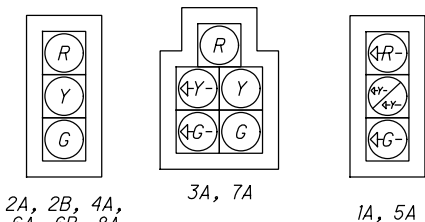


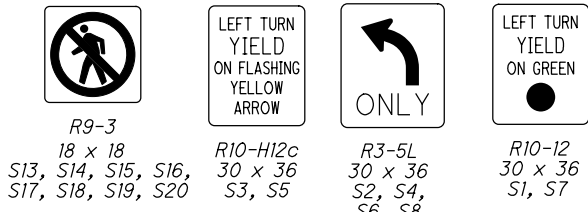
LEGEND

	PROP	EXIST
TRAFFIC SIGNAL, 3 UNIT HEAD, 12"		
TRAFFIC SIGNAL, 3 UNIT HEAD, 12" WITH ARROWS		
TRAFFIC SIGNAL, 5 UNIT HEAD, 12"		
SIGNAL SUPPORT POLE		
LUMINAIRE, CONVENTIONAL		
CONTROLLER CABINET AND WORK PAD (332)		
TRAFFIC PULL BOX		
STOP BAR RADAR DETECTION UNIT		
ADVANCE RADAR DETECTION UNIT		
DETECTION ZONE		

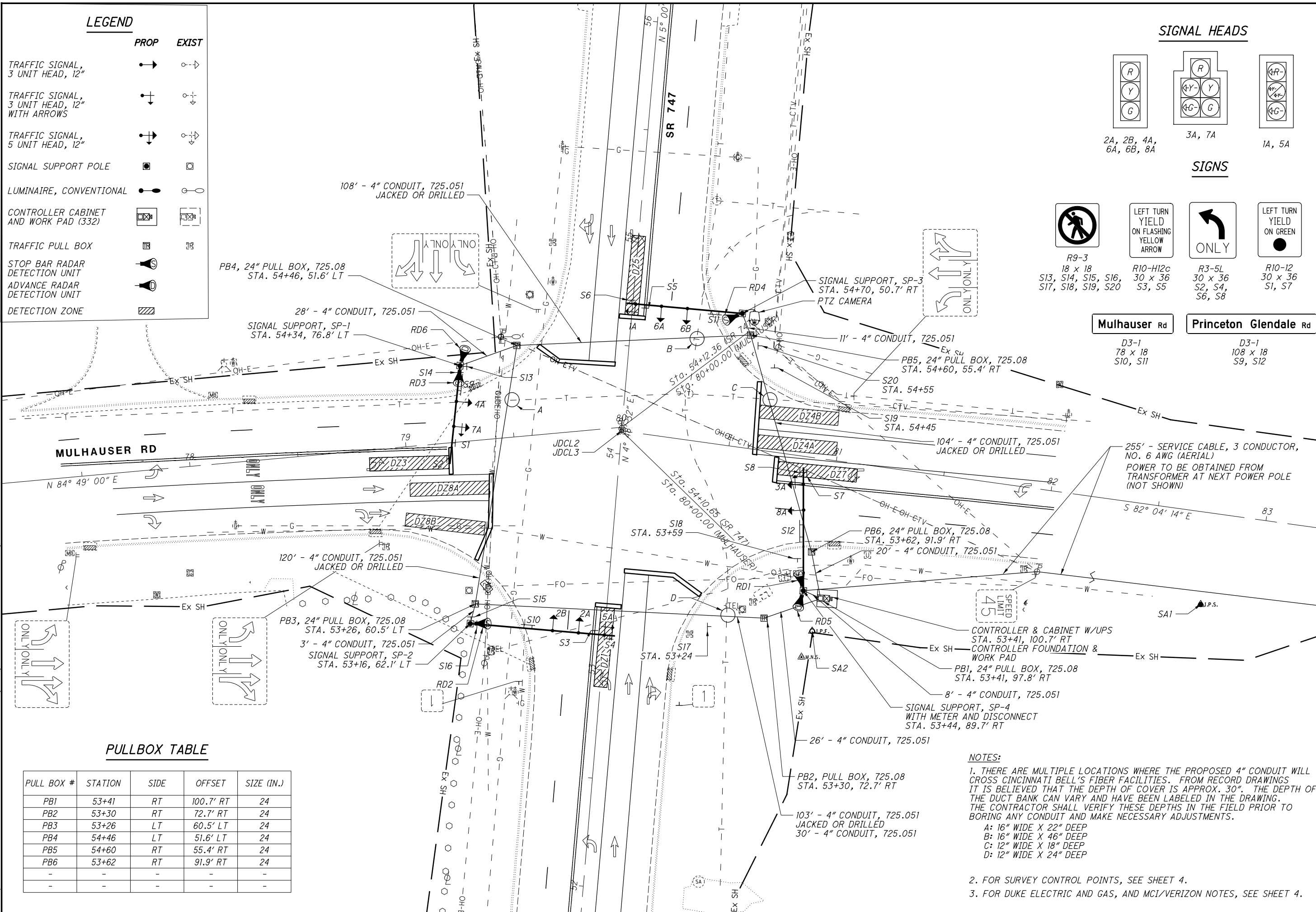
SIGNAL HEADS



SIGNS



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PULLBOX TABLE

PULL BOX #	STATION	SIDE	OFFSET	SIZE (IN.)
PB1	53+41	RT	100.7' RT	24
PB2	53+30	RT	72.7' RT	24
PB3	53+26	LT	60.5' LT	24
PB4	54+46	LT	51.6' LT	24
PB5	54+60	RT	55.4' RT	24
PB6	53+62	RT	91.9' RT	24
-	-	-	-	-
-	-	-	-	-

NOTES:

- THERE ARE MULTIPLE LOCATIONS WHERE THE PROPOSED 4" CONDUIT WILL CROSS CINCINNATI BELL'S FIBER FACILITIES. FROM RECORD DRAWINGS IT IS BELIEVED THAT THE DEPTH OF COVER IS APPROX. 30". THE DEPTH OF THE DUCT BANK CAN VARY AND HAVE BEEN LABELED IN THE DRAWING. THE CONTRACTOR SHALL VERIFY THESE DEPTHS IN THE FIELD PRIOR TO BORING ANY CONDUIT AND MAKE NECESSARY ADJUSTMENTS.
 A: 16" WIDE X 22" DEEP
 B: 16" WIDE X 46" DEEP
 C: 12" WIDE X 18" DEEP
 D: 12" WIDE X 24" DEEP
- FOR SURVEY CONTROL POINTS, SEE SHEET 4.
- FOR DUKE ELECTRIC AND GAS, AND MCI/VERIZON NOTES, SEE SHEET 4.

