

PARTIAL SITE PLAN  
SCALE 1" = 20'  
Graphic Scale

By Fax Ref 7-27-07 from Signals RyG  
AM 6am - 10am  
PM 3pm - 7pm

PROPOSED SIGNAL TIMING AND PHASING DIAGRAM  
ROUTE 104 AT ROUTE 36

| Street          | Direction | PHASING |   |    |   |    |   |    |   |   |   |   |   |    |    |    |    |    |    |    |    | FLASH OPER. |    |    |    |    |    |
|-----------------|-----------|---------|---|----|---|----|---|----|---|---|---|---|---|----|----|----|----|----|----|----|----|-------------|----|----|----|----|----|
|                 |           | 1       | 2 | 3  | 4 | 5  | 6 | 7  | 8 | 9 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |             | 18 | 19 | 20 | 21 |    |
| ROUTE 104       | NB        | R       | R | R  | R | G  | Y | R  | R | R | R | R | R | R  | R  | R  | R  | R  | R  | R  | R  | R           | R  | R  | R  | R  | FR |
| ROUTE 104       | SB        | R       | R | R  | R | R  | R | R  | R | R | R | R | R | R  | R  | R  | R  | R  | R  | R  | R  | R           | R  | R  | R  | R  | FR |
| ROUTE 104       | WB        | R       | R | R  | R | R  | R | R  | R | R | R | R | R | R  | R  | R  | R  | R  | R  | R  | R  | R           | R  | R  | R  | R  | FR |
| ROUTE 104       | EB        | R       | R | R  | R | R  | R | R  | R | R | R | R | R | R  | R  | R  | R  | R  | R  | R  | R  | R           | R  | R  | R  | R  | FR |
| ROUTE 36        | EB        | R       | R | R  | R | R  | R | R  | R | R | R | R | R | R  | R  | R  | R  | R  | R  | R  | R  | R           | R  | R  | R  | R  | FR |
| ROUTE 36        | WB        | R       | R | R  | R | R  | R | R  | R | R | R | R | R | R  | R  | R  | R  | R  | R  | R  | R  | R           | R  | R  | R  | R  | FR |
| ROUTE 36        | WB        | R       | R | R  | R | R  | R | R  | R | R | R | R | R | R  | R  | R  | R  | R  | R  | R  | R  | R           | R  | R  | R  | R  | FR |
| ROUTE 36        | WB        | R       | R | R  | R | R  | R | R  | R | R | R | R | R | R  | R  | R  | R  | R  | R  | R  | R  | R           | R  | R  | R  | R  | FR |
| MINIMUM INITIAL |           | 5       |   | 5  |   | 5  |   | 5  |   | 5 |   | 5 |   | 5  |    | 5  |    | 5  |    | 5  |    | 5           |    | 5  |    | 5  |    |
| EXTENSION       |           | 2       |   | 2  |   | 2  |   | 2  |   | 2 |   | 2 |   | 2  |    | 2  |    | 2  |    | 2  |    | 2           |    | 2  |    | 2  |    |
| MAXIMUM AM      |           | 5       |   | 55 |   | 76 |   | 26 |   | 5 |   | 5 |   | 10 |    | 5  |    | 10 |    | 5  |    | 10          |    | 5  |    | 10 |    |
| MAXIMUM PM      |           | 7       |   | 9  |   | 44 |   | 42 |   | 7 |   | 7 |   | 38 |    | 7  |    | 38 |    | 7  |    | 38          |    | 7  |    | 38 |    |
| CHANGE          |           | 4       | 2 | 4  | 2 | 4  | 2 | 4  | 2 | 4 | 2 | 4 | 2 | 4  | 2  | 4  | 2  | 4  | 2  | 4  | 2  | 4           | 2  | 4  | 2  | 4  | 2  |

**LEGEND**

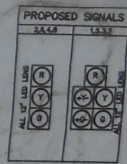
- IRON PIPE OR REBAR FOUND
- SANITARY SEWER MANHOLE
- CATCH BASIN
- BOLLARD
- ⊕ HYDRANT
- ⊕ LIGHT POLE
- ⊕ UTILITY POLE & GUY WIRE SIGN
- SS— SANITARY SEWER
- S— STORM DRAIN
- W— WATER LINE
- OH— OVERHEAD POWER/TEL.
- P— PROPERTY LINE/R.O.K.
- S20--- EXISTING CONTOUR
- H/O— HOW OR FORMERLY OWNED BY
- E— EXISTING WIRE
- L— UNDER DRAIN
- G— GUARD RAIL
- ⊕ EXISTING TRAFFIC SIGNAL
- ⊕ SOIL BORING LOCATION
- ⊕ PROPOSED MAST ARM, STREET LIGHT & TRAFFIC SIGNALS
- ⊕ PROPOSED LOOP DETECTOR
- S20--- PROPOSED CONTOUR

