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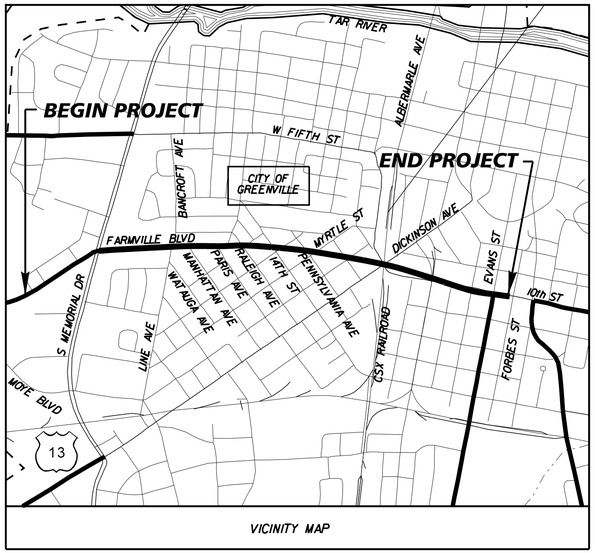
Project No.	Sheet No.
U-3315	SIG. 1.0

TIP PROJECT: U-3315

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PITT COUNTY

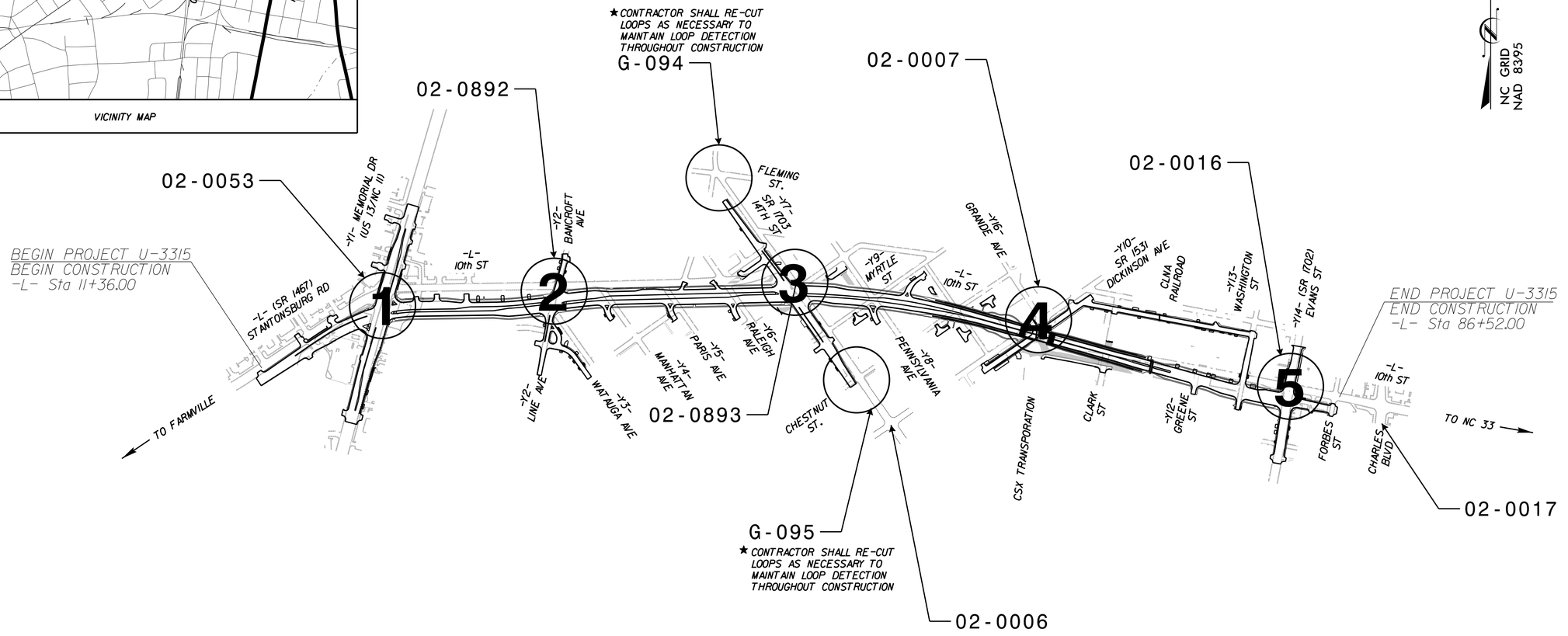


VICINITY MAP

LOCATION: ***STANTONSBURG ROAD – 10th STREET CONNECTOR FROM US 13/NC 11 (MEMORIAL DRIVE) TO SR 1702 (EVANS STREET)***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, SIGNING, SIGNALS, AND STRUCTURES***

NC GRID
NAD 83/95



Index of Plans

Sheet #	*Reference #*	*Location/Description*
Sig. 1.0	----------	*TITLE SHEET*
Sig. 1.1–1.9	*02-0053*	*US 13- NC 11-43-903(MEMORIAL DRIVE) AT SR 1200 (STANTONSBURG ROAD)/10th STREET*
Sig. 2.1–2.12	*02-0892*	*10th STREET AT BANCROFT AVENUE/LINE AVENUE*
Sig. 3.1–3.11	*02-0893*	*10th STREET AT SR 1703 (14TH STREET)*
Sig. 4.1–4.3	*02-0007*	*SR 1598/SR 1531 (DICKINSON AVENUE) AT SR 1571 (GRANDE AVENUE)*
Sig. 5.1–5.10	*02-0016*	*SR 1598 (10th STREET) AT SR 1702 (EVANS STREET)*
Sig. M1–M9	–	*METAL POLE STANDARDS*
Sig. P1–P3	–	*PUSHBUTTON DETAILS*
ITS-1	–	*CONSTRUCTION NOTES SHEET*
ITS-2 – ITS-5	–	*CABLE ROUTING SHEETS*
ITS-6 – ITS-10	–	*SPLICE DETAILS*

PLANS PREPARED BY:

Jeff M. Moore, P.E., Project Manager

Stacie Phillips, P.E., Signal Project Engineer

Stephanie Privette, P.E., ITS Engineer

Susan Pennington, Designer

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/22/2014
SIGNATURE

PLANS PREPARED FOR:

Transportation Mobility and Safety Division
Signal Design Section

750 N.Greenfield Pkwy,Garner,NC 27529

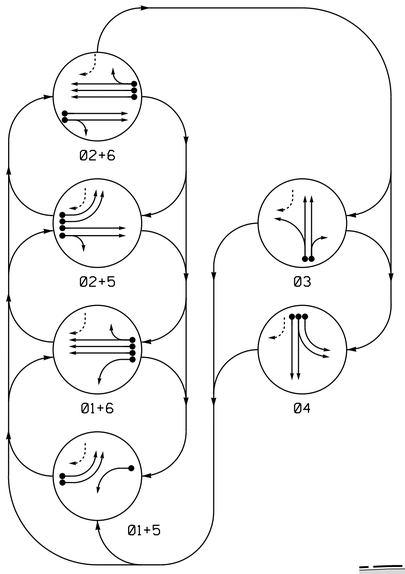
PLANS PREPARED BY:

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

9/22/2014 K:\RAL_Roadway\011036175 (U-3315\Traffic Signals\S4 - Signal Design\u3315-140829-tshdgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 1.1

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

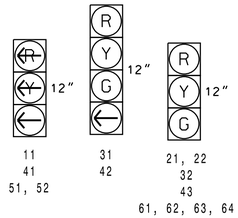
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE						
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3	Ø4	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R	Y
31	~~R~~	~~R~~	~~R~~	~~R~~	G ←	~~R~~	~~R~~
32	R	R	R	R	G	R	R
41	R	R	R	R	R	←	R
42	R	R	R	R	R	G ←	R
43	R	R	R	R	R	G	R
51, 52	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~
61,62,63,64	R	G	R	G	R	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.



NEMA LOOP & DETECTOR INSTALLATION CHART

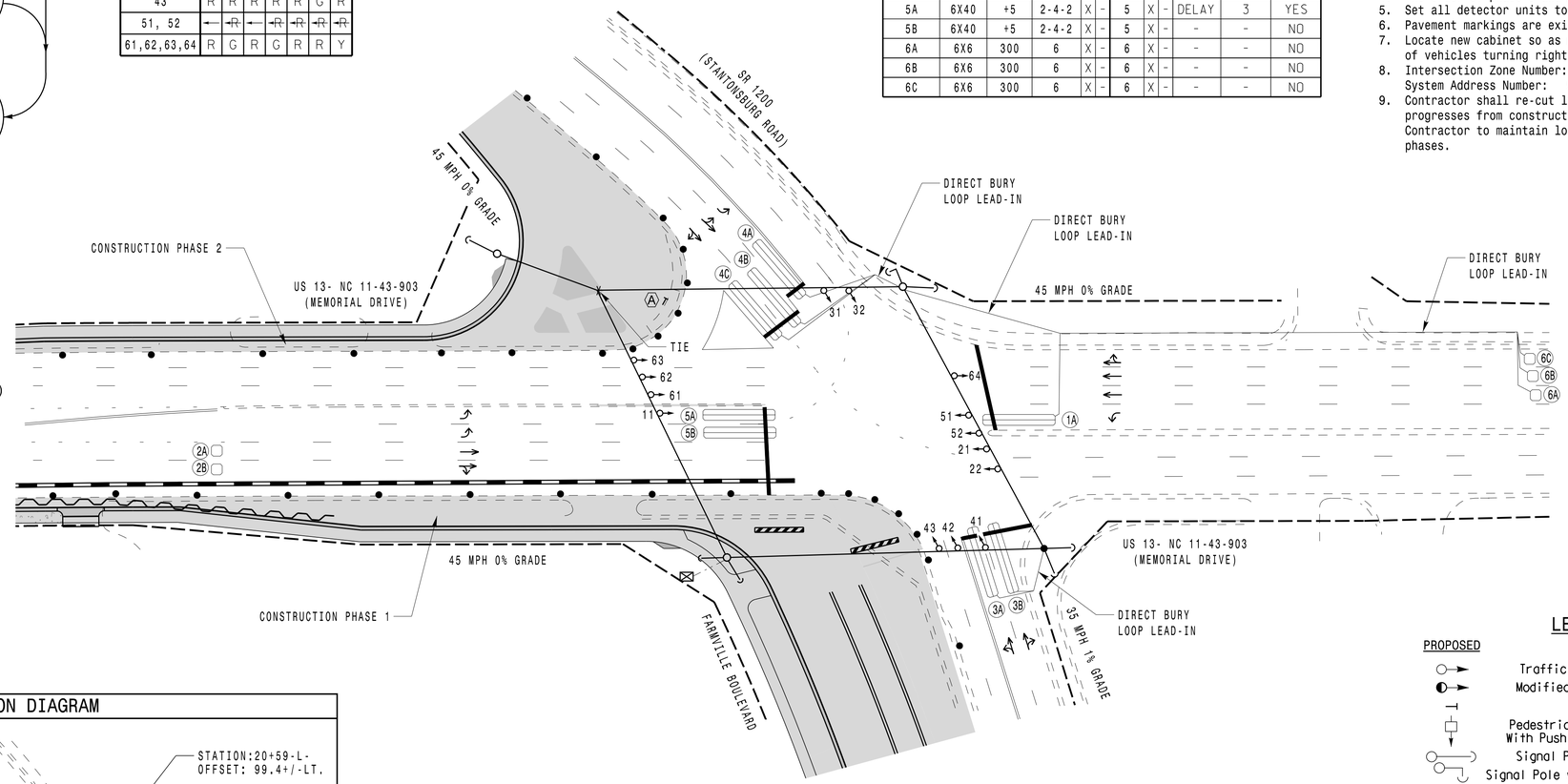
with TS-2 CABINET

INDUCTIVE LOOPS						DETECTOR UNITS					
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	NEMA PHASE	NEW	EXISTING	TIMING FEATURE	TIMING TIME	INHIBIT DELAY DURING GREEN?
1A	6X40	+5	2-4-2	X	-	1	X	-	-	-	NO
2A	6X6	300	4	X	-	2	X	-	-	-	NO
2B	6X6	300	4	X	-	2	X	-	-	-	NO
3A	6X40	+5	2-4-2	X	-	3	X	-	DELAY	3	YES
3B	6X40	+5	2-4-2	X	-	3	X	-	DELAY	10	YES
4A	6X40	+5	2-4-2	X	-	4	X	-	DELAY	3	YES
4B	6X40	+5	2-4-2	X	-	4	X	-	-	-	NO
4C	6X40	+5	2-4-2	X	-	4	X	-	-	-	NO
5A	6X40	+5	2-4-2	X	-	5	X	-	DELAY	3	YES
5B	6X40	+5	2-4-2	X	-	5	X	-	-	-	NO
6A	6X6	300	6	X	-	6	X	-	-	-	NO
6B	6X6	300	6	X	-	6	X	-	-	-	NO
6C	6X6	300	6	X	-	6	X	-	-	-	NO

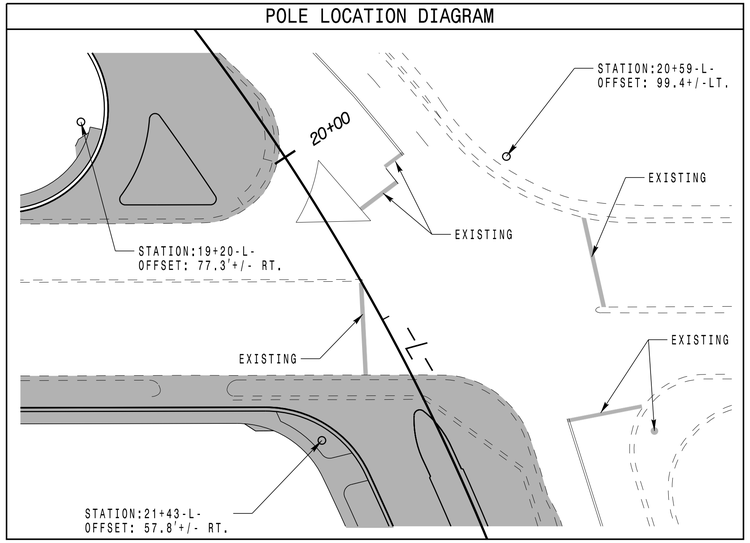
6 PHASE FULLY ACTUATED (GREENVILLE CITY SYSTEM)

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. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Pavement markings are existing.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Intersection Zone Number: 11
   System Address Number: 53
9. Contractor shall re-cut loops 2A, 2B and 2C as construction progresses from construction phase 1 to construction phase 2. Contractor to maintain loops during all construction phases.



POLE LOCATION DIAGRAM



ASC3 NEMA TIMING CHART

FEATURE	PHASE					
	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
MINIMUM GREEN *	7 SEC.	12 SEC.	7 SEC.	7 SEC.	7 SEC.	12 SEC.
PASSAGE/GAP *	2.0 SEC.	6.0 SEC.	2.0 SEC.	2.0 SEC.	2.0 SEC.	6.0 SEC.
YELLOW CHANGE INT.	3.0 SEC.	4.5 SEC.	3.8 SEC.	4.5 SEC.	3.0 SEC.	4.5 SEC.
RED CLEARANCE	2.1 SEC.	1.8 SEC.	2.9 SEC.	2.2 SEC.	2.8 SEC.	1.9 SEC.
MAXIMUM 1 *	30 SEC.	90 SEC.	45 SEC.	30 SEC.	30 SEC.	90 SEC.
RECALL POSITION	NONE	MIN. RECALL	NONE	NONE	NONE	MIN. RECALL
VEHICLE CALL MEMORY	NONLOCK	LOCK	NONLOCK	NONLOCK	NONLOCK	LOCK
WALK *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
FLASHING DON'T WALK	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
VOLUME DENSITY	OFF	ON	OFF	OFF	OFF	ON
ACTUATION B4 ADD *	– VEH.	0 VEH.	– VEH.	– VEH.	– VEH.	0 VEH.
SEC. PER ACTUATION *	– SEC.	1.0 SEC.	– SEC.	– SEC.	– SEC.	1.0 SEC.
MAX. INITIAL *	– SEC.	34 SEC.	– SEC.	– SEC.	– SEC.	34 SEC.
TIME B4 REDUCTION *	– SEC.	15 SEC.	– SEC.	– SEC.	– SEC.	15 SEC.
TIME TO REDUCE *	– SEC.	45 SEC.	– SEC.	– SEC.	– SEC.	45 SEC.
MINIMUM GAP	– SEC.	3.0 SEC.	– SEC.	– SEC.	– SEC.	3.0 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	→
DD	Directional Drill	N/A
Ⓐ	"YIELD" Sign (R1-2)	Ⓐ
▭	Construction Zone	▭
●- - -	Construction Zone Drums	●- - -

TEMPORARY DESIGN 1 - TMP PHASE 1

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

Prepared For: Transportation Mobility and Safety Division, STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

US 13- NC 11-43-903(MEMORIAL DRIVE)
AT
SR 1200 (STANTONSBURG ROAD)/
FARMVILLE BOULEVARD
DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON REVIEWED BY:

SCALE 0 40' 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

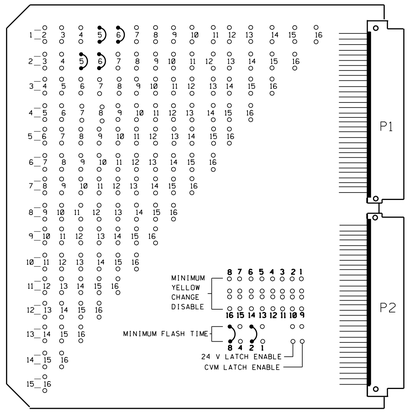
DocuSigned by: Stacie Phillips 9/2/2014
0C87A50ED0D0B437
SIGNATURE DATE

SIG. INVENTORY NO. 02-0053T1

8/29/2014 10:56:07 AM susan.pennington K:\RAL_Roadway\01103617S (U-3315)\Traffic Signals\SG4 - Signal Design*-02-0053 Memorial*.1 020053-140829gT1.dgn

EDI MODEL MMU2-16LE
MALFUNCTION MANAGEMENT UNIT
PROGRAMMING DETAIL

(program card and tables as shown below)



MMU PROGRAMMING CARD

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	ENABLE
2	ENABLE
3	ENABLE
4	ENABLE
5	ENABLE
6	ENABLE
7	DISABLE
8	DISABLE
9	DISABLE
10	DISABLE
11	DISABLE
12	DISABLE
13	DISABLE
14	DISABLE
15	DISABLE
16	DISABLE

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDgaurd	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF
VM 3x/Day Latch	ON

FLASHING YELLOW ARROW	
CONFIG MODE	A
ENABLE CHANNEL PAIR, FYA	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
RED/YEL INPUT ENABLE	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
FLASH RATE FAULT	OFF
FYA TRAP DETECT	OFF

MMU PROGRAMMING NOTE

ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

NOTES

1. To prevent "Flash-conflict" problems, wire all unused load switches to flash red. Verify that signal heads flash in accordance with the signal plans.
2. To prevent red failures on unused monitor channels, tie unused load switch red outputs 7,8,9,10,11,12,13,14 15 and 16 to load switch AC+ by inserting a jumper plug in the unused load switch socket from pin 1 (LS AC+) to pin 3 (red out). Make sure all flash transfer relays are in place.
3. Program controller to start up in phases 2 and 6 green.
4. Set power-up flash time to 10 seconds and implement on the Malfunction Management Unit. Set controller power-up flash time to 0 seconds.
5. Enable simultaneous gap-out feature, on controller unit, for all phases.
6. Program detectors in accordance with the manufacturer's instructions to accomplish the detection schemes shown on the signal design plans.
7. Program detector call delay and extension timing on the controller, unless otherwise specified.
8. Set all detector card unit channels to "presence" mode.
9. Program phases 2 and 6, on controller unit, for volume density operation.
10. This controller and cabinet are part of the Greenville Signal System.

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 1.2

SIGNAL HEAD HOOK-UP CHART

PHASE	1	2	3		4			5	6	7	8	2 PED	4 PED	6 PED	8 PED	OLA	OLB	OLC	OLD
SIGNAL HEAD NO.	11	21,22	31	32	41	42	43	51,52	61,62 63,64	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
RED		2R	3R	3R		4R	4R		6R										
YELLOW		2Y	3Y	3Y		4Y	4Y		6Y										
GREEN		2G	3G	3G		4G	4G		6G										
RED ARROW	1R				4R			5R											
YELLOW ARROW	1Y				4Y			5Y											
ARROW	1G		3G		4G	4G		5G											
WALK																			
DON'T WALK																			

EQUIPMENT INFORMATION

CONTROLLER.....ECONOLITE ASC/3
CABINET .....NC-8A [TS-2]
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....1.2.3.4.5.6
PHASES USED.....1.2.3.4.5.6
OLA.....NOT USED
OLB.....NOT USED
OLC.....NOT USED
OLD.....NOT USED

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW.
PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

DETECTOR RACK #1

BIU	CH1 L3 ø2	CH1 L1 ø1	CH1 L7 ø3	CH1 L5 NOT USED	CH1 L11 ø5	CH1 L9 ø4	CH1 L15 ø6	CH1 L13 ø6	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	CH2 L4 ø2	CH2 L2 NOT USED	CH2 L8 ø3	CH2 L6 NOT USED	CH2 L12 ø5	CH2 L10 ø4	CH2 L16 NOT USED	CH2 L14 ø6			

DETECTOR RACK #2

BIU	SLOT EMPTY	CH1 L17 ø4 CH2 L18 NOT USED	SLOT EMPTY	SLOT EMPTY

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS
1A	L1A,L1B
–	L2A,L2B
2A	L3A,L3B
2B	L4A,L4B
–	L5A,L5B
–	L6A,L6B
3A	L7A,L7B
3B	L8A,L8B
4A	L9A,L9B
4B	L10A,L10B
5A	L11A,L11B
5B	L12A,L12B
6A	L13A,L13B
6B	L14A,L14B
6C	L15A,L15B
–	L16A,L16B
4C	L17A,L17B
–	L18A,L18B
–	L19A,L19B
–	L20A,L20B
–	L21A,L21B
–	L22A,L22B
–	L23A,L23B
–	L24A,L24B

NOTE
BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	ø 1	–	–
2	–	–	–
3	ø 2	–	–
4	ø 2	–	–
5	–	–	–
6	–	–	–
7	ø 3	DELAY	3
8	ø 3	–	–
9	ø 4	DELAY	3
10	ø 4	DELAY	10
11	ø 5	DELAY	3
12	ø 5	–	–
13	ø 6	–	–
14	ø 6	–	–
15	ø 6	–	–
16	–	–	–
17	ø 4	–	–
18	–	–	–
19	–	–	–
20	–	–	–
21	–	–	–
22	–	–	–
23	–	–	–
24	–	–	–

LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	ø1
2	ø2
3	ø3
4	ø4
5	ø5
6	ø6
7	ø7
8	ø8
9	ø2 PED
10	ø4 PED
11	ø6 PED
12	ø8 PED
13	OLA
14	OLB
15	OLC
16	OLD

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0053T1
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

TEMPORARY DESIGN 1 - TMP PHASE 1

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For: Transportation Mobility and Safety Division, North Carolina Department of Transportation, Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

US 13-NC 11-43-903(MEMORIAL DRIVE)
AT
SR 1200 (STANTONSBURG ROAD)/
FARMVILLE BOULEVARD

DIVISION 2 | PITT COUNTY | GREENVILLE
PLAN DATE: JUNE 2014 | REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

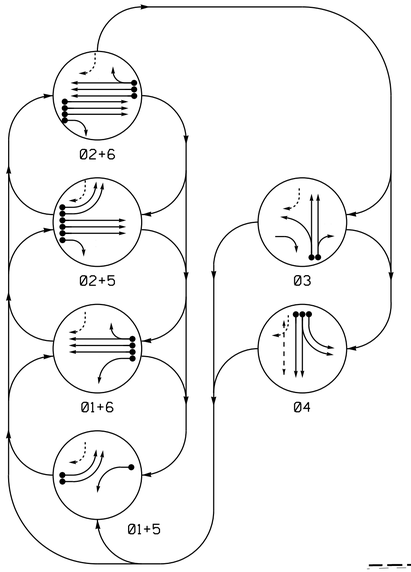
DocuSigned by: Stacie Phillips 9/2/2014
DC87A58E0E0843Z...
SIGNATURE DATE

SIG. INVENTORY NO. 02-0053T1

8/29/2014 10:56:09 AM susan.pennington K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\54 - Signal Design\1-02-0053 Memorial\1.2 020053-140829e1T1.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 1.3

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

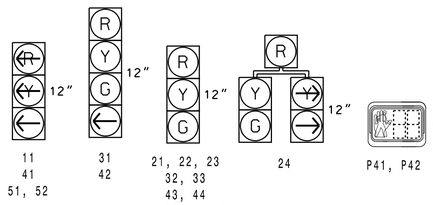
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE						
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3	Ø4	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22, 23	R	R	G	G	R	R	Y
24	R	R	G	G	R/G	R	Y
31	R	R	R	R	G ←	R	R
32, 33	R	R	R	R	G	R	R
41	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~
42	R	R	R	R	R	G ←	R
43, 44	R	R	R	R	R	G	R
51, 52	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~
61,62,63,64	R	G	R	G	R	R	Y
P41, P42	DW	DW	DW	DW	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



NEMA LOOP & DETECTOR INSTALLATION CHART

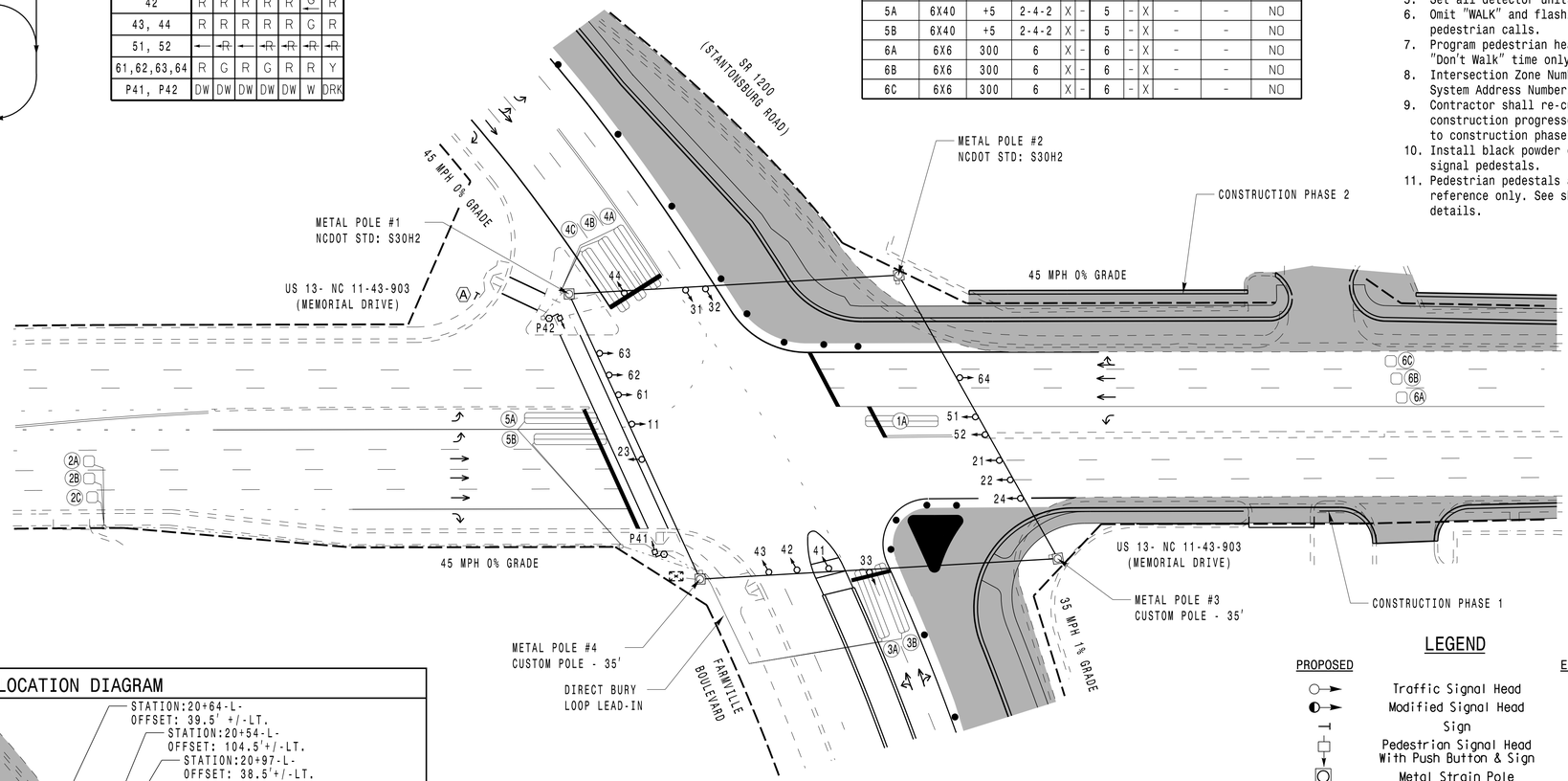
with TS-2 CABINET

INDUCTIVE LOOPS						DETECTOR UNITS				
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	NEMA PHASE	NEW	EXISTING	TIMING FEATURE	TIMING TIME	INHIBIT DELAY DURING GREEN?
1A	6X40	+5	2-4-2	X	-	1	-	X	-	-	NO
2A	6X6	300	4	X	-	2	-	X	-	-	NO
2B	6X6	300	4	X	-	2	-	X	-	-	NO
2C	6X6	300	4	X	-	2	-	X	-	-	NO
3A	6X40	+5	2-4-2	X	-	3	-	X	-	-	NO
3B	6X40	+5	2-4-2	X	-	3	-	X	DELAY	10	YES
4A	6X40	+5	2-4-2	X	-	4	-	X	DELAY	3	YES
4B	6X40	+5	2-4-2	X	-	4	-	X	-	-	NO
4C	6X40	+5	2-4-2	X	-	4	-	X	-	-	NO
5A	6X40	+5	2-4-2	X	-	5	-	X	-	-	NO
5B	6X40	+5	2-4-2	X	-	5	-	X	-	-	NO
6A	6X6	300	6	X	-	6	-	X	-	-	NO
6B	6X6	300	6	X	-	6	-	X	-	-	NO
6C	6X6	300	6	X	-	6	-	X	-	-	NO

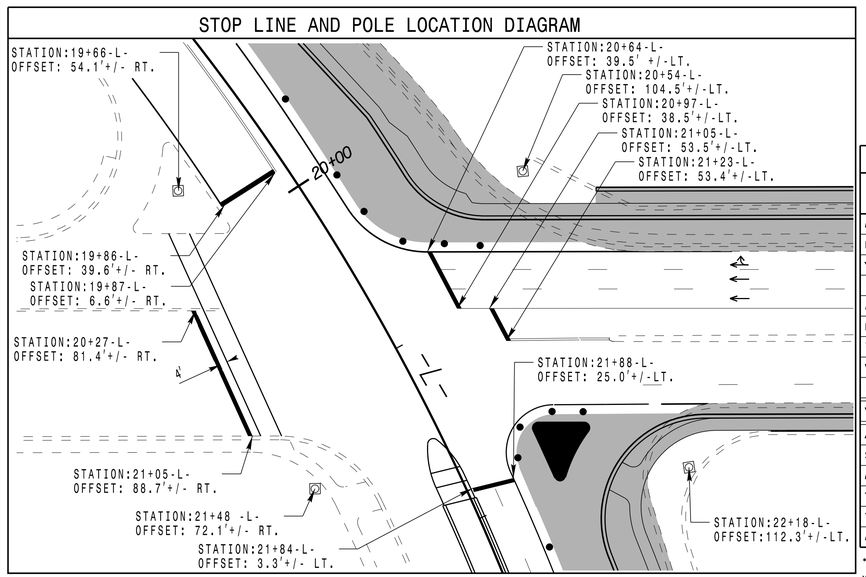
6 PHASE FULLY ACTUATED (GREENVILLE CITY SYSTEM)

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. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Intersection Zone Number: 11
   System Address Number: 53
9. Contractor shall re-cut loops 1A, 6A, 6B and 6C as construction progresses from construction phase 1 to construction phase 2. Contractor to maintain
10. Install black powder coated poles and pedestrian signal pedestals.
11. Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.



STOP LINE AND POLE LOCATION DIAGRAM



ASC3 NEMA TIMING CHART

FEATURE	PHASE					
	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
MINIMUM GREEN *	7 SEC.	12 SEC.	7 SEC.	7 SEC.	7 SEC.	12 SEC.
PASSAGEGAP *	2.0 SEC.	6.0 SEC.	2.0 SEC.	2.0 SEC.	2.0 SEC.	6.0 SEC.
YELLOW CHANGE INT.	3.0 SEC.	4.5 SEC.	3.8 SEC.	4.5 SEC.	3.0 SEC.	4.5 SEC.
RED CLEARANCE	2.9 SEC.	1.7 SEC.	3.8 SEC.	2.4 SEC.	3.1 SEC.	1.9 SEC.
MAXIMUM 1 *	30 SEC.	90 SEC.	45 SEC.	30 SEC.	30 SEC.	90 SEC.
RECALL POSITION	NONE	MIN. RECALL	NONE	NONE	NONE	MIN. RECALL
VEHICLE CALL MEMORY	NONLOCK	LOCK	NONLOCK	NONLOCK	NONLOCK	LOCK
WALK *	– SEC.	– SEC.	7 SEC.	– SEC.	– SEC.	– SEC.
FLASHING DON'T WALK	– SEC.	– SEC.	30 SEC.	– SEC.	– SEC.	– SEC.
VOLUME DENSITY	OFF	ON	OFF	OFF	OFF	ON
ACTUATION B4 ADD *	– VEH.	0 VEH.	– VEH.	– VEH.	– VEH.	0 VEH.
SEC. PER ACTUATION *	– SEC.	1.0 SEC.	– SEC.	– SEC.	– SEC.	1.0 SEC.
MAX. INITIAL *	– SEC.	34 SEC.	– SEC.	– SEC.	– SEC.	34 SEC.
TIME B4 REDUCTION *	– SEC.	15 SEC.	– SEC.	– SEC.	– SEC.	15 SEC.
TIME TO REDUCE *	– SEC.	45 SEC.	– SEC.	– SEC.	– SEC.	45 SEC.
MINIMUM GAP	– SEC.	3.0 SEC.	– SEC.	– SEC.	– SEC.	3.0 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	■
◎	Metal Strain Pole	◘
⬡	Type II Signal Pedestal	⬢
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
-·-·-	2-in Underground Conduit	-·-·-
N/A	Right of Way	– – – –
→	Directional Arrow	→
Ⓐ	"YIELD" Sign (R1-2)	Ⓐ
▭	Construction Zone	▭
● ●	Construction Zone Drums	● ●

TEMPORARY DESIGN 2 - TMP PHASE 2

Prepared For: Transportation Mobility and Safety Division, North Carolina Department of Transportation, Signal Design Section

750 N.Greenfield Pkwy.Garner,NC 27529

US 13- NC 11-43-903(MEMORIAL DRIVE) AT SR 1200 (STANTONSBURG ROAD)/ FARMVILLE BOULEVARD

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLILPS

PREPARED BY: SP PENNINGTON REVIEWED BY:

SCALE 0 40' 1"=40'

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014

SIGNATURE DATE

SIG. INVENTORY NO. 02-0053T2

PLANS PREPARED IN THE OFFICE OF:

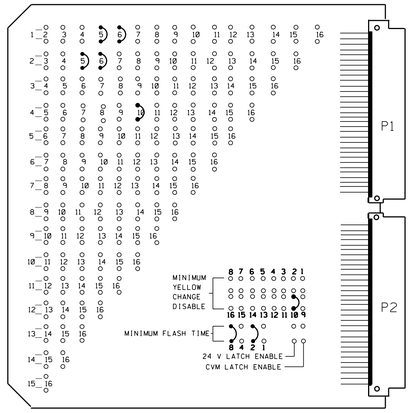
Kimley»Horn

NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

8/29/2014 10:56:10 AM susan.pennington K:\RAL_Roadway\C01036175 (U-3315)\Traffic Signals\S4 - Signal Design\1-02-0053 Memorial\1.3 020053_140829g12.dgn

EDI MODEL MMU2-16LE
MALFUNCTION MANAGEMENT UNIT
PROGRAMMING DETAIL

(program card and tables as shown below)



MMU PROGRAMMING CARD

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	ENABLE
2	ENABLE
3	ENABLE
4	ENABLE
5	ENABLE
6	ENABLE
7	DISABLE
8	DISABLE
9	DISABLE
10	ENABLE
11	DISABLE
12	DISABLE
13	DISABLE
14	DISABLE
15	DISABLE
16	DISABLE

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDgaurd	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF
VM 3x/Day Latch	ON

FLASHING YELLOW ARROW	
CONFIG MODE	A
ENABLE CHANNEL PAIR, FYA	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
RED/YEL INPUT ENABLE	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
FLASH RATE FAULT	OFF
FYA TRAP DETECT	OFF

MMU PROGRAMMING NOTE

ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW.
PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

DETECTOR RACK #1

BIU	CH1 L3 ø2	CH1 L1 ø1	CH1 L7 ø3	CH1 L5 ø2	CH1 L11 ø5	CH1 L9 ø4	CH1 L15 ø6	CH1 L13 ø6	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	CH2 L4 ø2	CH2 L2 NOT USED	CH2 L8 ø3	CH2 L6 NOT USED	CH2 L12 ø5	CH2 L10 ø4	CH2 L16 NOT USED	CH2 L14 ø6			

DETECTOR RACK #2

BIU	SLOT EMPTY	CH1 L17 ø4 CH2 L18 NOT USED	SLOT EMPTY	SLOT EMPTY

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS
1A	L1A,L1B
–	L2A,L2B
2A	L3A,L3B
2B	L4A,L4B
2C	L5A,L5B
–	L6A,L6B
3A	L7A,L7B
3B	L8A,L8B
4A	L9A,L9B
4B	L10A,L10B
5A	L11A,L11B
5B	L12A,L12B
6A	L13A,L13B
6B	L14A,L14B
6C	L15A,L15B
–	L16A,L16B
4C	L17A,L17B
–	L18A,L18B
–	L19A,L19B
–	L20A,L20B
–	L21A,L21B
–	L22A,L22B
–	L23A,L23B
–	L24A,L24B

NOTE

BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	ø 1	–	–
2	–	–	–
3	ø 2	–	–
4	ø 2	–	–
5	ø 2	–	–
6	–	–	–
7	ø 3	–	–
8	ø 3	DELAY	10
9	ø 4	DELAY	3
10	ø 4	–	–
11	ø 5	–	–
12	ø 5	–	–
13	ø 6	–	–
14	ø 6	–	–
15	ø 6	–	–
16	–	–	–
17	ø 4	–	–
18	–	–	–
19	–	–	–
20	–	–	–
21	–	–	–
22	–	–	–
23	–	–	–
24	–	–	–

NOTES

1. To prevent "Flash-conflict" problems, wire all unused load switches to flash red. Verify that signal heads flash in accordance with the signal plans.
2. To prevent red failures on unused monitor channels, tie unused load switch red outputs 7,8,9,11,12,13,14, 15 and 16 to load switch AC+ by inserting a jumper plug in the unused load switch socket from pin 1 (LS AC+) to pin 3 (red out). Make sure all flash transfer relays are in place.
3. Program controller to start up in phases 2 and 6 green.
4. Set power-up flash time to 10 seconds and implement on the Malfunction Management Unit. Set controller power-up flash time to 0 seconds.
5. Enable simultaneous gap-out feature, on controller unit, for all phases.
6. Program detectors in accordance with the manufacturer's instructions to accomplish the detection schemes shown on the signal design plans.
7. Program detector call delay and extension timing on the controller, unless otherwise specified.
8. Set all detector card unit channels to "presence" mode.
9. Program phases 2 and 6, on controller unit, for volume density operation.
10. This controller and cabinet are part of the Greenville Signal System.

LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	ø1
2	ø2
3	ø3
4	ø4
5	ø5
6	ø6
7	ø7
8	ø8
9	ø2 PED
10	ø4 PED
11	ø6 PED
12	ø8 PED
13	OLA
14	OLB
15	OLC
16	OLD

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 1.4

SIGNAL HEAD HOOK-UP CHART

PHASE	1	2	3			4			5	6	7	8	2 PED	4 PED	6 PED	8 PED	OLA	OLB	OLC	OLD
SIGNAL HEAD NO.	11	21,22 23,24	24	31	32,33	41	42	43,44	51,52	61,62 63,64	NU	NU	NU	P41, P42	NU	NU	NU	NU	NU	NU
RED		2R		3R	3R		4R	4R		6R										
YELLOW		2Y		3Y	3Y		4Y	4Y		6Y										
GREEN		2G		3G	3G		4G	4G		6G										
RED ARROW	1R					4R			5R											
YELLOW ARROW	1Y		3Y			4Y			5Y											
GREEN ARROW	1G		3G	3G		4G	4G		5G											
WALK														10G						
DON'T WALK														10R						

NU = Not Used

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

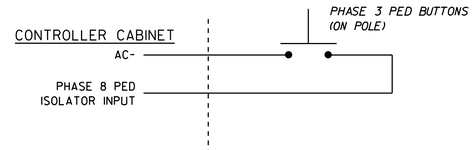
Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

EQUIPMENT INFORMATION

CONTROLLER.....ECONOLITE ASC/3
CABINET .....NC-8A [TS-2]
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....1,2,3,4,5,6,10
PHASES USED.....1,2,3,4,5,6,4PED
OLA.....NOT USED
OLB.....NOT USED
OLC.....NOT USED
OLD.....NOT USED

PEDESTRIAN PUSH-BUTTON WIRING DETAIL

(wire push-buttons as shown below)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0053T2
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

TEMPORARY DESIGN 2 - TMP PHASE 2

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For: Transportation Mobility and Safety Division, North Carolina Department of Transportation, Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

US 13-NC 11-43-903(MEMORIAL DRIVE)
AT
SR 1200 (STANTONSBURG ROAD)/
FARMVILLE BOULEVARD

DIVISION 2 | PITT COUNTY | GREENVILLE
PLAN DATE: JUNE 2014 | REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

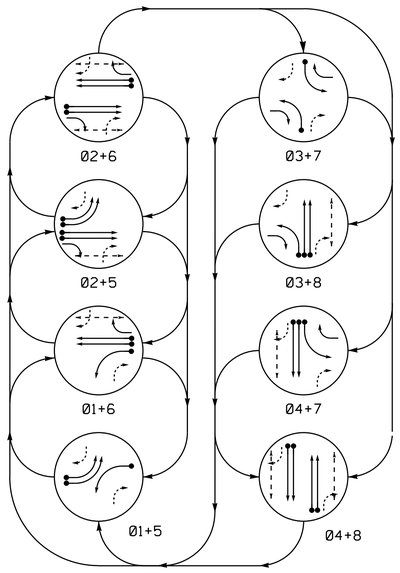
DocuSigned by: Stacie Phillips 9/2/2014
DC87A59ED6D0437...
SIGNATURE DATE

SIG. INVENTORY NO. 02-0053T2

8/29/2014 10:56:11 AM susan.pennington K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\54 - Signal Design\1-02-0053 Memorial\1.4 020053_140829w12.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 1.5

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

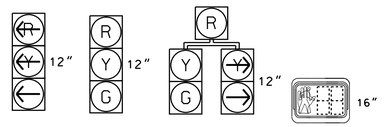
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+05	01+06	02+05	02+06	03+07	03+08	04+07	04+08	FLASH
11	←̶	←̶	R̶	R̶	R̶	R̶	R̶	R̶	R̶
21, 23	R	R	G	G	R	R	R	R	Y
22	R	R	G	G	R/→	R/→	R	R	Y
31	R̶	R̶	R̶	R̶	←̶	←̶	R̶	R̶	R̶
41, 42, 43	R	R	R	R	R	R	G	G	R
51, 52	←̶	R̶	←̶	R̶	R̶	R̶	R̶	R̶	R̶
61, 63	R	G	R	G	R	R	R	R	Y
62	R	G	R	G	R/→	R	R/→	R	Y
71	R̶	R̶	R̶	R̶	←̶	R̶	←̶	R̶	R̶
81, 82, 83	R	R	R	R	R	G	R	G	R
P21, P22	DW	DW	W	W	DW	DW	DW	DW	DRK
P41, P42	DW	DW	DW	DW	DW	DW	W	W	DRK
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	DW	W	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



11, 31, 51, 52, 71 — 21, 23, 41, 42, 43, 61, 63, 81, 82, 83 — 22, 62 — P21, P22, P41, P42, P61, P62, P81, P82

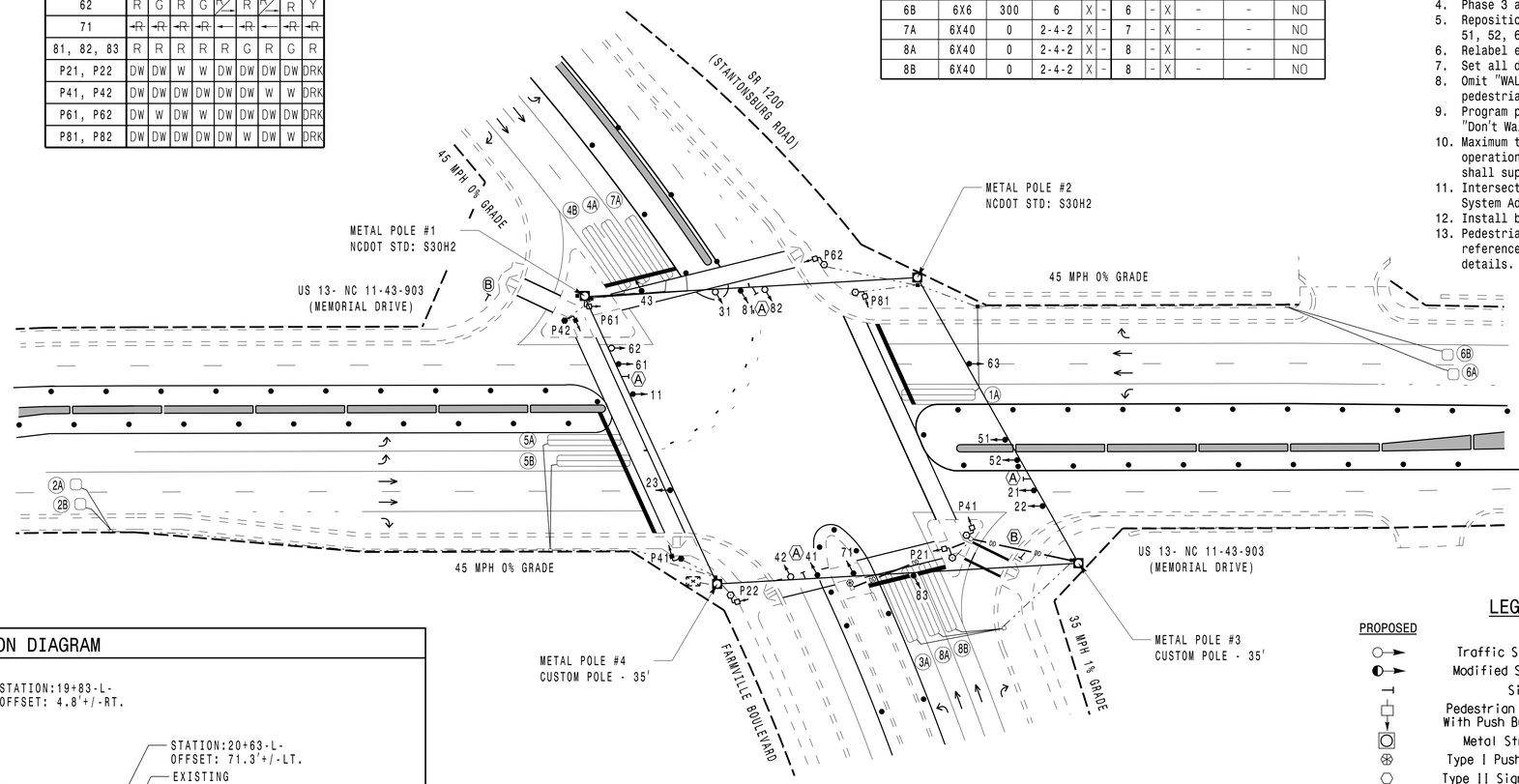
NEMA LOOP & DETECTOR INSTALLATION CHART

with TS-2 CABINET

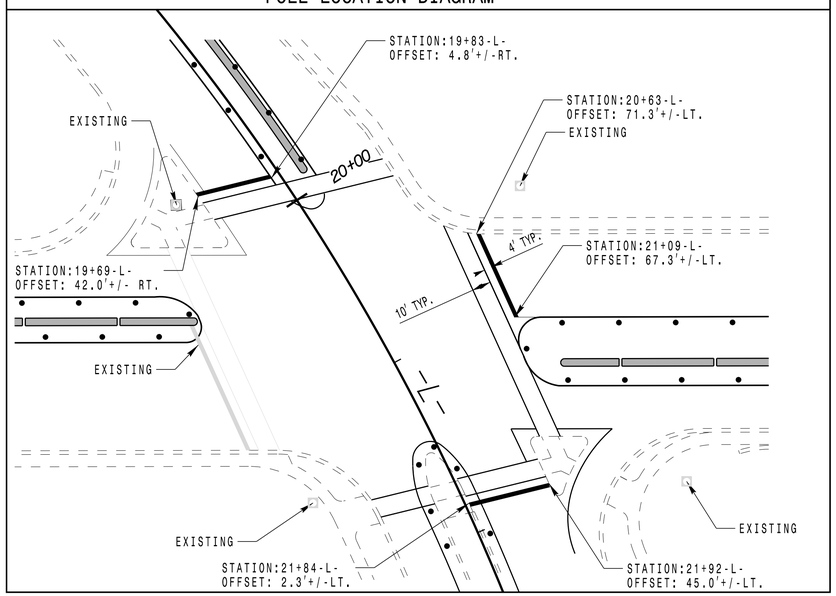
INDUCTIVE LOOPS						DETECTOR UNITS					
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	NEMA PHASE	NEW	EXISTING	TIMING FEATURE	TIMING TIME	INHIBIT DELAY DURING GREEN?
1A	6X40	0	2-4-2	X	-	1	-	X	-	-	NO
2A	6X6	300	4	X	-	2	-	X	-	-	NO
2B	6X6	300	4	X	-	2	-	X	-	-	NO
3A	6X40	0	2-4-2	X	-	3	-	X	-	-	NO
4A	6X40	0	2-4-2	X	-	4	-	X	-	-	NO
4B	6X40	0	2-4-2	X	-	4	-	X	-	-	NO
5A	6X40	0	2-4-2	X	-	5	-	X	-	-	NO
5B	6X40	0	2-4-2	X	-	5	-	X	-	-	NO
6A	6X6	300	6	X	-	6	-	X	-	-	NO
6B	6X6	300	6	X	-	6	-	X	-	-	NO
7A	6X40	0	2-4-2	X	-	7	-	X	-	-	NO
8A	6X40	0	2-4-2	X	-	8	-	X	-	-	NO
8B	6X40	0	2-4-2	X	-	8	-	X	-	-	NO

8 PHASE FULLY ACTUATED (GREENVILLE CITY SYSTEM)

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. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Reposition existing signals 11, 21, 22, 31, 41, 43 51, 52, 61, 63, 81, and 83.
6. Relabel existing head 24 as 22.
7. Set all detector units to presence mode.
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
9. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
11. Intersection Zone Number: 11
    System Address Number: 53
12. Install black powder coated pedestals.
13. Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.



POLE LOCATION DIAGRAM



ASC3 NEMA TIMING CHART

FEATURE	PHASE 01	02	03	04	05	06	07	08
MINIMUM GREEN *	7 SEC.	12 SEC.	7 SEC.	7 SEC.	7 SEC.	12 SEC.	7 SEC.	7 SEC.
PASSAGE/GAP *	2.0 SEC.	6.0 SEC.	2.0 SEC.	2.0 SEC.	2.0 SEC.	6.0 SEC.	2.0 SEC.	2.0 SEC.
YELLOW CHANGE INT.	3.0 SEC.	4.5 SEC.	3.0 SEC.	4.5 SEC.	3.0 SEC.	4.5 SEC.	3.0 SEC.	3.8 SEC.
RED CLEARANCE	3.9 SEC.	2.5 SEC.	4.8 SEC.	2.9 SEC.	3.8 SEC.	2.5 SEC.	4.6 SEC.	3.4 SEC.
MAXIMUM 1 *	30 SEC.	90 SEC.	30 SEC.	45 SEC.	30 SEC.	90 SEC.	30 SEC.	45 SEC.
RECALL POSITION	NONE	MIN. RECALL	NONE	NONE	NONE	MIN. RECALL	NONE	NONE
VEHICLE CALL MEMORY	NONLOCK	LOCK	NONLOCK	NONLOCK	NONLOCK	LOCK	NONLOCK	NONLOCK
WALK *	– SEC.	7 SEC.	– SEC.	7 SEC.	– SEC.	7 SEC.	– SEC.	7 SEC.
FLASHING DON'T WALK	– SEC.	23 SEC.	– SEC.	30 SEC.	– SEC.	25 SEC.	– SEC.	32 SEC.
VOLUME DENSITY	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
ACTUATION B4 ADD *	– VEH.	0 VEH.	– VEH.	– VEH.	– VEH.	0 VEH.	– VEH.	– VEH.
SEC. PER ACTUATION *	– SEC.	1.5 SEC.	– SEC.	– SEC.	– SEC.	1.5 SEC.	– SEC.	– SEC.
MAX. INITIAL *	– SEC.	34 SEC.	– SEC.	– SEC.	– SEC.	34 SEC.	– SEC.	– SEC.
TIME B4 REDUCTION *	– SEC.	15 SEC.	– SEC.	– SEC.	– SEC.	15 SEC.	– SEC.	– SEC.
TIME TO REDUCE *	– SEC.	45 SEC.	– SEC.	– SEC.	– SEC.	45 SEC.	– SEC.	– SEC.
MINIMUM GAP	– SEC.	3.0 SEC.	– SEC.	– SEC.	– SEC.	3.0 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.

