



**PROJECT NOTES:**

- OWNER: FERGUSON TOWNSHIP  
3147 RESEARCH DRIVE  
STATE COLLEGE, PA 16801  
(814) 238-4651
- PLANS DO NOT CONTAIN ANY HORIZONTAL OR VERTICAL DATUM. LOCATIONS FOR ALL NEW FACILITIES TO BE SET IN THE FIELD.
- THE LEGAL RIGHT OF WAY FOR EACH STREET IS DEPICTED ON THE PLAN.

**UTILITY NOTES:**

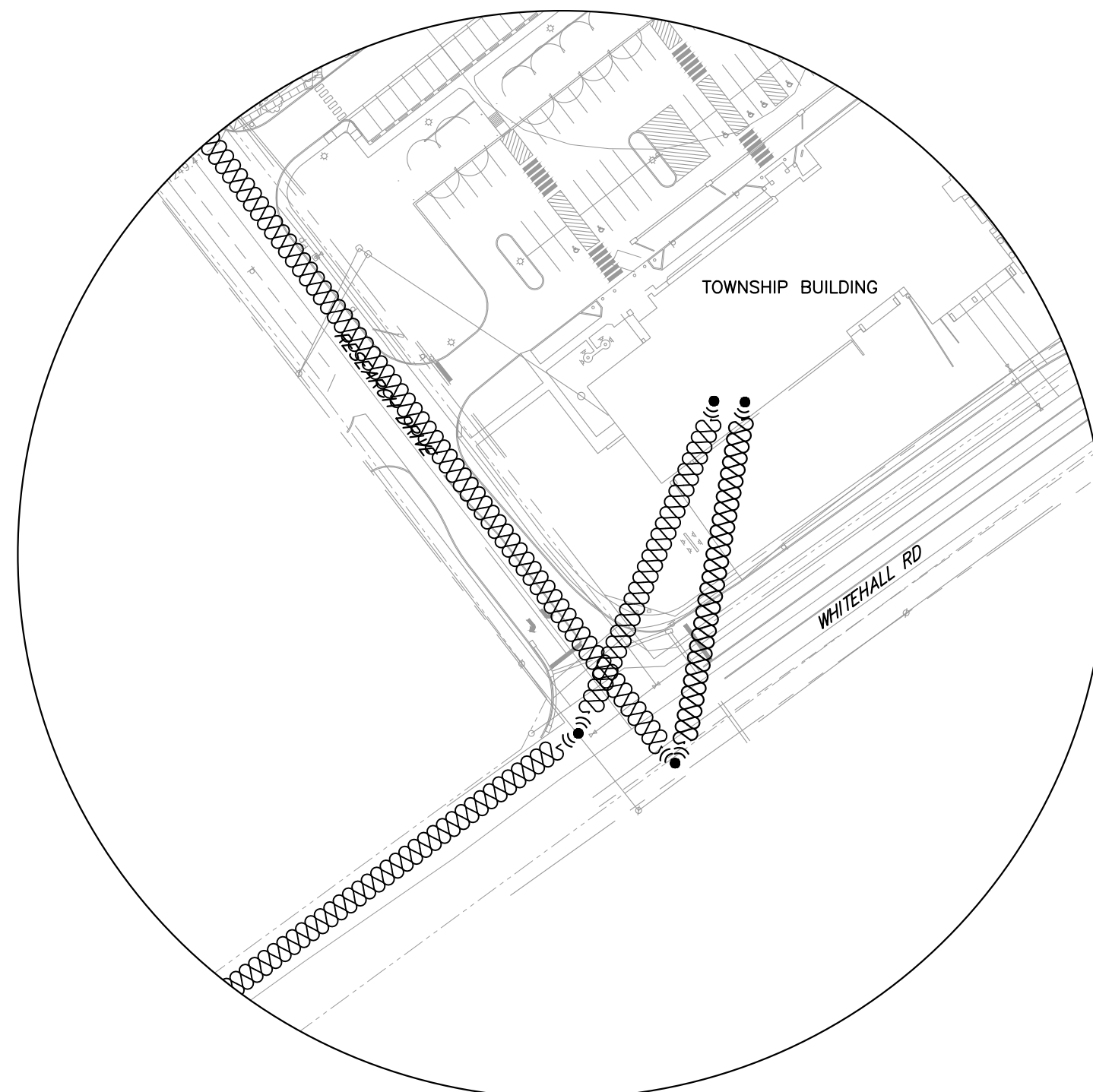
- THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY AND ARE BASED ON RECORDS OF THE VARIOUS FACILITY OWNERS AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE UTILITY INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST NOTIFY THE PA ONE-CALL SYSTEM AT LEAST 3 DAYS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES.
- THE CONTRACTOR SHALL DIG TEST PITS AT EXISTING CONFLICTS SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT PLAN REVISIONS AS REQUIRED.
- ALL EXISTING ON-SITE UTILITIES SHALL REMAIN FUNCTIONAL UNLESS DESIGNATED FOR REMOVAL OR ABANDONMENT.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE RELOCATION OF ALL EXISTING UTILITIES THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
- NO UTILITY SERVICE MAY BE DISCONNECTED WITHOUT PRIOR APPROVAL OF THE OWNERS REPRESENTATIVE.

**CONSTRUCTION NOTES:**

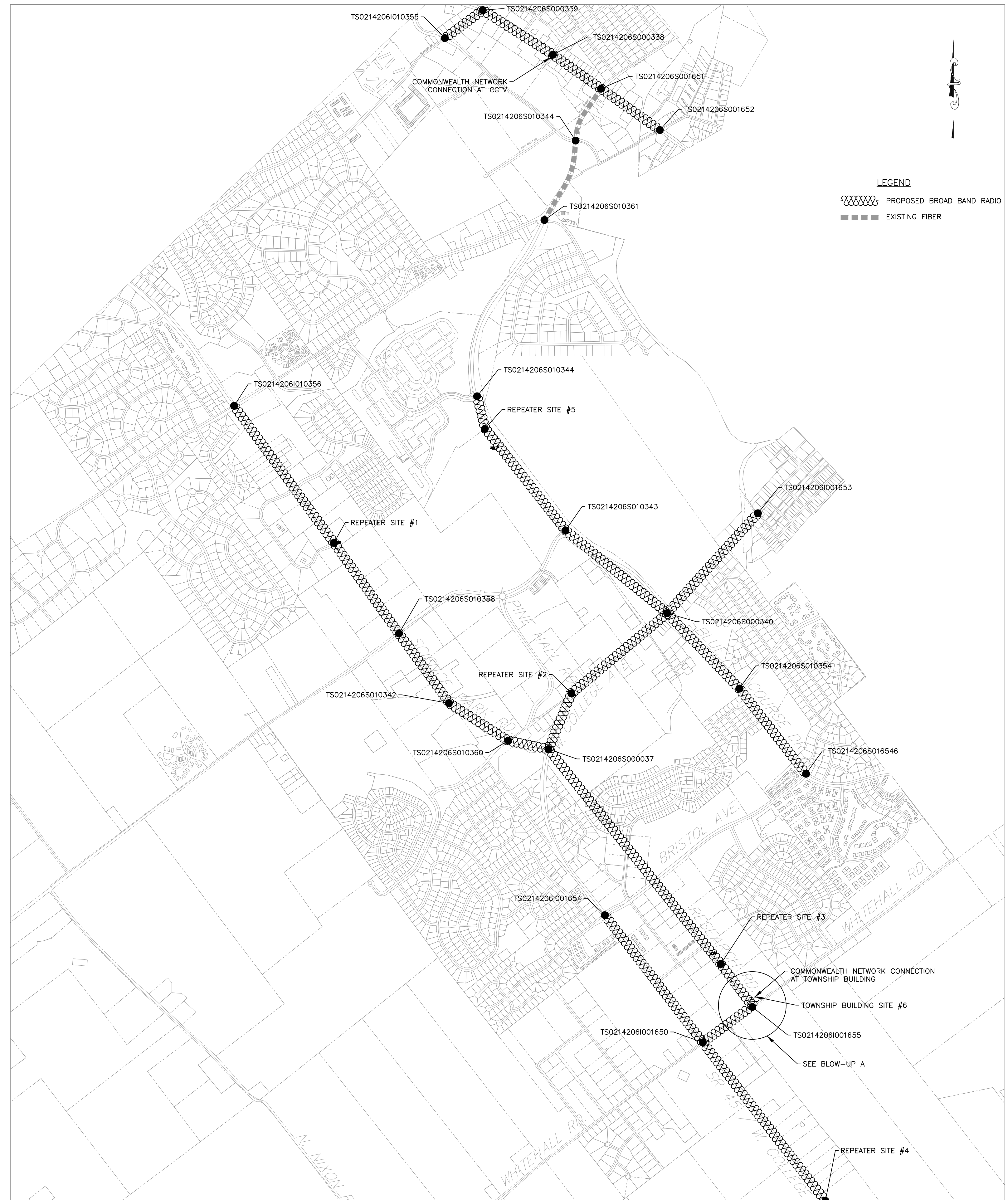
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING PUBLICATIONS:  
PENNDOT PUBLICATION 408 / 2020 (CHANGE No. 2)  
PENNDOT PUBLICATIONS 34, 35, 37, AND 38 (APPROVED CONSTRUCTION MATERIALS)  
PENNDOT PUBLICATION 72M - STANDARDS FOR ROADWAY CONSTRUCTION  
PENNDOT PUBLICATION 213M - WORK ZONE TRAFFIC CONTROL  
PENNDOT PUBLICATION 111M - TC 8700 TRAFFIC SIGNING STANDARDS  
PENNDOT PUBLICATION 236M - HANDBOOK OF APPROVED SIGNS  
PENNSYLVANIA CODE, TITLE 67, CHAPTERS 441 AND 459  
PENNDOT PUBLICATION 148 - TC 8800 TRAFFIC STANDARDS
- CONSTRUCTION STANDARDS: ARE AS DEPICTED ON TRAFFIC STANDARDS - SIGNALS, TC-8800 SERIES, CURRENT VERSION
- A PENNDOT HOP HAS BEEN ISSUED FOR INSTALLATION OF REPEATER SITE 4 ALONG WEST COLLEGE AVENUE. COMPLY WITH ALL PERMIT CONDITIONS INCLUDED IN CONTRACT DOCUMENTS ATTACHMENT F.

**TRAFFIC CONTROL NOTES:**

- MAINTAIN TRAFFIC IN ACCORDANCE WITH THE LATEST EDITION OF PENNDOT PUBLICATION 213M (67 PA CODE, CH. 212) WORK ZONE TRAFFIC CONTROL GUIDELINES.
- PROVIDE FLAGGERS AT INTERSECTIONS DURING LANE CLOSURES.
- SHORT-TERM WORK ZONE TRAFFIC CONTROL SHALL BE REMOVED AT THE END OF EACH WORK DAY.
- DO NOT HAVE TRAVEL LANE DROP-OFFS/OPEN EXCAVATIONS DURING NON-WORKING HOURS.
- THE POSTED SPEED LIMIT ON EACH STREET IS NOTED ON THE PLAN.
- PROVIDE ORANGE REFLECTIVE FENCING WITH DELINEATION DEVICES AROUND AREAS OF OPEN EXCAVATION TO DELINEATE FOR PEDESTRIAN TRAFFIC.
- PROVIDE CHANNELIZING DEVICES AS NEEDED TO CLEARLY DELINEATE TRAVEL LANE AND ACCESS TO DRIVEWAYS.
- PROVIDE AN APPROPRIATE NUMBER OF FLAG PERSONS AS NEEDED BASED UPON LIMIT OF WORK AREA.

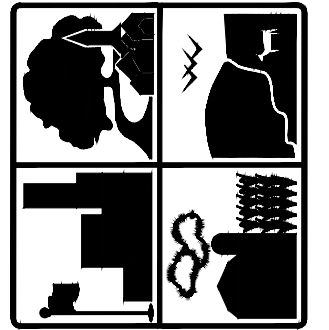


BLOW UP A

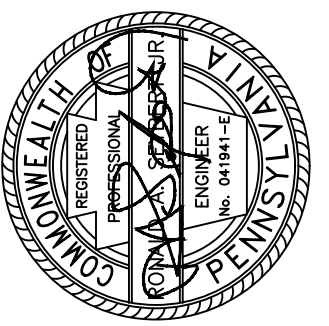


**NETWORK DIAGRAM**

1"=2000'



**FERGUSON TOWNSHIP**  
DEPT. OF PUBLIC WORKS & ENGINEERING  
3147 RESEARCH DRIVE  
STATE COLLEGE, PA 16801  
PHONE: 814-238-4651  
FAX: 814-238-3454  
www.twp.ferguson.pa.us

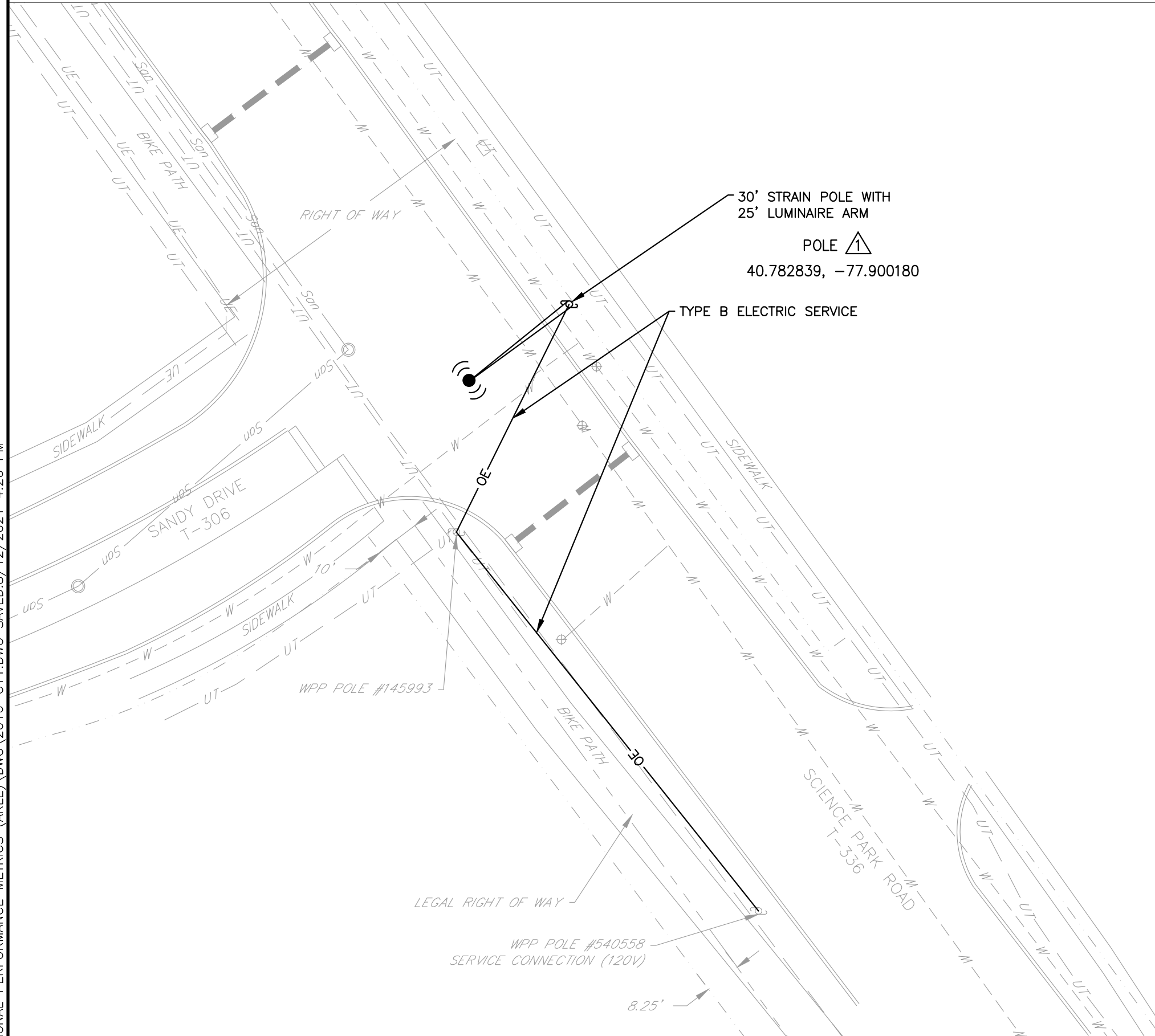


REV.	DATE	REVISION DESCRIPTION

AUTOMATED TRAFFIC SIGNAL  
PERFORMANCE METRICS (ARLE)  
CONTRACT 2016-C11  
**GENERAL NOTES &  
NETWORK DIAGRAM**

DESIGNED BY: RAS	<b>2</b>
DRAWN BY: LMS	
CHECKED BY: RAS DATE: 8-23-2021	

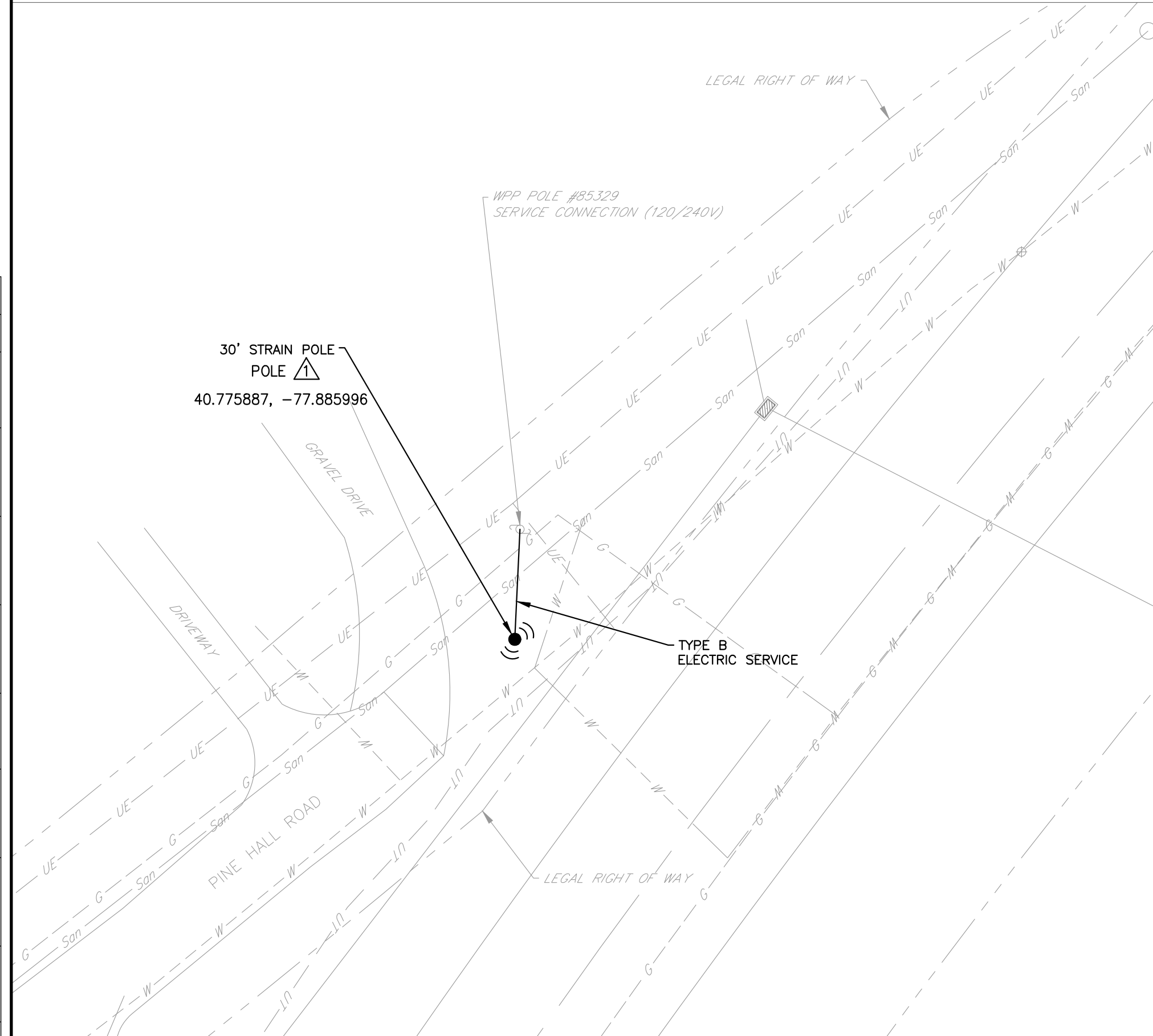
PATH:\PUBLIC WORKS\PIWSTAFF\CAPITAL PROJECTS\2016 PROJECTS\2016-C11 TRAFFIC SIGNAL PERFORMANCE METRICS (ARLE)\DWG\2016-C11.DWG, SAVERD/12/2021 4:26 PM



REPEATER SITE #1  
SCIENCE PARK ROAD AND SANDY DRIVE

- CONSTRUCTION NOTES:
1. INSTALL 30' STRAIN POLE WITH 20' LUMINAIRE ARM.
  2. INSTALL TYPE B ELECTRIC SERVICE
  3. ATTACHED SWITCH ENCLOSURE CABINET WITH POWER RECEPTACLE.
  4. INSTALL NETWORK SWITCH AND CABLES.
  5. INSTALL DUAL CHANNEL BROAD BAND RADIO AND RELATED CABLING.
  6. AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
  7. PROGRAM IP ADDRESSES AS ASSIGNED.

MISCELLANEOUS			
ITEM NUMBER	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	1	POLE 1
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	0	
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	0	
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	0	
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	1	POLE 1
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	0	
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	0	
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	1	PER PLAN, FIELD VERIFIED BY OWNER
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			



REPEATER SITE #2  
PINEHALL CT AND COLLEGE AVE

- CONSTRUCTION NOTES:
1. INSTALL 30' STRAIN POLE.
  2. INSTALL TYPE B ELECTRIC SERVICE
  3. ATTACHED SWITCH ENCLOSURE CABINET WITH POWER RECEPTACLE.
  4. INSTALL NETWORK SWITCH AND CABLES.
  5. INSTALL DUAL CHANNEL BROAD BAND RADIO AND RELATED CABLING.
  6. AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
  7. PROGRAM IP ADDRESSES AS ASSIGNED.

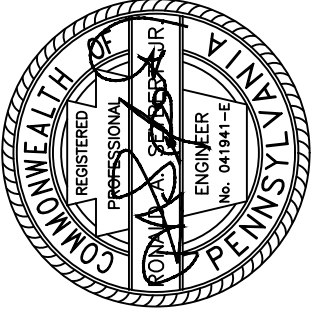
MISCELLANEOUS			
ITEM NUMBER	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	1	POLE 1
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	0	
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	0	
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	0	
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	1	POLE 1
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	0	
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	0	
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	1	PER PLAN, FIELD VERIFIED BY OWNER
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			

DESIGNED BY: RAS  
 DRAWN BY: LMS  
 CHECKED BY: RAS  
 DATE: 8-23-2021

**REPEATER SITE LOCATIONS**

3

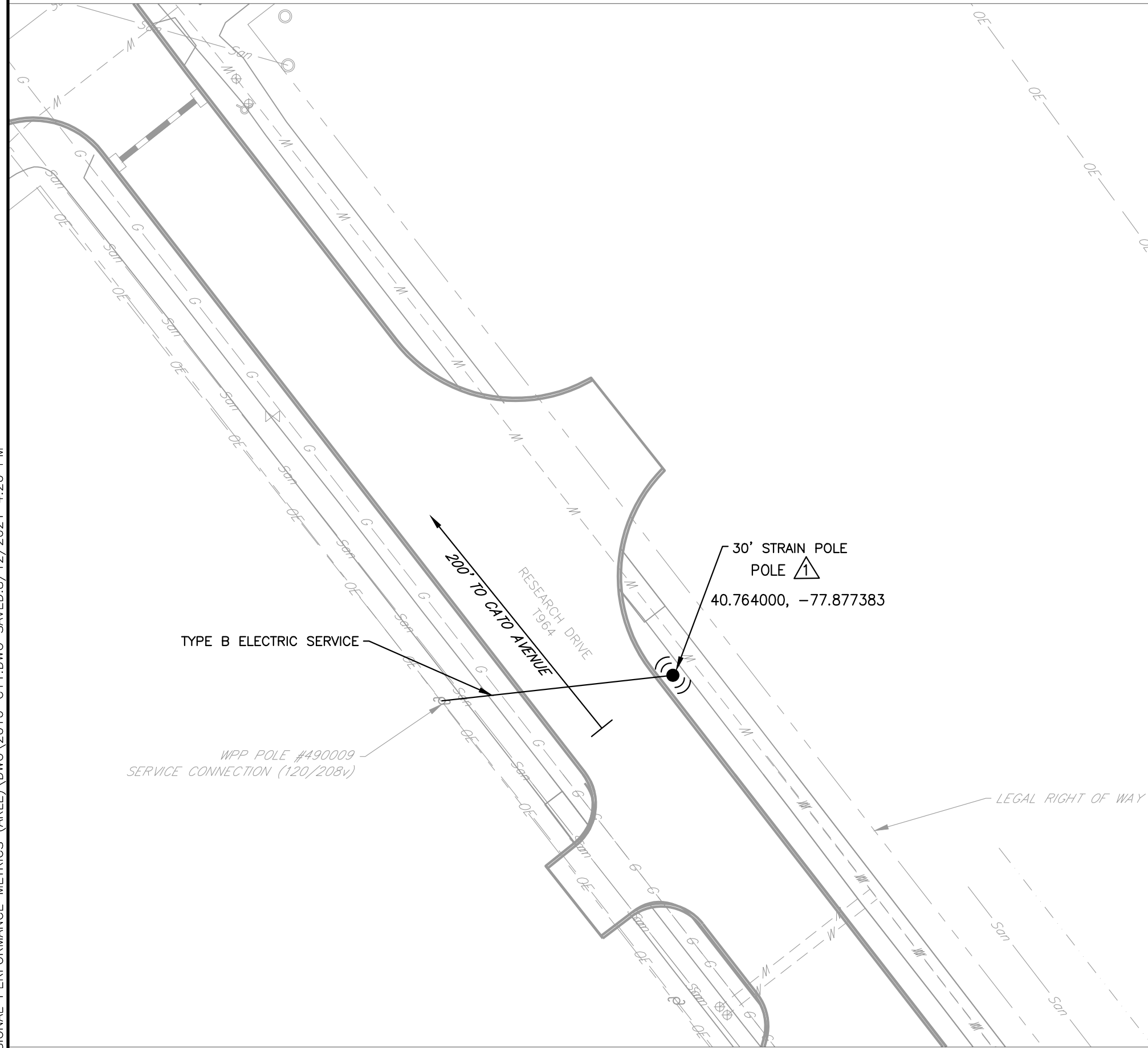
REV. DATE DESCRIPTION

  
**FERGUSON TOWNSHIP**  
 DEPT. OF PUBLIC WORKS & ENGINEERING  
 3147 RESEARCH DRIVE  
 STATE COLLEGE, PA 16801  
 PHONE: 814-238-4651  
 FAX: 814-238-3454  
 www.twp.ferguson.pa.us

AUTOMATED TRAFFIC SIGNAL PERFORMANCE METRICS (ARLE) CONTRACT 2016-C11

REVISION DESCRIPTION

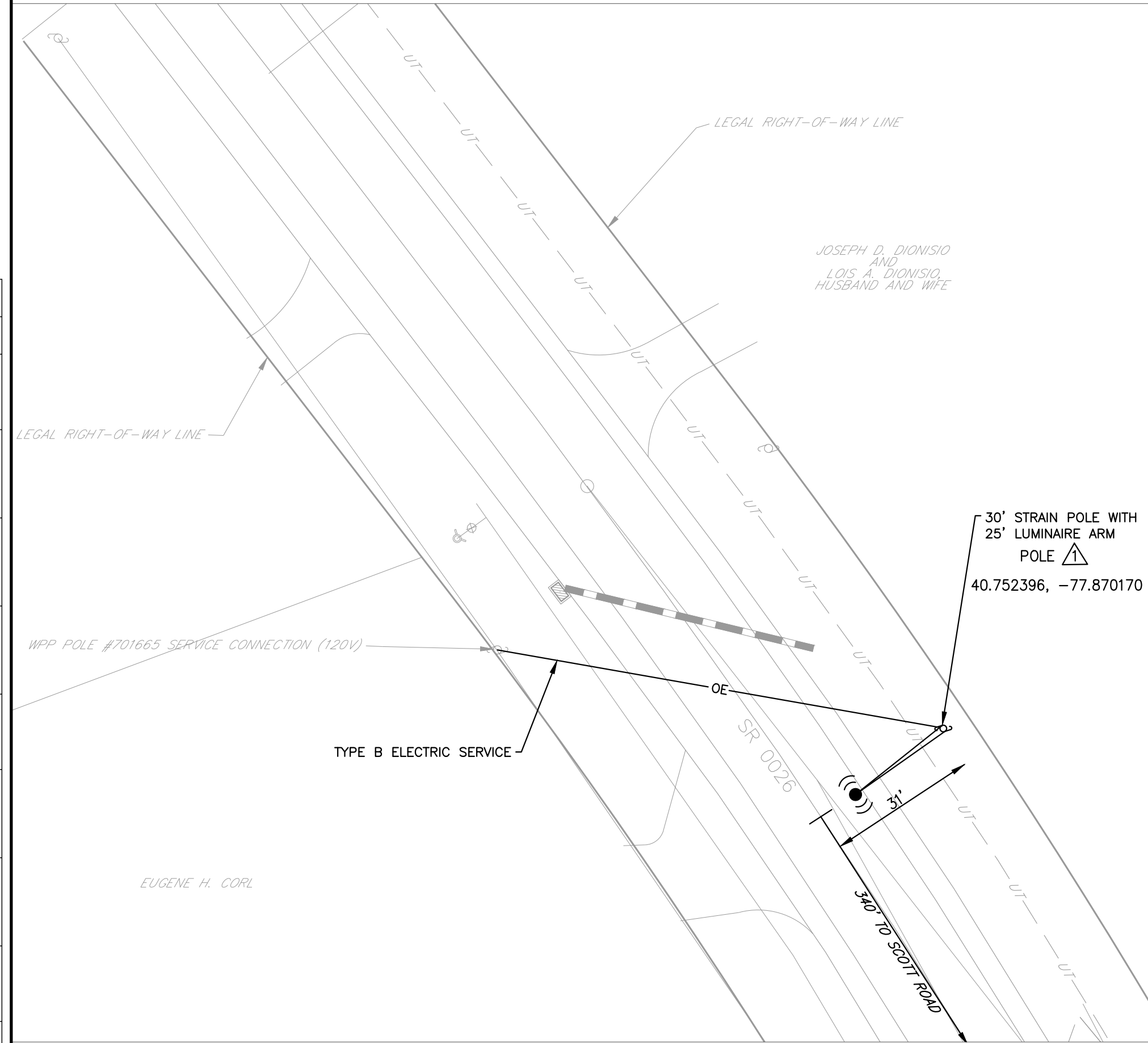
PATH:\PUBLIC WORKS\PM\STAFF\CAPITAL PROJECTS\2016 PROJECTS\2016-C11 TRAFFIC SIGNAL PERFORMANCE METRICS (ARLE)\DWG\2016-C11.DWG, SAVED: 08/12/2021 4:26 PM



REPEATER SITE #3  
RESEARCH DRIVE

- CONSTRUCTION NOTES:
1. INSTALL 30' STRAIN POLE.
  2. INSTALL TYPE B ELECTRIC SERVICE
  3. ATTACHED SWITCH ENCLOSURE CABINET WITH POWER RECEPTACLE.
  4. INSTALL NETWORK SWITCH AND CABLES.
  5. INSTALL DUAL CHANNEL BROAD BAND RADIO AND RELATED CABLING.
  6. AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
  7. PROGRAM IP ADDRESSES AS ASSIGNED.

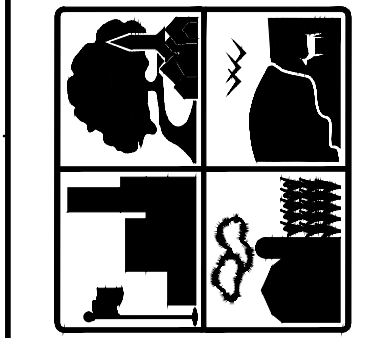
MISCELLANEOUS			
ITEM NUMBER	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	1	POLE 1
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	0	
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	0	
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	0	
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	1	POLE 1
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	0	
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	0	
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	1	PER PLAN, FIELD VERIFIED BY OWNER
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			



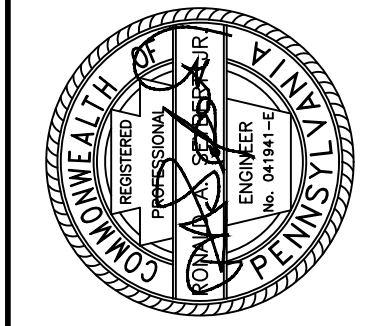
REPEATER SITE #4  
SCOTT ROAD

- CONSTRUCTION NOTES:
1. INSTALL 30' STRAIN POLE WITH 20' LUMINAIRE ARM.
  2. INSTALL TYPE B ELECTRIC SERVICE
  3. ATTACHED SWITCH ENCLOSURE CABINET WITH POWER RECEPTACLE
  4. INSTALL NETWORK SWITCH AND CABLES.
  5. INSTALL DUAL CHANNEL BROAD BAND RADIO AND RELATED CABLING.
  6. AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
  7. PROGRAM IP ADDRESSES AS ASSIGNED.

MISCELLANEOUS			
ITEM NUMBER	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	1	POLE 1
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	0	
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	0	
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	0	
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	1	POLE 1
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	0	
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	0	
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	1	PER PLAN, FIELD VERIFIED BY OWNER
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			



**FERGUSON TOWNSHIP**  
DEPT. OF PUBLIC WORKS & ENGINEERING  
3147 RESEARCH DRIVE  
STATE COLLEGE, PA 16801  
PHONE: 814-238-4651  
FAX: 814-238-3454  
www.twp.ferguson.pa.us

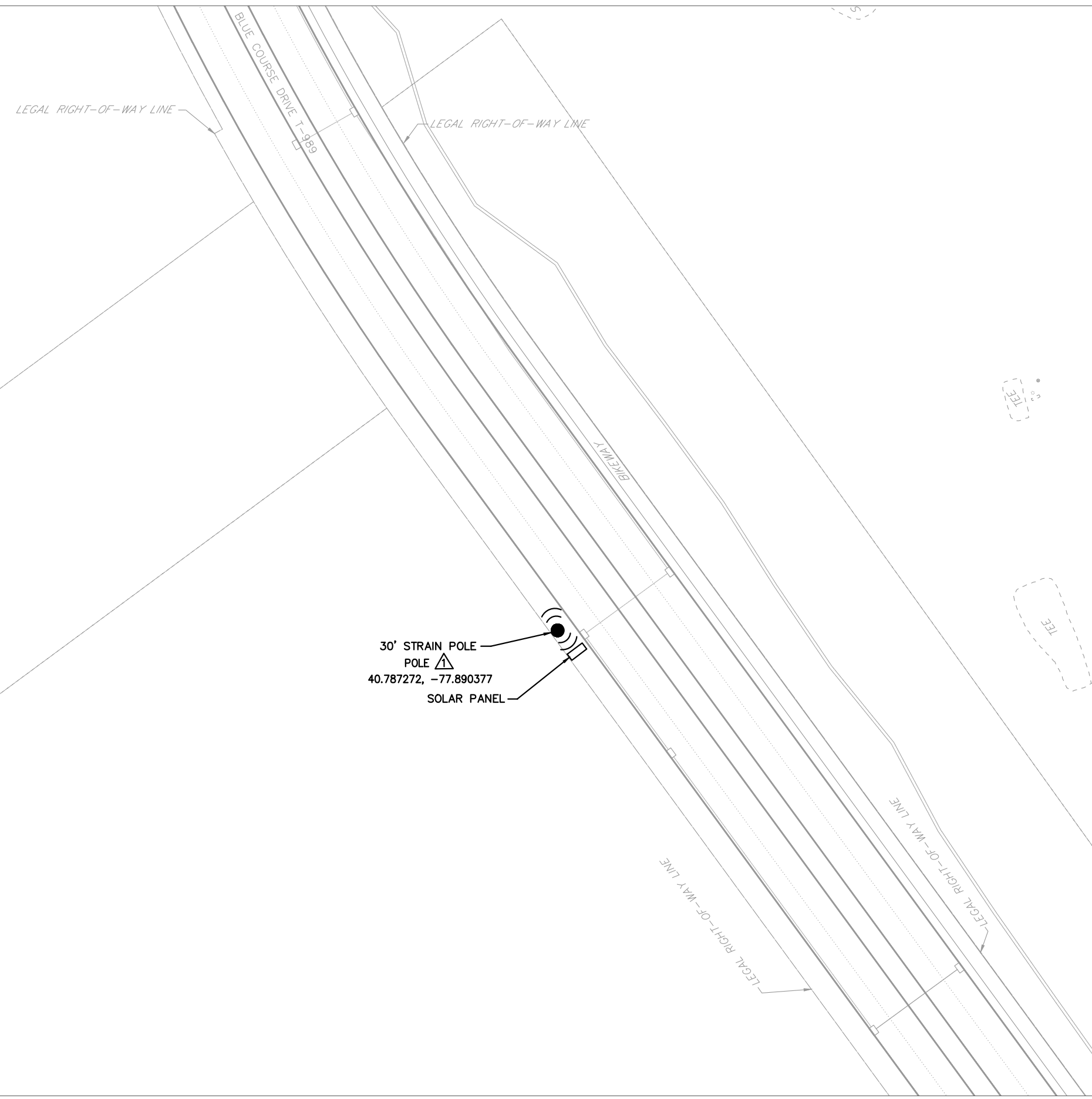


REV.	DATE	DESCRIPTION

AUTOMATED TRAFFIC SIGNAL PERFORMANCE METRICS (ARLE) CONTRACT 2016-C11  
**REPEATER SITE LOCATIONS**

DESIGNED BY: RAS	<b>4</b>
DRAWN BY: LMS	
CHECKED BY: RAS DATE: 8-23-2021	

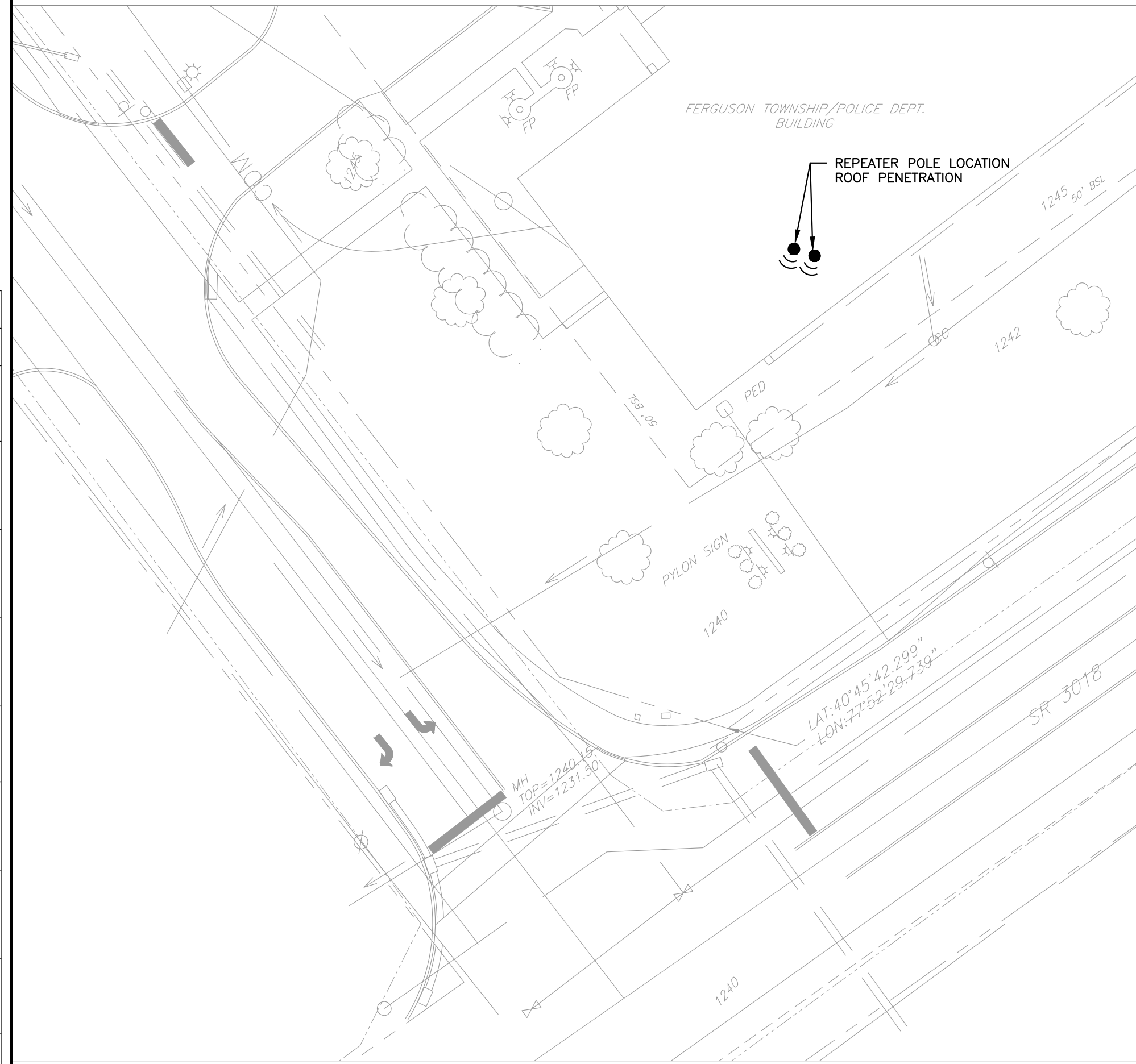
PATH:\PUBLIC WORKS\PMSTAFF\CAPITAL PROJECTS\2016 PROJECTS\2016-C11 TRAFFIC SIGNAL PERFORMANCE METRICS (ARLE)\DWG\2016-C11.DWG, SAVED: 8/12/2021 4:26 PM



REPEATER SITE #5  
ON BLUECOURSE BELOW HAVERSHERE

- CONSTRUCTION NOTES:
1. INSTALL 30' STRAIN POLE.
  2. INSTALL TYPE B ELECTRIC SERVICE
  3. ATTACHED SWITCH ENCLOSURE CABINET WITH POWER RECEPTACLE.
  4. INSTALL NETWORK SWITCH AND CABLES.
  5. INSTALL DUAL CHANNEL BROAD BAND RADIO AND RELATED CABLING.
  6. AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
  7. PROGRAM IP ADDRESSES AS ASSIGNED.

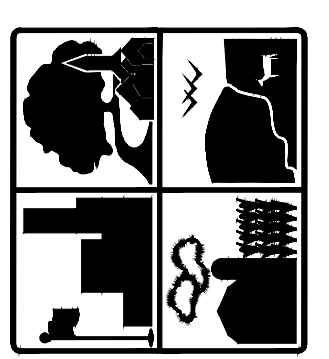
ITEM NUMBER	MISCELLANEOUS		
UNIT	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	0	
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	0	
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	0	
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	1	POLE 1
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	0	
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	0	
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	1	POLE 1
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINARE ARM (30' HEIGHT) 1,000#	0	
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	1	PER PLAN, FIELD VERIFIED BY OWNER
EACH			



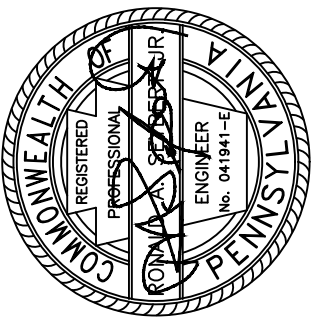
REPEATER SITE #6.  
TOWNSHIP BUILDING REPEATER SITE

- CONSTRUCTION NOTES:
1. FOLLOW SPECIAL PROVISIONS AND COORDINATE WITH OWNER.

ITEM NUMBER	MISCELLANEOUS		
UNIT	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	0	
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	1	IN BUILDING
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	2	ROOF TOP
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	0	
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	0	
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	0	
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	1	TOWNSHIP BUILDING
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINARE ARM (30' HEIGHT) 1,000#	0	
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			



**FERGUSON TOWNSHIP**  
DEPT. OF PUBLIC WORKS & ENGINEERING  
3147 RESEARCH DRIVE  
STATE COLLEGE, PA 16801  
PHONE: 814-238-4651  
FAX: 814-238-3454  
www.twp.ferguson.pa.us



REV.	DATE	DESCRIPTION

AUTOMATED TRAFFIC SIGNAL PERFORMANCE METRICS (ARLE) CONTRACT 2016-C11  
**REPEATER SITE LOCATIONS**

DESIGNED BY: RAS  
DRAWN BY: LMS  
CHECKED BY: RAS  
DATE: 8-23-2021

**5**

PHASING DIAGRAM

SIGNALS	PHASE 1+5			PHASE 2+5			PHASE 1+6			PHASE 2+6				PHASE 4+8			
	1	2	3	1	2	3	1	2	3	1	2	3	4	1	2	3	4
1	R	R	R	R	R	R	G	Y	R	G	Y	R	R	R	R	R	R
2	R	R	R	R	R	R	G	Y	R	G	Y	R	R	R	R	R	R
3	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R
4	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R
5-6	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R
7-8	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R
9-10	DW	DW	DW	W	FD	DW	DW	DW	DW	W	FD	DW	DW	DW	DW	DW	OFF
11	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	OFF
12-13	DW	DW	DW	DW	DW	DW	W	FD	DW	W	FD	DW	DW	DW	DW	DW	OFF
14-15-16-17	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	OFF
FIXED	4.0	2.0		4.0	2.0		4.0	2.0		4.0	2.0		3.5	3.0			
MINIMUM	3			3			3			14			3				
PASSAGE	1.5			1.5			1.5			1.0			2				
MAXIMUM	10			10			10			50			20				
PEDESTRIAN *										7	22		7	25			
▲ CYCLE 1	14			14			14			58			28				
▲ CYCLE 2	18			18			18			54			28				
▲ CYCLE 3	18			18			18			58			24				
▲ CYCLE 4	14			14			14			61			25				
▲ TSP CYCLE 1	13			13			13			69			18				
▲ TSP CYCLE 2	13			13			13			69			18				
▲ TSP CYCLE 3	13			13			13			73			14				
▲ TSP CYCLE 4	13			13			13			72			15				
MEMORY	NON-LOCKING	NON-LOCKING	NON-LOCKING	NON-LOCKING	NON-LOCKING	NON-LOCKING	MIN. RECALL	NON-LOCKING									

\* UPON PEDESTRIAN ACTUATION AT ALL TIMES

▲ TOTAL LENGTH OF PHASE

ADVANCE DILEMMA ZONE NOTES:  
 I. ESTIMATE TIME OF ARRIVAL: MINIMUM 2.5 SECONDS - MAXIMUM 5.5 SECONDS.  
 II. RANGE OF DETECTION: MINIMUM 50 FEET - MAXIMUM 500 FEET FROM STOP BAR.  
 III. MINIMUM SPEED BOUNDARY 10 MPH.

DETECTION ZONE NOTES (STOP BAR):  
 I. RANGE OF DETECTION: MINIMUM 10 FEET - MAXIMUM 100 FEET FROM STOP BAR.  
 II. ZONE MAY BE ADJUSTED IN FIELD.

NOTES:

- R/-G IF FOLLOWED BY 1+6.
- R/-G IF FOLLOWED BY 2+5
- G/Y IF FOLLOWED BY 2+6.
- G IF FOLLOWED BY 2+6.
- G IF FOLLOWED BY 2+6.
- Y/-G IF FOLLOWED BY 1+5 OR 1+6
- R/-G IF FOLLOWED BY 1+5 OR 1+6
- R/-G IF FOLLOWED BY 1+6
- TIMING AS SHOWN IN PHASE 2+6 INTERVALS MAY TIME OUT IN THIS PHASE OR BE COMPLETED IN 2+6.
- PHASE 1+5 ONLY FOLLOWS PHASE 4+8.

DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
		2	5	4	7	6	1	8	3
PRESENCE	50' x 10' @ 40'	1-2 (1)	3 (1)	17 (2)	-	33-34 (3)	35 (3)	49-50 (4)	-
COUNT	6' x 10' @ -20'	4-5 (1)	6 (1)	18 (2)	-	36-37 (3)	38 (3)	51-52 (4)	-
PULSE ADVANCE	6' @ 400'	7 (5)	-	-	-	39 (6)	-	-	-
DILEMMA ZONE	CONTINUOUS @ 450'	8 (5)	-	-	-	40 (6)	-	-	-
PEDESTRIAN	PB	(14-15)	(30-31)	-	-	(46-47)	(62-63)	-	-
EVP/TRANSIT	OPTICAL	(16)	-	-	-	(48)	-	-	-

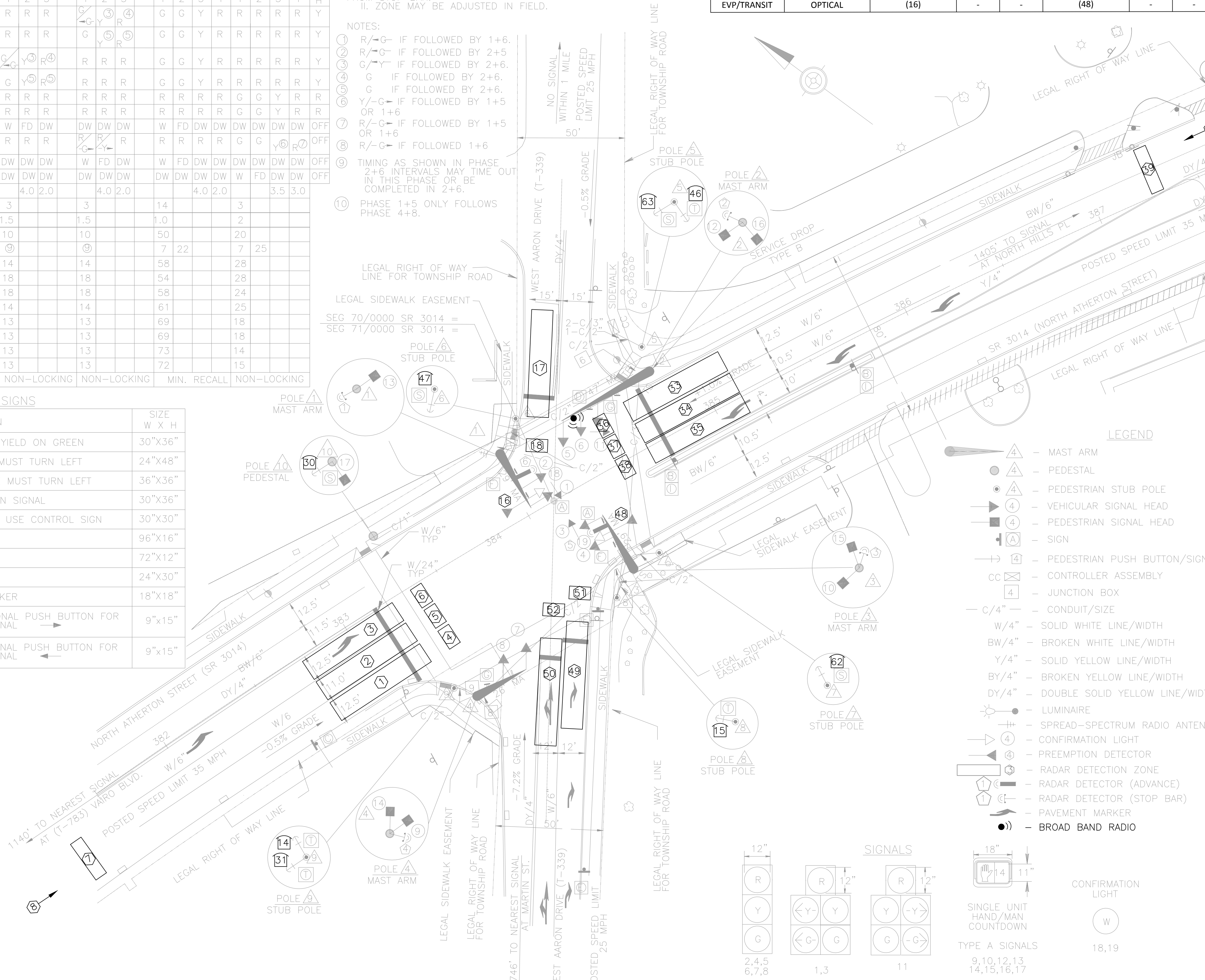
DISTRICT	COUNTY	ROUTE	SECTION	SHEET	
2-0	CENTRE	LOCAL	02E011	6 OF 44	
FERGUSON TOWNSHIP					
REVISION NUMBER	REVISIONS			DATE	BY

CONSTRUCTION NOTES:

- INSTALL DUAL CHANNEL BROAD BAND RADIO AND RELATED CABLING.
- AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
- INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.
- PROGRAM ALL IP ADDRESSES AS ASSIGNED.
- PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
- ENABLE DATA LOGGING FUNCTION.

