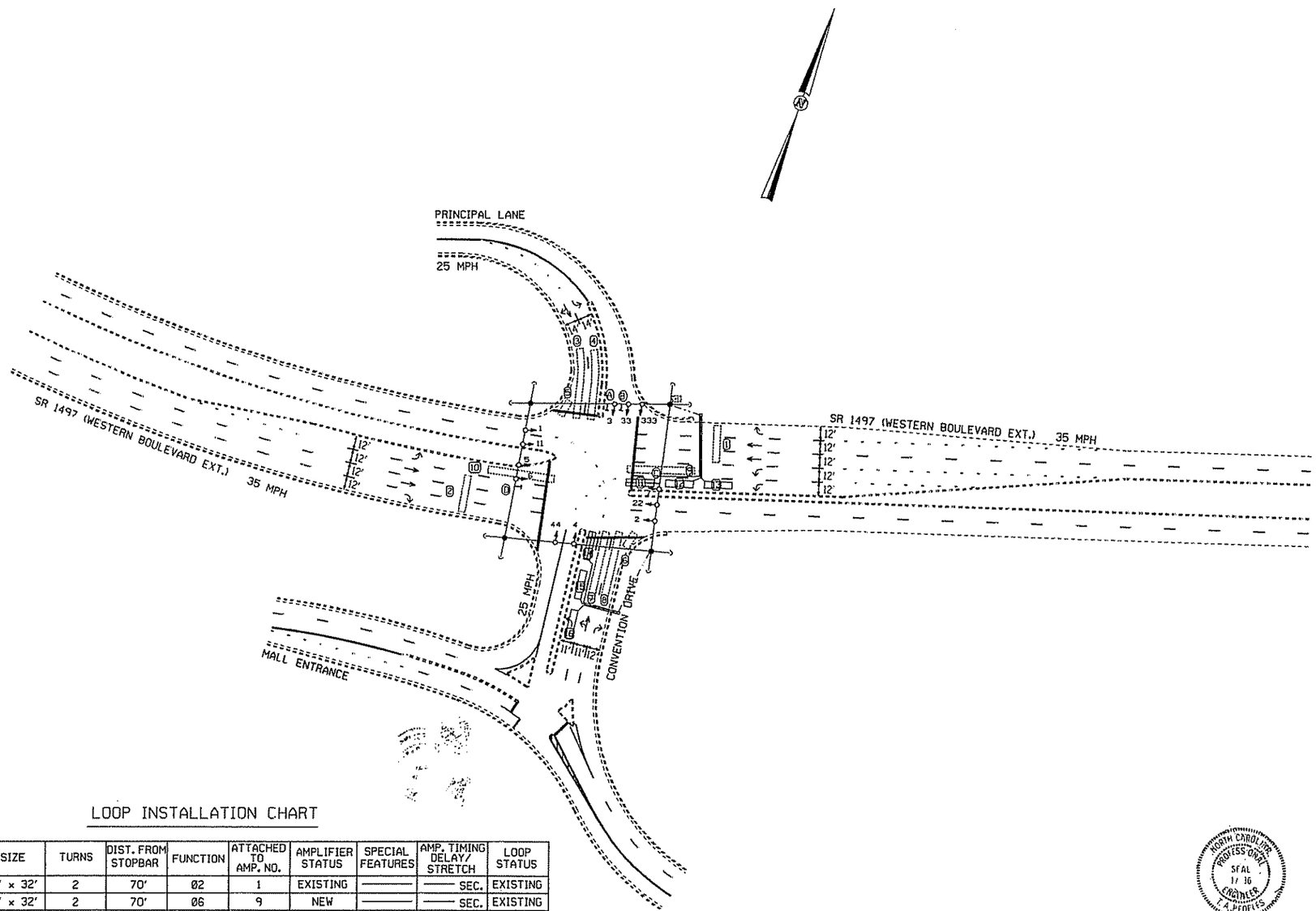
STATE	PROJECT NO.	SHEET NO	TOTAL SHEETS
N.C.	4.6332069	1	4
F. A. PROJ. NO.	N/A		
PROJECT ID. NO.	N/A		



NOTES

1. SIGNAL UPGRADE.
2. REUSE EXISTING EQUIPMENT AS SHOWN.
3. WHEN IN FLASH MODE, ALL SIGNAL FACES FOR SAME APPROACH SHALL FLASH CONCURRENTLY.
4. CONTROLLER SHOULD BE PROGRAMMED TO START UP IN PHASE 2+6 GREEN.
5. SIGNAL TO FLASH FROM 11:00 PM UNTIL 6:00 AM UNLESS OTHERWISE DIRECTED BY AREA TRAFFIC ENGINEER.
6. PAVEMENT MARKING PLANS TO BE PREPARED BY OTHERS.
7. STOPBAR LOCATIONS ON ALL APPROACHES ARE EXISTING.
8. NO COUNTS AVAILABLE.

