PLAN PREPARATION
DESIGNER BF

	DISTRICT	COUNTY	TOWNSHIP	BOROUGH	ROUTE	SECTION	TOTAL SHEETS
—	6-0	DELAWARE	RADNOR	—	1021		12

Est. 1989

TRAFFIC PLANNING AND DESIGN, INC.

DRAWINGS FOR CONSTRUCTION OF

ACCESS IMPROVEMENTS ASSOCIATED WITH ARDROSSAN FARM

EPS # 71834

TPD JOB # ESII.A.00001

STATE ROUTE 1021 SECTION _____

IN DELAWARE COUNTY

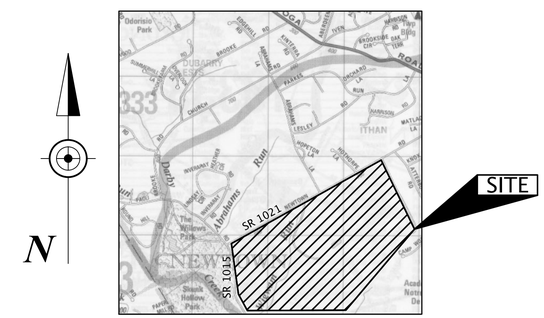
FROM STA 135+50.00 TO STA 165+00.00 LENGTH 2950 FT 0.5587 MI

FROM SEG 0010 OFFSET 1265 TO SEG 0020 OFFSET 1500

TITLE SHEET	SHEET	1
EXISTING PLAN	SHEET	2
PROPOSED CONDITIONS PLAN WITH GENERAL NOTES	SHEET	3
CONSTRUCTION AND PAVEMENT MARKING PLAN	SHEETS	4-5
ELEVATION AND DRAINAGE PLAN	SHEETS	6-7
TYPICAL SECTIONS	SHEET	8
PROFILES	SHEET	9
PAVEMENT MARKING STANDARDS	SHEETS	10-11
TRAFFIC CONTROL STANDARDS	SHEET	12

ALSO INCLUDED:

TRUCK TURNING PLANS	4 SHEETS	



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LOCATION MAP

0 2000 4000 FEET

UNDER DOT REVIEW
PLANS SUBJECT TO CHANGE

PENNSYLVANIA ACT 287 (1974) AS AMENDED BY ACT 121 (2008) REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE COMMONWEALTH.
PA ONE-CALL SERIAL #20142801996 HAS BEEN ASSIGNED TO THIS PROJECT ON 10/07/14
* ENTRIES FROM ACT 121 LIST UPDATED BY ENGINEER.

REVISION NUMBER	REVISIONS	DATE	BY

PREPARED BY:
TRAFFIC PLANNING & DESIGN, INC.
2500 E. HIGH STREET
SUITE 650
POTTSTOWN, PA 19464

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JEFFREY STEVEN TODD
ENGINEER
No. 070518-E

10/17/2014
DATE

J:\ESII\00001 (Ardrossan Farm\CADD\Plan\title sheet.dgn
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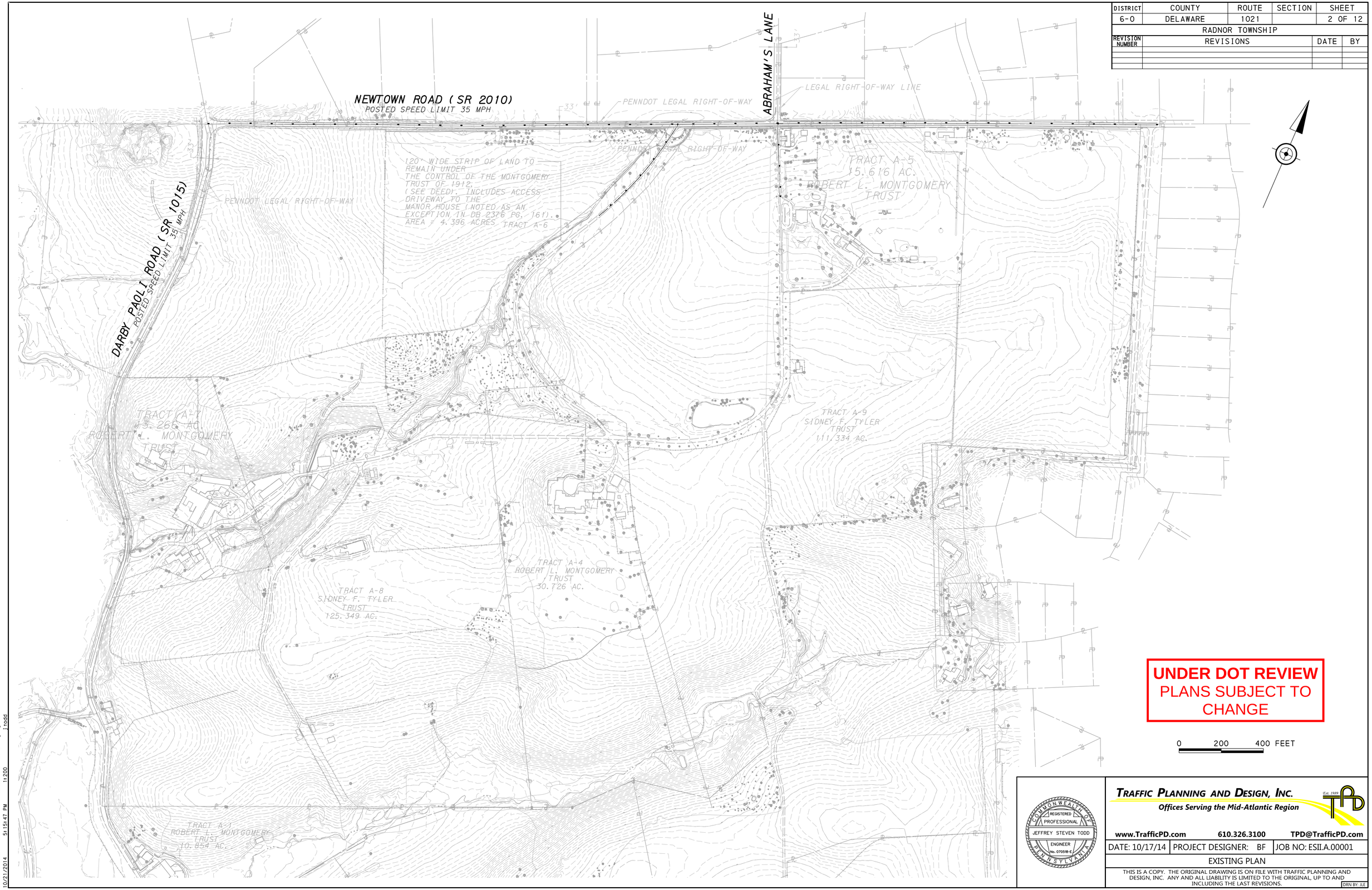
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	1021		2 OF 12
RADNOR TOWNSHIP				

REVISION NUMBER	REVISIONS	DATE	BY



UNDER DOT REVIEW
PLANS SUBJECT TO CHANGE

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JEFFREY STEVEN TODD
ENGINEER
No. 070518-E

TRAFFIC PLANNING AND DESIGN, INC.
Offices Serving the Mid-Atlantic Region
Est. 1989

www.TrafficPD.com 610.326.3100 TPD@TrafficPD.com

DATE: 10/17/14	PROJECT DESIGNER: BF	JOB NO: ESII.A.00001

EXISTING PLAN

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DRN BY: JLE

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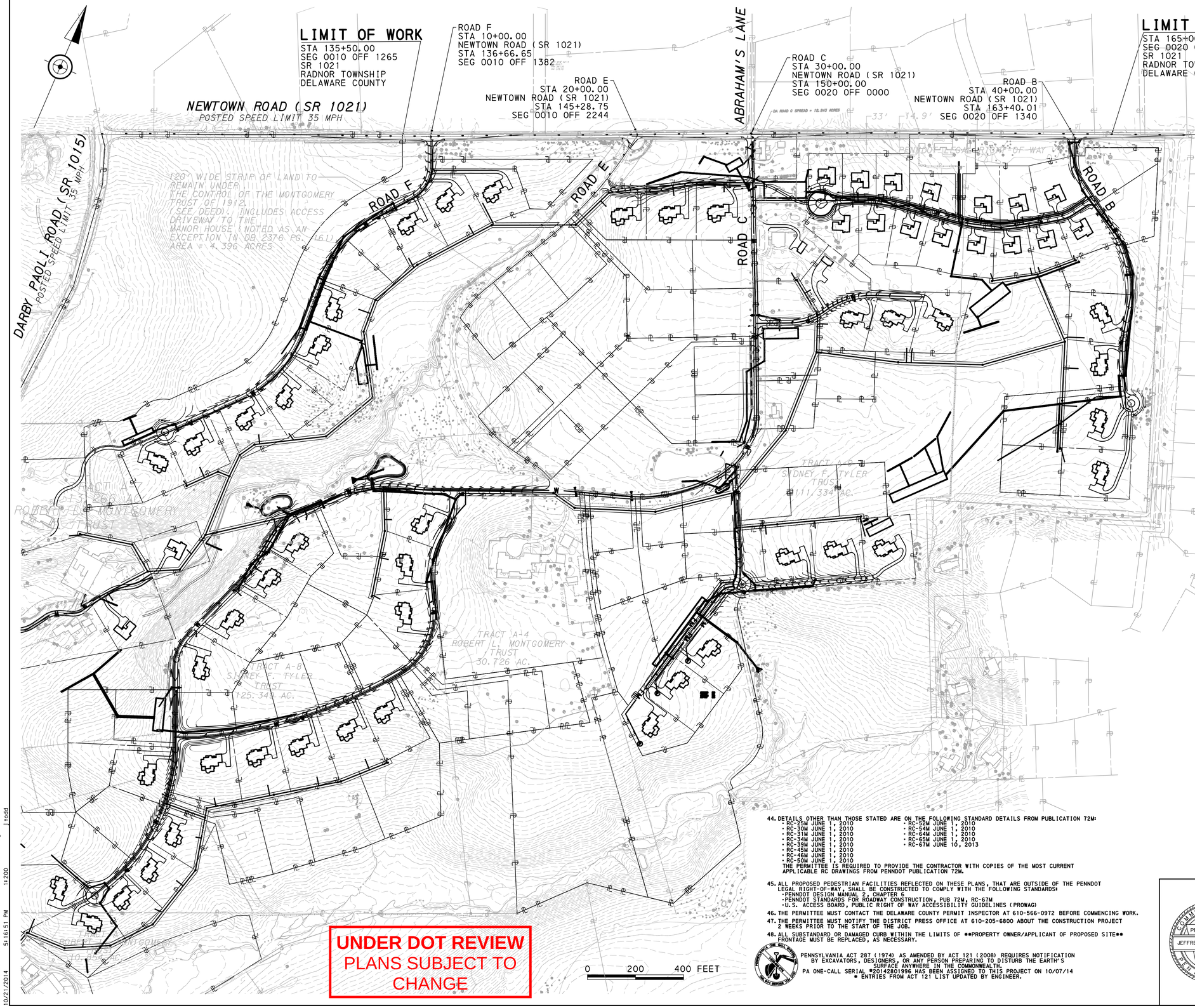
10/21/2014 5:15:47 PM 1:200 jtodd

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	1021		3 OF 12
	RADNOR TOWNSHIP			

REVISION NUMBER	REVISIONS	DATE	BY



GENERAL NOTES

1. ALL SEEDING AND SOIL SUPPLEMENT PER PUBLICATION 408.
2. TEMPORARY CONSTRUCTION EASEMENTS ARE REQUIRED ONLY UNTIL THE CONSTRUCTION WORK INDICATED BY THE PLAN IS COMPLETED, UNLESS SOONER RELINQUISHED IN WRITING BY THE DEPARTMENT.
3. THIS PROJECT WILL BE CONSTRUCTED IN ACCORDANCE WITH SPECIFICATIONS PUBLICATION 408, DATED 2011, OR AS AMENDED.
4. DO NOT INTERFERE WITH THE OPERATION OF ANY FIRE HYDRANTS, FIRE CALL BOX OR POLICE CALL BOX.
5. THIS PROJECT IS SUBJECT TO INSPECTION BY THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION.
6. ALL CURVE DATA IS BASED ON THE ARC DEFINITION UNLESS OTHERWISE INDICATED.
7. ALL DRAINAGE PIPES ARE TO BE IN ACCORDANCE WITH PENNDOT DESIGN MANUAL 2 AND CURRENT APPLICATION CRITERIA.
8. BEFORE THE START OF ANY PAVING OPERATIONS, THE DEVELOPER (PERMITTEE) IS RESPONSIBLE FOR ENSURING THAT ALL UTILITY POLES WITHIN THE PROPOSED PAVING AREA ARE RELOCATED OUTSIDE OF THE PAVED AREAS AND SHOULDERS ACCORDING TO PENNDOT DESIGN MANUAL 5. THE RELOCATED POSITIONS ARE TO BE CONSIDERED APPROXIMATE AND ARE SUBJECT TO THE UTILITY POLE RELOCATION PERMIT.
9. IT IS THE PERMITTEE'S RESPONSIBILITY TO VERIFY ALL UTILITY COMPANIES AND RELATED FACILITIES LOCATED WITHIN THE LIMITS OF WORK PRIOR TO COMMENCING CONSTRUCTION. IT IS FURTHER THE PERMITTEE'S RESPONSIBILITY TO OBTAIN ACCURATE FIELD LOCATIONS OF ALL UNDERGROUND AND AERIAL UTILITIES FROM THE UTILITY COMPANIES OR BY TEST PITS PRIOR TO BEGINNING WORK.
10. PRIOR TO THE START OF ANY UTILITY INSTALLATION, PERMITTEES ARE TO ACCURATELY FIELD MEASURE LOCATIONS AND ELEVATIONS OF EXISTING UTILITY LINES AT PROPOSED CONNECTIONS. PERMITTEES ARE TO IMMEDIATELY NOTIFY THE ENGINEER OF ANY DEVIATIONS FROM THE PLAN INFORMATION.
11. THE LOCATION OF ALL UTILITIES ARE APPROXIMATE AND MUST BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION. ALL UTILITY SERVICES WITHIN THE LIMITS OF WORK ARE TO BE LOCATED, THE USER TO BE NOTIFIED, AND MEASURES TAKEN TO PROTECT LINES IN ACCORDANCE WITH PENNSYLVANIA ACT 121. THE PERMITTEE SHALL CONTACT PA ONE CALL AT 1-800-242-1776 FOR INFORMATION ON THE UTILITIES APPROXIMATELY ONE WEEK BEFORE PROCEEDING WITH ANY EXCAVATION.
12. ANY SCALED DIMENSION FROM THIS PLAN SHALL NOT BE USED FOR CONSTRUCTION WITHOUT CONFIRMATION BY TRAFFIC PLANNING AND DESIGN, INC., CONSULTING ENGINEERS.
13. ALL PECO AND VERIZON TELEPHONE POLE RELOCATIONS WILL BE ADDRESSED BY THE RESPECTIVE PARTIES.
14. APPLICABILITY OF PAVEMENT SECTION TO BE EVALUATED DURING CONSTRUCTION WITH ADJUSTMENTS COMMENSURATE WITH ACTUAL PAVEMENT SUBGRADE CONDITIONS.
15. EXISTING BASE SURVEY, INCLUDING ROW, BY MOMENEE SURVEY GROUP INC.
    - SITE BENCH MARK RM-11 BY MOMENEE SURVEY GROUP INC. 1 SQUARE CUT IN EAST END OF SOUTHERLY WALL OF SAW MILL ROAD OVER DARBY CRFEEK, ELEVATION=236.18
    - THE HORIZONTAL AND VERTICAL GROUND CONTROL IS BY MOMENEE SURVEY GROUP INC.
    - VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929
    - RIGHT OF WAY DATA BASED ON: PENNDOT PLANS DATED 2-18-1965, PLAN BOOK 6, PAGE 1, SHT 7
      PENNDOT PLANS DATED 11-22-1965, DEED BOOK 2233, PG 677
16. SCHEDULE AND CONDUCT ALL CONSTRUCTION TO MINIMIZE EROSION. PROVIDE AND MAINTAIN APPROVED EROSION AND SEDIMENTATION CONTROL MEASURES UNTIL ALL WORK IS COMPLETED.
17. LANDSCAPED AREAS SHALL BE DRESSED WITH A MINIMUM OF 4 INCHES OF TOPSOIL AND SEEDED.
18. MATCH SURFACE COLOR OF NEW PAVEMENT TO COLOR OF EXISTING PAVEMENT AS CLOSE AS POSSIBLE.
19. POST-DEVELOPMENT RUNOFF SHALL NOT EXCEED PRE-DEVELOPMENT RUNOFF.
20. THESE PLANS ARE BASED ON INFORMATION AVAILABLE AT THE TIME THEY WERE PREPARED. ACTUAL CONDITIONS DETERMINED LATER MAY VARY. SOUND JUDGMENT SHOULD BE EXERCISED DURING CONSTRUCTION TO ASSURE THAT THE DESIGN IS COMPATIBLE WITH THE ACTUAL CONDITIONS.
21. THE PERMITTEE SHALL ACCEPT THE RESPONSIBILITY TO NOTIFY ALL PROPERTY OWNERS WITHIN THE LIMITS OF WORK DUE TO PROPOSED ROADWAY IMPROVEMENTS ALONG THEIR PROPERTY FRONTAGE AND WITHIN THE LEGAL RIGHT OF WAY PRIOR TO THE START OF CONSTRUCTION. A COPY OF THE WRITTEN NOTIFICATION(S) WILL BE ON FILE WITH THE APPLICANT'S HIGHWAY OCCUPANCY PERMIT.
22. IT IS THE RESPONSIBILITY OF THE PERMITTEE TO MAKE ADJUSTMENTS TO THE AFFECTED DRIVEWAYS. A WRITTEN PERMISSION / DRIVEWAY RELEASE FORM MUST BE OBTAINED AND SUBMITTED FROM THE ADJACENT DRIVEWAY OWNERS WITH THEIR NOTARIZED SIGNATURE FOR THE PROPOSED CHANGES THAT EXTEND BEYOND THE LEGAL RIGHT-OF-WAY LINE.
23. MAINTENANCE AND PROTECTION OF TRAFFIC DURING CONSTRUCTION SHALL BE IN ACCORDANCE WITH APPLICABLE FIGURES PATA 101, PATA 102, PATA 107, & PATA 201 IN PENNDOT PUBLICATION 213, "WORK ZONE TRAFFIC CONTROL GUIDELINES", (67 PA CODE, CHAPTER 212) JUNE 2014, OR MOST CURRENT REVISION.
24. PERMITTEE TO NOTIFY RESIDENTS A MINIMUM OF 24 HOURS PRIOR TO THE CLOSURE OF THEIR DRIVEWAYS. A COPY OF THESE NOTIFICATIONS MUST BE ON FILE WITH PENNDOT PERMITS OFFICE.
25. 24" SOLID WHITE STOP BARS AND 6" SOLID WHITE CROSSWALKS SHALL NOT BE PLACED UNTIL THE SIGNAL IS FULLY INSTALLED AND OPERATIONAL.
26. FURNISH AND INSTALL ALL TRAFFIC SIGNS AND PAVEMENT MARKINGS AS INDICATED.
27. ALL EXISTING PAVEMENT MARKINGS WHICH ARE NO LONGER APPROPRIATE SHALL BE ERADICATED BY THE PERMITTEE USING AN ERADICATION METHOD APPROVED BY A PENNDOT FIELD REPRESENTATIVE. THE PERMITTEE SHALL PLACE ALL REQUIRED NEW PAVEMENT MARKINGS.
28. OFFSETS FROM CENTERLINE ARE TO THE CENTER OF THE GRATE FOR TYPE "M" & "S" INLETS AND TO THE BACK OF THE GRATE FOR TYPE "C" INLETS.
29. IT IS THE RESPONSIBILITY OF THE PERMITTEE TO REMOVE ANY DEBRIS AND FLUSH OUT ALL EXISTING AND PROPOSED STORM DRAINAGE FACILITIES WITHIN THE PROJECT LIMITS AT THE COMPLETION OF CONSTRUCTION.
30. ALL PROPOSED PAVEMENT MARKINGS MUST BE HOT THERMOPLASTIC ON BITUMINOUS PAVEMENT, INCLUDING LONG AND SHORT LINES AND PAVEMENT MARKING LEGENDS. ALL PROPOSED PAVEMENT MARKINGS MUST BE EPOXY ON CONCRETE PAVEMENT, INCLUDING LONG AND SHORT LINES AND PAVEMENT MARKING LEGENDS.
31. MATCH BOTTOM OF CURB ELEVATION WHEN TYING INTO EXISTING CURB. IF THE EXISTING REVEAL DIFFERS FROM PROPOSED, TAPER THE TOP OF PROPOSED CURB TO MATCH THE EXISTING REVEAL AT THE LIMITS OF PROPOSED CURBING.
32. INLETS WITHIN THE STATE MAINTAINED RIGHT-OF-WAY MUST HAVE STRUCTURAL STEEL BICYCLE SAFE GRATES. FOR INLETS LOCATED IN FRONT OF CURB RAMPS, ADA COMPLIANT GRATES IN ACCORDANCE WITH RC-45M MUST BE UTILIZED.
33. ONLY PRECAST INLET BOXES SUPPLIED BY A MANUFACTURER LISTED IN PENNDOT PUBLICATION 35, BULLETIN 15 WILL BE PERMITTED FOR USE WITHIN THE STATE MAINTAINED RIGHT-OF-WAY.
34. ALL INLETS THAT EXCEED 5 FEET IN DEPTH MUST BE CONSTRUCTED WITH STEPS, SIMILAR TO A MANHOLE.
35. THE PERMITTEE SHALL ENSURE THAT THE SIGHT DISTANCE AT THE DRIVEWAYS SERVICING OTHER PROPERTIES OR AT OTHER INTERSECTIONS IS NOT REDUCED (UNLESS EXISTING AND PROPOSED VALUES EXCEED THE DESIRABLE VALUES SPECIFIED IN THE PENNSYLVANIA CODE, TITLE 67, TRANSPORTATION, CHAPTER 441.8.H.1) AS A RESULT OF THE WORK PERFORMED IN ACCORDANCE WITH THE STATE HIGHWAY OCCUPANCY PERMIT.
36. NO UNSUITABLE MATERIAL IS TO BE USED IN ANY PORTION OF THE ROADWAY CONSTRUCTION. REMOVE ANY SUBGRADE THAT CANNOT BE PROPERLY COMPACTED AND TREAT AS UNSUITABLE MATERIAL. ANY MATERIAL WITH A CBR VALUE OF FIVE (5) OR LESS IS CLASSIFIED AS UNSUITABLE. UNDERCUTTING AND/OR SUBGRADE STABILIZATION MAY BE REQUIRED TO OBTAIN A CBR VALUE GREATER THAN FIVE (5).
37. EITHER MILLING OR AN INTERMEDIATE 19mm BINDER LEVELING COURSE MAY BE REQUIRED TO ACHIEVE PROFILE PRIOR TO WEARING COURSE OVERLAY, AS DIRECTED BY THE PENNDOT INSPECTOR.
38. ALL WORK PERFORMED WITHIN THE STATE LEGAL RIGHT-OF-WAY MUST BE IN ACCORDANCE WITH PENNDOT PUBLICATION 72M, "STANDARDS FOR ROADWAY CONSTRUCTION", RC-OM TO 100M, AS AMENDED.
39. OFFER OR DEDICATION TO THE ULTIMATE RIGHT-OF-WAY LINE SHALL RUN ON PERPETUITY IN FAVOR OF THE APPLICABLE GOVERNMENT AUTHORITY.
40. SAWLINE LOCATIONS MAY BE ADJUSTED IN THE FIELD AS DEEMED NECESSARY BY A PENNDOT REPRESENTATIVE
41. TRAFFIC PLANNING AND DESIGN HAS PREPARED THIS HOP PLAN SET FOR ALL ROADWAY WORK AS DETAILED. ALL SITE RELATED WORK IS TO BE CONSTRUCTED FROM PLANS PREPARED BY MOMENEE AND ASSOCIATES, INC.
42. ALL UTILITY RELOCATION PERMITS TAKE PRECEDENCE OVER THE UTILITY RELOCATION POSITIONS SHOWN ON THE HOP PLANS.
43. COMPLY WITH THE FOLLOWING DOCUMENTS IN CONSTRUCTION:
    - DESIGN MANUAL PART II, HIGHWAY DESIGN, AUGUST 2009, AS AMENDED.
    - WORK ZONE TRAFFIC CONTROL GUIDELINES, PUBLICATION 213, MARCH 2014 (67 PA CODE, CHAPTER 212).
    - MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, US DEPARTMENT OF TRANSPORTATION, FHWA, 2009.
    - TRAFFIC CONTROL PAVEMENT MARKINGS AND SIGNING STANDARDS, TC-8600 AND TC-8700 SERIES, PUB 111M, JUNE 2013.
    - STANDARDS FOR ROADWAY CONSTRUCTION, SERIES RC OM TO 100M, PENNDOT PUBLICATION 72M, JUNE 2010, OR AS AMENDED.
    - ACCESS TO AND OCCUPANCY OF HIGHWAYS BY DRIVEWAYS AND LOCAL ROADS, 67 PA CODE, CHAPTER 441, AUGUST 1996.
    - OFFICIAL TRAFFIC CONTROL DEVICES, PUBLICATION 212, MARCH 2006.
    - ACT 121, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, OCTOBER 9, 2008.
44. DETAILS OTHER THAN THOSE STATED ARE ON THE FOLLOWING STANDARD DETAILS FROM PUBLICATION 72M:
    - RC-25M JUNE 1, 2010
    - RC-30M JUNE 1, 2010
    - RC-31M JUNE 1, 2010
    - RC-34M JUNE 1, 2010
    - RC-39M JUNE 1, 2010
    - RC-46M JUNE 1, 2010
    - RC-46M JUNE 1, 2010
    - RC-50M JUNE 1, 2010
    - RC-52M JUNE 1, 2010
    - RC-54M JUNE 1, 2010
    - RC-64M JUNE 1, 2010
    - RC-65M JUNE 1, 2010
    - RC-67M JUNE 10, 2013

