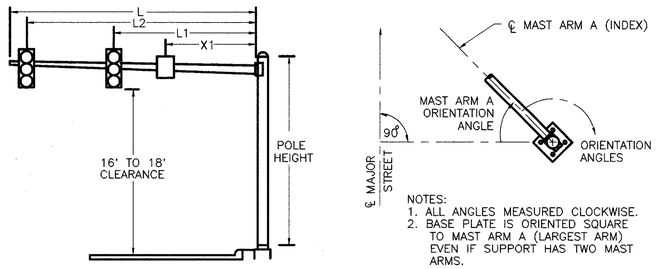
CALC. BY: DATE:	LAKE COUNTY LAK-91-4.56	OHIO
CHKD. BY: DATE:		FHWA REGION 5
		FEDERAL PROJECT



NOTES:
1. ALL ANGLES MEASURED CLOCKWISE.
2. BASE PLATE IS ORIENTED SQUARE TO MAST ARM A (LARGEST ARM) EVEN IF SUPPORT HAS TWO MAST ARMS.

	SUPPORT NO.	SIGNAL SUPPORT TC-81.20 TC-12.30: POLE DESIGN NO. TC-81.20	POLE DESIGN NO. TC-12.30	ARM DESIGN NO.	POLE HEIGHT (FT)	FOUNDATION STATION	FOUNDATION OFFSET	L (FT.)	L 1 (FT.)	L 2 (FT.)	L 3 (FT.)	L 4 (FT.)	MAST ARM A ANGLE (DEG.)	ORIENTATION ANGLES (DEG.) FROM MAST ARM "A": MAST ARM B	PEDESTRIAN SIGNALS	PEDESTRIAN PUSH BUTTONS	POWER SERVICE	CONTROLLER	LUMINAIRE BRACKET	HANDHOLE	CABLE ENTRANCE (12" FROM TOP)		
*	P1	4			21'	127+18	49'R	35	23	34			0		0	0				180			
	P2	3			21'	340+38	46'R	32	18	31		25	0							180			
	P3	4		3	21'	339+72	47'L	32	18	31		25	0							180			
				1				24	13	23				270									
*	P4	PED			8'	125+85	41'R								90/180	90/180				180			
*	P5	PED			8'	125+97	22'L								90	90				180			
*	P6	12		4	21'	126+30	33'L	35	24	34			0							180			
				3				29	16	28				270									

ORIENTATION ANGLE CHART

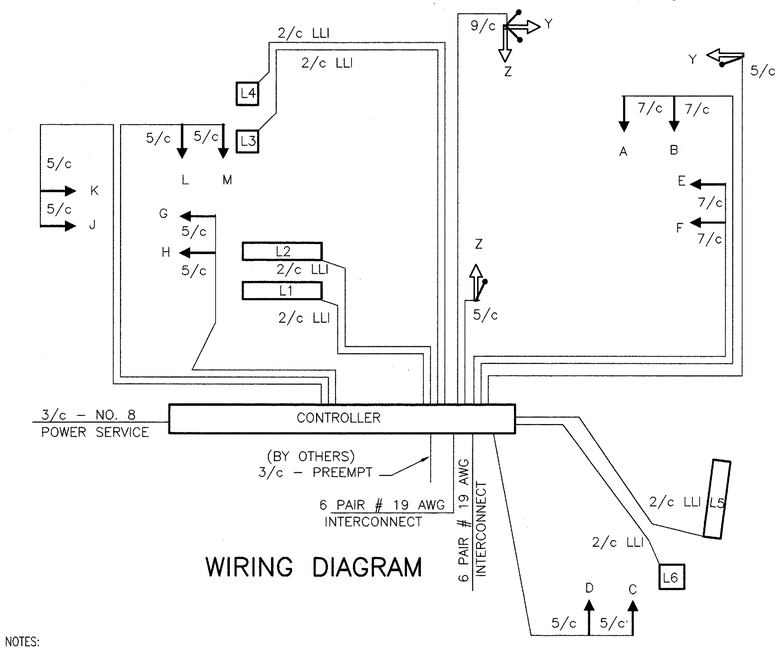
*LAKESHORE BOULEVARD IS CONSIDERED A MAJOR STREET.