LEGEND

PROPOSED		EXISTING
	TRAFFIC SIGNAL FACE	
N/A	MODIFIED TRAFFIC SIGNAL FACE	
	PEDESTRIAN SIGNAL FACE WITH PUSH BUTTON & SIGN	
	SIGNAL POLE WITH GUY	
	SIGNAL POLE WITH SIDEWALK GUY	
	INDUCTIVE LOOP DETECTOR	
	CONTROLLER & CABINET	
	LOOP DETECTOR PULL BOX	
	2" UNDERGROUND PVC	
	INTERCONNECT CABLE (HARDWIRE)	
	RIGHT OF WAY WITH MARKER	
	DIRECTIONAL ARROW	
	PAVEMENT MARKING ARROW	

(A) LEFT ARROW "ONLY" SIGN (30"X36") R3-5L
(B) COMBINATION VERTICAL AND LEFT ARROW SIGN (30"X36") R3-6L
(C) "LEFT TURN SIGNAL" SIGN (30"X36") R10-10L
(D) U "TURN MUST YIELD" SYMBOL SIGN (24"X30") R3-27

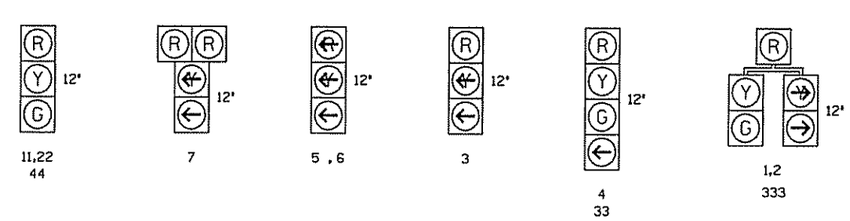
LOOP INSTALLATION CHART

LOOP NO.	SIZE	TURNS	DIST. FROM STOPBAR	FUNCTION	ATTACHED TO AMP. NO.	AMPLIFIER STATUS	SPECIAL FEATURES	AMP. TIMING DELAY/ STRETCH	LOOP STATUS
1	6' x 32'	2	70'	02	1	EXISTING	———	——— SEC.	EXISTING
2	6' x 32'	2	70'	06	9	NEW	———	——— SEC.	EXISTING
3 , 4	6' x 60'	1	5' BEYOND	04	2	EXISTING	———	——— SEC.	EXISTING
5	6' x 15'	2	5' BEYOND	04	3	EXISTING	CALL DELAY	15 SEC.	EXISTING
6	6' x 15'	2	5' BEYOND	03	4	NEW	CALL DELAY	15 SEC.	EXISTING
7	6' x 60'	1	5' BEYOND	03	5	EXISTING	———	——— SEC.	EXISTING
8	6' x 60'	1	5' BEYOND	03	6	NEW	CALL DELAY	15 SEC.	EXISTING
9	6' x 60'	1	5' BEYOND	01	7	EXISTING	———	——— SEC.	EXISTING
10	6' x 60'	1	5' BEYOND	05	8	EXISTING	———	——— SEC.	EXISTING
11	6' x 25'	2-4-2	5' BEYOND	01	10	NEW/DIGITAL	QUADRUPOLE	——— SEC.	NEW
12	6' x 25'	2	30'	01	10	NEW/DIGITAL	———	——— SEC.	NEW
13	6' x 25'	2	65'	01	10	NEW/DIGITAL	———	——— SEC.	NEW
14	6' x 25'	2-4-2	5' BEYOND	03	11	NEW/DIGITAL	QUADRUPOLE	——— SEC.	NEW
15	6' x 25'	2	30'	03	11	NEW/DIGITAL	———	——— SEC.	NEW
16	6' x 25'	2	65'	03	11	NEW/DIGITAL	———	——— SEC.	NEW

NORTH CAROLINA PROFESSIONAL SEAL 17 36 ENGINEER T.A. PEOPLES

TA Peoples 5-31-91

SIGNAL FACE I.D.



