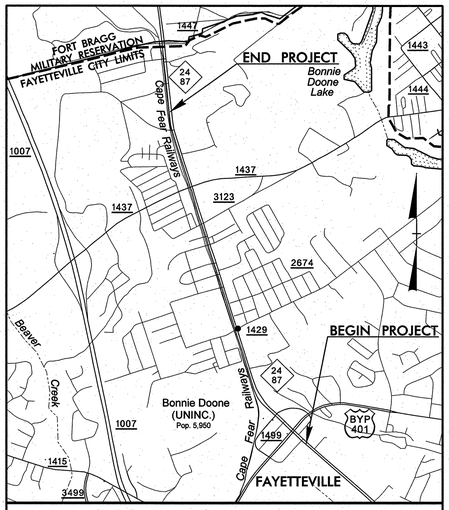
TIP PROJECT: U-3423

CONTRACT:



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

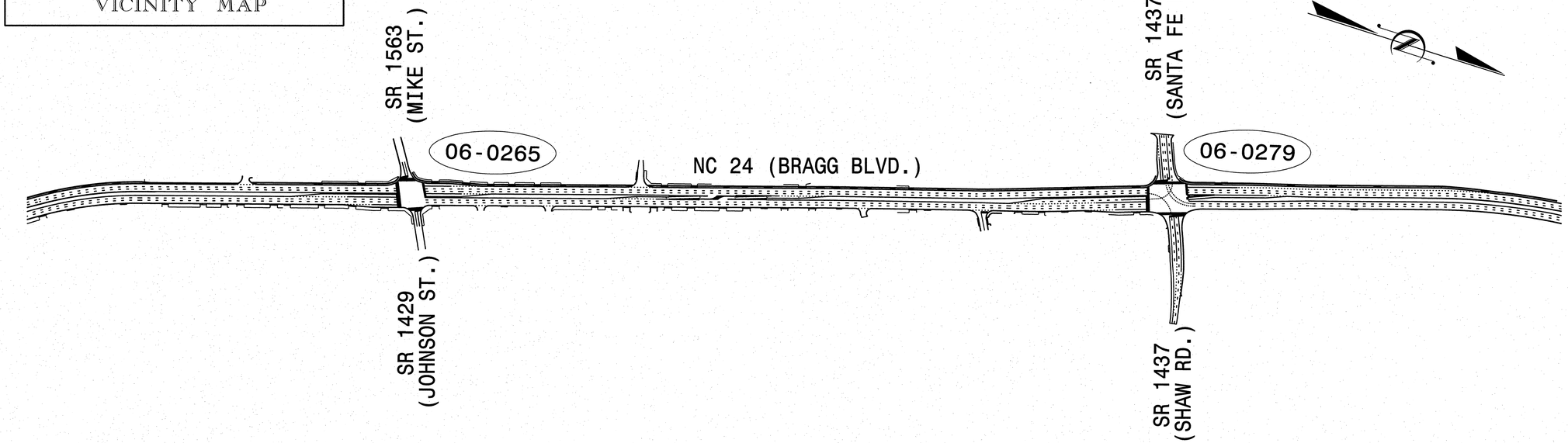
CUMBERLAND COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3423	SIG 1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

LOCATION: NC 24 (BRAGG BLVD.)

TYPE OF WORK: TRAFFIC SIGNALS AND SPLICE PLANS



NCDOT CONTACTS:
Transportation Mobility and Safety Branch
Pamela L. Alexander, P.E. – Eastern Region Signals Engineer
Jason P. Galloway, P.E. – Signals Project Engineer
I. Neil Avery – Signal Communications Project Engineer
George C. Brown, P.E. – Signal Equipment Design Engineer

STANTEC CONTACTS:
Betsy L. Watson, P.E. – Transportation Engineer
Lori E. Mahany, P.E. – Transportation Engineer
Kellie L. Wieskamp, E.I. – Transportation Designer

INDEX OF PLANS

Legend

XX-XXXX SIGNAL INVENTORY NUMBER

Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

3/2/2010
U:\Traffic\Signals\SigPlans\U-3423_sig_tsh.dgn
kwieskamp

PROJECT REFERENCE NO.	SHEET NO.
U-3423	SIG. 2

PHASING DIAGRAM

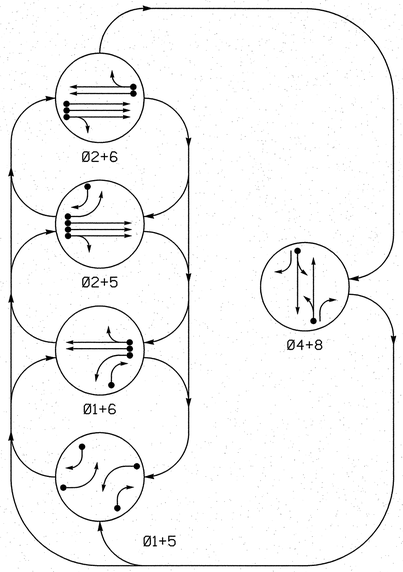
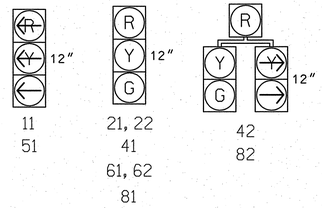


TABLE OF OPERATION

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

SIGNAL FACE I.D.

All Heads L.E.D.



OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

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*	6X40	0	-	Y	1	Y	Y	-	-	-	-	Y
1B	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
2A,2B,2C*	6X6	300	-	Y	2	Y	Y	-	1.6	-	-	Y
2D,2E,2F*	6X6	90	-	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
5A*	6X40	0	-	Y	5	Y	Y	-	-	-	-	Y
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
6A,6B*	6X6	300	-	Y	6	Y	Y	-	1.6	-	-	Y
6C,6D*	6X6	90	-	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y

*Video Detection Area

5 Phase
Fully Actuated
Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "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. 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. Refer to traffic control plans for location of temporary pavement markings including stopbars.

PHASING DIAGRAM DETECTION LEGEND

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

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	N/A
● ●	Construction Zone Drums	N/A
▬	Video Detection Area	N/A

OASIS 2070L TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	2.0	2.0	2.0	2.0	2.0	2.0
Max Green 1 *	20	90	25	20	90	25
Yellow Clearance	3.0	4.4	3.8	3.0	4.4	3.8
Red Clearance	2.5	1.0	2.9	2.1	1.2	2.5
Red Revert	0.0	0.0	0.0	0.0	0.0	0.0
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduction *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-
Dual Entry	-	-	ON	-	-	ON
Simultaneous Gap	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.

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

SIGNAL UPGRADE - TEMPORARY SIGNAL #1 (PHASE 1 PRE-NBL SHIFT)

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

NC 24 (Bragg Blvd.)
at
SR 1429 (Johnson St.) /
SR 1563 (Mike St.)

DIVISION 6 CUMBERLAND COUNTY FAYETTEVILLE

PLAN DATE: JANUARY 2010 REVIEWED BY: BL WATSON
PREPARED BY: KL WIESKAMP REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 029449 ENGINEER BETSY L. WATSON
SIGNATURE 3/1/10 DATE

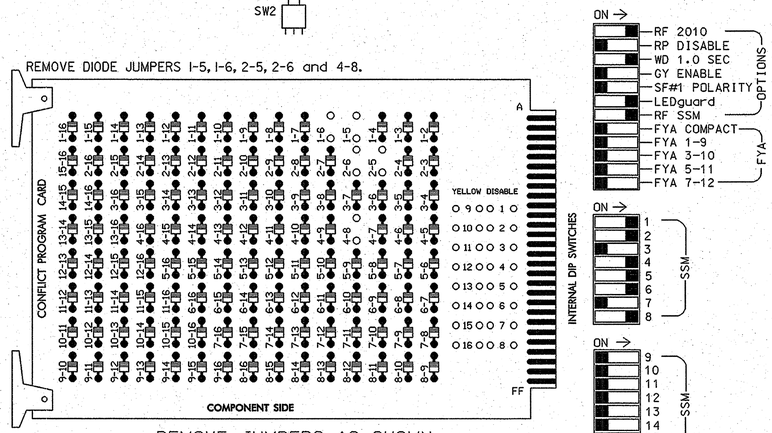
SIG. INVENTORY NO. 06-0265 T1

3/2/2010
U:\Traffic\Signals\Signals\06-0265_temp1g.dgn
KWieskamp

PROJECT REFERENCE NO.	SHEET NO.
U-3423	Sig. 3

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 3,7,9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 4 and 8 for Dual Entry.
4. Enable Simultaneous Gap-Out for all phases.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash.
7. The cabinet and controller are part of the Fayetteville City 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	82	21,22	NU	NU	41,42	NU	51	42	61,62	NU	NU	81,82	NU
RED			128			101				134			107	
YELLOW			129			102				135			108	
GREEN			130			103				136			109	
RED ARROW	125							131						
YELLOW ARROW	126	126						132	132					
GREEN ARROW	127	127						133	133					
✋														
🚶														

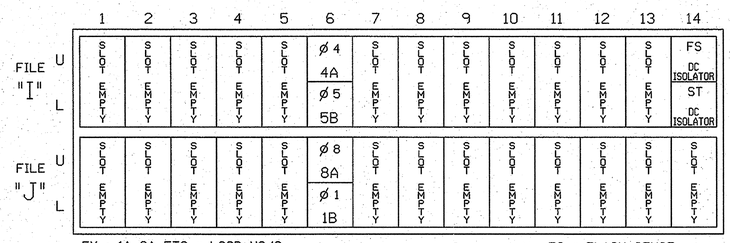
NU = Not Used

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,S4,S5,S6,S8
PHASES USED.....1,2,4,5,6,8
OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

SPECIAL DETECTOR NOTE

Install a loop emulation detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

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
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
5B	TB4-11,12	I6L	45	7	14	5	Y	Y			15
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
1B	TB5-11,12	J6L	46	8	18	1	Y	Y			15

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0265 T1
DESIGNED: January 2010
SEALED: 03/01/10
REVISED:

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Signal Upgrade - Temporary Signal 1

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

NC 24 (Bragg Blvd.)
at
SR 1429 (Johnson St.) /
SR 1563 (Mike St.)

Division 6 | Cumberland County | Fayetteville

PLAN DATE: January 2010 | REVIEWED BY: Bret Gillis
PREPARED BY: Lori Mahany | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 32643 ENGINEER LORI ELLIOTT MAHANY

SIGNATURE | DATE

SIG. INVENTORY NO. 06-0265 T1

3/1/2010
U:#T1001160#transportationDesign#trafficSignals#ElectricalDetails#06-0265_Template.dgn
mahany

PROJECT REFERENCE NO.	SHEET NO.
U-3423	SIG. 4

PHASING DIAGRAM

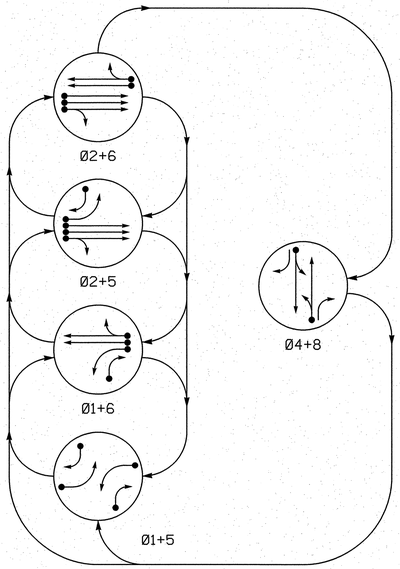
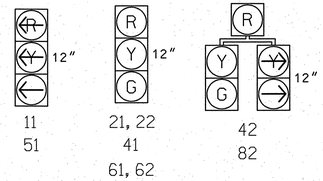


TABLE OF OPERATION							
SIGNAL FACE	PHASE						
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø4+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	Y
41	R	R	R	R	G	R
42	R/←	R	R/→	R	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	Y
81	R	R	R	R	G	R
82	R/←	R/→	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



OASIS 2070L LOOP & DETECTOR INSTALLATION CHART												
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*	6X40	0	-	Y	1	Y	Y	-	-	-	-	-
1B	6X40	0	2-4-2	-	1	Y	Y	-	-	15	-	-
2A,2B,2C*	6X6	300	-	Y	2	Y	Y	-	1.6	-	-	-
2D,2E,2F*	6X6	90	-	Y	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	3	-	-
5A*	6X40	0	-	Y	5	Y	Y	-	-	-	-	-
5B	6X40	0	2-4-2	-	5	Y	Y	-	-	15	-	-
6A,6B*	6X6	300	-	Y	6	Y	Y	-	1.6	-	-	-
6C,6D*	6X6	90	-	Y	6	Y	Y	-	-	-	-	-
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	3	-	-

* Video Detection Area

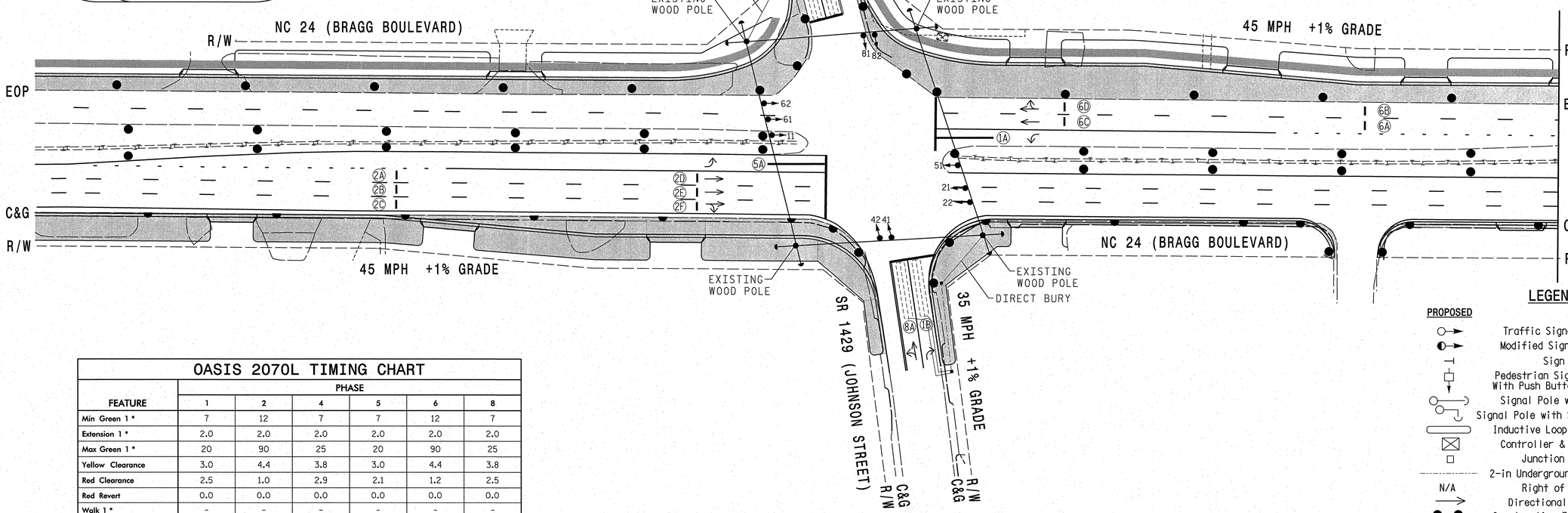
5 Phase
Fully Actuated
Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "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. Reposition existing signal heads numbered 21 and 22.
5. Set all detector units to presence mode.
6. Refer to traffic control plans for location of pavement markings including stopbars.

PHASING DIAGRAM DETECTION LEGEND

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



OASIS 2070L TIMING CHART

FEATURE	PHASE					
	1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	2.0	2.0	2.0	2.0	2.0	2.0
Max Green 1 *	20	90	25	20	90	25
Yellow Clearance	3.0	4.4	3.8	3.0	4.4	3.8
Red Clearance	2.5	1.0	2.9	2.1	1.2	2.5
Red Revert	0.0	0.0	0.0	0.0	0.0	0.0
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduction *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-
Dual Entry	-	-	ON	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON

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 Drums	N/A
	Construction Zone	N/A
	Video Detection Area	N/A

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

SIGNAL UPGRADE - TEMPORARY SIGNAL #2 (PHASE I STEP I)

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

NC 24 (Bragg Blvd.)
at
SR 1429 (Johnson St.) /
SR 1563 (Mike St.)

DIVISION 6 CUMBERLAND COUNTY FAYETTEVILLE

PLAN DATE: JANUARY 2010 REVIEWED BY: BL WATSON
PREPARED BY: KL WIESKAMP REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 029449
BETSY L. WATSON

Betsy L. Watson 3/1/10
SIGNATURE DATE

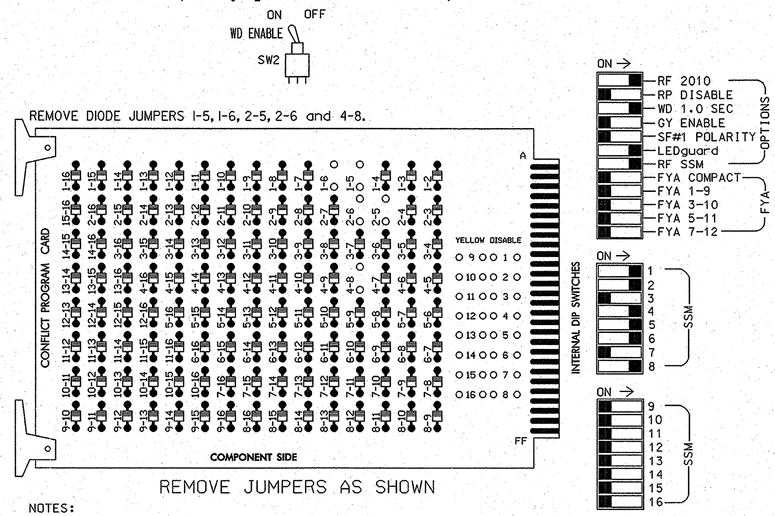
SIG. INVENTORY NO. 06-0265 T2

3/2/2010
U:\#Traffic\Signals\Sig\Plans\06-0265_temp2g.dgn
kwieskamp

PROJECT REFERENCE NO.	SHEET NO.
U-3423	Sig. 5

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 3,7,9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 4 and 8 for Dual Entry.
4. Enable Simultaneous Gap-Out for all phases.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash.
7. The cabinet and controller are part of the Fayetteville City System.

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,S4,S5,S6,S8
PHASES USED.....1,2,4,5,6,8
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.	11	82	21,22	NU	NU	41,42	NU	51	42	61,62	NU	NU	81,82	NU
RED			128			101				134			107	
YELLOW			129			102				135			108	
GREEN			130			103				136			109	
RED ARROW	125							131						
YELLOW ARROW	126	126						132	132					
GREEN ARROW	127	127						133	133					
✋														
🚶														

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 ENTRY	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY	ø4 4A	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY	FS DC ISOLATOR
FILE "I" L						ø5 5B								ST DC ISOLATOR
FILE "J" U	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY	ø8 8A	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY	SLOT ENTRY
FILE "J" L						ø1 1B								

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
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
5B	TB4-11,12	I6L	45	7	14	5	Y	Y			15
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
1B	TB5-11,12	J6L	46	8	18	1	Y	Y			15

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

SPECIAL DETECTOR NOTE

Install a loop emulation detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0265 T2
DESIGNED: January 2010
SEALED: 03/01/10
REVISED:

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Signal Upgrade - Temporary Signal 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

NC 24 (Bragg Blvd.)
at
SR 1429 (Johnson St.) /
SR 1563 (Mike St.)

Division 8 | Cumberland County | Fayetteville

PLAN DATE: January 2010 | REVIEWED BY: Bret Gillis
PREPARED BY: Lori Mahany | REVIEWED BY:

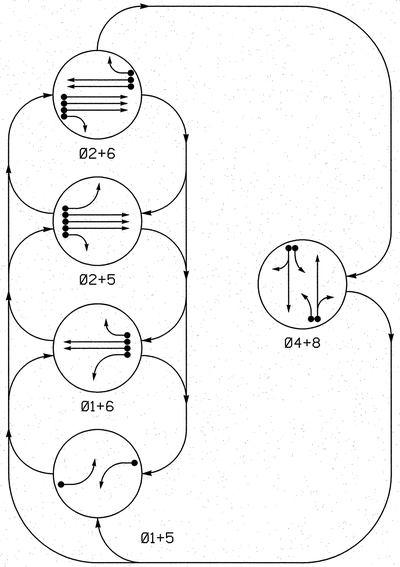
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 32643 ENGINEER LORI ELLIOTT MAHANY
SIGNATURE | DATE
SIG. INVENTORY NO. 06-0265 T2

3/1/2010
U:\ETTOO1\Workgroup\Transportation\Design\Traffic\Signals\Electrical\Details\06-0265_Temp2e.dgn
lmahany

PROJECT REFERENCE NO.	SHEET NO.
U-3423	SIG. 6

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

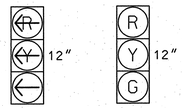
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	04+8	FLASH
11	↚	↚	↱̸	↱̸	↱̸	↱̸
21, 22, 23	R	R	G	G	R	Y
41, 42	R	R	R	R	G	R
51	↚	↱̸	↚	↱̸	↱̸	↱̸
61, 62	R	G	R	G	R	Y
81, 82	R	R	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

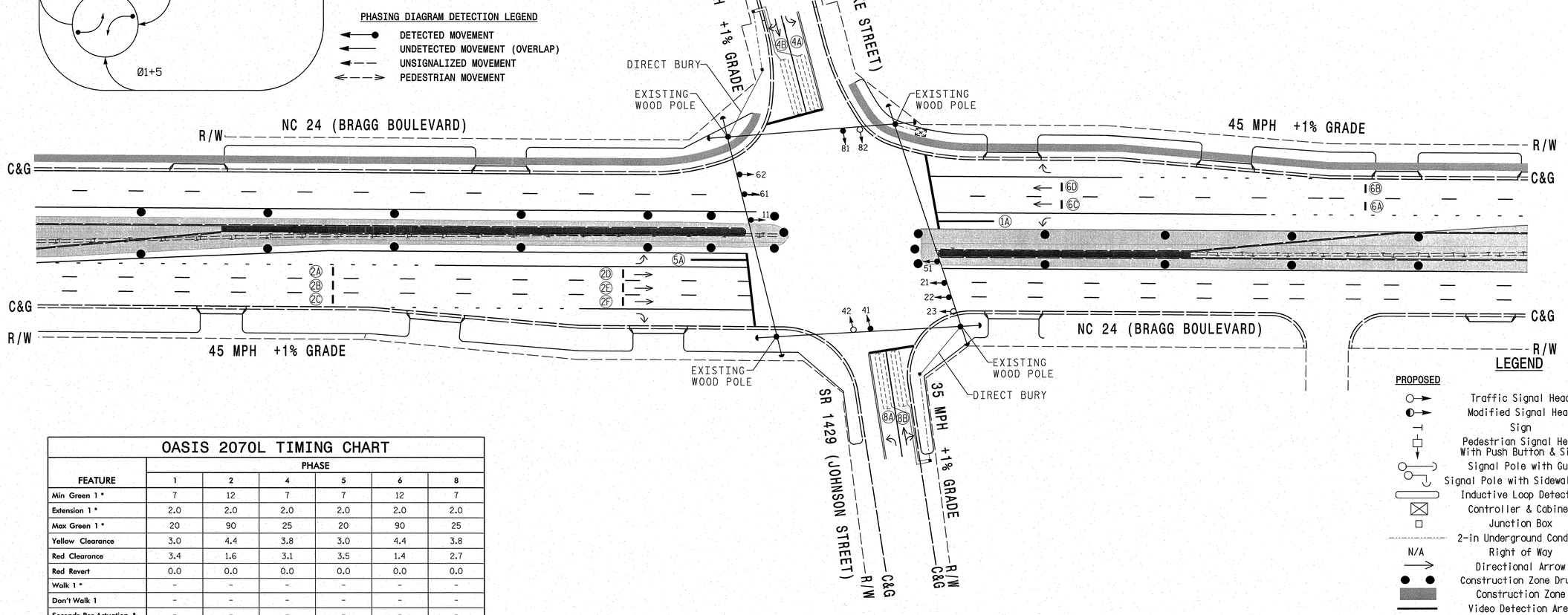
INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A*	6X40	0	-	Y	1	Y	Y	-	-	-	-	-
2A,2B,2C*	6X6	300	-	Y	2	Y	Y	-	1.6	-	-	-
2D,2E,2F*	6X6	90	-	Y	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	3	-	-
4B	6X40	0	2-4-2	-	4	Y	Y	-	-	10	-	-
5A*	6X40	0	-	Y	5	Y	Y	-	-	-	-	-
6A,6B*	6X6	300	-	Y	6	Y	Y	-	1.6	-	-	-
6C,6D*	6X6	90	-	Y	6	Y	Y	-	-	-	-	-
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	3	-	-
8B	6X40	0	2-4-2	-	8	Y	Y	-	-	10	-	-

*Video Detection Area

5 Phase
Fully Actuated
Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "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. Reposition existing signal heads numbered 11, 21, 22, 41, 51, 61, 62, & 81.
5. Set all detector units to presence mode.
6. Refer to traffic control plans for location of temporary pavement markings including stopbars.



OASIS 2070L TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	2.0	2.0	2.0	2.0	2.0	2.0
Max Green 1 *	20	90	25	20	90	25
Yellow Clearance	3.0	4.4	3.8	3.0	4.4	3.8
Red Clearance	3.4	1.6	3.1	3.5	1.4	2.7
Red Revert	0.0	0.0	0.0	0.0	0.0	0.0
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduction *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-
Dual Entry	-	-	ON	-	-	ON
Simultaneous Gap	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.

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 Drums	N/A
	Construction Zone	N/A
	Video Detection Area	N/A

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

SIGNAL UPGRADE - TEMPORARY SIGNAL #3 (PHASE II)

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

NC 24 (Bragg Blvd.)
at
SR 1429 (Johnson St.) /
SR 1563 (Mike St.)

