PHASING DIAGRAM

Ø2+6   Ø4+8

EV Preempt Phases

EVB (Ø3+8)

SEE NOTE #10

PHASING DIAGRAM DETECTION LEGEND

- ●— DETECTED MOVEMENT
- ◄— UNDETECTED MOVEMENT (OVERLAP)
- ◄- - UNSIGNALIZED MOVEMENT
- ◄- - - PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	Ø4+8	EVB	FLASH
21	F-Y	R	R	Y
22,23	G	R	R	Y
31	R	F-Y	R	R
41	R	F-Y	F-Y	R
42,43	R	G	R	R
61	F-Y	R	R	Y
62,63	G	R	R	Y
81,82	R	G	R	R
P21,P22	W	DW	DW	DRK

SIGNAL FACE I.D.

All Heads L.E.D.

R Y F —	R Y F G	R Y G	P21,P22
12"	12"	12"	16"
21 41 61 31	22,23 42,43 62,63 81,82		

2033 EV PREEMPTION

FUNCTION	EVB (SECONDS)
DELAY BEFORE PREEMPT	0
MIN. PED. CLEAR BEFORE PREEMPT	✳
MIN. GREEN BEFORE PREEMPT	1
CLEARANCE TIME	2
PREEMPT EXTEND**	2.0

✳ See Timing Chart for Min Ped Clearance
** Program Timing on Optical Detector Unit

2033 SOFTWARE w/ 2070 CONTROLLER
LOOP & DETECTOR UNIT INSTALLATION CHART

	INDUCTIVE LOOPS						DETECTOR PROGRAMMING														
LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW	EXISTING	NEMA PHASE	DELAY	CARRY (STRETCH)	1 FULL TIME DELAY	2 PEDESTRIAN CALL	3 RESERVED	4 COUNT	5 EXTENSION	6 TYPE 3	7 CALLING	8 ALTERNATE	SYSTEM LOOPS	NEW	EXISTING	
2A	6x6	✳	70	-	✳	2	- SEC.	- SEC.	-	-	-	-	X	-	X	-	-	-	✳	
2B	6x40	✳	0	✳	-	2	- SEC.	- SEC.	-	-	-	-	X	-	X	-	-	-	✳	
4A	6x40	✳	0	✳	-	4	3 SEC.	- SEC.	-	-	-	-	X	-	X	-	-	-	✳	
4B	6x40	✳	0	✳	-	4	10 SEC.	- SEC.	-	-	-	-	X	-	X	-	-	-	✳	
6A	6x6	✳	70	-	✳	6	- SEC.	- SEC.	-	-	-	-	X	-	X	-	-	-	✳	
6B	6x40	✳	0	✳	-	6	- SEC.	- SEC.	-	-	-	-	X	-	X	-	-	-	✳	
8A	6x40	✳	0	✳	-	8	3 SEC.	- SEC.	-	-	-	-	X	-	X	-	-	-	✳	
8B	6x40	✳	0	✳	-	8	10 SEC.	- SEC.	-	-	-	-	X	-	X	-	-	-	✳	
PEDESTRIAN DETECTION																				
P21,P22	N/A	N/A	N/A	-	X	2	- SEC.	- SEC.	-	X	-	-	-	-	-	-	-	-	X	

✳ Video Detection Zone

2 Phase
Fully Actuated
W/ EV Preemption
(Durham Signal System)

NOTES

1. Refer to "Road Standard Drawings NCDOT" dated January 2012, "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Program all timing information into phase banks 1,2, and 3 unless otherwise noted.
5. Set phase bank 3 maximum limit to 250 seconds for phases used.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time.
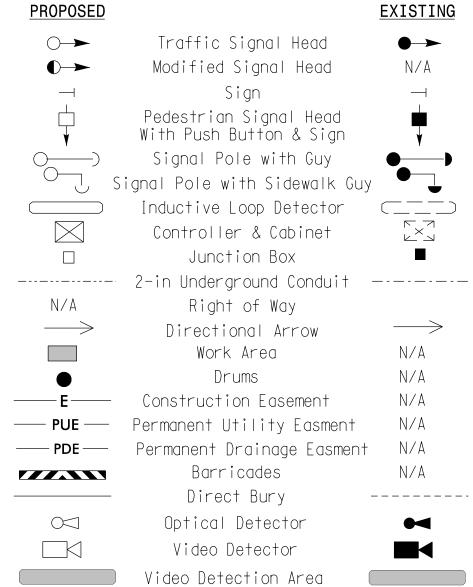8. Pavement markings are existing.
9. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
10. Upon completion of Emergency Vehicle Preemption, controller returns to normal operation.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
12. Contractor shall adjust video detection zones as required.