SIGNAL UPGRADE

CORR. FILE NO. 05-90-71

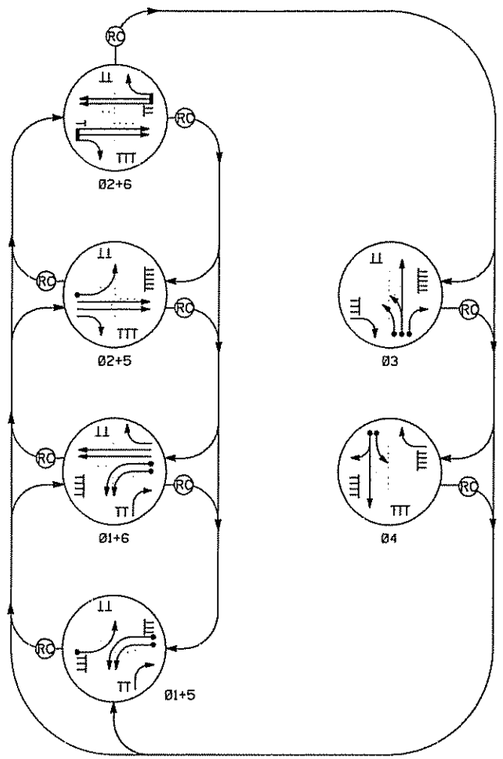
SR 1497 (WESTERN BOULEVARD EXT.)
AND
CONVENTION DRIVE - PRINCIPAL LANE

DIV. 05 WAKE COUNTY CARY

SCALE	1"=50'	N. C. DEPARTMENT OF TRANSPORTATION	REVISIONS
DATE	05-20-91		
DWG. BY	TGP	DIVISION OF HIGHWAYS	
DESIGN BY	TGP	TRAFFIC ENGINEERING BRANCH	CADD NO. tight/wd/themes/120873
APPROVED	CTA		S/G INV. NO. 05-0873

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	4.6332069	2	4
F. A. PROJ. NO.	N/A		
PROJECT ID. NO.	N/A		