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□↓	Pedestrian Signal Head With Push Button & Sign	■↓
◯	Metal Strain Pole	◘
⊛	Type I Pushbutton Post	⊛
⬡	Type II Signal Pedestal	⬢
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
·-·-·-·	2-in Underground Conduit	·-·-·-·
N/A	Right of Way	———
→	Directional Arrow	→
▭	Construction Zone	▭
● ●	Construction Zone Drums	● ●
Ⓐ	Street Name Sign	Ⓐ
Ⓑ	"YIELD" Sign (R1-2)	Ⓑ

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

TEMPORARY DESIGN 3 - TMP PHASE 3

Prepared For: Transportation Mobility and Safety Division, STATE OF NORTH CAROLINA, DEPARTMENT OF TRANSPORTATION, Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

US 13- NC 11-43-903(MEMORIAL DRIVE) AT SR 1200 (STANTONSBURG ROAD)/ FARMVILLE BOULEVARD

DIVISION 2 | PITT COUNTY | GREENVILLE

PLAN DATE: JUNE 2014 | REVIEWED BY: SL PHILLIPS

PREPARED BY: SP PENNINGTON | REVIEWED BY:

SCALE 0 40' 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
-DC87A56ED0DB437
SIGNATURE DATE

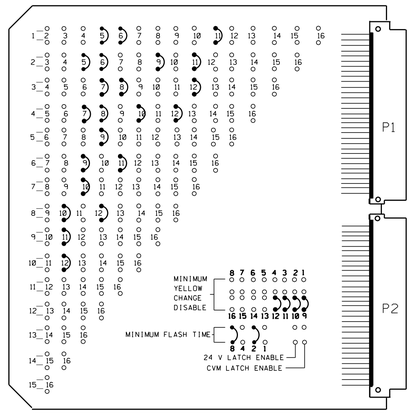
SIG. INVENTORY NO. 02-0053T3

8/29/2014 10:56:13 AM susan.pennington K:\RAL_Roadway\01103617S (U-3315)\Traffic Signals\SS4 - Signal Design\st-02-0053 Memorial\st_5 020053-1-40829gT3.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 1.6

EDI MODEL MMU2-16LE MALFUNCTION MANAGEMENT UNIT PROGRAMMING DETAIL

(program card and tables as shown below)



MMU PROGRAMMING CARD

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDgaurd	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF
VM 3x/Day Latch	ON

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	ENABLE
2	ENABLE
3	ENABLE
4	ENABLE
5	ENABLE
6	ENABLE
7	ENABLE
8	ENABLE
9	ENABLE
10	ENABLE
11	ENABLE
12	ENABLE
13	DISABLE
14	DISABLE
15	DISABLE
16	DISABLE

FLASHING YELLOW ARROW	
CONFIG MODE	A
ENABLE CHANNEL PAIR, FYA	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
RED/YEL INPUT ENABLE	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
FLASH RATE FAULT	OFF
FYA TRAP DETECT	OFF

MMU PROGRAMMING NOTE

ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

NOTES

1. To prevent "Flash-conflict" problems, wire all unused load switches to flash red. Verify that signal heads flash in accordance with the signal plans.
2. To prevent red failures on unused monitor channels, tie unused load switch red outputs 13,14, 15 and 16 to load switch AC+ by inserting a jumper plug in the unused load switch socket from pin 1 (LS AC+) to pin 3 (red out). Make sure all flash transfer relays are in place.
3. Program controller to start up in phases 2 and 6 green.
4. Set power-up flash time to 10 seconds and implement on the Malfunction Management Unit. Set controller power-up flash time to 0 seconds.
5. Enable simultaneous gap-out feature, on controller unit, for all phases.
6. Program detectors in accordance with the manufacturer's instructions to accomplish the detection schemes shown on the signal design plans.
7. Program detector call delay and extension timing on the controller, unless otherwise specified.
8. Set all detector card unit channels to "presence" mode.
9. Program phases 2 and 6, on controller unit, for volume density operation.
10. This controller and cabinet are part of the Greenville Signal System.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

SIGNAL HEAD HOOK-UP CHART

PHASE	1	2	3		4	5	6	7		8	2 PED	4 PED	6 PED	8 PED	OLA	OLB	OLC	OLD
SIGNAL HEAD NO.	11	21,22 23	22	31	41,42 43	51,52	61,62 63	71	62	81,82 83	P21, P22	P41, P42	P61, P62	P81, P82	NU	NU	NU	NU
RED		2R			4R		6R			8R								
YELLOW		2Y			4Y		6Y			8Y								
GREEN		2G			4G		6G			8G								
RED ARROW	1R			3R		5R		7R										
YELLOW ARROW	1Y		3Y	3Y		5Y		7Y	7Y									
GREEN ARROW	1G		3G	3G		5G		7G	7G									
WALK											9G	10G	11G	12G				
DON'T WALK											9R	10R	11R	12R				

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....ECONOLITE ASC/3
CABINET .....NC-8A [TS-2]
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....1,2,3,4,5,6,7,8,9,10,11,12
PHASES USED.....1,2,2PED,3,4,4PED,5,6,6PED,7,8,8PED
OLA.....NOT USED
OLB.....NOT USED
OLC.....NOT USED
OLD.....NOT USED

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW. PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

DETECTOR RACK #1

BIU	CH1 L3 ø2	CH1 L1 ø1	CH1 L7 ø3	CH1 L5 NOT USED	CH1 L11 ø5	CH1 L9 ø4	CH1 L15 NOT USED	CH1 L13 ø6	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	CH2 L4 ø2	CH2 L2 NOT USED	CH2 L8 NOT USED	CH2 L6 NOT USED	CH2 L12 ø5	CH2 L10 ø4	CH2 L16 NOT USED	CH2 L14 ø6			

DETECTOR RACK #2

BIU	CH1 L19 ø8	CH1 L17 ø7	SLOT EMPTY	SLOT EMPTY
	CH2 L20 ø8	CH2 L18 NOT USED		

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS
1A	L1A,L1B
–	L2A,L2B
2A	L3A,L3B
2B	L4A,L4B
–	L5A,L5B
–	L6A,L6B
3A	L7A,L7B
–	L8A,L8B
4A	L9A,L9B
4B	L10A,L10B
5A	L11A,L11B
5B	L12A,L12B
6A	L13A,L13B
6B	L14A,L14B
–	L15A,L15B
–	L16A,L16B
7A	L17A,L17B
–	L18A,L18B
8A	L19A,L19B
8B	L20A,L20B
–	L21A,L21B
–	L22A,L22B
–	L23A,L23B
–	L24A,L24B

NOTE

BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	ø 1	–	–
2	–	–	–
3	ø 2	–	–
4	ø 2	–	–
5	–	–	–
6	–	–	–
7	ø 3	–	–
8	–	–	–
9	ø 4	–	–
10	ø 4	–	–
11	ø 5	–	–
12	ø 5	–	–
13	ø 6	–	–
14	ø 6	–	–
15	–	–	–
16	–	–	–
17	ø 7	–	–
18	–	–	–
19	ø 8	–	–
20	ø 8	–	–
21	–	–	–
22	–	–	–
23	–	–	–
24	–	–	–

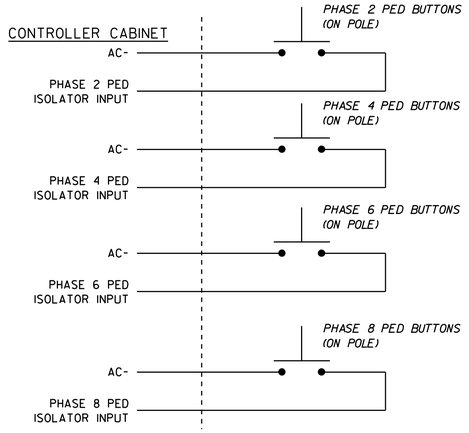
LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	ø1
2	ø2
3	ø3
4	ø4
5	ø5
6	ø6
7	ø7
8	ø8
9	ø2 PED
10	ø4 PED
11	ø6 PED
12	ø8 PED
13	OLA
14	OLB
15	OLC
16	OLD

PEDESTRIAN PUSH-BUTTON WIRING DETAIL

(wire push-buttons as shown below)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0053 T3
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

TEMPORARY DESIGN 3 - TMP PHASE 3

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For: Transportation Mobility and Safety Division, NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, Signals Management Section

750 N.Greenfield Pkwy.Garner,NC 27529

US 13- NC 11-43-903(MEMORIAL DRIVE) AT SR 1200 (STANTONSBURG ROAD)/ FARMVILLE BOULEVARD

DIVISION 2 | PITT COUNTY | GREENVILLE

PLAN DATE: JUNE 2014	REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
DC87A50ED60B437...
SIGNATURE DATE

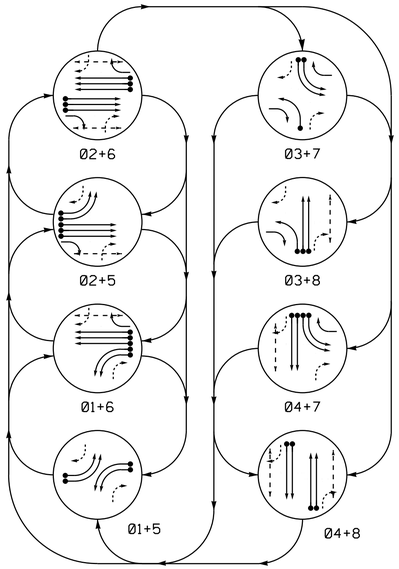
SIG. INVENTORY NO. 02-0053 T3

8/29/2014 10:56:14 AM susan.pennington K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\64 - Signal Design\1-02-0053 Memorial\1.6 020053-140829e13.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 1.7

8 PHASE FULLY ACTUATED (GREENVILLE CITY SYSTEM)

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

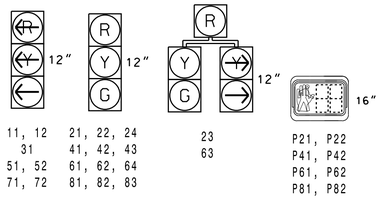
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11, 12	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22, 24	R	R	G	G	R	R	R	R	Y
23	R	R	G	G	R↗	R↗	R	R	Y
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~
41, 42, 43	R	R	R	R	R	R	G	G	R
51, 52	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61, 62, 64	R	G	R	G	R	R	R	R	Y
63	R	G	R	G	R↗	R	R↗	R	Y
71, 72	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~
81, 82, 83	R	R	R	R	R	G	R	G	R
P21, P22	DW	DW	W	W	DW	DW	DW	DW	DRK
P41, P42	DW	DW	DW	DW	DW	DW	W	W	DRK
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	DW	W	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



11, 12 21, 22, 24
31 41, 42, 43
51, 52 61, 62, 64
71, 72 81, 82, 83

23
63

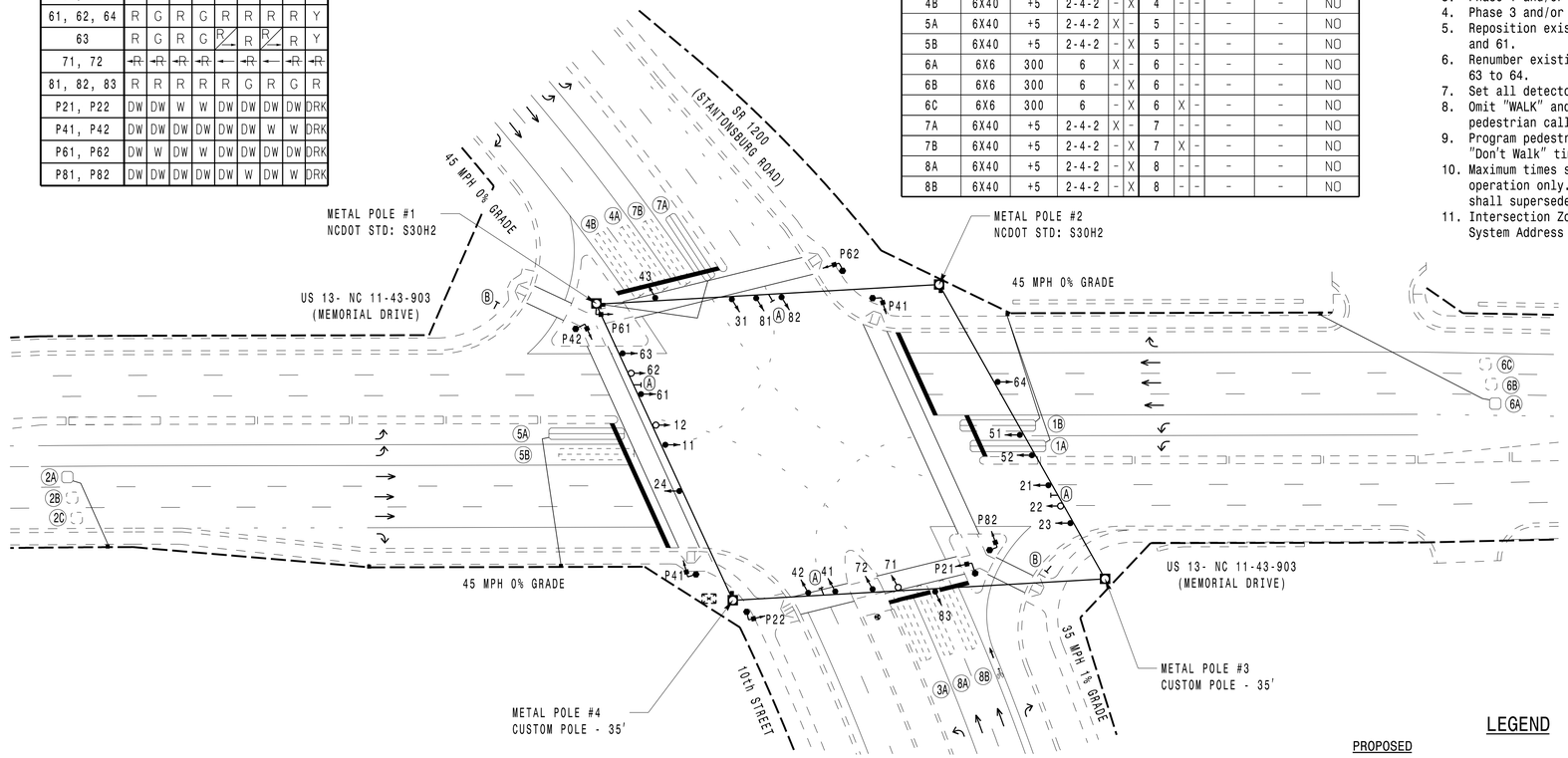
P21, P22
P41, P42
P61, P62
P81, P82

NEMA LOOP & DETECTOR INSTALLATION CHART
with TS-2 CABINET

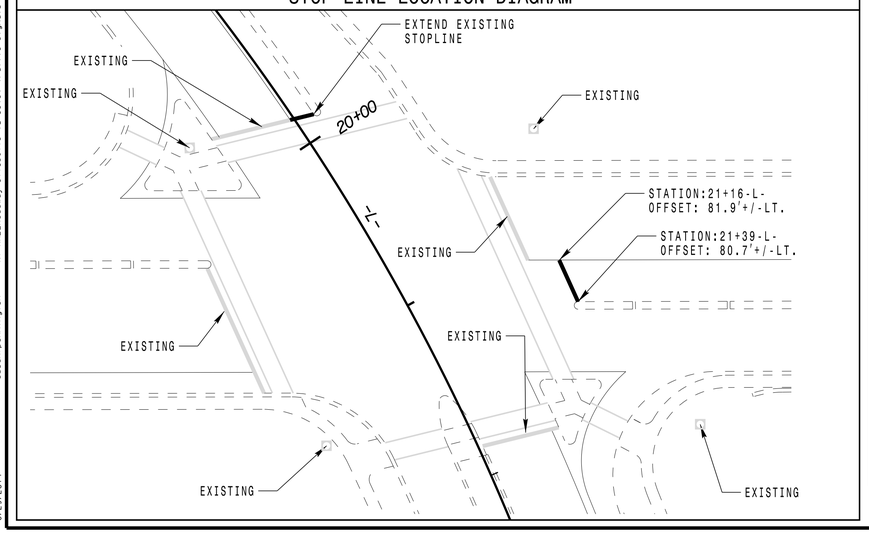
INDUCTIVE LOOPS						DETECTOR UNITS				
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	NEMA PHASE	NEW	EXISTING	TIMING FEATURE	TIMING TIME	INHIBIT DELAY DURING GREENT
1A	6X40	+5	2-4-2	X	-	1	-	-	-	-	NO
1B	6X40	+5	2-4-2	X	-	1	X	-	-	-	NO
2A	6X6	300	4	X	-	2	-	-	-	-	NO
2B	6X6	300	4	-	X	2	-	-	-	-	NO
2C	6X6	300	4	-	X	2	X	-	-	-	NO
3A	6X40	+5	2-4-2	-	X	3	-	-	-	-	NO
4A	6X40	+5	2-4-2	-	X	4	-	-	-	-	NO
4B	6X40	+5	2-4-2	-	X	4	-	-	-	-	NO
5A	6X40	+5	2-4-2	X	-	5	-	-	-	-	NO
5B	6X40	+5	2-4-2	-	X	5	-	-	-	-	NO
6A	6X6	300	6	X	-	6	-	-	-	-	NO
6B	6X6	300	6	-	X	6	-	-	-	-	NO
6C	6X6	300	6	-	X	6	X	-	-	-	NO
7A	6X40	+5	2-4-2	X	-	7	-	-	-	-	NO
7B	6X40	+5	2-4-2	-	X	7	X	-	-	-	NO
8A	6X40	+5	2-4-2	-	X	8	-	-	-	-	NO
8B	6X40	+5	2-4-2	-	X	8	-	-	-	-	NO

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. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Reposition existing signal heads numbered 11, 51, 52, and 61.
6. Renumber existing head 22 to 23, 23 to 24, 62 to 63 and 63 to 64.
7. Set all detector units to presence mode.
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
9. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
11. Intersection Zone Number: 11
    System Address Number: 53



STOP LINE LOCATION DIAGRAM



ASC3 NEMA TIMING CHART

FEATURE	PHASE 01	02	03	04	05	06	07	08
MINIMUM GREEN *	7 SEC.	12 SEC.	7 SEC.	7 SEC.	7 SEC.	12 SEC.	7 SEC.	7 SEC.
PASSAGE/GAP *	2.0 SEC.	6.0 SEC.	2.0 SEC.	2.0 SEC.	2.0 SEC.	6.0 SEC.	2.0 SEC.	2.0 SEC.
YELLOW CHANGE INT.	3.0 SEC.	4.5 SEC.	3.0 SEC.	4.5 SEC.	3.0 SEC.	4.5 SEC.	3.0 SEC.	3.8 SEC.
RED CLEARANCE	3.8 SEC.	2.4 SEC.	4.6 SEC.	2.9 SEC.	3.6 SEC.	2.4 SEC.	4.6 SEC.	3.4 SEC.
MAXIMUM 1 *	30 SEC.	90 SEC.	30 SEC.	45 SEC.	30 SEC.	90 SEC.	30 SEC.	45 SEC.
RECALL POSITION	NONE	MIN. RECALL	NONE	NONE	NONE	MIN. RECALL	NONE	NONE
VEHICLE CALL MEMORY	NONLOCK	LOCK	NONLOCK	NONLOCK	NONLOCK	LOCK	NONLOCK	NONLOCK
WALK *	– SEC.	7 SEC.	– SEC.	7 SEC.	– SEC.	7 SEC.	– SEC.	7 SEC.
FLASHING DON'T WALK	– SEC.	22 SEC.	– SEC.	30 SEC.	– SEC.	26 SEC.	– SEC.	32 SEC.
VOLUME DENSITY	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
ACTUATION B4 ADD *	– VEH.	0 VEH.	– VEH.	– VEH.	– VEH.	0 VEH.	– VEH.	– VEH.
SEC. PER ACTUATION *	– SEC.	1.0 SEC.	– SEC.	– SEC.	– SEC.	1.0 SEC.	– SEC.	– SEC.
MAX. INITIAL *	– SEC.	34 SEC.	– SEC.	– SEC.	– SEC.	34 SEC.	– SEC.	– SEC.
TIME B4 REDUCTION *	– SEC.	15 SEC.	– SEC.	– SEC.	– SEC.	15 SEC.	– SEC.	– SEC.
TIME TO REDUCE *	– SEC.	45 SEC.	– SEC.	– SEC.	– SEC.	45 SEC.	– SEC.	– SEC.
MINIMUM GAP	– SEC.	3.0 SEC.	– SEC.	– SEC.	– SEC.	3.0 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.

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□	Pedestrian Signal Head With Push Button & Sign	■
◎	Metal Strain Pole	◘
⊕	Type I Pushbutton Post	◓
⬡	Type II Signal Pedestal	⬢
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⛶
□	Junction Box	■
·-·-·	2-in Underground Conduit	·-·-·
N/A	Right of Way	– – – –
→	Directional Arrow	→
Ⓐ	Street Name Sign	Ⓐ
Ⓑ	"YIELD" Sign (R1-2)	Ⓑ

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

FINAL DESIGN

Prepared For: Transportation Mobility and Safety Division, NCDOT, Signal Design Section
750 N.Greenfield Pkwy.,Garner,NC 27529

US 13- NC 11-43-903(MEMORIAL DRIVE) AT SR 1200 (STANTONSBURG ROAD)/ 10th STREET

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLIPS

PREPARED BY: SP PENNINGTON REVIEWED BY:

SCALE 0 40' 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032607 STACIE L. PHILLIPS

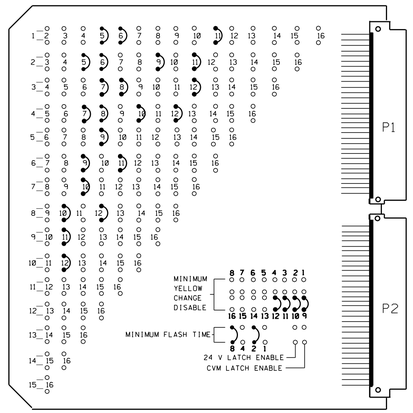
DocuSigned by: Stacie Phillips 9/2/2014
-DC87A59ED60B437-
SIGNATURE DATE

SIG. INVENTORY NO. 02-0053

8/29/2014 10:56:15 AM susan.pennington K:\RAL_Roadway\011936.175 (U-3315)\Traffic Signal\sht4 - Signal Design\1-02-0053 Memorial#1.7 020053-140829a.dgn

EDI MODEL MMU2-16LE
MALFUNCTION MANAGEMENT UNIT
PROGRAMMING DETAIL

(program card and tables as shown below)



MMU PROGRAMMING CARD

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDgaurd	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF
VM 3x/Day Latch	ON

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	ENABLE
2	ENABLE
3	ENABLE
4	ENABLE
5	ENABLE
6	ENABLE
7	ENABLE
8	ENABLE
9	ENABLE
10	ENABLE
11	ENABLE
12	ENABLE
13	DISABLE
14	DISABLE
15	DISABLE
16	DISABLE

FLASHING YELLOW ARROW	
CONFIG MODE	A
ENABLE CHANNEL PAIR, FYA	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
RED/YEL INPUT ENABLE	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
FLASH RATE FAULT	OFF
FYA TRAP DETECT	OFF

MMU PROGRAMMING NOTE

ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW. PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

DETECTOR RACK #1

BIU	CH1 L3 ø2	CH1 L1 ø1	CH1 L7 ø3	CH1 L5 ø2	CH1 L11 ø5	CH1 L9 ø4	CH1 L15 ø6	CH1 L13 ø6	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	CH2 L4 ø2	CH2 L2 ø1	CH2 L8 NOT USED	CH2 L6 NOT USED	CH2 L12 ø5	CH2 L10 ø4	CH2 L16 NOT USED	CH2 L14 ø6			

DETECTOR RACK #2

BIU	CH1 L19 ø8	CH1 L17 ø7	SLOT EMPTY	SLOT EMPTY
	CH2 L20 ø8	CH2 L18 ø7		

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS
1A	L1A,L1B
1B	L2A,L2B
2A	L3A,L3B
2B	L4A,L4B
2C	L5A,L5B
–	L6A,L6B
3A	L7A,L7B
–	L8A,L8B
4A	L9A,L9B
4B	L10A,L10B
5A	L11A,L11B
5B	L12A,L12B
6A	L13A,L13B
6B	L14A,L14B
6C	L15A,L15B
–	L16A,L16B
7A	L17A,L17B
7B	L18A,L18B
8A	L19A,L19B
8B	L20A,L20B
–	L21A,L21B
–	L22A,L22B
–	L23A,L23B
–	L24A,L24B

NOTE

BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	ø 1	–	–
2	ø 1	–	–
3	ø 2	–	–
4	ø 2	–	–
5	ø 2	–	–
6	–	–	–
7	ø 3	–	–
8	–	–	–
9	ø 4	–	–
10	ø 4	–	–
11	ø 5	–	–
12	ø 5	–	–
13	ø 6	–	–
14	ø 6	–	–
15	ø 6	–	–
16	–	–	–
17	ø 7	–	–
18	ø 7	–	–
19	ø 8	–	–
20	ø 8	–	–
21	–	–	–
22	–	–	–
23	–	–	–
24	–	–	–

NOTES

1. To prevent "Flash-conflict" problems, wire all unused load switches to flash red. Verify that signal heads flash in accordance with the signal plans.
2. To prevent red failures on unused monitor channels, tie unused load switch red outputs 13,14, 15 and 16 to load switch AC+ by inserting a jumper plug in the unused load switch socket from pin 1 (LS AC+) to pin 3 (red out). Make sure all flash transfer relays are in place.
3. Program controller to start up in phases 2 and 6 green.
4. Set power-up flash time to 10 seconds and implement on the Malfunction Management Unit. Set controller power-up flash time to 0 seconds.
5. Enable simultaneous gap-out feature, on controller unit, for all phases.
6. Program detectors in accordance with the manufacturer's instructions to accomplish the detection schemes shown on the signal design plans.
7. Program detector call delay and extension timing on the controller, unless otherwise specified.
8. Set all detector card unit channels to "presence" mode.
9. Program phases 2 and 6, on controller unit, for volume density operation.
10. This controller and cabinet are part of the Greenville Signal System.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	ø1
2	ø2
3	ø3
4	ø4
5	ø5
6	ø6
7	ø7
8	ø8
9	ø2 PED
10	ø4 PED
11	ø6 PED
12	ø8 PED
13	OLA
14	OLB
15	OLC
16	OLD

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 1.8

SIGNAL HEAD HOOK-UP CHART

PHASE	1	2	3		4	5	6	7		8	2 PED	4 PED	6 PED	8 PED	OLA	OLB	OLC	OLD
SIGNAL HEAD NO.	11,12	21,22 23,24	23	31	41,42 43	51,52	61,62 63,64	71,72	63	81,82 83	P21, P22	P41, P42	P61, P62	P81, P82	NU	NU	NU	NU
RED		2R			4R		6R			8R								
YELLOW		2Y			4Y		6Y			8Y								
GREEN		2G			4G		6G			8G								
RED ARROW	1R			3R		5R		7R										
YELLOW ARROW	1Y		3Y	3Y		5Y		7Y	7Y									
GREEN ARROW	1G		3G	3G		5G		7G	7G									
WALK											9G	10G	11G	12G				
DON'T WALK											9R	10R	11R	12R				

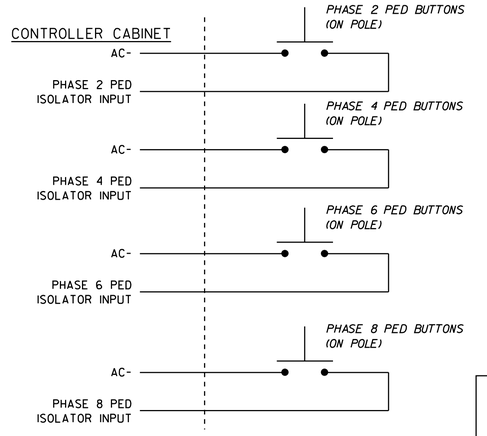
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....ECONOLITE ASC/3
CABINET .....NC-8A [TS-2]
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....1,2,3,4,5,6,7,8,9,10,11,12
PHASES USED.....1,2,2PED,3,4,4PED,5,6,6PED,7,8,8PED
OLA.....NOT USED
OLB.....NOT USED
OLC.....NOT USED
OLD.....NOT USED

PEDESTRIAN PUSH-BUTTON WIRING DETAIL

(wire push-buttons as shown below)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0053
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

FINAL DESIGN

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For: Conservation Mobility and Safety Division, State of North Carolina, Department of Transportation, Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

US 13- NC 11-43-903(MEMORIAL DRIVE) AT SR 1200 (STANTONSBURG ROAD)/ 10th STREET

DIVISION 2 | PITT COUNTY | GREENVILLE

PLAN DATE:	JUNE 2014	REVIEWED BY:	SL PHILLIPS
PREPARED BY:	SP PENNINGTON	REVIEWED BY:	

REVISIONS	INIT.	DATE

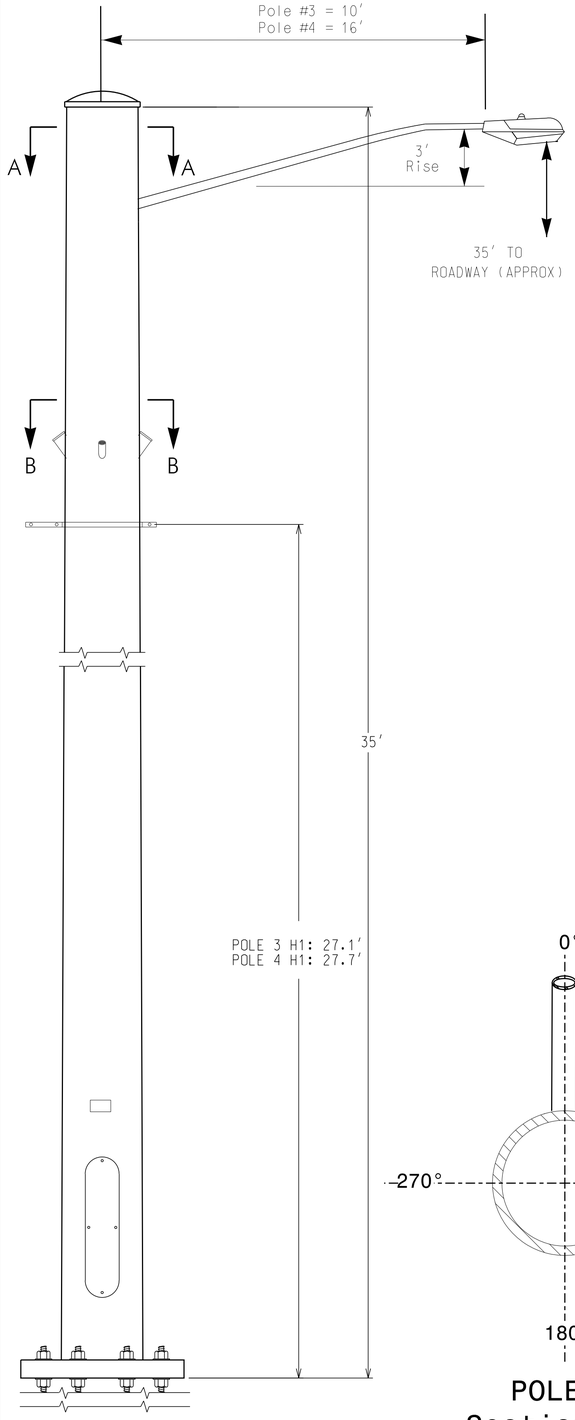
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
0C87A59ED6D8437...
SIGNATURE DATE

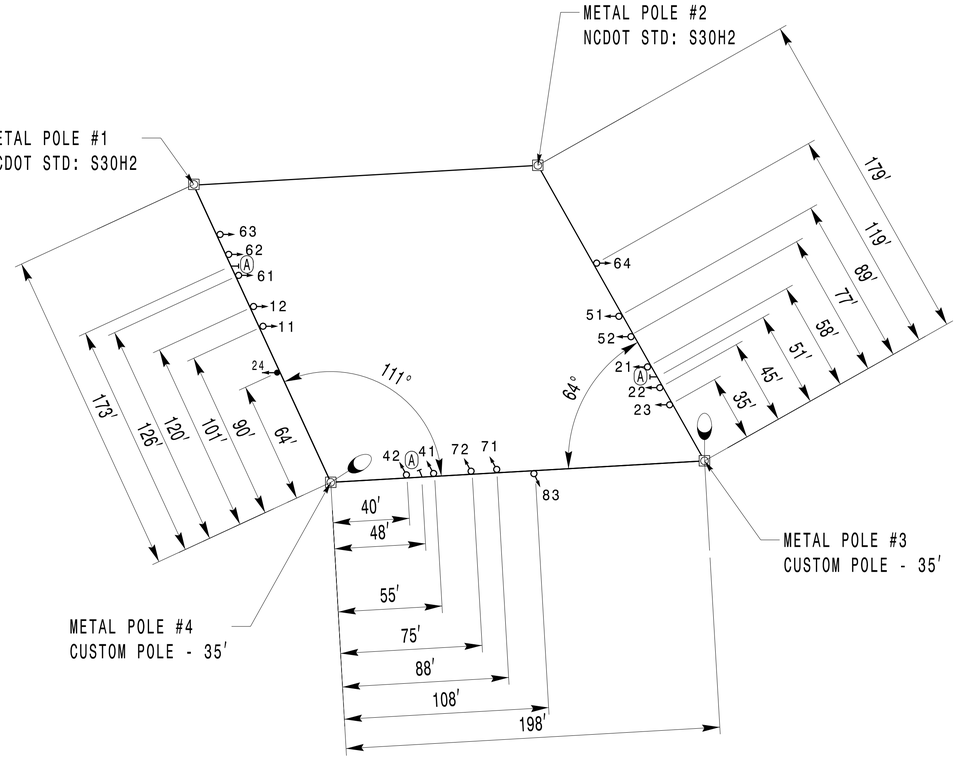
SIG. INVENTORY NO. 02-0053

8/29/2014 10:56:17 AM susan.pennington K:\MRAL_Roadway\01036175 (U-3315)\Traffic Signals\S4 - Signal Design\1-02-0053 Memorial\1.8 020053-140829e.dgn

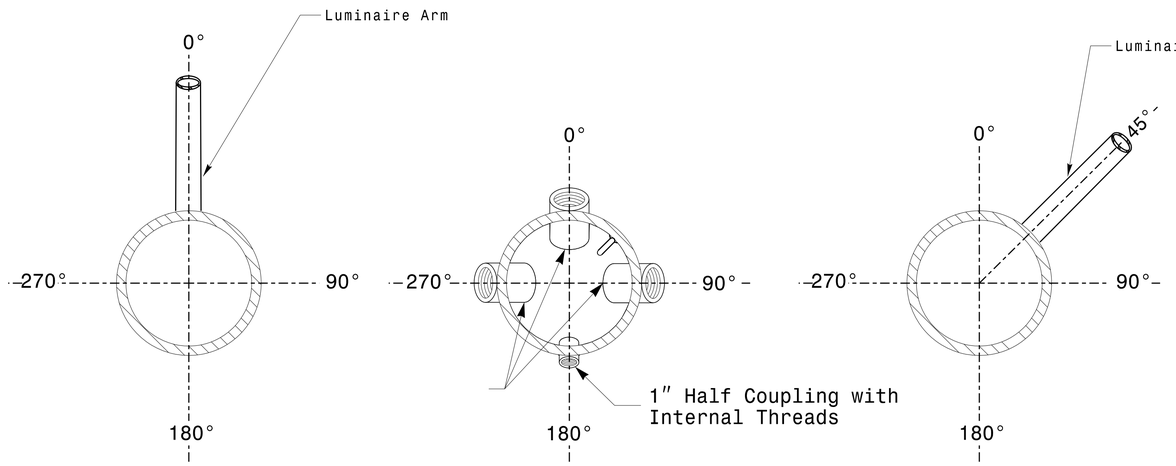
PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 1.9



Pole Elevation



Loading Diagram



Radial Orientation for Factory Installed Accessories

Notes

DESIGN REFERENCE MATERIAL

1. Design the traffic signal structure and foundation in accordance with:
   - The 5th Edition 2009 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
   - The 2012 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
   - The 2012 NCDOT Roadway Standard Drawings.
   - The traffic signal project plans and special provisions.
   - The NCDOT "Metal Pole Standards" located at the following NCDOT website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx
2. Fabricate Metal Pole #3 and #4 using design loadings shown. The contractor may revise attachment heights and radial orientations of wire entrances with approval from the Division Traffic Engineer. Any modifications to the original location of accessories must be reflected on the shop drawings when they are submitted for review and approval.
3. Design a drilled pier foundation that conforms to the requirements of ITSS Project Special Provisions (Version 12.3) included with and as part of these plans.
4. Comply with NEC code 230.2(E) concerning service equipment disconnect.
5. Lighting fixture and luminaire arm represent a load condition to the pole and may not represent exactly how the fixtures will be mounted. The contractor is responsible for ensuring that any required factory preps for mounting fixtures to the pole are included on the shop drawings.
6. Design the luminaire support arm using design dimensions as shown on elevations views. Refer to the Radial Orientation Detail for attachment to the signal pole. Design arm end for a nominal 2 inch slip fit socket connection for light assembly.

LOADING SCHEDULE FOR STRAIN POLES

HEAD	DESCRIPTION	AREA	SIZE	WEIGHT
11, 12 21, 22, 24 41, 42 51, 52 61, 62, 64 71, 72 83	SIGNAL HEAD 12″-3 SECTION-WITH BACKPLATE, HANGER, AND BALANCE ADJUSTER	9.2 S.F.	25.5″ W x 52.0″ L	56 LBS
23 63	SIGNAL HEAD 12″-5 SECTION-WITH BACKPLATE, HANGER, AND BALANCE ADJUSTER	16.5 S.F.	42.0″ W x 56.0″ L	89 LBS
	LUMINAIRE	1.0 S.F.	N/A	25 LBS
A	STREET NAME SIGN WITH HANGER	12.0 S.F.	18.0″ W X 96.0″ L	27 LBS

LOADING DIAGRAM: METAL POLE #3 and #4

PLANS PREPARED IN THE OFFICE OF:
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NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

Prepared For:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

US 13- NC 11-43-903(MEMORIAL DRIVE)
AT
SR 1200 (STANTONSBURG ROAD)/
FARMVILLE BOULEVARD

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLIPS

PREPARED BY: SP PENNINGTON REVIEWED BY:

SCALE 0 N/A N/A

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
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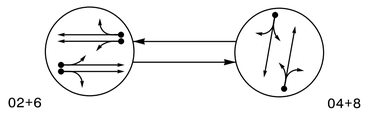
SIGNATURE DATE

SIG. INVENTORY NO. 02-0053

8/29/2014 10:56:18 AM susan.pennington K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\54 - Signal Design\1-02-0053 Memorial\1.9 020053-140829M3-4.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 2.1

PHASING DIAGRAM



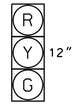
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION			
SIGNAL FACE	PHASE 02+6	PHASE 04+8	FLASH
21, 22	G	R	Y
41,42,43	R	G	R
61,62	G	R	Y
81,82	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



21, 22
41, 42, 43
61, 62
81, 82

NEMA LOOP & DETECTOR INSTALLATION CHART
with TS-2 CABINET

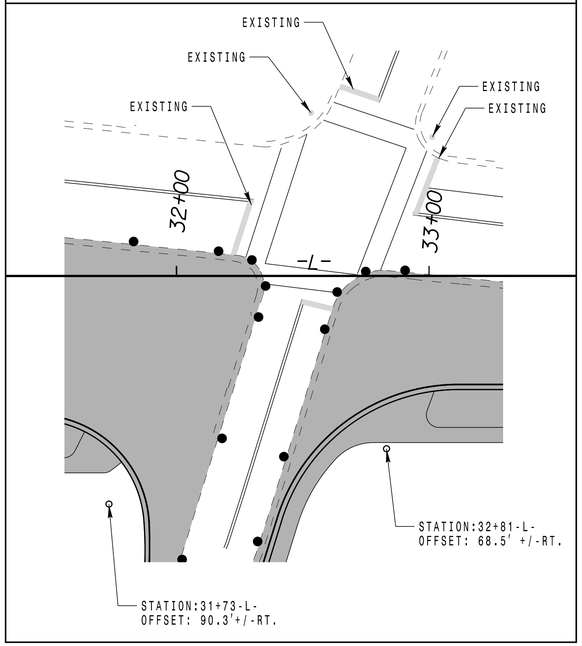
INDUCTIVE LOOPS						DETECTOR UNITS					
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	NEMA PHASE	NEW	EXISTING	TIMING FEATURE	TIMING TIME	INHIBIT DELAY DURING GREEN?
2A, 2B	6X6	70	4	X	-	2	X	-	-	-	NO
4A	6X40	+5	2-4-2	X	-	4	X	-	DELAY	3	YES
6A, 6B	6X6	70	4	X	-	6	X	-	-	-	NO
8A	6X40	+5	2-4-2	X	-	8	X	-	DELAY	3	YES

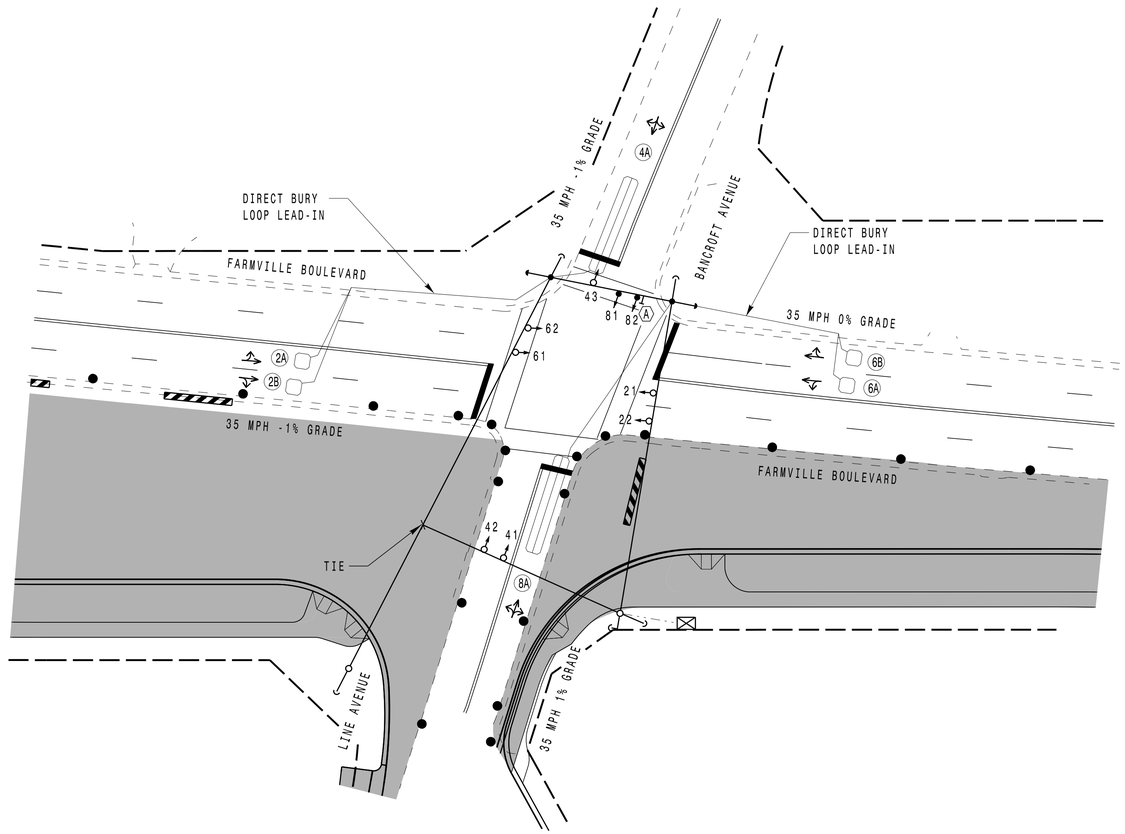
2 PHASE
FULLY ACTUATED
(GREENVILLE SIGNAL SYSTEM)

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. Program phase 4 and phase 8 for dual entry.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
8. Intersection Zone Number: 4
   System Address Number: 91

POLE LOCATION DIAGRAM





ASC3 TIMING CHART
NEMA CONTROLLER

PHASE	02	04	06	08
MINIMUM GREEN*	10 SEC.	7 SEC.	10 SEC.	7 SEC.
PASSAGE/GAP*	3.0 SEC.	2.0 SEC.	3.0 SEC.	2.0 SEC.
YELLOW CHANGE INT.	3.9 SEC.	3.9 SEC.	3.8 SEC.	3.8 SEC.
RED CLEARANCE	1.4 SEC.	1.5 SEC.	1.3 SEC.	1.5 SEC.
MAX. 1*	35 SEC.	25 SEC.	35 SEC.	25 SEC.
RECALL POSITION	MIN. RECALL	NONE	MIN. RECALL	NONE
VEHI. CALL MEMORY	NONLOCK	NONLOCK	NONLOCK	NONLOCK
WALK*	– SEC.	– SEC.	– SEC.	– SEC.
FLASHING DON'T WALK	– SEC.	– SEC.	– SEC.	– SEC.
VOLUME DENSITY	OFF	OFF	OFF	OFF
ACTUATION B4 ADD	– VEH.	– VEH.	– VEH.	– VEH.
SEC. PER ACTUATION*	– SEC.	– SEC.	– SEC.	– SEC.
MAX. INITIAL*	– SEC.	– SEC.	– SEC.	– SEC.
TIME B4 REDUCTION*	– SEC.	– SEC.	– SEC.	– SEC.
TIME TO REDUCE*	– SEC.	– SEC.	– SEC.	– SEC.
MINIMUM GAP	– SEC.	– SEC.	– SEC.	– SEC.

* These values may be field adjusted. Do not adjust Passage /Gap times for phases 2, 4, 6, and 8 lower than what is shown. Min Green for all phases should not belower 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	
	Construction Zone	
	Construction Zone Drums	
(A)	"NO TURN ON RED" Sign (R10-11)	(A)

TEMPORARY DESIGN 1 - TMP PHASE 1

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

Prepared For:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

FARMVILLE BOULEVARD
AT
BANCROFT AVENUE/
LINE AVENUE

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON REVIEWED BY:

SCALE 0 30' 1"=30'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
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SIGNATURE DATE

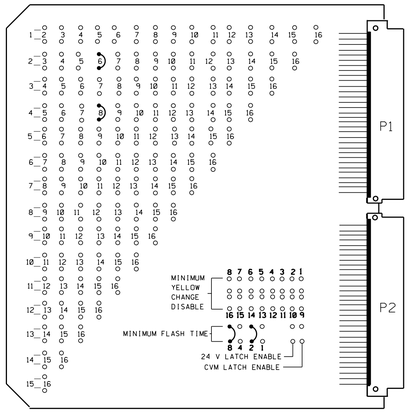
SIG. INVENTORY NO. 02-0892T1

K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\S4 - Signal Design\2-G-091 Bancroft\t2.1 020892-14082971.dgn
8/29/2014 10:56:19 AM susan.pennington

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 2.2

EDI MODEL MMU2-16LE MALFUNCTION MANAGEMENT UNIT PROGRAMMING DETAIL

(program card and tables as shown below)



MMU PROGRAMMING CARD

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	DISABLE
2	ENABLE
3	DISABLE
4	ENABLE
5	DISABLE
6	ENABLE
7	DISABLE
8	ENABLE
9	DISABLE
10	DISABLE
11	DISABLE
12	DISABLE
13	DISABLE
14	DISABLE
15	DISABLE
16	DISABLE

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDguard	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF
VM 3x/Day Latch	ON

FLASHING YELLOW ARROW	
CONFIG MODE	A
ENABLE CHANNEL PAIR, FYA	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
RED/YEL INPUT ENABLE	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
FLASH RATE FAULT	OFF
FYA TRAP DETECT	OFF

MMU PROGRAMMING NOTE

ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

NOTES

1. To prevent "Flash-conflict" problems, wire all unused load switches to flash red. Verify that signal heads flash in accordance with the signal plans.
2. To prevent red failures on unused monitor channels, tie unused load switch red outputs 1,3,5,7,9,10,11,12,13,14 15 and 16 to load switch AC+ by inserting a jumper plug in the unused load switch socket from pin 1 (LS AC+) to pin 3 (red out). Make sure all flash transfer relays are in place.
3. Program controller to start up in phases 2 and 6 green.
4. Set power-up flash time to 10 seconds and implement on the Malfunction Management Unit. Set controller power-up flash time to 0 seconds.
5. Enable simultaneous gap-out feature, on controller unit, for all phases.
6. Program detectors in accordance with the manufacturer's instructions to accomplish the detection schemes shown on the signal design plans.
7. Program detector call delay and extension timing on the controller, unless otherwise specified.
8. Set all detector card unit channels to "presence" mode.
9. Program phases 4 and 8, on controller unit, for dual entry.
10. This controller and cabinet are part of the Greenville Signal System.

SIGNAL HEAD HOOK-UP CHART

PHASE	1	2	3	4	5	6	7	8	2 PED	4 PED	6 PED	8 PED	OLA	OLB	OLC	OLD
SIGNAL HEAD NO.	NU	21,22	NU	41,42 43	NU	61,62	NU	81,82	NU	NU	NU	NU	NU	NU	NU	NU
RED		2R		4R		6R		8R								
YELLOW		2Y		4Y		6Y		8Y								
GREEN		2G		4G		6G		8G								
RED ARROW																
YELLOW ARROW																
GREEN ARROW																
WALK																
DON'T WALK																

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....ECONOLITE ASC/3
CABINET NC-8A TS-2
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....2,4,6,8
PHASES USED.....2,4,6,8
OLA.....NOT USED
OLB.....NOT USED
OLC.....NOT USED
OLD.....NOT USED

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW.
PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

BIU	CH1 L3 Ø 2	SLOT EMPTY	SLOT EMPTY	CH1 L5 Ø 4	CH1 L11 Ø 8	CH1 L9 Ø 6	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	CH2 L4 NOT USED			CH2 L6 NOT USED	CH2 L12 NOT USED	CH2 L10 NOT USED					

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS
NU	L1A,L1B
NU	L2A,L2B
2A, 2B	L3A,L3B
NU	L4A,L4B
4A	L5A,L5B
NU	L6A,L6B
NU	L7A,L7B
NU	L8A,L8B
6A, 6B	L9A,L9B
NU	L10A,L10B
8A	L11A,L11B
NU	L12A,L12B
NU	L13A,L13B
NU	L14A,L14B
NU	L15A,L15B
NU	L16A,L16B
NU	L17A, L17B
NU	L18A, L18B
NU	L19A, L19B
NU	L20A, L20B
NU	L21A, L21B
NU	L22A, L22B
NU	L23A, L23B
NU	L24A, L24B

NOTE

BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	–	–	–
2	–	–	–
3	Ø 2	–	–
4	–	–	–
5	Ø 4	DELAY	3
6	–	–	–
7	–	–	–
8	–	–	–
9	Ø 6	–	–
10	–	–	–
11	Ø 8	DELAY	3
12	–	–	–
13	–	–	–
14	–	–	–
15	–	–	–
16	–	–	–
17	–	–	–
18	–	–	–
19	–	–	–
20	–	–	–
21	–	–	–
22	–	–	–
23	–	–	–
24	–	–	–

LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	Ø 1
2	Ø 2
3	Ø 3
4	Ø 4
5	Ø 5
6	Ø 6
7	Ø 7
8	Ø 8
9	Ø 2 PED
10	Ø 4 PED
11	Ø 6 PED
12	Ø 8 PED
13	OLA
14	OLB
15	OLC
16	OLD

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0892T1
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

TEMPORARY DESIGN 1 - TMP PHASE 1

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

FARMVILLE BOULEVARD
AT
BANCROFT AVENUE/LINE AVENUE

DIVISION 2 | PITT COUNTY | GREENVILLE
PLAN DATE: JUNE 2014 | REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
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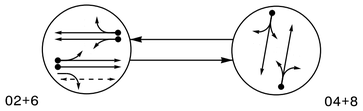
SIGNATURE DATE

SIG. INVENTORY NO. 02-0892T1

K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\64 - Signal Design\2-G-091 Bancroft*2.2 020892-140829eT1.dgn
10:56:21 AM susan.pennington
8/29/2014

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 2.3

PHASING DIAGRAM



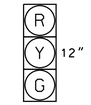
PHASING DIAGRAM DETECTION LEGEND

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

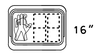
TABLE OF OPERATION			
SIGNAL FACE	PHASE 02+6	PHASE 04+8	FLASH
21, 22	G	R	Y
41,42,43	R	G	R
61,62	G	R	Y
81,82,83	R	G	R
P21, P22	W	DW	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



21, 22
41, 42, 43
61, 62
81, 82, 83



P21, P22

NEMA LOOP & DETECTOR INSTALLATION CHART
with TS-2 CABINET

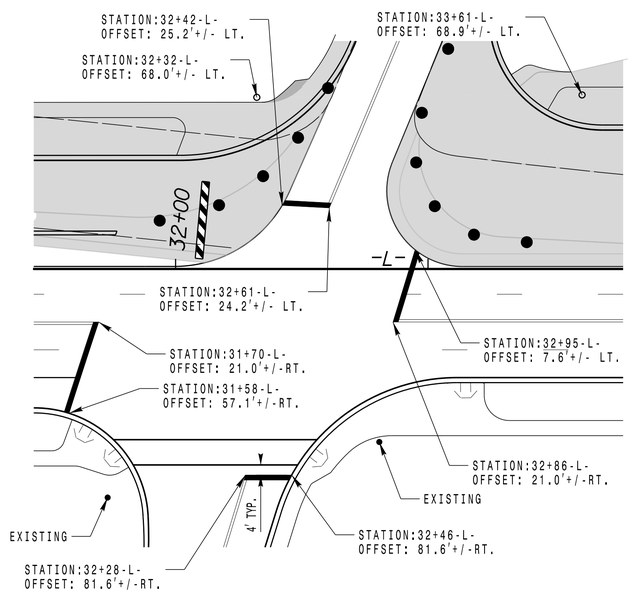
INDUCTIVE LOOPS						DETECTOR UNITS				
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	NEMA PHASE	NEW	EXISTING	TIMING FEATURE	TIMING TIME	INHIBIT DELAY DURING GREEN?
2A, 2B	6X6	70	5	X	-	2	-	X	-	-	NO
4A	6X40	+5	2-4-2	X	-	4	-	X	DELAY	3	YES
6A, 6B	6X6	70	5	X	-	6	-	X	-	-	NO
8A	6X40	+5	2-4-2	X	-	8	-	X	DELAY	3	YES

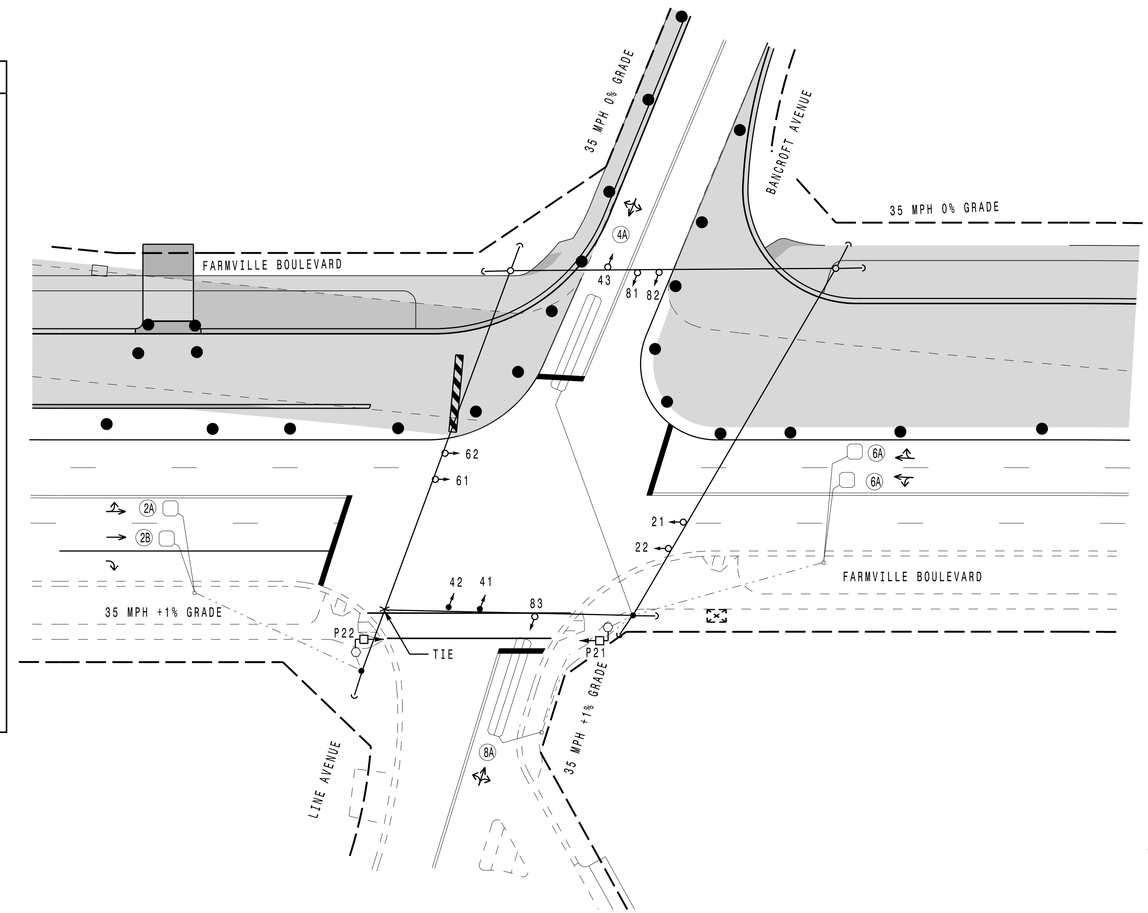
2 PHASE FULLY ACTUATED (GREENVILLE SIGNAL SYSTEM)

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. Program phase 4 and phase 8 for dual entry.
4. Set all detector units to presence mode.
5. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
6. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
8. Intersection Zone Number: 4
   System Address Number: 91
9. Install black powder coated pedestrain signal pedestals.
10. Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.

STOP LINE AND POLE LOCATION DIAGRAM





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	
	Type II Signal Pedestal	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Construction Zone	
	Construction Zone Drums	

ASC3 TIMING CHART
NEMA CONTROLLER

PHASE	02	04	06	08
MINIMUM GREEN*	10 SEC.	7 SEC.	10 SEC.	7 SEC.
PASSAGE/GAP*	3.0 SEC.	2.0 SEC.	3.0 SEC.	2.0 SEC.
YELLOW CHANGE INT.	3.8 SEC.	3.8 SEC.	3.8 SEC.	3.8 SEC.
RED CLEARANCE	2.5 SEC.	2.0 SEC.	2.1 SEC.	2.0 SEC.
MAX. 1*	35 SEC.	25 SEC.	35 SEC.	25 SEC.
RECALL POSITION	MIN. RECALL	NONE	MIN. RECALL	NONE
VEHI. CALL MEMORY	NONLOCK	NONLOCK	NONLOCK	NONLOCK
WALK*	7 SEC.	– SEC.	– SEC.	– SEC.
FLASHING DON'T WALK	20 SEC.	– SEC.	– SEC.	– SEC.
VOLUME DENSITY	OFF	OFF	OFF	OFF
ACTUATION B4 ADD	– VEH.	– VEH.	– VEH.	– VEH.
SEC. PER ACTUATION*	– SEC.	– SEC.	– SEC.	– SEC.
MAX. INITIAL*	– SEC.	– SEC.	– SEC.	– SEC.
TIME B4 REDUCTION*	– SEC.	– SEC.	– SEC.	– SEC.
TIME TO REDUCE*	– SEC.	– SEC.	– SEC.	– SEC.
MINIMUM GAP	– SEC.	– SEC.	– SEC.	– SEC.

* These values may be field adjusted. Do not adjust Passage /Gap times for phases 2, 4, 6, and 8 lower than what is shown. Min Green for all phases should not belower than 4 seconds.

