

APPENDICES

C-663A Pre-Construction Traffic Study for the Scudder Falls Bridge Replacement Project

APPENDIX G

SIGNAL PLANS



Effective: 6/22/2010

Route NJ 29 & Washington Crossing-
Pennington Road (MP 11.95)
Hopewell Township, Mercer County**137 – SECOND BACKGROUND CYCLE****112 – SECOND BACKGROUND CYCLE****59 – 80 SECOND VARIABLE CYCLE**

<u>Phase</u>	<u>Signal Faces</u>			<u>Time (Seconds)</u>		
	<u>1,2</u>	<u>3,4</u>	<u>7-12</u>	<u>I</u>	<u>II</u>	<u>III</u>
A) Route NJ 29 SB Lead	R	G/<G-	R	9	*	*
Change	R	G/<Y-	R	3	*	*
B) Route NJ 29 ROW	G	G	R	106 - 58	93 - 64	40
Change	Y	Y	R	4	4	4
Clearance	R	R	R	2	2	2
C) Washington Crossing-Pennington Rd ROW	R	R	G	7 - 55	7 - 36	7 - 28
Change	R	R	Y	4	4	4
Clearance	R	R	R	2	2	2
Emergency Flash	Y	Y	R	-	-	-

NOTES:

1. Vehicular memory to be off.
2. Vehicle extension is to be 2 seconds.
3. Manual control is to be connected.
4. Pedestrian actuation is to provide a minimum green time of 21 seconds to Phase C.

*The lead left-turn arrow shall not be displayed.

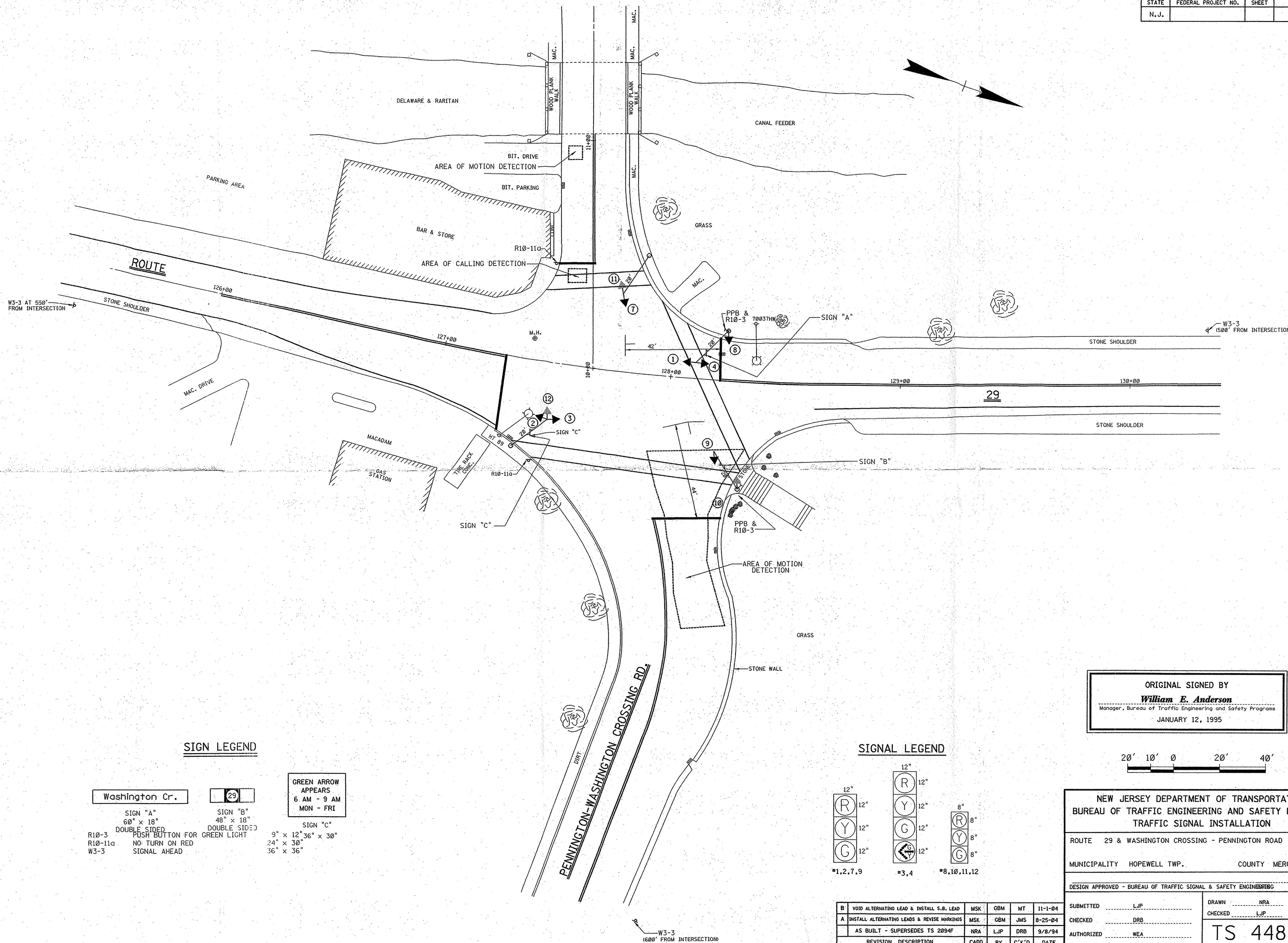
Hours of Operation: Timing I (137-Second Background Cycle) - 6:00 A.M. to 9:00 A.M. (Monday – Friday)
Timing II (112-Second Background Cycle) - 4:00 P.M. to 6:30 P.M. (Monday – Friday)
Timing III (59–80 Second Variable Cycle) - All Other Times

REFERENCE PARSONS BRINCKERHOFF - FC, INC.
ENGINEERS AND CONSULTANTS,
W. TRENTON, N.J.

NJDOT CADD DATA

ACCOUNT ELECTRICAL
DIRECTOR Lemer Cae
DWG. NAME UT:emer-cae#11010205-212
PLOT DATE 19-JUN-2007 12:49

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.			



SIGN LEGEND

Washington Cr.

SIGN "A"
60" x 18"

DOUBLE SIDED

R10-3
R10-11a
W3-3

PUSH BUTTON FOR
NO TURN ON RED
SIGNAL AHEAD

SIGN "B"
48" x 18"

DOUBLE SIDED

R10-3
R10-11a
W3-3

PUSH BUTTON FOR
NO TURN ON RED
SIGNAL AHEAD

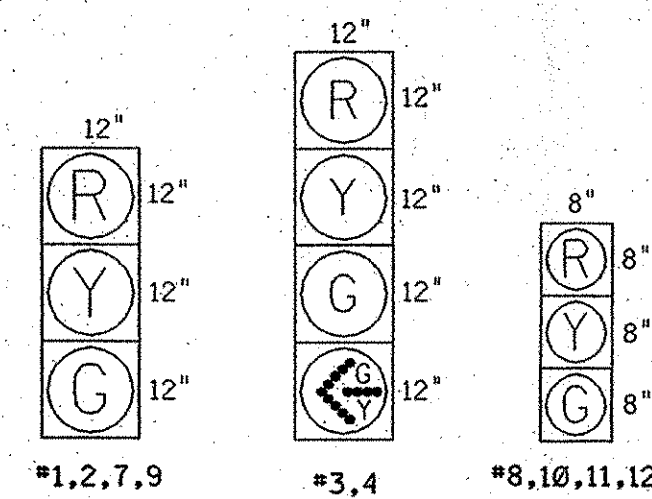
GREEN ARROW
APPEARS
6 AM - 9 AM
MON - FRI

SIGN "C"
9" x 12" 36" x 30"

24" x 30"

36" x 36"

SIGNAL LEGEND



REVISION	DESCRIPTION	CADD	BY	C'K'D	DATE
A	VOID ALTERNATING LEAD & INSTALL S.B. LEAD	MSK	GBM	MT	11-1-04
B	INSTALL ALTERNATING LEADS & REVISE MARKINGS	MSK	GBM	JMS	8-25-04
C	AS BUILT - SUPERSEDES TS 2094F	NRA	LJP	DRB	9/8/94

ORIGINAL SIGNED BY
William E. Anderson
Manager, Bureau of Traffic Engineering and Safety Programs
JANUARY 12, 1995

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC ENGINEERING AND SAFETY PROGRAMS
TRAFFIC SIGNAL INSTALLATION

ROUTE 29 & WASHINGTON CROSSING - PENNINGTON ROAD

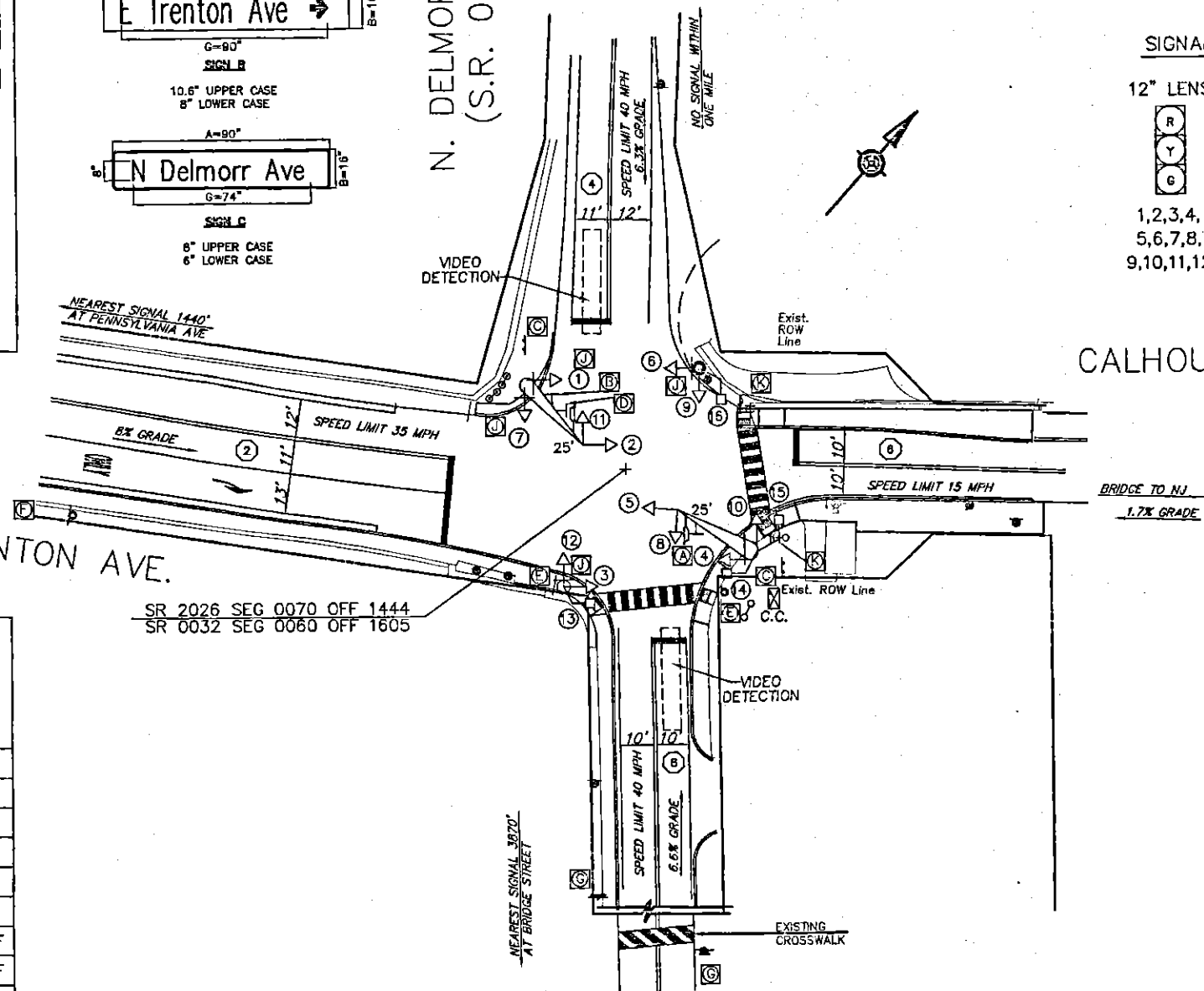
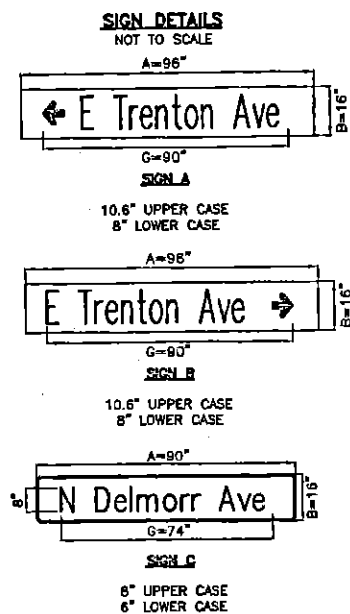
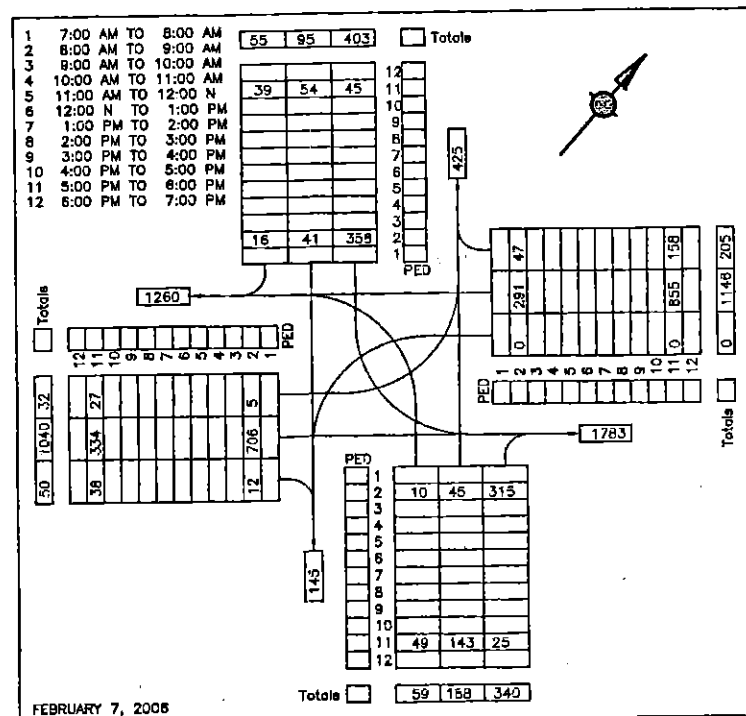
MUNICIPALITY HOPEWELL TWP. COUNTY MERCER

DESIGN APPROVED - BUREAU OF TRAFFIC SIGNAL & SAFETY ENGINEERING DATE

SUBMITTED LJP DRAWN NRA SCALE: 1"=20'

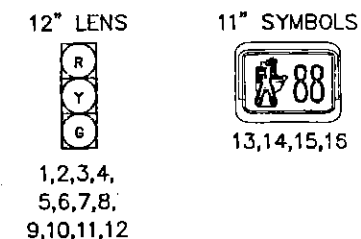
CHECKED DRB CHECKED LJP

AUTHORIZED WEA TS 4483B



SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	D3-4	96"x16"	E TRENTON AVE ←
B	D3-4	96"x16"	E TRENTON AVE →
C	D3-4	72"x16"	N DELMORR AVE
D	R3-2	36"x36"	NO LEFT TURN
E	R10-11	30"x36"	NO TURN ON RED
F	R3-7R	30"x30"	RIGHT LANE MUST TURN RIGHT
G	W11-2	36"x36"	PEDESTRIAN CROSSING (NOT IN CONTRACT BY OTHERS)
J	R9-3A	18"x18"	NO PEDESTRIAN CROSSING
K	R10-3E(L)	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER

SIGNAL INDICATIONS



GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION ENGINEERING DISTRICT 6-0

COUNTY: **BUCKS**
MUNICIPALITY: **MORRISVILLE BOROUGH**
INTERSECTION: **E. TRENTON AVE (SR 2026) AND
N. DELMORR AVE/RIVER RD (S.R. 0032)**

REVIEWED:

ROBERT A. SEWARD (ASSISTANT BOROUGH MANAGER) DATE 9-7-10
MUNICIPAL OFFICIAL DATE

RECOMMENDED:

MARK L. KRAY

DOUGLAS MAY

DISTRICT TRAFFIC ENGINEER DATE

NO. REVISION

1 NEW DRAWING, NEW SIGNAL JTS 8/10 NBP 9/7/10 APATL 9/7/10

2 AS BUILT BJD 11/2/13 NBP 12/1/13 APATL 12/1/13

3

4

5

6

7

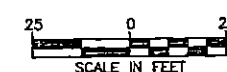
8

SHEET 1 OF 1 PERMIT # 61-0722 FILE # 0722

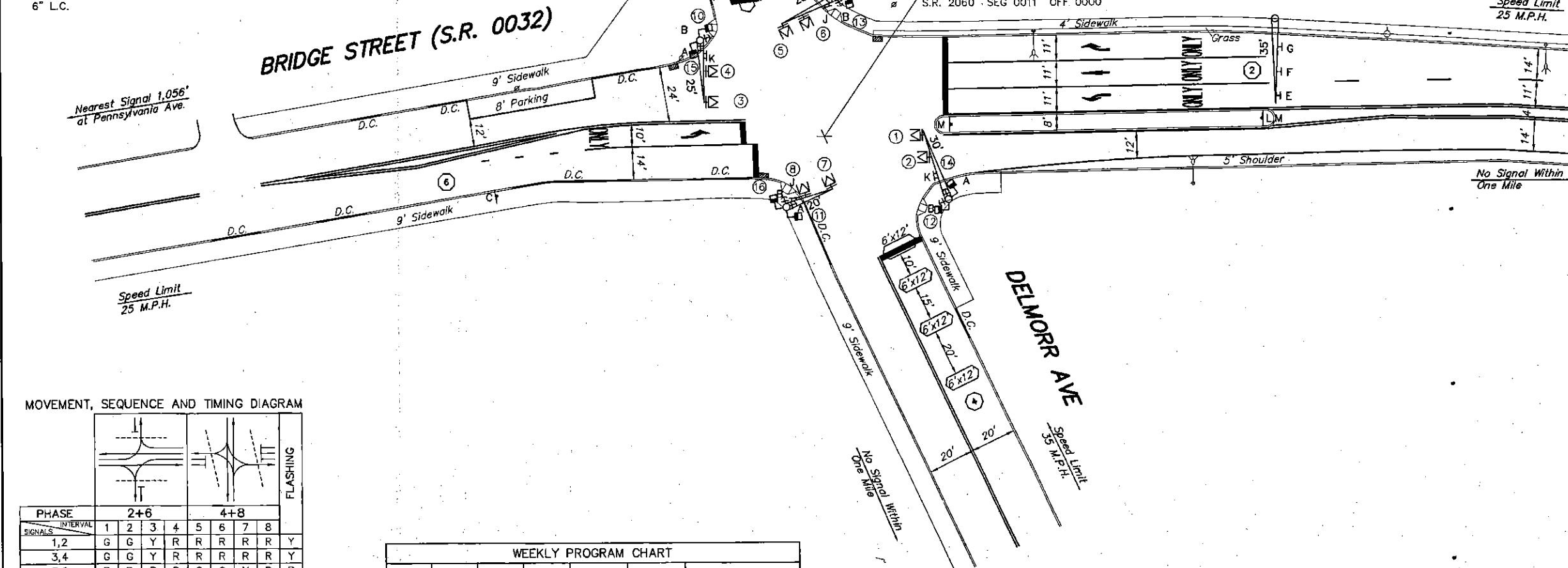
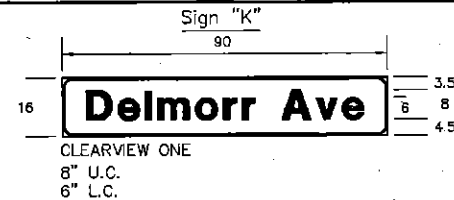
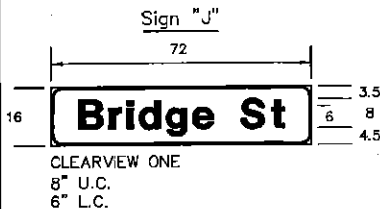
OPERATION NOTES:

- SIGNAL TO DWELL IN PHASE 2+6, UNTIL ACTUATED BY PHASE 4+8.
- MAXIMUM 1 TO OPERATE MONDAY TO FRIDAY FROM 6AM TO 9AM.
- MAXIMUM 1 TO OPERATE AT ALL OTHER TIMES.

LEGEND	
25'	MICROWAVE DETECTOR
②	MAST ARM/IDENTIFYING LENGTH
②	VEHICULAR SIGNAL HEAD/BACKPLATE/VISORS/DIRECTIONAL ARROW/IDENTIFYING NUMBER
②	PEDESTRIAN SIGNAL HEAD/IDENTIFYING NUMBER
②	PEDESTRIAN PUSH-BUTTON/SIGN
A	SIGN/IDENTIFYING LETTER
—	VIDEO DETECTION
—	EMERGENCY PREEMPTION BEACON
—	EMERGENCY PREEMPTION DETECTOR
—	ADA CURB RAMP
—	UTILITY POLE
②	PHASE NUMBER
—	INLET
—	VIDEO DETECTION CAMERA
—	CONTROLLER BOX



SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R10-3BR	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON
B	R10-3BL	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON
C	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
E	R3-5L	30"x36"	LEFT TURN
F	R3-5S	30"x36"	STRAIGHT THROUGH
G	R3-5R	30"x36"	RIGHT TURN
J	D3-4	72"x16"	SINGLE-LINE OVERHEAD STREET NAME SIGN
K	D3-4	90"x16"	SINGLE-LINE OVERHEAD STREET NAME SIGN
L	R4-7	24"x30"	KEEP RIGHT
M	OM1-3	18"x18"	OBJECT MARKER



MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2+6				4+8				FLASHING
	1	2	3	4	5	6	7	8	
1,2	G	G	Y	R	R	R	R	R	Y
3,4	G	G	Y	R	R	R	R	R	Y
5,6	R	R	R	R	G	G	Y	R	R
7,8	R	R	R	R	G	G	Y	R	R
9,10,11,12	M*	FH*	H	H	H	H	H	H	OFF
13,14,15,16	H	H	H	H	M*	FH*	H	H	OFF

FIXED	3	2	4	2
MINIMUM	40		3	
PASSAGE	45		34	
MAXIMUM 1	55		24	
MAXIMUM 2	40		29	
PEDESTRIAN*	7	15	7	23
MEMORY	MX		NL	

* UPON PEDESTRIAN ACTUATION ONLY

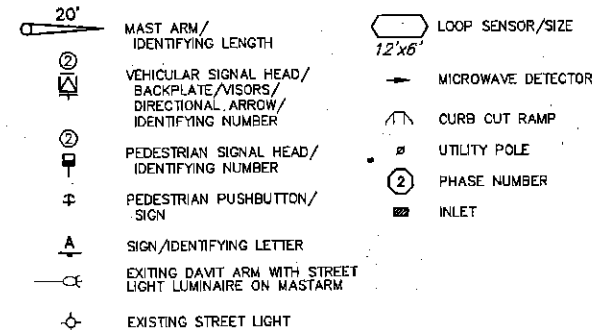
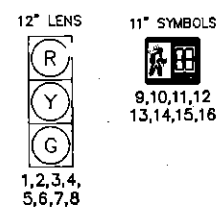
WEEKLY PROGRAM CHART						
EVENT	DAY*	TIME	CYCLE	OFFSET	PROGRAM	REMARKS
1	1-7	00:00	80	-	MAX 3	
2	1-5	07:00	90	-	MAX 1	
3	1-5	09:00	80	-	MAX 3	
4	1-5	18:00	90	-	MAX 2	
5	1-5	18:00	80	-	MAX 3	

* DAY 1 = MONDAY

OPERATION NOTE:

- PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL.

SIGNAL INDICATIONS



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THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 181, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE MARCH 29, 2007.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

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PENNSYLVANIA DEPARTMENT OF TRANSPORTATION

COUNTY: BUCKS
MUNICIPALITY: BOROUGH OF MORRISVILLE
INTERSECTION: DELMORR AVE. (S.R. 0032)
AND BRIDGE ST. (S.R. 0032/S.R. 2060)

REVIEWED:

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE

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Directive #251-02

Route I-95 NB Ramp &
 Bear Tavern Road
 Ewing Township
 Mercer County

68-89 Variable Cycle
 Traffic Signal Operation

Phase	Signals			Time (Sec.)
	1, 2	3, 4	5, 6, 7	
1. Bear Tavern Rd EB Change	<G-, G	R	R	7-15
	<Y-, G	R	R	3
2. Bear Tavern Rd EB & WB Change Clearance	G	G	R	40
	Y	Y	R	4
	R	R	R	2
3. Rt I-95 NB Ramp Change Clearance	R	R	G	7-20*
	R	R	Y	3
	R	R	R	2
Emergency Flash	Y	Y	R	-

Notes:

Memory circuits shall be disconnected, and the vehicle interval shall be set at 2 seconds.

Manual control shall be disconnected.

Controller shall rest in Phase 2.

Phase 2 must follow Phase 1.

Phase 1 and/or 3 may be skipped, if no actuation occurs.

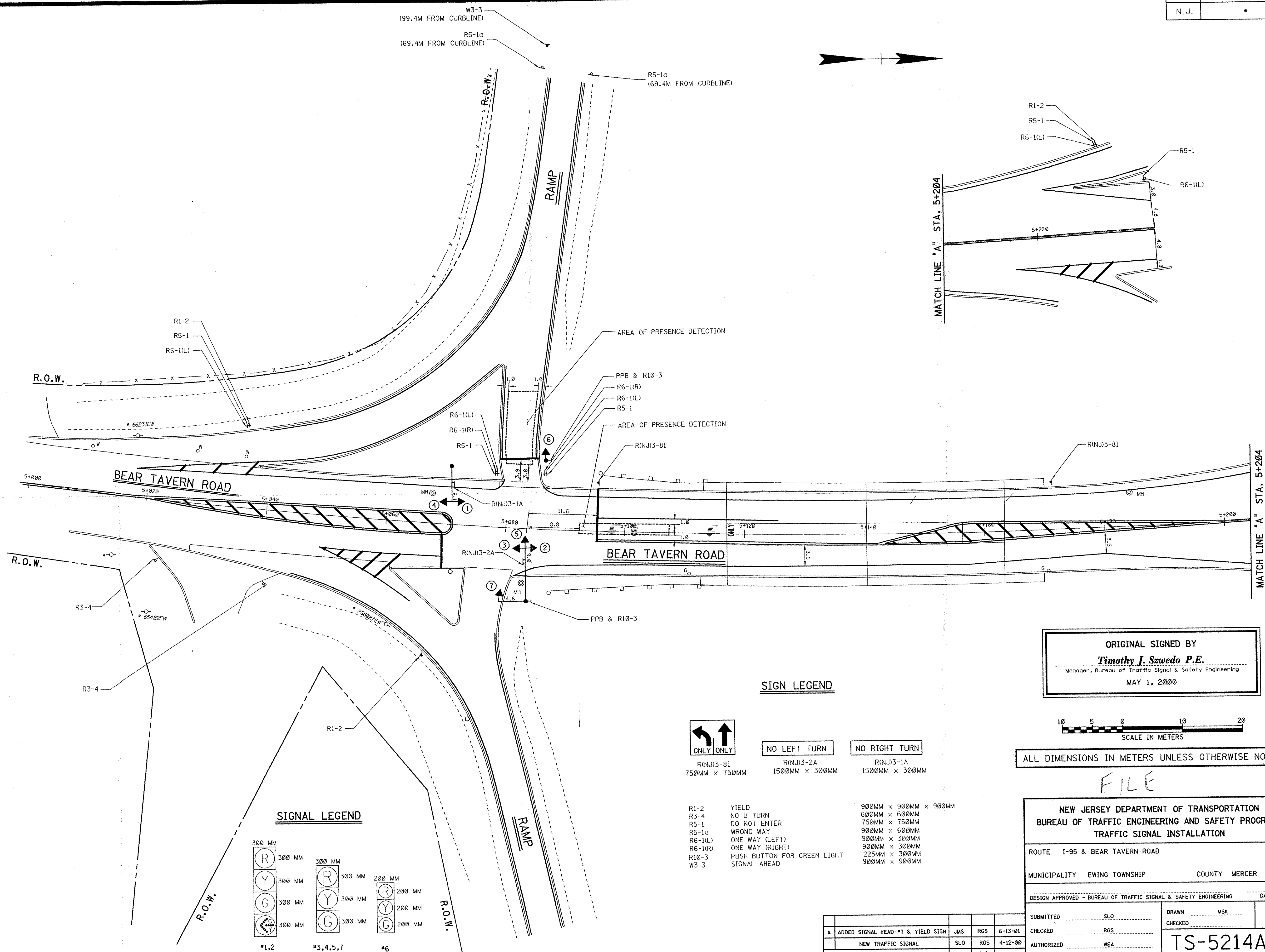
Phase 1 can only follow Phase 3.

