

# Appendix A5

## Traffic Signal Observations

## TRAFFIC SIGNAL OBSERVATIONS

### Old Brodhead Road

Signalized intersection #1, Brodhead Road at Old Brodhead Road (SR 3002), operates with a permitted+protected westbound (WB) left turn, wherein the WB left receives a leading protected arrow. Occasionally, a vehicle would actuate either the northbound (NB) side street or WB left movement, causing the signal to switch phases, but the waiting vehicle would clear the intersection before the phase switch, making the switch unnecessary.

The NB and eastbound (EB) legs have crosswalks and pedestrian signal heads; the pedestrian signal head crossing the EB leg dwells in the Don't Walk phase.

Queuing in the midday (MD) and PM peak hours is moderate, and generally doesn't exceed 175 feet in any direction. The WB left turn storage bay adequately accommodated observed left turn queues. No potentially excessive side street or mainline turning delays were observed as a result of the traffic signal dwelling in green along Brodhead Road in any peak hour.

Atypical driving behaviors observed included NB right traffic squeezing past NB left vehicles waiting at the stop bar, using the shoulder to bypass traffic. One vehicle made a last-second WB left turn from the outside WB through lane. One EB through vehicle ran the red light.

Potential needs to consider exploring in future phases of the study generally may include adjusting actuation settings to avoid unnecessary phase changes, and investigating a NB right turn lane.

The side-street right-turn from Old Brodhead Road onto northbound Brodhead Road (towards Monaca for access to Route 51) is posted as a local evacuation route, presumably for the nearby residential communities and the Penn State Beaver campus, and relative to evacuation plans for the Beaver Valley Nuclear Power Station.

*Signal #1 – Old Brodhead Road (SR 3002)*



## Short Street / Milne Drive

Signalized intersection #3, Brodhead Road at Short Street / Milne Drive, operates with protected leading EB and WB left turns, and split NB and SB phases, wherein the NB and SB phases operate exclusively, rather than running concurrently; the SB phase leads, the NB phase lags. Occasionally, a vehicle would trigger a NB or SB side street right movement, causing the signal to switch phases, but the waiting vehicle would clear the intersection before the phase switch, making the switch unnecessary.

The WB and NB legs have crosswalks and pedestrian signal heads, both of which dwell in the Don't Walk phase.

Queuing in the MD peak is moderate and doesn't exceed 225 feet in any direction; queuing in the PM peak is more substantial, with EB/WB queues extending nearly 450 feet, and SB queues extending nearly 250 feet, past the Stone Quarry Road/Wagner Road intersection. The EB, WB, and NB left turn storage bays adequately accommodated observed left turn queues. No potentially excessive side street or mainline turning delays were observed as a result of the traffic signal dwelling in green along Brodhead Road in any peak hour.

Atypical driving behaviors observed included several failures to yield by right turning traffic, particularly the EB right conflicting with the protected WB left movement. One SB left turning vehicle ran the red light.

Potential needs to consider exploring in future phases of the study generally may include adjusting actuation settings to avoid unnecessary phase changes, and enhancing signage for right turning traffic to yield.

*Signal #3 – Short Street / Milne Drive*



## Center Commons Boulevard

Signalized intersection #4, Brodhead Road at Center Commons Boulevard, operates with a protected leading EB left turn. The SB and WB right turns operates with permitted and overlap phasing, wherein the SB and WB right turns get a protected arrow concurrent with the protected EB and SB left turns, respectively.

The EB and SB legs have crosswalks and pedestrian signal heads, both of which dwell in the Don't Walk phase.

Queuing in the MD and PM peak hours is moderate and doesn't exceed 300 feet in any direction. The EB and SB turn storage bays adequately accommodated observed turn queues. In all three peak hours, potentially excessive side street and mainline turning delays were observed as a result of the traffic signal dwelling in green along Brodhead Road in any peak hour, though this did not result in excessive queuing.

Atypical driving behaviors observed included vehicles running the red light in all three directions; one heavy truck ran the WB red light rather than lose uphill momentum.

Potential needs to consider exploring in future phases of the study generally may include adjusting split lengths to decrease minor movement delay, investigating detection for the side street and mainline turning movements, and reviewing all-red clearance times.

*Signal #4 – Center Commons Boulevard*



## Beaver Valley Mall Drive / Golfview Drive

Signalized intersection #5, Brodhead Road at Beaver Valley Mall Drive / Golfview Drive, operates with protected leading EB and WB left turns, and split NB and SB phases; the SB phase leads, the NB phase lags. The NB right turn operates with permitted and overlap phasing, wherein the NB right turn gets a protected arrow concurrent with the protected WB left turns.

All four legs have crosswalks and pedestrian signal heads, all of which dwell in the Don't Walk phase.

Queuing in the MD and PM peaks is moderate and doesn't exceed 250 feet in any direction. All left turn storage bays adequately accommodated observed left turn queues. In all three peak hours, potentially excessive side street and mainline turning delays were observed as a result of the traffic signal dwelling in green along Brodhead Road, though this did not result in excessive queuing.

Atypical driving behaviors observed included the SB right turn, which has an acceleration lane, occasionally stopping and queuing. EB and WB traffic occasionally runs the red light.

Potential needs to consider exploring in future phases of the study generally may include adjusting split lengths to decrease minor movement delay, investigating detection for the side street and mainline turning movements, and reviewing all-red clearance times.

*Signal #5 – Beaver Valley Mall Drive / Golfview Drive*



## Frankfort Road (SR 18) / Old Brodhead Road (SR 3002)

Signalized intersection #6, Brodhead Road at Frankfort Road (SR 18) / Old Brodhead Road (SR 3002), operates with split phasing on all four approaches; the EB and SB phases lead, the WB and NB phases lag.

All four legs have crosswalks and pedestrian signal heads, all of which dwell in the Don't Walk phase.

Queuing in the MD and PM peaks is moderate, and doesn't exceed 300 feet in any direction, with two exceptions: in the PM peak, the EB queue often exceeds 525 feet, and the SB right turn queue often exceeds 350 feet. No potentially excessive side street or mainline turning delays were observed as a result of the traffic signal dwelling in green along Brodhead Road in any peak hour, and all observed queues cleared with every cycle.

Atypical driving behaviors observed included the SB right turn failing to yield to the WB traffic. Due to the outside SB lane on Brodhead Road tapering in downstream of the intersection, the inside shared SB left turn-through lane experiences high utilization, while the outside exclusive SB through lane is underutilized. Similarly, the outside exclusive WB through lane experiences high utilization, while the inside shared WB left turn-through lane operates as a de facto left turn lane.

Potential needs to consider exploring in future phases of the study generally may include investigating turn lane warrants, and eliminating split phases.

*Signal #6 – Frankfort Road (SR 18) / Old Brodhead Road (SR 3002)*



## Community College Drive

Signalized intersection #9, Brodhead Road at Community College Drive, operates with a protected SB left turn. The WB approach has a No Right Turn on Red sign.

The WB and SB legs have crosswalks, but in lieu of pedestrian signal heads, pedestrian phases are given standard three-section signal heads. The pedestrian signal head crossing the SB leg dwells in the red (Don't Walk) phase.

Queuing in all three peak hours is minimal, and generally doesn't exceed 50 feet in any direction. The SB left turn storage bay adequately accommodated observed left turn queues. In all three peak hours, potentially excessive side street and mainline turning delays were observed as a result of the traffic signal dwelling in green along Brodhead Road in any peak hour, though this did not result in excessive queuing.

No atypical driving behaviors were observed, though several side street and mainline turning drivers drifted into the intersection during the protected-only red phase, indicating driver from the signal dwelling in green for the main Brodhead Road movements.

Potential items to consider exploring in future phases of the study generally may include adjusting split lengths to decrease minor movement delay, investigating detection for the side street and mainline turning movements, installing modern pedestrian signal heads.

*Signal #9 – Community College Drive*



## Mill Street / Kennedy Boulevard (SR 3016)

Signalized intersection #16, Brodhead Road at Mill Street / Kennedy Boulevard (SR 3016), operates with split EB and WB phases, and protected leading NB and SB left turns; the EB phase leads, the WB phase lags. The SB right turn operates with permitted and overlap phasing, wherein the SB right turn gets a protected arrow concurrent with the split EB phase. The SB left turn will often be actuated and run at the same time as the NB left turn, despite no vehicles actually being present to actuate it.

All four legs have crosswalks and pedestrian signal heads, all of which dwell in the Don't Walk phase.

Queuing in the MD peak is moderate, and doesn't exceed 225 feet in any direction; in the PM peak, queuing is more substantial, with EB and WB queues often exceeding 400 feet. The SB left turn queue occasionally exceeds the available turn bay storage in the PM peak, though all observed queues cleared with every cycle.

Atypical driving behaviors observed included failure to yield by the EB and WB right turns. There are also several business driveways along Brodhead Road in close proximity to the signal, and queuing from the signal will occasionally block these driveways; as a result, traffic wishing to enter the blocked driveways get stuck, creating queues that begin to build back toward the signal. None of these such queues resulted in system breakdown or gridlock, however.

Potential needs to consider exploring in future phases of the study generally may include investigating turn lane warrants, eliminating split phases, and modifying the SB left turn actuation.

*Signal #16 – Mill Street / Kennedy Boulevard (SR 3016)*





## Sheffield Road

Signalized intersection #17, Brodhead Road at Sheffield Road, operates with a permitted+protected SB left turn, wherein the SB left receives a leading protected arrow. The WB approach has a No Right Turn on Red sign, and the NB approach has a No Left Turn sign.

All four legs have crosswalks and pedestrian signal heads, all of which dwell in the Don't Walk phase.

Queuing in the MD and PM peaks is moderate, and generally doesn't exceed 250 feet in any direction. In all three peak hours, potentially excessive side street delays were observed as a result of the traffic signal dwelling in green along Brodhead Road, though this did not result in excessive queuing.

Atypical driving behaviors observed included SB left turning vehicles cutting the WB corner to get ahead of oncoming NB traffic. Particularly in the more congested PM peak, SB traffic will partially enter the parking lot and crosswalk west of the intersection to get around SB left turning vehicles waiting for a gap in traffic. One car exited the gas station in the southeast corner of the intersection and stopped to make a WB right turn, but due to the close proximity of the western gas station driveway and the WB stop bar, they were not detected; the signal did not change phases until another car arrived behind the first car, activating the detector. Closely spaced business driveways near the intersection are occasionally blocked by queues from the traffic signal; this results in traffic wishing to enter the blocked driveways getting stuck, creating queues that begin to build back toward the signal. None of these queues resulted in system breakdown or gridlock, however.

Potential needs to consider exploring in future phases of the study generally may include investigating a SB left turn lane, and reviewing detection locations.

*Signal #17 – Sheffield Road*



## Five Points

Signalized intersection #22, Brodhead Road at Gringo Road / Laurel Road (SR 151) / Heights Road (SR 3038), also known as Five Points, operates with split EB, WB, and northwestbound (NWB) phases; the NWB phase leads, followed by the NB/SB phase, followed by the WB phase, and the EB phase lags. The WB, SB, and NWB approaches have No Right Turn on Red signs. The EB departure has No Trucks Allowed Except for Local Delivery signs.

The EB, WB, NB, and NWB legs have crosswalks and pedestrian signal heads, all of which dwell in the Don't Walk phase.

Queuing in the MD peak is moderate, and doesn't exceed 150 feet in any direction; in the PM peak, queuing is more substantial, with EB queues often exceeding 300 feet, NB and SB queues often exceeding 250 feet, and NWB queues often exceeding 450 feet. All observed queues cleared with every cycle, except for the PM peak NWB queue, which was often heavy with trucks.

Atypical driving behaviors observed included NBL traffic, which is permitted only, often cutting ahead of SB traffic; this is due in part to the fact that the SB stop bar is located nearly 250 feet from the middle of the intersection, though some NBL traffic truly cuts off SB traffic, particularly SB right turns. EB through trucks tend to partially occupy the EB left turn lane to avoid sideswiping the channelized island and utility poles, contributing to queuing. Additionally, trucks on the EB and NWB approaches, which are uphill, occasionally run the red light, rather than lose momentum. Vehicles on the WB and NWB approaches occasionally ignore the No Right Turn on Red signs; this is especially problematic for the NWB traffic, as they must cross the WB approach in such a movement, if their intended destination is the NB departure.

Potential needs to consider exploring in future phases of the study generally may include reconfiguring the overall intersection, and widening lanes to accommodate truck traffic.

Signal #22 – Five Points



## POTENTIAL NEEDS

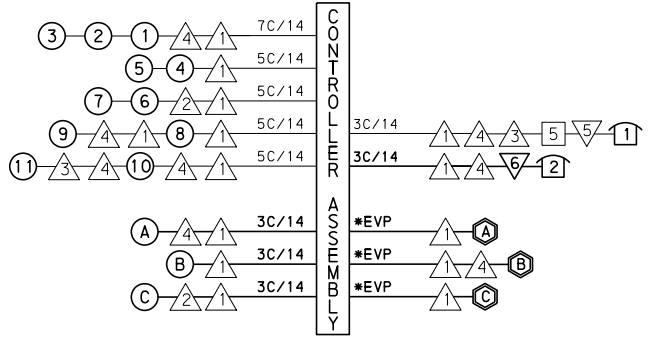
As noted previously, potential needs to consider exploring in future phases of the study generally may include:

1. Old Brodhead Road (SR 3002)
  - Adjust actuation settings to avoid unnecessary phase changes
  - Investigate a NB right turn lane
3. Short Street / Milne Drive
  - Adjust actuation settings to avoid unnecessary phase changes
  - Enhance signage for right turning traffic to yield
4. Center Commons Boulevard
  - Adjust split lengths to decrease minor movement delay
  - Investigate detection settings to decrease minor movement delay
  - Review all-red clearance times
5. Beaver Valley Mall Drive / Golfview Drive
  - Adjust split lengths to decrease minor movement delay
  - Investigate detection settings to decrease minor movement delay
  - Review all-red clearance times
6. Frankfort Road (SR 18) / Old Brodhead Road (SR 3002)
  - Investigate turn lanes
  - Eliminate split phases
9. Community College Drive
  - Adjust split lengths to decrease minor movement delay
  - Investigate detection settings to decrease minor movement delay
  - Install modern pedestrian signal heads
16. Mill Street / Kennedy Boulevard (SR 3016)
  - Investigate turn lanes
  - Eliminate split phases
  - Modify SB left turn actuation
17. Sheffield Road
  - Investigate a SB left turn lane
  - Review detection locations
22. Gringo Road / Laurel Road (SR 151) / Heights Road (SR 3038)
  - Reconfigure the overall intersection
  - Widen lanes to accommodate truck traffic

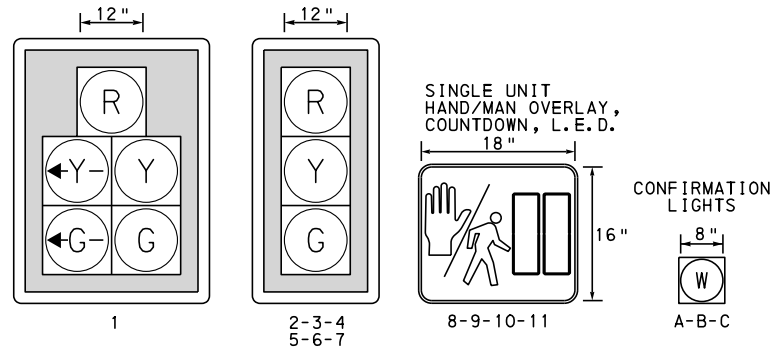
## TRAFFIC SIGNAL PERMIT PLANS

# CONSTRUCTION PLAN

## WIRING DIAGRAM



## SIGNALS



## SIGNAL ASSEMBLY NOTES:

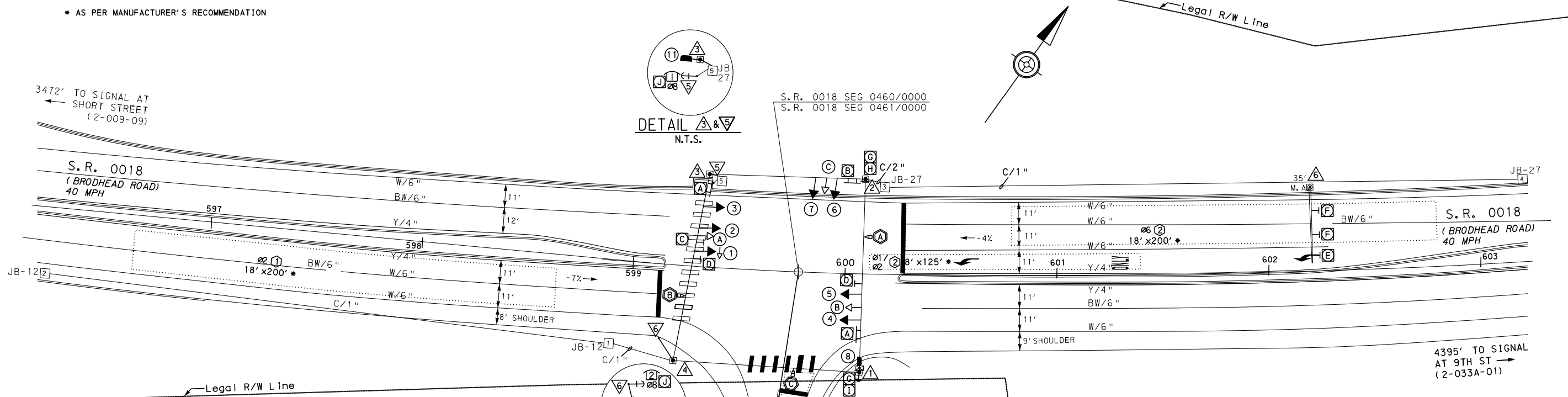
1. ALL SIGNAL HEADS EQUIPPED WITH TUNNEL VISORS.
2. ALL VEHICULAR SIGNALS EQUIPPED WITH METALLIC BACKPLATES AND 2" YELLOW RETROREFLECTIVE BORDER.
3. MIN/MAX HEIGHT FOR BOTTOM OF VEHICULAR SIGNALS 17' / 18'.
4. MIN/MAX HEIGHT FOR BOTTOM OF PEDESTRIAN SIGNALS 10' / 15'.
5. MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNAL HEADS 8'.
6. ALL VEHICULAR AND PEDESTRIAN INDICATIONS TO BE LED.
7. FINAL SIGNAL HEAD PLACEMENT WILL BE DETERMINED BY A REPRESENTATIVE OF THE DISTRICT TRAFFIC UNIT PRIOR TO SIGNAL BEING TURNED ON.
8. RADAR DETECTOR LOCATIONS TO BE DETERMINED BY CONTRACTOR BASED ON FIELD CONDITIONS TO MEET THE DETECTOR ZONES SHOWN ON PLANS.
9. LASH SIGNAL CABLE TO THE SPAN WIRE. NO CABLE TIES PERMITTED.

