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# J. A. McDONALD, INC.

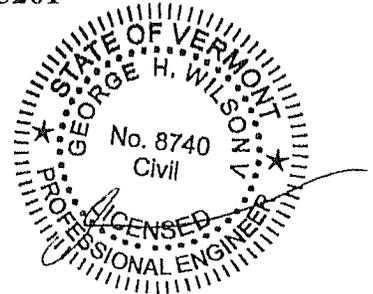
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## IRASBURG STP CULV(30)

### TRAFFIC CONTROL PLAN



J. A. McDonald, Inc. has been awarded a contract by the State of Vermont to replace two 96" CGMP culverts on VT Route 58 in Irasburg, VT. This work will require that traffic be restricted to alternating one-way traffic to allow for phased installation of the precast box culverts. Traffic will be controlled by temporary/portable traffic signals for the duration of Stage II (culvert installation). During Stage I and III alternating one-way traffic will be controlled with flaggers during day construction and returned to normal two-way traffic during non-work hours. Traffic Control Notes on plan sheet 4 and Traffic Control Plan sheets 18 and 39 of 55, VT AOT "E" Standards and the Manual on Uniform Traffic Control Devices (MUTCD) are referenced and incorporated into this site specific plan. Stage construction as noted below is applicable to both sites (BR6 & BR7) unless otherwise noted.

#### STAGE I:

Construction activities include: EPSC measures (demarcation/barrier/silt fence), temporary access road & staging areas, temporary relocation of stream, clearing and grubbing, guardrail removal/temporary barrier, pavement removal, initial Stage I excavation at BR6, Phase I Detour/roadway widening... Prior to Stage I work, Construction Approach signs will be erected as shown on Vermont AOT Standard Sheet T-10. Alternating one-way traffic controlled with flaggers will require additional temporary signage per MUTCD Typical Application 10. Signs required for Stage II Construction (Box Culvert Installation) are as shown on Sheets 18 and 39 of 55 and will also be erected and covered.

Stage I work is anticipated to last one to two weeks. Portable traffic signals will be located as shown on Sheet 14 and 35 of 55 and ready to be activated when needed.

#### STAGE II:

Construction activities include: maintenance of EPSC, construction access and staging areas, and temporary stream relocation/dewatering installed in Stage I; removal of structure, excavation, installation and backfilling of proposed precast concrete box culverts. Stage II is further broken down into Phase I & II construction.

In the initial phase (Phase I), portions of the existing CGMP is removed and the proposed outlet cutoff wall, wing walls/mitered end section and box sections are installed and backfilled. Alternating one-way traffic with temporary/portable signals will control traffic on the temporary Phase I detour on the north side (BR6) and south side (BR7) of Route 58 constructed in Stage I. In Phase II, the Phase I detour is removed and the remaining box culvert is installed and backfilled. Alternating one-way traffic will be

Signs installed in Stage I will be uncovered and portable traffic signals at the locations shown on Sheets 14 and 35 of 55 will be activated.. At the conclusion of Phase I, flaggers will be used to control traffic while the barriers are relocated to the Phase II configuration. At the conclusion of Phase II, traffic will return to normal two way with alternating one-way traffic during the work day.

**STAGE III:**

Construction activities include remaining stone fill at inlet/outlet, placement of the stream bed material within the culvert, subbase, guardrail installation, cold plan/pavement, line stripping, removal of EPSC and stream relocation measures. Alternating one-way traffic will be controlled with flaggers and temporary signage per MUTCD Typical Application 10.