The vehicular loop detectors in the left turn slot for Bear Tavern Rd shall provide for a 3-second delay.

* Pedestrian actuation to guarantee a minimum of 12 seconds of green time to this interval.

REFERENCE UPDATED FIELD SURVEY DONE BY SURVEY CENTRAL 3-2-00 MSK.

NJDOT CADD DATA
ACCOUNT ELECTRICAL
DIRECTOR emerger
DWG. NAME /elctdes/emercer/1120101.00a
PLOT DATE 14-JUN-2001 09:04



ORIGINAL SIGNED BY
Timothy J. Szewo P.E.
Manager, Bureau of Traffic Signal & Safety Engineering
MAY 1, 2000

10 5 0 10 20
SCALE IN METERS

ALL DIMENSIONS IN METERS UNLESS OTHERWISE NOTED

FILE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC ENGINEERING AND SAFETY PROGRAMS
TRAFFIC SIGNAL INSTALLATION

ROUTE I-95 & BEAR TAVERN ROAD

MUNICIPALITY EWING TOWNSHIP COUNTY MERCER

DESIGN APPROVED - BUREAU OF TRAFFIC SIGNAL & SAFETY ENGINEERING DATE

SUBMITTED SLO DRAWN MSK SCALE:
CHECKED RGS
AUTHORIZED WEA

TS-5214A

REVISION	DESCRIPTION	BY	C/K'D	DATE
A	ADDED SIGNAL HEAD #7 & YIELD SIGN	JMS	RGS	6-13-01
	NEW TRAFFIC SIGNAL	SLO	RGS	4-12-00

SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R10-11	30" x 36"	"NO TURN ON RED"
B	R10-11	24" x 30"	"NO TURN ON RED"
C	R10-12	24" x 30"	"LEFT TURN YIELD ON GREEN"
D	R10-6L	24" x 30"	"STOP HERE ON RED"
E	W3-3	36" x 36"	SIGNAL AHEAD SIGN
F	R3-5L	30" x 36"	LEFT TURN SIGN
G	R3-6SR	30" x 36"	OPTIONAL RIGHT TURN SIGN
H	R10-3	3" x 12"	"PUSH BUTTON FOR GREEN LIGHT"
J	R10-3	9" x 12"	"PUSH BUTTON FOR GREEN LIGHT"
K	R7-1	12" x 12"	NO PARKING SYMBOL SIGN
L	R7-7	12" x 6"	NO PARKING ARROW SIGN
M	R3-7L	30" x 30"	"LEFT LANE MUST TURN LEFT"

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION N° 68.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

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PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

IN ADDITION TO THIS SIGNAL PERMIT THE PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT PRIOR TO ANY OPENINGS BEING MADE IN OR UNDER ANY PORTION OF A STATE HIGHWAY.

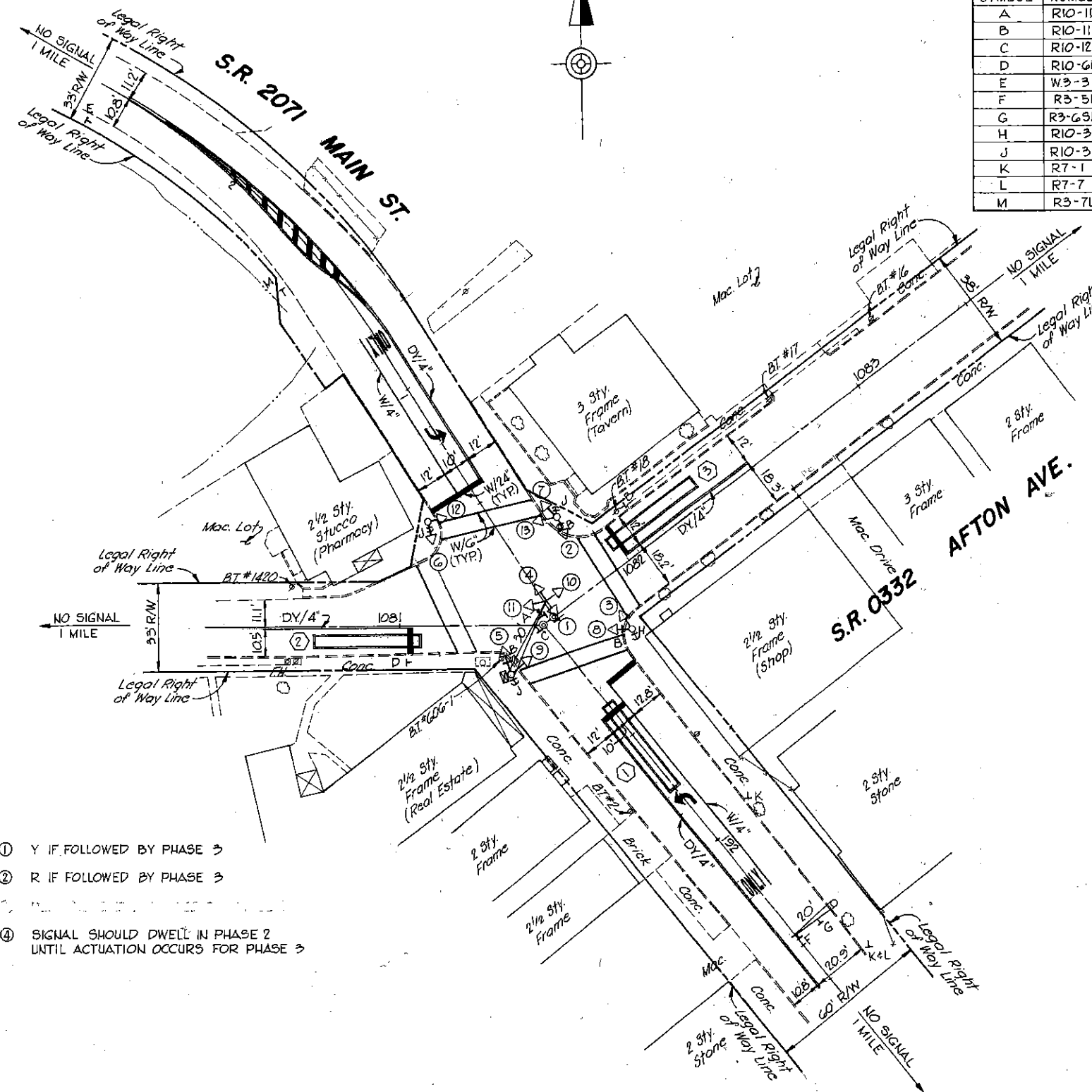
THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 172, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE DEC. 12, 1986.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

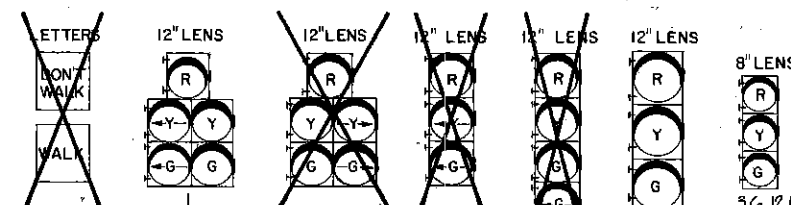
 PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
 ENGINEERING DISTRICT 6-0
COUNTY: **BUCKS**MUNICIPALITY: **YARDLEY BOROUGH**
 INTERSECTION: **AFTON AVE. (S.R. 0332) AND
 MAIN ST. (S.R. 2071)**

 REVIEWED: *[Signature]* 8/3/89
 MUNICIPAL OFFICIAL DATE

 RECOMMENDED: *[Signature]* 4/25/89
 DISTRICT TRAFFIC ENGINEER DATE

 Revised: *[Signature]* 3/32/01 9/15/89 4-25-89 4-25/89
 Revised: Relocate Xwalk, chg. Permit # : RFW 10/26/82 Multiple PCB 11/1/82
 Revised: _____
 Revised: _____


SIGNAL INDICATIONS


 SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS
 SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS and LOUVERS 3, 6

WEEKLY PROGRAM CHART						
EVENT	DAY *	HOUR	MINUTE	SECOND	PROGRAM NUMBER	OFFSET
1	1-7	0	00	00	MAX I	
2	1-5	7	30	00	MAX II	
3	1-5	9	00	00	MAX I	
4	1-5	15	00	00	MAX II	
5	1-5	18	00	00	MAX I	

* DAY 1 = MONDAY

MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

MOVEMENT, DECELERATION, AND FLARE DIAGRAM												FLASHING
PHASE	1			2 ④			3					
INTERVAL SIGNALS	1	2	3	4	5	6		7	8	9		
1	G	G	G	G	Y	R		R	R	R		Y
2	G	G	G	G	Y	R		R	R	R		Y
3	G	G	G	G	Y	R		R	R	R		OFF
4, 5	R	R	R	G	Y	R		R	R	R		Y
6	R	R	R	G	Y	R		R	R	R		OFF
7	R	R	R	G	Y	R		R	R	R		Y
8	R	R	R	R	R	R		G	Y	R		R
9	R	R	R	R	R	R		G	Y	R		R
10, 11	R	R	R	R	R	R		G	Y	R		R
12	R	R	R	R	R	R		R	R	R		OFF
13	R	R	R	R	R	R		G	Y	R		OFF

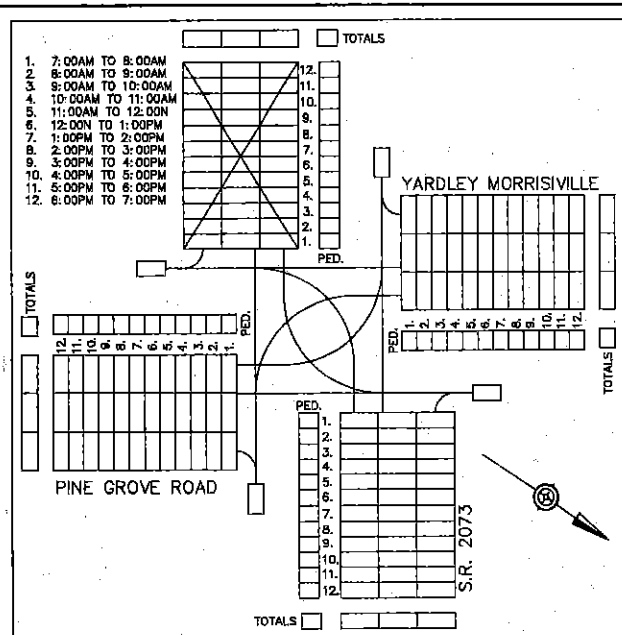
FIXED	3	3	3	3	2	3	3	2
	MINIMUM	3			30			3
PASSAGE	3							3
MAXIMUM I	15							25
MAXIMUM II	15							30
PEDESTRIAN								5
MEMORY	NL			MR			NL	

NL - NON-LOCKING





MR - MINIMUM RECALL

Jowee Makefield

2056



EMERGENCY PRE-EMPTION PHASING MOVEMENT, SEQUENCE AND TIMING DIAGRAM

												
PHASE	2			6			8					
INTERNAL SIGNALS	12	13	14	15	16	17	18	19	20			
1	R	R	R	G	Y	R	R	R	R			
2	R	R	R	G	Y	R	R	R	R			
3,4,5	G	Y	R	R	R	R	R	R	R			
6,7	R	R	R	R	R	R	G	Y	R			
8,9	H	H	H	H	H	H	H	H	H			
10,11	H	H	H	H	H	H	H	H	H			
FIXED	**	4	2	**	4	2	**	4	2			

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.

① G/Y WHEN RETURNING TO NORMAL OPERATION
② G WHEN RETURNING TO NORMAL OPERATION

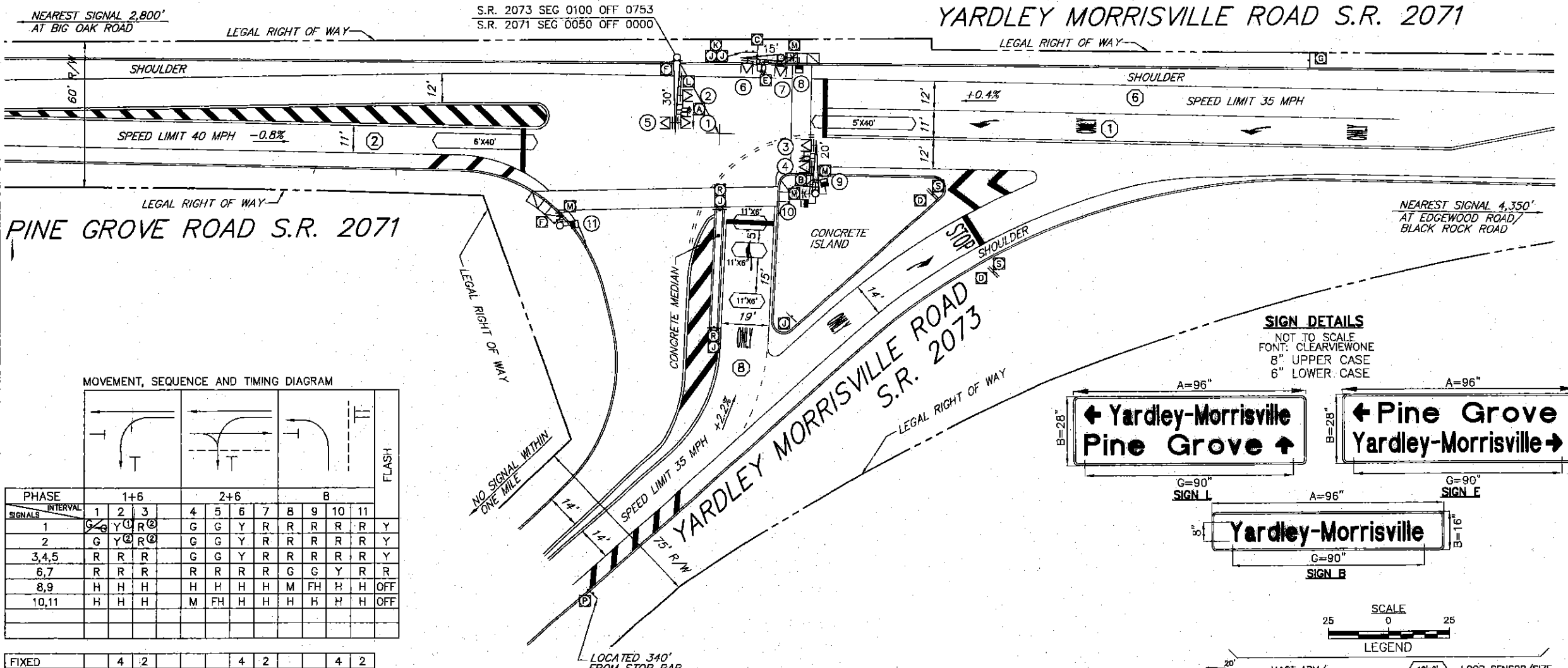
EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND & SOUTHBOUND APPROACHES OF PINE GROVE ROAD/ YARDLEY-MORRISVILLE ROAD (S.R. 2071) AND THE WESTBOUND APPROACH OF YARDLEY-MORRISVILLE ROAD (S.R. 2073) 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.
- LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.
- THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY, THEN THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
- THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
- IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED DURING THE "MAN" PHASE, THE "MAN" PHASE SHALL TERMINATE IMMEDIATELY FOLLOWED BY THE "FLASHING HAND" INDICATION IN ITS ENTIRETY, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE PROCEEDING TO THE PRE-EMPTION PHASE.
- 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 SERVED" OPERATION.

PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R10-12	30X36	LEFT TURN YIELD ON GREEN
B	D3-4	96X16	OVERHEAD STREET NAME SIGN (SEE DETAIL)
C	R3-1	30X30	NO RIGHT TURN
D	R1-1	30X30	STOP
E	D3-5	96X28	OVERHEAD STREET NAME SIGN (SEE DETAIL)
F	R9-3	18X18	NO PEDESTRIAN CROSSING
G	R3-7L	30X30	LEFT LANE MUST TURN LEFT
H	DM3-1	18X18	OBJECT MARKER
I	W1-7	48X24	LARGE DOUBLE ARROW
J	D3-5	96X28	OVERHEAD STREET NAME SIGN (SEE DETAIL)
K	R10-3B(L)	9X12	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON
L	R10-3B(R)	9X12	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON
M	W3-3	36X36	SIGNAL AHEAD
N	R4-7	24X30	KEEP RIGHT
O	R5-1	30X30	DO NOT ENTER

GENERAL NOTES

- NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.
- ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.
- ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.
- POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.
- SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.
- ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.
- THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.
- EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.
- CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.
- PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.
- THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.
- WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.
- PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.
- CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.



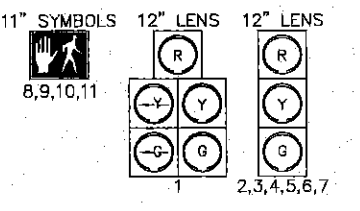
MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	1+6	2+6	B
1	G	Y	R
2	G	Y	R
3,4,5	R	R	R
6,7	R	R	R
8,9	H	H	H
10,11	H	H	H

FIXED	4	2	4	2
MINIMUM	30		3	
PASSAGE	3		3	
MAX 1	30		32	6
MAX 2	30		50	9
PEDESTRIAN*		7	27	7
MEMORY	NL		MX	NL

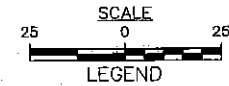
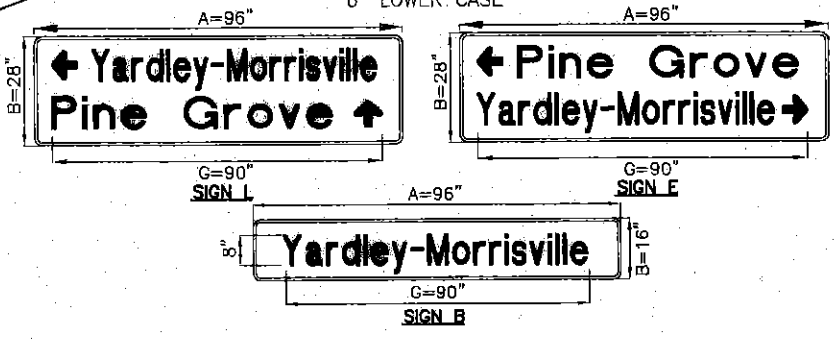
- OPERATION NOTES:
- ① G/Y IF FOLLOWED BY 2+6
 - ② G IF FOLLOWED BY 2+6
 - SIGNAL TO DWELL IN PHASE 1+6 UNTIL ACTUATED BY PHASE 2 OR B.
 - MAX 2 TO OPERATE 3PM-7PM MON-FRI. MAX 1 TO OPERATE AT ALL OTHER TIMES.

SIGNAL INDICATIONS



SIGN DETAILS

NOT TO SCALE
FONT: CLEARVIEWONE
8" UPPER CASE
6" LOWER CASE



LEGEND

- MAST ARM/ IDENTIFYING LENGTH
- VEHICULAR SIGNAL HEAD/ BACKPLATE/VISORS/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER
- PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- PEDESTRIAN PUSHBUTTON/ SIGN
- SIGN/IDENTIFYING LETTER
- VIDEO DETECTOR
- LOOP SENSOR/ SIZE
- ZONE OF DETECTION
- MICROWAVE PRESENCE DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- EMERGENCY PRE-EMPTION DEVICE
- CURB RAMP
- UTILITY POLE
- PHASE NUMBER
- INLET

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

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

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION ENGINEERING DISTRICT 6-0

COUNTY: BUCKS
MUNICIPALITY: LOWER MAKEFIELD TOWNSHIP
INTERSECTION: YARDLEY MORRISVILLE RD
(S.R. 2073) AND PINE GROVE ROAD (S.R. 2071)

REVIEWED: _____ DATE _____

MUNICIPAL OFFICIAL _____ DATE _____

RECOMMENDED: PAUL LUTZ 10/8/03
DATE
LOUIS R. BELMONTE 10/8/03
DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	DES./ REV.	DATE	REV.	DATE	RECOM.	DATE
1	AS BUILT	JLH	12/13/07	PAL	12/13/07	ABP	12/13/07
2	ADD "STOP" PVMT MARKING	JLH	11/2/10	NBP	11/5/10	ABP	11/4/10
3	MODIFIED MST	JLH	12/14/10	ABP	1/16/11	ABP	1/13/11
4							
5							
6							
7							
8							

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 68.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 181, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE MARCH 29, 2007.

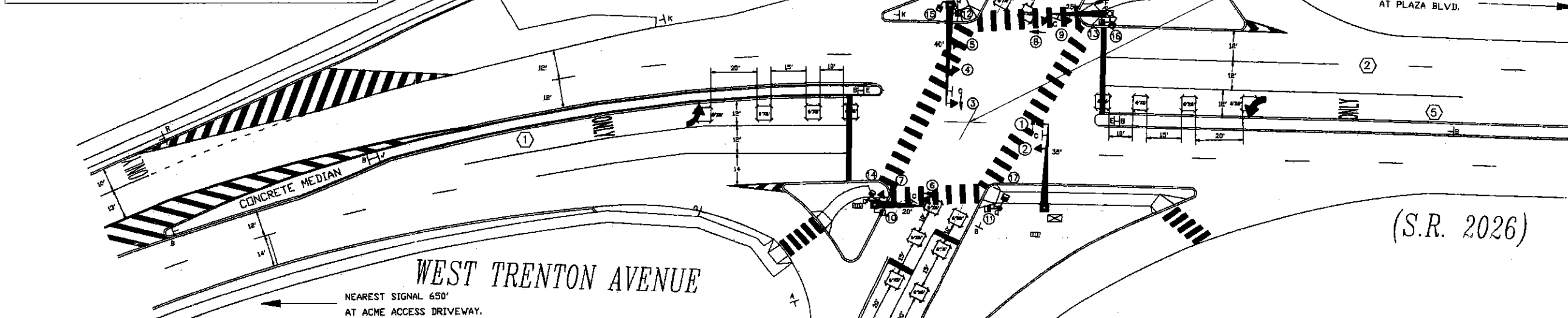
WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-7800 SERIES.

SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R1-2	48X48	YIELD
B	R3-7L	30X30	LEFT LANE MUST TURN LEFT
C	R10-12	30X36	LEFT TURN YIELD ON GREEN
E	OM1-3	18X18	OBJECT MARKER
F	R10-4R	9X12	PUSH BUTTON FOR WALK SIGNAL
G	W11-2	30X30	PEDESTRIAN CROSSING SIGN
J	W4-11R	30X30	LANE ENDS MERGE RIGHT
K	W4-2L	36X36	PAVMENT WIDTH TRANSITION-LEFT LANE ENDS
Q	R10-4L	9X12	PUSH BUTTON FOR WALK SIGNAL
R	R3-7R	30X30	RIGHT LANE MUST TURN RIGHT

COUNT DATA			
TIME PERIOD	778	1663	796
1. 7:00AM TO 8:00AM	55	182	28
2. 8:00AM TO 9:00AM	77	226	43
3. 9:00AM TO 10:00AM	77	134	53
4. 10:00AM TO 11:00AM	63	134	55
5. 11:00AM TO 12:00PM	66	101	82
6. 12:00PM TO 1:00PM	57	108	81
7. 1:00PM TO 2:00PM	51	94	76
8. 2:00PM TO 3:00PM	66	116	75
9. 3:00PM TO 4:00PM	101	166	108
10. 4:00PM TO 5:00PM	80	208	86
11. 5:00PM TO 6:00PM	83	216	101
TOTALS	633	1663	1942



MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

PHASE	1 + 5	2 + 5	1 + 6	2 + 6	3 + 7	3 + 8	4 + 7	4 + 8	EMERGENCY FLASH
1	R	R	R	R	R	R	R	R	OFF
2	R	R	R	R	R	R	R	R	Y
3	R	R	R	R	R	R	R	R	Y
4,5	R	R	R	R	R	R	R	R	Y
6	R	R	R	R	R	R	R	R	Y
7	R	R	R	R	R	R	R	R	Y
8	R	R	R	R	R	R	R	R	Y
9	R	R	R	R	R	R	R	R	Y
10,11,12,13	DW	DW	DW	DW	DW	DW	DW	DW	OFF
14,15,16,17	DW	DW	DW	DW	DW	DW	DW	DW	OFF

FIXED	4	2	4	2	4	2	4	2	4	2	4	2	4	2
MINIMUM	3	3	3	3	3	3	3	3	3	3	3	3	3	3
PASSAGE	3	3	3	3	3	3	3	3	3	3	3	3	3	3
MAXIMUM	10	10	10	10	10	10	10	10	10	10	10	10	10	10
PEDESTRIAN	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL
MEMORY	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL

PROGRAM 1	7	4	2	7	4	2	7	4	2	16	4	2	7	4	2	7	4	2	24	4	2
PROGRAM 2	10	4	2	10	4	2	10	4	2	19	4	2	7	4	2	7	4	2	20	4	2
PROGRAM 3	10	4	2	10	4	2	10	4	2	18	4	2	7	4	2	7	4	2	21	4	2

• SIGNAL SHALL DWELL IN PHASE 2 + 6

** UPON PEDESTRIAN ACTUATION

NOTE:

THIS SIGNAL TO BE COORDINATED WITH THE ADJACENT SIGNALS ALONG WEST TRENTON AVENUE (S.R. 2026) AT SWEETBRIAR ROAD, ACME ACCESS, PLAZA BOULEVARD, AND BIG OAK ROAD BY MEANS OF TIME BASED COORDINATION

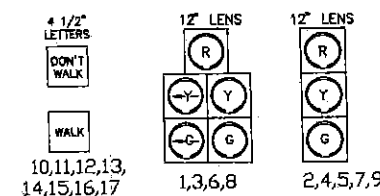
WEEKLY PROGRAM CHART					
EVENT	DAY	TIME	CYCLE	OFFSET	PROGRAM
1	1-5	06:00	80	0	1
2	1-5	09:00	80	0	2
3	1-5	15:00	80	0	3
4	1-5	18:00	80	0	2
5	1-7	22:00	-	-	FREE

MONDAY = DAY 1
OFFSET REFERENCE TO START OF GREEN ON WEST TRENTON (INTERVAL 10)

- ① R/G IF FOLLOWED BY 1 + 6
② R/G IF FOLLOWED BY 2 + 5
③ G/Y IF FOLLOWED BY 2 + 6
④ G IF FOLLOWED BY 2 + 6
⑤ G IF FOLLOWED BY 1 + 6
⑥ G IF FOLLOWED BY 2 + 5
⑦ R/G IF FOLLOWED BY 3 + 8
⑧ R/G IF FOLLOWED BY 4 + 7

- ⑨ G/Y IF FOLLOWED BY 4 + 8
⑩ G IF FOLLOWED BY 4 + 8
⑪ G IF FOLLOWED BY 3 + 8
⑫ G IF FOLLOWED BY 4 + 7

SIGNAL INDICATIONS



25 0 25

LEGEND

- 25' WAST ARM WITH IDENTIFYING LENGTH
LOOP DETECTOR PRESENCE & DIRECTIONAL
SIGN WITH IDENTIFYING LETTER
PEDESTRIAN PUSHBUTTON
SIGNAL HEAD WITH IDENTIFYING NUMBER
SIGNAL HEAD WITH ARROW SECTION & IDENTIFYING NUMBER
PHASE NUMBER
PEDESTRIAN SIGNAL HEAD WITH IDENTIFYING NUMBER

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: BUCKS

MUNICIPALITY: FALLS TOWNSHIP

INTERSECTION: WEST TRENTON AVENUE (S.R. 2026)
AND PINE GROVE ROAD (S.R. 2071)

REVIEWED:

MUNICIPAL OFFICIAL: _____ DATE: _____

RECOMMENDED: MARK L. KRAY 6-2-97
DISTRICT TRAFFIC ENGINEER: DOUGLAS MAY 6-2-97

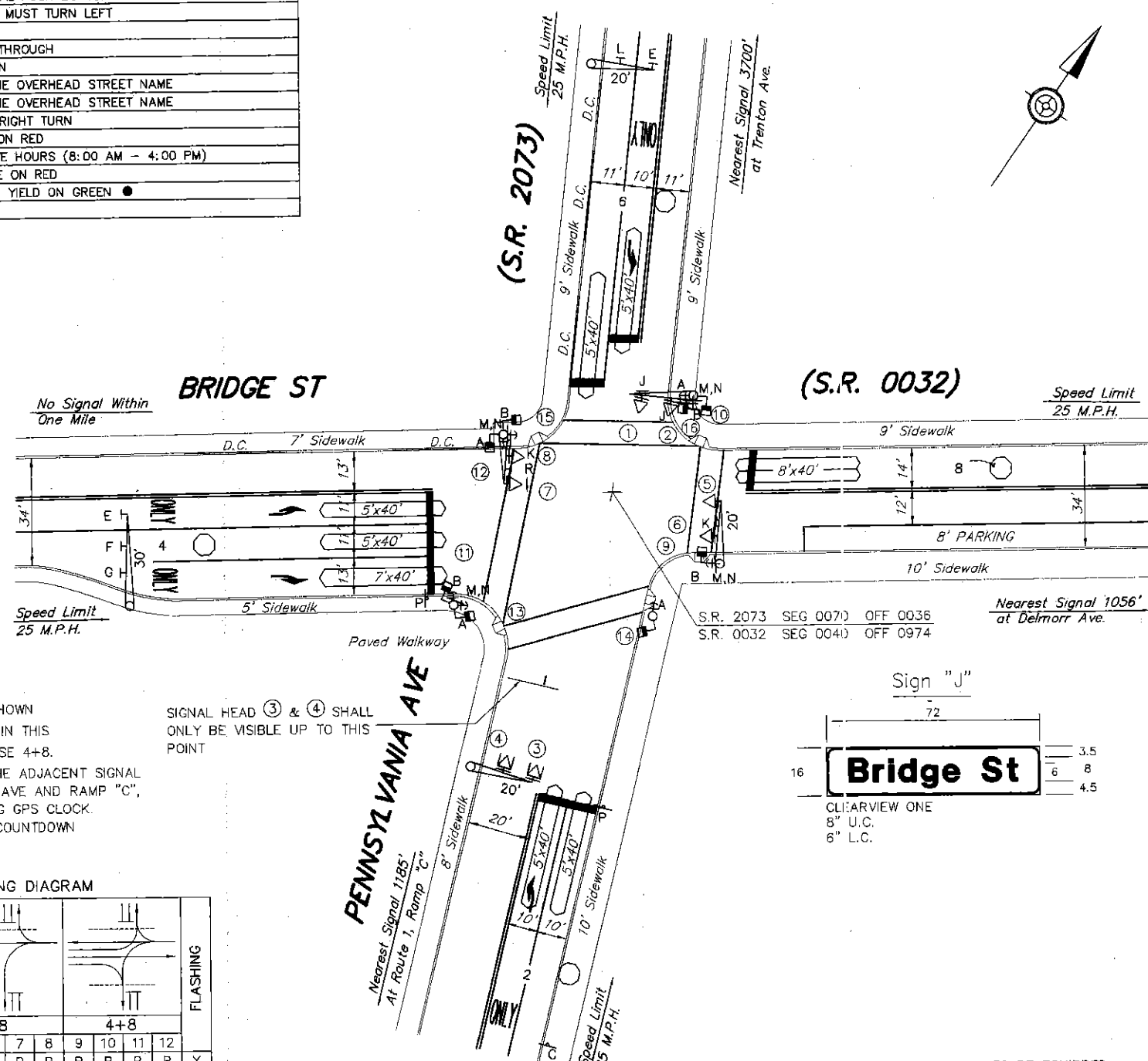
NO.	REVISION	DES./REV.	DATE	REV.	DATE	RECOM.	DATE
1	NEW DWG	NV	6/2/97	MK	6/2/97	DWM	6/2/97
2	MODIFY TIMINGS / REVISE COORD	MCM	6/11/97	MK	6/21/97	6/21/97	6/21/97
3							
4							
5							
6							
7							
8							

SHEET 2 OF 2 PERMIT # 61-0155 FILE # 0155

Morrisville Boro

Kite # 719

SIGN TABULATION				
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS	
A	R10-3BR	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON	
B	R10-3BL	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON	
C	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT	
E	R3-5L	30"x36"	LEFT TURN	
F	R3-5S	30"x36"	STRAIGHT THROUGH	
G	R3-5R	30"x36"	RIGHT TURN	
J	D3-4	72"x16"	SINGLE-LINE OVERHEAD STREET NAME	
K	D3-4	96"x16"	SINGLE-LINE OVERHEAD STREET NAME	
L	R3-6SR	30"x36"	OPTIONAL RIGHT TURN	
M	R10-11	24"x30"	NO TURN ON RED	
N	R3-20	24"x18"	RESTRICTIVE HOURS (8:00 AM - 4:00 PM)	
P	R10-6L	24"x30"	STOP HERE ON RED	
R	R10-12	30"x36"	LEFT TURN YIELD ON GREEN	



- OPERATION NOTE:**
- IF FOLLOWED BY PHASE 4+8.
 - G IF FOLLOWED BY PHASE 4+8.
 - PEDESTRIAN TIMING WILL BE AS SHOWN IN PHASE 4+8. IT MAY TIME OUT IN THIS PHASE OR BE COMPLETED IN PHASE 4+8.
- SIGNAL TO BE COORDINATED WITH THE ADJACENT SIGNAL AT INTERSECTION OF PENNSYLVANIA AVE AND RAMP "C", BY TIME-BASED COORDINATION USING GPS CLOCK.
 - PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL.

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2+6	8	4+8	FLASHING
1,2	G G Y R	R R R R	R R R R	Y
3,4	G G Y R	R R R R	R R R R	Y
5,6	R R R R	R R R R	G G Y R	R
7	R R R R	G G Y R	R R R R	R
8	R R R R	G G Y R	G G Y R	R
9,10,11,12	M* FH* H H H H	H H H H	H H H H	OFF
13,14	H H H H	H H H H	M* FH* H H	OFF
15,16	H H H H	M* FH* H H	M* FH* H H	OFF

FIXED	MINIMUM	PASSAGE	MAXIMUM	PEDESTRIAN*	MEMORY
	10	5	33	7 15	MN
					NL
					NL
PROGRAM 1	33	4	2	7	4
PROGRAM 2	31	4	2	7	4

(100 SECONDS)
(90 SECONDS)

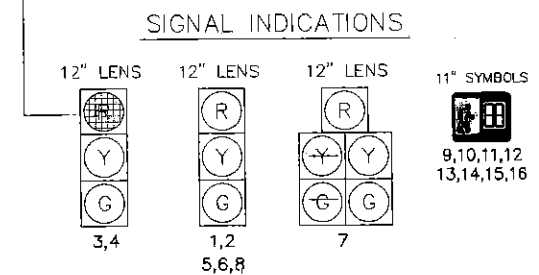
* UPON PEDESTRIAN ACTUATION ONLY

WEEKLY PROGRAM CHART

EVENT	DAY*	TIME	CYCLE	OFFSET	PROGRAM	REMARKS
1	1-7	0600	100	21	1	
2	1-7	1000	-	-	FREE	
3	1-7	1500	90	19	2	
4	1-7	1800	-	-	FREE	

*DAY 1 = MONDAY

RED INDICATION TO BE EQUIPPED WITH GEOMETRICALLY PROGRAMMED LOUVERS.

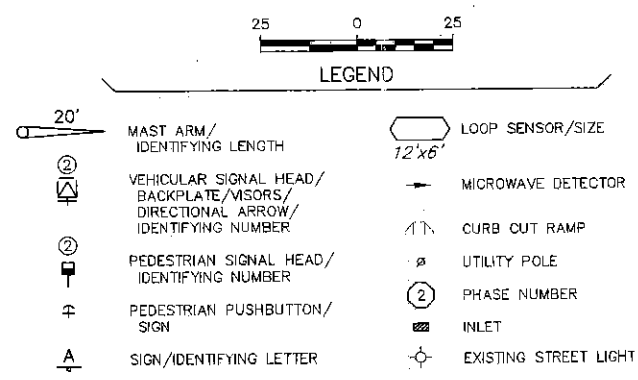
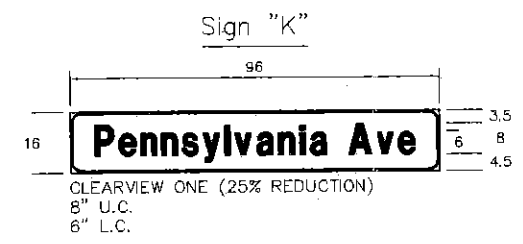


SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS 3,4
SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS & LOUVERS

1. 6:00 AM TO 7:00 AM
 2. 7:00 AM TO 8:00 AM
 3. 8:00 AM TO 9:00 AM
 4. 9:00 AM TO 10:00 AM
 5. 10:00 AM TO 11:00 AM
 6. 11:00 AM TO 12:00 PM
 7. 12:00 PM TO 1:00 PM
 8. 1:00 PM TO 2:00 PM
 9. 2:00 PM TO 3:00 PM
 10. 3:00 PM TO 4:00 PM
 11. 4:00 PM TO 5:00 PM
 12. 5:00 PM TO 6:00 PM
 13. 6:00 PM TO 7:00 PM

76	224	47			
78	220	32			
36	331	63			
29	378	56			

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GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL HAVE A MINIMUM CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 181, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE MARCH 29, 2007.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-7800 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION ENGINEERING DISTRICT 6-0

COUNTY: **BUCKS**
MUNICIPALITY: **MORRISVILLE BORO**
INTERSECTION: **PENNSYLVANIA AVE. (S.R. 2073)
AND BRIDGE ST. (S.R. 0032)**

REVIEWED: _____

MUNICIPAL OFFICIAL: _____

RECOMMENDED: **Mark L. Kray** 01/28/08

Wernre J. Elchorn 02/02/08
DISTRICT TRAFFIC ENGINEER

NO.	REVISION	DES. REV.	DATE	REV.	DATE	RECOM.
1	Added Sign F "No Turn on Red"	PML	09/21/04	MK	06/23/04	DWM
2	Added Emergency Pre-emption	JTS	05/20/07	MK	05/20/07	DWM
3	Added "NTOR" Sign to WB & SB Approaches	PWM	08/09/01	MK	08/13/01	LRB
4	Added Coordination	LBL	07/13/06	MK	07/19/06	LRB
5	New Drawing, Added Hand/Mans	PAI	02/11/08	NBP	02/15/08	YJA
6						
7						
8						

SHEET 2 OF 2 PERMIT # **61-0719** FILE # **07**

MATCHLINE A-A

OXFORD VALLEY ROAD (SR 2029)

RAMP D (SR 8069)

NEAREST SIGNAL 1,526' AT BIG OAK ROAD

NEAREST SIGNAL 650' AT RT 1 RAMPS A/B

YEAR 2008 TRAFFIC VOLUMES

Time Period	Oxford Valley Rd (SR 2029)	Ramp D (SR 8069)
3:00 AM TO 6:00 AM	508	1081
6:00 AM TO 10:00 AM	3337	3334
10:00 AM TO 12:00 PM	110	740
12:00 PM TO 1:00 PM		
1:00 PM TO 2:00 PM		
2:00 PM TO 3:00 PM		
3:00 PM TO 4:00 PM		
4:00 PM TO 5:00 PM		
5:00 PM TO 6:00 PM		
6:00 PM TO 7:00 PM		
Totals	737	803

SIGNAL INDICATIONS

12" LENS 12" LENS 12" LENS

(R)	(R)	(R)
(Y)	(Y)	(Y)
(G)	(G)	(G)
(R+G)	(R+G)	(R+G)
7	1,2	3,4,5 6,8

LEGEND

- MAST ARM / IDENTIFYING LENGTH
- VEHICULAR SIGNAL HEAD / VISORS / DIRECTIONAL ARROW / BACKPLATE / IDENTIFYING NO.
- PEDESTRIAN PUSHBUTTON / SIGN
- SIGN / IDENTIFYING LETTER
- LOOP SENSOR / SIZE
- EMERGENCY PREEMPTION FLASHING BEACON
- EMERGENCY PREEMPTION DETECTOR
- PHASE NUMBER

[illegible]

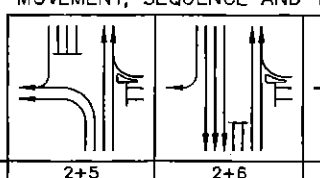
NO
TIMING
IN THIS
SECTION

CONTROLLER NOTES:

- ① G IF FOLLOWED BY PHASE 2+6
- ② MAXIMUM EXTENSION (MAXIMUM GREEN EXTENSION)
IF A GREEN INTERVAL IS TERMINATED DUE TO A VEHICLE
EXTENSION (MAX OUT) FOR TWO SUCCESSIVE CYCLES
THE MAX TIME IN EFFECT (FREE OR PROGRAMMED) IS
AUTOMATICALLY EXTENDED BY SUCCESSIVE INCREMENTS
OF MAX EXTENSION TIME (MAX EXT). MAX TIME INCREASES
BY MAX EXT EACH TIME THE PHASE MAKES-OUT, BUT
STOPS ADDING MAX EXT WHEN THE TOTAL MAX TIME IS
EQUAL TO MAX 3. IF, HOWEVER, THE PHASE CAPS OUT
ON TWO SUCCESSIVE CYCLES BEFORE MAX TIME REACHES
MAX 3, THE MAX TIMER IS RESET, WHEN MAX EXT IS USED
(MAX EXT > 0). MAX 3 BECOMES THE MAXIMUM GREEN TIME
AND MUST BE GREATER THAN MAX 2. WHEN MAX EXT IS NOT
USED (MAX EXT = 0), THE MAXIMUM GREEN IS EQUAL TO THE
SELECTED TIMER OR PROGRAM (FREE OR PROGRAM).

CONTROLLER TO DWELL IN PHASE 2+6 UNLESS ACTUATED BY PHASE 3+8.

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

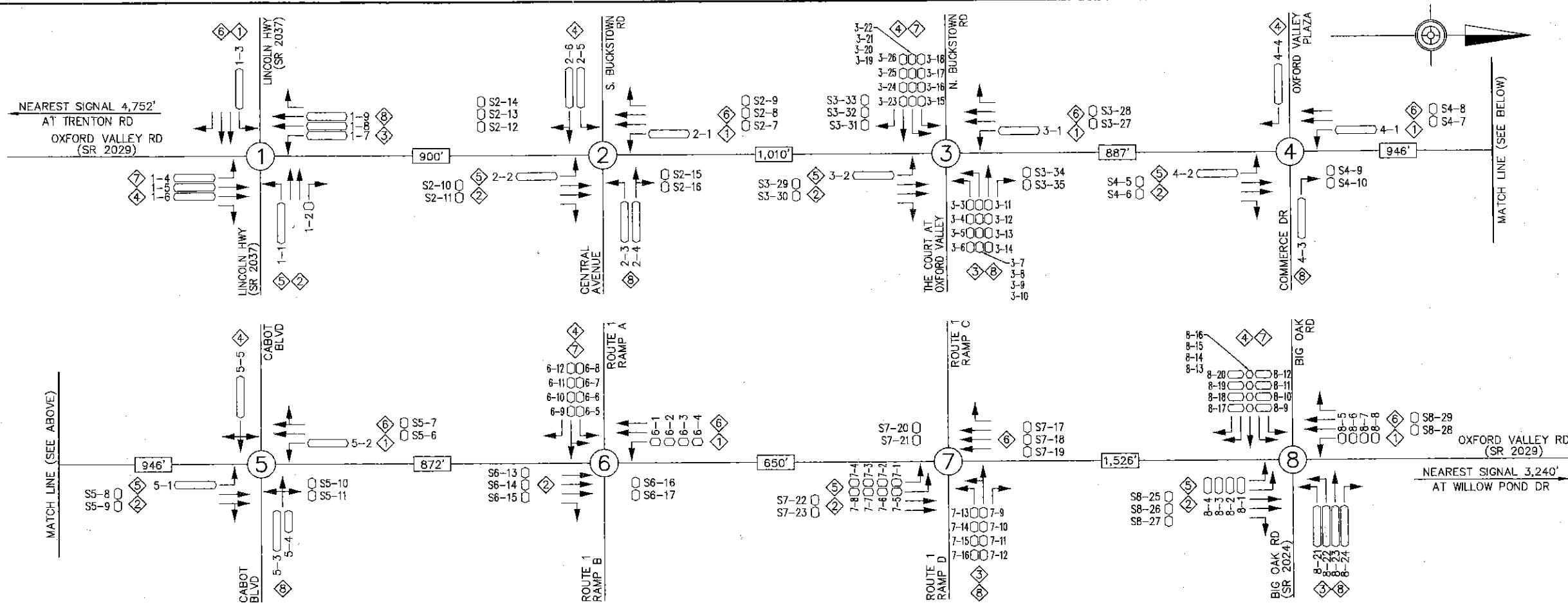


FLASH

PHASE		2+5				2+6				3+8				
SIGNALS	INTERVAL	1	2	3		4	5	6		7	8	9		
1,2		G	Y	R		G	Y	R		R	R	R		OFF
3,4		G	Y	R		G	Y	R		R	R	R		Y
5,6		R	R	R		G	Y	R		R	R	R		Y
7		R	R	R		R	R	R		G	Y	R		R
8		R	R	R		R	R	R		G	Y	R		R

FIXED		5	2		5	2		4	2
MINIMUM	3							3	
PASSAGE	3							3	
MAX. EXT.								10 ^②	
MAX 1	25				50			20	
MAX 2	30				60			30	
MAX 3	25				50			70	
MEMORY	NL				MX			NL	

REFER TO SYSTEM PLAN FOR PROGRAM SPLIT, OFFSET, AND WEEKLY
PROGRAM/TBC BACKUP CHART. (SYSTEM PERMIT # 1-0145)



CLOSED LOOP SYSTEM DETECTOR ASSIGNMENT

SYSTEM DETECTOR ASSIGNMENT																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Zone 1 (SR 2029) NB	2(10)	2(11)		2(15)	2(16)		3(29)	3(30)		3(34)	3(35)	4(5)	4(6)	4(7)	4(8)	5(8)	5(9)	5(10)	5(11)	6(13)	6(14)	6(15)	6(16)	6(17)	7(22)	7(23)					8(28)	8(29)
Zone 1 (SR 2029) SB	2(12)	2(13)	2(14)	2(17)	2(18)	2(8)	3(31)	3(32)	3(33)	3(27)	3(28)			4(9)	4(10)		5(6)	5(7)						7(20)	7(21)	7(17)	7(18)	7(19)	8(25)	8(26)	8(27)	

NOTES: ASSIGNED AS INTERSECTION # AND LOOP # IN THE PARENTHESIS AS SHOWN ON THE PLAN ABOVE [I.E. 1(4)=INTERSECTION #1 (AT LINCOLN HIGHWAY), LOOP #4].
ARCHIVE LOCAL DETECTOR COUNTS IN FIFTEEN MINUTE INTERVALS.

CYCLE/SPLIT/OFFSET

PROGRAM 1		PHASE										CYCLE LENGTH	OFFSET #1	OFFSET #2	OFFSET #3
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	PED		BALANCED	DR1	DR2	
8 OXFORD VALLEY RD & BIG OAK RD	2217	18 (LEAD)	38	23 (LEAD)	26	18 (LEAD)	38	23 (LEAD)	26			105	7		
7 OXFORD VALLEY RD & RT 1 RAMP C/D	3090		83			26 (LEAD)	57		22			105	67		
6 OXFORD VALLEY RD & RT 1 RAMP A/B	2430	17 (LEAD)	56		32		73					105	87		
5 OXFORD VALLEY RD & CABOT BLVD	2186	18 (LEAD)	64		23	18 (LEAD)	64		23			105	63		
4 OXFORD VALLEY RD & COMMERCE DR	2364	25 (LEAD)	80		25	25 (LEAD)	80		25			105	95		
3 OXFORD VALLEY RD & N BUCKSTOWN RD	1598	16 (LEAD)	57		16 (SPLIT)	16 (LEAD)	57		16 (SPLIT)			105	67		
2 OXFORD VALLEY RD & S BUCKSTOWN RD	1697	17 (LEAD)	59		29	17 (LEAD)	59		29			105	19		
1 OXFORD VALLEY RD & LINCOLN HWY	0574	18 (LEAD)	23	38 (LEAD)	26	16 (LEAD)	25	18 (LEAD)	48			105	0		
PROGRAM 2		PHASE										CYCLE LENGTH	OFFSET #1	OFFSET #2	OFFSET #3
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	PED		BALANCED	DR1	DR2	
8 OXFORD VALLEY RD & BIG OAK RD	2217	18 (LEAD)	39	17 (LEAD)	16	18 (LEAD)	39	17 (LEAD)	16			90	9		
7 OXFORD VALLEY RD & RT 1 RAMP C/D	3090		62			32 (LEAD)	30		28			90	43		
6 OXFORD VALLEY RD & RT 1 RAMP A/B	2430	14 (LEAD)	50		26	14 (LEAD)	50		26			90	48		
5 OXFORD VALLEY RD & CABOT BLVD	2186	14 (LEAD)	50		26	14 (LEAD)	50		26			90	48		
4 OXFORD VALLEY RD & COMMERCE DR	2364	36 (LEAD)	54		36	36 (LEAD)	54		36			90	58		
3 OXFORD VALLEY RD & N BUCKSTOWN RD	1598	14 (LEAD)	36		21 (SPLIT)	14 (LEAD)	36		19 (SPLIT)			90	1		
2 OXFORD VALLEY RD & S BUCKSTOWN RD	1697	18 (LEAD)	38		34	18 (LEAD)	38		34			90	10		
1 OXFORD VALLEY RD & LINCOLN HWY	0574	20 (LEAD)	22	24 (LEAD)	24	20 (LEAD)	22	24 (LEAD)	24			90	0		
PROGRAM 3		PHASE										CYCLE LENGTH	OFFSET #1	OFFSET #2	OFFSET #3
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	PED		BALANCED	DR1	DR2	
8 OXFORD VALLEY RD & BIG OAK RD	2217	26 (LEAD)	47	19 (LEAD)	18	26 (LEAD)	47	19 (LEAD)	18			110	107		
7 OXFORD VALLEY RD & RT 1 RAMP C/D	3090		80			40 (LEAD)	40		30			110	53		
6 OXFORD VALLEY RD & RT 1 RAMP A/B	2430	14 (LEAD)	58		38		72					110	72		
5 OXFORD VALLEY RD & CABOT BLVD	2186	14 (LEAD)	44		52	14 (LEAD)	44		52			110	57		
4 OXFORD VALLEY RD & COMMERCE DR	2364	54 (LEAD)	56		54	54 (LEAD)	56		54			110	27		
3 OXFORD VALLEY RD & N BUCKSTOWN RD	1598	15 (LEAD)	50		27 (SPLIT)	15 (LEAD)	50		18 (SPLIT)			110	105		
2 OXFORD VALLEY RD & S BUCKSTOWN RD	1697	19 (LEAD)	43		48	19 (LEAD)	43		48			110	0		
1 OXFORD VALLEY RD & LINCOLN HWY	0574	26 (LEAD)	23	26 (LEAD)	35	26 (LEAD)	23	26 (LEAD)	35			110	0		
PROGRAM 4		PHASE										CYCLE LENGTH	OFFSET #1	OFFSET #2	OFFSET #3
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	PED		BALANCED	DR1	DR2	
8 OXFORD VALLEY RD & BIG OAK RD	2217	23 (LEAD)	51	26 (LEAD)	20	23 (LEAD)	51	26 (LEAD)	20			120	63		
7 OXFORD VALLEY RD & RT 1 RAMP C/D	3090		88			37 (LEAD)	51		32			120	57		
6 OXFORD VALLEY RD & RT 1 RAMP A/B	2430	14 (LEAD)	69		37		83					120	82		
5 OXFORD VALLEY RD & CABOT BLVD	2186	14 (LEAD)	86		20	14 (LEAD)	86		20			120	78		
4 OXFORD VALLEY RD & COMMERCE DR	2364	60 (LEAD)	60		60	60 (LEAD)	60		60			120	34		
3 OXFORD VALLEY RD & N BUCKSTOWN RD	1598	18 (LEAD)	42		29 (SPLIT)	18 (LEAD)	42		31 (SPLIT)			120	118		
2 OXFORD VALLEY RD & S BUCKSTOWN RD	1697	27 (LEAD)	42		51	27 (LEAD)	42		51			120	11		
1 OXFORD VALLEY RD & LINCOLN HWY	0574	28 (LEAD)	29	36 (LEAD)	27	28 (LEAD)	29	36 (LEAD)	27			120	0		

NOTES: ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
REFER TO TRAFFIC SIGNAL PERMIT PLAN FOR MAXIMUM 1, MAXIMUM 2, AND CLEARANCE AND PED TIMES.

