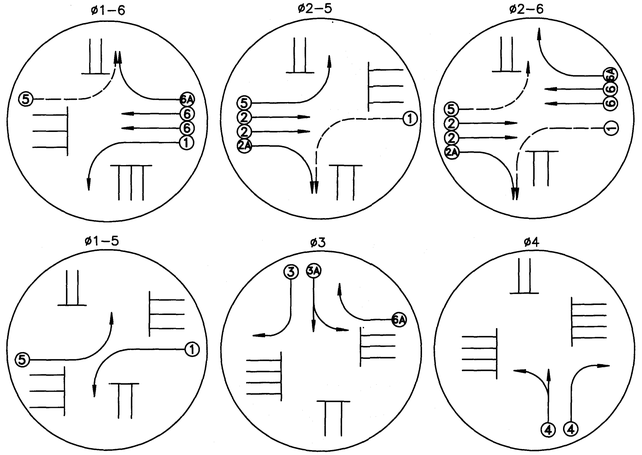
# PHASING DIAGRAM




| Preemption Phase Diagram (Route 460 & West Ruritan Rd. | | | | |
|---|---|---|---|---|
| Approximate | | | | |
| Phase | ø2+ø5 | ø1+ø6 | ø3 | ø4 |
| Preemption | Preempt 3 | Preempt 2 | Preempt 4 | Preempt 5 |

NOTE: ALL NEW CONDUIT SHALL HAVE A #8 BONDED GROUND. CONDUIT SHALL BE PVC.

NOTE: NEW CONDUCTORS SHALL RUN THRU EXISTING CONDUITS (A) THRU (F) AND (H), (I) AND NEW CONDUIT (G). IF EXISTING CONDUIT (BEING USED) DOES NOT HAVE A GROUND WIRE PRESENT A #8 BONDED GROUND SHALL BE INSTALLED.

**(A)** EXIST. CONDUIT
2-4C
3-7C
3-16/3

EXIST. CONDUIT
1-3C 3M OPTICOM DET. CABLE
1-14/3 CONFORMATION LIGHT

**(B)** EXIST. CONDUIT
2-4C
3-7C
3-16/3

EXIST. CONDUIT
1-3C 3M OPTICOM DET. CABLE
1-14/3 CONFORMATION LIGHT

**(C)** EXIST. CONDUIT
2-4C
3-7C
3-16/3

EXIST. CONDUIT
1-3C 3M OPTICOM DET. CABLE
1-14/3 CONFORMATION LIGHT

**(D)** EXIST. CONDUIT
1-16/3
1-4C
1-7C

**(E)** EXIST. CONDUIT
1-4C
2-7C
2-16/3

EXIST. CONDUIT
1-3C 3M OPTICOM DET. CABLE
1-14/3 CONFORMATION LIGHT

**(F)** EXIST. CONDUIT
1-4C
2-7C
2-16/3

EXIST. CONDUIT
1-3C 3M OPTICOM DET. CABLE
1-14/3 CONFORMATION LIGHT

**(G)** 1-3" CONDUIT (PROP.)
1-4C
2-7C
1-16/3
1-#8 BONDED GND.

1-3" CONDUIT (PROP.)
1-3C 3M OPTICOM DET. CABLE
1-14/3 CONFORMATION LIGHT
1-#8 BONDED GND.

1-2" SPARE CONDUIT (PROP)

**(H)** EXIST. CONDUIT
1-16/3

**(I)** EXIST. CONDUIT
1-16/3

NOTE: ALL NEW CONDUCTORS (AS NOTED ABOVE) SHALL BE INSTALLED IN NEW AND EXISTING CONDUITS (AS NOTED ABOVE) AND CONNECTIONS MADE TO NEW SIGNAL HEADS BEFORE SWITCHING FROM EXISTING SIGNALS TO NEW. CONTRACTOR MAY RELOCATE DETECTION CAMERAS AND EMERGENCY PREEMPTION EQUIPMENT AT TIME OF SIGNAL SWITCH OVER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING ANY BRACKETS THAT NEED TO BE REPLACED IN THE RELOCATION. IT SHOULD BE NOTED THAT NEW WIRES NEED TO BE RUN PRIOR TO RELOCATING THE EQUIPMENT TO REDUCE THE AMOUNT OF TIME THE SIGNAL IS OUT OF OPERATION.

