TIP: R-2320G

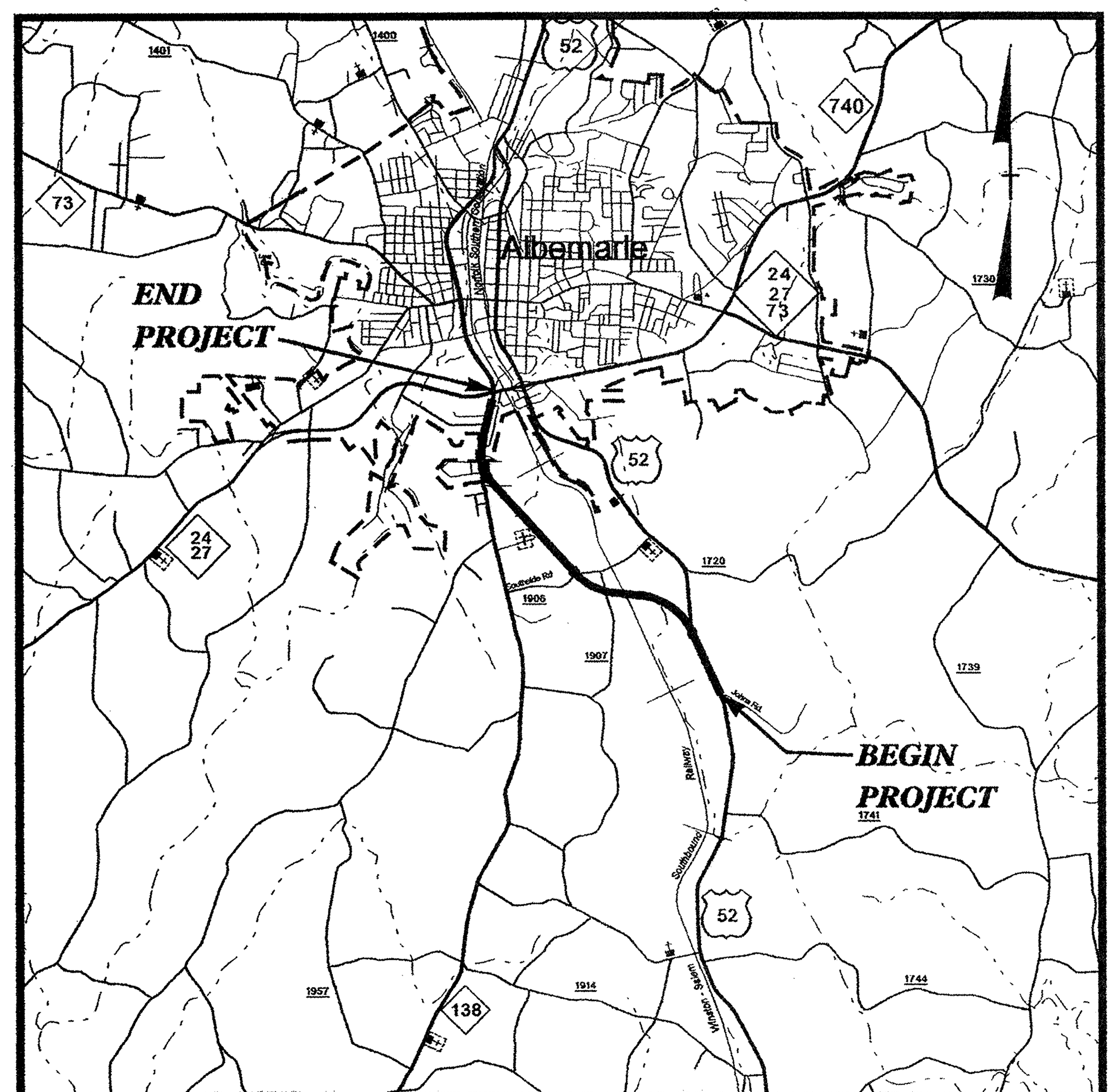
Project No.	Sheet No.
R-2320G	Sig. 1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

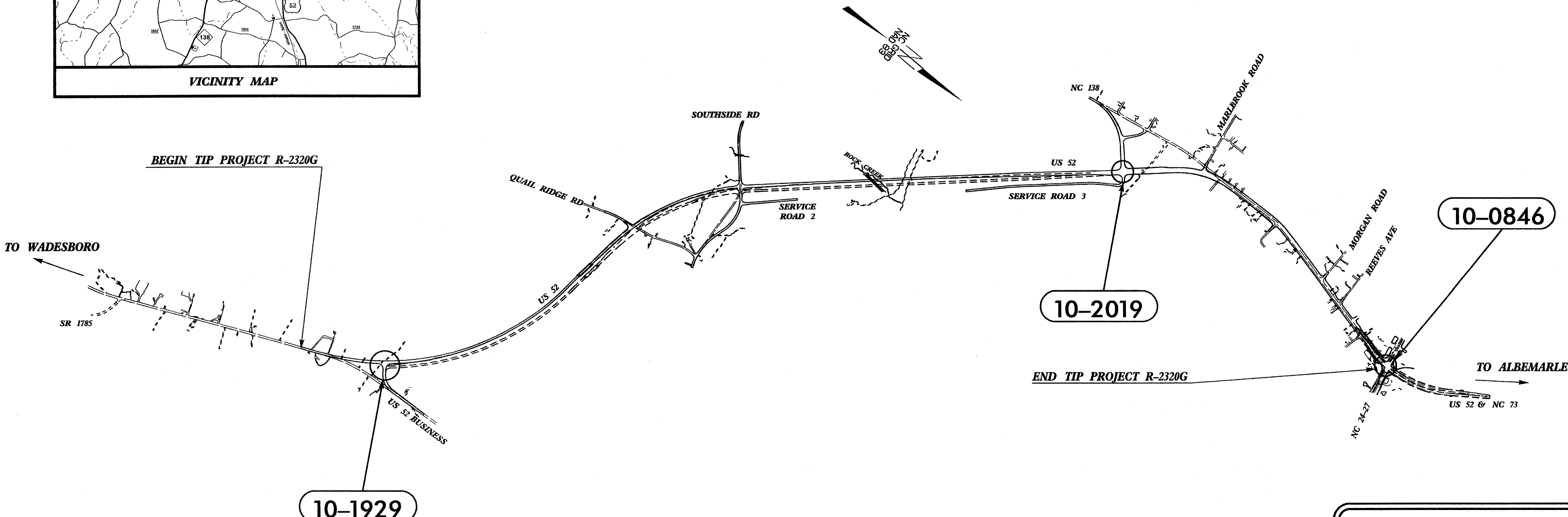
STANLY COUNTY

LOCATION: ALBEMARLE - US 52 EXTENSION FROM THE INTERSECTION OF US 52 /NC 73, NC 24-27 & NC 138 TO INTERSECTION OF US 52 AND SR 1785 (JOHNS ROAD)

TYPE OF WORK: TRAFFIC SIGNALS & COMMUNICATIONS CABLE



VICINITY MAP



Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.

Index of Plans

Sheet #	Reference #	Location/Description
Sig. 1	------	Title Sheet
Sig. 2-3	10-1929	US 52 at US 52 Business
Sig. 4-5	10-2019	US 52 at NC 138 / Service Rd. 3
Sig. 6-7	10-0846	US 24-27 at US 52 / NC 73 and NC 138 (Aquadale Rd.)
Sig. 8-10	N/A	Communications Cable Routing Plans
Sig. 11-13	N/A	Inductive Detection Loops Details

INTELLIGENT TRANSPORTATION SYSTEMS & SIGNALS UNIT
Contacts:

Timothy J. Williams, PE - S&G Contracts Engineer
George C. Brown, PE - Signal Equipment Design Engineer

Prepared In the Office of:
DIVISION OF HIGHWAYS
TRAFFIC ENGINEERING AND SAFETY SYSTEMS BRANCH

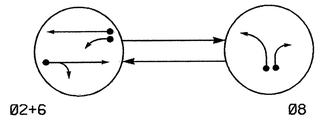
Intelligent Transportation Systems & Signals Unit
State of North Carolina Department of Transportation

750 N. Greenfield Parkway, Garner, NC 27529

04-FEB-2008 07:23
s:\its signals workgroups\tip projects\r-2320g\signals\design\titlesheet\r2320g_titlesheet_sig_dsn_2007xxx.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2320G	Sig. 2

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø8	PHASE FLASH
21, 22	G	R	Y
61, 62	G	R	Y
81, 82, 83	R	G	R

SIGNAL FACE I.D.

Denotes L.E.D.

21, 22
61, 62
81, 82, 83

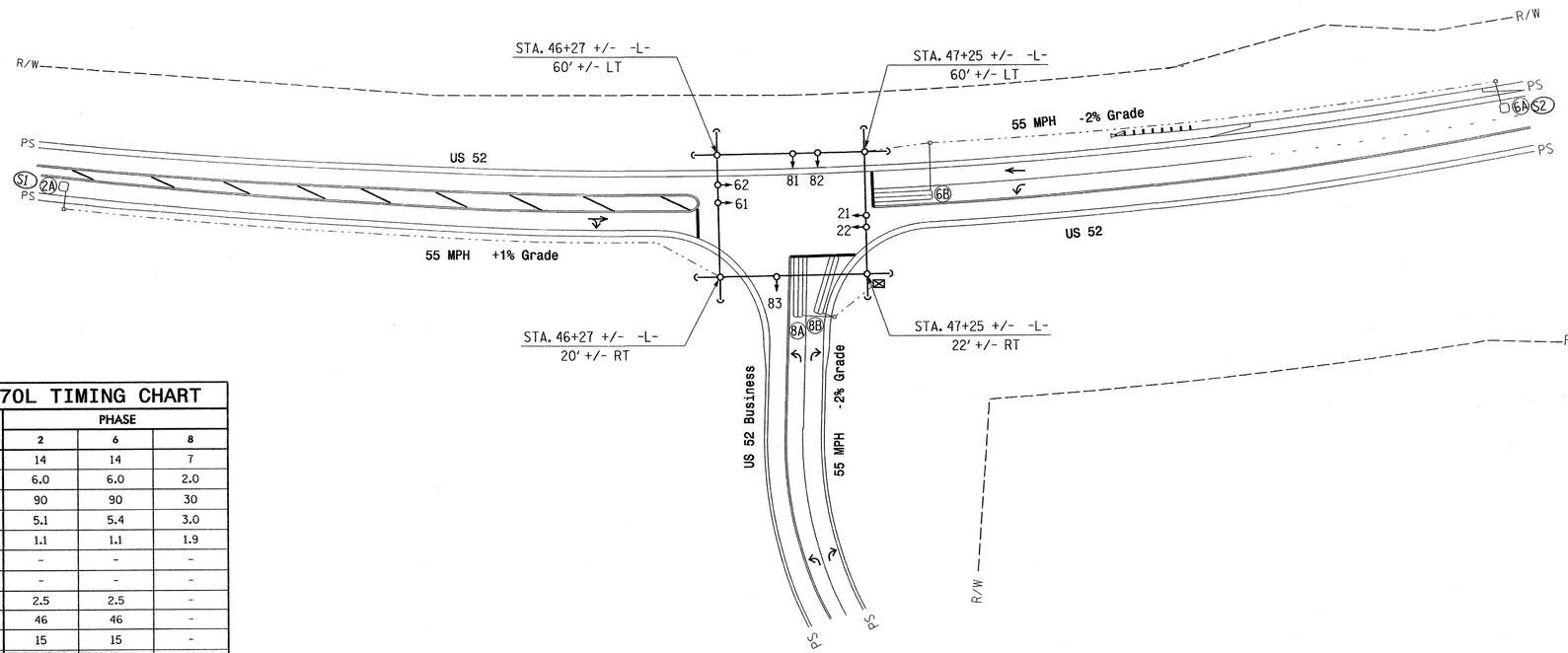
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A/S1	6X6	420	6	Y	2	Y	Y	-	-	-	Y	Y
6A/S2	6X6	420	6	Y	6	Y	Y	-	-	-	Y	Y
6B	6X40	0	2-4-2	Y	6	Y	Y	Y	-	3	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	15	-	Y

2 Phase
Fully Actuated
(US 52 Extension CLS)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
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. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
6. Closed loop system data: Controller Asset # 1929.



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	
	Pavement Marking Arrow	

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 6	PHASE 8
Min Green 1 *	14	14	7
Extension 1 *	6.0	6.0	2.0
Max Green 1 *	90	90	30
Yellow Clearance	5.1	5.4	3.0
Red Clearance	1.1	1.1	1.9
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	2.5	2.5	-
Max Variable Initial *	46	46	-
Time Before Reduction *	15	15	-
Time To Reduce *	30	30	-
Minimum Gap	3.4	3.4	-
Recall Mode	MIN RECALL	MIN RECALL	-
Vehicle Call Memory	YELLOW	YELLOW	-
Dual Entry	-	-	-
Simultaneous Gap	ON	ON	ON

* 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.

New Installation

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 50 1"=50'

US 52
at
US 52 Business

Division 10 Stanly County Albemarle

PLAN DATE:	December 2007	REVIEWED BY:	T. Thigpen
PREPARED BY:	C. Pierce	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 24393 ENGINEER TIMOTHY J. WILLIAMS

SIGNATURE T.J.Williams DATE 2/1/08.

SIG. INVENTORY NO. 10-1929

30-JAN-2008 13:47
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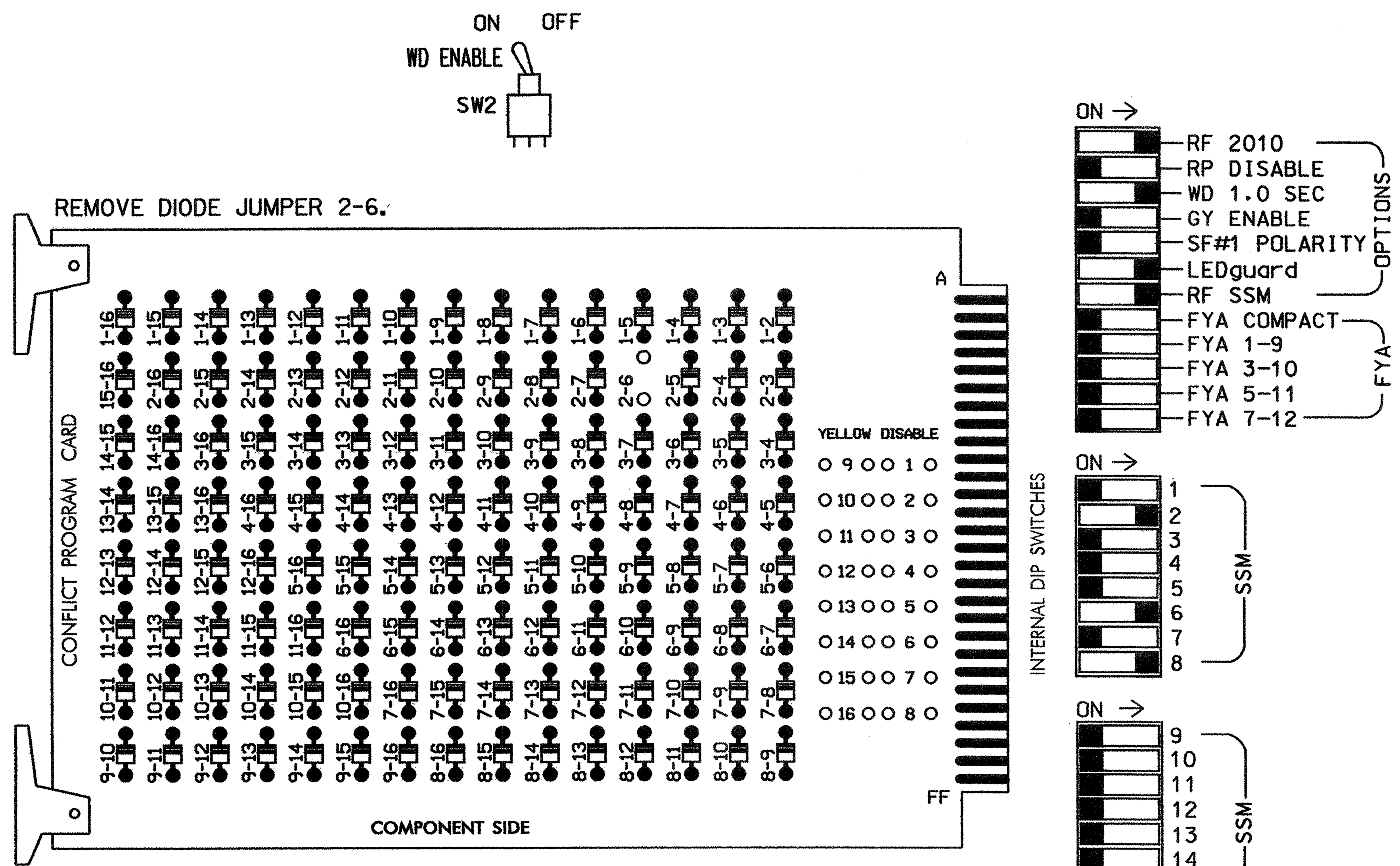
tthigpen

