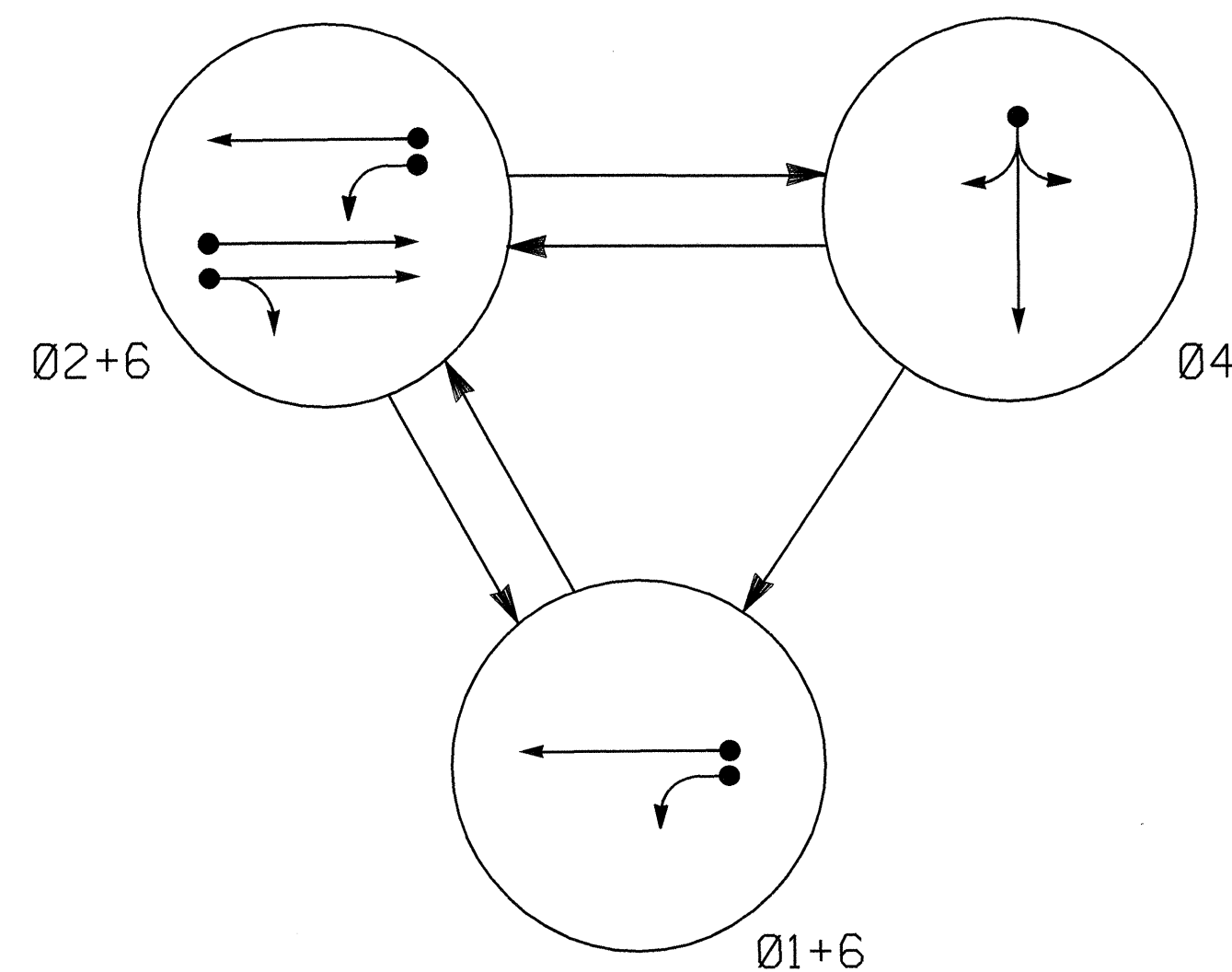


PHASING DIAGRAM



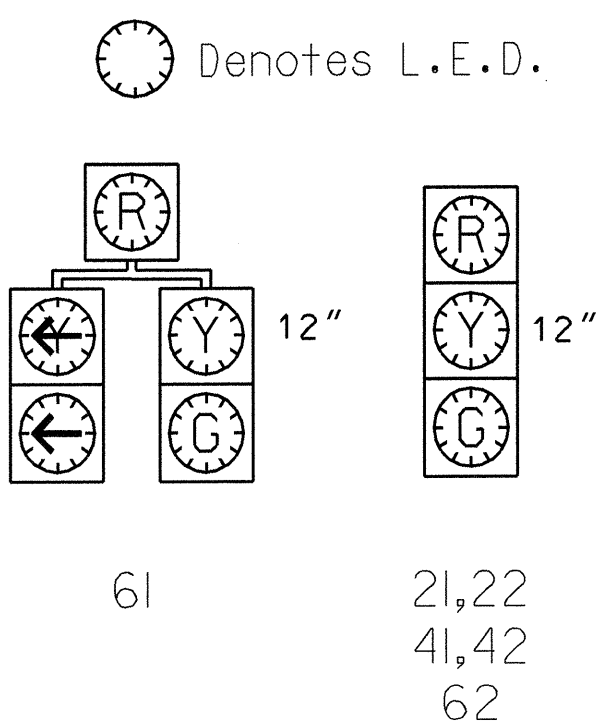
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE			
	Ø1+6	Ø2+6	Ø4	FLASH
21,22	R	G	R	Y
41,42	R	R	G	R
61	G	G	R	Y
62	G	G	R	Y

SIGNAL FACE I.D.