WORK REQUIRED:

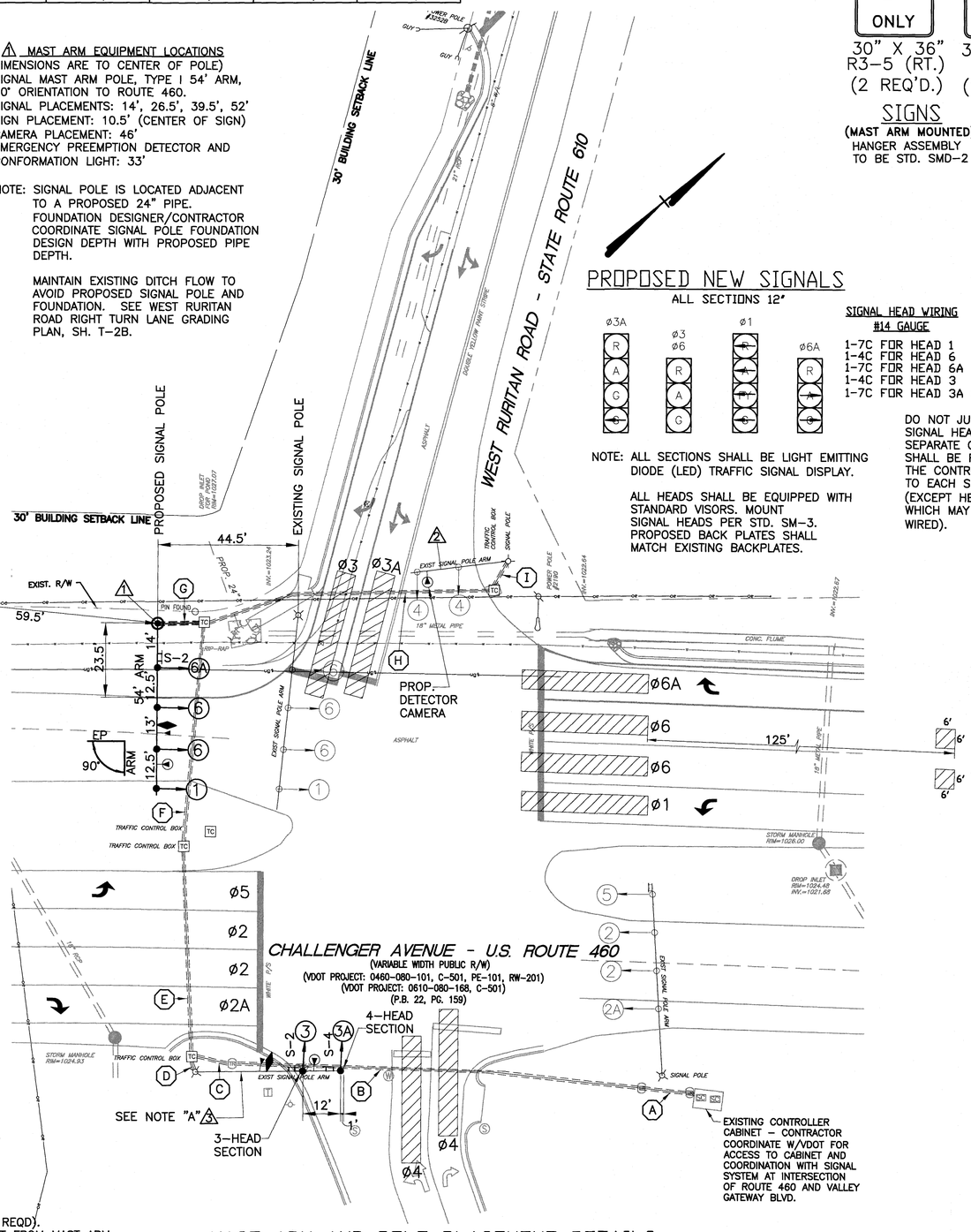
1. INSTALL NEW MAST ARM POLE, MAST ARM AND SIGNAL HEADS, CAMERA, SIGNAL, EMERGENCY PREEMPTION EQUIPMENT, CONDUCTOR CABLE AND CONDUIT TO EXISTING JUNCTION BOX. AFTER NEW SIGNALS ARE OPERATIONAL REMOVE EXISTING MAST ARM AND ATTACHED EQUIPMENT AND MAST ARM POLE.
2. INSTALL NEW DETECTOR CAMERA ON EXISTING MAST ARM.
3. SEE NOTE "A" BELOW, WORK SHALL BE PERFORMED ON EXISTING MAST ARM.

NOTE A: EXISTING SIGNAL POLE AND MAST ARM:
(ALL DIMENSIONS ARE TO CENTER OF POLE)
EXISTING MAST ARM: 47'±
SIGNAL PLACEMENT: 34'-3 SECT. HEAD, 46'-4 SECT. HEAD.
SIGN PLACEMENT: 30.5', 42.5' (CENTER OF SIGN)
CAMERA PLACEMENT: 37.5' (RELOCATE EXISTING)
EMERGENCY PREEMPTION DETECTOR AND CONFORMATION LIGHT TO REMAIN IN PLACE. (ADJUST IF REQD).
NEW SIGNAL HEADS AND STD. SM-3 HANGERS REQUIRED AFTER REMOVAL OF EXISTING EQUIPMENT FROM MAST ARM.
ALL HOLES SHALL BE PLUGGED.