DIVISION 6 CUMBERLAND COUNTY FAYETTEVILLE

PLAN DATE: JANUARY 2010 REVIEWED BY: BL WATSON

PREPARED BY: KL WIESKAMP REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 029449 ENGINEER BETSY L. WATSON

SIGNATURE DATE 3/1/10

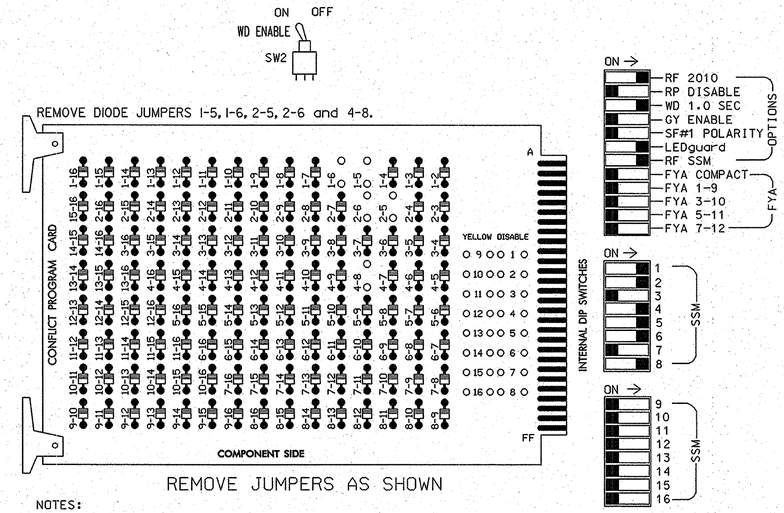
SIG. INVENTORY NO. 06-0265 T3

3/2/2010
U:\Traffic\Signals\Signalsplans\06-0265_temp3lg.dgn
kwieskamp

PROJECT REFERENCE NO.	SHEET NO.
U-3423	Sig. 7

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 3,7,9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 4 and 8 for Dual Entry.
4. Enable Simultaneous Gap-Out for all phases.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash.
7. The cabinet and controller are part of the Fayetteville City 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	21,22 23	NU	NU	41,42	NU	51	61,62	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125						131					
YELLOW ARROW	126						132					
GREEN ARROW	127						133					
✋												
🚶												

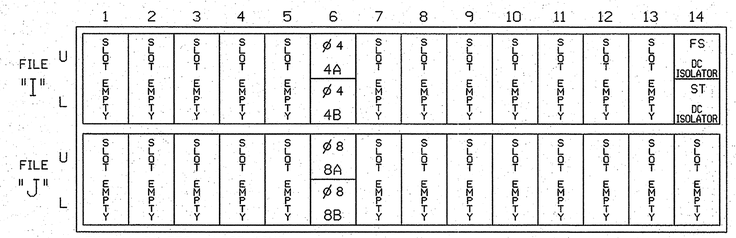
NU = Not Used

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,S4,S5,S6,S8
PHASES USED.....1,2,4,5,6,8
OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



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
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

SPECIAL DETECTOR NOTE

Install a loop emulation detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0265 T3
DESIGNED: January 2010
SEALED: 03/01/10
REVISED:

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6666
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Signal Upgrade - Temporary Signal 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

NC 24 (Bragg Blvd.) at SR 1429 (Johnson St.) / SR 1563 (Mike St.)

Division 6 | Cumberland County | Fayetteville

PLAN DATE: January 2010 | REVIEWED BY: Bret Gillis

PREPARED BY: Lori Mahany | REVIEWED BY:

REVISIONS	INIT.	DATE

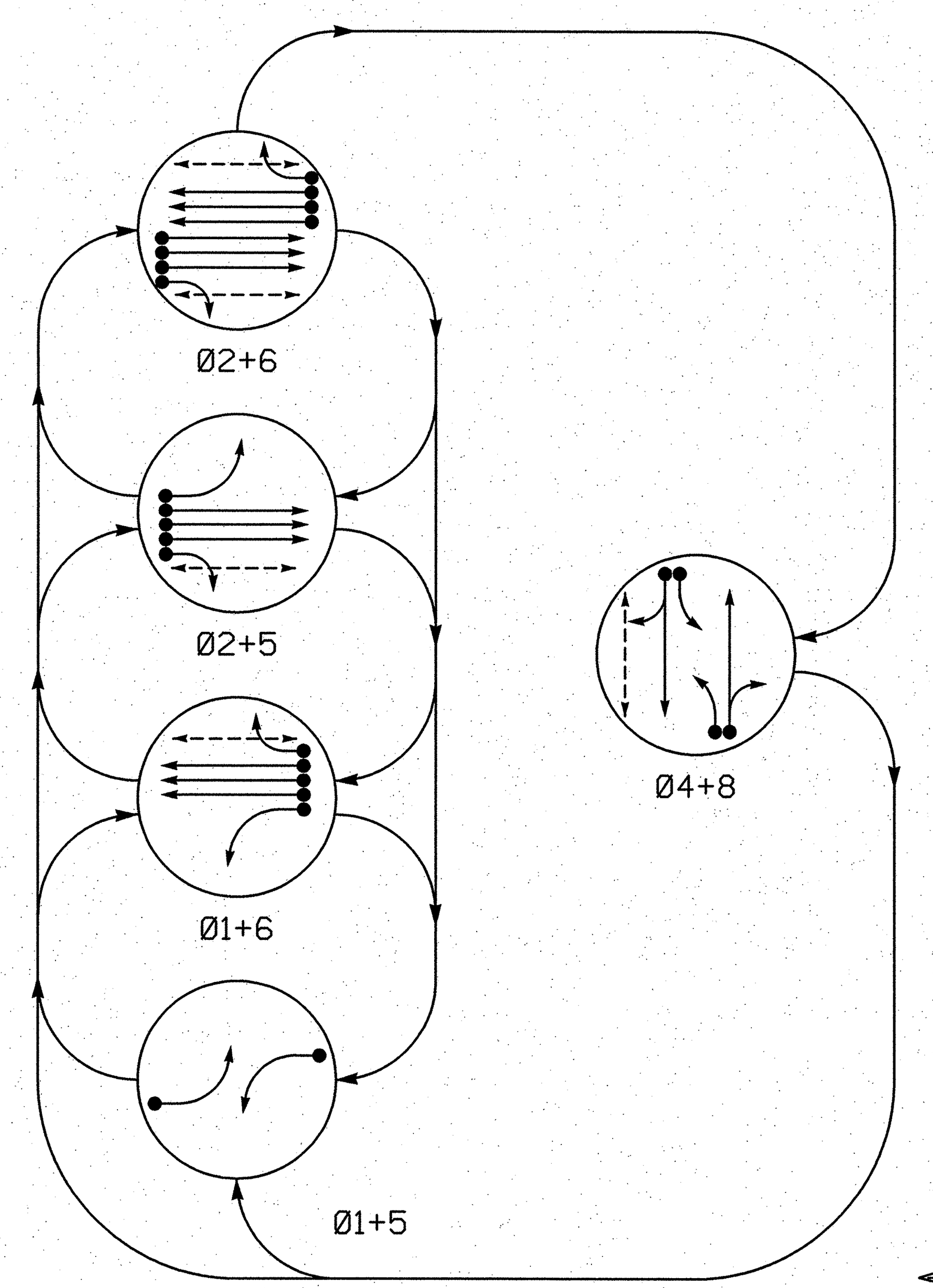
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 32643 ENGINEER LORI ELLIOTT MAHANY

SIGNATURE | DATE

SIG. INVENTORY NO. 06-0265 T3

3/1/2010
U:\mtt001\Highways\Transportation\Design\Traffic\Signals\Electrical Details\06-0265_Temp3e.dgn
lmahany

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

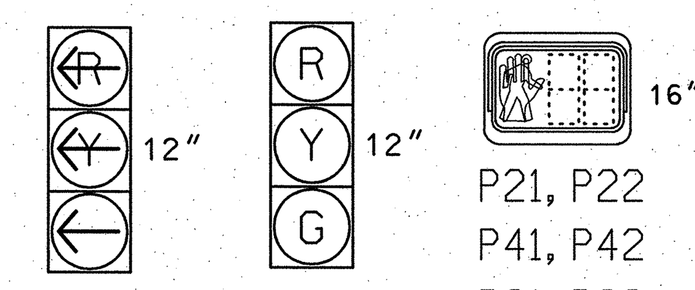
TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø4+8	FLASH
11	←	←	←R	←R	←R	←R
21, 22, 23	R	R	G	G	R	Y
41, 42	R	R	R	R	G	R
51	←	←R	←	←R	←R	←R
61, 62, 63	R	G	R	G	R	Y
81, 82	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

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

SIGNAL FACE I.D.

All Heads L.E.D.



OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

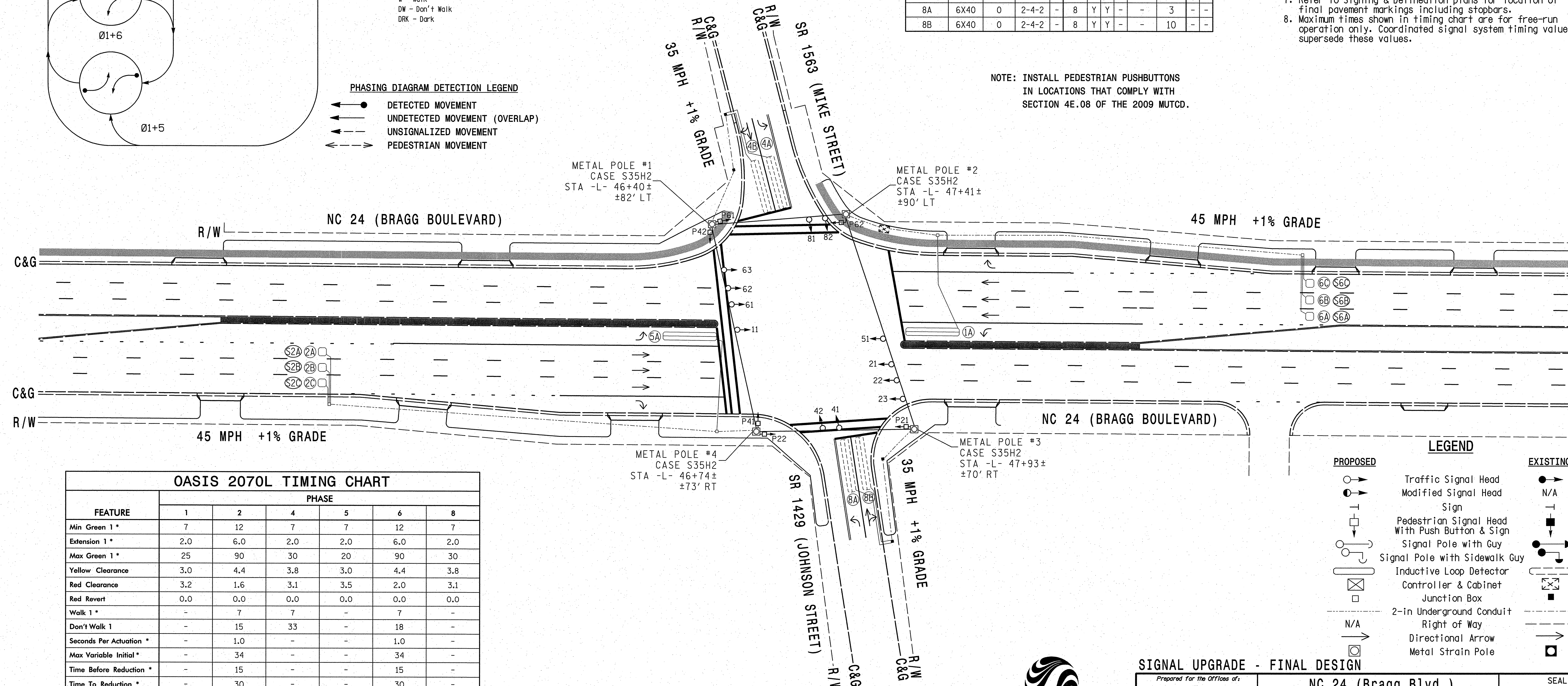
INDUCTIVE LOOPS: LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING: PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	-	-	-
2A/S2A	6X6	300	6	Y	2	Y	Y	-	-	-	Y	-
2B/S2B	6X6	300	6	Y	2	Y	Y	-	-	-	Y	-
2C/S2C	6X6	300	6	Y	2	Y	Y	-	-	-	Y	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	3	-	-
4B	6X40	0	2-4-2	-	4	Y	Y	-	-	10	-	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	-	-	-
6A/S6A	6X6	300	4	Y	6	Y	Y	-	-	-	Y	Y
6B/S6B	6X6	300	4	Y	6	Y	Y	-	-	-	Y	-
6C/S6C	6X6	300	4	Y	6	Y	Y	-	-	-	Y	-
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	3	-	-
8B	6X40	0	2-4-2	-	8	Y	Y	-	-	10	-	-

5 Phase
Fully Actuated
Fayetteville City System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "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. 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. Refer to Signing & Delineation plans for location of final pavement markings including stopbars.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

NOTE: INSTALL PEDESTRIAN PUSHBUTTONS IN LOCATIONS THAT COMPLY WITH SECTION 4E.08 OF THE 2009 MUTCD.



OASIS 2070L TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	2.0	6.0	2.0	2.0	6.0	2.0
Max Green 1 *	25	90	30	20	90	30
Yellow Clearance	3.0	4.4	3.8	3.0	4.4	3.8
Red Clearance	3.2	1.6	3.1	3.5	2.0	3.1
Red Revert	0.0	0.0	0.0	0.0	0.0	0.0
Walk 1 *	-	7	7	-	7	-
Don't Walk 1	-	15	33	-	18	-
Seconds Per Actuation *	-	1.0	-	-	1.0	-
Max Variable Initial *	-	34	-	-	34	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduction *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-
Dual Entry	-	-	ON	-	-	ON
Simultaneous Gap	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.

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	
	Metal Strain Pole	

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

SIGNAL UPGRADE - FINAL DESIGN

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

NC 24 (Bragg Blvd.)
at
SR 1429 (Johnson St.) /
SR 1563 (Mike St.)

DIVISION 6 CUMBERLAND COUNTY FAYETTEVILLE

PLAN DATE:	JANUARY 2010	REVIEWED BY:	BL WATSON
PREPARED BY:	KL WIESKAMP	REVIEWED BY:	

SCALE 0 40, 1"=40'

REVISIONS	INIT.	DATE

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029449 BETSY L. WATSON

Betsy L Watson 3/1/10
SIGNATURE DATE

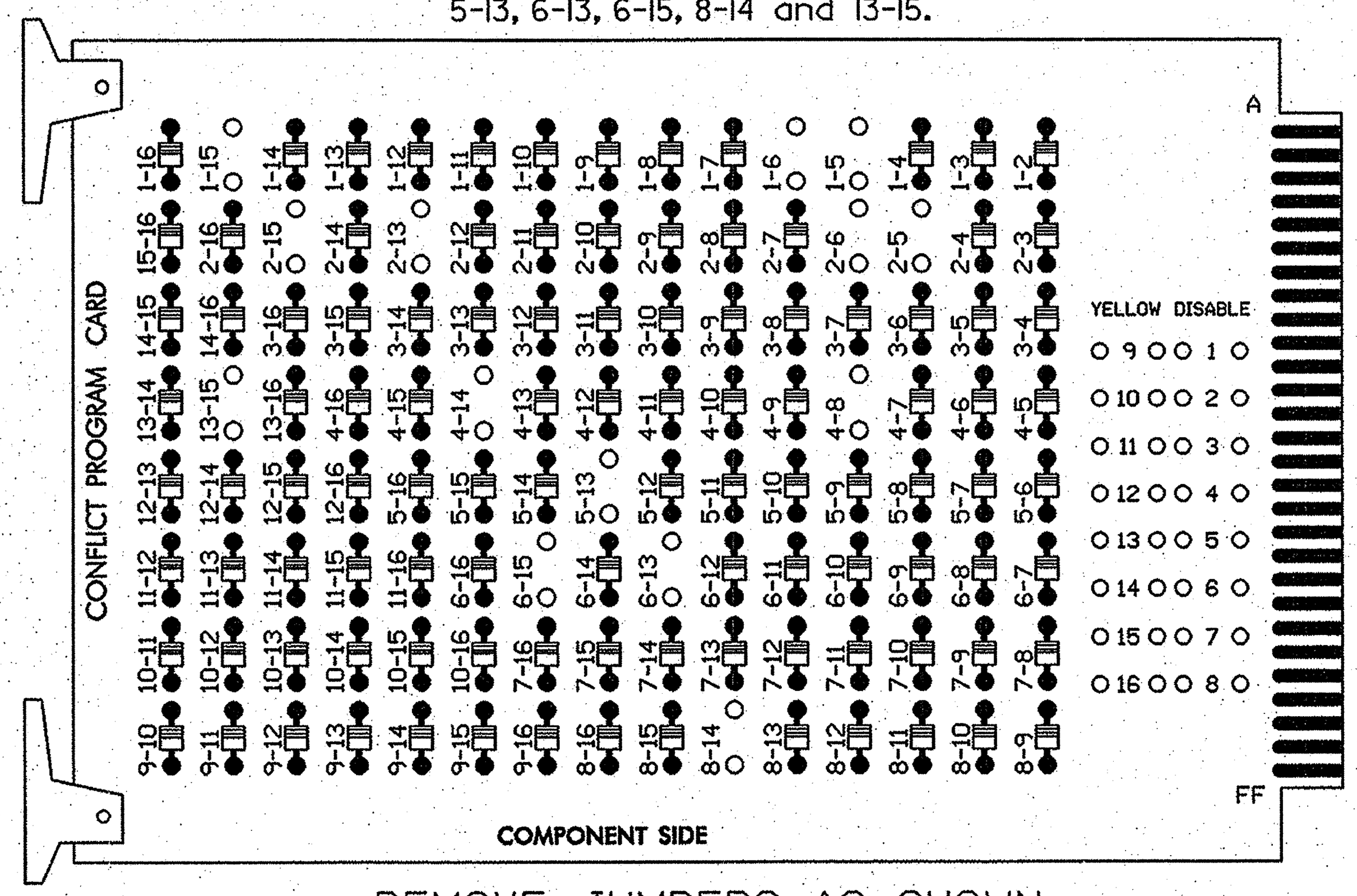
SIG. INVENTORY NO. 06-0265

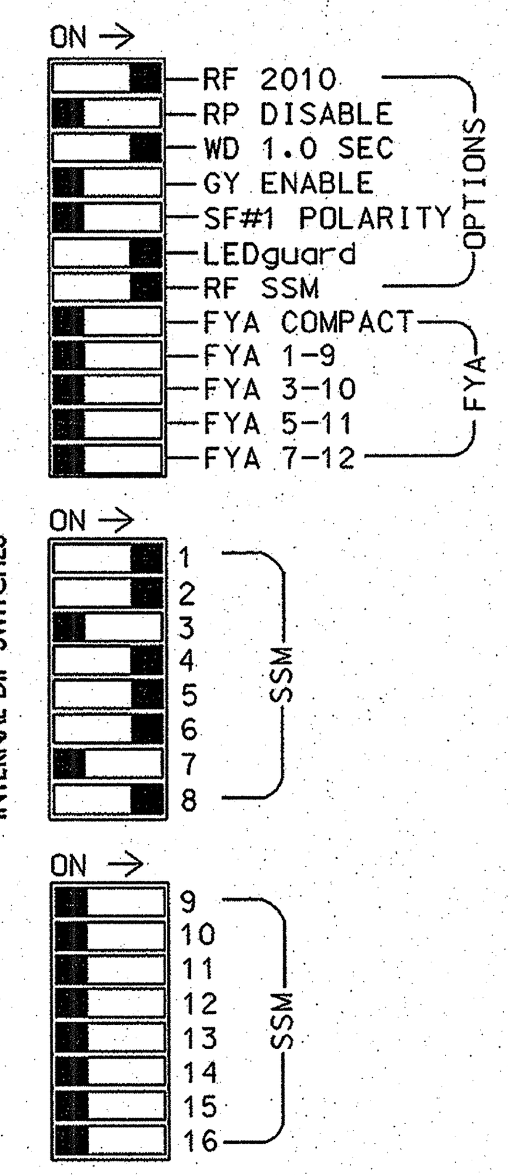
EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

ON OFF
WD ENABLE
SW2

REMOVE DIODE JUMPERS 1-5, 1-6, 1-15, 2-5, 2-6, 2-13, 2-15, 4-8, 4-14, 5-13, 6-13, 6-15, 8-14 and 13-15.





REMOVE JUMPERS 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 3,7,9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 4 and 8 for Dual Entry.
4. Enable Simultaneous Gap-Out for all phases.
5. Program phases 2 and 6 for Variable Initial and Gap Reduction.
6. Program phases 2 and 6 for Start Up In Green.
7. Program phases 2, 4 and 6 for 'STARTUP PED CALL'.
8. Program phases 2 and 6 for Yellow Flash.
9. The cabinet and controller are part of the Fayetteville City 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	21,22 23	P21, P22	NU	41,42	P41, P42	51	61,62 63	P61, P62	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125						131					
YELLOW ARROW	126						132					
GREEN ARROW	127						133					
			113			104			119			
			115			106			121			

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,S2P,S4,S4P,S5,S6,S6P,S8
PHASES USED.............1,2,2PED,4,4PED,5,6,6PED,8
OVERLAPS................NONE

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.

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 1A	Ø2/SYS 2A/S2A	Ø2/SYS 2C/S2C	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø2 PED DC ISOLATOR	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
FILE "I"	L	NOT USED	Ø2/SYS 2B/S2B	NOT USED			Ø 4 4B						Ø4 PED DC ISOLATOR	NOT USED	ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø6/SYS 6A/S6A	Ø6/SYS 6C/S6C	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
FILE "J"	L	NOT USED	Ø6/SYS 6B/S6B	NOT USED			Ø 8 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
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			
2A/S2A	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/S2B	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
2C/S2C	TB2-9,10	I3U	63	25	32	2/SYS	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
6A/S6A	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/S6B	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			
6C/S6C	TB3-9,10	J3U	64	26	36	6/SYS	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					

NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0265
DESIGNED: January 2010
SEALED: 03/01/10
REVISED:

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Signal Upgrade - Final Design

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

NC 24 (Bragg Blvd.)
at
SR 1429 (Johnson St.) /
SR 1563 (Mike St.)

Division 6 Cumberland County Fayetteville
PLAN DATE: January 2010 REVIEWED BY: Bret Gillis
PREPARED BY: Lori Mahany REVIEWED BY:

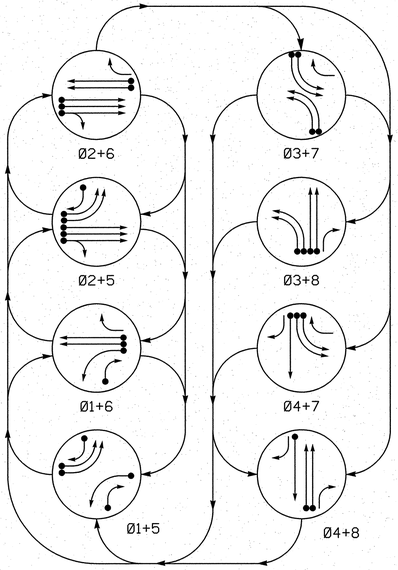
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 32643 ENGINEER LORI ELLIOTT MAHANY
SIGNATURE 3/1/10 DATE
SIG. INVENTORY NO. 06-0265

3/1/2010
U:\171001160\transportation\Design\Traffic\Signals\ElectricalDetails\06-0265_2010MMDDe.dgn
lmahany

PROJECT REFERENCE NO.	SHEET NO.
U-3423	SIG. 10

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

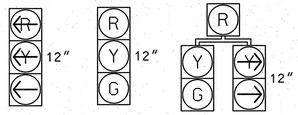
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	←	←	R	R	R	R	R	R	R
21, 22	R	R	G	G	R	R	R	R	Y
31, 32	R	R	R	R	←	←	R	R	R
41	R	R	R	R	R	R	G	G	R
42	R/←	R	R/←	R	R	R	G	G	R
51, 52	←	R	←	R	R	R	R	R	R
61	R	G	R	G	R	R	R	R	Y
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.

All Heads L.E.D.



11	21, 22	42
31, 32	41	62
51, 52	61	82
71, 72	81	

OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

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*	6X40	0	-	Y	1	Y	Y	-	-	-	-	Y
1B	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
2A,2B,2C*	6X6	300	-	Y	2	Y	Y	-	1.6	-	-	Y
2D,2E,2F*	6X6	90	-	Y	2	Y	Y	-	-	-	-	Y
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	3	-	Y
3B	6X40	0	2-4-2	Y	3	Y	Y	-	-	3	-	Y
4A	6X6	335	4	Y	4	-	Y	-	-	-	-	Y
4B	6X40	0	2-4-2	Y	4	Y	Y	Y	2.0	5	-	Y
4C	6X6	335	4	Y	4	-	Y	-	-	-	-	Y
5A*	6X40	0	-	Y	5	Y	Y	-	-	-	-	Y
5B*	6X40	0	-	Y	5	Y	Y	-	-	-	-	Y
5C	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
6A,6B*	6X6	300	-	Y	6	Y	Y	-	1.6	-	-	Y
6C,6D*	6X6	90	-	Y	6	Y	Y	-	-	-	-	Y
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	3	-	Y
7B	6X40	0	2-4-2	Y	7	Y	Y	-	-	3	-	Y
8A	6X6	310	6	Y	8	-	Y	-	-	-	-	Y
8B	6X6	310	6	Y	8	-	Y	-	-	-	-	Y
8C	6X40	0	2-4-2	Y	8	Y	Y	Y	2.0	5	-	Y
8D	6X40	0	2-4-2	Y	8	Y	Y	Y	2.0	5	-	Y

*Video Detection Area

8 Phase
Fully Actuated
Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "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. Refer to traffic control plans for location of temporary pavement markings including stopbars.

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	→
Ⓐ	"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	Ⓐ
● ●	Construction Zone Drums	N/A
▒	Construction Zone	N/A
▬	Video Detection Area	N/A

OASIS 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 *	2.0	2.0	2.0	6.0	2.0	2.0	2.0	6.0
Max Green 1 *	20	90	20	60	20	90	40	60
Yellow Clearance	3.0	4.5	3.0	4.4	3.0	4.5	3.0	4.5
Red Clearance	2.7	1.7	3.6	1.8	3.2	1.3	3.5	1.8
Red Revert	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	0	-	-	-	0
Time To Reduce *	-	-	-	15	-	-	-	15
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.

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

SIGNAL UPGRADE - TEMPORARY SIGNAL #1 (PHASE I)

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

NC 24 (Bragg Blvd.)
at
SR 1437 (Santa Fe Dr./
Shaw Rd.)