TEMPORARY DESIGN 2 - TMP PHASE 2

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

Prepared For:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

FARMVILLE BOULEVARD
AT
BANCROFT AVENUE/
LINE AVENUE

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON REVIEWED BY:

SCALE 0 30' 1"=30'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
DC87A5BE0508437...
SIGNATURE DATE

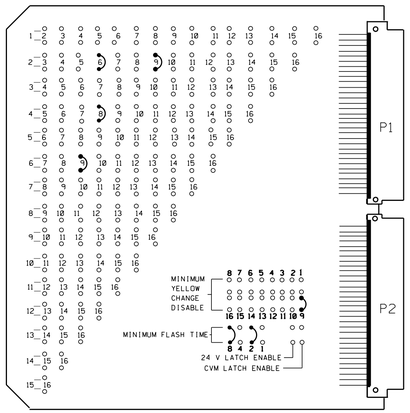
SIG. INVENTORY NO. 02-0892T2

K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\S4 - Signal Design\2-0-09t Bancroft\t2.3 020892-140829gT2.dgn
susan.pennington
10:56:22 AM
8/29/2014

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 2.4

EDI MODEL MMU2-16LE MALFUNCTION MANAGEMENT UNIT PROGRAMMING DETAIL

(program card and tables as shown below)



MMU PROGRAMMING CARD

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	DISABLE
2	ENABLE
3	DISABLE
4	ENABLE
5	DISABLE
6	ENABLE
7	DISABLE
8	ENABLE
9	ENABLE
10	DISABLE
11	DISABLE
12	DISABLE
13	DISABLE
14	DISABLE
15	DISABLE
16	DISABLE

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDgaurd	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF
VM 3x/Day Latch	ON

FLASHING YELLOW ARROW	
CONFIG MODE	A
ENABLE CHANNEL PAIR, FYA	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
RED/YEL INPUT ENABLE	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
FLASH RATE FAULT	OFF
FYA TRAP DETECT	OFF

MMU PROGRAMMING NOTE

ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW.
PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

BIU	CH1 L3 ø2	SLOT EMPTY	SLOT EMPTY	CH1 L5 ø4	CH1 L11 ø8	CH1 L9 ø6	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	CH2 L4 NOT USED			CH2 L6 NOT USED	CH2 L12 NOT USED	CH2 L10 NOT USED					

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS
NU	L1A,L1B
NU	L2A,L2B
2A, 2B	L3A,L3B
NU	L4A,L4B
4A	L5A,L5B
NU	L6A,L6B
NU	L7A,L7B
NU	L8A,L8B
6A, 6B	L9A,L9B
NU	L10A,L10B
8A	L11A,L11B
NU	L12A,L12B
NU	L13A,L13B
NU	L14A,L14B
NU	L15A,L15B
NU	L16A,L16B
NU	L17A, L17B
NU	L18A, L18B
NU	L19A, L19B
NU	L20A, L20B
NU	L21A, L21B
NU	L22A, L22B
NU	L23A, L23B
NU	L24A, L24B

NOTE

BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	-	-	-
2	-	-	-
3	ø 2	-	-
4	-	-	-
5	ø 4	DELAY	3
6	-	-	-
7	-	-	-
8	-	-	-
9	ø 6	-	-
10	-	-	-
11	ø 8	DELAY	3
12	-	-	-
13	-	-	-
14	-	-	-
15	-	-	-
16	-	-	-
17	-	-	-
18	-	-	-
19	-	-	-
20	-	-	-
21	-	-	-
22	-	-	-
23	-	-	-
24	-	-	-

NOTES

1. To prevent "Flash-conflict" problems, wire all unused load switches to flash red. Verify that signal heads flash in accordance with the signal plans.
2. To prevent red failures on unused monitor channels, tie unused load switch red outputs 1,3,5,7,10,11,12,13,14 15 and 16 to load switch AC+ by inserting a jumper plug in the unused load switch socket from pin 1 (LS AC+) to pin 3 (red out). Make sure all flash transfer relays are in place.
3. Program controller to start up in phases 2 and 6 green.
4. Set power-up flash time to 10 seconds and implement on the Malfunction Management Unit. Set controller power-up flash time to 0 seconds.
5. Enable simultaneous gap-out feature, on controller unit, for all phases.
6. Program detectors in accordance with the manufacturer's instructions to accomplish the detection schemes shown on the signal design plans.
7. Program detector call delay and extension timing on the controller, unless otherwise specified.
8. Set all detector card unit channels to "presence" mode.
9. Program phases 4 and 8, on controller unit, for dual entry.
10. This controller and cabinet are part of the Greenville Signal System.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	ø1
2	ø2
3	ø3
4	ø4
5	ø5
6	ø6
7	ø7
8	ø8
9	ø2 PED
10	ø4 PED
11	ø6 PED
12	ø8 PED
13	OLA
14	OLB
15	OLC
16	OLD

SIGNAL HEAD HOOK-UP CHART

PHASE	1	2	3	4	5	6	7	8	2 PED	4 PED	6 PED	8 PED	OLA	OLB	OLC	OLD
SIGNAL HEAD NO.	NU	21,22	NU	41,42 43	NU	61,62	NU	81,82 83	P21, P22	NU	NU	NU	NU	NU	NU	NU
RED		2R		4R		6R		8R								
YELLOW		2Y		4Y		6Y		8Y								
GREEN		2G		4G		6G		8G								
RED ARROW																
YELLOW ARROW																
GREEN ARROW																
WALK									9G							
DON'T WALK									9R							

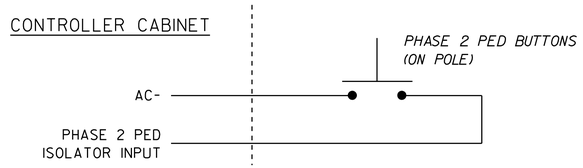
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....ECONOLITE ASC/3
CABINET NC-8A TS-2
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....2,4,6,8,9
PHASES USED.....2,2PED,4,6,8
OLA.....NOT USED
OLB.....NOT USED
OLC.....NOT USED
OLD.....NOT USED

PEDESTRIAN PUSH-BUTTON WIRING DETAIL

(wire push-buttons as shown below)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0892T2
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

TEMPORARY DESIGN 2 - TMP PHASE 2

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For: Transportation Mobility and Safety Division, North Carolina Department of Transportation, Signals Management Section

750 N.Greenfield Pkwy.Garner,NC 27529

FARMVILLE BOULEVARD
AT
BANCROFT AVENUE/LINE AVENUE

DIVISION 2	PITT COUNTY	GREENVILLE
PLAN DATE: JUNE 2014	REVIEWED BY:	SL PHILLIPS
PREPARED BY: SP PENNINGTON	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

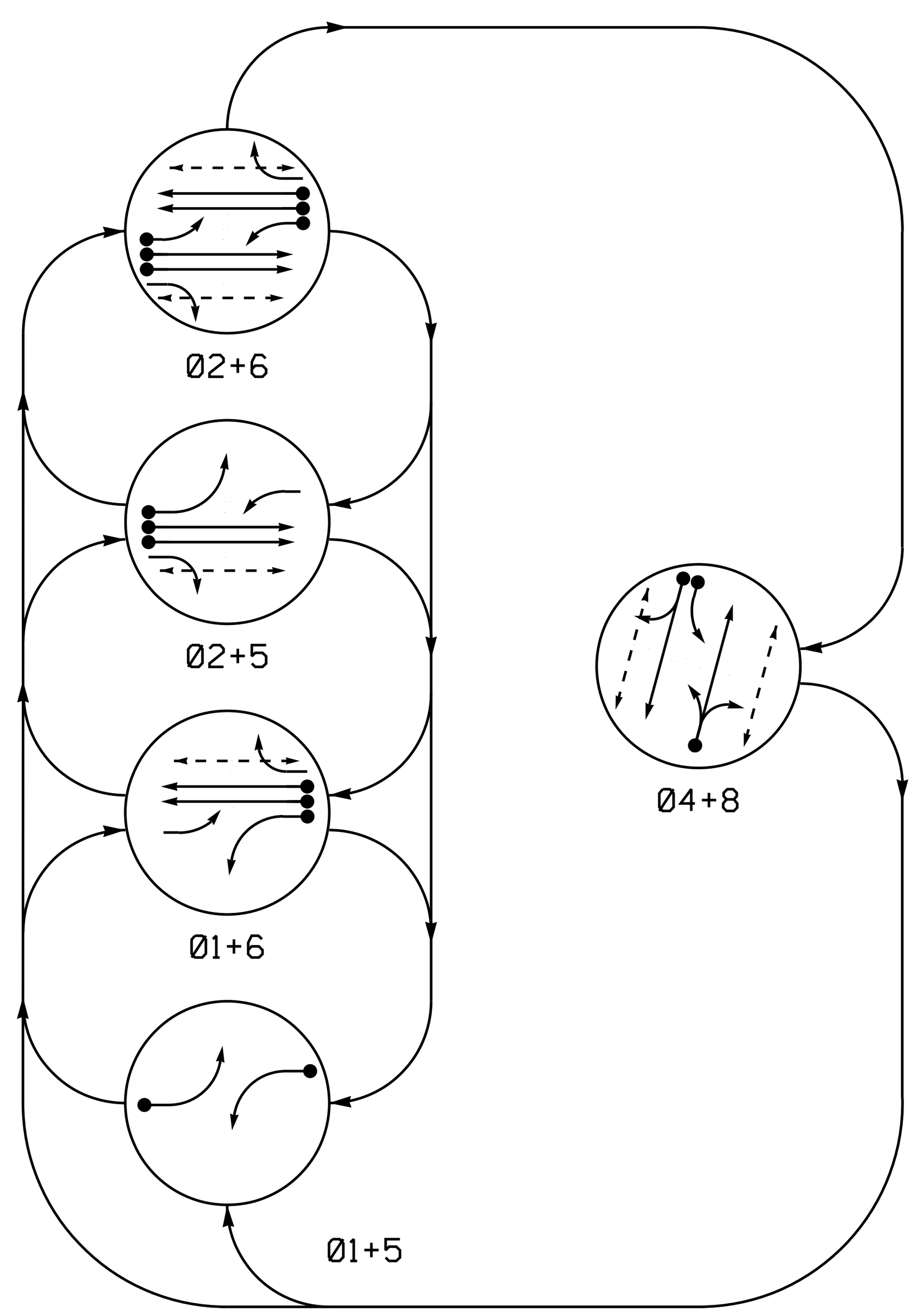
DocuSigned by: Stacie Phillips 9/2/2014
2C87A50ED6D0437
SIGNATURE DATE

SIG. INVENTORY NO. 02-0892T2

8/29/2014 10:56:23 AM susan.pennington K:\RAL_Roadway\011036:75 (U-3315)\Traffic Signals\54 - Signal Design\2-0-091 Bancroft\2.4 020892-140829et2.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 2.5

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

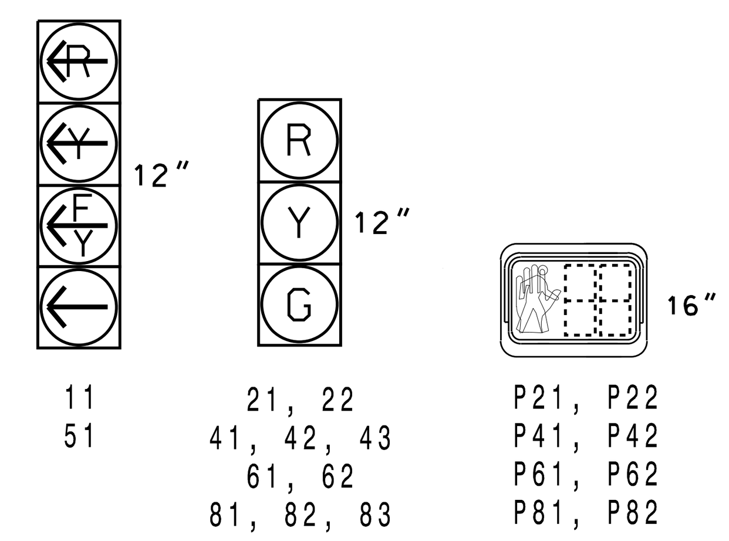
- ◄——● DETECTED MOVEMENT
- ◄—— UNDETECTED MOVEMENT (OVERLAP)
- ◄ – – UNSIGNALIZED MOVEMENT
- < – – > PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø4+8	FLASH
11	←	←	←F/Y	←F/Y	←R	←Y
21, 22	R	R	G	G	R	Y
41, 42, 43	R	R	R	R	G	R
51	←	←F/Y	←	←F/Y	←R	←Y
61, 62	R	G	R	G	R	Y
81, 82, 83	R	R	R	R	G	R
P21, P22	DW	DW	W	W	DW	DRK
P41, P42	DW	DW	DW	DW	W	DRK
P61, P62	DW	W	DW	W	DW	DRK
P81, P82	DW	DW	DW	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



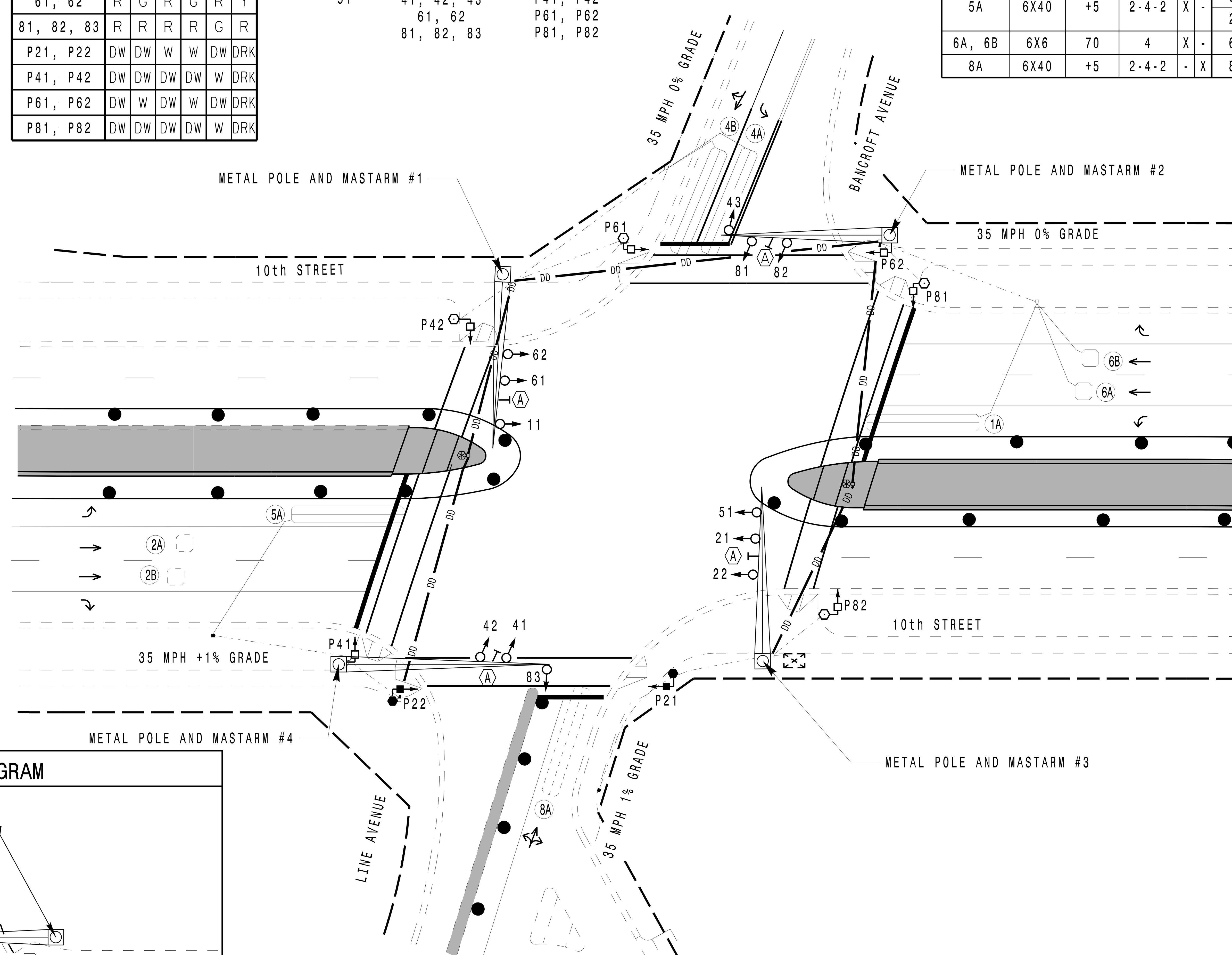
NEMA LOOP & DETECTOR INSTALLATION CHART
with TS-2 CABINET

INDUCTIVE LOOPS: LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	DETECTOR UNITS: NEMA PHASE	NEW	EXISTING	TIMING: FEATURE	TIME	INHIBIT DELAY DURING GREEN?
1A	6X40	+5	2-4-2	X	-	1	X	-	DELAY	15	YES
						6	X	-	-	-	NO
2A, 2B	6X6	70	4	-	X	2	-	X	-	-	NO
4A	6X40	+5	2-4-2	X	-	4	-	X	DELAY	3	YES
4B	6X40	+5	2-4-2	X	-	4	X	-	DELAY	10	YES
5A	6X40	+5	2-4-2	X	-	5	X	-	DELAY	15	YES
						2	X	-	-	-	NO
6A, 6B	6X6	70	4	X	-	6	-	X	-	-	NO
8A	6X40	+5	2-4-2	-	X	8	X	-	DELAY	10	YES

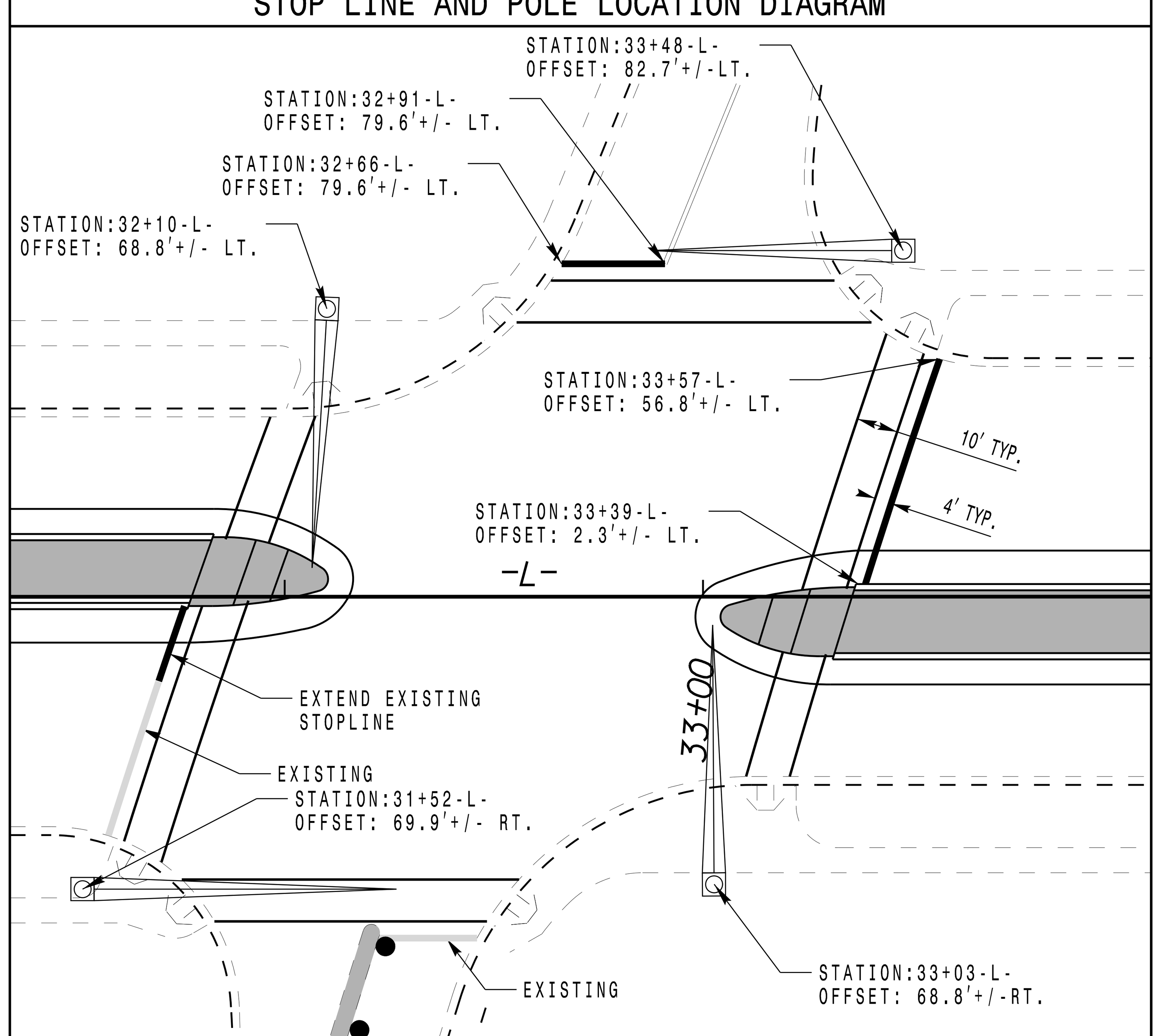
5 PHASE
FULLY ACTUATED
(GREENVILLE SIGNAL SYSTEM)

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. Phase 1 and/or 5 may be lagged.
3. Program phase 4 and phase 8 for dual entry.
4. Set all detector units to presence mode.
5. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
6. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
8. Intersection Zone Number: 4
   System Address Number: 91
9. Install black powder coated metal strain poles and pedestals.
10. Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.



STOP LINE AND POLE LOCATION DIAGRAM



NEMA TIMING CHART

FEATURE	PHASE Ø1	Ø2	Ø4	Ø5	Ø6	Ø8
MINIMUM GREEN *	7 SEC.	10 SEC.	7 SEC.	7 SEC.	10 SEC.	7 SEC.
PASSAGE/GAP *	2.0 SEC.	3.0 SEC.	2.0 SEC.	2.0 SEC.	3.0 SEC.	2.0 SEC.
YELLOW CHANGE INT.	3.0 SEC.	3.8 SEC.	3.8 SEC.	3.0 SEC.	3.8 SEC.	3.8 SEC.
RED CLEARANCE	4.2 SEC.	3.4 SEC.	3.2 SEC.	4.2 SEC.	3.4 SEC.	3.1 SEC.
MAXIMUM 1 *	30 SEC.	60 SEC.	45 SEC.	30 SEC.	60 SEC.	45 SEC.
RECALL POSITION	NONE	MIN. RECALL	NONE	NONE	MIN. RECALL	NONE
VEHICLE CALL MEMORY	NONLOCK	LOCK	NONLOCK	NONLOCK	LOCK	NONLOCK
WALK *	– SEC.	7 SEC.	7 SEC.	– SEC.	7 SEC.	7 SEC.
FLASHING DON'T WALK	– SEC.	20 SEC.	30 SEC.	– SEC.	20 SEC.	30 SEC.
VOLUME DENSITY	OFF	OFF	OFF	OFF	OFF	OFF
ACTUATION B4 ADD *	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.
SEC. PER ACTUATION *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
MAX. INITIAL *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
TIME B4 REDUCTION *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
TIME TO REDUCE *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
MINIMUM GAP	– SEC.	– 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.

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□	Pedestrian Signal Head With Push Button & Sign	■
	Metal Pole with Mastarm	
⊛	Type I Pushbutton Post	
⬡	Type II Signal Pedestal	⬢
	Inductive Loop Detector	
⊠	Controller & Cabinet	
□	Junction Box	■
- · - · -	2-in Underground Conduit	- · - · -
N/A	Right of Way	— — —
→	Directional Arrow	→
	Construction Zone	
	Construction Zone Drums	
Ⓐ	Street Name Sign	Ⓐ
— DD —	Directional Drill	N/A

TEMPORARY DESIGN 3 - TMP PHASE 3

PLANS PREPARED IN THE OFFICE OF:
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P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

Prepared For:
Transportation Mobility and Safety Division
State of North Carolina Department of Transportation
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

10th STREET AT BANCROFT AVENUE/ LINE AVENUE

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014	REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON	REVIEWED BY:

SCALE 0 30' 1"=30'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032607 STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
0C87A59ED60B437...
SIGNATURE DATE

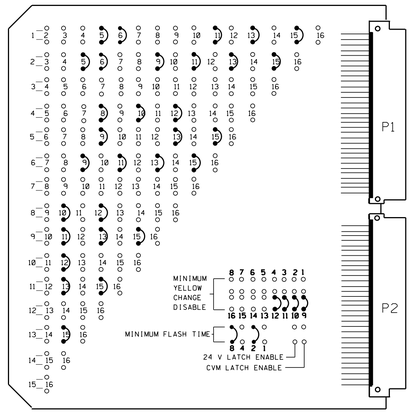
SIG. INVENTORY NO. 02-0892T3

K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\S4 - Signal Design\2-G-091 Bancroft\2.5 020892-140829gT3.dgn susan.pennington 10:56:25 AM 8/29/2014

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 2.6

EDI MODEL MMU2-16LE MALFUNCTION MANAGEMENT UNIT PROGRAMMING DETAIL

(program card and tables as shown below)



MMU PROGRAMMING CARD

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	DISABLE
2	ENABLE
3	DISABLE
4	ENABLE
5	DISABLE
6	ENABLE
7	DISABLE
8	ENABLE
9	ENABLE
10	ENABLE
11	ENABLE
12	ENABLE
13	ENABLE
14	DISABLE
15	ENABLE
16	DISABLE

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDgaurd	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF
VM 3x/Day Latch	ON

FLASHING YELLOW ARROW	
CONFIG MODE	A
ENABLE CHANNEL PAIR, FYA	
CH 1-9	ON
CH 3-10	OFF
CH 5-11	ON
CH 7-12	OFF
RED/YEL INPUT ENABLE	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
FLASH RATE FAULT	OFF
FYA TRAP DETECT	OFF

MMU PROGRAMMING NOTE

ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

NOTES

1. TO PREVENT "FLASH-CONFLICT" PROBLEMS, WIRE ALL UNUSED LOAD SWITCHES TO FLASH RED. VERIFY THAT SIGNAL HEADS FLASH IN ACCORDANCE WITH THE SIGNAL PLANS.
2. TO PREVENT RED FAILURES ON UNUSED MONITOR CHANNELS, TIE UNUSED LOAD SWITCH RED OUTPUTS 3, 7,14 & 16 TO LOAD SWITCH AC+ BY INSERTING A JUMPER PLUG IN THE UNUSED LOAD SWITCH SOCKET FROM PIN 1 (LS AC+) TO PIN 3 (RED OUT). MAKE SURE ALL FLASH TRANSFER RELAYS ARE IN PLACE.
3. PROGRAM CONTROLLER TO START UP IN PHASES 2 AND 6 GREEN.
4. SET POWER-UP FLASH TIME TO 10 SECONDS AND IMPLEMENT ON THE MALFUNCTION MANAGEMENT UNIT. SET CONTROLLER POWER-UP FLASH TIME TO 0 SECONDS.
5. ENABLE SIMULTANEOUS GAP-OUT FEATURE, ON CONTROLLER UNIT, FOR ALL PHASES.
6. PROGRAM DETECTORS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS TO ACCOMPLISH THE DETECTION SCHEMES SHOWN ON THE SIGNAL DESIGN PLANS.
7. PROGRAM DETECTOR CALL DELAY AND EXTENSION TIMING ON THE CONTROLLER, UNLESS OTHERWISE SPECIFIED.
8. SET ALL DETECTOR CARD UNIT CHANNELS TO "PRESENCE" MODE.
9. PROGRAM PHASES 4 AND 8, ON CONTROLLER UNIT, FOR DUAL ENTRY.
10. THE CABINET AND CONTROLLER ARE PART OF THE GREENVILE CITY SYSTEM.

SIGNAL HEAD HOOK-UP CHART

PHASE	1	2	3	4	5	6	7	8	2 PED	4 PED	6 PED	8 PED	OLA	OLB	OLC	OLD
SIGNAL HEAD NO.	11★	21,22	NU	41,42 43	51★	61,62	NU	81,82 83	P21, P22	P41, P42	P61, P62	P81, P82	11★	NU	51★	NU
RED	✳	2R		4R	✳	6R		8R								
YELLOW	✳	2Y		4Y	✳	6Y		8Y								
GREEN		2G		4G		6G		8G								
RED ARROW													13R		15R	
YELLOW ARROW													13Y		15Y	
FLASHING YELLOW ARROW													13G		15G	
GREEN ARROW	1G				5G											
✋									9R	10R	11R	12R				
🚶									9G	10G	11G	12G				

NU = NOT USED

✳ DENOTES INSTALL LOAD RESISTOR. SEE LOAD RESISTOR INSTALLATION DETAIL SHEET 2 OF 2.

★ SEE PICTORIAL OF HEAD WIRING DETAIL SHEET 2 OF 2.

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW.
PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

BIU	CH1 L3 ø2	CH1 L1 ø1	CH1 L7 ø5	CH1 L5 ø4	CH1 L11 ø8	CH1 L9 ø6	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	CH2 L4 NOT USED	CH2 L2 ø6	CH2 L8 ø2	CH2 L6 ø4	CH2 L12 NOT USED	CH2 L10 NOT USED					

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

	LOOP NO.	LOOP PANEL TERMINALS
ADD JUMPERS FROM: L1A TO L2A, AND L1B TO L2B	1A	L1A,L1B
		L2A,L2B
	2A, 2B	L3A,L3B
	NU	L4A,L4B
	4A	L5A,L5B
	4B	L6A,L6B
ADD JUMPERS FROM: L7A TO L8A, AND L7B TO L8B	5A	L7A,L7B
		L8A,L8B
	6A, 6B	L9A,L9B
	NU	L10A,L10B
	8A	L11A,L11B
	NU	L12A,L12B
	NU	L13A,L13B
	NU	L14A,L14B
	NU	L15A,L15B
	NU	L16A,L16B
	NU	L17A, L17B
	NU	L18A, L18B
	NU	L19A, L19B
	NU	L20A, L20B
	NU	L21A, L21B
	NU	L22A, L22B
	NU	L23A, L23B
	NU	L24A, L24B

NOTE

BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	ø1	DELAY	15
2	ø6	–	–
3	ø2	–	–
4	–	–	–
5	ø4	DELAY	3
6	ø4	DELAY	10
7	ø5	DELAY	15
8	ø2	–	–
9	ø6	–	–
10	–	–	–
11	ø8	DELAY	10
12	–	–	–
13	–	–	–
14	–	–	–
15	–	–	–
16	–	–	–
17	–	–	–
18	–	–	–
19	–	–	–
20	–	–	–
21	–	–	–
22	–	–	–
23	–	–	–
24	–	–	–

EQUIPMENT INFORMATION

LOCAL CONTROLLER.....ECONOLITE ASC/3
CABINET NC-8A TS-2
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....1,2,4,5,6,8,9,10,11,12,13,15
PHASES USED.....1,2,2PED,4,4PED,5,6,6PED,8,8PED
OLA.....*
OLB.....NOT USED
OLC.....*
OLD.....NOT USED

*See Sheet 2 of 2 Econolite ASC/3 Overlap Programming Detail.

DETECTOR RACK NO. 2 SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW.
PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

BIU	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY

LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	ø1
2	ø2
3	ø3
4	ø4
5	ø5
6	ø6
7	ø7
8	ø8
9	ø2 PED
10	ø4 PED
11	ø6 PED
12	ø8 PED
13	OLA
14	OLB
15	OLC
16	OLD

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0892T3
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

TEMPORARY DESIGN 3-TMP PHASE 3 SHEET 1 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

10th STREET
AT
BANCROFT AVENUE/
LINE AVENUE

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014	REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
SIGNATURE DATE

SIG. INVENTORY NO. 02-0892T3

K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\S4 - Signal Design\2-G-091 Bancroft#2.6 020892-140829e13-1.dgn susan.pennington 1:17:16 PM 8/29/2014

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 2.7

ECONOLITE ASC/3 SPECIAL MMU PROGRAMMING

(program controller as shown below)

FROM MAIN MENU SELECT 1 (CONFIGURATION)

```
CONFIGURATION SUBMENU

1. CONTROLLER SEQ        5. COMMUNICATIONS
2. PHASE IN USE/PED      6. ENABLE LOGGING
3. LOAD SW ASSIGN        7. DISPLAY/ACCESS
[4. PORT 1 (SDLC)]       8. LOGIC PROCESSOR

PRESS KEYS 1..8 TO SELECT
```

```
PORT 1 (SDLC) SUBMENU

1. SDLC OPTIONS
[2. MMU PROGRAM]
3. COLOR CHECK ENABLE
4. SECONDARY STATION/TESTS

PRESS KEYS 1..4 TO SELECT
```

```
MMU PROGRAM [    MANUAL]
      CH  6 5 4 3 2 1 0 9 8 7 6 5 4 3 2
  1       . X . X . X . . . . X X . . .
  2       . X . X . X . X . . X X . .
  3       . . . . . . . . . . . . . .
  4       . . . . X . X . X . . .
  5       . X . X . . . X . . .
  6       . X . X . X . X . .
  7       . . . . . . . . . .
  8       . . . . X . X .
  9       . X . X . X .
 10       . . . . X .
 11       . X . X .
 12       . . . .
 13       . X .
 14       . .
```

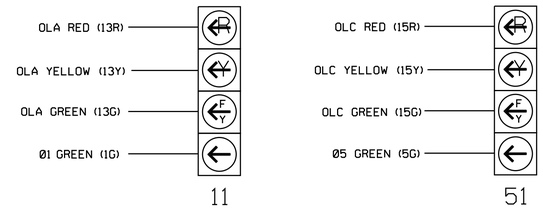
CAUTION!

Set intersection to Flash before attempting to enter or change any MMU programming data.

This programming and that of the MMU programming card must match exactly. If they do not, the intersection will be placed into Flash.

4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

1. SEE OVERLAP PROGRAMMING INSTRUCTIONS THIS SHEET.

ECONOLITE ASC/3 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

From Main Menu select 2 (CONTROLLER)

```
MAIN MENU

1. CONFIGURATION         6. DETECTORS
[2. CONTROLLER]          7. STATUS DISPLAY
3. COORDINATOR           8. UTILITIES
4. PREEMPTOR/TSP         9. DIAGNOSTICS
5. TIME BASE

PRESS KEYS 1..9 TO SELECT
```

From Controller Sub select 2 (VEHICLE OVERLAPS)

```
CONTROLLER SUBMENU

1. TIMING PLANS          5. START/FLASH
[2. VEHICLE OVERLAPS]    6. OPTION DATA
3. VEH/PED OVERLAPS      7. PRE-TIMED
4. GUAR MIN TIME         8. PHASE RECALL

PRESS KEYS 1..8 TO SELECT
```

OVERLAP A

Select Vehicle Overlap Type (PPLT FYA)

```
TMG VEH OVLP . . .[A]    TYPE: [PPLT FYA]

PROTECTED PHASE (LEFT TURN).....................1
PERMISSIVE PHASE (OPPOSING THRU).................2
FLASHING ARROW OUTPUT.................CH13 ISOLATE

DELAY START OF:  FYA.. 0.0  CLEARANCE.....0.0
ACTION PLAN SF BIT DISABLE.....................0
```

OVERLAP C

Select Vehicle Overlap Type (PPLT FYA)

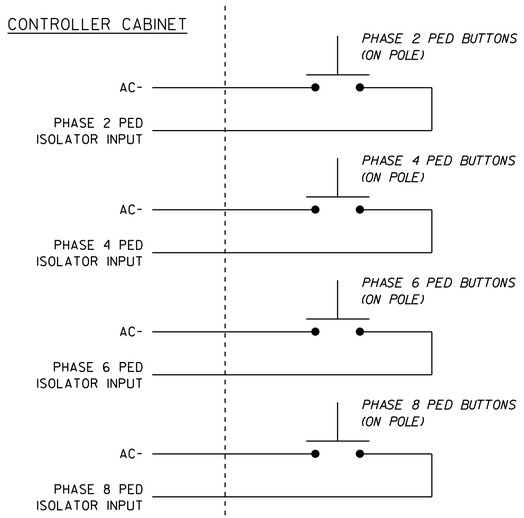
```
TMG VEH OVLP . . .[C]    TYPE: [PPLT FYA]

PROTECTED PHASE (LEFT TURN).....................5
PERMISSIVE PHASE (OPPOSING THRU).................6
FLASHING ARROW OUTPUT.................CH15 ISOLATE

DELAY START OF:  FYA.. 0.0  CLEARANCE.....0.0
ACTION PLAN SF BIT DISABLE.....................0
```

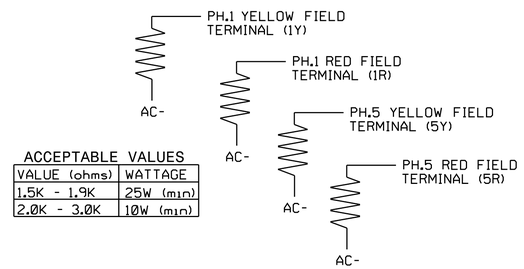
PEDESTRIAN PUSH-BUTTON WIRING DETAIL

(wire push-buttons as shown below)



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)



ACCEPTABLE VALUES

VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0892T3
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

TEMPORARY DESIGN 3-TMP PHASE 3 DESIGN SHEET 2 OF 2

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

10th STREET
AT
BANCROFT AVENUE/
LINE AVENUE

DIVISION 2 | PITT COUNTY | GREENVILLE

PLAN DATE: JUNE 2014	REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

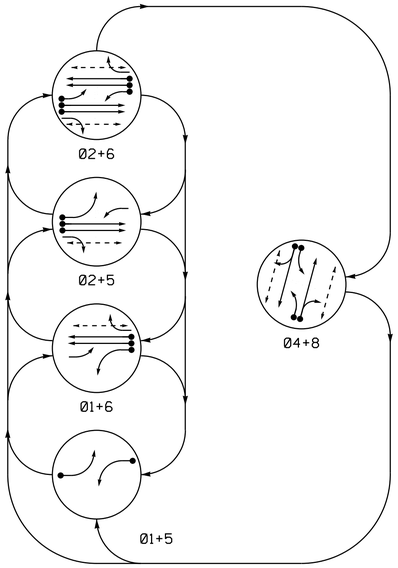
DocuSigned by: Stacie Phillips 9/2/2014
DOCUSIGNATURE DATE

SIG. INVENTORY NO. 02-0892T3

K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\SS4 - Signal Design\2-G-091 Bancroft\#2.7 020892-140829e13-2.dgn
susan.pennington
1:17:17 PM
8/29/2014

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 2.8

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

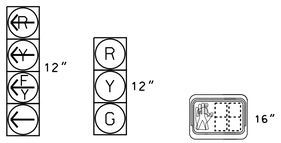
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+05	01+06	02+05	02+06	04+08	FLASH
11	←	←	↑ Y	↑ Y	↑ R	↑ Y
21, 22	R	R	G	G	R	Y
41, 42, 43	R	R	R	G	R	R
51	←	↑ Y	←	↑ Y	↑ R	↑ Y
61, 62	R	G	R	G	R	Y
81, 82, 83	R	R	R	R	G	R
P21, P22	DW	DW	W	W	DW	DRK
P41, P42	DW	DW	DW	DW	W	DRK
P61, P62	DW	W	DW	W	DW	DRK
P81, P82	DW	DW	DW	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



11
51

21, 22
41, 42, 43
61, 62
81, 82, 83

P21, P22
P41, P42
P61, P62
P81, P82

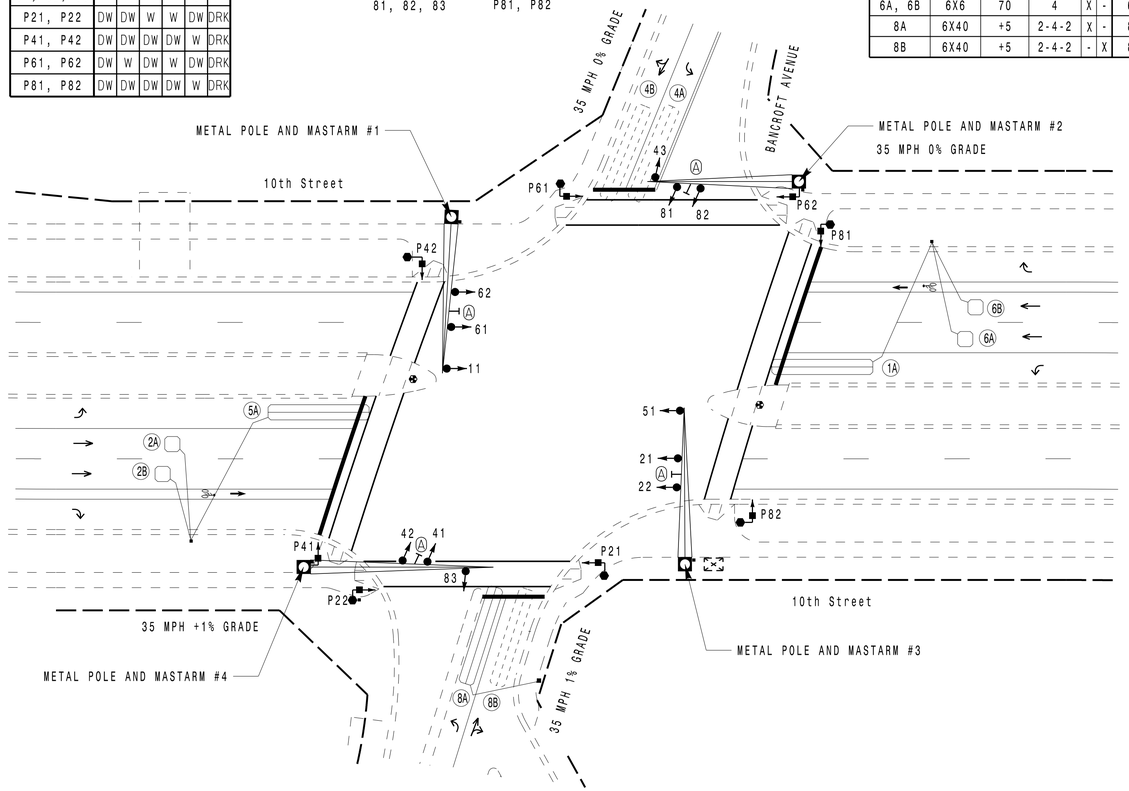
NEMA LOOP & DETECTOR INSTALLATION CHART
with TS-2 CABINET

INDUCTIVE LOOPS						DETECTOR UNITS					
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	NEMA PHASE	NEW	EXISTING	TIMING FEATURE	TIMING TIME	INHIBIT DELAY DURING GREEN?
1A	6X40	+5	2-4-2	X	-	1	-	X	DELAY	15	NO
						6	-	X	-	-	NO
2A, 2B	6X6	70	4	-	X	2	-	X	-	-	NO
4A	6X40	+5	2-4-2	-	X	4	-	X	DELAY	3	YES
4B	6X40	+5	2-4-2	-	X	4	-	X	DELAY	10	YES
5A	6X40	+5	2-4-2	X	-	5	-	X	DELAY	15	NO
						2	-	X	-	-	NO
6A, 6B	6X6	70	4	X	-	6	-	X	-	-	NO
8A	6X40	+5	2-4-2	X	-	8	-	X	-	-	NO
8B	6X40	+5	2-4-2	-	X	8	X	-	DELAY	10	YES

5 PHASE FULLY ACTUATED (GREENVILLE SIGNAL SYSTEM)

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. Phase 1 and/or 5 may be lagged.
4. Program phase 4 and phase 8 for dual entry.
5. Reposition existing signal heads 11, 21, 22, 51, 61 and 62.
6. Set all detector units to presence mode.
7. Pavement markings are existing.
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
9. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
11. Intersection Zone Number: 4
    System Address Number: 91



ASC3 NEMA TIMING CHART

FEATURE	PHASE 01	02	04	05	06	08
MINIMUM GREEN *	7 SEC.	10 SEC.	7 SEC.	7 SEC.	10 SEC.	7 SEC.
PASSAGE/GAP *	2.0 SEC.	3.0 SEC.	2.0 SEC.	2.0 SEC.	3.0 SEC.	2.0 SEC.
YELLOW CHANGE INT.	3.0 SEC.	3.8 SEC.	3.8 SEC.	3.0 SEC.	3.8 SEC.	3.8 SEC.
RED CLEARANCE	4.1 SEC.	3.3 SEC.	3.2 SEC.	4.0 SEC.	3.3 SEC.	3.1 SEC.
MAXIMUM 1 *	30 SEC.	60 SEC.	45 SEC.	30 SEC.	60 SEC.	45 SEC.
RECALL POSITION	NONE	MIN. RECALL	NONE	NONE	MIN. RECALL	NONE
VEHICLE CALL MEMORY	NONLOCK	LOCK	NONLOCK	NONLOCK	LOCK	NONLOCK
WALK *	– SEC.	7 SEC.	7 SEC.	– SEC.	7 SEC.	7 SEC.
FLASHING DON'T WALK	– SEC.	20 SEC.	30 SEC.	– SEC.	20 SEC.	30 SEC.
VOLUME DENSITY	OFF	OFF	OFF	OFF	OFF	OFF
ACTUATION B4 ADD *	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.
SEC. PER ACTUATION *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
MAX. INITIAL *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
TIME B4 REDUCTION *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
TIME TO REDUCE *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
MINIMUM GAP	– SEC.	– 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.

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□↓	Pedestrian Signal Head With Push Button & Sign	■↓
⬡	Signal Pedestal	⬢
⊛	Type I Pushbutton Post	⊛
▭◁	Metal Pole with Mastarm	▭◁
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
----------	2-in Underground Conduit	----------
N/A	Right of Way	----------
→	Directional Arrow	→
Ⓐ	Street Name Sign	Ⓐ

FINAL DESIGN

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

Prepared For:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

10th STREET
AT
BANCROFT AVENUE/
LINE AVENUE

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON REVIEWED BY:

SCALE 0 30' 1"=30'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
OC87A59ED6D8437
SIGNATURE DATE

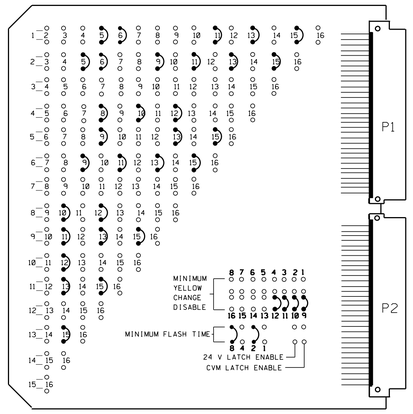
SIG. INVENTORY NO. 02-0892

K:#RAL_Roadway#0110361.75 (U-3315)#Traffic Signals#S4 - Signal Design#2-G-091 Bancroft#2.8 020892-140829g.dgn
8/29/2014 10:56:29 AM susan.pennington

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 2.9

EDI MODEL MMU2-16LE MALFUNCTION MANAGEMENT UNIT PROGRAMMING DETAIL

(program card and tables as shown below)



MMU PROGRAMMING CARD

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDgaurd	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF
VM 3x/Day Latch	ON

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	DISABLE
2	ENABLE
3	DISABLE
4	ENABLE
5	DISABLE
6	ENABLE
7	DISABLE
8	ENABLE
9	ENABLE
10	ENABLE
11	ENABLE
12	ENABLE
13	ENABLE
14	DISABLE
15	ENABLE
16	DISABLE

FLASHING YELLOW ARROW	
CONFIG MODE	A
ENABLE CHANNEL PAIR, FYA	
CH 1-9	ON
CH 3-10	OFF
CH 5-11	ON
CH 7-12	OFF
RED/YEL INPUT ENABLE	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
FLASH RATE FAULT	OFF
FYA TRAP DETECT	OFF

MMU PROGRAMMING NOTE

ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

NOTES

1. TO PREVENT "FLASH-CONFLICT" PROBLEMS, WIRE ALL UNUSED LOAD SWITCHES TO FLASH RED. VERIFY THAT SIGNAL HEADS FLASH IN ACCORDANCE WITH THE SIGNAL PLANS.
2. TO PREVENT RED FAILURES ON UNUSED MONITOR CHANNELS, TIE UNUSED LOAD SWITCH RED OUTPUTS 3, 7,14 & 16 TO LOAD SWITCH AC+ BY INSERTING A JUMPER PLUG IN THE UNUSED LOAD SWITCH SOCKET FROM PIN 1 (LS AC+) TO PIN 3 (RED OUT). MAKE SURE ALL FLASH TRANSFER RELAYS ARE IN PLACE.
3. PROGRAM CONTROLLER TO START UP IN PHASES 2 AND 6 GREEN.
4. SET POWER-UP FLASH TIME TO 10 SECONDS AND IMPLEMENT ON THE MALFUNCTION MANAGEMENT UNIT. SET CONTROLLER POWER-UP FLASH TIME TO 0 SECONDS.
5. ENABLE SIMULTANEOUS GAP-OUT FEATURE, ON CONTROLLER UNIT, FOR ALL PHASES.
6. PROGRAM DETECTORS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS TO ACCOMPLISH THE DETECTION SCHEMES SHOWN ON THE SIGNAL DESIGN PLANS.
7. PROGRAM DETECTOR CALL DELAY AND EXTENSION TIMING ON THE CONTROLLER, UNLESS OTHERWISE SPECIFIED.
8. SET ALL DETECTOR CARD UNIT CHANNELS TO "PRESENCE" MODE.
9. PROGRAM PHASES 4 AND 8, ON CONTROLLER UNIT, FOR DUAL ENTRY.
10. THE CABINET AND CONTROLLER ARE PART OF THE GREENVILE CITY SYSTEM.

SIGNAL HEAD HOOK-UP CHART

PHASE	1	2	3	4	5	6	7	8	2 PED	4 PED	6 PED	8 PED	OLA	OLB	OLC	OLD
SIGNAL HEAD NO.	11★	21,22	NU	41,42 43	51★	61,62	NU	81,82 83	P21, P22	P41, P42	P61, P62	P81, P82	11★	NU	51★	NU
RED	✳	2R		4R	✳	6R		8R								
YELLOW	✳	2Y		4Y	✳	6Y		8Y								
GREEN		2G		4G		6G		8G								
RED ARROW													13R		15R	
YELLOW ARROW													13Y		15Y	
FLASHING YELLOW ARROW													13G		15G	
GREEN ARROW	1G				5G											
✋									9R	10R	11R	12R				
🚶									9G	10G	11G	12G				

NU = NOT USED

✳ DENOTES INSTALL LOAD RESISTOR. SEE LOAD RESISTOR INSTALLATION DETAIL SHEET 2 OF 2.

★ SEE PICTORIAL OF HEAD WIRING DETAIL SHEET 2 OF 2.

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW.
PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

BIU	CH1 L3 ø2	CH1 L1 ø1	CH1 L7 ø5	CH1 L5 ø4	CH1 L11 ø8	CH1 L9 ø6	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	CH2 L4 NOT USED	CH2 L2 ø6	CH2 L8 ø2	CH2 L6 ø4	CH2 L12 ø8	CH2 L10 NOT USED					

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

	LOOP NO.	LOOP PANEL TERMINALS
ADD JUMPERS FROM: L1A TO L2A, AND L1B TO L2B	1A	L1A,L1B
		L2A,L2B
	2A, 2B	L3A,L3B
	NU	L4A,L4B
	4A	L5A,L5B
	4B	L6A,L6B
ADD JUMPERS FROM: L7A TO L8A, AND L7B TO L8B	5A	L7A,L7B
		L8A,L8B
	6A, 6B	L9A,L9B
	NU	L10A,L10B
	8A	L11A,L11B
	8B	L12A,L12B
	NU	L13A,L13B
	NU	L14A,L14B
	NU	L15A,L15B
	NU	L16A,L16B
	NU	L17A, L17B
	NU	L18A, L18B
	NU	L19A, L19B
	NU	L20A, L20B
	NU	L21A, L21B
	NU	L22A, L22B
	NU	L23A, L23B
	NU	L24A, L24B

NOTE

BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	ø1	DELAY	15
2	ø6	–	–
3	ø2	–	–
4	–	–	–
5	ø4	DELAY	3
6	ø4	DELAY	10
7	ø5	DELAY	15
8	ø2	–	–
9	ø6	–	–
10	–	–	–
11	ø8	–	–
12	ø8	DELAY	10
13	–	–	–
14	–	–	–
15	–	–	–
16	–	–	–
17	–	–	–
18	–	–	–
19	–	–	–
20	–	–	–
21	–	–	–
22	–	–	–
23	–	–	–
24	–	–	–

EQUIPMENT INFORMATION

LOCAL CONTROLLER.....ECONOLITE ASC/3
CABINET NC-8A TS-2
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....1,2,4,5,6,8,9,10,11,12,13,15
PHASES USED.....1,2,2PED,4,4PED,5,6,6PED,8,8PED
OLA.....*
OLB.....NOT USED
OLC.....*
OLD.....NOT USED

*See Sheet 2 of 2 Econolite ASC/3 Overlap Programming Detail.

DETECTOR RACK NO. 2 SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW.
PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

BIU	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY

LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	ø1
2	ø2
3	ø3
4	ø4
5	ø5
6	ø6
7	ø7
8	ø8
9	ø2 PED
10	ø4 PED
11	ø6 PED
12	ø8 PED
13	OLA
14	OLB
15	OLC
16	OLD

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 02-0892
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

FINAL DESIGN SHEET 1 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For: Transportation Mobility and Safety Division, North Carolina Department of Transportation, Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

10th STREET AT BANCROFT AVENUE/ LINE AVENUE

DIVISION 2 | PITT COUNTY | GREENVILLE

PLAN DATE: JUNE 2014 | REVIEWED BY: SL PHILLIPS

PREPARED BY: SP PENNINGTON | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
DOCUMENT SIGNATURE DATE

SIG. INVENTORY NO. 02-0892F

K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\54 - Signal Design\2-G-091 Bancroft#2.9 020892-140829e1.dgn susan.pennington 1:18:56 PM 8/29/2014

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 2.10

ECONOLITE ASC/3 SPECIAL MMU PROGRAMMING

(program controller as shown below)

FROM MAIN MENU SELECT 1 (CONFIGURATION)

```
CONFIGURATION SUBMENU

1. CONTROLLER SEQ        5. COMMUNICATIONS
2. PHASE IN USE/PED      6. ENABLE LOGGING
3. LOAD SW ASSIGN        7. DISPLAY/ACCESS
[4. PORT 1 (SDLC)]       8. LOGIC PROCESSOR

PRESS KEYS 1..8 TO SELECT
```

```
PORT 1 (SDLC) SUBMENU

1. SDLC OPTIONS
[2. MMU PROGRAM]
3. COLOR CHECK ENABLE
4. SECONDARY STATION/TESTS

PRESS KEYS 1..4 TO SELECT
```

```
MMU PROGRAM [    MANUAL]
      CH  6 5 4 3 2 1 0 9 8 7 6 5 4 3 2
 1        . X . X . X . . . . X X . . .
 2        . X . X . X . X . . X X . .
 3        . . . . . . . . . . . . . .
 4        . . . . X . X . X . . .
 5        . X . X . . . X . . .
 6        . X . X . X . X . .
 7        . . . . . . . . . .
 8        . . . . X . X .
 9        . X . X . X .
10        . . . . X .
11        . X . X .
12        . . . .
13        . X .
14        . .
```

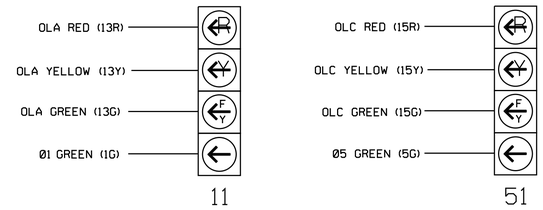
CAUTION!

Set intersection to Flash before attempting to enter or change any MMU programming data.

This programming and that of the MMU programming card must match exactly. If they do not, the intersection will be placed into Flash.

4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

1. SEE OVERLAP PROGRAMMING INSTRUCTIONS THIS SHEET.

ECONOLITE ASC/3 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

From Main Menu select 2 (CONTROLLER)

```
MAIN MENU

1. CONFIGURATION         6. DETECTORS
[2. CONTROLLER]          7. STATUS DISPLAY
3. COORDINATOR           8. UTILITIES
4. PREEMPTOR/TSP         9. DIAGNOSTICS
5. TIME BASE

PRESS KEYS 1..9 TO SELECT
```

From Controller Sub select 2 (VEHICLE OVERLAPS)

```
CONTROLLER SUBMENU

1. TIMING PLANS          5. START/FLASH
[2. VEHICLE OVERLAPS]    6. OPTION DATA
3. VEH/PED OVERLAPS      7. PRE-TIMED
4. GUAR MIN TIME         8. PHASE RECALL

PRESS KEYS 1..8 TO SELECT
```

OVERLAP A

Select Vehicle Overlap Type (PPLT FYA)

```
TMG VEH OVLP . . .[A]    TYPE: [PPLT FYA]

PROTECTED PHASE (LEFT TURN).....................1
PERMISSIVE PHASE (OPPOSING THRU).................2
FLASHING ARROW OUTPUT.................CH13 ISOLATE

DELAY START OF:  FYA.. 0.0  CLEARANCE.....0.0
ACTION PLAN SF BIT DISABLE.....................0
```

Toggle TWICE
Then ENTER

OVERLAP C

Select Vehicle Overlap Type (PPLT FYA)

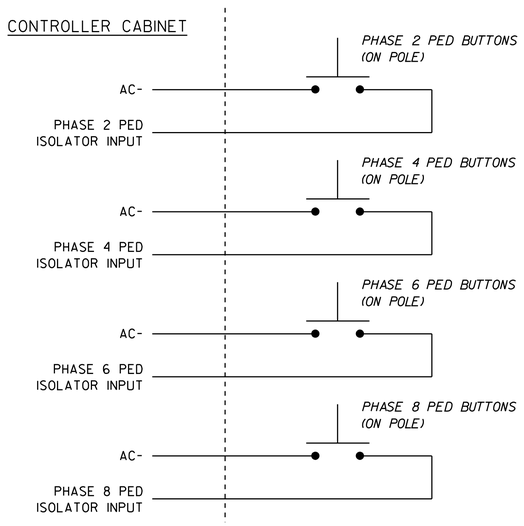
```
TMG VEH OVLP . . .[C]    TYPE: [PPLT FYA]

PROTECTED PHASE (LEFT TURN).....................5
PERMISSIVE PHASE (OPPOSING THRU).................6
FLASHING ARROW OUTPUT.................CH15 ISOLATE

DELAY START OF:  FYA.. 0.0  CLEARANCE.....0.0
ACTION PLAN SF BIT DISABLE.....................0
```

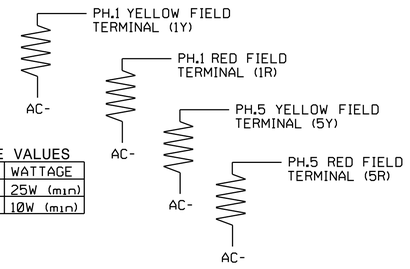
PEDESTRIAN PUSH-BUTTON WIRING DETAIL

(wire push-buttons as shown below)



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)



ACCEPTABLE VALUES	
VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0892
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

FINAL DESIGN SHEET 2 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For:

750 N.Greenfield Pkwy,Garner,NC 27529

10th STREET
AT
BANCROFT AVENUE/
LINE AVENUE

DIVISION 2 | PITT COUNTY | GREENVILLE

PLAN DATE: JUNE 2014 | REVIEWED BY: SL PHILLIPS

PREPARED BY: SP PENNINGTON | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

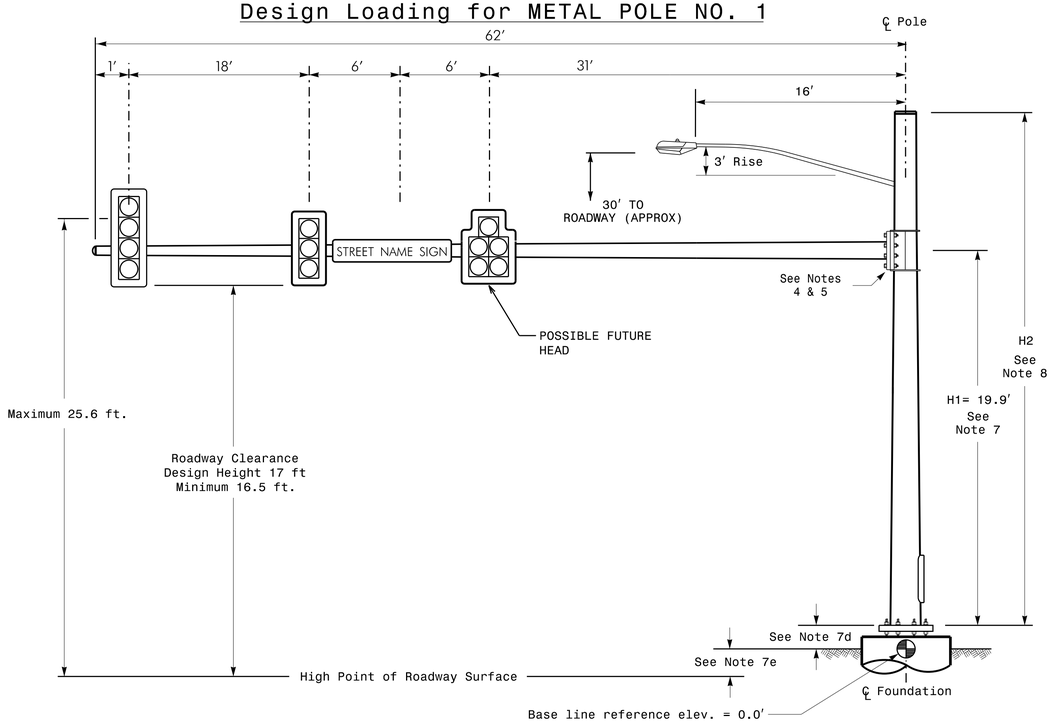
DocuSigned by: Stacie Phillips 9/2/2014
SIGNATURE DATE

SIG. INVENTORY NO. 02-0892F

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

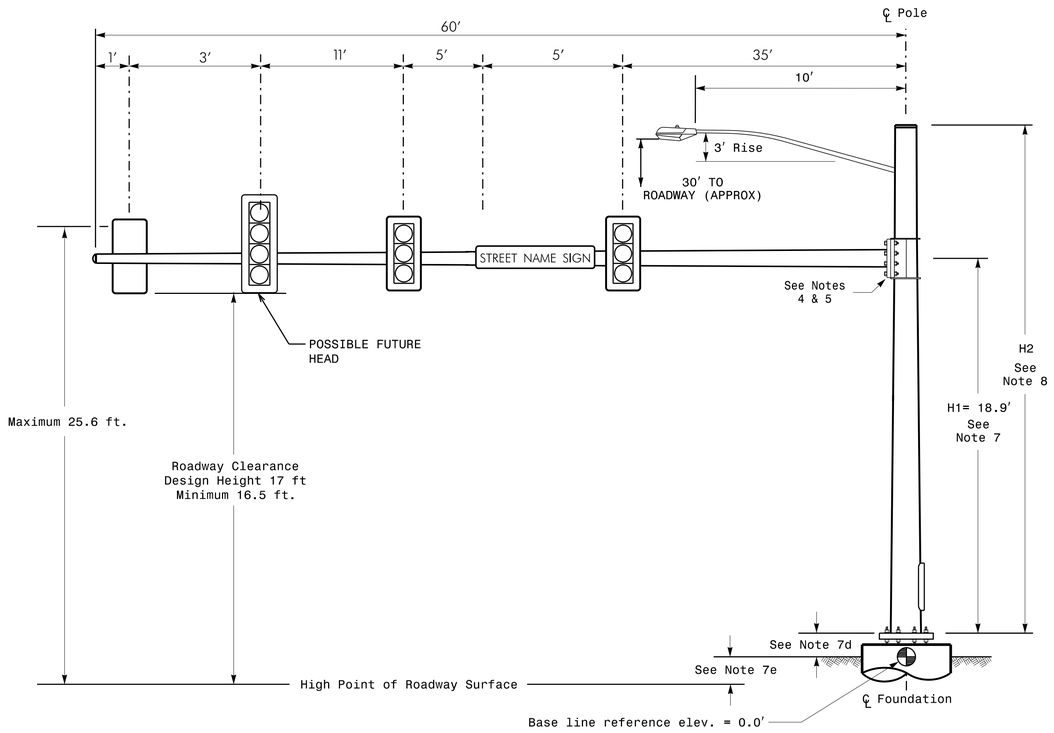
K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\S4 - Signal Design\2-G-091 Bancroft#2.10 020892-140829e-2.dgn 8/29/2014 1:18:57 PM susan.pennington

Design Loading for METAL POLE NO. 1



Elevation View

Design Loading for METAL POLE NO. 2



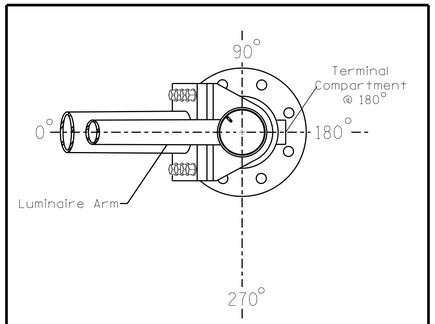
Elevation View

SPECIAL NOTE

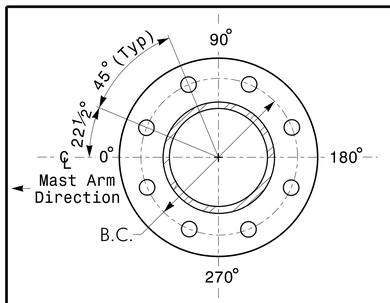
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Pole 1	Pole 2
Baseline reference point at ℄ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	0.0 ft.	-0.1 ft.
Elevation difference at Edge of travelway or face of curb	+0.9 ft.	-0.1 ft.

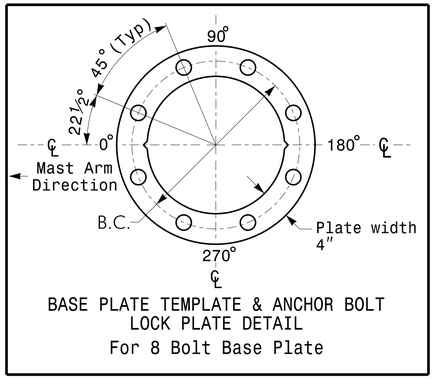


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 6



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL
For 8 Bolt Base Plate

METAL POLE No.1 and 2

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 2.11

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	SIGNAL HEAD 12″–5 SECTION–WITH BACKPLATE, RIGID MOUNTED	16.3 S.F.	42.0″ W X 56.0″ L	103 LBS
	SIGNAL HEAD 12″–4 SECTION–WITH BACKPLATE, RIGID MOUNTED	11.5 S.F.	25.5″ W X 66.0″ L	74 LBS
	SIGNAL HEAD 12″–3 SECTION–WITH BACKPLATE, RIGID MOUNTED	9.3 S.F.	25.5″ W X 52.5″ L	60 LBS
STREET NAME SIGN	STREET NAME SIGN, RIGID MOUNTED	16.0 S.F.	24.0″ W X 96.0″ L	36 LBS
	LUMINAIRES	1.0 S.F.	N/A	25 LBS

NOTES

DESIGN REFERENCE MATERIAL

1. Design the traffic signal structure and foundation in accordance with:
   - The 5th Edition 2009 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
   - The 2012 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
   - The 2012 NCDOT Roadway Standard Drawings.
   - The traffic signal project plans and special provisions.
   - The NCDOT "Metal Pole Standards" located at the following NCDOT website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

DESIGN REQUIREMENTS

2. Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
3. Design all signal supports using stress ratios that do not exceed 0.9.
4. The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
5. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
6. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
7. The mast arm attachment height (H1) shown is based on the following design assumptions:
   a. Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
   b. Signal heads are rigidly mounted and vertically centered on the mast arm.
   c. The roadway clearance height for design is as shown in the elevation views.
   d. The top of the pole base plate is 0.75 feet above the ground elevation.
   e. Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
8. The pole manufacturer will determine the total height (H2) of each pole based on the luminaire height requirement of 30 ft.
9. If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 773-2800.
10. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
11. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.
12. Comply with NEC code 230.2(E) concerning service equipment disconnect.
13. Lighting fixture and luminaire arm represent a load condition to the pole and may not represent exactly how the fixtures will be mounted. The contractor is responsible for ensuring that any required factory preps for mounting fixtures to the pole are included on the shop drawings.
14. Design the luminaire support arm using design dimensions as shown on elevations views. Refer to the Radial Orientation Detail for attachment to the signal pole. Design arm end for a nominal 2 inch slip fit socket connection for light assembly.