    THE PERMITTEE IS REQUIRED TO PROVIDE THE CONTRACTOR WITH COPIES OF THE MOST CURRENT APPLICABLE RC DRAWINGS FROM PENNDOT PUBLICATION 72M.
45. ALL PROPOSED PEDESTRIAN FACILITIES REFLECTED ON THESE PLANS, THAT ARE OUTSIDE OF THE PENNDOT LEGAL RIGHT-OF-WAY, SHALL BE CONSTRUCTED TO COMPLY WITH THE FOLLOWING STANDARDS:
    - PENNDOT DESIGN MANUAL 2, CHAPTER 6
    - PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION, PUB 72M, RC-67M
    - U.S. ACCESS BOARD, PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG)
46. THE PERMITTEE MUST CONTACT THE DELAWARE COUNTY PERMIT INSPECTOR AT 610-566-0972 BEFORE COMMENCING WORK.
47. THE PERMITTEE MUST NOTIFY THE DISTRICT PRESS OFFICE AT 610-205-6800 ABOUT THE CONSTRUCTION PROJECT 2 WEEKS PRIOR TO THE START OF THE JOB.
48. ALL SUBSTANDARD OR DAMAGED CURB WITHIN THE LIMITS OF **PROPERTY OWNER/APPLICANT OF PROPOSED SITE** FRONTAGE MUST BE REPLACED, AS NECESSARY.

PENNSYLVANIA ACT 287 (1974) AS AMENDED BY ACT 121 (2008) REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE COMMONWEALTH.
PA ONE-CALL SERIAL #20142801996 HAS BEEN ASSIGNED TO THIS PROJECT ON 10/07/14
* ENTRIES FROM ACT 121 LIST UPDATED BY ENGINEER.

UNDER DOT REVIEW
PLANS SUBJECT TO CHANGE

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JEFFREY STEVEN TODD
ENGINEER
No. 070518-E

TRAFFIC PLANNING AND DESIGN, INC.
Offices Serving the Mid-Atlantic Region
Est. 1989
www.TrafficPD.com 610.326.3100 TPD@TrafficPD.com

DATE: 10/17/14	PROJECT DESIGNER: BF	JOB NO: ESII.A.00001

PROPOSED CONDITIONS PLAN WITH GENERAL NOTES

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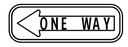
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	1021		4 OF 12
RADNOR TOWNSHIP				

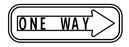
REVISION NUMBER	REVISIONS	DATE	BY

ROAD F @ STA 136+66.65

ALL SIGHT DISTANCE OBSTRUCTIONS (INCLUDING BUT NOT LIMITED TO EMBANKMENTS AND VEGETATION) SHALL BE REMOVED BY THE DEVELOPER (PERMITTEE) TO PROVIDE A MINIMUM OF 440' OF CONTINUOUS SIGHT DISTANCE TO THE LEFT AND 350' OF CONTINUOUS SIGHT DISTANCE TO THE RIGHT FOR A DRIVER EXITING THE PROPOSED INTERSECTION ONTO THE THROUGH HIGHWAY. THE DRIVER MUST BE CONSIDERED TO BE POSITIONED 10 FEET FROM THE NEAR EDGE OF THE CLOSEST HIGHWAY THROUGH TRAVEL LANE (FROM THE CURB LINE IF CURBING IS PRESENT) AT AN EYE HEIGHT OF 3'-6" ABOVE PAVED SURFACE. THE POINT SIGHTED BY THE EXITING DRIVER SHALL ALSO BE 3'-6" ABOVE THE PAVED SURFACE LOCATED IN THE CENTER OF THE CLOSEST HIGHWAY TRAVEL LANE DESIGNATED FOR USE BY THE APPROACHING TRAFFIC. THE CONTINUOUS SIGHT DISTANCE SHALL BE MAINTAINED BY THE PERMITTEE.



R6-1L
36"X12"
A



R6-1R
36"X12"
B

R1-1
30"X30"
C

LEGEND

- EXISTING SIGN
- PROPOSED SIGN

4"/W	EXISTING 4" WIDTH / SOLID WHITE LINE
4"/Y	EXISTING 4" WIDTH / SOLID YELLOW LINE
4"/DY	EXISTING 4" WIDTH / DOUBLE YELLOW LINE
24"/W	EXISTING 24" WIDTH / SOLID WHITE LINE
4"/W	4" WIDTH / SOLID WHITE LINE
6"/BW	6" WIDTH / BROKEN WHITE LINE
4"/Y	4" WIDTH / SOLID YELLOW LINE
4"/BY	4" WIDTH / BROKEN YELLOW LINE
4"/DW	4" WIDTH / DOTTED WHITE LINE
4"/DY	4" WIDTH / DOUBLE YELLOW LINE
6"/W	6" WIDTH / SOLID WHITE LINE
24"/W	24" WIDTH / SOLID WHITE LINE
24"/Y	24" WIDTH / SOLID YELLOW LINE

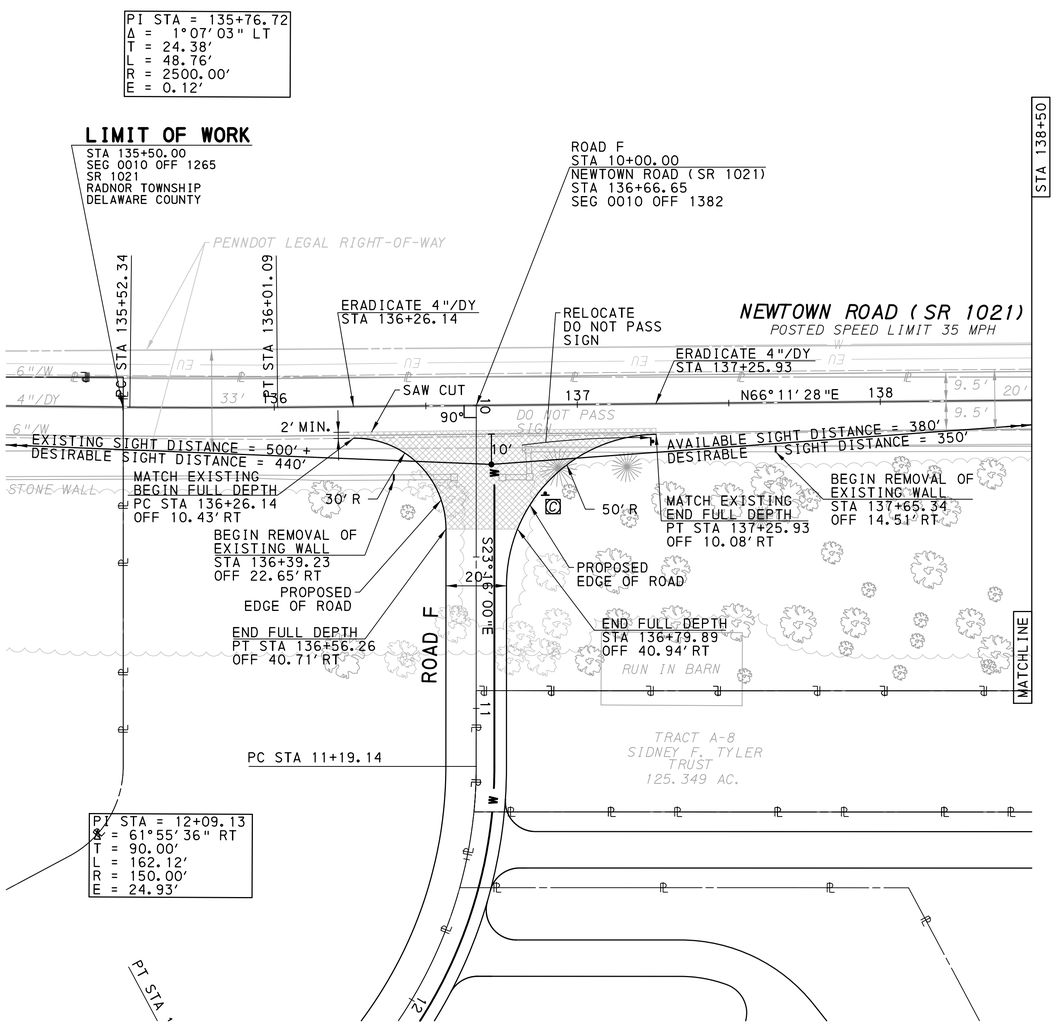
- PROPOSED FULL DEPTH PAVEMENT

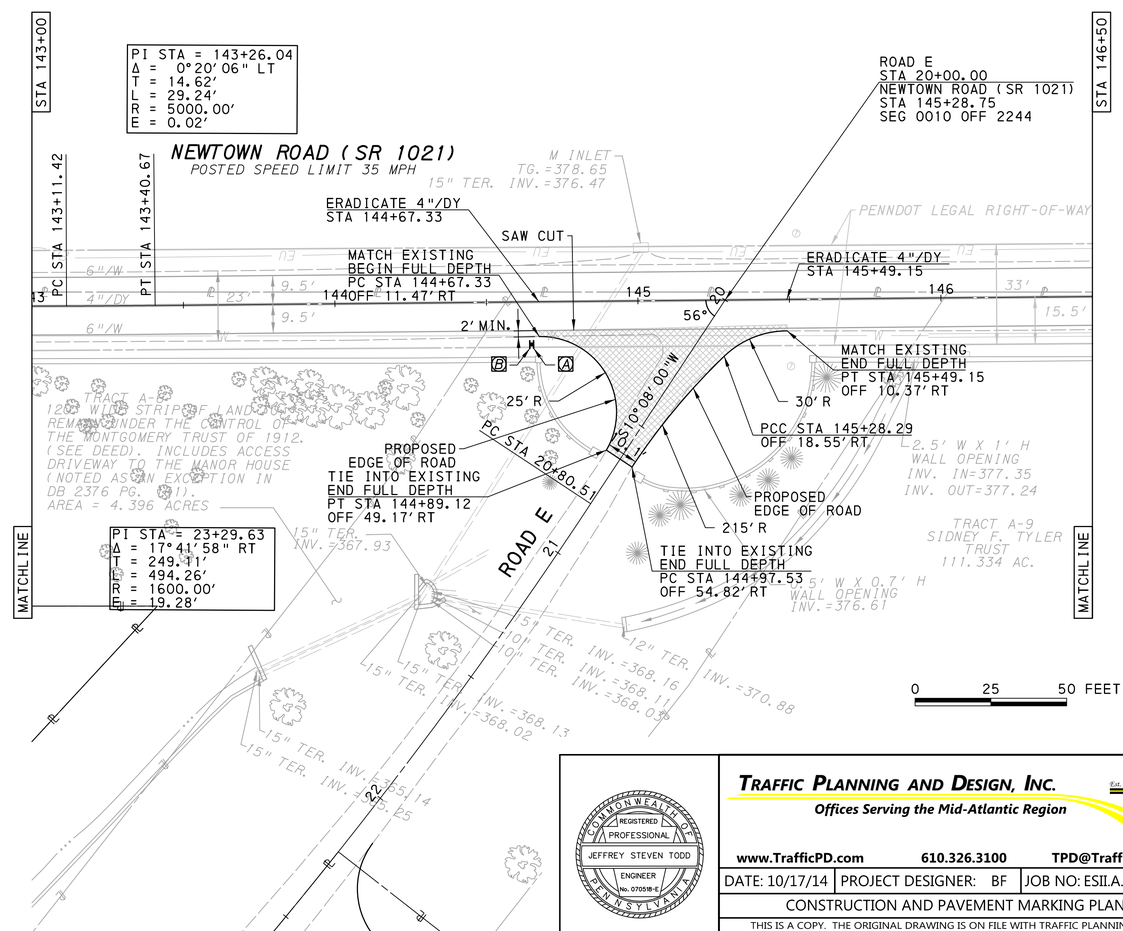
UNDER DOT REVIEW
PLANS SUBJECT TO CHANGE

SIGN TABULATION

PLAN SYMBOL	SERIES	SIZE	DESCRIPTION	STATION	STATE ROUTE	SEGMENT	OFFSET	ACTION	MAINTENANCE RESPONSIBILITY*
	R4-1	24"X30"	DO NOT PASS	137+24.76 RT	1021	0010	1440	RELOCATE	S
A	R6-1L	36"X12"	ONE WAY LEFT	144+64.81 RT	1021	0010	2180	NEW	S
B	R6-1R	36"X12"	ONE WAY RIGHT	144+64.81 RT	1021	0010	2180	NEW	S
C	R1-1	30"X30"	STOP	136+89.15 RT	1021	0010	1476	NEW	S

*S - STATE M - MUNICIPALITY P - PERMITTEE U - UNKNOWN





COMMONWEALTH OF PENNSYLVANIA
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DATE: 10/17/14	PROJECT DESIGNER: BF	JOB NO: ESII.A.00001

CONSTRUCTION AND PAVEMENT MARKING PLAN

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DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	1021		5 OF 12
RADNOR TOWNSHIP				

REVISION NUMBER	REVISIONS	DATE	BY

ROAD C @ STA 150+00.00

ALL SIGHT DISTANCE OBSTRUCTIONS (INCLUDING BUT NOT LIMITED TO EMBANKMENTS AND VEGETATION) SHALL BE REMOVED BY THE DEVELOPER (PERMITTEE) TO PROVIDE A MINIMUM OF 440' OF CONTINUOUS SIGHT DISTANCE TO THE LEFT AND 350' OF CONTINUOUS SIGHT DISTANCE TO THE RIGHT FOR A DRIVER EXITING THE PROPOSED INTERSECTION ONTO THE THROUGH HIGHWAY. THE DRIVER MUST BE CONSIDERED TO BE POSITIONED 10 FEET FROM THE NEAR EDGE OF THE CLOSEST HIGHWAY THROUGH TRAVEL LANE (FROM THE CURB LINE IF CURBING IS PRESENT) AT AN EYE HEIGHT OF 3'-6" ABOVE PAVED SURFACE. THE POINT SIGHTED BY THE EXITING DRIVER SHALL ALSO BE 3'-6" ABOVE THE PAVED SURFACE LOCATED IN THE CENTER OF THE CLOSEST HIGHWAY TRAVEL LANE DESIGNATED FOR USE BY THE APPROACHING TRAFFIC. THE CONTINUOUS SIGHT DISTANCE SHALL BE MAINTAINED BY THE PERMITTEE.

