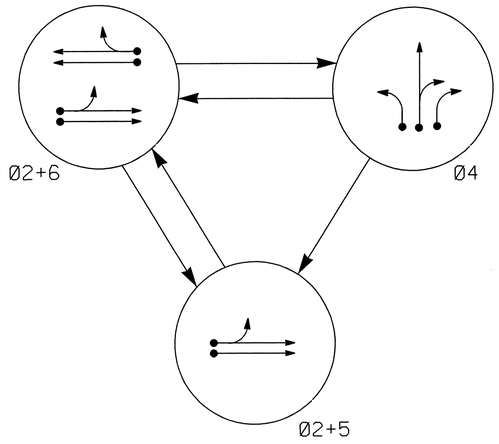
PROJECT REFERENCE NO.	SHEET NO.
B-3451	SIG. 8

PHASING DIAGRAM



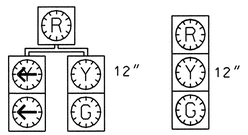
PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION				
SIGNAL FACE	PHASE Ø2+5	PHASE Ø2+6	PHASE Ø4	FLASH
21	G	G	R	Y
22	G	G	R	Y
41,42	R	R	G	R
61,62	R	G	R	Y

SIGNAL FACE I.D.

Denotes L.E.D.



21

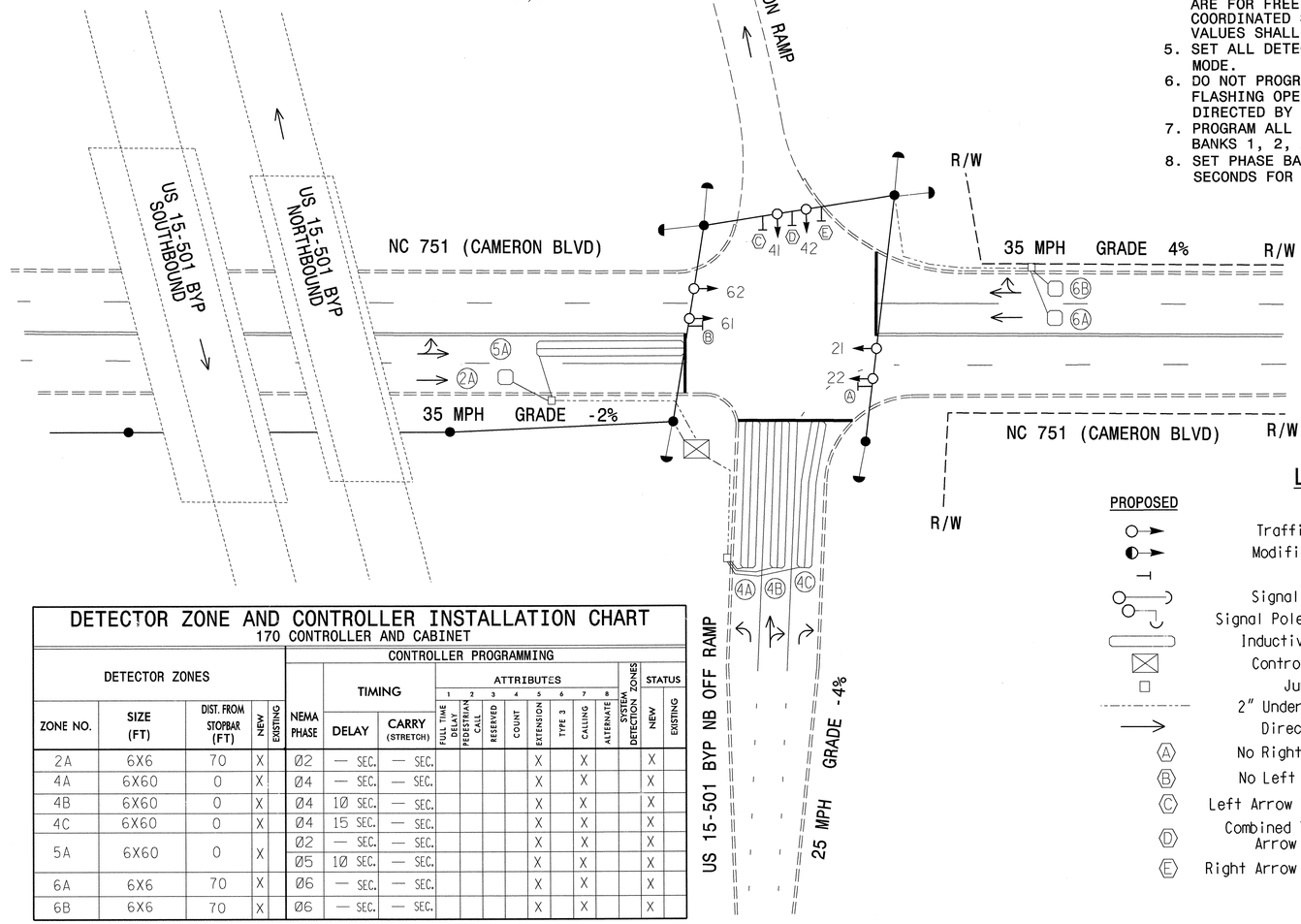
22
41,42
61,62

PLAN QUANTITIES	
Pay Item	Feet
Signal Cable	570
Messenger Cable	280
Lead-in Cable	310

3 Phase Fully Actuated (Durham Signal System)

NOTES

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



DETECTOR ZONE AND CONTROLLER INSTALLATION CHART

170 CONTROLLER AND CABINET

DETECTOR ZONES					CONTROLLER PROGRAMMING															
						TIMING		ATTRIBUTES 1 FULL TIME DELAY	2 PEDESTRIAN CALL	3 RESERVED	4 COUNT	5 EXTENSION	6 TYPE 3	7 CALLING	8 ALTERNATE	SYSTEM DETECTION ZONES	STATUS NEW	STATUS EXISTING
ZONE NO.	SIZE (FT)	DIST. FROM STOPBAR (FT)	NEW	EXISTING	NEMA PHASE	DELAY	CARRY (STRETCH)													
2A	6X6	70	X		Ø2	— SEC.	— SEC.					X		X			X	
4A	6X60	0	X		Ø4	— SEC.	— SEC.					X		X			X	
4B	6X60	0	X		Ø4	1Ø SEC.	— SEC.					X		X			X	
4C	6X60	0	X		Ø4	15 SEC.	— SEC.					X		X			X	
5A	6X60	0	X		Ø2	— SEC.	— SEC.					X		X			X	
					Ø5	1Ø SEC.	— SEC.					X		X			X	
6A	6X6	70	X		Ø6	— SEC.	— SEC.					X		X			X	
6B	6X6	70	X		Ø6	— SEC.	— SEC.					X		X			X	

TIMING CHART

170 CONTROLLER

PHASE	Ø2	Ø4	Ø5	Ø6
MINIMUM INITIAL	10 SEC.	7 SEC.	7 SEC.	10 SEC.