All metal poles and arms should be BLACK in color as specified in the project special provisions.

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

NCDOT Wind Zone 2 (130 mph)

Prepared For: Transportation Mobility and Safety Division, NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, Signal Design Section
1750 N.Greenfield Pkwy,Garner,NC 27529

10th STREET AT BANCROFT AVENUE/ LINE AVENUE

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLIPS

PREPARED BY: SP PENNINGTON REVIEWED BY:

SCALE 0 N/A N/A

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

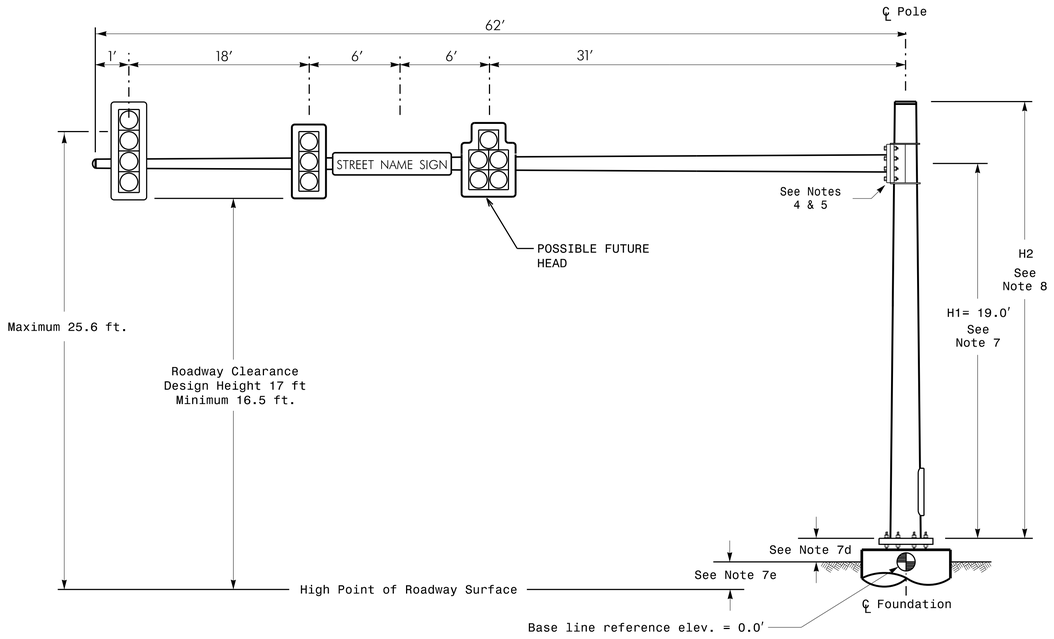
DocuSigned by: Stacie Phillips 9/2/2014
DC87A58ED600437
SIGNATURE DATE

SIG. INVENTORY NO. 02-0892

8/29/2014 10:56:32 AM susan.pennington K:\#RAL_Roadway\#011036175 (U-3315)\Traffic Signals\SS4 - Signal Design\2-G-091 Bancroft\#2.11 020892-140829ml-2.dgn

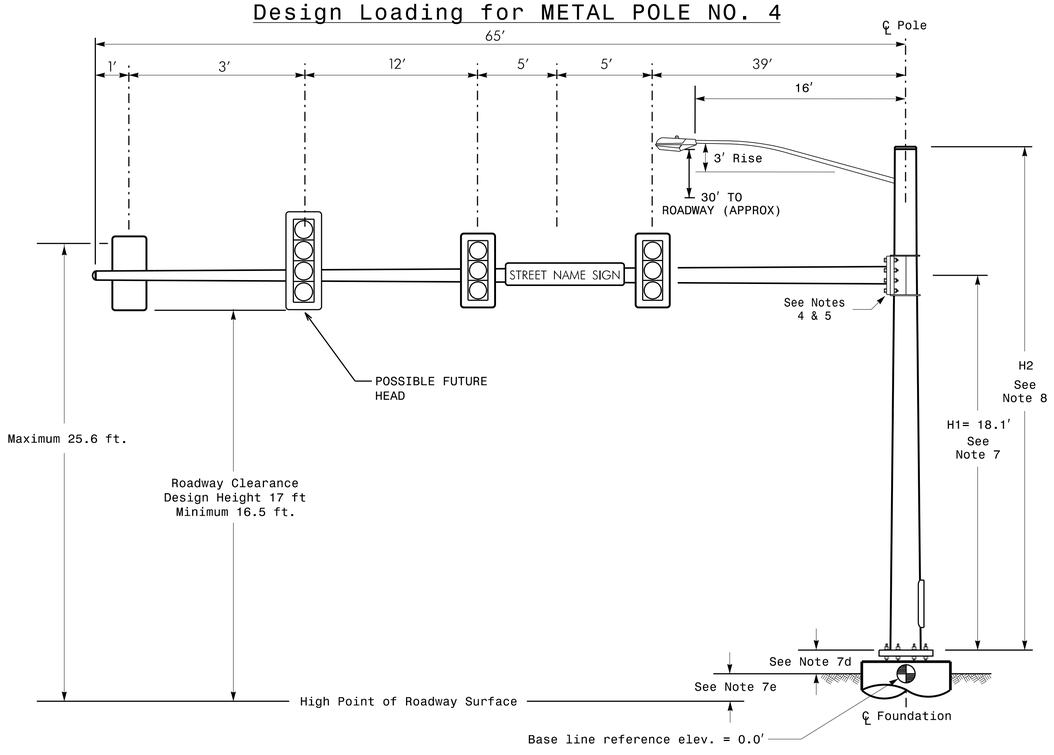
METAL POLE No. 3 and 4

Design Loading for METAL POLE NO. 3



Elevation View

Design Loading for METAL POLE NO. 4



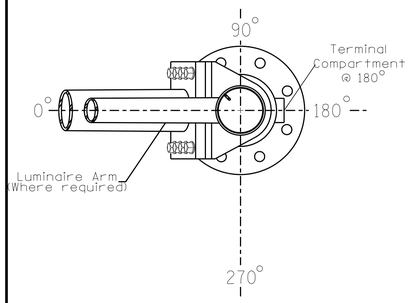
Elevation View

SPECIAL NOTE

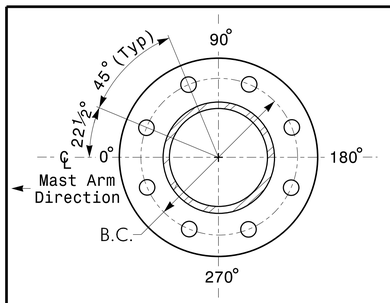
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Pole 3	Pole 4
Baseline reference point at ℄ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	0.0 ft.	-0.9 ft.
Elevation difference at Edge of travelway or face of curb	-0.9 ft.	-0.9 ft.

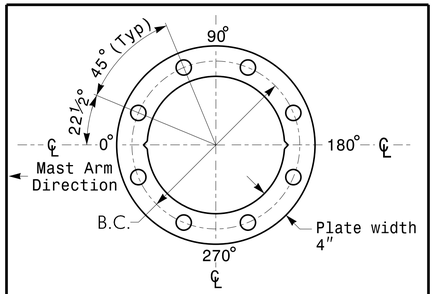


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 6



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL
For 8 Bolt Base Plate

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	SIGNAL HEAD 12″–5 SECTION–WITH BACKPLATE, RIGID MOUNTED	16.3 S.F.	42.0″ W X 56.0″ L	103 LBS
	SIGNAL HEAD 12″–4 SECTION–WITH BACKPLATE, RIGID MOUNTED	11.5 S.F.	25.5″ W X 66.0″ L	74 LBS
	SIGNAL HEAD 12″–3 SECTION–WITH BACKPLATE, RIGID MOUNTED	9.3 S.F.	25.5″ W X 52.5″ L	60 LBS
STREET NAME SIGN	STREET NAME SIGN, RIGID MOUNTED	16.0 S.F.	24.0″ W X 96.0″ L	36 LBS
	LUMINAIRES	1.0 S.F.	N/A	25 LBS

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1. Design the traffic signal structure and foundation in accordance with:
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   - The traffic signal project plans and special provisions.
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DESIGN REQUIREMENTS

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4. The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
5. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
6. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
7. The mast arm attachment height (H1) shown is based on the following design assumptions:
   a. Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
   b. Signal heads are rigidly mounted and vertically centered on the mast arm.
   c. The roadway clearance height for design is as shown in the elevation views.
   d. The top of the pole base plate is 0.75 feet above the ground elevation.
   e. Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
8. The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
   - Mast arm attachment height (H1) plus 2 feet, or
   - H1 plus ½ of the total height of the mast arm attachment assembly plus 1 foot or
   - The pole manufacturer will determine the total height (H2) of each pole based on the luminaire height requirement of 30 ft.
9. If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 773-2800.
10. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
11. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.
12. Comply with NEC code 230.2(E) concerning service equipment disconnect.
13. Lighting fixture and luminaire arm represent a load condition to the pole and may not represent exactly how the fixtures will be mounted. The contractor is responsible for ensuring that any required factory preps for mounting fixtures to the pole are included on the shop drawings.
14. Design the luminaire support arm using design dimensions as shown on elevations views. Refer to the Radial Orientation Detail for attachment to the signal pole. Design arm end for a nominal 2 inch slip fit socket connection for light assembly.

All metal poles and arms should be BLACK in color as specified in the project special provisions.

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P.O. Box 33068
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NCDOT Wind Zone 2 (130 mph)

Prepared For:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

10th STREET AT BANCROFT AVENUE/ LINE AVENUE

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLIPS

PREPARED BY: SP PENNINGTON REVIEWED BY:

SCALE 0 N/A N/A

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
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SIGNATURE DATE

SIG. INVENTORY NO. 02-0892

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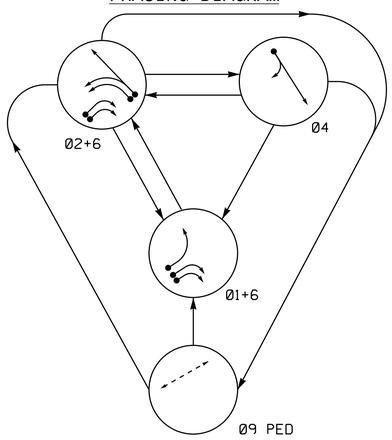
8/29/2014 10:56:34 AM susan.pennington

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 3.1

4 PHASE
FULLY ACTUATED
(GREENVILLE SIGNAL SYSTEM)

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

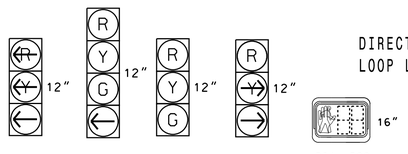
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	Ø2+6	Ø4	Ø9 PED	FLASH
11	←̶	R̶	R̶	R̶	R̶
21	R̶	←̶	R̶	R̶	Y̶
22	R	G	R	R	Y
41, 42	R	R	G	R	R
61, 62	→̶	→̶	R	R	Y̶
P91,P92	DW	DW	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.

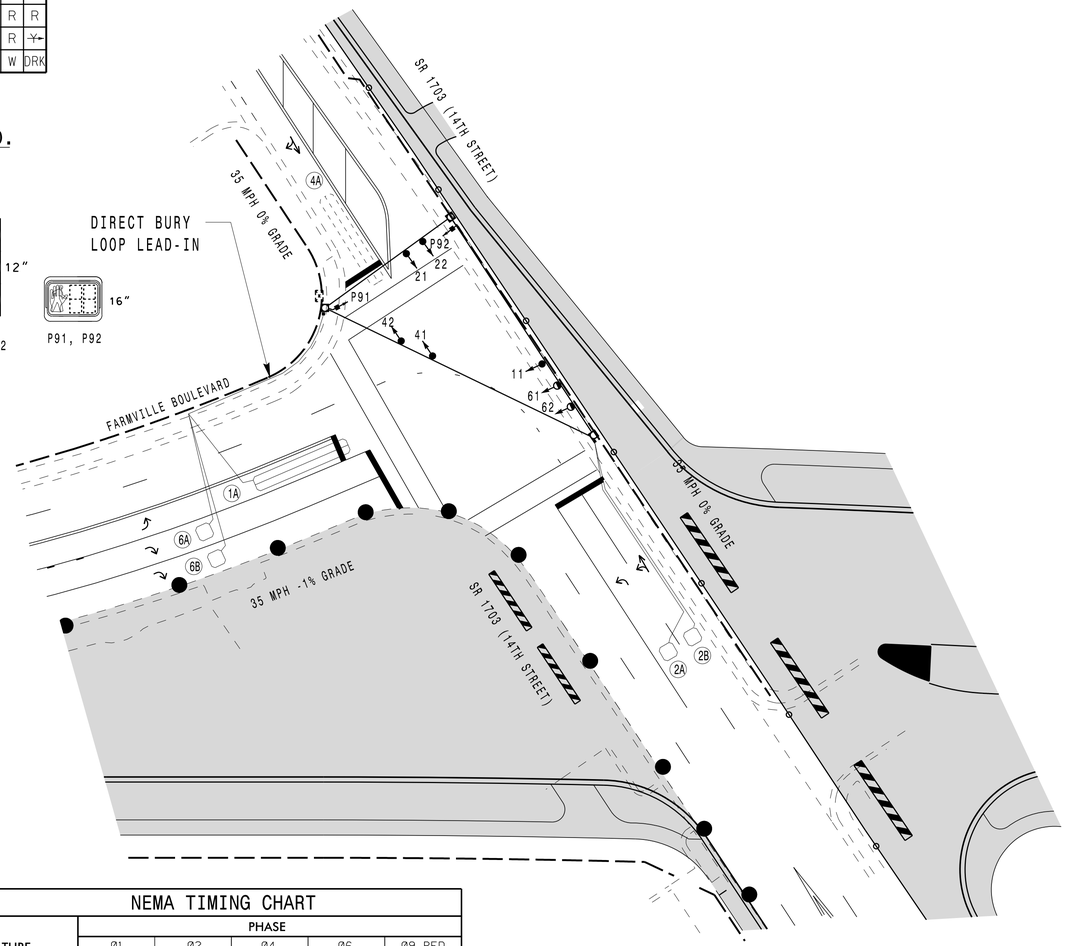


NEMA LOOP & DETECTOR INSTALLATION CHART
with TS-2 CABINET

INDUCTIVE LOOPS						DETECTOR UNITS				
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	NEMA PHASE	NEW	EXISTING	TIMING FEATURE	TIMING TIME	INHIBIT DELAY DURING GREEN?
1A	6X40	+5	2-4-2	X	-	1	-	X	DELAY	3	YES
2A, 2B	6X6	70	4	X	-	2	-	X	-	-	NO
4A	6X40	+5	2-4-2	-	X	4	-	X	-	-	NO
6A, 6B	6X6	70	4	X	-	6	-	X	-	-	NO

NOTES

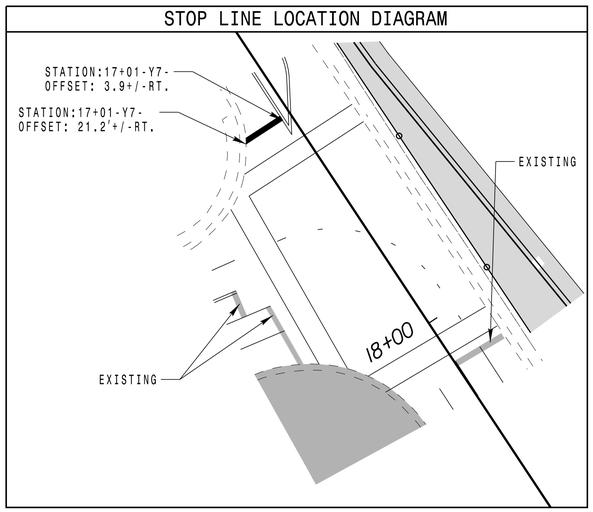
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
4. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
5. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
6. Intersection Zone Number: 4
   System Address Number: 90
7. Remove existing pedestrian signal heads P93, P94, P95 and P96.



LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□	Pedestrian Signal Head With Push Button & Sign	■
▣	Metal Strain Pole	◘
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
- - - - -	2-in Underground Conduit	- - - - -
N/A	Right of Way	- - - - -
→	Directional Arrow	→
DD	Directional Drill	N/A
▭	Construction Zone	▭
● ●	Construction Zone Drums	● ●

STOP LINE LOCATION DIAGRAM



NEMA TIMING CHART

FEATURE	PHASE Ø1	Ø2	Ø4	Ø6	Ø9 PED
MINIMUM GREEN *	7 SEC.	10 SEC.	7 SEC.	10 SEC.	0.0 SEC.
PASSAGE/GAP *	2.0 SEC.	3.0 SEC.	2.0 SEC.	3.0 SEC.	0.0 SEC.
YELLOW CHANGE INT.	3.0 SEC.	3.8 SEC.	3.8 SEC.	3.2 SEC.	3.0 SEC.
RED CLEARANCE	2.8 SEC.	2.5 SEC.	2.2 SEC.	1.7 SEC.	0.0 SEC.
MAXIMUM 1 *	15 SEC.	30 SEC.	20 SEC.	30 SEC.	- SEC.
RECALL POSITION	NONE	MIN. RECALL	NONE	MIN. RECALL	NONE
VEHICLE CALL MEMORY	NONLOCK	LOCK	NONLOCK	LOCK	NONLOCK
WALK *	- SEC.	- SEC.	- SEC.	- SEC.	5 SEC.
FLASHING DON'T WALK	- SEC.	- SEC.	- SEC.	- SEC.	16 SEC.
VOLUME DENSITY	OFF	OFF	OFF	OFF	OFF
ACTUATION B4 ADD *	- VEH.	- VEH.	- VEH.	- VEH.	- VEH.
SEC. PER ACTUATION *	- SEC.	- SEC.	- SEC.	- SEC.	- SEC.
MAX. INITIAL *	- SEC.	- SEC.	- SEC.	- SEC.	- SEC.
TIME B4 REDUCTION *	- SEC.	- SEC.	- SEC.	- SEC.	- SEC.
TIME TO REDUCE *	- 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.

TEMPORARY DESIGN 1 - TMP PHASE 1

Prepared For: Transportation Mobility and Safety Division, North Carolina Department of Transportation, Signal Design Section

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE 0 30' 1"=30'

FARMVILLE BOULEVARD
AT
SR 1703 (14TH STREET)

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

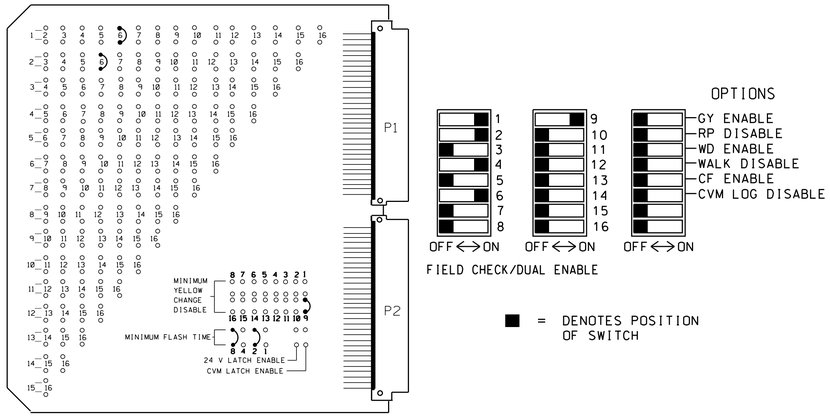
DocuSigned by: Stacie Phillips 9/2/2014
DC87A50ED6D8437
SIGNATURE DATE

SIG. INVENTORY NO. 02-0893T1

8/29/2014 10:56:35 AM susan.pennington K:\RAL_Roadway\01\036175 (U-3315)\Traffic Signals\S4 - Signal Design\03-14th\3.1 020893-140829gT1.dgn

EDI MODEL MMU-16E
MALFUNCTION MANAGEMENT UNIT
PROGRAMMING DETAIL

(program card and set switches as shown below)



■ = DENOTES POSITION OF SWITCH

MMU PROGRAMMING CARD

NOTES

1. TO PREVENT "FLASH-CONFLICT" PROBLEMS, WIRE ALL UNUSED LOAD SWITCHES TO FLASH RED. VERIFY THAT SIGNAL HEADS FLASH IN ACCORDANCE WITH THE SIGNAL PLANS.
2. TO PREVENT RED FAILURES ON UNUSED MONITOR CHANNELS, TIE UNUSED LOAD SWITCH RED OUTPUTS 3,5,7,8,10,11, & 12 TO LOAD SWITCH AC+ BY INSERTING A JUMPER PLUG IN THE UNUSED LOAD SWITCH SOCKET FROM PIN 1 (LS AC+) TO PIN 3 (RED OUT). MAKE SURE ALL FLASH TRANSFER RELAYS ARE IN PLACE.
3. PROGRAM CONTROLLER TO START UP IN PHASES 2 AND 6 GREEN.
4. SET POWER-UP FLASH TIME TO 10 SECONDS AND IMPLEMENT ON THE MALFUNCTION MANAGEMENT UNIT. SET CONTROLLER POWER-UP FLASH TIME TO 0 SECONDS.
5. ENABLE SIMULTANEOUS GAP-OUT FEATURE, ON CONTROLLER UNIT, FOR ALL PHASES.
6. PROGRAM DETECTORS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS TO ACCOMPLISH THE DETECTION SCHEMES SHOWN ON THE SIGNAL DESIGN PLANS.
7. PROGRAM DETECTOR CALL DELAY AND EXTENSION TIMING ON THE CONTROLLER, UNLESS OTHERWISE SPECIFIED.
8. SET ALL DETECTOR CARD UNIT CHANNELS TO "PRESENCE" MODE.

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 3.2

SIGNAL HEAD HOOK-UP CHART

PHASE	1	2		3	4	5	6	7	8	2 PED	4 PED	6 PED	8 PED
SIGNAL HEAD NO.	11	21	22	NU	41,42	NU	61,62	NU	NU	P91, P92	NU	NU	NU
RED			2R		4R								
YELLOW			2Y		4Y								
GREEN			2G		4G								
RED ARROW	1R	2R					6R						
YELLOW ARROW	1Y	2Y					6Y						
GREEN ARROW	1G	2G	2G				6G						
✋										9R			
🚶										9G			

NU = NOT USED

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW. PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

	CH1 L3 NOT USED	CH1 L1 ø1	SLOT	CH1 L5 ø6	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
BIU	CH2 L4 ø4	CH2 L2 ø2	EMPTY	CH2 L6 NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS
1A	L1A,L1B
2A, 2B	L2A,L2B
–	L3A,L3B
4A	L4A,L4B
6A, 6B	L5A,L5B
–	L6A,L6B
–	L7A,L7B
–	L8A,L8B
–	L9A,L9B
–	L10A,L10B
–	L11A,L11B
–	L12A,L12B
–	L13A,L13B
–	L14A,L14B
–	L15A,L15B
–	L16A,L16B

NOTE

BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	ø 1	DELAY	3
2	ø 2	–	–
3	–	–	–
4	ø 4	–	–
5	ø 6	–	–
6	–	–	–
7	–	–	–
8	–	–	–
9	–	–	–
10	–	–	–
11	–	–	–
12	–	–	–
13	–	–	–
14	–	–	–
15	–	–	–
16	–	–	–

ECONOLITE ASC/2-2100 SPECIAL PHASE SEQUENCE PROGRAMMING

(program controller as shown below)

RING CONFIGURATION DETAIL

RING 1	ø1	ø2	NOT USED	ø4	ø9	NOT USED	NOT USED
RING 2	NOT USED	ø6	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED

BARRIER BARRIER

LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	
2	ø2
3	
4	ø4
5	
6	ø6
7	
8	
9	9PED
10	
11	
12	

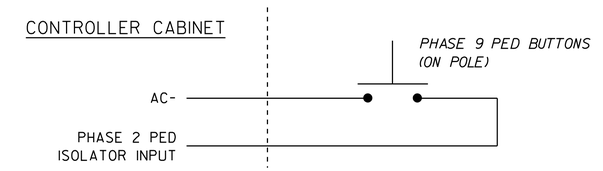
UNUSED LOAD SWITCH CHANNELS SHALL BE DISABLED IN CONTROLLER PROGRAMMING.

EQUIPMENT INFORMATION

CONTROLLER.....ECONOLITE ASC/2S-2100
CABINET .....ECONOLITE TS-2
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....12
LOAD SWITCHES USED.....2,4,6,9
PHASES USED.....2,4,6,2PED
OLA.....NOT USED
OLB.....NOT USED
OLC.....NOT USED
OLD.....NOT USED

PEDESTRIAN PUSH-BUTTON WIRING DETAIL

(wire push-buttons as shown below)



COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 02-0893 T1
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

TEMPORARY DESIGN 1 - TMP PHASE 1

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For: Transportation Mobility and Safety Division, North Carolina Department of Transportation, Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

FARMVILLE BOULEVARD AT SR 1703 (14TH STREET)

DIVISION 2 | PITT COUNTY | GREENVILLE
PLAN DATE: JUNE 2014 | REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
DC87A58E0E0B437...
SIGNATURE DATE

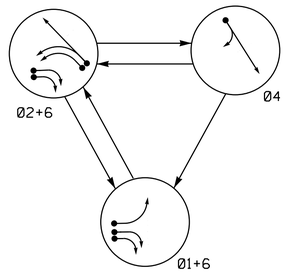
SIG. INVENTORY NO. 02-0893T1

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

8/29/2014 10:56:37 AM susan.pennington K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\S4 - Signal Design\03-14thSt.2 020893-140829ef1.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 3.3

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.

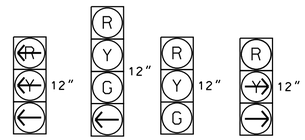
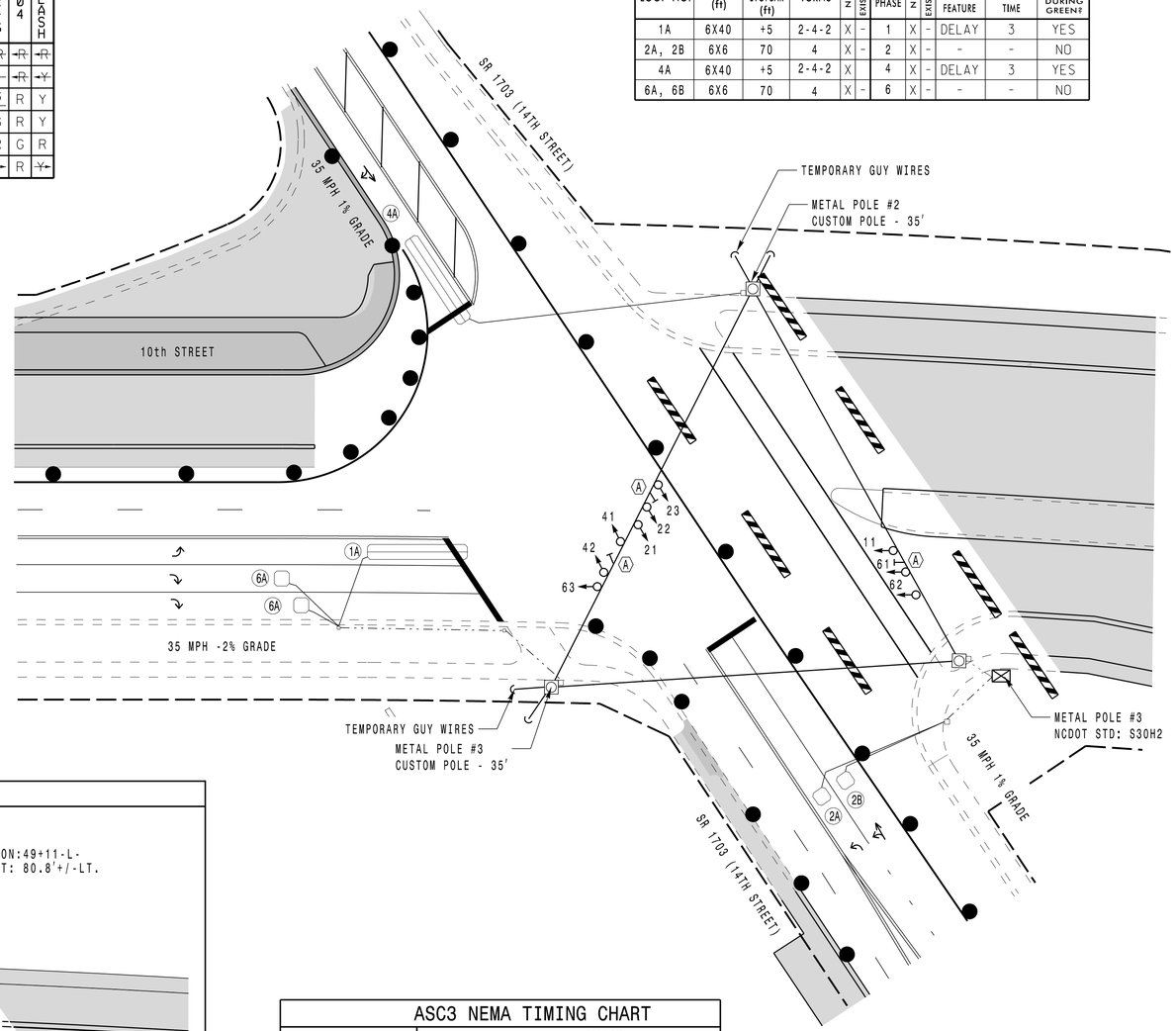


TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	PHASE Ø2+6	PHASE Ø4	PHASE FLASH
11	→	~~R~~	~~R~~	~~R~~
21	~~R~~	→	~~R~~	~~Y~~
22	R	G	R	Y
23	R	G	R	Y
41, 42	R	R	G	R
61, 62, 63	→	→	R	~~Y~~

NEMA LOOP & DETECTOR INSTALLATION CHART
with TS-2 CABINET

INDUCTIVE LOOPS						DETECTOR UNITS				
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	NEMA PHASE	NEW	EXISTING	TIMING: FEATURE	TIMING: TIME	INHIBIT DELAY DURING GREEN?
1A	6X40	+5	2-4-2	X	-	1	X	-	DELAY	3	YES
2A, 2B	6X6	70	4	X	-	2	X	-	-	-	NO
4A	6X40	+5	2-4-2	X		4	X	-	DELAY	3	YES
6A, 6B	6X6	70	4	X	-	6	X	-	-	-	NO

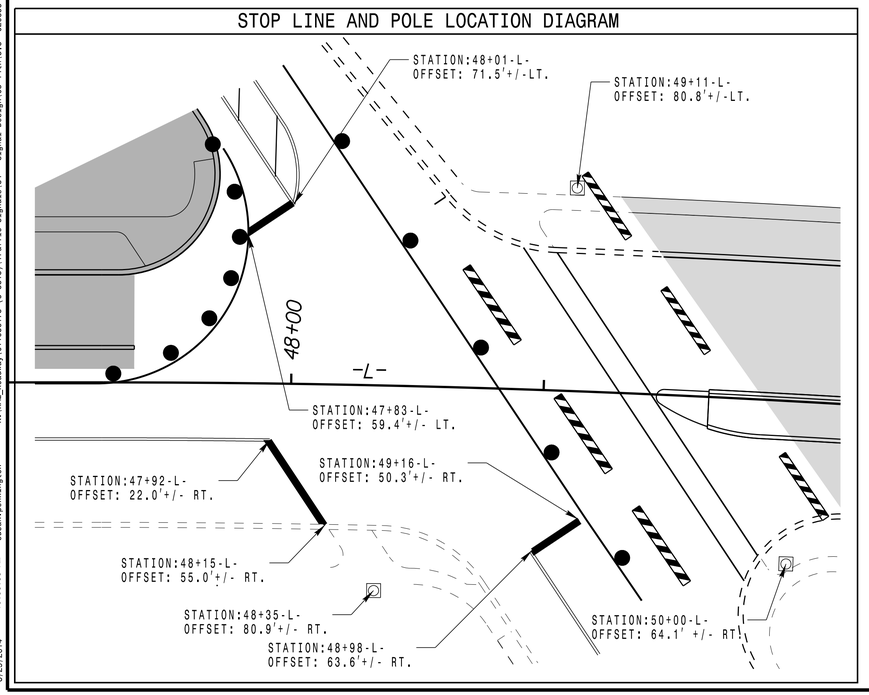


3 PHASE
FULLY ACTUATED
(GREENVILLE SIGNAL SYSTEM)

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. Set all detector units to presence mode.
4. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
5. Intersection Zone Number: 4
   System Address Number: 90
6. Install black powder coated metal strain poles and pedestals.

STOP LINE AND POLE LOCATION DIAGRAM



ASC3 NEMA TIMING CHART

FEATURE	PHASE Ø1	PHASE Ø2	PHASE Ø4	PHASE Ø6
MINIMUM GREEN *	7 SEC.	10 SEC.	7 SEC.	10 SEC.
PASSAGE/GAP *	2.0 SEC.	3.0 SEC.	2.0 SEC.	3.0 SEC.
YELLOW CHANGE INT.	3.0 SEC.	3.8 SEC.	3.8 SEC.	3.3 SEC.
RED CLEARANCE	3.1 SEC.	2.7 SEC.	2.9 SEC.	2.2 SEC.
MAXIMUM 1 *	15 SEC.	30 SEC.	20 SEC.	30 SEC.
RECALL POSITION	NONE	MIN. RECALL	NONE	MIN. RECALL
VEHICLE CALL MEMORY	NONLOCK	LOCK	NONLOCK	LOCK
WALK *	– SEC.	– SEC.	– SEC.	– SEC.
FLASHING DON'T WALK	– SEC.	– SEC.	– SEC.	– SEC.
VOLUME DENSITY	OFF	OFF	OFF	OFF
ACTUATION B4 ADD *	– VEH.	– VEH.	– VEH.	– VEH.
SEC. PER ACTUATION *	– SEC.	– SEC.	– SEC.	– SEC.
MAX. INITIAL *	– SEC.	– SEC.	– SEC.	– SEC.
TIME B4 REDUCTION *	– SEC.	– SEC.	– SEC.	– SEC.
TIME TO REDUCE *	– SEC.	– SEC.	– SEC.	– SEC.
MINIMUM GAP	– 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.

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
▭↓	Pedestrian Signal Head With Push Button & Sign	■↓
◎	Metal Strain Pole	◘
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊡
□	Junction Box	■
·-·-·-·	2-in Underground Conduit	·-·-·-·
N/A	Right of Way	- - - -
→	Directional Arrow	→
▭	Construction Zone	▭
●-●	Construction Zone Drums	●-●
Ⓐ	Street Name Sign	Ⓐ

TEMPORARY DESIGN 2 - TMP PHASE 2

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

Prepared For:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

SCALE
0 30'
1"=30'

10th STREET
AT
SR 1703 (14TH STREET)

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE:	JUNE 2014	REVIEWED BY:	SL PHILLIPS
PREPARED BY:	SP PENNINGTON	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

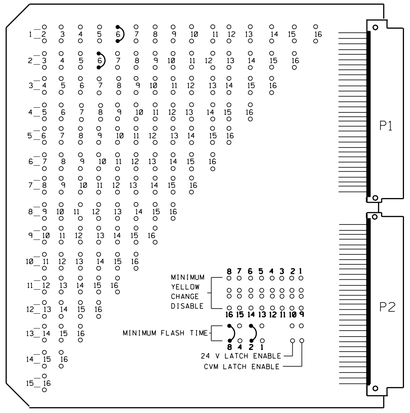
DocuSigned by: Stacie Phillips 9/2/2014
DC87A59ED6D0437
SIGNATURE DATE

SIG. INVENTORY NO. 02-0893T2

K:\RAL_Roadway\01106175 (U-3315)\Traffic Signals\S4 - Signal Design\03-14th\3.3 020893-140829g72.dgn
8/29/2014 10:56:38 AM susan.pennington

EDI MODEL MMU2-16LE
MALFUNCTION MANAGEMENT UNIT
PROGRAMMING DETAIL

(program card and tables as shown below)



MMU PROGRAMMING CARD

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	ENABLE
2	ENABLE
3	DISABLE
4	ENABLE
5	DISABLE
6	ENABLE
7	DISABLE
8	DISABLE
9	DISABLE
10	DISABLE
11	DISABLE
12	DISABLE
13	DISABLE
14	DISABLE
15	DISABLE
16	DISABLE

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDgaurd	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF
VM 3x/Day Latch	ON

FLASHING YELLOW ARROW	
CONFIG MODE	A
ENABLE CHANNEL PAIR, FYA	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
RED/YEL INPUT ENABLE	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
FLASH RATE FAULT	OFF
FYA TRAP DETECT	OFF

MMU PROGRAMMING NOTE

ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

NOTES

1. TO PREVENT "FLASH-CONFLICT" PROBLEMS, WIRE ALL UNUSED LOAD SWITCHES TO FLASH RED. VERIFY THAT SIGNAL HEADS FLASH IN ACCORDANCE WITH THE SIGNAL PLANS.
2. TO PREVENT RED FAILURES ON UNUSED MONITOR CHANNELS, TIE UNUSED LOAD SWITCH RED OUTPUTS 3,5,7,8,9,10,11,12,13,14,15 & 16 TOLOAD SWITCH AC+ BY INSERTING A JUMPER PLUG IN THE UNUSED LOAD SWITCH SOCKET FROM PIN 1 (LS AC+) TO PIN 3 (RED OUT). MAKE SURE ALL FLASH TRANSFER RELAYS ARE IN PLACE.
3. PROGRAM CONTROLLER TO START UP IN PHASES 2 AND 6 GREEN.
4. SET POWER-UP FLASH TIME TO 10 SECONDS AND IMPLEMENT ON THE MALFUNCTION MANAGEMENT UNIT. SET CONTROLLER POWER-UP FLASH TIME TO 0 SECONDS.
5. ENABLE SIMULTANEOUS GAP-OUT FEATURE, ON CONTROLLER UNIT, FOR ALL PHASES.
6. PROGRAM DETECTORS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS TO ACCOMPLISH THE DETECTION SCHEMES SHOWN ON THE SIGNAL DESIGN PLANS.
7. PROGRAM DETECTOR CALL DELAY AND EXTENSION TIMING ON THE CONTROLLER, UNLESS OTHERWISE SPECIFIED.
8. SET ALL DETECTOR CARD UNIT CHANNELS TO "PRESENCE" MODE.
9. THIS CONTROLLER AND CABINET ARE PART OF THE GREENVILLE SIGNAL SYSTEM.

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 3.4

SIGNAL HEAD HOOK-UP CHART

PHASE	1	2		3	4	5	6	7	8	2 PED	4 PED	6 PED	8 PED	OLA	OLB	OLC	OLD
SIGNAL HEAD NO.	11	21	22	23	NU	41,42	NU	61,62 63	NU	NU	NU	NU	NU	NU	NU	NU	NU
RED			2R	2R		4R		6R									
YELLOW			2Y	2Y		4Y											
GREEN			2G	2G		4G											
RED ARROW	1R	2R															
YELLOW ARROW	1Y	2Y						6Y									
FLASHING YELLOW ARROW																	
GREEN ARROW	1G	2G	2G					6G									
✋																	
🚶																	

NU = Not Used

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW. PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

DETECTOR RACK #1

BIU	SLOT EMPTY	CH1 L1 ø1 / CH2 L2 NOT USED	SLOT EMPTY	CH1 L5 ø2 / CH2 L6 NOT USED	SLOT EMPTY	CH1 L9 ø4 / CH2 L10 NOT USED	SLOT EMPTY	CH1 L13 ø6 / CH2 L14 NOT USED	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY

DETECTOR RACK #2

BIU	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS
1A	L1A,L1B
NU	L2A,L2B
NU	L3A,L3B
NU	L4A,L4B
2A, 2B	L5A,L5B
NU	L6A,L6B
NU	L7A,L7B
NU	L8A,L8B
4A	L9A,L9B
NU	L10A,L10B
NU	L11A,L11B
NU	L12A,L12B
6A, 6B	L13A,L13B
NU	L14A,L14B
NU	L15A,L15B
NU	L16A,L16B
NU	L17A,L17B
NU	L18A,L18B
NU	L19A,L19B
NU	L20A,L20B
NU	L21A,L21B
NU	L22A,L22B
NU	L23A,L23B
NU	L24A,L24B

NU = NOT USED

NOTE
BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	ø1	DELAY	3
2	"	–	–
3	"	"	–
4	–	–	–
5	ø2	–	–
6	–	–	–
7	"	–	–
8	"	–	–
9	ø4	DELAY	3
10	–	–	–
11	–	–	–
12	–	–	–
13	ø6	–	–
14	–	–	–
15	"	–	–
16	–	–	–
17	–	–	–
18	–	–	–
19	–	–	–
20	–	–	–
21	–	–	–
22	–	–	–
23	–	–	–
24	–	–	–

EQUIPMENT INFORMATION

CONTROLLER.....ASC/3
CABINET TS-2 NC-8A
SOFTWARE .....ECONOLITE ASC/ 2070
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....1,2,4,6
PHASES USED.....1,2,4,6
OLA.....NONE
OLB.....NONE
OLC.....NONE
OLD.....NONE

LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	ø1
2	ø2
3	ø3
4	ø4
5	ø5
6	ø6
7	ø7
8	ø8
9	ø2 PED
10	ø4 PED
11	ø6 PED
12	ø8 PED
13	OLA
14	OLB
15	OLC
16	OLD

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 02-0893T2
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

TEMPORARY DESIGN 2 - TMP PHASE 2

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For: Transportation Mobility and Safety Division, NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

10th STREET
AT
SR 1703 (14TH STREET)

DIVISION 5 | PITT COUNTY | GREENVILLE
PLAN DATE: JUNE 2014 | REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
0C87A59E0E0B437...
SIGNATURE DATE

SIG. INVENTORY NO. 02-0893T2

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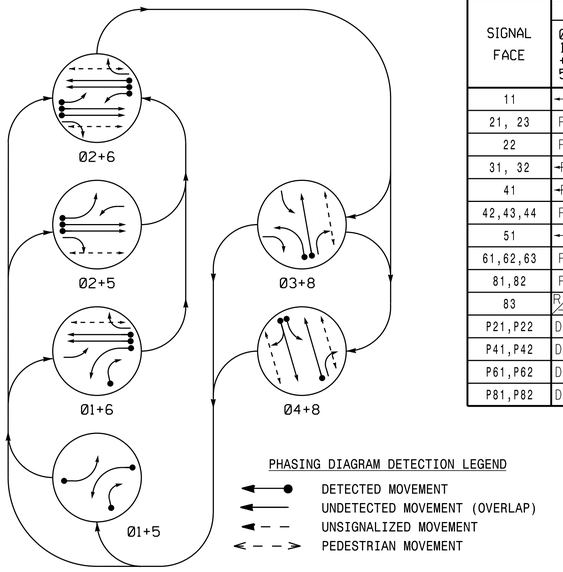
susan.pennington
10:56:39 AM
8/29/2014

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 3.5

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+8	Ø4+8	FLASH
11	←	←	F Y	F Y	~~R~~	~~R~~	~~Y~~
21, 23	R	R	G	G	R	R	Y
22	R	R	G	G	R/←	R	Y
31, 32	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	~~R~~
41	~~R~~	~~R~~	~~R~~	~~R~~	F Y	F Y	~~R~~
42,43,44	R	R	R	R	R	G	R
51	←	F Y	←	F Y	~~R~~	~~R~~	~~Y~~
61,62,63	R	G	R	G	R	R	Y
81,82	R	R	R	R	G	G	R
83	R/←	R/←	R	R	G	G	R
P21,P22	DW	DW	W	W	DW	DW	DRK
P41,P42	DW	DW	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	W	DW	DW	DRK
P81,P82	DW	DW	DW	DW	W	W	DRK

NEMA LOOP & DETECTOR INSTALLATION CHART
with TS-2 CABINET

INDUCTIVE LOOPS						DETECTOR UNITS					
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	NEMA PHASE	NEW	EXISTING	TIMING FEATURE	TIMING TIME	INHIBIT DELAY DURING GREEN?
1A	6X40	+5	2-4-2	X	-	1	-	X	DELAY	15	YES
						6	-	X	-	-	NO
1B	6X40	+5	2-4-2	X	-	1	X	-	DELAY	15	YES
2A, 2B	6X6	70	4	X	-	2	-	X	-	-	NO
3A	6X40	+5	2-4-2	X	-	3	X	-	-	-	NO
4A	6X40	+5	2-4-2	X	-	4	-	X	-	-	NO
4B	6X40	+5	2-4-2	X	-	4	X	-	DELAY	10	YES
5A	6X40	+5	2-4-2	X	-	5	X	-	DELAY	15	YES
						2	X	-	-	-	NO
6A, 6B	6X6	70	4	X	-	6	-	X	-	-	NO
8A	6X40	+5	2-4-2	X	-	8	X	-	-	-	NO

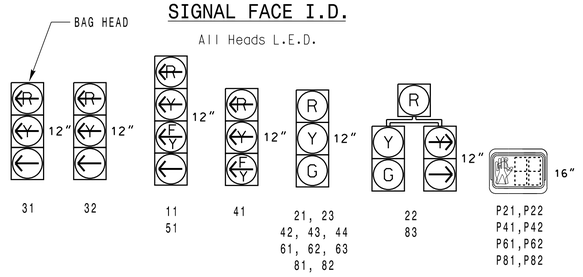
6 PHASE FULLY ACTUATED (GREENVILLE SIGNAL SYSTEM)

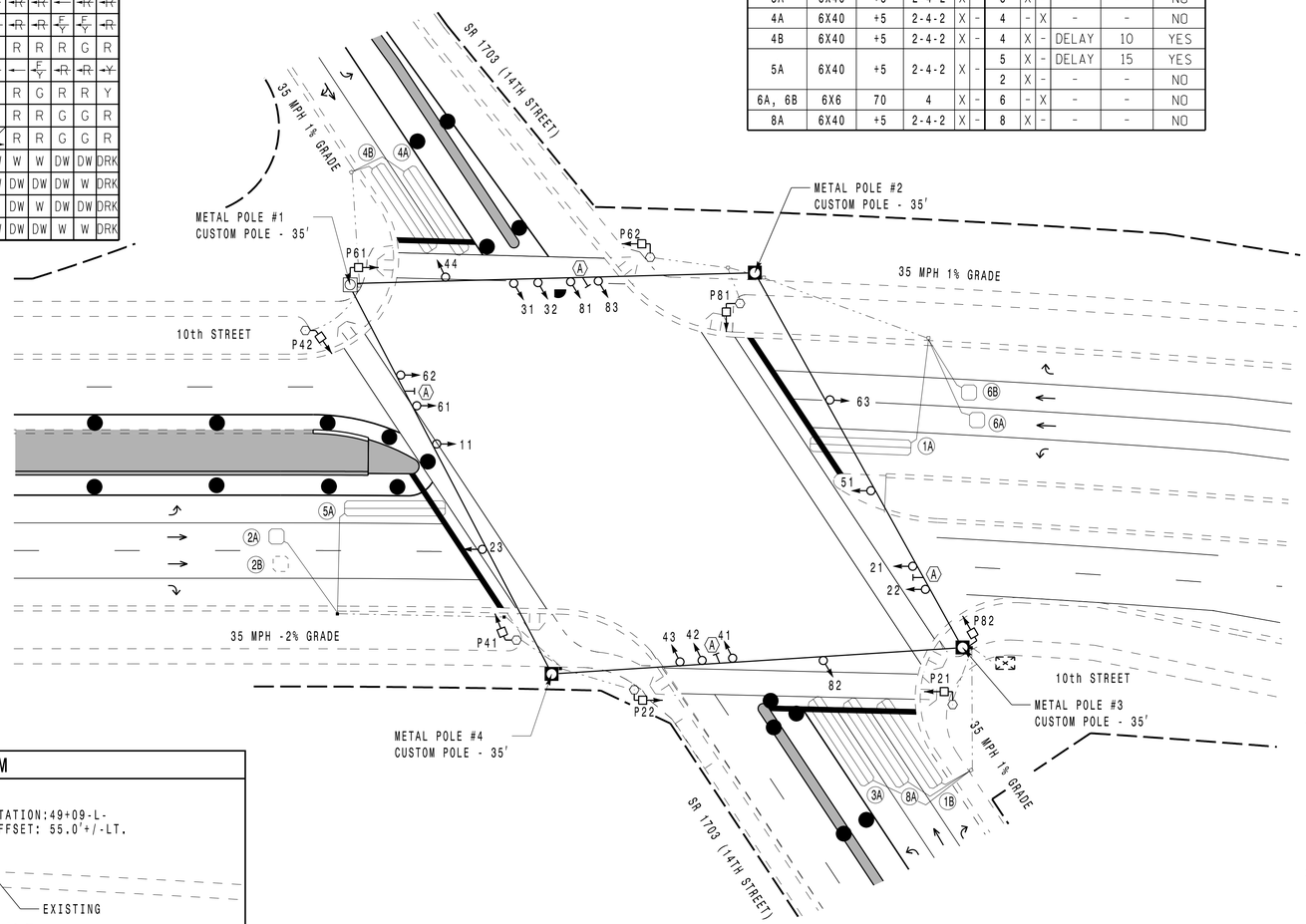
NOTES

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. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 may be lagged.
5. Set all detector units to presence mode.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
9. Intersection Zone Number: 4
   System Address Number: 90
10. Install and bag head 31.
11. Install black powder coated metal strain poles and pedestals.
12. Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.

SIGNAL FACE I.D.

All Heads L.E.D.

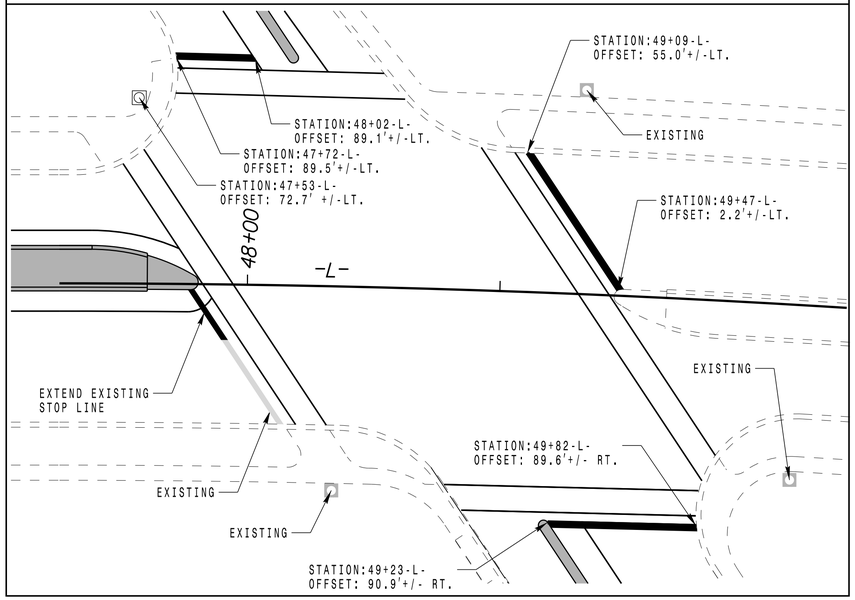




LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
▯↓	Pedestrian Signal Head With Push Button & Sign	■
⬡	Type II Signal Pedestal	⬢
◎	Metal Strain Pole	◘
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊡
□	Junction Box	■
·····	2-in Underground Conduit	·····
N/A	Right of Way	———
→	Directional Arrow	→
▭	Construction Zone	▭
●●●	Construction Zone Drums	●●●
Ⓐ	Street Name Sign	Ⓐ

STOP LINE AND POLE LOCATION DAIGRAM



ASC3 NEMA TIMING CHART

FEATURE	PHASE Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
MINIMUM GREEN *	7 SEC.	10 SEC.	7 SEC.	7 SEC.	7 SEC.	10 SEC.	7 SEC.
PASSAGE/GAP *	2.0 SEC.	3.0 SEC.	2.0 SEC.	2.0 SEC.	2.0 SEC.	3.0 SEC.	2.0 SEC.
YELLOW CHANGE INT.	3.0 SEC.	4.0 SEC.	3.0 SEC.	3.8 SEC.	3.0 SEC.	4.0 SEC.	3.8 SEC.
RED CLEARANCE	3.3 SEC.	3.1 SEC.	5.0 SEC.	4.2 SEC.	3.4 SEC.	3.1 SEC.	4.2 SEC.
MAXIMUM 1 *	30 SEC.	70 SEC.	20 SEC.	45 SEC.	30 SEC.	70 SEC.	45 SEC.
RECALL POSITION	NONE	MIN. RECALL	NONE	NONE	NONE	MIN. RECALL	NONE
VEHICLE CALL MEMORY	NONLOCK	LOCK	NONLOCK	NONLOCK	NONLOCK	LOCK	NONLOCK
WALK *	– SEC.	7 SEC.	– SEC.	7 SEC.	– SEC.	7 SEC.	7 SEC.
FLASHING DON'T WALK	– SEC.	25 SEC.	– SEC.	34 SEC.	– SEC.	24 SEC.	41 SEC.
VOLUME DENSITY	OFF	OFF	OFF	OFF	OFF	OFF	OFF
ACTUATION B4 ADD *	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.
SEC. PER ACTUATION *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
MAX. INITIAL *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
TIME B4 REDUCTION *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
TIME TO REDUCE *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
MINIMUM GAP	– SEC.	– SEC.	– 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.

PLANS PREPARED IN THE OFFICE OF:
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TEMPORARY DESIGN 3 - TMP PHASE 3

Prepared For:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

10th STREET
AT
SR 1703 (14TH STREET)

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON REVIEWED BY:

SCALE 0 30' 1"=30'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS
DocuSigned by: Stacie Phillips 9/2/2014
DC87A59ED6D8437...
SIGNATURE DATE

SIG. INVENTORY NO. 02-0893T3

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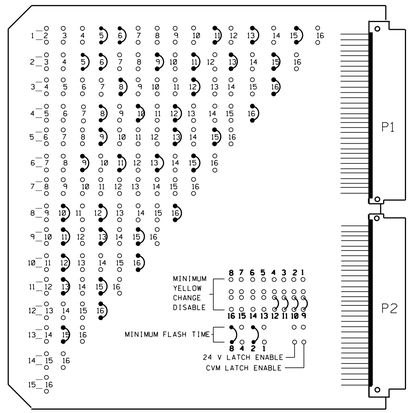
8/29/2014 10:56:41 AM susan.pennington

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 3.6

EDI MODEL MMU2-16LE MALFUNCTION MANAGEMENT UNIT PROGRAMMING DETAIL

(program card and tables as shown below)



MMU PROGRAMMING CARD

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDgaurd	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF
VM 3x/Day Latch	ON

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	ENABLE
2	ENABLE
3	ENABLE
4	ENABLE
5	ENABLE
6	ENABLE
7	DISABLE
8	ENABLE
9	ENABLE
10	ENABLE
11	ENABLE
12	ENABLE
13	ENABLE
14	DISABLE
15	ENABLE
16	ENABLE

FLASHING YELLOW ARROW	
CONFIG MODE	A
ENABLE CHANNEL PAIR, FYA	
CH 1-9	ON
CH 3-10	OFF
CH 5-11	ON
CH 7-12	OFF
RED/YEL INPUT ENABLE	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
FLASH RATE FAULT	OFF
FYA TRAP DETECT	OFF

MMU PROGRAMMING NOTE

ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

NOTES

1. To prevent "Flash-conflict" problems, wire all unused load switches to flash red. Verify that signal heads flash in accordance with the signal plans.
2. To prevent red failures on unused monitor channels, tie unused load switch red outputs 7 and 14 to load switch AC+ by inserting a jumper plug in the unused load switch socket from pin 1 (LS AC+) to pin 3 (red out). Make sure all flash transfer relays are in place.
3. Program controller to start up in phases 2 and 6 green.
4. Set power-up flash time to 10 seconds and implement on the Malfunction Management Unit. Set controller power-up flash time to 0 seconds.
5. Enable simultaneous gap-out feature, on controller unit, for all phases.
6. Program detectors in accordance with the manufacturer's instructions to accomplish the detection schemes shown on the signal design plans.
7. Program detector call delay and extension timing on the controller, unless otherwise specified.
8. Set all detector card unit channels to "presence" mode.
9. This controller and cabinet are part of the Greenville Signal System.

SIGNAL HEAD HOOK-UP CHART

PHASE	1		2	3		4	5	6	7	8	2 PED	4 PED	6 PED	8 PED	OLA	OLB	OLC	OLD
SIGNAL HEAD NO.	11★	83	21,22 23	22	32	42,43, 44	51★	61,62 63	NU	81,82 83	P21, P22	P41, P42	P61, P62	P81, P82	11★	NU	51★	41★
RED	✳		2R			4R	✳	6R		8R								
YELLOW			2Y			4Y	✳	6Y		8Y								
GREEN			2G			4G		6G		8G								
RED ARROW					3R										13R		15R	16R
YELLOW ARROW		1Y		3Y	3Y										13Y		15Y	16Y
FLASHING YELLOW ARROW															13G		15G	16G
GREEN ARROW	1G	1G		3G	3G		5G											
✋											9R	10R	11R	12R				
🚶											9G	10G	11G	12G				

NU = Not Used

✳Denotes install load resistor, see load resistor installation detail this sheet.

★See pictorial of head wiring detail this sheet.

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW. PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

DETECTOR RACK #1

BIU	CH1 L3 ø1	CH1 L1 ø1	CH1 L7 ø3	CH1 L5 ø2	CH1 L11 ø5	CH1 L9 ø4	CH1 L15 ø8	CH1 L13 ø6	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	CH2 L4 NOT USED	CH2 L2 ø6	CH2 L8 NOT USED	CH2 L6 NOT USED	CH2 L12 ø2	CH2 L10 ø4	CH2 L16 NOT USED	CH2 L14 NOT USED			

DETECTOR RACK #2

BIU	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS	
1A	L1A,L1B	ADD JUMPERS FROM L1A TO L2A AND L1B TO L2B
	L2A,L2B	
1B	L3A,L3B	
NU	L4A,L4B	
2A, 2B	L5A,L5B	
NU	L6A,L6B	
3A	L7A,L7B	
-	L8A,L8B	
4A	L9A,L9B	
4B	L10A,L10B	
5A	L11A,L11B	ADD JUMPERS FROM L11A TO L12A AND L11B TO L12B
	L12A,L12B	
6A, 6B	L13A,L13B	
NU	L14A,L14B	
8A	L15A,L15B	
NU	L16A,L16B	
NU	L17A,L17B	
NU	L18A,L18B	
NU	L19A,L19B	
NU	L20A,L20B	
NU	L21A,L21B	NOTE: BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.
NU	L22A,L22B	
NU	L23A,L23B	
NU	L24A,L24B	

NU = NOT USED

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	ø1	DELAY	15
2	ø6	-	-
3	ø1	DELAY	15
4	-	-	-
5	ø2	-	-
6	ø2	-	-
7	ø3	-	-
8	-	-	-
9	ø4	-	-
10	ø4	DELAY	10
11	ø5	DELAY	15
12	ø2	-	-
13	ø6	-	-
14	ø6	-	-
15	ø8	-	-
16	-	-	-
17	-	-	-
18	-	-	-
19	-	-	-
20	-	-	-
21	-	-	-
22	-	-	-
23	-	-	-
24	-	-	-

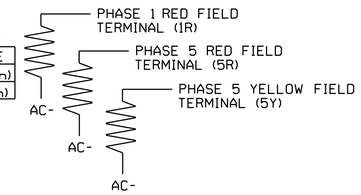
EQUIPMENT INFORMATION

CONTROLLER.....ASC/3
CABINET NC-8A TS-2
SOFTWARE .....ECONOLITE ASC/ 2070
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....1,2,3,4,5,6,8,9,10,11,12,13,15,16
PHASES USED.....1,2,2PED,3,4,4PED,5,6,6PED,8,8PED
OLA.....✳
OLB.....NONE
OLC.....✳
OLD.....✳

✳ See Sheet 2 of 2 Econolite ASC/2070 Overlap Programming Detail.