ROAD B @ STA 163+40.01

ALL SIGHT DISTANCE OBSTRUCTIONS (INCLUDING BUT NOT LIMITED TO EMBANKMENTS AND VEGETATION) SHALL BE REMOVED BY THE DEVELOPER (PERMITTEE) TO PROVIDE A MINIMUM OF 440' OF CONTINUOUS SIGHT DISTANCE TO THE LEFT AND 350' OF CONTINUOUS SIGHT DISTANCE TO THE RIGHT FOR A DRIVER EXITING THE PROPOSED INTERSECTION ONTO THE THROUGH HIGHWAY. THE DRIVER MUST BE CONSIDERED TO BE POSITIONED 10 FEET FROM THE NEAR EDGE OF THE CLOSEST HIGHWAY THROUGH TRAVEL LANE (FROM THE CURB LINE IF CURBING IS PRESENT) AT AN EYE HEIGHT OF 3'-6" ABOVE PAVED SURFACE. THE POINT SIGHTED BY THE EXITING DRIVER SHALL ALSO BE 3'-6" ABOVE THE PAVED SURFACE LOCATED IN THE CENTER OF THE CLOSEST HIGHWAY TRAVEL LANE DESIGNATED FOR USE BY THE APPROACHING TRAFFIC. THE CONTINUOUS SIGHT DISTANCE SHALL BE MAINTAINED BY THE PERMITTEE.

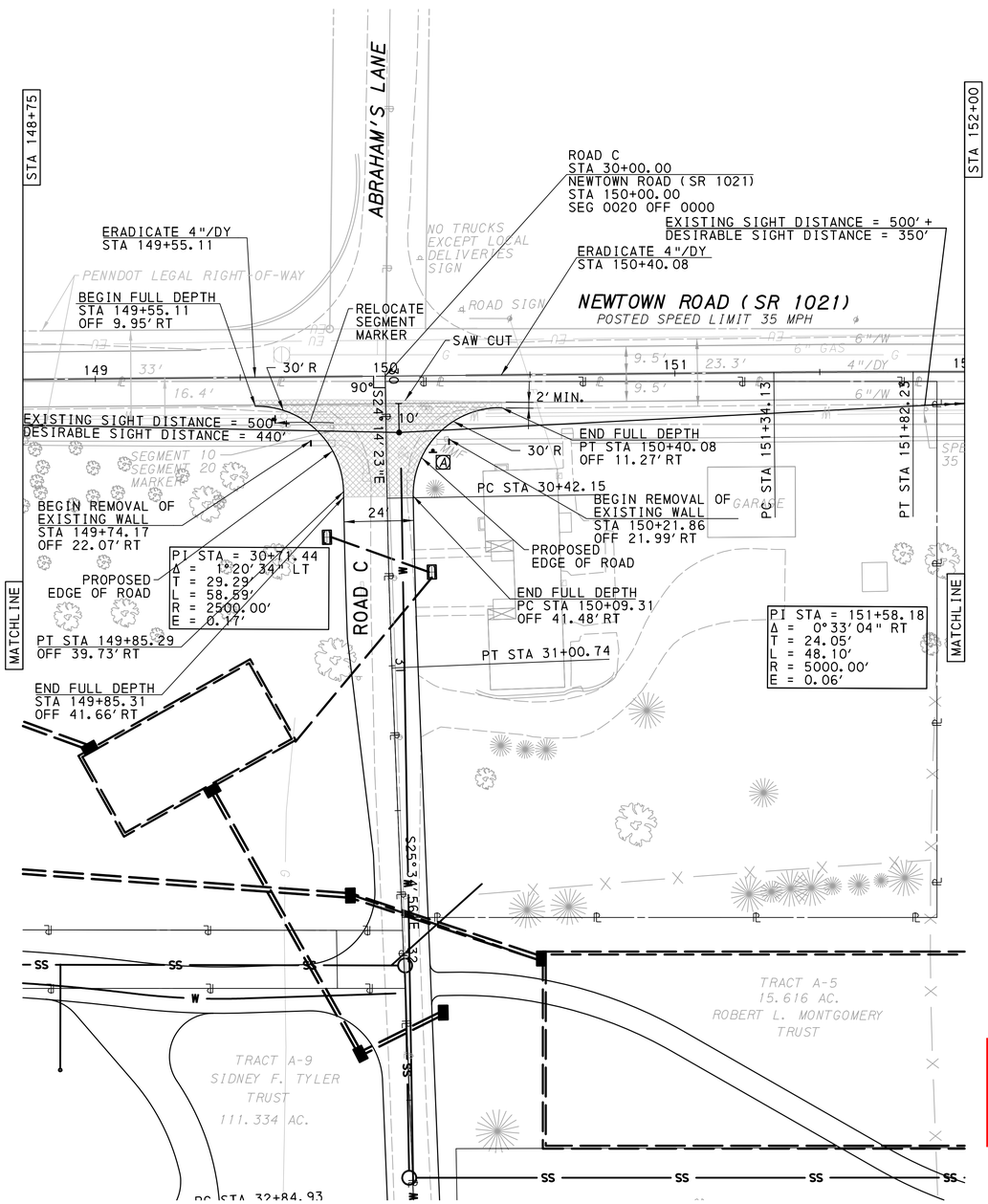
LEGEND

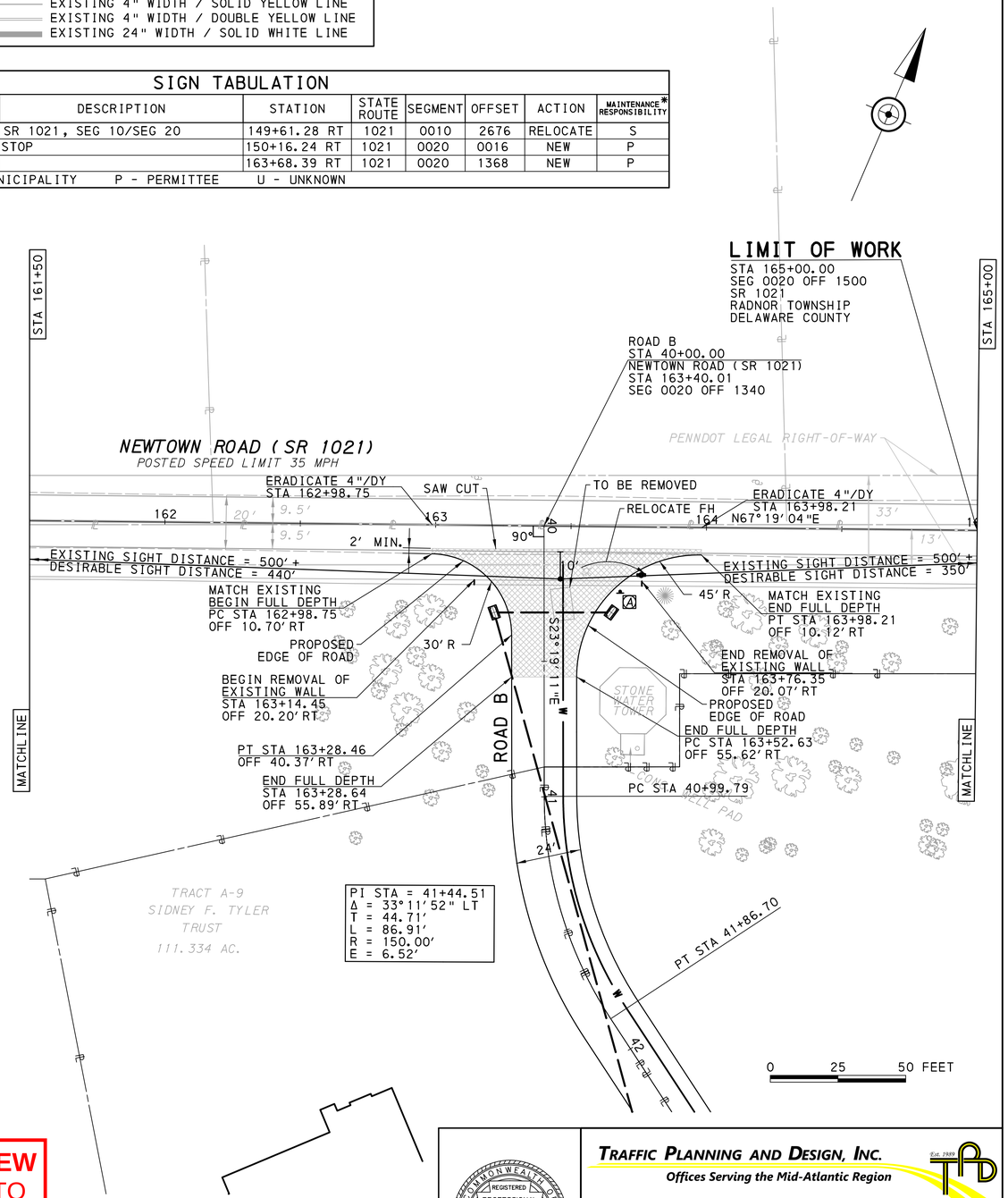
- EXISTING SIGN
- PROPOSED SIGN
- 4"/W — EXISTING 4" WIDTH / SOLID WHITE LINE
- 4"/Y — EXISTING 4" WIDTH / SOLID YELLOW LINE
- 4"/DY — EXISTING 4" WIDTH / DOUBLE YELLOW LINE
- 24"/W — EXISTING 24" WIDTH / SOLID WHITE LINE

SIGN TABULATION

PLAN SYMBOL	SERIES	SIZE	DESCRIPTION	STATION	STATE ROUTE	SEGMENT	OFFSET	ACTION	MAINTENANCE* RESPONSIBILITY
		10"X10"	SR 1021, SEG 10/SEG 20	149+61.28 RT	1021	0010	2676	RELOCATE	S
A	R1-1	30"X30"	STOP	150+16.24 RT	1021	0020	0016	NEW	P
				163+68.39 RT	1021	0020	1368	NEW	P

*S - STATE M - MUNICIPALITY P - PERMITTEE U - UNKNOWN





STOP
R1-1
30"X30"
A

UNDER DOT REVIEW
PLANS SUBJECT TO CHANGE

- PROPOSED FULL DEPTH PAVEMENT

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JEFFREY STEVEN TODD
ENGINEER
No. 070518-E

TRAFFIC PLANNING AND DESIGN, INC.
Offices Serving the Mid-Atlantic Region
Est. 1989
www.TrafficPD.com 610.326.3100 TPD@TrafficPD.com

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CONSTRUCTION AND PAVEMENT MARKING PLAN

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DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	1021		6 OF 12
RADNOR TOWNSHIP				

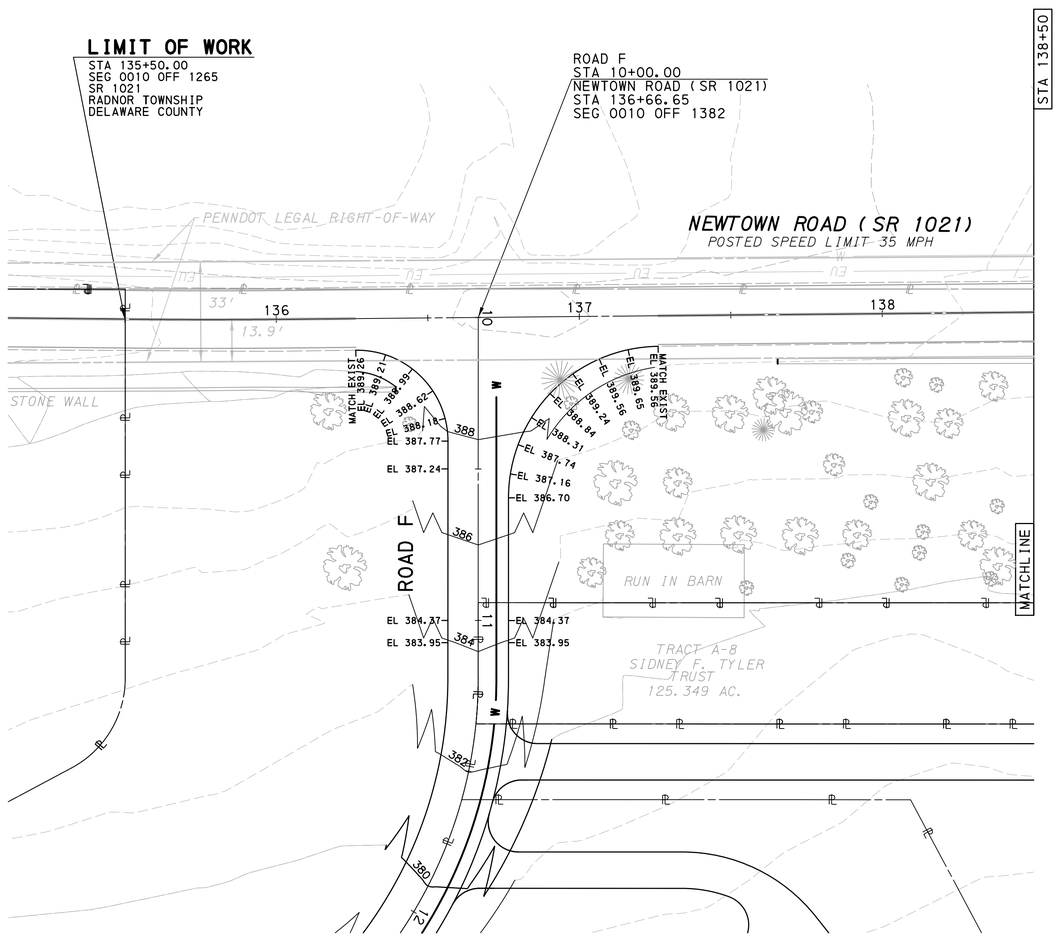
REVISION NUMBER	REVISIONS	DATE	BY

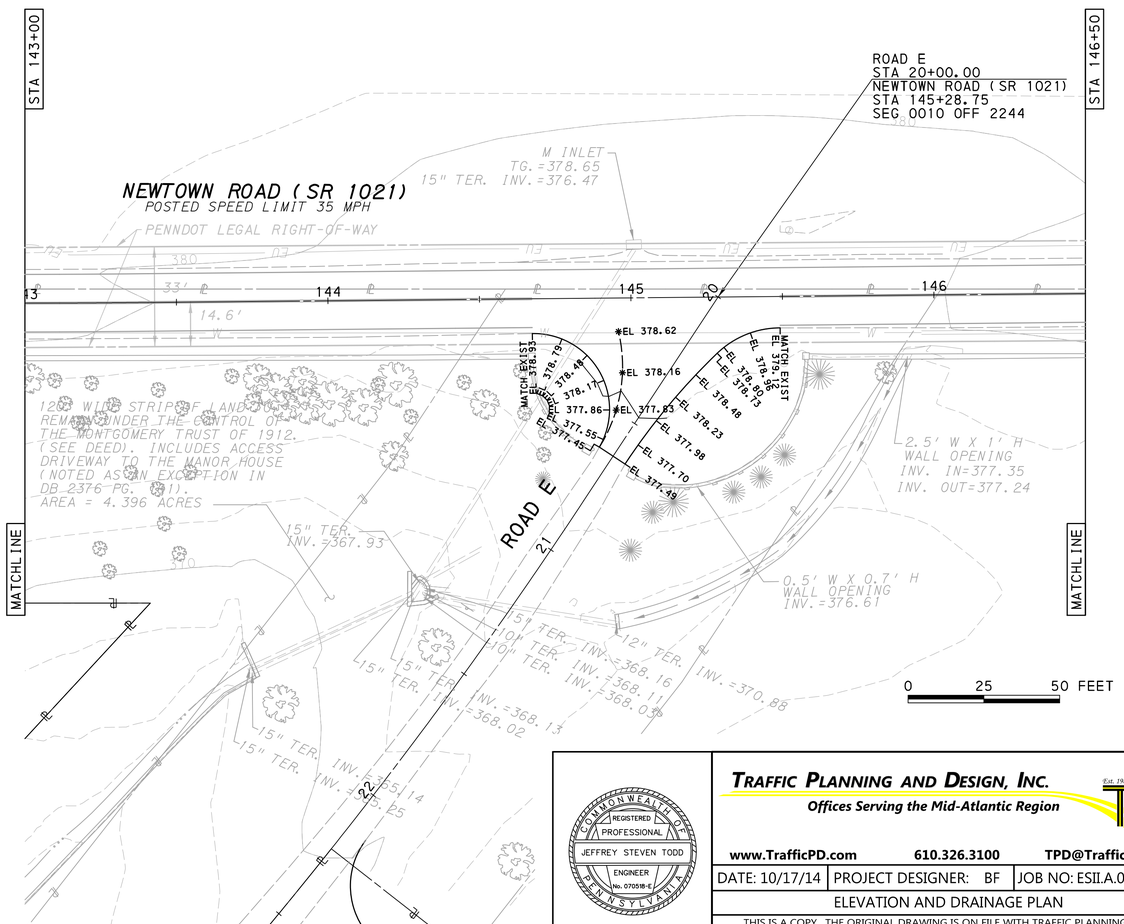
UNDER DOT REVIEW
PLANS SUBJECT TO CHANGE