SYSTEM NOTES:

- PROGRAMS TO BE SELECTED BY CLOSED LOOP SYSTEM OR T.B.C. BACKUP.
- OFFSET REFERENCED TO THE BEGINNING OF YELLOW (PHASE 2+6).
- SYSTEM:
OXFORD VALLEY ROAD (SR 2029) - 8 INTERSECTIONS
- SYSTEM LIMITS:
OXFORD VALLEY ROAD (SR 2029) -
LINCOLN HIGHWAY (SR 2037) TO BIG OAK ROAD (SR 2024)
- ON-STREET MASTER CONTROLLER LOCATION:
OXFORD VALLEY ROAD (SR 2029) & LINCOLN HIGHWAY (SR 2037)
- PRIMARY COORDINATION: FIBER OPTIC CABLE
SECONDARY COORDINATION: TIME BASED COORDINATION
(DEFAULT TO BACKUP T.B.C.)

WEEKLY PROGRAM CHART					
EVENT	DAY*	TIME	CYCLE	PROGRAM	REMARKS
1	1-7	00:00	-	MAX 1	FREE
2	1-5	06:00	105	1	AM PEAK
3	1-5	10:00	90	2	MID-DAY PEAK
4	1-5	15:00	110	3	PM PEAK
5	1-5	19:00	90	2	OFF PEAK
6	1-7	23:00	-	MAX 1	FREE
7	6-7	10:00	120	4	WEEKEND PEAK

* DAY 1 = MONDAY

LEGEND

- (X) INTERSECTION NUMBER
- X-Y LOOP DETECTOR, INTERSECTION NO. X - LOOP NO. Y
- SX-Y SYSTEM LOOP DETECTOR, INTERSECTION NO. X - LOOP NO. Y
- (X) PHASE NUMBER
- XXX' DISTANCE BETWEEN INTERSECTIONS

GENERAL NOTES

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ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 68.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITEE COMPLIES WITH THE PROVISIONS OF ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: BUCKS

MUNICIPALITY: FALLS TOWNSHIP, MIDDLETOWN

TOWNSHIP: LOWER MAKEFIELD TOWNSHIP

LOCATION: OXFORD VALLEY ROAD (S.R. 2029) -

LINCOLN HWY (SR 2037) TO BIG OAK RD (SR 2024)

REVIEWED:

DATE

MUNICIPAL OFFICIAL

DATE

RECOMMENDED:

DATE

SIGNALS ENGINEER

DATE

DISTRICT TRAFFIC ENGINEER

DATE

NO. REVISION

DES./REV. DATE REV. DATE RECOM. DATE

1 REVISED TIMING FOR INT #8

ORA 8/25/08 NBP 1/8/10 ALPATEL 1/25/10

2 REVISED INT #8 FULL BUILD

ORA 3/1/12 JBP 4/16/12 JBP 4/16/12

SYSTEM PERMIT # I-0145

SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R3-3	24"x24"	NO TURNS
B	R3-3	36"x36"	NO TURNS
D	R9-3A	18"x18"	NO PEDESTRIAN CROSSING
E	R10-12	30"x36"	LEFT TURN YIELD ON GREEN
F	OM1-3	18"x18"	OBJECT MARKER
G	R4-7	24"x30"	KEEP RIGHT
K	R1-5	30"x30"	DO NOT ENTER
L	R5-9	36"x24"	WRONG WAY
M	R3-1	30"x30"	NO RIGHT TURN
N	R1-2	36"x36"	YIELD
O	R6-1L	36"x12"	HORIZONTAL LEFT ONE WAY
P	R6-1R	36"x12"	HORIZONTAL RIGHT ONE WAY
R	R3-5L	30"x36"	LEFT TURN
S	R3-5LS	30"x36"	OPTIONAL LEFT TURN
T	R3-SR	30"x36"	RIGHT TURN
V	R3-5S	30"x36"	STRAIGHT THROUGH
W	D3-4	96"x16"	Oxford Valley Rd
X	D3-4	96"x16"	Route 1 North
Y	D3-4	96"x16"	Route 1 North

EMERGENCY PRE-EMPTION NOTES

CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND AND SOUTHBOUND APPROACHES OF OXFORD VALLEY ROAD AND THE EASTBOUND APPROACH OF RAMP A 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.

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

THE SIGNALS, WHEN ACTIVATED BY AN 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-EMPTED PHASE SHALL FOLLOW.

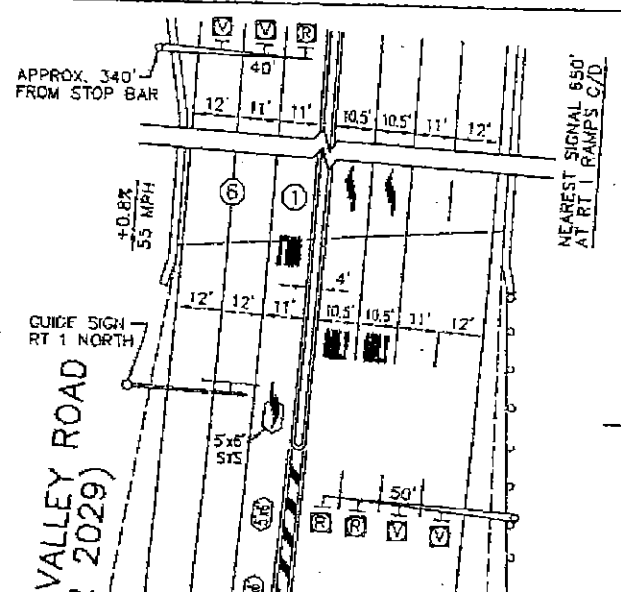
THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.

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

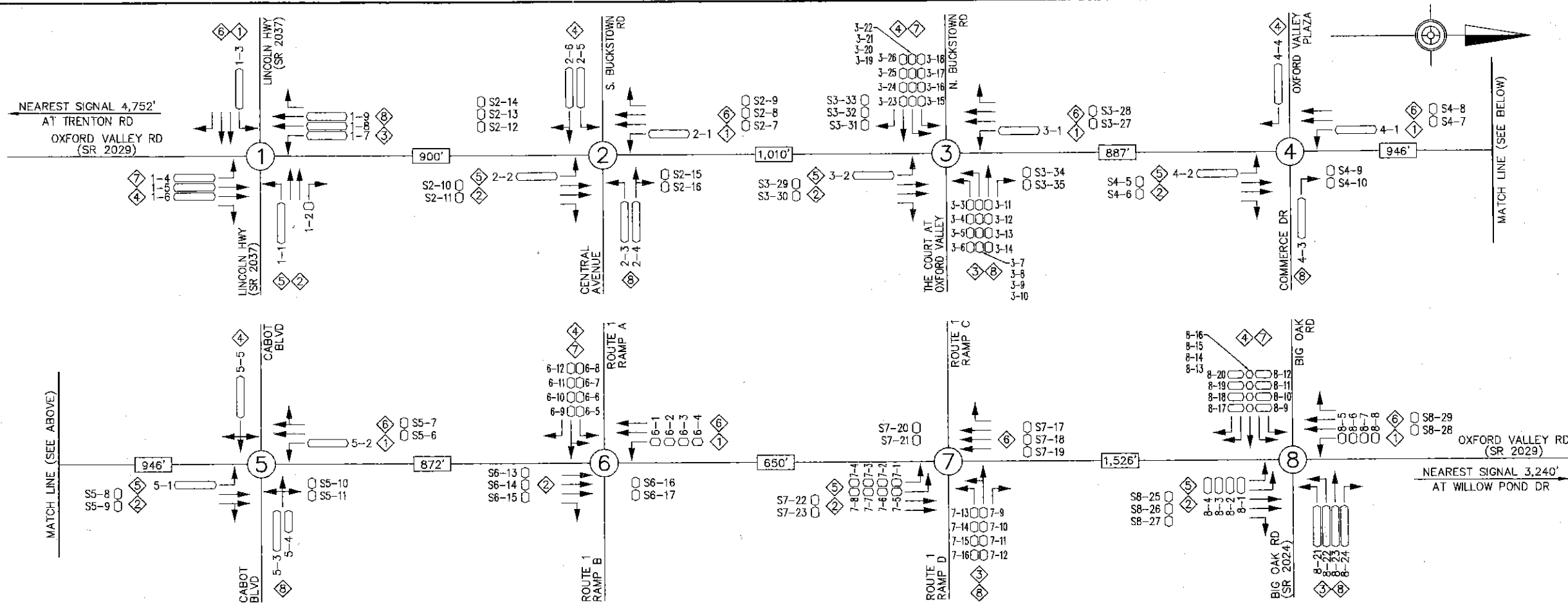
IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.

UPON COMPLETION OF PRE-EMPTION PHASE 2, 4, OR 6, 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 SERVED" OPERATION.



Time	SR 2029	SR 8069	Total
7:00 AM	1,234	567	1,801
8:00 AM	2,345	1,234	3,579
9:00 AM	3,456	2,345	5,801
10:00 AM	4,567	3,456	8,023
11:00 AM	5,678	4,567	10,245
12:00 PM	6,789	5,678	12,467
1:00 PM	7,890	6,789	14,679
2:00 PM	8,901	7,890	16,791
3:00 PM	9,012	8,901	17,913
4:00 PM	10,123	9,012	19,135
5:00 PM	11,234	10,123	21,357
6:00 PM	12,345	11,234	23,579
7:00 PM	13,456	12,345	25,801
8:00 PM	14,567	13,456	28,023
9:00 PM	15,678	14,567	30,245
10:00 PM	16,789	15,678	32,467
11:00 PM	17,890	16,789	34,679
12:00 AM	18,901	17,890	36,791
1:00 AM	19,012	18,901	37,913
2:00 AM	20,123	19,012	39,135
3:00 AM	21,234	20,123	41,357
4:00 AM	22,345	21,234	43,579
5:00 AM	23,456	22,345	45,801
6:00 AM	24,567	23,456	48,023
7:00 AM	25,678	24,567	50,245
8:00 AM	26,789	25,678	52,467
9:00 AM	27,890	26,789	54,679
10:00 AM	28,901	27,890	56,791
11:00 PM	29,012	28,901	57,913
12:00 AM	30,123	29,012	59,135
1:00 AM	31,234	30,123	61,357
2:00 AM	32,345	31,234	63,579
3:00 AM	33,456	32,345	65,801
4:00 AM	34,567	33,456	68,023
5:00 AM	35,678	34,567	70,245
6:00 AM	36,789	35,678	72,467
7:00 AM	37,890	36,789	74,679
8:00 AM	38,901	37,890	76,791
9:00 AM	39,012	38,901	77,913
10:00 AM	40,123	39,012	79,135
11:00 PM	41,234	40,123	81,357
12:00 AM	42,345	41,234	83,579
1:00 AM	43,456	42,345	85,801
2:00 AM	44,567	43,456	88,023
3:00 AM	45,678	44,567	90,245
4:00 AM	46,789	45,678	92,467
5:00 AM	47,890	46,789	94,679
6:00 AM	48,901	47,890	96,791
7:00 AM	49,012	48,901	97,913
8:00 AM	50,123	49,012	99,135
9:00 AM	51,234	50,123	101,357
10:00 AM	52,345	51,234	103,579
11:00 PM	53,456	52,345	105,801
12:00 AM	54,567	53,456	108,023
1:00 AM	55,678	54,567	110,245
2:00 AM	56,789	55,678	112,467
3:00 AM	57,890	56,789	114,679
4:00 AM	58,901	57,890	116,791
5:00 AM	59,012	58,901	117,913
6:00 AM	60,123	59,012	119,135
7:00 AM	61,234	60,123	121,357
8:00 AM	62,345	61,234	123,579
9:00 AM	63,456	62,345	125,801
10:00 AM	64,567	63,456	128,023
11:00 PM	65,678	64,567	130,245
12:00 AM	66,789	65,678	132,467
1:00 AM	67,890	66,789	134,679
2:00 AM	68,901	67,890	136,791
3:00 AM	69,012	68,901	137,913
4:00 AM	70,123	69,012	139,135
5:00 AM	71,234	70,123	141,357
6:00 AM	72,345	71,234	143,579
7:00 AM	73,456	72,345	145,801
8:00 AM	74,567	73,456	148,023
9:00 AM	75,678	74,567	150,245
10:00 AM	76,789	75,678	152,467
11:00 PM	77,890	76,789	154,679
12:00 AM	78,901	77,890	156,791
1:00 AM	79,012	78,901	157,913
2:00 AM	80,123	79,012	159,135
3:00 AM	81,234	80,123	161,357
4:00 AM	82,345	81,234	163,579
5:00 AM	83,456	82,345	165,801
6:00 AM	84,567	83,456	168,023
7:00 AM	85,678	84,567	170,245
8:00 AM	86,789	85,678	172,467
9:00 AM	87,890	86,789	174,679
10:00 AM	88,901	87,890	176,791
11:00 PM	89,012	88,901	177,913
12:00 AM	90,123	89,012	179,135
1:00 AM	91,234	90,123	181,357
2:00 AM	92,345	91,234	183,579
3:00 AM	93,456	92,345	185,801
4:00 AM	94,567	93,456	188,023
5:00 AM	95,678	94,567	190,245
6:00 AM	96,789	95,678	192,467
7:00 AM	97,890	96,789	194,679
8:00 AM	98,901	97,890	196,791
9:00 AM	99,012	98,901	197,913
10:00 AM	100,123	99,012	199,135
11:00 PM	101,234	100,123	201,357
12:00 AM	102,345	101,234	203,579
1:00 AM	103,456	102,345	205,801
2:00 AM	104,567	103,456	208,023
3:00 AM	105,678	104,567	210,245
4:00 AM	106,789	105,678	212,467
5:00 AM	107,890	106,789	214,679
6:00 AM	108,901	107,890	216,791
7:00 AM	109,012	108,901	217,913
8:00 AM	110,123	109,012	219,135
9:00 AM	111,234	110,123	221,357
10:00 AM	112,345	111,234	223,579
11:00 PM	113,456	112,345	225,801
12:00 AM	114,567	113,456	228,023
1:00 AM	115,678	114,567	230,245
2:00 AM	116,789	115,678	232,467
3:00 AM	117,890	116,789	234,679
4:00 AM	118,901	117,890	236,791
5:00 AM	119,012	118,901	237,913
6:00 AM	120,123	119,012	239,135
7:00 AM	121,234	120,123	241,357
8:00 AM	122,345	121,234	243,579
9:00 AM	123,456	122,345	245,801
10:00 AM	124,567	123,456	248,023
11:00 PM	125,678	124,567	250,245
12:00 AM	126,789	125,678	252,467
1:00 AM	127,890	126,789	254,679
2:00 AM	128,901	127,890	256,791
3:00 AM	129,012	128,901	257,913
4:00 AM	130,123	129,012	259,135
5:00 AM	131,234	130,123	261,357
6:00 AM	132,345	131,234	263,579
7:00 AM	133,456	132,345	265,801
8:00 AM	134,567	133,456	268,023
9:00 AM	135,678	134,567	270,245
10:00 AM	136,789	135,678	272,467
11:00 PM	137,890	136,789	274,679
12:00 AM	138,901	137,890	276,791
1:00 AM	139,012	138,901	277,913
2:00 AM	140,123	139,012	279,135
3:00 AM	141,234	140,123	281,357
4:00 AM	142,345	141,234	283,579
5:00 AM	143,456	142,345	285,801
6:00 AM	144,567	143,456	288,023
7:00 AM	145,678	144,567	290,245
8:00 AM	146,789	145,678	292,467
9:00 AM	147,890	146,789	294,679
10:00 AM	148,901	147,890	296,791
11:00 PM	149,012	148,901	297,913
12:00 AM	150,123	149,012	299,135
1:00 AM	151,234	150,123	301,357
2:00 AM	152,345	151,234	303,579
3:00 AM	153,456	152,345	305,801
4:00 AM	154,567	153,456	308,023
5:00 AM	155,678	154,567	310,245
6:00 AM	156,789	155,678	312,467
7:00 AM	157,890	156,789	314,679
8:00 AM	158,901	157,890	316,791
9:00 AM	159,012	158,901	317,913
10:00 AM	160,123	159,012	319,135
11:00 PM	161,234	160,123	321,357
12:00 AM	162,345	161,234	323,579
1:00 AM	163,456	162,345	325,801
2:00 AM	164,567	163,456	328,023
3:00 AM	165,678	164,567	330,245
4:00 AM	166,789	165,678	332,467
5:00 AM	167,890	166,789	334,679
6:00 AM	168,901	167,890	336,791
7:00 AM	169,012	168,901	337,913
8:00 AM	170,123	169,012	339,135
9:00 AM	171,234	170,123	341,357
10:00 AM	172,345	171,234	343,579
11:00 PM	173,456	172,345	345,801
12:00 AM	174,567	173,456	348,023
1:00 AM	175,678	174,567	350,245
2:00 AM	176,789	175,678	352,467
3:00 AM	177,890	176,789	354,679
4:00 AM	178,901	177,890	356,791
5:00 AM	179,012	178,901	357,913
6:00 AM	180,123	179,012	359,135
7:00 AM	181,234	180,123	361,357
8:00 AM	182,345	181,234	363,579
9:00 AM	183,456	182,345	365,801
10:00 AM	184,567	183,456	368,023
11:00 PM	185,678	184,567	370,245
12:00 AM	186,789	185,678	372,467
1:00 AM	187,890	186,789	374,679
2:00 AM	188,901	187,890	376,791
3:00 AM	189,012	188,901	377,913
4:00 AM	190,123	189,012	379,135
5:00 AM	191,234	190,123	381,357
6:00 AM	192,345	191,234	383,579
7:00 AM	193,456	192,345	385,801
8:00 AM	194,567	193,456	388,023
9:00 AM	195,678	194,567	390,245
10:00 AM	196,789	195,678	392,467
11:00 PM	197,890	196,789	394,679
12:00 AM	198,901	197,890	396,791
1:00 AM	199,012	198,901	397,913
2:00 AM	200,123	199,012	399,135
3:00 AM	201,234	200,123	401,357
4:00 AM	202,345	201,234	403,579
5:00 AM	203,456	202,345	405,801
6:00 AM	204,567	203,456	408,023
7:00 AM	205,678	204,567	410,245
8:00 AM	206,789	205,678	412,467
9:00 AM	207,890	206,789	414,679
10:00 AM	208,901	207,890	416,791
11:00 PM	209,012	208,901	417,913
12:00 AM	210,123	209,012	419,135
1:00 AM	211,234	210,123	421,357
2:00 AM	212,345	211,234	423,579
3:00 AM	213,456	212,345	425,801
4:00 AM	214,567	213,456	428,023
5:00 AM	215,678	214,567	430,245
6:00 AM	216,789	215,678	432,467
7:00 AM	217,890	216,789	434,679
8:00 AM	218,901	217,890	436,791
9:00 AM	219,012	218,901	437,913
10:00 AM	220,123	219,012	439,135
11:00 PM	221,234	220,123	441,357
12:00 AM	222,345	221,234	443,579
1:00 AM	223,456	222,345	445,801
2:00 AM	224,567	223,456	448,023
3:00 AM	225,678	224,567	450,245
4:00 AM	226,789	225,678	452,467
5:00 AM	227,890	226,789	454,679
6:00 AM	228,901	227,890	456,791
7:00 AM	229,012	228,901	457,913
8:00 AM	230,123	229,012	459,135
9:00 AM	231,234	230,123	461,357
10:00 AM	232,345	231,234	463,579
11:00 PM	233,456	232,345	465,801
12:00 AM	234,567	233,456	468,023
1:00 AM	235,678	234,567	470,245
2:00 AM	236,789	235,678	472,467
3:00 AM	237,890	236,789	474,679
4:00 AM	238,901	237,890	476,791
5:00 AM	239,012	238,901	477,913
6:00 AM	240,123	239,012	479,135
7:00 AM	241,234	240,123	481,357
8:00 AM	242,345	241,234	483,579
9:00 AM	243,456	242,345	485,801
10:00 AM	244,567	243,456	488,023
11:00 PM	245,678	244,567	490,245
12:00 AM	246,789	245,678	49



CLOSED LOOP SYSTEM DETECTOR ASSIGNMENT

SYSTEM DETECTOR ASSIGNMENT																																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
Zone 1 (SR 2029) NB	2(10)	2(11)		2(15)	2(16)		3(29)	3(30)		3(34)	3(35)	4(5)	4(6)	4(7)	4(8)	5(8)	5(9)	5(10)	5(11)	5(19)	6(13)	6(14)	6(15)	6(16)	6(17)	7(22)	7(23)				8(28)	8(29)	
Zone 1 (SR 2029) SB	2(12)	2(13)	2(14)	2(15)	2(16)	2(19)	3(31)	3(32)	3(33)	3(27)	3(28)			4(9)	4(10)	5(8)	5(9)	5(10)	5(11)	5(19)	6(13)	6(14)	6(15)	6(16)	6(17)	7(20)	7(21)	7(17)	7(18)	7(19)	8(25)	8(26)	8(27)

NOTES: ASSIGNED AS INTERSECTION # AND LOOP # IN THE PARENTHESIS AS SHOWN ON THE PLAN ABOVE [I.E. 1(4)=INTERSECTION #1 (AT LINCOLN HIGHWAY), LOOP #4].
ARCHIVE LOCAL DETECTOR COUNTS IN FIFTEEN MINUTE INTERVALS.

CYCLE/SPLIT/OFFSET

PROGRAM 1		PHASE										CYCLE LENGTH	OFFSET #1	OFFSET #2	OFFSET #3
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	PED					
8 OXFORD VALLEY RD & BIG OAK RD	2217	18 (LEAD)	38	23 (LEAD)	26	18 (LEAD)	38	23 (LEAD)	26			105	7		
7 OXFORD VALLEY RD & RT 1 RAMP C/D	3090		83		26 (LEAD)	57			22			105	67		
6 OXFORD VALLEY RD & RT 1 RAMP A/B	2430	17 (LEAD)	56		32	73						105	87		
5 OXFORD VALLEY RD & CABOT BLVD	2186	18 (LEAD)	64		23	18 (LEAD)	64		23			105	63		
4 OXFORD VALLEY RD & COMMERCE DR	2364	25 (LEAD)	80		25	25 (LEAD)	80		25			105	95		
3 OXFORD VALLEY RD & N BUCKSTOWN RD	1598	16 (LEAD)	57		16 (SPLIT)	16 (LEAD)	57		16 (SPLIT)			105	67		
2 OXFORD VALLEY RD & S BUCKSTOWN RD	1697	17 (LEAD)	59		29	17 (LEAD)	59		29			105	19		
1 OXFORD VALLEY RD & LINCOLN HWY	0574	18 (LEAD)	23	38 (LEAD)	26	16 (LEAD)	25	18 (LEAD)	48			105	0		
PROGRAM 2		PHASE										CYCLE LENGTH	OFFSET #1	OFFSET #2	OFFSET #3
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	PED					
8 OXFORD VALLEY RD & BIG OAK RD	2217	18 (LEAD)	39	17 (LEAD)	16	18 (LEAD)	39	17 (LEAD)	16			90	9		
7 OXFORD VALLEY RD & RT 1 RAMP C/D	3090		62		32 (LEAD)	30			28			90	43		
6 OXFORD VALLEY RD & RT 1 RAMP A/B	2430	14 (LEAD)	50		26	14 (LEAD)	50		26			90	48		
5 OXFORD VALLEY RD & CABOT BLVD	2186	14 (LEAD)	50		26	14 (LEAD)	50		26			90	48		
4 OXFORD VALLEY RD & COMMERCE DR	2364	36 (LEAD)	54		36	36 (LEAD)	54		36			90	58		
3 OXFORD VALLEY RD & N BUCKSTOWN RD	1598	14 (LEAD)	36		21 (SPLIT)	14 (LEAD)	36		19 (SPLIT)			90	1		
2 OXFORD VALLEY RD & S BUCKSTOWN RD	1697	18 (LEAD)	38		34	18 (LEAD)	38		34			90	10		
1 OXFORD VALLEY RD & LINCOLN HWY	0574	20 (LEAD)	22	24 (LEAD)	24	20 (LEAD)	22	24 (LEAD)	24			90	0		
PROGRAM 3		PHASE										CYCLE LENGTH	OFFSET #1	OFFSET #2	OFFSET #3
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	PED					
8 OXFORD VALLEY RD & BIG OAK RD	2217	26 (LEAD)	47	19 (LEAD)	18	26 (LEAD)	47	19 (LEAD)	18			110	107		
7 OXFORD VALLEY RD & RT 1 RAMP C/D	3090		80		40 (LEAD)	40			30			110	53		
6 OXFORD VALLEY RD & RT 1 RAMP A/B	2430	14 (LEAD)	58		38	14 (LEAD)	58		38			110	72		
5 OXFORD VALLEY RD & CABOT BLVD	2186	14 (LEAD)	44		52	14 (LEAD)	44		52			110	57		
4 OXFORD VALLEY RD & COMMERCE DR	2364	54 (LEAD)	56		54	54 (LEAD)	56		54			110	27		
3 OXFORD VALLEY RD & N BUCKSTOWN RD	1598	15 (LEAD)	50		27 (SPLIT)	15 (LEAD)	50		18 (SPLIT)			110	105		
2 OXFORD VALLEY RD & S BUCKSTOWN RD	1697	19 (LEAD)	43		48	19 (LEAD)	43		48			110	0		
1 OXFORD VALLEY RD & LINCOLN HWY	0574	26 (LEAD)	23	26 (LEAD)	35	26 (LEAD)	23	26 (LEAD)	35			110	0		
PROGRAM 4		PHASE										CYCLE LENGTH	OFFSET #1	OFFSET #2	OFFSET #3
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	PED					
8 OXFORD VALLEY RD & BIG OAK RD	2217	23 (LEAD)	51	26 (LEAD)	20	23 (LEAD)	51	26 (LEAD)	20			120	63		
7 OXFORD VALLEY RD & RT 1 RAMP C/D	3090		88		37 (LEAD)	51			32			120	57		
6 OXFORD VALLEY RD & RT 1 RAMP A/B	2430	14 (LEAD)	69		37	83						120	82		
5 OXFORD VALLEY RD & CABOT BLVD	2186	14 (LEAD)	86		20	14 (LEAD)	86		20			120	78		
4 OXFORD VALLEY RD & COMMERCE DR	2364	60 (LEAD)	60		60	60 (LEAD)	60		60			120	34		
3 OXFORD VALLEY RD & N BUCKSTOWN RD	1598	18 (LEAD)	42		29 (SPLIT)	18 (LEAD)	42		31 (SPLIT)			120	118		
2 OXFORD VALLEY RD & S BUCKSTOWN RD	1697	27 (LEAD)	42		51	27 (LEAD)	42		51			120	11		
1 OXFORD VALLEY RD & LINCOLN HWY	0574	28 (LEAD)	29	36 (LEAD)	27	28 (LEAD)	29	19 (LEAD)	27			120	0		

NOTES: ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
REFER TO TRAFFIC SIGNAL PERMIT PLAN FOR MAXIMUM 1, MAXIMUM 2, AND CLEARANCE AND PED TIMES.

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 68.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

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EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

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THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE DECEMBER 20, 1974.

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SYSTEM NOTES:

- PROGRAMS TO BE SELECTED BY CLOSED LOOP SYSTEM OR T.B.C. BACKUP.
- OFFSET REFERENCED TO THE BEGINNING OF YELLOW (PHASE 2+6).
- SYSTEM:
OXFORD VALLEY ROAD (SR 2029) - 8 INTERSECTIONS
- SYSTEM LIMITS:
OXFORD VALLEY ROAD (SR 2029) -
LINCOLN HIGHWAY (SR 2037) TO BIG OAK ROAD (SR 2024)
- ON-STREET MASTER CONTROLLER LOCATION:
OXFORD VALLEY ROAD (SR 2029) & LINCOLN HIGHWAY (SR 2037)
- PRIMARY COORDINATION: FIBER OPTIC CABLE
SECONDARY COORDINATION: TIME BASED COORDINATION (DEFAULT TO BACKUP T.B.C.)

