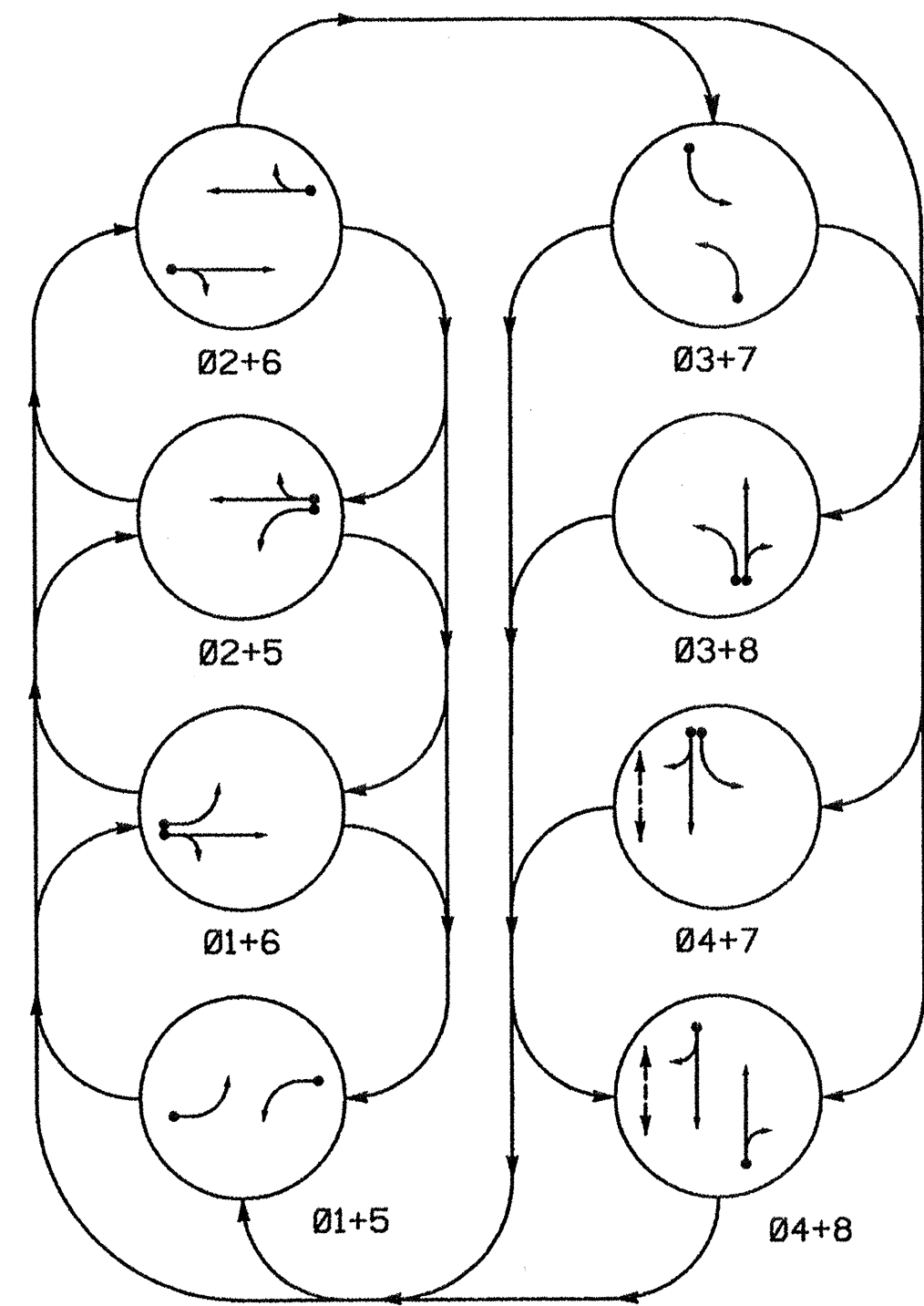


**PHASING DIAGRAM**



**PHASING DIAGRAM DETECTION LEGEND**

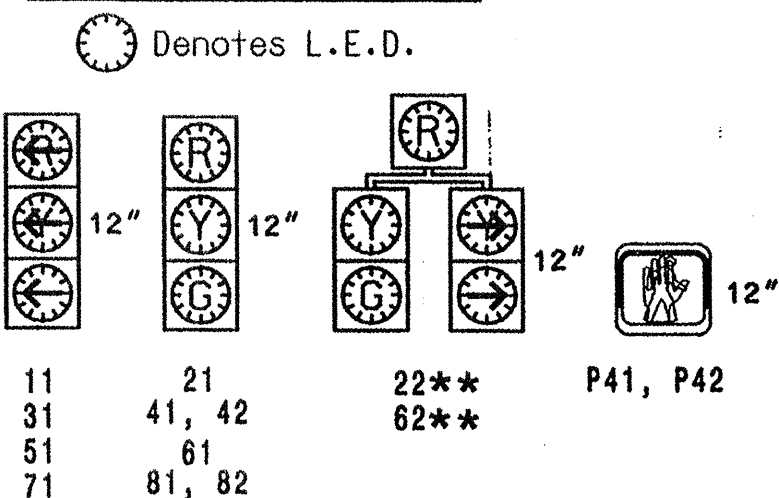
- ←●→ DETECTED MOVEMENT
- ←○→ UNDETECTED MOVEMENT (OVERLAP)
- ←---→ UNSIGNALIZED MOVEMENT
- ←-P-→ PEDESTRIAN MOVEMENT

**TABLE OF OPERATION**

SIGNAL FACE	PHASE								FLG*
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8	
11	---	---	---	---	---	---	---	---	---
21, 22	R	R	G	G	R	R	R	R	Y
31	---	---	---	---	---	---	---	---	---
41, 42	R	R	R	R	R	R	G	G	R
51	---	---	---	---	---	---	---	---	---
61, 62	R	G	R	G	R	R	R	R	Y
71	---	---	---	---	---	---	---	---	---
81, 82	R	R	R	R	R	G	G	R	R
P41, P42	DW	DW	DW	DW	DW	W	W	DRK	

