

HOP	DISTRICT	COUNTY	TOWNSHIP	MUNICIPALITY	ROUTE	SECTION	TOTAL SHEETS
	6-0	DELAWARE	MARPLE		0003		62

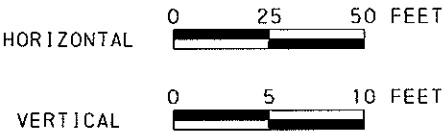
PennDOT E-PERMITTING SYSTEM #42543

MARPLE ASSOCIATES, INC.
DRAWINGS
FOR
CONSTRUCTION
OF

STATE ROUTE 0003
IN DELAWARE COUNTY
FROM STA 338+25.00 TO STA 352+70.00 LENGTH 1345.00 FT 0.255 MI
FROM SEG 0120 OFFSET 2056 TO SEG 0120 OFFSET 3501
FROM SEG 0121 OFFSET 2072 TO SEG 0121 OFFSET 3517

PLANS PREPARED FOR:
MARPLE ASSOCIATES, INC.
1604 WALNUT STREET
PHILADELPHIA, PA 19103

SCALE



DESIGN DESIGNATION

HIGHWAY CLASSIFICATION - URBAN PRINCIPAL ARTERIAL
DESIGN SPEED - 40 MPH (POSTED)

TRAFFIC DATA

CURRENT ADT - 45,049 (PENNDOT RMS TRAFFIC DATA)

EXISTING TOPOGRAPHIC
FEATURES, PROPERTY LINES,
RIGHT-OF-WAY LINES, AND
STAKE OUT OF GEOMETRIC
ALIGNMENTS ARE ACCURATE
AND IN ACCORDANCE WITH
INDUSTRY STANDARDS.
SURVEY WAS CONDUCTED,
IN JULY 2013 BY
CHESTER VALLEY ENGINEERS
83 CHESTNUT ROAD
PAOLI, PA 19301

REGISTERED
PROFESSIONAL SURVEYOR
DATE:

DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

REGISTERED
PROFESSIONAL ENGINEER
DATE:

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
TITLE SHEET		
Orth - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700		
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY		
PennDOT EPS Application #42543		SHEET NUMBER 1 OF 62
DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-056		

RECORD OF EXISTING TYPES OF ROADWAY PAVEMENT

SR 0003			
STA 338+25.00 TO	STA 352+70.00	SUPERPAVE ASPHALT MIXTURE DESIGN, HMA	
SEG 0120 OFF 2056	SEG 0120 OFF 3501	WEARING COURSE, 12.5 MM MIX, 3 1/2" DEPTH ON	
SEG 0121 OFF 2072	SEG 0121 OFF 3517	REINFORCED CEMENT CONCRETE PAVEMENT, 10" DEPTH ON	
		SUBBASE 8" DEPTH	
SR 8037			
STA 10127+60.00 TO	STA 10139+10.00	SUPERPAVE ASPHALT MIXTURE DESIGN, HMA	
SEG 0510 OFF 1240	SEG 0510 OFF 0100	WEARING COURSE, PG 64-22, 10 TO 30 MILLION	
		ESALS, 9.5 MM MIX, 1 1/2" DEPTH, SRL-E ON	
		BITUMINOUS BINDER COURSE 10-2, 5.0" DEPTH ON	
		BITUMINOUS CONCRETE BASE COURSE, 8.5" DEPTH ON	
		SUBBASE 8" DEPTH	
LANGFORD RUN ROAD			
STA 20+60.00 TO	STA 26+52.00	SUPERPAVE ASPHALT MIXTURE DESIGN, HMA	
		WEARING COURSE, PG 64-22, 3-10 MILLION	
		ESALS, 9.5 MM MIX, 1 1/2" DEPTH, SRL-H ON	
		SUPERPAVE ASPHALT MIXTURE DESIGN, HMA BINDER	
		COURSE, PG 64-22, 3-10 MILLION ESALS, 19 MM MIX,	
		2" DEPTH ON	
		SUPERPAVE ASPHALT MIXTURE DESIGN, HMA BASE COURSE,	
		PG 64-22, 3-10 MILLION ESALS, 37.5 MM MIX, 6" DEPTH ON	
		SUBBASE 6" DEPTH (NO 2A)	

EXISTING ROADWAY PAVEMENT NOTES:

- ① EXISTING PAVEMENT DEPTHS ON SR 0003 & SR 8037 DETERMINED FROM ROADWAY MANAGEMENT INFORMATION SYSTEM PAVEMENT HISTORY AND DRAWINGS FOR CONSTRUCTION OF LR 1010 SECTION 500 APPROVED BY HOWARD YERUSALIM ON BEHALF OF THE GOVERNOR ON JUNE 8, 1987.
- ② EXISTING PAVEMENT DEPTHS ON LANGFORD RUN ROAD DETERMINED FROM LAND DEVELOPMENT PLANS FOR MARPLE ASSOCIATES PREPARED BY CHESTER VALLEY ENGINEERS INC.

SHEET INDEX BLOCK

DESCRIPTION	SHEET
TITLE SHEET	1
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SIGNING AND PAVEMENT MARKING PLANS	29-34
TRAFFIC CONTROL PLANS	35-43
CROSS SECTIONS	44-62

STOP WORK
STA 10139+10.00
SEG 0510 OFF 0100
SR 8037

R=150.00'

18

23

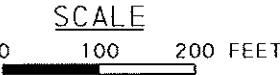
START WORK
STA 10127+60.00
SEG 0510 OFF 1240
SR 8037

STOP WORK
STA 352+20.00
SEG 0120 OFF 3451
SEG 0121 OFF 3467
SR 0003

LIMIT OF WORK
STA 352+70.00
SEG 0120 OFF 3501
SEG 0121 OFF 3517
SR 0003
MARPLE TOWNSHIP
DELAWARE COUNTY

STOP WORK
STA 26+52.00
LANGFORD RUN ROAD

INDEX MAP



LEGEND

- - CONSTRUCTION PLAN
- - PROFILE
- △ - PARCEL IDENTIFICATION NUMBER

PROPERTY OWNER INFORMATION

25-13-302 N/L RUSSELL & CECILIA MEYERS DBK 2555, PG 991	25-13-426 N/L MARPLE ASSOCIATES DBK 853, PG 2096
25-13-303 N/L KENNETH S. & KRITINE L. GROSS DBK 1912, PG 1866	25-13-425 N/L KONSTANTINOS & VASILIKI GOUVIAS DBK 4870, PG 544
25-13-322 N/L GRACE EVANGELICAL LUTHERAN CHURCH DBK 1247, PG 220	25-13-424 N/L GERALDO MARRON DBK 1366, PG 1064
25-20-40 N/L MARPLE ASSOCIATES DB 2083 PG 805	25-13-423 N/L PARVIN & TOFIGH TOSHTZAR DBK 4417, PG 1205
25-13-428 N/L MARPLE ASSOCIATES DBK 1710, PG 0126	25-13-422 N/L TODGER PEDRO & LOUISA MICELI DBK 1772, PG 1789
25-13-427 N/L MARPLE ASSOCIATES DBK 853, PG 2096	25-13-421 N/L SEAN & RACHEL CURRY DBK 5077, PG 1843
	25-13-420 N/L PARVIN & TOFIGH TOSHTZAR DBK 4844, PG 439
	25-13-338 N/L GOODHILL ASSOCIATES PARTNERSHIP DBK 2619, PG 1053
	25-13-339 N/L PECO ENERGY COMPANY (NO BK/PG LISTED)

LIMIT OF WORK

STA 338+25.00
SEG 0120 OFF 2056
SEG 0121 OFF 2072
SR 0003
MARPLE TOWNSHIP
DELAWARE COUNTY

START WORK
STA 20+60.00
LANGFORD RUN ROAD

START WORK
STA 338+75.00
SEG 0120 OFF 2106
SEG 0121 OFF 2122
SR 0003

LIST OF PUBLIC UTILITIES

PA ONE-CALL TOLL FREE TELEPHONE NO. 1-800-242-1776
PA ONE-CALL SERIAL NO. 20131902297

AQUA PA
762 LANCASTER AVE
BRYN MAWR PA 19010
MR WILLIAM A. ZAHN
610-645-4203
wazahn@aquaamerica.com

COMCAST CABLE
COMMUNICATION
110 SPRINGBROOK BLVD
ASTON, PA 19014
MR DANIEL MCENHILL
610-461-2000

MARPLE TOWNSHIP
227 SOUTH SPROUL ROAD
BROOMALL, PA 19008
MR ANTHONY T. HAMADAY
610-356-4040
ahamaday@marpletwp.com

CENTRAL DEL
COUNTY AUTHORITY
212 B UNITY TERRACE
RUTLEDGE, PA 19070
MS. GENNIFER GUILLANO
610-544-9944
cdca@craftertech.com

PECO
1050 SWEDSFORD ROAD
BERWYN, PA 19312
MR BILL HENSIL
610-725-7129
bhensil@peco-energy.com

VERIZON PENNSYLVANIA
180 SHEREE BLVD.
EXTON, PA 19341
MS THERESA L. BAKER
610-280-2154
theresa.l.baker@verizon.com

DESIGNED BY: GRS
DRAWN BY: LEW
CHECKED BY: TGS

REGISTERED
PROFESSIONAL ENGINEER
DATE:

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
INDEX MAP		
Orth - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office 301 Lindenwood Drive, Suite 130 Waverly, PA 19355 (610) 407-9700		
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY		
REGISTERED PROFESSIONAL ENGINEER DATE:	PennDOT EPS Application #42543	DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-055
SHEET NUMBER 2 OF 62		

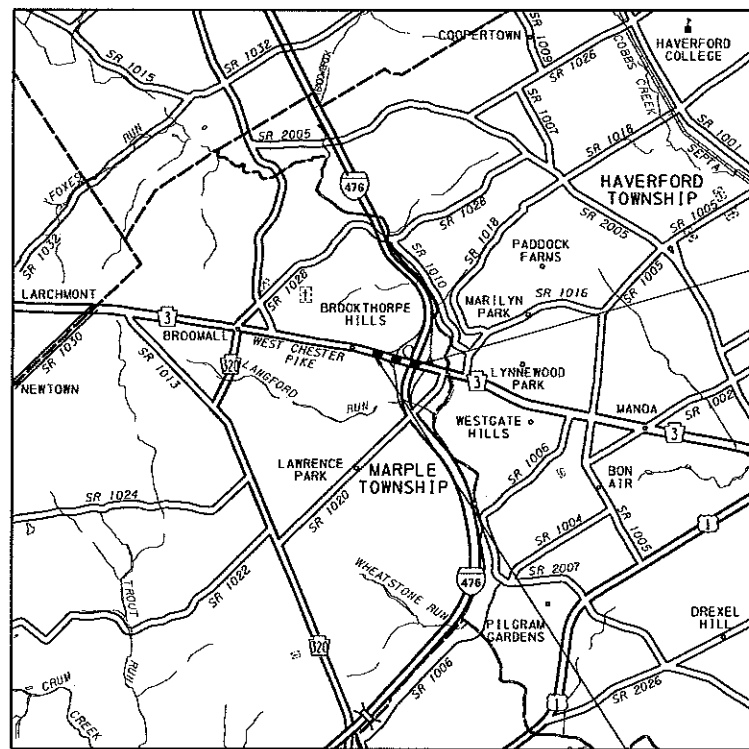
SUMMARY OF PROJECT COORDINATES
BASED ON THE PENNSYLVANIA STATE PLANE COORDINATE SYSTEM

ROUTE	STATION	POINT	NORTHING	EASTING	BEARING
SR 0003 SURVEY & CONSTR B	338+00.00	POT	244594.9406	2641987.9348	
	351+83.25	PC	244230.2082	2643322.2330	S 74°42'42" E
	352+26.64	PI	244218.7660	2643364.0920	S 74°42'42" E
	352+70.04	PT	244207.6411	2643406.0364	S 75°08'44" E
	353+00.00	POT	244199.9603	2643434.9959	S 75°08'44" E
ROUTE	STATION	POINT	NORTHING	EASTING	BEARING
SR 8037 SURVEY & CONSTR B	10127+00.00	POT	244241.9265	2643279.3642	
	10129+42.39	PC	244475.7371	2643343.2985	N 15°17'36" E
	10131+18.33	PI	244645.4435	2643389.7039	N 15°17'36" E
	10132+81.92	PT	244752.9189	2643528.9977	N 52°20'50" E
	10137+27.81	PC	245025.3008	2643882.0194	N 52°20'50" E
	10137+39.35	PI	245032.3512	2643891.1571	N 52°20'50" E
	10137+50.84	PT	245040.7165	2643899.1086	N 43°32'51" E
	10138+88.54	PC	245140.5210	2643993.9769	N 43°32'51" E
	10139+79.41	PI	245206.3789	2644056.5776	N 43°32'51" E
	10140+69.45	PT	245284.8629	2644102.3637	N 30°15'31" E
	10141+20.25	POT	245328.7359	2644127.9583	N 30°15'31" E
ROUTE	STATION	POINT	NORTHING	EASTING	BEARING
LANGFORD RUN ROAD SURVEY & CONSTR B	20+00.00	POT	244422.1108	2642620.1967	
	20+85.56	PC	244339.5742	2642597.6352	S 15°17'18" W
	21+47.76	PI	244279.5796	2642581.2356	S 15°17'18" W
	22+04.98	PT	244222.8763	2642606.7904	S 24°15'36" E
	23+56.61	PC	244084.6313	2642669.0941	S 24°15'36" E
	24+85.49	PI	243967.1387	2642722.0451	S 24°15'36" E
	26+03.86	PT	243910.9763	2642838.0370	S 64°09'51" E
	27+95.91	POT	243827.2786	2643010.8974	S 64°09'51" E

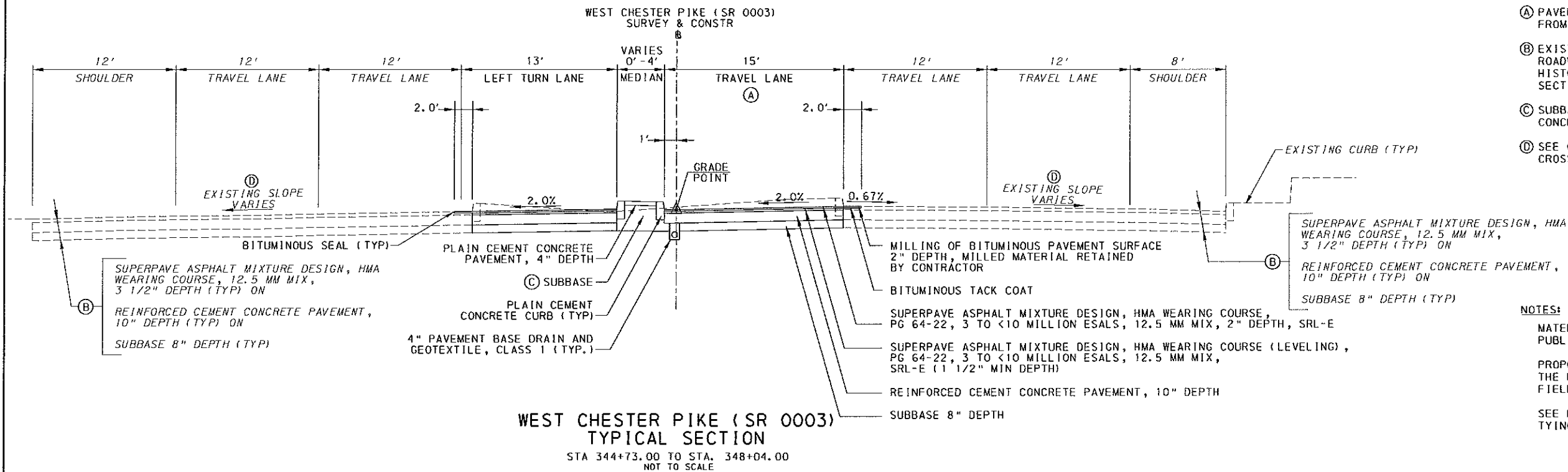
NOTE:
FOUR (4) PLACE COORDINATES ARE USED FOR COMPUTATIONAL PURPOSES
ONLY AND DO NOT IMPLY A PRECISION BEYOND TWO (2) PLACES.

GENERAL NOTES CONT'D

RESET GUIDE RAIL AT NEW SIGN STRUCTURE LOCATION.
CONTRACTOR SHALL CONTACT THE COUNTY MAINTENANCE
MANAGER AT THE TIME OF THE GUIDE RAIL REMOVAL.
ALL EXISTING SURPLUS GUIDE RAIL TO BE REMOVED,
TRANSPORTED TO AND STORED AS PER DIRECTION FROM
COUNTY MAINTENANCE MANAGER OR HIS REPRESENTATIVE.



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TYPICAL SECTION NOTES:

- (A) PAVEMENT TRANSITIONS FROM 2.0% TO -2.0% FROM STA 347+00.00 TO STA 348+04.00
- (B) EXISTING PAVEMENT DEPTHS ON SR 0003 DETERMINED FROM ROADWAY MANAGEMENT INFORMATION SYSTEM PAVEMENT HISTORY AND DRAWINGS FOR CONSTRUCTION OF LR 1010 SECTION 500.
- (C) SUBBASE IS INCIDENTAL TO PLAIN CEMENT CONCRETE CURB
- (D) SEE CROSS SECTIONS FOR EXISTING ROADWAY CROSS SLOPES IN VARIABLE AREAS.

NOTES:

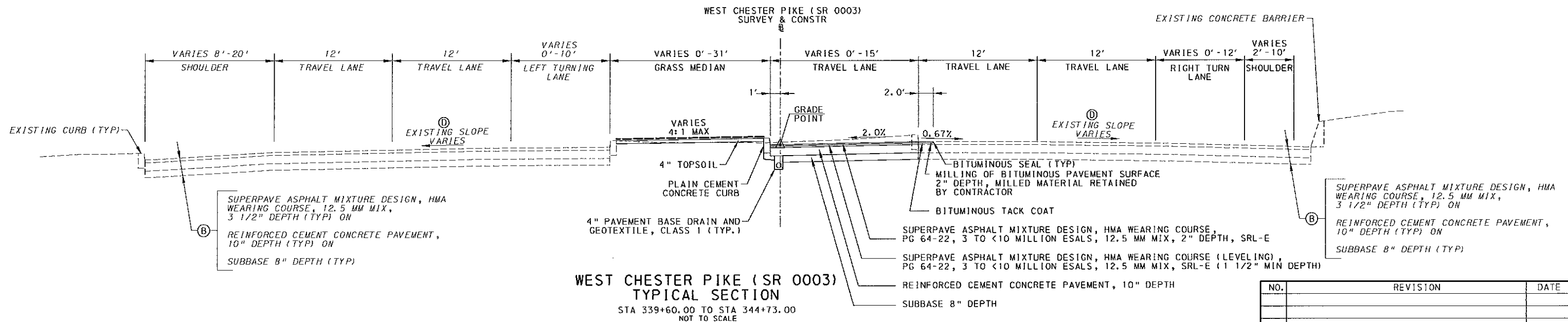
MATERIALS AND CONSTRUCTION TO MEET PENNDOT PUBLICATION 408/2011, LATEST EDITION.

PROPOSED PAVEMENT SECTION MUST BE AS INDICATED ON THE PLAN, OR MATCH THE EXISTING AS FOUND IN THE FIELD, WHICHEVER IS GREATER.

SEE RC-20M FOR LONGITUDINAL JOINT WHEN TYING INTO EXISTING CONCRETE PAVEMENT.

LEGEND

----- SEEDING AND SOIL SUPPLEMENTS - FORMULA B



DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014

TYPICAL SECTIONS



Orth - Rodgers & Associates, Inc.
TRANSPORTATION ENGINEERS and PLANNERS

Great Valley Office 301 Lindenwood Drive, Suite 130 Wolsvern, PA 19355 (610) 407-9700

WEST CHESTER PIKE
(SR 0003)

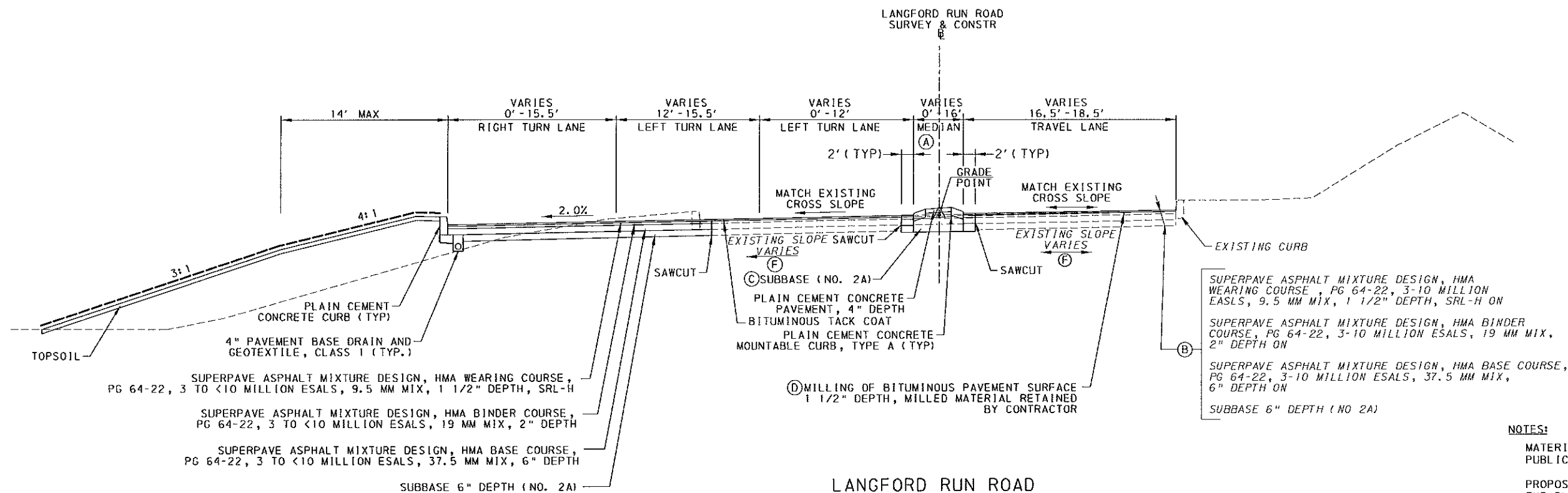
MARPLE TOWNSHIP, DELAWARE COUNTY

REGISTERED
PROFESSIONAL ENGINEER
DATE:

PennDOT EPS
Application #42543

DATE: NOVEMBER 5, 2013
PROJECT NUMBER: 2013-065

SHEET NUMBER
4 OF 62



LANGFORD RUN ROAD
TYPICAL SECTION
STA 20+60.00 TO STA 26+52.00
NOT TO SCALE

- TYPICAL SECTION NOTES:**
- (A) MAINTAIN EXISTING MEDIAN STA 20+91.70 TO STA 22+04.98
 - (B) EXISTING PAVEMENT DEPTHS ON LANGFORD RUN ROAD DETERMINED FROM LAND DEVELOPMENT PLANS FOR MARPLE ASSOCIATES PREPARED BY CHESTER VALLEY ENGINEERS INC.
 - (C) SUBBASE IS INCIDENTAL TO PLAIN CEMENT CONCRETE CURB AND PLAIN CEMENT CONCRETE MOUNTABLE CURB, TYPE A.
 - (D) MILL AND OVERLAY STA 20+46.00 TO STA 22+30.00. OVERLAY STA 22+30.00 TO STA 26+51.91.
 - (E) EXISTING PAVEMENT DEPTHS ON SR 0003 DETERMINED FROM ROADWAY MANAGEMENT INFORMATION SYSTEM PAVEMENT HISTORY AND DRAWINGS FOR CONSTRUCTION OF LR 1010 SECTION 500.
 - (F) SEE CROSS SECTIONS FOR EXISTING ROADWAY CROSS SLOPES IN VARIABLE AREAS.

NOTES:

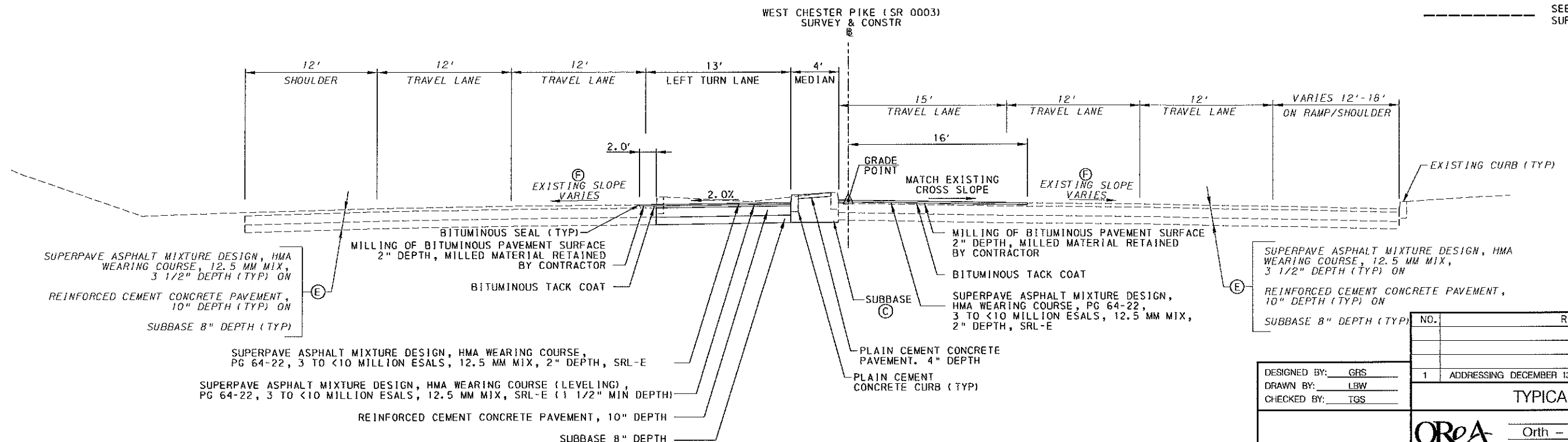
MATERIALS AND CONSTRUCTION TO MEET PENNDOT PUBLICATION 408/2011, LATEST EDITION

PROPOSED PAVEMENT SECTION MUST BE AS INDICATED ON THE PLAN, OR MATCH THE EXISTING AS FOUND IN THE FIELD, WHICHEVER IS GREATER.

SEE RC-20M FOR LONGITUDINAL JOINT WHEN TYING INTO EXISTING CONCRETE PAVEMENT.

LEGEND

----- SEEDING AND SOIL SUPPLEMENTS - FORMULA B



WEST CHESTER PIKE (SR 0003)
TYPICAL SECTION
STA 348+04.00 TO STA. 350+75.00
NOT TO SCALE

DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014

TYPICAL SECTIONS

OR&A Orth - Rodgers & Associates, Inc.
TRANSPORTATION ENGINEERS AND PLANNERS
Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700

WEST CHESTER PIKE
(SR 0003)

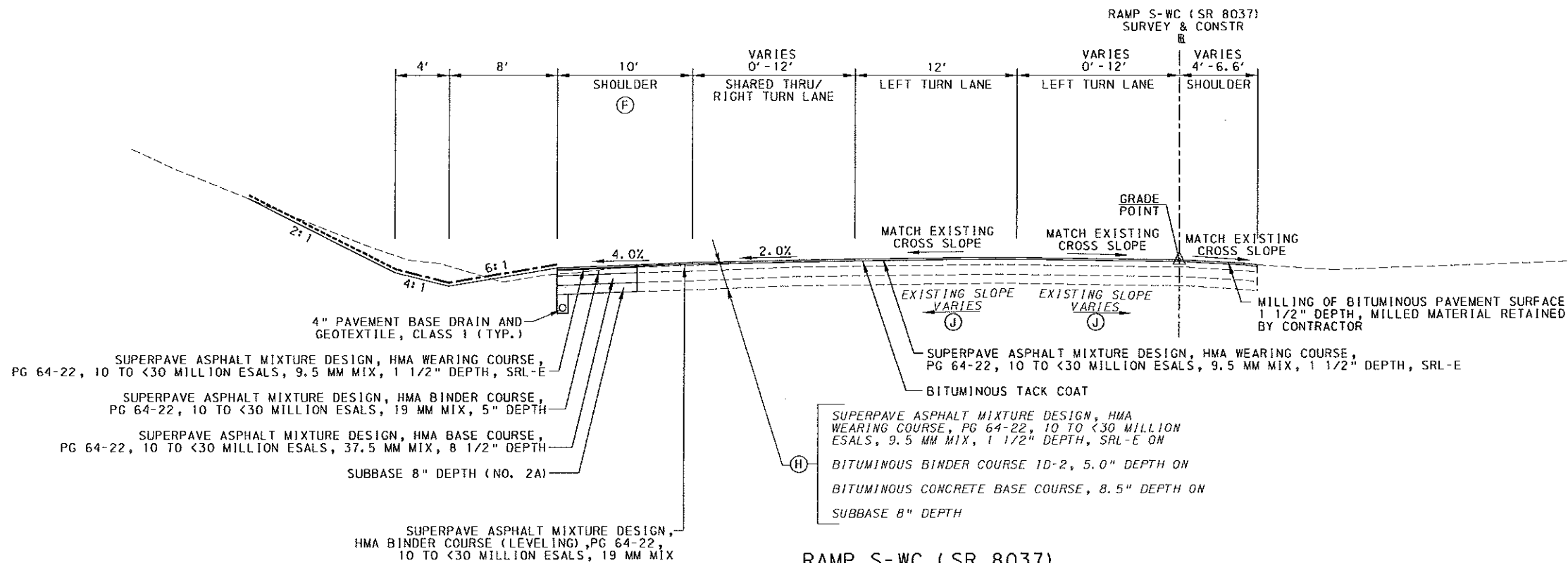
MARPLE TOWNSHIP, DELAWARE COUNTY

REGISTERED PROFESSIONAL ENGINEER
DATE:

PennDOT EPS
Application #42543

DATE: NOVEMBER 5, 2013
PROJECT NUMBER: 2013-055

SHEET NUMBER
5 OF 62



RAMP S-WC (SR 8037) TYPICAL SECTION

STA 10134+88.92 TO STA 10136+90.00
NOT TO SCALE

TYPICAL SECTION NOTES:

- (A) PAVEMENT TRANSITIONS FROM EXISTING CROSS SLOPE TO 4.0% (FS) FROM STA 10127+63.00 TO STA 10129+42.39
- (B) PAVEMENT TRANSITIONS FROM 4.0% (FS) TO 2.0% (RC) FROM STA 10132+81.92 TO STA 10133+50.92
- (C) PAVEMENT TRANSITIONS FROM 2.0% (RC) TO EXISTING CROSS SLOPE FROM STA 10133+50.92 TO STA 10134+75.00
- (D) PAVEMENT TRANSITIONS FROM 2.0% (RC) TO 2.0% (NC) FROM STA 10133+50.92 TO STA 10134+88.92
- (E) PAVEMENT TRANSITIONS FROM EXISTING CROSS SLOPE TO 2.0% FROM STA 10127+63.00 TO STA 10128+89.00
- (F) PAVEMENT TRANSITIONS 2.0% TO 4.0% FROM STA 10134+19.92 TO STA 10134+88.92
- (G) BEGIN SAWCUT AT STATION 10129+31.00.
- (H) EXISTING PAVEMENT DEPTHS ON SR 8037 DETERMINED FROM ROADWAY MANAGEMENT INFORMATION SYSTEM PAVEMENT HISTORY AND DRAWINGS FOR CONSTRUCTION OF LR 1010 SECTION 500.
- (J) SEE CROSS SECTIONS FOR EXISTING ROADWAY CROSS SLOPES IN VARIABLE AREAS.

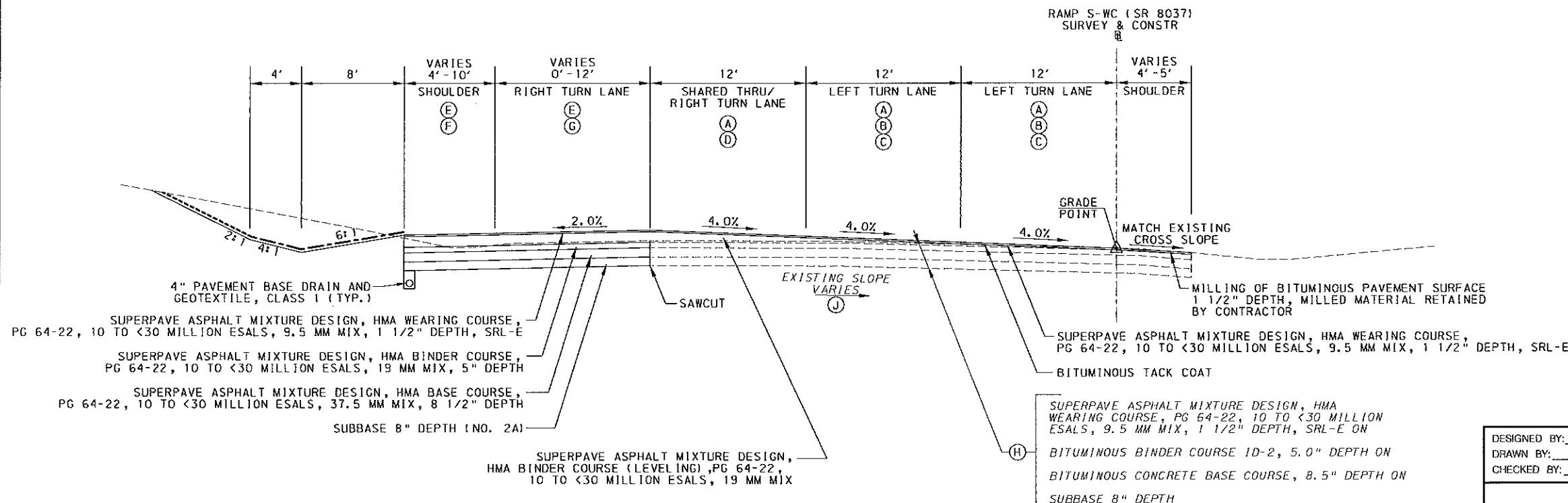
NOTES:

MATERIALS AND CONSTRUCTION TO MEET PENNDOT PUBLICATION 408/2011, LATEST EDITION

PROPOSED PAVEMENT SECTION MUST BE AS INDICATED ON THE PLAN, OR MATCH THE EXISTING AS FOUND IN THE FIELD, WHICHEVER IS GREATER.

LEGEND

- SEEDING AND SOIL SUPPLEMENTS - FORMULA C
- SEEDING AND SOIL SUPPLEMENTS - FORMULA D



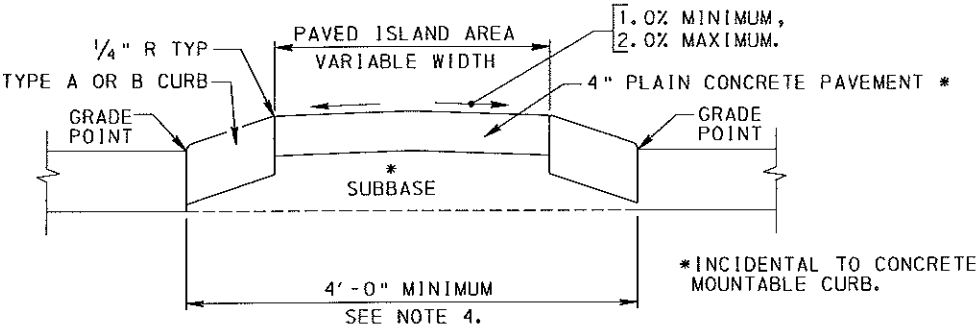
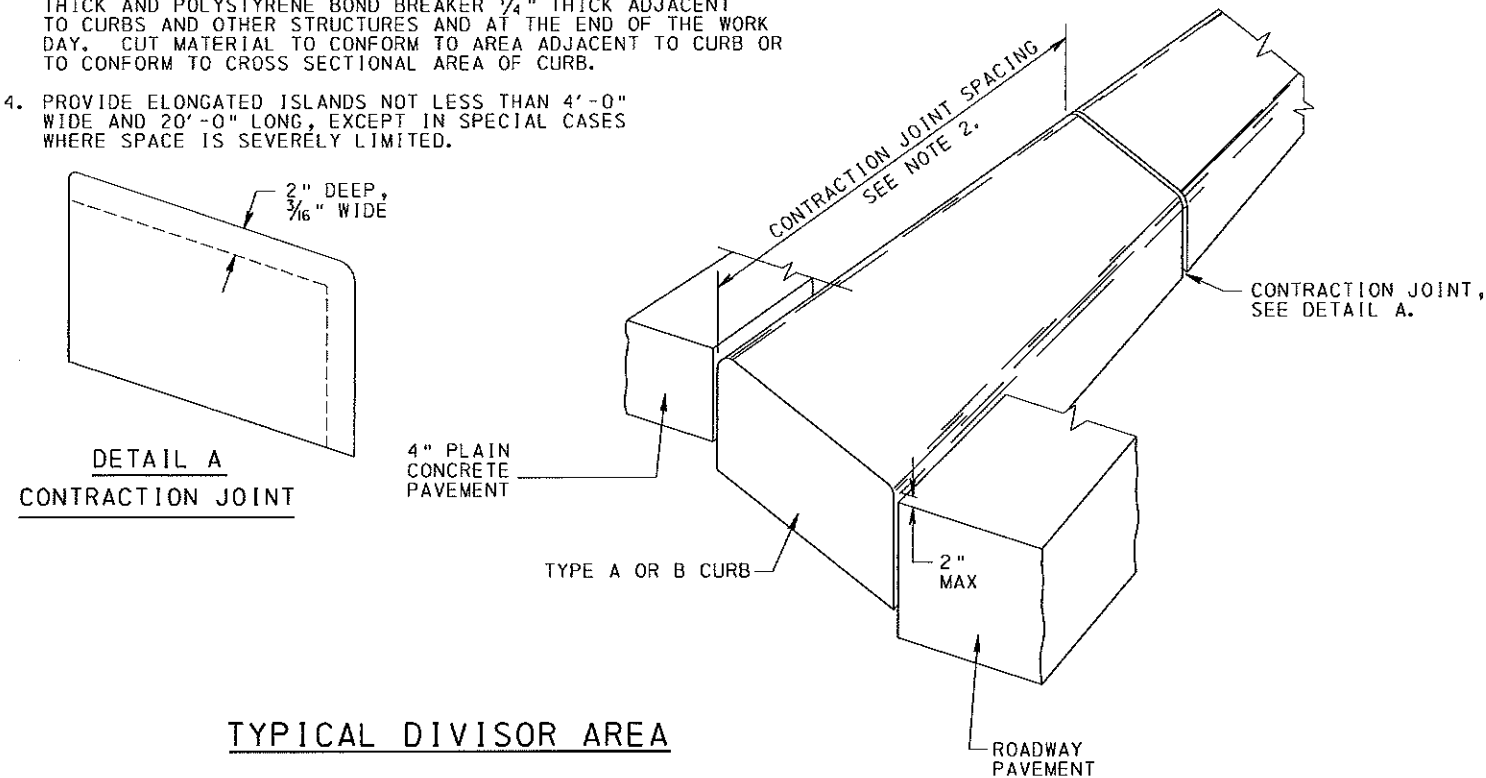
RAMP S-WC (SR 8037) TYPICAL SUPERELEVATED SECTION

STA 10127+63.00 TO STA 10134+88.92
NOT TO SCALE

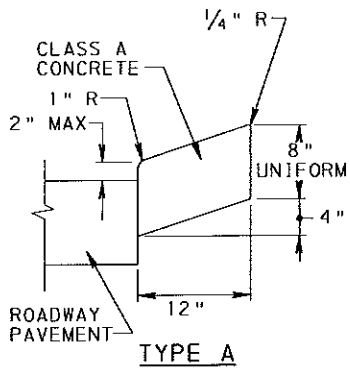
NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
TYPICAL SECTIONS		
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY		
DESIGNED BY: GRS	PennDOT EPS Application #42543	DATE: NOVEMBER 5, 2013
DRAWN BY: LBW		
CHECKED BY: TGS		
REGISTERED PROFESSIONAL ENGINEER		SHEET NUMBER
DATE:		6 OF 62

CONCRETE MOUNTABLE CURB NOTES

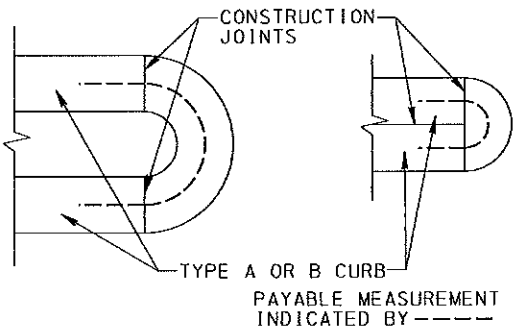
- 1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 633.
- 2. SPACE CONTRACTION JOINTS TO ALIGN WITH ADJACENT PAVEMENT JOINTS TO ELIMINATE SAWCUT AND SYMPATHY CRACKING. SEAL AS SPECIFIED IN PUBLICATION 408, SECTION 501.3(n).
- 3. PLACE PREMOLDED EXPANSION JOINT FILLER MATERIAL 1/2" THICK AND POLYSTYRENE BOND BREAKER 1/4" THICK ADJACENT TO CURBS AND OTHER STRUCTURES AND AT THE END OF THE WORK DAY. CUT MATERIAL TO CONFORM TO AREA ADJACENT TO CURB OR TO CONFORM TO CROSS SECTIONAL AREA OF CURB.
- 4. PROVIDE ELONGATED ISLANDS NOT LESS THAN 4'-0" WIDE AND 20'-0" LONG, EXCEPT IN SPECIAL CASES WHERE SPACE IS SEVERELY LIMITED.



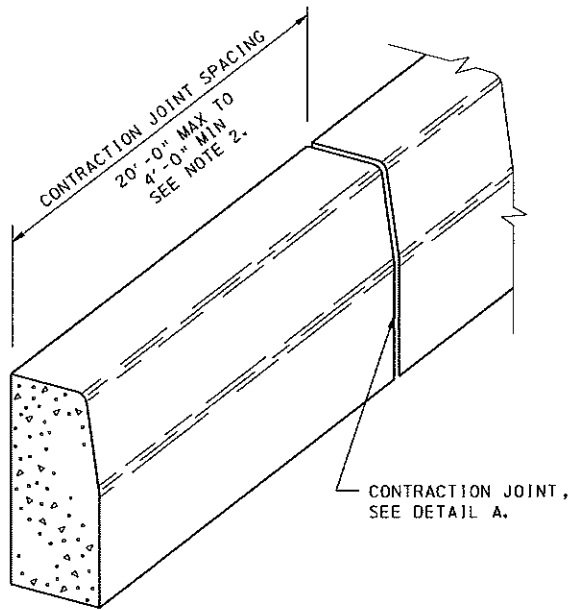
TYPICAL CONSTRUCTION



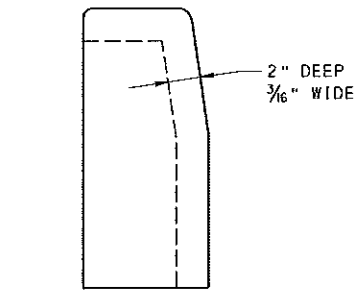
CONCRETE MOUNTABLE CURBS



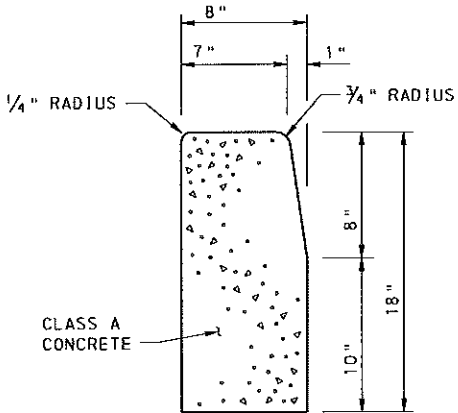
END DETAILS



PLAIN CEMENT CONCRETE CURB



DETAIL A
CONTRACTION JOINT



TYPICAL
CROSS SECTION

PLAIN CEMENT CONCRETE CURB NOTES

- 1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 630 FOR PLAIN CEMENT CONCRETE CURB.
- 2. SPACE CONTRACTION JOINTS IN UNIFORM LENGTHS OR SECTIONS.
- 3. PLACE 3/4" THICK PREMOLDED EXPANSION JOINT FILLER MATERIAL AT STRUCTURES AND AT THE END OF THE WORK DAY. CUT MATERIAL TO CONFORM TO AREA ADJACENT TO CURB OR TO CONFORM TO CROSS SECTIONAL AREA OF CURB.

DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014

DETAILS

OR&A Orth - Rodgers & Associates, Inc.
TRANSPORTATION ENGINEERS and PLANNERS
Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700

WEST CHESTER PIKE
(SR 0003)
MARPLE TOWNSHIP, DELAWARE COUNTY

REGISTERED
PROFESSIONAL ENGINEER
DATE:

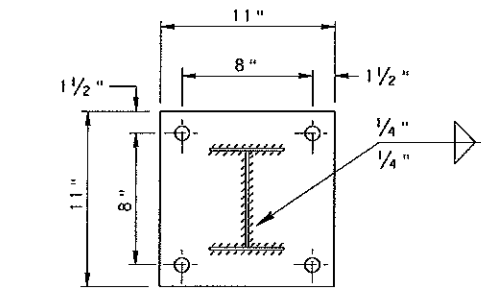
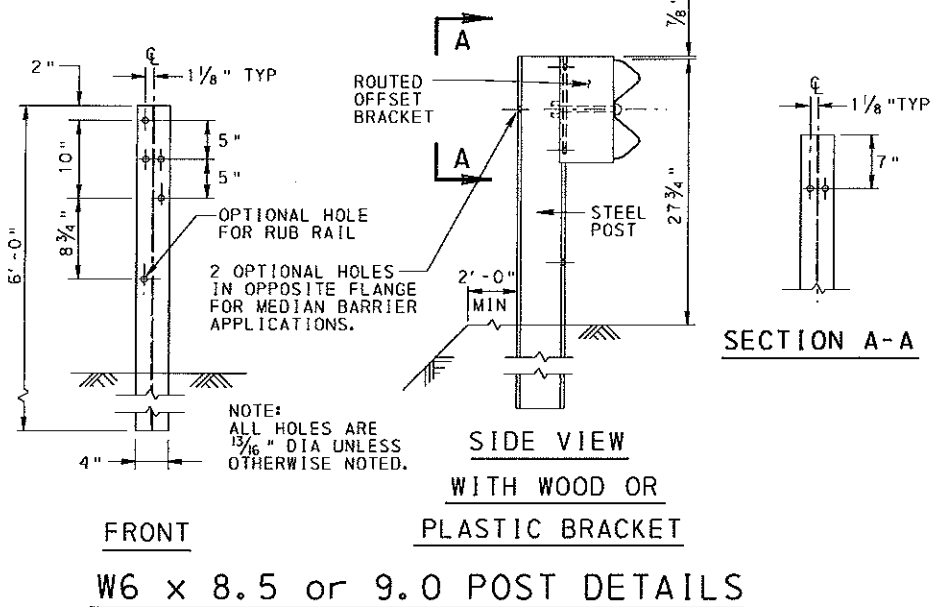
PennDOT EPS
Application #42543

DATE: NOVEMBER 5, 2013
PROJECT NUMBER: 2013-055

SHEET NUMBER
7 OF 62

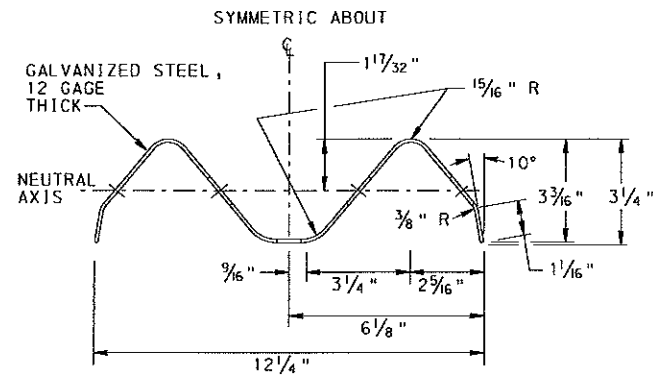
GUIDE RAIL NOTES

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 620.
2. PROVIDE STEEL I-BEAM W6" x 8.5 POSTS WITH ROUTED WOOD, PLASTIC OR COMPOSITE OFFSET BRACKETS LISTED IN BULLETIN 15.
3. ATTACH W-BEAM RAIL ELEMENTS TO EACH POST. SPLICE RAIL ELEMENTS ONLY AT POSTS AND LAP IN THE DIRECTION OF TRAFFIC.
4. BURNING OF POSTS OR RAIL ELEMENT FOR HOLES IS NOT PERMITTED.
5. WHEN THE 2'-0" MINIMUM CLEARANCE FROM THE REAR FACE OF THE GUIDE RAIL POST TO THE FILL SLOPE BREAK CANNOT BE MAINTAINED, PROVIDE STRONG POSTS THAT ARE A MINIMUM OF 1'-0" LONGER.

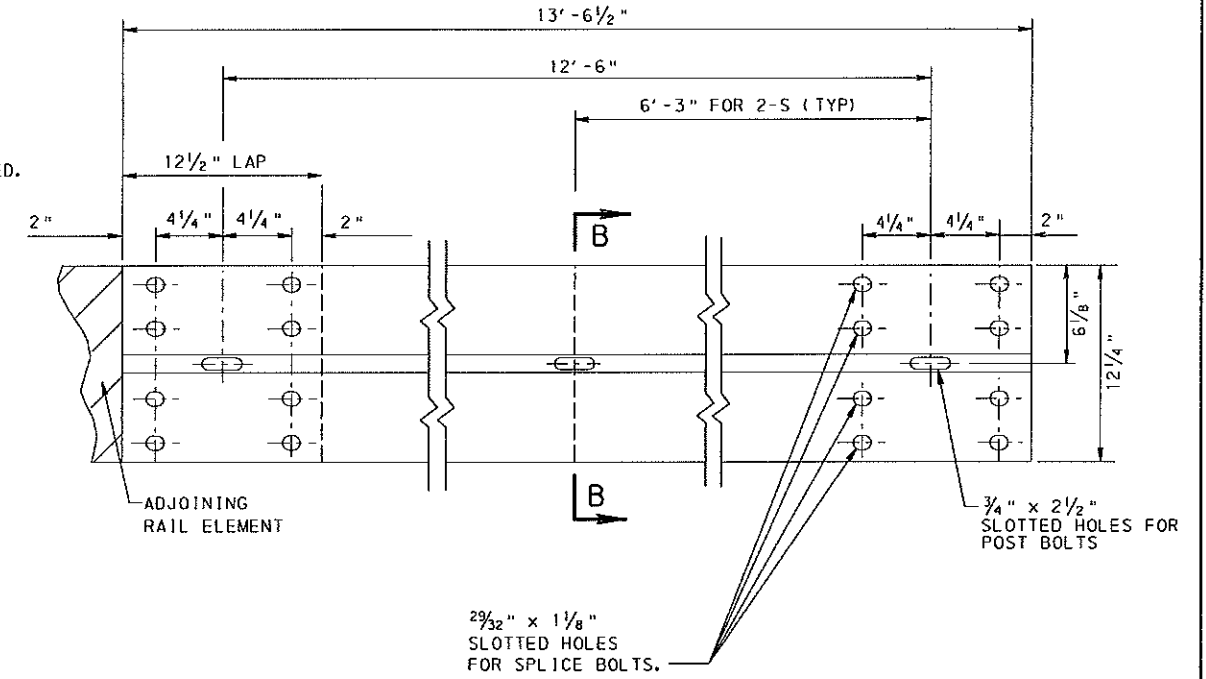


DETAIL A

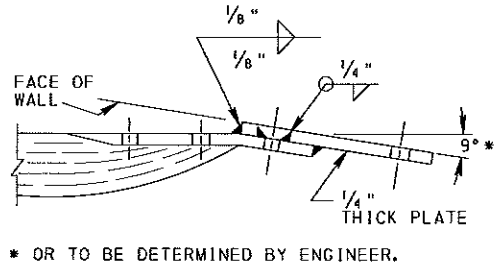
THICKNESS IS $\frac{3}{4}$ "
ALL HOLES 1"Ø UNLESS OTHERWISE NOTED.



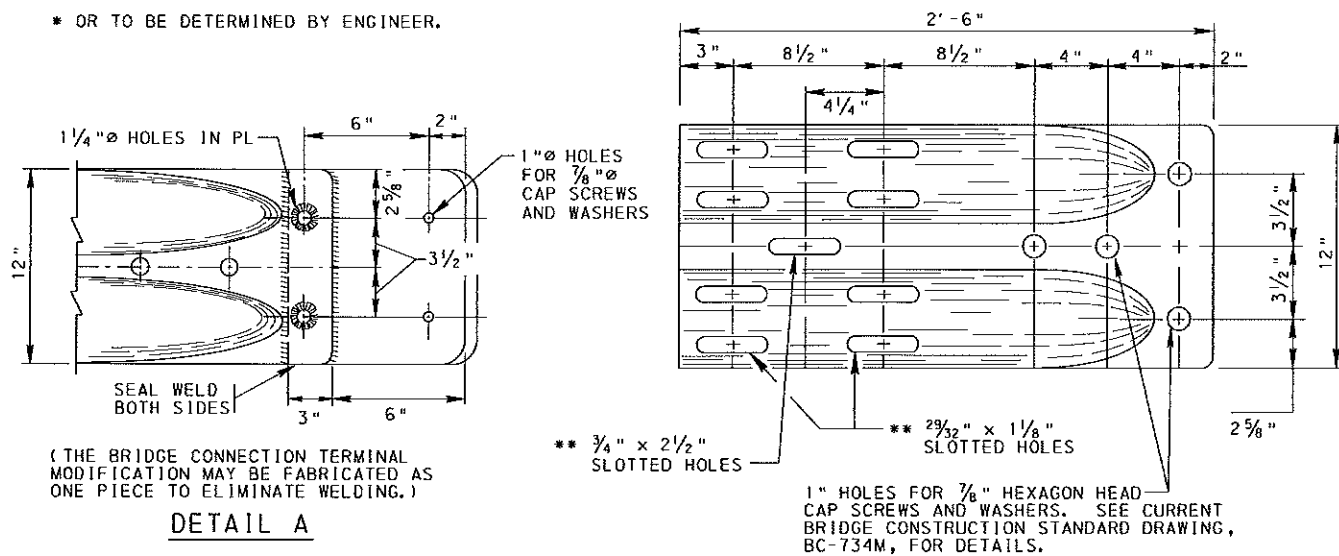
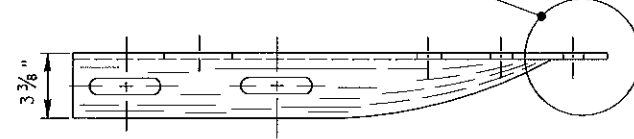
RAIL ELEMENT
SECTION B-B



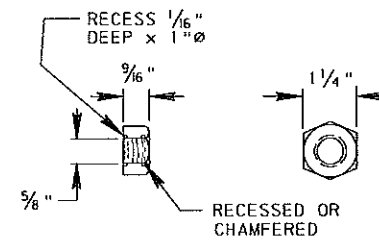
W-BEAM RAIL ELEMENT



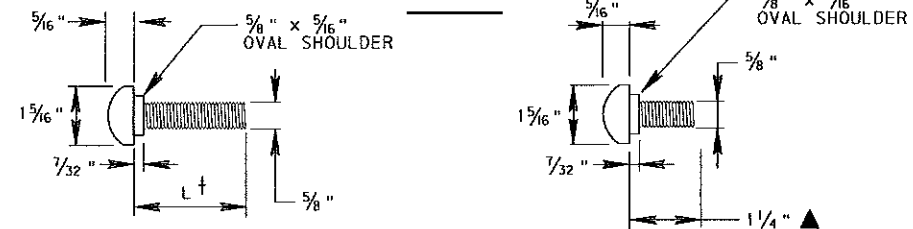
SEE DETAIL A, FOR
MODIFICATION WITH FLARED
SAFETY WALL, OR
WHERE REQUIRED.



**** PROVIDE SPLICE BOLTS WITH A LOCK NUT OR DOUBLE NUT AND
TIGHTEN ONLY TO A POINT THAT ALLOWS GUIDE RAIL TO BE FREE TO MOVE.
CENTER SPLICE BOLTS IN THE SLOTTED HOLES.**



NUT



POST BOLT

SPLICE BOLT

- ## NOTES
1. USE SPLICE BOLTS TO DEVELOP THE DESIGN STRENGTH OF THE RAIL ELEMENT.
 2. PROVIDE TERMINAL SECTION BRIDGE CONNECTION, WITH WELDED PLATE FOR SAFETY, AS AN INCIDENTAL ITEM.
 3. USE SLOTTED ROUND-HEADED BOLTS TO PROVIDE FOR WRENCH OR SCREWDRIVER.

NOTES

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014

DETAILS

OR&A
Orth - Rodgers & Associates, Inc.
TRANSPORTATION ENGINEERS and PLANNERS
Great Valley Office • 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700

WEST CHESTER PIKE
(SR 0003)

MARPLE TOWNSHIP, DELAWARE COUNTY

DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

REGISTERED
PROFESSIONAL ENGINEER
DATE: _____

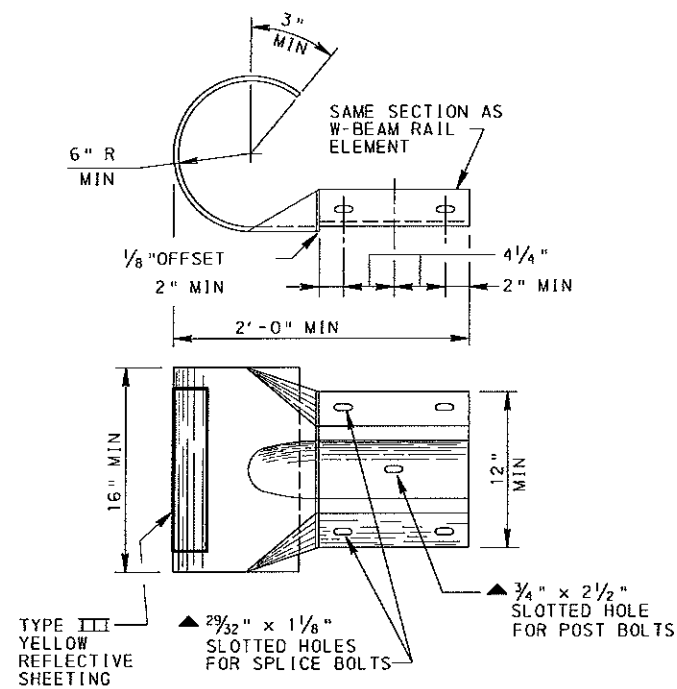
PennDOT EPS
Application #42543

DATE: NOVEMBER 5, 2013

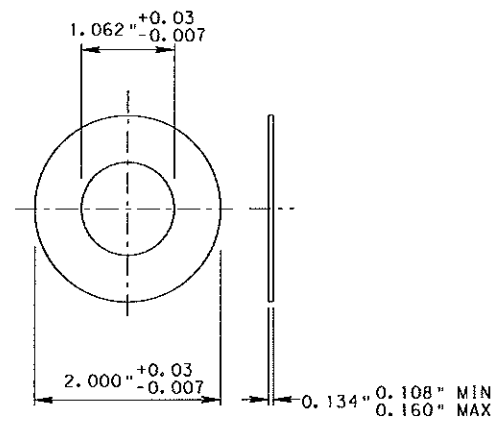
PROJECT NUMBER: 2013-065

SHEET NUMBER 1

8 OF 62

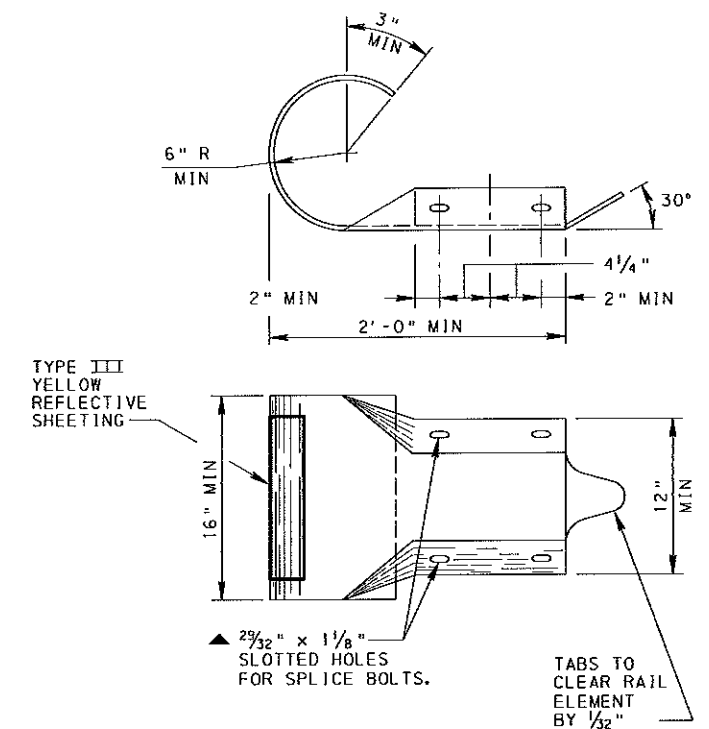


TERMINAL TO BE PLACED ON BACK OF RAIL ELEMENT



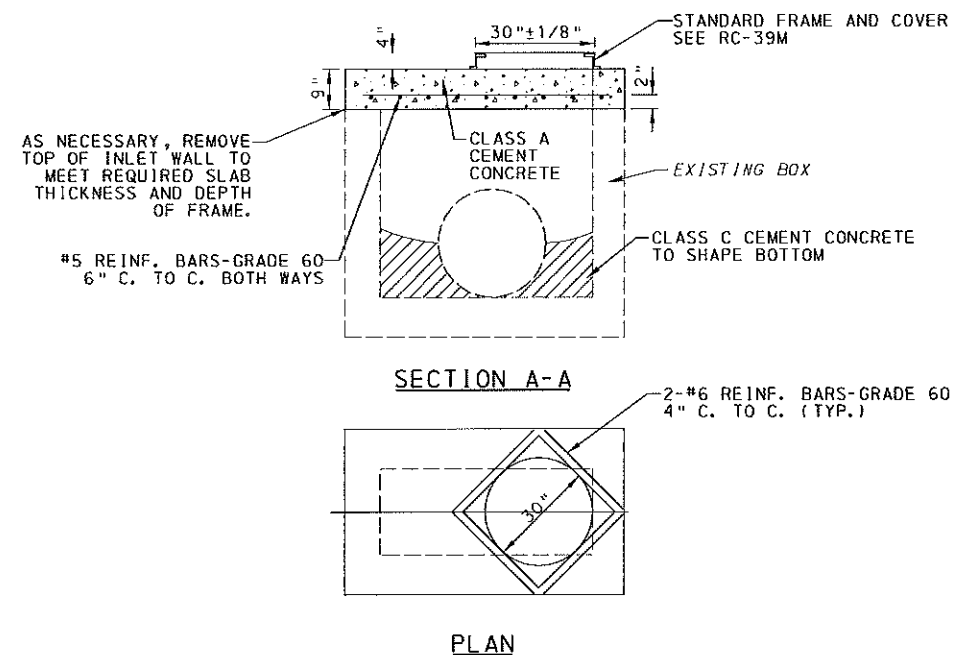
DETAIL B
TYPE A PLAIN WASHER

FOR SPLICE AND POST BOLTS, SEE DETAILS. FOR ALL SPLICE BOLT CONNECTIONS, PROVIDE A TYPE A PLAIN WASHER BETWEEN BOLT HEAD AND TERMINAL SECTION. FOR WASHER, SEE DETAIL B.

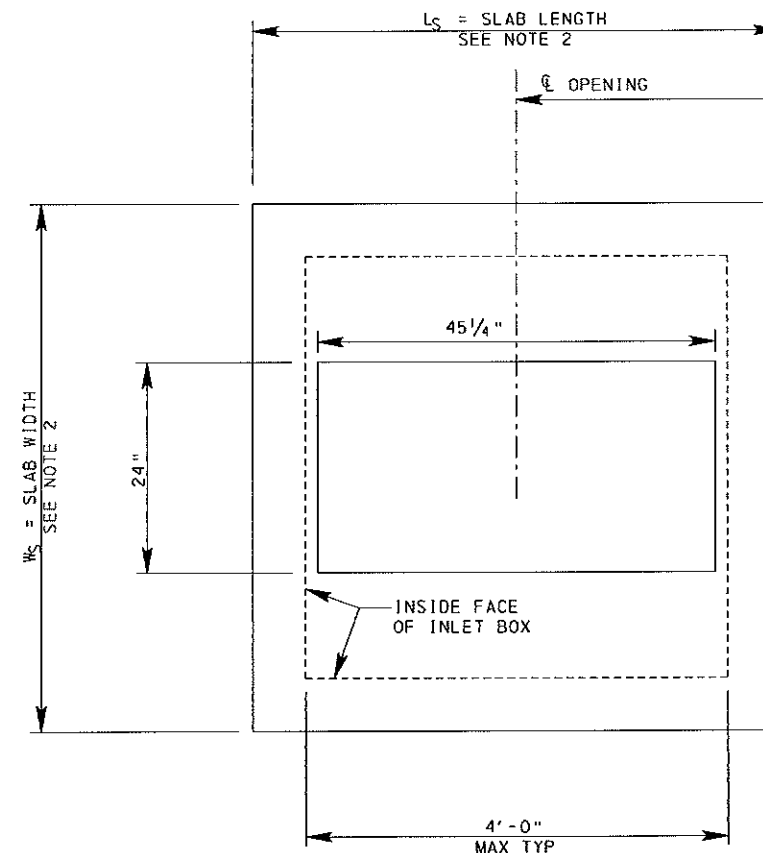


TERMINAL TO BE PLACED ON FACE OF RAIL ELEMENT

ALTERNATE TERMINAL SECTIONS



CONVERT INLET TO MANHOLE
NOT TO SCALE



MODIFIED TOP SLAB FOR INLET 121
NOT TO SCALE

1. VERIFY OPENING OF TOP SLAB IN THE FIELD.
2. OUT TO OUT DIMENSIONS OF TOP SLAB TO MATCH INLET BOX.
3. SEE RC-46M FOR ADDITIONAL NOTES.

DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014

DETAILS

OR&A Orth - Rodgers & Associates, Inc.
TRANSPORTATION ENGINEERS and PLANNERS
Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700

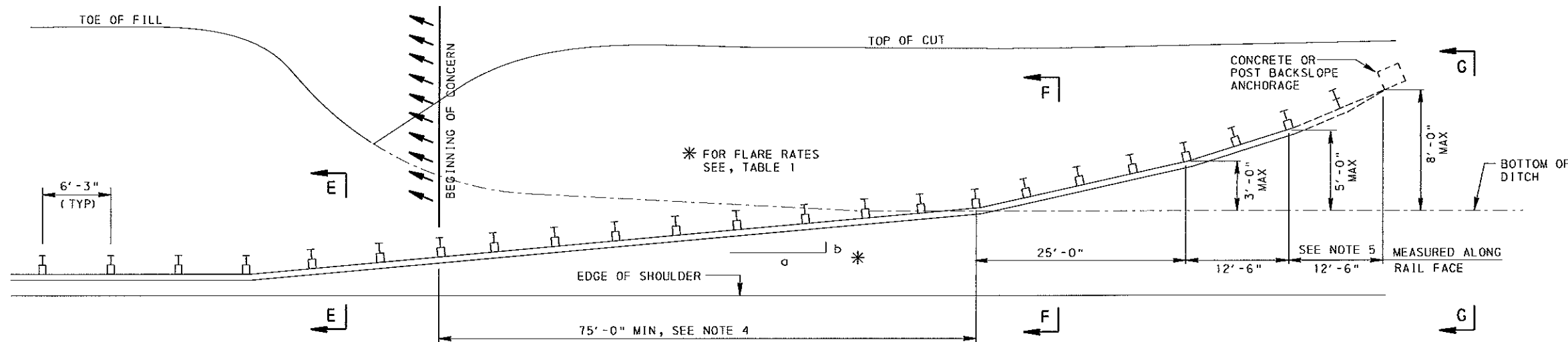
WEST CHESTER PIKE
(SR 0003)
MARPLE TOWNSHIP, DELAWARE COUNTY

REGISTERED PROFESSIONAL ENGINEER
DATE:

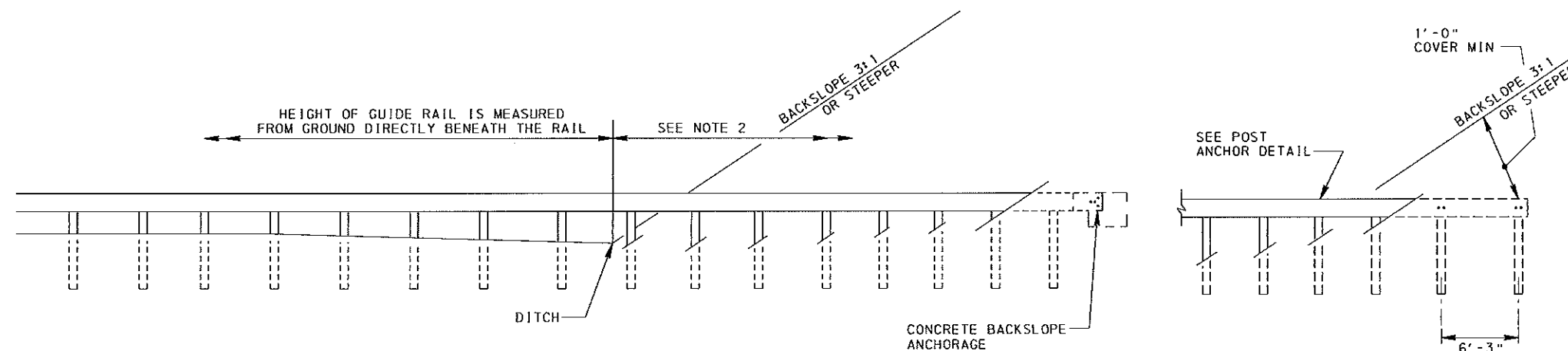
PennDOT EPS
Application #42543

DATE: NOVEMBER 6, 2013
PROJECT NUMBER: 2013-055

SHEET NUMBER
9 OF 62

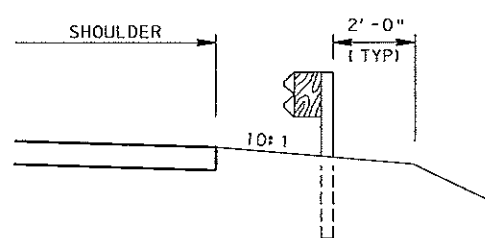


PLAN VIEW

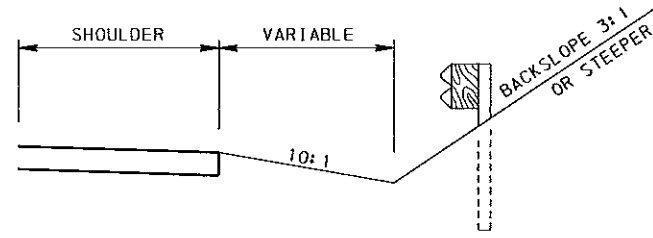


ELEVATION VIEW (PROFILE ALONG RAIL)

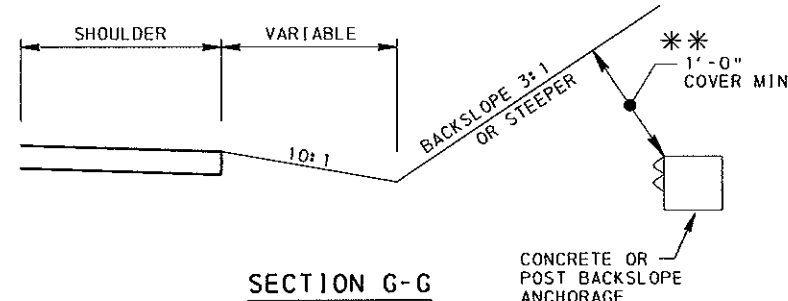
POST BACKSLOPE ANCHORAGE



SECTION E-E



SECTION F-F



SECTION G-G

** ROCK ANCHORAGE DOES NOT REQUIRE THE 1'-0" BURIAL.

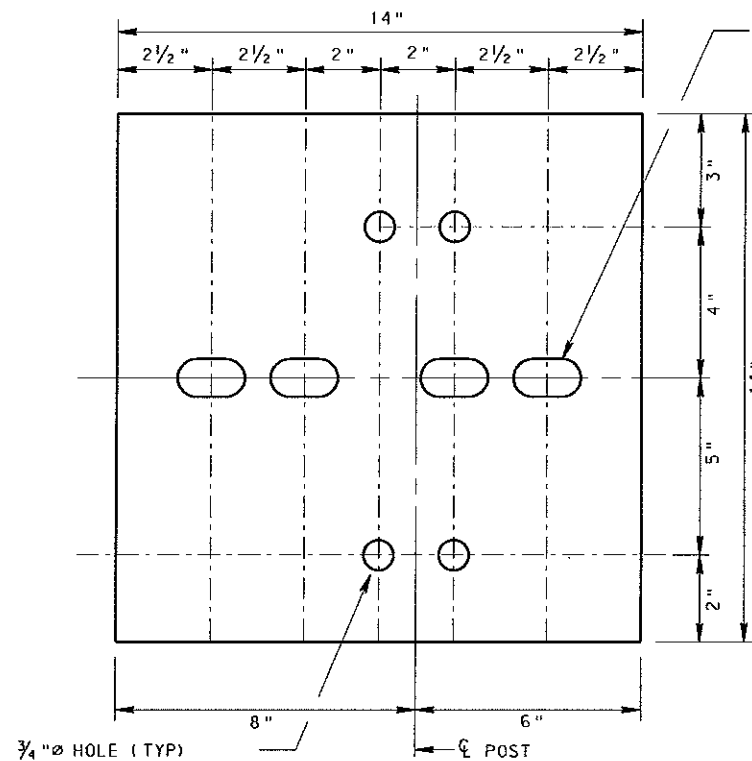
NOTES

1. THE HEIGHT OF TOP OF THE W-BEAM RAIL IS HELD CONSTANT RELATIVE TO THE ROADWAY PROFILE GRADE.
2. HEIGHT OF GUIDE RAIL MAY BE TAPERED DOWN AFTER CROSSING DITCH BOTTOM TO ACHIEVE 1'-0" OF COVER OVER THE ANCHOR TERMINAL.
3. WHEN THE GUIDE RAIL LENGTH OF NEED FALLS NEAR A CUT TO FILL SLOPE, THE PREFERRED TREATMENT IS TO ANCHOR THE GUIDE RAIL TO THE CUT SLOPE.
4. PROVIDE 75'-0" MINIMUM FROM WHERE THE GUIDE RAIL CROSSES THE SWALE LINE TO THE BEGINNING OF THE CONCERN.
5. BACKSLOPE ANCHOR TERMINAL PAY LIMIT INCLUDES THE CONCRETE OR POST ANCHORAGE, 12'-6" OF RAIL ELEMENT AND HARDWARE.

TABLE 1
FLARE RATES FOR BARRIER DESIGN

DESIGN SPEED		MAXIMUM FLARE RATES	
		CONCRETE BARRIER	GUIDE RAIL
110	70	20 : 1	15 : 1
105	65	19 : 1	15 : 1
100	60	18 : 1	14 : 1
90	55	16 : 1	12 : 1
80	50	14 : 1	11 : 1
70	45	12 : 1	10 : 1
65	40	11 : 1	9 : 1
60	35	10 : 1	8 : 1
50	30	8 : 1	7 : 1

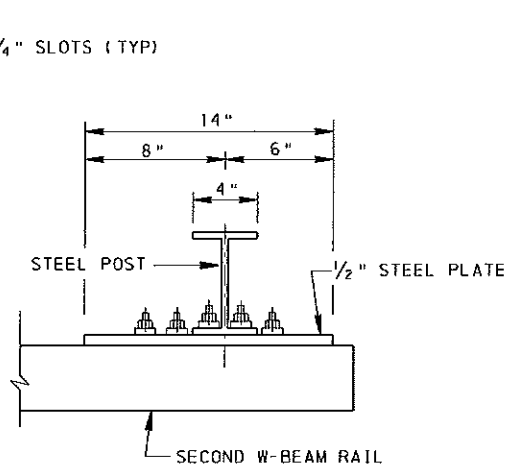
NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
DETAILS		
 Orth - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700		
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY		
DESIGNED BY: GRS DRAWN BY: LBW CHECKED BY: TGS	REGISTERED PROFESSIONAL ENGINEER DATE:	PennDOT EPS Application #42543 DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-055
SHEET NUMBER		10 OF 62



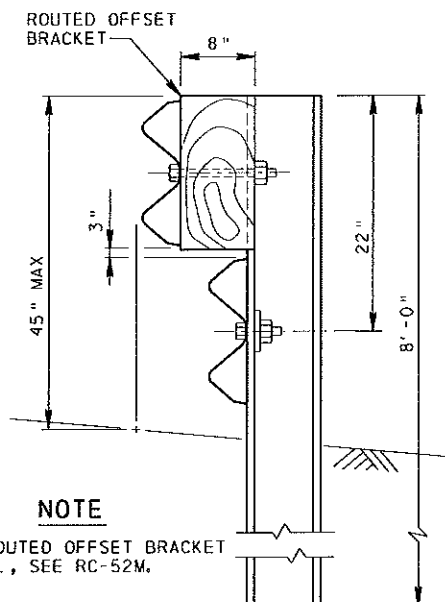
3/4" Ø HOLE (TYP)
ONLY IF PLATE IS BOLTED
TO POSTS.

STEEL PLATE - 1/2"

GALVANIZED
WELDED OR BOLTED TO POST

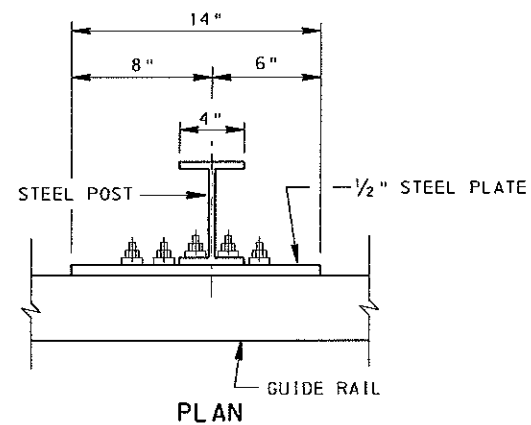


PARTIAL PLAN

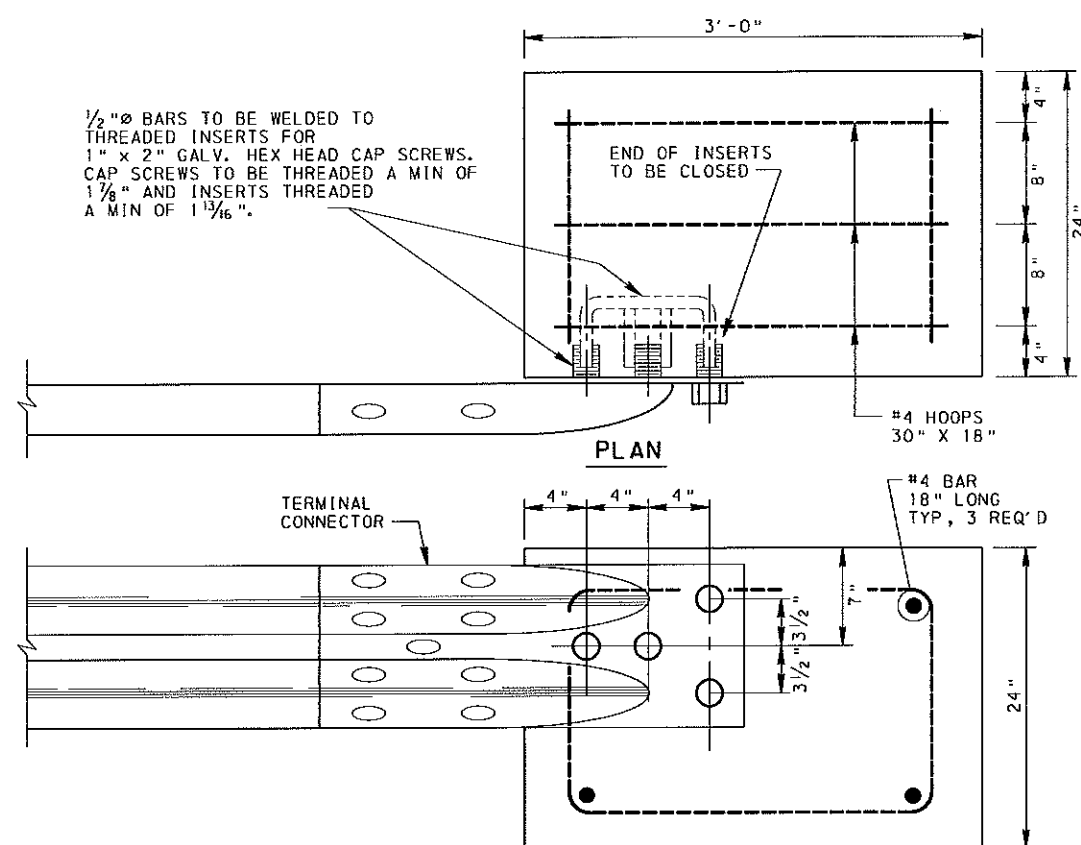


NOTE
1. FOR ROUTED OFFSET BRACKET
DETAIL, SEE RC-52M.

TYPICAL ELEVATION
STEEL POST
W6 x 8.5

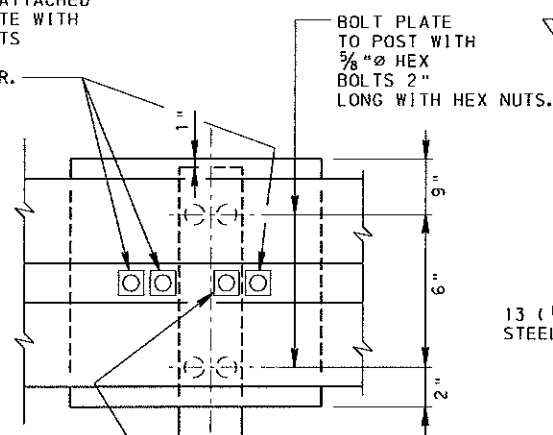


PLAN

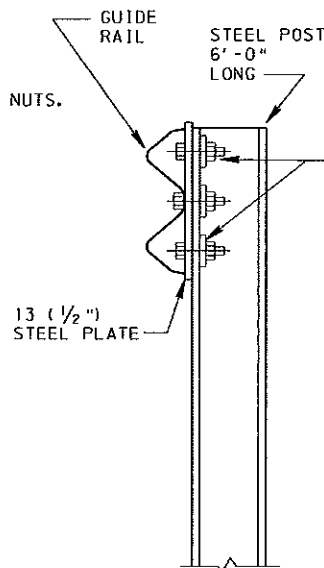


ELEVATION
CONCRETE BLOCK ANCHOR

1" Ø HOLES TO
BE FIELD DRILLED
IN RAIL AND ATTACHED
TO STEEL PLATE WITH
5/8" Ø HEX BOLTS
2" LONG WITH
SQUARE WASHER.



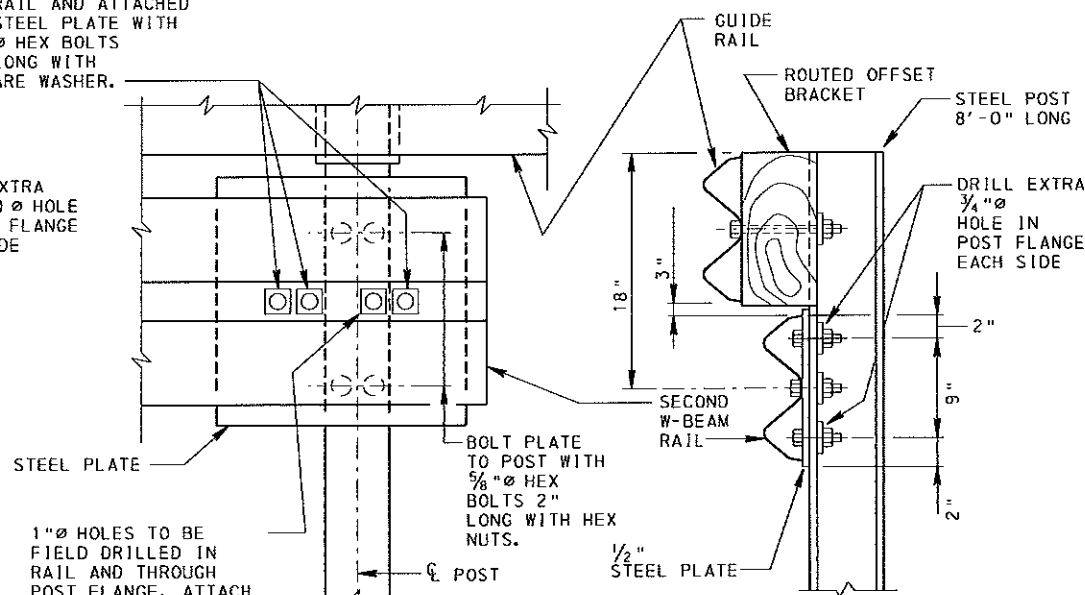
FRONT VIEW



ELEVATION

1" Ø HOLES TO
BE FIELD DRILLED
IN RAIL AND ATTACHED
TO STEEL PLATE WITH
5/8" Ø HEX BOLTS
2" LONG WITH
SQUARE WASHER.

DRILL EXTRA
20 (3/4") Ø HOLE
IN POST FLANGE
EACH SIDE

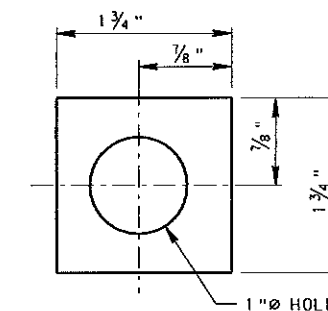


FRONT VIEW

ELEVATION

1" Ø HOLES TO BE
FIELD DRILLED IN
RAIL AND THROUGH
POST FLANGE. ATTACH
TO STEEL PLATE WITH
5/8" Ø HEX BOLTS
2" LONG WITH
SQUARE WASHER.