PHASING DIAGRAM



60
FULLY ACTUATED
(ISOLATED)

COLOR SEQUENCE CHART

SIGNAL FACE	Ø2+6 R/W	Ø2+6 CLEAR Ø3 1	Ø2+6 CLEAR Ø3 2	Ø2+6 CLEAR Ø4 1	Ø2+6 CLEAR Ø4 2	Ø2+6 CLEAR Ø1+5 1	Ø2+6 CLEAR Ø1+5 2	Ø2+6 CLEAR Ø1+6 1	Ø2+6 CLEAR Ø1+6 2	Ø2+6 CLEAR Ø2+5 1	Ø2+6 CLEAR Ø2+5 2	Ø3 R/W	Ø3 CLEAR Ø2+6 1	Ø3 CLEAR Ø2+6 2	Ø3 CLEAR Ø4 1	Ø3 CLEAR Ø4 2	Ø3 CLEAR Ø1+5 1	Ø3 CLEAR Ø1+5 2	Ø3 CLEAR Ø1+6 1	Ø3 CLEAR Ø1+6 2	Ø3 CLEAR Ø2+5 1	Ø3 CLEAR Ø2+5 2	Ø4 R/W	Ø4 CLEAR Ø2+6 1	Ø4 CLEAR Ø2+6 2	Ø4 CLEAR Ø1+5 1	Ø4 CLEAR Ø1+5 2	Ø4 CLEAR Ø1+6 1	Ø4 CLEAR Ø1+6 2	Ø4 CLEAR Ø2+5 1	Ø4 CLEAR Ø2+5 2	Ø1+5 R/W	Ø1+5 CLEAR Ø2+6 1	Ø1+5 CLEAR Ø2+6 2	Ø1+5 CLEAR Ø1+6 1	Ø1+5 CLEAR Ø1+6 2	Ø1+5 CLEAR Ø2+5 1	Ø1+5 CLEAR Ø2+5 2	Ø1+6 R/W	Ø1+6 CLR Ø2+6 1	Ø1+6 CLR Ø2+6 2	Ø1+6 CLR Ø1+5 1	Ø1+6 CLR Ø1+5 2	Ø1+6 CLR Ø2+5 1	Ø1+6 CLR Ø2+5 2	Ø2+5 R/W	Ø2+5 CLR Ø2+6 1	Ø2+5 CLR Ø2+6 2	Ø2+5 CLR Ø1+5 1	Ø2+5 CLR Ø1+5 2	Ø2+5 CLR Ø1+6 1	Ø2+5 CLR Ø1+6 2	FLASH	SIGNAL FACE
11	G	Y	R	Y	R	Y	R	G	G	Y	R	R	—	—	—	—	—	—	—	—	—	—	R	R	—	—	—	—	—	—	—	—	R	R	—	—	—	—	—	—	R	G	G	G	Y	R	Y	R	R	—	—	—	—	—	—	R	Y	11
22	G	Y	R	Y	R	Y	R	Y	R	G	G	R	—	—	—	—	—	—	—	—	—	—	R	R	—	—	—	—	—	—	—	—	R	R	—	—	—	—	—	—	R	R	—	—	—	—	—	R	G	G	G	Y	R	Y	R	Y	22
3	R	—	—	—	—	—	—	—	—	—	—	R	←	←Y	R	←Y	R	←Y	R	←Y	R	←Y	R	R	—	—	—	—	—	—	—	—	R	R	—	—	—	—	—	—	R	R	—	—	—	—	—	R	R	—	—	—	—	—	—	R	R	3
33	R	—	—	—	—	—	—	—	—	—	—	R	G	Y	R	Y	R	Y	R	Y	R	Y	R	R	—	—	—	—	—	—	—	—	R	R	—	—	—	—	—	—	R	R	—	—	—	—	—	R	R	—	—	—	—	—	—	R	R	33
333	R	—	—	—	—	—	—	—	—	—	—	R	G/Y	Y/R	R	Y/R	R	Y/R	R	Y/R	R	Y/R	R	R	—	—	—	—	—	—	—	—	R	R/G	R	R/G	R	R/G	R	R/G	R	R	R/G	R	R/G	R	R/G	R	R	—	—	—	—	—	—	R	R	333
4	R	—	—	—	—	—	—	—	—	—	—	R	R	—	—	—	—	—	—	—	—	—	R	G	Y	R	Y	R	Y	R	Y	R	R	R	—	—	—	—	—	—	R	R	—	—	—	—	—	R	R	—	—	—	—	—	—	R	R	4
44	R	—	—	—	—	—	—	—	—	—	—	R	R	—	—	—	—	—	—	—	—	—	R	G	Y	R	Y	R	Y	R	Y	R	R	R	—	—	—	—	—	—	R	R	—	—	—	—	—	R	R	—	—	—	—	—	—	R	R	44
5 , 6	←R	—	—	—	—	—	—	—	—	—	—	←R	←R	—	—	—	—	—	—	—	—	—	←R	←R	—	—	—	—	—	—	—	—	←	←	←Y	←R	←	←	←Y	←R	←	←Y	←R	←	←	←Y	←R	←R							←R	←R	5 , 6 *
7	R	—	—	—	—	—	—	—	—	—	—	R	R	—	—	—	—	—	—	—	—	—	R	R	—	—	—	—	—	—	—	—	R	←	←Y	R	←Y	R	←	←	R	—	—	—	—	—	R	←	←Y	R	←	←	←Y	R	R	7 *
1	G/Y	Y/R	R	Y/R	Y/R	Y/R	R	G/R	G/R	Y/R	R	R	—	—	—	—	—	—	—	—	—	—	R	R/G	R/G	R/G	R/G	R	R/G	R/G	R/G	R	R	R	—	—	—	—	—	R	R/G	G/R	G/R	Y/R	R	Y/R	R	R	—	—	—	—	—	—	R	Y	1
2	G/Y	Y/R	R/G	Y/R	R	Y/R	R	Y/R	R	G/R	G/R	R/G	R/G	R/G	R/G	R	R/G	R	R/G	R	R/G	R	R	R	—	—	—	—	—	—	—	—	R	R	—	—	—	—	—	—	R	R	—	—	—	—	—	R	G/R	G/R	G/R	Y/R	R	Y/R	R	Y	2

