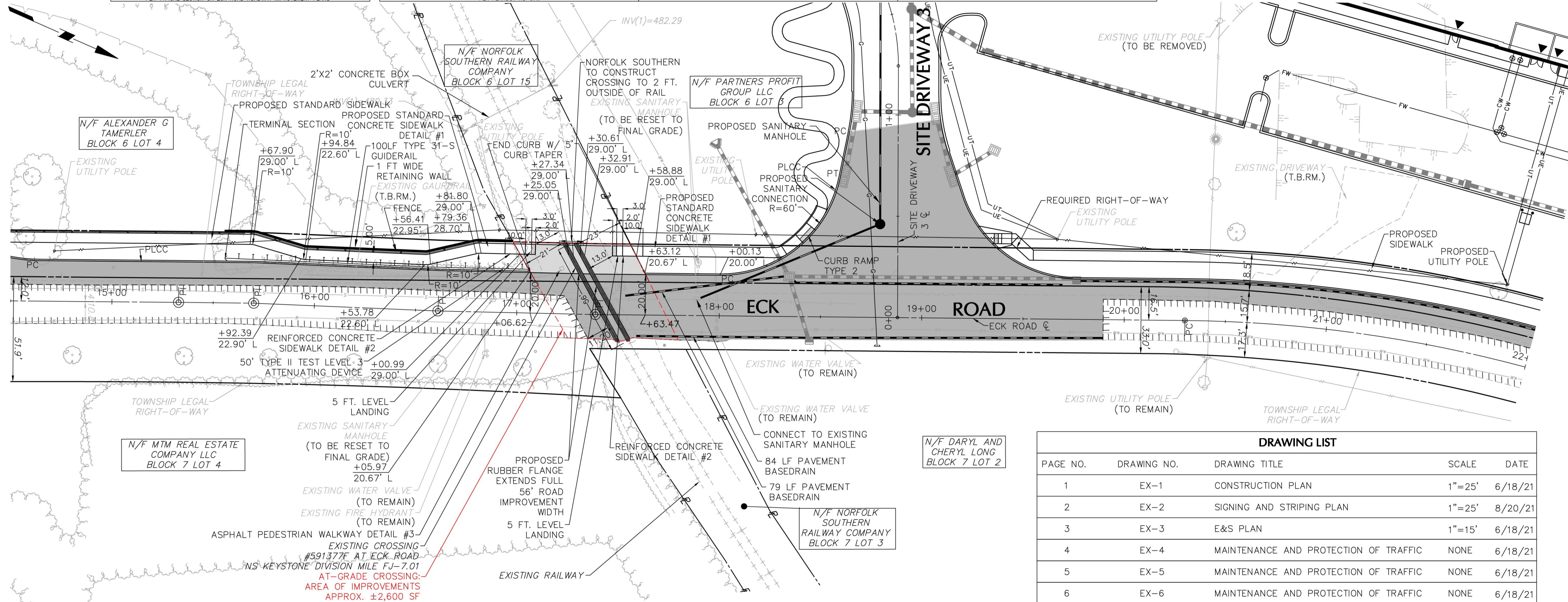
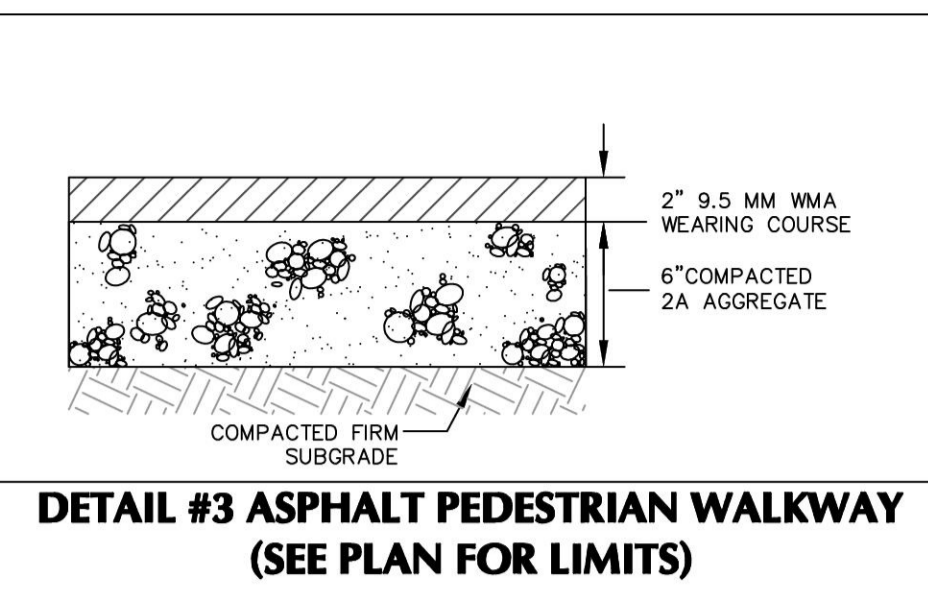
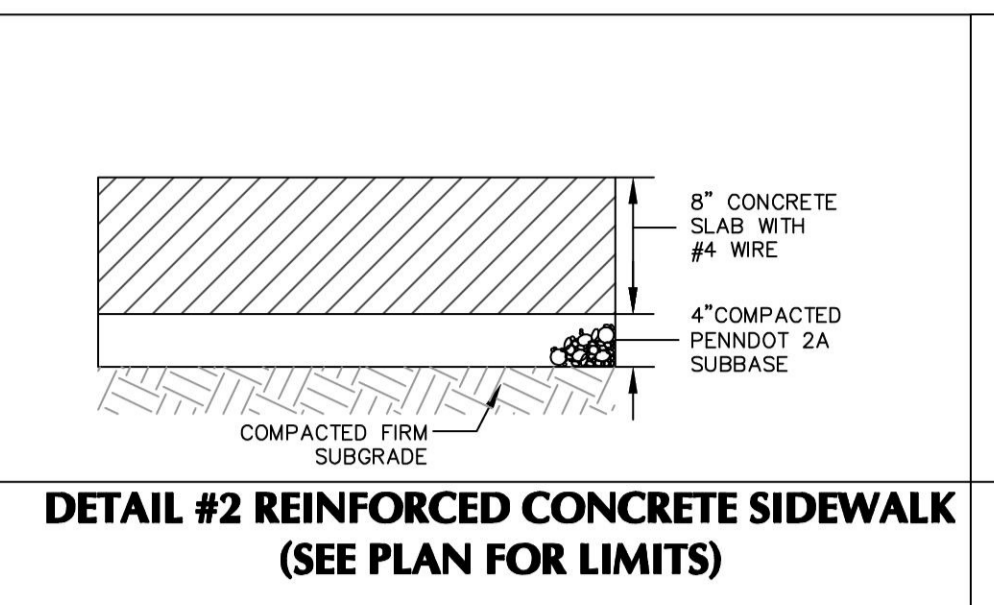
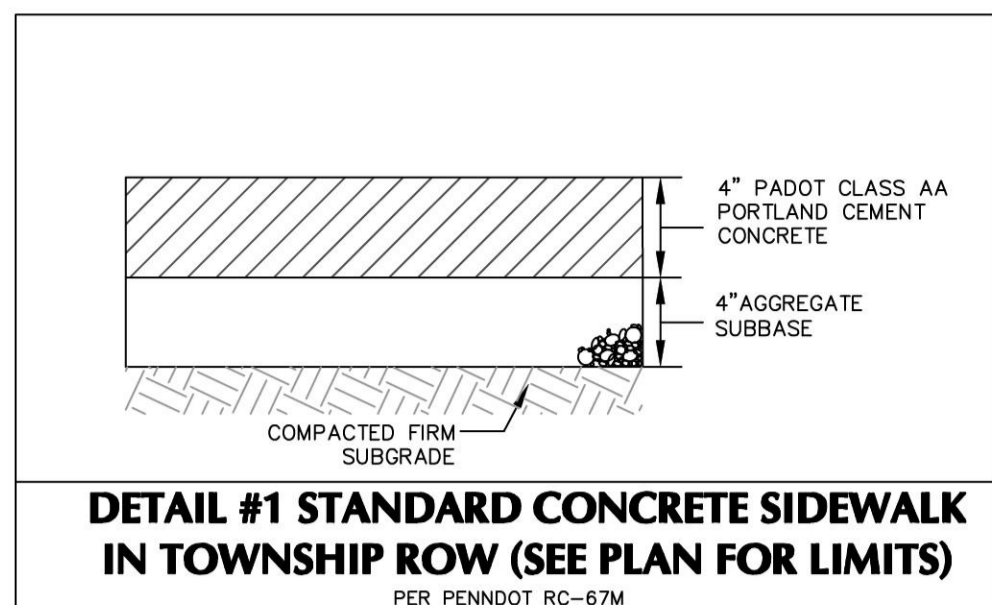
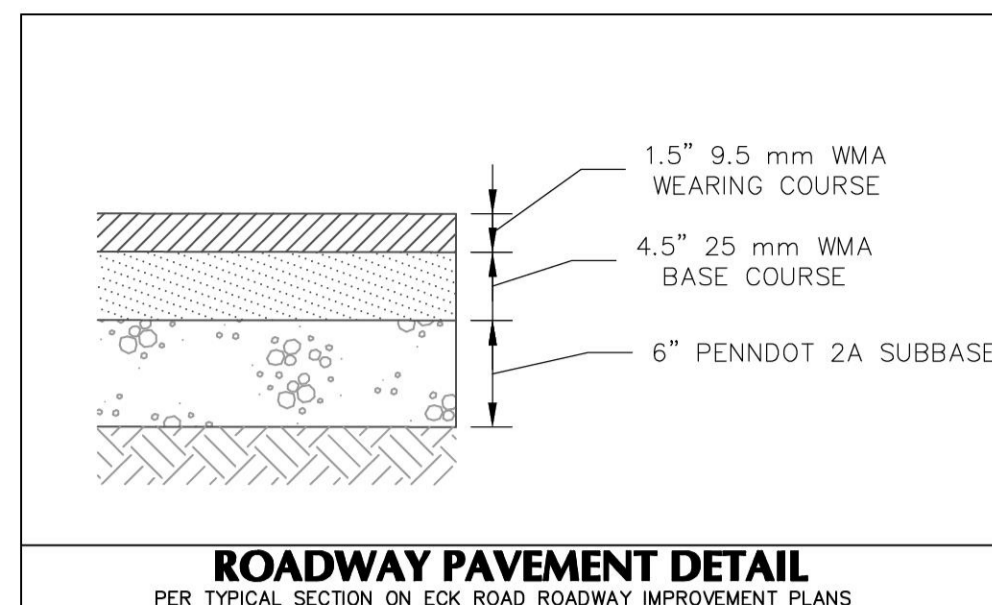
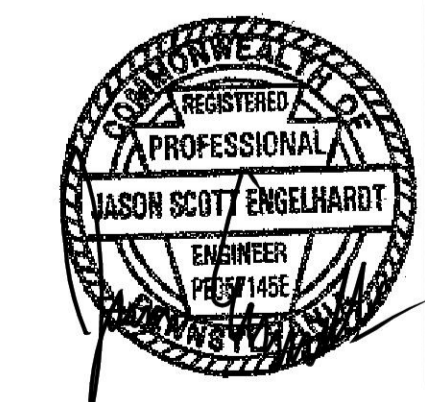
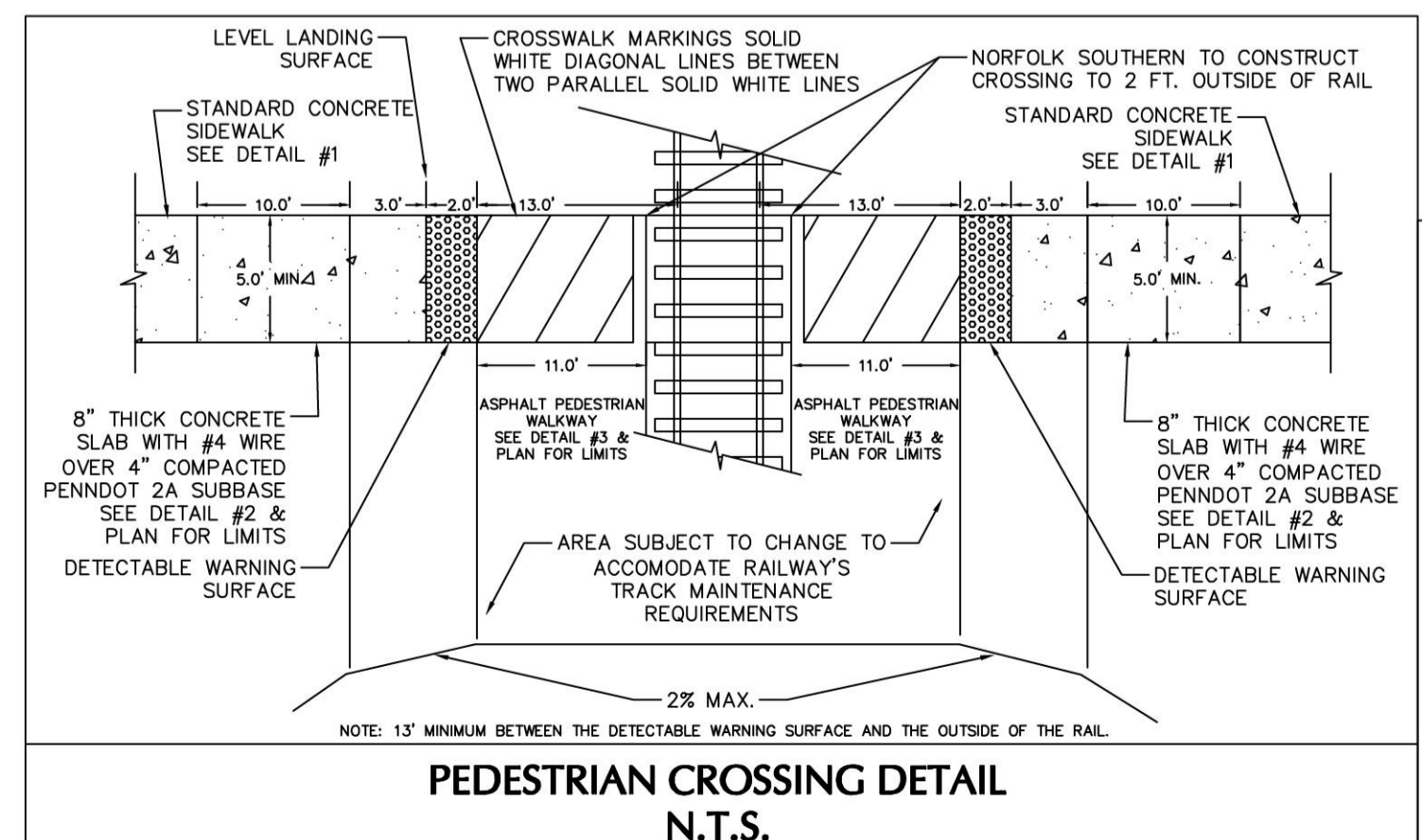
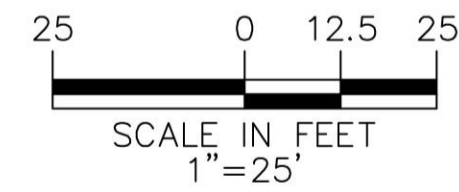


