| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| N.C. | U-5168 | 1 | |

| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION |
|---|---|---|
| 45241.1.1 | | PE |
| 45241.3.1 | STP-0314(5) | CONST |

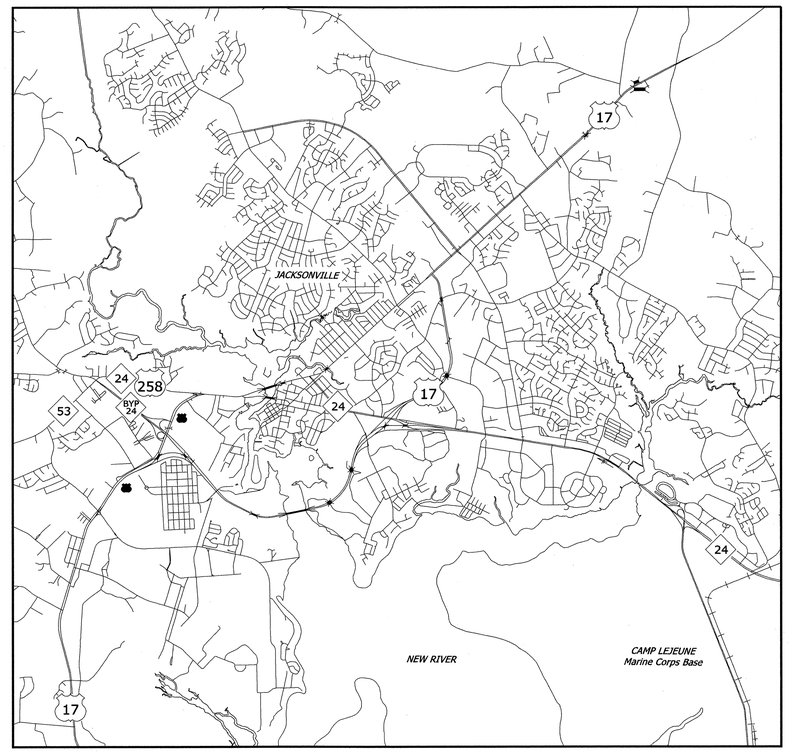
# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

# JACKSONVILLE

## COMPUTERIZED TRAFFIC SIGNAL SYSTEM

(ONSLOW COUNTY)




Volume III of III
Traffic Signal Plans

*FINAL PLANS*

TIP PROJECT: U-5168

CONTRACT: C202576

7/19/2011 $TIME$ susan.pennington ...*CADD*VOLUME 3*Vol3_Sht001.dgn

*2006 STANDARD SPECIFICATIONS*

*LETTING DATE:*
*NOVEMBER 15, 2011*

*DEPARTMENT OF TRANSPORTATION*
*FEDERAL HIGHWAY ADMINISTRATION*

*APPROVED*
*DIVISION ADMINISTRATOR* *DATE*

*PROJECT LENGTH*

*PROJECT LENGTH = 41 MILES*

*DIVISION OF HIGHWAYS*
*STATE OF NORTH CAROLINA*

*STATE DESIGN ENGINEER* *P.E.*

*NCDOT CONTACTS:*
*TRANSPORTATION SAFETY AND MOBILITY*
*INTELLIGENT TRANSPORTATION SYSTEMS SECTION*
W. MICHAEL BRASWELL - METRO SYSTEMS PROJECT ENGINEER

*PLANS PREPARED BY:*

Kimley-Horn
and Associates, Inc.
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

*KIMLEY-HORN CONTACTS:* T.F. BURCHETT, P.E. - PROJECT MANAGER
KEVIN W. SMITH, P.E. - PROJECT ENGINEER

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Intelligent Transportation Systems

*750 Greenfield Pkwy., Garner, NC 27529*

*SEAL*

*SIGNATURE* *DATE*

*SEAL*

NORTH CAROLINA PROFESSIONAL SEAL 030472 ENGINEER KEVIN W. SMITH

7-20-11

*SIGNATURE* *DATE*

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | 2 |

# SUMMARY OF WORK BY INTERSECTION

| No. | Cable Routing Sheet Number | Splicing Details Sheet Number | SIN | Intersection: Street 1 | Intersection: Street 2 | Controllers and Cabinets: Install New 2070 Controller (5) | Existing 2070 Controller | Install New Local Controller Software | Install New 332 Base Mounted Cabinet (6) | Install New 332 Base Mounted Cabinet with Aux File (6) | Install New 336S Pole Mounted Cabinet (8) | Existing 332 Base Mounted Cabinet | Install New Terminal Splice Box (5) | Reconnect Generator Power Inlet Box (35) | Install New Generator Power Inlet Box (51) | Reconnect Emergency Vehicle Preemption Equipment (34) | Remove Existing Cabinet and Controller (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 99 | 86 | CITY-01 | NEW BRIDGE ST | WARLICK ST | 1 | | | | | 1 | | | | | | 1 |
| 2 | 100 | 85 | CITY-02 | NEW BRIDGE ST | BAYSHORE ST | 1 | | | | | 1 | | | | | | 1 |
| 3 | 31 | 76 | 03-0090 | US 17 BUS (MARINE BLVD) | GUM BRANCH RD/BELL FORK RD | | 1 | 1 | | | | 1 | | 1 | | 1 | |
| 4 | 28 | 78 | 03-0091 | US 17 BUS (MARINE BLVD) | ONSLOW DR | | 1 | 1 | | | | 1 | | 1 | | 1 | |
| 5 | 28 | 78 | 03-0092 | US 17 BUS (MARINE BLVD) | HENDERSON DR | 1 | | | | 1 | | | | | | | 1 |
| 6 | 25 | 83 | 03-0094 | NC 24 (JOHNSON BLVD) | CHANEY AVE | 1 | | | | 1 | | | 1 | | | | 1 |
| 7 | 25 | 83 | 03-0095 | US 17 BUS (MARINE BLVD) | NC 24 (JOHNSON BLVD) | | 1 | 1 | | | | 1 | | 1 | | 1 | |
| 8 | 97 | 84 | 03-0100 | NC 24 (JOHNSON BLVD) | WARN ST | 1 | | | 1 | | | | 1 | | | | 1 |
| 9 | 100 | 85 | 03-0101 | NC 24 (JOHNSON BLVD) | BAYSHORE ST | 1 | | | 1 | | | | | | | | 1 |
| 10 | 101 | 88 | 03-0103 | NC 24 (JOHNSON BLVD/LEJEUNE BLVD) | NEW BRIDGE ST | 1 | | | 1 | | | | | | | | 1 |
| 11 | 106 | 80 | 03-0105 | HENDERSON DR | ONSLOW DR | 1 | | | | | 1 | | | | | | 1 |
| 12 | 132 | 64 | 03-0106 | BELL FORK RD | HARGETT ST/COUNTRY CLUB RD | 1 | | | | 1 | | | | | 1 | 1 | 1 |
| 13 | 105 | 91 | 03-0107 | HARGETT ST | NEW RIVER DR | 1 | | | | | 1 | | | | 1 | | 1 |
| 14 | 21 | 10 | 03-0108 | US 17 BUS (MARINE BLVD) | OLD BRIDGE ST | | 1 | 1 | | | | 1 | | 1 | | | |
| 15 | 89 | 16 | 03-0109 | US 17 (WILMINGTON HWY) | CURTIS RD/OLD MAPLEHURST RD | | 1 | 1 | | | | 1 | | | | | |
| 16 | 101 | 89 | 03-0111 | NC 24 BUS (LEJEUNE BLVD) | HARGETT ST | 1 | | | 1 | | | | | | 1 | 1 | 1 |
| 17 | 101 | 89 | 03-0112 | NC 24 BUS (LEJEUNE BLVD) | MONTFORD POINT RD | | 1 | 1 | | | | 1 | | | 1 | 1 | |
| 18 | 24 | 11 | 03-0114 | US 17 BUS (MARINE BLVD) | COURT ST | | 1 | 1 | | | | 1 | | | | 1 | |
| 19 | 26 | 82 | 03-0115 | US 17 BUS (MARINE BLVD) | CHANEY AVE | 1 | | | | | 1 | | | | | 1 | 1 |
| 20 | 19 | 20 | 03-0116 | US 17 BUS (WILMINGTON HWY) | US 258/NC24 (RICHLANDS HWY) | | 1 | 1 | | | | 1 | | 1 | | | |
| 21 | 140 | 58 | 03-0117 | NC 24 (LEJEUNE BLVD) | BELL FORK RD/CAMP KNOX RD | | 1 | 1 | | | | 1 | | 1 | | | |
| 22 | 146 | 55 | 03-0120 | NC 24 (LEJEUNE BLVD) | CORBIN ST/TARAWA BLVD | | 1 | 1 | | | | 1 | | 1 | | | |
| 23 | 142 | 57 | 03-0121 | NC 24 (LEJEUNE BLVD) | WESTERN BLVD/TARAWA BLVD | | 1 | 1 | | | | 1 | | 1 | | 1 | |
| 24 | 35 | 41 | 03-0124 | US 17 (MARINE BLVD) | WESTERN BLVD | | 1 | 1 | | | | 1 | | | | 1 | |
| 25 | 174 | 46 | 03-0144 | WESTERN BLVD | BRYNN MARR RD | | 1 | 1 | | | | 1 | | | 1 | | |
| 26 | 169 | 50 | 03-0169 | WESTERN BLVD | COUNTRY CLUB RD | | 1 | 1 | | | | 1 | | 1 | | 1 | |
| 27 | 4 | 1 | 03-0172 | NC 53 (BURGAW HWY) | PONY FARM RD/MURRILL HILL RD | | 1 | 1 | | | | 1 | | | | | |
| 28 | 125 | 71 | 03-0173 | GUM BRANCH RD | HENDERSON DR | | 1 | 1 | | | | 1 | | | 1 | 1 | |
| 29 | 20 | 9 | 03-0174 | US 17 BUS (MARINE BLVD) | GEORGETOWN RD | | 1 | 1 | | | | 1 | | | 1 | | |
| 30 | 13 | 6 | 03-0187 | NC 24 BYPASS | NC 53 (BURGAW HWY)/US 258 (RICHLANDS HWY) | | 1 | 1 | | | | 1 | | | | | |
| 31 | 67 | 30 | 03-0218 | NC 24 (LEJEUNE BLVD) | PINEY GREEN RD | | | | | | | | | | | | |
| 32 | 147 | 72 | 03-0225 | HENDERSON DR | DORIS AVE | 1 | | | | 1 | | | 1 | | 1 | | 1 |
| 33 | 45 | 23 | 03-0235 | PINEY GREEN RD | COUNTRY CLUB RD | | | | | | | | | | | | |
| 34 | 109 | 79 | 03-0247 | ONSLOW DR | NEW RIVER DR | 1 | | | | | 1 | | | | | | 1 |
| 35 | 167 | 54 | 03-0262 | WESTERN BLVD | UNIVERSITY DR | | 1 | 1 | | | | 1 | | | | | |
| 36 | 40 | 22 | 03-0264 | US 17 (MARINE BLVD) | PINEY GREEN RD | | | | | | | | | | | | |
| 37 | 78 | 12 | 03-0287 | US 17 (WILMINGTON HWY) | DAWSON CABIN RD | | 1 | 1 | | | | 1 | | | | | |
| 38 | 69 | 4 | 03-0304 | NC 24/US 258 (RICHLANDS HWY) | PONY FARM RD | | 1 | 1 | | | | 1 | | | | | |
| 39 | 54 | 27 | 03-0340 | PINEY GREEN RD | OLD 30 RD | | | | | | | | | | | | |
| 40 | 96 | 19 | 03-0370 | US 17 BUS (MARINE BLVD) | BROADHURST RD | | 1 | 1 | | | | 1 | | | | | |
| 41 | 170 | 49 | 03-0381 | WESTERN BLVD | MEMORIAL DR | | 1 | 1 | | | | 1 | | | 1 | | |
| 42 | 175 | 45 | 03-0382 | WESTERN BLVD | VILLAGE DR | | 1 | 1 | | | | 1 | | | | | |
| | | | | | **SUBTOTAL** | **14** | **24** | **24** | **4** | **4** | **6** | **24** | **3** | **9** | **9** | **12** | **14** |


PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
P.O. Box 33068
Raleigh N.C. 27636-3068
(919) 677-2000



Transportation Mobility and Safety Division
Intelligent Transportation Systems Section
750 N. Greenfield Pkwy., Garner, NC 27529


SCALE 0

CITY OF JACKSONVILLE
COMPUTERIZED
SIGNAL SYSTEM UPGRADE
SUMMARY OF WORK

DIVISION 3 ONSLOW COUNTY JACKSONVILLE

| | | | |
|---|---|---|---|
| PLAN DATE: | JULY 2011 | REVIEWED BY: | K.W. SMITH |
| PREPARED BY: | J.C. CROSS | REVIEWED BY: | T.F. BURCHETT |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 030472 ENGINEER KEVIN W. SMITH
SIGNATURE 7-20-11 DATE

CADD Filename:


7/19/2011 $TIME$ susan.pennington ...*CAD*WORKLUME 3*wo13_Sht002.dgn

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | 2A |

# SUMMARY OF WORK BY INTERSECTION

| No. | Cable Routing Sheet Number | Splicing Details Sheet Number | SIN | Intersection: Street 1 | Intersection: Street 2 | Controllers and Cabinets: Install New 2070 Controller (5) | Existing 2070 Controller | Install New Local Controller Software | Install New 332 Base Mounted Cabinet (6) | Install New 332 Base Mounted Cabinet with Aux File (6) | Install New 336S Pole Mounted Cabinet (8) | Existing 332 Base Mounted Cabinet | Install New Terminal Splice Box (5) | Reconnect Generator Power Inlet Box (35) | Install New Generator Power Inlet Box (51) | Reconnect Emergency Vehicle Preemption Equipment (34) | Remove Existing Cabinet and Controller (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | 176 | 44 | 03-0383 | WESTERN BLVD | LIBERTY DR/CENTER ST | | 1 | 1 | | | | 1 | | | | | |
| 44 | 120 | 69 | 03-0384 | WESTERN BLVD | GUM BRANCH RD | | 1 | 1 | | | | 1 | | 1 | | 1 | |
| 45 | 128 | 74 | 03-0411 | GUM BRANCH RD | DEWITT ST | | 1 | 1 | | | | 1 | | | | | |
| 46 | 124 | 70 | 03-0423 | GUM BRANCH RD | INDIAN TRAIL RD | | 1 | 1 | | | | 1 | | | | | |
| 47 | 49 | 25 | 03-0457 | PINEY GREEN RD | BALSAM RD | | | | | | | | | | | | |
| 48 | 130 | 75 | 03-0459 | GUM BRANCH RD | NOTTINGHAM RD | | 1 | 1 | | | | 1 | | | | | |
| 49 | 138 | 59 | 03-0463 | BELL FORK RD | BRYNN MARR RD | | 1 | 1 | | | | 1 | | | 1 | | |
| 50 | 133 | 61 | 03-0516 | BELL FORK RD | WHITE ST | | 1 | 1 | | | | 1 | | | | | |
| 51 | 144 | 56 | 03-0517 | NC 24 (LEJEUNE BLVD) | PINE VALLEY RD | | 1 | 1 | | | | 1 | | | | | |
| 52 | 177 | 51 | 03-0527 | COUNTRY CLUB RD | JACKSONVILLE MALL | | 1 | 1 | | | | 1 | | | | | |
| 53 | 171 | 47 | 03-0558 | WESTERN BLVD | HUFF DR/WHITE ST EXTENSION | | 1 | 1 | | | | 1 | | | 1 | 1 | |
| 54 | 10 | 3 | 03-0566 | NC 53 (BURGAW HWY) | OLD MAPLEHURST RD | 1 | | | | 1 | | | 1 | | | | 1 |
| 55 | 64 | 29 | 03-0568 | PINEY GREEN RD | ROCKY RUN RD | | | | | | | | | | | | |
| 56 | 127 | 73 | 03-0588 | GUM BRANCH RD | DORIS AVE/BRANCHWOOD DR | | 1 | 1 | | | | 1 | | | | | |
| 57 | 68 | 31 | 03-0593 | NC 24 (LEJEUNE BLVD) | GLADE AVE | 1 | | | 1 | | | | | | | | 1 |
| 58 | 30 | 77 | 03-0598 | US 17 BUS (MARINE BLVD) | THOMPSON ST | 1 | | | 1 | | | | 1 | | | | 1 |
| 59 | 166 | 54 | 03-0614 | WESTERN BLVD | COMMERCE RD/COLLEGE PARK PLAZA | | 1 | 1 | | | | 1 | | | 1 | | |
| 60 | 179 | 52 | 03-0664 | COUNTRY CLUB RD | PINE VALLEY RD | | 1 | 1 | | | | 1 | | | | | |
| 61 | 98 | 87 | 03-0665 | NEW BRIDGE ST | RAILROAD ST | 1 | | | 1 | | | | | | | | 1 |
| 62 | 164 | 38 | 03-0750 | WESTERN BLVD | CIRCUIT LN | | 1 | 1 | | | | 1 | | | | 1 | |
| 63 | 159 | 33 | 03-0776 | WESTERN BLVD | HENDERSON DR | | 1 | 1 | | | | 1 | | | 1 | 1 | |
| 64 | 59 | 28 | 03-0821 | PINEY GREEN RD | HUNTERS TRL | | | | | | | | | | | | |
| 65 | 161 | 34 | 03-0822 | WESTERN BLVD | GATEWAY NORTH | | 1 | 1 | | | | 1 | | | | 1 | |
| 66 | 37 | 21 | 03-0825 | US 17 (MARINE BLVD) | MCDANIEL DR /WORKSHOP LN | | 1 | 1 | | | | 1 | | | 1 | | |
| 67 | 163 | 36 | 03-0828 | WESTERN BLVD | CROSS POINT CENTER/LOWE'S | | 1 | 1 | | | | 1 | | | 1 | 1 | |
| 68 | 165 | 39 | 03-0834 | WESTERN BLVD | WAL-MART/STATE EMPLOYEES CREDIT UNION | | 1 | 1 | | | | 1 | | | | | |
| 69 | 48 | 24 | 03-0851 | PINEY GREEN RD | CREEDMOOR RD | | | | | | | | | | | | |
| 70 | 113 | 66 | 03-0879 | GUM BRANCH RD | SUMMERSILL SCHOOL RD | | 1 | 1 | | | | 1 | | | | | |
| 71 | 110 | 65 | 03-0889 | GUM BRANCH RD | RAMSEY RD | | 1 | 1 | | | | 1 | | | | | |
| 72 | 162 | 35 | 03-0896 | WESTERN BLVD | GATEWAY SOUTH | | 1 | 1 | | | | 1 | | | | | |
| 73 | 95 | 18 | 03-0922 | US 17 BUS (WILMINGTON HWY) | US 17 BYPASS SB RAMP/HIGHWAY PATROL | | 1 | 1 | | | | 1 | | | 1 | | |
| 74 | 91 | 17 | 03-0931 | US 17 (WILMINGTON HWY) | CANADY RD | | 1 | 1 | | | | 1 | | | | | |
| 75 | 104 | 92 | 03-0942 | NC 24 (LEJEUNE BLVD) | US 17 BYPASS NB RAMP | | 1 | 1 | | | | 1 | | | | | |
| 76 | 103 | 90 | 03-0943 | NC 24 (LEJEUNE BLVD) | US 17 BYPASS SB RAMP | | 1 | 1 | | | | 1 | | | | | |
| 77 | 15 | 7 | 03-1006 | NC 24 BUS/US 258 (RICHLANDS HWY) | YOPP RD | | 1 | 1 | | | | 1 | | | | | |
| 78 | 157 | 32 | 03-1015 | WESTERN BLVD | CAROLINA FOREST BLVD/NORTH PLAINS DR | | 1 | 1 | | | | 1 | | | | | |
| 79 | 16 | 8 | 03-1036 | NC 24 BUS/US 258 (RICHLANDS HWY) | HICKORY RD/VICTORY WAY | | 1 | 1 | | | | 1 | | | | | |
| 80 | 34 | 42 | 03-1050 | US 17 BYPASS | US 17 BUS (MARINE BLVD) | | 1 | 1 | | | | 1 | | | | | |
| 81 | 121 | 69A | 03-1055 | GUM BRANCH RD | WILLIAMSBURG PKWY | | 1 | 1 | | | | 1 | | | | | |
| 82 | 151 | 62 | 03-1059 | WHITE ST | US 17 SB RAMP | | 1 | 1 | | | | 1 | | | | | |
| 83 | 153 | 48 | 03-1061 | WHITE ST | WHITE ST EXTENSION | | 1 | 1 | | | | 1 | | | | | |
| 84 | 151 | 63 | 03-1066 | WHITE ST | US 17 NB RAMP | | 1 | 1 | | | | 1 | | | | | |
| | | | | | **SUBTOTAL** | **4** | **34** | **34** | **3** | **1** | **0** | **34** | **2** | **1** | **7** | **6** | **4** |
| | | | | | **TOTAL** | **18** | **58** | **58** | **7** | **5** | **6** | **58** | **5** | **10** | **16** | **18** | **18** |

PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
P.O. Box 33068
Raleigh N.C. 27636-3068
(919) 677-2000

Transportation Mobility and Safety Division
Traffic Engineering Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE: 0

CITY OF JACKSONVILLE
COMPUTERIZED
SIGNAL SYSTEM UPGRADE
SUMMARY OF WORK

DIVISION 3 ONSLOW COUNTY JACKSONVILLE

| | | | |
|---|---|---|---|
| PLAN DATE: | JULY 2011 | REVIEWED BY: | K.W. SMITH |
| PREPARED BY: | J.C. CROSS | REVIEWED BY: | T.F. BURCHETT |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 030472 ENGINEER KELVIN W. SMITH

SIGNATURE: K.W. Smith DATE: 7-20-11

CADD Filename:

7/19/2011 $TIME$ susan.pennington ...*CJAX*VOLUME 3*vol3_Sht002A.dgn

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | 2B |

# SUMMARY OF WORK BY INTERSECTION

| No. | Cable Routing Sheet Number | Splicing Details Sheet Number | SIN | Intersection: Street 1 | Intersection: Street 2 | Foundations: 1 Install New Cabinet Foundation (Same Quadrant) | Foundations: 1 Install New Cabinet Foundation (New Quadrant) | Foundations: 10 Install Pre-Formed Cabinet Foundation Pad | Foundations: 9 Install Base Adapter | Foundations: 3 Modify Existing Foundation (Rotate Cabinet 90 Degrees) | Foundations: 3 Modify Existing Foundation (Keep Cabinet Orientation) | Foundations: 33 Install New Generator Anchor in Foundation | Foundations: 2 Remove Existing Foundation | Conduits and Risers: 4 Install new Steel Riser with Weatherhead | Conduits and Risers: 5 Install New Steel Riser with Heatshrink Tubing | Conduits and Risers: 16 Reuse Existing Riser and replace Weatherhead with Heat Shrink Tubing | Conduits and Risers: 14 Core Drill New Foundation Entrance | Conduits and Risers: 13 Reuse Existing Foundation Stubouts/ Entrances | Conduits and Risers: 15 Install Riser into pole-mounted cabinet | Conduits and Risers: 17 Install Rigid Metal Conduit into pole-mounted cabinet |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 99 | 86 | CITY-01 | NEW BRIDGE ST | WARLICK ST | | | | | | | | | 7 | 1 | | | | 1 | |
| 2 | 100 | 85 | CITY-02 | NEW BRIDGE ST | BAYSHORE ST | | | | | | | | | 6 | | | | | | 1 |
| 3 | 31 | 76 | 03-0090 | US 17 BUS (MARINE BLVD) | GUM BRANCH RD/BELL FORK RD | | | | | | | 1 | | 3 | 1 | | 2 | | | |
| 4 | 28 | 78 | 03-0091 | US 17 BUS (MARINE BLVD) | ONSLOW DR | | | | | | | 1 | | | 1 | | 1 | 1 | | |
| 5 | 28 | 78 | 03-0092 | US 17 BUS (MARINE BLVD) | HENDERSON DR | | | 1 | | | | | | 1 | 1 | | 1 | | | |
| 6 | 25 | 83 | 03-0094 | NC 24 (JOHNSON BLVD) | CHANEY AVE | 1 | | | | | | | | | 1 | | | | | |
| 7 | 25 | 83 | 03-0095 | US 17 BUS (MARINE BLVD) | NC 24 (JOHNSON BLVD) | | | | | | | 1 | | | 1 | | 1 | | | |
| 8 | 97 | 84 | 03-0100 | NC 24 (JOHNSON BLVD) | WARN ST | 1 | | | | | | | | 1 | 1 | | | | | |
| 9 | 100 | 85 | 03-0101 | NC 24 (JOHNSON BLVD) | BAYSHORE ST | | | | | 1 | | | | | 1 | | | 1 | | |
| 10 | 101 | 88 | 03-0103 | NC 24 (JOHNSON BLVD/LEJEUNE BLVD) | NEW BRIDGE ST | | | | 1 | 1 | | | | | 1 | | 1 | | | |
| 11 | 106 | 80 | 03-0105 | HENDERSON DR | ONSLOW DR | | | | | | | | | | 1 | | | | 1 | |
| 12 | 132 | 64 | 03-0106 | BELL FORK RD | HARGETT ST/COUNTRY CLUB RD | | | | | 1 | | 1 | | 2 | | | 1 | | | |
| 13 | 105 | 91 | 03-0107 | HARGETT ST | NEW RIVER DR | | | | | | | 1 | | | 1 | | | | 1 | |
| 14 | 21 | 10 | 03-0108 | US 17 BUS (MARINE BLVD) | OLD BRIDGE ST | | | | | | | 1 | | | | | | 1 | | |
| 15 | 89 | 16 | 03-0109 | US 17 (WILMINGTON HWY) | CURTIS RD/OLD MAPLEHURST RD | | | | | | | | | | 1 | | 1 | 1 | | |
| 16 | 101 | 89 | 03-0111 | NC 24 BUS (LEJEUNE BLVD) | HARGETT ST | | | | | 1 | | 1 | | 1 | 1 | | | 1 | | |
| 17 | 101 | 89 | 03-0112 | NC 24 BUS (LEJEUNE BLVD) | MONTFORD POINT RD | | | | | | | 1 | | 1 | 1 | | | 1 | | |
| 18 | 24 | 11 | 03-0114 | US 17 BUS (MARINE BLVD) | COURT ST | | | | | | | | | 1 | | | 1 | | | |
| 19 | 26 | 82 | 03-0115 | US 17 BUS (MARINE BLVD) | CHANEY AVE | | | | | | | | | | 1 | | | | 1 | |
| 20 | 19 | 20 | 03-0116 | US 17 BUS (WILMINGTON HWY) | US 258/NC24 (RICHLANDS HWY) | | | | | | | 1 | | | 1 | | | 1 | | |
| 21 | 140 | 58 | 03-0117 | NC 24 (LEJEUNE BLVD) | BELL FORK RD/CAMP KNOX RD | | | | | | | 1 | | | | 1 | | | | |
| 22 | 146 | 55 | 03-0120 | NC 24 (LEJEUNE BLVD) | CORBIN ST/TARAWA BLVD | | | | | | | 1 | | | 1 | | 1 | | | |
| 23 | 142 | 57 | 03-0121 | NC 24 (LEJEUNE BLVD) | WESTERN BLVD/TARAWA BLVD | | | | | | | 1 | | 3 | 1 | | 1 | 1 | | |
| 24 | 35 | 41 | 03-0124 | US 17 (MARINE BLVD) | WESTERN BLVD | | | | | | | | | | | | | | | |
| 25 | 174 | 46 | 03-0144 | WESTERN BLVD | BRYNN MARR RD | | | | | | | 1 | | 1 | 1 | | 1 | | | |
| 26 | 169 | 50 | 03-0169 | WESTERN BLVD | COUNTRY CLUB RD | | | | | | | 1 | | | 1 | | | 1 | | |
| 27 | 4 | 1 | 03-0172 | NC 53 (BURGAW HWY) | PONY FARM RD/MURRILL HILL RD | | | | | | | | | | | | 1 | | | |
| 28 | 125 | 71 | 03-0173 | GUM BRANCH RD | HENDERSON DR | | | | | | | 1 | | 1 | | 1 | | | | |
| 29 | 20 | 9 | 03-0174 | US 17 BUS (MARINE BLVD) | GEORGETOWN RD | | | | | | | 1 | | | | | 1 | | | |
| 30 | 13 | 6 | 03-0187 | NC 24 BYPASS | NC 53 (BURGAW HWY)/US 258 (RICHLANDS HWY) | | | | | | | | | | 1 | | | 1 | | |
| 31 | 67 | 30 | 03-0218 | NC 24 (LEJEUNE BLVD) | PINEY GREEN RD | | | | | | | | | | | | | | | |
| 32 | 147 | 72 | 03-0225 | HENDERSON DR | DORIS AVE | 1 | | | | | | 1 | 1 | | 1 | | | | | |
| 33 | 45 | 23 | 03-0235 | PINEY GREEN RD | COUNTRY CLUB RD | | | | | | | | | | | | | | | |
| 34 | 109 | 79 | 03-0247 | ONSLOW DR | NEW RIVER DR | | | | | | | | | | 1 | | | | 1 | |
| 35 | 167 | 54 | 03-0262 | WESTERN BLVD | UNIVERSITY DR | | | | | | | | | | 1 | | | 1 | | |
| 36 | 40 | 22 | 03-0264 | US 17 (MARINE BLVD) | PINEY GREEN RD | | | | | | | | | | | | | | | |
| 37 | 78 | 12 | 03-0287 | US 17 (WILMINGTON HWY) | DAWSON CABIN RD | | | | | | | | | | 1 | | 2 | | | |
| 38 | 69 | 4 | 03-0304 | NC 24/US 258 (RICHLANDS HWY) | PONY FARM RD | | | | | | | | | | 1 | | 1 | | | |
| 39 | 54 | 27 | 03-0340 | PINEY GREEN RD | OLD 30 RD | | | | | | | | | | | | | | | |
| 40 | 96 | 19 | 03-0370 | US 17 BUS (MARINE BLVD) | BROADHURST RD | | | | | | | | | | | | | | | |
| 41 | 170 | 49 | 03-0381 | WESTERN BLVD | MEMORIAL DR | | | | | | | 1 | | | 1 | | | 1 | | |
| 42 | 175 | 45 | 03-0382 | WESTERN BLVD | VILLAGE DR | | | | | | | | | | 1 | | 1 | | | |
| | | | | | SUBTOTAL | 3 | 0 | 1 | 1 | 4 | 0 | 18 | 1 | 28 | 28 | 2 | 18 | 12 | 5 | 1 |

PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
P.O. Box 33068
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Transportation Mobility and Safety Division
Intelligent Transportation Systems Section
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE: 0

CITY OF JACKSONVILLE
COMPUTERIZED
SIGNAL SYSTEM UPGRADE
SUMMARY OF WORK

DIVISION 3 ONSLOW COUNTY JACKSONVILLE

| | | | |
|---|---|---|---|
| PLAN DATE: | JULY 2011 | REVIEWED BY: | K.W. SMITH |
| PREPARED BY: | J.C. CROSS | REVIEWED BY: | T.F. BURCHETT |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 030472 ENGINEER KEVIN W. SMITH

SIGNATURE 7-20-11 DATE

CADD Filename:

7/19/2011 $TIME$ susan.pennington ...*NCADWVOLUME 3*W013_Sht002B.dgn

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | 2C |

# SUMMARY OF WORK BY INTERSECTION

| | | | | Intersection | | Foundations | | | | | | | | Conduits and Risers | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1 | 1 | 10 | 9 | 3 | 3 | 33 | 2 | 4 | 5 | 16 | 14 | 13 | 15 | 17 |
| No. | Cable Routing Sheet Number | Splicing Details Sheet Number | SIN | Street 1 | Street 2 | Install New Cabinet Foundation (Same Quadrant) | Install New Cabinet Foundation (New Quadrant) | Install Pre-Formed Cabinet Foundation Pad | Install Base Adapter | Modify Existing Foundation (Rotate Cabinet 90 Degrees) | Modify Existing Foundation (Keep Cabinet Orientation) | Install New Generator Anchor in Foundation | Remove Existing Foundation | Install new Steel Riser with Weatherhead | Install New Steel Riser with Heatshrink Tubing | Reuse Existing Riser and replace Weatherhead with Heat Shrink Tubing | Core Drill New Foundation Entrance | Reuse Existing Foundation Stubouts/ Entrances | Install Riser into pole-mounted cabinet | Install Rigid Metal Conduit into pole-mounted cabinet |
| 43 | 176 | 44 | 03-0383 | WESTERN BLVD | LIBERTY DR/CENTER ST | | | | | | | | | | 1 | | 1 | | | |
| 44 | 120 | 69 | 03-0384 | WESTERN BLVD | GUM BRANCH RD | | | | | | | 1 | | | 1 | | | 1 | | |
| 45 | 128 | 74 | 03-0411 | GUM BRANCH RD | DEWITT ST | | | | | | | | | | | 1 | | | | |
| 46 | 124 | 70 | 03-0423 | GUM BRANCH RD | INDIAN TRAIL RD | | | | | | | | | | 1 | | 1 | | | |
| 47 | 49 | 25 | 03-0457 | PINEY GREEN RD | BALSAM RD | | | | | | | | | | | | | | | |
| 48 | 130 | 75 | 03-0459 | GUM BRANCH RD | NOTTINGHAM RD | | | | | | | | | | | 1 | | | | |
| 49 | 138 | 59 | 03-0463 | BELL FORK RD | BRYNN MARR RD | | | | | | | 1 | | | | 1 | | | | |
| 50 | 133 | 61 | 03-0516 | BELL FORK RD | WHITE ST | | | | | | | | | | | | | | | |
| 51 | 144 | 56 | 03-0517 | NC 24 (LEJEUNE BLVD) | PINE VALLEY RD | | | | | | | | | | 1 | | 1 | | | |
| 52 | 177 | 51 | 03-0527 | COUNTRY CLUB RD | JACKSONVILLE MALL | | | | | | | | | | 1 | 1 | | | | |
| 53 | 171 | 47 | 03-0558 | WESTERN BLVD | HUFF DR/WHITE ST EXTENSION | | | | | | | 1 | | | | | | | | |
| 54 | 10 | 3 | 03-0566 | NC 53 (BURGAW HWY) | OLD MAPLEHURST RD | | 1 | | | | | | 1 | 2 | 1 | | | | | |
| 55 | 64 | 29 | 03-0568 | PINEY GREEN RD | ROCKY RUN RD | | | | | | | | | | | | | | | |
| 56 | 127 | 73 | 03-0588 | GUM BRANCH RD | DORIS AVE/BRANCHWOOD DR | | | | | | | | | 1 | | 1 | 1 | | | |
| 57 | 68 | 31 | 03-0593 | NC 24 (LEJEUNE BLVD) | GLADE AVE | | | | 1 | 1 | | | | 1 | 2 | | 2 | | | |
| 58 | 30 | 77 | 03-0598 | US 17 BUS (MARINE BLVD) | THOMPSON ST | 1 | | | | | | | 1 | | 1 | | | | | |
| 59 | 166 | 54 | 03-0614 | WESTERN BLVD | COMMERCE RD/COLLEGE PARK PLAZA | | | | | | | 1 | | | 1 | | | 1 | | |
| 60 | 179 | 52 | 03-0664 | COUNTRY CLUB RD | PINE VALLEY RD | | | | | | | | | 1 | | 1 | | | | |
| 61 | 98 | 87 | 03-0665 | NEW BRIDGE ST | RAILROAD ST | | | 1 | | | | | | | | 1 | | | | |
| 62 | 164 | 38 | 03-0750 | WESTERN BLVD | CIRCUIT LN | | | | | | | | | | 1 | | 1 | | | |
| 63 | 159 | 33 | 03-0776 | WESTERN BLVD | HENDERSON DR | | | | | | | 1 | | | 1 | | | 1 | | |
| 64 | 59 | 28 | 03-0821 | PINEY GREEN RD | HUNTERS TRL | | | | | | | | | | | | | | | |
| 65 | 161 | 34 | 03-0822 | WESTERN BLVD | GATEWAY NORTH | | | | | | | | | | 1 | | 1 | 1 | | |
| 66 | 37 | 21 | 03-0825 | US 17 (MARINE BLVD) | MCDANIEL DR /WORKSHOP LN | | | | | | | 1 | | | 1 | | 1 | 1 | | |
| 67 | 163 | 36 | 03-0828 | WESTERN BLVD | CROSS POINT CENTER/LOWE'S | | | | | | | 1 | | | 1 | | 1 | | | |
| 68 | 165 | 39 | 03-0834 | WESTERN BLVD | WAL-MART/STATE EMPLOYEES CREDIT UNION | | | | | | | | | | 1 | | | 1 | | |
| 69 | 48 | 24 | 03-0851 | PINEY GREEN RD | CREEDMOOR RD | | | | | | | | | | | | | | | |
| 70 | 113 | 66 | 03-0879 | GUM BRANCH RD | SUMMERSILL SCHOOL RD | | | | | | | | | | 1 | | | 1 | | |
| 71 | 110 | 65 | 03-0889 | GUM BRANCH RD | RAMSEY RD | | | | | | | | | | 1 | | 1 | | | |
| 72 | 162 | 35 | 03-0896 | WESTERN BLVD | GATEWAY SOUTH | | | | | | | | | | 1 | | | 1 | | |
| 73 | 95 | 18 | 03-0922 | US 17 BUS (WILMINGTON HWY) | US 17 BYPASS SB RAMP/HIGHWAY PATROL | | | | | | | 1 | | | | | 1 | | | |
| 74 | 91 | 17 | 03-0931 | US 17 (WILMINGTON HWY) | CANADY RD | | | | | | | | | | | | | | | |
| 75 | 104 | 92 | 03-0942 | NC 24 (LEJEUNE BLVD) | US 17 BYPASS NB RAMP | | | | | | | | | | | | | 1 | | |
| 76 | 103 | 90 | 03-0943 | NC 24 (LEJEUNE BLVD) | US 17 BYPASS SB RAMP | | | | | | | | | | 2 | | | 1 | | |
| 77 | 15 | 7 | 03-1006 | NC 24 BUS/US 258 (RICHLANDS HWY) | YOPP RD | | | | | | | | | | 1 | | | 1 | | |
| 78 | 157 | 32 | 03-1015 | WESTERN BLVD | CAROLINA FOREST BLVD/NORTH PLAINS DR | | | | | | | | | | 1 | | | 1 | | |
| 79 | 16 | 8 | 03-1036 | NC 24 BUS/US 258 (RICHLANDS HWY) | HICKORY RD/VICTORY WAY | | | | | | | | | | 1 | | | 1 | | |
| 80 | 34 | 42 | 03-1050 | US 17 BYPASS | US 17 BUS (MARINE BLVD) | | | | | | | | | | | | 1 | | | |
| 81 | 121 | 69A | 03-1055 | GUM BRANCH RD | WILLIAMSBURG PKWY | | | | | | | | | | | | 1 | | | |
| 82 | 151 | 62 | 03-1059 | WHITE ST | US 17 SB RAMP | | | | | | | | | | | | | | | |
| 83 | 153 | 48 | 03-1061 | WHITE ST | WHITE ST EXTENSION | | | | | | | | | | | | | | | |
| 84 | 151 | 63 | 03-1066 | WHITE ST | US 17 NB RAMP | | | | | | | | | | | | | | | |
| | | | | | **SUBTOTAL** | **1** | **1** | **1** | **1** | **1** | **0** | **8** | **2** | **5** | **24** | **7** | **14** | **13** | **0** | **0** |
| | | | | | **TOTAL** | **4** | **1** | **2** | **2** | **5** | **0** | **26** | **3** | **33** | **52** | **9** | **32** | **25** | **5** | **1** |

PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
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Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Intelligent Transportation Systems Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0

CITY OF JACKSONVILLE
COMPUTERIZED
SIGNAL SYSTEM UPGRADE
SUMMARY OF WORK

DIVISION 3 ONSLOW COUNTY JACKSONVILLE

PLAN DATE: JULY 2011 REVIEWED BY: K.W. SMITH

PREPARED BY: J.C. CROSS REVIEWED BY: T.F. BURCHETT

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 030472 ENGINEER KEVIN W. SMITH

SIGNATURE 7-20-11 DATE

CADD Filename:

7/19/2011 $TIME$ susan.pennington ...*CADD*VOLUME 3*Vol3_Sht002C.dgn

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | 2D |

# SUMMARY OF WORK BY INTERSECTION

| | | | | Intersection | | Electrical Service | | Signals & Geometrics | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 31 | 30 | | | | | | | | | | | | | | | | | | | |
| No. | Cable Routing Sheet Number | Splicing Details Sheet Number | SIN | Street 1 | Street 2 | Install New Service | Modify Existing Service | VEHICLE SIGNAL HEAD (12", 3 SECTION) | VEHICLE SIGNAL HEAD (12", 4 SECTION) | PEDESTRIAN SIGNAL HEAD (16", 1 SECTION W/ COUNTDOWN) | MODIFY EXISTING VEHICLE SIGNAL HEAD | SIGNAL CABLE | SIGNAL PEDESTAL WITH FOUNDATION | SIGN FOR SIGNALS | INDUCTIVE LOOP SAWCUT | TYPE 2 LEAD-IN CABLE | UNDER-GROUND CONDUIT (1, 2") | DIRECTIONAL DRILL CONDUIT (1, 2") | JUNCTION BOX (STANDARD SIZE) | DETECTOR CHANNEL (TYPE 2070L) | CONFLICT MONITOR | RETROFIT AUX FILE | FIBER OPTIC CONTACT CLOSURE TRANSMITTER | FIBER OPTIC CONTACT CLOSURE RECEIVER | EVP OPTICAL DETECTOR | EVP PHASE SELECTOR |
| 1 | 99 | 86 | CITY-01 | NEW BRIDGE ST | WARLICK ST | | 1 | | | 8 | | 1450 | 1 | | 1110 | 3040 | 160 | | 8 | 8 | | | | | | |
| 2 | 100 | 85 | CITY-02 | NEW BRIDGE ST | BAYSHORE ST | | | | | 8 | | 1120 | | | 425 | 1670 | | | 4 | 4 | | | | | | |
| 3 | 31 | 76 | 03-0090 | US 17 BUS (MARINE BLVD) | GUM BRANCH RD/BELL FORK RD | | | | | | | | | | 310 | 1580 | 160 | | 4 | 3 | | | | | | |
| 4 | 28 | 78 | 03-0091 | US 17 BUS (MARINE BLVD) | ONSLOW DR | | | | | | | | | | | | | | | | | | | | | |
| 5 | 28 | 78 | 03-0092 | US 17 BUS (MARINE BLVD) | HENDERSON DR | | | | | | | | | | 75 | 540 | 5 | | 1 | 7 | | | | | 2 | 1 |
| 6 | 25 | 83 | 03-0094 | NC 24 (JOHNSON BLVD) | CHANEY AVE | | 1 | 1 | 2 | | | 570 | | | 130 | 150 | 50 | | 1 | 5 | | | | | 4 | 1 |
| 7 | 25 | 83 | 03-0095 | US 17 BUS (MARINE BLVD) | NC 24 (JOHNSON BLVD) | | | | | | | | | | | | | | | | | | | | | |
| 8 | 97 | 84 | 03-0100 | NC 24 (JOHNSON BLVD) | WARN ST | | 1 | 5 | | 4 | | 1325 | | | 260 | 1380 | 65 | | 2 | 6 | | | | | | |
| 9 | 100 | 85 | 03-0101 | NC 24 (JOHNSON BLVD) | BAYSHORE ST | | 1 | 4 | | | | 580 | | | | | | | | 4 | | | | | 2 | 1 |
| 10 | 101 | 88 | 03-0103 | NC 24 (JOHNSON BLVD/LEJEUNE BLVD) | NEW BRIDGE ST | | 1 | | | | | | | | 100 | 360 | 180 | | 1 | 7 | | | | | | |
| 11 | 106 | 80 | 03-0105 | HENDERSON DR | ONSLOW DR | | | | | | | | | | | | | | | 3 | | | | | 2 | 1 |
| 12 | 132 | 64 | 03-0106 | BELL FORK RD | HARGETT ST/COUNTRY CLUB RD | | | 2 | 2 | | | 600 | | | 160 | 400 | 20 | | 2 | 10 | | | | | | |
| 13 | 105 | 91 | 03-0107 | HARGETT ST | NEW RIVER DR | | | | | | | | | | | | | | | 5 | | | | | | |
| 14 | 21 | 10 | 03-0108 | US 17 BUS (MARINE BLVD) | OLD BRIDGE ST | | | | | | | | | | | | | | | | | | | | | |
| 15 | 89 | 16 | 03-0109 | US 17 (WILMINGTON HWY) | CURTIS RD/OLD MAPLEHURST RD | | | | | | | | | | 410 | 2550 | 120 | 30 | 4 | 6 | | | | | | |
| 16 | 101 | 89 | 03-0111 | NC 24 BUS (LEJEUNE BLVD) | HARGETT ST | | 1 | | | | | | | | 30 | 340 | 5 | | 1 | 5 | | | | | | |
| 17 | 101 | 89 | 03-0112 | NC 24 BUS (LEJEUNE BLVD) | MONTFORD POINT RD | | 1 | | | | | | | | 230 | 1190 | 20 | | 1 | 2 | | | | | | |
| 18 | 24 | 11 | 03-0114 | US 17 BUS (MARINE BLVD) | COURT ST | | | | 1 | | | 95 | | | 130 | 390 | 5 | | 1 | 2 | 1 | 1 | | | | |
| 19 | 26 | 82 | 03-0115 | US 17 BUS (MARINE BLVD) | CHANEY AVE | | 1 | | | | | | | | | | | | | 4 | | | | | | |
| 20 | 19 | 20 | 03-0116 | US 17 BUS (WILMINGTON HWY) | US 258/NC24 (RICHLANDS HWY) | | | | | | | | | | | | | | | | | | | | | |
| 21 | 140 | 58 | 03-0117 | NC 24 (LEJEUNE BLVD) | BELL FORK RD/CAMP KNOX RD | | | | | | | | | | | | | | | | | | | | | |
| 22 | 146 | 55 | 03-0120 | NC 24 (LEJEUNE BLVD) | CORBIN ST/TARAWA BLVD | | | | | | | | | | | | | | | | | | | | | |
| 23 | 142 | 57 | 03-0121 | NC 24 (LEJEUNE BLVD) | WESTERN BLVD/TARAWA BLVD | | | | | | | | | | 450 | 2530 | 55 | | 4 | 6 | | | | | | |
| 24 | 35 | 41 | 03-0124 | US 17 (MARINE BLVD) | WESTERN BLVD | | | | | | | | | | 430 | 2790 | 280 | | 4 | 2 | | | | 1 | | |
| 25 | 174 | 46 | 03-0144 | WESTERN BLVD | BRYNN MARR RD | | | | | | | | | | 260 | 1080 | 70 | | 2 | 4 | | 1 | | | 2 | 1 |
| 26 | 169 | 50 | 03-0169 | WESTERN BLVD | COUNTRY CLUB RD | | | | | | | | | | | | | | | | | | | | | |
| 27 | 4 | 1 | 03-0172 | NC 53 (BURGAW HWY) | PONY FARM RD/MURRILL HILL RD | | | 2 | 2 | | | 500 | | | 40 | 60 | 60 | | 1 | 1 | 1 | 1 | | | | |
| 28 | 125 | 71 | 03-0173 | GUM BRANCH RD | HENDERSON DR | | | 1 | 2 | | | 510 | | | 75 | 450 | 20 | | 1 | 1 | 1 | 1 | | | | |
| 29 | 20 | 9 | 03-0174 | US 17 BUS (MARINE BLVD) | GEORGETOWN RD | | | | | | | | | | | | | | | | | | | | | |
| 30 | 13 | 6 | 03-0187 | NC 24 BYPASS | NC 53 (BURGAW HWY)/US 258 (RICHLANDS HWY) | | | | | | 1 | | | | 150 | 1380 | 150 | | 2 | 2 | | | | | | |
| 31 | 67 | 30 | 03-0218 | NC 24 (LEJEUNE BLVD) | PINEY GREEN RD | | | | | | | | | | | | | | | | | | | | | |
| 32 | 147 | 72 | 03-0225 | HENDERSON DR | DORIS AVE | | | 1 | 2 | 8 | | 380 | | | | | | | | 5 | | | | | 3 | 1 |
| 33 | 45 | 23 | 03-0235 | PINEY GREEN RD | COUNTRY CLUB RD | | | | | | | | | | | | | | | | | | | | | |
| 34 | 109 | 79 | 03-0247 | ONSLOW DR | NEW RIVER DR | | | | | | | | | | | | | | | 5 | | | | | | |
| 35 | 167 | 54 | 03-0262 | WESTERN BLVD | UNIVERSITY DR | | | | | | | | | | | | | | | | | | | | 2 | 1 |
| 36 | 40 | 22 | 03-0264 | US 17 (MARINE BLVD) | PINEY GREEN RD | | | | | | | | | | | | | | | | | | | | | |
| 37 | 78 | 12 | 03-0287 | US 17 (WILMINGTON HWY) | DAWSON CABIN RD | | | | | | | | | | | | | | | | | | | | | |
| 38 | 69 | 4 | 03-0304 | NC 24/US 258 (RICHLANDS HWY) | PONY FARM RD | | | | | | | | | | | | | | | | | | | | | |
| 39 | 54 | 27 | 03-0340 | PINEY GREEN RD | OLD 30 RD | | | | | | | | | | | | | | | | | | | | | |
| 40 | 96 | 19 | 03-0370 | US 17 BUS (MARINE BLVD) | BROADHURST RD | | | | | | | | | | | | | | | | | | | | | |
| 41 | 170 | 49 | 03-0381 | WESTERN BLVD | MEMORIAL DR | | | | | | | | | | | | | | | | | | | | 2 | 1 |
| 42 | 175 | 45 | 03-0382 | WESTERN BLVD | VILLAGE DR | | | | | | | | | | | | | | | | | | | | 2 | 1 |
| | | | | | SUBTOTAL | 0 | 8 | 16 | 11 | 28 | 1 | 7130 | 1 | 0 | 4775 | 21880 | 1425 | 30 | 44 | 107 | 3 | 4 | 0 | 1 | 21 | 9 |

PLANS PREPARED IN THE OFFICE OF:

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Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Integrated Transportation Systems Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE
0

# CITY OF JACKSONVILLE COMPUTERIZED SIGNAL SYSTEM UPGRADE

## SUMMARY OF WORK

| DIVISION 3 | ONSLOW COUNTY | JACKSONVILLE |
|---|---|---|
| PLAN DATE: JULY 2011 | REVIEWED BY: K.W. SMITH | |
| PREPARED BY: J.C. CROSS | REVIEWED BY: T.F. BURCHETT | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 030472 ENGINEER KEVIN W. SMITH

SIGNATURE 7-25-11 DATE

CADD Filename:

7/25/2011 $TIME$ susan.pennington ...*CADD*VOLUME 3*Vol3.Sht002D.dgn

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | 2E |

# SUMMARY OF WORK BY INTERSECTION

| No. | Cable Routing Sheet Number | Splicing Details Sheet Number | SIN | Intersection: Street 1 | Intersection: Street 2 | Electrical Service: Install New Service (31) | Electrical Service: Modify Existing Service (30) | Signals & Geometrics: VEHICLE SIGNAL HEAD (12", 3 SECTION) | VEHICLE SIGNAL HEAD (12", 4 SECTION) | PEDESTRIAN SIGNAL HEAD (16", 1 SECTION W/ COUNTDOWN) | MODIFY EXISTING VEHICLE SIGNAL HEAD | SIGNAL CABLE | SIGNAL PEDESTAL WITH FOUNDATION | SIGN FOR SIGNALS | INDUCTIVE LOOP SAWCUT | TYPE 2 LEAD-IN CABLE | UNDER-GROUND CONDUIT (1, 2") | DIRECTIONAL DRILL CONDUIT (1, 2") | JUNCTION BOX (STANDARD SIZE) | DETECTOR CHANNEL (TYPE 2070L) | CONFLICT MONITOR | RETROFIT AUX FILE | FIBER OPTIC CONTACT CLOSURE TRANSMITTER | FIBER OPTIC CONTACT CLOSURE RECEIVER | EVP OPTICAL DETECTOR | EVP PHASE SELECTOR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | 176 | 44 | 03-0383 | WESTERN BLVD | LIBERTY DR/CENTER ST | | | | | | | | | | | | | | | | | | | | | |
| 44 | 120 | 69 | 03-0384 | WESTERN BLVD | GUM BRANCH RD | | | | | | | | | | | | | | | | | | | | | |
| 45 | 128 | 74 | 03-0411 | GUM BRANCH RD | DEWITT ST | | | | | | | | | | | | | | | | | | | | | |
| 46 | 124 | 70 | 03-0423 | GUM BRANCH RD | INDIAN TRAIL RD | | 1 | 2 | 2 | 2 | | 528 | | | | | | | | | 1 | 1 | | | | |
| 47 | 49 | 25 | 03-0457 | PINEY GREEN RD | BALSAM RD | | | | | | | | | | | | | | | | | | | | | |
| 48 | 130 | 75 | 03-0459 | GUM BRANCH RD | NOTTINGHAM RD | | | | | | | | | | | | | | | | | | | | | |
| 49 | 138 | 59 | 03-0463 | BELL FORK RD | BRYNN MARR RD | | | | | | | | | | | | | | | | | | | | | |
| 50 | 133 | 61 | 03-0516 | BELL FORK RD | WHITE ST | | | | | | | | | | | | | | | | | | | | | |
| 51 | 144 | 56 | 03-0517 | NC 24 (LEJEUNE BLVD) | PINE VALLEY RD | | | | | | | | | | | | | | | | | | | | | |
| 52 | 177 | 51 | 03-0527 | COUNTRY CLUB RD | JACKSONVILLE MALL | | | | | | | | | | 75 | 590 | 20 | | 1 | 1 | | | | | | |
| 53 | 171 | 47 | 03-0558 | WESTERN BLVD | HUFF DR/WHITE ST EXTENSION | | | | | | | | | | | | | | | | | | | | | |
| 54 | 10 | 3 | 03-0566 | NC 53 (BURGAW HWY) | OLD MAPLEHURST RD | 1 | | 1 | 1 | | | 555 | | | | 600 | 30 | | 1 | 4 | | | | | | |
| 55 | 64 | 29 | 03-0568 | PINEY GREEN RD | ROCKY RUN RD | | | | | | | | | | | | | | | | | | | | | |
| 56 | 127 | 73 | 03-0588 | GUM BRANCH RD | DORIS AVE/BRANCHWOOD DR | | | 1 | 2 | | | 310 | | | 150 | 500 | 40 | | 2 | 2 | 1 | 1 | | | 4 | 1 |
| 57 | 68 | 31 | 03-0593 | NC 24 (LEJEUNE BLVD) | GLADE AVE | | | | | | | | | 1 | 150 | 2420 | 820 | 60 | 4 | 6 | | | | | | |
| 58 | 30 | 77 | 03-0598 | US 17 BUS (MARINE BLVD) | THOMPSON ST | | 1 | | | | | 300 | | | | 400 | 30 | | 1 | 6 | | | | | | |
| 59 | 166 | 54 | 03-0614 | WESTERN BLVD | COMMERCE RD/COLLEGE PARK PLAZA | | | 1 | 2 | | | 620 | | | 130 | 2700 | 610 | 130 | 6 | 3 | 1 | 1 | 1 | | 2 | 1 |
| 60 | 179 | 52 | 03-0664 | COUNTRY CLUB RD | PINE VALLEY RD | | | | | | | | | | 30 | 170 | 10 | | 1 | 1 | | | | | | |
| 61 | 98 | 87 | 03-0665 | NEW BRIDGE ST | RAILROAD ST | | | | | | | | | | 32 | 230 | 55 | | 1 | 4 | | | | | | |
| 62 | 164 | 38 | 03-0750 | WESTERN BLVD | CIRCUIT LN | | | | | | | | | | 200 | 900 | 100 | | 2 | 3 | | | | | | |
| 63 | 159 | 33 | 03-0776 | WESTERN BLVD | HENDERSON DR | | | | | | | | | | | | | | | | | | | | | |
| 64 | 59 | 28 | 03-0821 | PINEY GREEN RD | HUNTERS TRL | | | | | | | | | | | | | | | | | | | | | |
| 65 | 161 | 34 | 03-0822 | WESTERN BLVD | GATEWAY NORTH | | | | | | | | | | | | | | | | | | | | | |
| 66 | 37 | 21 | 03-0825 | US 17 (MARINE BLVD) | MCDANIEL DR /WORKSHOP LN | | 1 | | | | | | | | | | | | | | | | | | | |
| 67 | 163 | 36 | 03-0828 | WESTERN BLVD | CROSS POINT CENTER/LOWE'S | | | | | | | | | | | | | | | | | | | | | |
| 68 | 165 | 39 | 03-0834 | WESTERN BLVD | WAL-MART/STATE EMPLOYEES CREDIT UNION | | | | | | | | | | | | | | | | | | | | | |
| 69 | 48 | 24 | 03-0851 | PINEY GREEN RD | CREEDMOOR RD | | | | | | | | | | | | | | | | | | | | | |
| 70 | 113 | 66 | 03-0879 | GUM BRANCH RD | SUMMERSILL SCHOOL RD | | | 1 | 1 | | | 390 | | | | | | | | | | | | | | |
| 71 | 110 | 65 | 03-0889 | GUM BRANCH RD | RAMSEY RD | | | | | | | | | | | | | | | | | | | | | |
| 72 | 162 | 35 | 03-0896 | WESTERN BLVD | GATEWAY SOUTH | | | | | | | | | | | | | | | | | 1 | | | 3 | 1 |
| 73 | 95 | 18 | 03-0922 | US 17 BUS (WILMINGTON HWY) | US 17 BYPASS SB RAMP/HIGHWAY PATROL | | | | | | | | | | | | | | | | | | | | | |
| 74 | 91 | 17 | 03-0931 | US 17 (WILMINGTON HWY) | CANADY RD | | | 2 | | | | 300 | | | | | | | | 1 | 1 | 1 | | | | |
| 75 | 104 | 92 | 03-0942 | NC 24 (LEJEUNE BLVD) | US 17 BYPASS NB RAMP | | | | | | | | | | | | | | | | | | | | | |
| 76 | 103 | 90 | 03-0943 | NC 24 (LEJEUNE BLVD) | US 17 BYPASS SB RAMP | | | | | | | | | | | | | | | | | | | | | |
| 77 | 15 | 7 | 03-1006 | NC 24 BUS/US 258 (RICHLANDS HWY) | YOPP RD | | | 1 | 1 | | | 550 | | | | | | | | | 1 | 1 | | | | |
| 78 | 157 | 32 | 03-1015 | WESTERN BLVD | CAROLINA FOREST BLVD/NORTH PLAINS DR | | | | | | | | | | 150 | 800 | 100 | | 2 | 2 | | | | | 2 | 1 |
| 79 | 16 | 8 | 03-1036 | NC 24 BUS/US 258 (RICHLANDS HWY) | HICKORY RD/VICTORY WAY | | | | | | | | | | | | | | | | | | | | | |
| 80 | 34 | 42 | 03-1050 | US 17 BYPASS | US 17 BUS (MARINE BLVD) | | | | | | | | | | | | | | | | | | | | | |
| 81 | 121 | 69A | 03-1055 | GUM BRANCH RD | WILLIAMSBURG PKWY | | | | | | | | | | | | | | | | | | | | 4 | 1 |
| 82 | 151 | 62 | 03-1059 | WHITE ST | US 17 SB RAMP | | | | | | | | | | | | | | | | | | | | | |
| 83 | 153 | 48 | 03-1061 | WHITE ST | WHITE ST EXTENSION | | | | | | | | | | | | | | | | | | | | | |
| 84 | 151 | 63 | 03-1066 | WHITE ST | US 17 NB RAMP | | | | | | | | | | | | | | | | | | | | | |
| | | | | | SUBTOTAL | 1 | 3 | 9 | 9 | 2 | 0 | 3553 | 0 | 1 | 917 | 9310 | 1815 | 190 | 21 | 33 | 5 | 6 | 1 | 0 | 15 | 5 |
| | | | | | TOTAL | 1 | 11 | 25 | 20 | 30 | 1 | 10683 | 1 | 1 | 5692 | 31190 | 3240 | 220 | 65 | 140 | 8 | 10 | 1 | 1 | 36 | 14 |

PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
P.O. Box 33068
Raleigh N.C. 27636-3068
(919) 677-2000

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Intelligent Transportation Systems Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0

CITY OF JACKSONVILLE
COMPUTERIZED
SIGNAL SYSTEM UPGRADE
SUMMARY OF WORK

DIVISION 3 ONSLOW COUNTY JACKSONVILLE

| | | | |
|---|---|---|---|
| PLAN DATE: | JULY 2011 | REVIEWED BY: | K.W. SMITH |
| PREPARED BY: | J.C. CROSS | REVIEWED BY: | T.F. BURCHETT |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 030472 ENGINEER KEVIN W. SMITH

SIGNATURE K.W. Smith DATE 7-25-11

CADD Filename:

7/25/2011 $TIME$ susan.pennington ...*MCADWVOLUME 3*Vol3_Sht002E.dgn

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | 3 |

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | Sig. |

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

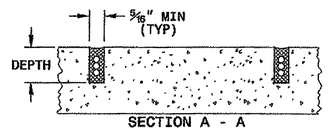
11-08

ENGLISH DETAIL DRAWING FOR
**INDUCTIVE DETECTION LOOPS**

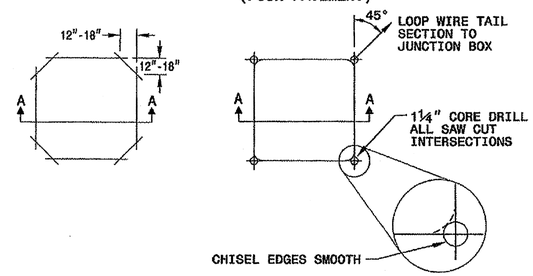
## CONVENTIONAL 4-SIDED LOOP

### SAW SLOT DEPTH CHART

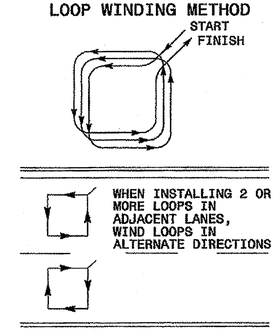
| DEPTH (IN) | NO. OF WIRE TURNS | | | | |
|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 |
| CONCRETE | 2.0 | 2.0 | 2.5 | 2.5 | 3.0 |
| ASPHALT | 2.0 | 2.5 | 3.0 | 3.0 | 3.0 |




### SAW CUT OPTIONS

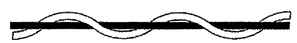



### LOOP WINDING METHOD




### LOOP WIRE TWISTING METHOD

INCORRECT WAY TO TWIST WIRE



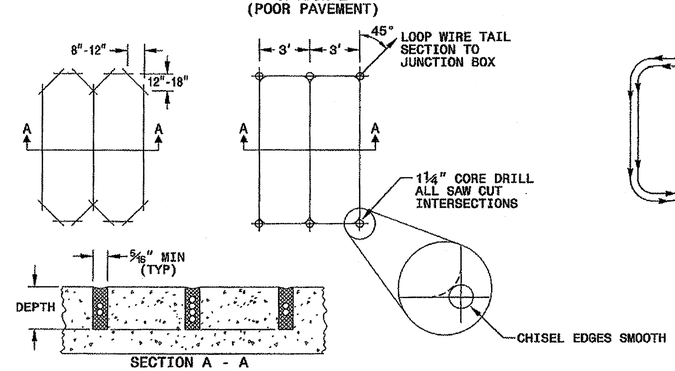
CORRECT WAY TO TWIST WIRE

### NOTES

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

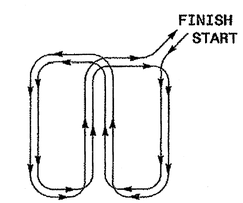
## QUADRUPOLE LOOP

### SAW CUT OPTIONS




DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

### LOOP WINDING METHOD




SHEET 1 OF 3
**1725D01**

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

11-08

ENGLISH DETAIL DRAWING FOR
**INDUCTIVE DETECTION LOOPS**

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 SEAL 16286 ENGINEER REVISION 1 SEAL
SIGNATURE 11/24/08 DATE

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
P.O. Box 33068
Raleigh N.C. 27636-3068
(919) 677-2000

750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0

# CITY OF JACKSONVILLE COMPUTERIZED SIGNAL SYSTEM UPGRADE
## INDUCTIVE DETECTION LOOP DETAIL

DIVISION 3 ONSLOW COUNTY JACKSONVILLE

| | | | |
|---|---|---|---|
| PLAN DATE: | JULY 2011 | REVIEWED BY: | K.W. SMITH |
| PREPARED BY: | J.C. CROSS | REVIEWED BY: | T.F. BURCHETT |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 030472 ENGINEER KEVIN W. SMITH
SIGNATURE 7-20-11 DATE

CADD Filename:

7/19/2011 $TIME$ susan.pennington ...\CADWVOLUME 3\Vol3_Sht003.dgn

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|---|---|
| U-5168 | 3A |

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | Sig. |

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

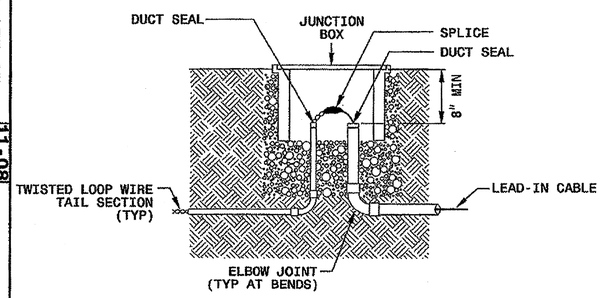
11-08

ENGLISH DETAIL DRAWING FOR
**INDUCTIVE DETECTION LOOPS**
LOOP WIRE DETAILS

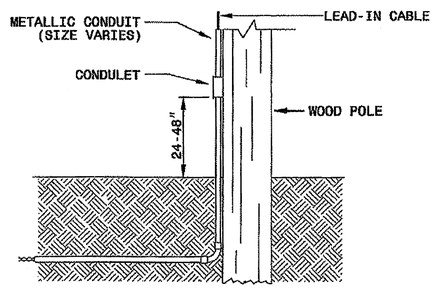
SHEET 2 OF 3
**1725D01**

## LOOP WIRE SPLICE POINT DETAILS

### LOOP WIRE AT JUNCTION BOX




### LOOP WIRE AT POLE

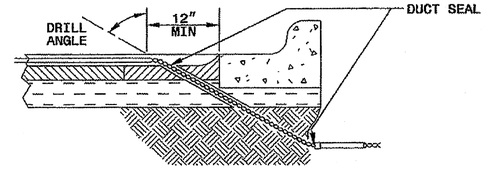



### NOTE

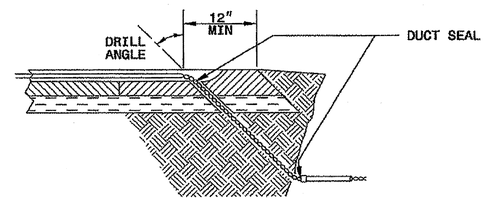
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

## 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. OLIVER
SIGNATURE — DATE 11/24/08

PLANS PREPARED IN THE OFFICE OF:
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P.O. Box 33068
Raleigh N.C. 27636-3068
(919) 677-2000

Transportation Mobility and Safety Division
Intelligent Transportation Systems Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE
0

CITY OF JACKSONVILLE
COMPUTERIZED
SIGNAL SYSTEM UPGRADE
INDUCTIVE DETECTION LOOP DETAIL

| DIVISION 3 | ONSLOW COUNTY | JACKSONVILLE |
|---|---|---|
| PLAN DATE: JULY 2011 | REVIEWED BY: K.W. SMITH | |
| PREPARED BY: J.C. CROSS | REVIEWED BY: T.F. BURCHETT | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 030472 ENGINEER KEVIN W. SMITH
SIGNATURE — DATE 7-20-11

CADD Filenames

7/19/2011 $TIME$ susan.pennington ...ACADWVOLUME 3WVol3_Sht003A.dgn

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2011/7/19

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|---|---|
| U-5168 | 3B |

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | Sig. |

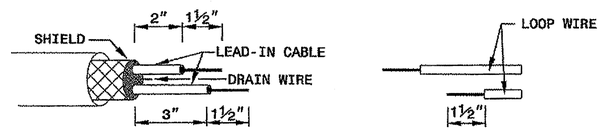
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

11-08

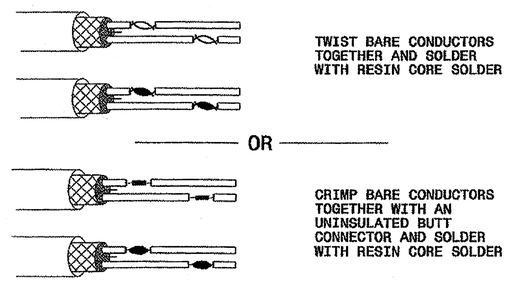
ENGLISH DETAIL DRAWING FOR
**INDUCTIVE DETECTION LOOPS**
SPLICING FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3
**1725D01**

## STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE

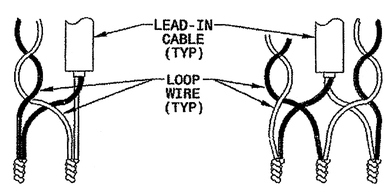



## STEP 2. CONNECT AND SOLDER

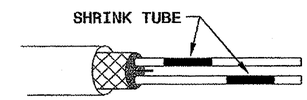



BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

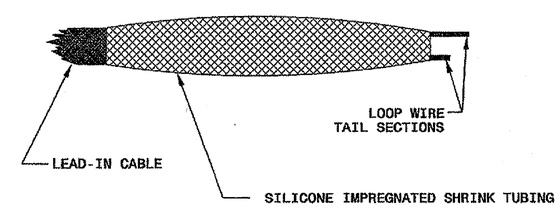
## LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS




## 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
750 N. Greenfield Parkway
Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 16286 ENGINEER MILTON J. DEAN
SIGNATURE: Milton J. Dean DATE: 11/24/08

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
P.O. Box 33068
Raleigh N.C. 27636-3068
(919) 677-2000

Transportation Mobility and Safety Division
Intelligent Transportation Systems Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE: 0

CITY OF JACKSONVILLE
COMPUTERIZED
SIGNAL SYSTEM UPGRADE
INDUCTIVE DETECTION LOOP DETAIL

| DIVISION 3 | ONSLOW COUNTY | JACKSONVILLE |
|---|---|---|
| PLAN DATE: JULY 2011 | REVIEWED BY: K.W. SMITH | |
| PREPARED BY: J.C. CROSS | REVIEWED BY: T.F. BURCHETT | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 030472 ENGINEER KEVIN W. SMITH
SIGNATURE: K.W.S. DATE: 7-20-11

CADD Filename:

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24-Nov-2008 09:34
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jmilliken

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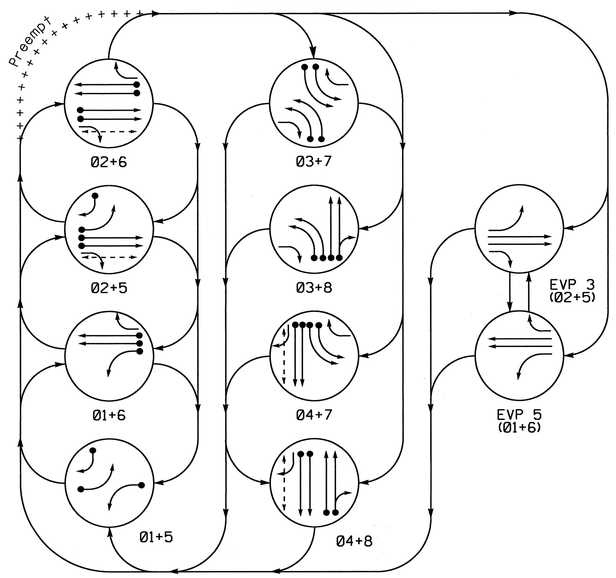
| U-5168 | Sig. 1 |

## PHASING DIAGRAM




**PHASING DIAGRAM DETECTION LEGEND**

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

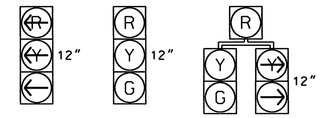
## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 03+7 | 03+8 | 04+7 | 04+8 | EVP 3 | EVP 5 | FLASH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | ← | ← | R | R | R | R | R | R | R | ← | R |
| 21 | R | R | G | G | R | R | R | R | G | R | Y |
| 22 | R | R | G | G | R/← | R/← | R | R | G | R | Y |
| 31,32 | R | R | R | R | ← | ← | R | R | R | R | R |
| 41 | R | R | R | R | R | R | G | G | R | R | R |
| 42 | R/← | R | R/← | R | R | R | G | G | R | R | R |
| 51 | ← | R | ← | R | R | R | R | R | ← | R | R |
| 61 | R | G | R | G | R | R | R | R | R | G | Y |
| 62 | R | G | R | G | R/← | R | R/← | R | R | G | Y |
| 71,72 | R | R | R | R | ← | R | ← | R | R | R | R |
| 81,82 | R | R | R | R | R | G | R | G | R | R | R |
| P21,P22 | DW | DW | W | W | DW | DW | DW | DW | DW | DW | DRK |
| P41,P42 | DW | DW | DW | DW | DW | DW | W | W | DW | DW | DRK |

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

## SIGNAL FACE I.D.

All Heads L.E.D.




11
31,32
51
71,72

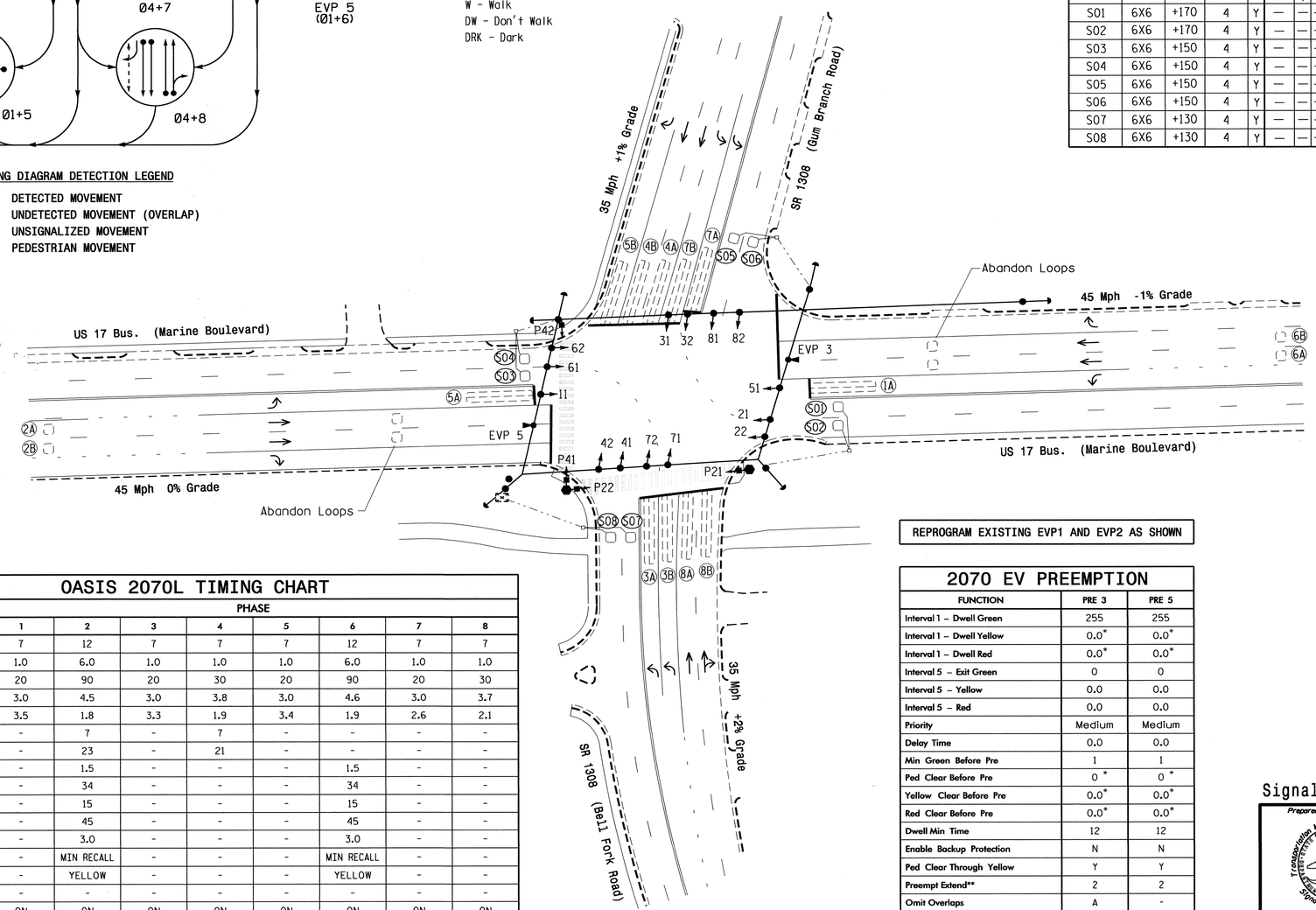
21
41
61
81,82

22
42
62

P21,P22
P41,P42

## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | +5 | 2-4-2 | — | 1 | Y | Y | - | —— | 3 | - | - |
| 2A | 6X6 | 300 | 4 | — | 2 | Y | Y | - | - | — | - | - |
| 2B | 6X6 | 300 | 4 | — | 2 | Y | Y | - | - | — | - | - |
| 3A | 6X40 | +5 | 2-4-2 | — | 3 | Y | Y | - | —— | 3 | - | - |
| 3B | 6X40 | +5 | 2-4-2 | — | 3 | Y | Y | - | —— | — | - | - |
| 4A | 6X40 | +5 | 2-4-2 | — | 4 | Y | Y | - | —— | — | - | - |
| 4B | 6X40 | +5 | 2-4-2 | — | 4 | Y | Y | - | —— | — | - | - |
| 5A | 6X40 | +5 | 2-4-2 | — | 5 | Y | Y | - | —— | 3 | - | - |
| 5B | 6X40 | +5 | 2-4-2 | — | 5 | Y | Y | - | —— | 15 | - | - |
| 6A | 6X6 | 300 | 4 | — | 6 | Y | Y | - | - | — | - | - |
| 6B | 6X6 | 300 | 4 | — | 6 | Y | Y | - | - | — | - | - |
| 7A | 6X40 | +5 | 2-4-2 | — | 7 | Y | Y | - | —— | 3 | - | - |
| 7B | 6X40 | +5 | 2-4-2 | — | 7 | Y | Y | - | —— | — | - | - |
| 8A | 6X40 | +5 | 2-4-2 | — | 8 | Y | Y | - | —— | — | - | - |
| 8B | 6X40 | +5 | 2-4-2 | — | 8 | Y | Y | - | —— | 10 | - | - |
| S01 | 6X6 | +170 | 4 | Y | — | — | — | - | —— | — | Y | - |
| S02 | 6X6 | +170 | 4 | Y | — | — | — | - | —— | — | Y | - |
| S03 | 6X6 | +150 | 4 | Y | — | — | — | - | —— | — | Y | Y |
| S04 | 6X6 | +150 | 4 | Y | — | — | — | - | —— | — | Y | Y |
| S05 | 6X6 | +150 | 4 | Y | — | — | — | - | —— | — | Y | Y |
| S06 | 6X6 | +150 | 4 | Y | — | — | — | - | —— | — | Y | Y |
| S07 | 6X6 | +130 | 4 | Y | — | — | — | - | —— | — | Y | Y |
| S08 | 6X6 | +130 | 4 | Y | — | — | — | - | —— | — | Y | Y |




**REPROGRAM EXISTING EVP1 AND EVP2 AS SHOWN**

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 5 |
|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 |
| Priority | Medium | Medium |
| Delay Time | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 |
| Ped Clear Before Pre | 0 * | 0 * |
| Yellow Clear Before Pre | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 |
| Enable Backup Protection | N | N |
| Ped Clear Through Yellow | Y | Y |
| Preempt Extend** | 2 | 2 |
| Omit Overlaps | A | - |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

## 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 * | 1.0 | 6.0 | 1.0 | 1.0 | 1.0 | 6.0 | 1.0 | 1.0 |
| Max Green 1 * | 20 | 90 | 20 | 30 | 20 | 90 | 20 | 30 |
| Yellow Clearance | 3.0 | 4.5 | 3.0 | 3.8 | 3.0 | 4.6 | 3.0 | 3.7 |
| Red Clearance | 3.5 | 1.8 | 3.3 | 1.9 | 3.4 | 1.9 | 2.6 | 2.1 |
| Walk 1 * | - | 7 | - | 7 | - | - | - | - |
| Don't Walk 1 | - | 23 | - | 21 | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | - | - | 1.5 | - | - |
| Max Variable Initial * | - | 34 | - | - | - | 34 | - | - |
| Time Before Reduction * | - | 15 | - | - | - | 15 | - | - |
| Time To Reduce * | - | 45 | - | - | - | 45 | - | - |
| Minimum Gap | - | 3.0 | - | - | - | 3.0 | - | - |
| Recall Mode | - | MIN RECALL | - | - | - | MIN RECALL | - | - |
| Vehicle Call Memory | - | YELLOW | - | - | - | YELLOW | - | - |
| Dual Entry | - | - | - | - | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

## 8 Phase
## Fully Actuated/W EV Preemption
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Pavement markings are existing.
10. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
12. Controller Asset #0090.

## 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 | |
| | Optical Detector | |
| | Signal Pedestal | |

Signal Upgrade

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

US 17 Bus. (Marine Boulevard)
At
SR 1308 (Gum Branch Road/
Bell Fork Road)

Division 3 Onslow County Jacksonville

PLAN DATE: April 2011 REVIEWED BY:
PREPARED BY: REVIEWED BY:

SCALE 0 40 1" = 40'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. GALLOWAY

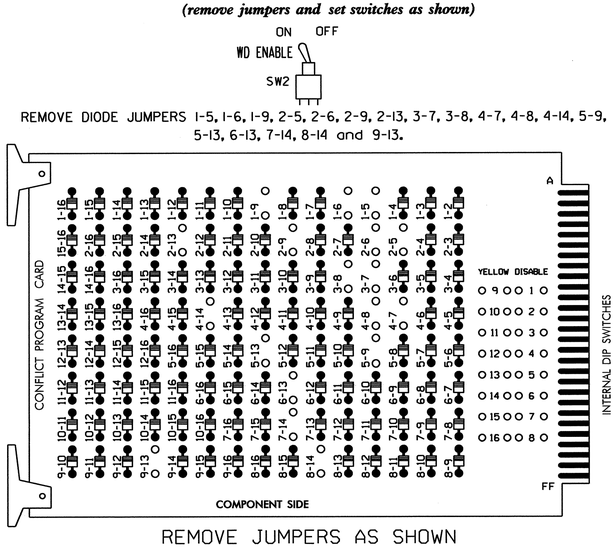
SIGNATURE DATE 5/9/11
SIG. INVENTORY NO. 03-0090

19-MAY-2011 13:58
S:\ITSASU\ITS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0090\03090.sig.dsn_20110519.dgn
jgallaway

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 2 |

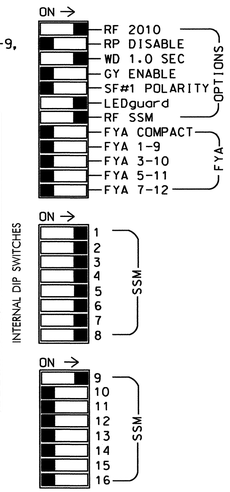
## EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 2-5, 2-6, 2-9, 2-13, 3-7, 3-8, 4-7, 4-8, 4-14, 5-9, 5-13, 6-13, 7-14, 8-14 and 9-13.

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 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 Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 4 for 'STARTUP PED CALL'.
7. Program phases 2 and 6 for Yellow Flash.
8. The cabinet and controller are part of the Jacksonville City Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
* CABINET.....332 W/ AUX
SOFTWARE .....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S2P,S3,S4,S4P,S5,S6,S7,S8,S9
PHASES USED.....1,2,3,4,5,6,7,8,2PED,4PED
OVERLAP "A".....5
OVERLAP "B".....NOT USED
OVERLAP "C".....NOT USED
OVERLAP "D".....NOT USED

## COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | | S4 | S4P | S5 | S6 | S6P | S7 | | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | | 4 | 4 PED | 5 | 6 | 6 PED | 7 | | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11 | 21,22 | P21, P22 | 31,32 | 22 | 41,42 | P41, P42 | 51 | 61,62 | NU | 71,72 | 62 | 81,82 | NU | 42 | NU | NU | NU | NU | 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 | | | 117 | 117 | | | 132 | | | 123 | 123 | | | A122 | | | | | |
| GREEN ARROW | 127 | | | 118 | 118 | | | 133 | | | 124 | 124 | | | A123 | | | | | |
| ✋ | | | 113 | | | | 104 | | | | | | | | | | | | | |
| 🚶 | | | 115 | | | | 106 | | | | | | | | | | | | | |

NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:              ¦123456789101112131415 16
VEH OVL PARENTS:¦     X
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 1A | Ø2 2A | SYS. DET. S01 | SLOT EMPTY | SLOT EMPTY | Ø3 3A | Ø4 4A | SLOT EMPTY | SYS. DET. S03 | SLOT EMPTY | SLOT EMPTY | Ø2 PED DC ISOLATOR | SLOT EMPTY | FS DC ISOLATOR |
| | L | NOT USED | Ø2 2B | SYS. DET. S02 | | | Ø3 3B | Ø4 4B | | SYS. DET. S04 | | | Ø4 PED DC ISOLATOR | | ST DC ISOLATOR |
| FILE "J" | U | Ø6 6A | Ø5 5A | SYS. DET. S05 | Ø6 6B | SLOT EMPTY | Ø7 7A | Ø8 8A | SLOT EMPTY | SYS. DET. S07 | SLOT EMPTY | SLOT EMPTY | PRE3 Opticom 2 Ch. Card PRE5 | SLOT EMPTY | SLOT EMPTY |
| | L | NOT USED | Ø5 5B | SYS. DET. S06 | NOT USED | | Ø7 7B | Ø8 8B | | SYS. DET. S08 | | | | | |

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## 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 | | | 3 |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| *S01 | TB2-9,10 | I3U | 63 | 25 | 32 | SYS | | | | | |
| *S02 | TB2-11,12 | I3L | 76 | 38 | 42 | SYS | | | | | |
| 3A | TB4-9,10 | I6U | 41 | 3 | 4 | 3 | Y | Y | | | 3 |
| 3B | TB4-11,12 | I6L | 45 | 7 | 14 | 3 | Y | Y | | | |
| 4A | TB6-1,2 | I7U | 65 | 27 | 34 | 4 | Y | Y | | | |
| 4B | TB6-3,4 | I7L | 78 | 40 | 44 | 4 | Y | Y | | | |
| *S03 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| *S04 | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| 6A | TB3-1,2 | J1U | 55 | 17 | 5 | 6 | Y | Y | | | |
| 5A | TB3-5,6 | J2U | 40 | 2 | 6 | 5 | Y | Y | | | 3 |
| 5B | TB3-7,8 | J2L | 44 | 6 | 16 | 5 | Y | Y | | | 15 |
| *S05 | TB3-9,10 | J3U | 64 | 26 | 36 | SYS | | | | | |
| *S06 | TB3-11,12 | J3L | 77 | 39 | 46 | SYS | | | | | |
| 6B | TB5-1,2 | J4U | 48 | 10 | 26 | 6 | Y | Y | | | |
| 7A | TB5-9,10 | J6U | 42 | 4 | 8 | 7 | Y | Y | | | 3 |
| 7B | TB5-11,12 | J6L | 46 | 8 | 18 | 7 | Y | Y | | | |
| 8A | TB7-1,2 | J7U | 66 | 28 | 38 | 8 | Y | Y | | | |
| 8B | TB7-3,4 | J7L | 79 | 41 | 48 | 8 | Y | Y | | | 10 |
| *S07 | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |
| *S08 | TB7-11,12 | J9L | 61 | 23 | 17 | SYS | | | | | |
| 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 | | | | | |

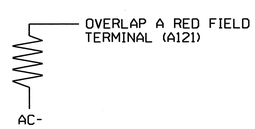
NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOT 112.

* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

## LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

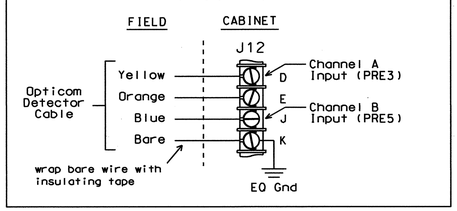
| VALUE (ohms) | WATTAGE |
|---|---|
| 1.5K - 1.9K | 25W (min) |
| 2.0K - 3.0K | 10W (min) |




NOTE: The purpose of this resistor is to load the channel red monitor inputs in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

## TYPICAL OPTICOM FIELD WIRE DETAIL

*(input file, rear view)*




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0090
DESIGNED: April 2011
SEALED: 5-19-11
REVISED: N/A

Signal Upgrade Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

US 17 Bus. (Marine Boulevard) at SR 1308 (Gum Branch Road/ Bell Fork Road)

| | | | |
|---|---|---|---|
| Division 03 | Onslow County | | Jacksonville |
| PLAN DATE: 5-3-11 | | REVIEWED BY: T. Jay | |
| PREPARED BY: D.H. Spaulding | | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
George C. Brown 5/27/11
SIGNATURE DATE
SIG. INVENTORY NO. 03-0090

26-MAY-2011 12:07
S:*ITS&SU*ITS Signals*Workgroups*Sig Mon*Spaulding*in-progress*03090_smele.2011xx.dgn
dspaulding

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 3 |

# EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

***(program controller as shown below)***

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3 and 5.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......Y
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦X
```

PRESS 'NEXT' TWICE

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......Y
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PROGRAMMING COMPLETE

Program extend time on optical detector unit for 2.0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0090
DESIGNED: April 2011
SEALED: 5-19-11
REVISED: N/A

Signal Upgrade  Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

US 17 Bus. (Marine Boulevard)
at
SR 1308 (Gum Branch Road/
Bell Fork Road)

Division 03  Onslow County  Jacksonville

PLAN DATE: 5-3-11  REVIEWED BY: T.J.M.
PREPARED BY: D.H. Spaulding  REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

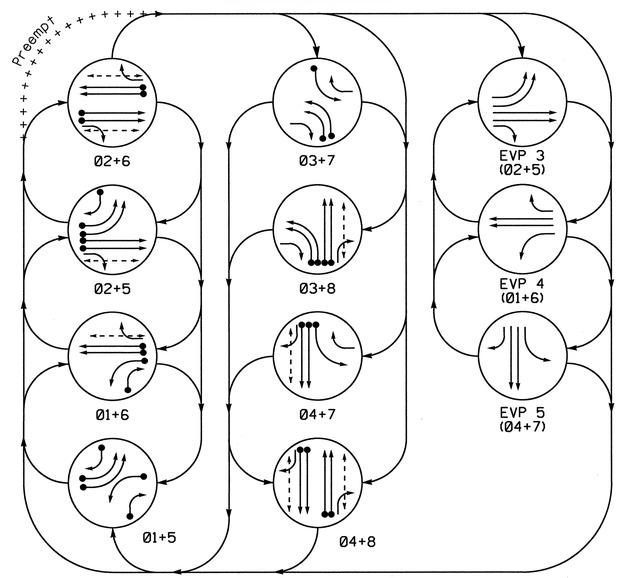
George C. Brown 5/27/11
SIGNATURE  DATE

SIG. INVENTORY NO. 03-0090

20-MAY-2011 15:31
S:*ITS&SU\ITS Signals\Workgroups\Sig Mgmt\Spaulding\in-progress\030090_smele_2011xx.dgn
dspaulding

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 4 |

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+05 | 01+06 | 02+05 | 02+06 | 03+07 | 03+08 | 04+07 | 04+08 | EVP 3 | EVP 4 | EVP 5 | FLASH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | ← | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ |
| 21 | R | R | G | G | R | R | R | R | G | R | R | Y |
| 22 | R | R | G | G | R/← | R/← | R | R | G | R | R | Y |
| 31, 32 | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |
| 41 | R | R | R | R | R | R | G | G | R | R | G | R |
| 42 | R/← | R | R/← | R | R | R | G | G | R | R | G | R |
| 51, 52 | ← | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ |
| 61 | R | G | R | G | R | R | R | R | R | G | R | Y |
| 62 | R | G | R | G | R/← | R | R/← | R | R | G | R | Y |
| 71 | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ |
| 81 | R | R | R | R | R | G | R | G | R | R | R | R |
| 82 | R/← | R/← | R | R | R | G | R | G | R | R | R | R |
| P21, P22 | DW | DW | W | W | DW | DW | DW | DW | DW | DW | DW | DRK |
| P41, P42 | DW | DW | DW | DW | DW | DW | W | W | DW | DW | DW | DRK |
| P61, P62 | DW | W | DW | W | DW | DW | DW | DW | DW | DW | DW | DRK |
| P81, P82 | DW | DW | DW | DW | DW | W | DW | W | DW | DW | DW | DRK |

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

## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

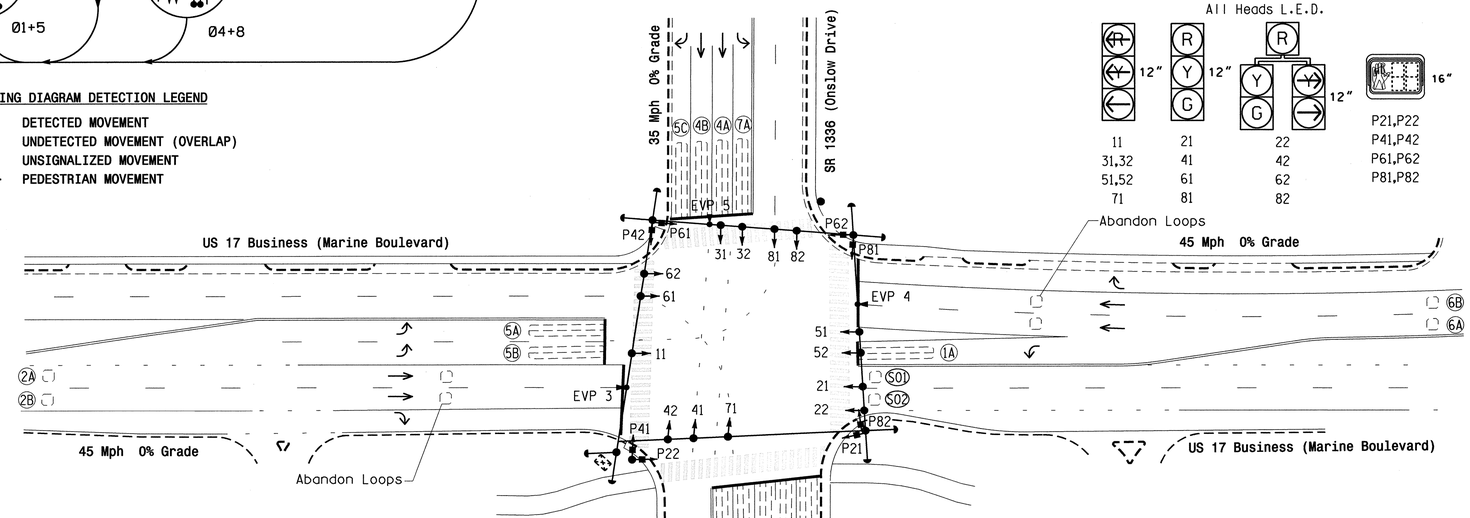
| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 3 | - | - |
| 1B | 6X40 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | - |
| 2A,2B | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 3A | 6X40 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | 3 | - | - |
| 3B | 6X40 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | - | - | - |
| 4A | 6X40 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 4B | 6X40 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 5A | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 3 | - | - |
| 5B | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | - | - | - |
| 5C | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | - |
| 6A,6B | 6X6 | 300 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| 7A | 6X40 | 0 | 2-4-2 | - | 7 | Y | Y | - | - | 3 | - | - |
| 8A | 6X40 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | - | - | - |
| 8B | 6X40 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | - | - | - |
| S01 | 6X6 | +130 | 5 | - | - | - | - | - | - | - | Y | - |
| S02 | 6X6 | +130 | 5 | - | - | - | - | - | - | - | Y | - |

Re-label existing system loops

## SIGNAL FACE I.D.

All Heads L.E.D.




## 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 * | 3.0 | 6.0 | 2.0 | 2.0 | 2.0 | 6.0 | 2.0 | 2.0 |
| Max Green 1 * | 20 | 90 | 15 | 30 | 20 | 90 | 15 | 30 |
| Yellow Clearance | 3.0 | 4.5 | 3.0 | 3.8 | 3.0 | 4.5 | 3.0 | 3.7 |
| Red Clearance | 3.2 | 1.7 | 3.5 | 2.6 | 3.4 | 1.7 | 3.2 | 2.6 |
| Walk 1 * | - | 7 | - | 7 | - | 7 | - | 7 |
| Don't Walk 1 | - | 21 | - | 25 | - | 20 | - | 25 |
| Seconds Per Actuation * | - | 2.0 | - | - | - | 2.0 | - | - |
| Max Variable Initial * | - | 34 | - | - | - | 34 | - | - |
| Time Before Reduction * | - | 15 | - | - | - | 15 | - | - |
| Time To Reduce * | - | 45 | - | - | - | 45 | - | - |
| Minimum Gap | - | 3.0 | - | - | - | 3.0 | - | - |
| Recall Mode | - | MIN RECALL | - | - | - | MIN RECALL | - | - |
| Vehicle Call Memory | - | YELLOW | - | - | - | YELLOW | - | - |
| Dual Entry | - | - | - | - | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 4 | PRE 5 |
|---|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 | 0.0 |
| Priority | Medium | Medium | Medium |
| Delay Time | 0.0 | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 | 1 |
| Ped Clear Before Pre | 0 * | 0 * | 0 * |
| Yellow Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 | 7 |
| Enable Backup Protection | N | N | N |
| Ped Clear Through Yellow | Y | Y | Y |
| Preempt Extend** | 2 | 2 | 2 |
| Omit Overlaps | B | A | D |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

## 8 Phase
## Fully Actuated W/ EV Preemption
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #0091.

## 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 | |
| | Optical Detector | |

Signal Upgrade

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

SCALE 0 40
1"=40'

US 17 Bus. (Marine Boulevard)
At
SR 1718/SR 1336
(Onslow Drive)

Division 3 Onslow County Jacksonville

| PLAN DATE: April 2011 | REVIEWED BY: |
|---|---|
| PREPARED BY: JPG | REVIEWED BY: |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY

SIGNATURE DATE 5/9/11

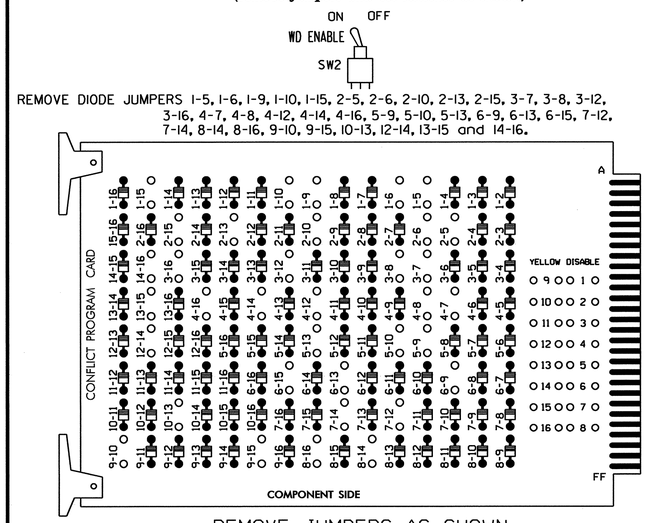
SIG. INVENTORY NO. 03-0091

08-JUL-2011 13:08
S:*ITS&SU*ITS Signals*Signal Design Section*Eastern Region*Div-03*Jacksonville Signal Systems*03-0091*030091_sig_dsn_20110519.dgn
Signal Copy

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 5 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*

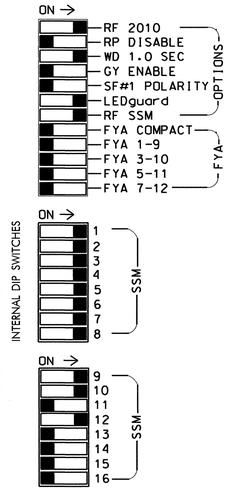



REMOVE JUMPERS AS SHOWN

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-10, 1-15, 2-5, 2-6, 2-10, 2-13, 2-15, 3-7, 3-8, 3-12, 3-16, 4-7, 4-8, 4-12, 4-14, 4-16, 5-9, 5-10, 5-13, 6-9, 6-13, 6-15, 7-12, 7-14, 8-14, 8-16, 9-10, 9-15, 10-13, 12-14, 13-15 and 14-16.

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 11, 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 Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2,4,6 and 8 for 'STARTUP PED CALL'.
7. Program phases 2 and 6 for Yellow Flash.
8. The cabinet and controller are part of the Jacksonville City Signal System.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11 | 21,22 | P21, P22 | 31,32 | 22 | 41,42 | P41, P42 | 51,52 | 61,62 | P61, P62 | 71 | 81,82 | P81, P82 | 82 | 42 | NU | NU | 62 | 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 | | | 117 | 117 | | | 132 | | | 123 | | | A122 | A125 | | | A102 | |
| GREEN ARROW | 127 | | | 118 | 118 | | | 133 | | | 124 | | | A123 | A126 | | | A103 | |
| ✋ | | | 113 | | | | 104 | | | 119 | | | 110 | | | | | | |
| 🚶 | | | 115 | | | | 106 | | | 121 | | | 112 | | | | | | |

NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
* CABINET.....332 W/ AUX
SOFTWARE .....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S2P,S3,S4,S4P,S5,S6,S6P,S7,S8,S8P,S9,S10,S13
PHASES USED.....1,2,3,4,5,6,7,8,2PED,4PED,6PED,8PED
OVERLAP "A".....1
OVERLAP "B".....5
OVERLAP "C".....NOT USED
OVERLAP "D".....7

## 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 | SLOT EMPTY | Ø1 1A | Ø2 2A,2B | SLOT EMPTY | SLOT EMPTY | Ø3 3A | Ø4 4A | SLOT EMPTY | SYS. DET. SØ1 | SLOT EMPTY | SLOT EMPTY | Ø2 PED DC ISOLATOR | Ø6 PED DC ISOLATOR | FS DC ISOLATOR |
| | L | | Ø1 1B | NOT USED | | | Ø3 3B | Ø4 4B | | SYS. DET. SØ2 | | | Ø4 PED DC ISOLATOR | Ø8 PED DC ISOLATOR | ST DC ISOLATOR |
| FILE "J" | U | Ø5 5A | Ø5 5B | Ø6 6A,6B | SLOT EMPTY | Ø7 7A | Ø8 8A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | PRE3 Opticom 4-CHANNEL | PRE4 | SLOT EMPTY |
| | L | NOT USED | Ø5 5C | NOT USED | | NOT USED | Ø8 8B | | | | | | PRE5 | NOT USED | |

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

## 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 | TB2-5,6 | I2U | 39 | 1 | 2 | 1 | Y | Y | | | 3 |
| 1B | TB2-7,8 | I2L | 43 | 5 | 12 | 1 | Y | Y | | | 15 |
| 2A,2B | TB2-9,10 | I3U | 63 | 25 | 32 | 2 | Y | Y | | | |
| 3A | TB4-9,10 | I6U | 41 | 3 | 4 | 3 | Y | Y | | | 3 |
| 3B | TB4-11,12 | I6L | 45 | 7 | 14 | 3 | Y | Y | | | |
| 4A | TB6-1,2 | I7U | 65 | 27 | 34 | 4 | Y | Y | | | |
| 4B | TB6-3,4 | I7L | 78 | 40 | 44 | 4 | Y | Y | | | |
| * SØ1 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| * SØ2 | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| 5A | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | 3 |
| 5B | TB3-5,6 | J2U | 40 | 2 | 6 | 5 | Y | Y | | | |
| 5C | TB3-7,8 | J2L | 44 | 6 | 16 | 5 | Y | Y | | | 15 |
| 6A,6B | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | | | |
| 7A | TB5-5,6 | J5U | 57 | 19 | 7 | 7 | Y | Y | | | 3 |
| 8A | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | Y | Y | | | |
| 8B | TB5-11,12 | J6L | 46 | 8 | 18 | 8 | Y | Y | | | |
| 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 | | | | | |
| P81,P82 | TB8-8,9 | I13L | 70 | 32 | PED 8 | 8 PED | | | | | |

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

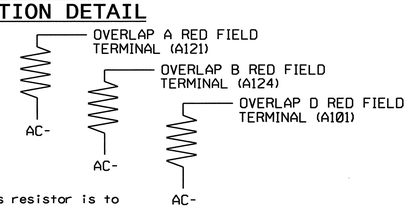
* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

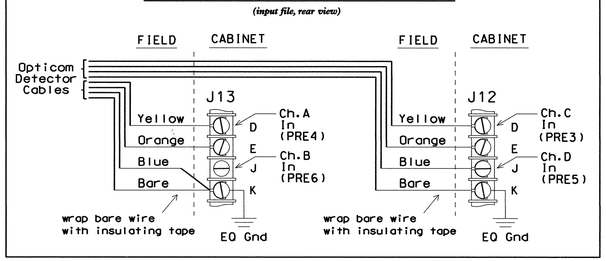
| VALUE (ohms) | WATTAGE |
|---|---|
| 1.5K - 1.9K | 25W (min) |
| 2.0K - 3.0K | 10W (min) |




NOTE: The purpose of this resistor is to load the channel red monitor inputs in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

## TYPICAL OPTICOM FIELD WIRE DETAIL

*(input file, rear view)*




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0091
DESIGNED: April 2011
SEALED: 5-19-11
REVISED: N/A

Signal Upgrade Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 17 Bus. (Marine Boulevard)
at
SR 1718/SR 1336
(Onslow Drive)

Division 03 Onslow County Jacksonville

PLAN DATE: 5-5-11 REVIEWED BY: TJ
PREPARED BY: D.H. Spaulding REVIEWED BY:

REVISIONS | INIT. | DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
SIGNATURE DATE 5/27/11
SIG. INVENTORY NO. 03-0091

28-MAY-2011 11:54
S:##ITS&SU##ITS Signals##workgroups##Sig Mgmt##spaulding##in-progress##030091_sm.ele.2011xx.dgn
dspaulding

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.6 |

## EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3, 4 and 5.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦ X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......Y
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦  X
```