* REFER TO NOTE 3

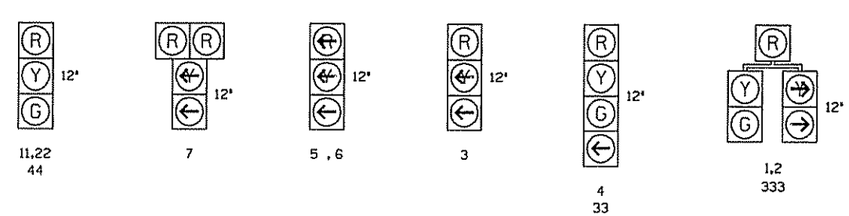
TIMING CHART

PHASE	Ø2	Ø6	Ø3	Ø4	Ø5	Ø1
MINIMUM GREEN	10 SEC.	10 SEC.	7 SEC.	7 SEC.	7 SEC.	7 SEC.
PASSAGE/GAP	3 SEC.	3 SEC.	1 SEC.	1 SEC.	1 SEC.	1 SEC.
YELLOW CLEARANCE	4.0 SEC.	4.0 SEC.	5.0 SEC.	4.5 SEC.	4.0 SEC.	4.5 SEC.
RED CLEARANCE	1.7 SEC.	1.3 SEC.	1.6 SEC.	1.6 SEC.	1.7 SEC.	1.6 SEC.
MAX. 1	40 SEC.	40 SEC.	30 SEC.	20 SEC.	20 SEC.	20 SEC.
MAX. 2	——— SEC.	——— SEC.	——— SEC.	——— SEC.	——— SEC.	——— SEC.
RECALL POSITION	MIN. RECALL	MIN. RECALL	NONE	NONE	NONE	NONE
VEHICLE CALL MEMORY	LOCK	LOCK	NONLOCK	NONLOCK	NONLOCK	NONLOCK

NORTH CAROLINA PROFESSIONAL SEAL 17416 ENGINEER T. A. PEOPLES

T.A. Peoples 5-31-91

SIGNAL FACE I.D.



SIGNAL UPGRADE

CORR. FILE NO. 05-90-71

SR 1497 (WESTERN BOULEVARD EXT.)
AND
CONVENTION DRIVE - PRINCIPAL LANE

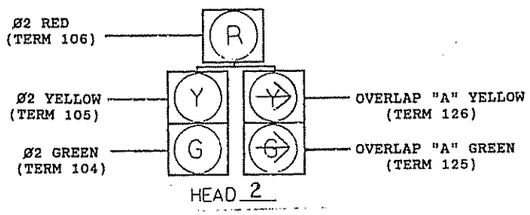
DIV. 05 WAKE COUNTY CARY

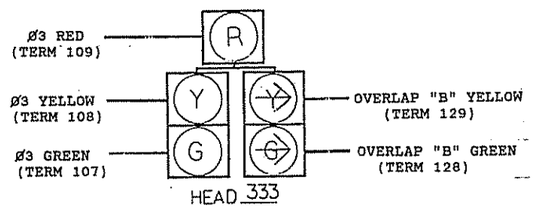
SCALE N/A	N. C. DEPARTMENT OF TRANSPORTATION	REVISIONS	
DATE 05-20-91			
DWG. BY TGP	DIVISION OF HIGHWAYS		
DESIGN BY TGP	TRAFFIC ENGINEERING BRANCH	CADD NO. highway/theme/020873	
APPROVED CBK		S/D INV. NO. 05-0873	

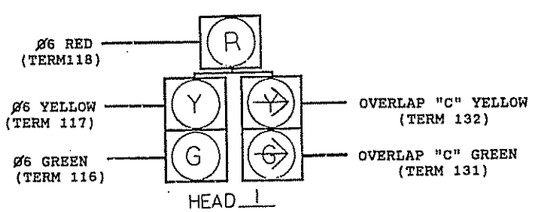
STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N. C.	4.6332069	3	5
F. A. PROJ. NO.			

5 SECTION RIGHT TURN SIGNAL WIRING DETAIL

(WIRE AS SHOWN)







CABINET WIRING NOTES

1. ADD A LOADSWTICH TO THE FOLLOWING LOADSWTICH POSITIONS: LS3, LS9, LS10, AND LS11.

   THE FOLLOWING LOADSWTICH POSITIONS SHOULD BE EMPTY: LS7, LS8, LS12, LS13, LS14, LS15, LS16.