W-BEAM RAIL ATTACHMENT

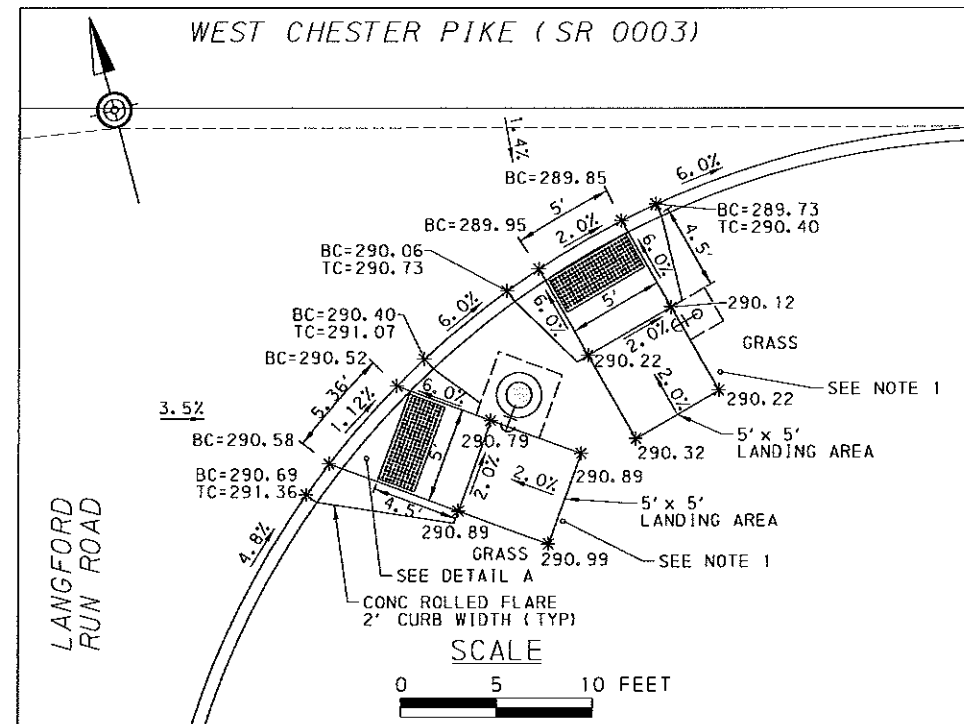


SQUARE WASHER
1/4" THICK - GALVANIZED

DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

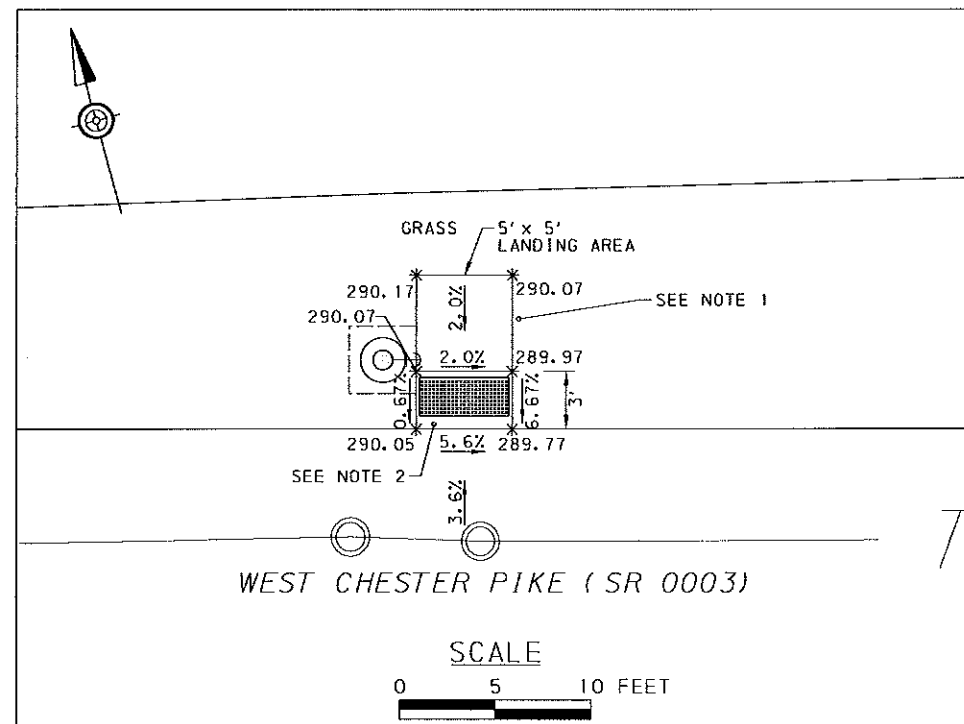
NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
DETAILS		
OR&A Orth - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700		
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY		
REGISTERED PROFESSIONAL ENGINEER	PennDOT EPS Application #42543	DATE: NOVEMBER 5, 2013
DATE:	PROJECT NUMBER: 2013-065	SHEET NUMBER: 11 OF 62

CURB RAMP DETAILS



CURB RAMP #1 - INSTALL PUSH BUTTON ON MAST ARM 6" EXTENSION (5" REACH)
CURB RAMP #2 - INSTALL PUSH BUTTON ON STUB POLE 0" EXTENSION (8" REACH)

CURB RAMP LOCATIONS #1 & #2



INSTALL PUSH BUTTON ON MAST ARM 6" EXTENSION (6" REACH)

CURB RAMP LOCATION #3

LEGEND

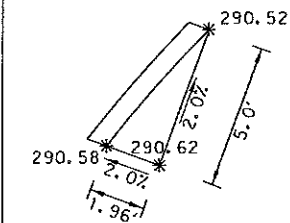
----- DWS

BC - BOTTOM OF CURB ELEVATION

TC - TOP OF CURB ELEVATION

 - TRAFFIC SIGNAL POLE WITH PEDESTRIAN PUSH BUTTON

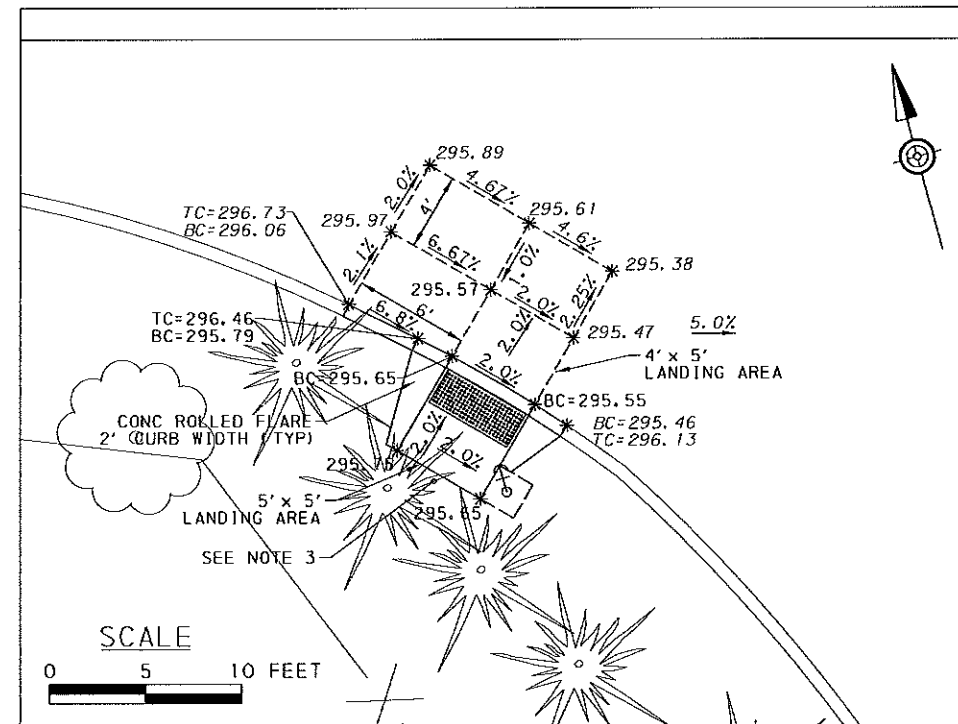
④ - PEDESTRIAN STUB POLE WITH PEDESTRIAN PUSH BUTTON



DETAIL A

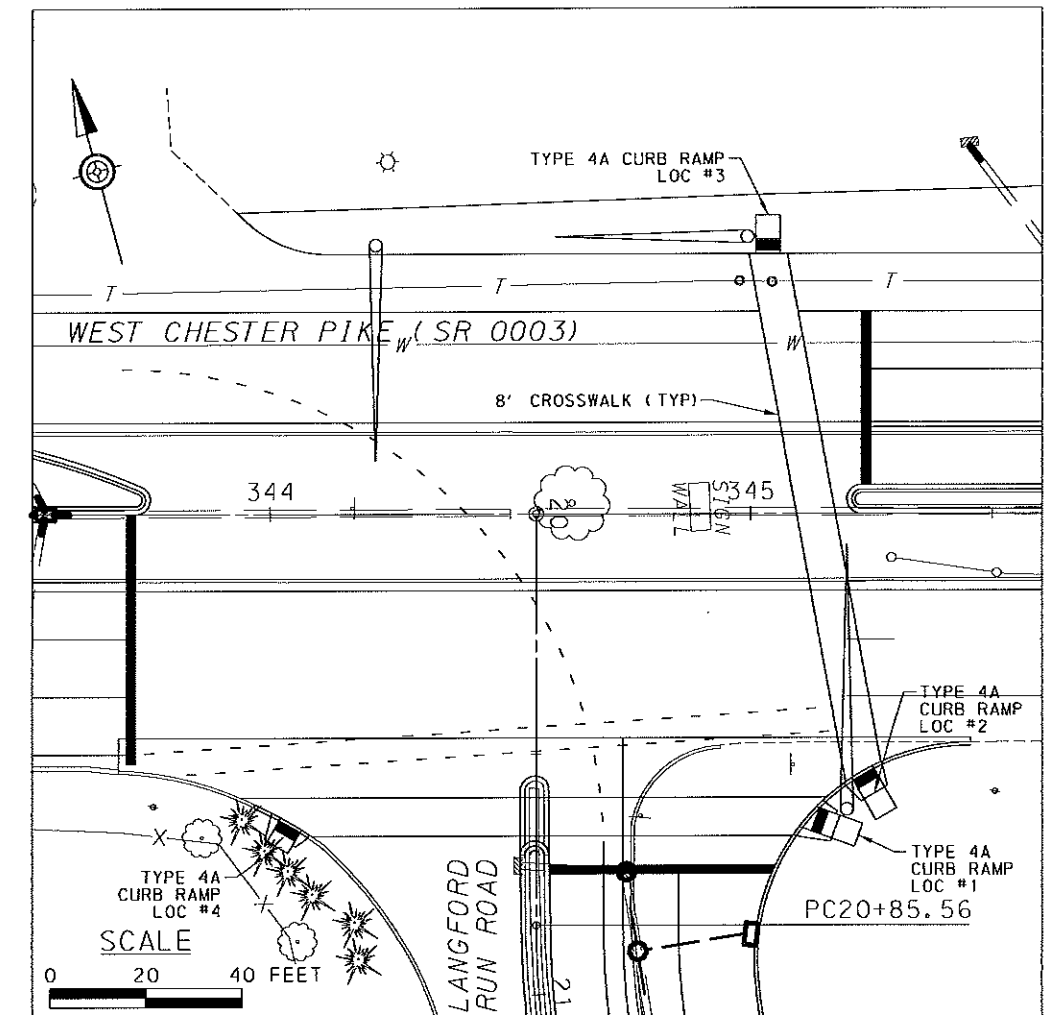
NOTES

1. GRADE AROUND CURB RAMP AT MAXIMUM SLOPE OF 3:1.
2. INSTALL DWS MINIMUM 8" FROM EDGE OF SHOULDER.
3. GRADE AROUND CURB RAMP AT MAXIMUM SLOPE OF 2:1.
4. CURB RAMPS MUST MEET REQUIREMENTS OF RC-67M.
5. ALL PROPOSED PEDESTRIAN FACILITIES REFLECTED ON THESE PLANS, THAT ARE OUTSIDE OF PENNDOT LEGAL RIGHT-OF-WAY, SHALL BE CONSTRUCTED TO COMPLY WITH THE REQUIREMENTS OF THE U.S. ACCESS BOARD, PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) AND THE 2010 ADA STANDARDS. PENNDOT DESIGN MANUAL PART 2, CHAPTER 6, AND PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION (PUBLICATION 72M, RC-67M) PROVIDE GUIDANCE ON ADA ACCESSIBLE DESIGN FOR PEDESTRIAN FACILITIES AND CAN BE UTILIZED FOR REFERENCE.



INSTALL PUSH BUTTON ON STUB POLE 0" EXTENSION (8" REACH)

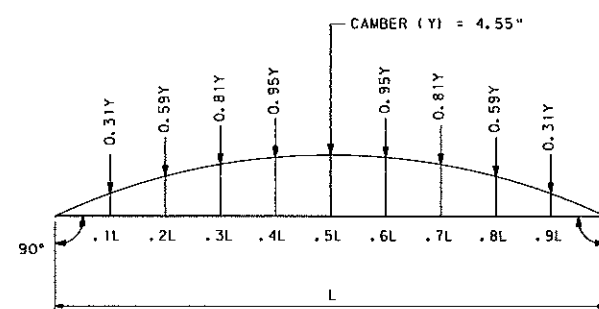
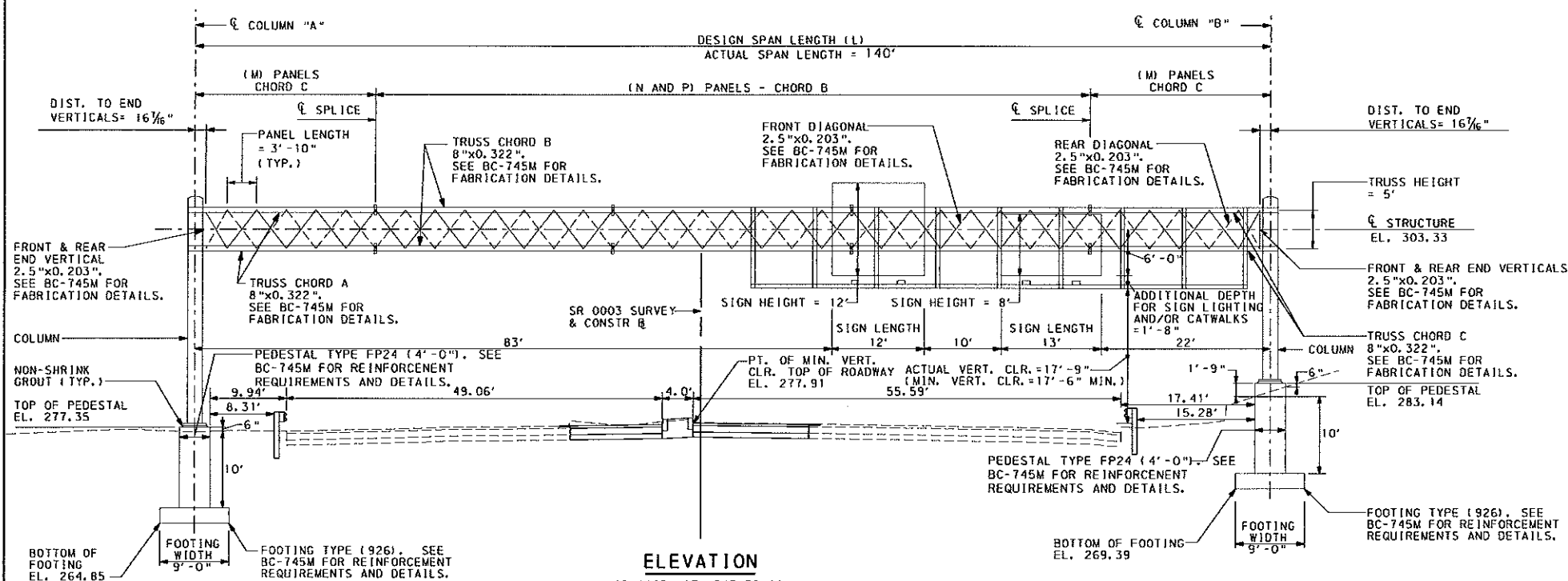
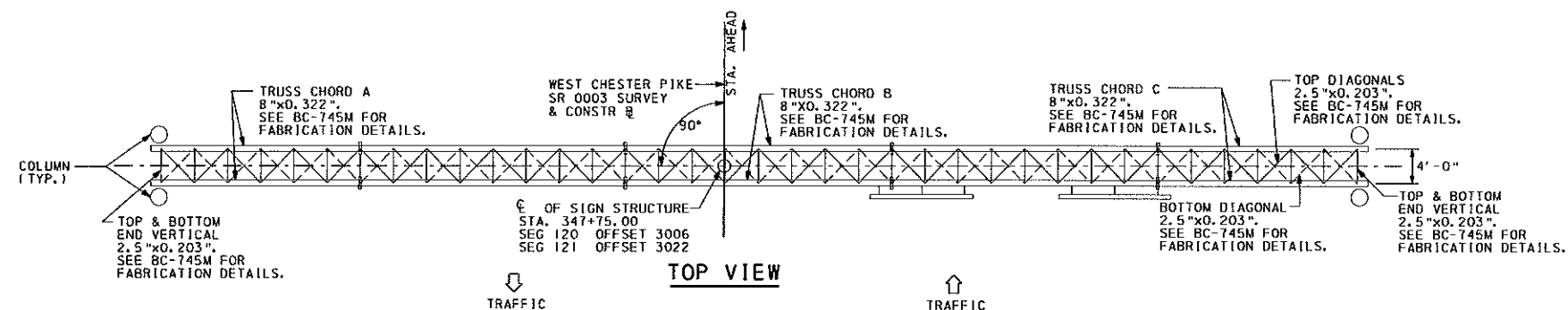
CURB RAMP LOCATION #4



WEST CHESTER PIKE (SR 0003) AND LANGFORD RUN ROAD
CURB RAMP LOCATIONS #1 TO #4

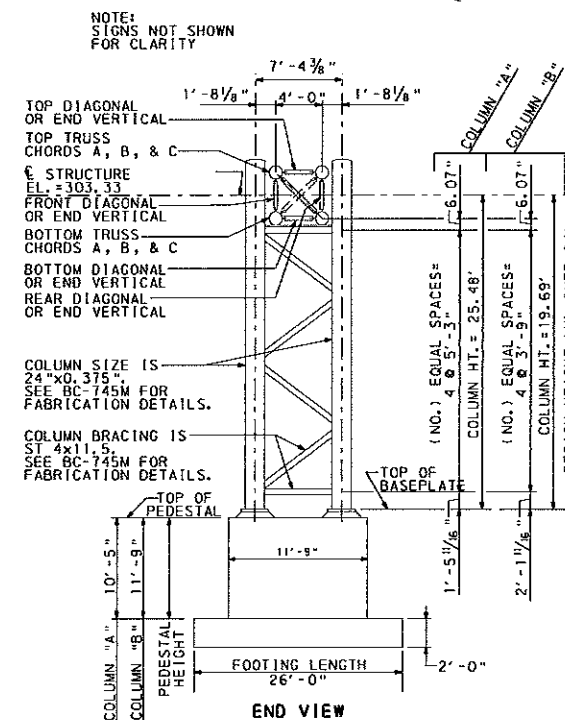
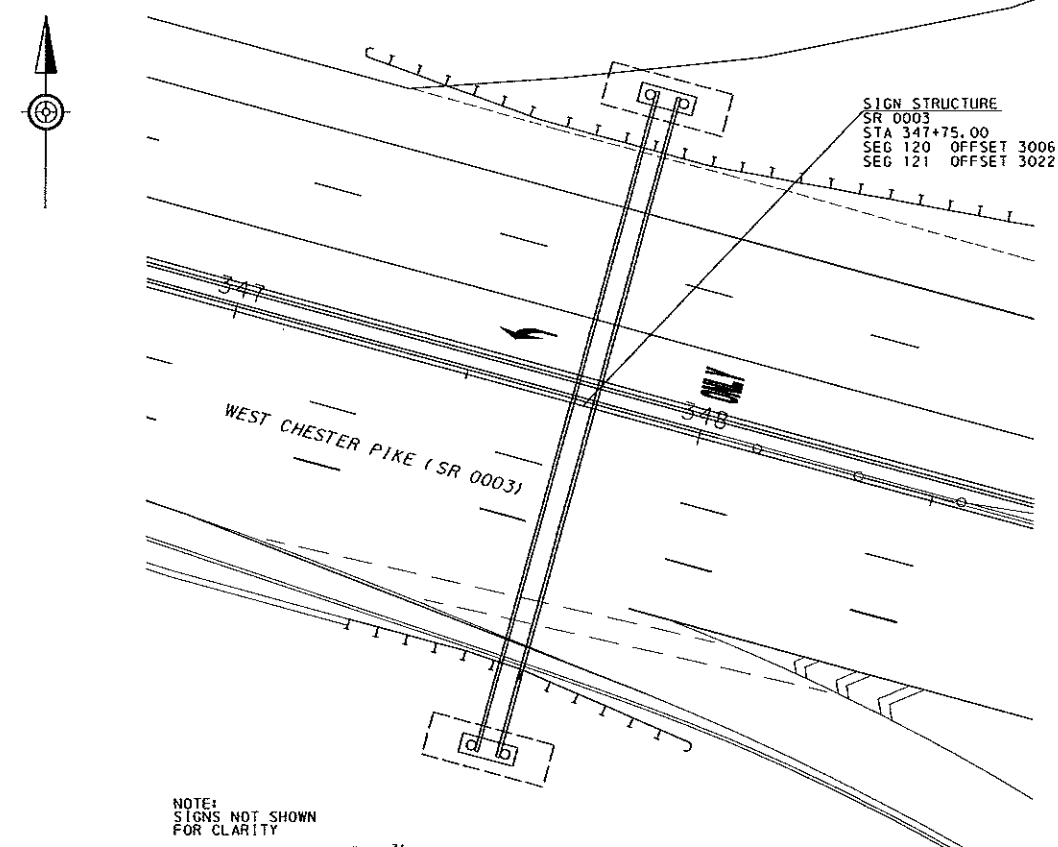
DESIGNED BY: <u>GRS</u> DRAWN BY: <u>LBW</u> CHECKED BY: <u>TGS</u>	NO.	REVISION	DATE
	1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
	CURB RAMP DETAILS		
			
	Orth – Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office #301 Lindenvood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700		
	WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY		
REGISTERED PROFESSIONAL ENGINEER DATE:	PennDOT EPS Application #42543	DATE: NOVEMBER 5 2013 PROJECT NUMBER: 2013-065	SHEET NUMBER 12 OF 62

SIGN AREA (A) = 600 SF
SPAN LENGTH (L) = 140'
STRUCTURE HEIGHT (H) = >24'
LOADING TYPE = 2
FATIGUE CATEGORY = II



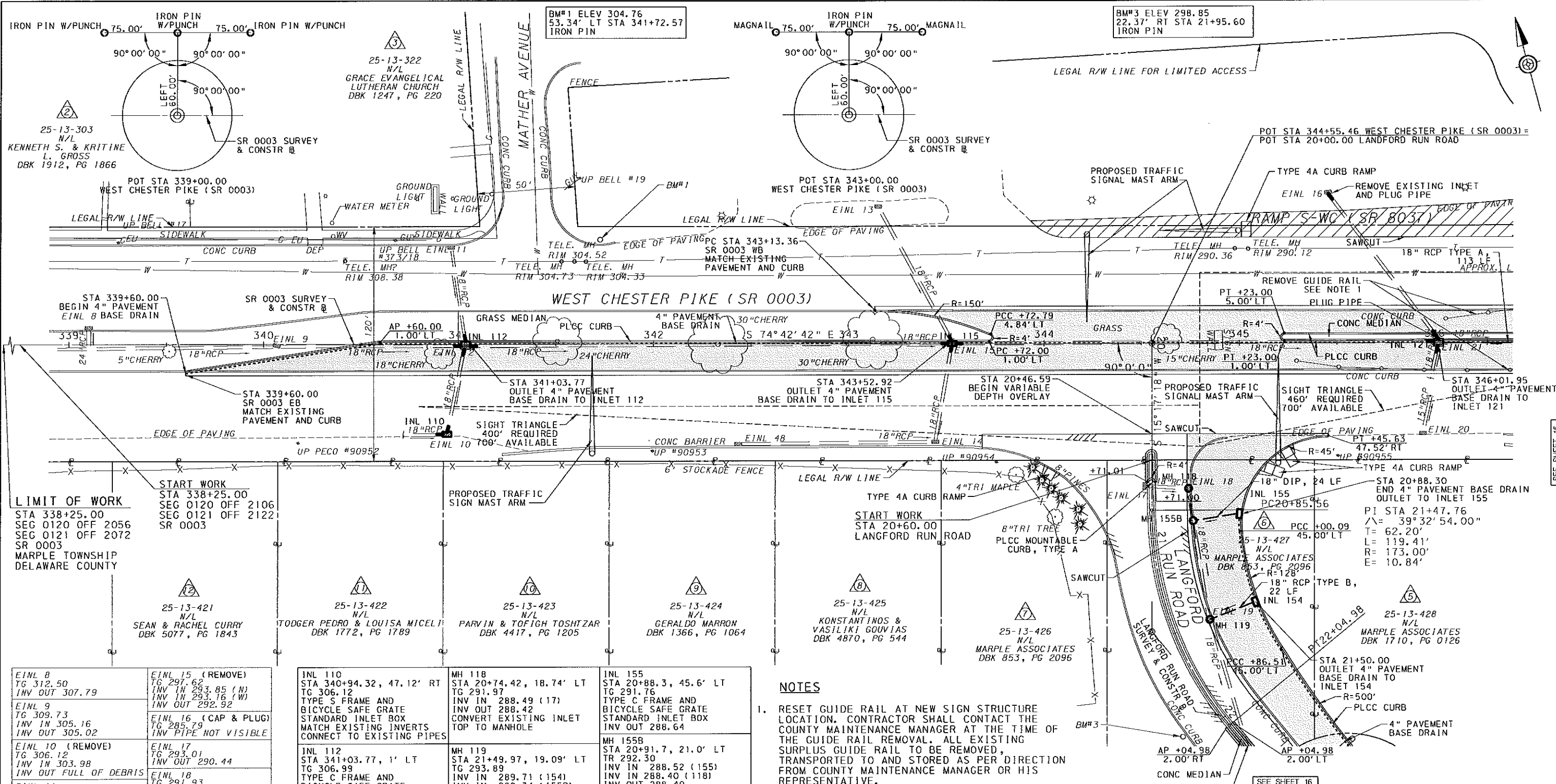
CAMBER DIAGRAM

NOTE: PRIOR TO SHIPMENT OF TRUSS STRUCTURE TO THE SITE, SHOP ASSEMBLE TRUSSES IN AN UPRIGHT POSITION AND CHECK TRUSS CAMBER.



S -	NO.	REVISION	DATE
	1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
DESIGNED BY: <u>GRS</u>	OVERHEAD SIGN STRUCTURE		
DRAWN BY: <u>LBW</u>			
CHECKED BY: <u>TGS</u>			
	 Orth - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office • 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700		
	WEST CHESTER PIKE (SR 0003)		
	MARPLE TOWNSHIP, DELAWARE COUNTY		
REGISTERED PROFESSIONAL ENGINEER DATE: _____	PennDOT EPS Application #42543	DATE: NOVEMBER 5, 2013	SHEET NUMBER 13 OF 62
		PROJECT NUMBER: 2013-065	

11/15/2014 2:10:57 PM
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LIMIT OF WORK
STA 338+25.00
SEG 0120 OFF 2056
SEG 0121 OFF 2122
SR 0003
MARPLE TOWNSHIP
DELAWARE COUNTY

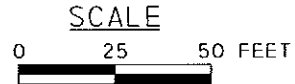
EINL 8 TG 312.50 INV OUT 307.79	EINL 15 (REMOVE) TG 297.62 INV IN 293.85 (N) INV IN 293.16 (W) INV OUT 292.92
EINL 9 TG 309.73 INV IN 305.16 INV OUT 305.02	EINL 16 (CAP & PLUG) TG 285.79 INV PIPE NOT VISIBLE
EINL 10 (REMOVE) TG 306.12 INV IN 303.98 INV OUT FULL OF DEBRIS	EINL 17 TG 293.01 INV OUT 290.44
EINL 11 TG 306.15 INV FILLED W/ DEBRIS	EINL 18 TG 291.93 INV IN 288.49 INV OUT 288.42
EINL 12 (REMOVE) TG 306.64 INV IN 302.62 (N) INV IN 302.30 (W) INV IN 302.40 (S) INV OUT 302.26	EINL 19 TG 293.84 INV IN 288.34 INV OUT 288.27
EINL 13 TG 297.68 INV OUT 296.05	EINL 20 TG 285.72 INV OUT 282.09
EINL 14 TG 298.02 INV IN 294.76 INV OUT 294.64	EINL 21 (REMOVE) TG 285.28 INV IN 281.13 (S) INV IN 280.93 (W) INV OUT 280.70
	EINL 4B TG 302.14 INV OUT 297.41

INL 110 STA 340+94.32, 47.12' RT TG 306.12 TYPE S FRAME AND BICYCLE SAFE GRATE STANDARD INLET BOX MATCH EXISTING INVERTS CONNECT TO EXISTING PIPES	MH 118 STA 20+74.42, 18.74' LT TG 291.97 INV IN 288.49 (17) INV OUT 288.42 CONVERT EXISTING INLET TOP TO MANHOLE
INL 112 STA 341+03.77, 1' LT TG 306.99 TYPE C FRAME AND BICYCLE SAFE GRATE TYPE 4 INLET BOX INV IN 302.62 (11) INV IN 302.30 (9) INV IN 302.40 (110) INV OUT 302.26 CONNECT TO EXISTING PIPES	MH 119 STA 21+49.97, 19.09' LT TG 293.89 INV IN 289.71 (154) INV IN 288.34 (155B) INV OUT 288.27 CONVERT EXISTING INLET TOP TO MANHOLE
INL 115 STA 343+52.92, 1' LT TG 298.01 TYPE C FRAME AND BICYCLE SAFE GRATE STANDARD INLET BOX INV IN 293.85 (13) INV IN 293.16 (112) INV OUT 292.92 CONNECT TO EXISTING PIPES	INL 121 STA 346+01.94, 1' LT TG 285.94 TYPE C FRAME AND BICYCLE SAFE GRATE TYPE 4 INLET BOX INV IN 281.13 (20) INV IN 280.93 (115) INV OUT 280.70 CONNECT TO EXISTING PIPES
INL 154 STA 21+50.00, 45.00' LT TG 293.37 TYPE C FRAME AND BICYCLE SAFE GRATE STANDARD INLET BOX INV OUT 289.93	

LEGEND

- LIMIT OF FULL DEPTH PAVEMENT
- PAVEMENT REMOVAL
- MILL AND OVERLAY
- OVERLAY

- NOTES**
- RESET GUIDE RAIL AT NEW SIGN STRUCTURE LOCATION. CONTRACTOR SHALL CONTACT THE COUNTY MAINTENANCE MANAGER AT THE TIME OF THE GUIDE RAIL REMOVAL. ALL EXISTING SURPLUS GUIDE RAIL TO BE REMOVED, TRANSPORTED TO AND STORED AS PER DIRECTION FROM COUNTY MAINTENANCE MANAGER OR HIS REPRESENTATIVE.
 - REMOVE ALL CONFLICTING TREES FROM SR 0003 MEDIAN FROM STA 340+00 TO STA 350+00.
 - INSTALL EROSION CONTROL MULCH BLANKET ON ALL DISTURBED SWALES. SEED DISTURBED SWALES WITH SEEDING AND SOIL SUPPLEMENTS - FORMULA D.

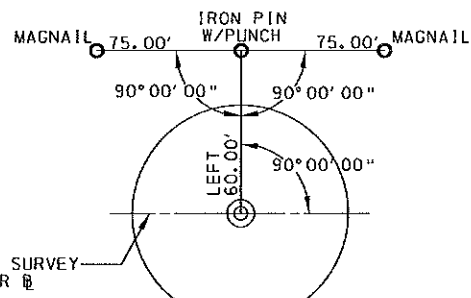


CONSTRUCTION PLAN

DESIGNED BY: GRS	NO.	REVISION	DATE
DRAWN BY: LBW	1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
CHECKED BY: TGS	CONSTRUCTION PLAN		
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY			
REGISTERED PROFESSIONAL ENGINEER	Permit DOT EPS Application #42543	DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-065	SHEET NUMBER 14 OF 62

1/15/2014 2:11:00 PM
FILENAME: F:\2013\065_Marple_Cty_HRP_CADD\CONSTR\14_CONSTR1.dgn

BM#2 ELEV 266.55
55.97' LT STA 350+11.19
IRON PIN



SR 0003 SURVEY
& CONSTR

POT STA 348+00.00
WEST CHESTER PIKE (SR 0003)
PT +89.99
52.00' LT
R=44'

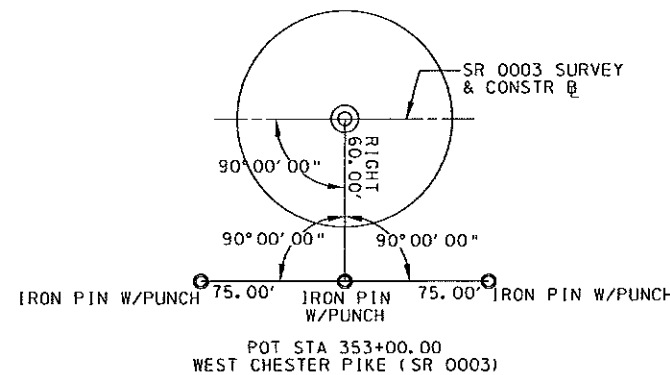
PI STA 352+26.64
Δ= 0°26'02.20"
T= 43.39'
L= 86.79'
R= 11459.16'
E= 0.08'

START WORK
STA 10127+60.00
SEC 0510 OFF 1240
SR 8037

SIGHT TRIANGLE
400' REQUIRED
800' AVAILABLE

WEST CHESTER PIKE
(SR 0003)

LIMIT OF WORK
STA 352+70.00
SEG 0120 OFF 3501
SEG 0121 OFF 3517
SR 0003
MARPLE TOWNSHIP
DELAWARE COUNTY



NOTES

- RESET GUIDE RAIL AT NEW SIGN STRUCTURE LOCATION. CONTRACTOR SHALL CONTACT THE COUNTY MAINTENANCE MANAGER AT THE TIME OF THE GUIDE RAIL REMOVAL. ALL EXISTING SURPLUS GUIDE RAIL TO BE REMOVED, TRANSPORTED TO AND STORED AS PER DIRECTION FROM COUNTY MAINTENANCE MANAGER OR HIS REPRESENTATIVE.
- REMOVE ALL CONFLICTING TREES FROM SR 0003 MEDIAN FROM STA 340+00 TO STA 350+00.
- INSTALL EROSION CONTROL MULCH BLANKET ON ALL DISTURBED SWALES. SEED DISTURBED SWALES WITH SEEDING AND SOIL SUPPLEMENTS - FORMULA D.
- REMOVE PORTION OF WALL NEEDED TO INSTALL NEW SIGN STRUCTURE FOUNDATION. REGRADE AREA AROUND NEW STRUCTURE AND INCLUDE NEW GUIDE RAIL

LEGEND

- LIMIT OF FULL DEPTH PAVEMENT
- PAVEMENT REMOVAL
- MILL AND OVERLAY
- OVERLAY

SCALE

0 25 50 FEET

EINL 22 TG 276.42 NO PIPE VISIBLE	EINL 29 TG 259.69 INV IN 257.65
EINL 23 (REMOVE) TG 276.78 INV IN 270.22 INV OUT 269.25	EINL 30 TG 257.02 INV OUT 253.88
EINL 24 TG 276.72 INV GRATE FILLED W/ CONC	EINL 31 TG 250.35 INV OUT 247.67
EINL 25 TG 263.31 INV OUT 261.28	EINL 32 TG 250.45 INV IN 247.30 (S) INV IN 245.39 (W) INV OUT 245.07
EINL 26 TG 265.52 INV IN 260.53 (W) INV IN 260.41 (N) INV OUT 259.10	EINL 33 TG 249.53 INV IN 242.58 INV OUT 242.31
EINL 27 TG 263.88 INV IN 258.56 INV OUT 258.26	EINL 49 TG 273.83 INV OUT 268.65
EINL 28 TG 261.55 INV IN 257.65 INV OUT 257.47	

INL 102 STA 347+15.00, 1' LT TG 280.43 TYPE C FRAME AND BICYCLE SAFE GRATE STANDARD INLET BOX INV IN 274.49 INV OUT 274.32
MH 123 STA 347+87.41, 7.42' LT TG 277.18 INV IN 270.22 (102) INV IN 270.22 (22) INV OUT 269.25 CONNECT TO EXISTING PIPES
MH 125 STA 350+69.56, 8.81' LT TG 265.20 INV IN 260.53 (123) INV IN 260.41 (25) INV OUT 259.10 CONVERT EXISTING INLET TO MANHOLE

DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

REGISTERED
PROFESSIONAL ENGINEER
DATE:

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-16-2014

CONSTRUCTION PLAN

OR&A

Orth - Rodgers & Associates, Inc.
TRANSPORTATION ENGINEERS AND PLANNERS

Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700

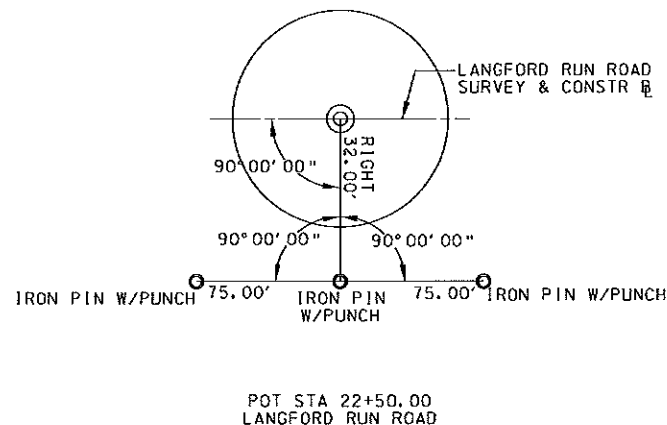
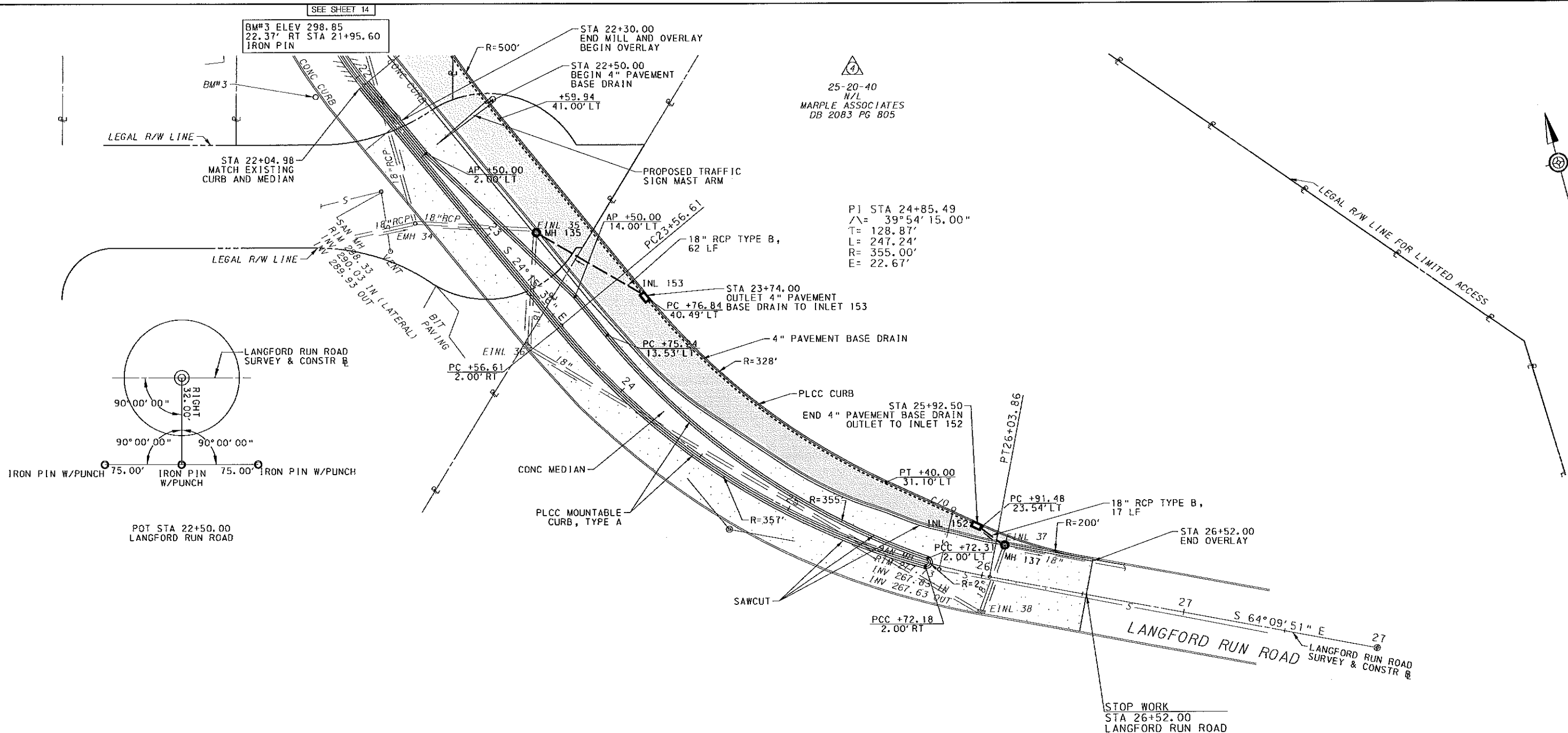
WEST CHESTER PIKE
(SR 0003)

MARPLE TOWNSHIP, DELAWARE COUNTY

PennDOT EPS
Application #42543

DATE: NOVEMBER 5, 2013
PROJECT NUMBER: 2013-065

SHEET NUMBER
15 OF 62



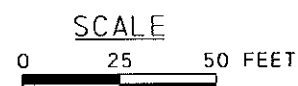
EMH 34 RIM 297.99 INV IN 291.19 INV IN 286.79 INV OUT 286.69
EINL 35 TG 295.66 INV IN 284.76 INV OUT 284.71
EINL 36 TG 293.91 INV IN 283.27 INV OUT 283.16
EINL 37 TG 275.20 INV IN 269.77 INV OUT 269.61
EINL 38 TG 275.75 INV IN 271.16 INV OUT 271.12

MH 135 STA 23+13.97, 19.05' LT TG 295.77 INV IN 287.62 (153) INV IN 284.76 (34) INV OUT 284.71 CONVERT EXISTING INLET TOP TO MANHOLE
MH 137 STA 26+08.31, 16.60' LT TG 275.33 INV IN 271.75 (152) INV IN 269.77 (38) INV OUT 269.61 CONVERT EXISTING INLET TOP TO MANHOLE

INL 152 STA 25+92.50, 24.14' LT TG 276.27 TYPE C FRAME AND BICYCLE SAFE GRATE STANDARD INLET BOX INV OUT 272.60
INL 153 STA 23+74.00, 40.62' LT TG 291.98 TYPE C FRAME AND BICYCLE SAFE GRATE STANDARD INLET BOX INV OUT 288.24

LEGEND

- LIMIT OF FULL DEPTH PAVEMENT
- PAVEMENT REMOVAL
- MILL AND OVERLAY
- OVERLAY



DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014

CONSTRUCTION PLAN

OR&A Orth - Rodgers & Associates, Inc.
TRANSPORTATION ENGINEERS and PLANNERS
Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700

WEST CHESTER PIKE
(SR 0003)

MARPLE TOWNSHIP, DELAWARE COUNTY

REGISTERED
PROFESSIONAL ENGINEER
DATE:

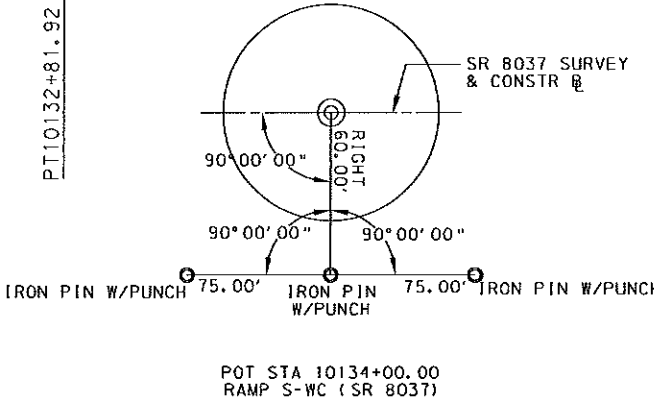
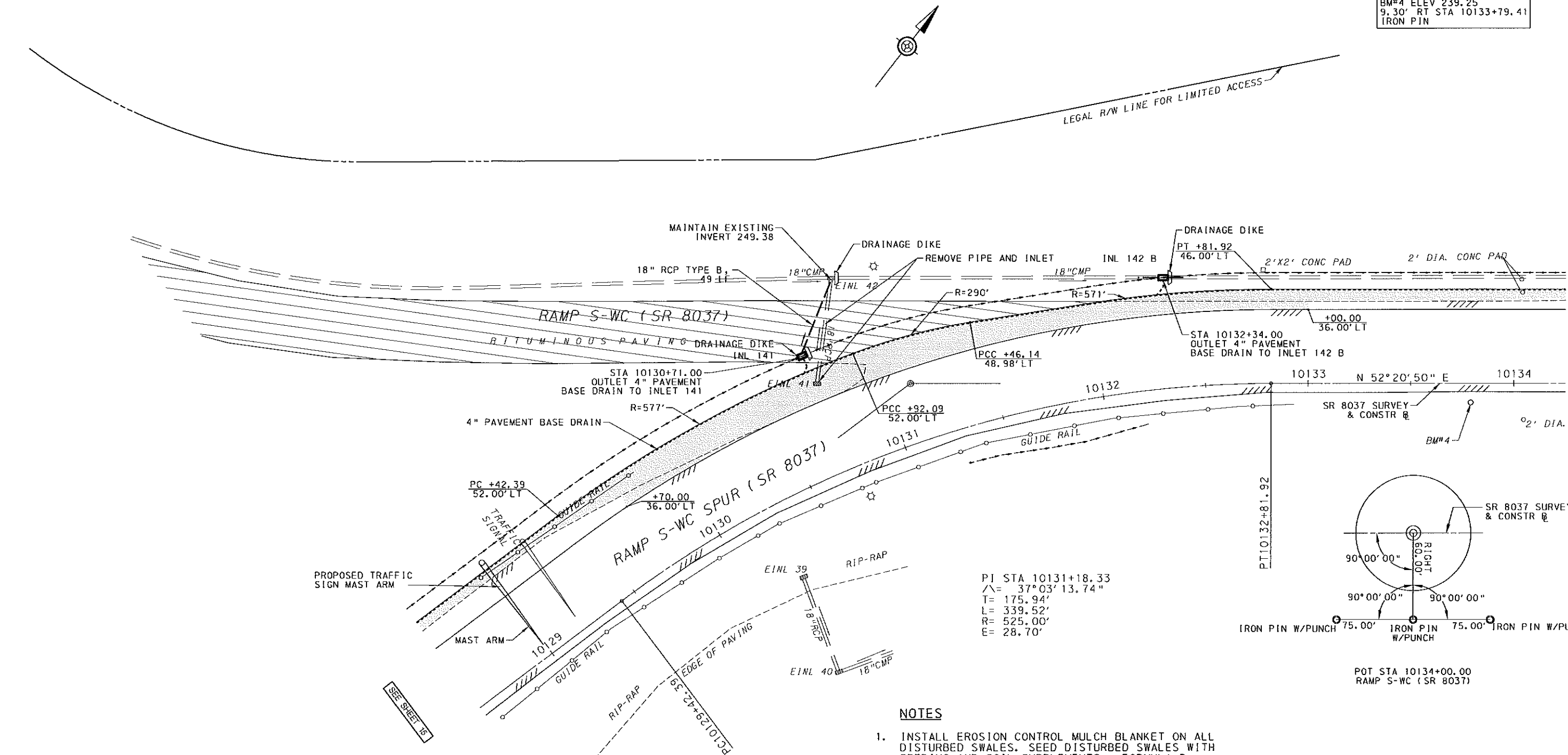
PennDOT EPS
Application #42543

DATE: NOVEMBER 5, 2013
PROJECT NUMBER: 2013-065

SHEET NUMBER
16 OF 62

CONSTRUCTION PLAN

BM#4 ELEV 239.25
9.30' RT STA 10133+79.41
IRON PIN



NOTES

1. INSTALL EROSION CONTROL MULCH BLANKET ON ALL DISTURBED SWALES. SEED DISTURBED SWALES WITH SEEDING AND SOIL SUPPLEMENTS - FORMULA D.
2. ALL EXISTING SURPLUS GUIDE RAIL TO BE REMOVED, TRANSPORTED TO AND STORED AS PER DIRECTION FROM COUNTY MAINTENANCE MANAGER OR HIS REPRESENTATIVE.