ITEM NUMBER	MISCELLANEOUS		
UNIT	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	0	
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	1	CABINET
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	0	
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	1	POLE 2
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	0	
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	0	
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINARE ARM (30' HEIGHT) 1,000#	0	
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			

PLAN SYMBOL	DESCRIPTION	SIZE W X H
(A)	R10-12, LEFT TURN YIELD ON GREEN	30"x36"
(B)	R3-7LA, LEFT LANE MUST TURN LEFT	24"x48"
(C)	R3-7L, CENTER LANE MUST TURN LEFT	36"x36"
(D)	R10-10R, RIGHT TURN SIGNAL	30"x36"
(E)	R3-8A (LS-R), LANE USE CONTROL SIGN	30"x30"
(F)	D3-4, Aaron Dr.	96"x16"
(G)	D3-4, Atherton St.	72"x12"
(H)	R4-7, KEEP RIGHT	24"x30"
(I)	W16-1, HAZARD MARKER	18"x18"
(J)	R10-3E(R), EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL	9"x15"
(K)	R10-3E(L), EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL	9"x15"



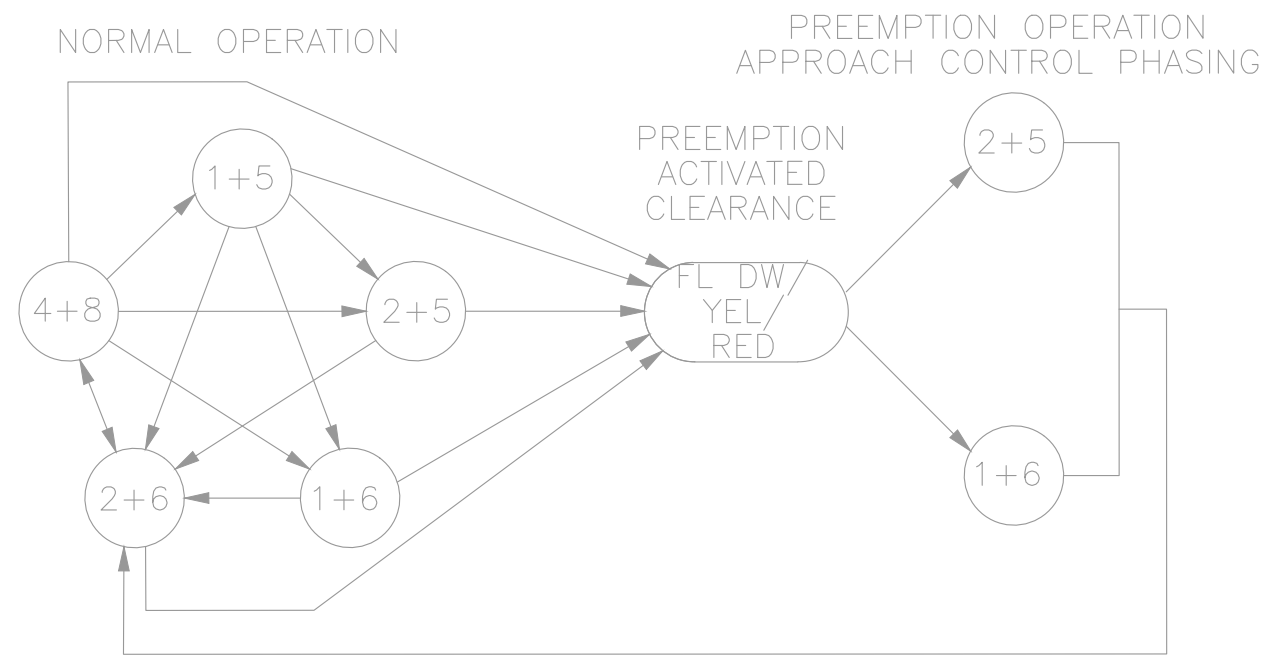
COUNTY : CENTRE  
 MUNICIPALITY : FERGUSON TOWNSHIP  
 INTERSECTION : NORTH ATHERTON ST (SR 3014) AND WEST AARON DR (T-339)

APPROVED BY: [Signature] 8/23/2021  
 MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
 DISTRICT TRAFFIC ENGINEER DATE

SCALE : 0 25 50 75

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	7 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	



NEMA PHASING DIAGRAM FOR EMERGENCY PREEMPTION

TRANSIT SIGNAL PRIORITY PLAN

CYCLE	GREEN EXTENSION TIME
CYCLE 1	11 SEC
CYCLE 2	15 SEC
CYCLE 3	15 SEC
CYCLE 4	11 SEC

WB CHECK-IN DISTANCE IS 880 FT  
EB CHECK-IN DISTANCE IS 924 FT

COORDINATION PLAN

PLAN NO.	DAY OF WEEK							TIME	CYCLE	OFFSET	REMARKS
	S	M	T	W	T	F	S				
1	X	X	X	X	X	X	X	6:00	100 SEC	-	FREE
2		X	X	X	X	X		7:00	100 SEC	97 SEC	CYCLE 2
3	X						X	8:00	100 SEC	31 SEC	CYCLE 1
4		X	X	X	X	X		10:00	100 SEC	59 SEC	CYCLE 4
5		X	X	X	X	X		16:00	100 SEC	88 SEC	CYCLE 3
6		X	X	X	X	X		19:00	100 SEC	59 SEC	CYCLE 4
7	X	X	X	X	X	X		22:00	100 SEC	-	FREE

OFFSETS REFERENCED TO START OF PHASE 2+6 GREEN

COORDINATION NOTES:

- INTERSECTIONS INTERCONNECTED VIA BROAD BAND:
  - N ATHERTON ST (SR 3014), HAWBAKER INDUSTRIAL DR & DOUGLAS DR (T-729)
  - N ATHERTON ST (SR 3014) & COLONNADE BLVD (T-530)
  - N ATHERTON ST (SR 3014) & COLONNADE WAY
  - N ATHERTON ST (SR 3014) & PATRIOT LN
  - N ATHERTON ST (SR 3014) & WOODYCREST AVE (T-691)
  - N ATHERTON ST (SR 3014) & N ATHERTON PLACE ENTRANCE
  - N ATHERTON ST (SR 3014), VAIRO BLVD (T-783) & MARTIN ST
  - VAIRO BLVD (T-783), N ATHERTON PL & TJ MAXX DRIVEWAY
  - VAIRO BLVD (T-783) & WADDLE RD (T-528)
  - N ATHERTON ST (SR 3014) & W AARON DR (T-330)
  - N ATHERTON ST (SR 3014) & W NORTH HILLS PL (T-794)
  - N ATHERTON ST (SR 3014), BLUE COURSE DR (T-989) & W. CLINTON AVE (T-743)
  - N ATHERTON ST (SR 3014) & W CHERRY LN (T-342)
  - N ATHERTON ST (SR 3014) & HILLCREST AVE
  - N ATHERTON ST (SR 3014) & W PARK AVE (SR 3007)
  - N ATHERTON ST (SR 3014) & CURTIN RD
  - N ATHERTON ST (SR 3014) & WHITE COURSE RD
  - N ATHERTON ST (SR 3014) FOR BUS DEPT PED CROSSING
- TO PROVIDE A PROGRESSIVE MOVEMENT OF TRAFFIC ALONG SR 3014, CONTROLLER COORDINATED WITH ADJACENT SIGNALS:
  - N ATHERTON ST (SR 3014), HAWBAKER INDUSTRIAL DR & DOUGLAS DR (T-729)
  - N ATHERTON ST (SR 3014) & COLONNADE BLVD (T-530)
  - N ATHERTON ST (SR 3014) & COLONNADE WAY
  - N ATHERTON ST (SR 3014) & PATRIOT LN
  - N ATHERTON ST (SR 3014) & WOODYCREST AVE (T-691)
  - N ATHERTON ST (SR 3014) & N ATHERTON PLACE ENTRANCE
  - N ATHERTON ST (SR 3014), VAIRO BLVD (T-783) & MARTIN ST
  - N ATHERTON ST (SR 3014) & W NORTH HILLS PL (T-794)
  - N ATHERTON ST (SR 3014), BLUE COURSE DR (T-989) & W CLINTON AVE (T-743)
  - N ATHERTON ST (SR 3014) & W CHERRY LN (T-342)
  - N ATHERTON ST (SR 3014) & HILLCREST AVE
  - N ATHERTON ST (SR 3014) & W PARK AVE (SR 3007)
  - N ATHERTON ST (SR 3014) & CURTIN RD
  - N ATHERTON ST (SR 3014) & WHITE COURSE RD
  - N ATHERTON ST (SR 3014) FOR BUS DEPT PED CROSSING

EMERGENCY VEHICLE PREEMPTION NOTES

NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PREEMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS.

EMERGENCY PREEMPTION SHALL BE PROVIDED ON A FIRST-COME, FIRST-SERVE BASIS. ONCE THE FIRST PRIORITY EMERGENCY VEHICLE CALLS THE SYSTEM, IT SHALL PREVENT OTHER PREEMPTIVE VEHICLES FROM ENTERING CALLS UNTIL THE FIRST EMERGENCY VEHICLE RELEASES CONTROL AND CLEARS THE INTERSECTION.

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 2+5 OR PHASE 1+6. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/GREEN ARROW) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK INTERVAL, THE YELLOW AND ALL-RED INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE WHILE THE CONFLICTING GREEN INDICATIONS ARE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN THE YELLOW, YELLOW ARROW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.

IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.

TRANSIT SIGNAL PRIORITY NOTES

-NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE MODIFIED BY AUTHORIZED TRANSIT VEHICLES.

-PROVIDE TRANSIT SIGNAL PRIORITY EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION.

-TRANSIT SIGNAL PRIORITY REQUEST MAY BE DETECTED IN ANY PHASE, BUT SHALL ONLY BE GIVEN EXTENSION TIMING IN INTERVAL 1 (GREEN) OR INTERVAL 2 (GREEN/FLASHING HAND) OF PHASE 2+6.

-THE TRANSIT SIGNAL PRIORITY SYSTEM SHALL DETECT THE TRANSIT VEHICLES AT THE CHECK-IN POINT. THE CHECK-IN DISTANCE SHALL BE THE DISTANCE FROM THE STOP BAR TO THE CHECK-IN DISTANCE NOTED ON THIS PLAN SHEET. THE CHECK-OUT POINT SHALL BE THE POINT AT WHICH THE TRANSIT VEHICLE CROSSES THE INTERSECTION AND IS NO LONGER DETECTED BY THE OPTICAL DETECTOR.

-ALL MINIMUM TIMINGS AND PEDESTRIAN CLEARANCE TIMES (FLASHING HAND) SHALL BE MAINTAINED IN ALL PHASES.

-PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY A TRANSIT VEHICLE:

-IF THE CONTROLLER OPERATION IS NOT IN PHASE 2+6, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY AND PROCEED THROUGH THE CYCLE UNTIL IT REACHES PHASE 2+6.

-IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF PHASE 2+6, THE CONTROLLER SHALL REMAIN GREEN UNTIL THE TRANSIT VEHICLE REACHES THE CHECK-OUT POINT AND THE TRANSIT SIGNAL PRIORITY CALL IS SERVICED. IF THE CALL IS NOT SERVICED FOR THE LENGTH OF THE NORMAL GREEN PLUS THE GREEN EXTENSION TIME, THE CALL SHALL BE TERMINATED TO MAINTAIN MINIMUM INITIAL TIMES IN ALL REMAINING PHASES.

-IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING HAND) OF PHASE 2+6, THE CONTROLLER SHALL REMAIN GREEN/FLASHING HAND UNTIL THE TRANSIT VEHICLE REACHES THE CHECK-OUT POINT AND THE TRANSIT SIGNAL PRIORITY CALL IS SERVICED. IF THE CALL IS NOT SERVICED FOR THE LENGTH OF THE NORMAL GREEN PLUS THE GREEN EXTENSION TIME, THE CALL SHALL BE TERMINATED TO MAINTAIN MINIMUM INITIAL TIMES IN ALL REMAINING PHASES.

-IF THE CONTROLLER OPERATION IS IN THE YELLOW OR RED CLEARANCE INTERVAL, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY AND PROCEED THROUGH THE CYCLE UNTIL IT REACHES PHASE 2+6.

-ONCE A TRANSIT SIGNAL PRIORITY CALL IS SERVICED, NO OTHER TRANSIT SIGNAL PRIORITY CALLS SHALL BE SERVICED DURING THE CURRENT CYCLE OR THE FOLLOWING CYCLE.

-UPON TERMINATION OF THE TRANSIT SIGNAL PRIORITY, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.


-IF TRANSIT SIGNAL PRIORITY OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICT OR TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

-FAIL-SAFE INDICATION: NO FAIL-SAFE INDICATION SHALL BE GIVEN WHEN A TRANSIT SIGNAL PRIORITY CALL IS SERVED.

COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : NORTH ATHERTON ST (SR 3014)  
AND WEST AARON DR (T-339)

APPROVED BY:  DATE: 8/23/2021  
MUNICIPAL OFFICIAL \_\_\_\_\_ DATE \_\_\_\_\_

RECOMMENDED : \_\_\_\_\_  
DISTRICT TRAFFIC ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

SCALE : 

PHASING DIAGRAM												
SIGNALS	PHASE 1+6			PHASE 2+6				PHASE 4+8				INTERVALS
	1	2	3	1	2	3	4	1	2	3	4	
1	G	Y	R	G	G	Y	R	R	R	R	R	Y
2	G	Y	R	G	G	Y	R	R	R	R	R	Y
3-4	R	R	R	G	G	Y	R	R	R	R	R	Y
5-6	R	R	R	R	R	R	R	R	R	R	R	Y
7-8	R	R	R	R	R	R	R	G	G	Y	R	R
9-10	DW	DW	DW	W	FD	DW	DW	DW	DW	DW	DW	OFF
11-12	DW	DW	DW	DW	DW	DW	DW	W	FD	DW	DW	OFF
13-14	DW	DW	DW	DW	DW	DW	DW	W	FD	DW	DW	OFF
15-16	W	FDW	DW	W	FD	DW	DW	DW	DW	DW	DW	OFF
FIXED		3.5	1.5			3.5	1.5			3.0	2.5	
MINIMUM	1			14				2				
PASSAGE	1.6			1.0				2.1				
MAXIMUM	10			47				22				
PEDESTRIAN *		3		7	20			4	18			
▲ CYCLE 1	12			63				25				
▲ CYCLE 2	17			58				25				
▲ CYCLE 3	14			63				23				
▲ CYCLE 4	14			57				29				
▲ TSP CYCLE 1	12			73				15				
▲ TSP CYCLE 2	12			73				15				
▲ TSP CYCLE 3	12			75				13				
▲ TSP CYCLE 4	12			69				19				
MEMORY	NON-LOCKING			MIN. RECALL				NON-LOCKING				

PHASE 1+6 ONLY FOLLOWS PHASE 4+8

\* UPON PEDESTRIAN ACTUATION

▲ TOTAL LENGTH OF PHASE

① G/Y IF FOLLOWED BY PHASE 2+6

② G/Y ← IF FOLLOWED BY PHASE 2+6

③ TIMING AS SHOWN IN PHASE 2+6 INTERVALS MAY TIME OUT IN THIS PHASE OR BE COMPLETED IN 2+6.

ADVANCE DILEMMA ZONE NOTES:  
 I. ESTIMATE TIME OF ARRIVAL: MINIMUM 2.5 SECONDS - MAXIMUM 5.5 SECONDS.  
 II. RANGE OF DETECTION: MINIMUM 50 FEET - MAXIMUM 500 FEET FROM STOP BAR.  
 III. MINIMUM SPEED BOUNDARY 10 MPH.

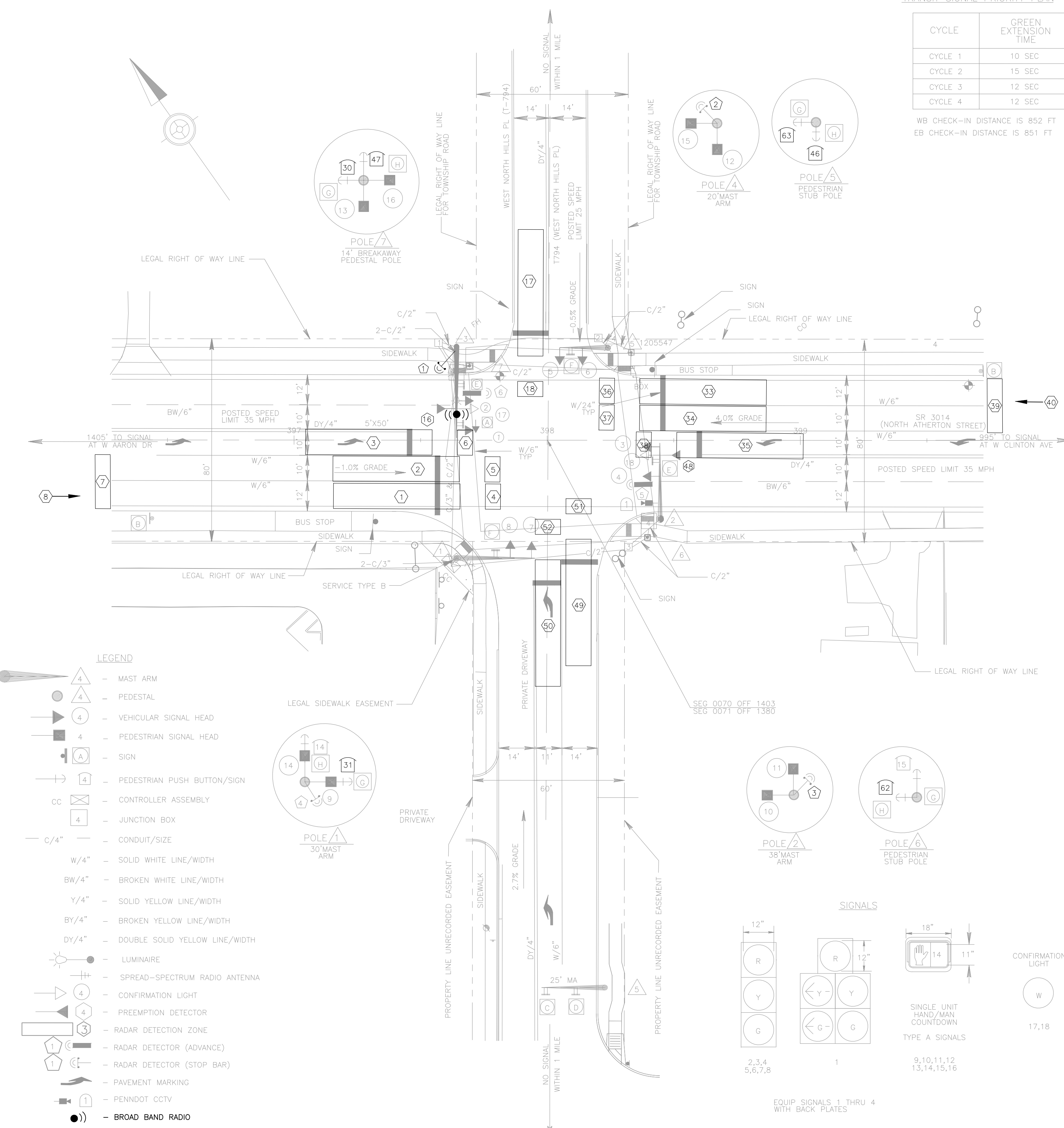
DETECTION ZONE NOTES (STOP BAR):  
 I. RANGE OF DETECTION: MINIMUM 10 FEET - MAXIMUM 100 FEET FROM STOP BAR.  
 II. MINIMUM SPEED BOUNDARY 5 MPH.  
 III. ZONE MAY BE ADJUSTED IN FIELD.

SIGNS

PLAN SYMBOL	DESCRIPTION	SIZE W X H
(A)	R10-12, LEFT TURN YIELD ON GREEN	30"x36"
(B)	R3-7C, CENTER LANE MUST TURN LEFT	30"x30"
(C)	R3-5L, LEFT TURN SIGN	30"x36"
(D)	R3-6SR, OPTIONAL RIGHT TURN	30"x36"
(E)	D3-4, W North Hills Pl	72"x16"
(F)	D3-4, N Atherton St.	72"x16"
(G)	R10-3E(R), EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL	9"x15"
(H)	R10-3E(L), EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL	9"x15"

LEGEND

- ▲ - MAST ARM
- ▲ - PEDESTAL
- ▲ - VEHICULAR SIGNAL HEAD
- ▲ - PEDESTRIAN SIGNAL HEAD
- ▲ - SIGN
- ▲ - PEDESTRIAN PUSH BUTTON/SIGN
- CC - CONTROLLER ASSEMBLY
- 4 - JUNCTION BOX
- C/4" - CONDUIT/SIZE
- W/4" - SOLID WHITE LINE/WIDTH
- BW/4" - BROKEN WHITE LINE/WIDTH
- Y/4" - SOLID YELLOW LINE/WIDTH
- BY/4" - BROKEN YELLOW LINE/WIDTH
- DY/4" - DOUBLE SOLID YELLOW LINE/WIDTH
- ☀ - LUMINAIRE
- ☀ - SPREAD-SPECTRUM RADIO ANTENNA
- ☀ - CONFIRMATION LIGHT
- ☀ - PREEMPTION DETECTOR
- ☀ - RADAR DETECTION ZONE
- ☀ - RADAR DETECTOR (ADVANCE)
- ☀ - RADAR DETECTOR (STOP BAR)
- ☀ - PAVEMENT MARKING
- ☀ - PENNDOT CCTV
- ☀ - BROAD BAND RADIO



ATSPM DETECTOR MAPPING TABLE									
DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
		2	5	4	7	6	1	8	3
PRESENCE	50' x 10' @ 40'	1-3 (1)	-	17 (2)	-	33-34 (3)	35 (3)	49-50 (4)	-
COUNT	6' x 10' @ -20'	4-6 (1)	-	18 (2)	-	36-37 (3)	38 (3)	51-52 (4)	-
PULSE ADVANCE	6' @ 400'	7 (5)	-	-	-	39 (6)	-	-	-
DILEMMA ZONE	CONTINUOUS @ 450'	8 (5)	-	-	-	40 (6)	-	-	-
PEDESTRIAN	PB	(14-15)	-	(30-31)	-	(46-47)	-	(62-63)	-
EVP/TRANSIT	OPTICAL	(16)	-	-	-	(48)	-	-	-

COORDINATION PLAN											
PLAN NO.	DAY OF WEEK							TIME	CYCLE	OFFSET	REMARKS
	S	M	T	W	T	F	S				
1	X	X	X	X	X	X	X	7:00	100 SEC	33 SEC	CYCLE 2
2	X	X	X	X	X	X	X	8:00	100 SEC	52 SEC	CYCLE 1
3	X	X	X	X	X	X	X	10:00	100 SEC	82 SEC	CYCLE 4
4	X	X	X	X	X	X	X	16:00	100 SEC	64 SEC	CYCLE 3
5	X	X	X	X	X	X	X	19:00	100 SEC	82 SEC	CYCLE 4
6	X	X	X	X	X	X	X	22:00	100 SEC	-	FREE

OFFSETS REFERENCED TO START OF PHASE 2+6 GREEN

TRANSIT SIGNAL PRIORITY PLAN

CYCLE	GREEN EXTENSION TIME
CYCLE 1	10 SEC
CYCLE 2	15 SEC
CYCLE 3	12 SEC
CYCLE 4	12 SEC

WB CHECK-IN DISTANCE IS 852 FT  
 EB CHECK-IN DISTANCE IS 851 FT

DISTRICT	COUNTY	ROUTE	SECTION	SHEET	
2-0	CENTRE	LOCAL	02E011	8 OF 44	
FERGUSON TOWNSHIP					
REVISION NUMBER	REVISIONS			DATE	BY

CONSTRUCTION NOTES:

1. INSTALL DUAL CHANNEL BROAD BAND RADIO AND RELATED CABLING.
2. AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
3. INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.
4. PROGRAM ALL IP ADDRESSES AS ASSIGNED.
5. INSTALL DETECTOR 1 ON POLE 3.
6. PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
7. ENABLE DATA LOGGING FUNCTION.
8. CONNECT NETWORK SWITCH TO COMMONWEALTH NETWORK AT CCTV CABINET ON POLE 2 WITH CAT 6 CABLE.

MISCELLANEOUS			
ITEM NUMBER	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	1	POLE 3
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	1	CABINET
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	0	
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	1	POLE 3
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	0	
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	0	
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			

COUNTY : CENTRE  
 MUNICIPALITY : FERGUSON TOWNSHIP  
 INTERSECTION : NORTH ATHERTON ST (SR 3014)  
 AND NORTH HILLS PLACE (T-794) / PRIVATE DRIVEWAY

APPROVED BY:  8/23/2021  
 MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
 DISTRICT TRAFFIC ENGINEER DATE

SCALE : 0 25 50 75



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	9 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	

TRANSIT SIGNAL PRIORITY NOTES

- NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE MODIFIED BY AUTHORIZED TRANSIT VEHICLES.
- PROVIDE TRANSIT SIGNAL PRIORITY EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION.
- TRANSIT SIGNAL PRIORITY REQUEST MAY BE DETECTED IN ANY PHASE, BUT SHALL ONLY BE GIVEN EXTENSION TIMING IN INTERVAL 1 (GREEN) OR INTERVAL 2 (GREEN/FLASHING HAND) OF PHASE 2+6.
- THE TRANSIT SIGNAL PRIORITY SYSTEM SHALL DETECT THE TRANSIT VEHICLES AT THE CHECK-IN POINT. THE CHECK-IN DISTANCE SHALL BE THE DISTANCE FROM THE STOP BAR TO THE CHECK-IN DISTANCE NOTED ON THIS PLAN SHEET. THE CHECK-OUT POINT SHALL BE THE POINT AT WHICH THE TRANSIT VEHICLE CROSSES THE INTERSECTION AND IS NO LONGER DETECTED BY THE OPTICAL DETECTOR.
- ALL MINIMUM TIMINGS AND PEDESTRIAN CLEARANCE TIMES (FLASHING HAND) SHALL BE MAINTAINED IN ALL PHASES.
- PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY A TRANSIT VEHICLE:
  - IF THE CONTROLLER OPERATION IS NOT IN PHASE 2+6, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY AND PROCEED THROUGH THE CYCLE UNTIL IT REACHES PHASE 2+6.
  - IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF PHASE 2+6, THE CONTROLLER SHALL REMAIN GREEN UNTIL THE TRANSIT VEHICLE REACHES THE CHECK-OUT POINT AND THE TRANSIT SIGNAL PRIORITY CALL IS SERVICED. IF THE CALL IS NOT SERVICED FOR THE LENGTH OF THE NORMAL GREEN PLUS THE GREEN EXTENSION TIME, THE CALL SHALL BE TERMINATED TO MAINTAIN MINIMUM INITIAL TIMES IN ALL REMAINING PHASES.
  - IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING HAND) OF PHASE 2+6, THE CONTROLLER SHALL REMAIN GREEN/FLASHING HAND UNTIL THE TRANSIT VEHICLE REACHES THE CHECK-OUT POINT AND THE TRANSIT SIGNAL PRIORITY CALL IS SERVICED. IF THE CALL IS NOT SERVICED FOR THE LENGTH OF THE NORMAL GREEN PLUS THE GREEN EXTENSION TIME, THE CALL SHALL BE TERMINATED TO MAINTAIN MINIMUM INITIAL TIMES IN ALL REMAINING PHASES.
  - IF THE CONTROLLER OPERATION IS IN THE YELLOW OR RED CLEARANCE INTERVAL, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY AND PROCEED THROUGH THE CYCLE UNTIL IT REACHES PHASE 2+6.
- ONCE A TRANSIT SIGNAL PRIORITY CALL IS SERVICED, NO OTHER TRANSIT SIGNAL PRIORITY CALLS SHALL BE SERVICED DURING THE CURRENT CYCLE OR THE FOLLOWING CYCLE.
- UPON TERMINATION OF THE TRANSIT SIGNAL PRIORITY, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.
- IF TRANSIT SIGNAL PRIORITY OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICT OR TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.
- FAIL-SAFE INDICATION: NO FAIL-SAFE INDICATION SHALL BE GIVEN WHEN A TRANSIT SIGNAL PRIORITY CALL IS SERVED.

COORDINATION NOTES:

- INTERSECTIONS INTERCONNECTED VIA BROAD BAND:
  - N ATHERTON ST (SR 3014), HAWBAKER INDUSTRIAL DR & DOUGLAS DR (T-729)
  - N ATHERTON ST (SR 3014) & LOWES BLVD (T-530)
  - N ATHERTON ST (SR 3014) & COLONNADE WAY
  - N ATHERTON ST (SR 3014) & WOODYCREST AVE (T-691)
  - N ATHERTON ST (SR 3014) & N ATHERTON PLACE ENTRANCE
  - N ATHERTON ST (SR 3014), VAIRO BLVD (T-783) & MARTIN ST
  - VAIRO BLVD (T-783), N ATHERTON PL & TU MAXX DRIVEWAY
  - VAIRO BLVD (T-783) & WADDLE RD (T-528)
  - N ATHERTON ST (SR 3014) & AARON DR (T-330)
  - N ATHERTON ST (SR 3014) & NORTH HILLS PL (T-794)
  - N ATHERTON ST (SR 3014), BLUE COURSE DR (T-989) & CLINTON AVE (T-743)
  - N ATHERTON ST (SR 3014) & W CHERRY LN (T-342)
  - N ATHERTON ST (SR 3014) & HILLCREST AVE
  - N ATHERTON ST (SR 3014) & W PARK AVE (SR 3007)
  - N ATHERTON ST (SR 3014) & CURTIN RD
  - N ATHERTON ST (SR 3014) & WHITE COURSE RD
  - N ATHERTON ST (SR 3014) FOR BUS DEPT PED CROSSING
- TO PROVIDE A PROGRESSIVE MOVEMENT OF TRAFFIC ALONG SR 3014, CONTROLLER COORDINATED WITH ADJACENT SIGNALS:
  - N ATHERTON ST (SR 3014), HAWBAKER INDUSTRIAL DR & DOUGLAS DR (T-729)
  - N ATHERTON ST (SR 3014) & LOWES BLVD (T-530)
  - N ATHERTON ST (SR 3014) & WOODYCREST AVE (T-691)
  - N ATHERTON ST (SR 3014) & N ATHERTON PLACE ENTRANCE
  - N ATHERTON ST (SR 3014), VAIRO BLVD (T-783) & MARTIN ST
  - N ATHERTON ST (SR 3014) & AARON DR (T-330)
  - N ATHERTON ST (SR 3014) & NORTH HILLS PL (T-794)
  - N ATHERTON ST (SR 3014), BLUE COURSE DR (T-989) & CLINTON AVE (T-743)
  - N ATHERTON ST (SR 3014) & W CHERRY LN (T-342)
  - N ATHERTON ST (SR 3014) & HILLCREST AVE
  - N ATHERTON ST (SR 3014) & W PARK AVE (SR 3007)
  - N ATHERTON ST (SR 3014) & CURTIN RD
  - N ATHERTON ST (SR 3014) & WHITE COURSE RD
  - N ATHERTON ST (SR 3014) FOR BUS DEPT PED CROSSING

EMERGENCY VEHICLE PREEMPTION NOTES

NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PREEMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS.

EMERGENCY PREEMPTION SHALL BE PROVIDED ON A FIRST-COME, FIRST-SERVE BASIS. ONCE THE FIRST PRIORITY EMERGENCY VEHICLE CALLS THE SYSTEM, IT SHALL PREVENT OTHER PREEMPTIVE VEHICLES FROM ENTERING CALLS UNTIL THE FIRST EMERGENCY VEHICLE RELEASES CONTROL AND CLEARS THE INTERSECTION.

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 1+6 OR PHASE 2. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/GREEN ARROW) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK INTERVAL, THE YELLOW AND ALL-RED INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE WHILE THE CONFLICTING GREEN INDICATIONS ARE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

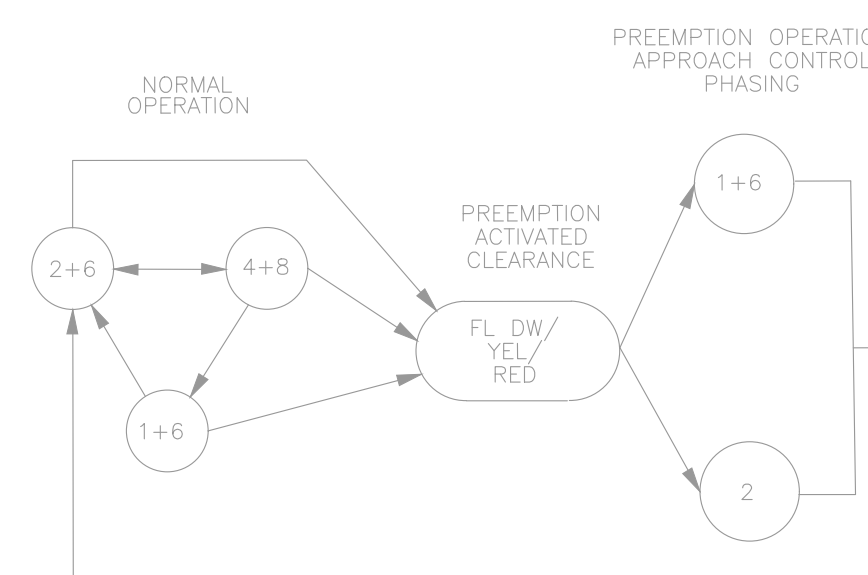
IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN THE YELLOW, YELLOW ARROW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.

IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.



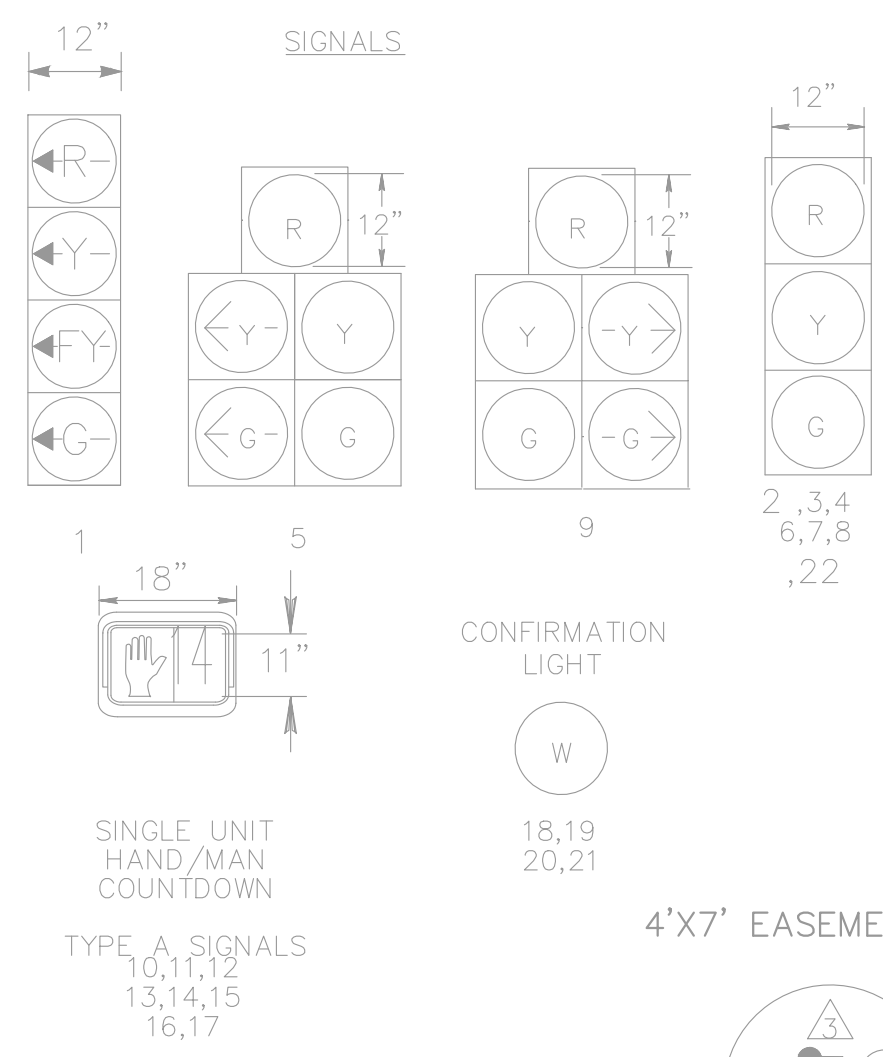
COUNTY : CENTRE  
 MUNICIPALITY : FERGUSON TOWNSHIP  
 INTERSECTION : NORTH ATHERTON ST (SR 3014)  
AND NORTH HILLS PLACE (T-794) / PRIVATE DRIVEWAY

APPROVED BY: [Signature] 8/23/2021  
 MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
 DISTRICT TRAFFIC ENGINEER DATE

SCALE : 0 25 50 75

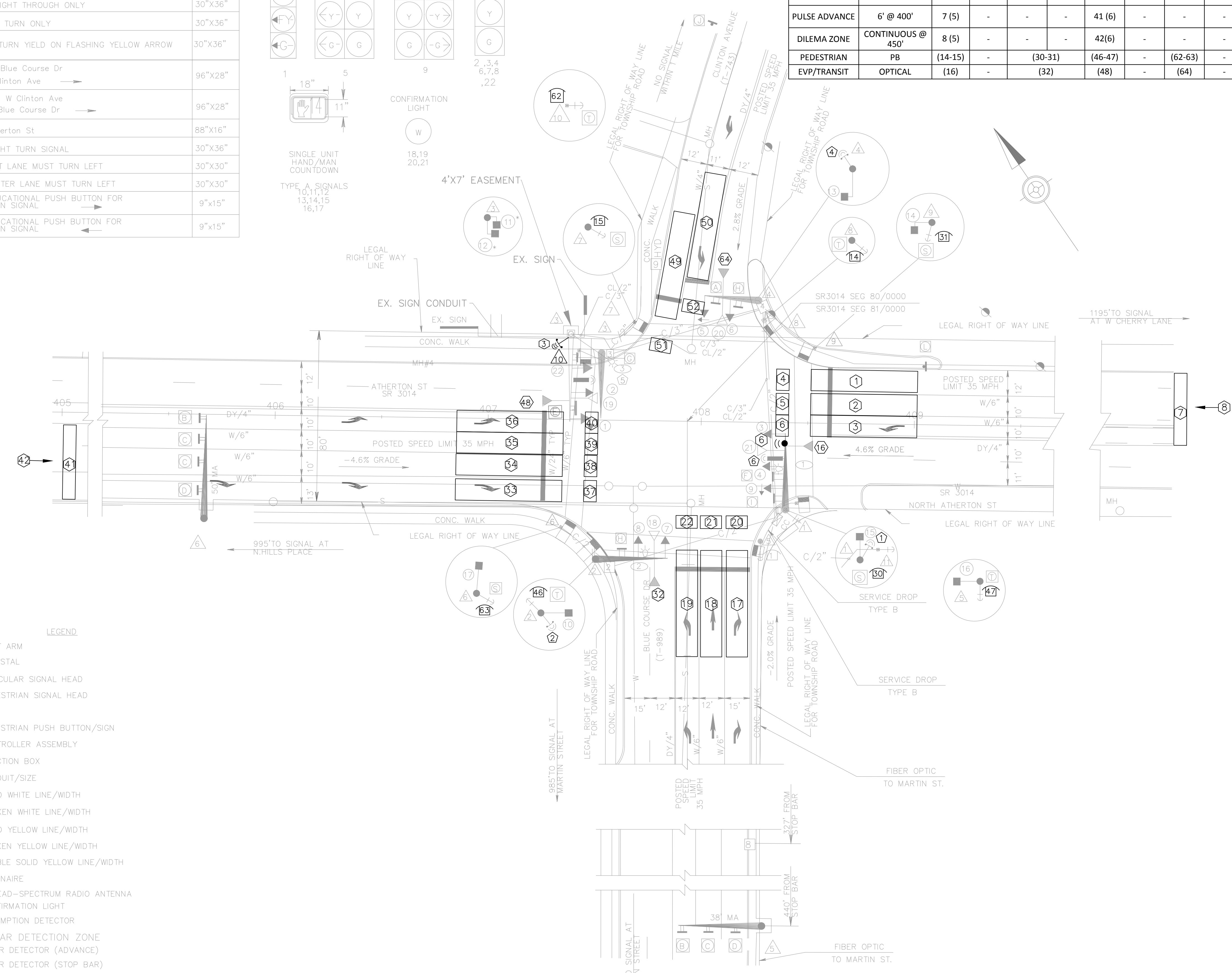
SIGNS		
PLAN SYMBOL	DESCRIPTION	SIZE W X H
(A)	R10-12, LEFT TURN YIELD ON GREEN	30"x36"
(B)	R3-5L, LEFT TURN ONLY	30"x36"
(C)	R3-5S, STRAIGHT THROUGH ONLY	30"x36"
(D)	R3-5R, RIGHT TURN ONLY	30"x36"
(E)	R10-12A, LEFT TURN YIELD ON FLASHING YELLOW ARROW	30"x36"
(F)	D3-5, ← Blue Course Dr W Clinton Ave →	96"x28"
(G)	D3-5, ← W Clinton Ave Blue Course Dr →	96"x28"
(H)	D3-4, N. Atherton St	88"x16"
(I)	R10-10R, RIGHT TURN SIGNAL	30"x36"
(J)	R3-7L, LEFT LANE MUST TURN LEFT	30"x30"
(K)	R3-7C, CENTER LANE MUST TURN LEFT	30"x30"
(S)	R10-3E(R), EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL →	9"x15"
(T)	R10-3E(L), EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL ←	9"x15"



ATSPM DETECTOR MAPPING TABLE									
DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
		2	5	4	7	6	1	8	3
PRESENCE	50' x 10' @ 40'	1-2 (1)	3 (1)	17-18 (2)	19 (2)	33-36 (3)	-	49-50 (4)	-
COUNT	6' x 10' @ -20'	4-5 (1)	6 (1)	20-21 (2)	22 (2)	37-40 (3)	-	51-52 (4)	-
PULSE ADVANCE	6' @ 400'	7 (5)	-	-	-	41 (6)	-	-	-
DILEMA ZONE	CONTINUOUS @ 450'	8 (5)	-	-	-	42(6)	-	-	-
PEDESTRIAN	PB	(14-15)	-	(30-31)	-	(46-47)	-	(62-63)	-
EVP/TRANSIT	OPTICAL	(16)	-	(32)	-	(48)	-	(64)	-

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	10 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	

- CONSTRUCTION NOTES:
- INSTALL SINGLE CHANNEL BROAD BAND RADIO AND RELATED CABLING.
  - AIM BROAD BAND RADIO ANTENNA TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
  - INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES AND CONNECT FIBER.
  - PROGRAM ALL IP ADDRESSES AS ASSIGNED.
  - INSTALL DETECTOR 3 ON POLE 3.
  - PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
  - ENABLE DATA LOGGING FUNCTION.



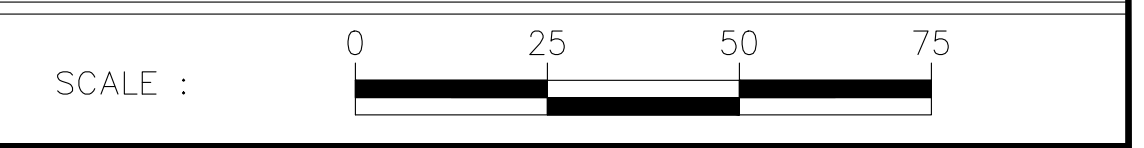
- LEGEND
- MAST ARM
  - PEDESTAL
  - VEHICULAR SIGNAL HEAD
  - PEDESTRIAN SIGNAL HEAD
  - SIGN
  - PEDESTRIAN PUSH BUTTON/SIGN
  - CONTROLLER ASSEMBLY
  - JUNCTION BOX
  - CONDUIT/SIZE
  - SOLID WHITE LINE/WIDTH
  - BROKEN WHITE LINE/WIDTH
  - SOLID YELLOW LINE/WIDTH
  - BROKEN YELLOW LINE/WIDTH
  - DOUBLE SOLID YELLOW LINE/WIDTH
  - LUMINAIRE
  - SPREAD-SPECTRUM RADIO ANTENNA
  - CONFIRMATION LIGHT
  - PREEMPTION DETECTOR
  - RADAR DETECTION ZONE
  - RADAR DETECTOR (ADVANCE)
  - RADAR DETECTOR (STOP BAR)
  - PAVEMENT MARKER
  - LIGHTING CONDUIT/SIZE
  - BROAD BAND RADIO

ITEM NUMBER	MISCELLANEOUS		
	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	1	POLE 3
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
9000-1001	MANAGED NETWORK SWITCH	1	CABINET
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	1	POLE 1
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	0	
9000-1004	CONTROLLER UNIT REPLACEMENT	0	
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	0	
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
9000-1007	RADIO ROOF MOUNTING	0	
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	

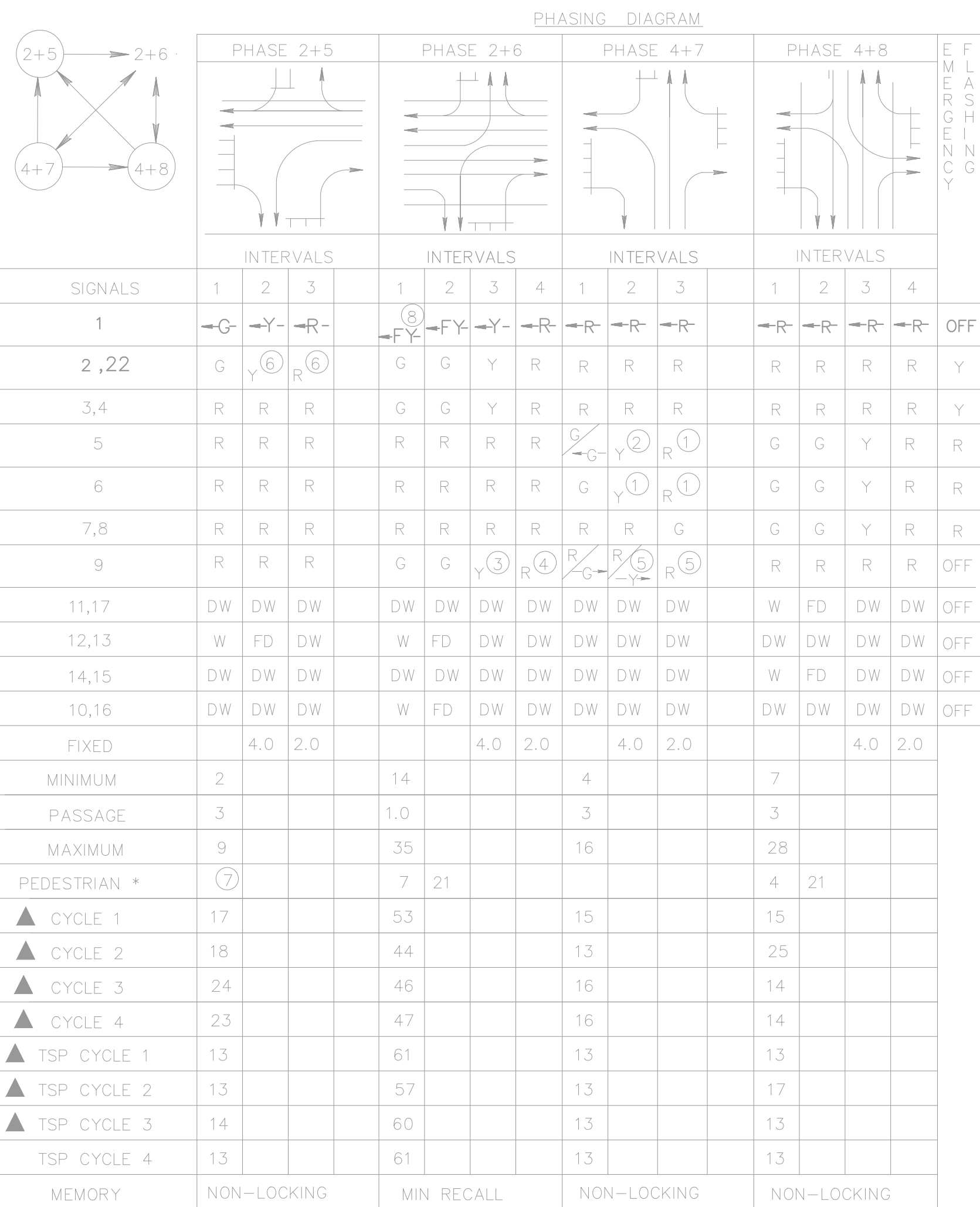
COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : N ATHERTON ST (SR 3014)  
AND BLUE COURSE DR (T-989)/ WEST CLINTON AVE (T-743)

APPROVED BY: *[Signature]* 8/23/2021  
MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
DISTRICT TRAFFIC ENGINEER DATE



TRAFFIC SIGNAL CONSTRUCTION PLAN



\* UPON PEDESTRIAN ACTUATION

▲ TOTAL LENGTH OF PHASE

① G IF FOLLOWED BY 4+8

② G/Y IE FOLLOWED BY 4+8

③ Y/G IF FOLLOWED BY 4+7

④ R/G IF FOLLOWED BY 4+7

⑤ R/G IF FOLLOWED BY 2+6

⑥ G IF FOLLOWED BY 2+6

⑦ TIMING AS SHOWN IN PHASE 2+6

⑧ INTERVALS MAY TIME OUT IN THIS PHASE OR BE COMPLETED IN 2+6.

⑧ FYA OPERATION TO HAVE 2 SECOND DELAY

**COORDINATION NOTES:**

-INTERSECTIONS INTERCONNECTED VIA BROAD BAND:

- N ATHERTON ST (SR 3014), HAWBAKER INDUSTRIAL DR & DOUGLAS DR (T-729)
- N ATHERTON ST (SR 3014) & COLONNADE BLVD (T-530)
- N ATHERTON ST (SR 3014) & COLONNADE WAY
- N ATHERTON ST (SR 3014) & PATRIOT LN
- N ATHERTON ST (SR 3014) & WOODYCREST AVE (T-691)
- N ATHERTON ST (SR 3014) & N ATHERTON PLACE ENTRANCE
- N ATHERTON ST (SR 3014), VAIRO BLVD (T-783) & MARTIN ST
- VAIRO BLVD (T-783), N ATHERTON PL & TU MAXX DRIVEWAY
- VAIRO BLVD (T-783) & WADDLE RD (T-528)
- N ATHERTON ST (SR 3014) & W AARON DR (T-330)
- N ATHERTON ST (SR 3014) & W NORTH HILLS PL (T-794)
- N ATHERTON ST (SR 3014), BLUE COURSE DR (T-989) & W CLINTON AVE (T-743)
- N ATHERTON ST (SR 3014) & W CHERRY LN (T-342)
- N ATHERTON ST (SR 3014) & HILLCREST AVE
- N ATHERTON ST (SR 3014) & W PARK AVE (SR 3007)
- N ATHERTON ST (SR 3014) & CURTIN RD
- N ATHERTON ST (SR 3014) & WHITE COURSE RD
- N ATHERTON ST (SR 3014) FOR BUS DEPT PED CROSSING

-TO PROVIDE A PROGRESSIVE MOVEMENT OF TRAFFIC ALONG SR 3014, CONTROLLER COORDINATED WITH ADJACENT SIGNALS:

- N ATHERTON ST (SR 3014), HAWBAKER INDUSTRIAL DR & DOUGLAS DR (T-729)
- N ATHERTON ST (SR 3014) & COLONNADE BLVD (T-530)
- N ATHERTON ST (SR 3014) & COLONNADE WAY
- N ATHERTON ST (SR 3014) & PATRIOT LN
- N ATHERTON ST (SR 3014) & WOODYCREST AVE (T-691)
- N ATHERTON ST (SR 3014) & N ATHERTON PLACE ENTRANCE
- N ATHERTON ST (SR 3014), VAIRO BLVD (T-783) & MARTIN ST
- N ATHERTON ST (SR 3014) & W AARON DR (T-330)
- N ATHERTON ST (SR 3014) & W NORTH HILLS PL (T-794)
- N ATHERTON ST (SR 3014) & W CHERRY LN (T-342)
- N ATHERTON ST (SR 3014) & HILLCREST AVE
- N ATHERTON ST (SR 3014) & W PARK AVE (SR 3007)
- N ATHERTON ST (SR 3014) & CURTIN RD
- N ATHERTON ST (SR 3014) & WHITE COURSE RD
- N ATHERTON ST (SR 3014) FOR BUS DEPT PED CROSSING

**TRANSIT SIGNAL PRIORITY PLAN**

CYCLE	GREEN EXTENSION TIME
CYCLE 1	8 SEC
CYCLE 2	13 SEC
CYCLE 3	14 SEC
CYCLE 4	14 SEC

WB CHECK-IN DISTANCE IS 851 FT  
EB CHECK-IN DISTANCE IS 675 FT

**TRANSIT SIGNAL PRIORITY NOTES**

- NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE MODIFIED BY AUTHORIZED TRANSIT VEHICLES.
- PROVIDE TRANSIT SIGNAL PRIORITY EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION.
- TRANSIT SIGNAL PRIORITY REQUEST MAY BE DETECTED IN ANY PHASE, BUT SHALL ONLY BE GIVEN EXTENSION TIMING IN INTERVAL 1 (GREEN) OR INTERVAL 2 (GREEN/FLASHING HAND) OF PHASE 2+6.
- THE TRANSIT SIGNAL PRIORITY SYSTEM SHALL DETECT THE TRANSIT VEHICLES AT THE CHECK-IN POINT. THE CHECK-IN DISTANCE SHALL BE THE DISTANCE FROM THE STOP BAR TO THE CHECK-IN DISTANCE NOTED ON THIS PLAN SHEET. THE CHECK-OUT POINT SHALL BE THE POINT AT WHICH THE TRANSIT VEHICLE CROSSES THE INTERSECTION AND IS NO LONGER DETECTED BY THE OPTICAL DETECTOR.
- ALL MINIMUM TIMINGS AND PEDESTRIAN CLEARANCE TIMES (FLASHING HAND) SHALL BE MAINTAINED IN ALL PHASES.
- PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY A TRANSIT VEHICLE:
- IF THE CONTROLLER OPERATION IS NOT IN PHASE 2+6, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY AND PROCEED THROUGH THE CYCLE UNTIL IT REACHES PHASE 2+6.
- IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF PHASE 2+6, THE CONTROLLER SHALL REMAIN GREEN UNTIL THE TRANSIT VEHICLE REACHES THE CHECK-OUT POINT AND THE TRANSIT SIGNAL PRIORITY CALL IS SERVICED. IF THE CALL IS NOT SERVICED FOR THE LENGTH OF THE NORMAL GREEN PLUS THE GREEN EXTENSION TIME, THE CALL SHALL BE TERMINATED TO MAINTAIN MINIMUM INITIAL TIMES IN ALL REMAINING PHASES.
- IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING HAND) OF PHASE 2+6, THE CONTROLLER SHALL REMAIN GREEN/FLASHING HAND UNTIL THE TRANSIT VEHICLE REACHES THE CHECK-OUT POINT AND THE TRANSIT SIGNAL PRIORITY CALL IS SERVICED. IF THE CALL IS NOT SERVICED FOR THE LENGTH OF THE NORMAL GREEN PLUS THE GREEN EXTENSION TIME, THE CALL SHALL BE TERMINATED TO MAINTAIN MINIMUM INITIAL TIMES IN ALL REMAINING PHASES.
- IF THE CONTROLLER OPERATION IS IN THE YELLOW OR RED CLEARANCE INTERVAL, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY AND PROCEED THROUGH THE CYCLE UNTIL IT REACHES PHASE 2+6.
- ONCE A TRANSIT SIGNAL PRIORITY CALL IS SERVICED, NO OTHER TRANSIT SIGNAL PRIORITY CALLS SHALL BE SERVICED DURING THE CURRENT CYCLE OR THE FOLLOWING CYCLE.
- UPON TERMINATION OF THE TRANSIT SIGNAL PRIORITY, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.
- IF TRANSIT SIGNAL PRIORITY OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICT OR TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.
- FAIL-SAFE INDICATION: NO FAIL-SAFE INDICATION SHALL BE GIVEN WHEN A TRANSIT SIGNAL PRIORITY CALL IS SERVED.