# IRASBURG STP CULV(30) - Signal Phasing Diagram

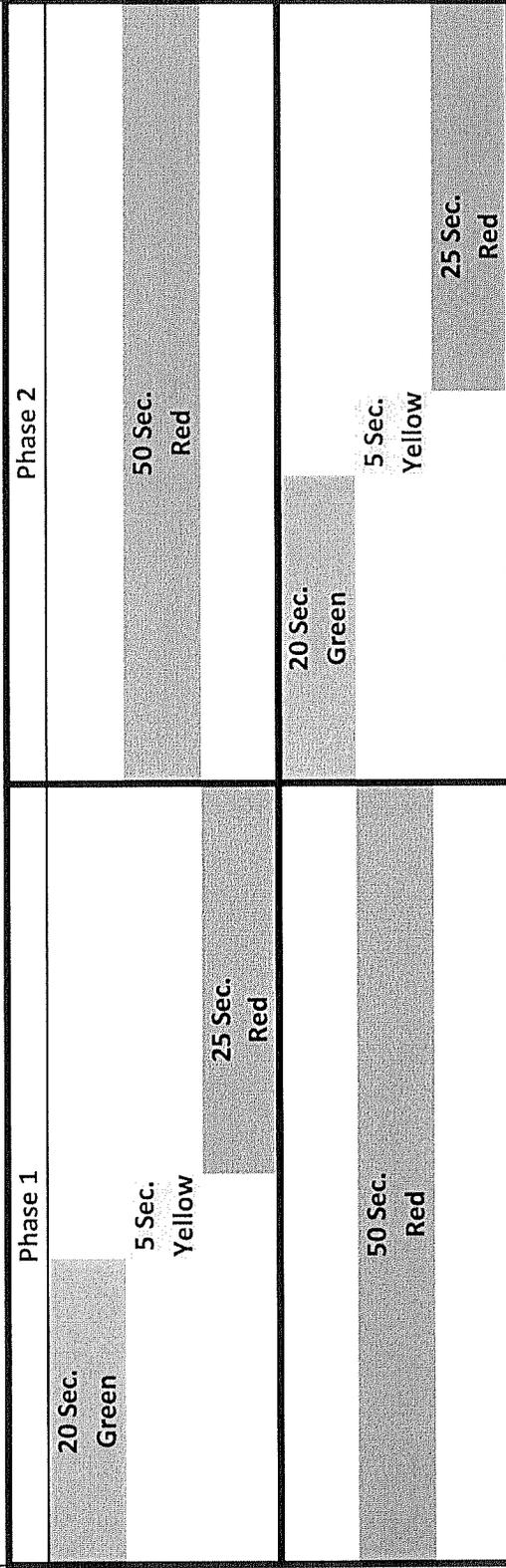
5/15/2015  
 J.A. McDonald, Inc.

Stop Light  
 Phase 2

Work Zone  
 Concrete Barrier

Stop Light  
 Phase 1

Distance Between Lights = Approx. 300 LF  
 Avg. Travel speed through zone = 10 MPH



Traffic Signal Unit #1

Traffic Signal Unit #2

Signal Cycle  
 1 Minutes 40 Seconds

horizon



SIGNAL  
TECHNOLOGIES

# SQ3TS<sup>®</sup> System

*OR EQUAL*

PORTABLE TRAFFIC SIGNAL SYSTEMS



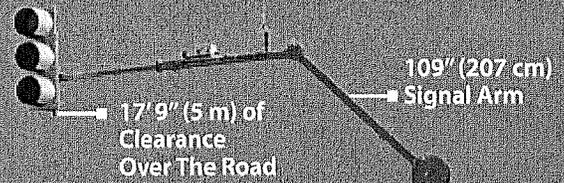
## TRAILER TOWABLE PORTABLE TRAFFIC SIGNAL WITH SOLAR ASSIST

The SQ3TS Portable Traffic Signal System combines fast efficient setup with highly reliable performance. The multitude of modular add-on components makes the SQ3TS the most versatile portable traffic signal system available today. The SQ3TS is the smart choice for a wide variety of short and long term traffic control applications. From a simple one lane bridge repair project to complete intersection control, the SQ3TS has the attributes to provide safe efficient traffic control.

# SQ3TS® System

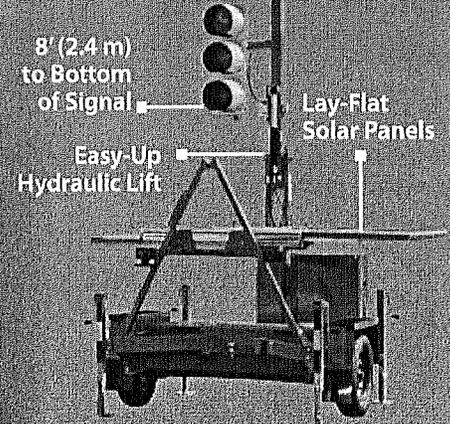
## SPECIFICATIONS

Signal Lamp	12" (300 mm) diameter LED
Signal Arm Extension	68 to 109" (173 to 277 cm)
Solar Charge	440W min
Power Source	12V / (16) 6V batteries
Tow Height	89" (226 cm)
Trailer Width	85" (216 cm)
Trailer Weight	3000 lb. (1361 kg)



## SQ3TS SYSTEM FEATURES

- Bulletproof 900 MHz radio communication
- True green time extensions
- Conflict monitoring
- Fast efficient setup
- Tandem tow signal trailers
- Highly visible 12" (30.5 cm) LED lights
- Adjustable overhead mast arm
- 180° rotating signal heads
- Fixed time, traffic actuated and manual operation options
- Controls up to seven traffic phases with eight signals
- Battery powered with solar & 110 volt charging