VEHICLE EXTENSION	2.0 SEC.	1.0 SEC.	1.0 SEC.	2.0 SEC.
YELLOW CHANGE INT.	4.0 SEC.	4.0 SEC.	4.0 SEC.	4.0 SEC.
RED CLEARANCE	1.5 SEC.	1.5 SEC.	1.5 SEC.	1.5 SEC.
MAXIMUM LIMIT	30 SEC.	20 SEC.	15 SEC.	30 SEC.
RECALL POSITION	VEH RECALL	NONE	NONE	VEH RECALL
VEHICLE CALL MEMORY	YELLOW LOCK	NONE	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	2.0 SEC.	1.0 SEC.	1.0 SEC.	2.0 SEC.
REDUCE 0.1 SEC EVERY	– SEC.	– SEC.	– SEC.	– SEC.
MINIMUM GAP	2.0 SEC.	1.0 SEC.	1.0 SEC.	2.0 SEC.

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
○—	Signal Pole with Guy	●—
○~	Signal Pole with Sidewalk Guy	
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
----	2" Underground Conduit	----
→	Directional Arrow	→
Ⓐ	No Right Turn Sign (R3-1)	Ⓐ
Ⓑ	No Left Turn Sign (R3-2)	Ⓑ
Ⓒ	Left Arrow "ONLY" Sign (R3-5L)	Ⓒ
Ⓓ	Combined Through and Right Arrow Sign (R3-6R)	Ⓓ
Ⓔ	Right Arrow "ONLY" Sign (R3-5R)	Ⓔ

TEMPORARY SIGNAL UPGRADE

PLANS PREPARED BY :
RUMMEL KLEPPER & KAHL, LLP
consulting engineers
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RALEIGH, NORTH CAROLINA 27609-3960
FOR
DIVISION OF HIGHWAYS

Prepared for the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
122 N. McDowell St., Raleigh, NC 27603

SCALE: Horiz. 0' 15' 30'

US 15-501 BYP NB 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

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 19798 ENGINEER DAVID W. MORTON

9-3-04
SIGNATURE DATE

SIG. INVENTORY NO. 05-2251T