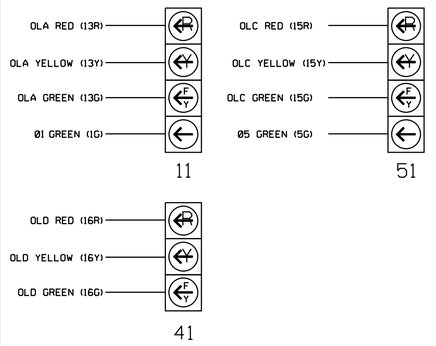
LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES	
VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

1. SEE OVERLAP PROGRAMMING INSTRUCTIONS SHEET 2 OF 2.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0893T3
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

TEMPORARY DESIGN 3 - TMP PHASE 3

SHEET 1 OF 2

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For: Transportation Mobility and Safety Division, North Carolina Department of Transportation, Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

10th STREET
AT
SR 1703 (14TH STREET)

DIVISION 2	PITT COUNTY	GREENVILLE
PLAN DATE: JUNE 2014	REVIEWED BY:	SL PHILLIPS
PREPARED BY: SP PENNINGTON	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
-DCE7A58E5A0B437 SIGNATURE DATE

SIG. INVENTORY NO. 02-0893T3

K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\S4 - Signal Design\03-14th\3.6 020893-140829eT3-1.dgn
susan.pennington
10:56:42 AM
8/29/2014

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 3.7

ECONOLITE ASC/3 SPECIAL MMU PROGRAMMING

(program controller as shown below)

FROM MAIN MENU SELECT 1 (CONFIGURATION)

```
CONFIGURATION SUBMENU

1. CONTROLLER SEQ        5. COMMUNICATIONS
2. PHASE IN USE/PED      6. ENABLE LOGGING
3. LOAD SW ASSIGN        7. DISPLAY/ACCESS
[4. PORT 1 (SDLC)]       8. LOGIC PROCESSOR

PRESS KEYS 1..8 TO SELECT
```

```
PORT 1 (SDLC) SUBMENU

1. SDLC OPTIONS
[2. MMU PROGRAM]
3. COLOR CHECK ENABLE
4. SECONDARY STATION/TESTS

PRESS KEYS 1..4 TO SELECT
```

```
MMU PROGRAM [    MANUAL]
      CH  6 5 4 3 2 1 0 9 8 7 6 5 4 3 2
  1       . X . X . X . . . . X X . . .
  2       . X . X . X . X . . X X . . .
  3       X . . . X . . . X . . . . . .
  4       X . . . X . X . X . . . . . .
  5       . X . X . . . X . . . . . . .
  6       . X . X . X . X . . . . . . .
  7       . . . . . . . . . . . . . . .
  8       X . . . X . X . . . . . . . .
  9       . X . X . X . . . . . . . . .
 10       X . . . X . . . . . . . . . .
 11       . X . X . . . . . . . . . . .
 12       X . . . . . . . . . . . . . .
 13       . X . . . . . . . . . . . . .
 14       . . . . . . . . . . . . . . .
```

CAUTION!

Set intersection to Flash before attempting to enter or change any MMU programming data.

This programming and that of the MMU programming card must match exactly. If they do not, the intersection will be placed into Flash.

LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	Ø1
2	Ø2
3	Ø3
4	Ø4
5	Ø5
6	Ø6
7	Ø7
8	Ø8
9	Ø2 PED
10	Ø4 PED
11	Ø6 PED
12	Ø8 PED
13	OLA
14	OLB
15	OLC
16	OLD

ECONOLITE ASC/3 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

From Main Menu select 2 (CONTROLLER)

```
MAIN MENU

1. CONFIGURATION         6. DETECTORS
[2. CONTROLLER]          7. STATUS DISPLAY
3. COORDINATOR           8. UTILITIES
4. PREEMPTOR/TSP         9. DIAGNOSTICS
5. TIME BASE

PRESS KEYS 1..9 TO SELECT
```

From Controller Sub select 2 (VEHICLE OVERLAPS)

```
CONTROLLER SUBMENU

1. TIMING PLANS          5. START/FLASH
[2. VEHICLE OVERLAPS]    6. OPTION DATA
3. VEH/PED OVERLAPS      7. PRE-TIMED
4. GUAR MIN TIME         8. PHASE RECALL

PRESS KEYS 1..8 TO SELECT
```

OVERLAP A

Select Vehicle Overlap Type (PPLT FYA)

```
TMG VEH OVLP . . .[A]   TYPE: [PPLT FYA]

PROTECTED PHASE (LEFT TURN).....................1
PERMISSIVE PHASE (OPPOSING THRU).................2
FLASHING ARROW OUTPUT.................CH13 ISOLATE

DELAY START OF:  FYA.. 0.0  CLEARANCE.....0.0
ACTION PLAN SF BIT DISABLE.....................0
```

OVERLAP C

Select Vehicle Overlap Type (PPLT FYA)

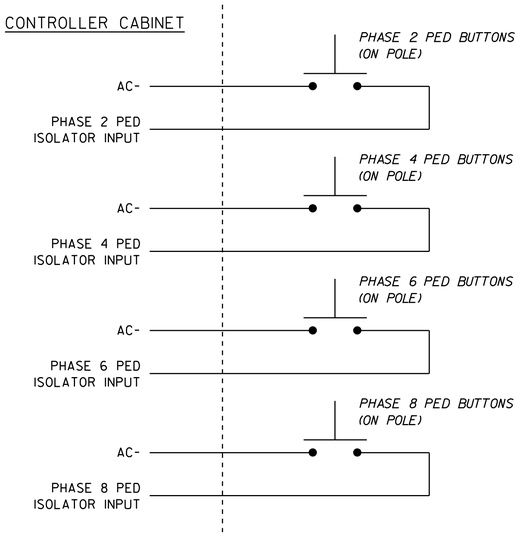
```
TMG VEH OVLP . . .[C]   TYPE: [PPLT FYA]

PROTECTED PHASE (LEFT TURN).....................5
PERMISSIVE PHASE (OPPOSING THRU).................6
FLASHING ARROW OUTPUT.................CH15 ISOLATE

DELAY START OF:  FYA.. 0.0  CLEARANCE.....0.0
ACTION PLAN SF BIT DISABLE.....................0
```

PEDESTRIAN PUSH-BUTTON WIRING DETAIL

(wire push-buttons as shown below)



ECONOLITE ASC/3 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

From Main Menu select 2 (CONTROLLER)

```
MAIN MENU

1. CONFIGURATION         6. DETECTORS
[2. CONTROLLER]          7. STATUS DISPLAY
3. COORDINATOR           8. UTILITIES
4. PREEMPTOR/TSP         9. DIAGNOSTICS
5. TIME BASE

PRESS KEYS 1..9 TO SELECT
```

From Controller Sub select 2 (VEHICLE OVERLAPS)

```
CONTROLLER SUBMENU

1. TIMING PLANS          5. START/FLASH
[2. VEHICLE OVERLAPS]    6. OPTION DATA
3. VEH/PED OVERLAPS      7. PRE-TIMED
4. GUAR MIN TIME         8. PHASE RECALL

PRESS KEYS 1..8 TO SELECT
```

OVERLAP D

Select Vehicle Overlap Type (OTHER/ECONOLITE)

```
TMG VEH OVLP . . .[D]   [TYPE:  OTHER/ECONOLITE]

  PHASES  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED  . . . X . . . . . . . . . . . .
PROTECT   . . . . . . . . . . . . . . . .
MODIFIER  . . . . . . . . . . . . . . . .
PED PRTC  . . . . . . . . . . . . . . . .
NO SERVE  . . . . . . . . . . . . . . . .
FLSH GRN  . . . 1 . . . . . . . . . . . .
LAG X PH  . . . . . . . . . . . . . . . .
LAG 2 PH  . . . . . . . . . . . . . . . .

LAG GRN  0.0  YEL  0.0  RED  0.0  ADV GRN  0.0
```

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0893T3
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

TEMPORARY DESIGN 3 - TMP PHASE 3 — SHEET 2 OF 2

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
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(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

10th STREET
AT
SR 1703 (14TH STREET)

DIVISION 2 | PITT COUNTY | GREENVILLE

PLAN DATE: JUNE 2014	REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

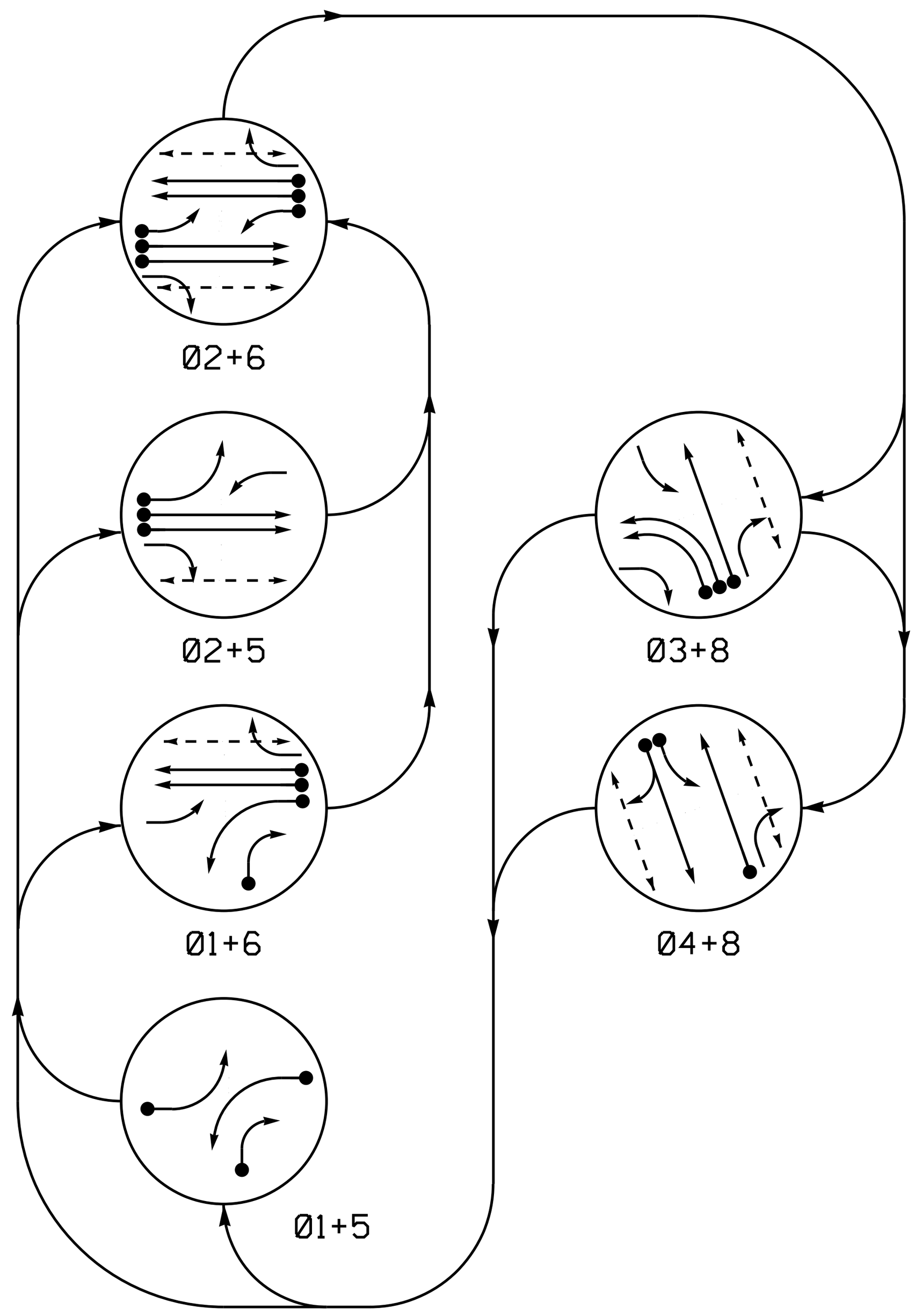
DocuSigned by: Stacie Phillips 9/2/2014
DC87A50ED60B437...
SIGNATURE DATE

SIG. INVENTORY NO. 02-0893T3

K:\RAL_Roadway\01103617S (U-3315)\Traffic Signals\S4 - Signal Design\03-14thst3.7 020893-140829et3-2.dgn
8/29/2014 10:56:43 AM susan.pennington

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 3.8

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

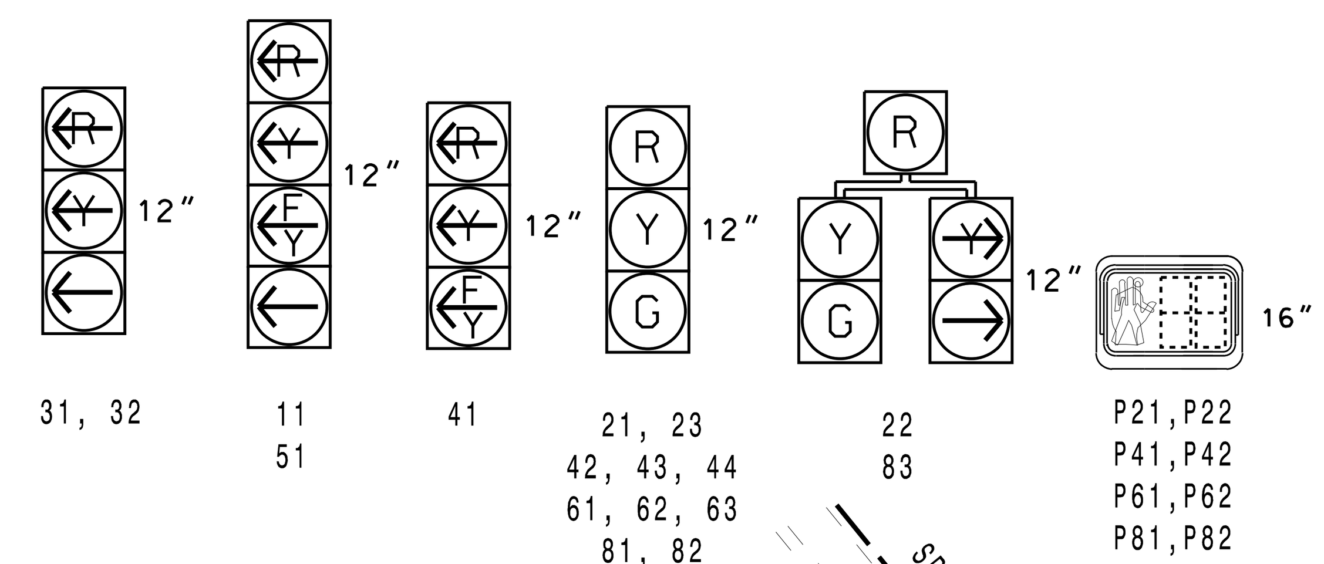
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+8	Ø4+8	FLASH
11	←	←	←F/Y	←F/Y	←R	←R	←Y
21, 23	R	R	G	G	R	R	Y
22	R	R	G	G	R/→	R	Y
31, 32	←R	←R	←R	←R	←	←R	←R
41	←R	←R	←R	←R	←F/Y	←F/Y	←R
42, 43, 44	R	R	R	R	R	G	R
51	←	←F/Y	←	←F/Y	←R	←R	←Y
61, 62, 63	R	G	R	G	R	R	Y
81, 82	R	R	R	R	G	G	R
83	R/→	R/→	R	R	G	G	R
P21, P22	DW	DW	W	W	DW	DW	DRK
P41, P42	DW	DW	DW	DW	DW	W	DRK
P61, P62	DW	W	DW	W	DW	DW	DRK
P81, P82	DW	DW	DW	DW	W	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



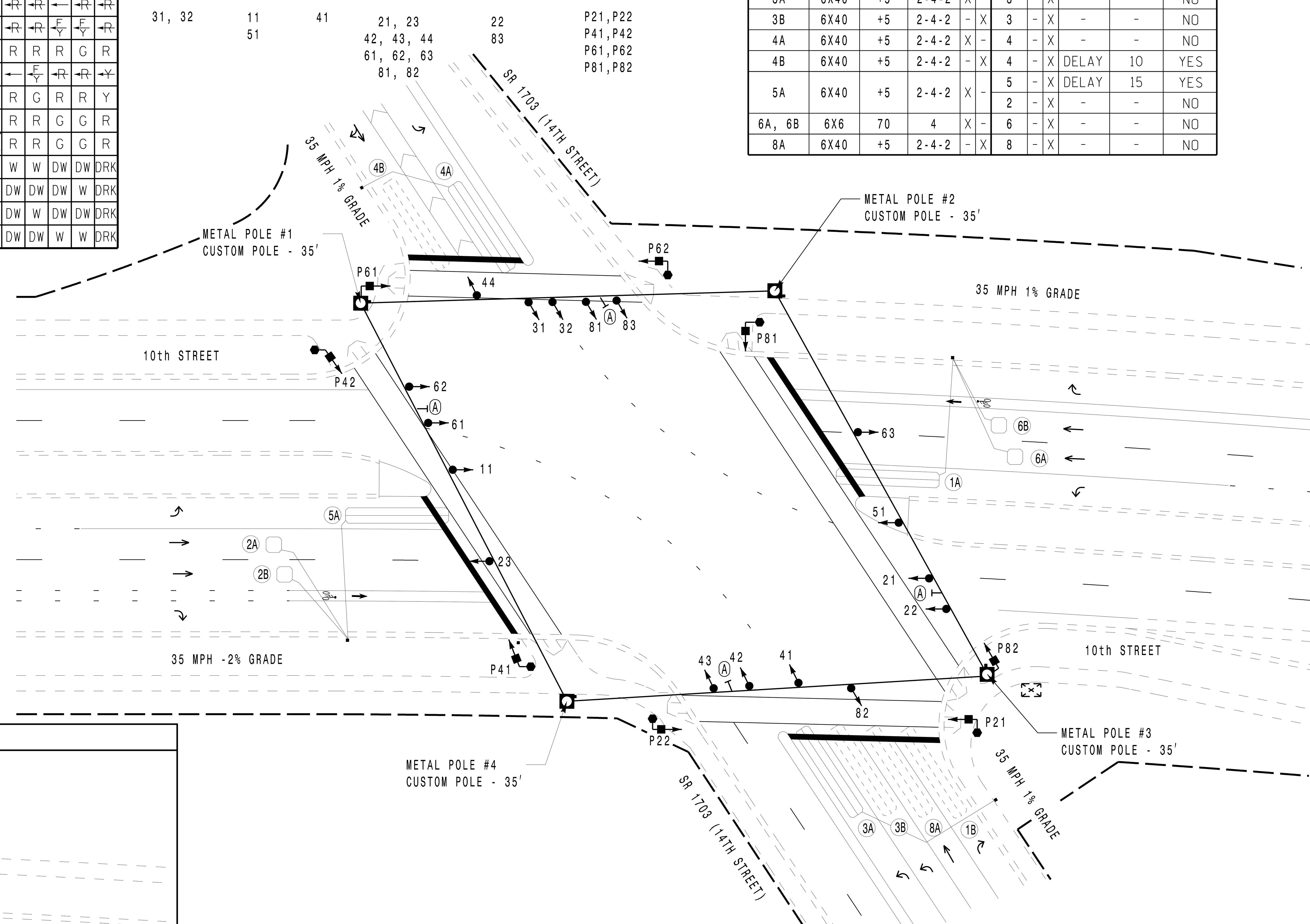
NEMA LOOP & DETECTOR INSTALLATION CHART
with TS-2 CABINET

INDUCTIVE LOOPS: LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	DETECTOR UNITS: NEMA PHASE	NEW	EXISTING	TIMING: FEATURE	TIME	INHIBIT DELAY DURING GREEN?
1A	6X40	+5	2-4-2	X	-	1	-	X	DELAY	15	YES
						6	-	X	-	-	NO
1B	6X40	+5	2-4-2	-	X	1	-	X	DELAY	15	YES
2A, 2B	6X6	70	4	X	-	2	-	X	-	-	NO
3A	6X40	+5	2-4-2	X	-	3	-	X	-	-	NO
3B	6X40	+5	2-4-2	-	X	3	-	X	-	-	NO
4A	6X40	+5	2-4-2	X	-	4	-	X	-	-	NO
4B	6X40	+5	2-4-2	-	X	4	-	X	DELAY	10	YES
5A	6X40	+5	2-4-2	X	-	5	-	X	DELAY	15	YES
						2	-	X	-	-	NO
6A, 6B	6X6	70	4	X	-	6	-	X	-	-	NO
8A	6X40	+5	2-4-2	-	X	8	-	X	-	-	NO

6 PHASE
FULLY ACTUATED
(GREENVILLE SIGNAL SYSTEM)

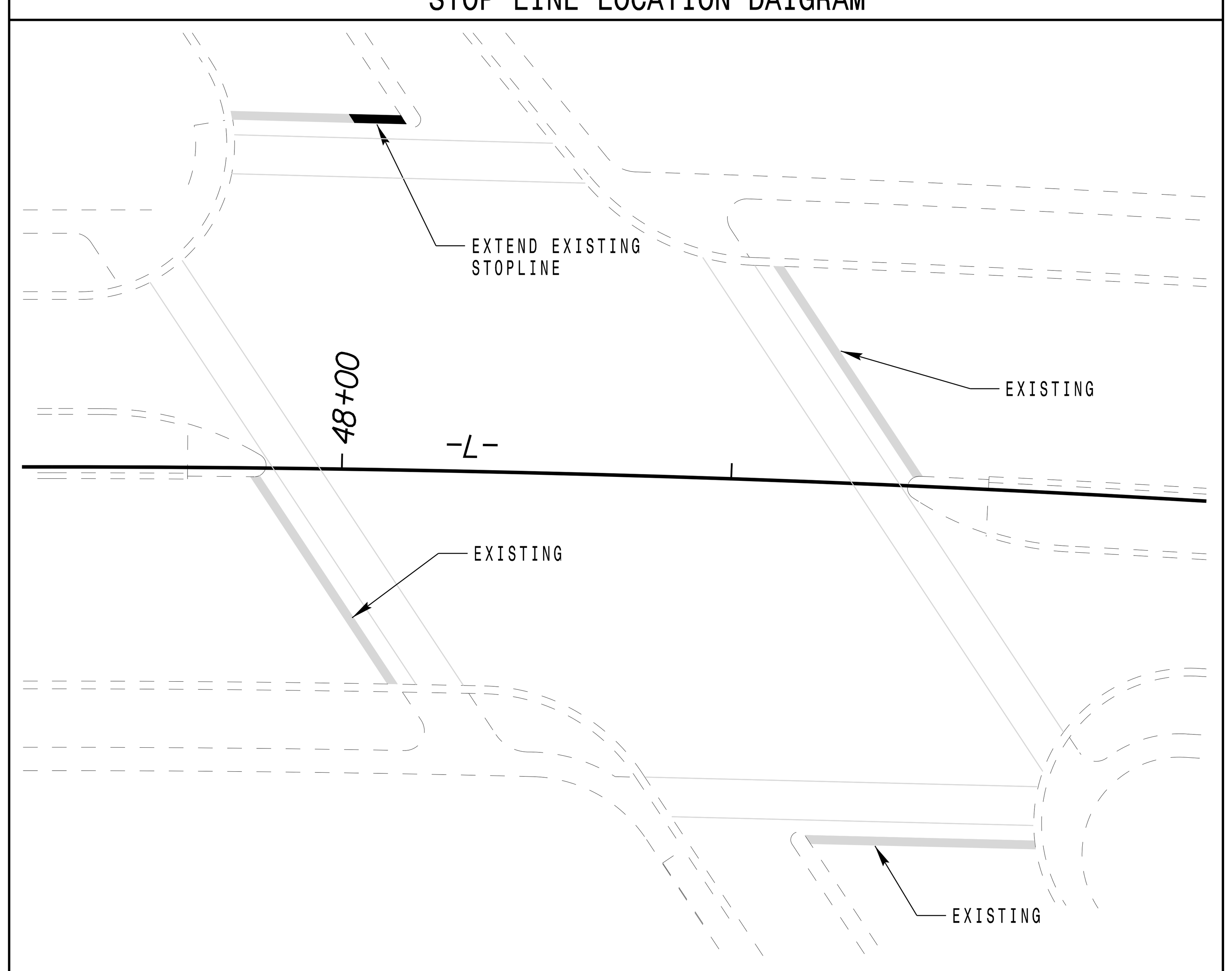
NOTES

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. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 may be lagged.
5. Reposition existing signal heads 11, 21, 22, 23, 31, 32, 41, 42, 43, 44, 51, 61, 62, 63, 81, 82 and 83.
6. Set all detector units to presence mode.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
10. Intersection Zone Number: 4
    System Address Number: 90



PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Metal Strain Pole	
	Signal Pedestal	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
A	Street Name Sign	A

STOP LINE LOCATION DAIGRAM



NEMA TIMING CHART

FEATURE	PHASE Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
MINIMUM GREEN *	7 SEC.	10 SEC.	7 SEC.	7 SEC.	7 SEC.	10 SEC.	7 SEC.
PASSAGE/GAP *	2.0 SEC.	3.0 SEC.	2.0 SEC.	2.0 SEC.	2.0 SEC.	3.0 SEC.	2.0 SEC.
YELLOW CHANGE INT.	3.0 SEC.	4.0 SEC.	3.0 SEC.	3.8 SEC.	3.0 SEC.	4.0 SEC.	3.8 SEC.
RED CLEARANCE	3.3 SEC.	3.1 SEC.	5.1 SEC.	4.3 SEC.	3.3 SEC.	3.1 SEC.	4.3 SEC.
MAXIMUM 1 *	30 SEC.	70 SEC.	20 SEC.	45 SEC.	30 SEC.	70 SEC.	45 SEC.
RECALL POSITION	NONE	MIN. RECALL	NONE	NONE	NONE	MIN. RECALL	NONE
VEHICLE CALL MEMORY	NONLOCK	LOCK	NONLOCK	NONLOCK	NONLOCK	LOCK	NONLOCK
WALK *	– SEC.	7 SEC.	– SEC.	7 SEC.	– SEC.	7 SEC.	7 SEC.
FLASHING DON'T WALK	– SEC.	25 SEC.	– SEC.	34 SEC.	– SEC.	22 SEC.	41 SEC.
VOLUME DENSITY	OFF	OFF	OFF	OFF	OFF	OFF	OFF
ACTUATION B4 ADD *	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.
SEC. PER ACTUATION *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
MAX. INITIAL *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
TIME B4 REDUCTION *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
TIME TO REDUCE *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
MINIMUM GAP	– SEC.	– SEC.	– 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.

PLANS PREPARED IN THE OFFICE OF:
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FINAL DESIGN

Prepared For: Transportation Mobility and Safety Division, Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

10th STREET AT SR 1703 (14TH STREET)

DIVISION 2 | PITT COUNTY | GREENVILLE

PLAN DATE:	JUNE 2014	REVIEWED BY:	SL PHILLIPS
PREPARED BY:	SP PENNINGTON	REVIEWED BY:	

SCALE 0 30' 1"=30'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 0C87A59ED60B437... 9/2/2014
SIGNATURE DATE

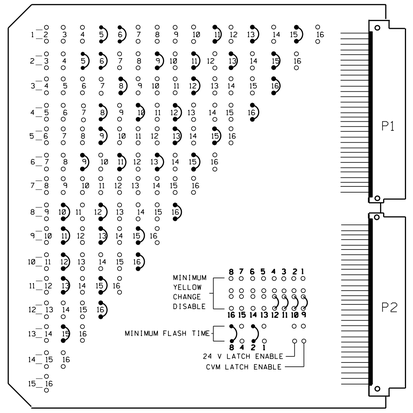
SIG. INVENTORY NO. 02-0893

8/29/2014 10:56:45 AM susan.pennington K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\S4 - Signal Design\03-14th\3.8 020893-140829g.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 3.9

EDI MODEL MMU2-16LE MALFUNCTION MANAGEMENT UNIT PROGRAMMING DETAIL

(program card and tables as shown below)



MMU PROGRAMMING CARD

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	ENABLE
2	ENABLE
3	ENABLE
4	ENABLE
5	ENABLE
6	ENABLE
7	DISABLE
8	ENABLE
9	ENABLE
10	ENABLE
11	ENABLE
12	ENABLE
13	ENABLE
14	DISABLE
15	ENABLE
16	ENABLE

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDgaurd	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF
VM 3x/Day Latch	ON

FLASHING YELLOW ARROW	
CONFIG MODE	A
ENABLE CHANNEL PAIR, FYA	
CH 1-9	ON
CH 3-10	OFF
CH 5-11	ON
CH 7-12	OFF
RED/YEL INPUT ENABLE	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
FLASH RATE FAULT	OFF
FYA TRAP DETECT	OFF

MMU PROGRAMMING NOTE

ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

NOTES

1. To prevent "Flash-conflict" problems, wire all unused load switches to flash red. Verify that signal heads flash in accordance with the signal plans.
2. To prevent red failures on unused monitor channels, tie unused load switch red outputs 7 and 14 to load switch AC+ by inserting a jumper plug in the unused load switch socket from pin 1 (LS AC+) to pin 3 (red out). Make sure all flash transfer relays are in place.
3. Program controller to start up in phases 2 and 6 green.
4. Set power-up flash time to 10 seconds and implement on the Malfunction Management Unit. Set controller power-up flash time to 0 seconds.
5. Enable simultaneous gap-out feature, on controller unit, for all phases.
6. Program detectors in accordance with the manufacturer's instructions to accomplish the detection schemes shown on the signal design plans.
7. Program detector call delay and extension timing on the controller, unless otherwise specified.
8. Set all detector card unit channels to "presence" mode.
9. This controller and cabinet are part of the Greenville Signal System.

SIGNAL HEAD HOOK-UP CHART

PHASE	1		2	3		4	5	6	7	8	2 PED	4 PED	6 PED	8 PED	OLA	OLB	OLC	OLD
SIGNAL HEAD NO.	11★	83	21,22 23	22	31,32	42,43, 44	51★	61,62 63	NU	81,82 83	P21, P22	P41, P42	P61, P62	P81, P82	11★	NU	51★	41★
RED	✳		2R			4R	✳	6R		8R								
YELLOW			2Y			4Y	✳	6Y		8Y								
GREEN			2G			4G		6G		8G								
RED ARROW					3R										13R		15R	16R
YELLOW ARROW		1Y		3Y	3Y										13Y		15Y	16Y
FLASHING YELLOW ARROW															13G		15G	16G
GREEN ARROW	1G	1G		3G	3G		5G											
✋											9R	10R	11R	12R				
🚶											9G	10G	11G	12G				

NU = Not Used

✳ Denotes install load resistor, see load resistor installation detail this sheet.

★ See pictorial of head wiring detail this sheet.

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW. PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

DETECTOR RACK #1

BIU	CH1 L3 ø1	CH1 L1 ø1	CH1 L7 ø3	CH1 L5 ø2	CH1 L11 ø5	CH1 L9 ø4	CH1 L15 ø8	CH1 L13 ø6	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	CH2 L4 NOT USED	CH2 L2 ø6	CH2 L8 ø3	CH2 L6 NOT USED	CH2 L12 ø2	CH2 L10 ø4	CH2 L16 NOT USED	CH2 L14 NOT USED			

DETECTOR RACK #2

BIU	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS	
1A	L1A, L1B	ADD JUMPERS FROM L1A TO L2A AND L1B TO L2B
	L2A, L2B	
1B	L3A, L3B	
NU	L4A, L4B	
2A, 2B	L5A, L5B	
NU	L6A, L6B	
3A	L7A, L7B	
3B	L8A, L8B	
4A	L9A, L9B	
4B	L10A, L10B	
5A	L11A, L11B	ADD JUMPERS FROM L11A TO L12A AND L11B TO L12B
	L12A, L12B	
6A, 6B	L13A, L13B	
NU	L14A, L14B	
8A	L15A, L15B	
NU	L16A, L16B	
NU	L17A, L17B	
NU	L18A, L18B	
NU	L19A, L19B	
NU	L20A, L20B	
NU	L21A, L21B	
NU	L22A, L22B	
NU	L23A, L23B	
NU	L24A, L24B	

NU = NOT USED

NOTE: BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	ø1	DELAY	15
2	ø6	-	-
3	ø1	DELAY	15
4	-	-	-
5	ø2	-	-
6	ø2	-	-
7	ø3	-	-
8	ø3	-	-
9	ø4	-	-
10	ø4	DELAY	10
11	ø5	DELAY	15
12	ø2	-	-
13	ø6	-	-
14	ø6	-	-
15	ø8	-	-
16	-	-	-
17	-	-	-
18	-	-	-
19	-	-	-
20	-	-	-
21	-	-	-
22	-	-	-
23	-	-	-
24	-	-	-

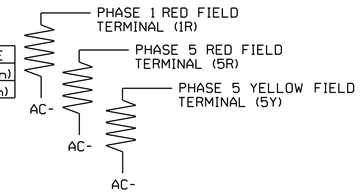
EQUIPMENT INFORMATION

CONTROLLER.....ASC/3
CABINET NC-8A TS-2
SOFTWARE .....ECONOLITE ASC/ 2070
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....1,2,3,4,5,6,8,9,10,11,12,13,15,16
PHASES USED.....1,2,2PED,3,4,4PED,5,6,6PED,8,8PED
OLA.....✳
OLB.....NONE
OLC.....✳
OLD.....✳

✳ See Sheet 2 of 2 Econolite ASC/2070 Overlap Programming Detail.

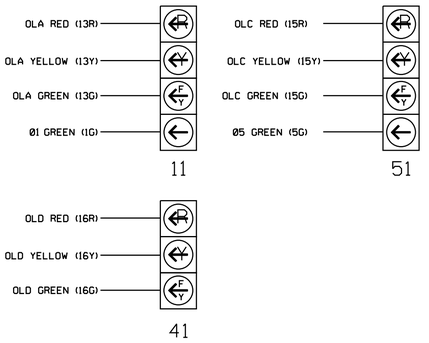
LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES	
VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

1. SEE OVERLAP PROGRAMMING INSTRUCTIONS SHEET 2 OF 2.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0893F
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

FINAL DESIGN

SHEET 1 OF 2

PLANS PREPARED IN THE OFFICE OF:
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Raleigh, NC 27636
(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

10th STREET
AT
SR 1703 (14TH STREET)

DIVISION 2 | PITT COUNTY | GREENVILLE

PLAN DATE: JUNE 2014	REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
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SIGNATURE DATE

SIG. INVENTORY NO. 02-0893F

K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\S4 - Signal Design\03-14th\3.9 020893-140829e-1.dgn
susan.pennington
10:56:46 AM
8/29/2014

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 3.10

ECONOLITE ASC/3 SPECIAL MMU PROGRAMMING

(program controller as shown below)

FROM MAIN MENU SELECT 1 (CONFIGURATION)

```
CONFIGURATION SUBMENU

1. CONTROLLER SEQ        5. COMMUNICATIONS
2. PHASE IN USE/PED      6. ENABLE LOGGING
3. LOAD SW ASSIGN        7. DISPLAY/ACCESS
[4. PORT 1 (SDLC)]       8. LOGIC PROCESSOR

PRESS KEYS 1..8 TO SELECT
```

```
PORT 1 (SDLC) SUBMENU

1. SDLC OPTIONS
[2. MMU PROGRAM]
3. COLOR CHECK ENABLE
4. SECONDARY STATION/TESTS

PRESS KEYS 1..4 TO SELECT
```

```
MMU PROGRAM [    MANUAL]
      CH  6 5 4 3 2 1 0 9 8 7 6 5 4 3 2
  1       . X . X . X . . . . X X . . .
  2       . X . X . X . X . . X X . . .
  3       X . . . X . . . X . . . . . .
  4       X . . . X . X . X . . . . . .
  5       . X . X . . . X . . . . . . .
  6       . X . X . X . X . . . . . . .
  7       . . . . . . . . . . . . . . .
  8       X . . . X . X . . . . . . . .
  9       . X . X . X . . . . . . . . .
 10       X . . . X . . . . . . . . . .
 11       . X . X . . . . . . . . . . .
 12       X . . . . . . . . . . . . . .
 13       . X . . . . . . . . . . . . .
 14       . . . . . . . . . . . . . . .
```

CAUTION!

Set intersection to Flash before attempting to enter or change any MMU programming data.

This programming and that of the MMU programming card must match exactly. If they do not, the intersection will be placed into Flash.

LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	Ø1
2	Ø2
3	Ø3
4	Ø4
5	Ø5
6	Ø6
7	Ø7
8	Ø8
9	Ø2 PED
10	Ø4 PED
11	Ø6 PED
12	Ø8 PED
13	OLA
14	OLB
15	OLC
16	OLD

ECONOLITE ASC/3 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

From Main Menu select 2 (CONTROLLER)

```
MAIN MENU

1. CONFIGURATION         6. DETECTORS
[2. CONTROLLER]          7. STATUS DISPLAY
3. COORDINATOR           8. UTILITIES
4. PREEMPTOR/TSP         9. DIAGNOSTICS
5. TIME BASE

PRESS KEYS 1..9 TO SELECT
```

From Controller Sub select 2 (VEHICLE OVERLAPS)

```
CONTROLLER SUBMENU

1. TIMING PLANS          5. START/FLASH
[2. VEHICLE OVERLAPS]    6. OPTION DATA
3. VEH/PED OVERLAPS      7. PRE-TIMED
4. GUAR MIN TIME         8. PHASE RECALL

PRESS KEYS 1..8 TO SELECT
```

OVERLAP A

Select Vehicle Overlap Type (PPLT FYA)

```
TMG VEH OVLP . . .[A]   TYPE: [PPLT FYA]

PROTECTED PHASE (LEFT TURN).....................1
PERMISSIVE PHASE (OPPOSING THRU).................2
FLASHING ARROW OUTPUT.................CH13 ISOLATE

DELAY START OF:  FYA.. 0.0  CLEARANCE.....0.0
ACTION PLAN SF BIT DISABLE.....................0
```

OVERLAP C

Select Vehicle Overlap Type (PPLT FYA)

```
TMG VEH OVLP . . .[C]   TYPE: [PPLT FYA]

PROTECTED PHASE (LEFT TURN).....................5
PERMISSIVE PHASE (OPPOSING THRU).................6
FLASHING ARROW OUTPUT.................CH15 ISOLATE

DELAY START OF:  FYA.. 0.0  CLEARANCE.....0.0
ACTION PLAN SF BIT DISABLE.....................0
```

ECONOLITE ASC/3 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

From Main Menu select 2 (CONTROLLER)

```
MAIN MENU

1. CONFIGURATION         6. DETECTORS
[2. CONTROLLER]          7. STATUS DISPLAY
3. COORDINATOR           8. UTILITIES
4. PREEMPTOR/TSP         9. DIAGNOSTICS
5. TIME BASE

PRESS KEYS 1..9 TO SELECT
```

From Controller Sub select 2 (VEHICLE OVERLAPS)

```
CONTROLLER SUBMENU

1. TIMING PLANS          5. START/FLASH
[2. VEHICLE OVERLAPS]    6. OPTION DATA
3. VEH/PED OVERLAPS      7. PRE-TIMED
4. GUAR MIN TIME         8. PHASE RECALL

PRESS KEYS 1..8 TO SELECT
```

OVERLAP D

Select Vehicle Overlap Type (OTHER/ECONOLITE)

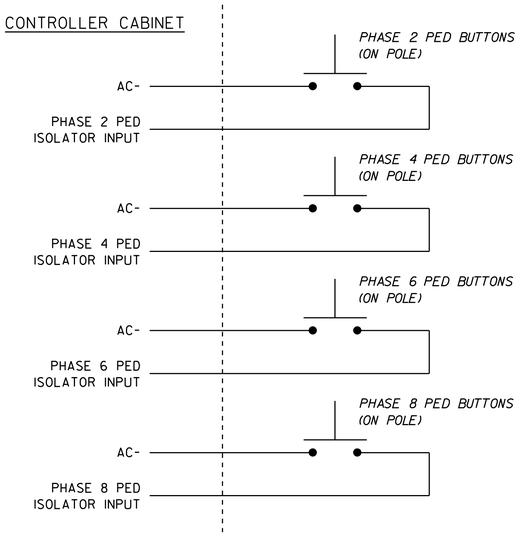
```
TMG VEH OVLP . . .[D]  [TYPE:  OTHER/ECONOLITE]

  PHASES  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED  . . . X . . . . . . . . . . . .
PROTECT   . . . . . . . . . . . . . . . .
MODIFIER  . . . . . . . . . . . . . . . .
PED PRTC  . . . . . . . . . . . . . . . .
NO SERVE  . . . . . . . . . . . . . . . .
FLSH GRN  . . . 1 . . . . . . . . . . . .
LAG X PH  . . . . . . . . . . . . . . . .
LAG 2 PH  . . . . . . . . . . . . . . . .

LAG GRN  0.0  YEL  0.0  RED  0.0  ADV GRN  0.0
```

PEDESTRIAN PUSH-BUTTON WIRING DETAIL

(wire push-buttons as shown below)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0893
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

FINAL DESIGN

SHEET 2 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Statewide Management Systems
750 N.Greenfield Pkwy.Garner,NC 27529

10th STREET
AT
SR 1703 (14TH STREET)

DIVISION 2 | PITT COUNTY | GREENVILLE

PLAN DATE: JUNE 2014	REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
DC87A50ED60B437...
SIGNATURE DATE

SIG. INVENTORY NO. 02-0893

K:\RAL_Roadway\01103617S (U-3315)\Traffic Signals\S4 - Signal Design\03-14thst3.10 020893-140829e-2.dgn
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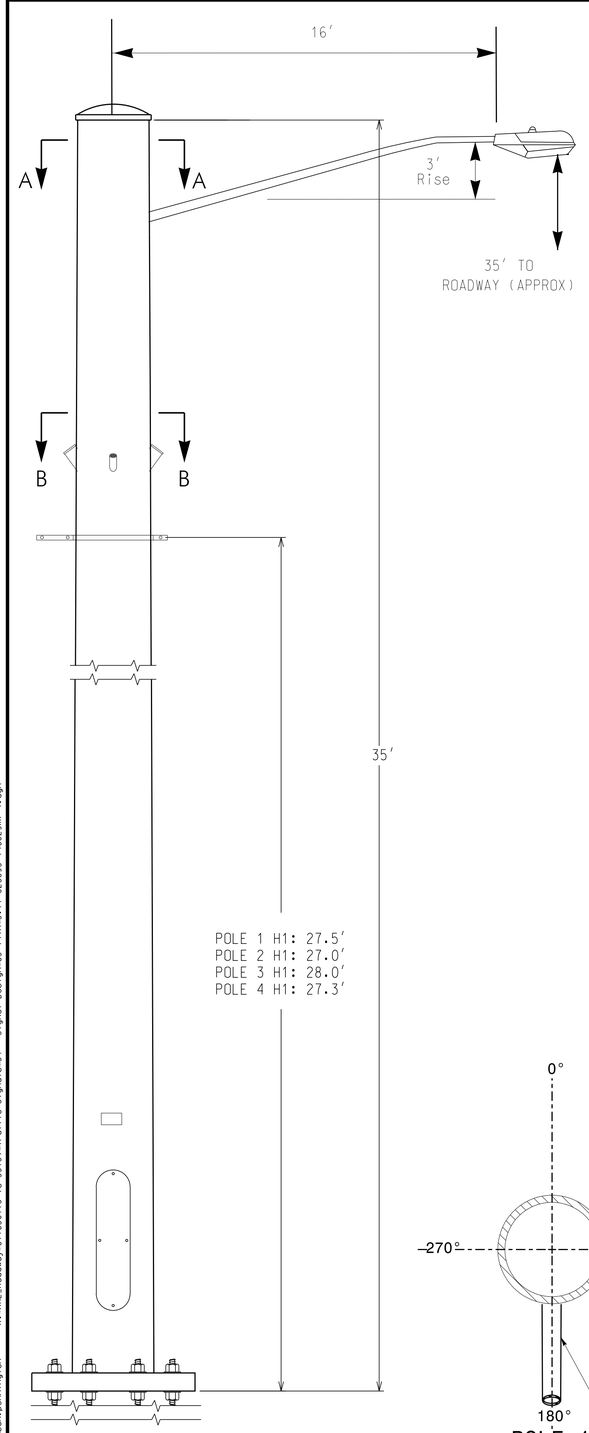
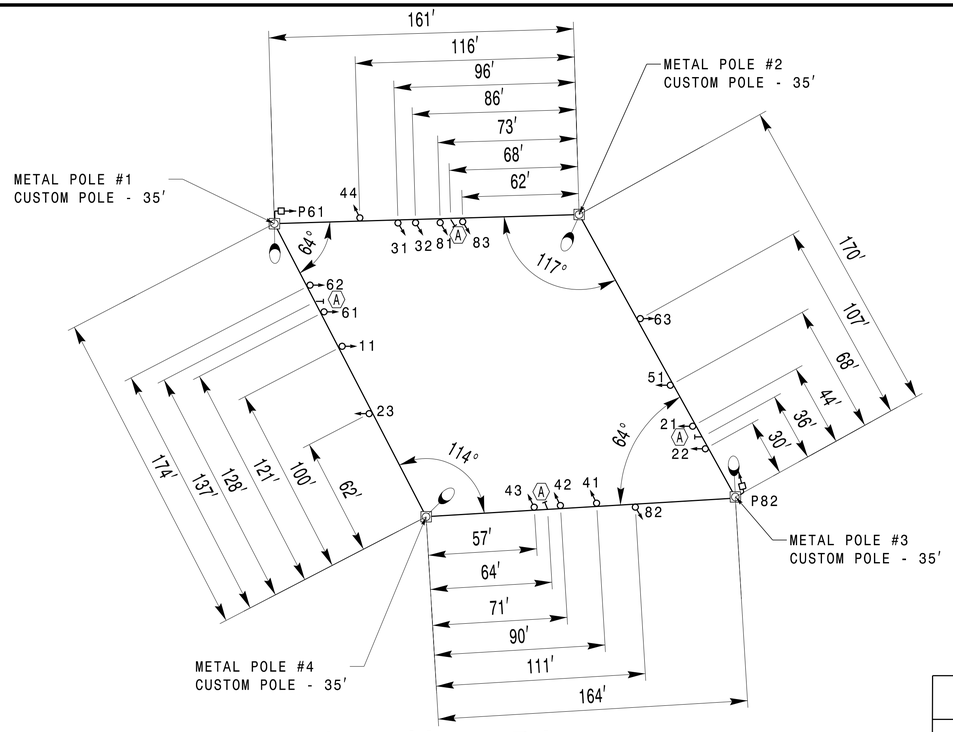
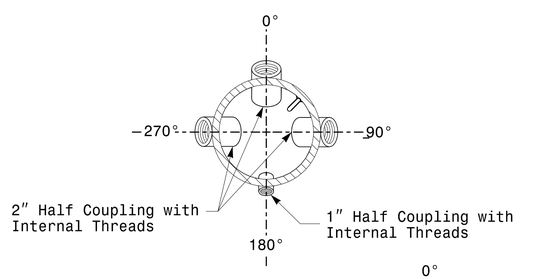
8/29/2014



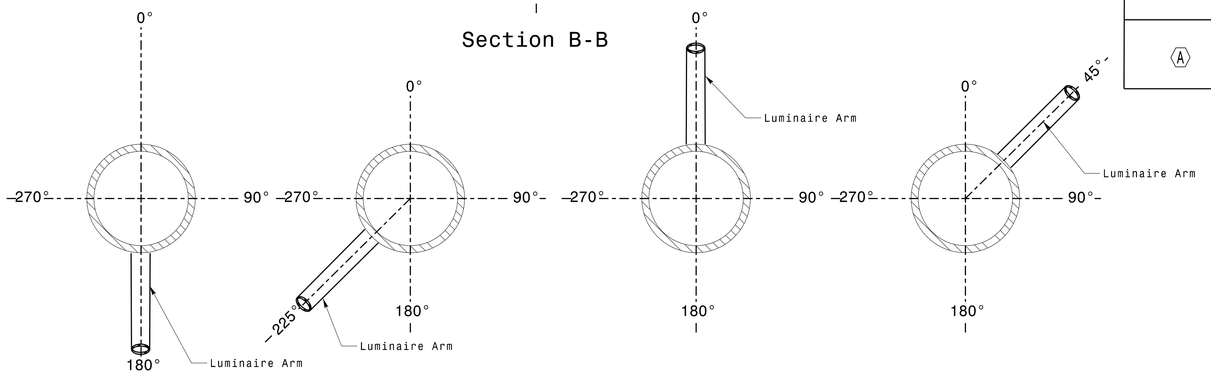
Pole Elevation



Loading Diagram



Section B-B



POLE 1
Section A-A

POLE 2
Section A-A

POLE 3
Section A-A

POLE 4
Section A-A

Radial Orientation for Factory Installed Accessories

Notes

DESIGN REFERENCE MATERIAL

1. Design the traffic signal structure and foundation in accordance with:
   - The 5th Edition 2009 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
   - The 2012 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
   - The 2012 NCDOT Roadway Standard Drawings.
   - The traffic signal project plans and special provisions.
   - The NCDOT "Metal Pole Standards" located at the following NCDOT website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx
2. Fabricate Metal Pole #3 and #4 using design loadings shown. The contractor may revise attachment heights and radial orientations of wire entrances with approval from the Division Traffic Engineer. Any modifications to the original location of accessories must be reflected on the shop drawings when they are submitted for review and approval.
3. Design a drilled pier foundation that conforms to the requirements of ITSS Project Special Provisions (Version 12.3) included with and as part of these plans.
4. Comply with NEC code 230.2(E) concerning service equipment disconnect.
5. Lighting fixture and luminaire arm represent a load condition to the pole and may not represent exactly how the fixtures will be mounted. The contractor is responsible for ensuring that any required factory preps for mounting fixtures to the pole are included on the shop drawings.
6. Design the luminaire support arm using design dimensions as shown on elevations views. Refer to the Radial Orientation Detail for attachment to the signal pole. Design arm end for a nominal 2 inch slip fit socket connection for light assembly.

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 3.11

LOADING SCHEDULE FOR STRAIN POLES

HEAD	DESCRIPTION	AREA	SIZE	WEIGHT
21, 23 31, 32 41, 42, 43, 44 61, 62, 63 81, 82	SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE, HANGER, AND BALANCE ADJUSTER	9.2 S.F.	25.5" W x 52.0" L	56 LBS
11 51	SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE, HANGER, AND BALANCE ADJUSTER	11.6 S.F.	25.5" W x 65.5" L	69 LBS
22 83	SIGNAL HEAD 12"-5 SECTION-WITH BACKPLATE, HANGER, AND BALANCE ADJUSTER	16.5 S.F.	42.0" W x 56.0" L	89 LBS
P61 P82	PEDESTRIAN SIGNAL HEAD WITH MOUNTING HARDWARE	2.2 S.F.	18.5" W X 17.0" L	21 LBS
—◐	LUMINAIRE	1.0 S.F.	N/A	25 LBS
(A)	STREET NAME SIGN WITH HANGER	12.0 S.F.	18.0" W X 96.0" L	27 LBS

LOADING DIAGRAM: METAL POLES 1, 2, 3 AND 4

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

Prepared For:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

10th STREET
AT
SR 1703 (14TH STREET)

DIVISION 2 | PITT COUNTY | GREENVILLE
PLAN DATE: JUNE 2014 | REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON | REVIEWED BY:

SCALE 0 N/A N/A

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS
DocuSigned by: Stacie Phillips 9/2/2014
DC87A58ED6D843Z...
SIGNATURE DATE

SIG. INVENTORY NO. 02-0893

8/29/2014 10:56:49 AM susan.pennington K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\54 - Signal Design\03-14thst3.11 020893-140829ml-4.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 4.1

3 PHASE FULLY ACTUATED (GREENVILLE SIGNAL SYSTEM)

PHASING DIAGRAM

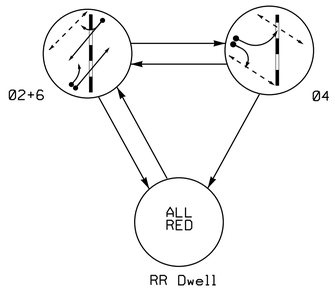
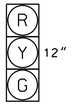


TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4	RR DWELL	FLASH
21,22,23	G	R	R	Y
41,42,43	R	G	R	R
61,62,63	G	R	R	Y
P41,P42,P43,P44	DW	W	DW	DRK
P61,P62	W	DW	DW	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



21, 22, 23
41, 42, 43
61, 62, 63

P41, P42, P43, P44
P61, P62

NEMA LOOP & DETECTOR INSTALLATION CHART
with TS-2 CABINET

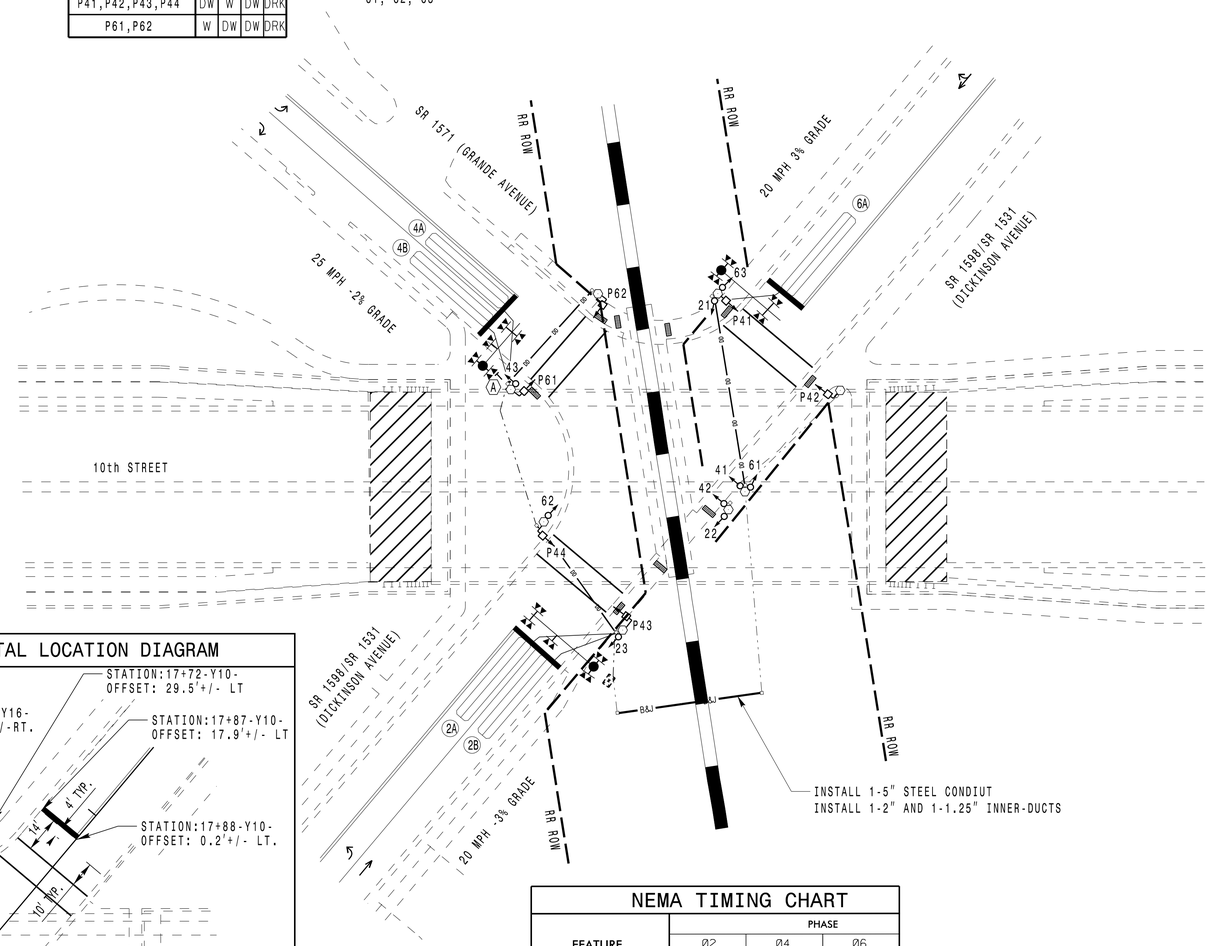
INDUCTIVE LOOPS						DETECTOR UNITS				
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	NEMA PHASE	NEW	EXISTING	TIMING FEATURE	TIMING TIME	INHIBIT DELAY DURING GREEN?
2A	6X40	0	2-4-2	X	-	2	X	-	-	-	NO
2B	6X40	0	2-4-2	X	-	2	X	-	-	-	NO
4A	6X40	0	2-4-2	X	-	4	X	-	-	-	NO
4B	6X40	0	2-4-2	X	-	4	X	-	-	-	NO
6A	6X40	0	2-4-2	X	-	6	X	-	-	-	NO

NOTES

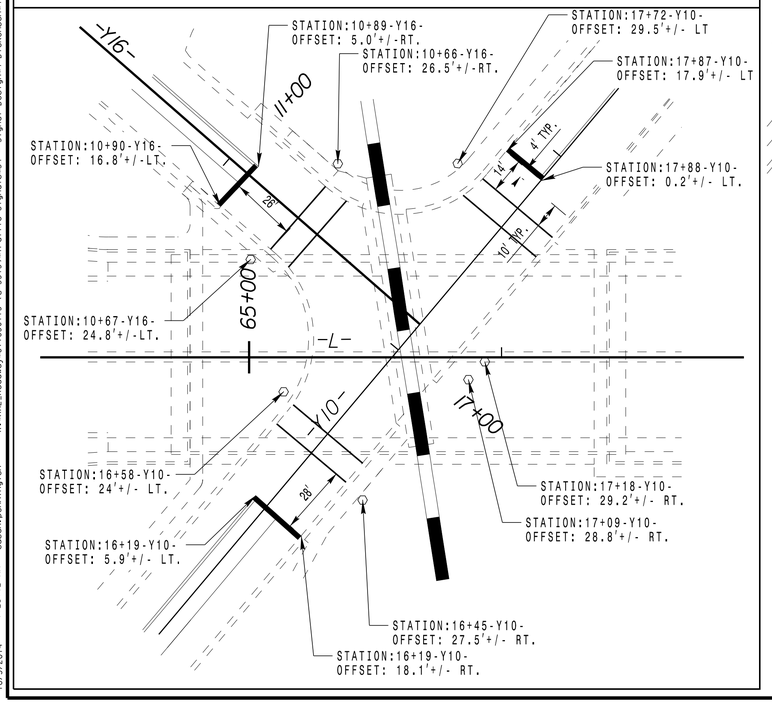
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. This location contains railroad preemption phasing. Do not program signal for late night flashing operation.
3. Set all detector units to presence mode.
4. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
5. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
7. Intersection Zone Number: 4
   System Address Number: 89
8. Install black powder coated pedestals.
9. Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.

PHASING DIAGRAM DETECTION LEGEND

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



STOP LINE AND SIGNAL HEAD PEDESTAL LOCATION DIAGRAM



NEMA TIMING CHART

FEATURE	PHASE Ø2	PHASE Ø4	PHASE Ø6
MINIMUM GREEN *	7 SEC.	7 SEC.	7 SEC.
PASSAGE/GAP *	2.0 SEC.	2.0 SEC.	2.0 SEC.
YELLOW CHANGE INT.	3.0 SEC.	3.3 SEC.	3.0 SEC.
RED CLEARANCE	4.0 SEC.	3.2 SEC.	3.9 SEC.
MAX. 1 *	30 SEC.	15 SEC.	30 SEC.
RECALL POSITION	MIN. RECALL	NONE	MIN. RECALL
VEHICLE CALL MEMORY	LOCK	NONLOCK	LOCK
WALK *	– SEC.	7 SEC.	7 SEC.
FLASHING DON'T WALK	– SEC.	9 SEC.	7 SEC.
VOLUME DENSITY	OFF	OFF	OFF
ACTUATION B4 ADD *	– VEH.	– VEH.	– VEH.
SEC. PER ACTUATION *	– SEC.	– SEC.	– SEC.
MAX. INITIAL *	– SEC.	– SEC.	– SEC.
TIME B4 REDUCTION *	– SEC.	– SEC.	– SEC.
TIME TO REDUCE *	– SEC.	– SEC.	– SEC.
MINIMUM GAP	– 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.