FUNCTION	ø1	ø2	ø3	PRE-EMPT
MINIMUM GREEN	7	10	10	30
PED WALK	–	5	7	
PED CLEARANCE	–	25	15	
GREEN EXTENSION	3.0	3.0	5.0	
MAXIMUM GREEN	22	43	23	
YELLOW CLEARANCE	3.6	3.6	4.7	3.1
ALL RED CLEARANCE	1.8	1.8	1.1	1.6
RECALL	NONE	PED	NONE	NONE

SIGNAL TIMING

SIGNAL HEAD	ø1 R/W	ø1 CLEAR		ø2 R/W	ø2 CLEAR			ø3 R/W	ø3 CLEAR			PREEMPT R/W	PREEMPT CLEAR		FLASH
A	G/⟲G	⟲/G	G	G	G	Y	R	R	R	R	R	R	R	R	Y
B	G	G	G	G	G	Y	R	R	R	R	R	R	R	R	Y
C	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	Y
D	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	Y
E	R	R	R	R	R	R	R	G	G	Y	R	G	Y	R	R
F	R/⟳	⟳/R	R	R	R	R	R	G	G	Y	R	G/⟳	Y/⟳	R	R
G	G	G	G	G	G	G	G	G	G	G	G	R	R	R	Y
H	G	G	G	G	G	G	G	G	G	G	G	R	R	R	Y
J	G	G	G	G	G	G	G	G	G	G	G	R	R	R	Y
K	G	G	G	G	G	G	G	G	G	G	G	R	R	R	Y
L	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R
M	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R
Y-Y	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DARK
Z-Z	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK

SIGNAL DISPLAY CHART



WIRING DIAGRAM

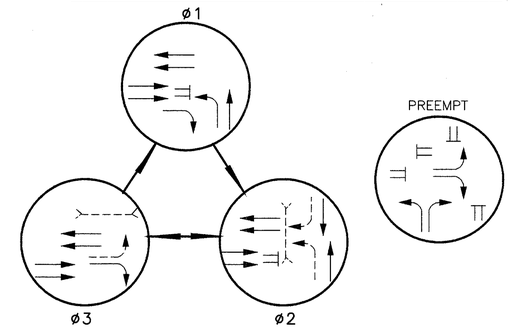
NOTES:
1. PHASE SPLITS SHALL INCLUDE ALL GREEN PLUS YELLOW & ALL RED
2. PERMISSIVES SHALL START AT THE ZERO POINT OF THE CYCLE
3. OFFSETS SHALL BE REFERENCED TO THE BEGINNING OF PHASE 1 YELLOW

	DIAL 1	DIAL 2	DIAL 3
CYCLE LENGTH	95 SEC	105 SEC	95 SEC
PHASE 1 SPLIT	28 %	26 %	28 %
PHASE 2 SPLIT	40 %	47 %	39 %
PHASE 3 SPLIT	32 %	27 %	33 %
PERMISSIVE	10 %	10 %	10 %
OFFSET	62 %	69 %	61 %
TIME OF DAY SCHEDULE	ALL OTHER TIMES	6:30AM TO 2:30PM 6:30PM TO 9:00PM MON–SAT	2:30PM TO 6:30PM MON–SAT

COORDINATION TIMING

LOOP #	SIZE	# TURNS	MODE	DELAY	UNIT #	PHASE
L1	8' x 40'	2	PRESENCE	8	1	1
L2	6' x 40'	2	PRESENCE	0	2	3
L3	6' x 6'	3	PRESENCE	0	3	SYSTEM
L4	6' x 6'	3	PRESENCE	0	4	SYSTEM
L5	6' x 30'	2	PRESENCE	0	5	1
L6	6' x 6'	3	PRESENCE	0	6	SYSTEM