LEGEND

- LIMIT OF FULL DEPTH PAVEMENT
- PAVEMENT REMOVAL
- MILL AND OVERLAY
- OVERLAY

SCALE

0 25 50 FEET

EINL 39
TG 245.79
INV OUT 239.85
EINL 40
TG 243.22
INV IN 238.54
INV OUT 237.49
EINL 41
TG 254.32
INV OUT 249.63
EINL 42
TG 252.42
INV IN 249.22 (W)
INV IN 249.38 (S)
INV OUT 249.10

INL 141
STA 10130+71.00, 60' LT
TG 253.45
TYPE M FRAME AND GRATE
STANDARD INLET BOX
INV OUT 249.63
INL 142B
STA 10132+34.00, 54' LT
TG 246.69
TYPE M FRAME AND GRATE
STANDARD INLET BOX
INV IN 241.52
INV OUT 241.32
CONNECT TO EXISTING PIPE

DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

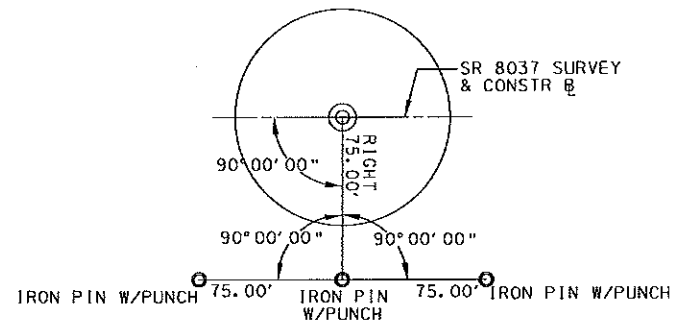
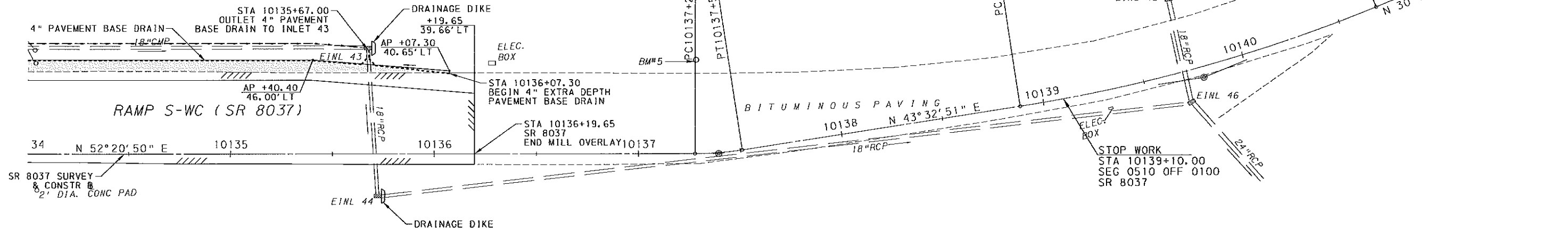
REGISTERED
PROFESSIONAL ENGINEER
DATE:

NO.	REVISION	DATE
	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
CONSTRUCTION PLAN		
OR&A Orth - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700		
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY		
REGISTERED PROFESSIONAL ENGINEER PennDOT EPS Application #42543	DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-055	SHEET NUMBER 17 OF 62

BM#5 ELEV 222.39
45.84' LT STA 10137+28.43
IRON PIN

PI STA 10137+39.35
 $\Delta = 8^\circ 47' 58.91''$
T= 11.54'
L= 23.04'
R= 150.00'
E= 0.44'

PJ STA 10139+79.41
 $\Delta = 13^\circ 17' 20.46''$
T= 90.86'
L= 180.91'
R= 780.00'
E= 5.27'



NOTES

1. INSTALL EROSION CONTROL MULCH BLANKET ON ALL DISTURBED SWALES. SEED DISTURBED SWALES WITH SEEDING AND SOIL SUPPLEMENTS - FORMULA D.

LEGEND

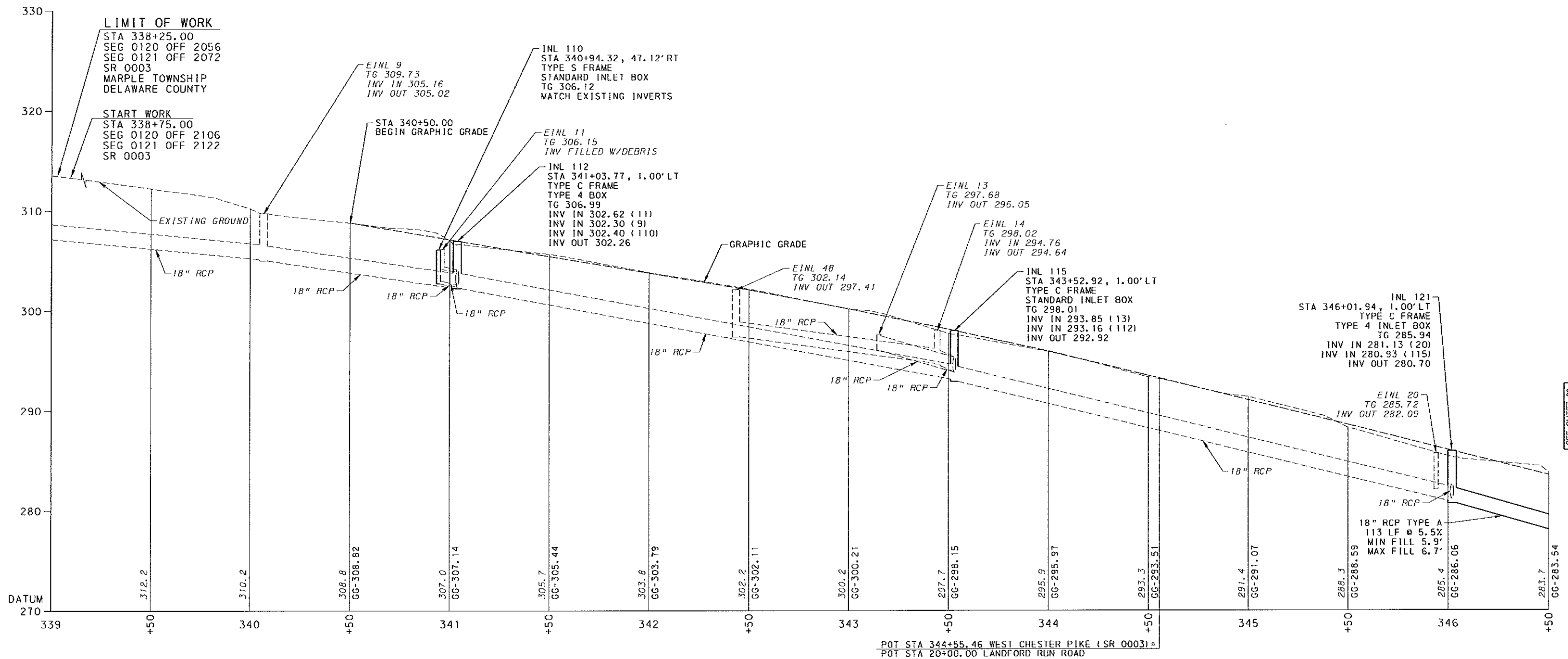
- LIMIT OF FULL DEPTH PAVEMENT
- PAVEMENT REMOVAL
- MILL AND OVERLAY
- OVERLAY

E1NL 43
TG 228.99
INV IN 225.46
INV OUT 225.15
E1NL 44
TG 228.47
INV IN 224.12
INV OUT 224.10
E1NL 45
TG 212.26
INV OUT 209.14
E1NL 46
TG 214.04
INV IN 210.34 (W)
INV IN 209.02 (N)
INV OUT 208.57

SCALE

0 25 50 FEET

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
CONSTRUCTION PLAN		
OR&A Orth - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700		
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY		
DESIGNED BY: GRS DRAWN BY: LBW CHECKED BY: TGS	PennDOT EPS Application #42543	DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-066
REGISTERED PROFESSIONAL ENGINEER DATE:		SHEET NUMBER 18 OF 62



WEST CHESTER PIKE (SR 0003)

DESIGNED BY: GRS
 DRAWN BY: LBW
 CHECKED BY: TGS

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014

PROFILE

OR&A Orth - Rodgers & Associates, Inc.
 TRANSPORTATION ENGINEERS and PLANNERS
 Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9100

WEST CHESTER PIKE (SR 0003)

MARPLE TOWNSHIP, DELAWARE COUNTY

REGISTERED
 PROFESSIONAL ENGINEER
 DATE: _____

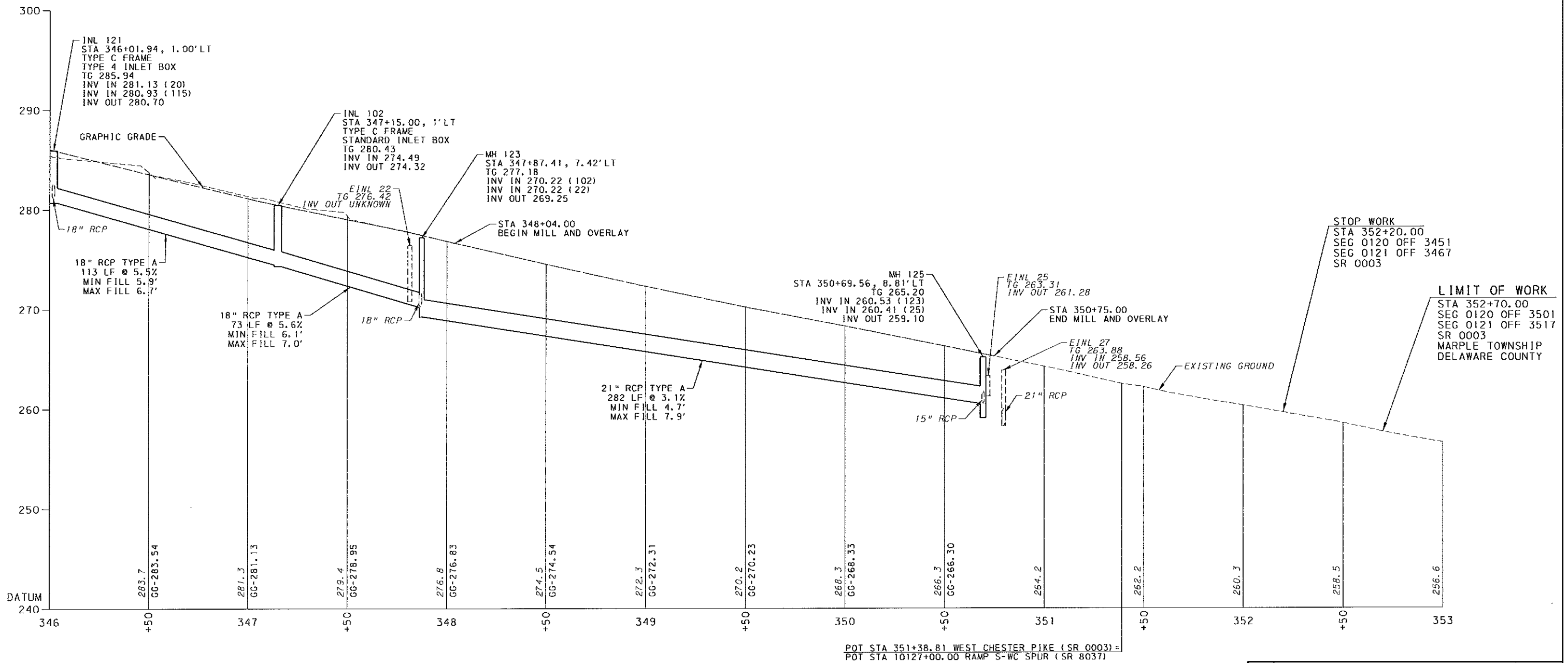
PennDOT EPS
 Application #42543

DATE: NOVEMBER 5, 2013
 PROJECT NUMBER: 2013-065

SHEET NUMBER
 19 OF 62

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SEE SHEET 19

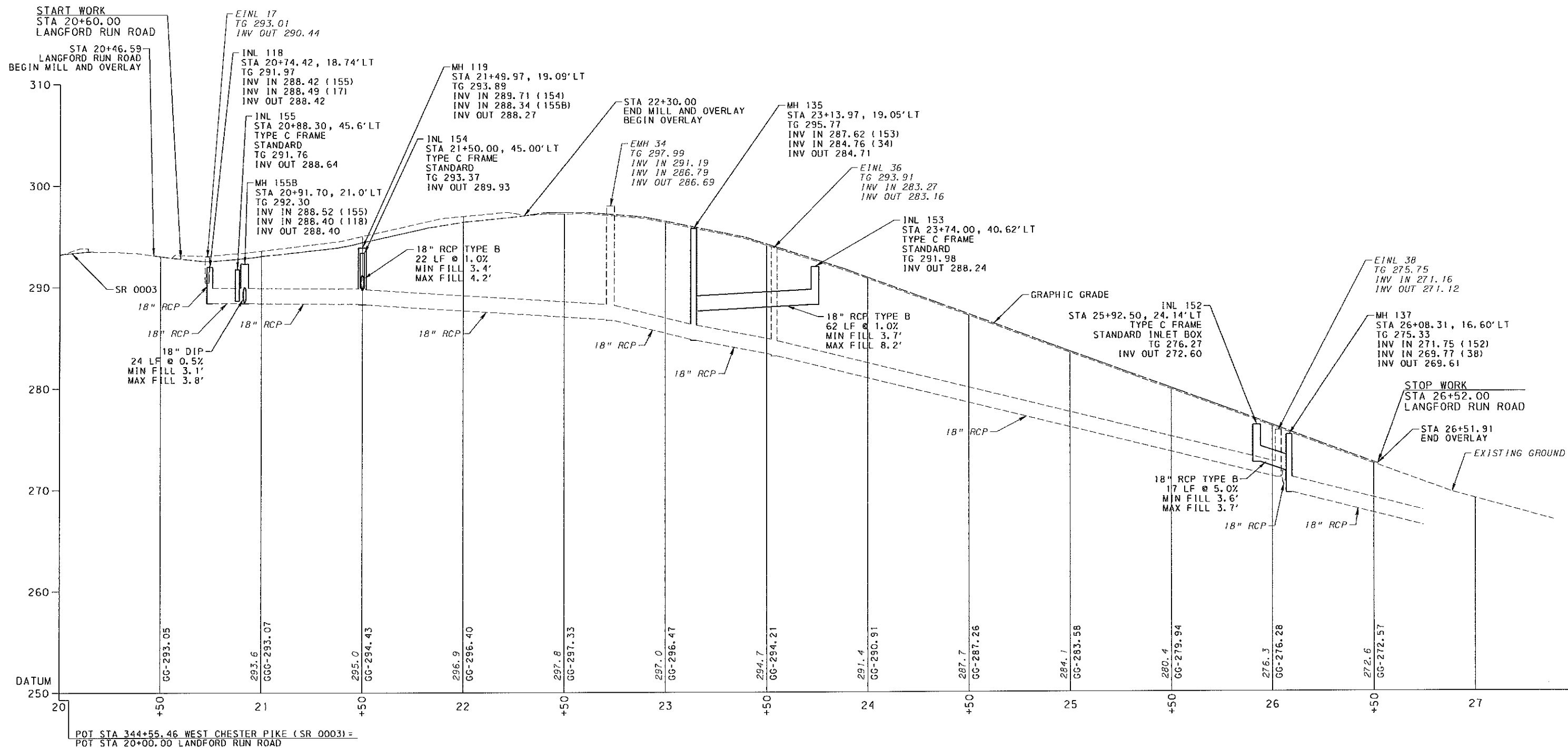


WEST CHESTER PIKE (SR 0003)

DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

REGISTERED
PROFESSIONAL ENGINEER
DATE: _____

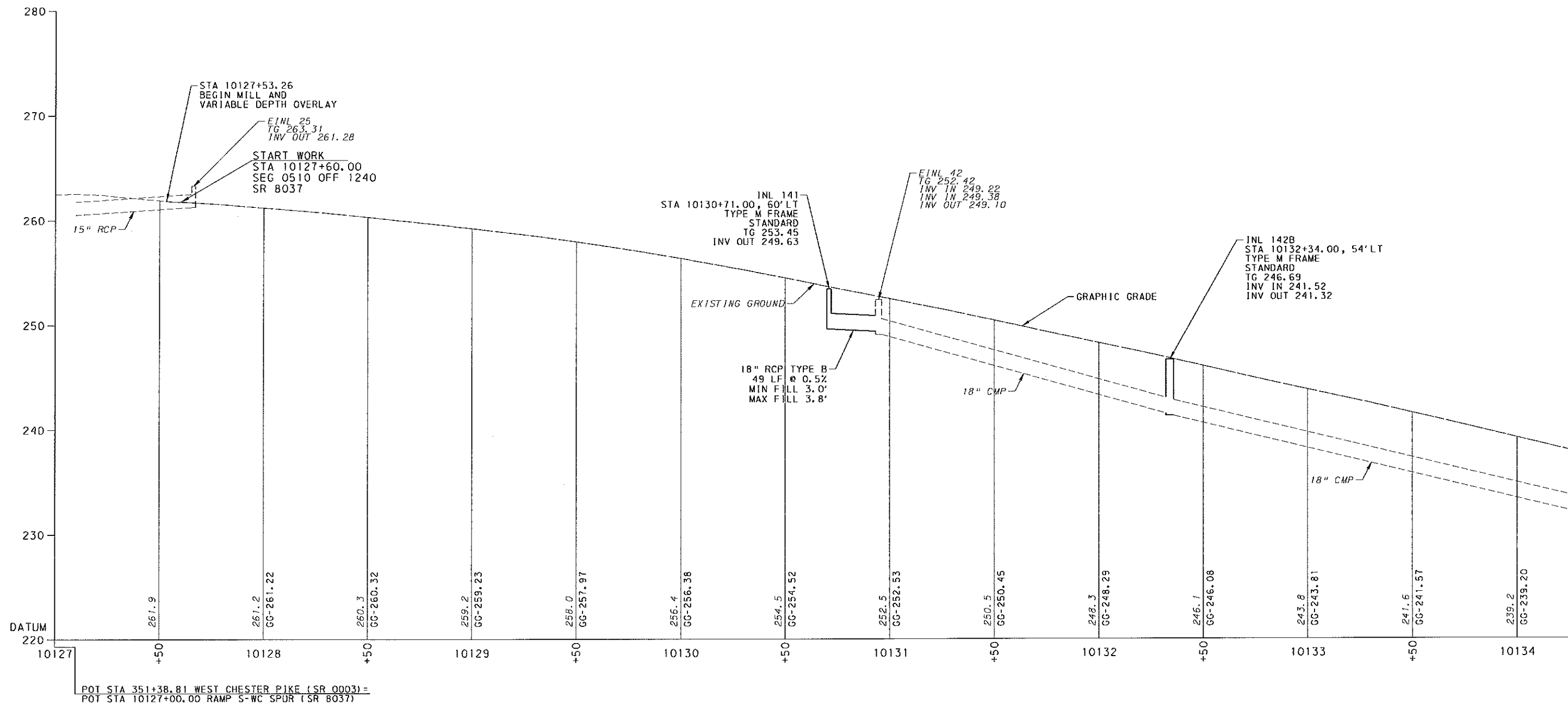
NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
PROFILE		
OR&A Orth - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office 301 Lindenwood Drive, Suite 130, Wexford, PA 15084-1001 (610) 407-9700		
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY		
PennDOT EPS Application #42543	DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-055	SHEET NUMBER 20 OF 62



LANGFORD RUN ROAD

NO.		REVISION	DATE
1		ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
PROFILE			
Orth - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700			
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY			
REGISTERED PROFESSIONAL ENGINEER DATE:	PennDOT EPS Application #42543	DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-066	SHEET NUMBER 21 OF 62

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RAMP S-WC SPUR (SR 8037)

DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014

PROFILE



Orth - Rodgers & Associates, Inc.
TRANSPORTATION ENGINEERS and PLANNERS

Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700

WEST CHESTER PIKE
(SR 0003)

MARPLE TOWNSHIP, DELAWARE COUNTY

REGISTERED
PROFESSIONAL ENGINEER
DATE: _____

PennDOT EPS
Application #42543

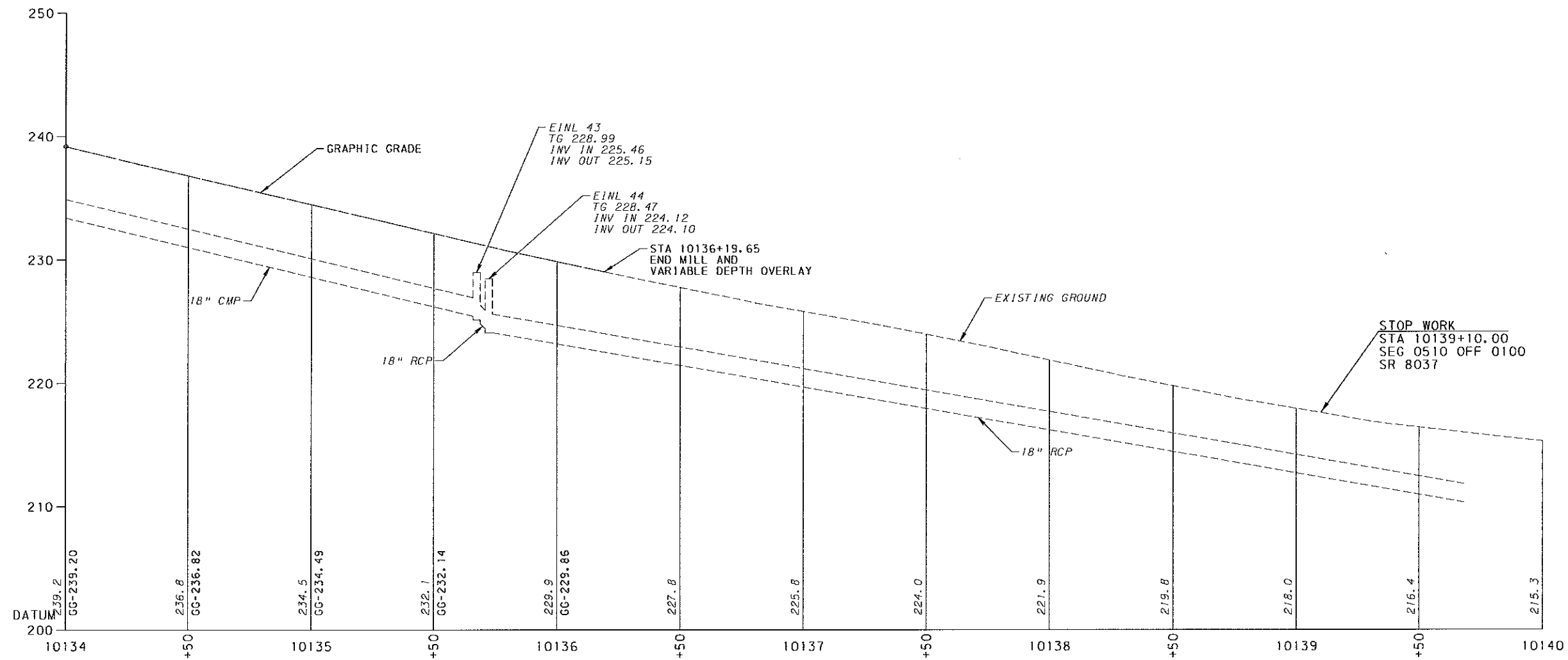
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PROJECT NUMBER: 2013-065

SHEET NUMBER
22 OF 62

SEE SHEET 23

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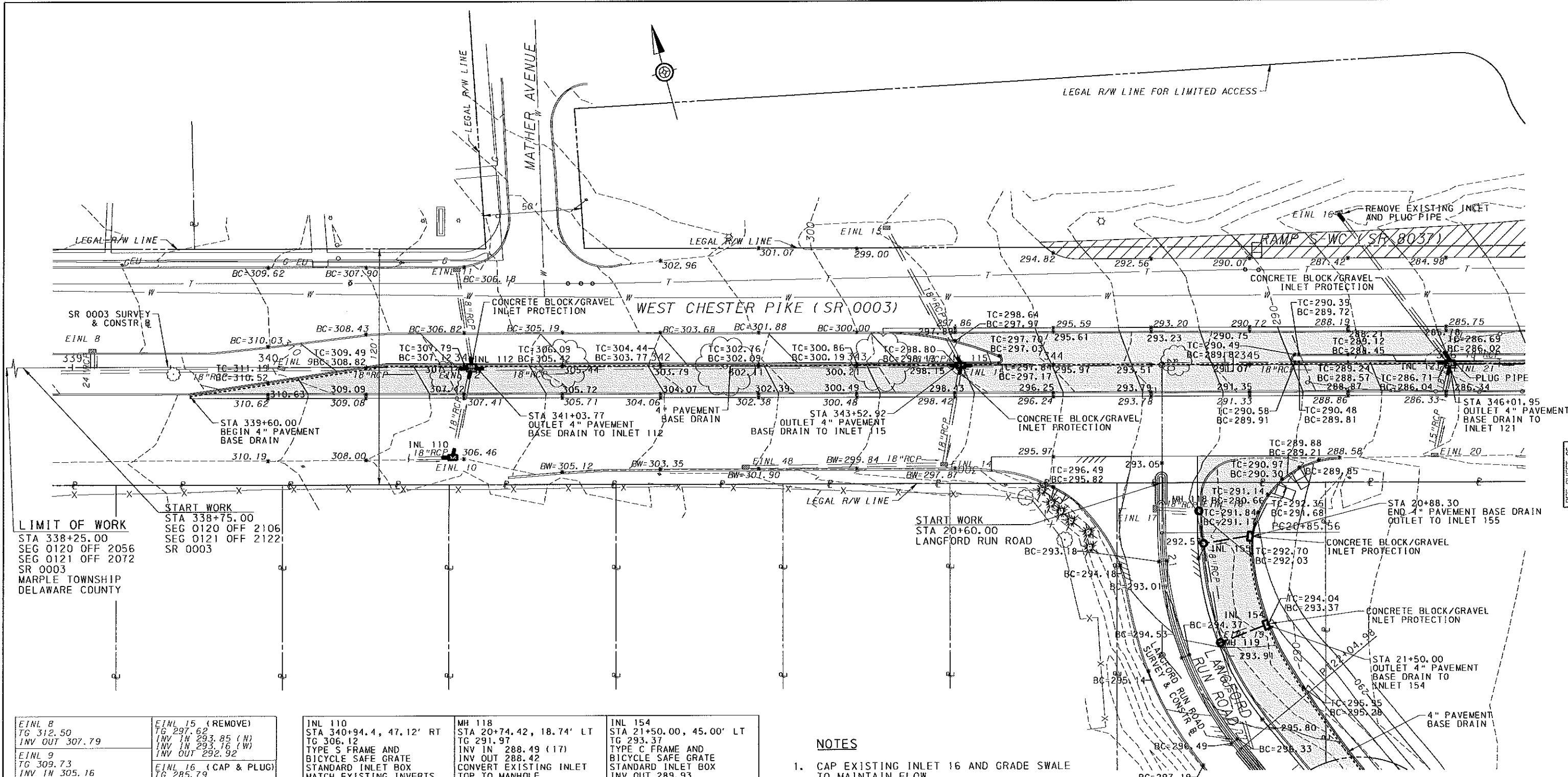


RAMP S-WC SPUR (SR 8037)

DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
PROFILE		
OR&A Orth - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700		
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY		
REGISTERED PROFESSIONAL ENGINEER DATE:	PennDOT EPS Application #42543	DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-065
SHEET NUMBER 23 OF 62		

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EINL 8 TG 312.50 INV OUT 307.79	EINL 15 (REMOVE) TG 297.62 INV IN 293.85 (N) INV IN 293.16 (W) INV OUT 292.92
EINL 9 TG 309.73 INV IN 305.16 INV OUT 305.02	EINL 16 (CAP & PLUG) TG 285.79 INV PIPE NOT VISIBLE
EINL 10 (REMOVE) TG 306.12 INV IN 303.98 INV OUT FULL OF DEBRIS	EINL 17 TG 293.01 INV OUT 290.44
EINL 11 TG 306.15 INV FILLED W/ DEBRIS	EINL 18 TG 291.93 INV IN 288.49 INV OUT 288.42
EINL 12 (REMOVE) TG 306.64 INV IN 302.62 (N) INV IN 302.30 (W) INV IN 302.40 (S) INV OUT 302.26	EINL 19 TG 293.84 INV IN 288.34 INV OUT 288.27
EINL 13 TG 297.68 INV OUT 296.05	EINL 20 TG 285.72 INV OUT 282.09
EINL 14 TG 298.02 INV IN 294.76 INV OUT 294.64	EINL 21 (REMOVE) TG 285.28 INV IN 281.13 (S) INV IN 280.93 (W) INV OUT 280.70
	EINL 48 TG 302.14 INV OUT 297.41

INL 110 STA 340+94.4, 47.12' RT TG 306.12 TYPE S FRAME AND BICYCLE SAFE GRATE STANDARD INLET BOX MATCH EXISTING INVERTS CONNECT TO EXISTING PIPES	MH 118 STA 20+74.42, 18.74' LT TG 291.97 INV IN 288.49 (17) INV OUT 288.42 CONVERT EXISTING INLET TOP TO MANHOLE	INL 154 STA 21+50.00, 45.00' LT TG 293.37 TYPE C FRAME AND BICYCLE SAFE GRATE STANDARD INLET BOX INV OUT 289.93
INL 112 STA 341+03.77, 1' LT TG 306.99 TYPE C FRAME AND BICYCLE SAFE GRATE TYPE 4 INLET BOX INV IN 302.62 (11) INV IN 302.30 (9) INV IN 302.40 (110) INV OUT 302.26 CONNECT TO EXISTING PIPES	MH 119 STA 21+49.97, 19.09' LT TG 293.89 INV IN 289.71 (154) INV IN 288.34 (155B) INV OUT 288.27 CONVERT EXISTING INLET TOP TO MANHOLE	INL 155 STA 20+88.3, 45.6' LT TG 291.76 TYPE C FRAME AND BICYCLE SAFE GRATE STANDARD INLET BOX INV OUT 288.64
INL 115 STA 343+52.92, 1' LT TG 298.01 TYPE C FRAME AND BICYCLE SAFE GRATE TYPE 4 INLET BOX INV IN 281.13 (20) INV IN 280.93 (115) INV OUT 280.70 CONNECT TO EXISTING PIPES	INL 121 STA 346+01.94, 1' LT TG 285.94 TYPE C FRAME AND BICYCLE SAFE GRATE TYPE 4 INLET BOX INV IN 281.13 (20) INV IN 280.93 (115) INV OUT 280.70 CONNECT TO EXISTING PIPES	MH 155B STA 20+91.7, 21.0' LT TR 292.30 INV IN 288.52 (155) INV IN 288.40 (118) INV OUT 288.40 CONNECT TO EXISTING PIPES

NOTES

1. CAP EXISTING INLET 16 AND GRADE SWALE TO MAINTAIN FLOW.
2. SEE CURB RAMP DETAILS FOR ADDITIONAL GRADING POINTS.

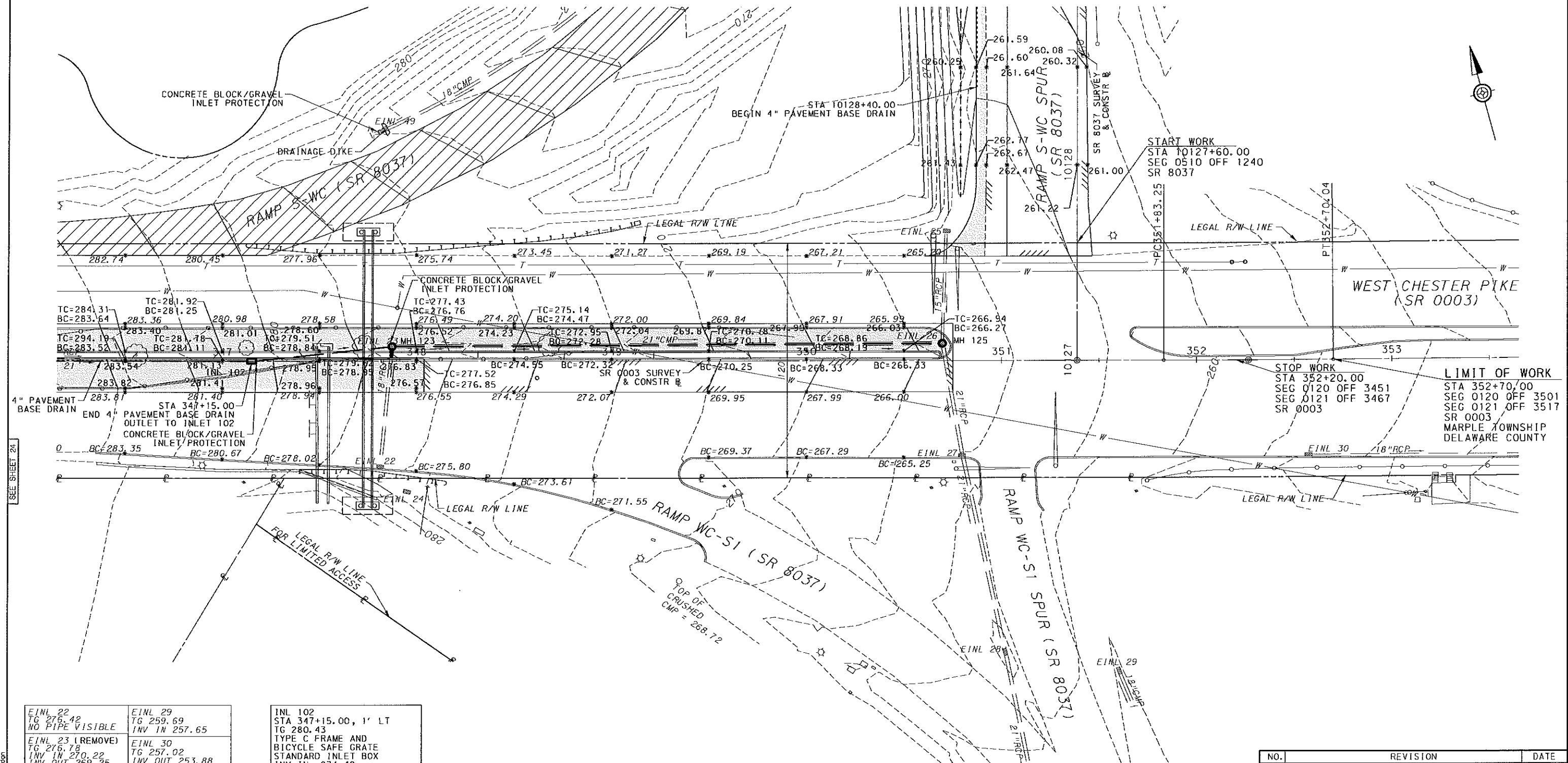
LEGEND

- LIMIT OF FULL DEPTH PAVEMENT
- PAVEMENT REMOVAL
- MILL AND OVERLAY
- OVERLAY

DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

REGISTERED
PROFESSIONAL ENGINEER
DATE:

NO.		REVISION	DATE
1		ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
GRADING PLAN			
OR&A Orth - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS AND PLANNERS Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 401-9700			
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY			
PennDOT EPS Application #42543		DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-065	SHEET NUMBER 24 OF 62



EINL 22 TG 276.42 NO PIPE VISIBLE	EINL 29 TG 259.69 INV IN 257.65
EINL 23 (REMOVE) TG 276.78 INV IN 270.22 INV OUT 269.25	EINL 30 TG 257.02 INV OUT 253.88
EINL 24 TG 276.72 INV GRATE FILLED W/ CONC	EINL 31 TG 250.35 INV OUT 247.67
EINL 25 TG 263.31 INV OUT 261.28	EINL 32 TG 250.45 INV IN 247.30 (S) INV IN 245.39 (W) INV OUT 245.07
EINL 26 TG 265.52 INV IN 260.53 (W) INV IN 260.41 (N) INV OUT 259.10	EINL 33 TG 249.53 INV IN 242.58 INV OUT 242.31
EINL 27 TG 263.88 INV IN 258.56 INV OUT 258.26	EINL 49 TG 273.83 INV OUT 268.65
EINL 28 TG 261.55 INV IN 257.65 INV OUT 257.47	

INL 102 STA 347+15.00, 1' LT TG 280.43 TYPE C FRAME AND BICYCLE SAFE GRATE STANDARD INLET BOX INV IN 274.49 INV OUT 274.32
MH 123 STA 347+87.41, 7.42' LT TG 277.18 INV IN 270.22 (102) INV IN 270.22 (22) INV OUT 269.25 CONNECT TO EXISTING PIPES
MH 125 STA 350+69.56, 8.81' LT TG 265.20 INV IN 260.53 (123) INV IN 260.41 (25) INV OUT 259.10 CONVERT EXISTING INLET TO MANHOLE

LEGEND

- LIMIT OF FULL DEPTH PAVEMENT
- PAVEMENT REMOVAL
- MILL AND OVERLAY
- OVERLAY

SCALE

0 25 50 FEET

DESIGNED BY: GRS
 DRAWN BY: LBW
 CHECKED BY: TGS

REGISTERED
 PROFESSIONAL ENGINEER
 DATE: _____

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014

GRADING PLAN

OR&A Orth - Rodgers & Associates, Inc.
 TRANSPORTATION ENGINEERS and PLANNERS
 Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700