TRAFFIC SIGNAL PLAN
SR 747 & MULHAUSER RD
BUT-747-1.01/2.07

SIGNAL TIMING CHART

INTERSECTION: SR 747 @ MULHAUSER RD MAINTAINING AGENCY: ODOT									
START UP		DUAL ENTRY: YES		PHASES: 2+6, 4+8					
START IN: ALL RED		REST IN RED: RING 1 - RING 2 -		OVERLAP		PHASES		A B C D	
TIME FOR FLASH OR ALL RED: 6 sec									
FIRST PHASE(S): 2 + 6									
COLOR DISPLAYED: GREEN									
INTERVAL OR FEATURE		CONTROLLER MOVEMENT NO.							
INTERSECTION MOVEMENT (PHASE)		1	2	3	4	5	6	7	8
DIRECTION		NB LT	SB	EB LT	WB	SB LT	NB	WB LT	EB
MINIMUM GREEN (INITIAL) (SEC.)		7	20	7	10	7	20	7	10
ADDED INITIAL *(SEC./ACTUATION)		-	-	-	-	-	-	-	-
MAXIMUM INITIAL (SEC.)		-	-	-	-	-	-	-	-
PASSAGE TIME (PRESET GAP) (SEC.)		4	4	3	3	4	4	3	3
TIME BEFORE REDUCTION *(SEC.)		-	-	-	-	-	-	-	-
MINIMUM GAP *(SEC.)		-	-	-	-	-	-	-	-
TIME TO REDUCE *(SEC.)		-	-	-	-	-	-	-	-
MAXIMUM GREEN I (SEC.)		30	55	20	30	30	55	20	30
MAXIMUM GREEN II (SEC.)		-	-	-	-	-	-	-	-
YELLOW CHANGE (SEC.)		4.5	5	4.5	5.5	4.5	5	4.5	5.5
ALL RED CLEARANCE (SEC.)		2.5	2	3	2	2.5	2	3	2
WALK (SEC.)		-	-	-	-	-	-	-	-
PEDESTRIAN CLEARANCE (SEC.)		-	-	-	-	-	-	-	-
RECALL	MAXIMUM (ON/OFF)	-	-	-	-	-	-	-	-
	MINIMUM (ON/OFF)	-	ON	-	-	-	ON	-	-
	PEDESTRIAN (ON/OFF)	-	-	-	-	-	-	-	-
MEMORY (ON/OFF)		-	-	-	-	-	-	-	-

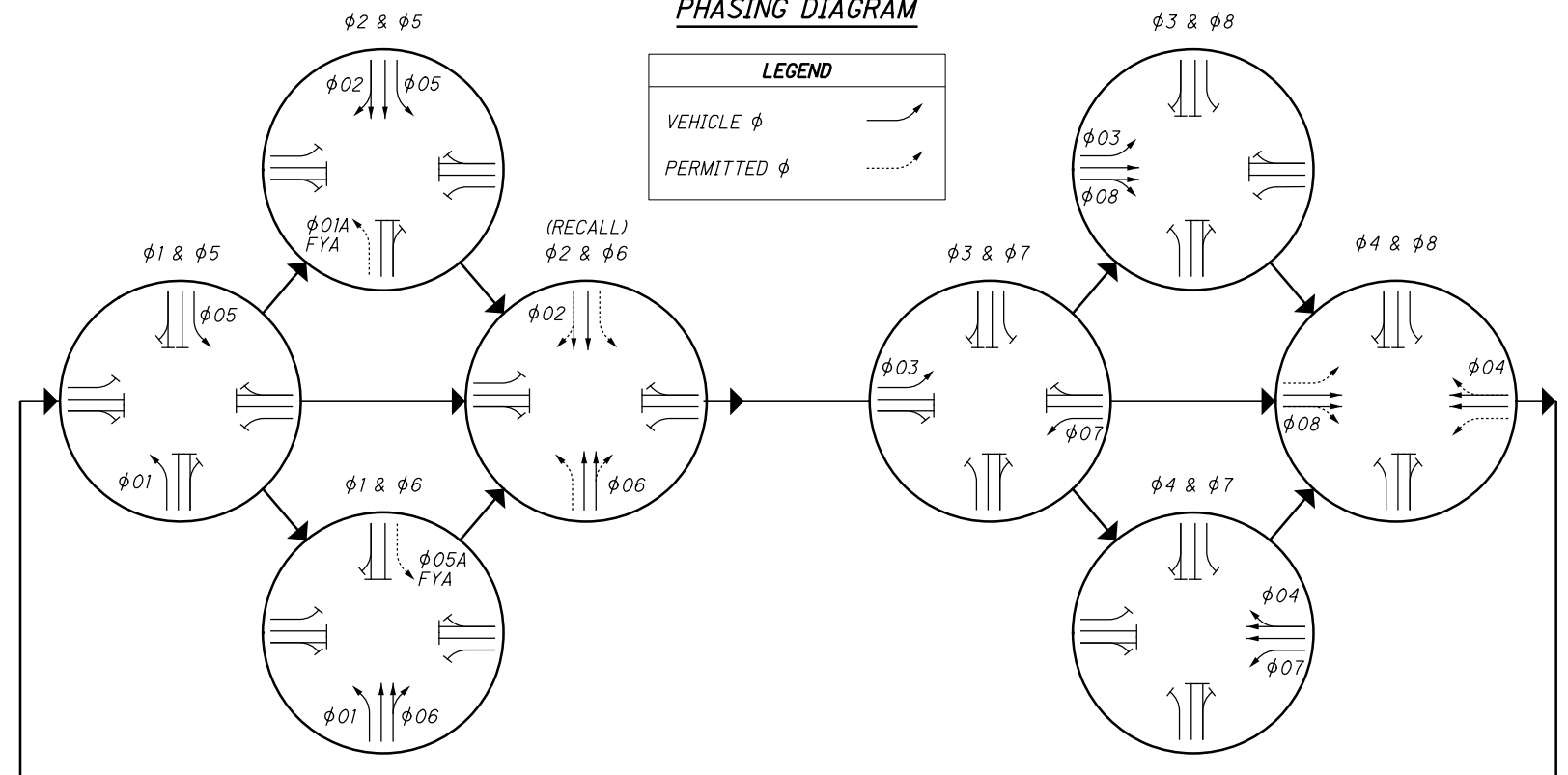
*VOLUME DENSITY CONTROLS
OMIT CALLS TO $\phi 1$ AND $\phi 5$ DURING $\phi 2$ AND $\phi 6$ GREEN
OMIT CALLS TO $\phi 3$ AND $\phi 7$ DURING $\phi 4$ AND $\phi 8$ GREEN