DIVISION 6 CUMBERLAND COUNTY FAYETTEVILLE

PLAN DATE: JANUARY 2010 REVIEWED BY: BL WATSON
PREPARED BY: KL WIESKAMP REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 029449 ENGINEER BETSY L. WATSON
SIGNATURE 3/1/10 DATE

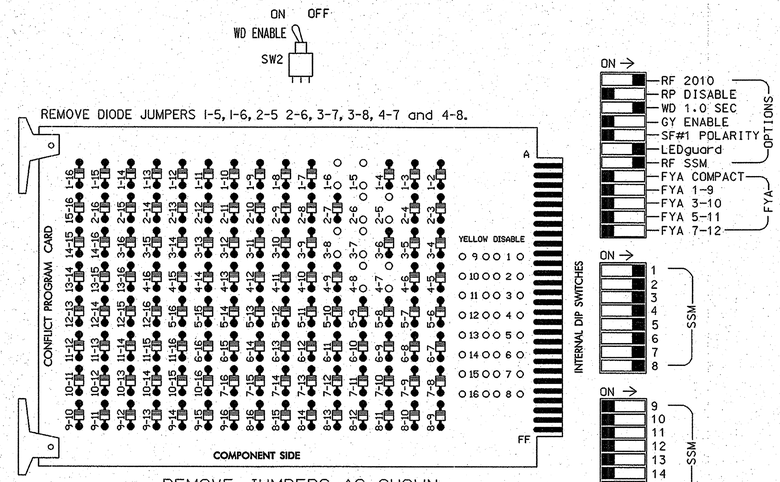
SIG. INVENTORY NO. 06-0279 T1

3/2/2010
U:\Traffic\Signals\Plans\06-0279_temp1g.dgn
kwieskamp

PROJECT REFERENCE NO.	SHEET NO.
U-3423	Sig. 11

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. Enable Simultaneous Gap-Out for all phases.
4. Program phases 4 and 8 for Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash.
7. The cabinet and controller are part of the Fayetteville City 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	82	21,22	NU	31,32	41,42	NU	51,52	42	61,62	NU	71,72	62	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			132	132			123	123		
GREEN ARROW	127	127			118			133	133			124	124		

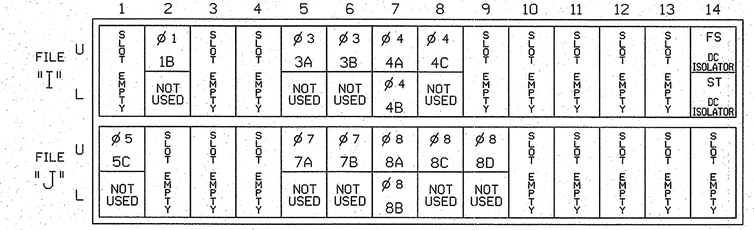
NU = Not Used

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)



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
1B	TB2-5,6	I2U	39	1	2	1	Y	Y			15
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			3
3B	TB4-9,10	I6U	41	3	4	3	Y	Y			3
4A	TB6-1,2	I7U	65	27	34	4		Y			
4B	TB6-3,4	I7L	78	40	44	4	Y	Y	Y	2	5
4C	TB6-5,6	I8U	49	11	24	4		Y			
5C	TB3-1,2	J1U	55	17	5	5	Y	Y			15
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			3
7B	TB5-9,10	J6U	42	4	8	7	Y	Y			3
8A	TB7-1,2	J7U	66	28	38	8		Y			
8B	TB7-3,4	J7L	79	41	48	8		Y			
8C	TB7-5,6	J8U	50	12	28	8	Y	Y	Y	2	5
8D	TB7-9,10	J9U	59	21	15	8	Y	Y	Y	2	5

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

SPECIAL DETECTOR NOTE

Install a loop emulation detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0279 T1
DESIGNED: January 2010
SEALED: 03/01/10
REVISED:

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Signal Upgrade - Temporary Signal 1

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

NC 24 (Bragg Blvd.)
at
SR 1437 (Santa Fe Dr./ Shaw Rd.)

Division 6 | Cumberland County | Fayetteville

PLAN DATE: January 2010 | REVIEWED BY: Bret Gillis
PREPARED BY: Lori Mahany | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 32643 ENGINEER LORI ELLIOTT MAHANY

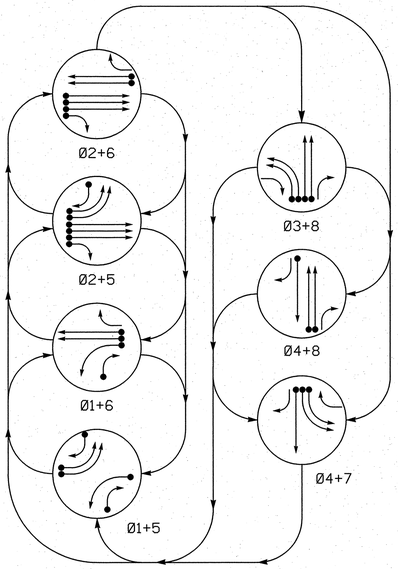
SIGNATURE | DATE

SIG. INVENTORY NO. 06-0279 T1

3/1/2010
D:\NITTI001160\transportation\Design\Traffic\Signals\Electrical\Details\06-0279_Temp1e.dgn
dsmoody

PROJECT REFERENCE NO.	SHEET NO.
U-3423	SIG. 12

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

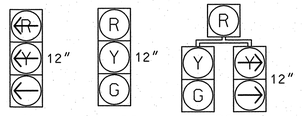
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+05	01+06	02+05	02+06	03+08	04+08	04+07	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R	R	Y
23	R	R	G	G	R/→	R	R	Y
31, 32	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~←~~	~~R~~	~~R~~
41	R	R	R	R	R	G	G	R
42	R/→	R	R/→	R	R	G	G	R
51, 52	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61	R	G	R	G	R	R	R	Y
62	R	G	R	G	R	R	R/→	Y
71, 72	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~←~~	~~R~~
81	R	R	R	R	G	G	R	R
82	R/→	R/→	R	R	G	G	R	R

SIGNAL FACE I.D.

All Heads L.E.D.



11	21, 22	23
31, 32	41	42
51, 52	61	62
71, 72	81	82

OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

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*	6X40	0	-	Y	1	Y	Y	-	-	-	-	-
1B	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	-
2A,2B,2C*	6X6	300	-	Y	2	Y	Y	-	1.6	-	-	-
2C,2D,2E*	6X6	90	-	Y	2	Y	Y	-	-	-	-	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	3	-	-
3B	6X40	0	2-4-2	Y	3	Y	Y	-	-	3	-	-
4A	6X6	300	4	-	4	-	Y	-	-	-	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	Y	2.0	5	-	-
5A*	6X40	0	-	Y	5	Y	Y	-	-	-	-	-
5B*	6X40	0	-	Y	5	Y	Y	-	-	-	-	-
5C	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	-
6A,6B*	6X6	300	-	Y	6	Y	Y	-	1.6	-	-	-
6C,6D*	6X6	90	-	Y	6	Y	Y	-	-	-	-	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	3	-	-
7B	6X40	0	2-4-2	Y	7	Y	Y	-	-	3	-	-
8A	6X6	300	6	-	8	-	Y	-	-	-	-	-
8B	6X6	300	6	-	8	-	Y	-	-	-	-	-
8C	6X40	0	2-4-2	Y	8	Y	Y	Y	2.0	5	-	-
8D	6X40	0	2-4-2	Y	8	Y	Y	Y	2.0	5	-	-

*Video Detection Area

7 Phase
Fully Actuated
Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "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. Reposition existing signal heads numbered 11, 21, 22, 31, 32, 51, 52, 61, 62, 81, 82, and signs Ⓐ.
6. Set all detector units to presence mode.
7. Refer to traffic control plans for locations of temporary pavement markings including stopbars.

OASIS 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 *	2.0	2.0	2.0	6.0	2.0	2.0	2.0	6.0
Max Green 1 *	20	90	20	60	20	90	40	60
Yellow Clearance	3.0	4.5	3.0	4.4	3.0	4.5	3.0	4.5
Red Clearance	3.7	2.6	4.1	2.4	4.3	2.1	4.1	2.4
Red Revert	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	0	-	-	-	0
Time To Reduce *	-	-	-	15	-	-	-	15
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.

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	→
Ⓐ	"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	Ⓐ
●●	Construction Zone Drums	N/A
▒	Construction Zone	N/A
———	Video Detection Area	N/A

SIGNAL UPGRADE - TEMPORARY SIGNAL #2 (PHASE II)

Stantec

Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

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

NC 24 (Bragg Blvd.)
at
SR 1437 (Santa Fe Dr./
Shaw Rd.)

DIVISION 6 CUMBERLAND COUNTY FAYETTEVILLE

PLAN DATE: JANUARY 2010 REVIEWED BY: BL WATSON
PREPARED BY: KL WIESKAMP REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 029449 ENGINEER BETSY L. WATSON

3/24/10
SIGNATURE DATE

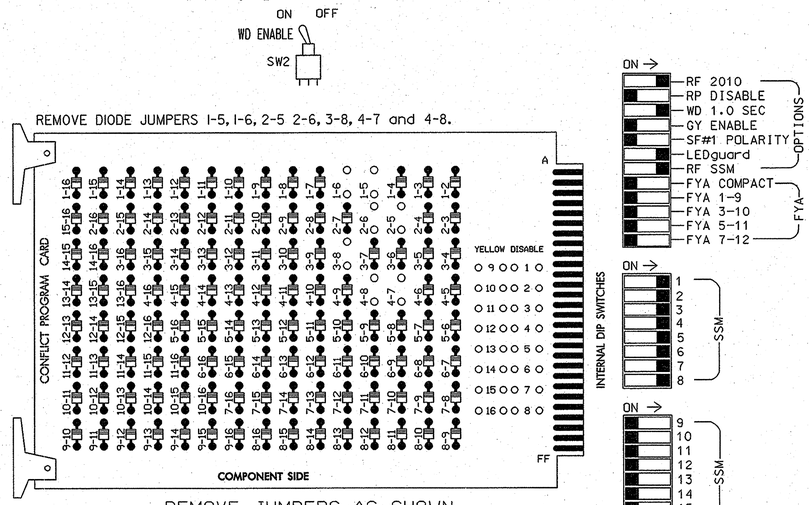
SIG. INVENTORY NO. 06-0279 T2

3/25/2010
U:\traffic\Signals\Sig#Plans\06-0279_temp2a.dgn
kwieskamp

PROJECT REFERENCE NO.	SHEET NO.
U-3423	Sig. 13

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. Enable Simultaneous Gap-Out for all phases.
4. Program phases 4 and 8 for Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash.
7. The cabinet and controller are part of the Fayetteville City 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	82	21,22 23	NU	31,32	23	41,42	NU	51,52	42	61,62	NU	71,72	62	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	132			123	123		
GREEN ARROW	127	127			118	118			133	133			124	124		
✋																
🚶																

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)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	ø1 1B	SLOT EMPTY	SLOT EMPTY	ø3 3A	ø3 3B	ø4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		NOT USED			NOT USED	NOT USED	ø4 4B							ST DC ISOLATOR
FILE "J"	U	ø5 5C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø7 7A	ø7 7B	ø8 8A	ø8 8C	ø8 8D	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED				NOT USED	NOT USED	ø8 8B	NOT USED	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
1B	TB2-5,6	I2U	39	1	2	1	Y	Y			15
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			3
3B	TB4-9,10	I6U	41	3	4	3	Y	Y			3
4A	TB6-1,2	I7U	65	27	34	4		Y			
4B	TB6-3,4	I7L	78	40	44	4	Y	Y	Y	2	5
5C	TB3-1,2	J1U	55	17	5	5	Y	Y			15
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			3
7B	TB5-9,10	J6U	42	4	8	7	Y	Y			3
8A	TB7-1,2	J7U	66	28	38	8		Y			
8B	TB7-3,4	J7L	79	41	48	8		Y			
8C	TB7-5,6	J8U	50	12	28	8	Y	Y	Y	2	5
8D	TB7-9,10	J9U	59	21	15	8	Y	Y	Y	2	5

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

SPECIAL DETECTOR NOTE

Install a loop emulation detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

PHASE SEQUENCE PROGRAMMING DETAIL

(program controller as shown below)

FROM OASIS LOCAL CONTROLLER MAIN MENU
SELECT: 4 PHASE SEQUENCE

PHASE SEQUENCE: PAGE 1 NEXT: PAGES) ↘

RNG	LEAD	BARRIER 1			X-LAG	LEAD	BARRIER 2			X-LAG
1	1	2	0	0	3	4	0	0		
2	5	6	0	0	0	8	0	7		
3	0	0	0	0	0	0	0	0		
4	0	0	0	0	0	0	0	0		

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0279 T2
DESIGNED: January 2010
SEALED: 03/24/10
REVISED:

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Signal Upgrade - Temporary Signal 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:
Transportation Mobility and Safety Division
NC Department of Transportation
Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

NC 24 (Bragg Blvd.) at SR 1437 (Santa Fe Dr./ Shaw Rd.)

Division 6 | Cumberland County | Fayetteville

PLAN DATE: January 2010 | REVIEWED BY: Bret Gillis

PREPARED BY: Lori Mahany | REVIEWED BY:

REVISIONS	INIT.	DATE

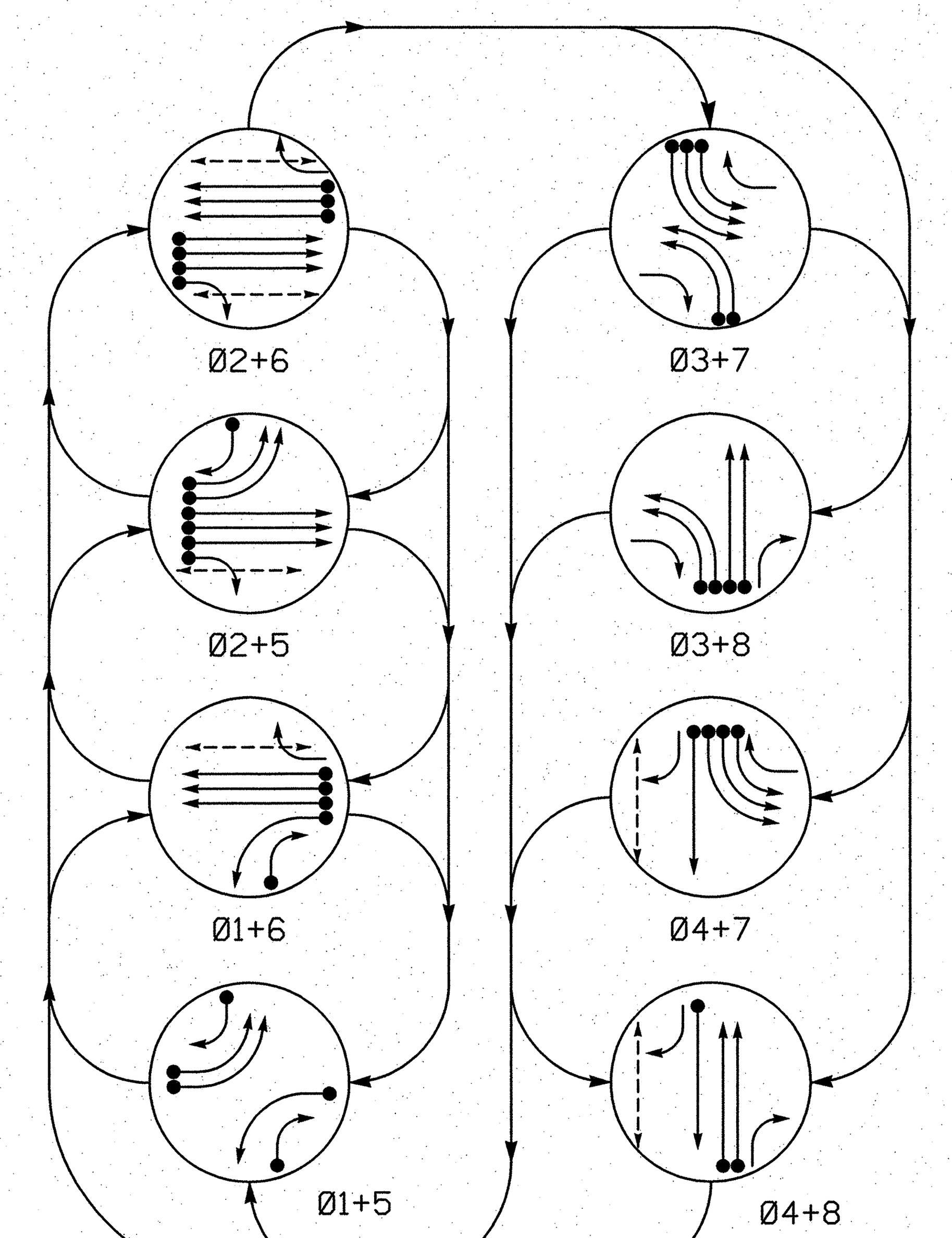
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 32643 ENGINEER LORI ELLIOTT MAHANY

Lori Mahany 3/24/10
SIGNATURE DATE

SIG. INVENTORY NO. 06-0279 T2

3/23/2010
H:\Projects\60160\transportation\Design\Traffic\Signals\Electrical\Details\06-0279_Temp2e.dgn
lmahany

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

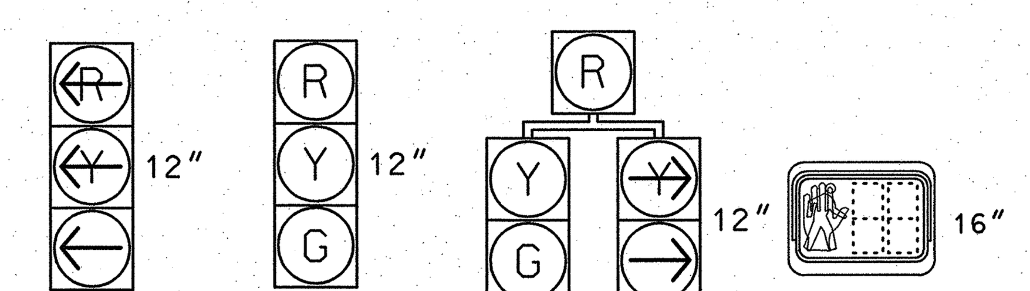
TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8	FLASH
11	←	←	←R	←R	←R	←R	←R	←R	←R
21, 22	R	R	G	G	R	R	R	R	Y
23	R	R	G	G	R/→	R/→	R	R	Y
31, 32	←R	←R	←R	←R	←	←	←R	←R	←R
41	R	R	R	R	R	R	G	G	R
42	R/→	R	R/→	R	R	R	G	G	R
51, 52	←	←R	←	←R	←R	←R	←R	←R	←R
61, 62	R	G	R	G	R	R	R	R	Y
63	R	G	R	G	R/→	R	R/→	R	Y
71, 72, 73	←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
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

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

SIGNAL FACE I.D.

All Heads L.E.D.



12"	12"	12"	16"
11, 31, 32, 51, 52, 71, 72, 73	21, 22, 41, 61, 62, 81	23, 42, 63, 82	P21, P22, P41, P42, P61, P62

OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

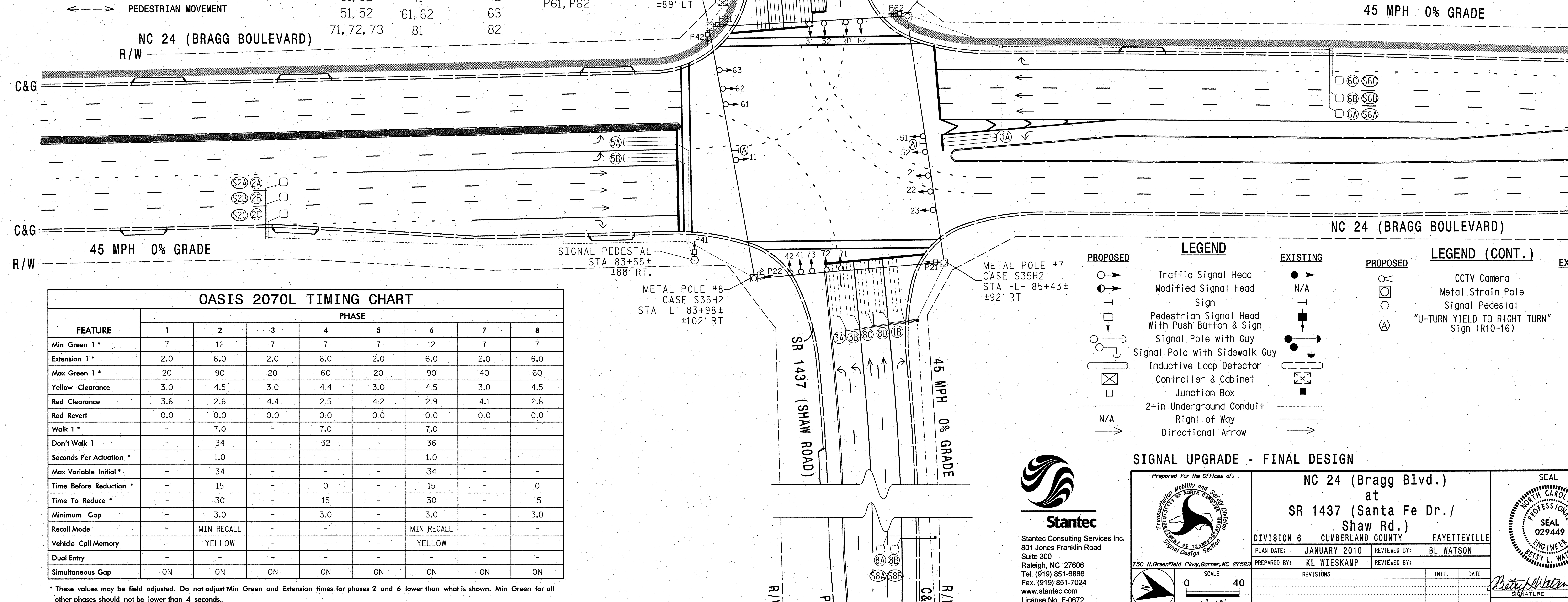
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	-	-	-
1B	6X40	0	2-4-2	-	1	Y	Y	-	-	15	-	-
2A/S2A	6X6	300	6	Y	2	Y	Y	-	-	-	Y	-
2B/S2B	6X6	300	6	Y	2	Y	Y	-	-	-	Y	-
2C/S2C	6X6	300	6	Y	2	Y	Y	-	-	-	Y	-
3A	6X40	0	2-4-2	-	3	Y	Y	-	-	3	-	-
3B	6X40	0	2-4-2	-	3	Y	Y	-	-	3	-	-
4A/S4A	6X6	300	4	-	4	-	Y	-	-	-	Y	-
4B	6X40	0	2-4-2	Y	4	Y	Y	Y	2	5	-	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	-	-	-
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	-	-	-
5C	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	-
6A/S6A	6X6	300	6	Y	6	Y	Y	-	-	-	Y	Y
6B/S6B	6X6	300	6	Y	6	Y	Y	-	-	-	Y	-
6C/S6C	6X6	300	6	Y	6	Y	Y	-	-	-	Y	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	3	-	-
7B	6X40	0	2-4-2	Y	7	Y	Y	-	-	3	-	-
7C	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	Y
8A/S8A	6X6	300	6	-	8	-	Y	-	-	-	Y	-
8B/S8B	6X6	300	6	-	8	-	Y	-	-	-	Y	-
8C	6X40	0	2-4-2	-	8	Y	Y	Y	2	5	-	-
8D	6X40	0	2-4-2	-	8	Y	Y	Y	2	5	-	-

8 Phase
Fully Actuated
Fayetteville City System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "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. Relocate existing signs Ⓐ to new span.
6. Abandon existing loop 4C.
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. Refer to Signing & Delineation plans for location of final pavement markings including stopbars.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

NOTE: INSTALL PEDESTRIAN PUSHBUTTONS IN LOCATIONS THAT COMPLY WITH SECTION 4E.08 OF THE 2009 MUTCD.



OASIS 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 *	2.0	6.0	2.0	6.0	2.0	6.0	2.0	6.0
Max Green 1 *	20	90	20	60	20	90	40	60
Yellow Clearance	3.0	4.5	3.0	4.4	3.0	4.5	3.0	4.5
Red Clearance	3.6	2.6	4.4	2.5	4.2	2.9	4.1	2.8
Red Revert	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk 1 *	-	7.0	-	7.0	-	7.0	-	-
Don't Walk 1	-	34	-	32	-	36	-	-
Seconds Per Actuation *	-	1.0	-	-	-	1.0	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	0	-	15	-	0
Time To Reduce *	-	30	-	15	-	30	-	15
Minimum Gap	-	3.0	-	3.0	-	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.

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	→

LEGEND (CONT.)

PROPOSED		EXISTING
⊂◁	CCTV Camera	N/A
◙	Metal Strain Pole	◙
⬡	Signal Pedestal	⬢
Ⓐ	"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	Ⓐ

SIGNAL UPGRADE - FINAL DESIGN

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

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

NC 24 (Bragg Blvd.)
at
SR 1437 (Santa Fe Dr./
Shaw Rd.)