PRESS 'NEXT'

```
   PREEMPTION  #4  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......Y
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦ X
```

PRESS 'NEXT'

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦   X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......Y
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦   X
```

PROGRAMMING COMPLETE

Program extend time on optical detector unit for 2.0 seconds.

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
 PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
 PHASE:            ¦123456789101112131415 16
VEH OVL PARENTS:   ¦X
VEH OVL NOT VEH:   ¦
VEH OVL NOT PED:   ¦
VEH OVL GRN EXT:   ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+'

```
 PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
 PHASE:            ¦123456789101112131415 16
VEH OVL PARENTS:   ¦    X
VEH OVL NOT VEH:   ¦
VEH OVL NOT PED:   ¦
VEH OVL GRN EXT:   ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+' TWICE

```
 PAGE 1: VEHICLE OVERLAP 'D' SETTINGS
 PHASE:            ¦123456789101112131415 16
VEH OVL PARENTS:   ¦      X
VEH OVL NOT VEH:   ¦
VEH OVL NOT PED:   ¦
VEH OVL GRN EXT:   ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0091
DESIGNED: April 2011
SEALED: 5-19-11
REVISED: N/A

Signal Upgrade  Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

US 17 Bus. (Marine Boulevard)
at
SR 1718/SR 1336
(Onslow Drive)

Division 03 Onslow County Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | 5-5-11 | REVIEWED BY: | T. Jay |
| PREPARED BY: | D.H. Spaulding | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 5/27/11
SIGNATURE DATE

SIG. INVENTORY NO. 03-0091

20-MAY-2011 15:43
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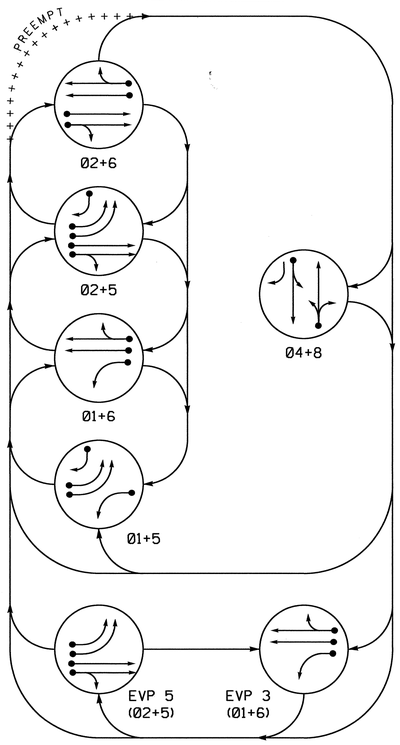
dspaulding

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 7 |

## PHASING DIAGRAM

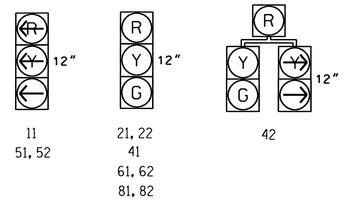



## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 04+8 | Pre3 | Pre5 | FLASH |
|---|---|---|---|---|---|---|---|---|
| 11 | ← | ← | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ |
| 21, 22 | R | R | G | G | R | R | G | Y |
| 41 | R | R | R | R | G | R | R | R |
| 42 | R/← | R | R/← | R | G | R | R | R |
| 51, 52 | ← | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ |
| 61, 62 | R | G | R | G | R | G | R | Y |
| 81, 82 | R | R | R | R | G | R | R | R |

## SIGNAL FACE I.D.

All Heads L.E.D.




## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | +5 | 2-4-2 | - | 1 | Y | Y | - | - | - | - | Y |
| 2A, 2B | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | Y |
| 4A | 6X50 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | 3 | - | Y |
| 5A, 5B | 6X60 | +5 | 2-4-2 | - | 5 | Y | Y | - | - | - | - | Y |
| 5C | 6X60 | +5 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | Y |
| 6A, 6B | 6X6 | 300 | 4 | - | 6 | Y | Y | - | - | - | - | Y |
| 8A | 6X30 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | 3 | - | Y |
| S01 | 6X6 | * | 4 | - | - | - | - | - | - | - | Y | Y |
| S02 | 6X6 | * | 4 | - | - | - | - | - | - | - | Y | Y |
| S03 | 6X6 | ** | 4 | Y | - | - | - | - | - | - | Y | Y |
| S04 | 6X6 | ** | 4 | Y | - | - | - | - | - | - | Y | Y |

* Existing
** As Shown

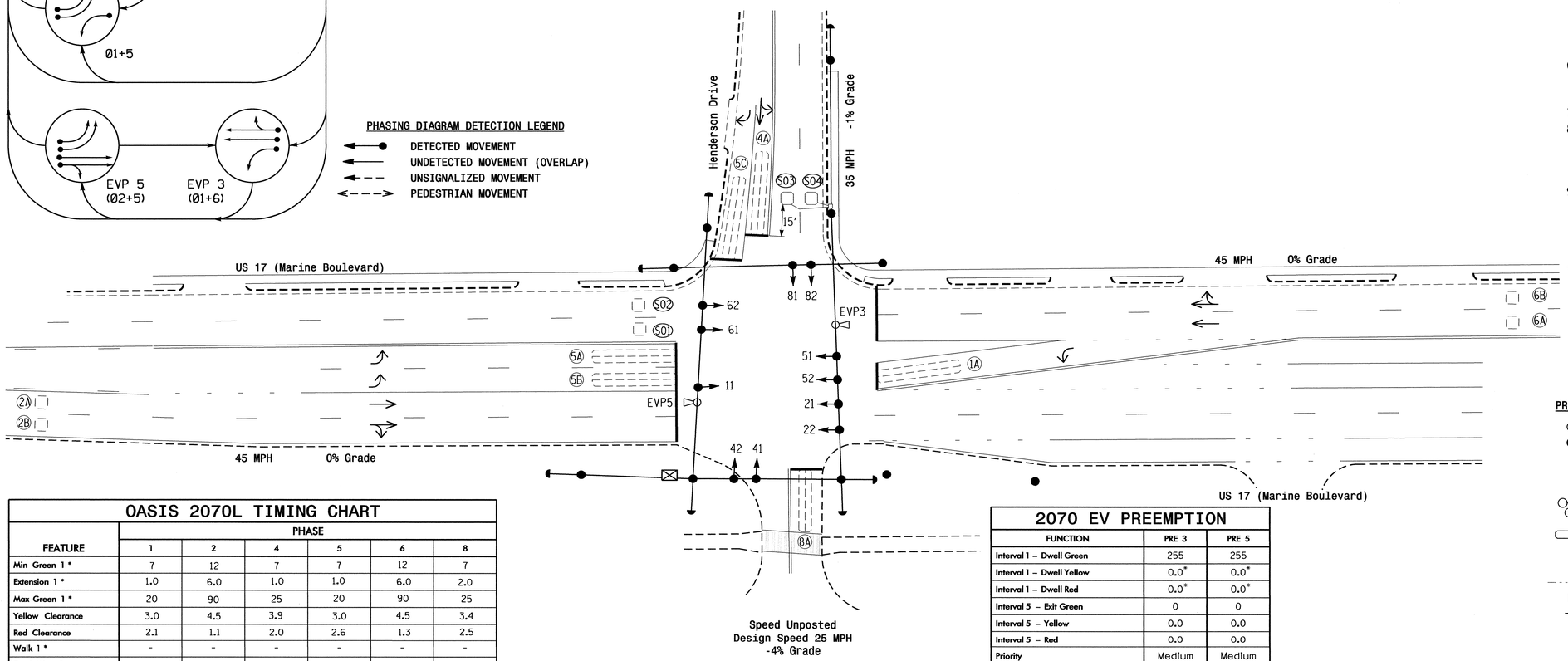
## 5 Phase
## Fully Actuated w/EV Preempt
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Pavement markings are existing.
8. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #0092.

### 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 | |
| | Optical Detector | |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 7 | 7 | 12 | 7 |
| Extension 1 * | 1.0 | 6.0 | 1.0 | 1.0 | 6.0 | 2.0 |
| Max Green 1 * | 20 | 90 | 25 | 20 | 90 | 25 |
| Yellow Clearance | 3.0 | 4.5 | 3.9 | 3.0 | 4.5 | 3.4 |
| Red Clearance | 2.1 | 1.1 | 2.0 | 2.6 | 1.3 | 2.5 |
| Walk 1 * | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - |
| Seconds Per Actuation * | - | 2.0 | - | - | 2.0 | - |
| Max Variable Initial * | - | 34 | - | - | 34 | - |
| Time Before Reduction * | - | 15 | - | - | 15 | - |
| Time To Reduce * | - | 45 | - | - | 45 | - |
| Minimum Gap | - | 3.0 | - | - | 3.0 | - |
| Recall Mode | - | MIN RECALL | - | - | MIN RECALL | - |
| Vehicle Call Memory | - | YELLOW | - | - | YELLOW | - |
| Dual Entry | - | - | 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.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 5 |
|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 |
| Priority | Medium | Medium |
| Delay Time | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 |
| Ped Clear Before Pre | 0 * | 0 * |
| Yellow Clear Before Pre | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 |
| Enable Backup Protection | N | N |
| Ped Clear Through Yellow | N | N |
| Preempt Extend** | 2 | 2 |
| Omit Overlaps | - | A |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

Signal Upgrade

Prepared in 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

SCALE 0 30 1"=30'

# US 17 Bus. (Marine Boulevard) at Henderson Drive/Commercial Drive

Division 03 Onslow County Jacksonville

PLAN DATE: December 2010 REVIEWED BY: JPG
PREPARED BY: EMM/JPG REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY

SIGNATURE 7/7/11 DATE

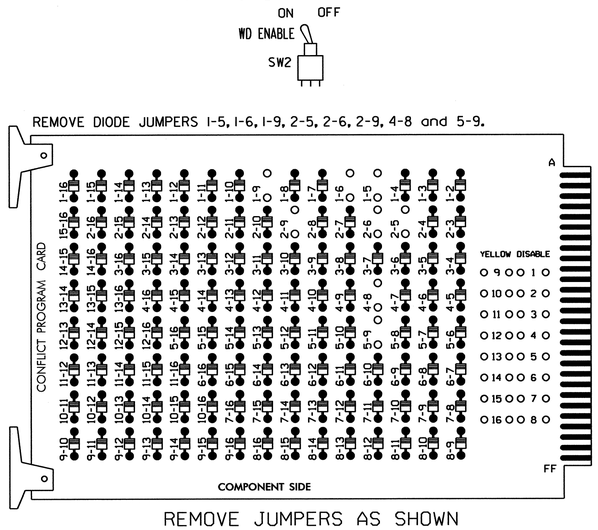
SIG. INVENTORY NO. 03-0092

07-JUL-2011 10:52
S:\ITS&SU\ITS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0092\03092_sig_dsn_20110707.dgn
jgallaway

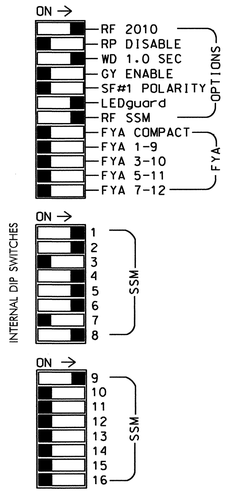
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 8 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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, 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 and 6 for Yellow Flash.
8. The cabinet and controller are part of the Jacksonville City Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET .....332
SOFTWARE .....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S8,S9
PHASES USED.....1,2,4,5,6,8
OVERLAP A.....5

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11 | 21,22 | NU | NU | 41,42 | NU | 51,52 | 61,62 | NU | NU | 81,82 | NU | 42 | NU | NU | NU | NU | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | | * | | | | | |
| YELLOW | | 129 | | | 102 | | | 135 | | | 108 | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | | | | | | | |
| RED ARROW | 125 | | | | | | 131 | | | | | | | | | | | |
| YELLOW ARROW | 126 | | | | | | 132 | | | | | | A122 | | | | | |
| GREEN ARROW | 127 | | | | | | 133 | | | | | | A123 | | | | | |

NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

## 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 2 / 2A,2B | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SYS. DET. S01 | SLOT | SLOT | SLOT | SLOT | FS / DC ISOLATOR |
| | L | NOT USED | Ø 4 / 4A | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | SYS. DET. S02 | EMPTY | EMPTY | EMPTY | EMPTY | ST / DC ISOLATOR |
| FILE "J" | U | Ø 5 / 5A,5B | Ø 5 / 5C | SLOT | SLOT | SLOT | Ø 8 / 8A | SLOT | SLOT | SYS. DET. S03 | SLOT | SLOT | CH. 3 / PRE-3 | CH. 1 / UNUSED | SLOT |
| | L | NOT USED | Ø 6 / 6A,6B | EMPTY | EMPTY | EMPTY | NOT USED | EMPTY | EMPTY | SYS. DET. S04 | EMPTY | EMPTY | CH. 4 / PRE-5 | CH. 2 / UNUSED | EMPTY |

EX.: 1A, 2A, ETC. = LOOP NO.'S
FS = FLASH SENSE
ST = STOP TIME

4 CHANNEL TOMAR OSP CARD INSERT CARD INTO SLOT J13

## 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,2B | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 4A | TB2-7,8 | I2L | 43 | 5 | 12 | 4 | Y | Y | | | 3 |
| 5A,5B | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | |
| 5C | TB3-5,6 | J2U | 40 | 2 | 6 | 5 | Y | Y | | | 15 |
| 6A,6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| 8A | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | Y | Y | | | 3 |
| * S01 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| * S02 | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| * S03 | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |
| * S04 | TB7-11,12 | J9L | 61 | 23 | 17 | SYS | | | | | |

* System Detector only. Remove the vehicle phase assigned to this detector in the default programming.

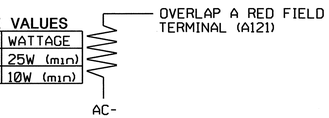
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## LOAD RESISTOR INSTALLATION DETAIL

*(install resistor as shown below)*

ACCEPTABLE VALUES

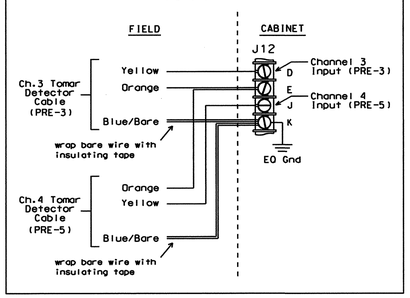
| VALUE (ohms) | WATTAGE |
|---|---|
| 1.5K - 1.9K | 25W (min) |
| 2.0K - 3.0K | 10W (min) |




NOTE: The purpose of this resistor is to load the channel red monitor input in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

## TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0092
DESIGNED: December 2010
SEALED: 07/07/11
REVISED:

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

US 17 Bus. (Marine Boulevard)
at
Henderson Drive/Commercial Drive

Division 3 | Onslow County | Jacksonville

PLAN DATE: July 2011 | REVIEWED BY: T. Jm
PREPARED BY: C. Strickland | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE | DATE 7/8/11

SIG. INVENTORY NO. 03-0092

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cbstrickland

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.9 |

## EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3 and 5.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
                OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT' TWICE

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
                OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦X
```

PROGRAMMING COMPLETE

Program extend time on optical detector unit for 2.0 seconds.

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
 PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
 PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS: ¦    X
VEH OVL NOT VEH: ¦
VEH OVL NOT PED: ¦
VEH OVL GRN EXT: ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0092
DESIGNED: December 2010
SEALED: 07/07/11
REVISED:

Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Management Section

750 N.Greenfield Pkwy,Garner,NC 27529

US 17 Bus. (Marine Boulevard)
at
Henderson Drive/Commercial Drive

Division 3 Onslow County Jacksonville

PLAN DATE: July 2011 REVIEWED BY: T.J.B.
PREPARED BY: C. Strickland REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE DATE 7/7/11

SIG. INVENTORY NO. 03-0092

07-JUL-2011 14:18
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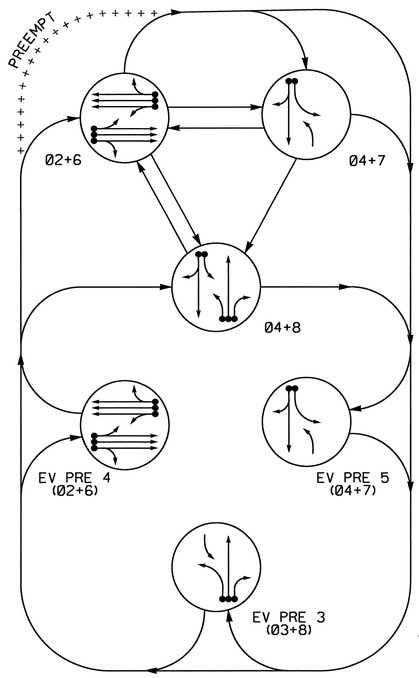
cestrickland

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.10 |

# 2 Phase
# Fully Actuated w/EV Preempt
# Jacksonville City Signal System

## PHASING DIAGRAM

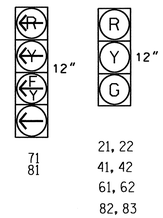



## TABLE OF OPERATION

| SIGNAL FACE | PHASE 02+6 | 04+7 | 04+8 | Pre3 | Pre4 | Pre5 | FLASH |
|---|---|---|---|---|---|---|---|
| 21,22 | G | R | R | R | G | R | Y |
| 41,42 | R | G | G | R | R | G | R |
| 61,62 | G | R | R | R | G | R | Y |
| 71 | ~~R~~ | ← | F Y | F Y | ~~R~~ | ← | ~~R~~ |
| 81 | ~~R~~ | F Y | F Y | ← | ~~R~~ | F Y | ~~R~~ |
| 82,83 | R | R | G | G | R | R | R |

## SIGNAL FACE I.D.

ALL HEADS L.E.D.



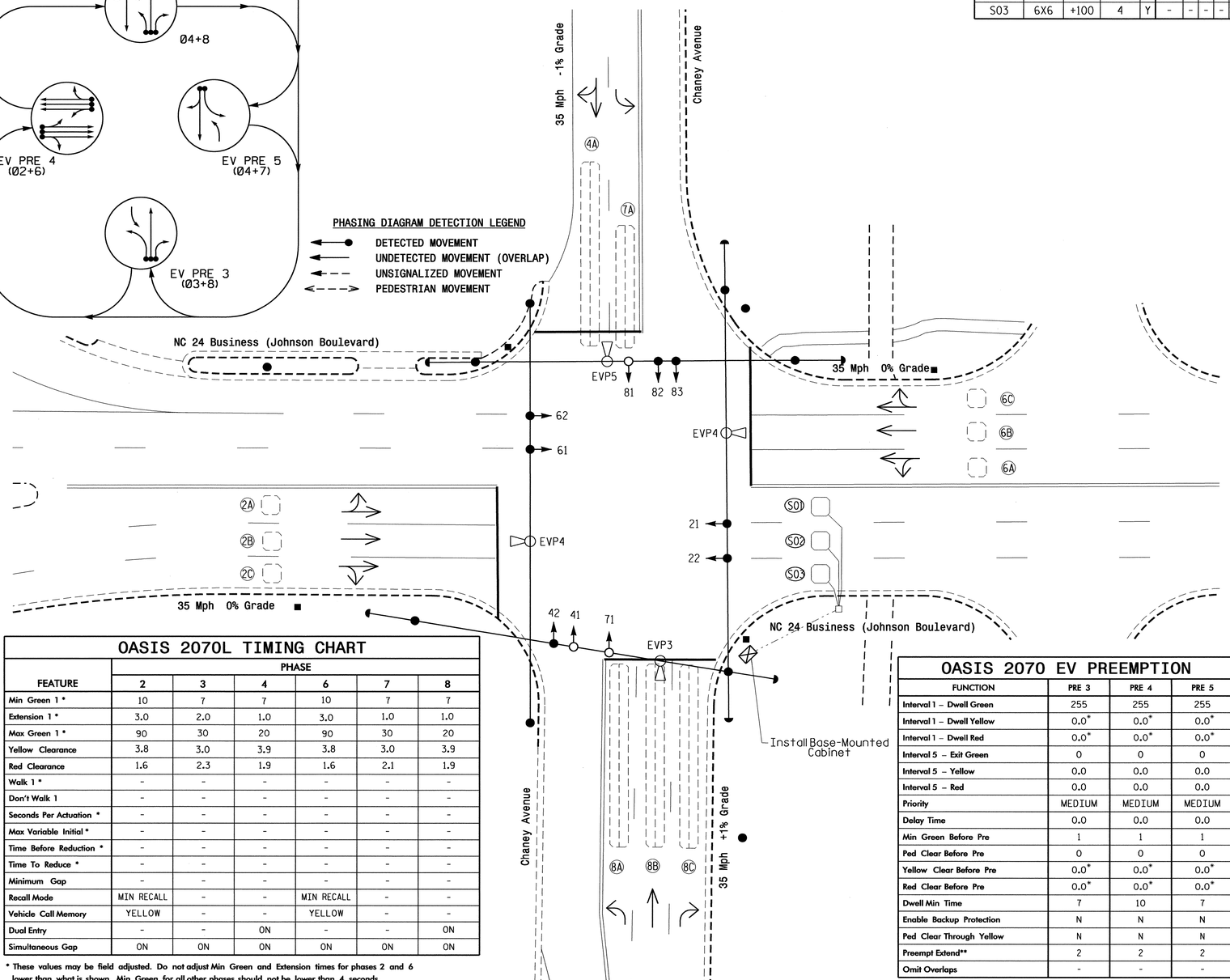

## STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

| FROM \ TO | ← | F Y | ~~R~~ |
|---|---|---|---|
| | 1 2 | 1 2 | 1 2 |
| ← | ← ← | ~~Y~~ ~~R~~ | ~~Y~~ ~~R~~ |
| F Y | F Y F Y | F Y F Y | ~~Y~~ ~~R~~ |
| ~~R~~ | ~~R~~ ~~R~~ | ~~R~~ ~~R~~ | ~~R~~ ~~R~~ |

F Y = Flashing Yellow Arrow

## 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 |
| 2A,2B,2C | 6X6 | 70 | 4 | - | 2 | Y | Y | - | - | - | - | Y |
| 4A | 6X60 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | Y |
| 6A,6B,6C | 6X6 | 70 | 4 | - | 6 | Y | Y | - | - | - | - | Y |
| 7A | 6X40 | +5 | 2-4-2 | - | 7 | Y | Y | - | - | 15 | - | Y |
| | | | | | 4 | Y | Y | - | - | 3 | - | Y |
| 8A,8B,8C | 6X60 | +5 | 2-4-2 | - | 8 | Y | Y | - | - | 3 | - | Y |
| S01 | 6X6 | +100 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S02 | 6X6 | +100 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S03 | 6X6 | +100 | 4 | Y | - | - | - | - | - | - | Y | Y |




## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | 3 | 4 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|
| Min Green 1 * | 10 | 7 | 7 | 10 | 7 | 7 |
| Extension 1 * | 3.0 | 2.0 | 1.0 | 3.0 | 1.0 | 1.0 |
| Max Green 1 * | 90 | 30 | 20 | 90 | 30 | 20 |
| Yellow Clearance | 3.8 | 3.0 | 3.9 | 3.8 | 3.0 | 3.9 |
| Red Clearance | 1.6 | 2.3 | 1.9 | 1.6 | 2.1 | 1.9 |
| Walk 1 * | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - |
| Seconds Per Actuation * | - | - | - | - | - | - |
| Max Variable Initial * | - | - | - | - | - | - |
| Time Before Reduction * | - | - | - | - | - | - |
| Time To Reduce * | - | - | - | - | - | - |
| 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.

## OASIS 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 4 | PRE 5 |
|---|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 | 0.0 |
| Priority | MEDIUM | MEDIUM | MEDIUM |
| Delay Time | 0.0 | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 | 1 |
| Ped Clear Before Pre | 0 | 0 | 0 |
| Yellow Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Dwell Min Time | 7 | 10 | 7 |
| Enable Backup Protection | N | N | N |
| Ped Clear Through Yellow | N | N | N |
| Preempt Extend** | 2 | 2 | 2 |
| Omit Overlaps | - | - | - |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 7 may be lagged.
4. Reposition existing signal heads numbered 42, 82, & 83.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #0094.

## 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 | |
| | Optical Detector | |

Signal Upgrade

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

SCALE 1"=20' (0 – 20)

NC 24 (Johnson Boulevard)
At
Chaney Avenue

Divison 03 Onslow County Jacksonville

PLAN DATE: December 2010 REVIEWED BY: P. L. Alexander
PREPARED BY: IOU/JPG REVIEWED BY: JPG

REVISIONS | INIT. | DATE

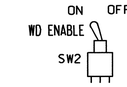
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 7/7/11 DATE
SIG. INVENTORY NO. 03-0094

07-JUL-2011 10:56
S:\TSS\Traffic Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0094\030094_sig_dsn_2011xxxx.dgn
SHELLGUAITS
SHELLGWAP

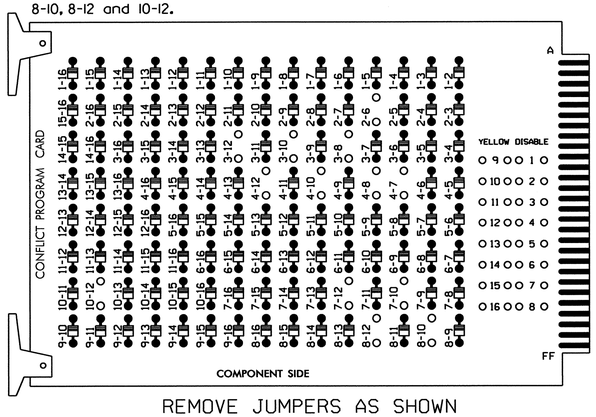
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.11 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

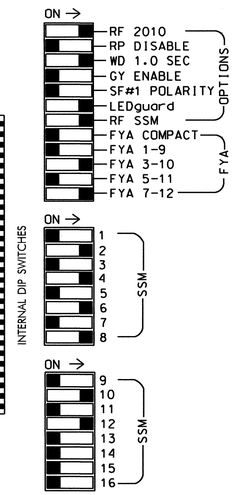
*(remove jumpers and set switches as shown)*




REMOVE DIODE JUMPERS 2-6, 3-8, 3-10, 3-12, 4-7, 4-8, 4-10, 4-12, 7-10, 7-12, 8-10, 8-12 and 10-12.




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 1,3, 5,7,9,11,13,14,15 & 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, and overlap 2 as Wag Overlaps.
7. The cabinet and controller are part of the Jacksonville City Signal System.

# EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....332 /W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S2,S3,S4,S6,S7,S8,S10,S13
PHASES USED.....2,*3,4,6,7,8
OVERLAP "A".....NOT USED
OVERLAP "B".....3+4
OVERLAP "C".....NOT USED
OVERLAP "D".....7+8

*Denotes phase 3 is used in preemption sequence only.

# SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | NU | 21,22 | NU | 81★ | 41,42 | NU | NU | 61,62 | NU | 71★ | 82,83 | NU | NU | 81★ | NU | NU | 71★ | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | | | | | | | |
| YELLOW | | 129 | | * | 102 | | | 135 | | * | 108 | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | | | | | | | |
| RED ARROW | | | | | | | | | | | | | | A124 | | | A101 | |
| YELLOW ARROW | | | | | | | | | | | | | | A125 | | | A102 | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | A126 | | | A103 | |
| GREEN ARROW | | | | 118 | | | | | | 124 | | | | | | | | |

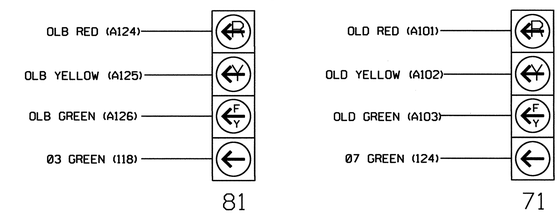
NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail below.

# FYA SIGNAL WIRING DETAIL

*(wire signal heads as shown)*

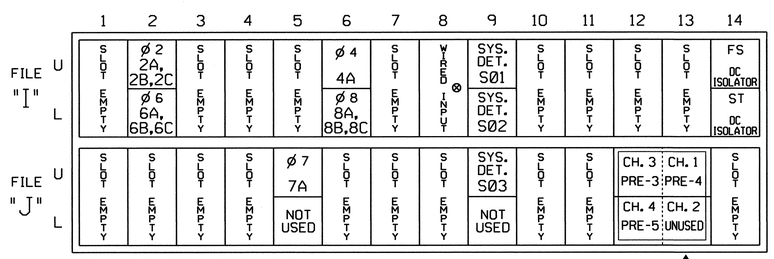



NOTE

1. The sequence display for these signals require special logic programming. See sheet 2 of 3 for programming instructions.

# INPUT FILE POSITION LAYOUT

*(front view)*




EX.: 1A, 2A, ETC. = LOOP NO.'S
FS = FLASH SENSE
ST = STOP TIME
⊗ Wired Input - Do not populate slot with detector card

4 CHANNEL TOMAR OSP CARD INSERT CARD INTO SLOT J13

# INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A,2B,2C | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | |
| 6A,6B,6C | TB2-7,8 | I2L | 43 | 5 | 12 | 6 | Y | Y | | | |
| 7A[1] | TB5-5,6 | J5U | 57 | 19 | 7 | 7 | Y | Y | | | 15 |
| | - | I8U | 49 | 11 | 24 | 4 | Y | Y | | | 3 |
| 8A,8B,8C | TB4-11,12 | I6L | 45 | 7 | 14 | 8 | Y | Y | | | 3 |
| * SØ1 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| * SØ2 | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| * SØ3 | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |

[1] Add jumper from J5-W to I8-W, on rear of input file.

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

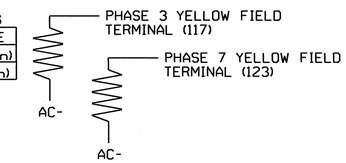
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

# LOAD RESISTOR INSTALLATION DETAIL

*(install resistors as shown below)*

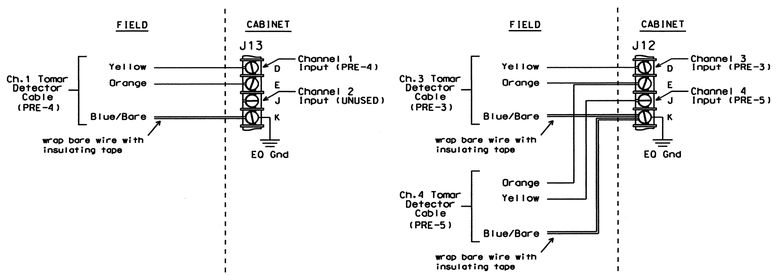
ACCEPTABLE VALUES

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




# TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*




# PREEMPT ONLY PHASE OMIT NOTE

*(program controller as shown below)*

From Main Menu press '2' (Phase Control). Then '1' (Phase Control Functions). Program Phase 3 for 'Omit Phase' and Phases 2, 4, 6, 7 and 8 for 'Startup Calls'. This is to prevent Phase 3 from being served when not in Preempt.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0094
DESIGNED: December 2010
SEALED: 07/07/11
REVISED:

ELECTRICAL DETAIL SHEET 1 OF 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

NC 24 (Johnson Boulevard) at Chaney Avenue

Division 3 | Onslow County | Jacksonville
PLAN DATE: July 2011 | REVIEWED BY: T. Uma
PREPARED BY: C. Strickland | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
George C. Brown 7/8/11
SIGNATURE DATE
SIG. INVENTORY NO. 03-0094

07-JUL-2011 14:06
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dgnstyles.rpt

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.12 |

## LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
## TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5 AND 6.

2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE       #3  IS ON
AND RED CLEAR ON PHASE #3  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #47 ON
SET OUTPUT  ASSIGNMENT #48 OFF
```

NOTE: LOGIC FOR PHASE 3 RED CLEAR WHEN TRANSITIONING FROM PHASE 3 TO PHASE 4 (HEAD 81).

PRESS '+'

```
LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE       #3  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #49 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 3 (HEAD 81).

PRESS '+'

```
LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE    #3  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #48 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 3 (HEAD 81).

PRESS '+'

```
LOGICAL I/O COMMAND #4  (+/-COMMAND#)
IF  ACTIVE PHASE       #7  IS ON
AND RED CLEAR ON PHASE #7  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #39 ON
SET OUTPUT  ASSIGNMENT #40 OFF
```

NOTE: LOGIC FOR PHASE 7 RED CLEAR WHEN TRANSITIONING FROM PHASE 7 TO PHASE 8 (HEAD 71).

PRESS '+'

```
LOGICAL I/O COMMAND #5  (+/-COMMAND#)
IF  ACTIVE PHASE       #7  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #41 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 7 (HEAD 71).

PRESS '+'

```
LOGICAL I/O COMMAND #6  (+/-COMMAND#)
IF  YELLOW ON PHASE    #7  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #40 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 7 (HEAD 71).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

### *OUTPUT REFERENCE SCHEDULE*

USE TO INTERPRET LOGIC PROCESSOR

OUTPUT 39 = Overlap D Red
OUTPUT 40 = Overlap D Yellow
OUTPUT 41 = Overlap D Green
OUTPUT 47 = Overlap B Red
OUTPUT 48 = Overlap B Yellow
OUTPUT 49 = Overlap B Green

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

PRESS '+'

```
PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
 PHASE:          :123456789101112131415 16
VEH OVL PARENTS::  XX
VEH OVL NOT VEH::
VEH OVL NOT PED::
VEH OVL GRN EXT::
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

PRESS '+' TWICE

```
PAGE 1: VEHICLE OVERLAP 'D' SETTINGS
 PHASE:          :123456789101112131415 16
VEH OVL PARENTS::      XX
VEH OVL NOT VEH::
VEH OVL NOT PED::
VEH OVL GRN EXT::
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

## FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0094
DESIGNED: December 2010
SEALED: 07/07/11
REVISED:

ELECTRICAL DETAIL SHEET 2 OF 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

NC 24 (Johnson Boulevard)
at
Chaney Avenue

Division 3 | Onslow County | Jacksonville

PLAN DATE: July 2011 | REVIEWED BY: T. Uzzle
PREPARED BY: C. Strickland | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE | DATE 7/8/11

SIG. INVENTORY NO. 03-0094

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cestrickland

# EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3, 4 and 5.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦  X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
              OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT'

```
   PREEMPTION  #4  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦  X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
              OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........10
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT'

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦    X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
              OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PROGRAMMING COMPLETE

Program extend time on optical detector unit for 2.0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0094
DESIGNED: December 2010
SEALED: 07/07/11
REVISED:

ELECTRICAL DETAIL SHEET 3 OF 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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 (Johnson Boulevard)
at
Chaney Avenue

Division 3 | Onslow County | Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: July 2011 | REVIEWED BY: | | |
| PREPARED BY: C. Strickland | REVIEWED BY: | | |
| REVISIONS | | INIT. | DATE |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

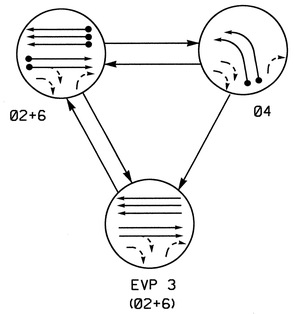
SIGNATURE | DATE 7/8/11

SIG. INVENTORY NO. 03-0094

07-JUL-2011 13:55
S:#TSASU#TS Signals#Workgroups#Sig Man#Strickland#030094_sm_ele_xxx.dgn
cbstrickland

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.14 |

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

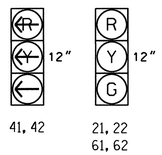
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 02+6 | PHASE 04 | PHASE EVP 3 | FLASH |
|---|---|---|---|---|
| 21,22 | G | R | G | Y |
| 41,42 | ~~R~~ | ~~←~~ | ~~R~~ | ~~R~~ |
| 61,62 | G | R | G | Y |

## SIGNAL FACE I.D.

All Heads L.E.D.




## OASIS 2070L LOOP & DETECTOR INSTALLATION

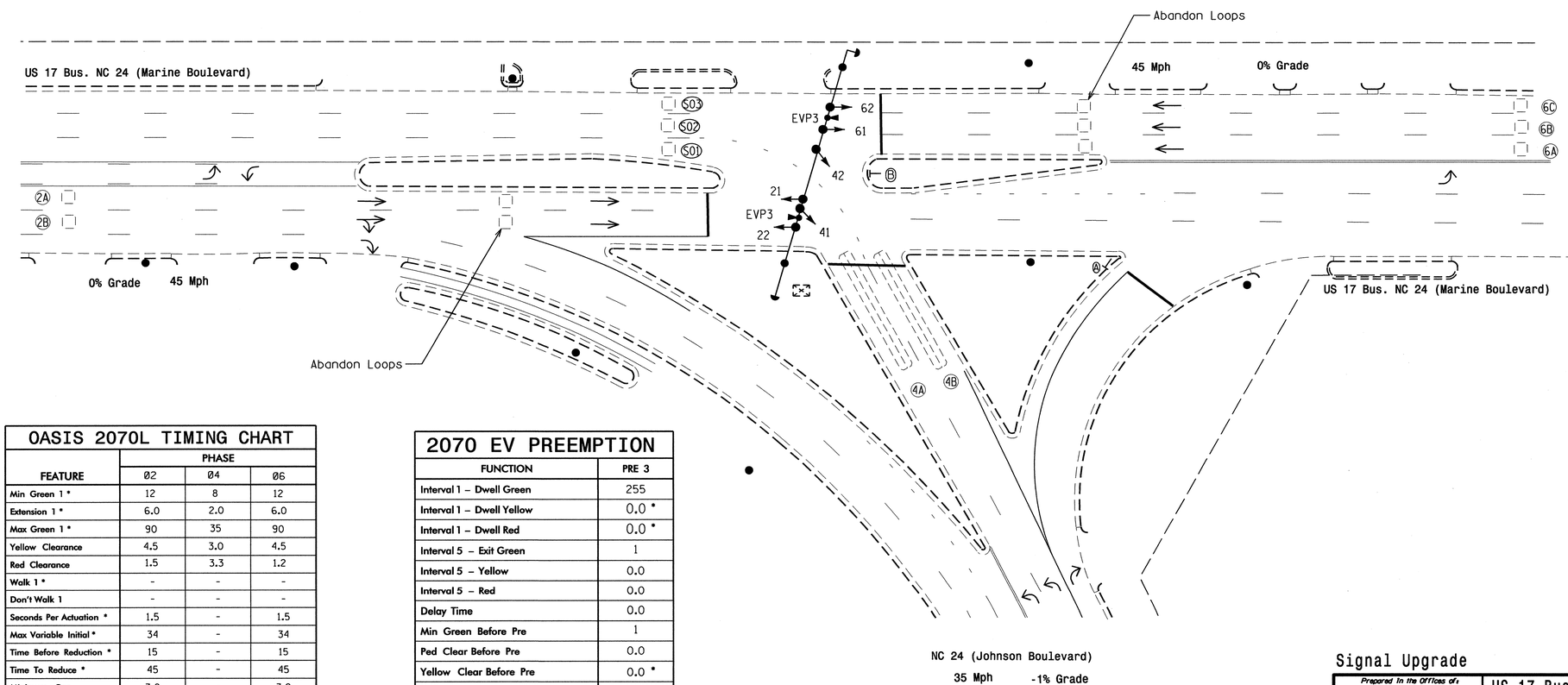
| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 2A | 6X6 | 290 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 290 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 4A | 6X60 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 4B | 6X60 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 6A | 6X6 | 290 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 290 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| 6C | 6X6 | 290 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| S01 | 6X6 | +100 | 4 | - | - | - | - | - | - | - | Y | - |
| S02 | 6X6 | +100 | 4 | - | - | - | - | - | - | - | Y | - |
| S03 | 6X6 | +100 | 4 | - | - | - | - | - | - | - | Y | - |

Re-label System Loops

## 2 Phase
## Fully Actuated W/EV Preempt
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
5. Pavement markings are existing.
6. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0095.




## 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 | |
| A | "STOP" Sign (R1-1) | A |
| B | "No Left Turn" Sign (R3-2) | B |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 02 | PHASE 04 | PHASE 06 |
|---|---|---|---|
| Min Green 1 * | 12 | 8 | 12 |
| Extension 1 * | 6.0 | 2.0 | 6.0 |
| Max Green 1 * | 90 | 35 | 90 |
| Yellow Clearance | 4.5 | 3.0 | 4.5 |
| Red Clearance | 1.5 | 3.3 | 1.2 |
| Walk 1 * | - | - | - |
| Don't Walk 1 | - | - | - |
| Seconds Per Actuation * | 1.5 | - | 1.5 |
| Max Variable Initial * | 34 | - | 34 |
| Time Before Reduction * | 15 | - | 15 |
| Time To Reduce * | 45 | - | 45 |
| Minimum Gap | 3.0 | - | 3.0 |
| Recall Mode | MIN RECALL | - | MIN RECALL |
| Vehicle Call Memory | YELLOW | - | YELLOW |
| Dual Entry | - | - | - |
| Simultaneous Gap | ON | ON | ON |

* 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.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 |
|---|---|
| Interval 1 – Dwell Green | 255 |
| Interval 1 – Dwell Yellow | 0.0 * |
| Interval 1 – Dwell Red | 0.0 * |
| Interval 5 – Exit Green | 1 |
| Interval 5 – Yellow | 0.0 |
| Interval 5 – Red | 0.0 |
| Delay Time | 0.0 |
| Min Green Before Pre | 1 |
| Ped Clear Before Pre | 0.0 |
| Yellow Clear Before Pre | 0.0 * |
| Red Clear Before Pre | 0.0 * |
| Dwell Min Time | 12 |
| Enable Backup Protection | N |
| Ped Clear Through Yellow | N |
| Preempt Extend** | 2 |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

Signal Upgrade

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

SCALE 0 30 1"=30'

US 17 Bus. NC 24 Bus./US 17 Bus. (Marine Boulevard) At NC 24 Bus. (Johnson Boulevard)

Division 3 Onslow County Jacksonville

PLAN DATE: March 2011 REVIEWED BY:
PREPARED BY: IOU/JPG REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

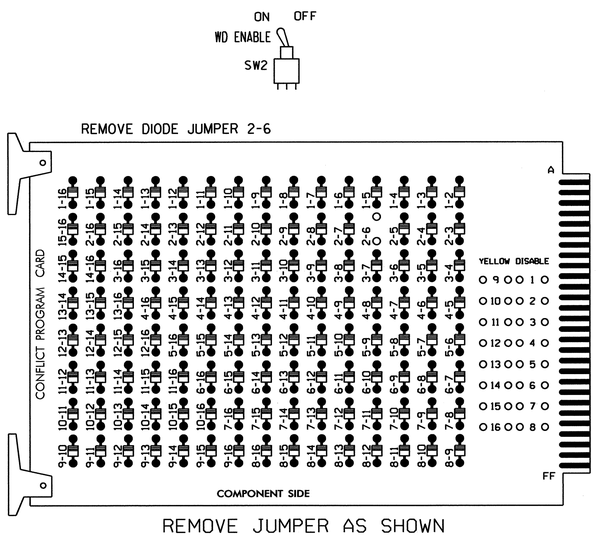
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 4/18/11 DATE
SIG. INVENTORY NO. 03-0095

08-JUL-2011 13:15
S:\ITS&SU\ITS Signals\Signal Design Sections\Eastern Region\01v-03\Jacksonville Signal System\03-0095\030095_sig_dsn_2011nmad.dgn
jgallowy

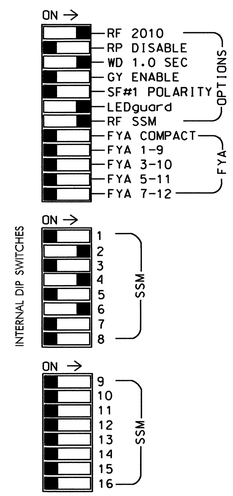
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.5 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumper and set switches as shown)*




REMOVE JUMPER AS SHOWN




NOTES:

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

## NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. Verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5,7,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per cabinet manufacturer's instructions.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
5. Program phases 2 and 6 for Start-Up in Green.
6. Set all detector card channels to 'PRESENCE' mode.
7. Program phases 2 and 6 for Yellow Flash.
8. The cabinet and controller are part of the Jacksonville City Signal System. Contraller Asset: #0095

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 41,42 | NU | NU | 61,62 | NU | NU | NU | NU |
| RED | | 128 | | | | | | 134 | | | | |
| YELLOW | | 129 | | | | | | 135 | | | | |
| GREEN | | 130 | | | | | | 136 | | | | |
| RED ARROW | | | | | 101 | | | | | | | |
| YELLOW ARROW | | | | | 102 | | | | | | | |
| GREEN ARROW | | | | | 103 | | | | | | | |

NU = Not Used

## EQUIPMENT INFORMATION

CONTROLLER.....EXISTING EAGLE TYPE 2070L
CABINET.....EXISTING McCAIN/CTRL TECH MODEL 332A
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6
PHASES USED.....2,4,6
OVERLAPS USED.....NONE

## EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press the 'Next' key 2-times to advance to Preempt 3:

EVP 3:

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING  |  CLEAR/DWELL PHASES
 GRN YEL  RED    |123456789101112131415 16
1 255  0.0* 0.0* | X    X
2   0  0.0  0.0  |
3   0  0.0  0.0  |
4   0  0.0  0.0  |
5   1  0.0  0.0  | X    X
EXIT CALLS       |
            OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0*
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0*
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                 | ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW    |
OMIT OVERLAPS:            |
```

PROGRAMMING COMPLETE

* TIME DEFAULTS TO TIME USED FOR PHASE DURING NORMAL OPERATION.

PROGRAM EXTEND TIME ON OPTICOM DETECTORS FOR 2.0 SEC.

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | SLOT | Ø2 2A | SLOT | SLOT | SLOT | Ø4 4A | SLOT | SLOT | SYS. DET. S01 | SLOT | SLOT | SLOT | SLOT | FS DC ISOLATOR |
| | L | EMPTY | Ø2 2B | EMPTY | EMPTY | EMPTY | Ø4 4B | EMPTY | EMPTY | SYS. DET. S02 | EMPTY | EMPTY | EMPTY | EMPTY | ST DC ISOLATOR |
| FILE "J" | U | SLOT | Ø6 6A | Ø6 6C | SLOT | SLOT | SLOT | SLOT | SLOT | SYS. DET. S03 | SLOT | SLOT | PRE3 * Opticom 2-ch. | SLOT | SLOT |
| | L | EMPTY | Ø6 6B | NOT USED | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | NOT USED | EMPTY | EMPTY | NOT USED | EMPTY | EMPTY |

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

*SEE OPTICOM FIELD WIRE DETAIL BELOW

## INPUT FILE CONNECTION & PROGRAMMING CHART

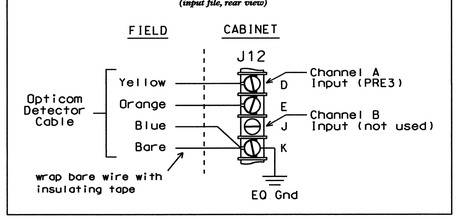
| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | |
| 4B | TB4-11,12 | I6L | 45 | 7 | 14 | 4 | Y | Y | | | |
| S01* | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| S02* | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| 6C | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | | | |
| S03* | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |

*System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## TYPICAL OPTICOM FIELD WIRE DETAIL

*(input file, rear view)*




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0095
DESIGNED: MARCH 2011
SEALED: 4/18/11
REVISED: N/A

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

US 17 Bus. NC 24 Bus./US 17 Bus. (Marine Boulevard) at NC 24 Bus. (Johnson Boulevard)

Division 03 | Onslow County | Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | April 2011 | REVIEWED BY: | |
| PREPARED BY: | F.E. Russ | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

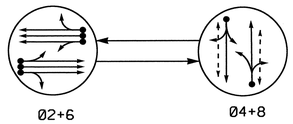
SIGNATURE 4-19-11 DATE

SIG. INVENTORY NO. 03-0095

18-APR-2011 16:54
S:\MTSSS\MTS Signals\Workgroups\Sig Mon\Russ\2070dwgs\03009S_sm_ele_201104xx.dgn
FERUSS

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 16 |

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 02+6 | PHASE 04+8 | FLASH |
|---|---|---|---|
| 21, 22 | G | R | Y |
| 41, 42 | R | G | R |
| 61, 62 | G | R | Y |
| 81, 82, 83 | R | G | R |
| P41, P42 | DW | W | DRK |
| P81, P82 | DW | W | DRK |

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

## SIGNAL FACE I.D.

All Heads L.E.D.

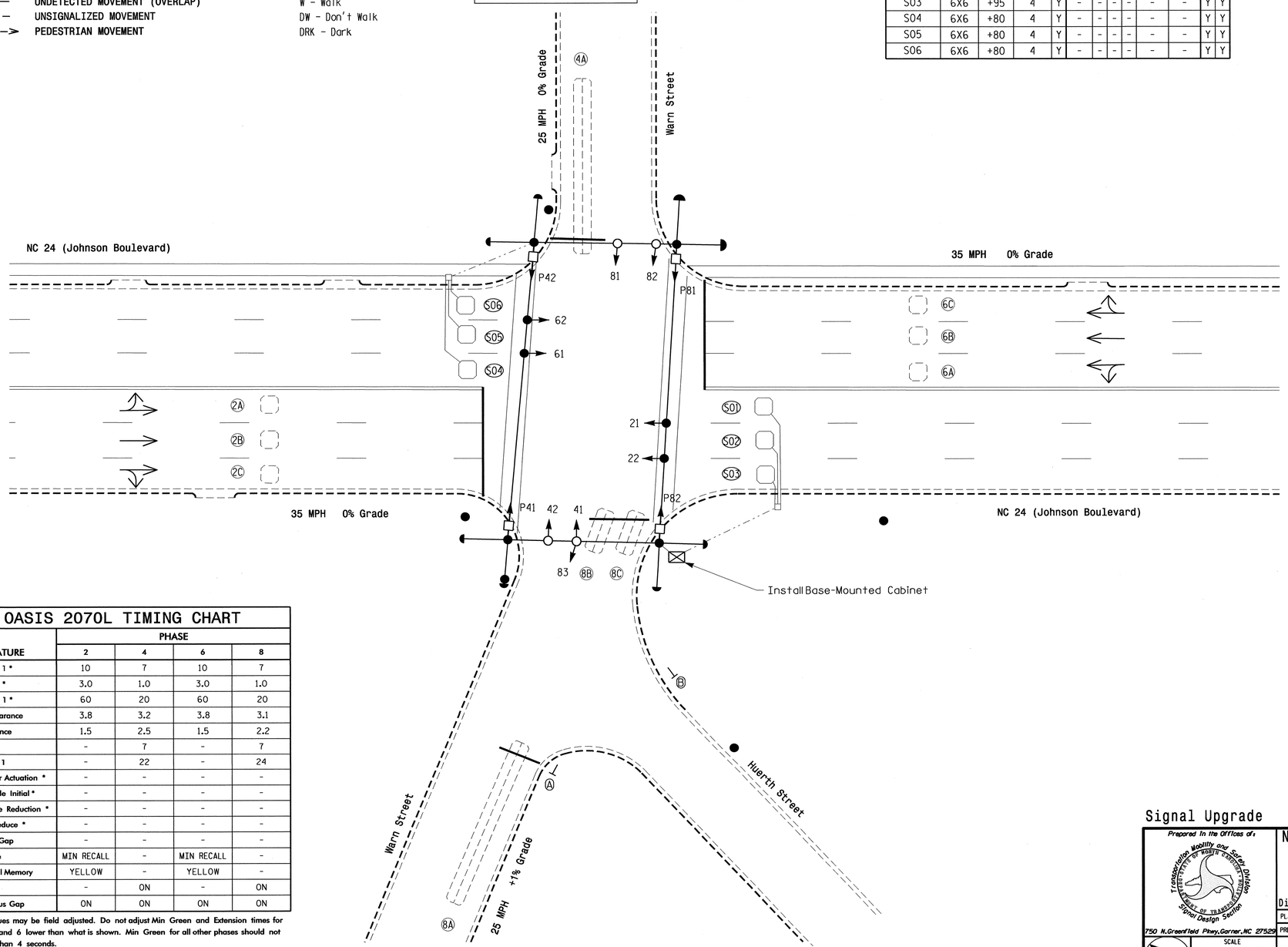
21,22
41,42
61,62
81,82,83

P41,P42
P81,P82

Re-wire heads 21,22,61,&62

## 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 |
| 2A, 2B, 2C | 6X6 | 70 | 4 | - | 2 | Y | Y | - | - | - | - | Y |
| 4A | 6X60 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | 5 | - | Y |
| 6A, 6B, 6C | 6X6 | 70 | 4 | - | 6 | Y | Y | - | - | - | - | Y |
| 8A | 6X60 | +5 | 2-4-2 | - | 8 | Y | Y | - | - | 3 | - | Y |
| 8B, 8C | 6X15 | +5 | 2-4-2 | - | 8 | Y | Y | - | - | 5 | - | Y |
| S01 | 6X6 | +95 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S02 | 6X6 | +95 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S03 | 6X6 | +95 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S04 | 6X6 | +80 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S05 | 6X6 | +80 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S06 | 6X6 | +80 | 4 | Y | - | - | - | - | - | - | Y | Y |




## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | PHASE 4 | PHASE 6 | PHASE 8 |
|---|---|---|---|---|
| Min Green 1 * | 10 | 7 | 10 | 7 |
| Extension 1 * | 3.0 | 1.0 | 3.0 | 1.0 |
| Max Green 1 * | 60 | 20 | 60 | 20 |
| Yellow Clearance | 3.8 | 3.2 | 3.8 | 3.1 |
| Red Clearance | 1.5 | 2.5 | 1.5 | 2.2 |
| Walk 1 * | - | 7 | - | 7 |
| Don't Walk 1 | - | 22 | - | 24 |
| Seconds Per Actuation * | - | - | - | - |
| Max Variable Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Recall Mode | MIN RECALL | - | MIN RECALL | - |
| Vehicle Call Memory | YELLOW | - | YELLOW | - |
| Dual Entry | - | ON | - | ON |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

## 2 Phase
## Fully Actuated
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset # 0100

## 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 | |
| A | "Stop here on Red" Sign (R10-6) | A |
| B | "STOP" Sign (R1-1) | B |

Signal Upgrade

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

NC 24 Bus. (Johnson Boulevard)
At
Warn Street

Division 3 Onslow County Jacksonville

PLAN DATE: December 2010 REVIEWED BY:
PREPARED BY: MAB/JPG REVIEWED BY:

SCALE 0 20 1"=20'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

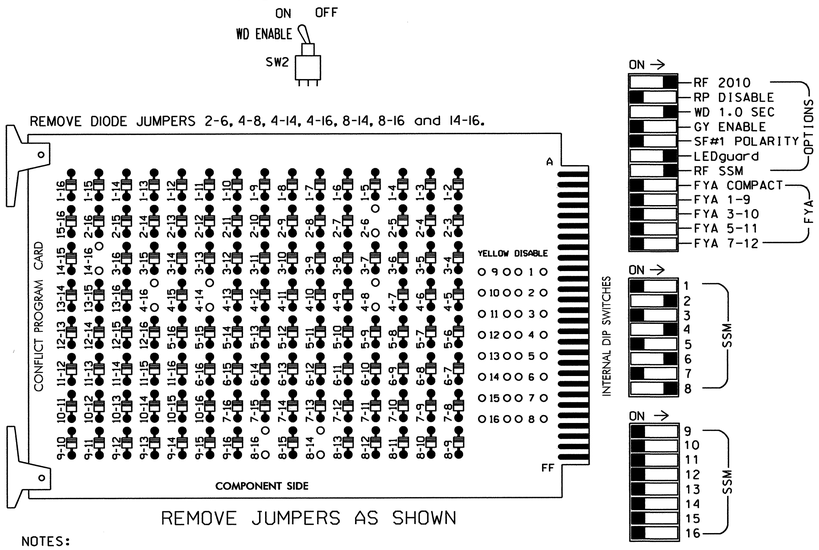
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 2/23/11 DATE
SIG. INVENTORY NO. 03-0100

23-FEB-2011 12:25
S:\ITS&SU\ITS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0100\03010O_sig_dsn_2010mmdd.dgn
jpollard

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.17 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




NOTES:

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

■ = DENOTES POSITION OF SWITCH

## NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5, 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 4 and 8 for 'STARTUP PED CALL'.
7. Program phases 2 and 6 for Yellow Flash.
8. The cabinet and controller are part of the Jacksonville City Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S4P,S6,S8,S8P
PHASES USED.....2,4,4 PED,6,8,8 PED
OVERLAPS.....NONE

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 41,42 | P41, P42 | NU | 61,62 | NU | NU | 81, 82,83 | P81, P82 |
| RED | | 128 | | | 101 | | | 134 | | | 107 | |
| YELLOW | | 129 | | | 102 | | | 135 | | | 108 | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | |
| GREEN ARROW | | | | | | | | | | | | |
| ✋ | | | | | | 104 | | | | | | 110 |
| 🚶 | | | | | | 106 | | | | | | 112 |

NU = Not Used

## COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | SLOT EMPTY | Ø2 2A, 2B,2C | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SYS. DET. S01 | SLOT EMPTY | SYS. DET. S03 | SLOT EMPTY | SLOT EMPTY | NOT USED | NOT USED | FS DC ISOLATOR |
| | L | | Ø4 4A | | | | | SYS. DET. S02 | | SYS. DET. S04 | | | Ø4 PED DC ISOLATOR | Ø8 PED DC ISOLATOR | ST DC ISOLATOR |
| FILE "J" | U | SLOT EMPTY | Ø6 6A, 6B,6C | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | Ø8 8A | SLOT EMPTY | SLOT EMPTY | SYS. DET. S05 | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY |
| | L | | NOT USED | | | | Ø8 8B,8C | | | SYS. DET. S06 | | | | | |

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

FS = FLASH SENSE
ST = STOP TIME

## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A,2B,2C | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 4A | TB2-7,8 | I2L | 43 | 5 | 12 | 4 | Y | Y | | | 5 |
| 6A,6B,6C | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 8A | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | Y | Y | | | 3 |
| 8B,8C | TB5-11,12 | J6L | 46 | 8 | 18 | 8 | Y | Y | | | 5 |
| * S01 | TB6-1,2 | I7U | 65 | 27 | 34 | SYS | | | | | |
| * S02 | TB6-3,4 | I7L | 78 | 40 | 44 | SYS | | | | | |
| * S03 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| * S04 | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| * S05 | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |
| * S06 | TB7-11,12 | J9L | 61 | 23 | 17 | SYS | | | | | |
| PED PUSH BUTTONS | | | | | | | | | | | |
| P41,P42 | TB8-5,6 | I12L | 69 | 31 | PED 4 | 4 PED | | | | | |
| P81,P82 | TB8-8,9 | I13L | 70 | 32 | PED 8 | 8 PED | | | | | |

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

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0100
DESIGNED: December 2010
SEALED: 02/23/11
REVISED:

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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 Bus. (Johnson Boulevard) at Warn Street

Division 3 | Onslow County | Jacksonville

PLAN DATE: December 2010 | REVIEWED BY: T. Vogt
PREPARED BY: C. Strickland | REVIEWED BY:

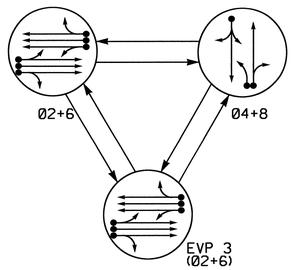
| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
SIGNATURE George C. Brown DATE 2/24/11
SIG. INVENTORY NO. 03-0100

24-FEB-2011 13:30
S:\TMS\Signals\Workgroups\Sig Man\Strickland\NC030100_sm.ele.xxx.dgn
S:\TMS\Signals

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.18 |

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 02+6 | PHASE 04+8 | PHASE Pr 3 | FLASH |
|---|---|---|---|---|
| 21, 22 | G | R | G | Y |
| 41, 42 | R | G | R | R |
| 61, 62 | G | R | G | Y |
| 81, 82 | R | G | R | R |

## SIGNAL FACE I.D.

All Heads L.E.D.

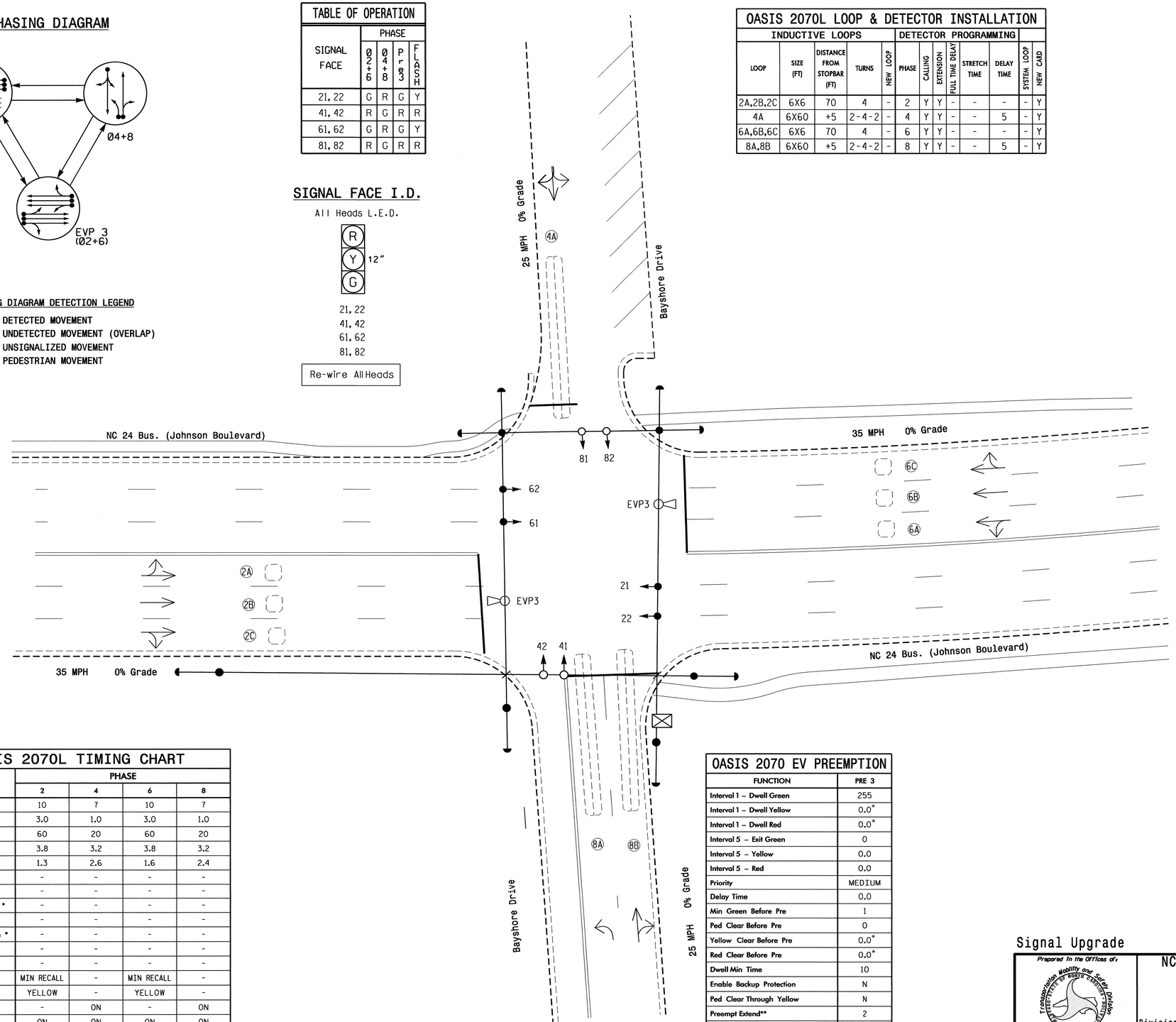
R
Y 12"
G

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

Re-wire All Heads

## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | DETECTOR PROGRAMMING | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 2A,2B,2C | 6X6 | 70 | 4 | - | 2 | Y | Y | - | - | - | - | Y |
| 4A | 6X60 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | 5 | - | Y |
| 6A,6B,6C | 6X6 | 70 | 4 | - | 6 | Y | Y | - | - | - | - | Y |
| 8A,8B | 6X60 | +5 | 2-4-2 | - | 8 | Y | Y | - | - | 5 | - | Y |




## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | PHASE 4 | PHASE 6 | PHASE 8 |
|---|---|---|---|---|
| Min Green 1 * | 10 | 7 | 10 | 7 |
| Extension 1 * | 3.0 | 1.0 | 3.0 | 1.0 |
| Max Green 1 * | 60 | 20 | 60 | 20 |
| Yellow Clearance | 3.8 | 3.2 | 3.8 | 3.2 |
| Red Clearance | 1.3 | 2.6 | 1.6 | 2.4 |
| Walk 1 * | - | - | - | - |
| Don't Walk 1 | - | - | - | - |
| Seconds Per Actuation * | - | - | - | - |
| Max Variable Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Recall Mode | MIN RECALL | - | MIN RECALL | - |
| Vehicle Call Memory | YELLOW | - | YELLOW | - |
| Dual Entry | - | ON | - | ON |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

## OASIS 2070 EV PREEMPTION

| FUNCTION | PRE 3 |
|---|---|
| Interval 1 – Dwell Green | 255 |
| Interval 1 – Dwell Yellow | 0.0* |
| Interval 1 – Dwell Red | 0.0* |
| Interval 5 – Exit Green | 0 |
| Interval 5 – Yellow | 0.0 |
| Interval 5 – Red | 0.0 |
| Priority | MEDIUM |
| Delay Time | 0.0 |
| Min Green Before Pre | 1 |
| Ped Clear Before Pre | 0 |
| Yellow Clear Before Pre | 0.0* |
| Red Clear Before Pre | 0.0* |
| Dwell Min Time | 10 |
| Enable Backup Protection | N |
| Ped Clear Through Yellow | N |
| Preempt Extend** | 2 |
| Omit Overlaps | - |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

## 2 Phase
## Fully Actuated w/EV Preempt
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0101.

## 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 | |
| | Optical Detector | |

Signal Upgrade

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

# NC 24 (Johnson Boulevard) At Bayshore Drive

Division 3 Onslow County Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | December 2010 | REVIEWED BY: | PLA |
| PREPARED BY: | JPG | REVIEWED BY: | |

SCALE 0 20 1"=20'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

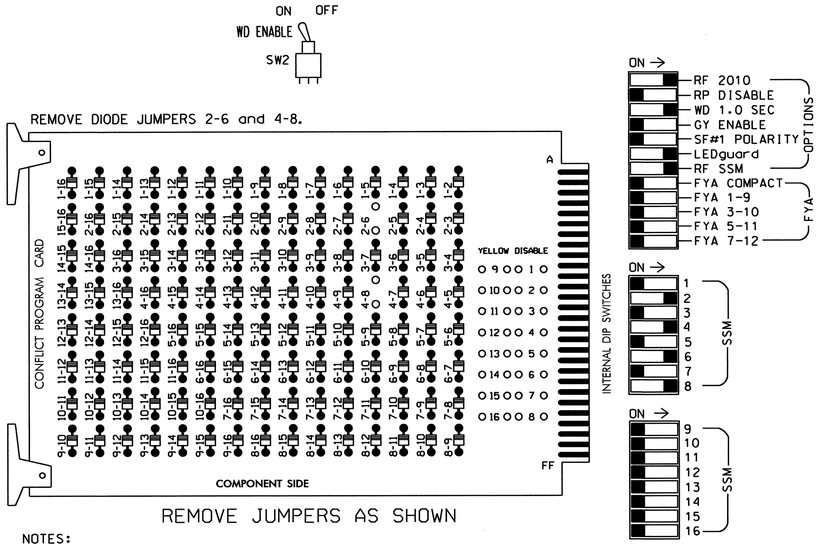
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 7/7/11 DATE
SIG. INVENTORY NO. 03-0101

07-JUL-2011 11:31
S:\TSU\ITS\Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0101\03010 1_sig_dsn_20110707.dgn
Sig1 (Jwg)

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 19 |

# 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 1,3,5, 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 Jacksonville City Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
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. | NU | 21,22 | NU | NU | 41,42 | NU | NU | 61,62 | NU | NU | 81,82 | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | |
| YELLOW | | 129 | | | 102 | | | 135 | | | 108 | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | |
| GREEN ARROW | | | | | | | | | | | | |

NU = Not Used

## EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempt 3.

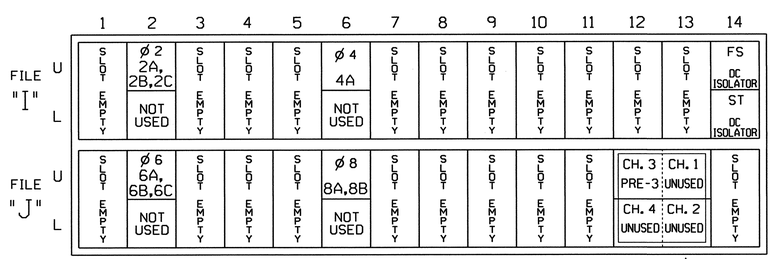
```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING  :  CLEAR/DWELL PHASES
  GRN YEL  RED   :123456789101112131415 16
1 255  0.0  0.0  : X   X
2   0  0.0  0.0  :
3   0  0.0  0.0  :
4   0  0.0  0.0  :
5   0  0.0  0.0  :
EXIT CALLS       :
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........10
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW
OMIT OVERLAPS:
```

PROGRAMMING COMPLETE

Program extend time on optical detector unit for 2.0 seconds.

## INPUT FILE POSITION LAYOUT

*(front view)*




EX.: 1A, 2A, ETC. = LOOP NO.'S
FS = FLASH SENSE
ST = STOP TIME

4 CHANNEL TOMAR OSP CARD
INSERT CARD INTO SLOT J13

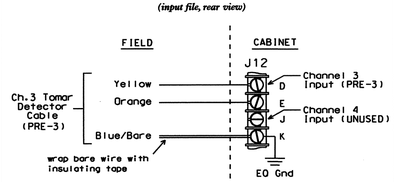
## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A,2B,2C | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | 5 |
| 6A,6B,6C | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 8A,8B | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | Y | Y | | | 5 |

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0101
DESIGNED: December 2010
SEALED: 07/07/11
REVISED:

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

# NC 24 (Johnson Boulevard) at Bayshore Drive

Division 3 Onslow County Jacksonville

| PLAN DATE: July 2011 | REVIEWED BY: T. Jap |
|---|---|
| PREPARED BY: C. Strickland | REVIEWED BY: |

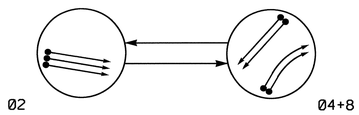
| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
SIGNATURE DATE 7/8/11
SIG. INVENTORY NO. 03-0101

08-JUL-2011 07:58
S:\#TSG&SW\ITS\Signals\workgroups\Sig Mark\Strickland\03010l_sm_ele_xxx.dgn
cestrickland

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.20 |

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

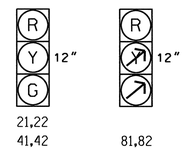
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

## TABLE OF OPERATION

| SIGNAL FACE | PHASE Ø2 | PHASE Ø4+8 | FLASH |
|---|---|---|---|
| 21,22 | G | R | Y |
| 41,42 | R | G | R |
| 81,82 | R | ↗ | R |

## SIGNAL FACE I.D.

All Heads L.E.D.




## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

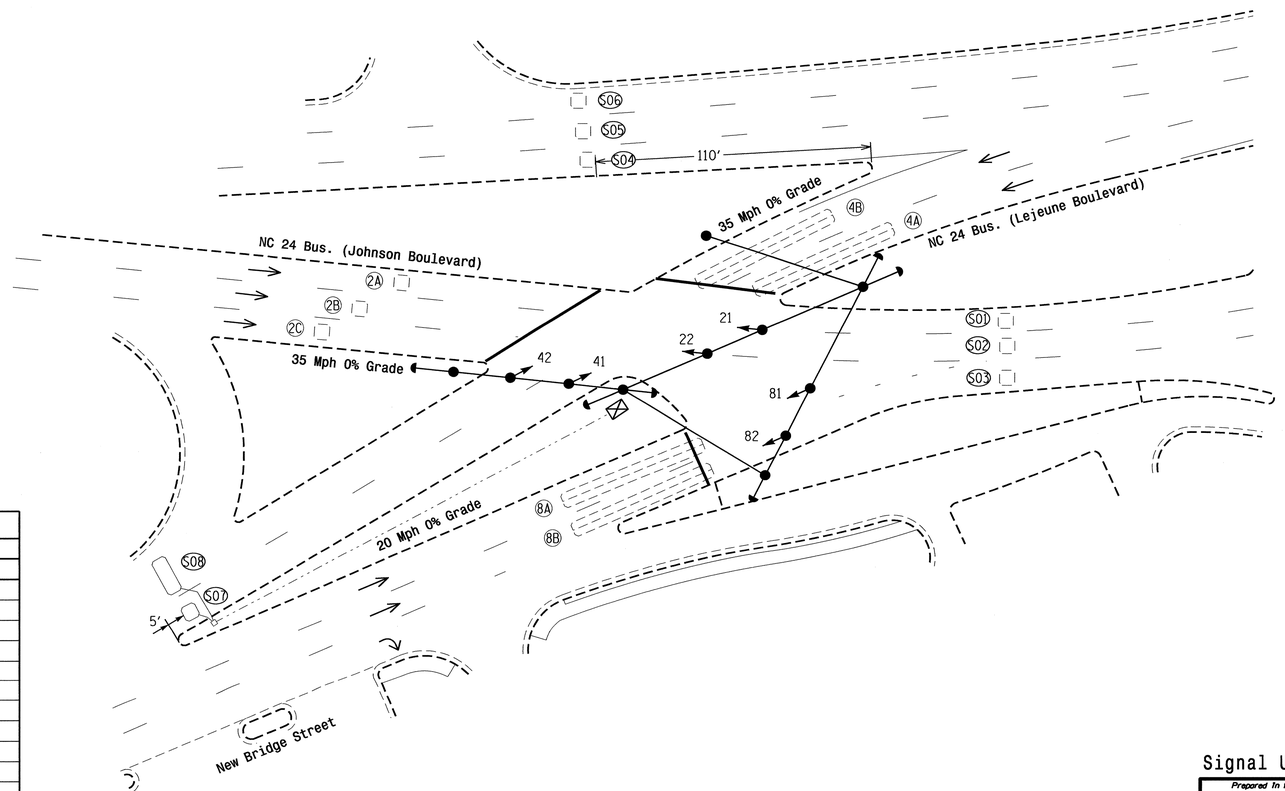
| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 2A,2B,2C | 6X6 | 70 | 4 | - | 2 | Y | Y | - | - | - | - | Y |
| 4A | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | Y |
| 4B | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | Y |
| 8A | 6X60 | +5 | 2-4-2 | - | 8 | Y | Y | - | - | - | - | Y |
| 8B | 6X60 | +5 | 2-4-2 | - | 8 | Y | Y | - | - | - | - | Y |
| S01 | 6X6 | +165 | 4 | - | - | - | - | - | - | - | Y | Y |
| S02 | 6X6 | +165 | 4 | - | - | - | - | - | - | - | Y | Y |
| S03 | 6X6 | +165 | 4 | - | - | - | - | - | - | - | Y | Y |
| S04 | 6X6 | * | 4 | - | - | - | - | - | - | - | Y | Y |
| S05 | 6X6 | * | 4 | - | - | - | - | - | - | - | Y | Y |
| S06 | 6X6 | * | 4 | - | - | - | - | - | - | - | Y | Y |
| S07 | 6X6 | * | 4 | Y | - | - | - | - | - | - | Y | Y |
| S08 | 6X15 | * | 4 | Y | - | - | - | - | - | - | Y | Y |

* As shown

## 2 Phase
## Fully Actuated
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0103.




## 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 | |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | PHASE 4 | PHASE 8 |
|---|---|---|---|
| Min Green 1 * | 10 | 7 | 7 |
| Extension 1 * | 3.0 | 1.0 | 1.0 |
| Max Green 1 * | 45 | 40 | 40 |
| Yellow Clearance | 3.8 | 3.8 | 3.0 |
| Red Clearance | 3.1 | 1.5 | 3.2 |
| Walk 1 * | - | - | - |
| Don't Walk 1 | - | - | - |
| Seconds Per Actuation * | - | - | - |
| Max Variable Initial * | - | - | - |
| Time Before Reduction * | - | - | - |
| Time To Reduce * | - | - | - |
| Minimum Gap | - | - | - |
| Recall Mode | MIN RECALL | - | - |
| Vehicle Call Memory | YELLOW | - | - |
| Dual Entry | - | ON | ON |
| Simultaneous Gap | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

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

SCALE 0 30
1"=30'

NC 24 Bus. (Johnson Boulevard)/
(Lejeune Boulevard)
At
New Bridge Street

Division 3 Onslow County Jacksonville

| PLAN DATE: April 2011 | REVIEWED BY: |
|---|---|
| PREPARED BY: JPG/MAB | REVIEWED BY: |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

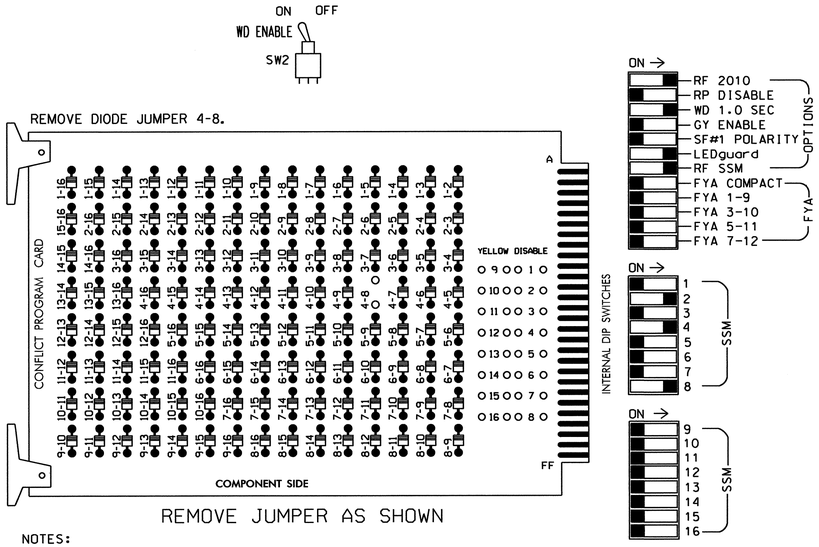
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 7/6/11 DATE
SIG. INVENTORY NO. 03-0103

06-JUL-2011 09:46
S:\ITS\SIG\ITS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0103\030103_sig_dsn_20110519.dgn
gallowayj

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.21 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumper and set switches as shown)*




NOTES:

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

■ = DENOTES POSITION OF SWITCH

## NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5, 6,7,9,10,11,12,13,14,15 & 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 phase 2 for Start Up In Green.
6. Program phase 2 for Yellow Flash.
7. The cabinet and controller are part of the Jacksonville City Signal System.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 41,42 | NU | NU | NU | NU | NU | 81,82 | NU |
| RED | | 128 | | | 101 | | | | | | 107 | |
| YELLOW | | 129 | | | 102 | | | | | | | |
| GREEN | | 130 | | | 103 | | | | | | | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | 108 | |
| GREEN ARROW | | | | | | | | | | | 109 | |

NU = Not Used

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S8
PHASES USED.....2,4,8
OVERLAPS.....NONE

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | SLOT EMPTY | Ø2 2A, 2B,2C | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | Ø4 4A | SYS. DET. S05 | SLOT EMPTY | SYS. DET. S01 | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | | NOT USED | | | | Ø4 4B | SYS. DET. S06 | | SYS. DET. S02 | | | | | ST DC ISOLATOR |
| FILE "J" | U | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | Ø8 8A | SYS. DET. S07 | SLOT EMPTY | SYS. DET. S03 | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY |
| | L | | | | | | Ø8 8B | SYS. DET. S08 | | SYS. DET. S04 | | | | | |

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

FS = FLASH SENSE
ST = STOP TIME

## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A,2B,2C | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | |
| 4B | TB4-11,12 | I6L | 45 | 7 | 14 | 4 | Y | Y | | | |
| 8A | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | Y | Y | | | |
| 8B | TB5-11,12 | J6L | 46 | 8 | 18 | 8 | Y | Y | | | |
| *S01 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| *S02 | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| *S03 | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |
| *S04 | TB7-11,12 | J9L | 61 | 23 | 17 | SYS | | | | | |
| *S05 | TB6-1,2 | I7U | 65 | 27 | 34 | SYS | | | | | |
| *S06 | TB6-3,4 | I7L | 78 | 40 | 44 | SYS | | | | | |
| *S07 | TB7-1,2 | J7U | 66 | 28 | 38 | SYS | | | | | |
| *S08 | TB7-3,4 | J7L | 79 | 41 | 48 | SYS | | | | | |

* System Detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0103
DESIGNED: April 2011
SEALED: 07/06/11
REVISED:

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

NC 24 Bus. (Johnson Boulevard) / (Lejeune Boulevard) at New Bridge Street

Division 3 | Onslow County | Jacksonville

PLAN DATE: May 2011 | REVIEWED BY: T. Jap
PREPARED BY: C. Strickland | REVIEWED BY:

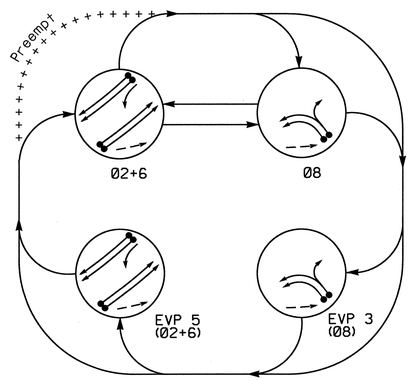
| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
SIGNATURE | DATE 7/7/11
SIG. INVENTORY NO. 03-0103

07-JUL-2011 07:17
S:#ITS&SU#ITS Signals#workgroups#Sig Mark#Strickland#03103_SmLele_xxx.dgn
castrickland

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.22 |

## PHASING DIAGRAM




### PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

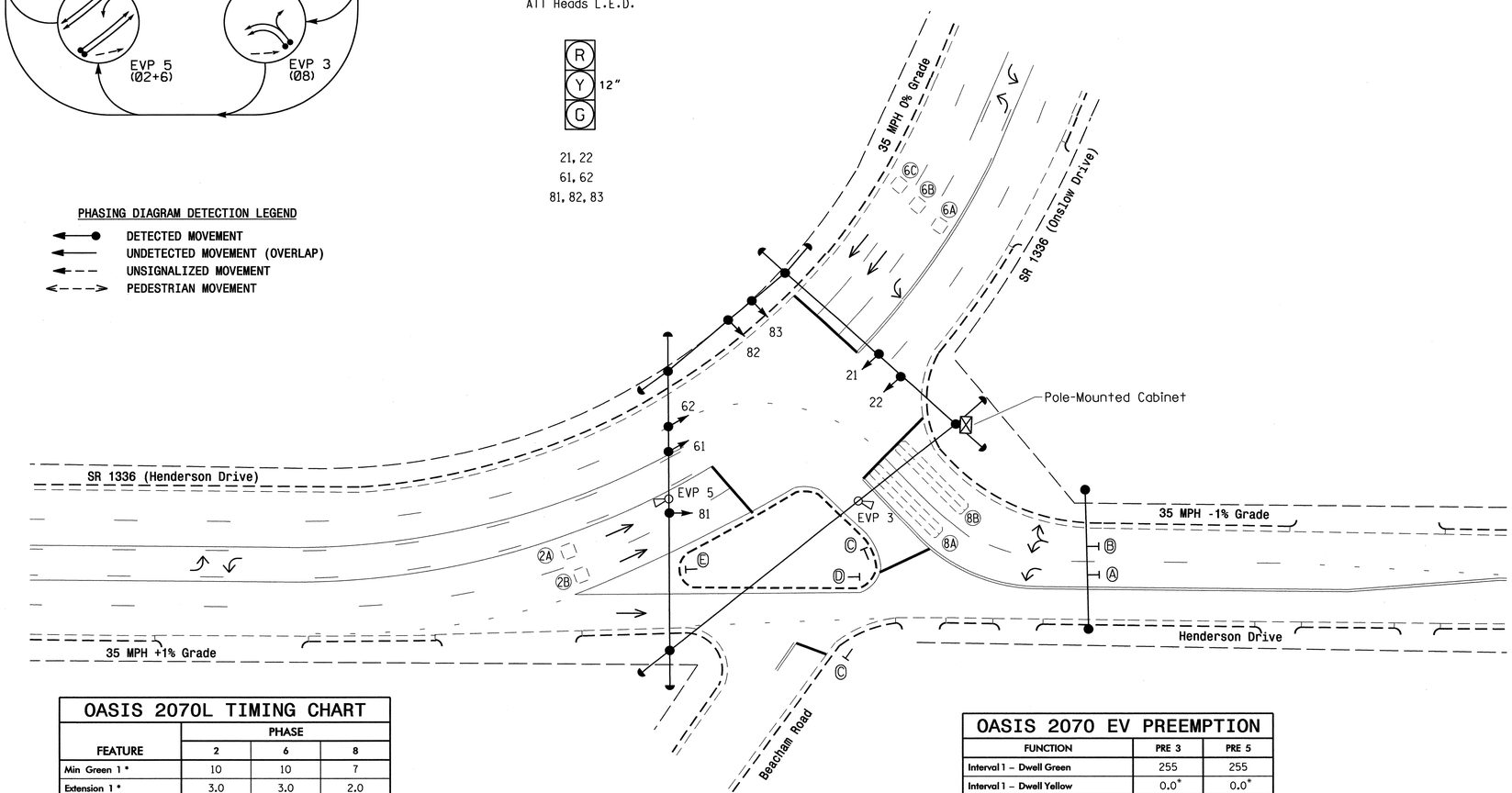
| SIGNAL FACE | PHASE Ø2+6 | PHASE Ø8 | PHASE Pre3 | PHASE Pre5 | FLASH |
|---|---|---|---|---|---|
| 21,22 | G | R | R | G | Y |
| 61,62 | G | R | R | G | Y |
| 81,82,83 | R | G | G | R | R |

## SIGNAL FACE I.D.

All Heads L.E.D.




21, 22
61, 62
81, 82, 83




## 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 |
| 2A,2B | 6X6 | 70 | 4 | - | 2 | Y | Y | - | - | - | - | Y |
| 6A,6B,6C | 6X6 | 70 | 4 | - | 6 | Y | Y | - | - | - | - | Y |
| 8A | 6X40 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | 3 | - | Y |
| 8B | 6X40 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | 5 | - | Y |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | PHASE 6 | PHASE 8 |
|---|---|---|---|
| Min Green 1 * | 10 | 10 | 7 |
| Extension 1 * | 3.0 | 3.0 | 2.0 |
| Max Green 1 * | 30 | 30 | 25 |
| Yellow Clearance | 3.8 | 3.8 | 3.0 |
| Red Clearance | 1.7 | 1.6 | 3.3 |
| Walk 1 * | - | - | - |
| Don't Walk 1 | - | - | - |
| Seconds Per Actuation * | - | - | - |
| Max Variable Initial * | - | - | - |
| Time Before Reduction * | - | - | - |
| Time To Reduce * | - | - | - |
| Minimum Gap | - | - | - |
| Recall Mode | MIN RECALL | MIN RECALL | - |
| Vehicle Call Memory | YELLOW | YELLOW | - |
| Dual Entry | - | - | - |
| Simultaneous Gap | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

## OASIS 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 5 |
|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 |
| Priority | MEDIUM | MEDIUM |
| Delay Time | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 |
| Ped Clear Before Pre | 0 * | 0 * |
| Yellow Clear Before Pre | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* |
| Dwell Min Time | 7 | 10 |
| Enable Backup Protection | N | N |
| Ped Clear Through Yellow | N | N |
| Preempt Extend** | 2 | 2 |
| Omit Overlaps | - | - |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

## 2 Phase
## Fully Actuated w/EV Preempt
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Controller Asset #0105.

## 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 | |
| | Optical Detector | |
| A | Left Arrow "ONLY" Sign (R3-5L) | A |
| B | Dual Turn Arrows Sign | B |
| C | "STOP" Sign (R1-1) | C |
| D | "DO NOT ENTER" Sign (R5-1) | D |
| E | Double Arrow Sign (W12-1) | E |

Signal Upgrade

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

SCALE 0 30 1"=30'

# SR 1336 (Henderson Drive)/ (Onslow Drive) At Henderson Drive

Division 3 Onslow County Jacksonville

| PLAN DATE: December 2010 | REVIEWED BY: JPG |
|---|---|
| PREPARED BY: IOU/JPG | REVIEWED BY: |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29904 JASON P. CALLOWAY

SIGNATURE 7/11/11 DATE

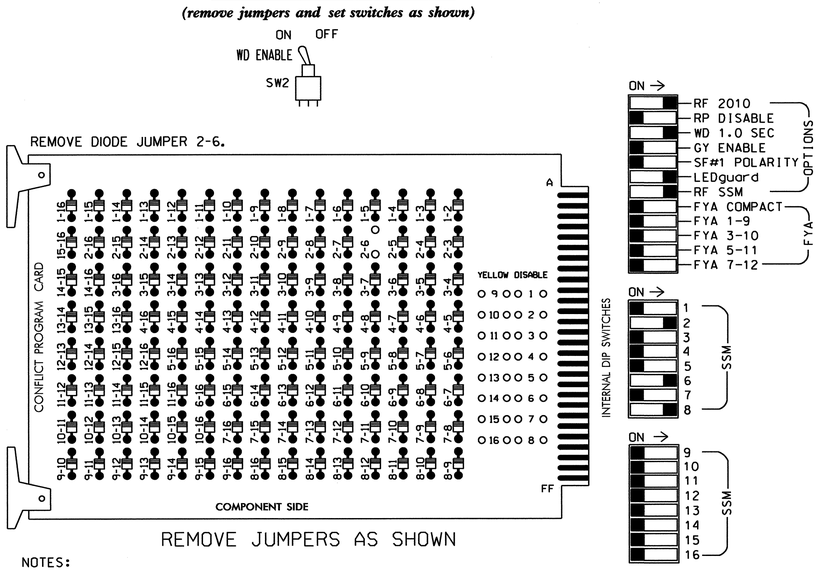
SIG. INVENTORY NO. 03-0105

11-JUL-2011 14:53
S:\TMS\SUM\TS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0105\030105_sig_dsn_20110711.dgn
Callowayj

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.23 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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 1,3,4,5, 7,9,10,11,12,13,14,15 & 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 Start Up In Green.
5. Program phases 2 and 6 for Yellow Flash.
6. The cabinet and controller are part of the Jacksonville City Signal System.

## SIGNAL HEAD HOOK-UP CHART

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

NU = Not Used

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....336
▽ SOFTWARE.....ECONOLITE OASIS (3.02.77 or later approved version)

CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S6,S8
PHASES USED.....2,6,8
OVERLAPS.....NONE

## ▽ EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press the 'Next' key 2-times to advance to Preempt #3.

EVP 3 :

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING :  CLEAR/DWELL PHASES
  GRN YEL  RED  :123456789101112131415 16
1 255  0.0  0.0  :        X
2   0  0.0  0.0  :
3   0  0.0  0.0  :
4   0  0.0  0.0  :
5   0  0.0  0.0  :
EXIT CALLS       :
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0.0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                 : ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW    :
OMIT OVERLAPS:            :
```

PRESS 'NEXT' TWICE

EVP 5 :

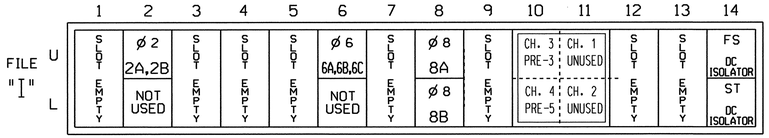
```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING :  CLEAR/DWELL PHASES
  GRN YEL  RED  :123456789101112131415 16
1 255  0.0  0.0  :X   X
2   0  0.0  0.0  :
3   0  0.0  0.0  :
4   0  0.0  0.0  :
5   0  0.0  0.0  :
EXIT CALLS       :
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........10
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                 : ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW    :
OMIT OVERLAPS:            :
```

PROGRAMMING COMPLETE

Program extend time on optical detector units for 2.0 sec.

## ▽ INPUT FILE POSITION LAYOUT

*(front view)*




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

FS = FLASH SENSE
ST = STOP TIME
PRE 3&5 = EV PREEMPTS

4 CHANNEL TOMAR OSP CARD INSERT CARD INTO SLOT 111.

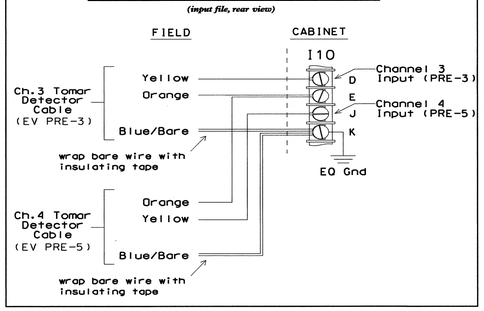
## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A,2B | TB21-3,4 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 6A,6B,6C | TB21-11,12 | I6U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 8A | TB22-1,2 | I8U | 42 | 4 | 8 | 8 | Y | Y | | | 3 |
| 8B | TB24-1,2 | I8L | 46 | 8 | 18 | 8 | Y | Y | | | 5 |

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

## ▽ TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*




▽ THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0105
DESIGNED: December 2010
SEALED: 7-11-11
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1336 (Henderson Drive)/ (Onslow County) at Henderson Drive

Prepared in the Offices of: Transportation Mobility and Safety Division, Signals Management Section, NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

750 N.Greenfield Pkwy,Garner,NC 27529

Division 3 | Onslow County | Jacksonville

PLAN DATE: February 2011 | REVIEWED BY: JTR

PREPARED BY: James Peterson | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| ▽ Added EV Preempts. (JP) | JTR | 7-13-11 |

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

SIGNATURE: John T Rowe Jr. DATE: 2-23-11

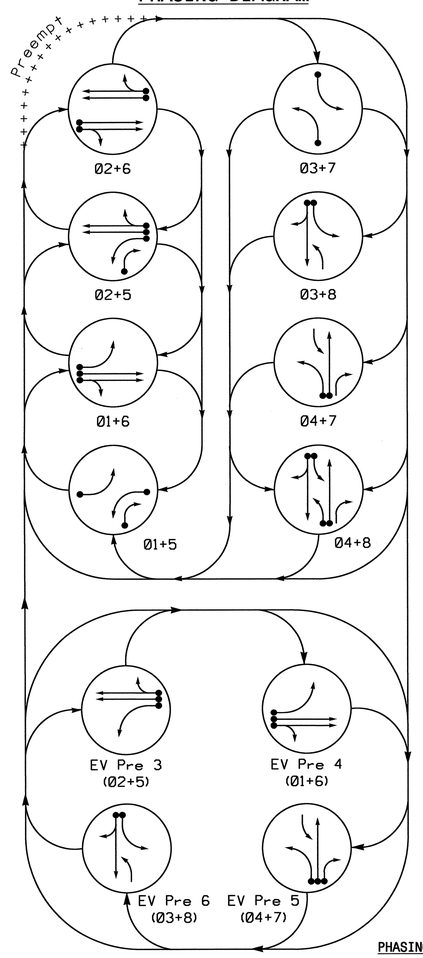
SIG. INVENTORY NO. 03-0105

13-JUL-2011 08:58
S:*ITS&SM\ITS Signals\workgroups\Sig Mgmt\Peterson\03010S_smLele.20110223.dgn
jpeterson

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 24 |

# 8 Phase
# Fully Actuated w/EV Preempt
# Jacksonville City Signal System

## PHASING DIAGRAM




### PHASING DIAGRAM DETECTION LEGEND

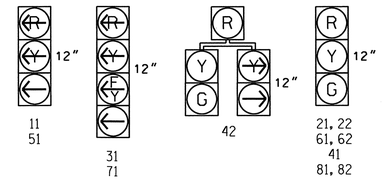
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 03+7 | 03+8 | 04+7 | 04+8 | Pre 3 | Pre 4 | Pre 5 | Pre 6 | FLASH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | ← | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ |
| 21,22 | R | R | G | G | R | R | R | R | G | R | R | R | Y |
| 31 | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ← | FY | FY | ~~R~~ | ~~R~~ | FY | ← | ~~R~~ |
| 41 | R | R | R | R | R | R | G | G | R | R | G | R | R |
| 42 | R/← | R | R/← | R | R | R | G | G | R | R | G | R | R |
| 51 | ← | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |
| 61,62 | R | G | R | G | R | R | R | R | R | G | R | R | Y |
| 71 | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ← | FY | FY | ~~R~~ | ~~R~~ | ← | FY | ~~R~~ |
| 81,82 | R | R | R | R | R | G | R | G | R | R | R | G | R |

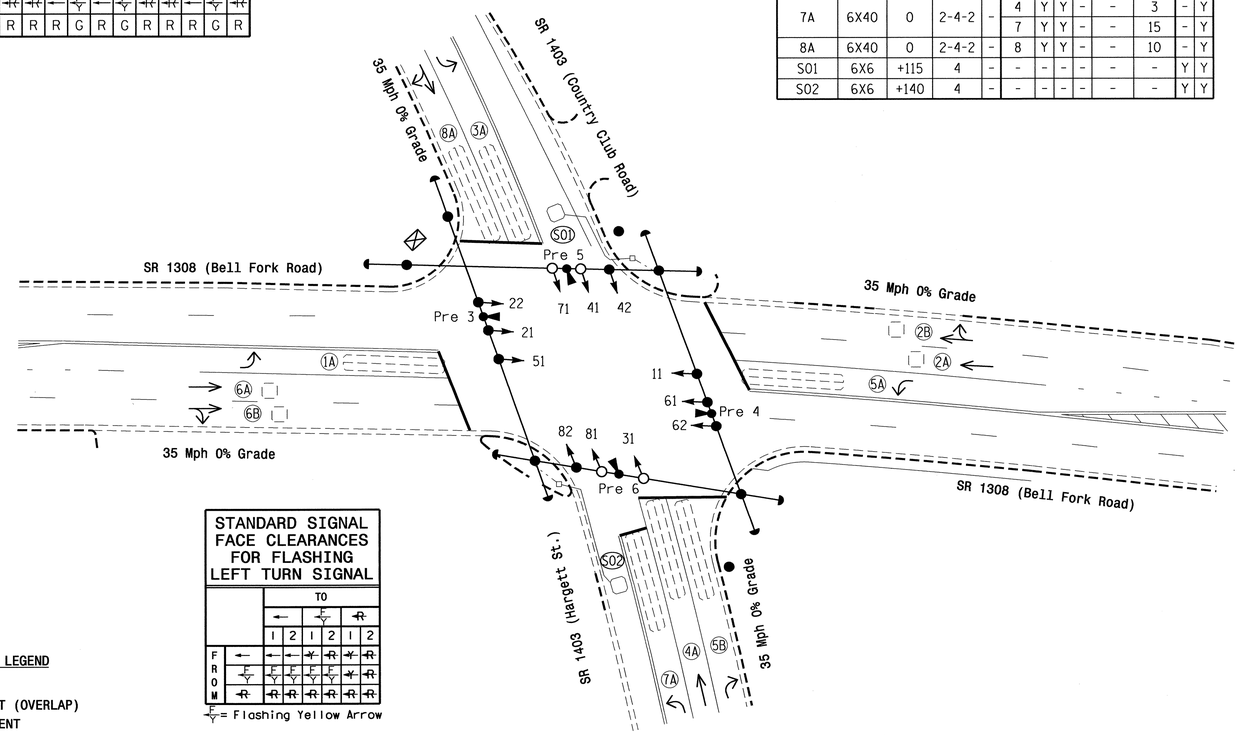
## SIGNAL FACE I.D.

All Heads L.E.D.




## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 3 | - | Y |
| 2A,2B | 6X6 | 70 | 4 | - | 2 | Y | Y | - | - | - | - | Y |
| 3A | 6X40 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | 15 | - | Y |
| | | | | | 8 | Y | Y | - | - | 3 | - | Y |
| 4A | 6X40 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | Y |
| 5A | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 3 | - | Y |
| 5B | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | Y |
| 6A,6B | 6X6 | 70 | 4 | - | 6 | Y | Y | - | - | - | - | Y |
| 7A | 6X40 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 3 | - | Y |
| | | | | | 7 | Y | Y | - | - | 15 | - | Y |
| 8A | 6X40 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | 10 | - | Y |
| S01 | 6X6 | +115 | 4 | - | - | - | - | - | - | - | Y | Y |
| S02 | 6X6 | +140 | 4 | - | - | - | - | - | - | - | Y | Y |




## STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

| | | TO | | | | |
|---|---|---|---|---|---|---|
| | | ← | FY | | ~~R~~ | |
| | | 1 | 2 | 1 | 2 | 1 | 2 |
| FROM | ← | ← | ← | ~~Y~~ | ~~R~~ | ~~Y~~ | ~~R~~ |
| | FY | FY | FY | FY | FY | ~~Y~~ | ~~R~~ |
| | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |

FY = Flashing Yellow Arrow

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Reposition existing signal heads numbered 42 and 82.
7. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
8. Pavement markings are existing.
9. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
11. Controller Asset #0106.