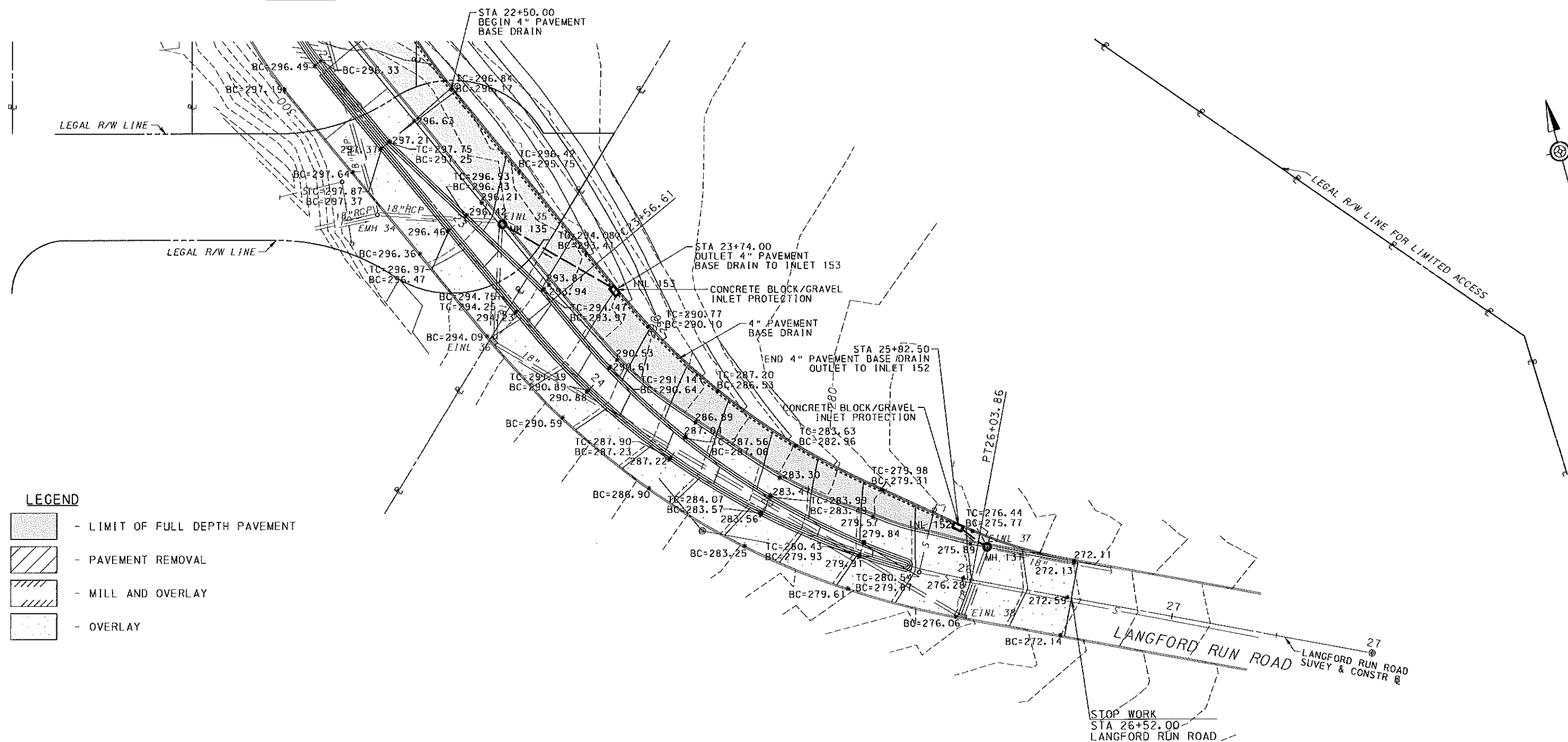
WEST CHESTER PIKE
 (SR 0003)

MARPLE TOWNSHIP, DELAWARE COUNTY

PennDOT EPS
 Application #42543

DATE: NOVEMBER 5, 2013
 PROJECT NUMBER: 2013-065

SHEET NUMBER
 25 OF 62



LEGEND

- LIMIT OF FULL DEPTH PAVEMENT
- PAVEMENT REMOVAL
- MILL AND OVERLAY
- OVERLAY

EMH 34 RIM 297.99 INV IN 291.19 INV IN 286.79 INV OUT 286.69
EINL 35 TG 295.66 INV IN 284.76 INV OUT 284.71
EINL 36 TG 293.91 INV IN 283.27 INV OUT 283.16
EINL 37 TG 275.20 INV IN 269.77 INV OUT 269.61
EINL 38 TG 275.75 INV IN 271.16 INV OUT 271.12

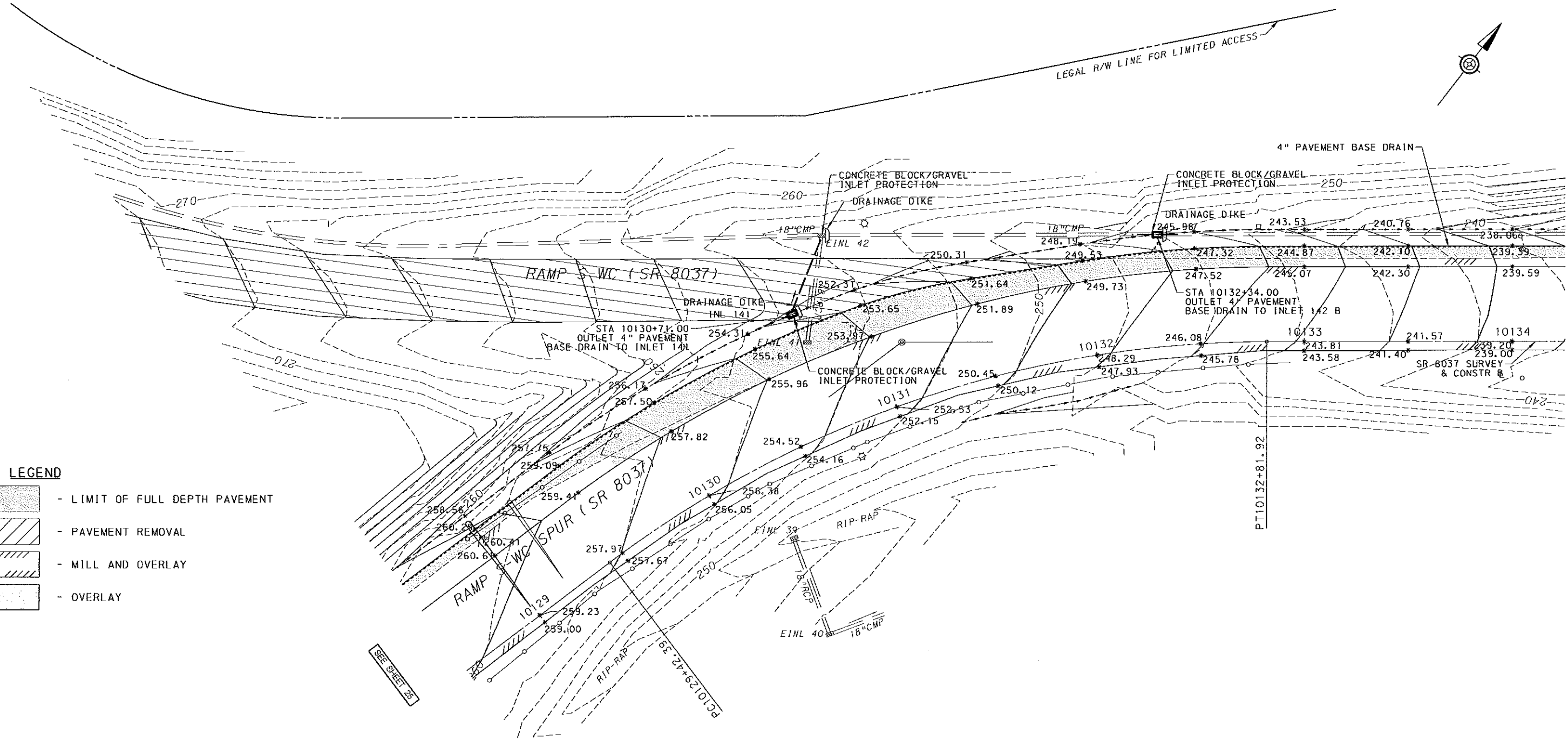
MH 135 STA 23+13.97, 19.05' LT TG 295.77 INV IN 287.62 (153) INV IN 284.76 (34) INV OUT 284.71 CONVERT EXISTING INLET TOP TO MANHOLE	INL 152 STA 25+92.50, 24.14' LT TG 276.27 TYPE C FRAME AND BICYCLE SAFE GRATE STANDARD INLET BOX INV OUT 272.60
MH 137 STA 26+08.31, 16.60' LT TG 275.33 INV IN 271.75 (152) INV IN 269.77 (38) INV OUT 269.61 CONVERT EXISTING INLET TOP TO MANHOLE	INL 153 STA 23+74.00, 40.62' LT TG 291.98 TYPE C FRAME AND BICYCLE SAFE GRATE STANDARD INLET BOX INV OUT 288.24

SCALE

0 25 50 FEET

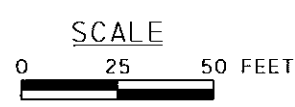
DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
GRADING PLAN		
Orth - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700		
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY		
REGISTERED PROFESSIONAL ENGINEER DATE: _____	PennDOT EPS Application #42543	DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-065
SHEET NUMBER 26 OF 62		



- LEGEND**
- LIMIT OF FULL DEPTH PAVEMENT
 - PAVEMENT REMOVAL
 - MILL AND OVERLAY
 - OVERLAY

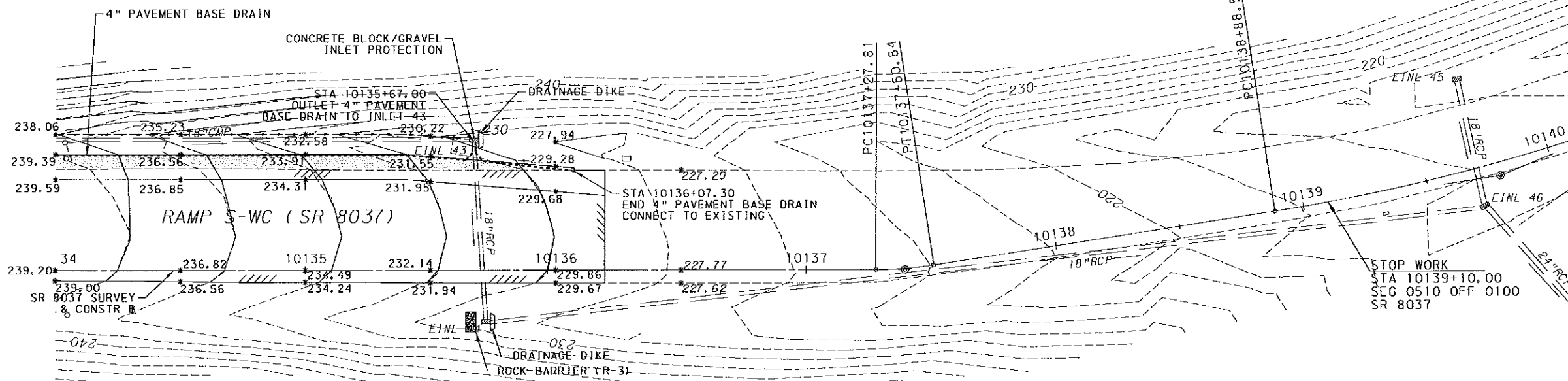
EINL 39 TG 245.79 INV OUT 239.85	INL 141 STA 10130+71.00, 60' LT TC 253.45 TYPE M FRAME AND GRATE STANDARD INLET BOX INV OUT 249.63
EINL 40 TG 243.22 INV IN 238.54 INV OUT 237.49	INL 142B STA 10132+34.00, 54' LT TC 246.69 TYPE M FRAME AND GRATE STANDARD INLET BOX INV IN 241.52 INV OUT 241.32 CONNECT TO EXISTING PIPE
EINL 41 TG 254.32 INV OUT 249.63	
EINL 42 TG 252.42 INV IN 249.22 (W) INV IN 249.38 (S) INV OUT 249.10	



NO.		REVISION	DATE
1		ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
GRADING PLAN			
Orth - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office 301 Lindenwood Drive, Suite 130, Malvern, PA 19355 (610) 407-9700			
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY			
DESIGNED BY: GRS DRAWN BY: LBW CHECKED BY: TGS	REGISTERED PROFESSIONAL ENGINEER DATE:	PennDOT EPS Application #42543 DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-065	SHEET NUMBER 27 OF 62

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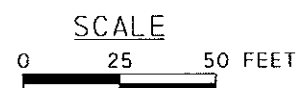
SEE SHEET 28



LEGEND

- LIMIT OF FULL DEPTH PAVEMENT
- PAVEMENT REMOVAL
- MILL AND OVERLAY
- OVERLAY

EINL 43 TG 228.99 INV IN 225.46 INV OUT 225.15
EINL 44 TG 228.47 INV IN 224.12 INV OUT 224.10
EINL 45 TG 212.26 INV OUT 209.14
EINL 46 TG 214.04 INV IN 210.34 (W) INV IN 209.02 (N) INV OUT 208.57



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CHECKED BY: TGS

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GRADING LAN



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WEST CHESTER PIKE
(SR 0003)

MARPLE TOWNSHIP, DELAWARE COUNTY

REGISTERED
PROFESSIONAL ENGINEER
DATE:

PennDOT EPS
Application #42543

DATE: NOVEMBER 5, 2013
PROJECT NUMBER: 2013-065

SHEET NUMBER
28 OF 62

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FILENAME: F:\2013_065_MID-CITY-HIGHWAY-CONSTRUCTION\03_SIGN\01.dgn

START WORK
STA 338+75.00
SEG 0120 OFF 2106
SEG 0121 OFF 2122
SR 0003

STA 342+50.00
SR 0003 WB
MATCH EXISTING
PAVEMENT MARKINGS

TWO HOUR
PARKING

LEGAL R/W LINE

R3-7L

LEFT LANE
MUST
TURN LEFT

STOP

MATHER AVENUE

LEGAL R/W LINE

NO PARKING
BETWEEN
SIGNS

NO
PARKING
BETWEEN
SIGNS

NO PARKING
BETWEEN
SIGNS

GRACE
LUTHERAN
CHURCH

WEST M3-4
M1-5

POT STA 344+55.46 WEST CHESTER PIKE
POT STA 20+00.00 LANGFORD RUN ROAD

R3-4
24"x24"

R4-7
24"x30"

OM1-3
18"x18"

R9-3
24"x24"

R9-3BR
18"x12"

USE
CROSSWALK

OM1-3
18"x18"

R4-7
24"x30"

STOP
HERE
ON
RED

R10-6AL
24"x30"

R3-4
24"x24"

450' LEFT TURN LANE

LEGAL R/W LINE

W/4"

W/4"

BW/6"

W/4"

W/6"

W/6"

BW/6"

W/4"

Y/4"

Y/4"

Y/4"

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WEST CHESTER PIKE
(SR 0003)

WEST CHESTER PIKE
(SR 0003)

LEGAL R/W LINE

100' BAY TAPER

100' BAY TAPER
RIGHT TURN LANE

200' RIGHT TURN LANE
LEGAL R/W LINE

LEGAL R/W LINE

STA 338+75.00
SR 0003 EB
MATCH EXISTING
PAVEMENT MARKINGS

476
M2-1
M1-1

ONLY
ONLY
ONLY
ONLY

START WORK
STA 20+60.00
LANGFORD RUN ROAD

CROSSWALK
USE
R9-3
24"x24"

175' DUAL LEFT TURN LANE

LANGFORD RUN ROAD
SURVEY & CONSTR

STOP
HERE
ON
RED

R10-6AL
24"x30"

R4-7
24"x30"

OM1-3
18"x18"

R2-1
(RELOCATE)

476
M2-1
M1-1

476
M2-1
M1-1

476
M2-1
M1-1

476
M2-1
M1-1

476
M2-1
M1-1

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M2-1
M1-1

476
M2-1
M1-1

476
M2-1
M1-1

476
M2-1
M1-1

476
M2-1
M1-1

NOTES

- EASTBOUND WEST CHESTER PIKE RIGHT TURN LANE
200' LENGTH WITH A 100' TAPER.
- WESTBOUND WEST CHESTER PIKE LEFT TURN LANE
450' LENGTH WITH A 75' TAPER.
- LANGFORD RUN ROAD DUAL LEFT TURN LANES
175' LENGTH WITH A 100' TAPER.
- LANGFORD RUN ROAD RIGHT TURN LANE
475' WITH A 100' TAPER.
- SEE SHEET 34 FOR SIGN TABULATION.

LEGEND

- W/4" - WIDTH/SOLID WHITE LINE
W/6" - WIDTH/SOLID WHITE LINE
DDW/6" - WIDTH/DOTTED WHITE LINE
Y/4" - WIDTH/SOLID YELLOW LINE
W/24" - WIDTH/SOLID YELLOW LINE
BW/6" - WIDTH/BROKEN YELLOW LINE
DY/4" - WIDTH/DOUBLE YELLOW LINE
PROPOSED SIGN
EXISTING SIGN
GROUND MOUNTED DELINATOR
WHITE POST AND SHEETING FACING
TRAFFIC WITH RED SHEETING FACING
WRONG-WAY MOVEMENT.
GROUND MOUNTED DELINATOR
RED POST AND SHEETING

SCALE

0 25 50 FEET

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014

SIGNING AND PAVEMENT MARKING PLAN

OR&A Orth - Rodgers & Associates, Inc.
TRANSPORTATION ENGINEERS and PLANNERS
Great Valley Office 301 Lindenswood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700

WEST CHESTER PIKE
(SR 0003)
MARPLE TOWNSHIP, DELAWARE COUNTY

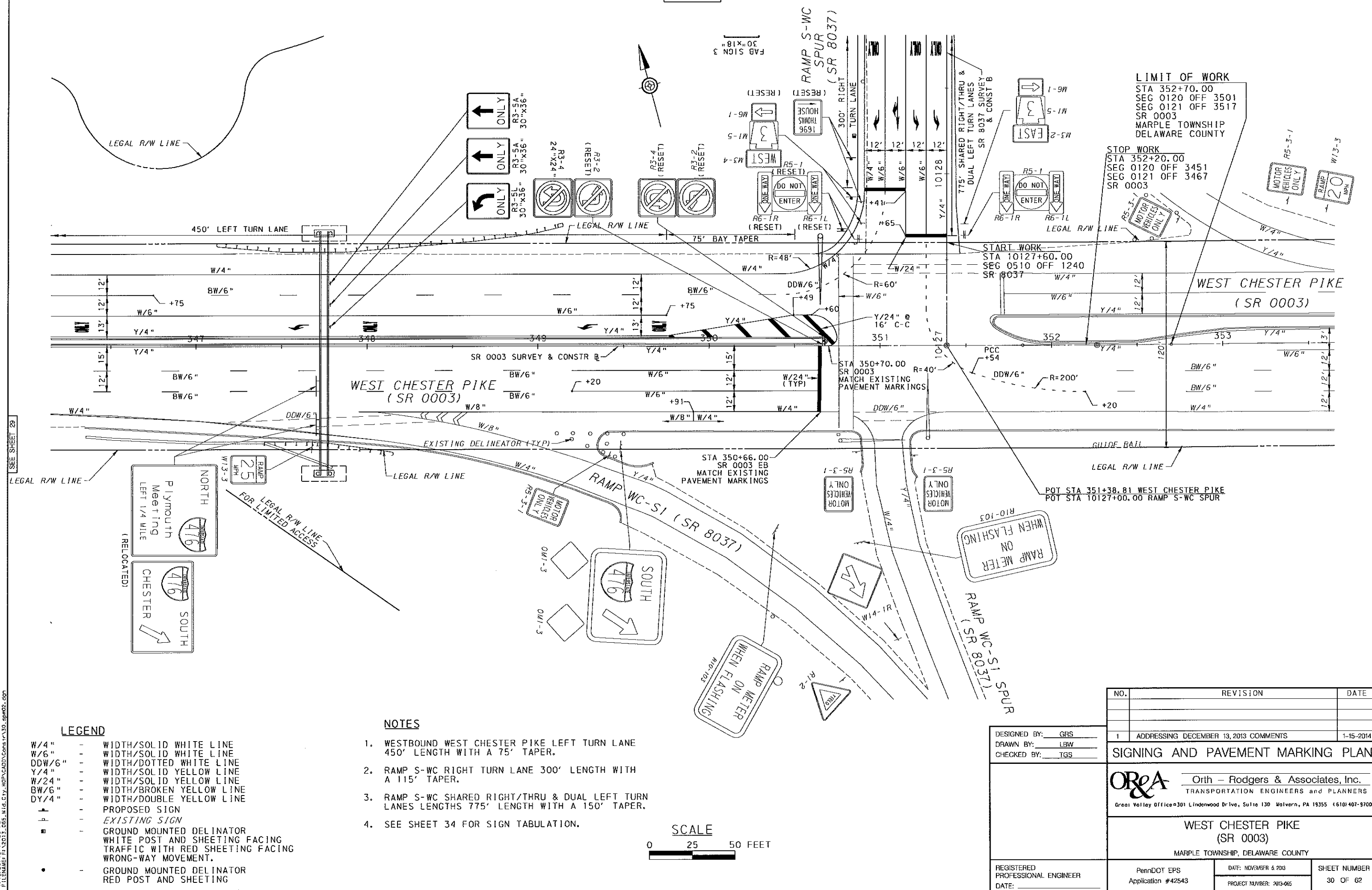
DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

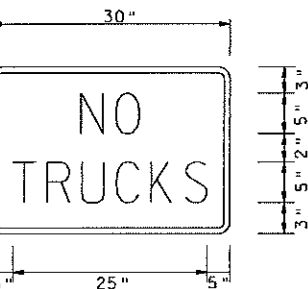
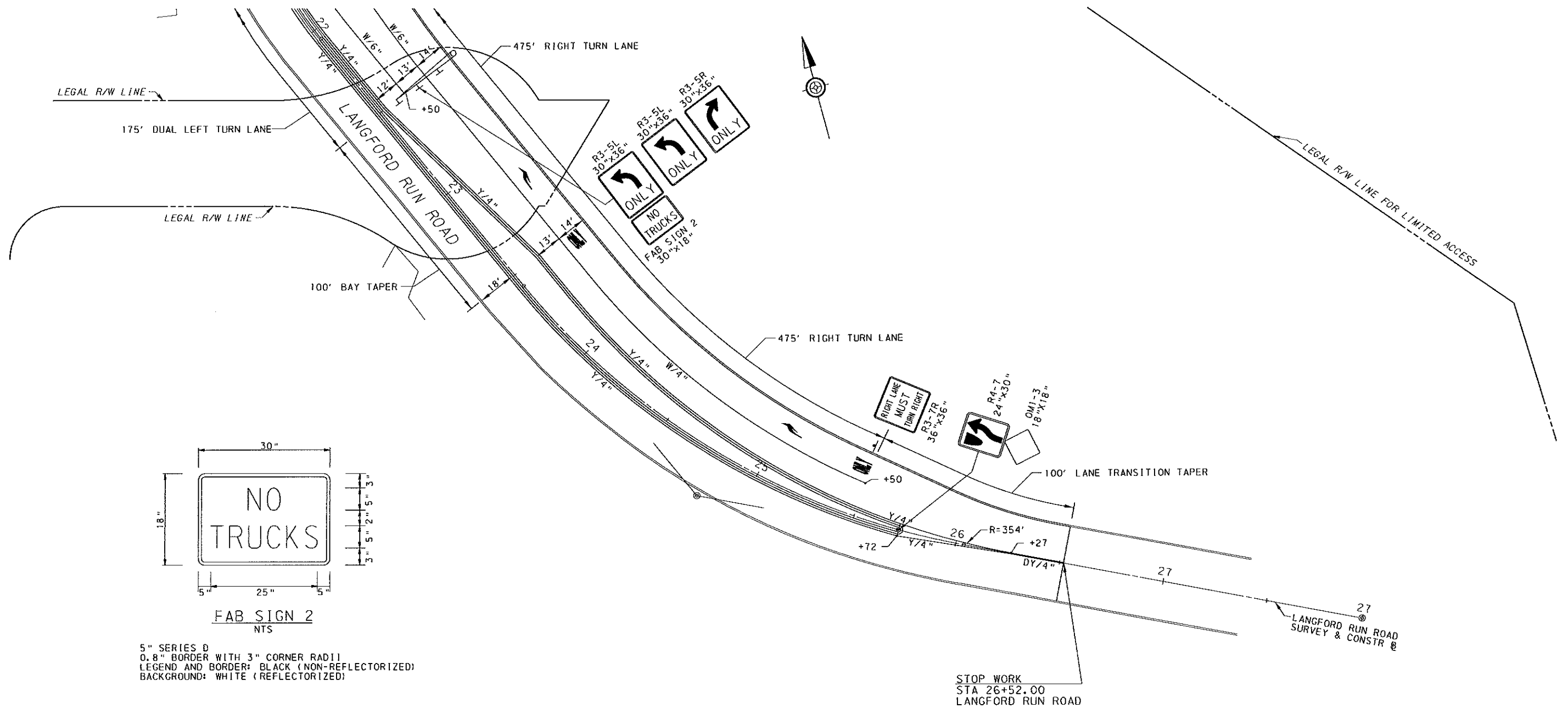
REGISTERED
PROFESSIONAL ENGINEER
DATE:

PennDOT EPS
Application #42543

DATE: NOVEMBER 5, 2013
PROJECT NUMBER: 2013-065

SHEET NUMBER
29 OF 62





5" SERIES D
0.8" BORDER WITH 3" CORNER RADII
LEGEND AND BORDER: BLACK (NON-REFLECTORIZED)
BACKGROUND: WHITE (REFLECTORIZED)

NOTES

1. LANGFORD RUN ROAD DUAL LEFT TURN LANES
175' LENGTH WITH A 100' TAPER.
2. LANGFORD RUN ROAD RIGHT TURN LANE
475' WITH A 100' TAPER.
3. SEE SHEET 34 FOR SIGN TABULATION.

LEGEND

- W/4" - WIDTH/SOLID WHITE LINE
- W/6" - WIDTH/SOLID WHITE LINE
- DDW/6" - WIDTH/DOTTED WHITE LINE
- Y/4" - WIDTH/SOLID YELLOW LINE
- W/24" - WIDTH/SOLID YELLOW LINE
- BW/6" - WIDTH/BROKEN YELLOW LINE
- DY/4" - WIDTH/DOUBLE YELLOW LINE
- PROPOSED SIGN
- EXISTING SIGN
- GROUND MOUNTED DELINATOR
WHITE POST AND SHEETING FACING
TRAFFIC WITH RED SHEETING FACING
WRONG-WAY MOVEMENT.
- GROUND MOUNTED DELINATOR
RED POST AND SHEETING

SCALE

0 25 50 FEET

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
SIGNING AND PAVEMENT MARKING PLAN		
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WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY		
DESIGNED BY: GRS DRAWN BY: LBW CHECKED BY: TGS	PennDOT EPS Application #42543	DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-055
REGISTERED PROFESSIONAL ENGINEER DATE:		SHEET NUMBER 31 OF 62

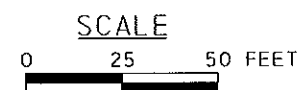
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NOTES

1. RAMP S-WC SHARED THRU RIGHT TURN LANE
775' LENGTH WITH A 150' TAPER.
2. RAMP S-WC DUAL LEFT TURN LANE LENGTHS
775' LENGTH WITH A 150' TAPER.
3. MAINTAIN DELINEATORS ON SOUTH SIDE OF RAMP
S-WC AND ON ALL GUIDE RAIL.
4. SEE SHEET 34 FOR SIGN TABULATION.

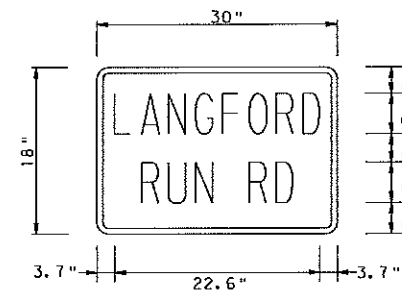
LEGEND

W/4"	-	WIDTH/SOLID WHITE LINE
W/6"	-	WIDTH/SOLID WHITE LINE
DDW/6"	-	WIDTH/DOTTED WHITE LINE
Y/4"	-	WIDTH/SOLID YELLOW LINE
W/24"	-	WIDTH/SOLID YELLOW LINE
BW/6"	-	WIDTH/BROKEN YELLOW LINE
DY/4"	-	WIDTH/DOUBLE YELLOW LINE
	-	PROPOSED SIGN
	-	EXISTING SIGN
	-	GROUND MOUNTED DELINATOR WHITE POST AND SHEETING FACING TRAFFIC WITH RED SHEETING FACING WRONG-WAY MOVEMENT.
	-	GROUND MOUNTED DELINATOR RED POST AND SHEETING



5" SERIES B
0.8" BORDER WITH 3" CORNER RADIUS
LEGEND AND BORDER: BLACK (NON-REFLECTORIZED)
BACKGROUND: WHITE (REFLECTORIZED)

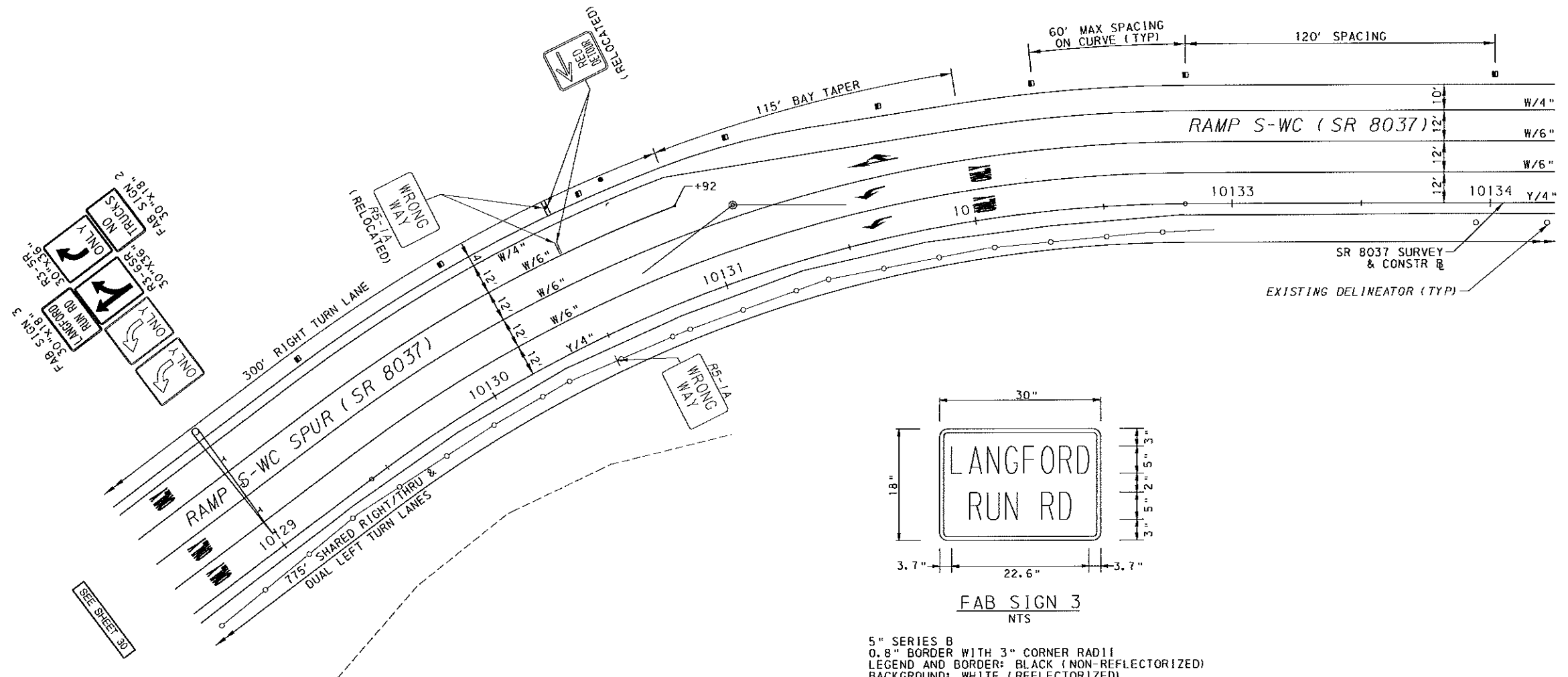
FAB SIGN 3
NTS



NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
SIGNING AND PAVEMENT MARKING PLAN		
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WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY		
REGISTERED PROFESSIONAL ENGINEER DATE: _____	PennDOT EPS Application #42543	DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-055
SHEET NUMBER 32 OF 62		

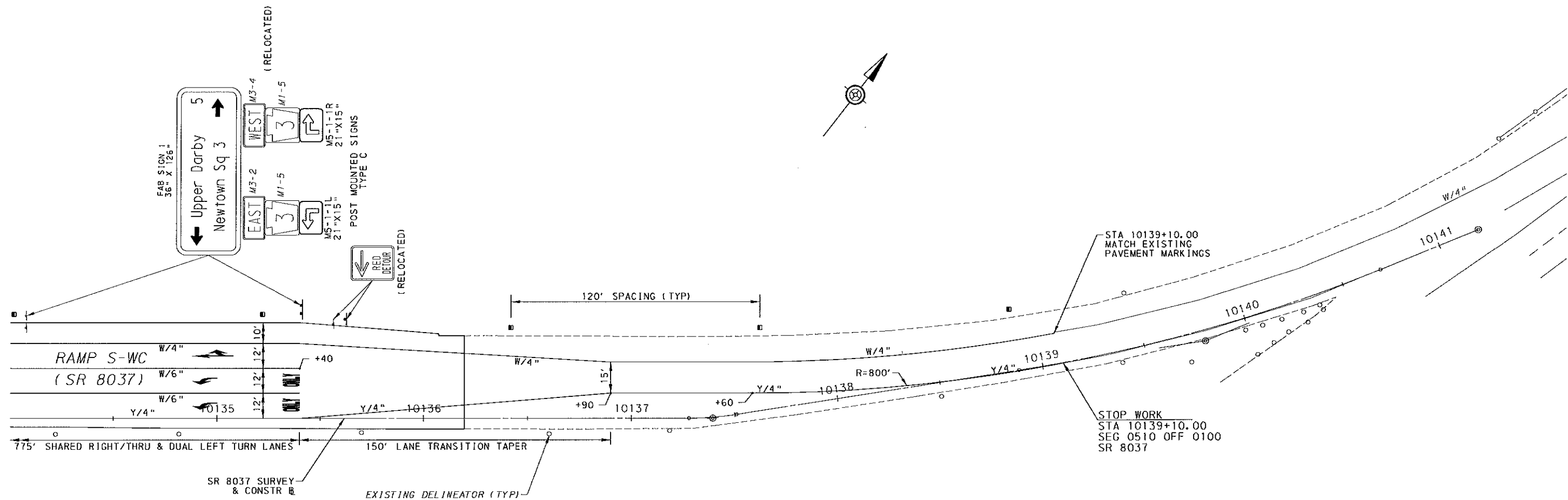
LEGAL R/W LINE FOR LIMITED ACCESS

LEGAL R/W LINE FOR LIMITED ACCESS



SEE SHEET 32

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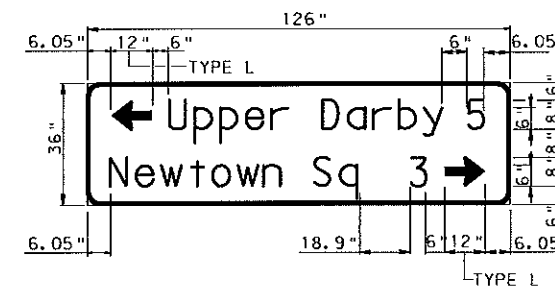


NOTES

1. RAMP S-WC SHARED THRU RIGHT TURN LANE 775' LENGTH WITH A 150' TAPER.
2. RAMP S-WC DUAL LEFT TURN LANE LENGTHS 775' LENGTH WITH A 150' TAPER.
3. MAINTAIN DELINEATORS ON SOUTH SIDE OF RAMP S-WC.
4. SEE SHEET 34 FOR SIGN TABULATION.

LEGEND

W/4"	-	WIDTH/SOLID WHITE LINE
W/6"	-	WIDTH/SOLID WHITE LINE
DDW/6"	-	WIDTH/DOTTED WHITE LINE
Y/4"	-	WIDTH/SOLID YELLOW LINE
W/24"	-	WIDTH/SOLID YELLOW LINE
BW/6"	-	WIDTH/BROKEN YELLOW LINE
DY/4"	-	WIDTH/DOUBLE YELLOW LINE
↑	-	PROPOSED SIGN
↓	-	EXISTING SIGN
□	-	GROUND MOUNTED DELINATOR
□	-	WHITE POST AND SHEETING FACING TRAFFIC WITH RED SHEETING FACING WRONG-WAY MOVEMENT.



FAB SIGN 1
NTS

8" CLEARFIELD FONT TYPE
1.25" BORDER WITH 6" CORNER RADIUS
LEGEND AND BORDER: WHITE (REFLECTORIZED)
BACKGROUND: GREEN (REFLECTORIZED)

SCALE

0 25 50 FEET

DESIGNED BY: GRS
DRAWN BY: LBW
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NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014

SIGNING AND PAVEMENT MARKING PLAN

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Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700

WEST CHESTER PIKE
(SR 0003)

MARPLE TOWNSHIP, DELAWARE COUNTY

REGISTERED
PROFESSIONAL ENGINEER
DATE:

PennDOT EPS
Application #42543

DATE: NOVEMBER 5, 2013
PROJECT NUMBER: 2013-065

SHEET NUMBER
33 OF 62

SIGN TABULATION

OWNER P-PENNDOT M-MUNICIPALITY PERMIT #	IN----INSTALL NEW RI----REPLACE INSTALLATION REL-RELOCATE INSTALLATION RM--REMOVE ER--EXISTING TO REMAIN	SR	DESCRIPTION / NOMENCLATURE	SIGN TYPE / DESCRIPTION	SEGMENT	OFFSET	ASCENDING / DESCENDING / INTERSECTION	LEFT / RIGHT / OVERHEAD
P	ER	0003	W16-1	SHARE THE ROAD SIGN	0120	2136	A	R
P	ER	0003	W2-1	JUNCTION SIGN	0120	2311	A	R
P	ER	0003	M1-1	INTERSTATE 476 SIGN	0120	2311	A	R
M	IN	0003	R3-5A	STRAIGHT ONLY SIGN	0120	2391	A	O
M	IN	0003	R3-5A	STRAIGHT ONLY SIGN	0120	2391	A	O
M	IN	0003	R3-5R	RIGHT ONLY SIGN	0120	2391	A	O
P	REL	0003	R2-1	SPEED LIMIT SIGN	0120	2801	A	R
P	ER	0003	W13-3	RAMP SPEED 25 SIGN	0120	2996	A	R
P	REL	0003	-	NORTH 476 PLYMOUTH MTG SIGN	0120	3006	A	O
P	REL	0003	-	SOUTH 476 CHESTER SIGN	0120	3006	A	O
P	ER	0003	M1-3	HAZARD MARKER SIGN	0120	3181	A	R
P	ER	0003	M1-3	HAZARD MARKER SIGN	0120	3181	A	R
P	ER	0003	-	SOUTH 476 SIGN	0120	3181	A	R
M	ER	0003	-	TWO HOUR PARKING SIGN	0120	2187	A	L
M	ER	0003	-	TWO HOUR PARKING SIGN	0120	2227	A	L
M	ER	0003	R3-7L	LEFT LANE MUST TURN LEFT SIGN	0120	2287	A	L
M	ER	0003	-	GRACE LUTHERAN CHURCH SIGN	0120	2437	A	L
P	ER	0003	M3-4	WEST SIGN	0120	2457	A	L
P	ER	0003	M1-5	ROUTE 3 SIGN	0120	2457	A	L
M	IN	0003	R3-4	NO U TURN SIGN	0120	2592	A	L
M	IN	0003	R4-7	KEEP RIGHT SIGN	0120	2592	A	L
M	IN	0003	OM1-3	HAZARD MARKER SIGN	0120	2592	A	L
M	IN	0003	R9-3	NO PEDESTRIAN CROSSING SIGN	0120	2362	A	L
M	IN	0003	R9-3BR	USE CROSSWALK SIGN	0120	2632	A	L
M	IN	0003	R4-7	KEEP LEFT SIGN	0120	2772	A	L
M	IN	0003	OM1-3	HAZARD MARKER SIGN	0120	2772	A	L
M	IN	0003	R3-4	NO U TURN SIGN	0120	2772	A	L
M	IN	0003	R10-6AL	STOP HERE ON RED SIGN	0120	2772	A	L
P	IN	0003	R3-5L	LEFT ONLY SIGN	0120	3022	A	L
P	IN	0003	R3-5A	STRAIGHT ONLY SIGN	0120	3022	A	L
P	IN	0003	R3-5A	STRAIGHT ONLY SIGN	0120	3022	A	L
M	REL	0003	R3-2	NO LEFT TURN SIGN	0120	3312	A	L
M	REL	0003	R3-4	NO U TURN SIGN	0120	3312	A	L
M	REL	0003	R3-2	NO LEFT TURN SIGN	0120	3312	A	L
M	IN	0003	R3-4	NO U TURN SIGN	0120	3312	A	L
P	REL	8037	-	RED DETOUR SIGN	0510	0450	D	L
P	REL	8037	M3-2	EAST SIGN	0510	0470	D	L
P	REL	8037	M3-4	WEST SIGN	0510	0470	D	L
P	REL	8037	M1-5	ROUTE 3 SIGN	0510	0470	D	L
P	REL	8037	M1-5	ROUTE 3 SIGN	0510	0470	D	L
P	IN	8037	M5-1-1L	LEFT ADVANCE SIGN	0510	0470	D	L
P	IN	8037	M5-1-1R	RIGHT ADVANCE SIGN	0510	0470	D	L
P	IN	8037	FAB	UPPER DARBY 5 SIGN	0510	0470	D	L
P	IN	8037	FAB	NEWTOWN SQ 3 SIGN	0510	0470	D	L
P	EX	8037	R5-1A	WRONG WAY SIGN	0510	0960	D	R
P	REL	8037	R5-1A	WRONG WAY SIGN	0510	0960	D	L
P	REL	8037	-	RED DETOUR SIGN	0510	0960	D	L
M	REL	8037	R3-5L	LEFT ONLY SIGN	0510	1110	D	O
M	REL	8037	R3-5L	LEFT ONLY SIGN	0510	1110	D	O
M	IN	8037	R3-6SR	STRAIGHT/RIGHT SIGN	0510	1110	D	O
M	IN	8037	R3-5R	RIGHT ONLY SIGN	0510	1110	D	O
M	IN	8037	FAB	NO TRUCKS SIGN	0510	1110	D	O
M	IN	8037	FAB	LANGFORD RUN RD	0510	1110	D	O
M	REL	8037	-	1969 THOMAS HOUSE SIGN	0510	1205	D	L
P	REL	8037	M3-4	WEST SIGN	0510	1230	D	L
P	REL	8037	M1-5	ROUTE 3 SIGN	0510	1230	D	L
P	REL	8037	M6-1	RIGHT ARROW SIGN	0510	1230	D	L
P	REL	8037	M3-2	EAST SIGN	0510	1240	D	R
P	REL	8037	M1-5	ROUTE 3 SIGN	0510	1240	D	R
P	REL	8037	M6-1	LEFT ARROW SIGN	0510	1240	D	R
P	REL	8037	R6-1L	ONE WAY LEFT SIGN	0510	1245	D	L
P	REL	8037	R6-1R	ONE WAY RIGHT SIGN	0510	1245	D	L
P	REL	8037	R5-1	DO NOT ENTER SIGN	0510	1245	D	L
P	EX	8037	R6-1L	ONE WAY LEFT SIGN	0510	1250	D	R
P	EX	8037	R6-1R	ONE WAY RIGHT SIGN	0510	1250	D	R
P	EX	8037	R5-1	DO NOT ENTER SIGN	0510	1250	D	R

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DESIGNED BY: GRS	NO.	REVISION	DATE
DRAWN BY: LBW	1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
CHECKED BY: TGS	SIGN TABULATION		
 Orth - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700			
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY			
REGISTERED PROFESSIONAL ENGINEER DATE: _____	PennDOT EPS Application #42543	DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-025	SHEET NUMBER 34 OF 62

GENERAL NOTES

THIS WORK CONSISTS OF THE MAINTENANCE OF TRAFFIC AND THE PROTECTION OF THE TRAVELING PUBLIC APPROACHING THE CONSTRUCTION AREA AND WITHIN THE LIMITS OF CONSTRUCTION.