RAILROAD PREEMPTION

FUNCTION	SECONDS
DELAY BEFORE PREEMPT	0
PED. CLEAR BEFORE PREEMPT	0
MIN. GREEN BEFORE PREEMPT	1
YELLOW CLEAR BEFORE PREEMPT	3.3
RED CLEAR BEFORE PREEMPT	4.0
TRACK CLEARANCE GREEN	0
TRACK CLEARANCE YELLOW	0.0
TRACK CLEARANCE RED	0.0
PREEMPT DWELL MIN. GREEN	0
YELLOW CLR AFTER PREEMPT	0.0
RED CLEAR AFTER PREEMPT	0.0
PED. CLEAR THROUGH YELLOW	0.0
EXIT PHASE	2,6

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□	Pedestrian Signal Head With Push Button & Sign	■
⬡	Type II Signal Pedestal	⬢
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
·-·-·	2-in Underground Conduit	·-·-·
—DD—	Directional Drill	N/A
—B&J—	Jack and Bore	N/A
N/A	Right of Way	- - - - -
→	Directional Arrow	→
N/A	Railroad Cantilever	✕✕●
N/A	Railroad Tracks	▬
Ⓐ	"NO TURN ON RED" Sign (R10-11)	Ⓐ

FINAL DESIGN

Prepared For: Transportation Mobility and Safety Division, North Carolina Department of Transportation, Signal Design Section
1750 N.Greenfield Pkwy.Garner,NC 27529

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

SCALE 0 30' 1"=30'

SR 1598/SR 1531 (DICKINSON AVENUE) AT SR 1571 (GRANDE AVENUE)

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLIPS

PREPARED BY: SP PENNINGTON REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

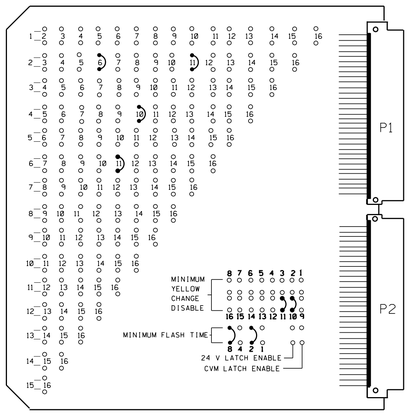
DocuSigned by: Stacie Phillips DC87A59E0D0B437... SIGNATURE 9/2/2014 DATE

SIG. INVENTORY NO. 02-0007

K:\RAL_Roadway\01103617S (U-3315)\Traffic Signals\S4 - Signal Design\4-Dickenson\4.1 020007-140829g.dgn 10/3/2014 7:25:12 AM susan.pennington

EDI MODEL MMU-16LE
MALFUNCTION MANAGEMENT UNIT
PROGRAMMING DETAIL

(program card and tables as shown below)



MMU PROGRAMMING CARD

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	DISABLE
2	ENABLE
3	DISABLE
4	ENABLE
5	DISABLE
6	ENABLE
7	DISABLE
8	DISABLE
9	DISABLE
10	ENABLE
11	ENABLE
12	DISABLE
13	DISABLE
14	DISABLE
15	DISABLE
16	DISABLE

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDguard	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF

FLASHING YELLOW ARROW	
CH. GROUP FOR PROTECTED GREEN ARROWS	CH. 1,3,5,7
ENABLE CHANNEL PAIR, FYA	
CH 1-13	OFF
CH 3-14	OFF
CH 5-15	OFF
CH 7-16	OFF

MMU PROGRAMMING NOTE

1. ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW.
PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

DETECTOR RACK #1

BIU	SLOT EMPTY	CH2 L2 ø2	CH2 L8 NOT USED	CH2 L6 ø4	CH1 L1 ø2	CH1 L7 ø6	CH1 L5 ø4	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS
2A	L1A,L1B
2B	L2A,L2B
–	L3A,L3B
–	L4A,L4B
4A	L5A,L5B
4B	L6A,L6B
6A	L7A,L7B
–	L8A,L8B
–	L9A,L9B
–	L10A,L10B
–	L11A,L11B
–	L12A,L12B
–	L13A,L13B
–	L14A,L14B
–	L15A,L15B
–	L16A,L16B

NOTE
BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	ø 2	–	–
2	ø 2	–	–
3	–	–	–
4	–	–	–
5	ø 4	–	–
6	ø 4	–	–
7	ø 6	–	–
8	–	–	–
9	–	–	–
10	–	–	–
11	–	–	–
12	–	–	–
13	–	–	–
14	–	–	–
15	–	–	–
16	–	–	–

NOTES

1. To prevent "Flash-conflict" problems, wire all unused load switches to flash red. Verify that signal heads flash in accordance with the signal plans.
2. To prevent red failures on unused monitor channels, tie unused load switch red outputs 1,3,5,7,8,9 & 12 to load switch AC+ by inserting a jumper plug in the unused load switch socket from pin 1 (LS AC+) to pin 3 (red out). Make sure all flash transfer relays are in place.
3. Program controller to start up in phases 2 and 6 green.
4. Set power-up flash time to 10 seconds and implement on the Malfunction Management Unit. Set controller power-up flash time to 0 seconds.
5. Enable simultaneous gap-out feature, on controller unit, for all phases.
6. Program detectors in accordance with the manufacturer's instructions to accomplish the detection schemes shown on the signal design plans.
7. Program detector call delay and extension timing on the controller, unless otherwise specified.
8. Set all detector card unit channels to "presence" mode.
9. This controller and cabinet are part of the Greenville Signal System.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	ø1
2	ø2
3	ø3
4	ø4
5	ø5
6	ø6
7	ø7
8	ø8
9	ø2 PED
10	ø4 PED
11	ø6 PED
12	ø8 PED

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 4.2

SIGNAL HEAD HOOK-UP CHART

PHASE	1	2	3	4	5	6	7	8	2 PED	4 PED	6 PED	8 PED
SIGNAL HEAD NO.	NU	21, 22 23	NU	41,42 43	NU	61,62 63	NU	NU	NU	P41,P42 P43,P44	P61, P62	NU
RED		2R		4R		6R						
YELLOW		2Y		4Y		6Y						
GREEN		2G		4G		6G						
RED ARROW												
YELLOW ARROW												
FLASHING YELLOW ARROW												
GREEN ARROW												
✋										10R	11R	
🚶										10G	11G	

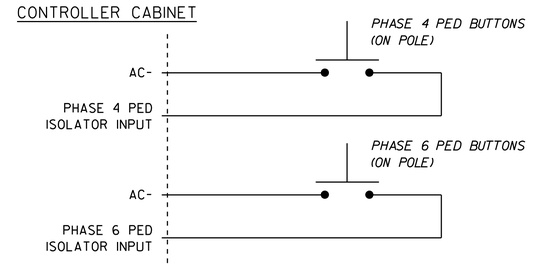
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....ECONOLITE ASC/2S-2100
CABINET .....ECONOLITE TS-2
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....12
LOAD SWITCHES USED.....2,4,6,S10,S11
PHASES USED.....2,4,6,4PED,6PED

PEDESTRIAN PUSH-BUTTON WIRING DETAIL

(wire push-buttons as shown below)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0007
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

FINAL DESIGN SHEET 1 OF 2

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

SR 1598/SR 1531
(DICKINSON AVENUE)
AT
SR 1571 (GRANDE AVENUE)

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE:	JUNE 2014	REVIEWED BY:	SL PHILLIPS
PREPARED BY:	SP PENNINGTON	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

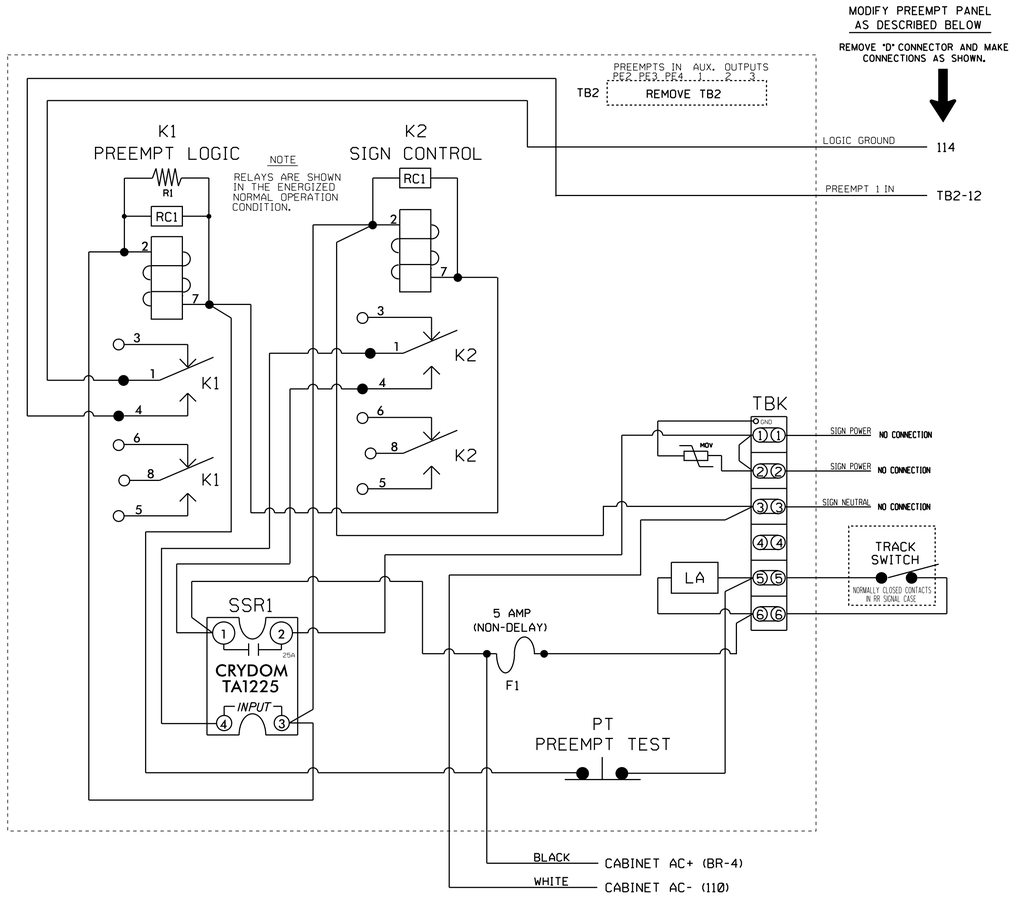
DocuSigned by: Stacie Phillips 9/2/2014
DC87A50ED60B437...
SIGNATURE DATE

SIG. INVENTORY NO. 02-0007

8/29/2014 10:56:51 AM susan.pennington K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\SS4 - Signal Design\M4-01ckensor\M4.2 020007-140829e1.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 4.3

PREEMPTION PANEL WIRING DIAGRAM



NOTES

1. RELAYS K1 AND K2 ARE DPDT WITH A 120VAC COIL. (EAGLE PART NO. 2202CA120).
2. SSR1 IS A SPST, N.O. WITH AN AC INPUT AND 25A CONTACTS. CRYDOM PART NO. TA1225, DOT MATERIAL NO. 625028740.
3. THE RC NETWORKS ACROSS THE COILS OF K1 AND K2 ARE VALUED AT .1 MICRO FARAD, 100 OHM. PART NO. PBN-2002.
4. LA IS AN EDCO SPA-60BS-2 SURGE PROTECTOR FOR 120VAC INTERCONNECT. DOT MATERIAL NO. 625022076.
5. MOV IS RATED AT 150 VRMS, 20 JOULES. PART NO. PGR-193.
6. THIS CABINET AND CONTROLLER IS WIRED AND PROGRAMMED FOR RAILROAD PREEMPTION. THE PREEMPTION PANEL IS AN EAGLE PART NO. AAD12366P003, DOT MATERIAL NO. 620031320.

ECONOLITE ASC/2-FAMILY RAILROAD PREEMPTOR
PREEMPTOR PROGRAMMING DETAIL
(program controller as shown below)

```
PREEMPTOR SUBMENU
1. PRIORITY PMT 1        5. PRIORITY PMT 5
2. PRIORITY PMT 2        6. PRIORITY PMT 6
3. PRIORITY PMT 3        7. BUS PREEMPTORS
4. PRIORITY PMT 4
```

```
PRIORITY PREEMPTOR 1
                                  1 1 1
PHASE.....  1 2 3 4 5 6 7 8 9 0 1 2
TERM PHASE OVLP  . . . . . . . . . . .
TRK CLR PHASE..  . . . . . . . . . . .
HOLD PHASES....  . . . . . . . . . . .
EXIT PHASES....  . X . . . X . . . . .
EXIT CALLS.....  . . . . . . . . . . .
TERM OVERLAP...   A: .  B: .  C: .  D: .

ACTIVE.....YES  PED DARK..... NO
PRIORITY.....YES  PED ACTIVE..... NO
DET LOCK..... NO  ZERO PC TIME... NO
HOLD FLASH..... NO  PC THRU YELLOW. NO
TERM OVLP ASAP. NO  TERM PHASES.... NO
ADDITIONAL PAGE(S)
```

```
PRIORITY PREEMPTOR 1
DON'T OVERRIDE FLASH.....  .
FLASH ALL OUTPUTS........  .
YELLOW-RED GOES GREEN....  .
ENABLE MAX PREEMPT TIME..  .
ACTIVE ONLY DURING HOLD..  .
NO CVM IN FLASH..........  .
FAST FLASH GRN ON HOLD...  .
OUT OF FLASH.............  GREEN

ADDITIONAL PAGE(S)
```

```
PRIORITY PREEMPTOR 1
MAX TIME.....  0  DURATION TIME..  0
MIN HOLD TIME.  7  DELAY TIME.....  0
MIN PED CLEAR.  0  INHIBIT TIME...  0
EXIT MAX.....  0  HLD DELAY TIME.  1

                GRN  YEL  RED
MINIMUM.....      1  3.3  4.0
TRACK CLEAR...    0  0.0  0.0
HOLD.........        0.0  0.0

END OF SUBMENU
```

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0007
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

FINAL DESIGN SHEET 2 OF 2

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For: Transportation Mobility and Safety Division, North Carolina Department of Transportation, Signals Management Section

750 N.Greenfield Pkwy,Garner,NC 27529

SR 1598/SR 1531
(DICKINSON AVENUE)
AT
SR 1571 (GRANDE AVENUE)

DIVISION 2	PITT COUNTY	GREENVILLE
PLAN DATE: JUNE 2014	REVIEWED BY: SL PHILLIPS	
PREPARED BY: SP PENNINGTON	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
DC87A50ED60B437...
SIGNATURE DATE

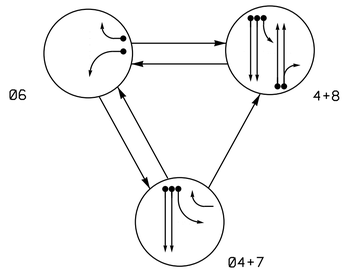
SIG. INVENTORY NO. 02-0007

8/29/2014 10:56:53 AM susan.pennington K:\RAL_Roadway\01036175 (U-3315)\Traffic Signals\S4 - Signal Design\4-Dickenson\4.3 020007-140829e2.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 5.1

3 PHASE
FULLY ACTUATED
(GREENVILLE CITY SYSTEM)

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.

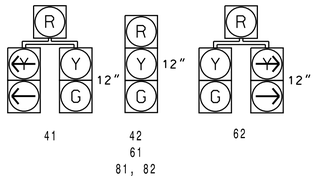
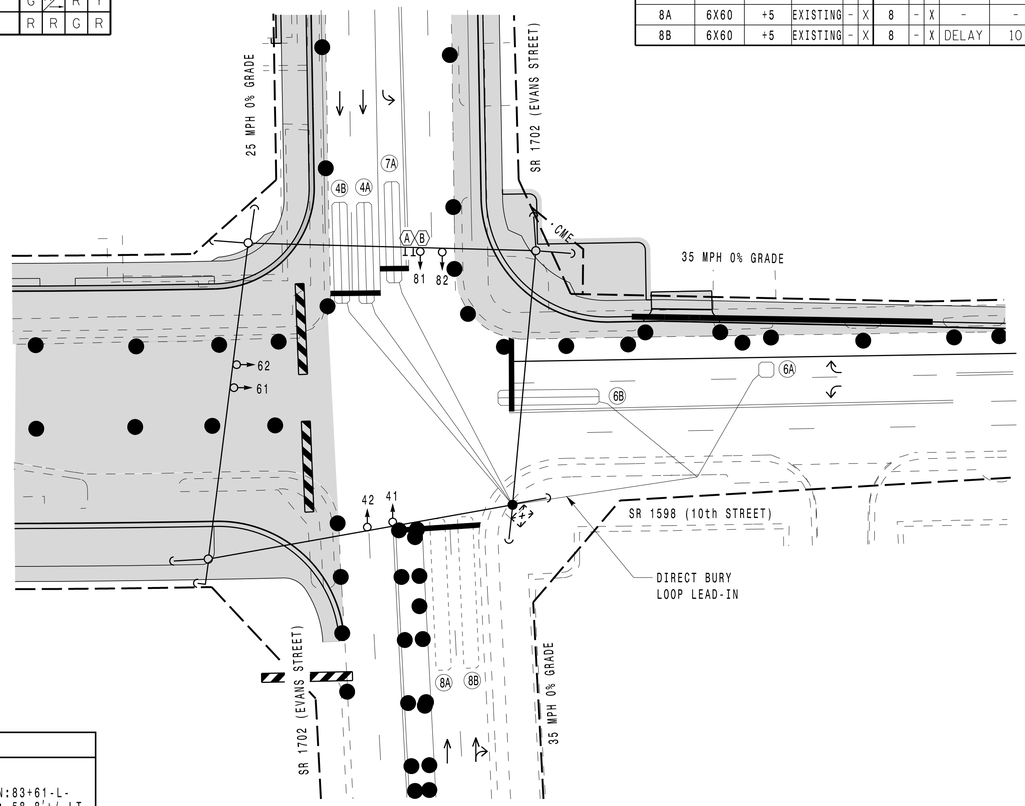


TABLE OF OPERATION

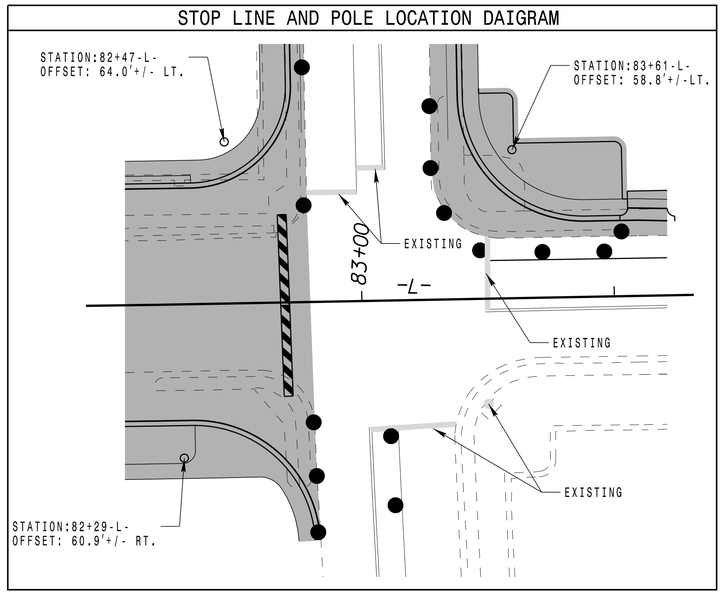
SIGNAL FACE	PHASE Ø6	Ø4+7	Ø4+8	FLASH
41	R	G	G	R
42	R	G	G	R
61	G	R	R	Y
62	G	R	R	Y
81, 82	R	R	G	R

NEMA LOOP & DETECTOR INSTALLATION CHART
with TS-2 CABINET

INDUCTIVE LOOPS						DETECTOR UNITS					
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	NEMA PHASE	NEW	EXISTING	TIMING FEATURE	TIMING TIME	INHIBIT DELAY DURING GREEN?
4A	6X40	+5	2-4-2	X	-	4	-	X	-	-	NO
4B	6X40	+5	2-4-2	X	-	4	-	X	-	-	NO
6A	6X6	70	4	X	-	6	-	X	-	-	NO
6B	6X40	+5	2-4-2	X	-	6	-	X	-	-	NO
7A	6X40	+5	2-4-2	X	-	7	-	X	DELAY	15	YES
						4	-	X	-	-	NO
8A	6X60	+5	EXISTING	-	X	8	-	X	-	-	NO
8B	6X60	+5	EXISTING	-	X	8	-	X	DELAY	10	YES



STOP LINE AND POLE LOCATION DAIGRAM



NEMA TIMING CHART

FEATURE	PHASE Ø4	Ø6	Ø7	Ø8
MINIMUM GREEN *	7 SEC.	10 SEC.	7 SEC.	7 SEC.
PASSAGE/GAP *	2.0 SEC.	3.0 SEC.	2.0 SEC.	1.0 SEC.
YELLOW CHANGE INT.	3.2 SEC.	3.0 SEC.	3.0 SEC.	3.8 SEC.
RED CLEARANCE	2.2 SEC.	2.1 SEC.	2.4 SEC.	1.5 SEC.
MAXIMUM 1 *	45 SEC.	60 SEC.	20 SEC.	45 SEC.
RECALL POSITION	NONE	MIN. RECALL	NONE	NONE
VEHICLE CALL MEMORY	NONLOCK	LOCK	NONLOCK	NONLOCK
WALK *	– SEC.	– SEC.	– SEC.	– SEC.
FLASHING DON'T WALK	– SEC.	– SEC.	– SEC.	– SEC.
VOLUME DENSITY	OFF	OFF	OFF	OFF
ACTUATION B4 ADD *	– VEH.	– VEH.	– VEH.	– VEH.
SEC. PER ACTUATION *	– SEC.	– SEC.	– SEC.	– SEC.
MAX. INITIAL *	– SEC.	– SEC.	– SEC.	– SEC.
TIME B4 REDUCTION *	– SEC.	– SEC.	– SEC.	– SEC.
TIME TO REDUCE *	– SEC.	– SEC.	– SEC.	– SEC.
MINIMUM GAP	– SEC.	– SEC.	– SEC.	– SEC.

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

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. Phase 7 may be lagged.
4. Program phase 4 and phase 8 for dual entry.
5. Pavement markings are existing.
6. Set all detector units to presence mode.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
8. Intersection Zone Number: 3
   System Address Number: 23

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	
	Construction Zone	
	Construction Zone Drums	
CME	Temporary Signal Easement	CME
A	No U-Turn Sign (R3-4)	A
B	No Left Turn Sign (R3-2)	B

TEMPORARY DESIGN 1 - TMP PHASE 1

PLANS PREPARED IN THE OFFICE OF:
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Prepared For:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

SR 1598 (10th STREET)
AT
SR 1702 (EVANS STREET)

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON REVIEWED BY:

SCALE 0 30' 1"=30'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
DC87A59ED60B437...
SIGNATURE DATE

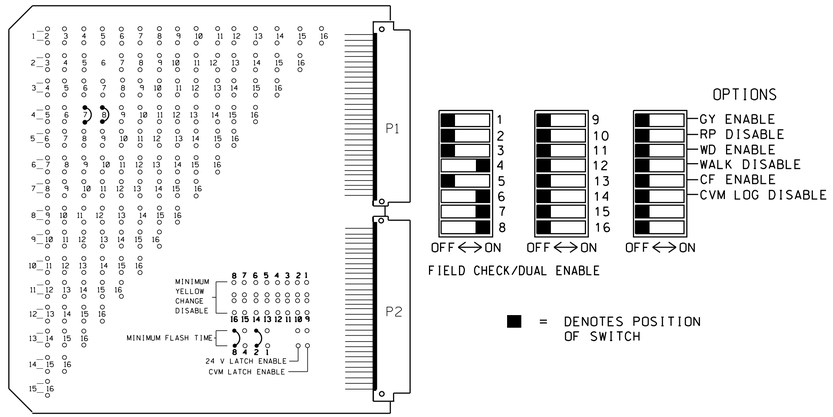
SIG. INVENTORY NO. 02-0016T1

8/29/2014 10:56:54 AM susan.pennington K:\RAL_Roadway\0110361.75 (U-3315)\Traffic Signals\S4 - Signal Design\5-02-0016 Evans\5.1 020016-140829g11.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG 5.2

EDI MODEL MMU-16E
MALFUNCTION MANAGEMENT UNIT
PROGRAMMING DETAIL

(program card and set switches as shown below)



MMU PROGRAMMING CARD

OPTIONS
- GY ENABLE
- RP DISABLE
- WD ENABLE
- WALK DISABLE
- CF ENABLE
- CVM LOG DISABLE

■ = DENOTES POSITION OF SWITCH

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW.
PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

BIU	CH1 L3 Ø6 / CH2 L4 Ø6	SLOT EMPTY	CH1 L7 Ø4 / CH2 L8 Ø4	SLOT EMPTY	SLOT EMPTY	CH1 L9 Ø7 / CH2 L10 Ø4	SLOT EMPTY	CH1 L13 Ø8 / CH2 L14 Ø8	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS
NU	L1A,L1B
NU	L2A,L2B
6A	L3A,L3B
6B	L4A,L4B
NU	L5A,L5B
NU	L6A,L6B
4A	L7A,L7B
4B	L8A,L8B
7A	L9A,L9B
	L10A,L10B
NU	L11A,L11B
NU	L12A,L12B
8A	L13A,L13B
8B	L14A,L14B
NU	L15A,L15B
NU	L16A,L16B

ADD JUMPERS FROM L9A TO L10A AND L9B TO L10B

NOTE

BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	–	–	–
2	–	–	–
3	Ø 6	–	–
4	Ø 6	–	–
5	–	–	–
6	–	–	–
7	Ø 4	–	–
8	Ø 4	–	–
9	Ø 7	DELAY	15
10	Ø 4	–	–
11	–	–	–
12	–	–	–
13	Ø 8	–	–
14	Ø 8	DELAY	10
15	–	–	–
16	–	–	–

NOTES

1. TO PREVENT "FLASH-CONFLICT" PROBLEMS, WIRE ALL UNUSED LOAD SWITCHES TO FLASH RED. VERIFY THAT SIGNAL HEADS FLASH IN ACCORDANCE WITH THE SIGNAL PLANS.
2. TO PREVENT RED FAILURES ON UNUSED MONITOR CHANNELS, TIE UNUSED LOAD SWITCH RED OUTPUTS 1,2,3,5,9,10,11, & 12 TO LOAD SWITCH AC+ BY INSERTING A JUMPER PLUG IN THE UNUSED LOAD SWITCH SOCKET FROM PIN 1 (LS AC+) TO PIN 3 (RED OUT). MAKE SURE ALL FLASH TRANSFER RELAYS ARE IN PLACE.
3. PROGRAM CONTROLLER TO START UP IN PHASE 6 GREEN.
4. SET POWER-UP FLASH TIME TO 10 SECONDS AND IMPLEMENT ON THE MALFUNCTION MANAGEMENT UNIT. SET CONTROLLER POWER-UP FLASH TIME TO 0 SECONDS.
5. ENABLE SIMULTANEOUS GAP-OUT FEATURE, ON CONTROLLER UNIT, FOR ALL PHASES.
6. PROGRAM DETECTORS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS TO ACCOMPLISH THE DETECTION SCHEMES SHOWN ON THE SIGNAL DESIGN PLANS.
7. PROGRAM DETECTOR CALL DELAY AND EXTENSION TIMING ON THE CONTROLLER, UNLESS OTHERWISE SPECIFIED.
8. SET ALL DETECTOR CARD UNIT CHANNELS TO "PRESENCE" MODE.
9. PROGRAM PHASES 4 AND 8, ON CONTROLLER UNIT, FOR DUAL ENTRY.
10. THIS CONTROLLER AND CABINET ARE PART OF THE GREENVILLE SIGNAL SYSTEM.

SIGNAL HEAD HOOK-UP CHART

PHASE	1	2	3	4	5	6	7		8	2 PED	4 PED	6 PED	8 PED
SIGNAL HEAD NO.	NU	NU	NU	41,42	NU	61,62	41	62	81,82	NU	NU	NU	NU
RED				4R		6R	*		8R				
YELLOW				4Y		6Y			8Y				
GREEN				4G		6G			8G				
RED ARROW													
YELLOW ARROW							7Y	7Y					
GREEN ARROW							7G	7G					
✋													
🚶													

NU = NOT USED

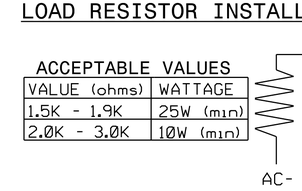
* Denotes install load resistor, see load resistor installation detail this sheet.

EQUIPMENT INFORMATION

CONTROLLER.....ECONOLITE ASC/2S-2100
CABINET .....ECONOLITE TS-2
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....12
LOAD SWITCHES USED.....4,6,7,8
PHASES USED.....4,6,7,8

LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES	
VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



NOTE: THE PURPOSE OF THIS RESISTOR IS TO LOAD THE CHANNEL RED MONITOR INPUT IN ORDER FOR THE MALFUNCTION MANAGEMENT UNIT TO USE THE FULL SIGNAL SEQUENCE MONITORING CAPABILITY ON PHASES THAT DO NOT USE THE RED DISPLAY IN THE FIELD.

LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	Ø1
2	Ø2
3	Ø3
4	Ø4
5	Ø5
6	Ø6
7	Ø7
8	Ø8
9	Ø2 PED
10	Ø4 PED
11	Ø6 PED
12	Ø8 PED

UNUSED LOAD SWITCH CHANNELS SHALL BE DISABLED IN CONTROLLER PROGRAMMING.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 02-0016T1
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

TEMPORARY DESIGN 1 - TMP PHASE 1

PLANS PREPARED IN THE OFFICE OF:
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ELECTRICAL AND PROGRAMMING DETAILS FOR:

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SR 1598 (10th STREET)
AT
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DIVISION 2 | PITT COUNTY | GREENVILLE
PLAN DATE: JUNE 2014 | REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON | REVIEWED BY:

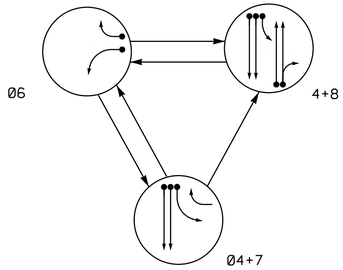
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS
DocuSigned by: Stacie Phillips 9/2/2014
0C87A59E0E0B437...
SIGNATURE DATE
SIG. INVENTORY NO. 02-0016T1

K:\TRAL_Roadway\011036175 (U-3315)\Traffic Signals\S4 - Signal Design\S-02-0016 Evans\S5.2 020016-140829dT1.dgn
8/29/2014 10:56:55 AM susan.pennington

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 5.3

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.

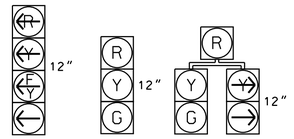
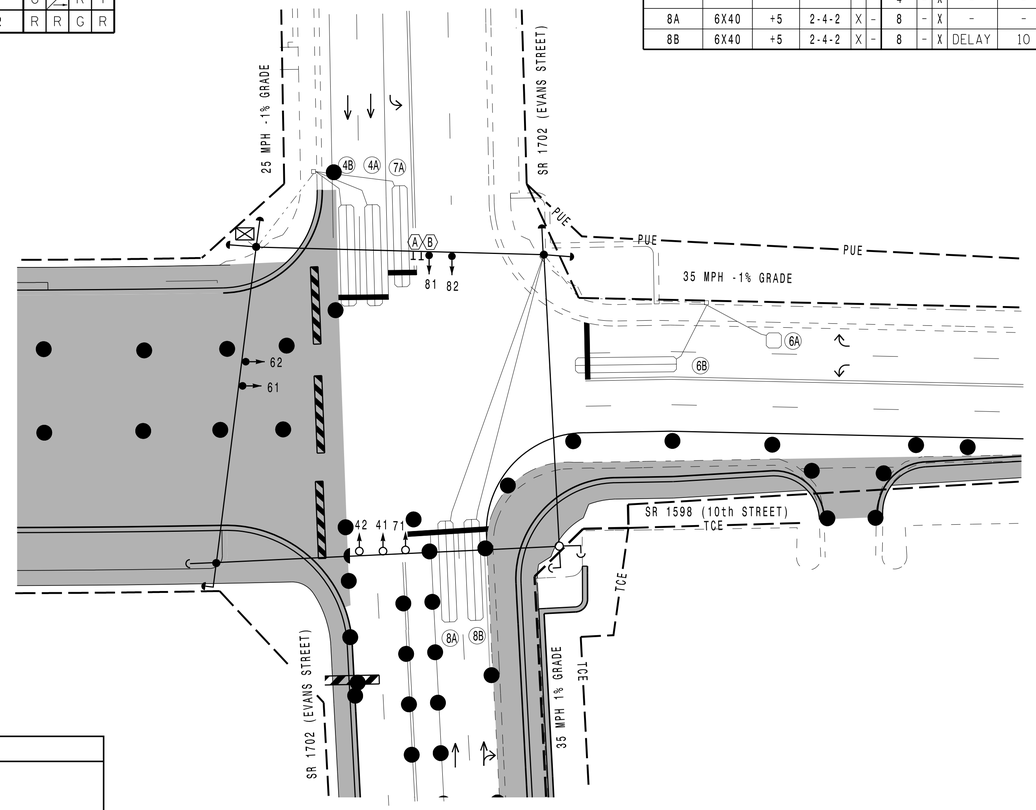


TABLE OF OPERATION

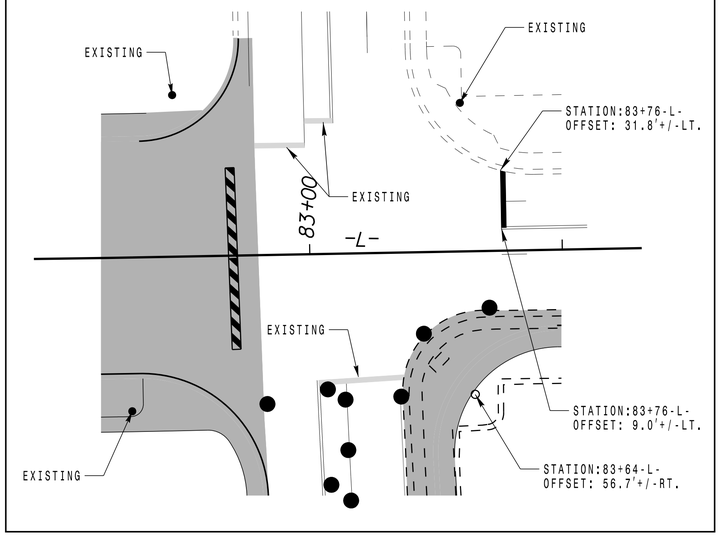
SIGNAL FACE	PHASE 06	PHASE 04+7	PHASE 04+8	PHASE FLASH
71	~~R~~	←	F/Y	~~R~~
41, 42	R	G	G	R
61	G	R	R	Y
62	G	R/→	R	Y
81, 82	R	R	G	R

NEMA LOOP & DETECTOR INSTALLATION CHART
with TS-2 CABINET

INDUCTIVE LOOPS						DETECTOR UNITS					
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	NEMA PHASE	NEW	EXISTING	TIMING FEATURE	TIMING TIME	INHIBIT DELAY DURING GREEN?
4A	6X40	+5	2-4-2	X	-	4	-	X	-	-	NO
4B	6X40	+5	2-4-2	X	-	4	-	X	-	-	NO
6A	6X6	70	5	X	-	6	-	X	-	-	NO
6B	6X40	+5	2-4-2	X	-	6	-	X	-	-	NO
7A	6X40	+5	2-4-2	X	-	7	-	X	DELAY	15	YES
						4	-	X	-	-	NO
8A	6X40	+5	2-4-2	X	-	8	-	X	-	-	NO
8B	6X40	+5	2-4-2	X	-	8	-	X	DELAY	10	YES



STOP LINE AND POLE LOCATION DAIGRAM



ASC3 NEMA TIMING CHART

FEATURE	PHASE 04	PHASE 06	PHASE 07	PHASE 08
MINIMUM GREEN *	7 SEC.	10 SEC.	7 SEC.	7 SEC.
PASSAGE/GAP *	2.0 SEC.	3.0 SEC.	2.0 SEC.	2.0 SEC.
YELLOW CHANGE INT.	3.8 SEC.	3.0 SEC.	3.0 SEC.	3.8 SEC.
RED CLEARANCE	2.2 SEC.	2.9 SEC.	2.4 SEC.	2.2 SEC.
MAXIMUM 1 *	45 SEC.	60 SEC.	20 SEC.	45 SEC.
RECALL POSITION	NONE	MIN. RECALL	NONE	NONE
VEHICLE CALL MEMORY	NONLOCK	LOCK	NONLOCK	NONLOCK
WALK *	– SEC.	– SEC.	– SEC.	– SEC.
FLASHING DON'T WALK	– SEC.	– SEC.	– SEC.	– SEC.
VOLUME DENSITY	OFF	OFF	OFF	OFF
ACTUATION B4 ADD *	– VEH.	– VEH.	– VEH.	– VEH.
SEC. PER ACTUATION *	– SEC.	– SEC.	– SEC.	– SEC.
MAX. INITIAL *	– SEC.	– SEC.	– SEC.	– SEC.
TIME B4 REDUCTION *	– SEC.	– SEC.	– SEC.	– SEC.
TIME TO REDUCE *	– SEC.	– SEC.	– SEC.	– SEC.
MINIMUM GAP	– SEC.	– SEC.	– SEC.	– SEC.

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

3 PHASE
FULLY ACTUATED
(GREENVILLE CITY SYSTEM)

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. Phase 7 may be lagged.
4. Program phase 4 and phase 8 for dual entry.
5. Pavement markings are existing.
6. Set all detector units to presence mode.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
9. Intersection Zone Number: 3
   System Address Number: 23

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	→
▭	Construction Zone	▭
●—●	Construction Zone Drums	●—●
— TCE —	Temporary Easement	— TCE —
— PUE —	Permanant Utility Easement	— PUE —
Ⓐ	No U-Turn Sign (R3-4)	Ⓐ
Ⓑ	No Left Turn Sign (R3-2)	Ⓑ

TEMPORARY DESIGN 2 - TMP PHASE 2

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

Prepared For: Transportation Mobility and Safety Division, NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

SR 1598 (10th STREET)
AT
SR 1702 (EVANS STREET)

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON REVIEWED BY:

SCALE 0 30' 1"=30'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
DC87A59ED6D8437...
SIGNATURE DATE

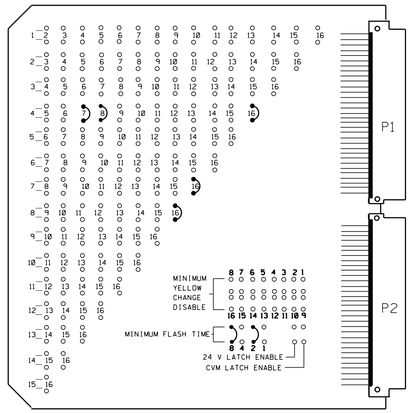
SIG. INVENTORY NO. 02-001612

8/29/2014 10:56:57 AM susan.pennington K:\RAL_Roadway\01103617S (U-3315)\Traffic Signals\S4 - Signal Design\S5-02-0016 Evans\S5.3 020016-140829T2a.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 5.4

EDI MODEL MMU2-16LE MALFUNCTION MANAGEMENT UNIT PROGRAMMING DETAIL

(program card and tables as shown below)



MMU PROGRAMMING CARD

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	DISABLE
2	DISABLE
3	DISABLE
4	ENABLE
5	DISABLE
6	ENABLE
7	ENABLE
8	ENABLE
9	DISABLE
10	DISABLE
11	DISABLE
12	DISABLE
13	DISABLE
14	DISABLE
15	DISABLE
16	ENABLE

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDgaurd	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF
VM 3x/Day Latch	ON

FLASHING YELLOW ARROW	
CONFIG MODE	A
ENABLE CHANNEL PAIR, FYA	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	ON
RED/YEL INPUT ENABLE	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
FLASH RATE FAULT	OFF
FYA TRAP DETECT	OFF

MMU PROGRAMMING NOTE

ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

NOTES

1. TO PREVENT "FLASH-CONFLICT" PROBLEMS, WIRE ALL UNUSED LOAD SWITCHES TO FLASH RED. VERIFY THAT SIGNAL HEADS FLASH IN ACCORDANCE WITH THE SIGNAL PLANS.
2. TO PREVENT RED FAILURES ON UNUSED MONITOR CHANNELS, TIE UNUSED LOAD SWITCH RED OUTPUTS 1,2,3,5,9,10,11,12,13,14 &15 TO LOAD SWITCH AC+ BY INSERTING A JUMPER PLUG IN THE UNUSED LOAD SWITCH SOCKET FROM PIN 1 (LS AC+) TO PIN 3 (RED OUT). MAKE SURE ALL FLASH TRANSFER RELAYS ARE IN PLACE.
3. PROGRAM CONTROLLER TO START UP IN PHASE 6 GREEN.
4. SET POWER-UP FLASH TIME TO 10 SECONDS AND IMPLEMENT ON THE MALFUNCTION MANAGEMENT UNIT. SET CONTROLLER POWER-UP FLASH TIME TO 0 SECONDS.
5. ENABLE SIMULTANEOUS GAP-OUT FEATURE, ON CONTROLLER UNIT, FOR ALL PHASES.
6. PROGRAM DETECTORS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS TO ACCOMPLISH THE DETECTION SCHEMES SHOWN ON THE SIGNAL DESIGN PLANS.
7. PROGRAM DETECTOR CALL DELAY AND EXTENSION TIMING ON THE CONTROLLER, UNLESS OTHERWISE SPECIFIED.
8. SET ALL DETECTOR CARD UNIT CHANNELS TO "PRESENCE" MODE.
9. PROGRAM PHASES 4 AND 8, ON CONTROLLER UNIT, FOR DUAL ENTRY.
10. THIS CONTROLLER AND CABINET ARE PART OF THE GREENVILLE SIGNAL SYSTEM.

SIGNAL HEAD HOOK-UP CHART

PHASE	1	2	3	4	5	6	7		8	2 PED	4 PED	6 PED	8 PED	OLA	OLB	OLC	OLD
SIGNAL HEAD NO.	NU	NU	NU	41,42	NU	61,62	62	71	81,82	NU	NU	NU	NU	NU	NU	NU	71★
RED				4R		6R		*	8R								
YELLOW				4Y		6Y			8Y								
GREEN				4G		6G			8G								
RED ARROW																	
YELLOW ARROW							7Y										16R
FLASHING YELLOW ARROW																	16Y
GREEN ARROW							7G	7G									16G
✋																	
🚶																	

NU = Not Used

* Denotes install load resistor, see load resistor installation detail this sheet.

★See pictorial of head wiring detail this sheet.

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW. PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

DETECTOR RACK #1

BIU	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	CH1 L9 ø4 / CH2 L10 ø4	CH1 L15 ø6 / CH2 L16 ø6	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY

DETECTOR RACK #2

BIU	CH1 L19 ø8 / CH2 L20 ø8	CH1 L17 ø7 / CH2 L18 ø4	SLOT EMPTY	SLOT EMPTY

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS	
NU	L1A,L1B	
NU	L2A,L2B	
NU	L3A,L3B	
NU	L4A,L4B	
NU	L5A,L5B	
NU	L6A,L6B	
NU	L7A,L7B	
NU	L8A,L8B	
4A	L9A,L9B	
4B	L10A,L10B	
NU	L11A,L11B	
NU	L12A,L12B	
NU	L13A,L13B	
NU	L14A,L14B	
6A	L15A,L15B	
6B	L16A,L16B	
7A	L17A,L17B	ADD JUMPERS FROM L17A TO L18A AND L17B TO L18B
	L18A,L18B	
8A	L19A,L19B	
8B	L20A,L20B	
NU	L21A,L21B	
NU	L22A,L22B	
NU	L23A,L23B	
NU	L24A,L24B	

NU = NOT USED

NOTE

BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	-	-	-
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	ø4	-	-
10	ø4	-	-
11	-	-	-
12	-	-	-
13	-	-	-
14	-	-	-
15	ø6	-	-
16	ø6	-	-
17	ø7	DELAY	15
18	ø4	-	-
19	ø8	-	-
20	ø8	DELAY	10
21	-	-	-
22	-	-	-
23	-	-	-
24	-	-	-

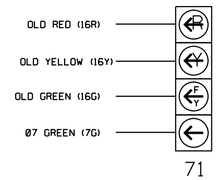
EQUIPMENT INFORMATION

CONTROLLER.....ASC/3
CABINET NC-8A TS-2
SOFTWARE .....ECONOLITE ASC/ 2070
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....4,6,7,8,16
PHASES USED.....4,6,7,8
OLD.....*

* See Sheet 2 of 2 Econolite ASC/2070 Overlap Programming Detail.

4 SECTION FYA PPLT SIGNAL WIRING DETAIL

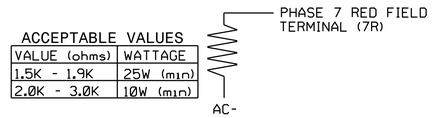
(wire signal heads as shown)



NOTE

1. SEE OVERLAP PROGRAMMING INSTRUCTIONS SHEET 2 OF 2.

LOAD RESISTOR INSTALLATION DETAIL



ACCEPTABLE VALUES	
VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 02-0016T2
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

TEMPORARY DESIGN 2 - TMP PHASE 2 SHEET 1 OF 2

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
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(919) 677-2000

Prepared For: Transportation Mobility and Safety Division, NC DEPARTMENT OF TRANSPORTATION, Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SSR 1598 (10th STREET)
AT
SR 1702 (EVANS STREET)

DIVISION 2	PITT COUNTY	GREENVILLE
PLAN DATE: JUNE 2014	REVIEWED BY: SL PHILLIPS	
PREPARED BY: SP PENNINGTON	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
-DCE7A59ED4D9437
SIGNATURE DATE

SIG. INVENTORY NO. 02-0016T2

K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\S4 - Signal Design\5-02-0016 Evans\5.4 020016-140829eT2-1.dgn
susan.pennington
10:56:58 AM
8/29/2014

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 5.5

ECONOLITE ASC/3 SPECIAL MMU PROGRAMMING

(program controller as shown below)

FROM MAIN MENU SELECT 1 (CONFIGURATION)

CONFIGURATION SUBMENU

1. CONTROLLER SEQ
2. PHASE IN USE/PED
3. LOAD SW ASSIGN
4. PORT 1 (SDLC)
5. COMMUNICATIONS
6. ENABLE LOGGING
7. DISPLAY/ACCESS
8. LOGIC PROCESSOR

PRESS KEYS 1..8 TO SELECT

PORT 1 (SDLC) SUBMENU

1. SDLC OPTIONS
2. MMU PROGRAM
3. COLOR CHECK ENABLE
4. SECONDARY STATION/TESTS

PRESS KEYS 1..4 TO SELECT

MMU PROGRAM [MANUAL]

CH	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
3	.	.	.	.	.	.	.	.	.	.	.	.	.		
4	X	.	.	.	.	.	.	.	X	X	.	.			
5	.	.	.	.	.	.	.	.	.	.	.				
6	.	.	.	.	.	.	.	.	.	.					
7	X	.	.	.	.	.	.	.	.						
8	X	.	.	.	.	.	.	.							
9	.	.	.	.	.	.	.								
10	.	.	.	.	.	.									
11	.	.	.	.	.										
12	.	.	.	.											
13	.	.	.												
14	.	.													

CAUTION!

Set intersection to Flash before attempting to enter or change any MMU programming data.

This programming and that of the MMU programming card must match exactly. If they do not, the intersection will be placed into Flash.

ECONOLITE ASC/3 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

From Main Menu select 2 (CONTROLLER)

MAIN MENU

1. CONFIGURATION
2. CONTROLLER
3. COORDINATOR
4. PREEMPTOR/TSP
5. TIME BASE
6. DETECTORS
7. STATUS DISPLAY
8. UTILITIES
9. DIAGNOSTICS

PRESS KEYS 1..9 TO SELECT

From Controller Sub select 2 (VEHICLE OVERLAPS)

CONTROLLER SUBMENU

1. TIMING PLANS
2. VEHICLE OVERLAPS
3. VEH/PED OVERLAPS
4. GUAR MIN TIME
5. START/FLASH
6. OPTION DATA
7. PRE-TIMED
8. PHASE RECALL

PRESS KEYS 1..8 TO SELECT

OVERLAP D

Select Vehicle Overlap Type (PPLT FYA)

TMG VEH OVLP . . .[D] TYPE: PPLT FYA

PROTECTED PHASE (LEFT TURN).....7
PERMISSIVE PHASE (OPPOSING THRU).....8
FLASHING ARROW OUTPUT.....CH16 ISOLATE

DELAY START OF: FYA.. 0.0 CLEARANCE.....0.0
ACTION PLAN SF BIT DISABLE.....0

LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	Ø 1
2	Ø 2
3	Ø 3
4	Ø 4
5	Ø 5
6	Ø 6
7	Ø 7
8	Ø 8
9	Ø 2 PED
10	Ø 4 PED
11	Ø 6 PED
12	Ø 8 PED
13	OLA
14	OLB
15	OLC
16	OLD

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0016T2
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

TEMPORARY DESIGN 2 - TMP PHASE 2 SHEET 2 OF 2

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
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Raleigh, NC 27636
(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 1598 (10th STREET)
AT
SR 1702 (EVANS STREET)

DIVISION 2 | PITT COUNTY | GREENVILLE

PLAN DATE: JUNE 2014 | REVIEWED BY: SL PHILLIPS
PREPARED BY: SP PENNINGTON | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
DC87A59ED0094371 SIGNATURE DATE

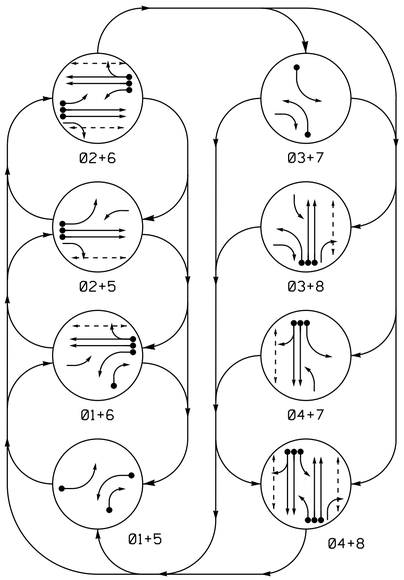
SIG. INVENTORY NO. 02-0016T2

8/29/2014 10:56:59 AM susan.pennington K:\NAL_Roadway\011036175 (U-3315)\Traffic Signals\54 - Signal Design\5-02-0016 Evans\5.5 020016-140829at2-2.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 5.6

8 PHASE
FULLY ACTUATED
(GREENVILLE CITY SYSTEM)

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

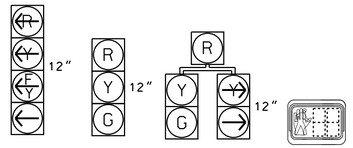
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	←-	←-	F Y	F Y	-R-	-R-	-R-	-R-	-Y-
21	R	R	G	G	R	R	R	Y	
22	R	R	G	G	R/→	R/→	R	R	Y
31	-R-	-R-	-R-	-R-	←-	←-	F Y	F Y	-R-
41, 42	R	R	R	R	R	R	G	G	R
51	←-	F Y	←-	F Y	-R-	-R-	-R-	-R-	-Y-
61, 62	R	G	R	G	R	R	R	Y	
71	-R-	-R-	-R-	-R-	←-	F Y	←-	F Y	-R-
81	R	R	R	R	R	G	R	G	R
82	R/→	R/→	R	R	R	G	R	G	R
P21, P22	DW	DW	W	W	DW	DW	DW	DW	DRK
P41, P42	DW	DW	DW	DW	DW	DW	W	W	DRK
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	DW	W	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



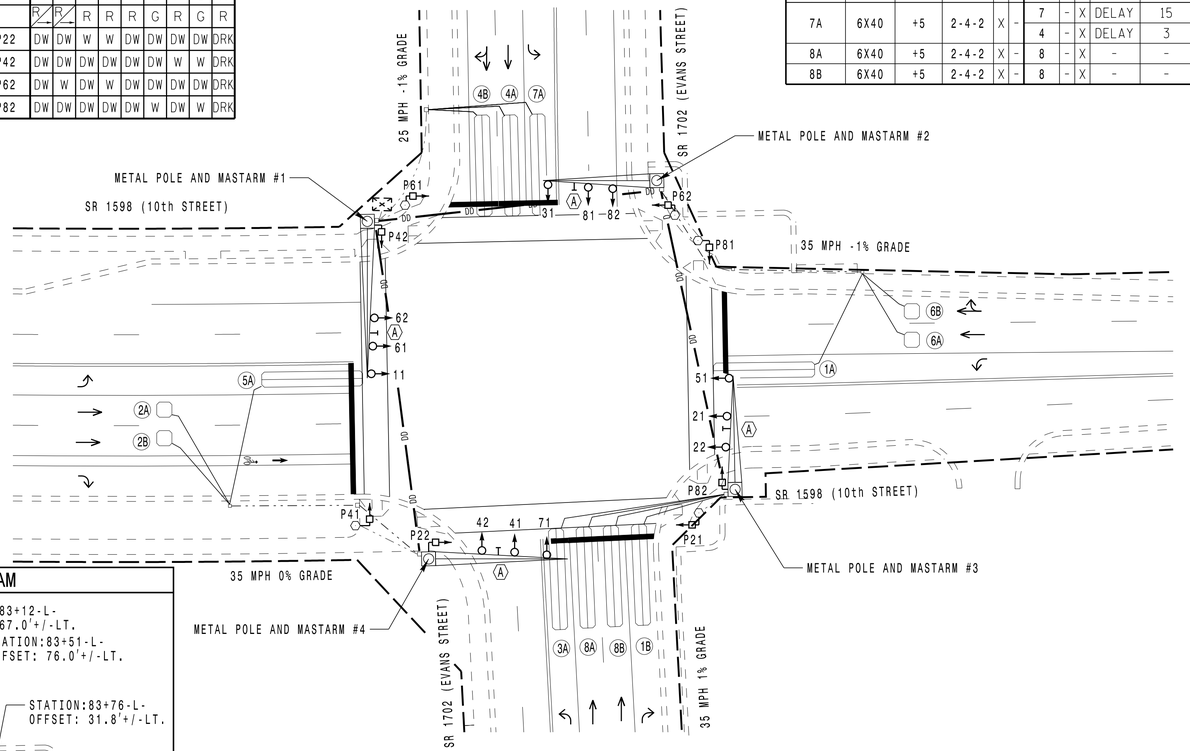
11, 31, 51, 71 — 21, 41, 42, 61, 81 — 22, 82 — P21, P22, P41, P42, P61, P62, P81, P82

NEMA LOOP & DETECTOR INSTALLATION CHART
with TS-2 CABINET

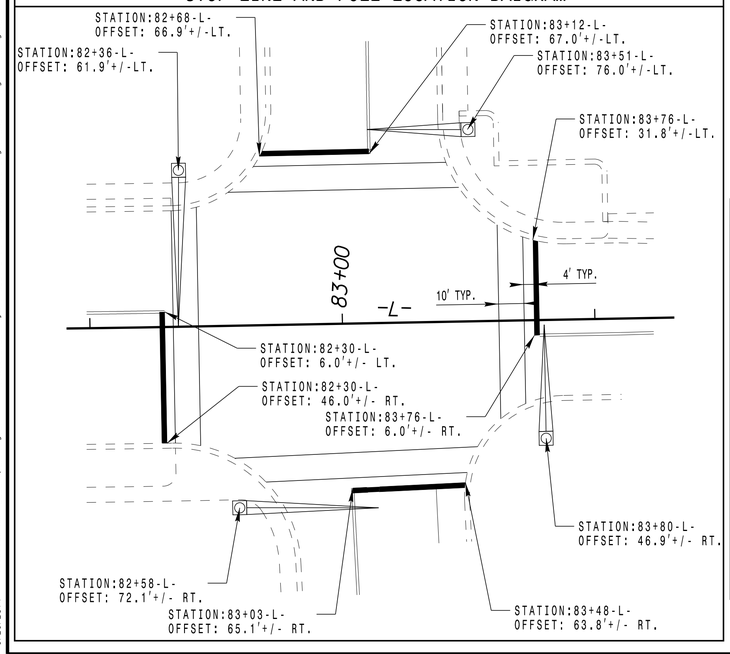
INDUCTIVE LOOPS						DETECTOR UNITS					
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	NEMA PHASE	NEW	EXISTING	TIMING FEATURE	TIMING TIME	INHIBIT DELAY DURING GREEN?
1A	6X40	+5	2-4-2	X	-	1	X	-	DELAY	15	YES
						6	X	-	-	-	NO
1B	6X40	+5	2-4-2	X	-	1	-	X	DELAY	15	YES
2A, 2B	6X6	70	4	X	-	2	X	-	-	-	NO
3A	6X40	+5	2-4-2	X	-	3	X	-	DELAY	15	YES
						8	X	-	DELAY	3	YES
4A	6X40	+5	2-4-2	X	-	4	-	X	-	-	NO
4B	6X40	+5	2-4-2	X	-	4	-	X	DELAY	10	YES
5A	6X40	+5	2-4-2	X	-	5	X	-	DELAY	15	YES
						2	X	-	-	-	NO
6A, 6B	6X6	70	4	X	-	6	-	X	-	-	NO
7A	6X40	+5	2-4-2	X	-	7	-	X	DELAY	15	YES
						4	-	X	DELAY	3	YES
8A	6X40	+5	2-4-2	X	-	8	-	X	-	-	NO
8B	6X40	+5	2-4-2	X	-	8	-	X	-	-	NO

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. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Program phase 4 and phase 8 for dual entry.
6. Set all detector units to presence mode.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Intersection Zone Number: 3
   System Address Number: 23



STOP LINE AND POLE LOCATION DAIGRAM



ASC3 NEMA TIMING CHART

FEATURE	PHASE Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8
MINIMUM GREEN *	7 SEC.	10 SEC.	7 SEC.	7 SEC.	7 SEC.	10 SEC.	7 SEC.	7 SEC.
PASSAGE/GAP *	2.0 SEC.	3.0 SEC.	2.0 SEC.	2.0 SEC.	2.0 SEC.	3.0 SEC.	2.0 SEC.	2.0 SEC.
YELLOW CHANGE INT.	3.0 SEC.	3.9 SEC.	3.0 SEC.	3.8 SEC.	3.0 SEC.	3.9 SEC.	3.0 SEC.	3.8 SEC.
RED CLEARANCE	3.2 SEC.	2.7 SEC.	3.3 SEC.	3.2 SEC.	3.4 SEC.	2.7 SEC.	3.2 SEC.	3.2 SEC.
MAXIMUM 1 *	25 SEC.	60 SEC.	20 SEC.	45 SEC.	25 SEC.	60 SEC.	20 SEC.	45 SEC.
RECALL POSITION	NONE	MIN. RECALL	NONE	NONE	NONE	MIN. RECALL	NONE	NONE
VEHICLE CALL MEMORY	NONLOCK	LOCK	NONLOCK	NONLOCK	NONLOCK	LOCK	NONLOCK	NONLOCK
WALK *	– SEC.	7 SEC.	– SEC.	7 SEC.	– SEC.	7 SEC.	– SEC.	7 SEC.
FLASHING DON'T WALK	– SEC.	24 SEC.	– SEC.	26 SEC.	– SEC.	21 SEC.	– SEC.	20 SEC.
VOLUME DENSITY	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
ACTUATION B4 ADD *	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.
SEC. PER ACTUATION *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
MAX. INITIAL *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
TIME B4 REDUCTION *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
TIME TO REDUCE *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
MINIMUM GAP	– SEC.	– SEC.	– SEC.	– 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.

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□	Pedestrian Signal Head With Push Button & Sign	■
⬡	Type II Signal Pedestal	⬢
○	Metal Pole with Mastarm	□
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⛶
□	Junction Box	■
----	2-in Underground Conduit	----
N/A	Right of Way	----
→	Directional Arrow	→
—DD—	Directional Drill	N/A
Ⓐ	Street Name Sign	Ⓐ

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

FINAL DESIGN

Prepared For:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
1750 N.Greenfield Pkwy.Garner,NC 27529

SR 1598 (10th STREET)
AT
SR 1702 (EVANS STREET)

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLIPS

PREPARED BY: SP PENNINGTON REVIEWED BY:

SCALE 0 30' 1"=30'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
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SIGNATURE DATE

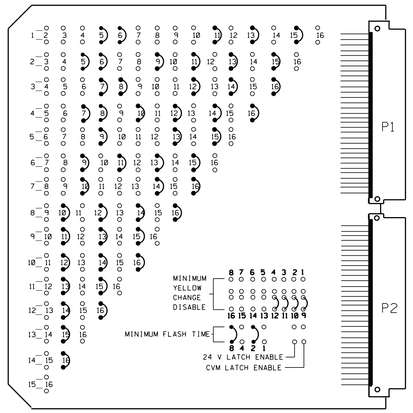
SIG. INVENTORY NO. 02-0016

8/29/2014 10:57:00 AM susan.pennington K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\S4 - Signal Design\5-02-0016 Evans\5.6 020016-140829g.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 5.7

EDI MODEL MMU2-16LE MALFUNCTION MANAGEMENT UNIT PROGRAMMING DETAIL

(program card and tables as shown below)



MMU PROGRAMMING CARD

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	ENABLE
2	ENABLE
3	ENABLE
4	ENABLE
5	ENABLE
6	ENABLE
7	ENABLE
8	ENABLE
9	ENABLE
10	ENABLE
11	ENABLE
12	ENABLE
13	ENABLE
14	ENABLE
15	ENABLE
16	ENABLE

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDgaurd	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF
VM 3x/Day Latch	ON

FLASHING YELLOW ARROW	
CONFIG MODE	A
ENABLE CHANNEL PAIR, FYA	
CH 1-9	ON
CH 3-10	ON
CH 5-11	ON
CH 7-12	ON
RED/YEL INPUT ENABLE	
CH 1-9	OFF
CH 3-10	OFF
CH 5-11	OFF
CH 7-12	OFF
FLASH RATE FAULT	OFF
FYA TRAP DETECT	OFF

MMU PROGRAMMING NOTE

ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

NOTES

1. To prevent "Flash-conflict" problems, wire all unused load switches to flash red. Verify that signal heads flash in accordance with the signal plans.
2. Program controller to start up in phases 2 and 6 green.
3. Set power-up flash time to 10 seconds and implement on the Malfunction Management Unit. Set controller power-up flash time to 0 seconds.
4. Enable simultaneous gap-out feature, on controller unit, for all phases.
5. Program detectors in accordance with the manufacturer's instructions to accomplish the detection schemes shown on the signal design plans.
6. Program detector call delay and extension timing on the controller, unless otherwise specified.
7. Set all detector card unit channels to "presence" mode.
8. Program phases 4 and 8, on controller unit, for dual entry.
9. This controller and cabinet are part of the Greenville Signal System.

