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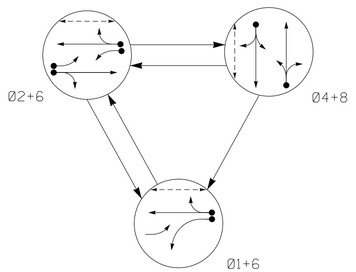
PROJECT REFERENCE NO.	SHEET NO.
U-3308	Sig. 14.0

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

PHASING DIAGRAM



EV Preempt Phases

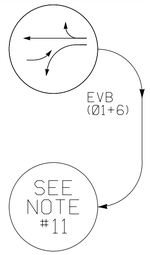


TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	Ø2+6	Ø4+8	EVB	FLASH
11	←R	←FY	←R	←	←Y
21	←FY	←FY	←R	←FY	←Y
22,23	R	G	R	R	Y
41,42	R	R	G	R	R
61,62	G	G	R	G	Y
81,82	R	R	G	R	R
P41,P42	DW	DW	W	DW	DRK
P61,P62	W	W	DW	DW	DRK

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

INDUCTIVE LOOPS						DETECTOR PROGRAMMING																
							TIMING		ATTRIBUTES											STATUS	
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
1A	6x40	✳	0	✳	-	1	15 SEC.	- SEC.	-	-	-	X	-	X	-	-	-	-	✳
						6	- SEC.	- SEC.	-	-	-	X	-	X	-	-	-	-	✳
2A	6x6	✳	70	✳	-	2	- SEC.	- SEC.	-	-	-	X	-	X	-	-	-	-	✳
2B	6x40	✳	0	✳	-	2	- SEC.	- SEC.	-	-	-	X	-	X	-	-	-	-	✳
4A	6x40	✳	0	✳	-	4	10 SEC.	- SEC.	-	-	-	X	-	X	-	-	-	-	✳
6A	6x6	✳	70	✳	-	6	- SEC.	- SEC.	-	-	-	X	-	X	-	-	-	-	✳
8A	6x40	✳	0	✳	-	8	10 SEC.	- SEC.	-	-	-	X	-	X	-	-	-	-	✳
PEDESTRIAN DETECTION																						
P41,P42	N/A	N/A	N/A	-	X	4	- SEC.	- SEC.	-	X	-	-	-	-	-	-	-	-	X
P61,P62	N/A	N/A	N/A	X	-	6	- SEC.	- SEC.	-	X	-	-	-	-	-	-	-	X	-

✳ Video Detection Zone

NOTES

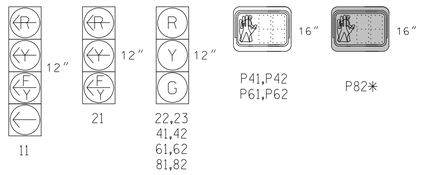
1. Refer to "Road Standard Drawings NCDOT" dated January 2012, "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Reposition signal heads #11, #21, #22, #23, #61, #62 and optical detector #10.
5. Set all detector units to presence mode.
6. Program all timing information into phase banks 1,2, and 3 unless otherwise noted.
7. Set phase bank 3 maximum limit to 250 seconds for phases used.
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
9. Program pedestrian heads to countdown the flashing "Don't Walk" time.
10. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
11. Upon completion of Emergency Vehicle Preemption, controller returns to normal operation.
12. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
13. Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.
14. Pedestrian signal head #P82 shall remain bagged and disconnected during this phase of construction.
15. Contractor shall adjust video detection zones as required.

PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

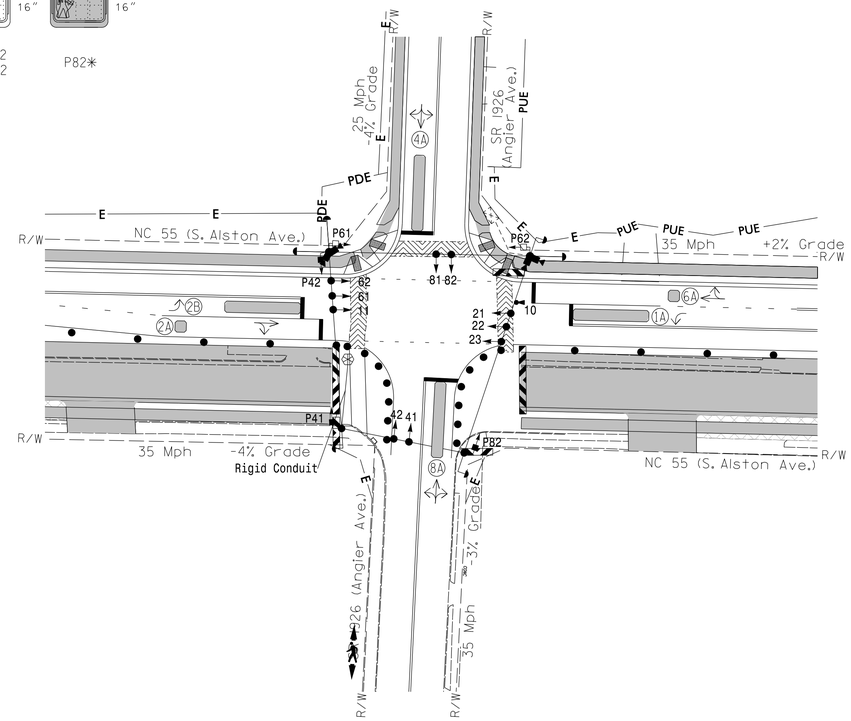
All Heads L.E.D.
✳ See Note 14



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



TIMING CHART
2033 SOFTWARE w/2070 CONTROLLER

PHASE	Ø1	Ø2	Ø4	Ø6	Ø8	OL3
MINIMUM INITIAL *	7 SEC.	10 SEC.	7 SEC.	10 SEC.	7 SEC.	0 SEC.
VEHICLE EXTENSION *	2.0 SEC.	3.0 SEC.	2.0 SEC.	3.0 SEC.	2.0 SEC.	
YELLOW CHANGE INT.	4.1 SEC.	4.1 SEC.	3.4 SEC.	4.1 SEC.	4.1 SEC.	4.1 SEC.
RED CLEARANCE	2.8 SEC.	2.1 SEC.	1.7 SEC.	2.1 SEC.	1.3 SEC.	2.1 SEC.
MAXIMUM LIMIT *	15 SEC.	50 SEC.	35 SEC.	50 SEC.	35 SEC.	
RECALL POSITION	NONE	VEH. RECALL	NONE	VEH. RECALL	NONE	
VEHICLE CALL MEMORY	NONE	YELLOW LOCK	NONE	YELLOW LOCK	NONE	
DOUBLE ENTRY	OFF	OFF	ON	OFF	ON	
WALK *	- SEC.	- SEC.	4 SEC.	4 SEC.	- SEC.	
FLASHING DON'T WALK	- SEC.	- SEC.	7 SEC.	8 SEC.	- SEC.	
MIN PED CLEARANCE	- SEC.	- SEC.	4 SEC.	4 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*	2.0 SEC.	3.0 SEC.	2.0 SEC.	3.0 SEC.	2.0 SEC.	
REDUCE 0.1 SEC EVERY *	- SEC.	- SEC.	- SEC.	- SEC.	- SEC.	
MINIMUM GAP	2.0 SEC.	3.0 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.

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	→
⊛	Type I Pushbutton Post	✣
▭	Work Area	N/A
●	Drums	N/A
E	Construction Easement	N/A
PDE	Permanent Drainage Easement	N/A
▨	Barricades	N/A
————	Rigid Conduit	----------
○	Optical Detector	●
▭	Video Detector	■
▭	Video Detection Area	▭

Signal Upgrade - Temporary Design 3 (TMP Phase 2, Steps 1-6)

SEPI ENGINEERING & CONSTRUCTION
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Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

NC 55 (South Alston Avenue) at SR 1926 (Angier Avenue)
Division 5 Durham County Durham
PLAN DATE: September 2014 REVIEWED BY: J Hochanadel
PREPARED BY: C Lawson REVIEWED BY:

SCALE 1"=40' (0 40)

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 28430 ENGINEER JEFFREY P. HOCHANADEL

DocuSigned by: 4/02/15 DATE
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SIG. INVENTORY NO. 05-1026T3

3/20/2015
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