## PAVEMENT MARKING NOTES:

- \* ALL STOP BARS ARE W/24"
- \* ALL CROSSWALKS ARE 8' WIDE WITH 2' KEYS

\* FINAL PLACEMENT OF RADAR DETECTION UNITS TO BE DETERMINED BY MANUFACTURER. ADVANCE RADAR DETECTION ZONES MUST COVER THE LENGTH SHOWN AT A MINIMUM, BUT SHOULD ADDITIONALLY EXTEND AS FAR AS THE PROVIDED EQUIPMENT ALLOWS.

- 5C/14 - CABLE (NO. OF CONDUCTORS/SIZE AWG.)
- SIGNAL HEAD
  - △ TRAFFIC SIGNAL SUPPORT
  - JUNCTION BOX
  - ▽ PEDESTRIAN PUSH BUTTON SUPPORT
  - ⊞ PEDESTRIAN PUSHBUTTON
  - Ⓐ ACOUSTIC PREEMPTION DETECTOR
  - \* AS PER MANUFACTURER'S RECOMMENDATION



DETAIL A & V  
N.T.S.

DETAIL A & V  
N.T.S.

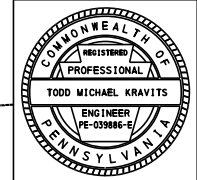
## SIGNS

SIGN	STANDARD	DESCRIPTION	SIZE W x H	QTY.
A	D3-4*	Old Brodhead Rd	96" x 16"	2
B	D3-4*	Brodhead Rd	76" x 16"	1
C	R10-12	LEFT TURN YIELD ON GREEN ●	30" x 36"	1
D	R3-4	NO U-TURN	36" x 36"	2
E	R3-5L	LEFT TURN	30" x 36"	1
F	R3-5A	STRAIGHT THROUGH	30" x 36"	2
G	R9-3A	NO PEDESTRIAN CROSSING	24" x 24"	2
H	R9-3BPL	↔ USE CROSSWALK	18" x 12"	1
I	R9-3BPR	USE CROSSWALK →	18" x 12"	1
J	R10-3ER	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER SIGN	9" x 15"	2

\* WHITE LEGEND ON GREEN BACKGROUND

## LEGEND

- △ - STRAIN POLE/SPAN WIRE
- ① - VEHICULAR SIGNAL HEAD
- ⊞ - PEDESTRIAN SIGNAL HEAD
- Ⓐ - POST MOUNTED SIGN
- ⊞ - STRUCTURE MOUNTED SIGN
- Ⓐ - RADAR DETECTOR ZONE
- ⊞ - CONTROLLER ASSEMBLY
- - JUNCTION BOX
- - GPS RECEIVER
- ⊞ - CONFIRMATION LIGHT
- Ⓐ - EMERGENCY VEHICLE PRE-EMPTION ACOUSTIC DETECTOR
- W/6" - SOLID WHITE LINE/WIDTH
- BW/6" - BROKEN WHITE LINE/WIDTH
- Y/4" - SOLID YELLOW LINE/WIDTH
- DY/4" - DOUBLE SOLID YELLOW LINE/WIDTH
- ⊞ - PEDESTRIAN PUSH BUTTON/SIGN
- ▽ - PUSH BUTTON SUPPORT



COUNTY : BEAVER

MUNICIPALITY : CENTER TOWNSHIP

INTERSECTION : S.R. 0018 (BRODHEAD RD) AND  
S.R. 3002 (OLD BRODHEAD RD)

RECOMMENDED :

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

SCALE: 0 25 50 75 100

# CONSTRUCTION PLAN

## PHASING DIAGRAM

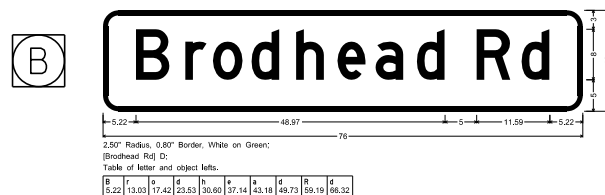
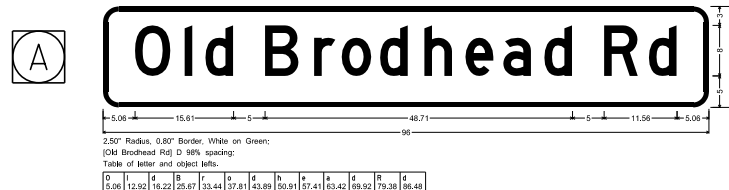
SIGNALS	PHASE 1+6				PHASE 2+6				PHASE 8				PHASE 1+6 PREEMPTION				PHASE 2 PREEMPTION				PHASE 8 PREEMPTION				E F L A S H I N G
	1	2	3		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
1	G	Y <sup>①</sup>	R <sup>②</sup>		G	G	Y <sup>③</sup>	R <sup>④</sup>	R	R	R	R	G	Y	R		R	R	R		R	R	R	Y	
2-3	G	Y <sup>②</sup>	R <sup>②</sup>		G	G	Y <sup>③</sup>	R <sup>④</sup>	R	R	R	R	G	Y	R		R	R	R		R	R	R	Y	
4-5	R	R	R		G	G	Y	R	R	R	R	R	G	Y	R		R	R	R		R	R	R	Y	
6-7	R	R	R		R	R	R	R	G	G	Y	R					R	R	R		G	Y	R	R	
8-9	DW	DW	DW		W	FD	DW	DW	DW	DW	DW	DW	DW	DW	DW		DW	DW	DW		DW	DW	DW	OFF	
*10-11	DW	DW	DW		DW	DW	DW	DW	W	FD	DW	DW	DW	DW	DW		DW	DW	DW		DW	DW	DW	OFF	
A	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF	OFF	
B	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF	OFF	
C	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF		ON	OFF	OFF	OFF	
FIXED	X	5	2		X	5	2		X	4	2		X	5	2		X	5	2		X	4	2		
MINIMUM	5				20				5				10				10				10				
PASSAGE	2				2				2				④				④				④				
MAX I	20				60				30				60				60				60				
MAX II	20				60				30				60				60				60				
PEDESTRIAN					7	12			7	18															
MEMORY	NL				MN/RW				NL																

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

- ① G IF 02+6 FOLLOWS
- ② G IF 02+6 FOLLOWS
- ③ G IF 01+6 FOLLOWS
- ④ DURATION OF EMERGENCY VEHICULAR ACTUATION, NOT TO EXCEED 60 SECONDS

**MEMORY INCLUDES:**

- PR - PEDESTRIAN RECALL
- MN - MINIMUM RECALL
- MX - MAXIMUM RECALL
- L - LOCKING
- NL - NON-LOCKING
- RW - REST IN WALK

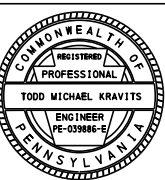


**EMERGENCY PREEMPTION NOTES:**

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING SHALL BE DISPLAYED: EMERGENCY PREEMPT PHASE 1+6, 2, OR 8. THE SYSTEM SHALL PROVIDE SERVICE ON FIRST-COME FIRST-SERVE BASIS. ONCE THE FIRST PRIORITY VEHICLE CALLS THE SYSTEM, IT SHALL PREVENT OTHER PREEMPTIVE VEHICLES FROM ENTERING CALLS UNTIL THE FIRST EMERGENCY VEHICLE RELEASES CONTROL AND CLEARS THE INTERSECTION.

UPON ACTIVATION BY AN EMERGENCY VEHICLE:

1. IF THE CONTROLLER OPERATION IS IN INTERVAL 1 OF A NON-PREEMPTIVE VEHICLE PHASE THE CONTROLLER SHALL TERMINATE THE INTERVAL IMMEDIATELY AND PROCEED NORMALLY THROUGH THE YELLOW AND ALL RED INTERVALS BEFORE PROCEEDING TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
2. IF THE CONTROLLER OPERATION IS IN INTERVAL 1 OF THE PREEMPTION PHASE THE CONTROLLER SHALL REMAIN IN THAT INTERVAL.
3. ANY WALK INDICATION SHALL TERMINATE IMMEDIATELY AND PROCEED NORMALLY THROUGH THE FLASHING DON'T WALK, YELLOW AND ALL RED INTERVAL BEFORE PROCEEDING TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
4. ANY FLASHING DON'T WALK INDICATION SHALL TIMEOUT NORMALLY, FOLLOWED BY THE YELLOW AND ALL RED INTERVAL BEFORE PROCEEDING TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
5. IF THE CONTROLLER OPERATION IS IN THE YELLOW OR ALL RED INTERVAL OF ANY VEHICLE PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY AND PROCEED TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
6. THE PREEMPTION PHASE GREEN INTERVAL SHALL BE A MINIMUM OF 10 SECONDS AND THEN EXTEND FOR THE LENGTH OF THE PREEMPTION ACTUATION OR A MAXIMUM OF 60 SECONDS.
7. UPON TERMINATION OF THE PREEMPTION PHASE THE CONTROLLER SHALL PROCEED NORMALLY THROUGH THE YELLOW AND ALL RED INTERVALS TO NORMAL TIME OF DAY AND "PHASE NEXT" OPERATION.
8. IF PREEMPTION OCCURS DURING CONFLICT/TIME CLOCK FLASH THE TRAFFIC SIGNAL SHALL CONTINUE FLASHING.
9. PREEMPT TO COORDINATION: USED WHEN EMERGENCY PREEMPTION IS ACTIVATED DURING COORDINATION. OPERATION TO ALLOW THE NEXT PERMISSIVE PHASE IN THE COORDINATION CYCLE TO BE SERVICED FOLLOWING PREEMPTION.
10. WHEN A CALL IS RECEIVED THE FAIL SAFE INDICATION SHALL BE ACTIVATED FOLLOWED BY THE SELECTIVE CLEARANCE INTERVALS AND FLASH AT A RATE OF NO LESS THAN 50 NOR MORE THAN 60 TIMES PER MINUTE.
11. PROVIDE A FAIL SAFE INDICATION CONSISTING OF A FLASHING WHITE LIGHT FOR THE DIRECTION ON WHICH THE EMERGENCY VEHICLE IS APPROACHING.

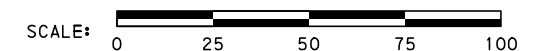


CONTROLLER CAN BE COORDINATED WITH ADJACENT SIGNAL CONTROLLERS VIA GPS TO PROVIDE A PROGRESSIVE MOVEMENT OF TRAFFIC ALONG S.R. 18. A MASTER CONTROLLER IS LOCATED AT THE INTERSECTION OF S.R. 18 AND GOLFVIEW DR.

COORDINATED INTERSECTIONS INCLUDE:  
 S.R. 18 (FRANKFORT RD) AT BEAVER VALLEY MALL BLVD  
 S.R. 18 (BRODHEAD RD/FRANKFORT RD) AT S.R. 3002/S.R. 3007  
 S.R. 18 (BRODHEAD RD) AT GOLFVIEW DR  
 S.R. 18 (BRODHEAD RD) AT CENTER COMMONS BLVD  
 S.R. 18 (BRODHEAD RD) AT SHORT ST/MILNE DR

COUNTY : BEAVER  
 MUNICIPALITY : CENTER TOWNSHIP  
 INTERSECTION : S.R. 0018 (BRODHEAD RD) AND  
S.R. 3002 (OLD BRODHEAD RD)

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

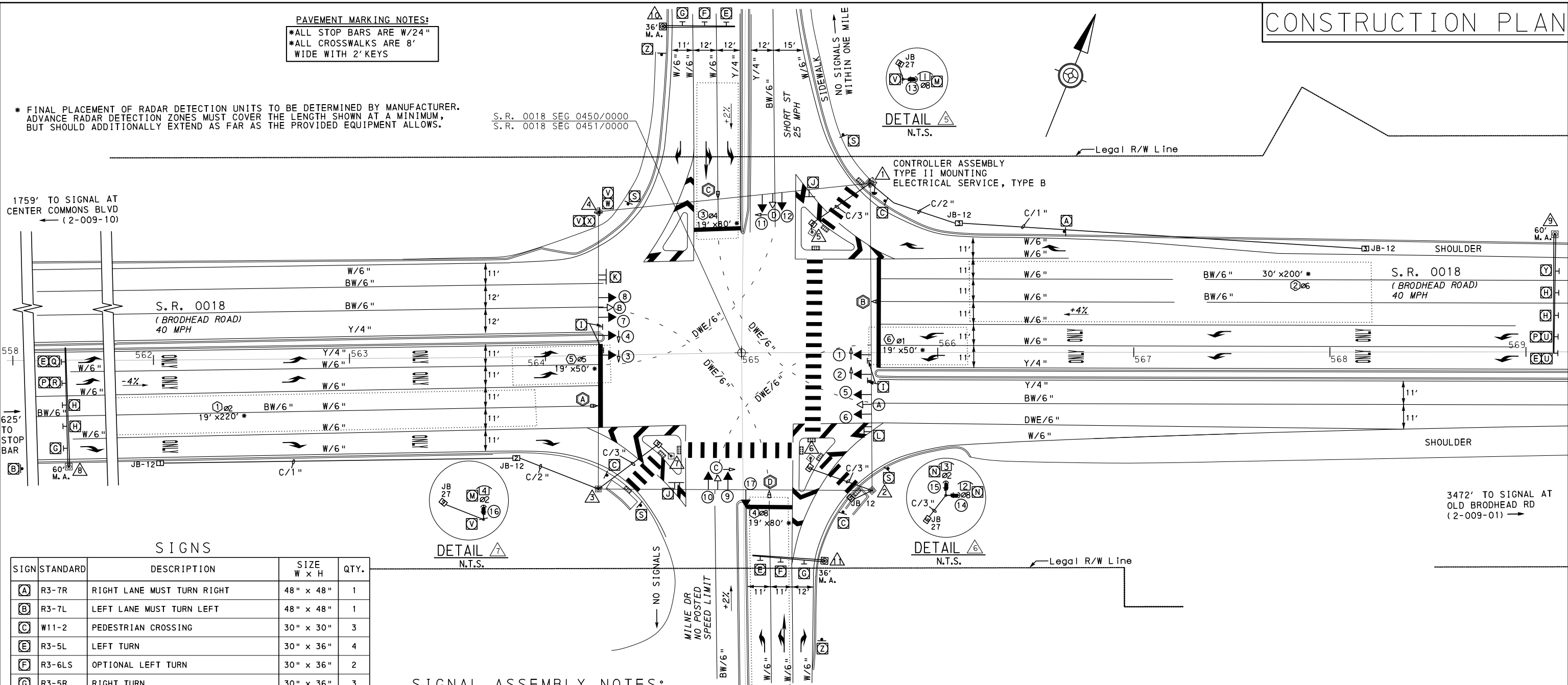


**PAVEMENT MARKING NOTES:**  
 \*ALL STOP BARS ARE W/24"  
 \*ALL CROSSWALKS ARE 8'  
 WIDE WITH 2' KEYS

\* FINAL PLACEMENT OF RADAR DETECTION UNITS TO BE DETERMINED BY MANUFACTURER. ADVANCE RADAR DETECTION ZONES MUST COVER THE LENGTH SHOWN AT A MINIMUM, BUT SHOULD ADDITIONALLY EXTEND AS FAR AS THE PROVIDED EQUIPMENT ALLOWS.

