



**EMERGENCY PRE-EMPTION PHASING**  
MOVEMENT, PHASING, AND SEQUENCE CHART

| PHASE | 2        |    |    | 6  |    |    | 8  |    |    |    |
|-------|----------|----|----|----|----|----|----|----|----|----|
|       | INTERVAL | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 1,2   | G        | Y  | R  | R  | R  | R  | R  | R  | R  | R  |
| 3     | ←Y       | ←Y | ←Y | ←Y | ←Y | ←Y | ←Y | ←Y | ←Y | ←Y |
| 4,5   | R        | R  | R  | G  | Y  | R  | R  | R  | R  | R  |
| 6,7   | R        | R  | R  | R  | R  | R  | G  | Y  | R  | R  |
| 8,9   | H        | H  | H  | H  | H  | H  | H  | H  | H  | H  |
| 10,11 | H        | H  | H  | H  | H  | H  | H  | H  | H  | H  |
| FIXED | ▲        | 4  | 2  | ▲  | 4  | 2  | ▲  | 3  | 3  | 3  |

▲ FOR DURATION OF PRE-EMPTION  
NOTE: IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

**EMERGENCY PRE-EMPTION**  
OPERATION NOTES

- ⊙ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION
- ⊙ SIGNAL TO INDICATE ←Y WHEN RETURNING TO NORMAL OPERATION

**EMERGENCY PRE-EMPTION NOTES:**

CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND AND SOUTHBOUND APPROACHES OF BETHLEHEM PIKE (SR 2018) AND THE WESTBOUND APPROACH OF MONTGOMERY AVE WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTION PHASE SHALL FOLLOW. ONLY THOSE PHASES NOT POSING A YELLOW TRAP CONDITION MAY REMAIN GREEN (1+6,6, OR 8) WHEN GOVERNED BY APPROACHING EMERGENCY VEHICLE. ANY FLASHING YELLOW ARROW INDICATIONS FOR THE PRE-EMPTED PHASE SHALL REMAIN FLASHING YELLOW ARROW DURING THE ENTRY ROUTINE FOLLOWED BY GREEN ARROW FOR THE DURATION OF THE SIGNAL PRE-EMPTION. ANY FLASHING YELLOW ARROW INDICATION FOR THE PHASE OPPOSITE THE PRE-EMPTED PHASE SHALL REMAIN FLASHING YELLOW ARROW DURING THE ENTRY ROUTINE AND FOR THE DURATION OF SIGNAL PRE-EMPTION.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL FOR THE PRE-EMPTION GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.

IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PED "WALK" (MAN) INTERVAL SHALL TERMINATE IMMEDIATELY AND THE PED "CLEAR" (FLASHING HAND AND COUNTDOWN TIMER) INTERVAL SHALL TIME OUT, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PRE-EMPTION.

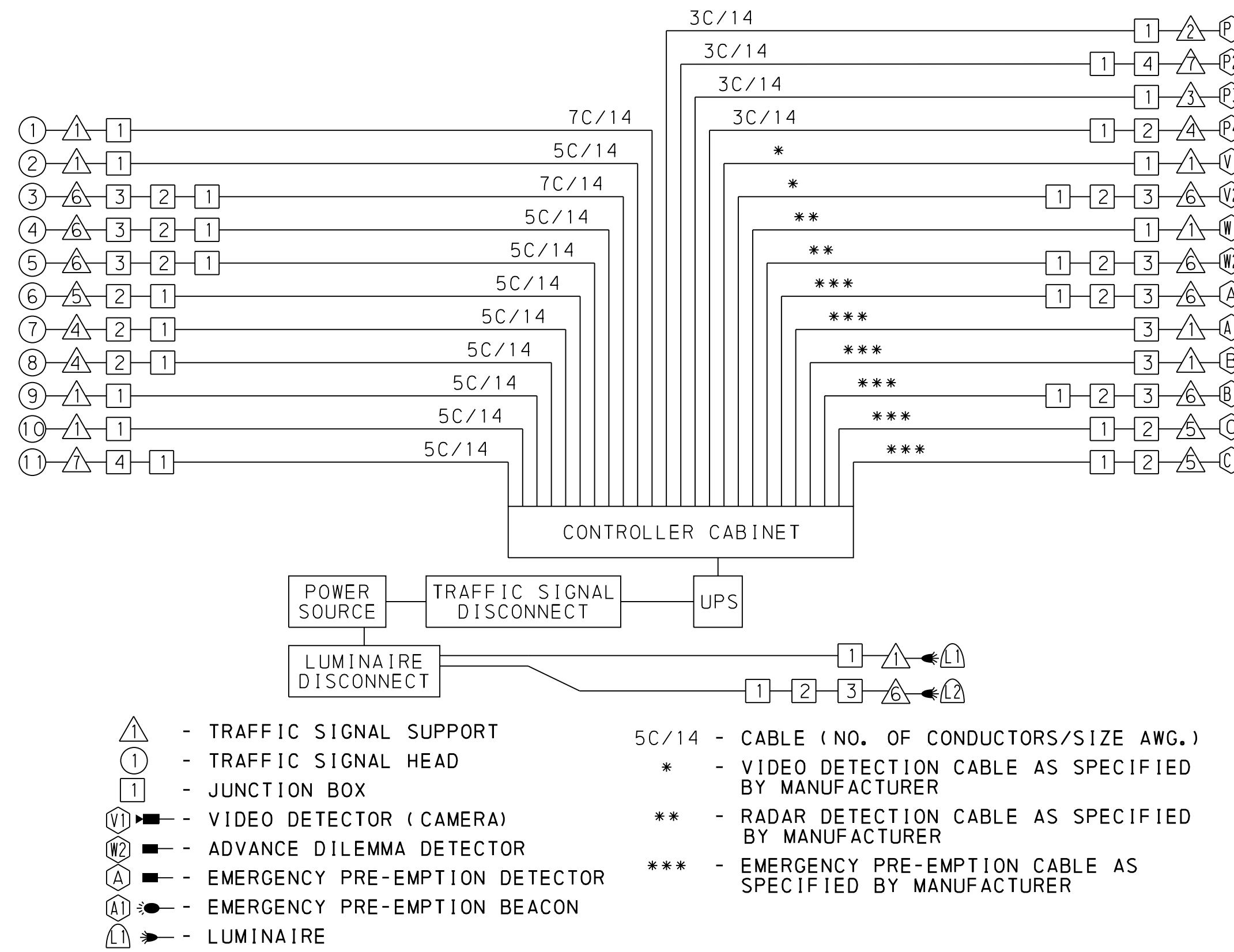
IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.

IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.

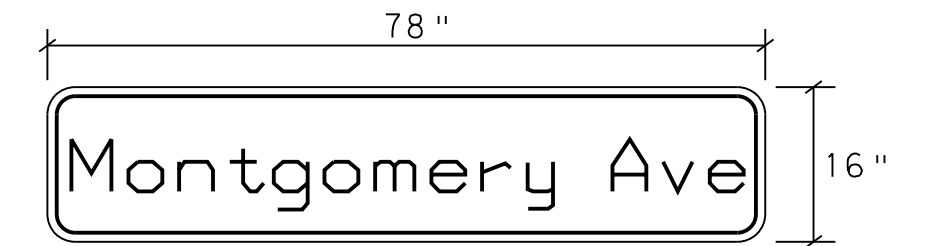
UPON COMPLETION OF PRE-EMPTION PHASE 2, 6 OR 8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 4 SHALL FOLLOW.

IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.



| DISTRICT             | COUNTY     | ROUTE | SECTION | SHEET   |
|----------------------|------------|-------|---------|---------|
| 6-0                  | MONTGOMERY | 2018  | SIP     | 2 OF 17 |
| SPRINGFIELD TOWNSHIP |            |       |         |         |
| REVISION NUMBER      | REVISIONS  | DATE  | BY      |         |
|                      |            |       |         |         |



SIGN 'S' DETAIL  
NOT TO SCALE

CLEARVIEW 1-W  
8" UC/6" LC



SIGN 'T' DETAIL  
NOT TO SCALE

CLEARVIEW 1-W  
8" UC/6" LC  
35% REDUCTION

**TRAFFIC SIGNAL**  
**CONSTRUCTION PLAN**

|  |   |
|--|---|
| PREPARED BY:<br>HNTB CORPORATION<br>1650 ARCH STREET<br>SUITE 1700<br>PHILADELPHIA,<br>PA 19103<br><br>_____<br>PROFESSIONAL ENGINEER<br><br>_____<br>DATE | COUNTY: <u>MONTGOMERY</u>   |
|  | MUNICIPALITY: <u>SPRINGFIELD TOWNSHIP</u>                             |
|  | INTERSECTION: <u>BETHLEHEM PIKE (SR 2018) &amp; MONTGOMERY AVENUE</u> |
|  | APPROVED BY:<br>_____<br>MUNICIPAL OFFICIAL<br>DATE _____             |
| RECOMMENDED:<br>_____<br>DISTRICT TRAFFIC ENGINEER<br>DATE _____   | SCALE: _____  |



### GENERAL NOTES

DO NOT MODIFY INSTALLATION WITHOUT PRIOR WRITTEN APPROVAL BY THE DEPARTMENT.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ARE PART OF THE PERMIT. INSTALL AND MAINTAIN IN ACCORDANCE WITH PUBLICATION 212 AND PUBLICATION 236.

INSTALL POST MOUNTED SIGNALS WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF THE CURB OR EDGE OF THE SHOULDER. PROVIDE A MINIMUM HORIZONTAL CLEARANCE OF 2 FEET FOR ALL SUPPORT POLES FOR OVERHEAD SIGNALS.

ERECT THE BOTTOM OF SIGNAL HEADS AND SIGNS OVER THE ROADWAY NOT LESS THAN 16 FEET NOR MORE THAN 19 FEET ABOVE THE ROADWAY. ERECT THE BOTTOM OF POST MOUNTED SIGNAL HEADS NOT LESS THAN 8 FEET NOR MORE THAN 15 FEET ABOVE THE SIDEWALK OR PAVEMENT GRADE.

MAINTAIN A MINIMUM HORIZONTAL DISTANCE OF 8 FEET BETWEEN SIGNAL HEADS, MEASURED AT RIGHT ANGLES TO THE APPROACH.

DETERMINE THE EXACT LOCATION OF DETECTORS WITH A PENNDOT REPRESENTATIVE PRIOR TO INSTALLATION.

THE CONTRACTOR IS TO COMPLETE THE NECESSARY APPLICATION(S) IN ORDER TO OBTAIN ELECTRICAL SERVICE FROM THE LOCAL POWER COMPANY.

CONSULT WITH LOCAL OFFICIALS AND UTILITIES TO RESOLVE CONFLICTS PRIOR TO CONSTRUCTION.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE CONTRACTOR COMPLIES WITH THE PROVISIONS OF ACT 50, AS AMENDED, UNDERGROUND UTILITY PROTECTION ACT, DATED APRIL 28, 2018. PRIOR TO CONSTRUCTION, CONSULT WITH UTILITY COMPANIES TO RESOLVE ANY CONFLICTS.

UNDERGROUND UTILITY INFORMATION HAS BEEN PROVIDED BY THE RESPECTIVE USERS IN RESPONSE TO THE PA ONE CALL SYSTEM. REFERENCE SERIAL NUMBER: 20220462162

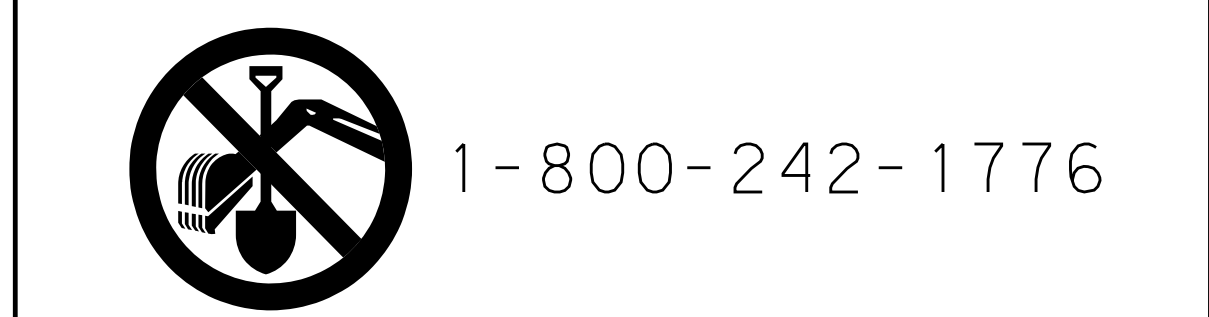
ISSUED ON: 02/15/2022

HNTB CORPORATION HAS NOT MADE AN INDEPENDENT DETERMINATION WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION AND SPECIFICALLY DISCLAIMS ANY WARRANTY OR REPRESENTATION AS TO THE ACCURACY OF SUCH INFORMATION. ALL LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

### CALL BEFORE YOU DIG !

PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE.

BEFORE YOU DIG, CALL THE PA ONE CALL SYSTEM TELEPHONE NUMBER.



PERMIT NO: 64-0297 FILE: 0297 SYSTEM PERMIT # 1-0060

COUNTY: MONTGOMERY

MUNICIPALITY: SPRINGFIELD TOWNSHIP

INTERSECTION: BETHLEHEM PIKE (SR 2018) & HAWS LANE

REVIEWED: \_\_\_\_\_

MUNICIPAL OFFICIAL \_\_\_\_\_ DATE \_\_\_\_\_

RECOMMENDED: \_\_\_\_\_

ADE - TRANSPORTATION OPERATIONS \_\_\_\_\_ DATE \_\_\_\_\_

### MOVEMENT, PHASING, AND SEQUENCE CHART

| PHASE           | 1+6 |   |   | 2+6 |    |   |   | 8 |    |    |    | EMERGENCY FLASH |     |
|-----------------|-----|---|---|-----|----|---|---|---|----|----|----|-----------------|-----|
|                 | 1   | 2 | 3 | 4   | 5  | 6 | 7 | 8 | 9  | 10 | 11 |                 |     |
| INTERVAL SIGNAL | 1,2 | R | R | R   | G  | G | Y | R | R  | R  | R  | R               | Y   |
| 3               | ←   | ← | ← | ←   | ←  | ← | ← | ← | ←  | ←  | ←  | ←               | ←   |
| 4,5             | G   | Y | R | G   | G  | Y | R | R | R  | R  | R  | R               | Y   |
| 6,7             | R   | R | R | R   | R  | R | R | G | G  | Y  | R  | R               | Y   |
| 8,9             | H   | H | H | H   | H  | H | H | M | FH | H  | H  | H               | OFF |
| 10,11           | H   | H | H | M   | FH | H | H | H | H  | H  | H  | H               | OFF |

|             |    |   |  |    |    |   |  |    |    |   |
|-------------|----|---|--|----|----|---|--|----|----|---|
| FIXED       | 4  | 2 |  |    | 4  | 2 |  |    | 3  | 3 |
| MINIMUM     | 3  |   |  | 15 |    |   |  | 5  |    |   |
| SEC/ACT     | -  |   |  | 2  |    |   |  | -  |    |   |
| MAX INITIAL | -  |   |  | 24 |    |   |  | -  |    |   |
| PASSAGE     | 3  |   |  | 1* |    |   |  | 3  |    |   |
| MAX 1       | 7  |   |  | 50 |    |   |  | 25 |    |   |
| PEDESTRIAN* |    |   |  | 7  | 10 |   |  | 7  | 14 |   |
| MEMORY      | NL |   |  | MN |    |   |  | L  |    |   |

REFER TO SYSTEM PERMIT #1-0060 FOR PROGRAM TIMINGS AND WEEKLY PROGRAM CHART

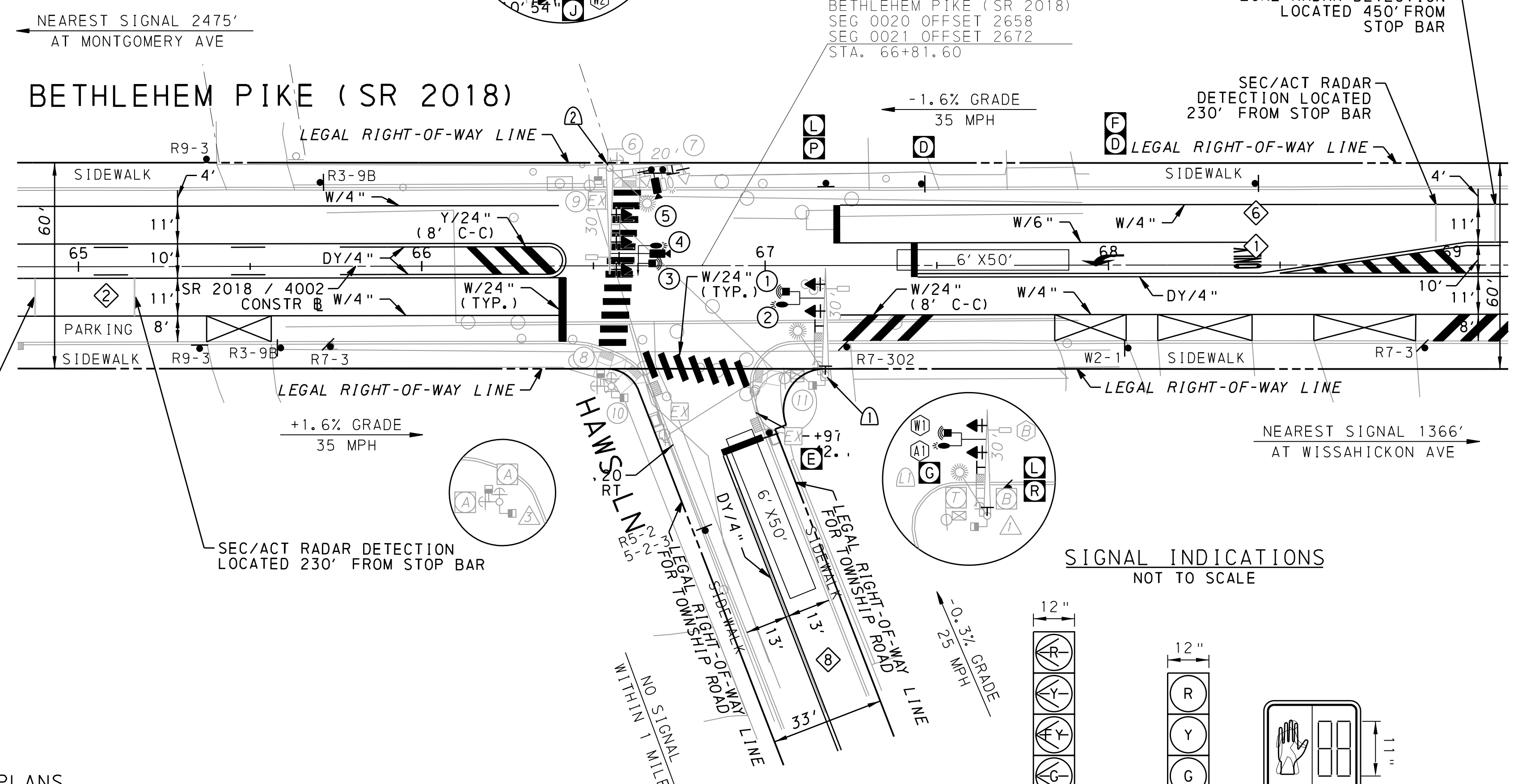
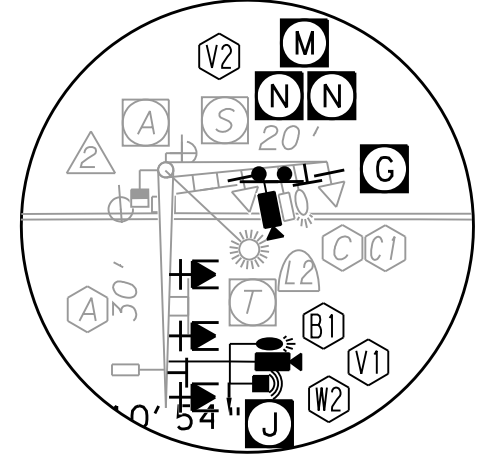
OPERATION NOTES  
 Ⓞ G IF FOLLOWED BY 2+6

- \*UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE HAND SYMBOL AT ALL TIMES
- CONTROLLER TO DWELL IN PHASE 2+6 UNTIL ACTUATED BY SIDE STREET PHASE
- PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL

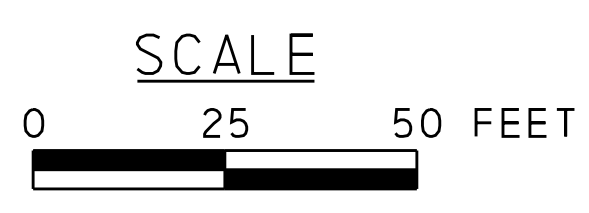
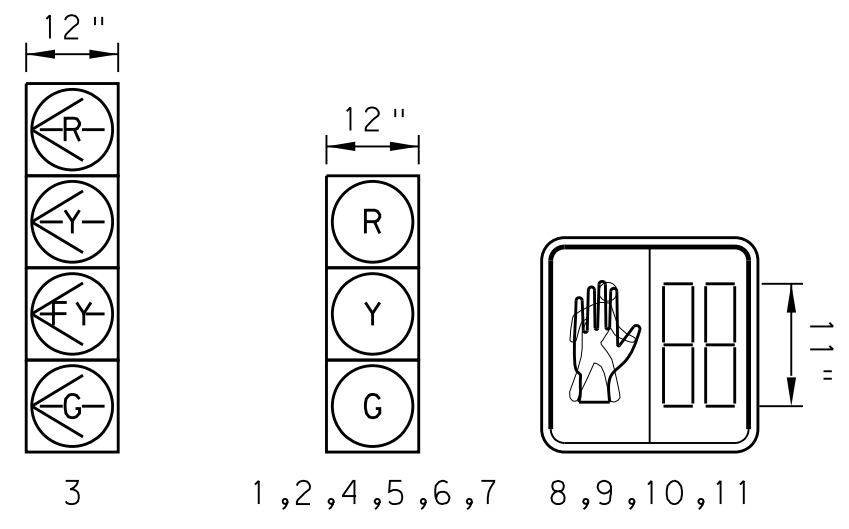
| SIGN TABULATION |               |         |  |  |
|-----------------|---------------|---------|--|--|
| PLAN SYMBOL     | SERIES NUMBER | SIZE    | DESCRIPTION  |  |
| (A)             | R10-3E(L)     | 9"x15"  | EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER (LEFT)  |  |
| (B)             | R10-3E(R)     | 9"x15"  | EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER (RIGHT) |  |
| (D)             | R3-7L         | 36"x36" | LEFT LANE MUST TURN LEFT   |  |
| (E)             | R10-6AL       | 24"x30" | STOP HERE ON RED (LEFT)  |  |
| (F)             | R10-7         | 24"x30" | DO NOT BLOCK DRIVEWAY  |  |
| (G)             | R10-11        | 30"x36" | NO TURN ON RED   |  |
| (J)             | R10-12A       | 30"x36" | LEFT TURN YIELD ON FLASHING YELLOW ARROW                             |  |
| (L)             | R9-3          | 18"x18" | NO PEDESTRIAN CROSSING   |  |
| (M)             | W1-7          | 48"x24" | LARGE DOUBLE ARROW   |  |
| (N)             | OM1-3         | 18"x18" | OBJECT MARKER  |  |
| (P)             | R9-3BPL       | 18"x12" | USE CROSSWALK LEFT   |  |
| (R)             | R9-3BPR       | 18"x12" | USE CROSSWALK RIGHT  |  |
| (S)             | D3-4          | 96"x16" | Bethlehem Pk   |  |
| (T)             | D3-4          | 60"x16" | Haws Ln  |  |

\*\* RADAR DILEMMA DETECTOR NOTES (ESTIMATED TIME OF ARRIVAL METHOD)

DENSITY:  
 RANGE OF DETECTION: STOP BAR TO 100 FEET  
 SPEED BOUNDARY: 5 MPH TO 30 MPH  
 DILEMMA ZONE:  
 ESTIMATE TIME OF ARRIVAL: MIN 2.5 SEC - MAX 5.5 SEC  
 RANGE OF DETECTION: STOP BAR TO 450 FEET  
 SPEED BOUNDARY: 27 MPH TO 100 MPH