DISTRICT	COUNTY	ROUTE	SECTION	SHEET
5-0	LEHIGH	-	-	1 OF 7
SOUTH WHITEHALL AND UPPER MACUNGIE TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	
1	REVISED PER NORFOLK SOUTHERN COMMENTS	4/22/21	MYP	
2	REVISED PER NORFOLK SOUTHERN COMMENTS	6/18/21	JLA	



DRAWING LIST				
PAGE NO.	DRAWING NO.	DRAWING TITLE	SCALE	DATE
1	EX-1	CONSTRUCTION PLAN	1"=25'	6/18/21
2	EX-2	SIGNING AND STRIPING PLAN	1"=25'	8/20/21
3	EX-3	E&S PLAN	1"=15'	6/18/21
4	EX-4	MAINTENANCE AND PROTECTION OF TRAFFIC	NONE	6/18/21
5	EX-5	MAINTENANCE AND PROTECTION OF TRAFFIC	NONE	6/18/21
6	EX-6	MAINTENANCE AND PROTECTION OF TRAFFIC	NONE	6/18/21
7	EX-7	DRAINAGE PLAN	1"=100'	8/20/21

- CONSTRUCTION NOTES**
- ALL MANHOLES, VALVE BOXES, ETC. EXPOSED BY MILLING OR OTHER OPERATIONS WILL BE PROTECTED BY THE CONTRACTOR UNTIL THE FINAL BITUMINOUS WEARING COURSE IS APPLIED.
  - ALL GAS VALVES, WATER VALVES, WATER METERS AND MANHOLES (STORM, SANITARY, TELEPHONE AND ELECTRIC) WITHIN THE PAVEMENT WIDENING WILL BE RESET TO THE PROPOSED FINISHED GRADE.
  - ALL INLETS GREATER THAN 5 FEET IN DEPTH MUST BE CONSTRUCTED WITH STEPS SIMILAR TO A MANHOLE. REFER TO RC-39M.
  - NO UNSUITABLE MATERIAL IS TO BE USED IN ANY PORTION OF THE ROADWAY CONSTRUCTION. REMOVE ANY SUBGRADE THAT CANNOT BE PROPERLY COMPACTED AND TREAT IT AS UNSUITABLE MATERIAL. UNDERCUTTING AND/OR SUBGRADE STABILIZATION MAY BE REQUIRED.
  - EXCESS EXCAVATED MATERIALS AND UNSUITABLE MATERIAL SHALL BE DELIVERED TO A LAWFUL SITE LOCATION IN ACCORDANCE WITH SECTION 203.3 OF PUBLICATION 408/2016.
  - ALL UTILITY RELOCATION PERMITS TAKE PRECEDENCE OVER THE UTILITY RELOCATION POSITIONS SHOWN ON THESE PLANS.
  - ALL PLAIN CEMENT CONCRETE CURB SHALL HAVE AN 8" REVEAL.
  - ALL INLETS WITHIN THE TOWNSHIP MAINTAINED RIGHT-OF-WAY MUST HAVE STRUCTURAL STEEL BICYCLE SAFE GRATES.
  - ALL DISTURBED GRASS/LANDSCAPE AREAS OUTSIDE THE ROADWAY IMPROVEMENT AREA MUST BE RETURNED TO THE ORIGINAL CONDITION OR BETTER. INSTALL TOP SOIL & SEEDING, 4" THICK WITH MULCHING (STRAW) FOR DISTURBED AREAS.
  - THE SPEED LIMIT FOR CRACKERSPORT ROAD IS 25 M.P.H. THE SPEED LIMIT FOR ECK ROAD IS 25 MPH.
  - SEE SIGNING AND PAVEMENT MARKING PLANS FOR THE SIGN PLACEMENT AND RELOCATION.
  - PER SECTION E.5.K.1 OF THE NORFOLK SOUTHERN PUBLIC PROJECTS MANUAL, THE CONTRACTOR WILL NOT BE PERMITTED TO STORE ANY EQUIPMENT ON NS PROPERTY WITHOUT PERMISSION FROM THE NS RAILROAD ENGINEER
  - NORFOLK SOUTHERN FORCES WILL REMOVE AND INSTALL THE PROPOSED VEHICULAR CROSSING TO 2'-0" BEYOND THE OUTSIDE OF EACH RAIL.
  - NO UNDER ROADWAY UTILITY MODIFICATIONS ARE REQUIRED ON NORFOLK SOUTHERN PROPERTY TO SUPPORT THIS PROJECT SCOPE.



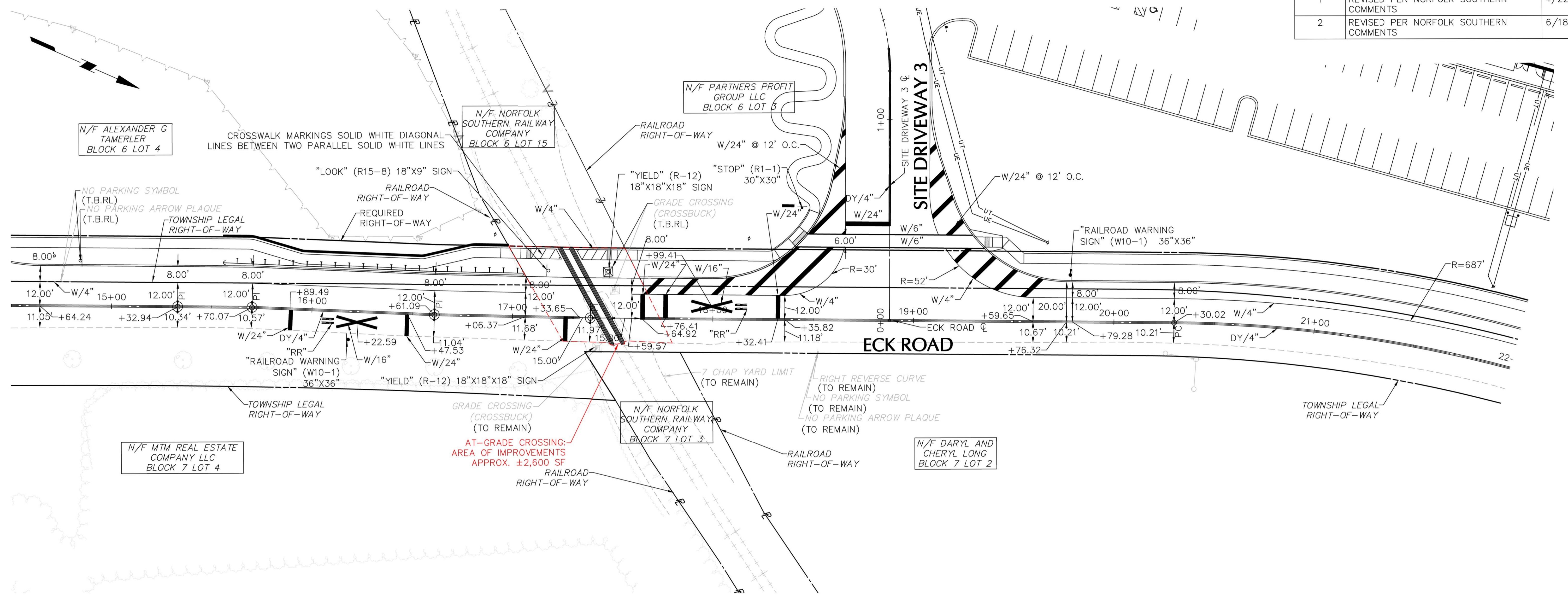
**JASON S. ENGELHARDT**  
PA LIC. NO. PE-057145-E  
DATE: FEBRUARY 9, 2021

NOTE:  
FOR ROADWAY DESIGN SEE ROADWAY IMPROVEMENT PLANS DATED 6/5/20 PREPARED BY LANGAN.