## AVAILABLE OPTIONS

**GPS Monitoring** Provides information on location, operating status, battery voltage, etc.

**Interface Module** Allows signal to operate in conjunction with a standard street corner control cabinet.

**Pre-emption System** Recognizes emergency vehicles and changes signal status as programmed.

**Back Plates** Provide an additional background around the signal head to enhance visibility.

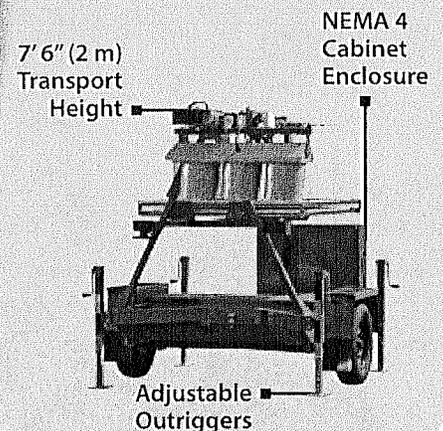
**Traffic Actuators** Facilitates traffic actuation via motion sensor or true presence video detection.

**Flagger/Pilot Car Module** Allows flagger or pilot car driver to control signal status with built in safeguards.

**Work Zone Light** Provides visual signal status inside a work zone.

## EASY TO DEPLOY

The SQ3TS Portable Traffic Signal is equipped with a one-touch, easy-up hydraulic lifting system to make deployments simple.



## DISTRIBUTED BY



General specifications for the SQ3TS® System are subject to change without notice to reflect improvements and upgrades. Additional information is available. Contact Horizon Signal Technologies for details.

### Regional Distribution Centers

Philadelphia, PA | Birmingham, AL | Chicago, IL | Indianapolis, IN | Waco, TX | Phoenix, AZ | St. Catharines, ON

### Horizon Signal Technologies

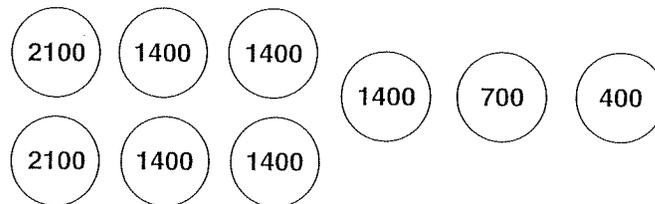
5 Corporate Blvd | Reading, PA 19608 | U.S. Toll Free (800) 852-8796

[www.horizonsignal.com](http://www.horizonsignal.com)

### Arrays Based on English Units (cont.)

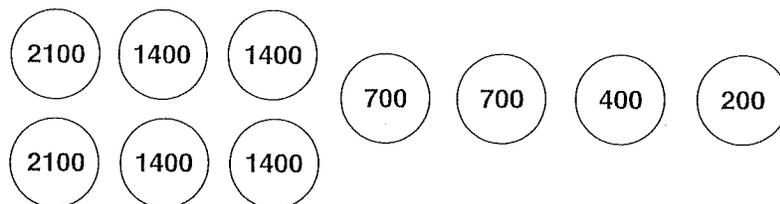
DESIGN VELOCITY 45 mph (72 km/h)

ROW	1800 lb vehicle				4500 lb vehicle		
	SAND MASS (lbs)	EXIT VEL (mph)	AVE G'S FOR ROW	IMPULSE TIME (sec)	EXIT VEL (mph)	AVE G'S FOR ROW	IMPULSE TIME (sec)
0		45.0			45.0		
1	400	36.8	7.5	0.05	41.3	3.5	0.05
2	700	26.5	7.3	0.06	35.8	4.8	0.05
3	1400	14.9	5.4	0.10	27.3	6.0	0.06
4	2800	5.8	2.1	0.20	16.8	5.1	0.09
5	2800	2.3	.3	0.50	10.4	2.0	0.15
6	4200	.7	.1	1.38	5.4	.9	0.26



DESIGN VELOCITY 50 mph (80 km/h)

ROW	1800 lb vehicle				4500 lb vehicle		
	SAND MASS (lbs)	EXIT VEL (mph)	AVE G'S FOR ROW	IMPULSE TIME (sec)	EXIT VEL (mph)	AVE G'S FOR ROW	IMPULSE TIME (sec)
0		50.0			50.0		
1	200	45.0	5.3	0.04	47.9	2.3	0.04
2	400	36.8	7.5	0.05	44.0	4.0	0.04
3	700	26.5	7.3	0.06	38.1	5.4	0.05
4	1400	14.9	5.4	0.10	29.0	6.7	0.06
5	2800	5.8	2.1	0.20	17.9	5.8	0.09
6	2800	2.3	.3	0.50	11.0	2.2	0.14
7	4200	.7	.1	1.38	5.7	1.0	0.24



Notes for Figure 6H-10—Typical Application 10  
Lane Closure on a Two-Lane Road Using Flaggers

Option:

1. For low-volume situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger, positioned to be visible to road users approaching from both directions, may be used (see Chapter 6E).
2. The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short-duration operations.