**COORDINATION PLAN**

PLAN NO.	DAY OF WEEK					TIME	CYCLE	OFFSET	REMARKS
	M	T	W	T	F				
1	X	X	X	X	X	0:00	100 SEC	-	FREE
2	X	X	X	X	X	7:00	100 SEC	48 SEC	CYCLE 2
3					X	8:00	100 SEC	84 SEC	CYCLE 1
4	X	X	X	X	X	10:00	100 SEC	5 SEC	CYCLE 4
5	X	X	X	X	X	16:00	100 SEC	63 SEC	CYCLE 3
6	X	X	X	X	X	19:00	100 SEC	5 SEC	CYCLE 4
7	X	X	X	X	X	22:00	100 SEC	-	FREE

OFFSETS REFERENCED TO START OF PHASE 2+6 GREEN


CONTROLLER PROGRAMMING SHALL BE DUAL ENTRY  
EQUIP CONTROLLER ASSEMBLY WITH HAND CONTROL FOR MANUAL OPERATION.

**EMERGENCY VEHICLE PREEMPTION NOTES**

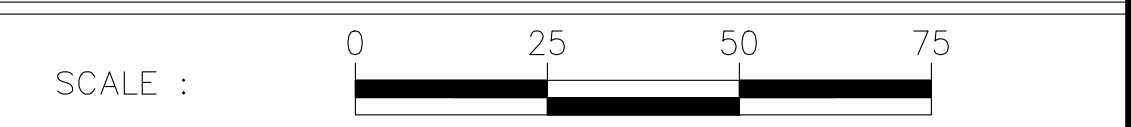
NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PREEMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS. EMERGENCY PREEMPTION SHALL BE PROVIDED ON A FIRST-COME, FIRST-SERVE BASIS. ONCE THE FIRST PRIORITY EMERGENCY VEHICLE CALLS THE SYSTEM, IT SHALL PREVENT OTHER PREEMPTIVE VEHICLES FROM ENTERING CALLS UNTIL THE FIRST EMERGENCY VEHICLE RELEASES CONTROL AND CLEARS THE INTERSECTION. EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 2+5, PHASE 6, PHASE 4+7, OR PHASE 8. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE. IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/GREEN ARROW) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK INTERVAL, THE YELLOW AND ALL-RED INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL. IF THE CONTROLLER IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL. IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE WHILE THE CONFLICTING GREEN INDICATIONS ARE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS. IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS. IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS. IF THE CONTROLLER OPERATION IS IN THE YELLOW, YELLOW ARROW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION. IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE. WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.

DISTRICT	COUNTY	ROUTE	SECTION	SHEET	
2-0	CENTRE	LOCAL	02E011	11 OF 44	
FERGUSON TOWNSHIP					
REVISION NUMBER	REVISIONS			DATE	BY

COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : N ATHERTON ST (SR 3014) AND BLUE COURSE DR (T-989)/ WEST CLINTON AVE (T-743)

APPROVED BY:   
MUNICIPAL OFFICIAL \_\_\_\_\_ DATE 8/23/2021

RECOMMENDED : \_\_\_\_\_  
DISTRICT TRAFFIC ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_



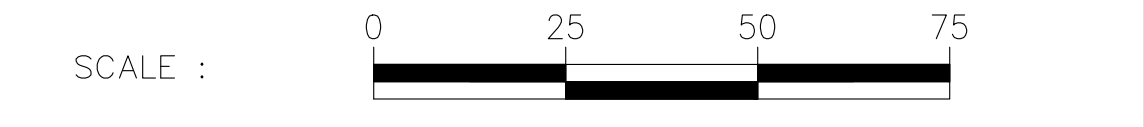
- CONSTRUCTION NOTES:
- INSTALL SINGLE CHANNEL BROAD BAND RADIO AND RELATED CABLING.
  - AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
  - INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.
  - PROGRAM ALL IP ADDRESSES AS ASSIGNED.
  - PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
  - ENABLE DATA LOGGING FUNCTION.

ITEM NUMBER	MISCELLANEOUS	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B		0	
EACH				
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM		0	
EACH				
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM		0	
EACH				
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE		0	
EACH				
9000-1001	MANAGED NETWORK SWITCH		1	CABINET
EACH				
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO		0	
EACH				
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO		1	POLE 2
EACH				
9000-1004	CONTROLLER UNIT REPLACEMENT		0	
EACH				
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT		0	
EACH				
9000-1006	SOLAR POWER SUPPLY SYSTEM		0	
EACH				
9000-1007	RADIO ROOF MOUNTING		0	
EACH				
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE		0	
EACH				
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#		0	
EACH				
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#		0	
EACH				
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#		0	
EACH				

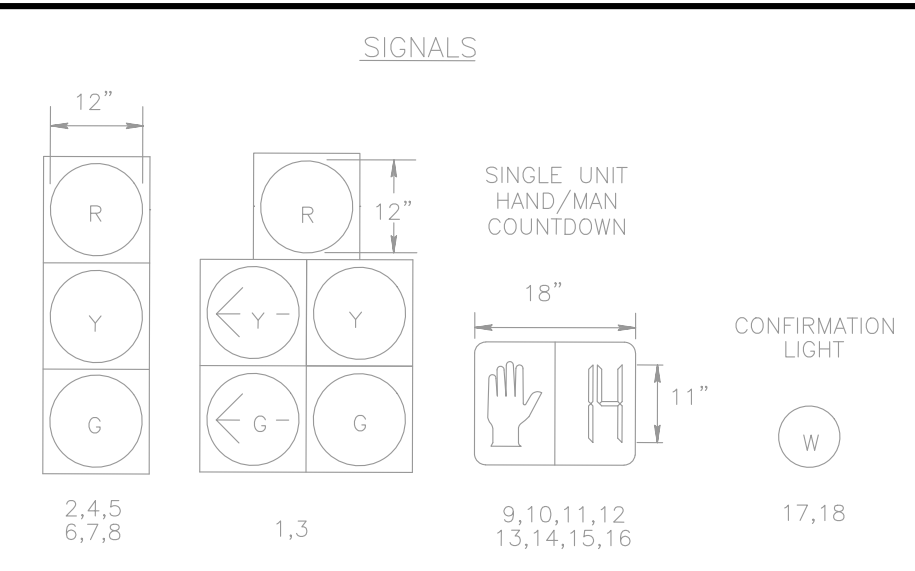
COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : NORTH ATHERTON ST (SR 3014) AND WEST CHERRY LANE (T-342)

APPROVED BY: *[Signature]* 8/23/2021  
MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
DISTRICT TRAFFIC ENGINEER DATE



DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
		2	5	4	7	6	1	8	3
PRESENCE	50' x 10' @ 40'	1-2 (1)	3 (1)	17 (2)	-	33-34 (3)	35 (3)	49 (4)	-
COUNT	6' x 10' @ -20'	4-5 (1)	6 (1)	18 (2)	-	36-37 (3)	38 (3)	50 (4)	-
PULSE ADVANCE	6' @ 400'	7 (5)	-	-	-	39 (6)	-	-	-
DILEMA ZONE	CONTINUOUS @ 450'	8 (5)	-	-	-	40 (6)	-	-	-
PEDESTRIAN	PB	(14-15)	(30-31)	-	-	(46-47)	(62-63)	-	-
EVP/TRANSIT	OPTICAL	(16)	-	-	-	(48)	-	-	-



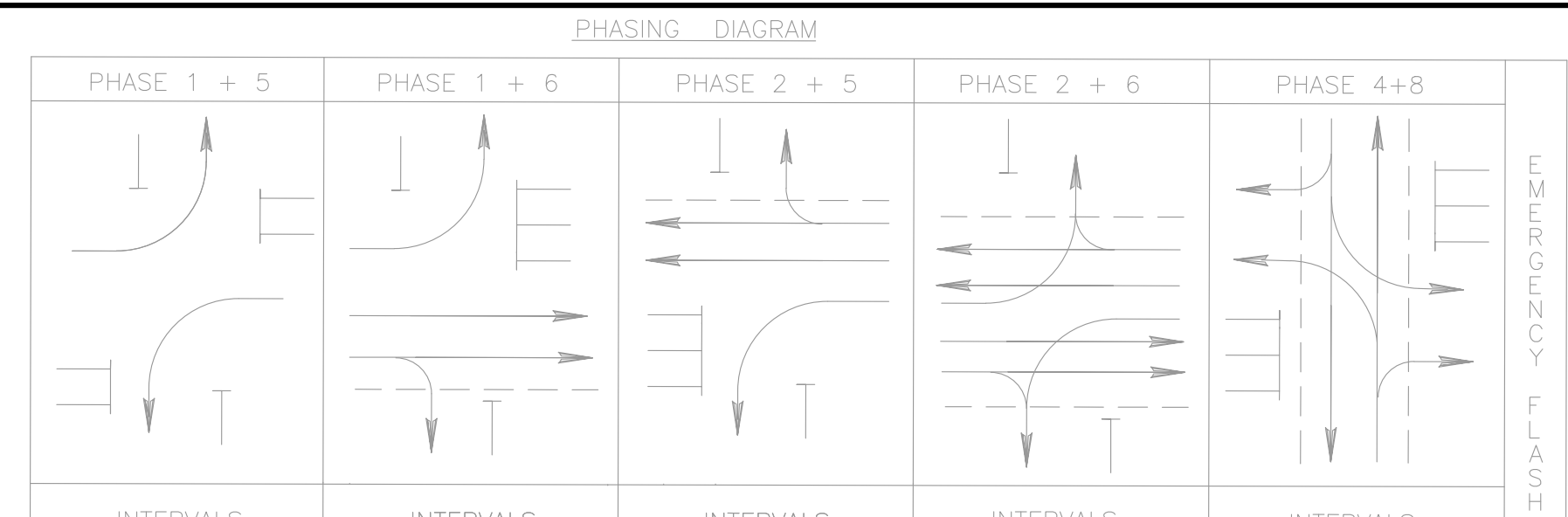
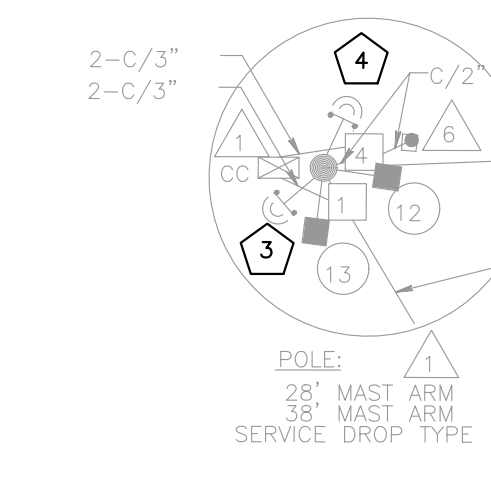
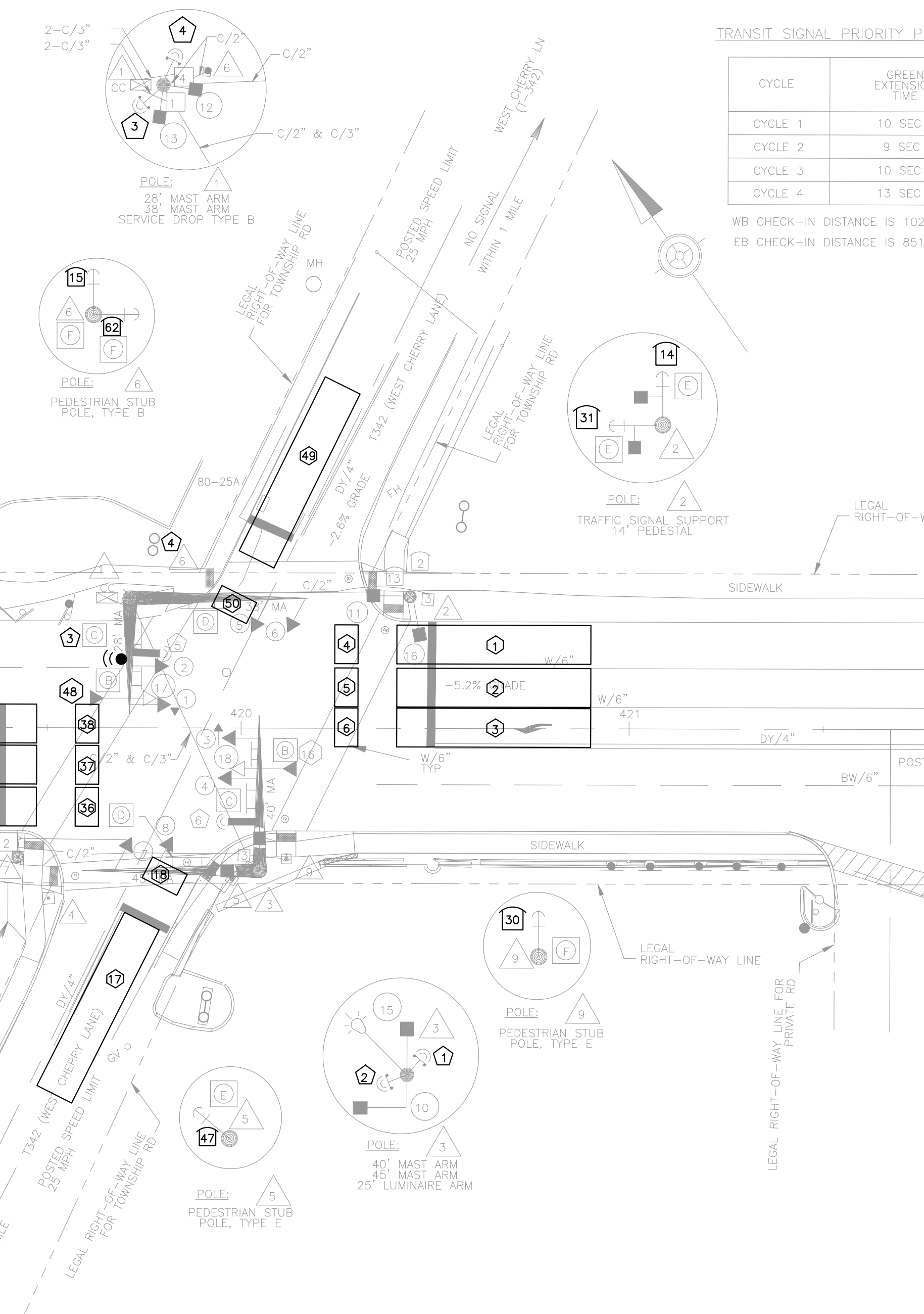
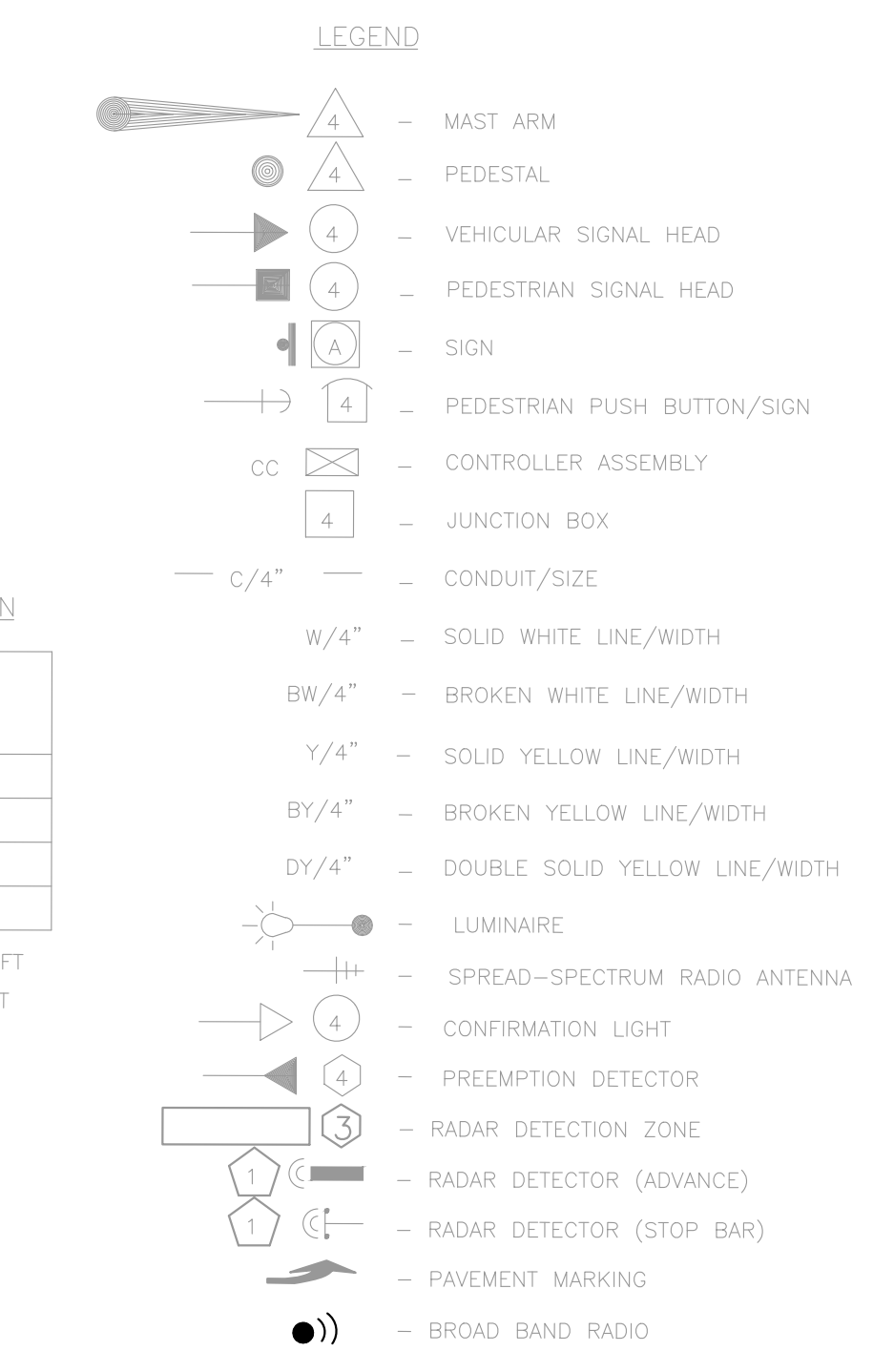
NOTES:  
EQUIP ALL SIGNALS WITH TUNNEL VISORS.  
CONTROLLER PROGRAMING SHALL BE DUAL ENTRY.  
EQUIP SIGNALS 1,2,3,4,7, AND 8 WITH BACKPLATES.

NOTES:  
PHASE 1 OR 5 WILL ONLY FOLLOW PHASE 4+8  
\* UPON PEDESTRIAN ACTUATION

- ▲ TOTAL LENGTH OF PHASE
- R/G—WHEN FOLLOWED BY 2+5.
  - R/G—WHEN FOLLOWED BY 1+6.
  - G/Y—WHEN FOLLOWED BY 2+6.
  - G WHEN FOLLOWED BY 2+6.
  - G WHEN FOLLOWED BY 2+6.
  - G WHEN FOLLOWED BY 2+6.

PLAN NO.	DAY OF WEEK							TIME	CYCLE	OFFSET	REMARKS
	S	M	T	W	T	F	S				
1	X	X	X	X	X	X	X	6:00	100 SEC	-	FREE
2	X	X	X	X	X	X	X	7:00	100 SEC	39 SEC	CYCLE 2
3	X	X	X	X	X	X	X	8:00	100 SEC	81 SEC	CYCLE 1
4	X	X	X	X	X	X	X	10:00	100 SEC	32 SEC	CYCLE 4
5	X	X	X	X	X	X	X	16:00	100 SEC	53 SEC	CYCLE 3
6	X	X	X	X	X	X	X	19:00	100 SEC	32 SEC	CYCLE 4
7	X	X	X	X	X	X	X	22:00	100 SEC	-	FREE

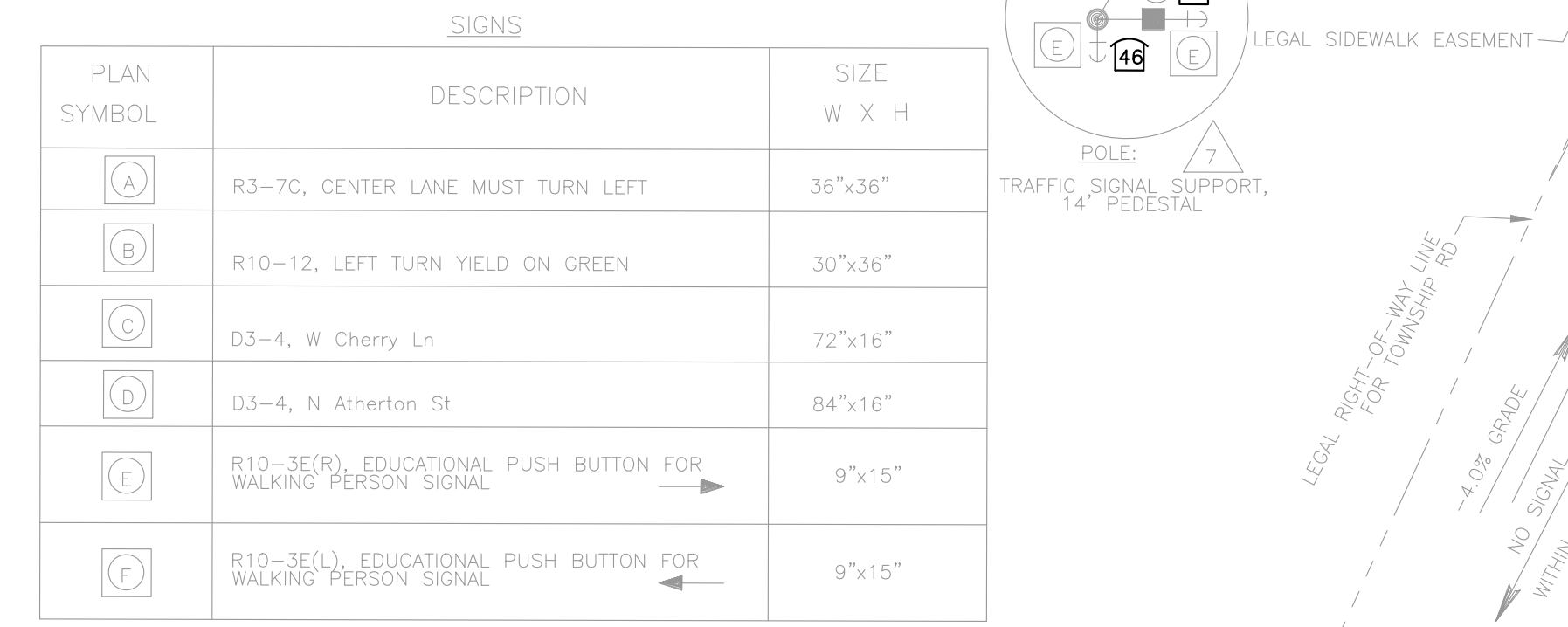
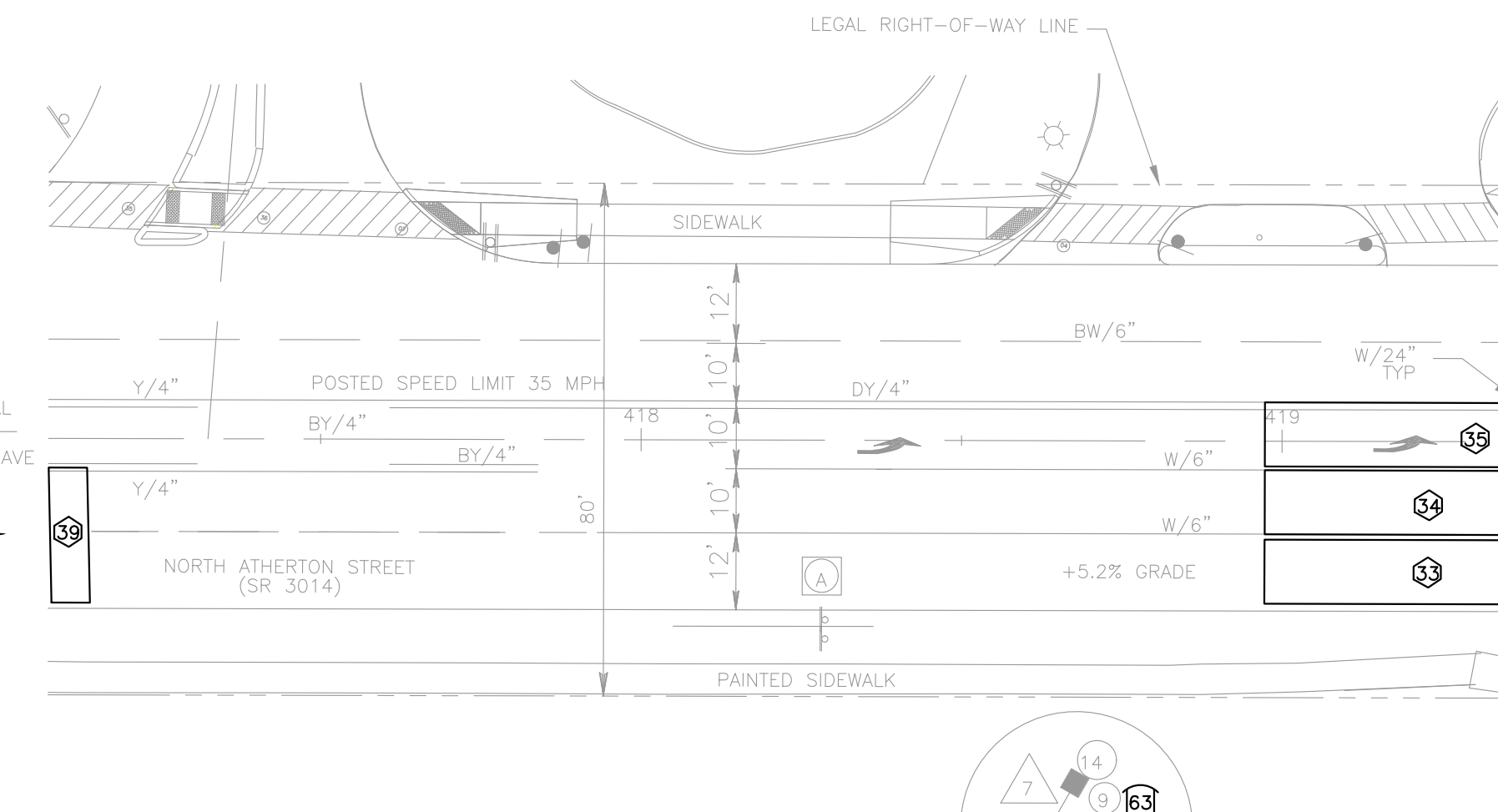
OFFSETS REFERENCED TO START OF PHASE 2+6 GREEN



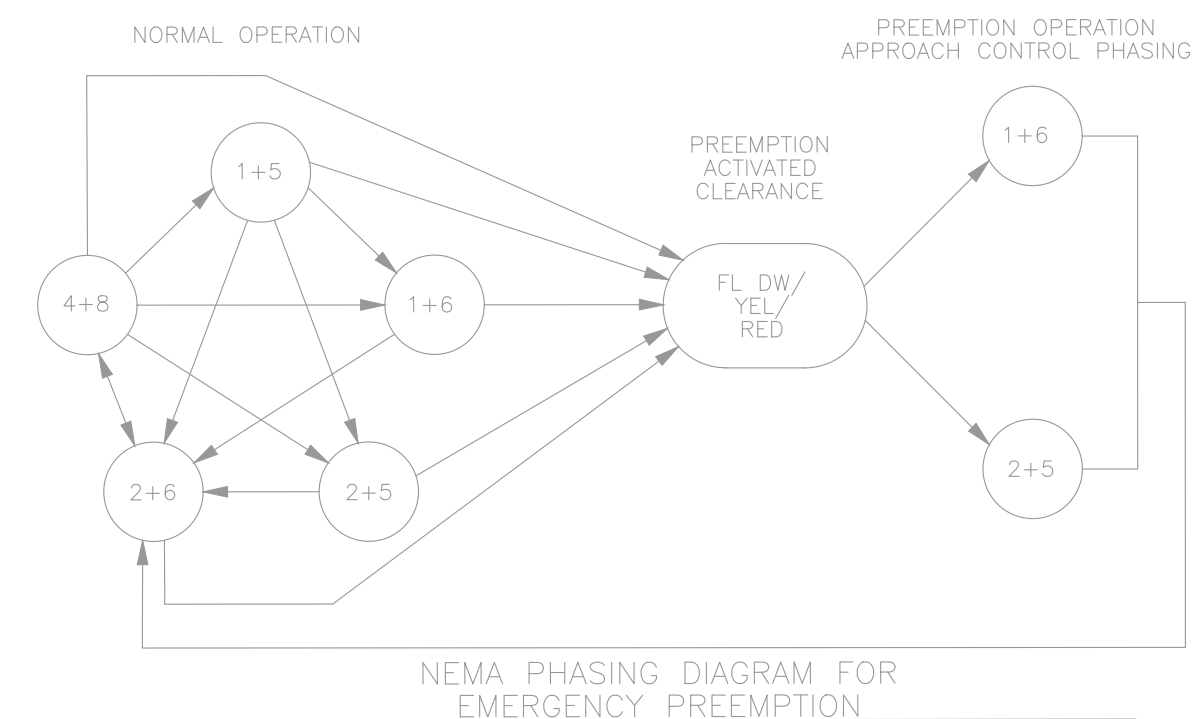
SIGNALS	PHASE 1 + 5			PHASE 1 + 6			PHASE 2 + 5			PHASE 2 + 6				PHASE 4+8			
	1	2	3	1	2	3	1	2	3	1	2	3	4	1	2	3	4
1	R	R	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	Y
2	R	R	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	Y
3	R	R	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	Y
4	R	R	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	Y
5 - 6	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R
7 - 8	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R
9 - 10	DW	DW	DW	W	FD	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	OFF
11 - 12	DW	DW	DW	DW	DW	DW	W	FD	DW	DW	DW	DW	DW	DW	DW	DW	OFF
13 - 16	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FD	DW	OFF
FIXED		4.0	2.0		4.0	2.0		4.0	2.0		4.0	2.0		3.0	2.5		
MINIMUM	2			2			2			7				3			
PASSAGE	3			3			3			1				3			
MAXIMUM	7			7			7			37				22			
PEDESTRIAN *																	
▲ CYCLE 1	13			13			13			60				7	18		
▲ CYCLE 2	13			13			13			65				27			
▲ CYCLE 3	13			13			13			62				25			
▲ CYCLE 4	16			16			16			58				26			
▲ TSP CYCLE 1	13			13			13			70				17			
▲ TSP CYCLE 2	13			13			13			74				13			
▲ TSP CYCLE 3	13			13			13			72				15			
▲ TSP CYCLE 4	13			13			13			71				16			
MEMORY	NON-LOCKING			NON-LOCKING			NON-LOCKING			MIN RECALL				NON-LOCKING			

ADVANCE DILEMMA ZONE NOTES:  
I. ESTIMATE TIME OF ARRIVAL: MINIMUM 2.5 SECONDS - MAXIMUM 5.5 SECONDS.  
II. RANGE OF DETECTION: MINIMUM 50 FEET - MAXIMUM 500 FEET FROM STOP BAR.  
III. MINIMUM SPEED BOUNDARY 10 MPH.

DETECTION ZONE NOTES (STOP BAR):  
I. RANGE OF DETECTION: MINIMUM 10 FEET - MAXIMUM 100 FEET FROM STOP BAR.  
II. MINIMUM SPEED BOUNDARY 5 MPH.  
III. ZONE MAY BE ADJUSTED IN FIELD.



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	13 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	



EMERGENCY VEHICLE PREEMPTION NOTES

NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PREEMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS.

EMERGENCY PREEMPTION SHALL BE PROVIDED ON A FIRST-COME, FIRST-SERVE BASIS. ONCE THE FIRST PRIORITY EMERGENCY VEHICLE CALLS THE SYSTEM, IT SHALL PREVENT OTHER PREEMPTIVE VEHICLES FROM ENTERING CALLS UNTIL THE FIRST EMERGENCY VEHICLE RELEASES CONTROL AND CLEARS THE INTERSECTION.

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 1+6 OR PHASE 2+5. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/GREEN ARROW) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK INTERVAL, THE YELLOW AND ALL-RED INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE WHILE THE CONFLICTING GREEN INDICATIONS ARE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN THE YELLOW, YELLOW ARROW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.

IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.

TRANSIT SIGNAL PRIORITY NOTES

-NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE MODIFIED BY AUTHORIZED TRANSIT VEHICLES.

-PROVIDE TRANSIT SIGNAL PRIORITY EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION.

-TRANSIT SIGNAL PRIORITY REQUEST MAY BE DETECTED IN ANY PHASE, BUT SHALL ONLY BE GIVEN EXTENSION TIMING IN INTERVAL 1 (GREEN) OR INTERVAL 2 (GREEN/FLASHING HAND) OF PHASE 2+6.

-THE TRANSIT SIGNAL PRIORITY SYSTEM SHALL DETECT THE TRANSIT VEHICLES AT THE CHECK-IN POINT. THE CHECK-IN DISTANCE SHALL BE THE DISTANCE FROM THE STOP BAR TO THE CHECK-IN DISTANCE NOTED ON THIS PLAN SHEET. THE CHECK-OUT POINT SHALL BE THE POINT AT WHICH THE TRANSIT VEHICLE CROSSES THE INTERSECTION AND IS NO LONGER DETECTED BY THE OPTICAL DETECTOR.

-ALL MINIMUM TIMINGS AND PEDESTRIAN CLEARANCE TIMES (FLASHING HAND) SHALL BE MAINTAINED IN ALL PHASES.

-PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY A TRANSIT VEHICLE:

-IF THE CONTROLLER OPERATION IS NOT IN PHASE 2+6, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY AND PROCEED THROUGH THE CYCLE UNTIL IT REACHES PHASE 2+6.

-IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF PHASE 2+6, THE CONTROLLER SHALL REMAIN GREEN UNTIL THE TRANSIT VEHICLE REACHES THE CHECK-OUT POINT AND THE TRANSIT SIGNAL PRIORITY CALL IS SERVICED. IF THE CALL IS NOT SERVICED FOR THE LENGTH OF THE NORMAL GREEN PLUS THE GREEN EXTENSION TIME, THE CALL SHALL BE TERMINATED TO MAINTAIN MINIMUM INITIAL TIMES IN ALL REMAINING PHASES.

-IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING HAND) OF PHASE 2+6, THE CONTROLLER SHALL REMAIN GREEN/FLASHING HAND UNTIL THE TRANSIT VEHICLE REACHES THE CHECK-OUT POINT AND THE TRANSIT SIGNAL PRIORITY CALL IS SERVICED. IF THE CALL IS NOT SERVICED FOR THE LENGTH OF THE NORMAL GREEN PLUS THE GREEN EXTENSION TIME, THE CALL SHALL BE TERMINATED TO MAINTAIN MINIMUM INITIAL TIMES IN ALL REMAINING PHASES.

-IF THE CONTROLLER OPERATION IS IN THE YELLOW OR RED CLEARANCE INTERVAL, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY AND PROCEED THROUGH THE CYCLE UNTIL IT REACHES PHASE 2+6.

-ONCE A TRANSIT SIGNAL PRIORITY CALL IS SERVICED, NO OTHER TRANSIT SIGNAL PRIORITY CALLS SHALL BE SERVICED DURING THE CURRENT CYCLE OR THE FOLLOWING CYCLE.

-UPON TERMINATION OF THE TRANSIT SIGNAL PRIORITY, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.

- IF TRANSIT SIGNAL PRIORITY OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICT OR TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

- FAIL-SAFE INDICATION: NO FAIL-SAFE INDICATION SHALL BE GIVEN WHEN A TRANSIT SIGNAL PRIORITY CALL IS SERVED.

COORDINATION NOTES:

-INTERSECTIONS INTERCONNECTED VIA BROAD BAND:

- N ATHERTON ST (SR 3014), HAWBAKER INDUSTRIAL DR & DOUGLAS DR (T-729)
- N ATHERTON ST (SR 3014) & LOWES BLVD (T-530)
- N ATHERTON ST (SR 3014) & COLONNADE WAY
- N ATHERTON ST (SR 3014) & WOODYCREST AVE (T-691)
- N ATHERTON ST (SR 3014) & N ATHERTON PLACE ENTRANCE
- N ATHERTON ST (SR 3014), VAIRO BLVD (T-783) & MARTIN ST
- VAIRO BLVD (T-783), N ATHERTON PL & TJ MAXX DRIVEWAY
- VAIRO BLVD (T-783) & WADDLE RD (T-528)
- N ATHERTON ST (SR 3014) & AARON DR (T-330)
- N ATHERTON ST (SR 3014) & NORTH HILLS PL (T-794)
- N ATHERTON ST (SR 3014), BLUE COURSE DR (T-989) & CLINTON AVE (T-743)
- N ATHERTON ST (SR 3014) & W CHERRY LN (T-342)
- N ATHERTON ST (SR 3014) & HILLCREST AVE
- N ATHERTON ST (SR 3014) & W PARK AVE (SR 3007)
- N ATHERTON ST (SR 3014) & CURTIN RD
- N ATHERTON ST (SR 3014) & WHITE COURSE RD
- N ATHERTON ST (SR 3014) FOR BUS DEPT PED CROSSING


-TO PROVIDE A PROGRESSIVE MOVEMENT OF TRAFFIC ALONG SR 3014,

- CONTROLLER COORDINATED WITH ADJACENT SIGNALS:
- N ATHERTON ST (SR 3014), HAWBAKER INDUSTRIAL DR & DOUGLAS DR (T-729)
- N ATHERTON ST (SR 3014) & LOWES BLVD (T-530)
- N ATHERTON ST (SR 3014) & WOODYCREST AVE (T-691)
- N ATHERTON ST (SR 3014) & N ATHERTON PLACE ENTRANCE
- N ATHERTON ST (SR 3014), VAIRO BLVD (T-783) & MARTIN ST
- N ATHERTON ST (SR 3014) & AARON DR (T-330)
- N ATHERTON ST (SR 3014) & NORTH HILLS PL (T-794)
- N ATHERTON ST (SR 3014), BLUE COURSE DR (T-989) & CLINTON AVE (T-743)
- N ATHERTON ST (SR 3014) & W CHERRY LN (T-342)
- N ATHERTON ST (SR 3014) & HILLCREST AVE
- N ATHERTON ST (SR 3014) & W PARK AVE (SR 3007)
- N ATHERTON ST (SR 3014) & CURTIN RD
- N ATHERTON ST (SR 3014) & WHITE COURSE RD
- N ATHERTON ST (SR 3014) FOR BUS DEPT PED CROSSING

COUNTY : CENTRE

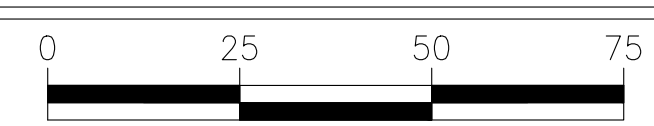
MUNICIPALITY : FERGUSON TOWNSHIP

INTERSECTION : NORTH ATHERTON ST (SR 3014)  
AND WEST CHERRY LANE (T-342)

APPROVED BY:  8/23/2021  
MUNICIPAL OFFICIAL DATE

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

DISTRICT TRAFFIC ENGINEER DATE

SCALE : 

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	14 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS			DATE BY

**CONSTRUCTION NOTES:**

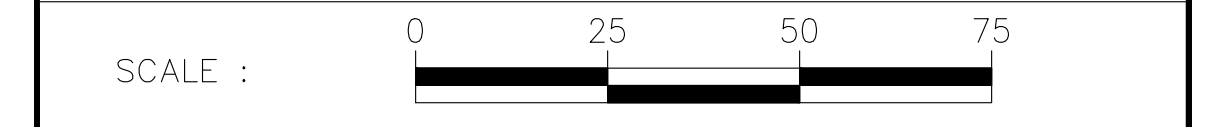
1. INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES AND CONNECT FIBER.
2. PROGRAM ALL IP ADDRESSES AS ASSIGNED.
3. PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
4. ENABLE DATA LOGGING FUNCTION.

ITEM NUMBER	MISCELLANEOUS		
	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	0	
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	1	CABINET
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	0	
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	0	
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	0	
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	0	
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			

COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : BLUE COURSE DRIVE (T-989) AND MARTIN STREET (T-975)

APPROVED BY:   
MUNICIPAL OFFICIAL \_\_\_\_\_ DATE 8/23/2021

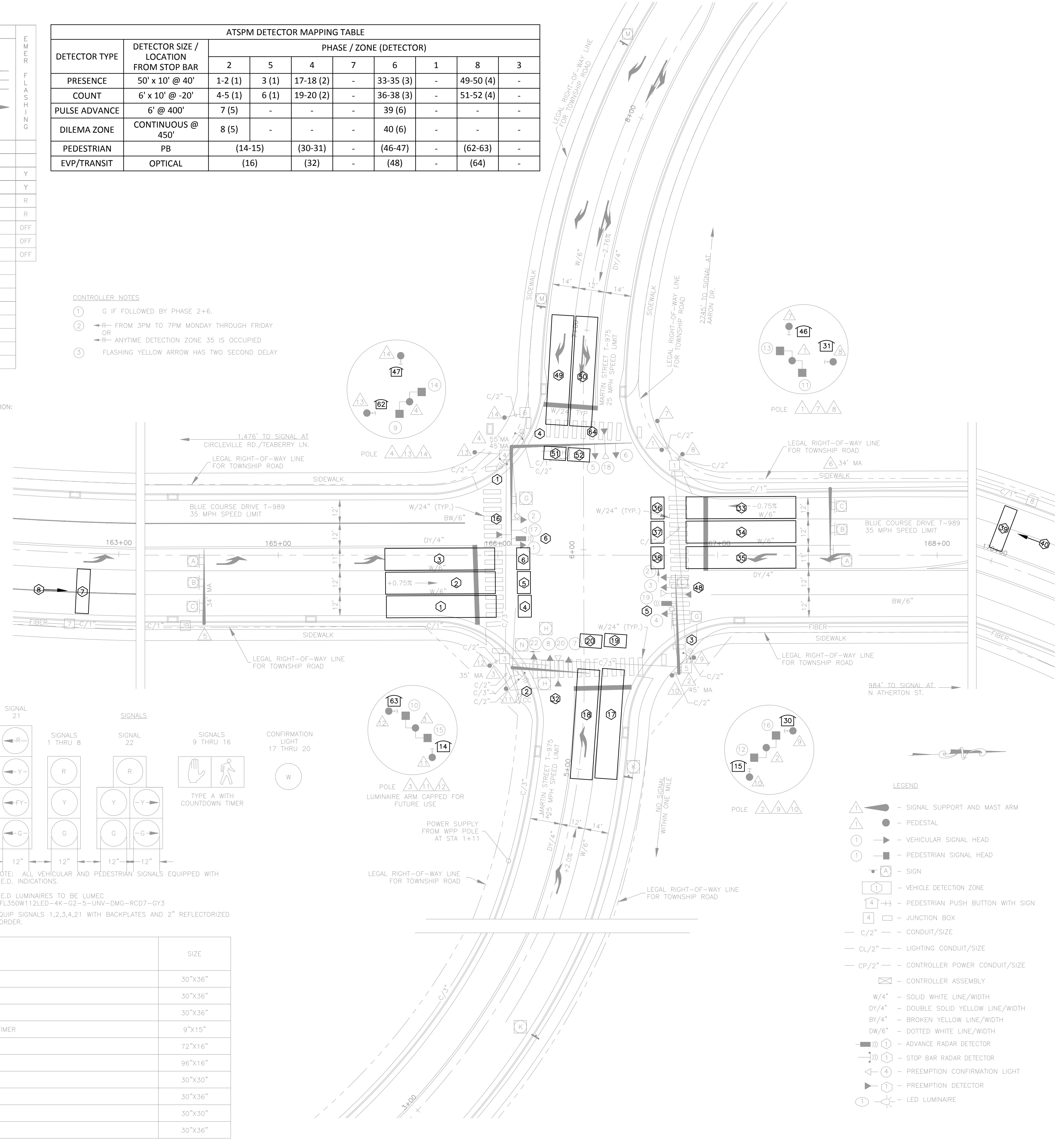
RECOMMENDED : \_\_\_\_\_  
DISTRICT TRAFFIC ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_



DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)								
		2	5	4	7	6	1	8	3	
PRESENCE	50' x 10' @ 40'	1-2 (1)	3 (1)	17-18 (2)	-	33-35 (3)	-	49-50 (4)	-	
COUNT	6' x 10' @ -20'	4-5 (1)	6 (1)	19-20 (2)	-	36-38 (3)	-	51-52 (4)	-	
PULSE ADVANCE	6' @ 400'	7 (5)	-	-	-	39 (6)	-	-	-	
DILEMA ZONE	CONTINUOUS @ 450'	8 (5)	-	-	-	40 (6)	-	-	-	
PEDESTRIAN	PB	(14-15)	(30-31)	-	(46-47)	-	(62-63)	-	-	
EVP/TRANSIT	OPTICAL	(16)	(32)	-	(48)	-	(64)	-	-	

**CONTROLLER NOTES**

1. G IF FOLLOWED BY PHASE 2+6.
2. ←R- FROM 3PM TO 7PM MONDAY THROUGH FRIDAY OR ←R- ANYTIME DETECTION ZONE 35 IS OCCUPIED
3. FLASHING YELLOW ARROW HAS TWO SECOND DELAY



**PHASING DIAGRAM**

SIGNALS	PHASE 2+5				PHASE 2+6				PHASE 4+8				EMER FLASHING
	1	2	3	4	1	2	3	4	1	2	3	4	
1-2	R	R	R		G	G	Y	R	R	R	R		Y
3-4	G	Y	R		G	G	Y	R	R	R	R		Y
5-6-7-8	R	R	R		R	R	R	R	G	G	Y	R	R
22	R	R	R		R	R	R	R	G	G	Y	R	R
9-10-11-16	H	H	H		H	H	H	H	M*	FH*	H	H	OFF
12-13-14-15	H	H	H		M*	FH*	H	H	H	H	H	H	OFF
21	G	Y	R		G	Y	R		R	R	R		OFF
FIXED	3	3			3	3			3	3			
MINIMUM	3				10				3				
PASSAGE	2				1.5				2				
MAXIMUM I	17				21				25				
▲ CYCLE 1	28				29				33				
▲ CYCLE 2	39				26				25				
PEDESTRIAN**					7	20			7	19			
MEMORY	NON-LOCKING				MIN RECALL				NON-LOCKING				

\* UPON PEDESTRIAN ACTIVATION, OTHERWISE DON'T WALK AT ALL TIMES  
\*\* UPON PEDESTRIAN ACTIVATION ONLY

**ADVANCE DILEMA ZONE NOTES**  
ESTIMATED TIME OF ARRIVAL: MINIMUM 2.5 SECONDS - MAXIMUM 5.5 SECONDS. RANGE OF DETECTION: MINIMUM 5 FEET - MAXIMUM 450 FEET FROM THE STOP BAR. MINIMUM SPEED BOUNDARY 10 MPH. ZONE MAY BE ADJUSTED IN THE FIELD.

**PRESENCE DETECTION ZONE NOTES**  
RANGE OF DETECTION: MINIMUM 30 - MAXIMUM 100 FEET FROM STOP BAR. MINIMUM SPEED BOUNDARY - 1 MPH ZONE MAY BE ADJUSTED IN FIELD.

**COORDINATION PROGRAM**

PLAN NO.	DAY OF WEEK							TIME	CYCLE	OFFSET	REMARKS
	S	M	T	W	T	F	S				
1	X	X	X	X	X	X	X	0:00	90		FREE
2	X	X	X	X	X	X	X	7:00	90	20	CYCLE 1
3	X	X	X	X	X	X	X	15:00	90	66	CYCLE 2
4	X	X	X	X	X	X	X	19:00	90		FREE
5	X						X	6:00	90		FREE

OFFSETS REFERENCED TO START OF YELLOW PHASE 2+6.

**INTERCONNECT NOTES:**  
CONTROLLER INTERCONNECTED VIA BROAD BAND WITH ADJACENT SIGNALS TO PROVIDE A PROGRESSIVE MOVEMENT OF TRAFFIC

**INTERSECTIONS INCLUDED IN SYSTEM:**  
- THIS INTERSECTION  
- BLUE COURSE DR/CIRCLEVILLE RD  
- BLUE COURSE DR/HAVERSHIRE BLVD  
- BLUE COURSE DR/OLD GATESBURG RD



PLAN SYMBOL	DESCRIPTION	SIZE
(A)	R3-5L, LEFT TURN	30"x36"
(B)	R3-5S, STRAIGHT THROUGH	30"x36"
(C)	R3-6SR, OPTIONAL RIGHT TURN	30"x36"
(D)	R10-3E, EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER	9"x15"
(E)	D3-4, Martin St	72"x16"
(F)	D3-4, Blue Course Dr	96"x16"
(G)	R3-8A(L-SR), LANE USE CONTROL SIGN	30"x30"
(H)	R10-12A, LEFT TURN YIELD ON FLASHING YELLOW ARROW	30"x36"
(I)	R3-8A(LS-R), LANE USE CONTROL SIGN	30"x30"
(J)	R10-10R, RIGHT TURN SIGNAL	30"x36"







EMERGENCY VEHICLE PREEMPTION NOTES

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 1+6, PHASE 2, PHASE 4, OR PHASE 8. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/GREEN ARROW OR RED/GREEN ARROW) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK INTERVAL, THE YELLOW AND ALL-RED INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

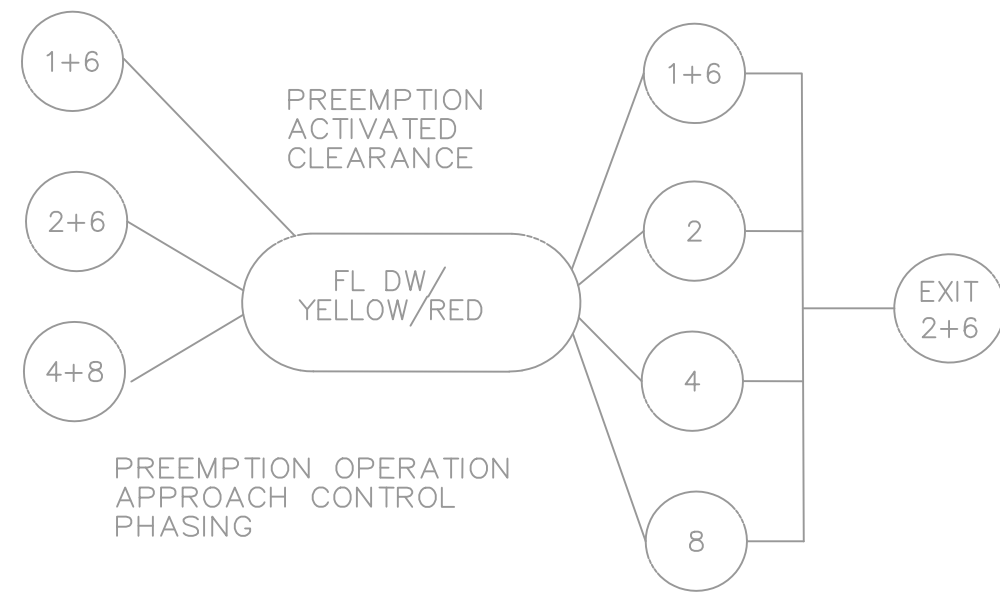
IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE WHILE THE CONFLICTING GREEN INDICATIONS ARE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO TIME THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN THE YELLOW, YELLOW ARROW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION. FLASHING TO EMERGENCY VEHICLE PREEMPTION. IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

FAIL-SAFE INDICATION. WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	17 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	

COUNTY : CENTRE

MUNICIPALITY : FERGUSON TOWNSHIP

INTERSECTION : BLUE COURSE DRIVE (T-989)  
CIRLEVILLE ROAD (T-337) & TEABERRY LANE (T-340)

APPROVED BY: *[Signature]* 8/23/2021  
 MUNICIPAL OFFICIAL DATE

RECOMMENDED : \_\_\_\_\_  
 DISTRICT TRAFFIC ENGINEER DATE

SCALE : 0 25 50 75

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	18 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS			DATE BY

CONSTRUCTION NOTES:

- INSTALL SINGLE CHANNEL BROAD BAND RADIO AND RELATED CABLING.
- AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
- INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.
- PROGRAM ALL IP ADDRESSES AS ASSIGNED.
- INSTALL DETECTOR 3 ON POLE 1.
- PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
- ENABLE DATA LOGGING FUNCTION.

