG33	BL-G33	570953.5003	1500325.2135	648.60	OUTSIDE PROJECT LIMITS	
BLG34	BL-G34	571088.8002	1500700.1983	630.43	OUTSIDE PROJECT LIMITS	
BLG35	BL-G35	571473.2545	1500676.7101	608.81	OUTSIDE PROJECT LIMITS	
EQF1	BL-F1	572024.8982	1500775.0431	604.30	OUTSIDE PROJECT LIMITS	

BL2

POINT	DESC.	NORTH	EAST	ELEVATION	M1 STATION	OFFSET
BLF5	BL-F5	573874.1983	1500999.0037	672.99	OUTSIDE PROJECT LIMITS	
EQ11	P3414-11	573520.1777	1501138.6901	648.83	OUTSIDE PROJECT LIMITS	
BLF4	BL-F4	573131.3088	1501171.0561	639.84	OUTSIDE PROJECT LIMITS	
BLF3	BL-F3	572742.5686	1501025.1103	625.10	OUTSIDE PROJECT LIMITS	
BLF2	BL-F2	572373.7576	1500881.2505	615.35	OUTSIDE PROJECT LIMITS	
BLF1	BL-F1	572024.8982	1500775.0431	604.30	OUTSIDE PROJECT LIMITS	

BY1G

POINT	DESC.	NORTH	EAST	ELEVATION	M1 STATION	OFFSET
EQG27	BL-G27	572315.8039	1498552.7952	650.87	10526+35.53	899.27 LT
8	P5208G-8	572750.1980	1499190.8950	646.28	10519+68.15	531.61 LT
7	P5208G-7	573126.9750	1499158.1490	650.70	10519+62.01	153.47 LT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	M1 STATION	OFFSET
EQF4	BL-F4	573131.3088	1501171.0561	639.84	OUTSIDE PROJECT LIMITS	
BLF6	BL-F6	573185.6688	1501467.8690	636.32	OUTSIDE PROJECT LIMITS	

BYS3-1

POINT	DESC.	NORTH	EAST	ELEVATION	M1 STATION	OFFSET
E97	BL-97	557685.4301	1480064.9284	783.82	10798+63.10	37.60 LT
BL126	BY-126	557729.8564	1479873.3360	775.53	10799+49.83	139.43 RT
BL127	BY-127	557540.7255	1479676.9626	760.05	10802+31.46	161.94 RT
BL128	BY-128	556996.0513	1479037.7898	786.07	10811+06.36	169.46 RT
BL129	BY-129	556875.7968	1478794.7907	782.59	10813+87.73	202.09 RT

BYS3-2

POINT	DESC.	NORTH	EAST	ELEVATION	M1 STATION	OFFSET
E126	BY-126	557729.8564	1479873.3360	775.53	10799+49.83	139.43 RT
BL130	BY-130	558084.9560	1479383.7016	742.98	10799+94.66	742.94 RT

BYS3-4

POINT	DESC.	NORTH	EAST	ELEVATION	M1 STATION	OFFSET
EE97	BL-97	557685.4301	1480064.9284	783.82	10798+63.10	37.60 LT
BL120	BY-120	557553.4894	1480319.0898	789.85	10798+12.81	319.14 LT
BL121	BY-121	556992.7141	1479958.8560	794.36	10804+19.32	423.28 LT
BL122	BY-122	556673.1069	1479520.8921	800.99	10809+13.78	377.29 LT
BL123	BY-123	556578.6938	1479320.2977	797.50	10811+14.68	334.45 LT

BYS3-5

POINT	DESC.	NORTH	EAST	ELEVATION	M1 STATION	OFFSET
BL124	BY-124	556700.7825	1480337.3918	800.01	10803+63.69	896.99 LT
BL125	BY-125	556632.6338	1479714.0219	808.82	10807+99.71	529.08 LT
E122	BY-122	556673.1069	1479520.8921	800.99	10809+13.78	377.29 LT

ADDITIONAL POINTS

POINT	DESC.	NORTH	EAST	ELEVATION	M1 STATION	OFFSET
2	P5208G-2	572042.1130	1494812.6370	662.30	10562+24.00	1621.92 LT
3	P5208G-3	572951.7770	1497740.7380	662.36	10533+59.68	238.50 LT
4	P5208G-4	572458.3860	1497643.0170	623.74	10534+31.02	735.48 LT
P341414	P3414-14	574005.9756	1495416.0977	688.57	10558+04.28	405.17 RT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCDOT FOR MONUMENT "P3414-15"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 572927.0137(ft) EASTING: 1490817.4654(ft)
ELEVATION: 700.64(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.9998439800
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"P3414-15" TO -M1- STATION 10514+34.70 IS
N 87°17'45.6" E 9058.457'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

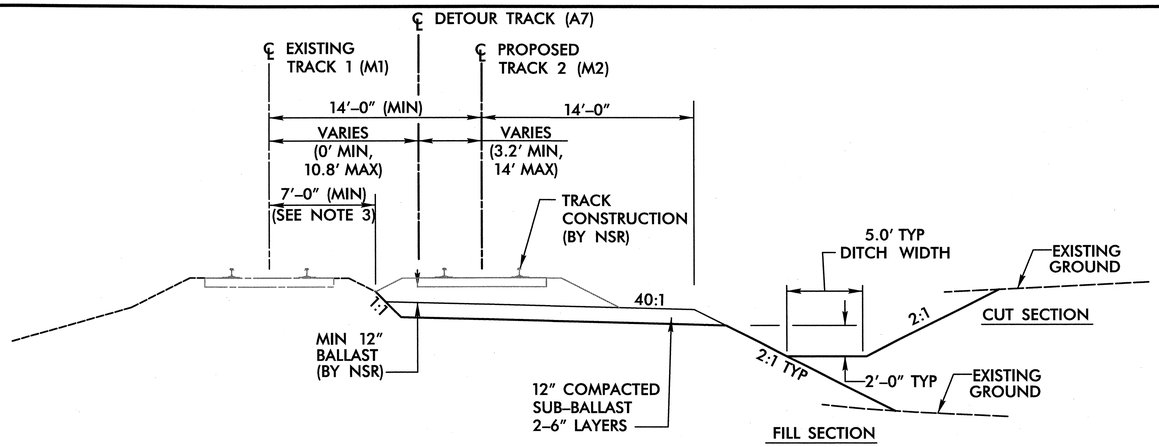
PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR2

RAIL DESIGN ENGINEER

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

NOTES:

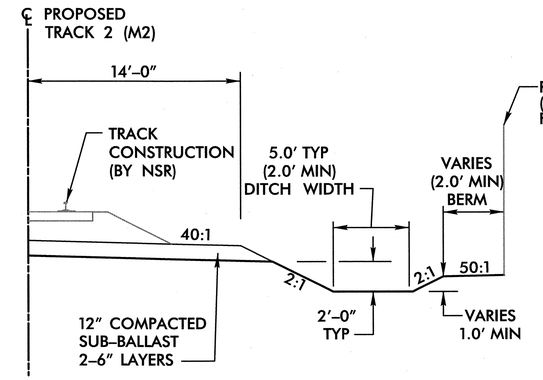
1. TOP OF SUB-GRADE IS TO BE CROWNED.
2. TRACK CONSTRUCTION, INCLUDING BALLAST, TIE AND RAIL INSTALLATION, BY NSR.
3. ACTUAL LOCATION OF EXCAVATION IS TO BE BASED ON FIELD CONDITIONS AS DETERMINED BY THE NORFOLK SOUTHERN REPRESENTATIVE.
4. ADDITIONAL ROADBED WIDTH IS PROPOSED FOR ACCESS ROAD AS FOLLOWS: –M1– STA. 10825+25 TO STA. 10829+78 LEFT (VARIES 8'–0" TO 138'–0")
5. SUBSURFACE DRAINS SHALL BE INSTALLED IN LOCATIONS WHERE ROADBED IS GREATER THAN 22' FEET (MEASURED FROM CENTERLINE OF TRACK), FOR A DISTANCE GREATER THAN 25'. SEE SUBSURFACE DRAIN DETAIL ON THIS SHEET FOR DETAILS.



TYPICAL SECTION NO. 1

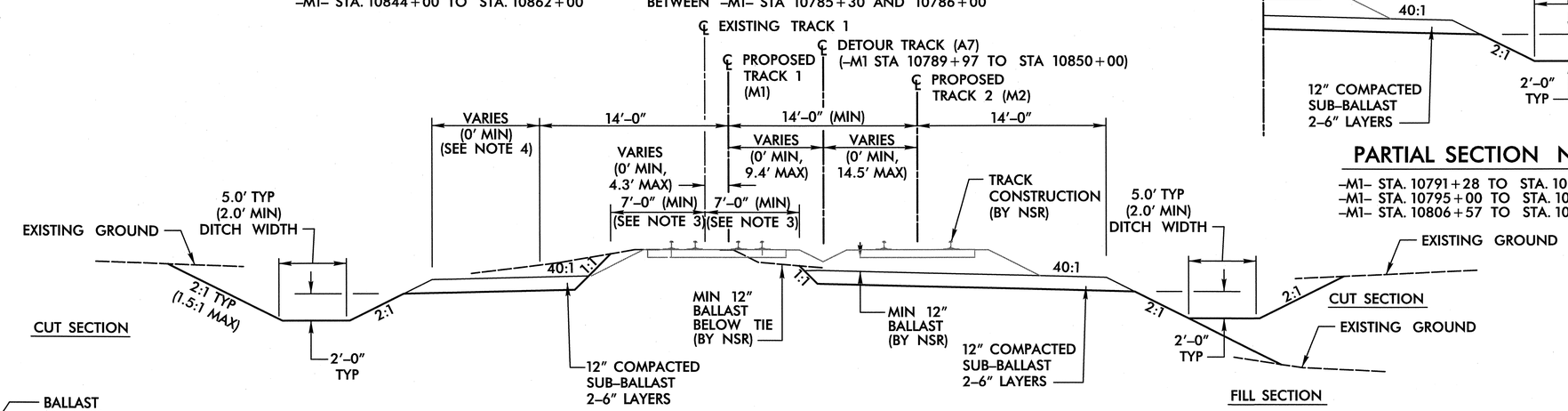
–M1– STA. 10785+30 TO STA. 10789+15*
–M1– STA. 10844+00 TO STA. 10862+00

* SEE SHEET RR2–G FOR ROADBED TAPER DETAIL BETWEEN –M1– STA 10785+30 AND 10786+00



PARTIAL SECTION NO. 2

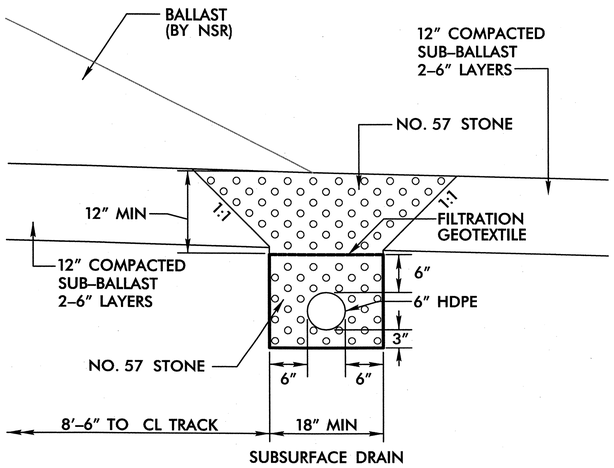
–M1– STA. 10791+28 TO STA. 10795+00
–M1– STA. 10795+00 TO STA. 10804+81
–M1– STA. 10806+57 TO STA. 10808+39



TYPICAL SECTION NO. 2

–M1– STA. 10789+15 TO STA. 10795+00**
–M1– STA. 10824+00 TO STA. 10829+78
–M1– STA. 10843+64 TO STA. 10844+00
–M1– STA. 10862+00 TO STA. 10867+61

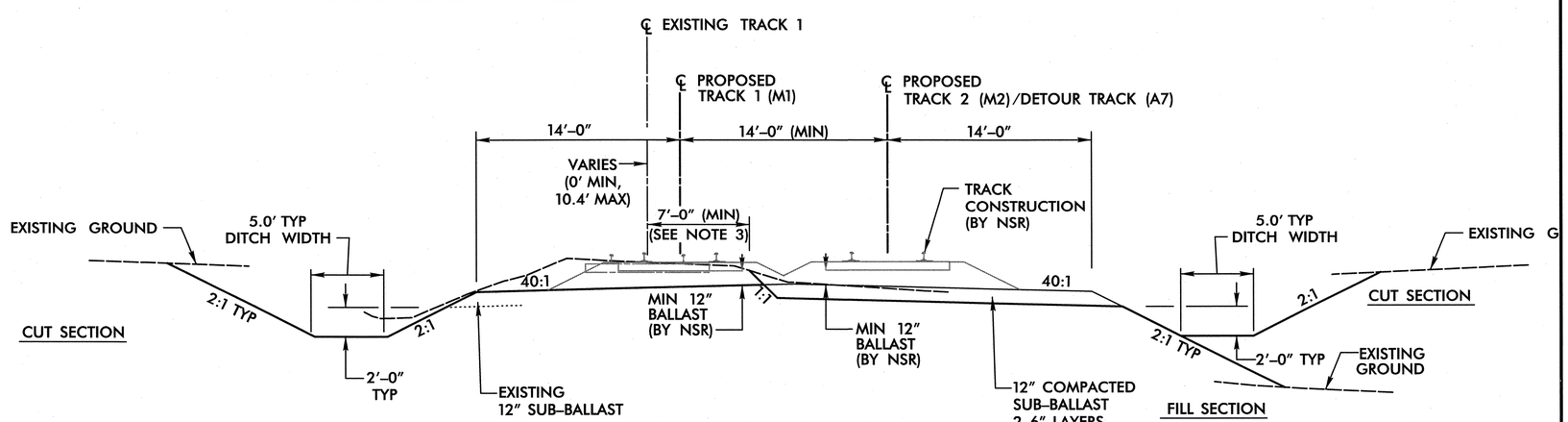
** USE PARTIAL SECTION NO. 2 FOR THE FOLLOWING STATIONS:
–M1– STA. 10791+28 TO STA. 10795+00



*PROVIDE SUBDRAIN OUTLETS AT LOCATIONS SHOWN IN PLANS OR AS DIRECTED BY ENGINEER.

SUBSURFACE DRAIN DETAIL

SUBSURFACE DRAIN SHOWN IS ON RIGHT SIDE, MIRROR IMAGE FOR SUBSURFACE DRAIN ON LEFT SIDE



TYPICAL SECTION NO. 3

–M1– STA. 10819+00 TO STA. 10824+00

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DGN

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DATE: 12/20/2013
TIME: 02:40:03 PM
DGN: R:\Rail\Sheets\Grier Rd Detour\P-5208H_RR-TS01.dgn

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR2-A

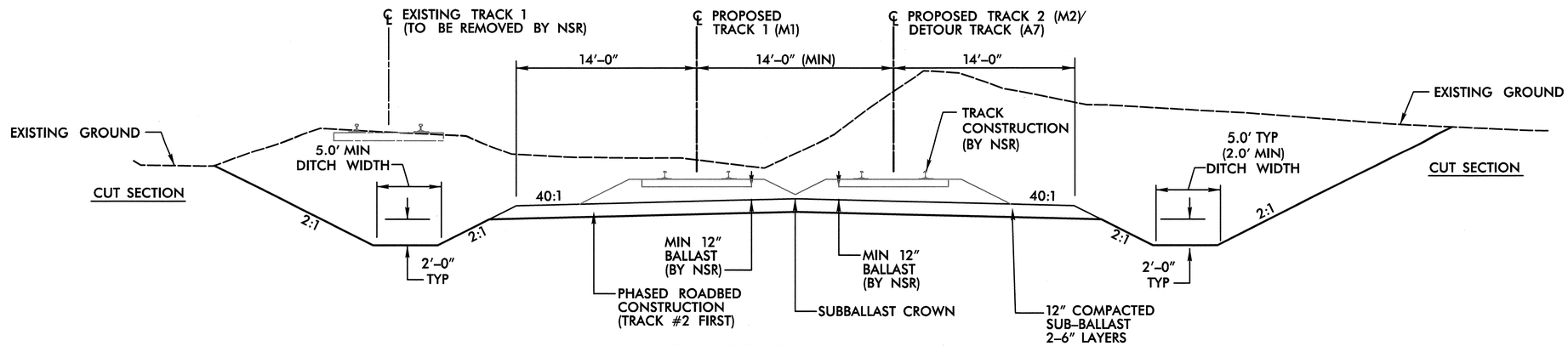
RAIL DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 036222 ENGINEER

4/17/13

Prepared in the Office of: AECOM

NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 • (919) 854-6259(FAX)



NOTES:

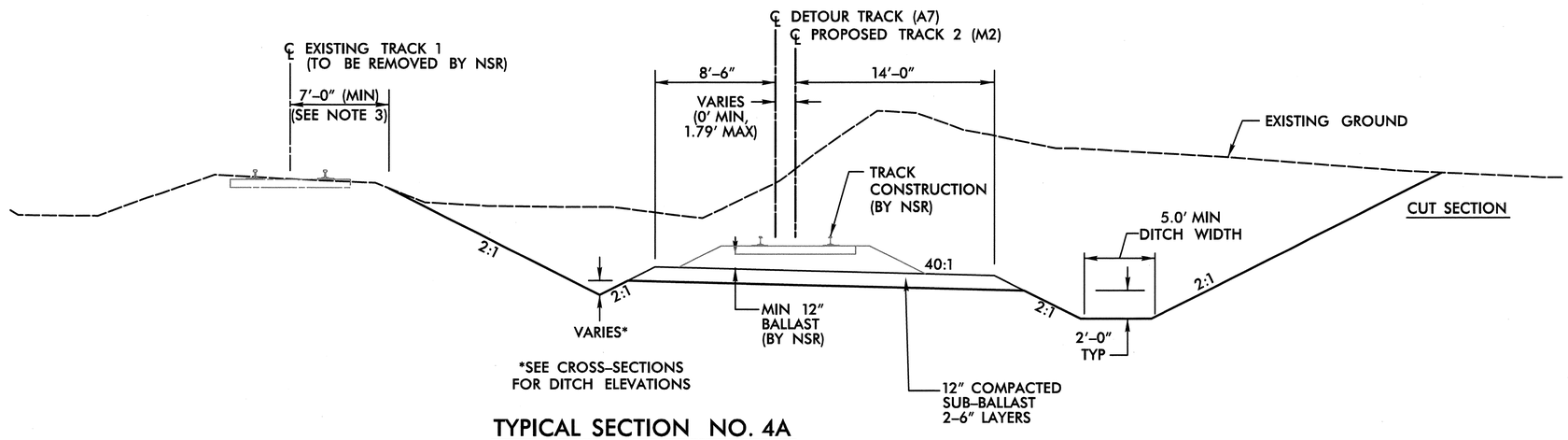
1. TOP OF SUB-GRADE IS TO BE CROWNED.
2. TRACK CONSTRUCTION, INCLUDING BALLAST, TIE AND RAIL INSTALLATION, BY NSR.
3. ACTUAL LOCATION OF EXCAVATION IS TO BE BASED ON FIELD CONDITIONS AS DETERMINED BY THE NORFOLK SOUTHERN REPRESENTATIVE.