3. Flashing warning lights and/or flags may be used to call attention to the advance warning signs. A BE PREPARED TO STOP sign may be added to the sign series.

Guidance:

4. The buffer space should be extended so that the two-way traffic taper is placed before a horizontal (or crest vertical) curve to provide adequate sight distance for the flagger and a queue of stopped vehicles.

Standard:

5. At night, flagger stations shall be illuminated, except in emergencies.

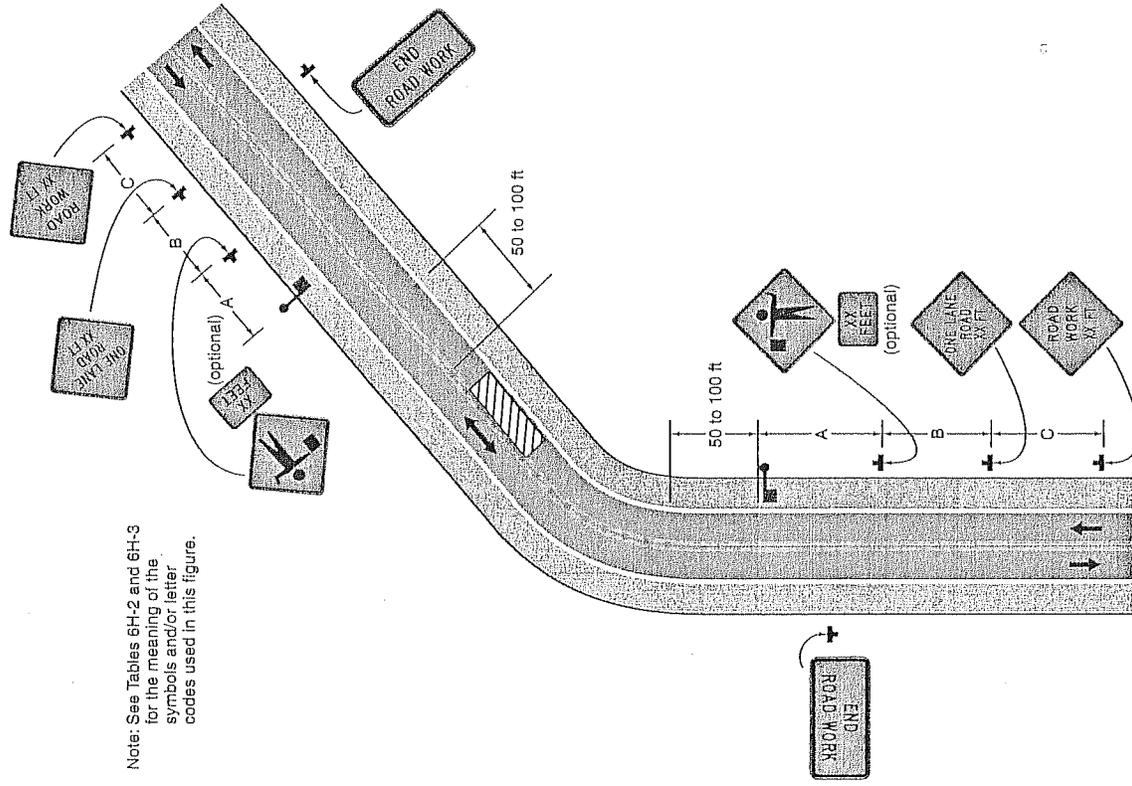
Guidance:

6. When used, the BE PREPARED TO STOP sign should be located between the Flagger sign and the ONE LANE ROAD sign.
7. When a grade crossing exists within or upstream of the transition area and it is anticipated that queues resulting from the lane closure might extend through the grade crossing, the TTC zone should be extended so that the transition area precedes the grade crossing.
8. When a grade crossing equipped with active warning devices exists within the activity area, provisions should be made for keeping flaggers informed as to the activation status of these warning devices.
9. When a grade crossing exists within the activity area, drivers operating on the left-hand side of the normal center line should be provided with comparable warning devices as for drivers operating on the right-hand side of the normal center line.
10. Early coordination with the railroad company or light rail transit agency should occur before work starts.

Option:

11. A flagger or a uniformed law enforcement officer may be used at the grade crossing to minimize the probability that vehicles are stopped within 15 feet of the grade crossing, measured from both sides of the outside rails.

Figure 6H-10. Lane Closure on a Two-Lane Road Using Flaggers (TA-10)



Typical Application 10