COORDINATION TIMING CHART

PHASE	SPLITS (G+Y+AR) IN SECONDS								OFFSET 1 (SEC)	OFFSET 2 (SEC)
	1	2	3	4	5	6	7	8		
DIRECTION	NB LT	SB	EB LT	WB	SB LT	NB	WB LT	EB	SR 747 @ MULHAUSER RD	
PLAN NO./C/S/O										
1	19	67	20	34	26	60	24	30	0	-
2	22	55	22	26	22	55	22	26	0	-
3	22	53	20	30	22	53	26	24	0	-
4	24	66	20	40	24	66	20	40	0	-
5	24	58	24	34	24	58	24	34	0	-

DAY(S) OF WEEK	PLAN NAME	HOURS	PLAN NO. OR C/S/O	CYCLE LENGTH (SEC)
M-F	FREE	0:00-6:00	100	-
M-F	AM PEAK	6:00-9:00	1	140
M-F	-	9:00-11:00	2	125
M-F	MID	11:00-14:30	3	125
M-F	PM PEAK	14:30-19:00	4	150
M-F	-	19:00-21:00	2	125
M-F	FREE	21:00-0:00	100	-
S-S	FREE	0:00-10:00	100	-
S-S	MID	10:00-20:00	3	125
S-S	FREE	20:00-0:00	100	-

PHASING DIAGRAM



RADAR DETECTION CHART

DETECTION ZONE	MOVEMENT	PULSE OR PRESENCE	ASSOCIATED PHASE	DELAY PROGRAMMED IN CONTROLLER (SEC)	EXTENSION PROGRAMMED IN CONTROLLER (SEC)	DELAY INHIBIT PHASE	PURPOSE	DETECTION ZONE LENGTH (FT)
DZ1	NB LT	PRESENCE	1	-	-	1	CALL/EXTEND PHASE 1	40'
DZ3	EB LT	PRESENCE	3	-	-	3	CALL/EXTEND PHASE 3	40'
DZ4A	WB THRU	PRESENCE	4	-	-	-	CALL/EXTEND PHASE 4	40'
DZ4B	WB THRU	PRESENCE	4	8	-	-	CALL/EXTEND PHASE 4	40'
DZ5	SB LT	PRESENCE	5	-	-	5	CALL/EXTEND PHASE 5	40'
DZ7	NB LT	PRESENCE	7	-	-	7	CALL/EXTEND PHASE 7	40'
DZ8A	EB THRU	PRESENCE	8	-	-	-	CALL/EXTEND PHASE 8	40'
DZ8B	EB THRU	PRESENCE	8	8	-	-	CALL/EXTEND PHASE 8	40'
DZ2		PRESENCE	2	-	-	-	DILEMMA ZONE	500'
DZ6		PRESENCE	6	-	-	-	DILEMMA ZONE	500'