TYPICAL SECTION NO. 4

-M1- STA. 10795+00 TO STA. 10819+000*

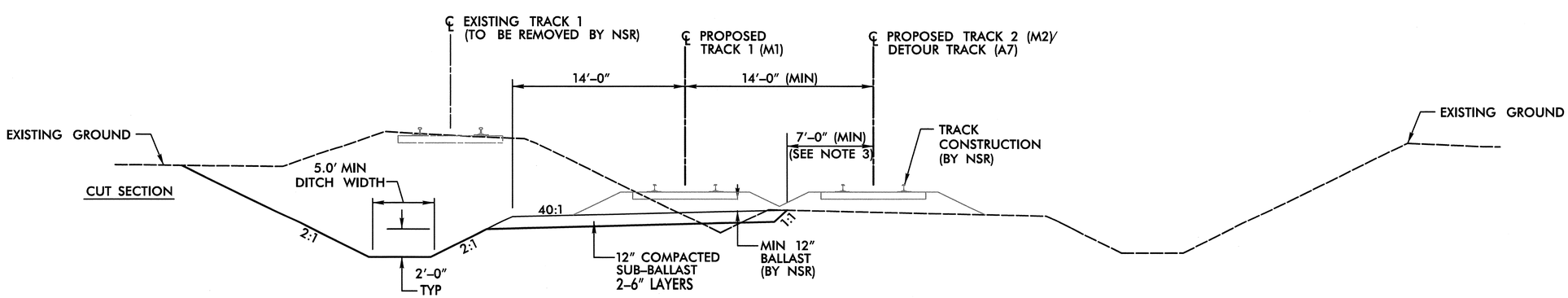
SEE TYPICAL SECTIONS NO. 4A AND 4B FOR PHASING DETAILS

* USE PARTIAL SECTION NO. 2 FOR THE FOLLOWING STATIONS:
-M1- STA. 10795+00 TO STA. 10804+81
-M1- STA. 10806+57 TO STA. 10808+39



TYPICAL SECTION NO. 4A

PHASE 1



TYPICAL SECTION NO. 4B

PHASE 2 – TO BE CONSTRUCTED AFTER TRAFFIC HAS BEEN SHIFTED TO DETOUR TRACK

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TIME: 8:53:01 PM
DGN: R:\Rail\Sheets\Grter Rd Detour\P-5208H_RR-TS02.dgn

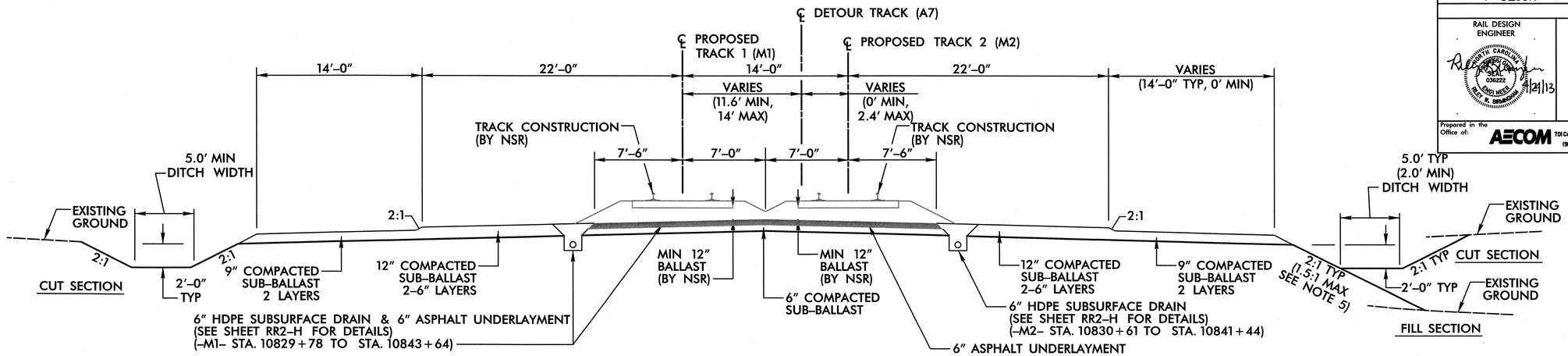
0102DEL_p10a6
0001ADD_P10a6

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR2-B

RAIL DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 036222 RAIL DESIGN ENGINEER
9/21/13

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)



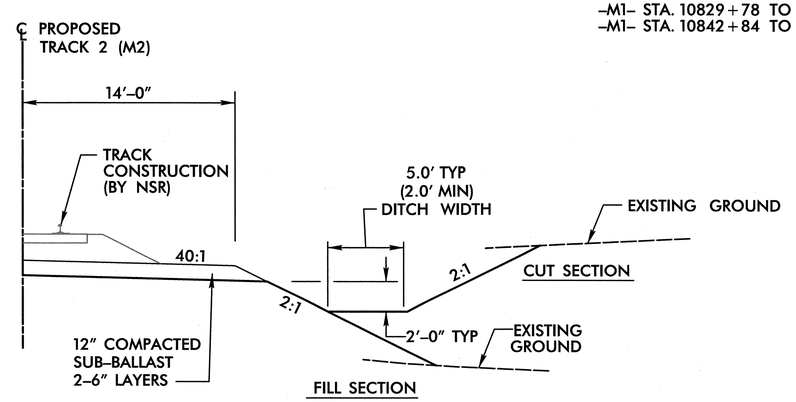
TYPICAL SECTION NO. 5

-M1- STA. 10829+78 TO STA. 10843+64*

* USE PARTIAL SECTION NO. 5 FOR THE FOLLOWING STATIONS:
-M1- STA. 10829+78 TO STA. 10830+58
-M1- STA. 10842+84 TO STA. 10843+64

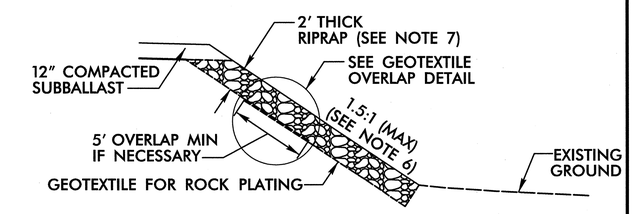
NOTES:

1. TOP OF SUB-GRADE IS TO BE CROWNED.
2. TRACK CONSTRUCTION, INCLUDING BALLAST, TIE AND RAIL INSTALLATION, BY NSR.
3. ACTUAL LOCATION OF EXCAVATION IS TO BE BASED ON FIELD CONDITIONS AS DETERMINED BY THE NORFOLK SOUTHERN REPRESENTATIVE.
4. WIDE ROADBED WIDTH IS PROPOSED FOR TURNOUT MATERIAL LAYDOWN AREA/ACCESS ROAD AS FOLLOWS (SEE SHEET RR2-J FOR DETAILS):
   -M1- STA 10825+25 TO STA 10843+64 LEFT
   -M1- STA 10830+58 TO STA 10842+85 RIGHT
5. ROCK PLATING IS REQUIRED ON SLOPES AS INDICATED ON ROCK PLATING DETAIL. (SEE ROCK PLATING DETAIL ON THIS SHEET).
6. 50' SLOPE TRANSITION WITH ROCK PLATING SHALL BE PROVIDED FROM 1.5:1 TO 2:1 SLOPE
7. USE CLASS I, II OR B RIPRAP.



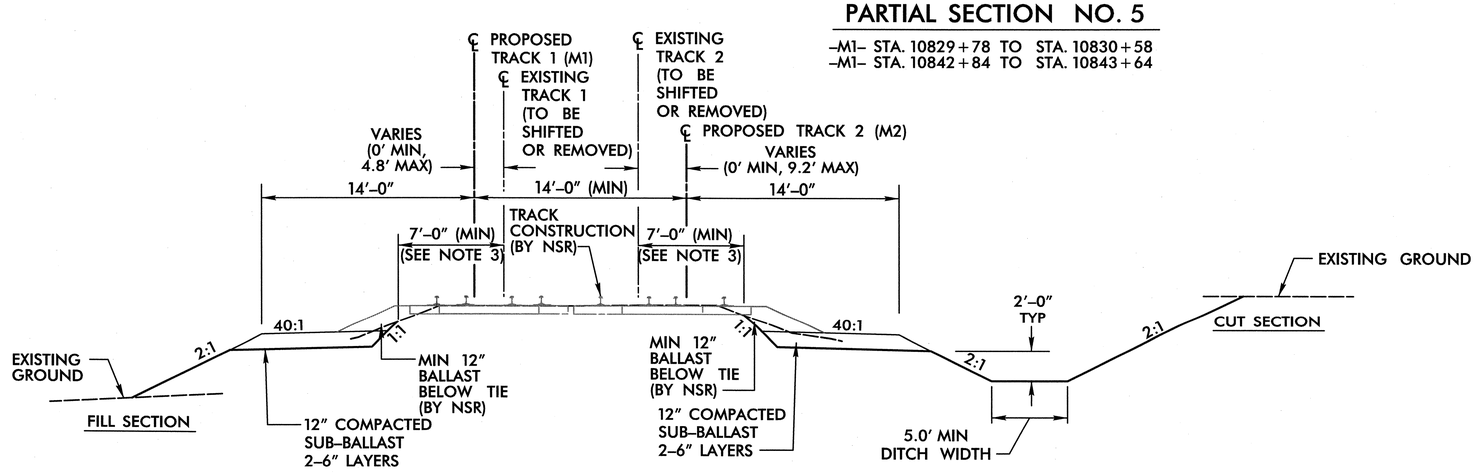
PARTIAL SECTION NO. 5

-M1- STA. 10829+78 TO STA. 10830+58
-M1- STA. 10842+84 TO STA. 10843+64



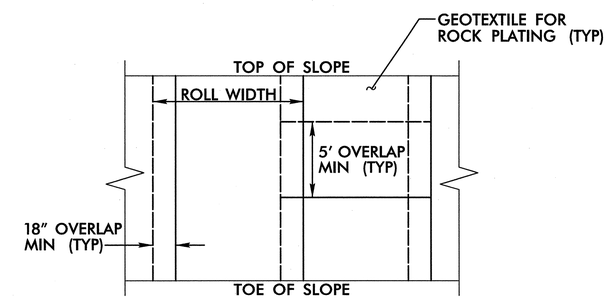
ROCK PLATING DETAIL

-M1- STA. 10832+50 TO STA. 10840+50



TYPICAL SECTION NO. 6

-M1- STA. 10867+61 TO STA. 10872+44



GEOTEXTILE OVERLAP DETAIL

(PLAN VIEW)

USER: westm
DATE: 9/20/2013
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0102DEL_p10a6

DGN

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR2-C

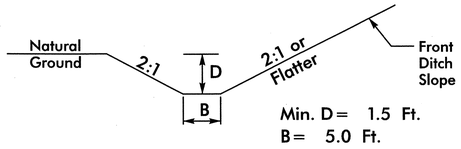
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER JOHN M. KAMPMANN

4/16/13

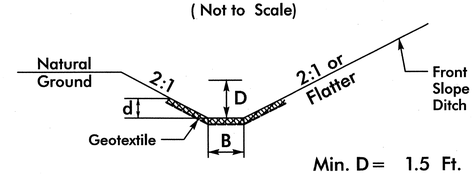
Prepared in the Office of: AECOM NC FIRM LICENSE No: F-0342 701 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-6200 - (919) 854-6259FAX0

DETAIL 1
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM STA 10797+00 TO STA 10817+00 –M1– RT
FROM STA 10805+00 TO STA 10818+00 –M1– LT
FROM STA 10820+00 TO STA 10822+00 –M1– LT
FROM STA 10824+00 TO STA 10825+20 –M1– LT
FROM STA 10825+75 TO STA 10827+00 –M1– LT
FROM STA 10828+00 TO STA 10833+65 –M1– RT
FROM STA 10863+00 TO STA 10866+00 –M1– RT
FROM STA 10865+00 TO STA 10865+80 –M1– LT
FROM STA 10867+00 TO STA 10869+00 –M1– LT

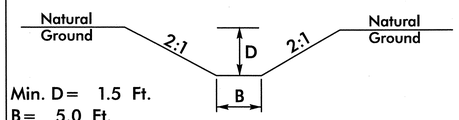
DETAIL 2
SPECIAL CUT BASE DITCH
(Not to Scale)



Type of Liner = CLASS B RIP RAP

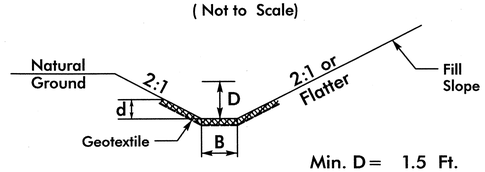
FROM STA 10817+00 TO STA 10819+20 –M1– RT
FROM STA 10867+00 TO STA 10871+20 –M1– RT

DETAIL 3
STANDARD BASE DITCH
(Not to Scale)



STA 10800+00 –M1– LT
STA 10805+00 –M1– LT
FROM STA 10869+00 TO STA 10870+00 –M1– LT

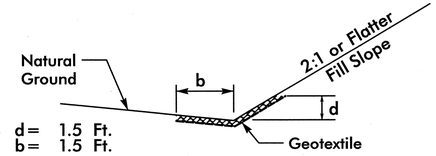
DETAIL 4
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Type of Liner = CLASS B RIP RAP

FROM STA 10837+50 TO STA 10844+00 –M1– LT

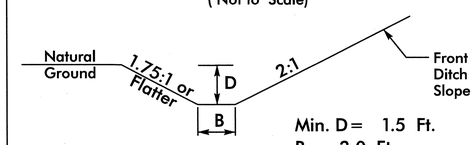
DETAIL 5
TOE PROTECTION
(Not to Scale)



Type of Liner = CLASS B RIP RAP

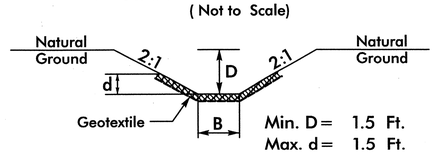
FROM STA 10854+50 TO STA 10856+50 –M1– RT

DETAIL 6
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM STA 10789+15 TO STA 10796+00 –M1– LT

DETAIL 7
STANDARD BASE DITCH
(Not to Scale)

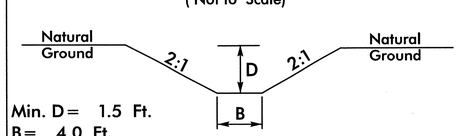


*When B is < 6.0'

Type of Liner = CLASS B RIP RAP

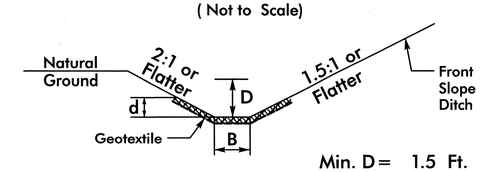
FROM STA 10785+73 TO STA 10786+00 –M1– RT

DETAIL 8
STANDARD BASE DITCH
(Not to Scale)



STA 10871+13 –M1– LT

DETAIL 9
SPECIAL CUT BASE DITCH
(Not to Scale)



Type of Liner = CLASS B RIP RAP

FROM STA 10839+00 TO STA 10839+90 –M1– RT

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DATE: 4/16/2013
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DGN: R:\Rail\Sheets\Grier Rd Detour\P-5208H_RR_HYD_DET30.dgn

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR2-D

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27610
(919) 854-6200 - (919) 854-6259(FAX)