## 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 | |
| | Optical Detector | |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Min Green 1 * | 7 | 10 | 7 | 7 | 7 | 10 | 7 | 7 |
| Extension 1 * | 2.0 | 3.0 | 2.0 | 2.0 | 2.0 | 3.0 | 2.0 | 2.0 |
| Max Green 1 * | 20 | 45 | 15 | 30 | 20 | 45 | 15 | 30 |
| Yellow Clearance | 3.0 | 3.8 | 3.0 | 3.8 | 3.0 | 3.8 | 3.0 | 3.8 |
| Red Clearance | 1.9 | 1.8 | 2.8 | 2.3 | 2.3 | 1.7 | 3.1 | 2.3 |
| Walk 1 * | - | - | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - | - | - |
| Seconds Per Actuation * | - | - | - | - | - | - | - | - |
| Max Variable Initial * | - | - | - | - | - | - | - | - |
| Time Before Reduction * | - | - | - | - | - | - | - | - |
| Time To Reduce * | - | - | - | - | - | - | - | - |
| 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 | 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.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 4 | PRE 5 | PRE 6 |
|---|---|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 | 0.0 | 0.0 |
| Priority | Medium | Medium | Medium | Medium |
| Delay Time | 0.0 | 0.0 | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 | 1 | 1 |
| Ped Clear Before Pre | 0 | 0 | 0 | 0 |
| Yellow Clear Before Pre | 0.0* | 0.0* | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* | 0.0* | 0.0* |
| Dwell Min Time | 10 | 10 | 7 | 7 |
| Enable Backup Protection | N | N | N | N |
| Ped Clear Through Yellow | N | N | N | N |
| Preempt Extend** | 2 | 2 | 2 | 2 |
| Omit Overlaps | C | - | - | - |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

Signal Upgrade

Prepared in 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

SR 1308 (Bell Fork Road)
At
SR 1403 (Country Club Road/ Hargett Street)

Division 03 Onslow County Jacksonville

PLAN DATE: December 2010 REVIEWED BY: PLA
PREPARED BY: JPG REVIEWED BY:

SCALE 0 30 1"=30'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 3/2/11 DATE
SIG. INVENTORY NO. 03-0106

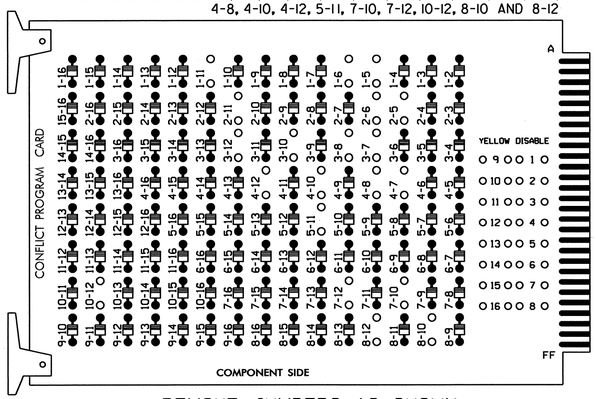
20-MAR-2011 09:07
S:\ITS&SU\ITS\Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0106\030106_sig_dsn_2011mmdd.dgn
emmishew

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 25 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*

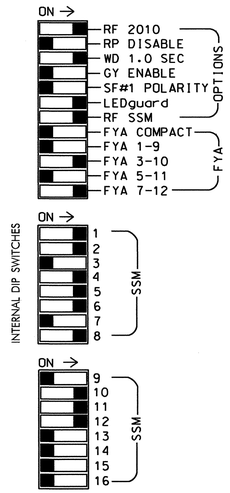
REMOVE DIODE JUMPERS 1-5, 1-6, 1-11, 2-5, 2-6, 2-11, 3-7, 3-8, 3-10, 3-12, 4-7, 4-8, 4-10, 4-12, 5-11, 7-10, 7-12, 10-12, 8-10 AND 8-12




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. 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 3,7,9,13,14,15 & 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. Set all detector card channels to 'PRESENCE' mode.
7. Program phases 2 and 6 for Yellow Flash, and Overlap 2 as a Wag Overlap.
8. The cabinet and controller are part of the Jacksonville City Signal System. Controller Asset: #0106

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11 | 21,22 | NU | 31★ | 41,42 | NU | 51 | 61,62 | NU | 71★ | 81,82 | NU | NU | 31★ | NU | 42 | 71★ | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | | | | | * | | |
| YELLOW | | 129 | | * | 102 | | | 135 | | * | 108 | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | | | | | | | |
| RED ARROW | 125 | | | | | | 131 | | | | | | | A124 | | | A101 | |
| YELLOW ARROW | 126 | | | | | | 132 | | | | | | | A125 | | A115 | A102 | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | A126 | | | A103 | |
| GREEN ARROW | 127 | | | 118 | | | 133 | | | 124 | | | | | | A116 | | |

NU = Not Used

*Denotes install load resistor. See Load Resistor Installation Detail this sheet.

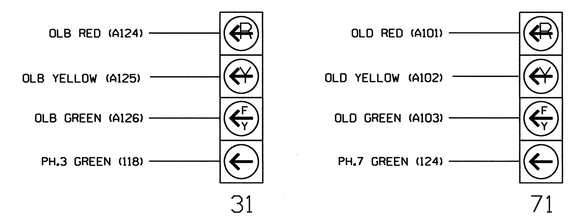
★See 4-Sect. FYA-PPLT Signal Wiring Detail below.

## EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332A W/AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S10,S12,S13
PHASES USED.....1,2,3,4,5,6,7,8
OVERLAP'A'.....NOT USED
OVERLAP'B'.....3+4
OVERLAP'C'.....Ø5
OVERLAP'D'.....7+8

## 4-SECTION FYA-PPLT SIGNAL WIRING DETAIL

*(wire signal heads as shown)*




NOTE:

The display sequence for this signal requires special logic programming. See sheet 2 for programming instructions.

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 | SLOT | Ø2 | SLOT | Ø3 | Ø4 | SLOT | WIRED ⊗ INPUT | SYS. DET. S01 | SLOT | SLOT | SLOT | SLOT | FS DC ISOLATOR |
| | L | 1A | EMPTY | 2A,2B | EMPTY | 3A | 4A | EMPTY | | SYS. DET. S02 | EMPTY | EMPTY | EMPTY | EMPTY | ST DC ISOLATOR |
| | | NOT USED | | NOT USED | | NOT USED | NOT USED | | | | | | | | |
| FILE "J" | U | Ø5 | Ø5 | Ø6 | SLOT | Ø7 | Ø8 | SLOT | WIRED ⊗ INPUT | SLOT | SLOT | SLOT | PRE3 * Opticom | PRE4 4-ch. | SLOT |
| | L | 5A | 5B | 6A,6B | EMPTY | 7A | 8A | EMPTY | | EMPTY | EMPTY | EMPTY | PRE5 | PRE6 | EMPTY |
| | | NOT USED | NOT USED | NOT USED | | NOT USED | NOT USED | | | | | | | | |

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

⊗ Wired Input - Do not populate slot with detector card

*SEE OPTICOM FIELD WIRE DETAIL BELOW

## 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 | | | 3 |
| 2A,2B | TB2-9,10 | I3U | 63 | 25 | 32 | 2 | Y | Y | | | |
| 3A[1] | TB4-5,6 | I5U | 58 | 20 | 3 | 3 | Y | Y | | | 15 |
| | - | J8U | 50 | 12 | 28 | 8 | Y | Y | | | 3 |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | |
| S01* | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| S02* | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| 5A | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | 3 |
| 5B | TB3-5,6 | J2U | 40 | 2 | 6 | 5 | Y | Y | | | 15 |
| 6A,6B | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | | | |
| 7A[2] | TB5-5,6 | J5U | 57 | 19 | 7 | 7 | Y | Y | | | 15 |
| | - | I8U | 49 | 11 | 24 | 4 | Y | Y | | | 3 |
| 8A | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | Y | Y | | | 10 |

*System detector only. Remove the vehicle phase assigned to this detector in the default programming.

[1]Add jumper from I5-W to J8-W, on rear of input file.

[2]Add jumper from J5-W to I8-W, on rear of input file.

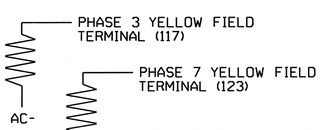
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0106
DESIGNED: DECEMBER 2010
SEALED: 3/2/11
REVISED: N/A

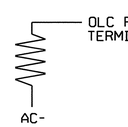
SEE SHEET 2 FOR FYA-PPLT SIGNAL SEQUENCE PROGRAMMING AND OVERLAP PROGRAMMING

SEE SHEET 3 FOR EMERGENCY VEHICLE PREEMPTION CONTROLLER PROGRAMMING

## LOAD RESISTOR INSTALLATION DETAIL

*(install resistors as shown below)*



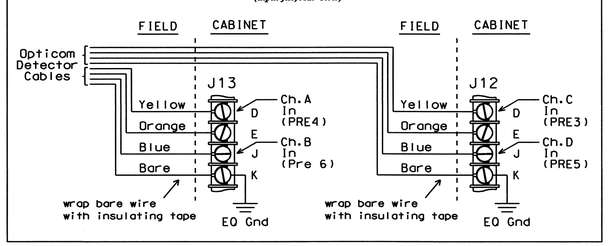




ACCEPTABLE VALUES

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

## TYPICAL OPTICOM FIELD WIRE DETAIL

*(input file, rear view)*




INPUT FILE POSITION LEGEND: J2U
FILE J
SLOT 2
UPPER

Electrical Detail - Sheet 1 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

SR 1308 (Bell Fork Road) at SR 1403 (Country Club Road/ Hargett Street)

Division 03 Onslow County Jacksonville

| PLAN DATE: March 2011 | REVIEWED BY: |
|---|---|
| PREPARED BY: F.E. Russ | REVIEWED BY: |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE 4-6-11 DATE
SIG. INVENTORY NO. 03-0106

06-APR-2011 14:40
S:\ITSA&S\ITS Signals\Workgroups\Sig Mon\Russ\2070dwgs\03106_smu_ele.201104xx.dgn
fgruss

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.26 |

# LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1,2,3,4,5 & 6.
2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1 (+/-COMMAND#)
IF  ACTIVE PHASE        #3  IS ON
AND RED CLEAR ON PHASE #3  IS ON

            SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #47 ON
SET OUTPUT  ASSIGNMENT #48 OFF
```

NOTE: LOGIC FOR PHASE 3 RED CLEAR WHEN TRANSITIONING FROM PHASE 3 TO PHASE 4 (HEAD 31)

PRESS '+'

```
LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF  ACTIVE PHASE        #3  IS ON

            SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #49 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 3 (HEAD 31)

PRESS '+'

```
LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF  YELLOW ON PHASE     #3  IS ON

            SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #48 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 3 (HEAD 31)

PRESS '+'

```
LOGICAL I/O COMMAND #4 (+/-COMMAND#)
IF  ACTIVE PHASE        #7  IS ON
AND RED CLEAR ON PHASE #7  IS ON

            SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #39 ON
SET OUTPUT  ASSIGNMENT #40 OFF
```

NOTE: LOGIC FOR PHASE 7 RED CLEAR WHEN TRANSITIONING FROM PHASE 7 TO PHASE 8 (HEAD 71)

PRESS '+'

```
LOGICAL I/O COMMAND #5 (+/-COMMAND#)
IF  ACTIVE PHASE        #7  IS ON

            SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #41 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 7 (HEAD 71)

PRESS '+'

```
LOGICAL I/O COMMAND #6 (+/-COMMAND#)
IF  YELLOW ON PHASE     #7  IS ON

            SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #40 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 7 (HEAD 71)

END OF PROGRAMMING

## OUTPUT REFERENCE SCHEDULE

OUTPUT 39 = Overlap D Red
OUTPUT 40 = Overlap D Yellow
OUTPUT 41 = Overlap D Green
OUTPUT 47 = Overlap B Red
OUTPUT 48 = Overlap B Yellow
OUTPUT 49 = Overlap B Green

# OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS). PRESS '+' ONCE TO REACH OVERLAP 'B'

```
PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS:¦  XX
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

← NOTICE GREEN FLASH

PRESS '+'

```
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS:¦    X
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+'

```
PAGE 1: VEHICLE OVERLAP 'D' SETTINGS
PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS:¦      XX
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0106
DESIGNED: DECEMBER 2010
SEALED: 3/2/11
REVISED: N/A

SEE SHEET 3 FOR EMERGENCY VEHICLE PREEMPTION CONTROLLER PROGRAMMING

Electrical Detail - Sheet 2 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

SR 1308 (Bell Fork Road)
at
SR 1403 (Country Club Road/ Hargett Street)

Division 03 | Onslow County | Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | March 2011 | REVIEWED BY: | JP |
| PREPARED BY: | F.E. Russ | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

John T. Rowe 4-6-11
SIGNATURE DATE

SIG. INVENTORY NO. 03-0106

04-APR-2011 14:35
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frusss

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.27 |

# EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press the 'Next' key 2-times to advance to Preempt 3:

PRE3 (EV Pre 3):

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦1234567891011121314151 6
1 255  0.0* 0.0*¦ X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0*
RED CLEAR BEFORE PRE (0= DEFAULT)....0*
DWELL MIN TIMER (0-255 SEC) .........10
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦   X
```

! NOTICE --->

PRESS 'NEXT'

PRE4 (EV Pre 4):

```
   PREEMPTION  #4  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦1234567891011121314151 6
1 255  0.0* 0.0*¦ X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0*
RED CLEAR BEFORE PRE (0= DEFAULT)....0*
DWELL MIN TIMER (0-255 SEC) .........10
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT'

PRE5 (EV Pre 5):

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦1234567891011121314151 6
1 255  0.0* 0.0*¦   X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0*
RED CLEAR BEFORE PRE (0= DEFAULT)....0*
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT'

PRE6 (EV Pre 6):

```
   PREEMPTION  #6  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦1234567891011121314151 6
1 255  0.0* 0.0*¦ X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0*
RED CLEAR BEFORE PRE (0= DEFAULT)....0*
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PROGRAMMING COMPLETE

* TIME DEFAULTS TO TIME USED BY PHASE DURING NORMAL OPERATION

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0106
DESIGNED: DECEMBER 2010
SEALED: 3/2/11
REVISED: N/A

Electrical Detail - Sheet 3 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

SR 1308 (Bell Fork Road)
at
SR 1403 (Country Club Road/ Hargett Street)

Division 03 | Onslow County | Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | March 2011 | REVIEWED BY: | |
| PREPARED BY: | F.E. Russ | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

SIGNATURE | P.A. | DATE 4-6-11

SIG. INVENTORY NO. 03-0106

04-APR-2011 14:36
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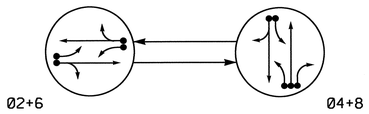
ferruss

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.28 |

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 02+6 | PHASE 04+8 | FLASH |
|---|---|---|---|
| 21,22 | G | R | Y |
| 41,42 | R | G | R |
| 61,62 | G | R | Y |
| 81,82 | R | G | R |

## SIGNAL FACE I.D.

All Heads L.E.D.




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

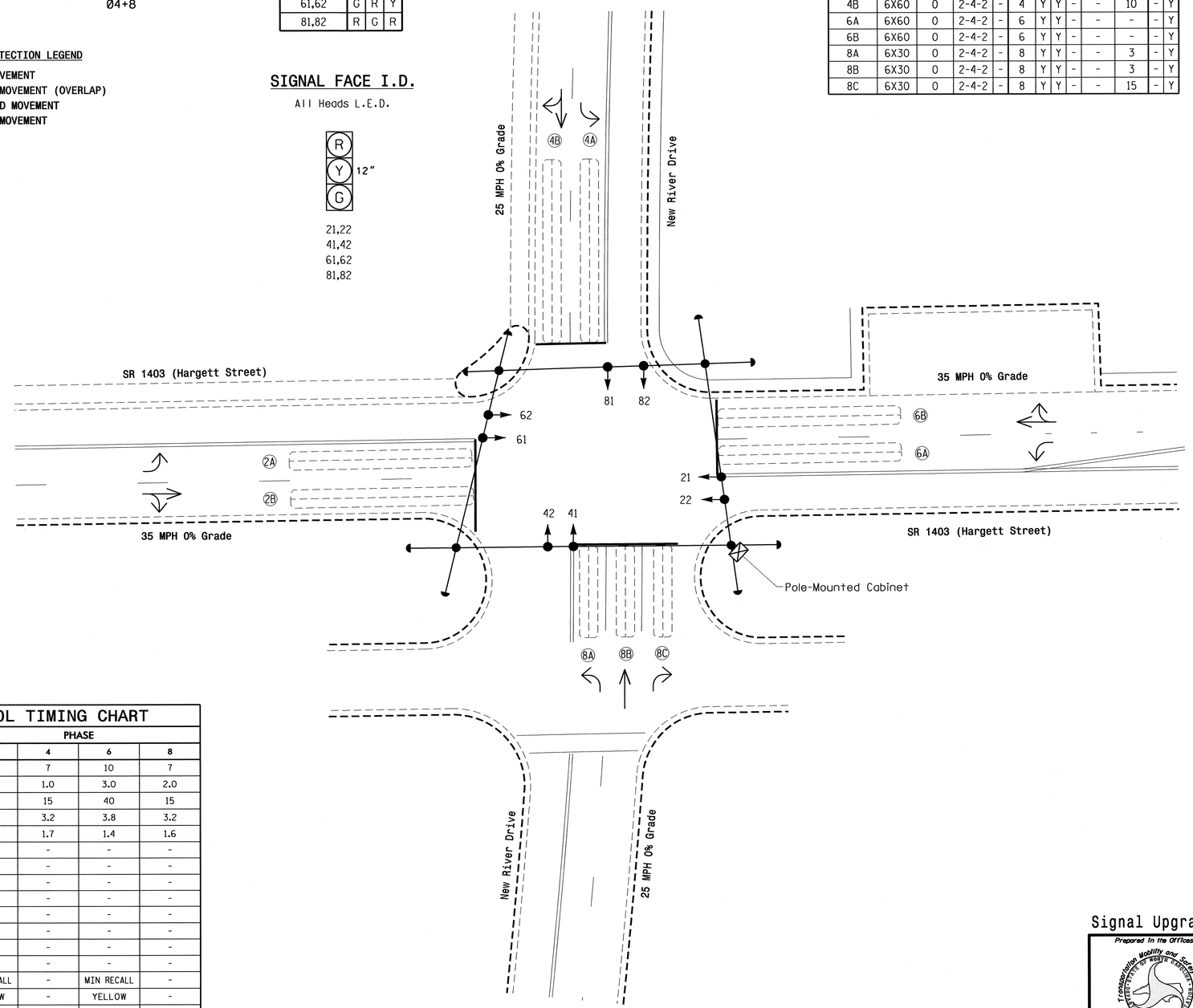
## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

| 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 |
| 2A | 6X60 | 0 | 2-4-2 | - | 2 | Y | Y | - | - | - | - | Y |
| 2B | 6X60 | 0 | 2-4-2 | - | 2 | Y | Y | - | - | - | - | Y |
| 4A | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 3 | - | Y |
| 4B | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 10 | - | Y |
| 6A | 6X60 | 0 | 2-4-2 | - | 6 | Y | Y | - | - | - | - | Y |
| 6B | 6X60 | 0 | 2-4-2 | - | 6 | Y | Y | - | - | - | - | Y |
| 8A | 6X30 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | 3 | - | Y |
| 8B | 6X30 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | 3 | - | Y |
| 8C | 6X30 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | 15 | - | Y |

2 Phase
Fully Actuated
Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
5. Pavement markings are existing.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Controller Asset #0107.




## 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 | |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | PHASE 4 | PHASE 6 | PHASE 8 |
|---|---|---|---|---|
| Min Green 1 * | 10 | 7 | 10 | 7 |
| Extension 1 * | 3.0 | 1.0 | 3.0 | 2.0 |
| Max Green 1 * | 40 | 15 | 40 | 15 |
| Yellow Clearance | 3.8 | 3.2 | 3.8 | 3.2 |
| Red Clearance | 1.3 | 1.7 | 1.4 | 1.6 |
| Red Revert | - | - | - | - |
| Walk 1 * | - | - | - | - |
| Don't Walk 1 | - | - | - | - |
| Seconds Per Actuation * | - | - | - | - |
| Max Variable Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Recall Mode | MIN RECALL | - | MIN RECALL | - |
| Vehicle Call Memory | YELLOW | - | YELLOW | - |
| Dual Entry | - | ON | - | ON |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

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

SCALE 0 20
1"=20'

SR 1403 (Hargett Street)
At
New River Drive

Division 3 Onslow County Jacksonville

PLAN DATE: January 2011 REVIEWED BY:
PREPARED BY: EMW/JPG REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON R. GALLOWAY

SIGNATURE DATE 1/10/11

SIG. INVENTORY NO. 03-0107

22-FEB-2011 15:39
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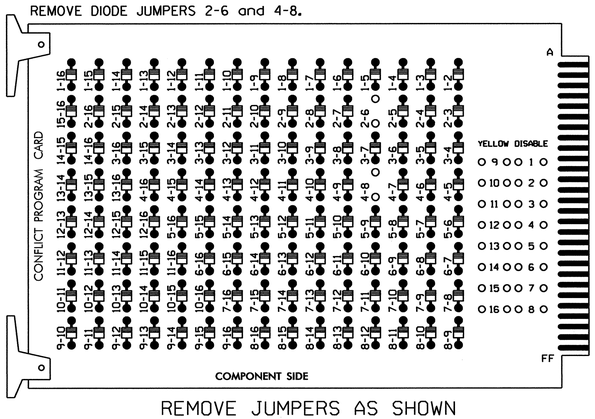
jgallaway

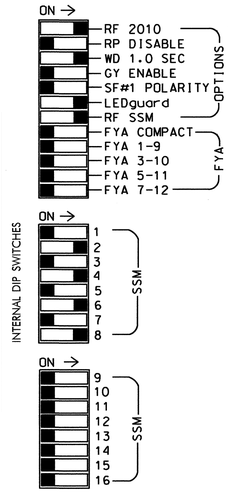
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | Sig. 29 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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 1,3,5, 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 Jacksonville City Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
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. | NU | 21,22 | NU | NU | 41,42 | NU | NU | 61,62 | NU | NU | 81,82 | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | |
| YELLOW | | 129 | | | 102 | | | 135 | | | 108 | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | |
| GREEN ARROW | | | | | | | | | | | | |

NU = Not Used

## INPUT FILE POSITION LAYOUT

*(front view)*

| FILE "I" | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U | SLOT EMPTY | Ø2 2A | SLOT EMPTY | Ø4 4A | SLOT EMPTY | Ø6 6A | NOT USED | Ø8 8A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| L | | Ø2 2B | | Ø4 4B | | Ø6 6B | Ø8 8C | Ø8 8B | | | | | | ST DC ISOLATOR |

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

FS = FLASH SENSE
ST = STOP TIME

## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A | TB21-3,4 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB23-3,4 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 4A | TB21-7,8 | I4U | 41 | 3 | 4 | 4 | Y | Y | | | 3 |
| 4B | TB23-7,8 | I4L | 45 | 7 | 14 | 4 | Y | Y | | | 10 |
| 6A | TB21-11,12 | I6U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB23-11,12 | I6L | 44 | 6 | 16 | 6 | Y | Y | | | |
| 8C | TB23-13,14 | I7L | 50 | 12 | 28 | 8 | Y | Y | | | 15 |
| 8A | TB22-1,2 | I8U | 42 | 4 | 8 | 8 | Y | Y | | | 3 |
| 8B | TB24-1,2 | I8L | 46 | 8 | 18 | 8 | Y | Y | | | 3 |

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0107
DESIGNED: January 2011
SEALED: 01-03-11
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

SR 1403 (Hargett Street)
at
New River Drive

Division 3 | Onslow County | Jacksonville

PLAN DATE: February 2011 | REVIEWED BY: JTR
PREPARED BY: James Peterson | REVIEWED BY:

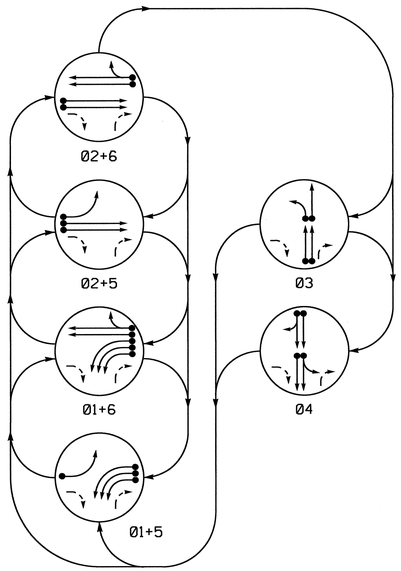
| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
John T. Rowe Jr. 2-23-11
SIGNATURE DATE
SIG. INVENTORY NO. 03-0107

23-FEB-2011 09:52
S:\TSS\SHARED\TS Signals\WorkGroups\Sig Mgmt\Peterson\030107_smlele_xxx.dgn
jamespeterson

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.30 |

## PHASING DIAGRAM




**PHASING DIAGRAM DETECTION LEGEND**

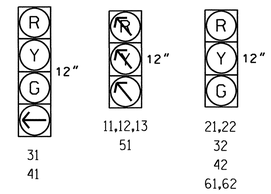
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 03 | 04 | FLASH |
|---|---|---|---|---|---|---|---|
| 11,12,13 | ↖ | ↖ | R | R | R | R | R |
| 21,22 | R | R | G | G | R | R | Y |
| 31 | R | R | R | R | G | R | R |
| 32 | R | R | R | R | G | R | R |
| 41 | R | R | R | R | G | R | R |
| 42 | R | R | R | R | G | R | R |
| 51 | ↖ | R | ↖ | R | R | R | R |
| 61,62 | R | G | R | G | R | R | Y |

## SIGNAL FACE I.D.

All Heads L.E.D.



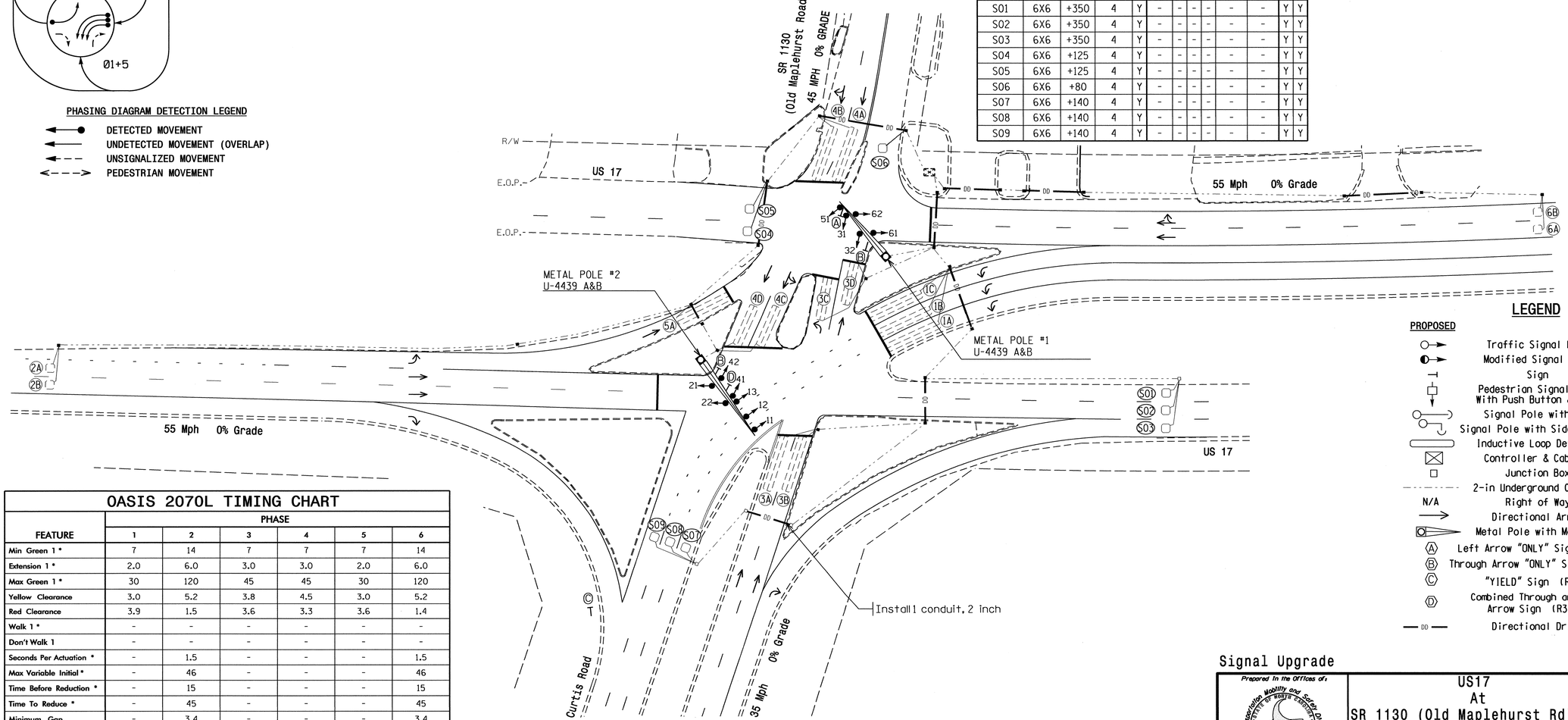

## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

| 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 | 2-4-2 | - | 1 | Y | Y | - | - | - | - | - |
| 1B | 6X40 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | - | - | - |
| 1C | 6X40 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | - | - | - |
| 2A | 6X6 | 420 | 6 | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 420 | 6 | - | 2 | Y | Y | - | - | - | - | - |
| 3A | 6X40 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | - | - | - |
| 3B | 6X40 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | - | - | - |
| 3C | 6X30 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | 5 | - | - |
| 3D | 6X30 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | 5 | - | - |
| 4A | 6X40 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 4B | 6X40 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 10 | - | - |
| 4C | 6X30 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 5 | - | - |
| 4D | 6X30 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 5 | - | - |
| 5A | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | - | - | - |
| 6A | 6X6 | 420 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 420 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| S01 | 6X6 | +350 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S02 | 6X6 | +350 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S03 | 6X6 | +350 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S04 | 6X6 | +125 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S05 | 6X6 | +125 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S06 | 6X6 | +80 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S07 | 6X6 | +140 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S08 | 6X6 | +140 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S09 | 6X6 | +140 | 4 | Y | - | - | - | - | - | - | Y | Y |

## 6 Phase
## Fully Actuated
## Jacksonville City Signal System

### NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Controller Asset #0109.




## 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 Pole with Mastarm | |
| Ⓐ | Left Arrow "ONLY" Sign (R3-5L) | Ⓐ |
| Ⓑ | Through Arrow "ONLY" Sign (R3-5A) | Ⓑ |
| Ⓒ | "YIELD" Sign (R1-2) | Ⓒ |
| Ⓓ | Combined Through and Left Arrow Sign (R3-6L) | Ⓓ |
| DD | Directional Drill | DD |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Min Green 1 * | 7 | 14 | 7 | 7 | 7 | 14 |
| Extension 1 * | 2.0 | 6.0 | 3.0 | 3.0 | 2.0 | 6.0 |
| Max Green 1 * | 30 | 120 | 45 | 45 | 30 | 120 |
| Yellow Clearance | 3.0 | 5.2 | 3.8 | 4.5 | 3.0 | 5.2 |
| Red Clearance | 3.9 | 1.5 | 3.6 | 3.3 | 3.6 | 1.4 |
| Walk 1 * | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | - | - | 1.5 |
| Max Variable Initial * | - | 46 | - | - | - | 46 |
| Time Before Reduction * | - | 15 | - | - | - | 15 |
| Time To Reduce * | - | 45 | - | - | - | 45 |
| Minimum Gap | - | 3.4 | - | - | - | 3.4 |
| Recall Mode | - | MIN RECALL | - | - | - | MIN RECALL |
| Vehicle Call Memory | - | YELLOW | - | - | - | YELLOW |
| Dual Entry | - | - | - | - | - | - |
| 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.

## Signal Upgrade

Prepared in 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

# US17 At SR 1130 (Old Maplehurst Rd) and Curtis Rd/Air Facility Entrance

Division 03 Onslow County Jacksonville

| PLAN DATE: March 2011 | REVIEWED BY: JPG |
|---|---|
| PREPARED BY: IOU/JPG | REVIEWED BY: |

SCALE 0 40 1"=40'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 4/18/11 DATE

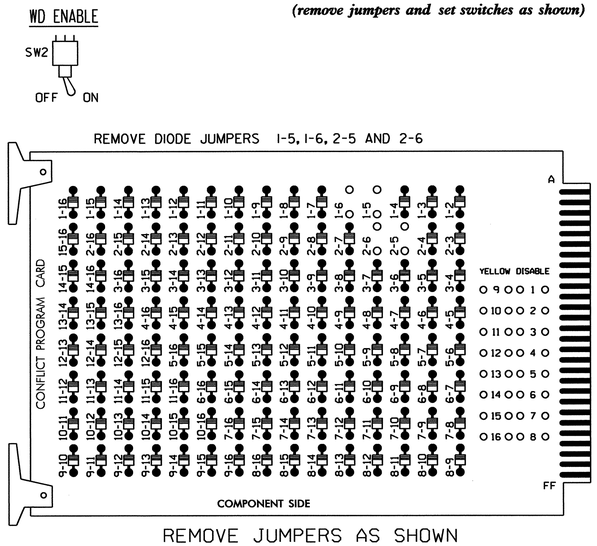
SIG. INVENTORY NO. 03-0109

24-JUN-2011 08:54
S:\TSDSU\TS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0109\U5168_sig_dsn_20110304.dgn
Lsanderlin

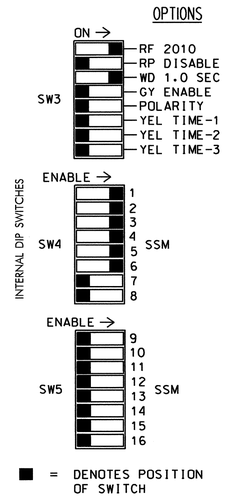
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 31 |

# EDI MODEL 2010ECL 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.

## NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. 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 7,8,9,10,11,12,13,14,15 & 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 Gap Reduction.
5. Program phases 2 and 6 for Start-Up in Green.
6. Set all detector card channels to 'PRESENCE' mode.
7. Program phases 2 and 6 for Yellow Flash.
8. The cabinet and controller are part of the Jacksonville City Signal System. Controller Asset: #0109

## EQUIPMENT INFORMATION

CONTROLLER.....EXISTING TYPE 2070L
CABINET.....EXISTING MODEL 332A
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6
PHASES USED.....1,2,3,4,5,6
OVERLAPS USED.....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. | 11,12, 13 | 21,22 | NU | 31 | 32 | 41 | 42 | NU | 51 | 61,62 | NU | NU | NU | NU |
| RED | | 128 | | 116 | 116 | 101 | 101 | | | 134 | | | | |
| YELLOW | | 129 | | 117 | 117 | 102 | 102 | | | 135 | | | | |
| GREEN | | 130 | | 118 | 118 | 103 | 103 | | | 136 | | | | |
| RED ARROW | 125 | | | | | | | | 131 | | | | | |
| YELLOW ARROW | 126 | | | | | | | | 132 | | | | | |
| GREEN ARROW | 127 | | | 118 | | 103 | | | 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 | Ø 1 | Ø 1 | Ø 2 | SLOT | Ø 3 | Ø 3 | Ø 4 | Ø 4 | Ø 4 | SLOT | SLOT | SLOT | SLOT | FS |
| | | 1A | 1B | 2A | | 3A | 3C | 4A | 4C | 4D | | | | | DC ISOLATOR |
| | L | NOT USED | Ø 1 | Ø 2 | EMPTY | Ø 3 | Ø 3 | Ø 4 | NOT USED | NOT USED | EMPTY | EMPTY | EMPTY | EMPTY | ST |
| | | | 1C | 2B | | 3B | 3D | 4B | | | | | | | DC ISOLATOR |
| FILE "J" | U | Ø 5 | Ø 6 | SLOT | SYS. DET. | SYS. DET. | SYS. DET. | SYS. DET. | SYS. DET. | SYS. DET. | SLOT | SLOT | SLOT | SLOT | SLOT |
| | | 5A | 6A | EMPTY | S01 | S02 | S03 | S05 | S07 | S08 | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY |
| | L | NOT USED | Ø 6 | | NOT USED | NOT USED | SYS. DET. | SYS. DET. | NOT USED | SYS. DET. | | | | | |
| | | | 6B | | | | S04 | S06 | | S09 | | | | | |

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 | | | |
| 1C | TB2-7,8 | I2L | 43 | 5 | 12 | 1 | Y | Y | | | |
| 2A | TB2-9,10 | I3U | 63 | 25 | 32 | 2 | Y | Y | | | |
| 2B | TB2-11,12 | I3L | 76 | 38 | 42 | 2 | Y | Y | | | |
| 3A | TB4-5,6 | I5U | 58 | 20 | 3 | 3 | Y | Y | | | |
| 3B | TB4-7,8 | I5L | 58 | 20 | 3 | 3 | Y | Y | | | |
| 3C | TB4-9,10 | I6U | 41 | 3 | 4 | 3 | Y | Y | | | 5 |
| 3D | TB4-11,12 | I6L | 45 | 7 | 14 | 3 | Y | Y | | | 5 |
| 4A | TB6-1,2 | I7U | 65 | 27 | 34 | 4 | Y | Y | | | |
| 4B | TB6-3,4 | I7L | 78 | 40 | 44 | 4 | Y | Y | | | 10 |
| 4C | TB6-5,6 | I8U | 49 | 11 | 24 | 4 | Y | Y | | | 5 |
| 4D | TB6-9,10 | I9U | 60 | 22 | 11 | 4 | Y | Y | | | 5 |
| 5A | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| S01* | TB5-1,2 | J4U | 48 | 10 | 26 | SYS | | | | | |
| S02* | TB5-5,6 | J5U | 57 | 19 | 7 | SYS | | | | | |
| S03* | TB5-9,10 | J6U | 42 | 4 | 8 | SYS | | | | | |
| S04* | TB5-11,12 | J6L | 46 | 8 | 18 | SYS | | | | | |
| S05* | TB7-1,2 | J7U | 66 | 28 | 38 | SYS | | | | | |
| S06* | TB7-3,4 | J7L | 79 | 41 | 48 | SYS | | | | | |
| S07* | TB7-5,6 | J8U | 50 | 12 | 28 | SYS | | | | | |
| S08* | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |
| S09* | TB7-11,12 | J9L | 61 | 23 | 17 | SYS | | | | | |

*System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0109
DESIGNED: MARCH 2011
SEALED: 4/18/11
REVISED: N/A

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

# US 17 at SR 1130 (Old Maplehurst Rd) and Curtis Rd/Air Facility Entrance

Division 03 Onslow County Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | April 2011 | REVIEWED BY: | |
| PREPARED BY: | F.E. Russ | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

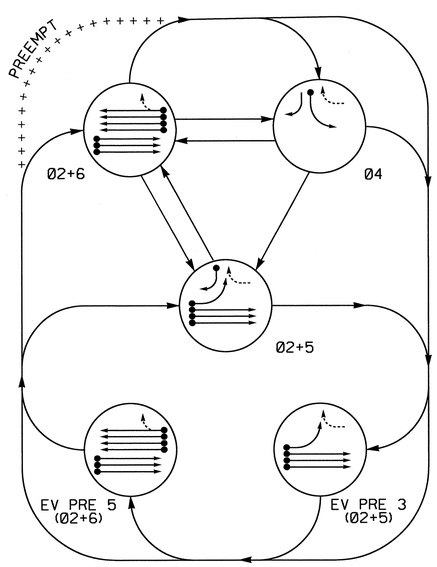
SIGNATURE DATE 4-18-11

SIG. INVENTORY NO. 03-0109

18-APR-2011 14:25
S:*ITS&SU*ITS Signals*Workgroups*Sig Mgmt*Russ*2070dwgs*030109_smlete_2011040xx.dgn
$$$$USER$

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.32 |

## PHASING DIAGRAM

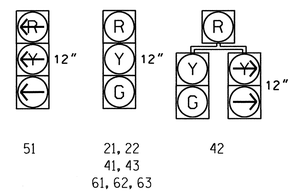



## TABLE OF OPERATION

| SIGNAL FACE | PHASE Ø2+5 | Ø2+6 | Ø4 | Pre 3 | Pre 5 | FLASH |
|---|---|---|---|---|---|---|
| 21, 22 | G | G | R | G | G | Y |
| 41, 43 | R | R | G | R | R | R |
| 42 | R | R | G | R | R | R |
| 51 | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |
| 61, 62, 63 | R | G | R | R | G | Y |

## 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 |
| 2A,2B,2C | 6X6 | 250 | 4 | - | 2 | Y | Y | - | 1.5 | - | - | Y |
| 2D,2E,2F | 6X6 | 80 | 4 | - | 2 | Y | Y | - | - | - | - | Y |
| 4A | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | Y |
| 5A | 6X60 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | - | - | Y |
| 5B | 6X60 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | Y |
| 6A,6B,6C,6D | 6X6 | 200 | 4 | - | 6 | Y | Y | - | 2.0 | - | - | Y |
| S01 | 6X6 | * | 4 | Y | - | - | - | - | - | - | Y | Y |

* As Shown

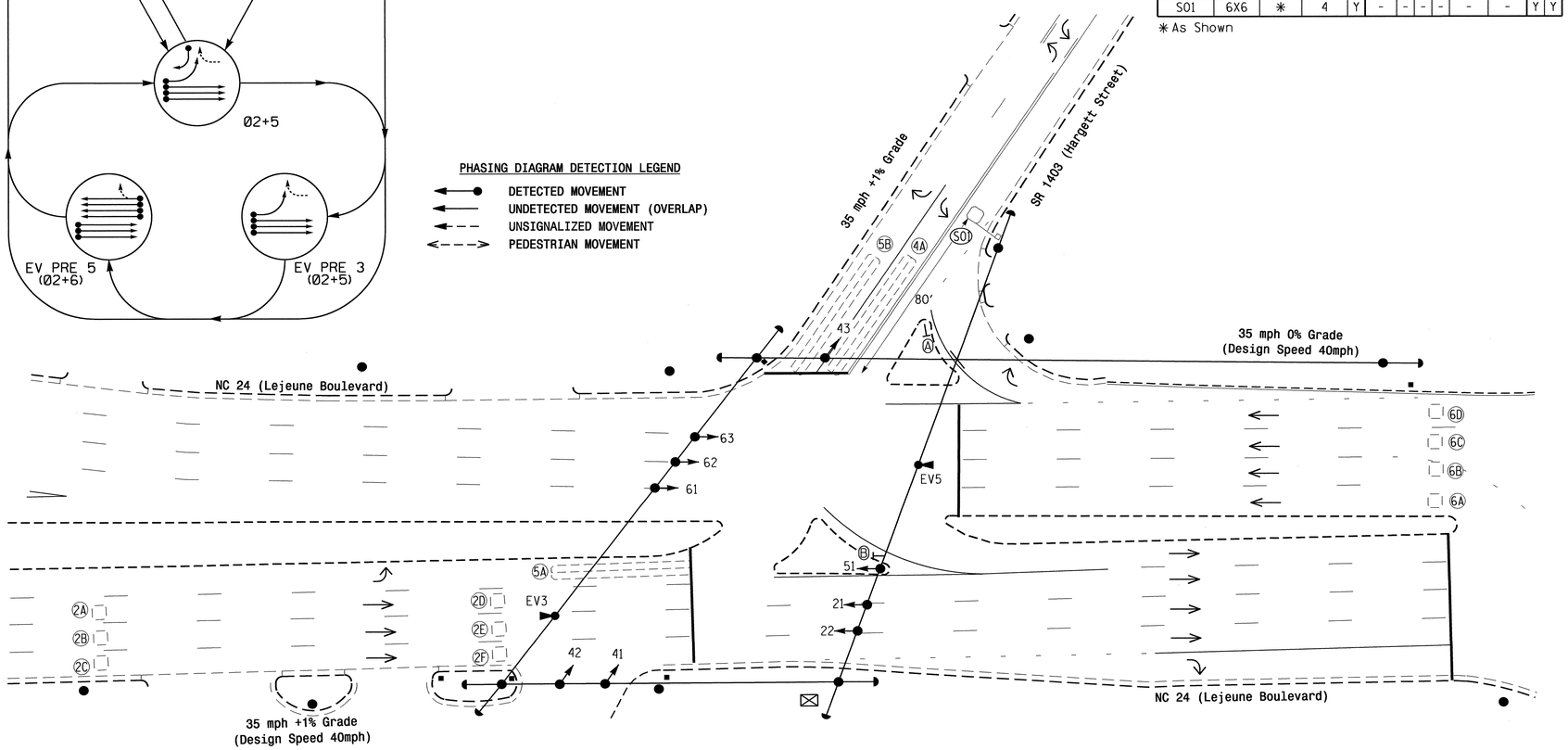
## 3 Phase
## Fully Actuated W/EV Preempt
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Pavement markings are existing.
7. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0111.

### PHASING DIAGRAM DETECTION LEGEND

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




## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | 4 | 5 | 6 |
|---|---|---|---|---|
| Min Green 1 * | 12 | 7 | 7 | 12 |
| Extension 1 * | 2.0 | 1.0 | 2.0 | 2.0 |
| Max Green 1 * | 60 | 25 | 25 | 60 |
| Yellow Clearance | 4.2 | 3.0 | 3.0 | 4.2 |
| Red Clearance | 1.9 | 2.4 | 3.3 | 1.9 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 |
| Walk 1 * | - | - | - | - |
| Don't Walk 1 | - | - | - | - |
| Seconds Per Actuation * | - | - | - | - |
| Max Variable Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Recall Mode | MIN RECALL | - | - | MIN RECALL |
| Vehicle Call Memory | YELLOW | - | - | YELLOW |
| Dual Entry | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 5 |
|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 |
| Priority | Medium | Medium |
| Delay Time | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 |
| Ped Clear Before Pre | 0 | 0 |
| Yellow Clear Before Pre | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 |
| Enable Backup Protection | N | N |
| Ped Clear Through Yellow | N | N |
| Preempt Extend** | 2 | 2 |
| Omit Overlaps | B | - |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

## 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 | |
| | Optical Detector | |
| A | "YIELD" Sign (R1-2) | A |
| B | U-Turn "MUST YIELD" Sign (R3-27) | B |

Signal Upgrade

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

SCALE 0 30 1"=30'

NC 24 (Lejeune Boulevard)
at
SR 1403 (Hargett Street)

Division 3 Onslow County Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2010 | REVIEWED BY: | PLA |
| PREPARED BY: | JPG | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

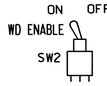
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JAMES P. GALLOWAY
SIGNATURE 3/31/11 DATE
SIG. INVENTORY NO. 03-0111

29-MAR-2011 11:14
S:*TSGS*ITS\Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0111\03111_sig_dsn_201103dc.dgn
emminshaw

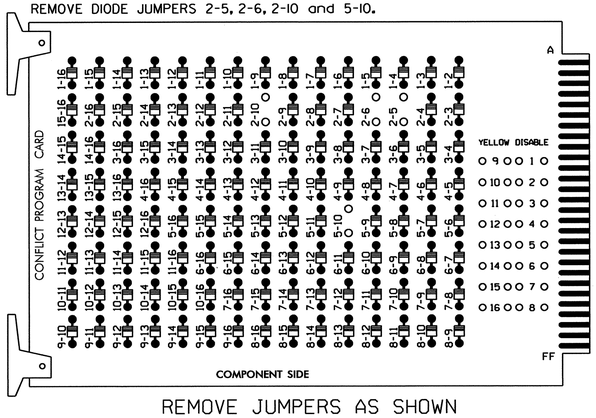
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.33 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

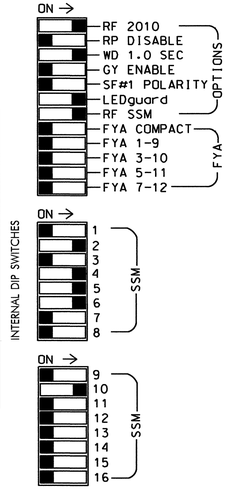
*(remove jumpers and set switches as shown)*




REMOVE DIODE JUMPERS 2-5, 2-6, 2-10 and 5-10.




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 1,3, 7,8,9,11,12,13,14,15 & 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 Start Up In Green.
5. Program phases 2 and 6 for Yellow Flash.
6. The cabinet and controller are part of the Jacksonville City Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET .....332
SOFTWARE .....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S2,S4,S5,S6,S10
PHASES USED.....2,4,5,6
OVERLAP B.....5

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 41, 42,43 | NU | 51 | 61, 62,63 | NU | NU | NU | NU | NU | 42 | NU | NU | NU | NU |
| RED | | 128 | | | 101 | | | 134 | | | | | | * | | | | |
| YELLOW | | 129 | | | 102 | | | 135 | | | | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | | | | | | | | |
| RED ARROW | | | | | | | 131 | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | 132 | | | | | | | A125 | | | | |
| GREEN ARROW | | | | | | | 133 | | | | | | | A126 | | | | |

NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

PRESS '+' OR '-' TO POSITION ON OVERLAP B

```
 PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
 PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS: ¦    X
VEH OVL NOT VEH: ¦
VEH OVL NOT PED: ¦
VEH OVL GRN EXT: ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | SLOT | Ø2 2A, 2B,2C | SLOT | SLOT | SLOT | Ø4 4A | SLOT | SLOT | SYS. DET. SØ1 | SLOT | SLOT | SLOT | SLOT | FS DC ISOLATOR |
| | L | EMPTY | Ø2 2D, 2E,2F | EMPTY | EMPTY | EMPTY | NOT USED | EMPTY | EMPTY | NOT USED | EMPTY | EMPTY | EMPTY | EMPTY | ST DC ISOLATOR |
| FILE "J" | U | Ø5 5A | Ø5 5B | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | PRE3 Opticom 2 Ch. Card | SLOT | SLOT |
| | L | NOT USED | Ø6 6A,6B, 6C,6D | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | PRE5 | EMPTY | EMPTY |

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A,2B,2C | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | 1.5 | |
| 2D,2E,2F | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | |
| 5A | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | |
| 5B | TB3-5,6 | J2U | 40 | 2 | 6 | 5 | Y | Y | | | 15 |
| 6A,6B,6C,6D | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | 2.0 | |
| * SØ1 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |

* System Detector only. Remove the vehicle phase assigned to this detector in the default programming.

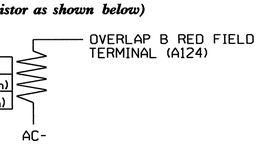
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## LOAD RESISTOR INSTALLATION DETAIL

*(install resistor as shown below)*

ACCEPTABLE VALUES

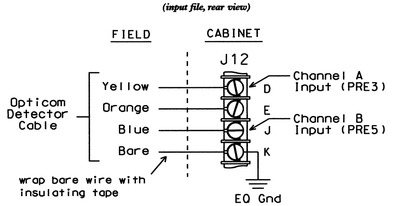
| VALUE (ohms) | WATTAGE |
|---|---|
| 1.5K - 1.9K | 25W (min) |
| 2.0K - 3.0K | 10W (min) |




NOTE: The purpose of this resistor is to load the channel red monitor input in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

## TYPICAL OPTICOM FIELD WIRE DETAIL

*(input file, rear view)*




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0111
DESIGNED: October 2010
SEALED: 03/31/11
REVISED:

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

# NC 24 (Lejeune Boulevard) at SR 1403 (Hargett Street)

Division 3 | Onslow County | Jacksonville

PLAN DATE: March 2011 | REVIEWED BY: T. Jym
PREPARED BY: C. strickland | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE | DATE 4/5/11

SIG. INVENTORY NO. 03-0111

01-APR-2011 14:11
S:\TSSDWG\TS Signals\WorkGroups\Sig Mgmt\Strickland\m030111_sm_ele_xxx.dgn
$$USERNAME$$

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.34 |

# EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

***(program controller as shown below)***

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3 and 5.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING  |  CLEAR/DWELL PHASES
 GRN YEL  RED    |123456789101112131415 16
1 255  0.0  0.0  | X  X
2   0  0.0  0.0  |
3   0  0.0  0.0  |
4   0  0.0  0.0  |
5   0  0.0  0.0  |
EXIT CALLS       |
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                | ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   |
OMIT OVERLAPS:           |  X
```

PRESS 'NEXT' TWICE

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING  |  CLEAR/DWELL PHASES
 GRN YEL  RED    |123456789101112131415 16
1 255  0.0  0.0  | X    X
2   0  0.0  0.0  |
3   0  0.0  0.0  |
4   0  0.0  0.0  |
5   0  0.0  0.0  |
EXIT CALLS       |
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                | ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   |
OMIT OVERLAPS:           |
```

PROGRAMMING COMPLETE

Program extend time on optical detector unit for 2.0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0111
DESIGNED: October 2010
SEALED: 03/31/11
REVISED:

Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Management Section

750 N.Greenfield Pkwy,Garner,NC 27529

NC 24 (Lejeune Boulevard)
at
SR 1403 (Hargett Street)

Division 3 | Onslow County | Jacksonville

PLAN DATE: March 2011 | REVIEWED BY: T. Jay

PREPARED BY: C. strickland | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

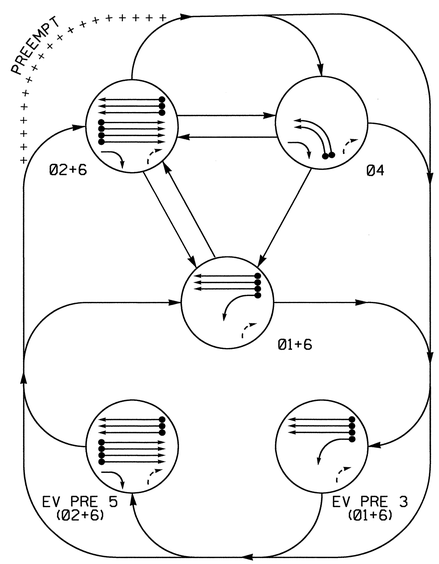
SIGNATURE | DATE 4/5/11

SIG. INVENTORY NO. 03-0111

01-APR-2011 14:12
S:*ITS&SU*ITS Signals*Workgroups*Sig Mgmt*Strickland*M030111_smu_ele_xxx.dgn
cstrickland

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.35 |

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

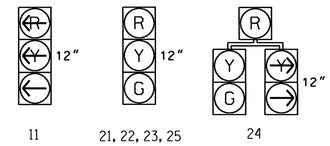
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+6 | 02+6 | 04 | Pre 3 | Pre 5 | FLASH |
|---|---|---|---|---|---|---|
| 11 | ← | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ |
| 21,22,23,25 | R | G | R | R | G | Y |
| 24 | R | G | R/← | R | G | Y |
| 41,42,43 | R | R | G | R | R | R |
| 61,62,63 | G | G | R | G | G | Y |

## SIGNAL FACE I.D.

All Heads L.E.D.



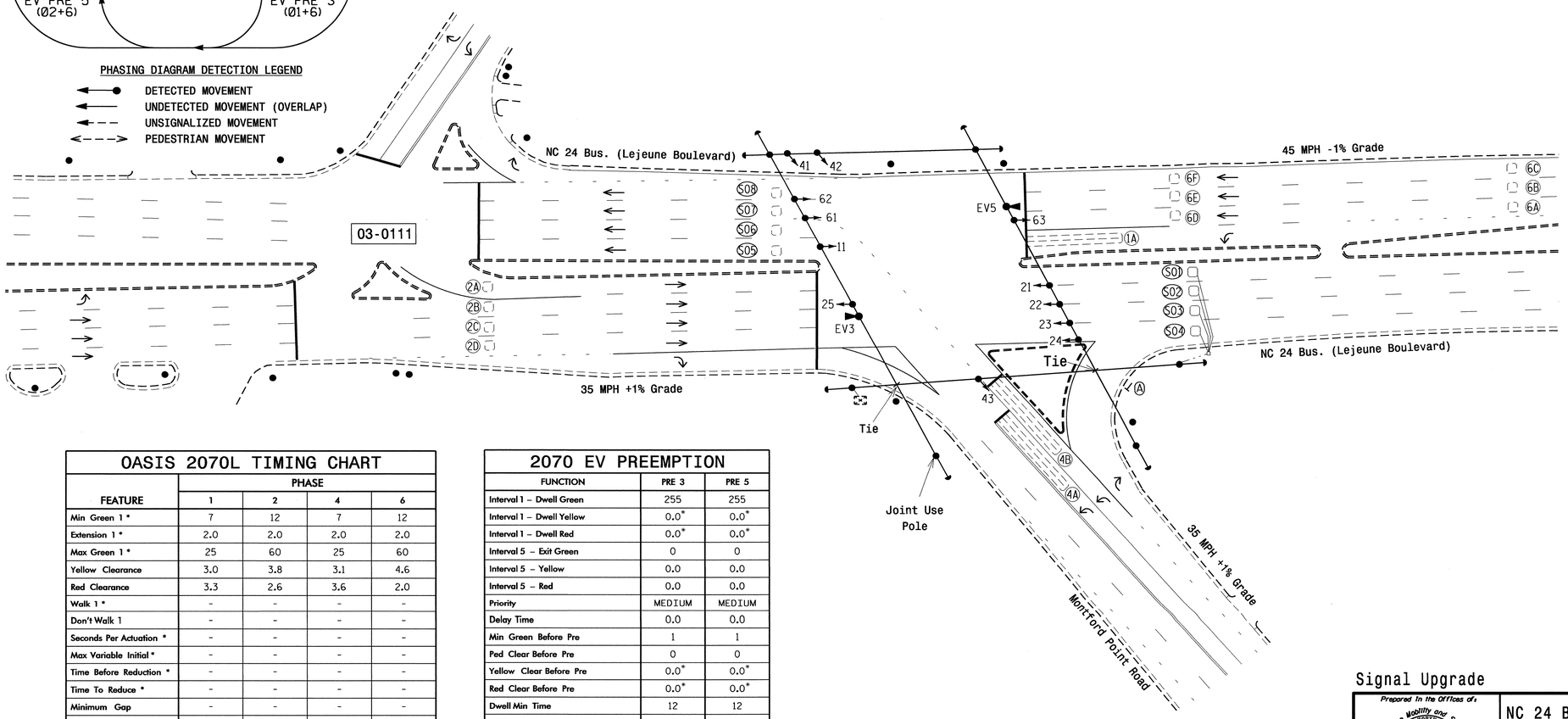

## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

| 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 | 6X60 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | - | - | - |
| 2A,2B | 6X6 | 200 | 4 | - | 2 | Y | Y | - | 2.0 | - | - | - |
| 2C,2D | 6X6 | 200 | 4 | - | 2 | Y | Y | - | 2.0 | - | - | - |
| 4A | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 4B | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 6A,6B | 6X6 | 300 | 4 | - | 6 | Y | Y | - | 1.6 | - | - | - |
| 6C | 6X6 | 300 | 4 | - | 6 | Y | Y | - | 1.6 | - | - | - |
| 6D,6E | 6X6 | 90 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| 6F | 6X6 | 90 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| S01 | 6X6 | +150 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S02 | 6X6 | +150 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S03 | 6X6 | +150 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S04 | 6X6 | +150 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S05 | 6X6 | +150 | 4 | - | - | - | - | - | - | - | Y | - |
| S06 | 6X6 | +150 | 4 | - | - | - | - | - | - | - | Y | - |
| S07 | 6X6 | +150 | 4 | - | - | - | - | - | - | - | Y | - |
| S08 | 6X6 | +150 | 4 | - | - | - | - | - | - | - | Y | - |

# 3 Phase w/Emergency Preemption
# Fully Actuated
# Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Pavement markings are existing.
7. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0112.




## LEGEND

| PROPOSED | | EXISTING |
|---|---|---|
| | Traffic Signal Head | |
| | Modified Signal Head | N/A |
| | Sign | |
| | Pedestrian Signal Head With Push Button & Sign | |
| | Signal Pole with Guy | |
| | Signal Pole with Sidewalk Guy | |
| | Inductive Loop Detector | |
| | Controller & Cabinet | |
| | Junction Box | |
| | 2-in Underground Conduit | |
| N/A | Right of Way | |
| | Directional Arrow | |
| | Pavement Marking Arrow | |
| | Optical Detector | |
| | "YIELD" Sign (R1-2) | |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 4 | 6 |
|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 7 | 12 |
| Extension 1 * | 2.0 | 2.0 | 2.0 | 2.0 |
| Max Green 1 * | 25 | 60 | 25 | 60 |
| Yellow Clearance | 3.0 | 3.8 | 3.1 | 4.6 |
| Red Clearance | 3.3 | 2.6 | 3.6 | 2.0 |
| Walk 1 * | - | - | - | - |
| Don't Walk 1 | - | - | - | - |
| Seconds Per Actuation * | - | - | - | - |
| Max Variable Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Recall Mode | - | MIN RECALL | - | MIN RECALL |
| Vehicle Call Memory | - | YELLOW | - | YELLOW |
| Dual Entry | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 5 |
|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 |
| Priority | MEDIUM | MEDIUM |
| Delay Time | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 |
| Ped Clear Before Pre | 0 | 0 |
| Yellow Clear Before Pre | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 |
| Enable Backup Protection | N | N |
| Ped Clear Through Yellow | N | N |
| Preempt Extend** | 2 | 2 |
| Omit Overlaps | - | - |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

Signal Upgrade

Prepared in 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

SCALE 0 40 1"=40'

NC 24 Bus. (Lejeune Boulevard) at Montford Point Road

Division 3 Onslow County Jacksonville

PLAN DATE: September 2010 REVIEWED BY: PLA
PREPARED BY: JPG REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

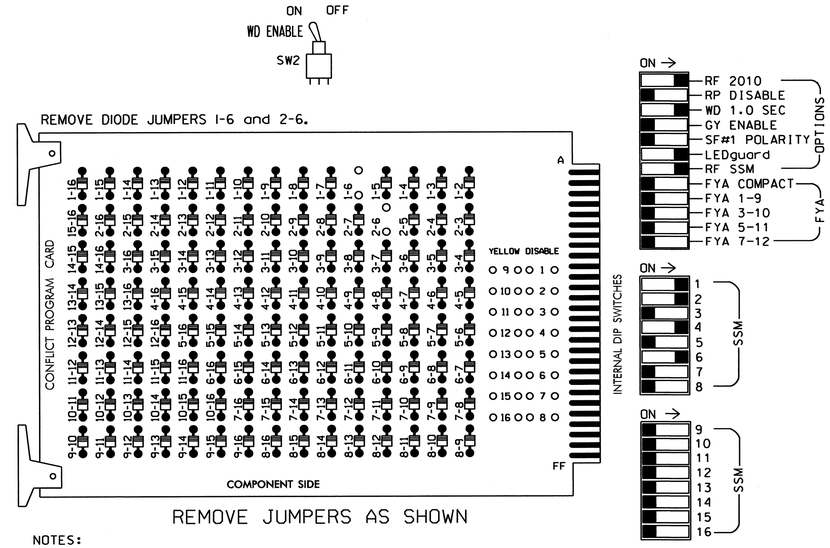
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 3/31/11 DATE
SIG. INVENTORY NO. 03-0112

29-MAR-2011 10:47
S:#ITS&S#ITS Signals#Signal Design Section#Eastern Region#Div-03#Jacksonville Signal System#03-0112#030112_sig_dsn_20110303dd.dgn
ammishaw

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.36 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches 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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Start Up In Green.
5. Program phases 2 and 6 for Yellow Flash..
6. The cabinet and controller are part of the Jacksonville System.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG.NO.9500-332-NCDOT)
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S4,S6
PHASES USED.....1,2,4,6
OVERLAPS.....NONE

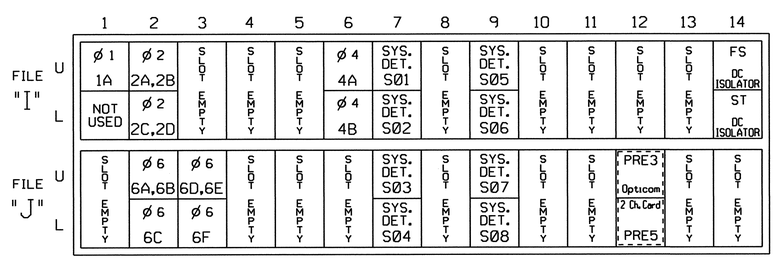
## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | | S4P | S5 | S6 | S6P | S7 | S8 | S8P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | 11 | 21, 22,23, 24,25 | NU | NU | 24 | 41, 42,43 | NU | NU | 61, 62,63 | NU | NU | NU | NU |
| RED | | 128 | | | | 101 | | | 134 | | | | |
| YELLOW | | 129 | | | | 102 | | | 135 | | | | |
| GREEN | | 130 | | | | 103 | | | 136 | | | | |
| RED ARROW | 125 | | | | | | | | | | | | |
| YELLOW ARROW | 126 | | | | 102 | | | | | | | | |
| GREEN ARROW | 127 | | | | 103 | | | | | | | | |

NU = Not Used

## INPUT FILE POSITION LAYOUT

*(front view)*




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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

## INPUT FILE CONNECTION & PROGRAMMING CHART

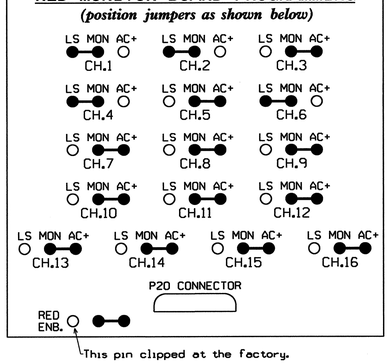
| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1A | TB2-1,2 | I1U | 56 | 18 | 1 | 1 | Y | Y | | | |
| 2A,2B | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | 2.0 | |
| 2C,2D | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | 2.0 | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | |
| 4B | TB4-11,12 | I6L | 45 | 7 | 14 | 4 | Y | Y | | | |
| 6A,6B | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | 1.6 | |
| 6C | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | 1.6 | |
| 6D,6E | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | | | |
| 6F | TB3-11,12 | J3L | 77 | 39 | 46 | 6 | Y | Y | | | |
| *S01 | TB6-1,2 | I7U | 65 | 27 | 34 | SYS | | | | | |
| *S02 | TB6-3,4 | I7L | 78 | 40 | 44 | SYS | | | | | |
| *S03 | TB7-1,2 | J7U | 66 | 28 | 38 | SYS | | | | | |
| *S04 | TB7-3,4 | J7L | 79 | 41 | 48 | SYS | | | | | |
| *S05 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| *S06 | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| *S07 | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |
| *S08 | TB7-11,12 | J9L | 61 | 23 | 17 | SYS | | | | | |

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

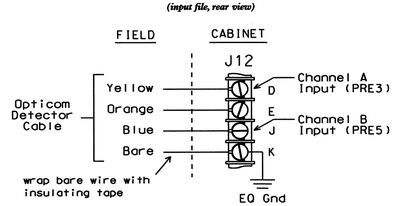
## RED MONITOR BOARD PROGRAMMING

*(position jumpers as shown below)*




## TYPICAL OPTICOM FIELD WIRE DETAIL

*(input file, rear view)*




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0112
DESIGNED: September 2010
SEALED: 03/31/11
REVISED:

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

NC 24 Bus. (Lejeune Boulevard) at Montford Point Road

Division 3 | Onslow County | Jacksonville

PLAN DATE: March 2011 | REVIEWED BY: T. Jan

PREPARED BY: C. Strickland | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

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

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE | DATE 4/5/11

SIG. INVENTORY NO. 03-0112

01-APR-2011 14:24
S:*ITSASU*ITS Signals*WorkGroups*Sig Mon*Strickland*M30112_sm_ele_xxx.dgn
cassettestand

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.37 |

# EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

***(program controller as shown below)***

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3 and 5.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X     X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT' TWICE

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X   X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PROGRAMMING COMPLETE

Program extend time on optical detector unit for 2.0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0112
DESIGNED: September 2010
SEALED: 03/31/11
REVISED:

Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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 Bus. (Lejeune Boulevard)
at
Montford Point Road

Division 3 | Onslow County | Jacksonville

PLAN DATE: March 2011 | REVIEWED BY: T. Jaff
PREPARED BY: C. Strickland | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

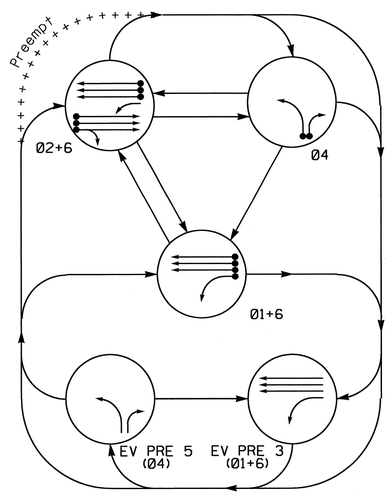
George C. Brown 4/5/11
SIGNATURE DATE

SIG. INVENTORY NO. 03-0112

01-APR-2011 14:25
s:\traffic\Signals\Workgroups\Sig Mgmt\Strickland\M030112_sm_ele_xxx.dgn
$$$$USERNAME$$$$

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 38 |

## PHASING DIAGRAM




### PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+6 | PHASE 02+6 | PHASE 04 | PHASE EV1P+36 | PHASE EV04P5 | FLASH |
|---|---|---|---|---|---|---|
| 11 | ← | F.Y | R | ← | R | Y |
| 21, 22 | R | G | R | R | R | Y |
| 41, 42 | R | R | G | R | G | R |
| 61, 62 | G | G | R | G | R | Y |

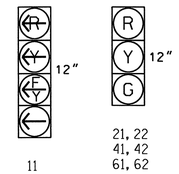
## STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

| FROM | TO ← 1 | TO ← 2 | TO F.Y 1 | TO F.Y 2 | TO R 1 | TO R 2 |
|---|---|---|---|---|---|---|
| ← | ← | ← | Y | R | Y | R |
| F.Y | F.Y | F.Y | F.Y | F.Y | Y | R |
| R | R | R | R | R | R | R |

F.Y = Flashing Yellow Arrow

## SIGNAL FACE I.D.

All Heads L.E.D.



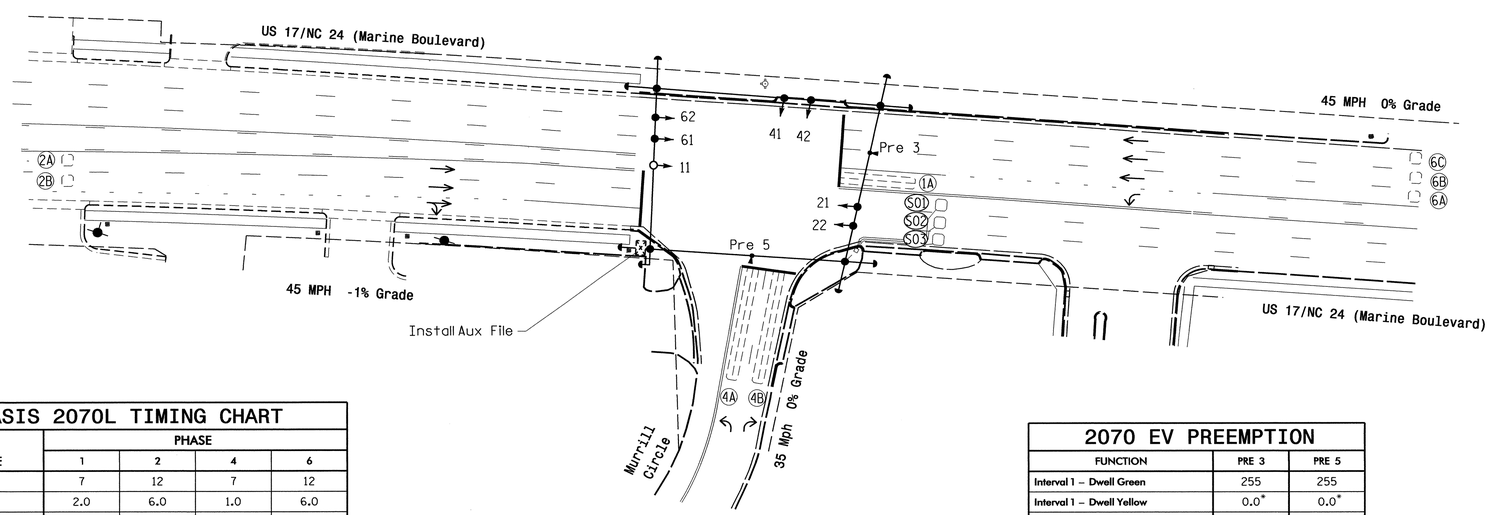

## OASIS 2070L LOOP & DETECTOR INSTALLATION

| 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 | - | 1 | Y | Y | - | - | 15 | - | - |
| 2A | 6X6 | 300 | 5 | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 300 | 5 | - | 2 | Y | Y | - | - | - | - | - |
| 4A | 6X60 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 4B | 6X60 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | 15 | - | - |
| 6A | 6X6 | 300 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 300 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| 6C | 6X6 | 300 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| S01 | 6X6 | +155 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S02 | 6X6 | +155 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S03 | 6X6 | +155 | 4 | Y | - | - | - | - | - | - | Y | Y |

## 3 Phase
## Fully Actuated w/EV Preempt
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Set all detector units to presence mode.
5. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Controller Asset #0114.




## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | PHASE 2 | PHASE 4 | PHASE 6 |
|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 7 | 12 |
| Extension 1 * | 2.0 | 6.0 | 1.0 | 6.0 |
| Max Green 1 * | 15 | 90 | 15 | 90 |
| Yellow Clearance | 3.0 | 4.6 | 3.0 | 4.6 |
| Red Clearance | 2.3 | 1.3 | 2.4 | 1.3 |
| Walk 1 * | - | - | - | - |
| Don't Walk 1 | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | 1.5 |
| Max Variable Initial * | - | 34 | - | 34 |
| Time Before Reduction * | - | 15 | - | 15 |
| Time To Reduce * | - | 45 | - | 45 |
| Minimum Gap | - | 3.0 | - | 3.0 |
| Recall Mode | - | MIN RECALL | - | MIN RECALL |
| Vehicle Call Memory | - | YELLOW | - | YELLOW |
| Dual Entry | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON |

* 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.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 5 |
|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 |
| Interval 5 – Yellow | - | - |
| Interval 5 – Red | - | - |
| Priority | Medium | Medium |
| Delay Time | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 |
| Ped Clear Before Pre | 0 | 0 |
| Yellow Clear Before Pre | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* |
| Dwell Min Time | 12 | 7 |
| Enable Backup Protection | N | N |
| Ped Clear Through Yellow | N | N |
| Preempt Extend** | 2 | 2 |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

## LEGEND

| PROPOSED | | EXISTING |
|---|---|---|
| | Traffic Signal Head | |
| | Modified Signal Head | N/A |
| | Sign | |
| | Pedestrian Signal Head With Push Button & Sign | |
| | Signal Pole with Guy | |
| | Signal Pole with Sidewalk Guy | |
| | Inductive Loop Detector | |
| | Controller & Cabinet | |
| | Junction Box | |
| | 2-in Underground Conduit | |
| N/A | Right of Way | |
| | Directional Arrow | |
| | Pavement Marking Arrow | |
| N/A | Fire Hydrant | |

Signal Upgrade

Prepared in the Offices of: Transportation Mobility and Safety Division, Signal Design Section, Traffic Engineering Branch, Division of Highways, State of North Carolina
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE 0 40 1"=40'

# US 17/NC 24 (Marine Boulevard) at Murrill Circle

Division 3 Onslow County Jacksonville

| PLAN DATE: March 2011 | REVIEWED BY: JPG |
|---|---|
| PREPARED BY: IOU/JPG | REVIEWED BY: |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY

SIGNATURE DATE 3/31/11

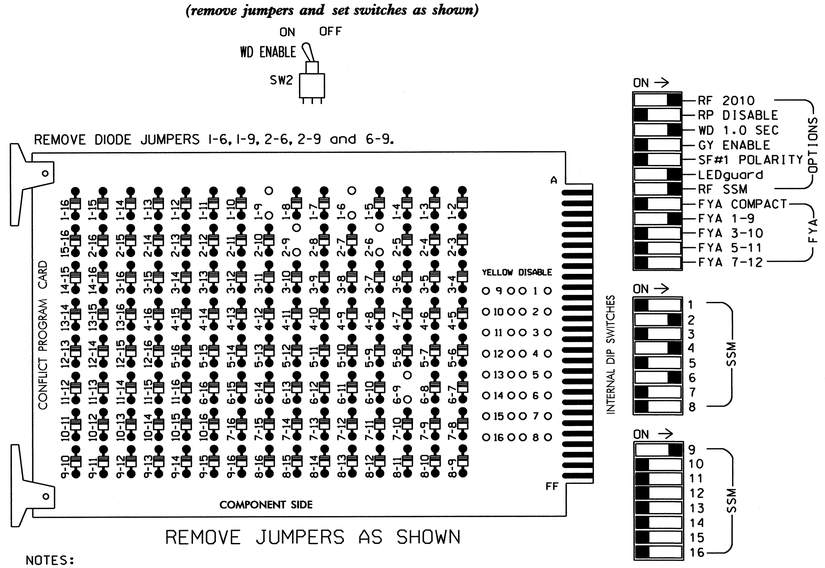
SIG. INVENTORY NO. 03-0114

29-MAR-2011 10:56
S:#TTSSU#TTS Signals#Signal Design Section#Eastern Region#Div-03#Jacksonville Signal System#03-0114#030114_sig_dsn_20110320.dgn
dminshew

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.39 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches 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

NOTE: conflict monitor must be EDI 2010ECL-NC to support FYA functionality.

## 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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
7. The cabinet and controller are part of the Jacksonville City Signal System.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11★ | 21,22 | NU | NU | 41,42 | NU | NU | 61,62 | NU | NU | NU | NU | 11★ | NU | NU | NU | NU | NU |
| RED | | 128 | | | 101 | | | 134 | | | | | | | | | | |
| YELLOW | ✳ | 129 | | | 102 | | | 135 | | | | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | | | | | |
| YELLOW ARROW | | | | | | | | | | | | | A122 | | | | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | | | | | |
| GREEN ARROW | 127 | | | | | | | | | | | | | | | | | |

NU = Not Used

✳ Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail below.

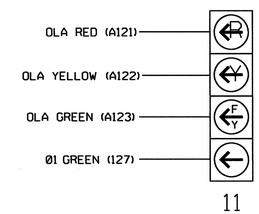
## EQUIPMENT INFORMATION

CONTROLLER.....2070L
✳ CABINET.....McCAIN/CONTROL TECHNOLOGIES
DWG.NO.9500-332-NCDOT /W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S4,S6,S9
PHASES USED.....1,2,4,6
OVERLAP "A".....1+2
OVERLAP "B".....NOT USED
OVERLAP "C".....NOT USED
OVERLAP "D".....NOT USED

✳ Auxiliary Output File required

## 4 SECTION FYA PPLT SIGNAL WIRING DETAIL

*(wire signal heads as shown)*




NOTE

1. The sequence display for this signal requires special logic programming. See sheet 2 of 2 for programming instructions.

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 1A | Ø2 2A | SLOT | SLOT | SLOT | Ø4 4A | SLOT | SLOT | SYS. DET. SØ1 | SLOT | SLOT | SLOT | SLOT | FS DC ISOLATOR |
| | L | NOT USED | Ø2 2B | EMPTY | EMPTY | EMPTY | Ø4 4B | EMPTY | EMPTY | SYS. DET. SØ2 | EMPTY | EMPTY | EMPTY | EMPTY | ST DC ISOLATOR |
| FILE "J" | U | SLOT | Ø6 6A | Ø6 6C | SLOT | SLOT | SLOT | SLOT | SLOT | SYS. DET. SØ3 | SLOT | SLOT | PRE3 Opticom 2 Ds.Card | SLOT | SLOT |
| | L | EMPTY | Ø6 6B | NOT USED | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | NOT USED | EMPTY | EMPTY | PRE5 | EMPTY | EMPTY |

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 | | | 15 |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | |
| 4B | TB4-11,12 | I6L | 45 | 7 | 14 | 4 | Y | Y | | | 15 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| 6C | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | | | |
| ✳ SØ1 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| ✳ SØ2 | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| ✳ SØ3 | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |

✳ System Detector only. Remove the vehicle phase assigned to this detector in the default programming.

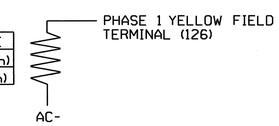
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## LOAD RESISTOR INSTALLATION DETAIL

*(install resistors as shown below)*

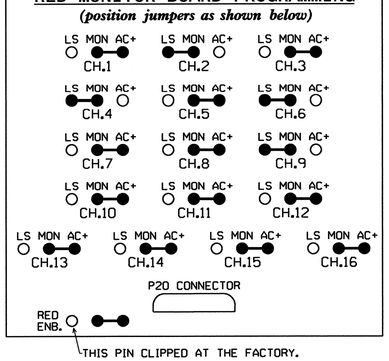
ACCEPTABLE VALUES

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



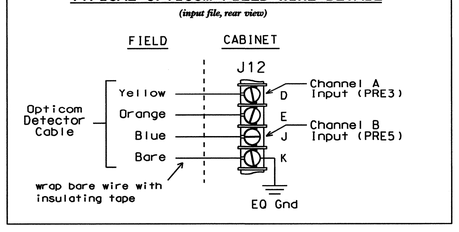

## RED MONITOR BOARD PROGRAMMING

*(position jumpers as shown below)*




## TYPICAL OPTICOM FIELD WIRE DETAIL

*(input file, rear view)*




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0114
DESIGNED: March 2011
SEALED: 03/31/11
REVISED:

ELECTRICAL DETAIL SHEET 1 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

US 17/NC 24 (Marine Boulevard)
at
Murrill Circle

Division 3 Onslow County Jacksonville

PLAN DATE: March 2011 REVIEWED BY: T. Joyner
PREPARED BY: C. Strickland REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE 4/5/11 DATE

SIG. INVENTORY NO. 03-0114

01-APR-2011 14:38
S:#TS&SI#TS Signals#Workgroups#Sig Mgmt#Strick\ondw030114_sm_ele_xxx.dgn
$$$$USERCONFIG

## LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2 AND 3.

2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON
AND RED CLEAR ON PHASE #1  IS ON

                SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON

                SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE     #1  IS ON

                SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

***OUTPUT REFERENCE SCHEDULE***

OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

## EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3 and 5.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT' TWICE

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦   X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PROGRAMMING COMPLETE

Program extend time on optical detector unit for 2.0 seconds.

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
 PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
 PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS: ¦XX
VEH OVL NOT VEH: ¦
VEH OVL NOT PED: ¦
VEH OVL GRN EXT: ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0114
DESIGNED: March 2011
SEALED: 03/31/11
REVISED:

ELECTRICAL DETAIL SHEET 2 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

US 17/NC 24 (Marine Boulevard)
at
Murrill Circle

Division 3 | Onslow County | Jacksonville

PLAN DATE: March 2011 | REVIEWED BY: T. Igo
PREPARED BY: C. Strickland | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE | DATE 4/5/11

SIG. INVENTORY NO. 03-0114

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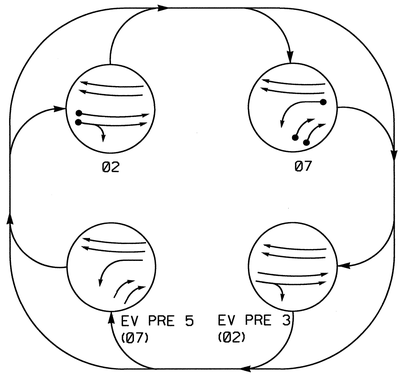
S:\TTSSGUNITS\Signals\DGS

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.41 |

## PHASING DIAGRAM




### PHASING DIAGRAM DETECTION LEGEND

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

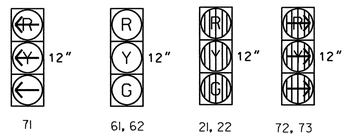
## TABLE OF OPERATION

| SIGNAL FACE | PHASE 02 | PHASE 07 | EVP23 | EVP75 | FLASH |
|---|---|---|---|---|---|
| 21, 22 | G | R | G | R | Y |
| 61, 62 | G | G | G | G | Y |
| 71 | ~~R~~ | ← | ~~R~~ | ← | ~~R~~ |
| 72, 73 | ~~R~~ | → | ~~R~~ | → | ~~R~~ |

## SIGNAL FACE I.D.

All Heads L.E.D.

Louvered



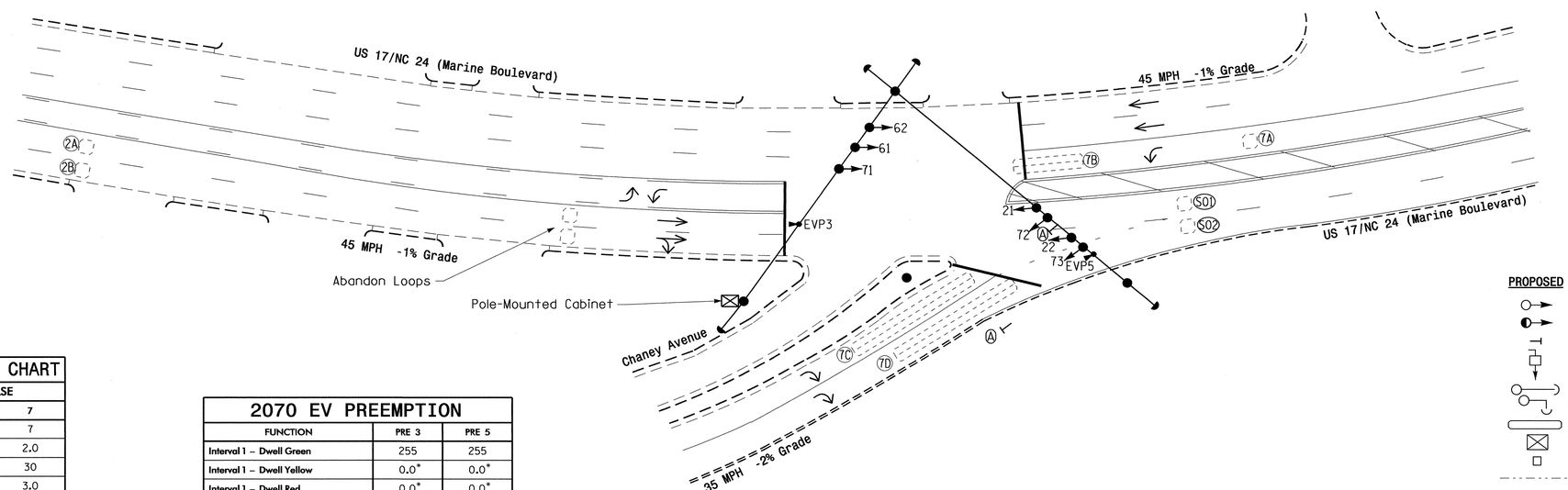

## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 2A | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | Y |
| 2B | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | Y |
| 7A | 6X6 | 95 | 4 | - | 7 | Y | Y | - | 1.5 | - | - | Y |
| 7B | 6X30 | +5 | 2-4-2 | - | 7 | Y | Y | - | - | - | - | Y |
| 7C | 6X60 | +5 | 2-4-2 | - | 7 | Y | Y | - | - | - | - | Y |
| 7D | 6X60 | +5 | 2-4-2 | - | 7 | Y | Y | - | - | - | - | Y |
| SO1 | 6X6 | +170 | 3 | - | - | - | - | - | - | - | Y | Y |
| SO2 | 6X6 | +170 | 3 | - | - | - | - | - | - | - | Y | Y |

## 2 Phase w/EV Preemption
## Fully Actuated
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Controller Asset #0115.




## 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 | |
| Ⓐ | "NO TURN ON RED" Sign (R10-11) | Ⓐ |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | PHASE 7 |
|---|---|---|
| Min Green 1 * | 12 | 7 |
| Extension 1 * | 6.0 | 2.0 |
| Max Green 1 * | 90 | 30 |
| Yellow Clearance | 4.6 | 3.0 |
| Red Clearance | 1.8 | 2.6 |
| Walk 1 * | - | - |
| Don't Walk 1 | - | - |
| Seconds Per Actuation * | 1.5 | - |
| Max Variable Initial * | 34 | - |
| Time Before Reduction * | 15 | - |
| Time To Reduce * | 45 | - |
| Minimum Gap | 3.0 | - |
| Recall Mode | MIN RECALL | - |
| Vehicle Call Memory | YELLOW | - |
| Dual Entry | - | - |
| Simultaneous Gap | 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.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 5 |
|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 |
| Delay Time | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 |
| Ped Clear Before Pre | 0 | 0 |
| Yellow Clear Before Pre | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* |
| Dwell Min Time | 12 | 7 |
| Enable Backup Protection | N | N |
| Ped Clear Through Yellow | N | N |
| Preempt Extend** | 2 | 2 |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

Signal Upgrade

Prepared In 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

SCALE 0 30 1"=30'

US 17 (Marine Boulevard)
at
Chaney Avenue

Division 3 Onslow County Jacksonville

PLAN DATE: March 2011 REVIEWED BY: PLA/JPG
PREPARED BY: EM Minshew REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY

SIGNATURE 3/31/11 DATE

SIG. INVENTORY NO. 03-0115

29-MAR-2011 11:48
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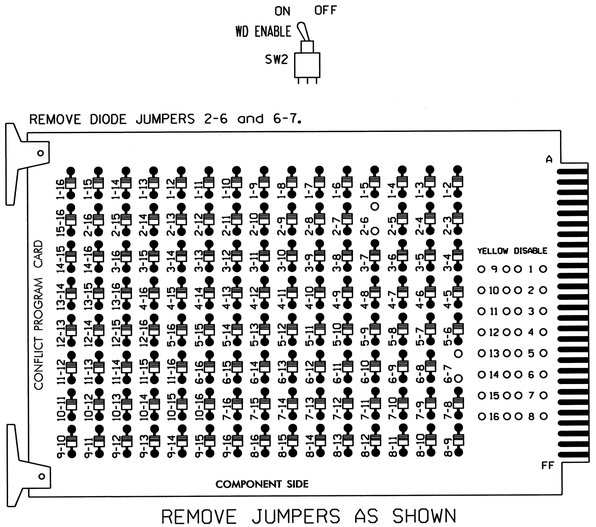
emminshew

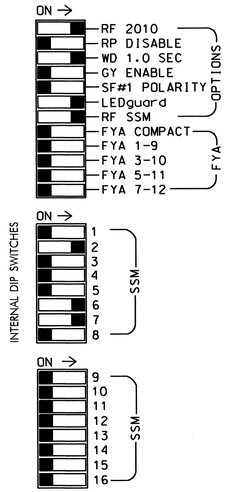
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.42 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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 1,3,4,5, 8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phase 2 for Variable Initial and Gap Reduction.
5. Program phase 2 for Start Up In Green.
6. Program phase 2 for Yellow Flash.
7. The cabinet and controller are part of the Jacksonville City Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S6,S7
PHASES USED.....2,7
OVERLAP E.....2+7

## 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 | OLE | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | NU | NU | NU | 61,62 | NU | 71, 72,73 | NU | NU |
| RED | | 128 | | | | | | 134 | | | | |
| YELLOW | | 129 | | | | | | 135 | | | | |
| GREEN | | 130 | | | | | | 136 | | | | |
| RED ARROW | | | | | | | | | | 122 | | |
| YELLOW ARROW | | | | | | | | | | 123 | | |
| GREEN ARROW | | | | | | | | | | 124 | | |

NU = Not Used

## INPUT FILE POSITION LAYOUT

*(front view)*

| FILE "I" | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U | SLOT | Ø2 2A | SLOT | SLOT | SLOT | Ø7 7A | Ø7 7C | SYS. DET. SØ1 | SLOT | PRE3 Opticom 2 Ch. Card | SLOT | SLOT | SLOT | FS DC ISOLATOR |
| L | EMPTY | Ø2 2B | EMPTY | EMPTY | EMPTY | Ø7 7B | Ø7 7D | SYS. DET. SØ2 | EMPTY | PRE5 | EMPTY | EMPTY | EMPTY | ST DC ISOLATOR |

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A | TB21-3,4 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB23-3,4 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 7A | TB21-11,12 | I6U | 40 | 2 | 6 | 7 | Y | Y | | 1.5 | |
| 7B | TB23-11,12 | I6L | 44 | 6 | 16 | 7 | Y | Y | | | |
| 7C | TB21-13,14 | I7U | 57 | 19 | 7 | 7 | Y | Y | | | |
| 7D | TB23-13,14 | I7L | 50 | 12 | 28 | 7 | Y | Y | | | |
| * SØ1 | TB22-1,2 | I8U | 42 | 4 | 8 | SYS | Y | Y | | | |
| * SØ2 | TB24-1,2 | I8L | 46 | 8 | 18 | SYS | Y | Y | | | |

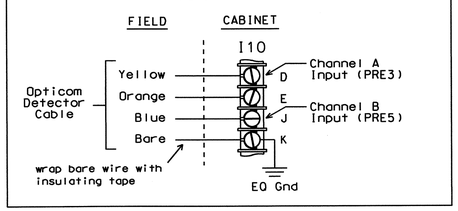
* System Detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: I2L

FILE I
SLOT 2
LOWER

## TYPICAL OPTICOM FIELD WIRE DETAIL

*(input file, rear view)*




## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

PRESS '+' OR '-' TO POSITION ON OVERLAP E

```
PAGE 1: VEHICLE OVERLAP 'E' SETTINGS
PHASE:              ¦123456789101112131415 16
VEH OVL PARENTS:¦ X     X
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....6
```

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0115
DESIGNED: March 2011
SEALED: 03/31/11
REVISED:

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION
Signal Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

# US 17 (Marine Boulevard) at Chaney Avenue

Division 3 | Onslow County | Jacksonville

PLAN DATE: March 2011 | REVIEWED BY: T. Jgn
PREPARED BY: C. Strickland | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 4/5/11
SIGNATURE DATE

SIG. INVENTORY NO. 03-0115

05-APR-2011 11:39
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cestrickland

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 43 |

# EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

***(program controller as shown below)***

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3 and 5.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦ X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
              OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT' TWICE

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦       X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
              OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PROGRAMMING COMPLETE

Program extend time on optical detector unit for 2.0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0115
DESIGNED: March 2011
SEALED: 03/31/11
REVISED:

Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Transportation Mobility and Safety Division
Signals Management Section
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

750 N.Greenfield Pkwy,Garner,NC 27529

US 17 (Marine Boulevard)
at
Chaney Avenue

Division 3 | Onslow County | Jacksonville

PLAN DATE: March 2011 | REVIEWED BY: T. Uzzle
PREPARED BY: C. Strickland | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

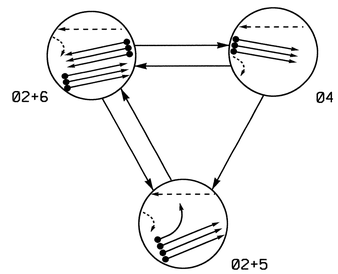
George C. Brown 4/5/11
SIGNATURE DATE

SIG. INVENTORY NO. 03-0115

01-APR-2011 13:19
S:*ITS&SU*ITS Signals*Workgroups*Sig Man*Strickland*03011 5_smu*ele_xxx.dgn
cassrickland

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.44 |

## PHASING DIAGRAM




### PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 02+5 | PHASE 02+6 | PHASE 04 | FLASH |
|---|---|---|---|---|
| 21,22 | G | G | R | Y |
| 41,42 | R | R | G | R |
| 51 | ← | ~~R~~ | ~~R~~ | ~~R~~ |
| 52 | ↖ | ~~R~~ | ~~R~~ | ~~R~~ |
| 61,62 | R | G | R | Y |

## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | TURNS | DISTANCE FROM STOPBAR (FT) | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 2A,2B,2C | 6X6 | 4 | 300 | - | 2 | Y | Y | - | 1.8 | - | - | - |
| 2D,2E,2F | 6X6 | 3 | 90 | - | 2 | Y | Y | - | - | - | - | - |
| 4A | 6X60 | 2-4-2 | 0 | - | 4 | Y | Y | - | - | - | - | - |
| 4B | 6X60 | 2-4-2 | 0 | - | 4 | Y | Y | - | - | - | - | - |
| 4C | 6X60 | 2-4-2 | 0 | - | 4 | Y | Y | - | - | - | - | - |
| 5A | 6X60 | 2-4-2 | 0 | - | 5 | Y | Y | - | - | - | - | - |
| 6A,6B | 6X6 | 4 | 255 | - | 6 | Y | Y | - | 1.0 | - | - | - |
| 6C,6D,6E | 6X6 | 3 | 90 | - | 6 | Y | Y | - | - | - | - | - |
| ▽ S01 | 6X6 | 5 | +270 | - | - | - | - | - | - | - | Y | - |
| S02 | 6X6 | 5 | +270 | - | - | - | - | - | - | - | Y | - |
| S03 | 6X6 | 5 | +270 | - | - | - | - | - | - | - | Y | - |
| S04 | 6X6 | 4 | +200 | - | - | - | - | - | - | - | Y | - |
| S05 | 6X6 | 4 | +200 | - | - | - | - | - | - | - | Y | - |
| S06 | 6X6 | 4 | +200 | - | - | - | - | - | - | - | Y | - |

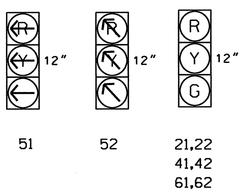
## 3 Phase
## Fully Actuated
## Jacksonville City Signal System

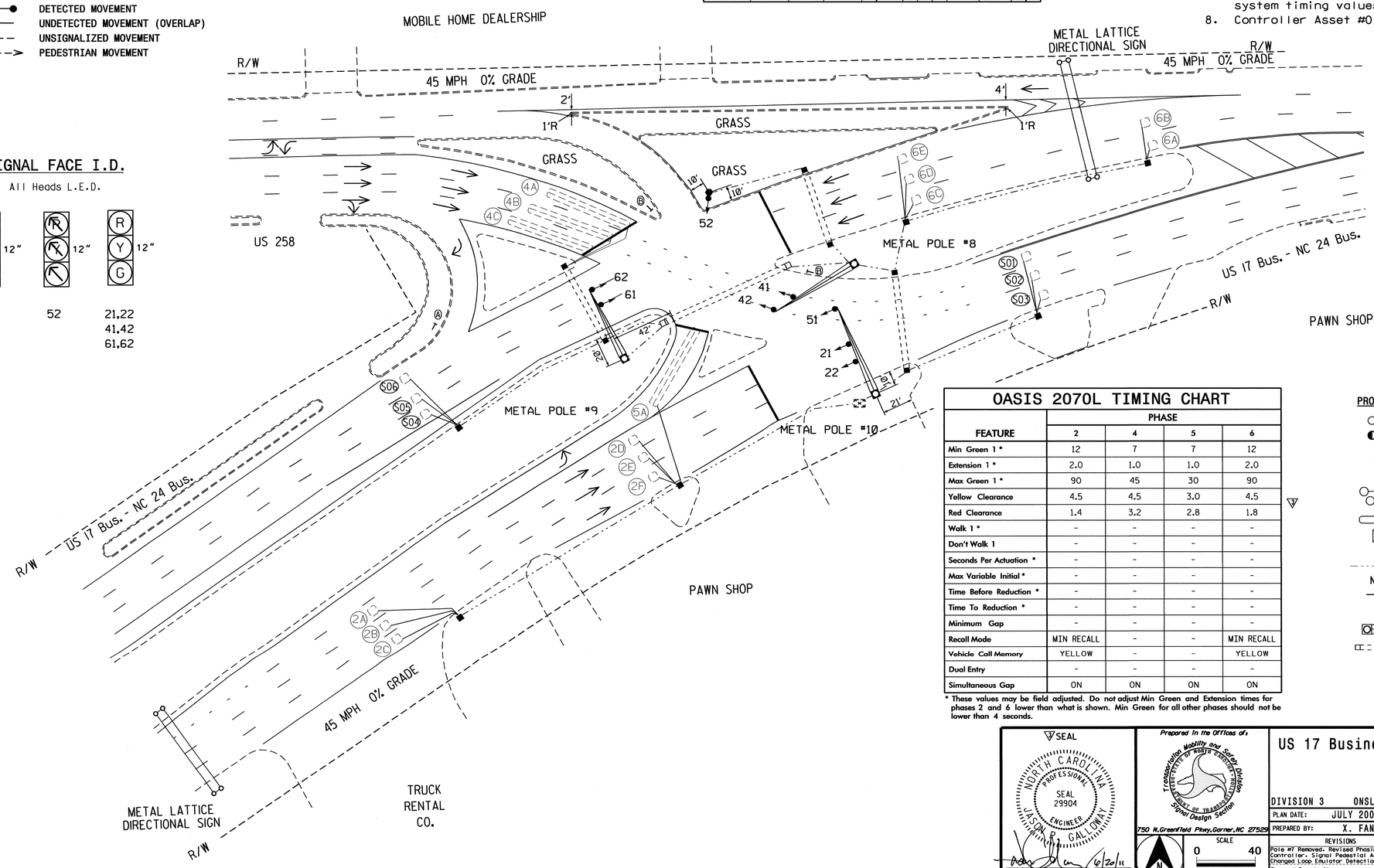
## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0116.

## SIGNAL FACE I.D.

All Heads L.E.D.




## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | PHASE 4 | PHASE 5 | PHASE 6 |
|---|---|---|---|---|
| Min Green 1 * | 12 | 7 | 7 | 12 |
| Extension 1 * | 2.0 | 1.0 | 1.0 | 2.0 |
| Max Green 1 * | 90 | 45 | 30 | 90 |
| Yellow Clearance | 4.5 | 4.5 | 3.0 | 4.5 |
| Red Clearance | 1.4 | 3.2 | 2.8 | 1.8 |
| 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 | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

## 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 | |
| | Signal Pedestal | |
| | Metal Pole with Mastarm | |
| | 5" Outer Duct & junction boxes | |
| | "YIELD" Sign (R1-2) | Ⓐ |
| | Keep Right Symbol Sign (R4-7) | Ⓑ |

▽ SEAL

NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON R. GALLOWAY

SIGNATURE — DATE 6/20/11

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

N — SCALE 0 40 1"=40'

# US 17 Business NC 24 Business At US 258

DIVISION 3 ONSLOW COUNTY JACKSONVILLE

| | | | |
|---|---|---|---|
| PLAN DATE: | JULY 2001 | REVIEWED BY: | K. MILAM |
| PREPARED BY: | X. FAN | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| Pole #7 Removed. Revised Phasing. Revised to 2070 Controller. Signal Pedestal Added (52). Island Revised. Changed Loop Emulator Detection to Loop Detection. | | JAN 03 |
| Removed Guardrail | TAC | JUN 04 |
| ▽ Renumber system loops/revised clearance times | JRG | 6/20/11 |

SEAL

*Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by Tyson A.Graves, #21080 on 4/21/2003. This document is only certified as to the revisions.*

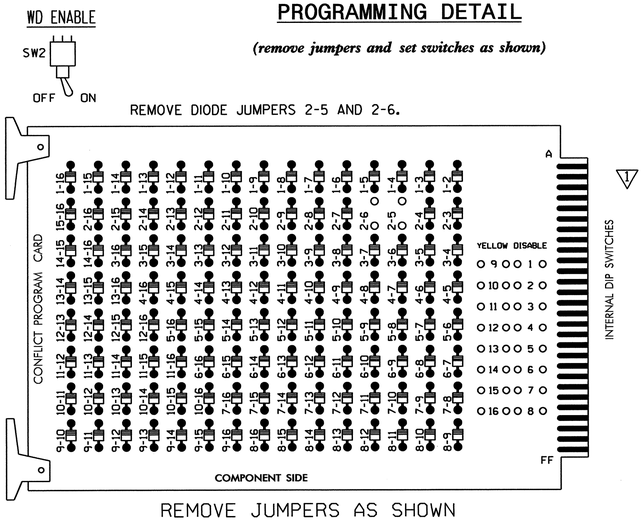
SIGNATURE — DATE

SIG. INVENTORY NO. 03-0116

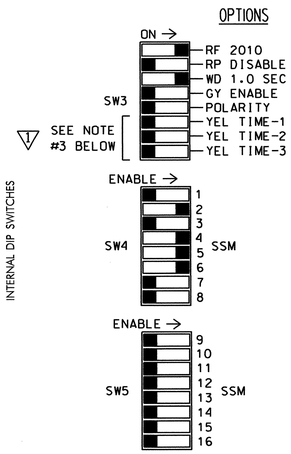
20-JUN-2011 09:09
S:\MTSASUM\ITS\Signals\Signal Design Sections\Eastern Region\DIv-03\Jacksonville Signal System\03-0116\03-0116_sig_dsn_20110401.dgn
DOCPROP 1.8

# EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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.
3. MAKE SURE YEL TIME-1, YEL TIME-2, AND YEL TIME-3 SWITCHES ARE SET TO 'OFF'.

## NOTES

1. TO PREVENT "FLASH-CONFLICT" PROBLEMS, INSERT RED FLASH PROGRAM BLOCKS FOR ALL UNUSED VEHICLE LOAD SWITCHES IN THE OUTPUT FILE. THE INSTALLER SHALL VERIFY THAT SIGNAL HEADS FLASH IN ACCORDANCE WITH THE SIGNAL PLANS.
2. ENSURE THAT RED ENABLE IS ACTIVE AT ALL TIMES DURING NORMAL OPERATION. TO PREVENT RED FAILURES ON UNUSED MONITOR CHANNELS, TIE UNUSED RED MONITOR INPUTS 1,3,7,8,9,10,11,12,13,14,15 & 16 TO LOAD SWITCH AC+ PER CABINET MANUFACTURER'S INSTRUCTIONS.
3. PROGRAM CONTROLLER TO START UP IN PHASES 2 AND 6 GREEN.
4. ENABLE SIMULTANEOUS GAP-OUT FEATURE FOR ALL PHASES.
5. PROGRAM PHASES 2 AND 6 FOR YELLOW FLASH.
6. THE CABINET AND CONTROLLER ARE PART OF THE JACKSONVILLE CITY SIGNAL SYSTEM.