PROJECT REFERENCE NO.	SHEET NO.
R-2320G	Sig.3

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)



REMOVE JUMPER AS SHOWN

■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,4,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the US 52 Extension Closed Loop System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	NU	NU	NU	61,62	NU	NU	81,82 83	NU
RED		128						134			107	
YELLOW		129						135			108	
GREEN		130						136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
✋												
🚶												

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.............CONTRACTOR SUPPLIED 2070L
CABINET................CONTRACTOR SUPPLIED 332
SOFTWARE...............ECONOLITE OASIS
CABINET MOUNT..........BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED......S2,S6,S8
PHASES USED............2,6,8
OVERLAPS...............NONE

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø2/SYS 2A/S1	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		NOT USED												ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø6/SYS 6A/S2	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		Ø6 6B				Ø8 8B								

EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A/S1	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
6A/S2	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y	Y		3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			15

INPUT FILE POSITION LEGEND: J2L

FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1929
DESIGNED: December 2007
SEALED: 2-1-08
REVISED: N/A

New Installation

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 52
at
US 52 Business

Division 10 Stanly Albemarle

PLAN DATE: 1-23-08 REVIEWED BY: D.T. Joyce
PREPARED BY: D.H. Spaulding REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

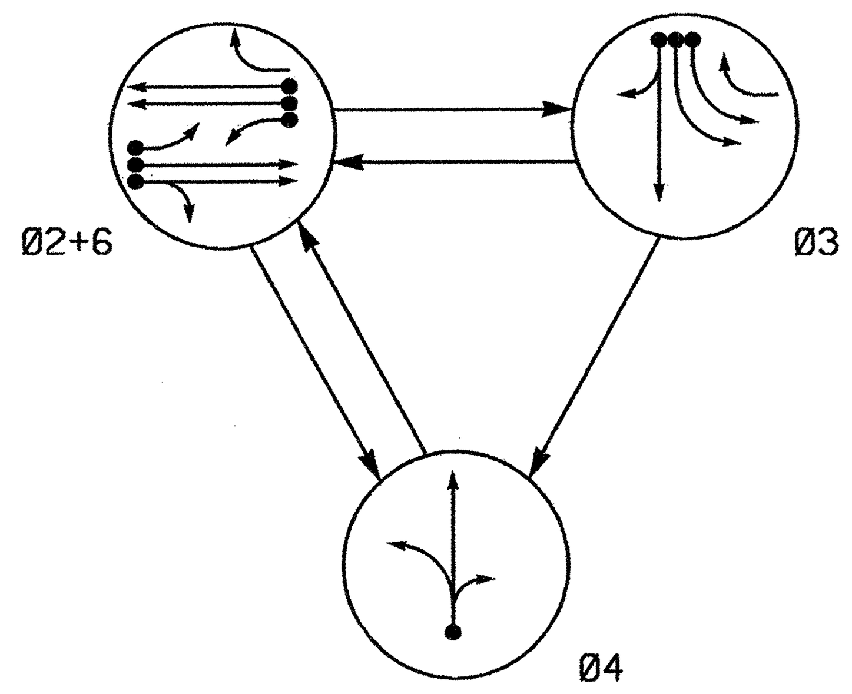
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN

SIGNATURE 2/4/08 DATE

SIG. INVENTORY NO. 10-1929

PROJECT REFERENCE NO.	SHEET NO.
R-2320G	Sig. 4

PHASING DIAGRAM



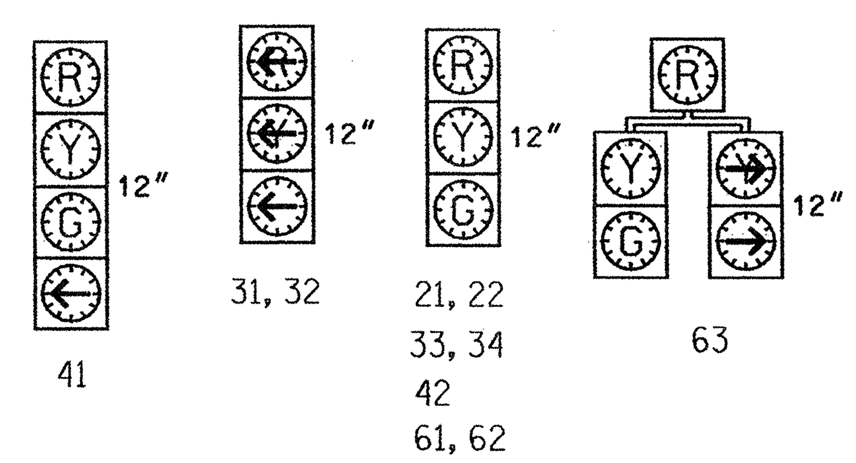
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION				
SIGNAL FACE	PHASE			
	Ø2+6	Ø3	Ø4	FLASH
21, 22	G	R	R	Y
31, 32	←R	←	←R	←R
33, 34	R	G	R	R
41	R	R	G ←	R
42	R	R	G	R
61, 62	G	R	R	Y
63	G	R / →	R	Y

SIGNAL FACE I.D.

Denotes L.E.D.

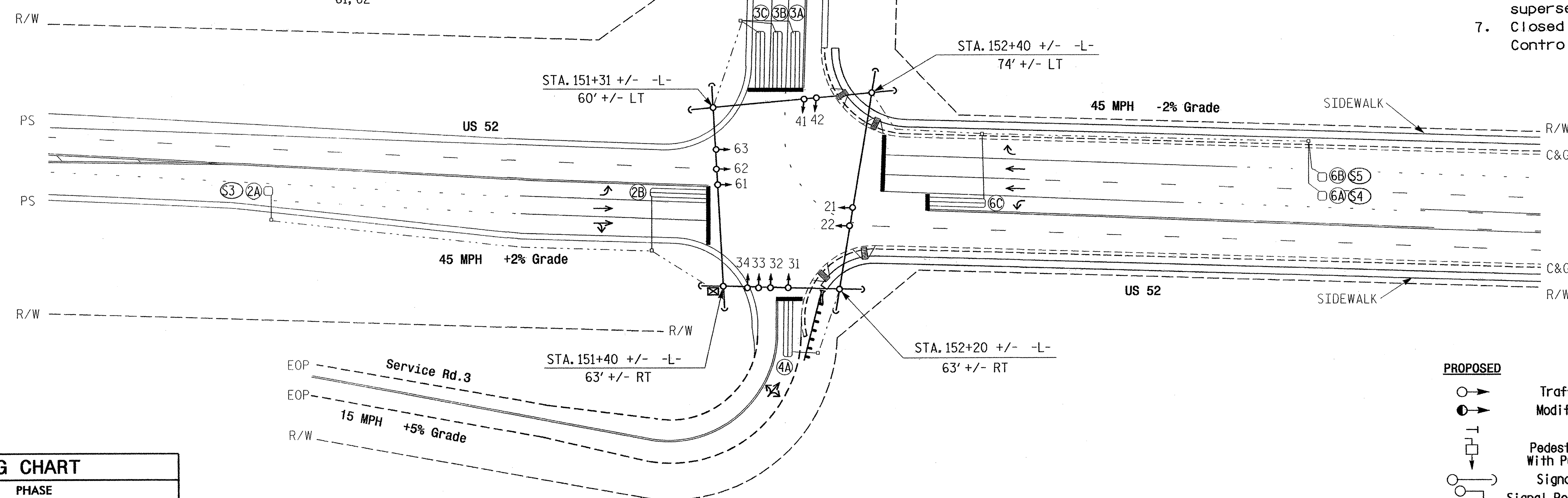


2070L LOOP & DETECTOR INSTALLATION												
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A/S3	6X6	300	6	Y	2	Y	Y	-	-	-	Y	Y
2B	6X40	0	2-4-2	Y	2	Y	Y	Y	-	3	-	Y
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	3	-	Y
3B	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-	Y
3C	6X40	0	2-4-2	Y	3	Y	Y	-	-	10	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	5	-	Y
6A/S4	6X6	300	6	Y	6	Y	Y	-	-	-	Y	Y
6B/S5	6X6	300	6	Y	6	Y	Y	-	-	-	Y	Y
6C	6X40	0	2-4-2	Y	6	Y	Y	Y	-	3	-	Y

3 Phase
Fully Actuated
(US 52 Extension CLS)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. The order of phase 3 and phase 4 may be reversed.
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. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Closed loop system data: Controller Asset # 2019.



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	
	Pavement Marking Arrow	
N/A	Wheelchair Ramp	

2070L TIMING CHART				
FEATURE	PHASE			
	2	3	4	6
Min Green 1 *	12	7	7	12
Extension 1 *	6.0	2.0	2.0	6.0
Max Green 1 *	90	30	20	90
Yellow Clearance	4.3	4.4	3.0	4.7
Red Clearance	1.6	1.8	4.2	1.7
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	2.5	-	-	1.5
Max Variable Initial *	34	-	-	34
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.0	-	-	3.0
Recall Mode	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

* 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.

New Installation

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch, Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 52
at
NC 138 / Service Rd. 3

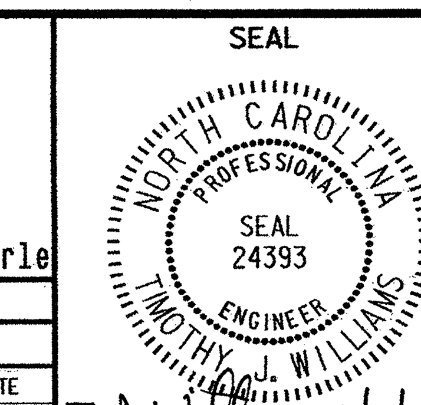
Division 10 Stanly County Albemarle

PLAN DATE: December 2007	REVIEWED BY: T. Thigpen
PREPARED BY: C. Pierce	REVIEWED BY:

SCALE 0 50
1"=50'

REVISIONS	INIT.	DATE

SEAL



SIGNATURE 2/1/08 DATE

SIG. INVENTORY NO. 10-2019

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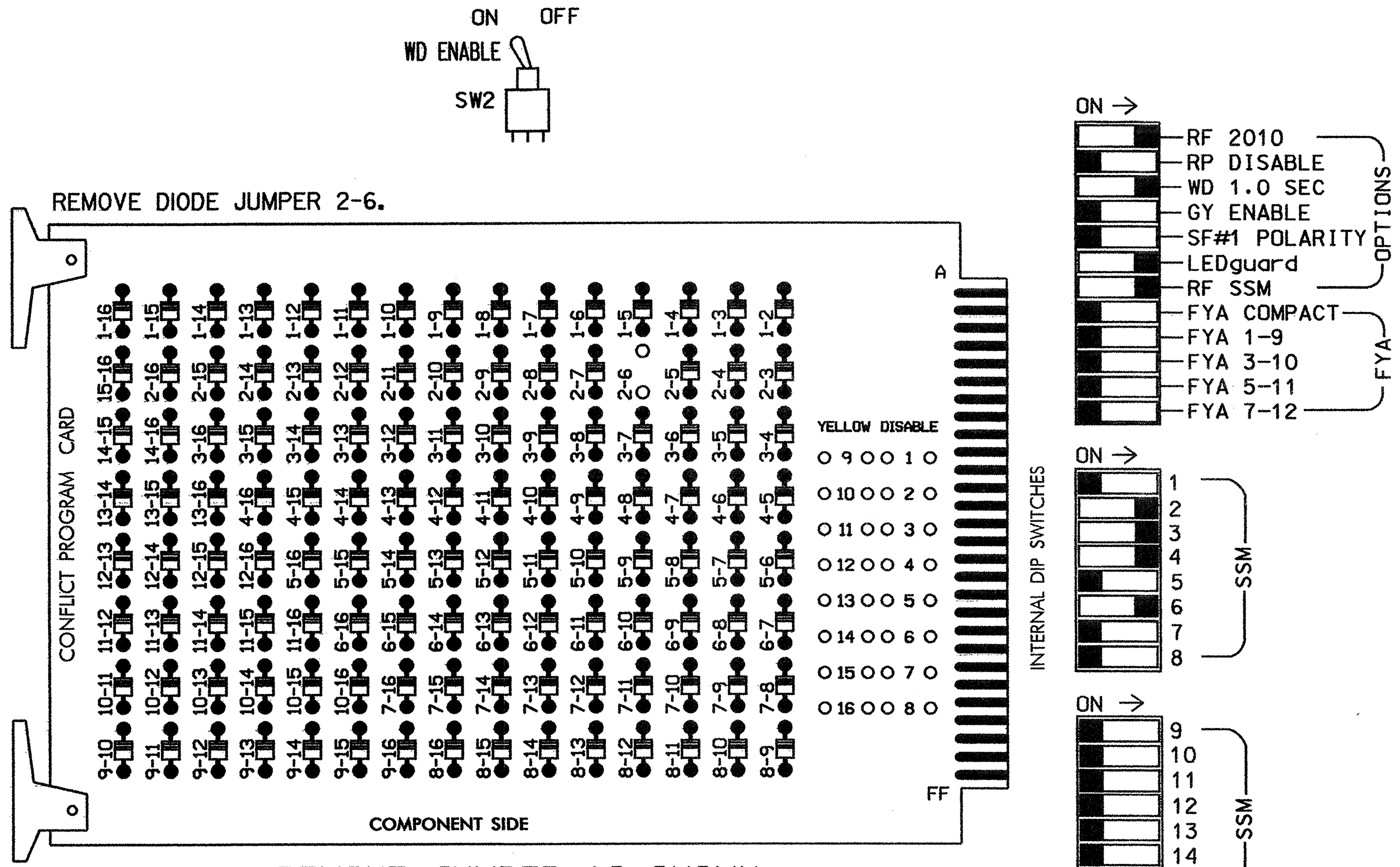
#thigpen

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)



REMOVE JUMPER AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,5,7,8,9, 10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the US 52 Extension Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER..............CONTRACTOR SUPPLIED 2070L
CABINET.................CONTRACTOR SUPPLIED 332
SOFTWARE................ECONOLITE OASIS
CABINET MOUNT...........BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED......S2,S3,S4,S6
PHASES USED.............2,3,4,6
OVERLAPS................NONE

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3			S4		S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3			4		4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	31,32	33,34	63	41	42	NU	NU	61,62 63	NU	NU	NU	NU
RED		128			116		101	101			134				
YELLOW		129			117		102	102			135				
GREEN		130			118		103	103			136				
RED ARROW				116											
YELLOW ARROW				117		117									
GREEN ARROW				118		118	103								
(hand)															
(pedestrian)															

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø2/SYS 2A/S3	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø3 3A	Ø3 3C	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		Ø2 2B				Ø3 3B	NOT USED	NOT USED						ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø6/SYS 6A/S4	Ø6 6C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		Ø6/SYS 6B/S5	NOT USED											

EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A/S3	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y	Y		3
3A	TB4-9,10	I6U	41	3	4	3	Y	Y			3
3B	TB4-11,12	I6L	45	7	14	3	Y	Y			
3C	TB6-1,2	I7U	65	27	34	3	Y	Y			10
4A	TB6-5,6	I8U	49	11	24	4	Y	Y			5
6A/S4	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/S5	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			
6C	TB3-9,10	J3U	64	26	36	6	Y	Y	Y		3

INPUT FILE POSITION LEGEND: J2L

FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-2019
DESIGNED: December 2007
SEALED: 2-1-08
REVISED: N.A.