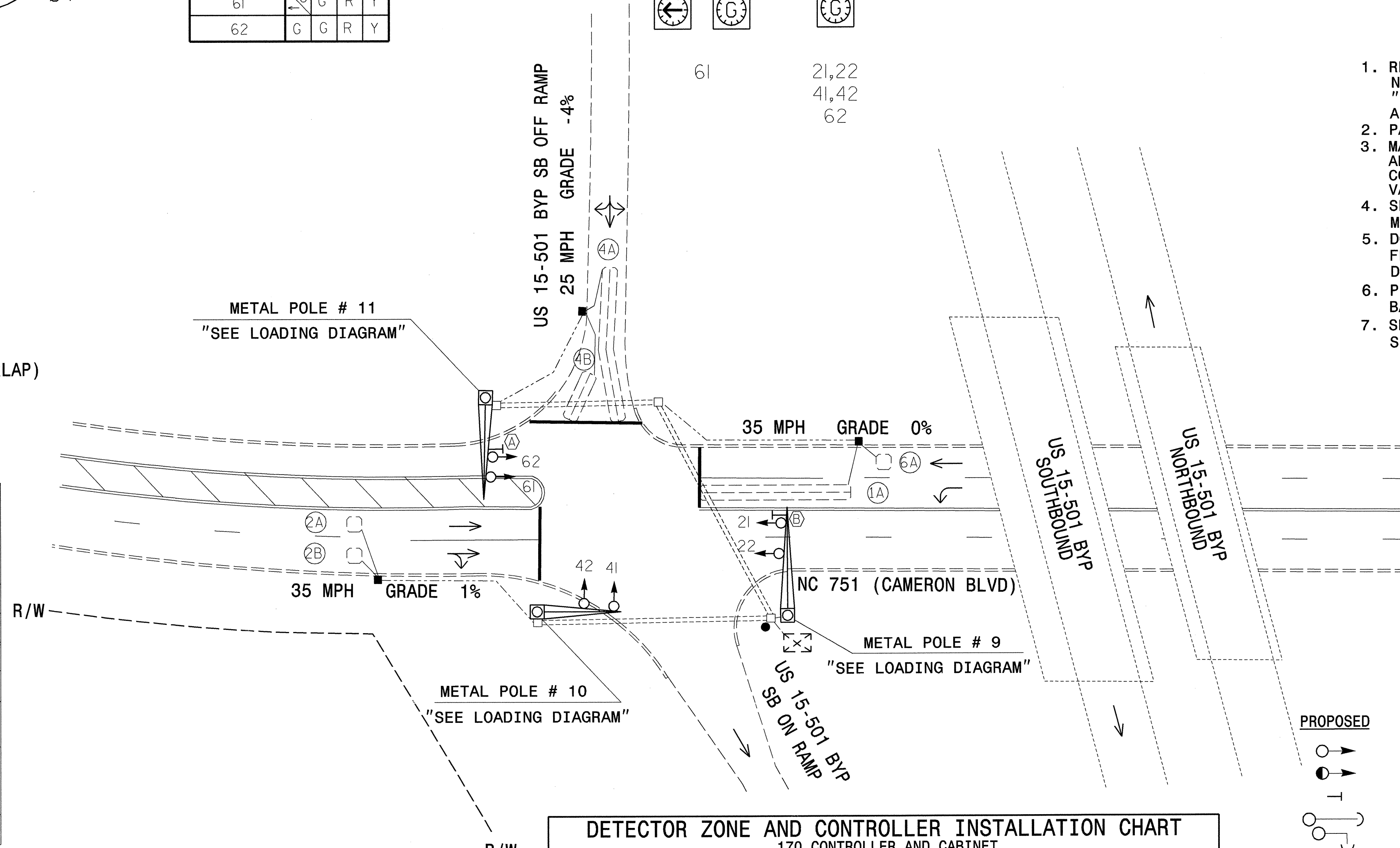
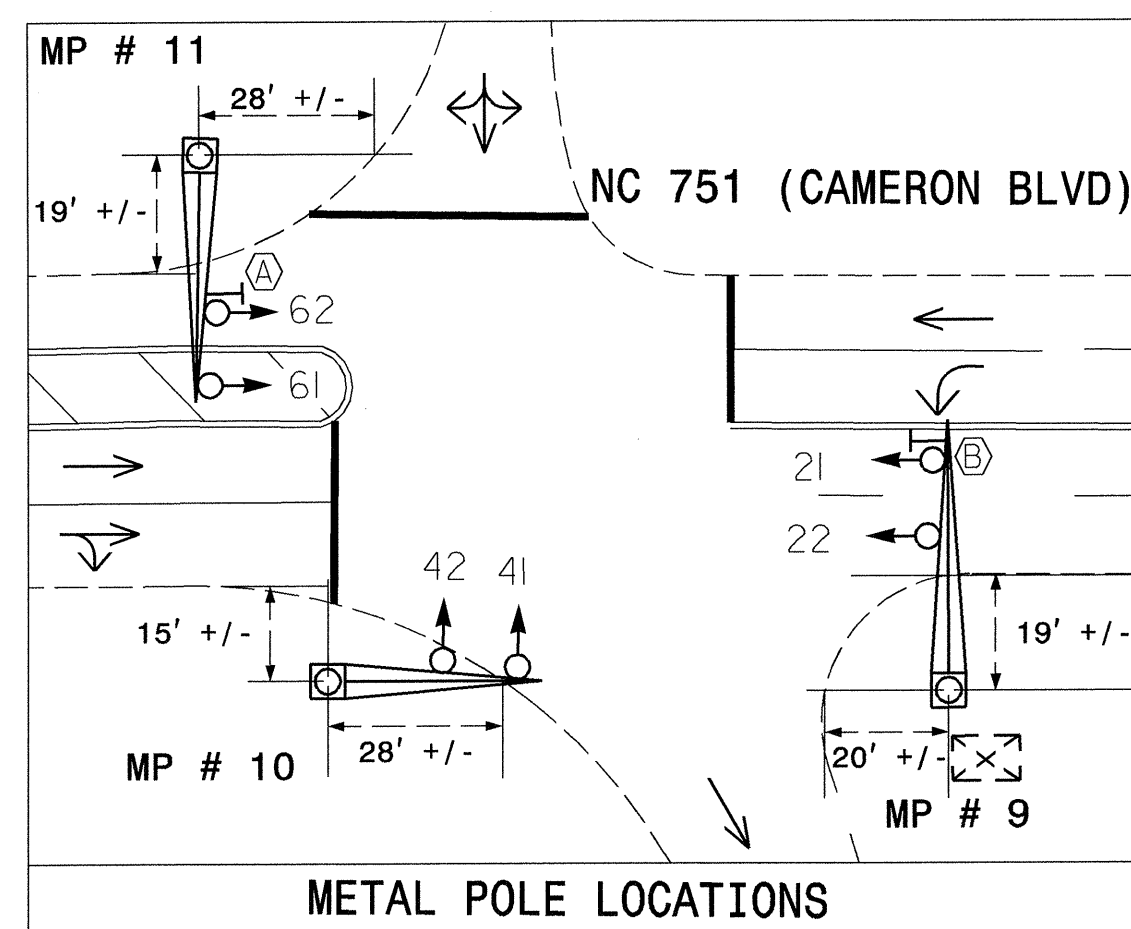
PLAN QUANTITIES

Pay Item	Feet
Signal Cable	545
Messenger Cable	—
Lead-in Cable	135

3 Phase Fully Actuated (Durham Signal System)

NOTES

- REFER TO "ROADWAY STANDARD DRAWINGS NCDOT", DATED JANUARY 2002 AND "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2002.
- PAVEMENT MARKINGS ARE EXISTING.
- MAXIMUM TIMES SHOWN IN TIMING CHART ARE FOR FREE-RUN OPERATIONS ONLY. COORDINATED SIGNAL SYSTEM TIMING VALUES SHALL SUPERSEDE THESE VALUES.
- SET ALL DETECTOR UNITS TO PRESENCE MODE.
- DO NOT PROGRAM SIGNAL FOR LATE NIGHT FLASHING OPERATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- PROGRAM ALL TIMING INFORMATION INTO PHASE BANKS 1, 2, AND 3 UNLESS OTHERWISE NOTED.
- SET PHASE BANK 3 MAXIMUM LIMIT TO 250 SECONDS FOR PHASES USED.