S.R. 0018 SEG 0450/0000  
 S.R. 0018 SEG 0451/0000

# CONSTRUCTION PLAN



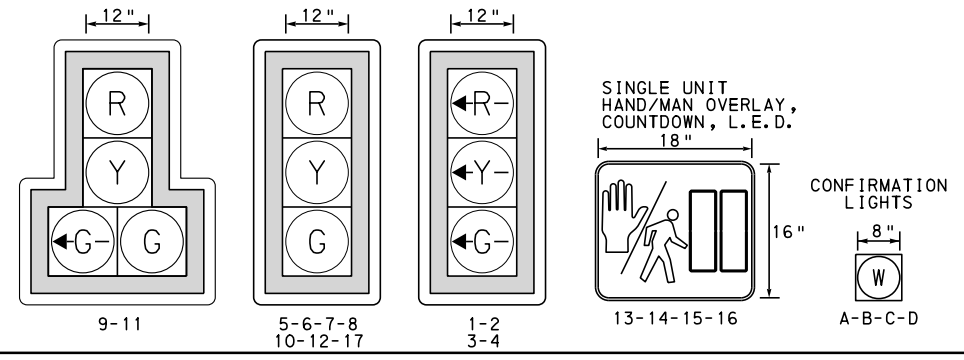
## SIGNS

SIGN	STANDARD	DESCRIPTION	SIZE W x H	QTY.
A	R3-7R	RIGHT LANE MUST TURN RIGHT	48" x 48"	1
B	R3-7L	LEFT LANE MUST TURN LEFT	48" x 48"	1
C	W11-2	PEDESTRIAN CROSSING	30" x 30"	3
E	R3-5L	LEFT TURN	30" x 36"	4
F	R3-6LS	OPTIONAL LEFT TURN	30" x 36"	2
G	R3-5R	RIGHT TURN	30" x 36"	3
H	R3-5A	STRAIGHT THROUGH	30" x 36"	4
I	R10-10L	LEFT TURN SIGNAL	30" x 36"	4
J	D3-4*	Brodhead Rd	76" x 16"	2
K	D3-5*	Milne Dr Short St	69" x 28"	1
L	D3-5*	Short St Milne Dr	69" x 28"	1
M	R10-3ER	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER SIGN	9" x 15"	2
N	R10-3EL	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER SIGN	9" x 15"	2
P	SP-1	LEFT TURN - NO TRUCKS	36" x 48"	2
Q	SPECIAL*	TO STONE QUARRY RD	24" x 30"	1
R	SPECIAL*	TO WAGNER RD	24" x 30"	1
S	R1-2	YIELD	36" x 36"	4
U	SPECIAL*	TO MILNE RD	24" x 30"	2
V	R9-3	NO PEDESTRIAN CROSSING	24" x 24"	4
W	R9-3BPL	USE CROSSWALK	18" x 12"	1
X	R9-3BPR	USE CROSSWALK	18" x 12"	1
Y	R3-6SR	OPTIONAL RIGHT TURN	30" x 36"	1
Z	R3-8B (L-LS-R)	LANE USE CONTROL (THREE LANES)	48" x 30"	2

\* WHITE LEGEND ON GREEN BACKGROUND

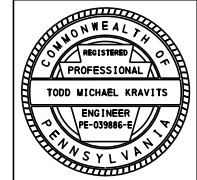
## SIGNAL ASSEMBLY NOTES:

1. ALL SIGNAL HEADS EQUIPPED WITH TUNNEL VISORS.
2. ALL VEHICULAR SIGNALS EQUIPPED WITH METALLIC BACKPLATES AND 2" YELLOW RETROREFLECTIVE BORDER.
3. MIN/MAX HEIGHT FOR BOTTOM OF VEHICULAR SIGNALS 17'/18'.
4. MIN/MAX HEIGHT FOR BOTTOM OF PEDESTRIAN SIGNALS 10'/15'.
5. MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNAL HEADS 8'.
6. ALL VEHICULAR AND PEDESTRIAN INDICATIONS TO BE LED.
7. FINAL SIGNAL HEAD PLACEMENT WILL BE DETERMINED BY A REPRESENTATIVE OF THE DISTRICT TRAFFIC UNIT PRIOR TO SIGNAL BEING TURNED ON.
8. RADAR DETECTOR LOCATIONS TO BE DETERMINED BY CONTRACTOR BASED ON FIELD CONDITIONS TO MEET THE DETECTOR ZONES SHOWN ON PLANS.
9. LASH SIGNAL CABLE TO THE SPAN WIRE. NO CABLE TIES PERMITTED.



## LEGEND

- ▲ - STRAIN POLE/SPAN WIRE
- ① - VEHICULAR SIGNAL HEAD
- ② - PEDESTRIAN SIGNAL HEAD
- ▲ - POST MOUNTED SIGN
- ▲ - STRUCTURE MOUNTED SIGN
- ④ - RADAR DETECTOR ZONE
- ☒ - CONTROLLER ASSEMBLY
- ☐ - JUNCTION BOX
- ➔ - GPS RECEIVER
- ⊕ - RADAR DETECTION SYSTEM
- ▨ - DETECTABLE WARNING SURFACE
- ⊖ (A) - CONFIRMATION LIGHT
- ⊖ (A) - EMERGENCY VEHICLE PRE-EMPTION ACOUSTIC DETECTOR
- W/6" - SOLID WHITE LINE/WIDTH
- BW/6" - BROKEN WHITE LINE/WIDTH
- DWE/6" - WHITE DOTTED EXTENSION LINE/WIDTH
- DY/4" - DOUBLE SOLID YELLOW LINE/WIDTH
- ➔ ⊕ - PEDESTRIAN PUSH BUTTON/SIGN



COUNTY : BEAVER  
 MUNICIPALITY : CENTER TOWNSHIP  
 INTERSECTION : S.R. 0018 (BRODHEAD RD.),  
SHORT ST, AND MILNE DR

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

SCALE: 0 25 50 75 100

# CONSTRUCTION PLAN

## EMERGENCY PREEMPTION NOTES:

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING SHALL BE DISPLAYED: EMERGENCY PREEMPT PHASE 2+5, 1+6, 8, OR 4. THE SYSTEM SHALL PROVIDE SERVICE ON FIRST-COME FIRST SERVE BASIS. ONCE THE FIRST PRIORITY VEHICLE CALLS THE SYSTEM, IT SHALL PREVENT OTHER PREEMPTIVE VEHICLES FROM ENTERING CALLS UNTIL THE FIRST EMERGENCY VEHICLE RELEASES CONTROL AND CLEARS THE INTERSECTION.

### UPON ACTIVATION BY AN EMERGENCY VEHICLE:

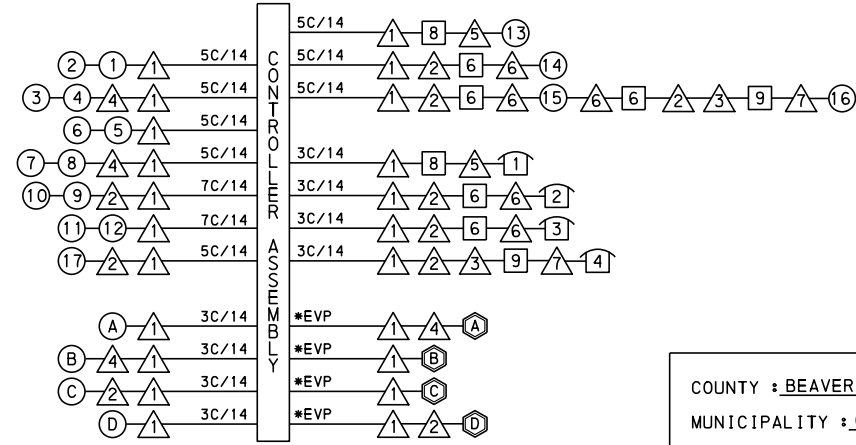
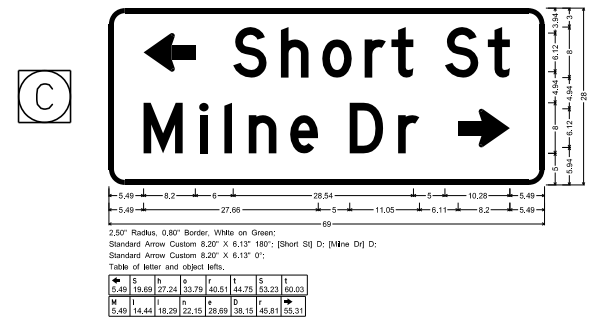
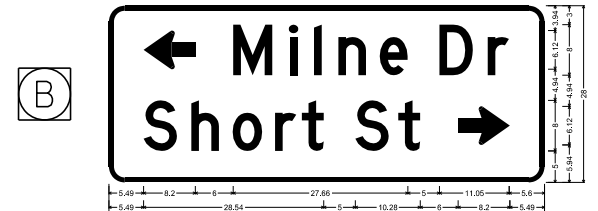
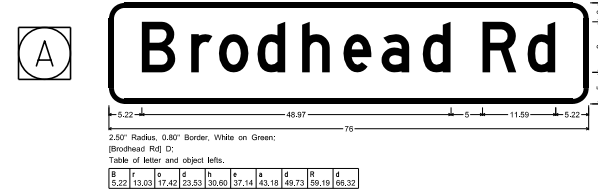
- IF THE CONTROLLER OPERATION IS IN INTERVAL 1 OF A NON-PREEMPTIVE VEHICLE PHASE THE CONTROLLER SHALL TERMINATE THE INTERVAL IMMEDIATELY AND PROCEED NORMALLY THROUGH THE YELLOW AND ALL RED INTERVALS BEFORE PROCEEDING TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
- IF THE CONTROLLER OPERATION IS IN INTERVAL 1 OF THE PREEMPTION PHASE THE CONTROLLER SHALL REMAIN IN THAT INTERVAL.
- ANY WALK INDICATION SHALL TERMINATE IMMEDIATELY AND PROCEED NORMALLY THROUGH THE FLASHING DON'T WALK AND ALL RED INTERVAL BEFORE PROCEEDING TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION.
- ANY FLASHING DON'T WALK INDICATION SHALL TIMEOUT NORMALLY, FOLLOWED BY THE ALL RED INTERVAL BEFORE PROCEEDING TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
- IF THE CONTROLLER OPERATION IS IN THE YELLOW OR ALL RED INTERVAL OF ANY VEHICLE PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY AND PROCEED TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
- THE PREEMPTION PHASE GREEN INTERVAL SHALL BE A MINIMUM OF 10 SECONDS AND THEN EXTEND FOR THE LENGTH OF THE PREEMPTION ACTUATION OR A MAXIMUM OF 60 SECONDS.
- UPON TERMINATION OF THE PREEMPTION PHASE THE CONTROLLER SHALL PROCEED NORMALLY THROUGH THE YELLOW AND ALL RED INTERVALS TO NORMAL TIME OF DAY AND "PHASE NEXT" OPERATION.
- IF PREEMPTION OCCURS DURING CONFLICT/TIME CLOCK FLASH THE TRAFFIC SIGNAL SHALL CONTINUE FLASHING.
- PREEMPT TO COORDINATION: USED WHEN EMERGENCY PREEMPTION IS ACTIVATED DURING COORDINATION. OPERATION TO ALLOW THE NEXT PERMISSIVE PHASE IN THE COORDINATION CYCLE TO BE SERVICED FOLLOWING PREEMPTION.
- WHEN A CALL IS RECEIVED THE FAIL SAFE INDICATION SHALL BE ACTIVATED FOLLOWED BY THE SELECTIVE CLEARANCE INTERVALS AND FLASH AT A RATE OF NO LESS THAN 50 NOR MORE THAN 60 TIMES PER MINUTE.
- PROVIDE A FAIL SAFE INDICATION CONSISTING OF A FLASHING WHITE LIGHT FOR THE DIRECTION ON WHICH THE EMERGENCY VEHICLE IS APPROACHING.

TYPE 170 CONTROLLER WITH MANUAL CORD AND MODEM

	PHASE 1+5				PHASE 1+6				PHASE 2+5				PHASE 2+6				PHASE 8				PHASE 4				PHASE 2+5 PREEMPTION				PHASE 1+6 PREEMPTION				PHASE 8 PREEMPTION				PHASE 4 PREEMPTION				EMERGENCY							
SIGNALS	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		1	2	3	4			
1-2	-G	-Y <sup>①</sup>	-R <sup>①</sup>		-R	-R	-R		-G	-G	-Y <sup>③</sup>	-R <sup>③</sup>	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-G	-Y	-R		-R	-R	-R		-R	-R	-R		-R	-R	-R	-R				
3-4	-G	-Y <sup>②</sup>	-R <sup>②</sup>		-G	-Y <sup>④</sup>	-R <sup>④</sup>		-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R		-G	-Y	-R		-R	-R	-R		-R	-R	-R	-R				
5-6	R	R	R		R	R	R		G	G	Y <sup>④</sup>	R <sup>④</sup>	G	G	Y <sup>⑤</sup>	R <sup>⑤</sup>	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R		R	R	R		R	R	R		R	R	R	Y				
7-8	R	R	R		G	Y <sup>④</sup>	R <sup>④</sup>		R	R	R	R	G	G	Y <sup>⑥</sup>	R <sup>⑥</sup>	R	R	R	R	R	R	R	R	R	R	R	R	-G	Y	R		R	R	R		R	R	R	Y								
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	Y	R		R	R	R		R	R	R	Y								
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	Y	R		R	R	R		R	R	R	Y								
11	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	Y	R		R	R	R		R	R	R	Y								
12-17	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	Y	R		R	R	R		R	R	R	Y								
*13-14	DW	DW	DW		DW	DW	DW		DW	DW	DW	DW	DW	DW	DW	DW	W	FD	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW		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	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW		DW	DW	DW		DW	DW	DW	OFF								
A	OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF												
B	OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF												
C	OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF												
D	OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	OFF												
FIXED	⊗	5	3		⊗	5	3		⊗	5	3		⊗	5	3		⊗	3	4		⊗	3	4		⊗	3	4		⊗	3	4		⊗	5	3		⊗	5	3		⊗	3	4		⊗	3	4	
MINIMUM	5				5				5				20				5				5				5				60				60				60				60							
PASSAGE	2				2				2				2				2				2				2				2				2				2				2							
MAX I	30				30				30				60				30				30				30				30				30				30				30							
MAX II	30				30				30				60				30				30				30				30				30				30				30							
PEDESTRIAN									⑦				7	18			7	28																														
MEMORY	NL				NL				NL				MN				NL				NL				NL																							

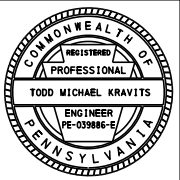
\* UPON PEDESTRIAN ACTUATION ONLY; DW AT ALL OTHER TIMES

- ① -G- IF FOLLOWED BY 02+5
- ② -G- IF FOLLOWED BY 01+6
- ③ -G- IF FOLLOWED BY 01+5
- ④ G IF FOLLOWED BY 02+6
- ⑤ G IF FOLLOWED BY 02+5
- ⑥ G IF FOLLOWED BY 01+6
- ⑦ TIMING WILL BE AS SHOWN IN PHASE 2+6. INTERVALS 1 AND 2 MAY TIME OUT IN THIS PHASE OR MAY BE COMPLETED IN PHASE 2+6
- ⑧ DURATION OF EMERGENCY VEHICULAR ACTUATION, NOT TO EXCEED 60 SECONDS



CONTROLLER CAN BE COORDINATED WITH ADJACENT SIGNAL CONTROLLERS VIA GPS TO PROVIDE A PROGRESSIVE MOVEMENT OF TRAFFIC ALONG S.R. 18. A MASTER CONTROLLER IS LOCATED AT THE INTERSECTION OF S.R. 18 AND GOLFVIEW DR.

- COORDINATED INTERSECTIONS INCLUDE:
- S.R. 18 (FRANKFORT RD) AT BEAVER VALLEY MALL BLVD
  - S.R. 18 (BRODHEAD RD/FRANKFORT RD) AT S.R. 3002/S.R. 3007
  - S.R. 18 (BRODHEAD RD) AT GOLFVIEW DR
  - S.R. 18 (BRODHEAD RD) AT CENTER COMMONS BLVD
  - S.R. 18 (BRODHEAD RD) AT S.R. 3002



COUNTY : BEAVER

MUNICIPALITY : CENTER TOWNSHIP

INTERSECTION : S.R. 0018 (BRODHEAD RD.),  
SHORT ST, AND MILNE DR

RECOMMENDED :

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

SCALE: 0 25 50 75 100



# CONSTRUCTION PLAN

## SIGNS

SIGN	STANDARD	DESCRIPTION	SIZE W x H	QTY.
A	D3-4*	Center Commons Blvd	96" x 16"	2
B	D3-4*	Brodhead Rd	76" x 16"	1
C	R3-5L	LEFT TURN	30" x 36"	5
D	R3-5A	STRAIGHT-THROUGH	30" x 36"	6
E	R3-5R	RIGHT TURN	30" x 36"	2
F	R10-10L	LEFT TURN SIGNAL	30" x 36"	2
G	R10-10R	RIGHT TURN SIGNAL	30" x 36"	2
J	R10-3EL	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER SIGN ←	9" x 15"	3
K	R10-3ER	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER SIGN →	9" x 15"	1
L	R9-3	NO PEDESTRIAN CROSSING	24" x 24"	2
M	R9-3BPL	↔ USE CROSSWALK	18" x 12"	1
N	R9-3BPR	↔ USE CROSSWALK	18" x 12"	1

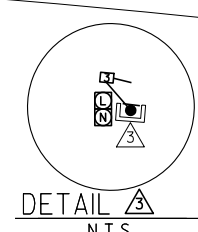
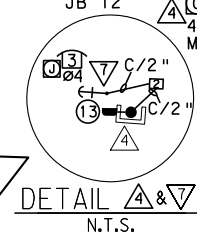
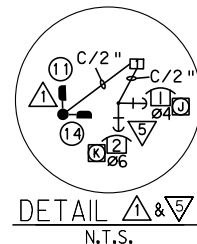
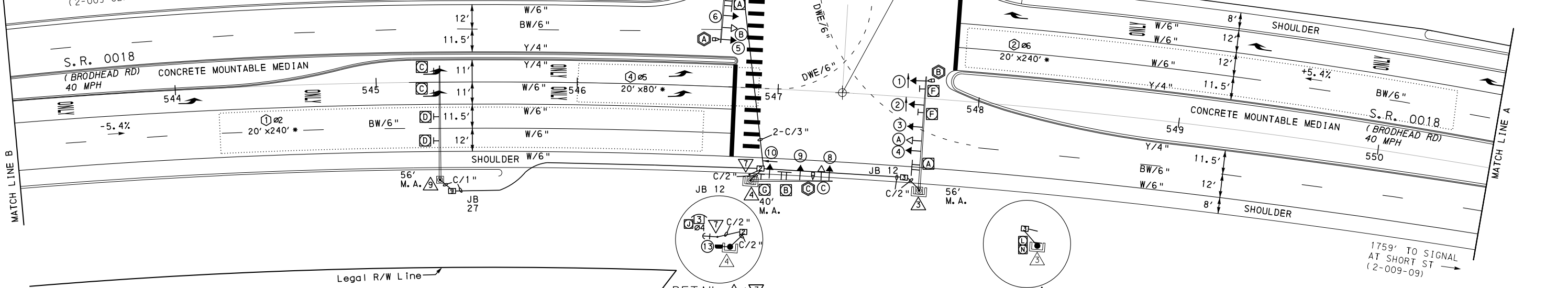
\* WHITE LEGEND ON GREEN BACKGROUND

### PAVEMENT MARKING NOTES:

- \* ALL STOP BARS ARE W/24"
- \* ALL CROSSWALKS ARE 8' WIDE WITH 2' KEYS

\* FINAL PLACEMENT OF RADAR DETECTION UNITS TO BE DETERMINED BY MANUFACTURER. ADVANCE RADAR DETECTION ZONES MUST COVER THE LENGTH SHOWN AT A MINIMUM, BUT SHOULD ADDITIONALLY EXTEND AS FAR AS THE PROVIDED EQUIPMENT ALLOWS.