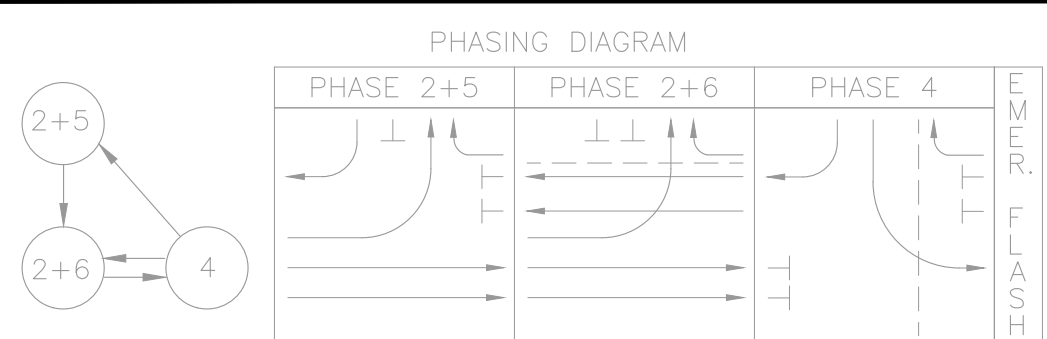
ITEM NUMBER	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	1	POLE 1
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
9000-1001	MANAGED NETWORK SWITCH	1	CABINET
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	1	POLE 3
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	0	
9000-1004	CONTROLLER UNIT REPLACEMENT	0	
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	1	CABINET
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
9000-1007	RADIO ROOF MOUNTING	0	
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	

COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : BLUE COURSE DRIVE (T-989) & HAVERSHIRE BOULEVARD (T-321)

APPROVED BY: *[Signature]* 8/23/2021  
MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
DISTRICT TRAFFIC ENGINEER DATE

SCALE : 0 25 50 75



PHASE SIGNALS	INTERVALS	INTERVALS	INTERVALS
1	G G R R	G G Y R	R R R R R Y
2	G G R R	G G Y R	R R R R R Y
3,4	R R R R	G G Y R	R R R R R Y
5	R R R R	R R R R	R G G Y R R
6	R R R R	R R R R	R G G Y R R
7,8	DW DW DW	DW DW DW	W W FDW DW DW OFF
9,10	DW DW DW	W FDW DW DW	DW DW DW DW OFF

\*UPON PEDESTRIAN ACTUATION, SIGNALS 7-8-9-10 SHALL DISPLAY THE NUMBER OF SECONDS REMAINING IN INTERVAL 2 OF THE ACTIVE PHASE. THE COUNTDOWN TIMER SHALL REMAIN DARK DURING ALL OTHER INTERVALS.

▲ - TOTAL LENGTH OF PHASE  
W - WALK  
DW - DONT WALK  
FDW - FLASHING DONT WALK

CONTROLLER NOTES:  
1. Y/G-IF FOLLOWED BY PHASE 2+5.  
2. R/G-IF FOLLOWED BY PHASE 2+5.  
3. G IF FOLLOWED BY PHASE 2+6.  
4. FALSE CALL FOR PEDESTRIANS TO BE PROGRAMMED DAILY AFTER THE PROGRAMMED FLASH.

FIXED	3	3	5	2	3	3
MINIMUM	4		10		4	
PASSAGE	2		1.5		3	
MAXIMUM	18		29		24	
*PEDESTRIAN			7	20	3	4
▲ CYCLE 1		17		38		35
▲ CYCLE 2		25		32		33
MEMORY	NON-LOCKING	MIN RECALL	NON-LOCKING			

ADVANCE DILEMMA ZONE NOTES

ESTIMATED TIME OF ARRIVAL: MINIMUM 2.5 SECONDS - MAXIMUM 5.5 SECONDS.  
RANGE OF DETECTION: MINIMUM 5 FEET - MAXIMUM 450 FEET FROM THE STOP BAR.  
MINIMUM SPEED BOUNDARY 10 MPH. ZONE MAY BE ADJUSTED IN THE FIELD.

PRESENCE DETECTION ZONE NOTES:

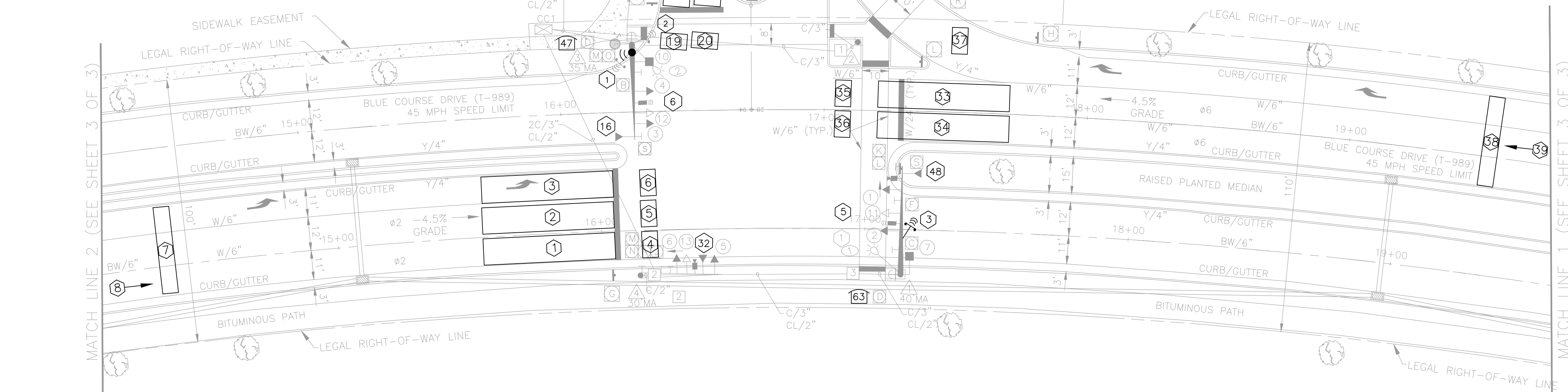
RANGE OF DETECTION: MINIMUM 30 - MAXIMUM 100 FEET FROM STOP BAR  
MINIMUM SPEED BOUNDARY - 1 MPH ZONE MAY BE ADJUSTED IN FIELD.

PLAN NO.	DAY OF WEEK							TIME	CYCLE	OFFSET	REMARKS
	S	M	T	W	T	F	S				
1	X	X	X	X	X	X	X	0:00	-	-	FREE
2		X	X	X	X	X		7:00	90	0	CYCLE 1
3		X	X	X	X	X		15:00	90	0	CYCLE 2
4		X	X	X	X	X		19:00	90	-	FREE
5	X						X	6:00	90	-	FREE

Offset Referenced to start of yellow phase 2+6.

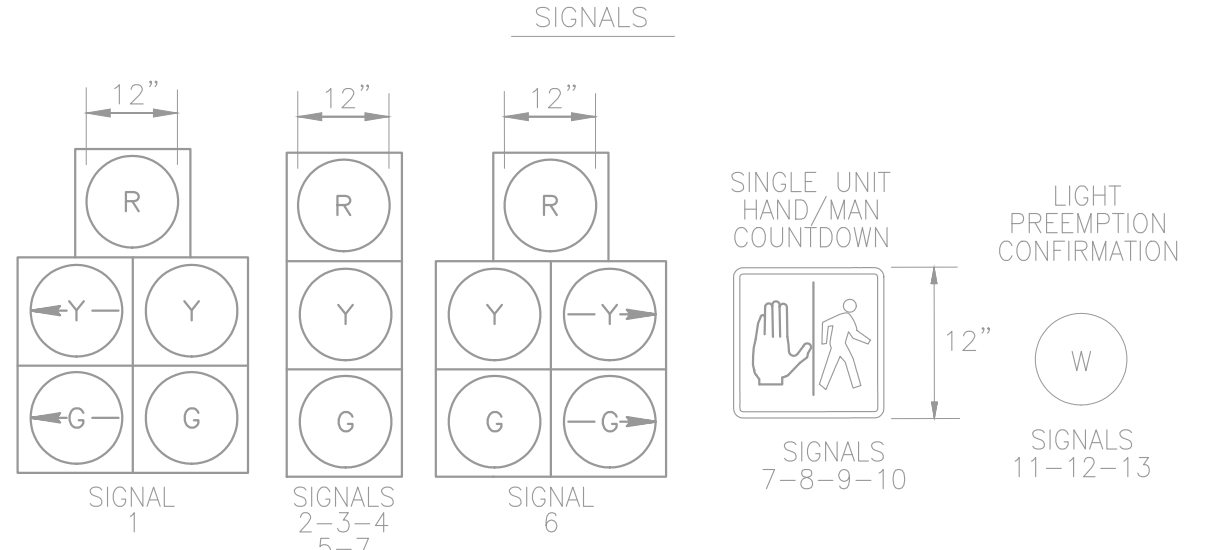
THIS INTERSECTION IS COORDINATED WITH THE ADJACENT INTERSECTIONS AT:

- BLUE COURSE DRIVE & OLD GATESBURG ROAD
- BLUE COURSE DRIVE & CIRCLEVILLE ROAD
- BLUE COURSE DRIVE & MARTIN STREET



Plan Symbol	Description	Size	Series Designation	Quantity
A	Blue Course Dr	90"x16"	D3-4	1
B	Havershire Blvd	90"x16"	D3-4	1
C	Havershire Blvd	90"x16"	D3-4	1
D	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER	9"x15"	R10-3EL	3
E	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER	9"x15"	R10-3ER	1
F	LEFT TURN YIELD ON GREEN	30"x36"	R10-12	1
G	LANE USE CONTROL	48"x30"	R3-8B(L-S-S)	3
H	LANE USE CONTROL	48"x30"	R3-8B(S-S-R)	3
I	LANE USE CONTROL	30"x30"	R3-8A(L-R)	2
J	RIGHT TURN SIGNAL	30"x36"	R10-10R	1
K	KEEP RIGHT	24"x30"	R4-7	2
L	OBJECT MARKER	18"x18"	OM1-3	2
M	NO PEDESTRIAN CROSSING	18"x18"	R9-3A	2
N	USE CROSSWALK	18"x12"	R9-3BL	1
O	USE CROSSWALK	18"x12"	R9-3BR	1
P	PEDESTRIAN CROSSING	30"x30"	W11-2	1
R	DIAGONAL DOWNWARD ARROW	24"x12"	W16-7P	1
S	NO U-TURN	36"x36"	R3-4	2
T	YIELD	36"x36"	R1-2	1
U	LEFT TURN LANE SIGN	30"x36"	R3-5L	1
V	THROUGH LANE SIGN	30"x36"	R3-5S	4
W	RIGHT TURN LANE SIGN	30"x36"	R3-5R	1

DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
		2	5	4	7	6	1	8	3
PRESENCE	50' x 10' @ 40'	1-2 (1)	3 (1)	17-18 (2)	-	33-34 (3)	-	-	-
COUNT	6' x 10' @ -20'	4-5 (1)	6 (1)	19-20 (2)	-	35-37 (3)	-	-	-
PULSE ADVANCE	6' @ 400'	7 (5)	-	-	-	38 (6)	-	-	-
DILEMMA ZONE	CONTINUOUS @ 450'	8 (5)	-	-	-	39 (6)	-	-	-
PEDESTRIAN	PB	-	-	-	-	(46-47)	-	(62-63)	-
EVP/TRANSIT	OPTICAL	(16)	(32)	-	-	(48)	-	-	-



- ALL VEHICULAR SIGNALS EQUIPPED WITH TUNNEL VISORS AND BACKPLATES.
- SINGLE UNIT, I.E.D. HAND/MAN OVERLAY ON ALL PEDESTRIAN SIGNALS.

- LEGEND
- ▲ - MAST ARM
  - - PEDESTAL
  - - VEHICULAR SIGNAL
  - - PEDESTRIAN SIGNAL HEAD
  - ⊕ - SIGN
  - ⊕ - VEHICLE DETECTION ZONE
  - ⊕ - PEDESTRIAN PUSH BUTTON/SIGN
  - ⊕ - CONFIRMATION LIGHT
  - ⊕ - EMERGENCY VEHICLE DETECTOR
  - CC1 ⊕ - CONTROLLER ASSEMBLY
  - ⊕ - JUNCTION BOX
  - C/4" - CONDUIT/SIZE
  - CL/4" - LUMINAIRE CONDUIT/SIZE
  - W/4" - SOLID WHITE LINE/WIDTH
  - Y/4" - SOLID YELLOW LINE/WIDTH
  - BW/4" - BROKEN WHITE LINE/WIDTH
  - DY/4" - DOUBLE SOLID YELLOW LINE/WIDTH
  - DY/4" - DOUBLE SOLID YELLOW LINE/WIDTH
  - DWS/6" - DASHED WHITE SKIP LINE/WIDTH
  - ⊕ - LUMINAIRE
  - ⊕ - VIDEO CAMERA FOR MONITORING ONLY
  - ⊕ - ADVANCE RADAR DETECTOR
  - ⊕ - OMNI-DIRECTIONAL ANTENNA
  - ⊕ - PRESENCE RADAR DETECTOR
  - ⊕ - BROAD BAND RADIO

EMERGENCY VEHICLE PREEMPTION NOTES

NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PREEMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS.

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 2+5, PHASE 6, OR PHASE 4.

IF THE CONTROLLER IS IN INTERVAL 1 (GREEN/GREEN ARROW) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK AND YELLOW AND ALL-RED INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE WHILE THE CONFLICTING GREEN INDICATIONS ARE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO TIME THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME AND CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

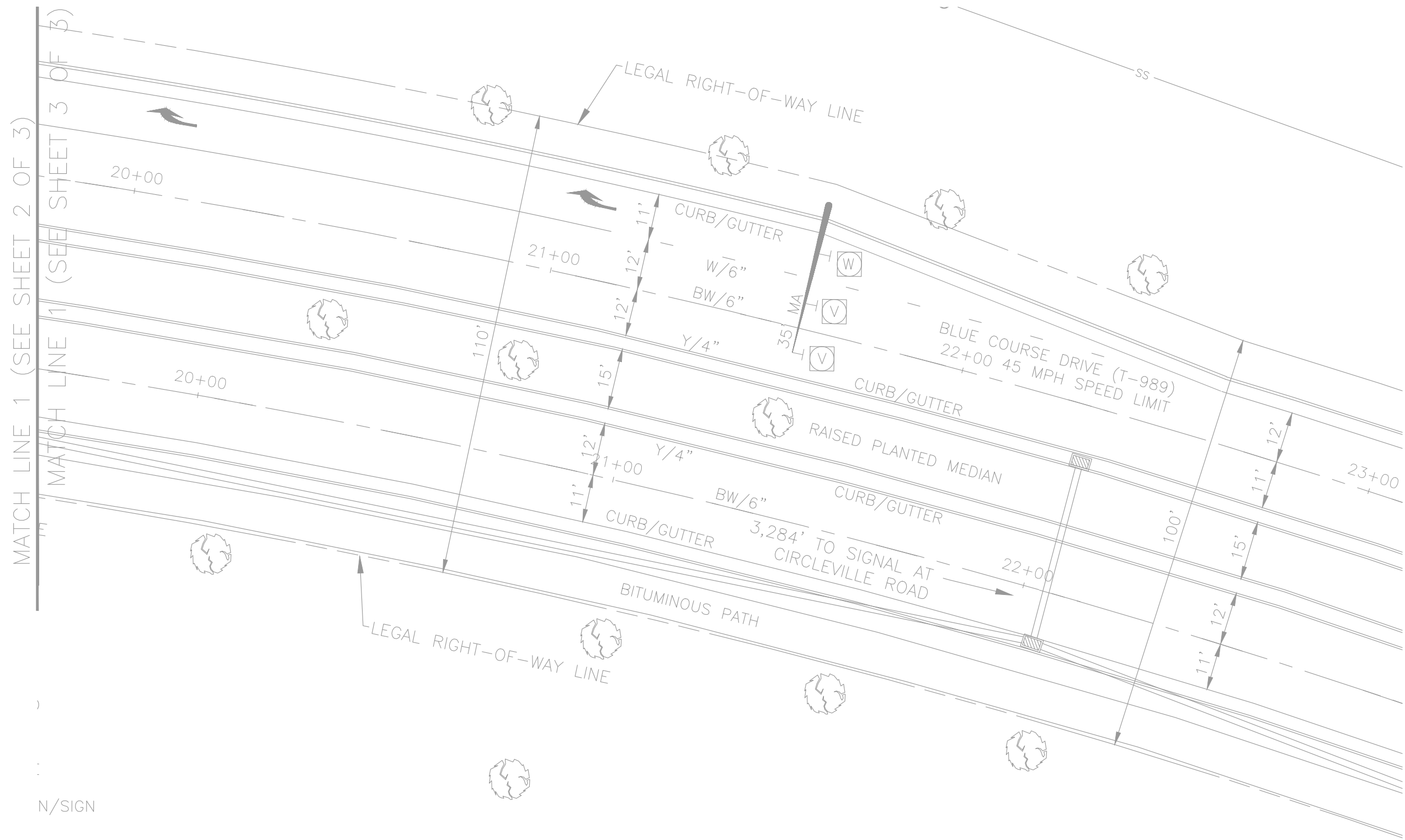
IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN THE YELLOW, YELLOW ARROW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

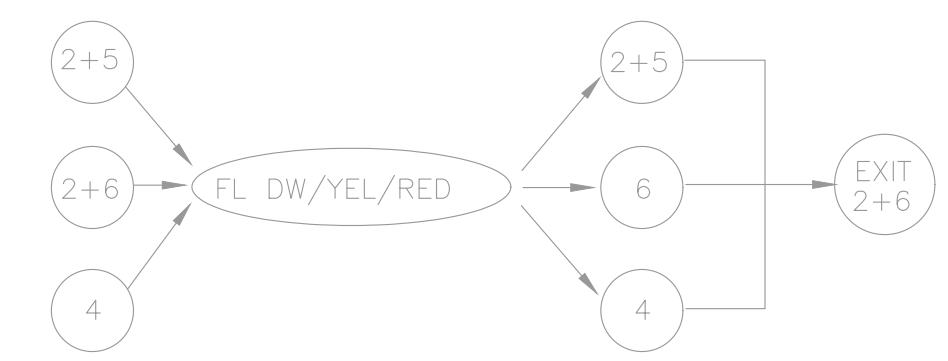
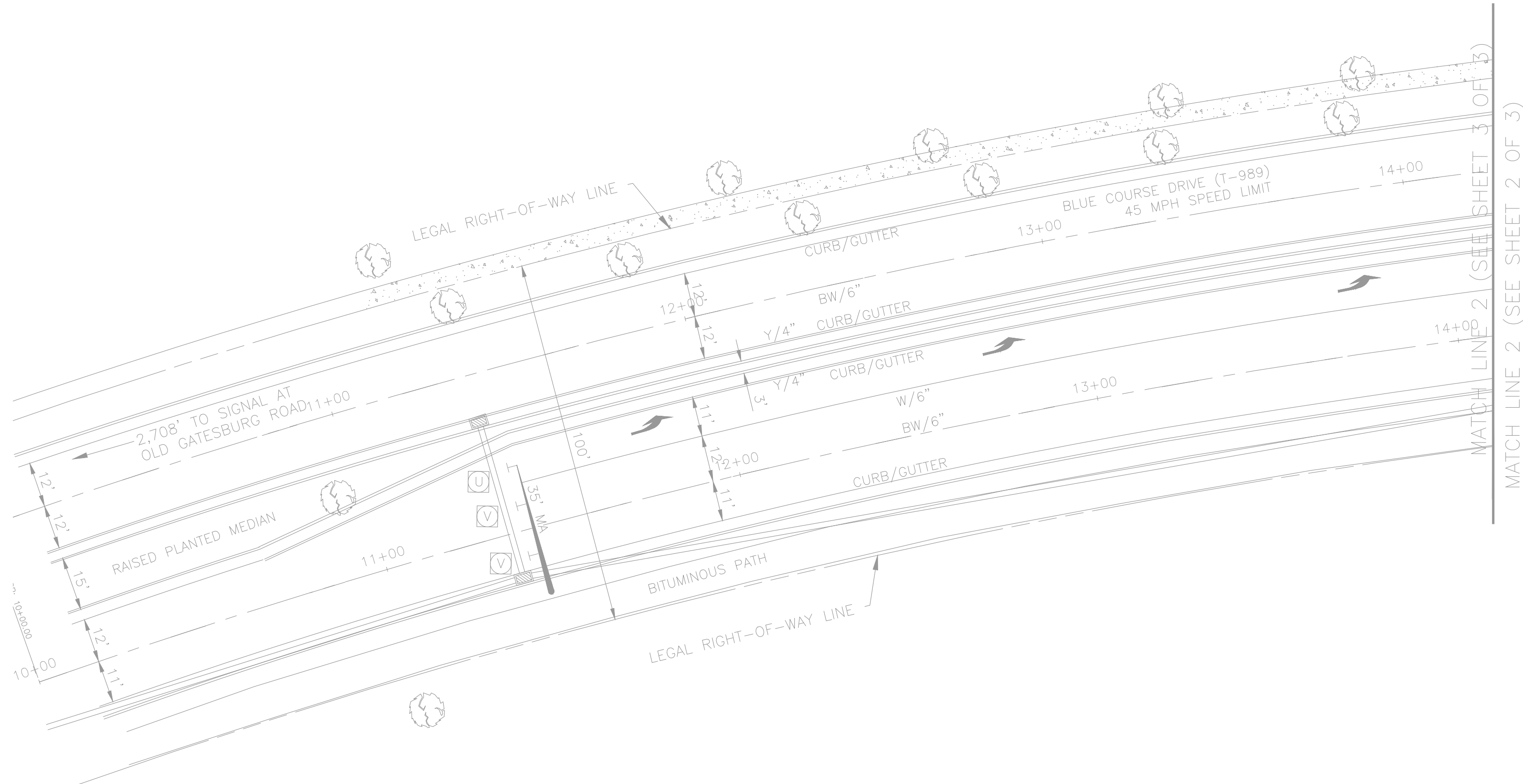
UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.

IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.



N/SIGN



PREEMPTION ACTIVATED CLEARANCE

NOTES:

1. ALL OVERHEAD SIGNALS EQUIPPED WITH BACKPLATES AND TUNNEL VISORS.
2. PEDESTRIAN SIGNAL HEADS ARE THE COUNTDOWN TYPE.
3. CONTROLLER PROGRAMMING IS DUAL ENTRY.
4. BASE MOUNTED CONTROLLER CABINET WITH 18" RISER.
5. CABINET HAS HAND CONTROL FOR MANUAL OPERATION. HAND CONTROL SHALL OVERRIDE NIGHTTIME FLASH.
6. PEDESTRIAN PUSH BUTTONS HAVE 2" NON-MOVING BUTTON.
7. LUMINAIRE FIXTURES HAVE A 30' MOUNTING HEIGHT.
8. ALL RAMPS ARE ADA COMPLIANT AND IN ACCORDANCE WITH RC-67M.
9. EQUIPPED WITH BATTERY BACK-UP AND GENERATOR ADAPTER PLUG.

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	19 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	

COUNTY : CENTRE

MUNICIPALITY : FERGUSON TOWNSHIP

INTERSECTION : BLUE COURSE DRIVE (T-989)  
& HAVERSHIRE BOULEVARD (T-321)

APPROVED BY: [Signature] 8/23/2021  
MUNICIPAL OFFICIAL DATE

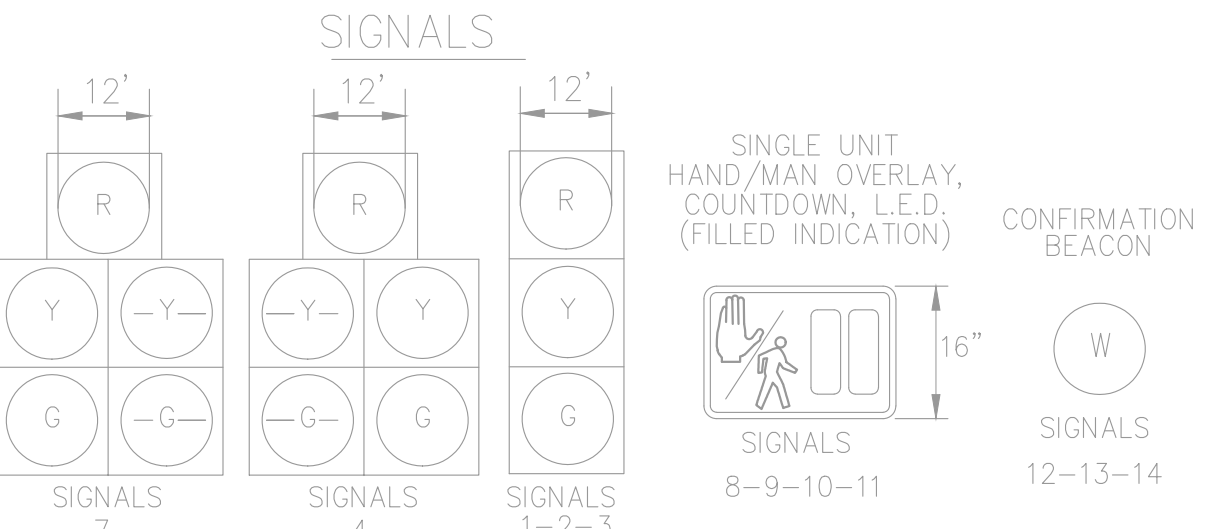
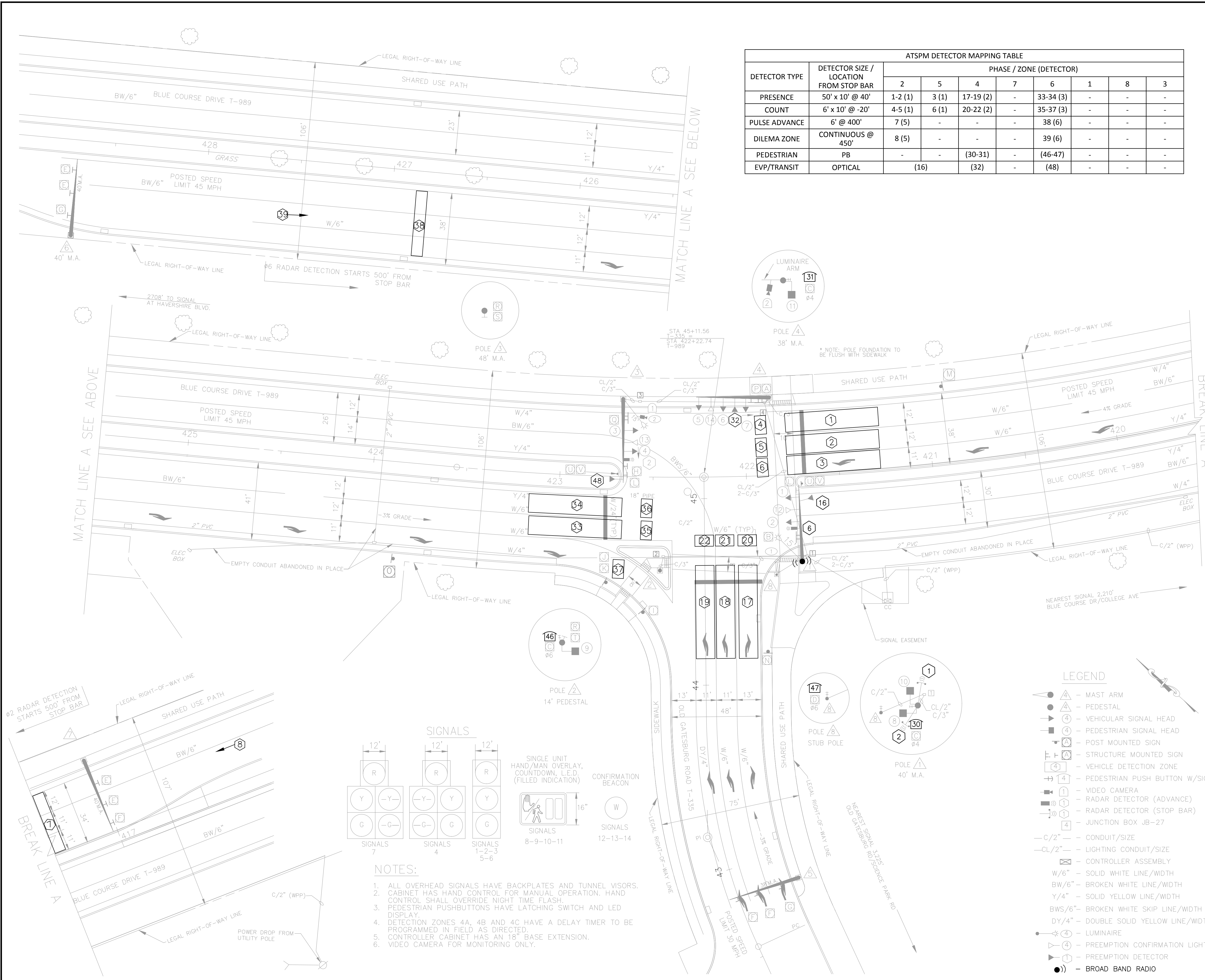
RECOMMENDED : \_\_\_\_\_  
DISTRICT TRAFFIC ENGINEER DATE

SCALE : 0 25 50 75

DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
		2	5	4	7	6	1	8	3
PRESENCE	50' x 10' @ 40'	1-2 (1)	3 (1)	17-19 (2)	-	33-34 (3)	-	-	-
COUNT	6' x 10' @ -20'	4-5 (1)	6 (1)	20-22 (2)	-	35-37 (3)	-	-	-
PULSE ADVANCE	6' @ 400'	7 (5)	-	-	-	38 (6)	-	-	-
DILEMA ZONE	CONTINUOUS @ 450'	8 (5)	-	-	-	39 (6)	-	-	-
PEDESTRIAN	PB	-	-	(30-31)	-	(46-47)	-	-	-
EVP/TRANSIT	OPTICAL	(16)		(32)		(48)		-	

- CONSTRUCTION NOTES:**
- INSTALL DUAL CHANNEL BROAD BAND RADIO AND RELATED CABLING.
  - AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
  - INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.
  - PROGRAM ALL IP ADDRESSES AS ASSIGNED.
  - INSTALL DETECTOR 3 ON POLE 3.
  - INSTALL NEW CONTROLLER AND MMU.
  - PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
  - ENABLE DATA LOGGING FUNCTION.

ITEM NUMBER	MISCELLANEOUS		
UNIT	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	1	POLE 3
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	1	CABINET
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	0	
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	1	POLE 1
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	1	CABINET
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	1	CABINET
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			



- NOTES:**
- ALL OVERHEAD SIGNALS HAVE BACKPLATES AND TUNNEL VISORS.
  - CABINET HAS HAND CONTROL FOR MANUAL OPERATION. HAND CONTROL SHALL OVERRIDE NIGHT TIME FLASH.
  - PEDESTRIAN PUSHBUTTONS HAVE LATCHING SWITCH AND LED DISPLAY.
  - DETECTION ZONES 4A, 4B AND 4C HAVE A DELAY TIMER TO BE PROGRAMMED IN FIELD AS DIRECTED.
  - CONTROLLER CABINET HAS AN 18" BASE EXTENSION.
  - VIDEO CAMERA FOR MONITORING ONLY.

- LEGEND**
- ▲ - MAST ARM
  - △ - PEDESTAL
  - - VEHICULAR SIGNAL HEAD
  - - PEDESTRIAN SIGNAL HEAD
  - - POST MOUNTED SIGN
  - - STRUCTURE MOUNTED SIGN
  - - VEHICLE DETECTION ZONE
  - - PEDESTRIAN PUSH BUTTON W/SIGN
  - - VIDEO CAMERA
  - - RADAR DETECTOR (ADVANCE)
  - - RADAR DETECTOR (STOP BAR)
  - - JUNCTION BOX JB-27
  - C/2" - CONDUIT/SIZE
  - CL/2" - LIGHTING CONDUIT/SIZE
  - ☒ - CONTROLLER ASSEMBLY
  - W/6" - SOLID WHITE LINE/WIDTH
  - BW/6" - BROKEN WHITE LINE/WIDTH
  - Y/4" - SOLID YELLOW LINE/WIDTH
  - BWS/6"- BROKEN WHITE SKIP LINE/WIDTH
  - DY/4" - DOUBLE SOLID YELLOW LINE/WIDTH
  - ☉ - LUMINAIRE
  - ☉ - PREEMPTION CONFIRMATION LIGHT
  - ☉ - PREEMPTION DETECTOR
  - - BROAD BAND RADIO

COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : BLUE COURSE DRIVE (T-989)  
AND OLD GATESBURG ROAD (T-335)

APPROVED BY: *[Signature]*  
MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
DISTRICT TRAFFIC ENGINEER DATE



PHASING DIAGRAM

SIGNALS	PHASE 2+5			PHASE 2+6				PHASE 4				EMERGENCY FLASHING
	1	2	3	1	2	3	4	1	2	3	4	
1-2	R	R	R	G	G	Y	R	R	R	R	R	Y
3	G	G	G	G	G	Y	R	R	R	R	R	Y
4	G	Y	G	G	G	Y	R	R	R	R	R	Y
5-6	R	R	R	R	R	R	R	G	G	Y	R	R
7	R	Y	R	R	R	R	R	G	G	Y	R	R
8-9	DW	DW	DW	W*	FD*	DW	DW	DW	DW	DW	DW	OFF
10-11	DW	DW	DW	DW	DW	DW	DW	W*	FD*	DW	DW	OFF
FIXED	5.0 1.0			5.0 1.5				4.0 2.0				
MINIMUM	2			10				3				
PASSAGE	2			1.0				3				
PEDESTRIAN *				7 14				7 20				
MAX 1	10			43				28				
▲ CYCLE 1	16			47				27				
▲ CYCLE 2	18			45				27				
MEMORY	NON-LOCKING			MIN. RECALL				NON-LOCKING				

\* UPON PEDESTRIAN ACTUATION, SIGNALS 8-9-10-11 SHALL DISPLAY THE NUMBER OF SECONDS REMAINING IN INTERVAL 2 OF THE ACTIVE PHASE. THE COUNTDOWN TIMER SHALL REMAIN DARK DURING ALL OTHER INTERVALS.

▲ TOTAL LENGTH OF PHASE

CONTROLLER NOTES

- ① Y/-G-IF FOLLOWED BY PHASE 2+5
- ② R/-G-IF FOLLOWED BY PHASE 2+5

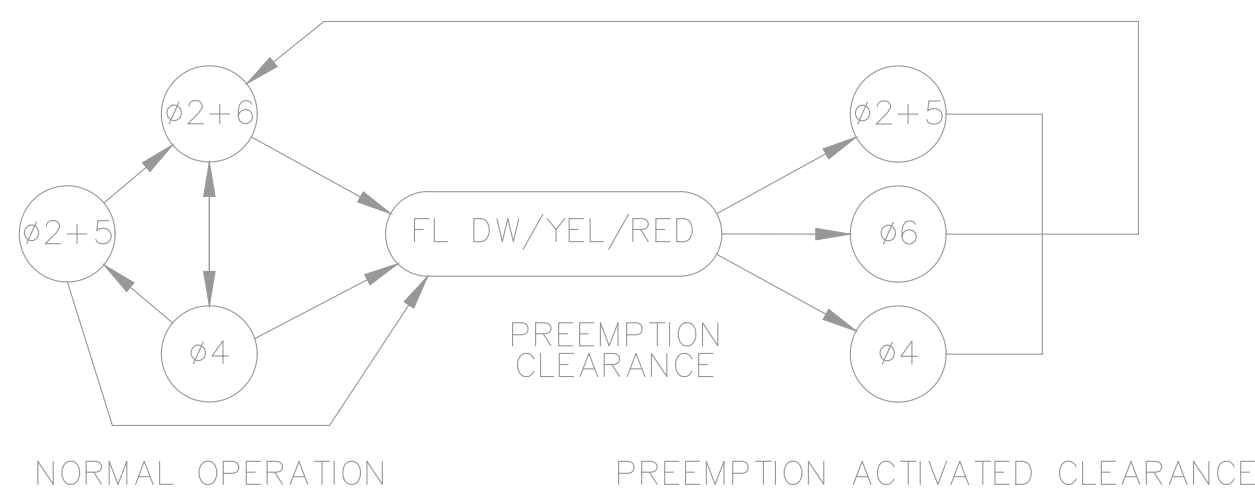
COORDINATION PROGRAM

PLAN NO.	DAYS OF WEEK							TIME	CYCLE	OFFSET	REMARKS
	S	M	T	W	T	F	S				
1	X	X	X	X	X	X	X	0:00	---	---	FREE
2	X	X	X	X	X			7:00	90	20	CYCLE 1
3	X	X	X	X	X			15:00	90	19	CYCLE 2
4	X	X	X	X	X			19:00	90	---	FREE
5	X						X	6:00	90	---	FREE

OFFSETS REFERENCED TO START OF YELLOW PHASE 2+6.

INTERCONNECT NOTES:  
CONTROLLER INTERCONNECTED VIA BROAD BAND WITH ADJACENT SIGNALS TO PROVIDE A PROGRESSIVE MOVEMENT OF TRAFFIC

INTERSECTIONS INCLUDED IN SYSTEM:  
- THIS INTERSECTION  
- BLUE COURSE DRIVE/HAVERSHIRE BOULEVARD  
- BLUE COURSE DRIVE/CIRGLEVILLE ROAD  
- BLUE COURSE DRIVE/MARTIN STREET



PREEMPTION ACTIVATED CLEARANCE

ADVANCED DILEMA ZONE NOTES:

1. ETA: MIN 2.5 SEC - MAX 5.5 SEC
2. RANGE: MIN 50 FEET - MAX 500 FEET FROM STOP BAR
3. MIN SPEED BOUNDARY - 10 MPH

STOP BAR DETECTION ZONE NOTES:

1. RANGE: MIN 10 FEET - MAX 100 FEET FROM STOP BAR
2. MIN SPEED BOUNDARY - 5 MPH
3. ZONE MAY BE ADJUSTED IN FIELD

SIGNS

PLAN SYMBOL	SERIES DESIGNATION	SIZE W x H	DESCRIPTION	QTY.
A	D3-4	96"x16"	Blue Course Dr	1
B	D3-4	96"x16"	Old Gatesburg Rd →	1
C	R10-3E-L	9"x14"	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER ←	3
D	R10-3E-R	9"x14"	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER →	1
E	R3-5S	30"x36"	STRAIGHT THROUGH	4
F	R3-5L	30"x36"	LEFT TURN	3
G	R3-5R	30"x36"	RIGHT TURN	2
H	R10-12	30"x36"	LEFT TURN YIELD ON GREEN	1
I	R1-2	36"x36"	YIELD	1
J	W11-2	30"x30"	PEDESTRIAN	1
K	W16-7P	24"x12"	DIAGONAL DOWNWARD POINTING ARROW	1
L	R3-4	36"x36"	NO U-TURN	2
M	R3-8B(L-S-S)	48"x30"	LANE USE CONTROL SIGN → ↑ ↑	1
N	R3-8B(L-L-R)	48"x30"	LANE USE CONTROL SIGN → ↪ ↪	1
O	R3-8B(S-S-R)	48"x30"	LANE USE CONTROL SIGN ↑ ↑ ↪	1
P	R10-10R	30"x36"	RIGHT TURN SIGNAL	1
Q	D3-4	96"x16"	← Old Gatesburg Rd	1
R	R9-3A	18"x18"	NO PEDESTRIAN CROSSING	2
S	R9-3BR	18"x12"	USE CROSSWALK →	1
V	R9-3BL	18"x12"	USE CROSSWALK ←	1
U	R4-7	24"x30"	KEEP RIGHT	2
V	OM1-3	18"x18"	OBJECT MARKER	2

EMERGENCY VEHICLE PREEMPTION NOTES:

NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PREEMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS.

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 2+5, PHASE 6, OR PHASE 4. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.

IF THE CONTROLLER IS IN INTERVAL 1 (GREEN/GREEN ARROW) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK AND YELLOW AND ALL-RED INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE WHILE THE CONFLICTING GREEN INDICATIONS ARE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO TIME THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME AND CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN THE YELLOW, YELLOW ARROW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.

IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	21 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS			DATE
				BY

COUNTY : \_\_\_\_\_ CENTRE \_\_\_\_\_

MUNICIPALITY : \_\_\_\_\_ FERGUSON TOWNSHIP \_\_\_\_\_

INTERSECTION : BLUE COURSE DRIVE (T-989)  
AND OLD GATESBURG ROAD (T-335)

APPROVED BY: \_\_\_\_\_  
MUNICIPAL OFFICIAL \_\_\_\_\_ DATE \_\_\_\_\_

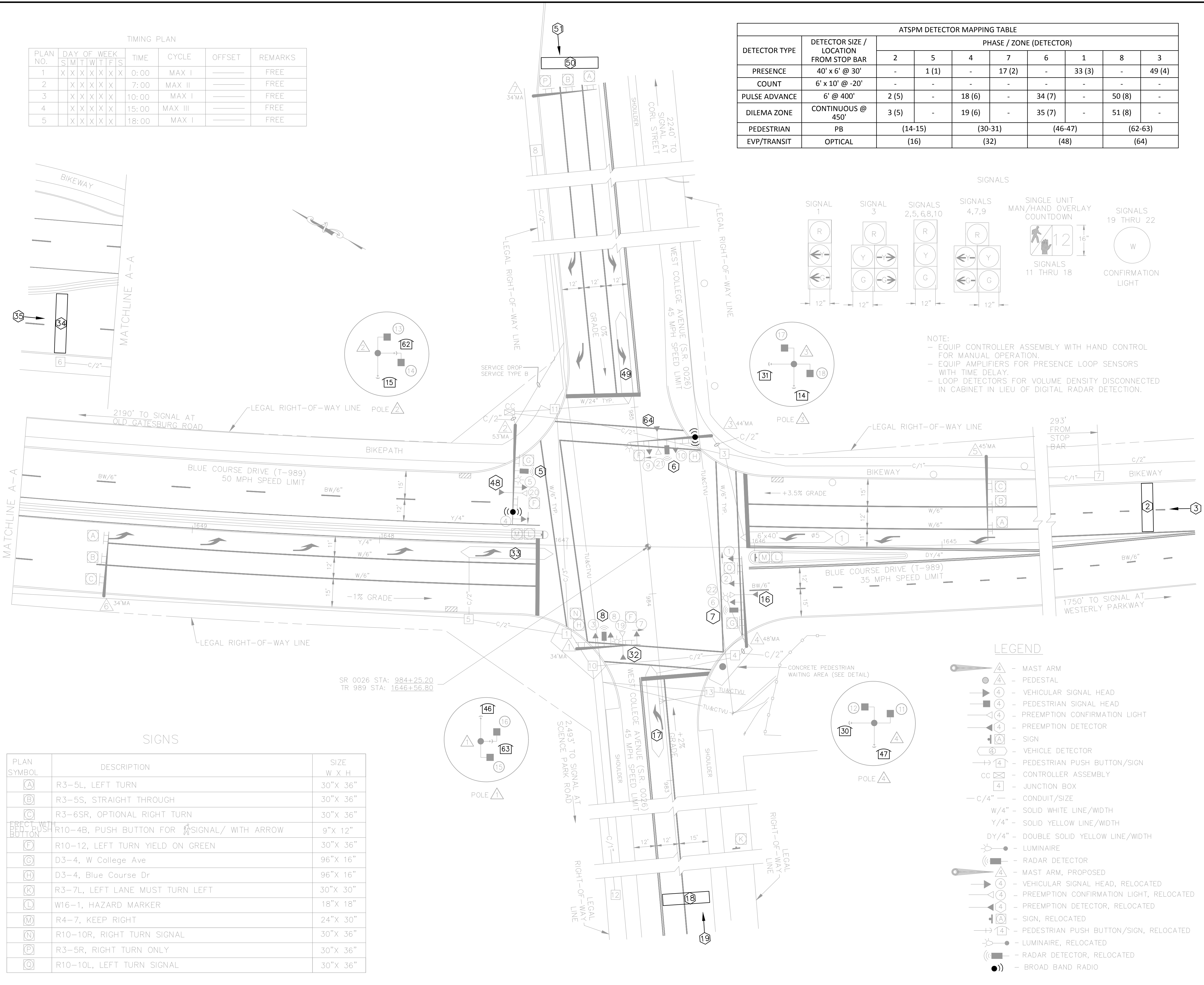
RECOMMENDED : \_\_\_\_\_

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

SCALE : 0 25 50 75

DETECTOR TYPE		ATSPM DETECTOR MAPPING TABLE								
DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)								
		2	5	4	7	6	3	1	8	3
PRESENCE	40' x 6' @ 30'	-	1 (1)	-	17 (2)	-	33 (3)	-	-	49 (4)
COUNT	6' x 10' @ -20'	-	-	-	-	-	-	-	-	-
PULSE ADVANCE	6' @ 400'	2 (5)	-	18 (6)	-	34 (7)	-	50 (8)	-	-
DILEMA ZONE	CONTINUOUS @ 450'	3 (5)	-	19 (6)	-	35 (7)	-	51 (8)	-	-
PEDESTRIAN	PB	(14-15)		(30-31)		(46-47)		(62-63)		-
EVP/TRANSIT	OPTICAL	(16)		(32)		(48)		(64)		-

TIMING PLAN									
PLAN NO.	DAY OF WEEK					TIME	CYCLE	OFFSET	REMARKS
	S	M	T	W	F				
1	X	X	X	X	X	0:00	MAX I	---	FREE
2	X	X	X	X	X	7:00	MAX II	---	FREE
3	X	X	X	X	X	10:00	MAX I	---	FREE
4	X	X	X	X	X	15:00	MAX III	---	FREE
5	X	X	X	X	X	18:00	MAX I	---	FREE



**CONSTRUCTION NOTES:**

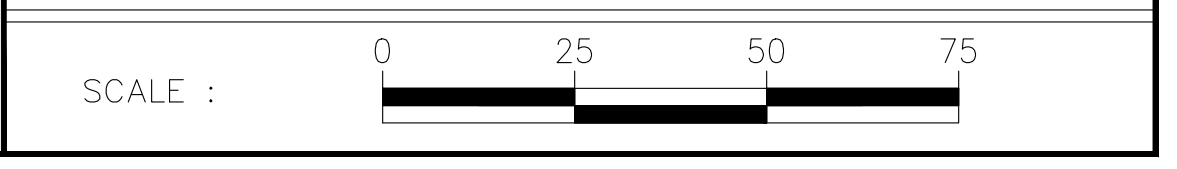
1. INSTALL DUAL CHANNEL BROAD BAND RADIOS AND RELATED CABLING.
2. AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
3. INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.
4. PROGRAM ALL IP ADDRESSES AS ASSIGNED.
5. INSTALL NEW CONTROLLER AND MMU.
6. PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
7. ENABLE DATA LOGGING FUNCTION.

ITEM NUMBER	MISCELLANEOUS		
	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	0	
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	1	CABINET
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	0	
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	2	POLES 2 AND 3
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	1	CABINET
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	1	CABINET
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			

COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : WEST COLLEGE AVENUE (S.R. 0026) AND BLUE COURSE DRIVE (T-989)

APPROVED BY: 8/23/2021  
MUNICIPAL OFFICIAL DATE

RECOMMENDED : \_\_\_\_\_  
DISTRICT TRAFFIC ENGINEER DATE



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	23 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	

PHASING DIAGRAM

SIGNALS	1 + 5			2 + 5			1 + 6			2 + 6				3 + 7			4 + 7			3 + 8				4 + 8				EMERGENCY FLASHING				
	1	2	3	1	2	3	1	2	3	1	2	3	4	1	2	3	1	2	3	1	2	3	4	1	2	3	4					
1	G	Y	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	OFF	
2,6	R	R	R	R	R	R	G	Y	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	OFF	
3	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R	OFF	
4	R	R	R	R	R	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	OFF	
5	R	R	R	G	Y	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	OFF	
7	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	OFF	
8	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R	OFF	
9	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R	OFF	
10	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R	OFF	
14,16	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	M	FH	H	H	OFF	
11,18	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	M	FH	H	H	OFF	
12,15	H	H	H	H	H	H	H	H	H	M	FH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	OFF	
13,17	H	H	H	H	H	H	H	H	H	M	FH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	OFF	
FIXED	3	1		3	1		3	1		4.5	1.5		3	1		3	1		3	1		3	1		4.5	2.0						
MINIMUM	2			2			2			10			2			2			2			2			10							
SEC/ACT										■															■							
MAXIMUM INIT										■															■							
PASSAGE	2			2			2			■			2			2			2			2			■							
TO REDUCE										■															■							
BEFORE REDUCE										■															■							
MIN GAP										■															■							
MAXIMUM I	15			15			15			30			7			7			7			7			40							
MAXIMUM II	15			15			15			24			7			7			7			7			51							
MAXIMUM III	15			15			16			28			10			10			10			10			51							
PEDESTRIAN **										7*	17*														7*	26*						
MEMORY	NL			NL			NL			LOCKING			NL			NL			NL			NL			MIN RECALL							

EMERGENCY VEHICLE PREEMPTION NOTES

NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PREEMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS. EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 1+6, PHASE 2+5, PHASE 3+8, OR PHASE 4+7. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/GREEN ARROW OR RED/GREEN ARROW) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK INTERVAL, THE YELLOW AND ALL-RED INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE WHILE THE CONFLICTING GREEN INDICATIONS ARE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO TIME THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS. IF THE CONTROLLER OPERATION IS IN THE YELLOW, YELLOW ARROW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.

FLASHING TO EMERGENCY VEHICLE PREEMPTION. IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

FAIL-SAFE INDICATION. WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.

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

\*\* UPON PEDESTRIAN ACTUATION ONLY.

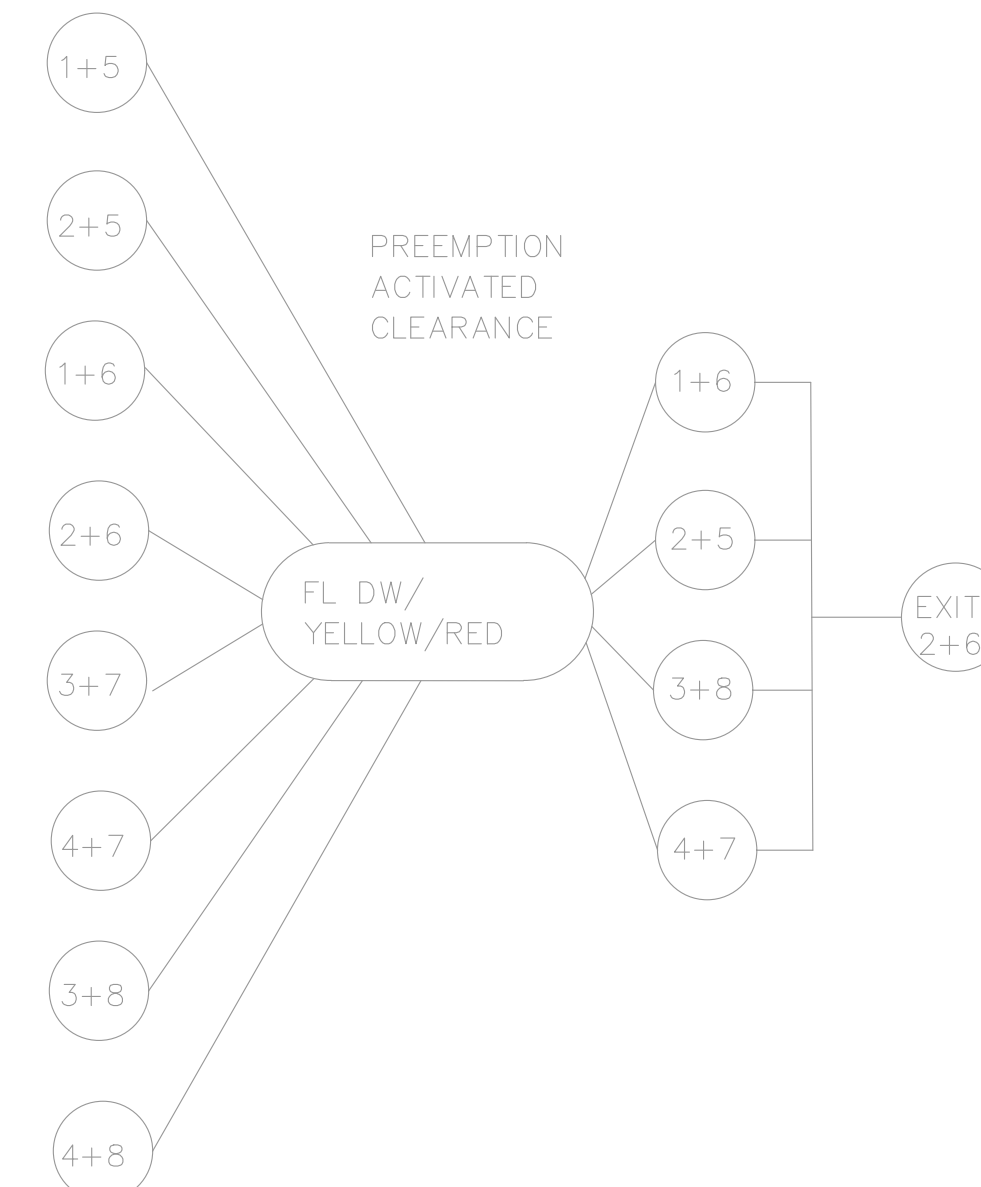
■ CONTROLLED BY DIGITAL RADAR DYNAMIC DETECTION AS FOLLOWS:

DETECTION RANGE	SPEED BOUNDARY
0'-50' FROM STOP BAR	1 MPH
50'-450' FROM STOP BAR	25 MPH

EQUIP CONTROLLER ASSEMBLY WITH HAND CONTROL FOR MANUAL OPERATION. HAND CONTROL SHALL OVERRIDE NIGHTTIME FLASH. CONTROLLER PROGRAMMING SHALL BE DUAL ENTRY

PHASE 1 OR 5 WILL ONLY FOLLOW 4+8.  
PHASE 3 OR 7 WILL ONLY FOLLOW 2 OR 6.