HORIZONTAL CURVE GEOMETRY

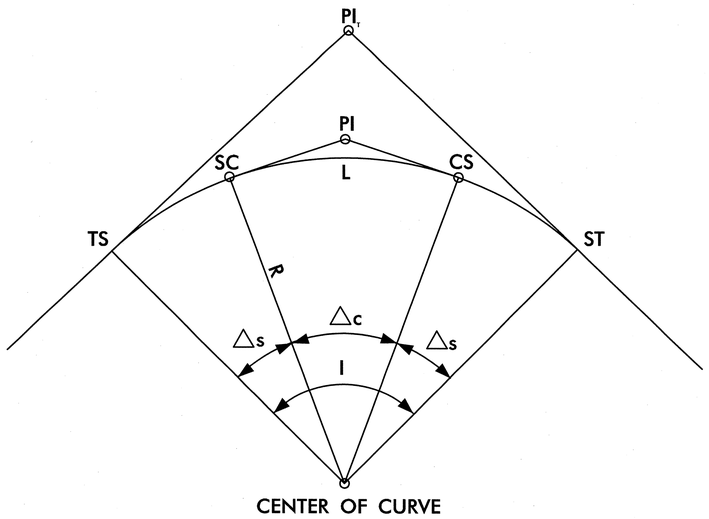

FIGURE A

CIRCULAR CURVE WITH SPIRAL TRANSITION CURVES

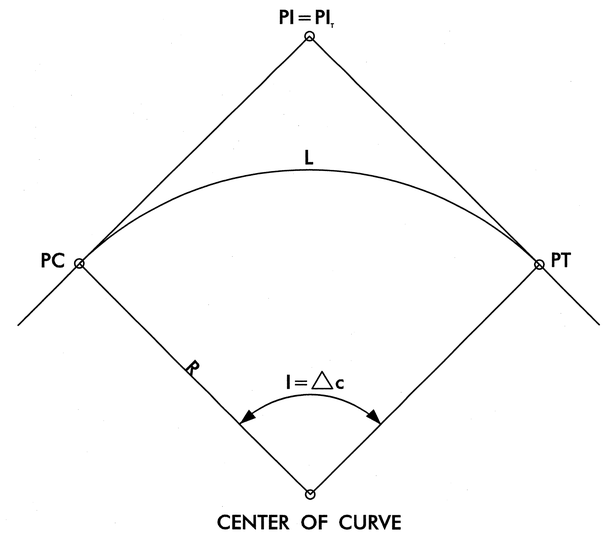

FIGURE B

SIMPLE CIRCULAR CURVE

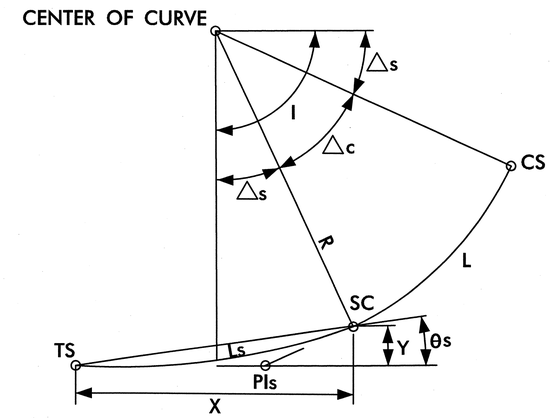

FIGURE C

SPIRAL TRANSITION CURVE

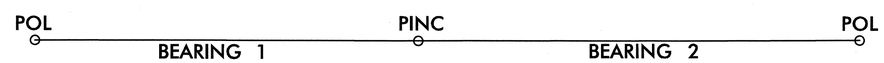

FIGURE D

DEFLECTION BETWEEN TANGENTS

R	RADIUS OF CURVATURE	PI	POINT OF INTERSECTION (CIRCULAR CURVE)
Dc	DEGREE OF CURVATURE (CHORD DEFINED)	PI,	POINT OF INTERSECTION (TANGENT)
L	LENGTH OF CURVE (CHORD DEFINED)	PIs	POINT OF INTERSECTION (SPIRAL)
I	TOTAL INTERSECTION ANGLE	PC	TANGENT TO CIRCULAR CURVE
△c	CURVE ANGLE	PT	CIRCULAR CURVE TO TANGENT
△s	SPIRAL ANGLE	TS	TANGENT TO SPIRAL
θs	SPIRAL DEFLECTION	SC	SPIRAL TO CIRCULAR CURVE
Ls	LENGTH OF SPIRAL	CS	CIRCULAR CURVE TO SPIRAL
X	SPIRAL TANGENT LENGTH TO OFFSET	ST	SPIRAL TO TANGENT
Y	SPIRAL TANGENT OFFSET	PINC	POINT OF INTERSECTION NO CURVE

USER: westhl
DATE: 8/28/2013
TIME: 8:39:05 AM
DGN: R:\Roh\Sheets\Gfxr Rd Detour\P-5208H_RR-T100.dgn

DGN 0102DEL_P10a6

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR2-E

RAIL DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 036222 ENGINEER

Prepared in the Office of: AECOM

NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259 FAX

TRACK GEOMETRY DATA

PROPOSED TRACK 1 (M1)

FEATURE NO.	DESC	STATION	NORTHING	EASTING	BEARING	DISTANCE	R(ft)	Dc	L(ft)	I	DELTA(CURVE)	DELTA(SPIRAL)	THETA	Ls(ft)	X(ft)	Y(ft)	Ea(in)	V(MPH) FREIGHT PLAN7-2	V(MPH) INTERMODAL PLAN7-2	V(MPH) PASSENGER PLAN7-2	V(MPH) PASSENGER FUTURE 4"CD	V(MPH) PASSENGER FUTURE 5"CD
					S 30° 00' 53.65" W	6,819.8398																
	TS	10790+39.51	558,396.7248	1,480,486.6005																		
												2° 41' 11.78" (RT)	0° 53' 43.87"	403.0000	402.9114	6.2979						
	SC	10794+42.51	558,050.9960	1,480,279.6007																		
M1C3711	PI	10809+12.60	556,813.9219	1,479,485.3673			4,297.2804	1° 20' 00.00"	2,832.8521	43° 08' 40.46" (RT)	37° 46' 16.90" (RT)						4.0	50	60	80 Eu=1.97"	90 Eu=3.56"	90 Eu=3.56"
	CS	10822+75.36	556,322.5403	1,478,099.8337																		
												2° 41' 11.78" (RT)	0° 53' 43.87"	403.0000	402.9114	6.2979						
	ST	10826+78.36	556,199.7854	1,477,716.0258																		
					S 73° 09' 34.10" W	424.7932																
	PS	10831+03.16	556,076.7191	1,477,309.4499																		
9					S 73° 09' 34.11" W	91.0000																
NO. 24 RH	PI/TO	10831+94.16	556,050.3556	1,477,222.3524																		
					S 73° 09' 34.11" W	953.7181																
	PI/TO	10841+47.88	555,774.0550	1,476,309.5347																		
12					S 73° 09' 34.11" W	91.0000																
NO. 24 LH	PS	10842+38.88	555,747.6915	1,476,222.4373																		
					S 73° 09' 34.11" W	1,791.7611																
3	PINC	10860+30.64	555,228.6025	1,474,507.5161																		
					S 73° 02' 33.66" W	555.7311																
4	PINC	10865+86.37	555,066.5184	1,473,975.9469																		
					S 73° 12' 33.66" W	657.9408																
5	POL	10872+44.31	554,876.4554	1,473,346.0563																		

TRACK GEOMETRY DATA

PROPOSED TRACK 2 (M2)

FEATURE NO.	DESC	STATION	NORTHING	EASTING	BEARING	DISTANCE	R(ft)	Dc	L(ft)	I	DELTA(CURVE)	DELTA(SPIRAL)	THETA	Ls(ft)	X(ft)	Y(ft)	Ea(in)	V(MPH) FREIGHT PLAN7-2	V(MPH) INTERMODAL PLAN7-2	V(MPH) PASSENGER PLAN7-2	V(MPH) PASSENGER FUTURE 4"CD	V(MPH) PASSENGER FUTURE 5"CD
					S 30° 00' 53.65" W	6,811.7598																
	TS	10790+48.37	558,408.3417	1,480,476.6552																		
												2° 41' 11.78" (RT)	0° 53' 43.87"	403.0000	402.9114	6.2979						
	SC	10794+51.37	558,062.6130	1,480,269.6554																		
M2C3711	PI	10809+21.45	556,825.5389	1,479,475.4219			4,297.2804	1° 20' 00.00"	2,832.8520	43° 08' 40.46" (RT)	37° 46' 16.90" (RT)						4.0	50	60	80 Eu=1.97"	90 Eu=3.56"	90 Eu=3.56"
	CS	10822+84.22	556,334.1572	1,478,089.8884																		
												2° 41' 11.78" (RT)	0° 53' 43.87"	403.0000	402.9114	6.2979						
	ST	10826+87.22	556,211.4024	1,477,706.0805																		
					S 73° 09' 34.11" W	845.4990																
	PI/TO	10835+32.72	555,966.4538	1,476,896.8408																		
10					S 73° 09' 34.11" W	91.0000																
NO. 24 RH	PS	10836+23.72	555,940.0903	1,476,809.7434																		
					S 73° 09' 34.11" W	100.0000																
	PS	10837+23.72	555,911.1195	1,476,714.0319																		
11					S 73° 09' 34.11" W	91.0000																
NO. 24 LH	PI/TO	10838+14.72	555,884.7560	1,476,626.9344																		
					S 73° 09' 34.11" W	2,218.6344																
6	PINC	10860+33.35	555,241.9980	1,474,503.4465																		
					S 73° 02' 33.66" W	555.7213																
7	PINC	10865+89.07	555,079.9168	1,473,971.8867																		
					S 73° 12' 33.66" W	450.4088																
8	PINC	10870+39.48	554,949.8047	1,473,540.6804																		
					S 73° 02' 33.67" W	207.5191																
9	POL	10872+47.00	554,889.2798	1,473,342.1837																		

USER: westml
DATE: 2/25/2013
TIME: 12:16:53 PM
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0102DEL_p10a6

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR2-F

RAIL DESIGN ENGINEER

4/17/13

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259 FAX

TRACK GEOMETRY DATA

PROPOSED DETOUR TRACK (A7)

FEATURE NO.	DESC	STATION	NORTHING	EASTING	BEARING	DISTANCE	R(ft)	Dc	L(ft)	I	DELTA(CURVE)	DELTA(SPIRAL)	THETA	Ls(ft)	X(ft)	Y(ft)	Ea(in)	V(MPH) FREIGHT PLAN7-2	V(MPH) INTERMODAL PLAN7-2	V(MPH) PASSENGER PLAN7-2	V(MPH) PASSENGER FUTURE 4"CD	V(MPH) PASSENGER FUTURE 5"CD
A7C3708	TS	10790+09.96	558,433.5737	1,480,507.9589	**TIE TO EXISTING TRACK**												1.5	50	60	65 Eu=1.65"		
												0° 39' 40.77" (RT)	0° 13' 13.59"	124.0000	123.9983	0.4771						
	SC	10791+33.96	558,326.5233	1,480,445.3809																		
	PI	10795+46.03	557,972.3845	1,480,234.6905			5,371.5569	1° 04' 00.00"	822.5243		8° 46' 24.93" (RT)											
	CS	10799+56.48	557,654.5264	1,479,972.4486								0° 44' 38.35" (RT)	0° 21' 29.58"	62.0000								
	SC	10800+18.48	557,606.9467	1,479,932.6979	**TIE TO MAIN TRACK #2**																	
A7C3717	TS	10841+04.83	555,800.7075	1,476,349.2624	**TIE TO MAIN TRACK #2**												1.0	50	60	65 Eu=0.73"		
												0° 16' 16.50" (LT)	0° 05' 25.50"	93.0000	92.9998	0.1468						
	SC	10841+97.83	555,773.6241	1,476,260.2934																		
	PI	10842+74.33	555,751.1132	1,476,187.1739			9,822.1761	0° 35' 00.00"	153.0087	1° 26' 06.18" (LT)	0° 53' 33.18" (LT)											
	CS	10843+50.84	555,727.4660	1,476,114.4139																		
												0° 16' 16.50" (LT)	0° 05' 25.50"	93.0000	92.9998	0.1468						
	ST	10844+43.84	555,698.4417	1,476,026.0591																		
					S 71° 43' 27.93" W	220.0000																
A7C3718	TS	10846+63.84	555,629.4528	1,475,817.1571													1.0	50	60	65 Eu=0.73"		
												0° 16' 16.50" (RT)	0° 05' 25.50"	93.0000	92.9998	0.1468						
	SC	10847+56.84	555,600.4286	1,475,728.8022																		
	PI	10848+33.34	555,576.7813	1,475,656.0422			9,822.1761	0° 35' 00.00"	153.0089	1° 26' 06.19" (RT)	0° 53' 33.19" (RT)											
	CS	10849+09.84	555,554.2703	1,475,582.9225																		
												0° 16' 16.50" (RT)	0° 05' 25.50"	93.0000	92.9998	0.1468						
	ST	10850+02.84	555,527.1870	1,475,493.9536	**TIE TO EXISTING TRACK**																	

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DATE: 4/17/2013
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PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR2-G

RAIL DESIGN ENGINEER

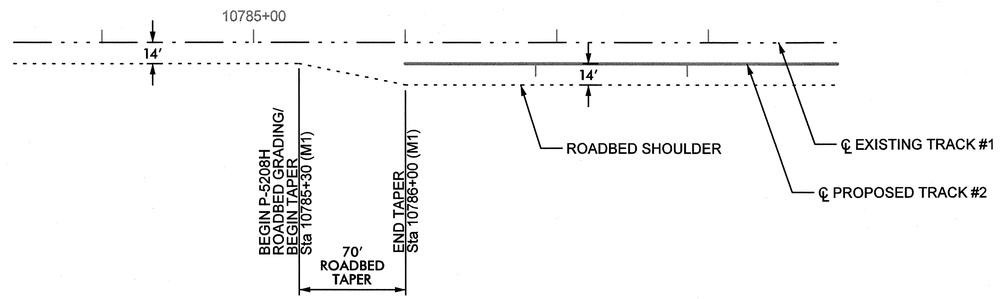
NORTH CAROLINA PROFESSIONAL SEAL 036222 ENGINEER

2/26/13

Prepared in the Office of: AECOM

NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259 (FAX)

ROADBED TAPER DETAIL



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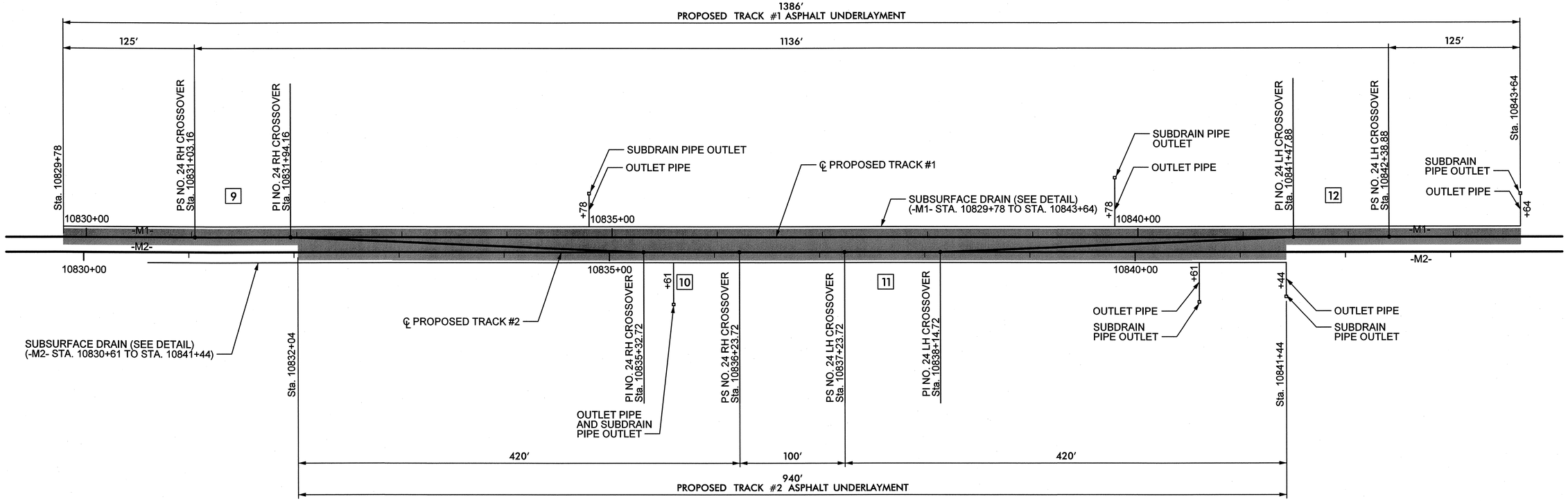
PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR2-H

RAIL DESIGN ENGINEER

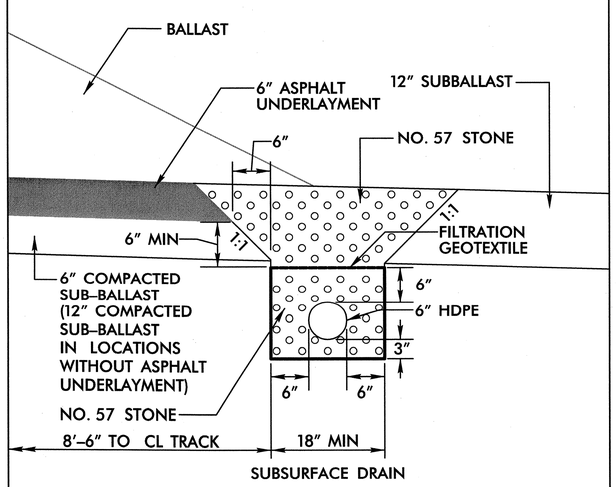
Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

ASPHALT UNDERLAYMENT AND SUBSURFACE DRAIN DETAIL

PROPOSED CP "JUNKER"

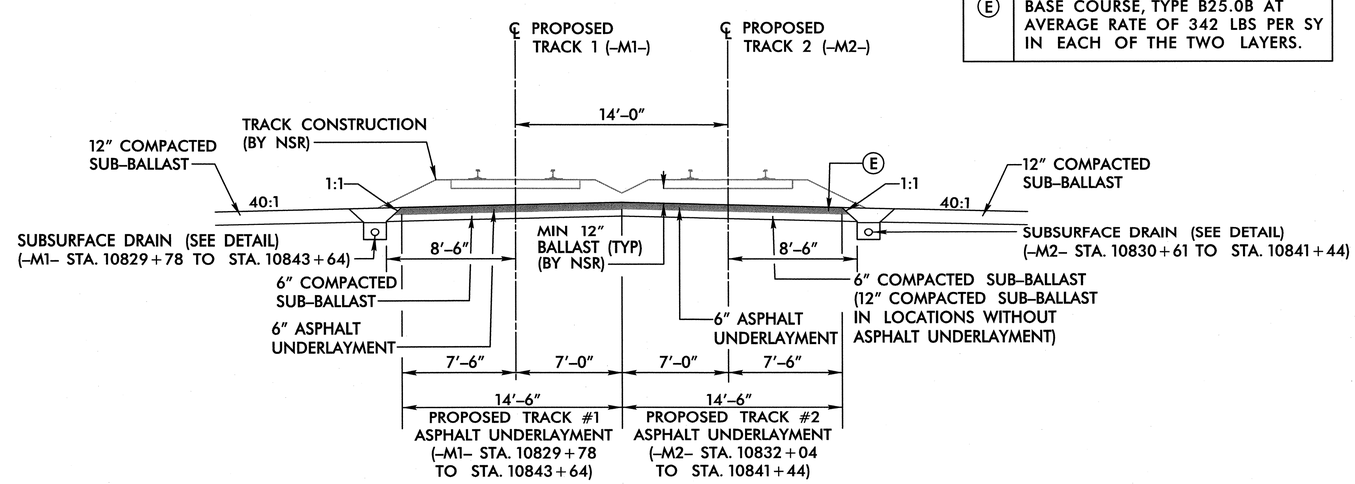


SUBSURFACE DRAIN DETAIL



*PROVIDE SUBDRAIN OUTLETS AT LOCATIONS SHOWN IN PLANS OR AS DIRECTED BY ENGINEER.