SIGNAL INDICATIONS  
 NOT TO SCALE



PREPARED BY:  
 HNTB CORPORATION  
 1650 ARCH ST, SUITE 1700  
 PHILADELPHIA, PA 19103

DRAFT

### TRAFFIC SIGNAL CONSTRUCTION PLAN

### LEGEND - CONSTRUCTION PLANS

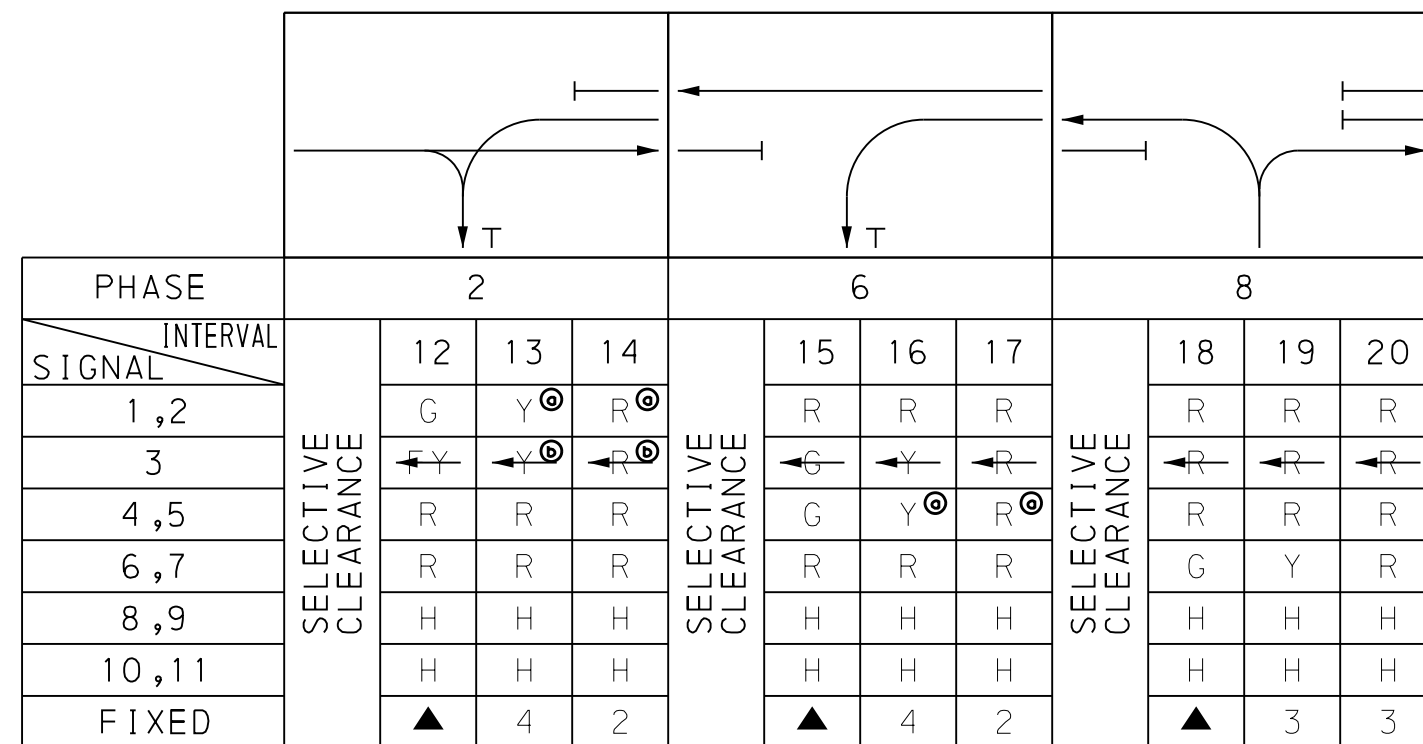
|  |                                    |  |  |
|--|------------------------------------|--|--|
|  | EX. MAST ARM/ID/LENGTH             |  | EX. JUNCTION BOX/ID                      |
|  | PR. MAST ARM/ID/LENGTH             |  | PR. JUNCTION BOX/ID                      |
|  | EX. PEDESTAL POLE/STUB POLE/ID     |  | CONDUIT/SIZE                             |
|  | PR. PEDESTAL POLE/STUB POLE/ID     |  | DETECTION ZONE/ID/SIZE                   |
|  | VEH. SIGNAL HEAD/ID                |  | STANDARD VIDEO DETECTOR/ID               |
|  | PED. SIGNAL HEAD/ID                |  | ADVANCE DILEMMA DETECTOR/ID              |
|  | PED. PUSH BUTTON/ID                |  | EMERGENCY PRE-EMPTION DETECTOR/ID        |
|  | POST-MOUNT/STRUCTURE-MOUNT SIGN/ID |  | EMERGENCY PRE-EMPTION FLASHING BEACON/ID |
|  | JUNCTION BOX/ID                    |  | MILLED CENTERLINE RUMBLE STRIPS          |
|  | LUMINAIRE/ID                       |  | SOLID WHITE LINE/WIDTH                   |
|  | CONTROLLER CABINET/MAINTENANCE PAD |  | SOLID YELLOW LINE/WIDTH                  |
|  | PHASE NUMBER                       |  | SOLID DOUBLE YELLOW LINE/WIDTH           |
|  | ADA RAMP                           |  | AUXILIARY WHITE LINE/WIDTH               |
|  |                                    |  | BROKEN WHITE LINE/WIDTH                  |
|  |                                    |  | BROKEN YELLOW LINE/WIDTH                 |
|  |                                    |  | CONDUIT/SIZE                             |
|  |                                    |  | DEW/4" DOTTED EXTENSION WHITE LINE/WIDTH |

### CONSTRUCTION NOTES:

- REALIGN EXISTING 3-SECTION VEHICULAR SIGNALS 1 & 2 AND INSTALL RETROREFLECTIVE BACKPLATES. INSTALL DILEMMA ZONE RADAR DETECTION SYSTEM. RESET EMERGENCY PREEMPTION EQUIPMENT. REPLACE SIGN G. INSTALL SIGN L. UPDATE CONTROLLER EQUIPMENT TO PROVIDE FLASHING YELLOW ARROW OPERATION AND ADJUST SIGNAL TIMINGS.
  - REMOVE EXISTING 5-SECTION SIGNAL HEAD AND 3-SECTION SIGNAL HEAD. INSTALL NEW 4-SECTION VEHICULAR SIGNAL 3. INSTALL NEW 3-SECTION VEHICULAR SIGNALS 4 & 5. INSTALL RETROREFLECTIVE BACKPLATES ON SIGNAL HEADS 6 & 7. INSTALL VIDEO DETECTORS. INSTALL DILEMMA ZONE RADAR DETECTION SYSTEM. RESET EMERGENCY PREEMPTION EQUIPMENT. INSTALL SIGNS J & G, AND RESET SIGN T.
- RETURN ANY REMOVED SIGNAL EQUIPMENT TO SPRINGFIELD TOWNSHIP. CONTACT SPRINGFIELD TOWNSHIP DEPARTMENT OF PUBLIC WORKS TO ARRANGE DELIVERY.
- EXISTING CONDUIT AND JUNCTION BOX LOCATIONS SHOWN ON PLANS ARE APPROXIMATE. VERIFY EXISTING CONDUIT LOCATIONS AND WIRING ROUTING IN THE FIELD PRIOR TO CONSTRUCTION.

1/2/21/2022 FILENAME: T182909-s-tr-sig02a.dgn

**EMERGENCY PRE-EMPTION PHASING**  
MOVEMENT, PHASING, AND SEQUENCE CHART



▲ FOR DURATION OF PRE-EMPTION  
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LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.

**FLAT SHEET ALUMINUM SIGN TABULATION**

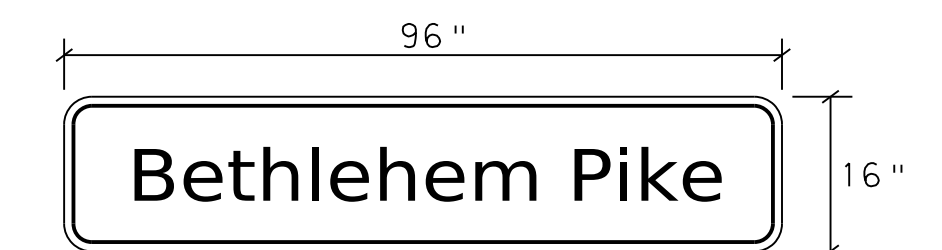
| PLAN SYMBOL | SERIES NUMBER | SIZE (IN) | AREA EACH (SF) | DESCRIPTION                              | QUANTITY (FOR INFO. ONLY)  |                            |   | ITEM NUMBER |      |      |
|-------------|---------------|-----------|----------------|--|----------------------------|----------------------------|---|-------------|------|------|
|             |               |           |                |  | POST MOUNTED SIGNS, TYPE B | POST MOUNTED SIGNS, TYPE F | STRUCTURE MOUNTED FLAT SHEET ALUMINUM SIGNS | 0931        | 0935 | 0936 |
|             |               |           |                |  |                            |                            |   | EACH        | EACH | SF   |
| D           | R3-7L         | 36"x36"   | 9.0            | LEFT LANE MUST TURN LEFT                 | 2                          |                            |   | ▲           |      |      |
| E           | R10-6AL       | 24"x30"   | 5.0            | STOP HERE ON RED (LEFT)                  | 1                          |                            |   | ▲           |      |      |
| F           | R10-7         | 24"x30"   | 5.0            | DO NOT BLOCK DRIVEWAY                    |                            | 1                          |   |             | ▲    |      |
| G           | R10-11        | 30"x36"   | 7.5            | NO TURN ON RED ●                         |                            |                            | 2   |             |      | 15.0 |
| J           | R10-12A       | 30"x36"   | 7.5            | LEFT TURN YIELD ON FLASHING YELLOW ARROW |                            |                            | 1   |             |      | 7.5  |
| L           | R9-3          | 18"x18"   | 2.25           | NO PEDESTRIAN CROSSING                   | 1                          | 1                          |   | ▲           | 2.3  |      |
| M           | W1-7          | 48"x24"   | 8.0            | LARGE DOUBLE ARROW                       | 1                          |                            |   | ▲           |      |      |
| N           | OM4-3         | 18"x18"   | 2.25           | OBJECT MARKER                            |                            | 2                          |   |             | ▲    |      |
| P           | R9-3BPL       | 18"x12"   | 1.5            | USE CROSSWALK LEFT                       |                            | 1                          |   |             | ▲    |      |
| R           | R9-3BPR       | 18"x12"   | 1.5            | USE CROSSWALK RIGHT                      |                            | 1                          |   |             | 1.5  |      |
| TOTALS:     |               |           |                |  |                            |                            |   |             | 3.8  | 22.5 |

▲ SIGN IS PAID FOR AS PART OF THE SIGNING AND PAVEMENT MARKING PLAN. INCLUSION IN THIS TABULATION BLOCK IS FOR INFORMATION PURPOSES ONLY. REFER TO SIGNING AND PAVEMENT MARKING PLAN FOR ADDITIONAL INFORMATION.

**MISCELLANEOUS ITEMS**

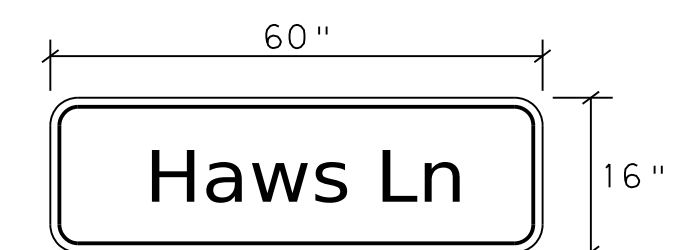
| ITEM NUM. | QUAN. | UNIT | DESCRIPTION   | LOCATION |
|-----------|-------|------|---|----------|
| 4952 3002 | 1     | EACH | CONTROLLER MODIFICATION, FLASHING YELLOW ARROW      | C.C.     |
| 0954 0202 | 180   | LF   | SIGNAL CABLE, 12 AWG, 5 CONDUCTOR                   | C.C.     |
| 0954 0203 | 190   | LF   | SIGNAL CABLE, 12 AWG, 7 CONDUCTOR                   | C.C.     |
| 0955 3208 | 2     | EACH | VEHICULAR SIGNAL HEADS, THREE 12" SECTIONS          | ④ ⑤      |
| 0955 3209 | 1     | EACH | VEHICULAR SIGNAL HEADS, FOUR 12" SECTIONS           | ③        |
| 0955 5000 | 4     | EACH | BACKPLATE RETROFIT                                  | ① ② ⑥ ⑦  |
| 0956 0700 | 2     | EACH | VIDEO DETECTOR                                      | ⑩ ⑪      |
| 9000 0006 | 1     | EACH | DILEMMA ZONE RADAR DETECTION SYSTEM, TWO APPROACHES | ⑩ ⑪      |
| 9000 0007 | 2     | EACH | RESET OPTICAL PREEMPTION SYSTEM AND BEACON ASSEMBLY | ⑩ ⑪      |
| 9000 0008 | 2     | EACH | RESET VEHICULAR SIGNAL HEAD                         | ① ②      |

| DISTRICT             | COUNTY     | ROUTE | SECTION | SHEET   |    |
|----------------------|------------|-------|---------|---------|----|
| 6-0                  | MONTGOMERY | 2018  | SIP     | 5 OF 17 |    |
| SPRINGFIELD TOWNSHIP |            |       |         |         |    |
| REVISION NUMBER      | REVISIONS  |       |         | DATE    | BY |
|                      |            |       |         |         |    |



SIGN 'S' DETAIL  
NOT TO SCALE

CLEARVIEW 1-W  
8" UC/6" LC



SIGN 'T' DETAIL  
NOT TO SCALE

CLEARVIEW 2-W  
8" UC/6" LC

**TRAFFIC SIGNAL CONSTRUCTION PLAN**

|   |   |
|---|---|
| PREPARED BY:<br>HNTB CORPORATION<br>1650 ARCH STREET<br>SUITE 1700<br>PHILADELPHIA,<br>PA 19103 | COUNTY: <u>MONTGOMERY</u>                                     |
|   | MUNICIPALITY: <u>SPRINGFIELD TOWNSHIP</u>                     |
|   | INTERSECTION: <u>BETHLEHEM PIKE (SR 2018) &amp; HAWS LANE</u> |
|   | APPROVED BY: _____  |
| PROFESSIONAL ENGINEER   | MUNICIPAL OFFICIAL _____ DATE _____                           |
| DATE _____  | RECOMMENDED: _____  |
|   | DISTRICT TRAFFIC ENGINEER _____ DATE _____                    |
|   | SCALE: _____  |

| SPRINGFIELD TOWNSHIP |           |      |    |
|----------------------|-----------|------|----|
| REVISION NUMBER      | REVISIONS | DATE | BY |
|                      |           |      |    |

### GENERAL NOTES

DO NOT MODIFY INSTALLATION WITHOUT PRIOR WRITTEN APPROVAL BY THE DEPARTMENT.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ARE PART OF THE PERMIT. INSTALL AND MAINTAIN IN ACCORDANCE WITH PUBLICATION 212 AND PUBLICATION 236.

INSTALL POST MOUNTED SIGNALS WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF THE CURB OR EDGE OF THE SHOULDER. PROVIDE A MINIMUM HORIZONTAL CLEARANCE OF 2 FEET FOR ALL SUPPORT POLES FOR OVERHEAD SIGNALS.

ERECT THE BOTTOM OF SIGNAL HEADS AND SIGNS OVER THE ROADWAY NOT LESS THAN 16 FEET NOR MORE THAN 19 FEET ABOVE THE ROADWAY. ERECT THE BOTTOM OF POST MOUNTED SIGNAL HEADS NOT LESS THAN 8 FEET NOR MORE THAN 15 FEET ABOVE THE SIDEWALK OR PAVEMENT GRADE.

MAINTAIN A MINIMUM HORIZONTAL DISTANCE OF 8 FEET BETWEEN SIGNAL HEADS, MEASURED AT RIGHT ANGLES TO THE APPROACH.

DETERMINE THE EXACT LOCATION OF DETECTORS WITH A PENNDOT REPRESENTATIVE PRIOR TO INSTALLATION.

THE CONTRACTOR IS TO COMPLETE THE NECESSARY APPLICATION(S) IN ORDER TO OBTAIN ELECTRICAL SERVICE FROM THE LOCAL POWER COMPANY.

CONSULT WITH LOCAL OFFICIALS AND UTILITIES TO RESOLVE CONFLICTS PRIOR TO CONSTRUCTION.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE CONTRACTOR COMPLIES WITH THE PROVISIONS OF ACT 50, AS AMENDED, UNDERGROUND UTILITY PROTECTION ACT, DATED APRIL 28, 2018. PRIOR TO CONSTRUCTION, CONSULT WITH UTILITY COMPANIES TO RESOLVE ANY CONFLICTS.

UNDERGROUND UTILITY INFORMATION HAS BEEN PROVIDED BY THE RESPECTIVE USERS IN RESPONSE TO THE PA ONE CALL SYSTEM. REFERENCE SERIAL NUMBER: 20220462162


ISSUED ON: 02/15/2022

HNTB CORPORATION HAS NOT MADE AN INDEPENDENT DETERMINATION WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION AND SPECIFICALLY DISCLAIMS ANY WARRANTY OR REPRESENTATION AS TO THE ACCURACY OF SUCH INFORMATION. ALL LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

### CALL BEFORE YOU DIG !

PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE.

BEFORE YOU DIG, CALL THE PA ONE CALL SYSTEM TELEPHONE NUMBER.



1-800-242-1776

PERMIT NO: 64-1484 FILE: 1484 SYSTEM PERMIT # 1-0060

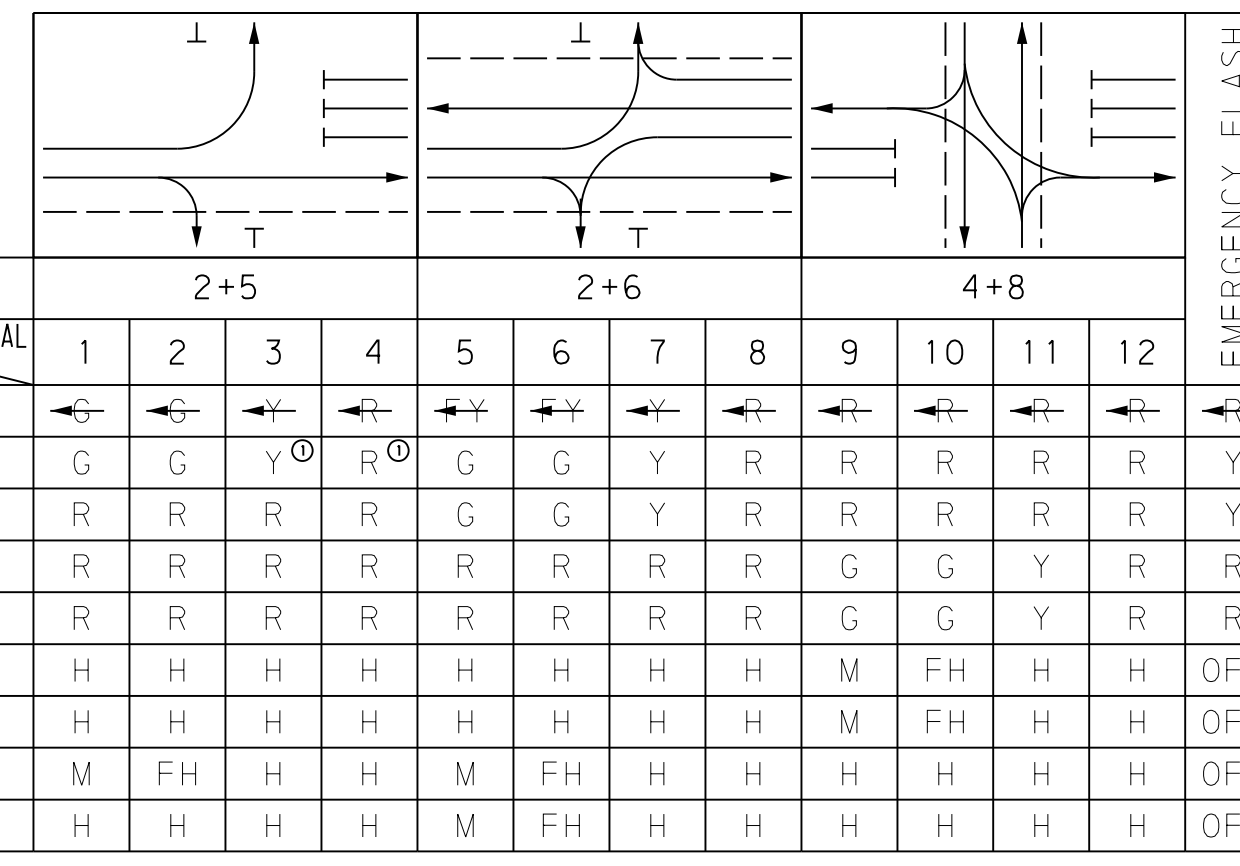
COUNTY: MONTGOMERY  
MUNICIPALITY: SPRINGFIELD TOWNSHIP

INTERSECTION: BETHLEHEM PIKE (SR 2018) & EAST/WEST WISSAHICKON AVENUE

REVIEWED: \_\_\_\_\_  
MUNICIPAL OFFICIAL \_\_\_\_\_ DATE \_\_\_\_\_

RECOMMENDED: \_\_\_\_\_  
ADE - TRANSPORTATION OPERATIONS \_\_\_\_\_ DATE \_\_\_\_\_

### MOVEMENT, PHASING, AND SEQUENCE CHART



|             |    |   |   |    |    |   |    |    |   |
|-------------|----|---|---|----|----|---|----|----|---|
| FIXED       |    | 4 | 2 |    | 4  | 2 |    | 3  | 4 |
| MINIMUM     | 3  |   |   | 15 |    |   | 5  |    |   |
| SEC/ACT     | -  |   |   | 2  |    |   | -  |    |   |
| MAX INITIAL | -  |   |   | 24 |    |   | -  |    |   |
| PASSAGE     | 3  |   |   | ** |    |   | 3  |    |   |
| MAX 1       | 7  |   |   | 50 |    |   | 30 |    |   |
| PEDESTRIAN* | ②  |   |   | 7  | 13 |   | 7  | 15 |   |
| MEMORY      | NL |   |   | MN |    |   | L  |    |   |

REFER TO SYSTEM PERMIT #1-0060 FOR PROGRAM TIMINGS AND WEEKLY PROGRAM CHART

**OPERATION NOTES**

① G IF FOLLOWED BY 2+6

② TIMING WILL BE AS SHOWN IN PHASE 2+6, IT MAY TIME OUT IN THIS PHASE OR BE COMPLETED IN PHASE 2+6

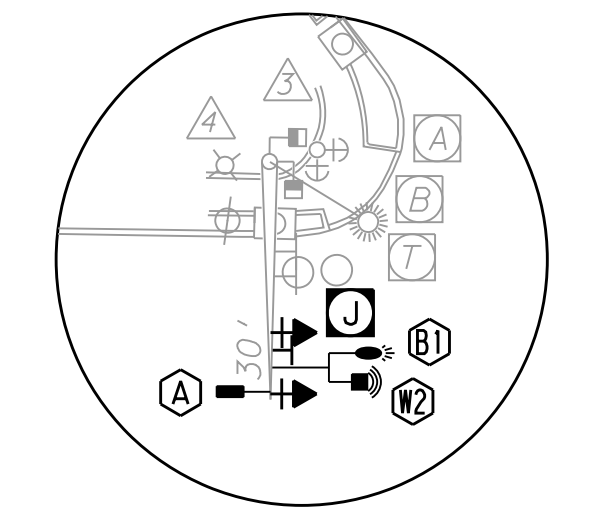
\*UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE HAND SYMBOL AT ALL TIMES

•CONTROLLER TO DWELL IN PHASE 2+6 UNTIL ACTUATED BY SIDE STREET PHASE

•PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL

**VIDEO DETECTION ZONE NOTES**

DETECTION ZONE 3 TO HAVE 5 SECOND DELAY FOR PHASE 5



**CONSTRUCTION NOTES:**

① INSTALL RETROREFLECTIVE BACKPLATES TO SIGNALS 8,9 & 10. INSTALL VIDEO DETECTORS. REPLACE SIGN J. UPDATE CONTROLLER EQUIPMENT TO PROVIDE FLASHING YELLOW ARROW OPERATION AND ADJUST SIGNAL TIMINGS.