WEEKLY PROGRAM CHART

EVENT	DAY*	TIME	CYCLE	PROGRAM	REMARKS
1	1-7	00:00	-	MAX I	FREE
2	1-5	06:00	105	1	AM PEAK
3	1-5	10:00	90	2	MID-DAY PEAK
4	1-5	15:00	110	3	PM PEAK
5	1-5	19:00	90	2	OFF PEAK
6	1-7	23:00	-	MAX I	FREE
7	6-7	10:00	120	4	WEEKEND PEAK

* DAY 1 = MONDAY

LEGEND

- (X) INTERSECTION NUMBER
- X-Y LOOP DETECTOR, INTERSECTION NO. X - LOOP NO. Y
- SX-Y SYSTEM LOOP DETECTOR, INTERSECTION NO. X - LOOP NO. Y
- (X) PHASE NUMBER
- XXX' DISTANCE BETWEEN INTERSECTIONS

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION ENGINEERING DISTRICT 6-0

COUNTY: BUCKS

MUNICIPALITY: FALLS TOWNSHIP, MIDDLETOWN

TOWNSHIP: LOWER MAKEFIELD TOWNSHIP

LOCATION: OXFORD VALLEY ROAD (S.R. 2029) -

LINCOLN HWY (SR 2037) TO BIG OAK RD (SR 2024)

REVIEWED:

DATE

MUNICIPAL OFFICIAL DATE

RECOMMENDED:

SIGNALS ENGINEER DATE

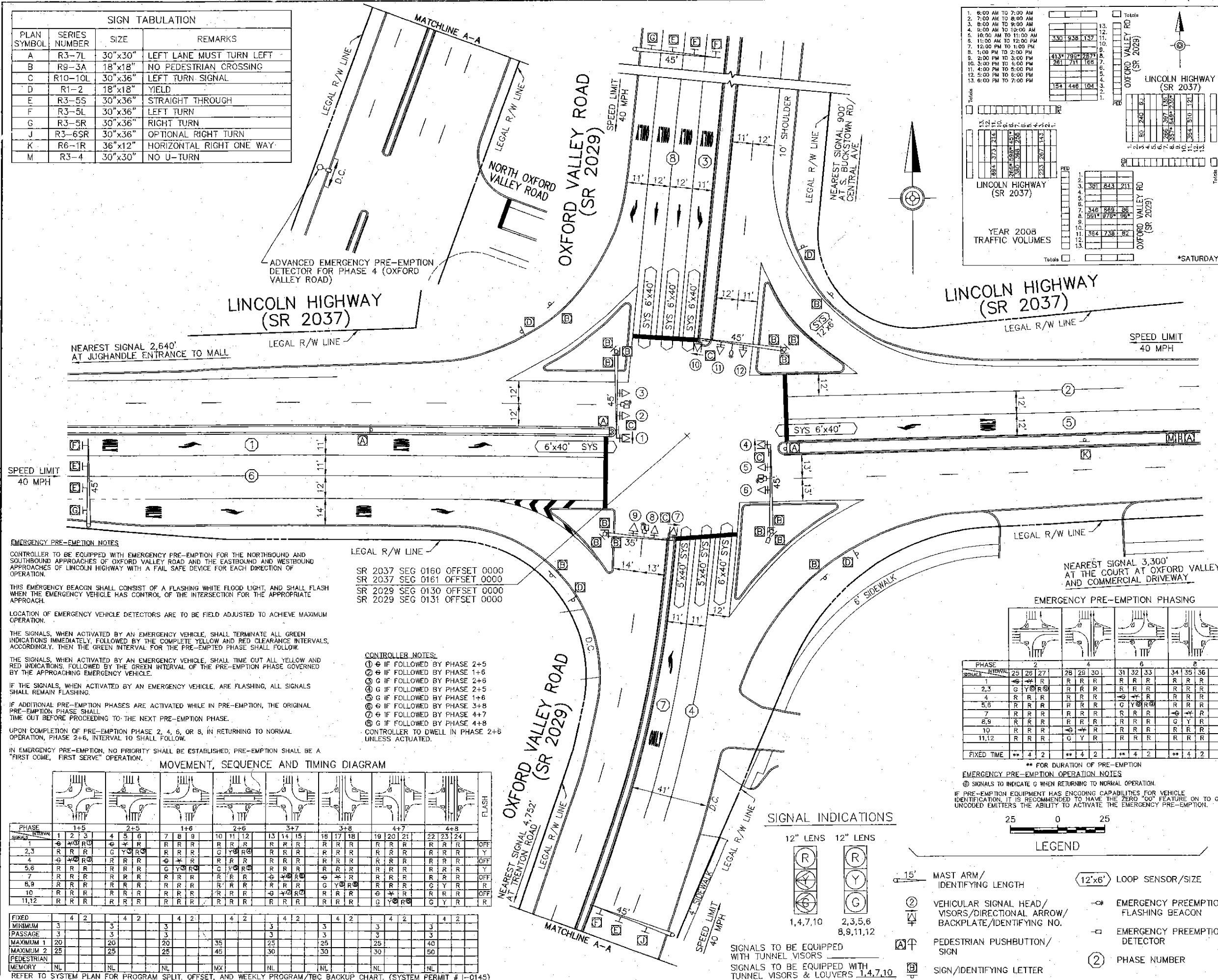
DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	DES./REV.	DATE	REV.	DATE	RECOM.	DATE
1	REVISED TIMING FOR INT #8	ORA	8/25/08	NBP	1/8/10	ALPATEL	1/25/10
2	REVISED INT #8 FULL BUILD	ORA	3/1/12	ALL	4/16/12	ALL	4/16/12
3							
4							
5							
6							
7							
8							

SYSTEM PERMIT # I-0145

Falls twp & Middle Twp # 0574

PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
B	R9-3A	18"x18"	NO PEDESTRIAN CROSSING
C	R10-10L	30"x36"	LEFT TURN SIGNAL
D	R1-2	18"x18"	YIELD
E	R3-5S	30"x36"	STRAIGHT THROUGH
F	R3-5L	30"x36"	LEFT TURN
G	R3-5R	30"x36"	RIGHT TURN
J	R3-6SR	30"x36"	OPTIONAL RIGHT TURN
K	R6-1R	36"x12"	HORIZONTAL RIGHT ONE WAY
M	R3-4	30"x30"	NO U-TURN



1. 6:00 AM to 7:00 AM
 2. 7:00 AM to 8:00 AM
 3. 8:00 AM to 9:00 AM
 4. 9:00 AM to 10:00 AM
 5. 10:00 AM to 11:00 AM
 6. 11:00 AM to 12:00 PM
 7. 12:00 PM to 1:00 PM
 8. 1:00 PM to 2:00 PM
 9. 2:00 PM to 3:00 PM
 10. 3:00 PM to 4:00 PM
 11. 4:00 PM to 5:00 PM
 12. 5:00 PM to 6:00 PM
 13. 6:00 PM to 7:00 PM

Lincoln Highway (SR 2029)

OXFORD VALLEY RD (SR 2029)

Lincoln Highway (SR 2037)

OXFORD VALLEY RD (SR 2037)

YEAR 2008 TRAFFIC VOLUMES

***SATURDAY**

GENERAL NOTES

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THE DEPARTMENT OF TRANSPORTATION.

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INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 40B.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING
UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF
ACT 181, UNDERGROUND UTILITY LINE PROTECTION ACT, EFFECTIVE
MARCH 29, 2007.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

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SYSTEM PERMIT # I-0145

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: BUCKS

MUNICIPALITY: FALLS TWP. & MIDDLETOWN TWP.

INTERSECTION: OXFORD VALLEY ROAD (SR 2029)

AND LINCOLN HIGHWAY (SR 2037)

REVIEWED:

DATE _____

DATE _____

RECOMMENDED:

1/04

SIGNALS ENGINEER

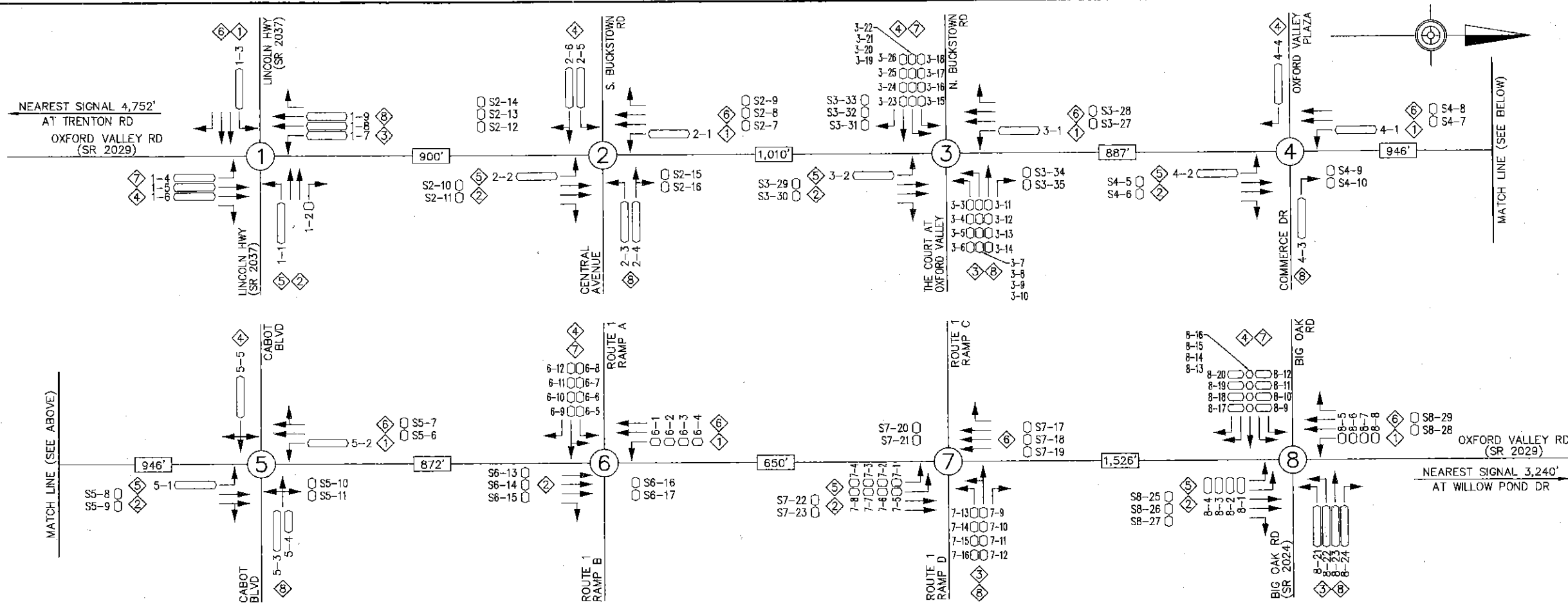
1/04

DISTRICT TRAFFIC ENGINEER

DM.	DAT
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1	CLOSED LOOP SYSTEM & PRE-EMPTION	PML	5/7/04		LRB	6/17/04
2	ADDED ADDITIONAL DETECTOR	MGM RFW	5/14/04	MLK	6/14/04	LRB 6/18/04
3	REVISED TIMINGS & ADDED SYSTEM PERMIT PLAN	ORA RFW	6/6/04	6/6/04	6/16/04	JDR 6/17/04
4						
5						
6						
7						
8						

SHEET 2 OF 2 PERMIT # 61-0574 FILE # 0574



CLOSED LOOP SYSTEM DETECTOR ASSIGNMENT

SYSTEM DETECTOR ASSIGNMENT																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Zone 1 (SR 2029) NB	2(10)	2(11)		2(15)	2(16)		3(29)	3(30)		3(34)	3(35)	4(5)	4(6)	4(7)	4(8)	5(8)	5(9)	5(10)	5(11)	6(13)	6(14)	6(15)	6(16)	6(17)	7(22)	7(23)					8(28)	8(29)
Zone 1 (SR 2029) SB	2(12)	2(13)	2(14)	2(7)	2(8)	2(9)	3(31)	3(32)	3(33)	3(27)	3(28)		4(9)	4(10)			5(6)	5(7)							7(20)	7(21)	7(17)	7(18)	7(19)	8(25)	8(26)	8(27)

NOTES: ASSIGNED AS INTERSECTION # AND LOOP # IN THE PARENTHESIS AS SHOWN ON THE PLAN ABOVE [I.E. 1(4)=INTERSECTION #1 (AT LINCOLN HIGHWAY), LOOP #4].
ARCHIVE LOCAL DETECTOR COUNTS IN FIFTEEN MINUTE INTERVALS.

CYCLE/SPLIT/OFFSET

PROGRAM 1		PHASE										CYCLE LENGTH	OFFSET #1	OFFSET #2	OFFSET #3
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	PED		BALANCED	DR1	DR2	
8 OXFORD VALLEY RD & BIG OAK RD	2217	18 (LEAD)	38	23 (LEAD)	26	18 (LEAD)	38	23 (LEAD)	26			105	7		
7 OXFORD VALLEY RD & RT 1 RAMP C/D	3090		83		26 (LEAD)	57			22			105	67		
6 OXFORD VALLEY RD & RT 1 RAMP A/B	2430	17 (LEAD)	56		32	73						105	87		
5 OXFORD VALLEY RD & CABOT BLVD	2186	18 (LEAD)	64		23	18 (LEAD)	64		23			105	63		
4 OXFORD VALLEY RD & COMMERCE DR	2364	25 (LEAD)	80		25	25 (LEAD)	80		25			105	95		
3 OXFORD VALLEY RD & N BUCKSTOWN RD	1598	16 (LEAD)	57		16 (SPLIT)	16 (LEAD)	57		16 (SPLIT)			105	67		
2 OXFORD VALLEY RD & S BUCKSTOWN RD	1697	17 (LEAD)	59		29	17 (LEAD)	59		29			105	19		
1 OXFORD VALLEY RD & LINCOLN HWY	0574	18 (LEAD)	23	38 (LEAD)	26	16 (LEAD)	25	18 (LEAD)	48			105	0		
PROGRAM 2		PHASE										CYCLE LENGTH	OFFSET #1	OFFSET #2	OFFSET #3
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	PED		BALANCED	DR1	DR2	
8 OXFORD VALLEY RD & BIG OAK RD	2217	18 (LEAD)	39	17 (LEAD)	16	18 (LEAD)	39	17 (LEAD)	16			90	9		
7 OXFORD VALLEY RD & RT 1 RAMP C/D	3090		62		32 (LEAD)	30			28			90	43		
6 OXFORD VALLEY RD & RT 1 RAMP A/B	2430	14 (LEAD)	50		26	14 (LEAD)	50		26			90	48		
5 OXFORD VALLEY RD & CABOT BLVD	2186	14 (LEAD)	50		26	14 (LEAD)	50		26			90	48		
4 OXFORD VALLEY RD & COMMERCE DR	2364	36 (LEAD)	54		36	36 (LEAD)	54		36			90	58		
3 OXFORD VALLEY RD & N BUCKSTOWN RD	1598	14 (LEAD)	36		21 (SPLIT)	14 (LEAD)	36		19 (SPLIT)			90	1		
2 OXFORD VALLEY RD & S BUCKSTOWN RD	1697	18 (LEAD)	38		34	18 (LEAD)	38		34			90	10		
1 OXFORD VALLEY RD & LINCOLN HWY	0574	20 (LEAD)	22	24 (LEAD)	24	20 (LEAD)	22	24 (LEAD)	24			90	0		
PROGRAM 3		PHASE										CYCLE LENGTH	OFFSET #1	OFFSET #2	OFFSET #3
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	PED		BALANCED	DR1	DR2	
8 OXFORD VALLEY RD & BIG OAK RD	2217	26 (LEAD)	47	19 (LEAD)	18	26 (LEAD)	47	19 (LEAD)	18			110	107		
7 OXFORD VALLEY RD & RT 1 RAMP C/D	3090		80		40 (LEAD)	40			30			110	53		
6 OXFORD VALLEY RD & RT 1 RAMP A/B	2430	14 (LEAD)	58		38	14 (LEAD)	58		38			110	72		
5 OXFORD VALLEY RD & CABOT BLVD	2186	14 (LEAD)	44		52	14 (LEAD)	44		52			110	57		
4 OXFORD VALLEY RD & COMMERCE DR	2364	54 (LEAD)	56		54	54 (LEAD)	56		54			110	27		
3 OXFORD VALLEY RD & N BUCKSTOWN RD	1598	15 (LEAD)	50		27 (SPLIT)	15 (LEAD)	50		18 (SPLIT)			110	105		
2 OXFORD VALLEY RD & S BUCKSTOWN RD	1697	19 (LEAD)	43		48	19 (LEAD)	43		48			110	0		
1 OXFORD VALLEY RD & LINCOLN HWY	0574	26 (LEAD)	23	26 (LEAD)	35	26 (LEAD)	23	26 (LEAD)	35			110	0		
PROGRAM 4		PHASE										CYCLE LENGTH	OFFSET #1	OFFSET #2	OFFSET #3
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	PED		BALANCED	DR1	DR2	
8 OXFORD VALLEY RD & BIG OAK RD	2217	23 (LEAD)	51	26 (LEAD)	20	23 (LEAD)	51	26 (LEAD)	20			120	63		
7 OXFORD VALLEY RD & RT 1 RAMP C/D	3090		88		37 (LEAD)	51			32			120	57		
6 OXFORD VALLEY RD & RT 1 RAMP A/B	2430	14 (LEAD)	69		37	83						120	82		
5 OXFORD VALLEY RD & CABOT BLVD	2186	14 (LEAD)	86		20	14 (LEAD)	86		20			120	78		
4 OXFORD VALLEY RD & COMMERCE DR	2364	60 (LEAD)	60		60	60 (LEAD)	60		60			120	34		
3 OXFORD VALLEY RD & N BUCKSTOWN RD	1598	18 (LEAD)	42		29 (SPLIT)	18 (LEAD)	42		31 (SPLIT)			120	118		
2 OXFORD VALLEY RD & S BUCKSTOWN RD	1697	27 (LEAD)	42		51	27 (LEAD)	42		51			120	11		
1 OXFORD VALLEY RD & LINCOLN HWY	0574	28 (LEAD)	29	36 (LEAD)	27	28 (LEAD)	29	19 (LEAD)	27			120	0		

NOTES: ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
REFER TO TRAFFIC SIGNAL PERMIT PLAN FOR MAXIMUM 1, MAXIMUM 2, AND CLEARANCE AND PED TIMES.

SYSTEM NOTES:

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- SYSTEM:
OXFORD VALLEY ROAD (SR 2029) - 8 INTERSECTIONS
- SYSTEM LIMITS:
OXFORD VALLEY ROAD (SR 2029) -
LINCOLN HIGHWAY (SR 2037) TO BIG OAK ROAD (SR 2024)
- ON-STREET MASTER CONTROLLER LOCATION:
OXFORD VALLEY ROAD (SR 2029) & LINCOLN HIGHWAY (SR 2037)
- PRIMARY COORDINATION: FIBER OPTIC CABLE
SECONDARY COORDINATION: TIME BASED COORDINATION
(DEFAULT TO BACKUP T.B.C.)

WEEKLY PROGRAM CHART					
EVENT	DAY*	TIME	CYCLE	PROGRAM	REMARKS
1	1-7	00:00	-	MAX 1	FREE
2	1-5	06:00	105	1	AM PEAK
3	1-5	10:00	90	2	MID-DAY PEAK
4	1-5	15:00	110	3	PM PEAK
5	1-5	19:00	90	2	OFF PEAK
6	1-7	23:00	-	MAX 1	FREE
7	6-7	10:00	120	4	WEEKEND PEAK

* DAY 1 = MONDAY

LEGEND

- (X) INTERSECTION NUMBER
- X-Y LOOP DETECTOR, INTERSECTION NO. X - LOOP NO. Y
- SX-Y SYSTEM LOOP DETECTOR, INTERSECTION NO. X - LOOP NO. Y
- (X) PHASE NUMBER
- XXX' DISTANCE BETWEEN INTERSECTIONS

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PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: BUCKS

MUNICIPALITY: FALLS TOWNSHIP, MIDDLETOWN

TOWNSHIP: LOWER MAKEFIELD TOWNSHIP

LOCATION: OXFORD VALLEY ROAD (S.R. 2029) -

LINCOLN HWY (SR 2037) TO BIG OAK RD (SR 2024)

REVIEWED:

DATE

MUNICIPAL OFFICIAL

DATE

RECOMMENDED:

SIGNALS ENGINEER

DATE

DISTRICT TRAFFIC ENGINEER

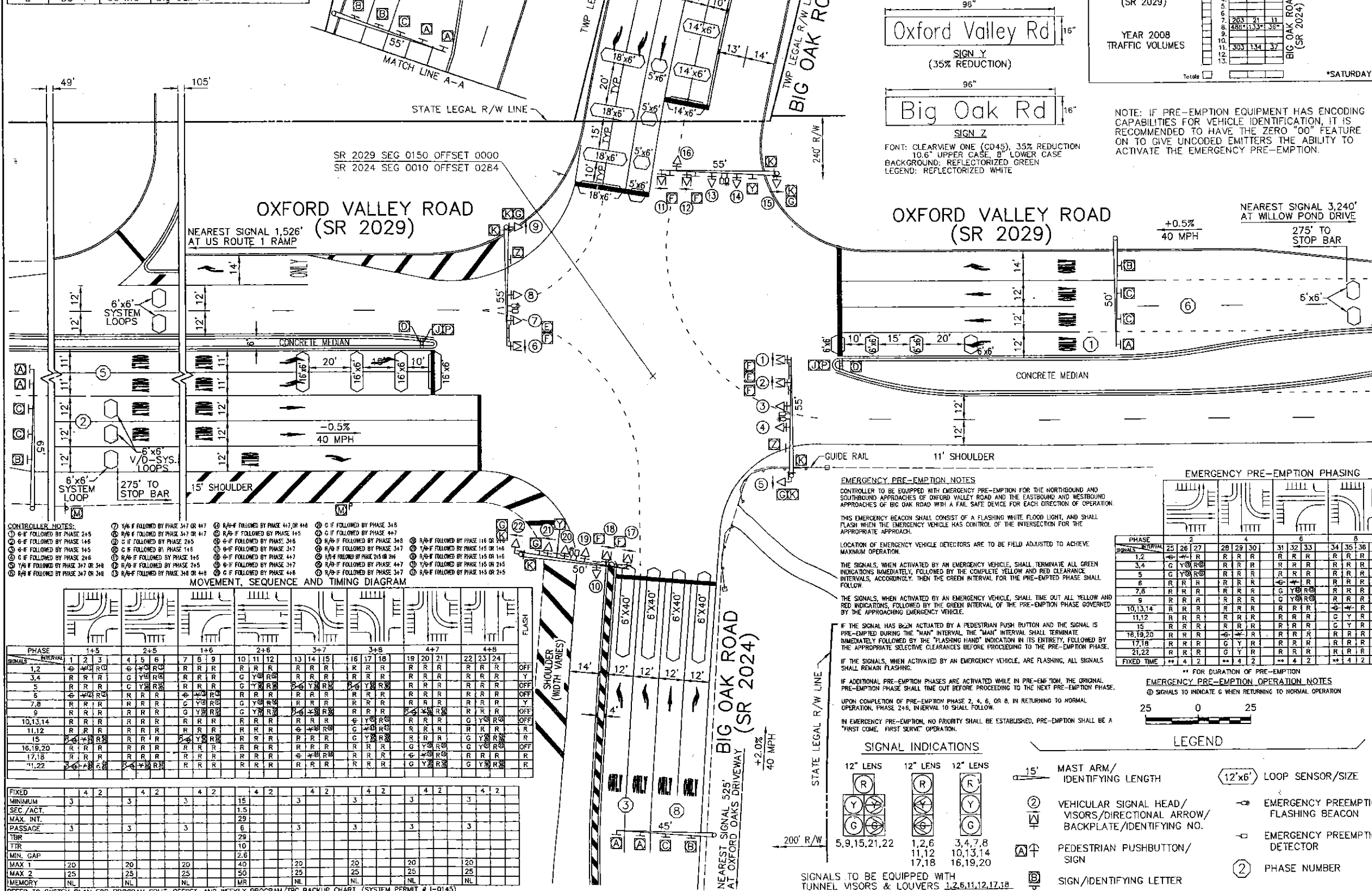
DATE

NO.	REVISION	DES./REV.	DATE	REV.	DATE	RECOM.	DATE
1	REVISED TIMING FOR INT #8	ORA	8/25/08	NBP	1/8/10	ALPATEL	1/25/10
2	REVISED INT #8 FULL BUILD	ORA	3/1/12	ALL	4/16/12	ALL	4/16/12
3							
4							
5							
6							
7							
8							

SYSTEM PERMIT # I-0145

SIGN TABULATION

PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R3-5L	30"x36"	LEFT TURN
B	R3-5R	30"x36"	RIGHT TURN
C	R3-5S	30"x36"	STRAIGHT THROUGH
D	R3-4	30"x30"	NO U-TURN
E	R3-4	36"x36"	NO U-TURN
F	R10-10L	30"x36"	LEFT TURN SIGNAL
G	R10-10R	30"x36"	RIGHT TURN SIGNAL
J	R4-7	24"x30"	KEEP RIGHT
K	R9-3A	18"x18"	NO PEDESTRIAN CROSSING
M	R4-18	30"x30"	KEEP OFF SHOULDER
N	R3-7R	30"x30"	RIGHT LANE MUST TURN RIGHT
P	OM1-3	18"x18"	OBJECT MARKER
Y	D3-4	96"x16"	Oxford Valley Rd
Z	D3-4	96"x16"	Bia Oak Rd



GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS
PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF
THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES,
NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE
RESPONSIBILITY OF THE PERMITEE.

* ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 68.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO
INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS
FORM 408

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING
UNLESS THE PERMITEE COMPLIES WITH THE PROVISIONS OF
ACT 199, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES.
EFFECTIVE DATE MARCH 29, 2007.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

SYSTEM PERMIT # I-0145

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: BUCKS

MUNICIPALITY: LOWER MAKEFIELD TOWNSHIP

INTERSECTION: OXFORD VALLEY ROAD (S.R. 2029)

AND BIG OAK ROAD (S.R. 2024)

REVIEWED

DATE _____

UNCLASSIFIED//FOR OFFICIAL USE ONLY DATE

RECOMMENDED:

MARK L. KRAY 6/16/

SIGNALS ENGINEER	DATE
------------------	------

DOUGLAS MAY 6/10/71

[illegible]

NO.	REVISION	REV.	DATE	REV.	DATE	REMARK
1	REMOVE PROGRAM # 1.	1	5/10/03	1	5/10/03	REMOVE

2	MODERNIZATION AND TRAINING CHANGE	ORA	7/23/03	14.00	7/25/03	1.00	7/25/03
---	-----------------------------------	-----	---------	-------	---------	------	---------

[illegible]

PERMIT PLAN	NRR	1/1/72	1/1/72	1/1/72	1/1/72	1/1/72
REMOVED SW SHOULDER & PAVEMENT	ORA	1/1/72	1/1/72	1/1/72	1/1/72	1/1/72

1	MARRINGS TO SHOW SB DECEL LANE	NRK	4/2/77	6/2/77	10/1/77	12/1/77
2						

[illegible][illegible][illegible][illegible]

SHEET 2 OF 2 PERMIT # 61-2217 FILE # 2217



Washington Crossing & Bear Tavern

File # HO06

Pole # D65282HW

Controller: ASC/3 (A11754)

Monitor: IDC LCD-12P (021126-003)

Command: FREE PLAN

Ring Sequence: 2341 / 6785

TIMING

FLASH	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8
WALK								
PED CLEAR								
MIN. GREEN	6	15	6	15	6	15	6	15
EXTENSION	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
MAX GREEN	10	30	10	25	10	30	10	25
MAX II								
MAX STEP								
MAX LIMIT								
AMBER	3.0	5.0	3.0	5.0	3.0	5.0	3.0	5.0
RED CLEAR		2.0		2.0		2.0		2.0

Ø (1 & 6) Washington Crossing Rd. (W.B.)