LEGEND

TC 350.67 / BC 350.00 - PROPOSED ELEVATION

EL 350.00 - PROPOSED ELEVATION





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ELEVATION AND DRAINAGE PLAN

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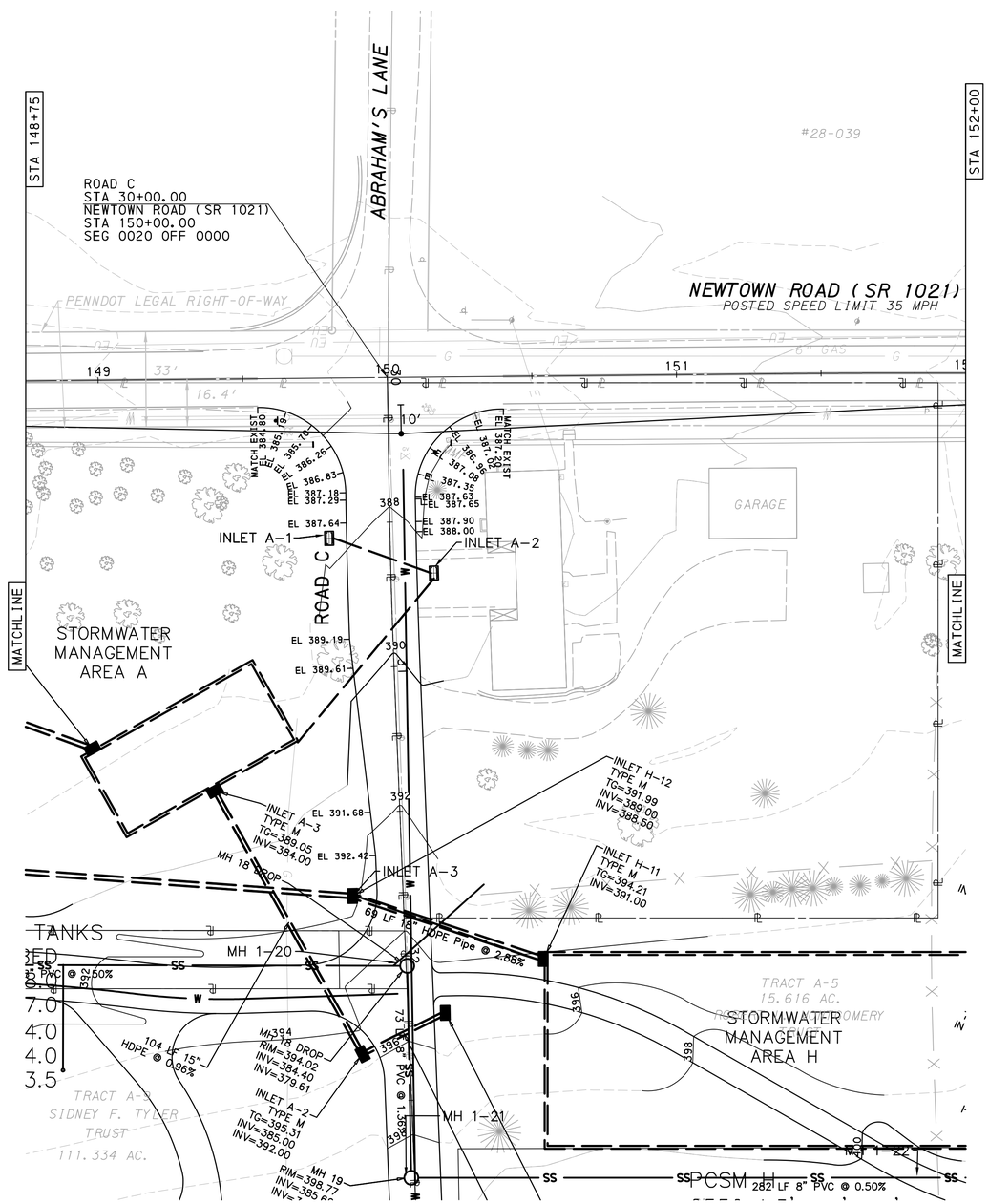
10/21/2014 5:19:17 PM 1:25

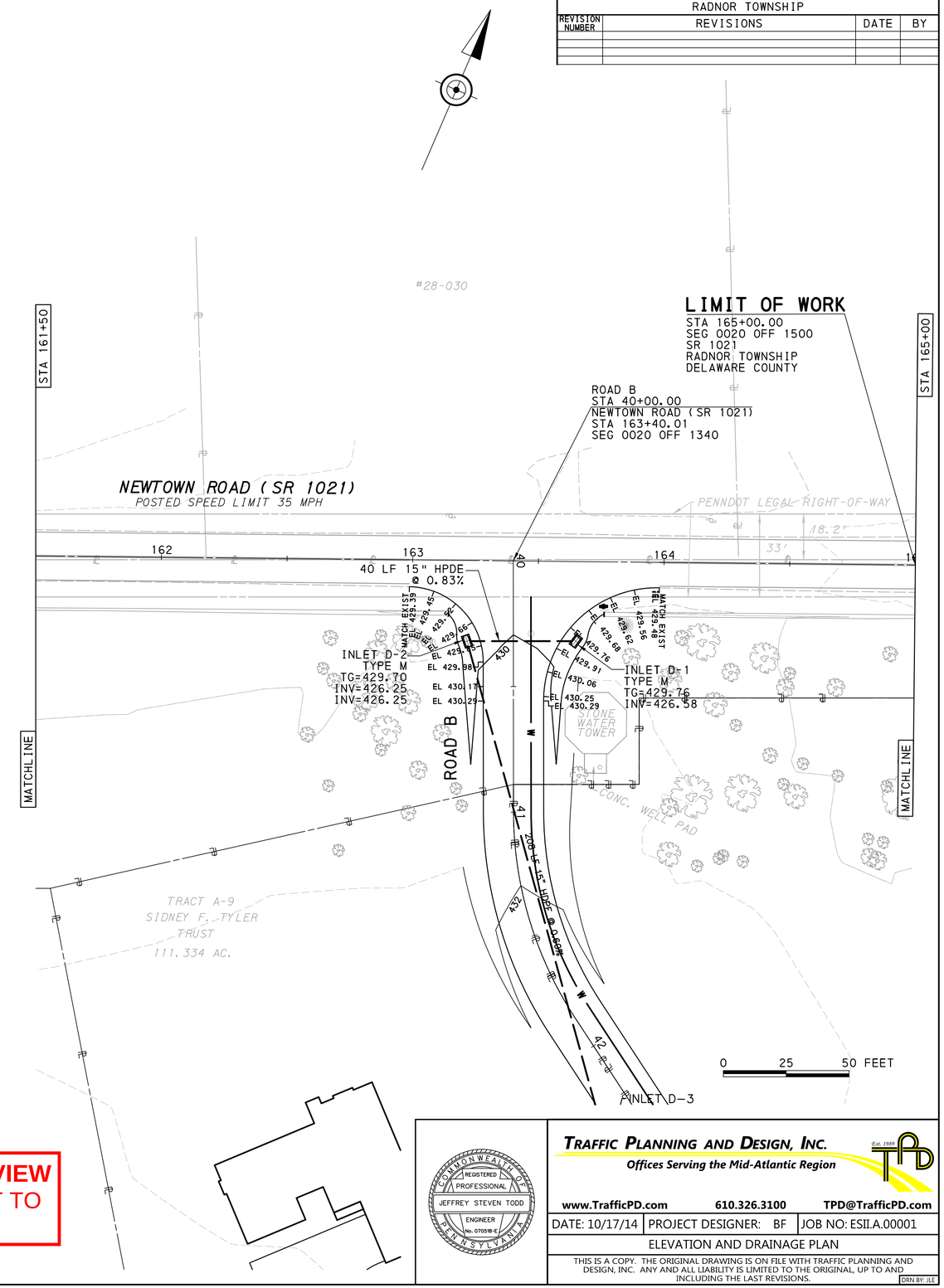
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	1021		7 OF 12
RADNOR TOWNSHIP				

REVISION NUMBER	REVISIONS	DATE	BY

LEGEND

TC 350.67 / BC 350.00	- PROPOSED ELEVATION
EL 350.00	- PROPOSED ELEVATION





UNDER DOT REVIEW
PLANS SUBJECT TO CHANGE

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ELEVATION AND DRAINAGE PLAN

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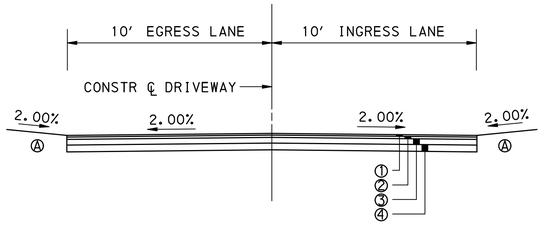
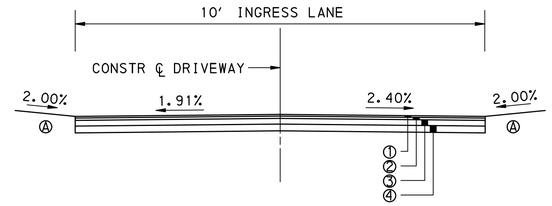
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	1021		8 OF 12
RADNOR TOWNSHIP				

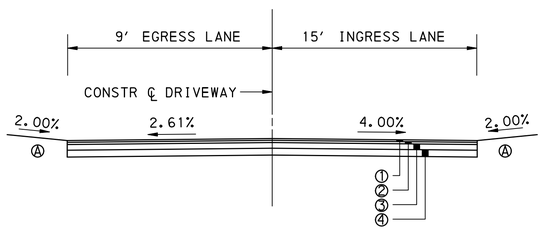
REVISION NUMBER	REVISIONS	DATE	BY



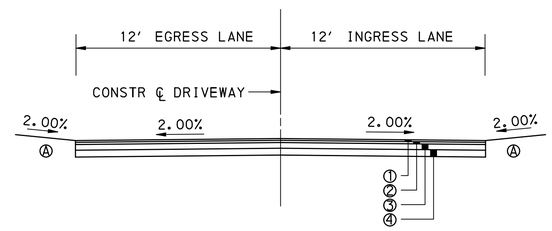
ROAD F
STA 10+59.52
STA 136+66.65 (SR 1021)
TYPICAL SECTION



ROAD E
STA 20+62.91
STA 145+28.75 (SR 1021)
TYPICAL SECTION



ROAD C
STA 30+41.55
STA 150+00.00 (SR 1021)
TYPICAL SECTION



ROAD B
STA 40+55.76
STA 163+40.01 (SR 1021)
TYPICAL SECTION

UTILITY CONTACTS FOR COORDINATION

AQUA PENNSYLVANIA INC.
762 W LANCASTER AVE
BRYN MAWR, PA 19010
ATTN: STEVE PIZZI
EMAIL: sbpizzi@aquaamerica.com

COMCAST CABLE COMMUNICATIONS INC
110 SPRINGBROOKE BLVD
ASTON, PA 19014
ATTN: RICH KAIN
EMAIL: richard_kain@cable.comcast.com

PECO ENERGY
450 S HENDERSON RD SUITE B
KING OF PRUSSIA, PA 19406
ATTN: GAVIN HEWITT
EMAIL: gavinhewitt@usicinc.com

VERIZON PENNSYLVANIA LLC
180 SHEREE BLVD STE 2100
EXTON, PA 19341
ATTN: KELLY BLOUNT
EMAIL: kelly.b.blount@verizon.com

RADNOR TOWNSHIP
301 IVEN AVENUE
WAYNE, PA 19087
ATTN: STEVE NORCINI
EMAIL: snorcini@radnor.org

① 1 1/2" SUPERPAVE VOLUMETRIC ASPHALT MIXTURE DESIGN, 9.5mm, PG 64-22, HMA WEARING COURSE, 3-10 M ESALS, SRL-H

② 2 1/2" SUPERPAVE VOLUMETRIC ASPHALT MIXTURE DESIGN, 19.0mm, PG 64-22, HMA BINDER COURSE, 3-10 M ESALS

③ 6" SUPERPAVE VOLUMETRIC ASPHALT MIXTURE DESIGN, 25.0mm, PG 64-22, HMA BASE COURSE, 3-10 M ESALS

④ 6" 2A SUBBASE

Ⓐ ALL SEEDING AND SOIL SUPPLEMENT PER PUBLICATION 408.

* IF EXISTING MATERIAL DEPTHS ARE GREATER IN FIELD, MATCH EXISTING DEPTHS

UNDER DOT REVIEW
PLANS SUBJECT TO CHANGE

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JEFFREY STEVEN TODD
ENGINEER
No. 070518-E

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Est. 1989
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TYPICAL SECTIONS

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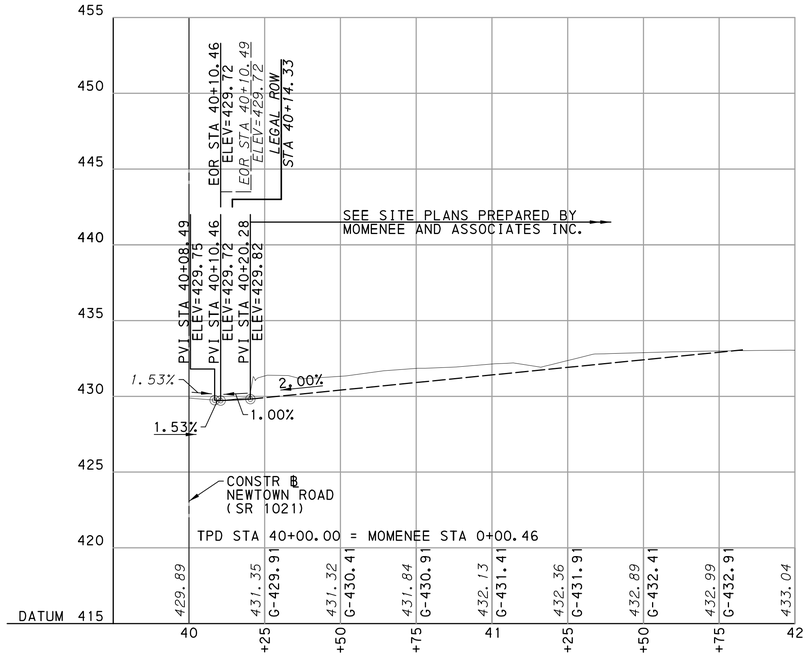
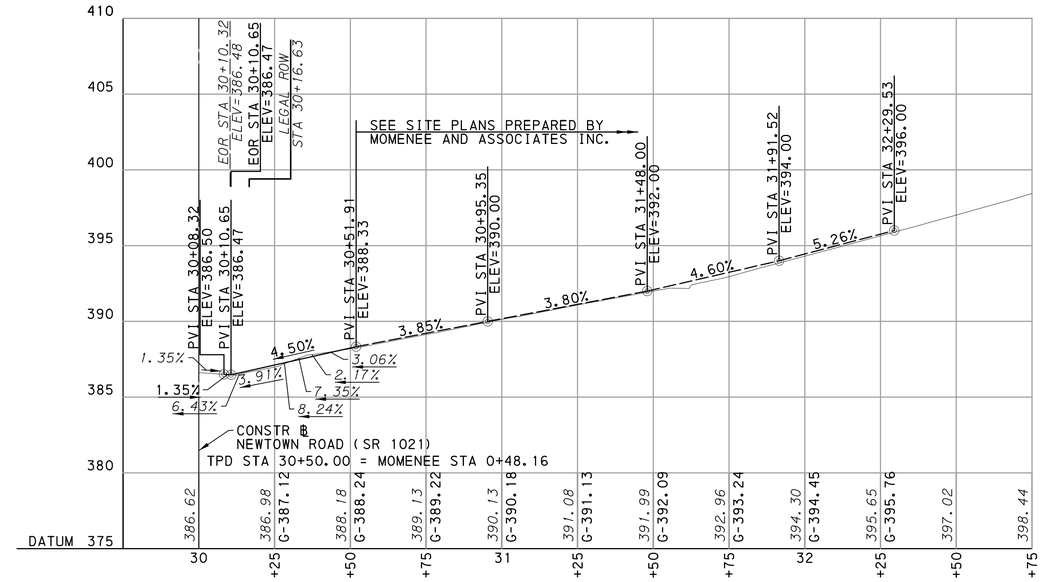
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	1021		9 OF 12
RADNOR TOWNSHIP				

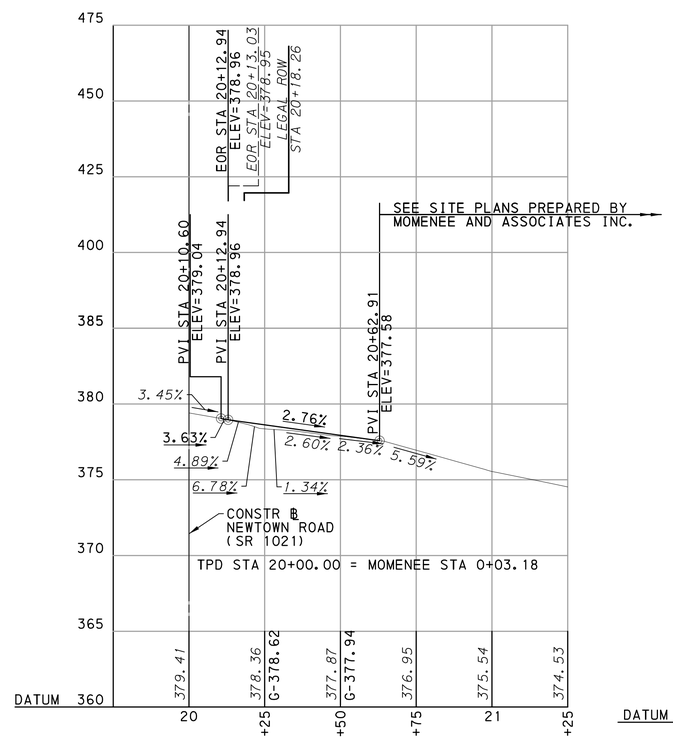
REVISION NUMBER	REVISIONS	DATE	BY



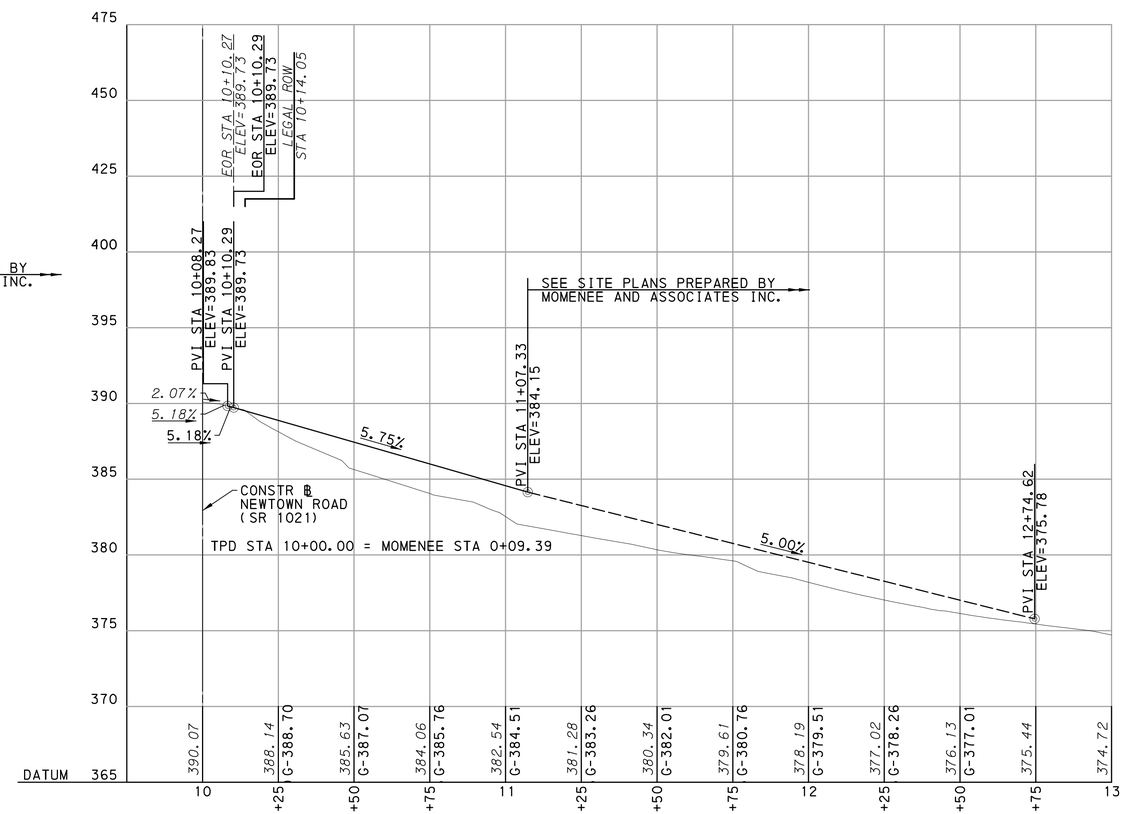
℄ NEWTOWN ROAD (SR 1021)
ROAD B @ STA 163+40.01