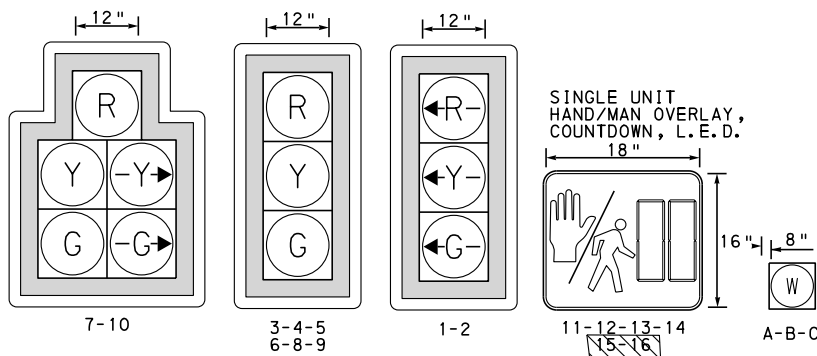
1680' TO SIGNAL AT GOLFVIEW DR (2-009-02)



### SIGNAL ASSEMBLY NOTES:

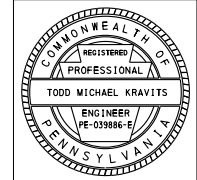
- ALL SIGNAL HEADS EQUIPPED WITH TUNNEL VISORS.
- ALL VEHICULAR SIGNALS EQUIPPED WITH METALLIC BACKPLATES AND 2" YELLOW RETROREFLECTIVE BORDER.
- MIN/MAX HEIGHT FOR BOTTOM OF VEHICULAR SIGNALS 17'/18'.
- MIN/MAX HEIGHT FOR BOTTOM OF PEDESTRIAN SIGNALS 10'/15'.
- MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNAL HEADS 8'.
- ALL VEHICULAR AND PEDESTRIAN INDICATIONS TO BE LED.
- FINAL SIGNAL HEAD PLACEMENT WILL BE DETERMINED BY A REPRESENTATIVE OF THE DISTRICT TRAFFIC UNIT PRIOR TO SIGNAL BEING TURNED ON.
- RADAR DETECTOR LOCATIONS TO BE DETERMINED BY CONTRACTOR BASED ON FIELD CONDITIONS TO MEET THE DETECTOR ZONES SHOWN ON PLANS.

### SIGNALS



### LEGEND

- C/3 — CONDUIT/SIZE
- ▬ DETECTABLE WARNING SURFACE
- ▬ CONFIRMATION LIGHT
- ▬ EMERGENCY VEHICLE PRE-EMPTION
- ▬ ACUSTIC DETECTOR
- W/6" SOLID WHITE LINE/WIDTH
- BW/6" BROKEN WHITE LINE/WIDTH
- Y/4" SOLID YELLOW LINE/WIDTH
- BY/4" BROKEN YELLOW LINE/WIDTH
- DY/4" DOUBLE SOLID YELLOW LINE/WIDTH
- ↔ PEDESTRIAN PUSH BUTTON/SIGN
- GPS RECEIVER
- ▬ MAST ARM
- ▬ PEDESTAL
- ▬ PUSH BUTTON SUPPORT
- ▬ VEHICULAR SIGNAL HEAD
- ▬ PEDESTRIAN SIGNAL HEAD
- ▬ POST MOUNTED SIGN
- ▬ STRUCTURE MOUNTED SIGN
- ▬ RADAR DETECTION ZONE
- ▬ CONTROLLER ASSEMBLY
- ▬ JUNCTION BOX
- ▬ RADAR DETECTION SYSTEM



COUNTY : **BEAVER**

MUNICIPALITY : **CENTER TOWNSHIP**

INTERSECTION : **S.R. 0018 (BRODHEAD RD) AND CENTER COMMONS BLVD**

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RECOMMENDED :

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

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SCALE: 0 25 50 75 100

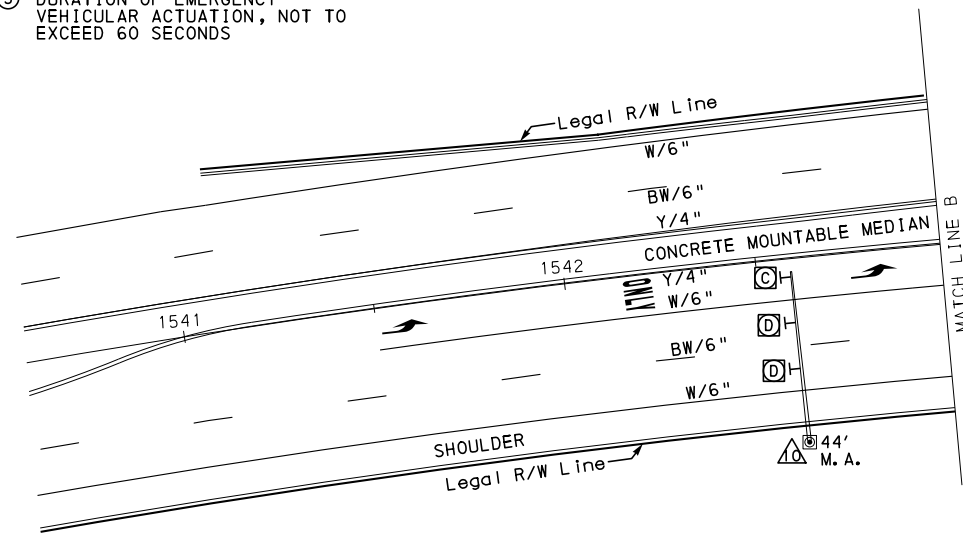
# CONSTRUCTION PLAN

TYPE 170 CONTROLLER WITH MANUAL CORD AND MODEM

SIGNALS	PHASE 2+5				PHASE 2+6				PHASE 4				PHASE 2+5 PREEMPTION				PHASE 6 PREEMPTION				PHASE 4 PREEMPTION				EMERGENCY											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		1	2	3	4							
1-2	-G-	-Y-	-R-		-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-G-	-Y-	-R-		-R-	-R-	-R-		-R-	-R-	-R-		-R-	-R-	-R-	-R-								
3-4	G	Y <sup>①</sup>	R <sup>①</sup>		G	G	Y <sup>②</sup>	R <sup>②</sup>	R	R	R	R	G	Y	R		R	R	R		R	R	R		R	R	R	Y								
5-6	R	R	R		G	G	Y	R	R	R	R	R	R	R	R		G	Y	R		R	R	R		R	R	R	Y								
7	R	R	R		G	G	Y	R	-G-	-G-	-Y-	R	R	R	R		-G-	-Y-	R		R	R	R		R	R	R	Y								
8-9	R	R	R		R	R	R	R	G	G	Y	R	R	R	R		R	R	R		R	R	R		G	Y	R	R								
10	R	R	R		R	R	R	R	G	G	Y	R	R	R	R		R	R	R		R	R	R		-G-	-Y-	R	R								
*11-12	DW	DW	DW		W	FD	DW	DW	DW	DW	DW	DW	DW	DW	DW		DW	DW	DW		DW	DW	DW		DW	DW	DW	OFF								
*13-14	DW	DW	DW		DW	DW	DW	DW	W	FD	DW	DW	DW	DW	DW		DW	DW	DW		DW	DW	DW		DW	DW	DW	OFF								
A	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF	OFF								
B	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF	OFF								
C	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF		ON	OFF	OFF	OFF								
FIXED	X	5	2		X	5	2		X	3	4		X	5	2		X	5	2		X	3	4		X	3	4									
MINIMUM	5				20				5				10				10				10				10											
PASSAGE	2				2				2				②				②				②				②											
MAX I	30				60				30				60				60				60				60											
MAX II	30				60				30				60				60				60				60											
PEDESTRIAN					7	27			7	31																										
MEMORY	NL				MN				NL																											

\* UPON PEDESTRIAN ACTUATION ONLY; DW AT ALL OTHER TIMES

- ① G IF FOLLOWED BY ②+6
- ② G IF FOLLOWED BY ②+5
- ③ DURATION OF EMERGENCY VEHICULAR ACTUATION, NOT TO EXCEED 60 SECONDS



## COORDINATION PLAN

EVENT	DAY OF WEEK							TIME	PLAN FUNC	CYCLE LENGTH	FORCE OFFS (SECONDS)								OFFSET	PERM. LENGTH	MAX DWELL	LEAD PHASES	COORD PHASES						
	S	M	T	W	T	F	S				Φ1	Φ2	Φ3	Φ4	Φ5	Φ6	Φ7	Φ8											
0	X						X	06:00	129																				
1	X						X	15:00	128																				
2	X	X	X	X	X	X	X	15:00	129																				
3	X	X	X	X	X	X	X	22:00	128																				
4	X	X	X	X	X	X	X	23:59	20																				
5	X	X	X	X	X	X	X	06:00	1	110	-	0	-	34	58	0	-	-	5	22	35	1	3	5	7	2	6		
6	X	X	X	X	X	X	X	09:00	2	90	-	0	-	32	52	0	-	-	58	22	30	1	3	5	7	2	6		
7							X	10:00	3	110	-	0	-	31	56	0	-	-	68	22	35	1	3	5	7	2	6		
8	X						X	11:00	3	110	-	0	-	31	56	0	-	-	68	22	35	1	3	5	7	2	6		
9	X	X	X	X	X	X	X	15:00	4	100	-	0	-	29	50	0	-	-	59	22	31	1	3	5	7	2	6		
10							X	15:00	5	110	-	0	-	31	55	0	-	-	68	22	35	1	3	5	7	2	6		
11	X						X	18:00	20																				
12	X	X	X	X	X	X	X	18:00	2	90	-	0	-	32	52	0	-	-	58	22	30	1	3	5	7	2	6		
13	X	X	X	X	X	X	X	20:00	20																				

PLAN : FUNC  
 1-18 : COORDINATION PLAN  
 20 : FREE  
 100 : PAGE 0  
 101 : PAGE 1  
 102 : PAGE 2  
 128 : MAX 1  
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OFFSET TIMINGS ARE REFERENCED TO THE START OF THE YELLOW INTERVAL OF PHASE 2 & 6.

CONTROLLER IS COORDINATED WITH ADJACENT SIGNAL CONTROLLERS VIA GPS TO PROVIDE A PROGRESSIVE MOVEMENT OF TRAFFIC ALONG S.R. 18. A MASTER CONTROLLER IS LOCATED AT THE INTERSECTION OF S.R. 18 AND GOLDFVIEW DR.

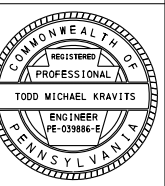
COORDINATED INTERSECTIONS INCLUDE:  
 S.R. 18 (FRANKFORT RD) AT BEAVER VALLEY MALL BLVD  
 S.R. 18 (BRODHEAD RD/FRANKFORT RD) AT S.R. 3002/S.R. 3007  
 S.R. 18 (BRODHEAD RD) AT GOLDFVIEW DR  
 S.R. 18 (BRODHEAD RD) AT SHORT ST/MILNE DR  
 S.R. 18 (BRODHEAD RD) AT S.R. 3002

## EMERGENCY PREEMPTION NOTES:

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING SHALL BE DISPLAYED: EMERGENCY PREEMPT PHASE 2+5, 6, OR 4. THE SYSTEM SHALL PROVIDE SERVICE ON FIRST-COME FIRST-SERVE BASIS. ONCE THE FIRST PRIORITY VEHICLE CALLS THE SYSTEM, IT SHALL PREVENT OTHER PREEMPTIVE VEHICLES FROM ENTERING CALLS UNTIL THE FIRST EMERGENCY VEHICLE RELEASES CONTROL AND CLEARS THE INTERSECTION.

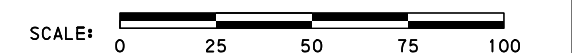
UPON ACTIVATION BY AN EMERGENCY VEHICLE:

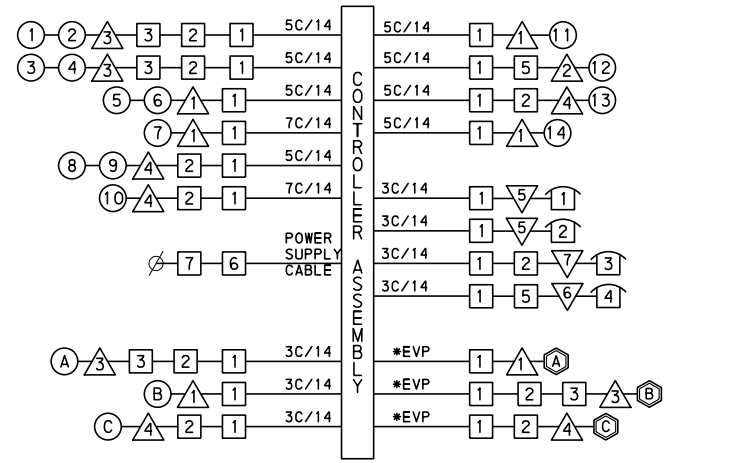
1. IF THE CONTROLLER OPERATION IS IN INTERVAL 1 OF A NON-PREEMPTIVE VEHICLE PHASE THE CONTROLLER SHALL TERMINATE THE INTERVAL IMMEDIATELY AND PROCEED NORMALLY THROUGH THE YELLOW AND ALL RED INTERVALS BEFORE PROCEEDING TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
2. IF THE CONTROLLER OPERATION IS IN INTERVAL 1 OF THE PREEMPTION PHASE THE CONTROLLER SHALL REMAIN IN THAT INTERVAL.
3. ANY WALK INDICATION SHALL TERMINATE IMMEDIATELY AND PROCEED NORMALLY THROUGH THE FLASHING DON'T WALK AND ALL RED INTERVAL BEFORE PROCEEDING TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION.
4. ANY FLASHING DON'T WALK INDICATION SHALL TIMEOUT NORMALLY, FOLLOWED BY THE ALL RED INTERVAL BEFORE PROCEEDING TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
5. IF THE CONTROLLER OPERATION IS IN THE YELLOW OR ALL RED INTERVAL OF ANY VEHICLE PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY AND PROCEED TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
6. THE PREEMPTION PHASE GREEN INTERVAL SHALL BE A MINIMUM OF 10 SECONDS AND THEN EXTEND FOR THE LENGTH OF THE PREEMPTION ACTUATION OR A MAXIMUM OF 60 SECONDS.
7. UPON TERMINATION OF THE PREEMPTION PHASE THE CONTROLLER SHALL PROCEED NORMALLY THROUGH THE YELLOW AND ALL RED INTERVALS TO NORMAL TIME OF DAY AND "PHASE NEXT" OPERATION.
8. IF PREEMPTION OCCURS DURING CONFLICT/TIME CLOCK FLASH THE TRAFFIC SIGNAL SHALL CONTINUE FLASHING.
9. PREEMPT TO COORDINATION: USED WHEN EMERGENCY PREEMPTION IS ACTIVATED DURING COORDINATION. OPERATION TO ALLOW THE NEXT PERMISSIVE PHASE IN THE COORDINATION CYCLE TO BE SERVICED FOLLOWING PREEMPTION.
10. WHEN A CALL IS RECEIVED THE FAIL SAFE INDICATION SHALL BE ACTIVATED FOLLOWED BY THE SELECTIVE CLEARANCE INTERVALS AND FLASH AT A RATE OF NO LESS THAN 50 NOR MORE THAN 60 TIMES PER MINUTE.
11. PROVIDE A FAIL SAFE INDICATION CONSISTING OF A FLASHING WHITE LIGHT FOR THE DIRECTION ON WHICH THE EMERGENCY VEHICLE IS APPROACHING.