Ø (2 & 5) Washington Crossing Rd. (E.B.)

Ø (3 & 8) Bear Tavern Rd. (S.B.)

Ø (4 & 7) Bear Tavern Rd. (N.B.)

RECALLS

	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8
MIN RECALL	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
PED RECALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
MAX RECALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
MEMORY	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Anti-backup Ø 1 & 5

DETECTORS

	1	2	3	4	5	6	7	8
DELAY	2.0	6.0	2.0	6.0	2.0	6.0	2.0	6.0
INHIBIT DELAY	Ø1&6	Ø2&6	Ø3&8	Ø4&8	Ø2&5	Ø2&6	Ø4&7	Ø4&8
ASSOCIATION	Ø1&6	Ø2&6	Ø3&4&8	Ø4&8	Ø2&5	Ø2&6	Ø4&7&8	Ø4&8



Washington Crossing & Jacobs Creek

File # HO14

Pole #PS949HW

Controller: Peek 3000E (0271000001)

Monitor: EDI NSM-12E (091107439)

Command: Free

Ring Sequence: 24 / 00

TIMING

FLASH	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8
WALK								
PED CLEAR								
MIN. GREEN		20		7				
EXTENSION				2.0				
MAX GREEN		53		16				
MAX II								
MAX STEP								
MAX LIMIT								
AMBER		5.0		4.0				
RED CLEAR		2.0		2.0				

Ø 2 Washington Crossing Rd.

Ø 4 Jacobs Creek Rd.

RECALLS

	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8
MIN RECALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
PED RECALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
MAX RECALL	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
MEMORY	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

DETECTORS (Video detection)

	1	2	3	4	5	6	7	8
DELAY								
INHIBIT DELAY	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø
ASSOCIATION	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8



Washington Crossing & Scotch

File # HO05

Pole # 60841HW

Controller: 820A (5201711302)

Monitor: EDI NSM-12L (512-111)

Command: COORD. PLAN

Ring Sequence: 241 / 678

TIMING

FLASH	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8
WALK				20				20
PED CLEAR								
MIN. GREEN	4.0	10		14		10	5	14
EXTENSION	2.0			2.0			2.0	2.0
MAX GREEN	10	18		20		18	22	20
MAX II								
MAX STEP								
MAX LIMIT								
AMBER	3.0	5.0		5.0		5.0	3.0	5.0
RED CLEAR		2.0		2.0		2.0		2.0

Ø (1 & 6) Washington Crossing Rd. (W.B.)

Ø 2 Washington Crossing Rd. (E.B.)

Ø (4 & 7) Scotch Rd. (N.B.)

Ø 8 Scotch Rd. (S.B.)

RECALLS

	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8
MIN RECALL	OFF	OFF		OFF		OFF	OFF	OFF
PED RECALL	OFF	OFF		OFF		OFF	OFF	OFF
MAX RECALL	OFF	ON		OFF		ON	OFF	OFF
MEMORY	OFF	OFF		OFF		OFF	OFF	OFF

Ø 1 Anti-Backup

DETECTORS

	1	2	3	4	5	6	7	8
DELAY								
INHIBIT DELAY	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø
ASSOCIATION	Ø1&6	Ø 2	Ø3&8	Ø4&8	Ø 5	Ø 6	Ø4&7	Ø 8



Washington Crossing & Scotch

COORDINATION CONSTANTS

TO REFERENCE	00:00	DET. ACCUM. INTERVAL	CYCLE
OFFSET REFERENCE	T0	CYCLES OF DET. ACCUM.	001
EXT. COORD. TYPE	NONE	MINUTES OF DET. ACCUM.	001
CYCLES OF NO SYNC	000	COORD. DUAL ENTRY	4 & 8

COORDINATION PLAN 1

PERM STRATEGY	T0	OMIT STRATEGY	MAX
TO LOCATION	END OF STEP 1	3% WINDOW	NO
STRETCH 3% BY	000	GBP OMTS	NO
EARLY RETURN	YES	ONCE AROUND	YES
CYCLE LENGTH	090	MIN. CYCLE LENGTH	090
MAX CYCLE LENGTH	150	OFFSET	000
EXT. SYNC	NO	ACTIVE S.F.C.	
DET. PLAN	001	PROT. ONLT ENABLE	
CALC. WALK		REST IN WALK	
NO SKIP			

RING 1: 241

STEP	1	2	3	4	5	6	7	8	9	10
ST PRM	000	000	000	000	000	000	000	000	000	000
AC SPLIT	028	085	100	000	000	000	000	000	000	000
OPTION	MAX	NO	NO	NO	NO	NO	NO	NO	NO	NO
SPLIT	GBP	REL	REL	REL	REL	REL	REL	REL	REL	REL
RESERV	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO
PED?	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO

RING 2: 678

STEP	1	2	3	4	5	6	7	8	9	10
ST PRM	000	000	000	000	000	000	000	000	000	000
AC SPLIT	028	055	100	000	000	000	000	000	000	000
OPTION	MAX	NO	NO	NO	NO	NO	NO	NO	NO	NO
SPLIT	GBP	REL	REL	REL	REL	REL	REL	REL	REL	REL
RESERV	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO
PED?	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO

PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	D3-4	96"x16"	OXFORD VALLEY RD. (SEE DETIL NEXT SHEET)
B	D3-4	96"x16"	EDGEWOOD RD. (SEE DETAIL NEXT SHEET)
C	W3-3	36"x36"	SIGNAL AHEAD SIGN
D	R10-11	30"x36"	NO TURN ON RED SIGN
E	R9-3	18"x18"	NO PEDESTRIAN CROSSING
F	R10-3B	9"x12"	EDUCATIONAL PUSH BUTTON SIGN, LEFT
G	R10-3B	9"x12"	EDUCATIONAL PUSH BUTTON SIGN, RIGHT

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PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING
UNLESS THE PERMITEE COMPLIES WITH THE PROVISIONS OF
ACT 187, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES,
EFFECTIVE DATE DECEMBER 19, 1996.

WHEN LIQUID FUNDS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

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CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORER OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-7800 SERIES.

WEEKLY PROGRAM CHART						
EVENT	DAY	HOUR	CYCLE	OFFSET	PROGRAM NUMBER	REMARK
1	1-7	0000	FREE	-	MAX: 1	-
2	1-5	0600	FREE	-	MAX: 2	AM PE
3	1-5	0900	FREE	-	MAX: 1	-
4	1-5	1500	FREE	-	MAX: 2	PM PE
5	1-7	2000	FREE	-	MAX: 1	-

* DAY 1 = MONDAY
** UPON PEDESTRIAN ACTUATION ONLY

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: BUCKS

MUNICIPALITY: LOWER MAKEFIELD TWP.

INTERSECTION: EDGEWOOD RD. (SR 2030)
& OXFORD VALLEY RD. (T-344)

REVIEWED:

JAMES R. MAJEWSKI, PE
TOWNSHIP ENGINEER

RECOMMENDED: MARK I. KRAY 8/7/03

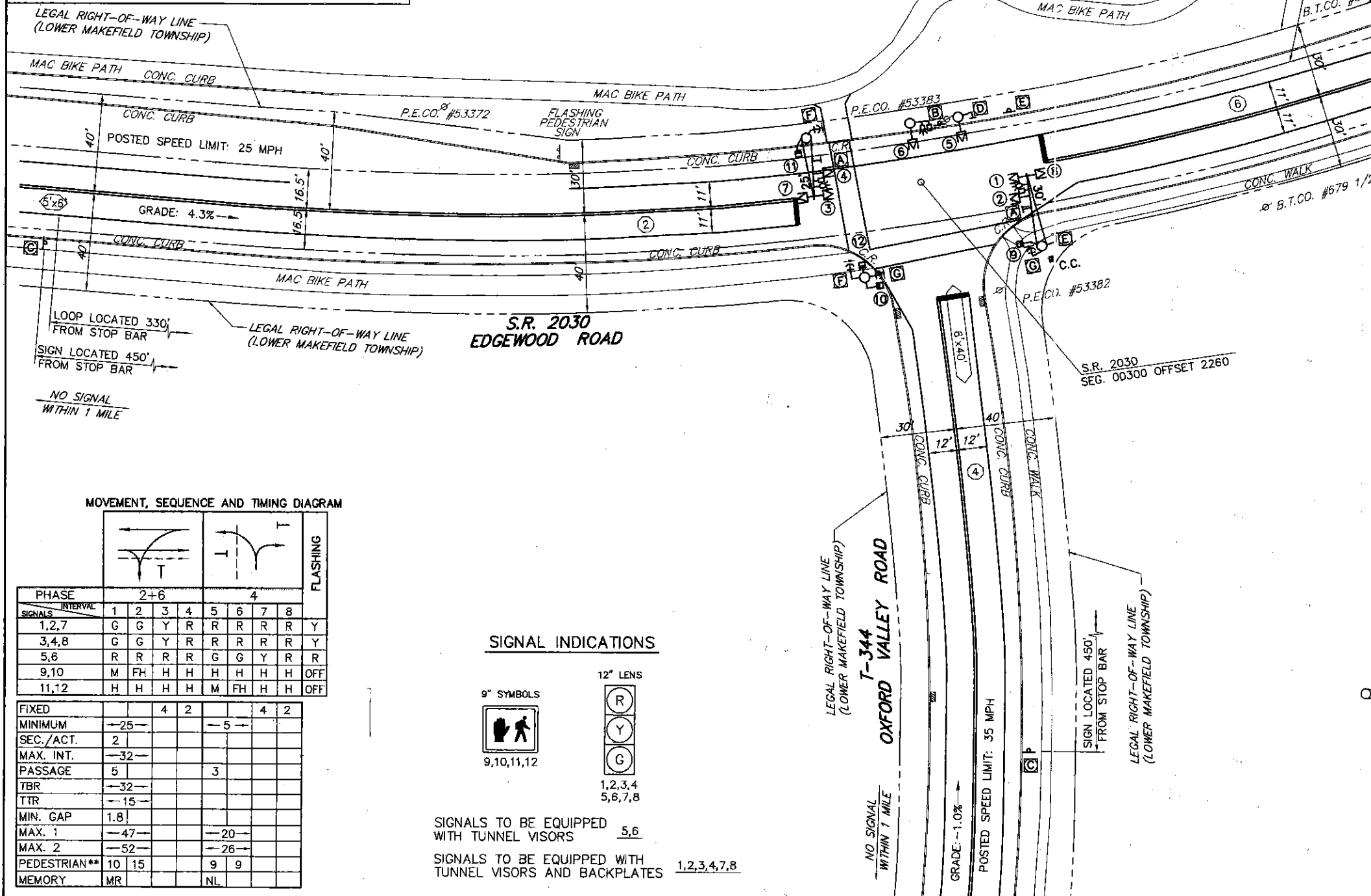
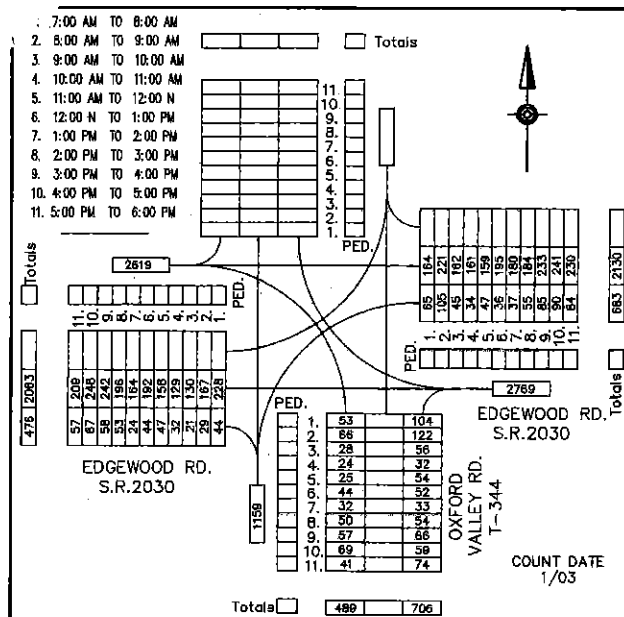
L. R. BELMONTE 8/12/03

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.
1	10-1-1	PCAS	11/1/77		11/1/77	✓


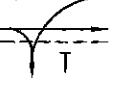
1	Relocate	Crosswalk	As built	RFW	11/10/05	12/15/05	2005

[illegible][illegible][illegible]

SHEET 2 OF 3 PERMIT # 61-2110 FILE # 2110



MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2+6				4				FLASHING	
	1	2	3	4	5	6	7	8		
SIGNALS	1,2,7	G	G	Y	R	R	R	R	R	Y
	3,4,8	G	G	Y	R	R	R	R	R	Y
	5,6	R	R	Y	R	G	G	Y	R	R
	9,10	M	FH	H	H	H	H	H	H	OFF
	11,12	H	H	H	H	M	FH	H	H	OFF

FIXED		4	2		4	2
MINIMUM	→25→			→5→		
SEC./ACT.	2					
MAX. INT.	→32→					
PASSAGE	5			3		
TBR	→32→					
TTR	→15→					
MIN. GAP	1.8					
MAX. 1	→47→			→20→		
MAX. 2	→52→			→26→		
PEDESTRIAN**	10 15			9 9		
MEMORY	MR			NI		

SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS 5,6

SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS AND BACKPLATES 1,2,3,4,7,8

~~20112~~ #21109

[illegible]

FIXED TIME		*	4	2			*	4	2			*	4	2
------------	--	---	---	---	--	--	---	---	---	--	--	---	---	---

SHEET 3 OF 3	PERMIT # 61-2110	FILE # 2110
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GENERAL NOTES

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ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

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POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

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ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

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EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITIES COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

IN ADDITION TO THIS SIGNAL PERMIT THE PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT PRIOR TO ANY OPENINGS BEING MADE IN OR UNDER ANY PORTION OF A STATE HIGHWAY.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLETES WITH THE PROVISIONS OF ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE APRIL 10, 1975.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATION MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY : BUCKS

MUNICIPALITY : LOWER MAKEFIELD TWP

INTERSECTION : MAKEFIELD RD. (T-380)

EDGEWOOD RD. (SR 2030)

LR 09020

REVIEWED : [Signature]

MUNICIPAL OFFICIAL _____ DATE _____

RECOMMENDED : [Signature]

DISTRICT TRAFFIC ENGINEER _____ DATE _____

Revised: Added Mast Arm w/ Signal Head to 20' w/ 5' 6" offset

Revised: Added Coordination w/ 10' 6" w/ 10' 6" offset

Revised: _____

Revised: _____

SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
1	R9-3	18" X 18"	NO PED. CROSSING

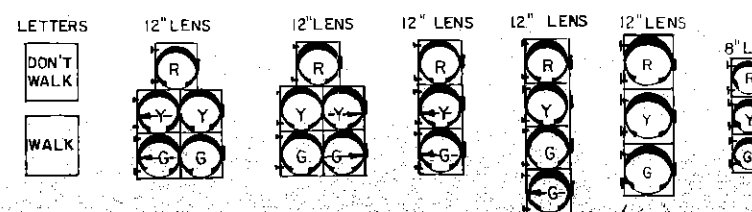
1. 7:00AM to 8:00AM	12	11	10	9	8	7	6	5	4	3	2	1
2. 8:00AM to 9:00AM	12	11	10	9	8	7	6	5	4	3	2	1
3. 9:00AM to 10:00AM	12	11	10	9	8	7	6	5	4	3	2	1
4. 10:00AM to 11:00AM	12	11	10	9	8	7	6	5	4	3	2	1
5. 11:00AM to 12:00N	12	11	10	9	8	7	6	5	4	3	2	1
6. 12:00N to 1:00PM	12	11	10	9	8	7	6	5	4	3	2	1
7. 1:00PM to 2:00PM	12	11	10	9	8	7	6	5	4	3	2	1
8. 2:00PM to 3:00PM	12	11	10	9	8	7	6	5	4	3	2	1
9. 3:00PM to 4:00PM	12	11	10	9	8	7	6	5	4	3	2	1
10. 4:00PM to 5:00PM	12	11	10	9	8	7	6	5	4	3	2	1
11. 5:00PM to 6:00PM	12	11	10	9	8	7	6	5	4	3	2	1
12. 6:00PM to 7:00PM	12	11	10	9	8	7	6	5	4	3	2	1

MOVEMENT, SEQUENCE AND TIMING DIAGRAM						
PHASE	1	2	3	4	5	6
INTERVAL	1	2	3	4	5	6
SIGNAL	1	2	3	4	5	6
1-2-3-4	G	Y	R	R	R	R
5-6-7-8	R	R	R	G	Y	R

FIXED TIME	3	2	3	2
MINIMUM	10	10	10	10
SEC. ACT.	2	2	2	2
MAX. INITIAL	30	30	30	30
PASSAGE	5	5	5	5
T.E.R.	1	1	1	1
T.I.R.	15	15	15	15
MIN. GAP	3	3	3	3
MAX I	50	50	50	50
MAX II	50	50	50	50
PED. TIME	NR	NR	NR	NR
MEMORY	NR	NR	NR	NR

MAX II TO OPERATE FROM 7AM TO 9AM AND 3PM TO 6PM.

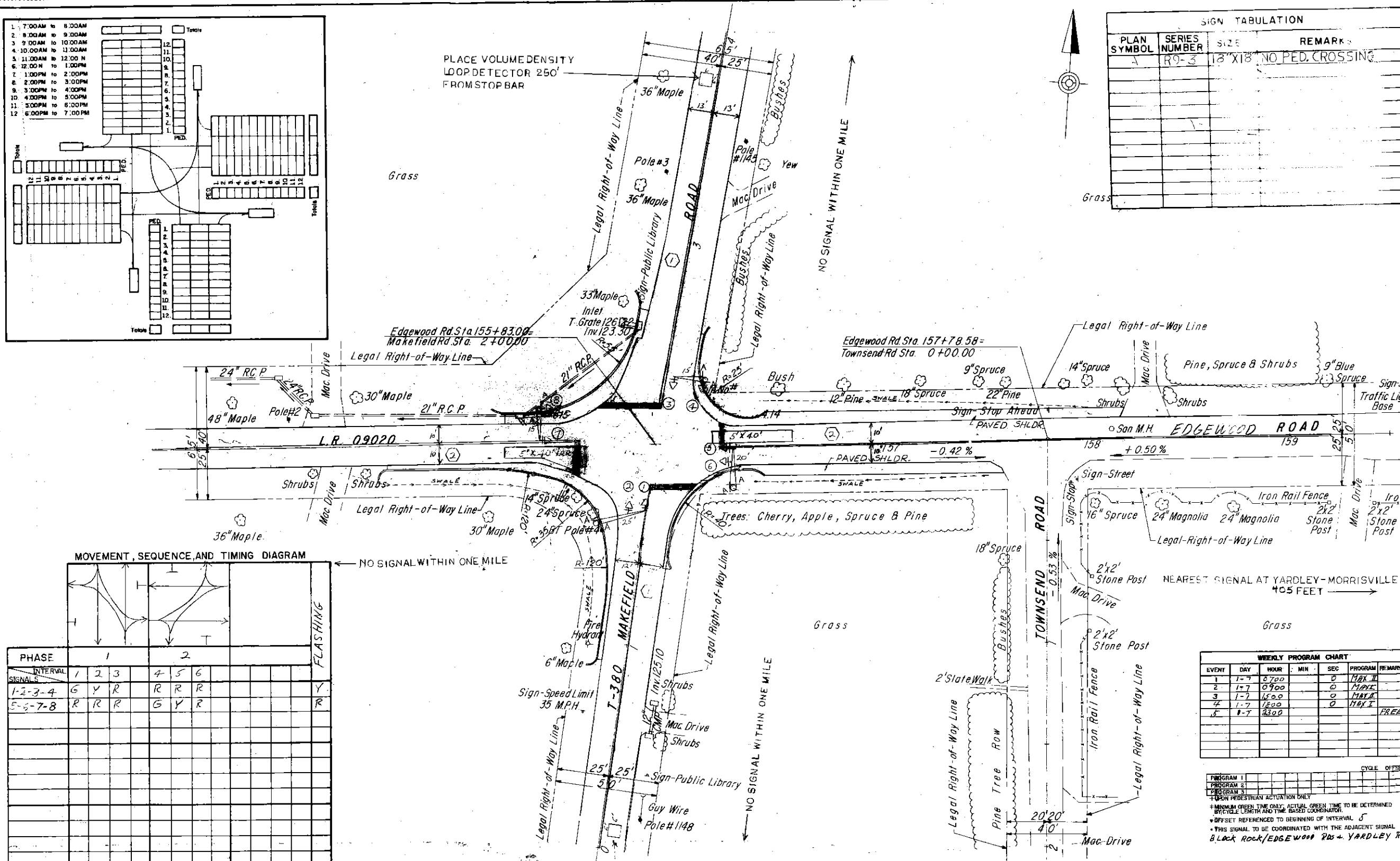
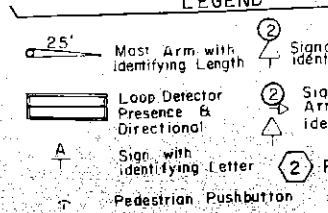
SIGNAL INDICATIONS



SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS
SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS AND LOUVERS

SCALE IN FEET

LEGEND





Lower Ferry & Upper Ferry

File # E22

Pole # 9-112

Controller: 820A (9303-2022)

Monitor: EDI NSM-12L (511-216)

Command: FREE PLAN

Ring Sequence: 241 / 605

TIMING

FLASH	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8
WALK		7		7		7		
PED CLEAR		15		16		15		
MIN. GREEN	5	13		7	5	13		
EXTENSION	2.0	2.0		2.0	2.0	2.0		
MAX GREEN	13	25		36	13	25		
MAX II								
MAX STEP								
MAX LIMIT								
AMBER	3.0	4.0		4.0	3.0	4.0		
RED CLEAR		2.0		2.0		2.0		

Ø (1 & 6) Upper Ferry Rd. (E.B.)

Ø (2 & 5) Upper Ferry Rd. (W.B.)

Ø 4 Lower Ferry Rd.

RECALLS

	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8
MIN RECALL	OFF	ON		OFF	OFF	ON		
PED RECALL	OFF	OFF		OFF	OFF	OFF		
MAX RECALL	OFF	OFF		OFF	OFF	OFF		
MEMORY	OFF	OFF		OFF	OFF	OFF		

Ø 1 & Ø 5 Anti-Backup

DETECTORS (Video detection)

	1	2	3	4	5	6	7	8
DELAY				7.0				
INHIBIT DELAY	Ø	Ø	Ø	Ø 4	Ø	Ø	Ø	Ø
ASSOCIATION	Ø 1&6	Ø 2	Ø 3	Ø 4	Ø 2&5	Ø 6	Ø 7	Ø 8

Effective: 5/9/2006

Route NJ 31 & Ewingville Rd-
Upper Ferry Road
Ewing Township, Mercer County**VARIABLE CYCLE**

		SIGNAL INDICATIONS						TIME (SECONDS)		
PHASE		1-3	4	5,6	7,8	9,10	11-14	15-18	PLAN 1	PLAN 2
Normal Operation										
1.	Route NJ 31 SB Lead Change	R R	G G	G / <G- G / <Y-	R R	R R	DW DW	DW DW	8 3	8 8
2.	Route NJ 31 ROW Change Clearance	G Y R	G Y R	G Y R	R R R	R R R	DW DW DW	DW DW DW	40 (Min) 5 2	40 (Min) 5 2
3.	Ewingville Rd-Upper Ferry Rd Leads Change	R R	R R	R R	R / <G- R / <Y-	R / <G- R / <Y-	DW DW	DW DW	3-12 3	3-12 3
4.	Ewingville Rd-Upper Ferry Rd ROW Change Clearance	R R R	R R R	R R R	G Y R	G Y R	DW DW DW	DW DW DW	6-32 4 2	6-22 4 2
Pedestrian Operation										
1.	Route NJ 31 SB Lead Change	R R	G G	G / <G- G / <Y-	R R	R R	DW DW	DW DW	8 3	8 3
2.	Route NJ 31 ROW Pedestrian Clearance Change Clearance	G G Y R	G G Y R	G G Y R	R R R R	R R R R	W FDW DW DW	DW DW DW DW	17 (Min) 23 5 2	17 (Min) 23 5 2
3.	Ewingville Rd-Upper Ferry Rd Leads Change	R R	R R	R R	R / <G- R / <Y-	R / <G- R / <Y-	DW DW	DW DW	3-12 3	3-12 3
4.	Ewingville Rd-Upper Ferry Rd ROW Pedestrian Clearance Vehicle Extension Change Clearance	R R R R R	R R R R R	R R R R R	G G G Y R	G G G Y R	DW DW DW DW DW	DW DW DW DW DW	10 19 0-3 4 2	10 19 0 4 2
EMERGENCY FLASH		Y	Y	Y	R	R	DARK	DARK	--	--

The manual control is to be connected.

The signal is to rest in Phase 2.

Vehicle memories are to remain OFF and the vehicle extensions set at 2 seconds.

Phase 3 shall only follow Phase 2 and shall be followed by Phase 4. Phase 1 shall only follow Phase 4. Phase 4 shall follow Phase 2 if Phase 3 is not actuated.

The Phase 3 left-turn lanes shall operate independently and concurrently. If actuation occurs on both approaches, each shall have the capability of being initiated, extended or terminated separately. If only one of the left-turn lanes terminates, the non-conflicting movements of Phase 4 shall be initiated prior to full actuation of Phase 4.

Route NJ 31 & Ewingville Rd-
Upper Ferry Road
Ewing Township, Mercer County

Phase 3 shall place a call to Phase 4, and the controller shall operate with dual ring.