## EQUIPMENT INFORMATION

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

## FIELD CONNECTION HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 41,42 | NU | 51,52 | 61,62 | NU | NU | NU | NU |
| GREEN | | 130 | | | 103 | | | 136 | | | | |
| YELLOW | | 129 | | | 102 | | | 135 | | | | |
| RED | | 128 | | | 101 | | | 134 | | | | |
| RED ARROW | | | | | | | 131 | | | | | |
| YELLOW ARROW | | | | | | | 132 | | | | | |
| GREEN ARROW | | | | | | | 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 | Ø2 | Ø2 | Ø4 | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | FS DC ISOLATOR |
| | | 2A,2B,2C | 2D,2E,2F | 4B | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | |
| | L | NOT USED | Ø4 | Ø4 | | | | | | | | | | | ST DC ISOLATOR |
| | | | 4A | 4C | | | | | | | | | | | |
| FILE "J" | U | Ø5 | Ø6 | SYS | SYS | SYS | SYS | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT |
| | | 5A | 6A,6B | SØ1 | SØ3 | SØ4 | SØ5 | | | | | | | | |
| | L | NOT USED | Ø6 | SYS | NOT USED | NOT USED | SYS | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY |
| | | | 6C,6D,6E | SØ2 | | | SØ6 | | | | | | | | |

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

FS = FLASH SENSE
ST = STOP TIME

## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A,2B,2C | TB2-1,2 | I1U | 56 | 18 | 1 | 2 | Y | Y | | 1.8 | |
| 2D,2E,2F | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 4A | TB2-7,8 | I2L | 43 | 5 | 12 | 4 | Y | Y | | | |
| 4B | TB2-9,10 | I3U | 63 | 25 | 32 | 4 | Y | Y | | | |
| 4C | TB2-11,12 | I3L | 76 | 38 | 42 | 4 | Y | Y | | | |
| | TB4-1,2 | I4U | 47 | 9 | 22 | | | | | | |
| | TB4-5,6 | I5U | 58 | 20 | 3 | | | | | | |
| | TB4-9,10 | I6U | 41 | 3 | 4 | | | | | | |
| | TB4-11,12 | I6L | 45 | 7 | 14 | | | | | | |
| | TB6-1,2 | I7U | 65 | 27 | 34 | | | | | | |
| | TB6-3,4 | I7L | 78 | 40 | 44 | | | | | | |
| | TB6-5,6 | I8U | 49 | 11 | 24 | | | | | | |
| 5A | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | |
| 6A,6B | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | 1.0 | |
| 6C,6D,6E | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| *SØ1 | TB3-9,10 | J3U | 64 | 26 | 36 | SYS | | | | | |
| *SØ2 | TB3-11,12 | J3L | 77 | 39 | 46 | SYS | | | | | |
| *SØ3 | TB5-1,2 | J4U | 48 | 10 | 26 | SYS | | | | | |
| *SØ4 | TB5-5,6 | J5U | 57 | 19 | 7 | SYS | | | | | |
| *SØ5 | TB5-9,10 | J6U | 42 | 4 | 8 | SYS | | | | | |
| *SØ6 | TB5-11,12 | J6L | 46 | 8 | 18 | SYS | | | | | |
| | TB7-1,2 | J7U | 66 | 28 | 38 | | | | | | |
| | TB7-3,4 | J7L | 79 | 41 | 48 | | | | | | |
| | TB7-5,6 | J8U | 50 | 12 | 28 | | | | | | |

* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0116
DESIGNED: JULY 2001
SEALED: APRIL 21, 2003
REVISED1: JAN 2003
REVISED2: JUN 2004
REVISED3: 6/20/11


ARCADIS
G & M of North Carolina, Inc.
WWW.ARCADIS-US.COM
801 Corporate Center Drive, Suite 300
Raleigh, NC 27607-5073
Tel: 919/854-1282 Fax: 919/854-5448


SIGNAL UPGRADE

REVISION SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

SIGNATURE DATE 6-23-11

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

# US 17 Business NC 24 Business at US 258

DIVISION 3 ONSLOW COUNTY JACKSONVILLE

| | | | |
|---|---|---|---|
| PLAN DATE: | JULY 2001 | REVIEWED BY: | A. ANCHORS |
| PREPARED BY: | A. ANCHORS | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| Renumbered system loops, revised monitor switch settings, and revised notes. (WSA) | JTR | 6-23-11 |

SEAL

Not a certified document as to the Original Document but Only as to the Revisions - This document originally issued and sealed by Arthur L. Anchors. #15061. on 04/21/2003. This document is only certified as to the revisions.

SIGNATURE DATE

SIG. INVENTORY NO. 03-0116

23-JUN-2011 09:54
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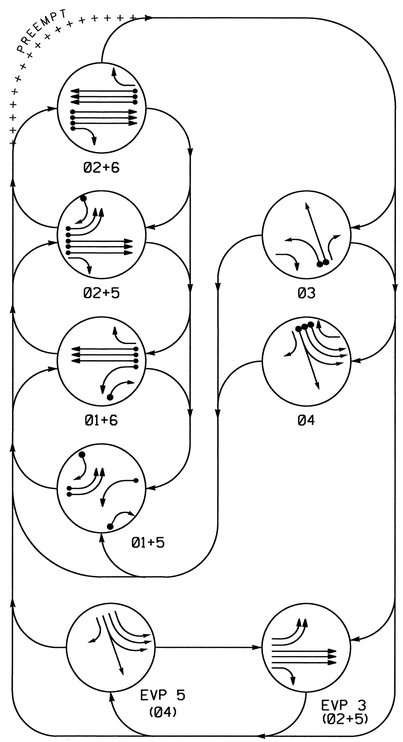
sarmstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.46 |

## PHASING DIAGRAM




### PHASING DIAGRAM DETECTION LEGEND

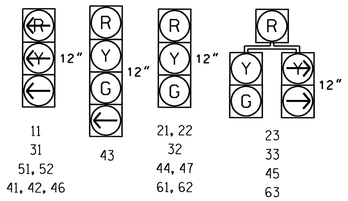
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 03 | 04 | EVP 3 | EVP 5 | FLASH |
|---|---|---|---|---|---|---|---|---|---|
| 11 | ← | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |
| 21, 22 | R | R | G | G | R | R | G | R | Y |
| 23 | R | R | G | G | R/→ | R | G | R | Y |
| 31 | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |
| 32 | R | R | R | R | G | R | R | R | R |
| 33 | R/→ | R/→ | R | R | G | R | R | R | R |
| 41, 42, 46 | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ← | ~~R~~ |
| 43 | R | R | R | R | R | G | R | G | R |
| 45 | R/→ | R | R/→ | R | R | G | R | G | R |
| 44, 47 | R | R | R | R | R | G | R | G | R |
| 51, 52 | ← | ~~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 |

## SIGNAL FACE I.D.

ALL HEADS L.E.D.




## OASIS 2070L LOOP & DETECTOR INSTALLATION

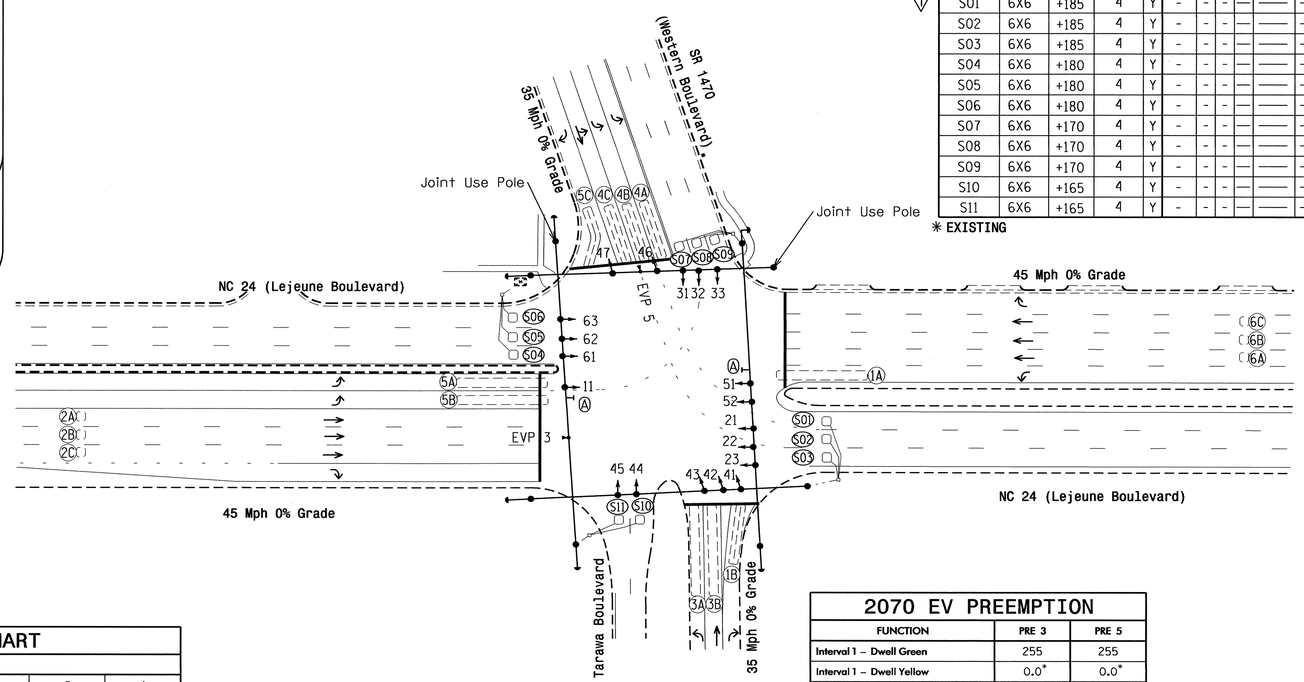
| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X60 | +5 | * | — | 1 | Y | Y | — | — | — | — | — |
| 1B | 6X40 | 0 | 2-4-2 | - | 1 | Y | Y | — | — | 15 | — | — |
| 2A | 6X6 | 300 | * | — | 2 | Y | Y | — | — | — | — | — |
| 2B | 6X6 | 300 | * | — | 2 | Y | Y | — | — | — | — | — |
| 2C | 6X6 | 300 | * | — | 2 | Y | Y | — | — | — | — | — |
| 3A | 6X60 | +5 | * | — | 3 | Y | Y | — | — | — | — | — |
| 3B | 6X60 | +5 | * | — | 3 | Y | Y | — | — | — | — | — |
| 4A | 6X40 | 0 | 2-4-2 | — | 4 | Y | Y | — | — | — | — | — |
| 4B | 6X40 | 0 | 2-4-2 | — | 4 | Y | Y | — | — | — | — | — |
| 4C | 6X40 | 0 | 2-4-2 | — | 4 | Y | Y | — | — | — | — | — |
| 5A | 6X60 | +5 | * | — | 5 | Y | Y | — | — | — | — | — |
| 5B | 6X60 | +5 | * | — | 5 | Y | Y | — | — | — | — | — |
| 5C | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | — | — | 15 | — | — |
| 6A | 6X6 | 300 | * | — | 6 | Y | Y | — | — | — | — | — |
| 6B | 6X6 | 300 | * | — | 6 | Y | Y | — | — | — | — | — |
| 6C | 6X6 | 300 | * | — | 6 | Y | Y | — | — | — | — | — |
| S01 | 6X6 | +185 | 4 | Y | - | - | - | — | — | — | Y | Y |
| S02 | 6X6 | +185 | 4 | Y | - | - | - | — | — | — | Y | Y |
| S03 | 6X6 | +185 | 4 | Y | - | - | - | — | — | — | Y | Y |
| S04 | 6X6 | +180 | 4 | Y | - | - | - | — | — | — | Y | Y |
| S05 | 6X6 | +180 | 4 | Y | - | - | - | — | — | — | Y | Y |
| S06 | 6X6 | +180 | 4 | Y | - | - | - | — | — | — | Y | Y |
| S07 | 6X6 | +170 | 4 | Y | - | - | - | — | — | — | Y | Y |
| S08 | 6X6 | +170 | 4 | Y | - | - | - | — | — | — | Y | Y |
| S09 | 6X6 | +170 | 4 | Y | - | - | - | — | — | — | Y | Y |
| S10 | 6X6 | +165 | 4 | Y | - | - | - | — | — | — | Y | Y |
| S11 | 6X6 | +165 | 4 | Y | - | - | - | — | — | — | Y | Y |

* EXISTING

## 6 Phase
## Fully Actuated W/EV Preemption
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0121.




## 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 | |
| | Pedestrian Pedestal | |
| | Inductive Loop Detector | |
| | Controller & Cabinet | |
| | Junction Box | |
| N/A | Wheel Chair Ramp | |
| | 2-in Underground Conduit | |
| N/A | Right of Way | |
| | Directional Arrow | |
| | Pavement Marking Arrow | |
| | Optical Detector Unit | |
| | Pedestrian Signal Pedestal | |
| | "U-TURN YIELD TO RIGHT TURN" Sign (R10-16) | |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 7 | 7 | 7 | 12 |
| Extension 1 * | 1.0 | 6.0 | 1.0 | 2.0 | 1.0 | 6.0 |
| Max Green 1 * | 20 | 90 | 15 | 25 | 15 | 90 |
| Yellow Clearance | 3.0 | 4.5 | 3.8 | 3.8 | 3.0 | 4.5 |
| Red Clearance | 3.6 | 2.1 | 2.8 | 3.2 | 3.8 | 2.0 |
| Walk 1 * | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | - | - | 1.5 |
| Max Variable Initial * | - | 34 | - | - | - | 34 |
| Time Before Reduction * | - | 15 | - | - | - | 15 |
| Time To Reduce * | - | 30 | - | - | - | 30 |
| Minimum Gap | - | 3.0 | - | - | - | 3.0 |
| Recall Mode | - | MIN RECALL | - | - | - | MIN RECALL |
| Vehicle Call Memory | - | YELLOW | - | - | - | YELLOW |
| Dual Entry | - | - | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON | 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.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 5 |
|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 |
| Priority | Medium | Medium |
| Delay Time | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 |
| Ped Clear Before Pre | 0 | 0 |
| Yellow Clear Before Pre | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* |
| Dwell Min Time | 12 | 7 |
| Enable Backup Protection | N | N |
| Ped Clear Through Yellow | N/A | N/A |
| Preempt Extend** | 2 | 2 |
| Omit Overlaps | E | F |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

Signal Upgrade

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

NC 24 (Lejeune Boulevard)
At
SR 1470 (Western Boulevard)/
Tarawa Boulevard

Division 03 Onslow County Jacksonville

PLAN DATE: May 2011 REVIEWED BY:
PREPARED BY: I. O. Umozurike REVIEWED BY:

SCALE 0 50 1"=50'

| REVISIONS | INIT. | DATE |
|---|---|---|
| Add system detection | JPC | 6/30/11 |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON R. CALLOWAY
SIGNATURE DATE 6/29/11
SIG. INVENTORY NO. 03-0121

23-JUN-2011 16:15
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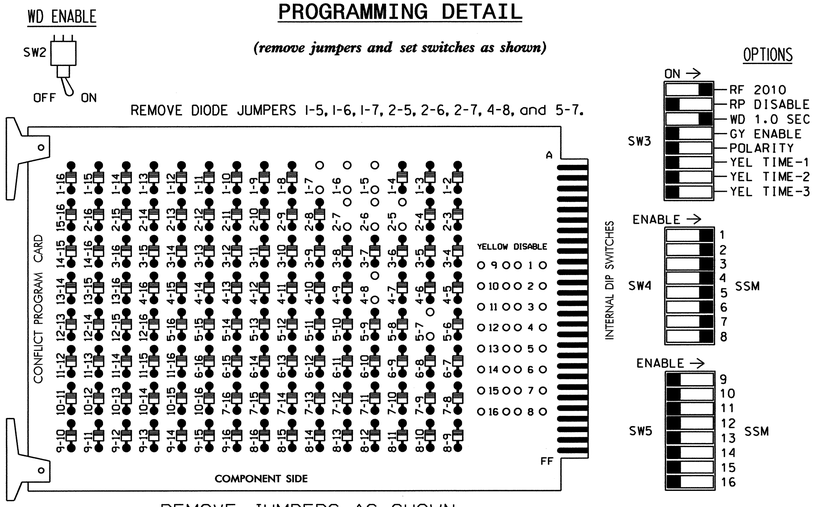
iumozurike

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.47 |

# EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail on sheet 2.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash.
7. ▽1 The cabinet and controller are part of the Jacksonville City Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG.NO.9500-332-NCDOT)
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
OVERLAP E.....5
OVERLAP F.....4

## SIGNAL HEAD HOOK-UP CHART

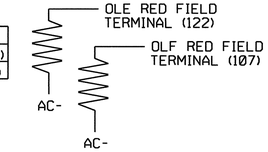
| LOAD SWITCH NO. | S1 | | S2 | S2P | S3 | | | S4 | | | S4P | S5 | S6 | S6P | S7 | S8 | S8P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | | 2 | 2 PED | 3 | | | 4 | | | 4 PED | 5 | 6 | 6 PED | OLE | OLF | 8 PED |
| SIGNAL HEAD NO. | 11 | 33 | 21,22 23 | NU | 23 | 31 | 32,33 | 41,42 46 | 43 | 44,45 47 | NU | 51,52 | 61,62 63 | NU | 45 | 63 | NU |
| RED | | | 128 | | | | 116 | | 101 | 101 | | | 134 | | * | * | |
| YELLOW | | | 129 | | | | 117 | | 102 | 102 | | | 135 | | | | |
| GREEN | | | 130 | | | | 118 | | 103 | 103 | | | 136 | | | | |
| RED ARROW | 125 | | | | | 116 | | 101 | | | | 131 | | | | | |
| YELLOW ARROW | 126 | 126 | | | 117 | 117 | | 102 | | | | 132 | | | 123 | 108 | |
| GREEN ARROW | 127 | 127 | | | 118 | 118 | | 103 | 103 | | | 133 | | | 124 | 109 | |
| ✋ | | | | | | | | | | | | | | | | | |
| 🚶 | | | | | | | | | | | | | | | | | |

NU = Not Used
* Denotes install load resistor. See load resistor installation detail this sheet.

## LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

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




## ▽1 INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 1A | Ø2 2A | Ø2 2C | SLOT EMPTY | Ø3 3A | Ø4 4A | Ø3 3B | Ø4 4C | SYS. DET. SØ2 | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | NOT USED | Ø2 2B | Ø1 1B | | NOT USED | Ø4 4B | SYS. DET. SØ1 | NOT USED | SYS. DET. SØ3 | | | | | ST DC ISOLATOR |
| FILE "J" | U | Ø5 5A | Ø5 5B | Ø6 6A | Ø6 6C | SYS. DET. SØ4 | SYS. DET. SØ5 | SYS. DET. SØ7 | SYS. DET. SØ9 | SYS. DET. S10 | SLOT EMPTY | SLOT EMPTY | CH. 3 PRE-3 | CH. 1 UNUSED | SLOT EMPTY |
| | L | NOT USED | Ø5 5C | Ø6 6B | NOT USED | NOT USED | SYS. DET. SØ6 | SYS. DET. SØ8 | NOT USED | SYS. DET. S11 | | | CH. 4 PRE-5 | CH. 2 UNUSED | |

EX.: 1A, 2A, ETC. = LOOP NO.'S
FS = FLASH SENSE
ST = STOP TIME
PRE3,5 = EV PREEMPTS

4 CHANNEL TOMAR OSP CARD INSERT CARD INTO SLOT J13

## ▽1 INPUT FILE CONNECTION & PROGRAMMING CHART

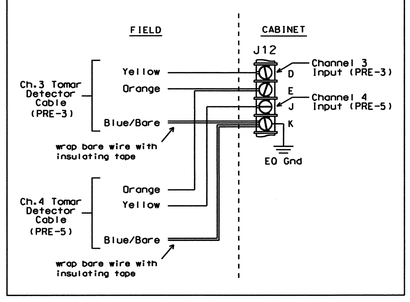
| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1A | TB2-1,2 | I1U | 56 | 18 | 1 | 1 | Y | Y | | | |
| 1B | TB2-11,12 | I3L | 76 | 38 | 42 | 1 | Y | Y | | | 15 |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 2C | TB2-9,10 | I3U | 63 | 25 | 32 | 2 | Y | Y | | | |
| 3A | TB4-5,6 | I5U | 58 | 20 | 3 | 3 | Y | Y | | | |
| 3B | TB6-1,2 | I7U | 65 | 27 | 34 | 3 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | |
| 4B | TB4-11,12 | I6L | 45 | 7 | 14 | 4 | Y | Y | | | |
| 4C | TB6-5,6 | I8U | 49 | 11 | 24 | 4 | Y | Y | | | |
| 5A | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | |
| 5B | TB3-5,6 | J2U | 40 | 2 | 6 | 5 | Y | Y | | | |
| 5C | TB3-7,8 | J2L | 44 | 6 | 16 | 5 | Y | Y | | | 15 |
| 6A | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | | | |
| 6B | TB3-11,12 | J3L | 77 | 39 | 46 | 6 | Y | Y | | | |
| 6C | TB5-1,2 | J4U | 48 | 10 | 26 | 6 | Y | Y | | | |
| * SØ1 | TB6-3,4 | I7L | 78 | 40 | 44 | SYS | | | | | |
| * SØ2 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| * SØ3 | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| * SØ4 | TB5-5,6 | J5U | 57 | 19 | 7 | SYS | | | | | |
| * SØ5 | TB5-9,10 | J6U | 42 | 4 | 8 | SYS | | | | | |
| * SØ6 | TB5-11,12 | J6L | 46 | 8 | 18 | SYS | | | | | |
| * SØ7 | TB7-1,2 | J7U | 66 | 28 | 38 | SYS | | | | | |
| * SØ8 | TB7-3,4 | J7L | 79 | 41 | 48 | SYS | | | | | |
| * SØ9 | TB7-5,6 | J8U | 50 | 12 | 28 | SYS | | | | | |
| * S10 | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |
| * S11 | TB7-11,12 | J9L | 61 | 23 | 17 | SYS | | | | | |

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0121
DESIGNED: May 2011
SEALED: 6/29/11
▽1 REVISED1: 6/30/11

Signal Upgrade - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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 (Lejeune Boulevard) at SR 1470 (Western Boulevard) / Tarawa Boulevard

Division 3 | Onslow County | Jacksonville

PLAN DATE: June 2011 | REVIEWED BY: JTR
PREPARED BY: S. Armstrong | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| ▽1 Added system loops (Jacksonville city)...(WSA) | JTR | 7-7-11 |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

John T. Rowe, Jr. 7-7-11
SIGNATURE DATE

SIG. INVENTORY NO. 03-0121

07-JUL-2011 12:16
S:\TTSA&S\TS Signals\Workgroups\Sig Man\armstrong\03121_sm_ele_xxx.dgn
sarmstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.48 |

## EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' to advance to Preemption #3.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN  YEL  RED ¦123456789101112131415 16
1 255  0.0  0.0 ¦ X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦

PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦     X
```

PRESS 'NEXT TWICE

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN  YEL  RED ¦123456789101112131415 16
1 255  0.0  0.0 ¦   X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦

PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦     X
```

PREEMPT PROGRAMMING COMPLETE

Program extend time on optical detector units for 2.0 sec for EVP3 and EVP5.

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

PRESS '+' 4 TIMES

```
 PAGE 1: VEHICLE OVERLAP 'E' SETTINGS
 PHASE:            ¦123456789101112131415 16
VEH OVL PARENTS:   ¦    X
VEH OVL NOT VEH:   ¦
VEH OVL NOT PED:   ¦
VEH OVL GRN EXT:   ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....7
```

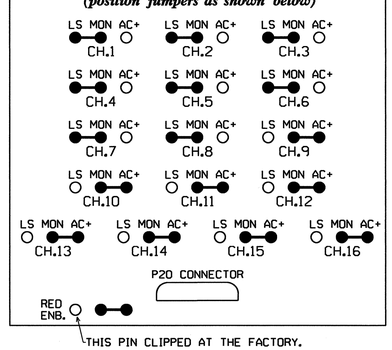
PRESS '+' ONCE

```
 PAGE 1: VEHICLE OVERLAP 'F' SETTINGS
 PHASE:            ¦123456789101112131415 16
VEH OVL PARENTS:   ¦   X
VEH OVL NOT VEH:   ¦
VEH OVL NOT PED:   ¦
VEH OVL GRN EXT:   ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....8
```

OVERLAP PROGRAMMING COMPLETE

## RED MONITOR BOARD PROGRAMMING

*(position jumpers as shown below)*




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0121
DESIGNED: May 2011
SEALED: 6/29/11
REVISED1: 6/30/11

Signal Upgrade - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Transportation Mobility and Safety Division, STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, Signal Management Section

750 N.Greenfield Pkwy,Garner,NC 27529

# NC 24 (Lejeune Boulevard) at SR 1470 (Western Boulevard) / Tarawa Boulevard

Division 3 | Onslow County | Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: June 2011 | REVIEWED BY: JTR | | |
| PREPARED BY: S. Armstrong | REVIEWED BY: | | |
| REVISIONS | | INIT. | DATE |
| 1 Added system loops (Jacksonville city)...(MSA) | | JTR | 7-7-11 |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

SIGNATURE 7-7-11 DATE

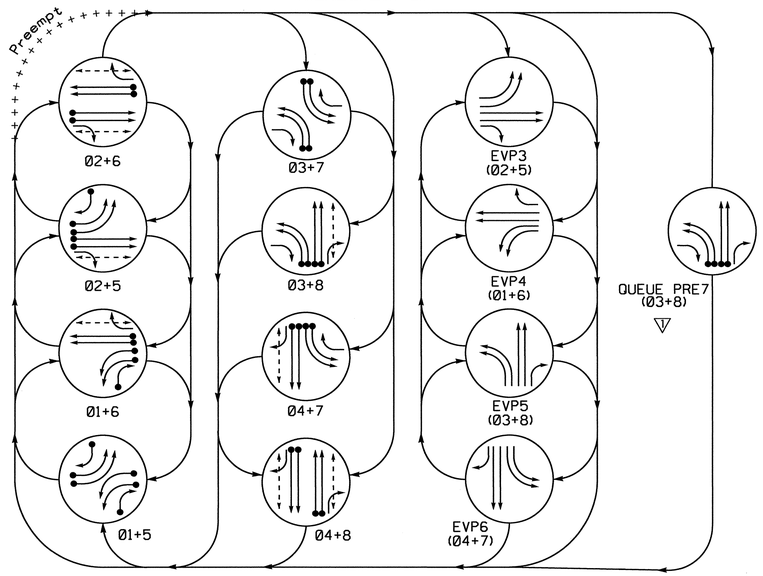
SIG. INVENTORY NO. 03-0121

07-JUL-2011 12:16
S:\MTS&SU\ITS\Signals\Workgroups\Sig Mgmt\Armstrong\03012l_sm_ele_xxx.dgn
sarmstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.49 |

# 8 Phase
# Fully Actuated w/ EVP
# Jacksonville City Signal System

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 03+7 | 03+8 | 04+7 | 04+8 | PRE3 | PRE4 | PRE5 | PRE6 | PRE7 | FLASH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11,12 | ← | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |
| 21,22 | R | R | G | G | R | R | R | R | G | R | R | R | R | Y |
| 23 | R | R | G | G | R/→ | R/→ | R | R | G | R | R | R | R/→ | Y |
| 31,32 | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ← | ~~R~~ | ~~R~~ | ~~R~~ | R | ← | ~~R~~ | ← | ~~R~~ |
| 41 | R | R | R | R | R | R | G | G | R | R | R | G | R | R |
| 42 | R/→ | R | R/→ | R | R | R | G | G | R | R | R | G | R | R |
| 51,52 | ← | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |
| 61,62 | R | G | R | G | R | R | R | R | R | G | R | R | R | Y |
| 63 | R | G | R | G | R/→ | R | R/→ | R | R | G | R | R | R | Y |
| 71,72 | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ |
| 81 | R | R | R | R | R | G | R | G | R | R | G | R | G | R |
| 82 | R/→ | R/→ | R | R | R | G | R | G | R | R | G | R | G | R |
| P21,P22 | DW | DW | W | W | DW | DW | DW | DW | DW | DW | DW | DW | DW | DRK |
| P41,P42,P43,P44 | DW | DW | DW | DW | DW | DW | W | W | DW | DW | DW | DW | DW | DRK |
| P61,P62,P63,P64 | DW | W | DW | W | DW | DW | DW | DW | DW | DW | DW | DW | DW | DRK |
| P81,P82,P83,P84 | DW | DW | DW | DW | DW | W | DW | W | DW | DW | DW | DW | DW | DRK |

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

## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

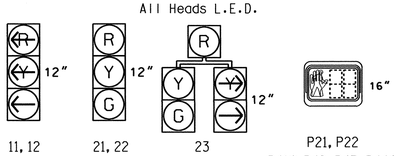
| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | - | - | - |
| 1B | 6X40 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | - | - | - |
| 1C | 6X40 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | - |
| 2A | 6X6 | 300 | 6 | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 300 | 6 | - | 2 | Y | Y | - | - | - | - | - |
| 3A | 6X40 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | - | - | - |
| 3B | 6X40 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | - | - | - |
| 4A, 4B | 6X6 | 300 | 3 | - | 4 | - | Y | - | 2.4 | - | - | - |
| 4C | 6X40 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 4D | 6X40 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 5A | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | - | - | - |
| 5B | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | - | - | - |
| 5C | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | - |
| 6A | 6X6 | 300 | 6 | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 300 | 6 | - | 6 | Y | Y | - | - | - | - | - |
| 7A | 6X40 | 0 | 2-4-2 | - | 7 | Y | Y | - | - | - | - | - |
| 7B | 6X40 | 0 | 2-4-2 | - | 7 | Y | Y | - | - | - | - | - |
| 8A, 8B | 6X6 | 300 | 3 | - | 8 | - | Y | - | 2.4 | - | - | - |
| 8C | 6X40 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | - | - | - |
| 8D | 6X40 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | - | - | - |
| S01 | 6X6 | +205 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S02 | 6X6 | +205 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S03 | 6X6 | +240 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S04 | 6X6 | +240 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S05 | 6X6 | +240 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S06 | 6X6 | +240 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S07 | 6X6 | +240 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S08 | 6X6 | +240 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S09 | 6X6 | +235 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S10 | 6X6 | +235 | 4 | Y | - | - | - | - | - | - | Y | Y |

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0124.

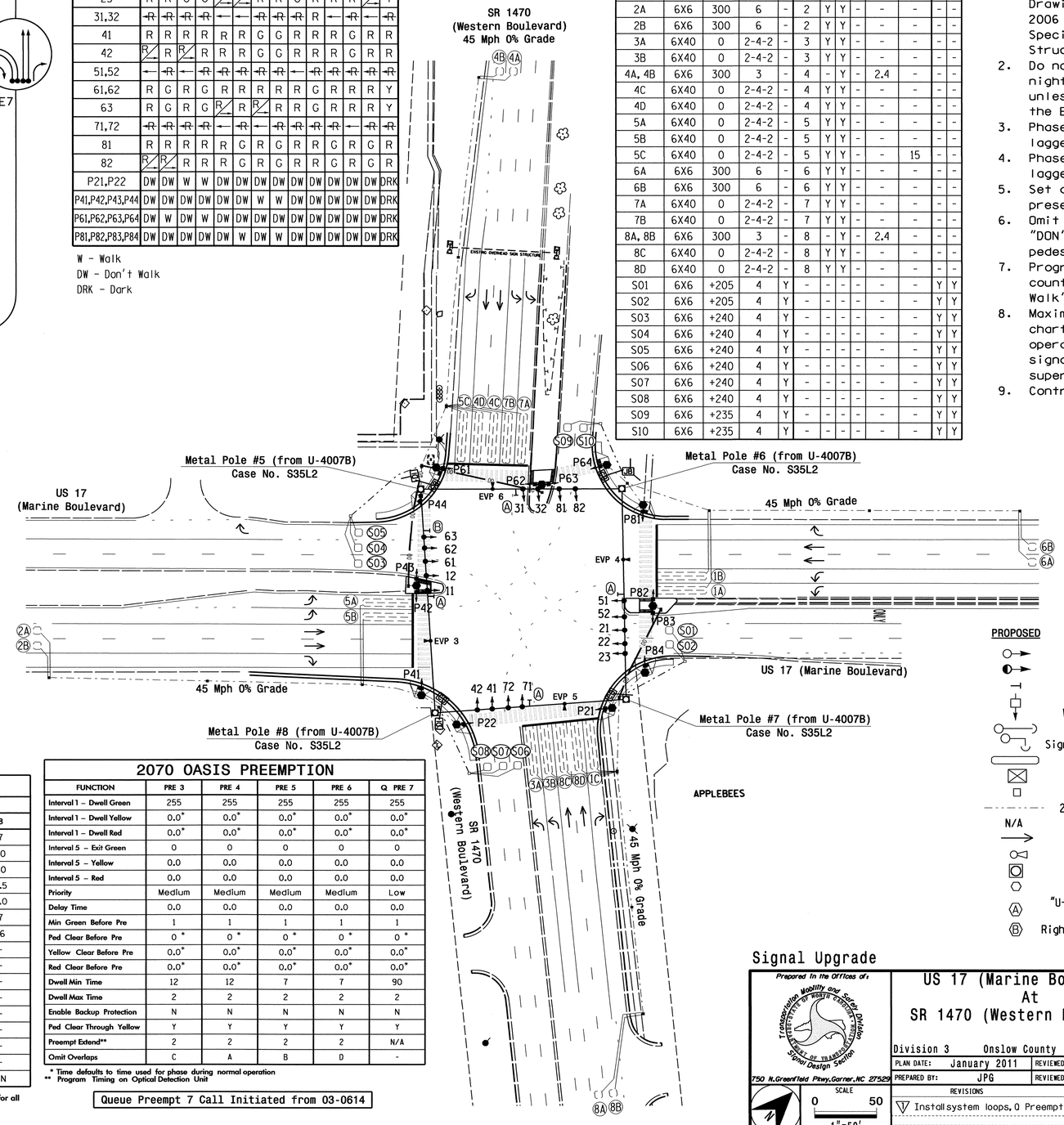
## SIGNAL FACE I.D.

All Heads L.E.D.




| | | | |
|---|---|---|---|
| 11, 12 | 21, 22 | 23 | P21, P22 |
| 31, 32 | 41 | 42 | P41✱ P42, P43, P44✱ |
| 51, 52 | 61, 62 | 63 | P61✱ P62, P63, P64✱ |
| 71, 72 | 81 | 82 | P81✱ P82, P83, P84✱ |

✱ Use R10-3d Signs




## 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 | |
| | EV Preemption Detector | |
| | Metal Strain Pole | |
| | Signal Pedestal | |
| Ⓐ | "U-TURN YIELD TO RIGHT TURN" Sign (R10-16) | Ⓐ |
| Ⓑ | Right Arrow "ONLY" Sign (R3-5R) | Ⓑ |

## 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 | 3.0 | 2.0 | 1.0 | 6.0 | 1.0 | 2.0 |
| Max Green 1 * | 45 | 90 | 40 | 60 | 25 | 90 | 30 | 60 |
| Yellow Clearance | 3.0 | 4.5 | 3.0 | 4.5 | 3.0 | 4.5 | 3.0 | 4.5 |
| Red Clearance | 4.4 | 2.8 | 4.4 | 3.1 | 4.5 | 2.8 | 4.6 | 3.0 |
| Walk 1 * | - | 7 | - | 7 | - | 7 | - | 7 |
| Don't Walk 1 | - | 29 | - | 18 | - | 17 | - | 16 |
| Seconds Per Actuation * | - | 1.5 | - | - | - | 1.5 | - | - |
| Max Variable Initial * | - | 34 | - | - | - | 34 | - | - |
| Time Before Reduction * | - | 15 | - | - | - | 15 | - | - |
| Time To Reduce * | - | 60 | - | - | - | 60 | - | - |
| 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.

## 2070 OASIS PREEMPTION

| FUNCTION | PRE 3 | PRE 4 | PRE 5 | PRE 6 | Q PRE 7 |
|---|---|---|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 | 255 | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* | 0.0* | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* | 0.0* | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 | 0 | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Priority | Medium | Medium | Medium | Medium | Low |
| Delay Time | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 | 1 | 1 | 1 |
| Ped Clear Before Pre | 0 * | 0 * | 0 * | 0 * | 0 * |
| Yellow Clear Before Pre | 0.0* | 0.0* | 0.0* | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* | 0.0* | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 | 7 | 7 | 90 |
| Dwell Max Time | 2 | 2 | 2 | 2 | 2 |
| Enable Backup Protection | N | N | N | N | N |
| Ped Clear Through Yellow | Y | Y | Y | Y | Y |
| Preempt Extend** | 2 | 2 | 2 | 2 | N/A |
| Omit Overlaps | C | A | B | D | - |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

Queue Preempt 7 Call Initiated from 03-0614

## Signal Upgrade

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

SCALE 1"=50' (0 – 50)

# US 17 (Marine Boulevard) At SR 1470 (Western Boulevard)

Division 3 | Onslow County | Jacksonville

PLAN DATE: January 2011 | REVIEWED BY: PLA
PREPARED BY: JPG | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| ▽ Install system loops, Q Preempt | JPG | 7/5/11 |

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE | DATE 1/28/11
SIG. INVENTORY NO. 03-0124

07-JUL-2011 10:33
S:\TTSAD\ITS Signals\Signal Design Sections\Eastern Region\Div-03\Jacksonville Signal Systems\03-0124\030124_sig_dsn_20110705.dgn
John Doe

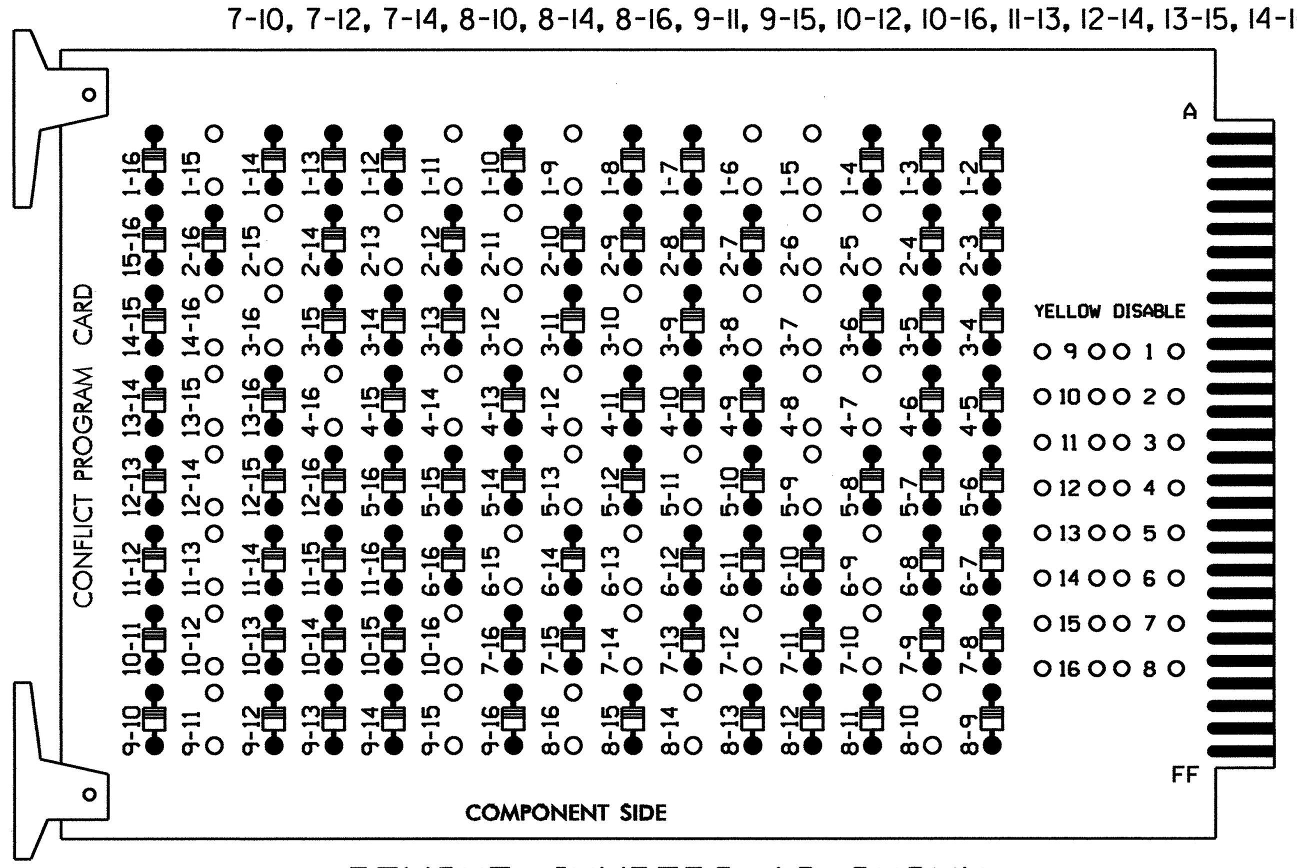
# EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*

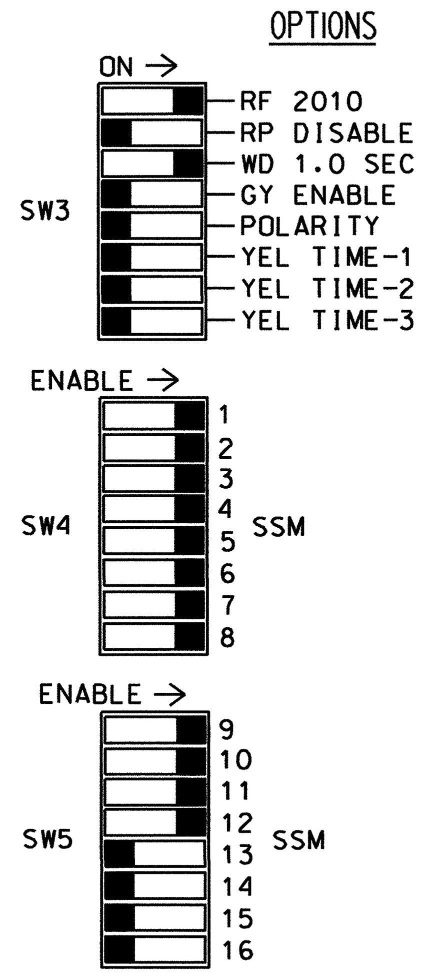
WD ENABLE

SW2 OFF ON

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-11, 2-13, 2-15, 3-7, 3-8, 3-10, 3-12, 3-16, 4-7, 4-8, 4-12, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-13, 6-15, 7-10, 7-12, 7-14, 8-10, 8-14, 8-16, 9-11, 9-15, 10-12, 10-16, 11-13, 12-14, 13-15, 14-16.




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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail on sheet 2.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2, 4, 6 and 8 for 'STARTUP PED CALL'.
7. Program phases 2 and 6 for Yellow Flash.
8. The cabinet and controller are part of the Jacksonville Closed Loop System.

## EQUIPMENT INFORMATION

CONTROLLER.............EAGLE TYPE 2070L
CABINET ...............McCAIN/CONTROL TECHNOLOGIES (DWG.NO.9500-332-NCDOT)
SOFTWARE ..............ECONOLITE OASIS
CABINET MOUNT..........BASE
OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S2P,S3,S4,S4P,S5,S6,S6P, S7,S8,S8P,S9,S10,S12,S13
PHASES USED............1,2,2 PED,3,4,4 PED,5,6,6 PED, 7,8,8 PED
OVERLAP A:.............1
OVERLAP B:.............3
OVERLAP C:.............5
OVERLAP D:.............7

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11,12 | 21 22,23 | P21, P22 | 31,32 | 41,42 | P41,P42, P43,P44 | 51,52 | 61 62,63 | P61,P62, P63,P64 | 71,72 | 81,82 | P81,P82, P83,P84 | 82 | 23 | NU | 42 | 63 | 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 | | | 117 | | | 132 | | | 123 | | | A122 | A125 | | A115 | A102 | |
| GREEN ARROW | 127 | | | 118 | | | 133 | | | 124 | | | A123 | A126 | | A116 | A103 | |
| (hand) | | | 113 | | | 104 | | | 119 | | | 110 | | | | | | |
| (walking person) | | | 115 | | | 106 | | | 121 | | | 112 | | | | | | |

NU = Not Used

* Denotes install load resistor, see load resistor installation detail sheet 2.

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:           |12345678910111213141516
VEH OVL PARENTS: |X
VEH OVL NOT VEH: |
VEH OVL NOT PED: |
VEH OVL GRN EXT: |
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+'

```
PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
PHASE:           |12345678910111213141516
VEH OVL PARENTS: |  X
VEH OVL NOT VEH: |
VEH OVL NOT PED: |
VEH OVL GRN EXT: |
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+'

```
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE:           |12345678910111213141516
VEH OVL PARENTS: |    X
VEH OVL NOT VEH: |
VEH OVL NOT PED: |
VEH OVL GRN EXT: |
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+'

```
PAGE 1: VEHICLE OVERLAP 'D' SETTINGS
PHASE:           |12345678910111213141516
VEH OVL PARENTS: |      X
VEH OVL NOT VEH: |
VEH OVL NOT PED: |
VEH OVL GRN EXT: |
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

## 1 INPUT FILE POSITION LAYOUT

*(front view)*

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

| FILE | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 1A | Ø1 1C | Ø2 2A | SLOT EMPTY | Ø3 3A | Ø4 4A,4B | Ø4 4C | Ø4 4D | SYS. DET. S01 | SLOT EMPTY | SLOT EMPTY | Ø2 PED DC ISOLATOR | Ø6 PED DC ISOLATOR | FS DC ISOLATOR |
| | L | Ø1 1B | SYS. DET. S03 | Ø2 2B | | Ø3 3B | SYS. DET. S04 | SYS. DET. S05 | NOT USED | SYS. DET. S02 | | | Ø4 PED DC ISOLATOR | Ø8 PED DC ISOLATOR | ST DC ISOLATOR |
| FILE "J" | U | Ø5 5A | Ø5 5C | Ø6 6A | NOT USED DC ISOLATOR | Ø7 7A | Ø8 8A,8B | Ø8 8C | Ø8 8D | SYS. DET. S09 | SLOT EMPTY | SLOT EMPTY | CH. 3 PRE-3 | CH. 1 PRE-4 | SLOT EMPTY |
| | L | Ø5 5B | SYS. DET. S06 | Ø6 6B | PRE-7 DC ISOLATOR | Ø7 7B | SYS. DET. S07 | SYS. DET. S08 | NOT USED | SYS. DET. S10 | | | CH. 4 PRE-5 | CH. 2 PRE-6 | |

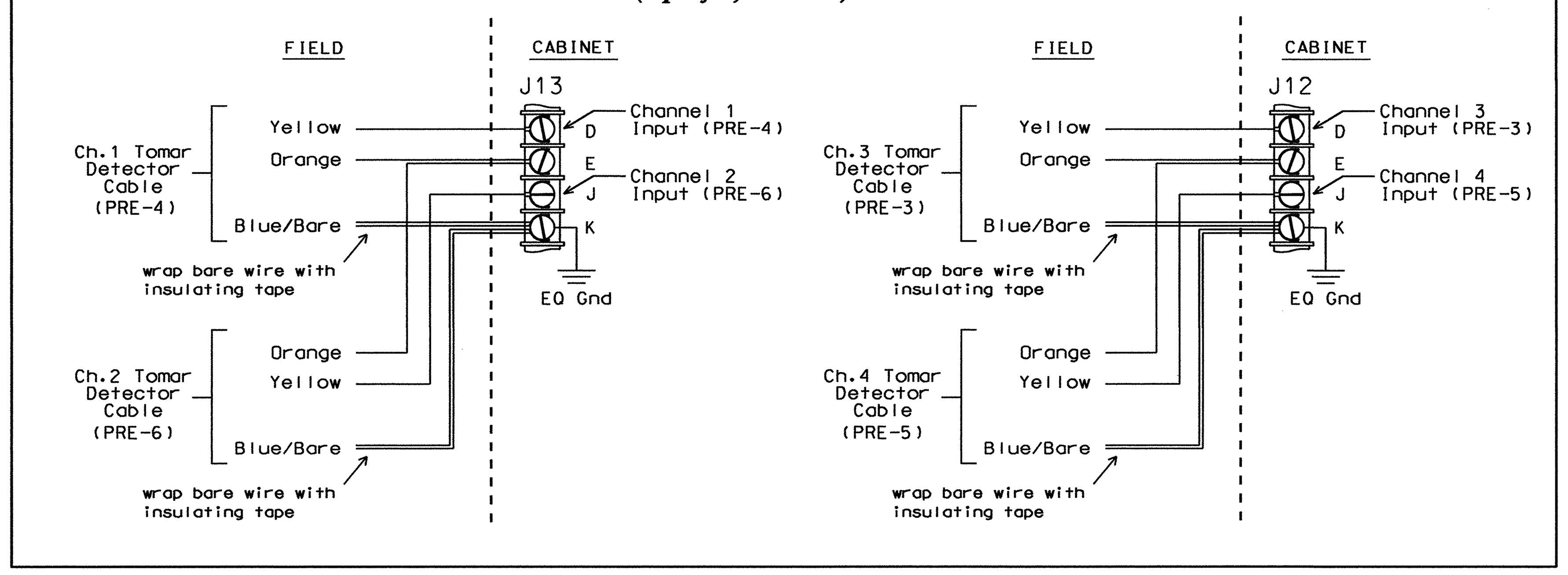
IMPORTANT: BE SURE TO REMOVE LOOP SURGE ARRESTORS INSTALLED ON TERMINALS TB5-1&2 AND TERMINALS TB5-3&4, LOCATED ON INPUT PANEL.

MODEL 242 DC ISOLATOR TO CONTROL QUEUE PREEMPT 7. CHANNEL 1 IS UNUSED. SEE SHEET 3 FOR WIRING.

4 CHANNEL TOMAR OSP CARD INSERT CARD INTO SLOT J13

## 1 TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*




## 1 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 | TB2-3,4 | I1L | 56 | 18 | 1 | 1 | Y | Y | | | |
| 1C | TB2-5,6 | I2U | 39 | 1 | 2 | 1 | Y | Y | | | 15 |
| *S03 | TB2-7,8 | I2L | 43 | 5 | 12 | SYS | | | | | |
| 2A | TB2-9,10 | I3U | 63 | 25 | 32 | 2 | Y | Y | | | |
| 2B | TB2-11,12 | I3L | 76 | 38 | 42 | 2 | Y | Y | | | |
| 3A | TB4-5,6 | I5U | 58 | 20 | 3 | 3 | Y | Y | | | |
| 3B | TB4-7,8 | I5L | 58 | 20 | 3 | 3 | Y | Y | | | |
| 4A,4B | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | | Y | | 2.4 | |
| *S04 | TB4-11,12 | I6L | 45 | 7 | 14 | SYS | | | | | |
| 4C | TB6-1,2 | I7U | 65 | 27 | 34 | 4 | Y | Y | | | |
| *S05 | TB6-3,4 | I7L | 78 | 40 | 44 | SYS | | | | | |
| 4D | TB6-5,6 | I8U | 49 | 11 | 24 | 4 | Y | Y | | | |
| *S01 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| *S02 | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| 5A | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | |
| 5B | TB3-3,4 | J1L | 55 | 17 | 5 | 5 | Y | Y | | | |
| 5C | TB3-5,6 | J2U | 40 | 2 | 6 | 5 | Y | Y | | | 15 |
| *S06 | TB3-7,8 | J2L | 44 | 6 | 16 | SYS | | | | | |
| 6A | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | | | |
| 6B | TB3-11,12 | J3L | 77 | 39 | 46 | 6 | Y | Y | | | |
| 7A | TB5-5,6 | J5U | 57 | 19 | 7 | 7 | Y | Y | | | |
| 7B | TB5-7,8 | J5L | 57 | 19 | 7 | 7 | Y | Y | | | |
| 8A,8B | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | | Y | | 2.4 | |
| *S07 | TB5-11,12 | J6L | 46 | 8 | 18 | SYS | | | | | |
| 8C | TB7-1,2 | J7U | 66 | 28 | 38 | 8 | Y | Y | | | |
| *S08 | TB7-3,4 | J7L | 79 | 41 | 48 | SYS | | | | | |
| 8D | TB7-5,6 | J8U | 50 | 12 | 28 | 8 | Y | Y | | | |
| *S09 | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |
| *S10 | TB7-11,12 | J9L | 61 | 23 | 17 | SYS | | | | | |
| PED PUSH BUTTONS | | | | | | | | | | | |
| P21,P22 | TB8-4,6 | I12U | 67 | 29 | PED 2 | 2 PED | | | | | |
| P41,P42,P43,P44 | TB8-5,6 | I12L | 69 | 31 | PED 4 | 4 PED | | | | | |
| P61,P62,P63,P64 | TB8-7,9 | I13U | 68 | 30 | PED 6 | 6 PED | | | | | |
| P81,P82,P83,P84 | TB8-8,9 | I13L | 70 | 32 | PED 8 | 8 PED | | | | | |

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

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0124
DESIGNED: January 2011
SEALED: 01/28/11
REVISED: 7-5-11

ELECTRICAL DETAIL Sheet 1 of 3

1 REVISION SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 008453 JOHN T. ROWE, JR.
SIGNATURE 7-7-11 DATE

ELECTRICAL AND PROGRAMMING DETAILS FOR:
Prepared In the Offices of: Transportation Mobility and Safety Division, Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

**US 17 (Marine Boulevard) at SR 1470 (Western Boulevard)**

Division 3 | Onslow County | Jacksonville

| PLAN DATE: January 2011 | REVIEWED BY: T. Joyce |
|---|---|
| PREPARED BY: C. Strickland | REVIEWED BY: |

| REVISIONS | INIT. | DATE |
|---|---|---|
| 1 MODIFIED INPUT FILE TO INCLUDE SYSTEM LOOPS. ADDED TOMAR TYPICAL WIRING DETAIL ADDED QUEUE PREEMPT & ASSOC. DETAILS MWH 7-6-11 | JTR | 7-7-11 |

SEAL
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SIGNATURE DATE

SIG. INVENTORY NO. 03-0124

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MHarrison

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | SIG.51 |

## EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption). then '1' (Standard Preemptions). Press 'NEXT' to advance to Preemption #3.

EVP 3 :

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦  X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....2
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......Y
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦  X
```

PRESS 'NEXT'

EVP 4 :

```
   PREEMPTION  #4  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X     X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....2
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......Y
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦X
```

PRESS 'NEXT'

EVP 5 :

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦  X     X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....2
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......Y
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦X
```

PRESS 'NEXT'

EVP 6 :

```
   PREEMPTION  #6  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦    X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....2
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......Y
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦  X
```

PROGRAMMING COMPLETE

Note: Program extend time on Tomar OSP Card for 2.0 seconds for Preempts 3-6

## ▽ QUEUE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption). then '1' (Standard Preemptions). Press 'NEXT' to advance to Preemption #7.

PRE 7 :

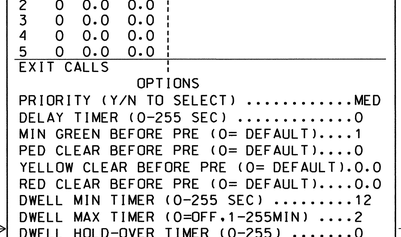
```
   PREEMPTION  #7  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X     X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............LOW
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........90
DWELL MAX TIMER (0=OFF,1-255MIN) ....2
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......Y
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PROGRAMMING COMPLETE

## LOAD RESISTOR INSTALLATION DETAIL

**ACCEPTABLE VALUES**

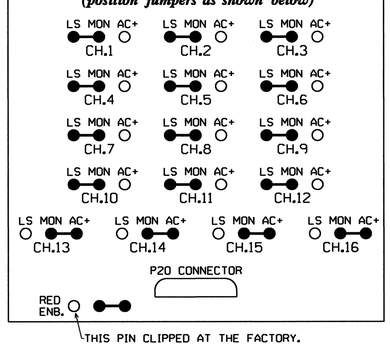
| VALUE (ohms) | WATTAGE |
|---|---|
| 1.5K - 1.9K | 25W (min) |
| 2.0K - 3.0K | 10W (min) |




NOTE: The purpose of these resistors is to load the channel red monitor inputs in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

## RED MONITOR BOARD PROGRAMMING

*(position jumpers as shown below)*




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0124
DESIGNED: January 2011
SEALED: 01/28/11
REVISED: 7-5-11

▽ REVISION SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

SIGNATURE: John T. Rowe Jr. DATE: 7-7-11

ELECTRICAL DETAIL Sheet 2 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of: Transportation Mobility and Safety Division, STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, Signal Management Section

750 N.Greenfield Pkwy,Garner,NC 27529

US 17 (Marine Boulevard)
at
SR 1470 (Western Boulevard)

Division 3 | Onslow County | Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: January 2011 | REVIEWED BY: | T. Joyce | |
| PREPARED BY: C. Strickland | REVIEWED BY: | | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| ▽ MODIFIED INPUT FILE TO INCLUDE SYSTEM LOOPS. ADDED TOMAR TYPICAL WIRING DETAIL ADDED QUEUE PREEMPT & ASSOC. DETAILS MWH 7-6-11 | JTR | 7-7-11 |

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SIGNATURE | DATE

SIG. INVENTORY NO. 03-0124

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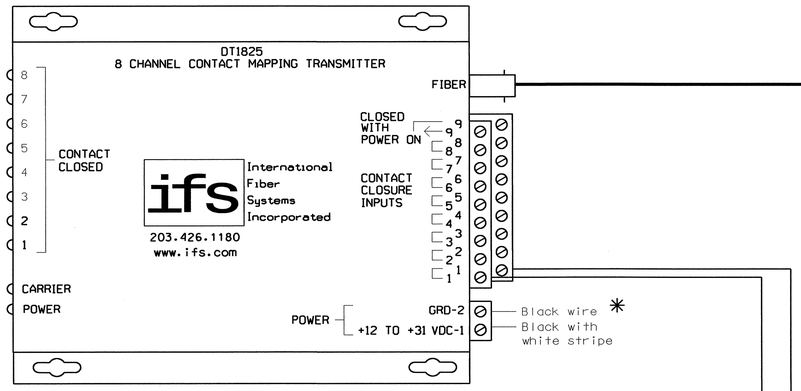
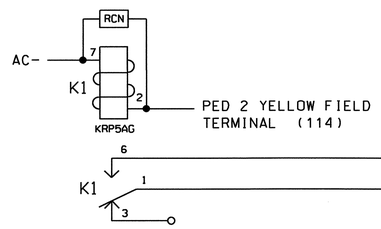
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | SIG.52 |

## WIRING DIAGRAM FOR FIBER OPTIC CONTACT CLOSURE TRANSMITTER LOCATED IN CABINET AT WESTERN BLVD AT COMMERCE (03-0614)




RELAY CONTROL NOTE: Relay K1 is controlled by LS S2P-Yel. This load switch output is controlled by Logic Processor programming. This output becomes active when Queue Preempt 7 is called for by queue loops and remains active until Preempt 7 is no longer active.

When relay K1 closes its contacts, the fiber optic contact closure device will send a preempt call down the fiber so that signal number 03-0124 will activate its queue preempiton simultaneously with 03-0614.




## ⚠ QUEUE PREEMPT 7 INPUT ASSIGNMENT PROGRAMMING DETAIL

*(program controller as shown below)*

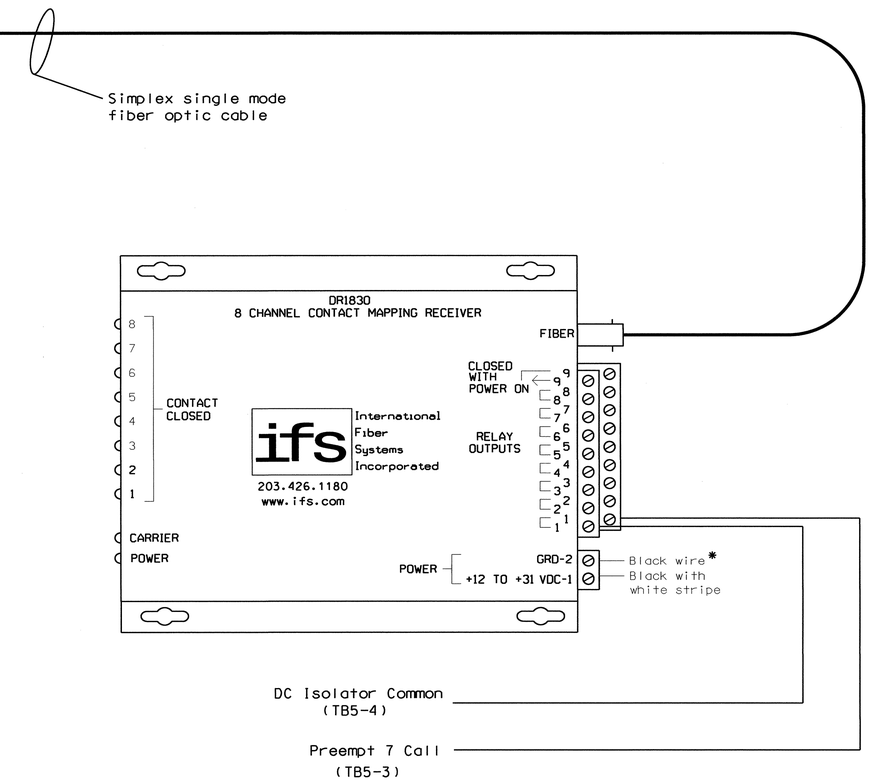
FROM MAIN MENU PRESS '5' (INPUTS), THEN '-' UNTIL INPUT 10 IS REACHED:

```
PAGE: 1 C1 PIN:48  PREEMPT
INPUT ASSIGNMENT #.................10
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................._
VEHICLE DETECTOR (1-64).............._
PEDESTRIAN DETECTOR (1-16)..........._
ALTERNATE PED DETECTOR (1-16)......._
PREEMPT (1-10)......................7
INVERTED PREEMPT (1-10)............._
STOP TIME (Y/N)....................._
FLASH SENSE (Y/N)..................._
DOOR OPEN (Y/N)....................._
MANUAL CONTROL ENABLE (Y/N)........._
MANUAL CONTROL ADVANCE (Y/N)......._
SPECIAL FUNCTION ALARM (1-8)......._
TOD HOUR SYCHRONIZATION (0-23)....._
FORCE OFF RING (1-4)................_
HOLD PHASES (1-16)................._
PLAN (65=FLSH,66=FREE)..._  OFFSET#..._
CHANGE PHASE SEQUENCE PAGE (1-12)...._
CHANGE PHASE TIMING PAGE (1-4)......._
CHANGE PHASE CONTROL PAGE (1-4)....._
CHANGE OVERLAP CONTROL PAGE (1-4)...._
CHANGE INPUT PAGE (1-4)............._
CHANGE OUTPUT PAGE (1-4)............_
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

ENTER 7 IN PREEMPT FIELD AND PRESS "ENT" KEY

PROGRAMMING COMPLETE

## ⚠ WIRING DETAIL FOR FIBER OPTIC CONTACT CLOSURE RECEIVER LOCATED IN CABINET AT US 17 (MARINE BLVD.) AT WESTERN BLVD (03-0124)




## NOTES

1. The International Fiber Systems DT1830 is an 8-channel contact mapping transmitter capable of transmitting up to eight contact closures over one optical fiber.

   If other manufacturer type of fiber transmitter is used contact NCDOT Signals Management for wiring details.

*2. Power connections are with the supplied 12 Volt DC Plug-in Power Supply.

3. Connections shown are located on input panel.

4. Ensure that DC isolater is inserted into slot J4 of input file.

5. Preempt 7 will have to be mapped to slot J4 of input file. See input programming detail on this sheet.

### OPERATIONAL NOTE

QUEUE PREEMPT 7 IS ACTIVATED WHEN QUEUE LOOPS LOCATED AT WESTERN BLVD. AT COMMERCE RD. (03-0614) ARE ACTUATED. WHEN THIS OCCURS THE FIBER TRANSMITTER AT 03-0614 WILL SEND A SIGNAL TO THE RECEIVER SHOWN ABOVE TO PLACE A PREEMPT CALL ON PREEMPT 7.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0124
DESIGNED: January 2011
SEALED: 01/28/11
REVISED: 7-5-11

⚠ REVISION SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

SIGNATURE 7-7-11 DATE

ELECTRICAL DETAIL Sheet 3 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

US 17 (Marine Boulevard) at SR 1470 (Western Boulevard)

Division 3 Onslow County Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: January 2011 | REVIEWED BY: T. Joyce | | |
| PREPARED BY: C. Strickland | REVIEWED BY: | | |
| REVISIONS | | INIT. | DATE |
| ⚠ MODIFIED INPUT FILE TO INCLUDE SYSTEM LOOPS. ADDED TOWAR TYPICAL WIRING DETAIL ADDED QUEUE PREEMPT & ASSOC. DETAILS MWH 7-6-11 | | JTR | 7-7-11 |

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SIGNATURE DATE

SIG. INVENTORY NO. 03-0124

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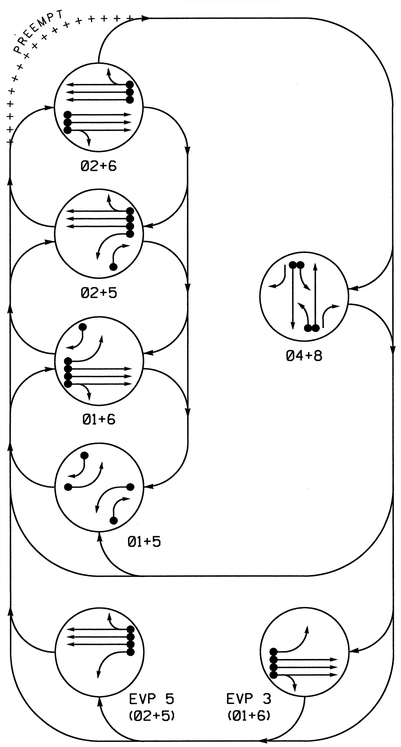
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.53 |

## PHASING DIAGRAM




## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 04+8 | Pre3 | Pre5 | FLASH |
|---|---|---|---|---|---|---|---|---|
| 11 | ← | ← | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ |
| 21,22 | R | R | G | G | R | R | G | Y |
| 41 | R | R | R | R | G | R | R | R |
| 42 | R/← | R | R/← | R | G | R | R | R |
| 51 | ← | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ |
| 61,62 | R | G | R | G | R | G | R | Y |
| 81 | R | R | R | R | G | R | R | R |
| 82 | R/← | R/← | R | R | G | R | R | R |

## SIGNAL FACE I.D.

All Heads L.E.D.




## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X60 | +5 | 1 | - | 1 | Y | Y | - | - | 3 | - | - |
| 1B | 6X60 | +5 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | - |
| 2A | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 2C | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 4A | 6X60 | +5 | 1 | - | 4 | Y | Y | - | - | 3 | - | - |
| 4B | 6X60 | +5 | 1 | - | 4 | Y | Y | - | - | - | - | - |
| 5A | 6X60 | +5 | 1 | - | 5 | Y | Y | - | - | 3 | - | - |
| 5B | 6X60 | +5 | 1 | - | 5 | Y | Y | - | - | 15 | - | - |
| 6A | 6X6 | 300 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 300 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| 6C | 6X6 | 300 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| 8A | 6X60 | +5 | 2-4-2 | - | 8 | Y | Y | - | - | 3 | - | - |
| 8B | 6X60 | +5 | 2-4-2 | - | 8 | Y | Y | - | - | - | - | - |
| S01 | 6X6 | +130 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S02 | 6X6 | +130 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S03 | 6X6 | +130 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S04 | 6X6 | +100 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S05 | 6X6 | +100 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S06 | 6X6 | +100 | 4 | Y | - | - | - | - | - | - | Y | Y |

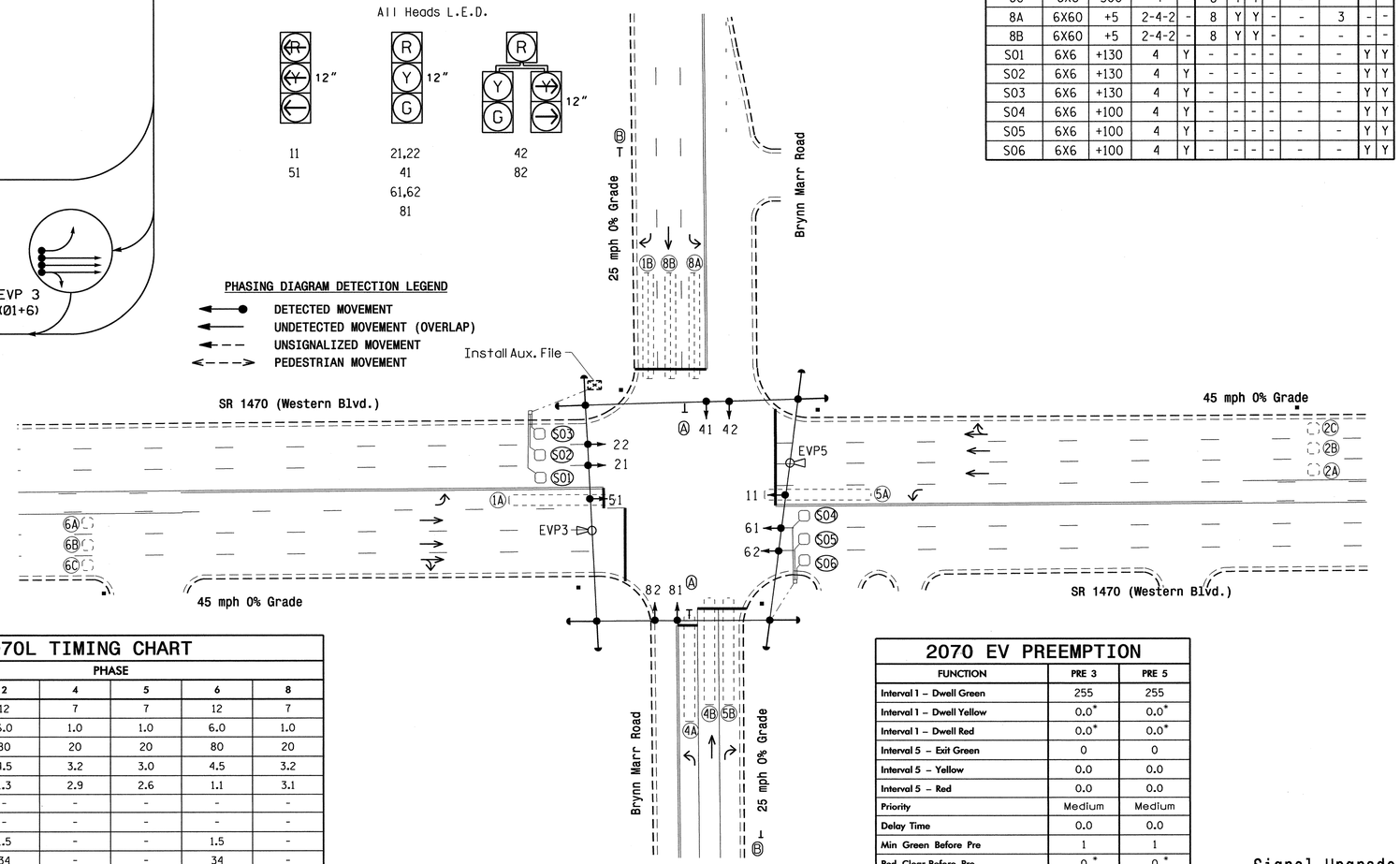
5 Phase
Fully Actuated w/EV Preempt
Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Pavement markings are existing.
7. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0144.

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 * | 1.0 | 6.0 | 1.0 | 1.0 | 6.0 | 1.0 |
| Max Green 1 * | 20 | 80 | 20 | 20 | 80 | 20 |
| Yellow Clearance | 3.0 | 4.5 | 3.2 | 3.0 | 4.5 | 3.2 |
| Red Clearance | 2.6 | 1.3 | 2.9 | 2.6 | 1.1 | 3.1 |
| Walk 1 * | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | - | 1.5 | - |
| Max Variable Initial * | - | 34 | - | - | 34 | - |
| Time Before Reduction * | - | 15 | - | - | 15 | - |
| Time To Reduce * | - | 40 | - | - | 34 | - |
| Minimum Gap | - | 3.2 | - | - | 3.2 | - |
| 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.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 5 |
|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 |
| Priority | Medium | Medium |
| Delay Time | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 |
| Ped Clear Before Pre | 0 * | 0 * |
| Yellow Clear Before Pre | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 |
| Enable Backup Protection | N | N |
| Ped Clear Through Yellow | N | N |
| Preempt Extend** | 2 | 2 |
| Omit Overlaps | A | C |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

## 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 | |
| | Optical Detector | |
| A | Left Arrow "ONLY" Sign (R3-5L) | A |
| B | "Right Lane Must Turn Right" Sign (R3-7R) | B |

Signal Upgrade

Prepared In 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

# SR 1470 (Western Blvd.) at Brynn Marr Road

Division 3 Onslow County Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | March 2011 | REVIEWED BY: | |
| PREPARED BY: | JPG | REVIEWED BY: | |

SCALE 0 40 1"=40'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY

SIGNATURE DATE

SIG. INVENTORY NO. 03-0144

11-JUL-2011 15:00
S:\Traffic\ITS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0144\03144_sig_dsn_20110711.dgn
jgalloway

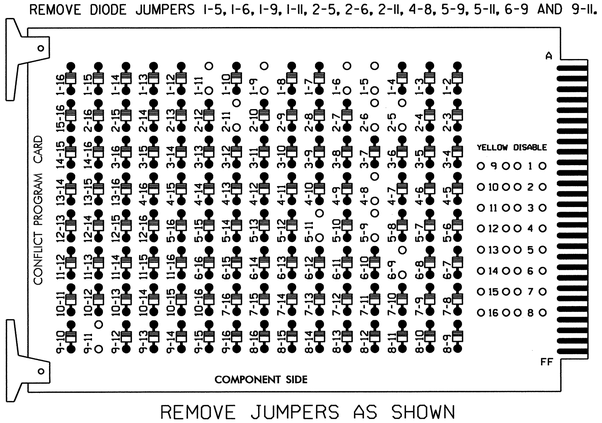
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.54 |

# EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*

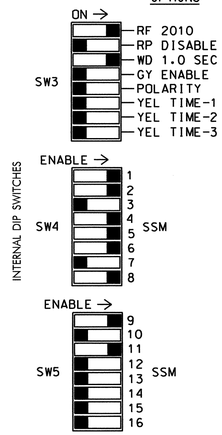
WD ENABLE

REMOVE DIODE JUMPERS I-5, I-6, I-9, I-11, 2-5, 2-6, 2-11, 4-8, 5-9, 5-11, 6-9 AND 9-11.




REMOVE JUMPERS AS SHOWN

OPTIONS




■ = 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, 10,12,13,14,15 & 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 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
8. The cabinet and controller are part of the Jacksonville City Signal System.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11 | 21,22 | NU | NU | 41,42 | NU | 51 | 61,62 | NU | NU | 81,82 | NU | 82 | NU | NU | 42 | NU | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | | * | | | * | | |
| YELLOW | | 129 | | | 102 | | | 135 | | | 108 | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | | | | | | | |
| RED ARROW | 125 | | | | | | 131 | | | | | | | | | | | |
| YELLOW ARROW | 126 | | | | | | 132 | | | | | | A122 | | | A115 | | |
| GREEN ARROW | 127 | | | | | | 133 | | | | | | A123 | | | A116 | | |

NU = Not Used

* Denotes install load resistor. See load resistor installation detail below.

## EQUIPMENT INFORMATION

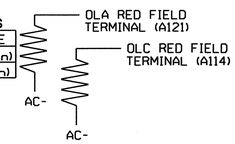
CONTROLLER.....2070L
CABINET .....332
SOFTWARE .....ECONOLITE OASIS (3.02.77 or later approved version)

CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S8,S9,S12
PHASES USED.....1,2,4,5,6,8
OVERLAP A:.....1
OVERLAP B:.....NOT USED
OVERLAP C:.....5
OVERLAP D:.....NOT USED

## LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

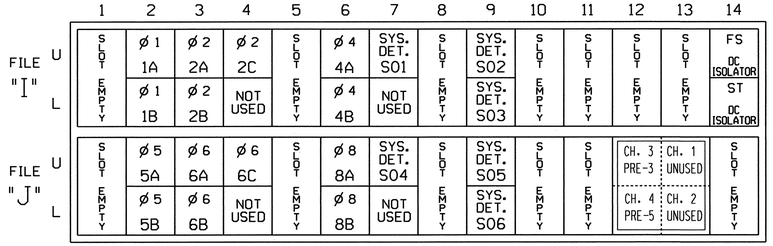
| VALUE (ohms) | WATTAGE |
|---|---|
| 1.5K - 1.9K | 25W (min) |
| 2.0K - 3.0K | 10W (min) |




NOTE: The purpose of these resistors is to load the channel red monitor inputs in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

## INPUT FILE POSITION LAYOUT

*(front view)*




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

FS = FLASH SENSE
ST = STOP TIME
PRE 3&5 = EV PREEMPT

4 CHANNEL TOMAR OSP CARD INSERT CARD INTO SLOT J13

## INPUT FILE CONNECTION & PROGRAMMING CHART

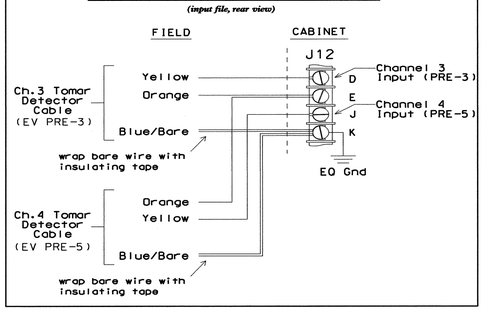
| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1A | TB2-5,6 | I2U | 39 | 1 | 2 | 1 | Y | Y | | | 3 |
| 1B | TB2-7,8 | I2L | 43 | 5 | 12 | 1 | Y | Y | | | 15 |
| 2A | TB2-9,10 | I3U | 63 | 25 | 32 | 2 | Y | Y | | | |
| 2B | TB2-11,12 | I3L | 76 | 38 | 42 | 2 | Y | Y | | | |
| 2C | TB4-1,2 | I4U | 47 | 9 | 22 | 2 | 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 | | | |
| S01* | TB6-1,2 | I7U | 65 | 27 | 34 | SYS | | | | | |
| S02* | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| S03* | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| 5A | TB3-5,6 | J2U | 40 | 2 | 6 | 5 | Y | Y | | | 3 |
| 5B | TB3-7,8 | J2L | 44 | 6 | 16 | 5 | Y | Y | | | 15 |
| 6A | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | | | |
| 6B | TB3-11,12 | J3L | 77 | 39 | 46 | 6 | Y | Y | | | |
| 6C | TB5-1,2 | J4U | 48 | 10 | 26 | 6 | 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 | | | |
| S04* | TB7-1,2 | J7U | 66 | 28 | 38 | SYS | | | | | |
| S05* | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |
| S06* | TB7-11,12 | J9L | 61 | 23 | 17 | SYS | | | | | |

*System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0144
DESIGNED: MARCH 2011
SEALED: 07-11-11
REVISED: N/A

Signal Upgrade - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

# SR 1470 (Western Blvd.) at Brynn Marr Road

Division 03 | Onslow County | Jacksonville

PLAN DATE: July 2011 | REVIEWED BY: JTR
PREPARED BY: James Peterson | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE | DATE 7-12-11
SIG. INVENTORY NO. 03-0144

13-JUL-2011 09:01
S:\MTSASU\ITS Signals\Workgroups\Sig Mgmt\Petersonm\03014A_smlele_20110418.dgn
jtpeterson

## EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press the 'Next" key 2-times to advance to Preempt #3.

EVP 3 :

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0.0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦ X
```

PRESS 'NEXT' TWICE

EVP 5 :

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦   X
```

PROGRAMMING COMPLETE

Program extend time on optical detector units for 2.0 sec.

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
 PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
 PHASE:                ¦123456789101112131415 16
VEH OVL PARENTS:       ¦X
VEH OVL NOT VEH:       ¦
VEH OVL NOT PED:       ¦
VEH OVL GRN EXT:       ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+' TWICE

```
 PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
 PHASE:                ¦123456789101112131415 16
VEH OVL PARENTS:       ¦    X
VEH OVL NOT VEH:       ¦
VEH OVL NOT PED:       ¦
VEH OVL GRN EXT:       ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0144
DESIGNED: MARCH 2011
SEALED: 7-11-11
REVISED: N/A

Signal Upgrade - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

SR 1470 (Western Blvd.)
at
Brynn Marr Road

Division 03 | Onslow County | Jacksonville

PLAN DATE: July 2011 | REVIEWED BY: JTR

PREPARED BY: James Peterson | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

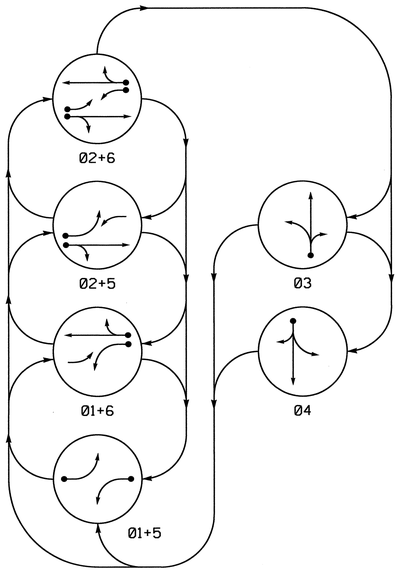
John T. Rowe Jr. 7-13-11
SIGNATURE DATE

SIG. INVENTORY NO. 03-0144

13-JUL-2011 08:21
S:\ITS&SU\ITS Signals\Workgroups\Sig Mgmt\Peterson\03014A_sm_ele_20110418.dgn
jpeterson

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.56 |

## 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 | 04 | FLASH |
|---|---|---|---|---|---|---|---|
| 11 | ← | ← | F.Y. | F.Y. | ~~R~~ | ~~R~~ | ~~Y~~ |
| 21,22 | R | R | G | G | R | R | Y |
| 31 | R | R | R | R | G ← | R | R |
| 32 | R | R | R | R | G | R | R |
| 41 | R | R | R | R | R | G ← | R |
| 42 | R | R | R | R | R | G | R |
| 51 | ← | F.Y. | ← | F.Y. | ~~R~~ | ~~R~~ | ~~Y~~ |
| 61,62 | R | G | R | G | R | R | Y |

## STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

| FROM | TO ← 1 | TO ← 2 | TO F.Y. 1 | TO F.Y. 2 | TO ~~R~~ 1 | TO ~~R~~ 2 |
|---|---|---|---|---|---|---|
| ← | ← | ← | ~~Y~~ | ~~R~~ | ~~Y~~ | ~~R~~ |
| F.Y. | F.Y. | F.Y. | F.Y. | F.Y. | ~~Y~~ | ~~R~~ |
| ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |

F.Y. = Flashing Yellow Arrow

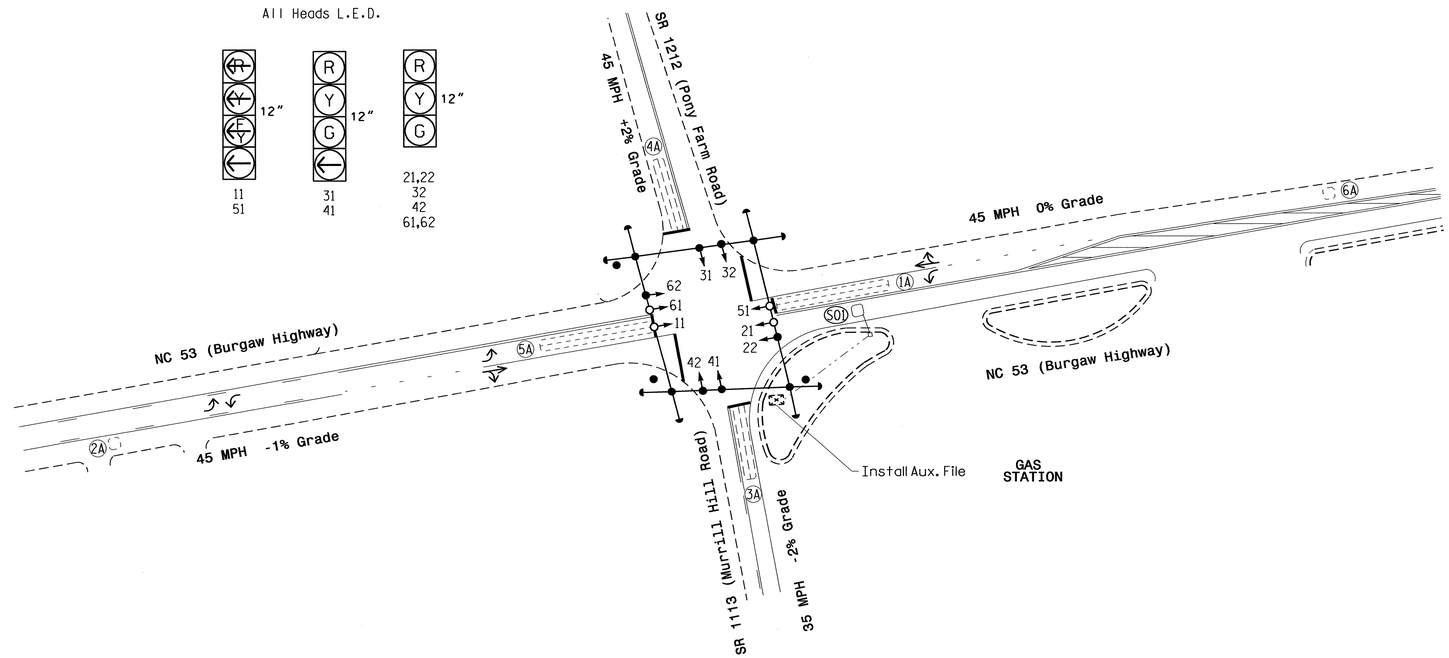
## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X60 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | - |
| | | | | | 6 | Y | Y | Y | - | 3 | - | - |
| 2A | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 3A | 6X40 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | 10 | - | - |
| 4A | 6X40 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 10 | - | - |
| 5A | 6X60 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | - |
| | | | | | 2 | Y | Y | Y | - | 3 | - | - |
| 6A | 6X6 | 300 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| S01 | 6X6 | +85 | 4 | Y | - | - | - | - | - | - | Y | Y |

## SIGNAL FACE I.D.

All Heads L.E.D.




## 6 Phase
## Fully Actuated
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Disable existing backup protection for phases 2+6.
4. Phase 1 and/or phase 5 may be lagged.
5. The order of phase 3 and phase 4 may be reversed.
6. Set all detector units to presence mode.
7. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #0172.

## 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 | |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 7 | 7 | 7 | 12 |
| Extension 1 * | 1.0 | 6.0 | 1.0 | 1.0 | 1.0 | 6.0 |
| Max Green 1 * | 20 | 90 | 25 | 25 | 20 | 90 |
| Yellow Clearance | 3.0 | 4.6 | 4.0 | 4.3 | 3.0 | 4.6 |
| Red Clearance | 1.6 | 1.0 | 1.5 | 1.2 | 1.6 | 1.0 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Walk 1 * | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - |
| Seconds Per Actuation * | - | 2.0 | - | - | - | 2.0 |
| Max Variable Initial * | - | 34 | - | - | - | 34 |
| Time Before Reduction * | - | 15 | - | - | - | 15 |
| Time To Reduce * | - | 30 | - | - | - | 30 |
| Minimum Gap | - | 3.0 | - | - | - | 3.0 |
| Recall Mode | - | MIN RECALL | - | - | - | MIN RECALL |
| Vehicle Call Memory | - | YELLOW | - | - | - | YELLOW |
| Dual Entry | - | - | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

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

SCALE 1"=40' (0 – 40)

# NC 53 (Burgaw Highway) at SR 1212 (Pony Farm Road)/ SR 1113 (Murrill Hill Road)

Division 3 Onslow County Jacksonville

PLAN DATE: March 2011 REVIEWED BY:
PREPARED BY: JPG REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON R. GALLOWAY

SIGNATURE 4/18/11 DATE

SIG. INVENTORY NO. 03-0172

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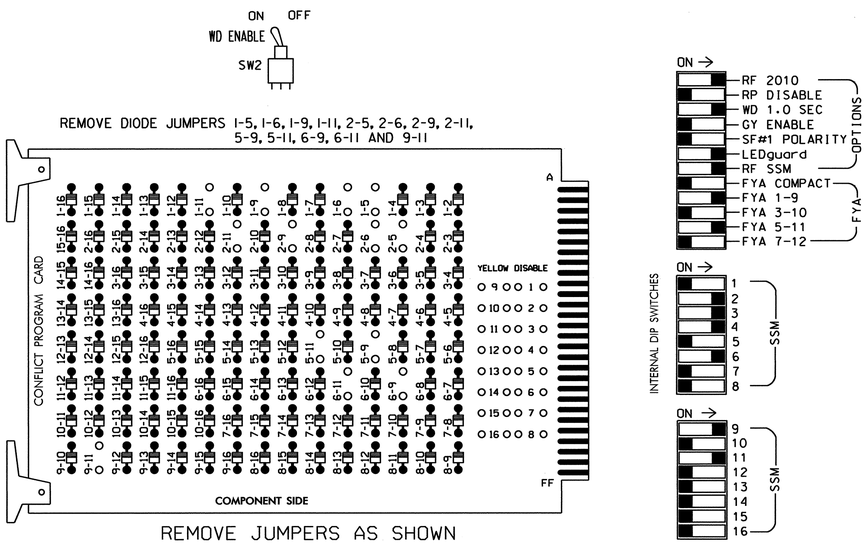
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.57 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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.

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 1A | Ø2 2A | SLOT EMPTY | WIRED INPUT ⊗ | Ø3 3A | Ø4 4A | SLOT EMPTY | SLOT EMPTY | SYS. DET. S01 | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | NOT USED | NOT USED | | | NOT USED | NOT USED | | | NOT USED | | | | | ST DC ISOLATOR |
| FILE "J" | U | Ø5 5A | Ø6 6A | SLOT EMPTY | WIRED INPUT ⊗ | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY |
| | L | NOT USED | NOT USED | | | | | | | | | | | | |

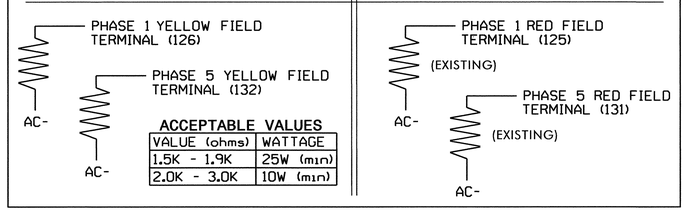
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

## LOAD RESISTOR INSTALLATION DETAIL

*(install and remove resistors as shown below)*




**ACCEPTABLE VALUES**

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

## NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. Verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,5,7,8,10,12,13,14,15 & 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 Gap Reduction.
5. Program phases 2 and 6 for Start-Up in Green.
6. Set all detector card channels to 'PRESENCE' mode.
7. Program phases 2 and 6 for Yellow Flash, and Overlap 1 as a Wag Overlap.
8. ! ---> Install and wire new Auxiliary Output File. (See EQUIPMENT INFORMATION notes below).
9. The cabinet and controller are part of the Jacksonville City Signal System. Controller Asset: #0172

## EQUIPMENT INFORMATION

CONTROLLER.....EXISTING EAGLE TYPE 2070L
CABINET.....EXISTING McCAIN/CTRL TECH MODEL 332A
AUXILIARY OUTPUT FILE...SAFETRAN TYPE 420 OR EQUAL*
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S9,S12.
PHASES USED.....1,2,3,4,5,6
OVERLAP'A'.....1+2
OVERLAP'B'.....NOT USED
OVERLAP'C'.....5+6
OVERLAP'D'.....NOT USED

*SUBJECT TO APPROVAL

## ! BACKUP PROTECTION DISABLE NOTE !

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Scroll down to 'Backup Protect' and DISABLE programming for phases 2 and 6.

## 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[1] | TB2-1,2 | I1U | 56 | 18 | 1 | 1 | Y | Y | | | 15 |
| | - | J4U | 48 | 10 | 26 | 6 | Y | Y | Y | | 3 |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 3A | TB4-5,6 | I5U | 58 | 20 | 3 | 3 | Y | Y | | | 10 |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | 10 |
| S01* | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| 5A[2] | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | 15 |
| | - | I4U | 47 | 9 | 22 | 2 | Y | Y | Y | | 3 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |

*System detector only. Remove the vehicle phase assigned to this detector in the default programming.

[1]Add jumper from I1-W to J4-W, on rear of input file.

[2]Add jumper from J1-W to I4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2U
FILE J
SLOT 2
UPPER

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | | S4 | | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | | 4 | | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11★ | 21,22 | NU | 31 | 32 | 41 | 42 | NU | 51★ | 61,62 | NU | NU | NU | NU | 11★ | NU | NU | 51★ | NU | NU |
| RED | * | 128 | | 116 | 116 | 101 | 101 | | * | 134 | | | | | | | | | | |
| YELLOW | * | 129 | | 117 | 117 | 102 | 102 | | * | 135 | | | | | | | | | | |
| GREEN | | 130 | | 118 | 118 | 103 | 103 | | | 136 | | | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | | | A121 | | | A114 | | |
| YELLOW ARROW | | | | | | | | | | | | | | | A122 | | | A115 | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | | A123 | | | A116 | | |
| GREEN ARROW | 127 | | | 118 | | 103 | | | 133 | | | | | | | | | | | |

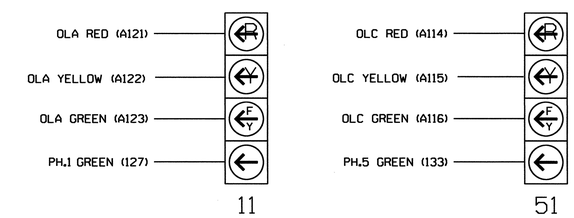
NU = Not Used

*See Load Resistor Installation Detail this sheet.

★See 4-Sect. FYA-PPLT Signal Wiring Detail below.

## 4-SECTION FYA-PPLT SIGNAL WIRING DETAIL

*(wire signal heads as shown)*




NOTE:

The display sequence for this signal requires special logic programming. See sheet 2 for programming instructions.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0172
DESIGNED: MARCH 2011
SEALED: 4/18/11
REVISED: N/A

SEE SHEET 2 FOR FYA-PPLT SIGNAL SEQUENCE PROGRAMMING AND OVERLAP PROGRAMMING

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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 53 (Burgaw Highway)
at
SR 1212 (Pony Farm Road)/
SR 1113 (Murrill Hill Road)

Division 03 | Onslow County | Jacksonville

PLAN DATE: April 2011 | REVIEWED BY: MCA
PREPARED BY: F.E. Russ | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE 4-19-11 DATE
SIG. INVENTORY NO. 03-0172

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## LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL). THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1,2,3,4,5 & 6.
2. FROM MAIN MENU PRESS '6' (OUTPUTS). THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1 (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON
AND RED CLEAR ON PHASE #1  IS ON

        SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11)

PRESS '+'

```
LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON

        SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11)

PRESS '+'

```
LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF  YELLOW ON PHASE     #1  IS ON

        SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11)

PRESS '+'

```
LOGICAL I/O COMMAND #4 (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON
AND RED CLEAR ON PHASE #5  IS ON

        SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #42 ON
SET OUTPUT  ASSIGNMENT #43 OFF
```

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51)

PRESS '+'

```
LOGICAL I/O COMMAND #5 (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON

        SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #44 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51)

PRESS '+'

```
LOGICAL I/O COMMAND #6 (+/-COMMAND#)
IF  YELLOW ON PHASE     #5  IS ON

        SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #43 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51)

END OF PROGRAMMING

### OUTPUT REFERENCE SCHEDULE

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS). THEN '1' (VEHICLE OVERLAP SETTINGS).

```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS:¦XX
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y <-------- !
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

PRESS '+' TWICE

```
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS:¦    XX
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y <-------- !
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0172
DESIGNED: MARCH 2011
SEALED: 4/18/11
REVISED: N/A

Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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 53 (Burgaw Highway)
at
SR 1212 (Pony Farm Road)/
SR 1113 (Murrill Hill Road)

Division 03 | Onslow County | Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | April 2011 | REVIEWED BY: | MGH |
| PREPARED BY: | F.E. Russ | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE 4-18-11 DATE
SIG. INVENTORY NO. 03-0172

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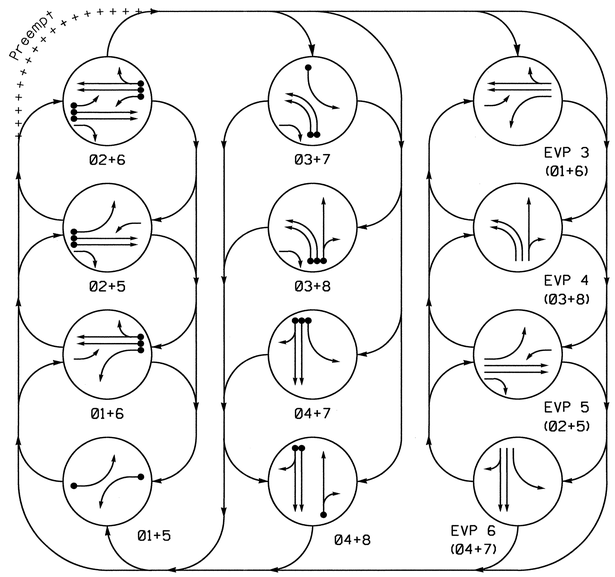
Russ

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.59 |

## PHASING DIAGRAM

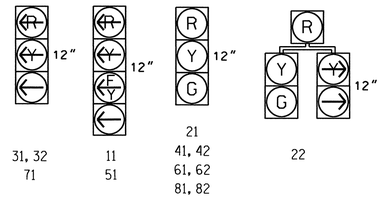



PHASING DIAGRAM DETECTION LEGEND

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

## SIGNAL FACE I.D.

All Heads L.E.D.




## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 03+7 | 03+8 | 04+7 | 04+8 | EVP 3 | EVP 4 | EVP 5 | EVP 6 | FLASH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | ← | ← | F/Y | F/Y | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | F/Y | ~~R~~ | ~~Y~~ |
| 21 | R | R | G | G | R | R | R | R | R | R | G | R | Y |
| 22 | R | R | G | G | R/→ | R/→ | R | R | R | R | G | R | Y |
| 31,32 | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ← | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ |
| 41,42 | R | R | R | R | R | R | G | G | R | R | R | G | R |
| 51 | ← | F/Y | ← | F/Y | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | F/Y | ~~R~~ | ← | ~~R~~ | ~~Y~~ |
| 61,62 | R | G | R | G | R | R | R | R | G | R | R | R | Y |
| 71 | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ |
| 81,82 | R | R | R | R | R | G | R | G | R | G | R | R | R |

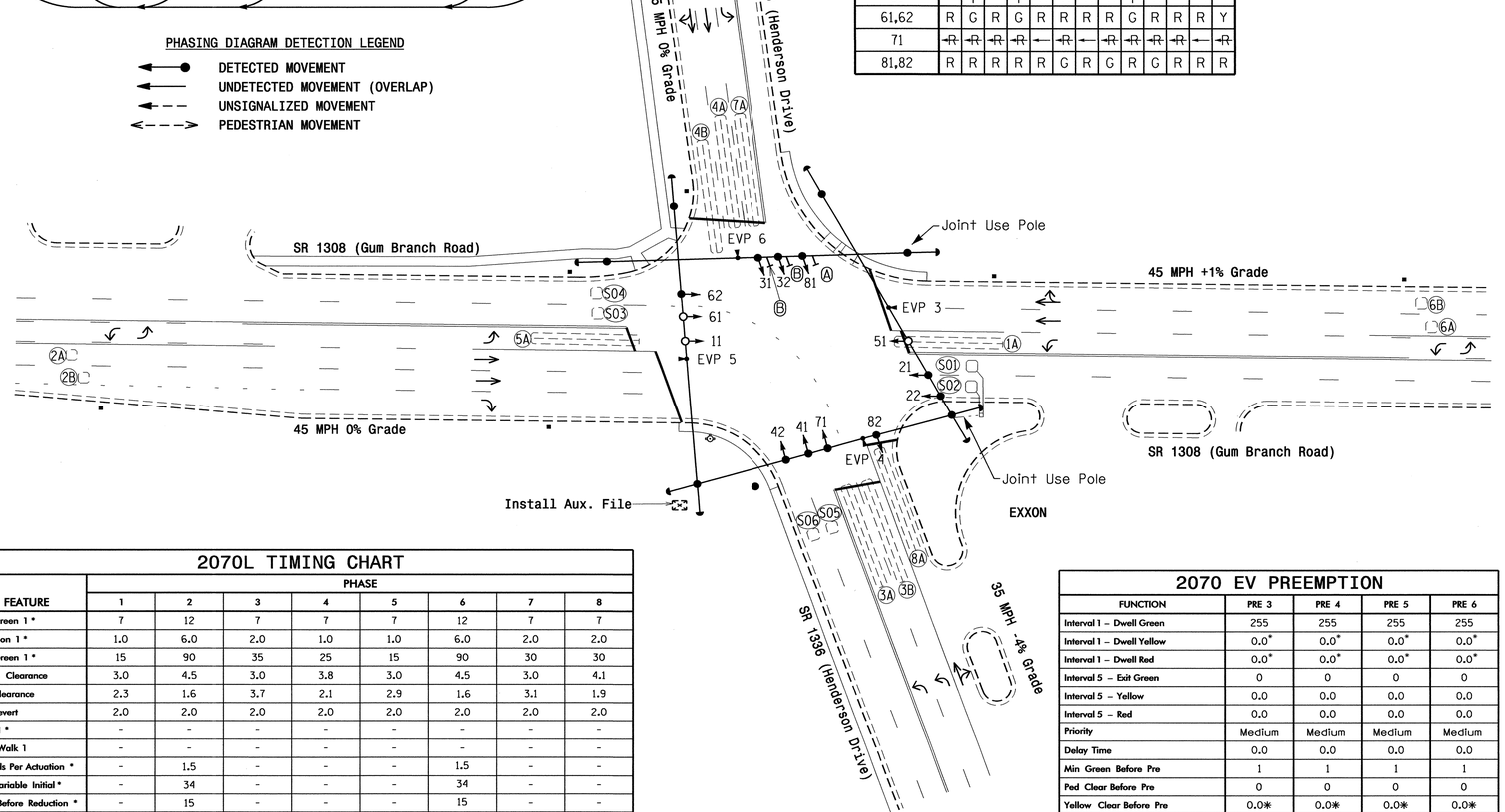
## 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X60 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | - |
| | | | | | 6 | Y | Y | Y | - | 3 | - | - |
| 2A | 6X6 | 306 | Existing | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 306 | Existing | - | 2 | Y | Y | - | - | - | - | - |
| 3A | 6X60 | +2 | 2-4-2 | - | 3 | Y | Y | - | - | 3 | - | - |
| 3B | 6X60 | +3 | 2-4-2 | - | 3 | Y | Y | - | - | - | - | - |
| 4A | 6X60 | +4 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 4B | 6X60 | +18 | 2-4-2 | - | 4 | Y | Y | - | - | 10 | - | - |
| 5A | 6X60 | +5 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | - |
| | | | | | 2 | Y | Y | Y | - | 3 | - | - |
| 6A | 6X6 | 283 | Existing | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 283 | Existing | - | 6 | Y | Y | - | - | - | - | - |
| 7A | 6X60 | +2 | 2-4-2 | - | 7 | Y | Y | - | - | 3 | - | - |
| 8A | 6X60 | 3 | 2-4-2 | - | 8 | Y | Y | - | - | 10 | - | - |
| S01 | 6X6 | +160 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S02 | 6X6 | +160 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S03 | 6X6 | +145 | 4 | - | - | - | - | - | - | - | Y | - |
| S04 | 6X6 | +149 | 4 | - | - | - | - | - | - | - | Y | - |
| S05 | 6X6 | +167 | 4 | - | - | - | - | - | - | - | Y | - |
| S06 | 6X6 | +173 | 4 | - | - | - | - | - | - | - | Y | - |

## 8 Phase
## Fully Actuated w/ EV Preeemption
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or 5 may be lagged.
4. Disable existing backup protection.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Pavement markings are existing.
8. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset # 0173.