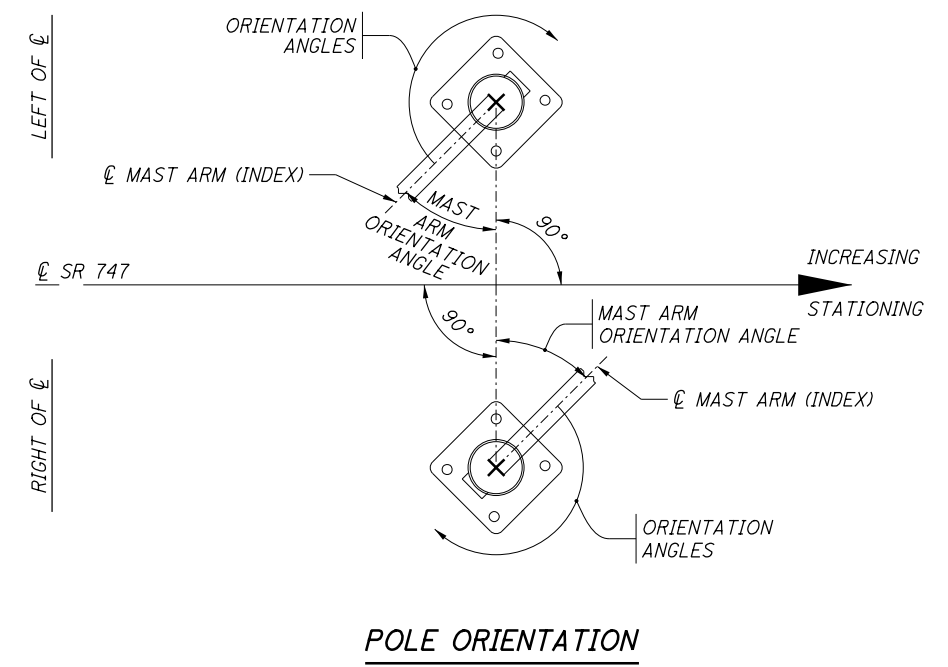
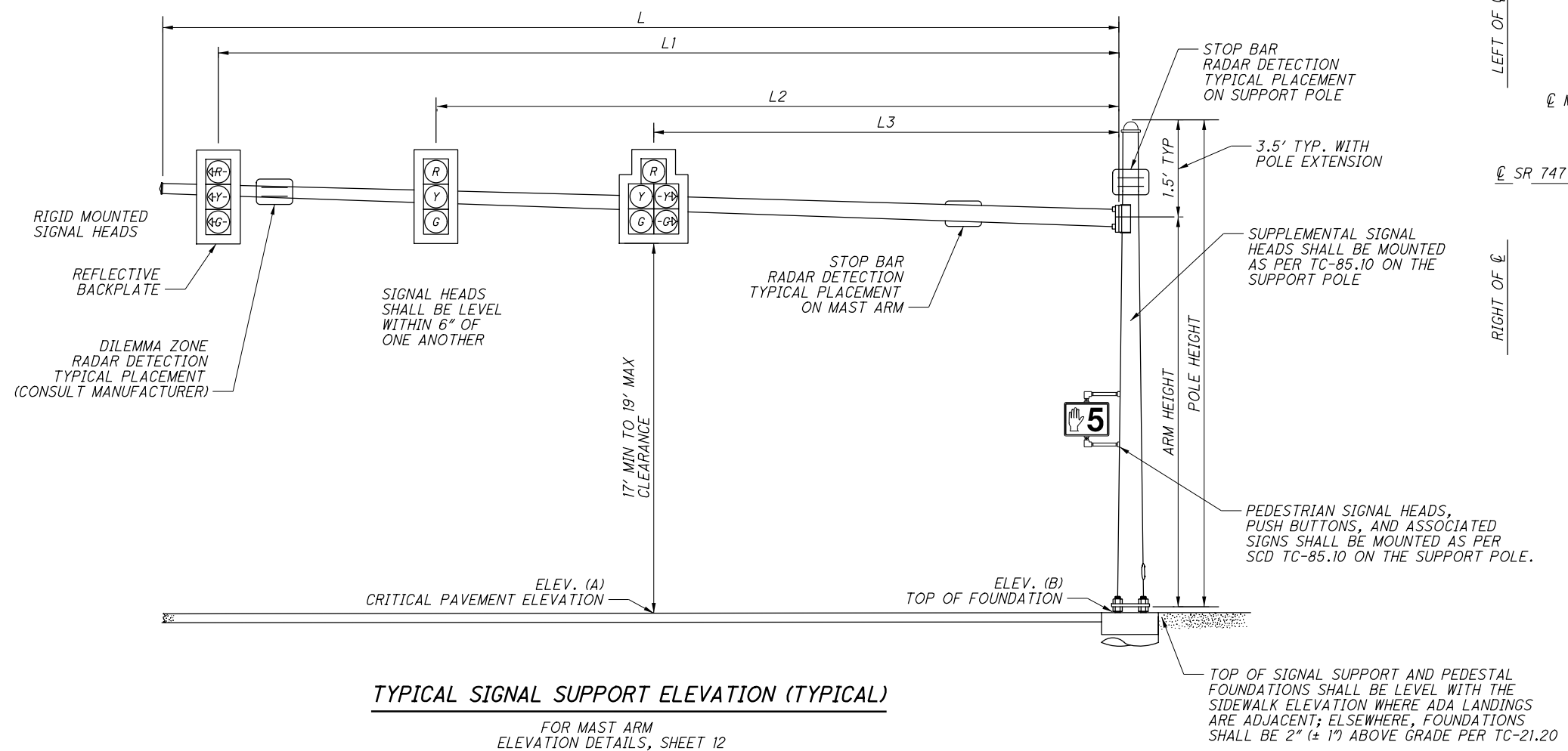
NOTE: DILEMMA ZONE SPEED THRESHOLD >30 MPH

- ENABLE DETECTOR SWITCHING TO ALLOW $\phi 3$ & $\phi 7$ TO EXTEND $\phi 4$ & $\phi 8$ AND $\phi 1$ & $\phi 5$ TO EXTEND $\phi 2$ & $\phi 6$ WHEN ALLOCATED GREEN TIME FOR LEFT TURN PHASES ARE EXHAUSTED.