**LANGAN**  
ONE WEST BROAD STREET, SUITE 200  
BETHLEHEM, PA 18018  
PHONE: 610-984-8500  
NORFOLK SOUTHERN AT GRADE CROSSING  
#591377F AT ECK ROAD

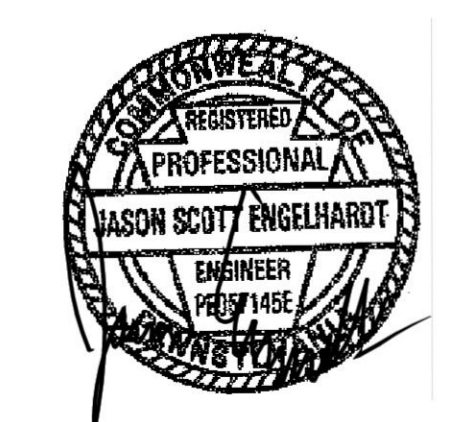
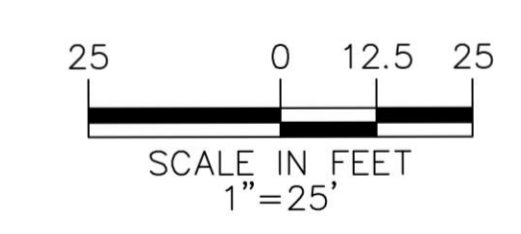
DATE: 2/9/21	HOP APP. #:	PROJECT NO. 240045601
DRAWN BY: JLA		CHECKED BY: AMV
PLAN TITLE		DRAWING NO.
CONSTRUCTION PLAN		EX-1

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
5-0	LEHIGH	-	-	2 OF 7
SOUTH WHITEHALL AND UPPER MACUNGIE TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	
1	REVISED PER NORFOLK SOUTHERN COMMENTS	4/22/21	MYP	
2	REVISED PER NORFOLK SOUTHERN COMMENTS	6/18/21	JLA	



**PAVEMENT MARKING GENERAL NOTES**

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE PENNDOT PUBLICATION 408/2016.
2. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED.
3. THE CONTRACTOR SHALL PREPARE THE PAVEMENT SURFACE FOR THE PROPER ADHESION. ANY SWEEPING OR REMOVAL OF THE DEBRIS, GRAVEL, DIRT OR OTHER FOREIGN MATERIALS SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE NEW PAVEMENT MARKINGS, AND NO SEPARATE PAYMENTS SHALL BE MADE THEREFORE.
4. 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.
5. PRIOR TO APPLICATION, THE CONTRACTOR SHALL FIELD CHECK AND LOCATE ALL PAVEMENT MARKINGS TO THE SATISFACTION OF THE ENGINEER.
6. ALL MARKINGS IMPROPERLY APPLIED, LOCATED, OR DAMAGED BY VEHICLES DRIVING OVER THEM BEFORE THEY ARE COMPLETELY DRY SHALL BE COMPLETELY REMOVED AND CORRECTLY REAPPLIED, AT THE SOLE EXPENSE OF THE CONTRACTOR.
7. ALL TRAFFIC LANE LINES (LONG & SHORT), PEDESTRIAN CROSSWALKS, GORE AREAS, MEDIAN AREAS, LEGENDS, AND STOP BARS SHALL BE COMPRISED OF HOT THERMOPLASTIC PAVEMENT MARKINGS IN BITUMINOUS PAVEMENT AREAS PER PENNDOT PUBLICATION 408/2016, SECTION 0960 UNLESS OTHERWISE APPROVED BY THE ENGINEER.
8. ALL PAVEMENT MARKINGS AND LEGENDS SHALL BE APPLIED DURING THE NIGHT HOURS OF 9:00 PM TO 5:00 AM. ALL EFFORTS WILL BE MADE BY THE CONTRACTOR TO PREVENT VEHICLES FROM CROSSING OVER THE PAVEMENT MARKINGS AND LEGENDS BEFORE THEY ARE COMPLETELY DRY. THE CONTRACTOR WILL STRICTLY FOLLOW PUBLICATION 213, PATA 303 TO CONTROL TRAFFIC DURING THE PAVEMENT MARKING OPERATIONS.
9. THE CONTRACTOR IS RESPONSIBLE TO REPLACE ALL EXISTING PAVEMENT MARKINGS (SHOWN TO REMAIN ON THE PAVEMENT MARKING PLANS) AND PROPOSED PAVEMENT MARKINGS THAT WERE DAMAGED OR REMOVED DURING CONSTRUCTION.
10. ALL EXISTING PAVEMENT MARKINGS WHICH ARE NO LONGER APPROPRIATE SHALL BE ERADICATED BY THE PERMITEE. THE PERMITEE SHALL PLACE ALL REQUIRED NEW PAVEMENT MARKINGS. ERADICATION METHOD TO BE APPROVED BY A PENNDOT FIELD REPRESENTATIVE.
11. ALL SIGNAGE AND PAVEMENT MARKINGS MUST CONFORM WITH THE REQUIREMENTS INCLUDED IN THE LATEST VERSION OF THE MUTCD MANUAL. ALL PAVEMENT MARKINGS MUST BE IN ACCORDANCE WITH THE TC-8600 SERIES DRAWINGS IN PENNDOT PUBLICATION 111M/2013.
12. ACCESS SIGNING AND PAVEMENT MARKINGS AUTHORIZED BY THE PERMIT MUST BE MAINTAINED BY THE PERMITTEE.



**JASON S. ENGELHARDT**  
**PA LIC. NO. PE-057145-E**  
 DATE: FEBRUARY 9, 2021

LEGEND	
W/4" - 4" WHITE	⊥ - EXISTING SIGN
W/6" - 6" WHITE	⊥ - RELOCATED SIGN
W/24" - 24" WHITE	⊥ - PROPOSED SIGN
Y/4" - 4" YELLOW	T.B.R.L. - TO BE RELOCATED
DY/4" - 4" DOUBLE YELLOW	T.B.R.M. - TO BE REMOVED
Y/24" - 24" YELLOW	
Y/24" @ 45', 16' O.C - 24" YELLOW @ 45', 16' ON CENTER	
W/24" @ 45', 8' O.C - 24" WHITE @ 45', 8' ON CENTER	

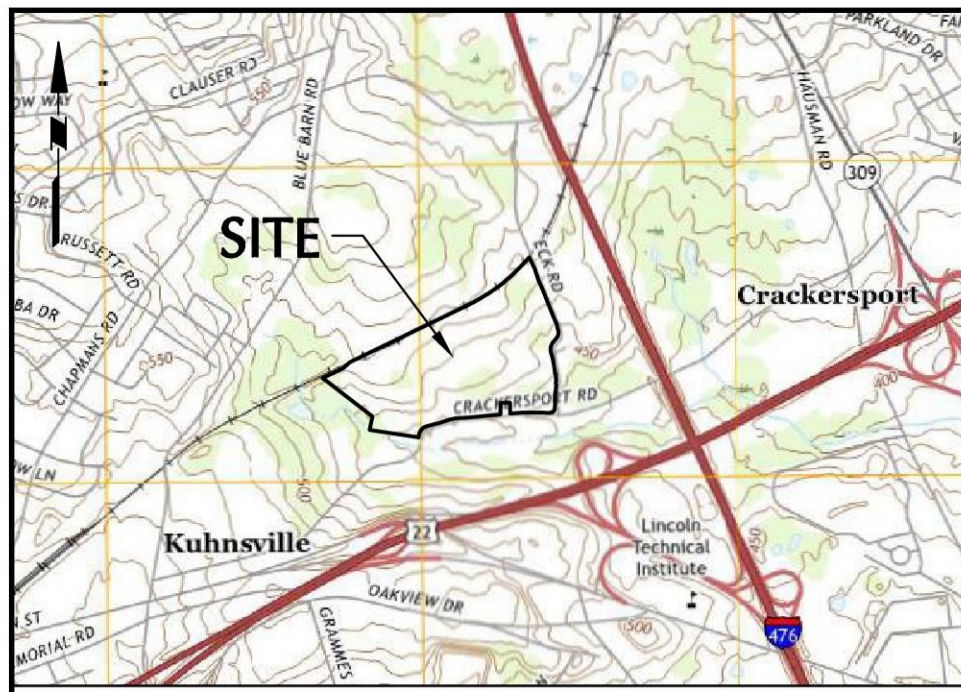
**LANGAN**

ONE WEST BROAD STREET, SUITE 200  
 BETHLEHEM, PA 18018  
 PHONE: 610-984-8500

NORFOLK SOUTHERN AT GRADE CROSSING  
 #591377F AT ECK ROAD

DATE: 2/9/21	HOP APP. #:	PROJECT NO. 240045601
DRAWN BY: JLA	CHECKED BY: AMV	
PLAN TITLE	DRAWING NO.	

**SIGNING AND STRIPING PLAN**



**DEVELOPER:**  
**BLACK CREEK GROUP**  
**301 ROUTE 17 NORTH**  
**SUITE 206**  
**RUTHERFORD, N.J. 07070**  
**PHONE: (201) 507 - 6777**  
**CONTACT: JIM MURRAY**

**SITE LOCATION MAP**  
 SCALE: 1"=2,000'

LEGEND	
<b>SITE SYMBOLS</b>	<b>GRADING SYMBOLS</b>
CURB LINE	EXISTING CONTOUR
PROPOSED BUILDING LINE	EXISTING SPOT ELEVATION
PROPERTY LINE	PROPOSED CONTOUR
PROPOSED CHAIN LINK FENCE	PROPOSED SPOT ELEVATION
RETAINING WALL	PROPOSED CURB SPOT ELEVATION
<b>NATURAL RESOURCES SYMBOLS</b>	<b>SOIL SYMBOLS</b>
WETLAND LIMITS	SOILS LIMITS
STREAM LIMITS	SOILS TYPE
POND LIMIT	
<b>UTILITY SYMBOLS</b>	
EXISTING STORM SEWER	EXISTING SANITARY & DRAINAGE MANHOLE
EXISTING SANITARY SEWER	EXISTING FIRE HYDRANT
EXISTING WATER MAIN	EXISTING GAS VALVE
EXISTING UNDERGROUND ELECTRIC	EXISTING CATCH BASIN
EXISTING OVERHEAD ELECTRIC	EXISTING WATER VALVE
PROPOSED STORM SEWER	EXISTING STREET LIGHT
PROPOSED SANITARY SEWER	EXISTING ELECTRIC POLE
PROPOSED ESFR FIRE WATER MAIN	PROPOSED SANITARY SEWER MANHOLE
PROPOSED WATER MAIN	PROPOSED TYPE C CATCH BASIN
PROPOSED ELECTRIC LINE	PROPOSED TYPE M CATCH BASIN
PROPOSED TELEPHONE LINE	PROPOSED ACCESSIBLE RAMP
PROPOSED SIGN	PROPOSED EGRESS
PROPOSED CONC. PAVEMENT	PROPOSED BOLLARD
PROPOSED STRIPED CROSSWALK	

**THIS PLAN IS PART OF AN OVERALL E&S PLAN PREPARED BY LANGAN ENGINEERING DATED 10/07/20 . SEE SHEETS CE-100 TO CE-503.**

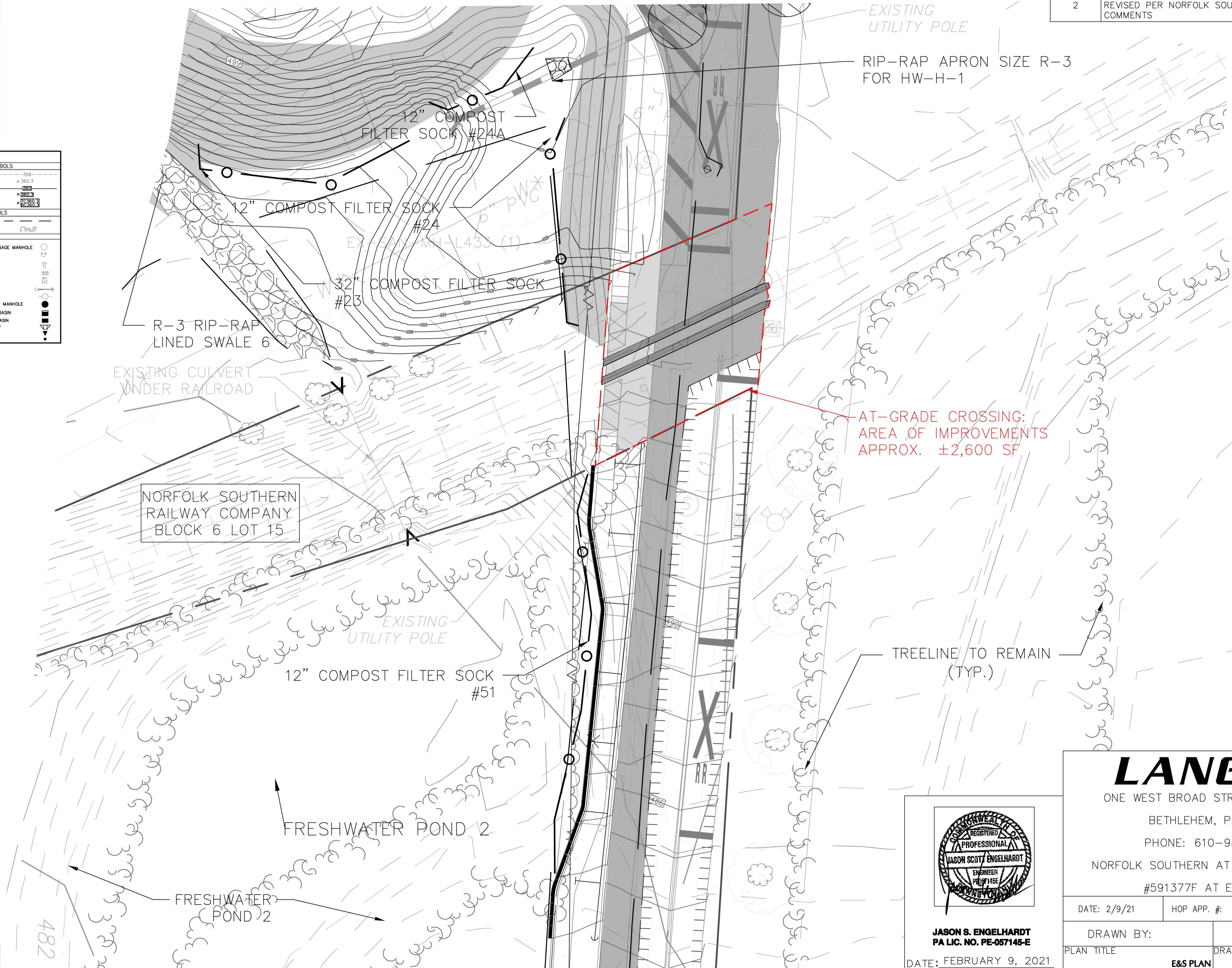
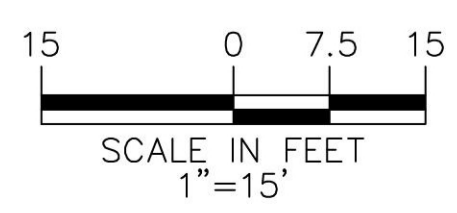
**ACT 287 AS AMENDED**  
 IT IS THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH THE PENNSYLVANIA ACT 287 (AS AMENDED) AND TO CONTRACT THE "ONE CALL SYSTEM" THREE (3) WORKING DAYS (UNLESS OTHERWISE NOTED) PRIOR TO START OF CONSTRUCTION.  
 PENNSYLVANIA ONE CALL 1-800-242-1776  
 SERIAL NO : 20182002215