PAVEMENT SCHEDULE	
(E)	PROPOSED 6" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B AT AVERAGE RATE OF 342 LBS PER SY IN EACH OF THE TWO LAYERS.



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DGN

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0102DEL_P10a6

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR2-1

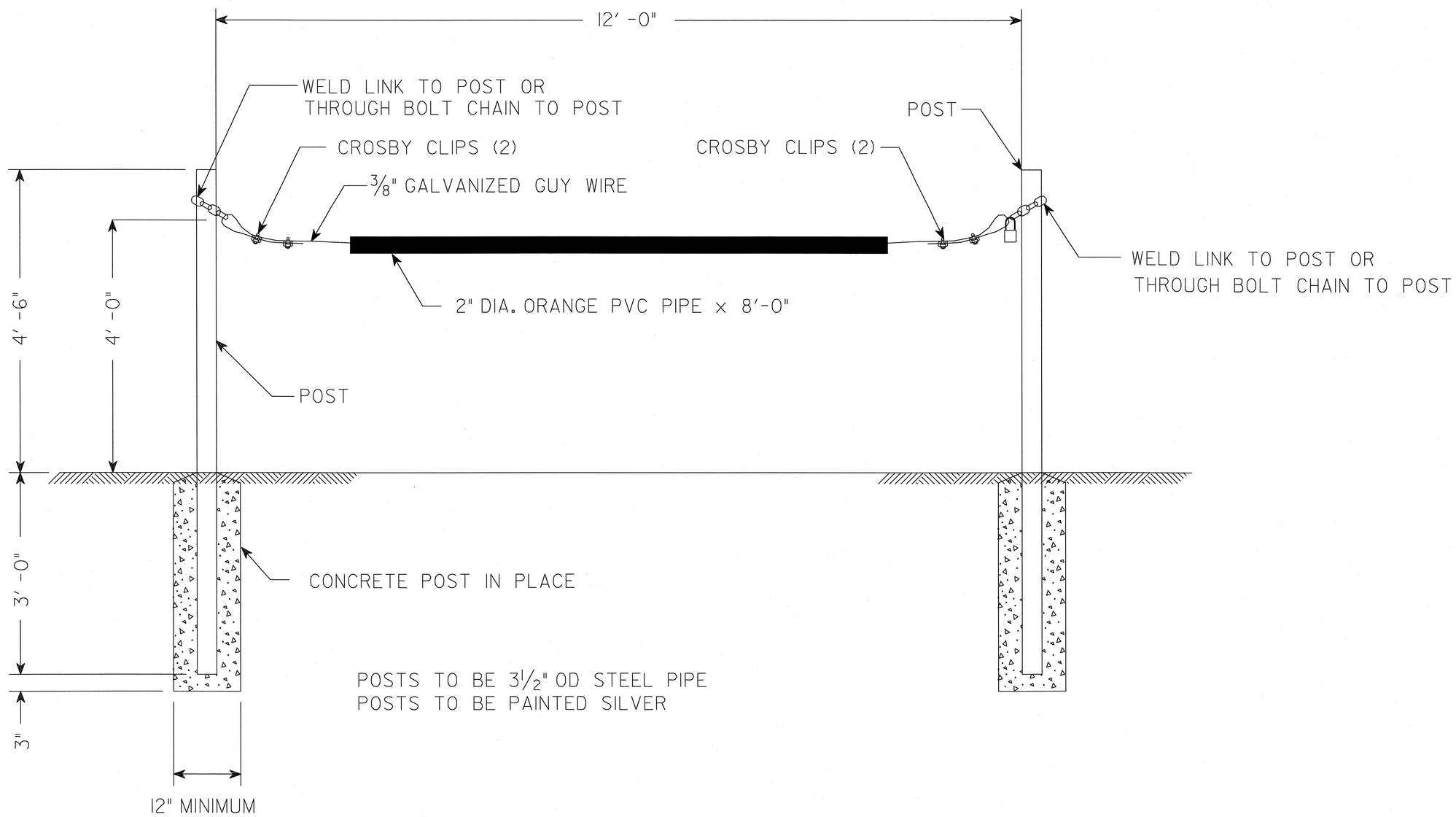
RAIL DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 036322 ENGINEER RICK E. BRANNON

Prepared in the Office of: AECOM

NC FIRM LICENSE No: F-0342
701 Corporate Center Drive Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259 FAX

RIGHT OF WAY GATE DETAIL



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PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR2-J

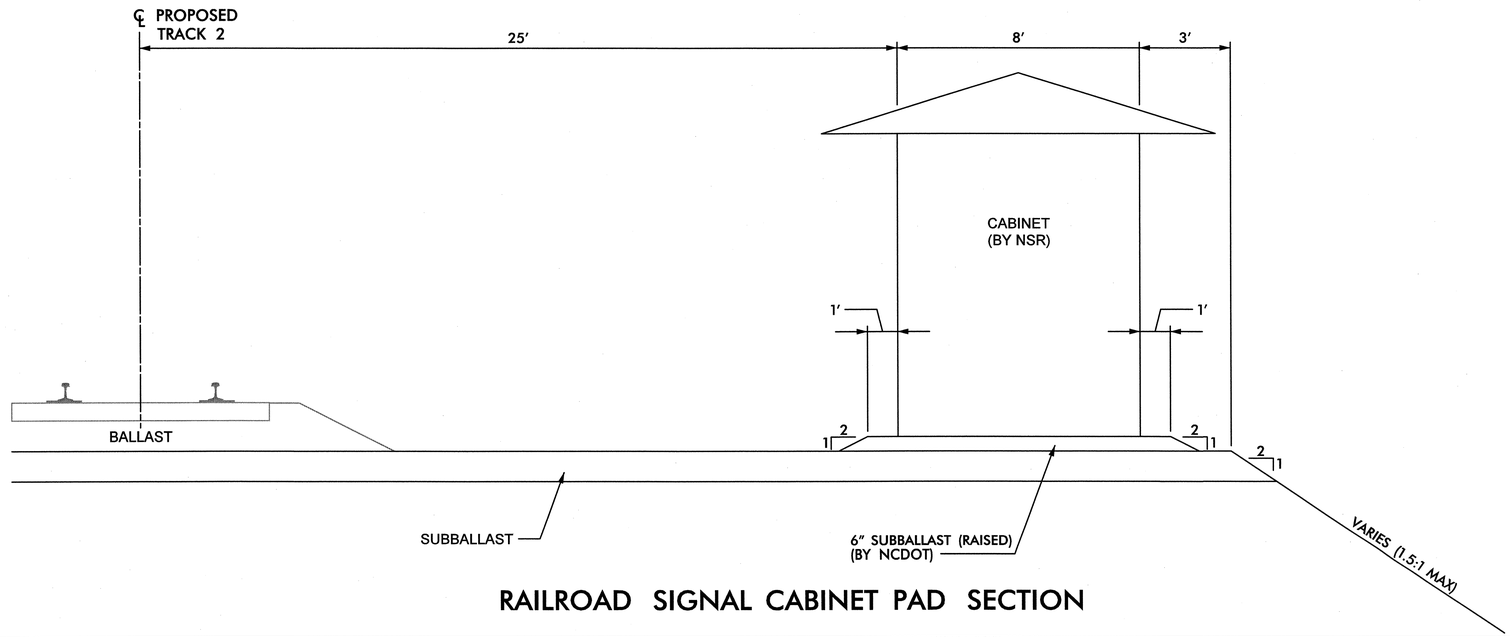
RAIL DESIGN ENGINEER

4/16/13

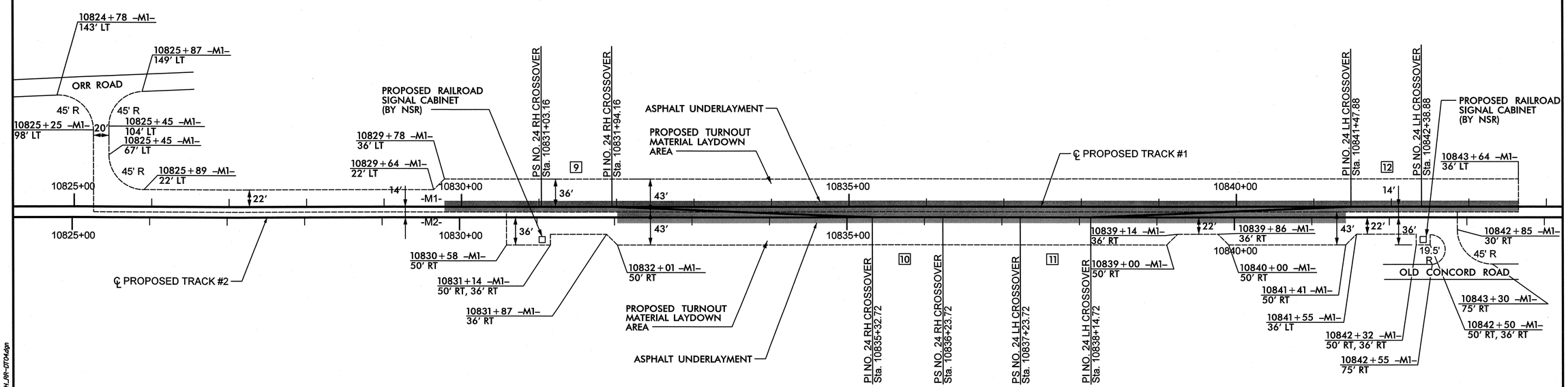
Prepared in the Office of: AECOM

NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

RAILROAD SIGNAL CABINET PAD AND TURNOUT MATERIAL LAYDOWN AREA DETAIL



RAILROAD SIGNAL CABINET PAD SECTION



TURNOUT MATERIAL LAYDOWN AREA /ACCESS ROAD AND RAILROAD SIGNAL CABINET PAD AT CP "JUNKER" (STA. 10831+03 AND STA. 10842+39)

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NEWELL -HICKORY GROVE ROAD GRADE CROSSING CLOSURE DETAIL

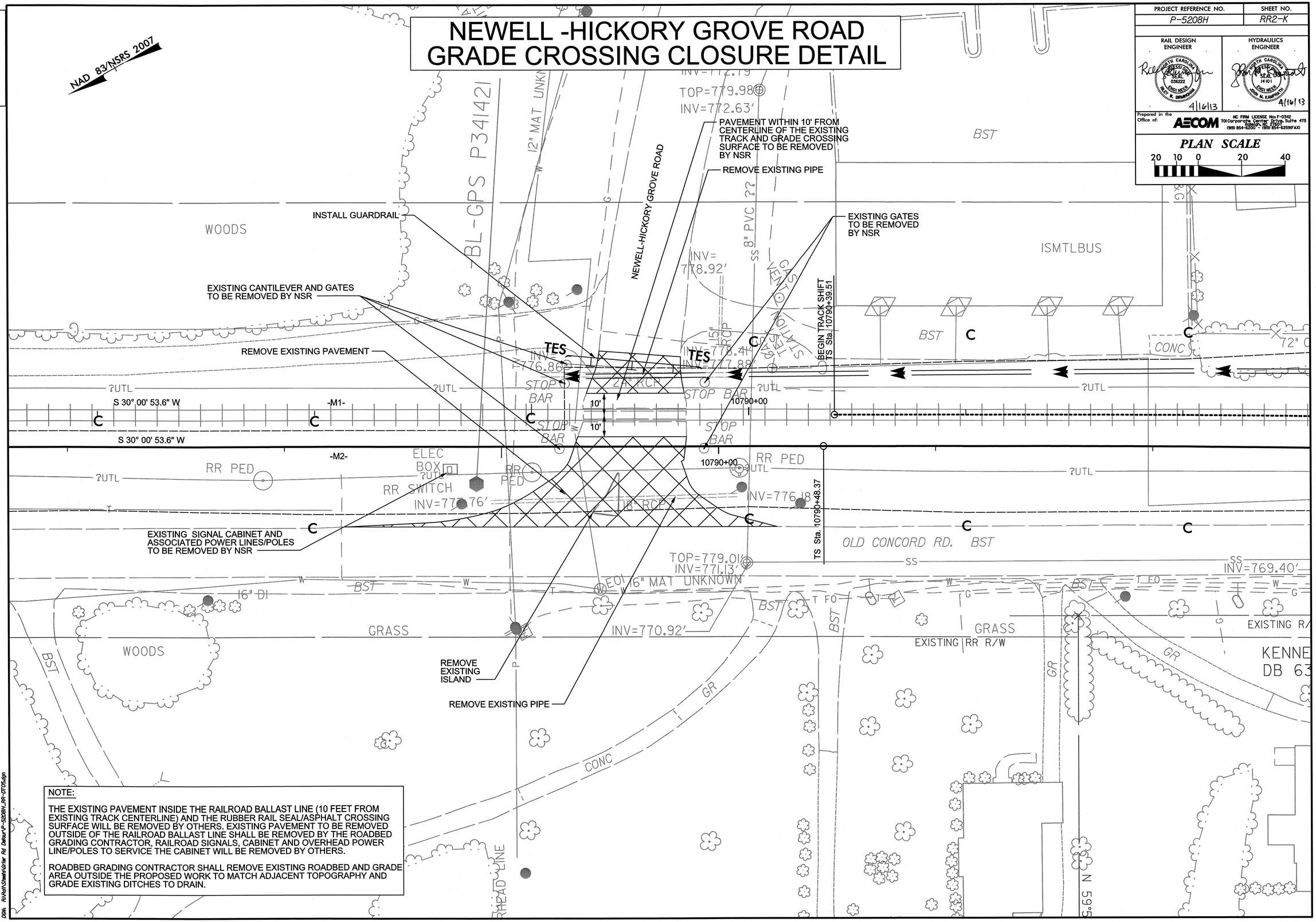
PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR2-K

RAIL DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 03622 ENGINEER — R. K. BRUNSWICK — 4/16/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER — JOHN M. KAMPRATH — 4/16/13

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27607, (919) 854-6200 - (919) 854-6259(FAX)

PLAN SCALE 20 10 0 20 40



NOTE:

THE EXISTING PAVEMENT INSIDE THE RAILROAD BALLAST LINE (10 FEET FROM EXISTING TRACK CENTERLINE) AND THE RUBBER RAIL SEAL/ASPHALT CROSSING SURFACE WILL BE REMOVED BY OTHERS. EXISTING PAVEMENT TO BE REMOVED OUTSIDE OF THE RAILROAD BALLAST LINE SHALL BE REMOVED BY THE ROADBED GRADING CONTRACTOR, RAILROAD SIGNALS, CABINET AND OVERHEAD POWER LINE/POLES TO SERVICE THE CABINET WILL BE REMOVED BY OTHERS.

ROADBED GRADING CONTRACTOR SHALL REMOVE EXISTING ROADBED AND GRADE AREA OUTSIDE THE PROPOSED WORK TO MATCH ADJACENT TOPOGRAPHY AND GRADE EXISTING DITCHES TO DRAIN.

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DATE: 4/16/2013
TIME: 8:30:02 AM
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PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR2-L

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

ENGLISH DETAIL DRAWING FOR
TRAFFIC BEARING DROP INLET
FOR TRIPLE FRAME AND GRATES

SHEET 1 OF 2
840D35

SECTION Y-Y

NOTES:
-HORIZONTAL AND VERTICAL DIMENSIONS MAY BE ADJUSTED AS THE FIELD CONDITIONS AND/OR ALTERNATE DESIGN REQUIRE.
-ALL ADJUSTMENTS ARE TO BE MADE AS DIRECTED BY THE ENGINEER.

SECTION X-X

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

ENGLISH DETAIL DRAWING FOR
TRAFFIC BEARING DROP INLET
FOR TRIPLE FRAME AND GRATES

SHEET 1 OF 2
840D35

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

ENGLISH DETAIL DRAWING FOR
TRAFFIC BEARING DROP INLET
FOR TRIPLE FRAME AND GRATES

SHEET 2 OF 2
840D35

BILL OF MATERIALS

BAR	SIZE	LENGTH	QUANTITY	WEIGHT
A	#5	4'-10¼"	8	40
B	#5	9'-9⅜"	20	168
C	#5	9'-9⅜"	15	126
D	#5	6'-7¼"	20	165
E	#5	6'-6"	6	36
F	#5	2'-6"	4	68
		6'-3"	26	170
REINF. STEEL (TOTAL WEIGHT LBS.)				637
CONCRETE TOTAL (CU. YDS.)				4.00
NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES				

GENERAL NOTES:
-CHAMFER ALL EXPOSED CONCRETE CORNERS 3".
-USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
-IF PIPES ARE SET IN THE BASE, FOLLOW CONSTRUCTION PROCEDURES SHOWN IN STD. DWG. 840.00.
-PROTECT THE WALLS OF THE BASE WITH ASPHALT WHEN CONCRETE MAY BE USED IN LIEU CAST IN PLACE CONCRETE.
-REFERENCE STD. DWG. 840.25 FOR FRAME ANCHORAGE.
-PROVIDE DROP INLETS OVER 3'-6" DEEP WITH STEPS AS DIRECTED BY STD. DWG. 840.66.
-FRAME AND GRATES SHALL BE SEPARATE CONTRACT ITEM.
-INSTALL CONCRETE APRON AS SHOWN IN STD. DWG. 840.17.