CALCULATED
TCS
CHECKED
MAG

TRAFFIC SIGNAL PLAN DETAILS
SR 747 & MULHAUSER RD

BUT - 747 - 1.01 / 2.07

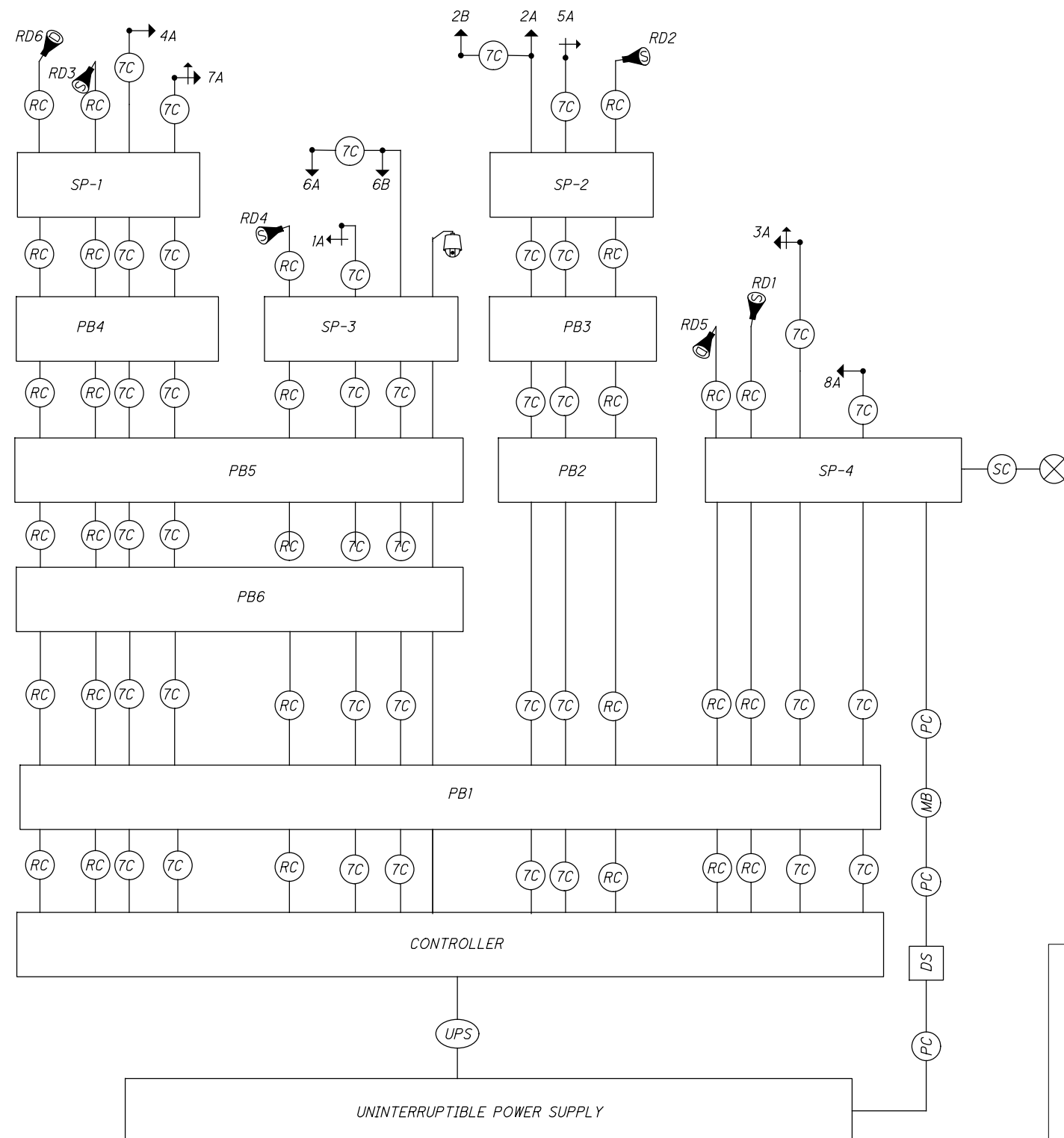


MAST ARM TABLE

SUPPORT NO.	STATION	OFFSET	ELEVATION		DESIGN TYPE	DESIGN NO.	POLE HEIGHT	ARM HEIGHT	ARM LENGTH, L	DISTANCE FROM SUPPORT, FT						ORIENTATION ANGLES FROM MAST ARM									
			A	B						L1	L2	L3	L4	L5	L6	MAST ARM A ANGLE	MAST ARM B ANGLE	PEDESTRIAN SIGNAL	PEDESTRIAN BUTTON	POWER SERVICE	CONTROLLER	BRACKET ARM	HANDHOLE	CABLE ENTRANCE 12" FROM TOP	
			FT	FT			FT	FT	FT	FT	FT	FT	FT	FT	FT	DEG	DEG	DEG	DEG	DEG	DEG	DEG	DEG	DEG	
SP1	54+34	76.8' LT	721.57	722.32	TC-81.21	12	20.5	19.0	46	43	36	28	17	9	-	91	-	-	-	-	-	-	-	180	0
SP2	53+16	62.1' LT	720.11	722.52	TC-81.21	14	17.0	18.5	66	63	60	57	49	36	26	0	-	-	-	-	-	-	-	180	0
SP3	54+70	50.7' RT	723.81	724.42	TC-81.21	13	20.5	19.0	54	52	49	45	37	25	12	0	-	-	-	-	-	-	-	180	0
SP4	53+44	89.7' RT	724.15	724.50	TC-81.21	13	20.5	19.0	56	54	49	52	37	21	-	85	-	-	-	90	-	-	-	180	0

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WIRING DIAGRAM



FIELD WIRING HOOK-UP CHART

SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH	SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH
1A (NB LT)	<--R-->	AUX CH 9 RED	R	7A (WB LT)	R	φ 4 RED	R
	<--Y-->	AUX CH 9 YEL			Y	φ 4 YEL	
	<--FYA-->	AUX CH 9 GRN			G	φ 4 GRN	
	<--G-->	φ 1 GRN			<--Y-->	φ 7 YEL	
	-	-		<--G-->	φ 7 GRN		
2A, 2B (SB)	R	φ 2 RED	R	8A (EB)	R	φ 8 RED	R
	Y	φ 2 YEL			Y	φ 8 YEL	
	G	φ 2 GRN			G	φ 8 GRN	
	-	-			-	-	
	-	-		-	-		
3A (EB LT)	R	φ 8 RED	R	PEDESTRIAN MOVEMENTS			
	Y	φ 8 YEL		-	-	-	-
	G	φ 8 GRN		-	-	-	-
	<--Y-->	φ 3 YEL		-	-	-	-
	<--G-->	φ 3 GRN		-	-	-	
4A (WB)	R	φ 4 RED	R	OVERLAPS			
	Y	φ 4 YEL		-	-	-	-
	G	φ 4 GRN		-	-	-	-
5A (SB LT)	<--R-->	AUX CH 11 RED	R	OVERLAPS			
	<--Y-->	AUX CH 11 YEL		-	-	-	-
	<--FYA-->	AUX CH 11 GRN		-	-	-	-
	<--G-->	φ 5 GRN		-	-	-	-
	-	-		-	-	-	
6A, 6B (NB)	R	φ 6 RED	R	-	-	-	-
	Y	φ 6 YEL		-	-	-	-
	G	φ 6 GRN		-	-	-	-