POLE (1) MAST ARM EQUIPMENT LOCATIONS
(ALL DIMENSIONS ARE TO CENTER OF POLE)
SIGNAL MAST ARM POLE, TYPE I 54' ARM, 90° ORIENTATION TO ROUTE 460.
SIGNAL PLACEMENTS: 14', 26.5', 39.5', 52'
SIGN PLACEMENT: 10.5' (CENTER OF SIGN)
CAMERA PLACEMENT: 46'
EMERGENCY PREEMPTION DETECTOR AND CONFORMATION LIGHT: 33'

NOTE: SIGNAL POLE IS LOCATED ADJACENT TO A PROPOSED 24" PIPE. FOUNDATION DESIGNER/CONTRACTOR COORDINATE SIGNAL POLE FOUNDATION DESIGN DEPTH WITH PROPOSED PIPE DEPTH.

MAINTAIN EXISTING DITCH FLOW TO AVOID PROPOSED SIGNAL POLE AND FOUNDATION. SEE WEST RURITAN ROAD RIGHT TURN LANE GRADING PLAN, SH. T-2B.




MAST ARM AND POLE PLACEMENT DETAILS

# SIGNS

S-2: 30" X 36" R3-5 (RT.) (2 REQ'D.) — ONLY

S-4: 30" X 36" R3-6 (1 REQ'D.)

## SIGNS
**(MAST ARM MOUNTED)**
HANGER ASSEMBLY
TO BE STD. SMD-2

# PROPOSED NEW SIGNALS

ALL SECTIONS 12"

ø3A (R A G) ø3 ø6 (R A G) ø1 (R A G) ø6A (R A G)

NOTE: ALL SECTIONS SHALL BE LIGHT EMITTING DIODE (LED) TRAFFIC SIGNAL DISPLAY.

ALL HEADS SHALL BE EQUIPPED WITH STANDARD VISORS. MOUNT SIGNAL HEADS PER STD. SM-3. PROPOSED BACK PLATES SHALL MATCH EXISTING BACKPLATES.

SIGNAL HEAD WIRING
#14 GAUGE
1-7C FOR HEAD 1
1-4C FOR HEAD 6
1-7C FOR HEAD 6A
1-4C FOR HEAD 3
1-7C FOR HEAD 3A (4-HEAD SIGNAL)

DO NOT JUMP WIRE SIGNAL HEADS. A SEPARATE CONDUCTOR SHALL BE RUN FROM THE CONTROLLER CABINET TO EACH SIGNAL HEAD. (EXCEPT HEADS 6 WHICH MAY BE JUMP WIRED).

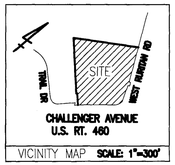
## LEGEND

- (TC, TR) EXISTING JUNCTION BOX
- UNDERGROUND CONDUIT
- (SC) EXISTING CONTROLLER CABINET
- STD. MP-1 MAST ARM POLE
- DETECTOR CAMERA (AUTOSCOPE TARRA)
- OPTICOM DETECTOR (DET.)
- 75 WATT INDICATOR (CONF. LT.) FLOOD LIGHT, 3C, IMSA # 14
- (E.P.) EMERGENCY PREEMPTION
- VIDEO DETECTION ZONE 6'X40' TYP. U.N.O.

| CLEARANCE INTERVAL CHART | | |
|---|---|---|
| PHASE | AMBER CLEAR | ALL RED CLEAR |
| | SECONDS | SECONDS |
| 1 | 4.9 | 3.7 |
| 2 | 4.9 | 3.7 |
| 2A | 4.9 | 3.7 |
| 3 | 5.3 | 3.6 |
| 3A | 5.3 | 3.6 |
| 4 | 3.2 | 4.0 |
| 4 | 3.2 | 4.0 |
| 5 | 4.9 | 3.7 |
| 6 | 4.9 | 3.7 |
| 6A | 4.9 | 3.7 |

0 10' 20' 40'
SCALE: 1" = 20'

FOR CONSTRUCTION




COMMONWEALTH OF VIRGINIA
MICHAEL S. AGEE
Lic. No. 15232
12/12/14
PROFESSIONAL ENGINEER

| Revisions | Date |
|---|---|
| | |

Issue Date: Dec. 12, 2014
Drawn By: WCB
Designed By: RSM
Checked By: THL
Date: Dec. 1, 2014


Mattern & Craig
CONSULTING ENGINEERS • SURVEYORS
701 FIRST STREET, S.W.
ROANOKE, VIRGINIA 24016
(540) 345-9342
FAX (540) 345-7691


CHICK FIL-A VDOT RIGHT OF WAY IMPROVEMENTS

# SIGNAL PLAN

COUNTY OF ROANOKE, VA

Vertical Scale: N/A
Horizontal Scale: 1" = 20'
Commission Number: 3413
Sheet No.: T-4