New Installation

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 52
at
NC 138 / Service Rd. 3

Prepared in the Offices of: Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

Division 10 Stanly Albemarle
PLAN DATE: 1-23-08 REVIEWED BY: D.T. Joyce
PREPARED BY: D.H. Spaulding REVIEWED BY:
REVISIONS INIT. DATE

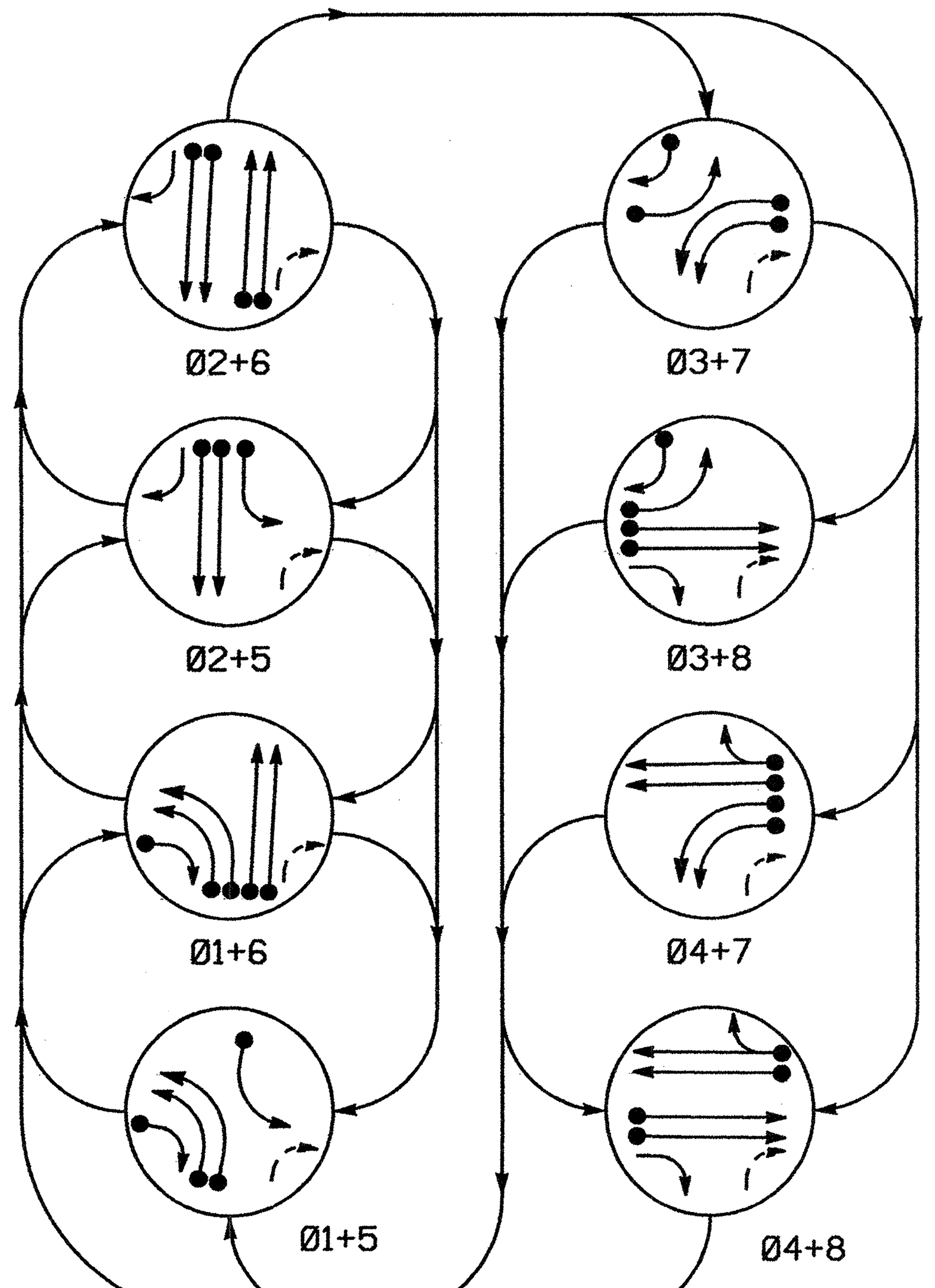
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN
SIGNATURE DATE 2/4/08

SIG. INVENTORY NO. 10-2019

PROJECT REFERENCE NO.	SHEET NO.
R-2320G	Sig.6

8 Phase
Fully Actuated
(US 52 Extension CLS)

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

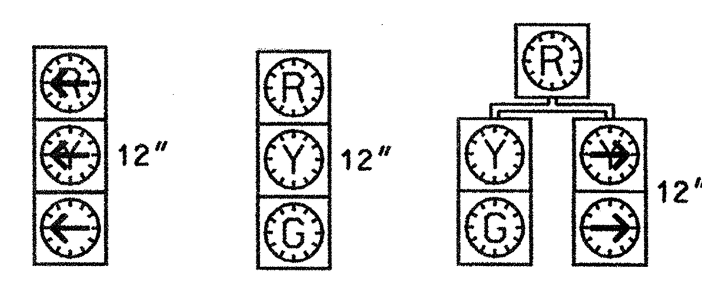
- ←● DETECTED MOVEMENT
- ←— UNDETECTED MOVEMENT (OVERLAP)
- ←-- UNSIGNALIZED MOVEMENT
- <---> PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8	FLASH
11, 12	←	←	←R	←R	←R	←R	←R	←R	←R
21	R	R	G	G	R	R	R	R	Y
22	R	R	G	G	R/→	R/→	R	R	Y
31	←R	←R	←R	←R	←	←	←R	←R	←R
41, 42	R	R	R	R	R	R	G	G	R
51	←	←R	←	←R	←R	←R	←R	←R	←R
61, 62	R	G	R	G	R	R	R	R	Y
71, 72	←R	←R	←R	←R	←	←R	←	←R	←R
81	R	R	R	R	R	G	R	G	R
82	R/→	R/→	R	R	R	G	R	G	R

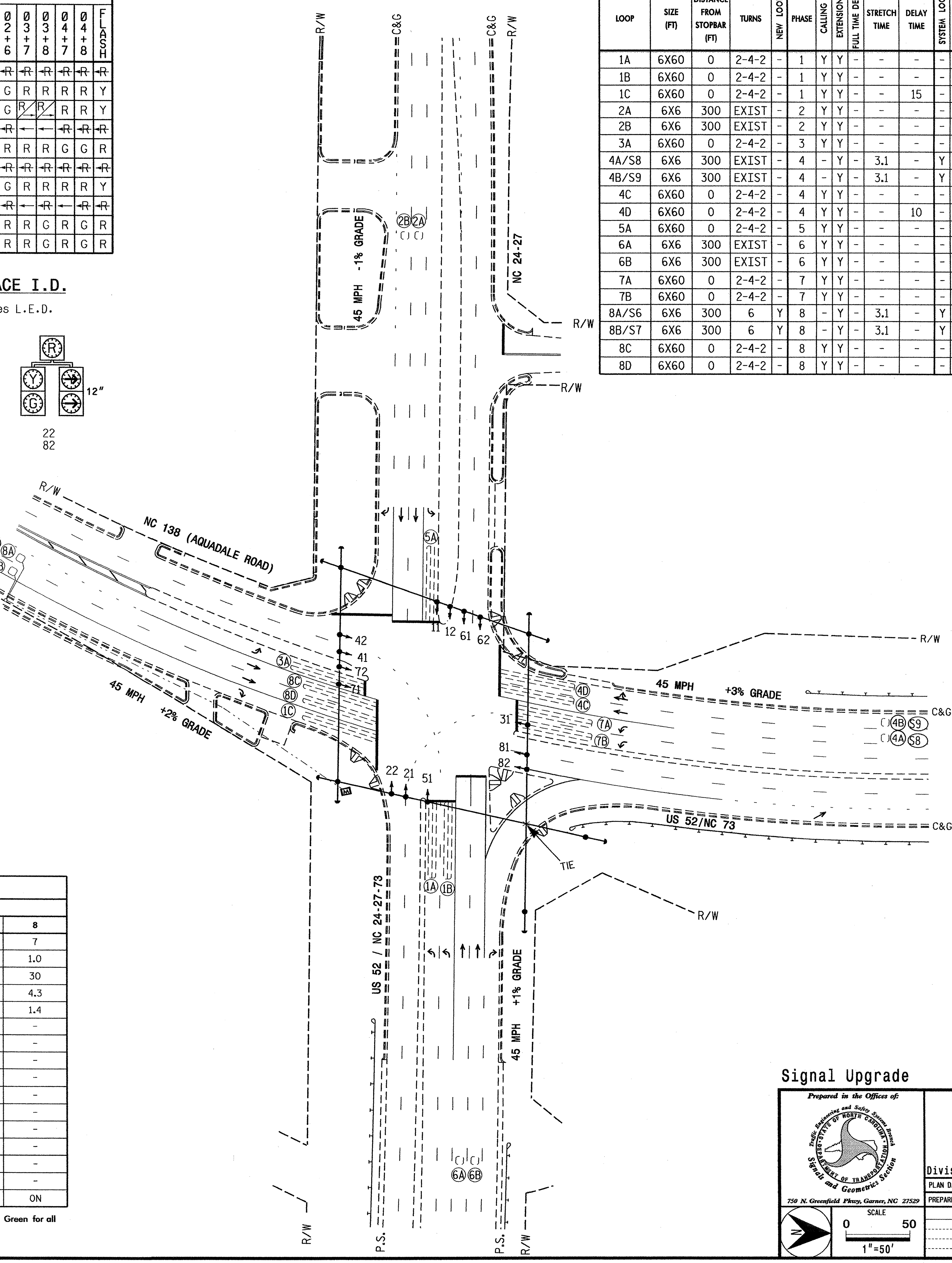
SIGNAL FACE I.D.

◌ Denotes L.E.D.



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	-	-	Y
1B	6X60	0	2-4-2	-	1	Y	Y	-	-	-	-	Y
1C	6X60	0	2-4-2	-	1	Y	Y	-	-	15	-	Y
2A	6X6	300	EXIST	-	2	Y	Y	-	-	-	-	Y
2B	6X6	300	EXIST	-	2	Y	Y	-	-	-	-	Y
3A	6X60	0	2-4-2	-	3	Y	Y	-	-	-	-	Y
4A/S8	6X6	300	EXIST	-	4	-	Y	-	3.1	-	Y	Y
4B/S9	6X6	300	EXIST	-	4	-	Y	-	3.1	-	Y	Y
4C	6X60	0	2-4-2	-	4	Y	Y	-	-	-	-	Y
4D	6X60	0	2-4-2	-	4	Y	Y	-	-	10	-	Y
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	-	-	Y
6A	6X6	300	EXIST	-	6	Y	Y	-	-	-	-	Y
6B	6X6	300	EXIST	-	6	Y	Y	-	-	-	-	Y
7A	6X60	0	2-4-2	-	7	Y	Y	-	-	-	-	Y
7B	6X60	0	2-4-2	-	7	Y	Y	-	-	-	-	Y
8A/S6	6X6	300	6	Y	8	-	Y	-	3.1	-	Y	Y
8B/S7	6X6	300	6	Y	8	-	Y	-	3.1	-	Y	Y
8C	6X60	0	2-4-2	-	8	Y	Y	-	-	-	-	Y
8D	6X60	0	2-4-2	-	8	Y	Y	-	-	-	-	Y



NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Phase 3 or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Closed loop system data: Controller Asset # 0846 Master Asset # 11001.

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	→
→	Pavement Marking Arrow	→
N/A	Wheelchair Ramp	

2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green 1 *	7	12	7	7	7	12	7	7
Extension 1 *	1.0	6.0	1.0	1.0	1.0	6.0	1.0	1.0
Max Green 1 *	25	90	20	30	25	90	30	30
Yellow Clearance	3.0	4.6	3.0	4.3	3.0	4.4	3.0	4.3
Red Clearance	3.8	1.6	2.8	1.6	3.3	1.5	3.3	1.4
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	45	-	-	-	45	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

* 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.

Signal Upgrade

Prepared in the Offices of: Traffic Engineering and Safety Systems Branch, Signals and Geometrics Section, North Carolina Department of Transportation
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 50 1"=50'

NC 24-27 at US 52 / NC 73 and NC 138 (Aquadale Rd.)

Division 10 | Stanly | Albemarle

PLAN DATE:	December 2007	REVIEWED BY:	T. Thigpen
PREPARED BY:	C. E. Pierce	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
North Carolina Professional Engineer Seal 24393 Timothy J. Williams

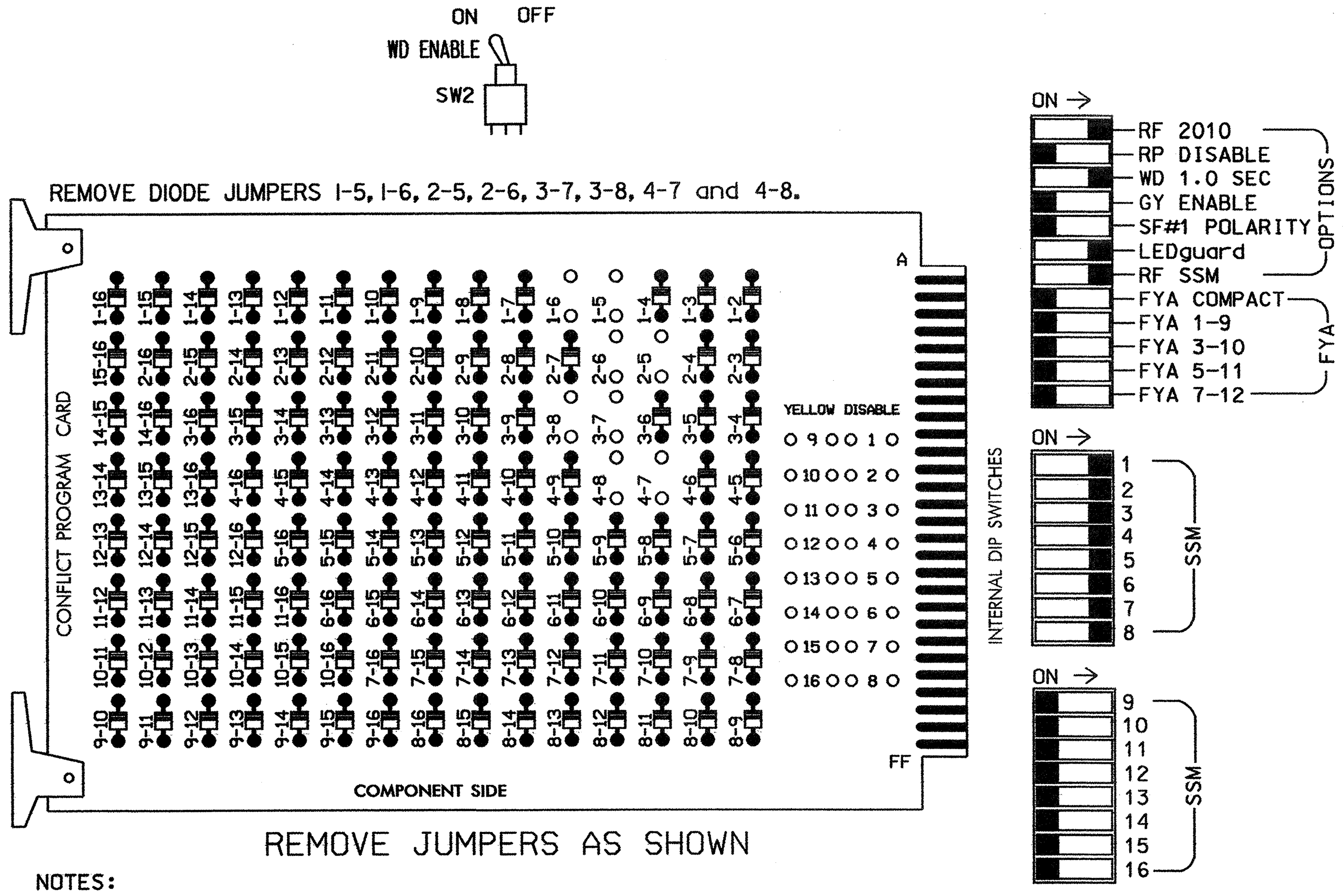
T. J. Wll 2/1/08
SIGNATURE DATE

SIG. INVENTORY NO. 10-0846

01-FEB-2008 09:21
s:*its signals*workgroups*tip projects*r-2320g*signals*design*signals*10-0846*10-0846_sig_dsn_2007xxxx.dgn
cepierce