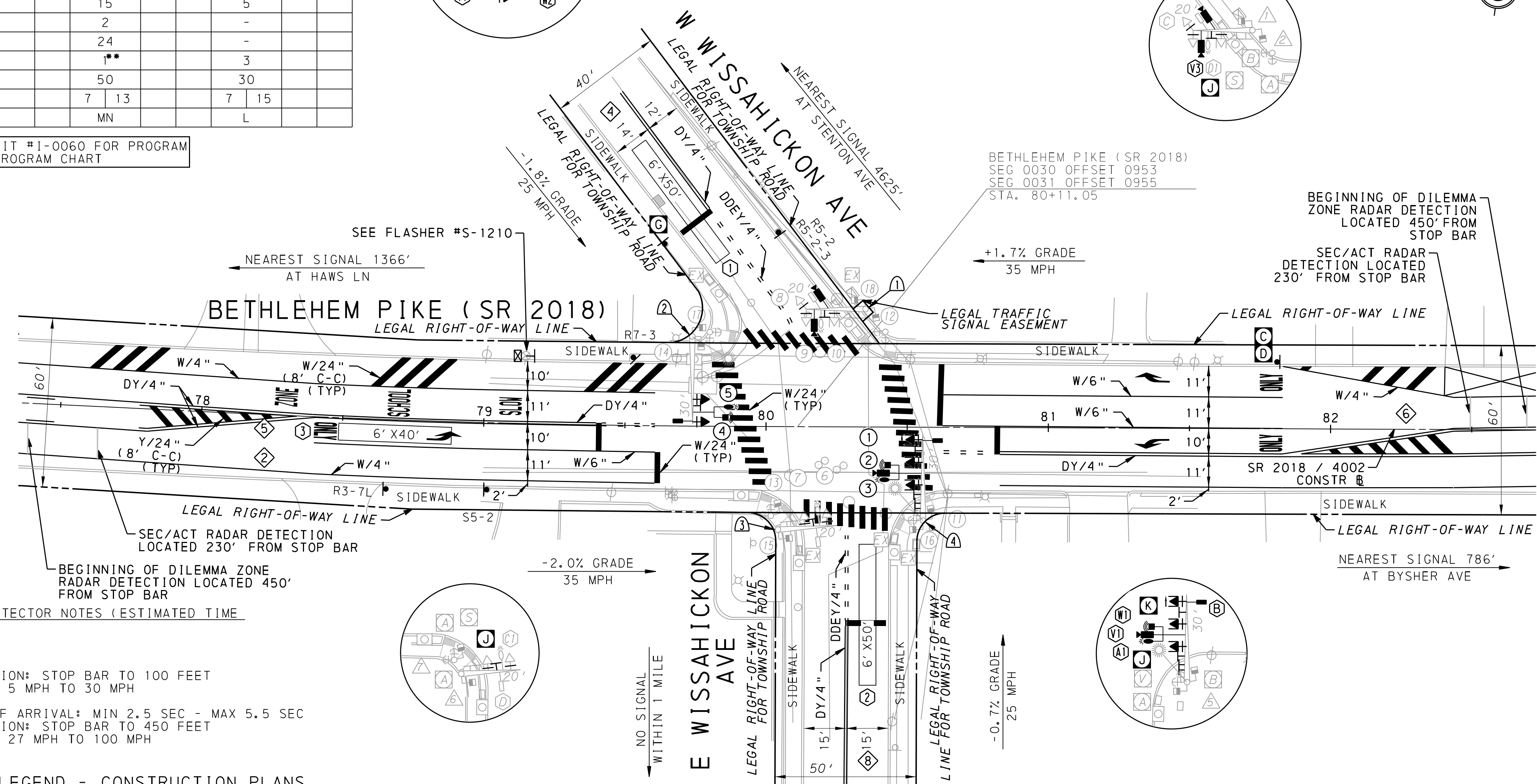
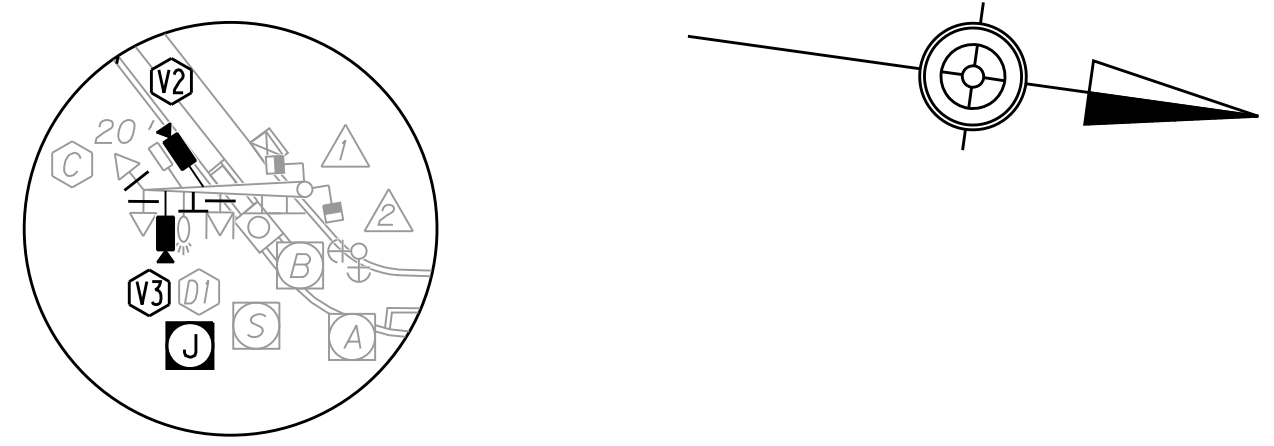
② REALIGN EXISTING 3-SECTION VEHICULAR SIGNALS 4 & 5 AND INSTALL RETROREFLECTIVE BACKPLATES. INSTALL DILEMMA ZONE RADAR DETECTION SYSTEM. RESET EMERGENCY PREEMPTION EQUIPMENT. REPLACE SIGN J.

③ INSTALL RETROREFLECTIVE BACKPLATES TO SIGNALS 6 & 7. REPLACE SIGN J.

④ REMOVE EXISTING 5-SECTION SIGNAL HEAD AND 3-SECTION SIGNAL HEAD. INSTALL NEW 4-SECTION VEHICULAR SIGNAL 1. INSTALL NEW 3-SECTION VEHICULAR SIGNALS 2 & 3. INSTALL VIDEO DETECTORS. INSTALL DILEMMA ZONE RADAR DETECTION SYSTEM. RESET EMERGENCY PREEMPTION EQUIPMENT. INSTALL SIGN K. REPLACE SIGN J. RESET SIGN V.

RETURN ANY REMOVED SIGNAL EQUIPMENT TO SPRINGFIELD TOWNSHIP. CONTACT SPRINGFIELD TOWNSHIP DEPARTMENT OF PUBLIC WORKS TO ARRANGE DELIVERY.

EXISTING CONDUIT AND JUNCTION BOX LOCATIONS SHOWN ON PLANS ARE APPROXIMATE. VERIFY EXISTING CONDUIT LOCATIONS AND WIRING ROUTING IN THE FIELD PRIOR TO CONSTRUCTION.



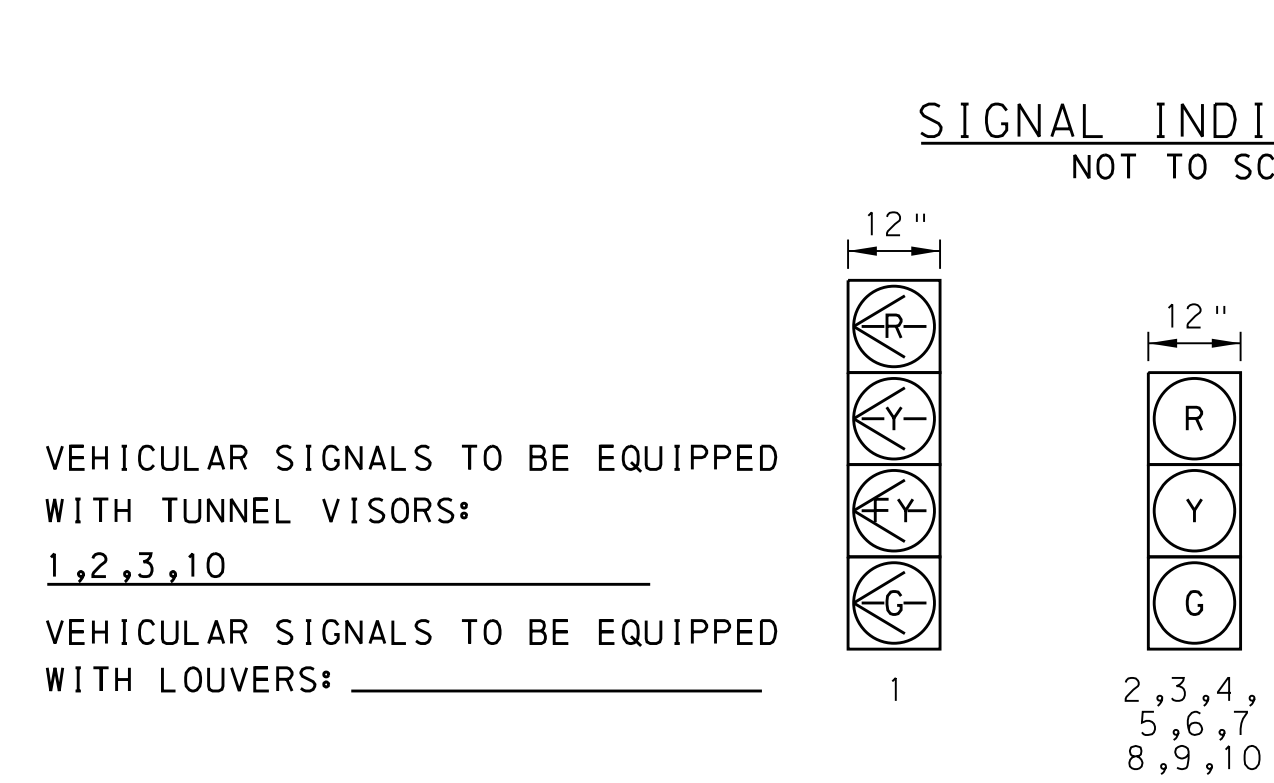
\*\* RADAR DILEMMA DETECTOR NOTES (ESTIMATED TIME OF ARRIVAL METHOD)

DENSITY:  
RANGE OF DETECTION: STOP BAR TO 100 FEET  
SPEED BOUNDARY: 5 MPH TO 30 MPH

DILEMMA ZONE:  
ESTIMATE TIME OF ARRIVAL: MIN 2.5 SEC - MAX 5.5 SEC  
RANGE OF DETECTION: STOP BAR TO 450 FEET  
SPEED BOUNDARY: 27 MPH TO 100 MPH

#### LEGEND - CONSTRUCTION PLANS

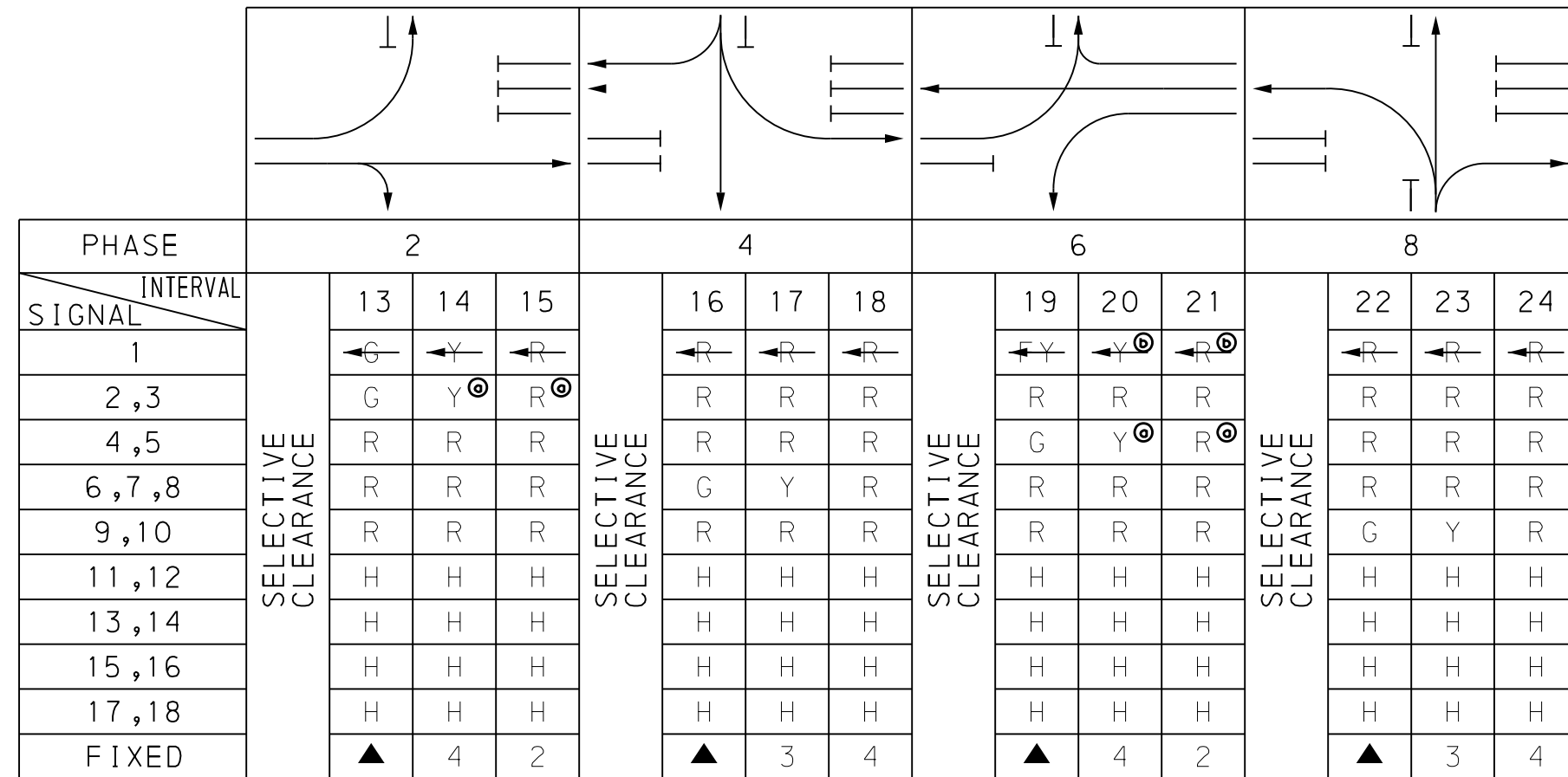
|  |                                    |  |  |
|--|------------------------------------|--|--|
|  | EX. MAST ARM/ID/LENGTH             |  | EX. JUNCTION BOX/ID                      |
|  | PR. MAST ARM/ID/LENGTH             |  | PR. JUNCTION BOX/ID                      |
|  | EX. PEDESTAL POLE/STUB POLE/ID     |  | DETECTION ZONE/ID/SIZE                   |
|  | PR. PEDESTAL POLE/STUB POLE/ID     |  | STANDARD VIDEO DETECTOR/ID               |
|  | VEH. SIGNAL HEAD/ID                |  | ADVANCE DILEMMA DETECTOR/ID              |
|  | PED. SIGNAL HEAD/ID                |  | EMERGENCY PRE-EMPTION DETECTOR/ID        |
|  | PED. PUSH BUTTON/ID                |  | EMERGENCY PRE-EMPTION FLASHING BEACON/ID |
|  | POST-MOUNT/STRUCTURE-MOUNT SIGN/ID |  | MILLED CENTERLINE RUMBLE STRIPS          |
|  | JUNCTION BOX/ID                    |  | SOLID WHITE LINE/WIDTH                   |
|  | LUMINAIRE/ID                       |  | SOLID YELLOW LINE/WIDTH                  |
|  | CONTROLLER CABINET/MAINTENANCE PAD |  | SOLID DOUBLE YELLOW LINE/WIDTH           |
|  | PHASE NUMBER                       |  | AUXILIARY WHITE LINE/WIDTH               |
|  | ADA RAMP                           |  | BROKEN WHITE LINE/WIDTH                  |
|  |                                    |  | BROKEN YELLOW LINE/WIDTH                 |
|  |                                    |  | CONDUIT/SIZE                             |
|  |                                    |  | DOTTED EXTENSION WHITE LINE/WIDTH        |



PREPARED BY:  
HNTB CORPORATION  
1650 ARCH ST, SUITE 1700  
PHILADELPHIA, PA 19103

# DRAFT

**EMERGENCY PRE-EMPTION PHASING  
MOVEMENT, PHASING, AND SEQUENCE CHART**



▲ FOR DURATION OF PRE-EMPTION  
NOTE: IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

**EMERGENCY PRE-EMPTION  
OPERATION NOTES**

- ⊙ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION
- ⊙ SIGNAL TO INDICATE ←FY WHEN RETURNING TO NORMAL OPERATION

**EMERGENCY PRE-EMPTION NOTES:**

CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND AND SOUTHBOUND APPROACHES OF BETHLEHEM PIKE (SR 2018) AND THE EASTBOUND AND WESTBOUND APPROACHES OF WISSAHICKON AVE WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTION PHASE SHALL FOLLOW. ONLY THOSE PHASES NOT POSING A YELLOW TRAP CONDITION MAY REMAIN GREEN (2+5) WHEN GOVERNED BY APPROACHING EMERGENCY VEHICLE. ANY FLASHING YELLOW ARROW INDICATORS FOR THE PRE-EMPTED PHASE SHALL REMAIN FLASHING YELLOW ARROW DURING THE ENTRY ROUTINE FOLLOWED BY GREEN ARROW FOR THE DURATION OF THE SIGNAL PRE-EMPTION. ANY FLASHING YELLOW ARROW INDICATIONS FOR THE PHASE OPPOSITE THE PRE-EMPTED PHASE SHALL REMAIN FLASHING YELLOW ARROW DURING THE ENTRY ROUTINE AND FOR THE DURATION OF SIGNAL PRE-EMPTION.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICAL SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL FOR THE PRE-EMPTION GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.

IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PED "WALK" (MAN) INTERVAL SHALL TERMINATE IMMEDIATELY AND THE PED "CLEAR" (FLASHING HAND AND COUNTDOWN TIMER) INTERVAL SHALL TIME OUT, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PRE-EMPTION.

IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.

IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.

UPON COMPLETION OF PRE-EMPTION PHASE 2, 4, 6 OR 8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 5 SHALL FOLLOW.

IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.

**FLAT SHEET ALUMINUM SIGN TABULATION**

| PLAN SYMBOL | SERIES NUMBER | SIZE (IN) | AREA EACH (SF) | DESCRIPTION                              | QUANTITY (FOR INFO. ONLY)  |                            |   | ITEM NUMBER |           |           |
|-------------|---------------|-----------|----------------|--|----------------------------|----------------------------|---|-------------|-----------|-----------|
|             |               |           |                |  | POST MOUNTED SIGNS, TYPE B | POST MOUNTED SIGNS, TYPE F | STRUCTURE MOUNTED FLAT SHEET ALUMINUM SIGNS | 0931 0001   | 0935 0001 | 0936 0200 |
| ⊙           | R3-7L         | 36"x36"   | 9.0            | LEFT LANE MUST TURN LEFT                 | 2                          |                            |   | ▲           |           |           |
| ⊙           | R3-7R         | 36"x36"   | 9.0            | RIGHT LANE MUST TURN RIGHT               |                            | 1                          |   |             | ▲         |           |
| ⊙           | R10-11        | 24"x30"   | 5.0            | NO TURN ON RED ●                         | 1                          |                            |   | ▲           |           |           |
| ⊙           | R10-11        | 30"x36"   | 7.5            | NO TURN ON RED ●                         |                            |                            | 4   |             |           | 30        |
| ⊙           | R10-12A       | 30"x36"   | 7.5            | LEFT TURN YIELD ON FLASHING YELLOW ARROW |                            |                            | 1   |             |           | 7.5       |
| TOTALS:     |               |           |                |  |                            |                            |   |             |           | 37.5      |

▲ SIGN IS PAID FOR AS PART OF THE SIGNING AND PAVEMENT MARKING PLAN. INCLUSION IN THIS TABULATION BLOCK IS FOR INFORMATION PURPOSES ONLY. REFER TO SIGNING AND PAVEMENT MARKING PLAN FOR ADDITIONAL INFORMATION.

|                      |            |       |         |         |    |
|----------------------|------------|-------|---------|---------|----|
| DISTRICT             | COUNTY     | ROUTE | SECTION | SHEET   |    |
| 6-0                  | MONTGOMERY | 2018  | SIP     | 7 OF 17 |    |
| SPRINGFIELD TOWNSHIP |            |       |         |         |    |
| REVISION NUMBER      | REVISIONS  |       |         | DATE    | BY |
|                      |            |       |         |         |    |



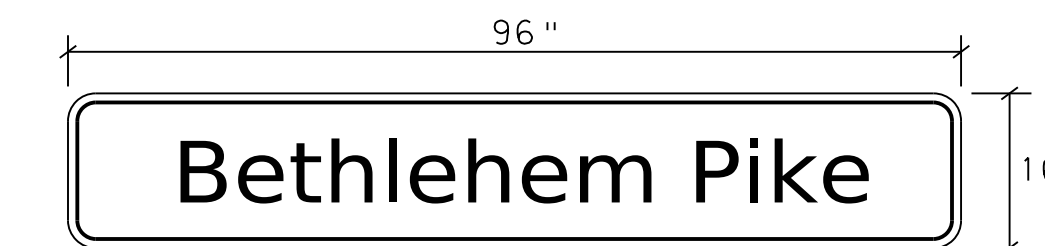
SIGN 'T' DETAIL  
NOT TO SCALE

CLEARVIEW 2-W  
8" UC/6" LC



SIGN 'V' DETAIL  
NOT TO SCALE

CLEARVIEW 2-W  
8" UC/6" LC



SIGN 'S' DETAIL  
NOT TO SCALE

CLEARVIEW 1-W  
8" UC/6" LC

**MISCELLANEOUS ITEMS**

| ITEM NUM. | QUAN. | UNIT | DESCRIPTION   | LOCATION         |
|-----------|-------|------|---|------------------|
| 4952 3002 | 1     | EACH | CONTROLLER MODIFICATION, FLASHING YELLOW ARROW      | C. C.            |
| 0954 0202 | 170   | LF   | SIGNAL CABLE, 12 AWG, 5 CONDUCTOR                   | C. C.            |
| 0954 0203 | 180   | LF   | SIGNAL CABLE, 12 AWG, 7 CONDUCTOR                   | C. C.            |
| 0955 3208 | 2     | EACH | VEHICULAR SIGNAL HEADS, THREE 12" SECTIONS          | ② ③              |
| 0955 3209 | 1     | EACH | VEHICULAR SIGNAL HEADS, FOUR 12" SECTIONS           | ①                |
| 0955 5000 | 7     | EACH | BACKPLATE RETROFIT                                  | ④ ⑤ ⑥ ⑦<br>⑧ ⑨ ⑩ |
| 0956 0700 | 3     | EACH | VIDEO DETECTOR                                      | ⑪ ⑫ ⑬            |
| 9000 0006 | 1     | EACH | DILEMMA ZONE RADAR DETECTION SYSTEM, TWO APPROACHES | ⑭ ⑮              |
| 9000 0007 | 2     | EACH | RESET OPTICAL PREEMPTION SYSTEM AND BEACON ASSEMBLY | ⑯ ⑰              |
| 9000 0008 | 2     | EACH | RESET VEHICULAR SIGNAL HEAD                         | ④ ⑤              |

**TRAFFIC SIGNAL  
CONSTRUCTION PLAN**

|   |  |
|---|--|
| PREPARED BY:<br>HNTB CORPORATION<br>1650 ARCH STREET<br>SUITE 1700<br>PHILADELPHIA,<br>PA 19103 | COUNTY: <u>MONTGOMERY</u>  |
|   | MUNICIPALITY: <u>SPRINGFIELD TOWNSHIP</u>  |
|   | INTERSECTION: <u>BETHLEHEM PIKE (SR 2018) &amp; EAST/WEST WISSAHICKON AVENUE</u> |
| APPROVED BY:  |  |
| MUNICIPAL OFFICIAL  | DATE   |
| RECOMMENDED:  |  |
| DISTRICT TRAFFIC ENGINEER   | DATE   |
| DATE  | SCALE:   |