LOOP DETECTOR CHART



PHASING DIAGRAM

ITEM	TOTAL	UNIT	DESCRIPTION
202	60	SQ FT	WALK REMOVED
608	60	SQ FT	4" CONCRETE WALK
625	7	EACH	GROUND ROD
625	7	EACH	PULLBOX, 18", AS PER PLAN
625	1	EACH	PULLBOX, 24", AS PER PLAN
625	250	LIN FT	CONDUIT, 2", 713.04
625	21	LIN FT	CONDUIT, 3", 713.04
625	216	LIN FT	CONDUIT, JACKED OR DRILLED UNDER PAVEMENT, 3"
625	259	LIN FT	TRENCH
625	12	LIN FT	TRENCH IN PAVED AREAS, TYPE "B"
630	2	EACH	SIGN HANGER ASSEMBLY, MAST ARM, AS PER PLAN
630	12	SQ FT	SIGN, FLAT SHEET, TYPE G
632	9	EACH	VEHICULAR SIGNAL HEAD, 3 SECT., 12" LENS, 1 WAY, AS PER PLAN
632	1	EACH	VEHICULAR SIGNAL HEAD, 5 SECT., 12" LENS, 1 WAY, AS PER PLAN
632	1	EACH	VEHICULAR SIGNAL HEAD, 3 SECT., 12" LENS, 1 WAY, OPTICALLY PROGRAMED
632	1	EACH	VEHICULAR SIGNAL HEAD, 5 SECT., 12" LENS, 1 WAY, OPTICALLY PROGRAMED
632	4	EACH	PEDESTRIAN SIGNAL HEAD, TYPE "D-2"
632	4	EACH	PEDESTRIAN PUSHBUTTON
632	4	EACH	LOOP DETECTOR UNIT, AS PER PLAN
632	1	EACH	LOOP DETECTOR UNIT, DELAY AND EXTENSION TYPE, AS PER PLAN
632	9.44	CU YD	CONCRETE FOR ANCHOR BASE FOUNDATIONS
632	1	EACH	SIGNAL SUPPORT, TYPE TC-81.20, DES. 3, WITH 32' ARM
632	1	EACH	SIGNAL SUPPORT, TYPE TC-81.20, DES. 4, 35' ARM
632	1	EACH	SIGNAL SUPPORT, TYPE TC-81.20, DES. 4, WITH MAST ARMS TYPE TC-81.20 DES. 3, 32' AND TYPE TC-81.20 DES. 1, 24'
632	1	EACH	SIGNAL SUPPORT, TYPE TC-81.20, DES. 12, WITH MAST ARMS TYPE TC-81.20 DES. 4, 35' AND TYPE TC-81.20 DES. 3, 29'
632	2	EACH	PEDESTAL, 8', TRANSFORMER BASE
632	4	EACH	CABLE SUPPORT ASSEMBLY
632	482	LIN FT	LOOP DETECTOR PAVEMENT CUTTING
632	1084	LIN FT	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG
632	450	LIN FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG
632	198	LIN FT	SIGNAL CABLE, 9 CONDUCTOR, NO. 14 AWG
632	1202	LIN FT	LOOP DETECTOR WIRE, TYPE E
632	459	LIN FT	LOOP DETECTOR LEAD-IN CABLE
632	40	LIN FT	POWER CABLE, 3 CONDUCTOR, NO. 8 AWG
632	1	EACH	CONDUIT RISER, 2" DIAM.
632	12	EACH	COVERING OF VEHICULAR SIGNAL HEADS
632	1	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN
632	1	EACH	PHONE DROP
633	10.42	SQ FT	CONTROLLER WORK PAD
633	1.85	CU YD	CONCRETE FOR CABINET FOUNDATION
633	1	EACH	CONTROLLER, ACTUATED, 3 PHASE, SOLID-STATE DIGITAL, MICROPROCESSOR, AS PER PLAN
633	1	EACH	CONTROLLER, MASTER, SOLID-STATE DIGITAL, MICROPROCESSOR, TRAFFIC RESPONSIVE, AS PER PLAN
633	1	EACH	PREEMPTION

REVISED 4-26-94