- ① ← G, F 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 R/←G, IF FOLLOWED BY 3+8
- ⑥ R/←G, IF FOLLOWED BY 4+7
- ⑦ G/←Y, IF FOLLOWED BY 4+8
- ⑧ G, IF FOLLOWED BY 4+8
- ⑨ R→/G, IF FOLLOWED BY 1+6
- ⑩ Y→/G, IF FOLLOWED BY 1+5 OR 1+6
- ⑪ R→/G, IF FOLLOWED BY 1+5 OR 1+6



COUNTY : CENTRE

MUNICIPALITY : FERGUSON TOWNSHIP

INTERSECTION : WEST COLLEGE AVENUE (S.R. 0026) AND BLUE COURSE DRIVE (T-989)

APPROVED BY: [Signature] 8/23/2021

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

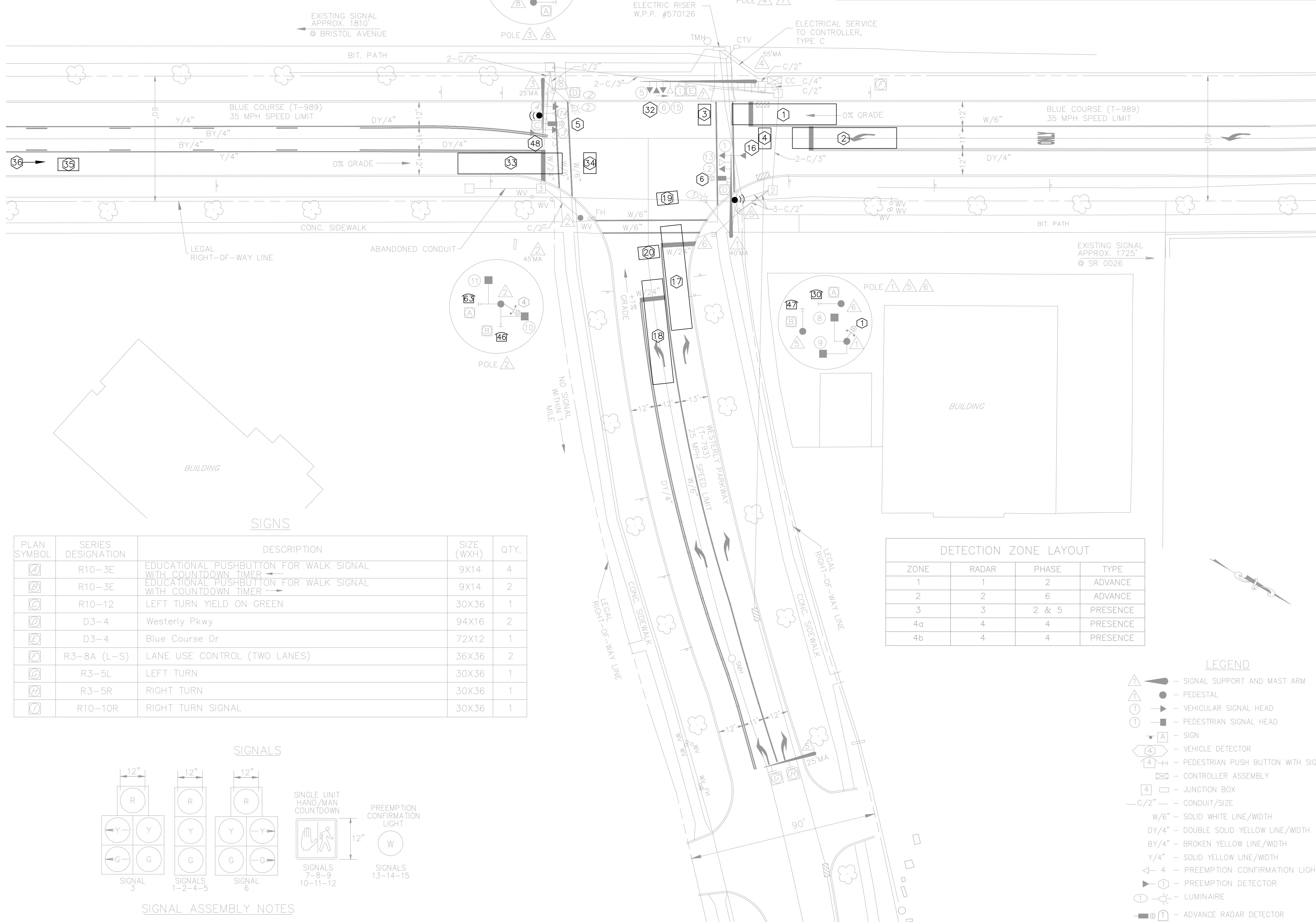
RECOMMENDED : \_\_\_\_\_

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

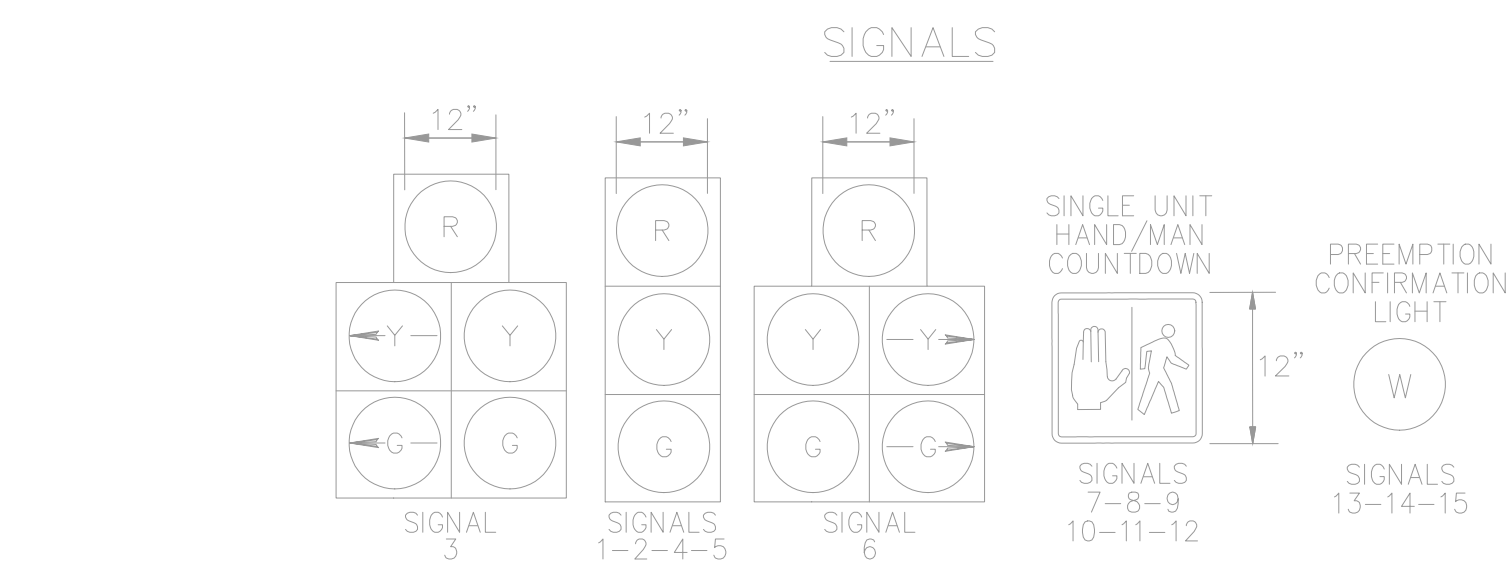
SCALE :

ATSPM DETECTOR MAPPING TABLE									
DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
		2	5	4	7	6	1	8	3
PRESENCE	50' x 10' @ 40'	1 (1)	2 (1)	17-18 (2)	-	33 (3)	-	-	-
COUNT	6' x 10' @ -20'	3 (1)	4 (1)	19-20 (2)	-	34 (3)	-	-	-
PULSE ADVANCE	10' @ 400'	5 (5)	-	-	-	35 (6)	-	-	-
DILEMA ZONE	CONTINUOUS @ 450'	6 (5)	-	-	-	36 (6)	-	-	-
PEDESTRIAN	PB	-	-	(30-31)	-	(46-47)	-	(62-63)	-
EVP/TRANSIT	OPTICAL	(16)	-	(32)	-	(48)	-	-	-

NOTES:  
 -CONTROLLER CABINET EQUIPPED WITH AN 18" BASE EXTENSION.  
 -CONTROLLER CABINET EQUIPPED WITH HAND CONTROL; HAND CONTROL SHALL OVERRIDE NIGHTTIME FLASH.  
 -PEDESTRIAN PUSH BUTTONS EQUIPPED WITH LATCHING SWITCH AND LED DISPLAY.  
 -ALL VEHICULAR SIGNALS EQUIPPED WITH BACKPLATES AND TUNNEL VISORS.  
 -PEDESTRIAN SIGNAL HEADS EQUIPPED WITH COUNTDOWN TIMERS.  
 -SIGNAL INTERCONNECTED WITH BLUE COURSE DRIVE MASTER VIA SPREAD SPECTRUM RADIO, BUT OPERATING IN FREE CONDITION.



PLAN SYMBOL	SERIES DESIGNATION	DESCRIPTION	SIZE (WXH)	QTY.
Ⓚ	R10-3E	EDUCATIONAL PUSHBUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER	9X14	4
Ⓚ	R10-3E	EDUCATIONAL PUSHBUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER	9X14	2
Ⓚ	R10-12	LEFT TURN YIELD ON GREEN	30X36	1
Ⓚ	D3-4	Westerly Pkwy	94X16	2
Ⓚ	D3-4	Blue Course Dr	72X12	1
Ⓚ	R3-8A (L-S)	LANE USE CONTROL (TWO LANES)	36X36	2
Ⓚ	R3-5L	LEFT TURN	30X36	1
Ⓚ	R3-5R	RIGHT TURN	30X36	1
Ⓚ	R10-10R	RIGHT TURN SIGNAL	30X36	1



SIGNAL ASSEMBLY NOTES

- 1) ALL VEHICULAR SIGNALS EQUIPPED WITH TUNNEL VISORS AND BACKPLATES.
- 2) SINGLE UNIT, L.E.D. HAND/MAN OVERLAY ON ALL PEDESTRIAN SIGNALS.

DETECTION ZONE LAYOUT			
ZONE	RADAR	PHASE	TYPE
1	1	2	ADVANCE
2	2	6	ADVANCE
3	3	2 & 5	PRESENCE
4a	4	4	PRESENCE
4b	4	4	PRESENCE

- LEGEND
- ▲ - SIGNAL SUPPORT AND MAST ARM
  - - PEDESTAL
  - Ⓚ - VEHICULAR SIGNAL HEAD
  - Ⓚ - PEDESTRIAN SIGNAL HEAD
  - Ⓚ - SIGN
  - Ⓚ - VEHICLE DETECTOR
  - Ⓚ - PEDESTRIAN PUSH BUTTON WITH SIGN
  - Ⓚ - CONTROLLER ASSEMBLY
  - Ⓚ - JUNCTION BOX
  - C/2"- CONDUIT/SIZE
  - W/6"- SOLID WHITE LINE/WIDTH
  - DY/4"- DOUBLE SOLID YELLOW LINE/WIDTH
  - BY/4"- BROKEN YELLOW LINE/WIDTH
  - Y/4"- SOLID YELLOW LINE/WIDTH
  - Ⓚ - PREEMPTION CONFIRMATION LIGHT
  - Ⓚ - PREEMPTION DETECTOR
  - Ⓚ - LUMINAIRE
  - Ⓚ - ADVANCE RADAR DETECTOR
  - Ⓚ - PRESENCE RADAR DETECTOR
  - Ⓚ - BROAD BAND RADIO

DISTRICT	COUNTY	ROUTE	SECTION	SHEET	
2-0	CENTRE	LOCAL	02E011	24 OF 44	
FERGUSON TOWNSHIP					
REVISION NUMBER	REVISIONS			DATE	BY

CONSTRUCTION NOTES:

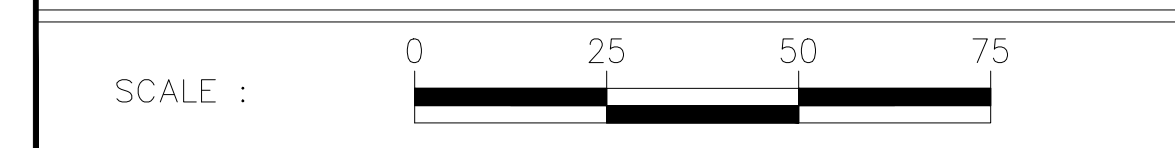
1. INSTALL TWO SINGLE CHANNEL BROAD BAND RADIOS AND RELATED CABLING.
2. AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
3. INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.
4. PROGRAM ALL IP ADDRESSES AS ASSIGNED.
5. INSTALL DETECTOR 3 ON POLE 3.
6. INSTALL NEW CONTROLLER AND MMU.
7. PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
8. ENABLE DATA LOGGING FUNCTION

MISCELLANEOUS			
ITEM NUMBER	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	1	POLE 3
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	1	CABINET
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	2	POLES 1 AND 3
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	0	
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	1	CABINET
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	1	CABINET
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			

COUNTY : CENTRE  
 MUNICIPALITY : FERGUSON TOWNSHIP  
 INTERSECTION : BLUE COURSE DRIVE (T-989) AND WESTERLY PARKWAY (T-793)

APPROVED BY: 8/23/2021  
 MUNICIPAL OFFICIAL DATE

RECOMMENDED : \_\_\_\_\_  
 DISTRICT TRAFFIC ENGINEER DATE

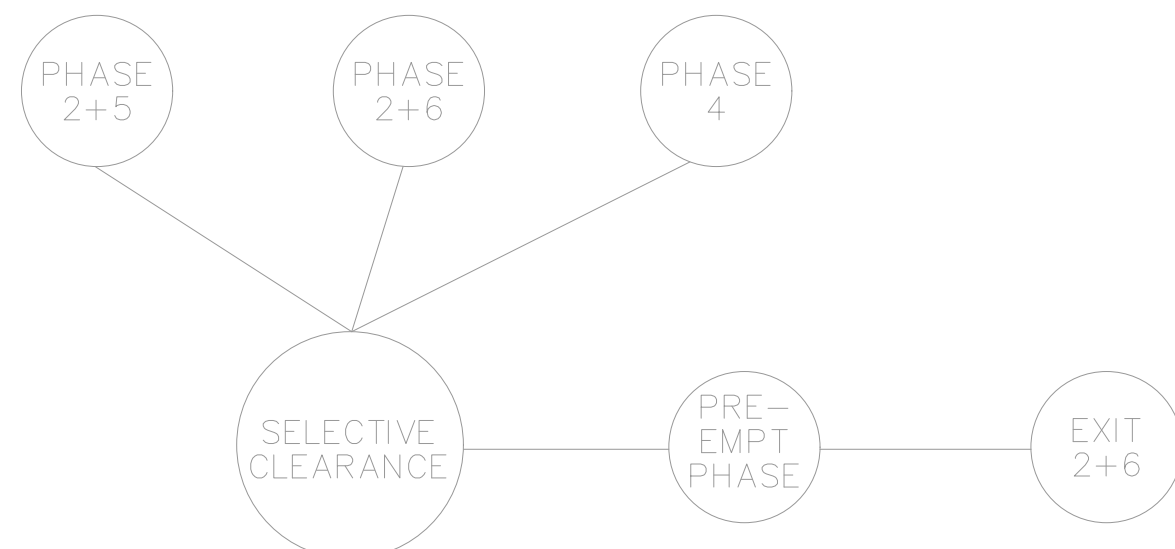




PHASING DIAGRAM

SIGNAL	PHASE 2+5				PHASE 2+6				PHASE 4				EMERGENCY FLASHING	PRE-EMPT 2				PRE-EMPT 6				PRE-EMPT 4			
	1	2	3		1	2	3	4	1	2	3	4		1	2	3	4	1	2	3	4	1	2	3	4
1,2	R	R	R		G	G	Y	R	R	R	R	R	Y				G	Y	R		R	R	R		
3	G	Y	R		G	G	Y	R	R	R	R	R	Y				R	R	R		R	R	R		
4	G	Y	R		G	G	Y	R	R	R	R	R	Y				R	R	R		R	R	R		
5	R	R	R		R	R	R	R	G	G	Y	R	R				R	R	R		G	Y	R		
6	R	R	R		R	R	R	R	G	G	Y	R	R				R	R	R		G	Y	R		
7,8	DW	DW	DW		DW	DW	DW	DW	W	FD	DW	DW	OFF				DW	DW	DW		DW	DW	DW		
9,10	DW	DW	DW		W	FD	DW	DW	DW	DW	DW	DW	OFF				DW	DW	DW		DW	DW	DW		
11,12	DW	DW	DW		DW	DW	DW	DW	W	FD	DW	DW	OFF				DW	DW	DW		DW	DW	DW		
FIXED TIME		3.5	1.0			3.5	2.0			3.5	2.5						**	3.5	2.0		**	3.5	2.0		
MINIMUM	3				10				3																
PASSAGE	1.5				1.5				1.5																
MAX. I	15				45				26																
MAX. II	41				61				20																
MAX. III	29				65				28																
PED *					7	13			7	13															
MEMORY	NON-LOCKING				MIN RECALL				NON-LOCKING																

\*\* GREEN TIME IS VARIABLE. IT WILL TERMINATE 5 SECONDS AFTER THE DEVICE CALL DROPS OUT. EXTEND THE PREEMPTION CALL 5 SECONDS.



PRESENCE DETECTION ZONE NOTES:

RANGE OF DETECTION: MINIMUM 30 - MAXIMUM 100 FEET FROM STOP BAR  
MINIMUM SPEED BOUNDARY - 1 MPH ZONE MAY BE ADJUSTED IN FIELD.

ADVANCE DILEMMA ZONE NOTES:

ESTIMATED TIME OF ARRIVAL: MINIMUM 2.5 SECONDS - MAXIMUM 5.5 SECONDS. RANGE OF DETECTION: MINIMUM 5 FEET - MAXIMUM 450 FEET FROM THE STOP BAR. MINIMUM SPEED BOUNDARY 10 MPH. ZONE MAY BE ADJUSTED IN THE FIELD.

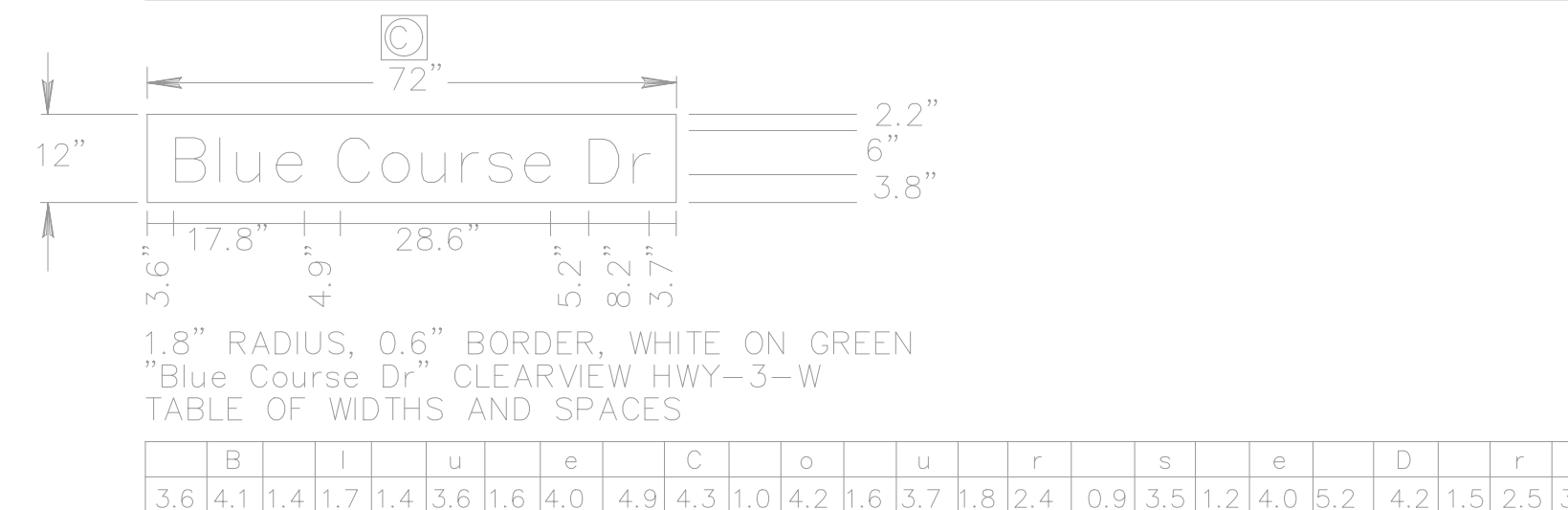
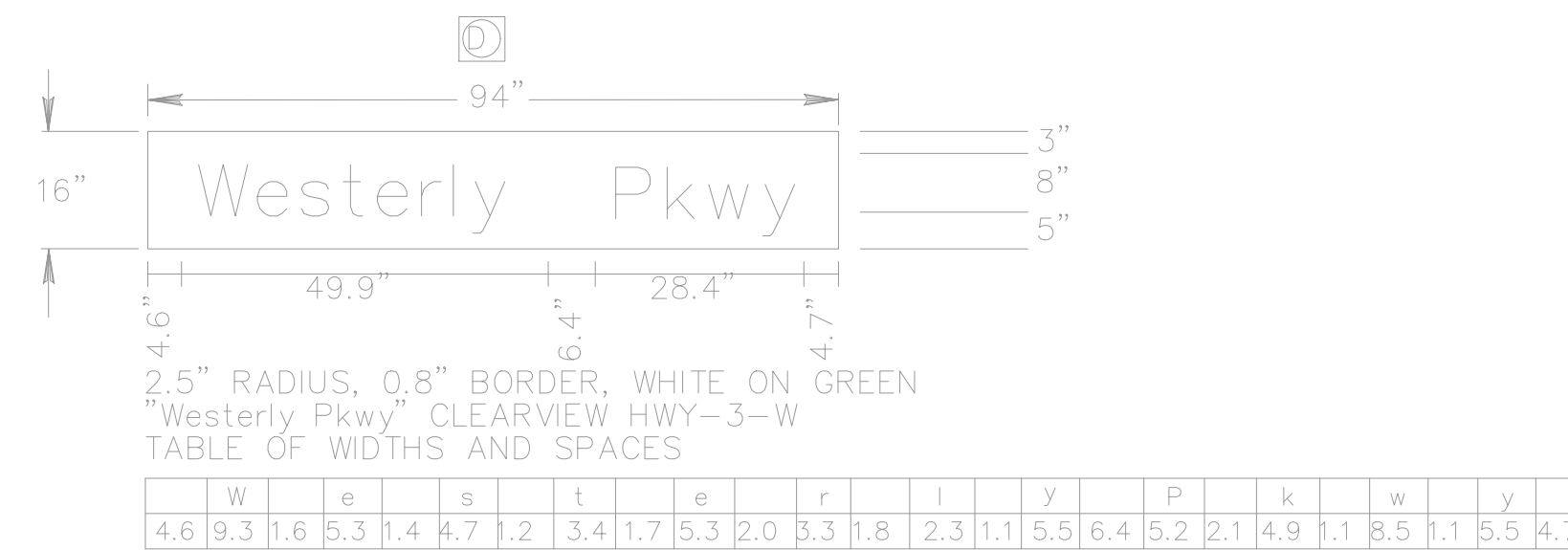
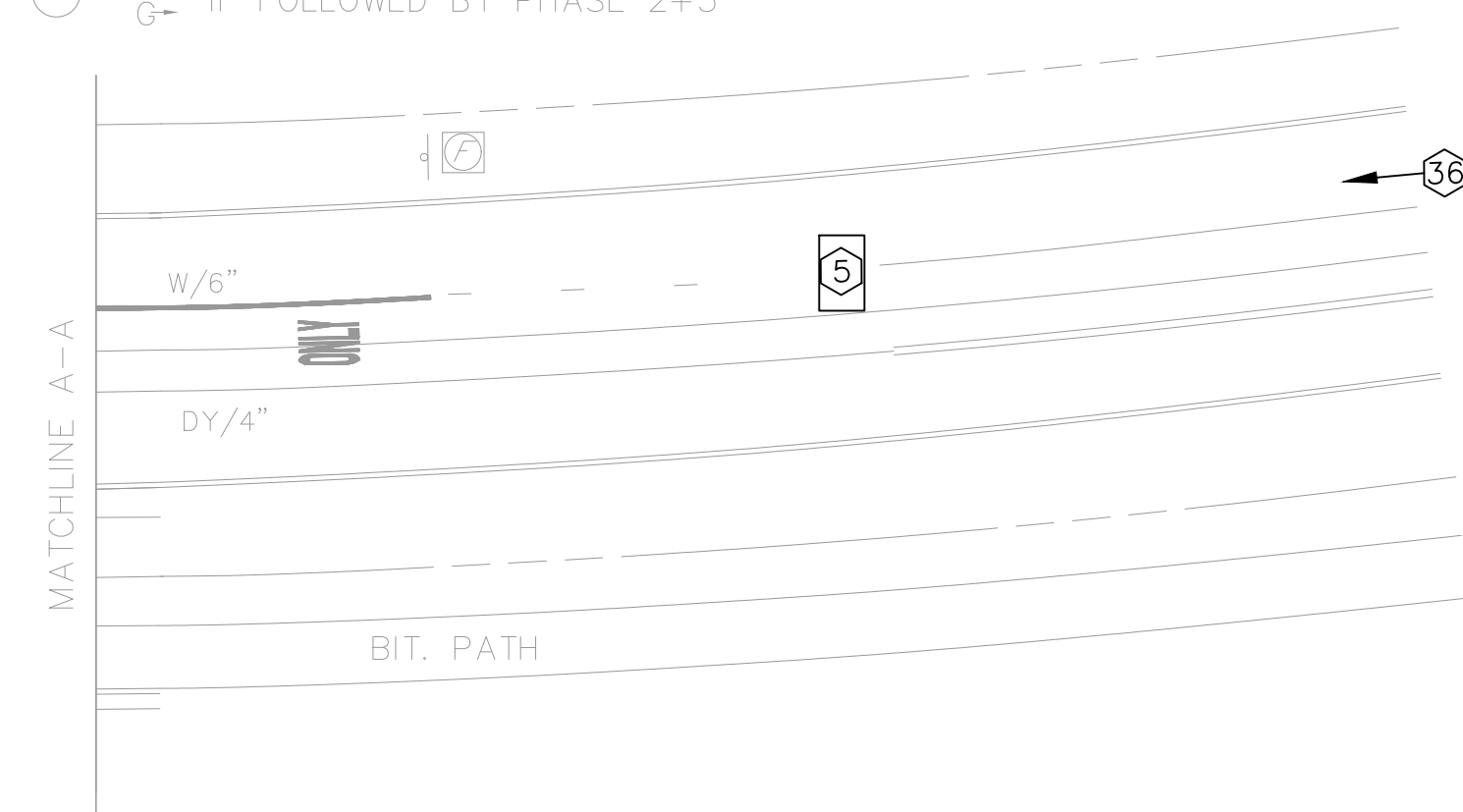
\* UPON PEDESTRIAN ACTIVATION ONLY  
PHASE 2+5 SHALL ONLY FOLLOW PHASE 4.

MAX. I ALL OTHER TIMES  
MAX. II 6:00 AM TO 10:00 AM  
MAX. III 2:00 PM TO 06:00 PM

$\frac{Y}{G}$  IF FOLLOWED BY PHASE 2+6  
 $G$  IF FOLLOWED BY PHASE 2+6

UPON PEDESTRIAN ACTUATION, OTHERWISE DON'T WALK AT ALL TIMES.

④  $\frac{Y}{G}$  IF FOLLOWED BY PHASE 2+5  
⑤  $\frac{R}{G}$  IF FOLLOWED BY PHASE 2+5



EMERGENCY VEHICLE PREEMPTION NOTES:

NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PREEMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS.

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 2+5, PHASE 6, OR PHASE 4. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.

IF THE CONTROLLER IS IN INTERVAL 1 (GREEN/GREEN ARROW) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK AND YELLOW AND ALL-RED INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE WHILE THE CONFLICTING GREEN INDICATIONS ARE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO TIME THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME AND CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED.

IF THE CONTROLLER OPERATION IS IN THE YELLOW, YELLOW ARROW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION. IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE. WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	25 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	

COUNTY : CENTRE

MUNICIPALITY : FERGUSON TOWNSHIP

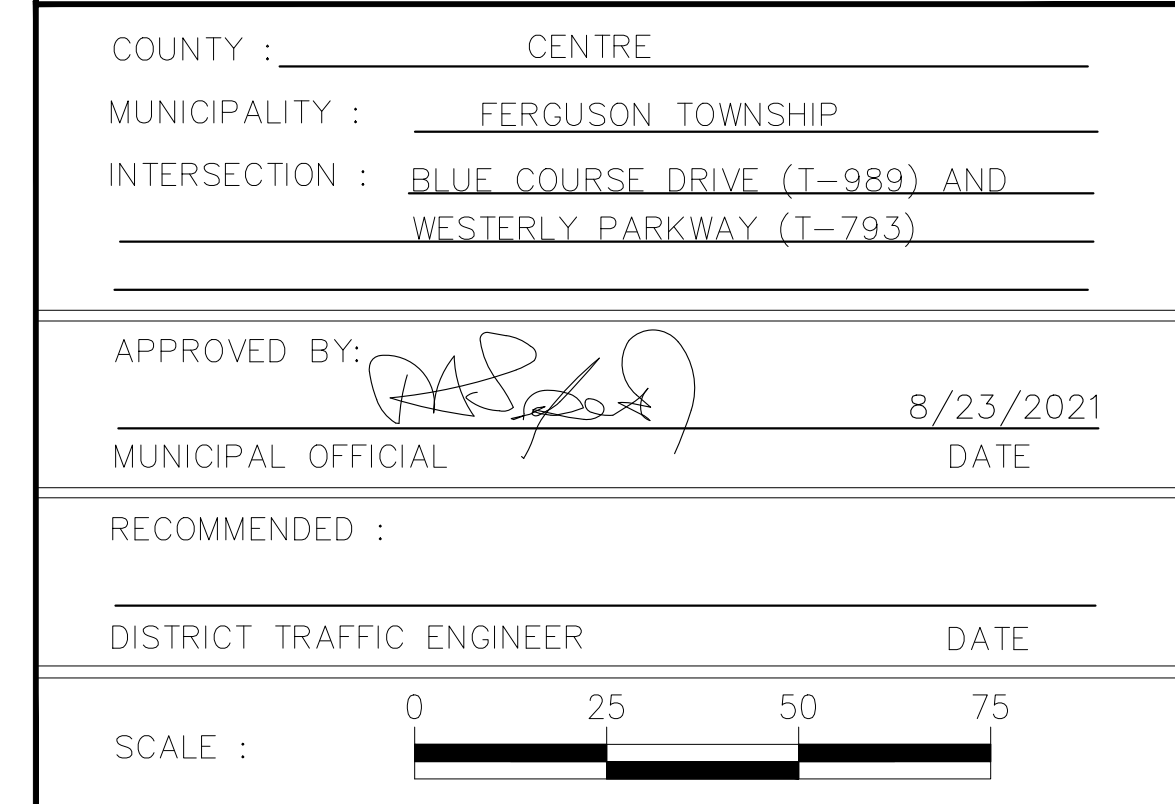
INTERSECTION : BLUE COURSE DRIVE (T-989) AND WESTERLY PARKWAY (T-793)

APPROVED BY: 8/23/2021

MUNICIPAL OFFICIAL DATE

RECOMMENDED :

DISTRICT TRAFFIC ENGINEER DATE

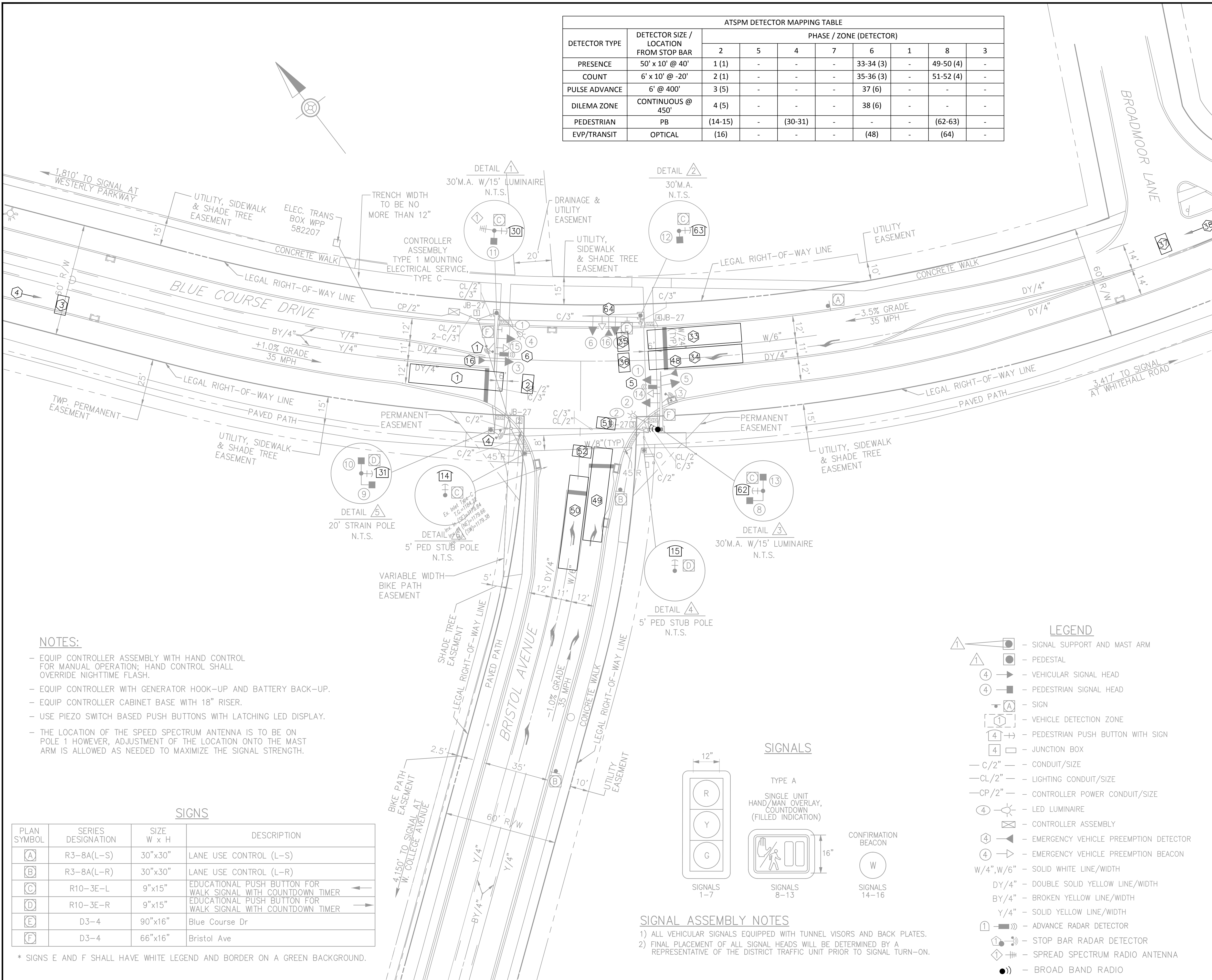


DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	26 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS			DATE

CONSTRUCTION NOTES:

1. INSTALL SINGLE CHANNEL BROAD BAND RADIO AND RELATED CABLING.
2. AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
3. INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.
4. PROGRAM ALL IP ADDRESSES AS ASSIGNED.
5. PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
6. ENABLE DATA LOGGING FUNCTION

ATSPM DETECTOR MAPPING TABLE									
DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
		2	5	4	7	6	1	8	3
PRESENCE	50' x 10' @ 40'	1 (1)	-	-	-	33-34 (3)	-	49-50 (4)	-
COUNT	6' x 10' @ -20'	2 (1)	-	-	-	35-36 (3)	-	51-52 (4)	-
PULSE ADVANCE	6' @ 400'	3 (5)	-	-	-	37 (6)	-	-	-
DILEMA ZONE	CONTINUOUS @ 450'	4 (5)	-	-	-	38 (6)	-	-	-
PEDESTRIAN	PB	(14-15)	-	(30-31)	-	-	-	(62-63)	-
EVP/TRANSIT	OPTICAL	(16)	-	-	-	(48)	-	(64)	-



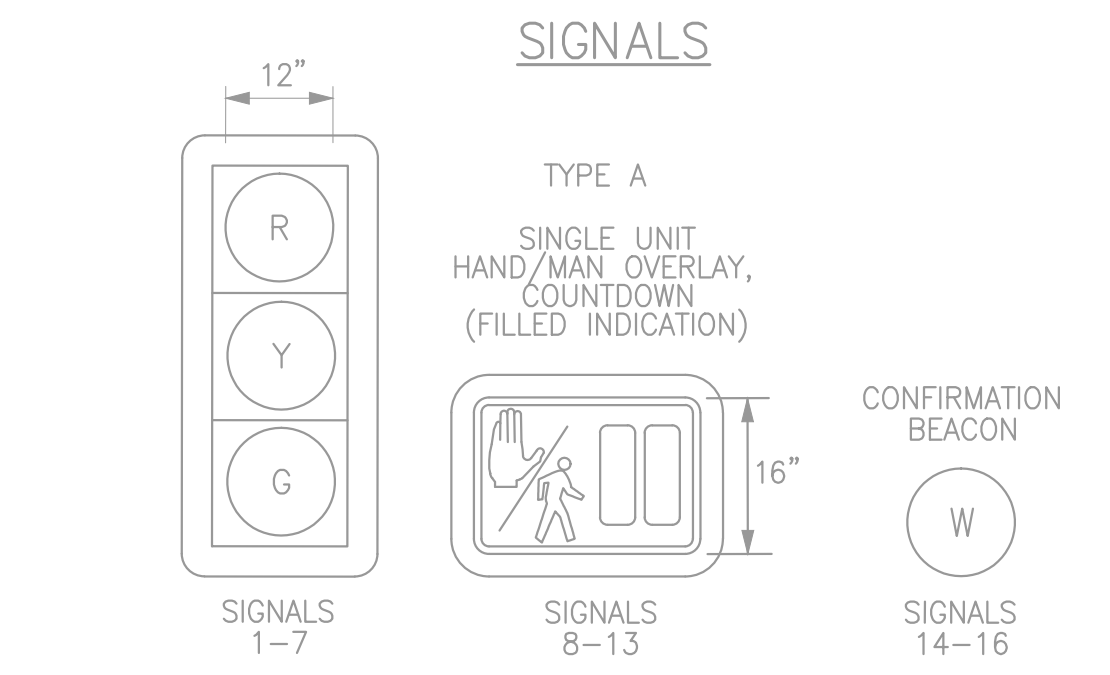
**NOTES:**

- EQUIP CONTROLLER ASSEMBLY WITH HAND CONTROL FOR MANUAL OPERATION; HAND CONTROL SHALL OVERRIDE NIGHTTIME FLASH.
- EQUIP CONTROLLER WITH GENERATOR HOOK-UP AND BATTERY BACK-UP.
- EQUIP CONTROLLER CABINET BASE WITH 18" RISER.
- USE PIEZO SWITCH BASED PUSH BUTTONS WITH LATCHING LED DISPLAY.
- THE LOCATION OF THE SPEED SPECTRUM ANTENNA IS TO BE ON POLE 1 HOWEVER, ADJUSTMENT OF THE LOCATION ONTO THE MAST ARM IS ALLOWED AS NEEDED TO MAXIMIZE THE SIGNAL STRENGTH.

PLAN SYMBOL	SERIES DESIGNATION	SIZE W x H	DESCRIPTION
(A)	R3-8A(L-S)	30"x30"	LANE USE CONTROL (L-S)
(B)	R3-8A(L-R)	30"x30"	LANE USE CONTROL (L-R)
(C)	R10-3E-L	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER
(D)	R10-3E-R	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER
(E)	D3-4	90"x16"	Blue Course Dr
(F)	D3-4	66"x16"	Bristol Ave

\* SIGNS E AND F SHALL HAVE WHITE LEGEND AND BORDER ON A GREEN BACKGROUND.

LEGEND	
	- SIGNAL SUPPORT AND MAST ARM
	- PEDESTAL
	- VEHICULAR SIGNAL HEAD
	- PEDESTRIAN SIGNAL HEAD
	- SIGN
	- VEHICLE DETECTION ZONE
	- PEDESTRIAN PUSH BUTTON WITH SIGN
	- JUNCTION BOX
	- CONDUIT/SIZE
	- LIGHTING CONDUIT/SIZE
	- CONTROLLER POWER CONDUIT/SIZE
	- LED LUMINAIRE
	- CONTROLLER ASSEMBLY
	- EMERGENCY VEHICLE PREEMPTION DETECTOR
	- EMERGENCY VEHICLE PREEMPTION BEACON
	- SOLID WHITE LINE/WIDTH
	- DOUBLE SOLID YELLOW LINE/WIDTH
	- BROKEN YELLOW LINE/WIDTH
	- SOLID YELLOW LINE/WIDTH
	- ADVANCE RADAR DETECTOR
	- STOP BAR RADAR DETECTOR
	- SPREAD SPECTRUM RADIO ANTENNA
	- BROAD BAND RADIO



**SIGNAL ASSEMBLY NOTES**

- 1) ALL VEHICULAR SIGNALS EQUIPPED WITH TUNNEL VISORS AND BACK PLATES.
- 2) FINAL PLACEMENT OF ALL SIGNAL HEADS WILL BE DETERMINED BY A REPRESENTATIVE OF THE DISTRICT TRAFFIC UNIT PRIOR TO SIGNAL TURN-ON.

ITEM NUMBER	MISCELLANEOUS		
	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	0	
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	1	CABINET
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	1	POLE 3
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	0	
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	0	
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	0	
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			

COUNTY : CENTRE

MUNICIPALITY : FERGUSON TOWNSHIP

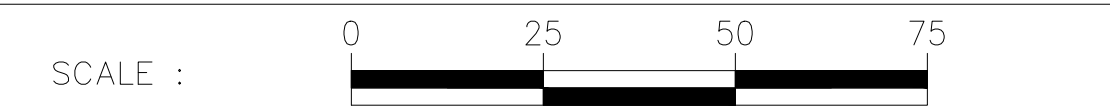
INTERSECTION : BRISTOL AVENUE (T-970)  
AND BLUE COURSE DRIVE (T-989)

APPROVED BY:

MUNICIPAL OFFICIAL: \_\_\_\_\_ DATE: 8/23/2021

RECOMMENDED :

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



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	27 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	

**PHASING DIAGRAM**

SIGNALS	PHASE 2+6				PHASE 8				EMERGENCY FLASHING
	1	2	3	4	1	2	3	4	
1-2	G	G	Y	R	R	R	R	R	Y
3-4-5	G	G	Y	R	R	R	R	R	Y
6-7	R	R	R	R	G	G	Y	R	R
8-9**	W	FD	DW	DW	DW	DW	DW	DW	OFF
10-11-12-13**	DW	DW	DW	DW	W	FD	DW	DW	OFF
FIXED			4.0	2.0			3.5	2.0	
MINIMUM	10.0				3.0				
PASSAGE	1.0				3.0				
MAX I	▲ 43				▲ 27				
MAX II	▲ 51				▲ 19				
PEDESTRIANS*	7	16			7	13			
MEMORY	MIN RECALL				NON LOCKING				

SELECTIVE YELLOW	PRE-EMPT 2				PRE-EMPT 6				PRE-EMPT 8			
	1	2	3	4	1	2	3	4	1	2	3	4
G	Y	R			R	R	R		R	R	R	
R	R	R			G	Y	R		R	R	R	
R	R	R			R	R	R		G	Y	R	
					DW	DW	DW		DW	DW	DW	
					DW	DW	DW		DW	DW	DW	
					*** 4.0	2.0			*** 3.5	2.0		

**EMERGENCY VEHICLE PREEMPTION NOTES**

NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PREEMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS.

EMERGENCY PREEMPTION SHALL BE PROVIDED ON A FIRST-COME, FIRST-SERVE BASIS. ONCE THE FIRST PRIORITY EMERGENCY VEHICLE CALLS THE SYSTEM, IT SHALL PREVENT OTHER PREEMPTIVE VEHICLES FROM ENTERING CALLS UNTIL THE FIRST EMERGENCY VEHICLE RELEASES CONTROL AND CLEARS THE INTERSECTION.

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 2, PHASE 6, OR PHASE 8. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/GREEN ARROW OR RED/GREEN ARROW) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PREEMPTION PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK INTERVAL AND THE YELLOW AND ALL RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTION PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW AND ALL RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO TIME THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN THE YELLOW, YELLOW ARROW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.

IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.

**ADVANCE DILEMMA ZONE NOTES**

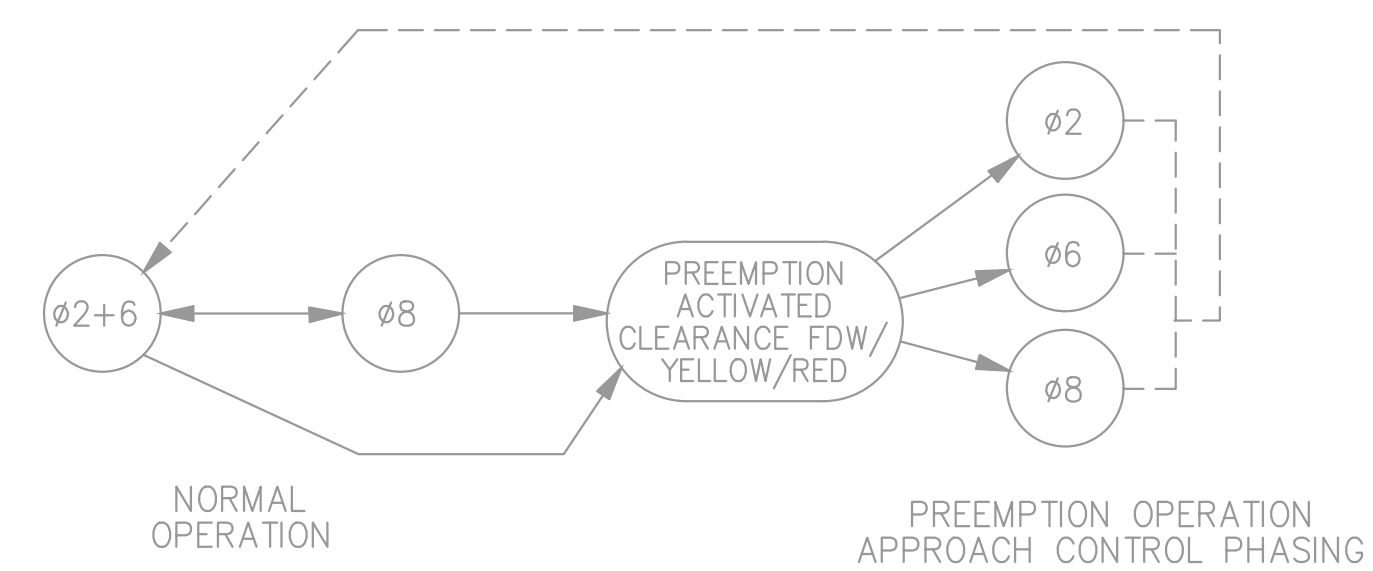
ESTIMATED TIME OF ARRIVAL: MINIMUM 2.5 - MAXIMUM 5.5 SECONDS.  
 RANGE OF DETECTION: MINIMUM 5 - MAXIMUM 450 FEET FROM STOP BAR.  
 MINIMUM SPEED BOUNDARY 10 MPH.  
 ZONE MAY BE ADJUSTED IN FIELD.

**DETECTION ZONE NOTES (STOP BAR)**

RANGE OF DETECTION: MINIMUM 30 - MAXIMUM 100 FEET FROM STOP BAR.  
 MINIMUM SPEED BOUNDARY 1 MPH.  
 ZONE MAY BE ADJUSTED IN FIELD.

- \* UPON PEDESTRIAN ACTUATION
- \*\* UPON PEDESTRIAN ACTUATION, SIGNALS 8,9,10,11,12, & 13 SHALL DISPLAY THE NUMBER OF SECONDS REMAINING IN INTERVAL 2 OF THE ACTIVE PHASE. THE COUNTDOWN TIMER SHALL REMAIN DARK DURING ALL OTHER INTERVALS.
- \*\*\* GREEN TIME IS VARIABLE. IT WILL TERMINATE 5 SECONDS AFTER THE DEVICE CALL DROPS OUT. EXTEND THE PREEMPTION CALL 5 SECONDS.
- ▲ TOTAL LENGTH OF PHASE IN SECONDS
- MAX I OPERATES FROM 6:00 AM TO 9:00 AM. MAX II OPERATES ALL OTHER TIMES.

**PHASE ROTATION DIAGRAM**



COUNTY : \_\_\_\_\_ CENTRE \_\_\_\_\_  
 MUNICIPALITY : \_\_\_\_\_ FERGUSON TOWNSHIP \_\_\_\_\_  
 INTERSECTION : \_\_\_\_\_ BRISTOL AVENUE (T-970) \_\_\_\_\_  
 \_\_\_\_\_ AND BLUE COURSE DRIVE (T-989) \_\_\_\_\_

APPROVED BY: \_\_\_\_\_ 8/23/2021  
 MUNICIPAL OFFICIAL \_\_\_\_\_ DATE

RECOMMENDED : \_\_\_\_\_  
 DISTRICT TRAFFIC ENGINEER \_\_\_\_\_ DATE

SCALE : \_\_\_\_\_ 0 25 50 75 \_\_\_\_\_

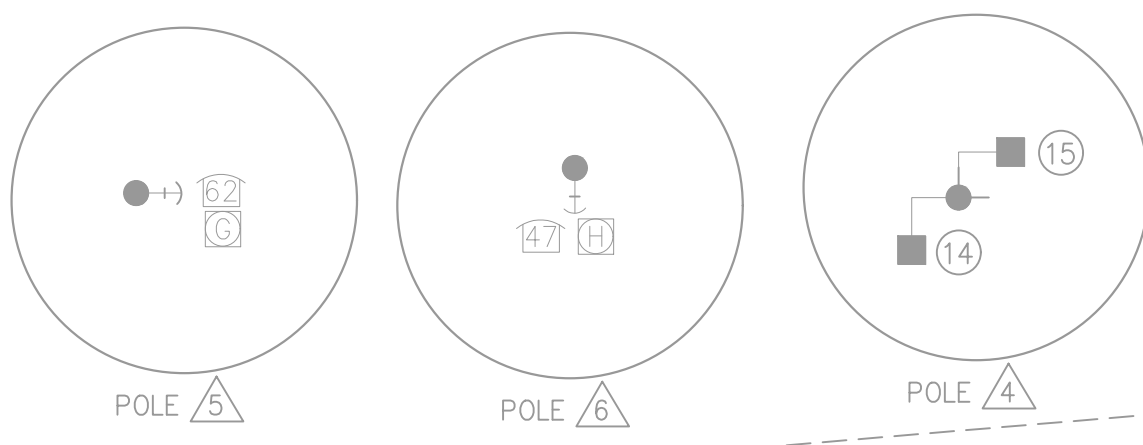
PHASING DIAGRAM

SIGNALS	PHASE 1+5				PHASE 2+5				PHASE 1+6				PHASE 2+6				PHASE 4+8				EMER. FLASHING
	1	2	3		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
1	R	R	R		R	R	R		G	G	Y	R	G	G	Y	R	R	R	R		Y
2	R	R	R		R	R	R		G	G	Y	R	G	G	Y	R	R	R	R		Y
3	R	R	R		R	R	R		G	G	Y	R	G	G	Y	R	R	R	R		Y
4	R	R	R		R	R	R		G	G	Y	R	G	G	Y	R	R	R	R		Y
5, 6, 7, 8	R	R	R		R	R	R		R	R	R	R	R	R	R	R	G	G	Y	R	R
17	R	R	R		R	R	R		R	R	R	R	R	R	R	R	G	G	Y	R	R
* 9, 10, 13, 14	DW	DW	DW		DW	DW	DW		DW	DW	DW	DW	DW	DW	DW	DW	W	FD	DW	DW	OFF
* 11, 12	DW	DW	DW		W	FD	DW	DW	DW	DW	DW	DW	W	FD	DW	DW	DW	DW	DW	DW	OFF
* 15, 16	DW	DW	DW		DW	DW	DW		W	FD	DW	DW	W	FD	DW	DW	DW	DW	DW	DW	OFF
FIXED	3.5	3			3.5	3			3.5	3			4	2			4	2			
MINIMUM	3				3				3				15				5				
SEC/ACT													2.5								
MAXIMUM INIT													23								
PASSAGE	2				2				2				6								
TO REDUCE													10								
BEFORE REDUCE													23								
MIN GAP													5								
MAXIMUM I	7				7				7				66				27				
MAXIMUM II	7				7				7				75				27				
* PEDESTRIAN					9				9				7	19			7	20			
MEMORY	NON-LOCKING				NON-LOCKING				NON-LOCKING				MINIMUM RECALL				NON-LOCKING				

\*UPON PEDESTRIAN ACTUATION, OTHERWISE 'DONT WALK' AT ALL TIMES  
 MAX I: ALL OTHER TIMES  
 MAX II: 3:00PM TO 6:00PM  
 PHASES 1 & 5 SHALL ONLY FOLLOW PHASE 4+8

PRESENCE DETECTION ZONE NOTES:  
 RANGE OF DETECTION: MINIMUM 30 - MAXIMUM 100 FEET FROM STOP BAR  
 MINIMUM SPEED BOUNDARY - 1 MPH ZONE MAY BE ADJUSTED IN FIELD.

ADVANCE DILEMMA ZONE NOTES:  
 ESTIMATED TIME OF ARRIVAL: MINIMUM 2.5 SECONDS - MAXIMUM 5.5 SECONDS. RANGE OF DETECTION: MINIMUM 5 FEET - MAXIMUM 450 FEET FROM THE STOP BAR. MINIMUM SPEED BOUNDARY 10 MPH. ZONE MAY BE ADJUSTED IN THE FIELD.