**TRAFFIC SIGNAL NOTES**

- NEW EQUIPMENT**
  - ALL SIGNAL HEADS SHALL BE POLYCARBONATE. BACK PLATES SHALL BE INSTALLED ON ALL SIGNAL HEADS.
  - ALL CONTROLLERS SHALL BE ECONOLITE BRAND, MODEL A82/25-300 (75-3 TYPE 2).
  - A DISCONNECT BREAKER FOR EACH CIRCUIT SHALL BE INSTALLED IN A RAINPROOF POLE NEXT TO OR BELOW THE METER SOCKET, COORDINATE THE STATIONING OFFICIAL ON STANDARD E-178 WITH THE UTILITY COMPANY. IF A TELEPHONE POLE IS USED, THE TELEPHONE POLE SHALL BE INSTALLED ON THE STATIONING OFFICIAL. THE GROUND MOUNTED NUMBER SHALL BE 200-844 WITH A 3/8" GROUNDING WIRE.
- SIGNAL OPERATION**
  - SWITCH-OVER FROM EXISTING TO REPLACEMENT SIGNALS SHALL NOT BE DONE DURING PEAK TRAFFIC PERIODS. IMPROVED TRAFFIC OPERATIONS SHALL CONTROL TRAFFIC DURING SWITCH-OVER.
  - ALL SIGNALS SHALL REMAIN ON THE VT ROUTE 104 THRU MOVEMENT UNLESS OTHERWISE NOTED.
  - THE VT ROUTE 104 THRU PHASE SHALL BE USED FOR THE START-UP PHASE FOLLOWING FLASHING OPERATION UNLESS OTHERWISE NOTED. FOLLOWING THE FLASHING OPERATION ALL PHASES SHALL START ON ALL-RED INDICATION FOR 8 SECONDS.
- PULL BOXES AND JUNCTION BOXES**
  - PULL BOXES AND JUNCTION BOXES ARE DETAIL ON STANDARD E-173. MINIMUM JUNCTION BOX SIZE SHALL BE 18" X 12" X 12", OR LARGER AS REQUIRED BY THE ELECTRICAL CODE.
  - THE LOAD ON PULL BOXES/JUNCTION BOXES SHALL BE AS PER STANDARD E-173.
- TRAFFIC SIGNAL CONDUIT**
  - ALL TRAFFIC SIGNAL CONDUIT SHALL BE PVC.
  - MINIMUM CONDUIT SIZES SHALL BE:
    - 1" 1/2" FOR LOOP LEAD-IN
    - 1 1/2" FOR ALL OTHERS, OR AS SHOWN ON THE PLAN.
- VEHICLE DETECTOR LOOP - SEE STANDARD E-172.**
- STREET LIGHTING**
  - STRAIN POLE-MOUNTED LUMINAIRES SHALL BE 350W HIGH PRESSURE SODIUM, AS SHOWN ON THE PLAN. INSTALLED WITH A 3'4" MOUNTING HEIGHT ABOVE THE EDGE OF PAVEMENT.
  - BRACKET ARM MOUNTED LUMINAIRES SHALL HAVE A MEDIUM CUT-OFF DISTRIBUTION. THE MOUNTING HEIGHT SHALL BE AS SHOWN ON THE PLAN.

**LOOP DETECTOR DATA**

| DETECTOR | LANE | # CALLED | # EXT. | MODE | SIZE   | TYPE & NO. TURNS       | IND. CALC. | RESIST. CALC. | STA. B. OFFSET |
|----------|------|----------|--------|------|--------|------------------------|------------|---------------|----------------|
| △        | SB   | 1        | 1      | B    | 8'x40' | QUAD / 2 TURNS LOOKING | 355.4800   | 0.784         | 159'23"        |
| △        | NB   | 2        | 2      | B    | 8'x40' | QUAD / 2 TURNS LOOKING | 363.4520   | 0.874         | 161'23"        |
| △        | WB   | 3        | 3      | B    | 8'x40' | QUAD / 2 TURNS LOOKING | 344.0070   | 0.835         | 157'21"        |
| △        | EB   | 4        | 4      | B    | 8'x40' | QUAD / 2 TURNS LOOKING | 374.5070   | 1.030         | 165'27"        |
| △        | NB   | 5        | 5      | B    | 8'x40' | QUAD / 2 TURNS LOOKING | 382.4520   | 0.874         | 167'23"        |
| △        | SB   | 6        | 6      | B    | 8'x40' | QUAD / 2 TURNS LOOKING | 355.4800   | 0.784         | 161'23"        |
| △        | WB   | 7        | 7      | B    | 8'x40' | QUAD / 2 TURNS LOOKING | 374.5070   | 1.030         | 165'27"        |
| △        | EB   | 8        | 8      | B    | 8'x40' | QUAD / 2 TURNS LOOKING | 344.0070   | 0.835         | 157'21"        |