PLAN

PLAN OF BASE

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

ENGLISH DETAIL DRAWING FOR
TRAFFIC BEARING DROP INLET
FOR TRIPLE FRAME AND GRATES

SHEET 2 OF 2
840D35

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

SEE PLATE FOR TITLE

ORIGINAL BY: K. KEMPF DATE: 4-18-2013
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: g:details/english/P5208H_840d35_54wsp3GI.dgn

18-APR-2013 13:35
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$$$$USERNAME$$$$

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PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR4

RAIL DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 036222 ENGINEER BRIAN K. BRANDHORST — 4/29/13

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER JOHN M. KAMPRATH — 4/30/13

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342 701 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-6200 - (919) 854-6259 (FAX)

KANNAPOLIS ← NAD 83/NSRS 2007

CHARLOTTE →

-GRIER DETOUR TRACK- (CURVE A7C3708)

PIs Sta 10790+92.63	PI Sta 10795+46.03
Δs = 0° 39' 40.8"	Δc = 8° 46' 24.9" (RT)
Ls = 124.00'	Dc = 1° 04' 00.0"
LT = 82.67'	L = 822.52'
ST = 41.33'	T = 412.07'
	R = 5,371.56'
	Ea = 1.5"

-TRACK 1- (CURVE M1C3711)

PIs Sta 10793+08.21	PI Sta 10809+12.60
Δs = 2° 41' 11.8"	Δc = 37° 46' 16.9" (RT)
Ls = 403.00'	Dc = 1° 20' 00.0"
LT = 268.70'	L = 2,832.85'
ST = 134.36'	T = 1,470.09'
	R = 4,297.28'
	Ea = 4.0"

END PROJECT P-5208G
BEGIN PROJECT P-5208H
TRACK 1 Sta 10785+30.00 (M1)
TRACK 2 Sta 10735+43.94 (M2)

PUBLIC AT-GRADE CROSSING (FLASHERS AND GATES) MP 370.71 - NO. 715348T TO BE CLOSED

NEWELL-HICKORY GROVE RD (SR 2853)

BEGIN DETOUR TRACK TO EXISTING TRACK TS Sta 10790+09.96 (A7)

BEGIN TRACK SHIFT TS Sta 10790+39.51 (M1)

SPECIAL CUT BASE DITCH SEE DETAIL 6

SC Sta 10791+33.96 (A7)

PROPOSED RETAINING WALL (SEE SHEETS W-4 TO W-5 FOR WALL DETAILS)

℄ DETOUR TRACK (PROP) (BY NSR)

℄ MAIN TRACK #1 (SHIFTED) (BY NSR)

END TRACK SHIFT SC Sta 10794+42.51 (M1)

℄ MAIN TRACK #1 (PROP) (BY NSR)

EXISTING TRACK TO BE REMOVED (BY NSR)

-BL-GPS P34142

14'-0" MIN

-M1- 10785+00 S 30° 00' 53.6" W — 10790+00 — 10795+00

-M2- 10785+00 S 30° 00' 53.6" W — 10790+00 — 10795+00

REMOVE

OLD CONCORD RD (SR 2426)

STANDARD 5' BASE DITCH
DDE = 3 CY
EST 19 TONS CL B RIP RAP
EST 50 SY GEOTEXTILE
SLOPE = 7.5%
SEE DETAIL 7

-TRACK 2- (CURVE M2C3711)

PIs Sta 10793+17.06	PI Sta 10809+21.45
Δs = 2° 41' 11.8"	Δc = 37° 46' 16.9" (RT)
Ls = 403.00'	Dc = 1° 20' 00.0"
LT = 268.70'	L = 2,832.85'
ST = 134.36'	T = 1,470.09'
	R = 4,297.28'
	Ea = 4.0"

TS Sta 10790+48.37 (M2)

SC Sta 10794+51.37 (M2)

℄ MAIN TRACK #2 (PROP) (BY NSR)

KENNETH G PATE DB 6329 PG 494

JOHN ROSZLER LISA ROSZLER DB 19296 PG 167

JEFFREY R MATSON CATHY S MATSON DB 19219 PG 471

CHARLES C CARROTHERS VICTORIA A CARROTHERS DB 12701 PG 751 DB 20 PG 118

MATCHLINE -M1- 10797+00.00 SEE PLAN SHEET RR5

FOR GRADE CROSSING CLOSURE DETAIL SEE SHEET RR2-K

FOR DITCH DETAILS SEE SHEET RR2-C

-M1- TRACK #1

END P-5208G ROADBED GRADING
BEGIN P-5208H ROADBED GRADING
Sta 10785+30.00 (M1)

-Y15- NEWELL HICKORY GROVE RD (SR 2853) TO BE CLOSED

+24 +71

BEGIN GRADE STA. 10789+96.92 EL = 782.33

T/R PROPOSED TRACK

+0.7473%

(+) 0.3200%

(-) 0.42%

T/R EXISTING TRACK

PROPOSED UNDERCUT

BEGIN DITCH LT STA. 10789+15.00 EL. = 777.61

VPC STA 10792+12.56 EL = 783.95

END DITCH LT STA. 10793+00.00 EL. = 778.84

L = 1,110'
r = 0.13

FOR -A7- PROFILE SEE SHEET RR15
FOR -M2- PROFILE SEE SHEET RR11

820 810 800 790 780 770 760 750 740

EXIST T/R 778.26 778.94 779.60 780.16 780.78 781.45 782.17 782.91 783.10 783.70 783.85 784.48 784.55 785.02 785.12 785.63 785.56 786.20 785.88 786.68

10783+00 10784+00 10785+00 10786+00 10787+00 10788+00 10789+00 10790+00 10791+00 10792+00 10793+00 10794+00 10795+00 10796+00 10797+00

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PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR5

RAIL DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 036222 — RAJEEV K. BHANDARI — 4/29/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 14101 — ANDREW M. KAMPHEFNER — 4/30/13

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342 — 701 Corporate Center Drive, Suite 475, Raleigh, NC 27610 — (919) 854-6200 - (919) 854-6259(FAX)

KANNAPOLIS

CHARLOTTE

-DETOUR TRACK-
(CURVE A7C3708)
PI Sta 10795+46.03
Δc = 8° 46' 24.9" (RT)
Dc = 1° 04' 00.0"
L = 822.52'
T = 412.07'
R = 5,371.56'
Ea = 1.5"

-TRACK 1-
(CURVE M1C3711)
PI Sta 10809+12.60
Δc = 37° 46' 16.9" (RT)
Dc = 1° 20' 00.0"
L = 2,832.85'
T = 1,470.09'
R = 4,297.28'
Ea = 4.0"

-TRACK 2- (CURVE M2C3711)
PI Sta 10809+21.45
Δc = 37° 46' 16.9" (RT)
Dc = 1° 20' 00.0"
L = 2,832.85'
T = 1,470.09'
R = 4,297.28'
Ea = 4.0"

NAD 83/NSRS 2007

EXISTING TRACK TO BE REMOVED (BY NSR)

PROPOSED RETAINING WALL (SEE SHEETS W-4 TO W-5 FOR WALL DETAILS)

FILL IN TO MIN. EL. 772.0 PROVIDE POSITIVE DRAINAGE TO 54" PIPE INVERT SEE CROSS SECTIONS

STANDARD 5' BASE DITCH
DDE = 120 CY
SLOPE = 0.9%
SEE DETAIL 3

CLASS B RIP RAP
EST 3 TONS
EST 10 SY
GEOTEXTILE

SPECIAL CUT BASE DITCH SEE DETAIL 1

STA 10803+26

INVERT = 772.0'

℄ DETOUR TRACK (PROP) (BY NSR)

℄ MAIN TRACK #2 (PROP) (BY NSR)

STANDARD 5' BASE DITCH
DDE = 7 CY
SLOPE = 0.9%
SEE DETAIL 3

℄ MAIN TRACK #1 (PROP) (BY NSR) TRENCHLESS INSTALLATION 84' - 54" WELDED STEEL

-M1-

-M2-

FILL WITH FLOWABLE FILL

TBDI

REMOVE HW

15'-4" MAX
+97.37

TEMPORARY 18" WELDED STEEL

INVERT = 775.6'

TO BE FILLED WITH FLOWABLE FILL WHEN NO LONGER IN USE

SPECIAL CUT BASE DITCH SEE DETAIL 1

CLASS B RIP RAP
EST 3 TONS
EST 10 SY
GEOTEXTILE

PROPOSED MSE WALL (SEE SHEETS W-1 TO W-3 FOR WALL DETAILS)

CINDALINE F HELMS
DB 6654 PG 234

OLD CONCORD RD (SR 2426)

STEPHEN W & TODD B BENNETT
DB 9974 PG 742

CHARLES E CARROUTHERS
VICTORIA A CARROUTHERS
DB 12701 PG 751
MB 20 PG 183

SAMIR MALEK
DB 23494 PG 263
PB 49 PG 53

THE RYLAND GROUP, INC.
DB 26299 PG 298
PB 52 PG 859

HARRY JAMES FINCHER
DB 4715 PG 940

MARVIS D FETTERSON SR
JENESHA WILKES
DB 9710 PG 627
MB 20 PG 118

-DETOUR TRACK-
(SPIRAL A7C3710)
PIs Sta 10799+88.63
Δs = 0° 44' 38.3"
Ls = 62.00'
LT = 32.15'
ST = 29.85'

CLASS I RIP RAP ON BANKS ONLY
EST 26 TONS
EST 50 SY GEOTEXTILE

INVERT = 743.0'

54" WELDED STEEL

PROPOSED GRIER RD GRADE SEPARATION (OVERPASS) (SEE ROADWAY PLANS FOR DETAILS)

FOR DITCH DETAILS SEE SHEET RR2-C

MATCHLINE -M1- 10797+00.00 SEE PLAN SHEET RR4

MATCHLINE -M1- 10810+00.00 SEE PLAN SHEET RR6

-M1- TRACK #1

PIPE HYDRAULIC DATA

DRAINAGE AREA	= 20.4	AC
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 117	CFS
DESIGN HW ELEVATION	= 776.7	FT
100 YEAR DISCHARGE	= 117	CFS
100 YEAR HW ELEVATION	= 776.7	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 260	CFS
OVERTOPPING ELEVATION	= 785.6	FT

VPI STA 10797+67.53
EL = 788.09

+0.7473%
-0.6811%

T/R EXISTING TRACK

VPC STA 10804+25.24
EL = 783.61

T/R PROPOSED TRACK

L = 830'
r = 0.13

℄ PROPOSED GRIER ROAD

24'-10 1/4" MVC

PI = 10810+00.000 LT
El = 776.06

BEGIN DITCH RT
STA. 10797+00.00
EL = 780.28

(-) 1.0086%

(-) 2.6739%

PI = 10803+00.000 RT
El = 774.23

VPT STA 10803+22.53
EL = 784.31

-0.6811%
+0.3827%
(+) 0.4000%
(+) 0.4000%

L = 1,110'
r = 0.13

PROP. 54" WELDED STEEL

PI = 10803+46.000 RT
El = 773.00

BEGIN DITCH LT
STA. 10805+00.00
EL = 774.06

VPI STA 10808+40.24
EL = 780.79

EXIST. 30" X 36" RCB / 30" X 30"STB
TO BE FILLED WITH FLOWABLE FILL
INV. IN = 760.78'
INV. OUT = 752.98'

FOR -A7- PROFILE SEE SHEET RR15
FOR -M2- PROFILE SEE SHEET RR11

820 810 800 790 780 770 760 750 740

EXIST T/R: 786.68 786.66 | 787.00 786.12 | 787.18 786.04 | 787.37 785.84 | 787.50 785.51 | 787.70 785.06 | 787.92 784.46 | 788.24 783.79 | 788.68 783.14 | 788.98 782.62 | 789.27 782.23 | 789.32 781.96 | 789.24 781.82 | 789.03 781.82

PROP T/R

10797+00 10798+00 10799+00 10800+00 10801+00 10802+00 10803+00 10804+00 10805+00 10806+00 10807+00 10808+00 10809+00 10810+00

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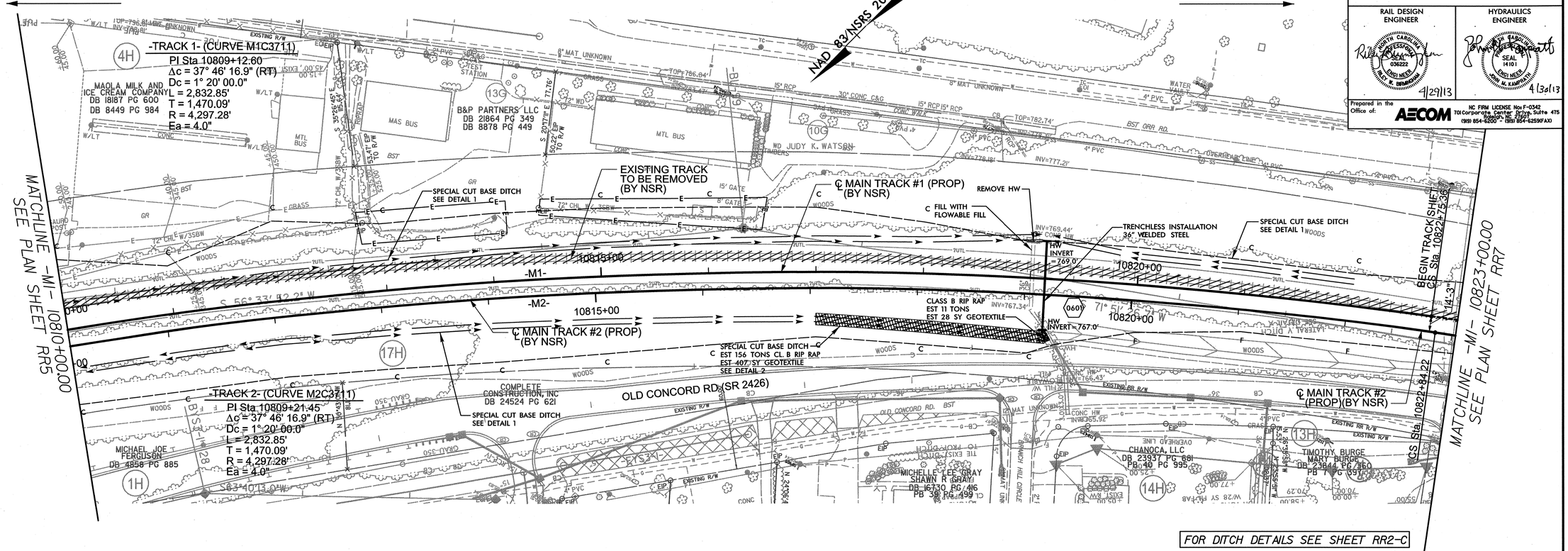
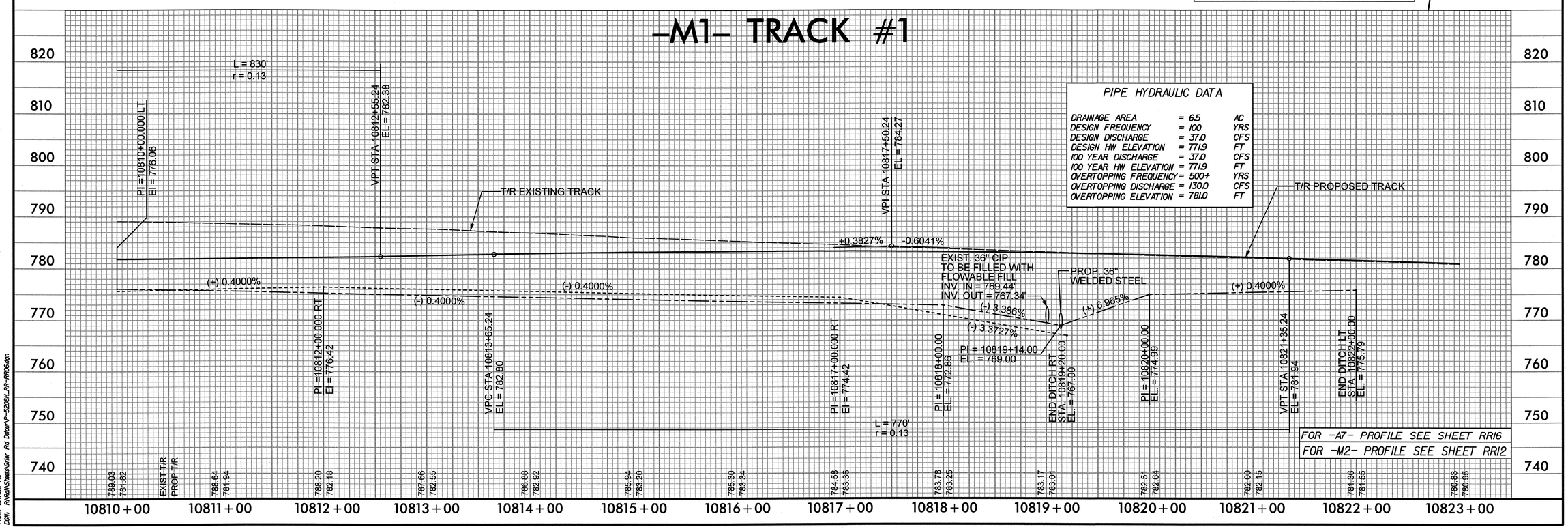
PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR6

RAIL DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 036222 ENGINEER — 4/29/13

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER — 4/30/13

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27607, (919) 854-6200 - (919) 854-6259(FAX)