- NOTES
- IF FOLLOWED BY PHASE 2+6.
  - G IF FOLLOWED BY PHASE 2+6.
  - G IF FOLLOWED BY PHASE 1+6.
  - IF FOLLOWED BY PHASE 1+5.
  - IF FOLLOWED BY PHASE 2+5.
  - G IF FOLLOWED BY PHASE 2+5.
  - IF FOLLOWED BY PHASE 1+6.
  - IF FOLLOWED BY PHASE 2+5.
  - TIMING WILL BE SHOWN IN PHASE 2+6. INTERVALS 1 & 2 MAY TIME OUT IN THIS PHASE OR MAY BE COMPLETED IN PHASE 2+6.

ATSPM DETECTOR MAPPING TABLE

DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
		2	5	4	7	6	1	8	3
PRESENCE	50' x 10' @ 40'	1-2 (1)	3 (1)	17-18 (2)	-	33 (3)	34 (3)	49-51 (4)	-
COUNT	6' x 10' @ -20'	4-5 (1)	6 (1)	19-20 (2)	-	35 (3)	36 (3)	52-54 (4)	-
PULSE ADVANCE	6' @ 400'	7 (5)	-	-	-	37 (6)	-	-	-
DILEMMA ZONE	CONTINUOUS @ 450'	8 (5)	-	-	-	38 (6)	-	-	-
PEDESTRIAN	PB	(14-15)	(30-31)	-	-	(46-47)	(62-63)	-	-
EVP/TRANSIT	OPTICAL	(16)	(32)	(48)	(64)	-	-	-	-

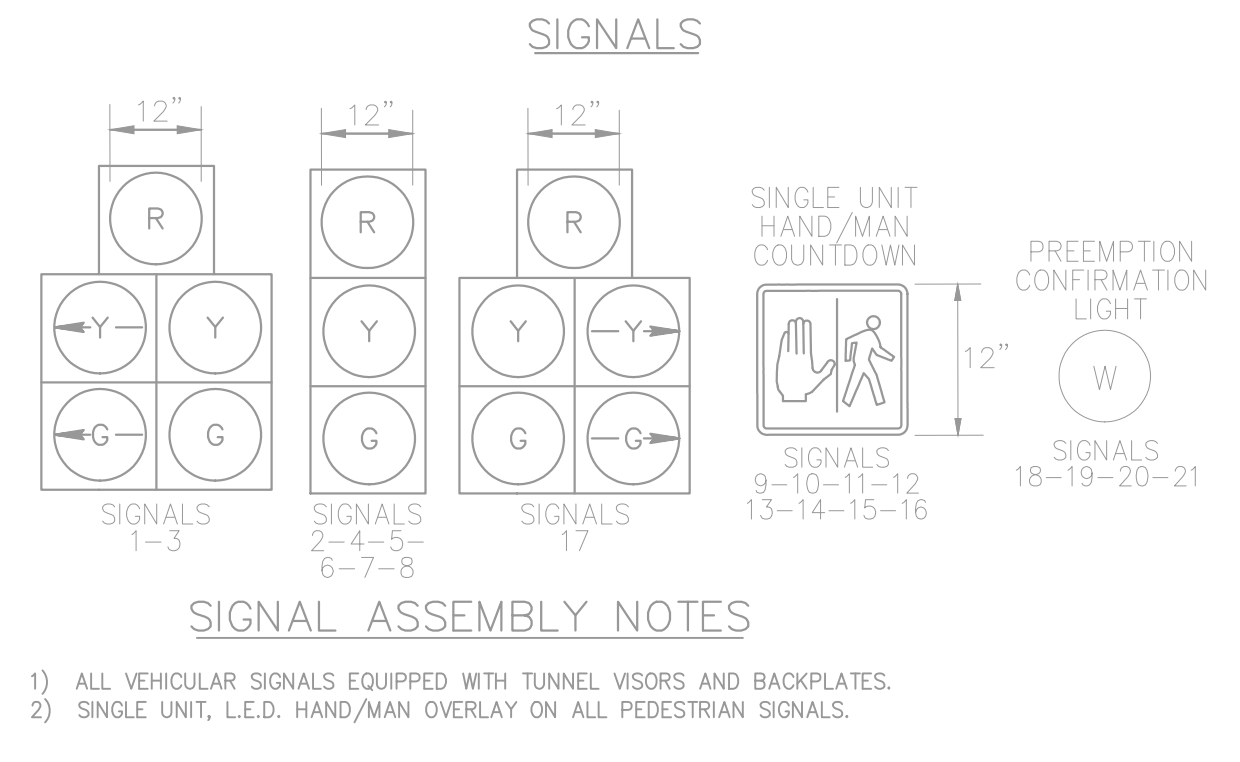
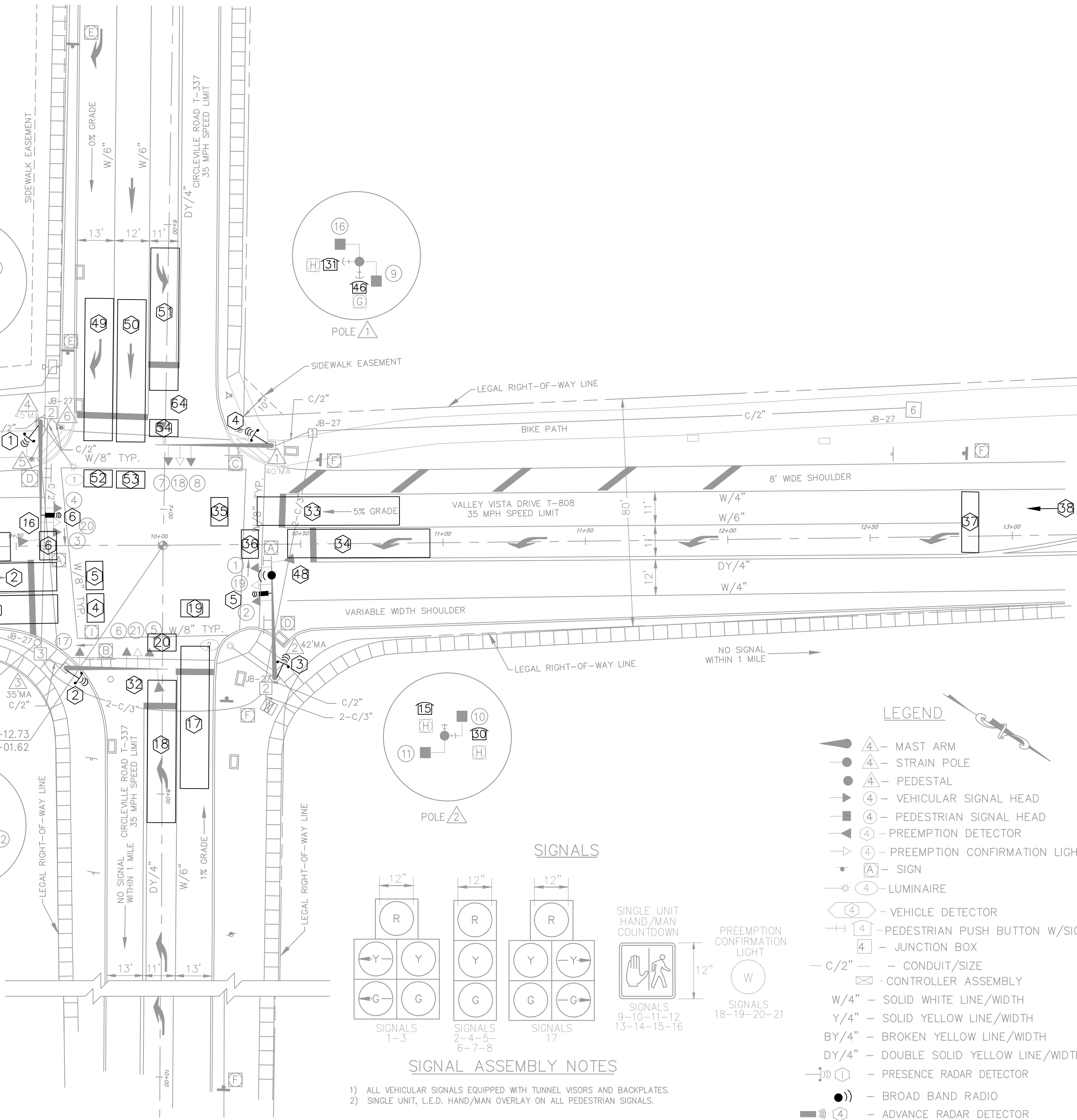
DISTRICT	COUNTY	ROUTE	SECTION	SHEET	
2-0	CENTRE	LOCAL	02E011	28 OF 44	
FERGUSON TOWNSHIP					
REVISION NUMBER	REVISIONS			DATE	BY

- CONSTRUCTION NOTES:
- INSTALL 4 STOP BAR DETECTORS
  - INSTALL 2 ADVANCE DETECTORS
  - INSTALL CLICK 656
  - CONNECT STOP BAR AND ADVANCE DETECTOR WIRE TO CLICK 656 VIA MINI-JUNCTION IN POLE BASE THEN HOME RUN TO CLICK 656, OR HOME RUN FROM DETECTOR TO CLICK 656
  - REMOVE DETECTOR LEAD-IN WIRES AND DETECTOR AMPLIFIERS.
  - INSTALL AND SET UP BROADBAND RADIO WITH CABLE TO CABINET. DO NOT SPLICE CABLE FROM RADIO TO NETWORK SWITCH.
  - PROGRAM NEW CONTROLLER FOR NEW PHASE LAYOUT AND DETECTION ZONES FOR ATSPM.
  - INSTALL NETWORK SWITCH AND CONNECT TO ALL CAPABLE DEVICES IN CONTROLLER CABINET.
  - INSTALL MMU.

ITEM NUMBER	MISCELLANEOUS	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B		0	
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM		4	POLES 1,2,3 & 4
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM		2	POLES 2 AND 4
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE		1	CABINET
9000-1001	MANAGED NETWORK SWITCH		1	CABINET
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO		1	POLE 2
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO		0	
9000-1004	CONTROLLER UNIT REPLACEMENT		1	CABINET
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT		1	CABINET
9000-1006	SOLAR POWER SUPPLY SYSTEM		0	
9000-1007	RADIO ROOF MOUNTING		0	
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE		0	
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#		0	
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#		0	
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#		0	

SIGNS

PLAN SYMBOL	SERIES DESIGNATION	SIZE W x H	DESCRIPTION
A	R10-12	30"x36"	LEFT TURN YIELD ON GREEN
B	D3-5	96"x28"	← Valley Vista Dr Science Park Rd
C	D3-5	96"x28"	→ Science Park Rd Valley Vista Dr
D	D3-4	96"x16"	Circleville Rd
E	R3-8B (L-S-R)	48"x30"	LANE USE CONTROL SIGN
F	R3-8(L-SR)	30"x30"	LANE USE CONTROL SIGN
G	R10-3E-L	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL
H	R10-3E-R	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL
I	R10-10R	30"x36"	RIGHT TURN SIGNAL



- LEGEND
- MAST ARM
  - STRAIN POLE
  - PEDESTAL
  - VEHICULAR SIGNAL HEAD
  - PEDESTRIAN SIGNAL HEAD
  - PREEMPTION DETECTOR
  - PREEMPTION CONFIRMATION LIGHT
  - SIGN
  - LUMINAIRE
  - VEHICLE DETECTOR
  - PEDESTRIAN PUSH BUTTON W/SIGN
  - JUNCTION BOX
  - CONDUIT/SIZE
  - CONTROLLER ASSEMBLY
  - SOLID WHITE LINE/WIDTH
  - SOLID YELLOW LINE/WIDTH
  - BROKEN YELLOW LINE/WIDTH
  - DOUBLE SOLID YELLOW LINE/WIDTH
  - PRESENCE RADAR DETECTOR
  - BROAD BAND RADIO
  - ADVANCE RADAR DETECTOR

COUNTY : CENTRE  
 MUNICIPALITY : FERGUSON TOWNSHIP  
 INTERSECTION : CIRCLEVILLE ROAD (T-337) AND VALLEY VISTA DRIVE (T-808)/ SCIENCE PARK ROAD (T-336)

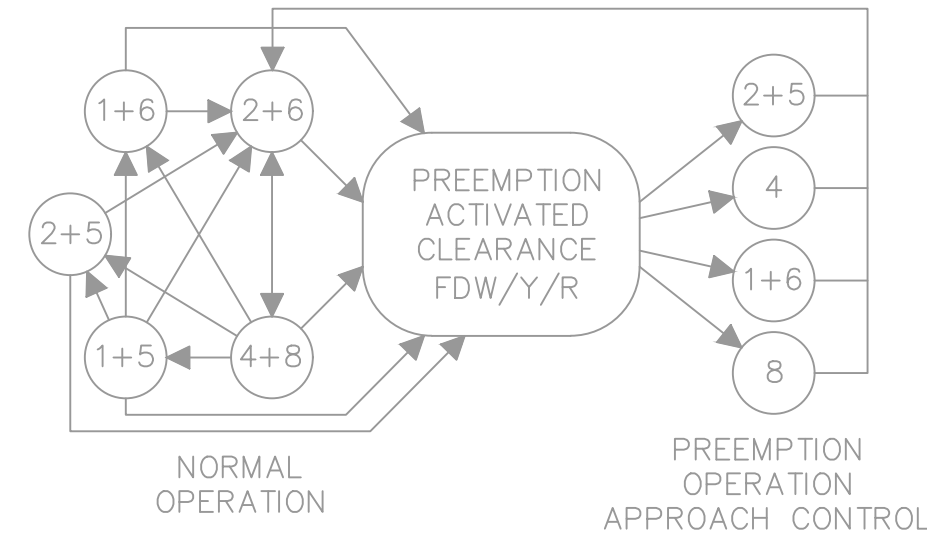
APPROVED BY: *[Signature]* 8/23/2021  
 MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
 DISTRICT TRAFFIC ENGINEER DATE

SCALE : 0 25 50 75

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	29 OF 44

FERGUSON TOWNSHIP			
REVISION NUMBER	REVISIONS	DATE	BY



NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PREEMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS. EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 2+5, PHASE 4, PHASE 1+6 OR PHASE 8. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK AND YELLOW INTERVAL BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW CLEARANCE INTERVAL. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW CLEARANCE INTERVAL BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO TIME THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN THE YELLOW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.

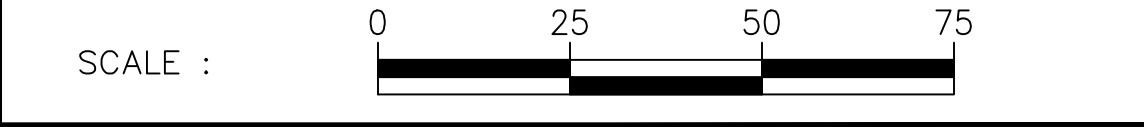
FLASHING TO EMERGENCY VEHICLE PREEMPTION. IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

FAIL-SAFE INDICATION. WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.

COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : CIRCLEVILLE ROAD (T-337) AND  
VALLEY VISTA DRIVE (T-808)/  
SCIENCE PARK ROAD (T-336)

APPROVED BY:  8/23/2021  
MUNICIPAL OFFICIAL DATE

RECOMMENDED : \_\_\_\_\_  
DISTRICT TRAFFIC ENGINEER DATE



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	30 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS			DATE
				BY

**CONSTRUCTION NOTES:**

1. INSTALL DUAL CHANNEL BROAD BAND RADIO AND RELATED CABLING.
2. AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
3. INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.
4. PROGRAM ALL IP ADDRESSES AS ASSIGNED.
5. PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
6. ENABLE DATA LOGGING FUNCTION.

ITEM NUMBER	MISCELLANEOUS		
	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	0	
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	1	CABINET
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	0	
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	1	POLE 3
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	0	
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	0	
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			

COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : SCIENCE PARK ROAD (T-336) AND OLD GATESBURG (T-335)

APPROVED BY: [Signature] 8/23/2021  
MUNICIPAL OFFICIAL DATE

RECOMMENDED : \_\_\_\_\_  
DISTRICT TRAFFIC ENGINEER DATE

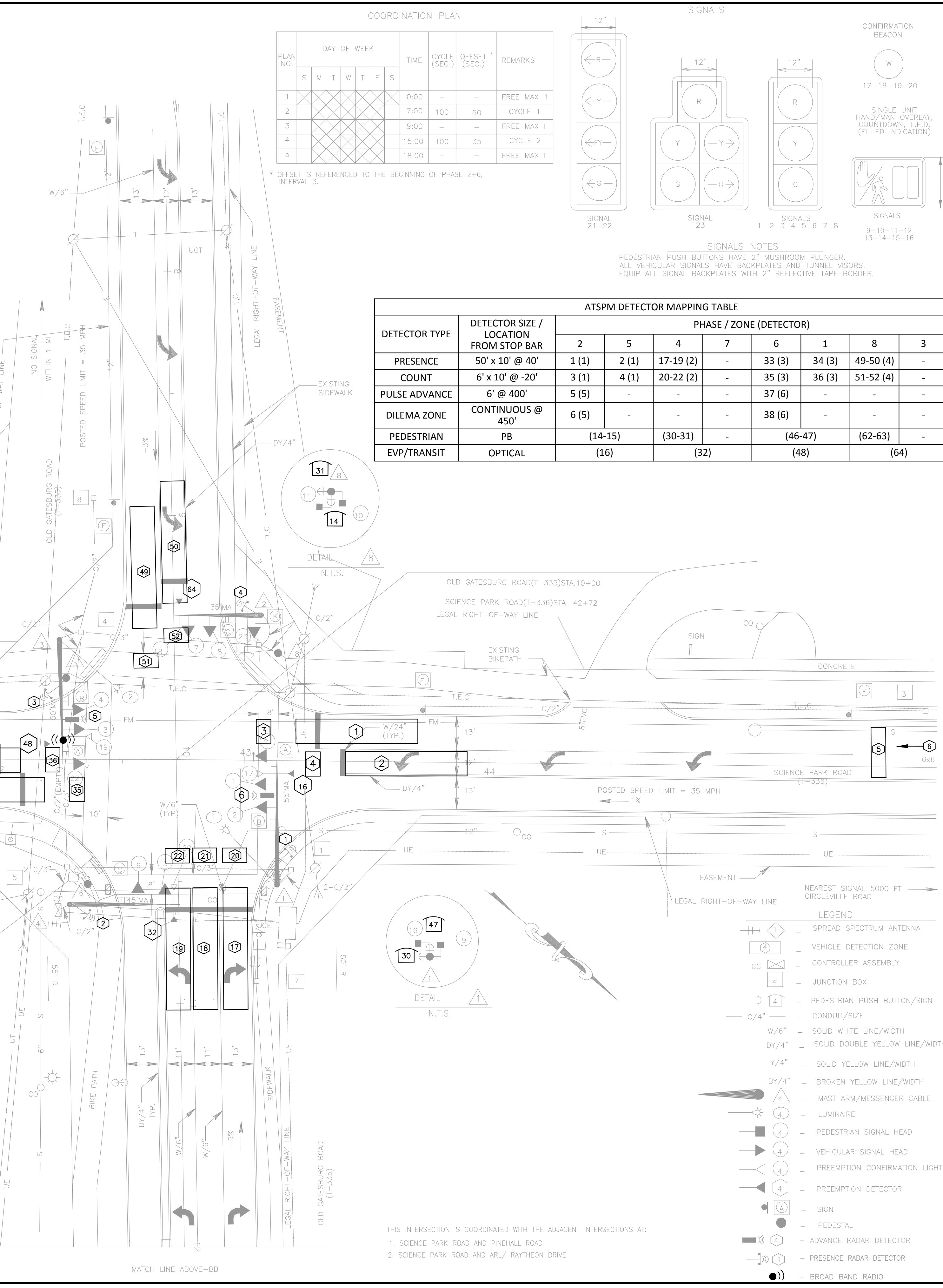
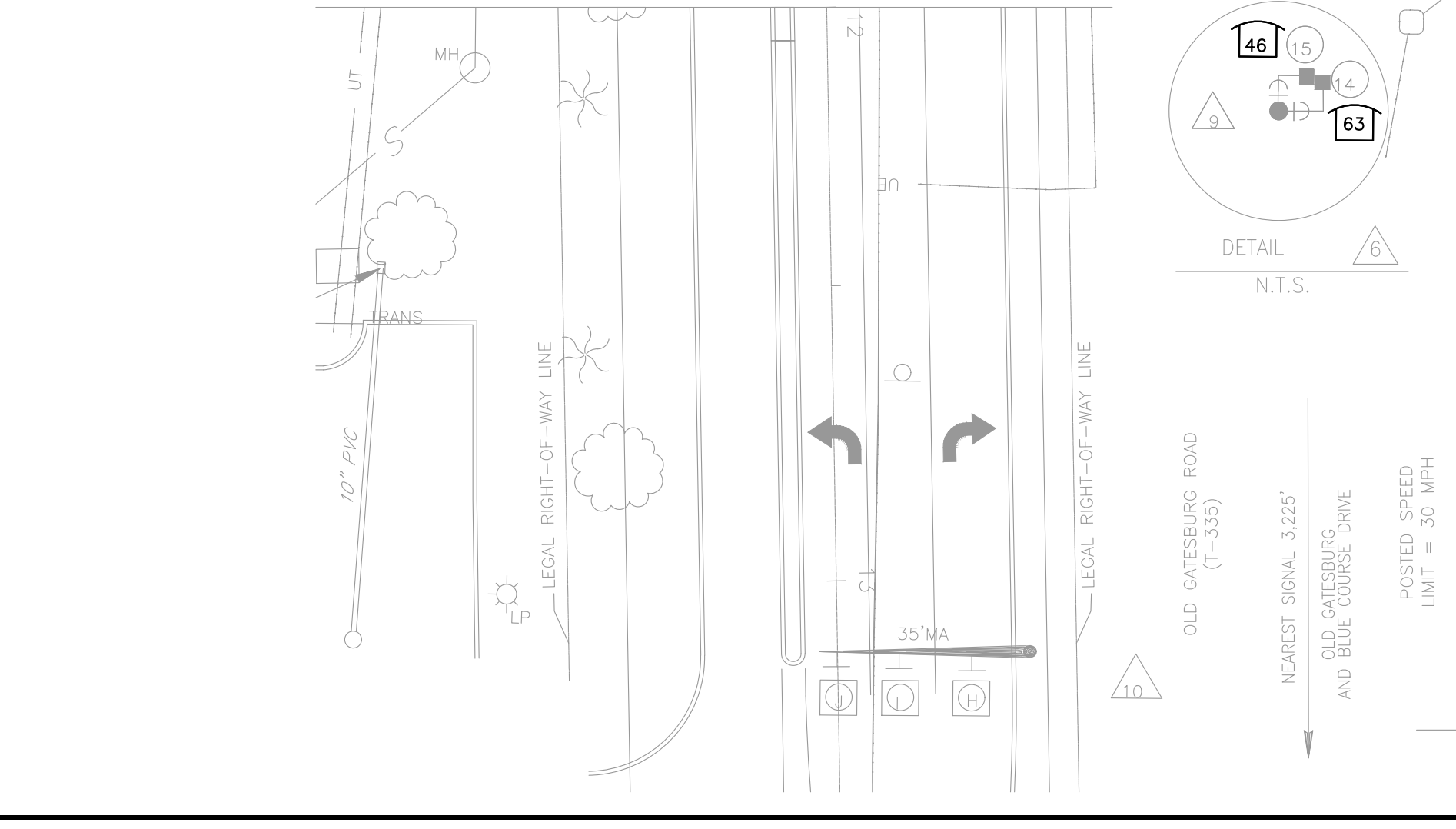
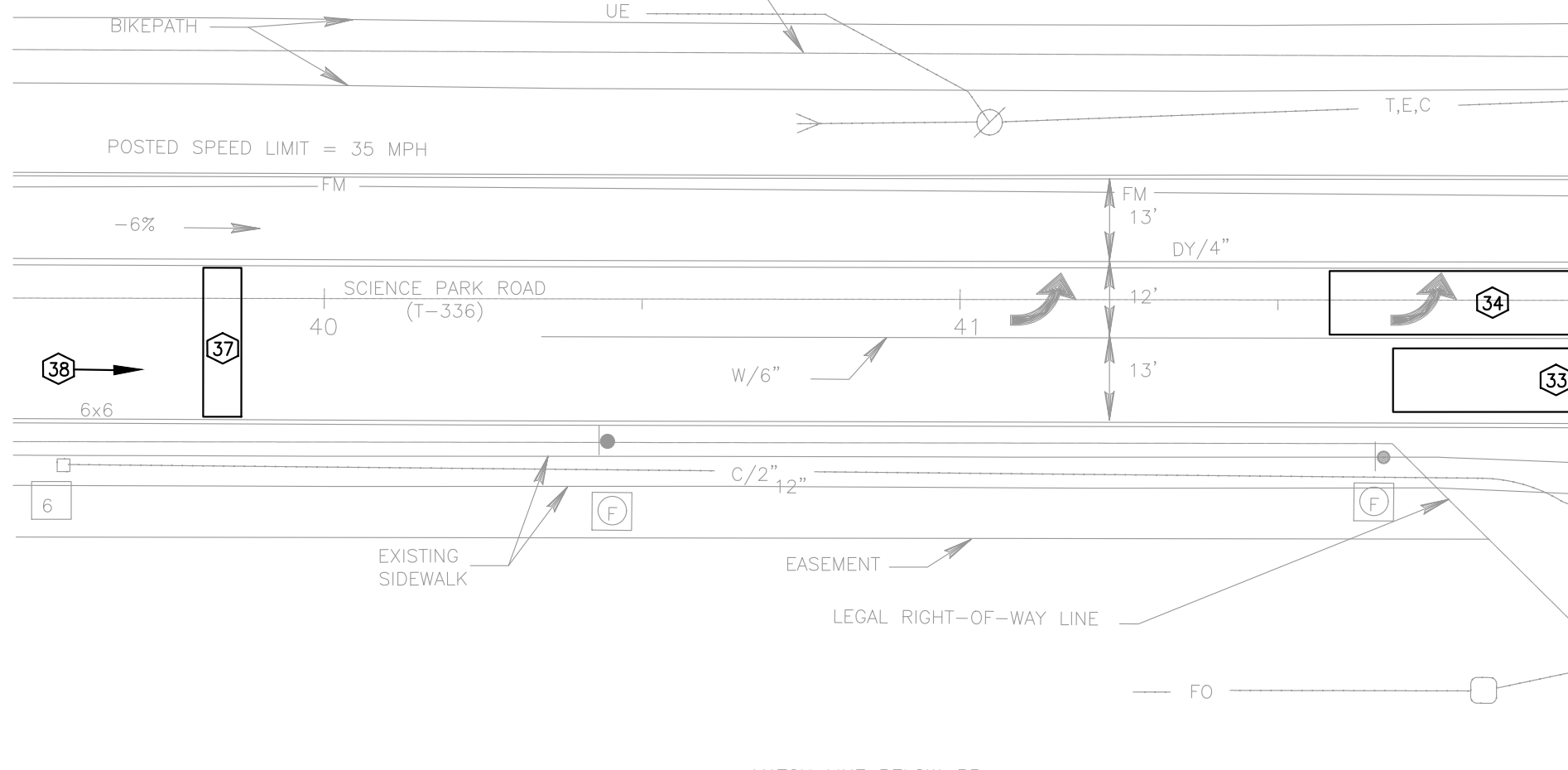
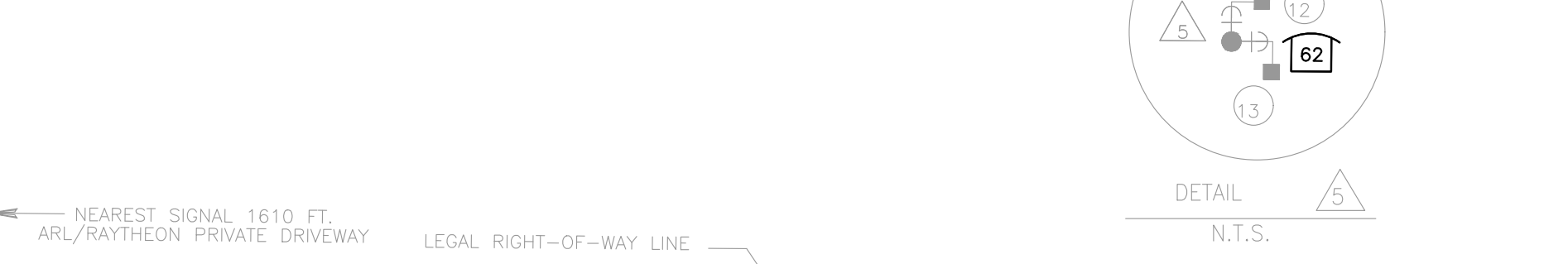
SCALE : 0 25 50 75

SIGNAL \ INTERVAL	PHASE 1+5				PHASE 1+6				PHASE 2+5				PHASE 2+6				PHASE 4+8				EMERGENCY FLASH
	1	2	3		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
21	G	Y(1)	R(1)		G	G	Y	R	FY(9)	FY	FY(7)	R	FY(9)	FY	Y	R	R	R	R	R	OFF
22	G	Y(2)	R(2)		FY(9)	FY	FY(7)	R	G	G	Y	R	FY(9)	FY	Y	R	R	R	R	R	OFF
1, 2	R	R	R		G	G	Y	R	R	R	R	R	G	G	Y	R	R	R	R	R	Y
3, 4	R	R	R		R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	Y
5, 6	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
7, 8	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
23	R/G	R/Y	R(3)		R	R	R	R	R/G	R/Y	R	G	G	Y	R	R	R	R	R	R	OFF
9, 10, 13, 14 (5)	DW	DW	DW		DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	OFF
11, 12 (5)	DW	DW	DW		DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	OFF
15, 16 (5)	DW	DW	DW		W	FD	DW	DW	DW	DW	DW	DW	W	FD	DW	DW	DW	DW	DW	DW	OFF
FIXED	X	3.5	3		X	X	3.5	3	X	X	3.5	3	X	X	4	2	X	X	4	2	
MIN GREEN	3				3				3				8				3				
PASSAGE	2				2				2				1.5				3				
MAX 1	7				7				11				48				26				
CYCLE 1 (4)	14				14				18				54				32				
CYCLE 2 (4)	14				14				14				53				33				
PEDESTRIAN (5)													7	19			7	20			
MEMORY	NON-LOCKING				NON-LOCKING				NON-LOCKING				MIN RECALL				NON-LOCKING				

**SIGNAL NOTES:**  
(1) G IF FOLLOWED BY PHASE 1+6  
(2) G IF FOLLOWED BY PHASE 2+5  
(3) R/G IF FOLLOWED BY PHASE 2+5  
(4) TIME EQUALS TOTAL LENGTH OF PHASE  
(5) WALK SYMBOL AND TIMES UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE DON'T WALK AT ALL TIMES  
(6) TIMING AS SHOWN IN 2+6. WALK INTERVAL MAY TIME OUT DURING THIS PHASE  
(7) Y IF FOLLOWED BY 4+8  
(8) R IF FOLLOWED BY 4+8  
(9) FYA TO HAVE TWO SECOND DELAY

**PRESENCE DETECTION ZONE NOTES:**  
RANGE OF DETECTION MINIMUM 30 - MAXIMUM 100 FEET FROM STOP BAR  
MINIMUM SPEED BOUNDARY - 1 MPH ZONE MAY BE ADJUSTED IN FIELD.

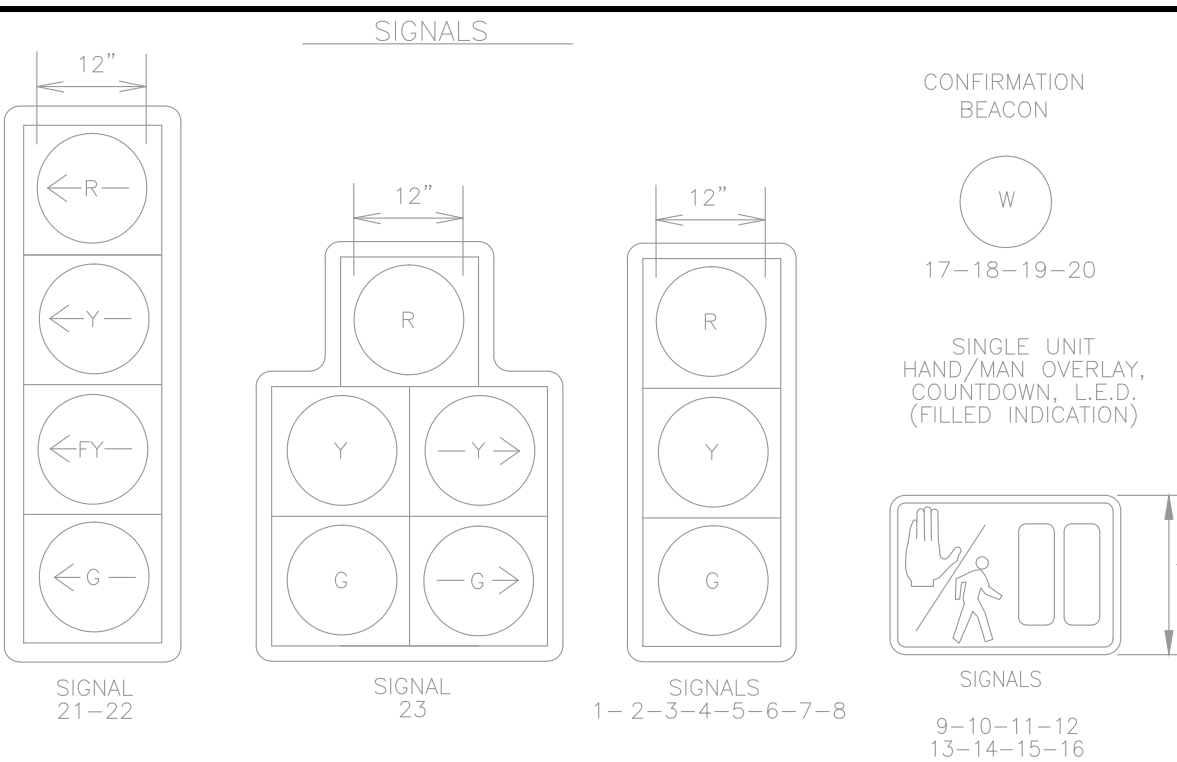
**ADVANCE DILEMMA ZONE NOTES:**  
ESTIMATED TIME OF ARRIVAL: MINIMUM 2.5 SECONDS - MAXIMUM 5.5 SECONDS. RANGE OF DETECTION: MINIMUM 5 FEET - MAXIMUM 450 FEET FROM THE STOP BAR. MINIMUM SPEED BOUNDARY 10 MPH. ZONE MAY BE ADJUSTED IN THE FIELD.



COORDINATION PLAN

PLAN NO.	DAY OF WEEK							TIME	CYCLE (SEC.)	OFFSET* (SEC.)	REMARKS
	S	M	T	W	T	F	S				
1								0:00	-	-	FREE MAX 1
2								7:00	100	50	CYCLE 1
3								9:00	-	-	FREE MAX 1
4								15:00	100	35	CYCLE 2
5								18:00	-	-	FREE MAX 1

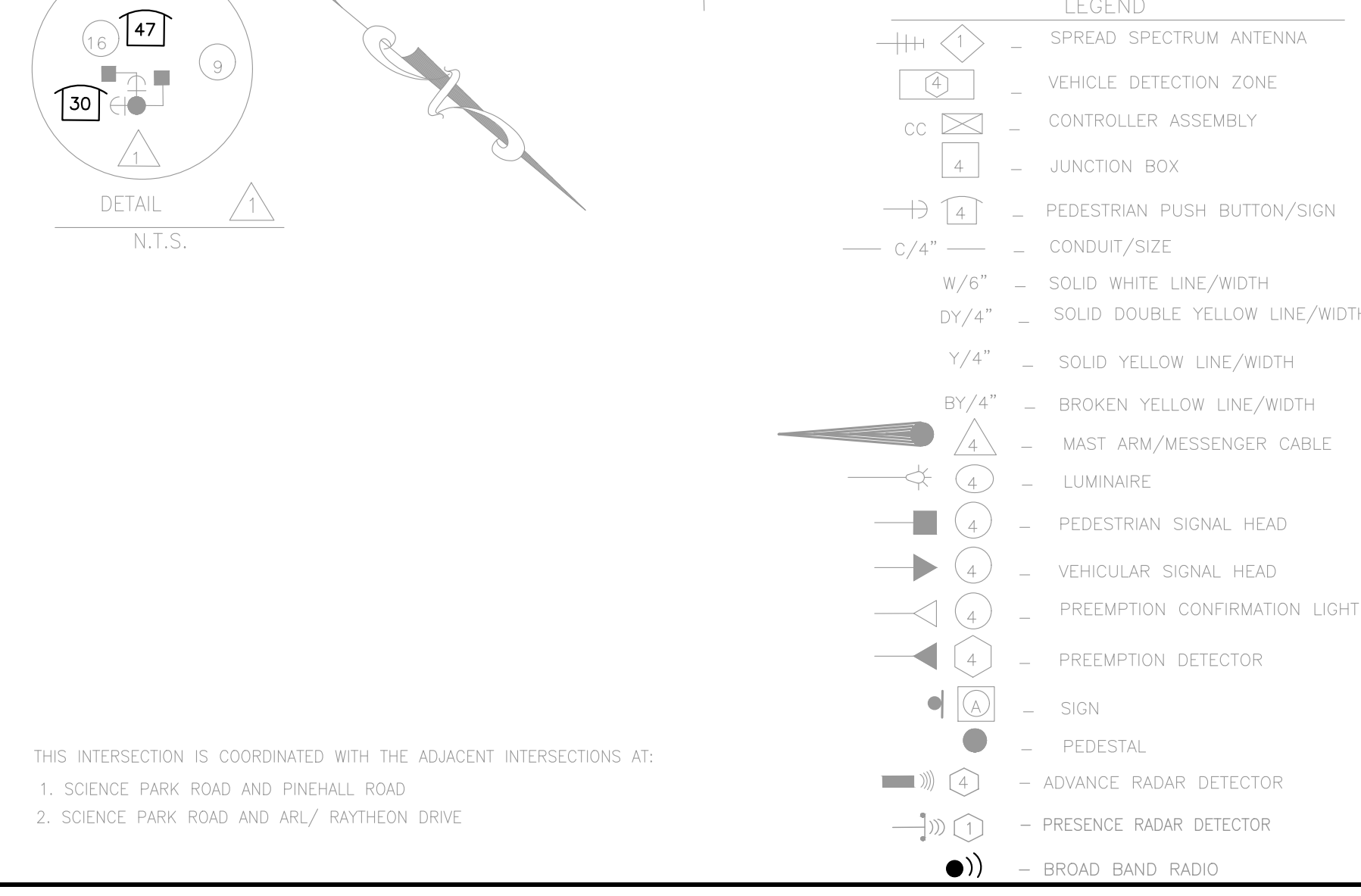
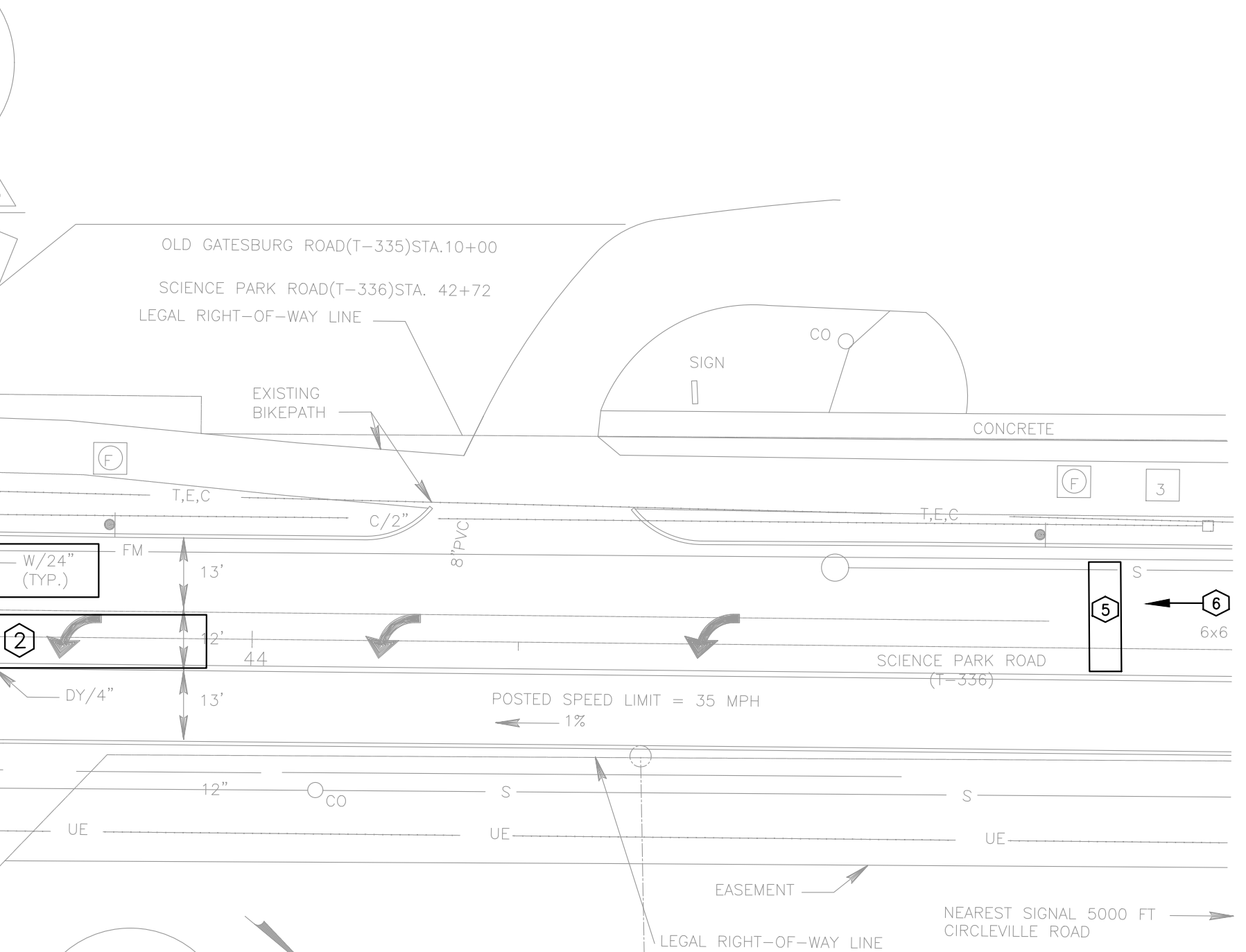
\* OFFSET IS REFERENCED TO THE BEGINNING OF PHASE 2+6, INTERVAL 3.



**SIGNALS NOTES:**  
PEDESTRIAN PUSH BUTTONS HAVE 2" MUSHROOM PLUNGER.  
ALL VEHICULAR SIGNALS HAVE BACKPLATES AND TUNNEL VISORS.  
EQUIP ALL SIGNAL BACKPLATES WITH 2" REFLECTIVE TAPE BORDER.

ATSPM DETECTOR MAPPING TABLE

DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
		2	5	4	7	6	1	8	3
PRESENCE	50' x 10' @ 40'	1 (1)	2 (1)	17-19 (2)	-	33 (3)	34 (3)	49-50 (4)	-
COUNT	6' x 10' @ -20'	3 (1)	4 (1)	20-22 (2)	-	35 (3)	36 (3)	51-52 (4)	-
PULSE ADVANCE	6' @ 400'	5 (5)	-	-	-	37 (6)	-	-	-
DILEMMA ZONE	CONTINUOUS @ 450'	6 (5)	-	-	-	38 (6)	-	-	-
PEDESTRIAN	PB	(14-15)		(30-31)		(46-47)		(62-63)	
EVP/TRANSIT	OPTICAL	(16)		(32)		(48)		(64)	

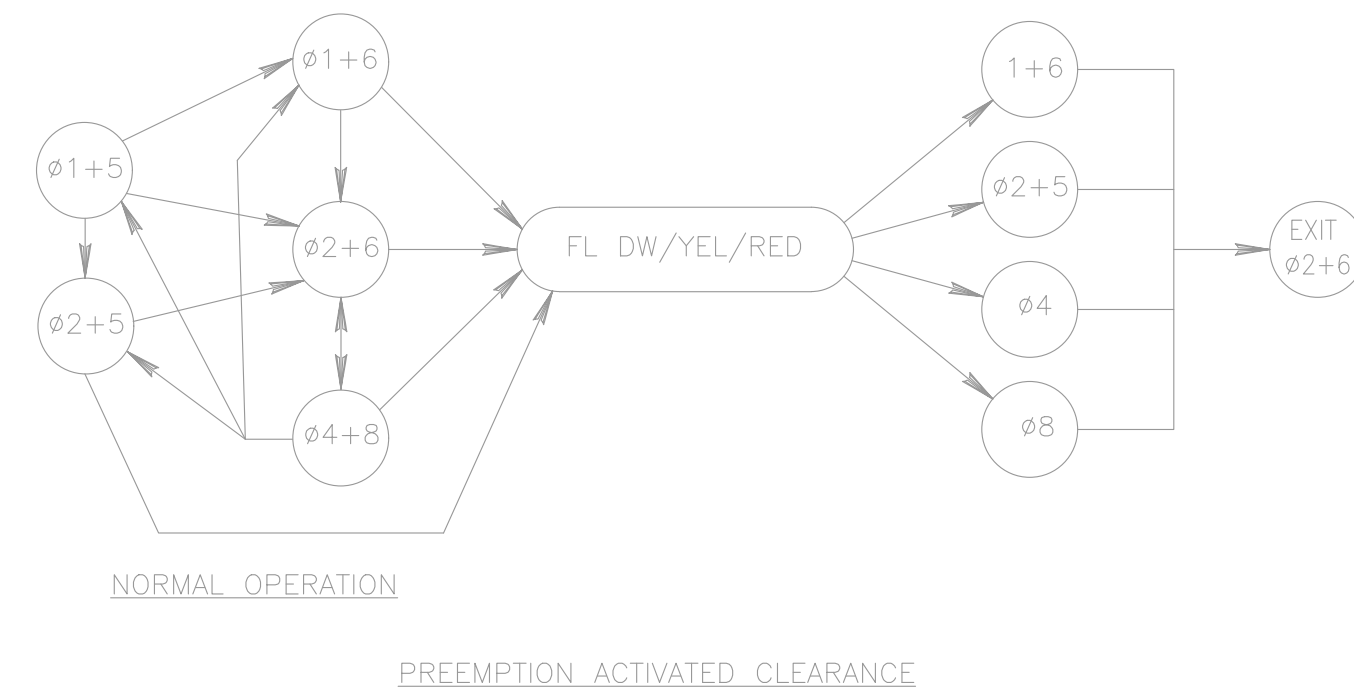


THIS INTERSECTION IS COORDINATED WITH THE ADJACENT INTERSECTIONS AT:  
1. SCIENCE PARK ROAD AND PINEHALL ROAD  
2. SCIENCE PARK ROAD AND ARL/ RAYTHEON DRIVE

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	31 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	

SIGNS			
PLAN SYMBOL	SERIES DESIGNATION	DESCRIPTION	SIZE WxH
◇	R10-4B	PUSH BUTTON FOR WALKING PERSON SIGNAL/ WITH ARROW	9" X 12"
⊙	R10-12A	LEFT TURN YIELD ON FLASHING YELLOW ARROW	30" X 36"
⊙	D3-4	Old Gatesburg Rd	96" X 16"
⊙	D3-4	Science Park Rd	96" X 16"
⊙	R3-8(L-SR)	LANE USE CONTROL SIGN	30" X 30"
⊙		OMITTED	
⊙	R3-5R	RIGHT TURN	30" X 36"
⊙	R3-5S	STRAIGHT-THROUGH	30" X 36"
⊙	R3-5L	LEFT TURN	30" X 36"
⊙	R10-10R	RIGHT TURN SIGNAL	30" X 36"

◇ - ERECT WITH PEDESTRIAN PUSH BUTTON



EMERGENCY VEHICLE PREEMPTION NOTES:

NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PREEMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS.

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 1+6, PHASE 2+5, PHASE 4, OR PHASE 8. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.

IF THE CONTROLLER IS IN INTERVAL 1 (GREEN/GREEN ARROW) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK AND YELLOW AND ALL-RED INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK AND YELLOW AND ALL-RED INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE WHILE THE CONFLICTING GREEN INDICATIONS ARE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO TIME THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME AND CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN THE YELLOW, YELLOW ARROW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.

IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

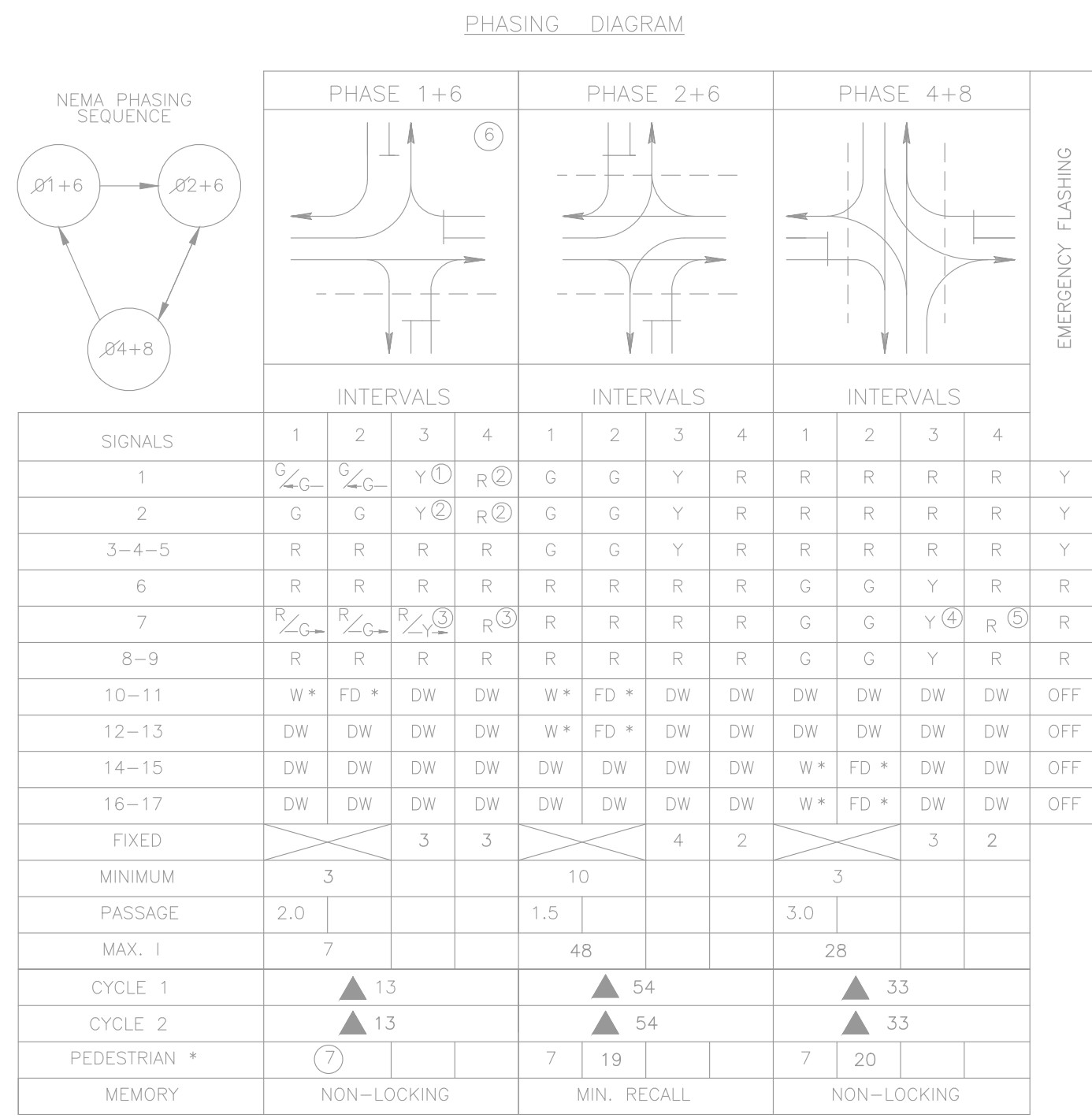
WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.

COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : SCIENCE PARK ROAD (T-336) AND  
OLD GATESBURG (T-335)

APPROVED BY: [Signature] 8/23/2021  
MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
\_\_\_\_\_  
DISTRICT TRAFFIC ENGINEER DATE

SCALE : 0 25 50 75



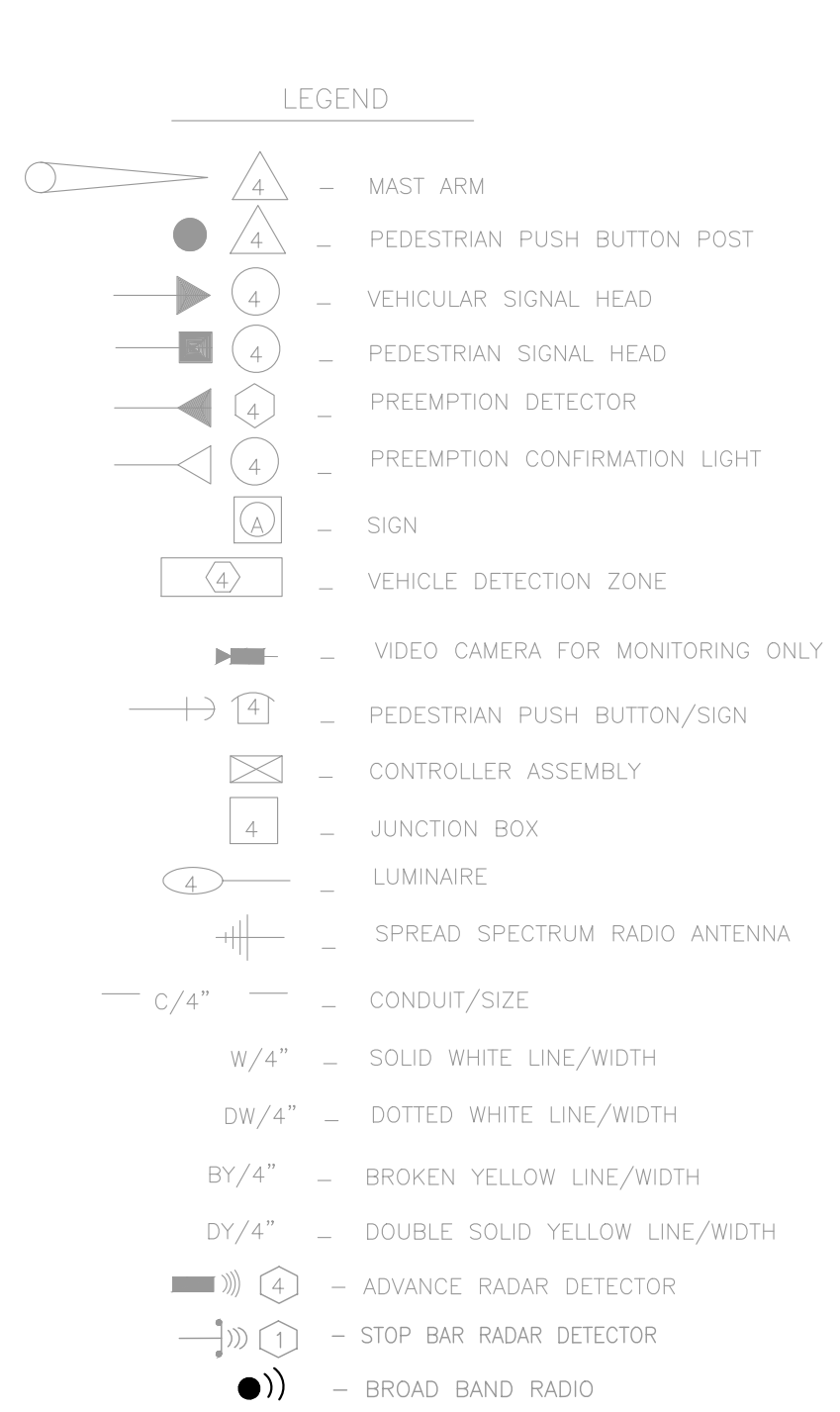
**CONTROLLER NOTES:**

1. G-Y-IF FOLLOWED BY 2+6
2. G-IF FOLLOWED BY 2+6
3. R-G-IF FOLLOWED BY 4+8
4. Y-G-IF FOLLOWED BY 1+6
5. R-G-IF FOLLOWED BY 1+6
6. PHASE 1+6 TO FOLLOW PHASE 4+8 ONLY.
7. TIMING WILL BE AS SHOWN IN PHASE 2+6. INTERVALS 1 & 2 MAY TIME OUT IN THIS PHASE OR BE COMPLETED IN PHASE 2+6.

- CONTROLLER PROGRAMMING WITH DUAL ENTRY.
- PHASE 2 AND 6 WITH SIMULTANEOUS GAP-OUT.

**ATSPM DETECTOR MAPPING TABLE**

DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
		2	5	4	7	6	1	8	3
PRESENCE	50' x 10' @ 40'	1-2 (1)	-	17-18 (2)	-	33 (3)	34 (3)	49-50 (4)	-
COUNT	6' x 10' @ -20'	3-4 (1)	-	19-20 (2)	-	35 (3)	36 (3)	51-52 (4)	-
PULSE ADVANCE	10' @ 400'	5 (5)	-	-	-	37 (6)	-	-	-
DILEMA ZONE	CONTINUOUS @ 450'	6 (5)	-	-	-	38 (6)	-	-	-
PEDESTRIAN	PB	(14-15)	-	(30-31)	-	(46-47)	-	(62-63)	-
EVP/TRANSIT	OPTICAL	(16)	-	(32)	-	(48)	-	(64)	-



**COORDINATION PLAN**

PLAN NO.	DAY OF WEEK							TIME	CYCLE (SEC.)	OFFSET* (SEC.)	REMARKS
	S	M	T	W	T	F	S				
1								0:00	-	0	MAX 1
2								7:00	100	95	CYCLE 1
3								15:00	100	2	CYCLE 2
4								20:00	-	0	MAX 1

**ADVANCE DILEMA ZONE NOTES:**

1. ETA: MIN 2.5 SEC - MAX 5.5 SEC
2. RANGE: MIN 50 FEET - MAX 450 FEET FROM STOP BAR
3. MIN SPEED BOUNDARY - 10 MPH

**STOP BAR DETECTION ZONE NOTES:**

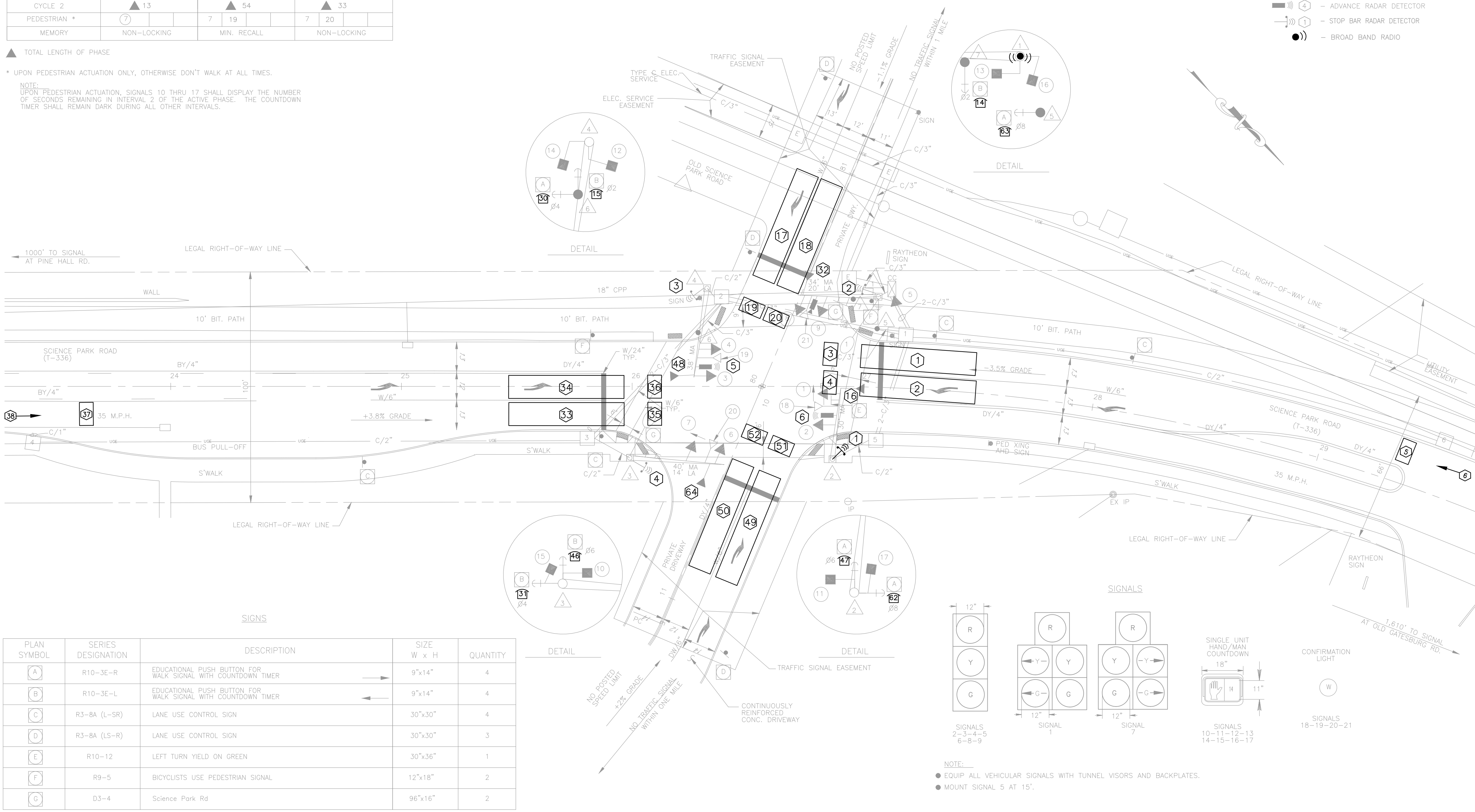
1. RANGE: MIN 10 FEET - MAX 100 FEET FROM STOP BAR
2. MIN SPEED BOUNDARY - 5 MPH
3. ZONE MAY BE ADJUSTED IN FIELD

THIS INTERSECTION IS COORDINATED WITH THE ADJACENT INTERSECTIONS AT:  
 - OLD GATESBURG ROAD (T-335)  
 - PINE HALL ROAD (T-596)

▲ TOTAL LENGTH OF PHASE

\* UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE DON'T WALK AT ALL TIMES.

NOTE:  
 UPON PEDESTRIAN ACTUATION, SIGNALS 10 THRU 17 SHALL DISPLAY THE NUMBER OF SECONDS REMAINING IN INTERVAL 2 OF THE ACTIVE PHASE. THE COUNTDOWN TIMER SHALL REMAIN DARK DURING ALL OTHER INTERVALS.



**SIGNS**

PLAN SYMBOL	SERIES DESIGNATION	DESCRIPTION	SIZE W x H	QUANTITY
A	R10-3E-R	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER	9"x14"	4
B	R10-3E-L	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER	9"x14"	4
C	R3-8A (L-SR)	LANE USE CONTROL SIGN	30"x30"	4
D	R3-8A (LS-R)	LANE USE CONTROL SIGN	30"x30"	3
E	R10-12	LEFT TURN YIELD ON GREEN	30"x36"	1
F	R9-5	BICYCLISTS USE PEDESTRIAN SIGNAL	12"x18"	2
G	D3-4	Science Park Rd	96"x16"	2

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	32 OF 44

FERGUSON TOWNSHIP

REVISION NUMBER	REVISIONS	DATE	BY

**CONSTRUCTION NOTES:**

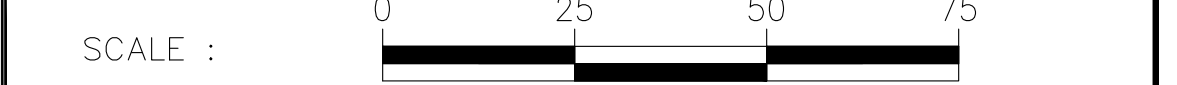
1. INSTALL DUAL CHANNEL BROAD BAND RADIO AND RELATED CABLING.
2. AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
3. INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.
4. PROGRAM ALL IP ADDRESSES AS ASSIGNED.
5. INSTALL DETECTOR 1 ON POLE 2.
6. PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
7. INSTALL MMU.
8. ENABLE DATA LOGGING FUNCTION.

ITEM NUMBER	MISCELLANEOUS	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B		0	
EACH				
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM		1	POLE 2
EACH				
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM		0	
EACH				
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE		0	
EACH				
9000-1001	MANAGED NETWORK SWITCH		1	CABINET
EACH				
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO		0	
EACH				
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO		1	POLE 1
EACH				
9000-1004	CONTROLLER UNIT REPLACEMENT		0	
EACH				
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT		1	CABINET
EACH				
9000-1006	SOLAR POWER SUPPLY SYSTEM		0	
EACH				
9000-1007	RADIO ROOF MOUNTING		0	
EACH				
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE		0	
EACH				
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#		0	
EACH				
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#		0	
EACH				
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#		0	
EACH				

COUNTY : CENTRE  
 MUNICIPALITY : FERGUSON TOWNSHIP  
 INTERSECTION : SCIENCE PARK ROAD (T-336) AND PRIVATE DRIVEWAY

APPROVED BY: 8/23/2021  
 MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
 DISTRICT TRAFFIC ENGINEER DATE





DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	33 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS			DATE BY

EMERGENCY VEHICLE PREEMPTION NOTES:

NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PREEMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS.

EMERGENCY VEHICLE PREEMPTION SHALL BE PROVIDED ON A FIRST-COME, FIRST-SERVE BASIS. ONCE THE FIRST PRIORITY EMERGENCY VEHICLE CALLS THE SYSTEM, IT SHALL PREVENT OTHER PREEMPTIVE VEHICLES FROM ENTERING CALLS UNTIL THE FIRST EMERGENCY VEHICLE RELEASES CONTROL AND CLEARS THE INTERSECTION.

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 1+6, PHASE 2, PHASE 4, OR PHASE 8. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.

IF THE CONTROLLER IS IN INTERVAL 1 (GREEN/GREEN ARROW) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK AND YELLOW AND ALL-RED INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE WHILE THE CONFLICTING GREEN INDICATIONS ARE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO TIME THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME AND CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

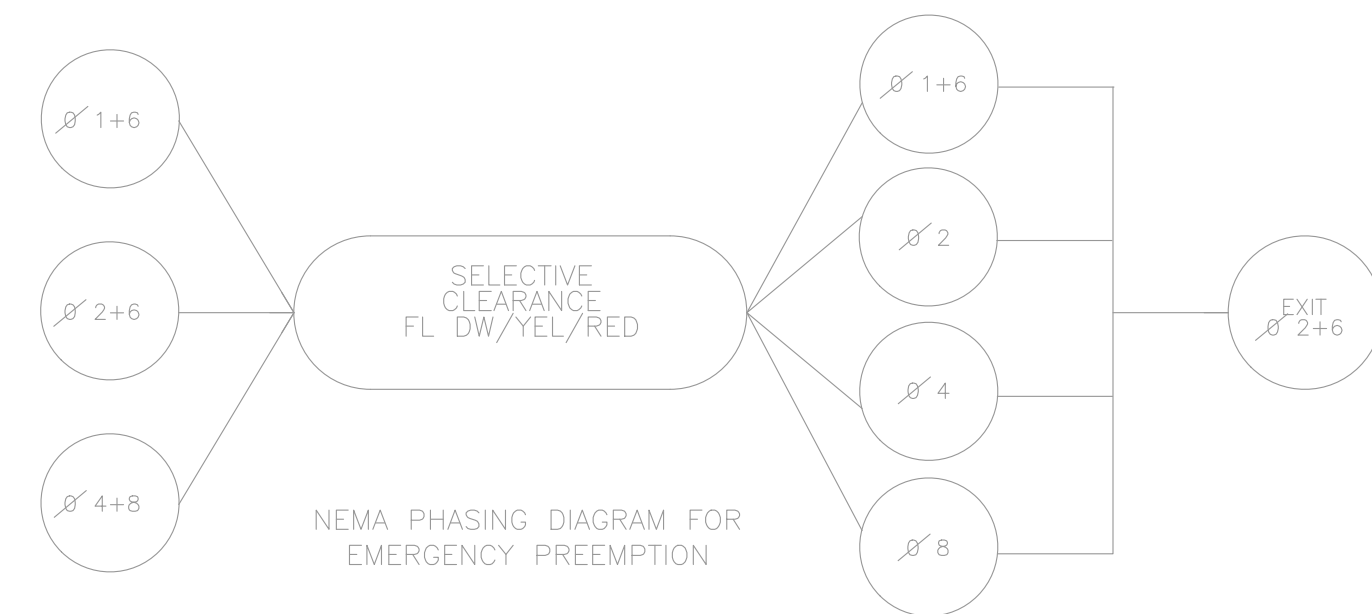
IF THE CONTROLLER OPERATION IS IN THE YELLOW, YELLOW ARROW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.

IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.

LOCATION OF PREEMPTION RECEIVERS MAY BE FIELD-ADJUSTED BY THE ENGINEER TO ACHIEVE MAXIMUM DETECTION DISTANCE.



COUNTY : CENTRE

MUNICIPALITY : FERGUSON TOWNSHIP

INTERSECTION : SCIENCEE PARK ROAD (T-336) AND  
PRIVATE DRIVEWAY

APPROVED BY: *[Signature]* 8/23/2021  
MUNICIPAL OFFICIAL DATE

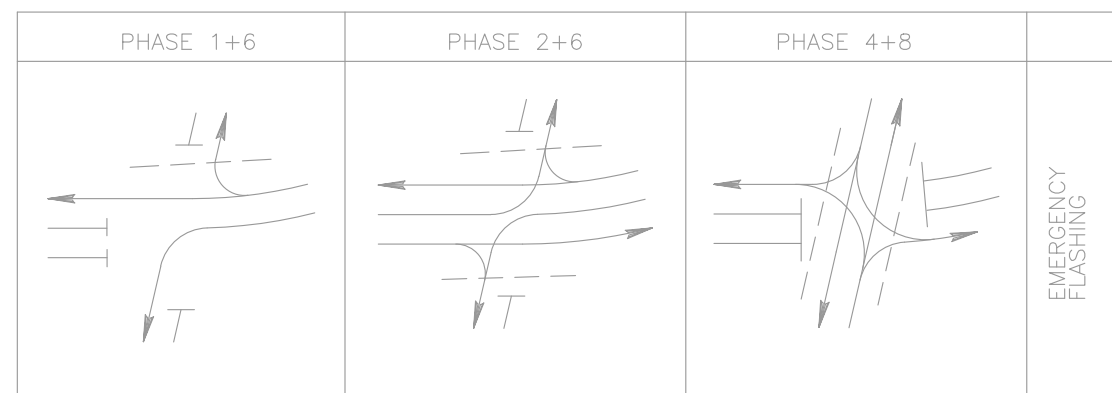
RECOMMENDED : \_\_\_\_\_  
DISTRICT TRAFFIC ENGINEER DATE

SCALE : 0 25 50 75



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	35 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	

PHASING DIAGRAM

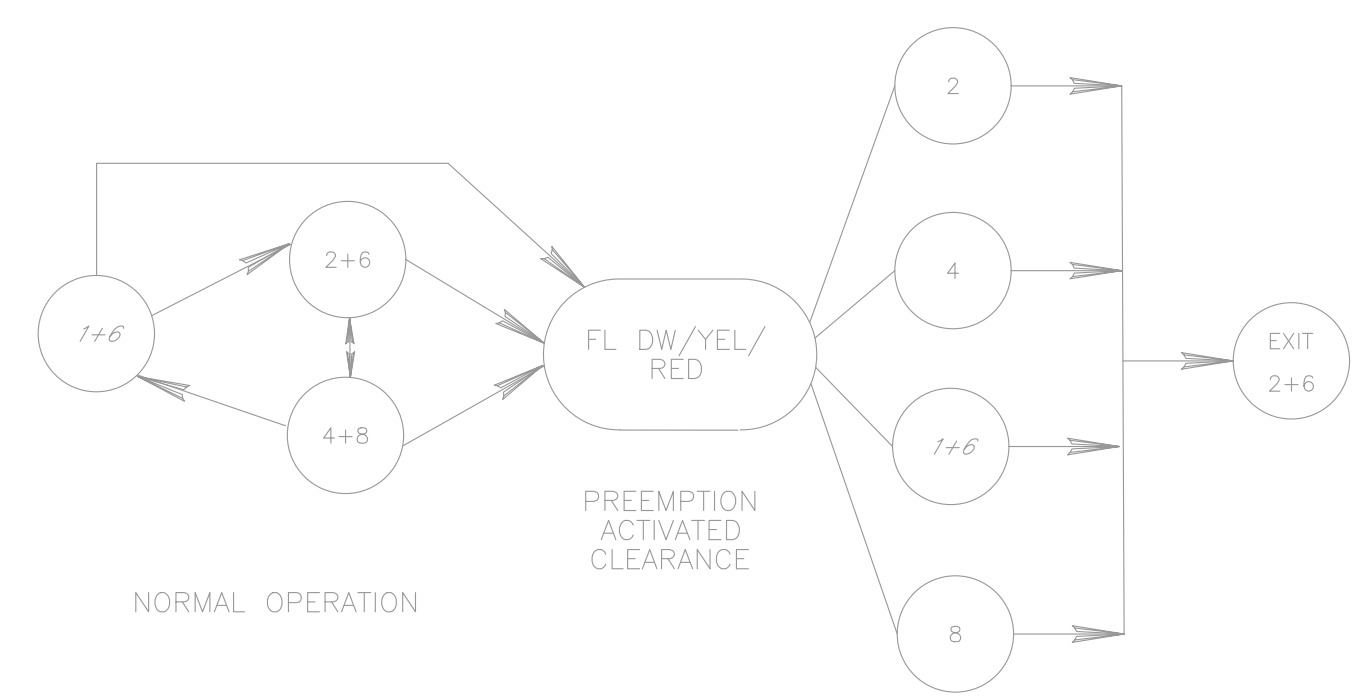


SIGNAL \ INTERVAL	INTERVALS				INTERVALS				INTERVALS				
	1	2	3	4	1	2	3	4	1	2	3	4	
1, 2	G	G	Y	R	G	G	Y	R	R	R	R	R	Y
3, 4	R	R	R	R	G	G	Y	R	R	R	R	R	Y
5, 6	R	R	R	R	R	R	R	R	G	G	Y	R	R
7, 8	R	R	R	R	R	R	R	R	G	G	Y	R	R
21	G	G	Y	R	FY(3)	FY	Y	R	R	R	R	R	OFF
13, 14, 17, 18	DW	DW	DW	DW	W	FD	DW	DW	DW	DW	DW	DW	OFF
15, 16, 19, 20	DW	DW	DW	DW	DW	DW	DW	DW	W	FD	DW	DW	OFF
FIXED	X	X	3.5	3	X	X	4	2	X	X	4	2	
MIN GREEN	3				8				3				
ADDED INITIAL	-				2.1				-				
MAX INITIAL	-				25				-				
PASSAGE	2				6.1				3				
TIME BEFORE	-				25				-				
TIME TO	-				10				-				
MIN GAP	-				3				-				
MAX 1	7				48				26				
CYCLE 1 (1)	13				54				33				
CYCLE 2 (1)	13				54				33				
PEDESTRIAN (2)					7	19			7	20			
MEMORY	NON-LOCKING				MIN RECALL				NON-LOCKING				

SIGNAL NOTES:  
(1) TIME EQUALS TOTAL LENGTH OF PHASE.  
(2) WALK SYMBOL AND TIMES UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE DON'T WALK AT ALL TIMES.  
(3) FYA TO HAVE TWO SECOND DELAY

PRESENCE DETECTION ZONE NOTES:  
RANGE OF DETECTION: MINIMUM 30 - MAXIMUM 100 FEET FROM STOP BAR  
MINIMUM SPEED BOUNDARY - 1 MPH ZONE MAY BE ADJUSTED IN FIELD.

ADVANCE DILEMMA ZONE NOTES:  
ESTIMATED TIME OF ARRIVAL: MINIMUM 2.5 SECONDS - MAXIMUM 5.5 SECONDS. RANGE OF DETECTION:  
MINIMUM 5 FEET - MAXIMUM 450 FEET FROM THE STOP BAR. MINIMUM SPEED BOUNDARY 10 MPH.  
ZONE MAY BE ADJUSTED IN THE FIELD.



COORDINATION PLAN

PLAN NO.	DAY OF WEEK							TIME	CYCLE (SEC.)	OFFSET (SEC.)	REMARKS
	S	M	T	W	T	F	S				
1								0:00	-	0	MAX I
2								6:00	100	0	CYCLE 1
3								15:00	100	0	CYCLE 2
4								20:00	-	0	MAX I

\* OFFSET IS REFERENCED TO THE BEGINNING OF PHASE 2+6, INTERVAL 3.

INTERCONNECT NOTE

CONTROLLER TO BE INTERCONNECTED WITH ADJACENT SIGNAL CONTROLLERS ALONG SCIENCE PARK ROAD (T-336) TO PROVIDE A PROGRESSIVE MOVEMENT OF TRAFFIC INTERSECTIONS INCLUDED IN INTERCONNECT ARE AS FOLLOWS:  
- OLD GATESBURG ROAD (T-335)  
- ARL ENTRANCE/BAYTHEON DRIVEWAY  
- PINE HALL ROAD (T-596)

EMERGENCY VEHICLE (FIRE APPARATUS) PREEMPTION NOTES:

NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PREEMPTED BY FIRE APPARATUS VEHICLES RESPONDING TO EMERGENCY CALLS.  
EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 2, PHASE 4, PHASE 1+6 OR PHASE 8. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.  
IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK AND YELLOW INTERVAL BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.  
IF THE CONTROLLER IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW CLEARANCE INTERVAL. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.  
IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW CLEARANCE INTERVAL BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.  
IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO TIME THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE.  
IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.  
IF THE CONTROLLER OPERATION IS IN THE YELLOW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.  
UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.  
FLASHING TO EMERGENCY VEHICLE PREEMPTION. IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.  
FAIL-SAFE INDICATION. WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.

COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : SCIENCE PARK ROAD (T-336) AND  
PINE HALL ROAD (T-596)

APPROVED BY: [Signature] 8/23/2021  
MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
DISTRICT TRAFFIC ENGINEER DATE

SCALE : 0 25 50 75

PHASING DIAGRAM

SIGNALS	1 + 5		1 + 6		2 + 5		2 + 6			4 + 8		
	1	2	1	2	1	2	1	2	3	1	2	3
1	R	R(1)	G	G	R	R	G	Y	R	R	R	R
2	R	R	G	G	R	R	G	Y	R	R	R	R
3	R	R(2)	R	R	G	G	G	Y	R	R	R	R
4	R	R	R	R	G	G	G	Y	R	R	R	R
5-6	R	R	R	R	R	R	R	R	R	G	Y	R
7-8	R	R	R	R	R	R	R	R	R	G	Y	R
FIXED		3		3		3		4.5	1.5		3.5	2.0
MINIMUM	2		2				15			3		
PASSAGE	1.5		1.5		1.5		1.0			3		
MAX I	13		13		8		26			40		
MAX II	16		16		8		43			44		
MEMORY	NON-LOCKING		NON-LOCKING		NON-LOCKING		MIN. RECALL			NON-LOCKING		

NOTE: 1 AND 5 WILL ONLY FOLLOW 4  
 ① R OVER G ARROW WHEN FOLLOWED BY 1 + 6  
 ② R OVER G ARROW WHEN FOLLOWED BY 2 + 5

DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)								
		2	5	4	7	6	1	8	3	
PRESENCE	50' x 10' @ 40'	1 (1)	2 (1)	17-18 (2)	-	33 (3)	34 (3)	49-50 (4)	-	-
COUNT	6' x 10' @ -20'	3-4 (1)	5 (1)	19-21 (2)	-	35-36 (3)	37 (3)	51-52 (4)	-	-
PULSE ADVANCE	10' @ 400'	6 (5)	-	-	-	38 (6)	-	-	-	-
DILEMA ZONE	CONTINUOUS @ 450'	7 (5)	-	-	-	39 (6)	-	-	-	-
PEDESTRIAN	PB	-	-	-	-	-	-	-	-	-
EVP/TRANSIT	OPTICAL		(16)	(32)	-	(48)	-	-	-	-

TIMING PLAN

PLAN NO.	DAY OF WEEK							TIME	REMARKS
	S	M	T	W	T	F	S		
1	X	X	X	X	X	X	X	00:00	MAX I
2	X	X	X	X	X	X	X	15:00	MAX II
3	X	X	X	X	X	X	X	18:00	MAX I

LEGEND

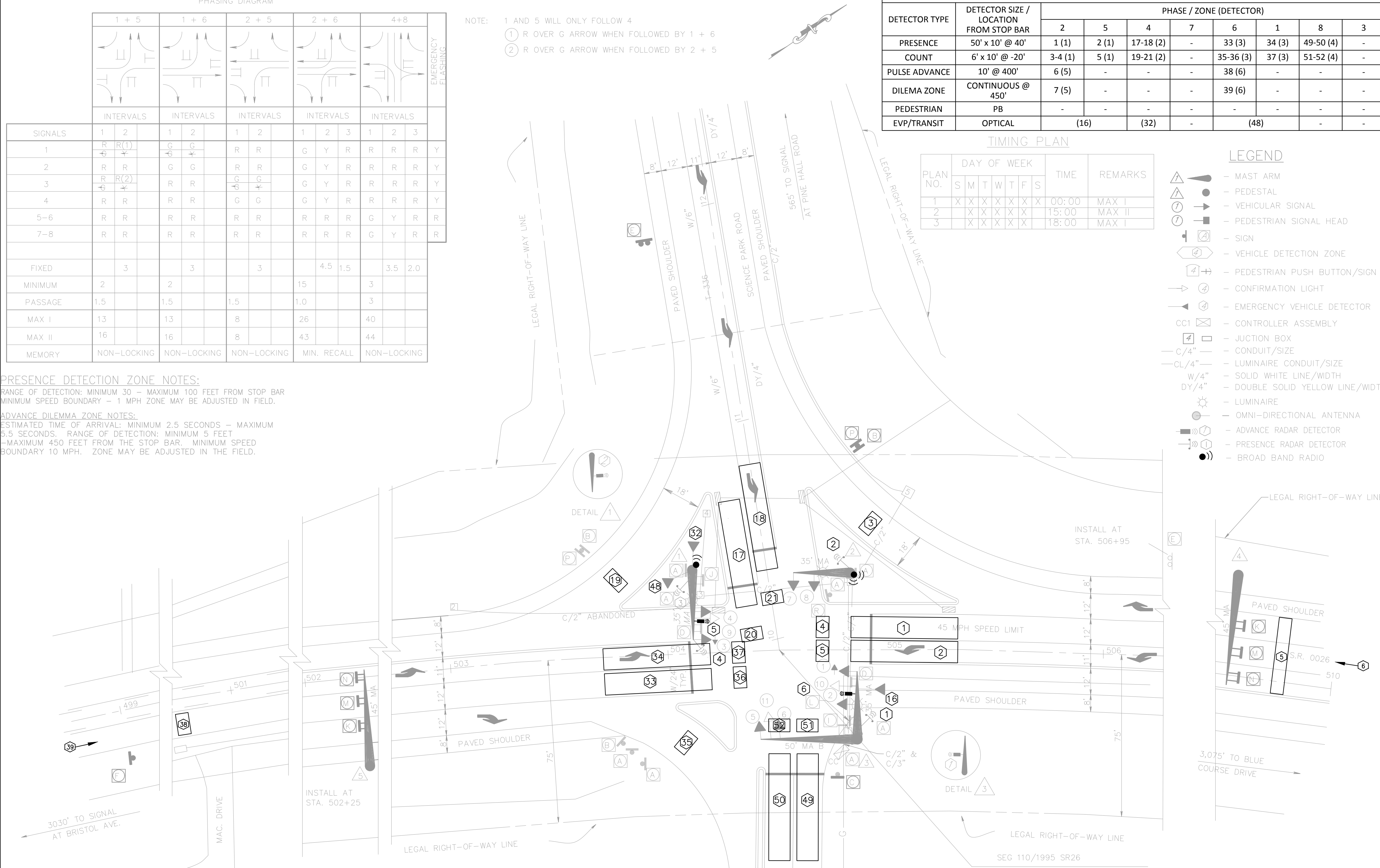
- ▲ - MAST ARM
- - PEDESTAL
- - VEHICULAR SIGNAL
- - PEDESTRIAN SIGNAL HEAD
- - SIGN
- - VEHICLE DETECTION ZONE
- - PEDESTRIAN PUSH BUTTON/SIGN
- - CONFIRMATION LIGHT
- - EMERGENCY VEHICLE DETECTOR
- CC1 ⊗ - CONTROLLER ASSEMBLY
- - JUNCTION BOX
- C/4" - CONDUIT/SIZE
- CL/4" - LUMINAIRE CONDUIT/SIZE
- W/4" - SOLID WHITE LINE/WIDTH
- DY/4" - DOUBLE SOLID YELLOW LINE/WIDTH
- ☀ - LUMINAIRE
- - OMNI-DIRECTIONAL ANTENNA
- - ADVANCE RADAR DETECTOR
- - PRESENCE RADAR DETECTOR
- - BROAD BAND RADIO

PRESENCE DETECTION ZONE NOTES:

RANGE OF DETECTION: MINIMUM 30 - MAXIMUM 100 FEET FROM STOP BAR  
 MINIMUM SPEED BOUNDARY - 1 MPH ZONE MAY BE ADJUSTED IN FIELD.

ADVANCE DILEMMA ZONE NOTES:

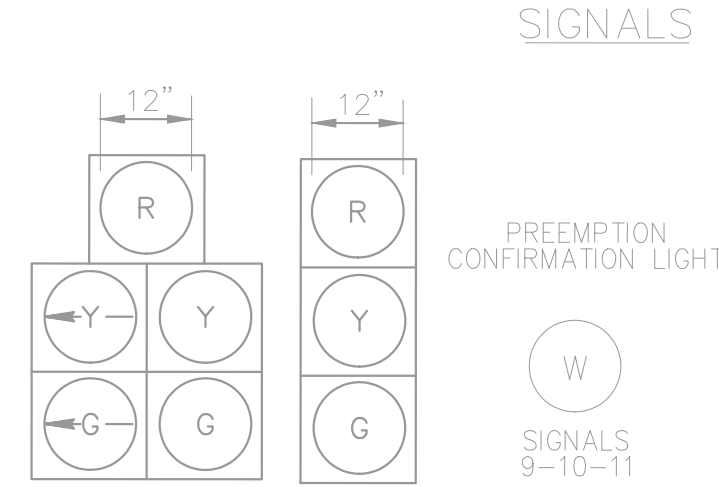
ESTIMATED TIME OF ARRIVAL: MINIMUM 2.5 SECONDS - MAXIMUM 5.5 SECONDS. RANGE OF DETECTION: MINIMUM 5 FEET - MAXIMUM 450 FEET FROM THE STOP BAR. MINIMUM SPEED BOUNDARY 10 MPH. ZONE MAY BE ADJUSTED IN THE FIELD.



PLAN SYMBOL	DESCRIPTION	SIZE W X H
A	R9-3, NO PEDESTRIAN CROSSING	24"x24"
B	R1-2, YIELD	36"x36"
C	R10-6L, STOP HERE ON RED	24"x30"
D	R10-12, LEFT TURN ON YIELD ON GREEN	30"x36"
E	R3-7L, LEFT LANE MUST TURN LEFT	48"x48"
F	R3-3, SIGNAL AHEAD	36"x36"
G	REMOVED	
H	R3-7L, LEFT LANE MUST TURN LEFT	30"x36"
L	D3-4, COLLEGE AVE.	90"x16"

PLAN SYMBOL	DESCRIPTION	SIZE W X H
J	D3-5, SCIENCE PARK ROAD →	96"x28"
L	D3-5, ← SCIENCE PARK ROAD	96"x28"
K	D3-5R, RIGHT TURN	30"x36"
M	R3-5S, STRAIGHT THROUGH	30"x36"
N	R3-5L, LEFT TURN	30"x36"
P	R5-1, DO NOT ENTER	30"x30"
R	R4-14, ENTER HERE	24"x30"

NOTE: 1. MOUNT LUMINAIRES TO POLES 1 THRU 3



SIGNAL ASSEMBLY NOTES

- ALL VEHICULAR SIGNALS EQUIPPED WITH TUNNEL VISORS AND BACKPLATES.
- SINGLE UNIT, L.E.D. HAND/MAN OVERLAY ON ALL PEDESTRIAN SIGNALS.

DETECTION ZONE LAYOUT			
ZONE	RADAR	PHASE	TYPE
1	1	6	ADVANCE
2	2	2	ADVANCE
3	3	1 & 6	PRESENCE
4	4	2 & 5	PRESENCE
5a	5	4	PRESENCE
5b	5	4	PRESENCE
6a	6	4	PRESENCE
6b	6	4	PRESENCE
6c	6	4	PRESENCE

DISTRICT	COUNTY	ROUTE	SECTION	SHEET	
2-0	CENTRE	LOCAL	02E011	36 OF 44	
FERGUSON TOWNSHIP					
REVISION NUMBER	REVISIONS			DATE	BY

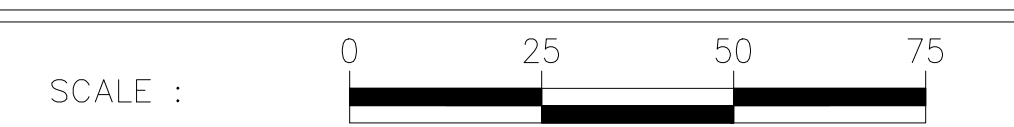
CONSTRUCTION NOTES:  
 1. INSTALL DUAL CHANNEL AND SINGLE CHANNEL BROAD BAND RADIOS AND RELATED CABLING.  
 2. AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.  
 3. INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.  
 4. PROGRAM ALL IP ADDRESSES AS ASSIGNED.  
 5. PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.  
 6. INSTALL NEW CONTROLLER AND MMU.  
 7. ENABLE DATA LOGGING FUNCTION

ITEM NUMBER	MISCELLANEOUS		
	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	0	
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
9000-1001	MANAGED NETWORK SWITCH	1	CABINET
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	1	POLE 1
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	1	POLE 2
9000-1004	CONTROLLER UNIT REPLACEMENT	1	CABINET
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	1	CABINET
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
9000-1007	RADIO ROOF MOUNTING	0	
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	

COUNTY : CENTRE  
 MUNICIPALITY : FERGUSON TOWNSHIP  
 INTERSECTION : WEST COLLEGE AVENUE (SR26) AND SCIENCE PARK ROAD (T-336)

APPROVED BY: *[Signature]* 8/23/2021  
 MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
 DISTRICT TRAFFIC ENGINEER DATE



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	37 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	

**EMERGENCY VEHICLE PREEMPTION NOTES:**

NORMAL TRAFFIC OPERATION SHALL ONLY BY PREEMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS.

EMERGENCY PREEMPTION SHALL BE PROVIDED ON A FIRST-COME, FIRST-SERVE BASIS. ONCE THE FIRST PRIORITY EMERGENCY VEHICLE CALLS THE SYSTEM, IT SHALL PREVENT OTHER PREEMPTIVE VEHICLES FROM ENTERING CALLS UNTIL THE FIRST EMERGENCY VEHICLE RELEASES CONTROL AND CLEARS THE INTERSECTION.

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 2+5, PHASE 1+6, OR PHASE 4. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.

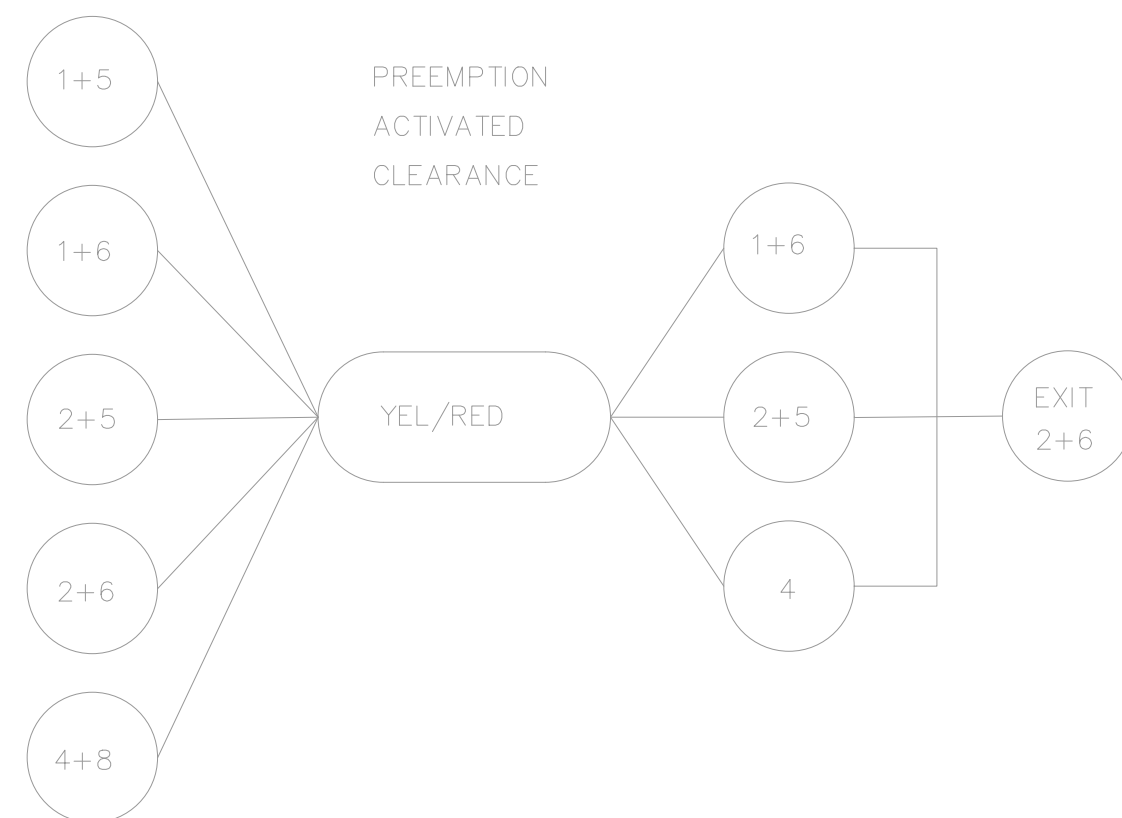
IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN OR GREEN/GREEN ARROW) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN THE YELLOW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.


IF THE CONTROLLER IS IN THE YELLOW CLEARANCE INTERVAL OF PHASE 1+5, 1+6, OR 2+5, THE CONTROLLER SHALL CONTINUE TO TIME OUT THE YELLOW CLEARANCE INTERVAL AND PROCEED THROUGH A 2-SECOND ALL-RED CLEARANCE INTERVAL BEFORE PROCEEDING TO THE EMERGENCY PREEMPTION PHASE GREEN.

UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION. FLASHING TO EMERGENCY VEHICLE PREEMPTION: IF AN EMERGENCY VEHICLE PREEMPTING OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

FAIL-SAFE INDICATION: WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.



COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : WEST COLLEGE AVENUE (SR26) AND  
SCIENCE PARK ROAD (T-336)

APPROVED BY:  8/23/2021  
MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
\_\_\_\_\_  
DISTRICT TRAFFIC ENGINEER DATE

SCALE : 

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

SIGNALS	PHASE 2+6		PHASE 4+8		EASTBOUND PRE-EMPTION		WESTBOUND PRE-EMPTION		NORTHBOUND PRE-EMPTION		SOUTHBOUND PRE-EMPTION		EMERGENCY FLASHING OPERATION													
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24	
1,2	G	G	Y	R	R	R	R	R	R	R	R	R	Y	10,11	M	FH	H	H	H	H	H	H	H	H	H	OFF
3,4	G	G	Y	R	R	R	R	R	R	R	R	R	Y	12,13	M	FH	H	H	H	H	H	H	H	H	H	OFF
5,6	R	R	R	R	G	G	Y	R						14,15	H	H	H	H	M	FH	H	H	H	H	H	OFF
7,8	R	R	R	R	G	G	Y	R						16,17	H	H	H	H	M	FH	H	H	H	H	H	OFF
														18	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
														19	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
														20	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
														21	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
FIXED			3.5	3.0																						
MINIMUM PASSAGE			2																							
MAX I			34																							
MAX II			36																							
PEDESTRIAN *			7	11																						
MEMORY			MIN	RECALL																						

\* UPON PEDESTRIAN ACTUATION ONLY  
 \*\* SELECTIVE CLEARANCE INTERVAL INCLUDES THE NORMAL ALL-RED INTERVALS.  
 \*\*\* FOR DURATION OF EMERGENCY PRE-EMPTION.

NOTES:  
 1. ALL SIGNALS TO BE EQUIPPED WITH LED INDICATIONS.  
 2. FINAL PLACEMENT OF ALL SIGNAL HEADS WILL BE DETERMINED BY A REPRESENTATIVE OF THE DISTRICT TRAFFIC UNIT PRIOR TO SIGNAL TURN -ON.

PLAN SYMBOL	SERIES DESIGNATIONS	SIZE WxH	DESCRIPTION	QTY
A	D3-4	72"x16"	COLLEGE AVE	2
B	D3-4	48"x16"	CORL ST	2
C	R3-8A	30"x30"	LANE USE CONTROL (TWO LANES) SIGN (L-SR)	2
D	R10-3E	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALK WITH COUNTDOWN TIMER	3
E	R10-3E	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALK WITH COUNTDOWN TIMER	5
F	R10-6L	24"x30"	STOP HERE ON RED	1
G	R10-11	30"x36"	NO TURN ON RED ●	2
H	R10-11	24"x30"	NO TURN ON RED ●	1

++ ADVANCE DILEMMA ZONE NOTES

EST. TIME OF ARRIVAL: MIN. 2.5 - MAX. 5.5 SEC.  
 RANGE OF PROTECTION: MIN. 0 - MAX. 500 FT. FROM STOP BAR  
 SPEED BOUNDARY: 5 - 100 MPH  
 NOTE: ZONE MAY BE ADJUSTED IN THE FIELD

++ DETECTION ZONE NOTES (STOP BAR)

RANGE OF DETECTION: 0 - 100 FT. FROM STOP BAR  
 SPEED BOUNDARY: 1 - 5 MPH  
 NOTE: ZONE MAY BE ADJUSTED IN THE FIELD

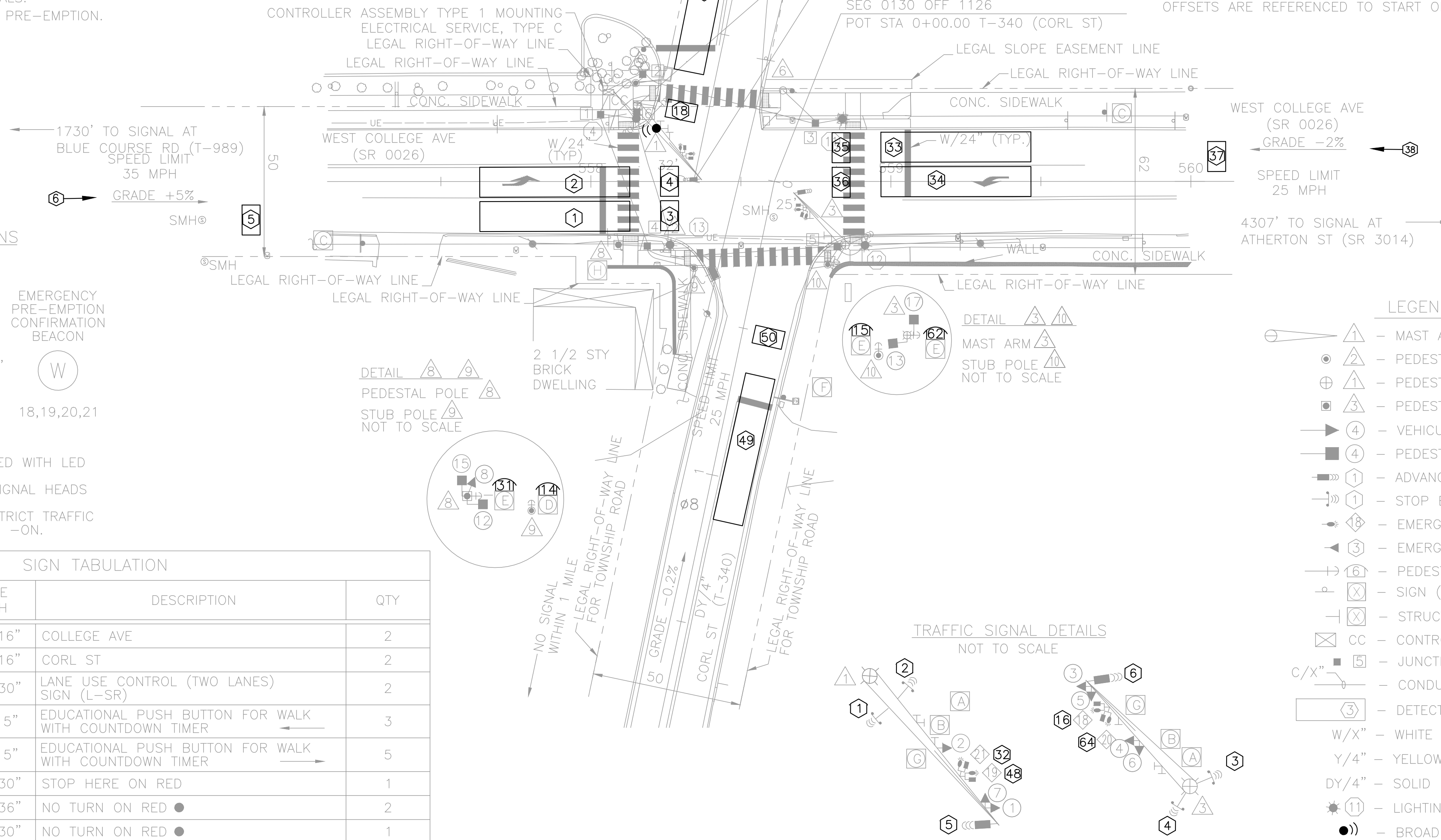
DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
		2	5	4	7	6	1	8	3
PRESENCE	50' x 10' @ 40'	1-2 (1)	-	17 (2)	-	33-34 (3)	-	49 (4)	-
COUNT	6' x 10' @ -20'	3-4 (1)	-	18 (2)	-	35-36 (3)	-	50 (4)	-
PULSE ADVANCE	10' @ 400'	5 (5)	-	-	-	37 (6)	-	-	-
DILEMMA ZONE	CONTINUOUS @ 450'	6 (5)	-	-	-	38 (6)	-	-	-
PEDESTRIAN	PB	(14-15)	-	(30-31)	-	(46-47)	-	(62-63)	-
EVP/TRANSIT	OPTICAL	(16)	-	(32)	-	(48)	-	(64)	-

EVENT NO.	WEEK	*DAY	HOUR	MIN.	SEC.	CYCLE	REMARKS
1	1-52	1-7	00	00	00	71 SEC	MAX I
2	1-52	1-5	14	30	00	65 SEC	MAX II
3	1-52	1-5	18	30	00	71 SEC	MAX I

\* DAY 1 IS MONDAY  
 OFFSETS ARE REFERENCED TO START OF 2+6, INTERVAL 3.

WEEKLY PROGRAM CHART

- LEGEND
- ① - MAST ARM
  - ⊕ - PEDESTRIAN STUB POLE
  - ⊕ - PEDESTAL POLE OR UTILITY POLE
  - ⊕ - PEDESTAL POLE
  - ➔ - VEHICULAR SIGNAL HEAD
  - ➔ - PEDESTRIAN SIGNAL HEAD
  - ➔ - ADVANCE RADAR DETECTOR
  - ➔ - STOP BAR RADAR DETECTOR
  - ⊕ - EMERGENCY FAIL-SAFE LIGHT
  - ➔ - EMERGENCY PRE-EMPTION DETECTOR
  - ➔ - PEDESTRIAN PUSH BUTTON/SIGN
  - ⊕ - SIGN (POST MOUNTED)
  - ⊕ - STRUCTURE MOUNTED SIGN
  - ⊕ - CONTROLLER CABINET
  - ⊕ - JUNCTION BOX
  - ⊕ - CONDUIT/SIZE
  - ⊕ - DETECTION ZONE
  - W/X" - WHITE SOLID LINE/WIDTH
  - Y/4" - YELLOW SOLID LINE/WIDTH
  - DY/4" - SOLID DOUBLE YELLOW LINE/WIDTH
  - ⊕ - LIGHTING POLE
  - - BROAD BAND RADIO



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	38 OF 44

FERGUSON TOWNSHIP

REVISION NUMBER	REVISIONS	DATE	BY

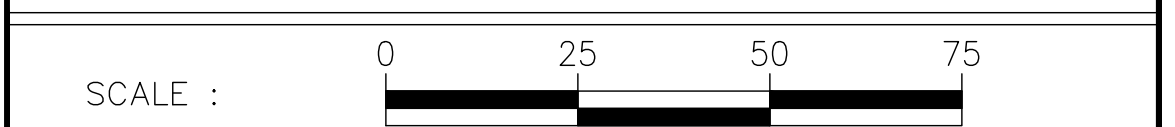
CONSTRUCTION NOTES:  
 1. INSTALL SINGLE CHANNEL BROAD BAND RADIO AND RELATED CABLING.  
 2. AIM BROAD BAND RADIO ANTENNA TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.  
 3. INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.  
 4. PROGRAM ALL IP ADDRESSES AS ASSIGNED.  
 5. PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.  
 6. ENABLE DATA LOGGING FUNCTION.

ITEM NUMBER	UNIT	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0		
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	0		
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0		
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0		
9000-1001	MANAGED NETWORK SWITCH	1	CABINET	
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	1	POLE 1	
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	0		
9000-1004	CONTROLLER UNIT REPLACEMENT	0		
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	0		
9000-1006	SOLAR POWER SUPPLY SYSTEM	0		
9000-1007	RADIO ROOF MOUNTING	0		
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0		
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0		
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0		
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0		

COUNTY : CENTRE  
 MUNICIPALITY : FERGUSON TOWNSHIP  
 INTERSECTION : WEST COLLEGE AVE (SR 0026) AND CORL ST (T-340)

APPROVED BY: *[Signature]* 8/23/2021  
 MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
 DISTRICT TRAFFIC ENGINEER DATE



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	39 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS			DATE BY

EMERGENCY PRE-EMPTION NOTES

NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PRE-EMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS.