## 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 | |
| N/A | Fire Hydrant | |
| | Directional Arrow | |
| | Pavement Marking Arrow | |
| | Optical Detector Unit | |
| Ⓐ | Combined Through and Right Arrow Sign (R3-6R) W/Orange Flags | Ⓐ |
| Ⓑ | Left Arrow "ONLY" Sign (R3-5L) | Ⓑ |

## 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 7 | 7 | 7 | 12 | 7 | 7 |
| Extension 1 * | 1.0 | 6.0 | 2.0 | 1.0 | 1.0 | 6.0 | 2.0 | 2.0 |
| Max Green 1 * | 15 | 90 | 35 | 25 | 15 | 90 | 30 | 30 |
| Yellow Clearance | 3.0 | 4.5 | 3.0 | 3.8 | 3.0 | 4.5 | 3.0 | 4.1 |
| Red Clearance | 2.3 | 1.6 | 3.7 | 2.1 | 2.9 | 1.6 | 3.1 | 1.9 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Walk 1 * | - | - | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | - | - | 1.5 | - | - |
| Max Variable Initial * | - | 34 | - | - | - | 34 | - | - |
| Time Before Reduction * | - | 15 | - | - | - | 15 | - | - |
| Time To Reduce * | - | 45 | - | - | - | 45 | - | - |
| Minimum Gap | - | 3.0 | - | - | - | 3.0 | - | - |
| Recall Mode | - | MIN RECALL | - | - | - | MIN RECALL | - | - |
| Vehicle Call Memory | - | YELLOW | - | - | - | YELLOW | - | - |
| Dual Entry | - | - | - | - | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 4 | PRE 5 | PRE 6 |
|---|---|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 | 0.0 | 0.0 |
| Priority | Medium | Medium | Medium | Medium |
| Delay Time | 0.0 | 0.0 | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 | 1 | 1 |
| Ped Clear Before Pre | 0 | 0 | 0 | 0 |
| Yellow Clear Before Pre | 0.0* | 0.0* | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* | 0.0* | 0.0* |
| Dwell Min Time | 12 | 7 | 12 | 7 |
| Enable Backup Protection | N | N | N | N |
| Ped Clear Through Yellow | N | N | N | N |
| Preempt Extend** | 2 | 2 | 2 | 2 |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

Signal Upgrade

Prepared in 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

# SR 1308 (Gum Branch Road) at SR 1336 (Henderson Drive)

Division 3 Onslow County Jacksonville

PLAN DATE: June 2009 REVIEWED BY: JPG
PREPARED BY: I. O. Umozurike REVIEWED BY:

SCALE 0 40 1"=40'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

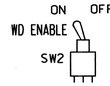
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON L. GALLOWAY
SIGNATURE 4/6/11 DATE
SIG. INVENTORY NO. 03-0173

06-APR-2011 08:28
S:\Traffic\Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0173\03-0173_sig_dsn_2011mod.dgn
jgalloway

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.60 |

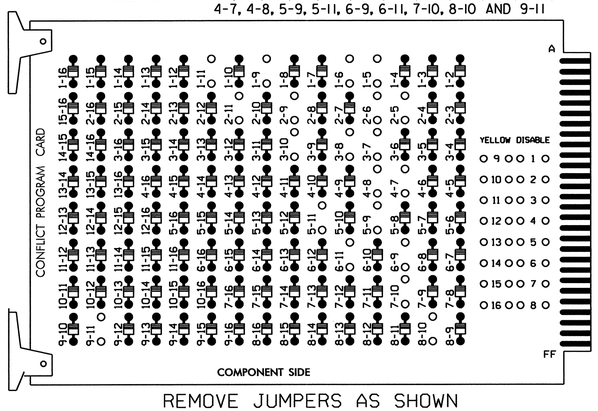
# EDI MODEL 2010ECL-NC CONFLICT MONITOR*
## PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*

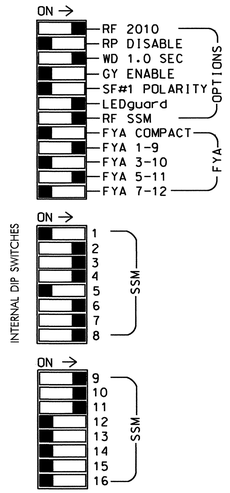



*NEW INSTALLATION

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 2-5, 2-6, 2-9, 2-11, 3-7, 3-8, 3-10, 4-7, 4-8, 5-9, 5-11, 6-9, 6-11, 7-10, 8-10 AND 9-11




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.

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 1A | Ø2 2A | SLOT EMPTY | WIRED INPUT ⊗ | Ø3 3A | Ø3 3B | Ø4 4A | SLOT EMPTY | SYS. DET. S01 | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | NOT USED | Ø2 2B | | | NOT USED | NOT USED | Ø4 4B | | SYS. DET. S02 | | | | | ST DC ISOLATOR |
| FILE "J" | U | Ø5 5A | Ø6 6A | SLOT EMPTY | WIRED INPUT ⊗ | Ø7 7A | SYS. DET. S05 | Ø8 8A | SLOT EMPTY | SYS. DET. S03 | SLOT EMPTY | SLOT EMPTY | PRE3 * Opticom | PRE4 4-ch. | SLOT EMPTY |
| | L | NOT USED | Ø6 6B | | | NOT USED | SYS. DET. S06 | NOT USED | | SYS. DET. S04 | | | PRE5 | PRE6 | |

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

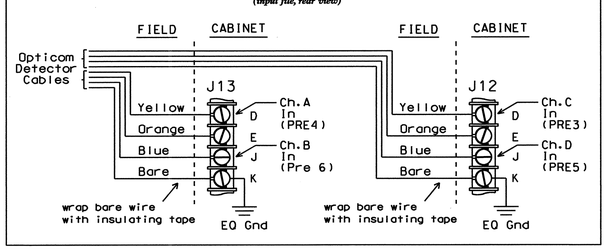
FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

⊗ Wired Input - Do not populate slot with detector card

*SEE OPTICOM FIELD WIRE DETAIL BELOW

### TYPICAL OPTICOM FIELD WIRE DETAIL

*(input file, rear view)*




## NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. Verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,5,12,13,14,15 & 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 Gap Reduction.
5. Program phases 2 and 6 for Start-Up in Green.
6. Set all detector card channels to 'PRESENCE' mode.
7. Program phases 2 and 6 for Yellow Flash, and Overlaps 1 and 2 as Wag Overlaps.
8. The cabinet and controller are part of the Jacksonville City Signal System. Controller Asset: #0173

## EQUIPMENT INFORMATION

CONTROLLER.....EXISTING SIEMENS/EAGLE 2070L
CABINET.....EXISTING SIEMENS/EAGLE 332A*
AUXILIARY OUTPUT FILE...SAFETRAN TYPE 420 OR EQUAL**
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S12
PHASES USED.....1,2,3,4,5,6,7,8
OVERLAP'A'.....1+2
OVERLAP'B'.....Ø3
OVERLAP'C'.....5+6
OVERLAP'D'.....NOT USED

*NEW 2010ECL-NC CONFLICT MONITOR REQUIRED **SUBJECT TO APPROVAL

## ! BACKUP PROTECTION DISABLE NOTE !

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Scroll down to 'Backup Protect' and DISABLE programming for phases 2 and 6.

## 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[1] | TB2-1,2 | I1U | 56 | 18 | 1 | 1 | Y | Y | | | 15 |
| | - | J4U | 48 | 10 | 26 | 6 | Y | Y | Y | | 3 |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | 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 | | | |
| 4A | TB6-1,2 | I7U | 65 | 27 | 34 | 4 | Y | Y | | | |
| 4B | TB6-3,4 | I7L | 78 | 40 | 44 | 4 | Y | Y | | | 10 |
| S01* | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| S02* | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| 5A[2] | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | 15 |
| | - | I4U | 47 | 9 | 22 | 2 | Y | Y | Y | | 3 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| 7A | TB5-5,6 | J5U | 57 | 19 | 7 | 7 | Y | Y | | | 3 |
| S05* | TB5-9,10 | J6U | 42 | 4 | 8 | SYS | | | | | |
| S06* | TB5-11,12 | J6L | 46 | 8 | 18 | SYS | | | | | |
| 8A | TB7-1,2 | J7U | 66 | 28 | 38 | 8 | Y | Y | | | 10 |
| S03* | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |
| S04* | TB7-11,12 | J9L | 61 | 23 | 17 | SYS | | | | | |

*System detector only. Remove the vehicle phase assigned to this detector in the default programming.

[1]Add jumper from I1-W to J4-W, on rear of input file.

[2]Add jumper from J1-W to I4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11★ | 21,22 | NU | 31,32 | 41,42 | NU | 51★ | 61,62 | NU | 71 | 81,82 | NU | 11★ | 22 | NU | 51★ | NU | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | | | * | | | | |
| YELLOW | * | 129 | | | 102 | | * | 135 | | | 108 | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | | | | | | | |
| RED ARROW | | | | 116 | | | | | | 122 | | | A121 | | | A114 | | |
| YELLOW ARROW | | | | 117 | | | | | | 123 | | | A122 | A125 | | A115 | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | | | A116 | | |
| GREEN ARROW | 127 | | | 118 | | | 133 | | | 124 | | | | A126 | | | | |

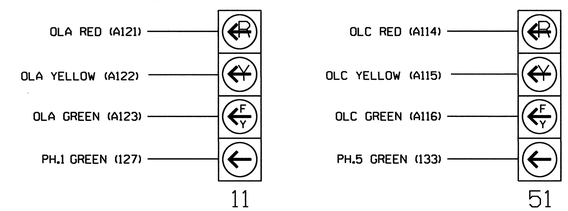
NU = Not Used

*Denotes install load resistor. See Load Resistor Installation Detail this sheet.

★See 4-Sect. FYA-PPLT Signal Wiring Detail below.

## 4-SECTION FYA-PPLT SIGNAL WIRING DETAIL

*(wire signal heads as shown)*

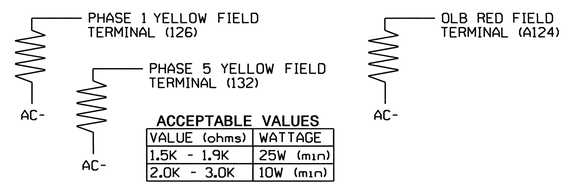



NOTE:

The display sequence for this signal requires special logic programming. See sheet 2 for programming instructions.

## LOAD RESISTOR INSTALLATION DETAIL

*(install resistors as shown below)*




ACCEPTABLE VALUES

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0173
DESIGNED: JUNE 2009
SEALED: 4/6/11
REVISED: N/A

SEE SHEET 2 FOR FYA-PPLT SIGNAL SEQUENCE PROGRAMMING AND OVERLAP PROGRAMMING

SEE SHEET 3 FOR EMERGENCY VEHICLE PREEMPTION CONTROLLER PROGRAMMING

Electrical Detail - Sheet 1 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

# SR 1308 (Gum Branch Road) at SR 1336 (Henderson Drive)

| Division 03 | Onslow County | Jacksonville |
|---|---|---|
| PLAN DATE: March 2011 | REVIEWED BY: | |
| PREPARED BY: F.E. Russ | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
John T. Rowe 4-6-11
SIGNATURE DATE
SIG. INVENTORY NO. 03-0173

06-APR-2011 16:27
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Russ

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 61 |

# LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1,2,3,4,5 & 6.

2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1 (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON
AND RED CLEAR ON PHASE #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11 )

PRESS '+'

```
LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11 )

PRESS '+'

```
LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF  YELLOW ON PHASE     #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11 )

PRESS '+'

```
LOGICAL I/O COMMAND #4 (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON
AND RED CLEAR ON PHASE #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #42 ON
SET OUTPUT  ASSIGNMENT #43 OFF
```

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51 )

PRESS '+'

```
LOGICAL I/O COMMAND #5 (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #44 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51 )

PRESS '+'

```
LOGICAL I/O COMMAND #6 (+/-COMMAND#)
IF  YELLOW ON PHASE     #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #43 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51 )

END OF PROGRAMMING

## OUTPUT REFERENCE SCHEDULE

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

# OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:              |123456789101112131415 16
VEH OVL PARENTS:    |XX
VEH OVL NOT VEH:    |
VEH OVL NOT PED:    |
VEH OVL GRN EXT:    |
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y <--------- !
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

PRESS '+'

```
PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
PHASE:              |123456789101112131415 16
VEH OVL PARENTS:    |  X
VEH OVL NOT VEH:    |
VEH OVL NOT PED:    |
VEH OVL GRN EXT:    |
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+'

```
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE:              |123456789101112131415 16
VEH OVL PARENTS:    |    XX
VEH OVL NOT VEH:    |
VEH OVL NOT PED:    |
VEH OVL GRN EXT:    |
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y <--------- !
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0173
DESIGNED: JUNE 2009
SEALED: 4/6/11
REVISED: N/A

SEE SHEET 3 FOR EMERGENCY VEHICLE PREEMPTION CONTROLLER PROGRAMMING

Electrical Detail - Sheet 2 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

SR 1308 (Gum Branch Road)
at
SR 1336 (Henderson Drive)

Division 03 | Onslow County | Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | March 2011 | REVIEWED BY: | |
| PREPARED BY: | F.E. Russ | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE 4-6-11 DATE
SIG. INVENTORY NO. 03-0173

06-APR-2011 16:28
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ferruss

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.62 |

# EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press the 'Next' key 2-times to advance to Preempt 3:

PRE3 (EVP 3):

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0* 0.0*¦X     X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0*
RED CLEAR BEFORE PRE (0= DEFAULT)....0*
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT'

! NOTICE --->

PRE4 (EVP 4):

```
   PREEMPTION  #4  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0* 0.0*¦  X     X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0*
RED CLEAR BEFORE PRE (0= DEFAULT)....0*
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦ X
```

PRESS 'NEXT'

PRE5 (EVP 5):

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0* 0.0*¦  X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0*
RED CLEAR BEFORE PRE (0= DEFAULT)....0*
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT'

PRE6 (EVP 6):

```
   PREEMPTION  #6  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0* 0.0*¦    X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0*
RED CLEAR BEFORE PRE (0= DEFAULT)....0*
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PROGRAMMING COMPLETE

*TIME DEFAULTS TO TIME USED BY PHASE DURING NORMAL OPERATION

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0173
DESIGNED: JUNE 2009
SEALED: 4/6/11
REVISED: N/A

Electrical Detail - Sheet 3 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

SR 1308 (Gum Branch Road)
at
SR 1336 (Henderson Drive)

Division 03 | Onslow County | Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: March 2011 | REVIEWED BY: | | |
| PREPARED BY: F.E. Russ | REVIEWED BY: | | |
| REVISIONS | | INIT. | DATE |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE | DATE 4-6-11
SIG. INVENTORY NO. 03-0173

06-APR-2011 16:29
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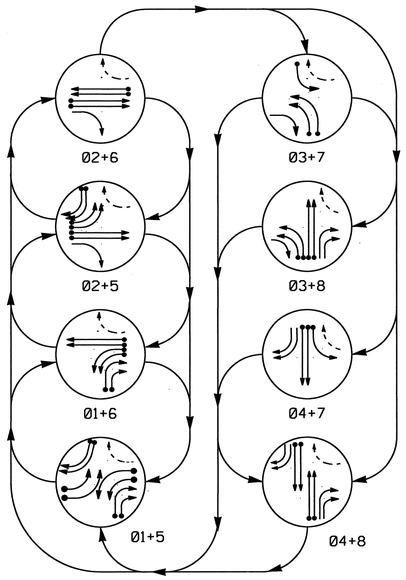
fenuss

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.63 |

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 03+7 | 03+8 | 04+7 | 04+8 | FLASH |
|---|---|---|---|---|---|---|---|---|---|
| 11, 12 | ← | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |
| 13, 14 | → | → | ~~R~~ | ~~R~~ | ~~R~~ | → | ~~R~~ | → | ~~R~~ |
| 21 | R | R | G | G | R | R | R | R | Y |
| 22 | R | R | G | G | R/→ | R/→ | R | R | Y |
| 31, 32 | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ← | ~~R~~ | ~~R~~ | ~~R~~ |
| 41,43 | R | R | R | R | R | R | G | G | R |
| 42 | R/→ | R | R/→ | R | R | R | G/→ | G/→ | R |
| 51, 52, 53 | ← | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |
| 54 | → | R | → | R | R | R | → | → | R |
| 61, 62 | R | G | R | G | R | R | R | R | Y |
| 71, 72 | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ← | ~~R~~ | ~~R~~ |
| 81, 82 | R | R | R | R | R | G | R | G | R |

## SIGNAL FACE I.D.

ALL HEADS L.E.D.




11,12
31,32
51,52,53
71,72

21
41,43
61,62
81,82

22
42

54

13,14

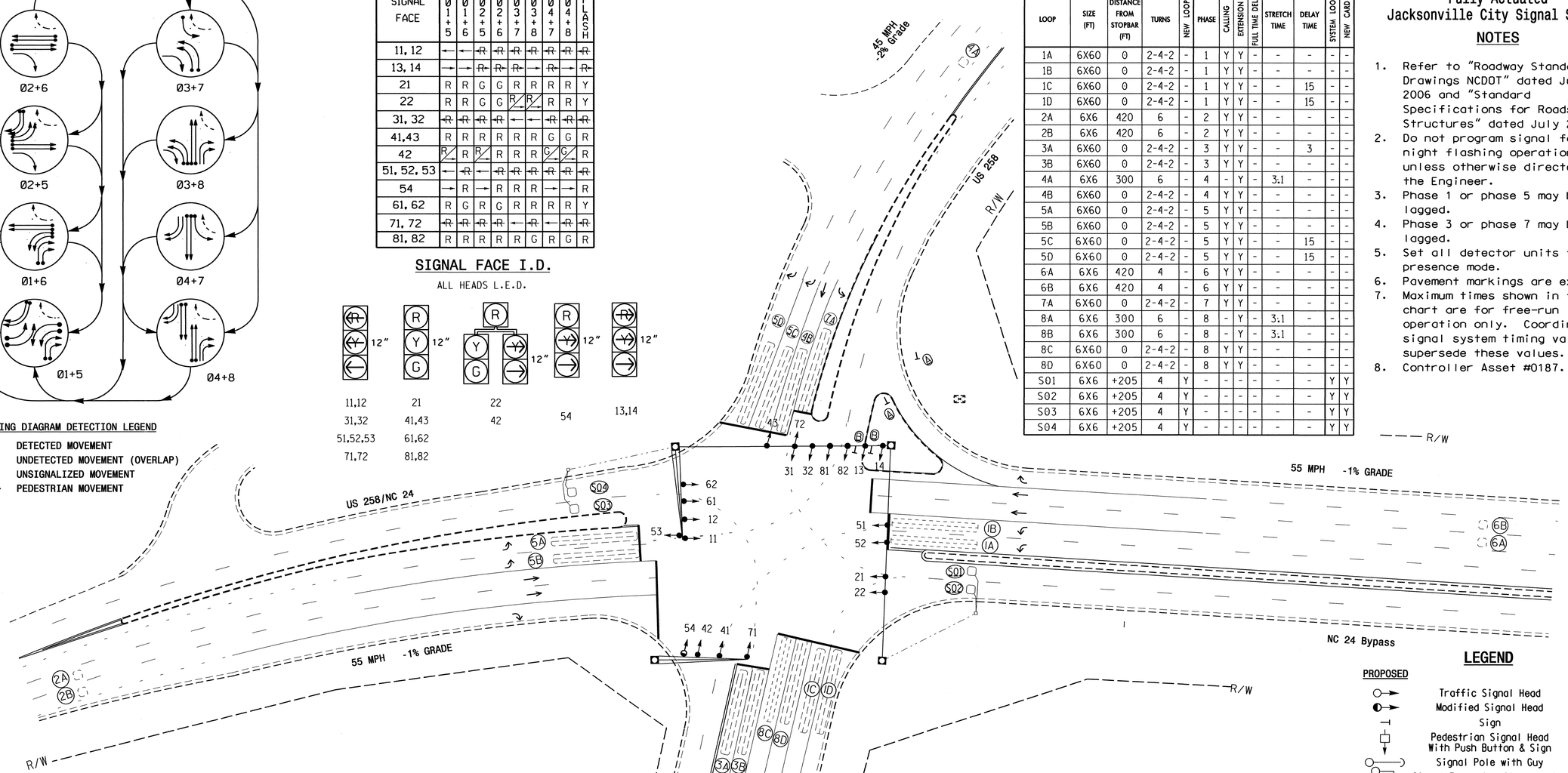
## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

| 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 | 6X60 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | - | - | - |
| 1B | 6X60 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | - | - | - |
| 1C | 6X60 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | - |
| 1D | 6X60 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | - |
| 2A | 6X6 | 420 | 6 | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 420 | 6 | - | 2 | Y | Y | - | - | - | - | - |
| 3A | 6X60 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | 3 | - | - |
| 3B | 6X60 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | - | - | - |
| 4A | 6X6 | 300 | 6 | - | 4 | - | Y | - | 3.1 | - | - | - |
| 4B | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 5A | 6X60 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | - | - | - |
| 5B | 6X60 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | - | - | - |
| 5C | 6X60 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | - |
| 5D | 6X60 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | - |
| 6A | 6X6 | 420 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 420 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| 7A | 6X60 | 0 | 2-4-2 | - | 7 | Y | Y | - | - | - | - | - |
| 8A | 6X6 | 300 | 6 | - | 8 | - | Y | - | 3.1 | - | - | - |
| 8B | 6X6 | 300 | 6 | - | 8 | - | Y | - | 3.1 | - | - | - |
| 8C | 6X60 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | - | - | - |
| 8D | 6X60 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | - | - | - |
| S01 | 6X6 | +205 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S02 | 6X6 | +205 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S03 | 6X6 | +205 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S04 | 6X6 | +205 | 4 | Y | - | - | - | - | - | - | Y | Y |

## 8 Phase Fully Actuated Jacksonville City Signal System

### NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Phase 3 or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0187.




## 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 | |
| A | "YIELD" Sign (R1-2) | A |
| B | "NO TURN ON RED" Sign (R10-11a) | B |
| | Metal Pole with Mastarm | |

## 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Min Green 1 * | 7 | 14 | 7 | 7 | 7 | 14 | 7 | 7 |
| Extension 1 * | 1.0 | 6.0 | 1.0 | 1.0 | 1.0 | 6.0 | 1.0 | 1.0 |
| Max Green 1 * | 25 | 120 | 20 | 45 | 25 | 120 | 20 | 45 |
| Yellow Clearance | 3.2 | 5.3 | 3.0 | 4.7 | 3.2 | 5.3 | 3.0 | 4.4 |
| Red Clearance | 3.3 | 1.8 | 3.6 | 2.1 | 3.5 | 1.5 | 3.4 | 1.9 |
| Walk 1 * | - | - | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - | - | - |
| Seconds Per Actuation * | - | 1.8 | - | - | - | 1.8 | - | - |
| Max Variable Initial * | - | 46 | - | - | - | 46 | - | - |
| Time Before Reduction * | - | 20 | - | - | - | 20 | - | - |
| Time To Reduction * | - | 45 | - | - | - | 45 | - | - |
| Minimum Gap | - | 3.4 | - | - | - | 3.4 | - | - |
| Recall Mode | - | MIN RECALL | - | - | - | MIN RECALL | - | - |
| Vehicle Call Memory | - | YELLOW | - | - | - | YELLOW | - | - |
| Dual Entry | - | - | - | - | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

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

NC 24
at
US 258/ NC 53

Division 3 Onslow County Jacksonville

PLAN DATE: March 2011 REVIEWED BY:
PREPARED BY: JPG REVIEWED BY:

SCALE 0 40 1"=40'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
4/14/2011

SIG. INVENTORY NO. 03-0187

14-APR-2011 09:51
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jgallaway

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.64 |

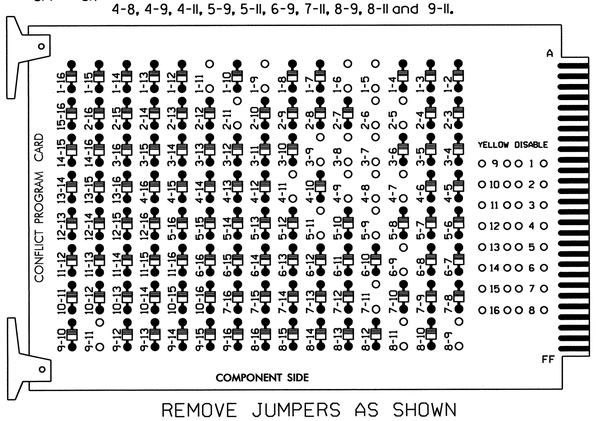
# EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*

WD ENABLE

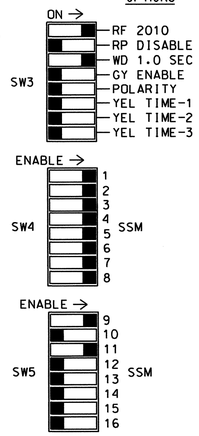
SW2 — OFF / ON

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 2-5, 2-6, 2-11, 3-7, 3-8, 3-9, 4-7, 4-8, 4-9, 4-11, 5-9, 5-11, 6-9, 7-11, 8-9, 8-11 and 9-11.




REMOVE JUMPERS AS SHOWN

OPTIONS




■ = 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 10, 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 Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash, and overlap 1 Wag Overlaps.
7. The cabinet and controller are part of the Jacksonville City Signal System.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | | OLD | SPARE |
| SIGNAL HEAD NO. | 11,12 | 21,22 | NU | 22 | 31,32 | 41, 42,43 | NU | 51, 52,53 | 61,62 | NU | 71,72 | 81,82 | NU | 13,14 | NU | NU | 42 | 54 | NU | NU |
| RED | | 128 | | | | 101 | | | 134 | | | 107 | | | | | | A114 | | |
| YELLOW | | 129 | | | | 102 | | | 135 | | | 108 | | | | | | | | |
| GREEN | | 130 | | | | 103 | | | 136 | | | 109 | | | | | | | | |
| RED ARROW | 125 | | | | 116 | | | 131 | | | 122 | | | A121 | | | | | | |
| YELLOW ARROW | 126 | | | 117 | 117 | | | 132 | | | 123 | | | A122 | | | A115 | A115 | | |
| GREEN ARROW | 127 | | | 118 | 118 | | | 133 | | | 124 | | | A123 | | | A116 | A116 | | |

NU = Not Used

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET .....332
SOFTWARE .....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S9,S12
PHASES USED.....1,2,3,4,5,6,7,8
OVERLAP A.....1+8
OVERLAP C.....4+5

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:            ¦123456789101112131415 16
VEH OVL PARENTS:¦X        X
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED   _ YELLOW   _ GREEN
FLASH COLORS:  _ RED   _ YELLOW   _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+' TWICE

```
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE:            ¦123456789101112131415 16
VEH OVL PARENTS:¦   XX
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED   _ YELLOW   _ GREEN
FLASH COLORS:  _ RED   _ YELLOW   _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 1A | Ø1 1B | Ø1 1D | Ø2 2B | Ø3 3A | Ø3 3B | NOT USED | Ø5 5C | SYS. DET. SØ1 | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | NOT USED | Ø1 1C | Ø2 2A | NOT USED | NOT USED | Ø4 4A | Ø4 4B | NOT USED | SYS. DET. SØ2 | | | | | ST DC ISOLATOR |
| FILE "J" | U | Ø5 5A | Ø5 5B | Ø6 6A | Ø7 7A | Ø8 8A | Ø8 8B | Ø8 8D | SLOT EMPTY | SYS. DET. SØ3 | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY |
| | L | NOT USED | Ø5 5D | Ø6 6B | NOT USED | NOT USED | Ø8 8C | NOT USED | | SYS. DET. SØ4 | | | | | |

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 | | | |
| 1C | TB2-7,8 | I2L | 43 | 5 | 12 | 1 | Y | Y | | | 15 |
| 1D | TB2-9,10 | I3U | 63 | 25 | 32 | 1 | Y | Y | | | 15 |
| 2A | TB2-11,12 | I3L | 76 | 38 | 42 | 2 | Y | Y | | | |
| 2B | TB4-1,2 | I4U | 47 | 9 | 22 | 2 | 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 | | | |
| 4A | TB4-11,12 | I6L | 45 | 7 | 14 | 4 | | Y | | 3.1 | |
| 4B | TB6-3,4 | I7L | 78 | 40 | 44 | 4 | Y | Y | | | |
| 5A | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | |
| 5B | TB3-5,6 | J2U | 40 | 2 | 6 | 5 | Y | Y | | | |
| 5C | TB6-5,6 | I8U | 49 | 11 | 24 | 5 | Y | Y | | | 15 |
| 5D | TB3-7,8 | J2L | 44 | 6 | 16 | 5 | Y | Y | | | 15 |
| 6A | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | | | |
| 6B | TB3-11,12 | J3L | 77 | 39 | 46 | 6 | Y | Y | | | |
| 7A | TB5-1,2 | J4U | 48 | 10 | 26 | 7 | Y | Y | | | |
| 8A | TB5-5,6 | J5U | 57 | 19 | 7 | 8 | | Y | | 3.1 | |
| 8B | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | | Y | | 3.1 | |
| 8C | TB5-11,12 | J6L | 46 | 8 | 18 | 8 | Y | Y | | | |
| 8D | TB7-1,2 | J7U | 66 | 28 | 38 | 8 | Y | Y | | | |
| * SØ1 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| * SØ2 | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| * SØ3 | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |
| * SØ4 | TB7-11,12 | J9L | 61 | 23 | 17 | SYS | | | | | |

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0187
DESIGNED: March 2011
SEALED: 04/14/2011
REVISED:

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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
at
US 258/NC 53

Division 3 | Onslow County | Jacksonville

PLAN DATE: April 2011 | REVIEWED BY: T. Vann
PREPARED BY: C. Strickland | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

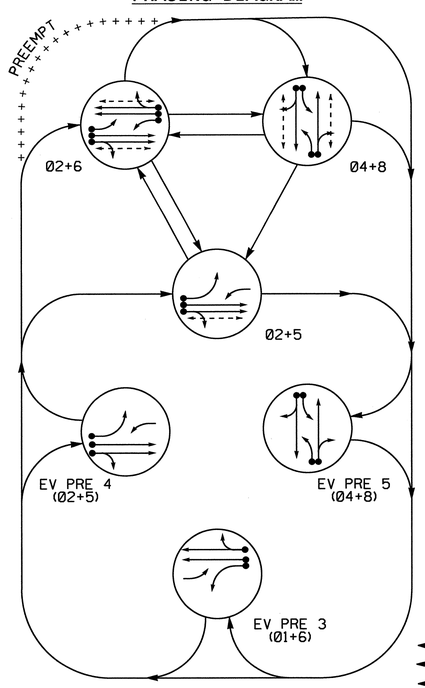
SIGNATURE | DATE 4/15/11

SIG. INVENTORY NO. 03-0187

14-APR-2011 13:44
S:*TTSS&S*TS Signals*Workgroups*Sig Man*Strickland*03187_smele_xxx.dgn
dastrickland

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.65 |

## PHASING DIAGRAM




## TABLE OF OPERATION

| SIGNAL FACE | PHASE 02+5 | 02+6 | 04+8 | Pre 3 | Pre 4 | Pre 5 | FLASH |
|---|---|---|---|---|---|---|---|
| 21,22 | G | G | R | R | G | R | Y |
| 41,42 | R | R | G | R | R | G | R |
| 51 | ← | F Y | ~~R~~ | F Y | ← | ~~R~~ | ~~Y~~ |
| 61 | F Y | F Y | ~~R~~ | ← | F Y | ~~R~~ | ~~Y~~ |
| 62,63 | R | G | R | G | R | R | Y |
| 81,82 | R | R | G | R | R | G | R |
| P21,P22 | W | W | DW | DW | DW | DW | DRK |
| P41,P42 | DW | DW | W | DW | DW | DW | DRK |
| P61,P62 | DW | W | DW | DW | DW | DW | DRK |
| P81,P82 | DW | DW | W | DW | DW | DW | DRK |

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

## STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

| FROM | TO ← (1) | TO ← (2) | TO F Y (1) | TO F Y (2) | TO ~~R~~ (1) | TO ~~R~~ (2) |
|---|---|---|---|---|---|---|
| ← | ← | ← | ~~Y~~ ~~R~~ | ~~Y~~ ~~R~~ | ~~Y~~ ~~R~~ | ~~Y~~ ~~R~~ |
| F Y | F Y | F Y | F Y | F Y | ~~Y~~ ~~R~~ | ~~Y~~ ~~R~~ |
| ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |

F Y = Flashing Yellow Arrow

## 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 |
| 2A,2B | 6X6 | 70 | 4 | - | 2 | Y | Y | - | - | - | - | Y |
| 4A | 6X60 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | 3 | - | Y |
| 4B | 6X60 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | 10 | - | Y |
| 5A | 6X60 | +5 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | Y |
| | | | | | 2 | Y | Y | - | - | - | - | Y |
| 6A,6B | 6X6 | 70 | 4 | - | 6 | Y | Y | - | - | - | - | Y |
| 8A | 6X60 | +5 | 2-4-2 | - | 8 | Y | Y | - | - | 3 | - | Y |
| 8B | 6X60 | +5 | 2-4-2 | - | 8 | Y | Y | - | - | 10 | - | Y |

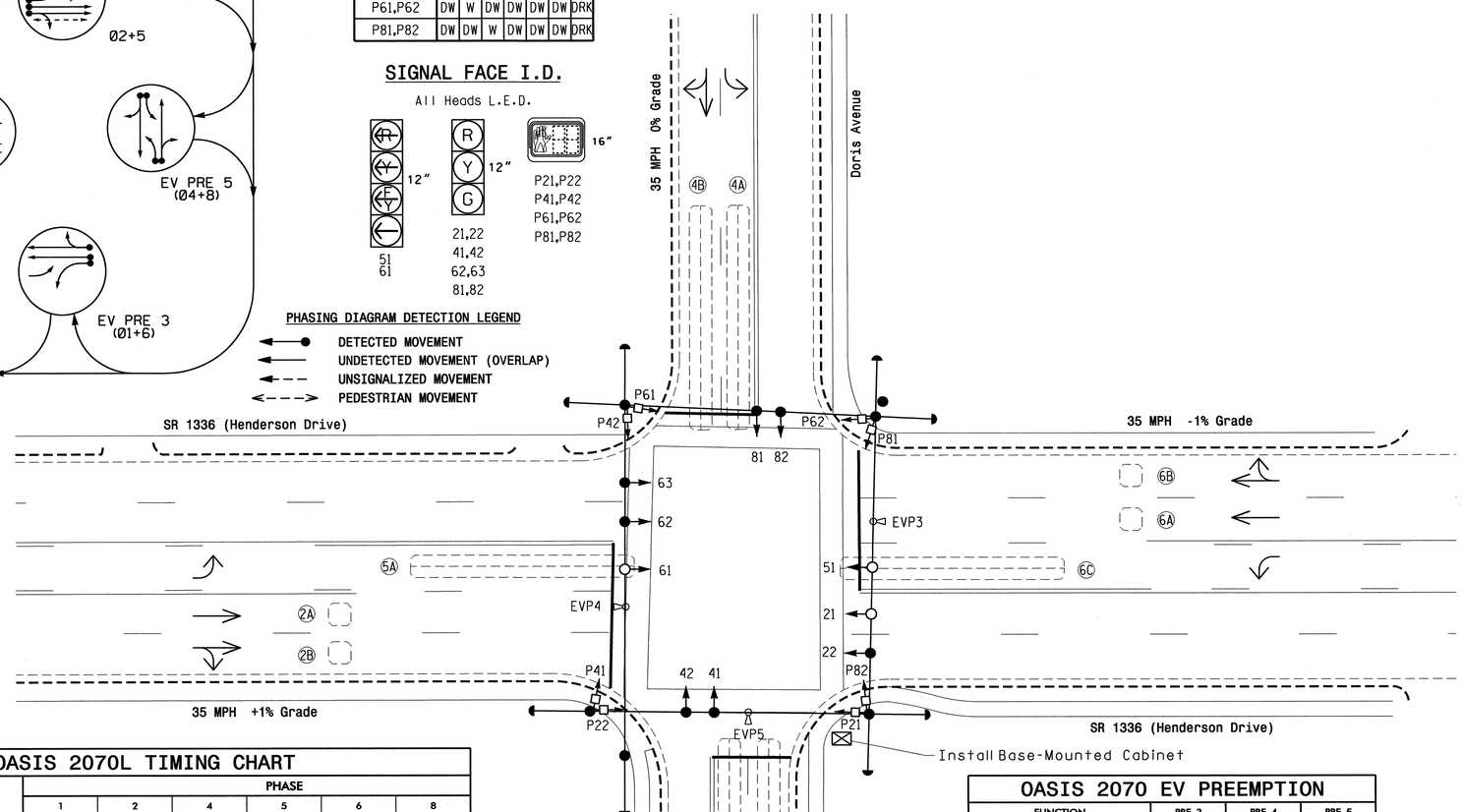
## SIGNAL FACE I.D.

All Heads L.E.D.




## 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 | 10 | 7 | 7 | 10 | 7 |
| Extension 1 * | 2.0 | 3.0 | 1.0 | 1.0 | 3.0 | 1.0 |
| Max Green 1 * | 30 | 40 | 10 | 10 | 40 | 10 |
| Yellow Clearance | 3.0 | 3.9 | 3.8 | 3.0 | 3.9 | 3.2 |
| Red Clearance | 1.9 | 1.2 | 1.5 | 1.9 | 1.2 | 2.4 |
| Red Revert | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Walk 1 * | - | 7 | 7 | - | 7 | 7 |
| Don't Walk 1 | - | 12 | 18 | - | 13 | 19 |
| Seconds Per Actuation * | - | - | - | - | - | - |
| Max Variable Initial * | - | - | - | - | - | - |
| Time Before Reduction * | - | - | - | - | - | - |
| Time To Reduce * | - | - | - | - | - | - |
| 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.

## OASIS 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 4 | PRE 5 |
|---|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 | 0.0 |
| Priority | MEDIUM | MEDIUM | MEDIUM |
| Delay Time | 0.0 | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 | 1 |
| Ped Clear Before Pre | 0 * | 0 * | 0 * |
| Yellow Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Dwell Min Time | 10 | 10 | 7 |
| Enable Backup Protection | N | N | N |
| Ped Clear Through Yellow | Y | Y | N |
| Preempt Extend** | 2 | 2 | 2 |
| Omit Overlaps | - | - | - |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

## 3 Phase
## Fully Actuated w/EV Preempt
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Reposition existing signal heads numbered 22.41.42.62.63.81. & 82.
5. Set all detector units to presence mode.
6. In the event of loop replacement. refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
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. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
12. Controller Asset #0255.

## 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 | |
| | Optical Detector | |

Signal Upgrade

Prepared in 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

SCALE 0 20 1"=20'

# SR 1336 (Henderson Drive) At Doris Avenue

Division 3 Onslow County Jacksonville

| PLAN DATE: January 2011 | REVIEWED BY: JPG |
|---|---|
| PREPARED BY: EMM/JPG | REVIEWED BY: |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY

SIGNATURE DATE 7/11/11

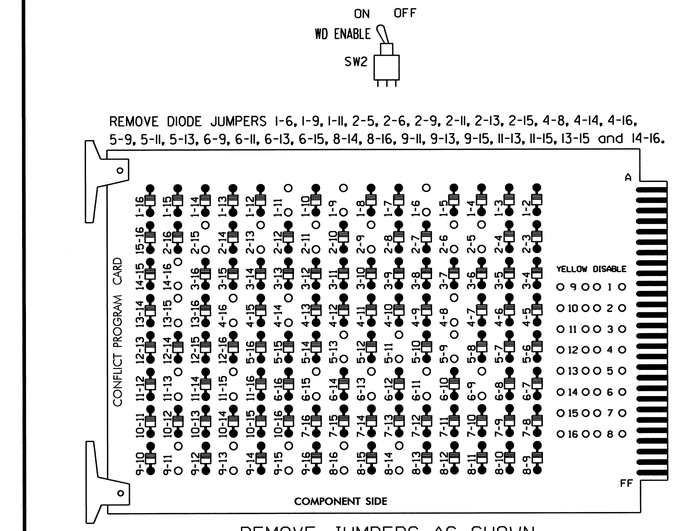
SIG. INVENTORY NO. 03-0225

11-JUL-2011 15:03
S:\ITS&SU\ITS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0225\03-0225_sig_dsn_20110711.dgn
Jason Gallowy

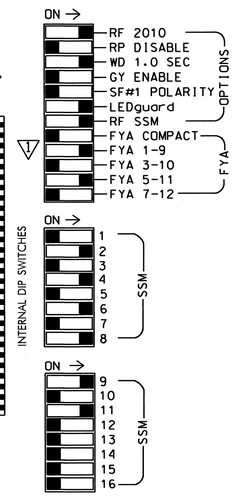
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.66 |

## EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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 1,3,5,7, 10,12,13,14,15 & 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, 4, 6 and 8 for 'STARTUP PED CALL'.
7. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
8. The cabinet and controller are part of the Jacksonville City Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....332 /W/ AUX
SOFTWARE.....ECONOLITE OASIS (3.02.77 or later approved version)

CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S2P,S4,S4P,S5,S6,S6P,S8,S8P,S9,S12.
PHASES USED.....*1,2,4,5,6,8,2 PED,4 PED,6 PED,8 PED.
OVERLAP "A".....1+2
OVERLAP "B".....NOT USED
OVERLAP "C".....2+5+6
OVERLAP "D".....NOT USED
*PHASE USED ONLY DURING PREEMPT.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5★ | 6 | 6 PED | 7 | 8 | 8 PED | OLA★ | OLB | SPARE | OLC★ | OLD | SPARE |
| SIGNAL HEAD NO. | 61 | 21,22 | P21, P22 | NU | 41,42 | P41, P42 | 51 | 62,63 | P61, P62 | NU | 81,82 | P81, P82 | 61 | NU | NU | 51 | NU | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | | | | | | | |
| YELLOW | * | 129 | | | 102 | | * | 135 | | | 108 | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | | | A114 | | |
| YELLOW ARROW | | | | | | | | | | | | | A122 | | | A115 | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | | | A116 | | |
| GREEN ARROW | 127 | | | | | | 133 | | | | | | | | | | | |
| ✋ | | | 113 | | | 104 | | | 119 | | | 110 | | | | | | |
| 🚶 | | | 115 | | | 106 | | | 121 | | | 112 | | | | | | |

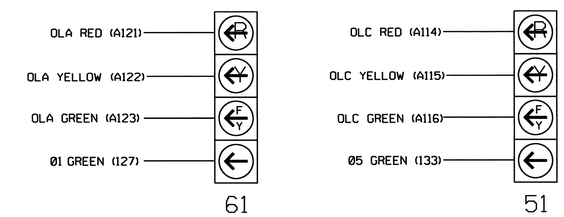
NU = Not Used

* Denotes install load resistor. See load resistor installation detail next page.

★ See pictorial of head wiring in detail below.

## FYA PPLT SIGNAL WIRING DETAIL

*(wire signal heads as shown)*

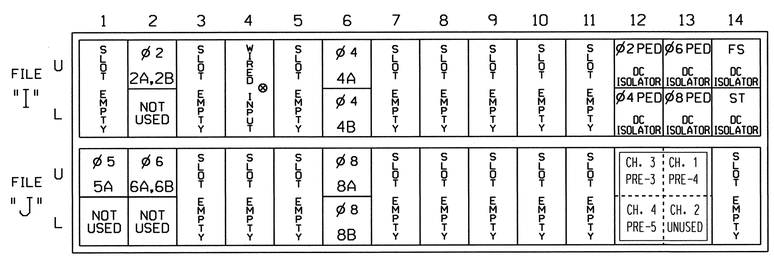



NOTE

1. The sequence display for this signal requires special logic programming. See sheet 2 for programming instructions.

## INPUT FILE POSITION LAYOUT

*(front view)*




⊗ Wired Input - Do not populate slot with detector card

FS = FLASH SENSE
ST = STOP TIME
PRE 3,4&5 = EV PREEMPT

4 CHANNEL TOMAR OSP CARD INSERT CARD INTO SLOT J13

## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A,2B | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | 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[1] | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | 15 |
| | - | I4U | 47 | 9 | 22 | 2 | Y | Y | | | |
| 6A,6B | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | 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 | | | | | |
| P81,P82 | TB8-8,9 | I13L | 70 | 32 | PED 8 | 8 PED | | | | | |

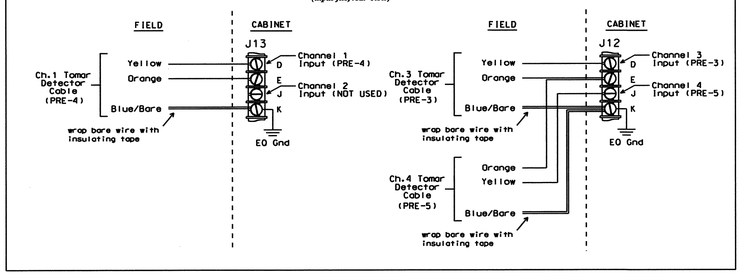
[1] Add jumper from J1-W to I4-W, on rear of input file.

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

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*




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

## 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.

## PREEMPT ONLY PHASE OMIT NOTE

*(program controller as shown below)*

From Main Menu press '2' (Phase Control). Then '1' (Phase Control Functions). Program Phase 1 for 'Omit Phase' and Phases 2, 4, 5, 6 and 8 for 'Startup Calls'. This is to prevent Phase 1 from being served when not in Preempt.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0225
DESIGNED: January 2011
SEALED: 7-11-11
REVISED: N/A

ELECTRICAL DETAIL SHEET 1 OF 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

# SR 1336 (Henderson Drive) at Doris Avenue

Division 3 | Onslow County | Jacksonville

PLAN DATE: February 2011 | REVIEWED BY: JTR
PREPARED BY: James Peterson | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| 1 Changed head 61 to a 4-section FYA and added EV Preempts. (JP) | JTR | 7-12-11 |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE 2-23-11 DATE
SIG. INVENTORY NO. 03-0225

13-JUL-2011 14:08
S:\ITS&SU\ITS Signals\Workgroups\Sig Man\Peterson\030225_smu_ele.20110223.dgn
jtpeterson

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 67 |

## ▽1 LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL). THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5 AND 6.

2. FROM MAIN MENU PRESS '6' (OUTPUTS). THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON
AND RED CLEAR ON PHASE #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 61).

PRESS '+'

```
LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 61).

PRESS '+'

```
LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE     #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 61).

PRESS '+'

```
LOGICAL I/O COMMAND #4  (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON
AND RED CLEAR ON PHASE #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #42 ON
SET OUTPUT  ASSIGNMENT #43 OFF
```

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

PRESS '+'

```
LOGICAL I/O COMMAND #5  (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #44 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

PRESS '+'

```
LOGICAL I/O COMMAND #6  (+/-COMMAND#)
IF  YELLOW ON PHASE     #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #43 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

### *OUTPUT REFERENCE SCHEDULE*

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

## ▽1 OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS). THEN '1' (VEHICLE OVERLAP SETTINGS).

```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS:¦XX
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

← NOTICE GREEN FLASH

PRESS '+' TWICE

```
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS:¦ X  XX
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

← NOTICE GREEN FLASH

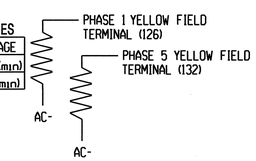
OVERLAP PROGRAMMING COMPLETE

## LOAD RESISTOR INSTALLATION DETAIL

*(install resistors as shown below)*

ACCEPTABLE VALUES

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




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0225
DESIGNED: January 2011
SEALED: 7-11-11
REVISED: N/A

▽1

ELECTRICAL DETAIL SHEET 2 OF 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

SR 1336 (Henderson Drive)
at
Doris Avenue

Division 3 | Onslow County | Jacksonville

PLAN DATE: February 2011 | REVIEWED BY: JTR
PREPARED BY: James Peterson | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| ▽1 Changed head 61 to a 4-section FYA and added EV Preempts. (JP) | JTR | 7-13-11 |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE | DATE 2-23-11
SIG. INVENTORY NO. 03-0225

13-JUL-2011 14:09
S:\#ITS&SM\ITS Signals\Workgroups\Sig Mgmt\Peterson\030225.sm.ele.20110223.dgn
jlpeterson

## ▽1 EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press the 'Next" key 2-times to advance to Preempt #3.

EVP 3 :

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0.0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........10
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......Y
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT'

EVP 4 :

```
   PREEMPTION  #4  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0.0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........10
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......Y
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT'

EVP 5 :

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦   X   X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PROGRAMMING COMPLETE

Program extend time on optical detector units for 2.0 sec.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0225
DESIGNED: January 2011
SEALED: 7-11-11
REVISED: N/A

▽1

ELECTRICAL DETAIL SHEET 3 OF 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

SR 1336 (Henderson Drive)
at
Doris Avenue

Division 3 | Onslow County | Jacksonville

PLAN DATE: February 2011 | REVIEWED BY: JTR

PREPARED BY: James Peterson | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| ▽1 Changed head 61 to a 4-section EYA and added EV Preempts. (JR) | JTR | 7-18-11 |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

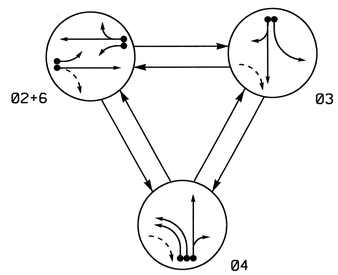
SIGNATURE | DATE 2-23-11

SIG. INVENTORY NO. 03-0225

13-JUL-2011 10:25
S:\TSASU\TS Signals\Workgroups\Sig Mgmt\Peterson\030225_smi_ele_20110223.dgn
jtpeterson

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.69 |

## PHASING DIAGRAM




### PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE Ø2+6 | PHASE Ø3 | PHASE Ø4 | FLASH |
|---|---|---|---|---|
| 21,22 | G | R | R | Y |
| 31 | R | G | R | R |
| 32 | R | G | R | R |
| 41,42 | ~~R~~ | ~~R~~ | ← | ~~R~~ |
| 43,44 | R | R | G | R |
| 61,62 | G | R | R | Y |

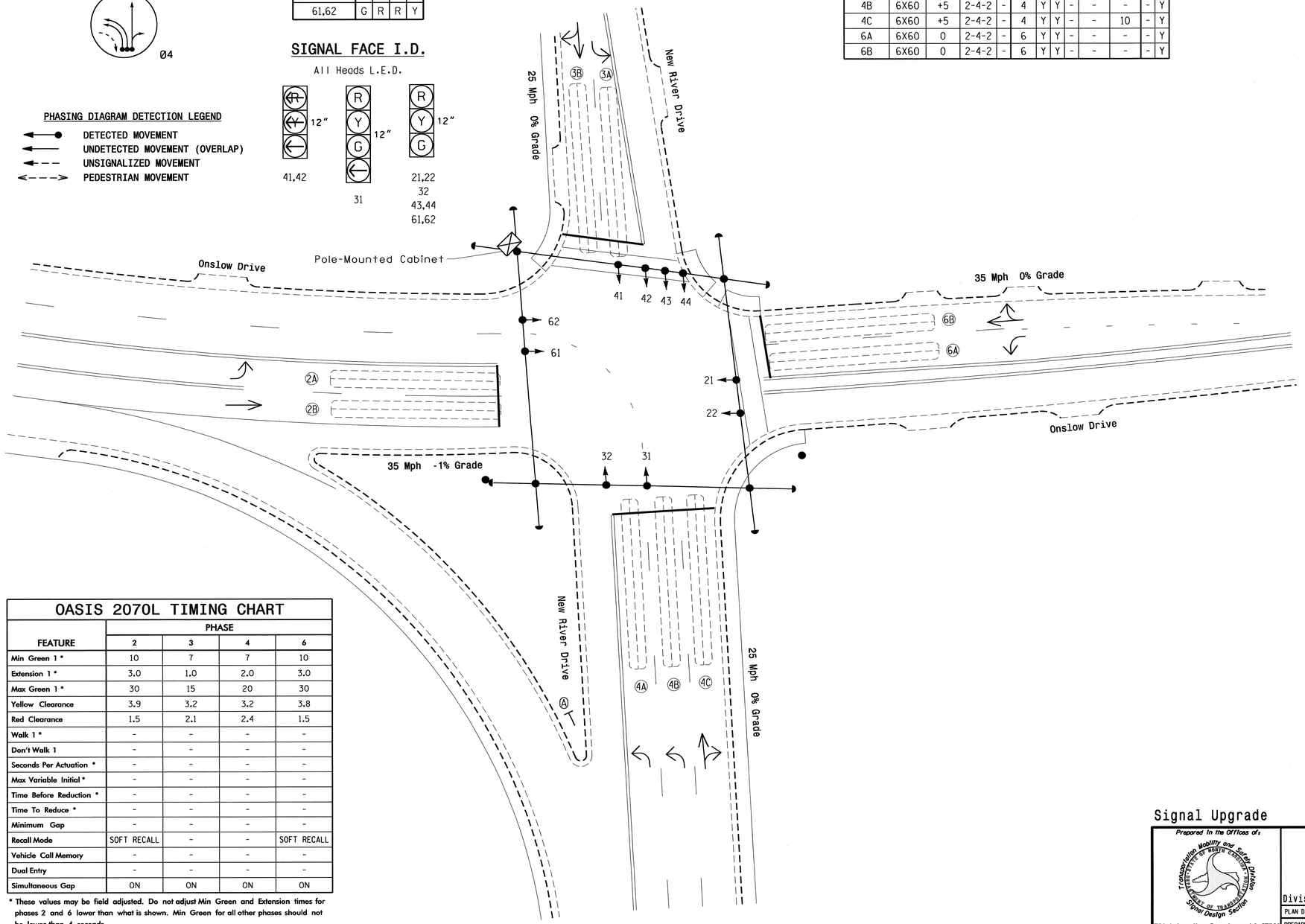
## SIGNAL FACE I.D.

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 |
| 2A | 6X60 | 0 | 2-4-2 | - | 2 | Y | Y | - | - | - | - | Y |
| 2B | 6X60 | 0 | 2-4-2 | - | 2 | Y | Y | - | - | - | - | Y |
| 3A | 6X60 | +5 | 2-4-2 | - | 3 | Y | Y | - | - | 3 | - | Y |
| 3B | 6X60 | +5 | 2-4-2 | - | 3 | Y | Y | - | - | 10 | - | Y |
| 4A | 6X60 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | 3 | - | Y |
| 4B | 6X60 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | Y |
| 4C | 6X60 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | 10 | - | Y |
| 6A | 6X60 | 0 | 2-4-2 | - | 6 | Y | Y | - | - | - | - | Y |
| 6B | 6X60 | 0 | 2-4-2 | - | 6 | Y | Y | - | - | - | - | Y |




## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | PHASE 3 | PHASE 4 | PHASE 6 |
|---|---|---|---|---|
| Min Green 1 * | 10 | 7 | 7 | 10 |
| Extension 1 * | 3.0 | 1.0 | 2.0 | 3.0 |
| Max Green 1 * | 30 | 15 | 20 | 30 |
| Yellow Clearance | 3.9 | 3.2 | 3.2 | 3.8 |
| Red Clearance | 1.5 | 2.1 | 2.4 | 1.5 |
| Walk 1 * | - | - | - | - |
| Don't Walk 1 | - | - | - | - |
| Seconds Per Actuation * | - | - | - | - |
| Max Variable Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Recall Mode | SOFT RECALL | - | - | SOFT RECALL |
| Vehicle Call Memory | - | - | - | - |
| Dual Entry | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

3 Phase
Fully Actuated
Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. The order of phase 3 and phase 4 may be reversed.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0247.

## 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 | |
| A | "YIELD" Sign (R1-2) | A |

Signal Upgrade

Prepared in 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

SCALE 0 20 1"=20'

# Onslow Drive At New River Drive

Division 3 Onslow County Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | January 2011 | REVIEWED BY: | PLA |
| PREPARED BY: | JPG | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY

SIGNATURE 01/03/11 DATE

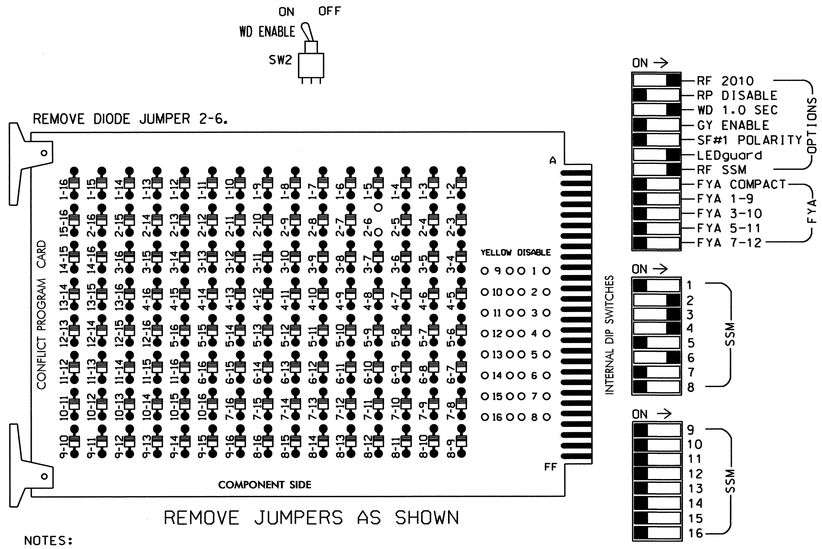
SIG. INVENTORY NO. 03-0247

22-FEB-2011 15:29
S:\TISG\HTS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0247\U5168_sig_dsn_20110103.dgn
jpg1 bwp

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.70 |

## EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches 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.

## NOTES

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

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S3,S4,S6
PHASES USED.....2,3,4,6
OVERLAPS.....NONE

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | | S4 | | S4P | S5 | S6 | S6P | S7 | S8 | S8P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | | 4 | | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | 21,22 | NU | 31 | 32 | 41,42 | 43,44 | NU | NU | 61,62 | NU | NU | NU | NU |
| RED | | 128 | | 116 | 116 | | 101 | | | 134 | | | | |
| YELLOW | | 129 | | 117 | 117 | | 102 | | | 135 | | | | |
| GREEN | | 130 | | 118 | 118 | | 103 | | | 136 | | | | |
| RED ARROW | | | | | | 101 | | | | | | | | |
| YELLOW ARROW | | | | | | 102 | | | | | | | | |
| GREEN ARROW | | | | 118 | | 103 | | | | | | | | |

NU = Not Used

## INPUT FILE POSITION LAYOUT

*(front view)*

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

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

FS = FLASH SENSE
ST = STOP TIME

## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A | TB21-3,4 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB23-3,4 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 3A | TB21-5,6 | I3U | 58 | 20 | 3 | 3 | Y | Y | | | 3 |
| 3B | TB23-5,6 | I3L | 49 | 11 | 24 | 3 | Y | Y | | | 10 |
| 4A | TB21-7,8 | I4U | 41 | 3 | 4 | 4 | Y | Y | | | 3 |
| 4B | TB23-7,8 | I4L | 45 | 7 | 14 | 4 | Y | Y | | | |
| 4C | TB21-9,10 | I5U | 55 | 17 | 5 | 4 | Y | Y | | | 10 |
| 6A | TB21-11,12 | I6U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB23-11,12 | I6L | 44 | 6 | 16 | 6 | Y | Y | | | |

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0247
DESIGNED: January 2011
SEALED: 01-03-11
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering & Safety Systems Branch
Signal Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

Onslow Drive
at
New River Drive

Division 3 Onslow County Jacksonville

PLAN DATE: February 2011 REVIEWED BY: JTR
PREPARED BY: James Peterson REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

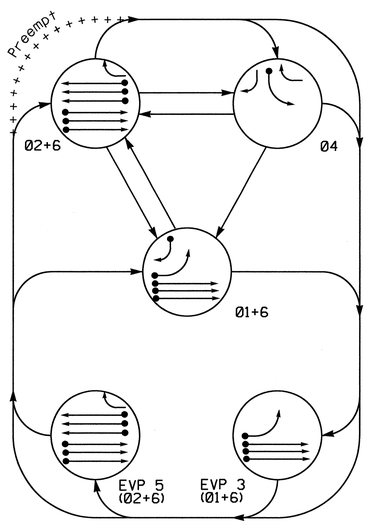
John T. Rowe Jr. 2-23-11
SIGNATURE DATE

SIG. INVENTORY NO. 03-0247

23-FEB-2011 09:14
S:#ITSGSU#ITS Signals#Workgroups#Sig Mgm#Peterson#030247_sm_ele_xxx.dgn
jtpeterson

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.71 |

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+6 | 02+6 | 04 | Pre 3 | Pre 5 | FLASH |
|---|---|---|---|---|---|---|
| 11 | ~~←~~ | ~~R~~ | ~~R~~ | ~~←~~ | ~~R~~ | ~~R~~ |
| 21,22 | R | G | R | R | G | Y |
| 23 | R | G | R/— | R | G | Y |
| 41 | R | R | G | R | R | R |
| 42 | R/— | R | G | R | R | R |
| 61,62 | G | G | R | G | G | Y |

## SIGNAL FACE I.D.

All Heads L.E.D.



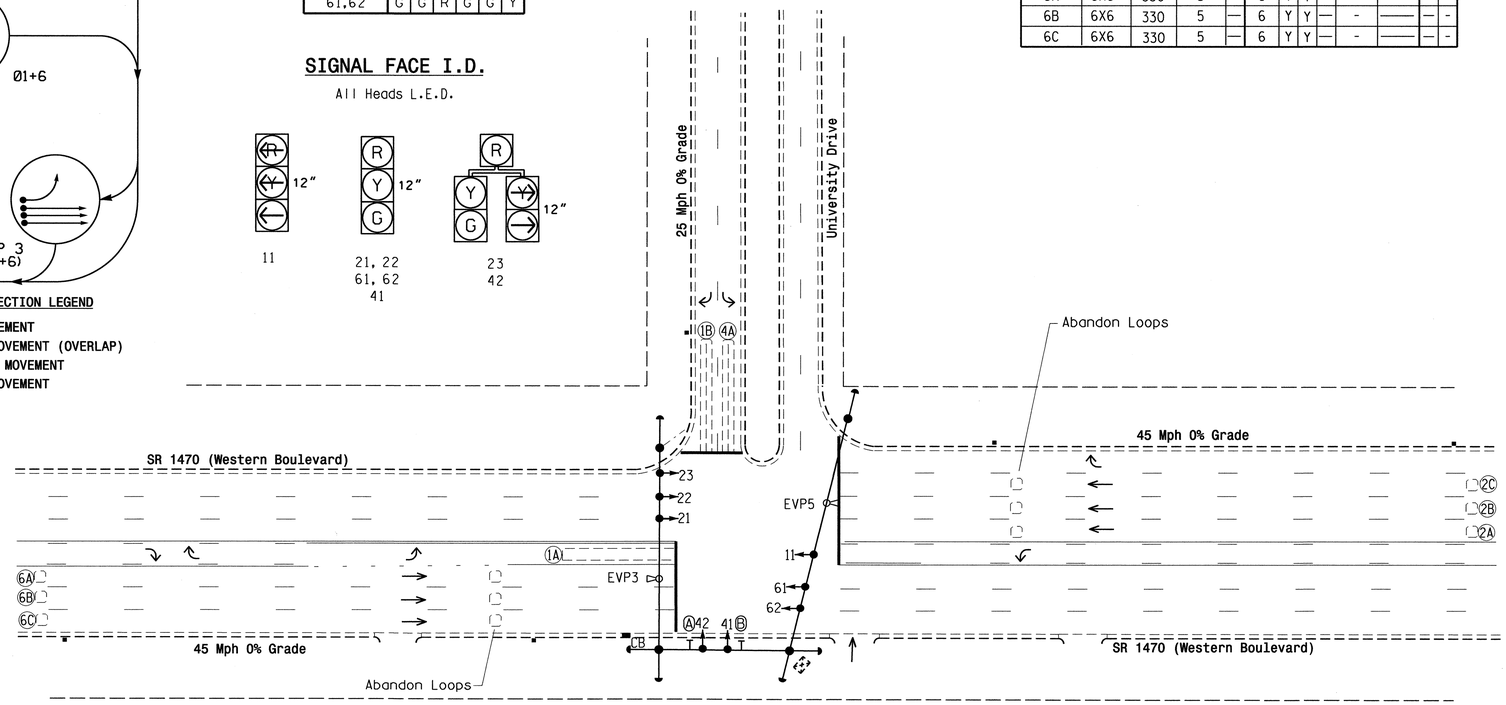

## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X60 | 0 | 1 | — | 1 | Y | Y | — | —— | —— | — | - |
| 1B | 6X60 | 0 | 2-4-2 | — | 1 | Y | Y | — | —— | 15 | — | - |
| 2A | 6X6 | 330 | 5 | — | 2 | Y | Y | — | - | —— | — | - |
| 2B | 6X6 | 330 | 5 | — | 2 | Y | Y | — | - | —— | — | - |
| 2C | 6X6 | 330 | 5 | — | 2 | Y | Y | — | - | —— | — | - |
| 4A | 6X60 | 0 | 2-4-2 | — | 4 | Y | Y | — | —— | —— | — | - |
| 6A | 6X6 | 330 | 5 | — | 6 | Y | Y | — | - | —— | — | - |
| 6B | 6X6 | 330 | 5 | — | 6 | Y | Y | — | - | —— | — | - |
| 6C | 6X6 | 330 | 5 | — | 6 | Y | Y | — | - | —— | — | - |

## 3 Phase
## Fully Actuated w/EV Preempt
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Pavement markings are existing.
7. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0262.




## 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 | |
| | Optical Detector | |
| Ⓐ | Curved Right Arrow (R3-5R) | Ⓐ |
| Ⓑ | Curved Left Arrow (R3-5L) | Ⓑ |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 4 | 6 |
|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 7 | 12 |
| Extension 1 * | 1.0 | 6.0 | 1.0 | 6.0 |
| Max Green 1 * | 15 | 90 | 25 | 90 |
| Yellow Clearance | 3.1 | 4.5 | 3.0 | 4.5 |
| Red Clearance | 3.0 | 1.3 | 2.4 | 1.0 |
| Walk 1 * | - | - | - | - |
| Don't Walk 1 | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | 1.5 |
| Max Variable Initial * | - | 37 | - | 37 |
| Time Before Reduction * | - | 15 | - | 15 |
| Time To Reduce * | - | 45 | - | 45 |
| Minimum Gap | - | 3.4 | - | 3.4 |
| Recall Mode | - | MIN RECALL | - | MIN RECALL |
| Vehicle Call Memory | - | YELLOW | - | YELLOW |
| Dual Entry | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 5 |
|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 |
| Priority | Medium | Medium |
| Delay Time | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 |
| Ped Clear Before Pre | 0 * | 0 * |
| Yellow Clear Before Pre | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 |
| Enable Backup Protection | N | N |
| Ped Clear Through Yellow | N | N |
| Preempt Extend** | 2 | 2 |
| Omit Overlaps | E | - |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

## Signal Upgrade

SEAL NORTH CAROLINA PROFESSIONAL SEAL 023904 ENGINEER JASON P. GALLOWAY

SIGNATURE 7/11/11 DATE

Prepared In 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

SCALE 0 40 1"=40'

**SR 1470 (Western Boulevard) At University Drive**

Division 3 Onslow County Jacksonville

PLAN DATE: June 2011 REVIEWED BY:

PREPARED BY: EMM/JPG REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| Install Optical EV Preemption, change detection to volume-density | | 7/11/11 |

SEAL
Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by Boniface MaduabuchuKwu,25475 on 6/14/2006
This document is only certified as to the revisions.

SIGNATURE DATE

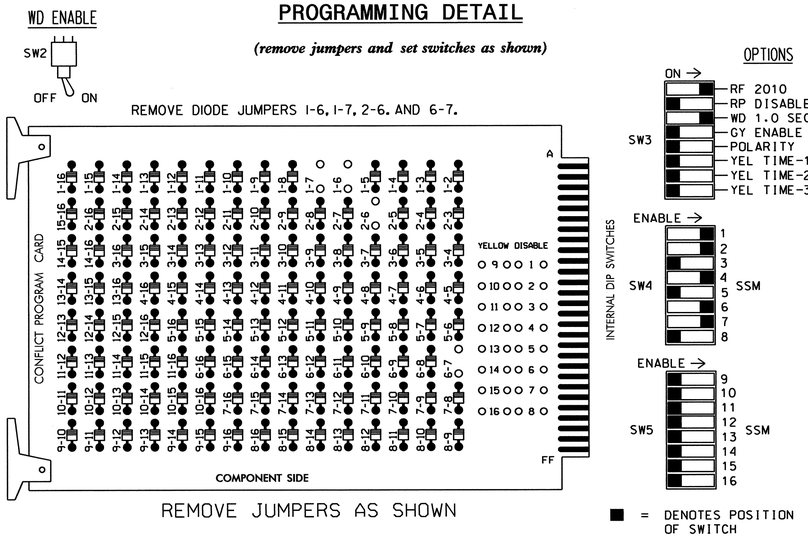
SIG. INVENTORY NO. 03-0262

11-JUL-2011 11:52
S:\ITS&SU\ITS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0262\03262_sig_dsn_20110711.dgn
(gallaway)

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 72 |

## EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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 SEL1-SEL5 are present on the monitor board.

## INPUT FILE POSITION LAYOUT

*(front view)*

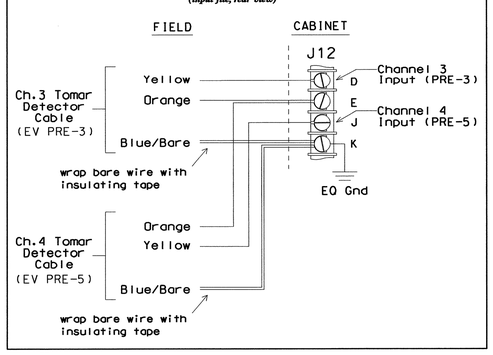
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" U | SLOT EMPTY | Ø1 1A | Ø2 2A | SLOT EMPTY | SLOT EMPTY | Ø2 2C | SLOT EMPTY | Ø4 4A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| FILE "I" L | | Ø1 1B | Ø2 2B | | | NOT USED | | NOT USED | | | | | | ST DC ISOLATOR |
| FILE "J" U | SLOT EMPTY | Ø6 6A | Ø6 6C | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | CH. 3 PRE-3 | CH. 1 UNUSED | SLOT EMPTY |
| FILE "J" L | | Ø6 6B | | | | NOT USED | | | | | | CH. 4 PRE-5 | CH. 2 UNUSED | |

EX.: 1A, 2A, ETC. = LOOP NO.'S
FS = FLASH SENSE
ST = STOP TIME
PRE3,5 = EV PREEMPTS

4 CHANNEL TOMAR OSP CARD INSERT CARD INTO SLOT J13

### TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*




## 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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Variable Initial and 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 Jacksonville Closed Loop System.

## EQUIPMENT INFORMATION

CONTROLLER.....EAGLE TYPE 2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG.NO.9500-332-NCDOT)
SOFTWARE.....ECONOLITE OASIS 3.02.77
(OR LATER APPROVED VERSION)
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S4,S6,S7
PHASES USED.....1,2,4,6
OVERLAP E.....1

## 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 | TB2-5,6 | I2U | 39 | 1 | 2 | 1 | Y | Y | | | |
| 1B | TB2-7,8 | I2L | 43 | 5 | 12 | 1 | Y | Y | | | 15 |
| 2A | TB2-9,10 | I3U | 63 | 25 | 32 | 2 | Y | Y | | | |
| 2B | TB2-11,12 | I3L | 76 | 38 | 42 | 2 | Y | Y | | | |
| 2C | TB4-9,10 | I6U | 41 | 3 | 4 | 2 | Y | Y | | | |
| 4A | TB6-5,6 | I8U | 49 | 11 | 24 | 4 | Y | Y | | | |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| 6C | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | | | |

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0262
DESIGNED: June 2011
ORIGINALLY SEALED: 6/14/06
REVISED1: 7/11/11

## SIGNAL HEAD HOOK-UP CHART

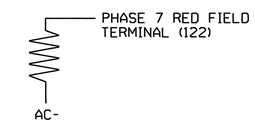
| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | | | S4P | S5 | S6 | S6P | S7 | S8 | S8P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | | | 4 PED | 5 | 6 | 6 PED | OLE | 8 | 8 PED |
| SIGNAL HEAD NO. | 11 | 21,22 23 | NU | NU | 23 | 41 | 42 | NU | NU | 61,62 | NU | 42 | NU | NU |
| RED | | 128 | | | | 101 | 101 | | | 134 | | * | | |
| YELLOW | | 129 | | | | 102 | 102 | | | 135 | | | | |
| GREEN | | 130 | | | | 103 | 103 | | | 136 | | | | |
| RED ARROW | 125 | | | | | | | | | | | | | |
| YELLOW ARROW | 126 | | | | 102 | | | | | | | 123 | | |
| GREEN ARROW | 127 | | | | 103 | | | | | | | 124 | | |

NU = Not Used
* Denotes install load resistor. See load resistor installation detail this sheet.

## LOAD RESISTOR INSTALLATION DETAIL

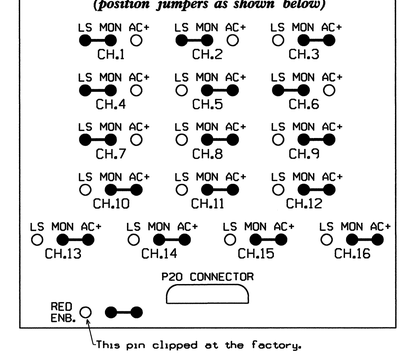
ACCEPTABLE VALUES

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




## RED MONITOR BOARD PROGRAMMING

*(position jumpers as shown below)*




Signal Upgrade - Sheet 1 of 2

REVISION SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE JR.

SIGNATURE 7-12-11 DATE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of: Traffic Engineering and Safety Systems Branch, Traffic Management Section, Division of Highways, N.C. Department of Transportation

122 N. McDowell St., Raleigh, NC 27603

# SR 1470 (WESTERN BOULEVARD) AT UNIVERSITY DRIVE

Division 3 Onslow County Jacksonville

PLAN DATE: June 2006 REVIEWED BY:
PREPARED BY: A. Wasiewicz REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| Sig.plan revised to volume density; added EV preemptions; revised notes. (WSA) | JTR | 7-12-11 |

SEAL

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SIGNATURE DATE

SIG. INVENTORY NO. 03-0262

11-JUL-2011 14:13
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armstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 73 |

## ▽ EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' to advance to Preemption #3.

EVP3

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN  YEL  RED ¦123456789101112131415 16
1 255  0.0  0.0 ¦X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦

PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦    X
```

PRESS 'NEXT' TWICE →

EVP5

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN  YEL  RED ¦123456789101112131415 16
1 255  0.0  0.0 ¦X   X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦

PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

EVP PROGRAMMING COMPLETE

Program extend time on optical detector units for 2.0 sec for EVP3 and EVP5.

## ▽ OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

PRESS '+' FOUR TIMES

```
 PAGE 1: VEHICLE OVERLAP 'E' SETTINGS
 PHASE:            ¦123456789101112131415 16
VEH OVL PARENTS:   ¦X
VEH OVL NOT VEH:   ¦
VEH OVL NOT PED:   ¦
VEH OVL GRN EXT:   ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....7
```

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0262
DESIGNED: June 2011
ORIGINALLY SEALED: 6/14/06
REVISED1: 7/11/11

Signal Upgrade - Sheet 2 of 2

REVISION ▽ SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

SIGNATURE 7-12-11 DATE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch — STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION — Signals Management Section

122 N. McDowell St., Raleigh, NC 27603

SR 1470 (WESTERN BOULEVARD) AT UNIVERSITY DRIVE

Division 3 | Onslow County | Jacksonville

PLAN DATE: June 2006 | REVIEWED BY:

PREPARED BY: A. Masiewicz | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| ▽ Sig.plan revised to volume density; added EV preemption; revised notes. (WSA) | JTR | 7-12-11 |

SEAL

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This document is only certified as to the revisions.

SIGNATURE DATE

SIG. INVENTORY NO. 03-0262

11-JUL-2011 14:13
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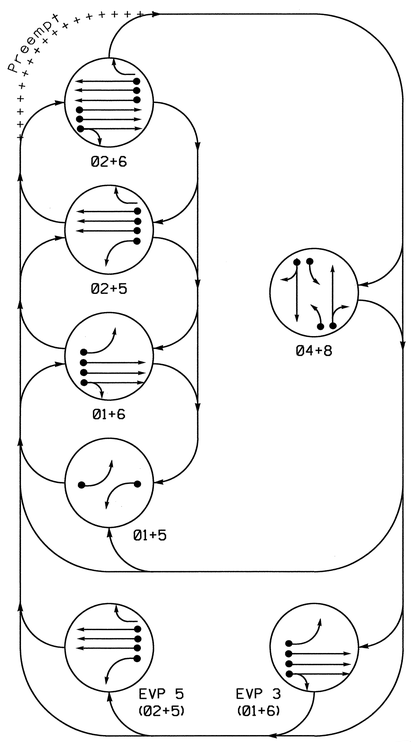
jsmstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.74 |

## PHASING DIAGRAM

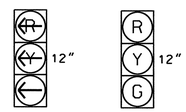



## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 04+8 | Pre3 | Pre5 | FLASH |
|---|---|---|---|---|---|---|---|---|
| 11 | ← | ← | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ |
| 21,22,23 | R | R | G | G | R | R | G | Y |
| 41,42 | R | R | R | R | G | R | R | R |
| 51 | ← | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ |
| 61,62 | R | G | R | G | R | G | R | Y |
| 81,82 | R | R | R | R | G | R | R | R |

## SIGNAL FACE I.D.

All Heads L.E.D.




11
51

21, 22, 23
41, 42
61, 62
81, 82

## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP NEW CARD |
| 1A | 6X60 | 0 | 2-4-2 | — | 1 | Y | Y | — | —— | 3 | — - |
| 2A | 6X6 | 300 | ✱ | — | 2 | Y | Y | — | —— | —— | — - |
| 2B | 6X6 | 300 | ✱ | — | 2 | Y | Y | — | —— | —— | — - |
| 2C | 6X6 | 300 | ✱ | — | 2 | Y | Y | — | —— | —— | — - |
| 4A | 6X60 | 0 | ✱ | — | 4 | Y | Y | — | —— | 3 | — - |
| 4B | 6X60 | 0 | ✱ | — | 4 | Y | Y | — | —— | 10 | — - |
| 5A | 6X60 | 0 | 2-4-2 | — | 5 | Y | Y | — | —— | 3 | — - |
| 6A | 6X6 | 330 | ✱ | — | 6 | Y | Y | — | —— | —— | — - |
| 6B | 6X6 | 330 | ✱ | — | 6 | Y | Y | — | —— | —— | — - |
| 6C | 6X6 | 330 | ✱ | — | 6 | Y | Y | — | —— | —— | — - |
| 8A | 6X60 | 0 | 2-4-2 | — | 8 | Y | Y | — | —— | — | — - |
| 8B | 6X60 | 0 | 2-4-2 | — | 8 | Y | Y | — | —— | 10 | — - |

✱ EXISTING

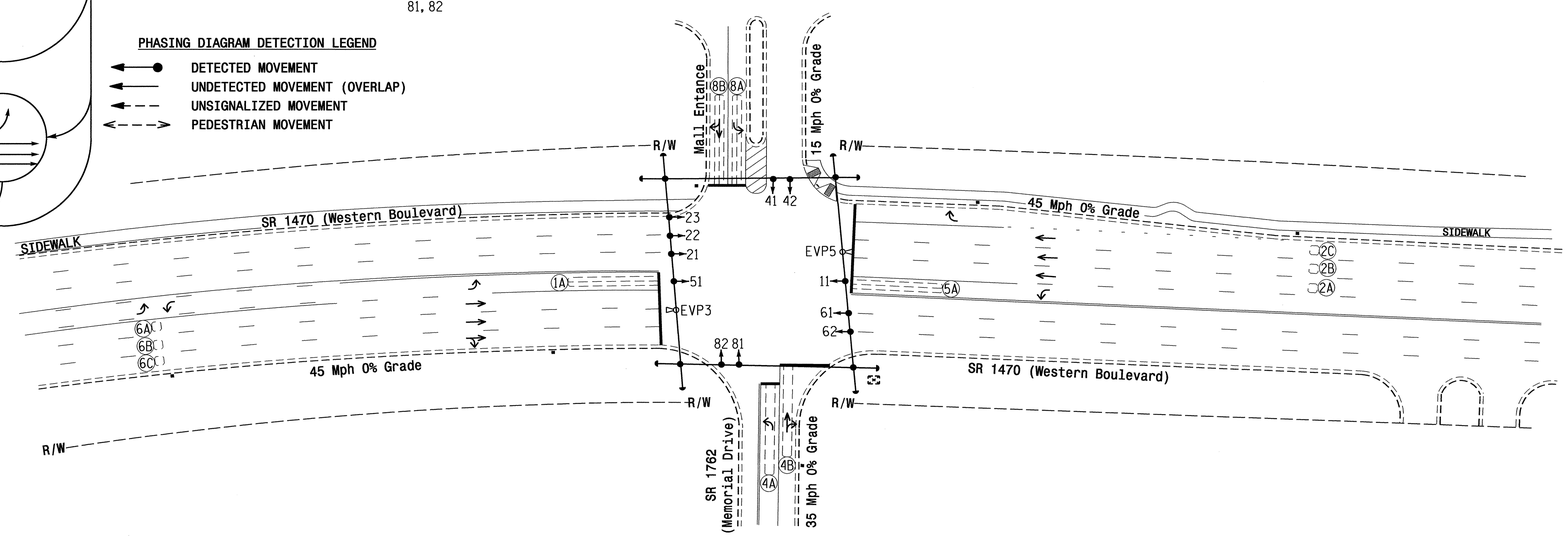
## 5 Phase
## Fully Actuated w/EV Preempt
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Pavement markings are existing.
7. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0381.

### 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 | |
| N/A | Wheel Chair Ramp | |
| | 2-in Underground Conduit | |
| N/A | Right of Way | |
| | Directional Arrow | |
| | Optical Detector | |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 7 | 7 | 12 | 7 |
| Extension 1 * | 1.0 | 6.0 | 1.0 | 1.0 | 6.0 | 1.0 |
| Max Green 1 * | 20 | 90 | 30 | 20 | 90 | 30 |
| Yellow Clearance | 3.2 | 4.5 | 3.8 | 3.0 | 4.5 | 4.2 |
| Red Clearance | 3.0 | 1.6 | 2.3 | 2.8 | 1.5 | 3.0 |
| Walk 1 * | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | - | 1.5 | - |
| Max Variable Initial * | - | 34 | - | - | 34 | - |
| Time Before Reduction * | - | 15 | - | - | 15 | - |
| Time To Reduce * | - | 40 | - | - | 40 | - |
| Minimum Gap | - | 3.2 | - | - | 3.2 | - |
| 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.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 5 |
|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 |
| Priority | Medium | Medium |
| Delay Time | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 |
| Ped Clear Before Pre | 0 * | 0 * |
| Yellow Clear Before Pre | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 |
| Enable Backup Protection | N | N |
| Ped Clear Through Yellow | N | N |
| Preempt Extend** | 2 | 2 |
| Omit Overlaps | - | - |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

Signal Upgrade

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. CALLOWAY
SIGNATURE 7/1/11 DATE

Prepared in 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

SCALE 0 50 1"=50'

# SR 1470 (Western Boulevard) At SR 1762 (Memorial Drive)/ Mall Entrance

Division 3 Onslow County Jacksonville

| PLAN DATE: June 2011 | REVIEWED BY: |
|---|---|
| PREPARED BY: EMM/JPG | REVIEWED BY: |

| REVISIONS | INIT. | DATE |
|---|---|---|
| Install Optical EV Preemption | JG | 7/1/11 |

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This document is only certified as to the revisions.
SIGNATURE DATE

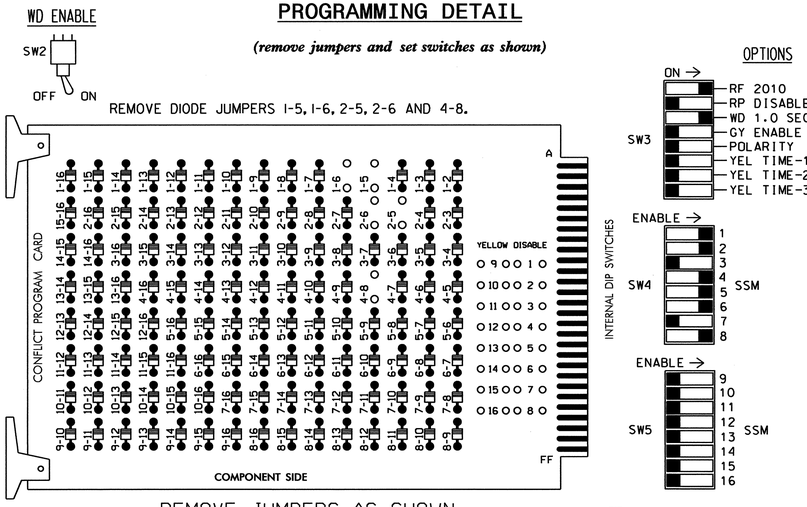
SIG. INVENTORY NO. 03-0381

01-JUL-2011 11:31
S:*ITS&SW*ITS Signals*Signal Design Section*Eastern Region*Div-03*Jacksonville Signal Systems*03-0381*03038l_sig_dsn_20110606.dgn
jgoll.dwpw

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 7S |

# EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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.

## 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 2 2A | Ø 2 2C | SLOT EMPTY | SLOT EMPTY | Ø 4 4A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | NOT USED | Ø 2 2B | NOT USED | | | Ø 4 4B | | | | | | | | ST DC ISOLATOR |
| FILE "J" | U | Ø 5 5A | Ø 6 6A | Ø 6 6C | SLOT EMPTY | SLOT EMPTY | Ø 8 8A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | CH. 3 PRE-3 | CH. 1 UNUSED | SLOT EMPTY |
| | L | NOT USED | Ø 6 6B | NOT USED | | | Ø 8 8B | | | | | | CH. 4 PRE-5 | CH. 2 UNUSED | |

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

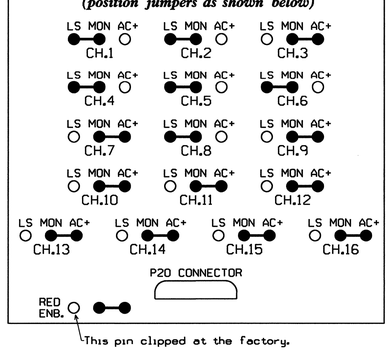
FS = FLASH SENSE
ST = STOP TIME

1 4 CHANNEL TOMAR OSP CARD INSERT CARD INTO SLOT J13

1

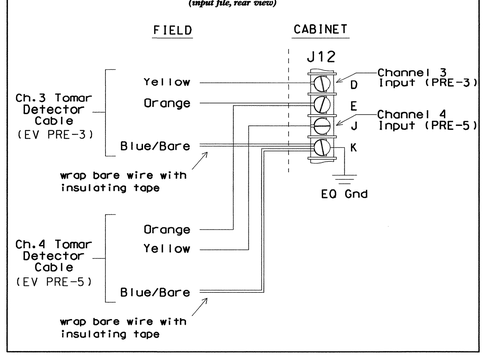
## RED MONITOR BOARD PROGRAMMING

*(position jumpers as shown below)*




## TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*




## 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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
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. 1 Program phases 2 and 6 for Yellow Flash.
8. The cabinet and controller are part of the Jacksonville City Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....EAGLE TYPE 2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG.NO.9500-332-NCDOT)
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 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 | | | 3 |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 2C | TB2-9,10 | I3U | 63 | 25 | 32 | 2 | 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 | | | 3 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| 6C | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | | | |
| 8A | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | Y | Y | | | |
| 8B | TB5-11,12 | J6L | 46 | 8 | 18 | 8 | Y | Y | | | 10 |

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## 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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0381
DESIGNED: June 2011
SEALED: 6-14-2006
REVISED: 7-1-11

SIGNAL UPGRADE SIGNAL UPGRADE Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1470 (WESTERN BOULEVARD)
AT
SR 1762 (MEMORIAL DRIVE)/
MALL ENTRANCE

DIVISION 3 ONSLOW COUNTY IN JACKSONVILLE

PLAN DATE: June 2006 REVIEWED BY:
PREPARED BY: A. Masiewicz REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| 1 Intall Optical EV Preemption. D.H.S. 6-30-11 OTJ 7/4/11 | DCB | 7/7/11 |

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
SIGNATURE DATE 7/7/11
SIG. INVENTORY NO. 03-0381

06-JUL-2011 14:20
S:##ITS&SU#ITS Signals#Workgroups#Sig Mon#Spoulding#in-progress#03038i_sm_elec_2011xx.dgn
dspoulding

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | S16.76 |

1

# EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

***(program controller as shown below)***

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3 and 5.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING  |  CLEAR/DWELL PHASES
  GRN YEL  RED   |123456789101112131415 16
1 255  0.0  0.0  |X     X
2   0  0.0  0.0  |
3   0  0.0  0.0  |
4   0  0.0  0.0  |
5   0  0.0  0.0  |
EXIT CALLS       |
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW
OMIT OVERLAPS:
```

PRESS 'NEXT' TWICE

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING  |  CLEAR/DWELL PHASES
  GRN YEL  RED   |123456789101112131415 16
1 255  0.0  0.0  |X   X
2   0  0.0  0.0  |
3   0  0.0  0.0  |
4   0  0.0  0.0  |
5   0  0.0  0.0  |
EXIT CALLS       |
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW
OMIT OVERLAPS:
```

PROGRAMMING COMPLETE

Program extend time on optical detector unit for 2.0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0381
DESIGNED: June 2011
SEALED: 6-14-2006
REVISED: 7-1-11

SIGNAL UPGRADE Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section

122 N. McDowell St., Raleigh, NC 27603

SR 1470 (WESTERN BOULEVARD)
AT
SR 1762 (MEMORIAL DRIVE)/
MALL ENTRANCE

DIVISION 3 ONSLOW COUNTY IN JACKSONVILLE

| | |
|---|---|
| PLAN DATE: June 2006 | REVIEWED BY: |
| PREPARED BY: A. Masiewicz | REVIEWED BY: |

| REVISIONS | INIT. | DATE |
|---|---|---|
| 1 Install Optical EV Preemption. D.H.S. 6-30-11 DJJ 7/1/11 | DJB | 7/7/11 |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

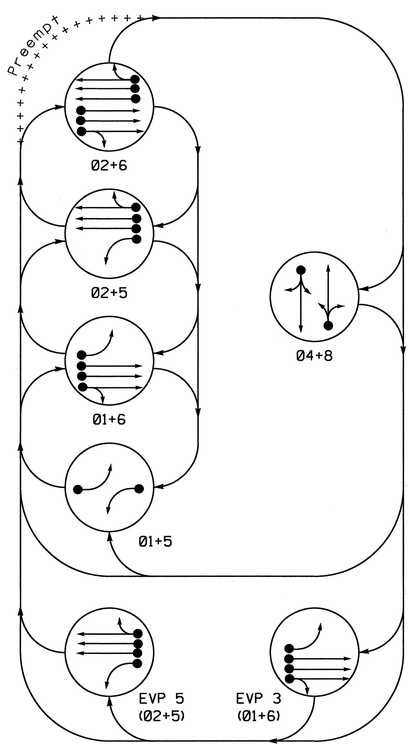
SIGNATURE DATE

SIG. INVENTORY NO. 03-0381

01-JUL-2011 15:41
S:*ITSASU*ITS Signals*Workgroups*Sig Man*Spaulding*In-progress*03038I_smlele.2011xx.dgn
dspaulding

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.77 |

## PHASING DIAGRAM




### PHASING DIAGRAM DETECTION LEGEND

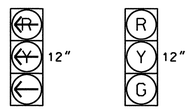
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 04+8 | Pre3 | Pre5 | FLASH |
|---|---|---|---|---|---|---|---|---|
| 11 | ← | ← | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ |
| 21,22 | R | R | G | G | R | R | G | Y |
| 41,42 | R | R | R | R | G | R | R | R |
| 51 | ← | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ |
| 61,62 | R | G | R | G | R | G | R | Y |
| 81,82 | R | R | R | R | G | R | R | R |

## SIGNAL FACE I.D.

All Heads L.E.D.

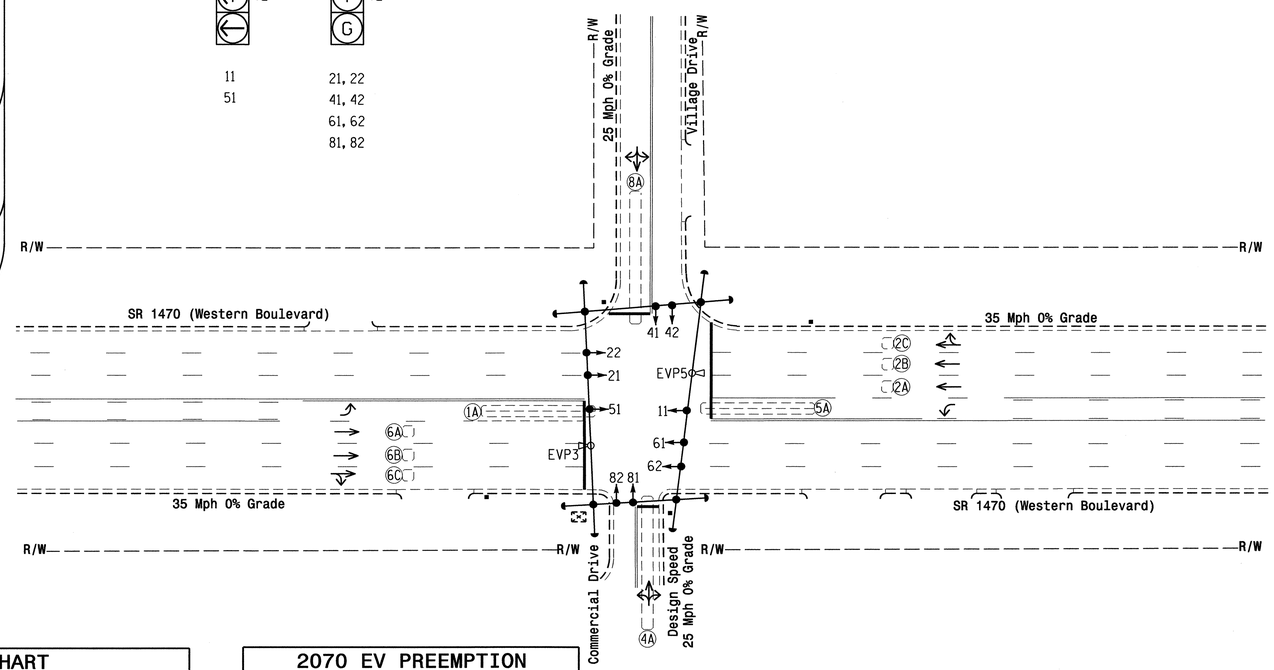



11
51

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

## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X60 | +5 | 2-4-2 | — | 1 | Y | Y | — | — | 3 | — | - |
| 2A | 6X6 | 90 | 4 | — | 2 | Y | Y | — | — | — | — | - |
| 2B | 6X6 | 90 | 4 | — | 2 | Y | Y | — | — | — | — | - |
| 2C | 6X6 | 90 | 4 | — | 2 | Y | Y | — | — | — | — | - |
| 4A | 6X70 | +5 | 1 | — | 4 | Y | Y | — | — | 10 | — | - |
| 5A | 6X60 | +5 | 2-4-2 | — | 5 | Y | Y | — | — | 3 | — | - |
| 6A | 6X6 | 90 | 4 | — | 6 | Y | Y | — | — | — | — | - |
| 6B | 6X6 | 90 | 4 | — | 6 | Y | Y | — | — | — | — | - |
| 6C | 6X6 | 90 | 4 | — | 6 | Y | Y | — | — | — | — | - |
| 8A | 6X70 | +5 | 1 | — | 8 | Y | Y | — | — | 10 | — | - |




## 5 Phase
## Fully Actuated w/EV Preempt
## Jacksonville City Signal System

### NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Pavement markings are existing.
7. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0382.

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|---|
| Min Green 1 * | 7 | 10 | 7 | 7 | 10 | 7 |
| Extension 1 * | 1.0 | 3.0 | 1.0 | 1.0 | 3.0 | 1.0 |
| Max Green 1 * | 20 | 60 | 25 | 20 | 60 | 25 |
| Yellow Clearance | 3.0 | 3.8 | 3.2 | 3.0 | 3.8 | 3.2 |
| Red Clearance | 2.1 | 1.0 | 2.6 | 2.3 | 1.0 | 2.6 |
| Walk 1 * | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - |
| Seconds Per Actuation * | - | - | - | - | - | - |
| Max Variable Initial * | - | - | - | - | - | - |
| Time Before Reduction * | - | - | - | - | - | - |
| Time To Reduce * | - | - | - | - | - | - |
| 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.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 5 |
|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 |
| Priority | Medium | Medium |
| Delay Time | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 |
| Ped Clear Before Pre | 0 * | 0 * |
| Yellow Clear Before Pre | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* |
| Dwell Min Time | 10 | 10 |
| Enable Backup Protection | N | N |
| Ped Clear Through Yellow | N | N |
| Preempt Extend** | 2 | 2 |
| Omit Overlaps | - | - |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

## 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 | |
| | Optical Detector | |

## Signal Upgrade

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON D. GALLOWAY
SIGNATURE DATE 7/11/11

Prepared In 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

SCALE 0 40 1"=40'

# SR 1470 (Western Boulevard) At Village Drive/Commercial Drive

Division 3 Onslow County Jacksonville

PLAN DATE: June 2011 REVIEWED BY: M MAHBOOBA
PREPARED BY: EM MINSHEW REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| 1 Install Optical EV Preemption | JG | 7/11/11 |

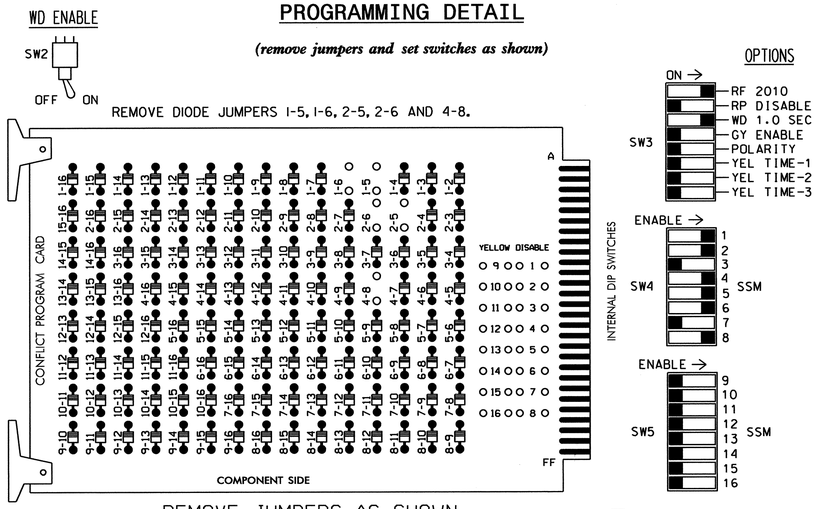
SEAL
*Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by Boniface MaduabuchuKwu,25475 on 6/28/2006 This document is only certified as to the revisions.*
SIGNATURE DATE
SIG. INVENTORY NO. 03-0382

11-JUL-2011 11:58
S:\ITSAS\ITS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0382\03382_sig_dsn_20110711.dgn
jgallaway

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.7B |

# EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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 SEL1-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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
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 Jacksonville City Signal 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 | 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 | | | | | |

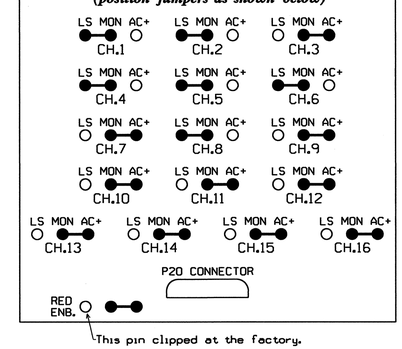
NU = Not Used

## EQUIPMENT INFORMATION

CONTROLLER.....EAGLE TYPE 2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG.NO.9500-332-NCDOT)
▽1 SOFTWARE.....ECONOLITE OASIS 3.02.77
(OR LATER APPROVED VERSION)
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

## RED MONITOR BOARD PROGRAMMING

*(position jumpers as shown below)*




## ▽1 INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 1A | Ø2 2A | Ø2 2C | SLOT EMPTY | SLOT EMPTY | Ø4 4A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | NOT USED | Ø2 2B | NOT USED | | | NOT USED | | | | | | | | ST DC ISOLATOR |
| FILE "J" | U | Ø5 5A | Ø6 6A | Ø6 6C | SLOT EMPTY | SLOT EMPTY | Ø8 8A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | CH. 3 PRE-3 | CH. 1 UNUSED | SLOT EMPTY |
| | L | NOT USED | Ø6 6B | NOT USED | | | NOT USED | | | | | | CH. 4 PRE-5 | CH. 2 UNUSED | |

EX.: 1A, 2A, ETC. = LOOP NO.'S
FS = FLASH SENSE
ST = STOP TIME
PRE3,5 = EV PREEMPTS

4 CHANNEL TOMAR OSP CARD INSERT CARD INTO SLOT J13

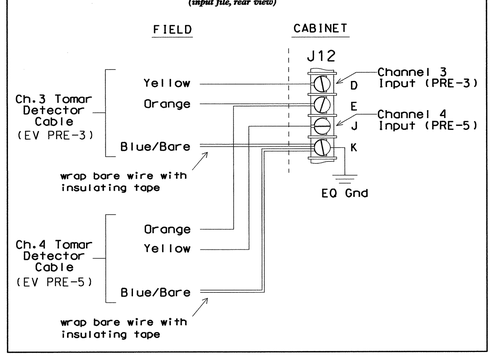
## INPUT FILE CONNECTION & PROGRAMMING CHART

| 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 | | | 3 |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 2C | TB2-9,10 | I3U | 63 | 25 | 32 | 2 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | 10 |
| 5A | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | 3 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| 6C | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | | | |
| 8A | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | Y | Y | | | 10 |

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## ▽1 TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0382
DESIGNED: June 2011
ORIGINALLY SEALED: 6/28/06
▽1 REVISED1: 7/11/11

Signal Upgrade - Sheet 1 of 2

REVISION ▽ SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

John T. Rowe Jr. 7-12-11
SIGNATURE DATE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

*Prepared in the Offices of:*

Pedestrian Safety Systems Branch, Traffic Engineering Section, Signals Management Section, Division of Highways, Department of Transportation, State of North Carolina

122 N. McDowell St., Raleigh, NC 27603

SR 1470 (WESTERN BOULEVARD) AT VILLAGE DRIVE/COMMERCIAL DRIVE

DIVISION 3 ONSLOW COUNTY IN JACKSONVILLE

PLAN DATE: June 2006 REVIEWED BY:
PREPARED BY: A. Masiewicz REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| ▽1 Added EV preemption; revised notes. (WSA) | JTR | 7-12-11 |

SEAL

Not a certified document as to the Original Document but Only as to the Revisions - This document originally issued and sealed by George C. Brown, #022013, on 7/6/06.
This document is only certified as to the revisions.

SIGNATURE DATE
SIG. INVENTORY NO. 03-0382

11-JUL-2011 14:22
S:*TSASU*ITS Signals\Workgroups\Sig Mon\armstrong\03382_smlele_xxx.dgn
sarmstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.79 |

## ▽ EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

***(program controller as shown below)***

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' to advance to Preemption #3.

EVP3

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN  YEL  RED ¦123456789101112131415 16
1 255  0.0  0.0 ¦X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦

PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........10
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT' TWICE →

EVP5

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN  YEL  RED ¦123456789101112131415 16
1 255  0.0  0.0 ¦ X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦

PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........10
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

EVP PROGRAMMING COMPLETE

Program extend time on optical detector units for 2.0 sec for EVP3 and EVP5.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0382
DESIGNED: June 2011
ORIGINALLY SEALED: 6/28/06
REVISED1: 7/11/11 ▽

Signal Upgrade - Sheet 2 of 2

REVISION ▽ SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

SIGNATURE — DATE 7-12-11

ELECTRICAL AND PROGRAMMING DETAILS FOR:

*Prepared in the Offices of:*

*Traffic Engineering and Safety Systems Branch — Signals Management Section*

*122 N. McDowell St., Raleigh, NC 27603*

# SR 1470 (WESTERN BOULEVARD) AT VILLAGE DRIVE/COMMERCIAL DRIVE

DIVISION 3 — ONSLOW COUNTY — IN JACKSONVILLE

PLAN DATE: June 2006 — REVIEWED BY:

PREPARED BY: A. Masiewicz — REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| ▽ Added EV preemption revised notes. (WSA) | JTR | 7-12-11 |

SEAL

Not a certified document as to the Original Document but Only as to the Revisions - This document originally issued and sealed by George C. Brown. #022013. on 7/6/06. This document is only certified as to the revisions.

SIGNATURE — DATE

SIG. INVENTORY NO. 03-0382

11-JUL-2011 14:22
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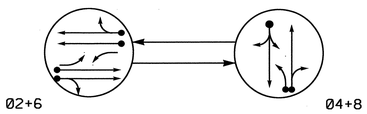
armstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.8D |

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

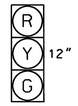
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 0 2 + 6 | PHASE 0 4 + 8 | FLASH |
|---|---|---|---|
| 21,22 | G | R | Y |
| 41,42 | R | G | R |
| 61,62 | G | R | Y |
| 81,82 | R | G | R |

## SIGNAL FACE I.D.

All Heads L.E.D.