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the US 52 Extension Closed Loop System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1		S2	S2P	S3		S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1		2	2 PED	3		4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	11,12	82	21,22	NU	31	22	41,42	NU	51	61,62	NU	71,72	81,82	NU
RED			128				101			134			107	
YELLOW			129				102			135			108	
GREEN			130				103			136			109	
RED ARROW	125				116				131			122		
YELLOW ARROW	126	126			117	117			132			123		
GREEN ARROW	127	127			118	118			133			124		
(Don't Walk)														
(Walk)														

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER..............CONTRACTOR SUPPLIED 2070L
CABINET.................CONTRACTOR SUPPLIED 332
SOFTWARE................ECONOLITE OASIS
CABINET MOUNT...........BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED......S1,S2,S3,S4,S5,S6,S7,S8
PHASES USED.............1,2,3,4,5,6,7,8
OVERLAPS................NONE

INPUT FILE POSITION LAYOUT

(front view)

FILE		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	ø 1 1C	ø 1 1A	ø 2 2A	SLOT EMPTY	ø 3 3A	ø 4/SYS 4A/S8	ø 4 4C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	ø 1 1B	ø 2 2B		NOT USED	ø 4/SYS 4B/S9	ø 4 4D							ST DC ISOLATOR
FILE "J"	U	ø 5 5A	ø 6 6A	SLOT EMPTY	SLOT EMPTY	ø 7 7A	ø 8/SYS 8A/S6	ø 8 8C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	ø 6 6B			ø 7 7B	ø 8/SYS 8B/S7	ø 8 8D							

EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1C	TB2-1,2	I1U	56	18	1	1	Y	Y			15
1A	TB2-5,6	I2U	39	1	2	1	Y	Y			
1B	TB2-7,8	I2L	43	5	12	1	Y	Y			
2A	TB2-9,10	I3U	63	25	32	2	Y	Y			
2B	TB2-11,12	I3L	76	38	42	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			
4A/S8	TB4-9,10	I6U	41	3	4	4/SYS		Y		3.1	
4B/S9	TB4-11,12	I6L	45	7	14	4/SYS		Y		3.1	
4C	TB6-1,2	I7U	65	27	34	4	Y	Y			
4D	TB6-3,4	I7L	78	40	44	4	Y	Y			10
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			
7B	TB5-7,8	J5L	57	19	7	7	Y	Y			
8A/S6	TB5-9,10	J6U	42	4	8	8/SYS		Y		3.1	
8B/S7	TB5-11,12	J6L	46	8	18	8/SYS		Y		3.1	
8C	TB7-1,2	J7U	66	28	38	8	Y	Y			
8D	TB7-3,4	J7L	79	41	48	8	Y	Y			

INPUT FILE POSITION LEGEND: J2L

FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 10-0846
DESIGNED: December 2007
SEALED: 2-1-08
REVISED: N.A.

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch — State of North Carolina Department of Transportation — Signals Management Section

750 N. Greenfield Pwky, Garner, NC 27529

NC 24-27
at
US 52 / NC 73 and
NC 138 (Aquadale Rd.)

Division 10 | Stanly | Albemarle

PLAN DATE: 1-23-08	REVIEWED BY: D.T. Joyce DTJ
PREPARED BY: D.H. Spaulding	REVIEWED BY:

REVISIONS	INIT.	DATE

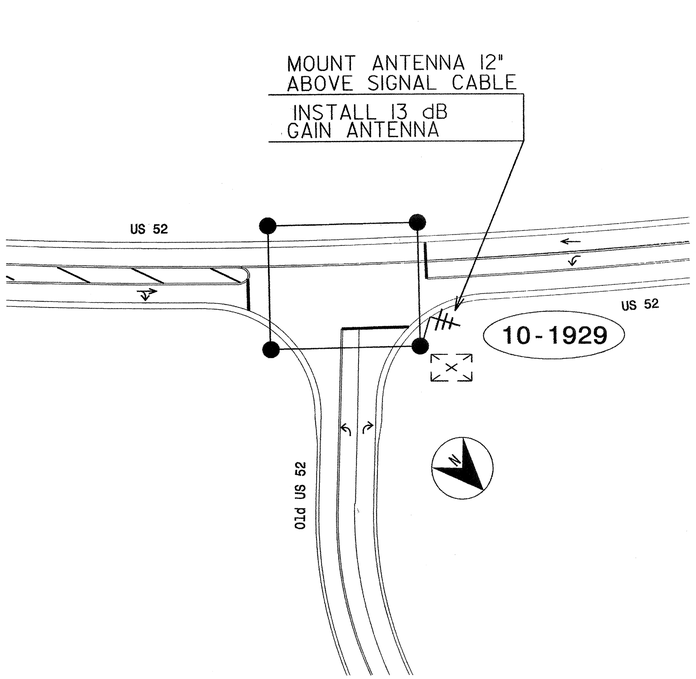
SEAL

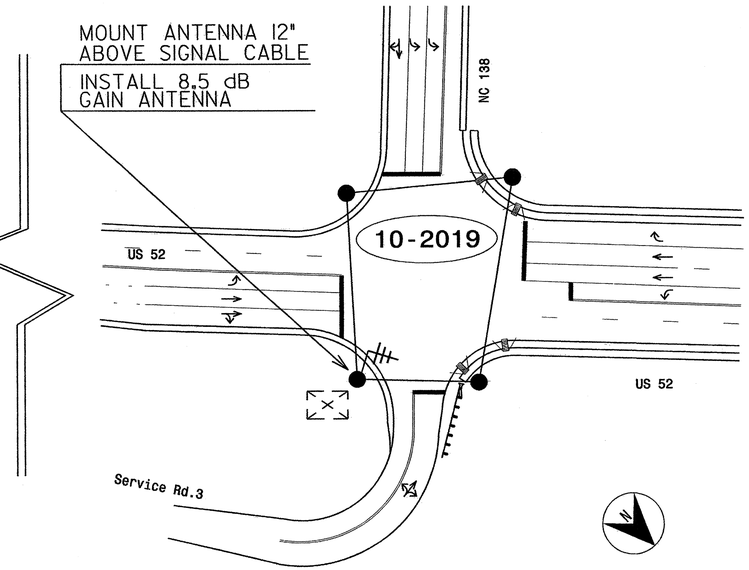
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

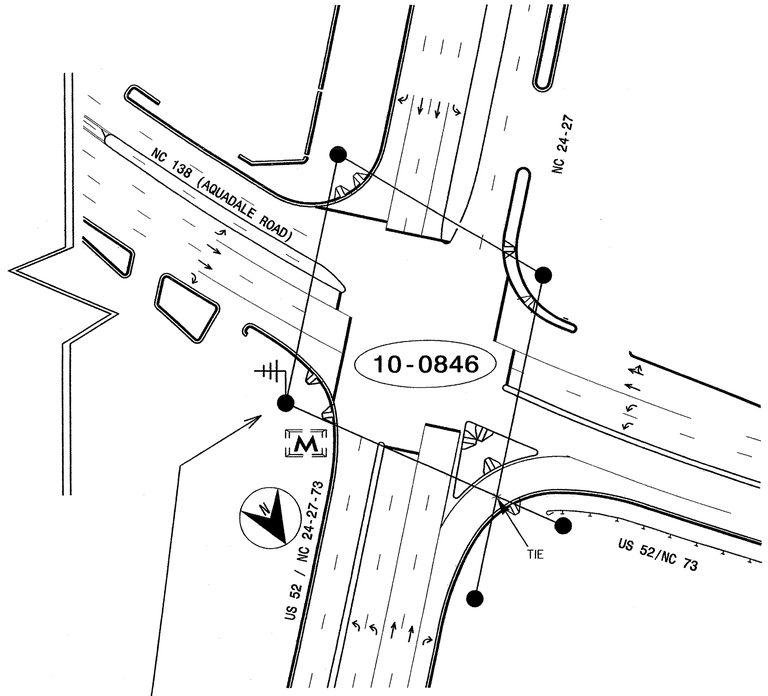
George C Brown 2/4/08
SIGNATURE DATE

SIG. INVENTORY NO. 10-0846

PROJECT REFERENCE NO.	SHEET NO.
R-2320G	Sig. 8







LEGEND

- YAGI ANTENNA (DOUBLE) FOR REPEATOR OPERATION
- YAGI ANTENNA (SINGLE)
- OMNI ANTENNA
- EXISTING CONTROLLER AND CABINET
- EXISTING MASTER CONTROLLER AND CABINET
- XX-XXXX SIGNAL INVENTORY NUMBER
- NEW METAL POLE W/MAST ARM
- EXISTING WOOD POLE
- NEW METAL POLE
- SP SIGNAL POLE
- EXISTING METAL POLE
- NEW OVERSIZED JUNCTION BOX

NOTES:

1. INSTALL COAXIAL CABLE
   - A. ON WOOD POLES, INSTALL A 2" RISER WITH HEAT SHRINK TUBING TO ROUTE THE COAXIAL CABLE TO THE ANTENNA.
   - B. ON METAL POLES, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE MAST ARM; FIELD DRILL HOLE WITH GROMMET THROUGH BOTTOM OF MAST ARM FOR INSTALLATION OF THE COAXIAL CABLE TO THE ANTENNA.
   - C. ON METAL STRAIN POLES, RUN COAXIAL CABLE UP THROUGH THE POLE AND REPLACE THE WEATHERHEAD WITH HEAT SHRINK TUBING AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
   - D. BETWEEN THE POINT OF EXITING THE METAL POLE OR MAST ARM AND THE ANTENNA, SECURE THE COAXIAL CABLE TO THE STRUCTURE USING 3/4" STAINLESS STEEL STRAPS EVERY 12".
2. IF EXISTING SPARE RISER IS AVAILABLE, REMOVE WEATHERHEAD AND INSTALL COAXIAL CABLE. RESEAL WITH HEAT SHRINK TUBING.
3. INSTALL ANTENNA ON POLE WITH RF WARNING SIGN AND AIM TOWARDS MASTER.
4. MAINTAIN PROPER CLEARANCE FROM ALL UTILITIES PER NESC.
5. INSTALL WIRELESS SERIAL RADIO MODEM WITH EXTERIOR DISCONNECT SWITCH LOCATED ON CABINET.
6. REFERENCE "WIRELESS RADIO ANTENNA TYPICAL DETAILS".

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
North Carolina Department of Transportation
Intelligent Transportation Systems
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0

EXTENSION OF US 52
FROM SR 1785 (JOHNS ROAD) TO
NC 24 -27 AT US 52 & NC 73
DIVISION 10 STANLY CO. TOWN of ALBEMARLE

PLAN DATE:	JANUARY 2008	REVIEWED BY:	S. WARDLE
PREPARED BY:	I. N. AVERY	REVIEWED BY:	G. G. MURR, JR.