LS = LOAD SWITCH

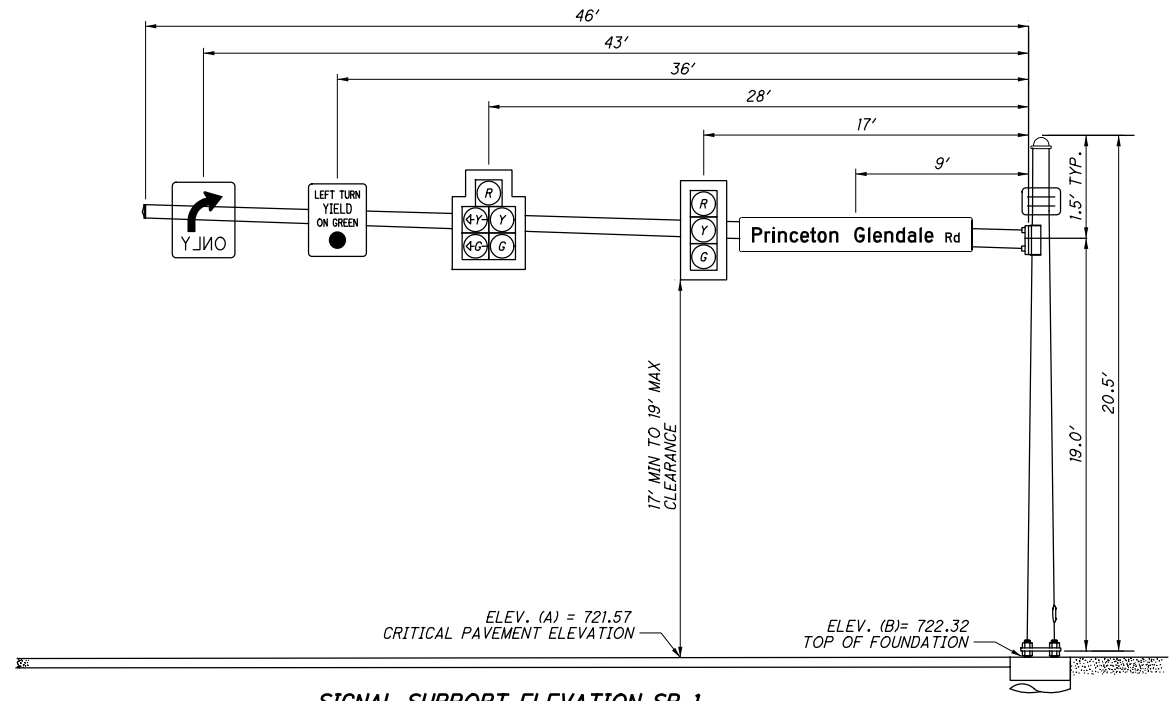
CONFLICT MONITOR MODIFICATIONS:

- CUT DIODES TO ALLOW FYA CHANNELS (9, 11) TO PROCEED WITH PHASES SHOWIN IN PHASING DIAGRAM.
- FYAC SWITCH - *QEF*; STANDARD FYA MODE IS SELECTED.
- FYA 1-9, 5-11 SWITCHES - *QN*; ENABLES A CHANNEL PAIR FOR FYA MONITORING FUNCTIONS.
- THE SSM SWITCH IN *QN* FOR THE PERMISSIVE TURN CHANNELS 9, 11
- THE SSM SWITCH IS *QEF* FOR THE PROTECTED TURN CHANNELS 1,5
-SIGNAL LOADS ARE NOT BEING DRIVEN FROM THE PROTECTED RED AND YELLOW OUTPUTS THEN THE SSM SWITCH FOR THE ASSOCIATED PROTECTED TURN CHANNEL 1,5 SHOULD BE *QEF* AND THE YELLOW DISABLE JUMPER IS INSTALLED.

LEGEND

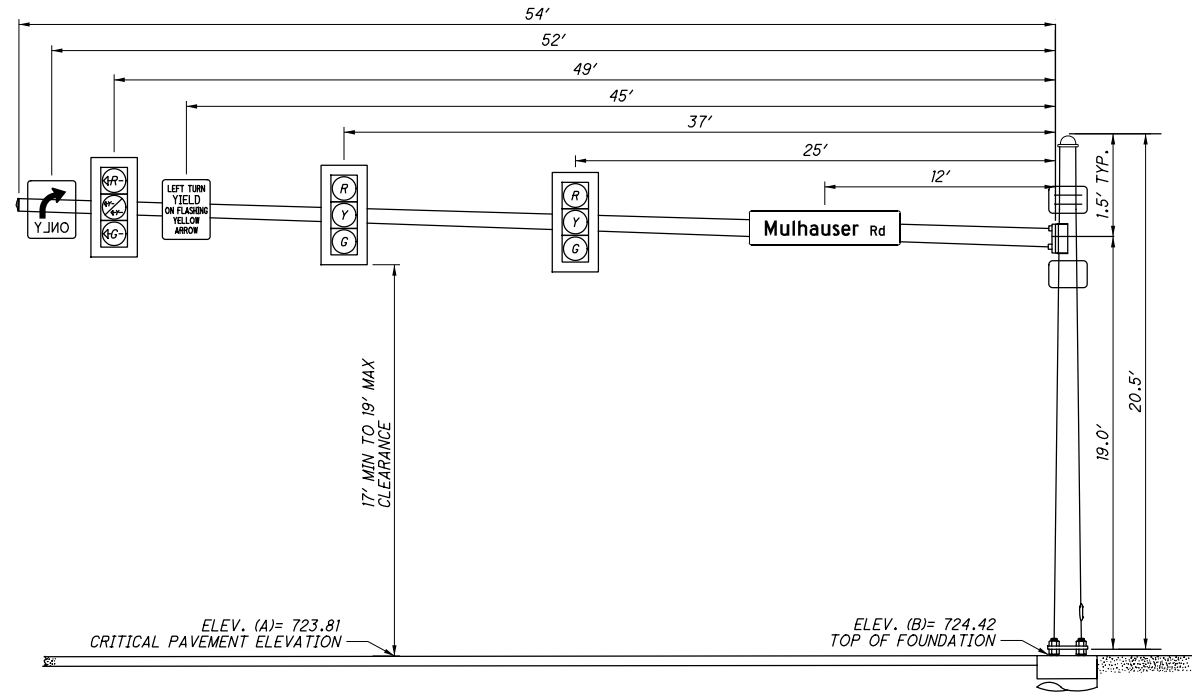
	5 SECTION VEHICULAR SIGNAL HEAD, 1-WAY		POWER SOURCE
	3 SECTION VEHICULAR SIGNAL HEAD, 1-WAY		SERVICE CABLE, 6 CONDUCTOR, NO. 6 AWG
	3 SECTION VEHICULAR SIGNAL HEAD, TURN ARROWS 1-WAY		POWER CABLE, 2 CONDUCTOR, NO. 6 AWG
	DILEMMA ZONE RADAR DETECTION UNIT		SIGNAL SUPPORT POLE NO. --
	STOP BAR RADAR DETECTION UNIT		METER BASE
	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG		DUAL LIGHTING/SIGNAL DISCONNECT SWITCH
	RADAR DETECTION CABLE		UNINTERRUPTIBLE POWER SUPPLY CABLE
	PTZ CAMERA		