SIGNAL HEAD HOOK-UP CHART

PHASE	1		2	3		4	5	6	7	8	2 PED	4 PED	6 PED	8 PED	OLA	OLB	OLC	OLD
SIGNAL HEAD NO.	11★	82	21,22	22	31★	41,42	51★	61,62	71★	81,82	P21, P22	P41, P42	P61, P62	P81, P82	11★	31★	51★	71★
RED	✳		2R		✳	4R	✳	6R	✳	8R								
YELLOW			2Y			4Y	✳	6Y	✳	8Y								
GREEN			2G			4G		6G		8G								
RED ARROW															13R	14R	15R	16R
YELLOW ARROW		1Y		3Y											13Y	14Y	15Y	16Y
FLASHING YELLOW ARROW															13G	14G	15G	16G
GREEN ARROW	1G	1G		3G	3G		5G		7G									
✋											9R	10R	11R	12R				
🚶											9G	10G	11G	12G				

NU = Not Used

✳Denotes install load resistor, see load resistor installation detail this sheet.

★See pictorial of head wiring detail this sheet.

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW. PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

DETECTOR RACK #1

BIU	CH1 L3 ø1	CH1 L1 ø1	CH1 L7 ø3	CH1 L5 ø2	CH1 L11 ø5	CH1 L9 ø4	CH1 L15 ø6	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	CH2 L4 NOT USED	CH2 L2 ø6	CH2 L8 ø8	CH2 L6 NOT USED	CH2 L12 ø2	CH2 L10 ø4	CH2 L16 NOT USED				

HALF DETECTOR RACK #2

BIU	CH1 L19 ø8	CH1 L17 ø7	SLOT EMPTY	SLOT EMPTY
	CH2 L20 ø8	CH2 L18 ø4		

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS	
1A	L1A, L1B	ADD JUMPERS FROM L1A TO L2A AND L1B TO L2B
	L2A, L2B	
1B	L3A, L3B	
NU	L4A, L4B	
2A, 2B	L5A, L5B	
NU	L6A, L6B	
3A	L7A, L7B	ADD JUMPERS FROM L7A TO L8A AND L7B TO L8B
	L8A, L8B	
4A	L9A, L9B	
4B	L10A, L10B	
5A	L11A, L11B	ADD JUMPERS FROM L11A TO L12A AND L11B TO L12B
	L12A, L12B	
NU	L13A, L13B	
NU	L14A, L14B	
6A, 6B	L15A, L15B	
NU	L16A, L16B	
7A	L17A, L17B	ADD JUMPERS FROM L17A TO L18A AND L17B TO L18B
	L18A, L18B	
8A	L19A, L19B	
8B	L20A, L20B	
NU	L21A, L21B	
NU	L22A, L22B	
NU	L23A, L23B	
NU	L24A, L24B	

NU = NOT USED

NOTE

BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME(SEC)
1	ø1	DELAY	15
2	ø6	–	–
3	ø1	DELAY	15
4	–	–	–
5	ø2	–	–
6	–	–	–
7	ø3	DELAY	15
8	ø8	DELAY	3
9	ø4	–	–
10	ø4	DELAY	10
11	ø5	DELAY	15
12	ø2	–	–
13	–	–	–
14	–	–	–
15	ø6	–	–
16	–	–	–
17	ø7	DELAY	15
18	ø4	DELAY	3
19	ø8	–	–
20	ø8	–	–
21	–	–	–
22	–	–	–
23	–	–	–
24	–	–	–

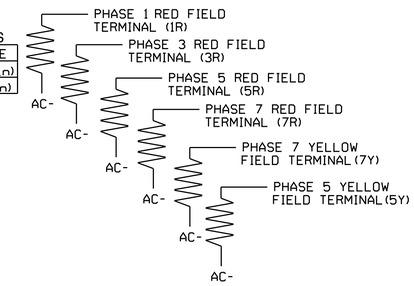
EQUIPMENT INFORMATION

CONTROLLER.....ASC/3
CABINET NC-8A TS-2
SOFTWARE .....ECONOLITE ASC/ 2070
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16
PHASES USED.....1,2,2PED,3,4,4PED,5,6,6PED,7,8,8PED
OLA.....✳
OLB.....✳
OLC.....✳
OLD.....✳

✳ See Sheet 2 of 2 Econolite ASC/2070 Overlap Programming Detail.

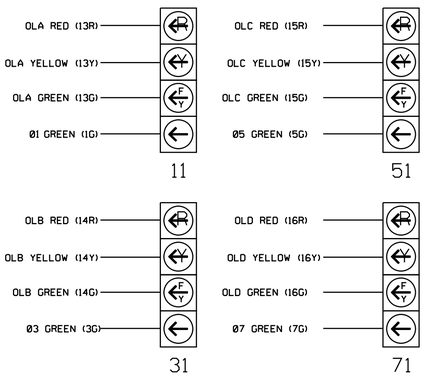
LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES	
VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

1. SEE OVERLAP PROGRAMMING INSTRUCTIONS SHEET 2 OF 2.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 02-0016
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

FINAL DESIGN

SHEET 1 OF 2

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
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(919) 677-2000

Prepared For: Transportation Mobility and Safety Division, North Carolina Department of Transportation, Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1598 (10th STREET)
AT
SR 1702 (EVANS STREET)

DIVISION 2	PITT COUNTY	GREENVILLE
PLAN DATE: JUNE 2014	REVIEWED BY: SL PHILLIPS	
PREPARED BY: SP PENNINGTON	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
-DC87A58E0408437
SIGNATURE DATE

SIG. INVENTORY NO. 02-0016

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8/29/2014 10:57:02 AM susan.pennington

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 5.8

ECONOLITE ASC/3 SPECIAL MMU PROGRAMMING

(program controller as shown below)

FROM MAIN MENU SELECT 1 (CONFIGURATION)

```
CONFIGURATION SUBMENU

1. CONTROLLER SEQ          5. COMMUNICATIONS
2. PHASE IN USE/PED        6. ENABLE LOGGING
3. LOAD SW ASSIGN          7. DISPLAY/ACCESS
[4. PORT 1 (SDLC)]         8. LOGIC PROCESSOR

PRESS KEYS 1..8 TO SELECT
```

```
PORT 1 (SDLC) SUBMENU

1. SDLC OPTIONS
[2. MMU PROGRAM]
3. COLOR CHECK ENABLE
4. SECONDARY STATION/TESTS

PRESS KEYS 1..4 TO SELECT
```

```
MMU PROGRAM [    MANUAL]
      CH  6 5 4 3 2 1 0 9 8 7 6 5 4 3 2
  1       . X . X . X . . . X X . . .
  2       . X . X . X . X . . X X . .
  3       X . X . X . . . X X . . .
  4       X . X . X . X . X X . .
  5       . X . X . . . X . . .
  6       . X . X . X . X . .
  7       X . X . . . X . .
  8       X . X . X . X .
  9       . X . X . X .
 10       X . X . X .
 11       . X . X .
 12       X . X .
 13       . X .
 14       X .
```

CAUTION!

Set intersection to Flash before attempting to enter or change any MMU programming data.

This programming and that of the MMU programming card must match exactly. If they do not, the intersection will be placed into Flash.

LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	Ø 1
2	Ø 2
3	Ø 3
4	Ø 4
5	Ø 5
6	Ø 6
7	Ø 7
8	Ø 8
9	Ø 2 PED
10	Ø 4 PED
11	Ø 6 PED
12	Ø 8 PED
13	OLA
14	OLB
15	OLC
16	OLD

ECONOLITE ASC/3 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

From Main Menu select 2 (CONTROLLER)

```
MAIN MENU

1. CONFIGURATION           6. DETECTORS
[2. CONTROLLER]            7. STATUS DISPLAY
3. COORDINATOR             8. UTILITIES
4. PREEMPTOR/TSP           9. DIAGNOSTICS
5. TIME BASE

PRESS KEYS 1..9 TO SELECT
```

From Controller Sub select 2 (VEHICLE OVERLAPS)

```
CONTROLLER SUBMENU

1. TIMING PLANS            5. START/FLASH
[2. VEHICLE OVERLAPS]      6. OPTION DATA
3. VEH/PED OVERLAPS        7. PRE-TIMED
4. GUAR MIN TIME           8. PHASE RECALL

PRESS KEYS 1..8 TO SELECT
```

OVERLAP A

Select Vehicle Overlap Type (PPLT FYA)

```
TMG VEH OVLP . . .[A]    TYPE: [PPLT FYA]

PROTECTED PHASE (LEFT TURN).....1
PERMISSIVE PHASE (OPPOSING THRU).....2
FLASHING ARROW OUTPUT.....CH13 ISOLATE
DELAY START OF:  FYA.. 0.0  CLEARANCE.....0.0
ACTION PLAN SF BIT DISABLE.....0
```

OVERLAP B

Select Vehicle Overlap Type (PPLT FYA)

```
TMG VEH OVLP . . .[B]    TYPE: [PPLT FYA]

PROTECTED PHASE (LEFT TURN).....3
PERMISSIVE PHASE (OPPOSING THRU).....4
FLASHING ARROW OUTPUT.....CH14 ISOLATE
DELAY START OF:  FYA.. 0.0  CLEARANCE.....0.0
ACTION PLAN SF BIT DISABLE.....0
```

OVERLAP C

Select Vehicle Overlap Type (PPLT FYA)

```
TMG VEH OVLP . . .[C]    TYPE: [PPLT FYA]

PROTECTED PHASE (LEFT TURN).....5
PERMISSIVE PHASE (OPPOSING THRU).....6
FLASHING ARROW OUTPUT.....CH15 ISOLATE
DELAY START OF:  FYA.. 0.0  CLEARANCE.....0.0
ACTION PLAN SF BIT DISABLE.....0
```

OVERLAP D

Select Vehicle Overlap Type (PPLT FYA)

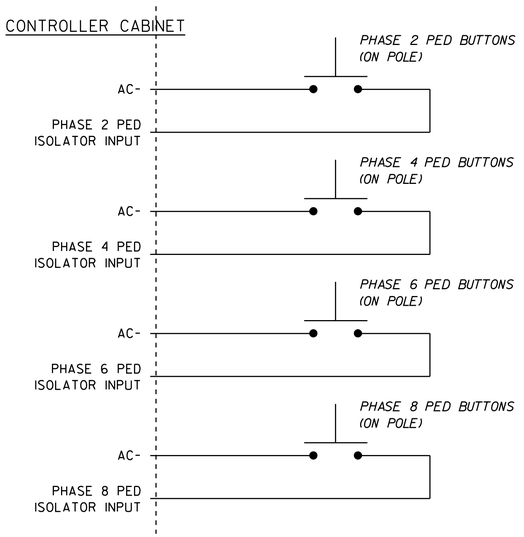
```
TMG VEH OVLP . . .[D]    TYPE: [PPLT FYA]

PROTECTED PHASE (LEFT TURN).....7
PERMISSIVE PHASE (OPPOSING THRU).....8
FLASHING ARROW OUTPUT.....CH16 ISOLATE
DELAY START OF:  FYA.. 0.0  CLEARANCE.....0.0
ACTION PLAN SF BIT DISABLE.....0
```

Then ENTER

PEDESTRIAN PUSH-BUTTON WIRING DETAIL

(wire push-buttons as shown below)



COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 02-0016
DESIGNED: JUNE 2014
SEALED: 9/2/2014
REVISED: N/A

FINAL DESIGN

SHEET 2 OF 2

PLANS PREPARED IN THE OFFICE OF:
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(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For: Transportation Mobility and Safety Division, NC DEPARTMENT OF TRANSPORTATION, Signals Management Section

750 N.Greenfield Pkwy.Garner,NC 27529

SR 1598 (10th STREET)
AT
SR 1702 (EVANS STREET)

DIVISION 2 | PITT COUNTY | GREENVILLE

PLAN DATE: JUNE 2014 | REVIEWED BY: SL PHILLIPS

PREPARED BY: SP PENNINGTON | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
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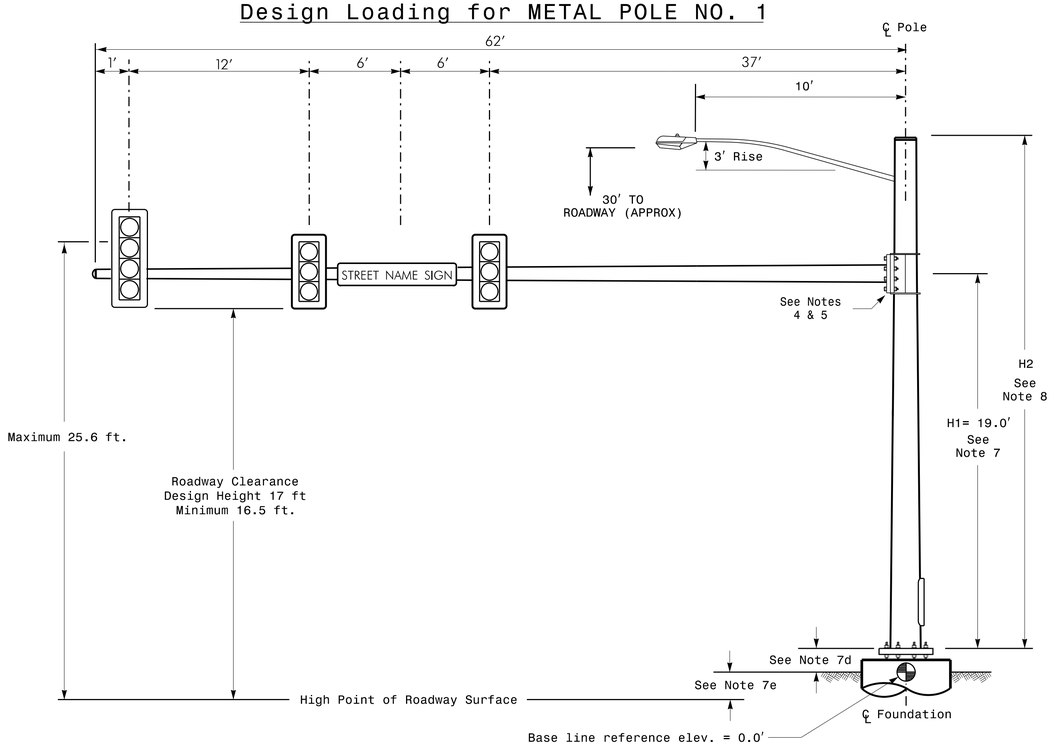
SIGNATURE DATE

SIG. INVENTORY NO. 02-0016

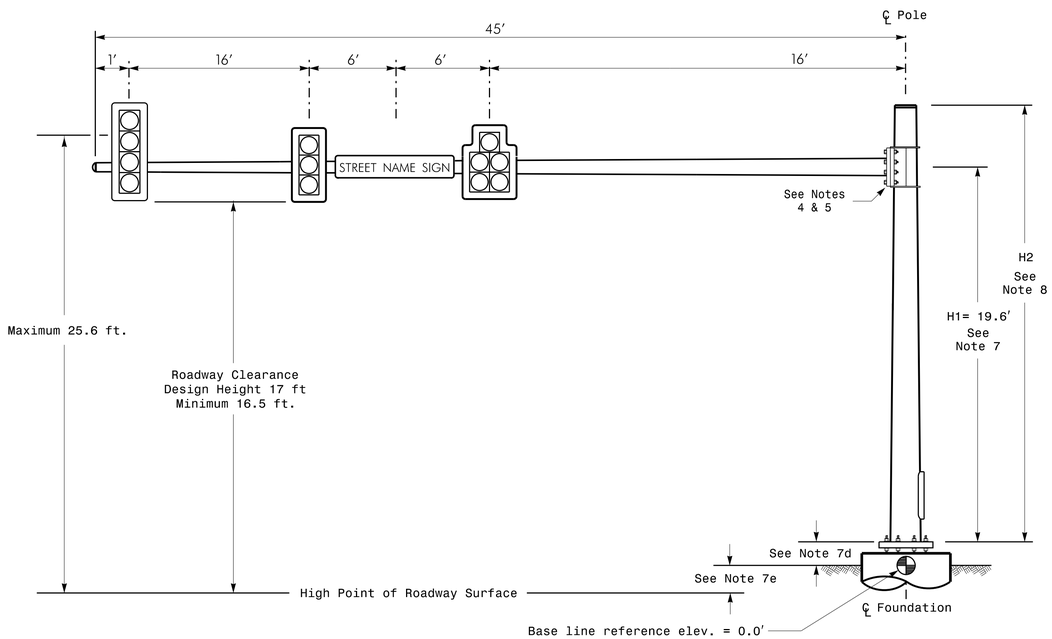
8/29/2014 10:57:03 AM susan.pennington K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\S4 - Signal Design\S-02-0016 Evans\S.8 020016-140829s2.dgn

Design Loading for METAL POLE NO. 1



Elevation View

Design Loading for METAL POLE NO. 2



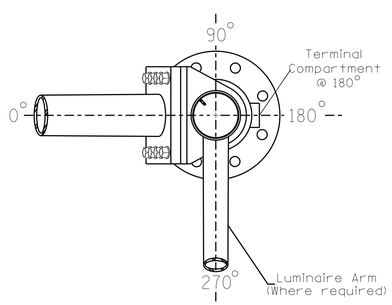
Elevation View

SPECIAL NOTE

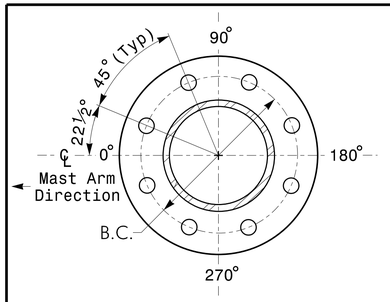
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Pole 1	Pole 2
Baseline reference point at ⊕ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	+/-0.0 ft.	+0.6 ft.
Elevation difference at Edge of travelway or face of curb	+/-0.0 ft.	+0.6 ft.

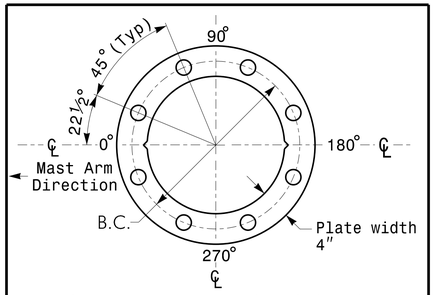


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 6



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL

For 8 Bolt Base Plate

METAL POLE No. 1 and 2

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 5.9

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	SIGNAL HEAD 12″–5 SECTION–WITH BACKPLATE, RIGID MOUNTED	16.3 S.F.	42.0″ W X 56.0″ L	103 LBS
	SIGNAL HEAD 12″–4 SECTION–WITH BACKPLATE, RIGID MOUNTED	11.5 S.F.	25.5″ W X 66.0″ L	74 LBS
	SIGNAL HEAD 12″–3 SECTION–WITH BACKPLATE, RIGID MOUNTED	9.3 S.F.	25.5″ W X 52.5″ L	60 LBS
STREET NAME SIGN	STREET NAME SIGN, RIGID MOUNTED	16.0 S.F.	24.0″ W X 96.0″ L	36 LBS
	LUMINAIRES	1.0 S.F.	N/A	25 LBS

NOTES

DESIGN REFERENCE MATERIAL

1. Design the traffic signal structure and foundation in accordance with:
   - The 5th Edition 2009 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
   - The 2012 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
   - The 2012 NCDOT Roadway Standard Drawings.
   - The traffic signal project plans and special provisions.
   - The NCDOT "Metal Pole Standards" located at the following NCDOT website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

DESIGN REQUIREMENTS

2. Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
3. Design all signal supports using stress ratios that do not exceed 0.9.
4. The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
5. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
6. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
7. The mast arm attachment height (H1) shown is based on the following design assumptions:
   a. Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
   b. Signal heads are rigidly mounted and vertically centered on the mast arm.
   c. The roadway clearance height for design is as shown in the elevation views.
   d. The top of the pole base plate is 0.75 feet above the ground elevation.
   e. Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
8. The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
   - Mast arm attachment height (H1) plus 2 feet, or
   - H1 plus ½ of the total height of the mast arm attachment assembly plus 1 foot or
   - The pole manufacturer will determine the total height (H2) of each pole based on the luminaire height requirement of 30 ft.
9. If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 773-2800.
10. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
11. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.
12. Comply with NEC code 230.2(E) concerning service equipment disconnect.
13. Lighting fixture and luminaire arm represent a load condition to the pole and may not represent exactly how the fixtures will be mounted. The contractor is responsible for ensuring that any required factory preps for mounting fixtures to the pole are included on the shop drawings.
14. Design the luminaire support arm using design dimensions as shown on elevations views. Refer to the Radial Orientation Detail for attachment to the signal pole. Design arm end for a nominal 2 inch slip fit socket connection for light assembly.

All metal poles and arms should be BLACK in color as specified in the project special provisions.

NCDOT Wind Zone 2 (130 mph)

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

Prepared For: Transportation Mobility and Safety Division, North Carolina Department of Transportation, Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 1598 (10th STREET)
AT
SR 1702 (EVANS STREET)

DIVISION 2 | PITT COUNTY | GREENVILLE

PLAN DATE: JUNE 2014 | REVIEWED BY: SL PHILLIPS

PREPARED BY: SP PENNINGTON | REVIEWED BY:

SCALE: 0 N/A N/A

REVISIONS	INIT.	DATE

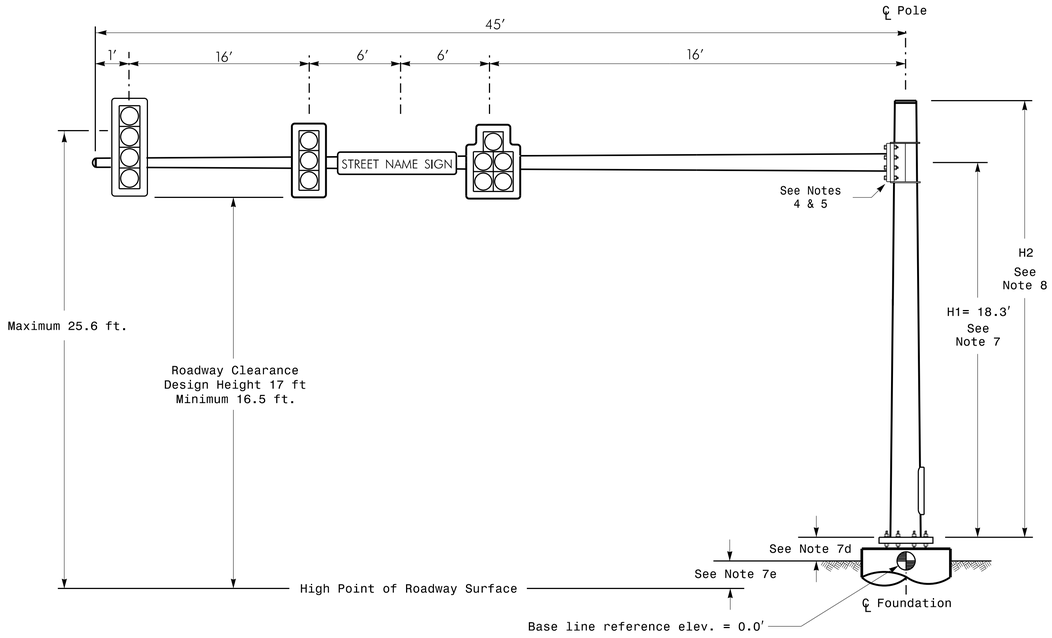
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
0CA7A59ED0094370
SIGNATURE DATE

SIG. INVENTORY NO. 02-0016

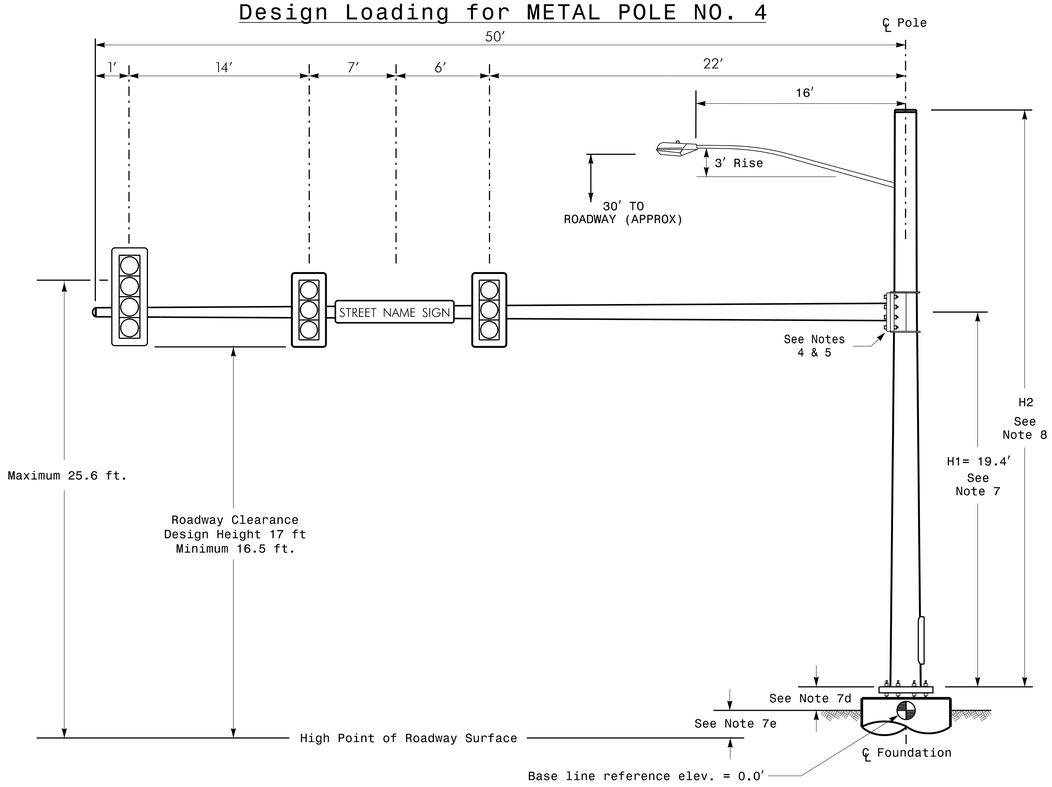
8/29/2014 10:57:04 AM susan.pennington K:\MAL_Roadway\01036175 (U-3315)\Traffic Signals\S4 - Signal Design\S-02-0016 Evans\S_9 020016-140829_ml-2.dgn

Design Loading for METAL POLE NO. 3



Elevation View

Design Loading for METAL POLE NO. 4



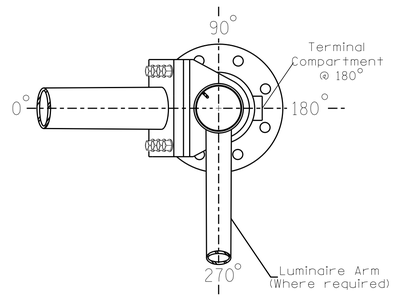
Elevation View

SPECIAL NOTE

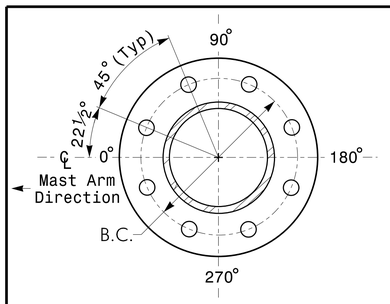
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Pole 3	Pole 4
Baseline reference point at ℄ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	+0.7 ft.	-0.4 ft.
Elevation difference at Edge of travelway or face of curb	+0.7 ft.	-0.4 ft.

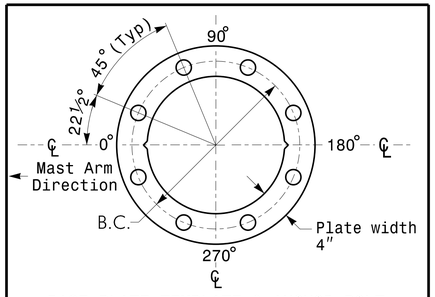


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 6



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL
For 8 Bolt Base Plate

METAL POLE No. 3 and 4

PROJECT REFERENCE NO.	SHEET NO.
U-3315	SIG. 5.10

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	SIGNAL HEAD 12″–5 SECTION–WITH BACKPLATE, RIGID MOUNTED	16.3 S.F.	42.0″ W X 56.0″ L	103 LBS
	SIGNAL HEAD 12″–4 SECTION–WITH BACKPLATE, RIGID MOUNTED	11.5 S.F.	25.5″ W X 66.0″ L	74 LBS
	SIGNAL HEAD 12″–3 SECTION–WITH BACKPLATE, RIGID MOUNTED	9.3 S.F.	25.5″ W X 52.5″ L	60 LBS
STREET NAME SIGN	STREET NAME SIGN, RIGID MOUNTED	16.0 S.F.	24.0″ W X 96.0″ L	36 LBS
	LUMINAIRES	1.0 S.F.	N/A	25 LBS

NOTES

DESIGN REFERENCE MATERIAL

1. Design the traffic signal structure and foundation in accordance with:
   - The 5th Edition 2009 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
   - The 2012 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
   - The 2012 NCDOT Roadway Standard Drawings.
   - The traffic signal project plans and special provisions.
   - The NCDOT "Metal Pole Standards" located at the following NCDOT website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

DESIGN REQUIREMENTS

2. Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
3. Design all signal supports using stress ratios that do not exceed 0.9.
4. The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
5. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
6. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
7. The mast arm attachment height (H1) shown is based on the following design assumptions:
   a. Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
   b. Signal heads are rigidly mounted and vertically centered on the mast arm.
   c. The roadway clearance height for design is as shown in the elevation views.
   d. The top of the pole base plate is 0.75 feet above the ground elevation.
   e. Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
8. The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
   - Mast arm attachment height (H1) plus 2 feet, or
   - H1 plus ½ of the total height of the mast arm attachment assembly plus 1 foot or
   - The pole manufacturer will determine the total height (H2) of each pole based on the luminaire height requirement of 30 ft.
9. If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 773-2800.
10. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
11. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.
12. Comply with NEC code 230.2(E) concerning service equipment disconnect.
13. Lighting fixture and luminaire arm represent a load condition to the pole and may not represent exactly how the fixtures will be mounted. The contractor is responsible for ensuring that any required factory preps for mounting fixtures to the pole are included on the shop drawings.
14. Design the luminaire support arm using design dimensions as shown on elevations views. Refer to the Radial Orientation Detail for attachment to the signal pole. Design arm end for a nominal 2 inch slip fit socket connection for light assembly.

All metal poles and arms should be BLACK in color as specified in the project special provisions.

NCDOT Wind Zone 2 (130 mph)

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
P.O. Box 33068
Raleigh, NC 27626
(919) 677-2000

Prepared For:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 1598 (10th STREET)
AT
SR 1702 (EVANS STREET)

DIVISION 2 PITT COUNTY GREENVILLE

PLAN DATE: JUNE 2014 REVIEWED BY: SL PHILLIPS

PREPARED BY: SP PENNINGTON REVIEWED BY:

SCALE: 0 N/A N/A

REVISIONS	INIT.	DATE

SEAL
032607
NORTH CAROLINA PROFESSIONAL ENGINEER STACIE L. PHILLIPS

DocuSigned by: Stacie Phillips 9/2/2014
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SIGNATURE DATE

SIG. INVENTORY NO. 02-0016

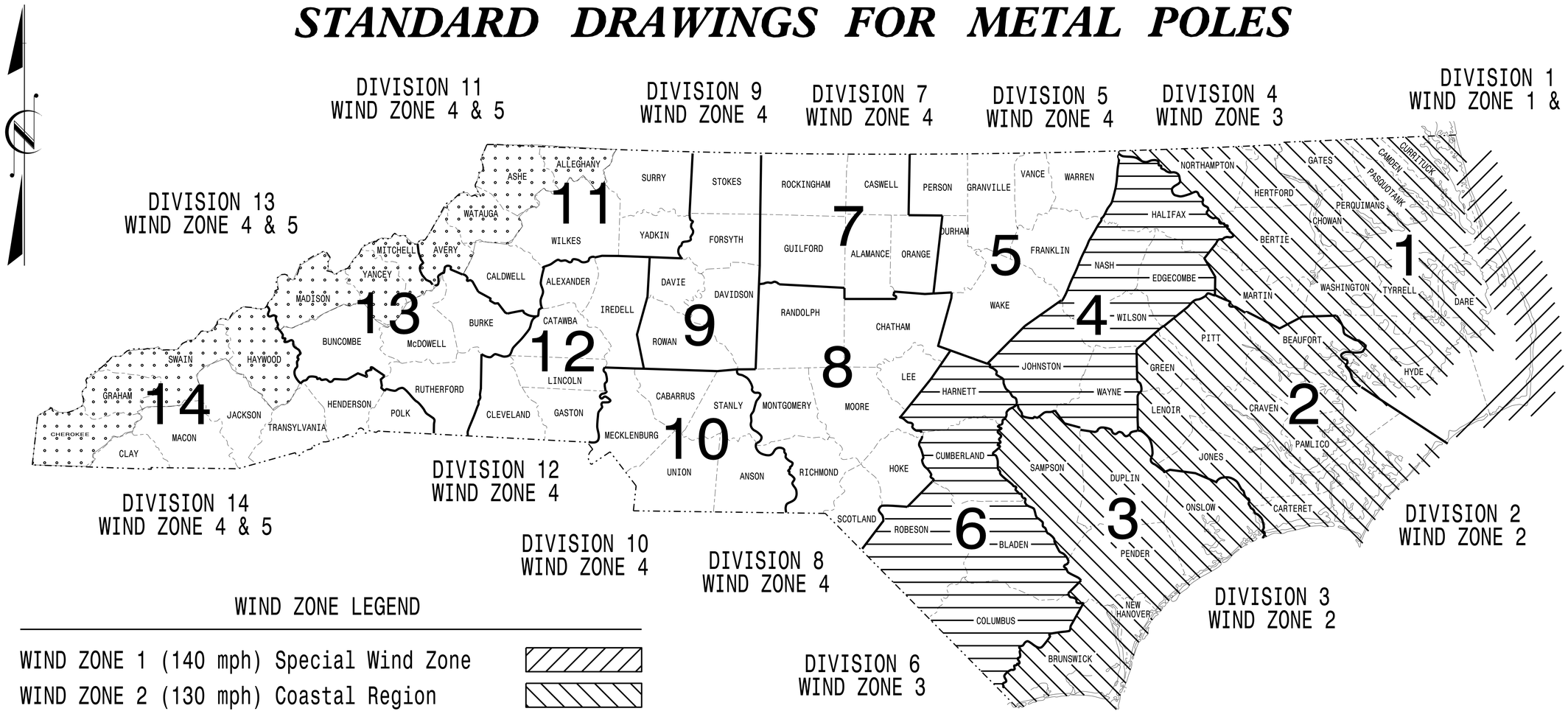
8/29/2014 10:57:06 AM susan.pennington K:\RAL_Roadway\011036175 (U-3315)\Traffic Signals\S4 - Signal Design\S-02-0016 Evans\S-10 020016-140829m3-4.dgn

PROJECT NO.	SHEET NO.
U-3315	Sig. M1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANDARD DRAWINGS FOR METAL POLES

NCDOT METAL POLE STANDARDS



WIND ZONE LEGEND

WIND ZONE 1 (140 mph) Special Wind Zone	
WIND ZONE 2 (130 mph) Coastal Region	
WIND ZONE 3 (110 mph) Eastern Region	
WIND ZONE 4 (90 mph) Central & Mtn. Region	
WIND ZONE 5 (120 mph) Special Wind Zone	

https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

Prepared in the Offices of:

Transportation Mobility and Safety Division
Signal Design Section
STATE OF NORTH CAROLINA - DEPARTMENT OF TRANSPORTATION

750 N.Greenfield Pkwy.Garner,NC 27529

Designed in conformance with the latest 2012 Interim to the 5th Edition 2009

AASHTO

Standard Specifications for Structural Supports for Highway Signs, Luminares, and Traffic Signals

INDEX OF PLANS

NCDOT CONTACTS:

MOBILITY AND SAFETY DIVISION – ITS AND SIGNALS UNIT

G. A. FULLER, P.E. – STATE ITS AND SIGNALS ENGNEER

G. G. MURR, JR., P.E. – STATE SIGNALS ENGINEER

D.C. SARKAR, P.E. – ITS AND SIGNALS SENIOR STRUCTURAL ENGINEER

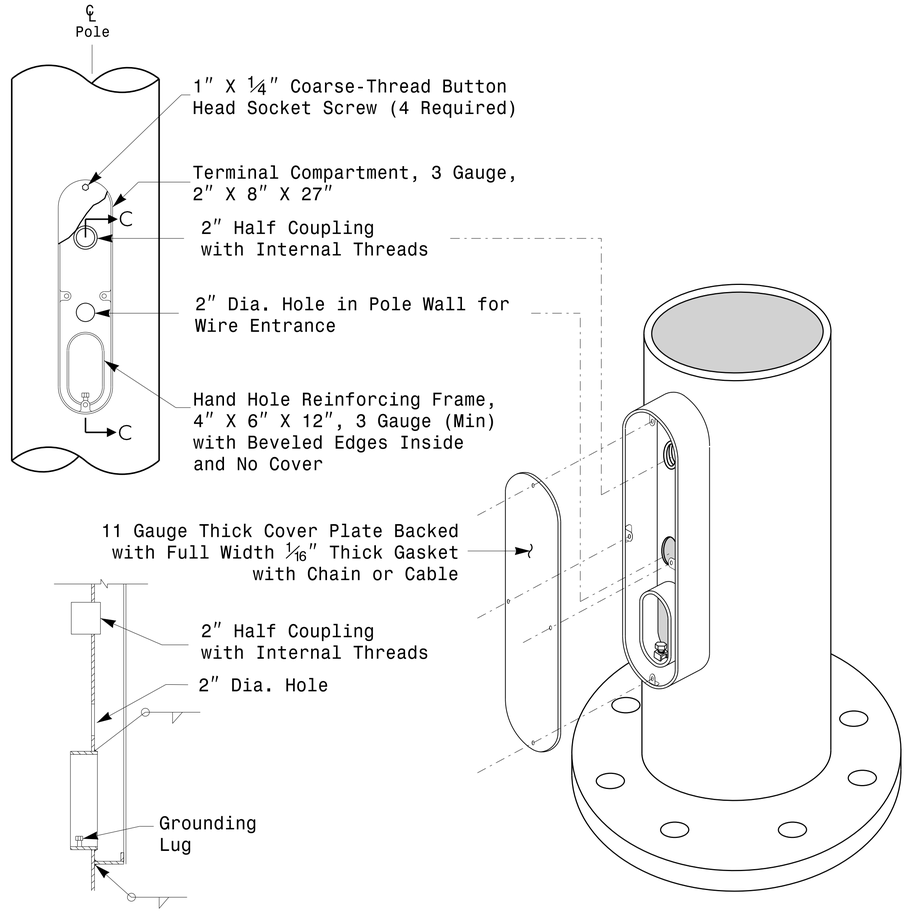
C.F. ANDREWS – ITS AND SIGNALS JOURNEY STRUCTURAL ENGINEER

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar 44EBE32E147E4C4...

8/26/2014
DATE



Note: Unless otherwise specified, locate Terminal Compartment 1 foot above the pole base plate at 180 degrees on the pole's radial index.

Terminal Compartment Detail

MFG _____ MFG. DATE: MM/YY
SHAFT D/T/L/Y ----/----/----/----
ARM-A D/T/L/Y ----/----/----/----
----/----/----/----
ARM-B D/T/L/Y ----/----/----/----
----/----/----/----
A.B. DIA./B.C./L/Y ----/----/----/----
NCDOT STANDARD ----------

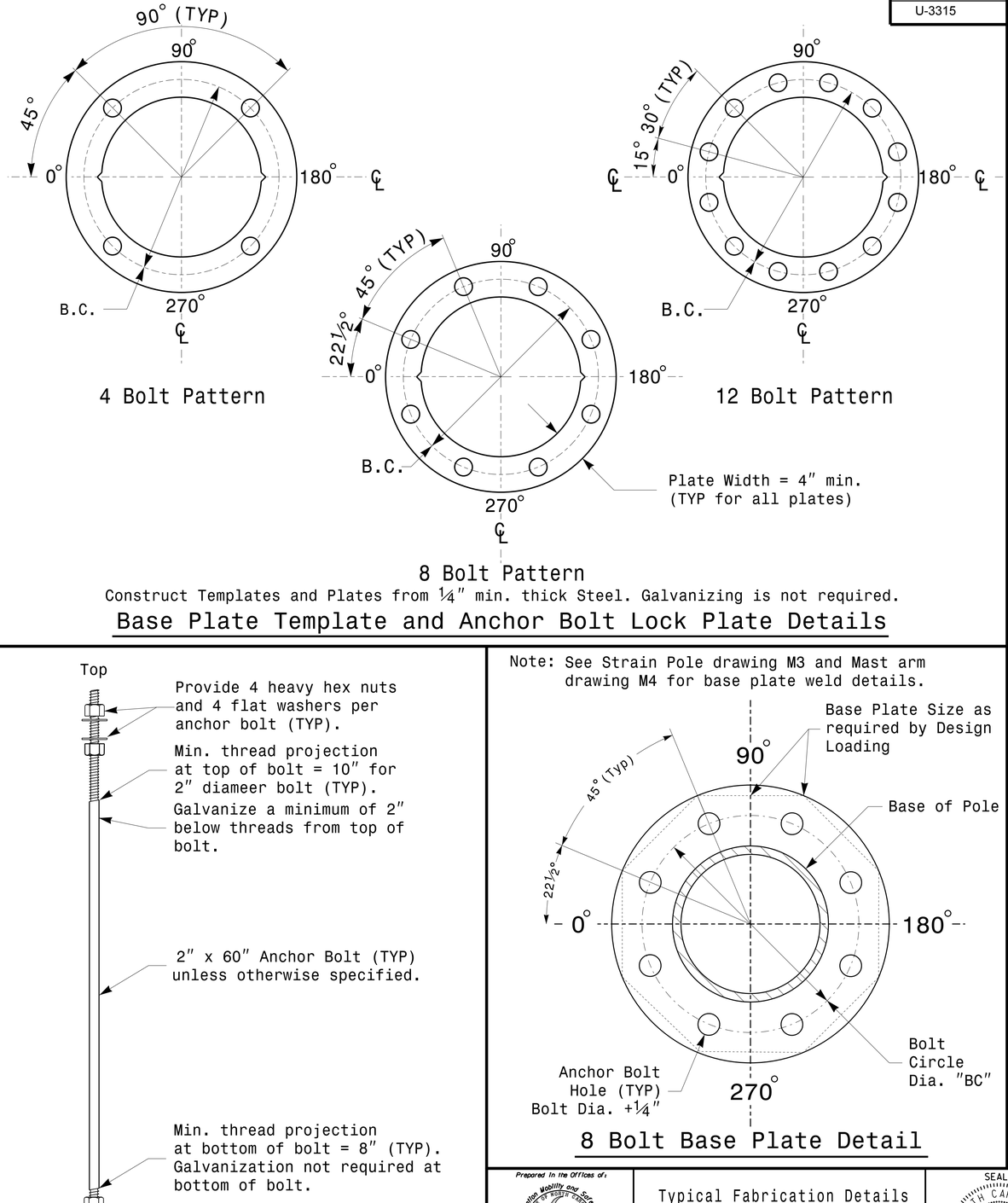
Shaft I.D. Tag
(Provide on Strain Poles and Mast Arm Poles)

MFG _____ MFG. DATE: MM/YY
SECTION D/T/L/Y ----/----/----/----
NCDOT STANDARD ----------

Arm I.D. Tag
(Provide on each section of a multi-section mast arm)

Notes:
1) D= Diameter, T= Thickness, L= Length, Y= Yield Strength
2) A.B. = Anchor Bolt
3) B.C. = Bolt Circle of Anchor Bolts
4) If Custom Design, use "NCDOT STANDARD" line for pole I.D. number and Signal Inv. Number.
5) See drawing M4 for mounting positions of I.D. tags.

Identification Tag Details



Construct Templates and Plates from ¼″ min. thick Steel. Galvanizing is not required.

Base Plate Template and Anchor Bolt Lock Plate Details

Anchor Bolt Detail

Note: See Strain Pole drawing M3 and Mast arm drawing M4 for base plate weld details.

8 Bolt Base Plate Detail

Fabrication Details – All Poles

Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

Typical Fabrication Details Common To All Metal Poles

PLAN DATE:	AUGUST 2013	DESIGNED BY:	C.F. ANDREWS
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

SCALE 0 NA NONE

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar 44EBE83DE147E4C4... 8/26/2014 DATE

SIG. INVENTORY NO.

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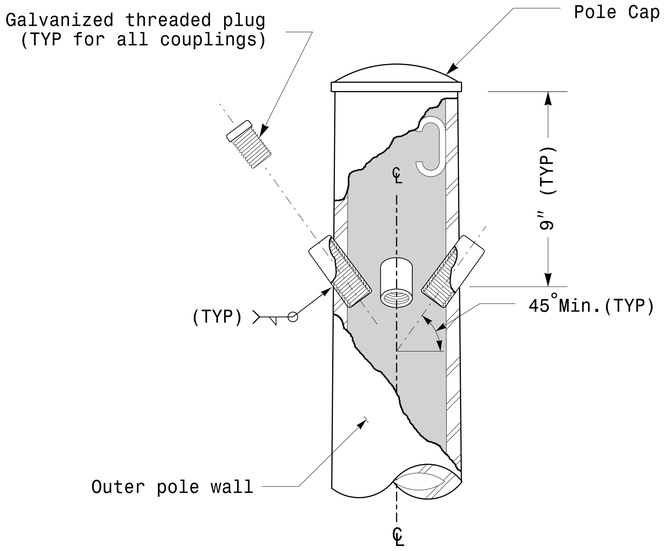
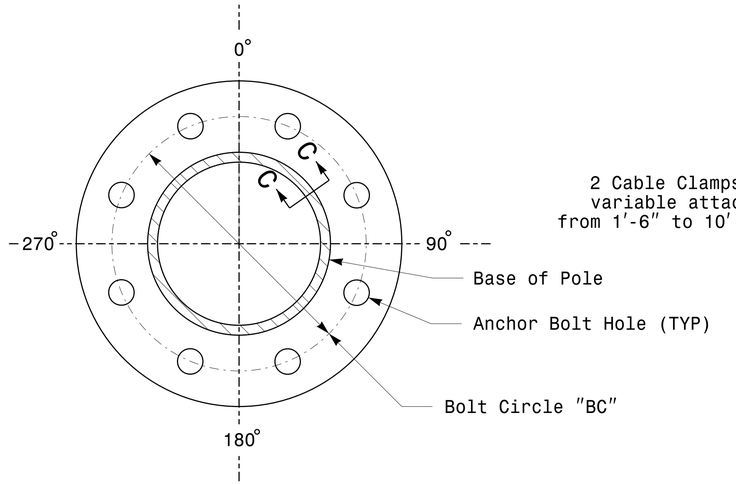
PROJECT REFERENCE NO.	SHEET NO.
U-3315	Sig. M3

Fabrication Details – Strain Poles



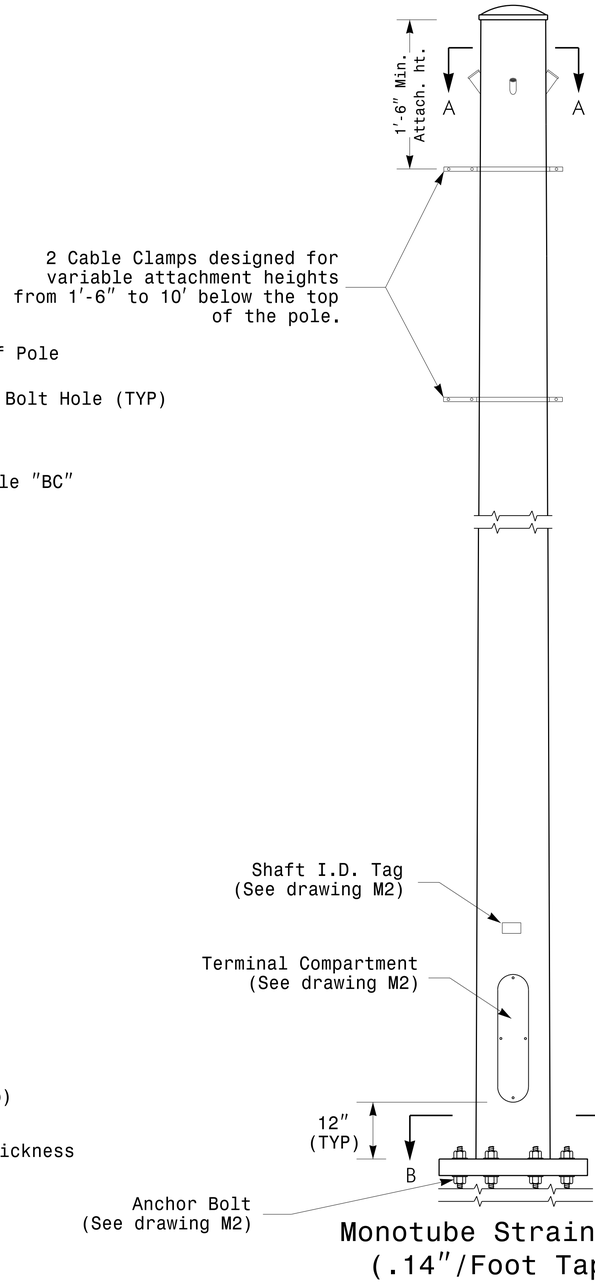
Cable Entrances at Top of Pole



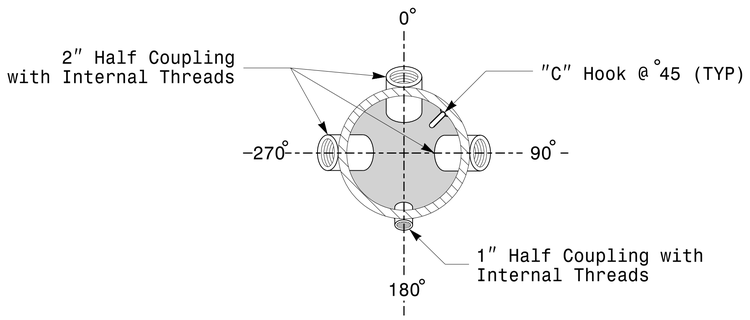
Section B-B

(See drawing M2)

Pole Base Plate

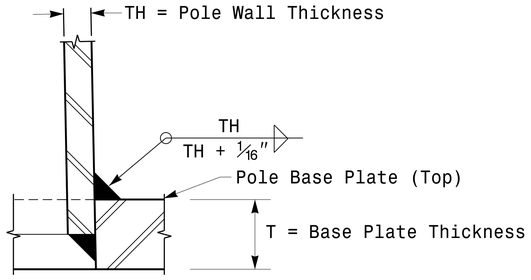


Monotube Strain Pole (.14"/Foot Taper)



Section A-A

Radial Orientation for Factory Installed Accessories at Top of Pole



Section C-C

Socket Connection Weld Detail

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

Typical Fabrication Details For Strain Poles

PLAN DATE:	AUGUST 2013	DESIGNED BY:	C.F. ANDREWS
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

SCALE: 0 NA — NONE

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar
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8/26/2014
DATE

SIG. INVENTORY NO.

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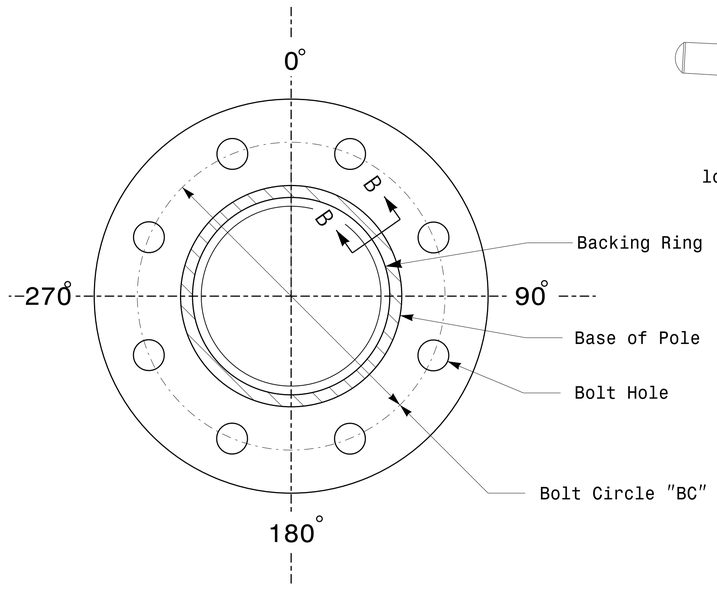
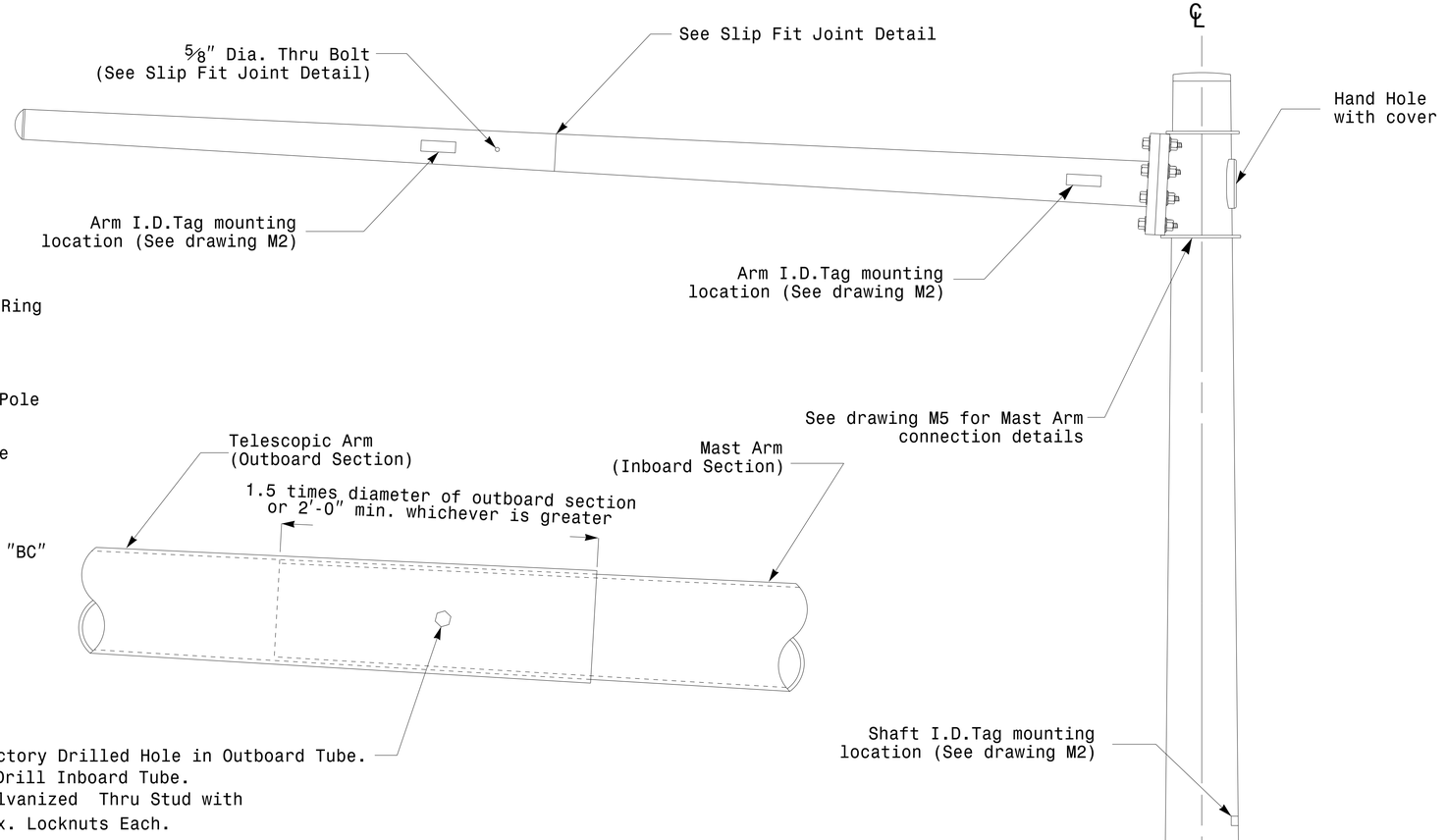


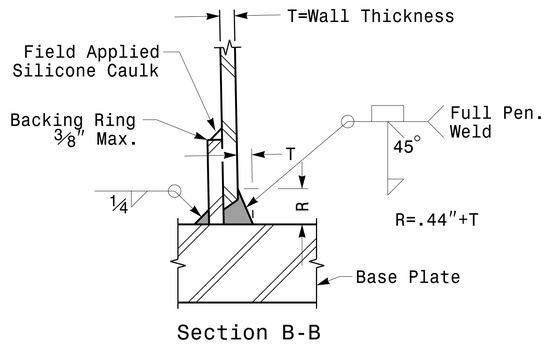
Section A-A

(See drawing M 2)

Pole Base Plate



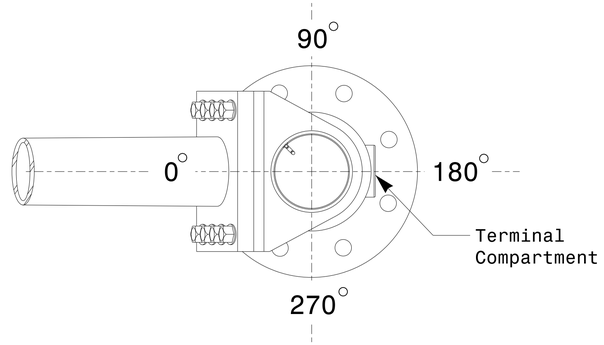
Slip Fit Joint Detail for Mast Arm



Section B-B

(Pole Attachment to Base Plate)

Full-Penetration Groove Weld Detail



Mast Arm Radial Orientation

Monotube Mast Arm Pole
(.14in./ft. taper)

Fabrication Details – Mast Arm Poles

Prepared in the Offices of:
Transportation Mobility and Safety Division
North Carolina Department of Transportation
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

Typical Fabrication Details
for Mast Arm Poles

PLAN DATE:	AUGUST 2013	DESIGNED BY:	C.F. ANDREWS
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

SCALE 0 NA NONE

REVISIONS	INIT.	DATE

DocuSigned by: Deresh C. Sarkar 44ERE3DE147E4C4... 8/26/2014 DATE

SIG. INVENTORY NO.