℄ NEWTOWN ROAD (SR 1021)
ROAD C @ STA 150+00.00



℄ NEWTOWN ROAD (SR 1021)
ROAD E @ STA 145+28.75



℄ NEWTOWN ROAD (SR 1021)
ROAD F @ STA 136+66.65

UNDER DOT REVIEW
PLANS SUBJECT TO CHANGE

SCALE
HORIZONTAL 0 25 50 FEET
VERTICAL 0 5 10 FEET

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JEFFREY STEVEN TODD
ENGINEER
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PROFILES

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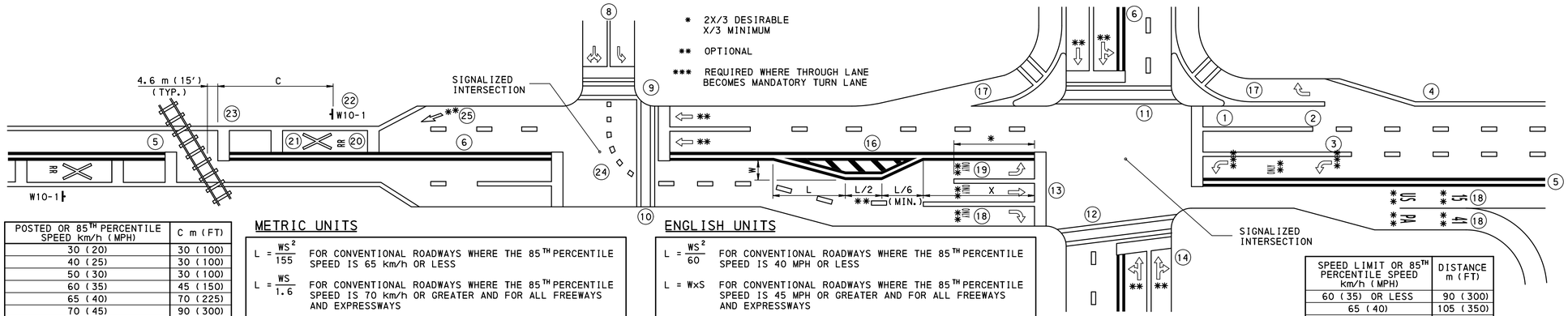
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	1021		10 OF 12
	RADNOR TOWNSHIP			

REVISION NUMBER	REVISIONS	DATE	BY



POSTED OR 85TH PERCENTILE SPEED km/h (MPH)	C m (FT)
30 (20)	30 (100)
40 (25)	30 (100)
50 (30)	30 (100)
60 (35)	45 (150)
65 (40)	70 (225)
70 (45)	90 (300)
80 (50)	115 (375)
90 (55)	137 (450)
100 (60)	168 (550)
105 (65)	198 (650)

LOCATION OF RAILROAD CROSSING SIGN

METRIC UNITS

$L = \frac{WS^2}{155}$ FOR CONVENTIONAL ROADWAYS WHERE THE 85TH PERCENTILE SPEED IS 65 km/h OR LESS

$L = \frac{WS}{1.6}$ FOR CONVENTIONAL ROADWAYS WHERE THE 85TH PERCENTILE SPEED IS 70 km/h OR GREATER AND FOR ALL FREEWAYS AND EXPRESSWAYS

WHERE: S = 85TH PERCENTILE SPEED (KMH)
W = OFFSET

X = 7.5 m PER 30 TURNING V.P.H. THE MINIMUM IS 22.5 m

ENGLISH UNITS

$L = \frac{WS^2}{60}$ FOR CONVENTIONAL ROADWAYS WHERE THE 85TH PERCENTILE SPEED IS 40 MPH OR LESS

L = WxS FOR CONVENTIONAL ROADWAYS WHERE THE 85TH PERCENTILE SPEED IS 45 MPH OR GREATER AND FOR ALL FREEWAYS AND EXPRESSWAYS

WHERE: S = 85TH PERCENTILE SPEED (MPH)
W = OFFSET

X = 25' PER 30 TURNING V.P.H. THE MINIMUM IS 75'

SPEED LIMIT OR 85TH PERCENTILE SPEED km/h (MPH)	DISTANCE m (FT)
60 (35) OR LESS	90 (300)
65 (40)	105 (350)
70 (45)	120 (400)
80 (50)	135 (450)
90 (55)	150 (500)

TABLE A

(SEE NOTE 5)

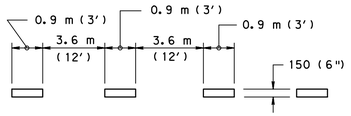
LEGEND

WHITE

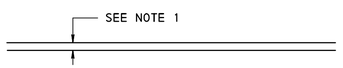
YELLOW

DIRECTION OF TRAVEL

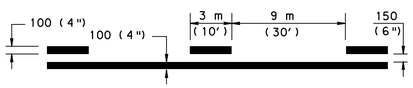
(3) NOTE REFERENCE NUMBER



AUXILIARY LANE LINE

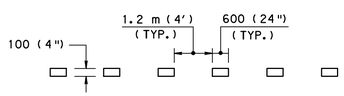


SOLID LANE LINE

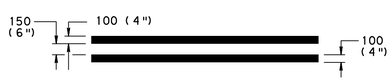


ONE-WAY BARRIER LINES

(SEE NOTE 5)

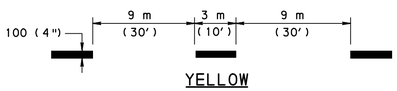


DOTTED EXTENSION LINE

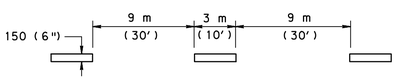


TWO-WAY BARRIER LINES

(SEE NOTE 5)

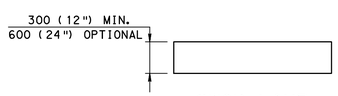


YELLOW

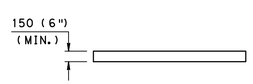


WHITE

BROKEN LANE LINE



STOP LINE



CROSSWALK

NOTES:

LANE, EDGE AND CENTERLINES

1. MAKE ALL LANE LINES, EITHER SOLID OR BROKEN WHITE, 100 mm (4") MINIMUM WIDE ON TWO-LANE, TWO-WAY HIGHWAYS AND 150 mm (6") WIDE ON MULTI-LANE HIGHWAYS.
2. LANE LINES ON AN APPROACH TO A SIGNALIZED INTERSECTION SHALL BE SOLID WHITE FOR A DISTANCE OF 45 m (150') MEASURED FROM THE STOP BAR.
3. LANE LINES THAT DELINEATE THE EDGE OF A TURNING LANE ARE TO BE SOLID WHITE LINES WITH A LENGTH EQUAL 2X/3, BUT NOT LESS THAN 1/3 THE LENGTH OF THE TURN LANE, MEASURED FROM THE STOP BAR.
4. MAKE EDGE LINES SOLID WHITE LINES 100 mm (4") WIDE, EXCEPT USE SOLID YELLOW LINES WHEN ADJACENT TO A MEDIAN WHICH SEPARATES OPPOSING DIRECTIONS OF VEHICULAR TRAFFIC FLOW.
5. ON TWO-LANE, TWO-WAY HIGHWAYS, THE CENTER LINES ARE YELLOW, 100 mm (4") WIDE EITHER SOLID, BROKEN OR A COMBINATION THEREOF. A SOLID BARRIER LINE SHALL PRECEDE ALL APPROACHES TO RAILROAD CROSSINGS AND CONTROLLED INTERSECTIONS BY THE MINIMUM DISTANCE NOTED IN TABLE A.
6. ON FOUR OR MORE LANE UNDIVIDED HIGHWAYS, FOR CENTER LINES USE THE TWO-WAY BARRIER LINES.
7. "CENTER LANE LEFT TURN ONLY" MARKINGS ARE TWO (2) SETS OF ONE-WAY BARRIER LINES WITH BROKEN YELLOW LINES INSIDE OF THE SOLID YELLOW LINES.
8. EXTEND THE LANE LINES, EDGE LINES AND/OR CENTER LINES A DISTANCE OF 45 m (150') FROM THE STOP BAR ON MINOR APPROACHES, WHERE CONDITIONS PERMIT.

CROSSWALKS (FOR TYPES SEE PENNDOT PUB. 111M, TC-8600, SHEET 4 OF 8)

9. MAKE THE CROSSWALK LINES SOLID WHITE AND NOT LESS THAN 150 mm (6") WIDE, MARKING BOTH EDGES OF THE CROSSWALK AREA.
10. EXTEND THE CROSSWALK LINES FROM FACE OF CURB TO FACE OF CURB OR EDGE OF SHOULDER AS APPLICABLE.
11. MAKE THE LINES FORMING A CROSSWALK PARALLEL.
12. THE MINIMUM WIDTH OF CROSSWALKS IS 1.8 m (6').

STOP LINE

13. STOP LINES ARE SOLID WHITE LINES THAT COMPLETELY TRAVERSE EACH TRAFFIC LANE. AT AN INTERSECTION WITH A STOP SIGN, THE STOP LINE SHOULD BE PLACED AT A LOCATION NO LESS THAN 1.2 m (4'), OR MORE THAN 9 m (30') FROM THE NEAREST EDGE OF THE INTERSECTING ROADWAY TO ENSURE MAXIMUM SIGHT DISTANCE TO VEHICLES ON THE CROSSING ROUTE. WHEN USED ON MULTI-LANE APPROACH TO A SIGNALIZED INTERSECTION, THE STOP LINE MAY BE STAGGERED TO ASSIST TURNING VEHICLES AND TO IMPROVE SIGHT DISTANCE FOR MOTORIST DESIRING TO MAKE A TURN ON RED.
14. LOCATE STOP LINES AT A MINIMUM OF 1.2 m (4') IN ADVANCE OF AND PARALLEL TO THE CROSSWALK LINES UNLESS OTHERWISE NOTED.

YIELD LINE (FOR DETAILS SEE PENNDOT PUB. 111M, TC-8600, SHEET 5 OF 8)

15. YEILD LINES ARE TO CONSIST OF A ROW OF SOLID WHITE ISOSCELES TRIANGLES POINTING TOWARD APPROACHING VEHICLES EXTENDING ACROSS APPROACH LANES TO INDICATE THE POINT AT WHICH THE YEILD IS INTENDED OR REQUIRED TO BE MADE.

MEDIAN MARKINGS

16. TRANSVERSE MEDIAN MARKINGS ARE 600 mm (24") WIDE YELLOW LINES SPACED AS INDICATED ON SHEET 4 OF 7, WITHIN TWO (2) SETS OF TWO-WAY BARRIER LINES. USE TRANSVERSE LINES ONLY WHEN REQUIRED TO PROVIDE EMPHASIS IF THE SIGHT DISTANCE OR VISIBILITY IS RESTRICTED.

GORE MARKINGS

17. EDGE LINES ARE 100 mm (4") SOLID WHITE LINES. USE TRANSVERSE OR DIAGONAL LINES ONLY WHEN REQUIRED TO PROVIDE ADDITIONAL EMPHASIS IF THE SIGHT DISTANCE OR VISIBILITY OF GORE IS RESTRICTED.

PAVEMENT LEGENDS

18. WORD AND SYMBOL MARKINGS SHOULD NOT EXCEED THREE LINES OF INFORMATION. IF A PAVEMENT MARKING WORD MESSAGE CONSISTS OF MORE THAN ONE LINE OF INFORMATION, IT SHOULD READ IN THE DIRECTION OF TRAVEL. THE FIRST WORD OF THE MESSAGE SHOULD BE NEAREST TO THE ROAD USER. LOCATE ANY SPECIFIED WORD MESSAGES IN ADVANCE OF ITS ACCOMPANYING SYMBOL BY A DISTANCE NOT LESS THAN 4 TIMES THE LETTER HEIGHT FOR LOW-SPEED [≤55 km/h (35MPH)], NOR MORE THAN 10 TIMES THE LETTER HEIGHT FOR HIGH-SPEED [>55 km/h (35 MPH)]. ON ALL APPROACHES, CENTER THE LEGENDS WITHIN THE LANE.
19. ALIGN THE LEGENDS TRANSVERSELY ACROSS EACH PAVEMENT. THE MINIMUM DISTANCE BETWEEN THE ARROW SYMBOL AND STOP BAR IS 6 m (20').

RAILROAD CROSSING MARKINGS

20. CENTER THE RAILROAD SYMBOLS WITHIN EACH LANE ON ALL PAVED APPROACHES TO HIGHWAY-RAIL GRADE CROSSINGS. IN THOSE SITUATIONS WHERE THERE IS INADEQUATE SPACE FOR THE PAVEMENT MARKINGS OR WHERE THE INSTALLATION WOULD CREATE OPERATIONAL PROBLEMS WITH TURNING LANES OR OTHER SPECIAL CONDITIONS, PAVEMENT MARKINGS ARE NOT REQUIRED PROVIDING AN ENGINEERING STUDY INDICATES THAT OTHER TRAFFIC CONTROL DEVICES PROVIDE SUITABLE WARNING AND CONTROL.
21. ON MULTI-LANE ROADS EXTEND THE TRANSVERSE LINES ACROSS ALL TRAFFIC LANES ON EACH APPROACH AND USE INDIVIDUAL SYMBOLS IN EACH APPROACH LANE.
22. LOCATE A PORTION OF RAILROAD PAVEMENT MARKING SYMBOL DIRECTLY OPPOSITE THE ADVANCE WARNING SIGN W10-1. USE DIMENSION "C" FOR PLACEMENT OF ADVANCE WARNING SIGN W10-1.
23. LOCATE STOP LINES 2.4 m (8') FROM THE GATE (IF PRESENT), BUT NO CLOSER THAN 4.6 m (15') FROM THE NEAREST RAIL.

DOTTED EXTENSION LINES

24. DOTTED EXTENSION LINES MAY BE USED TO DELINEATE TRAVEL PATHS FOR TURNING TRAFFIC MOVEMENTS AT OFFSET, SKEWED OR COMPLEX INTERSECTIONS AND FOR MULTIPLE TURN LANES.

LANE REDUCTION ARROW (LRA)

25. FOR DETAILS SEE SHEET 7 OF 8.

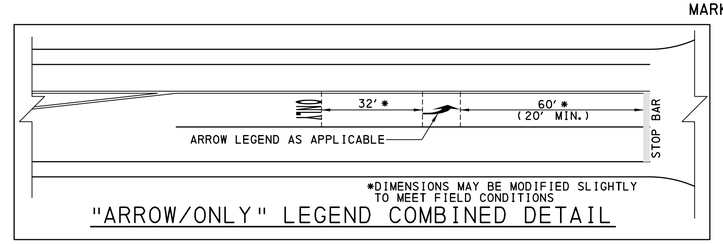
GENERAL

26. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. ENGLISH UNITS IN PARENTHESIS ( ).
27. EITHER ALL METRIC OR ALL ENGLISH UNITS MUST BE USED ON PLANS. METRIC AND ENGLISH UNITS SHOWN MAY NOT BE MIXED.

GENERAL NOTES

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE DEPARTMENT'S SPECIFICATIONS, FORM 408.
2. THESE PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE REGULATIONS GOVERNING THE DESIGN, LOCATION, AND OPERATION OF ALL OFFICIAL TRAFFIC SIGNS, SIGNALS, AND MARKINGS ON AND ALONG HIGHWAYS WITHIN THE COMMONWEALTH OF PENNSYLVANIA.
3. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED.
4. THE CONTRACTOR SHALL PREPARE THE PAVEMENT SURFACE FOR THE PROPER ADHESION. ANY SWEEPING OR REMOVAL OF DEBRIS, GRAVEL, DIRT, OR OTHER FOREIGN MATERIALS SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE NEW PAVEMENT MARKINGS, AND NO SEPARATE PAYMENT SHALL BE MADE THEREFORE.
5. THE CONTRACTOR SHALL REMOVE ALL PREVIOUS PAVEMENT MARKINGS, WHICH IN THE OPINION OF THE ENGINEER CONFLICT WITH THE NEW PAVEMENT MARKINGS. UNLESS SPECIFICALLY STATED OTHERWISE THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE NEW PAVEMENT MARKINGS, AND NO SEPARATE PAYMENT WILL BE MADE THEREFORE.
6. THE CONTRACTOR SHALL NOTE ALL SPECIAL PROVISIONS OF THE CONTRACT AND SPECIFICALLY WITH REGARDS TO: THE RATE OF APPLICATION, MAINTENANCE OF TRAFFIC, RESTRICTED WORKING HOURS, AND/OR RESTRICTED WEATHER CONDITIONS. NO DEVIATIONS WILL BE PERMITTED.
7. UNLESS SPECIFIED OTHERWISE, THE BASIS OF MEASUREMENT SHALL BE ALONG THE LONGITUDINAL CENTERLINE OF PAVEMENT MARKINGS. MEASUREMENT FOR LEGENDS SHALL BE PER MESSAGE, COMPLETE AND IN PLACE.
8. PRIOR TO APPLICATION, THE CONTRACTOR SHALL FIELD CHECK AND LOCATE ALL PAVEMENT MARKINGS TO THE SATISFACTION OF THE PENNDOT INSPECTOR.
9. ALL MARKINGS IMPROPERLY APPLIED OR LOCATED SHALL BE COMPLETELY REMOVED AND CORRECTLY RE-APPLIED, AT THE SOLE EXPENSE OF THE CONTRACTOR.
10. WHERE BITUMINOUS SEALANTS PREVENTS OR MAKES IMPRACTICAL THE EXTENDING OF LINES TO THE FACE OF THE CURB, THE CONTRACTOR SHALL EXTEND LINES TO EDGE OF SEALANT OR WITHIN ONE FOOT OF THE FACE OF CURB, WHICHEVER IS LESS.
11. ALL PROPOSED PAVEMENT MARKINGS MUST BE HOT THERMOPLASTIC ON BITUMINOUS PAVEMENT, INCLUDING LONG AND SHORT LINES AND PAVEMENT MARKING LEGENDS. ALL PROPOSED PAVEMENT MARKINGS MUST BE EPOXY ON CONCRETE PAVEMENT, INCLUDING LONG AND SHORT LINES AND PAVEMENT MARKING LEGENDS.