**CALL BEFORE YOU DIG**  
 IN PA, TOLL FREE  
 1-800-242-1776  
 FOR FREE MARKOUTS TO LOCATE UNDERGROUND UTILITIES  
 "IT'S THE LAW"

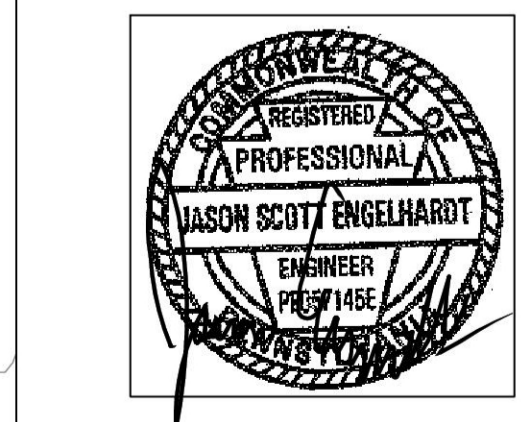
SOIL EROSION LEGEND	
LIMIT OF DISTURBANCE	
NPDES BOUNDARY	
COMPOST FILTER SOCK	
ROCK FILTER WITH COMPOST LAYER	
BLOCK AND STONE INLET PROTECTION	
FILTER BAG INLET PROTECTION	
RIP RAP APRON	
BAFFLE	
TEMPORARY PROTECTION FENCE	
CONCRETE WASHOUT	
CLEAN OUT STAKE	
3:1 SLOPE EMBANKMENT	
EROSION CONTROL MATTING	
EMERGENCY SPILLWAY	
TURF REINFORCEMENT MATTING	
ROCK CONSTRUCTION ENTRANCE	
FILTER SOCK DIVERSION BERM	
TREELINE TO REMAIN	

NOTE: REFER TO DRAWINGS CE-501 THROUGH CE-503 FOR SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS.  
 LIMIT OF DISTURBANCE AREA = ±66 ACRES



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
5-0	LEHIGH	-	-	3 OF 7
SOUTH WHITEHALL AND UPPER MACUNGIE TOWNSHIP				
REVISION NUMBER	REVISIONS		DATE	BY
1	REVISED PER NORFOLK SOUTHERN COMMENTS		4/22/21	MYP
2	REVISED PER NORFOLK SOUTHERN COMMENTS		6/18/21	JLA

LANGAN PROJECT NO. 240045601



**JASON S. ENGELHARDT**  
 PA LIC. NO. PE-057145-E  
 DATE: FEBRUARY 9, 2021

**LANGAN**  
 ONE WEST BROAD STREET, SUITE 200  
 BETHLEHEM, PA 18018  
 PHONE: 610-984-8500  
 NORFOLK SOUTHERN AT GRADE CROSSING  
 #591377F AT ECK ROAD

DATE: 2/9/21	HOP APP. #:	PROJECT NO. 240045601
DRAWN BY:		CHECKED BY:
PLAN TITLE		DRAWING NO.
<b>E&amp;S PLAN</b>		<b>EX-3</b>

**MAINTENANCE AND PROTECTION OF TRAFFIC NOTES:**

- THIS WORK CONSISTS OF MAINTENANCE OF TRAFFIC AND PROTECTION OF THE PUBLIC WHEN APPROACHING AND DEPARTING THE CONSTRUCTION AREA AND WITHIN THE LIMITS OF CONSTRUCTION.
- FURNISH, ERECT, PLACE AND MAINTAIN TRAFFIC CONTROL SIGNS AND DEVICES. MAINTAIN TRAFFIC DURING HOURS OF CONSTRUCTION AND AT ALL OTHER TIMES CONSISTENT WITH THE METHODS INDICATED ON THESE DRAWINGS AND THE FOLLOWING:  
PENNDOT PUBLICATION 35;  
PENNDOT PUBLICATION 46;  
PENNDOT PUBLICATION 72M;  
PENNDOT PUBLICATION 111;  
PENNDOT PUBLICATION 212;  
PENNDOT PUBLICATION 213;  
PENNDOT PUBLICATION 236;  
PENNDOT PUBLICATION 408; AND  
MUTCD CURRENT EDITION.
- REMOVE THESE DEVICES IMMEDIATELY UPON COMPLETION OF THE WORK.
- COVER OR REMOVE ALL CONFLICTING SIGNS AND ERADICATE ALL CONFLICTING PAVEMENT MARKINGS.
- MOUNT ALL LONG TERM ADVANCE WARNING SIGNS ON TYPE III BARRICADES UNLESS OTHERWISE NOTED OR INSTRUCTED BY SOUTH WHITEHALL TOWNSHIP.
- ALL EXISTING SIGNS AND DEVICES ARE TO BE MAINTAINED IN NEW OR LIKE NEW CONDITION UNLESS OTHERWISE NOTED ON THE PLANS.
- THE CONTRACTOR SHALL TEMPORARILY BAG ALL CONFLICTING SIGNAGE THROUGHOUT CONSTRUCTION PROCESS.
- DRIVEWAYS WILL BE KEPT ACCESSIBLE AT ALL TIMES. LOCATE ALL SIGNS SO THAT THE SIGHT DISTANCE WILL NOT BE OBSTRUCTED AT DRIVEWAYS AND LOCAL ROADS.
- ALL LONG TERM ADVANCE WARNING SIGNS ARE TO CONFORM TO CURRENT STANDARDS.
- PERMITTEE(S) SHALL NOTIFY LOCAL EMERGENCY AUTHORITIES (POLICE, FIRE, MEDICAL, ETC), AFFECTED BUSINESSES, SCHOOL DISTRICT(S) AND THE GENERAL PUBLIC AT LEAST FOURTEEN DAYS PRIOR TO ANY SIGNIFICANT TRAFFIC IMPACTS.
- WORK AREA PAVEMENT MARKINGS: UNLESS OTHERWISE SPECIFIED IN THE TRAFFIC CONTROL PLAN, FURNISH ALL MATERIAL FOR AND INSTALL REFLECTORIZED PAVEMENT MARKINGS IN WORK AREAS FOR ALL BASE COURSE, FLEXIBLE PAVEMENT, AND RIGID PAVEMENT CONSTRUCTION OPERATIONS AS FOLLOWS:  
ALL OPERATIONS EXCEPT SEAL COAT/SURFACE TREATMENT (OIL & CHIP), SKIN PATCHING, SLURRY SEAL, HEAT SCARIFICATION, AND RALUMAC OPERATIONS: PRIOR TO TERMINATING WORK EACH DAY, REPLACE ALL LANE LINES AND CENTER LINES COVERED OR DESTROYED DURING THE DAY'S OPERATIONS WITH THE APPLICABLE SHORT-TERM PAVEMENT MARKING PATTERN SHOWN IN DEPARTMENT PUBLICATION 54, TRAFFIC ENGINEERING AND OPERATIONS MANUAL, FIGURES 4.9.2 THRU 4.9.9.
- MPT FIGURE PATA 102 AND PATA 201 MAY ONLY BE UTILIZED IF THERE IS ADEQUATE PAVEMENT WIDTH AND/OR SITE FRONTAGE AVAILABLE TO MAINTAIN THE MINIMUM TRAVEL LANE WIDTHS (10'). THE USE OF MPT FIGURE PATA 102 AND PATA 201 IS AT THE DISCRETION OF A SOUTH WHITEHALL TOWNSHIP FIELD REPRESENTATIVE.
- THE PROPOSED ACCESSES MUST REMAIN BARRICADED WITH TYPE III BARRICADE UNTIL DEEMED READY TO BE OPENED BY A PENNDOT REPRESENTATIVE.
- ALL DISTANCES MAY BE ADJUSTED TO FIT FIELD CONDITIONS. THE ADJUSTMENTS ARE TO BE REVIEWED WITH THE ENGINEER PRIOR TO RELOCATION.
- BEFORE THE START OF ANY PAVING OPERATIONS, ENSURE THAT ALL UTILITY POLES AND TRAFFIC SIGNAL POLES ARE REMOVED FROM THE AREAS TO BE PAVED.
- ALL TRAFFIC CONTROL DEVICES MUST BE IN PLACE AND INSPECTED BY THE ENGINEER BEFORE ALL WORK BEGINS.
- THIS TRAFFIC CONTROL PLAN DOES NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY AS SPECIFIED IN SECTION 901.3(A) OF PUBLICATION 408/2016.
- WITH PROPER INSPECTION AND APPROVAL, MODIFY EXISTING TRAFFIC CONTROL DEVICES REQUIRED FOR THE DURATION OF THE WORK.
- NOTIFY THE SOUTH WHITEHALL TOWNSHIP PUBLIC WORKS OFFICE AT 610-398-0401 TWO WEEKS IN ADVANCE OF ANY DETOURS, LANE CLOSURES, OR RESTRICTIONS.
- THE BUILDING ACCESS MUST BE MAINTAINED AT ALL TIMES.
- ALL CHANNELIZING DEVICES, BARRICADES, AND SIGNS SHALL HAVE TYPE III OR BETTER PRISMATIC RETROREFLECTIVE SHEETING. SHEETING SHALL BE APPROVED AND LISTED IN PENNDOT PUBLICATION 35 (BULLETIN 15).
- DROPOFFS CREATED BY CONSTRUCTION OPERATIONS SHALL BE TREATED CONSISTENT WITH PUBLICATION 408, SECTION 901.3(J).
- REMOVE ALL SHORT-TERM WORK ZONE TRAFFIC CONTROL SIGNING UPON COMPLETION OF THAT DAY'S WORK PERIOD.
- RESTRICTING TRAFFIC FLOW WITHIN THE WORK AREA SHALL BE MINIMIZED TO PREVENT TRAFFIC CONGESTION AND UNSAFE TRAFFIC CONDITIONS.
- THE CONTRACTOR SHALL COMPLY WITH ACT 229 OF DECEMBER 2002 DURING.

