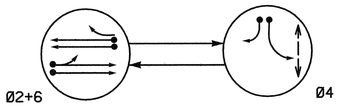
PROJECT REFERENCE NO.	SHEET NO.
U-4010	SIG. 8

2 PHASE FULLY ACTUATED (DURHAM SIGNAL SYSTEM)

PHASING DIAGRAM



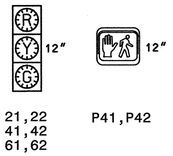
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION			
SIGNAL FACE	PHASE Ø2+6	PHASE Ø4	PHASE FLASH
21,22	G	R	Y
41,42	R	G	R
61,62	G	R	Y
P41,P42	DW	W	DRK

SIGNAL FACE I.D.

Denotes L.E.D.

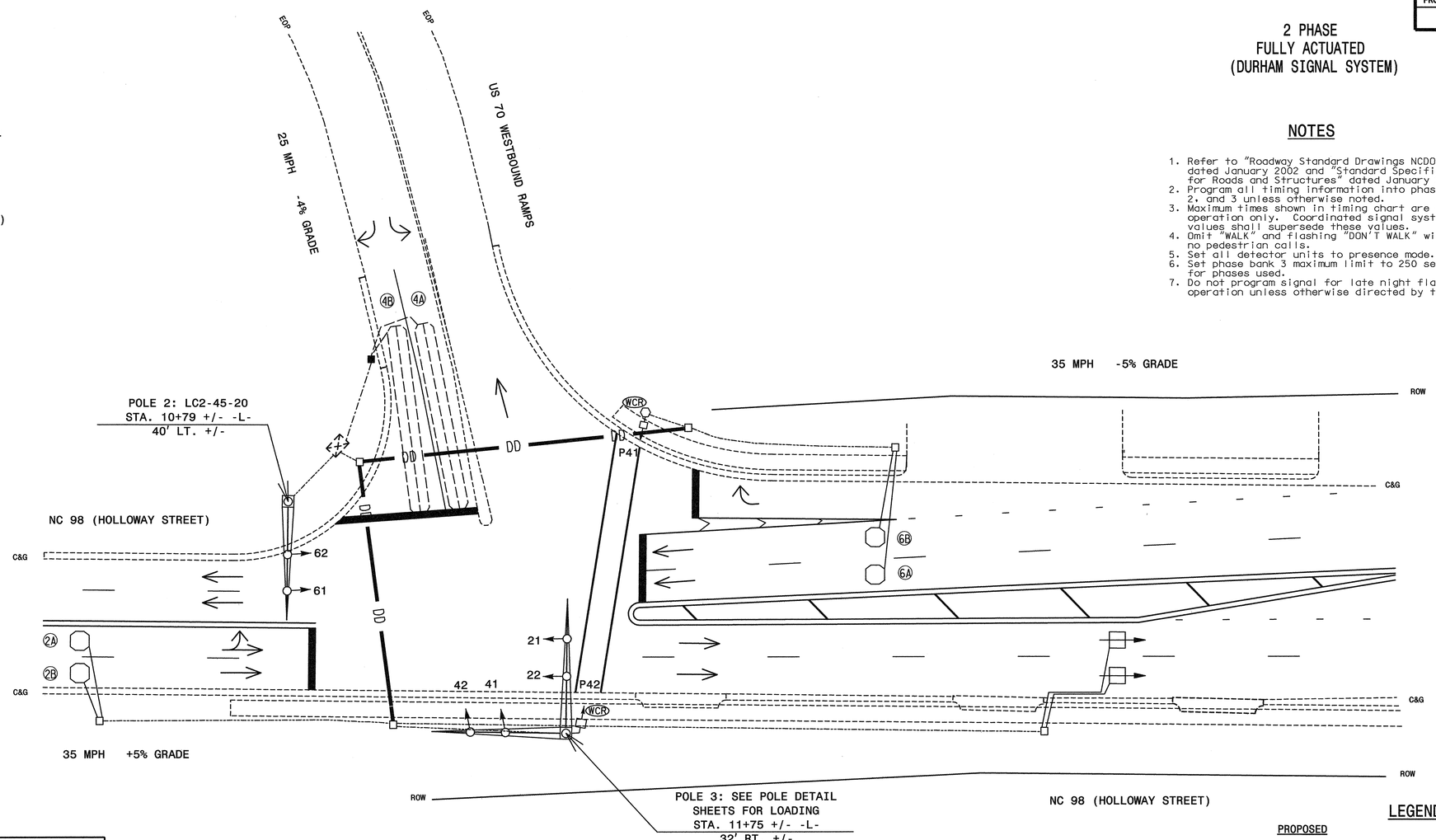


21,22
41,42
61,62

P41,P42

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2002 and "Standard Specifications for Roads and Structures" dated January 2002.
2. Program all timing information into phase banks 1, 2, and 3 unless otherwise noted.
3. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
4. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
5. Set all detector units to presence mode.
6. Set phase bank 3 maximum limit to 250 seconds for phases used.
7. Do not program signal for late night flashing operation unless otherwise directed by the engineer.