THE
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0
STANDARD PAVEMENT
MARKINGS



"ARROW/ONLY" LEGEND COMBINED DETAIL

UNDER DOT REVIEW
PLANS SUBJECT TO CHANGE

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JEFFREY STEVEN TODD
ENGINEER
No. 070518-E

TRAFFIC PLANNING AND DESIGN, INC.
Offices Serving the Mid-Atlantic Region
Est. 1989
www.TrafficPD.com 610.326.3100 TPD@TrafficPD.com

DATE: 10/17/14 | PROJECT DESIGNER: BF | JOB NO: ESII.A.00001

PAVEMENT MARKING STANDARDS

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DRN BY: JLE

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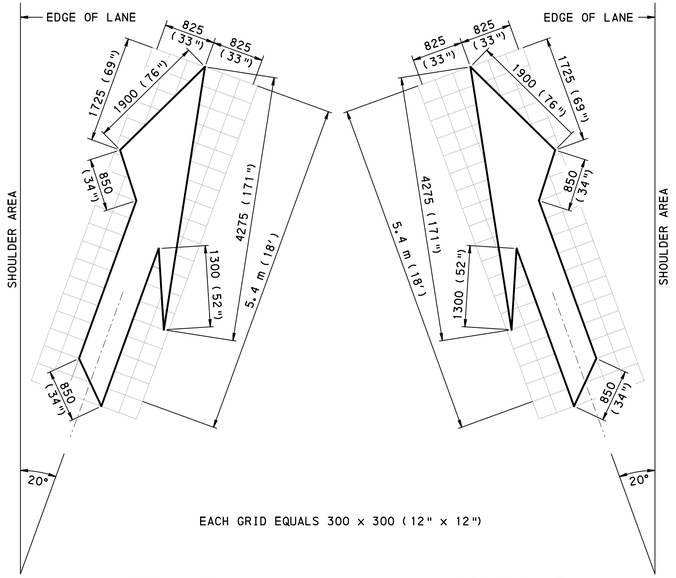
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	1021		11 OF 12
RADNOR TOWNSHIP				

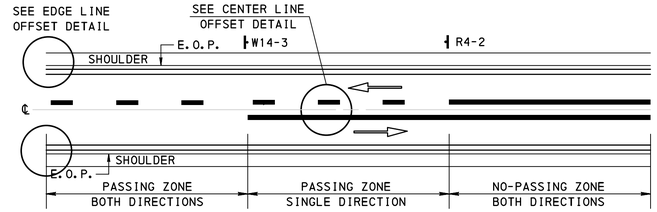
REVISION NUMBER	REVISIONS	DATE	BY



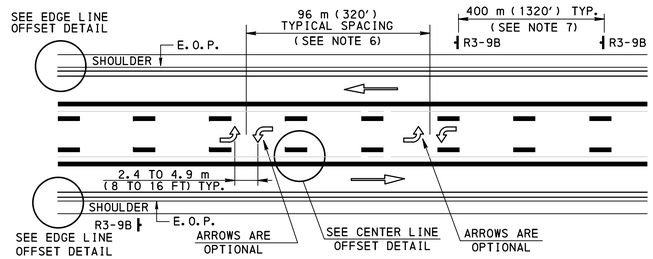
LEFT LANE
(MERGE RIGHT)

RIGHT LANE
(MERGE LEFT)

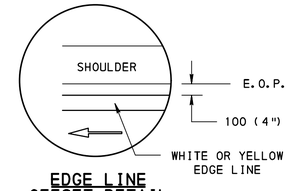
LANE REDUCTION TRANSITION ARROW



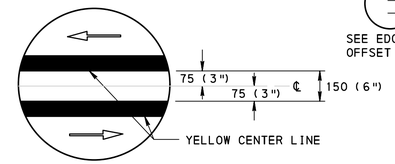
TWO-LANE, TWO-WAY UNDIVIDED ROADWAY



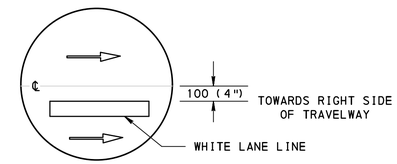
TWO-LANE, TWO-WAY UNDIVIDED ROADWAY WITH TWO-WAY LEFT TURN LANE



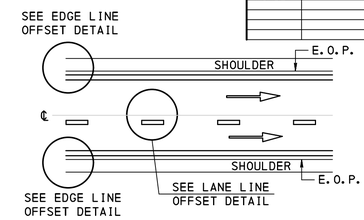
EDGE LINE OFFSET DETAIL

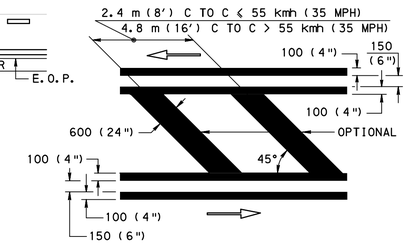


CENTER LINE OFFSET DETAIL

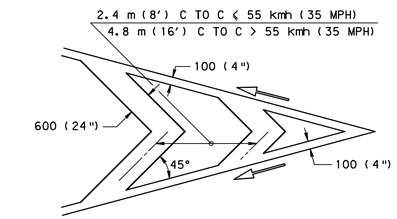


LANE LINE OFFSET DETAIL

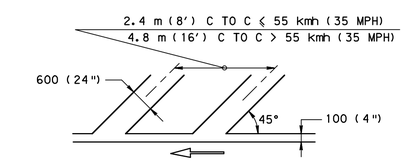




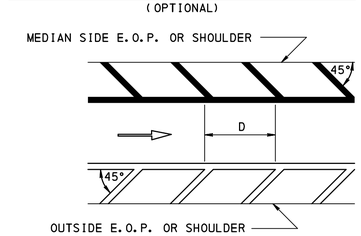
TRANSVERSE MEDIAN MARKING



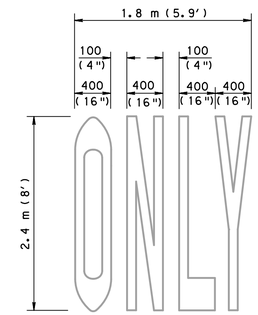
CHEVRON GORE MARKING
(OPTIONAL)



ONE-WAY BARRIER GORE MARKING
(OPTIONAL)

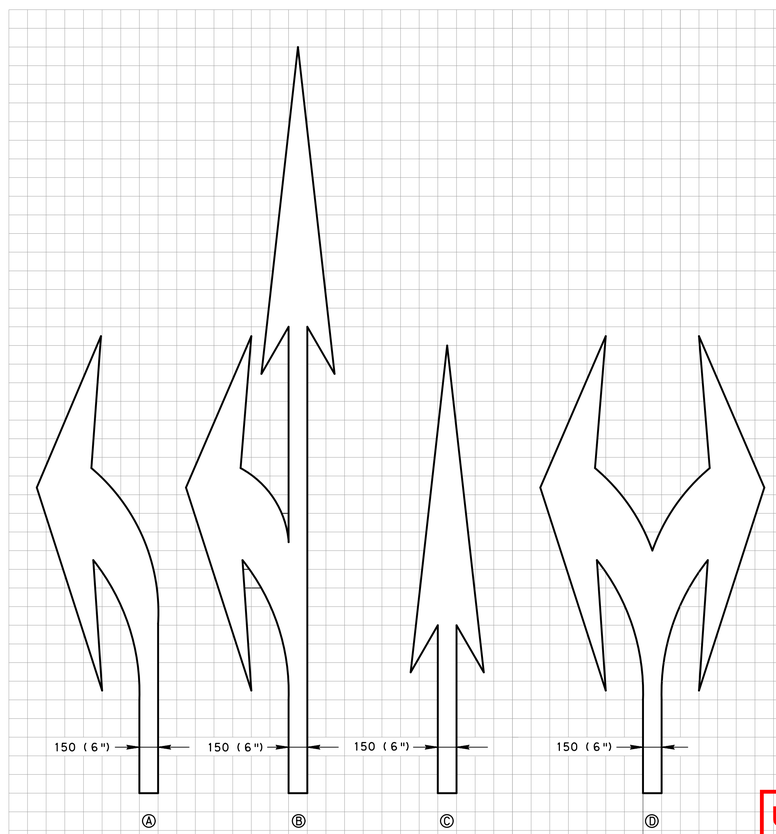


D = SPACING OF DIAGONAL LINES (TYPICALLY EQUAL IN FEET TO THE POSTED SPEED LIMIT). INCREASE SPACING OF DIAGONALS TO 60 m (200') OR MORE ON INTERSTATE ROADWAYS.



NOTES:

1. OFFSET PAVEMENT MARKING LINES 100 mm (4") FROM LONGITUDINAL PAVEMENT CONSTRUCTION JOINTS, AS DETERMINED BY THE ENGINEER OR AS INDICATED BELOW:
   - YELLOW SKIP LINES ON TWO-LANE, TWO-WAY ROADWAYS (WHERE PASSING IS ALLOWED IN BOTH DIRECTIONS) CAN BE OFFSET 75 mm (3") FROM THE CENTER LINE TO ALLOW FOR FUTURE REPAINTING OF THE LINES WITH COMPATIBLE DEPARTMENT EQUIPMENT.
   - OFFSET DOUBLE YELLOW CENTER LINES 75 mm (3") ON EACH SIDE OF THE CENTER LINE TO ALLOW FOR PLACEMENT OF PAVEMENT MARKERS (PRESENT OR FUTURE PLACEMENT).
2. PASSING - NO PASSING ZONES WILL BE DETERMINED BY THE ENGINEER.
3. EDGE LINES ARE NOT REQUIRED ALONG CURB AND GUTTER LOCATIONS.
4. DO NOT CONTINUE EDGE LINES THRU INTERSECTIONS, AND DO NOT BREAK EDGE LINES AT DRIVEWAYS.
5. PLACE EDGE LINES AT RAISED ISLAND LOCATIONS, OUTLINING THE SHAPE OF THE RAISED ISLAND.
6. 96 m (320') TYPICAL SPACING BETWEEN SETS OF ARROW SYMBOLS CAN BE INCREASED OR DECREASED AS DETERMINED BY THE ENGINEER.
7. 400 m (1320') TYPICAL DISTANCE BETWEEN CENTER LANE - LEFT TURN ONLY SIGNS (R3-9B) CAN BE INCREASED OR DECREASED AS DETERMINED BY THE ENGINEER.
8. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. ENGLISH UNITS IN PARENTHESIS ( ).
9. EITHER ALL METRIC OR ALL ENGLISH UNITS MUST BE USED ON PLANS. METRIC AND ENGLISH UNITS SHOWN MAY NOT BE MIXED.



NOTES:

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2. EITHER ALL METRIC OR ALL ENGLISH UNITS MUST BE USED ON PLANS. METRIC AND ENGLISH UNITS SHOWN MAY NOT BE MIXED.

UNDER DOT REVIEW
PLANS SUBJECT TO CHANGE

COMMONWEALTH OF PENNSYLVANIA
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PAVEMENT MARKING STANDARDS

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DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	1021		12 OF 12
	RADNOR TOWNSHIP			

REVISION NUMBER	REVISIONS	DATE	BY

PATA 101 (OLD PATA 5)

NOTES

1. The shadow vehicle and traffic control devices are not required if the work space is beside the highway right-of-way, behind barrier, more than 2'-0" behind curb, or 15' or more from the edge of my roadway.

2. For operations of 60 minutes or less, all traffic control devices may be eliminated if a shadow vehicle is present.

3. For divided highways and one-way highways where it is physically possible, advance warning signs should also be placed on the left-hand side of the roadway.

4. When a shadow vehicle is not used, distance A is measured from the Road Work (W20-1) sign location to beginning of work space.

Signs

W20-1

Sign Spacing Chart

Condition	Distance A Feet	B Feet	C Feet	F Feet
Urban 35 MPH or less	100	100	100	100
Urban Greater than 35 MPH	350	350	350	350
Rural	500	500	500	500

When multiple distance plaques are used on advance warning signs, they shall all be of the same series type.
Example: either all "AHEAD" or XXX FEET.

Taper Length Formulas

S	L
40 MPH or less	$L = \frac{WS^2}{60}$
45 MPH or more	L = WS

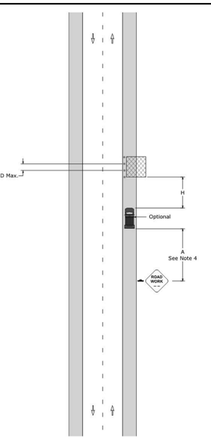
S = Regulatory Speed Limit
W = Width of Offset
L = Length

Distance and Spacing Quick Reference Chart

Speed MPH	W Feet	L Feet	1/2L Feet	1/3L Feet	Min. Channelizing Devices Per Taper Type Lengths L	1/2L	1/3L	50'	D Feet	E Feet	H Feet
25	10	105	55	35							
	11	115	60	40	6	6	6	6	50	155	150
	12	125	65	45							
30	10	150	75	50	6						
	11	165	85	55	7	6	6	6	60	200	150
	12	180	90	60	7						
35	10	205	105	70	7						
	11	225	115	75	8	6	6	6	70	250	150
	12	245	125	80	8						
40	10	270	135	90	8						
	11	295	150	100	9	6	6	6	80	305	150
	12	320	160	110	9						
45	10	450	225	150	11	6					
	11	495	250	165	12	7	6	6	90	360	150
	12	540	270	180	13	7					
50	10	500	250	170	11	6					
	11	550	275	185	12	7	6	6	100	425	250
	12	600	300	200	13	7					
55	10	550	275	185	11	6					
	11	605	305	205	12	7	6	6	110	495	250
	12	660	330	220	13	7					

Note: Channelizing devices used in taper shall be equally spaced at ½ D Max.

WORK SPACE ON OR BEYOND THE SHOULDER (NO ROADWAY ENCROACHMENT)



PATA 102 (OLD PATA 7)

NOTES

1. If the work space is completely within a parking lane and parking is present, the taper or shadow vehicle is not required.

2. For operations of 15 minutes or less:
   a. The Road Work (W20-1) sign is not required.

   b. All channelizing devices may be eliminated if a shadow vehicle is present.

3. For divided highways and one-way highways where it is physically possible, advance warning signs should also be placed on the left-hand side of the roadway.

4. When a shadow vehicle is not used, distance E is measured from end of taper to beginning of work space.

Signs

W20-1

Sign Spacing Chart

Condition	Distance A Feet	B Feet	C Feet	F Feet
Urban 35 MPH or less	100	100	100	100
Urban Greater than 35 MPH	350	350	350	350
Rural	500	500	500	500

When multiple distance plaques are used on advance warning signs, they shall all be of the same series type.
Example: either all "AHEAD" or XXX FEET.

Taper Length Formulas

S	L
40 MPH or less	$L = \frac{WS^2}{60}$
45 MPH or more	L = WS

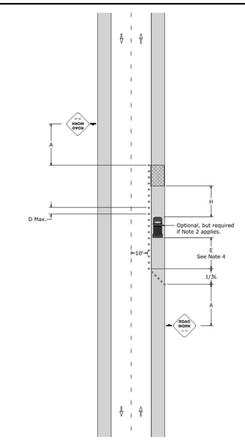
S = Regulatory Speed Limit
W = Width of Offset
L = Length

Distance and Spacing Quick Reference Chart

Speed MPH	W Feet	L Feet	1/2L Feet	1/3L Feet	Min. Channelizing Devices Per Taper Type Lengths L	1/2L	1/3L	50'	D Feet	E Feet	H Feet
25	10	105	55	35							
	11	115	60	40	6	6	6	6	50	155	150
	12	125	65	45							
30	10	150	75	50	6						
	11	165	85	55	7	6	6	6	60	200	150
	12	180	90	60	7						
35	10	205	105	70	7						
	11	225	115	75	8	6	6	6	70	250	150
	12	245	125	80	8						
40	10	270	135	90	8						
	11	295	150	100	9	6	6	6	80	305	150
	12	320	160	110	9						
45	10	450	225	150	11	6					
	11	495	250	165	12	7	6	6	90	360	150
	12	540	270	180	13	7					
50	10	500	250	170	11	6					
	11	550	275	185	12	7	6	6	100	425	250
	12	600	300	200	13	7					
55	10	550	275	185	11	6					
	11	605	305	205	12	7	6	6	110	495	250
	12	660	330	220	13	7					

Note: Channelizing devices used in taper shall be equally spaced at ½ D Max.

WORK SPACE ON BEYOND THE SHOULDER (MINOR ROADWAY ENCROACHMENT)



PATA 107 (OLD PATA 10a)

NOTES

1. Each flagger shall be clearly visible to traffic for a minimum distance of E and shall be in constant communication with all other flaggers.

2. For operations of 15 minutes or less:
   a. The Road Work (W20-1), One Lane Road (W20-4), and Flagger Symbol (W20-7) signs are not required.

   b. All channelizing devices may be eliminated if a shadow vehicle is present.

3. The buffer space shall be extended so that the two-way traffic taper is placed before a horizontal (or crest vertical) curve to provide adequate sight distance for the flagger and a queue of stopped vehicles.

4. When a shadow vehicle is not used, distance E is measured from end of taper to beginning of work space.

Signs

W20-1 W20-4 W20-7

Sign Spacing Chart

Condition	Distance A Feet	B Feet	C Feet	F Feet
Urban 35 MPH or less	100	100	100	100
Urban Greater than 35 MPH	350	350	350	350
Rural	500	500	500	500

When multiple distance plaques are used on advance warning signs, they shall all be of the same series type.
Example: either all "AHEAD" or XXX FEET.

Taper Length Formulas

S	L
40 MPH or less	$L = \frac{WS^2}{60}$
45 MPH or more	L = WS

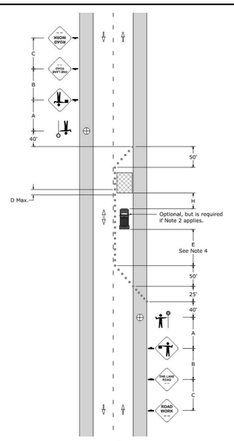
S = Regulatory Speed Limit
W = Width of Offset
L = Length

Distance and Spacing Quick Reference Chart

Speed MPH	W Feet	L Feet	1/2L Feet	1/3L Feet	Min. Channelizing Devices Per Taper Type Lengths L	1/2L	1/3L	50'	D Feet	E Feet	H Feet
25	10	105	55	35							
	11	115	60	40	6	6	6	6	50	155	150
	12	125	65	45							
30	10	150	75	50	6						
	11	165	85	55	7	6	6	6	60	200	150
	12	180	90	60	7						
35	10	205	105	70	7						
	11	225	115	75	8	6	6	6	70	250	150
	12	245	125	80	8						
40	10	270	135	90	8						
	11	295	150	100	9	6	6	6	80	305	150
	12	320	160	110	9						
45	10	450	225	150	11	6					
	11	495	250	165	12	7	6	6	90	360	150
	12	540	270	180	13	7					
50	10	500	250	170	11	6					
	11	550	275	185	12	7	6	6	100	425	250
	12	600	300	200	13	7					
55	10	550	275	185	11	6					
	11	605	305	205	12	7	6	6	110	495	250
	12	660	330	220	13	7					

Note: Channelizing devices used in taper shall be equally spaced at ½ D Max.

WORK IN ONE LANE; TWO FLAGGERS



PATA 201 (OLD PATA 24)

NOTES

1. Traffic control devices are not required if the work space is outside the highway right-of-way, behind barrier, more than 2'-0" behind curb, or 15' or more from the edge of the roadway.

2. For divided highways and one-way highways where it is physically possible, advance warning signs should also be placed on the left-hand side of the roadway.

3. When a shadow vehicle is not used, distance A is measured from sign to beginning of work space.

Signs

W20-1 G20-2

Sign Spacing Chart

Condition	Distance A Feet	B Feet	C Feet	F Feet
Urban 35 MPH or less	100	100	100	100
Urban Greater than 35 MPH	350	350	350	350
Rural	500	500	500	500

When multiple distance plaques are used on advance warning signs, they shall all be of the same series type.
Example: either all "AHEAD" or XXX FEET.