DIVISION 6 CUMBERLAND COUNTY FAYETTEVILLE

PLAN DATE:	JANUARY 2010	REVIEWED BY:	BL WATSON
PREPARED BY:	KL WIESKAMP	REVIEWED BY:	

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 029449 ENGINEER BETSY L. WATSON

SIGNATURE 3/1/10 DATE

SIG. INVENTORY NO. 06-0279

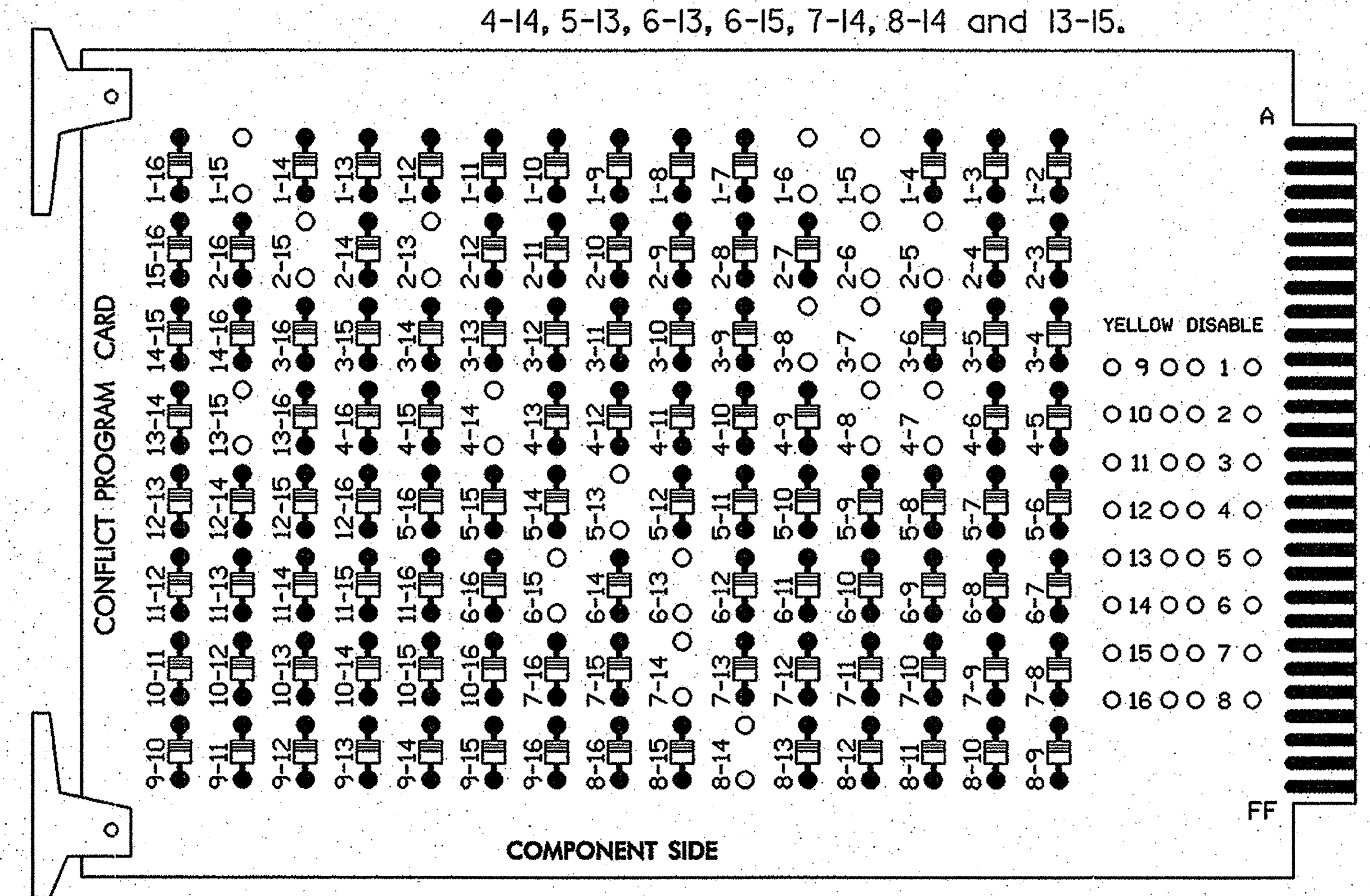
3/2/2010
U:*Traffic*Signals*SigPlans*06-0279_2010MMDDg.dgn
kwieskamp

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

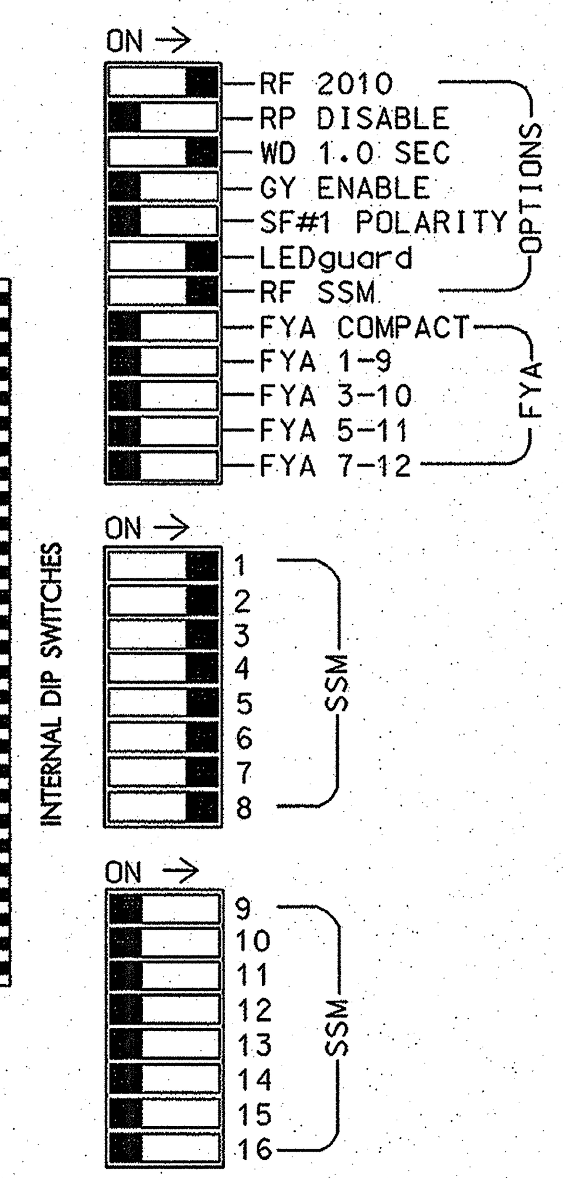
(remove jumpers and set switches as shown)

ON OFF
WD ENABLE
SW2

REMOVE DIODE JUMPERS 1-5, 1-6, 1-15, 2-5 2-6, 2-13, 2-15, 3-7, 3-8, 4-7, 4-8, 4-14, 5-13, 6-13, 6-15, 7-14, 8-14 and 13-15.



REMOVE JUMPERS 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 9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Variable Initial and phases 2, 4, 6 and 8 for Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2, 4 and 6 for 'STARTUP PED CALL'.
7. Program phases 2 and 6 for Yellow Flash.
8. The cabinet and controller are part of the Fayetteville City 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	82	21,22 23	P21, P22	31,32	23	41,42	P41, P42	51,52	42	61,62 63	P61, P62	71,72 73	63	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	132			123	123		
GREEN ARROW	127	127			118	118			133	133			124	124		
(hand)				113				104				119				
(walk)				115				106				121				

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,S2P,S3,S4,S4P,S5,S6,S6P,S7,S8
PHASES USED............1,2,2PED,3,4,4PED,5,6,6PED,7,8
OVERLAPS...............NONE

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.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 1 1B	Ø2/SYS 2A/S2A	Ø2/SYS 2C/S2C	Ø 3 3A	Ø 3 3B	Ø4/SYS 4A/S4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø2 PED DC ISOLATOR	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
	L	NOT USED	NOT USED	Ø2/SYS 2B/S2B	NOT USED	NOT USED	NOT USED	Ø 4 4B					Ø4 PED DC ISOLATOR	NOT USED	ST DC ISOLATOR
FILE "J"	U	Ø 5 5C	Ø 5 5A	Ø6/SYS 6A/S6A	Ø6/SYS 6C/S6C	Ø 7 7A	Ø 7 7B	Ø8/SYS 8A/S8A	Ø 8 8C	Ø 8 8D	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 5 5B	Ø6/SYS 6B/S6B	NOT USED	NOT USED	Ø 7 7C	Ø8/SYS 8B/S8B	NOT USED	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
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			
1B	TB2-5,6	I2U	39	1	2	1	Y	Y			15
2A/S2A	TB2-9,10	I3U	63	25	32	2/SYS	Y	Y			
2B/S2B	TB2-11,12	I3L	76	38	42	2/SYS	Y	Y			
2C/S2C	TB4-1,2	I4U	47	9	22	2/SYS	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			3
3B	TB4-9,10	I6U	41	3	4	3	Y	Y			3
4A/S4A	TB6-1,2	I7U	65	27	34	4/SYS		Y			
4B	TB6-3,4	I7L	78	40	44	4	Y	Y	Y	2	5
5C	TB3-1,2	J1U	55	17	5	5	Y	Y			15
5A	TB3-5,6	J2U	40	2	6	5	Y	Y			
5B	TB3-7,8	J2L	44	6	16	5	Y	Y			
6A/S6A	TB3-9,10	J3U	64	26	36	6/SYS	Y	Y			
6B/S6B	TB3-11,12	J3L	77	39	46	6/SYS	Y	Y			
6C/S6C	TB5-1,2	J4U	48	10	26	6/SYS	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			3
7B	TB5-9,10	J6U	42	4	8	7	Y	Y			3
7C	TB5-11,12	J6L	46	8	18	7	Y	Y			
8A/S8A	TB7-1,2	J7U	66	28	38	8/SYS		Y			
8B/S8B	TB7-3,4	J7L	79	41	48	8/SYS		Y			
8C	TB7-5,6	J8U	50	12	28	8	Y	Y	Y	2	5
8D	TB7-9,10	J9U	59	21	15	8	Y	Y	Y	2	5
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					

NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0279
DESIGNED: January 2010
SEALED: 03/01/10
REVISED:

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Signal Upgrade - Final Design

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

NC 24 (Bragg Blvd.) at SR 1437 (Santa Fe Dr./ Shaw Rd.)

Division 6 | Cumberland County | Fayetteville

PLAN DATE: January 2010 | REVIEWED BY: Bret Gillis
PREPARED BY: Lori Mahany | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 32643 LORI ELLIOTT MAHANY
SIGNATURE 3/1/10 DATE

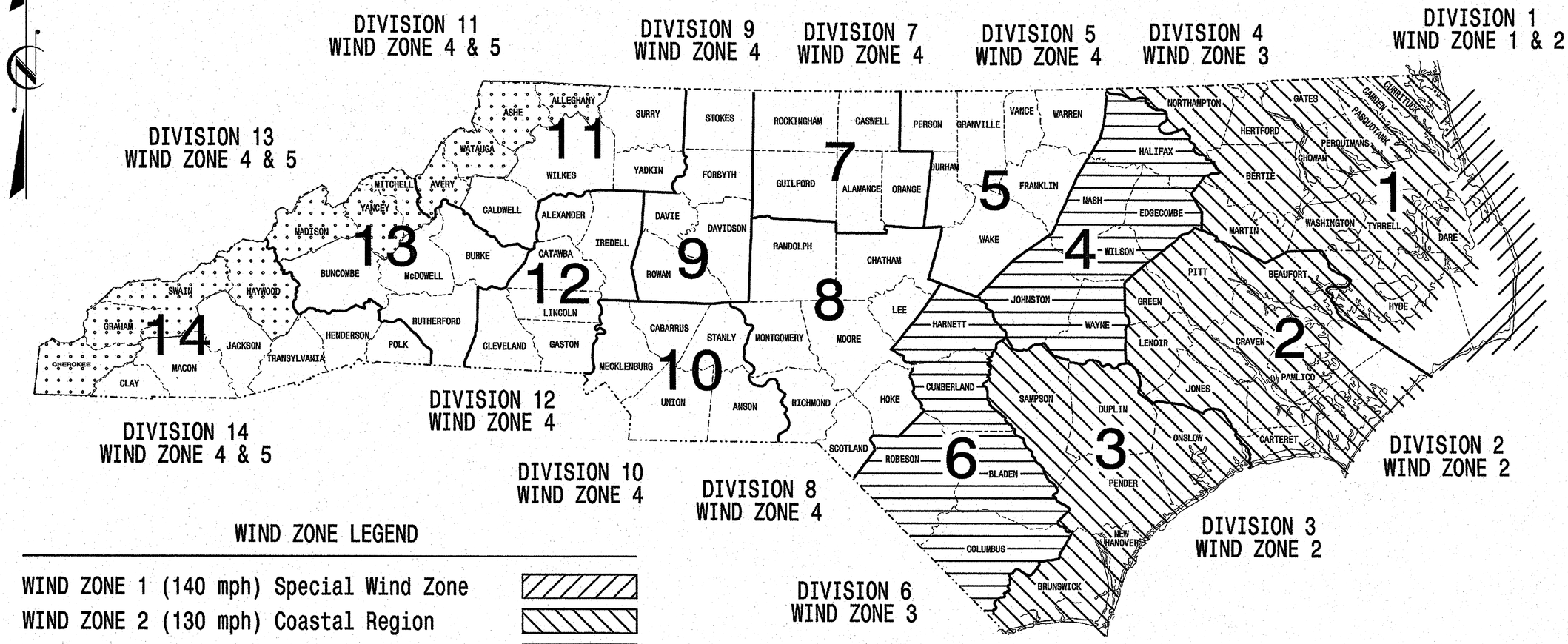
SIG. INVENTORY NO. 06-0279

NCDOT METAL POLE STANDARDS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	PROJECT NO.	SHEET NO.
N.C.	U-3423	Sig. 16
F. A. PROJ. NO.		M 1
PROJECT ID. NO.		

STANDARD DRAWINGS FOR METAL POLES



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	

http://www.ncdot.org/doh/preconstruct/traffic/ITSS/ws/mpoles/poles.html

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

Designed in conformance with the 2002 Interim to the 4th Edition 2001

AASHTO

Standard Specifications for Structural Supports for Highway Signs, Luminares, and Traffic Signals

INDEX OF PLANS

NCDOT CONTACTS:

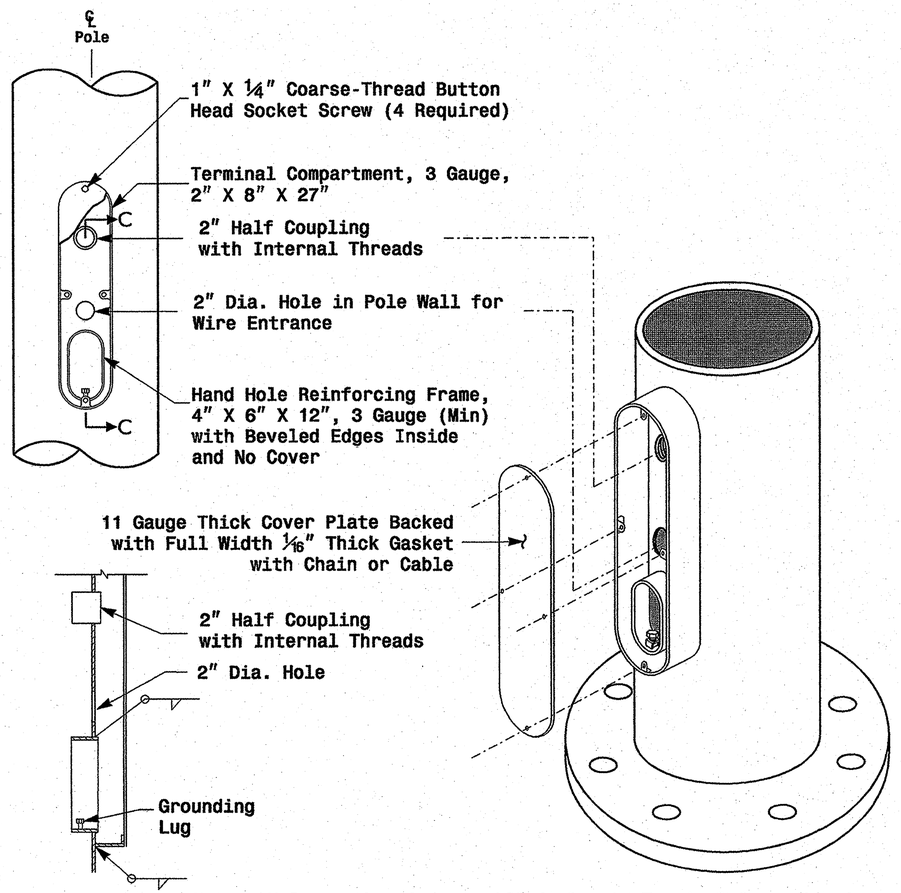
MOBILITY AND SAFETY DIVISION – ITS and SIGNALS UNIT

G. A. Fuller, P.E. – State ITS and Signals Engineer
G. G. Murr, Jr., P.E. – State Signals Engineer
D. C. Sarkar, P.E. – ITS and Signals Senior Structural Engineer
C. F. Andrews, Jr. – ITS and Signals Structural Project Engineer
M. Aslam – ITS and Signals Structural Project Engineer
N. Bitting, P.E. – ITS and Signals Structural Project Engineer

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

D. Sarkar 7.21.2009
SIGNATURE DATE



Section C-C

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	----------

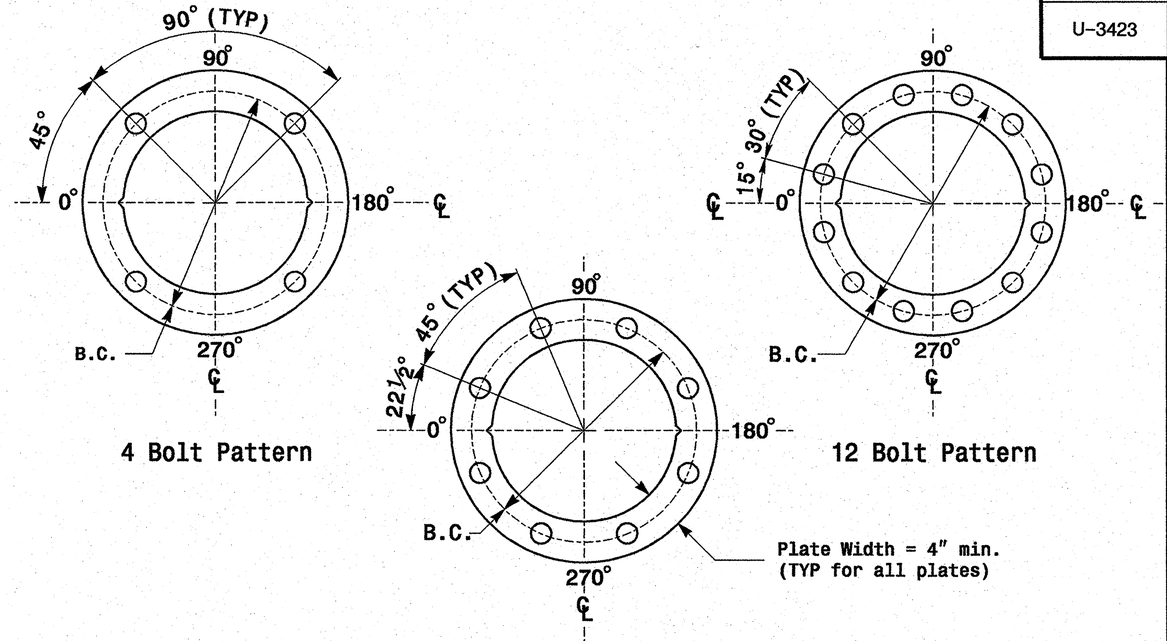
Shaft I.D. Tag
(Provide on Strain Poles and Mast Arm Poles)

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)

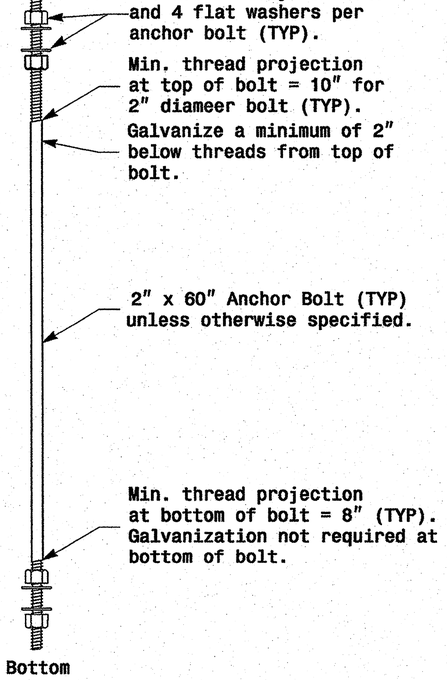
Notes:
1) D= Diameter, T= Thickness, L= Length, Y= Yield Strength
2) A.B. = Anchor Bolt
3) B.C. = Bolt Circle of Anchor Bolts
4) If Custom Design, use "NCDOT STANDARD" line for plan pole I.D.
5) See drawing M4 for mounting positions of I.D. tags.

Identification Tag Details



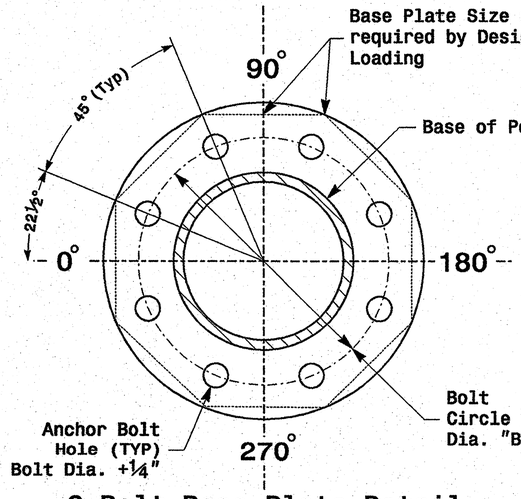
Construct Templates and Plates from ¼" min. thick Steel. Galvanizing is not required.

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

Prepared in the Offices of: Traffic Engineering and Signal Design Branch, Traffic Engineering Section, Division of Highways, North Carolina Department of Transportation, 122 N. McDowell St., Raleigh, NC 27603

Typical Fabrication Details Common To All Metal Poles

PLAN DATE:	May 2005	REVIEWED BY:	C.F. Andrews
PREPARED BY:	P.L. Alexander	REVIEWED BY:	A.W. Esposito

REVISIONS	INIT.	DATE

SCALE: 0 NA — NONE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

D. SarKar 9.2.2005
SIGNATURE DATE

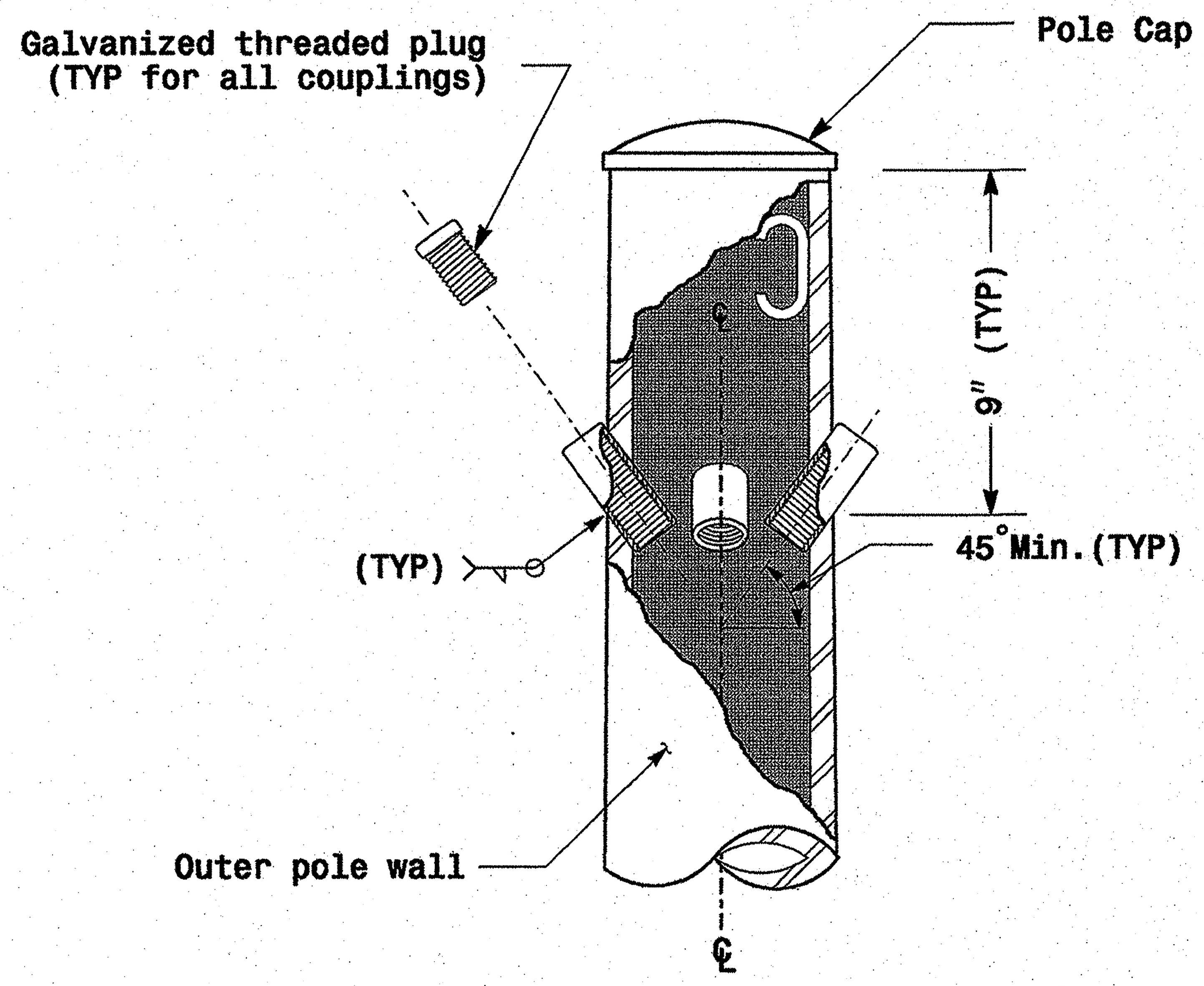
SIG. INVENTORY NO.