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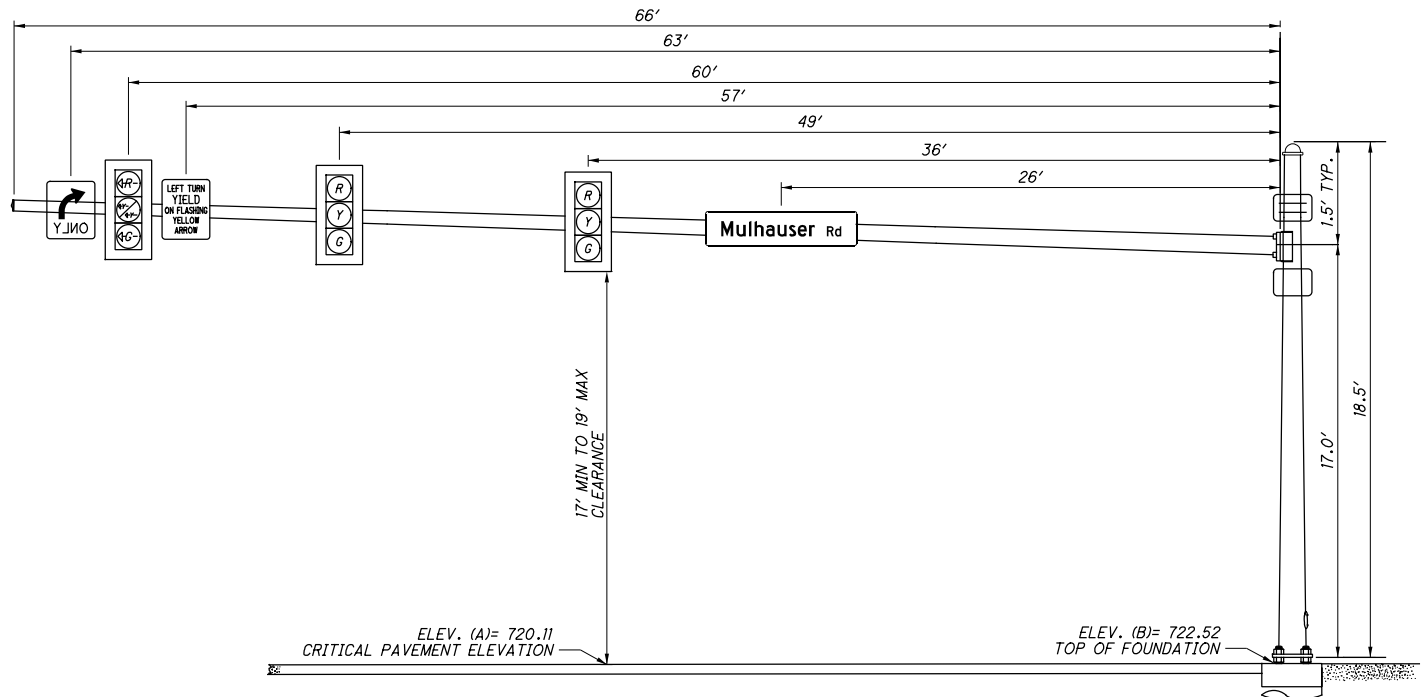
SIGNAL SUPPORT ELEVATION SP-1

TC-81.21, DESIGN #12
STA. 54+34, 76.8' LT
(LOOKING WESTBOUND)