EMERGENCY PRE-EMPTION SHALL BE PROVIDED ON A FIRST-COME, FIRST-SERVE BASIS. ONCE THE FIRST PRIORITY EMERGENCY VEHICLE CALLS THE SYSTEM, IT SHALL PREVENT OTHER PRE-EMPTIVE VEHICLES FROM ENTERING CALLS UNTIL THE FIRST EMERGENCY VEHICLE RELEASES CONTROL AND CLEARS THE INTERSECTION

EMERGENCY VEHICLE PRE-EMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PRE-EMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 2, PHASE 6, PHASE 4 OR PHASE 8. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PRE-EMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK INTERVAL, THE YELLOW AND ALL RED INTERVALS BEFORE PROCEEDING TO THE PRE-EMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PRE-EMPTIVE PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW AND ALL-RED CLEARANCE INTERVALS. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PRE-EMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PRE-EMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PRE-EMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PRE-EMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

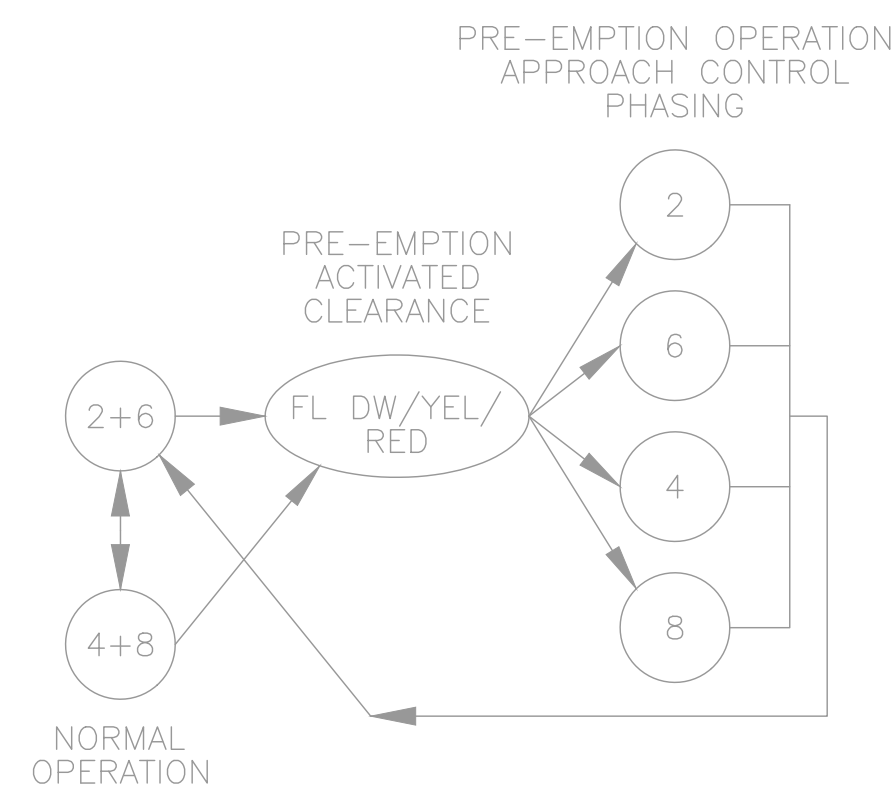
IF THE CONTROLLER OPERATION IS IN THE YELLOW, YELLOW ARROW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PRE-EMPTION PHASE GREEN. UPON TERMINATION OF THE PRE-EMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.

UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.

IF EMERGENCY VEHICLE PRE-EMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

WHEN THE PRE-EMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PRE-EMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PRE-EMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.

EMERGENCY VEHICLE PRE-EMPTION SEQUENCE



COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : WEST COLLEGE AVE (SR 0026)  
AND CORL ST (T-340)

APPROVED BY: [Signature] 8/23/2021  
MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
DISTRICT TRAFFIC ENGINEER DATE

SCALE :

CONSTRUCTION NOTES:

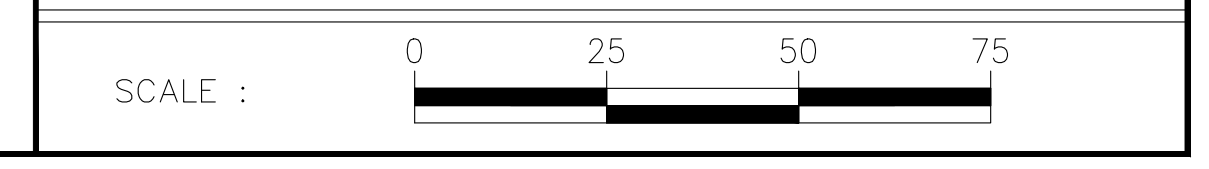
1. INSTALL SINGLE CHANNEL BROAD BAND RADIO AND RELATED CABLING.
2. AIM BROAD BAND RADIO ANTENNA TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
3. INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.
4. PROGRAM ALL IP ADDRESSES AS ASSIGNED.
5. PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
6. INSTALL NEW CONTROLLER AND MMU.
7. MODIFY CABINET AS NEEDED TO ASSIGN PHASE 8 TO WESTBOUND BRISTOL AVENUE.
8. ENABLE DATA LOGGING FUNCTION.

ITEM NUMBER	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	0	
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
9000-1001	MANAGED NETWORK SWITCH	1	CABINET
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	1	POLE 2
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	0	
9000-1004	CONTROLLER UNIT REPLACEMENT	1	CABINET
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	1	CABINET
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
9000-1007	RADIO ROOF MOUNTING	0	
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	1	CABINET
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	

COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : WEST COLLEGE AVENUE (SR26) AND BRISTOL AVENUE (T-970)

APPROVED BY: *[Signature]* 8/23/2021  
MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
DISTRICT TRAFFIC ENGINEER DATE



DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
		2	5	4	7	6	1	8	3
PRESENCE	50' x 10' @ 40'	1 (1)	2 (1)	17-18 (2)	-	33 (3)	34 (3)	49-51 (4)	-
COUNT	6' x 10' @ -20'	3 (1)	4 (1)	19-20 (2)	-	35 (3)	36 (3)	52-54 (4)	-
PULSE ADVANCE	10' @ 400'	5 (5)	-	-	-	37 (6)	-	-	-
DILEMA ZONE	CONTINUOUS @ 450'	6 (5)	-	-	-	38 (6)	-	-	-
PEDESTRIAN	PB	(14-15)		(30-31)		(46-47)		(62-63)	
EVP/TRANSIT	OPTICAL	-		-		-		-	

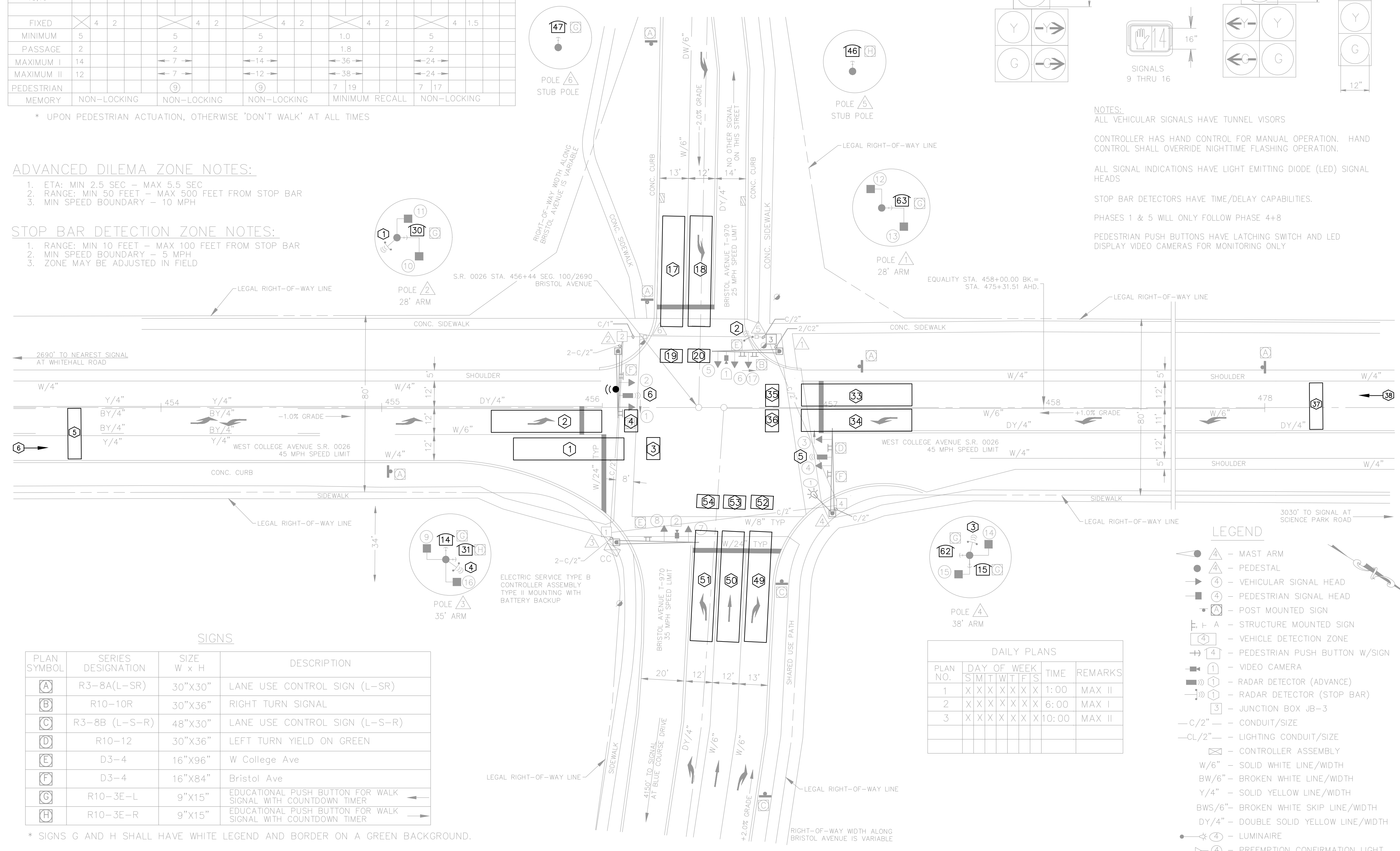
- NOTES:
1. IF FOLLOWED BY PHASE 2+6.
  2. G IF FOLLOWED BY PHASE 2+6.
  3. G IF FOLLOWED BY PHASE 1+6.
  4. IF FOLLOWED BY PHASE 1+5.
  5. IF FOLLOWED BY PHASE 1+5 OR 1+6.
  6. IF FOLLOWED BY PHASE 1+5 OR 1+6.
  7. IF FOLLOWED BY PHASE 1+6.
  8. IF FOLLOWED BY PHASE 2+5.
  9. TIMING WILL BE SHOWN IN PHASE 2+6. INTERVALS 1 & 2 MAY TIME OUT IN THIS PHASE OR MAY BE COMPLETED IN PHASE 2+6.
  10. IF FOLLOWED BY PHASE 1+6 OR 4+8.
  11. G IF FOLLOWED BY PHASE 2+5.

### PHASING DIAGRAM

	PHASE 1+5				PHASE 2+5				PHASE 1+6				PHASE 2+6				PHASE 4+8			
SIGNALS	1	2	3		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	R	R	R		R	R	R	R	G	G	Y	R	G	G	Y	R	R	R	R	R
2	R	R	R		R	R	R	R	G	G	Y	R	G	G	Y	R	R	R	R	R
3	R	R	R		R	R	R	R	G	G	Y	R	G	G	Y	R	R	R	R	R
4	R	R	R		R	R	R	R	G	G	Y	R	G	G	Y	R	R	R	R	R
5,6,7,8	R	R	R		R	R	R	R	G	G	Y	R	G	G	Y	R	R	R	R	R
17	R	R	R		R	R	R	R	G	G	Y	R	G	G	Y	R	R	R	R	R
9,10,13,14	DW	DW	DW		DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FD	DW	DW
11,12	DW	DW	DW		DW	DW	DW	DW	W	FD	DW	DW	W	FD	DW	DW	DW	DW	DW	DW
15,16	DW	DW	DW		W	FD	DW	DW	DW	DW	DW	DW	W	FD	DW	DW	DW	DW	DW	DW
FIXED	4	2			4	2			4	2			4	2			4	2		
MINIMUM	5				5				5				1.0				5			
PASSAGE	2				2				2				1.8				2			
MAXIMUM I	14				7				14				36				24			
MAXIMUM II	12				7				12				38				24			
PEDESTRIAN					9				9				7	19			7	17		
MEMORY	NON-LOCKING	NON-LOCKING	NON-LOCKING		NON-LOCKING	NON-LOCKING	NON-LOCKING		MINIMUM RECALL	NON-LOCKING										

\* UPON PEDESTRIAN ACTUATION, OTHERWISE 'DON'T WALK' AT ALL TIMES

- #### ADVANCED DILEMA ZONE NOTES:
1. ETA: MIN 2.5 SEC - MAX 5.5 SEC
  2. RANGE: MIN 50 FEET - MAX 500 FEET FROM STOP BAR
  3. MIN SPEED BOUNDARY - 10 MPH
- #### STOP BAR DETECTION ZONE NOTES:
1. RANGE: MIN 10 FEET - MAX 100 FEET FROM STOP BAR
  2. MIN SPEED BOUNDARY - 5 MPH
  3. ZONE MAY BE ADJUSTED IN FIELD



#### SIGNS

PLAN SYMBOL	SERIES DESIGNATION	SIZE W x H	DESCRIPTION
A	R3-8A(L-SR)	30"x30"	LANE USE CONTROL SIGN (L-SR)
B	R10-10R	30"x36"	RIGHT TURN SIGNAL
C	R3-8B (L-S-R)	48"x30"	LANE USE CONTROL SIGN (L-S-R)
D	R10-12	30"x36"	LEFT TURN YIELD ON GREEN
E	D3-4	16"x96"	W College Ave
F	D3-4	16"x84"	Bristol Ave
G	R10-3E-L	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER
H	R10-3E-R	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER

\* SIGNS G AND H SHALL HAVE WHITE LEGEND AND BORDER ON A GREEN BACKGROUND.

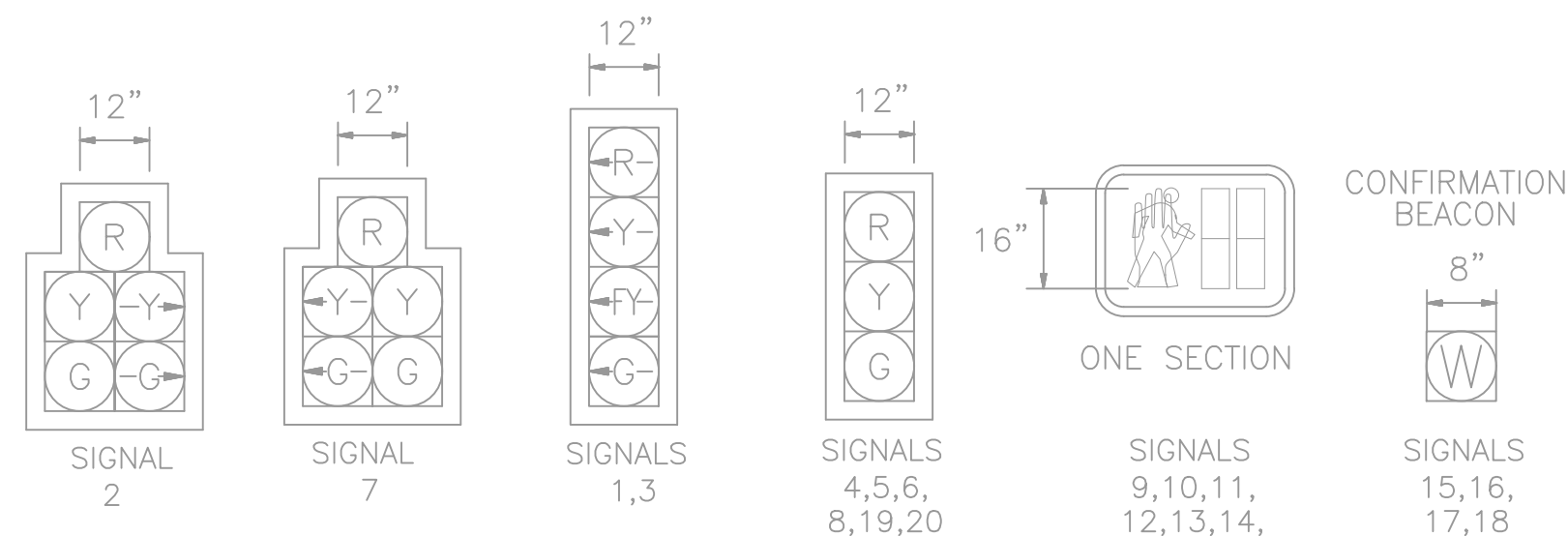
#### DAILY PLANS

PLAN NO.	DAY OF WEEK	TIME	REMARKS
1	X X X X X X X X	1:00	MAX II
2	X X X X X X X X	6:00	MAX I
3	X X X X X X X X	10:00	MAX II

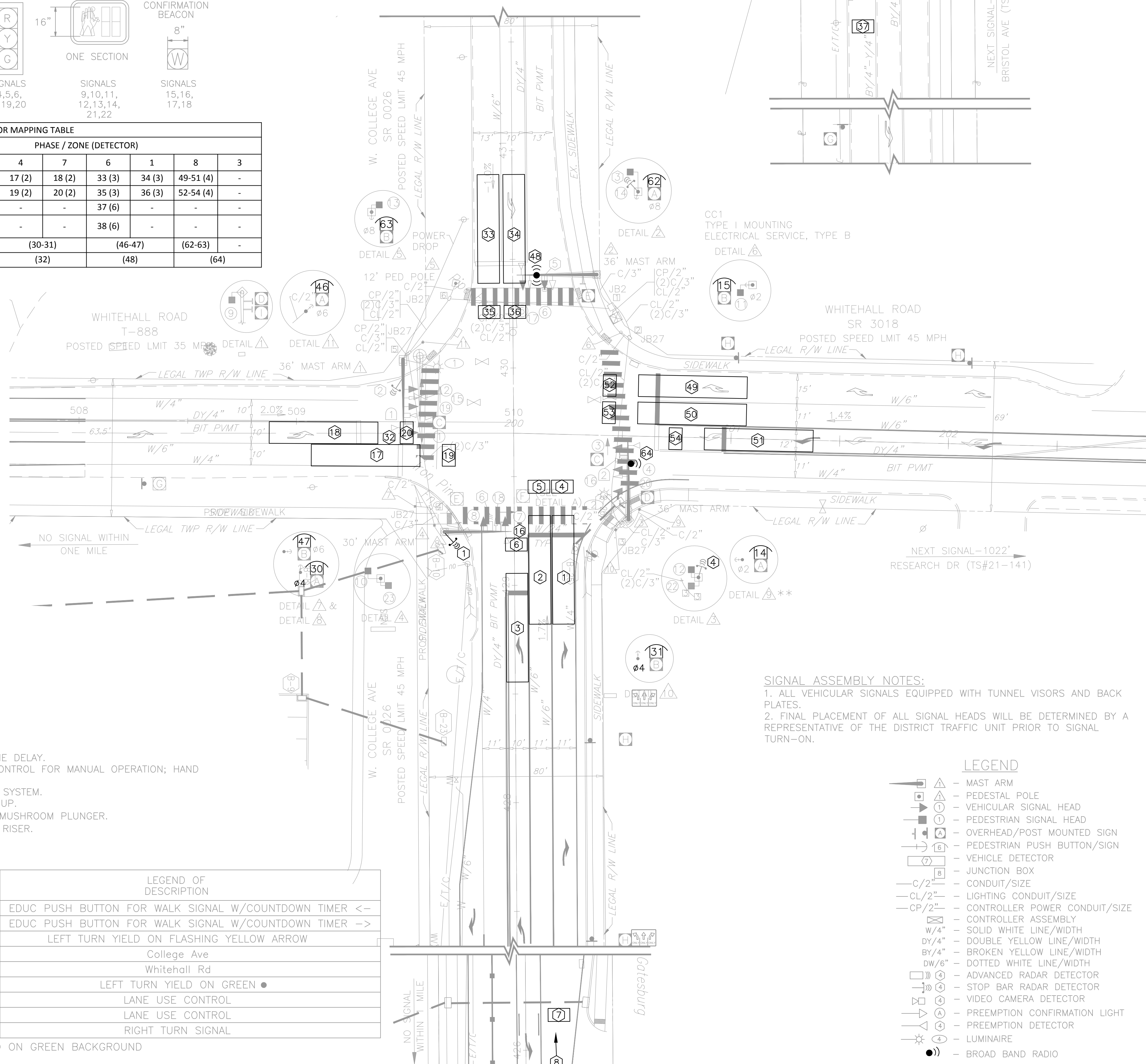
- #### LEGEND
- ▲ - MAST ARM
  - - PEDESTAL
  - ➔ - VEHICULAR SIGNAL HEAD
  - ➔ - PEDESTRIAN SIGNAL HEAD
  - ⊠ - POST MOUNTED SIGN
  - ⊠ - STRUCTURE MOUNTED SIGN
  - ⊠ - VEHICLE DETECTION ZONE
  - ⊠ - PEDESTRIAN PUSH BUTTON W/SIGN
  - ⊠ - VIDEO CAMERA
  - ⊠ - RADAR DETECTOR (ADVANCE)
  - ⊠ - RADAR DETECTOR (STOP BAR)
  - ⊠ - JUNCTION BOX JB-3
  - C/2"- CONDUIT/SIZE
  - CL/2"- LIGHTING CONDUIT/SIZE
  - ⊠ - CONTROLLER ASSEMBLY
  - W/6" - SOLID WHITE LINE/WIDTH
  - BW/6" - BROKEN WHITE LINE/WIDTH
  - Y/4" - SOLID YELLOW LINE/WIDTH
  - BWS/6" - BROKEN WHITE SKIP LINE/WIDTH
  - DY/4" - DOUBLE SOLID YELLOW LINE/WIDTH
  - ⊠ - LUMINAIRE
  - ⊠ - PREEMPTION CONFIRMATION LIGHT
  - ⊠ - PREEMPTION DETECTOR
  - - BROAD BAND RADIO



SIGNAL IDENTIFICATION



DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
		2	5	4	7	6	1	8	3
PRESENCE	50' x 10' @ 40'	1-3 (1)	-	17 (2)	18 (2)	33 (3)	34 (3)	49-51 (4)	-
COUNT	6' x 10' @ -20'	4-6 (1)	-	19 (2)	20 (2)	35 (3)	36 (3)	52-54 (4)	-
PULSE ADVANCE	10' @ 400'	7 (5)	-	-	-	37 (6)	-	-	-
DILEMA ZONE	CONTINUOUS @ 450'	8 (5)	-	-	-	38 (6)	-	-	-
PEDESTRIAN	PB	(14-15)	-	(30-31)	-	(46-47)	-	(62-63)	-
EVP/TRANSIT	OPTICAL	(16)	-	(32)	-	(48)	-	(64)	-



ADVANCED DILEMA ZONE NOTES:

- ETA: MIN 2.5 SEC - MAX 5.5 SEC
- RANGE: MIN 50 FEET - MAX 450 FEET FROM STOP BAR
- MIN SPEED BOUNDARY - 10 MPH

STOP BAR DETECTION ZONE NOTES:

- RANGE: MIN 10 FEET - MAX 100 FEET FROM STOP BAR
- MIN SPEED BOUNDARY - 5 MPH
- ZONE MAY BE ADJUSTED IN FIELD

NOTES:

- EQUIP ALL STOP BAR DETECTORS WITH A TIME DELAY.
- EQUIP CONTROLLER ASSEMBLY WITH HAND CONTROL FOR MANUAL OPERATION; HAND CONTROL SHALL OVERRIDE NIGHTTIME FLASH.
- EQUIP CONTROLLER WITH BATTERY BACK-UP SYSTEM.
- EQUIP CONTROLLER WITH GENERATOR HOOK-UP.
- EQUIP PEDESTRIAN PUSH BUTTONS WITH 2" MUSHROOM PLUNGER.
- EQUIP CONTROLLER CABINET BASE WITH 18" RISER.

SIGNS

QUANTITY	PLAN SYMBOL	SERIES DESIGNATION	SIZE (INCHES)	LEGEND OF DESCRIPTION
4	(A)	R10-3E-L	9X15	EDUC PUSH BUTTON FOR WALK SIGNAL W/COUNTDOWN TIMER <-
4	(B)	R10-3E-R	9X15	EDUC PUSH BUTTON FOR WALK SIGNAL W/COUNTDOWN TIMER ->
2	(C)	R10-12FYA	30X36	LEFT TURN YIELD ON FLASHING YELLOW ARROW
2	(D)	D3-4*	78X16	College Ave
2	(E)	D3-4*	84X16	Whitehall Rd
1	(F)	R10-12	30X36	LEFT TURN YIELD ON GREEN ●
2	(G)	R3-8A(L-SR)	30X30	LANE USE CONTROL
4	(H)	R3-8B(L-S-R)	48X30	LANE USE CONTROL
1	(I)	R10-10R	30X36	RIGHT TURN SIGNAL

SIGNS F AND G SHALL HAVE WHITE LEGEND ON GREEN BACKGROUND

SIGNAL ASSEMBLY NOTES:

- ALL VEHICULAR SIGNALS EQUIPPED WITH TUNNEL VISORS AND BACK PLATES.
- FINAL PLACEMENT OF ALL SIGNAL HEADS WILL BE DETERMINED BY A REPRESENTATIVE OF THE DISTRICT TRAFFIC UNIT PRIOR TO SIGNAL TURN-ON.

LEGEND

- ▲ - MAST ARM
- △ - PEDESTAL POLE
- - VEHICULAR SIGNAL HEAD
- - PEDESTRIAN SIGNAL HEAD
- - OVERHEAD/POST MOUNTED SIGN
- - PEDESTRIAN PUSH BUTTON/SIGN
- - VEHICLE DETECTOR
- - JUNCTION BOX
- C/2"- CONDUIT/SIZE
- CL/2"- LIGHTING CONDUIT/SIZE
- CP/2"- CONTROLLER POWER CONDUIT/SIZE
- ⊠ - CONTROLLER ASSEMBLY
- W/4" - SOLID WHITE LINE/WIDTH
- DY/4" - DOUBLE YELLOW LINE/WIDTH
- BY/4" - BROKEN YELLOW LINE/WIDTH
- DW/6" - DOTTED WHITE LINE/WIDTH
- - ADVANCED RADAR DETECTOR
- - STOP BAR RADAR DETECTOR
- - VIDEO CAMERA DETECTOR
- △ - PREEMPTION CONFIRMATION LIGHT
- △ - PREEMPTION DETECTOR
- ☀ - LUMINAIRE
- - BROAD BAND RADIO

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	41 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS		DATE	BY

CONSTRUCTION NOTES:

- INSTALL DUAL CHANNEL AND SINGLE CHANNEL BROAD BAND RADIOS AND RELATED CABLING.
- AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
- INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.
- PROGRAM ALL IP ADDRESSES AS ASSIGNED.
- INSTALL NEW DETECTOR 1 ON POLE 4.
- PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
- INSTALL NEW CONTROLLER.
- ENABLE DATA LOGGING FUNCTION.

ITEM NUMBER	MISCELLANEOUS		
	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	1	POLE 4
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	1	CABINET
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	1	POLE 3
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	1	POLE 2
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	1	CABINET
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	0	
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			

COUNTY : CENTRE  
 MUNICIPALITY : FERGUSON TOWNSHIP  
 INTERSECTION : WEST COLLEGE AVENUE (SR 0026) & WHITEHALL ROAD (SR 3018 / T-888)

APPROVED BY: [Signature] 8/23/2021  
 MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
 DISTRICT TRAFFIC ENGINEER DATE






DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	43 OF 44
FERGUSON TOWNSHIP				
REVISION NUMBER	REVISIONS		DATE	BY

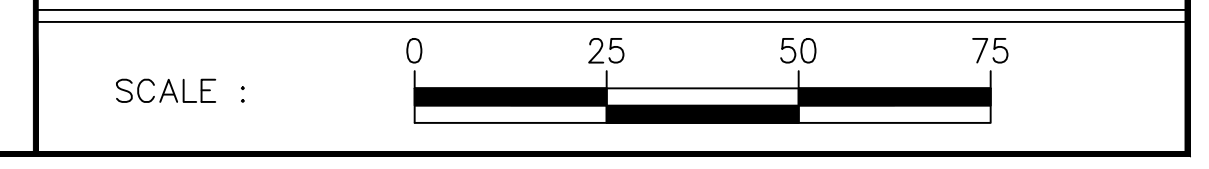
- CONSTRUCTION NOTES:**
- INSTALL DUAL CHANNEL AND SINGLE CHANNEL BROAD BAND RADIO AND RELATED CABLING.
  - AIM BROAD BAND RADIO ANTENNAS TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
  - INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.
  - INSTALL NEW CONTROLLER AND MMU.
  - PROGRAM ALL IP ADDRESSES AS ASSIGNED.
  - INSTALL DETECTOR 1 ON POLE 1 AND DETECTOR 3 ON POLE 3.
  - PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
  - ENABLE DATA LOGGING FUNCTION.

ITEM NUMBER	MISCELLANEOUS		
UNIT	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	2	POLES 1 AND 3
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	1	CABINET
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	0	
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	2	POLES 1 AND 4
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	1	CABINET
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	1	CABINET
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			

COUNTY : CENTRE  
MUNICIPALITY : FERGUSON TOWNSHIP  
INTERSECTION : WHITEHALL ROAD (SR 3018)  
AND RESEARCH DRIVE (T-964)

APPROVED BY:   
MUNICIPAL OFFICIAL 8/23/2021  
DATE

RECOMMENDED : \_\_\_\_\_  
DISTRICT TRAFFIC ENGINEER DATE



**EMERGENCY VEHICLE PREEMPTION NOTES**

NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PREEMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS.

EMERGENCY PREEMPTION SHALL BE PROVIDED ON A FIRST-COME, FIRST-SERVE BASIS. ONCE THE FIRST PRIORITY EMERGENCY VEHICLE CALLS THE SYSTEM, IT SHALL PREVENT OTHER PREEMPTIVE VEHICLES FROM ENTERING CALLS UNTIL THE FIRST EMERGENCY VEHICLE RELEASES CONTROL AND CLEARS THE INTERSECTION.

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 6, PHASE 2, OR PHASE 4. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/GREEN ARROW OR RED/GREEN ARROW) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK INTERVAL AND ALL RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTION PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK INTERVAL AND ALL RED CLEARANCE INTERVALS BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO TIME THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

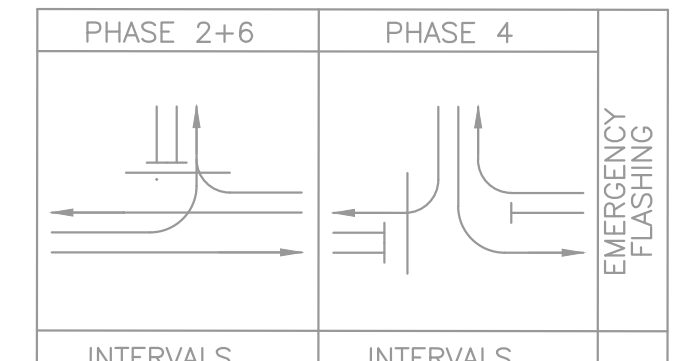
IF THE CONTROLLER OPERATION IS IN THE YELLOW, YELLOW ARROW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.

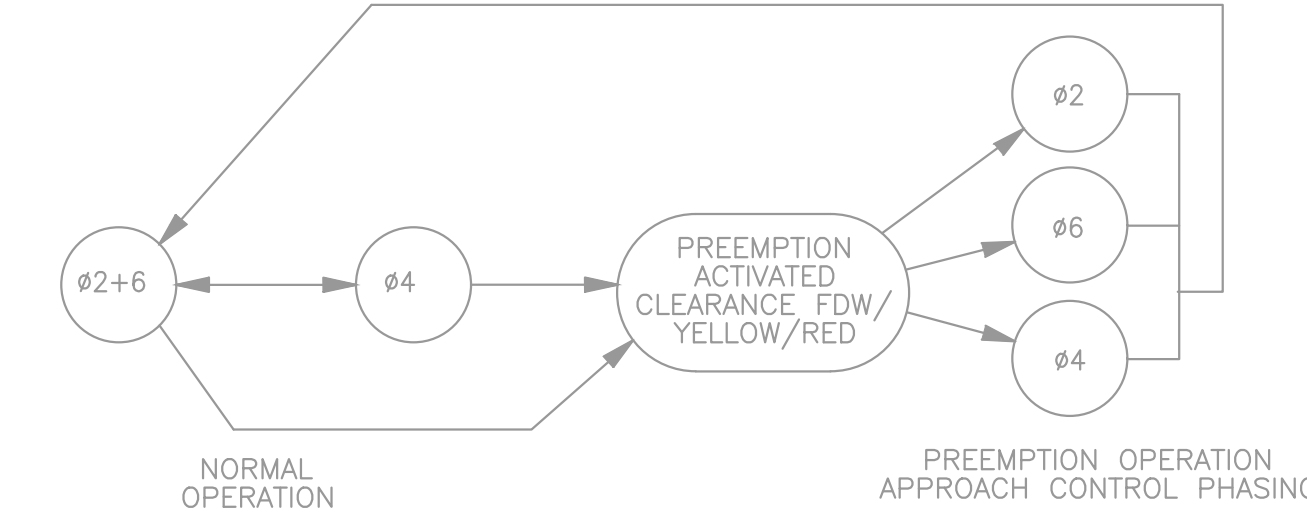
IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.

**PHASING DIAGRAM**



**PHASE ROTATION DIAGRAM**



**NOTES:**

- ALL STOP BAR DETECTORS HAVE TIME DELAY.
- CONTROLLER ASSEMBLY HAS HAND CONTROL FOR MANUAL OPERATION; HAND CONTROL SHALL OVERRIDE NIGHTTIME FLASH.
- CONTROLLER HAS BATTERY BACK-UP SYSTEM.
- CONTROLLER HAS GENERATOR HOOK-UP.
- PEDESTRIAN PUSH BUTTONS HAVE LATCHING SWITCH AND LED DISPLAY.
- CONTROLLER CABINET BASE HAS 18" RISER.
- VIDEO CAMERA FOR MONITORING ONLY.

SIGNALS	1	2	3	4	1	2	3	4	
1	G	G	Y	R	R	R	R	R	Y
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	W*	FD*	DW	DW	DW	DW	DW	DW	OFF
9-10	DW	DW	DW	DW	W*	FD*	DW	DW	OFF
FIXED		4.5	1.5		4.0	1.5			
MINIMUM		10.0			3.0				
PASSAGE		1.0			3.0				
MAX.I		43.0			20.0				
PEDESTRIANS*	7	14			7	13			
MEMORY		MIN-RECALL			NON-LOCKING				

\* UPON PEDESTRIAN ACTUATION, OTHERWISE "DON'T WALK" AT ALL TIMES.  
\*\* UPON PEDESTRIAN ACTUATION, SIGNALS 7 THROUGH 10 SHALL DISPLAY THE NUMBER OF SECONDS REMAINING IN INTERVAL 2 OF THE ACTIVE PHASE. THE COUNTDOWN TIMER SHALL REMAIN DARK DURING ALL OTHER INTERVALS.

**ATSPM DETECTOR MAPPING TABLE**

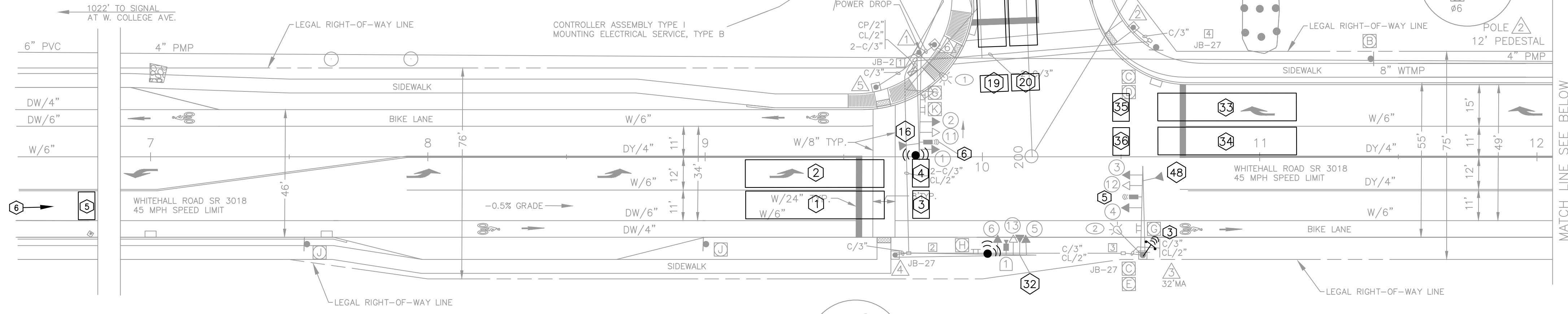
DETECTOR TYPE	DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
		2	5	4	7	6	1	8	3
PRESENCE	50' x 10' @ 40'	1-2 (1)	-	17-18 (2)	-	33-34 (3)	-	-	-
COUNT	6' x 10' @ -20'	3-4 (1)	-	19-20 (2)	-	35-36 (3)	-	-	-
PULSE ADVANCE	10' @ 400'	5 (5)	-	-	-	37 (6)	-	-	-
DILEMA ZONE	CONTINUOUS @ 450'	6 (5)	-	-	-	38 (6)	-	-	-
PEDESTRIAN	PB	-	-	(30-31)	-	(46-47)	-	-	-
EVP/TRANSIT	OPTICAL	(16)	-	(32)	-	(48)	-	-	-

**ADVANCED DILEMA ZONE NOTES:**

- ETA: MIN 2.5 SEC - MAX 5.5 SEC
- RANGE: MIN 50 FEET - MAX 450 FEET FROM STOP BAR
- MIN SPEED BOUNDARY - 10 MPH

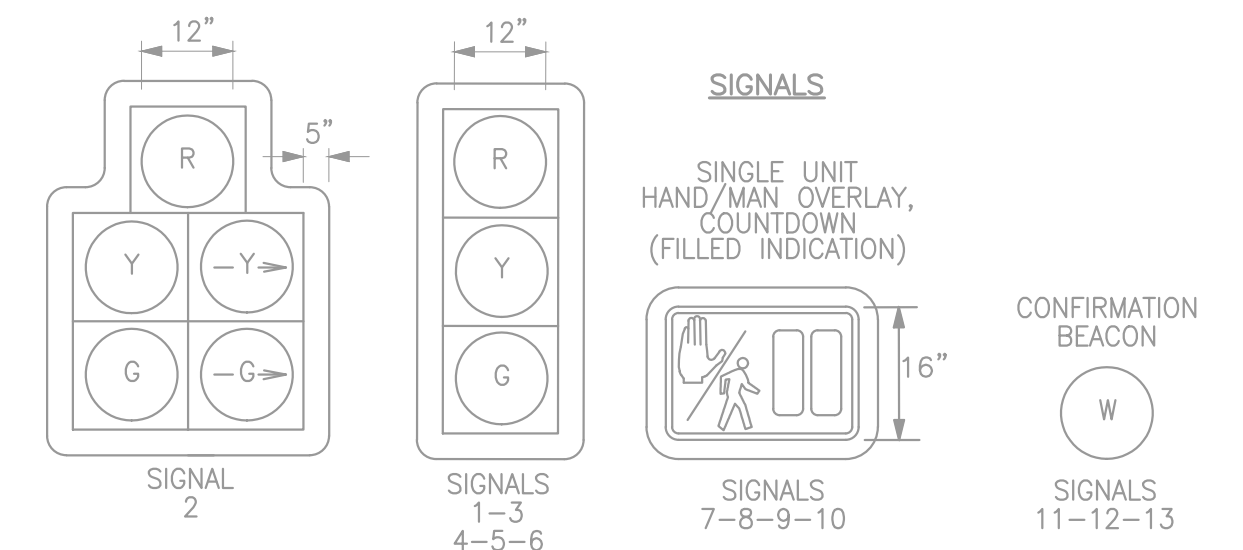
**STOP BAR DETECTION ZONE NOTES:**

- RANGE: MIN 10 FEET - MAX 100 FEET FROM STOP BAR
- MIN SPEED BOUNDARY - 5 MPH
- ZONE MAY BE ADJUSTED IN FIELD



**SIGNS**

PLAN SYMBOL	SERIES DESIGNATION	SIZE W x H	DESCRIPTION
A	R10-3E-L	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER
B	R3-8A(S-R)	30"x30"	LANE USE CONTROL SIGN (S-R)
C	R9-3A	18"x18"	NO PEDESTRIAN CROSSING
D	R9-3BL	18"x12"	USE CROSSWALK
E	R9-3BR	18"x12"	USE CROSSWALK
F	R10-3E-R	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER
G	D3-4 *	78"x16"	Research Dr
H	D3-4 *	84"x16"	Whitehall Rd
I	R3-8A(L-R)	30"x30"	LANE USE CONTROL SIGN (L-R)
J	R3-8A(L-S)	30"x30"	LANE USE CONTROL SIGN (L-S)
K	R10-10R	30"x36"	RIGHT TURN SIGNAL



- SIGNAL ASSEMBLY NOTES**
- ALL VEHICULAR SIGNALS EQUIPPED WITH TUNNEL VISORS AND BACK PLATES.
  - FINAL POSITION OF ALL SIGNAL HEADS WILL BE DETERMINED BY A REPRESENTATIVE OF THE DISTRICT TRAFFIC UNIT PRIOR TO SIGNAL TURN-ON.

\* SIGNS G AND H SHALL HAVE WHITE LEGEND AND BORDER ON A GREEN BACKGROUND.

**LEGEND**

- ▲ - SIGNAL SUPPORT AND MAST ARM
- - PEDESTAL
- ① - VEHICULAR SIGNAL HEAD
- ① - PEDESTRIAN SIGNAL HEAD
- ▲ - SIGN
- ① - VEHICLE DETECTION ZONE
- ④ - PEDESTRIAN PUSH BUTTON WITH SIGN
- ④ - JUNCTION BOX
- C/2"- CONDUIT/SIZE
- CL/2"- LIGHTING CONDUIT/SIZE
- CP/2"- CONTROLLER POWER CONDUIT/SIZE
- ☒ - CONTROLLER ASSEMBLY
- W/4"- SOLID WHITE LINE/WIDTH
- DY/4"- DOUBLE SOLID YELLOW LINE/WIDTH
- BY/4"- BROKEN YELLOW LINE/WIDTH
- DW/6"- DOTTED WHITE LINE/WIDTH
- - VIDEO CAMERA
- - ADVANCE RADAR DETECTOR
- - STOP BAR RADAR DETECTOR
- ◀ - PREEMPTION CONFIRMATION LIGHT
- ◀ - PREEMPTION DETECTOR
- ① - LUMINAIRE
- - BROAD BAND RADIO

**EMERGENCY VEHICLE (FIRE APPARATUS) PREEMPTION NOTES:**

NORMAL TRAFFIC SIGNAL OPERATION SHALL ONLY BE PREEMPTED BY EMERGENCY VEHICLES RESPONDING TO EMERGENCY CALLS. EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. PROVIDE EMERGENCY VEHICLE PREEMPTION EQUIPMENT IN THE CONTROLLER CABINET CAPABLE OF DISPLAYING APPROACH CONTROL OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, THE FOLLOWING PHASES SHALL BE DISPLAYED: PHASE 2, PHASE 4, PHASE 6 OR PHASE 8. PROVIDE THE FOLLOWING SEQUENCE UPON ACTIVATION BY AN EMERGENCY VEHICLE.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING WALK INDICATION AND PROCEED THROUGH THE FLASHING DON'T WALK AND YELLOW INTERVAL BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL TIME OUT THE INTERVAL BEFORE PROCEEDING THROUGH THE YELLOW CLEARANCE INTERVAL. THE GREEN INDICATION SHALL REMAIN GREEN THROUGH THE FLASHING DON'T WALK INTERVAL.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN) OF A NON-PREEMPTIVE PHASE, THE CONTROLLER SHALL IMMEDIATELY TERMINATE THE CONFLICTING GREEN INDICATION AND PROCEED THROUGH THE YELLOW CLEARANCE INTERVAL BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

IF THE CONTROLLER OPERATION IS IN INTERVAL 1 (GREEN/WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE AND IMMEDIATELY TERMINATE THE WALK INDICATION AND PROCEED TO TIME THE FLASHING DON'T WALK INTERVAL TIME. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE.

IF THE CONTROLLER OPERATION IS IN INTERVAL 2 (GREEN/FLASHING DON'T WALK) OF A PREEMPTION PHASE, THE CONTROLLER SHALL REMAIN IN THE GREEN INTERVAL OF THE PREEMPTION PHASE, EXCEPT THE FLASHING DON'T WALK SHALL TIME OUT. UPON CONCLUSION OF THE FLASHING DON'T WALK TIME ANY CONFLICTING GREEN INDICATION WILL BE IMMEDIATELY TERMINATED AND PROCEED THROUGH THE YELLOW AND ALL-RED INTERVALS.

IF THE CONTROLLER OPERATION IS IN THE YELLOW OR RED CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY BEFORE PROCEEDING TO THE PREEMPTION PHASE GREEN.

UPON TERMINATION OF THE PREEMPTION, THE SIGNAL SHALL RETURN TO NORMAL OPERATION.

FLASHING TO EMERGENCY VEHICLE PREEMPTION. IF EMERGENCY VEHICLE PREEMPTION OCCURS WHEN THE TRAFFIC SIGNALS ARE IN CONFLICTING/TIME CLOCK FLASHING OPERATION, THE NORMAL FLASHING OPERATION SEQUENCE, AS SHOWN IN THE PHASING DIAGRAM, SHALL CONTINUE.

FAIL-SAFE INDICATION. WHEN THE PREEMPTION SIGNAL HAS BEEN ACCEPTED, THE FAIL-SAFE INDICATION SHALL BE DISPLAYED IMMEDIATELY ON THE PREEMPTED APPROACH IN THE FORM OF A FLASHING WHITE LIGHT. THE FAIL-SAFE INDICATION SHALL CONTINUE TO FLASH FOR THE DURATION OF THE PREEMPTION PHASE. NO FAIL-SAFE INDICATION SHALL BE GIVEN DURING FLASHING OPERATION.

DETECTOR TYPE		DETECTOR SIZE / LOCATION FROM STOP BAR	PHASE / ZONE (DETECTOR)							
			2	5	4	7	6	1	8	3
PRESENCE	40' X 5/6' per plan		1-2 (2&5)	-	17 (3)	-	33-34 (1&6)	-	49 (4)	-
COUNT	6' x 10' @ -20'		-	-	-	-	-	-	-	-
PULSE ADVANCE	6' @ 400'		-	-	-	-	-	-	-	-
DILEMA ZONE	CONTINUOUS @ 450'		-	-	-	-	-	-	-	-
PEDESTRIAN	PB		(14-15)	-	(30-31)	-	(46-47)	-	(62-63)	-
EVP/TRANSIT	OPTICAL		(16)		(32)		(48)		(64)	

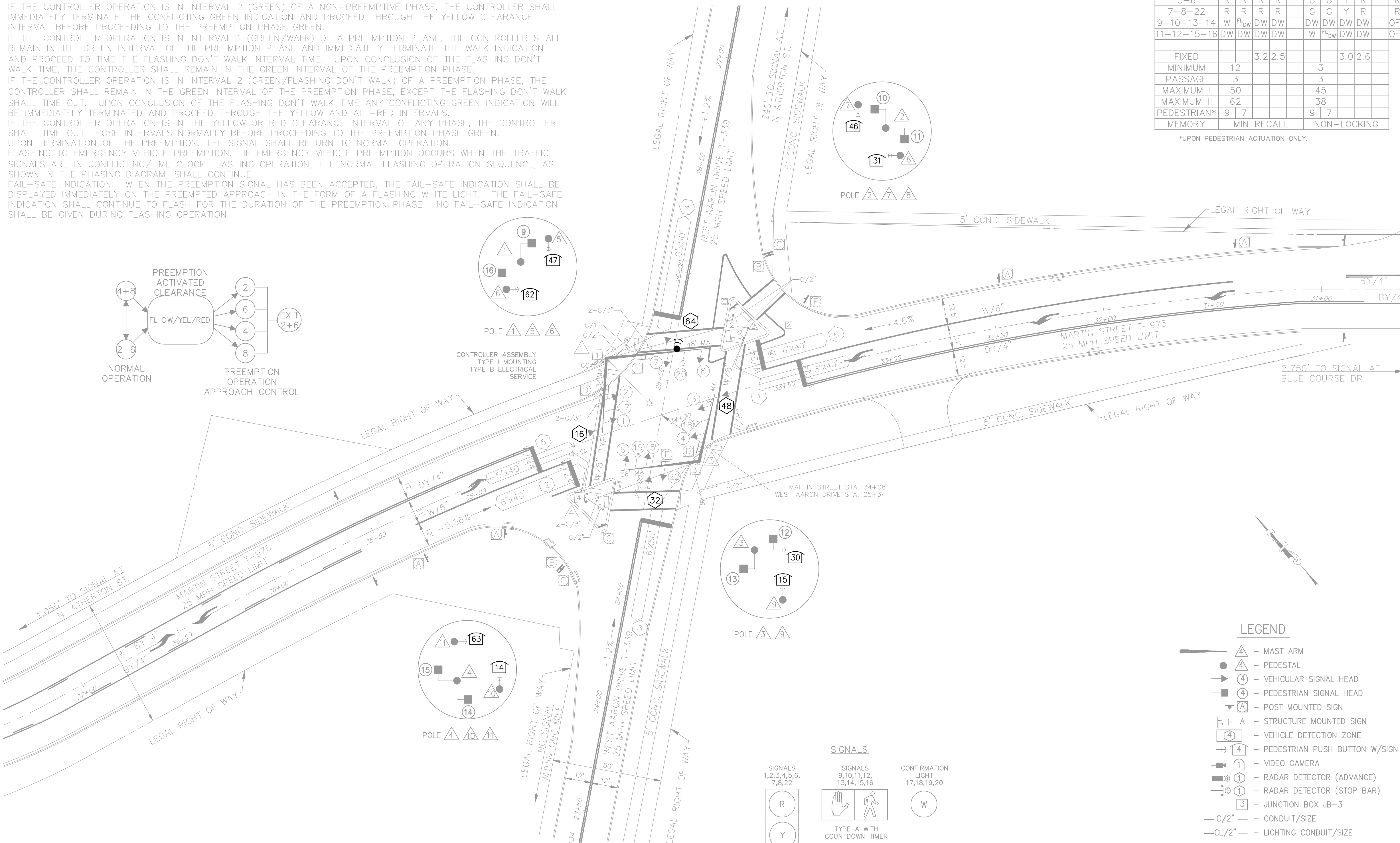
**PHASING DIAGRAM**

SIGNALS	INTERVALS				INTERVALS			
	1	2	3	4	1	2	3	4
1-2	G	G	Y	R	R	R	R	Y
3-4	G	G	Y	R	R	R	R	Y
5-6	R	R	R	R	G	G	Y	R
7-8-22	R	R	R	R	G	G	Y	R
9-10-13-14	W	FL DW	DW	DW	DW	DW	DW	OFF
11-12-15-16	DW	DW	DW	DW	W	FL DW	DW	OFF

	FIXED	MINIMUM	PASSAGE	MAXIMUM I	MAXIMUM II	PEDESTRIAN*	MEMORY
PHASE 2+6		3.2	2.5				
PHASE 4+8				3.0	2.6		

\*UPON PEDESTRIAN ACTUATION ONLY.



PLAN SYMBOL	SERIES DESIGNATION	SIZE W x H	DESCRIPTION
Ⓜ	R3-8(L-SR)	30" X 30"	LANE USE CONTROL
Ⓜ	R1-2	36" X 36"	YIELD
Ⓜ	R5-1	30" X 30"	DO NOT ENTER
Ⓜ	D3-4	84" X 16"	W Aaron Dr
Ⓜ	D3-4	66" X 16"	Martin St
Ⓜ	R1-5	24" X 18"	YIELD TO PEDESTRIANS IN CROSSWALK
*ERECT WITH PUSH BUTTON	R10-3E	9" X 15"	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER

\*ERECT WITH PEDESTRIAN PUSH BUTTON.

NOTES:  
 -EQUIP ALL INDICATIONS WITH L.E.D. MODULES.  
 -EQUIP ALL SIGNAL HEADS WITH TUNNEL VISORS.  
 -EQUIP SIGNAL HEADS 1,2,3,4,5, AND 6 WITH BACK PLATES.

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
2-0	CENTRE	LOCAL	02E011	44 OF 44

FERGUSON TOWNSHIP

REVISION NUMBER	REVISIONS	DATE	BY

**CONSTRUCTION NOTES:**

1. INSTALL SINGLE CHANNEL BROAD BAND RADIO AND RELATED CABLING.
2. AIM BROAD BAND RADIO ANTENNA TO OPTIMIZE SIGNAL STRENGTH BETWEEN RADIOS.
3. INSTALL NETWORK SWITCH AND CABLES TO IP ADDRESSABLE DEVICES.
4. INSTALL NEW MANU AND CONTROLLER.
5. PROGRAM ALL IP ADDRESSES AS ASSIGNED.
6. PROGRAM ALL DETECTION ZONES PER NEW ASSIGNMENT.
7. ENABLE DATA LOGGING FUNCTION.

ITEM NUMBER	DESCRIPTION	QTY	LOCATION
0954-0402	ELECTRIC SERVICE, TYPE B	0	
EACH			
9000-0770	DIGITAL WAVE RADAR PRESENCE DETECTION SYSTEM	0	
EACH			
9000-0771	DIGITAL WAVE RADAR ADVANCE DETECTION SYSTEM	0	
EACH			
9000-0772	DIGITAL WAVE RADAR CABINET INTERFACE	0	
EACH			
9000-1001	MANAGED NETWORK SWITCH	1	CABINET
EACH			
9000-1002	WIRELESS COMMUNICATION SYSTEM - SINGLE RADIO	1	POLE 1
EACH			
9000-1003	WIRELESS COMMUNICATION SYSTEM - DUAL RADIO	0	
EACH			
9000-1004	CONTROLLER UNIT REPLACEMENT	1	CABINET
EACH			
9000-1005	MALFUNCTION MANAGEMENT UNIT REPLACEMENT	1	CABINET
EACH			
9000-1006	SOLAR POWER SUPPLY SYSTEM	0	
EACH			
9000-1007	RADIO ROOF MOUNTING	0	
EACH			
9000-1008	CABINET MODIFICATION FOR PHASE CHANGE	0	
EACH			
9000-1009	TRAFFIC SIGNAL SUPPORT, STRAIN POLE (30' HEIGHT) 1,000#	0	
EACH			
9000-1010	TRAFFIC SIGNAL SUPPORT, STRAIN POLE WITH LUMINAIRE ARM (30' HEIGHT) 1,000#	0	
EACH			
9000-1011	TRAFFIC SIGNAL SUPPORT, STRAIN POLE PAINTED BLACK (30' HEIGHT) 1,000#	0	
EACH			

COUNTY : CENTRE  
 MUNICIPALITY : FERGUSON TOWNSHIP  
 INTERSECTION : MARTIN STREET (T-975) AND WEST AARON DRIVE (T-339)

APPROVED BY: 8/23/2021  
 MUNICIPAL OFFICIAL DATE

RECOMMENDED :  
 DISTRICT TRAFFIC ENGINEER DATE