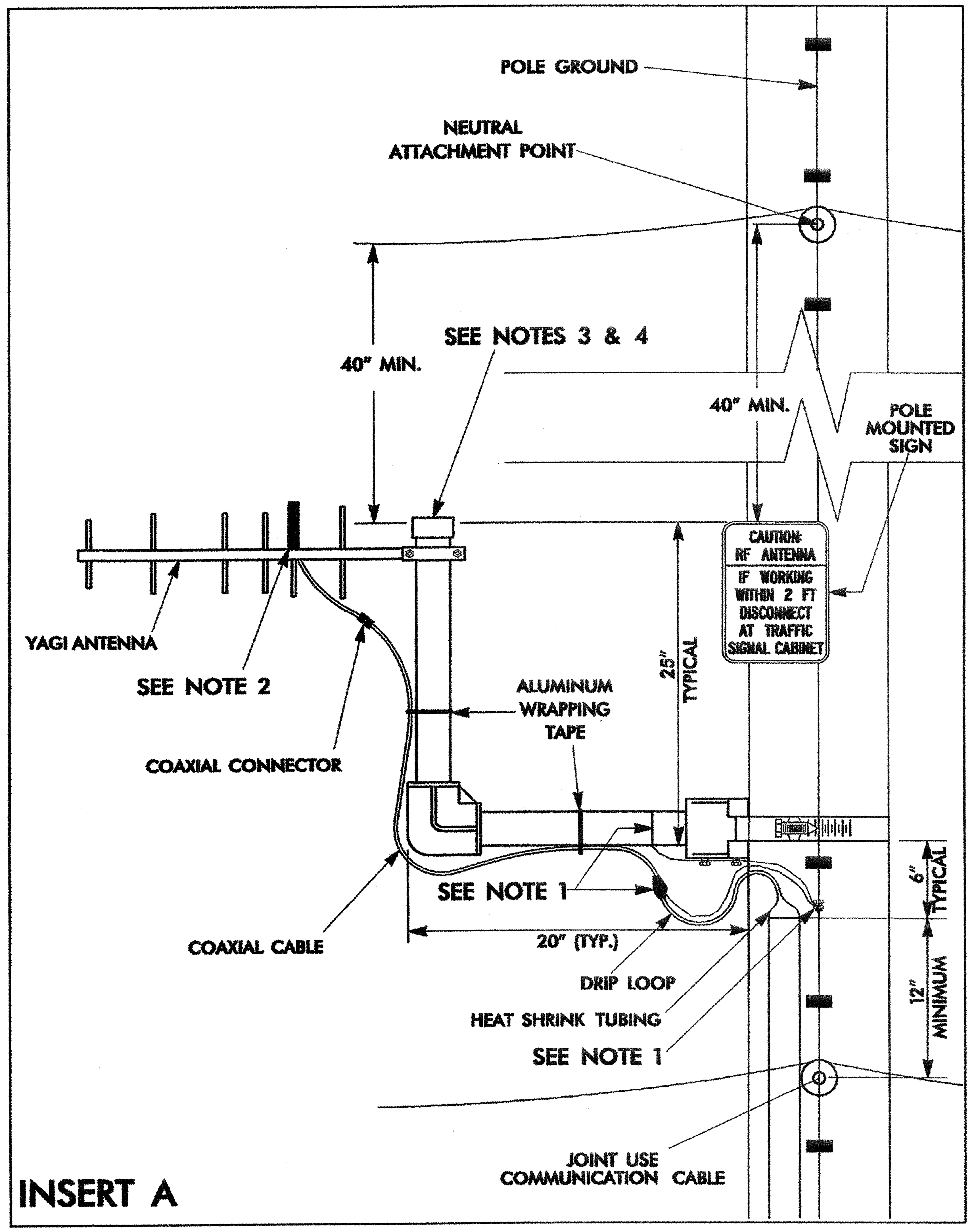
REVISIONS	INIT.	DATE

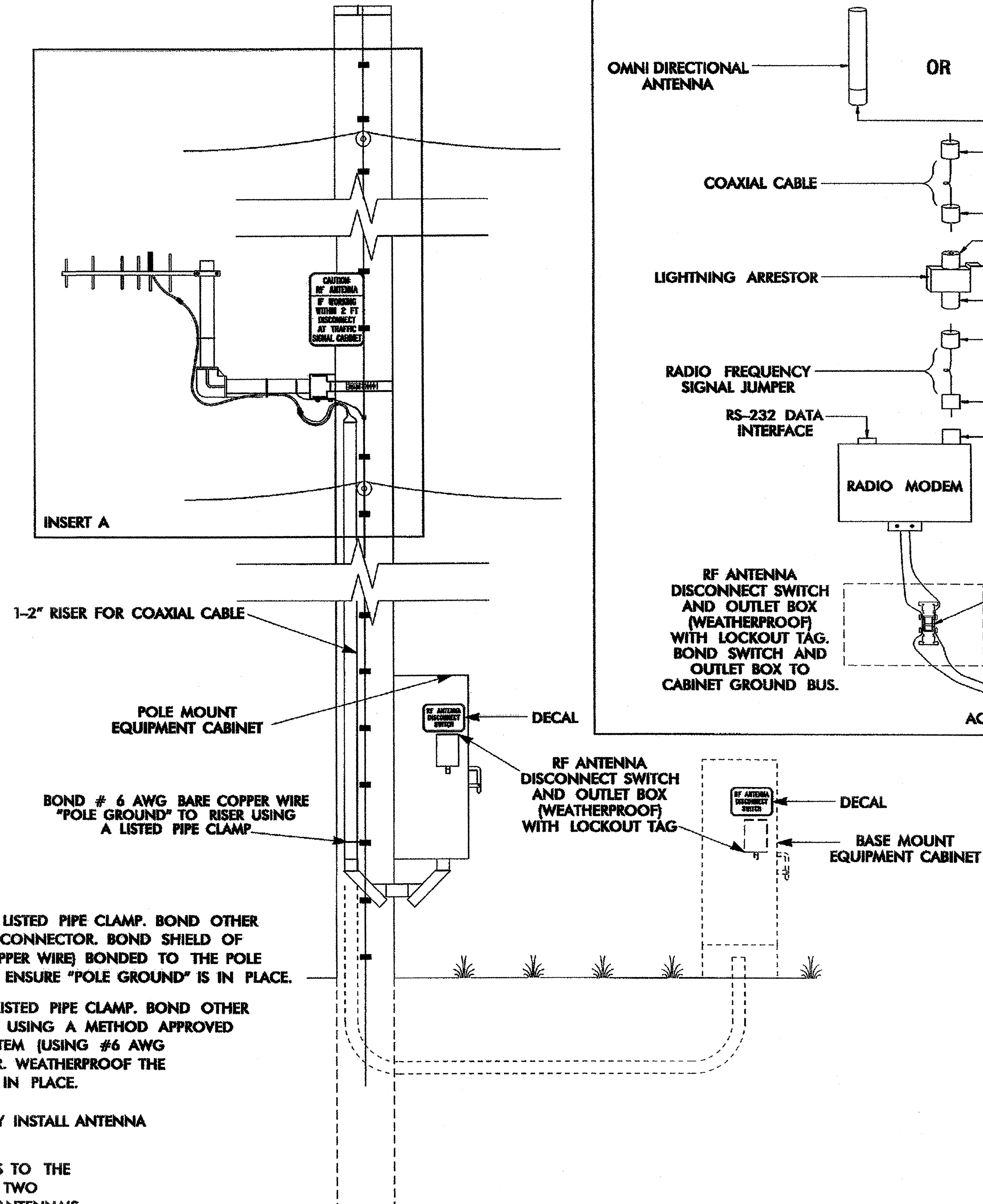
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 14543 ENGINEER GENE G. MURR, JR.

SIGNATURE 1-28-08 DATE

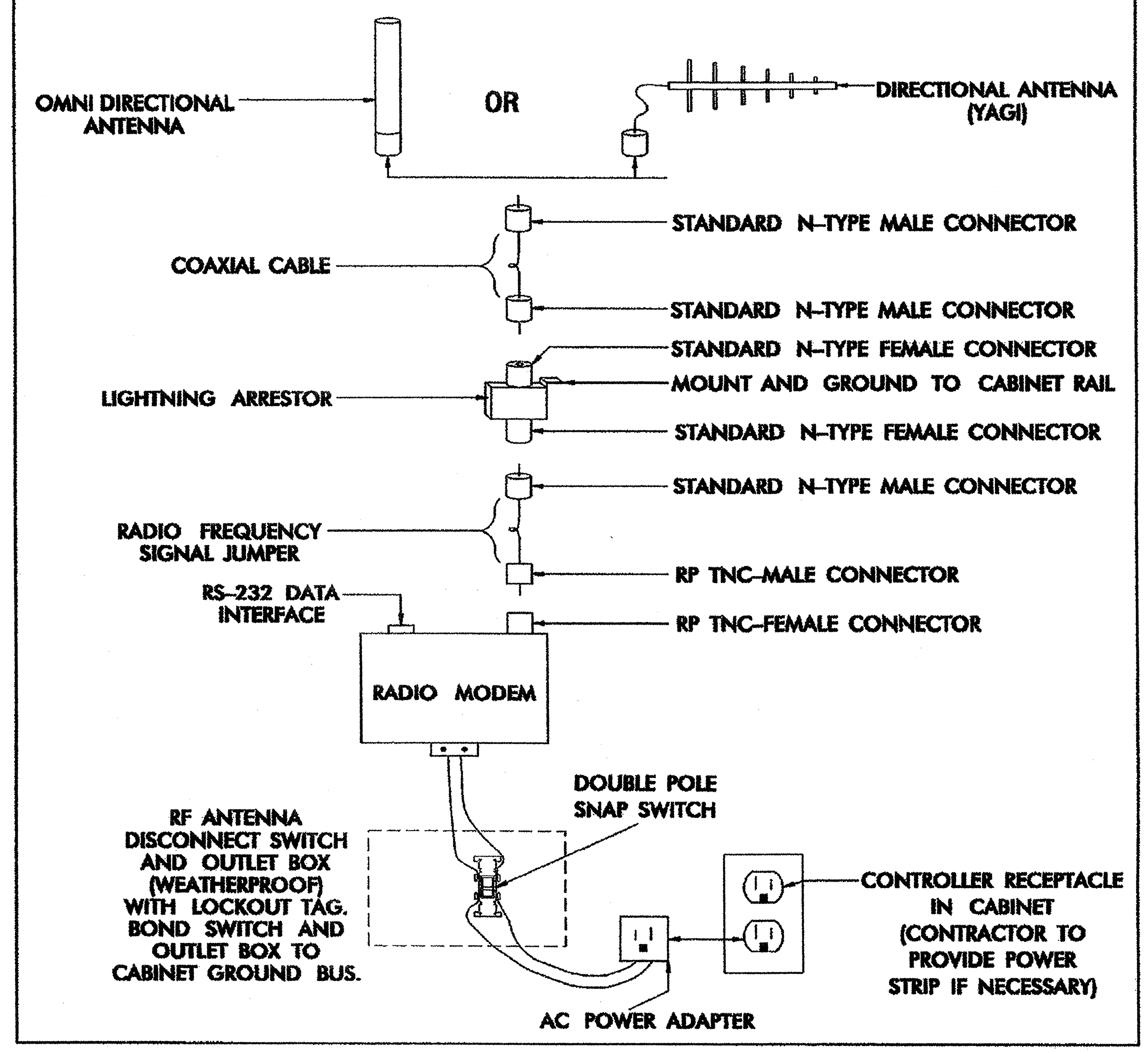
CADD Filename:

PROJECT REFERENCE NO.	SHEET NO.
R-2320G	Sig. 9





ANTENNA AND COAXIAL CABLE CONNECTION SCHEMATIC



NOTES

1. WOOD POLE — BOND # 6 AWG SOLID BARE COPPER WIRE TO ANTENNA SUPPORT USING LISTED PIPE CLAMP. BOND OTHER END OF # 6 AWG SOLID BARE COPPER WIRE TO THE POLE GROUND USING A SPLIT BOLT CONNECTOR. BOND SHIELD OF COAXIAL CABLE WITH AN APPROVED GROUNDING SYSTEM (USING #6 AWG STRANDED COPPER WIRE) BONDED TO THE POLE GROUND. WEATHERPROOF THE CONNECTION ONCE THE GROUNDING SYSTEM IS INSTALLED. ENSURE "POLE GROUND" IS IN PLACE.

   METAL POLE — BOND # 6 AWG SOLID BARE COPPER WIRE TO ANTENNA SUPPORT USING LISTED PIPE CLAMP. BOND OTHER END OF # 6 AWG SOLID BARE COPPER WIRE TO THE POLE OR EXISTING SYSTEM GROUND USING A METHOD APPROVED BY THE ENGINEER. BOND SHIELD OF COAXIAL CABLE WITH AN APPROVED GROUNDING SYSTEM (USING #6 AWG STRANDED COPPER WIRE) BONDED TO THE POLE BY A METHOD APPROVED BY THE ENGINEER. WEATHERPROOF THE CONNECTION ONCE THE GROUNDING SYSTEM IS INSTALLED. ENSURE "SYSTEM GROUND" IS IN PLACE.

2. YAGI ANTENNA SHOWN IN VERTICAL POLARIZATION POSITION FOR CLARIFICATION. TYPICALLY INSTALL ANTENNA IN HORIZONTAL POLARIZATION POSITION.

3. TO CONSERVE VERTICAL SPACING ON THE POLE (JOINT-USE OR SIGNAL POLE) WITH REGARDS TO THE SURROUNDING UTILITIES, INSTALL THE ANTENNA MOUNTING HARDWARE USING ONE OF THE TWO METHODS LISTED BELOW: (ENSURE THAT THE MOUNTING METHOD DOES NOT DEGRADE THE ANTENNA'S SIGNAL INTEGRITY)
   A) ROTATE THE VERTICAL SUPPORT ARM 90 DEGREES SUCH THAT THE ANTENNA IS AT THE SAME HEIGHT AS THE HORIZONTAL SUPPORT ARM.
   B) ELIMINATE THE VERTICAL SUPPORT ARM AND MOUNT THE ANTENNA TO THE HORIZONTAL SUPPORT ARM.
   C) ANTENNA, ANTENNA SUPPORT ARM, AND SIGN TO MAINTAIN A 40" SEPARATION FROM NEUTRAL/POWER AND 12" FROM OTHER UTILITIES.

4. INSTALL AN END CAP TO SEAL THE EXPOSED END OF THE MOUNTING PIPE.

Prepared in the Offices of: Traffic Management Systems, 122 N. McDowell St., Raleigh, NC 27603

SCALE 0

WIRELESS RADIO ANTENNA TYPICAL DETAILS

PLAN DATE:	JULY 2005	REVIEWED BY:	I. N. AVERY
PREPARED BY:	A. CREECH	REVIEWED BY:	A. T. FAULKNER

REVISIONS	INIT.	DATE
UPDATE GROUNDING - COAXIAL CABLE SHIELD		9/13/06

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 023919 GREGORY A. FULLER

SIGNATURE: Gregory A. Fuller DATE: 9/12/05

CADD Filename:

DECAL

POLE MOUNTED SIGN

PROJECT REFERENCE NO.	SHEET NO.
R-2320G	Sig. 10

SIGN NUMBER: SP05224 BACKG COLOR: Yellow
TYPE: DECAL COPY COLOR: Black
QUANTITY:

SYMBOL	X	Y	WID	HT

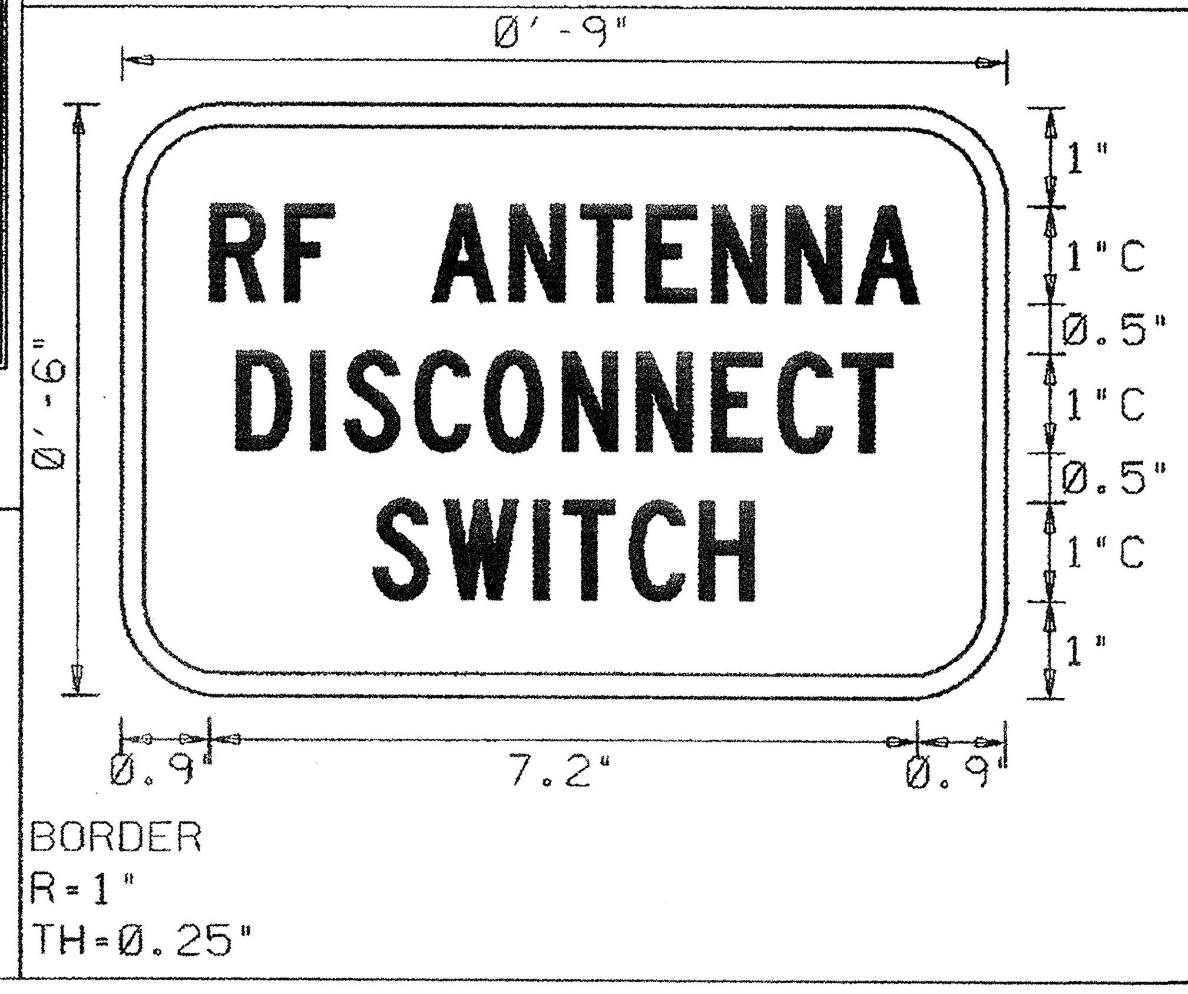
SIGN WIDTH: 0'-9"
HEIGHT: 0'-6"
TOTAL AREA: 0.4 Sq.Ft.

BORDER TYPE: FLUSH
RECESS: 0"
WIDTH: 0.25"
RADII: 1"

MAT'L: 0.063" (1.6 mm) ALUMINUM

NO. Z BARS:
LENGTH:

DESIGN BY: S PIOTROWSKI DATE: Jul 18,2005 CHECKED BY: SUSAN B. KUNZ
PROJECT ID: ID DIV:INTELLIGENT TRANSPORTATION SYSTEM



NOTE: THIS SIGN SHALL BE PRODUCED AS A **DECAL**

USE NOTES: 2, 4
1. Legend and border shall be direct applied Type III reflective sheeting.
2. Legend and border shall be direct applied non-reflective sheeting.
3. Shields shall be Type III reflective sheeting on 0.032" (0.8mm) aluminum and demountable.
4. Background shall be Type III reflective sheeting.
5. Background shall be Type I reflective sheeting.
6. Center arrow(s) vertically on sign.
7. Bottom panel shall be yellow Type III sheeting. Legend shall be direct applied black non-reflective sheeting. Yellow panel is:

LETTER POSITIONS

Letter spacings are to start of next letter

													Series/Size Text Length
		R	F		A	N	T	E	N	N	A		C1
	0.9	0.8	0.5	1	0.8	0.7	0.7	0.7	0.8	0.7	0.6	0.9	7.2
		D	I	S	C	O	N	N	E	C	T		C1
	1.2	0.8	0.3	0.7	0.7	0.8	0.8	0.8	0.7	0.7	0.5	1.2	6.7
		S	W	I	T	C	H						C1
	2.6	0.7	0.9	0.3	0.7	0.7	0.5	2.6					3.9

Spacing Factor is 1 unless specified otherwise

SIGN NUMBER: SP05223 BACKG COLOR: Yellow
TYPE: D COPY COLOR: Black
QUANTITY:

SYMBOL	X	Y	WID	HT
BAR	0.2	8.2	8.6	1.0

SIGN WIDTH: 0'-9"
HEIGHT: 1'-0"
TOTAL AREA: 0.8 Sq.Ft.