Fabrication Details – All Poles

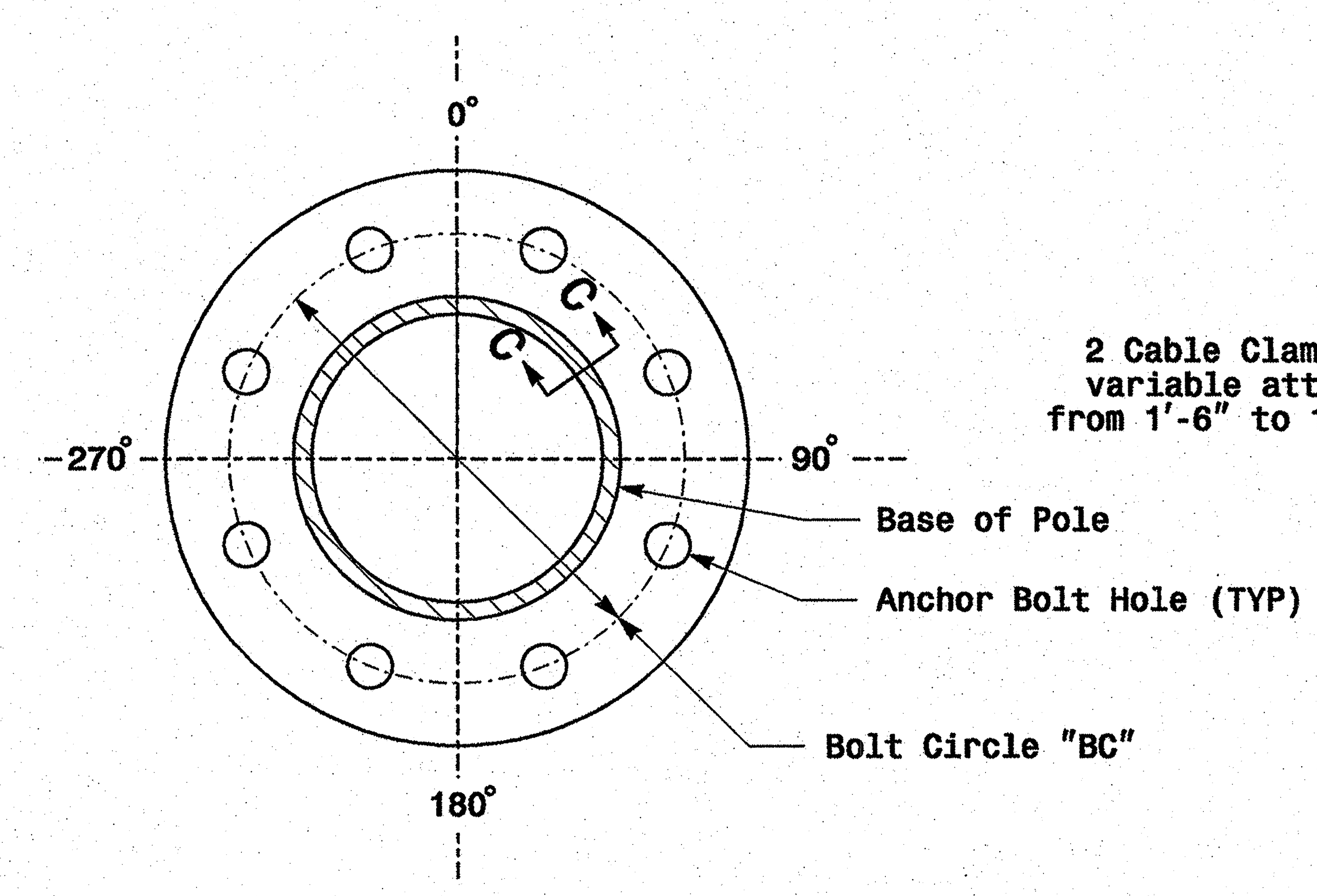
01-SEP-2005 18:21
D:\projects\Mast Pole Standards\6004 m2 thru m5.dgn
candrews

PROJECT REFERENCE NO.	SHEET NO.
U-3423	Sig. 18 M 3

Fabrication Details – Strain Poles



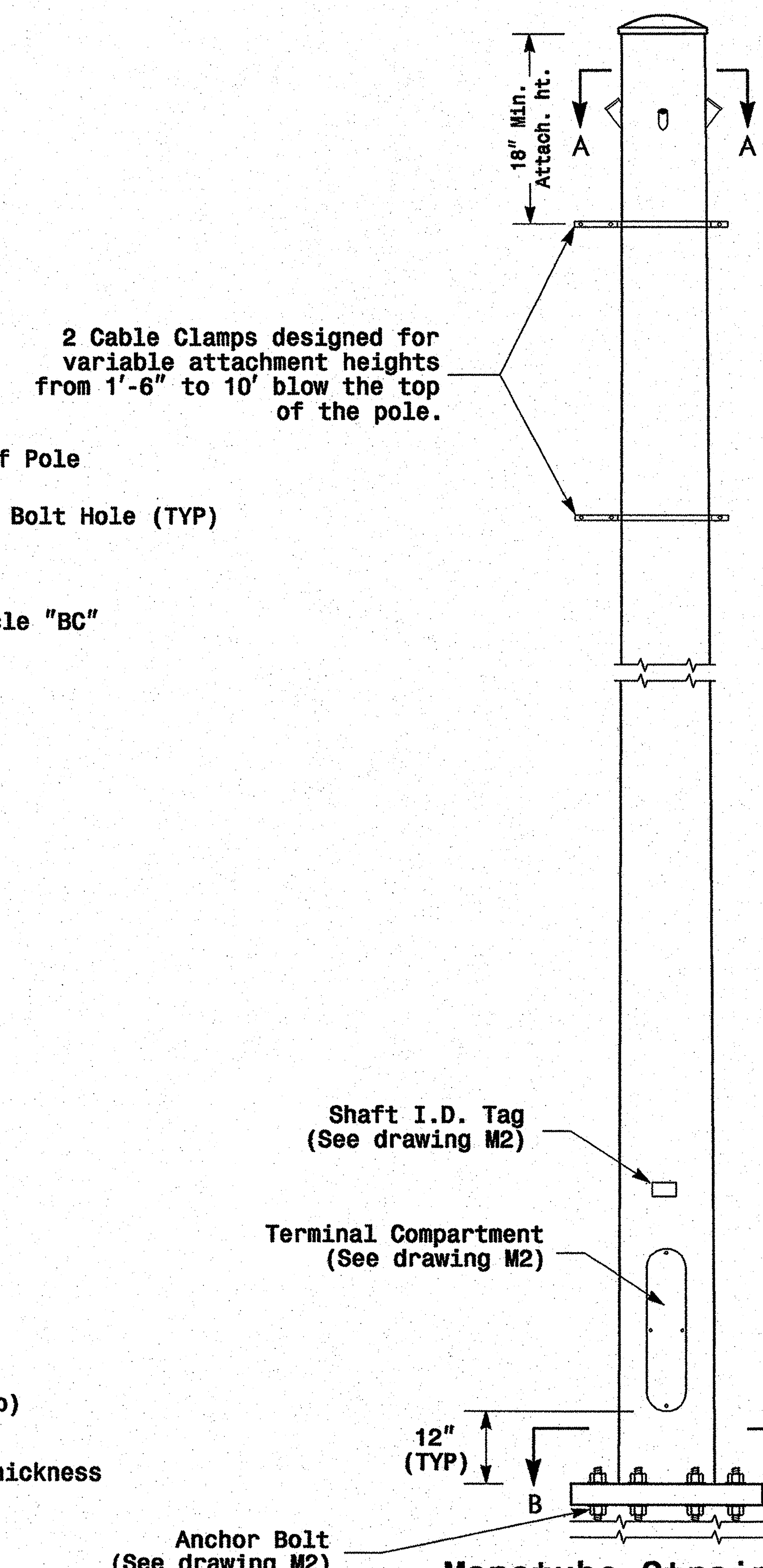
Cable Entrances at Top of Pole



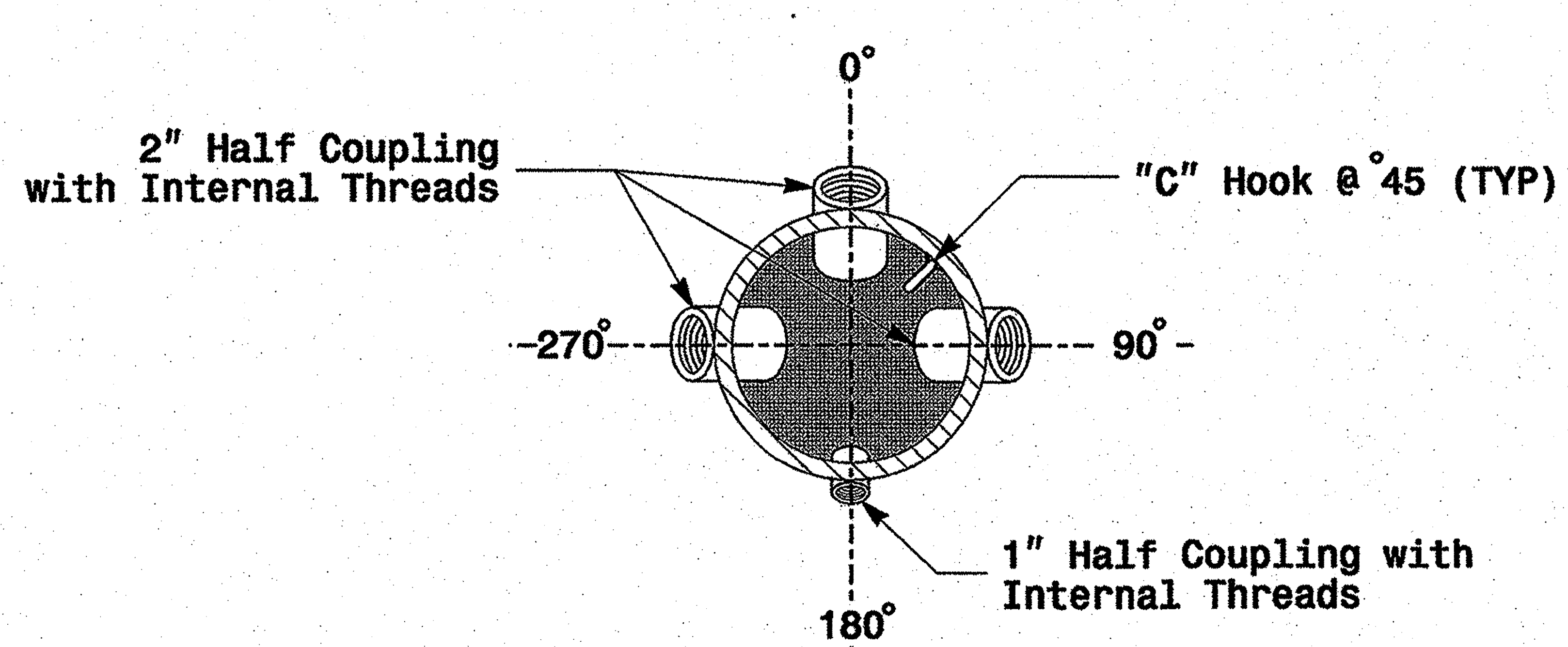
Section B-B

(See drawing M2)

Pole Base Plate

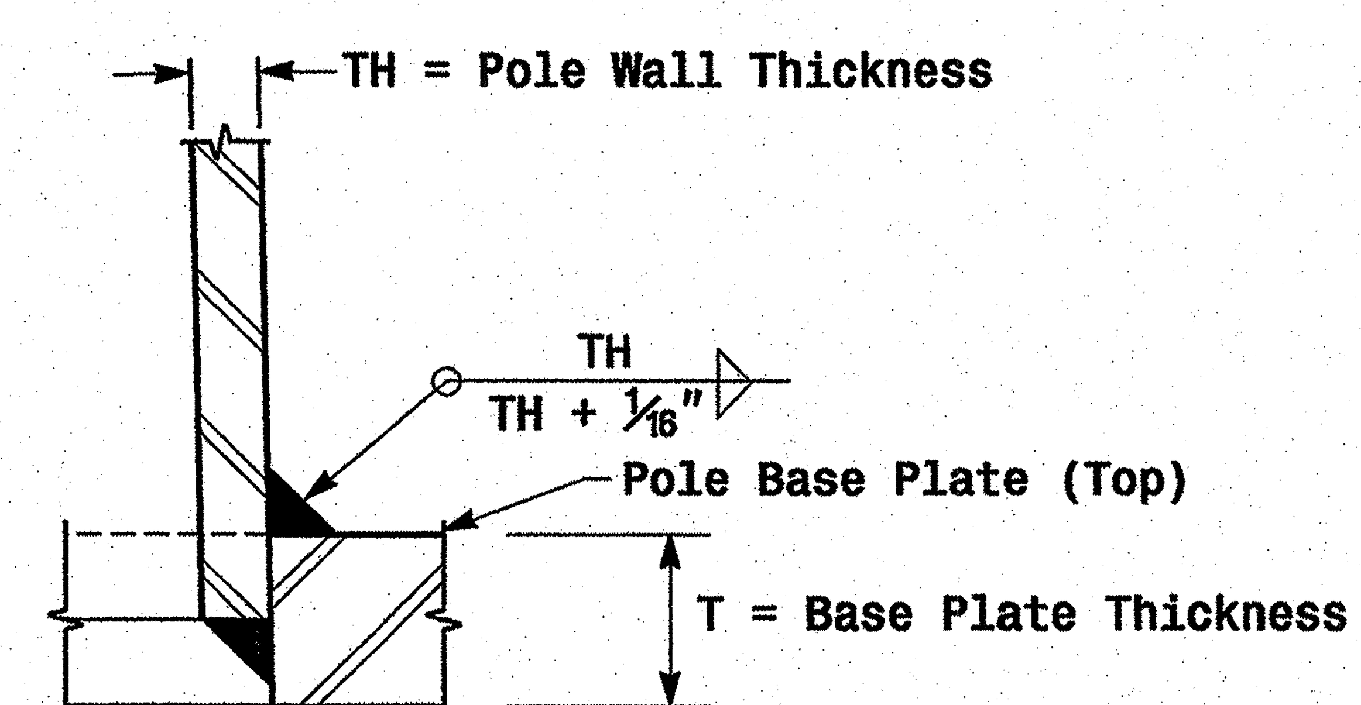


Monotube Strain Pole
(.14"/Foot Taper)



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:
Traffic Engineering and Safety Systems Branch, Signals and Geometrics Section, North Carolina Department of Transportation
122 N. McDowell St., Raleigh, NC 27603

SCALE: 0 NA — NONE

Typical Fabrication Details
For Strain Poles

PLAN DATE:	May 2005	REVIEWED BY:	C.F. Andrews
PREPARED BY:	P.L. Alexander	REVIEWED BY:	A.M. Esposito

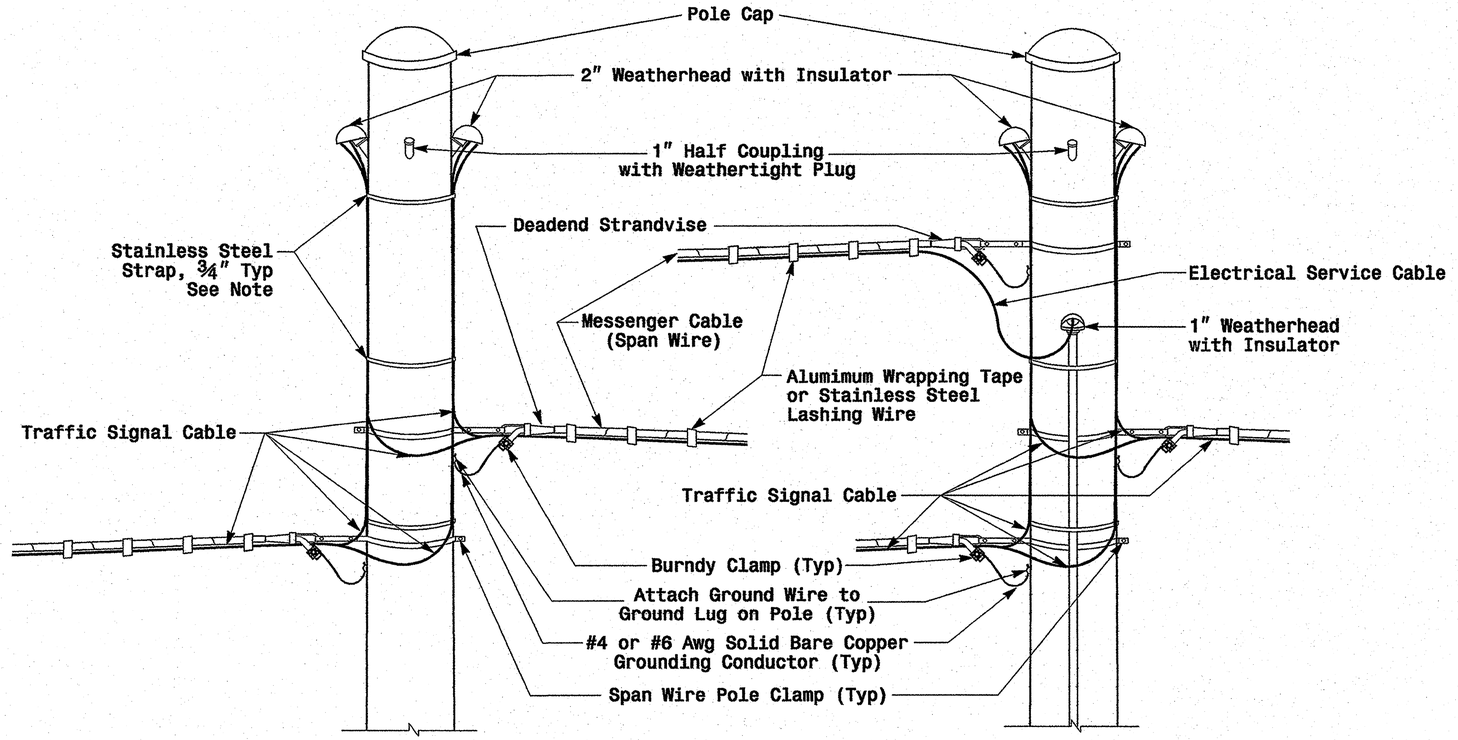
REVISIONS	INIT.	DATE

SEAL
North Carolina Professional Seal 028094 Engineer — Debesh C. Sarkar

D. Sarkar (SIGNATURE) 9.2.2005 (DATE)

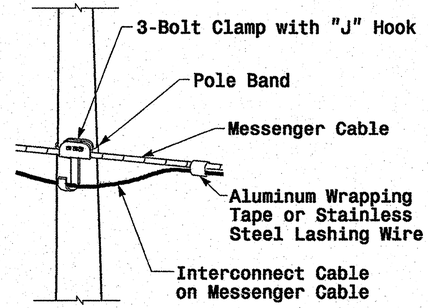
SIG. INVENTORY NO.

Construction Details – Strain Poles

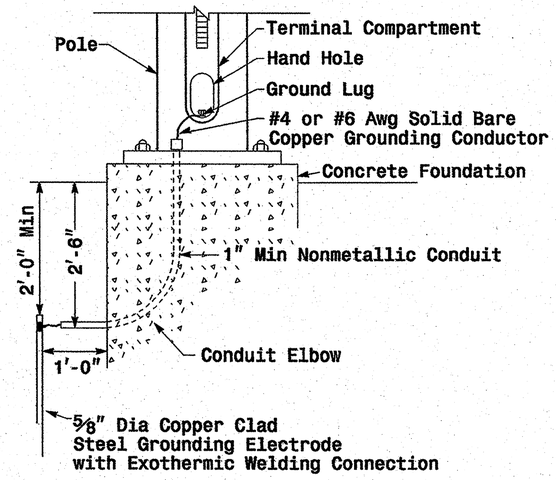


Note: Strap all signal cables to the side of the pole with ¾" stainless steel straps when the distance between the spanwire attachment clamp and the weatherheads exceeds 36"

Strain Pole Attachments



Attachment of Cable to Intermediate Metal Pole



Metal Pole Grounding Detail

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Traffic Control Systems Group
Signals and Geometrics Section
122 N. McDowell St., Raleigh, NC 27603

SCALE: 0 NA — NONE

Construction Details Strain Poles

PLAN DATE: May 2005	REVIEWED BY: P.L. ALEXANDER
PREPARED BY: C.F. ANDREWS	REVIEWED BY: D.C. SARKAR

REVISIONS	INIT.	DATE

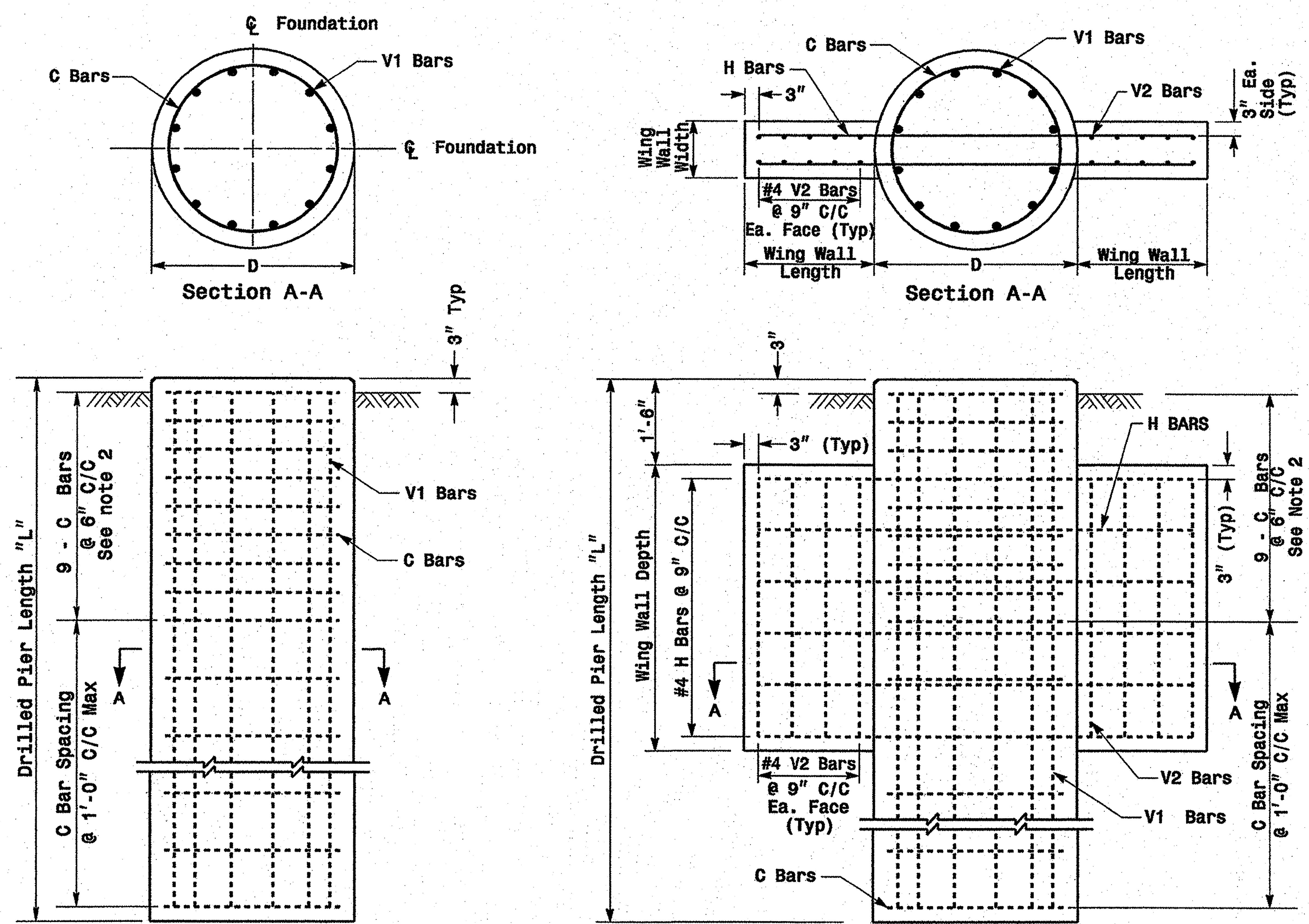
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 016286 ENGINEER MILTON L. DEAN

SIGNATURE — DATE: 9-1-05

SIG. INVENTORY NO.

01-SEP-2005 16:33
w:#poles#unit#workgroups#2004 metal pole standards#2004 ms.dgn
poleandar

Reinforcing Steel Bars



REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (42" & 48" DIAMETER)

Shaft Dia (in.)	Conc. Volume (cu. yds.)	Bar Name	No.	Size	Type	Length
42"	.356 x L	V1	9	#8	STR.	**
		C	*	#4	CIR.	10'-9"
48"	.465 x L	V1	12	#8	STR.	**
		C	*	#4	CIR.	12'-6"

* See Note No. 1
** See Note No. 3

REINFORCING STEEL TABLE FOR STANDARD 42" and 48" DRILL PIER SHAFT WITH TYPE 1 AND TYPE 2 WING WALLS

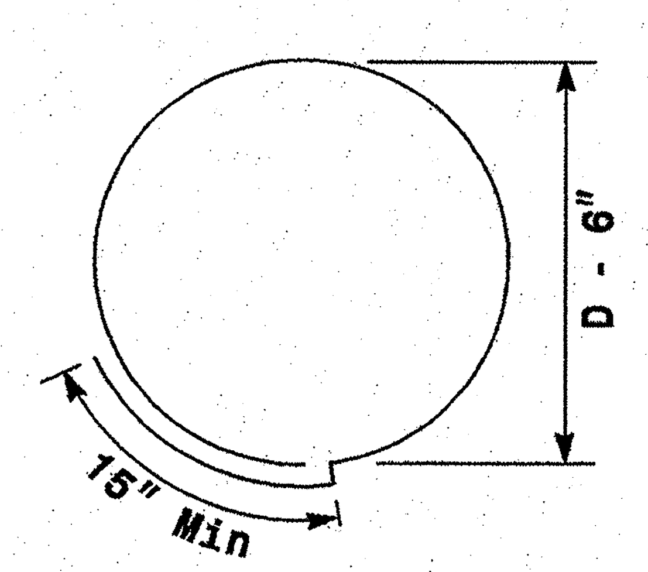
Wing Wall Type	Drill Pier Shaft Dia. (in.)	Reinforcing Steel: Bar Name	No.	Size	Type	Length
TYPE 1	42"	V1	9	#8	STR.	**
		V2	12	#4	STR.	2'-6"
		H	8	#4	STR.	6'-0"
		C	*	#4	CIR.	10'-9"
TYPE 2	42"	V1	9	#8	STR.	**
		V2	16	#4	STR.	4'-6"
		H	12	#4	STR.	9'-0"
		C	*	#4	CIR.	10'-9"
TYPE 2	48"	V1	12	#8	STR.	**
		V2	16	#4	STR.	4'-6"
		H	12	#4	STR.	9'-6"
		C	*	#4	CIR.	12'-6"

* See Note No. 1
** See Note No. 3

WING WALL DETAILS

Wing Wall Type	Wing Wall Length (Ft.)	Wing Wall Width (Ft.)	Wing Wall Depth (Ft.)	Concrete Volume (Cu. Yds.)
TYPE 1	1'-6"	1'-0"	3'-0"	.4
TYPE 2	3'-0"	1'-0"	5'-0"	1.2