The pedestrian push buttons are to be equipped with locator devices and visually-impaired delay operation of 3 seconds and the "Man / Hand" pedestrian heads are to be equipped with an audible (voice message) feature. Should a button be pushed for a time period less than 3 seconds in the normal "Walk / Don't Walk" pedestrian operation shown is to be displayed. No audible (voice message) feature is to be provided. Should a button be pushed and held continuously for 3 seconds, both the normal "Walk / Don't Walk" pedestrian operation and the audible (voice message) feature are to be initiated. The audible (voice message) feature is to operate as follows:

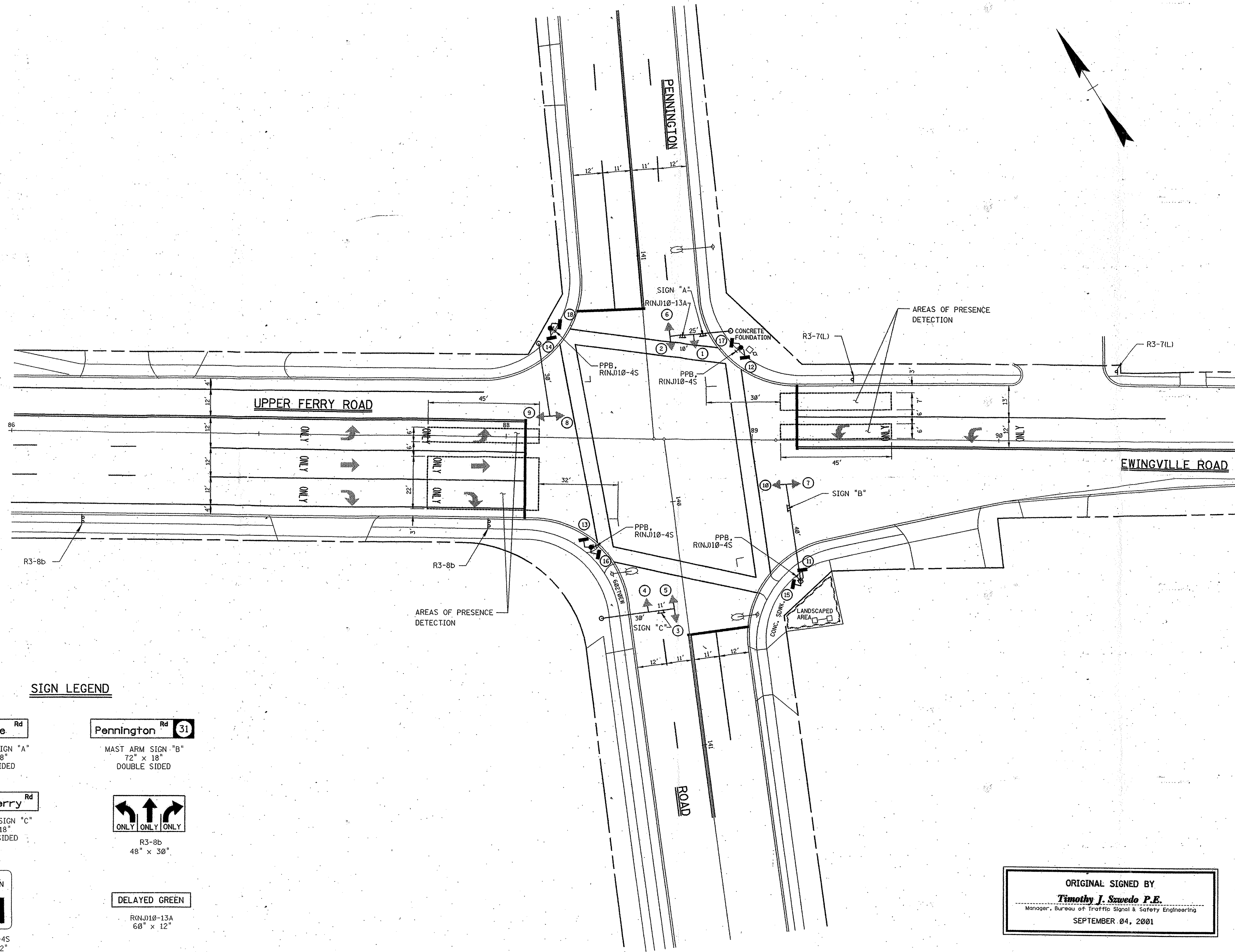
1. If the traffic signal is in Phase 1 or the Phase 2 "Walk" interval, the voice message "Walk is on to cross Upper Ferry Road" or "Walk is on to cross Ewingville Road" (depending on which button is actuated) is to be provided, and during the next Phase 4 "Walk" interval, the voice message "Walk is on to cross Route 31" is to be provided.
2. If the traffic signal is in the Phase 2 pedestrian-clearance interval or Phase 3, during the next Phase 4 "Walk" interval, the voice message "Walk is on to cross Route 31" is to be provided, and during the next Phase 2 "Walk" interval, the voice message "Walk is on to cross Upper Ferry Road" or "Walk is on to cross Ewingville Road" (depending on which button is actuated) is to be provided.
3. If the traffic signal is in Phase 4 "Don't Walk" interval or the Phase 4 pedestrian-clearance interval, during the next Phase 2 "Walk" interval, the voice message "Walk is on to cross Upper Ferry Road" or "Walk is on to cross Ewingville Road" (depending on which button is actuated) is to be provided, and during the next Phase 4 "Walk" interval, the voice message "Walk is on to cross Route 31" is to be provided.

HOURS OF OPERATION

- 1) 6:30 AM – 9:30 AM – Monday thru Friday
- 2) 3:30 PM – 6:30 PM – Monday thru Friday
- 3) All Other Times

CYCLE

Plan 1
Plan 1
Plan 2



SIGN LEGEND

Ewingville Rd

MAST ARM SIGN "A"
72" x 18"
DOUBLE SIDED

Pennington Rd 31

MAST ARM SIGN "B"
72" x 18"
DOUBLE SIDED

Upper Ferry Rd

MAST ARM SIGN "C"
72" x 18"
DOUBLE SIDED

R3-8b
48" x 30"

DELAYED GREEN
R(NJ)10-13A
60" x 12"

R3-7(L)
LEFT LANE MUST TURN LEFT
LANE USE

R3-8b
LANE USE

PUSH BUTTON FOR
R(NJ)10-4S
9" x 12"

SIGNAL LEGEND

12" L.E.D.

12" L.E.D.

12" L.E.D.

12" L.E.D.

NO. 1-4

12" L.E.D.

12" L.E.D.

12" L.E.D.

12" L.E.D.

NO. 5-10

12" L.E.D.

12" L.E.D.

12" L.E.D.

12" L.E.D.

NO. 11-18

- NOTES:
1. ALL ARROWS ARE BIMODAL.
 2. PPB'S ARE TO BE EQUIPPED WITH VISUALLY IMPAIRED DELAY OPERATION AND LOCATOR DEVICES.
 3. HAND/MAN PEDESTRIAN HEADS ARE TO BE EQUIPPED WITH VOICE DIRECTION FOR CROSSINGS.



ORIGINAL SIGNED BY
Timothy J. Sawedo P.E.
Manager, Bureau of Traffic Signal & Safety Engineering
SEPTEMBER 04, 2001

NEW JERSEY DEPARTMENT OF TRANSPORTATION BUREAU OF TRAFFIC ENGINEERING AND SAFETY PROGRAMS TRAFFIC SIGNAL INSTALLATION			
ROUTE 31 & EWINGVILLE ROAD - UPPER FERRY ROAD			
MUNICIPALITY EWING TOWNSHIP		COUNTY MERCER	
DESIGN APPROVED - BUREAU OF TRAFFIC SIGNAL & SAFETY ENGINEERING DATE			
SUBMITTED	MAGUIRE GROUP	DRAWN	A.B.B.
CHECKED		CHECKED	W.J.D.
AUTHORIZED	W.J.D.	SCALE: 1"=20'	
TS-5387A			

REVISION	DESCRIPTION	BY	C/K'D	DATE
A	ADDED W/DW AND VI DEVICES	W.J.D.	T.J.S.	01/29/02
	AS BUILT	W.J.D.	T.J.S.	09/04/01

NJDOT CADD DATA
ACCOUNT ELECTRICAL
DIRECTOR: ennmout
DWG: NAME ***NJDOT-sat02***mercer***111810502.00g
PLOT DATE 28-JAN-2004 10:14

1106104d

Directive Number: 77-92

Effective: 10/1/1991

Route NJ 29 & W State St-Calhoun St
Trenton City, Mercer County

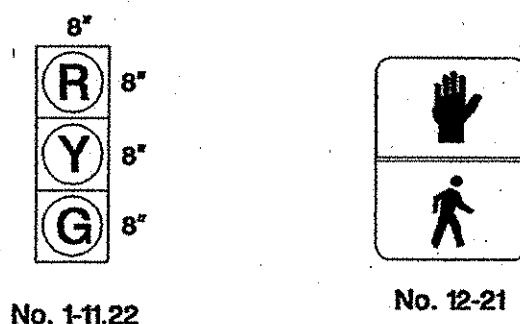
70-SECOND FIXED TIME CYCLE

SIGNAL FACES

<u>PHASE</u>	<u>1-6</u>	<u>7-11, 22</u>	<u>12-15</u>	<u>16-17</u>	<u>18-21</u>	<u>TIME (SECONDS)</u>	<u>OFFSET</u>
1. West State Street ROW	G	R	W	W	DW	9	
Pedestrian Clearance 1	G	R	W	FDW	DW	14	
Pedestrian Clearance 1+2	G	R	FDW	FDW	DW	9	
Change	Y	R	DW	DW	DW	4	
Clearance	R	R	DW	DW	DW	2	
2. Calhoun Street ROW	R	G	DW	DW	W	12	
Pedestrian Clearance	R	G	DW	DW	FDW	14	
Change	R	Y	DW	DW	DW	4	0*
Clearance	R	R	DW	DW	DW	2	
Emergency Flash	Y	R	DARK	DARK	DARK		

*Offset to be measured from the beginning of yellow to Calhoun Street at Hanover Street to the beginning of yellow to Calhoun Street at State Street.

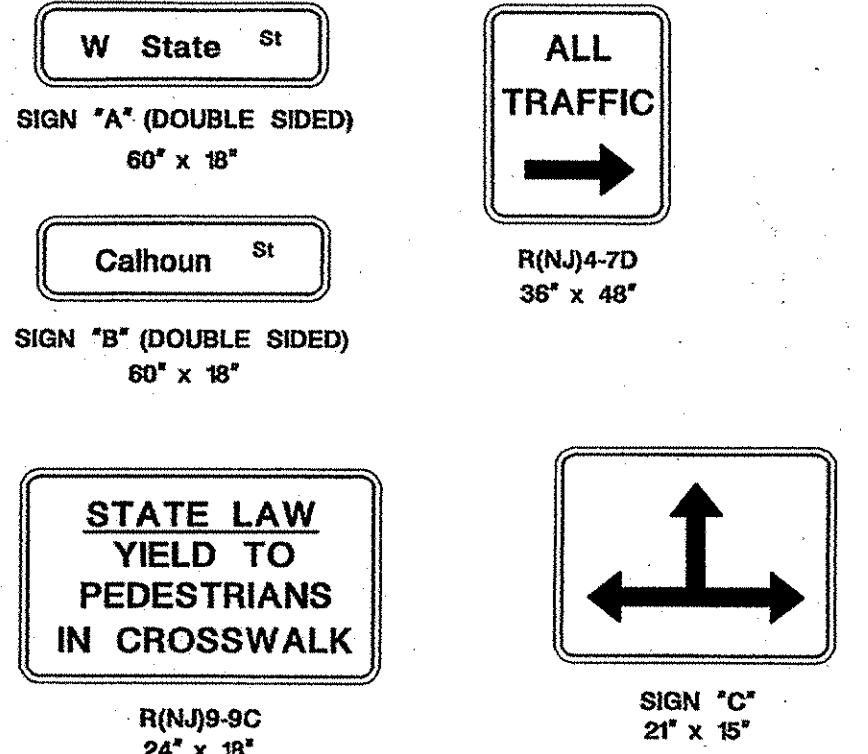
SIGNAL LEGEND



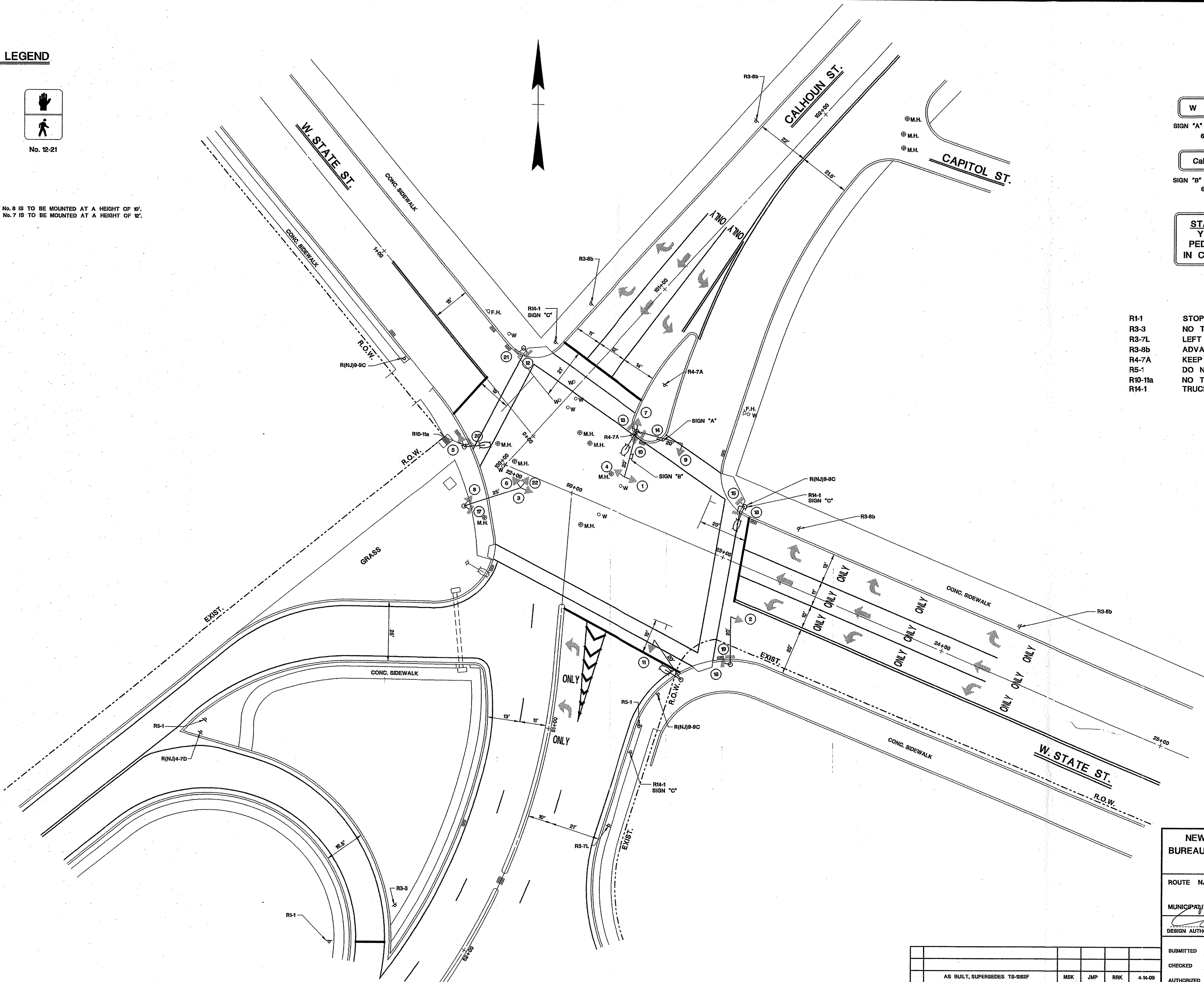
NOTES:

- 1. SIGNAL FACE No. 8 IS TO BE MOUNTED AT A HEIGHT OF 10'.
- 2. SIGNAL FACE No. 7 IS TO BE MOUNTED AT A HEIGHT OF 12'.

SIGN LEGEND



- | | | |
|---------|-----------------------------------|-----------|
| R1-1 | STOP | 30" x 30" |
| R3-3 | NO TURNS | 24" x 24" |
| R3-7L | LEFT LANE MUST TURN LEFT | 30" x 30" |
| R3-8b | ADVANCE INTERSECTION LANE CONTROL | 48" x 30" |
| R4-7A | KEEP RIGHT (SYMBOL) | 24" x 30" |
| R5-1 | DO NOT ENTER | 30" x 30" |
| R10-11a | NO TURN ON RED | 24" x 30" |
| R14-1 | TRUCK ROUTE | 24" x 18" |



NEW JERSEY DEPARTMENT OF TRANSPORTATION BUREAU OF TRAFFIC ENGINEERING AND INVESTIGATIONS TRAFFIC SIGNAL INSTALLATION	
ROUTE NJ ROUTE 29 RAMP - CALHOUN STREET & WEST STATE STREET	
MUNICIPALITY CITY OF TRENTON	COUNTY MERCER
DESIGN AUTHORIZED - BUREAU OF TRAFFIC SIGNAL & SAFETY ENGINEERING	DATE 5/14/09
SUBMITTED JMP/RRK	DRAWN MSK
CHECKED DJM	CHECKED AA
AUTHORIZED DRB	SCALE: 1" = 20'
TS-6346	

REVISION	DESCRIPTION	CADD	BY	C'D	DATE

LOWER MAKEFIELD

3408

TOTALS		TOTALS	
1	7:00AM TO 8:00AM	11	5:00PM TO 6:00PM
2	8:00AM TO 9:00AM	10	6:00PM TO 7:00PM
3	9:00AM TO 10:00AM	9	7:00PM TO 8:00PM
4	10:00AM TO 11:00AM	8	8:00PM TO 9:00PM
5	11:00AM TO 12:00PM	7	9:00PM TO 10:00PM
6	12:00PM TO 1:00PM	6	10:00PM TO 11:00PM
7	1:00PM TO 2:00PM	5	11:00PM TO 12:00AM
8	2:00PM TO 3:00PM	4	12:00AM TO 1:00AM
9	3:00PM TO 4:00PM	3	1:00AM TO 2:00AM
10	4:00PM TO 5:00PM	2	2:00AM TO 3:00AM
11	5:00PM TO 6:00PM	1	3:00AM TO 4:00AM
12	6:00PM TO 7:00PM		

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND APPROACH OF I-95 NORTHBOUND OFF RAMP AND THE EASTBOUND & WESTBOUND APPROACHES OF NEWTOWN-YARDLEY 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.
- LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.
- THE SIGNALS, WHEN ACTIVATED BY AN 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-EMPTED PHASE SHALL FOLLOW.
- THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTED PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
- IF SIGNALS HAVE BEEN ACTIVATED BY PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PEDESTRIAN TIME SHALL BE SPLIT BETWEEN "PED WALK" AND "PED CLEAR". THE "PED WALK" INTERVAL SHALL TERMINATE IMMEDIATELY FOLLOWED BY THE "PED CLEAR" INTERVAL. THIS 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 1 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

EMERGENCY PRE-EMPTION PHASING MOVEMENT, SEQUENCE AND TIMING DIAGRAM	
PHASE	2 4 6
INTERVAL	7 8 9 10 11 12 13 14 15
SIGNALS	G Y R G R R R R R R R R R R R
1,2	G Y R R R R R R R R R R R
3,4	R R R R R R R R R R R R R
5,6	R R R R R R R R R R R R R
SELECTIVE CLEARANCES	
FIXED	** 5 2 ** 4 2 ** 5 2

** 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.

© G WHEN RETURNING TO NORMAL OPERATION

SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	W1-7	24"x48"	LARGE DOUBLE ARROW
B	R9-3A	18"x18"	NO PEDESTRIAN CROSSING
C	R3-1	30"x30"	NO RIGHT TURN
D	R3-2	30"x30"	NO LEFT TURN
E	R5-1	30"x30"	DO NOT ENTER
F	R5-1A	36"x24"	WRONG WAY
G	OM1-3	18"x18"	OBJECT MARKER
H	D3-4	96"x16"	OVERHEAD STREET NAME SIGN (SEE DETAIL)
I	R3-5L	30"x36"	LEFT TURN
J	R3-5R	30"x36"	RIGHT TURN
K	R6-1L	36"x12"	ONE WAY
L	R6-1R	36"x12"	ONE WAY
M	R5-1A	48"x36"	WRONG WAY
N	R3-4	24"x24"	NO U-TURN

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

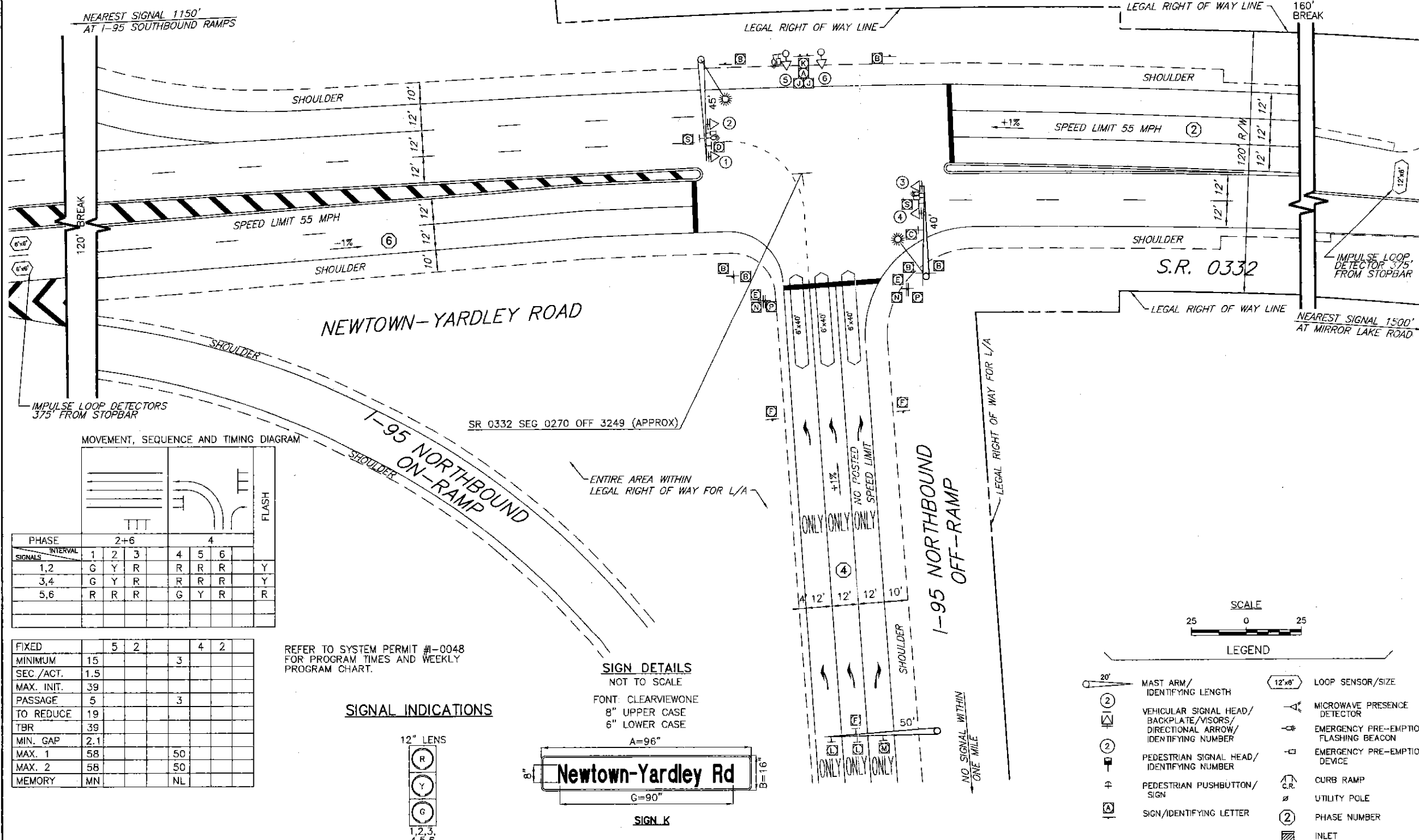
PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 181, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE MARCH 29, 2007.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-7800 SERIES.

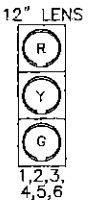


MOVEMENT, SEQUENCE AND TIMING DIAGRAM	
PHASE	2+6 4
INTERVAL	1 2 3 4 5 6
SIGNALS	G Y R R R R R R R R R R R
1,2	G Y R R R R R R R R R R R
3,4	G Y R R R R R R R R R R R
5,6	R R R R R R R R R R R R R

FIXED	5 2	4 2
MINIMUM	15	3
SEC /ACT.	1.5	
MAX. INIT.	39	
PASSAGE	5	3
TO REDUCE	19	
TBR	39	
MIN. GAP	2.1	
MAX. 1	58	50
MAX. 2	58	50
MEMORY	MN	NL

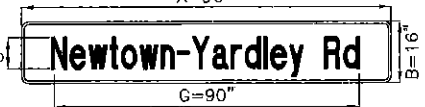
REFER TO SYSTEM PERMIT #1-0048 FOR PROGRAM TIMES AND WEEKLY PROGRAM CHART.

SIGNAL INDICATIONS



SIGN DETAILS NOT TO SCALE

FONT: CLEARVIEWONE
8" UPPER CASE
6" LOWER CASE



SIGN K

SYSTEM PERMIT #1-0048

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: BUCKS
MUNICIPALITY: LOWER MAKEFIELD TOWNSHIP
INTERSECTION: NEWTOWN-YARDLEY ROAD
(S.R. 0332) AND I-95 NORTHBOUND RAMP

REVIEWED: _____ DATE _____

MUNICIPAL OFFICIAL _____ DATE _____

RECOMMENDED: PAUL LUTZ 4/20/04

LOUIS BELMONTE 4/20/04
DISTRICT TRAFFIC ENGINEER

NO.	REVISION	DES/REV.	DATE	REV.	DATE	RECOM.	DATE
1	As built	RFW	4/10/04	04/17/04	4/20/04		
2							
3							
4							
5							
6							
7							
8							

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Newtown & Lower Makefield Township

1-0048

WEEKLY PROGRAM CHART					
		CYCLE	TRAFFIC RESPONSIVE	TBC BACK UP PROGRAM	REMARKS
1	1-5	0600	ON OR OFF	1	AM PEAK
2	1-5	0900	ON OR OFF	2	OFF PEAK
3	1-5	1500	ON OR OFF	3	PM PEAK
4	1-5	1900	ON OR OFF	2	OFF PEAK
5	1-5	2200	ON OR OFF	MAX 1	FREE
6	6,7	0900	ON OR OFF	2	WEEKEND
7	6,7	1900	ON OR OFF	MAX 1	FREE

* DAY 1 = MONDAY

SYSTEM NOTES

- PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
- OFFSETS ARE REFERENCED TO THE BEGINNING OF GREEN (NEMA TS2 FIRST GREEN).
- NEWTOWN-YARDLEY ROAD/NEWTOWN BYPASS SYSTEM LIMITS
I-95 RAMP TO WOODBOURNE ROAD/PENNS TRAIL DRIVE
ALONG NEWTOWN-YARDLEY ROAD/NEWTOWN BYPASS (S.R. 0332)
(ON STREET MASTER AT NEWTOWN BYPASS AND PENNS TRAIL/WOODBOURNE RD).
- PRIMARY COORDINATION: FIBER OPTIC CABLE.
SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC).
- SYSTEM IS DESIGNED FOR THE SYSTEM SOFTWARE: MARC NX

REFER TO FILE 2534 FOR INTERSECTION DETAILS

REFER TO FILE 2536 FOR INTERSECTION DETAILS

REFER TO FILE 2529 FOR INTERSECTION DETAILS

REFER TO FILE 2706 FOR INTERSECTION DETAILS

Step 1: System Detector Assignment

Channels	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Capacity/Sec																																								

Step 2: Computational Channel Select

Cycle Select: DR1 ☐ GP1 ☐ NA1 ☐ DR2 ☐ GP2 ☐ NA2 ☐

Offset Select: DR1 ☐ DR2 ☐

Split Select: DR1 ☐ GP1 ☐ NA1 ☐ DR2 ☐ GP2 ☐ NA2 ☐

Check mark to select the channels for the cycle, offset and split select for the computation of threshold parameters.