FURNISH, ERECT, PLACE AND MAINTAIN TRAFFIC CONTROL SIGNS AND DEVICES AND MAINTAIN TRAFFIC DURING HOURS OF CONSTRUCTION AND AT ALL OTHER TIMES IN ACCORDANCE WITH THE METHODS INDICATED ON THESE DRAWINGS AND:

- 1. THE SPECIAL PROVISIONS OF THE CONTRACT.
- 2. PA CODE, TITLE 67, CHAPTER 212, PUB 213, TEMPORARY TRAFFIC CONTROL GUIDELINES.
- 3. PA CODE, TITLE 67, CHAPTER 212, PUB 212, OFFICIAL TRAFFIC CONTROL DEVICES.
- 4. PENNDOT PUBLICATION 35, APPROVED CONSTRUCTION MATERIALS (BULLETIN 15).
- 5. PENNDOT PUBLICATION 408, SPECIFICATIONS.
- 6. MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

CONTRACTOR SHALL PROVIDE FOR THE SAFETY AND PROTECTION OF ALL PEDESTRIANS APPROACHING OR TRAVELING WITHIN THE CONSTRUCTION AREA.

CONTRACTOR WILL NOTIFY ALL GOVERNMENTAL, POLICE, FIRE, AND EMERGENCY SERVICES WITHIN THE IMMEDIATE AREA. NOTICE MUST BE GIVEN AT LEAST 48 HOURS PRIOR TO THE START OF WORK.

PROVIDE A TRAFFIC CONTROL SUPERVISOR WHO CAN BE REACHED 24 HOURS A DAY, 7 DAYS A WEEK FOR THE DURATION OF THE PROJECT.

ACCESS TO ALL DRIVEWAYS, ALLEYS, PEDESTRIAN PATHS, RESIDENCES AND BUSINESSES WITHIN THE PROJECT LIMITS MUST BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT. LOCATE ALL SIGNS SO THAT SIGHT DISTANCE IS NOT OBSTRUCTED AT DRIVEWAYS AND SIDE STREETS.

INSPECT ALL TRAFFIC CONTROL DEVICES PRIOR TO THE START OF WORK AND DAILY DURING THE LIFE OF THE PROJECT.

INSTALL ADVANCE WARNING SIGNS PRIOR TO INITIATING CONSTRUCTION OPERATIONS. MAINTAIN ADVANCE WARNING SIGNS THROUGHOUT THE DURATION OF THE CONSTRUCTION PROJECT.

ALL TRAFFIC CONTROL DEVICES MUST BE IN PLACE AND VISIBLE PRIOR TO BEGINNING WORK EACH DAY. REPLACE ANY DAMAGED OR MISSING SIGNS, BARRICADES, LIGHTS, OR OTHER TRAFFIC CONTROL DEVICES WITHIN 24 HOURS.

MAINTAIN CONSTANT SURVEILLANCE OF THE TRAFFIC CONTROL OPERATION AND REPLACE OR CORRECT ANY MISSING, DAMAGED, INEFFECTIVE OR MISALIGNED SIGNS, DEVICES OR EQUIPMENT.

IMMEDIATELY UPON COMPLETION OF THE WORK, REMOVE ALL TRAFFIC CONTROL DEVICES.

ALL SIGNS AND DEVICES (I.E. SUPPORTS, SIGN BLANKS, DRUMS, VERTICAL PANELS, ETC.) SHALL BE CLEAN AND FREE FROM ALL DEFECTS AND MUST BE MAINTAINED AS SUCH FOR THE DURATION OF THE PROJECT. USE REFLECTIVE MATERIAL THAT MEETS PENNSYLVANIA DEPARTMENT OF TRANSPORTATION CURRENT SPECIFICATIONS FOR SHEET REFLECTIVE MATERIAL (TYPE III FLORESCENT OR TYPE VII FLORESCENT) FOR ALL SIGNS AND DEVICES.

ALL SIGNS OR DEVICES, NOT IN USE OR CONFLICTING, MUST BE EITHER PROPERLY COVERED OR REMOVED FROM SIGHT.

THE CONTRACTOR'S TRAFFIC CONTROL RESPONSIBILITIES WILL INCLUDE THE REMOVAL OF EXISTING CONFLICTING PAVEMENT MARKINGS AND THE APPLICATION OF TEMPORARY (INTERIM) WATERBORNE PAVEMENT MARKINGS THROUGHOUT THE DURATION OF CONSTRUCTION.

REMOVE CONFLICTING PAVEMENT MARKINGS.

PROVIDE SUFFICIENT NUMBER OF TYPE III BARRICADES AT THE POINTS OF CLOSURE TO EXTEND ACROSS THE ENTIRE ROADWAY, SHOULDER OR LANE.

PLACE TYPE C LIGHTS ON ALL CHANNELIZING DEVICES DURING LONG-TERM OPERATIONS IN TAPERS AND LANE SHIFTS.

COVER ALL OPEN TRENCHES WITH STEEL PLATES OR BACKFILL TO THE LEVEL OF THE SURROUNDING AREA AT THE END OF EACH WORK DAY.

A SAFETY WEDGE MUST BE USED ANY PLACE WHERE OPEN EXCAVATION ALONG ACTIVE ROADWAYS RESULTS IN A DROP-OFF GREATER THAN 2". (SEE DETAIL)

THE CONTRACTOR SHALL ASSURE THAT WARNING VESTS ARE WORN BY ALL PERSONS ENGAGED IN WORK OPERATIONS. WORKER'S SAFETY GARMENTS SHALL BE REFLECTORIZED.

ALL FLAGGERS, AT A MINIMUM, SHALL HAVE TRAINING AS PER PUBLICATION 408/2011 SECTION 901.3 FLAGGER TRAINING.

COMPLETE CONSTRUCTION IN ACCORDANCE WITH THE SEQUENCE OF CONSTRUCTION DESCRIBED IN THESE PLANS.

NOTIFY THE DISTRICT TRAFFIC ENGINEER AT LEAST TWO (2) WEEKS PRIOR TO MODIFYING EXISTING TRAFFIC PATTERNS AND ROADWAY CLOSURES. ALL MODIFICATIONS MUST BE APPROVED BY THE DISTRICT.

NO LANE CLOSURES ARE PERMITTED FROM 6 A.M. TO 9 A.M., AND FROM 3 P.M. TO 7 P.M. DAILY, MONDAY THRU FRIDAY, AND DURING ALL LEGAL HOLIDAYS.

INSTALL AND UTILIZE ALL PROPOSED SIGNING AND PAVEMENT MARKINGS WHERE APPLICABLE.

ALL LOCATIONS AND DISTANCES SHOWN ON THE TRAFFIC CONTROL PLANS MAY BE ADJUSTED SLIGHTLY TO FIT FIELD CONDITIONS.

TAPER LENGTHS SHOWN ON THE PLAN ARE A MINIMUM.

THE REQUIREMENTS INDICATED ARE THE MINIMUM NECESSARY AND THE CONTRACTOR SHALL FURNISH, ERECT AND MAINTAIN ADDITIONAL DEVICES AS DIRECTED BY THE ENGINEER.

THIS TRAFFIC CONTROL PLAN DOES NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY AS SPECIFIED IN SECTION 901.3(a) OF PUBLICATION 408/2011.

CONSTRUCTION SEQUENCE

INSTALL AND MAINTAIN ADVANCE WARNING SIGNS FOR THE DURATION OF THE PROJECT.

STAGE 1A LONG TERM OPERATION

RAMP S-WC (SR 8037)

INSTALL TEMPORARY LONG TERM SIGNS, TRAFFIC CONTROL DEVICES, AND EROSION CONTROL DEVICES.

REMOVE PORTION OF EXISTING PAVEMENT ALONG RAMP S-WC (SR 8037), GRADE WIDENING AREAS AND APPLY SEEDING AND SOIL SUPPLEMENTS ON ALL DISTURBED AREAS.

INSTALL FULL DEPTH PAVEMENT UP TO AND INCLUDING THE BINDER COURSE.

INSTALL SIGNAL MAST ARM AND SIGNAL HEADS AT THE INTERSECTION OF WEST CHESTER PIKE (SR 0003) AND RAMP S-WC (SR 8037). WORK ON STAGE 1B CANNOT BEGIN UNTIL SIGNAL IS ACTIVATED.

INSTALL TEMPORARY PAVEMENT MARKINGS AS REQUIRED.

STAGE 1B LONG TERM OPERATION

LANGFORD RUN ROAD

INSTALL TEMPORARY LONG TERM SIGNS, TRAFFIC CONTROL DEVICES, AND EROSION CONTROL DEVICES.

GRADE WIDENING AREA AND APPLY SEEDING AND SOIL SUPPLEMENTS ON ALL DISTURBED AREAS.

INSTALL NEW DRAINAGE PIPES, MANHOLES, INLETS, CURBS, FULL DEPTH PAVEMENT, AND TRAFFIC SIGNAL MAST ARM AND POLE

LANGFORD RUN ROAD TO REMAIN CLOSED UNTIL TRAFFIC SIGNAL IS ACTIVATED.

RAMP S-WC (SR 8037)

INSTALL TEMPORARY SIGNING AND PAVEMENT MARKINGS PRIOR TO DIVERTING WESTBOUND RT 3 TRAFFIC TO SIGNALIZED INTERSECTION.

INSTALL EROSION CONTROL DEVICES AND REMOVE PORTION OF EXISTING PAVEMENT ALONG RAMP S-WC (SR 8037), GRADE WIDENING AREA AND APPLY SEEDING AND SOIL SUPPLEMENTS ON ALL DISTURBED AREAS

INSTALL DRAINAGE STRUCTURES AND FULL DEPTH PAVEMENT UP TO AND INCLUDING THE BINDER COURSE.

INSTALL TEMPORARY PAVEMENT MARKINGS AS REQUIRED.

WEST CHESTER PIKE (SR 0003)

INSTALL TEMPORARY LONG TERM SIGNS, TRAFFIC CONTROL DEVICES, AND TEMPORARY CONCRETE BARRIER.

CONSTRUCT NEW SIGN STRUCTURE FOUNDATIONS ON WEST CHESTER PIKE (SR 0003).

INSTALL NEW SIGN STRUCTURE ON WEST CHESTER PIKE AND RELOCATE EXISTING OVERHEAD SIGN ON NEW SIGN STRUCTURE.

REMOVE EXISTING SIGN STRUCTURE FROM WEST CHESTER PIKE (SR 0003).

STAGE 1C SHORT TERM OPERATION

RAMP S-WC (SR 8037)

CONSTRUCTION TO BE PERFORMED BETWEEN THE HOURS OF 7 PM TO 6 AM. HAVE ALL LANES OF TRAFFIC OPEN BETWEEN THE HOURS OF 6 AM TO 7 PM.

INSTALL TEMPORARY SIGNS AND TRAFFIC CONTROL DEVICES.

MAINTAIN STAGE 1B PAVEMENT MARKINGS AS NEEDED.

MAINTAIN ONE LANE OF TRAFFIC ON EXIT RAMP S-WC (SR 8037), AS INDICATED ON THE PLANS.

CONSTRUCT MILL AND OVERLAY OPERATION AS REQUIRED TO ACHIEVE PROPER CROSS SLOPE.

LEVELING COURSE MUST BE INSTALLED IN ONE NIGHT TIME OPERATION.

INSTALL WEARING COURSE, FINAL PAVEMENT MARKINGS, AND SIGNS.

STAGE 1D SHORT TERM OPERATION

RAMP S-WC (SR 8037)

CONSTRUCTION TO BE PERFORMED BETWEEN THE HOURS OF 7 PM TO 6 AM. HAVE ALL LANES OF TRAFFIC OPEN BETWEEN THE HOURS OF 6 AM TO 7 PM.

INSTALL TEMPORARY SIGNS AND TRAFFIC CONTROL DEVICES.

MAINTAIN TWO LANES OF TRAFFIC ON EXIT RAMP S-WC (SR 8037), AS INDICATED ON THE PLANS.

CONSTRUCT MILL AND OVERLAY OPERATION AS REQUIRED TO ACHIEVE PROPER CROSS SLOPE. INSTALL WEARING COURSE, FINAL PAVEMENT MARKINGS, AND SIGNS.

STAGE 2 LONG TERM OPERATION

LANGFORD RUN ROAD

MAINTAIN TEMPORARY SIGN AND TRAFFIC CONTROL DEVICES.

INSTALL WEARING COURSE AND FINAL PAVEMENT MARKINGS.

INSTALL TRAFFIC SIGNAL EQUIPMENT AT THE INTERSECTION OF LANGFORD RUN ROAD AND WEST CHESTER PIKE (SR 0003) UTILIZING PATAS 7 AND 18 OF PUB 213.

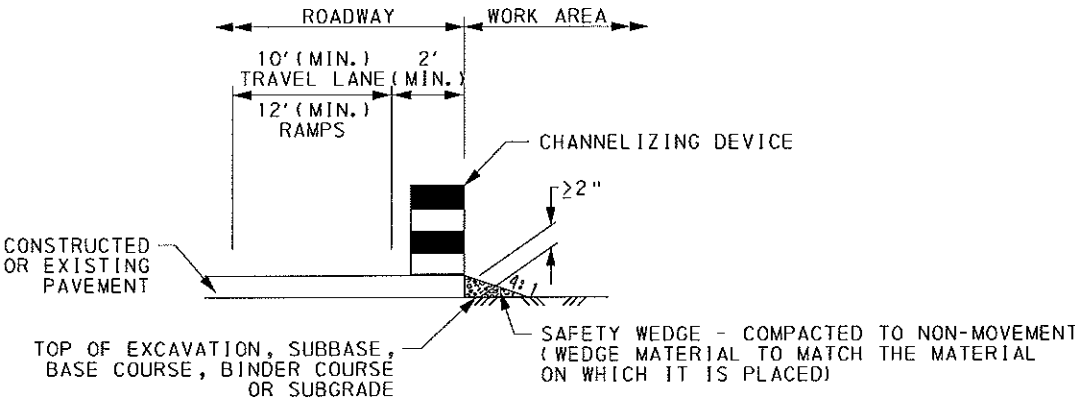
WEST CHESTER PIKE (SR 0003)

INSTALL TEMPORARY SIGN, TRAFFIC CONTROL DEVICES, AND EROSION CONTROL DEVICES.

REMOVE EXISTING MEDIAN AND OVERHEAD SIGN STRUCTURE FOUNDATION, INSTALL NEW STORMWATER FACILITIES.

CONSTRUCT NEW CURB, FULL DEPTH PAVEMENT, PERMANENT SIGNS, AND FINAL PAVEMENT MARKINGS.

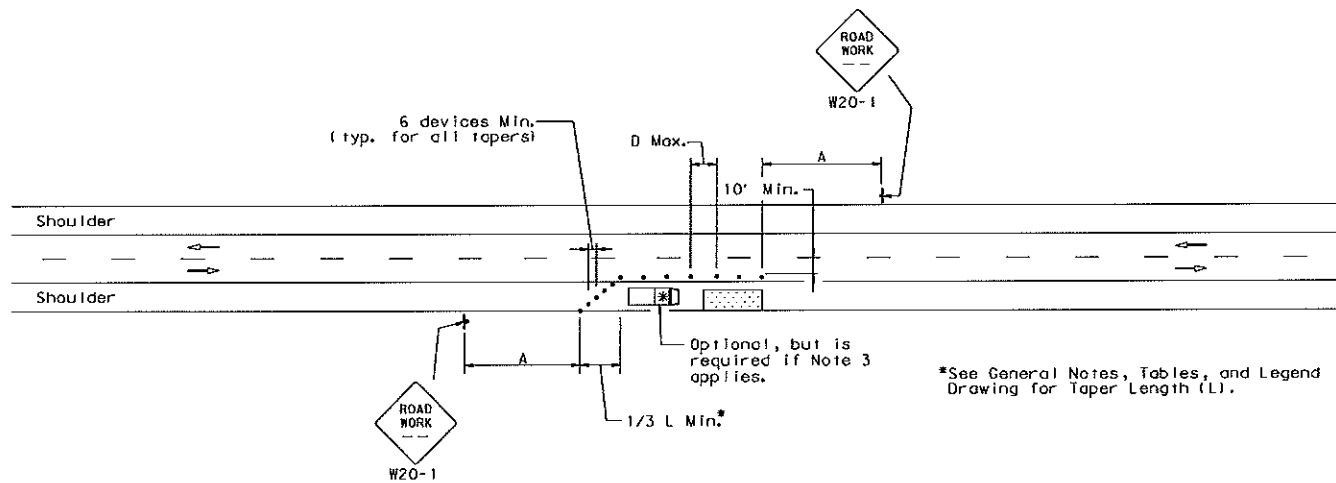
USE PATA 18 OF PUB 213 FOR ANY SHORT-TERM LANE CLOSURES AND TO COMPLETE MILL AND OVERLAY OPERATIONS



NOTE:
SAFETY WEDGE MUST BE USED ANY PLACE WHERE OPEN EXCAVATION OR CONSTRUCTION ALONG RAMP S-WC (SR 8037) RESULTS IN A DROP-OFF GREATER THAN TWO INCHES (2'').

DROP-OFF DETAIL
NOT TO SCALE

NO.		REVISION	DATE
1		ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
TRAFFIC CONTROL PLAN			
OR&A Orth - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office 301 Lindenwood Drive, Suite 130 Woburn, PA 19355 (610) 407-9700			
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY			
DESIGNED BY: GRS	PerinDOT EPS		DATE: NOVEMBER 5, 2013
DRAWN BY: LBW	Application #42543		SHEET NUMBER
CHECKED BY: TGS	PROJECT NUMBER: 2013-065		35 OF 62
REGISTERED PROFESSIONAL ENGINEER	DATE: _____		

PATA 7

Distance plaques on Advance Warning signs shall be the same series type.

Example: either all XXX ft. or all "AHEAD"

CONDITION 1: All Highways (except Freeways and Expressways)
A = 500 ft., W20-1 sign distance plaque to read 500 ft. or "AHEAD"
D = 2 times the normal speed limit

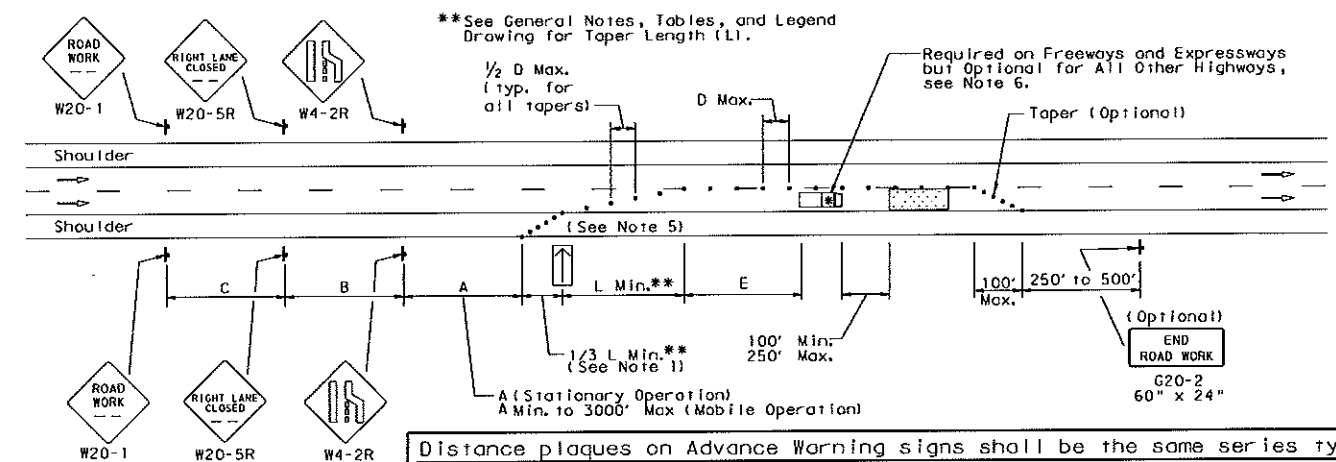
CONDITION 2: For Urban Streets
A = 200 ft. and sign distance plaque to read "AHEAD"
D = 2 times the normal speed limit

NOTES

1. If the work area is completely within a parking lane and parking is present, the taper or the vehicle with an activated or revolving yellow light is not required.
2. When paved shoulders having a width of 8' or more are closed, channelizing devices should be used to close the shoulder.
3. For operations of 15 minutes or less:
 - a. The #20-1 Sign is not required.
 - b. All channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is present in advance of the work space.
4. Additional signs may be appropriate (Road Narrows sign, No Guide Rail sign, and so forth).

PENNDOT PUBLICATION 213

PATA 18



Distance plaques on Advance Warning signs shall be the same series type.

Example: either all XXX ft. or all "AHEAD"

CONDITION 1: All Highways (except Freeways and Expressways)
 A = 500 ft.
 B = 500 ft., W20-5R sign distance plaque to read 1000 ft. or "AHEAD"
 C = 500 ft., W20-1 sign distance plaque to read 1500 ft. or "AHEAD"

CONDITION 2: For Urban Streets
A, B and C = 200 ft. and sign distance plaque to read "AHEAD"

CONDITION 3: For Freeway and Expressway Highways

- A = 1000 ft.
- B = 1640 ft., W20-5R sign distance plaque to read 1/2 MILE or "AHEAD"
- C = 2640 ft., W20-1 sign distance plaque to read 1 MILE or "AHEAD"

All Highways (except freeways and expressways)		
MPH	D	E *
	ft	ft
25	50	155
30	60	200
35	70	250
40	80	305
45	90	360
50	100	425
55	110	495
Freeways and Expressways:		
50	100	425
55	110	495
60	120	570
65	130	645

*Distances may be increased for downgrades or other conditions that affect stopping sight distance.

NOTES

1. When paved shoulders having a width of 8 ft or more are closed, channelizing devices should be used to close the shoulder in advance of the merging taper.
2. For left lane closures, the W20-5L Sign shall be used instead of the W20-5R Sign.
3. When a highway-rail grade crossing exists within the work zone, or it is anticipated that queues resulting from the lane closure might extend through a highway-rail grade crossing, provisions shall be made to eliminate conflicts, which may require placing a flagger at the crossing. Coordination with the railroad is essential.
4. Where speed or volume is higher, signing such as additional Right Lane Closed XX ft Sign (W20-5R) or Be Prepared To Stop Sign (W3-4) should be used in advance of the W20-1 sign.
5. See Table 5 for size of the Flashing Arrow Panel.
6. Shadow vehicle shall be equipped with a Truck Mounted Attenuator (TMA) on Expressways and Freeways. Use of a TMA is optional on all other Highways when a shadow vehicle is used.

TABLE 5.
FLASHING ARROW PANEL GUIDELINES

Panel Type	Size (inches)	Application
A **	48x24	Low-speed urban Typically 25-30 MPH
B **	60x30	Intermediate-speed facility, typically 35-40 MPH and Mobile Operations
C **	96x48	Freeway and Expressway Other high-speed, high-volume roadways Typically 45 MPH or greater
D **	Length of Arrow=48 Width of Arrowhead=24	Low-speed urban, typically 25-30 MPH Short-term work not to exceed one daylight period For use on authorized vehicles only

**Type A, B and C arrow panels shall have solid rectangular appearances. The Type D arrow panel shall conform to the shape of the arrow.

NO.	REVISION	DATE

1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
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TRAFFIC CONTROL PLAN

OR & A
Orth - Rodgers & Associates, Inc.
TRANSPORTATION ENGINEERS and PLANNERS
Great Valley Office: 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700

WEST CHESTER PIKE
(SR 0003)

MARPLE TOWNSHIP, DELAWARE COUNTY

DESIGNED BY: <u>GRS</u>	I ADDRESSING DECEMBER 13, 2013 COMMENTS		1-15-2014		
DRAWN BY: <u>LBW</u>	TRAFFIC CONTROL PLAN				
CHECKED BY: <u>TGS</u>					
	 Orth – Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office=301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-5700	WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY			
		REGISTERED PROFESSIONAL ENGINEER	PennDOT EPS Application # 42543	DATE: NOVEMBER 5, 2013	SHEET NUMBER 36 OF 62
		DATE:		PROJECT NUMBER: 2013-065	

NOTES

- 1. INSTALL ADVANCE WARNING SIGNS PRIOR TO INITIATING CONSTRUCTION OPERATIONS. MAINTAIN WARNING SIGNS THROUGHOUT THE DURATION OF THE CONSTRUCTION PROJECT.
- 2. MESSAGE SIGN MUST BE APPROVED BY THE DEPARTMENT PRIOR TO ACTIVATION.
- 3. LANGFORD RUN ROAD IS CURRENTLY CLOSED TO THE PUBLIC AND WILL REMAIN CLOSED UNTIL SITE WORK IS COMPLETE AND OPEN THE PUBLIC.

Ⓐ

ROAD
WORK
AHEAD
W20-1
36 "X36 "

Ⓑ

ROAD
WORK
1000 FT
W20-1
36 "X36 "

Ⓒ

ROAD
WORK
1500 FT
W20-1
36 "X36 "

Ⓓ

RAMP
WORK
1000 FT
W21-4-1B
48 "X48 "

Ⓔ

RAMP
WORK
1/2 MILE
W21-4-1B
48 "X48 "

Ⓕ

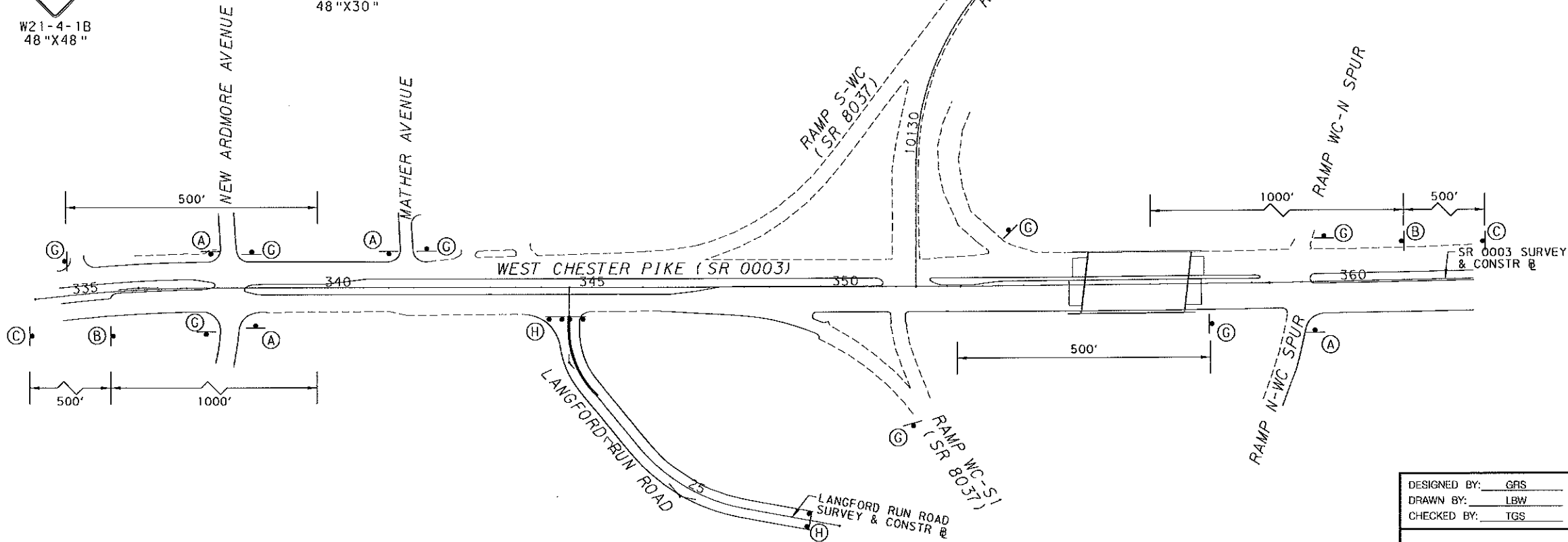
RAMP
WORK
1 MILE
W21-4-1B
48 "X48 "

Ⓖ

END
ROAD WORK
G20-2
60 "X24 "

Ⓗ

ROAD
CLOSED
R11-2
48 "X30 "



ADVANCED WARNING SIGNS
NTS

DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

REGISTERED
PROFESSIONAL ENGINEER
DATE:

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014

TRAFFIC CONTROL PLAN

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Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700

WEST CHESTER PIKE
(SR 0003)

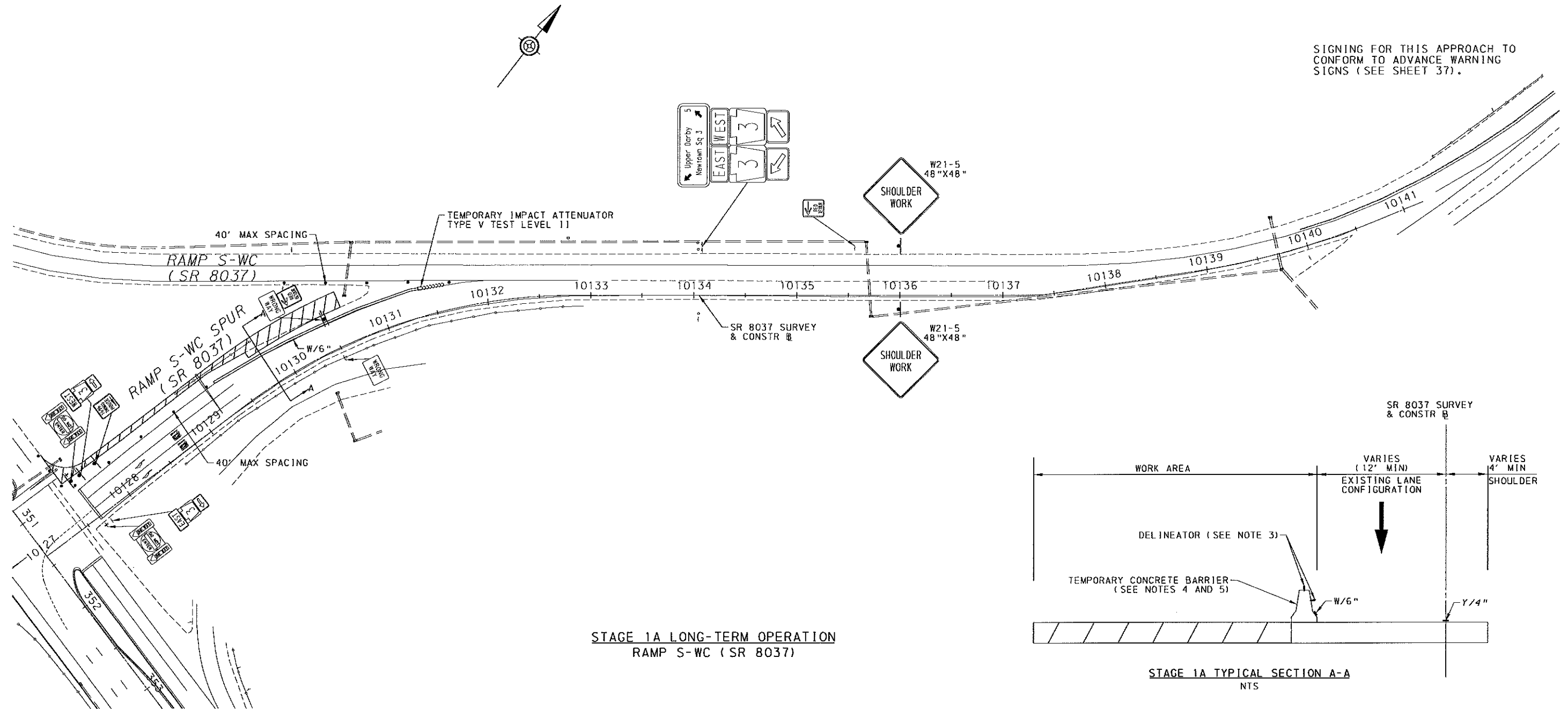
MARPLE TOWNSHIP, DELAWARE COUNTY

PennDOT EPS
Application #42543

DATE: NOVEMBER 5, 2013
PROJECT NUMBER: 2013-066

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37 OF 62

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LEGEND

- WORK ZONE
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGN
- CHANNELIZING DEVICE
- TEMPORARY CONCRETE BARRIER
- TEMPORARY IMPACT ATTENUATOR
- PERMANENT SIGN
- EXISTING SIGN

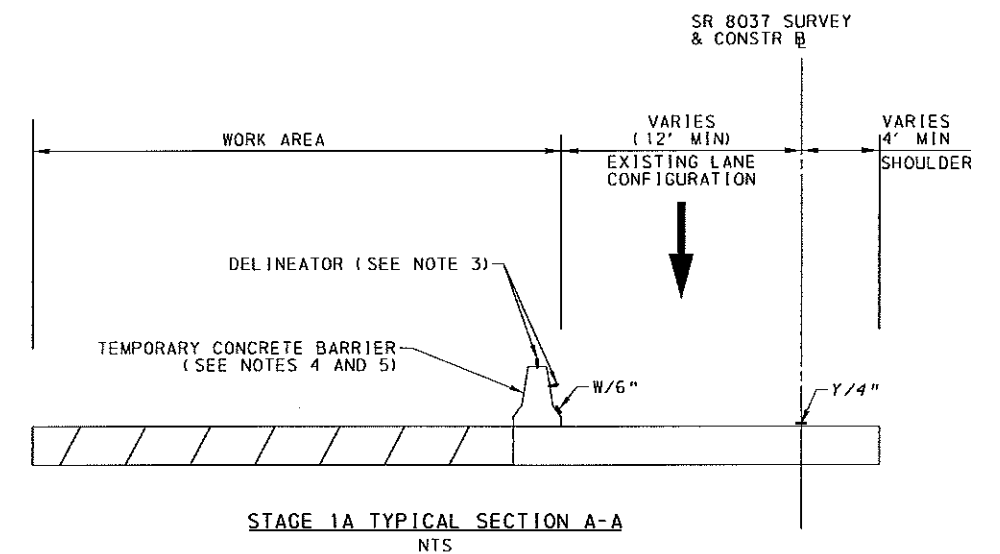
NOTES

1. MAINTAIN EXISTING SIGNING AND PAVEMENT MARKINGS AS NEEDED.
2. SEE SHEET 37 FOR ADVANCED WARNING SIGNS.
3. INSTALL DELINEATORS IN ACCORDANCE WITH PENNDOT PUBLICATION 111M, TC-8604.
4. INSTALL TEMPORARY CONCRETE BARRIER IN ACCORDANCE WITH PENNDOT PUBLICATION 72M, RC-57M.
5. FOLLOW PENNDOT PUBLICATION 213 FOR TEMPORARY CONCRETE BARRIER PLACEMENT AND STIFFENING.
6. USE TEMPORARY WATERBORNE PAVEMENT MARKINGS FOR ALL TEMPORARY TRAFFIC CONTROL PAVEMENT MARKINGS.

SCALE

0 50 100 FEET

SIGNING FOR THIS APPROACH TO
CONFORM TO ADVANCE WARNING
SIGNS (SEE SHEET 37).



DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014

TRAFFIC CONTROL PLAN

OR&A Orth - Rodgers & Associates, Inc.
TRANSPORTATION ENGINEERS AND PLANNERS
Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700

WEST CHESTER PIKE
(SR 0003)

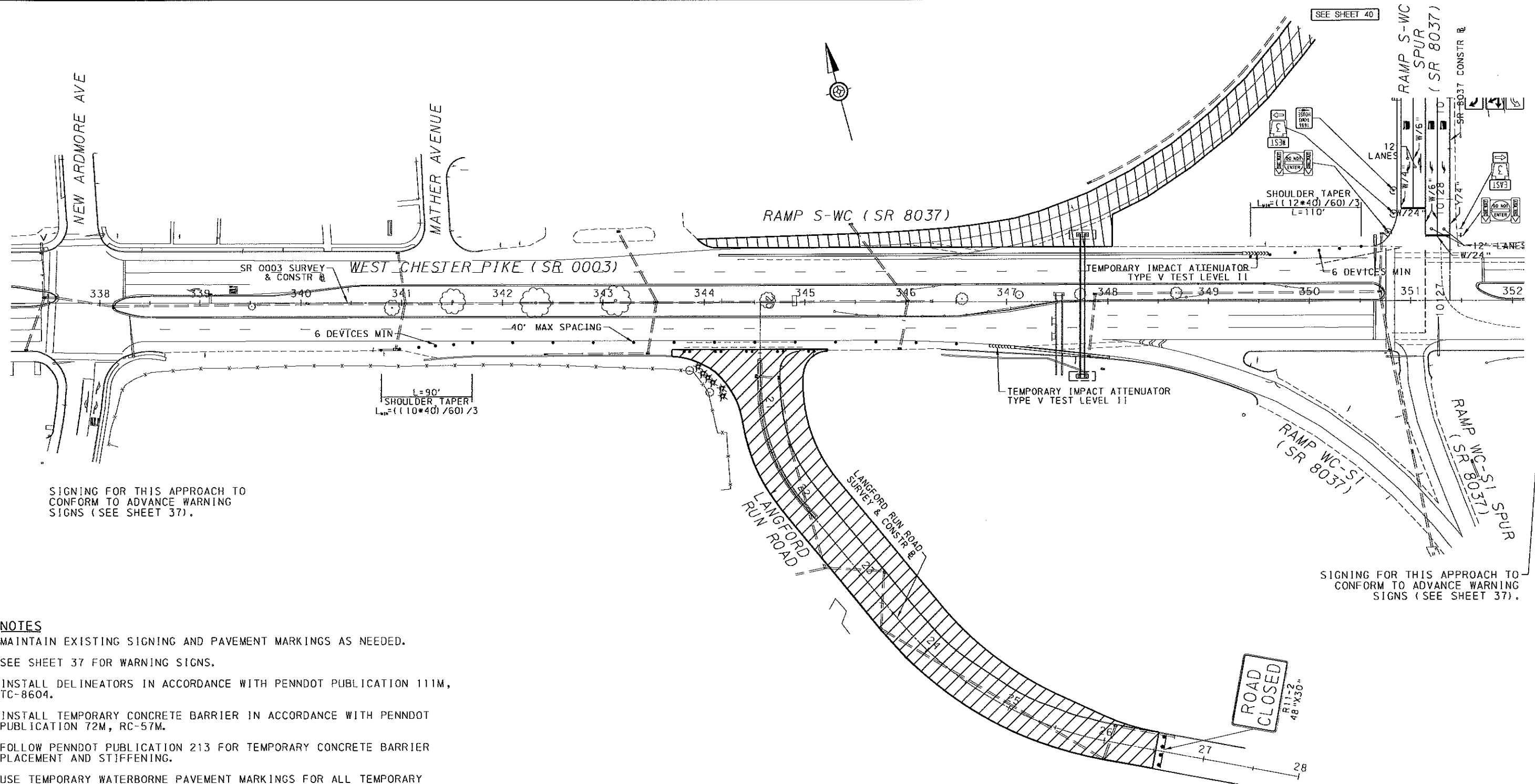
MARPLE TOWNSHIP, DELAWARE COUNTY

REGISTERED
PROFESSIONAL ENGINEER
DATE:

PennDOT EPS
Application #42543

DATE: NOVEMBER 5, 2013
PROJECT NUMBER: 2013-065

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38 OF 62



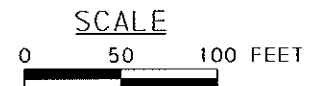
NOTES

1. MAINTAIN EXISTING SIGNING AND PAVEMENT MARKINGS AS NEEDED.
2. SEE SHEET 37 FOR WARNING SIGNS.
3. INSTALL DELINEATORS IN ACCORDANCE WITH PENNDOT PUBLICATION 111M, TC-8604.
4. INSTALL TEMPORARY CONCRETE BARRIER IN ACCORDANCE WITH PENNDOT PUBLICATION 72M, RC-57M.
5. FOLLOW PENNDOT PUBLICATION 213 FOR TEMPORARY CONCRETE BARRIER PLACEMENT AND STIFFENING.
6. USE TEMPORARY WATERBORNE PAVEMENT MARKINGS FOR ALL TEMPORARY TRAFFIC CONTROL PAVEMENT MARKINGS.

LEGEND

- WORK ZONE
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGN
- CHANNELIZING DEVICE
- TEMPORARY CONCRETE BARRIER
- TEMPORARY IMPACT ATTENUATOR
- PERMANENT SIGN
- EXISTING SIGN

STAGE 1B LONG-TERM OPERATION
 WEST CHESTER PIKE (SR 0003)
 RAMP S-WC (SR 8037)
 LANGFORD RUN ROAD

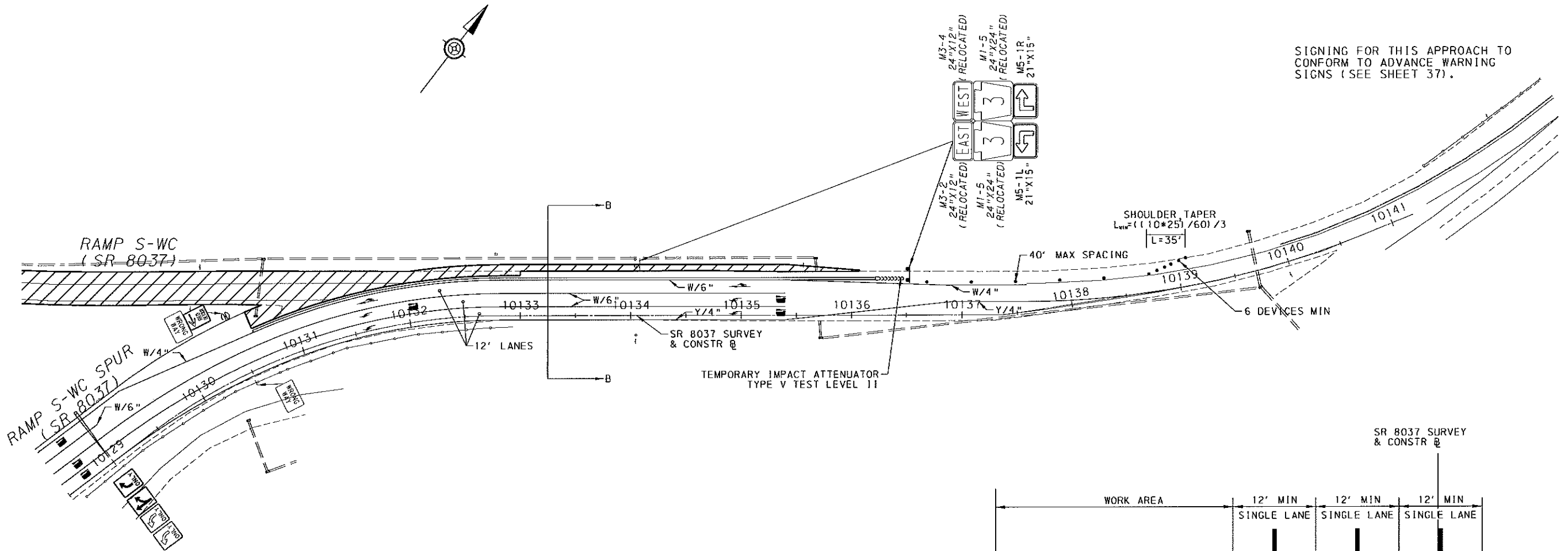


DESIGNED BY: GRS
 DRAWN BY: LBW
 CHECKED BY: TGS

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1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
TRAFFIC CONTROL PLAN		
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WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY		
REGISTERED PROFESSIONAL ENGINEER DATE:	PennDOT EPS Application #42543	DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-065
		SHEET NUMBER 39 OF 62

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SEE SHEET 39



SIGNING FOR THIS APPROACH TO CONFORM TO ADVANCE WARNING SIGNS (SEE SHEET 37).