MOVEMENT, PHASING, AND SEQUENCE CHART

| PHASE | 2+5 |    |   |   | 2+6 |    |   |   | 1+6 |    |    |    | 4  |    |    |    | 8  |    |    |    | EMERGENCY FLASH |    |
|-------|-----|----|---|---|-----|----|---|---|-----|----|----|----|----|----|----|----|----|----|----|----|-----------------|----|
|       | 1   | 2  | 3 | 4 | 5   | 6  | 7 | 8 | 9   | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |                 | 21 |
| 1     | G   | G  | Y | R | G   | G  | Y | R | R   | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R               | R  |
| 2,3   | G   | G  | Y | R | G   | G  | Y | R | R   | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R               | R  |
| 4     | R   | R  | R | R | G   | G  | Y | R | R   | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R               | R  |
| 5,6   | R   | R  | R | R | G   | G  | Y | R | R   | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R               | R  |
| 7,8,9 | R   | R  | R | R | R   | R  | R | R | R   | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R               | R  |
| 10,11 | R   | R  | R | R | R   | R  | R | R | R   | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R               | R  |
| 12,13 | M   | FH | H | H | M   | FH | H | H | H   | H  | H  | H  | H  | H  | H  | H  | H  | H  | H  | H  | H               | H  |
| 14,15 | H   | H  | H | H | M   | FH | H | H | M   | FH | H  | H  | H  | H  | H  | H  | H  | H  | H  | H  | H               | H  |
| 16,17 | H   | H  | H | H | H   | H  | H | H | H   | H  | H  | H  | M  | M  | FH | H  | H  | H  | H  | H  | H               | H  |
| 18,19 | H   | H  | H | H | H   | H  | H | H | H   | H  | H  | H  | H  | H  | H  | H  | M  | M  | FH | H  | H               | H  |

| FIXED       | 3  | 4 | 3  | 15 | 4 | 3 | 3  | 4 | 3 | 5  | 3 | 4 | 5  | 3 | 4 |
|-------------|----|---|----|----|---|---|----|---|---|----|---|---|----|---|---|
| MINIMUM     | 3  | 4 | 3  | 15 | 4 | 3 | 3  | 4 | 3 | 5  | 3 | 4 | 5  | 3 | 4 |
| SEC/ACT     | -  | - | -  | 3  | - | - | -  | - | - | -  | - | - | -  | - | - |
| MAX INITIAL | -  | - | -  | 24 | - | - | -  | - | - | -  | - | - | -  | - | - |
| PASSAGE     | 3  | 4 | 3  | ** | 3 | 4 | 3  | 4 | 3 | 3  | 4 | 3 | 3  | 4 | 3 |
| MAX 1       | 7  | 7 | 7  | 28 | 7 | 7 | 20 | 7 | 7 | 20 | 7 | 7 | 20 | 7 | 7 |
| PEDESTRIAN* | 6  | 7 | 11 | 5  | 3 | 4 | 14 | 3 | 4 | 14 | 3 | 4 | 14 | 3 | 4 |
| MEMORY      | NL |   |    | MN |   |   | NL |   |   | L  |   |   | L  |   |   |

CONSTRUCTION NOTES:

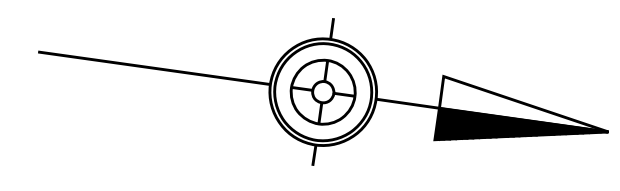
- 1. CONSTRUCTION SIGNAL SUPPORTS, JUNCTION BOXES, AND CONDUIT RUNS. INSTALL CONTROLLER CABINET AND CONNECT EXISTING WIRING AND FIBER. INSTALL SIGNAL HEADS, PEDESTRIAN PUSH BUTTON, VIDEO DETECTOR, DILEMMA ZONE RADAR DETECTION SYSTEM, AND EMERGENCY PREEMPTION EQUIPMENT. INSTALL SIGNS B,E,S, & T.
  - 2. INSTALL VIDEO DETECTOR. INSTALL SIGN F.
  - 3. CONSTRUCT SIGNAL SUPPORT, JUNCTION BOX, AND CONDUIT RUN. INSTALL PEDESTRIAN SIGNAL HEAD 19 AND PEDESTRIAN PUSH BUTTON. INSTALL SIGN A.
  - 4. INSTALL 3-SECTION VEHICULAR SIGNAL 1. REALIGN EXISTING 3-SECTION VEHICULAR SIGNALS 2 & 3 AND INSTALL RETROREFLECTIVE BACKPLATES. INSTALL VIDEO DETECTORS. INSTALL DILEMMA ZONE RADAR DETECTION SYSTEM. RESET EMERGENCY PREEMPTION EQUIPMENT. INSTALL SIGNS E & W. RESET SIGN V.
- RETURN ANY REMOVED SIGNAL EQUIPMENT TO SPRINGFIELD TOWNSHIP. CONTACT SPRINGFIELD TOWNSHIP DEPARTMENT OF PUBLIC WORKS TO ARRANGE DELIVERY.

EXISTING CONDUIT AND JUNCTION BOX LOCATIONS SHOWN ON PLANS ARE APPROXIMATE. VERIFY EXISTING CONDUIT LOCATIONS AND WIRING ROUTING IN THE FIELD PRIOR TO CONSTRUCTION.

OPERATION NOTES

- 1. G IF FOLLOWED BY 2+5
- 2. G IF FOLLOWED BY 2+6
- 3. G IF FOLLOWED BY 1+6
- 4. R IF ACTUATED BY PUSH BUTTON
- 5. TIMING WILL BE AS SHOWN IN PHASE 2+6, IT MAY TIME OUT IN THIS PHASE OR BE COMPLETED IN PHASE 2+6

- \*UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE HAND SYMBOL AT ALL TIMES
- CONTROLLER TO DWELL IN PHASE 2+6 UNTIL ACTUATED BY SIDE STREET PHASE
- PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL

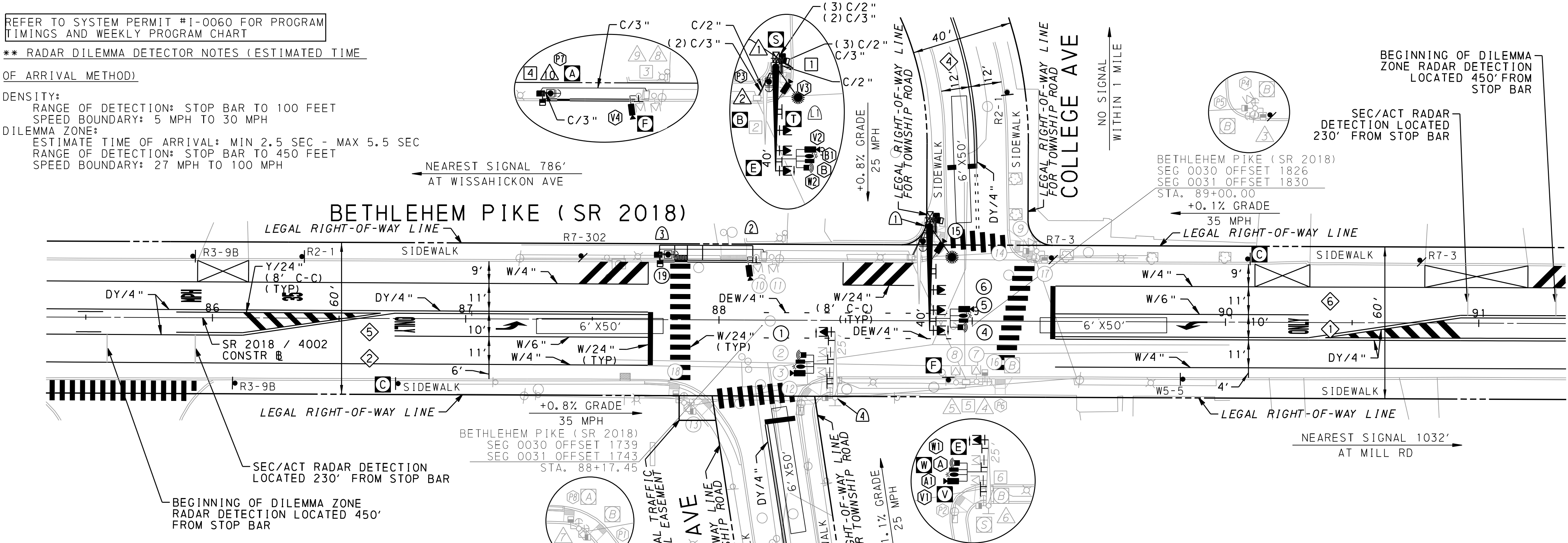


REFER TO SYSTEM PERMIT #I-0060 FOR PROGRAM TIMINGS AND WEEKLY PROGRAM CHART

\*\* RADAR DILEMMA DETECTOR NOTES (ESTIMATED TIME OF ARRIVAL METHOD)

DENSITY:  
RANGE OF DETECTION: STOP BAR TO 100 FEET  
SPEED BOUNDARY: 5 MPH TO 30 MPH

DILEMMA ZONE:  
ESTIMATE TIME OF ARRIVAL: MIN 2.5 SEC - MAX 5.5 SEC  
RANGE OF DETECTION: STOP BAR TO 450 FEET  
SPEED BOUNDARY: 27 MPH TO 100 MPH



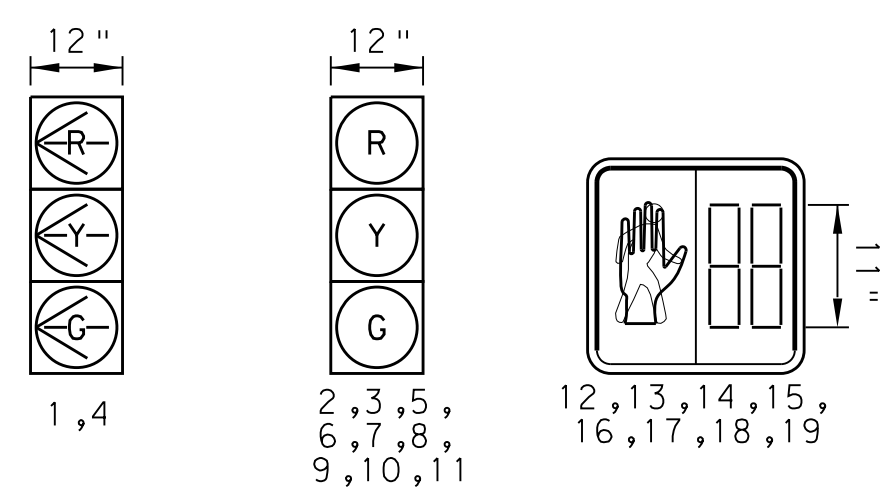
LEGEND - CONSTRUCTION PLANS

|  |                                    |  |  |
|--|------------------------------------|--|--|
|  | EX. MAST ARM/ID/LENGTH             |  | EX. JUNCTION BOX/ID                      |
|  | PR. MAST ARM/ID/LENGTH             |  | PR. JUNCTION BOX/ID                      |
|  | EX. PEDESTAL POLE/STUB POLE/ID     |  | CONDUIT/SIZE                             |
|  | PR. PEDESTAL POLE/STUB POLE/ID     |  | DETECTION ZONE/ID/SIZE                   |
|  | VEH. SIGNAL HEAD/ID                |  | STANDARD VIDEO DETECTOR/ID               |
|  | PED. SIGNAL HEAD/ID                |  | ADVANCE DILEMMA DETECTOR/ID              |
|  | PED. PUSH BUTTON/ID                |  | EMERGENCY PRE-EMPTION DETECTOR/ID        |
|  | POST-MOUNT/STRUCTURE-MOUNT SIGN/ID |  | EMERGENCY PRE-EMPTION FLASHING BEACON/ID |
|  | JUNCTION BOX/ID                    |  | MILLED CENTERLINE RUMBLE STRIPS          |
|  | LUMINAIRE/ID                       |  | SOLID WHITE LINE/WIDTH                   |
|  | CONTROLLER CABINET/MAINTENANCE PAD |  | SOLID YELLOW LINE/WIDTH                  |
|  | PHASE NUMBER                       |  | SOLID DOUBLE YELLOW LINE/WIDTH           |
|  | ADA RAMP                           |  | AUXILIARY WHITE LINE/WIDTH               |
|  |                                    |  | BROKEN WHITE LINE/WIDTH                  |
|  |                                    |  | BROKEN YELLOW LINE/WIDTH                 |
|  |                                    |  | CONDUIT/SIZE                             |
|  |                                    |  | DOTTED EXTENSION WHITE LINE/WIDTH        |

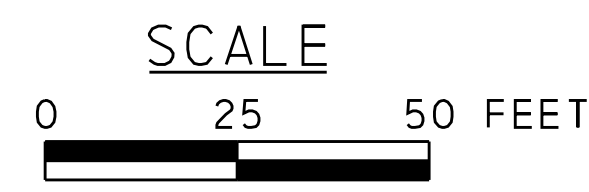
VEHICULAR SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS:  
1,2,3,4,5,6,7,8,9,10,11

VEHICULAR SIGNALS TO BE EQUIPPED WITH LOUVERS:

SIGNAL INDICATIONS NOT TO SCALE



TRAFFIC SIGNAL CONSTRUCTION PLAN



PREPARED BY:  
HNTB CORPORATION  
1650 ARCH ST, SUITE 1700  
PHILADELPHIA, PA 19103

DRAFT

| DISTRICT | COUNTY     | ROUTE | SECTION | SHEET   |
|----------|------------|-------|---------|---------|
| 6-0      | MONTGOMERY | 2018  | SIP     | 8 OF 17 |

GENERAL NOTES

- DO NOT MODIFY INSTALLATION WITHOUT PRIOR WRITTEN APPROVAL BY THE DEPARTMENT.
- ALL SIGNS AND PAVEMENT MARKINGS<sup>4</sup> INDICATED ARE PART OF THE PERMIT. INSTALL AND MAINTAIN IN ACCORDANCE WITH PUBLICATION 212 AND PUBLICATION 236.
- INSTALL POST MOUNTED SIGNALS WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF THE CURB OR EDGE OF THE SHOULDER. PROVIDE A MINIMUM HORIZONTAL CLEARANCE OF 2 FEET FOR ALL SUPPORT POLES FOR OVERHEAD SIGNALS.
- ERECT THE BOTTOM OF SIGNAL HEADS AND SIGNS OVER THE ROADWAY NOT LESS THAN 16 FEET NOR MORE THAN 19 FEET ABOVE THE ROADWAY. ERECT THE BOTTOM OF POST MOUNTED SIGNAL HEADS NOT LESS THAN 8 FEET NOR MORE THAN 15 FEET ABOVE THE SIDEWALK OR PAVEMENT GRADE.
- MAINTAIN A MINIMUM HORIZONTAL DISTANCE OF 8 FEET BETWEEN SIGNAL HEADS, MEASURED AT RIGHT ANGLES TO THE APPROACH.
- DETERMINE THE EXACT LOCATION OF DETECTORS WITH A PENNDOT REPRESENTATIVE PRIOR TO INSTALLATION.
- THE CONTRACTOR IS TO COMPLETE THE NECESSARY APPLICATION(S) IN ORDER TO OBTAIN ELECTRICAL SERVICE FROM THE LOCAL POWER COMPANY.
- CONSULT WITH LOCAL OFFICIALS AND UTILITIES TO RESOLVE CONFLICTS PRIOR TO CONSTRUCTION.
- THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE CONTRACTOR COMPLIES WITH THE PROVISIONS OF ACT 50, AS AMENDED, UNDERGROUND UTILITY PROTECTION ACT, DATED APRIL 28, 2018. PRIOR TO CONSTRUCTION, CONSULT WITH UTILITY COMPANIES TO RESOLVE ANY CONFLICTS.
- UNDERGROUND UTILITY INFORMATION HAS BEEN PROVIDED BY THE RESPECTIVE USERS IN RESPONSE TO THE PA ONE CALL SYSTEM. REFERENCE SERIAL NUMBER: 20220462162
- ISSUED ON: 02/15/2022
- HNTB CORPORATION HAS NOT MADE AN INDEPENDENT DETERMINATION WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION AND SPECIFICALLY DISCLAIMS ANY WARRANTY OR REPRESENTATION AS TO THE ACCURACY OF SUCH INFORMATION. ALL LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

CALL BEFORE YOU DIG !

PENNSYLVANIA LAW REQUIRES  
3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE  
AND 10 WORKING DAYS IN DESIGN STAGE.  
BEFORE YOU DIG, CALL  
THE PA ONE CALL SYSTEM TELEPHONE NUMBER.



1-800-242-1776

|   |                                    |                        |
|---|------------------------------------|------------------------|
| PERMIT NO: 64-0676  | FILE: 0676                         | SYSTEM PERMIT # I-0060 |
| COUNTY: MONTGOMERY  | MUNICIPALITY: SPRINGFIELD TOWNSHIP |                        |
| INTERSECTION: BETHLEHEM PIKE (SR 2018) & BYSHER AVENUE / COLLEGE AVENUE |                                    |                        |
| REVIEWED:   | DATE                               |                        |
| MUNICIPAL OFFICIAL  | DATE                               |                        |
| RECOMMENDED:  | DATE                               |                        |
| ADE - TRANSPORTATION OPERATIONS   | DATE                               |                        |



**EMERGENCY PRE-EMPTION PHASING**  
MOVEMENT, PHASING, AND SEQUENCE CHART

| PHASE  | 2  |    |    | 6  |    |    |
|--------|----|----|----|----|----|----|
| SIGNAL | 23 | 24 | 25 | 26 | 27 | 28 |
| 1      | G  | Y  | R  | R  | R  | R  |
| 2,3    | G  | Y  | R  | R  | R  | R  |
| 4      | R  | R  | R  | G  | Y  | R  |
| 5,6    | R  | R  | R  | R  | R  | R  |
| 7,8,9  | R  | R  | R  | R  | R  | R  |
| 10,11  | R  | R  | R  | R  | R  | R  |
| 12,13  | H  | H  | H  | H  | H  | H  |
| 14,15  | H  | H  | H  | H  | H  | H  |
| 16,17  | H  | H  | H  | H  | H  | H  |
| 18,19  | H  | H  | H  | H  | H  | H  |
| FIXED  | ▲  | 4  | 3  | ▲  | 4  | 3  |

▲ FOR DURATION OF PRE-EMPTION  
NOTE: IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

**EMERGENCY PRE-EMPTION OPERATION NOTES**

◎ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION

**EMERGENCY PRE-EMPTION NOTES:**

CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND AND SOUTHBOUND APPROACHES OF BETHLEHEM PIKE (SR 2018) WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTION PHASE SHALL FOLLOW. ONLY THOSE PHASES NOT POSING A YELLOW TRAP CONDITION MAY REMAIN GREEN (1+6 OR 2+5) WHEN GOVERNED BY APPROACHING EMERGENCY VEHICLE.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL FOR THE PRE-EMPTION GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.

IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PED "WALK" (MAN) INTERVAL SHALL TERMINATE IMMEDIATELY AND THE PED "CLEAR" (FLASHING HAND AND COUNTDOWN TIMER) INTERVAL SHALL TIME OUT, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PRE-EMPTION.

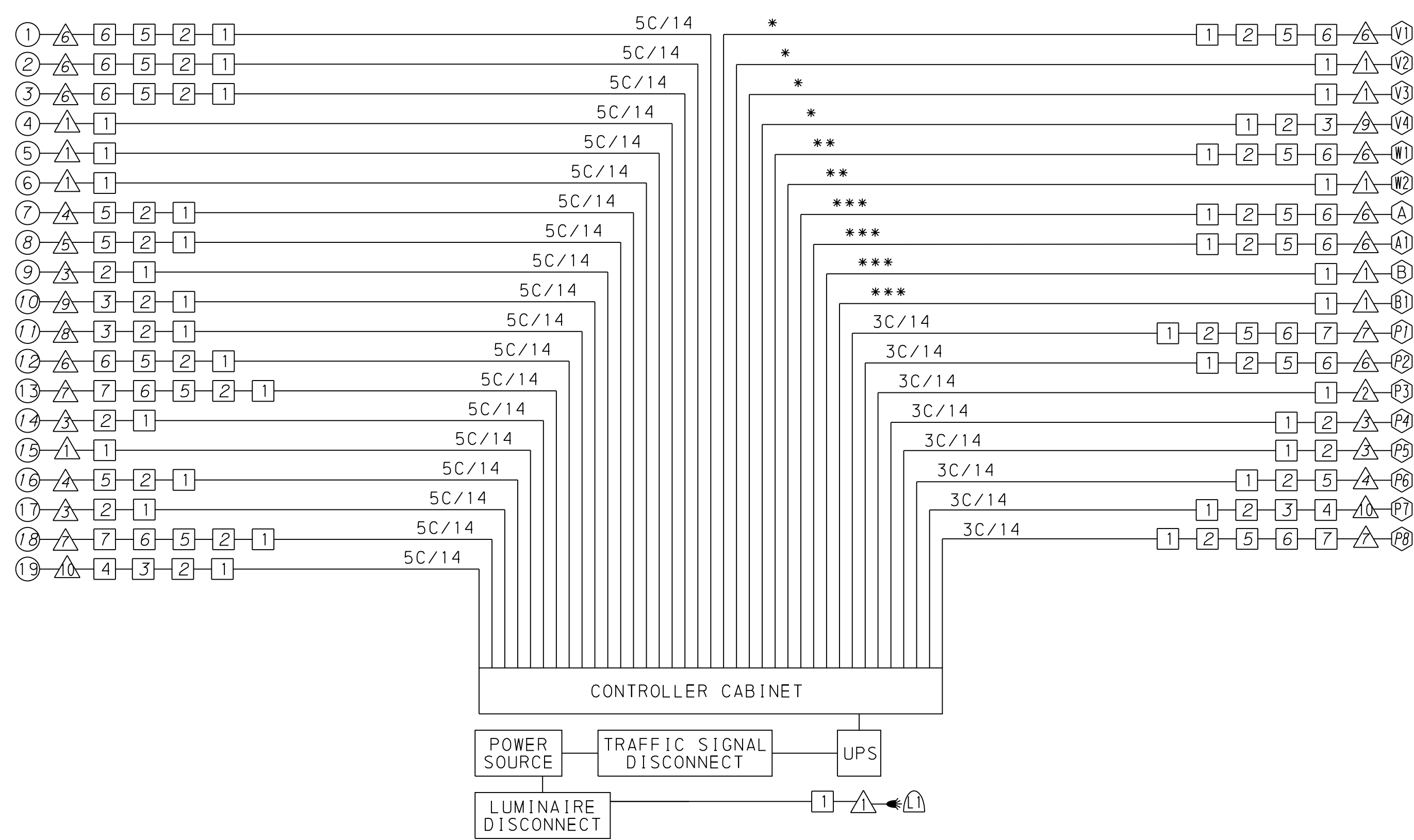
IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.

IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.

UPON COMPLETION OF PRE-EMPTION PHASE 2 OR 6 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 5 SHALL FOLLOW.

IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.