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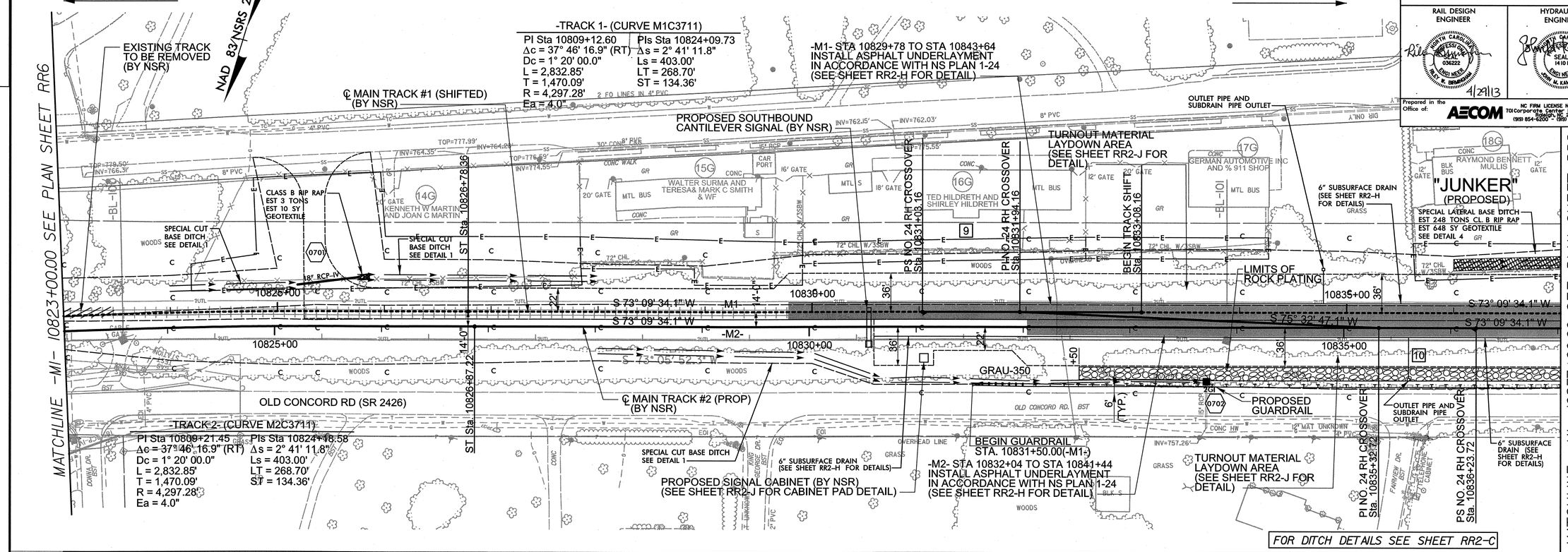
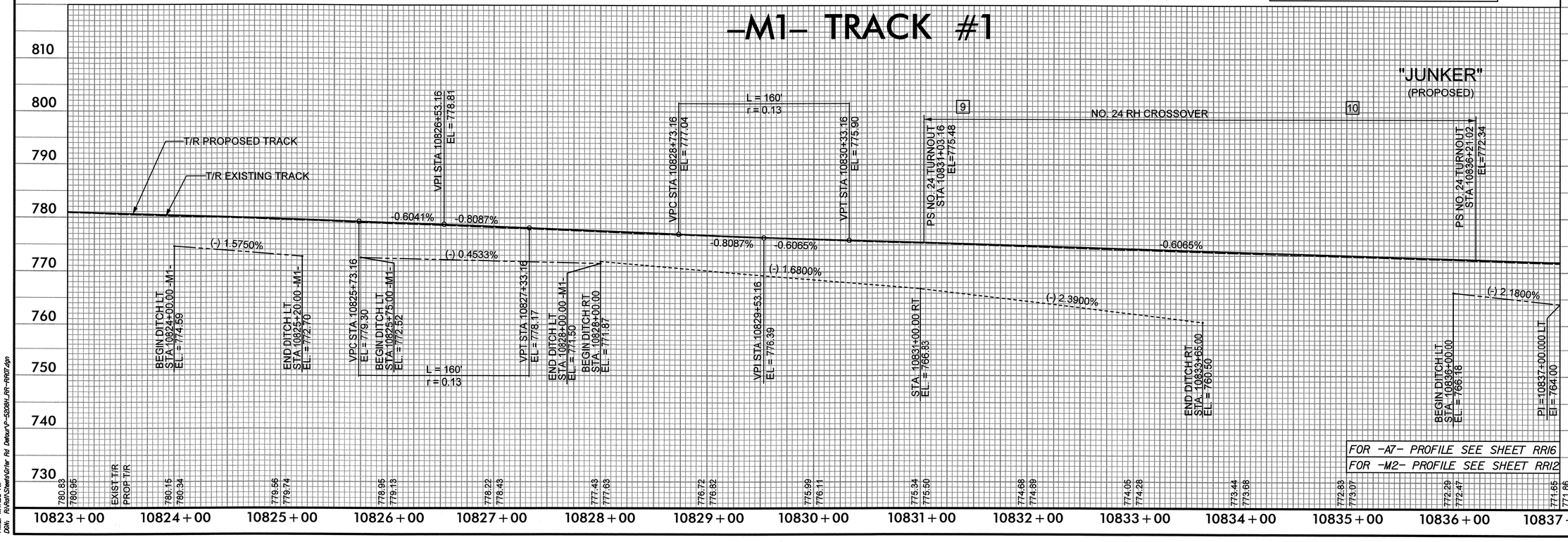
PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR7

RAIL DESIGN ENGINEER — R.L. BRAMBLETT, SEAL 036222, DIGI NEER, 4/29/13

HYDRAULICS ENGINEER — B.K. KANNEDY, SEAL 14101, DIGI NEER, 4/30/13

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27610, (919) 854-6200 - (919) 854-6259(FAX)





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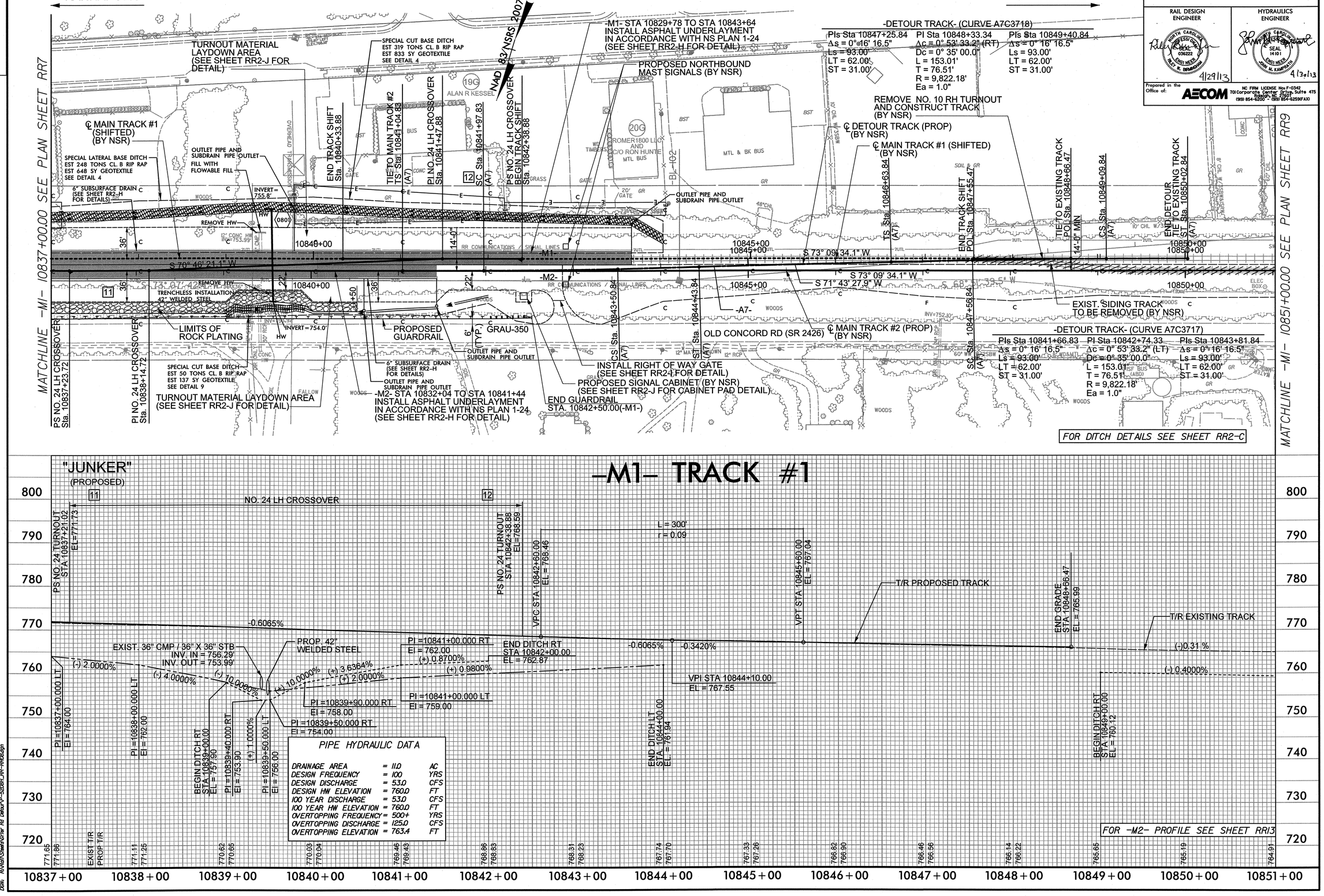
PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR8

RAIL DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 036222 ENGINEER — 4/29/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER — 4/30/13

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27607, (919) 854-6200 - (919) 854-6259(FAX)



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DGN

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR9

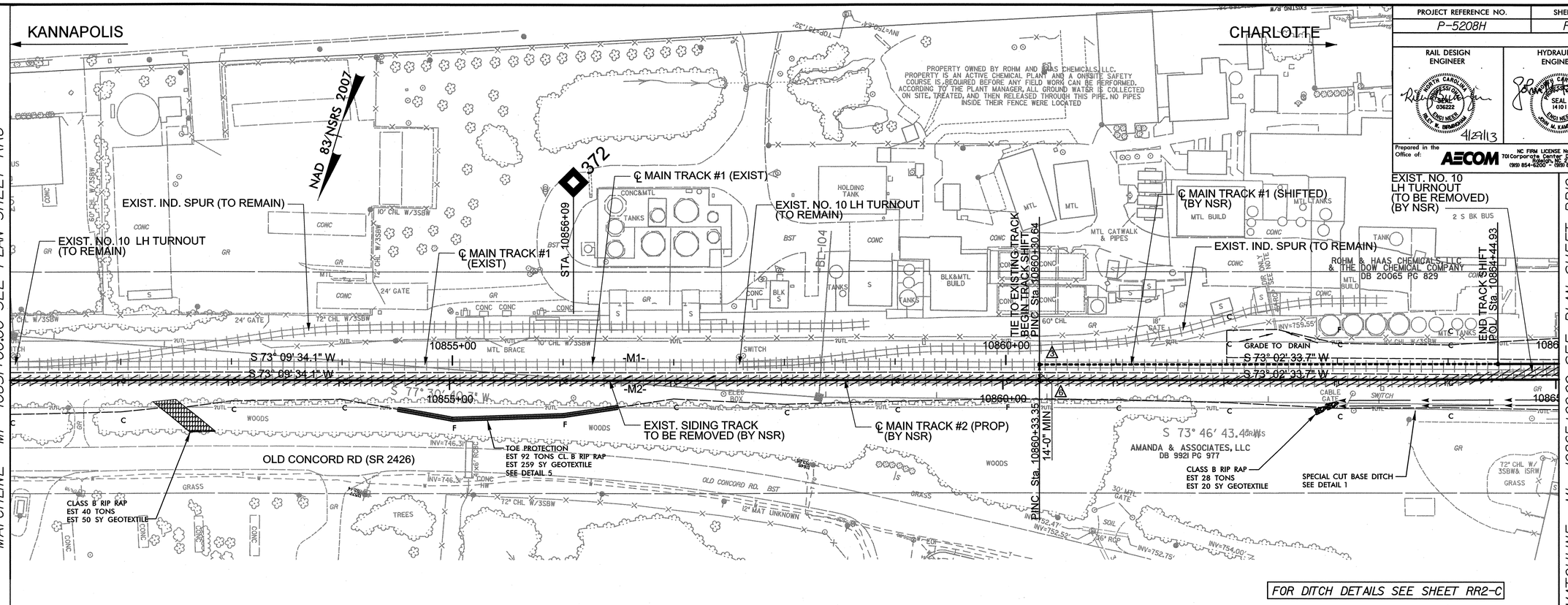
RAIL DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 036222 ENGINEER — 4/29/13

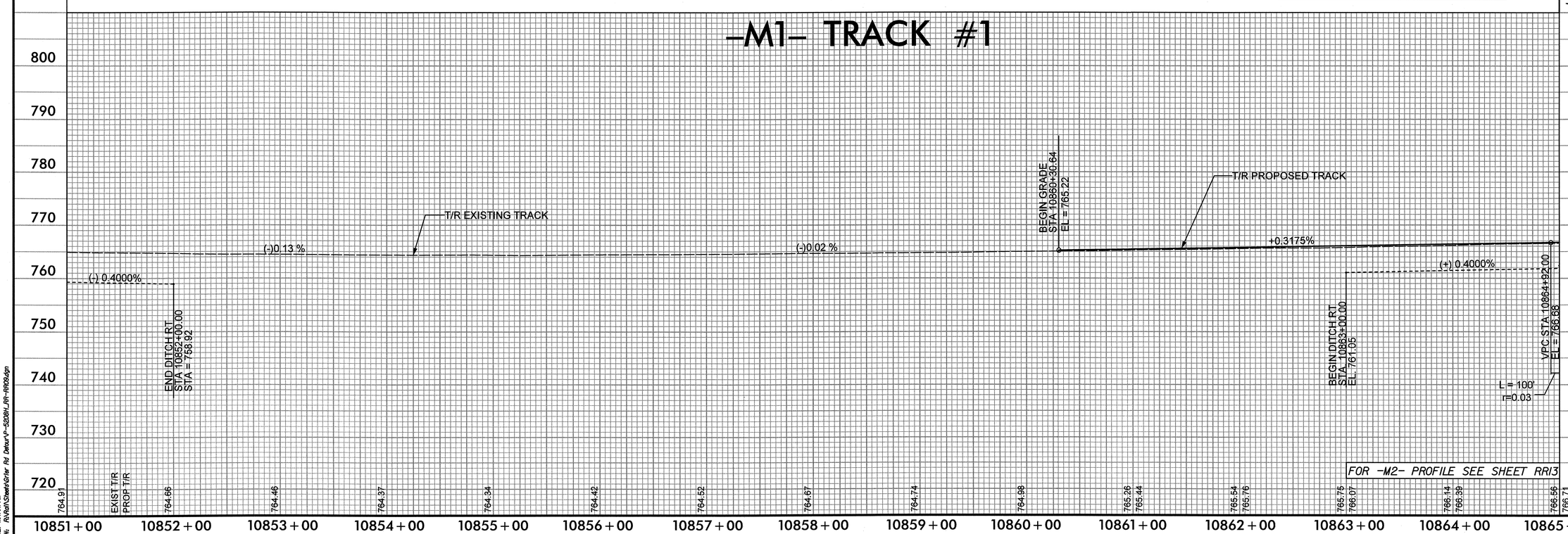
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER — 4/30/13

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342 701 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-6200 - (919) 854-6259(FAX)

MATCHLINE -M1- 10851+00.00 SEE PLAN SHEET RR8

MATCHLINE -M1- 10865+00.00 SEE PLAN SHEET RR10





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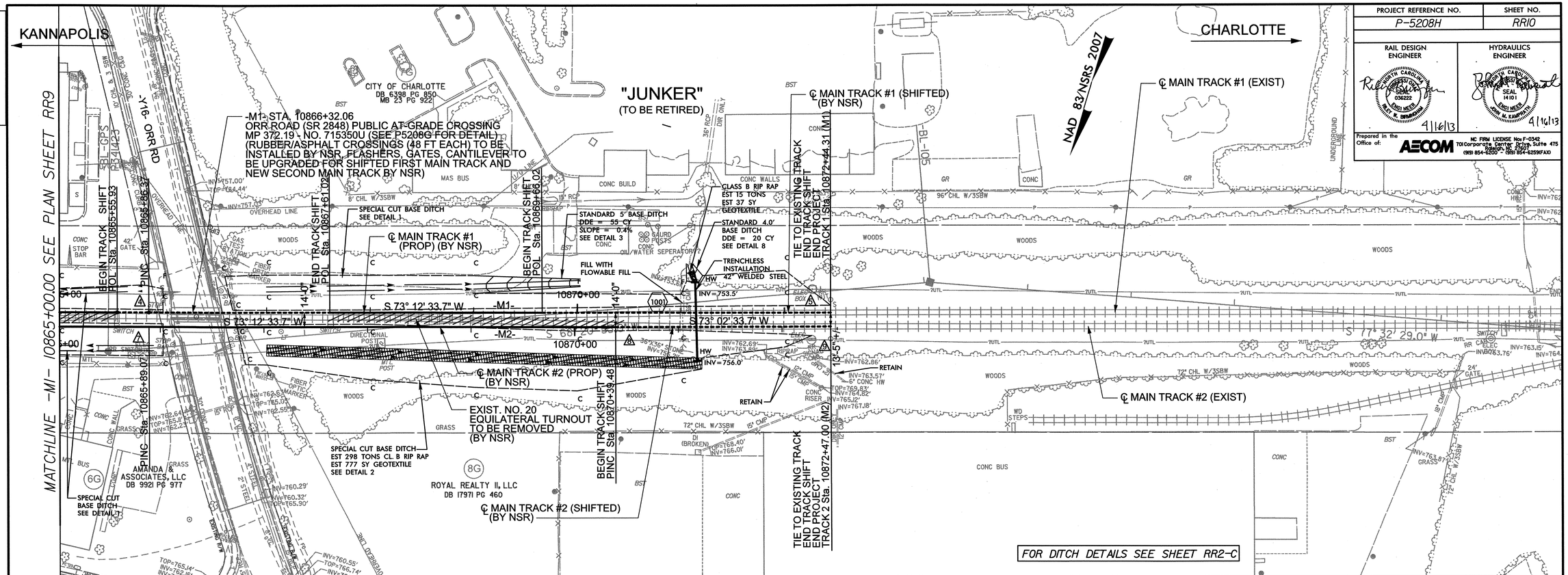
0102DEL_p10a6

