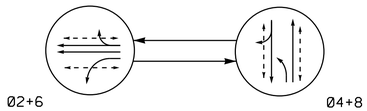
PROJECT REFERENCE NO.	SHEET NO.
W-5601GG	Sig. 1.0

2 Phase
Pre-Timed
w/ EV Preemption
(Durham Signal System)

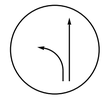
PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

EV PREEMPT PHASES



EVB
(Ø3+8)

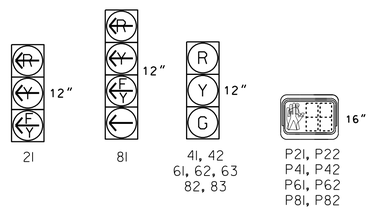
TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	PHASE EVB	PHASE FLASH
21	~~F Y~~	~~R~~	~~R~~	~~Y~~
41, 42	R	G	R	R
61, 62, 63	G	R	R	Y
81	~~R~~	~~F Y~~	~~←~~	~~R~~
82, 83	R	G	G	R
P21, P22	W	DW	DW	DRK
P41, P42	DW	W	DW	DRK
P61, P62	W	DW	DW	DRK
P81, P82	DW	W	DW	DRK

W - Walk
DW - Don't Walk
DRK - Dark

SIGNAL FACE I.D.

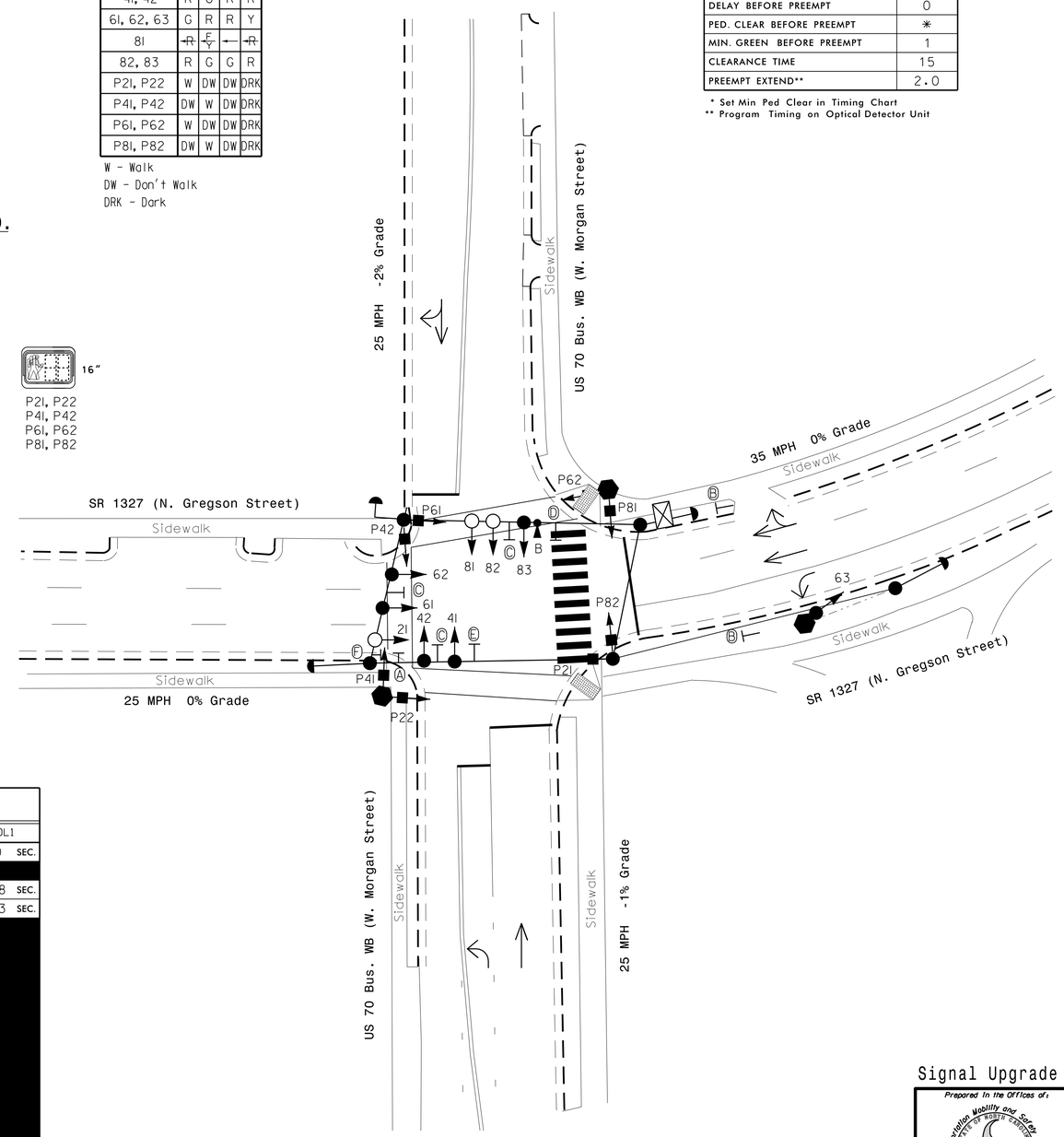
All Heads L.E.D.