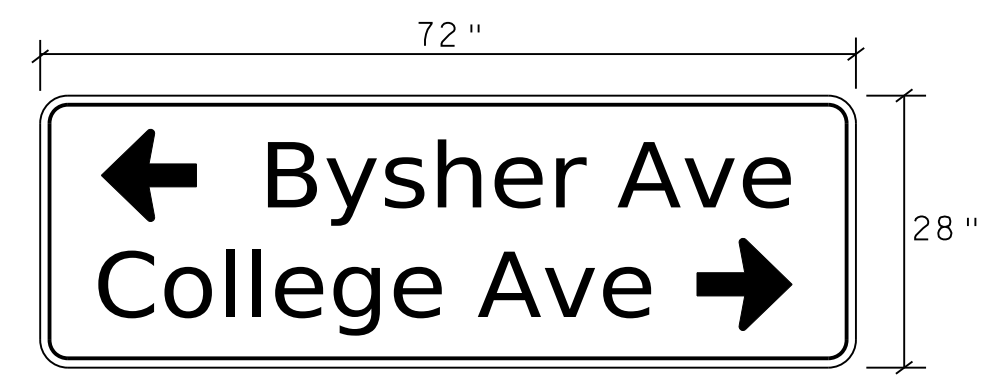
- ▲ - TRAFFIC SIGNAL SUPPORT
- ① - TRAFFIC SIGNAL HEAD
- Ⓜ - JUNCTION BOX
- Ⓜ - VIDEO DETECTOR (CAMERA)
- Ⓜ - ADVANCE DILEMMA DETECTOR
- Ⓜ - EMERGENCY PRE-EMPTION DETECTOR
- Ⓜ - EMERGENCY PRE-EMPTION BEACON
- Ⓜ - LUMINAIRE
- 5C/14 - CABLE (NO. OF CONDUCTORS/SIZE AWG.)
- \* - VIDEO DETECTION CABLE AS SPECIFIED BY MANUFACTURER
- \*\* - RADAR DETECTION CABLE AS SPECIFIED BY MANUFACTURER
- \*\*\* - EMERGENCY PRE-EMPTION CABLE AS SPECIFIED BY MANUFACTURER

| SIGN TABULATION |               |         |  |
|-----------------|---------------|---------|--|
| PLAN SYMBOL     | SERIES NUMBER | SIZE    | DESCRIPTION  |
| A               | R10-3E(L)     | 9"x15"  | EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER (LEFT)  |
| B               | R10-3E(R)     | 9"x15"  | EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER (RIGHT) |
| C               | R3-7L         | 36"x36" | LEFT LANE MUST TURN LEFT   |
| E               | R10-10L       | 30"x36" | LEFT TURN SIGNAL   |
| F               | R10-11        | 24"x30" | NO TURN ON RED ●   |
| S               | D3-4          | 60"x16" | Bethlehem Pike   |
| T               | D3-5          | 72"x28" | Bysher Ave (Left) / College Ave (Right)                              |
| V               | D3-5          | 72"x28" | College Ave (Left) / Bysher Ave (Right)                              |
| W               | W25-2         | 24"x30" | ONCOMING TRAFFIC MAY HAVE EXTENDED GREEN                             |

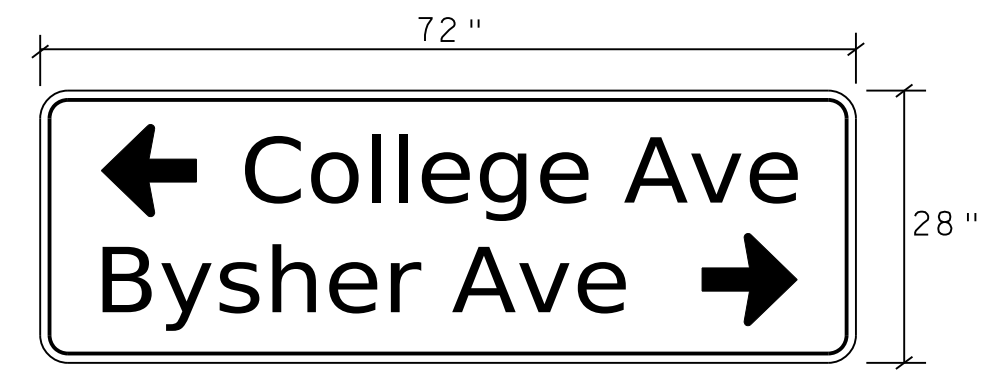
| DISTRICT             | COUNTY     | ROUTE | SECTION | SHEET   |    |
|----------------------|------------|-------|---------|---------|----|
| 6-0                  | MONTGOMERY | 2018  | SIP     | 9 OF 17 |    |
| SPRINGFIELD TOWNSHIP |            |       |         |         |    |
| REVISION NUMBER      | REVISIONS  |       |         | DATE    | BY |
|                      |            |       |         |         |    |



SIGN 'S' DETAIL  
NOT TO SCALE  
CLEARVIEW 1-W  
8" UC/6" LC  
35% REDUCTION



SIGN 'T' DETAIL  
NOT TO SCALE  
CLEARVIEW 1-W  
8" UC/6" LC



SIGN 'V' DETAIL  
NOT TO SCALE  
CLEARVIEW 1-W  
8" UC/6" LC

**TRAFFIC SIGNAL CONSTRUCTION PLAN**

PREPARED BY:  
HNTB CORPORATION  
1650 ARCH STREET  
SUITE 1700  
PHILADELPHIA,  
PA 19103

COUNTY: MONTGOMERY

MUNICIPALITY: SPRINGFIELD TOWNSHIP

INTERSECTION: BETHLEHEM PIKE (SR 2018) & BYSHER AVENUE / COLLEGE AVENUE

APPROVED BY: \_\_\_\_\_

MUNICIPAL OFFICIAL \_\_\_\_\_ DATE \_\_\_\_\_

RECOMMENDED: \_\_\_\_\_

DISTRICT TRAFFIC ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

SCALE: \_\_\_\_\_

PROFESSIONAL ENGINEER \_\_\_\_\_

DATE \_\_\_\_\_

ELECTRICAL DISTRIBUTION SYSTEM

| DESCRIPTION         | CONDUIT |        | TRENCH AND BACKFILL |         |          | SIGNAL CABLE, 14 AWG |             |             | JUNCTION BOX |       |      | ELECTRICAL SERVICE |
|---------------------|---------|--------|---------------------|---------|----------|----------------------|-------------|-------------|--------------|-------|------|--------------------|
|                     | 2 INCH  | 3 INCH | TYPE I              | TYPE II | TYPE III | 3 CONDUCTOR          | 5 CONDUCTOR | 7 CONDUCTOR | JB-27        | JB-30 |      |                    |
| ITEM NUMBER         | 0954    | 0954   | 0954                | 0954    | 0954     | 0954                 | 0954        | 0954        | 0910         | 0954  | 0594 | 0954               |
| UNIT                | LF      | LF     | LF                  | LF      | LF       | LF                   | LF          | LF          | LF           | EACH  | EACH | EACH               |
| LOCATION            |         |        |                     |         |          |                      |             |             |              |       |      |                    |
| U.P. TO C.C.        |         |        |                     |         |          |                      |             |             |              |       |      |                    |
| JB. 1 TO JB. 2      | 15      | 10     |                     | 5       |          |                      |             |             |              |       | 1    |                    |
| JB. 1 TO POLE 1     | 20      | 40     |                     | 20      |          |                      |             |             |              |       |      |                    |
| JB. 1 TO POLE 2     | 15      | 5      |                     | 5       |          |                      |             |             |              |       |      |                    |
| JB. 2 TO JB. 3      | 10      |        |                     | 10      |          |                      |             |             |              |       |      |                    |
| JB. 2 TO POLE 3     |         |        |                     |         |          |                      |             |             |              |       |      |                    |
| JB. 3 TO JB. 4      |         | 45     |                     | 45      |          |                      |             |             |              | 1     |      |                    |
| JB. 3 TO POLE 8     |         |        |                     |         |          |                      |             |             |              |       |      |                    |
| JB. 3 TO POLE 9     |         |        |                     |         |          |                      |             |             |              |       |      |                    |
| JB. 4 TO POLE 10    |         | 5      |                     | 5       |          |                      |             |             |              |       |      |                    |
| JB. 5 TO JB. 6      |         |        |                     |         |          |                      |             |             |              |       |      |                    |
| JB. 5 TO POLE 4     |         |        |                     |         |          |                      |             |             |              |       |      |                    |
| JB. 5 TO POLE 5     |         |        |                     |         |          |                      |             |             |              |       |      |                    |
| JB. 6 TO JB. 7      |         |        |                     |         |          |                      |             |             |              |       |      |                    |
| JB. 6 TO POLE 6     |         |        |                     |         |          |                      |             |             |              |       |      |                    |
| JB. 6 TO POLE 7     |         |        |                     |         |          |                      |             |             |              |       |      |                    |
| ENTIRE INTERSECTION |         |        |                     |         |          | 1070                 | 2730        |             | 120          |       |      | 1                  |
| TOTALS              | 60      | 105    |                     | 90      |          | 1070                 | 2730        |             | 120          | 1     | 1    | 1                  |

MISCELLANEOUS ITEMS

| ITEM NUM. | QUAN. | UNIT | DESCRIPTION  | LOCATION |
|-----------|-------|------|--|----------|
| 4952 1030 | 1     | EACH | NEMA TS-2; TYPE 1 CONTROLLER ASSEMBLY, TYPE 1 MOUNTING, SIEMENS CONTROLLER | C.C.     |
| 4954 0600 | 1     | EACH | UNINTERRUPTIBLE POWER SUPPLY (UPS), LED INDICATOR LIGHT                    | C.C.     |
| 0955 3208 | 4     | EACH | VEHICULAR SIGNAL HEAD, THREE 12" SECTIONS                                  | ① ④ ⑤ ⑥  |
| 4955 3722 | 2     | EACH | LED COUNTDOWN PEDESTRIAN SIGNAL HEAD, TYPE A, STEADY COUNTDOWN             | ⑬ ⑭      |
| 0955 5000 | 2     | EACH | BACKPLATE RETROFIT   | ② ③      |
| 0956 0500 | 2     | EACH | PEDESTRIAN PUSH BUTTON   | ⑮ ⑯      |
| 0956 0700 | 4     | EACH | VIDEO DETECTOR   | ⑩ ⑪ ⑫ ⑬  |
| 9000 0002 | 1     | EACH | EMERGENCY PREEMPTION SYSTEM, TWO APPROACHES                                | ④ ⑤      |
| 9000 0004 | 1     | EACH | LED LUMINAIRE, ARM MOUNT, 250 WATT EQUIVALENT                              | ①        |
| 9000 0006 | 1     | EACH | DILEMMA ZONE RADAR DETECTION SYSTEM, TWO APPROACHES                        | ⑩ ⑪      |
| 9000 0008 | 2     | EACH | RESET VEHICULAR SIGNAL HEAD  | ② ③      |
| 9000 0009 | 1     | EACH | TRAFFIC SIGNAL FIBER TIPPING   | C.C.     |
| 9000 0010 | 1     | EACH | MANAGED NETWORK SWITCH (SIGNAL CABINET)                                    | C.C.     |
| 9000 0011 | 1     | EACH | FIBER OPTIC TERMINATION PANEL  | C.C.     |
| 9000 0012 | 1     | L.S. | TRAFFIC SIGNAL CONTROL, UNIFIED COMMAND AND CONTROL SYSTEM SETUP           | C.C.     |

TRAFFIC SIGNAL AND SIGN SUPPORTS

| STRUCT. NO. | ITEM NUMBER |           |           |           | ROUTE   | STATION | SIDE | OFFSET | MAST ARM        |    |     |     |     |     |                 |     |     |   |   |     | PEDESTAL SHAFT |    |   |   |  |     |    |  |
|-------------|-------------|-----------|-----------|-----------|---------|---------|------|--------|-----------------|----|-----|-----|-----|-----|-----------------|-----|-----|---|---|-----|----------------|----|---|---|--|-----|----|--|
|             | 0951-2240   | 0951-4106 | 0951-4112 | 0951-4112 |         |         |      |        | ARM A           |    |     |     |     |     | ARM C           |     |     |   |   |     | H              | M  | N |   |  |     |    |  |
|             |             |           |           |           |         |         |      |        | SIGNAL LOCATION |    |     |     |     |     | SIGNAL LOCATION |     |     |   |   |     |                |    |   |   |  |     |    |  |
|             |             |           |           |           |         |         |      |        | M               | N  | O   | P   | Q   | R   | S               | T   | U   | W | G | X   |                |    |   | Z |  |     |    |  |
| ▲           | 1           |           |           |           | SR 2018 | 88+83   | LT   | 39'    | 16'<br>MIN.     | 8' | 40' | 40' | 32' | 24' |                 | 37' | 16' |   |   | 15' |                | 0' |   |   |  |     |    |  |
| ▲           |             |           |           | 1         | SR 2018 | 87+81   | LT   | 33'    |                 |    |     |     |     |     |                 |     |     |   |   |     |                |    |   |   |  | 5'  |    |  |
| ▲           |             |           |           | 1         | SR 2018 | 87+80   | LT   | 28'    |                 |    |     |     |     |     |                 |     |     |   |   |     |                |    |   |   |  | 14' | 8' |  |
| TOTALS      | 1           |           |           | 1         |         |         |      |        |                 |    |     |     |     |     |                 |     |     |   |   |     |                |    |   |   |  |     |    |  |

NOTES:

THE EXACT LOCATION OF THE SUPPORTS IS TO BE DETERMINED BY A PENNDOT REPRESENTATIVE.

VERTICAL POLES AND MAST ARMS ARE TO BE DESIGNED BY THE MANUFACTURER TO ADEQUATELY SUPPORT LOADS AS SHOWN ON THE PLAN OR MAXIMUM LOAD REQUIREMENTS ESTABLISHED BY AASHTO SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, WHICHEVER IS GREATER.

SIGNAL SUPPORTS TO BE POWDER COATED BLACK.

FLAT SHEET ALUMINUM SIGN TABULATION

| PLAN SYMBOL | SERIES NUMBER | SIZE (IN) | AREA EACH (SF) | DESCRIPTION   | QUANTITY (FOR INFO. ONLY)  |                            |   | ITEM NUMBER |           |           |      |
|-------------|---------------|-----------|----------------|---|----------------------------|----------------------------|---|-------------|-----------|-----------|------|
|             |               |           |                |   | POST MOUNTED SIGNS, TYPE B | POST MOUNTED SIGNS, TYPE F | STRUCTURE MOUNTED FLAT SHEET ALUMINUM SIGNS | 0931 0001   | 0935 0001 | 0936 0200 |      |
|             |               |           |                |   |                            |                            |   |             |           |           | EACH |
| ▲           | R10-3E(L)     | 9"x15"    | 0.94           | EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER (LEFT) |                            | 1                          |   |             |           | **        |      |
| ▲           | R3-7L         | 36"x36"   | 9.0            | LEFT LANE MUST TURN LEFT  | 2                          |                            |   | ▲           |           |           |      |
| ▲           | R10-10L       | 30"x36"   | 7.5            | LEFT TURN SIGNAL  |                            |                            | 2   |             |           | 15.0      |      |
| ▲           | R10-11        | 24"x30"   | 5.0            | NO TURN ON RED ●  | 1                          | 1                          |   | ▲           |           | 5.0       |      |
| ▲           | D3-4          | 60"x16"   | 6.67           | Bethlehem Pike  |                            |                            | 1   |             |           | 6.67      |      |
| ▲           | D3-5          | 72"x28"   | 14.0           | Bysher Ave (Left) / College Ave (Right)                             |                            |                            | 1   |             |           | 14.0      |      |
| ▲           | W25-2         | 24"x30"   | 5.0            | ONCOMING TRAFFIC MAY HAVE EXTENDED GREEN                            |                            |                            | 1   |             |           | 5.0       |      |
| TOTALS:     |               |           |                |   |                            |                            |   |             |           | 5.0       | 41.0 |

▲ SIGN IS PAID FOR AS PART OF THE SIGNING AND PAVEMENT MARKING PLAN. INCLUSION IN THIS TABULATION BLOCK IS FOR INFORMATION PURPOSES ONLY. REFER TO SIGNING AND PAVEMENT MARKING PLAN FOR ADDITIONAL INFORMATION.

\*\* FOR INFORMATION ONLY. SIGN IS INCIDENTAL TO ITEM 0956-0500 PEDESTRIAN PUSH BUTTON.

TRAFFIC SIGNAL CONSTRUCTION PLAN

|   |  |
|---|--|
| PREPARED BY:<br>HNTB CORPORATION<br>1650 ARCH STREET<br>SUITE 1700<br>PHILADELPHIA,<br>PA 19103 | COUNTY: <u>MONTGOMERY</u><br>MUNICIPALITY: <u>SPRINGFIELD TOWNSHIP</u><br>INTERSECTION: <u>BETHLEHEM PIKE (SR 2018) &amp; BYSHER AVENUE / COLLEGE AVENUE</u> |
| PROFESSIONAL ENGINEER<br>_____<br>DATE  | APPROVED BY:<br>_____<br>MUNICIPAL OFFICIAL DATE<br>RECOMMENDED:<br>_____<br>DISTRICT TRAFFIC ENGINEER DATE<br>SCALE:  |

**MOVEMENT, PHASING, AND SEQUENCE CHART**

| PHASE | 1+6      |    |    |    | 2+6 |     |    |    | 4+8 |    |    |    | EMERGENCY FLASH |
|-------|----------|----|----|----|-----|-----|----|----|-----|----|----|----|-----------------|
|       | INTERVAL | 1  | 2  | 3  | 4   | 5   | 6  | 7  | 8   | 9  | 10 | 11 |                 |
| 1,2   | R        | R  | R  | R  | G   | G   | Y  | R  | R   | R  | R  | R  | Y               |
| 3     | ←G       | ←G | ←Y | ←R | ←FY | ←FY | ←Y | ←R | ←R  | ←R | ←R | ←R | ←R              |
| 4,5   | G        | G  | Y  | R  | G   | G   | Y  | R  | R   | R  | R  | R  | Y               |
| 6,7   | R        | R  | R  | R  | R   | R   | R  | R  | R   | G  | G  | Y  | R               |
| 8,9   | R        | R  | R  | R  | R   | R   | R  | R  | R   | G  | G  | Y  | R               |
| 10,11 | H        | H  | H  | H  | H   | H   | H  | H  | M   | FH | H  | H  | OFF             |
| 12,13 | H        | H  | H  | H  | H   | H   | H  | H  | M   | FH | H  | H  | OFF             |
| 14,15 | H        | H  | H  | H  | M   | FH  | H  | H  | H   | H  | H  | H  | OFF             |
| 16,17 | M        | FH | H  | H  | M   | FH  | H  | H  | H   | H  | H  | H  | OFF             |

**OPERATION NOTES**

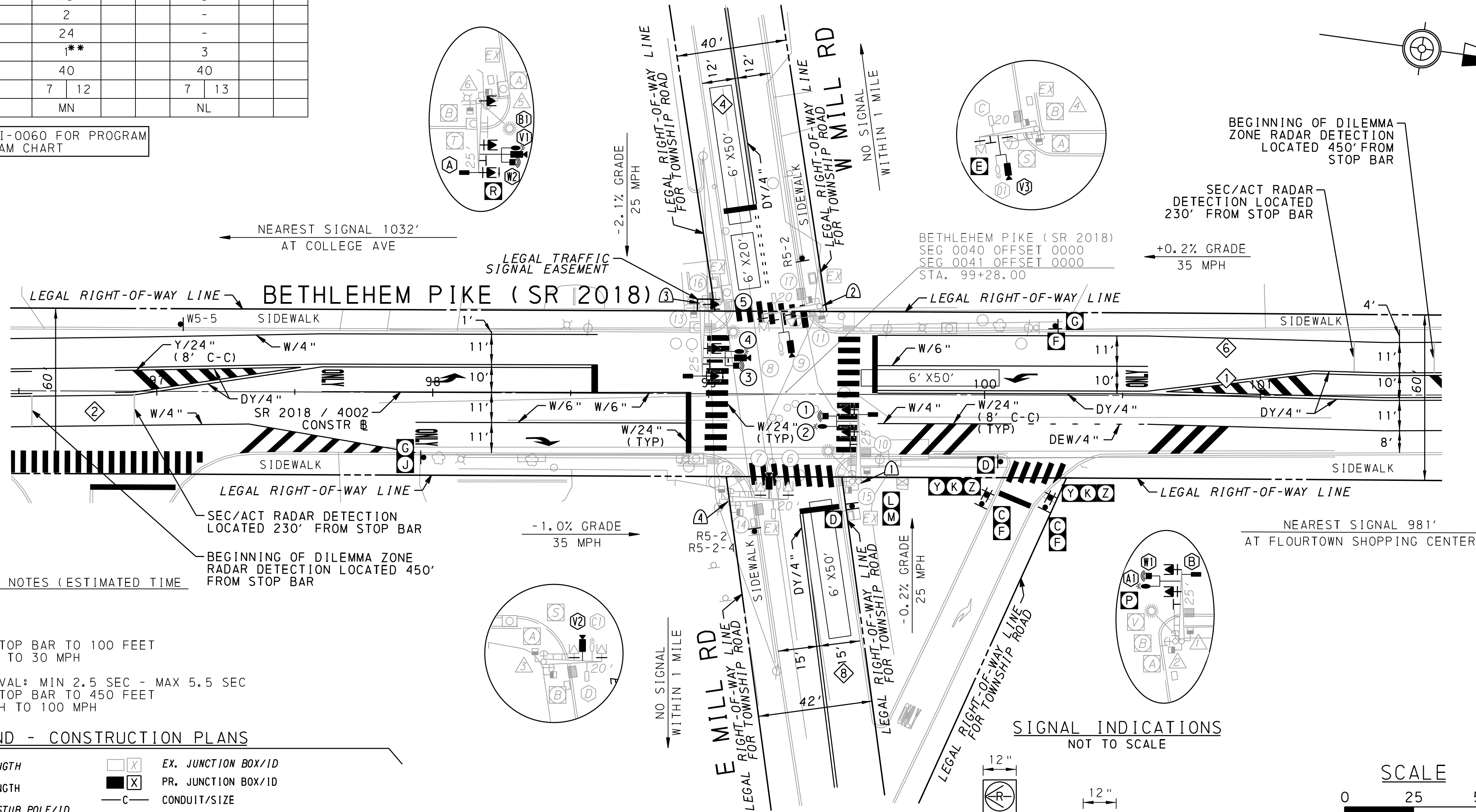
- ① G IF FOLLOWED BY 2+6
- ② TIMING WILL BE AS SHOWN IN PHASE 2+6, IT MAY TIME OUT IN THIS PHASE OR BE COMPLETED IN PHASE 2+6
- \*UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE HAND SYMBOL AT ALL TIMES
- CONTROLLER TO DWELL IN PHASE 2+6 UNTIL ACTUATED BY SIDE STREET PHASE
- PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL

**CONSTRUCTION NOTES:**

- ① REALIGN EXISTING 3-SECTION VEHICULAR SIGNAL HEADS 1 & 2 AND INSTALL RETROREFLECTIVE BACKPLATES. INSTALL ADVANCE DILEMMA RADAR DETECTION SYSTEM. RESET EMERGENCY PREEMPTION EQUIPMENT. REPLACE SIGN P. UPDATE CONTROLLER EQUIPMENT TO PROVIDE FLASHING YELLOW ARROW OPERATION AND ADJUST SIGNAL TIMINGS.
  - ② INSTALL RETROREFLECTIVE BACKPLATES TO SIGNAL HEADS 8 & 9. INSTALL VIDEO DETECTOR. REPLACE SIGN E.
  - ③ REMOVE EXISTING 5-SECTION SIGNAL HEAD. INSTALL NEW 4-SECTION VEHICULAR SIGNAL HEAD 3. INSTALL NEW 3-SECTION VEHICULAR SIGNAL HEAD 4. REALIGN EXISTING 3-SECTION VEHICULAR SIGNAL HEAD 5. INSTALL VIDEO DETECTOR. INSTALL ADVANCE DILEMMA RADAR DETECTION SYSTEM. RESET EMERGENCY PREEMPTION EQUIPMENT. INSTALL SIGN R.
  - ④ INSTALL RETROREFLECTIVE BACKPLATES TO SIGNAL HEAD 6 & 7. INSTALL VIDEO DETECTOR.
- RETURN ANY REMOVED SIGNAL EQUIPMENT TO SPRINGFIELD TOWNSHIP. CONTACT SPRINGFIELD TOWNSHIP DEPARTMENT OF PUBLIC WORKS TO ARRANGE DELIVERY.
- EXISTING CONDUIT AND JUNCTION BOX LOCATIONS SHOWN ON PLANS ARE APPROXIMATE. VERIFY EXISTING CONDUIT LOCATIONS AND WIRING ROUTING IN THE FIELD PRIOR TO CONSTRUCTION.

| FIXED       | 3  | 4 | 2 | 15  | 4  | 2 | 5  | 3  | 3 |
|-------------|----|---|---|-----|----|---|----|----|---|
| MINIMUM     | 3  |   |   | 15  |    |   | 5  |    |   |
| SEC/ACT     | -  |   |   | 2   |    |   | -  |    |   |
| MAX INITIAL | -  |   |   | 24  |    |   | -  |    |   |
| PASSAGE     | 3  |   |   | 1** |    |   | 3  |    |   |
| MAX 1       | 7  |   |   | 40  |    |   | 40 |    |   |
| PEDESTRIAN* | ②  |   |   | 7   | 12 |   | 7  | 13 |   |
| MEMORY      | NL |   |   | MN  |    |   | NL |    |   |

REFER TO SYSTEM PERMIT #I-0060 FOR PROGRAM TIMINGS AND WEEKLY PROGRAM CHART



\*\* RADAR DILEMMA DETECTOR NOTES (ESTIMATED TIME OF ARRIVAL METHOD)

DENSITY:  
 RANGE OF DETECTION: STOP BAR TO 100 FEET  
 SPEED BOUNDARY: 5 MPH TO 30 MPH  
 DILEMMA ZONE:  
 ESTIMATE TIME OF ARRIVAL: MIN 2.5 SEC - MAX 5.5 SEC  
 RANGE OF DETECTION: STOP BAR TO 450 FEET  
 SPEED BOUNDARY: 27 MPH TO 100 MPH

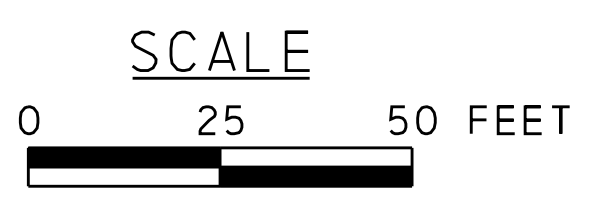
**LEGEND - CONSTRUCTION PLANS**

|  |                                    |  |  |
|--|------------------------------------|--|--|
|  | EX. MAST ARM/ID/LENGTH             |  | EX. JUNCTION BOX/ID                      |
|  | PR. MAST ARM/ID/LENGTH             |  | PR. JUNCTION BOX/ID                      |
|  | EX. PEDESTAL POLE/STUB POLE/ID     |  | CONDUIT/SIZE                             |
|  | PR. PEDESTAL POLE/STUB POLE/ID     |  | DETECTION ZONE/ID/SIZE                   |
|  | VEH. SIGNAL HEAD/ID                |  | STANDARD VIDEO DETECTOR/ID               |
|  | PED. SIGNAL HEAD/ID                |  | ADVANCE DILEMMA DETECTOR/ID              |
|  | PED. PUSH BUTTON/ID                |  | EMERGENCY PRE-EMPTION DETECTOR/ID        |
|  | POST-MOUNT/STRUCTURE-MOUNT SIGN/ID |  | EMERGENCY PRE-EMPTION FLASHING BEACON/ID |
|  | JUNCTION BOX/ID                    |  | MILLED CENTERLINE RUMBLE STRIPS          |
|  | LUMINAIRE/ID                       |  | SOLID WHITE LINE/WIDTH                   |
|  | CONTROLLER CABINET/MAINTENANCE PAD |  | SOLID YELLOW LINE/WIDTH                  |
|  | PHASE NUMBER                       |  | SOLID DOUBLE YELLOW LINE/WIDTH           |
|  | ADA RAMP                           |  | AUXILIARY WHITE LINE/WIDTH               |
|  |                                    |  | BROKEN WHITE LINE/WIDTH                  |
|  |                                    |  | BROKEN YELLOW LINE/WIDTH                 |
|  |                                    |  | CONDUIT/SIZE                             |
|  |                                    |  | DOTTED EXTENSION WHITE LINE/WIDTH        |

VEHICULAR SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS:  
 1,2,3,4,5,6,7,8

VEHICULAR SIGNALS TO BE EQUIPPED WITH LOUVERS:  
 10,11,12,13,14,15,16,17

**TRAFFIC SIGNAL CONSTRUCTION PLAN**



PREPARED BY:  
 HNTB CORPORATION  
 1650 ARCH ST, SUITE 1700  
 PHILADELPHIA, PA 19103

**DRAFT**

| DISTRICT | COUNTY     | ROUTE | SECTION | SHEET    |
|----------|------------|-------|---------|----------|
| 6-0      | MONTGOMERY | 2018  | SIP     | 11 OF 17 |

**GENERAL NOTES**

DO NOT MODIFY INSTALLATION WITHOUT PRIOR WRITTEN APPROVAL BY THE DEPARTMENT.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ARE PART OF THE PERMIT. INSTALL AND MAINTAIN IN ACCORDANCE WITH PUBLICATION 212 AND PUBLICATION 236.