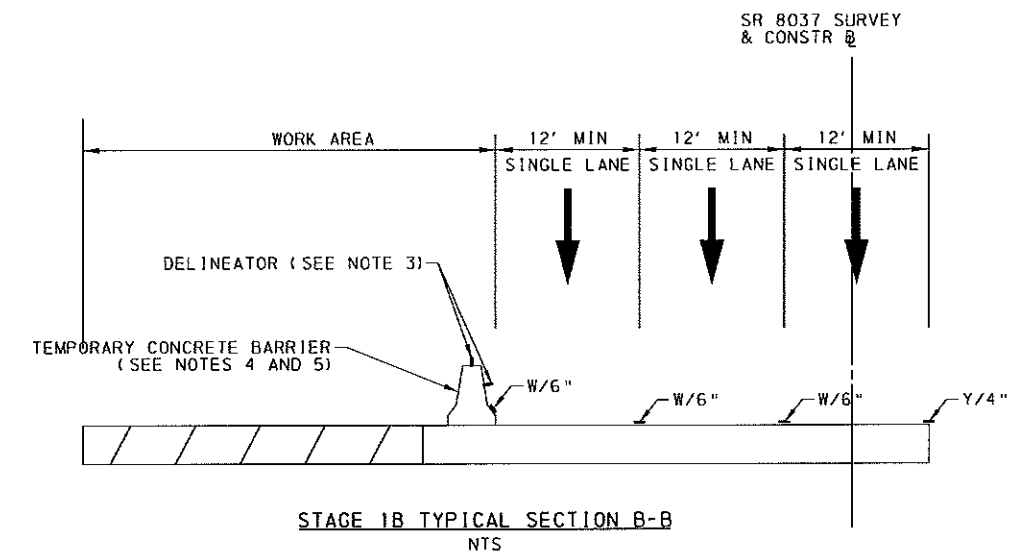
NOTES

1. MAINTAIN EXISTING SIGNING AND PAVEMENT MARKINGS AS NEEDED.
2. SEE SHEET 37 FOR ADVANCED WARNING SIGNS.
3. INSTALL DELINEATORS IN ACCORDANCE WITH PENNDOT PUBLICATION 111M, TC-8604.
4. INSTALL TEMPORARY CONCRETE BARRIER IN ACCORDANCE WITH PENNDOT PUBLICATION 72M, RC-57M.
5. FOLLOW PENNDOT PUBLICATION 213 FOR TEMPORARY CONCRETE BARRIER PLACEMENT AND STIFFENING.
6. USE TEMPORARY WATERBORNE PAVEMENT MARKINGS FOR ALL TEMPORARY TRAFFIC CONTROL PAVEMENT MARKINGS.

LEGEND

- WORK ZONE
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGN
- CHANNELIZING DEVICE
- TEMPORARY CONCRETE BARRIER
- TEMPORARY IMPACT ATTENUATOR
- PERMANENT SIGN
- EXISTING SIGN

STAGE 1B LONG-TERM OPERATION RAMP S-WC (SR 8037)



DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

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TRAFFIC CONTROL PLAN

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TRANSPORTATION ENGINEERS and PLANNERS
Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700

WEST CHESTER PIKE (SR 0003)

MARPLE TOWNSHIP, DELAWARE COUNTY

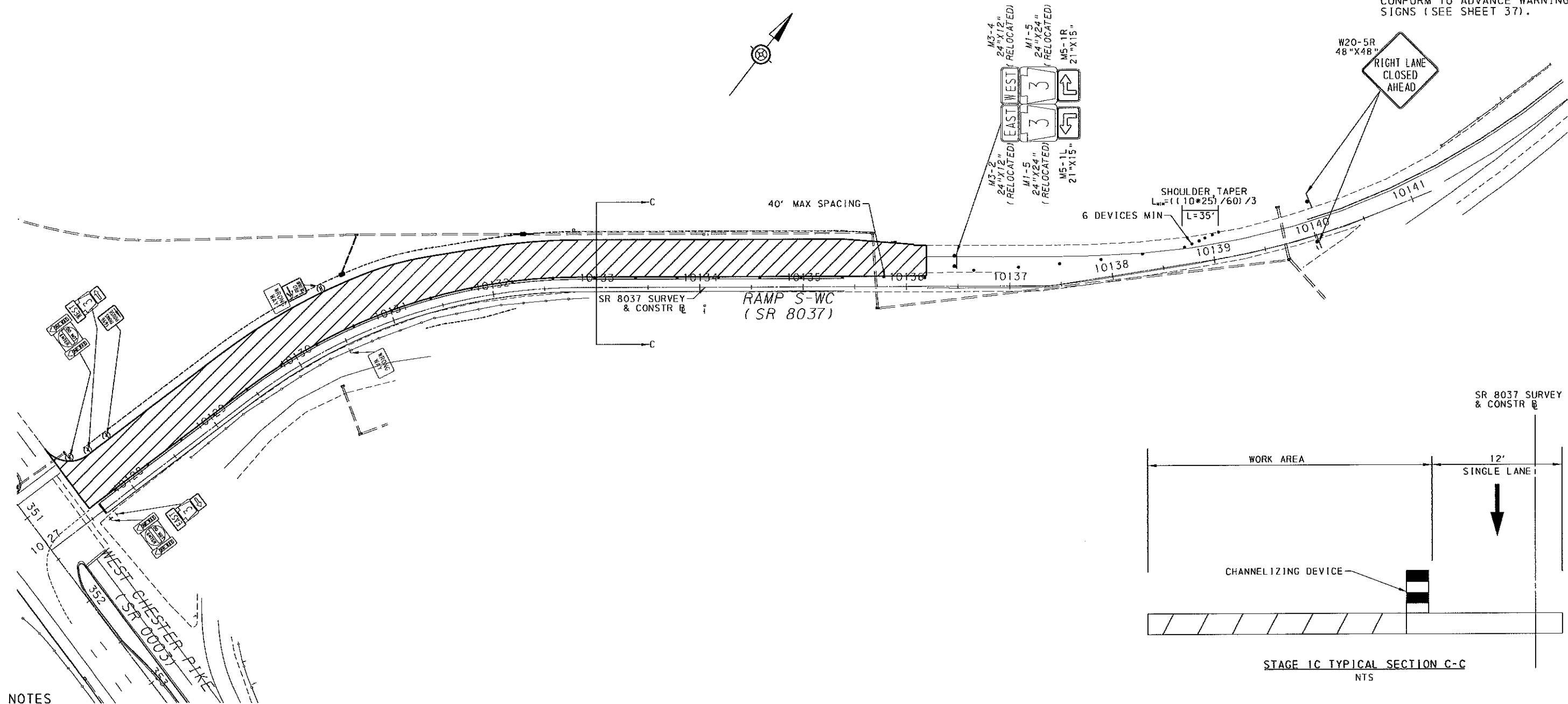
REGISTERED
PROFESSIONAL ENGINEER
DATE:

PennDOT EPS
Application #42543

DATE: NOVEMBER 5, 2013
PROJECT NUMBER: 2013-065

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40 OF 62

SIGNING FOR THIS APPROACH TO CONFORM TO ADVANCE WARNING SIGNS (SEE SHEET 37).



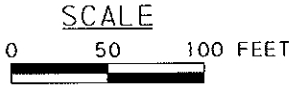
NOTES

- CONSTRUCTION TO BE PERFORMED DURING NIGHT TIME HOURS BETWEEN 7 PM TO 6 AM. HAVE ALL LANES OF TRAFFIC OPEN BETWEEN THE HOURS OF 6 AM TO 7 PM.
- MAINTAIN STAGE 1B PAVEMENT MARKINGS AS NEEDED.
- SEE SHEET 37 FOR ADVANCED WARNING SIGNS.
- USE TEMPORARY WATERBORNE PAVEMENT MARKINGS FOR ALL TEMPORARY TRAFFIC CONTROL PAVEMENT MARKINGS.

LEGEND

- WORK ZONE
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGN
- CHANNELIZING DEVICE
- TEMPORARY CONCRETE BARRIER
- TEMPORARY IMPACT ATTENUATOR
- PERMANENT SIGN
- EXISTING SIGN

STAGE 1C SHORT-TERM OPERATION
RAMP S-WC (SR 8037)



NO.		REVISION	DATE
1		ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
TRAFFIC CONTROL PLAN			
Orith - Rodgers & Associates, Inc. TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700			
WEST CHESTER PIKE (SR 0003) MARPLE TOWNSHIP, DELAWARE COUNTY			
REGISTERED PROFESSIONAL ENGINEER DATE: _____		PennDOT EPS Application #42543 DATE: NOVEMBER 5, 2013 PROJECT NUMBER: 2013-065	SHEET NUMBER 41 OF 62

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W20-5L
48"X48"

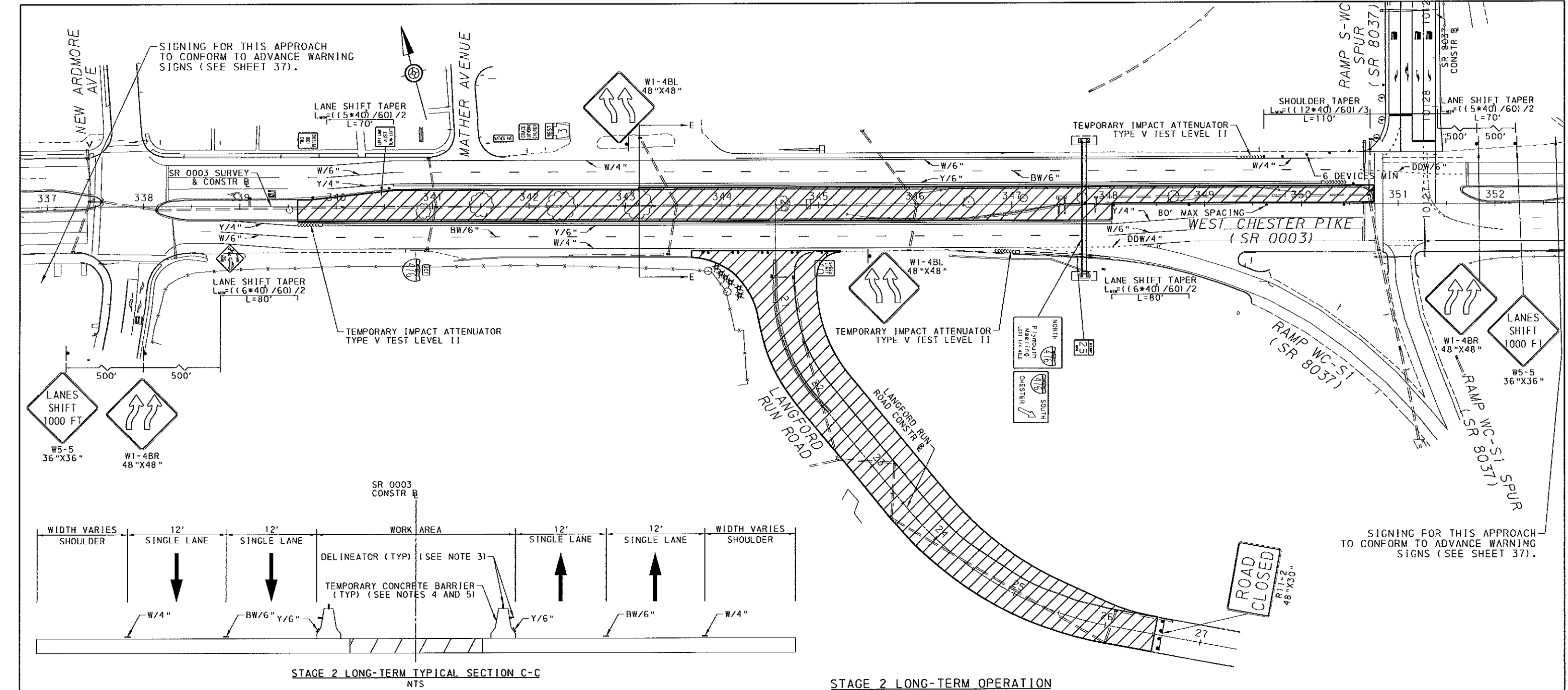


SCALE

0 50 100 FEET

A horizontal scale bar with a black background and white markings. It is divided into two equal segments, each labeled '50'. The total length is labeled '100 FEET' at the right end. The left end is labeled '0'.

NO.	REVISION	DATE
I	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014
TRAFFIC CONTROL PLAN		
 <u>Orth – Rodgers & Associates, Inc.</u> TRANSPORTATION ENGINEERS and PLANNERS Great Valley Office=301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700		
WEST CHESTER PIKE (SR 0003)		
MARPLE TOWNSHIP, DELAWARE COUNTY		
PennDOT EPS Application #42543	DATE: NOVEMBER 5, 2013	SHEET NUMBER 42 OF 62
	PROJECT NUMBER: 2013-065	



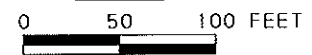
NOTES

1. MAINTAIN EXISTING SIGNING AND PAVEMENT MARKINGS AS NEEDED.
2. SEE SHEET 37 FOR ADVANCED WARNING SIGNS.
3. INSTALL DELINEATORS IN ACCORDANCE WITH PENNDOT PUBLICATION 111M, TC-8604.
4. INSTALL TEMPORARY CONCRETE BARRIER IN ACCORDANCE WITH PENNDOT PUBLICATION 72M, RC-57M.
5. FOLLOW PENNDOT PUBLICATION 213 FOR TEMPORARY CONCRETE BARRIER PLACEMENT AND STIFFENING.
6. USE TEMPORARY WATERBORNE PAVEMENT MARKINGS FOR ALL TEMPORARY TRAFFIC CONTROL PAVEMENT MARKINGS.
7. USE PATA 18 OF PUB 213 FOR ANY SHORT-TERM LANE CLOSURES.

LEGEND

- WORK ZONE
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGN
- CHANNELIZING DEVICE
- TEMPORARY CONCRETE BARRIER
- TEMPORARY IMPACT ATTENUATOR
- PERMANENT SIGN
- EXISTING SIGN

SCALE



NO.	REVISION	DATE
1	ADDRESSING DECEMBER 13, 2013 COMMENTS	1-15-2014

DESIGNED BY: GRS
DRAWN BY: LBW
CHECKED BY: TGS

TRAFFIC CONTROL PLAN

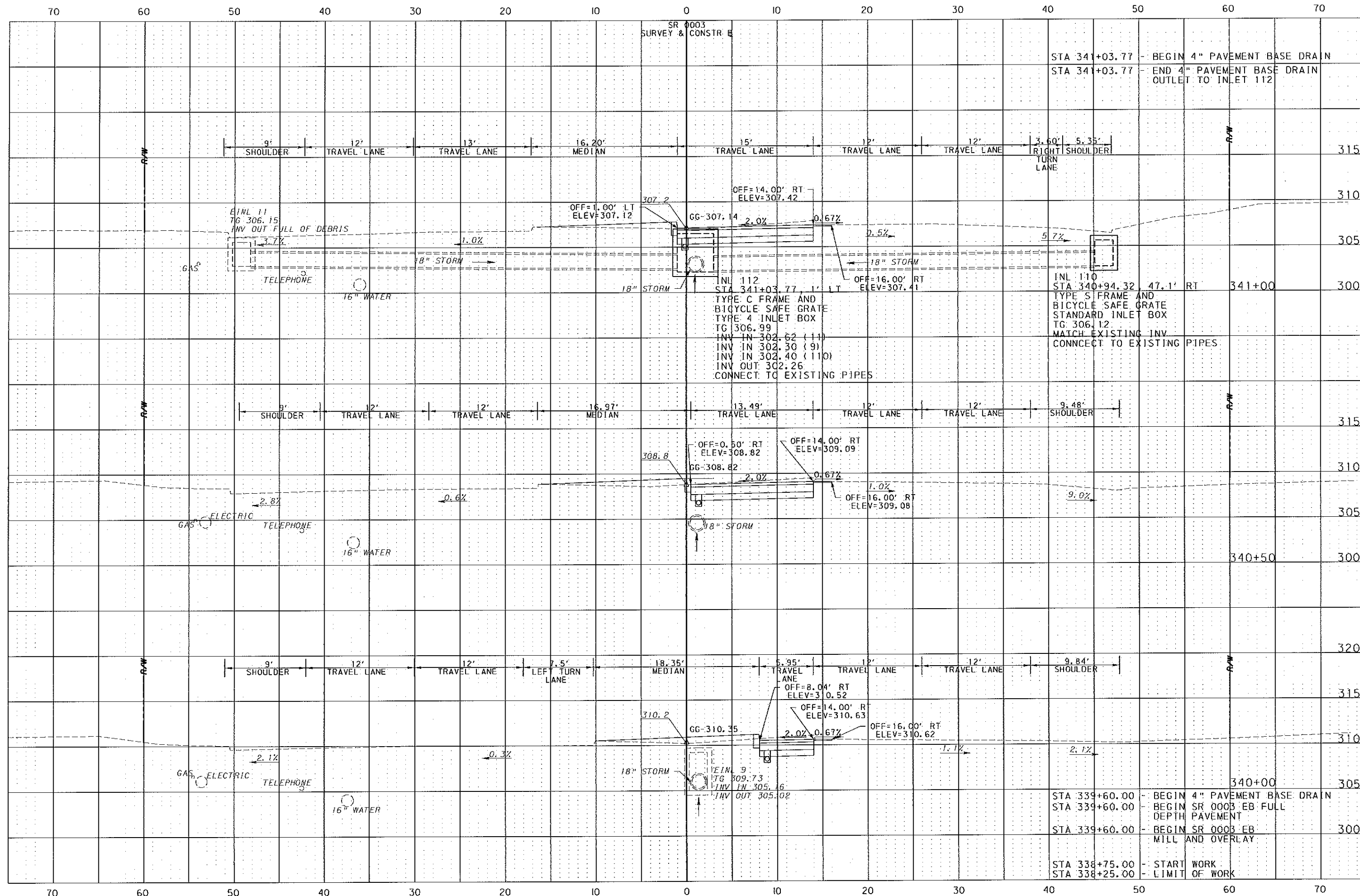
OR&A Orth - Rodgers & Associates, Inc.
TRANSPORTATION ENGINEERS and PLANNERS
Great Valley Office 301 Lindenwood Drive, Suite 130 Malvern, PA 19355 (610) 407-9700

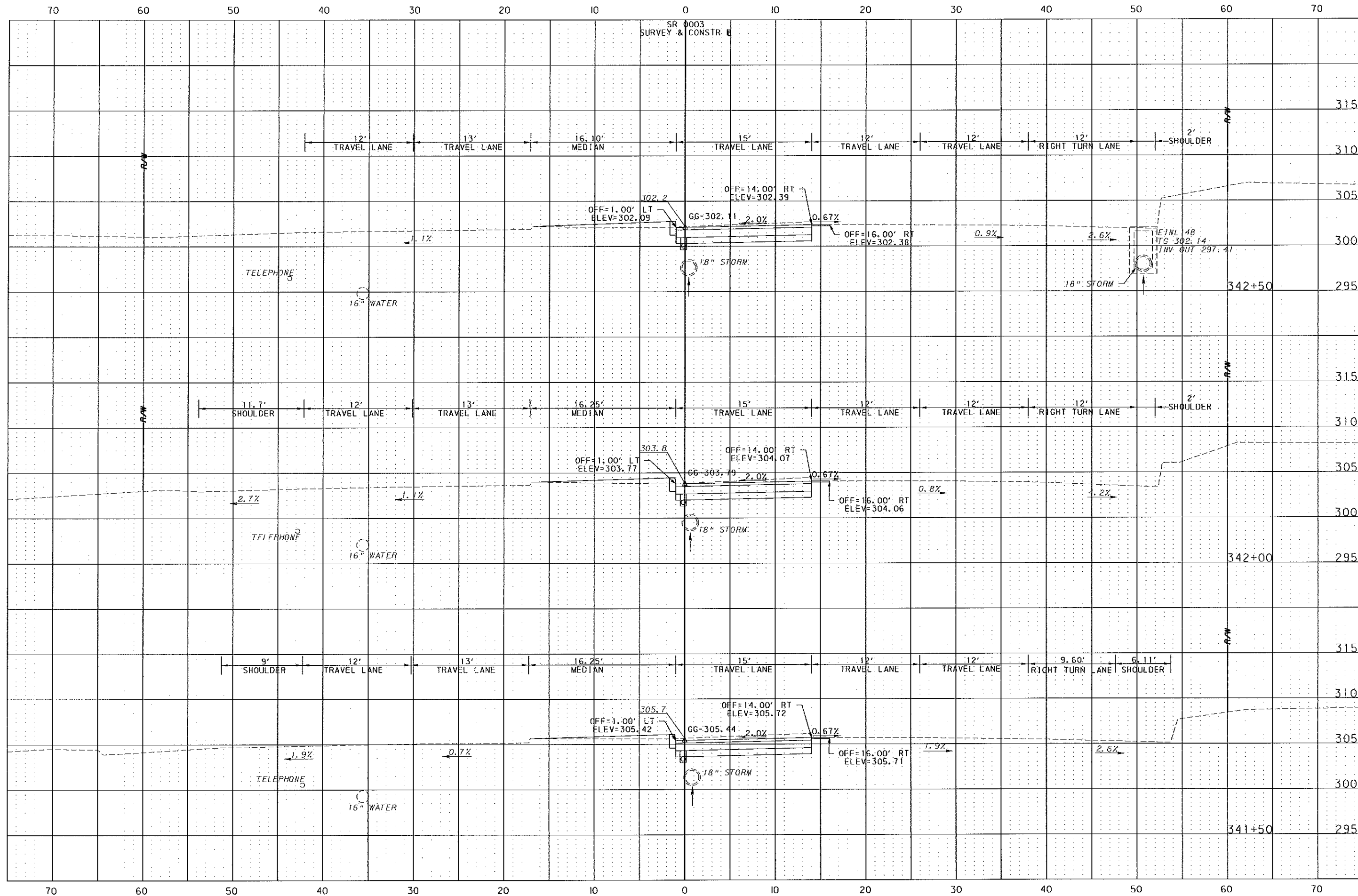
WEST CHESTER PIKE
(SR 0003)
MARPLE TOWNSHIP, DELAWARE COUNTY

REGISTERED PROFESSIONAL ENGINEER
DATE:

PennDOT EPS Application #42543
DATE: NOVEMBER 5, 2013
PROJECT NUMBER: 2013-065
SHEET NUMBER
43 OF 62

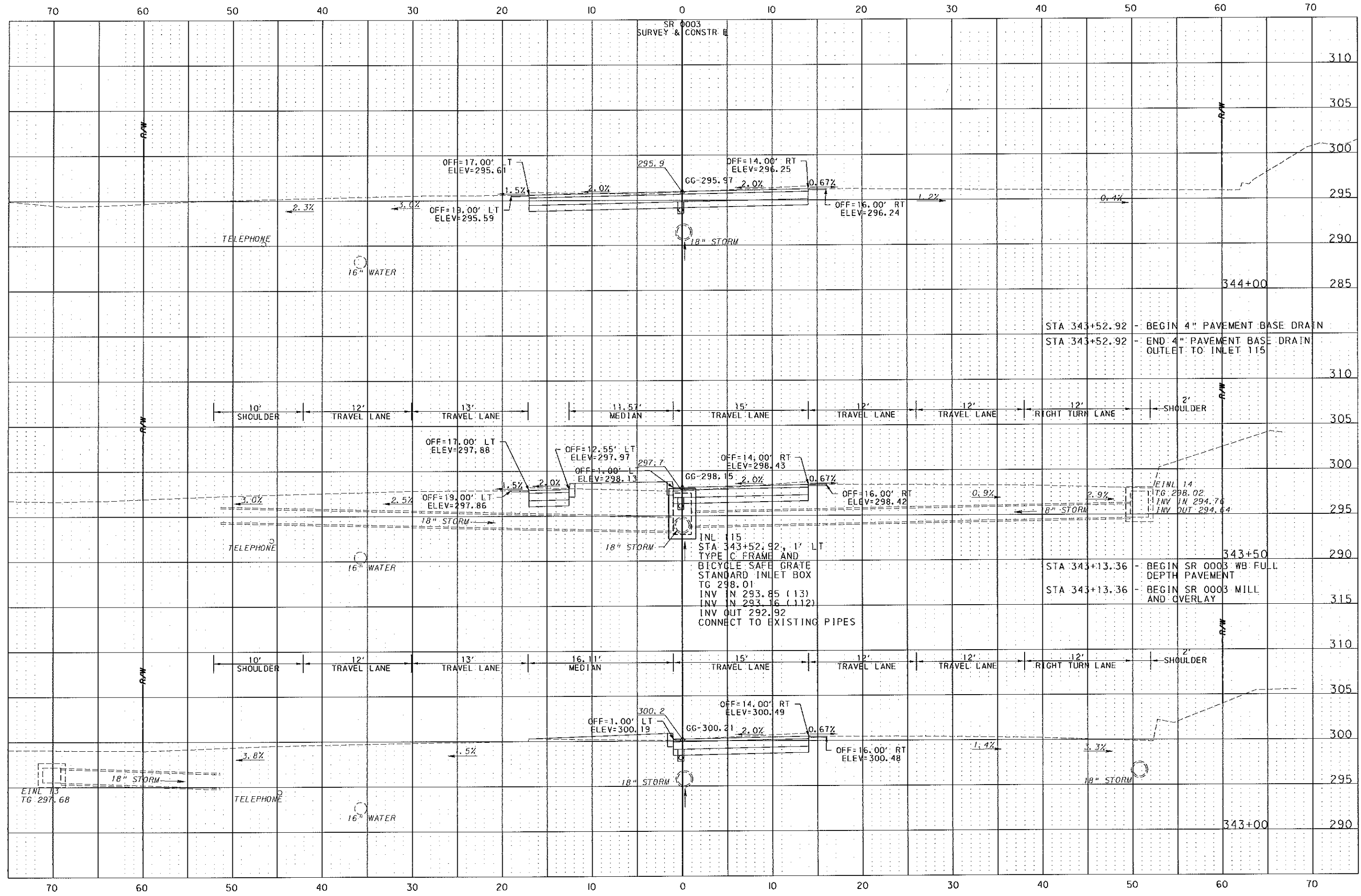
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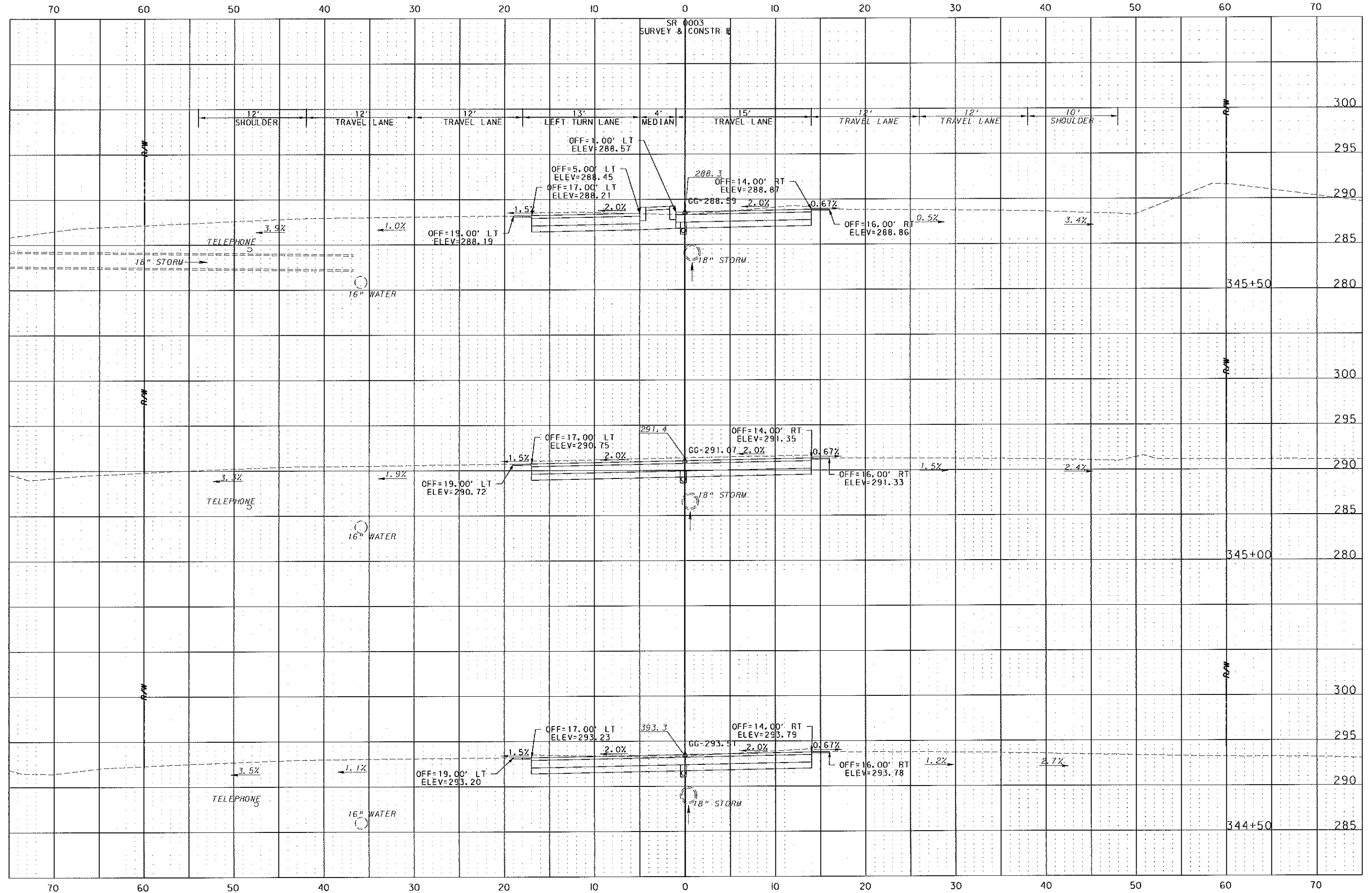


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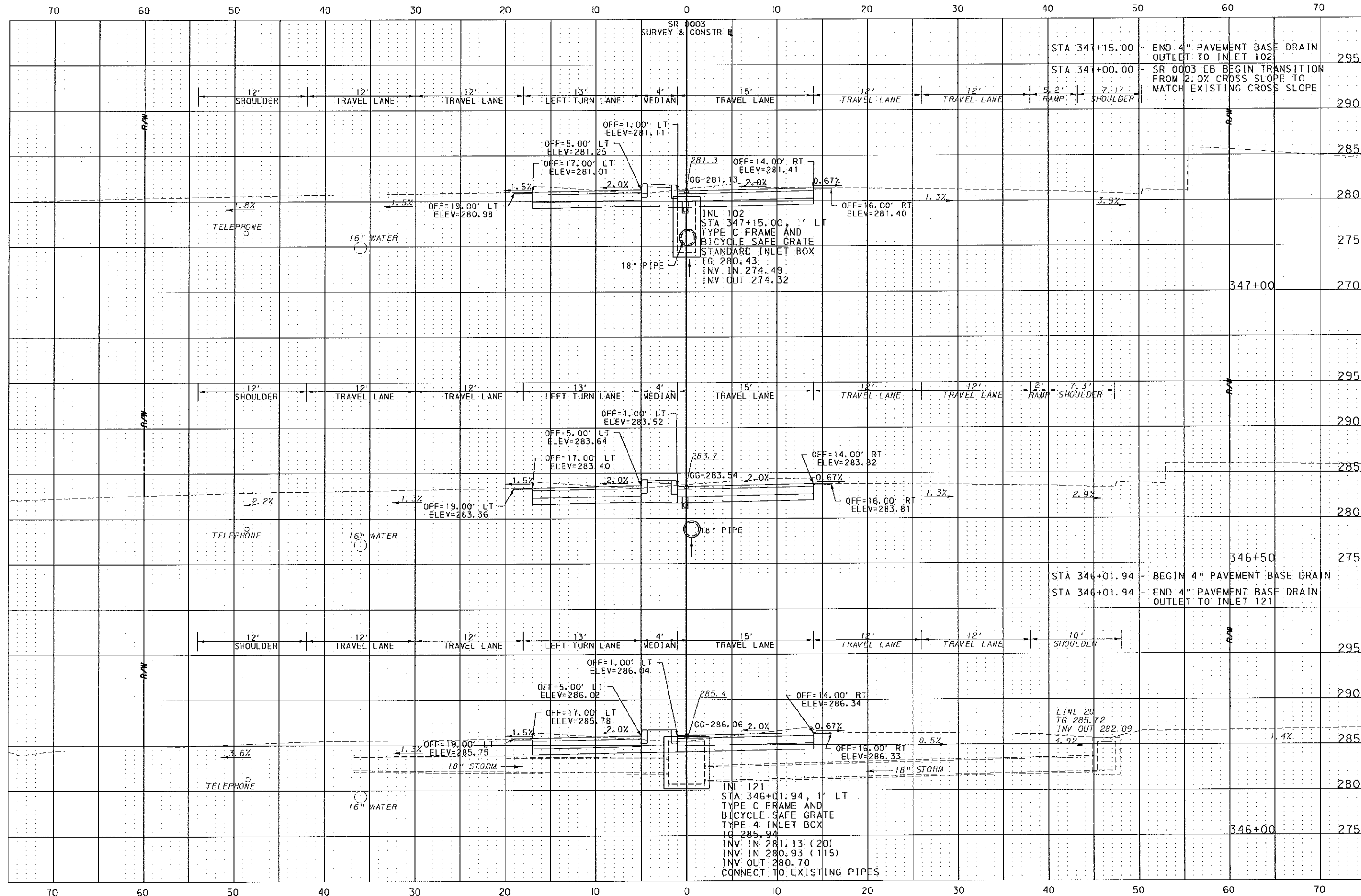
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CROSS SECTIONS



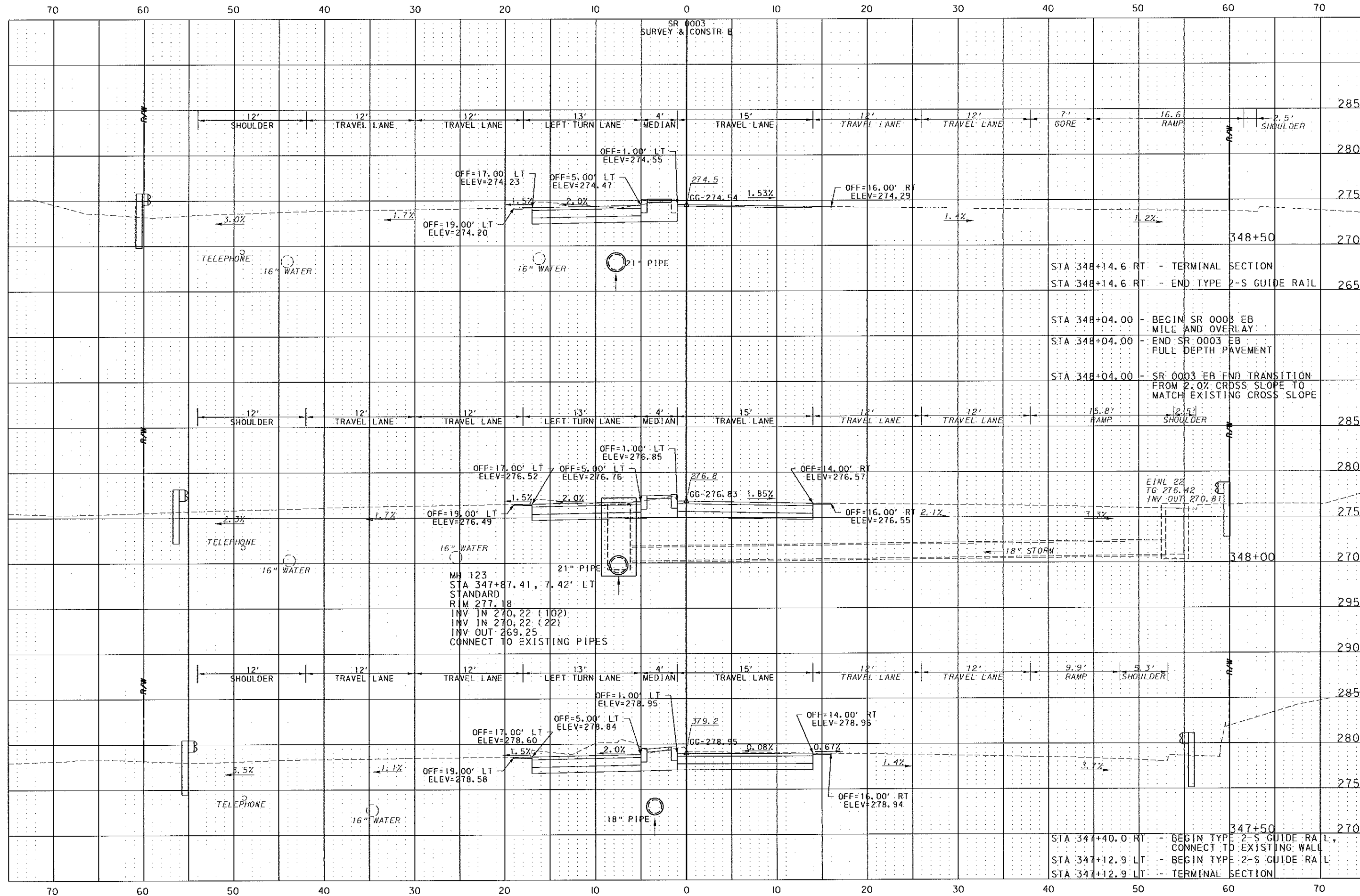
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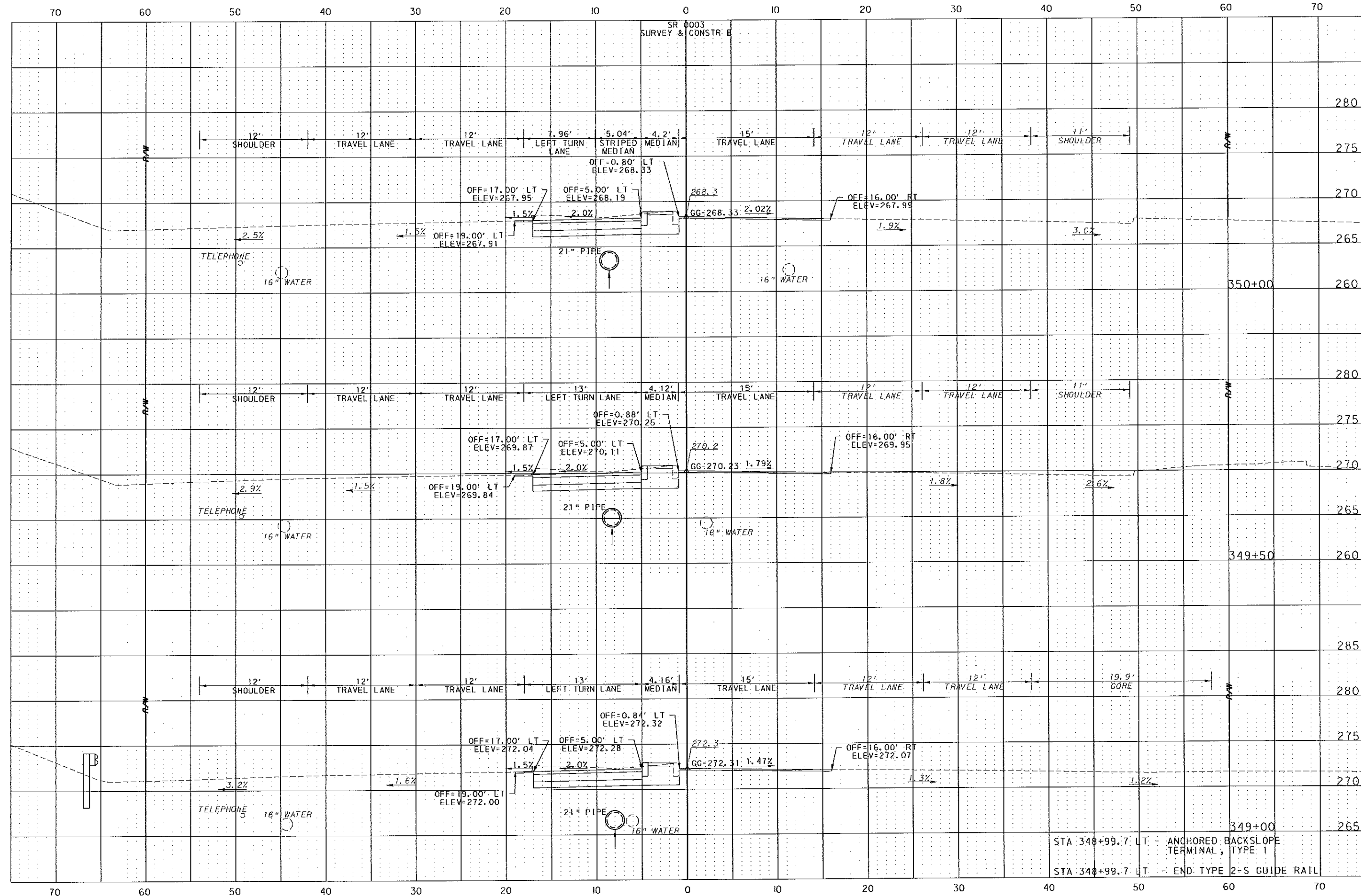


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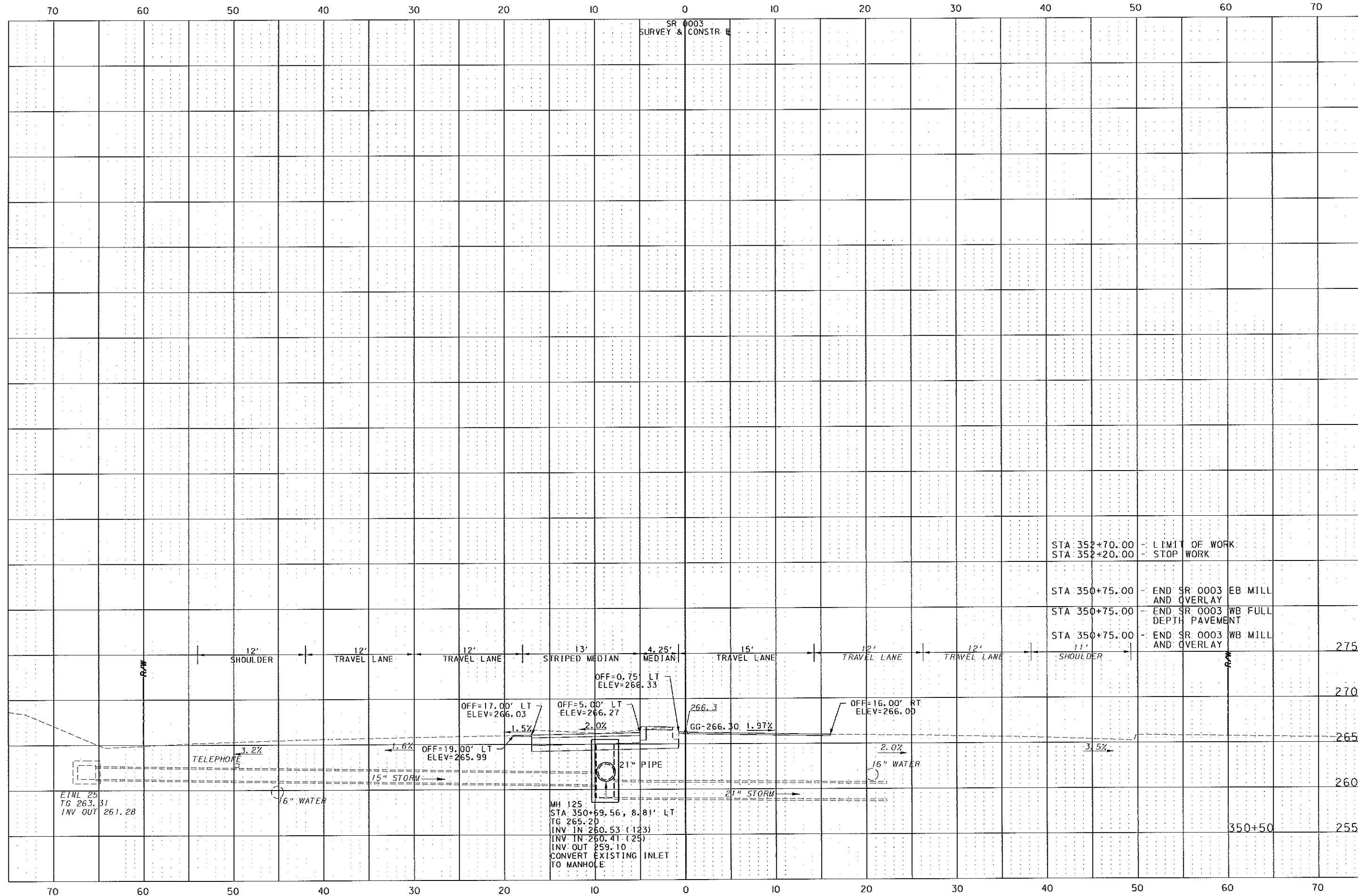