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

## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

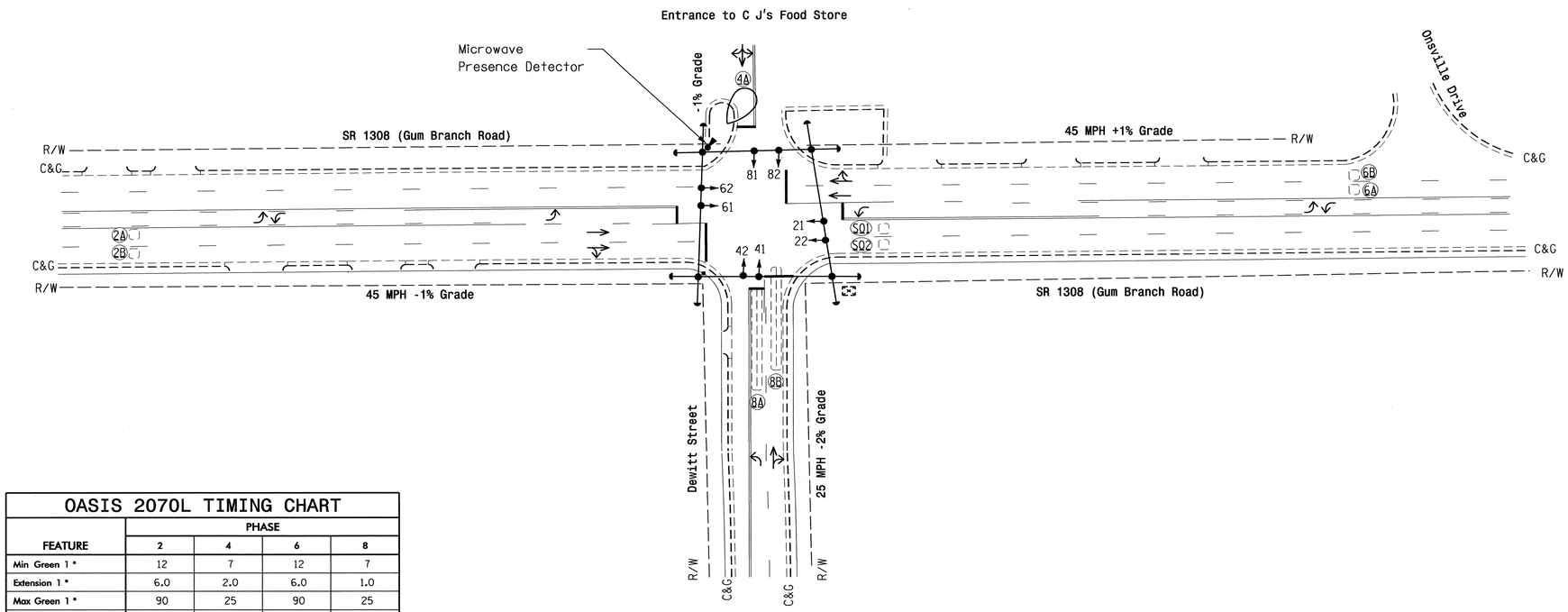
| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 2A | 6X6 | 330 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 330 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 4A | * | 0 | * | - | 4 | Y | Y | - | - | 5 | - | - |
| 6A | 6X6 | 330 | 2-4-2 | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 330 | 2-4-2 | - | 6 | Y | Y | - | - | - | - | - |
| 8A | 6X60 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | 3 | - | - |
| 8B | 6X60 | +5 | 2-4-2 | - | 8 | Y | Y | - | - | 10 | - | - |
| S01 | 6X6 | +100 | 4 | - | - | - | - | - | - | - | Y | - |
| S02 | 6X6 | +100 | 4 | - | - | - | - | - | - | - | Y | - |

* Microwave Detection Zone
Re-label Existing System Loops

2 Phase
Fully Actuated
Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
5. Pavement markings are existing.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Controller Asset #0411.




## 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 | |
| | Microwave Detection Zone | |
| | Microwave Detector | |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | PHASE 4 | PHASE 6 | PHASE 8 |
|---|---|---|---|---|
| Min Green 1 * | 12 | 7 | 12 | 7 |
| Extension 1 * | 6.0 | 2.0 | 6.0 | 1.0 |
| Max Green 1 * | 90 | 25 | 90 | 25 |
| Yellow Clearance | 4.6 | 3.1 | 4.4 | 3.3 |
| Red Clearance | 1.0 | 2.8 | 1.0 | 1.8 |
| Walk 1 * | - | - | - | - |
| Don't Walk 1 | - | - | - | - |
| Seconds Per Actuation * | 1.5 | - | 1.5 | - |
| Max Variable Initial * | 37 | - | 37 | - |
| Time Before Reduction * | 15 | - | 15 | - |
| Time To Reduce * | 45 | - | 45 | - |
| Minimum Gap | 3.0 | - | 3.0 | - |
| Recall Mode | MIN RECALL | - | MIN RECALL | - |
| Vehicle Call Memory | YELLOW | - | YELLOW | - |
| Dual Entry | - | ON | - | ON |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

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

SR 1308 (Gum Branch Road)
at
Dewitt Street

Division 3 Onslow County Jacksonville

PLAN DATE: March 2011 REVIEWED BY: J.P. Galloway
PREPARED BY: CJC/JPG REVIEWED BY:

SCALE 0 40 1"=40'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

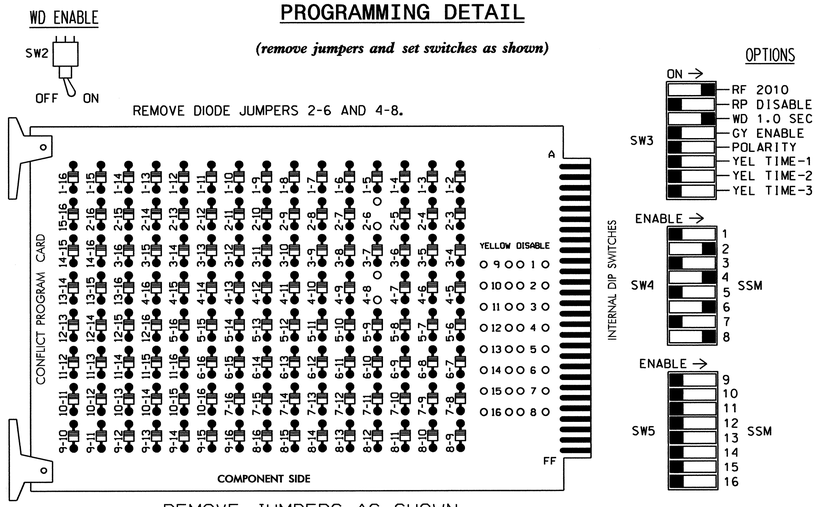
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 4/19/11 DATE
SIG. INVENTORY NO. 03-0411

14-APR-2011 09:36
S:*ITS&SU*ITS Signals*Signal Design Section*Eastern Region*Div-03*Jacksonville Signal System*03-0411*03041 1_sig_dsn_2011mmdd.dgn
jgalloway

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.81 |

# EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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 1,3,5, 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 and 6 for Yellow Flash.
8. The cabinet and controller are part of the Jacksonville City Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
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. | NU | 21,22 | NU | NU | 41,42 | NU | NU | 61,62 | NU | NU | 81,82 | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | |
| YELLOW | | 129 | | | 102 | | | 135 | | | 108 | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | |
| GREEN ARROW | | | | | | | | | | | | |

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 | Ø2 2A | SLOT | SLOT | SLOT | Ø4 4A M-W DC ISOLATOR | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | FS DC ISOLATOR |
| | L | EMPTY | Ø2 2B | EMPTY | EMPTY | EMPTY | NOT USED | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | ST DC ISOLATOR |
| FILE "J" | U | SLOT | Ø6 6A | SLOT | SLOT | SLOT | Ø8 8A | SYS. DET. SØ1 | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT |
| | L | EMPTY | Ø6 6B | EMPTY | EMPTY | EMPTY | Ø8 8B | SYS. DET. SØ2 | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY |

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

FS = FLASH SENSE
ST = STOP TIME

## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| ** 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | 5 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | 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 |
| * SØ1 | TB7-1,2 | J7U | 66 | 28 | 38 | SYS | | | | | |
| * SØ2 | TB7-3,4 | J7L | 79 | 41 | 48 | SYS | | | | | |

* System Detector only. Remove the vehicle phase assigned to this detector in the default programming.

** Microwave Detector. see 'Accuwave Detector Panel Wiring Detail' Sheet 2 of 2.

INPUT FILE POSITION LEGEND: J2L

FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0411
DESIGNED: March 2011
SEALED: 04/14/2011
REVISED:

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Management Section

750 N.Greenfield Pkwy,Garner,NC 27529

# SR 1308 (Gum Branch Road) at Dewitt Street

Division 3 | Onslow County | Jacksonville

PLAN DATE: April 2011 | REVIEWED BY: T. Vega

PREPARED BY: C. Strickland | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 4/15/11
SIGNATURE DATE

SIG. INVENTORY NO. 03-0411

14-APR-2011 14:04
S:\MTS&SU\ITS Signals\Workgroups\Sig Mgmt\Strickland\03041l_smlelle.xxx.dgn
cestrickland

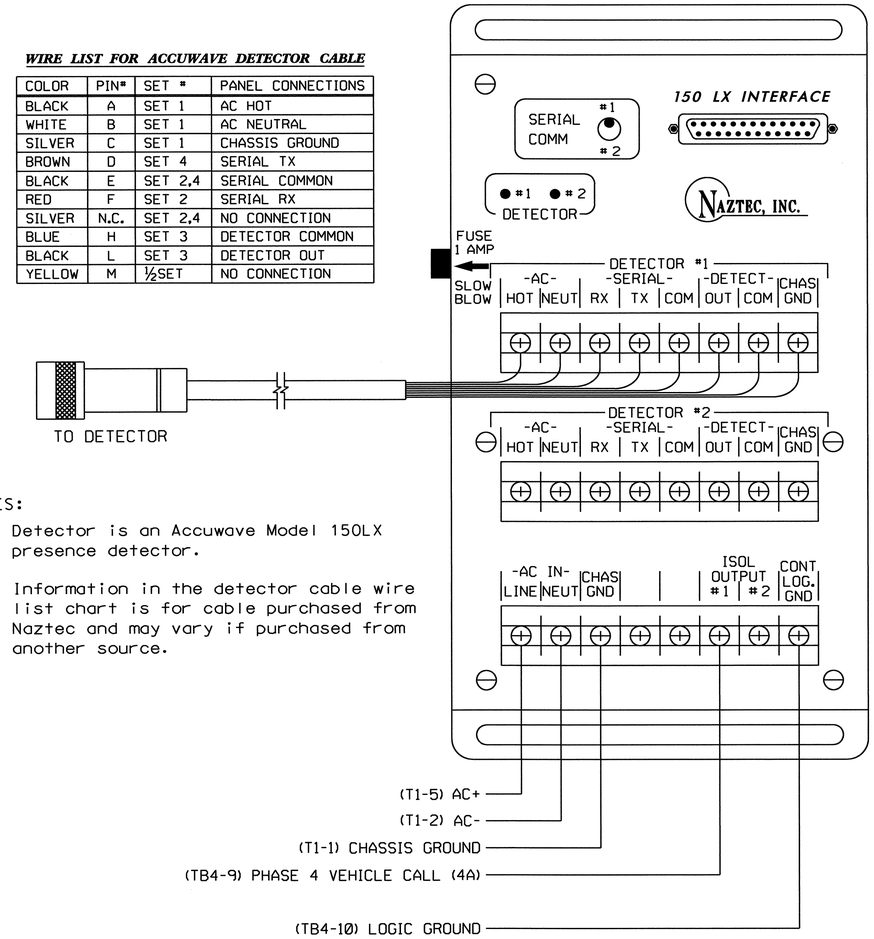
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.82 |

# ACCUWAVE DETECTOR PANEL WIRING DETAIL

*(wire as shown)*

***WIRE LIST FOR ACCUWAVE DETECTOR CABLE***

| COLOR | PIN# | SET # | PANEL CONNECTIONS |
|---|---|---|---|
| BLACK | A | SET 1 | AC HOT |
| WHITE | B | SET 1 | AC NEUTRAL |
| SILVER | C | SET 1 | CHASSIS GROUND |
| BROWN | D | SET 4 | SERIAL TX |
| BLACK | E | SET 2,4 | SERIAL COMMON |
| RED | F | SET 2 | SERIAL RX |
| SILVER | N.C. | SET 2,4 | NO CONNECTION |
| BLUE | H | SET 3 | DETECTOR COMMON |
| BLACK | L | SET 3 | DETECTOR OUT |
| YELLOW | M | ½SET | NO CONNECTION |




NOTES:

1. Detector is an Accuwave Model 150LX presence detector.
2. Information in the detector cable wire list chart is for cable purchased from Naztec and may vary if purchased from another source.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0411
DESIGNED: March 2011
SEALED: 04/14/2011
REVISED:

Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

SR 1308 (Gum Branch Road)
at
Dewitt Street

Division 3 | Onslow County | Jacksonville

PLAN DATE: April 2011 | REVIEWED BY:
PREPARED BY: C. Strickland | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 4/15/11
SIGNATURE DATE

SIG. INVENTORY NO. 03-0411

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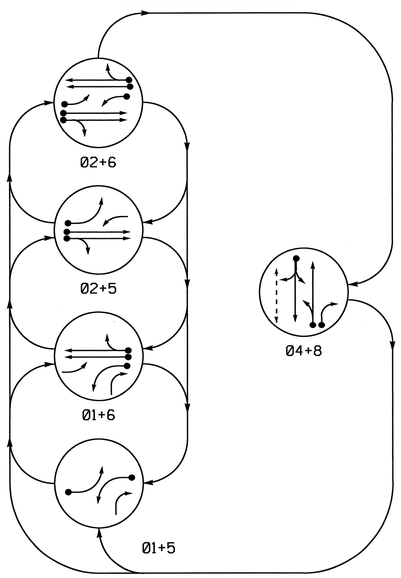
S:*ITS&SU*ITS Signals*Workgroups*Sig Mgmt*Strickland*03-0411_smlele_xxx.dgn
dgnsrtlsk.dgn

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.03 |

## 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 | ← | ← | F | F | R | Y |
| 21,22 | R | R | G | G | R | Y |
| 41,42 | R | R | R | R | G | R |
| 51 | ← | F | ← | F | R | Y |
| 61,62 | R | G | R | G | R | Y |
| 81 | R | R | R | R | G | R |
| 82 | R / R | / | R | R | G | R |
| P41,P42 | DW | DW | DW | DW | W | DRK |

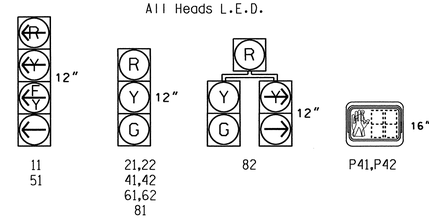
## STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

| FROM | TO ← 1 | TO ← 2 | TO F 1 | TO F 2 | TO R 1 | TO R 2 |
|---|---|---|---|---|---|---|
| ← | ← | ← | Y | R | Y | R |
| F | F | F | F | F | Y | R |
| R | R | R | R | R | R | R |

F = Flashing Yellow Arrow

## SIGNAL FACE I.D.

All Heads L.E.D.



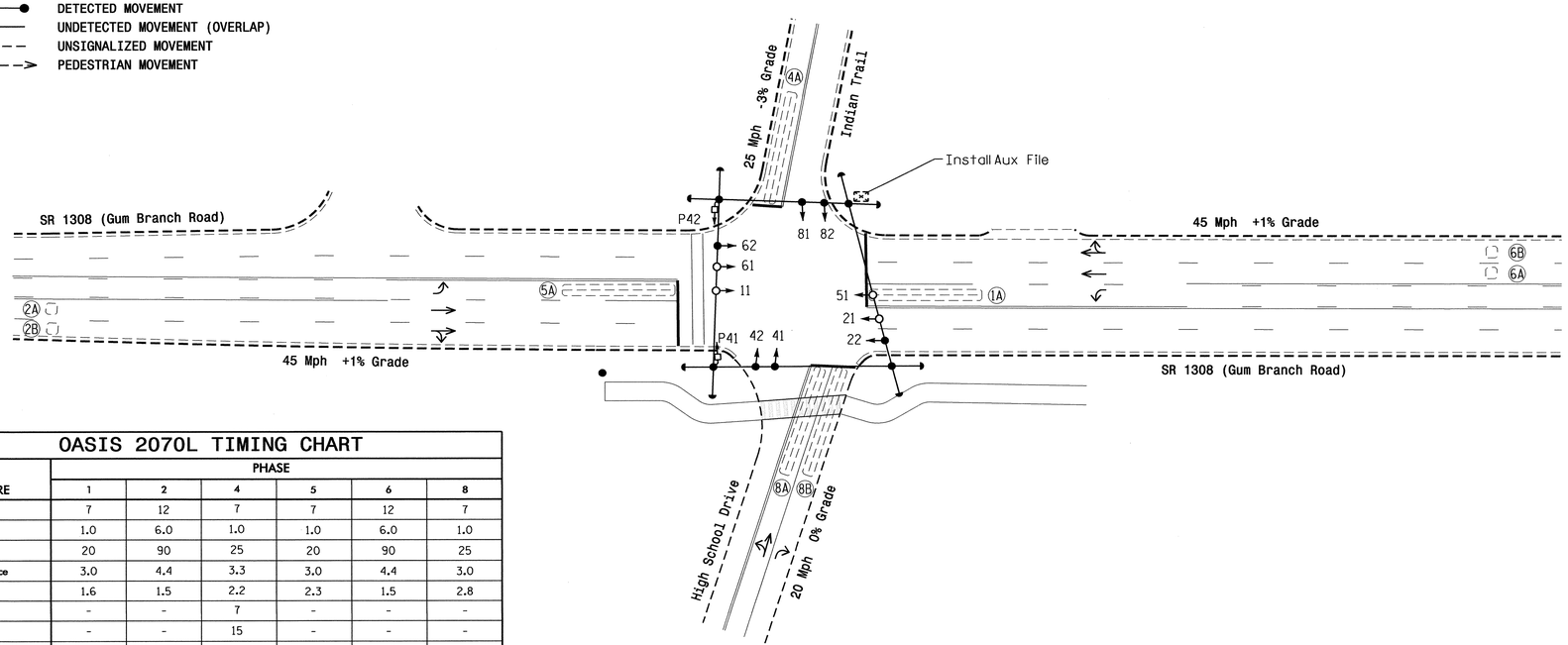

## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

| 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 | 6X60 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | - |
| | | | | | 6 | Y | Y | Y | - | 3 | - | - |
| 2A | 6X6 | 330 | 5 | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 330 | 5 | - | 2 | Y | Y | - | - | - | - | - |
| 4A | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 5 | - | - |
| 5A | 6X60 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | - |
| | | | | | 2 | Y | Y | Y | - | 3 | - | - |
| 6A | 6X6 | 330 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 330 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| 8A | 6X60 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | 3 | - | - |
| 8B | 6X60 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | 15 | - | - |

## 5 Phase Fully Actuated Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Disable existing backup protection for phases 2+6.
4. Phase 1 and/or phase 5 may be lagged.
5. Reposition existing signal heads 22 and 62.
6. Set all detector units to presence mode.
7. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
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. Pavement markings are existing.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
12. Controller Asset #0423.




## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 7 | 7 | 12 | 7 |
| Extension 1 * | 1.0 | 6.0 | 1.0 | 1.0 | 6.0 | 1.0 |
| Max Green 1 * | 20 | 90 | 25 | 20 | 90 | 25 |
| Yellow Clearance | 3.0 | 4.4 | 3.3 | 3.0 | 4.4 | 3.0 |
| Red Clearance | 1.6 | 1.5 | 2.2 | 2.3 | 1.5 | 2.8 |
| Walk 1 * | - | - | 7 | - | - | - |
| Don't Walk 1 | - | - | 15 | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | - | 1.5 | - |
| Max Variable Initial * | - | 37 | - | - | 38 | - |
| Time Before Reduction * | - | 15 | - | - | 15 | - |
| Time To Reduction * | - | 45 | - | - | 45 | - |
| 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 | |

Signal Upgrade

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

SCALE 0 40 1"=40'

SR 1308 (Gum Branch Road) at Indian Trail/ Jacksonville High School

Division 3 Onslow County Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | March 2011 | REVIEWED BY: | J.P. Galloway |
| PREPARED BY: | CJC/JPG | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

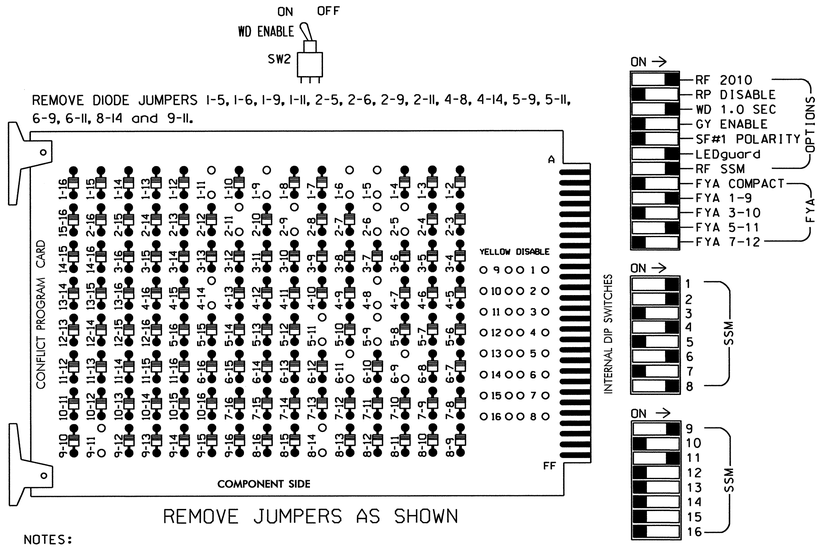
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE DATE 6/23/11
SIG. INVENTORY NO. 03-0423

23-JUN-2011 14:55
S:*ITSASU*ITS Signals*Signal Design Sections*Eastern Region*Div-03*Jacksonville Signal System*03-0423*03-0423_sig.dgn_2011mmdd.dgn
jpgalloway

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.84 |

## EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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.

NOTE: conflict monitor must be EDI 2010ECL-NC to support FYA functionality.

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 | Ø2 | SLOT | WIRED ⊗ | SLOT | Ø4 | SLOT | SLOT | SLOT | SLOT | SLOT | NOT USED | SLOT | FS |
| | | 1A | 2A | EMPTY | INPUT | EMPTY | 4A | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | | EMPTY | DC ISOLATOR |
| | L | NOT USED | Ø2 | | | | NOT USED | | | | | | Ø4 PED | | ST |
| | | | 2B | | | | | | | | | | DC ISOLATOR | | DC ISOLATOR |
| FILE "J" | U | Ø5 | Ø6 | SLOT | WIRED ⊗ | SLOT | Ø8 | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT |
| | | 5A | 6A | EMPTY | INPUT | EMPTY | 8A | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY |
| | L | NOT USED | Ø6 | | | | Ø8 | | | | | | | | |
| | | | 6B | | | | 8B | | | | | | | | |

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

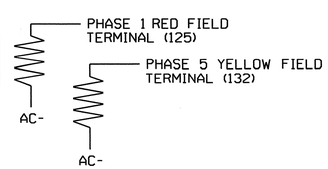
FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

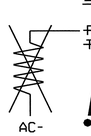
## LOAD RESISTOR INSTALLATION DETAIL

*(install resistors as shown below)*

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




## LOAD RESISTOR REMOVAL DETAIL




! IMPORTANT: If present, remove load resistor PHASE 5 RED FIELD TERMINAL (131)

## 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 3,5, 7,10,12,13,14,15 & 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 phase 4 for 'STARTUP PED CALL'.
8. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
9. The cabinet and controller are part of the Jacksonville City Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
* CABINET.....332 /W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S4,S4P,S5,S6,S8,S9,S12
PHASES USED.....1,2,4,5,6,8
OVERLAP "A".....1+2
OVERLAP "B".....NOT USED
OVERLAP "C".....5+6
OVERLAP "D".....NOT USED

* Auxiliary Output File required

## 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[1] | TB2-1,2 | I1U | 56 | 18 | 1 | 1 | Y | Y | | | 15 |
| | - | J4U | 48 | 10 | 26 | 6 | Y | Y | Y | | 3 |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | 5 |
| 5A[2] | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | 15 |
| | - | I4U | 47 | 9 | 22 | 2 | Y | Y | Y | | 3 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | 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 | | | 15 |
| PED PUSH BUTTONS | | | | | | | | | | | |
| P41,P42 | TB8-5,6 | I12L | 69 | 31 | PED 4 | 4 PED | | | | | |

NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOT I12.

[1] Add jumper from I1-W to J4-W, on rear of input file.

[2] Add jumper from J1-W to I4-W, on rear of input file.

! IMPORTANT: If present, remove jumpers from TB2-9 to TB2-11, and from TB2-10 to TB2-12.

! IMPORTANT: If present, remove jumpers from TB3-9 to TB3-11, and from TB3-10 to TB3-12.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

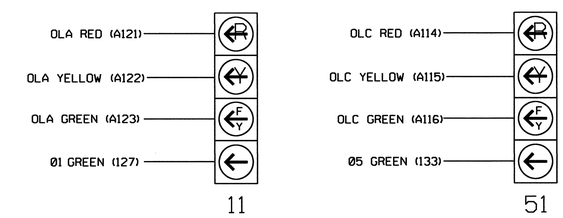
## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11★ | 82 | 21,22 | NU | NU | 41,42 | P41, P42 | 51★ | 61,62 | NU | NU | 81,82 | NU | 11★ | NU | NU | 51★ | NU | NU |
| RED | | * | 128 | | | 101 | | | 134 | | | 107 | | | | | | | |
| YELLOW | | | 129 | | | 102 | | * | 135 | | | 108 | | | | | | | |
| GREEN | | | 130 | | | 103 | | | 136 | | | 109 | | | | | | | |
| RED ARROW | | | | | | | | | | | | | | A121 | | | A114 | | |
| YELLOW ARROW | | 126 | | | | | | | | | | | | A122 | | | A115 | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | A123 | | | A116 | | |
| GREEN ARROW | 127 | 127 | | | | | | 133 | | | | | | | | | | | |
| ✋ | | | | | | | 104 | | | | | | | | | | | | |
| 🚶 | | | | | | | 106 | | | | | | | | | | | | |

NU = Not Used
* Denotes install load resistor. See load resistor installation detail this sheet.
★ See pictorial of head wiring in detail below.

## 4 SECTION FYA PPLT SIGNAL WIRING DETAIL

*(wire signal heads as shown)*




NOTE

1. The sequence display for this signal requires special logic programming. See sheet 2 of 2 for programming instructions.

## COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0423
DESIGNED: March 2011
SEALED: 06/23/11
REVISED:

ELECTRICAL DETAIL SHEET 1 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

SR 1308 (Gum Branch Road)
at
Indian Trail/
Jacksonville High School

Division 3 | Onslow County | Jacksonville

PLAN DATE: April 2011 | REVIEWED BY: T.J.
PREPARED BY: C. Strickland | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
SIGNATURE | DATE 6/24/11
SIG. INVENTORY NO. 03-0423

24-JUN-2011 07:27
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castrickland

## LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
## TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL). THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5 AND 6.

2. FROM MAIN MENU PRESS '6' (OUTPUTS). THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON
AND RED CLEAR ON PHASE  #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE     #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #4  (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON
AND RED CLEAR ON PHASE  #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #42 ON
SET OUTPUT  ASSIGNMENT #43 OFF
```

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

PRESS '+'

```
LOGICAL I/O COMMAND #5  (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #44 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

PRESS '+'

```
LOGICAL I/O COMMAND #6  (+/-COMMAND#)
IF  YELLOW ON PHASE     #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #43 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS). THEN '1' (VEHICLE OVERLAP SETTINGS).

```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:          |123456789101112131415 16
VEH OVL PARENTS:|XX
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

PRESS '+' TWICE

```
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE:          |123456789101112131415 16
VEH OVL PARENTS:|   XX
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

## DYNAMIC BACK-UP CONTROL PROGRAMMING

*(program controller as shown below)*

1. From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Scroll to the bottom of the menu and enable Dynamic/Backup Control Functions 1 and 2.

2. From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

```
DYNAMIC/BACKUP CONTROL FUNCTION #01
                 OVERLAPS:|ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE |
OR        PHASES:|123456789101112131415 16
IF PHASES ARE ON|  X
OMIT PHASES     |X
CALL PHASES     |   X
```

PRESS 'NEXT'

```
DYNAMIC/BACKUP CONTROL FUNCTION #02
                 OVERLAPS:|ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE |
OR        PHASES:|123456789101112131415 16
IF PHASES ARE ON|     X
OMIT PHASES     |    X
CALL PHASES     |   X
```

BACKUP PROTECTION PROGRAMMING COMPLETE

**!** IMPORTANT: 1. If present, remove all functions from 'Dynamic/Backup'.

**!** IMPORTANT: 2. If present, remove all phases from all 'Dynamic/Backup Control Functions'.

### *OUTPUT REFERENCE SCHEDULE*

USE TO INTERPRET LOGIC PROCESSOR

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0423
DESIGNED: March 2011
SEALED: 06/23/2011
REVISED:

ELECTRICAL DETAIL SHEET 2 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

SR 1308 (Gum Branch Road)
at
Indian Trail/
Jacksonville High School

Division 3 | Onslow County | Jacksonville

PLAN DATE: April 2011 | REVIEWED BY: T. Jyn
PREPARED BY: C. Strickland | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE | DATE 6/24/11
SIG. INVENTORY NO. 03-0423

24-JUN-2011 07:29
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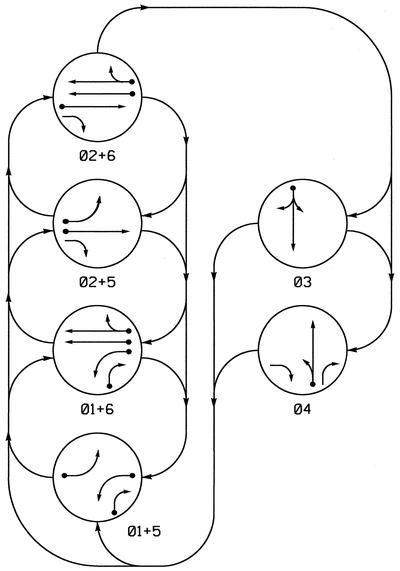
cestrickland

| WBS ELEMENT NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.8b |

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

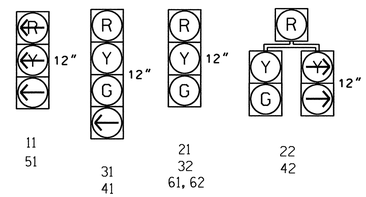
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 03 | 04 | FLASH |
|---|---|---|---|---|---|---|---|
| 11 | ← | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |
| 21 | R | R | G | G | R | R | Y |
| 22 | R | R | G | G | R | R/← | Y |
| 31 | R | R | R | R | G/← | R | R |
| 32 | R | R | R | R | G | R | R |
| 41 | R | R | R | R | R | G/← | R |
| 42 | R/→ | R/← | R | R | R | G | R |
| 51 | ← | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |
| 61, 62 | R | G | R | G | R | R | Y |

## SIGNAL FACE I.D.

All Heads L.E.D.



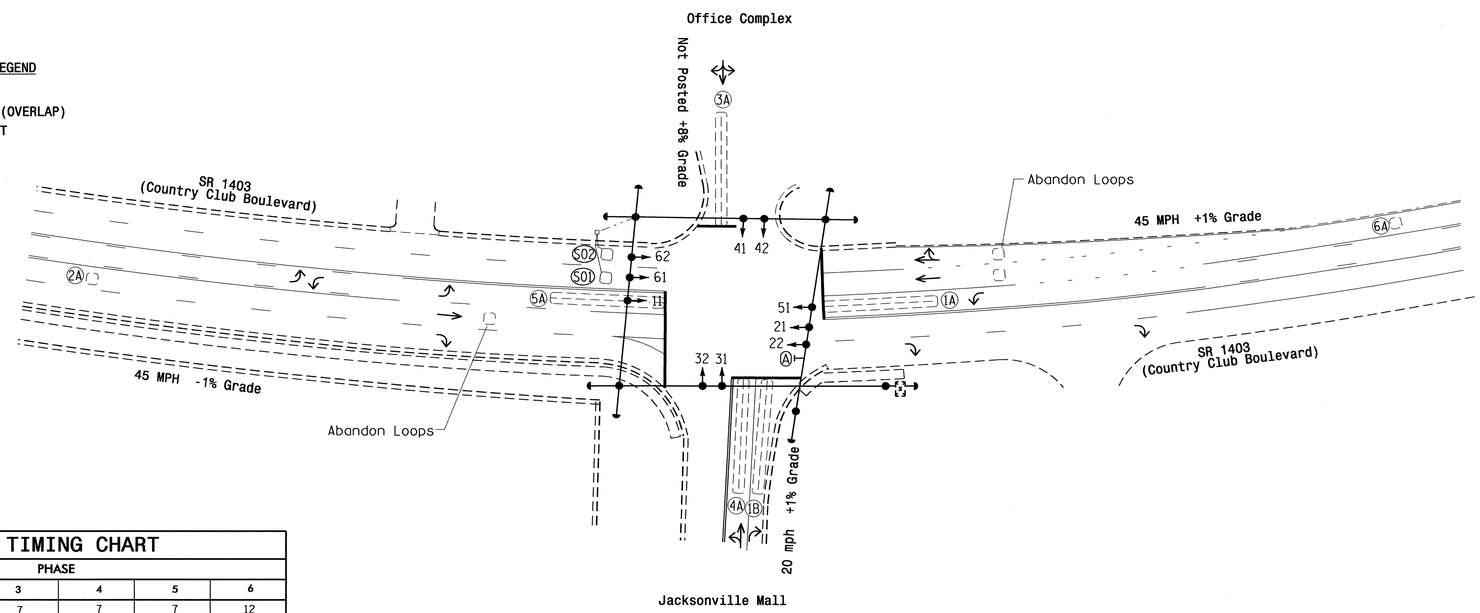

## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

| 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 | 6X60 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 3 | - | - |
| 1B | 6X60 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | - |
| 2A | 6X6 | 300 | 5 | - | 2 | Y | Y | - | - | - | - | - |
| 3A | 6X60 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | 10 | - | - |
| 4A | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 3 | - | - |
| 5A | 6X60 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 3 | - | - |
| 6A | 6X6 | 300 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| S01 | 6X6 | +115 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S02 | 6X6 | +115 | 4 | Y | - | - | - | - | - | - | Y | Y |

## 6 Phase
## Fully Actuated
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0527.




## 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 | |
| A | Right Arrow "ONLY" Sign (R3-5R) | A |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 7 | 7 | 7 | 12 |
| Extension 1 * | 1.0 | 6.0 | 1.0 | 1.0 | 1.0 | 6.0 |
| Max Green 1 * | 20 | 90 | 20 | 25 | 15 | 90 |
| Yellow Clearance | 3.0 | 4.6 | 3.0 | 3.0 | 3.0 | 4.4 |
| Red Clearance | 2.1 | 1.0 | 2.6 | 2.4 | 1.9 | 1.1 |
| Walk 1 * | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | - | - | 1.5 |
| Max Variable Initial * | - | 34 | - | - | - | 34 |
| Time Before Reduction * | - | 15 | - | - | - | 15 |
| Time To Reduction * | - | 45 | - | - | - | 45 |
| Minimum Gap | - | 3.0 | - | - | - | 3.0 |
| Recall Mode | - | MIN RECALL | - | - | - | MIN RECALL |
| Vehicle Call Memory | - | YELLOW | - | - | - | YELLOW |
| Dual Entry | - | - | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

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

SCALE 0 40 1"=40'

SR 1403 (Country Club Road)
at
Jacksonville Mall/Office Complex

Division 3 Onslow County Jacksonville

| PLAN DATE: March 2011 | REVIEWED BY: |
|---|---|
| PREPARED BY: JPG | REVIEWED BY: |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON R. GALLOWAY

SIGNATURE DATE 4/18/11

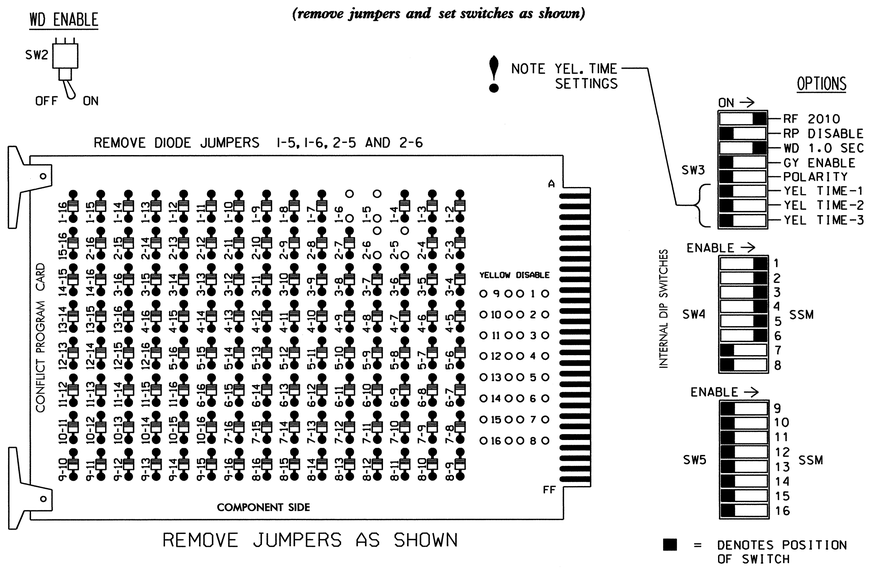
SIG. INVENTORY NO. 03-0527

18-APR-2011 12:04
S:\ITSAS\ITS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0527\03527_sig_dsn_2011mod.dgn
jcomparine

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.87 |

# EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches 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.

## NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. 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 7,8,9,10,11,12,13,14,15 & 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 Gap Reduction.
5. Program phases 2 and 6 for Start-Up in Green.
6. Set all detector card channels to 'PRESENCE' mode.
7. Program phases 2 and 6 for Yellow Flash.
8. The cabinet and controller are part of the Jacksonville City Signal System. Controller Asset: #0527

## 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 | 42 | 21,22 | NU | 31 | 32 | 22 | 41 | 42 | NU | 51 | 61,62 | NU | NU | NU | NU |
| RED | | | 128 | | 116 | 116 | | 101 | 101 | | | 134 | | | | |
| YELLOW | | | 129 | | 117 | 117 | | 102 | 102 | | | 135 | | | | |
| GREEN | | | 130 | | 118 | 118 | | 103 | 103 | | | 136 | | | | |
| RED ARROW | 125 | | | | | | | | | | 131 | | | | | |
| YELLOW ARROW | 126 | 126 | | | | | 102 | | | | 132 | | | | | |
| GREEN ARROW | 127 | 127 | | | 118 | | 103 | 103 | | | 133 | | | | | |

NU = Not Used

## EQUIPMENT INFORMATION

CONTROLLER.....EXISTING EAGLE TYPE 2070L
CABINET.....EXISTING McCAIN/CTRL TECH MODEL 332A
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6
PHASES USED.....1,2,3,4,5,6
OVERLAPS USED.....NONE

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 1A | Ø2 2A | Ø1 1B | SLOT | Ø3 3A | Ø4 4A | SLOT | SLOT | SYS. DET. S01 | SLOT | SLOT | SLOT | SLOT | FS DC ISOLATOR |
| | L | NOT USED | NOT USED ** | NOT USED | EMPTY | NOT USED | NOT USED | EMPTY | EMPTY | SYS. DET. S02 | EMPTY | EMPTY | EMPTY | EMPTY | ST DC ISOLATOR |
| FILE "J" | U | Ø5 5A | Ø6 6A | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT |
| | L | NOT USED | NOT USED ** | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY |

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

FS = FLASH SENSE
ST = STOP TIME

** THESE LOOPS ARE TO BE ABANDONED. DISCONNECT LOOP WIRES AT TERMINAL BLOCKS. COIL, TAPE, & LABEL WIRES FOR IDENTIFICATION PURPOSES ONLY.

## 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 | | | 3 |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B** | TB2-7,8 | I2L | | | | | | | | | |
| 1B | TB2-9,10 | I3U | 63 | 25 | 32 | 1 | Y | Y | | | 15 |
| 3A | TB4-5,6 | I5U | 58 | 20 | 3 | 3 | Y | Y | | | 10 |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | 3 |
| S01* | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| S02* | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| 5A | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | 3 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B,6C** | TB3-7,8 | J2L | | | | | | | | | |

*System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0527
DESIGNED: MARCH 2011
SEALED: 4/18/11
REVISED: N/A

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared In 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

SR 1403 (Country Club Road)
at
Jacksonville Mall/Office Complex

Division 03 Onslow County Jacksonville

PLAN DATE: April 2011 REVIEWED BY:
PREPARED BY: F.E. Russ REVIEWED BY:

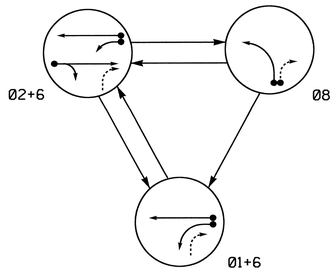
| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE DATE 4-19-11
SIG. INVENTORY NO. 03-0527

18-APR-2011 15:48
s:\TSSSUM175 Signals\Workgroups\Sig Mgmt\Russ\2070dwgs\03527_sm_ele_20110kxx.dgn
frusus

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.88 |

## PHASING DIAGRAM




### PHASING DIAGRAM DETECTION LEGEND

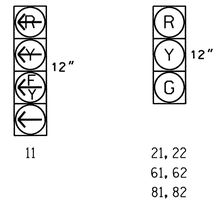
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+6 | PHASE 02+6 | PHASE 08 | FLASH |
|---|---|---|---|---|
| 11 | ← | F Y | R | Y |
| 21, 22 | R | G | R | Y |
| 61, 62 | G | G | R | Y |
| 81, 82 | R | R | G | R |

## SIGNAL FACE I.D.

All Heads L.E.D.



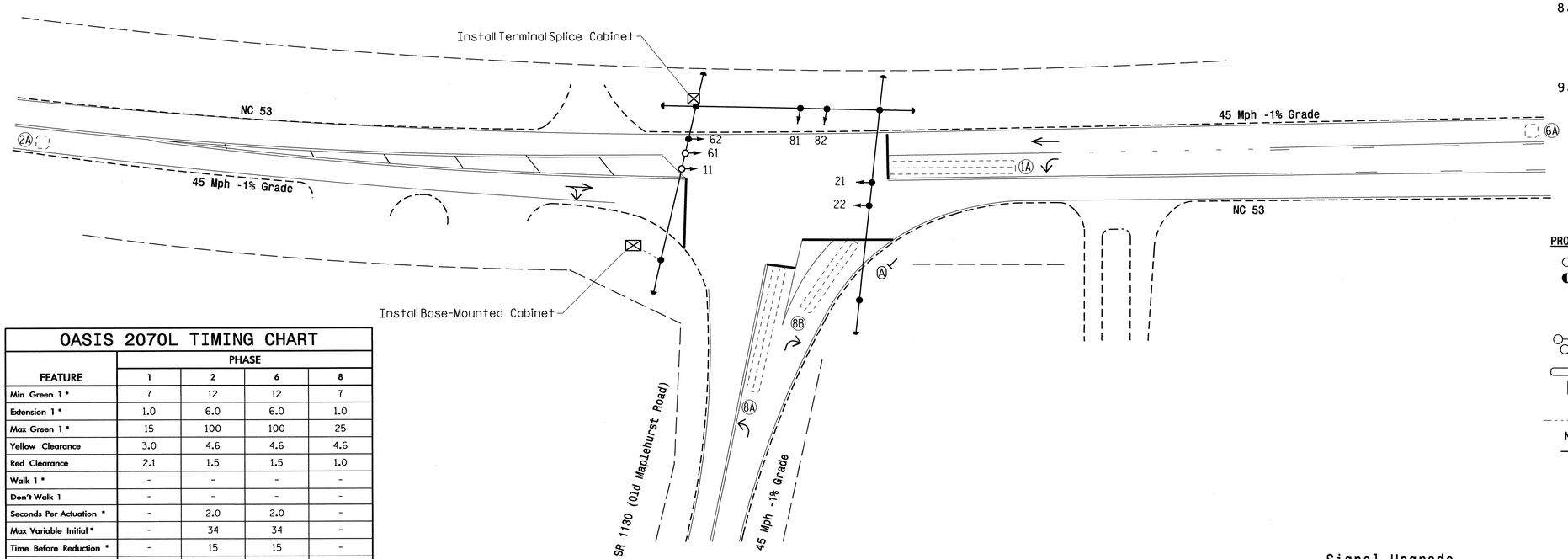

## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

| 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 | 6X60 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | Y |
| | | | | | 6 | Y | Y | Y | - | 3 | - | Y |
| 2A | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | Y |
| 6A | 6X6 | 300 | 4 | - | 6 | Y | Y | - | - | - | - | Y |
| 8A | 6X60 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | - | - | Y |
| 8B | 6X40 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | 25 | - | Y |

# 3 Phase
# Fully Actuated
# Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Reposition existing signal heads numbered 62.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0556.




## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | PHASE 2 | PHASE 6 | PHASE 8 |
|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 12 | 7 |
| Extension 1 * | 1.0 | 6.0 | 6.0 | 1.0 |
| Max Green 1 * | 15 | 100 | 100 | 25 |
| Yellow Clearance | 3.0 | 4.6 | 4.6 | 4.6 |
| Red Clearance | 2.1 | 1.5 | 1.5 | 1.0 |
| Walk 1 * | - | - | - | - |
| Don't Walk 1 | - | - | - | - |
| Seconds Per Actuation * | - | 2.0 | 2.0 | - |
| Max Variable Initial * | - | 34 | 34 | - |
| Time Before Reduction * | - | 15 | 15 | - |
| Time To Reduce * | - | 45 | 45 | - |
| Minimum Gap | - | 3.2 | 3.2 | - |
| Recall Mode | - | MIN RECALL | MIN RECALL | - |
| Vehicle Call Memory | - | YELLOW | YELLOW | - |
| Dual Entry | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

## 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 | |
| A | "YIELD" Sign (R1-2) | A |

Signal Upgrade

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

NC 53
At
SR 1130 (Old Maplehurst Road)

Division 3 Onslow County Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | January 2011 | REVIEWED BY: | |
| PREPARED BY: | IOU/JPG | REVIEWED BY: | |

SCALE 0 30 1"=30'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

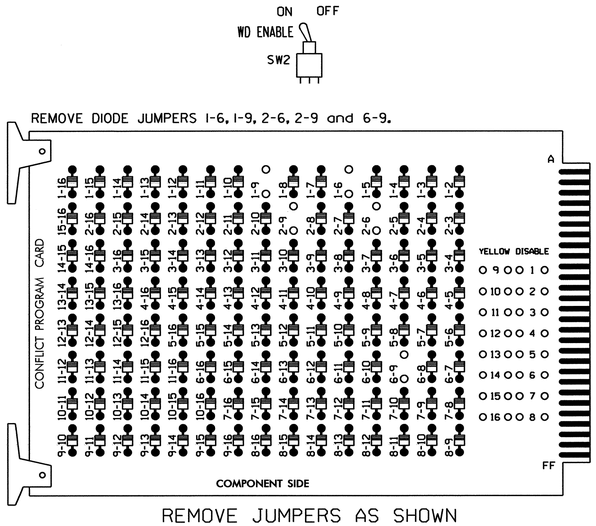
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 11/16/11 DATE
SIG. INVENTORY NO. 03-0566

08-JUL-2011 08:27
S:*13SDHTS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0566\03-0566_sig_dsn_20110106.dgn
(gallaway)

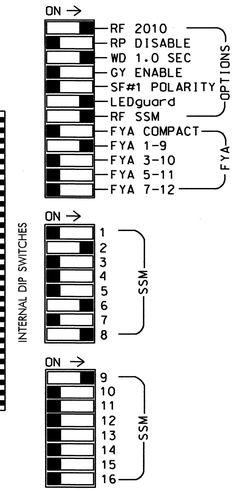
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.89 |

# 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 1,3,4, 5,7,10,11,12,13,14,15 & 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 Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
7. The cabinet and controller are part of the Jacksonville Closed Loop System.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....332 /W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S6,S8,S9
PHASES USED.....1,2,6,8.
OVERLAP "A".....1+2
OVERLAP "B".....NOT USED
OVERLAP "C".....NOT USED
OVERLAP "D".....NOT USED

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1★ | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA★ | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11 | 21,22 | NU | NU | NU | NU | NU | 61,62 | NU | NU | 81,82 | NU | 11 | NU | NU | NU | NU | NU |
| RED | | 128 | | | | | | 134 | | | 107 | | | | | | | |
| YELLOW | ✳ | 129 | | | | | | 135 | | | 108 | | | | | | | |
| GREEN | | 130 | | | | | | 136 | | | 109 | | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | | | | | |
| YELLOW ARROW | | | | | | | | | | | | | A122 | | | | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | | | | | |
| GREEN ARROW | 127 | | | | | | | | | | | | | | | | | |

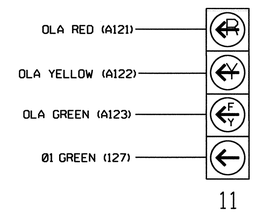
NU = Not Used

✳ Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail below.

## 4 SECTION FYA PPLT SIGNAL WIRING DETAIL

*(wire signal heads as shown)*




NOTE

1. The sequence display for this signal requires special logic programming. See sheet 2 of 2 for programming instructions.

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 1A | Ø2 2A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | NOT USED | NOT USED | | | | | | | | | | | | ST DC ISOLATOR |
| FILE "J" | U | SLOT EMPTY | Ø6 6A | SLOT EMPTY | WIRED INPUT ⊗ | SLOT EMPTY | Ø8 8A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY |
| | L | | NOT USED | SLOT EMPTY | | | Ø8 8B | | | | | | | | |

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

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

## 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[1] | TB2-1,2 | I1U | 56 | 18 | 1 | 1 | Y | Y | | | 15 |
| | - | J4U | 48 | 10 | 26 | 6 | Y | Y | Y | | 3 |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 8A | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | Y | Y | | | |
| 8B | TB5-11,12 | J6L | 46 | 8 | 18 | 8 | Y | Y | | | 25 |

[1]Add jumper from I1-W to J4-W, on rear of input file.

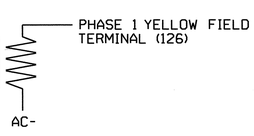
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## LOAD RESISTOR INSTALLATION DETAIL

*(install resistors as shown below)*

ACCEPTABLE VALUES

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




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0566
DESIGNED: January 2011
SEALED: 01-06-11
REVISED: N/A

ELECTRICAL DETAIL SHEET 1 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

NC 53
at
SR 1130 (Old Maplehurst Road)

Division 3 | Onslow County | Jacksonville

PLAN DATE: February 2011 | REVIEWED BY: JTR
PREPARED BY: James Peterson | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

Prepared in 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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE | DATE 2-23-11
SIG. INVENTORY NO. 03-0566

23-FEB-2011 09:15
S:\ITSSG\ITS Signals\Workgroups\Sig Mgmt\Peterson\03-0566_smlele_xxx.dgn
jtpeterson

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.90 |

## LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
## TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2 AND 3.

2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE       #1  IS ON
AND RED CLEAR ON PHASE #1  IS ON

                 ↓
            SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE       #1  IS ON

                 ↓
            SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE    #1  IS ON

                 ↓
            SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

***OUTPUT REFERENCE SCHEDULE***

OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:            ¦123456789101112131415 16
VEH OVL PARENTS:¦XX
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0566
DESIGNED: January 2011
SEALED: 01-06-11
REVISED: N/A

ELECTRICAL DETAIL SHEET 2 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

NC 53
at
SR 1130 (Old Maplehurst Road)

Division 3 | Onslow County | Jacksonville

PLAN DATE: February 2011 | REVIEWED BY: JTR
PREPARED BY: James Peterson | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

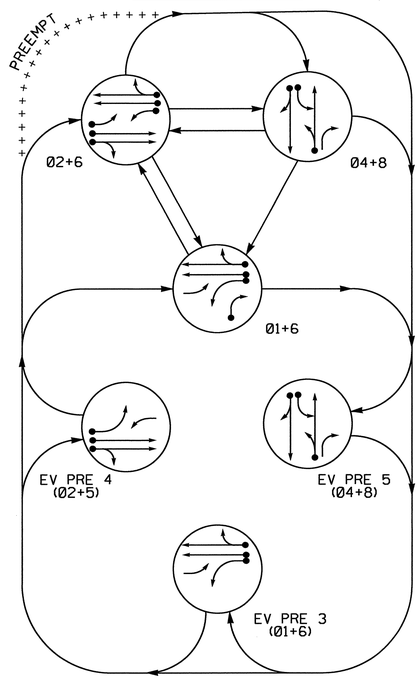
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

SIGNATURE | DATE 2-23-11
SIG. INVENTORY NO. 03-0566

23-FEB-2011 09:16
S:*ITSS(U*ITS Signals*Workgroups*Sig Mgmt*Peterson*03056_smLele_xxx.dgn
jtpeterson

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.91 |

## PHASING DIAGRAM




### PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+6 | 02+6 | 04+8 | Pre 3 | Pre 4 | Pre 5 | FLASH |
|---|---|---|---|---|---|---|---|
| 11 | ← | F.Y. | R | ← | F.Y. | R | Y |
| 21 | F.Y. | F.Y. | R | F.Y. | ← | R | Y |
| 22,23 | R | G | R | R | G | R | Y |
| 41,42 | R | R | G | R | R | G | R |
| 61,62 | G | G | R | G | R | R | Y |
| 81 | R | R | G | R | R | G | R |
| 82 | R/→ | R | G | R | R | G | R |

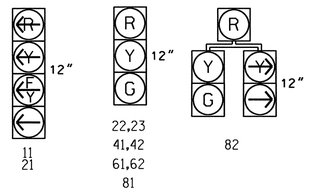
## STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

| FROM | TO ← 1 | ← 2 | F.Y. 1 | F.Y. 2 | R 1 | R 2 |
|---|---|---|---|---|---|---|
| ← | ← | ← | Y | R | Y | R |
| F.Y. | F.Y. | F.Y. | F.Y. | F.Y. | Y | R |
| R | R | R | R | R | R | R |

F.Y. = Flashing Yellow Arrow

## SIGNAL FACE I.D.

All Heads L.E.D.



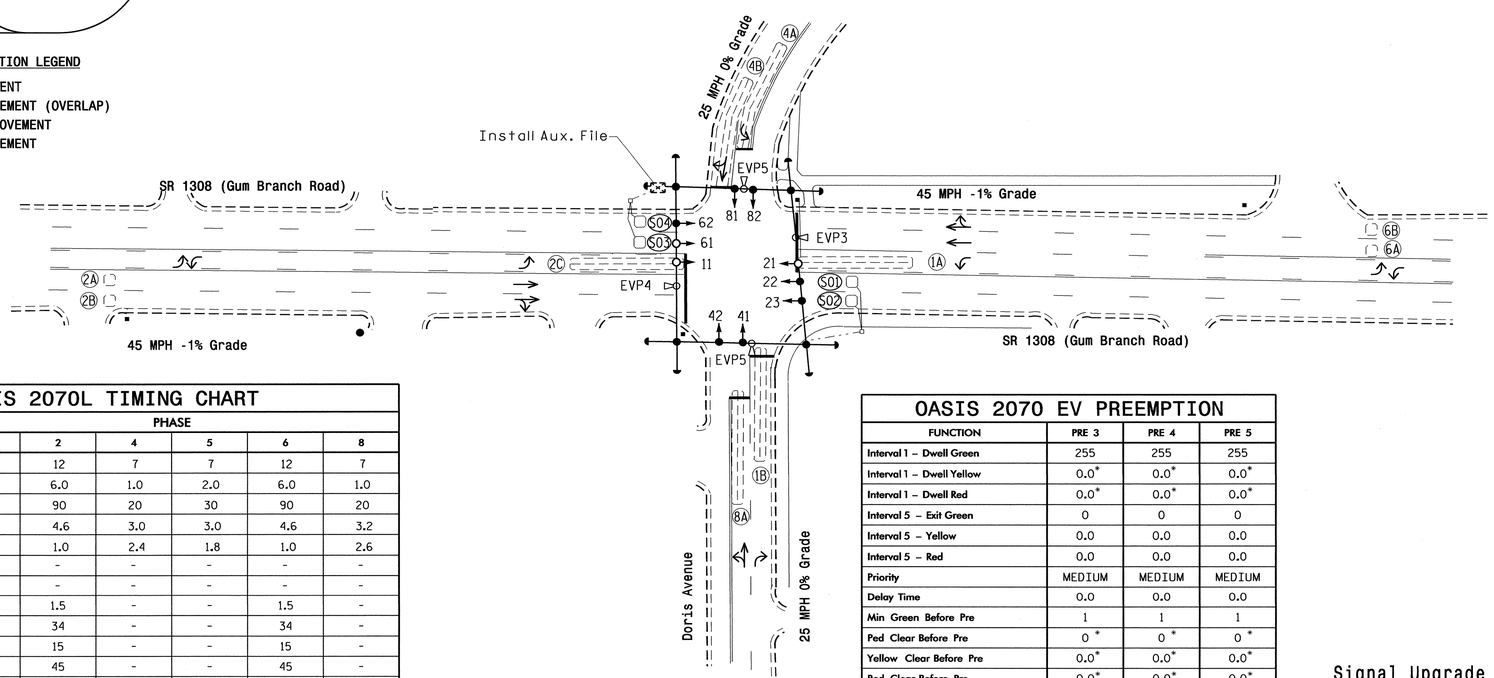

## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

| 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 | 6X60 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | - |
| | | | | | 6 | Y | Y | Y | - | 3 | - | - |
| 1B | 6X60 | +5 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | - |
| 2A | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 2C | 6X60 | 0 | 2-4-2 | - | 2 | Y | Y | Y | - | 3 | - | - |
| 4A | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 3 | - | - |
| 4B | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 10 | - | - |
| 6A | 6X6 | 300 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 300 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| 8A | 6X60 | +5 | 2-4-2 | - | 8 | Y | Y | - | - | 3 | - | - |
| S01 | 6X6 | +90 | 4 | Y | - | - | - | - | - | - | Y | - |
| S02 | 6X6 | +90 | 4 | Y | - | - | - | - | - | - | Y | - |
| S03 | 6X6 | +80 | 4 | Y | - | - | - | - | - | - | Y | - |
| S04 | 6X6 | +80 | 4 | Y | - | - | - | - | - | - | Y | - |

# 3 Phase
# Fully Actuated w/EV Preempt
# Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Disable existing backup protection for phase 1.
4. Phase 1 may be lagged.
5. Set all detector units to presence mode.
6. Reposition existing signal heads numbered 22, 23, and 62.
7. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
8. Pavement markings are existing.
9. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
11. Controller Asset #0588.




## 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 | |
| | Optical Detector | |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 7 | 7 | 12 | 7 |
| Extension 1 * | 1.0 | 6.0 | 1.0 | 2.0 | 6.0 | 1.0 |
| Max Green 1 * | 30 | 90 | 20 | 30 | 90 | 20 |
| Yellow Clearance | 3.0 | 4.6 | 3.0 | 3.0 | 4.6 | 3.2 |
| Red Clearance | 1.8 | 1.0 | 2.4 | 1.8 | 1.0 | 2.6 |
| Walk 1 * | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | - | 1.5 | - |
| Max Variable Initial * | - | 34 | - | - | 34 | - |
| Time Before Reduction * | - | 15 | - | - | 15 | - |
| Time To Reduce * | - | 45 | - | - | 45 | - |
| Minimum Gap | - | 3.0 | - | - | 3.0 | - |
| Recall Mode | - | MIN. RECALL | - | - | MIN. RECALL | - |
| Vehicle Call Memory | - | YELLOW | - | - | YELLOW | - |
| Dual Entry | - | - | 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.

## OASIS 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 4 | PRE 5 |
|---|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 | 0.0 |
| Priority | MEDIUM | MEDIUM | MEDIUM |
| Delay Time | 0.0 | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 | 1 |
| Ped Clear Before Pre | 0 * | 0 * | 0 * |
| Yellow Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 | 7 |
| Enable Backup Protection | N | N | N |
| Ped Clear Through Yellow | N | N | N |
| Preempt Extend** | 2 | 2 | 2 |
| Omit Overlaps | B | - | - |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

Signal Upgrade

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

SR 1308 (Gum Branch Road)
At
Doris Avenue

Division 3 Onslow County Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | March 2011 | REVIEWED BY: | J. P. Galloway |
| PREPARED BY: | CJC/JPG | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SCALE 0 40 1"=40'

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 7/7/11 DATE
SIG. INVENTORY NO. 03-0588

07-JUL-2011 10:47
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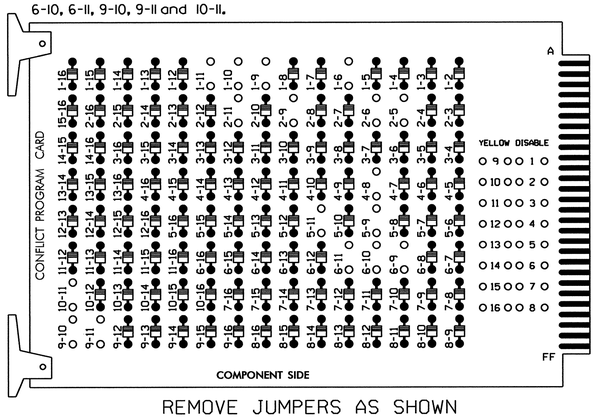
jgalloway

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.92 |

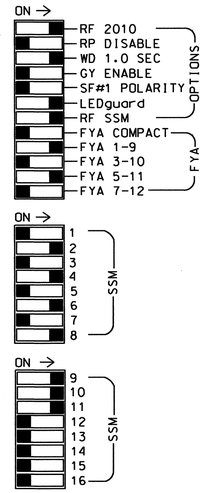
# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*

REMOVE DIODE JUMPERS 1-6, 1-9, 1-10, 1-11, 2-5, 2-6, 2-9, 2-11, 4-8, 5-9, 5-11, 6-9, 6-10, 6-11, 9-10, 9-11 and 10-11.




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.

NOTE: conflict monitor must be EDI 2010ECL-NC to support FYA functionality.

## INPUT FILE POSITION LAYOUT

*(front view)*

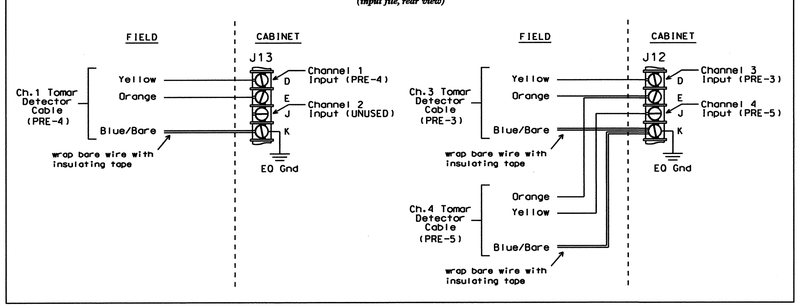
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 1A | Ø2 2A | Ø1 1B | Ø2 2C | SLOT EMPTY | Ø4 4A | SLOT EMPTY | SLOT EMPTY | SYS. DET. SØ1 | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | NOT USED | Ø2 2B | NOT USED | NOT USED | | Ø4 4B | | | SYS. DET. SØ2 | | | | | ST DC ISOLATOR |
| FILE "J" | U | SLOT EMPTY | Ø6 6A | SLOT EMPTY | WIRED INPUT ⊗ | SLOT EMPTY | Ø8 8A | SLOT EMPTY | SLOT EMPTY | SYS. DET. SØ3 | SLOT EMPTY | SLOT EMPTY | CH. 3 PRE-3 | CH. 1 PRE-4 | SLOT EMPTY |
| | L | | Ø6 6B | | | | NOT USED | | | SYS. DET. SØ4 | | | CH. 4 PRE-5 | CH. 2 UNUSED | |

EX.: 1A, 2A, ETC. = LOOP NO.'S
FS = FLASH SENSE
ST = STOP TIME
⊗ Wired Input - Do not populate slot with detector card

4 CHANNEL TOMAR OSP CARD INSERT CARD INTO SLOT J13

## TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*




## NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5, 7,12,13,14,15 & 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 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
8. The cabinet and controller are part of the Jacksonville City Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
** CABINET.....332 /W/ AUX
SOFTWARE.....ECONOLITE OASIS VER. 3.02.77 OR LATER APPROVED VERSION
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S8,S9,S10,S12
PHASES USED.....1,2,4,*5,6,8
OVERLAP "A".....1+2
OVERLAP "B".....1
OVERLAP "C".....5+6
OVERLAP "D".....NOT USED

* Denotes phase 5 is used in preemption sequence only
** Auxiliary Output File required

## 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[1] | TB2-1,2 | I1U | 56 | 18 | 1 | 1 | Y | Y | | | 15 |
| | - | J4U | 48 | 10 | 26 | 6 | Y | Y | Y | | 3 |
| 1B | TB2-9,10 | I3U | 63 | 25 | 32 | 1 | Y | Y | | | 15 |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 2C | TB4-1,2 | I4U | 47 | 9 | 22 | 2 | Y | Y | Y | | 3 |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | 3 |
| 4B | TB4-11,12 | I6L | 45 | 7 | 14 | 4 | Y | Y | | | 10 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| 8A | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | Y | Y | | | 3 |
| *SØ1 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| *SØ2 | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| *SØ3 | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |
| *SØ4 | TB7-11,12 | J9L | 61 | 23 | 17 | SYS | | | | | |

[1]Add jumper from I1-W to J4-W, on rear of input file.
* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

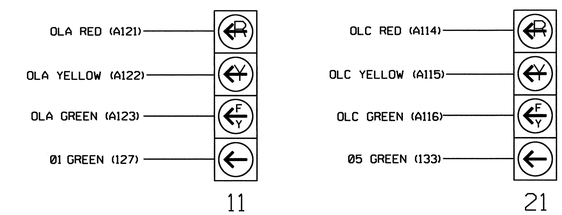
## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11★ | 22,23 | NU | NU | 41,42 | NU | 21★ | 61,62 | NU | NU | 81,82 | NU | 11★ | 82 | NU | 21★ | NU | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | | | * | | | | |
| YELLOW | * | 129 | | | 102 | | * | 135 | | | 108 | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | | | A114 | | |
| YELLOW ARROW | | | | | | | | | | | | | A122 | A125 | | A115 | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | | | A116 | | |
| GREEN ARROW | 127 | | | | | | 133 | | | | | | | A126 | | | | |

NU = Not Used
* Denotes install load resistor. See load resistor installation detail sheet 2 of 3.
★ See pictorial of head wiring in detail below.

## FYA SIGNAL WIRING DETAIL

*(wire signal heads as shown)*




NOTE

1. The sequence display for these signals require special logic programming. See sheet 2 of 3 for programming instructions.

## PREEMPT ONLY PHASE OMIT NOTE

*(program controller as shown below)*

From Main Menu press '2' (Phase Control). Then '1' (Phase Control Functions). Program Phase 5 for 'Omit Phase' and Phases 1, 2, 4, 6 and 8 for 'Startup Calls'. This is to prevent Phase 5 from being served when not in Preempt.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0588
DESIGNED: March 2011
SEALED: 07/07/11
REVISED:

ELECTRICAL DETAIL SHEET 1 OF 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

SR 1308 (Gum Branch Road) at Doris Avenue

Division 3 Onslow County Jacksonville

PLAN DATE: July 2011 REVIEWED BY: T. Uzle
PREPARED BY: C. Strickland REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE DATE 7/11/11
SIG. INVENTORY NO. 03-0588

08-JUL-2011 13:55
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castrickland

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.93 |

# LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL). THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5 AND 6.

2. FROM MAIN MENU PRESS '6' (OUTPUTS). THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE       #1  IS ON
AND RED CLEAR ON PHASE #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE       #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE    #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #4  (+/-COMMAND#)
IF  ACTIVE PHASE       #5  IS ON
AND RED CLEAR ON PHASE #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #42 ON
SET OUTPUT  ASSIGNMENT #43 OFF
```

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 21).

PRESS '+'

```
LOGICAL I/O COMMAND #5  (+/-COMMAND#)
IF  ACTIVE PHASE       #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #44 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 21).

PRESS '+'

```
LOGICAL I/O COMMAND #6  (+/-COMMAND#)
IF  YELLOW ON PHASE    #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #43 ON
```

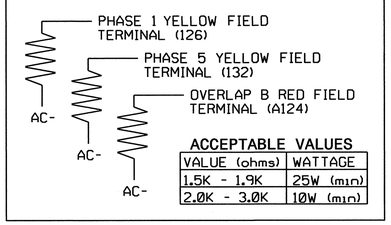
NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 21).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

***OUTPUT REFERENCE SCHEDULE***

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

## LOAD RESISTOR INSTALLATION DETAIL

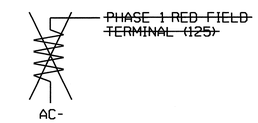



ACCEPTABLE VALUES

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

## LOAD RESISTOR REMOVAL DETAIL

*(remove resistor as shown below)*




! If present, remove load resistor PHASE 1 RED FIELD TERMINAL (125)

## DYNAMIC BACK-UP CONTROL PROGRAMMING

*(program controller as shown below)*

1. From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Scroll to the bottom of the menu and enable Dynamic/Backup Control Function 1.

2. From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

```
DYNAMIC/BACKUP CONTROL FUNCTION #01
                 OVERLAPS:¦ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE ¦
OR        PHASES:¦123456789101112131415 16
IF PHASES ARE ON¦ X
OMIT PHASES     ¦X
CALL PHASES     ¦   X
```

BACKUP PROTECTION PROGRAMMING COMPLETE

! IMPORTANT: 1. If present, remove all functions from 'Dynamic/Backup'.

! IMPORTANT: 2. If present, remove all phases from all 'Dynamic/Backup Control Functions'.

ELECTRICAL DETAIL SHEET 2 OF 3

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0588
DESIGNED: March 2011
SEALED: 07/07/11
REVISED:

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Transportation Mobility and Safety Division, Signal Management Section

750 N.Greenfield Pkwy,Garner,NC 27529

SR 1308 (Gum Branch Road) at Doris Avenue

Division 3 Onslow County Jacksonville

PLAN DATE: July 2011 REVIEWED BY: T. Vogt

PREPARED BY: C. Strickland REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE DATE 7/11/11

SIG. INVENTORY NO. 03-0588

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cestrickland

## EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3, 4 and 5.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦ X
```

PRESS 'NEXT'

```
   PREEMPTION  #4  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦ X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT'

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦   X   X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PROGRAMMING COMPLETE

Program extend time on optical detector unit for 2.0 seconds.

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
 PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
 PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS: ¦XX
VEH OVL NOT VEH: ¦
VEH OVL NOT PED: ¦
VEH OVL GRN EXT: ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

PRESS '+'

```
 PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
 PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS: ¦X
VEH OVL NOT VEH: ¦
VEH OVL NOT PED: ¦
VEH OVL GRN EXT: ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+'

```
 PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
 PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS: ¦   XX
VEH OVL NOT VEH: ¦
VEH OVL NOT PED: ¦
VEH OVL GRN EXT: ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

ELECTRICAL DETAIL SHEET 3 OF 3

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0588
DESIGNED: March 2011
SEALED: 07/07/11
REVISED:

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

SR 1308 (Gum Branch Road)
at
Doris Avenue

| Division 3 | Onslow County | Jacksonville |
|---|---|---|
| PLAN DATE: July 2011 | REVIEWED BY: T.J.A. | |
| PREPARED BY: C. Strickland | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

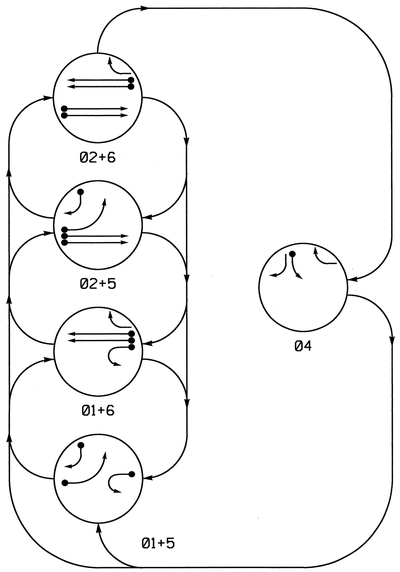
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE DATE 7/11/11
SIG. INVENTORY NO. 03-0588

07-JUL-2011 14:48
S:*ITSASU\ITS Signals\Workgroups\Sig Mon\Strickland\03588_smu_ele_xxx.dgn
castrickland

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.95 |

## PHASING DIAGRAM

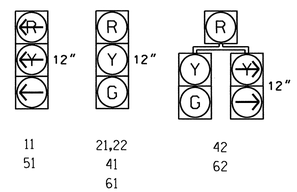



## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 04 | 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 | R | G | R | G | R | Y |
| 62 | R | G | R | G | R/← | Y |

## 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 | 2-4-2 | - | 1 | Y | Y | - | - | - | - | Y |
| 2A | 6X6 | 420 | 5 | Y | 2 | Y | Y | - | - | - | - | Y |
| 2B | 6X6 | 420 | 5 | Y | 2 | Y | Y | - | - | - | - | Y |
| 4A | 6X40 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | Y |
| 5A | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | - | - | Y |
| 5B | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | Y |
| 6A | 6X6 | 420 | 5 | Y | 6 | Y | Y | - | - | - | - | Y |
| 6B | 6X6 | 420 | 5 | Y | 6 | Y | Y | - | - | - | - | Y |

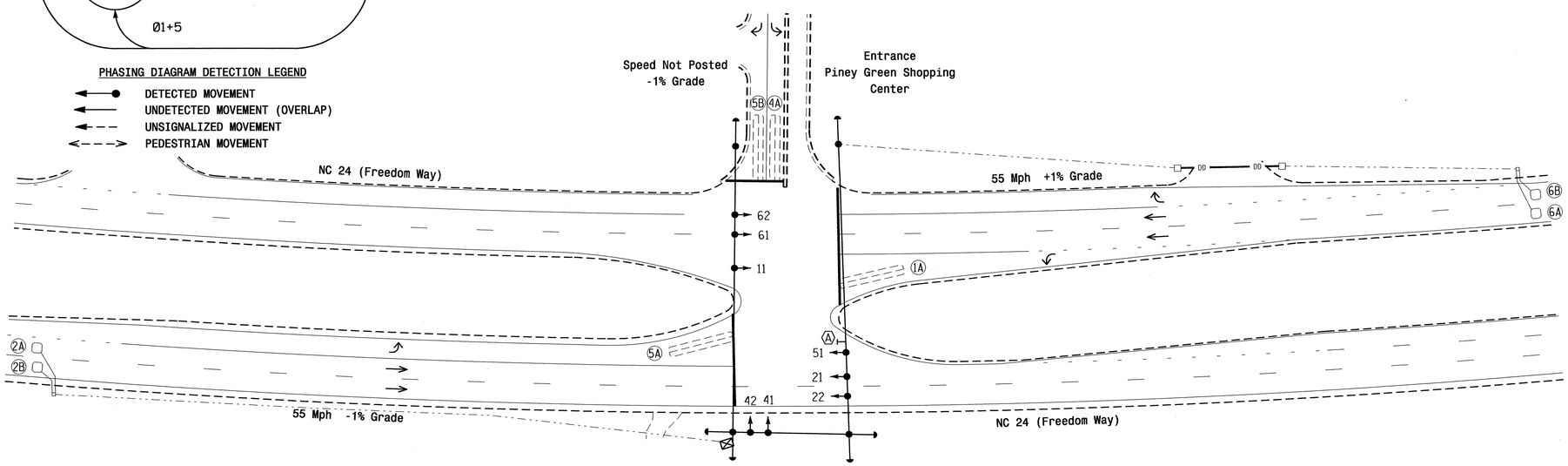
# 5 Phase
# Fully Actuated
# Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0593.

PHASING DIAGRAM DETECTION LEGEND

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




## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Min Green 1 * | 7 | 14 | 7 | 7 | 14 |
| Extension 1 * | 1.0 | 6.0 | 1.0 | 1.0 | 6.0 |
| Max Green 1 * | 20 | 90 | 40 | 20 | 90 |
| Yellow Clearance | 3.0 | 5.3 | 3.0 | 3.0 | 5.1 |
| Red Clearance | 3.2 | 1.0 | 3.3 | 3.3 | 1.0 |
| Walk 1 * | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | - | 1.5 |
| Max Variable Initial * | - | 46 | - | - | 46 |
| Time Before Reduction * | - | 15 | - | - | 15 |
| Time To Reduce * | - | 45 | - | - | 45 |
| Minimum Gap | - | 3.4 | - | - | 3.4 |
| Recall Mode | - | MIN RECALL | - | - | MIN RECALL |
| Vehicle Call Memory | - | YELLOW | - | - | YELLOW |
| Dual Entry | - | - | - | - | - |
| Simultaneous Gap | 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 | |
| DD | Directional Drill 1 - 2" Conduit | N/A |
| A | "U-TURN YIELD TO RIGHT TURN" Sign (R10-16) | A |

Signal Upgrade

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

SCALE 0 40 1"=40'

# NC 24 (Freedom Way) At Piney Green Shopping Center Entrance

Division 3 Onslow County Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | March 2011 | REVIEWED BY: | PLA |
| PREPARED BY: | JPG | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

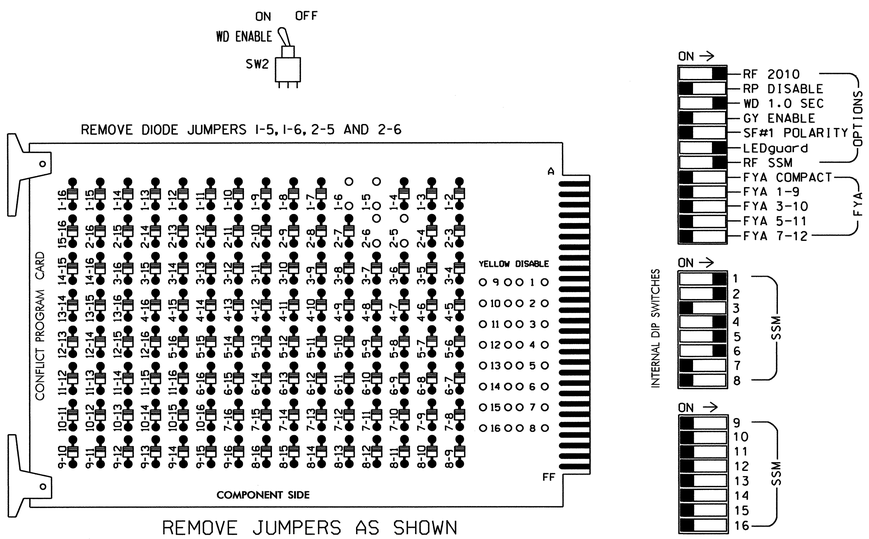
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE DATE
SIG. INVENTORY NO. 03-0593

18-APR-2011 12:06
S:\ITS&SU\ITS Signals\Signal Design Section\Eastern Region\01v-03\Jacksonville Signal System\03-0593\03-0593_sig_dsn_20110304.dgn
tcomczar1kb

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.96 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches 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.

## NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. 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 3,7,8,9,10,11,12,13,14,15 & 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 Gap Reduction.
5. Program phases 2 and 6 for Start-Up in Green.
6. Set all detector card channels to 'PRESENCE' mode.
7. Program phases 2 and 6 for Yellow Flash.
8. The cabinet and controller are part of the Jacksonville City Signal System. Controller Asset: #0593

## 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 | NU | NU | 41,42 | 62 | NU | 42 | 51 | 61,62 | NU | NU | NU | NU |
| RED | | 128 | | | 101 | | | | | 134 | | | | |
| YELLOW | | 129 | | | 102 | | | | | 135 | | | | |
| GREEN | | 130 | | | 103 | | | | | 136 | | | | |
| RED ARROW | 125 | | | | | | | | 131 | | | | | |
| YELLOW ARROW | 126 | | | | | 102 | | 132 | 132 | | | | | |
| GREEN ARROW | 127 | | | | | 103 | | 133 | 133 | | | | | |

NU = Not Used

## EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED TYPE 2070L
CABINET.....CONTRACTOR SUPPLIED MODEL 332A
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S4,S5,S6
PHASES USED.....1,2,4,5,6
OVERLAPS USED.....NONE

## 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 | SLOT | Ø 2 | SLOT | SLOT | Ø 4 | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | FS |
| | | 1A | EMPTY | 2A | EMPTY | EMPTY | 4A | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | DC ISOLATOR |
| | L | NOT USED | | Ø 2 2B | | | NOT USED | | | | | | | | ST DC ISOLATOR |
| FILE "J" | U | Ø 5 | Ø 5 | Ø 6 | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT |
| | | 5A | 5B | 6A | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY |
| | L | NOT USED | NOT USED | Ø 6 6B | | | | | | | | | | | |

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 | TB2-9,10 | I3U | 63 | 25 | 32 | 2 | Y | Y | | | |
| 2B | TB2-11,12 | I3L | 76 | 38 | 42 | 2 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | |
| 5A | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | |
| 5B | TB3-5,6 | J2U | 40 | 2 | 6 | 5 | Y | Y | | | 15 |
| 6A | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | | | |
| 6B | TB3-11,12 | J3L | 77 | 39 | 46 | 6 | Y | Y | | | |

INPUT FILE POSITION LEGEND: J2U
FILE J
SLOT 2
UPPER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0593
DESIGNED: MARCH 2011
SEALED: 4/18/11
REVISED: N/A

ELECTRICAL AND PROGRAMMING DETAILS FOR:

NC 24 (Freedom Way)
at
Piney Green Shopping Center
Entrance

Division 03 | Onslow County | Jacksonville

PLAN DATE: April 2011 | REVIEWED BY:
PREPARED BY: F.E. Russ | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

Prepared in 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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR

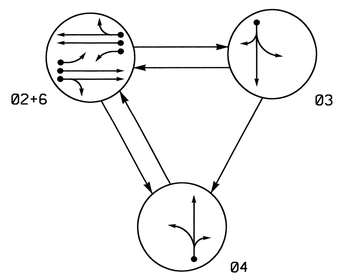
John T. Rowe Jr. 4-19-11
SIGNATURE DATE

SIG. INVENTORY NO. 03-0593

18-APR-2011 15:35
S:*RTS&SU*TS Signals*Workgroups*Sig Mgmt*Russ*2070dwgs*03593_sm_ele.201104xx.dgn
russ

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.97 |

## PHASING DIAGRAM

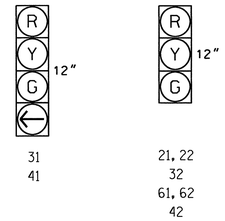



## TABLE OF OPERATION

| SIGNAL FACE | PHASE Ø2+6 | Ø3 | Ø4 | FLASH |
|---|---|---|---|---|
| 21, 22 | G | R | R | Y |
| 31 | R | G | R | R |
| 32 | R | G | R | R |
| 41 | R | R | G | R |
| 42 | R | R | G | R |
| 61, 62 | G | R | R | Y |

## SIGNAL FACE I.D.

All Heads L.E.D.




## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 2A | 6X6 | 300 | 5 | - | 2 | Y | Y | - | - | - | - | Y |
| 2B | 6X6 | 300 | 5 | - | 2 | Y | Y | - | - | - | - | Y |
| 2C | 6X40 | 0 | 2-4-2 | - | 2 | Y | Y | Y | - | 3 | - | Y |
| 3A | 6X40 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | 5 | - | Y |
| 4A | 6X40 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | 5 | - | Y |
| 6A | 6X6 | 300 | 5 | - | 6 | Y | Y | - | - | - | - | Y |
| 6B | 6X6 | 300 | 5 | - | 6 | Y | Y | - | - | - | - | Y |
| 6C | 6X40 | 0 | 2-4-2 | - | 6 | Y | Y | Y | - | 3 | - | Y |

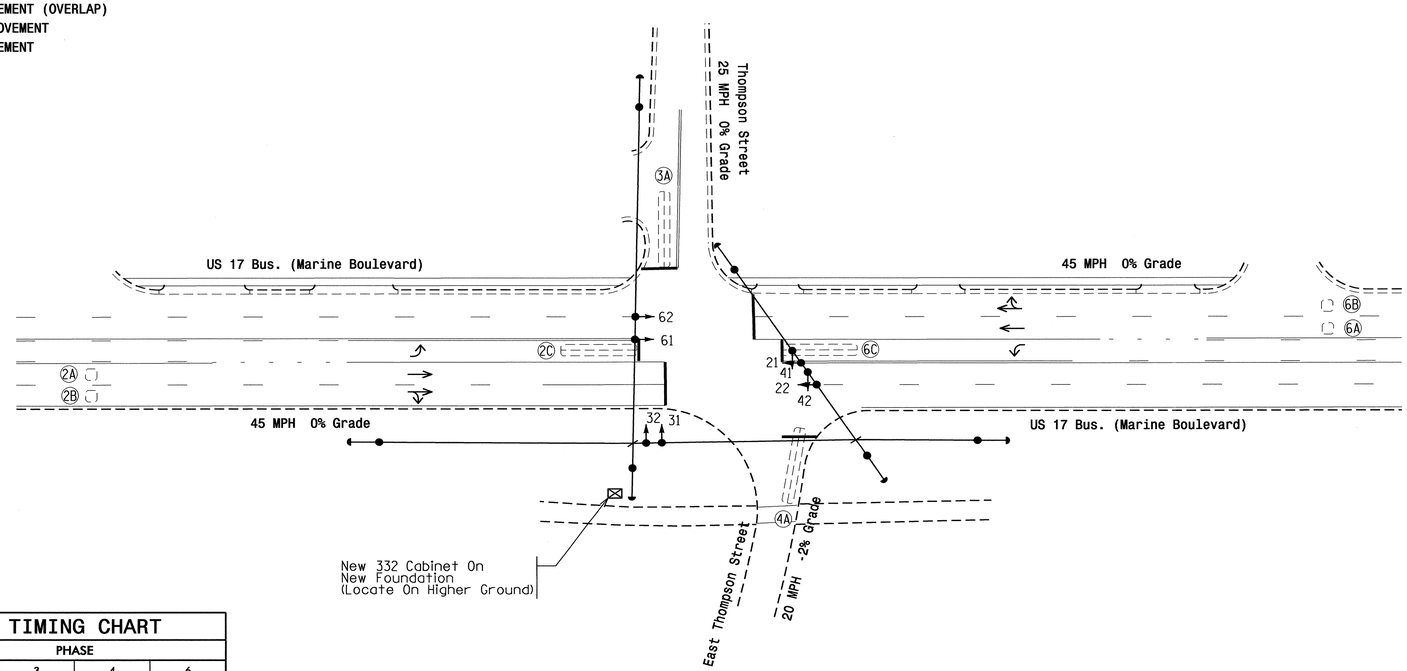
3 Phase
Fully Actuated
Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. The order of phase 3 and phase 4 may be reversed.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0598.

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 | |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | 3 | 4 | 6 |
|---|---|---|---|---|
| Min Green 1 * | 12 | 7 | 7 | 12 |
| Extension 1 * | 6.0 | 1.0 | 1.0 | 6.0 |
| Max Green 1 * | 100 | 15 | 15 | 100 |
| Yellow Clearance | 4.5 | 3.2 | 3.0 | 4.5 |
| Red Clearance | 1.0 | 2.4 | 2.9 | 1.0 |
| Walk 1 * | - | - | - | - |
| Don't Walk 1 | - | - | - | - |
| Seconds Per Actuation * | 1.6 | - | - | 1.6 |
| Max Variable Initial * | 34 | - | - | 34 |
| Time Before Reduction * | 15 | - | - | 15 |
| Time To Reduce * | 25 | - | - | 25 |
| Minimum Gap | 3.2 | - | - | 3.2 |
| Recall Mode | MIN RECALL | - | - | MIN RECALL |
| Vehicle Call Memory | YELLOW | - | - | YELLOW |
| Dual Entry | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

Prepared in 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

SCALE 0 40 1"=40'

US 17 Bus. (Marine Boulevard)
at
Thompson Street

Division 3 | Onslow County | Jacksonville

| PLAN DATE: May 2011 | REVIEWED BY: PLA |
|---|---|
| PREPARED BY: JPG | REVIEWED BY: |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE
6/20/11
DATE
SIG. INVENTORY NO. 03-0598

20-JUN-2011 09:21
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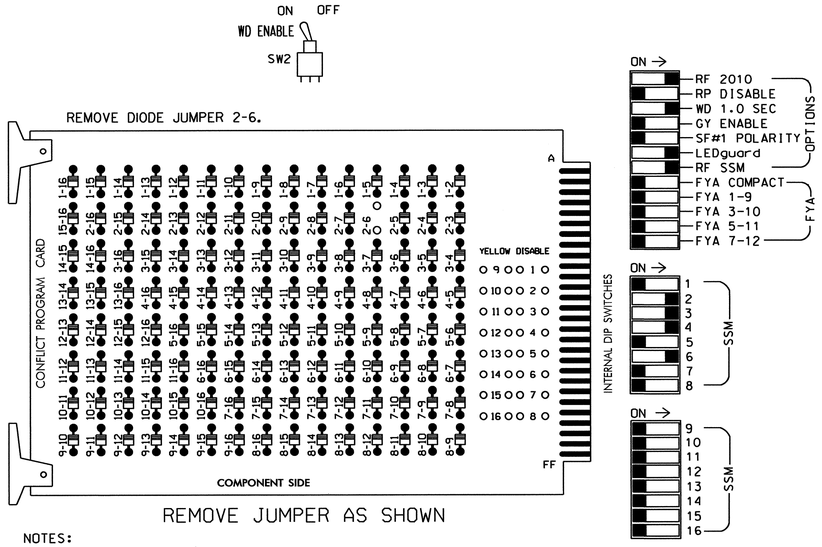
ISDOGAT\8

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.98 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumper and set switches as shown)*




REMOVE JUMPER AS SHOWN

NOTES:

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

■ = DENOTES POSITION OF SWITCH

## NOTES

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

## EQUIPMENT INFORMATION

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

## SIGNAL HEAD HOOK-UP CHART

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

NU = Not Used

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | SLOT EMPTY | Ø 2 2A | Ø 2 2C | SLOT EMPTY | Ø 3 3A | Ø 4 4A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | | Ø 2 2B | NOT USED | | NOT USED | NOT USED | | | | | | | | ST DC ISOLATOR |
| FILE "J" | U | SLOT EMPTY | Ø 6 6A | Ø 6 6C | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY |
| | L | | Ø 6 6B | NOT USED | | | | | | | | | | | |

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

FS = FLASH SENSE
ST = STOP TIME

## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 2C | TB2-9,10 | I3U | 63 | 25 | 32 | 2 | Y | Y | Y | | 3 |
| 3A | TB4-5,6 | I5U | 58 | 20 | 3 | 3 | Y | Y | | | 5 |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | 5 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| 6C | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | Y | | 3 |

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0598
DESIGNED: May 2011
SEALED: 6/20/11
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

US 17 Bus. (Marine Boulevard)
at
Thompson Street

Division 3 Onslow County Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | June 2011 | REVIEWED BY: | JTR |
| PREPARED BY: | S. Armstrong | REVIEWED BY: | |

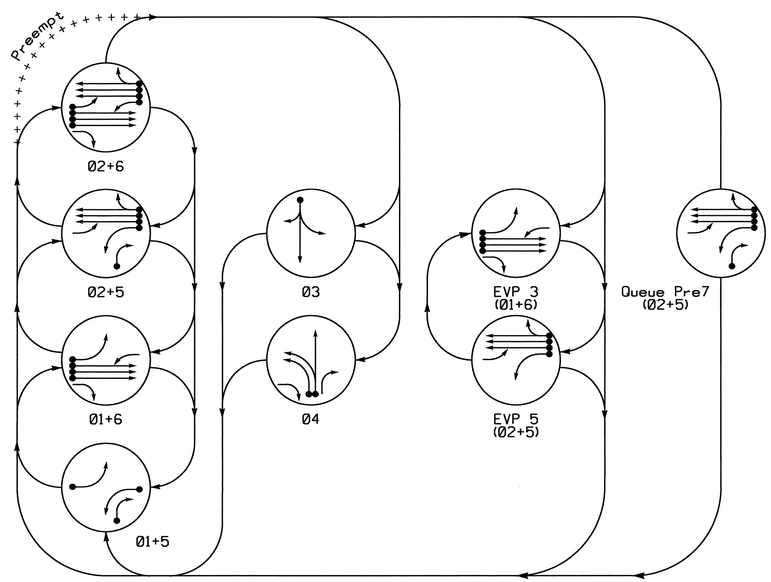
| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |
| | | |
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE John T. Rowe Jr. DATE 6-22-11
SIG. INVENTORY NO. 03-0598

20-JUN-2011 15:44
S:\TSGSU\ITS Signals\WorkGroups\Sig Man\Armstrong\03059B_sm_ele_xxx.dgn
armstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.99 |

## 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 | 04 | Pre3 | Pre5 | Pre7 | FLASH |
|---|---|---|---|---|---|---|---|---|---|---|
| 11 | ← | ← | F Y | F Y | ~~R~~ | ~~R~~ | ← | F Y | F Y | ~~Y~~ |
| 21,22,23 | R | R | G | G | R | R | R | G | G | Y |
| 31 | R | R | R | R | G ← | R | R | R | R | R |
| 32 | R | R | R | R | G | R | R | R | R | R |
| 41 | R | R | R | R | R | G ← | R | R | R | R |
| 42 | R | R | R | R | R | G | R | R | R | R |
| 51 | ← | F Y | ← | F Y | ~~R~~ | ~~R~~ | F Y | ← | ← | ~~Y~~ |
| 61,62 | R | G | R | G | R | R | G | R | R | Y |
| 63 | R | G | R | G | R | R | G | R | R | Y |

## STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

| FROM \ TO | ← | F Y 1 | F Y 2 | ~~R~~ 1 | ~~R~~ 2 |
|---|---|---|---|---|---|
| ← | ← | ← | ~~Y~~ | ~~R~~ | ~~Y~~ | ~~R~~ |
| F Y | F Y | F Y | F Y | F Y | ~~Y~~ | ~~R~~ |
| ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |

F Y = Flashing Yellow Arrow

## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

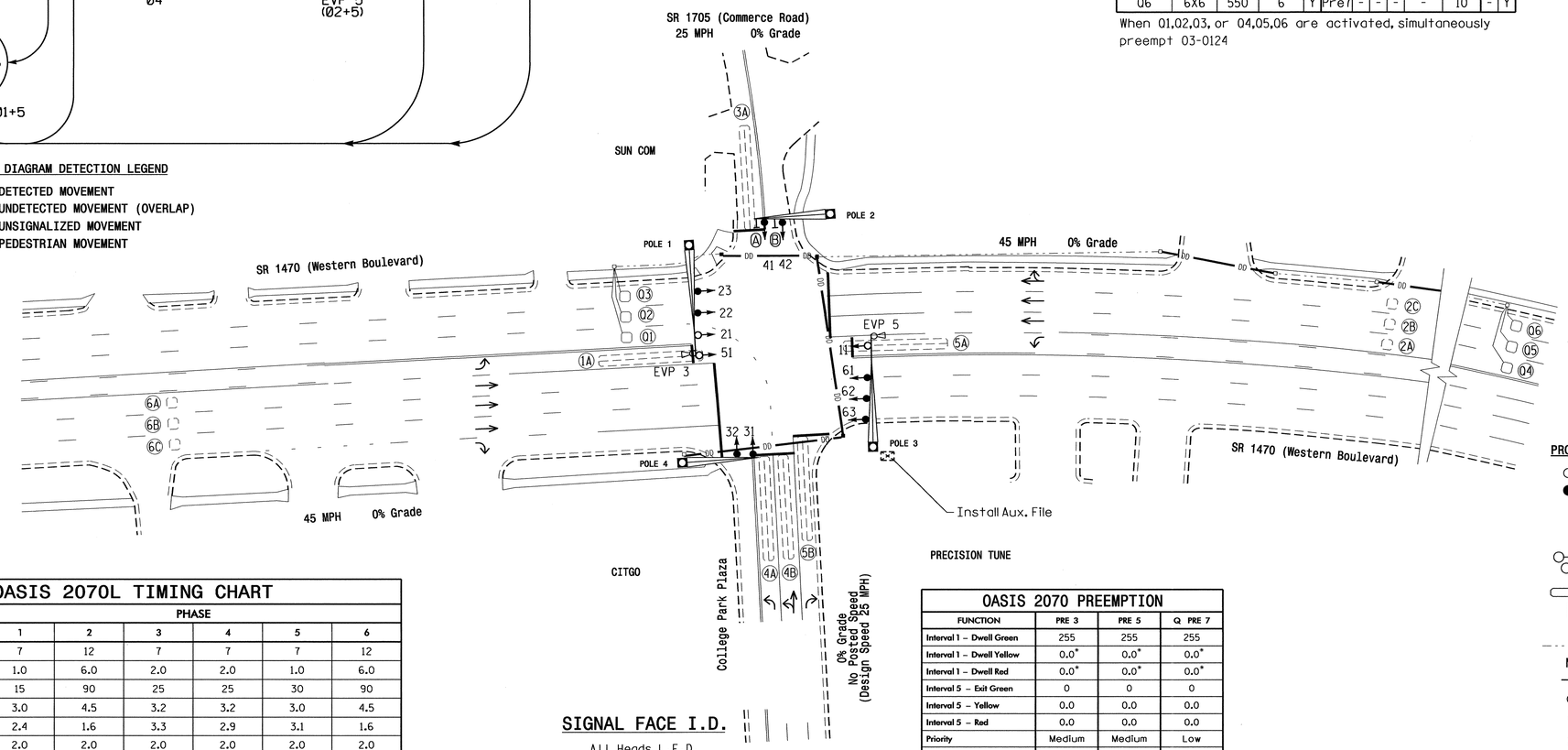
| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X60 | +5 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | - |
| | | | | | 6 | Y | Y | Y | - | 3 | - | - |
| 2A,2B,2C | 6X6 | 320 | 5 | - | 2 | Y | Y | - | - | - | - | - |
| 3A | 6X60 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | 10 | - | - |
| 4A | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 3 | - | - |
| 4B | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 5A | 6X60 | +5 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | - |
| | | | | | 2 | Y | Y | Y | - | 3 | - | - |
| 5B | 6X60 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | - |
| 6A,6B,6C | 6X6 | 300 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| 01 | 6X6 | +115 | 4 | Y | Pre7 | - | - | - | - | 10 | - | Y |
| 02 | 6X6 | +115 | 4 | Y | Pre7 | - | - | - | - | 10 | - | Y |
| 03 | 6X6 | +115 | 4 | Y | Pre7 | - | - | - | - | 10 | - | Y |
| 04 | 6X6 | 550 | 6 | Y | Pre7 | - | - | - | - | 10 | - | Y |
| 05 | 6X6 | 550 | 6 | Y | Pre7 | - | - | - | - | 10 | - | Y |
| 06 | 6X6 | 550 | 6 | Y | Pre7 | - | - | - | - | 10 | - | Y |

When 01,02,03, or 04,05,06 are activated, simultaneously preempt 03-0124

## 6 Phase Fully Actuated Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Disable existing Backup Protection for phases 2 and 6.
4. Phase 1 and/or phase 5 may be lagged.
5. The order of phase 3 and phase 4 may be reversed.
6. Reposition existing signal heads numbered 22 and 23.
7. Set all detector units to presence mode.
8. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
9. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
11. Controller Asset #614.




## 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 | |
| | Optical Detector | |
| Ⓐ | Left Arrow "ONLY" Sign (R3-5L) | Ⓐ |
| Ⓑ | Combined Through and Left Arrow Sign (R3-6L) | Ⓑ |

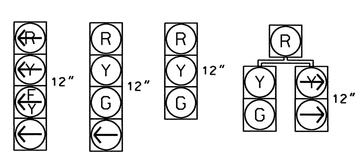
## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 7 | 7 | 7 | 12 |
| Extension 1 | 1.0 | 6.0 | 2.0 | 2.0 | 1.0 | 6.0 |
| Max Green 1 * | 15 | 90 | 25 | 25 | 30 | 90 |
| Yellow Clearance | 3.0 | 4.5 | 3.2 | 3.2 | 3.0 | 4.5 |
| Red Clearance | 2.4 | 1.6 | 3.3 | 2.9 | 3.1 | 1.6 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Walk 1 * | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - |
| Seconds Per Actuation * | - | 2.0 | - | - | - | 2.0 |
| Max Variable Initial * | - | 34 | - | - | - | 34 |
| Time Before Reduction * | - | 15 | - | - | - | 15 |
| Time To Reduce * | - | 40 | - | - | - | 40 |
| Minimum Gap | - | 3.2 | - | - | - | 3.2 |
| Recall Mode | - | MIN RECALL | - | - | - | MIN RECALL |
| Vehicle Call Memory | - | YELLOW | - | - | - | YELLOW |
| Dual Entry | - | - | - | - | - | - |
| 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.

## SIGNAL FACE I.D.

All Heads L.E.D.




## OASIS 2070 PREEMPTION

| FUNCTION | PRE 3 | PRE 5 | Q PRE 7 |
|---|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 | 0.0 |
| Priority | Medium | Medium | Low |
| Delay Time | 0.0 | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 | 1 |
| Ped Clear Before Pre | 0 * | 0 * | 0 * |
| Yellow Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 | 90 |
| Dwell Max Time | 2 | 2 | 2 |
| Enable Backup Protection | N | N | N |
| Ped Clear Through Yellow | N | N | N |
| Preempt Extend** | 2 | 2 | N/A |
| Omit Overlaps | - | D | - |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

Signal Upgrade

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

SR 1470 (Western Boulevard) At Commerce Road

Division 3 Onslow County Jacksonville

| PLAN DATE: February 2011 | REVIEWED BY: PLA |
|---|---|
| PREPARED BY: JPG | REVIEWED BY: |

SCALE 0 40 1"=40'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON R. GALLOWAY

SIGNATURE DATE 7/5/11

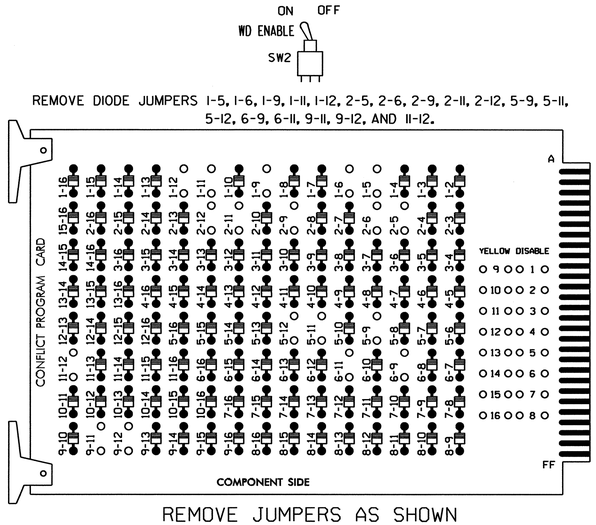
SIG. INVENTORY NO. 03-0614

05-JUL-2011 11:01
S:\TTSSDWH\TS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0614\030614_sig_dsn_20110307.dgn
Sgallway

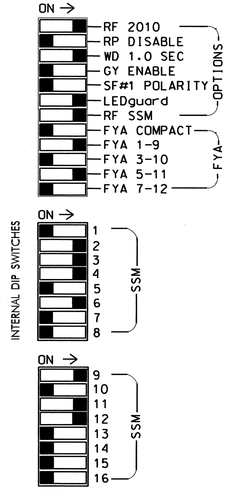
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.100 |

# 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 1,5,7,8, 10,13,14,15 & 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 Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
7. The cabinet and controller are part of the Jacksonville City Signal System.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | | S4 | | | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | | 4 | | | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11★ | 21,22 23 | ⊗ | 31 | 32 | 41 | 42 | 63 | NU | 51★ | 61,62 63 | NU | NU | NU | NU | 11★ | NU | NU | 51★ | 42 | NU |
| RED | | 128 | | 116 | 116 | 101 | 101 | | | | 134 | | | | | | | | | ✳ | |
| YELLOW | ✳ | 129 | | 117 | 117 | 102 | 102 | | | ✳ | 135 | | | | | | | | | | |
| GREEN | | 130 | | 118 | 118 | 103 | 103 | | | | 136 | | | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | | | | A121 | | | A114 | | |
| YELLOW ARROW | | | | | | | | 102 | | | | | | | | A122 | | | A115 | A102 | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | | | A123 | | | A116 | | |
| GREEN ARROW | 127 | | | 118 | | 103 | | 103 | | 133 | | | | | | | | | | A103 | |

NU = Not Used

✳ Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail below.

⊗ LS S2P-YEL is used for preempt 7 interconnect control (see sheet 5 of 5).

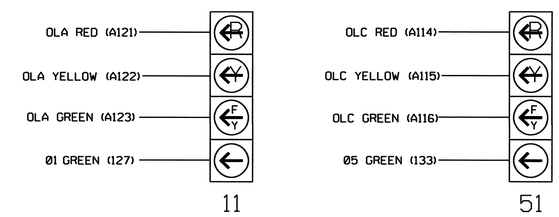
## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....332 /W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S2P✳,S3,S4,S5,S6,S9,S12,S13.
PHASES USED.....1,2,3,4,5,6.
OVERLAP "A".....1+2
OVERLAP "B".....NOT USED
OVERLAP "C".....5+6
OVERLAP "D".....5

✳ DENOTES LOAD SWITCH S2P IS USED FOR PREEMPT INTERCONNECT CONTROL

## 4 SECTION FYA PPLT SIGNAL WIRING DETAIL

*(wire signal heads as shown)*




NOTE

1. The sequence display for this signal requires special logic programming. See sheet 2 of 2 for programming instructions.

## INPUT FILE POSITION LAYOUT

*(front view)*

FS = FLASH SENSE
ST = STOP TIME

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" U | Ø1 1A | Ø2 2A,2B,2C | SLOT EMPTY | WIRED INPUT ⊗ | Ø3 3A | Ø4 4A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| FILE "I" L | NOT USED | NOT USED | | | NOT USED | Ø4 4B | | | | | | | | ST DC ISOLATOR |
| FILE "J" U | Ø5 5A | Ø5 5B | Ø6 6A,6B,6C | WIRED INPUT ⊗ | SLOT EMPTY | PRE-7 Q1 | PRE-7 Q3 | SLOT EMPTY | PRE-7 Q5 | SLOT EMPTY | SLOT EMPTY | CH. 3 PRE-3 | CH. 1 UNUSED | SLOT EMPTY |
| FILE "J" L | NOT USED | NOT USED | NOT USED | | | PRE-7 Q2 | PRE-7 Q4 | | PRE-7 Q6 | | | CH. 4 PRE-5 | CH. 2 UNUSED | |

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

⊗ Wired Input - Do not populate slot with detector card

4 CHANNEL TOMAR OSP CARD INSERT CARD INTO SLOT J13

## 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[1] | TB2-1,2 | I1U | 56 | 18 | 1 | 1 | Y | Y | | | 15 |
| | - | J4U | 48 | 10 | 26 | 6 | Y | Y | Y | | 3 |
| 2A,2B,2C | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 3A | TB4-5,6 | I5U | 58 | 20 | 3 | 3 | Y | Y | | | 10 |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | 3 |
| 4B | TB4-11,12 | I6L | 45 | 7 | 14 | 4 | Y | Y | | | |
| 5A[2] | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | 15 |
| | - | I4U | 47 | 9 | 22 | 2 | Y | Y | Y | | 3 |
| 5B | TB3-5,6 | J2U | 40 | 2 | 6 | 5 | Y | Y | | | 15 |
| 6A,6B,6C | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | | | |
| 01 | TB5-9,10 | J6U | 42 | 4 | - | PRE-7 | - | - | - | - | ✳ |
| 02 | TB5-11,12 | J6L | 46 | 8 | - | PRE-7 | - | - | - | - | ✳ |
| 03 | TB7-1,2 | J7U | 66 | 28 | - | PRE-7 | - | - | - | - | ✳ |
| 04 | TB7-3,4 | J7L | 79 | 41 | - | PRE-7 | - | - | - | - | ✳ |
| 05 | TB7-9,10 | J9U | 59 | 21 | - | PRE-7 | - | - | - | - | ✳ |
| 06 | TB7-11,12 | J9L | 61 | 23 | - | PRE-7 | - | - | - | - | ✳ |

[1] Add jumper from I1-W to J4-W, on rear of input file.

[2] Add jumper from J1-W to I4-W, on rear of input file.

✳ DENOTES PREEMPT 7 LOOP DELAY TIMES TO BE PROGRAMMED IN LOGIC PROCESSOR. SEE SHEET 2 FOR INSTRUCTIONS.

IMPORTANT

! If present, remove jumpers from TB2-5 to TB2-7, and from TB2-6 to TB2-8.

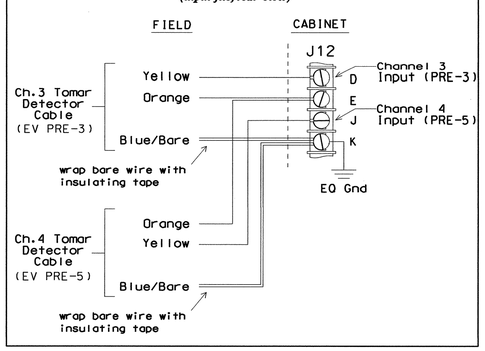
! If present, remove jumpers from TB3-5 to TB3-7, and from TB3-6 to TB3-8.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0614
DESIGNED: February 2011
SEALED: 7-5-11
REVISED: N/A

## TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*

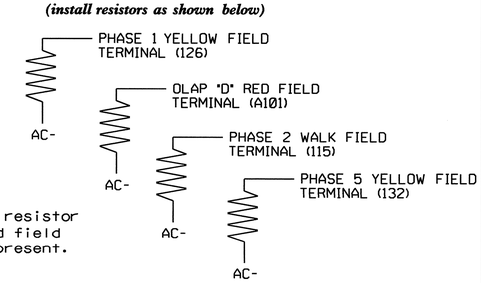



## LOAD RESISTOR INSTALLATION DETAIL

*(install resistors as shown below)*

ACCEPTABLE VALUES

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




NOTE: Remove resistor on phase 1 red field terminal, if present.

ELECTRICAL DETAIL SHEET 1 OF 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1470 (Western Boulevard) at Commerce Road

Division 03 | Onslow County | Jacksonville

PLAN DATE: July 2011 | REVIEWED BY: JTR

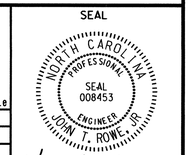
PREPARED BY: M.W. Harrison | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

Prepared in the Offices of: Transportation Mobility and Safety Division, Traffic Engineering Branch, Signal Management Section, Department of Transportation, State of North Carolina

750 N.Greenfield Pkwy,Garner,NC 27529

SEAL




SIGNATURE | DATE 7-7-11

SIG. INVENTORY NO. 03-0614

07-JUL-2011 13:16
U:\ACAD dgn files\jrowe\030614_sm_ele_201107xx.dgn
jrowe7 ocn

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.101 |

# LOGICAL I/O PROCESSOR PROGRAMMING DETAIL

## FOR FYA SEQUENCE AND QUEUE PREMPTION LOOP CONTROL

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, AND 21.
2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON
AND RED CLEAR ON PHASE  #1  IS ON
SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
PRESS '+'
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

```
LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON
SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
PRESS '+'
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

```
LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE     #1  IS ON
SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #51 ON
PRESS '+'
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

```
LOGICAL I/O COMMAND #4  (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON
AND RED CLEAR ON PHASE  #5  IS ON
SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #42 ON
SET OUTPUT  ASSIGNMENT #43 OFF
PRESS '+'
```

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

```
LOGICAL I/O COMMAND #5  (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON
SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #44 OFF
PRESS '+'
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

```
LOGICAL I/O COMMAND #6  (+/-COMMAND#)
IF  YELLOW ON PHASE     #5  IS ON
SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #43 ON
PRESS '+'
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

```
LOGICAL I/O COMMAND #7  (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #4  IS ON
SCROLL DOWN
THEN:
    DELAY FOR   10.0 SECONDS
SET LOGIC FLAG          #1  ON
PRESS '+'
```

NOTE: LOGIC FOR LOOP 01 PREEMPT AND DELAY CONTROL

```
LOGICAL I/O COMMAND #8  (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #4  IS OFF
SCROLL DOWN
THEN:
SET LOGIC FLAG          #1  OFF
PRESS '+'
```

NOTE: LOGIC FOR LOOP 01 PREEMPT AND DELAY CONTROL

```
LOGICAL I/O COMMAND #9  (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #8  IS ON
SCROLL DOWN
THEN:
    DELAY FOR   10.0 SECONDS
SET LOGIC FLAG          #2  ON
PRESS '+'
```

NOTE: LOGIC FOR LOOP 02 PREEMPT AND DELAY CONTROL

```
LOGICAL I/O COMMAND #10 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #8  IS OFF
SCROLL DOWN
THEN:
SET LOGIC FLAG          #2  OFF
PRESS '+'
```

NOTE: LOGIC FOR LOOP 02 PREEMPT AND DELAY CONTROL

```
LOGICAL I/O COMMAND #11 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #28 IS ON
SCROLL DOWN
THEN:
    DELAY FOR   10.0 SECONDS
SET LOGIC FLAG          #3  ON
PRESS '+'
```

NOTE: LOGIC FOR LOOP 03 PREEMPT AND DELAY CONTROL

```
LOGICAL I/O COMMAND #12 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #28 IS OFF
SCROLL DOWN
THEN:
SET LOGIC FLAG          #3  OFF
PRESS '+'
```

NOTE: LOGIC FOR LOOP 03 PREEMPT AND DELAY CONTROL

```
LOGICAL I/O COMMAND #13 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #41 IS ON
SCROLL DOWN
THEN:
    DELAY FOR   10.0 SECONDS
SET LOGIC FLAG          #4  ON
PRESS '+'
```

NOTE: LOGIC FOR LOOP 04 PREEMPT AND DELAY CONTROL

```
LOGICAL I/O COMMAND #14 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #41 IS OFF
SCROLL DOWN
THEN:
SET LOGIC FLAG          #4  OFF
PRESS '+'
```

NOTE: LOGIC FOR LOOP 04 PREEMPT AND DELAY CONTROL

```
LOGICAL I/O COMMAND #15 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #21 IS ON
SCROLL DOWN
THEN:
    DELAY FOR   10.0 SECONDS
SET LOGIC FLAG          #5  ON
PRESS '+'
```

NOTE: LOGIC FOR LOOP 05 PREEMPT AND DELAY CONTROL

```
LOGICAL I/O COMMAND #16 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #21 IS OFF
SCROLL DOWN
THEN:
SET LOGIC FLAG          #5  OFF
PRESS '+'
```

NOTE: LOGIC FOR LOOP 05 PREEMPT AND DELAY CONTROL

```
LOGICAL I/O COMMAND #17 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #23 IS ON
SCROLL DOWN
THEN:
    DELAY FOR   10.0 SECONDS
SET LOGIC FLAG          #6  ON
PRESS '+'
```

NOTE: LOGIC FOR LOOP 06 PREEMPT AND DELAY CONTROL

```
LOGICAL I/O COMMAND #18 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #23 IS OFF
SCROLL DOWN
THEN:
SET LOGIC FLAG          #6  OFF
PRESS '+'
```

NOTE: LOGIC FOR LOOP 06 PREEMPT AND DELAY CONTROL

```
LOGICAL I/O COMMAND #19 (+/-COMMAND#)
IF  LOGIC FLAG          #1  IS ON
OR  LOGIC FLAG          #2  IS ON
OR  LOGIC FLAG          #3  IS ON
OR  LOGIC FLAG          #4  IS ON
OR  LOGIC FLAG          #5  IS ON
OR  LOGIC FLAG          #6  IS ON
THEN:
SET INPUT   ASSIGNMENT #64  ON
PRESS '+'
```

NOTE: LOGIC TO MAP ALL QUEUE LOOP LOGIC FLAGS TO CALL PREEMPT 7

```
LOGICAL I/O COMMAND #20 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #64 IS ON
OR  ACTIVE PREEMPTION  #7  IS ON
SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT     #33 ON
PRESS '+'
```

NOTE: LOGIC FOR SWITCHING "ON" S2P-YEL OUTPUT TO CALL PREEMPT AT SIG. NO. 03-0124 (PREEMPT INTERCONNECT CONTROL)

```
LOGICAL I/O COMMAND #21 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #64 IS OFF
AND ACTIVE PREEMPTION  #7  IS OFF
SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT     #33 OFF
```

NOTE: LOGIC FOR SWITCHING "OFF" S2P-YEL OUTPUT TO RELEASE PREEMPT AT SIG. NO. 03-0124 (PREEMPT INTERCONNECT CONTROL)

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

### *I/O REFERENCE SCHEDULE*

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green
OUTPUT 33 = S2P-Yel control
INPUT 4 = Loop 01 output
INPUT 8 = Loop 02 output
INPUT 28 = Loop 03 output
INPUT 41 = Loop 04 output
INPUT 21 = Loop 05 output
INPUT 23 = Loop 06 output
INPUT 64 = Preempt 7 call

ELECTRICAL DETAIL SHEET 2 OF 5

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0614
DESIGNED: February 2011
SEALED: 7-5-11
REVISED: N/A

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

SR 1470 (Western Boulevard)
at
Commerce Road

| Division 03 | Onslow County | Jacksonville |
|---|---|---|
| PLAN DATE: July 2011 | REVIEWED BY: JTR | |
| PREPARED BY: W.W. Harrison | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

John T. Rowe 7-7-11
SIGNATURE DATE

SIG. INVENTORY NO. 03-0614

06-JUL-2011 09:27
U:\MCAD\dgn Files\In Progress\030614_sm_ele_201107xx.dgn
wwharrison

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.102 |

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
 PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
 PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS: ¦XX
VEH OVL NOT VEH: ¦
VEH OVL NOT PED: ¦
VEH OVL GRN EXT: ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

PRESS '+' TWICE

```
 PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
 PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS: ¦    XX
VEH OVL NOT VEH: ¦
VEH OVL NOT PED: ¦
VEH OVL GRN EXT: ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

PRESS '+'

```
 PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
 PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS: ¦   X
VEH OVL NOT VEH: ¦
VEH OVL NOT PED: ¦
VEH OVL GRN EXT: ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW    GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

## EMERGENCY VEH. PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS 'A' (PREEMPTION), THEN '1' (STANDARD PREEMPTIONS). USE "+" KEY TO ADVANCE TO PREEMPT 3.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....2
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

NOTE: PROGRAM PREEMPT EXTEND FOR 2 SEC. ON TOMAR OSP CARD.

PRESS "+" KEY TWICE TO ADVACNE TO PREEMPT 5 →

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....2
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦   X
```

NOTE: PROGRAM PREEMPT EXTEND FOR 2 SEC. ON TOMAR OSP CARD.