**SEQUENCE OF CONSTRUCTION:**

- STAGE 1**
- SET TRAFFIC CONTROL AS DEFINED IN PATA FIGURES 102, 103, 108 AND 109 FOR MAINTENANCE AND PROTECTION OF SHORT-TERM TRAFFIC CONTROL AND PATA 201, 202 AND 204 FOR MAINTENANCE AND PROTECTION OF LONG-TERM TRAFFIC CONTROL THROUGHOUT THE DURATION OF IMPROVEMENTS. PROVIDE A MINIMUM OF 10' WIDE LANES IN EACH DIRECTION. AREAS WHERE 10' WIDE LANES CAN NOT BE PROVIDED, SET TRAFFIC CONTROL AS DEFINED BY PATA 107 DURING WORKING HOURS.
  - SAWCUT 2' INSIDE THE EXISTING EDGE OF THE THRU LANE/EDGE OF PAVEMENT.
  - PROVIDE TEMPORARY W/4" EDGE LINE IF NECESSARY.
  - EXCAVATE AREA OF PROPOSED DRIVEWAYS AND ROADWAY WIDENING.
  - INSTALL PROPOSED CURB AND ADA FACILITIES.
  - INSTALL PROPOSED DRAINAGE FEATURES.
  - INSTALL PROPOSED PAVEMENT SECTION UP TO THE WEARING COURSE.
  - COMPLETE ALL OPERATIONS OF STAGE 1 BEFORE BEGINNING STAGE 2.
- STAGE 2**
- SET TRAFFIC CONTROL AS DEFINED IN PATA 102, 107, 108 AND 109 FOR MAINTENANCE AND PROTECTION OF SHORT-TERM TRAFFIC CONTROL.
  - PERFORM ALL MILLING AND PLACEMENT OF WEARING COURSE.
  - SET TRAFFIC CONTROL AND MAINTENANCE AND PROTECTION OF TRAFFIC MEASURES AS DEFINED IN PATA 303 AND PLACE ALL FINAL PAVEMENT MARKINGS. INSTALL PROPOSED SIGNS PER THE PLACEMENT OF THE SIGNING AND PAVEMENT MARKING PLAN.

**DROP OFF NOTES:**

THE FOLLOWING CONDITIONS AND TREATMENTS APPLY TO DROP OFFS CREATED BY CONSTRUCTION, MAINTENANCE OR PERMIT/UTILITY OPERATIONS.

DRAINAGE DITCHES ARE NOT CONSIDERED AS DROP OFFS IN THIS SECTION.

WHEN CHANNELIZING DEVICES ARE USED FOR A DROP OFF CONDITION, A MINIMUM OF 2 DEVICES ARE REQUIRED.

IF A DROP OFF IS GREATER THAN 6 INCHES OR THE DISTANCE FROM THE DROP OFF TO THE EDGE OF THE TRAVEL LANE IS SUCH THAT CHENNELIZING DEVICES MUST BE PLACED BELOW GRADE, POSITION THE DEVICES ON A STABLE PLATFORM SO THAT THE BOTTOMS ARE AT GRADE.

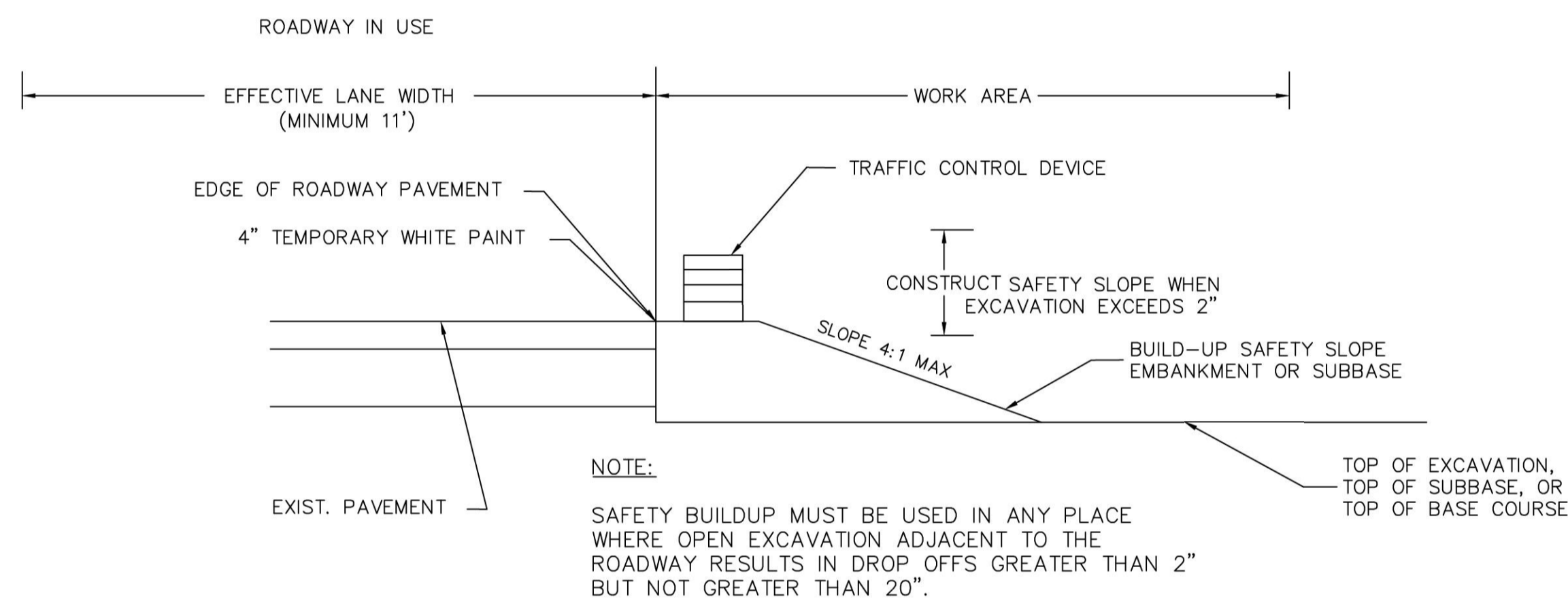
TEMPORARY CONCRETE MEDIAN BARRIERS MAY BE USED AT SOUTH WHITEHALL TOWNSHIP'S DISCRETION.

SPACING OF CHANNELIZING DEVICES FOR DROP OFFS: SPACE ALL CHANNELIZING DEVICES AT 2 TIMES THE NORMAL SPEED LIMIT (IN FEET) OR CLOSER, AS DIRECTED.

DROP OFFS BETWEEN THE EDGE OF THE TRAVEL LANE AND THE SHOULDER: IF A DROP OFF LESS THAN OR EQUAL TO 2 INCHES EXISTS BETWEEN THE EDGE OF THE TRAVEL LANE AND THE SHOULDER, CHANNELIZING DEVICES ARE NOT REQUIRED. IF A DROP OFF GREATER THAN 2 INCHES EXISTS, INSTALL CHANNELIZING DEVICES THROUGHOUT THE THE DROP OFF CONDITION. INSTALL "LOW SHOULDER" SIGNS (W8-11), AT INTERVALS NOT EXCEEDING 2 MILE, THROUGHOUT THE DROP OFF CONDITION TO SUPPLEMENT THE CHANNELIZING DEVICES.

DROP OFFS IN OR BEYOND THE SHOULDER: IF A DROP OFF LESS THAN OR EQUAL TO 2 INCHES EXISTS IN OR BEYOND THE SHOULDER AREA, CHANNELIZING IN OR BEYOND THE SHOULDER AREA, INSTALL CHANNELIZING DEVICES THROUGHOUT THE DROP OFF CONDITION UNLESS THE DROP OFF IS:

- OUTSIDE THE RIGHT-OF WAY, OR;
- BEHIND THE GUIDERAIL, OR;
- BEHIND CURB, OR;
- 15 FEET OR MORE FROM THE EDGE OF ROADWAY.

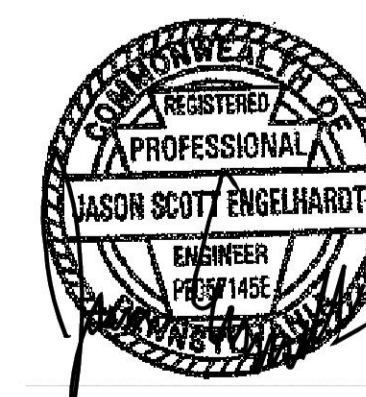


**NOTE:**

SAFETY BUILDUP MUST BE USED IN ANY PLACE WHERE OPEN EXCAVATION ADJACENT TO THE ROADWAY RESULTS IN DROP OFFS GREATER THAN 2" BUT NOT GREATER THAN 20".

**DROPOFF TREATMENT**

STANDARD DETAILS	
STANDARD DRAWING NUMBER	DRAWING DATE
PATA 102	JUNE 6, 2014
PATA 103	JUNE 6, 2014
PATA 107	JUNE 6, 2014
PATA 108	JUNE 6, 2014
PATA 109	JUNE 6, 2014
PATA 110	JUNE 6, 2014
PATA 303	JUNE 6, 2014



**JASON S. ENGELHARDT**  
PA LIC. NO. PE-057145-E

DATE: FEBRUARY 9, 2021

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
5-0	LEHIGH	-	-	4 OF 7
SOUTH WHITEHALL AND UPPER MACUNGIE TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	
1	REVISED PER NORFOLK SOUTHERN COMMENTS	4/22/21	MYP	
2	REVISED PER NORFOLK SOUTHERN COMMENTS	6/18/21	JLA	

**LANGAN**  
ONE WEST BROAD STREET, SUITE 200  
BETHLEHEM, PA 18018  
PHONE: 610-984-8500  
NORFOLK SOUTHERN AT GRADE CROSSING  
#591377F AT ECK ROAD

DATE: 2/9/21	HOP APP. #:	PROJECT NO. 240045601
DRAWN BY: JLA	CHECKED BY: AMV	
PLAN TITLE: MAINTENANCE AND PROTECTION OF TRAFFIC PLAN	DRAWING NO. EX-4	

**PATA 102 (Old PATA 7) - Notes**

- If the work space is completely within a parking lane and parking is present, the taper or shadow vehicle is not required.
- For operations of 15 minutes or less:
  - The Road Work (W20-1) sign is not required.
  - All channelizing devices may be eliminated if a shadow vehicle is present.
- 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.
- 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	B	C	F
	Feet	Feet	Feet	Feet
Urban 35 MPH or less	100	100	100	100
Urban Greater than 35 MPH	350	350	350	350
Rural	500	500	500	500

**Distance and Spacing Quick Reference Chart**

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

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

Note: Channelizing devices used in taper shall be equally spaced at 1/2 D Max.

**PATA 103 (Old PATA 08) - Notes**

- Right Reverse Curve (W1-4R) sign shall only be used when lane shifts onto shoulder.
- When a shadow vehicle is not used, distance E is measured from end of taper to beginning of work space.
- Refer to PATA 008 for reverse curve/turn signing.

**Signs**



W20-1 W1-4L W1-4R

**Sign Spacing Chart**

Condition	Distance			
	A	B	C	F
	Feet	Feet	Feet	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 (Length)	D Feet	E Feet	H Feet
25	10	105	55	35	6	6	6	50
	11	115	60	40				
	12	125	65	45				
30	10	150	75	50	6	6	6	60
	11	165	85	55				
	12	180	90	60				
35	10	205	105	70	6	6	6	70
	11	225	115	75				
	12	245	125	85				
40	10	270	135	90	6	6	6	80
	11	295	150	100				
	12	320	160	110				
45	10	450	225	150	6	6	6	90
	11	495	250	165				
	12	540	270	180				
50	10	500	250	170	6	6	6	100
	11	550	275	185				
	12	600	300	200				
55	10	550	275	185	6	6	6	110
	11	605	305	205				
	12	660	330	220				

Note: Channelizing devices used in taper shall be equally spaced at 1/2 D Max.