\* SEE NOTE #2

**SIGNAL FACE I.D.**



\*\* - SEE NOTE #7

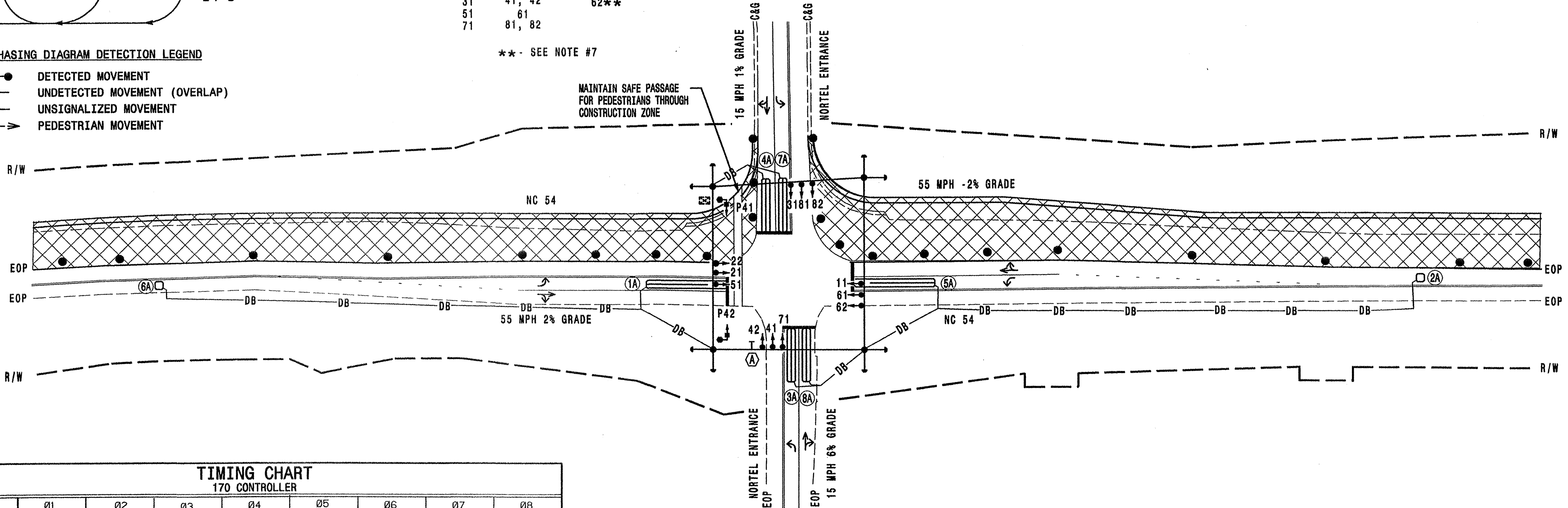
**LOOP & DETECTOR UNIT INSTALLATION CHART**  
170 CONTROLLER AND CABINET

LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW	EXISTING	NEMA PHASE	DETECTOR PROGRAMMING												
							TIMING		ATTRIBUTES								STATUS		
							DELAY	CARRY (STRETCH)	FULL TIME	CALL	RESERVED	COUNT	EXTENSION	TYPE 3	CALLING	ALTERNATE	SYSTEM LOOPS	NEW	EXISTING
1A	6X60	2-4-2	0	X	-	1	3 SEC.	-	SEC.	-	-	-	-	X	-	X	-	-	X
2A	6X6	6	420	X	-	2	-	SEC.	-	SEC.	-	-	-	X	X	-	X	-	X
3A	6X40	2-4-2	0	X	-	3	3 SEC.	-	SEC.	-	-	-	-	X	X	-	-	-	X
4A	6X40	2-4-2	0	X	-	4	10 SEC.	-	SEC.	-	-	-	-	X	X	-	-	-	X
5A	6X60	2-4-2	0	X	-	5	3 SEC.	-	SEC.	-	-	-	-	X	X	-	-	-	X
6A	6X6	6	420	X	-	6	-	SEC.	-	SEC.	-	-	-	X	X	-	-	-	X
7A	6X40	2-4-2	0	X	-	7	3 SEC.	-	SEC.	-	-	-	-	X	X	-	-	-	X
8A	6X40	2-4-2	0	X	-	8	-	SEC.	-	SEC.	-	-	-	X	X	-	-	-	X
P41, P42	-	-	-	X	-	-	-	SEC.	-	SEC.	-	X	-	-	-	-	-	-	X

**8 PHASE FULLY ACTUATED (ISOLATED)**

**NOTES**

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2002 and "Standard Specifications for Roads and Structures" dated January 2002, and all applicable sections of the latest version of the Project Special Provisions.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition existing signal heads numbered # 11, 21, 51 and 61.
4. Program all timing information into phase banks 1, 2 and 3 unless otherwise noted.
5. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
6. Set all detector units to presence mode.
7. De-energize and bag arrow signal faces on heads 22 and 62.



**LEGEND**

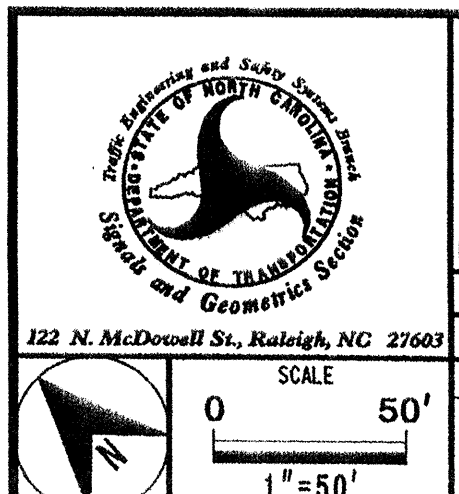
- | PROPOSED  | EXISTING  |
|---|---|