METAL POLE LOCATIONS

TIMING CHART  
170 CONTROLLER

PHASE	Ø1	Ø2	Ø4	Ø6
MINIMUM INITIAL	7 SEC.	10 SEC.	7 SEC.	10 SEC.
VEHICLE EXTENSION	1.0 SEC.	2.0 SEC.	1.0 SEC.	2.0 SEC.
YELLOW CHANGE INT.	4.0 SEC.	4.0 SEC.	4.0 SEC.	4.0 SEC.
RED CLEARANCE	1.0 SEC.	1.5 SEC.	1.5 SEC.	1.5 SEC.
MAXIMUM LIMIT	15 SEC.	30 SEC.	20 SEC.	30 SEC.
RECALL POSITION	NONE	VEH RECALL	NONE	VEH RECALL
VEHICLE CALL MEMORY	NONE	YELLOW LOCK	NONE	YELLOW LOCK
DOUBLE ENTRY	OFF	OFF	OFF	OFF
WALK	— SEC.	— SEC.	— SEC.	— SEC.
FLASHING DON'T WALK	— SEC.	— SEC.	— SEC.	— SEC.
TYPE 3 LIMIT	— SEC.	— SEC.	— SEC.	— SEC.
ALTERNATE EXTENSION	— SEC.	— SEC.	— SEC.	— SEC.
ADD PER VEHICLE	— SEC.	— SEC.	— SEC.	— SEC.
MAXIMUM INITIAL	— SEC.	— SEC.	— SEC.	— SEC.
MAXIMUM GAP	1.0 SEC.	2.0 SEC.	1.0 SEC.	2.0 SEC.
REDUCE 0.1 SEC EVERY	— SEC.	— SEC.	— SEC.	— SEC.
MINIMUM GAP	1.0 SEC.	2.0 SEC.	1.0 SEC.	2.0 SEC.

DETECTOR ZONE AND CONTROLLER INSTALLATION CHART  
170 CONTROLLER AND CABINET

ZONE NO.	SIZE (FT)	DIST. FROM STOPBAR (FT)	NEW EXISTING	NEMA PHASE	TIMING		ATTRIBUTES								STATUS			
					DELAY	CARRY (STRETCH)	1	2	3	4	5	6	7	8	NEW	EXISTING		
																	FULL TIME DELAY	PEDESTRIAN CALL
1A	6X60	0	X	Ø6	3 SEC.	— SEC.												X
2A	6X6	70	X	Ø2	— SEC.	— SEC.						X	X					X
2B	6X6	70	X	Ø2	— SEC.	— SEC.						X	X					X
4A	6X60	0	X	Ø4	5 SEC.	— SEC.						X	X					X
4B	6X20	0	X	Ø4	10 SEC.	— SEC.						X	X					X
6A	6X6	70	X	Ø6	— SEC.	— SEC.						X	X					X

LEGEND

- PROPOSED: Traffic Signal Head, Modified Signal Head, Signal Pole with Guy, Signal Pole with Sidewalk Guy, Inductive Loop Detector, Controller & Cabinet, Junction Box, 2" Underground Conduit, Directional Arrow, Directional Drill, 2-50 mm Polyethylene Conduit, Metal Pole with Mastarm.
- EXISTING: N/A, Signal Pole with Guy, Inductive Loop Detector, Controller & Cabinet, Junction Box, 2" Underground Conduit, Directional Arrow, Directional Drill, 2-50 mm Polyethylene Conduit, Metal Pole with Mastarm.
- Other symbols: No Right Turn Sign (R3-1), No Left Turn Sign (R3-2).

SIGNAL UPGRADE

PLANS PREPARED BY :  
**RUMMEL KLEPPER & KAHL, LLP**  
*consulting engineers*  
 5800 FARINGDON PLACE SUITE 105  
 RALEIGH, NORTH CAROLINA 27609-3960  
 FOR  
**DIVISION OF HIGHWAYS**

Prepared for the Offices of:  
  
 122 N. McDowell St., Raleigh, NC 27603

US 15-501 BYP SB RAMPS  
 AT  
 NC 751 (CAMERON BOULEVARD)  
 DIVISION 05 DURHAM COUNTY DURHAM NC  
 PLAN DATE: 08-15-04 REVIEWED BY: D.W.MORTON  
 PREPARED BY: C.B. HOLDEN RK&K PROJECT NO. 302-079-SIG6

SEAL  
  
 SIGNATURE DATE  
 9-3-04  
 SIG. INVENTORY NO. 05-1093