INSTALL POST MOUNTED SIGNALS WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF THE CURB OR EDGE OF THE SHOULDER. PROVIDE A MINIMUM HORIZONTAL CLEARANCE OF 2 FEET FOR ALL SUPPORT POLES FOR OVERHEAD SIGNALS.

ERECT THE BOTTOM OF SIGNAL HEADS AND SIGNS OVER THE ROADWAY NOT LESS THAN 16 FEET NOR MORE THAN 19 FEET ABOVE THE ROADWAY. ERECT THE BOTTOM OF POST MOUNTED SIGNAL HEADS NOT LESS THAN 8 FEET NOR MORE THAN 15 FEET ABOVE THE SIDEWALK OR PAVEMENT GRADE.

MAINTAIN A MINIMUM HORIZONTAL DISTANCE OF 8 FEET BETWEEN SIGNAL HEADS, MEASURED AT RIGHT ANGLES TO THE APPROACH.

DETERMINE THE EXACT LOCATION OF DETECTORS WITH A PENNDOT REPRESENTATIVE PRIOR TO INSTALLATION.

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UNDERGROUND UTILITY INFORMATION HAS BEEN PROVIDED BY THE RESPECTIVE USERS IN RESPONSE TO THE PA ONE CALL SYSTEM. REFERENCE SERIAL NUMBER: 20220462162

ISSUED ON: 02/15/2022

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**CALL BEFORE YOU DIG !**

PENNSYLVANIA LAW REQUIRES  
 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE  
 AND 10 WORKING DAYS IN DESIGN STAGE.

BEFORE YOU DIG, CALL  
 THE PA ONE CALL SYSTEM TELEPHONE NUMBER.

1-800-242-1776

PERMIT NO: 64-0674 FILE: 0674 SYSTEM PERMIT # I-0060

COUNTY: MONTGOMERY  
 MUNICIPALITY: SPRINGFIELD TOWNSHIP

INTERSECTION: BETHLEHEM PIKE (SR 2018) &  
 EAST/WEST MILL ROAD

REVIEWED:  
 MUNICIPAL OFFICIAL DATE

RECOMMENDED:  
 ADE - TRANSPORTATION OPERATIONS DATE

**EMERGENCY PRE-EMPTION PHASING**  
MOVEMENT, PHASING, AND SEQUENCE CHART

| PHASE    | 2  |    |    | 4  |    |    | 6  |    |    | 8  |    |    |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|
| INTERVAL | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 1,2      | G  | Y  | R  | R  | R  | R  | R  | R  | R  | R  | R  | R  |
| 3        | ←Y | ←R | ←R | ←R | ←R | ←R | ←Y | ←R | ←R | ←R | ←R | ←R |
| 4,5      | R  | R  | R  | R  | R  | R  | G  | Y  | R  | R  | R  | R  |
| 6,7      | R  | R  | R  | G  | Y  | R  | R  | R  | R  | R  | R  | R  |
| 8,9      | R  | R  | R  | R  | R  | R  | R  | R  | R  | G  | Y  | R  |
| 10,11    | H  | H  | H  | H  | H  | H  | H  | H  | H  | H  | H  | H  |
| 12,13    | H  | H  | H  | H  | H  | H  | H  | H  | H  | H  | H  | H  |
| 14,15    | H  | H  | H  | H  | H  | H  | H  | H  | H  | H  | H  | H  |
| 16,17    | H  | H  | H  | H  | H  | H  | H  | H  | H  | H  | H  | H  |
| FIXED    | ▲  | 4  | 2  | ▲  | 3  | 3  | ▲  | 4  | 2  | ▲  | 3  | 3  |

▲ FOR DURATION OF PRE-EMPTION  
NOTE: IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

**EMERGENCY PRE-EMPTION OPERATION NOTES**

- ⊙ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION
- ⊙ SIGNAL TO INDICATE ←Y WHEN RETURNING TO NORMAL OPERATION

**EMERGENCY PRE-EMPTION NOTES:**

CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND AND SOUTHBOUND APPROACHES OF BETHLEHEM PIKE (SR 2018) AND THE EASTBOUND AND WESTBOUND APPROACHES OF MILL ROAD WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTION PHASE SHALL FOLLOW. ONLY THOSE PHASES NOT POSING A YELLOW TRAP CONDITION MAY REMAIN GREEN (1+6) WHEN GOVERNED BY APPROACHING EMERGENCY VEHICLE. ANY FLASHING YELLOW ARROW INDICATORS FOR THE PRE-EMPTED PHASE SHALL REMAIN FLASHING YELLOW ARROW DURING THE ENTRY ROUTINE FOLLOWED BY GREEN ARROW FOR THE DURATION OF THE SIGNAL PRE-EMPTION. ANY FLASHING YELLOW ARROW INDICATORS FOR THE PHASE OPPOSITE THE PRE-EMPTED PHASE SHALL REMAIN FLASHING YELLOW ARROW DURING THE ENTRY ROUTINE AND FOR THE DURATION OF SIGNAL PRE-EMPTION.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL FOR THE PRE-EMPTION GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.

IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PED "WALK" (MAN) INTERVAL SHALL TERMINATE IMMEDIATELY AND THE PED "CLEAR" (FLASHING HAND AND COUNTDOWN TIMER) INTERVAL SHALL TIME OUT, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PRE-EMPTION.

IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.

IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.

UPON COMPLETION OF PRE-EMPTION PHASE 2, 4, 6 OR 8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 5 SHALL FOLLOW.

IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.

**FLAT SHEET ALUMINUM SIGN TABULATION**

| PLAN SYMBOL | SERIES NUMBER | SIZE (IN) | AREA EACH (SF) | DESCRIPTION                              | QUANTITY (FOR INFO. ONLY)  |                            |   | ITEM NUMBER |           |           |
|-------------|---------------|-----------|----------------|--|----------------------------|----------------------------|---|-------------|-----------|-----------|
|             |               |           |                |  | POST MOUNTED SIGNS, TYPE B | POST MOUNTED SIGNS, TYPE F | STRUCTURE MOUNTED FLAT SHEET ALUMINUM SIGNS | 0931 0001   | 0935 0001 | 0936 0200 |
| C           | R1-1          | 36"x36"   | 9.0            | STOP                                     | 2                          |                            |   | ▲           |           |           |
| D           | R3-1          | 24"x24"   | 4.0            | NO RIGHT TURN                            | 2                          |                            |   | ▲           |           |           |
| E           | R3-1          | 30"x30"   | 6.25           | NO RIGHT TURN                            |                            |                            | 1   |             |           | 6.25      |
| F           | R3-2          | 24"x24"   | 4.0            | NO LEFT TURN                             |                            | 3                          |   |             | ▲         |           |
| G           | R3-7L         | 36"x36"   | 9.0            | LEFT LANE MUST TURN LEFT                 | 2                          |                            |   | ▲           |           |           |
| J           | R3-7R         | 36"x36"   | 9.0            | RIGHT LANE MUST TURN RIGHT               |                            | 1                          |   |             | ▲         |           |
| K           | R5-1          | 36"x36"   | 9.0            | DO NOT ENTER                             | 2                          |                            |   | ▲           |           |           |
| P           | R10-11        | 30"x36"   | 7.5            | NO TURN ON RED ●                         |                            |                            | 1   |             |           | 7.5       |
| R           | R10-12A       | 30"x36"   | 7.5            | LEFT TURN YIELD ON FLASHING YELLOW ARROW |                            |                            | 1   |             |           | 7.5       |
| Y           | R6-1L         | 36"x12"   | 3.0            | HORIZONTAL LEFT ONE-WAY                  |                            | 2                          |   |             | ▲         |           |
| Z           | R6-1R         | 36"x12"   | 3.0            | HORIZONTAL RIGHT ONE-WAY                 |                            | 2                          |   |             | ▲         |           |
| TOTALS:     |               |           |                |  |                            |                            |   |             |           | 21.5      |

▲ SIGN IS PAID FOR AS PART OF THE SIGNING AND PAVEMENT MARKING PLAN. INCLUSION IN THIS TABULATION BLOCK IS FOR INFORMATION PURPOSES ONLY. REFER TO SIGNING AND PAVEMENT MARKING PLAN FOR ADDITIONAL INFORMATION.

**MISCELLANEOUS ITEMS**

| ITEM NUM. | QUAN. | UNIT | DESCRIPTION   | LOCATION |
|-----------|-------|------|---|----------|
| 4952 3002 | 1     | EACH | CONTROLLER MODIFICATION, FLASHING YELLOW ARROW      | C. C.    |
| 0954 0202 | 190   | LF   | SIGNAL CABLE, 12 AWG, 5 CONDUCTOR                   | C. C.    |
| 0954 0203 | 200   | LF   | SIGNAL CABLE, 12 AWG, 7 CONDUCTOR                   | C. C.    |
| 0955 3208 | 1     | EACH | VEHICULAR SIGNAL HEADS, THREE 12" SECTIONS          | ④        |
| 0955 3209 | 1     | EACH | VEHICULAR SIGNAL HEADS, FOUR 12" SECTIONS           | ①        |
| 0955 5000 | 6     | EACH | BACKPLATE RETROFIT                                  | ①②③④⑤⑥   |
| 0956 0700 | 3     | EACH | VIDEO DETECTOR                                      | ①②③      |
| 9000 0006 | 1     | EACH | DILEMMA ZONE RADAR DETECTION SYSTEM, TWO APPROACHES | ①②       |
| 9000 0007 | 2     | EACH | RESET OPTICAL PREEMPTION SYSTEM AND BEACON ASSEMBLY | ④⑤       |
| 9000 0008 | 3     | EACH | RESET VEHICULAR SIGNAL HEAD                         | ①②③      |

| SIGN TABULATION |               |         |  |
|-----------------|---------------|---------|--|
| PLAN SYMBOL     | SERIES NUMBER | SIZE    | DESCRIPTION  |
| A               | R10-3E(L)     | 9"x15"  | EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER (LEFT)  |
| B               | R10-3E(R)     | 9"x15"  | EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER (RIGHT) |
| C               | R1-1          | 36"x36" | STOP   |
| D               | R3-1          | 24"x24" | NO RIGHT TURN  |
| E               | R3-1          | 30"x30" | NO RIGHT TURN  |
| F               | R3-2          | 24"x24" | NO LEFT TURN   |
| G               | R3-7L         | 36"x36" | LEFT LANE MUST TURN LEFT   |
| J               | R3-7R         | 36"x36" | RIGHT LANE MUST TURN RIGHT   |
| K               | R5-1          | 36"x36" | DO NOT ENTER   |
| P               | R10-11        | 30"x36" | NO TURN ON RED ●   |
| R               | R10-12A       | 30"x36" | LEFT TURN YIELD ON FLASHING YELLOW ARROW                             |
| S               | D3-4          | 84"x16" | Bethlehem Pike   |
| T               | D3-5          | 96"x28" | ← E Mill Rd / W Mill Rd →  |
| U               | D3-5          | 96"x28" | ← W Mill Rd / E Mill Rd →  |
| Y               | R6-1L         | 36"x12" | HORIZONTAL LEFT ONE-WAY  |
| Z               | R6-1R         | 36"x12" | HORIZONTAL RIGHT ONE-WAY   |

**TRAFFIC SIGNAL CONSTRUCTION PLAN**

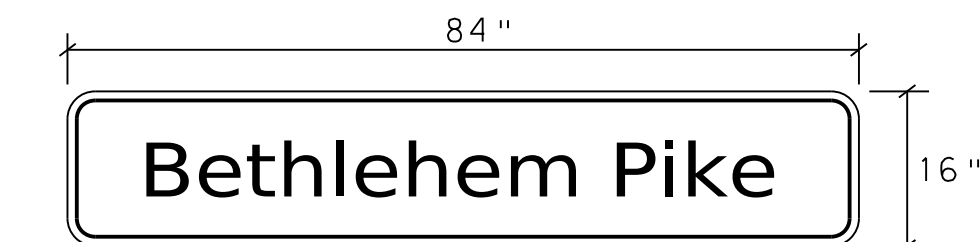
| DISTRICT             | COUNTY     | ROUTE | SECTION | SHEET    |    |
|----------------------|------------|-------|---------|----------|----|
| 6-0                  | MONTGOMERY | 2018  | SIP     | 12 OF 17 |    |
| SPRINGFIELD TOWNSHIP |            |       |         |          |    |
| REVISION NUMBER      | REVISIONS  |       |         | DATE     | BY |
|                      |            |       |         |          |    |



SIGN 'T' DETAIL  
NOT TO SCALE  
CLEARVIEW 2-W  
10.6" UC/8" LC



SIGN 'V' DETAIL  
NOT TO SCALE  
CLEARVIEW 2-W  
10.6" UC/8" LC



SIGN 'S' DETAIL  
NOT TO SCALE  
CLEARVIEW 1-W  
8" UC/6" LC

PREPARED BY:  
HNTB CORPORATION  
1650 ARCH STREET  
SUITE 1700  
PHILADELPHIA,  
PA 19103

COUNTY: MONTGOMERY

MUNICIPALITY: SPRINGFIELD TOWNSHIP

INTERSECTION: BETHLEHEM PIKE (SR 2018) & EAST/WEST MILL ROAD

APPROVED BY: \_\_\_\_\_

MUNICIPAL OFFICIAL \_\_\_\_\_ DATE \_\_\_\_\_

RECOMMENDED: \_\_\_\_\_

DISTRICT TRAFFIC ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

SCALE: \_\_\_\_\_

PROFESSIONAL ENGINEER \_\_\_\_\_

DATE \_\_\_\_\_

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ERECT THE BOTTOM OF SIGNAL HEADS AND SIGNS OVER THE ROADWAY NOT LESS THAN 16 FEET NOR MORE THAN 19 FEET ABOVE THE ROADWAY. ERECT THE BOTTOM OF POST MOUNTED SIGNAL HEADS NOT LESS THAN 8 FEET NOR MORE THAN 15 FEET ABOVE THE SIDEWALK OR PAVEMENT GRADE.

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ISSUED ON: 02/15/2022

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BEFORE YOU DIG, CALL THE PA ONE CALL SYSTEM TELEPHONE NUMBER.

1-800-242-1776

PERMIT NO: 64-0672 FILE: 0672 SYSTEM PERMIT # I-0060

COUNTY: MONTGOMERY

MUNICIPALITY: SPRINGFIELD & WHITEMARSH TOWNSHIP

INTERSECTION: BETHLEHEM PIKE (SR 2018) & FLOURTOWN SHOPPING CENTER / COMMERCIAL/RESIDENTIAL DRIVE

REVIEWED: \_\_\_\_\_

MUNICIPAL OFFICIAL \_\_\_\_\_ DATE \_\_\_\_\_

RECOMMENDED: \_\_\_\_\_

ADE - TRANSPORTATION OPERATIONS \_\_\_\_\_ DATE \_\_\_\_\_

### MOVEMENT, PHASING, AND SEQUENCE CHART

| PHASE   | INTERVAL | 1   | 2               | 3               | 4   | 5   | 6              | 7              | 8   | 9   | 10              | 11              | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | EMERGENCY FLASH |
|---------|----------|-----|-----------------|-----------------|-----|-----|----------------|----------------|-----|-----|-----------------|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|
| 1       |          | ←G- | ←Y <sup>0</sup> | ←R <sup>0</sup> | ←R- | ←R- | ←R-            | ←R-            | ←G- | ←G- | ←Y <sup>0</sup> | ←R-             | ←R- | ←R- | ←R- | ←R- | ←R- | ←R- | ←R- | ←R- | ←R-             |
| 2,3     |          | R   | R               | R               | R   | R   | R              | R              | G   | G   | Y <sup>0</sup>  | R               | R   | R   | R   | R   | R   | R   | R   | R   | R               |
| 4       |          | ←G- | ←Y <sup>0</sup> | ←R <sup>0</sup> | ←R- | ←R- | ←R-            | ←R-            | ←FY | ←FY | ←Y <sup>0</sup> | ←R <sup>0</sup> | ←FY | ←FY | ←Y- | ←R- | ←R- | ←R- | ←R- | ←R- | ←R-             |
| 5,6     |          | R   | R               | R               | G   | G   | Y <sup>0</sup> | R <sup>0</sup> | R   | R   | R               | R               | G   | G   | Y   | R   | R   | R   | R   | R   | R               |
| 7,8     |          | R   | R               | R               | R   | R   | R              | R              | R   | R   | R               | R               | R   | R   | R   | R   | R   | G   | G   | Y   | R               |
| 9,10,11 |          | R   | R               | R               | R   | R   | R              | R              | R   | R   | R               | R               | R   | R   | R   | R   | R   | R   | G   | Y   | R               |
| 12,13   |          | H   | H               | H               | H   | H   | H              | H              | H   | H   | H               | H               | H   | H   | H   | H   | M   | FH  | H   | H   | OFF             |
| 14,15   |          | H   | H               | H               | H   | H   | H              | H              | H   | H   | H               | H               | H   | H   | H   | M   | FH  | H   | H   | H   | OFF             |
| 16,17   |          | H   | H               | H               | H   | H   | H              | M              | FH  | H   | H               | M               | FH  | H   | H   | H   | H   | H   | H   | H   | OFF             |
| 18,19   |          | H   | H               | H               | M   | FH  | H              | H              | H   | H   | M               | FH              | H   | H   | H   | H   | H   | H   | H   | H   | OFF             |

|             |    |   |   |  |    |   |  |    |   |  |     |    |  |    |    |
|-------------|----|---|---|--|----|---|--|----|---|--|-----|----|--|----|----|
| FIXED       |    | 4 | 2 |  | 4  | 2 |  | 4  | 2 |  | 4   | 2  |  | 3  | 3  |
| MINIMUM     | 3  |   |   |  | 3  |   |  | 3  |   |  | 15  |    |  | 5  |    |
| SEC/ACT     | -  |   |   |  | -  |   |  | -  |   |  | 2   |    |  | -  |    |
| MAX INITIAL | -  |   |   |  | -  |   |  | -  |   |  | 24  |    |  | -  |    |
| PASSAGE     | 3  |   |   |  | 3  |   |  | 3  |   |  | 1** |    |  | 3  |    |
| MAX 1       | 7  |   |   |  | 7  |   |  | 7  |   |  | 50  |    |  | 30 |    |
| PEDESTRIAN* |    |   |   |  | 5  |   |  | 5  |   |  | 7   | 23 |  | 7  | 19 |
| MEMORY      | NL |   |   |  | NL |   |  | NL |   |  | MN  |    |  | NL |    |

REFER TO SYSTEM PERMIT #I-0060 FOR PROGRAM TIMINGS AND WEEKLY PROGRAM CHART

- OPERATION NOTES**
- ① <G- IF FOLLOWED BY 2+5
  - ② G IF FOLLOWED BY 2+6
  - ③ <G- IF FOLLOWED BY 1+6
  - ④ <FY- IF FOLLOWED BY 2+6
  - ⑤ TIMING WILL BE AS SHOWN IN PHASE 2+6, IT MAY TAKE TIME OUT IN THIS PHASE OR BE COMPLETED IN PHASE 2+6

- \*UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE HAND SYMBOL AT ALL TIMES
- CONTROLLER TO DWELL IN PHASE 2+6 UNTIL ACTUATED BY SIDE STREET PHASE
  - PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL

\*\* RADAR DILEMMA DETECTOR NOTES (ESTIMATED TIME OF ARRIVAL METHOD)

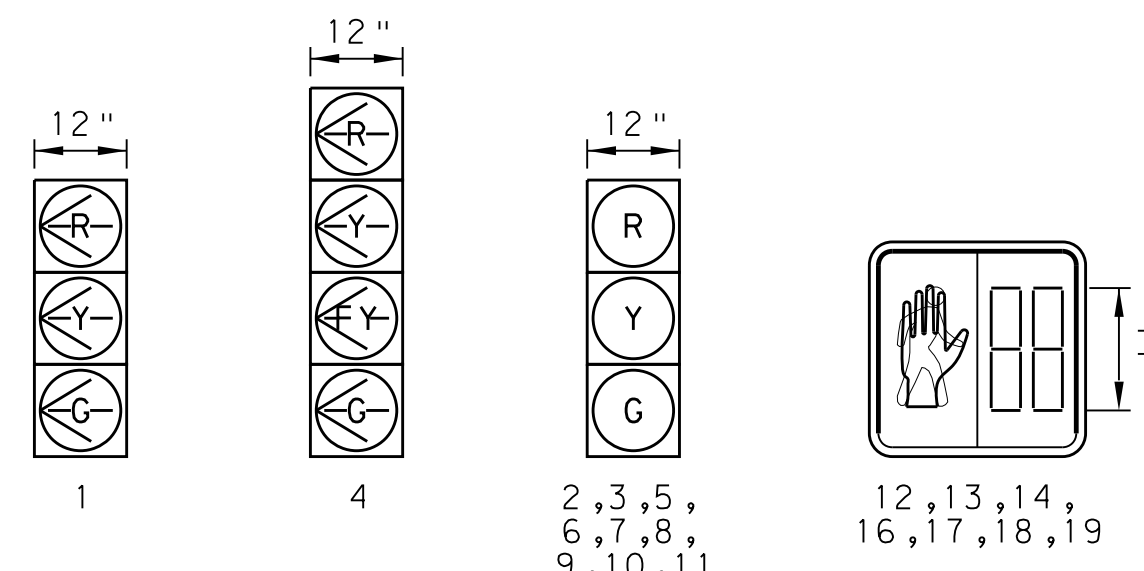
DENSITY:  
 RANGE OF DETECTION: STOP BAR TO 100 FEET  
 SPEED BOUNDARY: 5 MPH TO 30 MPH

DILEMMA ZONE:  
 ESTIMATE TIME OF ARRIVAL: MIN 2.5 SEC - MAX 5.5 SEC  
 RANGE OF DETECTION: STOP BAR TO 450 FEET  
 SPEED BOUNDARY: 27 MPH TO 100 MPH