Offset Select Levels		Volume	Occupancy	Volume + Occupancy	Direction 2(WB)	Direction 1(EB)	Option 1	Option 2
Enter								
Leave								

*Offsets may be favored for one direction over other when traffic in one direction over other is 1.5 times.

Step 4: Cycle/Split/Offset

Program 1 =	1	2	3	4	5	6	7	8	Cycle	Offsets	Offsets	Offsets
Interactions	1	2	3	4	5	6	7	8		Bol	DR2(WB)	DR1(EB)
AM Peak												
I-95 Ramps NB	37					37		83	120	27		
I-95 Ramps SB	22(Lead)	84		14		106		86	120	60		
Stony Hill Road	18(Lead)	68				28		34	120	30		
Lindenhurst Road/Campus Drive	24(Lead)	61		23(Split)	15(Lead)	28		12(Split)	120			
L Silver Lake Rd/Newtown-Yardley Rd	14(Lead)	52		35(Split)	14(Lead)	52		14(Split)	120	15		
Woodbourne Road/Penns Trail Drive	14(Lead)	52		21	19(Lead)	47		21(Lead)	120	68		
Program 2 =												
Interactions	1	2	3	4	5	6	7	8	Cycle	Offset # 1	Offset # 2	Offset # 3
Mid Peak										Bol	DR2(WB)	DR1(EB)
I-95 Ramps NB	45					45		52	100	25		
I-95 Ramps SB	25(Lead)	63		17		83		52	100	32		
Stony Hill Road	20(Lead)	40				60		40	100	78		
Lindenhurst Road/Campus Drive	14(Lead)	48		17(Split)	14(Lead)	52		12(Split)	100	73		
L Silver Lake Rd/Newtown-Yardley Rd	14(Lead)	48		22(Split)	14(Lead)	48		12(Split)	100	1		
Woodbourne Road/Penns Trail Drive	12(Lead)	38		28(Lead)	24	14(Lead)		28	100	53		
Program 3 =												
Interactions	1	2	3	4	5	6	7	8	Cycle	Offset # 1	Offset # 2	Offset # 3
PM Peak										Bol	DR2(WB)	DR1(EB)
I-95 Ramps NB	33					33		87	120	51		
I-95 Ramps SB	18(Lead)	86		14		106		86	120	98		
Stony Hill Road	31(Lead)	69				37		37	120	61		
Lindenhurst Road/Campus Drive	15(Lead)	70		22(Split)	15(Lead)	70		13(Split)	120	50		
L Silver Lake Rd/Newtown-Yardley Rd	14(Lead)	35		37(Split)	12(Lead)	37		14(Split)	120	83		
Woodbourne Road/Penns Trail Drive	12(Lead)	45		21(Lead)	32	18(Lead)		37	120	26		

Step 3: Threshold Parameters

Cycle Select Levels		Volume	Occupancy	Volume + Occupancy	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Enter										
Leave										

Split Select Levels		Volume	Occupancy	Volume + Occupancy	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Enter										
Leave										

General note

*THRESHOLD PARAMETERS ARE IN VOLUME+OCCUPANCY (PERCENTAGE) OF THE CAPACITY.

- Notes:
- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
 - REFER TO SIGNAL PERMIT PLAN FOR MAX 1, MAX 2 AND CLEARANCE TIMES.
 - LEVELS CORRESPOND TO THE TRAFFIC RESPONSIVE THRESHOLD CHARTS.
 - DIALS CORRESPOND TO THE CONTROLLERS COORDINATION PLANS.

GENERAL NOTES

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TEST THE SYSTEM AT LOCAL INTERSECTION LEVEL, SUBSYSTEM LEVEL, MASTER CONTROLLER LEVEL AND PERSONAL COMPUTER REMOTE DIAL UP LEVEL.

GATHER THE SYSTEM FAILURE CRITICAL ALARMS REPORT AND ARCHIVE THEM WHERE APPLICABLE.

SET UP PENNDOT DISTRICT 6-0 COMPUTER WITH THE SYSTEM DATABASE AND GRAPHICS. MODIFY THE DATABASE AND GRAPHICS FOR SYSTEMS REVISIONS.

ASSIGN LOOP DETECTORS AND PROGRAM THE CONTROLLERS TO GATHER TRAFFIC VOLUMES IN 15 MINUTE INTERVAL, WHERE APPLICABLE.

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MAINTAIN MASTER CONTROLLER COMMUNICATION SUCH AS PHONE DROPS.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 187, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES EFFECTIVE DATE DECEMBER 19, 1996.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

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CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-7800 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: BUCKS
MUNICIPALITY: NEWTOWN AND LOWER MAKEFIELD TWPS
INTERSECTION: NEWTOWN BYPASS CORRIDOR

REVIEWED: _____ DATE _____
MUNICIPAL OFFICIAL: _____ DATE _____

RECOMMENDED: _____ DATE _____
LOUIS R. BELMONTE, P.E. 5/17/08
DISTRICT TRAFFIC ENGINEER

NO.	REVISION	DES./ REV.	DATE	REV.	DATE	RECOM.	DATE
1	TIMING CHANGES	SM	5-17-08			alpha	5/21/08
2							
3							
4							
5							
6							
7							
8							

NOT TO SCALE

INTERCONNECT PERMIT # 1-0048

EMERGENCY PRE-EMPTION NOTES:

CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE SOUTHBOUND APPROACH OF I-95 SOUTHBOUND OFF RAMP AND THE EASTBOUND & WESTBOUND APPROACHES OF NEWTOWN-YARDLEY 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.

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

THE SIGNALS, WHEN ACTIVATED BY AN 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-EMPTED PHASE SHALL FOLLOW.

THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY, THEN THE GREEN INTERVAL FOR THE PRE-EMPTED PHASE SHALL FOLLOW.

IF SIGNALS HAVE BEEN ACTIVATED BY PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PEDESTRIAN TIME SHALL BE SPLIT BETWEEN "RED WALK" AND "RED CLEAR". THE "RED WALK" INTERVAL SHALL TERMINATE IMMEDIATELY FOLLOWED BY THE "RED CLEAR" INTERVAL. THIS 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 6 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 SERVED" OPERATION.

EMERGENCY PRE-EMPTION NOTES:

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SIGN DETAILS
NOT TO SCALE
FONT: CLEARVIEWONE
8" UPPER CASE
6" LOWER CASE
A=96"
G=90"
SIGN R

SIGN TABULATION

PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R3-1	30x30	NO RIGHT TURN
B	W3-3	36x36	SIGNAL AHEAD
C	R5-1	30x30	DO NOT ENTER
D	R1-2	36x36	YIELD
E	R6-1L	36x12	ONE WAY
F	R6-1R	36x12	ONE WAY
G	R9-3A	18x18	NO PEDESTRIAN CROSSING
H	R3-2	30x30	NO LEFT TURN
I	R5-1A	36x30	WRONG WAY
J	R3-7L	30x30	LEFT LANE MUST TURN LEFT
K	R10-6L	30x36	STOP HERE ON RED
L	D3-4	96x16	OVERHEAD STREET NAME SIGN (SEE DETAIL)
M	W1-6	24x48	LARGE SINGLE ARROW
N	OM1-3	18x18	OBJECT MARKER
O	R10-12	30x36	LEFT TURN YIELD ON GREEN
P	R3-5L	30x36	LEFT TURN
Q	R3-5S	30x36	STRAIGHT THROUGH

GENERAL NOTES

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ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 181, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE MARCH 29, 2007.

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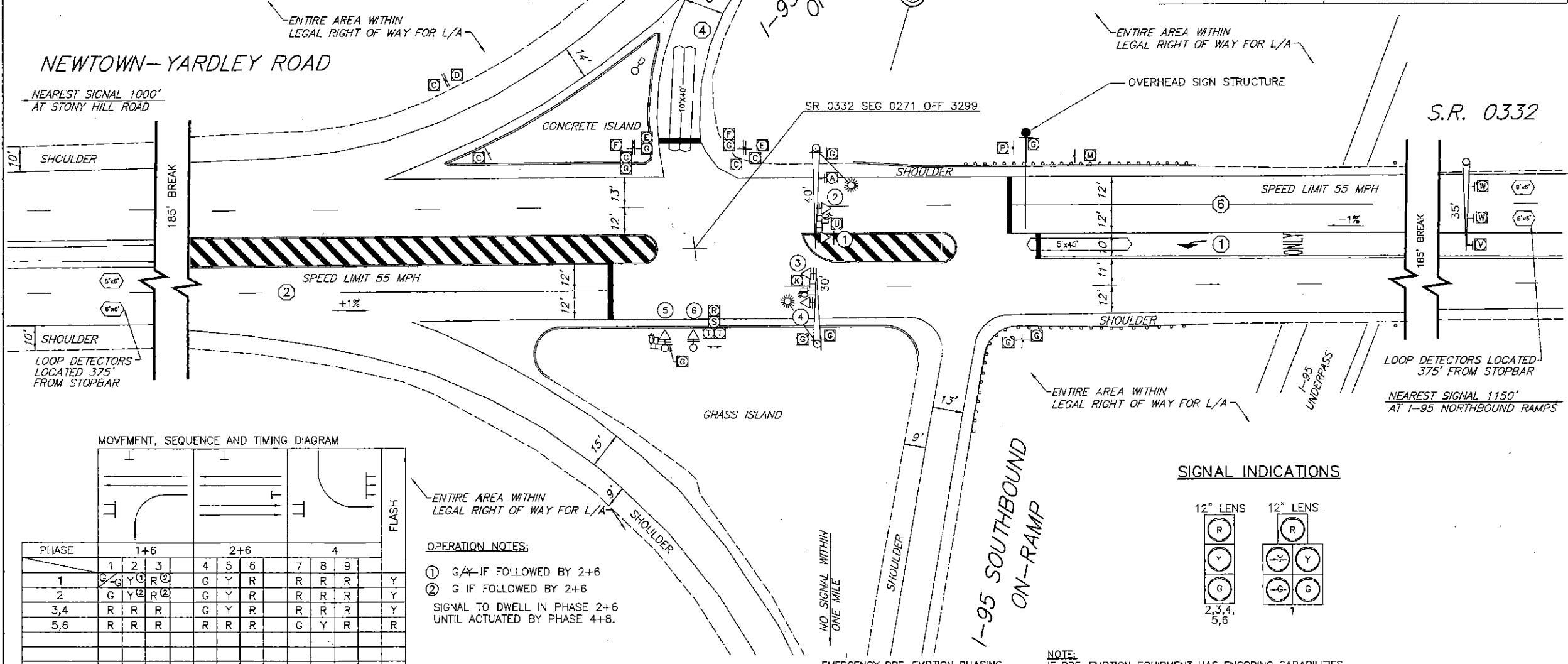
SYSTEM PERMIT #1-0048

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: **BUCKS**
MUNICIPALITY: **LOWER MAKEFIELD TOWNSHIP**
INTERSECTION: **NEWTOWN-YARDLEY ROAD
(S.R. 0332) AND I-95 SOUTHBOUND RAMPS**

REVIEWED: _____ DATE _____
MUNICIPAL OFFICIAL: _____ DATE _____
RECOMMENDED: **PAUL LUTZ** **4/20/04**
LOUIS BELMONTE **4/20/04**
DISTRICT TRAFFIC ENGINEER

NO.	REVISION	DES./REV.	DATE	REV.	DATE	RECOM.	DATE
1	As built	RFW	7/4/02	NBP	12/1/02	DDP	7/2/03
2							
3							
4							
5							
6							
7							
8							



MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	1+6	2+6	4	FLASH
1	G Y R	G Y R	R R R	Y
2	G Y R	G Y R	R R R	Y
3,4	R R R	G Y R	R R R	Y
5,6	R R R	R R R	G Y R	R

OPERATION NOTES:

1 G/Y IF FOLLOWED BY 2+6

2 G IF FOLLOWED BY 2+6

SIGNAL TO DWELL IN PHASE 2+6 UNTIL ACTUATED BY PHASE 4+8.

REFER TO SYSTEM PERMIT #1-0048 FOR PROGRAM TIMES AND WEEKLY PROGRAM CHART.

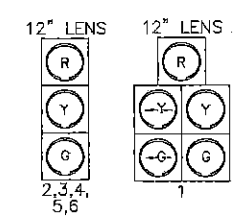
FIXED	5	2	5	2	4	2
MINIMUM SEC./ACT.	3	15	1.5	3		
MAX. INIT. PASSAGE TO REDUCE	3	39	5	3		
TBR		39				
MIN. GAP		2.1				
MAX. 1	22	58		30		
MAX. 2	22	58		30		
MEMORY	NL	MN		NL		

EMERGENCY PRE-EMPTION PHASING
MOVEMENT, SEQUENCE AND TIMING DIAGRAM

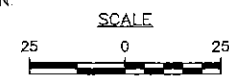
PHASE	2	4	6
1	R R R	R R R	G Y R
2	R R R	R R R	G Y R
3,4	G Y R	R R R	R R R
5,6	R R R	G Y R	R R R

** FOR DURATION OF PRE-EMPTION
G/Y WHEN RETURNING TO NORMAL OPERATION
G WHEN RETURNING TO NORMAL OPERATION

SIGNAL INDICATIONS



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.



LEGEND

20'	MAST ARM/ IDENTIFYING LENGTH	12"x6"	LOOP SENSOR/ SIZE
2	VEHICULAR SIGNAL HEAD/ BACKPLATE/ VISORS/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER	2	MICROWAVE PRESENCE DETECTOR
2	PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER	2	EMERGENCY PRE-EMPTION FLASHING BEACON
2	PEDESTRIAN PUSHBUTTON/ SIGN	2	EMERGENCY PRE-EMPTION DEVICE
2	SIGN/IDENTIFYING LETTER	2	CURB RAMP
2	LUMINAIRE/IDENTIFYING LENGTH	2	UTILITY POLE
		2	PHASE NUMBER
		2	INLET
		2	VIDEO

Newtown & Lower Makefield Township

1-0048

WEEKLY PROGRAM CHART					
		CYCLE	TRAFFIC RESPONSIVE	TBC BACK UP PROGRAM	REMARKS
1	1-5	0600	ON OR OFF	1	AM PEAK
2	1-5	0900	ON OR OFF	2	OFF PEAK
3	1-5	1500	ON OR OFF	3	PM PEAK
4	1-5	1900	ON OR OFF	2	OFF PEAK
5	1-5	2200	ON OR OFF	MAX 1	FREE
6	6,7	0900	ON OR OFF	2	WEEKEND
7	6,7	1900	ON OR OFF	MAX 1	FREE

* DAY 1 = MONDAY

SYSTEM NOTES

- PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
- OFFSETS ARE REFERENCED TO THE BEGINNING OF GREEN (NEMA TS2 FIRST GREEN).
- NEWTOWN-YARDLEY ROAD/NEWTOWN BYPASS SYSTEM LIMITS I-95 RAMP TO WOODBOURNE ROAD/PENNS TRAIL DRIVE ALONG NEWTOWN-YARDLEY ROAD/NEWTOWN BYPASS (S.R. 0332) (ON STREET MASTER AT NEWTOWN BYPASS AND PENNS TRAIL/WOODBOURNE RD).
- PRIMARY COORDINATION: FIBER OPTIC CABLE. SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC).
- SYSTEM IS DESIGNED FOR THE SYSTEM SOFTWARE: MARC NX

REFER TO FILE 2534 FOR INTERSECTION DETAILS

REFER TO FILE 2536 FOR INTERSECTION DETAILS

REFER TO FILE 2529 FOR INTERSECTION DETAILS

REFER TO FILE 2706 FOR INTERSECTION DETAILS

Step 1: System Detector Assignment

Channels	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Capacity/Sec																																								

Step 2: Computational Channel Select

Cycle Select: DR1 ☐ GP1 ☐ NA1 ☐ DR2 ☐ GP2 ☐ NA2 ☐

Offset Select: DR1 ☐ DR2 ☐

Split Select: DR1 ☐ GP1 ☐ NA1 ☐ DR2 ☐ GP2 ☐ NA2 ☐

Check mark to select the channels for the cycle, offset and split select for the computation of threshold parameters.

Offset Select Levels		Direction 2(WB)	Direction 1(EB)	Option 1	Option 2
Enter	Volume Occupancy Volume + Occupancy				
Leave	Volume Occupancy Volume + Occupancy				

*Offsets may be favored for one direction over other when traffic in one direction over other is 1.5 times.

Step 4: Cycle/Split/Offset

Program 1 = Interactions AM Peak	1	2	3	4	5	6	7	8	Cycle	Offsets	Offsets	Offsets
I-95 Ramps NB	37					37		83	120	27		
I-95 Ramps SB	22(Lead)	84		14		106		86	120	60		
Stony Hill Road	18(Lead)	68				28		34	120	30		
Lindenhurst Road/Campus Drive	24(Lead)	61		23(Split)	15(Lead)	28		12(Split)	120			
L Silver Lake Rd/Newtown-Yardley Rd	14(Lead)	52		35(Split)	14(Lead)	62		14(Split)	120	15		
Woodbourne Road/Penns Trail Drive	14(Lead)	52	33(Lead)	21	19(Lead)	47	21(Lead)	33	120	68		
Program 2 = Interactions Mid Peak	1	2	3	4	5	6	7	8	Cycle	Offset # 1	Offset # 2	Offset # 3
I-95 Ramps NB	45					45		52	100	25		
I-95 Ramps SB	25(Lead)	63		17		83		52	100	32		
Stony Hill Road	20(Lead)	40				60		40	100	78		
Lindenhurst Road/Campus Drive	14(Lead)	48		17(Split)	14(Lead)	57		12(Split)	100	73		
L Silver Lake Rd/Newtown-Yardley Rd	14(Lead)	48		28(Split)	14(Lead)	48		12(Split)	100	1		
Woodbourne Road/Penns Trail Drive	12(Lead)	38	28(Lead)	24	14(Lead)	35	14(Lead)	25	100	53		
Program 3 = Interactions PM Peak	1	2	3	4	5	6	7	8	Cycle	Offset # 1	Offset # 2	Offset # 3
I-95 Ramps NB	33					33		87	120	51		
I-95 Ramps SB	18(Lead)	86		14		106		86	120	98		
Stony Hill Road	31(Lead)	66				37		37	120	61		
Lindenhurst Road/Campus Drive	15(Lead)	70		22(Split)	15(Lead)	70		13(Split)	120	50		
L Silver Lake Rd/Newtown-Yardley Rd	14(Lead)	35		37(Split)	14(Lead)	57		14(Split)	120	83		
Woodbourne Road/Penns Trail Drive	12(Lead)	45	21(Lead)	32	18(Lead)	52	18(Lead)	37	120	26		

Step 3: Threshold Parameters

Cycle Select Levels		Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Enter	Volume Occupancy Volume + Occupancy						
Leave	Volume Occupancy Volume + Occupancy						

Split Select Levels		Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Enter	Volume Occupancy Volume + Occupancy						
Leave	Volume Occupancy Volume + Occupancy						

General note

*THRESHOLD PARAMETERS ARE IN VOLUME+OCCUPANCY (PERCENTAGE) OF THE CAPACITY.

- Notes:
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 - REFER TO SIGNAL PERMIT PLAN FOR MAX 1, MAX 2 AND CLEARANCE TIMES.
 - LEVELS CORRESPOND TO THE TRAFFIC RESPONSIVE THRESHOLD CHARTS.
 - DIALS CORRESPOND TO THE CONTROLLERS COORDINATION PLANS.

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TEST THE SYSTEM AT LOCAL INTERSECTION LEVEL, SUBSYSTEM LEVEL MASTER CONTROLLER LEVEL AND PERSONAL COMPUTER REMOTE DIAL UP LEVEL.

GATHER THE SYSTEM FAILURE CRITICAL ALARMS REPORT AND ARCHIVE THEM WHERE APPLICABLE.

SET UP PENNDOT DISTRICT 6-0 COMPUTER WITH THE SYSTEM DATABASE AND GRAPHICS. MODIFY THE DATABASE AND GRAPHICS FOR SYSTEMS REVISIONS.

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PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: BUCKS
MUNICIPALITY: NEWTOWN AND LOWER MAKEFIELD TWPS
INTERSECTION: NEWTOWN BYPASS CORRIDOR

REVIEWED: _____ DATE _____
MUNICIPAL OFFICIAL: _____ DATE _____

RECOMMENDED: _____ DATE _____
LOUIS R. BELMONTE, P.E. 5/17/08
DISTRICT TRAFFIC ENGINEER

NO.	REVISION	DES./REV.	DATE	REVW.	DATE	RECOM.	DATE
1	TIMING CHANGES	SM	5-17-08			alpha	5/21/08
2							
3							
4							
5							
6							
7							
8							

NOT TO SCALE

INTERCONNECT PERMIT # 1-0048

PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R10-3B	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON →
B	R10-3B	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON ←
C	R10-11	30"x36"	NO TURN ON RED
D	D3-4	96"x16"	SINGLE LINE OVERHEAD STREET NAME
E	D3-5	96"x28"	DOUBLE LINE OVERHEAD STREET NAME
F	D3-5	96"x28"	DOUBLE LINE OVERHEAD STREET NAME

[illegible]

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS
PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF
THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING
ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED
AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 68.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO
INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

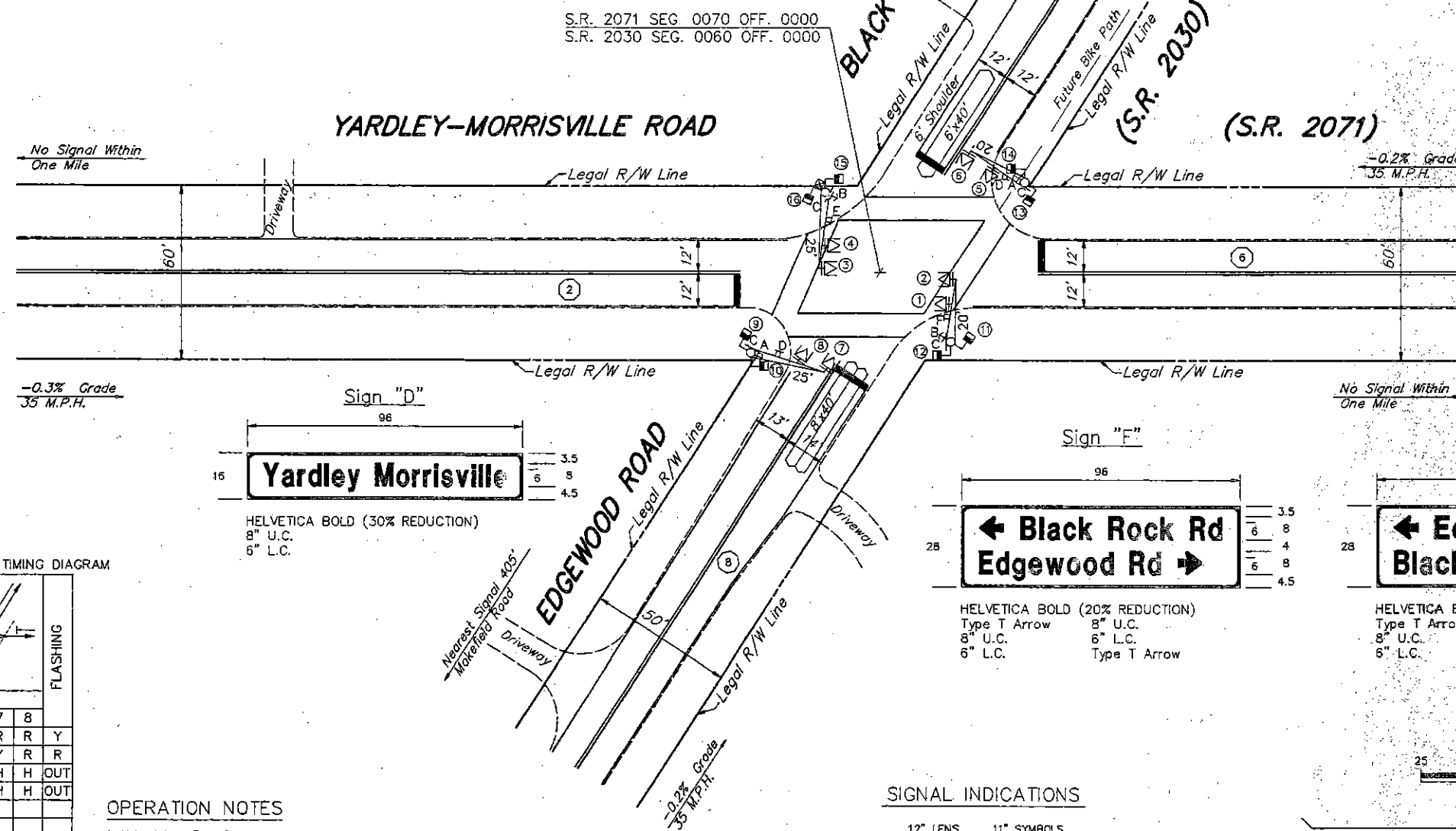
PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING
UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF
ACT 187, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES,
EFFECTIVE DATE DECEMBER 19, 1996.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-7800 SERIES.



MOVEMENT, SEQUENCE AND TIMING DIAGRAM

[illegible]

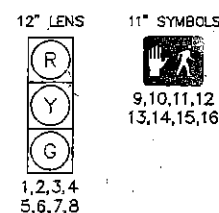
OPERATION NOTES

- MAXIMUM 2 TO OPERATE FROM 0700 TO 0900 AND 1500 TO 1800 MONDAY THROUGH FRIDAY, MAXIMUM 1 TO OPERATE ALL OTHER TIMES.

FIXED			4	2		4	2
MINIMUM	← 15 →				← 3 →		
PASSAGE	← 1 →				← 3 →		
MAXIMUM 1	← 40 →				← 30 →		
MAXIMUM 2	← 45 →				← 35 →		
PEDESTRIAN	7 14				7* 12*		
MEMORY	← MR →				← NL →		

* UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE H AT ALL TIMES.












SIGNAL INDICATIONS



SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS

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

LEGEND

	MAST ARM/ IDENTIFYING LENGTH		LOOP SENSOR/SIZE
②			MICROWAVE DETECTOR
	VEHICULAR SIGNAL HEAD/ BACKPLATE/VISORS/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER		EMERGENCY PREEMPTION BEACON
②			EMERGENCY PREEMPTION DETECTOR
	PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER		CURB CUT RAMP
	PEDESTRIAN PUSHBUTTON/ SIGN		UTILITY POLE
A	SIGN/IDENTIFYING LETTER		PHASE NUMBER
			CONTROLLER

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: . . . BUCKS

MUNICIPALITY: LOWER MAKEFIELD TOWNSHIP

INTERSECTION- YARDLEY-MORRISVILLE ROAD (S.R. 2071)

AND BLACK ROCK ROAD (S.R. 2030)/
EDGEWOOD ROAD (S.R. 2030)

REVIEWED:

DATE _____

MUNICIPAL OFFICIAL _____ DATE _____

Mark | Krav 06 / 03 / 96

Douglas May 06/06/98

DISTRICT TRAFFIC ENGINEER

NO.	REVISION	DES/REVW	DATE	REVW.	DATE	RECOM.	DATE
1	Added Coordination and Notes	JUL	06/03/96	MK	06/03/96	D'WM	06/03/96
2	New Drawing, Modernization	PAI	05/14/91	YHL	5/14/91	YPR	5/14/91
3	Coordination eliminated			WJE	5/21/91	YPR	5/21/91
4							
5							
6							
7							
8							

SHEET 2 OF 2	PERMIT # 61-1539	FILE # 1539
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