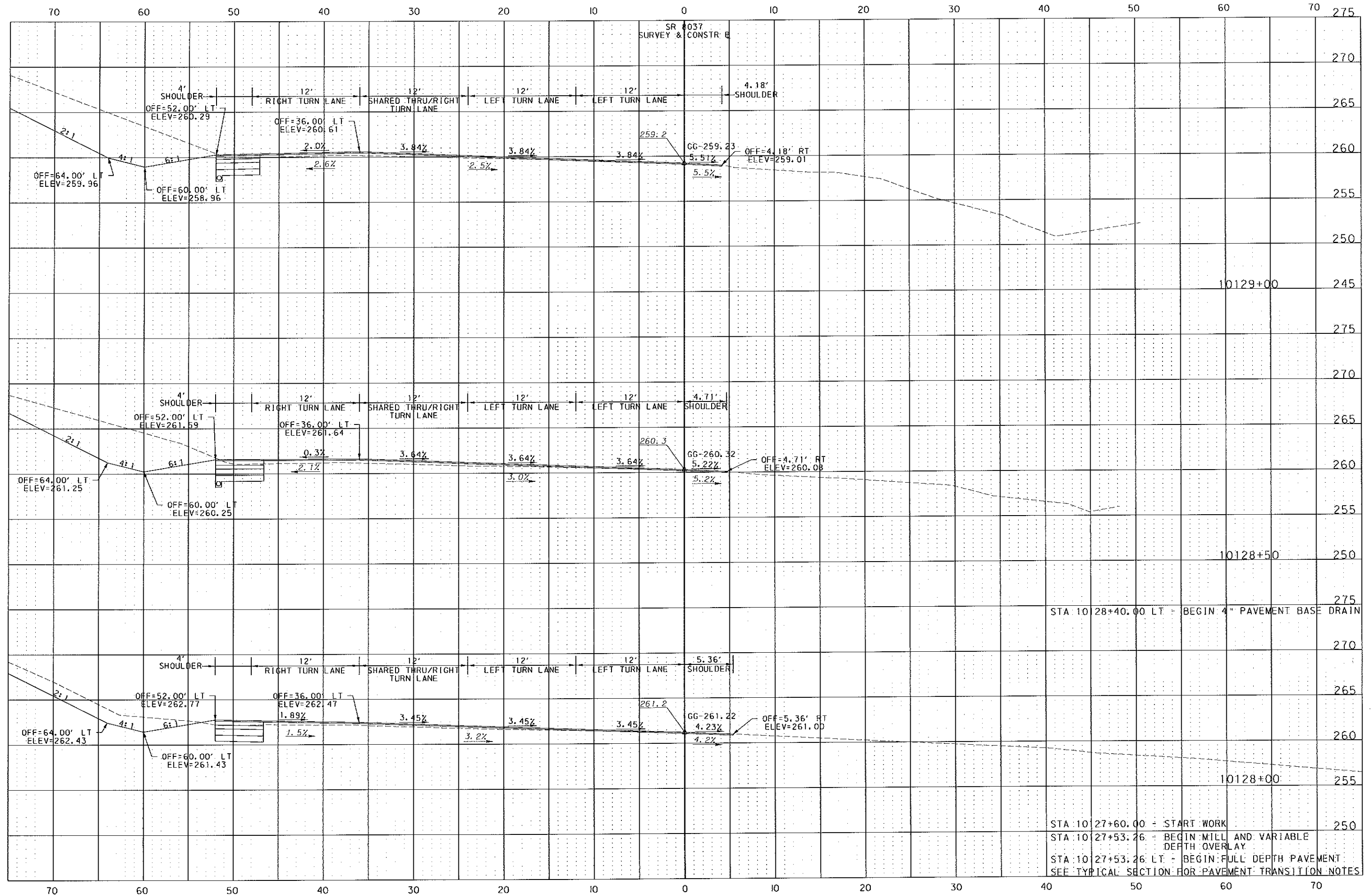
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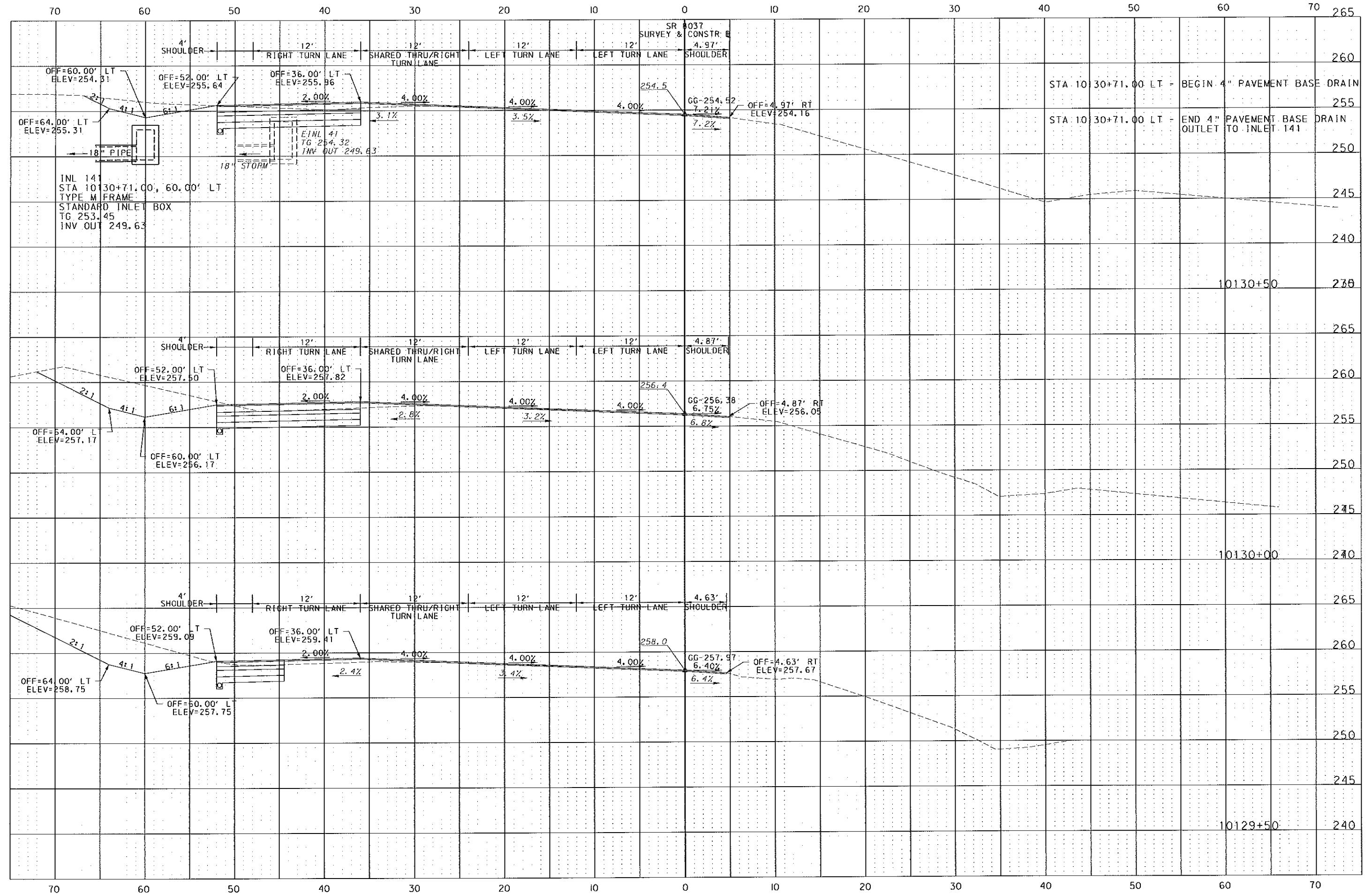
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CROSS SECTIONS



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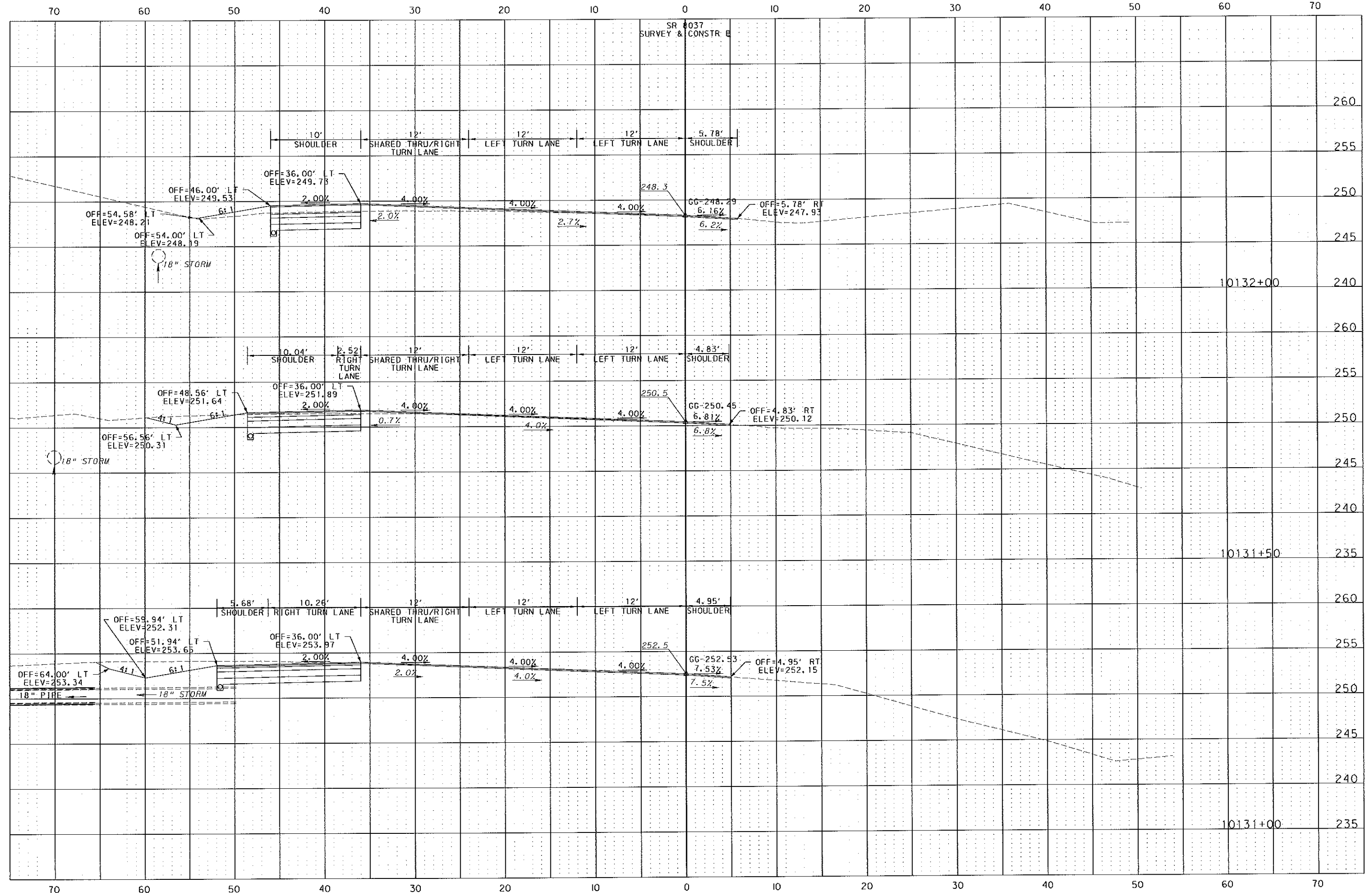




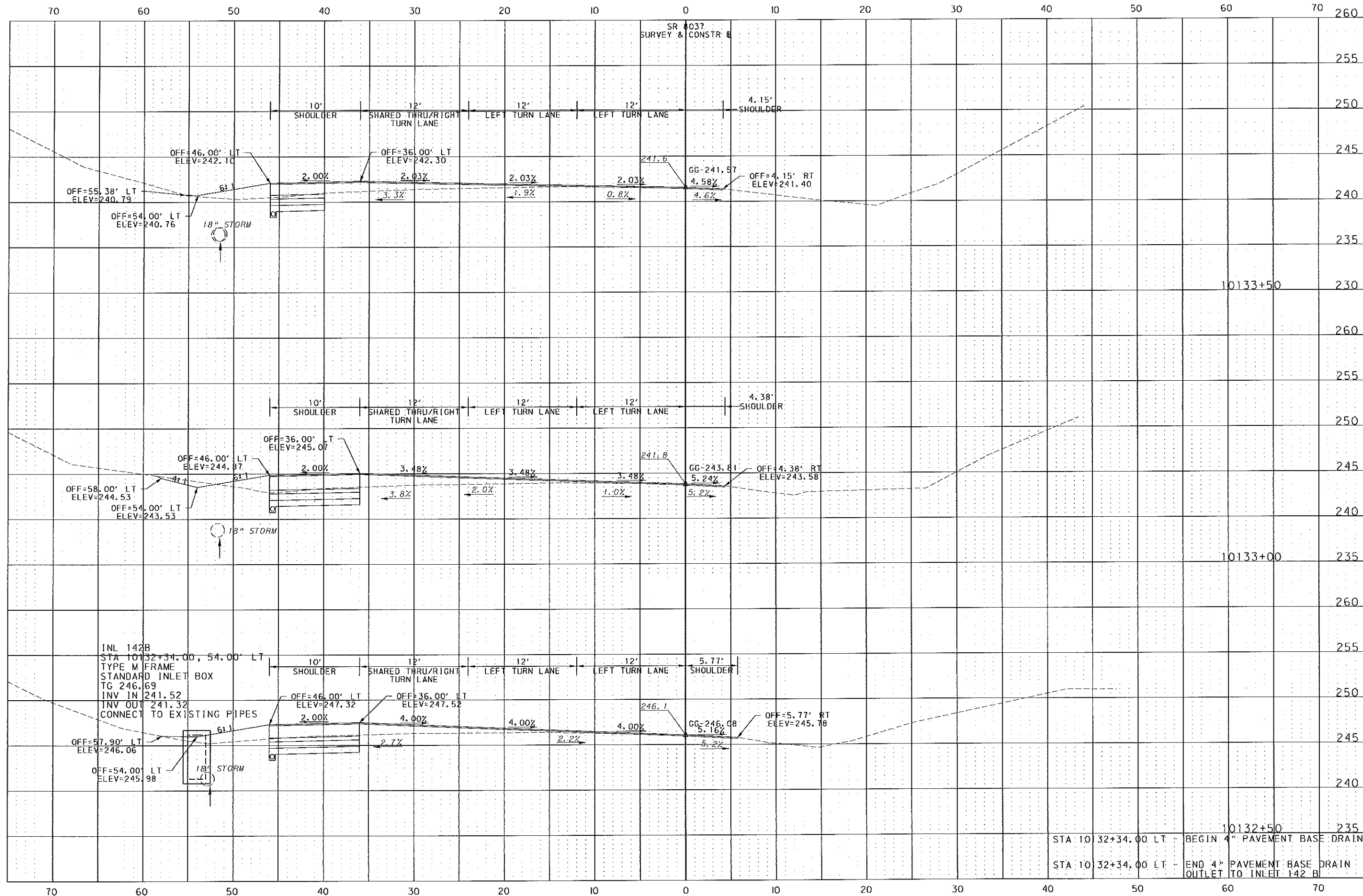


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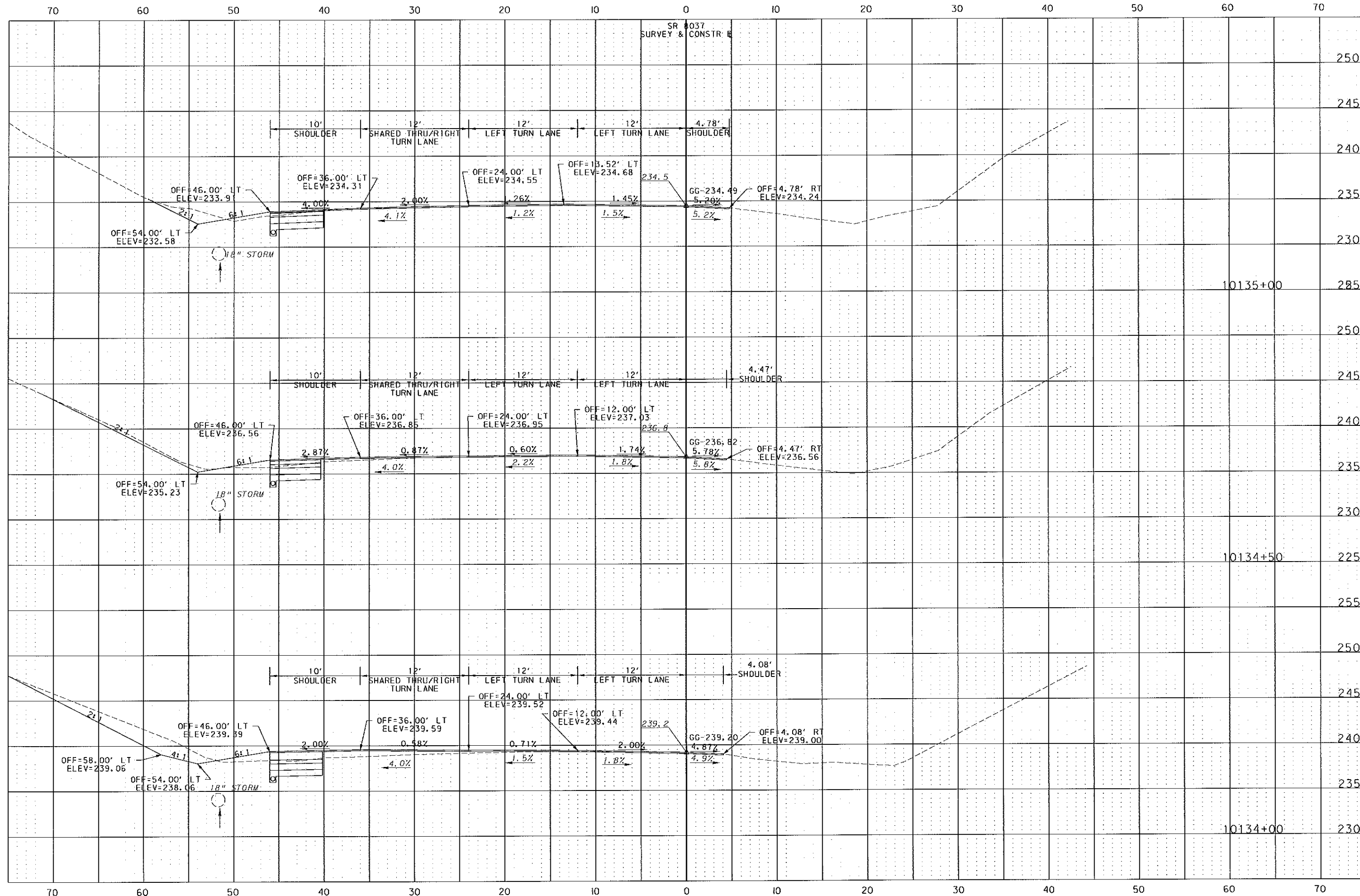
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CROSS SECTIONS



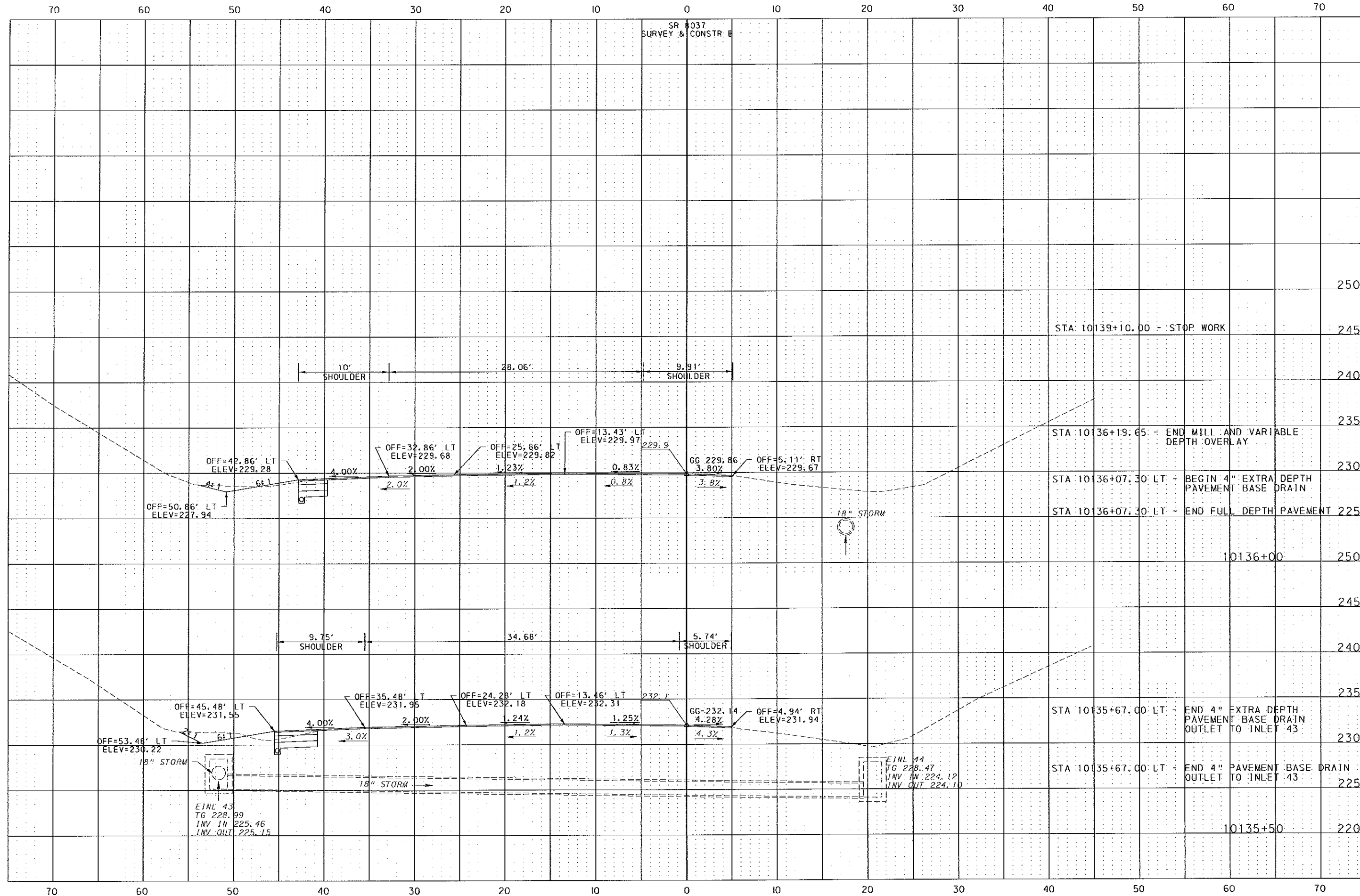
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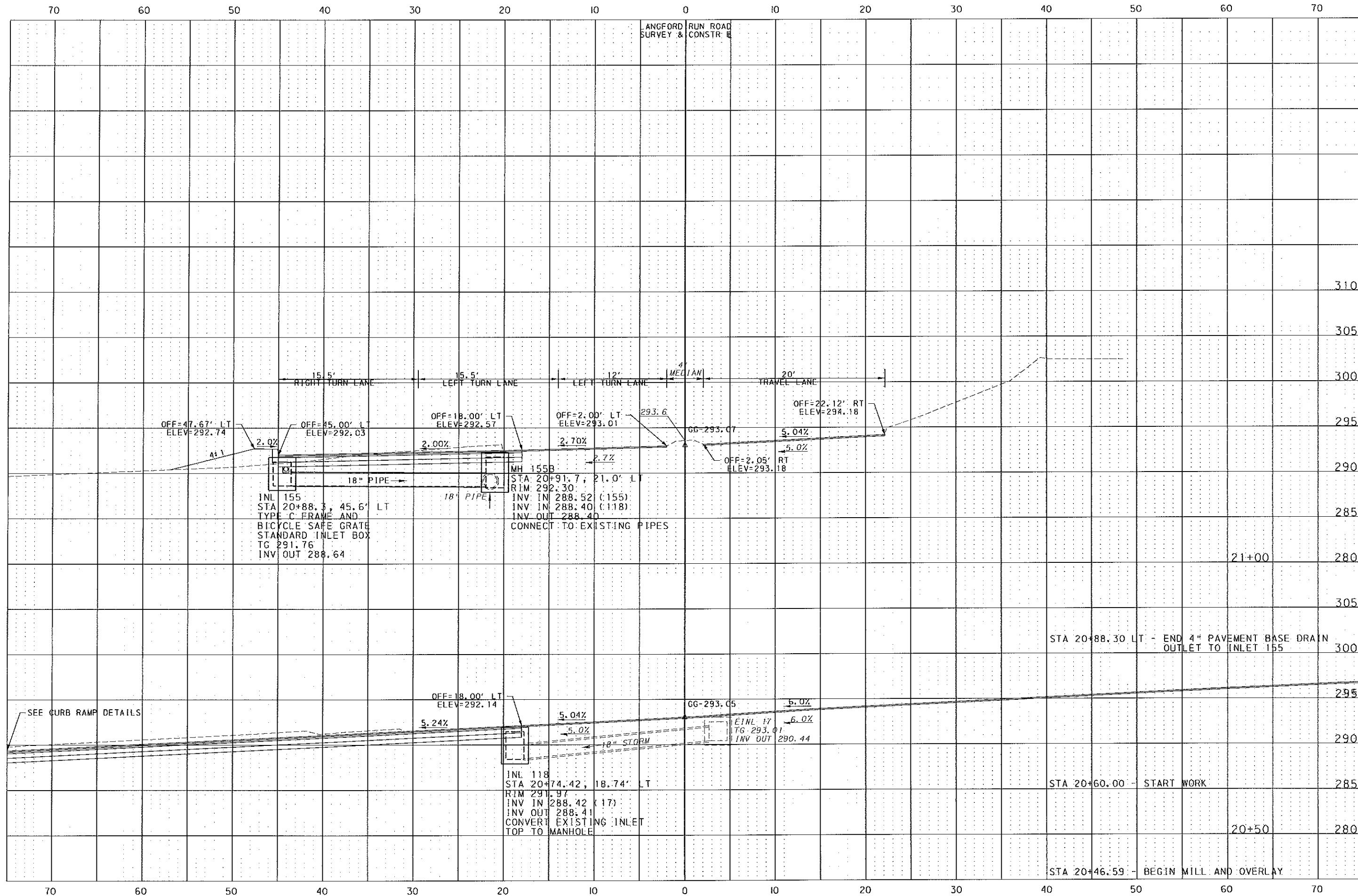


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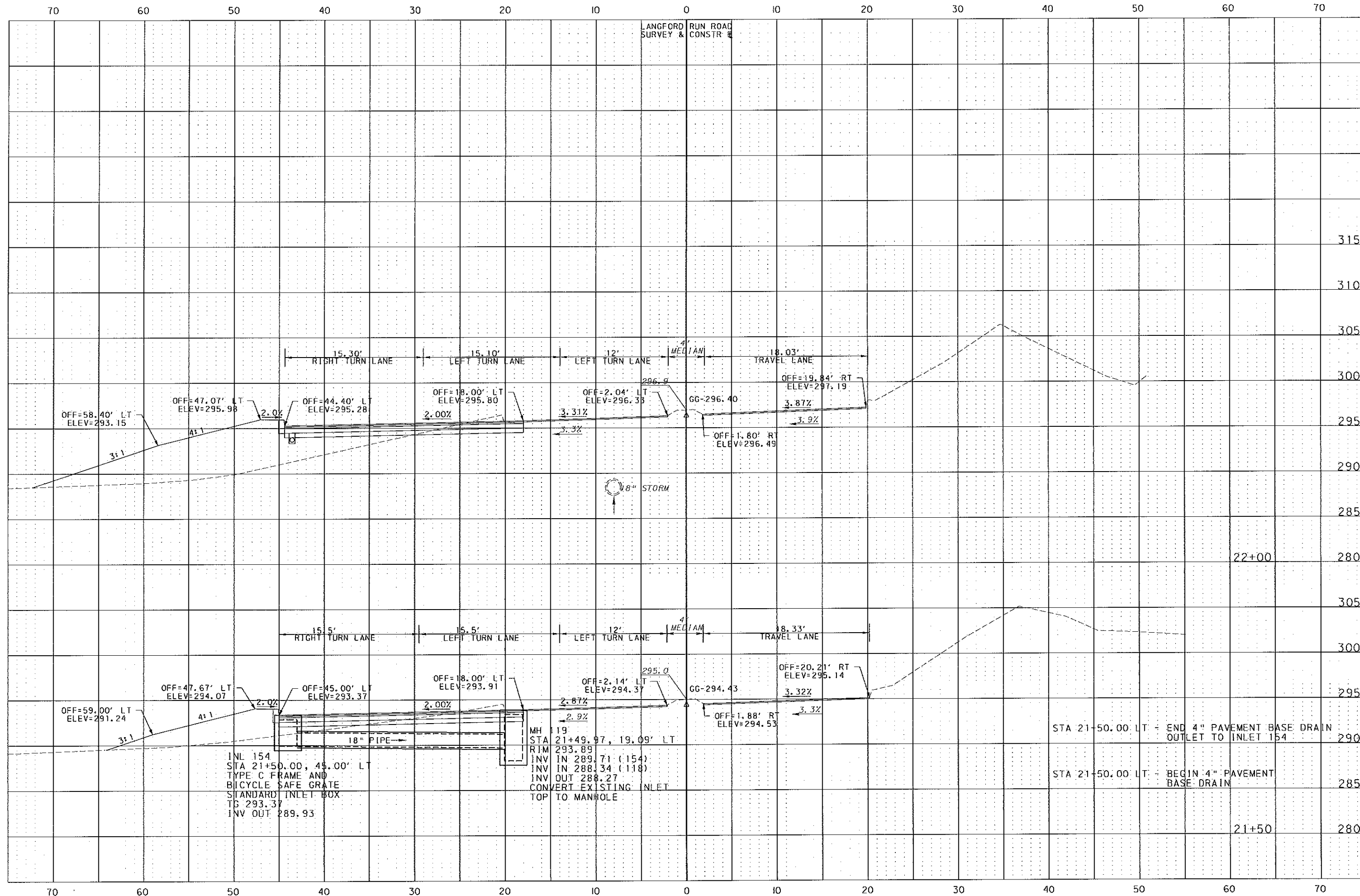


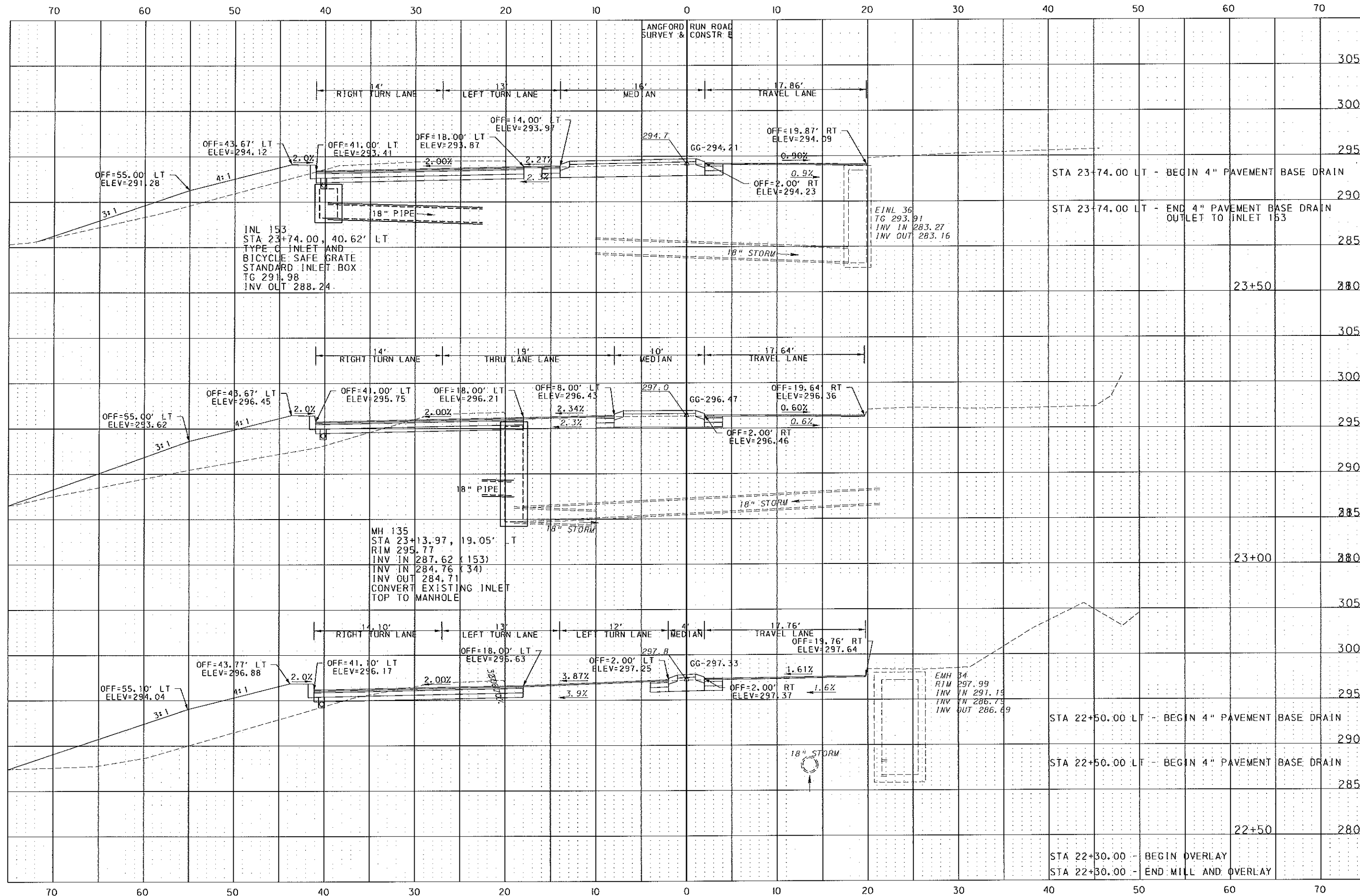
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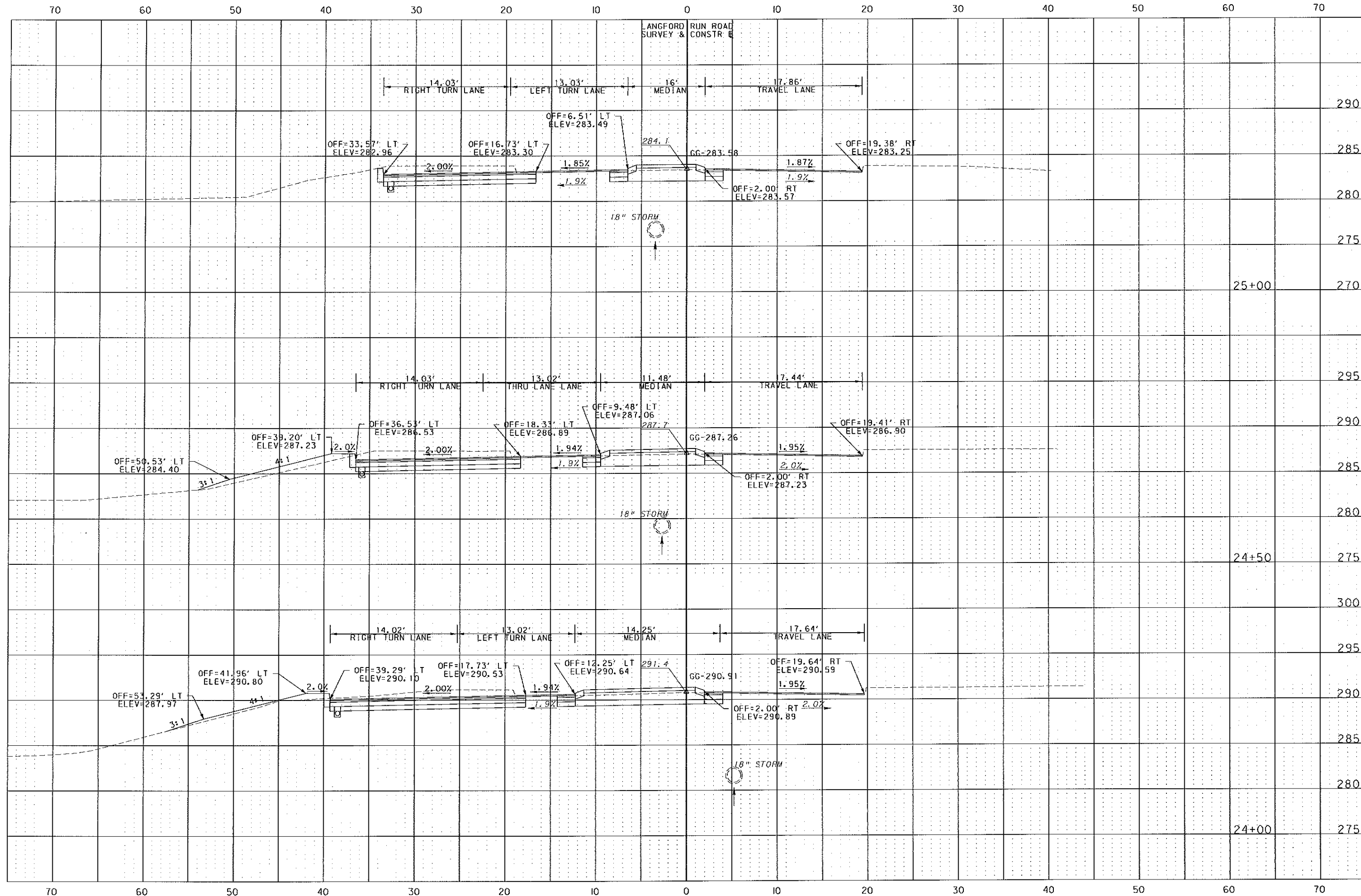


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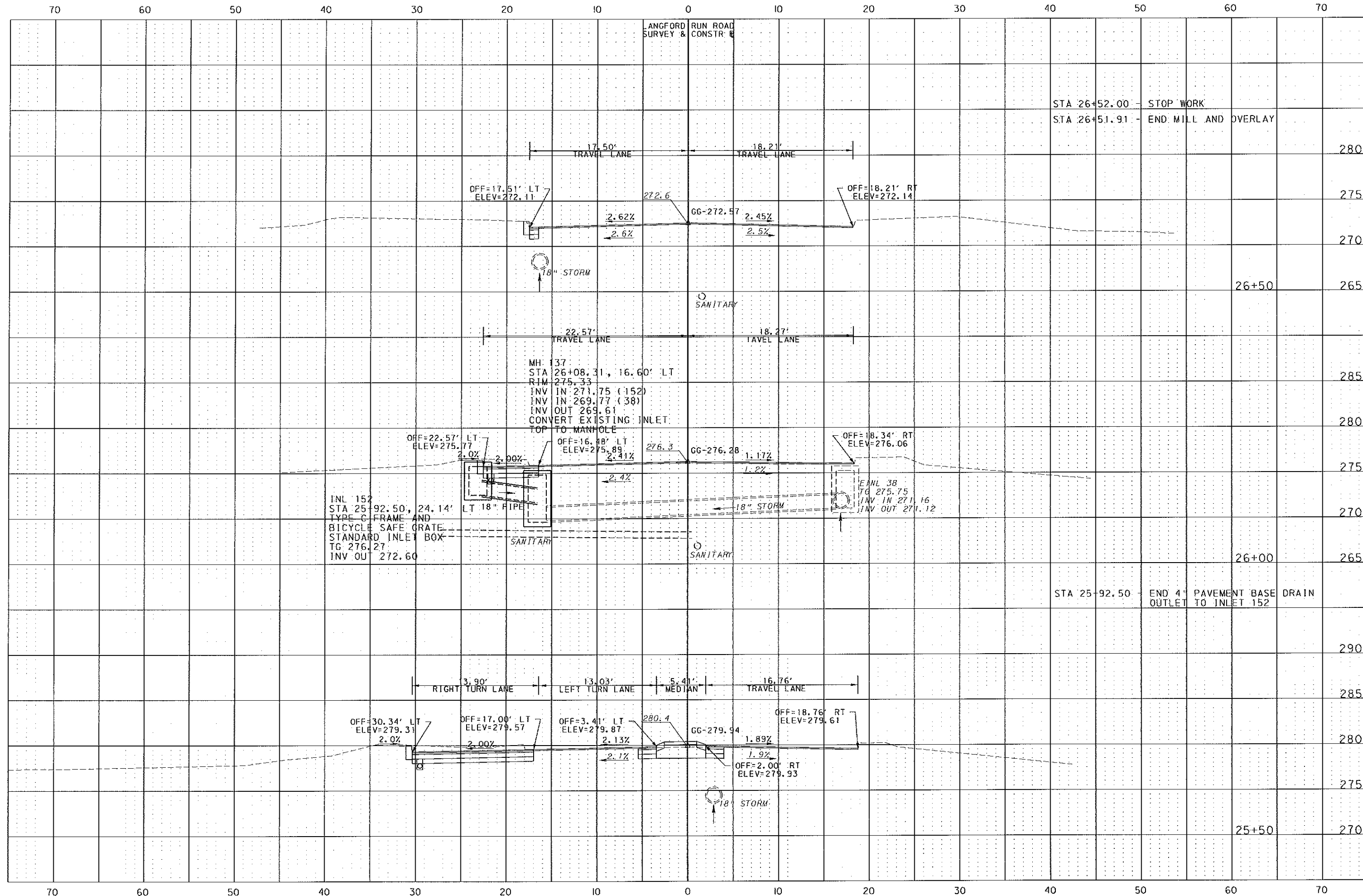




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SCALE: 1 INCH = 5 FEET



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