2. PHASES 1, 5, 3, 4 AND OVERLAPS "A", "B", & "C" SHALL BE WIRED TO FLASH RED. PHASES 2 AND 6 SHALL BE WIRED TO FLASH YELLOW.

3. TO PREVENT RED FAILURE ON UNUSED MONITOR CHANNELS TIE UNUSED LOADSWITCH RED OUTPUTS TO LOADSWITCH AC+ BY MAKING THE FOLLOWING JUMPER CONNECTIONS IN A "DAISY-CHAIN" TYPE ARRANGEMENT.

   IMPORTANT: THIS JUMPER ARRANGEMENT WAS DESIGNED ASSUMING ALL UNUSED PHASES AND OVERLAPS HAVE BEEN CHANGED TO FLASH RED. IF THEY ARE NOT MADE TO FLASH RED, THIS JUMPER ARRANGEMENT WILL NOT BE VALID.

   INSTALL A JUMPER:
   FROM TERM F-21 (LS7 RED OUT) TO TERM F-22 (LS 8 RED OUT)
   FROM TERM F-22 (LS8 RED OUT) TO TERM F-36 (LS12 RED OUT)
   FROM TERM F-36 (LS12 RED OUT) TO TERM F-27 (LOADSWITCH AC+)

   NOTE: ALL FLASH TRANSFER RELAYS MUST BE IN PLACE.

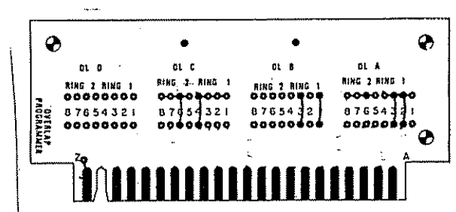
4. THE CONTROLLER SHALL BE PROGRAMMED TO "START-UP" IN PHASES 2+6 GREEN.

5. A POWER UP FLASH TIME OF 10 SECONDS SHALL BE SET AND IMPLEMENTED ON THE CONFLICT MONITOR.

FIELD CONNECTION HOOK-UP CHART

CONTR PHASE	1	2	3	4	5	6	7	8	OLA	OLB	OLC	OLD	P2	P4	P6	P8
SIGNAL HEAD NO.	5,6	2,22	3,33 333	4,44	7	1,11	NU	NU	2	333	1	NU	NU	NU	NU	NU
GREEN		104	33,333 only 107	110		116										
YELLOW		105	33,333 only 108	111		117										
RED		106	109	112	115	118										
GREEN ARROW	101		3,33 only 107	HD 4 only 110	113				125	128	131					
YELLOW ARROW	102		HD 3 only 108		114				126	129	132					
RED ARROW	103															

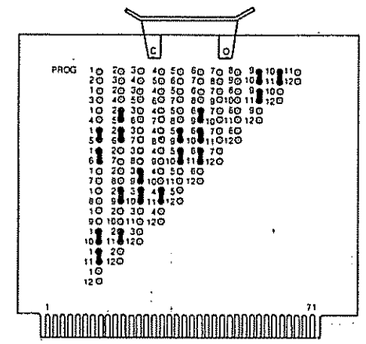
NU = NOT USED



NEMA OVERLAP PROGRAMMING CARD
(INSTALL JUMPERS AS SHOWN)

NEMA CONFLICT MONITOR PROGRAMMING CARD

(INSTALL JUMPERS SHOWN)



CABINET MANUF: CONTROL TECH.
CABINET MOUNT: BASE
LOADBAY POSITIONS: 16
PHASES USED: 1, 2, 3, 4, 5, 6,
OL/A=Ø2+3
OL/B=Ø1+3
OL/C=Ø4+6
OL/D=NU

NU = NOT USED

ALL CABINET TERMINAL DESIGNATIONS ARE FOR CONTROL TECHNOLOGIES 8 PHASE, 16 POSITION BASE MOUNTED CABINETS

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

ELECTRICAL AND PROGRAMMING DETAIL FOR:
SR 1497 (WESTERN BOULEVARD EXT.)
AND
CONVENTION DR. – PRINCIPAL LANE

DIV. 05 WAKE CO. CARY

SCALE N/A
DATE 6-6-91
CHKD. BY TDP
DESIGN BY MWH-TDP
APPROVED

N. C. DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
TRAFFIC ENGINEERING BRANCH

REVISIONS

S/G INV. NO. 05-0873