TIMING CHART
170 CONTROLLER

PHASE	Ø2	Ø4	Ø6
MINIMUM INITIAL	10 SEC.	7 SEC.	10 SEC.
VEHICLE EXTENSION	3.0 SEC.	1.0 SEC.	3.0 SEC.
YELLOW CHANGE INT.	4.0 SEC.	4.0 SEC.	4.0 SEC.
RED CLEARANCE	2.5 SEC.	1.5 SEC.	2.5 SEC.
MAXIMUM LIMIT	45 SEC.	25 SEC.	45 SEC.
RECALL POSITION	VEH. RECALL	NONE	VEH. RECALL
VEHICLE CALL MEMORY	YELLOW LOCK	NONE	YELLOW LOCK
DOUBLE ENTRY	OFF	OFF	OFF
WALK	– SEC.	4 SEC.	– SEC.
FLASHING DON'T WALK	– SEC.	18 SEC.	– SEC.
TYPE 3 LIMIT	– SEC.	– SEC.	– SEC.
ALTERNATE EXTENSION	– SEC.	– SEC.	– SEC.
ADD PER VEHICLE	– SEC.	– SEC.	– SEC.
MAXIMUM INITIAL	– SEC.	– SEC.	– SEC.
MAXIMUM GAP	3.0 SEC.	1.0 SEC.	3.0 SEC.
REDUCE 0.1 SEC EVERY	– SEC.	– SEC.	– SEC.
MINIMUM GAP	3.0 SEC.	1.0 SEC.	3.0 SEC.

LOOP & DETECTOR UNIT INSTALLATION CHART
170 CONTROLLER AND CABINET

INDUCTIVE LOOPS						DETECTOR PROGRAMMING													
							TIMING		ATTRIBUTES 1	2	3	4	5	6	7	8		STATUS	
LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW	EXISTING	NEMA PHASE	DELAY	CARRY (STRETCH)	FULL TIME DELAY	PEDESTRIAN CALL	RESERVED	COUNT	EXTENSION	TYPE 3	CALLING	ALTERNATE	SYSTEM LOOPS	NEW	EXISTING
2A,2B	6X6	4	70	X		2	SEC.	SEC.					X		X		–	X	
4A	6X60	2-4-2	0	X		4	SEC.	SEC.					X		X		–		X
4B	6X60	2-4-2	0	X		4	15 SEC.	SEC.					X		X		–		X
6A,6B	6X6	4	0	X		6	SEC.	SEC.					X		X		–	X	
P41,P42	N/A	N/A	N/A	X		4	SEC.	SEC.		X							–	X	
SYSTEM MICROLOOP PROBES			+260	X		N/A											X	X	

PLAN QUANTITIES

Pay Item	Feet
Signal Cable	1230
Messenger Cable	0
Lead-in Cable	1010

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□↓	Pedestrian Signal Head With Push Button & Sign	■↓
▷	Metal Pole with Mastarm	●
⬡	Pedestrian Signal Pedestal	⬢
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
·····	2-in Underground Conduit	·····
▬	Directional Drill	N/A
N/A	Right of Way with Marker	△
→	Directional Arrow	→
→	Pavement Marking Arrow	→

PLAN PREPARED IN THE OFFICE OF:

Kubilins
TRANSPORTATION GROUP, INC.
201 PRODUCTION DR.
2ND FLOOR
YORKTOWN, VA 23693
PH: (757) 594-1419 FAX: (757) 594-9010

SIGNAL UPGRADE - FINAL DESIGN

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

NC 98 (HOLLOWAY STREET)
AT
US 70 WESTBOUND RAMPS

DIVISION 5 DURHAM CO. DURHAM
PLAN DATE: JANUARY 2004 REVIEWED BY: MAK
PREPARED BY: CED REVIEWED BY:

SCALE 0 20 1"=20'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 17464 ENGINEER MARGARET ANN TUBILINS

SIGNATURE DATE 2/16/04

SIG. INVENTORY NO. 05-1717