## QUEUE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS 'A' (PREEMPTION), THEN '1' (STANDARD PREEMPTIONS). USE "+" KEY TO ADVANCE TO PREEMPT 7.

```
   PREEMPTION  #7  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............LOW
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........90
DWELL MAX TIMER (0=OFF,1-255MIN) ....2
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................Y
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PREEMPT 7 PROGRAMMING COMPLETE

## DYNAMIC BACK-UP CONTROL PROGRAMMING

*(program controller as shown below)*

1. From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Scroll to the bottom of the menu and enable Dynamic/Backup Control Functions 1 and 2.
2. From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

```
 DYNAMIC/BACKUP CONTROL FUNCTION #01
                   OVERLAPS:¦ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE      ¦
OR        PHASES:           ¦123456789101112131415 16
IF PHASES ARE ON            ¦ X
OMIT PHASES                 ¦  X
CALL PHASES                 ¦   X
```

PRESS 'NEXT'

```
 DYNAMIC/BACKUP CONTROL FUNCTION #02
                   OVERLAPS:¦ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE      ¦
OR        PHASES:           ¦123456789101112131415 16
IF PHASES ARE ON            ¦     X
OMIT PHASES                 ¦    X
CALL PHASES                 ¦   X
```

IMPORTANT:

If present, disable all "Dynamic Backup" Control Programming.

ELECTRICAL DETAIL SHEET 3 OF 5

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0614
DESIGNED: February 2011
SEALED: 7-5-11
REVISED: N/A

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

SR 1470 (Western Boulevard) at Commerce Road

Division 03 | Onslow County | Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | July 2011 | REVIEWED BY: | JTR |
| PREPARED BY: | W.W. Harrison | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

SIGNATURE 7-7-11 DATE

SIG. INVENTORY NO. 03-0614

07-JUL-2011 13:26
U:\CADD dgn files\jrowe\03061d_sm.ele.2011071xx.dgn
wwharrison

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 103 |

# INPUT ASSIGNMENT PROGRAMMING DETAIL
# TO DISABLE INPUTS ASSOCIATED WITH QUEUE LOOPS

*(program controller as shown below)*

FROM MAIN MENU PRESS '5' (INPUTS), THEN '+' UNTIL INPUT 4 IS REACHED.

```
PAGE: 1 C1 PIN:42  NOT ENABLED
INPUT ASSIGNMENT #.................4
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................Y
VEHICLE DETECTOR (1-64)............_
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16)......_
PREEMPT (1-10)......................
INVERTED PREEMPT (1-10)............_
STOP TIME (Y/N)....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N)....................
MANUAL CONTROL ENABLE (Y/N)........
MANUAL CONTROL ADVANCE (Y/N)......
SPECIAL FUNCTION ALARM (1-8)......
TOD HOUR SYCHRONIZATION (0-23)....
FORCE OFF RING (1-4)..............
HOLD PHASES (1-16)................
PLAN (65=FLSH,66=FREE)..._ OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)....
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)..
CHANGE INPUT PAGE (1-4)...........
CHANGE OUTPUT PAGE (1-4)..........
OVERRIDE PHASE CONTROL FUNCTION (Y)
```

ENTER A "YES" IN NOT ENABLED FIELD TO REMOVE VEH. DET. FUNCTIONALITY FROM THIS INPUT.

PRESS "+" KEY 4 TIMES TO ADVANCE TO INPUT 8

```
PAGE: 1 C1 PIN:46  NOT ENABLED
INPUT ASSIGNMENT #.................8
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................Y
VEHICLE DETECTOR (1-64)............_
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16)......_
PREEMPT (1-10)......................
INVERTED PREEMPT (1-10)............_
STOP TIME (Y/N)....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N)....................
MANUAL CONTROL ENABLE (Y/N)........
MANUAL CONTROL ADVANCE (Y/N)......
SPECIAL FUNCTION ALARM (1-8)......
TOD HOUR SYCHRONIZATION (0-23)....
FORCE OFF RING (1-4)..............
HOLD PHASES (1-16)................
PLAN (65=FLSH,66=FREE)..._ OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)....
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)..
CHANGE INPUT PAGE (1-4)...........
CHANGE OUTPUT PAGE (1-4)..........
OVERRIDE PHASE CONTROL FUNCTION (Y)
```

ENTER A "YES" IN NOT ENABLED FIELD TO REMOVE VEH. DET. FUNCTIONALITY FROM THIS INPUT.

PRESS "+" KEY 13 TIMES TO ADVANCE TO INPUT 21

```
PAGE: 1 C1 PIN:59  NOT ENABLED
INPUT ASSIGNMENT #................21
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................Y
VEHICLE DETECTOR (1-64)............_
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16)......_
PREEMPT (1-10)......................
INVERTED PREEMPT (1-10)............_
STOP TIME (Y/N)....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N)....................
MANUAL CONTROL ENABLE (Y/N)........
MANUAL CONTROL ADVANCE (Y/N)......
SPECIAL FUNCTION ALARM (1-8)......
TOD HOUR SYCHRONIZATION (0-23)....
FORCE OFF RING (1-4)..............
HOLD PHASES (1-16)................
PLAN (65=FLSH,66=FREE)..._ OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)....
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)..
CHANGE INPUT PAGE (1-4)...........
CHANGE OUTPUT PAGE (1-4)..........
OVERRIDE PHASE CONTROL FUNCTION (Y)
```

ENTER A "YES" IN NOT ENABLED FIELD TO REMOVE VEH. DET. FUNCTIONALITY FROM THIS INPUT.

PRESS "+" KEY TWICE TO ADVANCE TO INPUT 23

```
PAGE: 1 C1 PIN:61  NOT ENABLED
INPUT ASSIGNMENT #................23
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................Y
VEHICLE DETECTOR (1-64)............_
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16)......_
PREEMPT (1-10)......................
INVERTED PREEMPT (1-10)............_
STOP TIME (Y/N)....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N)....................
MANUAL CONTROL ENABLE (Y/N)........
MANUAL CONTROL ADVANCE (Y/N)......
SPECIAL FUNCTION ALARM (1-8)......
TOD HOUR SYCHRONIZATION (0-23)....
FORCE OFF RING (1-4)..............
HOLD PHASES (1-16)................
PLAN (65=FLSH,66=FREE)..._ OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)....
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)..
CHANGE INPUT PAGE (1-4)...........
CHANGE OUTPUT PAGE (1-4)..........
OVERRIDE PHASE CONTROL FUNCTION (Y)
```

ENTER A "YES" IN NOT ENABLED FIELD TO REMOVE VEH. DET. FUNCTIONALITY FROM THIS INPUT.

PRESS "+" KEY 5 TIMES TO ADVANCE TO INPUT 28

```
PAGE: 1 C1 PIN:66  NOT ENABLED
INPUT ASSIGNMENT #................28
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................Y
VEHICLE DETECTOR (1-64)............_
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16)......_
PREEMPT (1-10)......................
INVERTED PREEMPT (1-10)............_
STOP TIME (Y/N)....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N)....................
MANUAL CONTROL ENABLE (Y/N)........
MANUAL CONTROL ADVANCE (Y/N)......
SPECIAL FUNCTION ALARM (1-8)......
TOD HOUR SYCHRONIZATION (0-23)....
FORCE OFF RING (1-4)..............
HOLD PHASES (1-16)................
PLAN (65=FLSH,66=FREE)..._ OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)....
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)..
CHANGE INPUT PAGE (1-4)...........
CHANGE OUTPUT PAGE (1-4)..........
OVERRIDE PHASE CONTROL FUNCTION (Y)
```

ENTER A "YES" IN NOT ENABLED FIELD TO REMOVE VEH. DET. FUNCTIONALITY FROM THIS INPUT.

PRESS "+" KEY 13 TIMES TO ADVANCE TO INPUT 41

```
PAGE: 1 C1 PIN:79  NOT ENABLED
INPUT ASSIGNMENT #................41
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................Y
VEHICLE DETECTOR (1-64)............_
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16)......_
PREEMPT (1-10)......................
INVERTED PREEMPT (1-10)............_
STOP TIME (Y/N)....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N)....................
MANUAL CONTROL ENABLE (Y/N)........
MANUAL CONTROL ADVANCE (Y/N)......
SPECIAL FUNCTION ALARM (1-8)......
TOD HOUR SYCHRONIZATION (0-23)....
FORCE OFF RING (1-4)..............
HOLD PHASES (1-16)................
PLAN (65=FLSH,66=FREE)..._ OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)....
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)..
CHANGE INPUT PAGE (1-4)...........
CHANGE OUTPUT PAGE (1-4)..........
OVERRIDE PHASE CONTROL FUNCTION (Y)
```

ENTER A "YES" IN NOT ENABLED FIELD TO REMOVE VEH. DET. FUNCTIONALITY FROM THIS INPUT.

PROGRAMMING COMPLETE

NOTE: THIS PROGRAMMING IS NECESSARY TO REMOVE DEFAULT DETECTOR PROGRAMMING FROM INPUTS ASSOCIATED WITH THE QUEUE PREEMPTION LOOPS. QUEUE LOOP INPUT MAPPING TO PREEMPT 7 IS ACCOMPLISHED WITHIN LOGIC PROCESSOR PROGRAMMING. SEE SHEET 2 OF 5.

# QUEUE PREEMPT 7
# INPUT ASSIGNMENT PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '5' (INPUTS), THEN '-' UNTIL INPUT 64 IS REACHED.

```
PAGE: 1 C1 PIN:0  PREEMPT
INPUT ASSIGNMENT #................64
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................
VEHICLE DETECTOR (1-64)............_
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16)......_
PREEMPT (1-10)......................7
INVERTED PREEMPT (1-10)............_
STOP TIME (Y/N)....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N)....................
MANUAL CONTROL ENABLE (Y/N)........
MANUAL CONTROL ADVANCE (Y/N)......
SPECIAL FUNCTION ALARM (1-8)......
TOD HOUR SYCHRONIZATION (0-23)....
FORCE OFF RING (1-4)..............
HOLD PHASES (1-16)................
PLAN (65=FLSH,66=FREE)..._ OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)....
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)..
CHANGE INPUT PAGE (1-4)...........
CHANGE OUTPUT PAGE (1-4)..........
OVERRIDE PHASE CONTROL FUNCTION (Y)
```

ENTER 7 IN PREEMPT FIELD AND PRESS "ENT" KEY

PROGRAMMING COMPLETE

NOTE: PREEMPT 7 INPUT ABOVE IS NOT ASSOCIATED WITH A C1 PIN NUMBER. PREEMPT 7 IS ACTIVATED BY QUEUE LOOP LOGIC WITHIN THE LOGIC PROCESSOR PROGRAMMING. SEE SHEET 2 OF 5.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0614
DESIGNED: February 2011
SEALED: 7-5-11
REVISED: N/A

ELECTRICAL DETAIL SHEET 4 OF 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

SR 1470 (Western Boulevard)
at
Commerce Road

Division 03 | Onslow County | Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | July 2011 | REVIEWED BY: | JTR |
| PREPARED BY: | M.W. Harrison | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

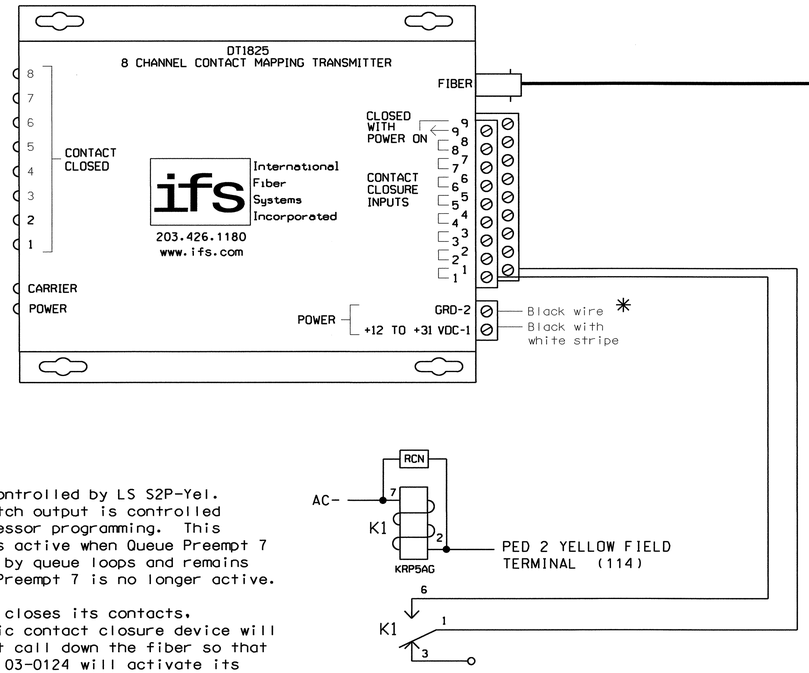
SIGNATURE | DATE 7-7-11

SIG. INVENTORY NO. 03-0614

07-JUL-2011 13:27
U:\CADD dgn files\jrowe\030614_sm_ele_20110711xx.dgn
wmorrison

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 104 |

## WIRING DIAGRAM FOR FIBER OPTIC CONTACT CLOSURE TRANSMITTER LOCATED IN CABINET AT WESTERN BLVD AT COMMERCE (03-0614)




RELAY CONTROL NOTE: Relay K1 is controlled by LS S2P-Yel. This load switch output is controlled by Logic Processor programming. This output becomes active when Queue Preempt 7 is called for by queue loops and remains active until Preempt 7 is no longer active.

When relay K1 closes its contacts, the fiber optic contact closure device will send a preempt call down the fiber so that signal number 03-0124 will activate its queue preempiton simultaneously with 03-0614.

## NOTES

1. The International Fiber Systems DT1825 is an 8-channel contact mapping transmitter capable of transmitting up to eight contact closures over one optical fiber.

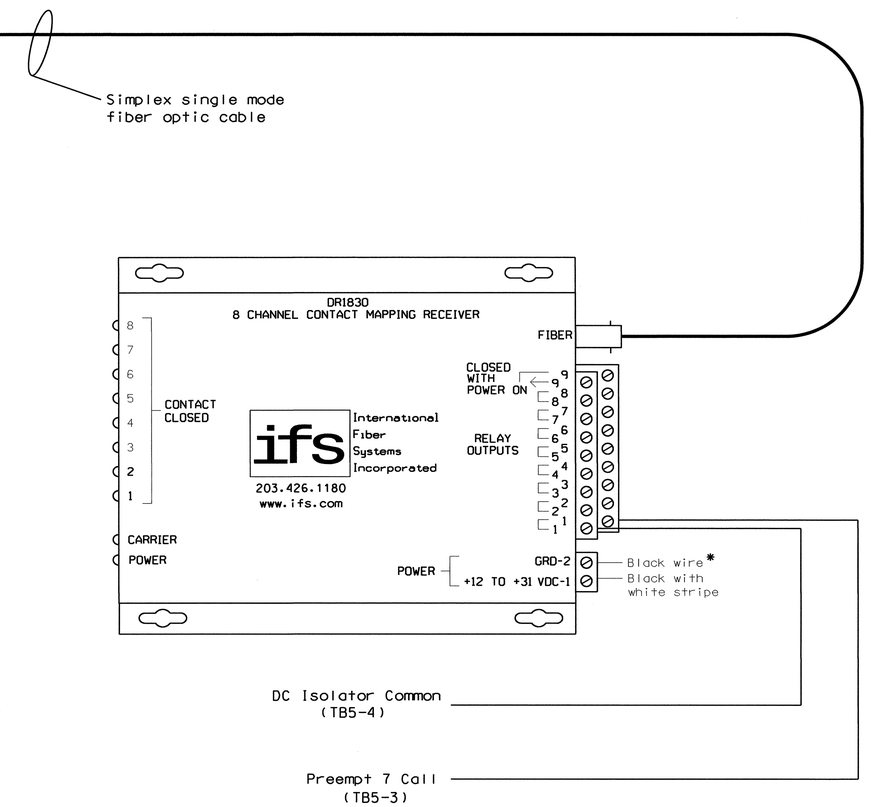
   If other manufacturer type of fiber transmitter is used contact NCDOT Signals Management for wiring details.

* 2. Power connections are with the supplied 12 Volt DC Plug-in Power Supply.

3. Relay 'K1' is a DPST with a 120VAC coil. (DOT Material No. 625028600) (P&B# KRPA5AG-120)

4. RCN is valued at .1 microFarad, 100 Ohm. (DOT Material No. 106018075)

## WIRING DETAIL FOR FIBER OPTIC CONTACT CLOSURE RECEIVER LOCATED IN CABINET AT US 17 (MARINE BLVD.) AT WESTERN BLVD (03-0124)




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0614
DESIGNED: February 2011
SEALED: 7-5-11
REVISED: N/A

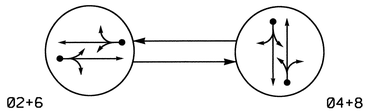
ELECTRICAL DETAIL SHEET 5 OF 5

| ELECTRICAL AND PROGRAMMING DETAILS FOR: | SR 1470 (Western Boulevard) at Commerce Road | SEAL |
|---|---|---|
| Prepared in the Offices of: Transportation Mobility and Safety Division, Signal Management Section, State of North Carolina Department of Transportation | Division 03 Onslow County Jacksonville | NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR. |
| | PLAN DATE: July 2011 REVIEWED BY: JTR | SIGNATURE 7-7-11 DATE |
| | PREPARED BY: M.W. Harrison REVIEWED BY: | SIG. INVENTORY NO. 03-0614 |
| 750 N.Greenfield Pkwy,Garner,NC 27529 | REVISIONS / INIT. / DATE | |

07-JUL-2011 13:34
U:\MCADD dgn Files\jrowe\03061 4_smlele.2011070xx.dgn
mwarrison

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.05 |

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

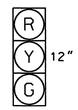
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 02+6 | PHASE 04+8 | FLASH |
|---|---|---|---|
| 21,22 | G | R | Y |
| 41,42 | R | G | R |
| 61,62 | G | R | Y |
| 81,82 | R | G | R |

## SIGNAL FACE I.D.

All Heads L.E.D.




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

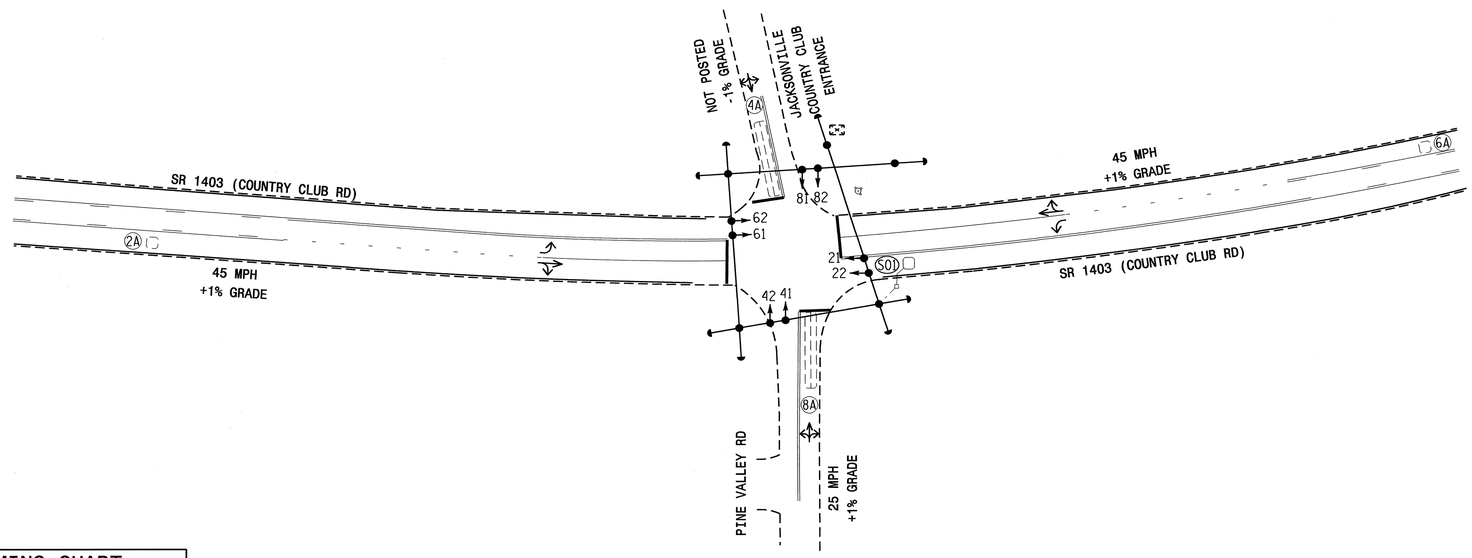
## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 2A | 6x6 | 300 | 5 | - | 2 | Y | Y | - | - | - | - | - |
| 4A | 6x40 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 10 | - | - |
| 6A | 6x6 | 300 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| 8A | 6x40 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | 10 | - | - |
| S01 | 6x6 | +100 | 4 | Y | - | - | - | - | - | - | Y | Y |

2-Phase
Fully Actuated
Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
5. Controller Asset #0664.




## 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 | |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | PHASE 4 | PHASE 6 | PHASE 8 |
|---|---|---|---|---|
| Min Green 1 * | 12 | 7 | 12 | 7 |
| Extension 1 * | 6.0 | 1.0 | 6.0 | 1.0 |
| Max Green 1 * | 45 | 20 | 45 | 20 |
| Yellow Clearance | 4.4 | 3.2 | 4.4 | 3.1 |
| Red Clearance | 1.0 | 1.4 | 1.0 | 1.7 |
| Walk 1 * | - | - | - | - |
| Don't Walk 1 | - | - | - | - |
| Seconds Per Actuation * | 2.5 | - | 2.5 | - |
| Max Variable Initial * | 34 | - | 34 | - |
| Time Before Reduction * | 15 | - | 15 | - |
| Time To Reduce * | 30 | - | 30 | - |
| Minimum Gap | 3.2 | - | 3.2 | - |
| Recall Mode | MIN RECALL | - | MIN RECALL | - |
| Vehicle Call Memory | YELLOW | - | YELLOW | - |
| Dual Entry | - | ON | - | ON |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

New Installation

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

SCALE 0 40 1"=40'

# SR 1403 (Country Club Rd) at Pine Valley Rd / Jacksonville Country Club Entrance

Division 3 Onslow County Jacksonville

| PLAN DATE: March 2011 | REVIEWED BY: IOU |
|---|---|
| PREPARED BY: JPG | REVIEWED BY: |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

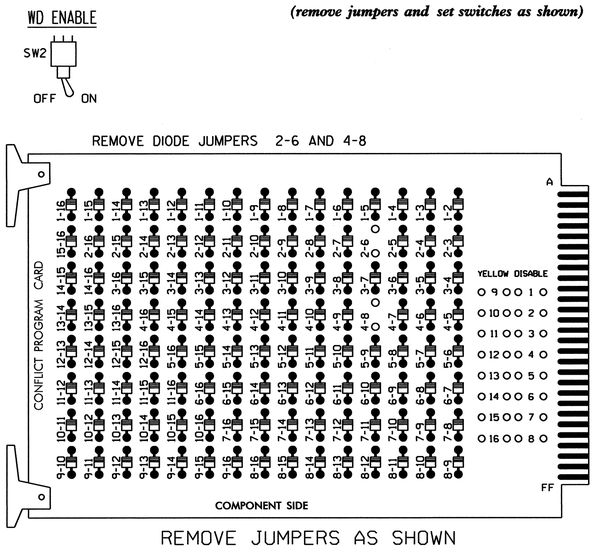
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 4/18/11 DATE
SIG. INVENTORY NO. 03-0664

18-APR-2011 12:19
S:*TTSSUM*TS Signals*Signal Design Section*Eastern Region*Div-03*Jacksonville Signal System*03-0664*03064_sig_dsn_20110311.dgn
ioungzurike

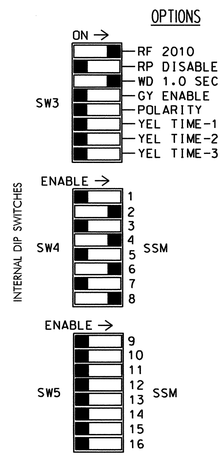
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.106 |

# EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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. Verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5,7,9,10,11,12,13,14,15 & 16 to load switch AC+ per 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. Set all detector card channels to 'PRESENCE' mode.
8. Program phases 2 and 6 for Yellow Flash.
9. The cabinet and controller are part of the Jacksonville City Signal System. Contrlloer Asset: #0664

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 41,42 | NU | NU | 61,62 | NU | NU | 81,82 | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | |
| YELLOW | | 129 | | | 102 | | | 135 | | | 108 | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | |
| GREEN ARROW | | | | | | | | | | | | |

NU = Not Used

## EQUIPMENT INFORMATION

CONTROLLER.....EXISTING EAGLE TYPE 2070L
CABINET.....EXISTING McCAIN/CTRL TECH MODEL 332A
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
OVERLAPS USED.....NONE

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | SLOT EMPTY | ø2 2A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | ø4 4A | SLOT EMPTY | SLOT EMPTY | SYS. DET. S01 | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | | NOT USED | | | | NOT USED | | | NOT USED | | | | | ST DC ISOLATOR |
| FILE "J" | U | SLOT EMPTY | ø6 6A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | ø8 8A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY |
| | L | | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | 10 |
| S01* | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 8A | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | Y | Y | | | 10 |

*System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2U
FILE J
SLOT 2
UPPER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0664
DESIGNED: MARCH 2011
SEALED: 4/18/11
REVISED: N/A

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1403 (Country Club Rd)
at
Pine Valley Rd/Jacksonville
Country Club Entrance

Division 03 | Onslow County | Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | April 2011 | REVIEWED BY: | |
| PREPARED BY: | F.E. Russ | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

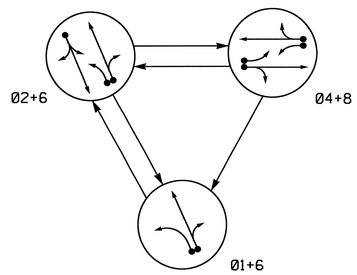
Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE | DATE 4-19-11
SIG. INVENTORY NO. 03-0664

18-APR-2011 15:29
S:*MTS&SU*ITS Signals*Work*Groups*Sig Man*Russ*2070*dgns*03664_sm_ele.2011104xx.dgn
Express

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.10 |

## PHASING DIAGRAM




**PHASING DIAGRAM DETECTION LEGEND**

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+6 | PHASE 02+6 | PHASE 04+8 | FLASH |
|---|---|---|---|---|
| 21, 22 | R | G | R | Y |
| 41, 42 | R | R | G | R |
| 61 | G | G | R | Y |
| 62 | G | G | R | Y |
| 81, 82 | R | R | G | R |

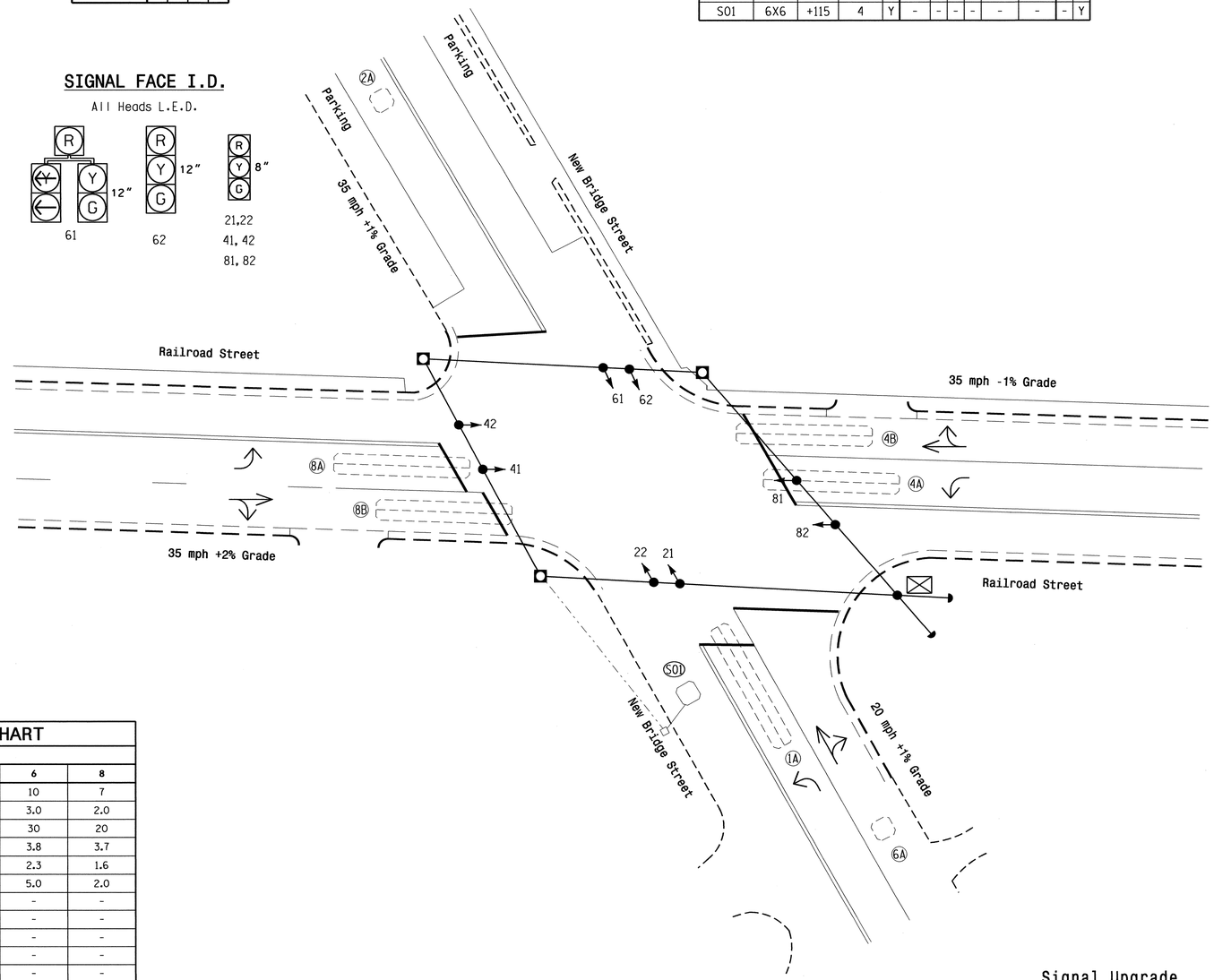
## SIGNAL FACE I.D.

All Heads L.E.D.




## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | +5 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | Y |
| | | | | | 6 | Y | Y | - | - | - | - | Y |
| 2A | 6X6 | 70 | 4 | - | 2 | Y | Y | - | - | - | - | Y |
| 4A,4B | 6X40 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | 3 | - | Y |
| 6A | 6X6 | 70 | 4 | - | 6 | Y | Y | - | - | - | - | Y |
| 8A,8B | 6X40 | +5 | 2-4-2 | - | 8 | Y | Y | - | - | 3 | - | Y |
| S01 | 6X6 | +115 | 4 | Y | - | - | - | - | - | - | - | Y |




## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | PHASE 2 | PHASE 4 | PHASE 6 | PHASE 8 |
|---|---|---|---|---|---|
| Min Green 1 * | 7 | 10 | 7 | 10 | 7 |
| Extension 1 * | 2.0 | 3.0 | 2.0 | 3.0 | 2.0 |
| Max Green 1 * | 20 | 30 | 20 | 30 | 20 |
| Yellow Clearance | 3.0 | 3.8 | 3.9 | 3.8 | 3.7 |
| Red Clearance | 3.1 | 2.3 | 1.5 | 2.3 | 1.6 |
| Red Revert | 2.0 | 2.0 | 2.0 | 5.0 | 2.0 |
| Walk 1 * | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - |
| Seconds Per Actuation * | - | - | - | - | - |
| Max Variable Initial * | - | - | - | - | - |
| Time Before Reduction * | - | - | - | - | - |
| Time To Reduce * | - | - | - | - | - |
| Minimum Gap | - | - | - | - | - |
| Recall Mode | - | MIN RECALL | - | MIN RECALL | - |
| Vehicle Call Memory | - | YELLOW | - | YELLOW | - |
| Dual Entry | - | - | ON | - | ON |
| Simultaneous Gap | 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.

3 Phase
Fully Actuated
Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 6 to allow the controller to clear from phase 2+6 to phase 1+6 by progressing through an all red display.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Signal heads 41, 81, and 82 have backplates.
9. Controller Asset #0665.

## 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 | |

Signal Upgrade

Prepared in 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

SCALE 0 20 1"=20'

# New Bridge Street At Railroad Street

Division 3 Onslow County Jacksonville

| PLAN DATE: April 2011 | REVIEWED BY: |
|---|---|
| PREPARED BY: I. O. Umozurike | REVIEWED BY: |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY

SIGNATURE 5/17/11 DATE

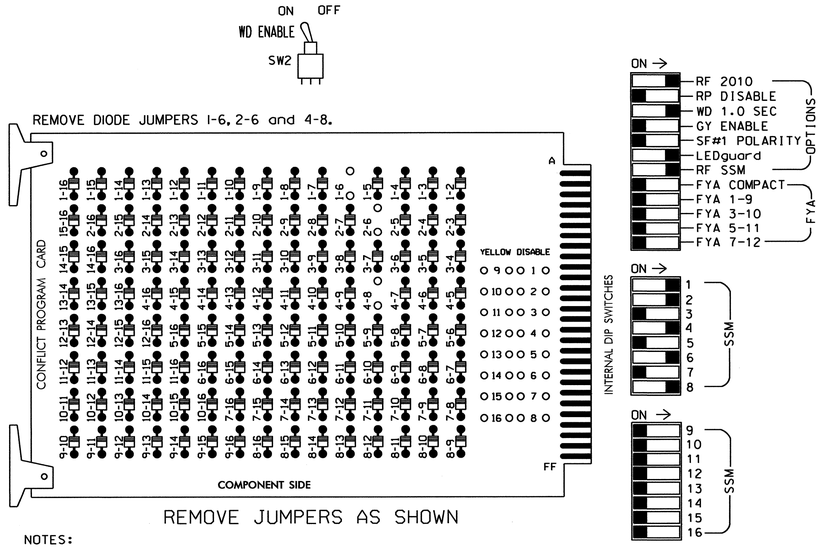
SIG. INVENTORY NO. 03-0665

19-MAY-2011 12:26
S:\MTS&SU\ITS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0665\03065.sig_dsn.20110519.dgn
(gallaway)

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.108 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches 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 3,5, 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 Jacksonville City Signal 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. | 61 | 21,22 | NU | NU | 41,42 | NU | NU | 61,62 | NU | NU | 81,82 | NU |
| RED | * | 128 | | | 101 | | | 134 | | | 107 | |
| YELLOW | | 129 | | | 102 | | | 135 | | | 108 | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | 126 | | | | | | | | | | | |
| GREEN ARROW | 127 | | | | | | | | | | | |

NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

## EQUIPMENT INFORMATION

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

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 1A | Ø2 2A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | Ø4 4A,4B | SLOT EMPTY | SLOT EMPTY | SYS. DET. SØ1 | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | NOT USED | Ø6 6A | | | | Ø8 8A,8B | | | NOT USED | | | | | ST DC ISOLATOR |
| FILE "J" | U | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | WIRED INPUT ⊗ | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY |
| | L | | | | | | | | | | | | | | |

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

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

## 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[1] | TB2-1,2 | I1U | 56 | 18 | 1 | 1 | Y | Y | | | 15 |
| | - | J4U | 48 | 10 | 26 | 6 | Y | Y | | | |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 4A,4B | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | 3 |
| 6A | TB2-7,8 | I2L | 43 | 5 | 12 | 6 | Y | Y | | | |
| 8A,8B | TB4-11,12 | I6L | 45 | 7 | 14 | 8 | Y | Y | | | 3 |
| * SØ1 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |

[1] Add jumper from I1-W to J4-W, on rear of input file.

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## BACKUP PROTECTION NOTE

*(program controller as shown below)*

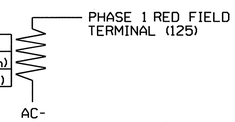
From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phase 6 for 'Backup Protect'. Make sure the Red Revert times shown on the Signal Design Plans are programmed in the 'Phase Timing' menu.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0665
DESIGNED: April 2011
SEALED: 05/19/11
REVISED:

## LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

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




NOTE: The purpose of this resistor is to load the channel red monitor input in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

New Bridge Street
at
Railroad Street

Division 3 Onslow County Jacksonville

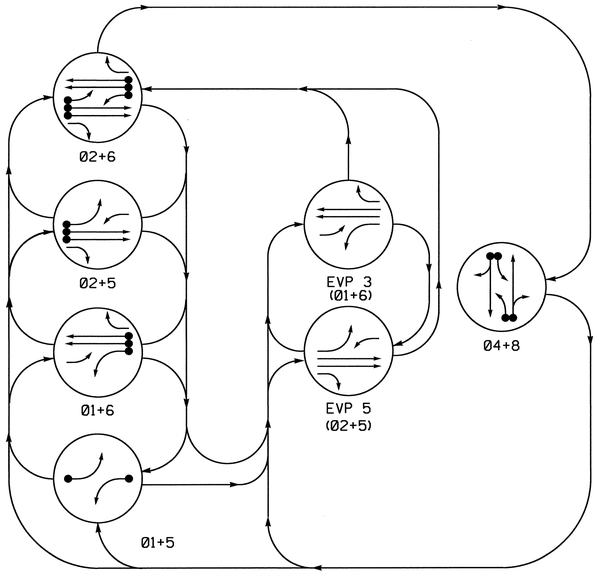
| | | | |
|---|---|---|---|
| PLAN DATE: May 2011 | REVIEWED BY: T. Jap | | |
| PREPARED BY: C. Strickland | REVIEWED BY: | | |
| REVISIONS | | INIT. | DATE |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
George C Brown 5/23/11
SIGNATURE DATE
SIG. INVENTORY NO. 03-0665

20-MAY-2011 09:36
S:\ITS&SM\ITS Signals\WorkGroups\Sig Mark\Strickland\03065_sm_ele_xxx.dgn
cbstrickland

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.109 |

## PHASING DIAGRAM




## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 04+8 | EVP 3 | EVP 5 | FLASH |
|---|---|---|---|---|---|---|---|---|
| 11 | ← | ← | F | F | R | ← | F | Y |
| 21, 22 | R | R | G | G | R | R | G | Y |
| 41, 42, 43 | R | R | R | R | G | R | R | R |
| 51 | ← | F | ← | F | R | F | ← | Y |
| 61, 62 | R | G | R | G | R | G | R | Y |
| 81, 82, 83 | R | R | R | R | G | R | R | R |

## STANDARD SIGNAL FACE CLEARANCES FOR 4 SECTION LEFT TURN SIGNAL

| FROM | TO ← 1 | TO ← 2 | TO F 1 | TO F 2 | TO R 1 | TO R 2 |
|---|---|---|---|---|---|---|
| ← | ← | ← | Y | R | Y | R |
| F | F | F | F | F | Y | R |
| R | R | R | R | R | R | R |

F = FLASHING YELLOW ARROW

## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | - |
| | | | | | 6 | Y | Y | Y | - | 3 | - | - |
| 2A | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 4A | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 3 | - | - |
| 4B | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 10 | - | - |
| 5A | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | - |
| | | | | | 2 | Y | Y | Y | - | 3 | - | - |
| 6A | 6X6 | 300 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 300 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| 8A | 6X60 | +12 | 2-4-2 | - | 8 | Y | Y | - | - | 3 | - | - |
| 8B | 6X60 | +12 | 2-4-2 | - | 8 | Y | Y | - | - | 10 | - | - |
| S01 | 6X6 | +150 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S02 | 6X6 | +150 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S03 | 6X6 | +150 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S04 | 6X6 | +150 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S05 | 6X6 | +150 | 4 | Y | - | - | - | - | - | - | Y | Y |

## 5 Phase
## Fully Actuated w/ EV Preemption
## Jacksonville City Signal System

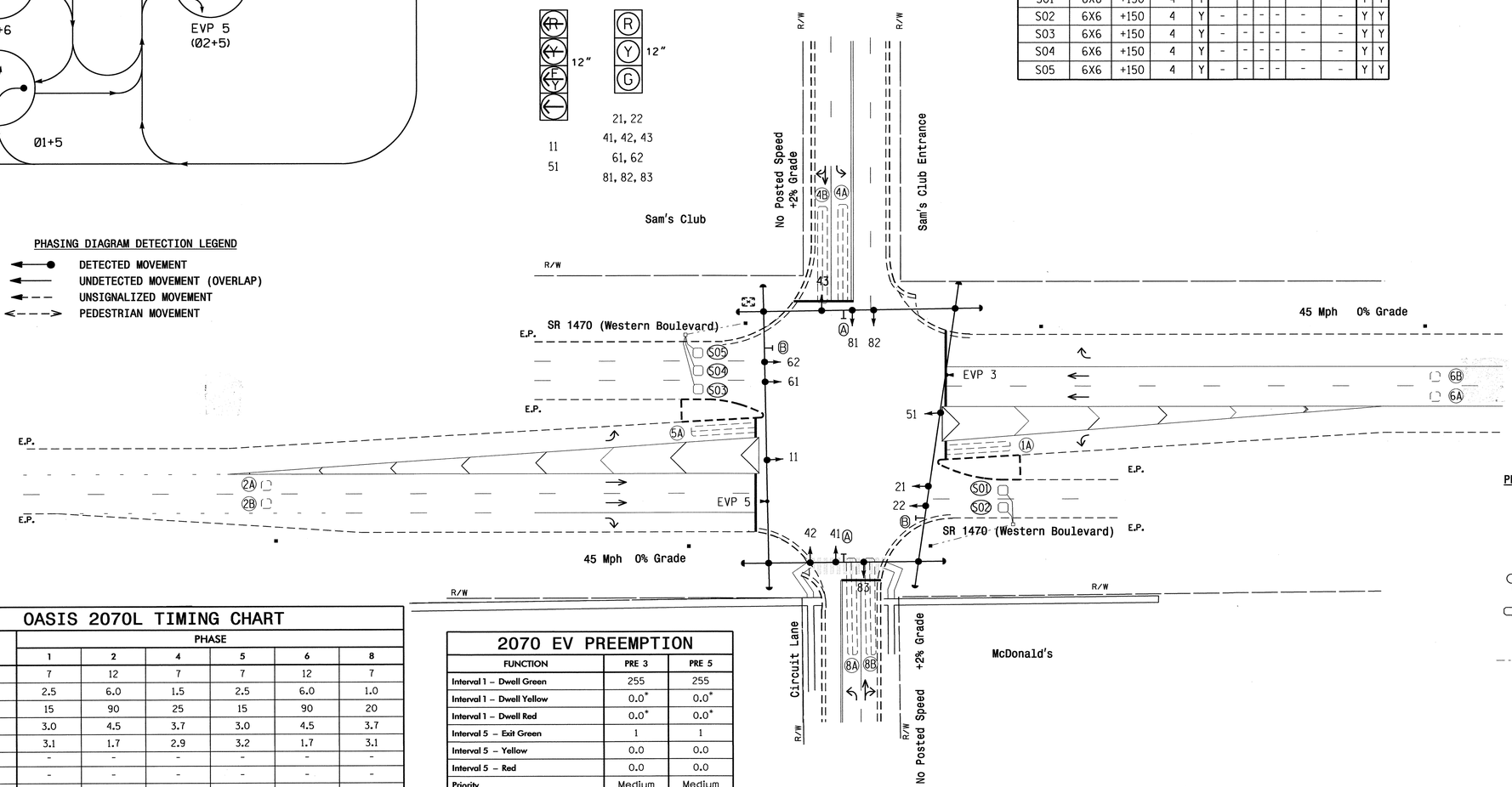
## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset 0750.

## SIGNAL FACE I.D.

All Heads L.E.D.




## 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 * | 2.5 | 6.0 | 1.5 | 2.5 | 6.0 | 1.0 |
| Max Green 1 * | 15 | 90 | 25 | 15 | 90 | 20 |
| Yellow Clearance | 3.0 | 4.5 | 3.7 | 3.0 | 4.5 | 3.7 |
| Red Clearance | 3.1 | 1.7 | 2.9 | 3.2 | 1.7 | 3.1 |
| Walk 1 * | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | - | 1.5 | - |
| Max Variable Initial * | - | 34 | - | - | 34 | - |
| Time Before Reduction * | - | 15 | - | - | 15 | - |
| Time To Reduce * | - | 60 | - | - | 60 | - |
| Minimum Gap | - | 3.2 | - | - | 3.2 | - |
| 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.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 5 |
|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* |
| Interval 5 – Exit Green | 1 | 1 |
| Interval 5 – Yellow | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 |
| Priority | Medium | Medium |
| Delay Time | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 |
| Ped Clear Before Pre | 0 | 0 |
| Yellow Clear Before Pre | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 |
| Enable Backup Protection | N | N |
| Ped Clear Through Yellow | N | N |
| Preempt Extend** | 2 | 2 |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

## 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 | |
| | Opticom Detector | |
| Ⓐ | Left Arrow "ONLY" Sign (R3-5L) | Ⓐ |
| Ⓑ | Right Arrow "ONLY" Sign (R3-5R) | Ⓑ |

Signal Upgrade

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

SR 1470 (Western Blvd.)
at
Circuit Lane/Sam's Club Ent.

Division 3 Onslow County Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | May 2011 | REVIEWED BY: | |
| PREPARED BY: | JPG | REVIEWED BY: | |

SCALE 0 40 1"=40'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

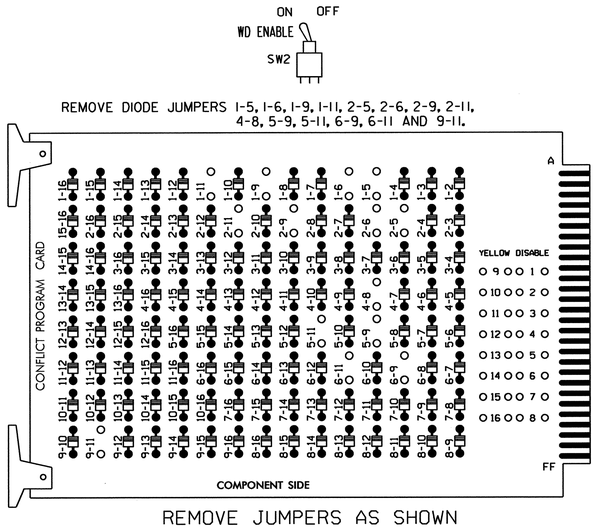
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 6/20/11 DATE
SIG. INVENTORY NO. 03-0750

20-JUN-2011 09:28
S:\ITS&S\ITS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0750\030750_sig_dsn_2008mmdd.dgn
tcarozzafke

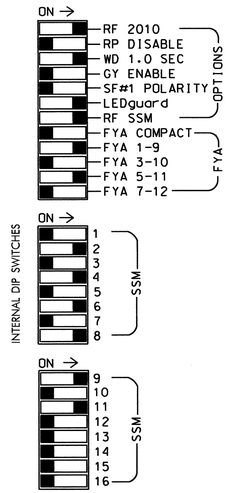
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.110 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
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. ▽3 Program phases 2 and 6 for Yellow Flash, and overlap 1 as WAG Overlaps.
8. ▽3 The cabinet and controller are part of the Jacksonville City Signal System.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11★ | 21,22 | NU | NU | 41,42, 43 | NU | 51★ | 61,62 | NU | NU | 81,82, 83 | NU | 11★ | NU | NU | 51★ | NU | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | | | | | | | |
| YELLOW | ✳ | 129 | | | 102 | | ✳ | 135 | | | 108 | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | | | A114 | | |
| YELLOW ARROW | | | | | | | | | | | | | A122 | | | A115 | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | | | A116 | | |
| GREEN ARROW | 127 | | | | | | 133 | | | | | | | | | | | |

NU = Not Used

✳ Denotes install load resistor. See Load Resistor Installation Detail this sheet.

★ See 4-Sect. FYA-PPLT Signal Wiring Detail below.

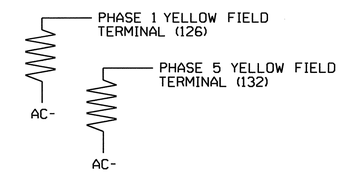
## EQUIPMENT INFORMATION

CONTROLLER.....EAGLE/SIEMENS ITS 2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG.NO.9500-332-NCDOT W/AUX)
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S8,S9,S12
PHASES USED.....1,2,4,5,6,8
OVERLAP A.....1+2
OVERLAP B.....NOT USED
OVERLAP C.....5+6
OVERLAP D.....NOT USED

## LOAD RESISTOR INSTALLATION DETAIL

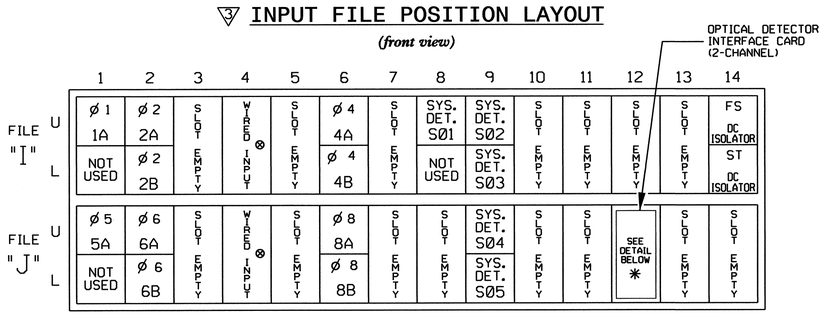
ACCEPTABLE VALUES

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




## ▽3 INPUT FILE POSITION LAYOUT

*(front view)*




EX.: 1A, 2A, ETC. = LOOP NO.'S
⊗ Wired Input - Do not populate slot with detector card

FS = FLASH SENSE
ST = STOP TIME

## ▽3 INPUT FILE CONNECTION & PROGRAMMING CHART

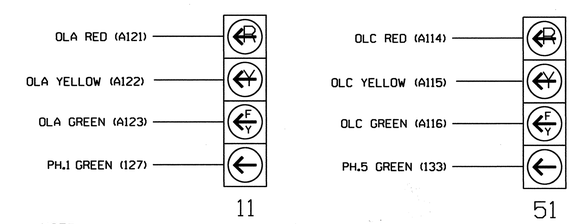
| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1A[1] | TB2-1,2 | I1U | 56 | 18 | 1 | 1 | Y | Y | | | 15 |
| | - | J4U | 48 | 10 | 26 | 6 | Y | Y | Y | | 3 |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | 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[2] | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | 15 |
| | - | I4U | 47 | 9 | 22 | 2 | Y | Y | Y | | 3 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | 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 |
| ✳SØ1 | TB6-5,6 | I8U | 49 | 11 | 24 | SYS | | | | | |
| ✳SØ2 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| ✳SØ3 | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| ✳SØ4 | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |
| ✳SØ5 | TB7-11,12 | J9L | 61 | 23 | 17 | SYS | | | | | |

[1] Add jumper from I1-W to J4-W, on rear of input file.
[2] Add jumper from J1-W to I4-W, on rear of input file.
✳ System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## 4-SECTION FYA-PPLT SIGNAL WIRING DETAIL

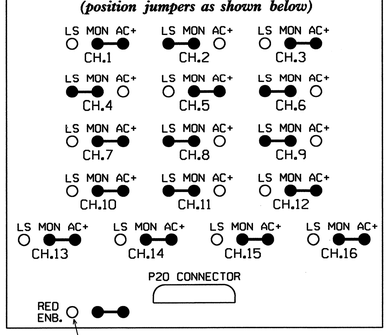
*(wire signal heads as shown)*



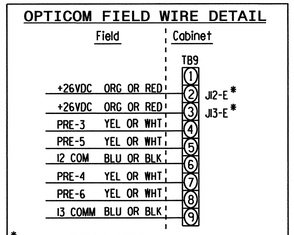

NOTE:
The display sequence for this signal requires special logic programming. See sheet 2 of 3 for programming instructions.

## RED MONITOR BOARD PROGRAMMING

*(position jumpers as shown below)*




✳ **OPTICOM FIELD WIRE DETAIL**




✳Assuming TB9-2 & TB9-3 are unused on the J File, move wires on J11-J & J11-K (Twisted Pair) to J12-E & J13-E Respectively.

▽3 THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0750
DESIGNED: May 2011
SEALED: 6/20/11
REVISED: N/A

Electrical Detail - Sheet 1 of 3

REVISION ▽3 SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

John T. Rowe Jr. 6-23-11
SIGNATURE DATE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

# SR 1470 (Western Blvd.) at Circuit Lane/Sam's Club Ent.

Division 03 Onslow County Jacksonville

PLAN DATE: 6-06-06 REVIEWED BY: D.T. Joyce DTJ
PREPARED BY: D.H. Spaulding REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| ▽3 REVISED PER S&G SIGNAL UPGRADE TO ADD EV PREEMPTION; DYNAMIC/BACKUP CONTROL REPLACED BY "BACKUP PROTECT" PROGRAMMING USING RED REVERT TIMING. - FER 3-26-09 JTP | JTR | 1-30-09 |
| ▽3 REVISED TO ADD FYA-PPLT; OFFSET LEFTS; ADJUST EVPE TIMES - FER 4-16-09 MWH | JTR | 4-21-09 |
| ▽3 ADDED SYS LOOPS; REVISED NOTES & OVERLAP FLASH. (WSA) | JTR | 6-23-11 |

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This document is only certified as to the revisions.

SIGNATURE DATE
SIG. INVENTORY NO. 03-0750

20-JUN-2011 15:28
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armstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.111 |

# LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1,2,3,4,5 & 6.
2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1 (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON
AND RED CLEAR ON PHASE  #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11)

PRESS '+'

```
LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11)

PRESS '+'

```
LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF  YELLOW ON PHASE     #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11)

PRESS '+'

```
LOGICAL I/O COMMAND #4 (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON
AND RED CLEAR ON PHASE  #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #42 ON
SET OUTPUT  ASSIGNMENT #43 OFF
```

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51)

PRESS '+'

```
LOGICAL I/O COMMAND #5 (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #44 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51)

PRESS '+'

```
LOGICAL I/O COMMAND #6 (+/-COMMAND#)
IF  YELLOW ON PHASE     #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #43 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51)

END OF PROGRAMMING

## OUTPUT REFERENCE SCHEDULE

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

# OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:            ¦123456789101112131415 16
VEH OVL PARENTS:¦XX
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN      <--- NOTICE GREEN FLASH !
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y        <--- NOTICE FLASH 'Y' (3)
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+' TWICE

```
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE:            ¦123456789101112131415 16
VEH OVL PARENTS:¦    XX
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN      <--- NOTICE GREEN FLASH !
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y        <--- NOTICE FLASH 'Y' (3)
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

(3) THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0750
DESIGNED: May 2011
SEALED: 6/20/11
REVISED: N/A

Electrical Detail - Sheet 2 of 3

REVISION (3) SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

John T. Rowe 6-23-11
SIGNATURE DATE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
Signal Management Section

750 N. Greenfield Pkwy., Garner, NC 27529

# SR 1470 (Western Blvd.) at Circuit Lane/Sam's Club Ent.

Division 03 | Onslow County | Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | 6-06-06 | REVIEWED BY: | D.T. Joyce DTJ |
| PREPARED BY: | D.H. Spaulding | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| (3) REVISED PER S&G SIGNAL UPGRADE TO ADD EV PREEMPTION; DYNAMIC/BACKUP CONTROL REPLACED BY "BACKUP PROTECT" PROGRAMMING USING RED REVERT TIMING. FER 1-29-09 | JTR | 1-30-09 |
| (3) REVISED TO ADD FYA-PPLT; OFFSET LEFTS; ADJUST EVPE TIMES. FER 4-16-09 | JTR | 4-21-09 |
| (3) ADDED SYS LOOPS; REVISED NOTES & OVERLAP FLASH. (WSA) | JTR | 6-23-11 |

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SIGNATURE DATE

SIG. INVENTORY NO. 03-0750

20-JUN-2011 15:30
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armstrong

# EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press the 'Next' key 2-times to advance to Preempt 3:

PRE3 (EVP 3):

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
 INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED   ¦123456789101112131415 16
1 255  0.0  0.0  ¦X    X
2   0  0.0  0.0  ¦
3   0  0.0  0.0  ¦
4   0  0.0  0.0  ¦
5   1  0.0  0.0  ¦ X   X
EXIT CALLS       ¦
              OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0
RED CLEAR BEFORE PRE (0= DEFAULT)....0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................Y
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT' 2-TIMES

PRE5 (EVP 5):

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
 INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED   ¦123456789101112131415 16
1 255  0.0  0.0  ¦X  X
2   0  0.0  0.0  ¦
3   0  0.0  0.0  ¦
4   0  0.0  0.0  ¦
5   1  0.0  0.0  ¦ X   X
EXIT CALLS       ¦
              OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0
RED CLEAR BEFORE PRE (0= DEFAULT)....0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................Y
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PROGRAMMING COMPLETE

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

3

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0750
DESIGNED: May 2011
SEALED: 6/20/11
REVISED: N/A

Electrical Detail - Sheet 3 of 3

REVISION 3 SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

SIGNATURE 6-23-11 DATE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Transportation Mobility and Safety Division, Traffic Engineering Branch, Signals Management Section, State of North Carolina Department of Transportation

750 N. Greenfield Pkwy., Garner, NC 27529

# SR 1470 (Western Blvd.) at Circuit Lane/Sam's Club Ent.

Division 03 Onslow County Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | 6-06-06 | REVIEWED BY: | D.T. Joyce DTJ |
| PREPARED BY: | D.H. Spaulding | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| 3 REVISED PER S&G SIGNAL UPGRADE TO ADD EV PREEMPTION; DYNAMIC/BACKUP CONTROL REPLACED BY "BACKUP PROTECT" PROGRAMMING USING RED REVERT TIMING. FER 1-28-09 JTP | JTR | 1-30-09 |
| 4 REVISED TO ADD FYA-PPLT; OFFSET LEFTS; ADJUST EVPE TIMES FER 4-16-09 MHH | JTR | 4-21-09 |
| 5 ADDED SYS LOOPS; REVISED NOTES & OVERLAP FLASH. (WSA) | JTR | 6-23-11 |

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SIGNATURE DATE

SIG. INVENTORY NO. 03-0750

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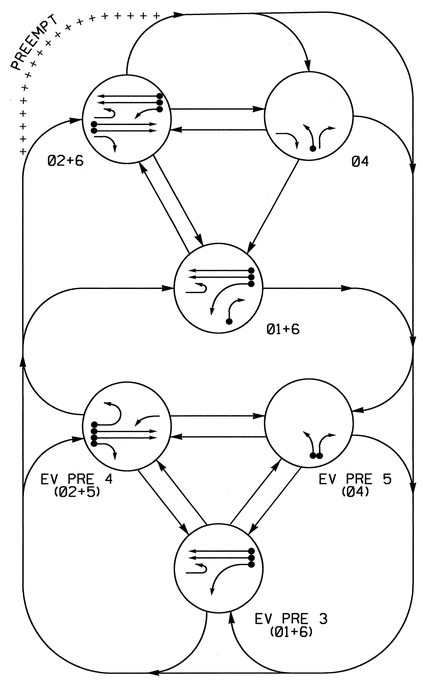
sarmstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.113 |

## PHASING DIAGRAM




### PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+6 | 02+6 | 04 | Pre 3 | Pre 4 | Pre 5 | FLASH |
|---|---|---|---|---|---|---|---|
| 11 | ← | F Y | R | ← | F Y | R | Y |
| 21 | F Y | F Y | R | F Y | ← | R | Y |
| 22 | R | G | R | R | G | R | Y |
| 23 | R | G | R/← | R | G | R | Y |
| 41 | R | R | G | R | R | G | R |
| 42 | R/← | R | G | R | R | G | R |
| 61, 62 | G | G | R | G | R | R | Y |

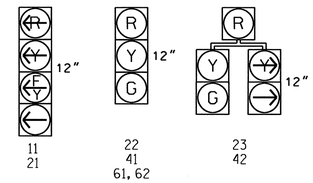
## STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

| FROM | TO ← 1 | TO ← 2 | TO F Y 1 | TO F Y 2 | TO R 1 | TO R 2 |
|---|---|---|---|---|---|---|
| ← | ← | ← | Y | R | Y | R |
| F Y | F Y | F Y | F Y | F Y | Y | R |
| R | R | R | R | R | R | R |

F Y = Flashing Yellow Arrow

## SIGNAL FACE I.D.

All Heads L.E.D.



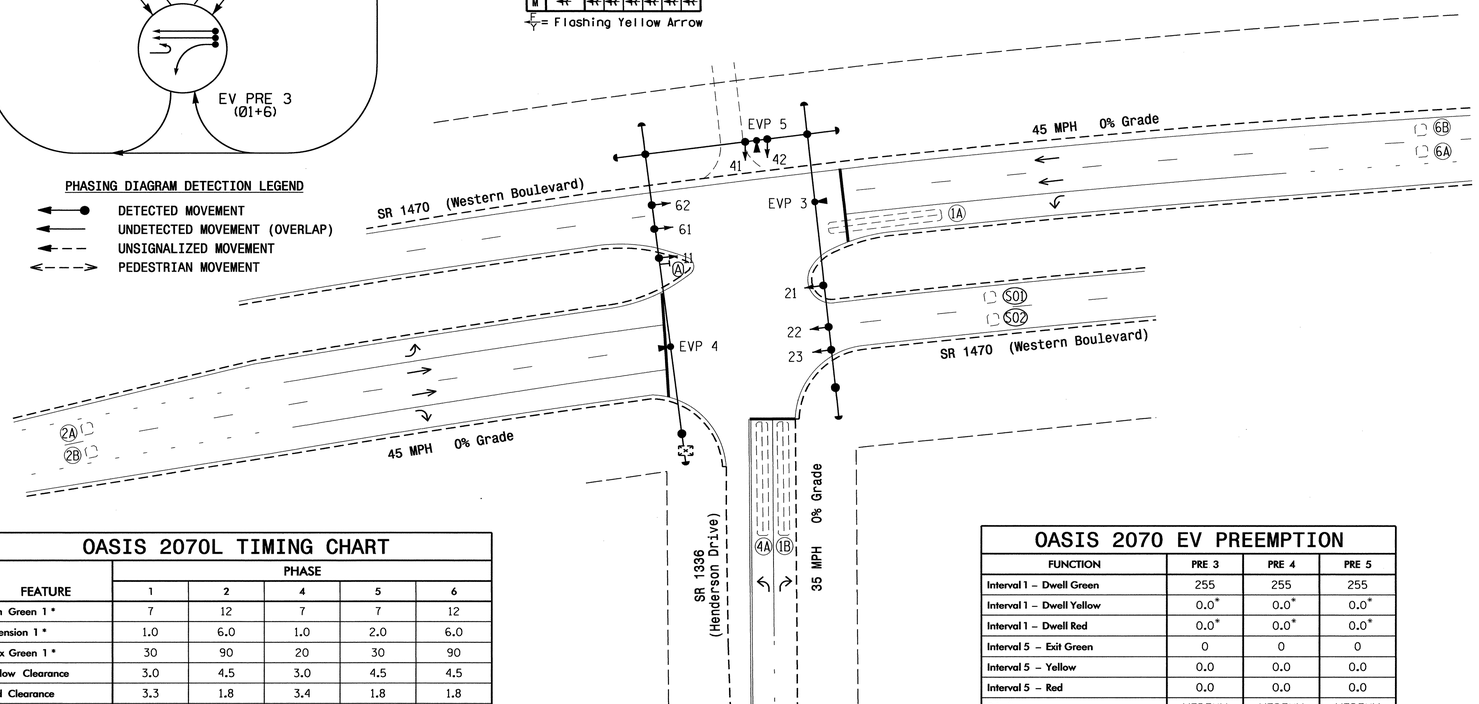

## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

| 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 | 6X60 | +10 | 2-4-2 | - | 1 | Y | Y | - | - | 20 | - | - |
| | | | | | 6 | Y | Y | Y | - | 3 | - | - |
| 1B | 6X60 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 20 | - | - |
| 2A | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 4A | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 3 | - | - |
| 6A | 6X6 | 300 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 300 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| S01 | 6X6 | +175 | 4 | - | - | - | - | - | - | - | Y | - |
| S02 | 6X6 | +175 | 4 | - | - | - | - | - | - | - | Y | - |

## 3 Phase
## Fully Actuated w/Emergency Preempt
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Disable Existing Backup Protect for phase 2.
4. Phase 1 may be lagged.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
7. Pavement markings are existing.
8. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #0776.




## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 7 | 7 | 12 |
| Extension 1 * | 1.0 | 6.0 | 1.0 | 2.0 | 6.0 |
| Max Green 1 * | 30 | 90 | 20 | 30 | 90 |
| Yellow Clearance | 3.0 | 4.5 | 3.0 | 4.5 | 4.5 |
| Red Clearance | 3.3 | 1.8 | 3.4 | 1.8 | 1.8 |
| Walk 1 * | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | - | 1.5 |
| Max Variable Initial * | - | 34 | - | - | 34 |
| Time Before Reduction * | - | 15 | - | - | 15 |
| Time To Reduce * | - | 40 | - | - | 40 |
| Minimum Gap | - | 3.2 | - | - | 3.2 |
| Recall Mode | - | MIN RECALL | - | - | MIN RECALL |
| Vehicle Call Memory | - | YELLOW | - | - | YELLOW |
| Dual Entry | - | - | - | - | - |
| Simultaneous Gap | 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.

## OASIS 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 4 | PRE 5 |
|---|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 | 0.0 |
| Priority | MEDIUM | MEDIUM | MEDIUM |
| Delay Time | 0.0 | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 | 1 |
| Ped Clear Before Pre | 0 | 0 | 0 |
| Yellow Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 | 7 |
| Enable Backup Protection | N | N | N |
| Ped Clear Through Yellow | N | N | N |
| Preempt Extend** | 2 | 2 | 2 |
| Omit Overlaps | D | - | B |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

## 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 | |
| | Optical Detector | |
| | U-Turn "MUST YIELD" Sign (R3-27) | |

Signal Upgrade

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

# SR 1470 (Western Boulevard) At SR 1336 (Henderson Drive)

Division 3 Onslow County Jacksonville

PLAN DATE: September 2010 REVIEWED BY: PLA

PREPARED BY: JPG REVIEWED BY:

SCALE 0 40 1"=40'

| REVISIONS | INIT. | DATE |
|---|---|---|
| 1 Renumber system loops | JPG | 6/20/11 |

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY

SIGNATURE 10/12/10 DATE

SIG. INVENTORY NO. 03-0776

23-JUN-2011 11:43
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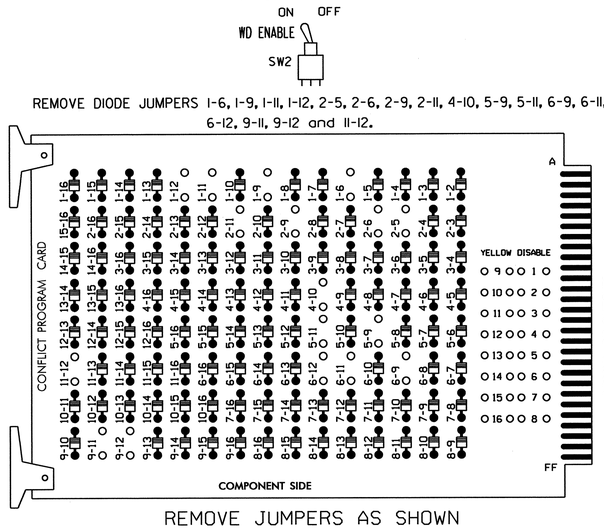
jgalloway

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 114 |

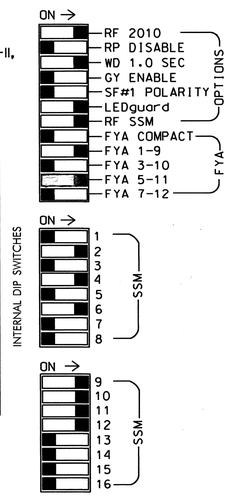
## EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




REMOVE DIODE JUMPERS 1-6, 1-9, 1-11, 1-12, 2-5, 2-6, 2-9, 2-11, 4-10, 5-9, 5-11, 6-9, 6-11, 6-12, 9-11, 9-12 and 11-12.

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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as WAG Overlaps.
7. The cabinet and controller are part of the Jacksonville City Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....EAGLE TYPE 2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES (DWG.NO.9500-332-NCDOT)
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S9,S10,S12,S13
PHASES USED.....1,2,4,*5,6
OVERLAP A:.....1+2
OVERLAP B:.....4
OVERLAP C:.....5+6
OVERLAP D:.....1

*Phase 5 is used only during preempt.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1★ | 2 | 2 PED | 3 | 4 | 4 PED | 5★ | 6 | 6 PED | 7 | 8 | 8 PED | OLA★ | OLB | SPARE | OLC★ | OLD | SPARE |
| SIGNAL HEAD NO. | 11 | 22,23 | NU | NU | 41,42 | NU | 21 | 61,62 | NU | NU | NU | NU | 11 | 23 | NU | 21 | 42 | NU |
| RED | | 128 | | | 101 | | | 134 | | | | | | * | | | * | |
| YELLOW | * | 129 | | | 102 | | * | 135 | | | | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | | | A114 | | |
| YELLOW ARROW | | | | | | | | | | | | | A122 | A125 | | A115 | A102 | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | | | A116 | | |
| GREEN ARROW | 127 | | | | | | 133 | | | | | | | A126 | | | A103 | |

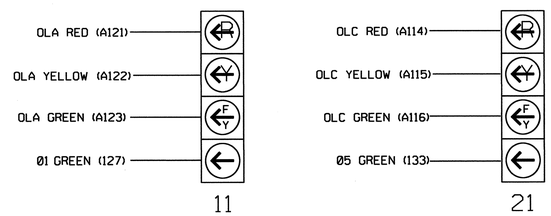
NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail below.

## FYA SIGNAL WIRING DETAIL

*(wire signal heads as shown)*




NOTE

1. The sequence display for this signal requires special logic programming. See sheet 2 for programming instructions.

## PREEMPT ONLY PHASE OMIT NOTE

*(program controller as shown below)*

From Main Menu press '2' (Phase Control). Then '1' (Phase Control Functions). Program Phase 5 for 'Omit Phase' and Phases 1, 2, 4 and 6 for 'Startup Calls'. This is to prevent Phase 5 from being served when not in Preempt.

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 1B | Ø1 1A | Ø2 2A | SLOT EMPTY | SLOT EMPTY | Ø4 4A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | NOT USED | Ø6 1A | Ø2 2B | | | NOT USED | | | | | | | | ST DC ISOLATOR |
| FILE "J" | U | SLOT EMPTY | Ø6 6A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SYS. DET. SØ1 | SLOT EMPTY | SLOT EMPTY | PRE3 | PRE4 | SLOT EMPTY |
| | L | | Ø6 6B | | | | | | | SYS. DET. SØ2 | | | * Optical 4 Ch. Card PRE5 | NOT USED | |

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

FS = FLASH SENSE
ST = STOP TIME
PRE3,4,5 = EV PREEMPTS

## 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 | TB2-1,2 | I1U | 56 | 18 | 1 | 1 | Y | Y | | | 20 |
| 1A [1] | TB2-5,6 | I2U | 39 | 1 | 2 | 1 | Y | Y | | | 20 |
| | TB2-7,8 | I2L | 43 | 5 | 12 | 6 | Y | Y | Y | | 3 |
| 2A | TB2-9,10 | I3U | 63 | 25 | 32 | 2 | Y | Y | | | |
| 2B | TB2-11,12 | I3L | 76 | 38 | 42 | 2 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | 3 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| * SØ1 | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |
| * SØ2 | TB7-11,12 | J9L | 61 | 23 | 17 | SYS | | | | | |

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

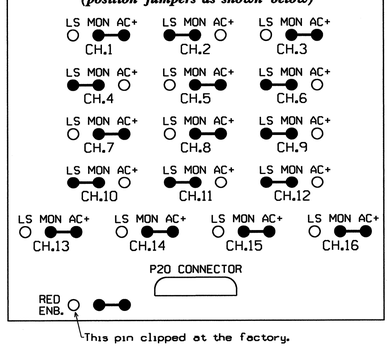
[1] Add jumpers from TB2-5 to TB2-7, and from TB2-6 to TB2-8.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

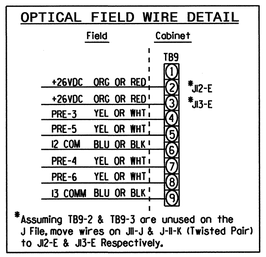
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0776
DESIGNED: September 2010
SEALED: 10-12-10
REVISED1: 6/20/11

## RED MONITOR BOARD PROGRAMMING

*(position jumpers as shown below)*



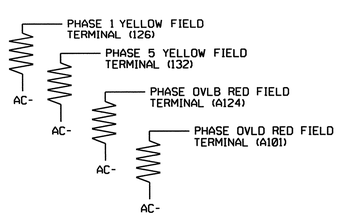

## OPTICAL FIELD WIRE DETAIL




*Assuming TB9-2 & TB9-3 are unused on the J File, move wires on J11-J & J-11-K (Twisted Pair) to J12-E & J13-E Respectively.

## LOAD RESISTOR INSTALLATION DETAIL

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




Signal Upgrade - Sheet 1 of 3

| ELECTRICAL AND PROGRAMMING DETAILS FOR: | SR 1470 (Western Boulevard) at SR 1336 (Henderson Drive) | SEAL |
|---|---|---|
| Prepared in the Offices of: Traffic Engineering and Safety Systems Branch, Division of Highways, N.C. Department of Transportation, Signals Management Section, 122 N. McDowell St., Raleigh, NC 27603 | Division 03 Onslow County In Jacksonville<br>PLAN DATE: October 2010 REVIEWED BY: JTR<br>PREPARED BY: James Peterson REVIEWED BY: | NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR. |
| | REVISIONS: 1 Renumbered system loops; corrected head 21 operation. (WSA) — INIT. JTR DATE 6-23-11 | SIGNATURE John T. Rowe DATE 10-25-10 |
| | | SIG. INVENTORY NO. 03-0776 |

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armstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 115 |

## ▽ LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5, AND 6.

2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON
AND RED CLEAR ON PHASE #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE     #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #4  (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON
AND RED CLEAR ON PHASE #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #42 ON
SET OUTPUT  ASSIGNMENT #43 OFF
```

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

PRESS '+'

```
LOGICAL I/O COMMAND #5  (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #44 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

PRESS '+'

```
LOGICAL I/O COMMAND #6  (+/-COMMAND#)
IF  YELLOW ON PHASE     #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #43 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

***OUTPUT REFERENCE SCHEDULE***

OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green
OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:          |123456789101112131415 16
VEH OVL PARENTS:|XX
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

PRESS '+'

```
PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
PHASE:          |123456789101112131415 16
VEH OVL PARENTS:|   X
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW    GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+'

▽

```
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE:          |123456789101112131415 16
VEH OVL PARENTS:|    XX
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

PRESS '+'

```
PAGE 1: VEHICLE OVERLAP 'D' SETTINGS
PHASE:          |123456789101112131415 16
VEH OVL PARENTS:|X
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW    GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

▽ THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0776
DESIGNED: September 2010
SEALED: 10-12-10
REVISED1: 6/20/11

Signal Upgrade - Sheet 2 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
122 N. McDowell St., Raleigh, NC 27603

**SR 1470 (Western Boulevard) at SR 1336 (Henderson Drive)**

Division 03 | Onslow County | In Jacksonville

PLAN DATE: October 2010 | REVIEWED BY: JTR
PREPARED BY: James Peterson | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| ▽ Renumbered system loopst corrected head 21 operation. (WSA) | JTR | 6-23-11 |

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

SIGNATURE: John T. Rowe Jr. DATE: 10-25-10

SIG. INVENTORY NO. 03-0776

23-JUN-2011 14:12
S:##TSS&S##TS Signals##workgroups#Sig Mark#armstrong#030776.sm.ele.xxx.dgn
armstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.116 |

# EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press the 'Next" key 2-times to advance to Preempt #3.

EVP 3 :

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0.0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦    X
```

PRESS 'NEXT'

EVP 4 :

```
   PREEMPTION  #4  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0.0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT'

EVP 5 :

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1 255  0.0  0.0 ¦   X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦   X
```

PROGRAMMING COMPLETE

Program extend time on optical detector units for 2.0 sec.

DISABLE

## DYNAMIC BACK-UP CONTROL PROGRAMMING

*(program controller as shown below)*

1. From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Scroll to the bottom of the menu and enable Dynamic/Backup Control Function 1.
2. From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

```
 DYNAMIC/BACKUP CONTROL FUNCTION #01
              OVERLAPS:¦ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE ¦
OR        PHASES:¦123456789101112131415 16
IF PHASES ARE ON¦ X
OMIT PHASES     ¦X
CALL PHASES     ¦   X
```

BACKUP PROTECTION PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0776
DESIGNED: September 2010
SEALED: 10-12-10
REVISED1: 6/20/11

Signal Upgrade - Sheet 3 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1470 (Western Boulevard)
at
SR 1336 (Henderson Drive)

Division 03 Onslow County In Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2010 | REVIEWED BY: | JTR |
| PREPARED BY: | James Peterson | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| 1 Renumbered system loops; corrected head 21 operation. (MSA) | JTR | 6-23-11 |

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
122 N. McDowell St., Raleigh, NC 27603

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE John T. Rowe Jr. DATE 10-25-10
SIG. INVENTORY NO. 03-0776

23-JUN-2011 14:12
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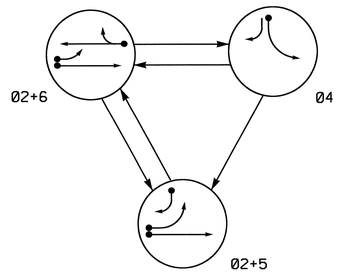
armstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.117 |

## PHASING DIAGRAM




### PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 02+5 | PHASE 02+6 | PHASE 04 | FLASH |
|---|---|---|---|---|
| 21,22 | G | G | R | Y |
| 41 | R | R | G | R |
| 42 | R | R | G | R |
| 51 | ← | F | R | Y |
| 61,62 | R | G | R | Y |

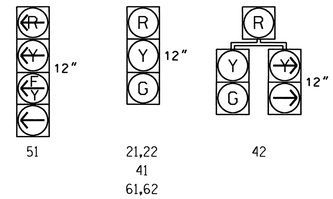
## STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

| FROM | TO ← 1 | TO ← 2 | TO F 1 | TO F 2 | TO R 1 | TO R 2 |
|---|---|---|---|---|---|---|
| ← | ← | ← | Y | R | Y | R |
| F | F Y | F Y | F Y | F Y | Y | R |
| R | R | R | R | R | R | R |

F = Flashing Yellow Arrow

## SIGNAL FACE I.D.

All Heads L.E.D.



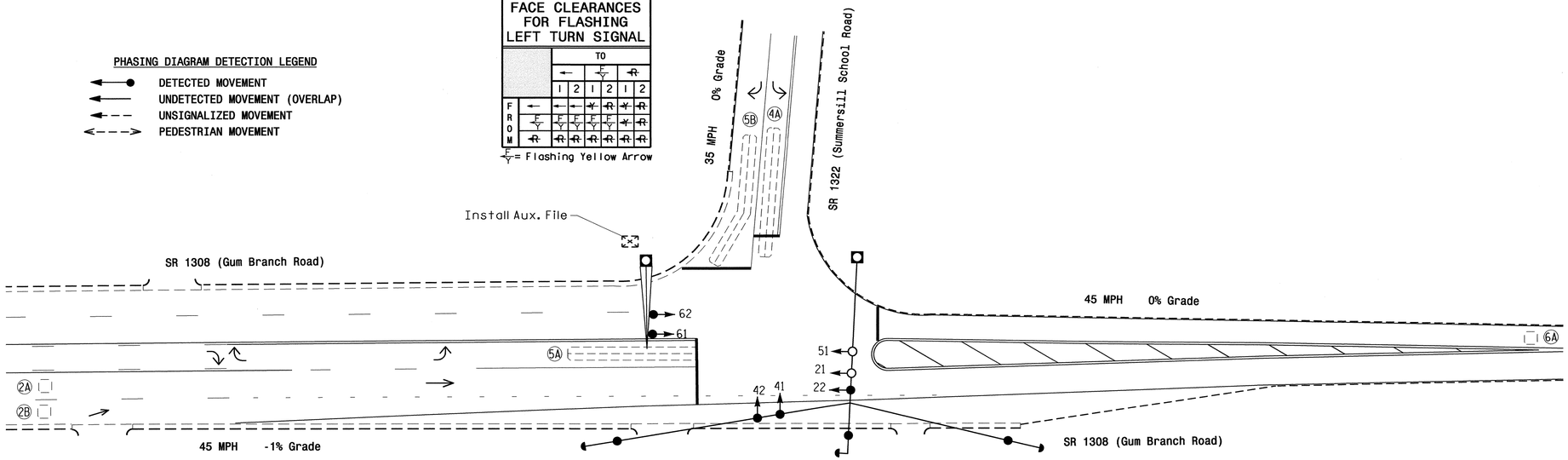

## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

| 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 |
| 2A | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 300 | 4 | - | 2 | Y | Y | - | - | - | - | - |
| 4A | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 3 | - | - |
| 5A | 6X60 | +5 | 2-4-2 | - | 2 | Y | Y | Y | - | 3 | - | - |
| | | | | - | 5 | Y | Y | - | - | 15 | - | - |
| 5B | 6X60 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | - |
| 6A | 6X6 | 300 | 4 | - | 6 | Y | Y | - | - | - | - | - |

# 3 Phase
# Fully Actuated
# Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0879.




## 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 | |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | PHASE 4 | PHASE 5 | PHASE 6 |
|---|---|---|---|---|
| Min Green 1 * | 12 | 7 | 7 | 12 |
| Extension 1 * | 6.0 | 1.0 | 1.0 | 6.0 |
| Max Green 1 * | 100 | 25 | 15 | 100 |
| Yellow Clearance | 4.6 | 3.0 | 3.0 | 4.6 |
| Red Clearance | 1.3 | 2.3 | 1.8 | 1.3 |
| Walk 1 * | - | - | - | - |
| Don't Walk 1 | - | - | - | - |
| Seconds Per Actuation * | 2.0 | - | - | 2.0 |
| Max Variable Initial * | 34 | - | - | 34 |
| Time Before Reduction * | 20 | - | - | 20 |
| Time To Reduce * | 30 | - | - | 30 |
| Minimum Gap | 3.0 | - | - | 3.0 |
| Recall Mode | MIN RECALL | - | - | MIN RECALL |
| Vehicle Call Memory | YELLOW | - | - | YELLOW |
| Dual Entry | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

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

SR 1308 (Gum Branch Road)
At
SR 1322 (Summersill School Road)

Division 3 Onslow County Jacksonville

PLAN DATE: January 2011 REVIEWED BY:
PREPARED BY: IOU/JPG REVIEWED BY:

SCALE 0 30 1"=30'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

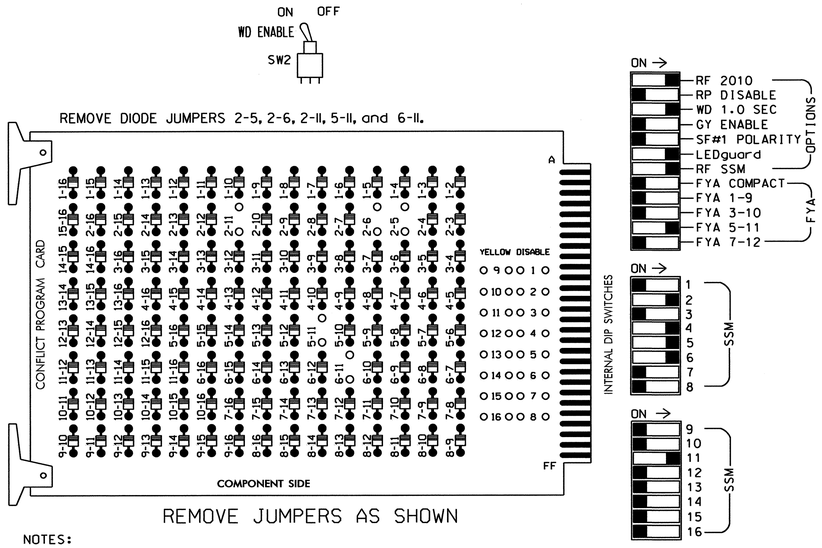
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 1/11/11 DATE
SIG. INVENTORY NO. 03-0879

07-FEB-2011 08:42
S:\TSGS\ITS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0879\03-0879_sig_dsn_20110111.dgn
jgalloway

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.118 |

# 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

! IMPORTANT! 2010ECL-NC conflict monitor required for FYA operation.

## NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3, 7,8,9,10,12,13,14,15 & 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 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 Jacksonville City Signal System.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 41,42 | NU | 42 | 51★ | 61,62 | NU | NU | NU | NU | NU | NU | NU | 51★ | NU | NU |
| RED | | 128 | | | 101 | | ✳ | | 134 | | | | | | | | | | |
| YELLOW | | 129 | | | 102 | | | | 135 | | | | | | | | | | |
| GREEN | | 130 | | | 103 | | | | 136 | | | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | | | | | A114 | | |
| YELLOW ARROW | | | | | | | 132 | | | | | | | | | | A115 | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | | | | A116 | | |
| GREEN ARROW | | | | | | | 133 | 133 | | | | | | | | | | | |

NU = Not Used

✳ Denotes install load resistor. See load resistor installation detail this sheet.

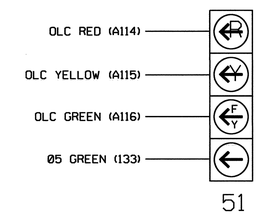
★ See pictorial of head wiring in detail below.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....332 W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S2,S4,S5,S6,S12
PHASES USED.....2,4,5,6
OVERLAP "A".....NOT USED
OVERLAP "B".....NOT USED
OVERLAP "C".....5+6
OVERLAP "D".....NOT USED

## 4 SECTION FYA PPLT SIGNAL WIRING DETAIL

*(wire signal head as shown)*




NOTE

The sequence display for signal head 51 requires special logic programming. See sheet 2 of 2 for programming instructions.

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | SLOT EMPTY | Ø2 2A | SLOT EMPTY | WIRED INPUT ⊗ | SLOT EMPTY | Ø4 4A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | | Ø2 2B | | | | NOT USED | | | | | | | | ST DC ISOLATOR |
| FILE "J" | U | Ø5 5A | Ø5 5B | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY |
| | L | NOT USED | Ø6 6A | | | | | | | | | | | | |

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

⊗ Wired Input - Do not populate slot with detector card

FS = FLASH SENSE
ST = STOP TIME

## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | 3 |
| 5A[1] | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | 15 |
| | - | I4U | 47 | 9 | 22 | 2 | Y | Y | Y | | 3 |
| 5B | TB3-5,6 | J2U | 40 | 2 | 6 | 5 | Y | Y | | | 15 |
| 6A | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |

[1] Add jumper from J1-W to I4-W. on rear of input file.

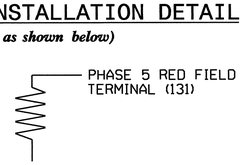
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## LOAD RESISTOR INSTALLATION DETAIL

*(install resistor as shown below)*

ACCEPTABLE VALUES

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




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0879
DESIGNED: January 2011
SEALED: 1/11/11
REVISED: N/A

Signal Upgrade - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1308 (Gum Branch Road)
at
SR 1322 (Summersill School Rd)

Division 3 | Onslow County | Jacksonville

PLAN DATE: January 2011 | REVIEWED BY: T. Jam
PREPARED BY: S. Armstrong | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

Prepared in the Offices of: Transportation Mobility and Safety Division, Traffic Engineering Branch, Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
SIGNATURE | DATE 2/8/11
SIG. INVENTORY NO. 03-0879

07-FEB-2011 09:35
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armstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.119 |

## LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
## TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, AND 3.

2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
 LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON
AND RED CLEAR ON PHASE #5  IS ON

                 ↓
            SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #42 ON
SET OUTPUT  ASSIGNMENT #43 OFF
```

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

PRESS '+'

```
 LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON

                 ↓
            SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #44 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

PRESS '+'

```
 LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE     #5  IS ON

                 ↓
            SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #43 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