Taper Length Formulas

S	L
40 MPH or less	$L = \frac{WS^2}{60}$
45 MPH or more	L = WS

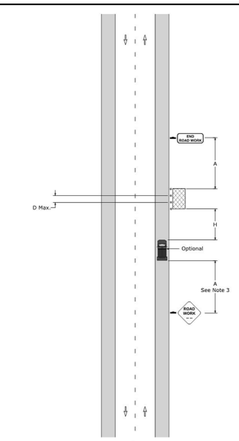
S = Regulatory Speed Limit
W = Width of Offset
L = Length

Distance and Spacing Quick Reference Chart

Speed MPH	W Feet	L Feet	1/2L Feet	1/3L Feet	Min. Channelizing Devices Per Taper Type Lengths L	1/2L	1/3L	50'	D Feet	E Feet	H Feet
25	10	105	55	35							
	11	115	60	40	6	6	6	6	50	155	150
	12	125	65	45							
30	10	150	75	50	6						
	11	165	85	55	7	6	6	6	60	200	150
	12	180	90	60	7						
35	10	205	105	70	7						
	11	225	115	75	8	6	6	6	70	250	150
	12	245	125	80	8						
40	10	270	135	90	8						
	11	295	150	100	9	6	6	6	80	305	150
	12	320	160	110	9						
45	10	450	225	150	11	6					
	11	495	250	165	12	7	6	6	90	360	150
	12	540	270	180	13	7					
50	10	500	250	170	11	6					
	11	550	275	185	12	7	6	6	100	425	250
	12	600	300	200	13	7					
55	10	550	275	185	11	6					
	11	605	305	205	12	7	6	6	110	495	250
	12	660	330	220	13	7					

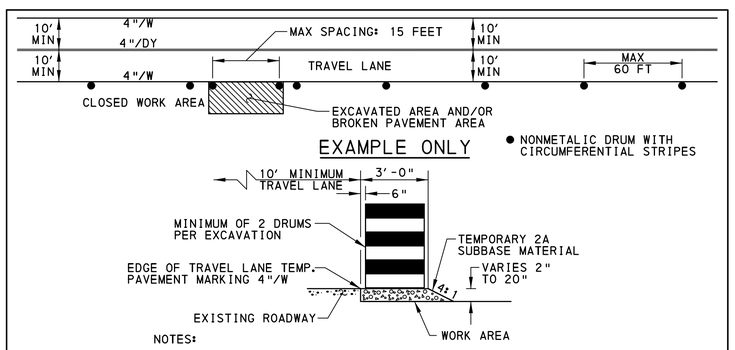
Note: Channelizing devices used in taper shall be equally spaced at ½ D Max.

WORK SPACE BEYOND SHOULDER



SEQUENCE OF CONSTRUCTION:

1. SET UP MPT ALONG SR 1021 IN ACCORDANCE WITH FIGURES 101, 102, 107 AND 201.
2. INSTALL/MODIFY DRAINAGE STRUCTURES ALONG SR 1021 ACCORDING TO PLANS BEGINNING AT THE LOWEST POINTS OF THE NETWORK
3. CONSTRUCT ALL ACCESS POINTS AND ASSOCIATED IMPROVEMENTS ALONG THE SOUTHERN SIDE OF SR 1021
4. PROVIDE FINAL PAVEMENT MARKINGS ON SR 1021 (AUXILIARY LINES, DOUBLE YELLOW, ETC.)



NOTES:

1. THE REMOVAL OF SAFETY SLOPES, PLACEMENT OF DOWELS, AND CONCRETE POURING ARE TO BE CONDUCTED AS ONE CONTINUOUS OPERATION PER PENNDOT PUBLICATION 408, SECTION 901.
2. DROP-OFFS EXCEEDING 2" IMMEDIATELY ADJACENT TO THE TRAVEL LANES ARE NOT PERMITTED. PAVE OR PLACE TEMPORARY BACKFILL (4:1 MAX SLOPE) AT THE COMPLETION OF EACH WORK DAY TO ELIMINATE DROP-OFFS.

TYPICAL PAVEMENT EXCAVATION PROTECTION (8 HOURS OR MORE)

VARIABLE LENGTH
NO SCALE

TRAFFIC CONTROL GENERAL NOTES

1. FURNISH, INSTALL, MAINTAIN, AND REMOVE ALL TRAFFIC CONTROL DEVICES AS SPECIFIED IN THE TRAFFIC CONTROL PLANS.
2. REQUIRE ALL MAINTENANCE AND PROTECTION OF TRAFFIC DEVICES AND METHODS TO CONFORM WITH THE FOLLOWING DOCUMENTS:

   COMMONWEALTH OF PENNSYLVANIA, DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, PUBLICATION 408, 2011, OR AS AMENDED.

   WORK ZONE TRAFFIC CONTROL, PUBLICATION 213, (67 PA CODE, CHAPTER 212), JUNE 2014.

   MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, U.S. DEPARTMENT OF TRANSPORTATION, FWHA, 2009.

   TRAFFIC CONTROL SIGNING STANDARDS, TC8600 SERIES, PUBLICATION 111M, JUNE 2013.

   STANDARDS FOR ROADWAY CONSTRUCTION, SERIES RC OM TO 100M, PENNDOT PUBLICATION 72M, JUNE 2010, OR AS AMENDED.

   ACCESS TO AND OCCUPANCY OF HIGHWAYS BY DRIVEWAYS AND LOCAL ROADS, 67 PA CODE, CHAPTER 441, APRIL,2006.
3. NO TRAFFIC RESTRICTIONS OR LANE CLOSURES ARE PERMITTED ON LEGAL HOLIDAYS BETWEEN THE HOURS OF 6:00AM - 9:00AM AND 3:00PM - 6:00PM, MONDAY THROUGH FRIDAY.
4. PROPERLY BARRICADE AND SECURE THE WORK AREA DURING NON-WORKING HOURS TO PROVIDE FULL WIDTH USE FOR THROUGH TRAFFIC LANES UNDER SHORT TERM OPERATIONS. RETURN ALL LANES TO NORMAL TRAFFIC FLOW AT CLOSE OF WORKDAY.
5. MAINTAIN ACCESS TO ALL PRIVATE DRIVEWAYS AND MUNICIPAL ROADS DURING CONSTRUCTION.
6. PROTECT ANY EXCAVATIONS, OBSTRUCTIONS, OR CONSTRUCTION SO AS NOT TO EXPOSE ANY PEDESTRIAN TO HAZARDS.
7. DO NOT PARK ANY PERSONNEL VEHICLES WITHIN THE HIGHWAY RIGHT OF WAY WITHOUT PERMISSION OF THE INSPECTOR IN CHARGE.
8. EXISTING DEPARTMENT SIGNS. REMOVE EXISTING WARNING, REGULATORY, GUIDE, AND DIRECTIONAL SIGNS AS REQUIRED TO ACCOMMODATE CONSTRUCTION OPERATION. DO NOT REMOVE STOP OR YIELD SIGNS UNLESS AN ALTERNATE TYPE OF TRAFFIC CONTROL IS PROVIDED, SUCH AS FLAGGERS, TEMPORARY TRAFFIC SIGNALS, ETC. CONTINUE THE ALTERNATE TRAFFIC CONTROL UNTIL THE STOP AND/OR YIELD SIGN ARE REPLACED. SPEED LIMIT AND WARNING SIGNS NEED TO BE RELOCATED UNLESS THEY ARE ALL COUNTED AS PART OF THE PLAN.
9. STAKE OR MARK SIGN LOCATIONS OR LOCATE SIGNS ON CONSTRUCTION DRAWINGS BEFORE REMOVING ANY SIGNS. REINSTALL EXISTING WARNING SIGNS AT APPROPRIATE LOCATIONS WITHIN 4 HOURS OF THEIR REMOVAL. WITH THE EXCEPTION OF STOP OR YIELD SIGNS AS HEREIN NOTED, REINSTALL EXISTING REGULATORY, GUIDE, AND DIRECTIONAL SIGNS AT APPROPRIATE LOCATIONS WITHIN 24 HOURS OF THEIR REMOVAL.
10. THE CHOSEN CONTRACTOR SHALL ESTABLISH A NAME AND PHONE NUMBER FOR THE PERSON RESPONSIBLE FOR TRAFFIC PROTECTION (24 HOURS).
11. REPLACE IN KIND ALL SIGNS OR POSTS DAMAGED DURING REMOVAL OR REINSTALLATION.
12. PLACE TEMPORARY CONCRETE BARRIER AND THE APPROPRIATE END PROTECTION IN ANY LOCATION WHICH HAS A 20" OR GREATER DROP-OFF.
13. THE PROPOSED DRIVEWAY(S) ON SR 1021 SHALL BE CLOSED WITH "ROAD CLOSED" SIGNS ON TYPE III BARRICADES AND BARRELS UNTIL THE DRIVEWAY(S) ARE READY TO BE OPENED.
14. MPT FIGURE PATA 102 MAY ONLY BE UTILIZED IF THERE IS ADEQUATE PAVEMENT WIDTH AND / OR SITE FRONTAGE AVAILABLE TO MAINTAIN THE MINIMUM TRAVEL WIDTHS (10') AND AT THE DISCRETION OF A PENNDOT FIELD REPRESENTATIVE.
15. ALL WORKERS SHALL FOLLOW THE REGULATIONS SET FORTH IN TITLE OF THE CODE OF FEDERAL REGULATIONS (CFR) PART 634 EFFECTIVE NOVEMBER 24, 2008 IN REGARDS TO THE WORKER'S SAFETY APPAREL.

UNDER DOT REVIEW
PLANS SUBJECT TO CHANGE

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JEFFREY STEVEN TODD
ENGINEER
No. 070518-E

TRAFFIC PLANNING AND DESIGN, INC.
Offices Serving the Mid-Atlantic Region
Est. 1989
www.TrafficPD.com 610.326.3100 TPD@TrafficPD.com

DATE: 10/17/14	PROJECT DESIGNER: BF	JOB NO: ESII.A.00001

TRAFFIC CONTROL STANDARDS

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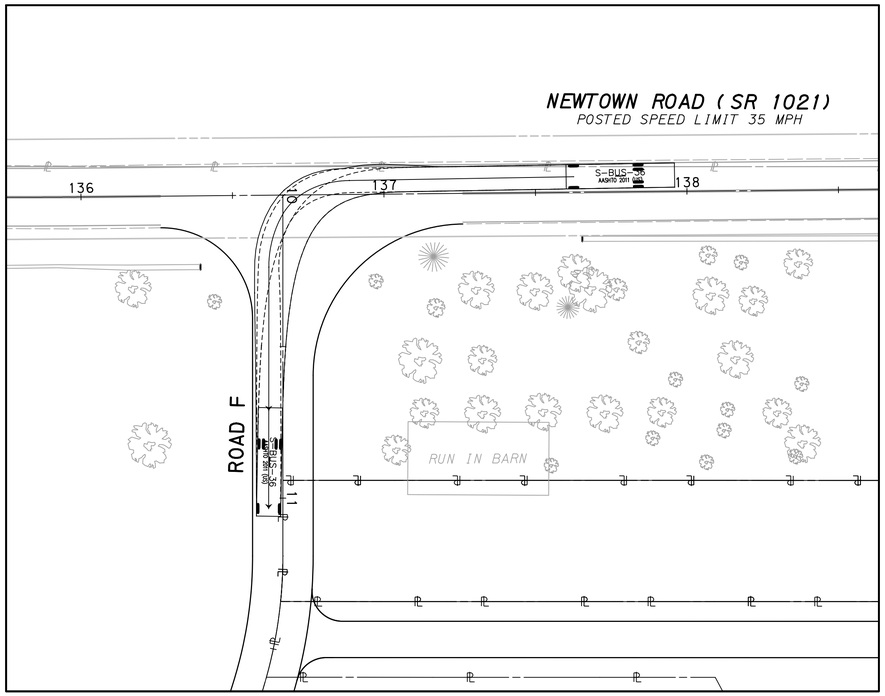
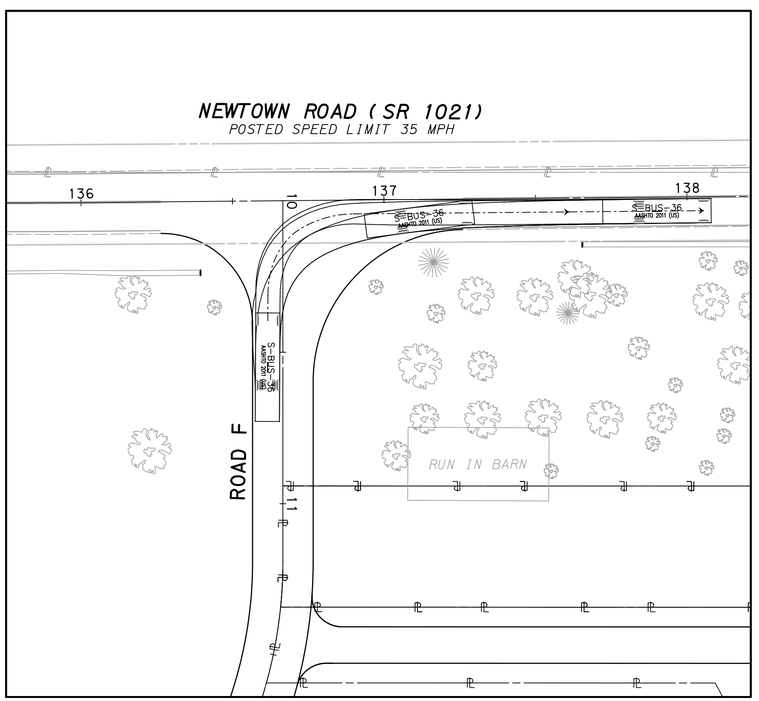
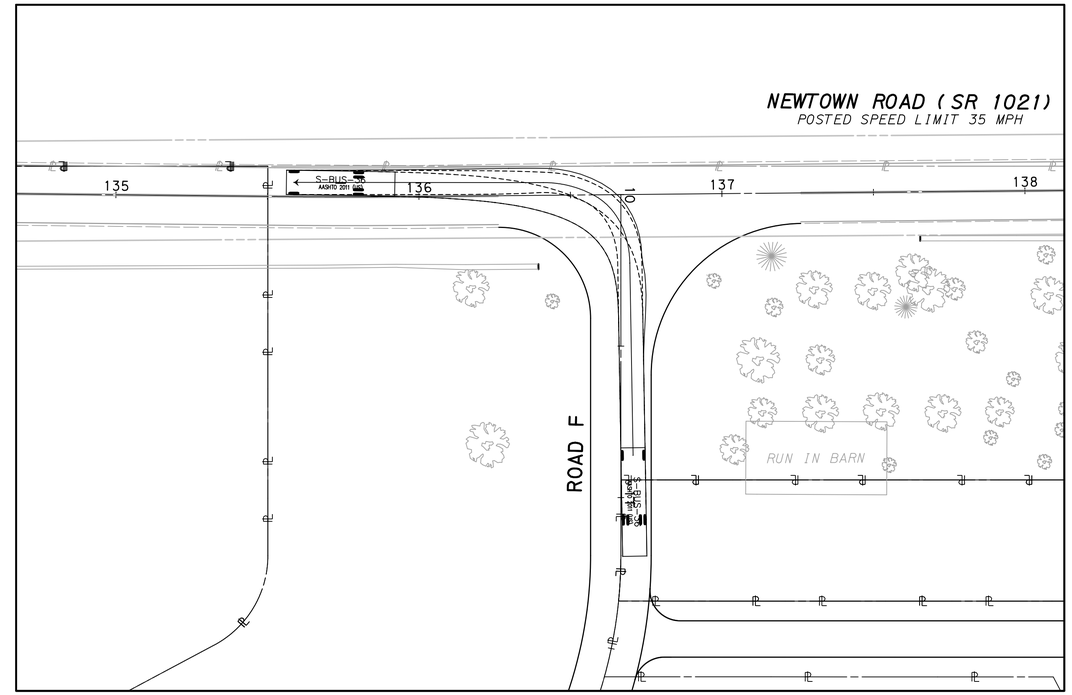
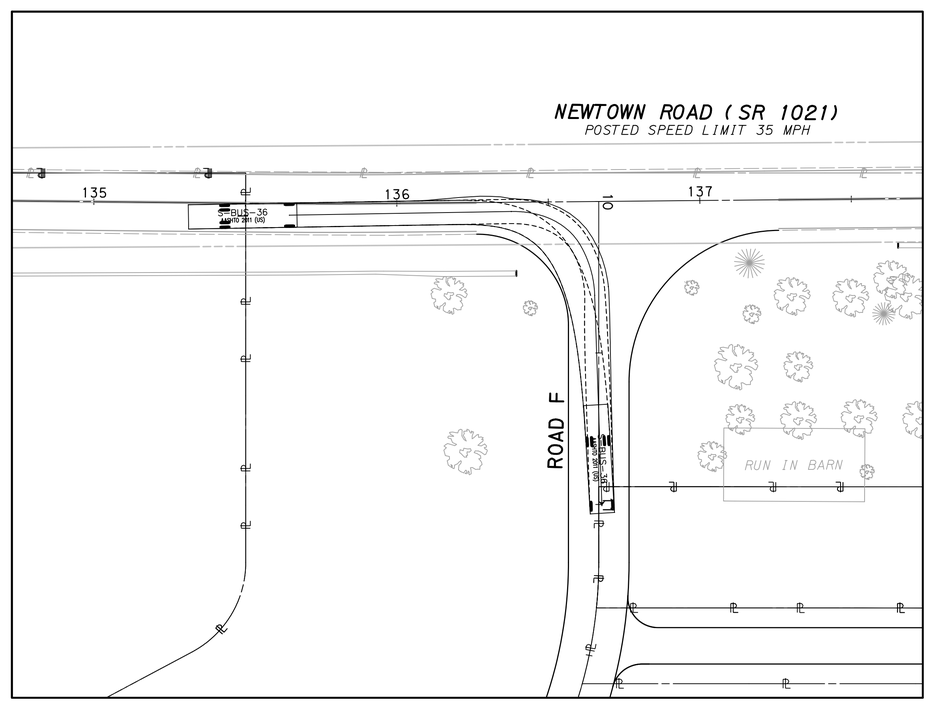
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	1021		1 OF 4
RADNOR TOWNSHIP				

REVISION NUMBER	REVISIONS	DATE	BY









UNDER DOT REVIEW
PLANS SUBJECT TO CHANGE

NOTE:

THE LARGEST ANTICIPATED VEHICLE SIZE TO UTILIZE THE PROPOSED ACCESSES IS A SCHOOL BUS (S-BUS-36).