COUNTY : BEAVER  
 MUNICIPALITY : CENTER TOWNSHIP  
 INTERSECTION : S.R. 0018 (BRODHEAD RD) AND  
CENTER COMMONS BLVD

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

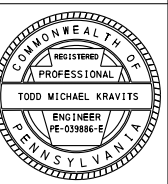
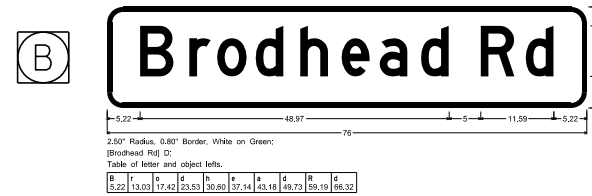
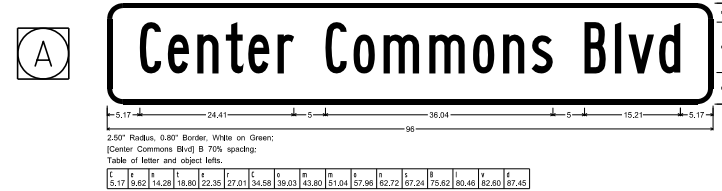




**WIRING DIAGRAM**

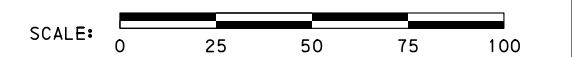
5C/14 - CABLE (NO. OF CONDUCTORS/SIZE AWG.)  
 \*AS PER MANUFACTURER'S RECOMMENDATION

- SIGNAL HEAD
- JUNCTION BOX
- ▭ PEDESTRIAN PUSHBUTTON
- △ TRAFFIC SIGNAL SUPPORT
- ▽ PEDESTRIAN PUSH BUTTON SUPPORT
- ⬡ ACOUSTIC PREEMPTION DETECTOR



COUNTY : BEAVER  
 MUNICIPALITY : CENTER TOWNSHIP  
 INTERSECTION : S.R. 0018 (BRODHEAD RD) AND  
CENTER COMMONS BLVD

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



SIGNS

SIGN	STANDARD	DESCRIPTION	SIZE W x H	QTY.
A	R10-10L	LEFT TURN SIGNAL	30" x 36"	4
B	R3-5R	RIGHT TURN	30" x 36"	3
C	R3-6LS	OPTIONAL LEFT TURN	30" x 36"	2
D	R3-5L	LEFT TURN	30" x 36"	3
E	R3-5A	STRAIGHT THROUGH	30" x 36"	3
F	R3-6SR	OPTIONAL RIGHT TURN	30" x 36"	1
G	R10-3EL	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER SIGN	9" x 15"	4
H	R10-3ER	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER SIGN	9" x 15"	4
I	R1-2	YIELD	36" x 36"	2
J	R3-8A (LS-R)	LANE USE CONTROL (TWO LANES)	30" x 30"	1
K	R10-6AL	STOP HERE ON RED	24" x 30"	2
L	R10-7	DO NOT BLOCK INTERSECTION	24" x 30"	1
M	R3-7R	RIGHT LANE MUST TURN RIGHT	48" x 48"	1
N	R10-10R	RIGHT TURN SIGNAL	30" x 36"	1
O	D3-5*	↔ Golfview Dr ↔ Beaver Valley Mall	96" x 28"	1
P	D3-5*	↔ Beaver Valley Mall ↔ Golfview Dr	96" x 28"	1
Q	D3-4*	Brodhead Rd	76" x 16"	2

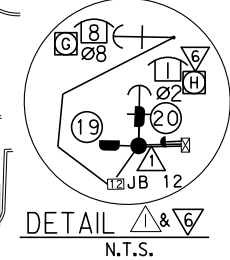
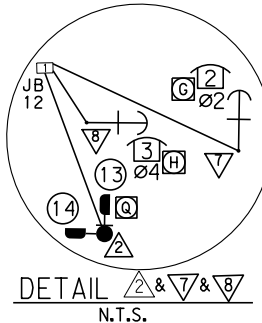
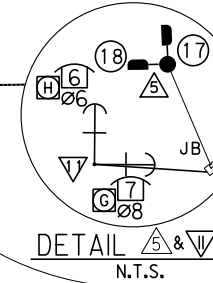
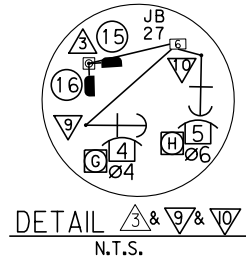
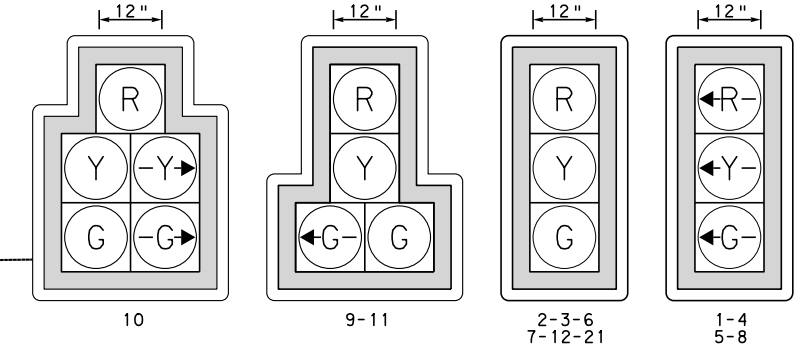
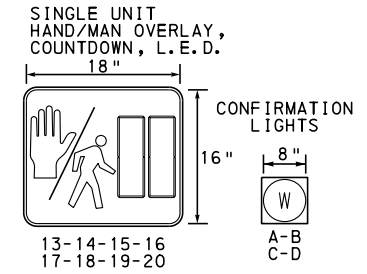
\* WHITE LEGEND ON GREEN BACKGROUND

CONSTRUCTION PLAN

SIGNAL ASSEMBLY NOTES:

1. ALL SIGNAL HEADS EQUIPPED WITH TUNNEL VISORS.
2. ALL VEHICULAR SIGNALS EQUIPPED WITH METALLIC BACKPLATES AND 2" YELLOW RETROREFLECTIVE BORDER.
3. MIN/MAX HEIGHT FOR BOTTOM OF VEHICULAR SIGNALS 17' / 18'.
4. MIN/MAX HEIGHT FOR BOTTOM OF PEDESTRIAN SIGNALS 10' / 15'.
5. MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNAL HEADS 8'.
6. ALL VEHICULAR AND PEDESTRIAN INDICATIONS TO BE LED.
7. FINAL SIGNAL HEAD PLACEMENT WILL BE DETERMINED BY A REPRESENTATIVE OF THE DISTRICT TRAFFIC UNIT PRIOR TO SIGNAL BEING TURNED ON.
8. RADAR DETECTOR LOCATIONS TO BE DETERMINED BY CONTRACTOR BASED ON FIELD CONDITIONS TO MEET THE DETECTOR ZONES SHOWN ON PLANS.
9. LASH SIGNAL CABLE TO THE SPAN WIRE. NO CABLE TIES PERMITTED.

SIGNALS



LEGEND

- Mast Arm
- Vehicular Signal Head
- Pedestrian Signal Head
- Post Mounted Sign
- Structure Mounted Sign
- Radar Detection System
- Radar Detection Zone
- Pedestrian Push Button/Sign
- Controller Assembly
- Junction Box
- Conduit/Size
- Detectable Warning Surface
- W/6" - Solid White Line/Width
- DY/4" - Double Solid Yellow Line/Width
- Confirmation Light
- Acoustic Vehicle Pre-emption Acoustic Detector
- White Dotted Extension Line/Width
- GPS Receiver
- Push Button Support

COUNTY : BEAVER  
 MUNICIPALITY : CENTER TOWNSHIP  
 INTERSECTION : S.R. 0018 (BRODHEAD RD.), GOLDFVIEW DR, AND BEAVER VALLEY MALL

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

SCALE: 0 25 50 75 100

PAVEMENT MARKING NOTES:

- \* ALL STOP BARS ARE W/24" WIDE WITH 2' KEYS
- \* ALL CROSSWALKS ARE 8' WIDE WITH 2' KEYS

\* FINAL PLACEMENT OF RADAR DETECTION UNITS TO BE DETERMINED BY MANUFACTURER. ADVANCE RADAR DETECTION ZONES MUST COVER THE LENGTH SHOWN AT A MINIMUM, BUT SHOULD ADDITIONALLY EXTEND AS FAR AS THE PROVIDED EQUIPMENT ALLOWS.

TYPE 170 CONTROLLER WITH MANUAL CORD AND MODEM

	PHASE 1+5				PHASE 2+5				PHASE 1+6				PHASE 2+6				PHASE 4				PHASE 8				PHASE 2+5 PREEMPTION				PHASE 1+6 PREEMPTION				PHASE 4 PREEMPTION				PHASE 8 PREEMPTION				E M E R G E N C Y							
	INTERVALS				INTERVALS				INTERVALS				INTERVALS				INTERVALS				INTERVALS				INTERVALS				INTERVALS				INTERVALS															
SIGNALS	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		1	2	3	4			
1-4	-G	-Y	-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	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R								
2-3	R	R	R		R	R	R	R	G	G	Y	R	G	G	Y	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								
5-8	-G	-Y	-R		-G	-G	-Y	-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	-R	-R	-R								
6-7	R	R	R		G	G	Y	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	R	R	R								
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	R	R	R	R	R	R	R	R	R	R	R	R	R								
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21	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	R	R	R	R	R	R	R	R	R								
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A	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF								
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C	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF								
D	OFF	OFF	OFF		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF								
FIXED		5	2			5	2			5	2			5	2			3	4			3	3			5	2			5	2			3	4			3	3									
MINIMUM	5				5				5				20				5				5				5				10				10				10				10							
PASSAGE	2				2				2				2				2				2				2				10				10				10				10							
MAX I	30				30				30				60				30				30				30				60				60				60				60							
MAX II	30				30				30				60				30				30				30				60				60				60				60							
PEDESTRIAN					9				9				7	15			7	22			7	21																										
MEMORY	NL				NL				NL				MN				NL				NL				NL																							

\* UPON PEDESTRIAN ACTUATION ONLY; DW AT ALL OTHER TIMES

- ① -G- IF FOLLOWED BY 01+6
- ② -G- IF FOLLOWED BY 02+5
- ③ R- IF FOLLOWED BY 01+6
- ④ -G- IF FOLLOWED BY 01+5
- ⑤ G IF FOLLOWED BY 02+6
- ⑥ G IF FOLLOWED BY 01+6
- ⑦ G IF FOLLOWED BY 02+5
- ⑧ R- IF FOLLOWED BY 01+5
- ⑨ TIMING WILL BE AS SHOWN IN PHASE 2+6. INTERVALS 1 AND 2 MAY TIME OUT IN THIS PHASE OR MAY BE COMPLETED IN PHASE 2+6
- ⑩ DURATION OF EMERGENCY VEHICULAR ACTUATION, NOT TO EXCEED 60 SECONDS

### EMERGENCY PREEMPTION NOTES:

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING SHALL BE DISPLAYED: EMERGENCY PREEMPT PHASE 2+5, 1+6, 4, OR 8. THE SYSTEM SHALL PROVIDE SERVICE ON FIRST-COME FIRST SERVE BASIS. ONCE THE FIRST PRIORITY VEHICLE CALLS THE SYSTEM, IT SHALL PREVENT OTHER PREEMPTIVE VEHICLES FROM ENTERING CALLS UNTIL THE FIRST EMERGENCY VEHICLE RELEASES CONTROL AND CLEARS THE INTERSECTION.

UPON ACTIVATION BY AN EMERGENCY VEHICLE:

1. IF THE CONTROLLER OPERATION IS IN INTERVAL 1 OF A NON-PREEMPTIVE VEHICLE PHASE THE CONTROLLER SHALL TERMINATE THE INTERVAL IMMEDIATELY AND PROCEED NORMALLY THROUGH THE YELLOW AND ALL RED INTERVALS BEFORE PROCEEDING TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
2. IF THE CONTROLLER OPERATION IS IN INTERVAL 1 OF THE PREEMPTION PHASE THE CONTROLLER SHALL REMAIN IN THAT INTERVAL.
3. ANY WALK INDICATION SHALL TERMINATE IMMEDIATELY AND PROCEED NORMALLY THROUGH THE FLASHING DON'T WALK, YELLOW AND ALL RED INTERVAL BEFORE PROCEEDING TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION.
4. ANY FLASHING DON'T WALK INDICATION SHALL TIMEOUT NORMALLY, FOLLOWED BY THE YELLOW AND ALL RED INTERVAL BEFORE PROCEEDING TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
5. IF THE CONTROLLER OPERATION IS IN THE YELLOW OR ALL RED INTERVAL OF ANY VEHICLE PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY AND PROCEED TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
6. THE PREEMPTION PHASE GREEN INTERVAL SHALL BE A MINIMUM OF 10 SECONDS AND THEN EXTEND FOR THE LENGTH OF THE PREEMPTION ACTUATION OR A MAXIMUM OF 60 SECONDS.
7. UPON TERMINATION OF THE PREEMPTION PHASE THE CONTROLLER SHALL PROCEED NORMALLY THROUGH THE YELLOW AND ALL RED INTERVALS TO NORMAL TIME OF DAY AND "PHASE NEXT" OPERATION.
8. IF PREEMPTION OCCURS DURING CONFLICT/TIME CLOCK FLASH THE TRAFFIC SIGNAL SHALL CONTINUE FLASHING.
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11. PROVIDE A FAIL SAFE INDICATION CONSISTING OF A FLASHING WHITE LIGHT FOR THE DIRECTION ON WHICH THE EMERGENCY VEHICLE IS APPROACHING.

### COORDINATION PLAN

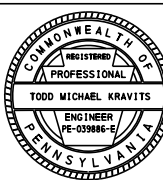
EVENT	DAY OF WEEK							TIME	PLAN FUNC	CYCLE LENGTH	FORCE OFFS (SECONDS)								OFFSET	PERM. LENGTH	MAX DWELL	LEAD PHASES	COORD PHASES
	S	M	T	W	T	F	S				Φ1	Φ2	Φ3	Φ4	Φ5	Φ6	Φ7	Φ8					
0	X	X	X	X	X	X		06:00	1	110	67	0	-	31	71	0	-	49	0	6	33	1 3 5 7	2 6
1	X	X	X	X	X	X		09:00	2	90	58	0	-	23	61	0	-	43	0	6	33	1 3 5 7	2 6
2							X	10:00	3	110	73	0	-	34	80	0	-	54	0	6	33	1 3 5 7	2 6
3	X							11:00	3	110	73	0	-	34	80	0	-	54	0	6	33	1 3 5 7	2 6
4	X	X	X	X	X	X		15:00	4	110	71	0	-	28	63	0	-	43	0	6	33	1 3 5 7	2 6
5	X							18:00	20														
6	X	X	X	X	X	X		18:00	2	90	58	0	-	23	61	0	-	43	0	6	33	1 3 5 7	2 6
7	X	X	X	X	X	X		20:00	20														
8																							

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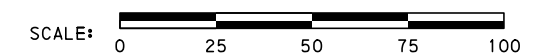
CONTROLLER IS COORDINATED WITH ADJACENT SIGNAL CONTROLLERS VIA GPS TO PROVIDE A PROGRESSIVE MOVEMENT OF TRAFFIC ALONG S.R. 18. A MASTER CONTROLLER IS LOCATED AT THIS INTERSECTION.

COORDINATED INTERSECTIONS INCLUDE:  
 S.R. 18 (FRANKFORT RD) AT BEAVER VALLEY MALL BLVD  
 S.R. 18 (BRODHEAD RD/FRANKFORT RD) AT S.R. 3002/S.R. 3007  
 S.R. 18 (BRODHEAD RD) AT CENTER COMMONS BLVD  
 S.R. 18 (BRODHEAD RD) AT SHORT ST/MILNE DR  
 S.R. 18 (BRODHEAD RD) AT S.R. 3002

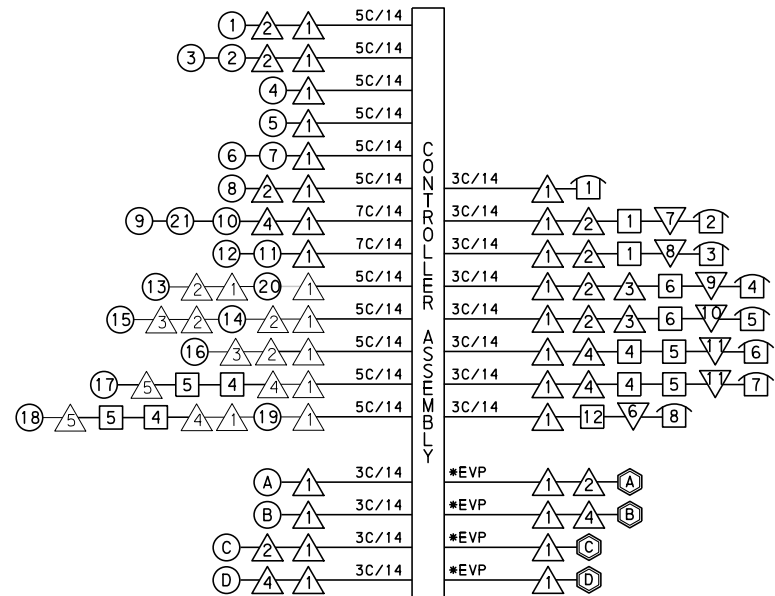


COUNTY : BEAVER  
 MUNICIPALITY : CENTER TOWNSHIP  
 INTERSECTION : S.R. 0018 (BRODHEAD RD.), GOLDFVIEW DR, AND BEAVER VALLEY MALL

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



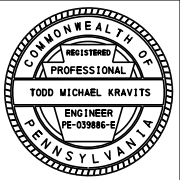
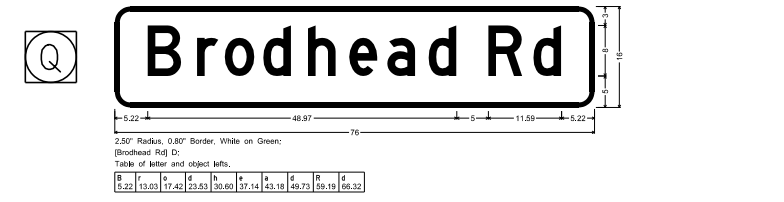
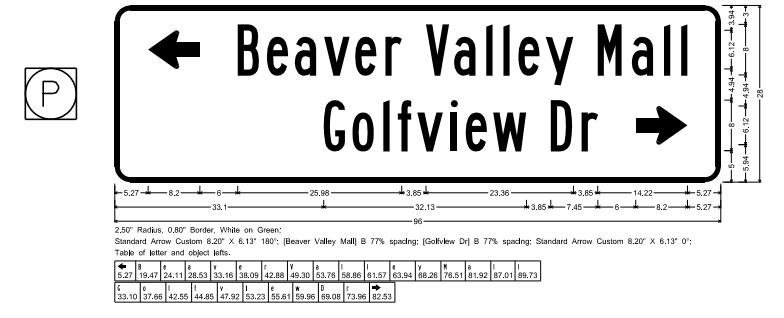
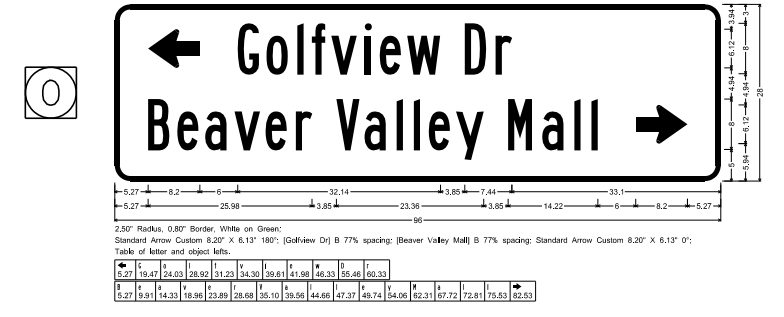
# CONSTRUCTION PLAN



### WIRING DIAGRAM

5C/14 - CABLE (NO. OF CONDUCTORS/SIZE AWG.)  
 \*AS PER MANUFACTURER'S RECOMMENDATION

- SIGNAL HEAD
- JUNCTION BOX
- ▢ PEDESTRIAN PUSHBUTTON
- △ TRAFFIC SIGNAL SUPPORT
- ▽ PEDESTRIAN PUSH BUTTON SUPPORT
- ⬢ ACOUSTIC PREEMPTION DETECTOR



COUNTY : BEAVER

MUNICIPALITY : CENTER TOWNSHIP

INTERSECTION : S.R. 0018 (BRODHEAD RD.), GOLFFVIEW DR, AND BEAVER VALLEY MALL

RECOMMENDED :

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

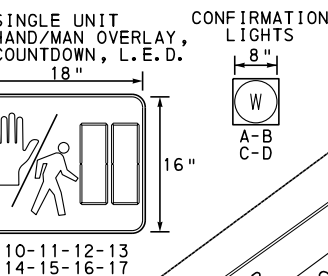
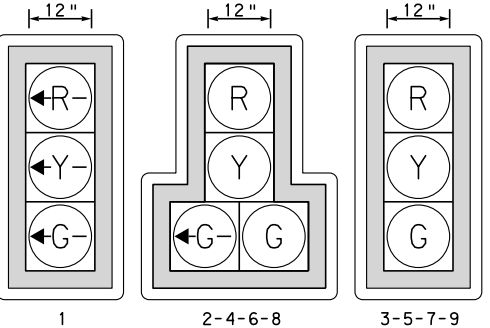
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# CONSTRUCTION PLAN

\* FINAL PLACEMENT OF RADAR DETECTION UNITS TO BE DETERMINED BY MANUFACTURER. ADVANCE RADAR DETECTION ZONES MUST COVER THE LENGTH SHOWN AT A MINIMUM, BUT SHOULD ADDITIONALLY EXTEND AS FAR AS THE PROVIDED EQUIPMENT ALLOWS.