**PATA 107 (Old PATA 10a) - Notes**

- Each flagger shall be clearly visible to traffic for a minimum distance of E and shall be in constant communication with all other flaggers.
  - The Road Work (W20-1), One Lane Road (W20-4), and Flagger Symbol (W20-7) signs are not required.
  - All channelizing devices may be eliminated if a shadow vehicle is present.
- 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.
- 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	B	C	F
	Feet	Feet	Feet	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	$L = WS$

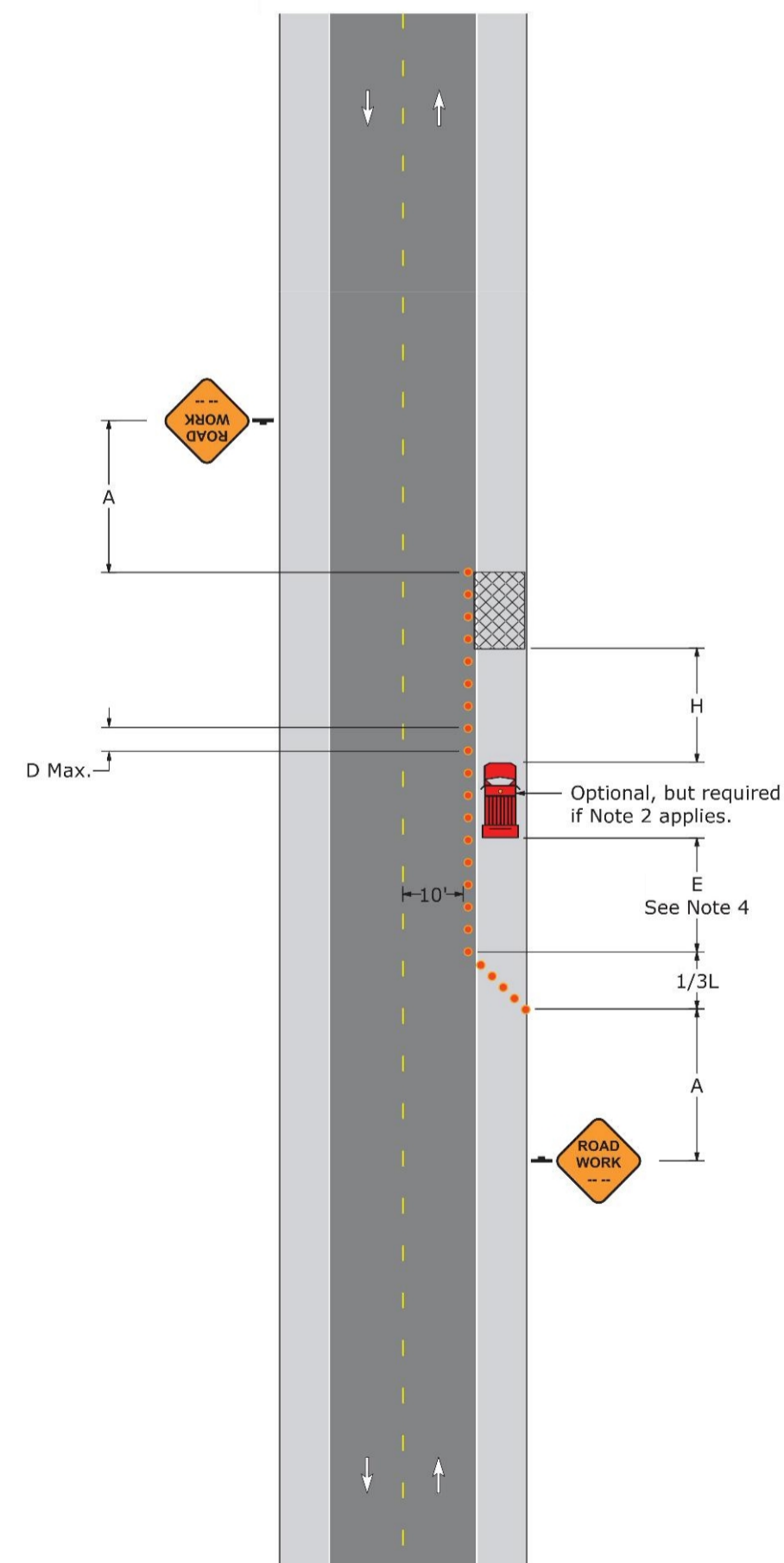
S = Regulatory Speed Limit  
W = Width of Offset  
L = Length

**Distance and Spacing Quick Reference Chart**

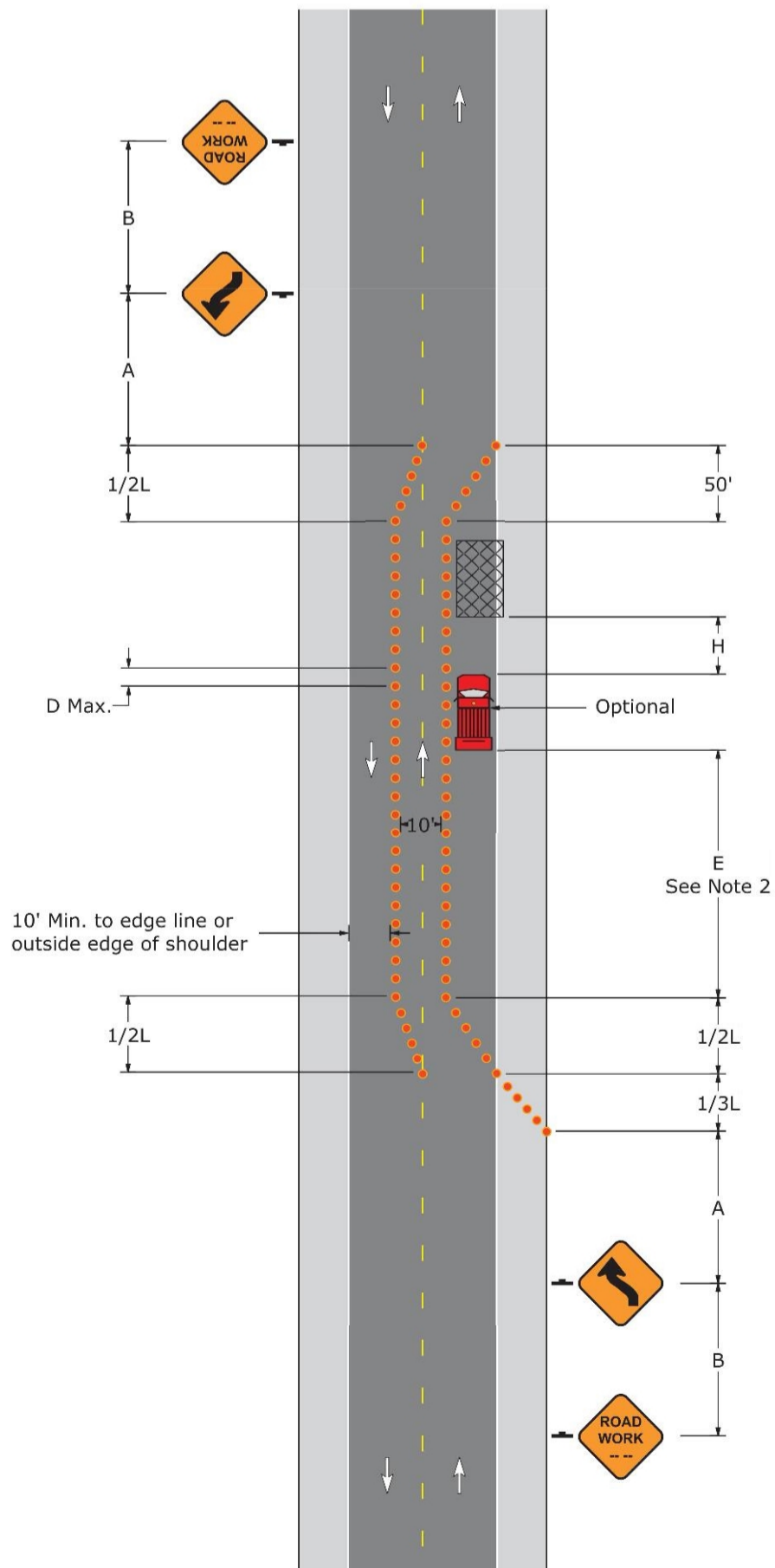
Speed MPH	W Feet	L Feet	1/2L Feet	1/3L Feet	Min. Channelizing Devices Per Taper Type (Length)	D Feet	E Feet	H Feet
25	10	105	55	35	6	6	6	50
	11	115	60	40				
	12	125	65	45				
30	10	150	75	50	6	6	6	60
	11	165	85	55				
	12	180	90	60				
35	10	205	105	70	6	6	6	70
	11	225	115	75				
	12	245	125	85				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

Note: Channelizing devices used in taper shall be equally spaced at 1/2 D Max.

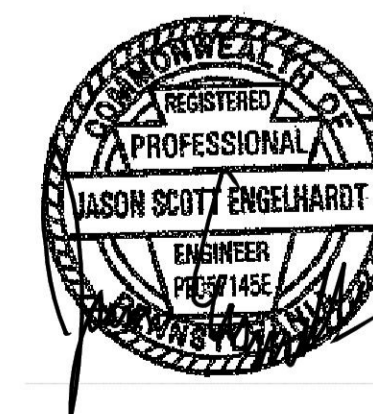
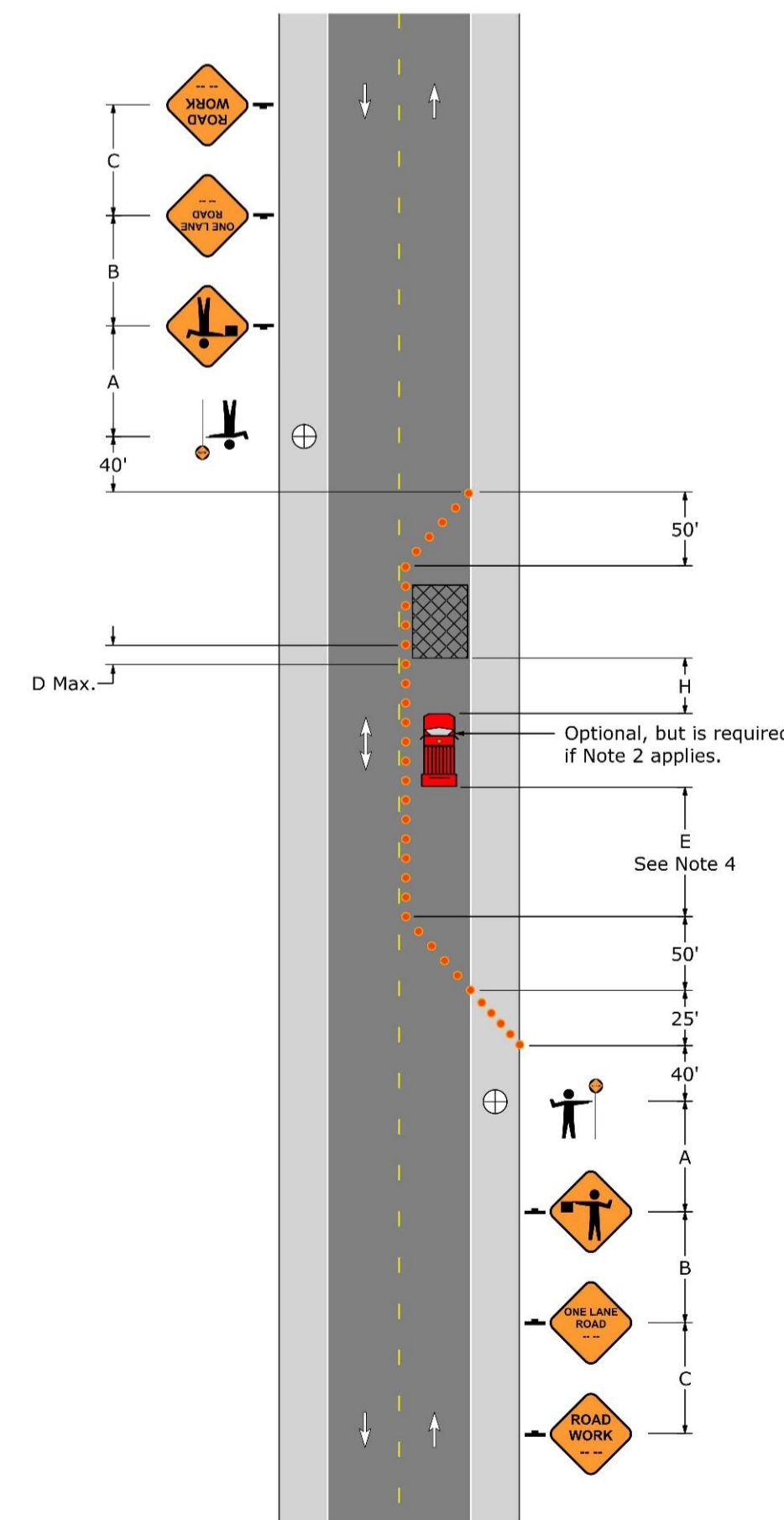
**PATA 102 (Old PATA 7)  
Work Space On Or Beyond The Shoulder (Minor Roadway Encroachment)**