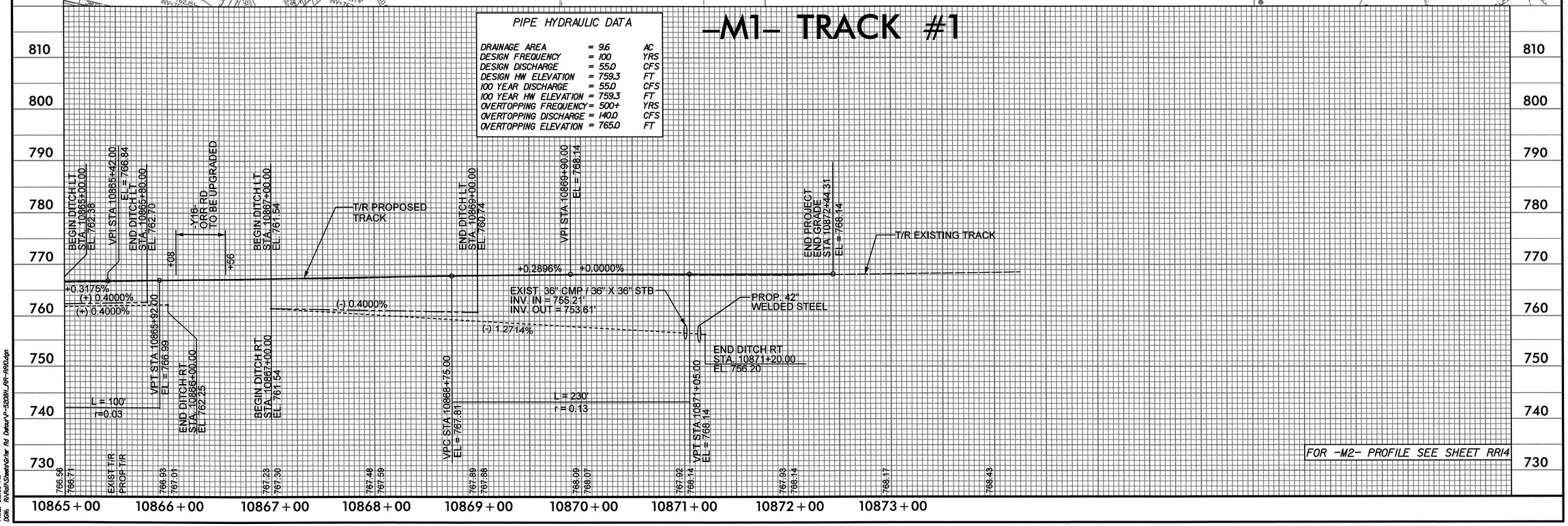
PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR10

RAIL DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 036222 ENGINEER R. BRANNAN — 4/16/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER M. KAMPETH — 4/16/13

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27610, (919) 854-6200 - (919) 854-6259FAX0





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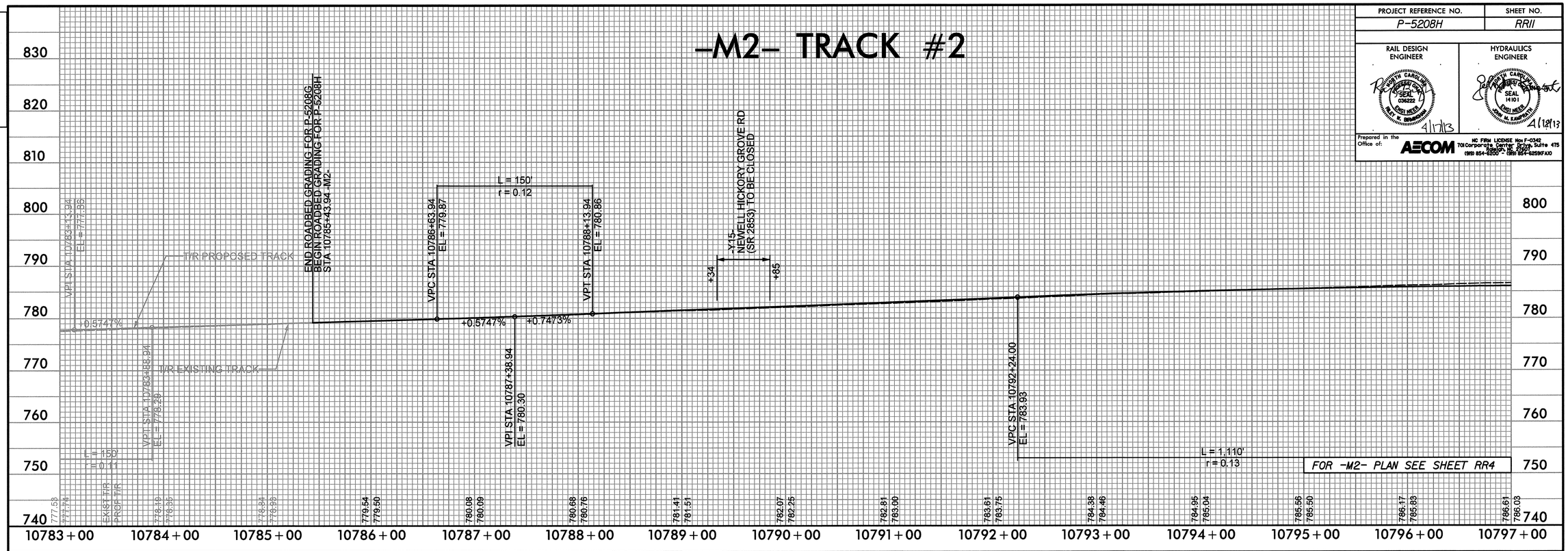
PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR11

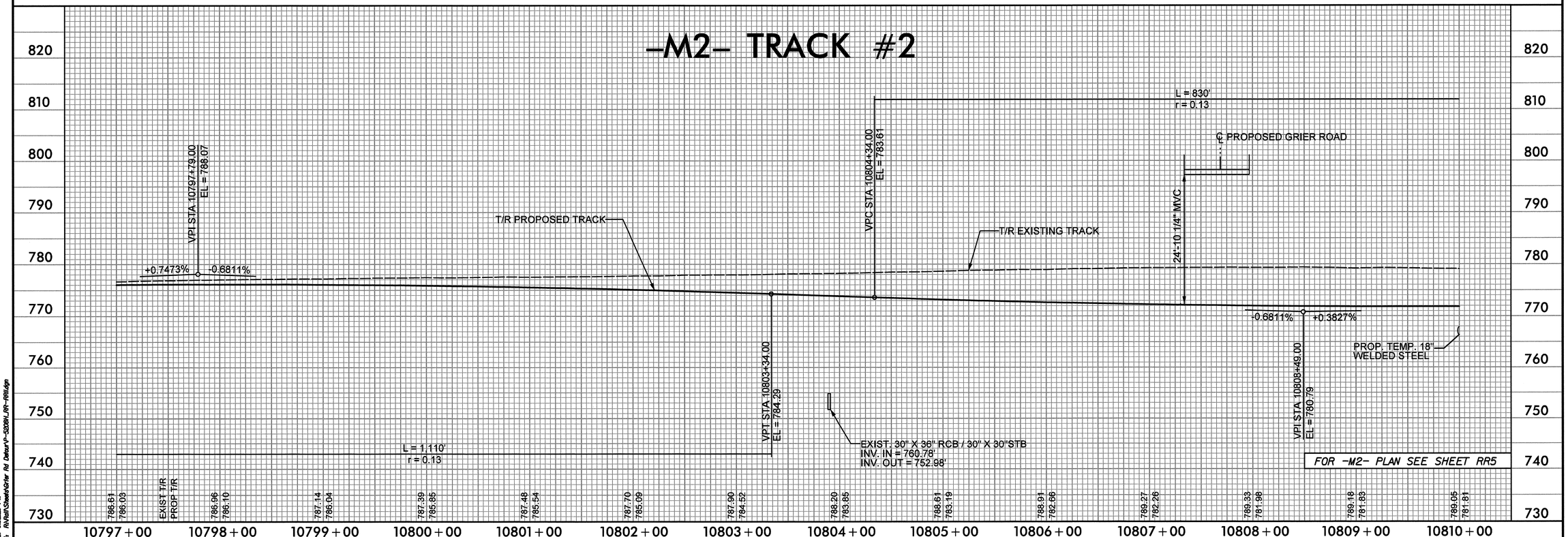
RAIL DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 036222 ENGINEER — 4/17/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER — 4/18/13

Prepared in the Office of: AECOM — NC FIRM LICENSE Nbr F-0342 701 Corporate Center Drive, Suite 475 Raleigh, NC 27610 (919) 854-6200 - (919) 854-6259(FAX)

0102DEL_p10a6





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PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR12

RAIL DESIGN ENGINEER

HYDRAULICS ENGINEER

Prepared in the Office of: AECOM

NC FIRM LICENSE No: F-0342
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DGN 0102DEL_P10a6

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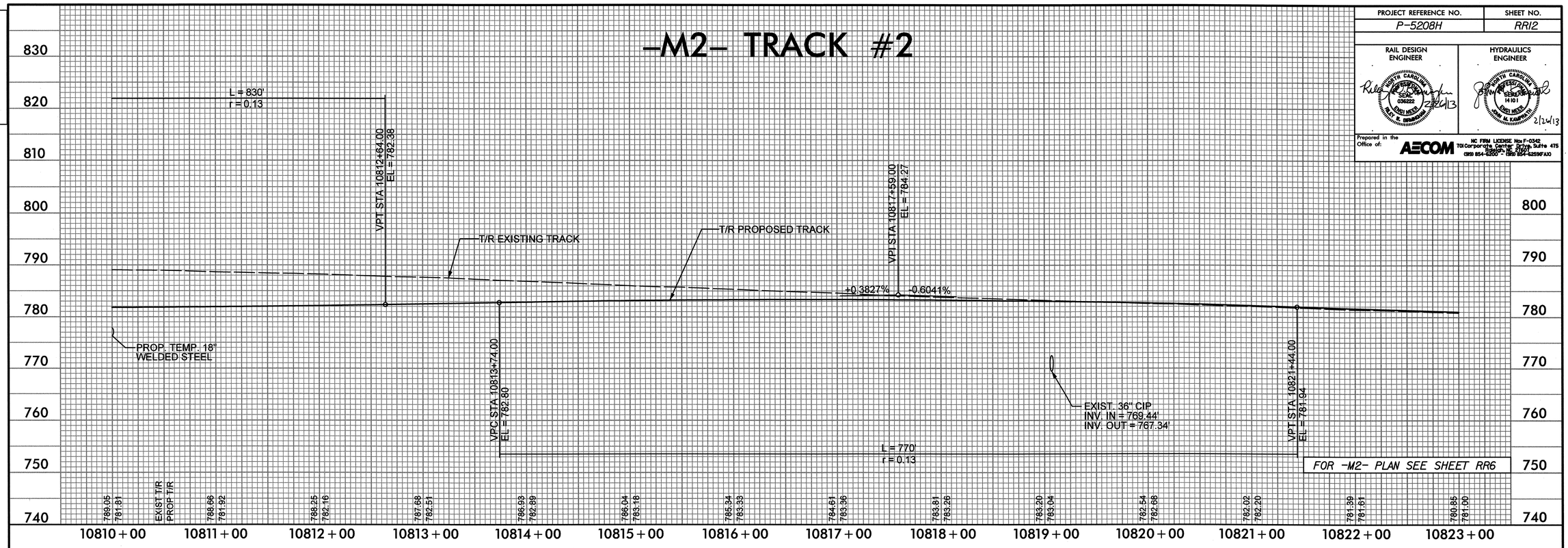

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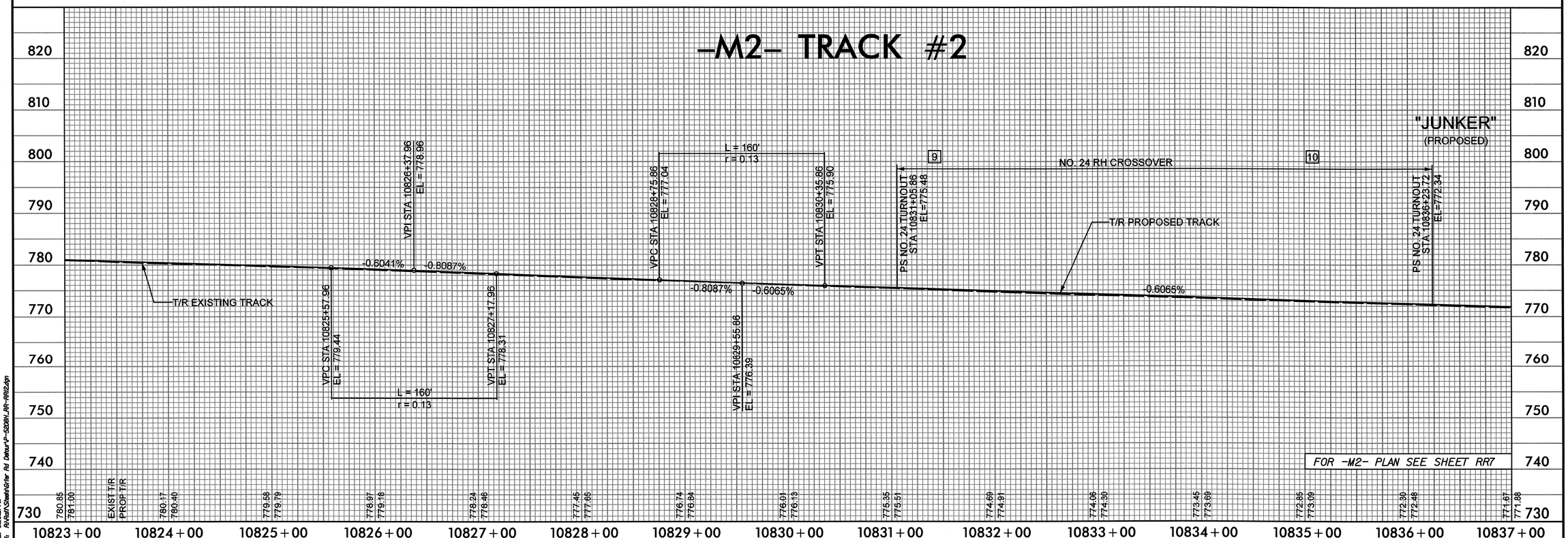

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0102DEL_P10a6

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR13

RAIL DESIGN ENGINEER

HYDRAULICS ENGINEER

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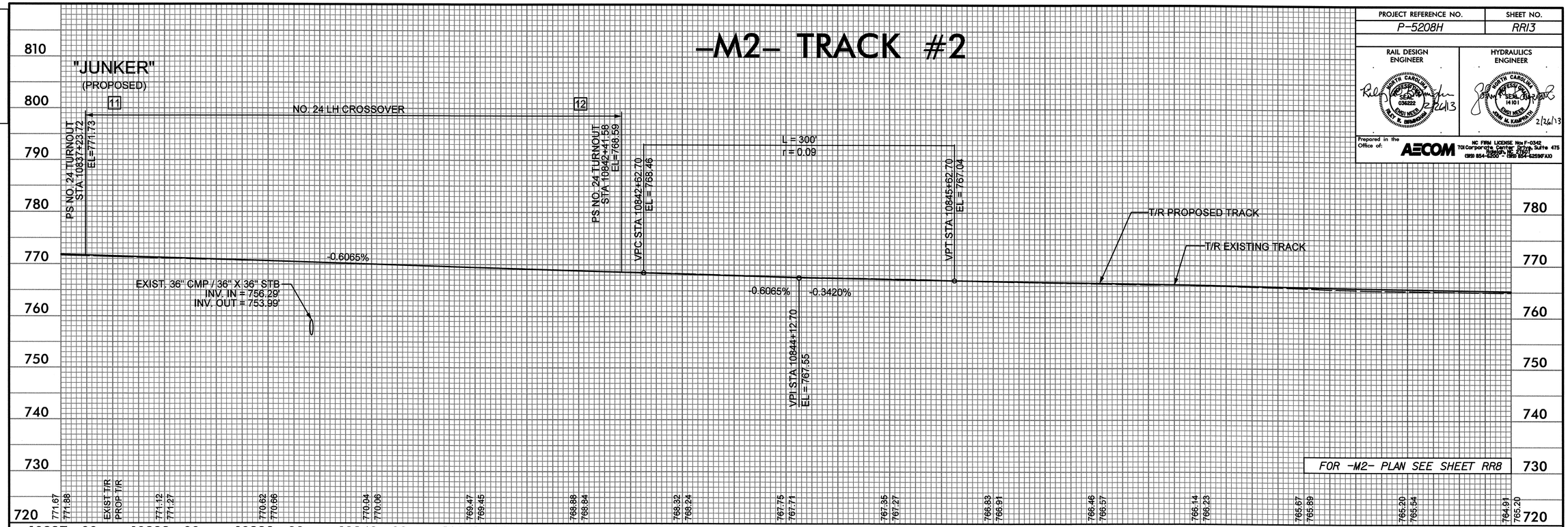
-M2- TRACK #2