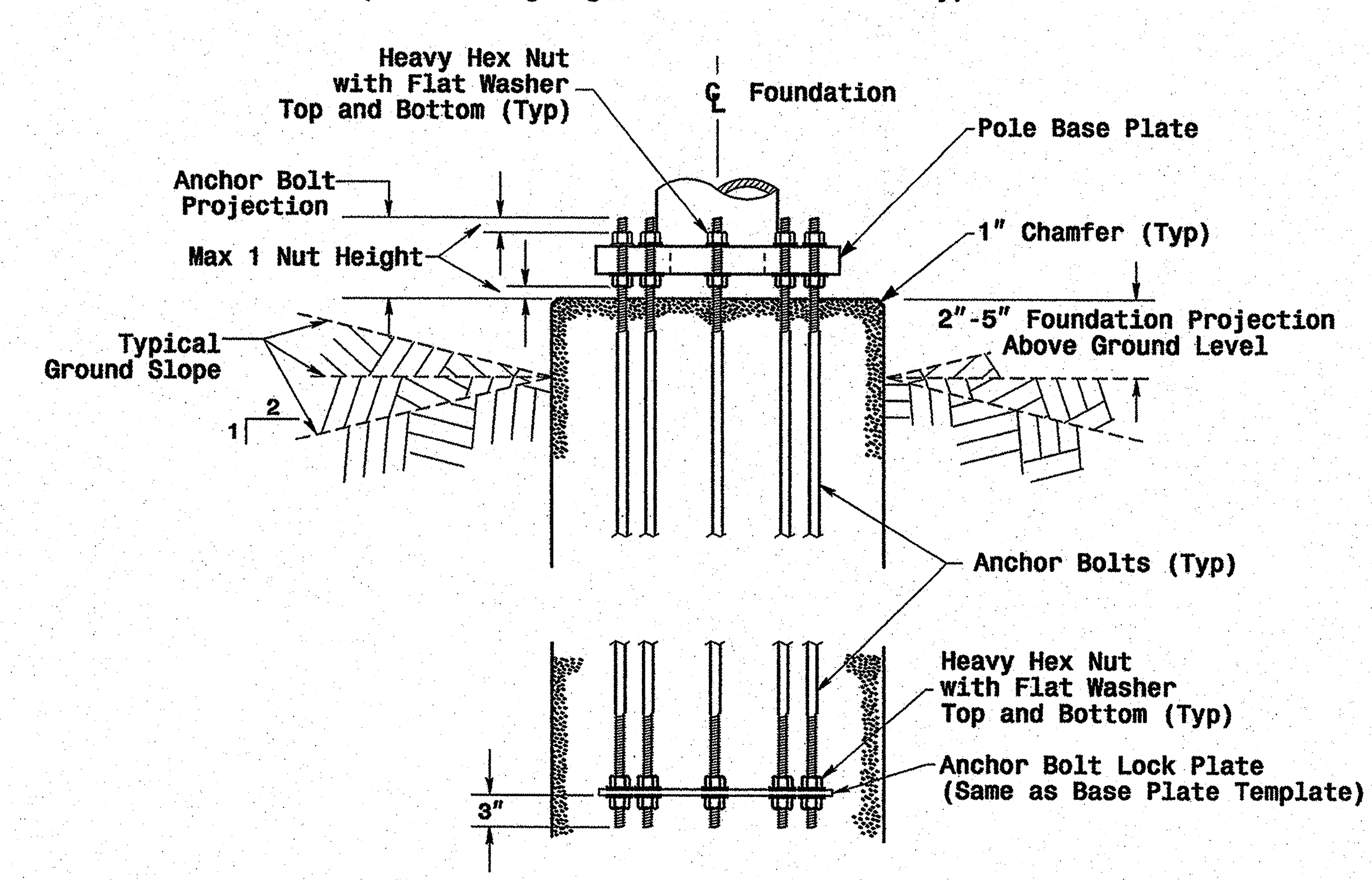
See Note No. 4



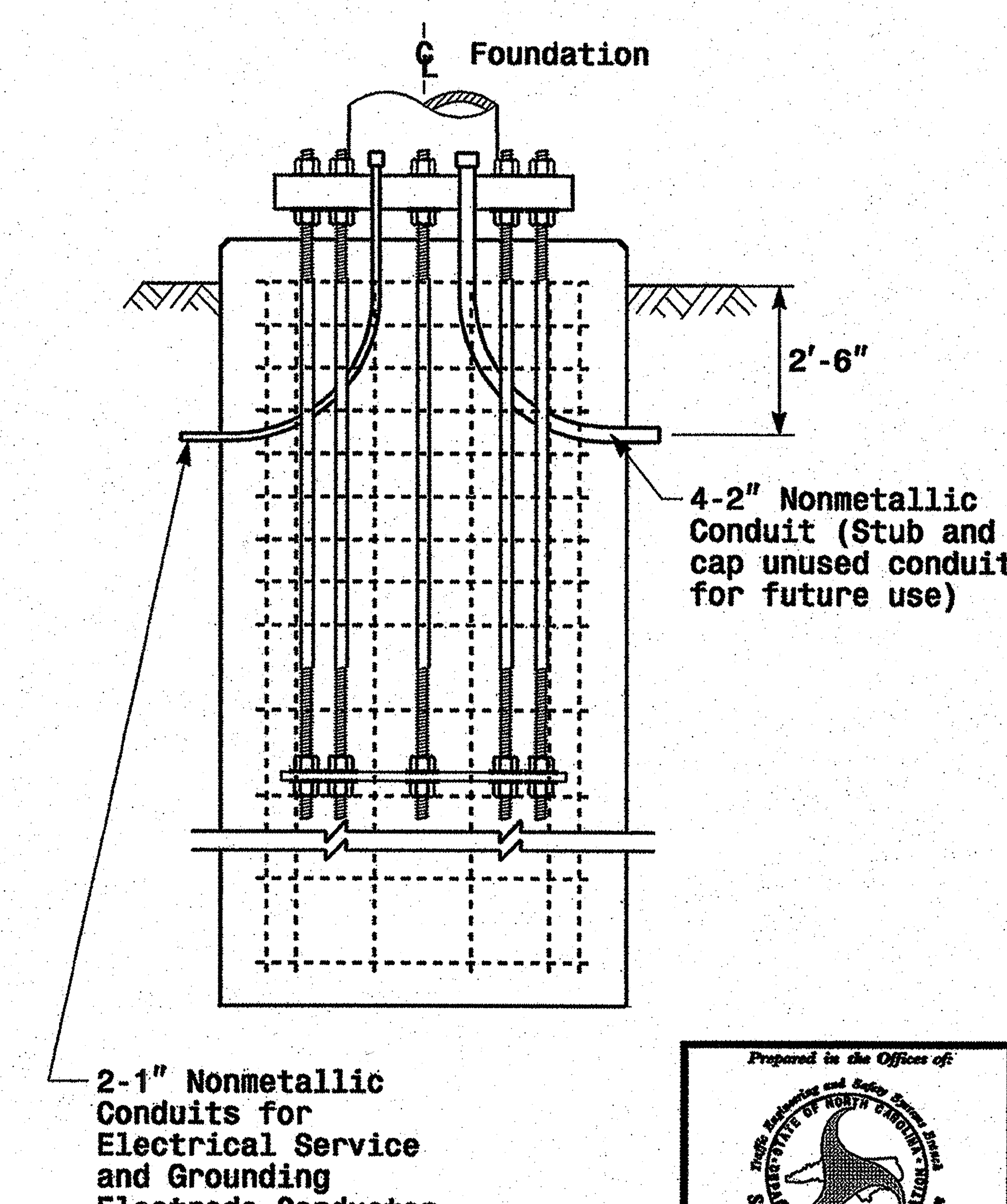
Typical "C" Bars

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. For standard foundations, see sheet M 8.
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 sheet M 8.
4. The quantities for steel and concrete shown in the Wing Wall Details Chart reflect the amount of material for 1 pair of wing walls (2 wing walls per drilled pier shaft.)

Construction Details - Foundations

Prepared in the Offices of: Signals and Geometrics Section, 122 N. McDowell St., Raleigh, NC 27603

SCALE: 0 NA — NONE

Construction Details Foundations

PLAN DATE: May 2005 | REVIEWED BY: P.L. ALEXANDER
PREPARED BY: C.F. ANDREWS | REVIEWED BY: A.M. ESPOSITO
REVISIONS | INIT. | DATE

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028094 DEBESH C. SARKAR

D. Sarkar 9.2.2005
SIGNATURE | DATE
SIG. INVENTORY NO.

PROJECT REFERENCE NO.	SHEET NO.
U-3423	Sig. 21 M 8

		STANDARD STRAIN POLES				STANDARD FOUNDATIONS 42" Diameter Drilled Pier Length (L) – Feet						
						Clay				Sand		
		Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Moment at the Pole Base (ft-kp)	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
WIND ZONE 1	LIGHT	S26L3	26	25	280	20.5	14.0	11.5	9.5	18.0	16.0	14.0
		S30L3	30	25	310	21.0	14.5	11.5	9.5	18.5	16.5	14.5
		S35L3	35	25	350	22.5	15.0	12.0	10.0	19.5	17.5	15.5
	HEAVY	S30H3	30	29	450	25.5	16.5	13.0	11.0	21.0	18.5	16.5
		S35H3	35	29	540	26.0	17.0	13.5	11.5	22.0	19.5	17.0
WIND ZONE 2	LIGHT	S26L2	26	23	250	19.5	13.5	11.0	9.0	18.0	15.5	14.0
		S30L2	30	23	290	20.0	14.0	11.5	9.5	18.5	16.0	14.0
		S35L2	35	23	315	21.0	14.5	11.5	9.5	19.0	16.5	14.5
	HEAVY	S30H2	30	29	415	24.5	16.0	13.0	10.5	21.0	18.5	16.0
		S35H2	35	29	485	25.5	16.5	13.5	11.0	21.5	19.0	16.5
WIND ZONE 3	LIGHT	S26L2	26	23	250	18.5	13.0	10.5	9.0	17.5	15.0	13.5
		S30L2	30	23	290	19.5	13.5	11.0	9.0	18.0	15.5	14.0
		S35L2	35	23	315	20.0	14.0	11.5	9.5	18.5	16.0	14.5
	HEAVY	S30H2	30	29	415	23.0	15.5	12.5	10.0	20.5	17.5	16.0
		S35H2	35	29	485	24.0	16.0	13.0	10.5	21.0	18.0	16.5
WIND ZONE 4	LIGHT	S26L1	26	22	195	18.0	13.0	10.5	9.0	16.5	14.5	13.0
		S30L1	30	22	225	18.5	13.0	10.5	9.0	17.0	15.0	13.5
		S35L1	35	22	255	19.0	13.5	11.0	9.0	17.5	15.5	14.0
	HEAVY	S30H1	30	25	330	22.0	15.0	12.0	9.5	19.5	17.0	15.0
		S35H1	35	25	385	23.0	15.5	12.5	10.0	20.0	17.5	15.5
WIND ZONE 5	LIGHT	S26L2	26	23	250	19.0	13.5	10.5	9.0	17.5	15.5	13.5
		S30L2	30	23	290	20.0	14.0	11.0	9.5	18.0	16.0	14.0
		S35L2	35	23	315	21.0	14.5	11.5	10.0	19.0	16.5	14.5
	HEAVY	S30H2	30	29	415	23.5	15.5	12.5	10.5	21.0	18.0	16.0
		S35H2	35	29	485	25.0	16.5	13.0	11.0	21.5	18.5	16.5

Concrete Volume (cubic yards)=.356 X L

Fabrication Design Notes:

1. Values shown in "Moment at the Pole Base" column represents the minimum acceptable capacity allowable for design using a design CSR of 1.
2. 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 sheet M 1.
3. Select the soil type (Clay or Sand) that best describes the soil characteristics.
4. Get the appropriate pole case load 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.

Standard Strain Poles

Prepared in the Offices of:
North Carolina Department of Transportation
Roadway and Geometrics Section
1722 N. McDowell St., Raleigh, NC 27603

SCALE: 0 NA None

Standard Strain Poles and Standard Foundations

PLAN DATE: May 2005	REVIEWED BY: C.F. Andrews
PREPARED BY: P.L. Alexander	REVIEWED BY: A.W. Esposito

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

D. Sarkar 9.2.2005
SIGNATURE DATE

02-SEP-2005 12:42
w:\tpeople-unit\workgroups\2004 metal pole standards\2004 m8 std strain pole.dgn
palexander

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

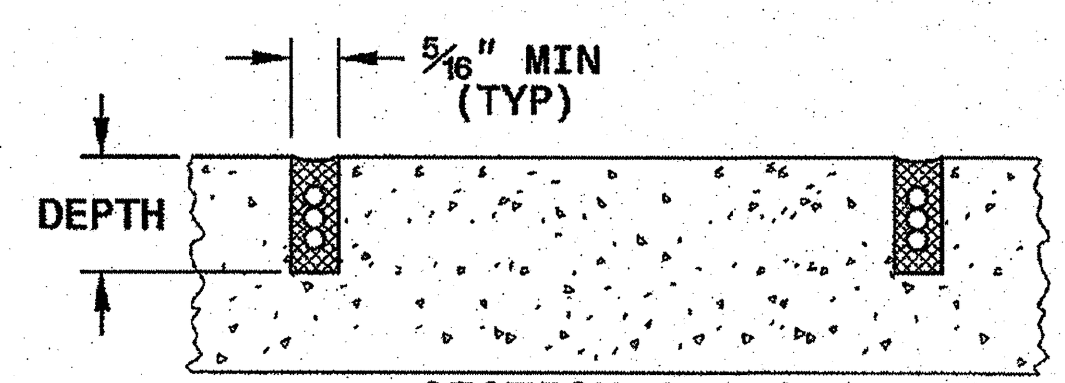
11-08

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS

CONVENTIONAL 4-SIDED LOOP

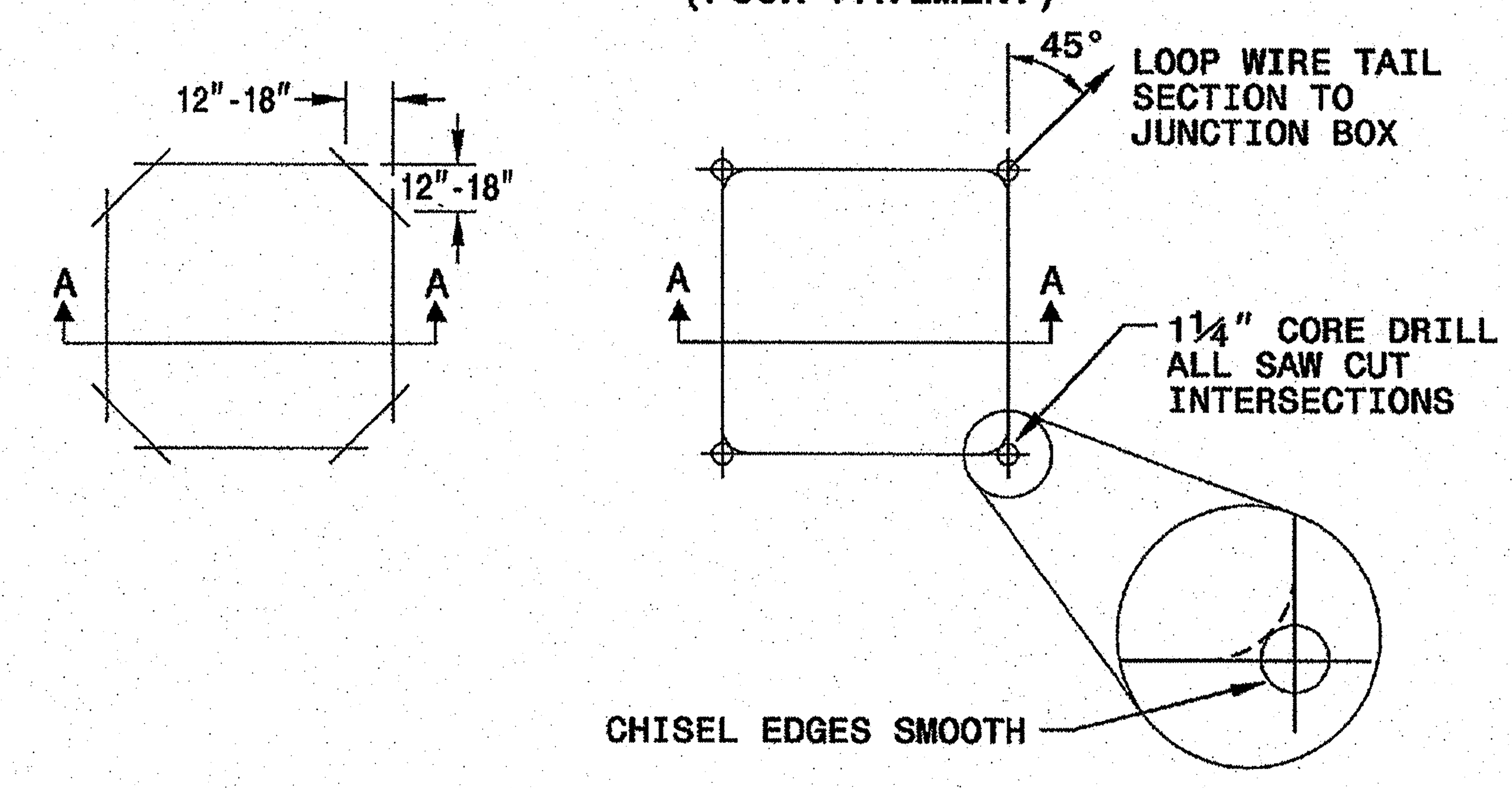
SAW SLOT DEPTH CHART

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

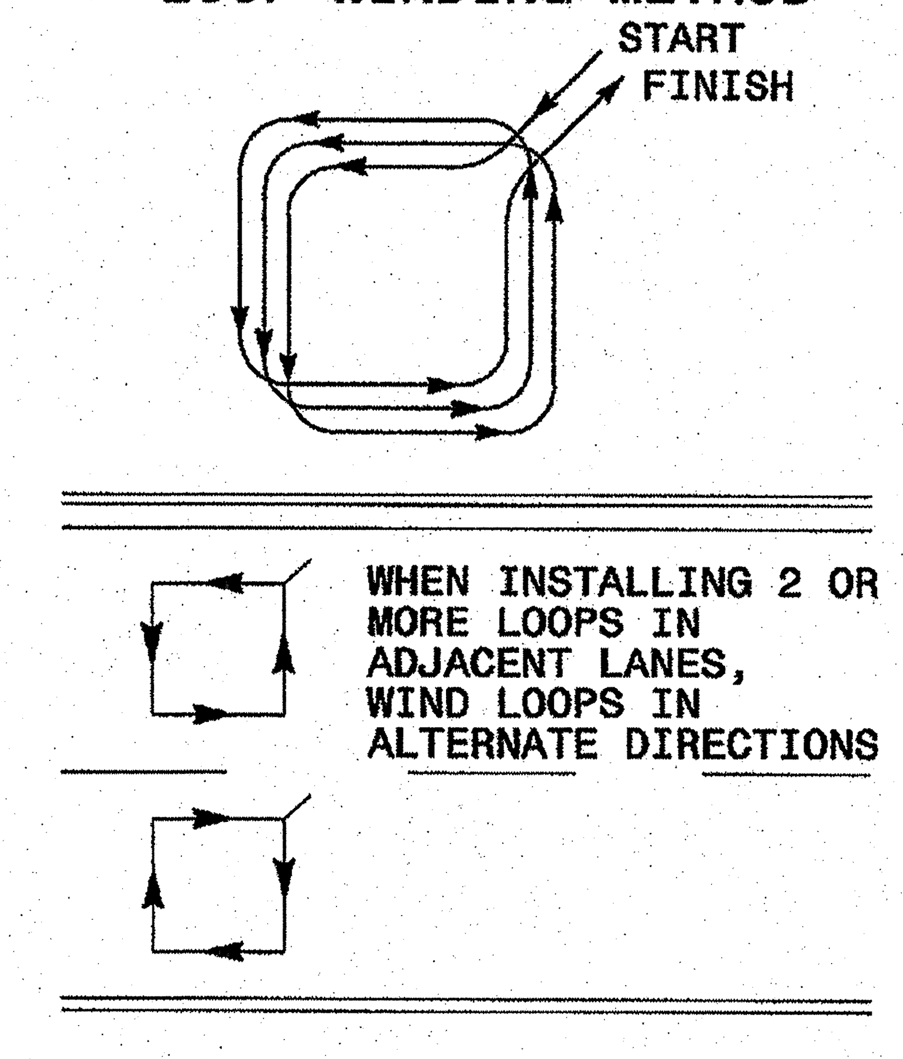


SECTION A - A

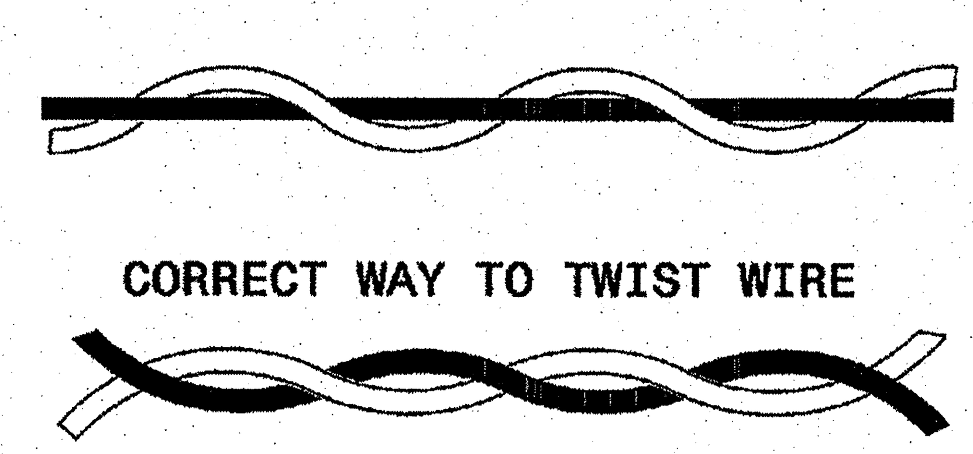
SAW CUT OPTIONS



LOOP WINDING METHOD



LOOP WIRE TWISTING METHOD

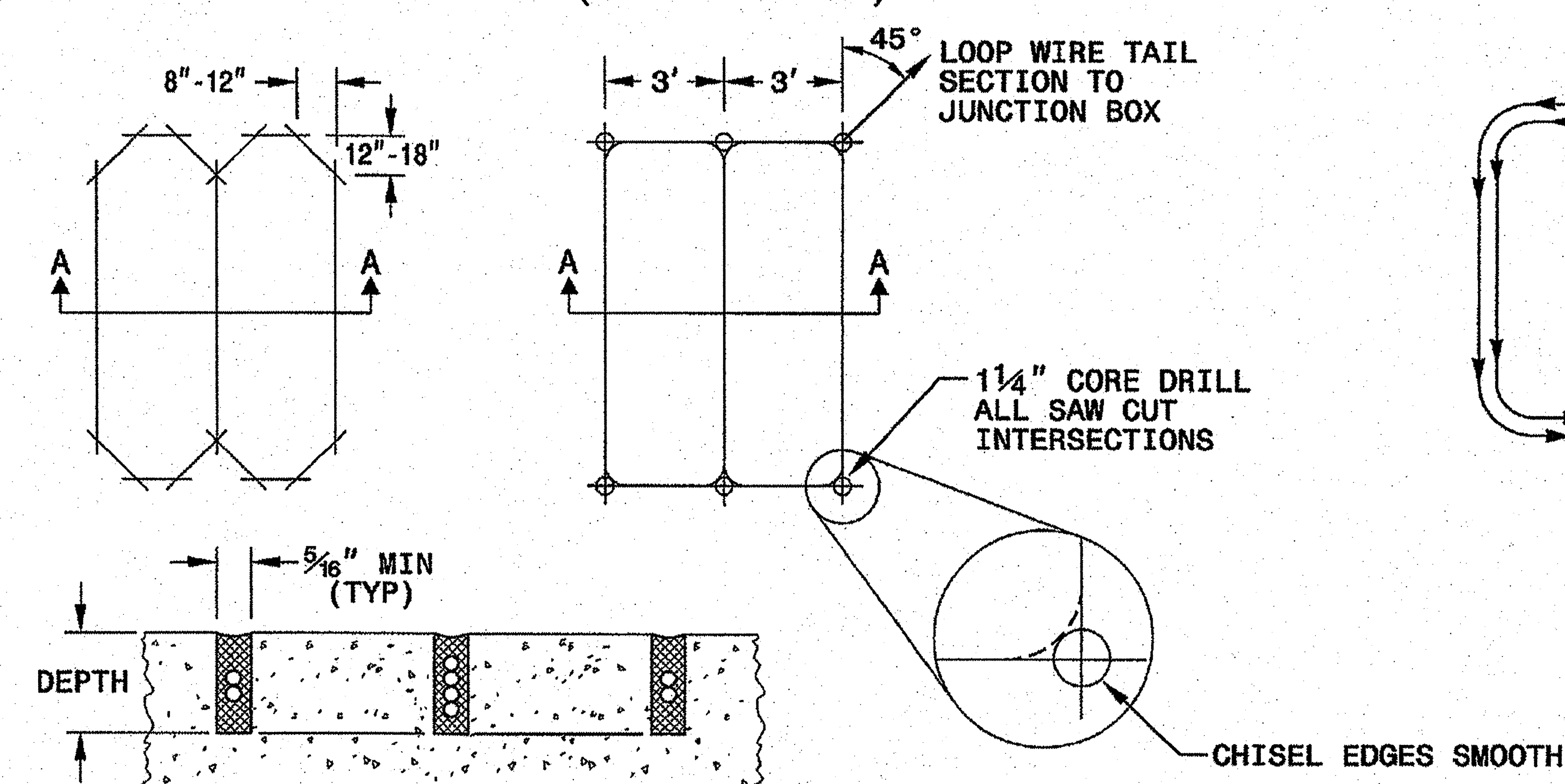


NOTES

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.

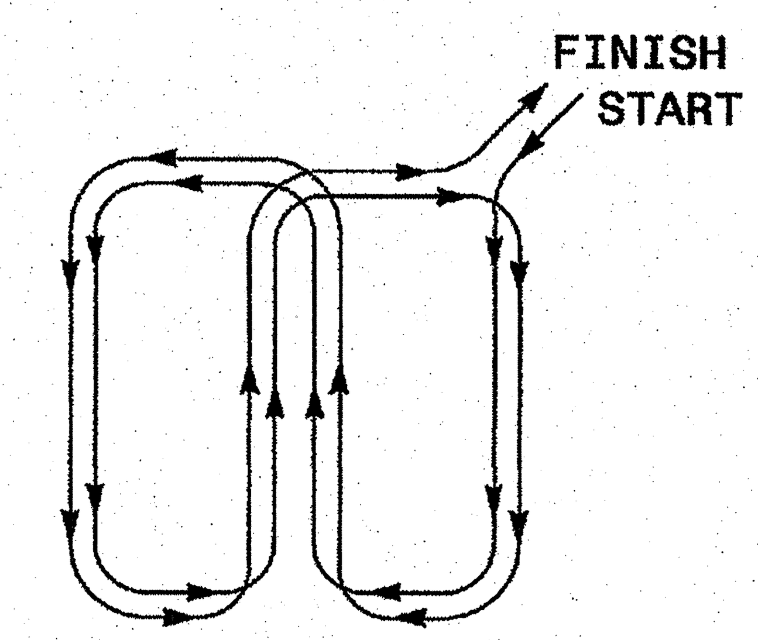
QUADRUPOLE LOOP

SAW CUT OPTIONS



DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

LOOP WINDING METHOD



SHEET 1 OF 3
1725D01

See Plate for Title

Prepared in the Offices of:
Intelligent Transportation Systems & Signals Unit
750 N. Greenfield Parkway
Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16286 MILTON I. DEAN

SIGNATURE 11/24/08 DATE

PROJECT REFERENCE NO.	SHEET NO.
U-3423	Sig. 23

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

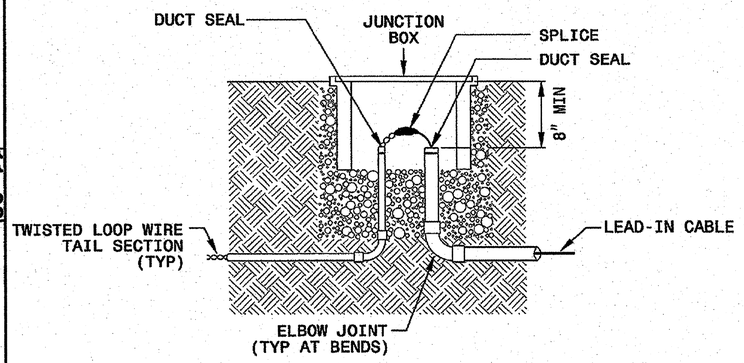
11-08

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

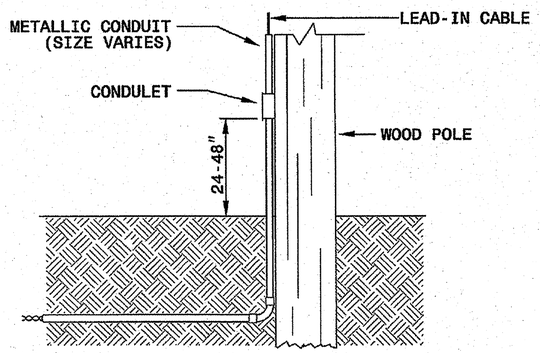
SHEET 2 OF 3
1725D01

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



LOOP WIRE AT POLE

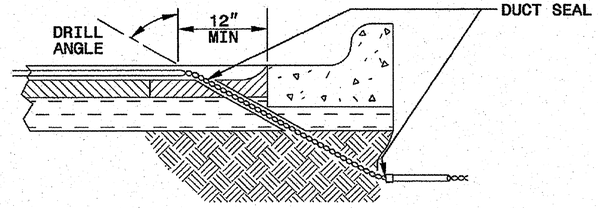


NOTE

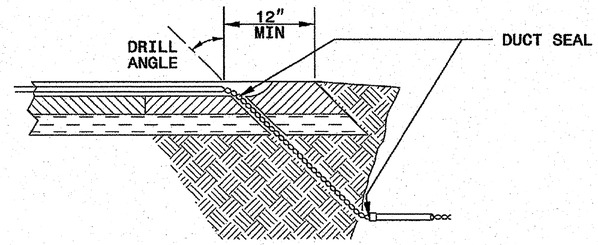
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

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.