### LEGEND - CONSTRUCTION PLANS

|  |                                    |  |  |
|--|------------------------------------|--|--|
|  | EX. MAST ARM/ID/LENGTH             |  | EX. JUNCTION BOX/ID                      |
|  | PR. MAST ARM/ID/LENGTH             |  | PR. JUNCTION BOX/ID                      |
|  | EX. PEDESTAL POLE/STUB POLE/ID     |  | CONDUIT/SIZE                             |
|  | PR. PEDESTAL POLE/STUB POLE/ID     |  | DETECTION ZONE/ID/SIZE                   |
|  | VEH. SIGNAL HEAD/ID                |  | STANDARD VIDEO DETECTOR/ID               |
|  | PED. SIGNAL HEAD/ID                |  | ADVANCE DILEMMA DETECTOR/ID              |
|  | PED. PUSH BUTTON/ID                |  | EMERGENCY PRE-EMPTION DETECTOR/ID        |
|  | POST-MOUNT/STRUCTURE-MOUNT SIGN/ID |  | EMERGENCY PRE-EMPTION FLASHING BEACON/ID |
|  | JUNCTION BOX/ID                    |  | MILLED CENTERLINE RUMBLE STRIPS          |
|  | LUMINAIRE/ID                       |  | SOLID WHITE LINE/WIDTH                   |
|  | CONTROLLER CABINET/MAINTENANCE PAD |  | SOLID YELLOW LINE/WIDTH                  |
|  | PHASE NUMBER                       |  | SOLID DOUBLE YELLOW LINE/WIDTH           |
|  | ADA RAMP                           |  | AUXILIARY WHITE LINE/WIDTH               |
|  |                                    |  | BROKEN WHITE LINE/WIDTH                  |
|  |                                    |  | BROKEN YELLOW LINE/WIDTH                 |
|  |                                    |  | CONDUIT/SIZE                             |
|  |                                    |  | DOTTED EXTENSION WHITE LINE/WIDTH        |

### SIGNAL INDICATIONS NOT TO SCALE

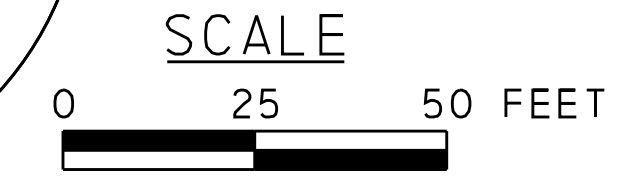
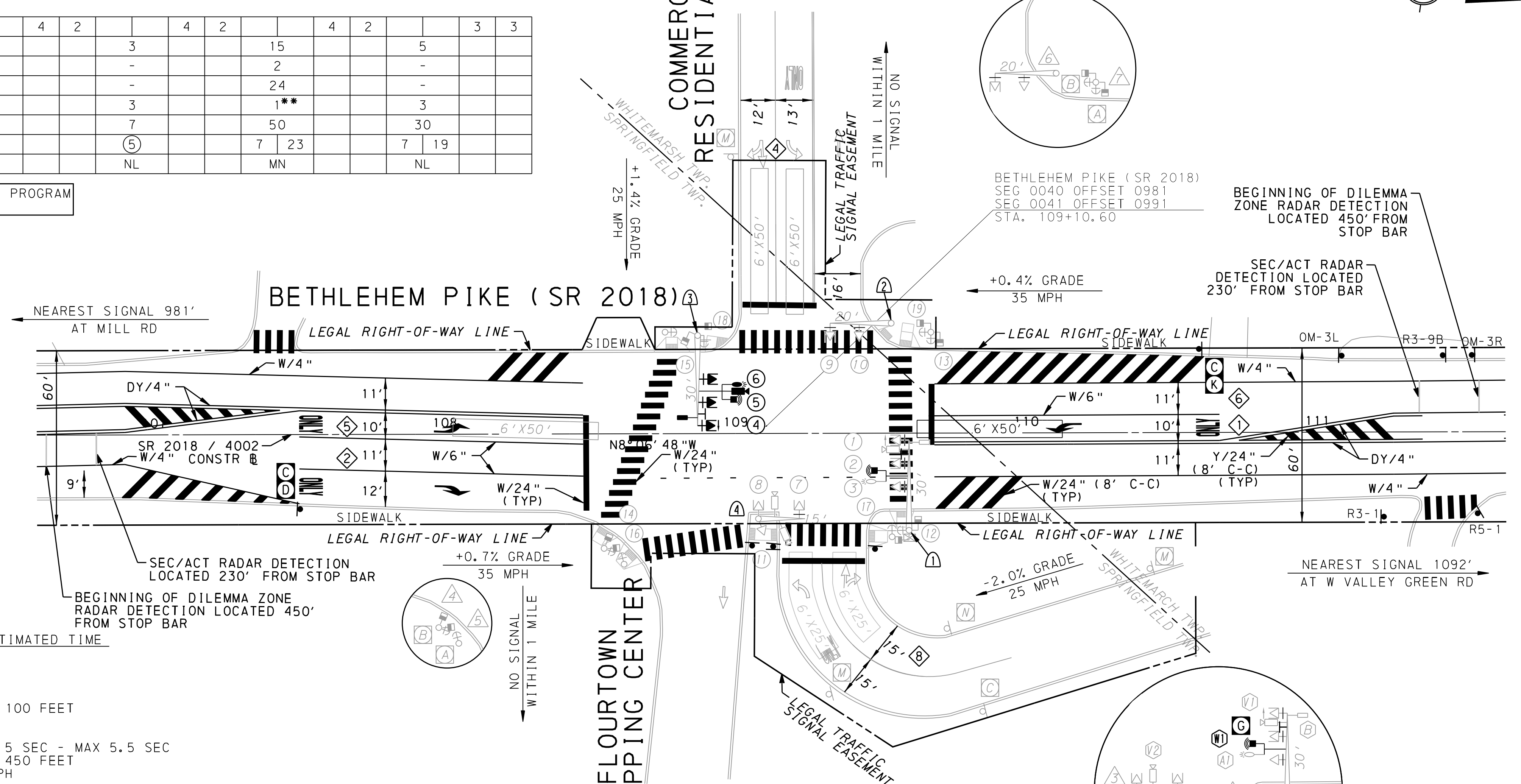


### CONSTRUCTION NOTES:

- ① INSTALL RETROREFLECTIVE BACKPLATES TO SIGNAL HEADS 1, 2, & 3. INSTALL ADVANCE DILEMMA RADAR DETECTION SYSTEM. UPDATE CONTROLLER EQUIPMENT TO PROVIDE FLASHING YELLOW ARROW OPERATION AND ADJUST SIGNAL TIMINGS.
- ② INSTALL RETROREFLECTIVE BACKPLATES TO SIGNAL HEAD 9 & 10.
- ③ INSTALL NEW 4-SECTION VEHICULAR SIGNAL 4. REALIGN EXISTING 3-SECTION VEHICULAR SIGNAL HEADS 5 & 6 AND INSTALL RETROREFLECTIVE BACKPLATES. INSTALL VIDEO DETECTOR. INSTALL ADVANCE DILEMMA RADAR DETECTION SYSTEM. RESET EMERGENCY PREEMPTION EQUIPMENT. INSTALL SIGN L.
- ④ INSTALL RETROREFLECTIVE BACKPLATES TO SIGNAL HEAD 7.

RETURN ANY REMOVED SIGNAL EQUIPMENT TO SPRINGFIELD TOWNSHIP. CONTACT SPRINGFIELD TOWNSHIP DEPARTMENT OF PUBLIC WORKS TO ARRANGE DELIVERY.

EXISTING CONDUIT AND JUNCTION BOX LOCATIONS SHOWN ON PLANS ARE APPROXIMATE. VERIFY EXISTING CONDUIT LOCATIONS AND WIRING ROUTING IN THE FIELD PRIOR TO CONSTRUCTION.



VEHICULAR SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS:  
 1, 2, 4, 5, 6, 7, 8, 9

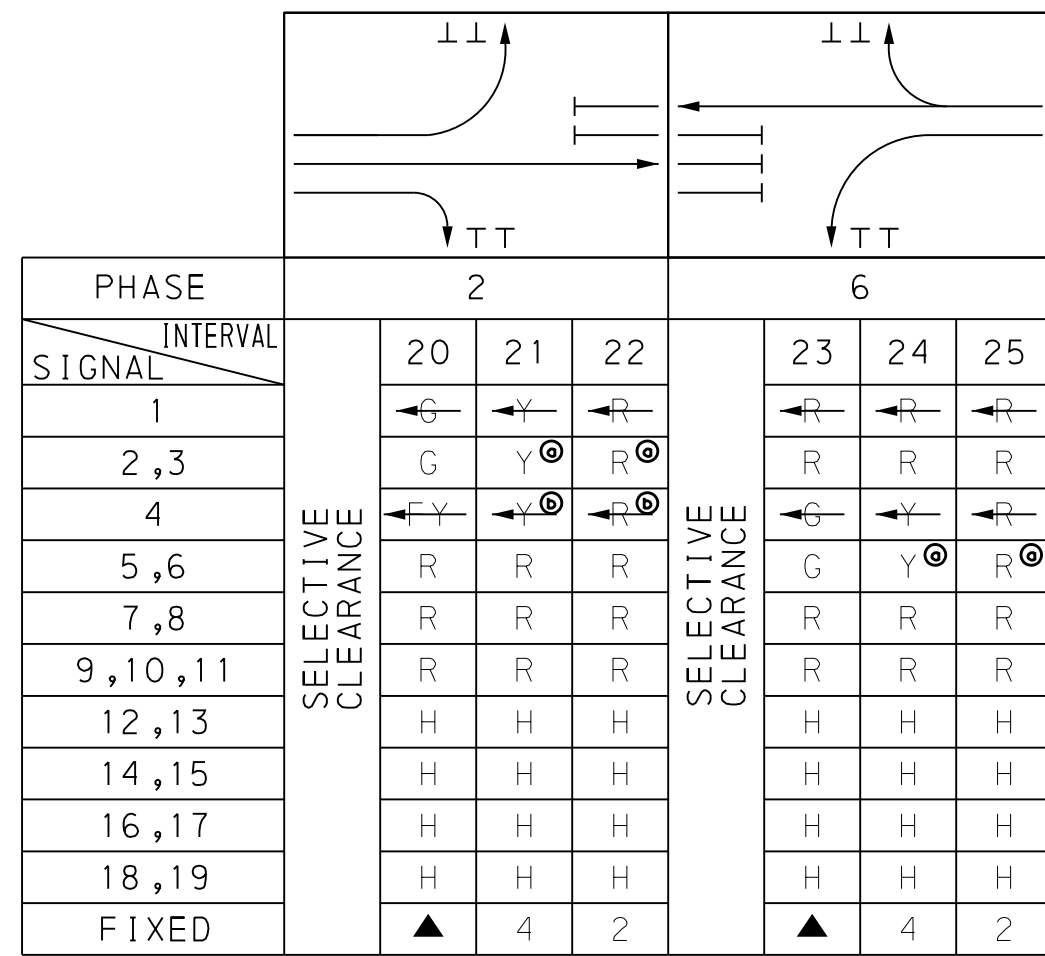
VEHICULAR SIGNALS TO BE EQUIPPED WITH LOUVERS:

### TRAFFIC SIGNAL CONSTRUCTION PLAN

PREPARED BY:  
 HNTB CORPORATION  
 1650 ARCH ST, SUITE 1700  
 PHILADELPHIA, PA 19103

**DRAFT**

**EMERGENCY PRE-EMPTION PHASING  
MOVEMENT, PHASING, AND SEQUENCE CHART**



▲ FOR DURATION OF PRE-EMPTION  
NOTE: IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

**EMERGENCY PRE-EMPTION  
OPERATION NOTES**

- ⊙ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION
- ⊙ SIGNAL TO INDICATE ~~F~~ WHEN RETURNING TO NORMAL OPERATION

**EMERGENCY PRE-EMPTION NOTES:**

CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND AND SOUTHBOUND APPROACHES OF BETHLEHEM PIKE (SR 2018) WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTION PHASE SHALL FOLLOW. ONLY THOSE PHASES NOT POSING A YELLOW TRAP CONDITION MAY REMAIN GREEN (2+5,6) WHEN GOVERNED BY APPROACHING EMERGENCY VEHICLE.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL FOR THE PRE-EMPTION GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.

IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PED "WALK" (MAN) INTERVAL SHALL TERMINATE IMMEDIATELY AND THE PED "CLEAR" (FLASHING HAND AND COUNTDOWN TIMER) INTERVAL SHALL TIME OUT, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PRE-EMPTION.

IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.

IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.

UPON COMPLETION OF PRE-EMPTION PHASE 2 OR 6 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 5 SHALL FOLLOW.

IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.

**FLAT SHEET ALUMINUM SIGN TABULATION**

| PLAN SYMBOL | SERIES NUMBER | SIZE (IN) | AREA EACH (SF) | DESCRIPTION                              | QUANTITY (FOR INFO. ONLY)  |                            |   | ITEM NUMBER |           |           |
|-------------|---------------|-----------|----------------|--|----------------------------|----------------------------|---|-------------|-----------|-----------|
|             |               |           |                |  | POST MOUNTED SIGNS, TYPE B | POST MOUNTED SIGNS, TYPE F | STRUCTURE MOUNTED FLAT SHEET ALUMINUM SIGNS | 0931 0001   | 0935 0001 | 0936 0200 |
| ⓐ           | R3-7L         | 36"x36"   | 9.0            | LEFT LANE MUST TURN LEFT                 | 2                          | 1                          |   | ▲           | ▲         |           |
| ⓑ           | R3-7R         | 36"x36"   | 9.0            | RIGHT LANE MUST TURN RIGHT               |                            | 1                          |   |             | ▲         |           |
| ⓒ           | R4-7          | 24"x30"   | 5.0            | KEEP RIGHT                               | 1                          |                            |   | ▲           |           |           |
| ⓓ           | R5-1          | 36"x36"   | 9.0            | DO NOT ENTER                             | 2                          |                            |   | ▲           |           |           |
| ⓔ           | R10-10L       | 30"x36"   | 7.5            | LEFT TURN SIGNAL                         |                            |                            | 1   |             |           | 7.5       |
| ⓕ           | OM1-3         | 18"x18"   | 2.25           | OBJECT MARKER                            |                            | 1                          |   |             | ▲         |           |
| ⓖ           | R4-107        | 30"x30"   | 6.25           | KEEP OFF SHOULDER                        |                            | 1                          |   |             | ▲         |           |
| ⓗ           | R10-12A       | 30"x36"   | 7.5            | LEFT TURN YIELD ON FLASHING YELLOW ARROW |                            |                            | 1   |             |           | 7.5       |
| TOTALS:     |               |           |                |  |                            |                            |   |             |           | 15        |

▲ SIGN IS PAID FOR AS PART OF THE SIGNING AND PAVEMENT MARKING PLAN. INCLUSION IN THIS TABULATION BLOCK IS FOR INFORMATION PURPOSES ONLY. REFER TO SIGNING AND PAVEMENT MARKING PLAN FOR ADDITIONAL INFORMATION.

| DISTRICT                          | COUNTY     | ROUTE | SECTION | SHEET    |
|-----------------------------------|------------|-------|---------|----------|
| 6-0                               | MONTGOMERY | 2018  | SIP     | 14 OF 17 |
| SPRINGFIELD & WHITEMARSH TOWNSHIP |            |       |         |          |
| REVISION NUMBER                   | REVISIONS  | DATE  | BY      |          |
|                                   |            |       |         |          |

| SIGN TABULATION |               |         |  |  |
|-----------------|---------------|---------|--|--|
| PLAN SYMBOL     | SERIES NUMBER | SIZE    | DESCRIPTION  |  |
| ⓐ               | R10-3E(L)     | 9"x15"  | EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER (LEFT)  |  |
| ⓑ               | R10-3E(R)     | 9"x15"  | EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER (RIGHT) |  |
| ⓒ               | R3-7L         | 36"x36" | LEFT LANE MUST TURN LEFT   |  |
| ⓓ               | R3-7R         | 36"x36" | RIGHT LANE MUST TURN RIGHT   |  |
| ⓔ               | R4-7          | 24"x30" | KEEP RIGHT   |  |
| ⓕ               | R5-1          | 36"x36" | DO NOT ENTER   |  |
| ⓖ               | R10-10L       | 30"x36" | LEFT TURN SIGNAL   |  |
| ⓗ               | OM1-3         | 18"x18" | OBJECT MARKER  |  |
| ⓓ               | R4-107        | 30"x30" | KEEP OFF SHOULDER  |  |
| ⓔ               | R10-12A       | 30"x36" | LEFT TURN YIELD ON FLASHING YELLOW ARROW                             |  |
| ⓕ               | R3-8AL-SR     | 30"x30" | LANE USE CONTROL   |  |
| ⓖ               | R3-6SR        | 30"x30" | OPTIONAL RIGHT TURN  |  |

**MISCELLANEOUS ITEMS**

| ITEM NUM. | QUAN. | UNIT | DESCRIPTION   | LOCATION           |
|-----------|-------|------|---|--------------------|
| 4952 3002 | 1     | EACH | CONTROLLER MODIFICATION, FLASHING YELLOW ARROW      | C. C.              |
| 0954 0203 | 220   | LF   | SIGNAL CABLE, 12 AWG, 7 CONDUCTOR                   | C. C.              |
| 0955 3209 | 1     | EACH | VEHICULAR SIGNAL HEADS, FOUR 12" SECTIONS           | ④                  |
| 0955 5000 | 8     | EACH | BACKPLATE RETROFIT                                  | ① ② ③ ⑤<br>⑥ ⑦ ⑨ ⑩ |
| 0956 0700 | 1     | EACH | VIDEO DETECTOR                                      | ⑫                  |
| 9000 0006 | 1     | EACH | DILEMMA ZONE RADAR DETECTION SYSTEM, TWO APPROACHES | ⑪ ⑭                |
| 9000 0007 | 2     | EACH | RESET OPTICAL PREEMPTION SYSTEM AND BEACON ASSEMBLY | ⑬ ⑮                |
| 9000 0008 | 2     | EACH | RESET VEHICULAR SIGNAL HEAD                         | ⑥ ⑧                |

**TRAFFIC SIGNAL  
CONSTRUCTION PLAN**

|  |  |
|--|--|
| PREPARED BY:<br>HNTB CORPORATION<br>1650 ARCH STREET<br>SUITE 1700<br>PHILADELPHIA,<br>PA 19103<br><br>_____<br>PROFESSIONAL ENGINEER<br><br>_____<br>DATE | COUNTY: <u>MONTGOMERY</u>  |
|  | MUNICIPALITY: <u>SPRINGFIELD &amp; WHITEMARSH TOWNSHIP</u>   |
|  | INTERSECTION: <u>BETHLEHEM PIKE (SR 2018) &amp; FLOURTOWN SHOPPING CENTER / COMMERCIAL/RESIDENTIAL DRIVE</u> |
|  | APPROVED BY:<br>_____<br>MUNICIPAL OFFICIAL <span style="float: right;">DATE</span>                          |
| RECOMMENDED:<br>_____<br>DISTRICT TRAFFIC ENGINEER <span style="float: right;">DATE</span>   | SCALE:   |

**GENERAL NOTES**

DO NOT MODIFY INSTALLATION WITHOUT PRIOR WRITTEN APPROVAL BY THE DEPARTMENT.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ARE PART OF THE PERMIT. INSTALL AND MAINTAIN IN ACCORDANCE WITH PUBLICATION 212 AND PUBLICATION 236.

INSTALL POST MOUNTED SIGNALS WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF THE CURB OR EDGE OF THE SHOULDER. PROVIDE A MINIMUM HORIZONTAL CLEARANCE OF 2 FEET FOR ALL SUPPORT POLES FOR OVERHEAD SIGNALS.

ERECT THE BOTTOM OF SIGNAL HEADS AND SIGNS OVER THE ROADWAY NOT LESS THAN 16 FEET NOR MORE THAN 19 FEET ABOVE THE ROADWAY. ERECT THE BOTTOM OF POST MOUNTED SIGNAL HEADS NOT LESS THAN 8 FEET NOR MORE THAN 15 FEET ABOVE THE SIDEWALK OR PAVEMENT GRADE.

MAINTAIN A MINIMUM HORIZONTAL DISTANCE OF 8 FEET BETWEEN SIGNAL HEADS, MEASURED AT RIGHT ANGLES TO THE APPROACH.

DETERMINE THE EXACT LOCATION OF DETECTORS WITH A PENNDOT REPRESENTATIVE PRIOR TO INSTALLATION.

THE CONTRACTOR IS TO COMPLETE THE NECESSARY APPLICATION(S) IN ORDER TO OBTAIN ELECTRICAL SERVICE FROM THE LOCAL POWER COMPANY.

CONSULT WITH LOCAL OFFICIALS AND UTILITIES TO RESOLVE CONFLICTS PRIOR TO CONSTRUCTION.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE CONTRACTOR COMPLIES WITH THE PROVISIONS OF ACT 50, AS AMENDED, UNDERGROUND UTILITY PROTECTION ACT, DATED APRIL 28, 2018. PRIOR TO CONSTRUCTION, CONSULT WITH UTILITY COMPANIES TO RESOLVE ANY CONFLICTS.

UNDERGROUND UTILITY INFORMATION HAS BEEN PROVIDED BY THE RESPECTIVE USERS IN RESPONSE TO THE PA ONE CALL SYSTEM. REFERENCE SERIAL NUMBER: 20220462162

ISSUED ON: 02/15/2022

HNTB CORPORATION HAS NOT MADE AN INDEPENDENT DETERMINATION WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION AND SPECIFICALLY DISCLAIMS ANY WARRANTY OR REPRESENTATION AS TO THE ACCURACY OF SUCH INFORMATION. ALL LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

**CALL BEFORE YOU DIG !**

PENNSYLVANIA LAW REQUIRES  
3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE  
AND 10 WORKING DAYS IN DESIGN STAGE.

BEFORE YOU DIG, CALL  
THE PA ONE CALL SYSTEM TELEPHONE NUMBER.