**PATA 103 (Old PATA 8)  
Work Space Has A Major Encroachment On The Roadway**



**PATA 107 (Old PATA 10a)  
Work In One Lane; Two Flaggers**



**JASON S. ENGELHARDT**  
PA LIC. NO. PE-057145-E

DATE: FEBRUARY 9, 2021

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
5-0	LEHIGH	-	-	5 OF 7
SOUTH WHITEHALL AND UPPER MACUNGIE TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	
1	REVISED PER NORFOLK SOUTHERN COMMENTS	4/22/21	MYP	
2	REVISED PER NORFOLK SOUTHERN COMMENTS	6/18/21	JLA	

**LANGAN**  
ONE WEST BROAD STREET, SUITE 200  
BETHLEHEM, PA 18018  
PHONE: 610-984-8500  
NORFOLK SOUTHERN AT GRADE CROSSING  
#591377F AT ECK ROAD

DATE: 2/9/21	HOP APP. #:	PROJECT NO. 240045601
DRAWN BY: JLA	CHECKED BY: AMV	
PLAN TITLE: MAINTENANCE AND PROTECTION OF TRAFFIC PLAN	DRAWING NO.	EX-5

PROJECT No. 240045601

**PATA 108 (New PATA) - Notes**

- Each flagger shall be clearly visible to traffic for a minimum distance of E and shall be in constant communication with all other flaggers.
- For operations of 15 minutes or less:
  - The Road Work (W20-1), One Lane Road (W20-4), Be Prepared To Stop (W3-4), and Flagger Symbol (W20-7) signs are not required.
  - All channelizing devices may be eliminated if a shadow vehicle is present.
- 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.
- When a shadow vehicle is not used, distance E is measured from end of taper to beginning of work space.

**Signs**



**Sign Spacing Chart**

**Distance and Spacing Quick Reference Chart**

Condition	Distance			
	A	B	C	F
	Feet	Feet	Feet	Feet
Urban 35 MPH or less	100	100	100	100
	11	105	55	35
	12	125	65	45
Urban Greater than 35 MPH	350	350	350	350
	10	150	75	50
	11	165	85	55
Rural	500	500	500	500
	10	205	105	70
	11	225	115	75

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

**PATA 109 (Old PATA 10b) - Notes**

- Each flagger shall be clearly visible to traffic for a minimum distance of E and shall be in constant communication with all other flaggers.
- For operations of 15 minutes or less:
  - The Road Work (W20-1), One Lane Road (W20-4), Be Prepared To Stop (W3-4), and Flagger Symbol (W20-7) signs are not required.
  - All channelizing devices may be eliminated if a shadow vehicle is present.
- 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.
- When a shadow vehicle is not used, distance E is measured from end of taper to beginning of work space.

**Signs**



**Sign Spacing Chart**

**Distance and Spacing Quick Reference Chart**

Condition	Distance			
	A	B	C	F
	Feet	Feet	Feet	Feet
Urban 35 MPH or less	100	100	100	100
	10	105	55	35
	11	115	60	40
Urban Greater than 35 MPH	350	350	350	350
	10	150	75	50
	11	165	85	55
Rural	500	500	500	500
	10	205	105	70
	11	225	115	75

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

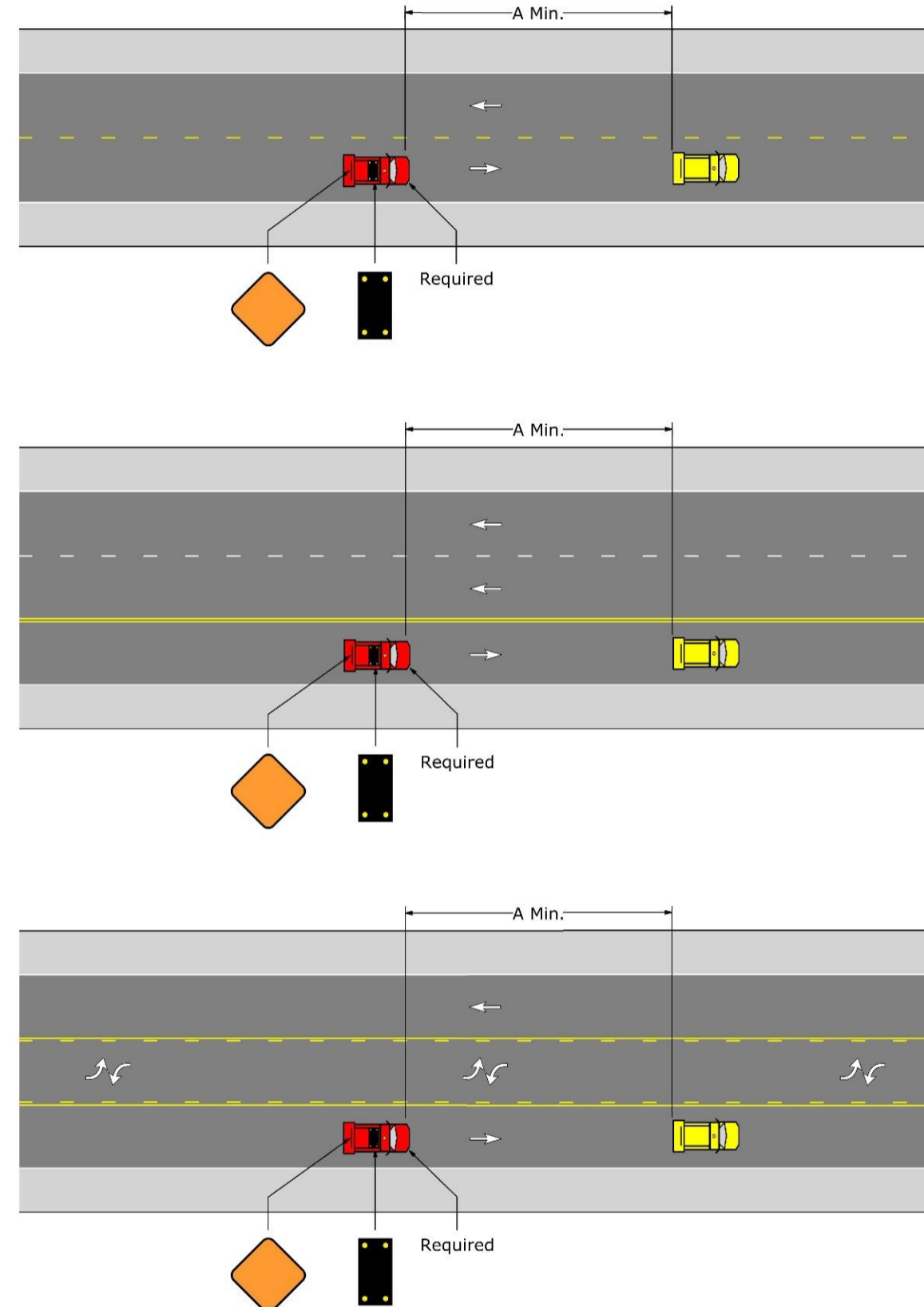
**PATA 303 (Old PATA 12) - Notes**

- The shadow vehicle shall be positioned so that it is visible from behind the work vehicle for a minimum distance of A. The shadow vehicle should slow down in advance of vertical or horizontal curves that restrict sight distance.
- Where passing is not permitted for extended lengths, the shadow and work vehicles should pull over periodically, when it is reasonable and safe, in order to allow traffic to resume normal speeds.
- The shadow vehicle should be equipped with two high-intensity flashing lights mounted on the rear and located adjacent to the sign.
- The shadow vehicle may be equipped with a flashing arrow panel in caution mode.
- A "W Series" (W14-12, W21-14, W21-11, etc) sign or message board on the rear of the shadow vehicle is required.
- Refer to PATA 012 for arrow panel sizing.