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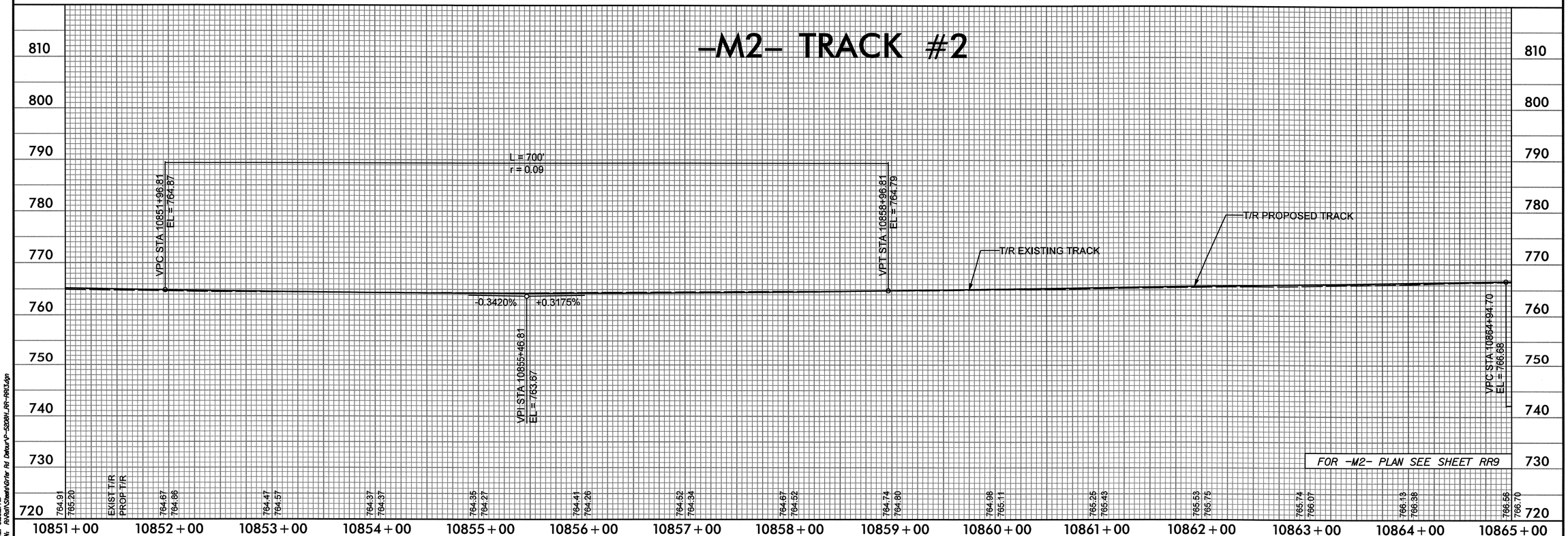

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PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR14

RAIL DESIGN ENGINEER

HYDRAULICS ENGINEER

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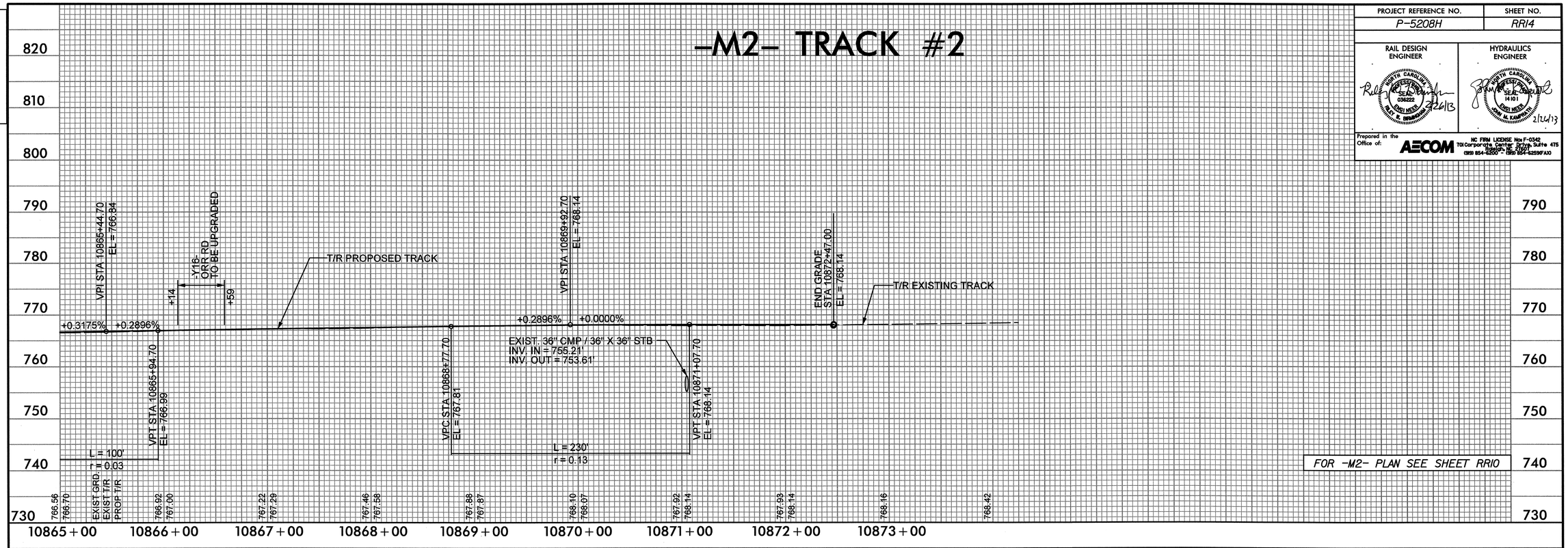
-M2- TRACK #2



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0102DEL_p10a6

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR15

RAIL DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 036222 ENGINEER
4/17/13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER
4/18/13

Prepared in the Office of: AECOM
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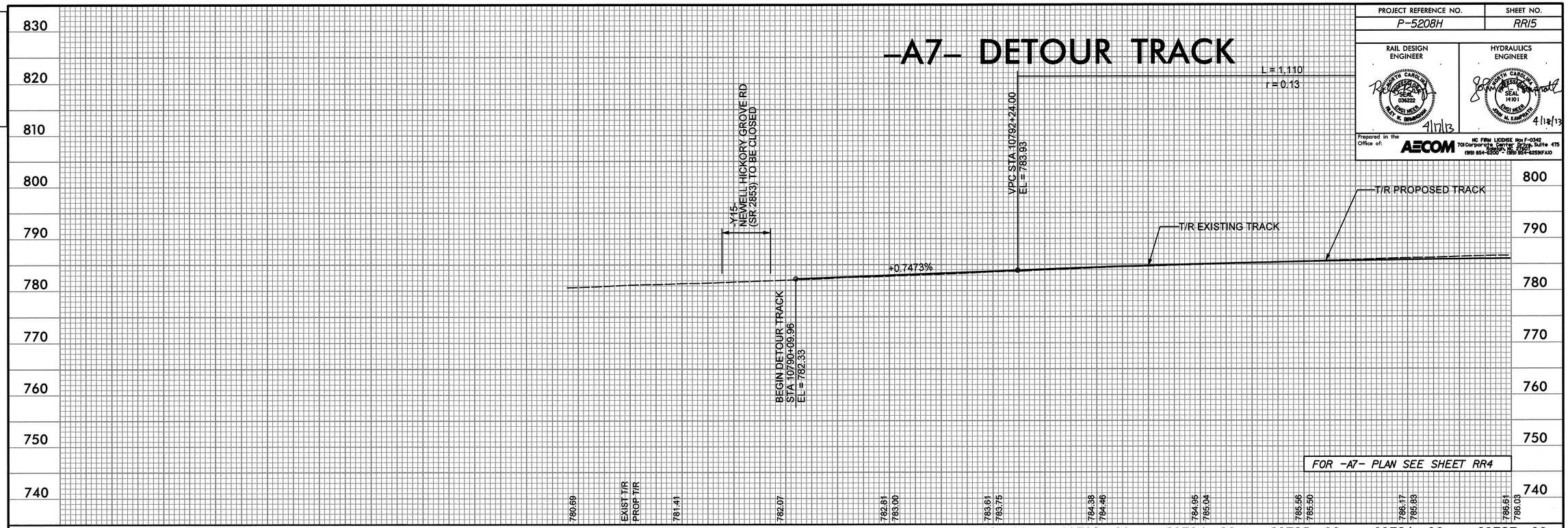
Raleigh, NC 27610
(919) 854-6200 - (919) 854-6259 FAX

-A7- DETOUR TRACK



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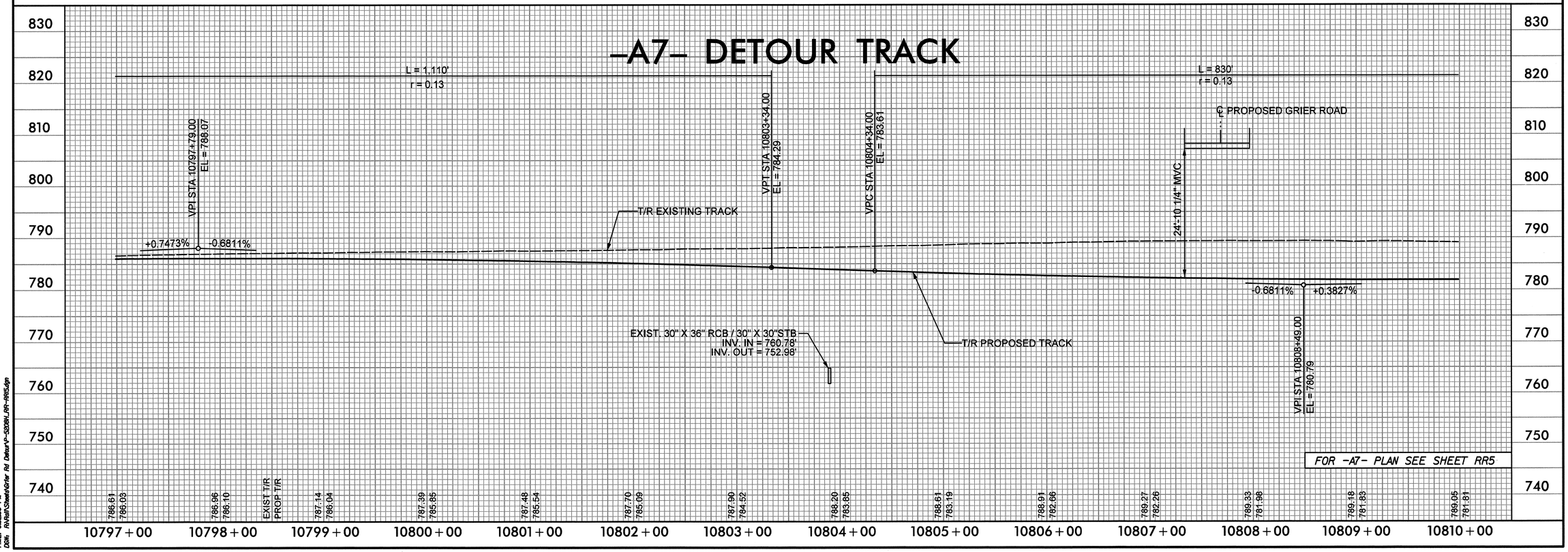

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PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR16

RAIL DESIGN ENGINEER

HYDRAULICS ENGINEER

Prepared in the Office of: AECOM

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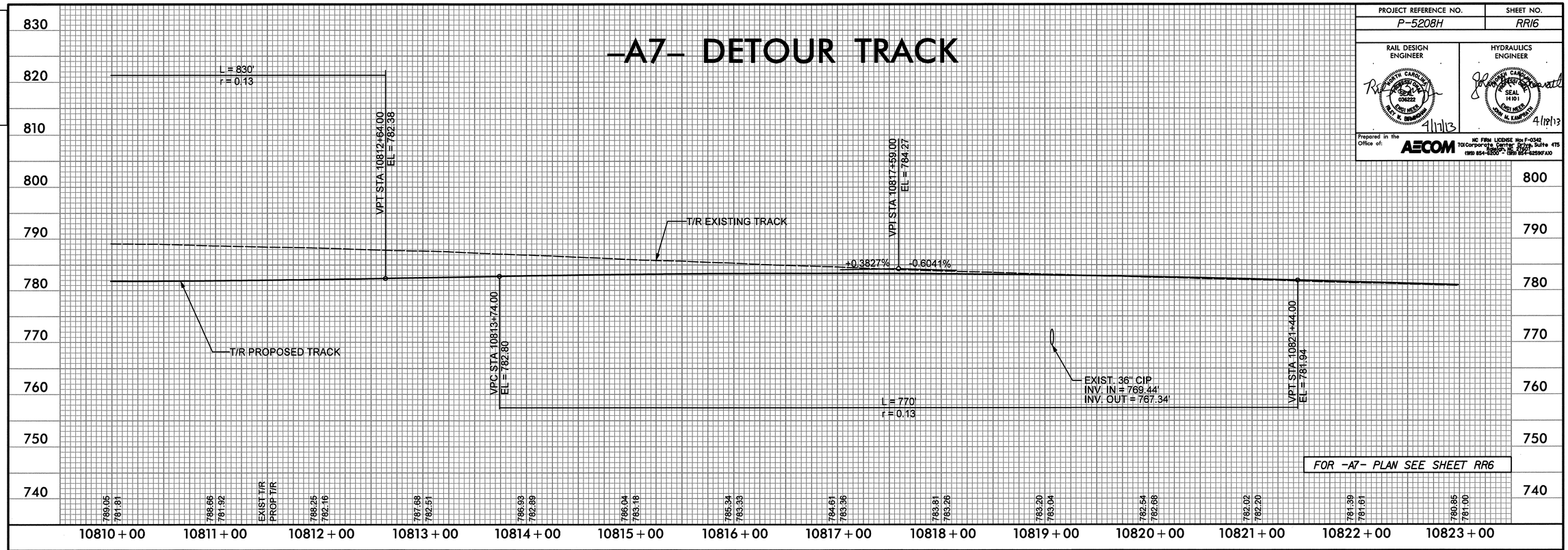
0102DEL_p10a6

-A7- DETOUR TRACK



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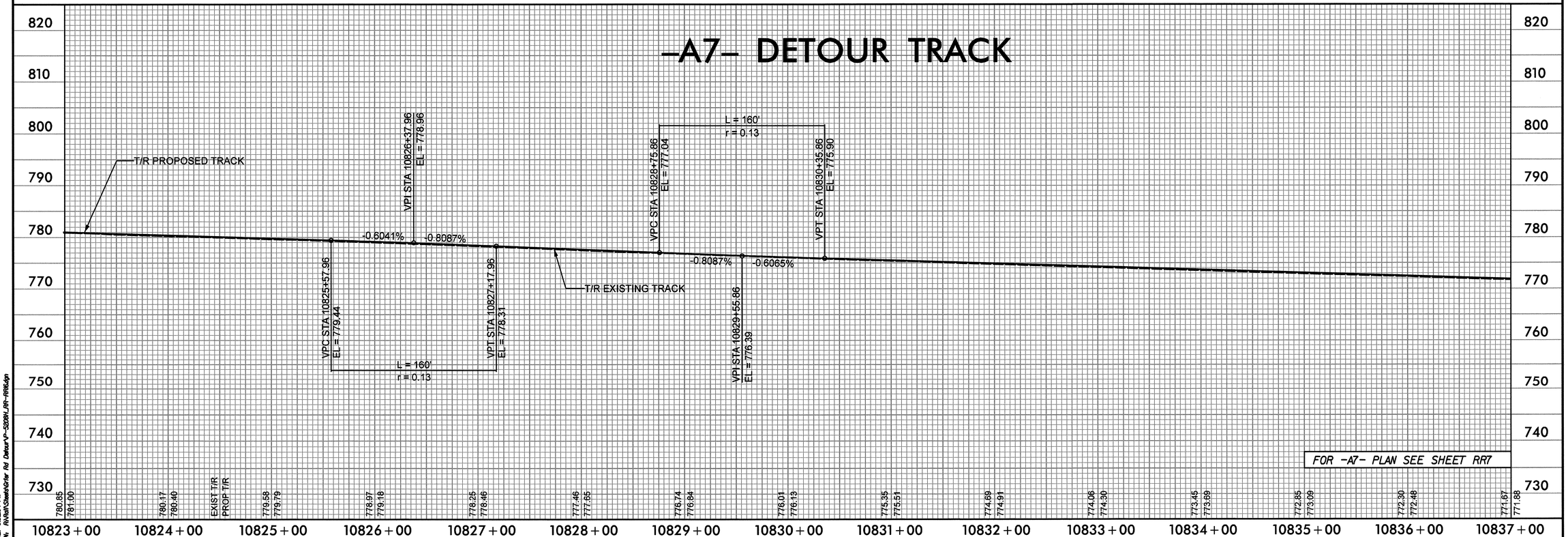

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0102DEL_p10a6

PROJECT REFERENCE NO.	SHEET NO.
P-5208H	RR17

RAIL DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 036222 ENGINEER RICHARD W. SPRINKLE

4/17/13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER JOHN M. KAMPSTRA

4/18/13

Prepared in the Office of: AECOM

NC FIRM LICENSE No: F-0342
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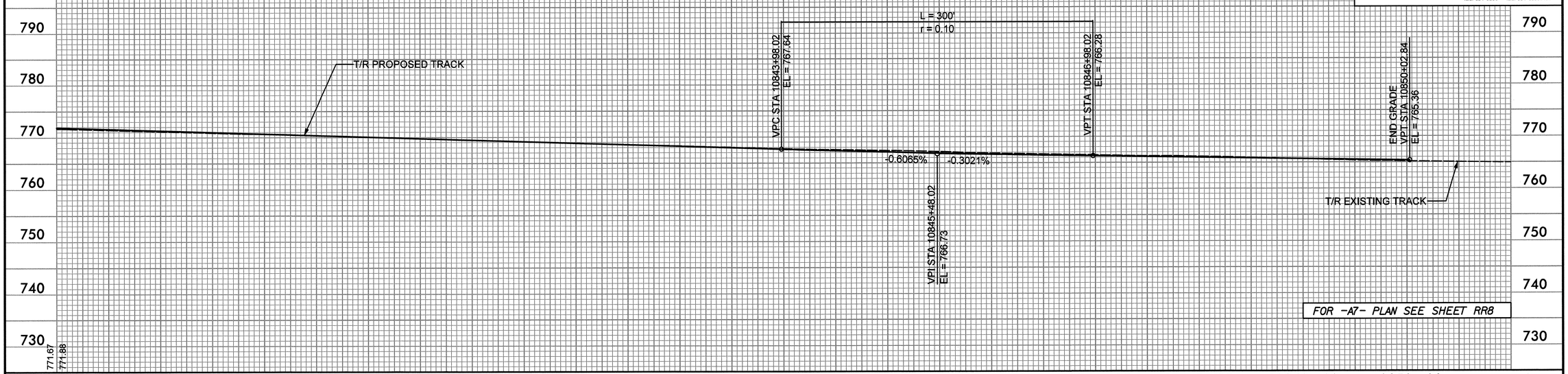
-A7- DETOUR TRACK



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