## SIGNAL ASSEMBLY NOTES:

- ALL SIGNAL HEADS EQUIPPED WITH TUNNEL VISORS.
- ALL VEHICULAR SIGNALS EQUIPPED WITH METALLIC BACKPLATES AND 2" YELLOW RETROREFLECTIVE BORDER.
- MIN/MAX HEIGHT FOR BOTTOM OF VEHICULAR SIGNALS 17' / 18'.
- MIN/MAX HEIGHT FOR BOTTOM OF PEDESTRIAN SIGNALS 10' / 15'.
- MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNAL HEADS 8'.
- ALL VEHICULAR AND PEDESTRIAN INDICATIONS TO BE LED.
- FINAL SIGNAL HEAD PLACEMENT WILL BE DETERMINED BY A REPRESENTATIVE OF THE DISTRICT TRAFFIC UNIT PRIOR TO SIGNAL BEING TURNED ON.
- RADAR DETECTOR LOCATIONS TO BE DETERMINED BY CONTRACTOR BASED ON FIELD CONDITIONS TO MEET THE DETECTOR ZONES SHOWN ON PLANS.
- LASH SIGNAL CABLE TO THE SPAN WIRE. NO CABLE TIES PERMITTED.



## LEGEND

- ⊠ - PEDESTAL
- ⊠ - VEHICULAR SIGNAL HEAD
- ⊠ - PEDESTRIAN SIGNAL HEAD
- ⊠ - POST MOUNTED SIGN
- ⊠ - STRUCTURE MOUNTED SIGN
- ⊠ - RADAR DETECTOR ZONE
- ⊠ - CONTROLLER ASSEMBLY
- ⊠ - JUNCTION BOX
- ⊠ - GPS RECEIVER
- ⊠ - RADAR DETECTION SYSTEM
- ⊠ - DETECTABLE WARNING SURFACE
- ⊠ - CONFIRMATION LIGHT
- ⊠ - EMERGENCY VEHICLE PRE-EMPTION ACOUSTIC DETECTOR
- W/6" - SOLID WHITE LINE/WIDTH
- BW/6" - BROKEN WHITE LINE/WIDTH
- Y/4" - SOLID YELLOW LINE/WIDTH
- BY/4" - BROKEN YELLOW LINE/WIDTH
- DY/4" - DOUBLE SOLID YELLOW LINE/WIDTH
- WDE/6" - WHITE DOTTED EXTENSION LINE/WIDTH
- ⊠ - PEDESTRIAN PUSH BUTTON/SIGN
- ⊠ - PUSH BUTTON SUPPORT

## SIGNS

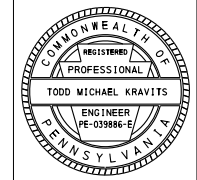
SIGN	STANDARD	DESCRIPTION	SIZE W x H	QTY.	SIGN	STANDARD	DESCRIPTION	SIZE W x H	QTY.
A	R3-5L	LEFT TURN	30" x 36"	1	I	R3-6LS	OPTIONAL LEFT TURN	30" x 36"	4
B	R3-5A	STRAIGHT THROUGH	30" x 36"	3	J	R3-7LA	LEFT LANE MUST TURN LEFT (NARROW)	24" x 48"	1
C	R3-5R	RIGHT TURN	30" x 36"	4	K	D3-4*	Brodhead Rd	76" x 16"	2
D	R3-8A (LS-S)	LANE USE CONTROL (TWO LANES)	30" x 30"	2	L	D3-5*	Old Brodhead Rd Frankfort Rd	96" x 28"	1
E	R3-8A (L-LS)	LANE USE CONTROL (TWO LANES)	30" x 30"	2	M	OM1-3	OBJECT MARKER	18" x 18"	1
F	R1-2	YIELD	36" x 36"	4	N	R4-7	KEEP RIGHT	24" x 30"	1
G	R10-3EL	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER SIGN	9" x 15"	4	O	D3-5*	Frankfort Rd Old Brodhead Rd	96" x 28"	1
H	R10-3ER	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER SIGN	9" x 15"	4					

\*WHITE LETTERS ON GREEN BACKGROUND

## PAVEMENT MARKING NOTES:

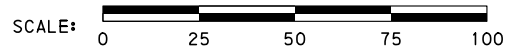
- \*ALL STOP BARS ARE W/24"
- \*ALL CROSSWALKS ARE 8' WIDE WITH 2' KEYS

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COUNTY : BEAVER  
 MUNICIPALITY : CENTER TOWNSHIP  
 INTERSECTION : S.R. 0018 (FRANKFORT RD/BRODHEAD RD), S.R. 3002 (OLD BRODHEAD RD), AND S.R. 3007 (BRODHEAD RD)

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



EMERGENCY PREEMPTION NOTES:

EMERGENCY VEHICLE PREEMPTION MAY OCCUR DURING ANY INTERVAL OF THE NORMAL CONTROLLER OPERATION. DEPENDING ON THE DIRECTION OF TRAVEL OF THE EMERGENCY VEHICLE, ONE OF THE FOLLOWING SHALL BE DISPLAYED: EMERGENCY PREEMPT PHASE 2, 6, 4, OR 8. THE SYSTEM SHALL PROVIDE SERVICE ON FIRST-COME FIRST SERVE BASIS. ONCE THE FIRST PRIORITY VEHICLE CALLS THE SYSTEM, IT SHALL PREVENT OTHER PREEMPTIVE VEHICLES FROM ENTERING CALLS UNTIL THE FIRST EMERGENCY VEHICLE RELEASES CONTROL AND CLEARS THE INTERSECTION.

UPON ACTIVATION BY AN EMERGENCY VEHICLE:

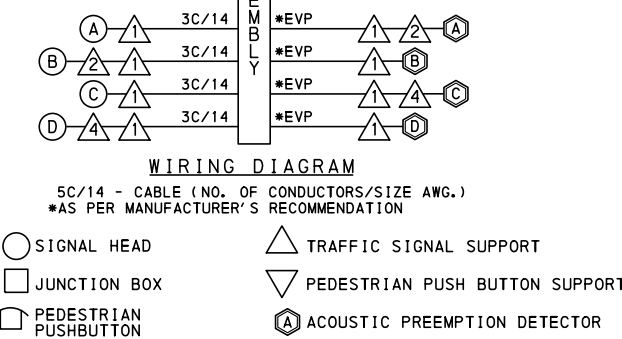
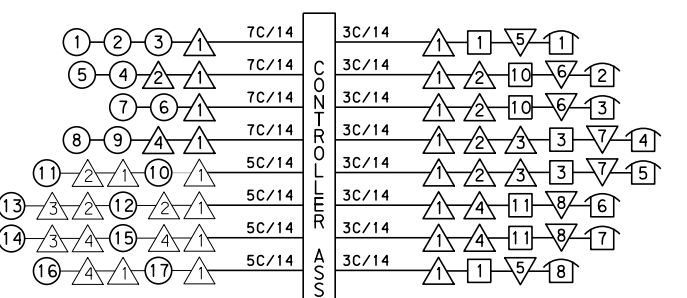
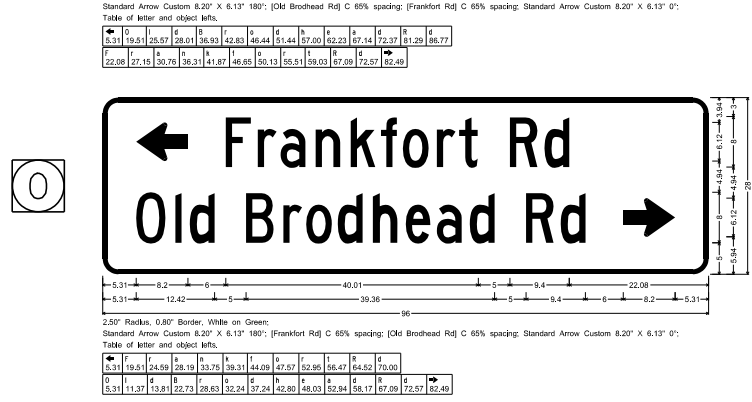
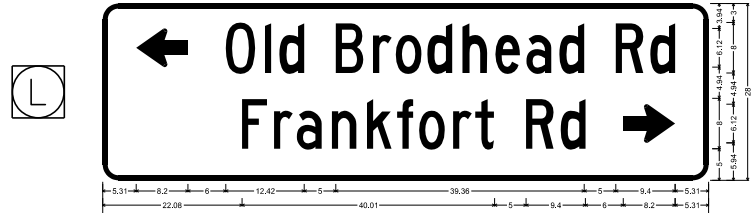
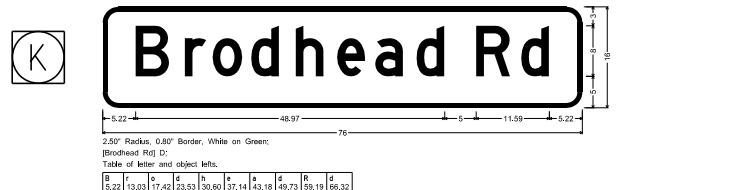
- IF THE CONTROLLER OPERATION IS IN INTERVAL 1 OF A NON-PREEMPTIVE VEHICLE PHASE THE CONTROLLER SHALL TERMINATE THE INTERVAL IMMEDIATELY AND PROCEED NORMALLY THROUGH THE YELLOW AND ALL RED INTERVALS BEFORE PROCEEDING TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
- IF THE CONTROLLER OPERATION IS IN INTERVAL 1 OF THE PREEMPTION PHASE THE CONTROLLER SHALL REMAIN IN THAT INTERVAL.
- ANY WALK INDICATION SHALL TERMINATE IMMEDIATELY AND PROCEED NORMALLY THROUGH THE FLASHING DON'T WALK AND ALL RED INTERVAL BEFORE PROCEEDING TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION.
- ANY FLASHING DON'T WALK INDICATION SHALL TIMEOUT NORMALLY, FOLLOWED BY THE ALL RED INTERVAL BEFORE PROCEEDING TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
- IF THE CONTROLLER OPERATION IS IN THE YELLOW OR ALL RED INTERVAL OF ANY VEHICLE PHASE, THE CONTROLLER SHALL TIME OUT THOSE INTERVALS NORMALLY AND PROCEED TO THE APPROPRIATE EMERGENCY VEHICLE PREEMPTION PHASE.
- THE PREEMPTION PHASE GREEN INTERVAL SHALL BE A MINIMUM OF 10 SECONDS AND THEN EXTEND FOR THE LENGTH OF THE PREEMPTION ACTUATION OR A MAXIMUM OF 60 SECONDS.
- UPON TERMINATION OF THE PREEMPTION PHASE THE CONTROLLER SHALL PROCEED NORMALLY THROUGH THE YELLOW AND ALL RED INTERVALS TO NORMAL TIME OF DAY AND "PHASE NEXT" OPERATION.
- IF PREEMPTION OCCURS DURING CONFLICT/TIME CLOCK FLASH THE TRAFFIC SIGNAL SHALL CONTINUE FLASHING.
- PREEMPT TO COORDINATION: USED WHEN EMERGENCY PREEMPTION IS ACTIVATED DURING COORDINATION. OPERATION TO ALLOW THE NEXT PERMISSIVE PHASE IN THE COORDINATION CYCLE TO BE SERVICED FOLLOWING PREEMPTION.
- WHEN A CALL IS RECEIVED THE FAIL SAFE INDICATION SHALL BE ACTIVATED FOLLOWED BY THE SELECTIVE CLEARANCE INTERVALS AND FLASH AT A RATE OF NO LESS THAN 50 NOR MORE THAN 60 TIMES PER MINUTE.
- PROVIDE A FAIL SAFE INDICATION CONSISTING OF A FLASHING WHITE LIGHT FOR THE DIRECTION ON WHICH THE EMERGENCY VEHICLE IS APPROACHING.

NEMA TS-2	PHASE 2				PHASE 6				PHASE 4				PHASE 8				PHASE 2 PREEMPTION				PHASE 6 PREEMPTION				PHASE 4 PREEMPTION				PHASE 8 PREEMPTION				EMERGENCY								
	INTERVALS				INTERVALS				INTERVALS				INTERVALS				INTERVALS				INTERVALS				INTERVALS				INTERVALS												
SIGNALS	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
1	-G	-G	-Y	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-R	-G	-Y	-R		-R	-R	-R		-R	-R	-R		-R	-R	-R						
2	-G	-G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	-G	Y	R		R	R	R		R	R	R		R	R	R						
3	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R		R	R	R		R	R	R		R	R	R						
4	R	R	R	R	-G	-G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	-G	Y	R		R	R	R		R	R	R		R	R	R						
5	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R		R	R	R		R	R	R		R	R	R						
6	R	R	R	R	R	R	R	R	-G	-G	Y	R	R	R	R	R	R	R	R	R	-G	Y	R		R	R	R		R	R	R		R	R	R						
7	R	R	R	R	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	G	Y	R		R	R	R		R	R	R		R	R	R						
8	R	R	R	R	R	R	R	R	-G	-G	Y	R	R	R	R	R	R	R	R	R	-G	Y	R		R	R	R		R	R	R		R	R	R						
9	R	R	R	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						
*10-11	W	FD	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW		DW	DW	DW		DW	DW	DW		DW	DW	DW						
*12-13	DW	DW	DW	DW	DW	DW	DW	DW	W	FD	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW		DW	DW	DW		DW	DW	DW		DW	DW	DW						
*14-15	DW	DW	DW	DW	W	FD	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW		DW	DW	DW		DW	DW	DW		DW	DW	DW						
*16-17	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FD	DW	DW	DW	DW	DW	DW	DW	DW	DW		DW	DW	DW		DW	DW	DW		DW	DW	DW						
A	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF						
B	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF						
C	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF						
D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF		OFF	OFF	OFF						
FIXED			4	5		4	3			4	2			5	3			4	5			4	3			4	2			4	3			5	3						
MINIMUM	10				5				5				5				10				10				10				10				10								
PASSAGE	2				2				2				2				①				①				①				①				①								
MAX I	45				30				30				30				60				60				60				60				60								
MAX II	45				30				30				30				60				60				60				60				60								
PEDESTRIAN	7	21			7	20			7	21			7	21																											
MEMORY	L				L				L				L																												

\* UPON PEDESTRIAN ACTUATION ONLY; DW AT ALL OTHER TIMES

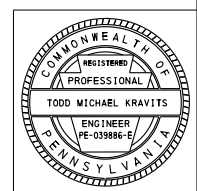
MEMORY INCLUDES:  
 PR - PEDESTRIAN RECALL  
 MN - MINIMUM RECALL  
 MX - MAXIMUM RECALL  
 L - LOCKING  
 NL - NON-LOCKING  
 RW - REST IN WALK

① DURATION OF EMERGENCY VEHICULAR ACTUATION, NOT TO EXCEED 60 SECONDS



WIRING DIAGRAM  
 5C/14 - CABLE (NO. OF CONDUCTORS/SIZE AWG.)  
 \*AS PER MANUFACTURER'S RECOMMENDATION

- SIGNAL HEAD
- JUNCTION BOX
- ⬇ PEDESTRIAN PUSHBUTTON
- △ TRAFFIC SIGNAL SUPPORT
- ▽ PEDESTRIAN PUSH BUTTON SUPPORT
- ⓐ ACOUSTIC PREEMPTION DETECTOR