2033 EMERGENCY PREEMPTION TIMING CHART

FUNCTION	EVB (3+8) SECONDS
DELAY BEFORE PREEMPT	0
PED. CLEAR BEFORE PREEMPT	*
MIN. GREEN BEFORE PREEMPT	1
CLEARANCE TIME	15
PREEMPT EXTEND**	2.0

* Set Min Ped Clear in Timing Chart
** Program Timing on Optical Detector Unit



NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "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. Renumber existing signal heads and phases as shown.
4. Reposition existing signal heads numbered 61, 62, 82, and 83.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
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. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Pavement markings are existing.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
11. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
12. Upon completion of Emergency Vehicle Preemption, controller returns to normal operation based on vehicle demand.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head	
	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 II Signal Pedestal	
	Optical Detector	
N/A	Curb Ramp	
Ⓐ	"NO TURN ON RED" Sign (R10-11)	Ⓐ
Ⓑ	"DO NOT ENTER" Sign (R5-1)	Ⓑ
Ⓒ	Street Name Sign (D3-1)	Ⓒ
Ⓓ	No Right Turn Sign (R3-1)	Ⓓ
Ⓔ	No Left Turn Sign (R3-2)	Ⓔ
Ⓕ	Left Arrow "ONLY" Sign (R3-5L)	Ⓕ

TIMING CHART
2033 SOFTWARE w/ 2070 CONTROLLER

PHASE	02	03	04	06	08	OL1
MINIMUM INITIAL *	10 SEC.	7 SEC.	7 SEC.	10 SEC.	7 SEC.	10 SEC.
VEHICLE EXTENSION *	0.0 SEC.	0.0 SEC.	0.0 SEC.	0.0 SEC.	0.0 SEC.	
YELLOW CHANGE INT.	3.8 SEC.	3.0 SEC.	3.3 SEC.	3.8 SEC.	3.3 SEC.	3.8 SEC.
RED CLEARANCE	1.3 SEC.	1.9 SEC.	1.8 SEC.	1.3 SEC.	1.8 SEC.	1.3 SEC.
MAXIMUM LIMIT *	60 SEC.	30 SEC.	30 SEC.	60 SEC.	30 SEC.	
RECALL POSITION	MAX/PED RECALL	NONE	MAX/PED RECALL	MAX/PED RECALL	MAX/PED RECALL	
VEHICLE CALL MEMORY	N/A	N/A	N/A	N/A	N/A	
DOUBLE ENTRY	OFF	OFF	ON	OFF	ON	
ADVANCE WALK	5 SEC.	– SEC.	– SEC.	– SEC.	– SEC.	
WALK *	7 SEC.	– SEC.	7 SEC.	7 SEC.	7 SEC.	
MINIMUM PED CLEAR	5 SEC.	– SEC.	5 SEC.	5 SEC.	5 SEC.	
FLASHING DON'T WALK	10 SEC.	– SEC.	6 SEC.	9 SEC.	11 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*	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	
REDUCE 0.1 SEC EVERY *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	
MINIMUM GAP	– SEC.	– SEC.	– SEC.	– SEC.	– 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.

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rzelmbo

Signal Upgrade

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Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
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Division 5 Durham County Durham

PLAN DATE: August 2016 REVIEWED BY:
PREPARED BY: C.E. carter REVIEWED BY:

SCALE 0 20 1"=20'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 026486 ENGINEER ROBERT J. ZELMBO

DocuSigned by: 10/24/2016
SIGNATURE DATE

SIG. INVENTORY NO. 05-1005