1-800-242-1776

PERMIT NO: S-1210

COUNTY: MONTGOMERY

MUNICIPALITY: SPRINGFIELD TOWNSHIP

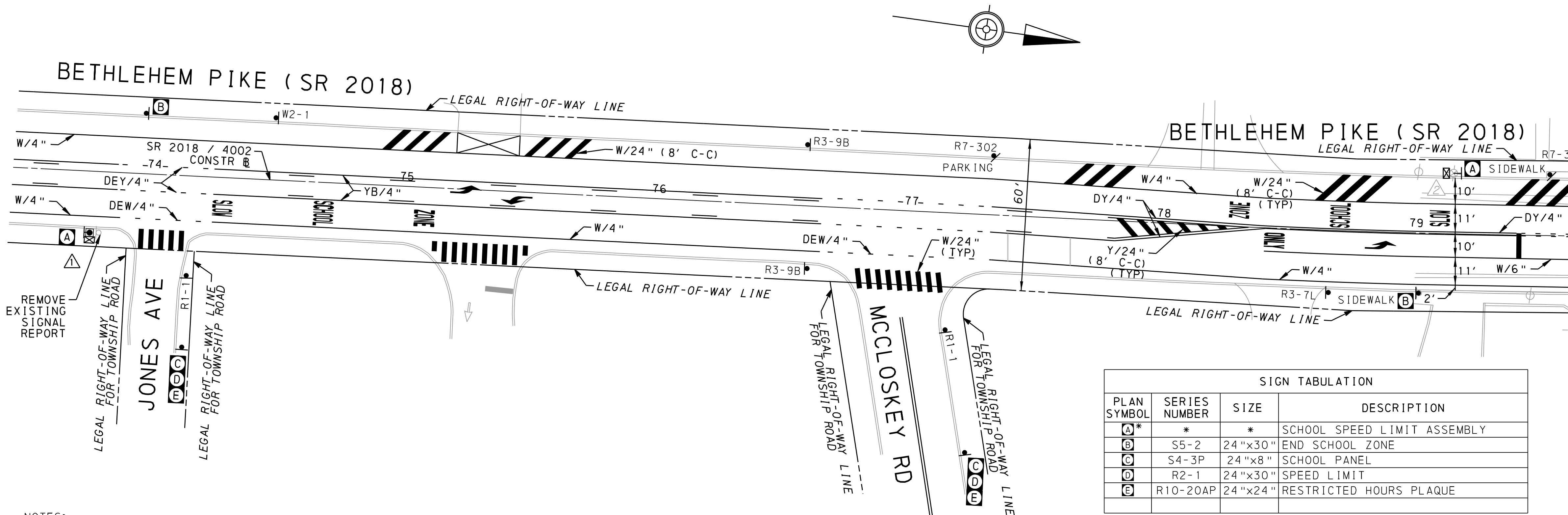
INTERSECTION: BETHLEHEM PIKE (SR 2018) &  
SAINT GENEVIEVE SCHOOL FLASHERS

REVIEWED:

MUNICIPAL OFFICIAL \_\_\_\_\_ DATE \_\_\_\_\_

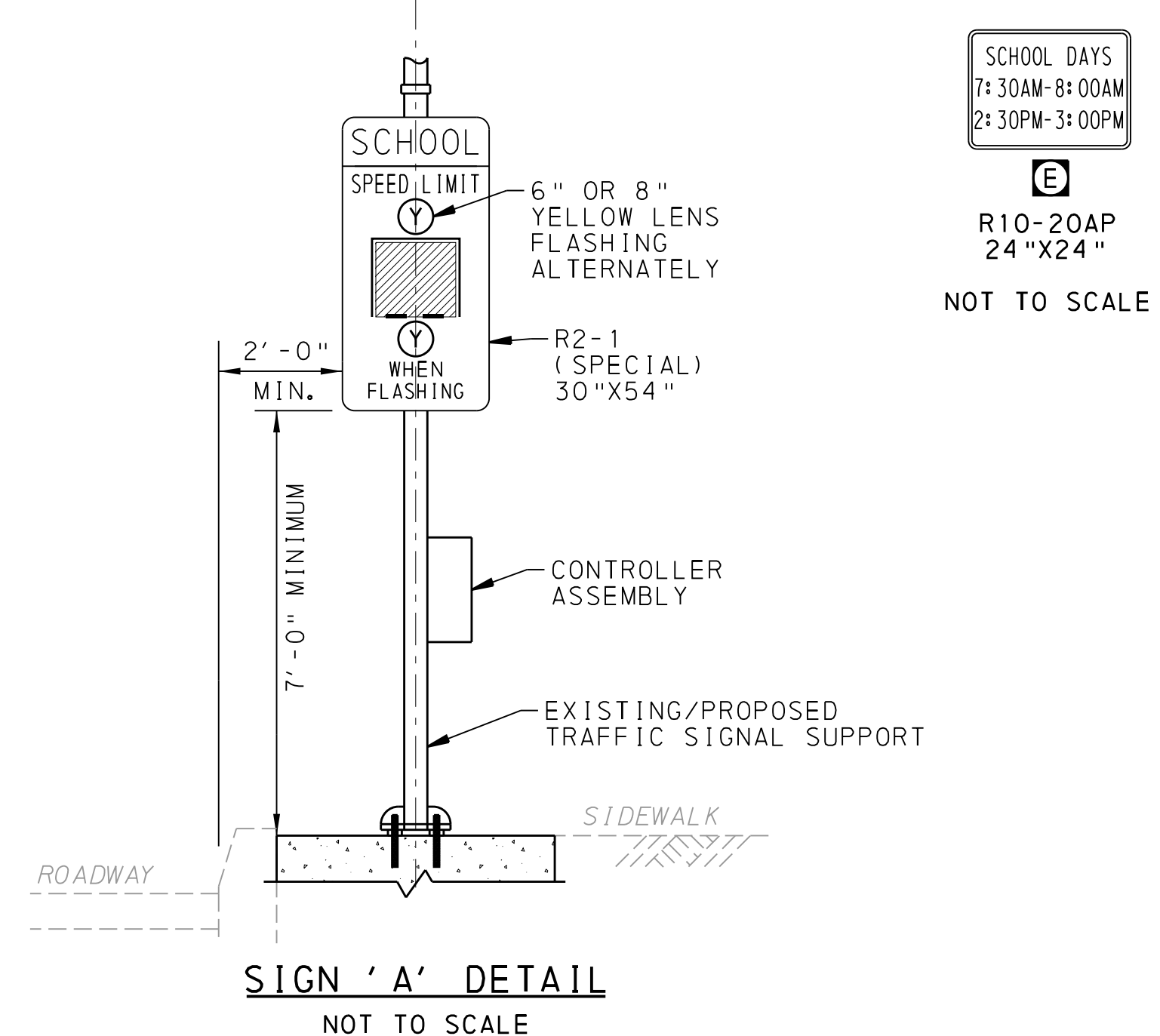
RECOMMENDED:

ADE - TRANSPORTATION OPERATIONS \_\_\_\_\_ DATE \_\_\_\_\_

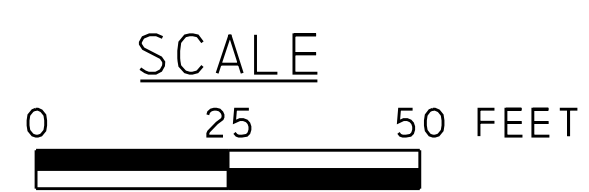
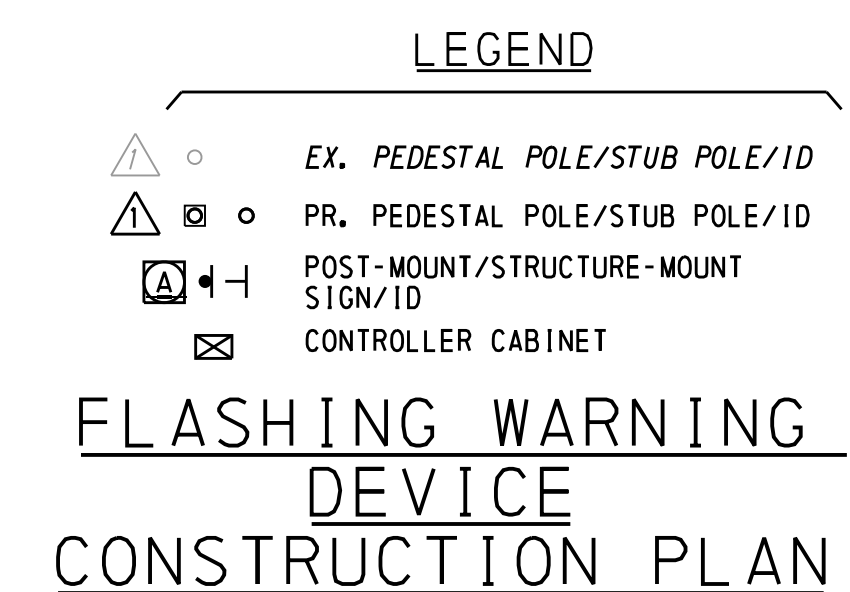


| PLAN SYMBOL | SERIES NUMBER | SIZE    | DESCRIPTION                 |
|-------------|---------------|---------|-----------------------------|
| A*          | *             | *       | SCHOOL SPEED LIMIT ASSEMBLY |
| B           | S5-2          | 24"x30" | END SCHOOL ZONE             |
| C           | S4-3P         | 24"x8"  | SCHOOL PANEL                |
| D           | R2-1          | 24"x30" | SPEED LIMIT                 |
| E           | R10-20AP      | 24"x24" | RESTRICTED HOURS PLAQUE     |

\* REFER TO SIGN 'A' DETAILS



NOTE:  
SIGN TO INCLUDE WHITE FLASHING INDICATOR LIGHT ON BACK, ILLUMINATED DURING FLASHING OPERATION.  
SIGNAL SUPPORTS TO BE POWDER COATED BLACK.



PREPARED BY:  
HNTB CORPORATION  
1650 ARCH ST, SUITE 1700  
PHILADELPHIA, PA 19103

**DRAFT**

- NOTES:**
- ALL FLASHING ASSEMBLIES SHALL HAVE 6" OR 8" YELLOW LED LENSES AND FLASH ALTERNATELY AT A RATE OF NOT LESS THAN 50, NOR MORE THAN 60 TIMES PER MINUTE.
  - WHEN THE SIGNALS ARE FLASHED, THE SPEED MESSAGE "15" SHALL BE VISIBLE.
  - TIMERS SHALL ALLOW THE FLASHERS TO OPERATE AS THE HOURS LISTED IN PERMIT NO. S-1210, SHEET 1
    - TIMER SHALL BE CAPABLE OF YEARLY PROGRAMMING TO ELIMINATE FLASHING DURING SCHEDULED HOLIDAYS AND SCHOOL CLOSINGS.
    - TIMER SHALL BE CAPABLE OF MANUAL TURN ON OF THE FLASHERS FOR ONE (1) HOUR OF OPERATION UPON ACTIVATION WITH A KEY.

**MISCELLANEOUS ITEMS**

| ITEM NUM. | QUAN. | UNIT | DESCRIPTION   | LOCATION |
|-----------|-------|------|---|----------|
| 4935 0411 | 2     | EACH | SCHOOL ZONE SPEED LIMIT FLASHING WARNING SIGN (TYPE II), CONFIRMATION LIGHT | ▲ ▲      |
| 0951 4106 | 1     | EACH | TRAFFIC SIGNAL SUPPORT, 14' PEDESTAL, POWDER COATED                         | ▲        |
| 0954 0402 | 2     | EACH | ELECTRICAL SERVICE, TYPE B  | ▲ ▲      |

**FLAT SHEET ALUMINUM SIGN TABULATION**

| PLAN SYMBOL | SERIES NUMBER | SIZE (IN) | AREA EACH (SF) | DESCRIPTION                              | QUANTITY (FOR INFO. ONLY)  |                            |   | ITEM NUMBER |           |           |
|-------------|---------------|-----------|----------------|--|----------------------------|----------------------------|---|-------------|-----------|-----------|
|             |               |           |                |  | POST MOUNTED SIGNS, TYPE B | POST MOUNTED SIGNS, TYPE F | STRUCTURE MOUNTED FLAT SHEET ALUMINUM SIGNS | 0931 0001   | 0935 0001 | 0936 0200 |
| A           | SPECIAL       | 30"x54"   | 11.25          | SCHOOL ZONE SPEED LIMIT FLASHING WARNING |                            |                            |   |             |           |           |
| B           | S5-2          | 24"x30"   | 5.0            | END SCHOOL ZONE                          | 2                          |                            |   | *           |           |           |
| C           | S4-3P         | 24"x8"    | 1.33           | SCHOOL PANEL                             |                            | 2                          |   |             | *         |           |
| D           | R2-1          | 24"x30"   | 5.0            | SPEED LIMIT                              |                            | 2                          |   |             | *         |           |
| E           | R10-20AP      | 24"x24"   | 4.0            | RESTRICTED HOURS PLAQUE                  |                            |                            | 2   |             |           | *         |
| TOTALS:     |               |           |                |  |                            |                            |   |             |           |           |

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\*\* QUANTIFIED IN MISCELLANEOUS ITEMS TABLE.

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ERECT THE BOTTOM OF SIGNAL HEADS AND SIGNS OVER THE ROADWAY NOT LESS THAN 16 FEET NOR MORE THAN 19 FEET ABOVE THE ROADWAY. ERECT THE BOTTOM OF POST MOUNTED SIGNAL HEADS NOT LESS THAN 8 FEET NOR MORE THAN 15 FEET ABOVE THE SIDEWALK OR PAVEMENT GRADE.

MAINTAIN A MINIMUM HORIZONTAL DISTANCE OF 8 FEET BETWEEN SIGNAL HEADS, MEASURED AT RIGHT ANGLES TO THE APPROACH.

DETERMINE THE EXACT LOCATION OF DETECTORS WITH A PENNDOT REPRESENTATIVE PRIOR TO INSTALLATION.

THE CONTRACTOR IS TO COMPLETE THE NECESSARY APPLICATION(S) IN ORDER TO OBTAIN ELECTRICAL SERVICE FROM THE LOCAL POWER COMPANY.

CONSULT WITH LOCAL OFFICIALS AND UTILITIES TO RESOLVE CONFLICTS PRIOR TO CONSTRUCTION.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE CONTRACTOR COMPLIES WITH THE PROVISIONS OF ACT 50, AS AMENDED, UNDERGROUND UTILITY PROTECTION ACT, DATED APRIL 28, 2018. PRIOR TO CONSTRUCTION, CONSULT WITH UTILITY COMPANIES TO RESOLVE ANY CONFLICTS.

UNDERGROUND UTILITY INFORMATION HAS BEEN PROVIDED BY THE RESPECTIVE USERS IN RESPONSE TO THE PA ONE CALL SYSTEM. REFERENCE SERIAL NUMBER: 20220462162

ISSUED ON: 02/15/2022

HNTB CORPORATION HAS NOT MADE AN INDEPENDENT DETERMINATION WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION AND SPECIFICALLY DISCLAIMS ANY WARRANTY OR REPRESENTATION AS TO THE ACCURACY OF SUCH INFORMATION. ALL LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

**CALL BEFORE YOU DIG !**

PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE.

BEFORE YOU DIG, CALL THE PA ONE CALL SYSTEM TELEPHONE NUMBER.



1-800-242-1776

PERMIT NO: W-6447-41

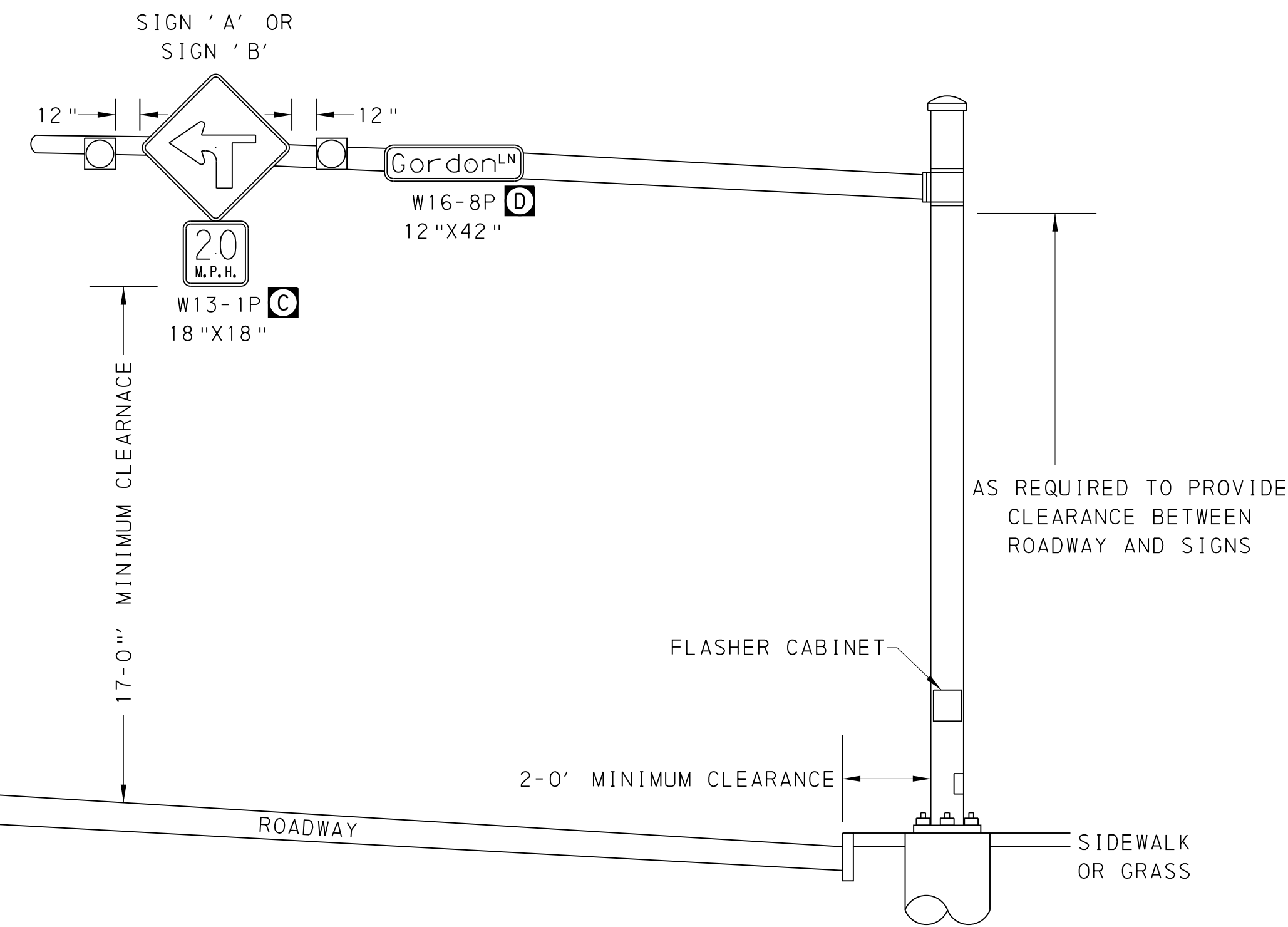
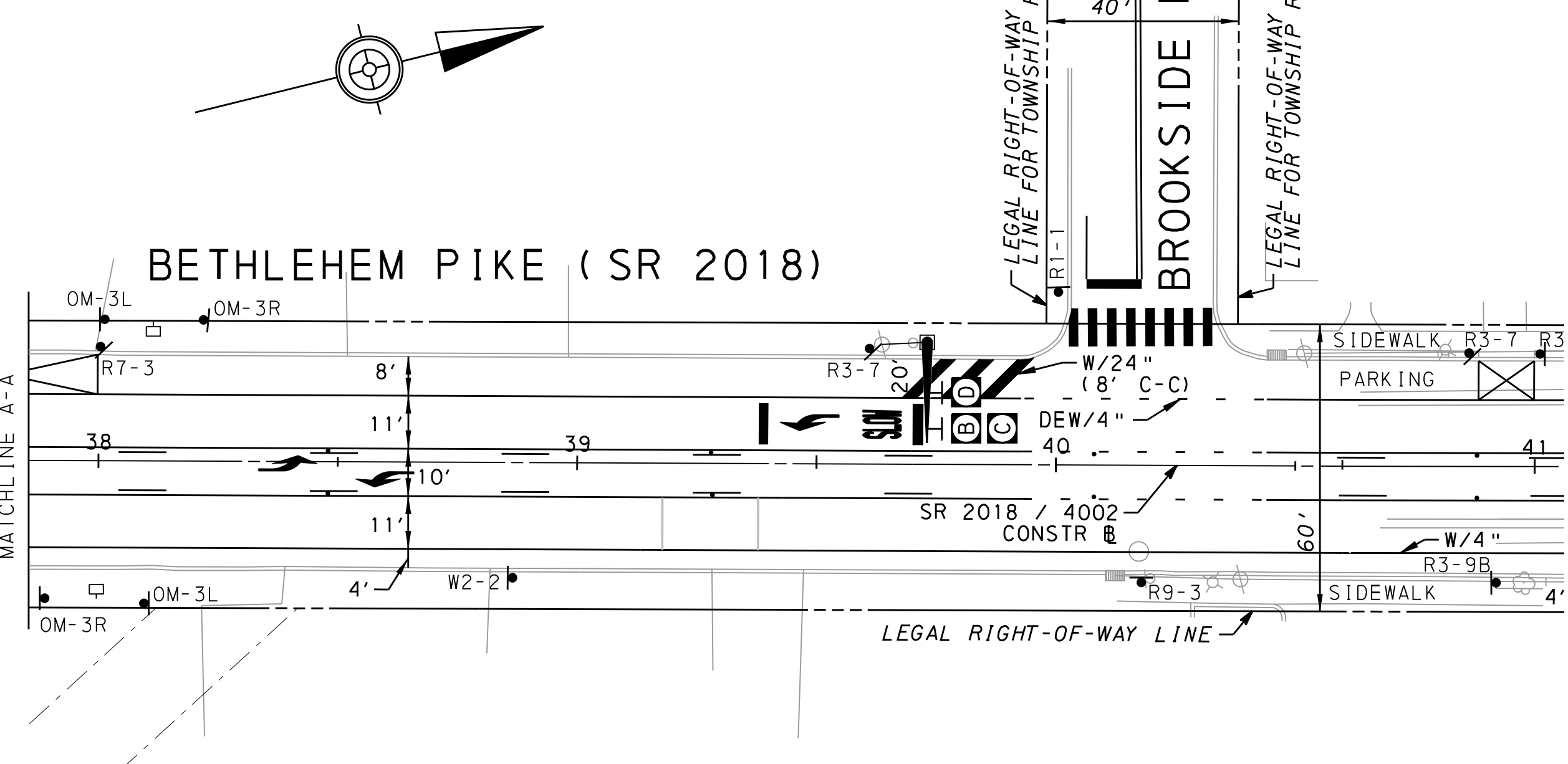
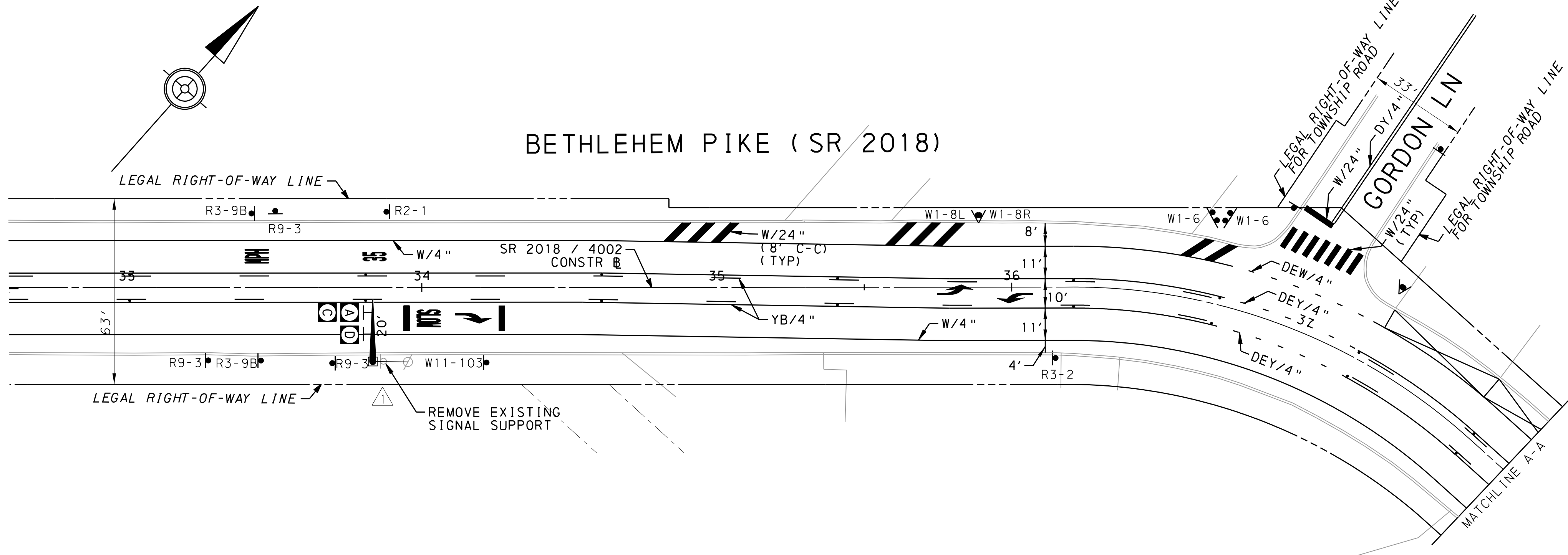
COUNTY: MONTGOMERY  
MUNICIPALITY: SPRINGFIELD TOWNSHIP  
INTERSECTION: BETHLEHEM PIKE (SR 2018) & GORDON LANE

REVIEWED:

MUNICIPAL OFFICIAL \_\_\_\_\_ DATE \_\_\_\_\_

RECOMMENDED:

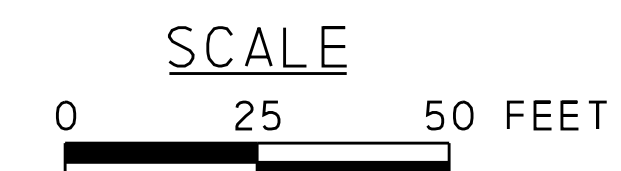
ADE - TRANSPORTATION OPERATIONS \_\_\_\_\_ DATE \_\_\_\_\_



FLASHING WARNING DEVICE DETAIL NOT TO SCALE



SIGN 'D' DETAIL NOT TO SCALE



PREPARED BY:  
HNTB CORPORATION  
1650 ARCH ST, SUITE 1700  
PHILADELPHIA, PA 19103

**DRAFT**

**FLASHING WARNING DEVICE CONSTRUCTION PLAN**

| SIGN TABULATION |               |         |  |  |
|-----------------|---------------|---------|--|--|
| PLAN SYMBOL     | SERIES NUMBER | SIZE    | DESCRIPTION                            |  |
| A               | W1-1RL        | 36"x36" | RIGHT TURN WITH SIDE ROAD LEFT         |  |
| B               | W1-1LR        | 36"x36" | LEFT TURN WITH SIDE ROAD RIGHT         |  |
| C               | W13-1P        | 18"x18" | ADVISORY SPEED PLAQUE (20 MPH)         |  |
| D               | W16-8P        | 12"x42" | SINGLE-LINE ADVANCE STREET NAME PLAQUE |  |

12/22/2022 FILENAME: T182909-s-tr-s1g08a.dgn