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

11-08

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

SHEET 2 OF 3
1725D01

See Plate for Title

Prepared in the Offices of:
Intelligent Transportation Systems & Signals Unit
750 N. Greenfield Parkway
Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 16286 ENGINEER MILTON I DEAN

Milton I. Dean 11/24/08
SIGNATURE DATE

24-NOV-2008 09:29
d:\mwork files\40-standard plate sheets\1725d102_nov2007.dgn
jmiller

PROJECT REFERENCE NO.	SHEET NO.
U-3423	Sig.24

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

11-08

ENGLISH DETAIL DRAWING FOR

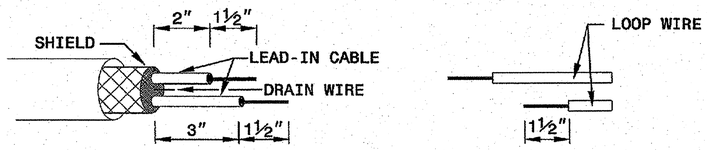
INDUCTIVE DETECTION LOOPS

SPLICING FOR LEAD-IN CABLE AND LOOP WIRE

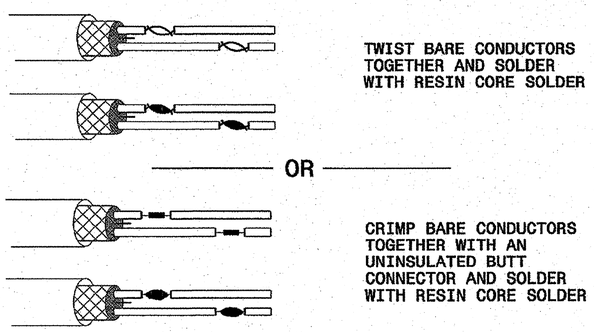
SHEET 3 OF 3

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

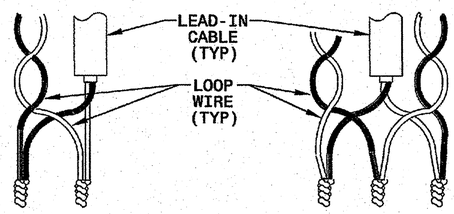
OR

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

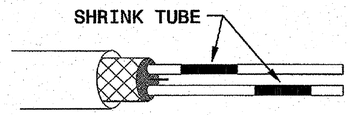
BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS

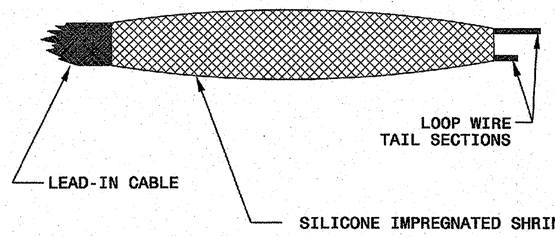
SINGLE CONNECTION SERIES CONNECTION



STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY



STEP 4. ENVIRONMENTALLY PROTECT SPLICE



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

11-08

ENGLISH DETAIL DRAWING FOR

INDUCTIVE DETECTION LOOPS

SPLICING FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3

1725D01

See Plate for Title

Prepared in the Offices of:

Intelligent Transportation Systems & Signals Unit
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

750 N. Greenfield Parkway
Garner, NC 27529

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 16286 ENGINEER MILTON I. OLAN

Milton I. Olan 11/24/08
SIGNATURE DATE

24-NOV-2008 09:36
d:\work files\MD-standard plate sheets\1725D103_nov2307.dgn
zmiller

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

11-08

ENGLISH DETAIL DRAWING FOR

INDUCTIVE DETECTION LOOPS

SPLICING FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3

1725D01

PROJECT REFERENCE NO.	SHEET NO.
U-3423	Sig. 25

DEPT. OF TRANSPORTATION

AERIAL SPLICE ENCLOSURE (06-0265) AT

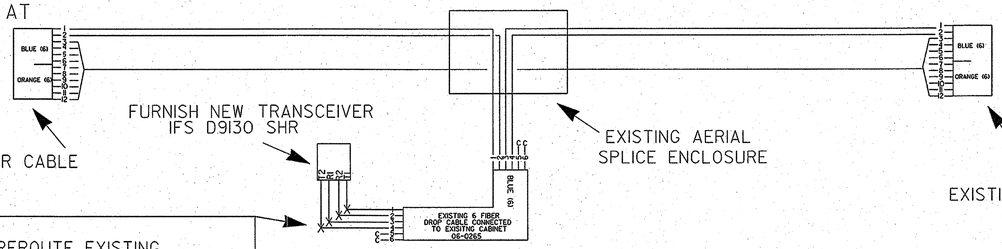
BRAGG BLVD. @ MIKE ST./JOHNSON ST.

FROM:

AERIAL SPLICE ENCLOSURE (06-0083) AT

PAMALEE DR. @

BRAGG BLVD.



TO:

NCDOT AERIAL SPLCIE ENCLOSURE

AT

06-0279

(BRAGG BLVD. @ SANTA FE DR.

EXISTING 12 FIBER CABLE

CONTRACTOR TO REROUTE EXISTING
DROP CABLE FROM EXISTING CABINET LOCATION
TO NEW CABINET LOCATION AND TERMINATE AS SHOWN

"X" = FUSION SPLICE
"C" = CAP AND SEAL

EXISTING

PUBLIC WORKS COMMISSION

AERIAL SPLICE ENCLOSURE

(DO NOT ENTER)

FROM:

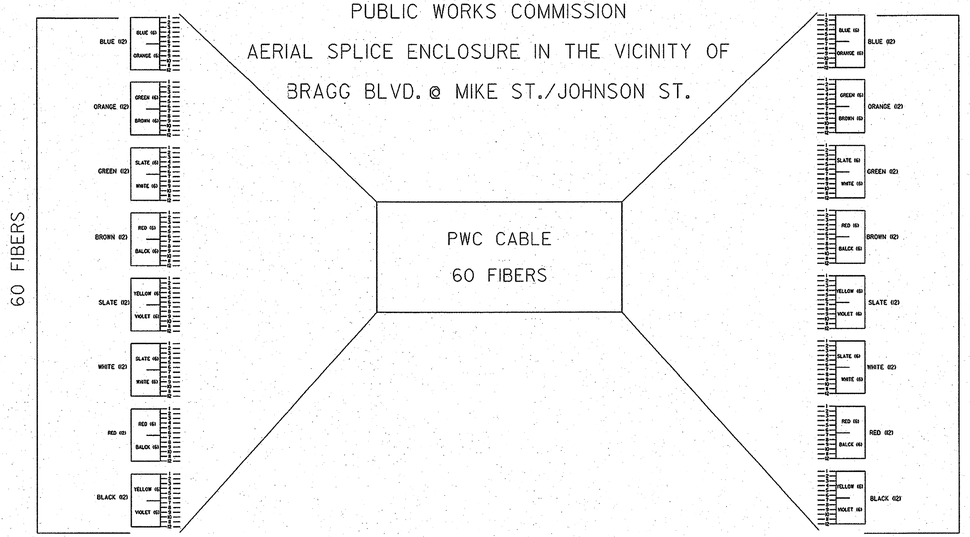
PAMALEE DR. @

BRAGG BLVD.

PUBLIC WORKS COMMISSION

AERIAL SPLICE ENCLOSURE IN THE VICINITY OF

BRAGG BLVD. @ MIKE ST./JOHNSON ST.



TO:

AERIAL SPLCIE ENCLOSURE

AT

06-0279

(BRAGG BLVD. @ SANTA fE DR.

NOTES:

1. FURNISH SELF-HEALING RING TYPE RECEIVERS.
2. UNLESS OTHERWISE NOTED, CAP AND STORE UNUSED FIBERS.

LEGEND

COLOR CODE
TIA/EIA 598-A

(1) BLUE	(7) RED
(2) ORANGE	(8) BLACK
(3) GREEN	(9) YELLOW
(4) BROWN	(10) VIOLET
(5) SLATE	(11) ROSE
(6) WHITE	(12) AQUA

X - FUSION SPLICE INDIVIDUAL FIBER

BUFFER TUBE — SPLICE OR EXPRESS ENTIRE BUFFER TUBE AS NOTED

Stantec

Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Prepared for the Offices of:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION — Transportation Mobility and Safety Division

ITS & Signals Unit

750 N.Greenfield Pkwy.,Garner,NC 27529

SPLICE PLAN
SHEET 1 OF 3

Division 6	Cumberland County		Fayetteville
PLAN DATE: January 2010		REVIEWED BY:	Bret Gillis
PREPARED BY: Lori Mahany		REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL

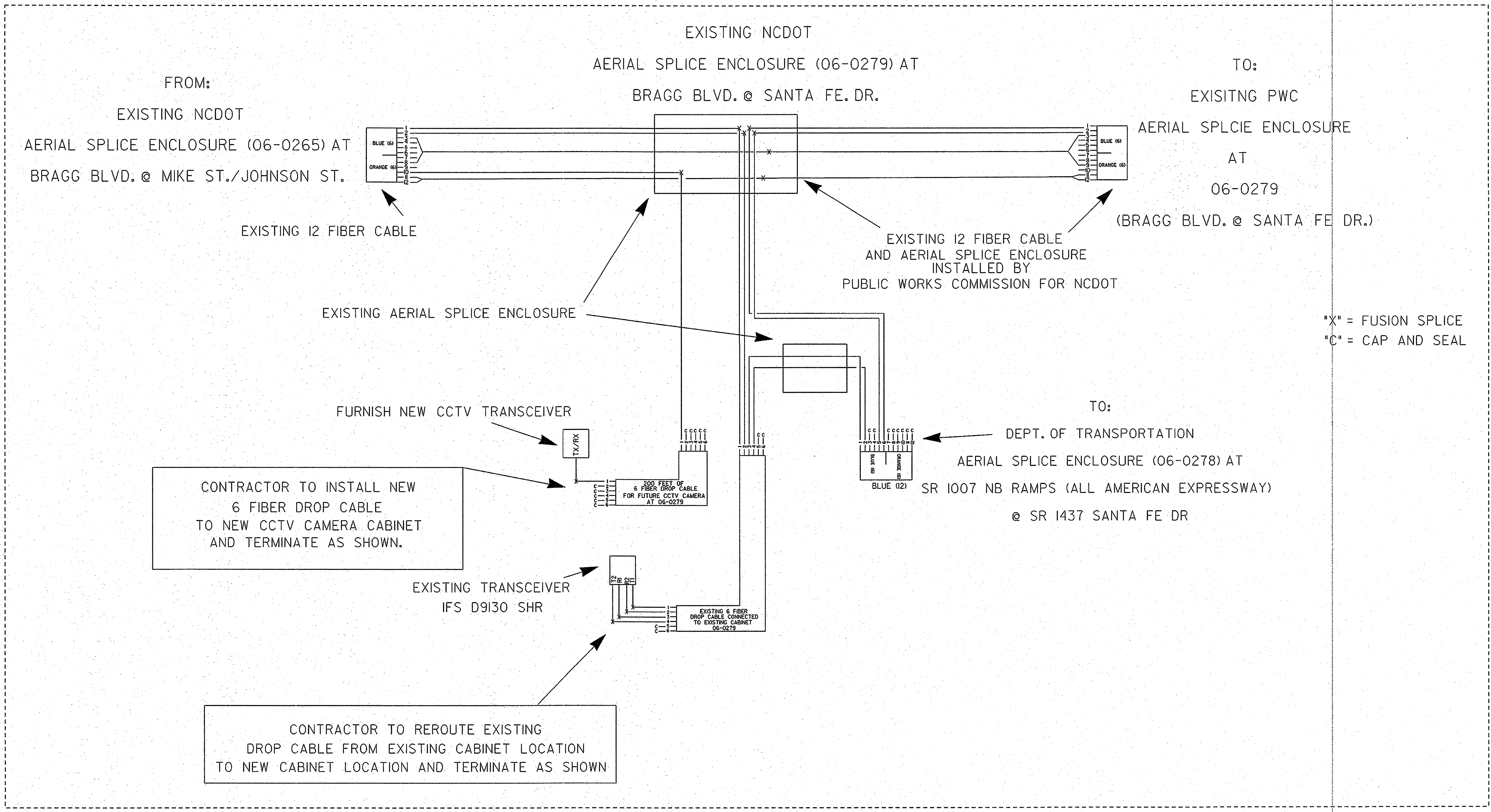
NORTH CAROLINA PROFESSIONAL SEAL 32643 ENGINEER LORI ELLIOTT MAHANY

for Mahany 2/25/10

SIGNATURE DATE

2/25/2010
U:\TIT00160\transportation\Design\Traffic\Signals\CAD\Routing\FINAL_splice.dgn
lmahany

PROJECT REFERENCE NO.	SHEET NO.
U-3423	Sig. 26



NOTES:
1. FURNISH SELF-HEALING RING TYPE RECEIVERS.
2. UNLESS OTHERWISE NOTED, CAP AND STORE UNUSED FIBERS.

LEGEND

COLOR CODE
TIA/EIA 598-A

(1) BLUE	(7) RED
(2) ORANGE	(8) BLACK
(3) GREEN	(9) YELLOW
(4) BROWN	(10) VIOLET
(5) SLATE	(11) ROSE
(6) WHITE	(12) AQUA

X - FUSION SPLICE INDIVIDUAL FIBER

BUFFER TUBE — SPLICE OR EXPRESS ENTIRE BUFFER TUBE AS NOTED

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0572

Prepared for the Offices of:
Transportation Mobility and Safety Division
ITS & Signals Unit
750 N.Greenfield Pkwy,Garner,NC 27529

SPLICE PLAN
SHEET 2 OF 3

Division 6	Cumberland County	Fayetteville
PLAN DATE: January 2010	REVIEWED BY: Bret Gillis	
PREPARED BY: Lori Mahany	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 32643 ENGINEER LORI ELLIOTT MAHANY
SIGNATURE DATE 7/5/10

3/4/2010
mahany

PROJECT REFERENCE NO.	SHEET NO.
U-3423	Sig. 27

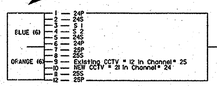
FROM:

EXISTING NCDOT

AERIAL SPLICE ENCLOSURE (06-0279) AT

BRAGG BLVD. @ SANTA FE. DR.

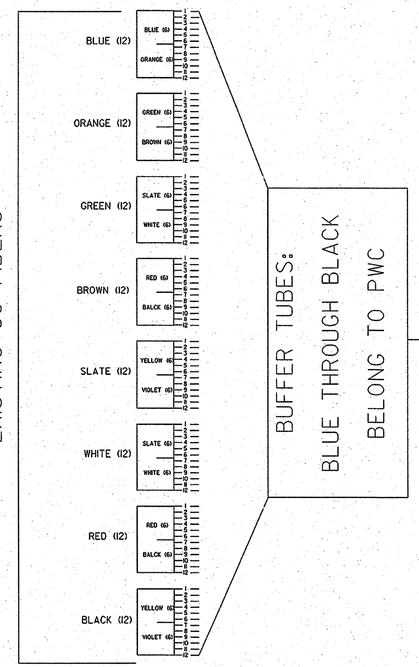
EXISITNG 12 FIBER CABLE
INSTALLED BY
PUBLIC WORKS COMMISSION



PWC AERIAL SPLICE ENCLOSURE IN THE VICINITY OF

(06-0279)

BRAGG BLVD. @ SANTA FE. DR.



FROM

PUBLIC WORKS COMMISSION

AERIAL SPLICE ENCLOSURE IN THE VICINITY OF

BRAGG BLVD. @ MIKE ST./JOHNSON ST.

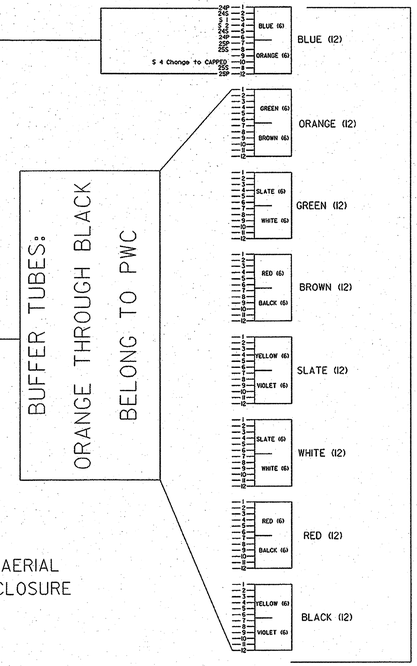
EXISTING

PUBLIC WORKS COMMISSION

AERIAL SPLICE ENCLOSURE

(DO NOT ENTER)

EXISTING AERIAL
SPLICE ENCLOSURE



TO:

PUBLIC WORKS COMMISION

AERIAL SPLICE ENCLOSURE (06-0905) AT

BRAGG BLVD. @ KNOX ST.

NO WORK REQUIRED. SHOWN FOR INFORMATION ONLY.

LEGEND

COLOR CODE TIA/EIA 598-A

(1) BLUE	(7) RED
(2) ORANGE	(8) BLACK
(3) GREEN	(9) YELLOW
(4) BROWN	(10) VIOLET
(5) SLATE	(11) ROSE
(6) WHITE	(12) AQUA

X - FUSION SPLICE INDIVIDUAL FIBER

BUFFER TUBE — SPLICE OR EXPRESS ENTIRE BUFFER TUBE AS NOTED

NOTES:

1. FURNISH SELF-HEALING RING TYPE RECEIVERS.
2. UNLESS OTHERWISE NOTED, CAP AND STORE UNUSED FIBERS.

Stantec

Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Prepared for the Offices of:

Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

ITS & Signals Unit
750 N.Greenfield Pkwy,Garner,NC 27529

SPLICE PLAN
SHEET 3 OF 3

Division 6	Cumberland County	Fayetteville
PLAN DATE: January 2010	REVIEWED BY:	Bret Gillis
PREPARED BY: Lori Mahany	REVIEWED BY:	