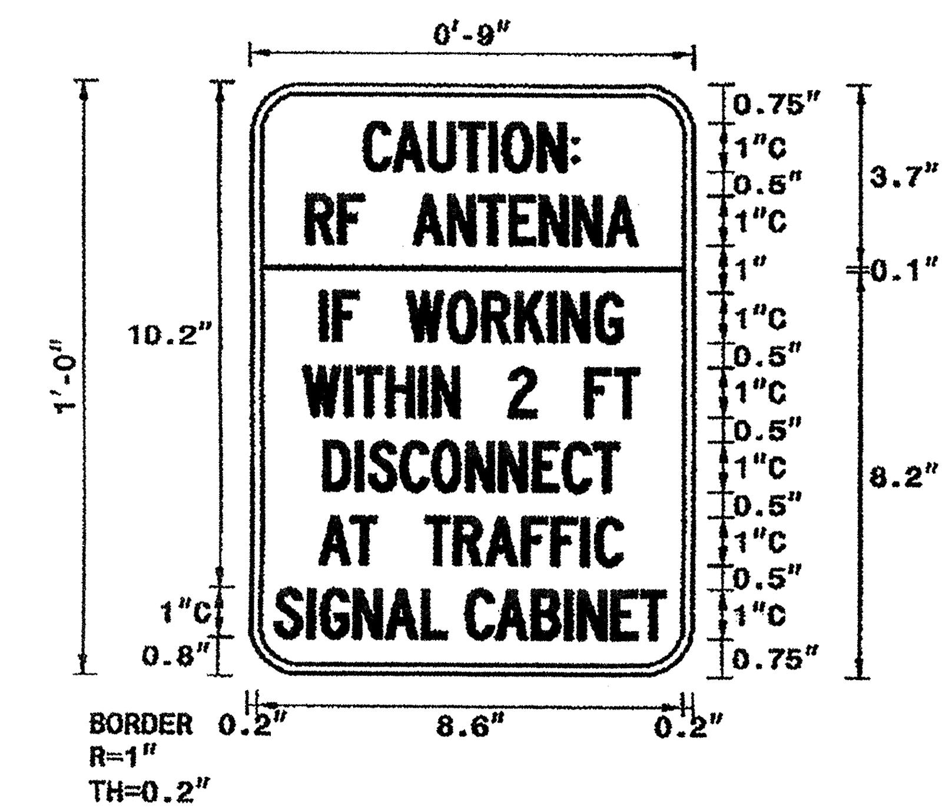
BORDER TYPE: FLUSH
RECESS: 0"
WIDTH: 0.2"
RADII: 1"

MAT'L: 0.063" (1.6 mm) ALUMINUM

NO. Z BARS:
LENGTH:

USE NOTES: 2,4
1. Legend and border shall be direct applied Type III reflective sheeting.
2. Legend and border shall be direct applied non-reflective sheeting.
3. Shields shall be Type III reflective sheeting on 0.032" (0.8mm) aluminum and demountable.
4. Background shall be Type III reflective sheeting.
5. Background shall be Type I reflective sheeting.
6. Center arrow(s) vertically on sign.
7. Bottom panel shall be yellow Type III sheeting. Legend shall be direct applied black non-reflective sheeting. Yellow panel is:

DESIGN BY: M. TRACEY DATE: Oct 25, 2007 CHECKED BY: SUSAN KUNZ
PROJECT ID: DIV: INTELLIGENT TRANSPORTATION SYSTEMS



0.60 SPACING FACTOR

LETTER POSITIONS

Letter spacings are to start of next letter

																	Series/Size Text Length
		C	A	U	T	I	O	N	:								C
	2.3	0.6	0.7	0.6	0.6	0.3	0.7	0.7	0.1	2.3							4.4
		R	F		A	N	T	E	N	N	A						C
	1.2	0.7	0.5	1	0.7	0.6	0.6	0.6	0.7	0.6	0.6	1.2					6.7
		I	F		W	O	R	K	I	N	G						C
	1.4	0.3	0.5	1	0.8	0.7	0.7	0.6	0.3	0.7	0.5	1.4					6.1
		W	I	T	H	I	N		2		F	T					C
	1.1	0.8	0.2	0.6	0.7	0.3	0.5	1	0.5	1	0.6	0.5	1.1				6.8
		D	I	S	C	O	N	N	E	C	T						C
	1.5	0.7	0.3	0.6	0.6	0.7	0.7	0.7	0.6	0.6	0.5	1.5					6
		A	T		T	R	A	F	F	I	C						C
	1.4	0.7	0.5	1	0.6	0.6	0.7	0.6	0.6	0.3	0.5	1.4					6.2
		S	I	G	N	A	L		C	A	B	I	N	E	T		C
	0.5	0.7	0.3	0.7	0.6	0.7	0.5	0.4	0.6	0.7	0.7	0.3	0.7	0.6	0.5	0.5	7.9

Spacing Factor is 1 unless specified otherwise

NORTH CAROLINA D.O.T. SIGN DETAIL

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
State of North Carolina Department of Transportation
Intelligent Transportation Systems
750 N. Greenfield Pkwy., Garner, NC 27529

WIRELESS
RADIO ANTENNA
TYPICAL DETAILS

PLAN DATE:	JULY 2005	REVIEWED BY:	I. N. AVERY
PREPARED BY:	A. CREECH	REVIEWED BY:	A. T. FAULKNER

SCALE 0

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 023919 ENGINEER GREGORY A. FULLER
Gregory A. Fuller 9/12/05
SIGNATURE DATE
CADD Filename:

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

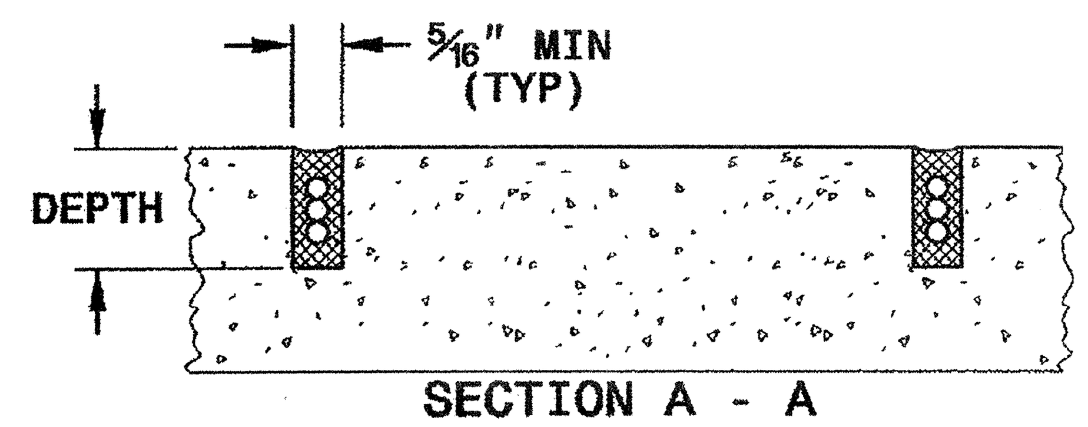
5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS

SHEET 1 OF 3
1725D01

SAW SLOT DEPTH CHART

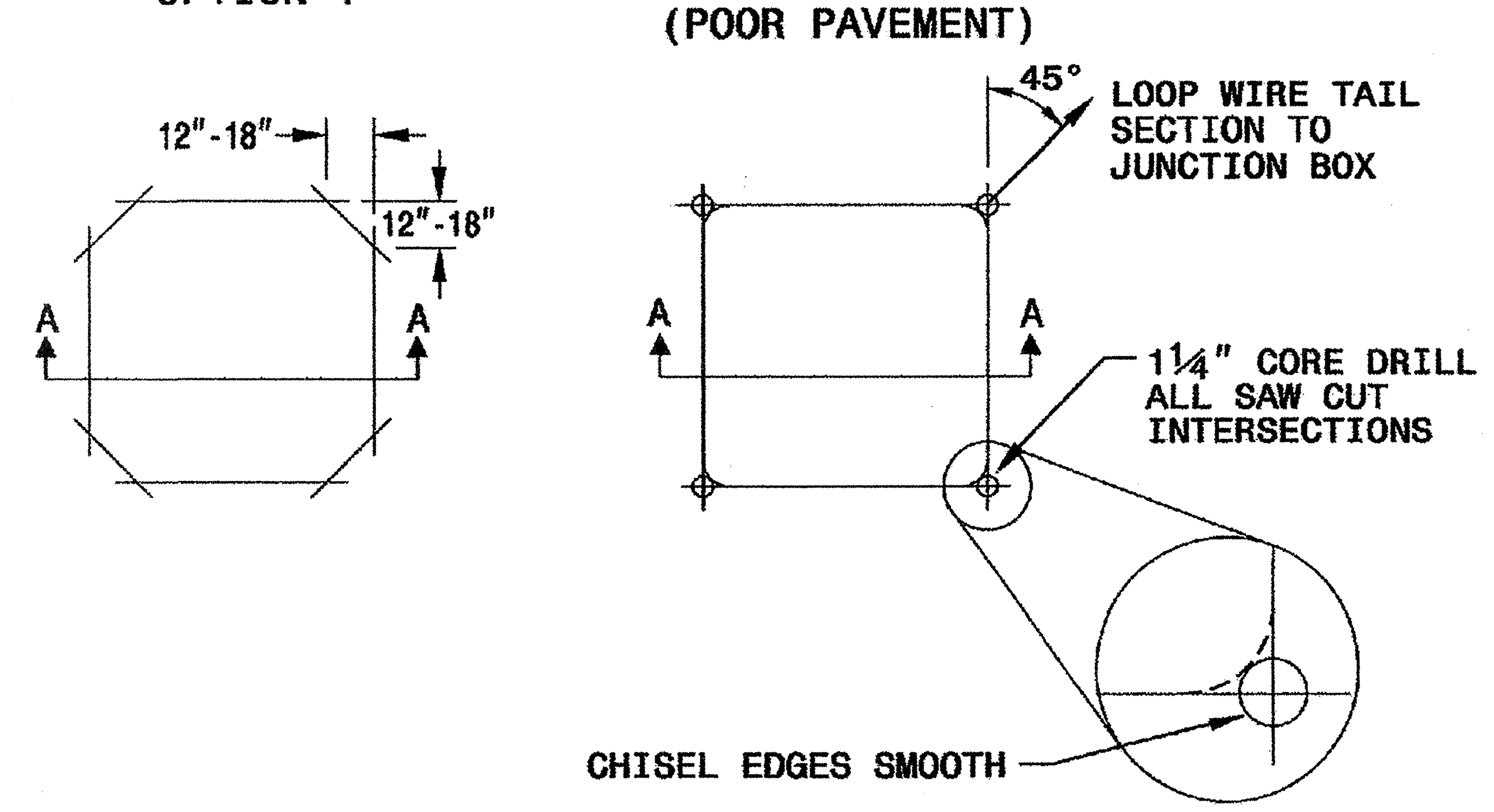
DEPTH (IN)	NO. OF WIRE TURNS				
	2	3	4	5	6
CONCRETE	2.0	2.0	2.5	2.5	3.0
ASPHALT	2.0	2.5	3.0	3.0	3.0