***OUTPUT REFERENCE SCHEDULE***

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

PRESS '+' TWICE

```
 PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
 PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS:¦    XX
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0879
DESIGNED: January 2011
SEALED: 1/11/11
REVISED: N/A

Signal Upgrade - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

SR 1308 (Gum Branch Road)
at
SR 1322 (Summersill School Rd)

Division 3 | Onslow County | Jacksonville

PLAN DATE: January 2011 | REVIEWED BY: T. Vigo
PREPARED BY: S. Armstrong | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 2/8/11
SIGNATURE DATE

SIG. INVENTORY NO. 03-0879

07-FEB-2011 09:36
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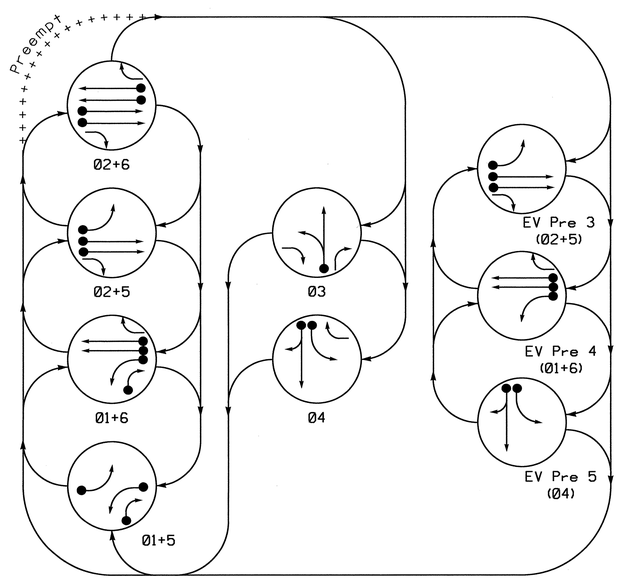
sarmstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.12a |

## PHASING DIAGRAM




## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 03 | 04 | Pre3 | Pre4 | Pre5 | FLASH |
|---|---|---|---|---|---|---|---|---|---|---|
| 11 | ← | ← | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ |
| 21 | R | R | G | G | R | R | G | R | R | Y |
| 22 | R | R | G | G | R/← | R | G | R | R | Y |
| 31 | R | R | R | R | G | R | R | R | R | R |
| 32 | R/← | R/← | R | R | G | R | R | R | R | R |
| 41 | R | R | R | R | R | G | R | R | G | R |
| 42 | R | R | R | R | R | G | R | R | G | R |
| 51 | ← | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ | ← | ~~R~~ | ~~R~~ | ~~R~~ |
| 61 | R | G | R | G | R | R | R | G | R | Y |
| 62 | R | G | R | G | R | R/← | R | G | R | Y |

## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X60 | 0 | 2-4-2 | — | 1 | Y | Y | — | —— | —— | — | - |
| 1B | 6X60 | 0 | 2-4-2 | — | 1 | Y | Y | — | —— | 15 | — | - |
| 2A | 6X6 | 300 | 4 | — | 2 | Y | Y | — | —— | —— | — | - |
| 2B | 6X6 | 300 | 4 | — | 2 | Y | Y | — | —— | —— | — | - |
| 3A | 6X60 | 0 | 2-4-2 | — | 3 | Y | Y | — | —— | —— | — | - |
| 4A | 6X60 | 0 | 2-4-2 | — | 4 | Y | Y | — | —— | 3 | — | - |
| 4B | 6X60 | 0 | 2-4-2 | — | 4 | Y | Y | — | —— | 10 | — | - |
| 5A | 6X60 | 0 | 2-4-2 | — | 5 | Y | Y | — | —— | —— | — | - |
| 6A | 6X6 | 300 | 4 | — | 6 | Y | Y | — | —— | —— | — | - |
| 6B | 6X6 | 300 | 4 | — | 6 | Y | Y | — | —— | —— | — | - |

## 6 Phase
## Fully Actuated w/EV Preempt
## Jacksonville City Signal System

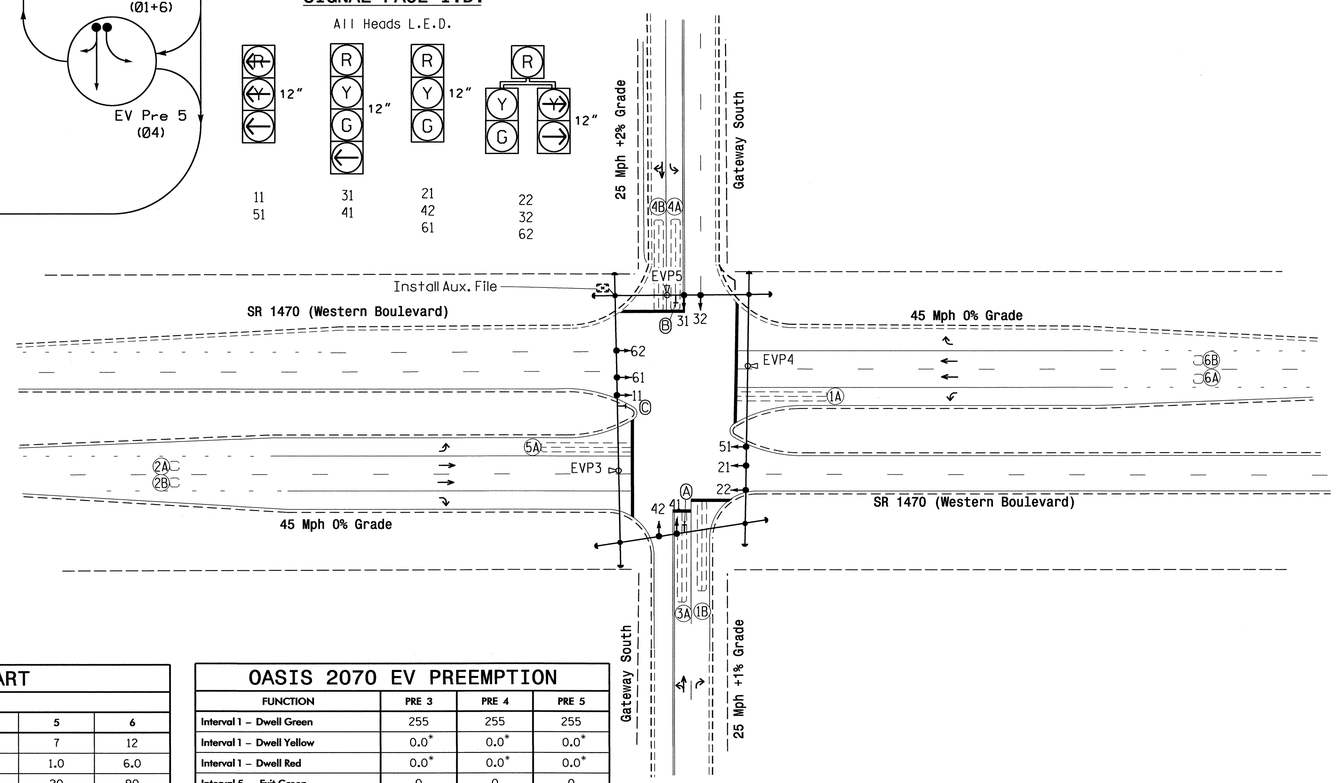
## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2006 and "Standard Specifications for Roads and Structures" dated January 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Pavement markings are existing.
8. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset # 0896.

## SIGNAL FACE I.D.

All Heads L.E.D.




### PHASING DIAGRAM DETECTION LEGEND

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

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 7 | 7 | 7 | 12 |
| Extension 1 * | 1.0 | 6.0 | 1.0 | 1.0 | 1.0 | 6.0 |
| Max Green 1 * | 20 | 90 | 30 | 30 | 20 | 90 |
| Yellow Clearance | 3.2 | 4.5 | 3.4 | 3.4 | 3.2 | 4.5 |
| Red Clearance | 3.0 | 1.0 | 3.0 | 3.0 | 3.0 | 1.0 |
| Walk 1 * | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | - | - | 1.5 |
| Max Variable Initial * | - | 34 | - | - | - | 34 |
| Time Before Reduction * | - | 15 | - | - | - | 15 |
| Time To Reduce * | - | 60 | - | - | - | 60 |
| Minimum Gap | - | 3.2 | - | - | - | 3.2 |
| Recall Mode | - | MIN RECALL | - | - | - | MIN RECALL |
| Vehicle Call Memory | - | YELLOW | - | - | - | YELLOW |
| Dual Entry | - | - | - | - | - | - |
| 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.

## OASIS 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 4 | PRE 5 |
|---|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 | 0.0 |
| Priority | Medium | Medium | Medium |
| Delay Time | 0.0 | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 | 1 |
| Ped Clear Before Pre | 0 * | 0 * | 0 * |
| Yellow Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 | 7 |
| Enable Backup Protection | N | N | N |
| Ped Clear Through Yellow | N | N | N |
| Preempt Extend** | 2 | 2 | 2 |
| Omit Overlaps | - | A | B |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

## 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 | |
| | Optical Detector | |
| Ⓐ | Left Arrow "ONLY" Sign (R3-5L) | Ⓐ |
| Ⓑ | Combined Through and Left Arrow Sign (R3-6L) | Ⓑ |
| Ⓒ | U-Turn "YIELD TO RIGHT TURN" Sign (R10-16) | Ⓒ |

Signal Upgrade

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 7/7/11 DATE

Prepared in 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

SCALE 0 50 1"=50'

# SR 1470 (Western Boulevard) At Gateway South

Division 3 Onslow County Jacksonville

PLAN DATE: June 2011 REVIEWED BY:
PREPARED BY: EMM/JPG REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| Install Optical EV Preemption | JPG | 7/7/11 |

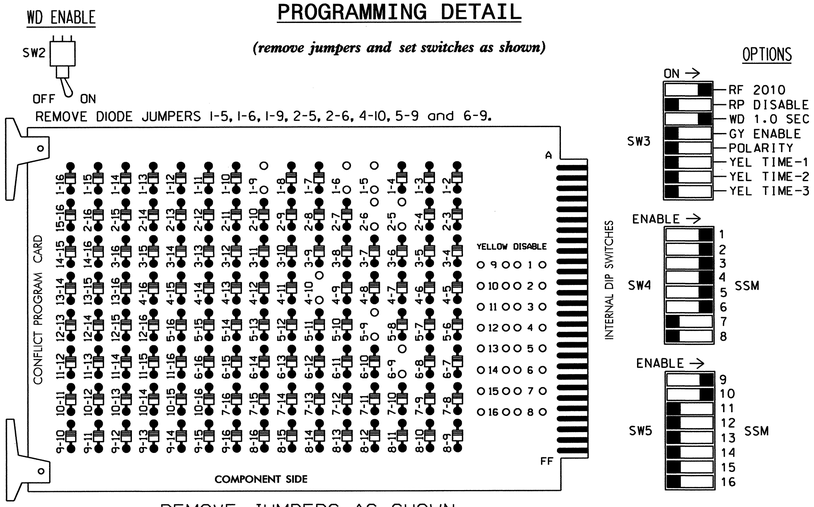
SEAL
*Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by Boniface Maduabuchukwu, PE no.25475 on 6/14/2006 This document is only certified as to the revisions.*
SIGNATURE DATE
SIG. INVENTORY NO. 03-0896

07-JUL-2011 08:06
S:\TSS\Signals\Signal Design Sections\Eastern Region\Div-03\Jacksonville Signal System\03-0896\03-0896_sig_dsn_20110606.dgn
(gallaway)

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 12.1 |

# EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*




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 7,8,11 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 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 Jacksonville City Signal System.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | | | S4 | | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | | | 4 | | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11 | 21,22 | NU | 31 | 32 | 22 | 41 | 42 | NU | 51 | 61,62 | NU | NU | NU | NU | 32 | 62 | NU | NU | NU | NU |
| RED | | 128 | | 116 | 116 | | 101 | 101 | | | 134 | | | | | * | * | | | | |
| YELLOW | | 129 | | 117 | 117 | | 102 | 102 | | | 135 | | | | | | | | | | |
| GREEN | | 130 | | 118 | 118 | | 103 | 103 | | | 136 | | | | | | | | | | |
| RED ARROW | 125 | | | | | | | | | 131 | | | | | | | | | | | |
| YELLOW ARROW | 126 | | | | | 117 | | | | 132 | | | | | | A122 | A125 | | | | |
| GREEN ARROW | 127 | | | 118 | | 118 | 103 | | | 133 | | | | | | A123 | A126 | | | | |
| ✋ | | | | | | | | | | | | | | | | | | | | | |
| 🚶 | | | | | | | | | | | | | | | | | | | | | |

NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
**CABINET.....332 /W/ AUX
SOFTWARE .....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S9,S10
PHASES USED.....1,2,3,4,5,6
OVERLAP "A".....1
OVERLAP "B".....4
OVERLAP "C".....NOT USED
OVERLAP "D".....NOT USED

**Auxiliary Output File required

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:            :123456789101112131415 16
VEH OVL PARENTS:  :X
VEH OVL NOT VEH:  :
VEH OVL NOT PED:  :
VEH OVL GRN EXT:  :
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+'

```
PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
PHASE:            :123456789101112131415 16
VEH OVL PARENTS:  :   X
VEH OVL NOT VEH:  :
VEH OVL NOT PED:  :
VEH OVL GRN EXT:  :
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | SLOT | Ø1 | Ø2 | SLOT | Ø3 | Ø4 | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | FS |
| | | | 1A | 2A | | 3A | 4A | | | | | | | | DC ISOLATOR |
| | L | EMPTY | Ø1 | Ø2 | EMPTY | NOT USED | Ø4 | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | ST |
| | | | 1B | 2B | | | 4B | | | | | | | | DC ISOLATOR |
| FILE "J" | U | Ø5 | Ø6 | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | SLOT | CH. 3 PRE-3 | CH. 1 PRE-4 | SLOT |
| | | 5A | 6A | | | | | | | | | | | | |
| | L | NOT USED | Ø6 | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | EMPTY | CH. 4 PRE-5 | CH. 2 NOT USED | EMPTY |
| | | | 6B | | | | | | | | | | | | |

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

4 CHANNEL TOMAR OSP CARD INSERT CARD INTO SLOT J13

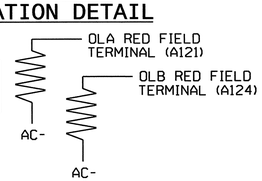
## INPUT FILE CONNECTION & PROGRAMMING CHART

| 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 | TB2-5,6 | I2U | 39 | 1 | 2 | 1 | Y | Y | | | |
| 1B | TB2-7,8 | I2L | 43 | 5 | 12 | 1 | Y | Y | | | 15 |
| 2A | TB2-9,10 | I3U | 63 | 25 | 32 | 2 | Y | Y | | | |
| 2B | TB2-11,12 | I3L | 76 | 38 | 42 | 2 | Y | Y | | | |
| 3A | TB4-5,6 | I5U | 58 | 20 | 3 | 3 | Y | Y | | | |
| 4A | 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 | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## LOAD RESISTOR INSTALLATION DETAIL

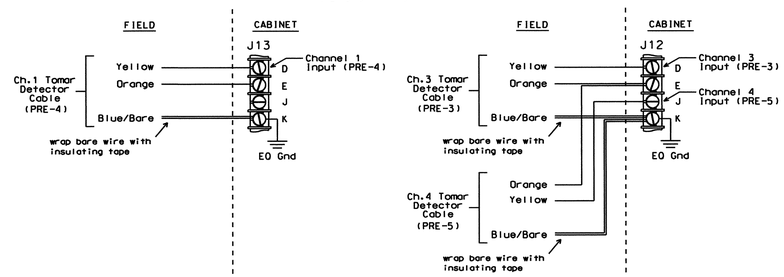
| ACCEPTABLE VALUES | |
|---|---|
| VALUE (ohms) | WATTAGE |
| 1.5K - 1.9K | 25W (min) |
| 2.0K - 3.0K | 10W (min) |




NOTE: The purpose of this resistor is to load the channel red monitor inputs in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

## TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*




THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0896
DESIGNED: June 2011
SEALED: 6-14-06
REVISED: 7-7-11

Signal Upgrade Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1470 (Western Boulevard) At Gateway South

Division 03 Onslow County Jacksonville

PLAN DATE: 7-01-11 REVIEWED BY: T. Vaz

PREPARED BY: D.H. Spaulding REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

Prepared in the Offices of: Traffic Engineering and Safety Systems Branch, Signals Management Section, Division of Highways, State of North Carolina, Department of Transportation

122 N. McDowell St., Raleigh, NC 27603

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE DATE 7/7/11

SIG. INVENTORY NO. 03-0896

07-JUL-2011 11:38
S:#ITSASU#ITS Signals#Workgroups#Sig Man#Spaulding#in-progress#03086_sm_ele_2011xx.dgn
dspaulding

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig. 122 |

# EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

***(program controller as shown below)***

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3 and 5.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦1234567891011121314151 6
1 255  0.0  0.0 ¦ X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT'

```
   PREEMPTION  #4  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦1234567891011121314151 6
1 255  0.0  0.0 ¦X    X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦ X
```

PRESS 'NEXT'

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦1234567891011121314151 6
1 255  0.0  0.0 ¦   X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦  X
```

PROGRAMMING COMPLETE

Program extend time on optical detector unit for 2.0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0896
DESIGNED: June 2011
SEALED: 6-14-06
REVISED: 7-7-11

Signal Upgrade  Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1470 (Western Boulevard)
At
Gateway South

Division 03  Onslow County  Jacksonville

PLAN DATE: 7-01-11  REVIEWED BY: T.J.B.
PREPARED BY: D.H. Spaulding  REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

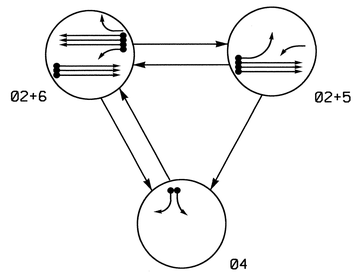
Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
122 N. McDowell St., Raleigh, NC 27603

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
George C. Brown 7/7/11
SIGNATURE DATE
SIG. INVENTORY NO. 03-0896

07-JUL-2011 09:34
S:\TSS&S\ITS Signals\workgroups\Sig Mark\Spaulding\in-progress\03096_smLele_2011xx.dgn
dspaulding

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.123 |

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE Ø2+5 | PHASE Ø2+6 | PHASE Ø4 | FLASH |
|---|---|---|---|---|
| 21,22 | G | G | R | Y |
| 41,42 | R | R | G | R |
| 51 | ← | ~~R~~ | ~~R~~ | ~~R~~ |
| 52 | ↖ | ~~R~~ | ~~R~~ | ~~R~~ |
| 61 | F Y | F Y | ~~R~~ | ~~Y~~ |
| 62,63,64 | R | G | R | Y |

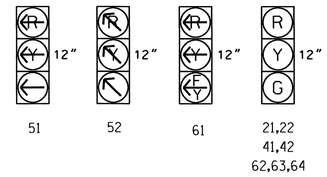
## STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

| | | TO ← | TO F Y | TO ~~R~~ | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 1 | 2 | 1 | 2 |
| FROM | ← | ~~←~~ | ~~←~~ | ~~Y~~ | ~~R~~ | ~~Y~~ | ~~R~~ |
| | F Y | F Y | F Y | F Y | F Y | ~~Y~~ | ~~R~~ |
| | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |

F Y = Flashing Yellow Arrow

## SIGNAL FACE I.D.

All Heads L.E.D.




## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

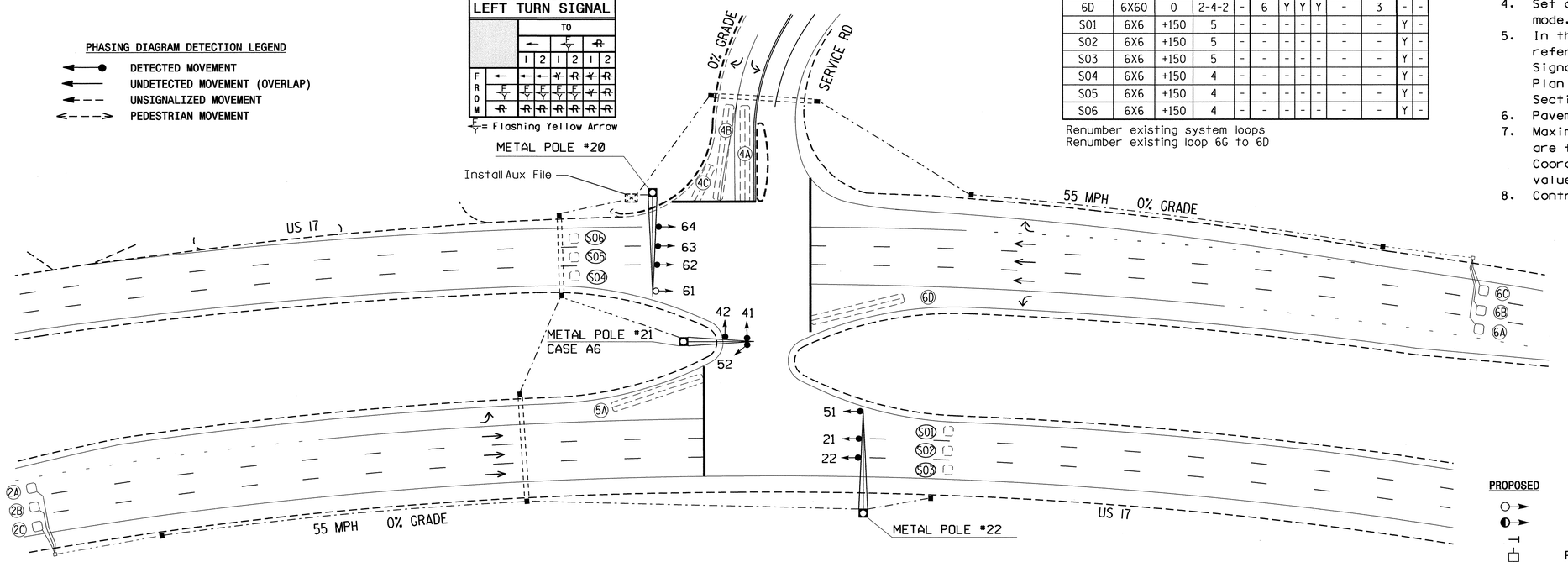
| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 2A | 6X6 | 420 | 5 | Y | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 420 | 5 | Y | 2 | Y | Y | - | - | - | - | - |
| 2C | 6X6 | 420 | 5 | Y | 2 | Y | Y | - | - | - | - | Y |
| 4A | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 4B | 6X60 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 4C | 6X25 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 5A | 6X60 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | - | - | - |
| 6A | 6X6 | 420 | 6 | Y | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 420 | 6 | Y | 6 | Y | Y | - | - | - | - | - |
| 6C | 6X6 | 420 | 6 | Y | 6 | Y | Y | - | - | - | - | Y |
| 6D | 6X60 | 0 | 2-4-2 | - | 6 | Y | Y | Y | - | 3 | - | - |
| S01 | 6X6 | +150 | 5 | - | - | - | - | - | - | - | Y | - |
| S02 | 6X6 | +150 | 5 | - | - | - | - | - | - | - | Y | - |
| S03 | 6X6 | +150 | 5 | - | - | - | - | - | - | - | Y | - |
| S04 | 6X6 | +150 | 4 | - | - | - | - | - | - | - | Y | - |
| S05 | 6X6 | +150 | 4 | - | - | - | - | - | - | - | Y | - |
| S06 | 6X6 | +150 | 4 | - | - | - | - | - | - | - | Y | - |

Renumber existing system loops
Renumber existing loop 6G to 6D

## 3 Phase
## Fully Actuated
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may lead.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0931.




## 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 Pole with Mastarm | |
| | 5" Outer Duct & junction boxes | |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | PHASE 4 | PHASE 5 | PHASE 6 |
|---|---|---|---|---|
| Min Green 1 * | 14 | 7 | 7 | 14 |
| Extension 1 * | 6.0 | 1.0 | 1.0 | 6.0 |
| Max Green 1 * | 100 | 45 | 35 | 100 |
| Yellow Clearance | 5.2 | 3.2 | 3.0 | 5.2 |
| Red Clearance | 1.2 | 3.5 | 3.7 | 1.2 |
| Walk 1 * | - | - | - | - |
| Don't Walk 1 | - | - | - | - |
| Seconds Per Actuation * | 1.5 | - | - | 1.5 |
| Max Variable Initial * | 46 | - | - | 46 |
| Time Before Reduction * | 20 | - | - | 20 |
| Time To Reduce * | 60 | - | - | 60 |
| Minimum Gap | 3.4 | - | - | 3.4 |
| Recall Mode | MIN RECALL | - | - | MIN RECALL |
| Vehicle Call Memory | YELLOW | - | - | YELLOW |
| Dual Entry | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

Prepared in 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

# US 17
# At
# Canady Road

Division 3 Onslow County Jacksonville

| PLAN DATE: May 2011 | REVIEWED BY: |
|---|---|
| PREPARED BY: JPG | REVIEWED BY: |

SCALE 0 40 1"=40'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

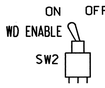
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLIMAY
SIGNATURE DATE 6/20/11
SIG. INVENTORY NO. 03-0931

20-JUN-2011 09:23
S:\ITS&SU\ITS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-0931\030931_sig_dsn_20110506.dgn
Dum2ZrTKe

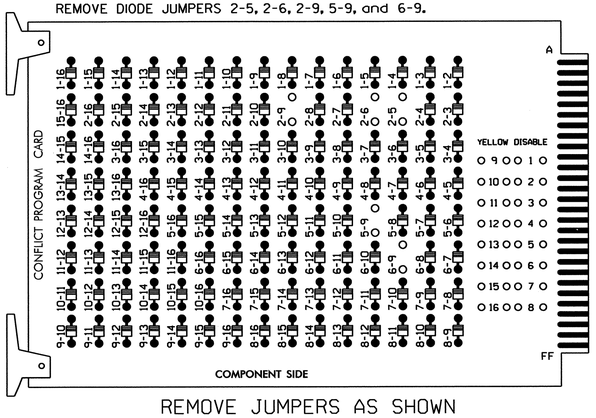
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.124 |

## * EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

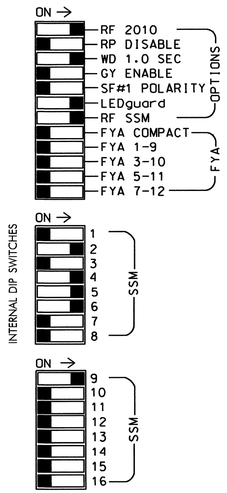
*(remove jumpers and set switches as shown)*




REMOVE DIODE JUMPERS 2-5, 2-6, 2-9, 5-9, and 6-9.




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.

* IMPORTANT! Ensure cabinet is equipped with 2010ECL-NC conflict monitor.

## NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3, 7,8,10,11,12,13,14,15 & 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 Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
7. The cabinet and controller are part of the Jacksonville City Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
* CABINET.....332 W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX OUTPUT FILE
LOAD SWITCHES USED.....S2,S4,S5,S6,S9
PHASES USED.....2,4,5,6
OVERLAP "A".....2
OVERLAP "B".....NOT USED
OVERLAP "C".....NOT USED
OVERLAP "D".....NOT USED

* Auxiliary Output File required.

## SIGNAL HEAD HOOK-UP CHART

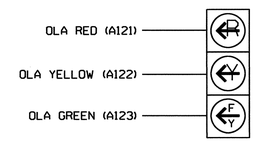
| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 41,42 | NU | 51,52 | 62,63 64 | NU | NU | NU | NU | 61 ★ | NU | NU | NU | NU | NU |
| RED | | 128 | | | 101 | | | 134 | | | | | | | | | | |
| YELLOW | | 129 | | | 102 | | | 135 | | | | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | | | | | | | | |
| RED ARROW | | | | | | | 131 | | | | | | A121 | | | | | |
| YELLOW ARROW | | | | | | | 132 | | | | | | A122 | | | | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | | | | | |
| GREEN ARROW | | | | | | | 133 | | | | | | | | | | | |

NU = Not Used

★ See pictorial of head wiring in detail below.

## 3 SECTION FYA SIGNAL WIRING DETAIL

*(wire signal head as shown)*




61

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | SLOT EMPTY | Ø2 2A | Ø2 2C | SLOT EMPTY | SLOT EMPTY | Ø4 4A | Ø4 4C | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | | Ø2 2B | NOT USED | | | Ø4 4B | NOT USED | | | | | | | ST DC ISOLATOR |
| FILE "J" | U | Ø5 5A | Ø6 6A | Ø6 6C | SYS. DET. S01 | SYS. DET. S02 | SYS. DET. S03 | SYS. DET. S05 | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY |
| | L | NOT USED | Ø6 6B | Ø6 6D | NOT USED | NOT USED | SYS. DET. S04 | SYS. DET. S06 | | | | | | | |

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

FS = FLASH SENSE
ST = STOP TIME

## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 2C | TB2-9,10 | I3U | 63 | 25 | 32 | 2 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | |
| 4B | TB4-11,12 | I6L | 45 | 7 | 14 | 4 | Y | Y | | | |
| 4C | TB6-1,2 | I7U | 65 | 27 | 34 | 4 | Y | Y | | | |
| 5A | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| 6C | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | | | |
| 6D | TB3-11,12 | J3L | 77 | 39 | 46 | 6 | Y | Y | Y | | 3 |
| *S01 | TB5-1,2 | J4U | 48 | 10 | 26 | SYS | | | | | |
| *S02 | TB5-5,6 | J5U | 57 | 19 | 7 | SYS | | | | | |
| *S03 | TB5-9,10 | J6U | 42 | 4 | 8 | SYS | | | | | |
| *S04 | TB5-11,12 | J6L | 46 | 8 | 18 | SYS | | | | | |
| *S05 | TB7-1,2 | J7U | 66 | 28 | 38 | SYS | | | | | |
| *S06 | TB7-3,4 | J7L | 79 | 41 | 48 | SYS | | | | | |

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:          :123456789101112131415 16
VEH OVL PARENTS:: X
VEH OVL NOT VEH::
VEH OVL NOT PED::
VEH OVL GRN EXT::
STARTUP COLOR: _ RED   _ YELLOW   _ GREEN
FLASH COLORS:  _ RED   _ YELLOW   X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

## 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 :0    2    0    0    :0    4    0    0
2 :0    6    5    0    :0    0    0    0
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: 03-0931
DESIGNED: May 2011
SEALED: 6/20/11
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

# US 17 at Canady Road

Division 3 | Onslow County | Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: | June 2011 | REVIEWED BY: | JTR |
| PREPARED BY: | S. Armstrong | REVIEWED BY: | |

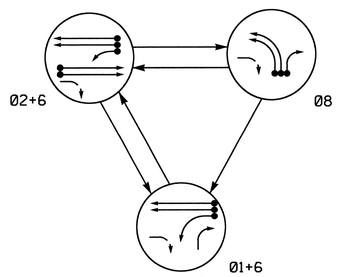
| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE | DATE 6-23-11
SIG. INVENTORY NO. 03-0931

20-JUN-2011 15:39
S:\TMS\Traffic Signals\Workgroups\Sig Mgmt\armstrong\030931_sm_ele_xxx.dgn
armstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.125 |

## PHASING DIAGRAM




## TABLE OF OPERATION

| SIGNAL FACE | PHASE Ø1+6 | PHASE Ø2+6 | PHASE Ø8 | FLASH |
|---|---|---|---|---|
| 11 | ← | F Y | R | Y |
| 21, 22 | R | G | R | Y |
| 61,62 | G | G | R | Y |
| 81 | R | R | G | R |
| 82 | R/→ | R | G | R |

## STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

| FROM | TO ← 1 | TO ← 2 | TO F Y 1 | TO F Y 2 | TO R 1 | TO R 2 |
|---|---|---|---|---|---|---|
| ← | ← | ← | Y | R | Y | R |
| F Y | F Y | F Y | F Y | F Y | Y | R |
| R | R | R | R | R | R | R |

F Y = Flashing Yellow Arrow

## 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | - |
| | | | | | 6 | Y | Y | Y | - | 3 | - | - |
| 2A | 6X6 | 300 | 5 | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 300 | 5 | - | 2 | Y | Y | - | - | - | - | - |
| 6A | 6X6 | 300 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 300 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| 8A | 6X40 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | - | - | - |
| 8B | 6X40 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | - | - | - |
| 8C | 6X40 | 0 | 2-4-2 | - | 8 | Y | Y | - | - | 15 | - | - |

3 Phase
Fully Actuated
Jacksonville City Signal System

## NOTES

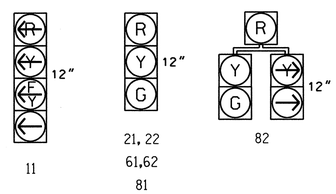
1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Remove existing backup protection.
4. Phase 1 may be lagged.
5. Set all detector units to presence mode.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #1006.

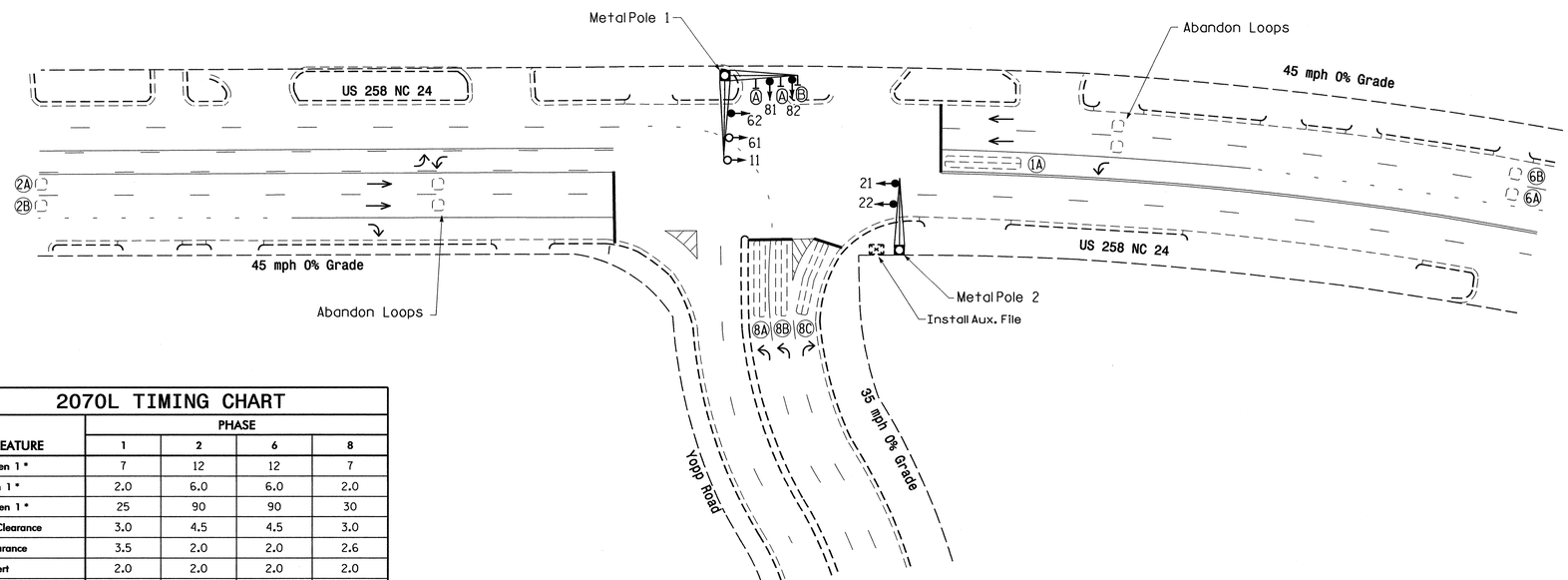
## PHASING DIAGRAM DETECTION LEGEND

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

## SIGNAL FACE I.D.

All Heads L.E.D.




## 2070L TIMING CHART

| FEATURE | PHASE 1 | PHASE 2 | PHASE 6 | PHASE 8 |
|---|---|---|---|---|
| Min Green 1 * | 7 | 12 | 12 | 7 |
| Extension 1 * | 2.0 | 6.0 | 6.0 | 2.0 |
| Max Green 1 * | 25 | 90 | 90 | 30 |
| Yellow Clearance | 3.0 | 4.5 | 4.5 | 3.0 |
| Red Clearance | 3.5 | 2.0 | 2.0 | 2.6 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 |
| Walk 1 * | - | - | - | - |
| Don't Walk 1 | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | 1.5 | - |
| Max Variable Initial * | - | 34 | 34 | - |
| Time Before Reduction * | - | 15 | 15 | - |
| Time To Reduce * | - | 45 | 45 | - |
| Minimum Gap | - | 3.0 | 3.0 | - |
| Recall Mode | - | MIN RECALL | MIN RECALL | - |
| Vehicle Call Memory | - | YELLOW | YELLOW | - |
| Dual Entry | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON |

* 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 | |
| | Pavement Marking Arrow | |
| A | Left Arrow "ONLY" Sign (R3-5L) | A |
| B | Right Arrow "ONLY" Sign (R3-5R) | B |

Signal Upgrade

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

SCALE 0 40 1"=40

# US 258 NC 24 At Yopp Road

Division 03 Onlsow County Jacksonville

PLAN DATE: January 2011 REVIEWED BY:
PREPARED BY: JPG REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON R. CALLOWAY
SIGNATURE 1/11/11 DATE
SIG. INVENTORY NO. 03-1006

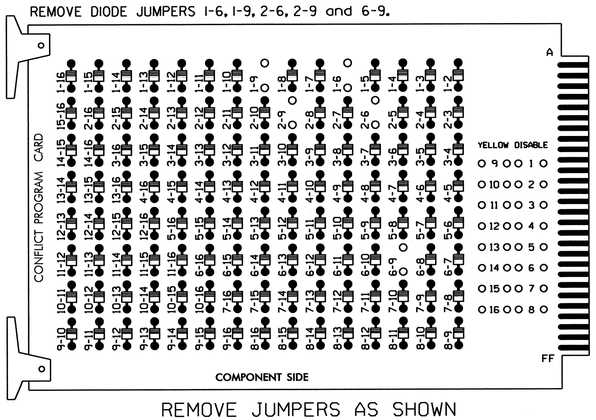
08-JUL-2011 09:20
S:\MTS&SU\TS Signals\Signal Design Section\Eastern Region\Div-03\Jacksonville Signal System\03-1006\031006_sig_dsn.20110111.dgn
jgallaway

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.126 |

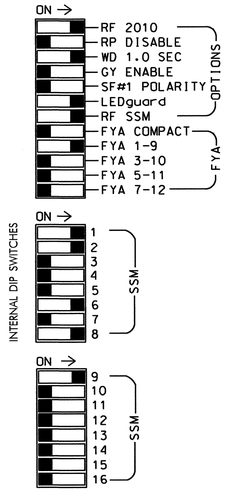
# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches as shown)*

REMOVE DIODE JUMPERS 1-6, 1-9, 2-6, 2-9 and 6-9.




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 3,4,5,7, 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 Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
7. The cabinet and controller are part of the Jacksonville City Signal System.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11★ | 82 | 21,22 | NU | NU | NU | NU | NU | 61,62 | NU | NU | 81,82 | NU | 11★ | NU | NU | NU | NU | NU |
| RED | | ✱ | 128 | | | | | | 134 | | | 107 | | | | | | | |
| YELLOW | | | 129 | | | | | | 135 | | | 108 | | | | | | | |
| GREEN | | | 130 | | | | | | 136 | | | 109 | | | | | | | |
| RED ARROW | | | | | | | | | | | | | | A121 | | | | | |
| YELLOW ARROW | | 126 | | | | | | | | | | | | A122 | | | | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | A123 | | | | | |
| GREEN ARROW | 127 | 127 | | | | | | | | | | | | | | | | | |

NU = Not Used

✱ Denotes install load resistor. See load resistor installation detail this sheet.

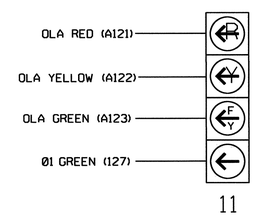
★ See pictorial of head wiring in detail below.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....332 /W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S6,S8,S9.
PHASES USED.....1,2,6,8.
OVERLAP "A".....1+2
OVERLAP "B".....NOT USED
OVERLAP "C".....NOT USED
OVERLAP "D".....NOT USED

## 4 SECTION FYA PPLT SIGNAL WIRING DETAIL

*(wire signal heads as shown)*




NOTE

1. The sequence display for this signal requires special logic programming. See sheet 2 of 2 for programming instructions.

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 1A | Ø2 2A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | NOT USED | Ø2 2B | | | | | | | | | | | | ST DC ISOLATOR |
| FILE "J" | U | SLOT EMPTY | Ø6 6A | SLOT EMPTY | WIRED INPUT ⊗ | SLOT EMPTY | Ø8 8A | Ø8 8C | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY |
| | L | | Ø6 6B | | | | Ø8 8B | NOT USED | | | | | | | |

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

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

## 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[1] | TB2-1,2 | I1U | 56 | 18 | 1 | 1 | Y | Y | | | 15 |
| | - | J4U | 48 | 10 | 26 | 6 | Y | Y | Y | | 3 |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| 8A | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | Y | Y | | | |
| 8B | TB5-11,12 | J6L | 46 | 8 | 18 | 8 | Y | Y | | | |
| 8C | TB7-1,2 | J7U | 66 | 28 | 38 | 8 | Y | Y | | | 15 |

[1]Add jumper from I1-W to J4-W, on rear of input file.

! IMPORTANT: If present, remove jumpers from TB6-9 to TB6-11, and from TB6-10 to TB6-12.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## BACKUP PROTECTION NOTE

*(program controller as shown below)*

~~From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phase 6 for 'Backup Protect'. Make sure the Red Revert times shown on the Signal Design Plans are programmed in the 'Phase Timing' menu.~~

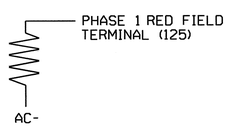
! IMPORTANT: Disable Backup Protection for phase 6.

## LOAD RESISTOR INSTALLATION DETAIL

*(install resistors as shown below)*

ACCEPTABLE VALUES

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




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-1006
DESIGNED: January 2011
SEALED: 1-11-11
REVISED: N/A

Signal Upgrade SHEET 1 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

US 258 NC 24
at
Yopp Road

Division 03 Onslow County Jacksonville

PLAN DATE: 2-1-11 REVIEWED BY: T. Yopp
PREPARED BY: D.H. Spaulding REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 2/8/11
SIGNATURE DATE

SIG. INVENTORY NO. 03-1006

08-FEB-2011 09:26
S:*ITS&SU*ITS Signals*Workgroups*Sig Man*Spaulding*In-progress*03100b_sm_ele.2011xx.dgn
dspaulding

## LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
## TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL). THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1. 2 and 3.

2. FROM MAIN MENU PRESS '6' (OUTPUTS). THEN '3' (LOGICAL I/O PROCESSOR).

```
 LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON
AND RED CLEAR ON PHASE #1  IS ON

                 SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

PRESS '+'

```
 LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON

                 SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

PRESS '+'

```
 LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE     #1  IS ON

                 SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

### *OUTPUT REFERENCE SCHEDULE*

OUTPUT 50 = Overlap A Red

OUTPUT 51 = Overlap A Yellow

OUTPUT 52 = Overlap A Green

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS). THEN '1' (VEHICLE OVERLAP SETTINGS).

```
 PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
 PHASE:            ¦123456789101112131415 16
VEH OVL PARENTS:¦XX
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-1006
DESIGNED: January 2011
SEALED: 1-11-11
REVISED: N/A

Signal Upgrade SHEET 2 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 258 NC 24
at
Yopp Road

Division 03 Onslow County Jacksonville

PLAN DATE: 2-1-11 REVIEWED BY: T. Yopp

PREPARED BY: D.H. Spaulding REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

Prepared in 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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

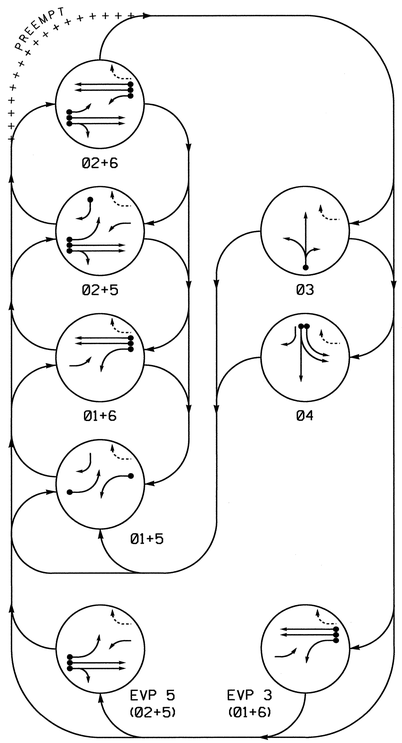
George C. Brown 2/8/11
SIGNATURE DATE

SIG. INVENTORY NO. 03-1006

04-FEB-2011 16:19
S:\#TS&SM\TS Signals\Workgroups\Sig Mgmt\Spaulding\in-progress\031006_sm_ele_2011xx.dgn
dspaulding

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.12B |

## 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 | 04 | Pre3 | Pre5 | FLASH |
|---|---|---|---|---|---|---|---|---|---|
| 11 | ← | ← | F Y | F Y | ~~R~~ | ~~R~~ | ← | F Y | ~~Y~~ |
| 21,22 | R | R | G | G | R | R | R | G | Y |
| 31 | R | R | R | R | G ← | R | R | R | R |
| 32 | R | R | R | R | G | R | R | R | R |
| 41 | R | R | R | R | G ← | R | R | R | R |
| 42 | R | R | R | R | R | G | R | R | R |
| 51 | ← | F Y | ← | F Y | ~~R~~ | ~~R~~ | F Y | ← | ~~Y~~ |
| 61,62 | R | G | R | G | R | R | G | R | Y |

## STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

| FROM \ TO | ← 1 | ← 2 | F Y 1 | F Y 2 | ~~R~~ 1 | ~~R~~ 2 |
|---|---|---|---|---|---|---|
| ← | | ← | ~~Y~~ | ~~R~~ | ~~Y~~ | ~~R~~ |
| F Y | F Y | F Y | F Y | F Y | ~~Y~~ | ~~R~~ |
| ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ |

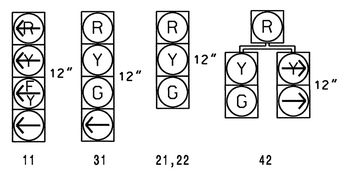
F Y = Flashing Yellow Arrow

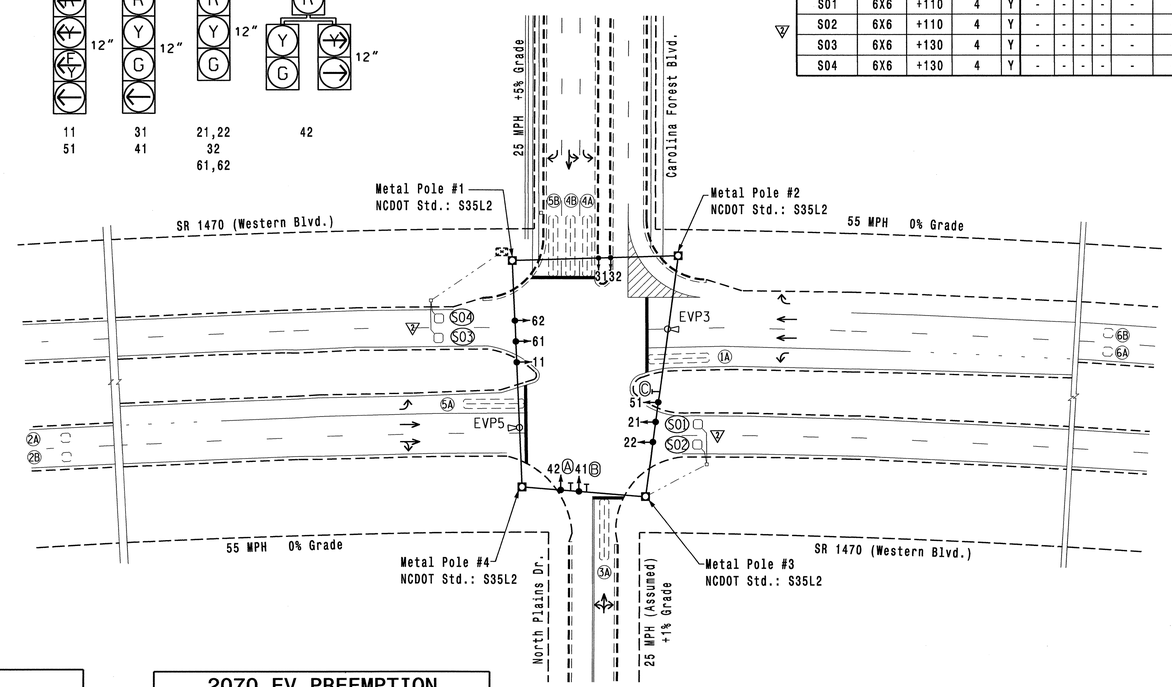
## OASIS 2070L LOOP & DETECTOR INSTALLATION

| INDUCTIVE LOOPS | | | | | DETECTOR PROGRAMMING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | DELAY TIME | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | 2-4-2 | - | 1 | Y | Y | - | - | 15 | - | - |
| | | | | | 6 | Y | Y | Y | - | 3 | - | - |
| 2A | 6X6 | 420 | 5 | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 420 | 5 | - | 2 | Y | Y | - | - | - | - | - |
| 3A | 6X40 | 0 | 2-4-2 | - | 3 | Y | Y | - | - | 5 | - | - |
| 4A | 6X40 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 4B | 6X40 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | - | - | - |
| 5A | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | - |
| | | | | | 2 | Y | Y | Y | - | 3 | - | - |
| 5B | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | - |
| 6A | 6X6 | 420 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 420 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| S01 | 6X6 | +110 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S02 | 6X6 | +110 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S03 | 6X6 | +130 | 4 | Y | - | - | - | - | - | - | Y | Y |
| S04 | 6X6 | +130 | 4 | Y | - | - | - | - | - | - | Y | Y |

## SIGNAL FACE I.D.

All Heads L.E.D.




## 6 Phase
## Fully Actuated w/EV Preempt
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Pavement markings are existing.
7. ▽ This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #1015.

## LEGEND

| PROPOSED | | EXISTING |
|---|---|---|
| | Traffic Signal Head | |
| | Modified Signal Head | N/A |
| | Sign | |
| | Pedestrian Signal Head With Push Button & Sign | |
| | Signal Pole with Guy | |
| | Signal Pole with Sidewalk Guy | |
| | Inductive Loop Detector | |
| | Controller & Cabinet | |
| | Junction Box | |
| | 2-in Underground Conduit | |
| N/A | Right of Way | |
| | Directional Arrow | |
| | Pavement Marking Arrow | |
| | Optical Detector | |
| Ⓐ | Combined Through and Left Arrow Sign (R3-6L) | Ⓐ |
| Ⓑ | Left Arrow "ONLY" Sign (R3-5L) | Ⓑ |
| Ⓒ | "U-TURN YIELD TO RIGHT TURN" Sign (R10-16) | Ⓒ |

## OASIS 2070L TIMING CHART

| FEATURE | PHASE 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Min Green 1 * | 7 | 14 | 7 | 7 | 7 | 14 |
| Extension 1 * | 1.0 | 6.0 | 1.0 | 1.0 | 1.0 | 6.0 |
| Max Green 1 * | 25 | 90 | 30 | 30 | 25 | 90 |
| Yellow Clearance | 3.0 | 5.2 | 3.1 | 3.0 | 3.0 | 5.2 |
| Red Clearance | 3.2 | 1.1 | 3.4 | 3.5 | 3.3 | 1.1 |
| Walk 1 * | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | - | - | 1.5 |
| Max Variable Initial * | - | 46 | - | - | - | 46 |
| Time Before Reduction * | - | 15 | - | - | - | 15 |
| Time To Reduce * | - | 45 | - | - | - | 45 |
| Minimum Gap | - | 3.4 | - | - | - | 3.4 |
| Recall Mode | - | MIN RECALL | - | - | - | MIN RECALL |
| Vehicle Call Memory | - | YELLOW | - | - | - | YELLOW |
| Dual Entry | - | - | - | - | - | - |
| 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.

## 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 5 |
|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 |
| Priority | Medium | Medium |
| Delay Time | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 |
| Ped Clear Before Pre | 0 * | 0 * |
| Yellow Clear Before Pre | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 |
| Enable Backup Protection | N | N |
| Ped Clear Through Yellow | N | N |
| Preempt Extend** | 2 | 2 |
| Omit Overlaps | - | B |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

Signal Upgrade

▽ REVISION SEAL

NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON R. GALLOWAY

SIGNATURE DATE 7/7/11

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

SCALE 0 50 1"=50'

# SR 1470 (Western Boulevard) at Carolina Forest Boulevard/ North Plains Drive

Division 3 Onslow County Jacksonville

| PLAN DATE: September 2008 | REVIEWED BY: | |
|---|---|---|
| PREPARED BY: J. Cross | REVIEWED BY: S. Privette | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| ▽ Revise loop locations and clearance times due to speed limit change | SBP | 8/11/09 |
| ▽ Added System Loops,EV Preemption | JRG | 7/7/11 |

SEAL

*Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by Stephanie Privette,24432 on 4/17/2009 This document is only certified as to the revisions.*

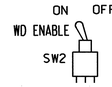
SIGNATURE DATE

SIG. INVENTORY NO. 03-1015

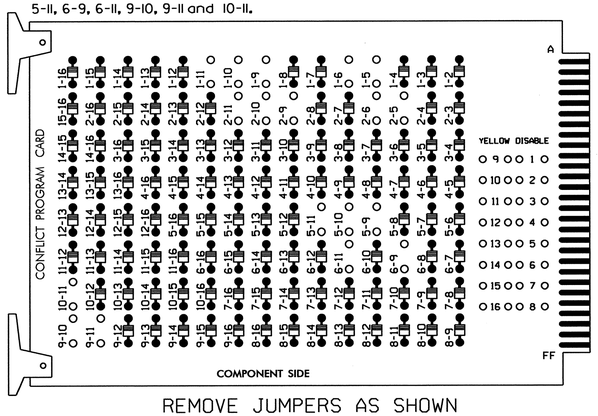
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.129 |

# EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

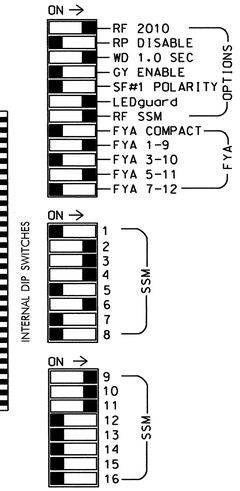
*(remove jumpers and set switches as shown)*




REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-10, 1-11, 2-5, 2-6, 2-9, 2-10, 2-11, 5-9, 5-10, 5-11, 6-9, 6-11, 9-10, 9-11 and 10-11.




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 1,5, 7,8,12,13,14,15 & 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 Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
7. The cabinet and controller are part of the Jacksonville City Signal System.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | | S4 | | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | | 4 | | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11★ | 21,22 | NU | 31 | 32 | 41 | 42 | NU | 51★ | 61,62 | NU | NU | NU | NU | 11★ | 42 | NU | 51★ | NU | NU |
| RED | | 128 | | 116 | 116 | 101 | 101 | | | 134 | | | | | | * | | | | |
| YELLOW | * | 129 | | 117 | 117 | 102 | 102 | | * | 135 | | | | | | | | | | |
| GREEN | | 130 | | 118 | 118 | 103 | 103 | | | 136 | | | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | | | A121 | | | A114 | | |
| YELLOW ARROW | | | | | | | | | | | | | | | A122 | A125 | | A115 | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | | A123 | | | A116 | | |
| GREEN ARROW | 127 | | | 118 | | 103 | | | 133 | | | | | | | A126 | | | | |

NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

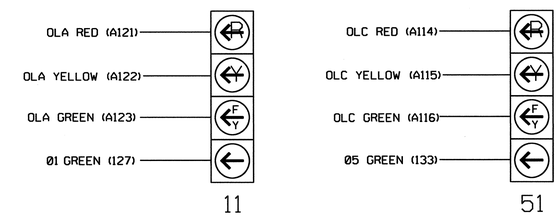
★ See pictorial of head wiring in detail below.

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....332 /W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S9,S10,S12
PHASES USED.....1,2,3,4,5,6
OVERLAP "A".....1+2
OVERLAP "B".....5
OVERLAP "C".....5+6
OVERLAP "D".....NOT USED

## 4 SECTION FYA PPLT SIGNAL WIRING DETAIL

*(wire signal heads as shown)*




NOTE

1. The sequence display for this signal requires special logic programming. See sheet 2 of 2 for programming instructions.

## INPUT FILE POSITION LAYOUT

*(front view)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILE "I" | U | Ø1 1A | Ø2 2A | SLOT EMPTY | WIRED INPUT ⊗ | Ø3 3A | Ø4 4A | SLOT EMPTY | SLOT EMPTY | SYS. DET. SØ1 | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | FS DC ISOLATOR |
| | L | NOT USED | Ø2 2B | | | NOT USED | Ø4 4B | | | SYS. DET. SØ2 | | | | | ST DC ISOLATOR |
| FILE "J" | U | Ø5 5A | Ø6 6A | Ø5 5B | WIRED INPUT ⊗ | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | SYS. DET. SØ3 | SLOT EMPTY | SLOT EMPTY | CH. 3 PRE-3 | CH. 1 UNUSED | SLOT EMPTY |
| | L | NOT USED | Ø6 6B | NOT USED | | | | | | SYS. DET. SØ4 | | | CH. 4 PRE-5 | CH. 2 UNUSED | |

EX.: 1A, 2A, ETC. = LOOP NO.'S
FS = FLASH SENSE
ST = STOP TIME
⊗ Wired Input - Do not populate slot with detector card

4 CHANNEL TOMAR OSP CARD INSERT CARD INTO SLOT J13

## 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[1] | TB2-1,2 | I1U | 56 | 18 | 1 | 1 | Y | Y | | | 15 |
| | - | J4U | 48 | 10 | 26 | 6 | Y | Y | Y | | 3 |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 3A | TB4-5,6 | I5U | 58 | 20 | 3 | 3 | Y | Y | | | 5 |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | |
| 4B | TB4-11,12 | I6L | 45 | 7 | 14 | 4 | Y | Y | | | |
| 5A[2] | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | 15 |
| | - | I4U | 47 | 9 | 22 | 2 | Y | Y | Y | | 3 |
| 5B | TB3-9,10 | J3U | 64 | 26 | 36 | 5 | Y | Y | | | 15 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| * SØ1 | TB6-9,10 | I9U | 60 | 22 | 11 | SYS | | | | | |
| * SØ2 | TB6-11,12 | I9L | 62 | 24 | 13 | SYS | | | | | |
| * SØ3 | TB7-9,10 | J9U | 59 | 21 | 15 | SYS | | | | | |
| * SØ4 | TB7-11,12 | J9L | 61 | 23 | 17 | SYS | | | | | |

[1] Add jumper from I1-W to J4-W, on rear of input file.

[2] Add jumper from J1-W to I4-W, on rear of input file.

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

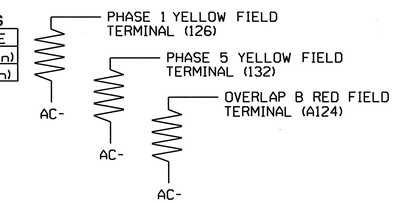
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## LOAD RESISTOR INSTALLATION DETAIL

*(install resistors as shown below)*

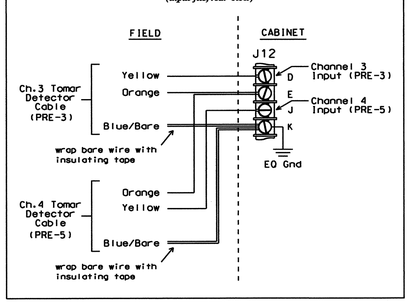
ACCEPTABLE VALUES

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



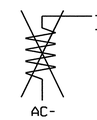

## TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*




## LOAD RESISTOR REMOVAL DETAIL

*(install resistors as shown below)*




! If present, remove load resistor PHASE 5 RED FIELD TERMINAL (131)

ELECTRICAL DETAIL SHEET 1 OF 2

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-1015
DESIGNED: September 2008
SEALED: 04/17/2009
REVISED1: 08/11/09
REVISED2: 07/07/11

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering Branch
Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 1470 (Western Boulevard) at Carolina Forest Boulevard/ North Plains Drive

Division 3 Onslow County Jacksonville

PLAN DATE: June 2011 REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
SIGNATURE DATE 7/8/11
SIG. INVENTORY NO. 03-1015

08-JUL-2011 07:17
S:*TIS&SU*ITS Signals*Workgroups*Sig Man*Strickland*031015_smele.xxx.dgn
castrickland

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.130 |

## LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5 AND 6.
2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON
AND RED CLEAR ON PHASE #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE     #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #4  (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON
AND RED CLEAR ON PHASE #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #42 ON
SET OUTPUT  ASSIGNMENT #43 OFF
```

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

PRESS '+'

```
LOGICAL I/O COMMAND #5  (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #44 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

PRESS '+'

```
LOGICAL I/O COMMAND #6  (+/-COMMAND#)
IF  YELLOW ON PHASE     #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #43 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:          |123456789101112131415 16
VEH OVL PARENTS:|XX
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

PRESS '+'

```
PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
PHASE:          |123456789101112131415 16
VEH OVL PARENTS:|    X
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+'

```
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE:          |123456789101112131415 16
VEH OVL PARENTS:|    XX
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

## EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

*(program controller as shown below)*

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3 and 5.

```
PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING |  CLEAR/DWELL PHASES
 GRN YEL  RED   |123456789101112131415 16
1 255  0.0  0.0 |X    X
2   0  0.0  0.0 |
3   0  0.0  0.0 |
4   0  0.0  0.0 |
5   0  0.0  0.0 |
EXIT CALLS      |
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                | ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   |
OMIT OVERLAPS:           |
```

PRESS 'NEXT' TWICE

```
PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING |  CLEAR/DWELL PHASES
 GRN YEL  RED   |123456789101112131415 16
1 255  0.0  0.0 | X  X
2   0  0.0  0.0 |
3   0  0.0  0.0 |
4   0  0.0  0.0 |
5   0  0.0  0.0 |
EXIT CALLS      |
          OPTIONS
PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                | ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   |
OMIT OVERLAPS:           |  X
```

PROGRAMMING COMPLETE

Program extend time on optical detector unit for 2.0 seconds.

### OUTPUT REFERENCE SCHEDULE

USE TO INTERPRET LOGIC PROCESSOR

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-1015
DESIGNED: September 2008
SEALED: 04/17/2009
REVISED1: 08/11/09
REVISED2: 07/07/11

ELECTRICAL DETAIL SHEET 2 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1470 (Western Boulevard) at Carolina Forest Boulevard/ North Plains Drive

Division 3 Onslow County Jacksonville

PLAN DATE: June 2011 REVIEWED BY: T. Uzzle

PREPARED BY: C. Strickland REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

Prepared in the Offices of: Transportation Mobility and Safety Division, Traffic Engineering Branch, Signal Management Section, State of North Carolina Department of Transportation

750 N.Greenfield Pkwy,Garner,NC 27529

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE DATE 7/8/11

SIG. INVENTORY NO. 03-1015

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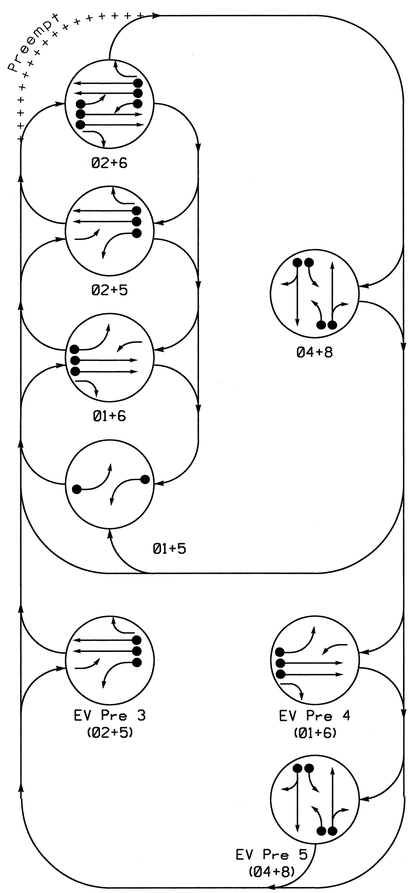
cestrickland

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.13 |

## PHASING DIAGRAM




## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+5 | 01+6 | 02+5 | 02+6 | 04+8 | Pre3 | Pre4 | Pre5 | FLASH |
|---|---|---|---|---|---|---|---|---|---|
| 11 | ← | ← | F | F | R | F | ← | R | Y |
| 21,22 | R | R | G | G | R | G | R | R | Y |
| 41,42 | R | R | R | R | G | R | R | G | R |
| 51 | ← | F | ← | F | R | ← | F | R | Y |
| 61,62 | R | G | R | G | R | R | G | R | Y |
| 81,82 | R | R | R | R | G | R | R | G | R |

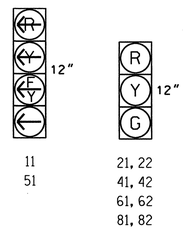
## STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

| FROM | TO ← 1 | TO ← 2 | TO F 1 | TO F 2 | TO R 1 | TO R 2 |
|---|---|---|---|---|---|---|
| ← | | ← | Y | R | Y | R |
| F | F | F | F | F | Y | R |
| R | R | R | R | R | R | R |

F = Flashing Yellow Arrow

## 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 | - | 1 | Y | Y | - | - | 15 | - | - |
| | | | | | 6 | Y | Y | Y | - | 3 | - | - |
| 2A | 6X6 | 300 | 5 | - | 2 | Y | Y | - | - | - | - | - |
| 2B | 6X6 | 300 | 5 | - | 2 | Y | Y | - | - | - | - | - |
| 4A | 6X40 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | 3 | - | - |
| 4B | 6X40 | +5 | 2-4-2 | - | 4 | Y | Y | - | - | 10 | - | - |
| 5A | 6X40 | 0 | 2-4-2 | - | 5 | Y | Y | - | - | 15 | - | - |
| | | | | | 2 | Y | Y | Y | - | 3 | - | - |
| 6A | 6X6 | 300 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 300 | 5 | - | 6 | Y | Y | - | - | - | - | - |
| 8A | 6X40 | +5 | 2-4-2 | - | 8 | Y | Y | - | - | 3 | - | - |
| 8B | 6X40 | +5 | 2-4-2 | - | 8 | Y | Y | - | - | 10 | - | - |

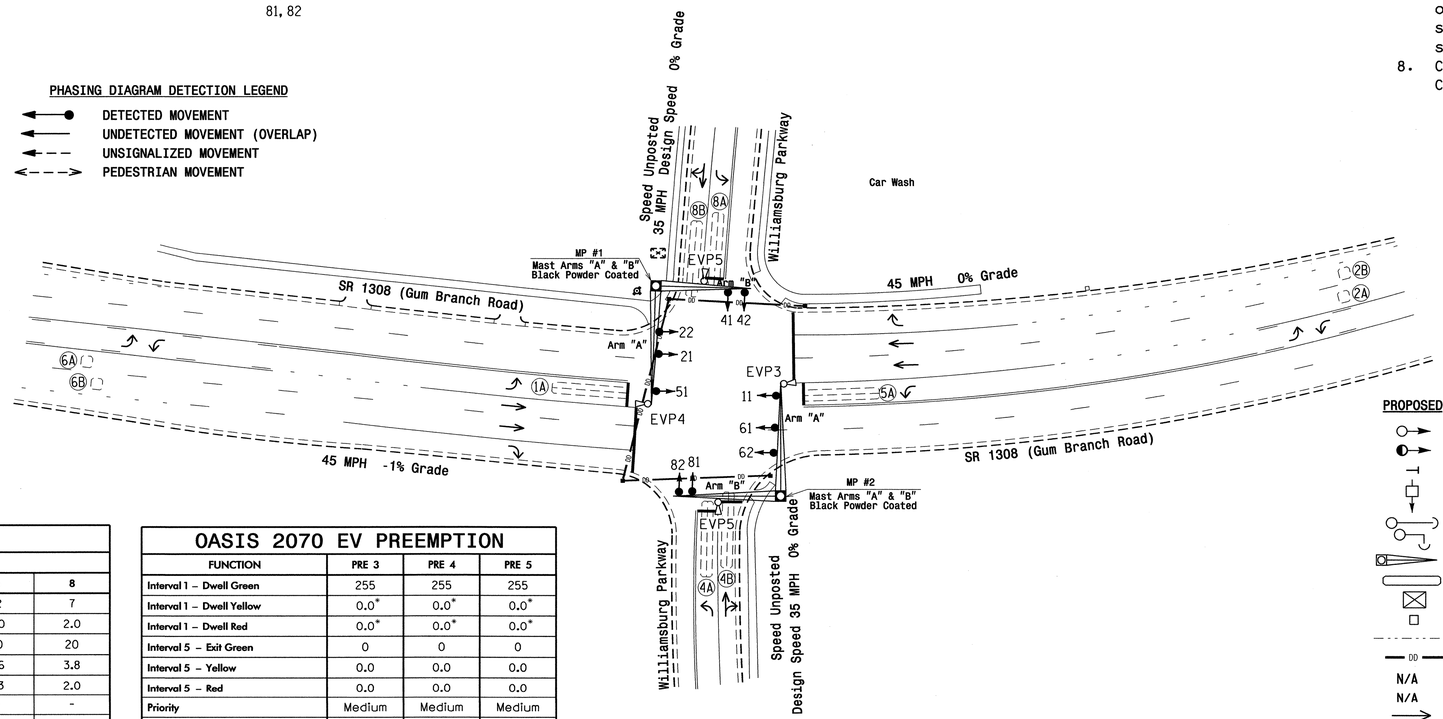
## 5 Phase
## Fully Actuated w/EV Preempt
## Jacksonville City Signal System

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Pavement markings are existing.
6. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Closed loop system data: Controller Asset #1055.

### 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 | |
| | Metal Pole with Mastarm | |
| | Inductive Loop Detector | |
| | Controller & Cabinet | |
| | Junction Box | |
| | 2-in Underground Conduit | |
| DD | Directional Drill | N/A |
| N/A | Fire Hydrant | |
| N/A | Right of Way | |
| | Directional Arrow | |
| | Optical Detector | |

## 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 | 20 | 25 | 90 | 20 |
| Yellow Clearance | 3.0 | 4.6 | 3.8 | 3.0 | 4.6 | 3.8 |
| Red Clearance | 2.6 | 1.3 | 2.1 | 2.8 | 1.3 | 2.0 |
| Walk 1 * | - | - | - | - | - | - |
| Don't Walk 1 | - | - | - | - | - | - |
| Seconds Per Actuation * | - | 1.5 | - | - | 1.5 | - |
| Max Variable Initial * | - | 34 | - | - | 34 | - |
| Time Before Reduction * | - | 15 | - | - | 15 | - |
| Time To Reduce * | - | 45 | - | - | 45 | - |
| Minimum Gap | - | 3.0 | - | - | 3.0 | - |
| Recall Mode | - | MIN RECALL | - | - | MIN RECALL | - |
| Vehicle Call Memory | - | YELLOW | - | - | YELLOW | - |
| Dual Entry | - | - | 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.

## OASIS 2070 EV PREEMPTION

| FUNCTION | PRE 3 | PRE 4 | PRE 5 |
|---|---|---|---|
| Interval 1 – Dwell Green | 255 | 255 | 255 |
| Interval 1 – Dwell Yellow | 0.0* | 0.0* | 0.0* |
| Interval 1 – Dwell Red | 0.0* | 0.0* | 0.0* |
| Interval 5 – Exit Green | 0 | 0 | 0 |
| Interval 5 – Yellow | 0.0 | 0.0 | 0.0 |
| Interval 5 – Red | 0.0 | 0.0 | 0.0 |
| Priority | Medium | Medium | Medium |
| Delay Time | 0.0 | 0.0 | 0.0 |
| Min Green Before Pre | 1 | 1 | 1 |
| Ped Clear Before Pre | 0 * | 0 * | 0 * |
| Yellow Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Red Clear Before Pre | 0.0* | 0.0* | 0.0* |
| Dwell Min Time | 12 | 12 | 7 |
| Enable Backup Protection | N | N | N |
| Ped Clear Through Yellow | N | N | N |
| Preempt Extend** | 2 | 2 | 2 |
| Omit Overlaps | - | - | - |

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit

Signal Upgrade

Prepared in 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

SCALE 0 40 1"=40'

# SR 1308 (Gum Branch Road) at Williamsburg Parkway

Division 3 Onslow County Jacksonville

PLAN DATE: June 2011 REVIEWED BY:
PREPARED BY: EM Minshew REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| 1 Install Optical EV Preemption | JRG | 7/11/11 |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON R. GALLOWAY
SIGNATURE 2/5/11 DATE
SIG. INVENTORY NO. 03-1055

11-JUL-2011 11:44
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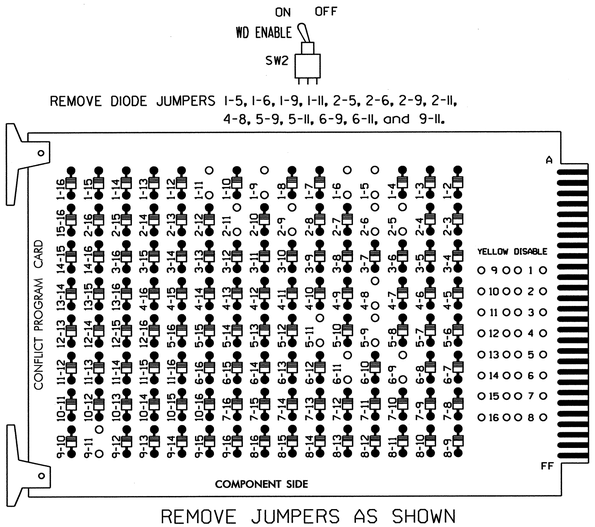
jgallowa

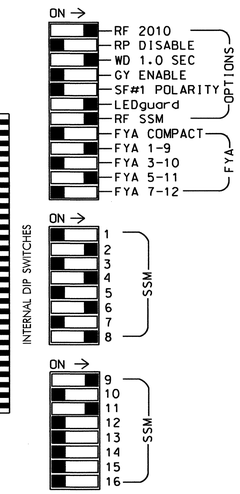
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.132 |

# 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 1,3, 5,7,10,12,13,14,15 & 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 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
8. ▽ The cabinet and controller are part of the Jacksonville City Signal System.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11★ | 21,22 | NU | NU | 41,42 | NU | 51★ | 61,62 | NU | NU | 81,82 | NU | 11★ | NU | NU | 51★ | NU | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | | | | | | | |
| YELLOW | ✳ | 129 | | | 102 | | ✳ | 135 | | | 108 | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | | | A114 | | |
| YELLOW ARROW | | | | | | | | | | | | | A122 | | | A115 | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | | | A116 | | |
| GREEN ARROW | 127 | | | | | | 133 | | | | | | | | | | | |

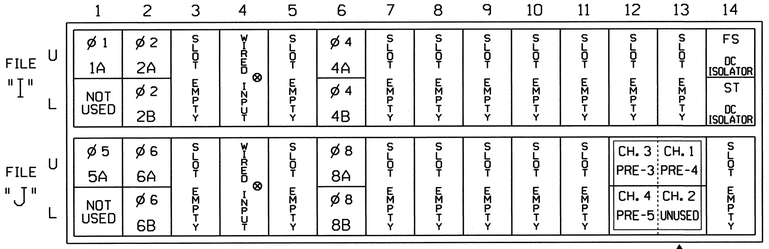
NU = Not Used

✳ Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail below.

## ▽ INPUT FILE POSITION LAYOUT

*(front view)*




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

⊗ Wired Input - Do not populate slot with detector card

FS = FLASH SENSE

ST = STOP TIME

PRE3,4,5 = EV PREEMPTS

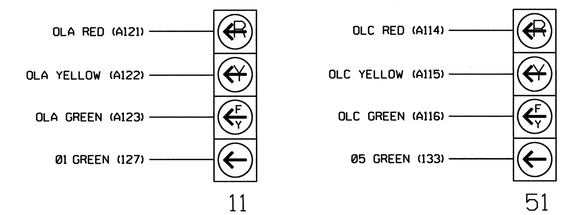
4 CHANNEL TOMAR OSP CARD INSERT CARD INTO SLOT J13

## EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....332 W/ AUX
▽ SOFTWARE.....ECONOLITE OASIS 3.02.77 (OR LATER APPROVED VERSION)
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S8,S9,S12
PHASES USED.....1,2,4,5,6,8
OVERLAP "A".....1+2
OVERLAP "B".....NOT USED
OVERLAP "C".....5+6
OVERLAP "D".....NOT USED

## 4 SECTION FYA PPLT SIGNAL WIRING DETAIL

*(wire signal heads as shown)*




NOTE

The sequence display for signal heads 11 and 51 requires special logic programming. See sheet 2 of 3 for programming instructions.

## 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[1] | TB2-1,2 | I1U | 56 | 18 | 1 | 1 | Y | Y | | | 15 |
| | - | J4U | 48 | 10 | 26 | 6 | Y | Y | Y | | 3 |
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | 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[2] | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | 15 |
| | - | I4U | 47 | 9 | 22 | 2 | Y | Y | Y | | 3 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | 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 |

[1] Add jumper from I1-W to J4-W, on rear of input file.

[2] Add jumper from J1-W to I4-W, on rear of input file.

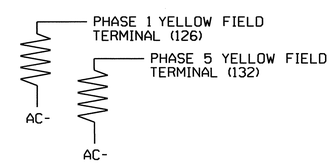
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

## LOAD RESISTOR INSTALLATION DETAIL

*(install resistors as shown below)*

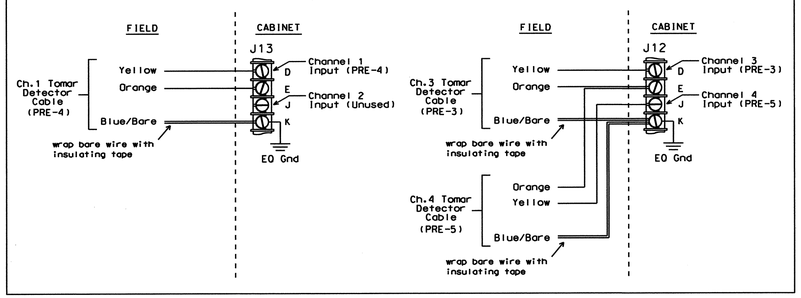
ACCEPTABLE VALUES

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




## TYPICAL TOMAR FIELD WIRE DETAIL

*(input file, rear view)*




THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-1055
DESIGNED: June 2011
SEALED: 2/5/11
REVISED1: 7/11/11

REVISION ▽ SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

SIGNATURE 7-12-11 DATE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Transportation Mobility and Safety Division, Signals Management Section

750 N.Greenfield Pkwy,Garner,NC 27529

# SR 1308 (Gum Branch Road) at Williamsburg Parkway

Division 3 | Onslow County | Jacksonville

PLAN DATE: February 2011 | REVIEWED BY: T. Joyce

PREPARED BY: S. Armstrong | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| ▽ Added EV preemption; revised notes. (WSA) | JTR | 7-12-11 |

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SIGNATURE DATE

SIG. INVENTORY NO. 03-1055

Signal Upgrade - Sheet 1 of 3

11-JUL-2011 14:50
S:*ITS&SU*ITS Signals*Workgroups*Sig Man*Armstrong*031055_smlele_xxx.dgn
armstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | Sig.133 |

## LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
## TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

*(program controller as shown below)*

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5 AND 6.

2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE       #1  IS ON
AND RED CLEAR ON PHASE #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE       #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE    #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #4  (+/-COMMAND#)
IF  ACTIVE PHASE       #5  IS ON
AND RED CLEAR ON PHASE #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #42 ON
SET OUTPUT  ASSIGNMENT #43 OFF
```

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

PRESS '+'

```
LOGICAL I/O COMMAND #5  (+/-COMMAND#)
IF  ACTIVE PHASE       #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #44 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

PRESS '+'

```
LOGICAL I/O COMMAND #6  (+/-COMMAND#)
IF  YELLOW ON PHASE    #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #43 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

### *OUTPUT REFERENCE SCHEDULE*

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

## OVERLAP PROGRAMMING DETAIL

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:            |123456789101112131415 16
VEH OVL PARENTS:  |XX
VEH OVL NOT VEH:  |
VEH OVL NOT PED:  |
VEH OVL GRN EXT:  |
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

PRESS '+' TWICE

```
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE:            |123456789101112131415 16
VEH OVL PARENTS:  |    XX
VEH OVL NOT VEH:  |
VEH OVL NOT PED:  |
VEH OVL GRN EXT:  |
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-1055
DESIGNED: June 2011
SEALED: 2/5/11
REVISED1: 7/11/11

Signal Upgrade - Sheet 2 of 3

REVISION SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

SIGNATURE 7-12-11 DATE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in 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

SR 1308 (Gum Branch Road) at Williamsburg Parkway

Division 3 | Onslow County | Jacksonville

PLAN DATE: February 2011 | REVIEWED BY: T. Joyce

PREPARED BY: S. Armstrong | REVIEWED BY:

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|---|---|---|
| 1 Added EV preemption revised notes, (WSA) | JTR | 7-12-11 |

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SIGNATURE DATE

SIG. INVENTORY NO. 03-1055

11-JUL-2011 14:50
S:#ITSASU#ITS Signals#workgroups#sig Mark#armstrong#03105S_sm_ele_xxx.dgn
sarmstrong

# EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

***(program controller as shown below)***

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' to advance to Preemption #3.

EVP3

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN  YEL  RED ¦123456789101112131415 16
1 255  0.0  0.0 ¦ X  X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦

PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT' →

EVP4

```
   PREEMPTION  #4  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN  YEL  RED ¦123456789101112131415 16
1 255  0.0  0.0 ¦X     X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦

PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........12
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

PRESS 'NEXT' →

EVP5

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN  YEL  RED ¦123456789101112131415 16
1 255  0.0  0.0 ¦   X   X
2   0  0.0  0.0 ¦
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   0  0.0  0.0 ¦
EXIT CALLS      ¦

PRIORITY (Y/N TO SELECT) ............MED
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦
```

EVP PROGRAMMING COMPLETE

Program extend time on optical detector units for 2.0 sec for EVP3, EVP4, and EVP5.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-1055
DESIGNED: June 2011
SEALED: 2/5/11
REVISED1: 7/11/11

Signal Upgrade - Sheet 3 of 3

REVISION SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

SIGNATURE 7-12-11 DATE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

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

750 N.Greenfield Pkwy,Garner,NC 27529

# SR 1308 (Gum Branch Road) at Williamsburg Parkway

Division 3 Onslow County Jacksonville

| | | | |
|---|---|---|---|
| PLAN DATE: February 2011 | | REVIEWED BY: | T. Joyce |
| PREPARED BY: S. Armstrong | | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| 1 Added EV preemptiont revised notes. (WSA) | JTR | 7-12-11 |

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This document is only certified as to the revisions.

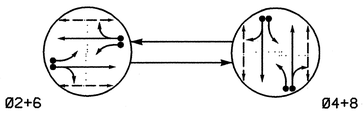
SIGNATURE DATE

SIG. INVENTORY NO. 03-1055

11-JUL-2011 14:51
S:*ITSASU*ITS Signals*Workgroups*Sig Mon*Armstrong*031055_sm.ele.xxx.dgn
sarmstrong

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | SIG. 135 |

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 02+6 | PHASE 04+8 | FLASH |
|---|---|---|---|
| 21, 22 | G | R | Y |
| 41, 42 | R | G | R |
| 61, 62 | G | R | Y |
| 81, 82 | R | G | R |
| P21, P22 | W | DW | DRK |
| P41, P42 | DW | W | DRK |
| P61, P62 | W | DW | DRK |
| P81, P82 | DW | W | DRK |

## SIGNAL FACE I.D.

All Heads L.E.D.




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

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

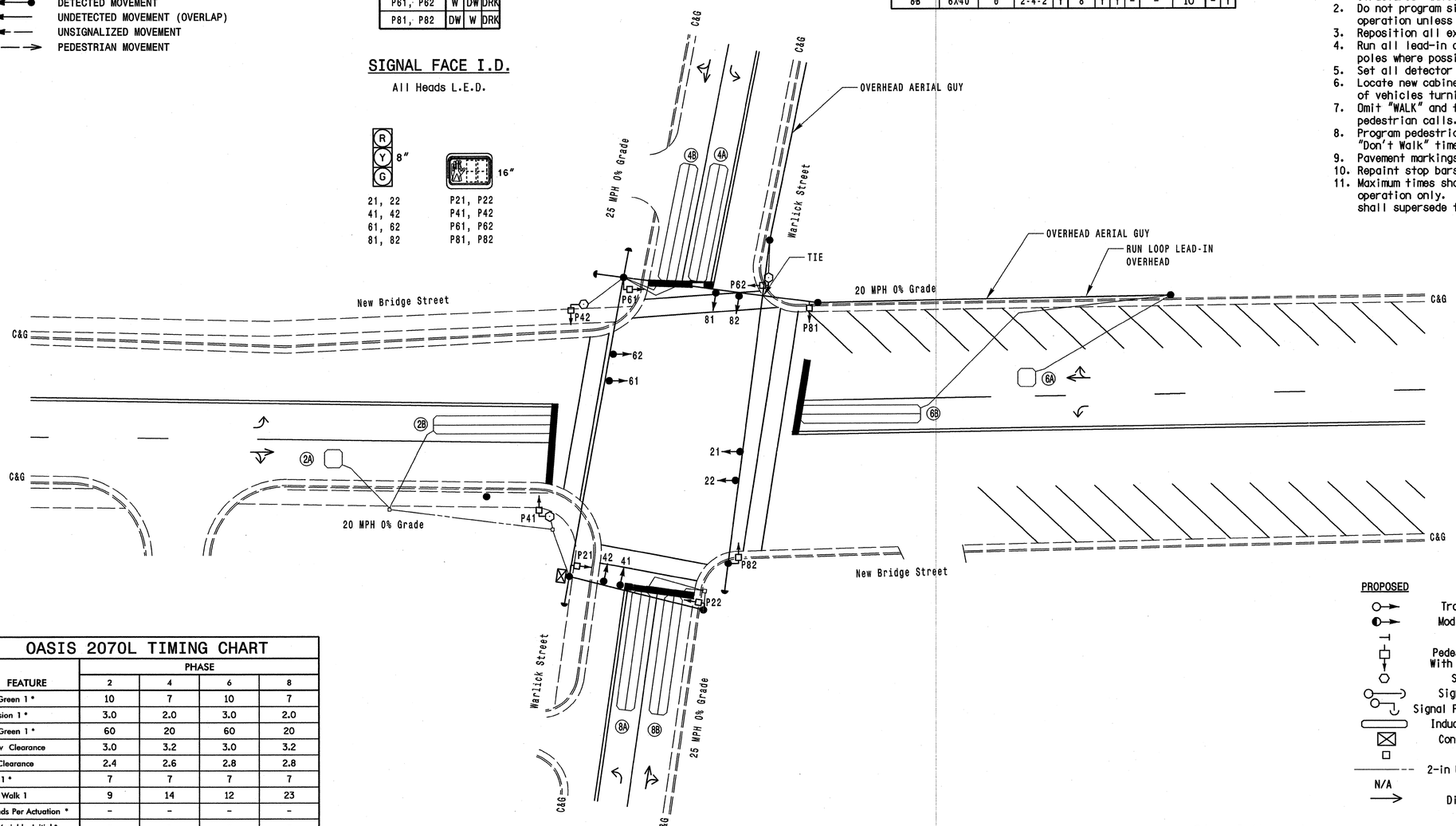
## OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

| 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 |
| 2A | 6X6 | 70 | 4 | Y | 2 | Y | Y | - | - | - | - | Y |
| 2B | 6X40 | 0 | 2-4-2 | Y | 2 | Y | Y | - | - | - | - | Y |
| 4A | 6X40 | 0 | 2-4-2 | Y | 4 | Y | Y | - | - | 3 | - | Y |
| 4B | 6X40 | 0 | 2-4-2 | Y | 4 | Y | Y | - | - | 10 | - | Y |
| 6A | 6X6 | 70 | 4 | Y | 6 | Y | Y | - | - | - | - | Y |
| 6B | 6X40 | 0 | 2-4-2 | Y | 6 | Y | Y | - | - | - | - | Y |
| 8A | 6X40 | 0 | 2-4-2 | Y | 8 | Y | Y | - | - | 3 | - | Y |
| 8B | 6X40 | 0 | 2-4-2 | Y | 8 | Y | Y | - | - | 10 | - | Y |

2 Phase
Fully Actuated
(Jacksonville Signal System)

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition all existing signal heads.
4. Run all lead-in cable overhead on existing utility poles where possible.
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. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Pavement markings are existing.
10. Repaint stop bars and/or crosswalks.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.




## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | PHASE 4 | PHASE 6 | PHASE 8 |
|---|---|---|---|---|
| Min Green 1 * | 10 | 7 | 10 | 7 |
| Extension 1 * | 3.0 | 2.0 | 3.0 | 2.0 |
| Max Green 1 * | 60 | 20 | 60 | 20 |
| Yellow Clearance | 3.0 | 3.2 | 3.0 | 3.2 |
| Red Clearance | 2.4 | 2.6 | 2.8 | 2.8 |
| Walk 1 * | 7 | 7 | 7 | 7 |
| Don't Walk 1 | 9 | 14 | 12 | 23 |
| Seconds Per Actuation * | - | - | - | - |
| Max Variable Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Recall Mode | MIN RECALL | - | MIN RECALL | - |
| Vehicle Call Memory | YELLOW | - | YELLOW | - |
| Dual Entry | - | ON | - | ON |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

## LEGEND

| PROPOSED | | EXISTING |
|---|---|---|
| | Traffic Signal Head | |
| | Modified Signal Head | N/A |
| | Sign | |
| | Pedestrian Signal Head With Push Button & Sign | |
| | Signal Pedestal | |
| | 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 | |

Signal Upgrade

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

JACKSONVILLE N.C. Caring Community CAMP LEJEUNE & MCAS NEW RIVER

SCALE 0 20' 1"=20'

New Bridge Street at Warlick Street

Onslow County Jacksonville

| PLAN DATE: March 2011 | REVIEWED BY: SL Phillips |
|---|---|
| PREPARED BY: SP Pennington | REVIEWED BY: |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE 5-13-11 DATE

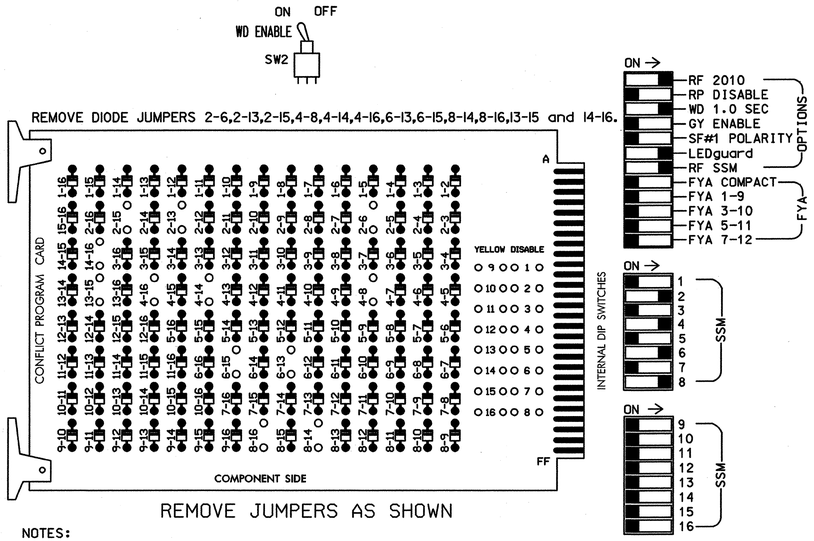
SIG. INVENTORY NO. CITY-01

5/13/2011 12:56:39 PM susan.pennington K:\REAL_TPTDW_ITS\40110361\71 Jacksonville Sig Sys\400 Intersection Designs\CITY-01_2011.dgn

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | SIG. 136 |

## EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

*(remove jumpers and set switches 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

## INPUT FILE POSITION LAYOUT

*(front view)*

| FILE "I" | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U | SLOT | Ø2 2A | SLOT | Ø4 4A | SLOT | Ø6 6A | SLOT | Ø8 8A | SLOT | SLOT | SLOT | Ø2 PED DC ISOLATOR | Ø6 PED DC ISOLATOR | FS DC ISOLATOR |
| L | EMPTY | Ø2 2B | EMPTY | Ø4 4B | EMPTY | Ø6 6B | EMPTY | Ø8 8B | EMPTY | EMPTY | EMPTY | Ø4 PED DC ISOLATOR | Ø8 PED DC ISOLATOR | ST DC ISOLATOR |

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

FS = FLASH SENSE
ST = STOP TIME

## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A | TB21-3,4 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB23-3,4 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 4A | TB21-7,8 | I4U | 41 | 3 | 4 | 4 | Y | Y | | | 3 |
| 4B | TB23-7,8 | I4L | 45 | 7 | 14 | 4 | Y | Y | | | 10 |
| 6A | TB21-11,12 | I6U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB23-11,12 | I6L | 44 | 6 | 16 | 6 | Y | Y | | | |
| 8A | TB22-1,2 | I8U | 42 | 4 | 8 | 8 | Y | Y | | | 3 |
| 8B | TB24-1,2 | I8L | 46 | 8 | 18 | 8 | Y | Y | | | 10 |
| PED PUSH BUTTONS | | | | | | | | | | | |
| P21,P22 | TB22-9,10 | I12U | 67 | 29 | PED 2 | 2 PED | | | | | |
| P41,P42 | TB24-9,10 | I12L | 69 | 31 | PED 4 | 4 PED | | | | | |
| P61,P62 | TB22-11,12 | I13U | 68 | 30 | PED 6 | 6 PED | | | | | |
| P81,P82 | TB24-11,12 | I13L | 70 | 32 | PED 8 | 8 PED | | | | | |

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

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

## NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5,7,9,10, 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, 4, 6 and 8 for 'STARTUP PED CALL'.
7. Program phases 2 and 6 for Yellow Flash.
8. The cabinet and controller are part of the Jacksonville Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S2P,S4,S4P,S6,S6P,S8,S8P
PHASES USED.....2,2PED,4,4PED,6,6PED,8,8PED
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.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | 21,22 | P21, P22 | NU | 41,42 | P41, P42 | NU | 61,62 | P61, P62 | NU | 81,82 | P81, P82 |
| RED | | 128 | | | 101 | | | 134 | | | 107 | |
| YELLOW | | 129 | | | 102 | | | 135 | | | 108 | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | |
| GREEN ARROW | | | | | | | | | | | | |
| ✋ | | | 113 | | | 104 | | | 119 | | | 110 |
| 🚶 | | | 115 | | | 106 | | | 121 | | | 112 |

NU = Not Used

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: CITY-01
DESIGNED: March 2011
SEALED: 5/19/2011
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

JACKSONVILLE N.C. Working Together CAMP LEJEUNE & MCAS NEW RIVER

New Bridge Street
at
Warlick Street

Onslow County Jacksonville

PLAN DATE: March 2011 REVIEWED BY: SL Phillips
PREPARED BY: SP Pennington REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE DATE 5/19/11

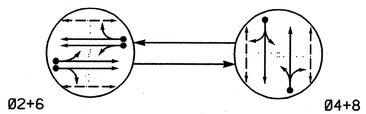
SIG. INVENTORY NO. CITY-01

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

5/19/2011 12:56:55 PM susan.pennington K:\REAL_PT\DW_ITS\01103617\ Jacksonville Sig Sys\400 Intersection Designs\CITY-01_2011_ele.dgn

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5168 | SIG. 1/37 |

## PHASING DIAGRAM




PHASING DIAGRAM DETECTION LEGEND

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

## TABLE OF OPERATION

| SIGNAL FACE | PHASE Ø2+6 | PHASE Ø4+8 | FLASH |
|---|---|---|---|
| 21, 22 | G | R | Y |
| 41, 42 | R | G | R |
| 61, 62 | G | R | Y |
| 81, 82 | R | G | R |
| P21, P22 | W | DW | DRK |
| P41, P42 | DW | W | DRK |
| P61, P62 | W | DW | DRK |
| P81, P82 | DW | W | DRK |

## 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 |
| 2A;2B | 6X6 | 70 | 4 | Y | 2 | Y | Y | - | - | - | - | Y |
| 4A | 6X40 | 0 | 2-4-2 | Y | 4 | Y | Y | - | - | 3 | - | Y |
| 6A;6B | 6X6 | 70 | 4 | Y | 6 | Y | Y | - | - | - | - | Y |
| 8A | 6X40 | 0 | 2-4-2 | Y | 8 | Y | Y | - | - | 3 | - | Y |

2 Phase
Fully Actuated
(Jacksonville Signal System)

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Run all lead-in cable overhead on existing utility poles where possible.
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. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.

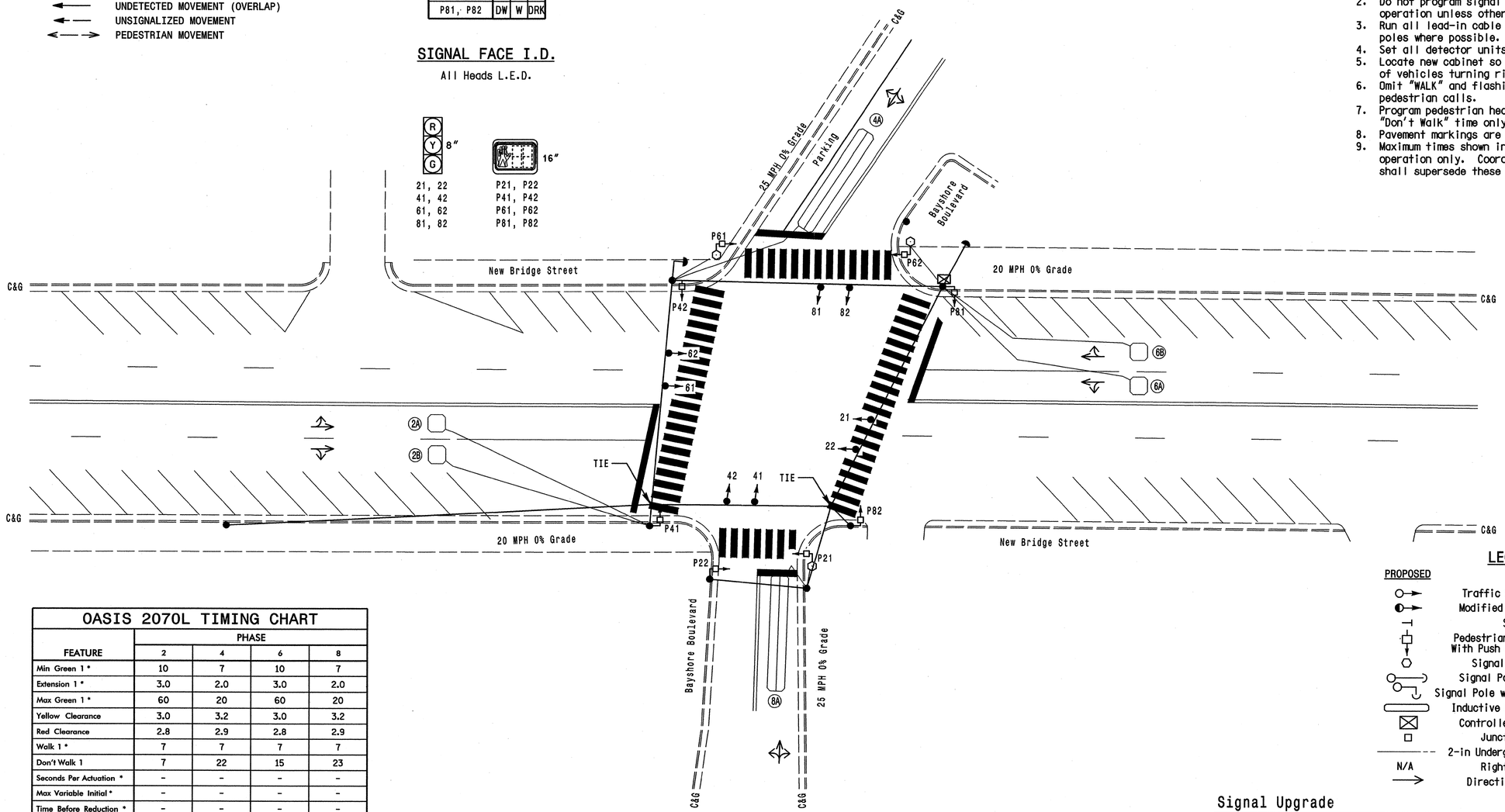
## SIGNAL FACE I.D.

All Heads L.E.D.




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

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




## OASIS 2070L TIMING CHART

| FEATURE | PHASE 2 | PHASE 4 | PHASE 6 | PHASE 8 |
|---|---|---|---|---|
| Min Green 1 * | 10 | 7 | 10 | 7 |
| Extension 1 * | 3.0 | 2.0 | 3.0 | 2.0 |
| Max Green 1 * | 60 | 20 | 60 | 20 |
| Yellow Clearance | 3.0 | 3.2 | 3.0 | 3.2 |
| Red Clearance | 2.8 | 2.9 | 2.8 | 2.9 |
| Walk 1 * | 7 | 7 | 7 | 7 |
| Don't Walk 1 | 7 | 22 | 15 | 23 |
| Seconds Per Actuation * | - | - | - | - |
| Max Variable Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Recall Mode | MIN RECALL | - | MIN RECALL | - |
| Vehicle Call Memory | YELLOW | - | YELLOW | - |
| Dual Entry | - | ON | - | ON |
| Simultaneous Gap | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

## LEGEND

| PROPOSED | | EXISTING |
|---|---|---|
| | Traffic Signal Head | |
| | Modified Signal Head | N/A |
| | Sign | |
| | Pedestrian Signal Head With Push Button & Sign | |
| | Signal Pedestal | |
| | 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 | |

Signal Upgrade

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

SCALE 0 20' 1"=20'

New Bridge Street
at
Bayshore Boulevard
Onslow County Jacksonville

| PLAN DATE: March 2011 | REVIEWED BY: SL Phillips |
|---|---|
| PREPARED BY: SP Pennington | REVIEWED BY: |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

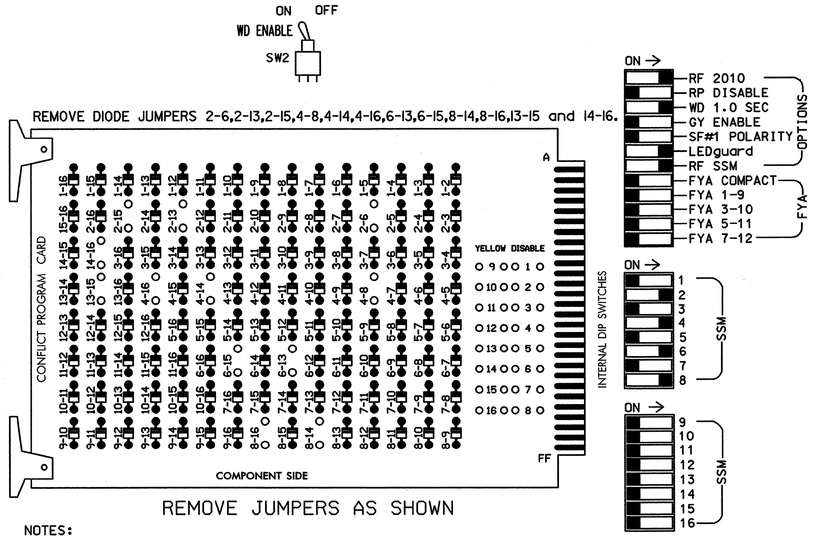
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS
SIGNATURE DATE 5-19-11
SIG. INVENTORY NO. CITY-02

5/19/2011 12:57:08 PM susan.pennington K:\RAL_TPTOB_ITS\4011036\71 Jacksonville Sig Sys\400 Intersection Designs\CITY-02_2011.dgn

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | SIG. 138 |

# 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

## INPUT FILE POSITION LAYOUT

*(front view)*

| FILE "I" | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U | SLOT EMPTY | Ø2 2A,2B | SLOT EMPTY | Ø4 4A | SLOT EMPTY | Ø6 6A,6B | SLOT EMPTY | Ø8 8A | SLOT EMPTY | SLOT EMPTY | SLOT EMPTY | Ø2 PED DC ISOLATOR | Ø6 PED DC ISOLATOR | FS DC ISOLATOR |
| L | | NOT USED | | NOT USED | | NOT USED | | NOT USED | | | | Ø4 PED DC ISOLATOR | Ø8 PED DC ISOLATOR | ST DC ISOLATOR |

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

FS = FLASH SENSE
ST = STOP TIME

## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2A,2B | TB21-3,4 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 4A | TB21-7,8 | I4U | 41 | 3 | 4 | 4 | Y | Y | | | 3 |
| 6A,6B | TB21-11,12 | I6U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 8A | TB22-1,2 | I8U | 42 | 4 | 8 | 8 | Y | Y | | | 3 |
| PED PUSH BUTTONS | | | | | | | | | | | |
| P21,P22 | TB22-9,10 | I12U | 67 | 29 | PED 2 | 2 PED | | | | | |
| P41,P42 | TB24-9,10 | I12L | 69 | 31 | PED 4 | 4 PED | | | | | |
| P61,P62 | TB22-11,12 | I13U | 68 | 30 | PED 6 | 6 PED | | | | | |
| P81,P82 | TB24-11,12 | I13L | 70 | 32 | PED 8 | 8 PED | | | | | |

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

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

## NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5,7,9,10, 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, 4, 6 and 8 for 'STARTUP PED CALL'.
7. Program phases 2 and 6 for Yellow Flash.
8. The cabinet and controller are part of the Jacksonville Signal System.

## EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S2P,S4,S4P,S6,S6P,S8,S8P
PHASES USED.....2,2PED,4,4PED,6,6PED,8,8PED
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.

## SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | 21,22 | P21, P22 | NU | 41,42 | P41, P42 | NU | 61,62 | P61, P62 | NU | 81,82 | P81, P82 |
| RED | | 128 | | | 101 | | | 134 | | | 107 | |
| YELLOW | | 129 | | | 102 | | | 135 | | | 108 | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | |
| GREEN ARROW | | | | | | | | | | | | |
| ✋ | | | 113 | | | 104 | | | 119 | | | 110 |
| 🚶 | | | 115 | | | 106 | | | 121 | | | 112 |

NU = Not Used

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: CITY-02
DESIGNED: March 2011
SEALED: 5/19/2011
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

JACKSONVILLE N.C. Gateway to Camp Lejeune Marine Corps Base CAMP LEJEUNE & MCAS NEW RIVER

New Bridge Street
at
Bayshore Boulevard

Onslow County Jacksonville

PLAN DATE: March 2011 REVIEWED BY: SL Phillips
PREPARED BY: SP Pennington REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS
SIGNATURE 5-19-11 DATE
SIG. INVENTORY NO. CITY-02

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

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