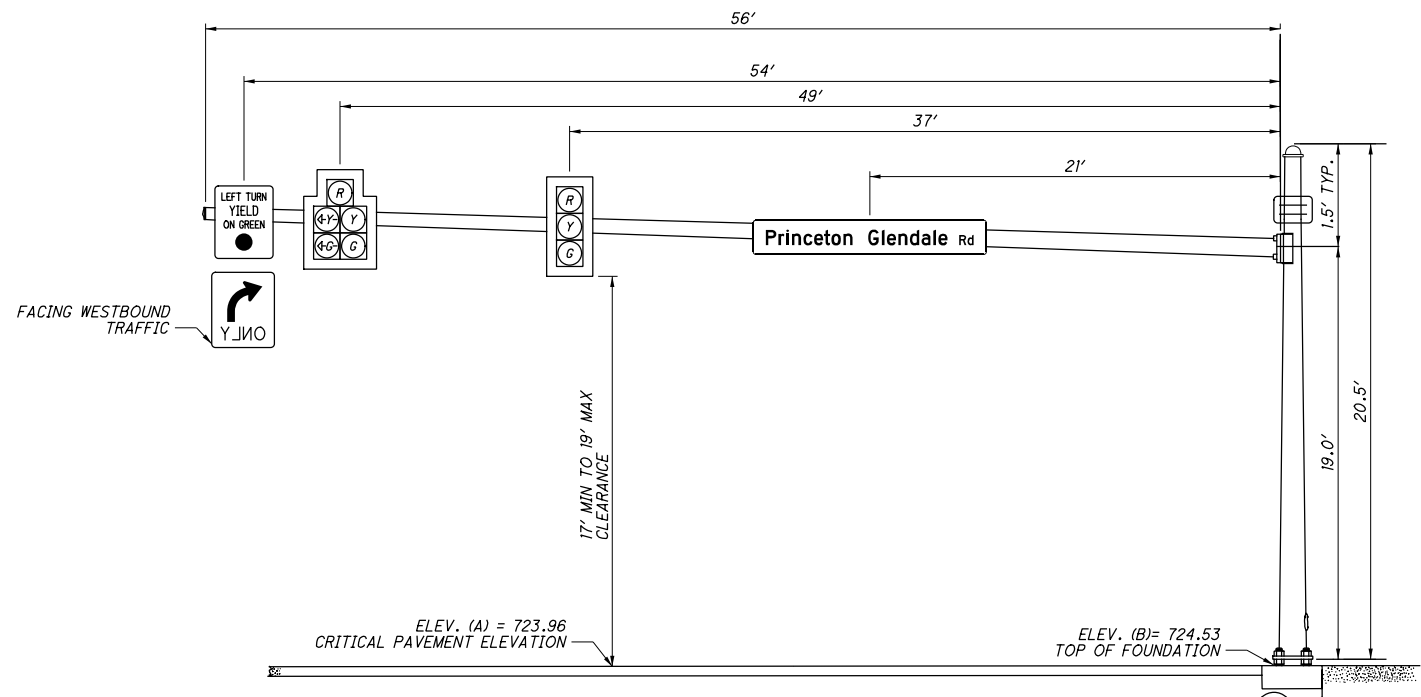
SIGNAL SUPPORT ELEVATION SP-3

TC-81.21, DESIGN #13
STA. 54+70, 50.7 RT
(LOOKING NORTHBOUND)



SIGNAL SUPPORT ELEVATION SP-2

TC-81.21, DESIGN #14
STA. 53+16, 62.1' LT
(LOOKING SOUTHBOUND)



SIGNAL SUPPORT ELEVATION SP-4

TC-81.21, DESIGN #13
STA. 53+44, 89.7' LT
(LOOKING EASTBOUND)

CALCULATED
TCS
CHECKED
MAG

**TRAFFIC SIGNAL PLAN DETAILS
SR 747 & MULHAUSER RD**

BUT-747-1.01/2.07

SUB-SUMMARY

ITEM	EXTENSION	QUANTITY	UNIT	DESCRIPTION
625	25604	126	FT	CONDUIT, 4", 725.051
625	25906	435	FT	CONDUIT, JACKED OR DRILLED, 725.051, 4"
625	29000	126	FT	TRENCH
625	30706	6	EACH	PULL BOX, 725.08, 24"
625	32000	5	EACH	GROUND ROD
630	03100	52	FT	GROUND MOUNTED SUPPORT, NO. 3 POST
630	79100	16	EACH	SIGN ATTACHMENT ASSEMBLY, MAST ARM
630	79500	4	EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED
630	80100	127.5	SQ FT	SIGN, FLAT SHEET
630	83000	15	SF	COVERING OF SIGN
632	4000	2	EACH	VEHICULAR SIGNAL HEAD, MISC.: 3-SECTION FLASHING YELLOW ARROW (POLYCARBONATE)
632	05007	6	EACH	VEHICULAR SIGNAL HEAD, (LED), BLACK, 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, WITH BACKPLATE, AS PER PLAN
632	05087	2	EACH	VEHICULAR SIGNAL HEAD, (LED), BLACK, 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, WITH BACKPLATE, AS PER PLAN
632	25000	10	EACH	COVERING OF VEHICULAR SIGNAL HEAD
632	40700	1753	FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG
632	64010	4	EACH	SIGNAL SUPPORT FOUNDATION
632	68300	43	FT	POWER CABLE, 3 CONDUCTOR, NO. 6 AWG
632	69800	265	FT	SERVICE CABLE, 3 CONDUCTOR, NO. 6 AWG
632	70001	1	EACH	POWER SERVICE, AS PER PLAN
632	77232	4	EACH	SIGNAL SUPPORT, MECHANICAL DAMPER FOR TC-82.21 MAST ARM (GREATER THAN 39' IN LENGTH), AS PER PLAN
632	80602	1	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 12
632	80620	2	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 13
632	72150	1	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 14
632	90100	1	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION
632	90104	1	EACH	REUSE OF TRAFFIC SIGNAL ITEM: PREEMPTION
632	90104	1	EACH	REUSE OF TRAFFIC SIGNAL ITEM: UBIQUITI RADIO
632	90104	1	EACH	REUSE OF TRAFFIC SIGNAL ITEM: CCTV
633	67100	1	EACH	CABINET FOUNDATION
633	67200	1	EACH	CONTROLLER WORK PAD
633	75001	1	EACH	UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN
633	99000	1	EACH	CONTROLLER ITEM, MISC.: CONTROLLER UNIT, TYPE COBALT, WITH ASC/3 SOFTWARE, WITH CABINET AND RISER, TYPE 332, AS PER PLAN
809	69000	2	EACH	ADVANCE RADAR DETECTION
809	69100	4	EACH	STOP LINE RADAR DETECTION

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TRAFFIC SIGNAL SUB-SUMMARY
SR 747 & MULHAUSER RD

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