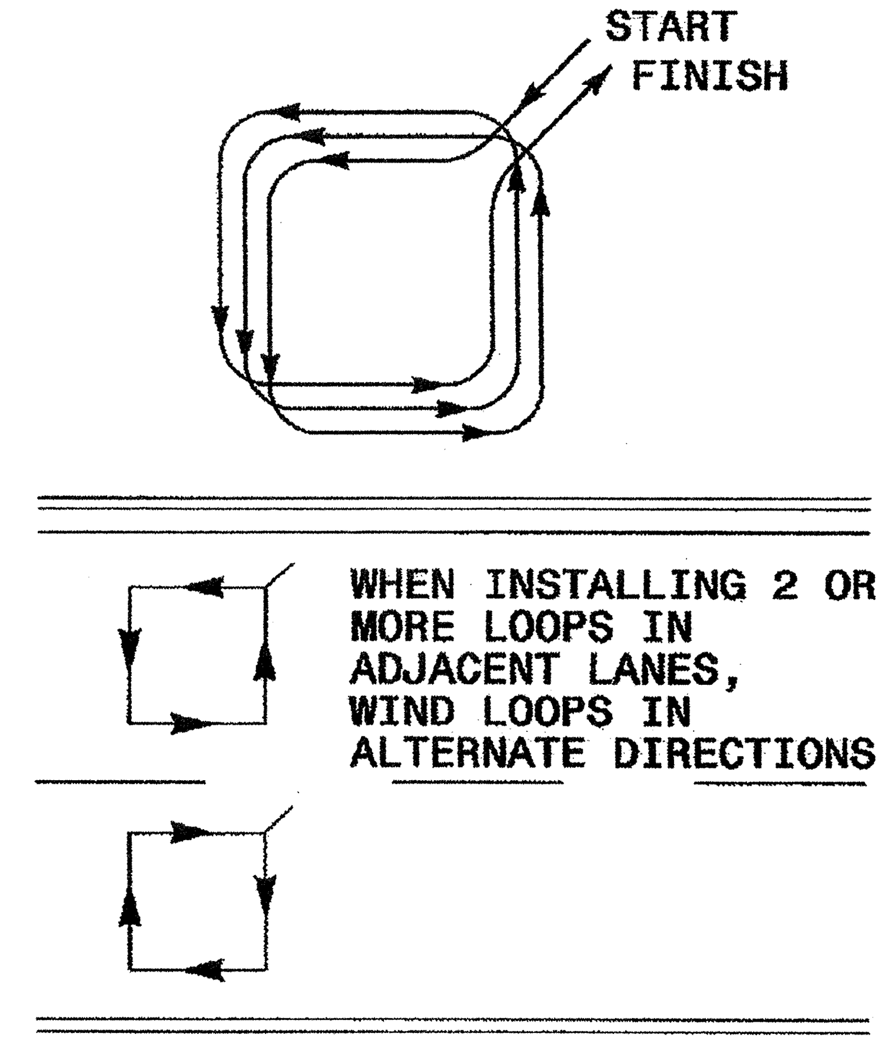
SECTION A - A

CONVENTIONAL 4-SIDED LOOP

SAW CUT OPTIONS



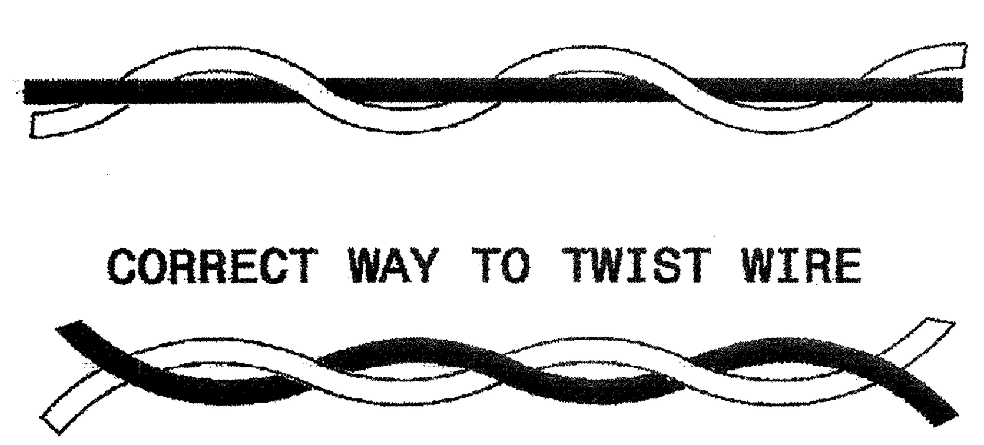
LOOP WINDING METHOD



LOOP WIRE TWISTING METHOD

INCORRECT WAY TO TWIST WIRE

CORRECT WAY TO TWIST WIRE

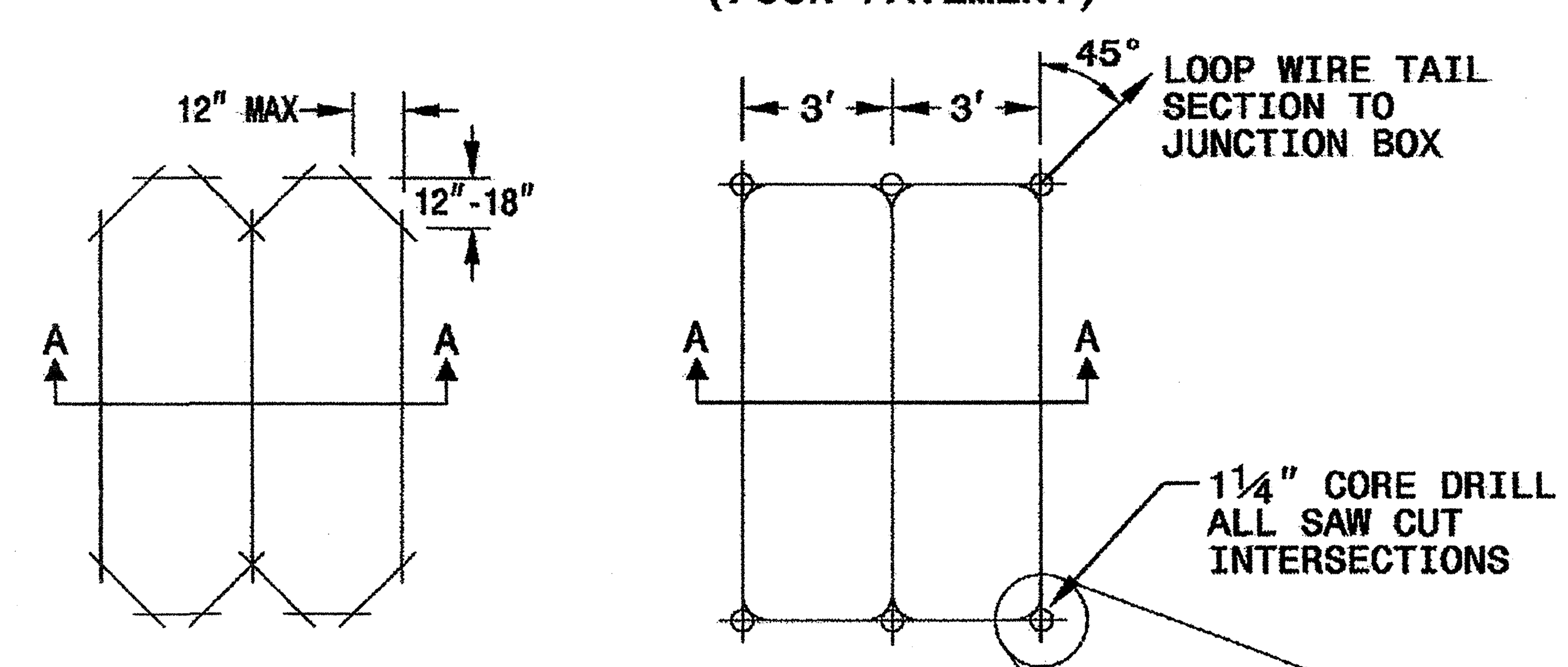


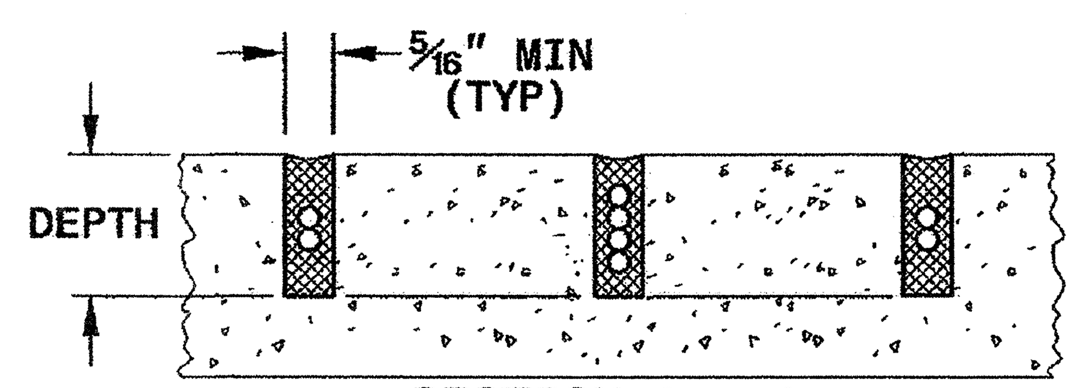
NOTES

1. OVERLAP SAW CUTS AT CORNERS AND INTERSECTION POINTS TO ENSURE UNIFORM SAW SLOT DEPTH.
2. MAINTAIN 12" SPACING BETWEEN LOOP WIRE TAIL SECTIONS.
3. WIRE LOOPS CONNECTED TO THE SAME DETECTOR CHANNEL IN SERIES.
4. LOCATE LOOPS IN CENTER OF LANES UNLESS OTHERWISE SHOWN ON PLANS OR APPROVED BY ENGINEER.

QUADRUPOLE LOOP

SAW CUT OPTIONS

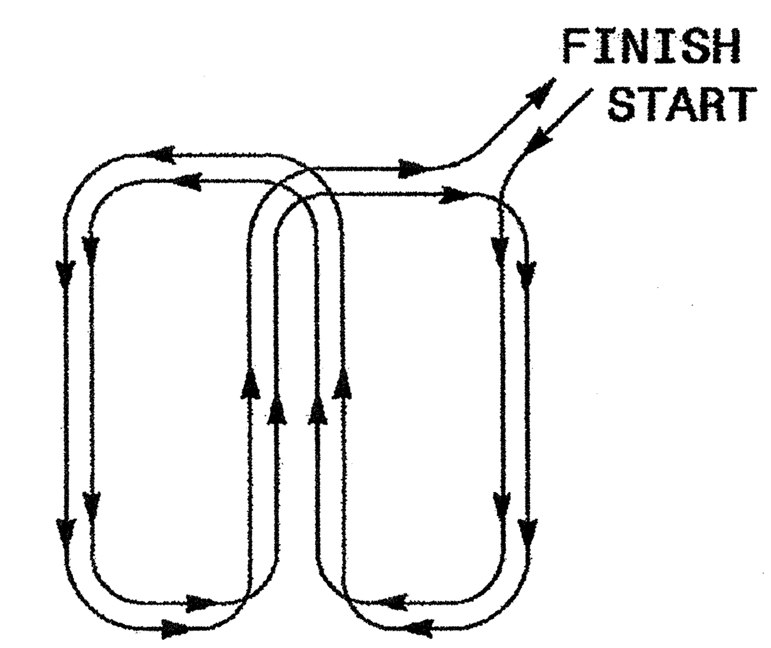




SECTION A - A

DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

LOOP WINDING METHOD



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ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS

SHEET 1 OF 3
1725D01

See Plate for Title

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Garner, NC 27529

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NORTH CAROLINA PROFESSIONAL SEAL 016286 ENGINEER MILTON I. DEAN

SIGNATURE 9/5/07 DATE

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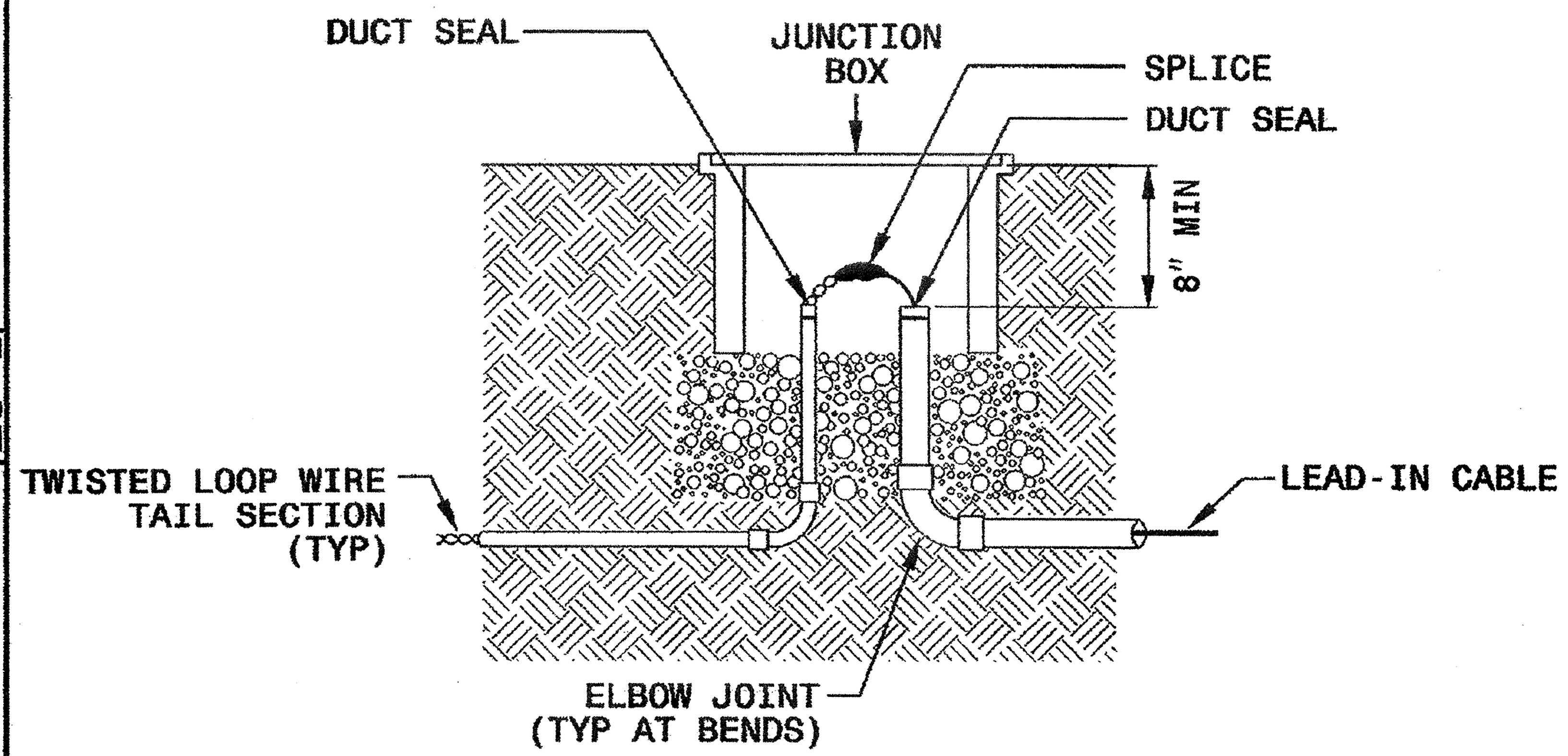
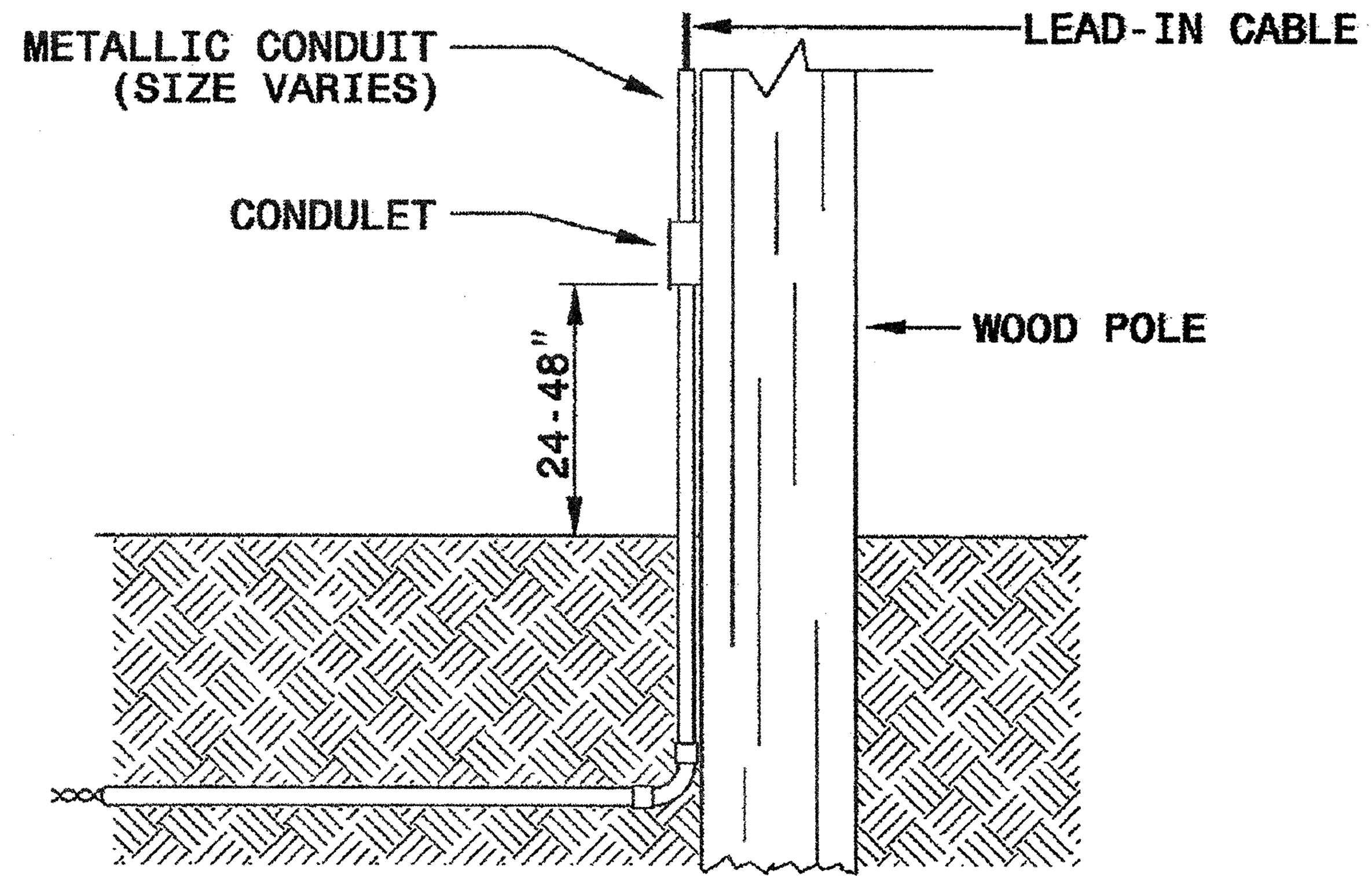
ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