| ○→ Traffic Signal Head                            | ●→ Traffic Signal Head                            |
| ○→ Modified Signal Head                           | N/A   |
| ○→ Sign   | ○→ Sign   |
| ○→ Pedestrian Signal Head With Push Button & Sign | ○→ Pedestrian Signal Head With Push Button & Sign |
| ○→ Pedestrian Signal Pedestal                     | ○→ Pedestrian Signal Pedestal                     |
| ○→ Signal Pole with Guy                           | ○→ Signal Pole with Guy                           |
| ○→ Signal Pole with Sidewalk Guy                  | ○→ Signal Pole with Sidewalk Guy                  |
| ○→ Inductive Loop Detector                        | ○→ Inductive Loop Detector                        |
| ○→ Controller & Cabinet                           | ○→ Controller & Cabinet                           |
| ○→ Junction Box                                   | ○→ Junction Box                                   |
| ○→ 2-in Underground Conduit                       | ○→ 2-in Underground Conduit                       |
| ○→ Direct Bury                                    | N/A   |
| ○→ Right of Way with Marker                       | ○→ Right of Way with Marker                       |
| ○→ Directional Arrow                              | ○→ Directional Arrow                              |
| ○→ Pavement Marking Arrow                         | ○→ Pavement Marking Arrow                         |
| ○→ Construction Zone Drums                        | N/A   |
| ○→ Construction Zone                              | N/A   |
| ○→ "NO TURN ON RED" Sign (R10-11)                 | ○→ "NO TURN ON RED" Sign (R10-11)                 |