LEGEND

PROPOSED		EXISTING
○—●	Traffic Signal Head	●—
●—●	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	■
□	Junction Box	■
— —	2-in Underground Conduit	
N/A	Right of Way	
→	Directional Arrow	→
▨	Work Area	N/A
●	Drums	N/A
— E —	Construction Easement	N/A
— PUE —	Permanent Utility Easment	N/A
— PDE —	Permanent Drainage Easment	N/A
▨▨▨	Barricades	N/A
	Direct Bury	- - - -
◁●	Optical Detector	◄●
▭◁	Video Detector	■◄
▬	Video Detection Area	▬

TIMING CHART
2033 SOFTWARE w/2070 CONTROLLER

PHASE	Ø2	Ø3	Ø4	Ø6	Ø8	OL1	OL3	OL4
MINIMUM INITIAL *	10 SEC.	— SEC.	7 SEC.	10 SEC.	7 SEC.	0 SEC.	0 SEC.	0 SEC.
VEHICLE EXTENSION *	3.0 SEC.	— SEC.	2.0 SEC.	3.0 SEC.	2.0 SEC.			
YELLOW CHANGE INT.	3.8 SEC.	4.4 SEC.	4.4 SEC.	3.8 SEC.	4.4 SEC.	3.8 SEC.	3.8 SEC.	4.4 SEC.
RED CLEARANCE	1.5 SEC.	2.4 SEC.	1.7 SEC.	1.5 SEC.	1.7 SEC.	1.5 SEC.	1.5 SEC.	1.7 SEC.
MAXIMUM LIMIT *	50 SEC.	35 SEC.	35 SEC.	50 SEC.	35 SEC.			
RECALL POSITION	VEH. RECALL	NONE	NONE	VEH. RECALL	NONE			
VEHICLE CALL MEMORY	YELLOW LOCK	NONE	NONE	YELLOW LOCK	NONE			
DOUBLE ENTRY	OFF	OFF	ON	OFF	ON			
WALK *	4 SEC.	— SEC.	— SEC.	— SEC.	— SEC.			
FLASHING DON'T WALK	10 SEC.	— SEC.	— SEC.	— SEC.	— SEC.			
MIN PED CLEARANCE	5 SEC.	— SEC.	— SEC.	— SEC.	— SEC.			
TYPE 3 LIMIT	— SEC.	— SEC.	— SEC.	— SEC.	— SEC.			
ALTERNATE EXTENSION	— SEC.	— SEC.	— SEC.	— SEC.	— SEC.			
ADD PER VEHICLE *	— SEC.	— SEC.	— SEC.	— SEC.	— SEC.			
MAXIMUM INITIAL *	— SEC.	— SEC.	— SEC.	— SEC.	— SEC.			
MAXIMUM GAP*	3.0 SEC.	— SEC.	2.0 SEC.	3.0 SEC.	2.0 SEC.			
REDUCE 0.1 SEC EVERY *	— SEC.	— SEC.	— SEC.	— SEC.	— SEC.			
MINIMUM GAP	3.0 SEC.	— SEC.	2.0 SEC.	3.0 SEC.	2.0 SEC.			

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Map labels: NC 55 (N. Alston Ave.), Liberty St, 35 Mph, -7% Grade, +1% Grade, +3% Grade, R/W, PUE, PDE, E

Loop/detector labels: 4A, 4B, 31 81 82, 63 62 61, 6A, 2B, 2A, 21 22 23, 43 42 41, P22, P21, 6B, 10

Signal Upgrade - Temporary Design 2 (TMP Phase 1, Steps 1-10)

NC 55 (North Alston Avenue) at Liberty St

Division 5	Durham County	Durham

PLAN DATE: September 2014	REVIEWED BY: J Hochanadel
PREPARED BY: R Drayton	REVIEWED BY:

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 28430 ENGINEER JEFFREY P. HOCHANADEL

REVISIONS	INIT.	DATE

DocuSigned by: 4/02/15

SCALE: 0 ──── 40   1" = 40'

SIG. INVENTORY NO. 05-1029T2