COUNTY : BEAVER  
 MUNICIPALITY : CENTER TOWNSHIP  
 INTERSECTION : S.R. 0018 (FRANKFORT RD/BRODHEAD RD), S.R. 3002 (OLD BRODHEAD RD), AND S.R. 3007 (BRODHEAD RD)

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

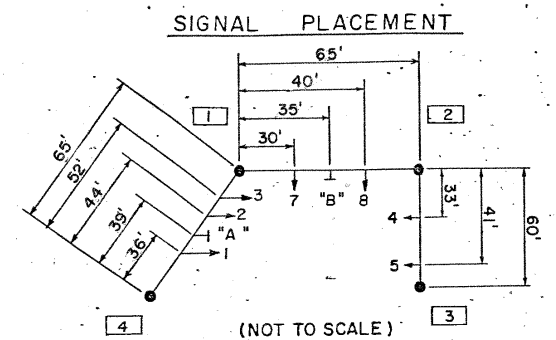
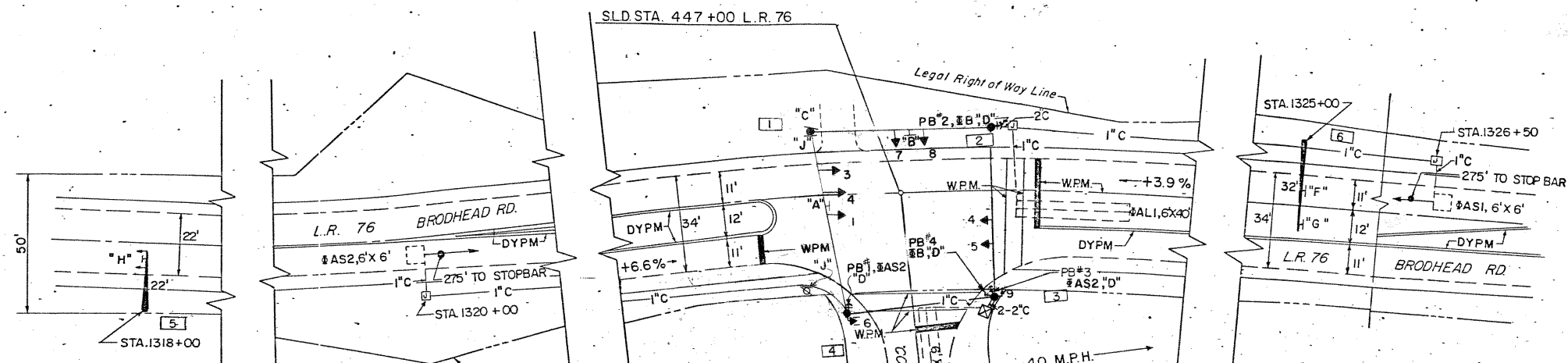


CONTROLLER CAN BE COORDINATED WITH ADJACENT SIGNAL CONTROLLERS VIA GPS TO PROVIDE A PROGRESSIVE MOVEMENT OF TRAFFIC ALONG S.R. 18. A MASTER CONTROLLER IS LOCATED AT THE INTERSECTION OF S.R. 18 AND GOLFFVIEW DR.

COORDINATED INTERSECTIONS INCLUDE:  
 S.R. 18 (FRANKFORT RD) AT BEAVER VALLEY MALL BLVD  
 S.R. 18 (BRODHEAD RD) AT GOLFFVIEW DR  
 S.R. 18 (BRODHEAD RD) AT CENTER COMMONS BLVD  
 S.R. 18 (BRODHEAD RD) AT SHORT ST/MILNE DR  
 S.R. 18 (BRODHEAD RD) AT S.R. 3002



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
11	BEAVER	76	105	1 of 2
CENTER TOWNSHIP				
PERMIT NO. 2-009-04		DATE ISSUED 11-7-84		
DATE REVISED				



**NOTES**

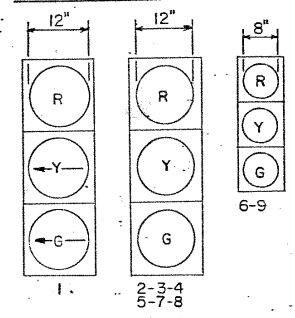
INSTALLATION, OPERATION AND MAINTENANCE OF THESE SIGNALS SHALL BE IN ACCORDANCE WITH PENNSYLVANIA DEPARTMENT OF TRANSPORTATION REGULATIONS GOVERNING THE DESIGN, LOCATION AND OPERATION OF SIGNS, SIGNALS AND MARKINGS.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED ACCORDINGLY.

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

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

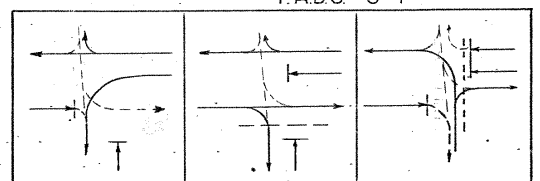
**SIGNAL HEADS**



NOTE: SIGNAL #6 SHALL HAVE FULL TUNNEL VISORS AND LOUVERS

SIGNAL #1 TO HAVE FULL TUNNEL VISORS

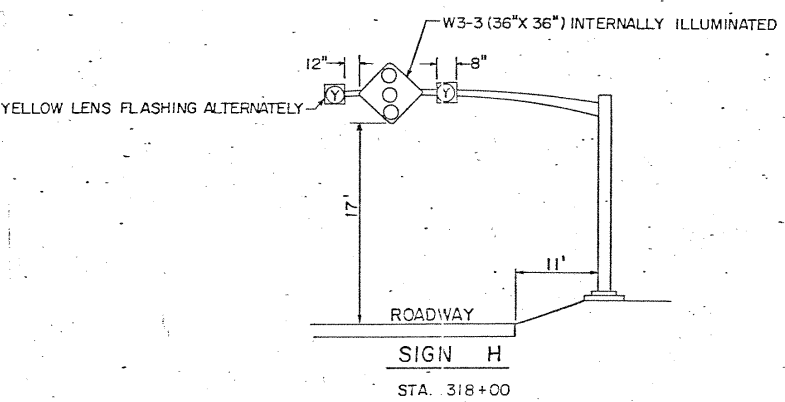
**FADS 3-4**



SIGNALS	INTERVAL									EMER. FLASH
	1	2	3	4	5	6	7	8	9	
1	-G-	-Y-	R	R	R	R	R	R	R	OFF
2-3	G	Y①	R①	G	Y②	R②	R	R	R	Y
4-5	R	R	R	G	Y	R	R	R	R	Y
7-8	R	R	R	R	R	R	G	Y	R	R
9	R	R	R	R	R	R	G	Y	R	R
6	R	R	R	G	Y	R	R	R	R	OFF

FIXED	3	2	3	2	3	2
MIN. INITIAL	2	6	2	2	2	2
SEC. PER ACT.	-	2	-	-	-	-
MAX. INITIAL	-	28	-	-	-	-
VEHICLE	2	5	2	2	2	2
MAXIMUM	25	36	24	24	24	24
PED. TIME	-	12	-	-	-	-

① REMAINS G IF #B FOLLOWS  
 ② REMAINS G IF #A FOLLOWS



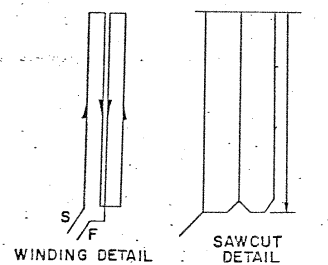
**SIGNS**

"A"	R10-10L	30" x 36"	LEFT TURN SIGNAL
"B"	R10-11	30" x 36"	NO TURN ON RED
"C"	R1-1	24" x 24"	STOP
"D"	R10-3L	9" x 12"	PUSH BUTTON FOR GREEN LIGHT
"E"	R10-3R	9" x 12"	PUSH BUTTON FOR GREEN LIGHT
"F"	R3-5(S)	30" x 36"	↑ ONLY
"G"	R3-5(L)	30" x 36"	↓ ONLY
"H"	W3-3	36" x 36"	SIGNAL AHEAD (SYMBOL: SEE DETAIL)
"J"	R9-3	18" x 18"	⊗

**LEGEND**

- ⊗ CONTROLLER
- 3 SIGNAL HEAD WITH IDENTIFYING NUMBER
- A POLE MOUNTED SIGN WITH IDENTIFYING LETTER
- C POST MOUNTED SIGN WITH IDENTIFYING LETTER
- STEEL SIGNAL POLE
- W.P.M. WHITE PAVEMENT MARKINGS
- DYPM DOUBLE YELLOW PAVEMENT MARKINGS
- JUNCTION BOX, TYPE J.B.12
- POLE NUMBER
- MESSENGER CABLE
- C CONDUIT AND SIZE
- ⊕ PED. PUSH BUTTON AND SIGN
- MAST ARM AND POLE
- LOOP DETECTOR

**LOOP DETECTOR CONFIGURATION**



**TRAFFIC SIGNAL PLAN**  
 BRODHEAD RD. (L.R. 76 - T.R. 51)  
 &  
 COMMUNITY COLLEGE DRIVE  
 BEAVER CO., CENTER TWP.

APPROVED: *[Signature]* DATE 11/5/84  
 MUNICIPAL REPRESENTATIVE

RECOMMENDED: *[Signature]* DATE 11/5/84  
 DISTRICT TRAFFIC ENGINEER

SCALE IN FEET  
 0 25 50

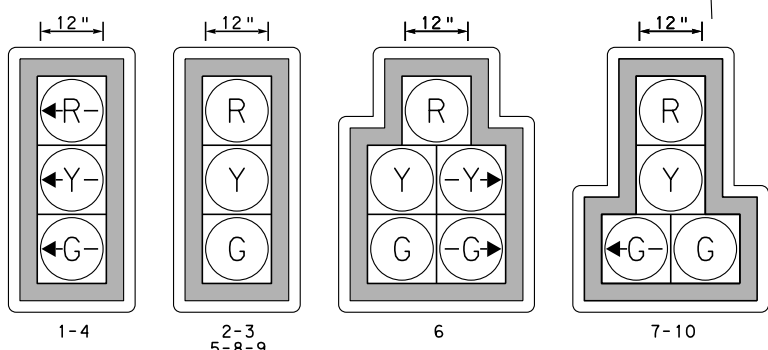
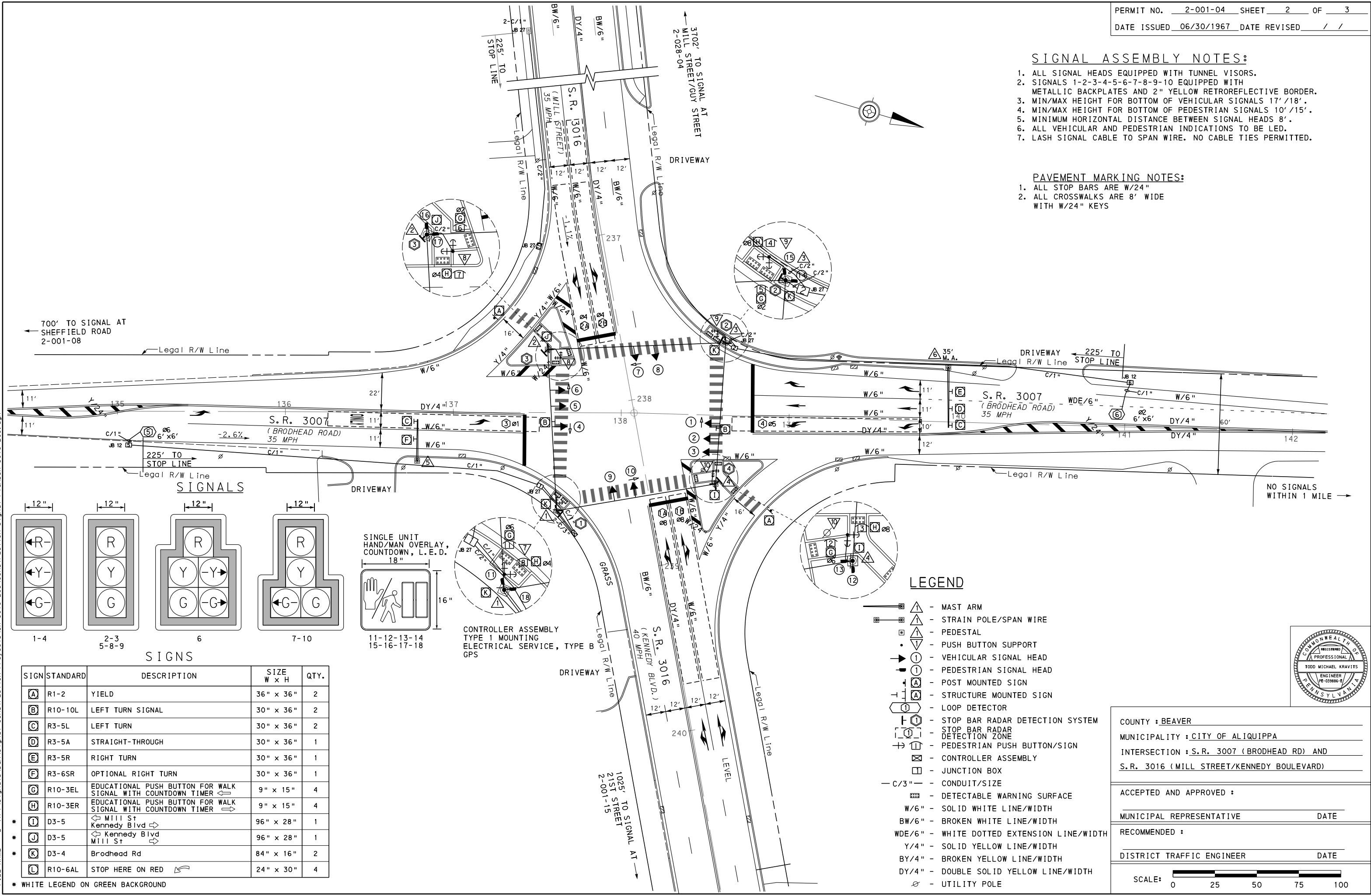
SHEET 2 of 2  
 2-009-04

**SIGNAL ASSEMBLY NOTES:**

1. ALL SIGNAL HEADS EQUIPPED WITH TUNNEL VISORS.
2. SIGNALS 1-2-3-4-5-6-7-8-9-10 EQUIPPED WITH METALLIC BACKPLATES AND 2" YELLOW RETROREFLECTIVE BORDER.
3. MIN/MAX HEIGHT FOR BOTTOM OF VEHICULAR SIGNALS 17' / 18'.
4. MIN/MAX HEIGHT FOR BOTTOM OF PEDESTRIAN SIGNALS 10' / 15'.
5. MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNAL HEADS 8'.
6. ALL VEHICULAR AND PEDESTRIAN INDICATIONS TO BE LED.
7. LASH SIGNAL CABLE TO SPAN WIRE. NO CABLE TIES PERMITTED.

**PAVEMENT MARKING NOTES:**

1. ALL STOP BARS ARE W/24"
2. ALL CROSSWALKS ARE 8' WIDE WITH W/24" KEYS



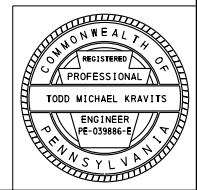
CONTROLLER ASSEMBLY  
 TYPE 1 MOUNTING  
 ELECTRICAL SERVICE, TYPE B  
 GPS

**LEGEND**

- ▲ - MAST ARM
- ▲ - STRAIN POLE/SPAN WIRE
- - PEDESTAL
- - PUSH BUTTON SUPPORT
- ⊙ - VEHICULAR SIGNAL HEAD
- ⊙ - PEDESTRIAN SIGNAL HEAD
- ⊙ - POST MOUNTED SIGN
- ⊙ - STRUCTURE MOUNTED SIGN
- ⊙ - LOOP DETECTOR
- ⊙ - STOP BAR RADAR DETECTION SYSTEM
- ⊙ - STOP BAR RADAR DETECTION ZONE
- ⊙ - PEDESTRIAN PUSH BUTTON/SIGN
- ⊙ - CONTROLLER ASSEMBLY
- ⊙ - JUNCTION BOX
- C/3" - CONDUIT/SIZE
- - DETECTABLE WARNING SURFACE
- W/6" - SOLID WHITE LINE/WIDTH
- W/6" - BROKEN WHITE LINE/WIDTH
- WDE/6" - WHITE DOTTED EXTENSION LINE/WIDTH
- Y/4" - SOLID YELLOW LINE/WIDTH
- BY/4" - BROKEN YELLOW LINE/WIDTH
- DY/4" - DOUBLE SOLID YELLOW LINE/WIDTH
- ⊙ - UTILITY POLE

SIGN	STANDARD	DESCRIPTION	SIZE W x H	QTY.
A	R1-2	YIELD	36" x 36"	2
B	R10-10L	LEFT TURN SIGNAL	30" x 36"	2
C	R3-5L	LEFT TURN	30" x 36"	2
D	R3-5A	STRAIGHT-THROUGH	30" x 36"	1
E	R3-5R	RIGHT TURN	30" x 36"	1
F	R3-6SR	OPTIONAL RIGHT TURN	30" x 36"	1
G	R10-3EL	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER	9" x 15"	4
H	R10-3ER	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER	9" x 15"	4
I	D3-5	← Mill St Kennedy Blvd →	96" x 28"	1
J	D3-5	← Kennedy Blvd Mill St →	96" x 28"	1
K	D3-4	Brodhead Rd	84" x 16"	2
L	R10-6AL	STOP HERE ON RED	24" x 30"	4

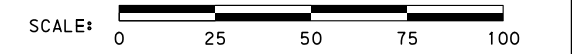
\* WHITE LEGEND ON GREEN BACKGROUND



COUNTY : BEAVER  
 MUNICIPALITY : CITY OF ALIQUIPPA  
 INTERSECTION : S.R. 3007 (BRODHEAD RD) AND S.R. 3016 (MILL STREET/KENNEDY BOULEVARD)