SEAL NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DERESH C SARKAR

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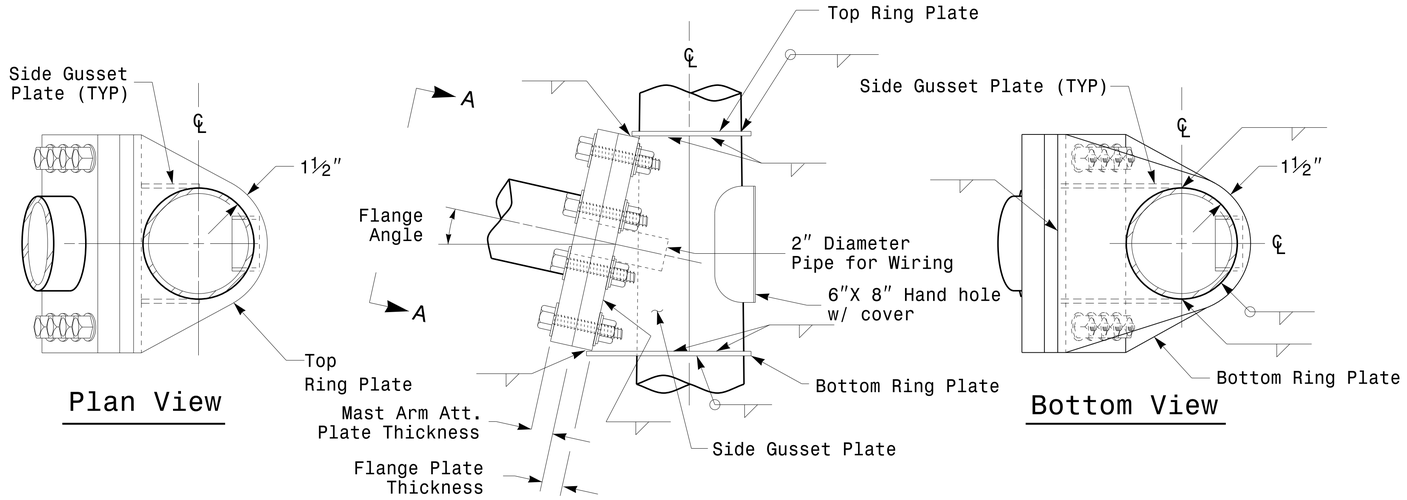
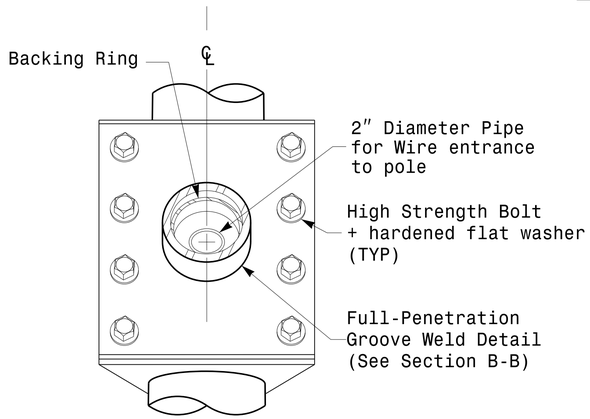
PROJECT REFERENCE NO.	SHEET NO.
U-3315	Sig. M5

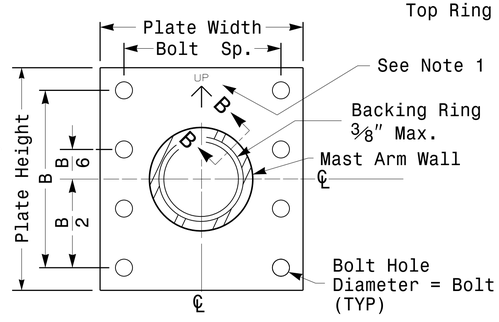
Welded Ring Stiffened Mast Arm Connection



Side Elevation View

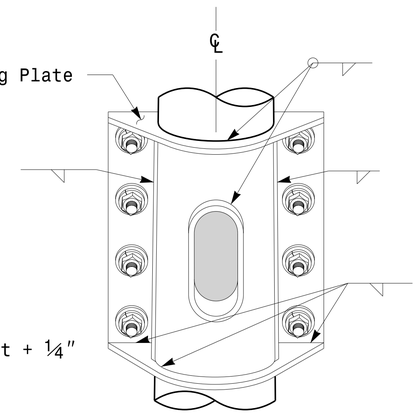


Front Elevation View

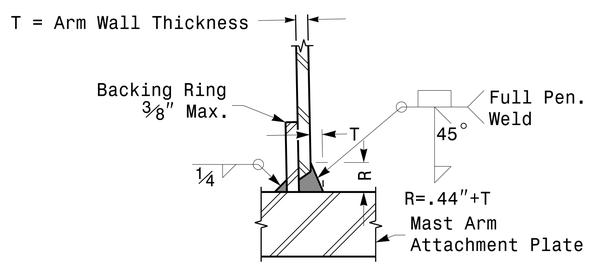


Section View A-A

Mast Arm Attachment Plate



Back Elevation View



Section B-B

Full-Penetration Groove Weld Detail

Notes:

1. Provide a permanent means of identification above the mast arm to indicate proper attachment orientation of the mast arm.
2. Designer will determine the size of all structural components, plates, fasteners, and welds shown unless they are already specified.
3. Designer is responsible for providing appropriate drainage points.

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

Fabrication Details For Mast Arm Connection To Pole

PLAN DATE:	AUGUST 2013	DESIGNED BY:	C.F. ANDREWS
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

SCALE: 0 NA — NONE

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar 44EBE32E147E4C4... 8/26/2014 DATE

SIG. INVENTORY NO.

Fabrication Details – Mast Arm Poles

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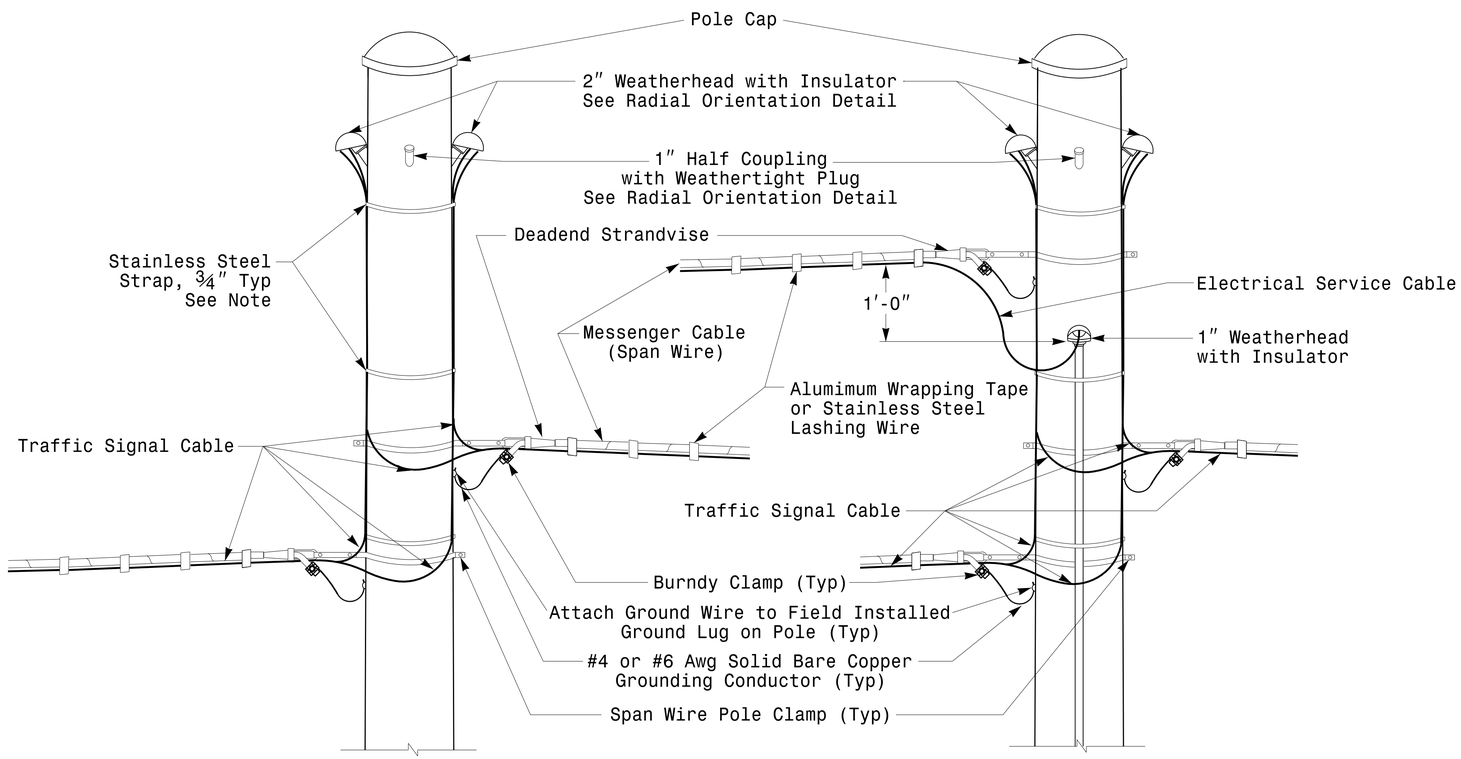
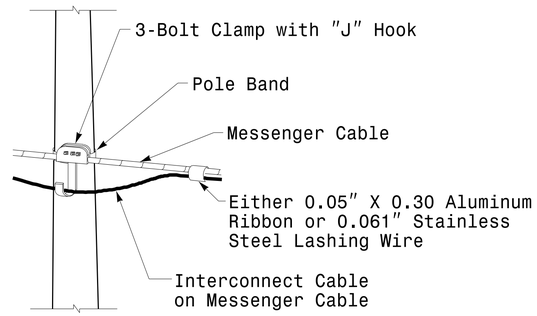
Construction Details – Strain Poles

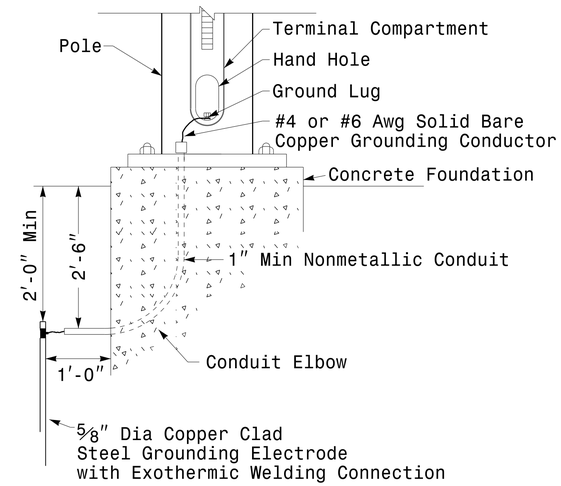


Strain Pole Attachments

Note: Strap all signal cables to the side of the pole with 3/4″ stainless steel straps when the distance between the spanwire attachment clamp and the weatherheads exceeds 36″



Attachment of Cable to Intermediate Metal Pole



Metal Pole Grounding Detail

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

Construction Details
Strain Poles

PLAN DATE:	AUGUST 2013	REVIEWED BY:	C.F. ANDREWS
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

SCALE 0 NA NONE

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar 44E83E3E147E4C4... 8/26/2014 DATE

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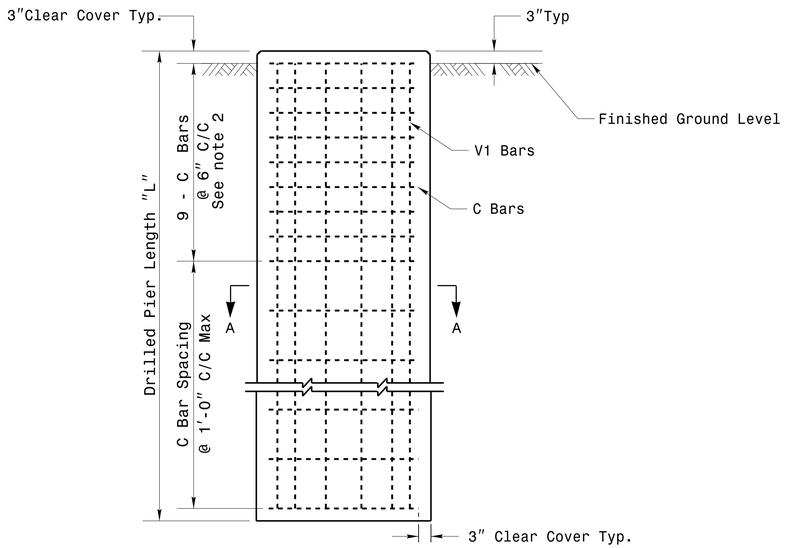
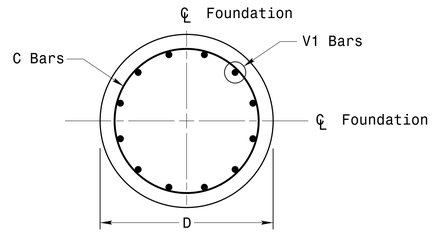
jgalloway

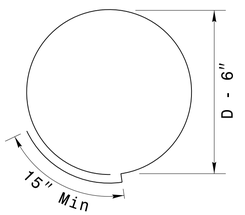
PROJECT REFERENCE NO.	SHEET NO.
U-3315	Sig. M7

Reinforcing Steel Bars





Section A-A



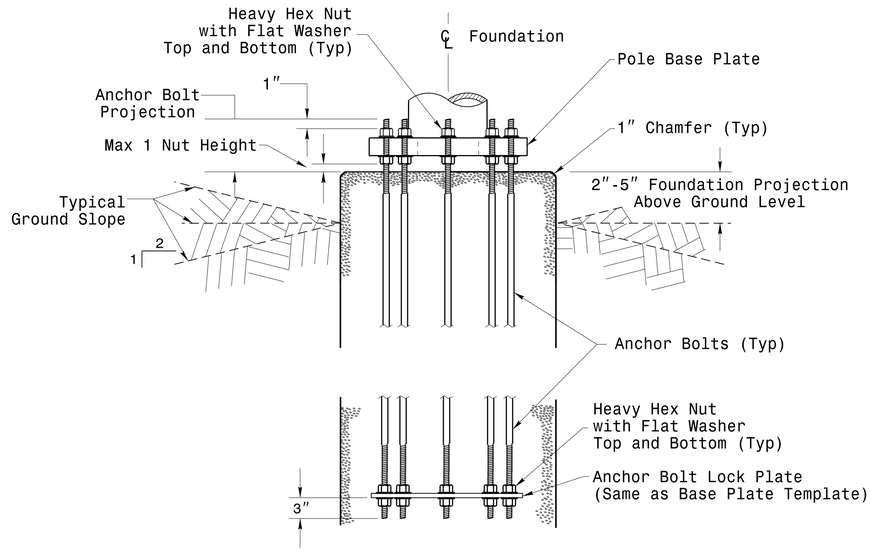
Typical "C" Bars

REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (4′–0″ DIAMETER)						
Shaft Dia (in.)	Conc. Volume (cu. yds.)	Bar Name	MIN.	Size	Type	Length
48″	.465 x L	V1	***	#8	STR.	**
		C	*	#4	CIR.	12′-6″

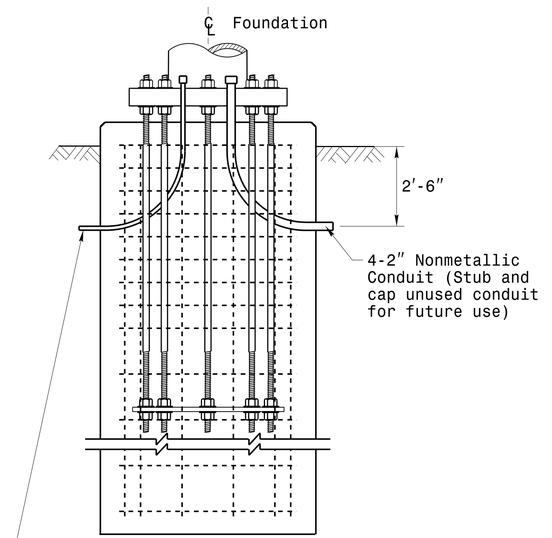
* See Note No. 1
** See Note No. 3
*** See Note No. 4

Typical Foundation Anchor Bolt Details

(Reinforcing Cage Not Shown for Clarity)



Typical Foundation Conduit Details



Notes

1. The number of C-bars is based on foundation depth and/or as required. For standard foundations, see sheets M 8 and M 9 for details.
2. Circular tie reinforcing rings may be vertically adjusted by +/- 3″ at a depth between 2′-0″ and 3′-0″ to facilitate the installation of electrical conduit entering in the cage.
3. The length of V1-bars is based on foundation depth. For standard foundations, see sheets M 8 and M 9 for details. Vertical reinforcing bars (V1) may be horizontally adjusted by +/-3″to facilitate the installation of electrical conduit entering into the cage.
4. Provide vertical reinforcement as required per design. See sheets M 8 and M9 for details.

Construction Details – Foundations

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

Construction Details
Foundations

PLAN DATE:	AUGUST 2013	DESIGNED BY:	K.C. DURIGON
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

SCALE
0 NA
NONE

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar 44EBE83E147E4C4... 8/26/2014 DATE

SIG. INVENTORY NO.

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SATURATED SOIL CONDITION

PROJECT REFERENCE NO.	SHEET NO.
U-3315	Sig. M8

		STANDARD STRAIN POLES						STANDARD FOUNDATIONS 48" Diameter Drilled Pier Length (L) – Feet							Reinforcement			
					Reactions at the Pole Base			Clay				Sand			Longitudinal		Stirrups	
		Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Axial (kip)	Shear (kip)	Moment (ft-kip)	Medium N-Value 4-8	Stiff N-Value 9-15	Very Stiff N-Value 16-30	Hard N-Value >30	Loose N-Value 4-10	Medium N-Value 11-30	Dense N-Value >30	Bar Size (#)	Quantity	Bar Size (#)	Spacing (in.)
WIND ZONE 1	LIGHT	S26L3	26	25	2	11	270	19	13	9	8	17	14.5	12.5	8	13	4	12
		S30L3	30	25	2	11	300	20	13.5	9	8	17.5	15	13	8	14	4	12
		S35L3	35	25	3	11	320	20	13.5	9.5	8	17.5	15	13	8	15	4	12
	HEAVY	S30H3	30	29	3	16	450	24.5	17	13	11	21	17.5	15	8	18	4	12
		S35H3	35	29	4	16	515	26	17.5	12	8.5	22	18.5	16	8	20	4	12
WIND ZONE 2	LIGHT	S26L2	26	23	2	10	245	18	12.5	8.5	8	16.5	14	12	8	13	4	12
		S30L2	30	23	2	10	270	19	12.5	9	8	16.5	14	12.5	8	13	4	12
		S35L2	35	23	3	10	300	19.5	13	9	8	17	14.5	13	8	14	4	12
	HEAVY	S30H2	30	29	3	15	415	25.5	15.5	11	8	20	17	14.5	8	17	4	12
		S35H2	35	29	4	15	475	25	16.5	11.5	8	21	17.5	15.5	8	19	4	12
WIND ZONE 3	LIGHT	S26L2	26	23	2	10	245	18	12.5	8.5	8	16.5	14	12	8	13	4	12
		S30L2	30	23	2	10	270	19	12.5	9	8	16.5	14	12.5	8	13	4	12
		S35L2	35	23	3	10	300	19.5	13	9	8	17	14.5	13	8	14	4	12
	HEAVY	S30H2	30	29	3	15	415	25.5	15.5	11	8	20	17	14.5	8	17	4	12
		S35H2	35	29	4	15	475	25	16.5	11.5	8	21	17.5	15.5	8	19	4	12
WIND ZONE 4	LIGHT	S26L1	26	22	2	8	190	16	11	8	8	15	12.5	11	8	12	4	12
		S30L1	30	22	2	8	205	16.5	11.5	8	8	15	13	11.5	8	12	4	12
		S35L1	35	22	3	8	230	17	12	8	8	15.5	13.5	11.5	8	12	4	12
	HEAVY	S30H1	30	25	3	12	320	20.5	14	9.5	8	18	15	13.5	8	15	4	12
		S35H1	35	25	4	12	350	21	14.5	10	8	18.5	15.5	13.5	8	16	4	12
WIND ZONE 5	LIGHT	S26L2	26	23	2	10	245	18	12.5	8.5	8	16.5	14	12	8	13	4	12
		S30L2	30	23	2	10	270	19	12.5	9	8	16.5	14	12.5	8	13	4	12
		S35L2	35	23	3	10	300	19.5	13	9	8	17	14.5	13	8	14	4	12
	HEAVY	S30H2	30	29	3	15	415	25.5	15.5	11	8	20	17	14.5	8	17	4	12
		S35H2	35	29	4	15	475	25	16.5	11.5	8	21	17.5	15.5	8	19	4	12

48" Dia. Foundations Concrete Volume (cubic yards) = (0.465) x Foundation Depth

Fabrication Design Notes:

1. Values shown in the "Reactions at the Pole Base" column represent the minimum acceptable capacity allowed for design using a design CSR of 1.00.
2. Min. base plate thickness (T) is 2.0 inches.

Foundation Selection:

1. Perform a standard penetration test at each proposed foundation site to determine "N" value.
2. Select the appropriate wind zone from M 1 drawing.
3. Select the soil type (Clay or Sand) that best describes the soil characteristics.
4. Get the appropriate standard pole case number from the plans or from the Engineer.
5. Select the appropriate column in the chart based on soil type and "N" value. Select the appropriate row based on the pole load case.
   The foundation depth is the value where the column and the row intersect.
6. Reference Drilled Shafts: Construction Procedures and Design Methods, FHWA -IF-99-025

S30H1 - Hard Clay-Stirrup Spacing: 6 in. c/c
S30H2 - Hard Clay-Stirrup Spacing: 6 in. c/c
S30H3 - Hard Clay-Stirrup Spacing: 6 in. c/c
- Dense Sand-Stirrup Spacing: 6 in. c/c
S35H1 - Hard Clay - Stirrup Spacing: 6 in. c/c
S35H2 - Very Stiff Clay-Stirrup Spacing: 6 in. c/c
- Hard Clay- Stirrup Spacing: 6 in. c/c
- Dense Sand- Stirrup Spacing: 6 in. c/c
S35H3 - Very Stiff Clay-Stirrup Spacing: 6 in. c/c
- Dense Sand-Stirrup Spacing: 6 in. c/c

Standard Strain Pole Foundation–Saturated Soil Condition

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

Standard Strain Pole Foundation for Saturated Soil Condition

PLAN DATE: SEPTEMBER 2013 | DESIGNED BY: C.B COGDELL
PREPARED BY: N. BITTING | REVIEWED BY: D. SARKAR

SCALE: 0 NA None

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL 028094
ENGINEER
DEBDESH C. SARKAR

DocuSigned by: Debdesh C. Sarkar 8/26/2014
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DATE

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jgalloway

PROJECT REFERENCE NO.	SHEET NO.
U-3315	Sig. M9

DRY SOIL CONDITION

		STANDARD STRAIN POLES			Reactions at the Pole Base			STANDARD FOUNDATIONS 48" Diameter Drilled Pier Length (L) – Feet: Clay				Sand			Reinforcement: Longitudinal		Stirrups	
		Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Axial (kip)	Shear (kip)	Moment (ft-kip)	Medium N-Value 4-8	Stiff N-Value 9-15	Very Stiff N-Value 16-30	Hard N-Value >30	Loose N-Value 4-10	Medium N-Value 11-30	Dense N-Value >30	Bar Size (#)	Quantity	Bar Size (#)	Spacing (in.)
WIND ZONE 1	LIGHT	S26L3	26	25	2	11	270	18	12.5	9	8	14.5	11	10	8	13	4	12
		S30L3	30	25	2	11	300	18.5	13	9	8	15	11.5	10	8	14	4	12
		S35L3	35	25	3	11	320	19	13.5	9.5	8	15	11.5	10.5	8	15	4	12
	HEAVY	S30H3	30	29	3	16	450	23	16	11	8	17.5	13.5	11.5	8	18	4	12
		S35H3	35	29	4	16	515	24.5	16.5	12	8.5	18.5	14	12	8	20	4	12
WIND ZONE 2	LIGHT	S26L2	26	23	2	10	245	17	12	8.5	8	14	11	9.5	8	13	4	12
		S30L2	30	23	2	10	270	18	12.5	8.5	8	14.5	11	10	8	13	4	12
		S35L2	35	23	3	10	300	18.5	13	9	8	14.5	11.5	10	8	14	4	12
	HEAVY	S30H2	30	29	3	15	415	22	15	10.5	8	17	13	11.5	8	17	4	12
		S35H2	35	29	4	15	475	23.5	16	11.5	8	18	13.5	12	8	19	4	12
WIND ZONE 3	LIGHT	S26L2	26	23	2	10	245	17	12	8.5	8	14	11	9.5	8	13	4	12
		S30L2	30	23	2	10	270	18	12.5	8.5	8	14.5	11	10	8	13	4	12
		S35L2	35	23	3	10	300	18.5	13	9	8	14.5	11.5	10	8	14	4	12
	HEAVY	S30H2	30	29	3	15	415	22	15	10.5	8	17	13	11.5	8	17	4	12
		S35H2	35	29	4	15	475	23.5	16	11.5	8	18	13.5	12	8	19	4	12
WIND ZONE 4	LIGHT	S26L1	26	22	2	8	190	15.5	10.5	8	8	13	10	9	8	12	4	12
		S30L1	30	22	2	8	205	15.5	11	8	8	13	10	9	8	12	4	12
		S35L1	35	22	3	8	230	16.5	11.5	8	8	13.5	10.5	9	8	12	4	12
	HEAVY	S30H1	30	25	3	12	320	19.5	13.5	9.5	8	15	12	10.5	8	15	4	12
		S35H1	35	25	4	12	350	20	14	10	8	15.5	12	10.5	8	15	4	12
WIND ZONE 5	LIGHT	S26L2	26	23	2	10	245	17	12	8.5	8	14	11	9.5	8	13	4	12
		S30L2	30	23	2	10	270	18	12.5	8.5	8	14.5	11	10	8	13	4	12
		S35L2	35	23	3	10	300	18.5	13	9	8	14.5	11.5	10	8	14	4	12
	HEAVY	S30H2	30	29	3	15	415	22	15	10.5	8	17	13	11.5	8	17	4	12
		S35H2	35	29	4	15	475	23.5	16	11.5	8	18	13.5	12	8	19	4	12

48" Dia. Foundations Concrete Volume (cubic yards) = (0.465) x Foundation Depth

Fabrication Design Notes:

1. Values shown in the "Reactions at the Pole Base" column represent the minimum acceptable capacity allowed for design using a design CSR of 1.00.
2. Min. base plate thickness (T) is 2.0 inches.

Foundation Selection:

1. Perform a standard penetration test at each proposed foundation site to determine "N" value.
2. Select the appropriate wind zone from M 1 drawing.
3. Select the soil type (Clay or Sand) that best describes the soil characteristics.
4. Get the appropriate standard pole case number from the plans or from the Engineer.
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6. Reference Drilled Shafts: Construction Procedures and Design Methods, FHWA -IF-99-025

S30H1 - Hard Clay-Stirrup Spacing: 6 in. c/c
- Dense Sand-Stirrup Spacing: 6 in. c/c

S30H2 - Very Stiff Clay: Stirrup Spacing: 6 in. c/c
- Hard Clay: Stirrup Spacing: 6 in. c/c
- Medium Clay: Stirrup Spacing: 6 in. c/c
- Dense Sand: Stirrup Spacing: 6 in. c/c

S30H3 - Very Stiff Clay: Stirrup Spacing: 6 in. c/c
- Hard Clay: Stirrup Spacing: 6 in. c/c
- Medium Clay: Stirrup Spacing: 6 in. c/c
- Dense Sand: Stirrup Spacing: 6 in. c/c

S35H1 - Hard Clay: tirrup Spacing: 6 in. c/c
- Dense Sand: Stirrup Spacing: 6 in. c/c

S35H2 - Very Stiff Clay: Stirrup Spacing: 6 in. c/c
- Hard Clay: Stirrup Spacing: 6 in. c/c
- Medium Clay: Stirrup Spacing: 6 in. c/c
- Dense Sand: Stirrup Spacing: 6 in. c/c

S35H3 - Very Stiff Clay: Stirrup Spacing: 6 in. c/c
- Hard Clay: Stirrup Spacing: 6 in. c/c
- Medium Clay: Stirrup Spacing: 6 in. c/c
- Dense Sand: Stirrup Spacing: 6 in. c/c

Standard Strain Pole Foundation–Dry Soil Condition

Prepared in the Offices of: Transportation Mobility and Safety Division, Signal Design Section
750 N.Greenfield Pkwy.Garner.NC 27529

Standard Strain Pole Foundation for Dry Soil Condition

PLAN DATE: SEPTEMBER 2013 | DESIGNED BY: C.B COGDELL
PREPARED BY: N. BITTING | REVIEWED BY: D. SARKAR

SCALE 0 NA None

REVISIONS | INIT. | DATE

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028094 DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar 8/26/2014
DATE

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jgalloway

PROJECT NO.	SHEET NO.
U-3315	Sig. P1

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

06-14

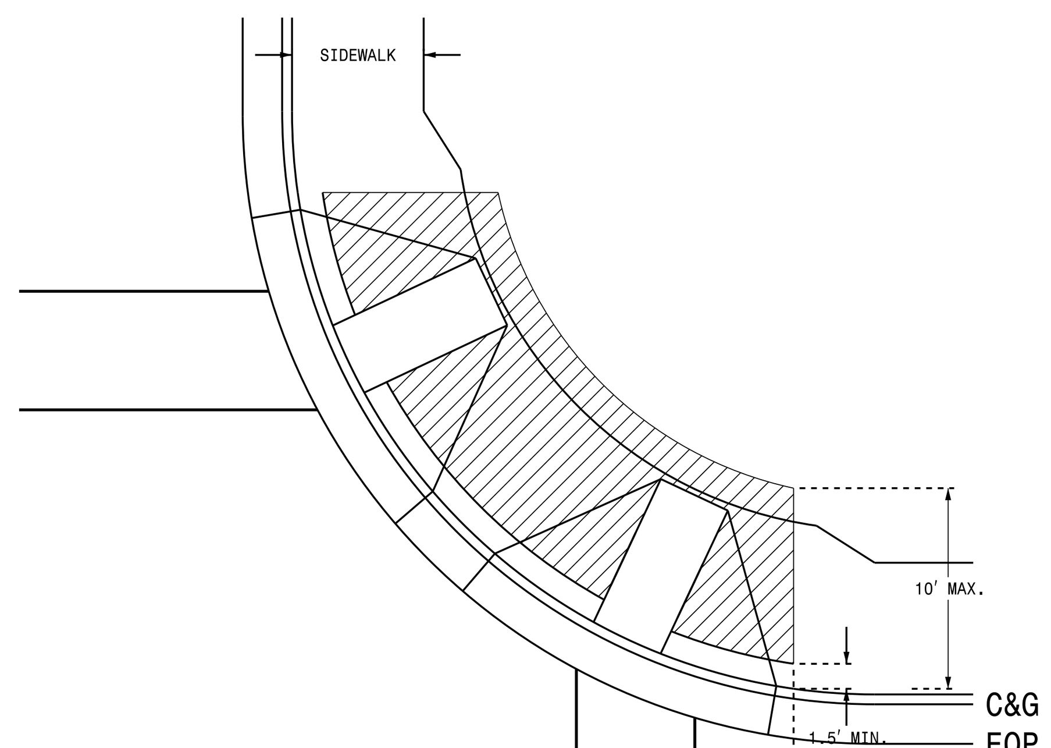
ENGLISH DETAIL DRAWING FOR PEDESTRIAN PUSHBUTTON LOCATIONS PLACEMENT DETAIL

SHEET 1 OF 3

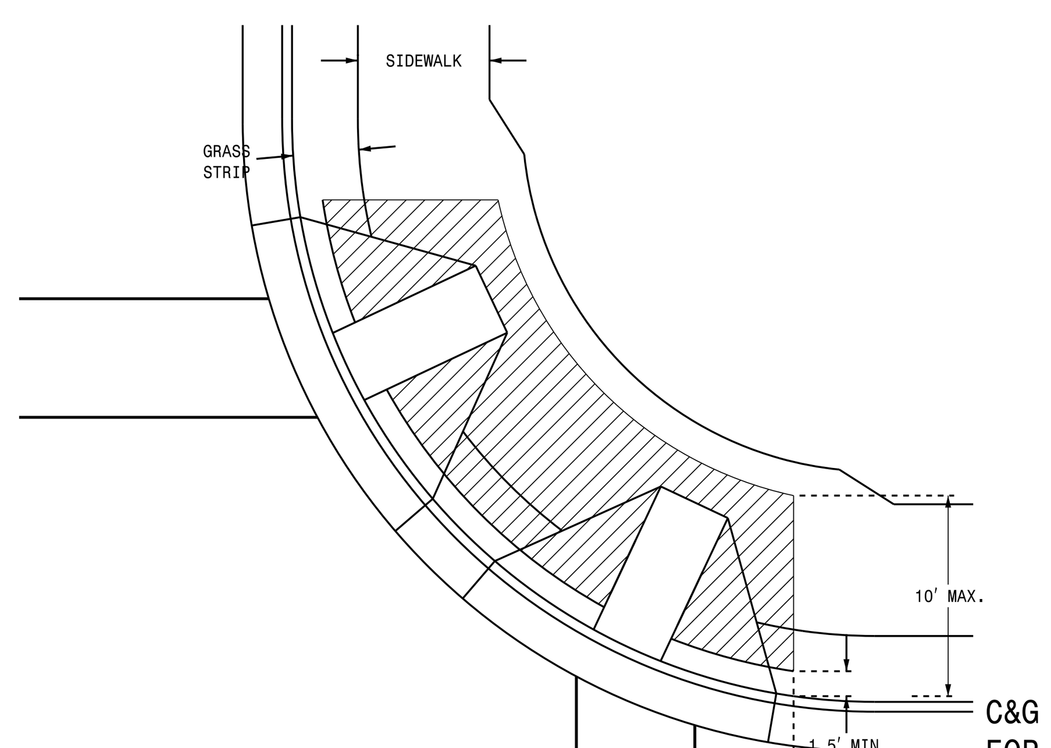
1705D01

PUSHBUTTON PLACEMENT

SEPARATE CURB RAMPS



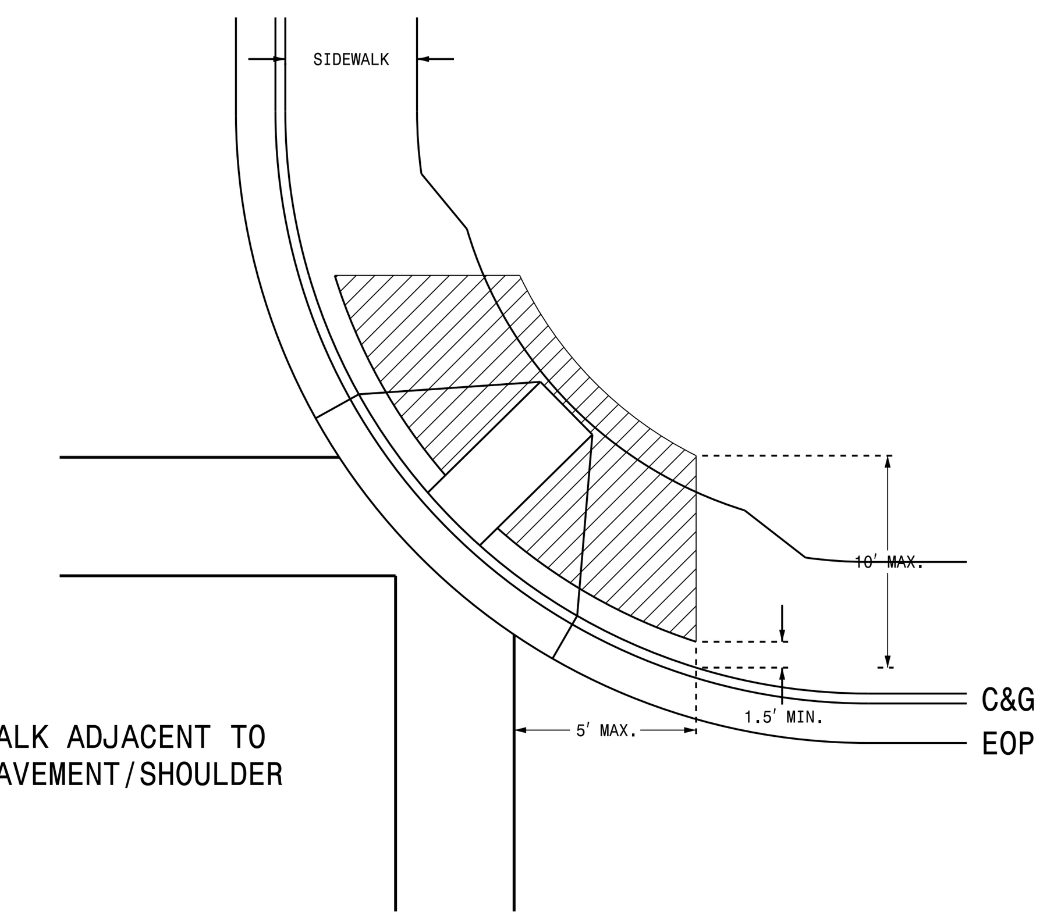
SIDEWALK ADJACENT TO CURB/PAVEMENT/SHOULDER



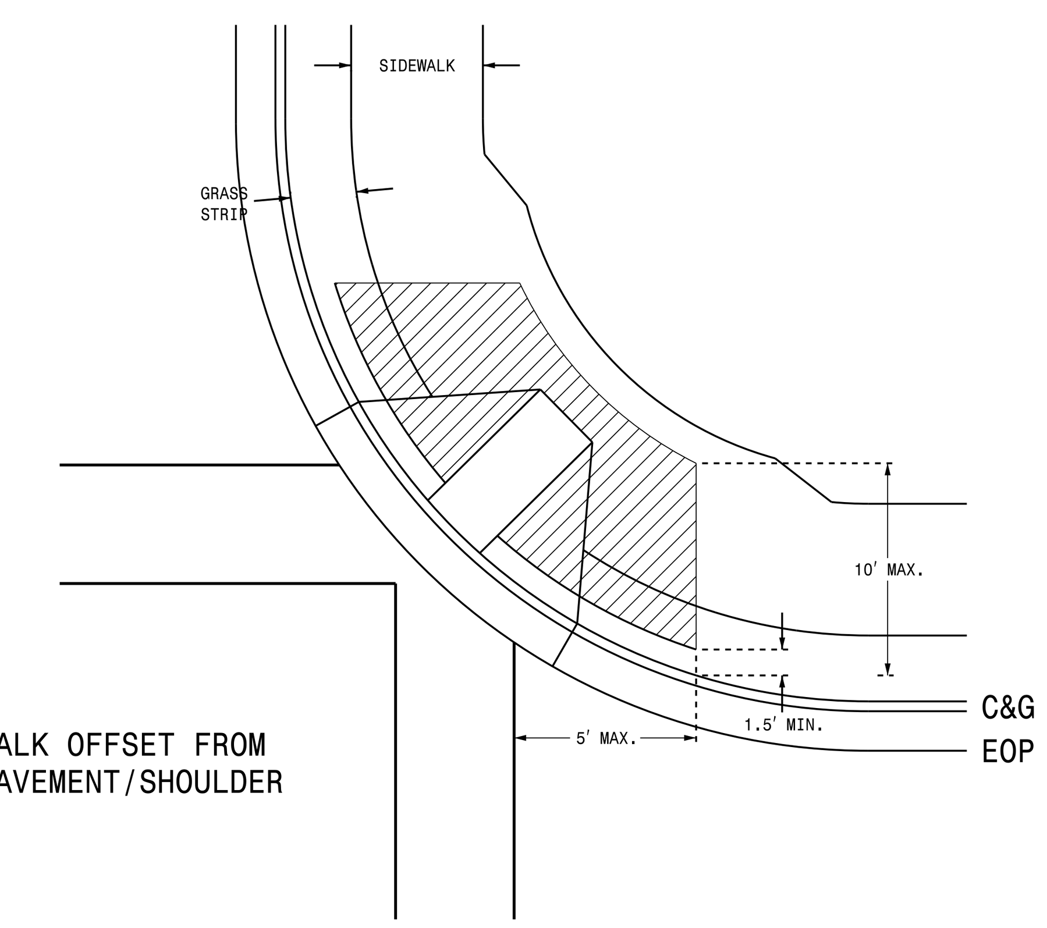
SIDEWALK OFFSET FROM CURB/PAVEMENT/SHOULDER

PUSHBUTTON PLACEMENT

SHARED CURB RAMP



SIDEWALK ADJACENT TO CURB/PAVEMENT/SHOULDER



SIDEWALK OFFSET FROM CURB/PAVEMENT/SHOULDER

NOTES

1. Pushbutton pedestals should not be located further than 10 feet from the edge of curb, shoulder, or pavement.
2. The face of the pushbutton should be parallel to the applicable crosswalk.
3. Separate pushbuttons used on the same corner should be separated by a distance of at least 10 feet.
4. Pushbuttons shall be installed adjacent to a level surface with a maximum reach distance of 10 inches.
5. Maintain 4 feet of clearance around pedestal if located in sidewalk.
6. Refer to section 1705 of the 2012 NCDOT Roadway Standard Drawings for Pushbutton Assembly details.
7. Refer to section 1743 of the 2012 NCDOT Roadway Standard Drawings for Pedestal details.
8. Contact Division Traffic Engineer for pushbutton location approval prior to installation.
9. Curb ramps are for symbolic use only and may not reflect actual design or field conditions.

LEGEND

PROPOSED

- Signal Pole
- Type I Pushbutton Post
- Type II Signal Pedestal
- Pushbutton & Sign
- Pedestrian Signal Head
- Curb Ramp
- Pushbutton Location Area

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

06-14

ENGLISH DETAIL DRAWING FOR PEDESTRIAN PUSHBUTTON LOCATIONS PLACEMENT DETAIL

SHEET 1 OF 3

1705D01

See Plate for Title

Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Parkway
Garner, NC 27529

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 026486 ENGINEER ROBERT J. ZIEMBA

DocuSigned by:

SIGNATURE 6/17/2014 DATE

26-AUG-2014 16:37
rziemba

PROJECT NO.	SHEET NO.
U-3315	Sig. P2

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

06-14

ENGLISH DETAIL DRAWING FOR

PEDESTRIAN PUSHBUTTON LOCATIONS

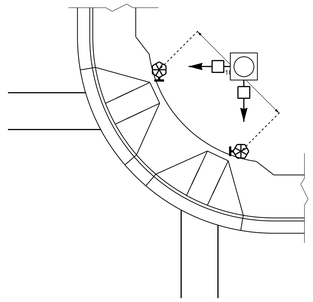
PLACEMENT DETAIL

SHEET 2 OF 3

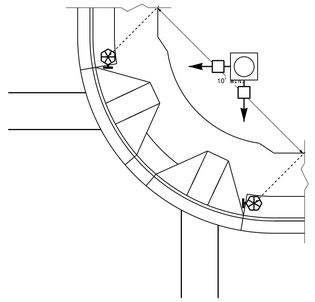
1705D01

TYPICAL PUSHBUTTON LOCATIONS (CASE I)

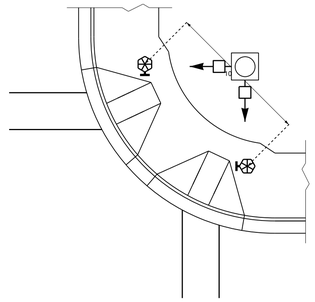
SEPARATE CURB RAMPS W/ TYPE I PEDESTALS



BACK OF SIDEWALK IS WITHIN 10'
OF CURB OR PAVEMENT/SHOULDER



GRASS STRIP PLACEMENT IF BACK
OF SIDEWALK EXCEEDS 10' FROM
CURB OR PAVEMENT/SHOULDER



PUSHBUTTON PLACEMENT
IN WIDE SIDEWALK

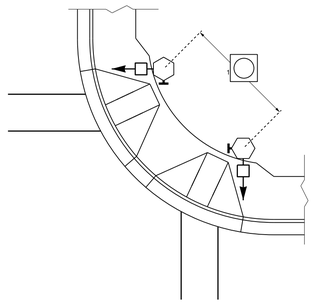
PROPOSED

LEGEND

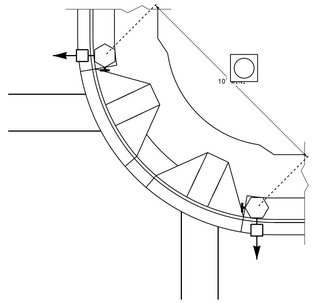
- Signal Pole
- Type I Pushbutton Post
- Type II Signal Pedestal
- Pushbutton & Sign
- Pedestrian Signal Head
- Curb Ramp
- Pushbutton Location Area

TYPICAL PUSHBUTTON LOCATIONS (CASE II)

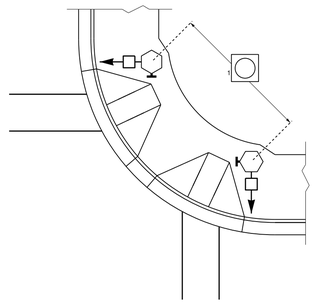
SEPARATE CURB RAMPS W/ TYPE II PEDESTALS



BACK OF SIDEWALK IS WITHIN 10'
OF CURB OR PAVEMENT/SHOULDER



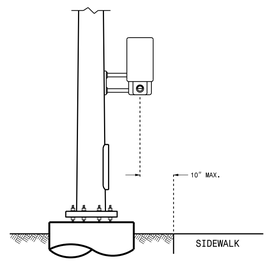
GRASS STRIP PLACEMENT IF BACK
OF SIDEWALK EXCEEDS 10' FROM
CURB OR PAVEMENT/SHOULDER



PUSHBUTTON PLACEMENT
IN WIDE SIDEWALK

OPTIONAL PUSHBUTTON EXTENSION

FACE OF PUSHBUTTON PARALLEL TO
APPLICABLE CROSSWALK



STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

06-14

ENGLISH DETAIL DRAWING FOR

PEDESTRIAN PUSHBUTTON LOCATIONS

PLACEMENT DETAIL

SHEET 2 OF 3

1705D01

See Plate for Title

Prepared in the Offices of:

Transportation Mobility and Safety Division
Signal Design Section
DEPARTMENT OF TRANSPORTATION • STATE OF NORTH CAROLINA

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Garner, NC 27529

SEAL

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026486
ENGINEER
ROBERT J. ZIEMBA

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SIGNATURE

6/17/2014
DATE

26-AUG-2014 16:38
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rziemba

PROJECT NO.	SHEET NO.
U-3315	Sig. P3

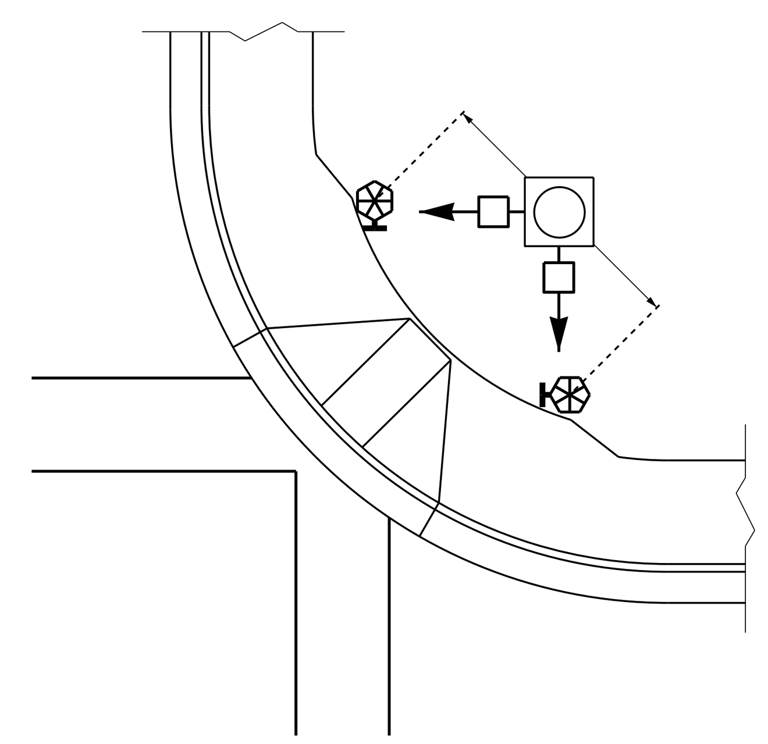
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

06-14

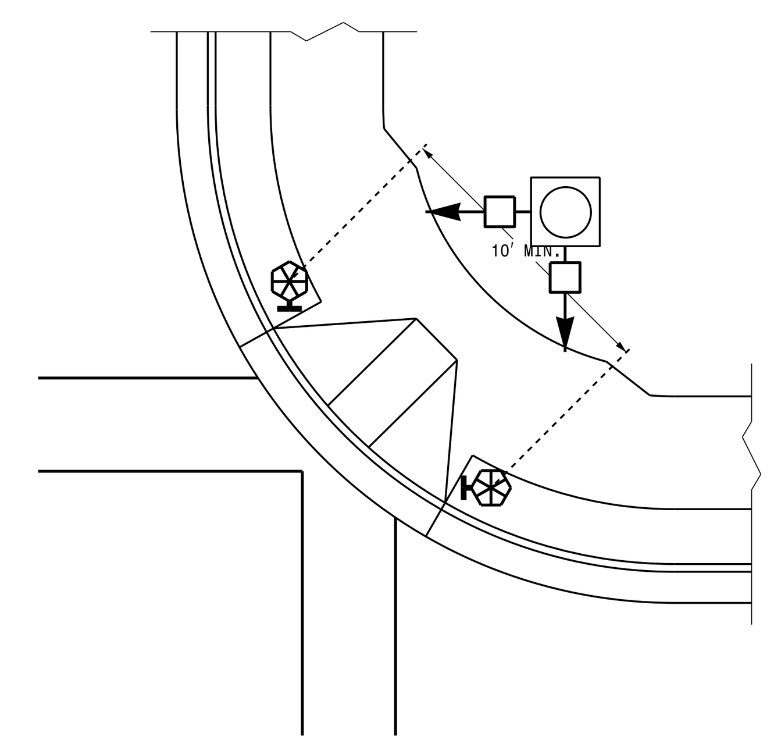
ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

TYPICAL PUSHBUTTON LOCATIONS (CASE III)

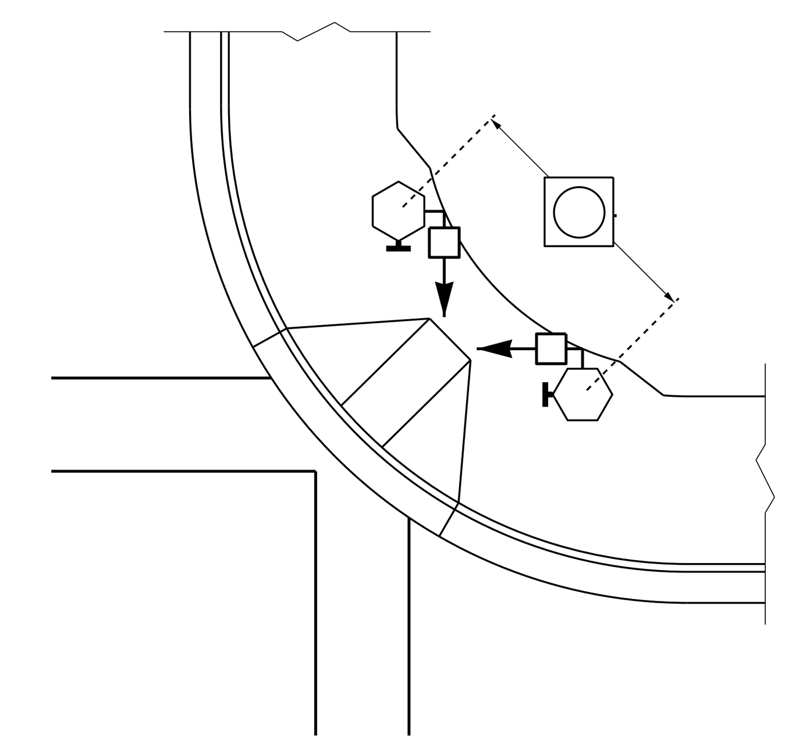
SHARED CURB RAMPS



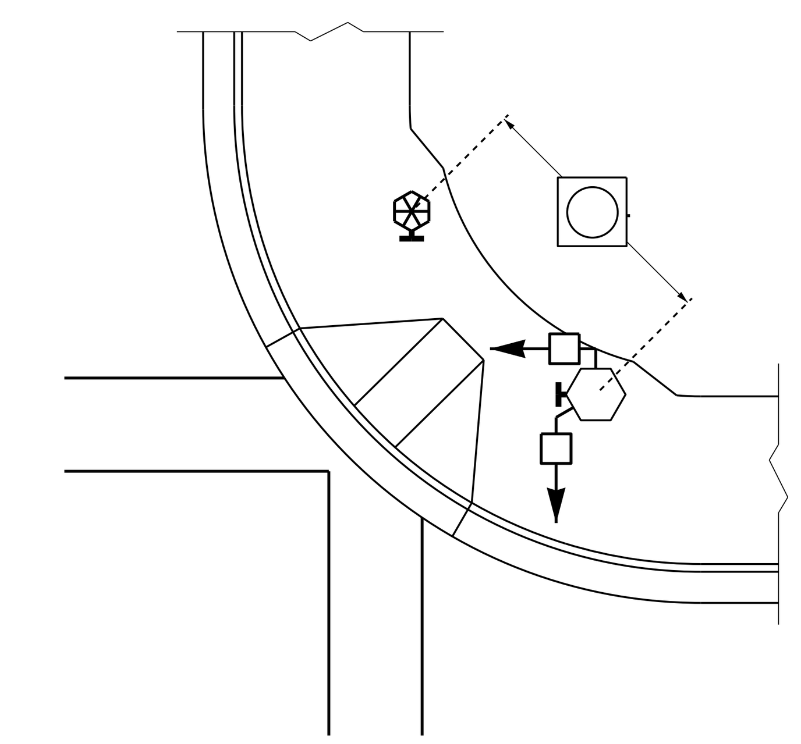
BACK OF SIDEWALK IS WITHIN 10' OF CURB OR PAVEMENT/SHOULDER



GRASS STRIP PLACEMENT IF BACK OF SIDEWALK EXCEEDS 10' FROM CURB OR PAVEMENT/SHOULDER

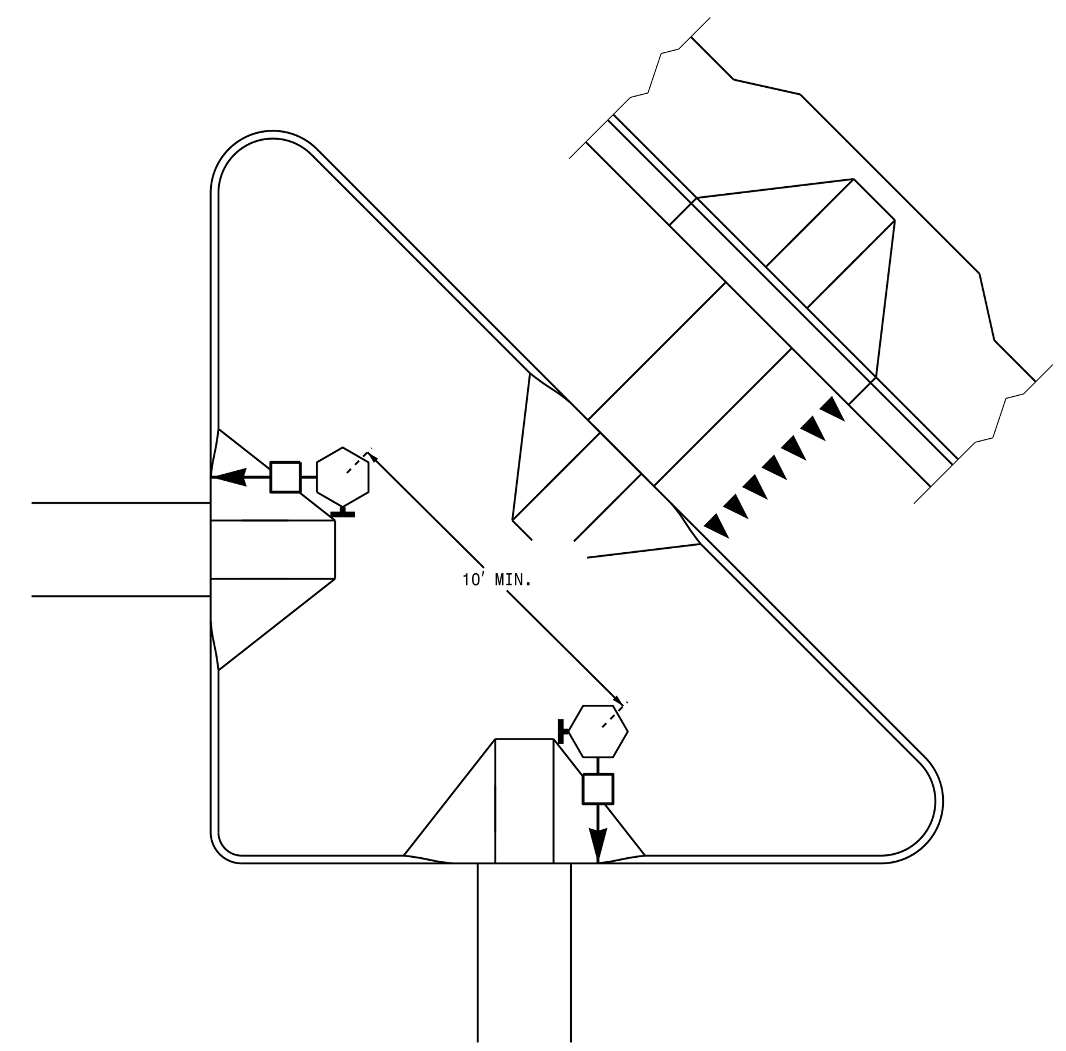


PUSHBUTTON PLACEMENT IN WIDE SIDEWALK (CORRESPONDING PUSHBUTTONS AND SIGNAL HEADS ON DIFFERENT PEDESTALS)

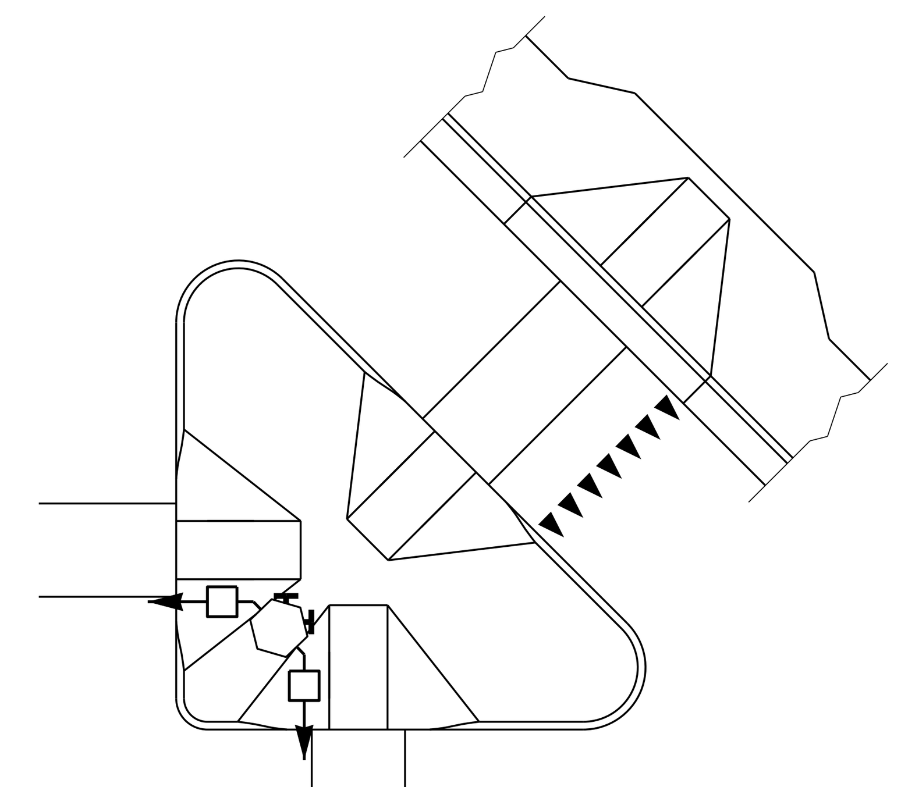


PUSHBUTTON PLACEMENT WITH SHARED TYPE II SIGNAL PEDESTAL AND TYPE I PUSHBUTTON POST

TRAFFIC ISLAND PUSHBUTTON LOCATIONS

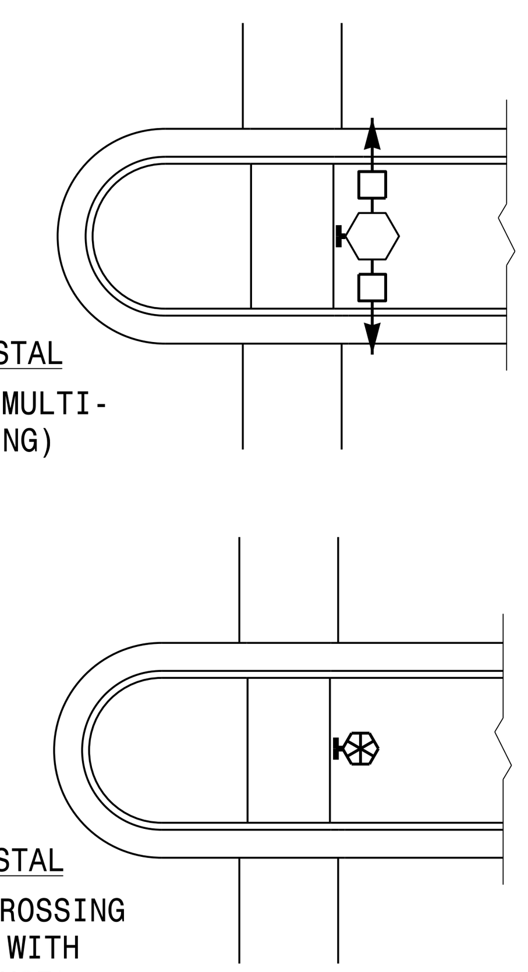


PUSHBUTTON PLACEMENT IN LARGE "PORK CHOP ISLAND" WITH SEPARATE PEDESTALS



PUSHBUTTON PLACEMENT IN SMALL "PORK CHOP ISLAND" WITH SHARED PEDESTAL

PUSHBUTTON PLACEMENT IN MEDIAN



TYPE II PEDESTAL
(FOR STAGED OR MULTI-PHASE CROSSING)

TYPE I PEDESTAL
(FOR COMPLETE CROSSING CURB TO CURB WITH OPTIONAL REFUGE)

LEGEND

PROPOSED

- Signal Pole
- Type I Pushbutton Post
- Type II Signal Pedestal
- Pushbutton & Sign
- Pedestrian Signal Head
- Curb Ramp
- Pushbutton Location Area

SHEET 3 OF 3
1705D01

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ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 3 OF 3
1705D01

See Plate for Title

Prepared in the Offices of:
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