LOOP WIRE AT POLE

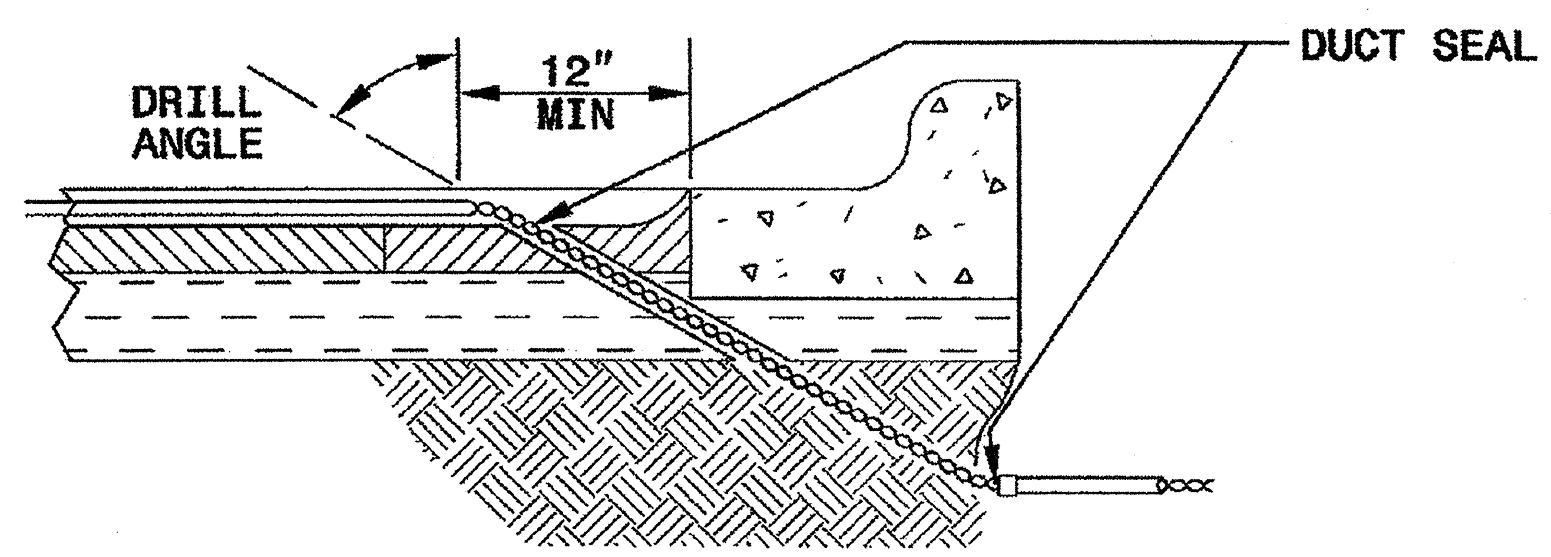


NOTE

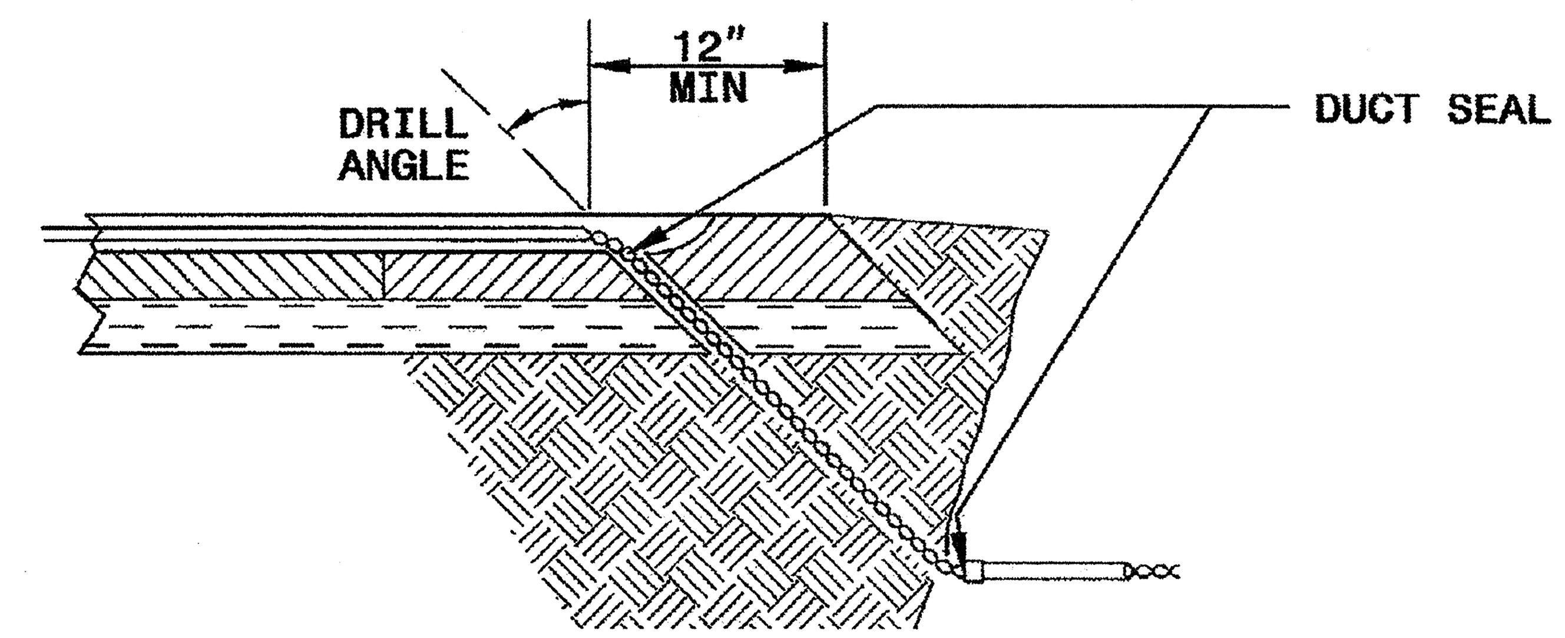
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

LOOP WIRE PAVEMENT EDGE DETAILS

LOOP WIRE AT CURB & GUTTER SECTION



LOOP WIRE AT PAVEMENT SECTION



NOTES

1. DO NOT EXCAVATE UNDER CURB AND GUTTER SECTIONS FOR CONDUIT INSTALLATION.
2. TWIST LOOP WIRE TAIL SECTIONS FROM WHERE LOOP WIRE TAIL LEAVES SAW CUT TO JUNCTION BOX, INCLUDING THROUGH CONDUIT.
3. BEFORE SEALING LOOPS, INSTALL DUCT SEAL WHERE LOOP WIRE TAIL SECTION LEAVES SAW CUT IN PAVEMENT AND AT ENTRANCE OF CONDUIT TO JUNCTION BOX.

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ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

SHEET 2 OF 3
1725D01

SHEET 2 OF 3
1725D01

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Garner, NC 27529

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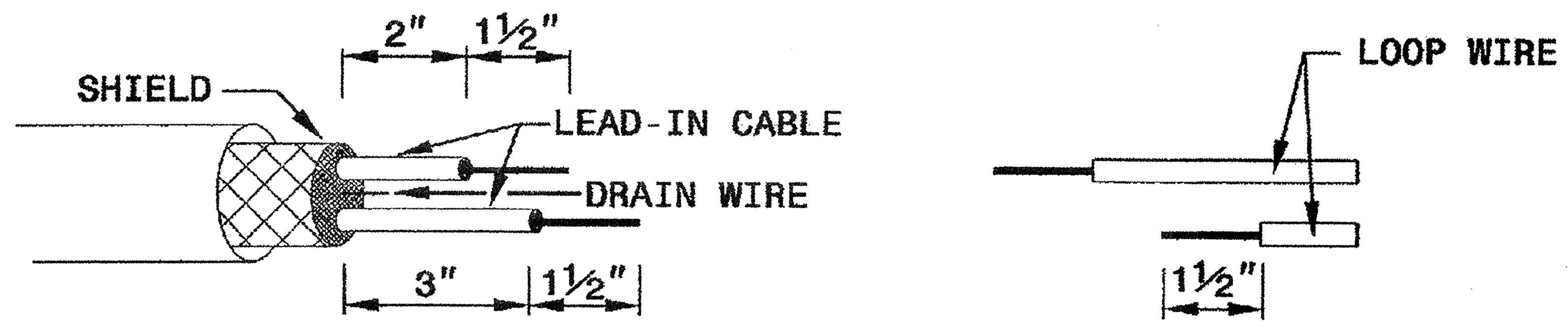
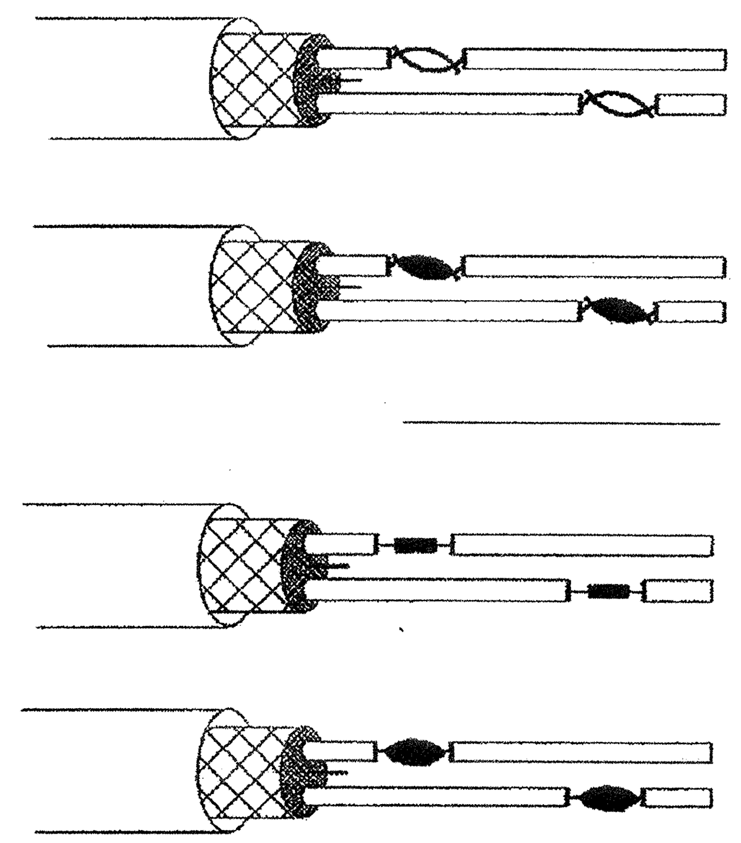
ENGLISH DETAIL DRAWING FOR
INDUCTION DETECTION LOOPS
SPLICING FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3
1725D01

STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE



STEP 2. CONNECT AND SOLDER



TWIST BARE CONDUCTORS TOGETHER AND SOLDER WITH RESIN CORE SOLDER

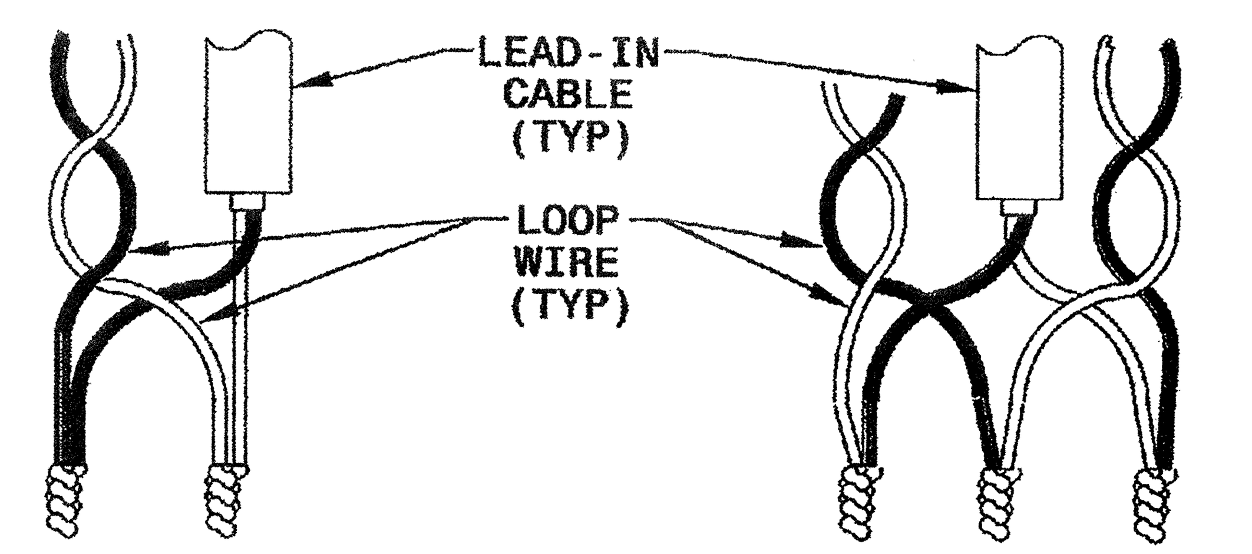
OR

CRIMP BARE CONDUCTORS TOGETHER WITH AN UNINSULATED BUTT CONNECTOR AND SOLDER WITH RESIN CORE SOLDER

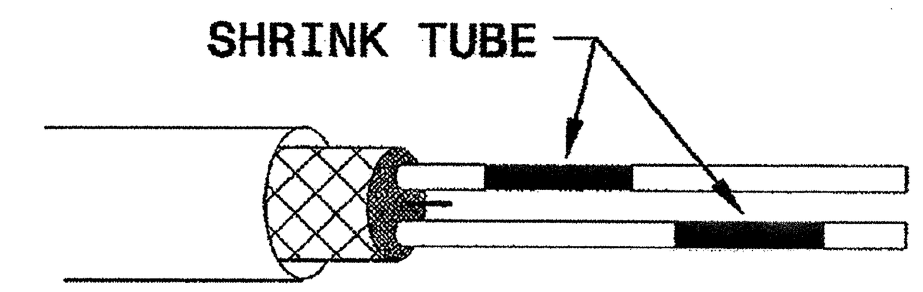
BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS

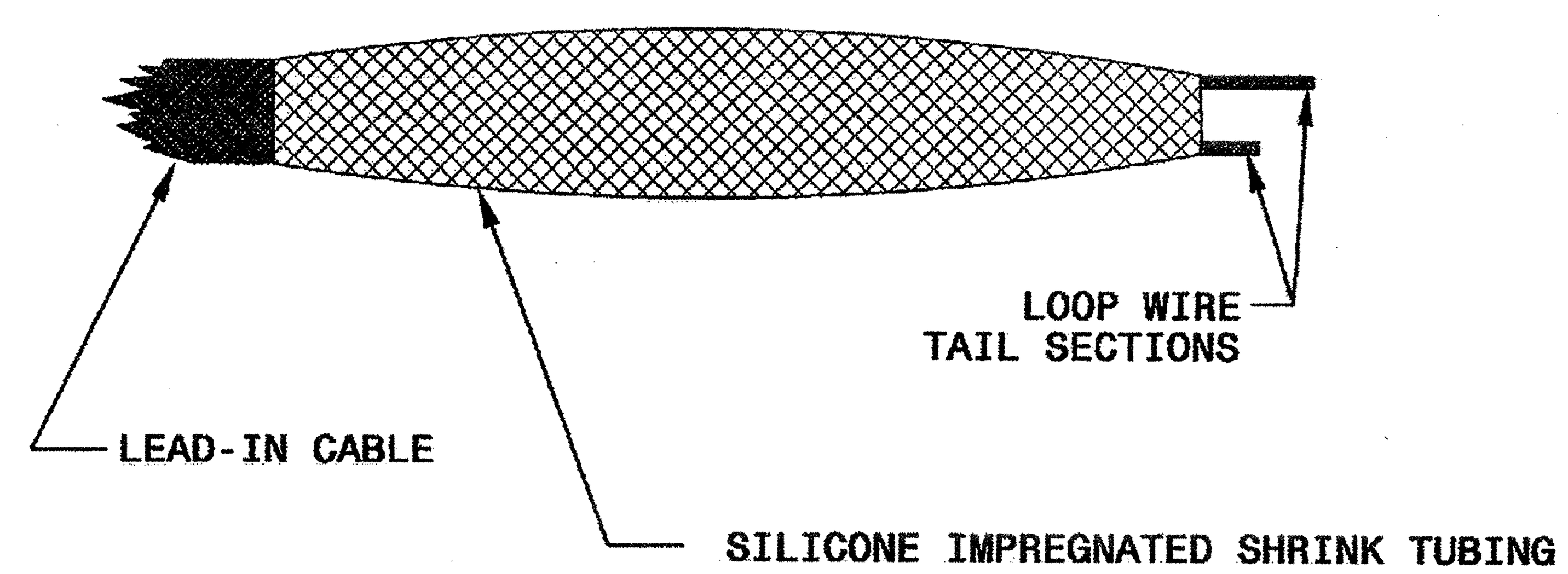
SINGLE CONNECTION SERIES CONNECTION



STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY



STEP 4. ENVIRONMENTALLY PROTECT SPLICE



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ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
SPLICING FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3
1725D01

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Milton I. Dean 9/5/07
SIGNATURE DATE