**TIMING CHART**  
170 CONTROLLER

PHASE	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8
MINIMUM INITIAL	7 SEC.	14 SEC.	7 SEC.	7 SEC.	7 SEC.	14 SEC.	7 SEC.	7 SEC.
VEHICLE EXTENSION	1.0 SEC.	6.0 SEC.	1.0 SEC.	1.0 SEC.	1.0 SEC.	6.0 SEC.	1.0 SEC.	1.0 SEC.
YELLOW CHANGE INT.	4.0 SEC.	5.4 SEC.	4.0 SEC.	4.0 SEC.	4.0 SEC.	5.4 SEC.	4.0 SEC.	4.0 SEC.
RED CLEARANCE	1.5 SEC.	1.5 SEC.	2.0 SEC.	2.5 SEC.	1.5 SEC.	1.5 SEC.	2.0 SEC.	2.5 SEC.
MAXIMUM LIMIT	20 SEC.	90 SEC.	20 SEC.	40 SEC.	20 SEC.	90 SEC.	20 SEC.	40 SEC.
RECALL POSITION	NONE	VEH. RECALL	NONE	NONE	NONE	VEH. RECALL	NONE	NONE
VEHICLE CALL MEMORY	NONE	YELLOW LOCK	NONE	NONE	NONE	YELLOW LOCK	NONE	NONE
DOUBLE ENTRY	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
WALK	- SEC.	- SEC.	- SEC.	7 SEC.	- SEC.	- SEC.	- SEC.	- SEC.
FLASHING DON'T WALK	- SEC.	- SEC.	- SEC.	18 SEC.	- SEC.	- SEC.	- SEC.	- SEC.
TYPE 3 LIMIT	- SEC.	- SEC.	- SEC.	- SEC.	- SEC.	- SEC.	- SEC.	- SEC.
ALTERNATE EXTENSION	- SEC.	- SEC.	- SEC.	- SEC.	- SEC.	- SEC.	- SEC.	- SEC.
ADD PER VEHICLE	- SEC.	2.5 SEC.	- SEC.	- SEC.	- SEC.	2.5 SEC.	- SEC.	- SEC.
MAXIMUM INITIAL	- SEC.	46 SEC.	- SEC.	- SEC.	- SEC.	46 SEC.	- SEC.	- SEC.
MAXIMUM GAP	1.0 SEC.	7.0 SEC.	1.0 SEC.	1.0 SEC.	1.0 SEC.	7.0 SEC.	1.0 SEC.	1.0 SEC.
REDUCE 0.1 SEC EVERY	- SEC.	1.5 SEC.	- SEC.	- SEC.	- SEC.	1.5 SEC.	- SEC.	- SEC.
MINIMUM GAP	1.0 SEC.	3.4 SEC.	1.0 SEC.	1.0 SEC.	1.0 SEC.	3.4 SEC.	1.0 SEC.	1.0 SEC.

**SIGNAL UPGRADE - TEMPORARY DESIGN TWO**

PLANS PREPARED IN THE OFFICE OF:  
**Kimley-Horn and Associates, Inc.**  
P.O. Box 33068  
Raleigh, NC 27636  
(919) 677-2000



**NC 54 AT NORTELL ENTRANCES**

DIVISION 5 DURHAM COUNTY DURHAM

PLAN DATE: JUNE 2004 REVIEWED BY: SP PENNINGTON

PREPARED BY: SP PENNINGTON REVIEWED BY: DE MARCEAU

REVISIONS: \_\_\_\_\_ INIT. DATE

DATE: 7/19/04

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

SEAL  
NORTH CAROLINA PROFESSIONAL ENGINEER  
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024910  
7/19/04  
SIG. INVENTORY NO. 05-108172