0 25 50 FEET

COMMONWEALTH OF PENNSYLVANIA
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TRUCK TURNING PLAN

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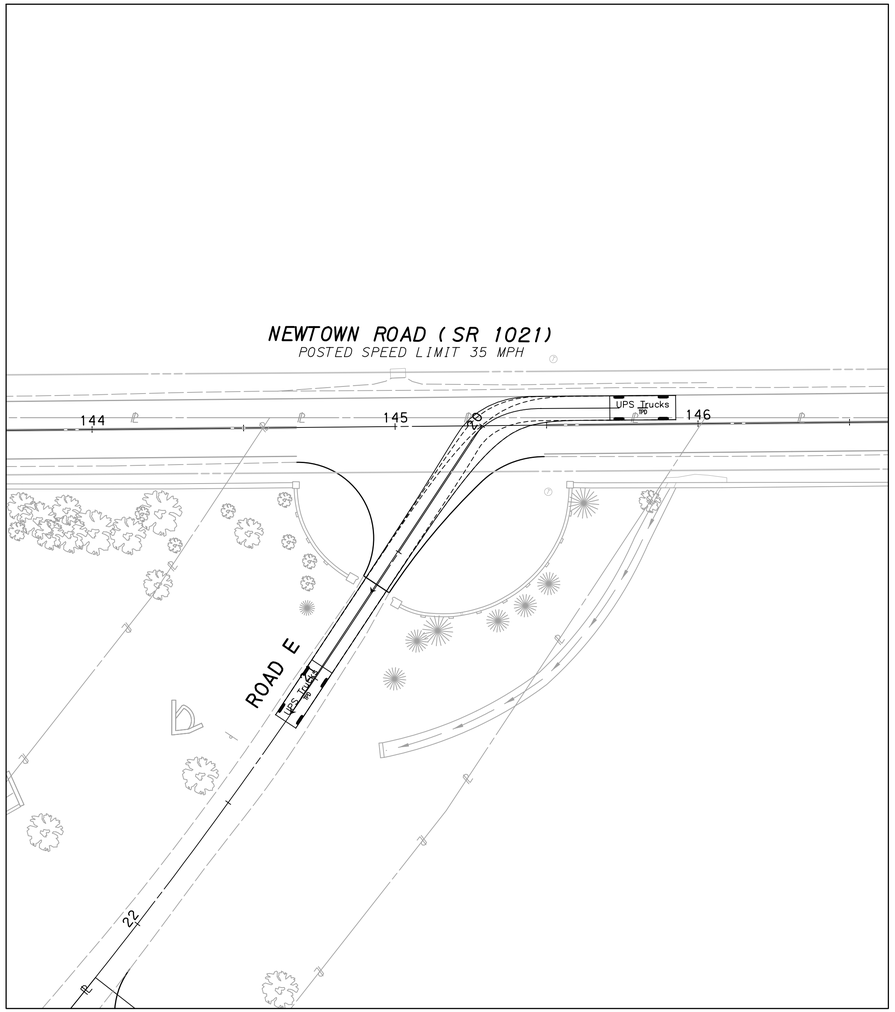
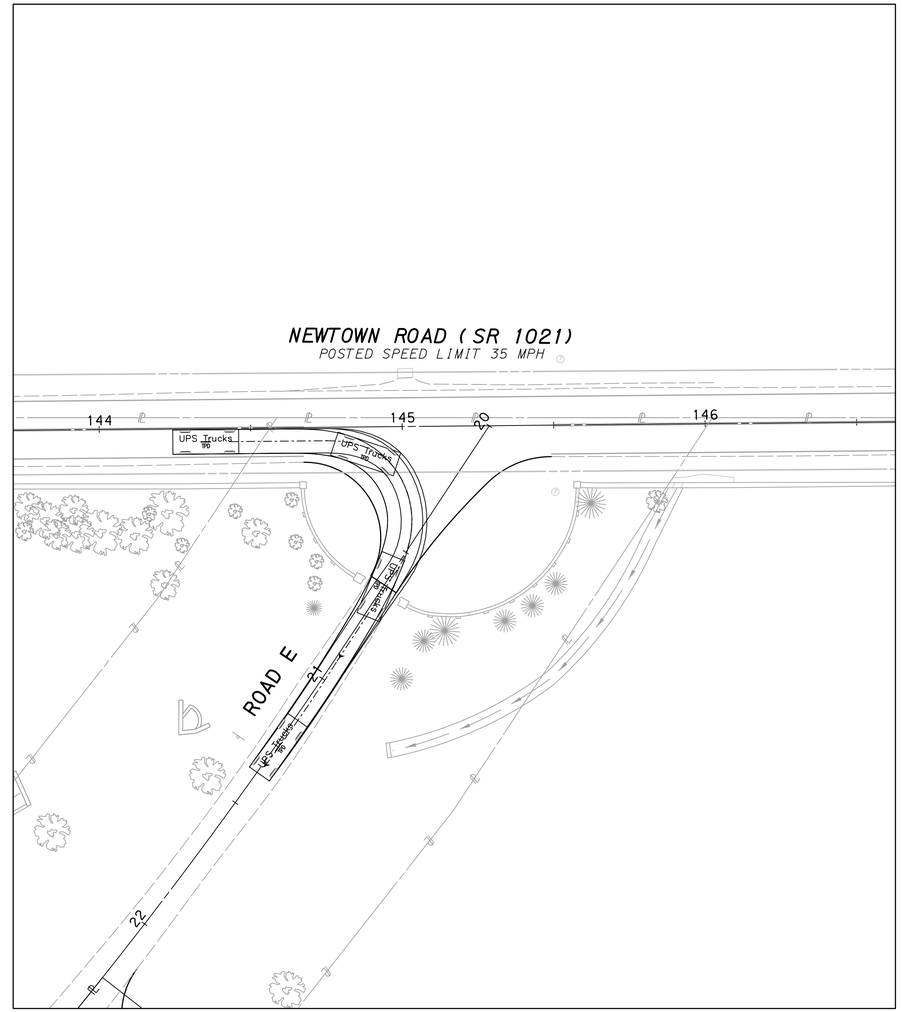
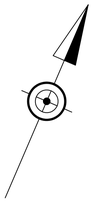
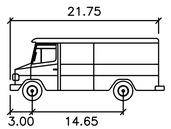
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	1021		2 OF 4
RADNOR TOWNSHIP				

REVISION NUMBER	REVISIONS	DATE	BY









UPS Trucks feet

Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 30.0

NOTE:

THE LARGEST ANTICIPATED VEHICLE SIZE TO UTILIZE THE PROPOSED ACCESSES IS A UPS TRUCK.

0 25 50 FEET

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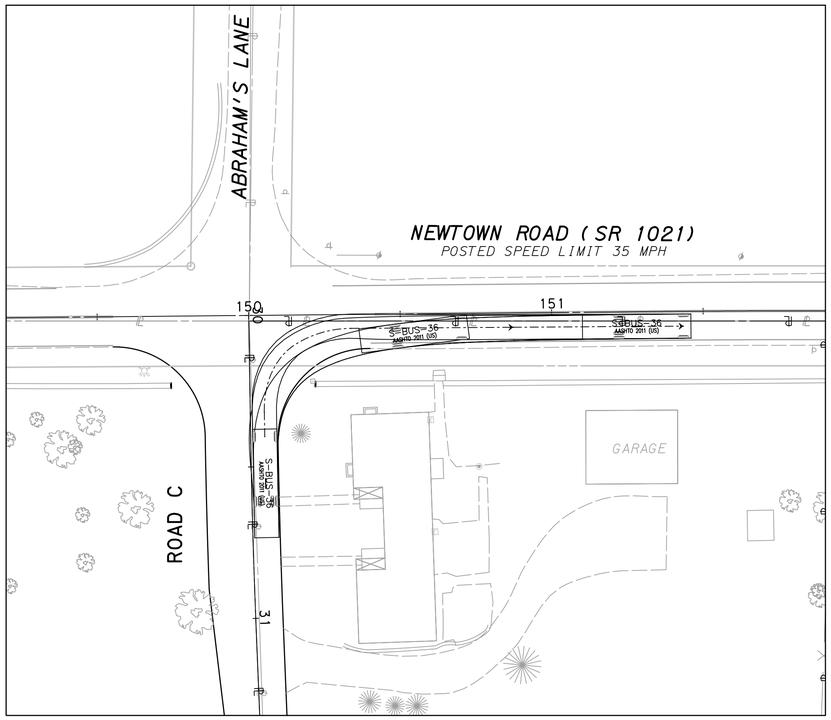
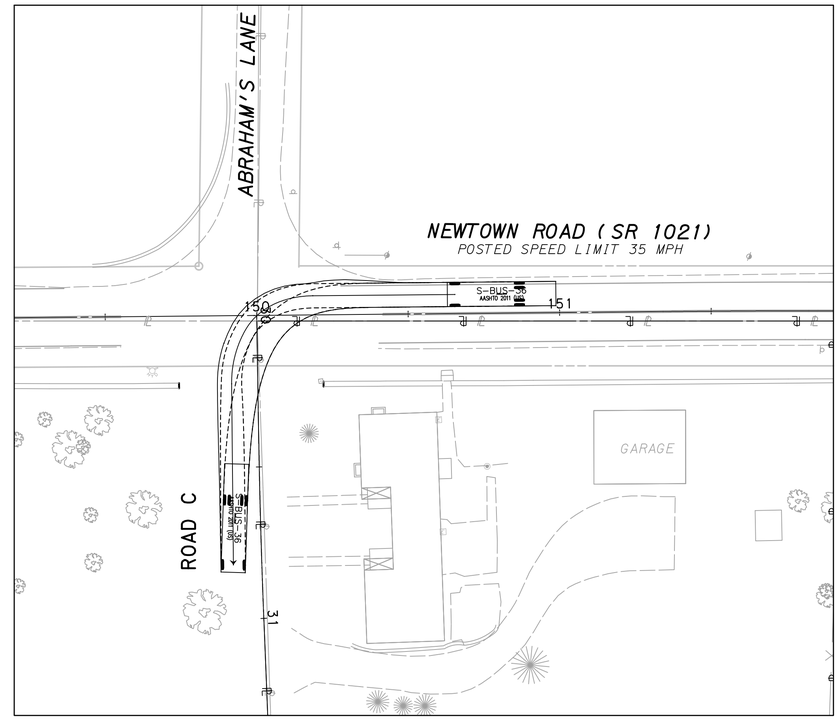
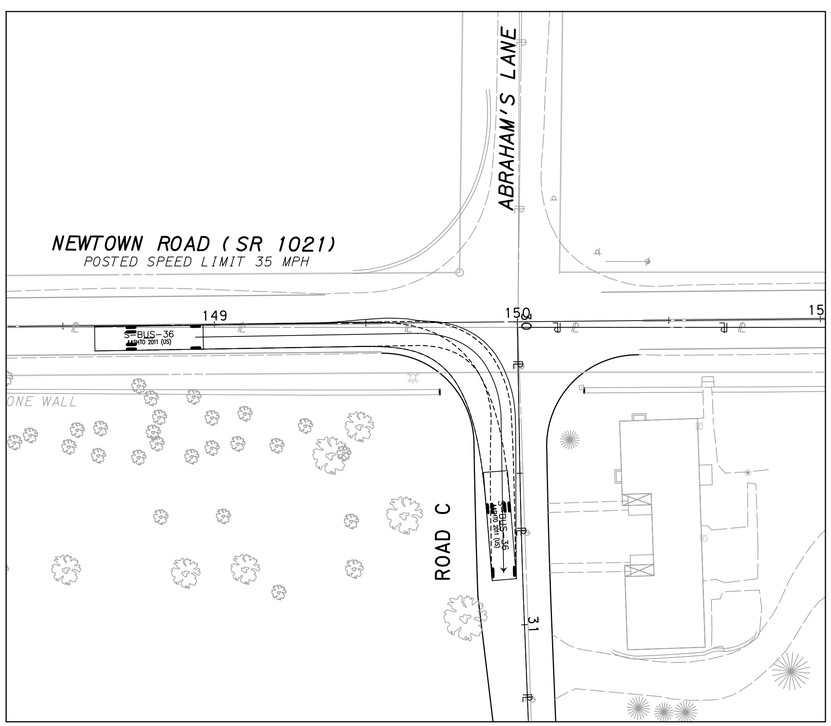
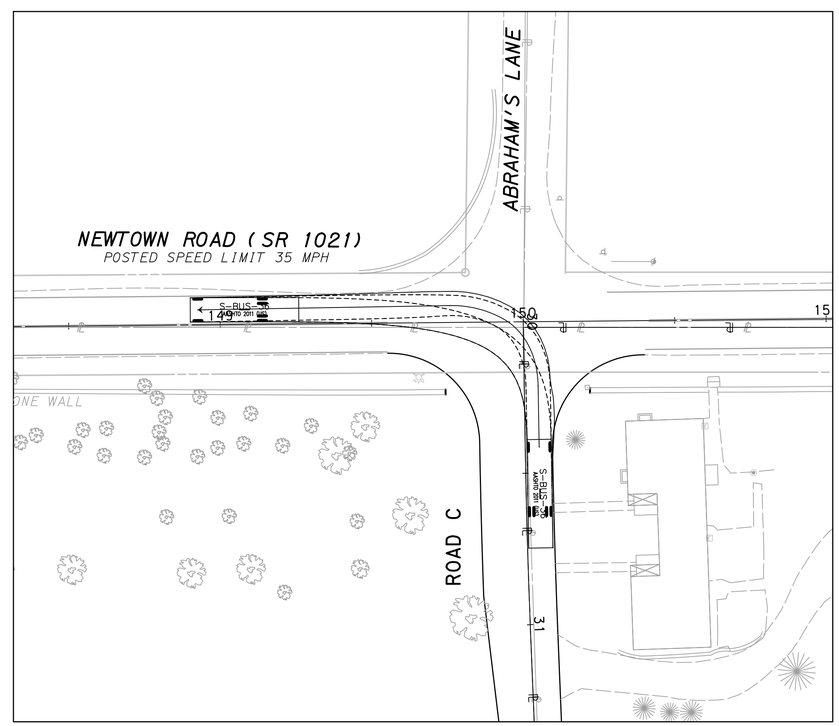
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	1021		3 OF 4
RADNOR TOWNSHIP				

REVISION NUMBER	REVISIONS	DATE	BY









UNDER DOT REVIEW
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NOTE:
THE LARGEST ANTICIPATED VEHICLE SIZE TO UTILIZE THE PROPOSED ACCESSES IS A SCHOOL BUS (S-BUS-36).

0 25 50 FEET

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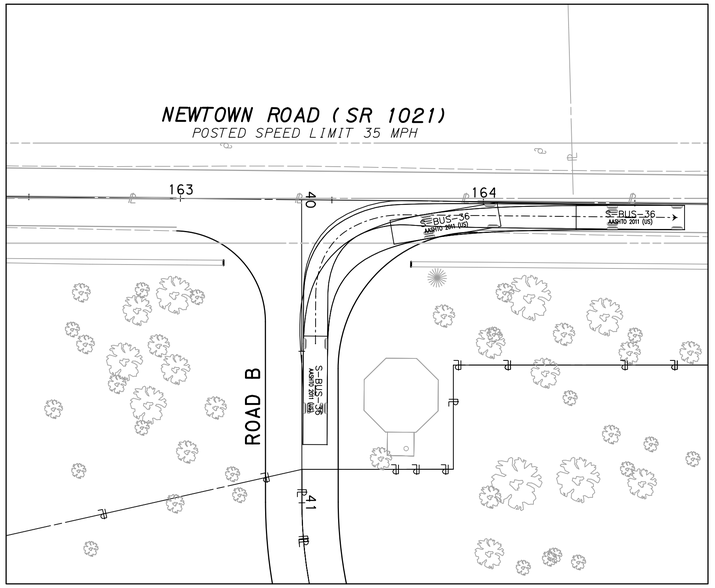
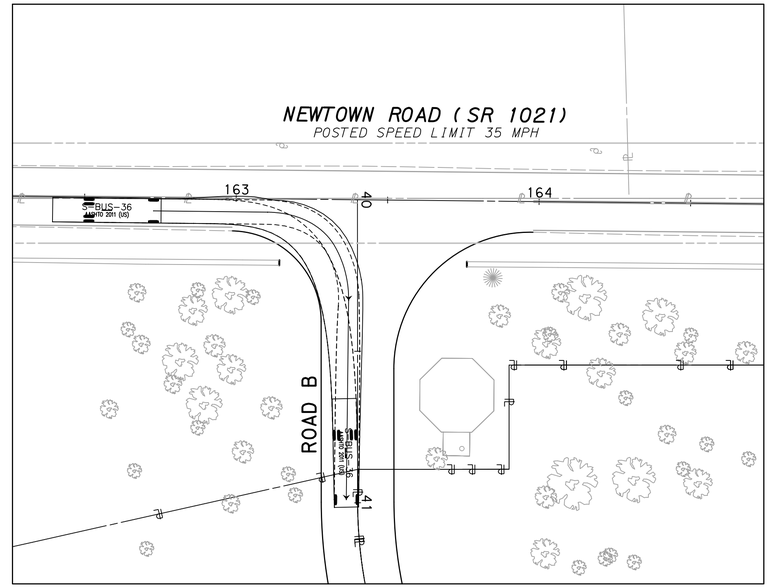
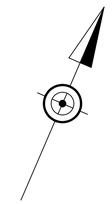
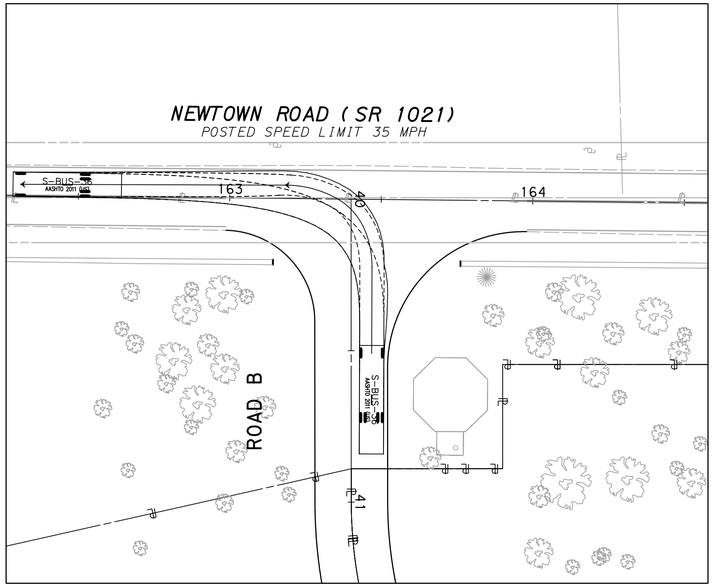
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	1021		4 OF 4
RADNOR TOWNSHIP				

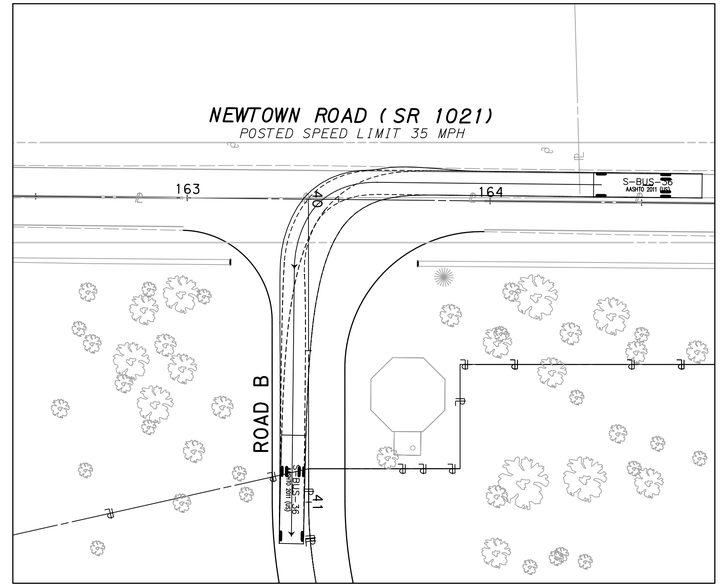
REVISION NUMBER	REVISIONS	DATE	BY











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