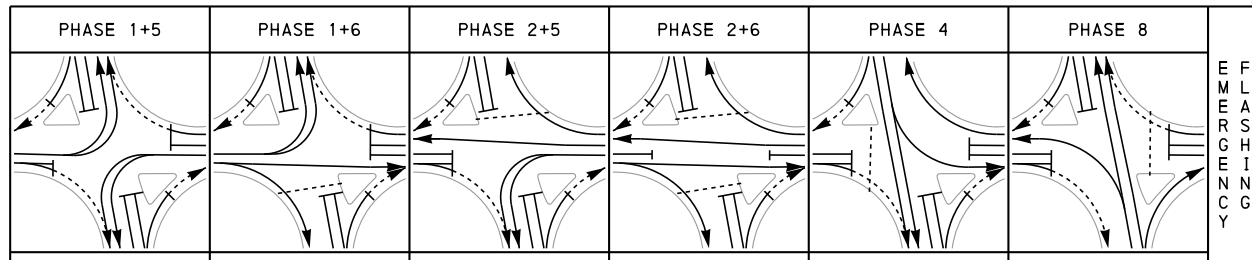
ACCEPTED AND APPROVED :  
 MUNICIPAL REPRESENTATIVE \_\_\_\_\_ DATE \_\_\_\_\_

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



PLOTTED: 19-JUN-2017 08:53  
 FILE NAME: L:\r1\signals\3016\_B08\Construction Signal Plan\_S.R. 3016\_B08.dgn

S.S.A.  
 W/V.D.  
 2-8 PHASE  
 W/MANUAL  
 CORD



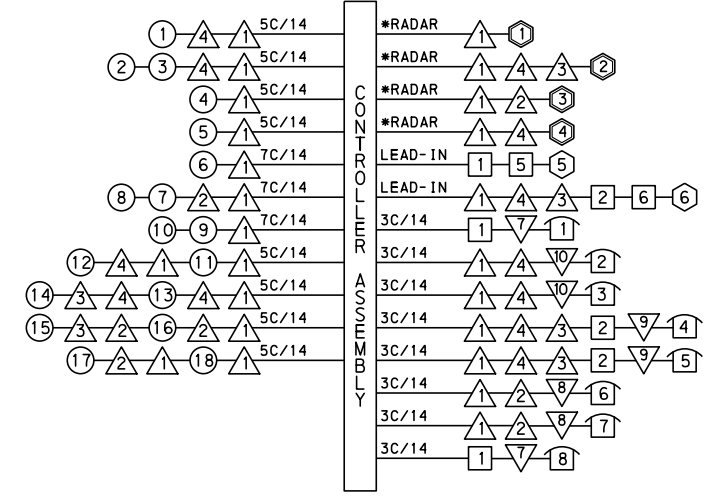
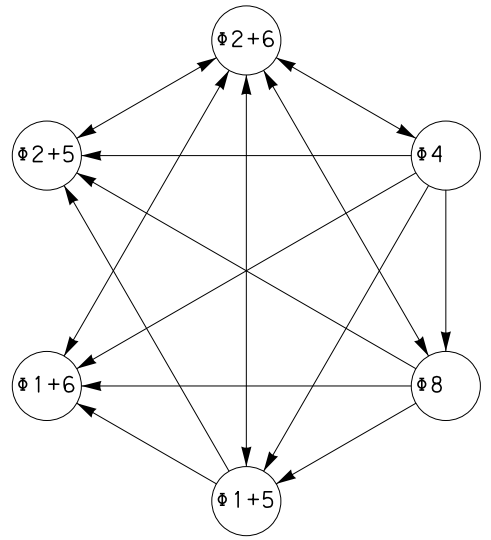
E  
M  
E  
R  
G  
E  
N  
C  
Y

SIGNALS	PHASE 1+5				PHASE 1+6				PHASE 2+5				PHASE 2+6				PHASE 4				PHASE 8				OFF
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
1	-G-	-Y <sup>①</sup>	-R <sup>①</sup>		-G-	-G-	-Y-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	
2-3	R	R	R		G	G	Y <sup>②</sup>	R <sup>②</sup>	R	R	R	R	G	G	Y <sup>④</sup>	R <sup>④</sup>	R	R	R	R	R	R	R	R	Y
4	-G-	-Y <sup>②</sup>	-R <sup>②</sup>		-R-	-R-	-R-	-R-	-G-	-G-	-Y-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	-R-	OFF
5	R	R	R		R	R	R	R	G	G	Y <sup>⑤</sup>	R <sup>⑤</sup>	G	G	Y <sup>⑥</sup>	R <sup>⑥</sup>	R	R	R	R	R	R	R	R	Y
6	R	R	R		R	R	R	R	G	G	Y <sup>⑤</sup>	R <sup>⑤</sup>	G	G	Y <sup>⑥</sup>	R <sup>⑥</sup>	-G-	-G-	-Y-	R	R	R	R	R	Y
7	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	-G-	-G-	Y	R	R
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
9	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R	R	R	R	R	R
10	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	-G-	-G-	Y	R	R	R	R	R	R
* 11-12	DW	DW	DW		W	FD	DW	DW	DW	DW	DW	DW	W	FD	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	OFF
* 13-14	DW	DW	DW		DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FD	DW	DW	OFF
* 15-16	DW	DW	DW		DW	DW	DW	DW	W	FD	DW	DW	W	FD	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	OFF
* 17-18	DW	DW	DW		DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FD	DW	DW	DW	DW	DW	DW	OFF
FIXED	X	4	3		X	4	3		X	4	3		X	4	3		X	4	3		X	5	3		
MINIMUM	5				5				5				12				5				5				
SEC/ACT													2.1												
MAX. INIT.													25												
PASSAGE	2				2				2				8				3				3				
BEFORE RED.													15												
TO REDUCE													10												
MIN. GAP													5												
MAX I	25				45				25				60				35				35				
MAX II	25				45				25				60				35				35				
PEDESTRIAN					⑧				⑧				7	24			7	22			7	19			
MEMORY	L				L				L				MN				NL				NL				

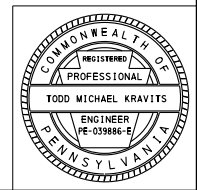
\* UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE DON'T WALK AT ALL TIMES

MEMORY INCLUDES:  
 PR - PEDESTRIAN RECALL  
 MN - MINIMUM RECALL  
 MX - MAXIMUM RECALL  
 RL - RED LOCKING  
 NL - NON-LOCKING

- ① -G- IF  $\phi 1+6$  FOLLOWS
- ② -G- IF  $\phi 2+5$  FOLLOWS
- ③ G IF  $\phi 2+6$  FOLLOWS
- ④ G IF  $\phi 1+6$  FOLLOWS
- ⑤ G IF  $\phi 2+5$  FOLLOWS
- ⑥  $\frac{Y}{G}$  IF  $\phi 4$  FOLLOWS
- ⑦  $\frac{R}{G}$  IF  $\phi 4$  FOLLOWS
- ⑧ TIMING TO BE AS SHOWN IN  $\phi 2+6$ . IT MAY TIME OUT IN THIS PHASE OR MAY BE COMPLETED IN  $\phi 2+6$

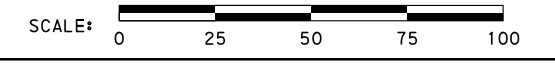


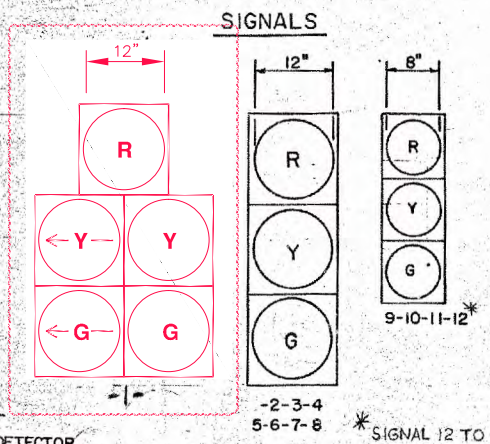
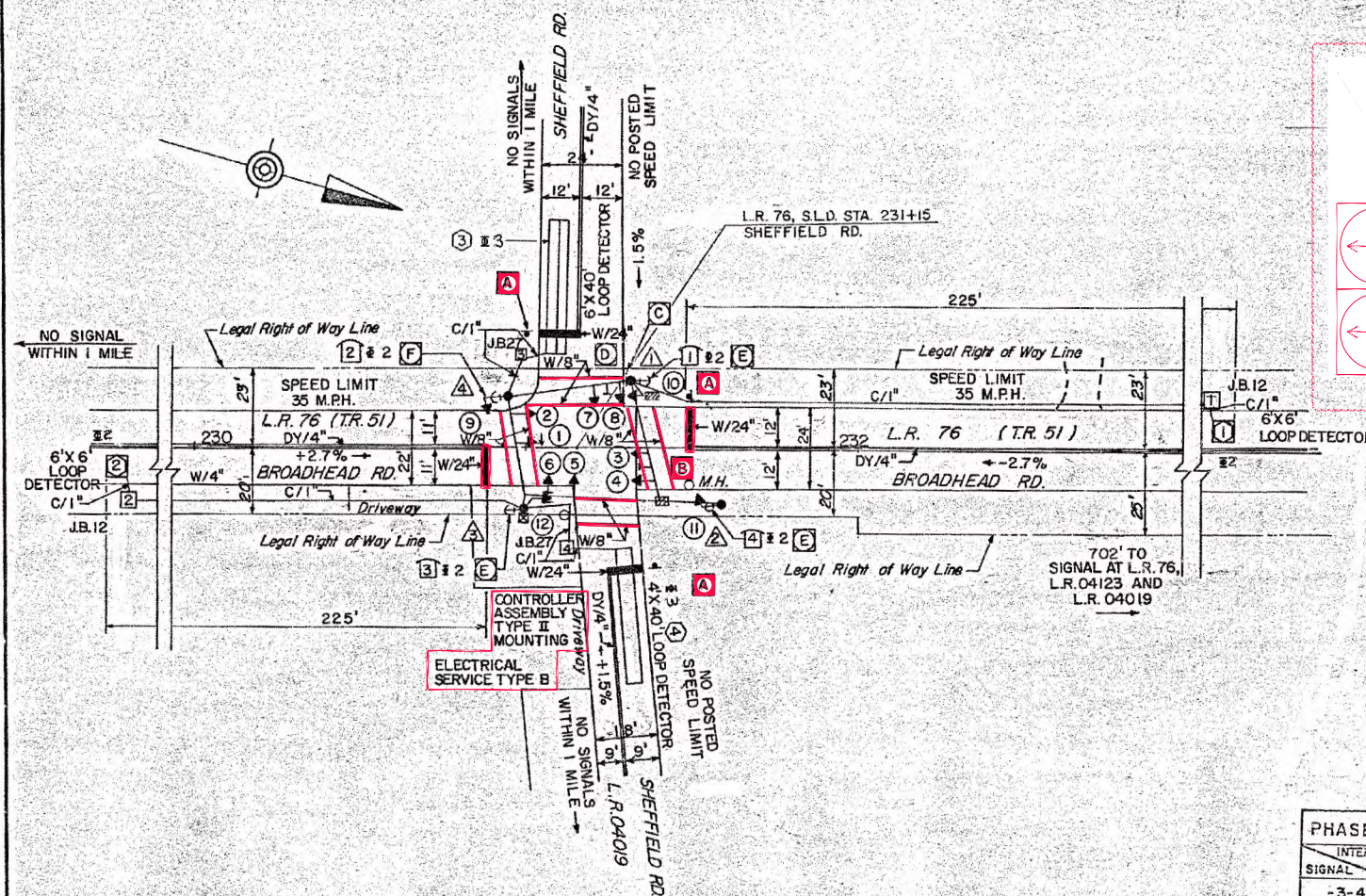
**WIRING DIAGRAM**  
 5C/14 - CABLE (NO. OF CONDUCTORS/SIZE AWG.)  
 ○ SIGNAL HEAD      ▲ TRAFFIC SIGNAL SUPPORT  
 □ JUNCTION BOX      ▼ PEDESTRIAN PUSH BUTTON SUPPORT  
 Ⓛ RADAR DETECTOR      ◻ PEDESTRIAN PUSHBUTTON  
 ⓐ OPTICAL PREEMPTION DETECTOR  
 \* AS PER MANUFACTURER'S RECOMMENDATION



COUNTY : BEAVER  
 MUNICIPALITY : CITY OF ALIQUIPPA  
 INTERSECTION : S.R. 3007 (BRODHEAD RD) AND  
S.R. 3016 (MILL STREET/KENNEDY BOULEVARD)

ACCEPTED AND APPROVED : \_\_\_\_\_  
 MUNICIPAL REPRESENTATIVE      DATE \_\_\_\_\_  
 RECOMMENDED : \_\_\_\_\_  
 DISTRICT TRAFFIC ENGINEER      DATE \_\_\_\_\_





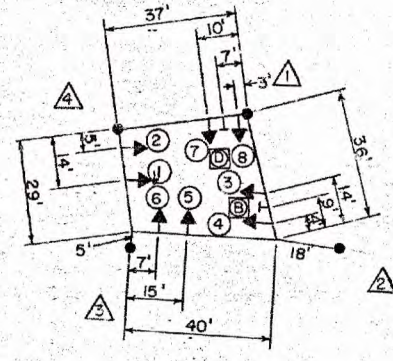
\* SIGNAL 12 TO HAVE TUNNEL VISORS AND LOUVERS  
 ALL SIGNAL HEADS WILL BE EQUIPPED WITH LED INDICATIONS.

SIGNS

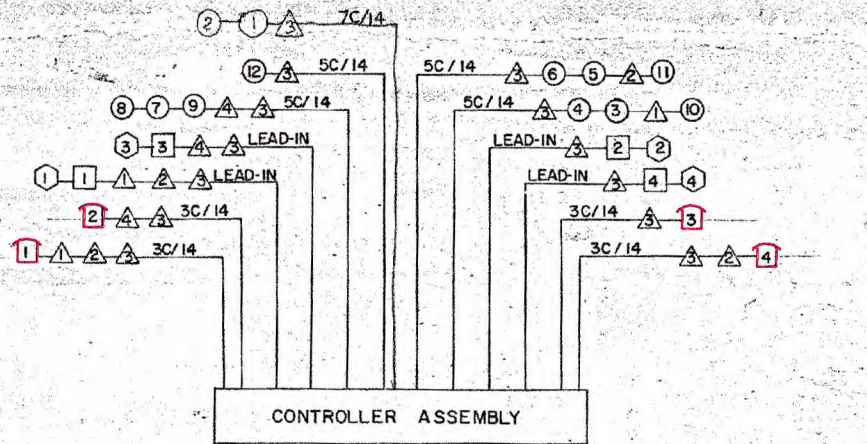
Plan Symbol	Description	Size W x H
A	R10-6AL STOP HERE ON RED	24" x 30"
B	R3-2 NO LEFT TURN	30" x 30"
C	R3-2 NO LEFT TURN	24" x 24"
D	R10-11A NO TURN ON RED	30" x 36"
E	R10-3L PUSH BUTTON FOR GREEN LIGHT	9" x 12"
F	R10-3R PUSH BUTTON FOR GREEN LIGHT	9" x 12"

S.S.A. W/V.D. 2-4 & 8 MANUAL CORD

PHASE	1	2	3									
INTERVAL	1	2	3	4	5	6	7	8	9			
SIGNAL	R	R	R	G	Y	R	R	R	R			
-3-4	R	R	R	G	Y	R	R	R	R			Y
5-6-7-8	R	R	R	R	R	R	G	Y	R			R
9-11	R	R	R	R	R	R	G	Y	R			R
10-12	R	R	R	G	Y	R	R	R	R			Y
1	G	G	G	G	Y	R	R	R	R			Y
2	G	G	G	G	Y	R	R	R	R			Y



SIGNAL PLACEMENT DIAGRAM  
 (FOR INFORMATION ONLY)



- SIGNAL HEAD    △ TRAFFIC SIGNAL SUPPORT
- DETECTOR      □ JUNCTION BOX
- PEDESTRIAN PUSH BUTTON
- 5C/14 - CABLE (NO. OF CONDUCTORS/SIZE AWG)

WIRING DIAGRAM

MEMORY INCLUDES:  
 PEDESTRIAN RECALL (PR)  
 MINIMUM RECALL (MR)  
 MAXIMUM RECALL (MaR)  
 LOCKING (L)  
 NON-LOCKING (NL)

SIGNAL TO BE COORDINATED WITH ADJACENT INTERSECTIONS THROUGH THE USE OF TIME BASE COORDINATORS TO PROVIDE A PROGRESSIVE MOVEMENT OF TRAFFIC ALONG L.R. 76 (T.R. 51)

\* UPON PEDESTRIAN ACTIVATION

	10	3	3	2	3	2						
FIXED												
MINIMUM												
SEC/ACT												
MAX INITIAL												
PASSAGE												
MAX I	10		45		25							
MAX II												
PED. *												
MEMORY												

SEE ATTACHED COORDINATION PLAN

LEGEND

- △ - Mast Arm
- - Strain Pole
- - Pedestal
- - Vehicular Signal Head
- - Pedestrian Signal Head
- - Sign
- - Vehicle Detector
- - Junction Box
- - Pedestrian Push Button/Sign
- - Controller Assembly
- 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

County: BEAVER  
 Municipality: BOROUGH OF ALIQUIPPA  
 Intersection: L.R. 76 (T.R. 51, BRODHEAD ROAD) AND SHEFFIELD RD.

Reviewed: *Josephine D. McKenna* June 19, 1986  
 Municipal Official Date

Recommended: *Thomas E. ...* 6-26-86  
 District Traffic Engineer Date

Scale: 0 25 50 75