**CONDUIT SCHEDULE**

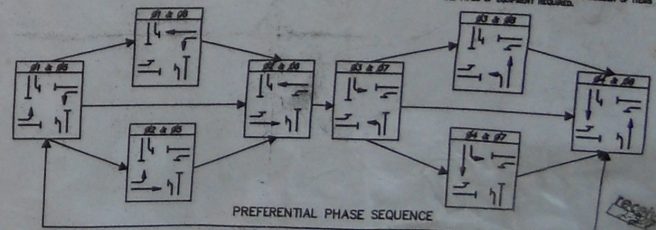
| CONDUIT SCHEDULE                         | USED   | DESCRIPTION |
|--|--------|-------------|
| UTILITY POLE AT STATIONING TO CONTROLLER | 70     | 1"          |
| PER TO TOP                               | 25     | 3/4"        |
| PER TO PB2                               | 18     | 3/4"        |
| PER TO MA2                               | 7      | 3/4"        |
| PER TO TOP                               | 24     | 3/4"        |
| PER TO CONTROLLER (DOUBLE CONDUIT RUN)   | 70 X 2 | 1"          |
| PER TO CONTROLLER                        | 8      | 3/4"        |
| CONTROLLER TO MA3                        | 24     | 3/4"        |
| PER TO PB4                               | 74     | 3/4"        |
| PER TO MA4                               | 74     | 3/4"        |
| PER TO PB4                               | 17     | 3/4"        |
| PER TO TOP                               | 24     | 3/4"        |
| PER TO TOP                               | 8      | 1"          |

**MAJOR ITEMS REQUIRED**

| QUANTITY | DESCRIPTION                                     |
|----------|---|
| 4        | 40' MAST ARM ASSEMBLY, BASE & POLE              |
| 4        | SIGNAL HEAD, 3 SECTION                          |
| 4        | SIGNAL HEAD, 3 SECTION                          |
| 4        | MONITOR LOOP DETECTOR (8'x40')                  |
| 4        | DUAL CHANNEL LOOP DETECTOR AMPLIFIER            |
| 1        | PULL BOX  |
| 1        | TRAFFIC SIGNAL CONTROLLER, CABINET & FOUNDATION |

PLUS ALL MISCELLANEOUS EQUIPMENT AND MATERIAL NECESSARY TO PROVIDE A COMPLETE OPERATIONAL TRAFFIC CONTROL SIGNAL.

\*\* THE QUANTITIES LISTED ABOVE ARE APPROXIMATE AND ARE FOR INFORMATION ONLY. MISCELLANEOUS (UNLISTED) ITEMS MAY BE REQUIRED TO PROVIDE FOR A FUNCTIONING TRAFFIC SIGNAL SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFICATION OF THE NUMBER OF ITEMS AND THE TYPES OF EQUIPMENT REQUIRED.



- NOTES:**
- PLANS AND SPECIFICATIONS CONFORM TO VERMONT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES AND THE 2003 EDITION OF MUTCD.
  - ALL NEW SIGNAL BARRIERS SHALL BE LED.

DESIGNER: 8/28/03 - REVISED SIGNAL PHASING, ADDED NEW GUARDRAIL LOCATION.  
 REVISION: 8/28/03 - REVISED SIGNAL PHASING, LOOP DETECTOR AND MAST ARM LENGTH, DISTANCE AND RESISTANCE CALCULATIONS.

**Traffic Signal Layout & Notes**  
 VT Route 36 & VT Route 104  
 Intersection Improvements Partnership  
 St. Albans, Vermont

RUIGIANO ENGINEERING, INC.  
 4 MAPLEVILLE DEPOT  
 ST. ALBANS, VERMONT 05478  
 PHONE: (802) 524-8200  
 FAX: (802) 524-8700

PROJECT NO. 2003  
 DRAWN BY: JAC  
 CHECKED BY: JAC  
 SCALE: 1" = 20'  
 DATE: 08/28/03



**C-5**