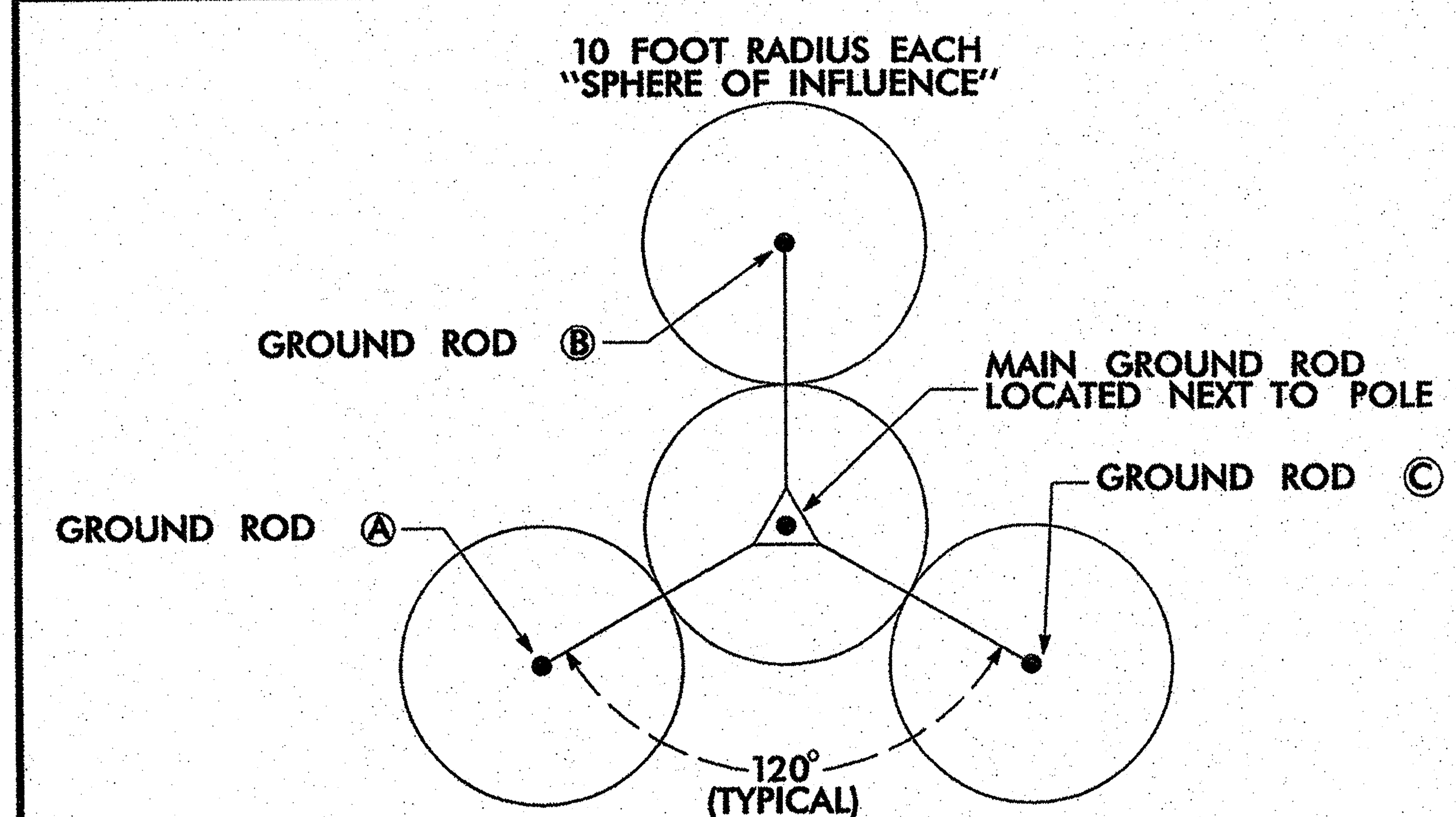
REVISIONS	INIT.	DATE

SEAL

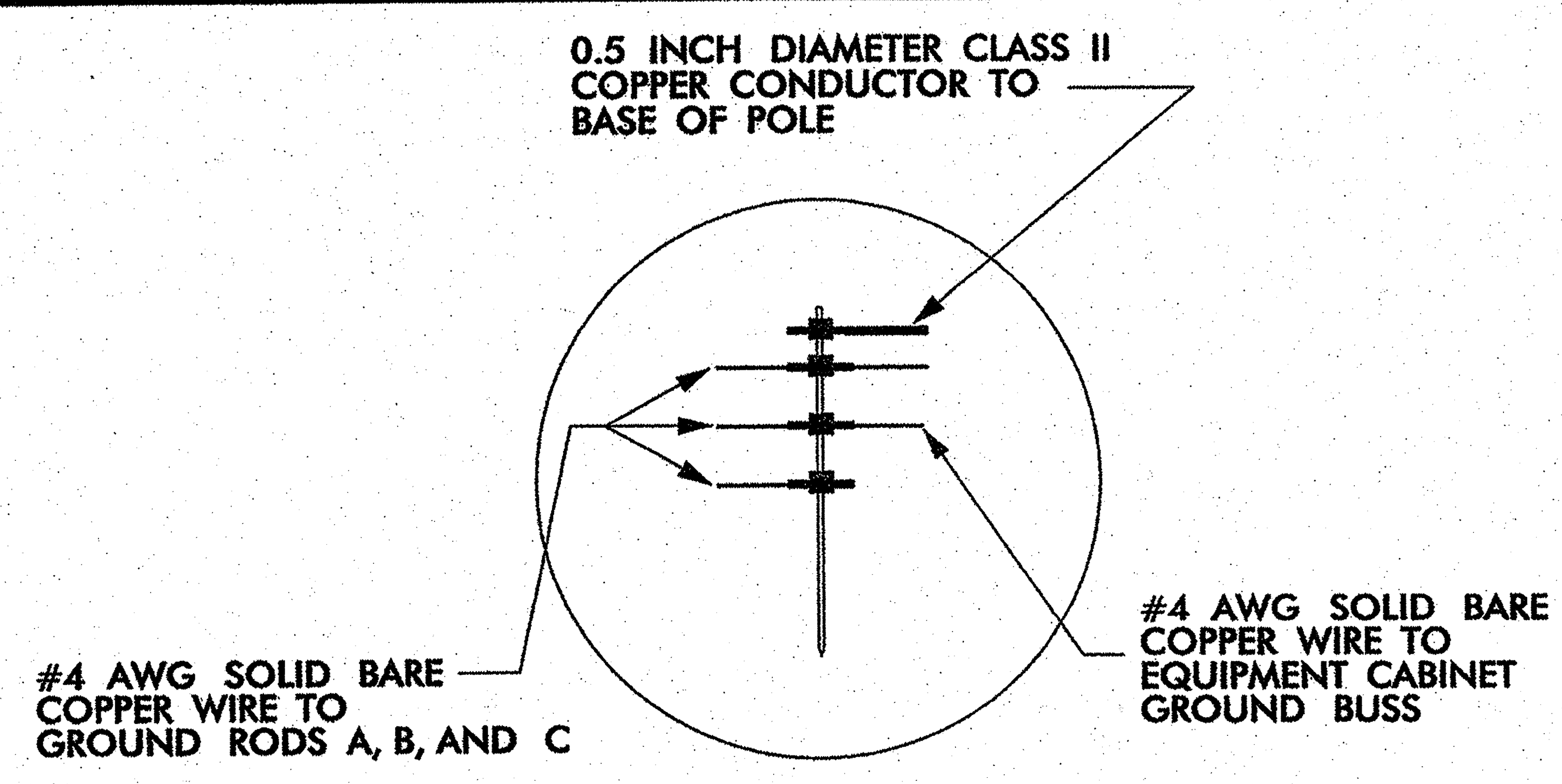
NORTH CAROLINA PROFESSIONAL SEAL 32643 ENGINEER LORI ELLIOTT MAHANY

Lori Mahany 2/25/10
SIGNATURE DATE

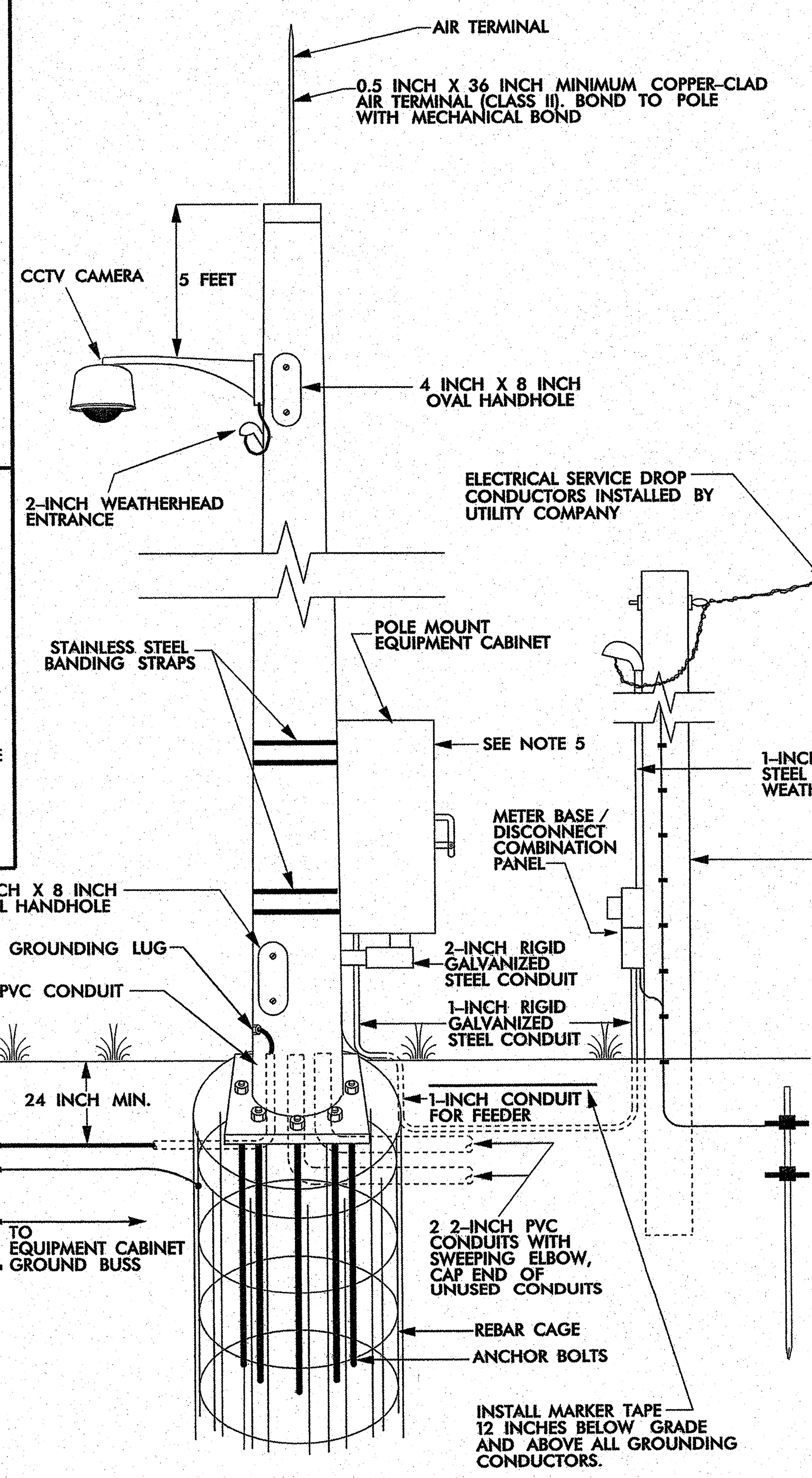
2/25/2010
U:\MTIP\0116\transportation\Design\Traffic\Signals\Cable\Routing\FINAL_splice.dgn
mahany

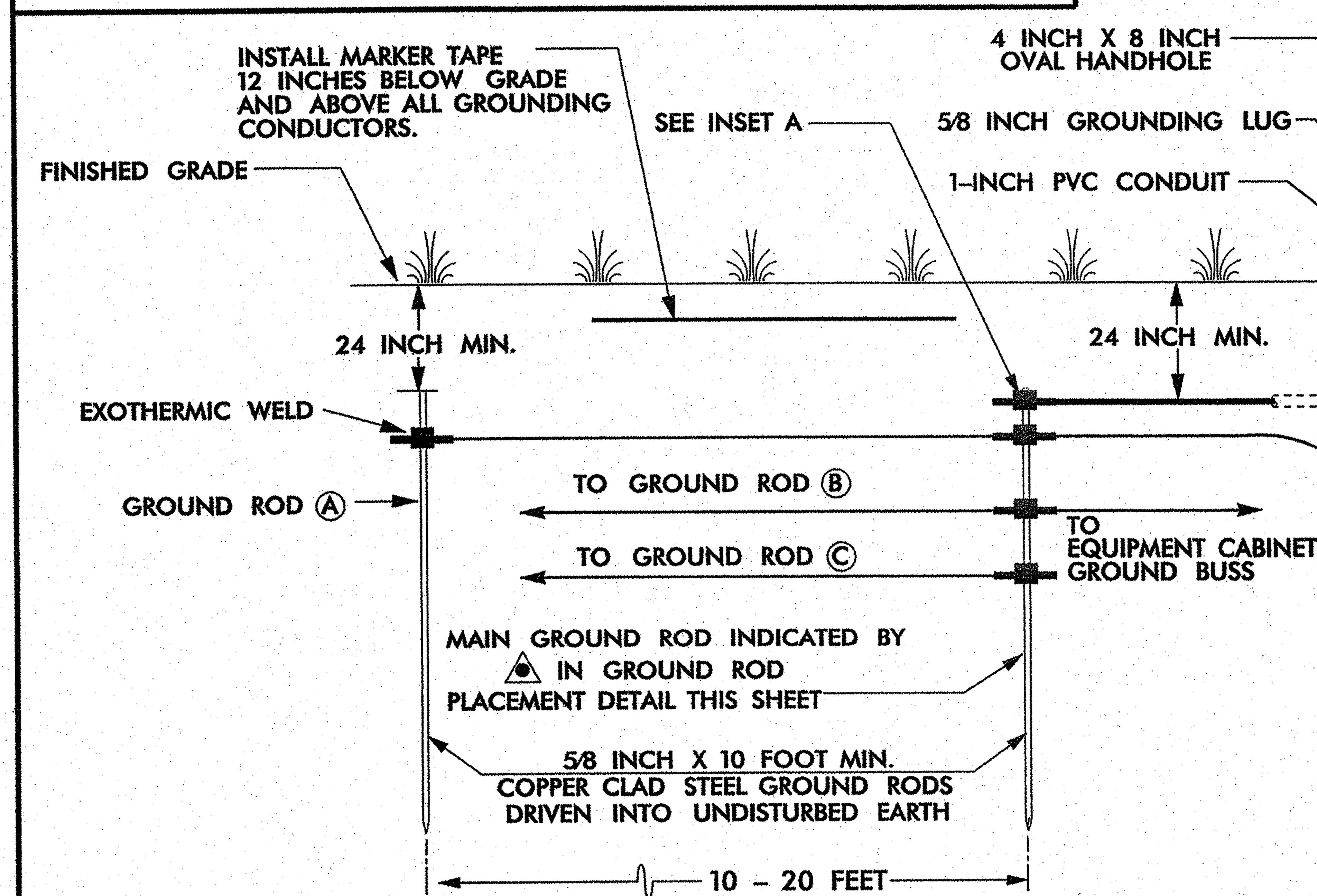


GROUND ROD PLACEMENT DETAIL
(TYPICAL EACH POLE)



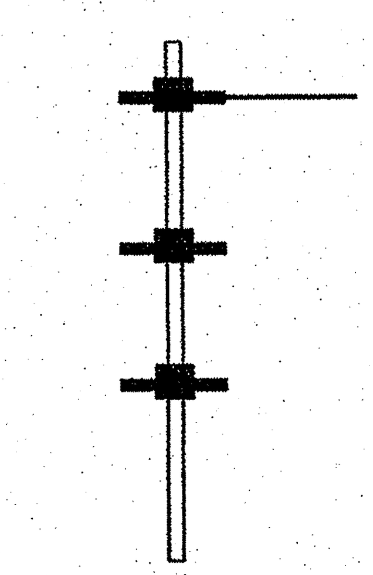
INSET `A'





ALTERNATE GROUNDING METHOD

IF SPACE IS NOT AVAILABLE TO DRIVE MULTIPLE RODS, DRIVE SECTIONAL GROUND RODS A MINIMUM OF 30 FEET.



JOIN SECTIONAL GROUND RODS BY EXOTHERMIC WELDING CONNECTION

NOTES

1. BOND 0.5 INCH DIAMETER, 28 STRAND (MINIMUM) CLASS II COPPER CONDUCTOR TO THE MAIN GROUND ROD BY AN EXOTHERMIC WELD METHOD.
2. EXOTHERMICALLY WELD ALL CONNECTIONS TO GROUND RODS.
3. BOND #4 AWG SOLID BARE COPPER WIRE TO REBAR CAGE AND THE MAIN GROUND ROD BY AN EXOTHERMIC WELD METHOD.
4. ENSURE CAMERA HOUSING, CAMERA, AND PAN -TILT UNIT ARE BONDED TO POLE.
5. REMOVE BONDING JUMPER BETWEEN EQUIPMENT CABINET GROUND BUSS AND NEUTRAL BUSS.
6. THE CONTRACTOR MAY, UPON APPROVAL OF THE ENGINEER, INSTALL A 30-FOOT SECTIONAL GROUND ROD WHEN CONDITIONS WILL NOT ALLOW FOR THE INSTALLATION OF THE 3 - RADIAL GROUND RODS.
7. INSTALL MARKER TAPE DIRECTLY ABOVE ALL GROUNDING ELECTRODES AND CONDUCTORS AT A DEPTH OF 12 INCHES.

Prepared in the Offices of: Traffic Engineering and Safety Systems Branch, State of North Carolina Department of Transportation, Intelligent Transportation Systems
122 N. McDowell St., Raleigh, NC 27603

CCTV CAMERA INSTALLATION FOR METAL POLE WITH AERIAL ELECTRICAL SERVICE TYPICAL DETAIL

PLAN DATE:	JANUARY 2008	REVIEWED BY:	T. G. PARKER
PREPARED BY:	J. HOOKER	REVIEWED BY:	G. A. FULLER

REVISIONS	INIT.	DATE

SCALE 0

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 023919 ENGINEER GREGORY A. FULLER

Gregory A. Fuller 2/1/08
SIGNATURE DATE

CADD Filename:

PROJECT REFERENCE NO.	SHEET NO.
U-3423	Sig. 29

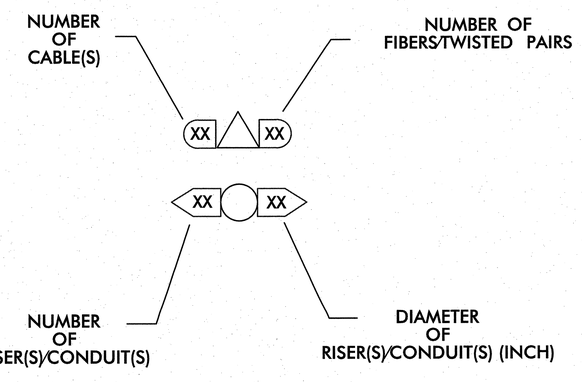
1. INSTALL REA, PE – 22, SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
2. INSTALL REA, PE – 38, (FIGURE – 8) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
3. INSTALL REA, PE – 39, (UNDERGROUND) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
4. INSTALL SMFO CABLE
5. INSTALL MMFO CABLE
6. INSTALL FIBER OPTIC DROP CABLE
7. INSTALL TRACER WIRE
8. TRENCH
9. INSTALL PVC CONDUIT
10. INSTALL RIGID, GALVANIZED STEEL CONDUIT
11. INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD
12. INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL
13. INSTALL OUTER–DUCT POLYETHYLENE CONDUIT
14. INSTALL POLYETHYLENE CONDUIT
15. DIRECTIONAL DRILL CONDUIT
16. BORE AND JACK CONDUIT
17. INSTALL CABLE(S) IN EXISTING CONDUIT
18. INSTALL CABLE(S) IN NEW CONDUIT
19. INSTALL CABLE(S) IN EXISTING RISER
20. INSTALL CABLE(S) IN NEW RISER
21. INSTALL CABLE(S) IN EXISTING CONDUIT STUBOUTS
22. INSTALL NEW CONDUIT INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB–OUTS WHEN AVAILABLE)
23. INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB–OUTS WHEN AVAILABLE)
24. INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET
25. INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET
26. TERMINATE COMMUNICATIONS CABLE ON EXISTING TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
27. INSTALL NEW TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
28. INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS, AND FUSION SPLICE CABLE IN CABINET
29. INSTALL UNDERGROUND SPLICE ENCLOSURE
30. INSTALL AERIAL SPLICE ENCLOSURE
31. INSTALL POLE MOUNTED SPLICE CABINET
32. INSTALL BASE MOUNTED SPLICE CABINET
33. REMOVE EXISTING SPLICE CABINET
34. INSTALL CABINET FOUNDATION
35. REMOVE EXISTING CABINET FOUNDATION
36. INSTALL CCTV CAMERA ASSEMBLY
37. INSTALL CCTV CAMERA WOOD POLE
38. INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
39. INSTALL JUNCTION BOX
40. INSTALL OVERSIZED JUNCTION BOX
41. REMOVE EXISTING JUNCTION BOX
42. INSTALL WOOD POLE
43. REMOVE EXISTING WOOD POLE
44. INSTALL AERIAL GUY ASSEMBLY
45. INSTALL STANDARD GUY ASSEMBLY
46. INSTALL SIDEWALK GUY ASSEMBLY
47. INSTALL MESSENGER CABLE
48. REMOVE EXISTING COMMUNICATIONS CABLE AND MESSENGER CABLE
49. REMOVE EXISTING COMMUNICATIONS CABLE
50. INSTALL TELEPHONE SERVICE
51. INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
52. INSTALL DELINEATOR MARKER
53. STORE 20 FEET OF COMMUNICATIONS CABLE
54. LASH CABLE(S) TO EXISTING SIGNAL/COMMUNICATIONS CABLE
55. LASH CABLE(S) TO EXISTING MESSENGER CABLE
56. LASH CABLE(S) TO NEW MESSENGER CABLE
57. MODIFY EXISTING ELECTRICAL SERVICE
58. INSTALL NEW ELECTRICAL SERVICE

LEGEND

- F. O. — NEW FIBER OPTIC COMMUNICATIONS CABLE
- TWIST. PR. — NEW TWISTED PAIR COMMUNICATIONS CABLE
- EXI. — EXISTING COMMUNICATIONS CABLE
- REM. — EXISTING COMMUNICATIONS CABLE TO BE REMOVED
- NEW AERIAL GUY ASSEMBLY
- NEW CONDUIT
- EXISTING CONDUIT
- D D — NEW DIRECTIONAL DRILLED CONDUIT
- B & J — NEW BORED AND JACKED CONDUIT
- NEW JUNCTION BOX
- EXISTING JUNCTION BOX
- NEW WOOD POLE
- EXISTING WOOD POLE
- (S) NEW AERIAL SPLICE ENCLOSURE
- NEW METAL POLE
- EXISTING METAL POLE
- NEW CCTV CAMERA ASSEMBLY
- NEW STANDARD GUY ASSEMBLY
- NEW STANDARD GUY USING EXISTING ANCHOR
- NEW SIDEWALK GUY ASSEMBLY
- NEW CABLE STORAGE RACKS (SNOW SHOES)
- EXISTING CONTROLLER AND CABINET
- [S] EXISTING SPLICE CABINET
- [S] NEW SPLICE CABINET
- SP SIGNAL POLE
- XX–XXXX SIGNAL INVENTORY NUMBER

CONSTRUCTION NOTE SYMBOLOGY KEY

- (XX) INDICATES NUMBER OF CABLES, LOOPS, ETC.
- (XX) INDICATES NUMBER OF FIBERS PER CABLE, TWISTED PAIRS PER CABLE, ETC.
- <XX INDICATES NUMBER OF RISER(S)/CONDUIT(S)
- XX> INDICATES DIAMETER OF RISER(S)/CONDUIT(S) (INCH)



Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Prepared for the Offices of:
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Mobility and Safety Division
Intelligent Transportation Systems Section
750 N. Greenfield Pkwy., Garner, NC 27529

CONSTRUCTION NOTES

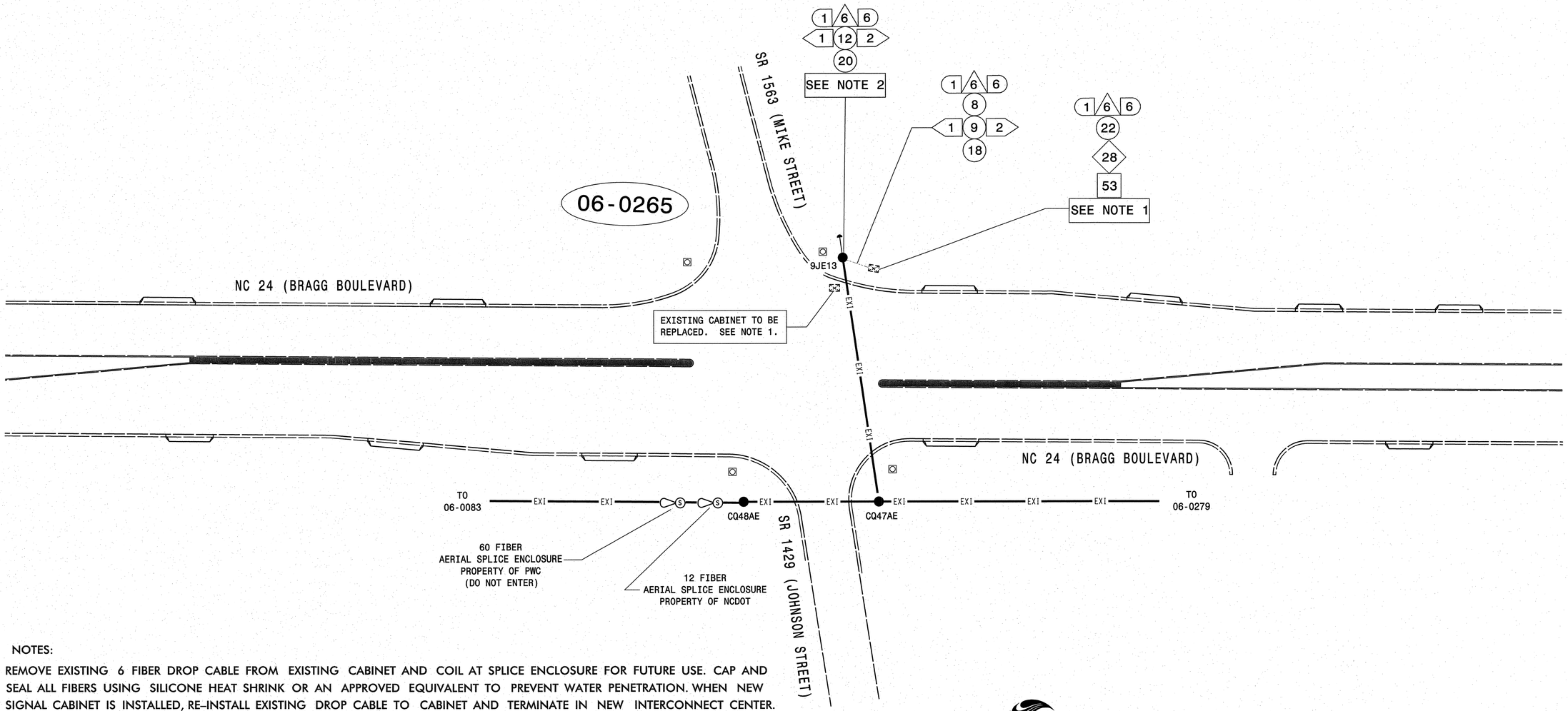
PLAN DATE:	MARCH 2010	REVIEWED BY:	L MAHANY
PREPARED BY:	K WIESKAMP	REVIEWED BY:	

SCALE: 0 — N/A

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029449 BETSY L. WATSON
SIGNATURE
3/4/10
DATE

PROJECT REFERENCE NO.	SHEET NO.
U-3423	Sig. 30



NOTES:

1. REMOVE EXISTING 6 FIBER DROP CABLE FROM EXISTING CABINET AND COIL AT SPLICE ENCLOSURE FOR FUTURE USE. CAP AND SEAL ALL FIBERS USING SILICONE HEAT SHRINK OR AN APPROVED EQUIVALENT TO PREVENT WATER PENETRATION. WHEN NEW SIGNAL CABINET IS INSTALLED, RE–INSTALL EXISTING DROP CABLE TO CABINET AND TERMINATE IN NEW INTERCONNECT CENTER.
2. INSTALL NEW RISER ON POWER POLE CLOSEST TO NEW CABINET LOCATION. DO NOT INSTALL RISER ON SIGNAL POLE.
3. CONTRACTOR TO CONTACT CITY OF FAYETTEVILLE TRAFFIC SERVICES (910–433–1660) PRIOR TO BEGINNING WORK ON SYSTEM SPLICING. PROVIDE 5 DAYS ADVANCE NOTICE PRIOR TO BEGINNING WORK.
4. RECORD AND PROVIDE TO THE ENGINEER DOCUMENTATION OF EXISTING SPLICES IN BOTH THE EXISTING SPLICE ENCLOSURE AND THE EXISTING SIGNAL CABINET (SIN #06–0265) PRIOR TO REMOVAL OF ANY SPLICES.
5. FOR INSTALLATION OF NEW INTERCONNECT CENTER, COMPARE SPLICE CONFIGURATION DATA RECORDED PREVIOUSLY TO THE SPLICE PLANS. IF THERE ARE VARIATIONS, SPLICE BACK ACCORDING TO EXISTING FIELD DATA TAKEN PRIOR TO REMOVAL.

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

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

Cable Routing

DIVISION 6 CUMBERLAND COUNTY FAYETTEVILLE

PLAN DATE: JANUARY 2010 REVIEWED BY: L MAHANY

PREPARED BY: KL WIESKAMP REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

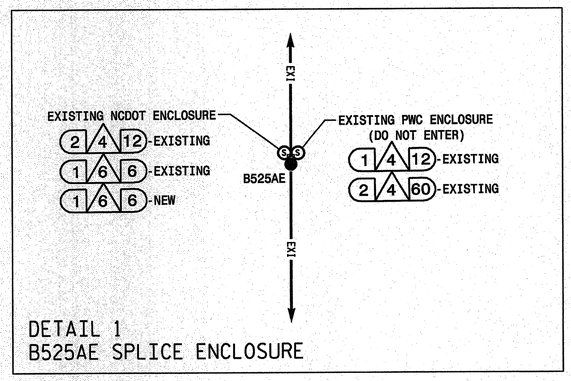
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 029449 ENGINEER BETSY L. WILSON

Betsy L Wilson 3/4/10
SIGNATURE DATE

SIG. INVENTORY NO. 06-0265

$$$$$SYSTIME$$$$
$$$$$USERNAME$$$$
$$$$$DGN$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3423	Sig. 31



DETAIL 1
B525AE SPLICE ENCLOSURE

NOTES:

1. REMOVE EXISTING 6 FIBER DROP CABLE FROM EXISTING CABINET AND COIL AT SPLICE ENCLOSURE FOR FUTURE USE. CAP AND SEAL ALL FIBERS USING SILICONE HEAT SHRINK OR AN APPROVED EQUIVALENT TO PREVENT WATER PENETRATION. WHEN NEW SIGNAL CABINET IS INSTALLED, RE-INSTALL EXISTING DROP CABLE TO CABINET AND TERMINATE IN NEW INTERCONNECT CENTER.
2. INSTALL NEW RISER ON POWER POLE CLOSEST TO NEW CABINET LOCATION. DO NOT INSTALL RISER ON SIGNAL POLE.
3. CONTRACTOR TO CONTACT CITY OF FAYETTEVILLE TRAFFIC SERVICES (910-433-1660) PRIOR TO BEGINNING WORK ON SYSTEM SPLICING. PROVIDE 5 DAYS ADVANCE NOTICE PRIOR TO BEGINNING WORK.
4. RECORD AND PROVIDE TO THE ENGINEER DOCUMENTATION OF EXISTING SPLICES IN BOTH THE EXISTING SPLICE ENCLOSURE AND THE EXISTING SIGNAL CABINET (SIN #06-0279) PRIOR TO REMOVAL OF ANY SPLICES.
5. FOR INSTALLATION OF NEW INTERCONNECT CENTER, COMPARE SPLICE CONFIGURATION DATA RECORDED PREVIOUSLY TO THE SPLICE PLANS. IF THERE ARE VARIATIONS, SPLICE BACK ACCORDING TO EXISTING FIELD DATA TAKEN PRIOR TO REMOVAL.

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Prepared for the Offices of:
Transportation Mobility and Safety Division
750 N.Greenfield Pkwy.Garner,NC 27529
STATE OF TRANSPORTATION
Signal Design Section

Cable Routing and CCTV Camera Location Detail

DIVISION 6 CUMBERLAND COUNTY FAYETTEVILLE

PLAN DATE:	JANUARY 2010	REVIEWED BY:	L MAHANY
PREPARED BY:	KL WIESKAMP	REVIEWED BY:	

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 029449 ENGINEER BETSY L. WIESKAMP
SIGNATURE 3/4/10 DATE

SIG. INVENTORY NO. 06-0279

\$\$\$\$\$SYSTIME\$\$\$\$\$
\$\$\$\$\$SYSDATE\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$