**Signs**



**PATA 303 (Old PATA 12)  
Moving Lane Closure**

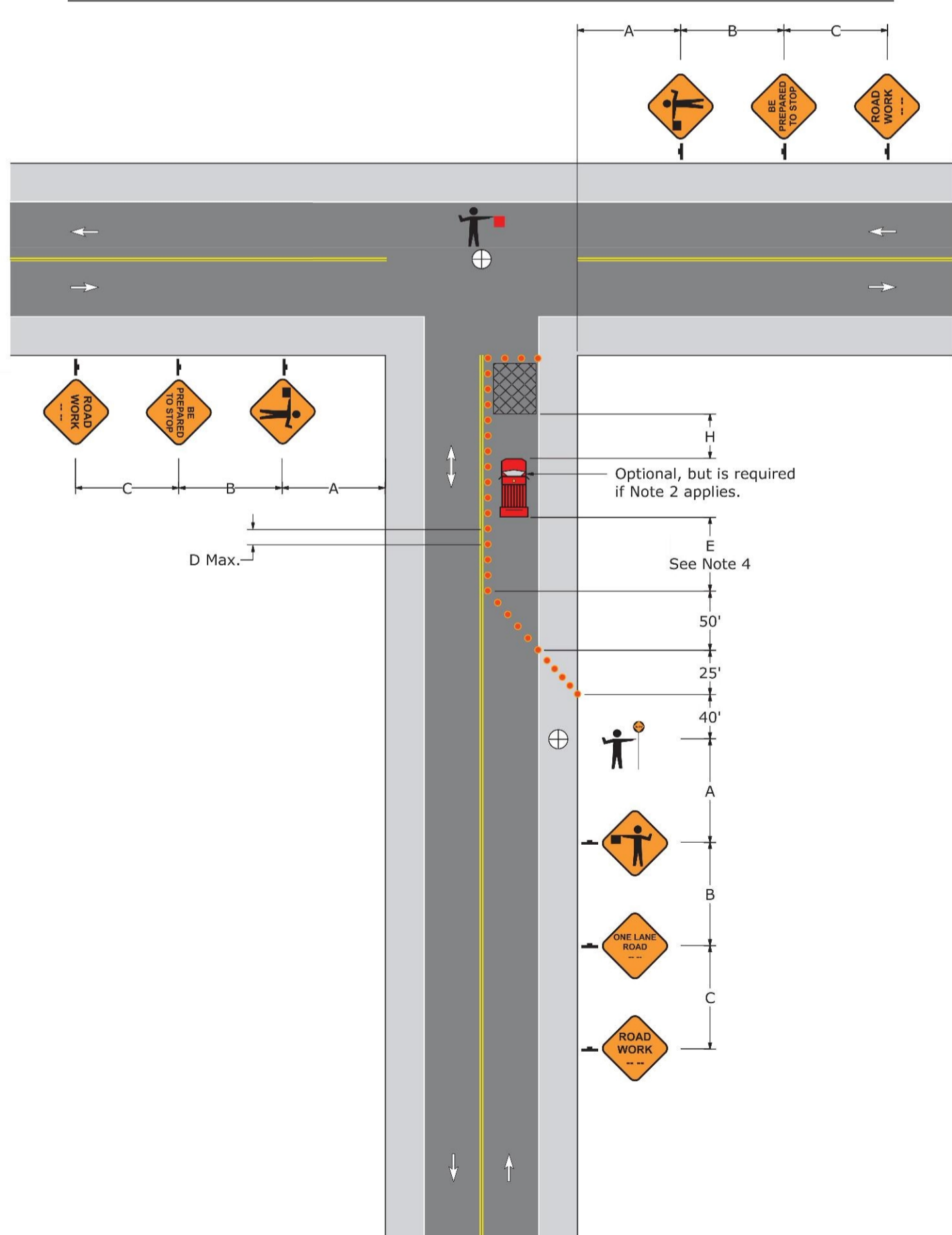


**Sign Spacing Chart**

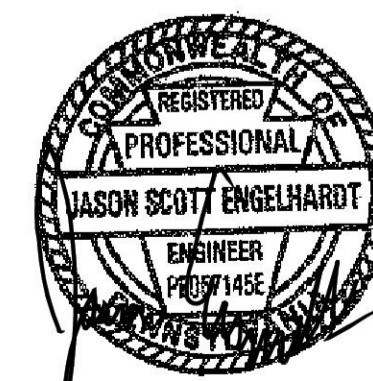
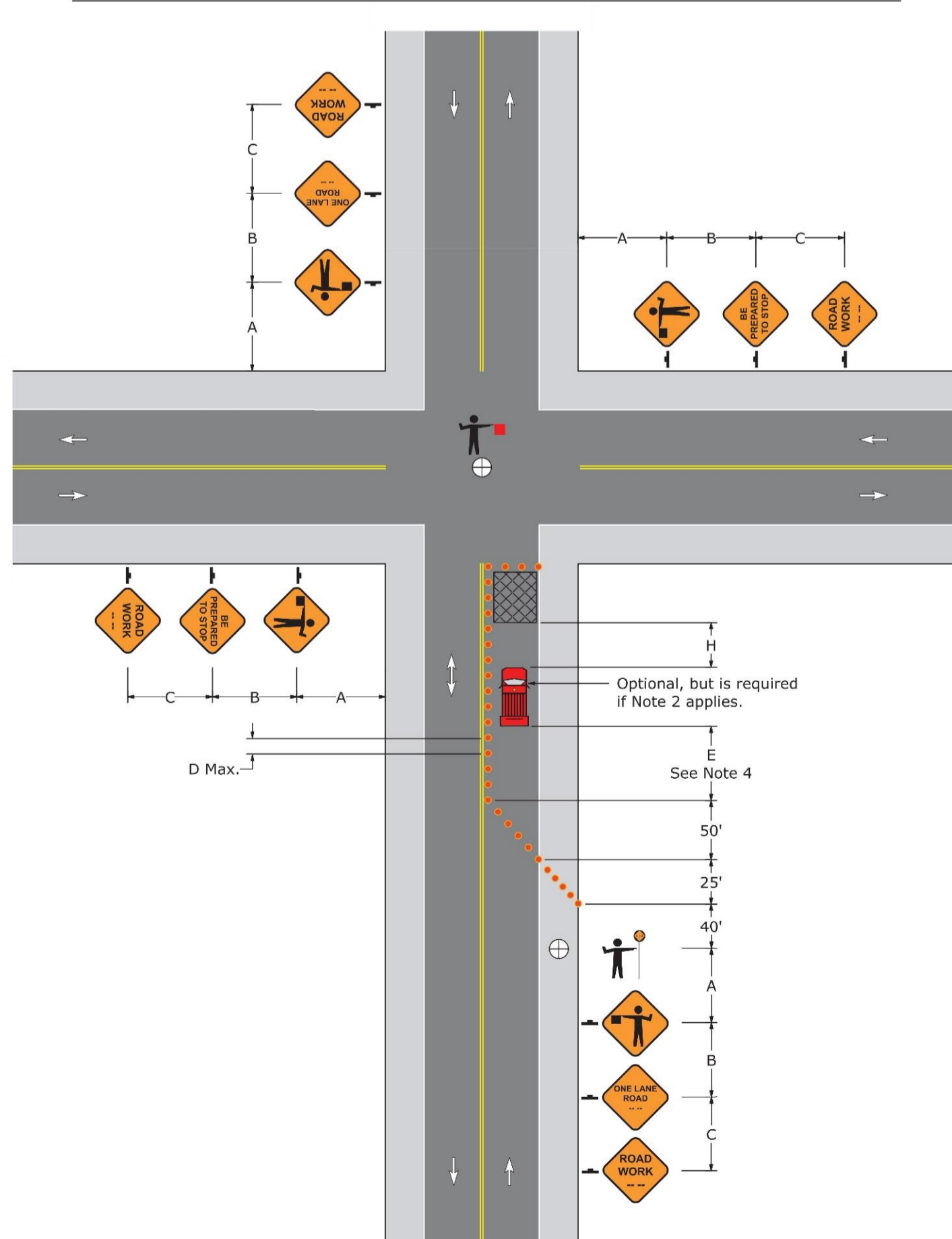
Condition	Distance			
	A	B	C	F
	Feet	Feet	Feet	Feet
Urban 35 MPH or less	100	100	100	100
Urban Greater than 35 MPH	350	350	350	350
Rural	500	500	500	500

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.

**PATA 108 (New PATA)  
Three-Leg Intersection Flagging Operation**



**PATA 109 (Old PATA 10b)  
Four-Leg Intersection Flagging Operation**



**JASON S. ENGELHARDT**  
PA LIC. NO. PE-057145-E

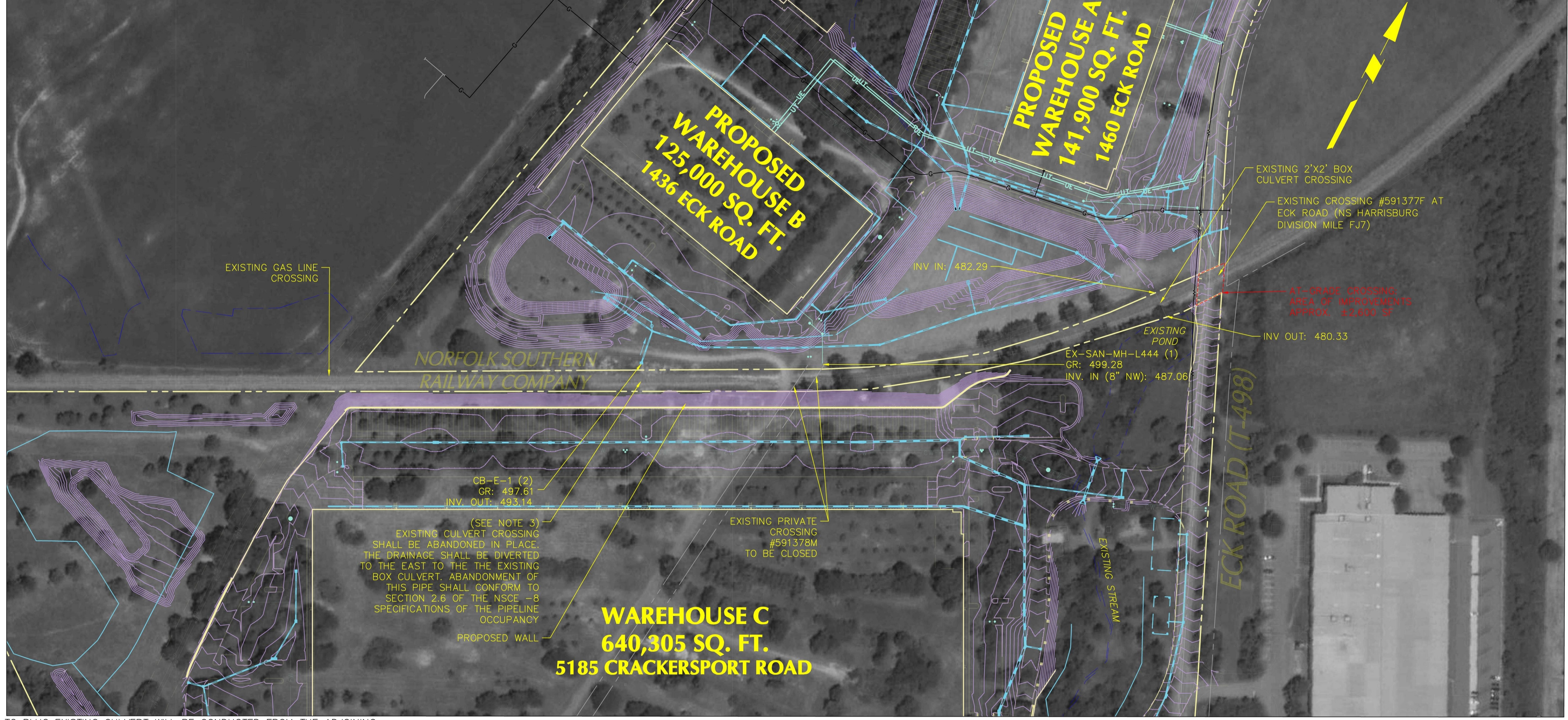
DATE: FEBRUARY 9, 2021

**LANGAN**

ONE WEST BROAD STREET, SUITE 200  
BETHLEHEM, PA 18018  
PHONE: 610-984-8500  
NORFOLK SOUTHERN AT GRADE CROSSING  
#591377F AT ECK ROAD

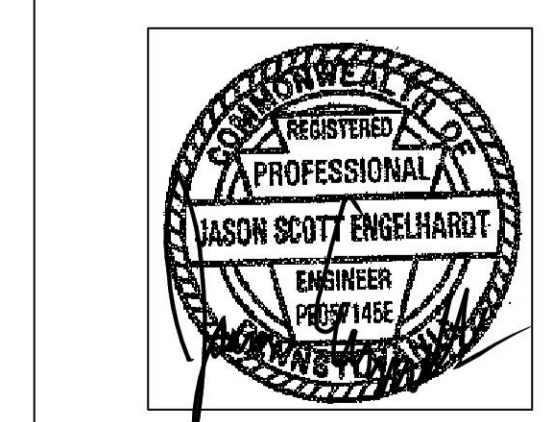
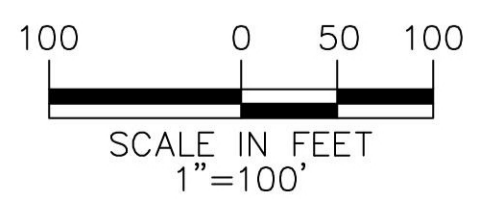
DATE: 2/9/21	HOP APP. #:	PROJECT NO. 240045601
DRAWN BY: JLA		CHECKED BY: AMV
PLAN TITLE: MAINTENANCE AND PROTECTION OF TRAFFIC PLAN		DRAWING NO.:

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
5-0	LEHIGH	-	-	7 OF 7
SOUTH WHITEHALL AND UPPER MACUNGIE TOWNSHIP				
REVISION NUMBER	REVISIONS			DATE BY
1	REVISED PER NORFOLK SOUTHERN COMMENTS			4/22/21 MYP
2	REVISED PER NORFOLK SOUTHERN COMMENTS			6/18/21 JLA
3	REVISED PER NORFOLK SOUTHERN COMMENTS			8/20/21 JLA



- NOTE:
1. SITE WORK TO PLUG EXISTING CULVERT WILL BE CONDUCTED FROM THE ADJOINING PROPERTY AND NOT FROM NORFOLK SOUTHERN RIGHT-OF-WAY.
  2. FOR THE EXISTING CULVERT CROSSING PROPOSED TO BE PLUGGED, THE CONTRACTOR SHALL COMPLETELY FILL PIPE WITH CEMENT GROUT.
  3. THE ABANDONMENT OF THE CULVERT SHALL NOT BE PERFORMED UNTIL A CONSTRUCTION AGREEMENT HAS BEEN EXECUTED BETWEEN SOUTH WHITEHALL TOWNSHIP AND NORFOLK SOUTHERN, CONSTRUCTION AUTHORIZATION HAS BEEN ISSUED BY NORFOLK SOUTHERN, AND A REPRESENTATIVE FROM NORFOLK SOUTHERN IS ON-SITE TO OBSERVE THE ABANDONMENT.

LEGEND	
PROPOSED CONTOURS	
PROPOSED UTILITIES	
PROPOSED SITE IMPROVEMENTS	



**JASON S. ENGELHARDT**  
 PA LIC. NO. PE-057145-E  
 DATE: FEBRUARY 9, 2021

<b>LANGAN</b>		
ONE WEST BROAD STREET, SUITE 200 BETHLEHEM, PA 18018 PHONE: 610-984-8500 NORFOLK SOUTHERN AT GRADE CROSSING #591377F AT ECK ROAD		
DATE: 2/9/21	HOP APP. #:	PROJECT NO. 240045601
DRAWN BY: FG	CHECKED BY: JDM	
PLAN TITLE: DRAINAGE PLAN	DRAWING NO.:	EX-7

PROJECT NO. 240045601 © 2019 Langan