



CONSTRUCTION LEADERS

**SUBMITTAL NO. : 11.1
TCP – Item 2.2 Smart Work Zone**

Item No.	Specification	Description
1	Sheet 5, Note 73	TCP – Item 2.2 Smart Work Zone

PROJECT:
HARTFORD LATERAL SLIDE
PROJECT NO.: IM 091-2(79)
CONTRACT ID.: 12A132

OWNER:
STATE OF VERMONT AGENCY OF TRANSPORTATION

ENGINEER OF RECORD:
STATE OF VERMONT AGENCY OF TRANSPORTATION

CONTRACTOR:
PCL CIVIL CONSTRUCTORS, INC.

Vermont Agency of Transportation

RECEIVED

Hartford IM091-2(79) TCP SWZ Resub 2-27-2015.pdf

CK'D BY CB/MM OK'D BY JS

February 26, 2015

RESUBMIT YES **Rejected**

BY KH DATE 2-27-2015

FEBRUARY 26, 2015

Equipment that should be in place and running for the work that will be occurring on US Route 5.

Note: Equipment being utilized in this phase is for the activity that will be starting on US Route 5. The balance of equipment proposed to be installed once the snow subsides is directly related to activity occurring on I-91. Placement of those pieces at this time will not change the functionality or increase accuracy of Phase 1 equipment for US Route 5. Phase 1 includes PCMS's on every inlet to the work area, plus both cameras so the work area and the approaches to the work area can be monitored. There are also PQT's at the approach to the work area from I-91 and I-89 to monitor traffic flow prior to US Route 5 from I-91. There are no PQT's on US Route 5.

Location is listed, with map reference and anticipated MOT to be utilized. UTO present at all locations and follows the work.

I assume inside means passing lane? Is this for NB or SB, or both barrels? (TYP)

Lane closure on I-91 NB needed as well?

- **PQT Q03**, located on I-91 NB Ramp from I-89. Refer to Map 2 of SWZ plans.
 - I91 RIGHT LANE CLOSURE
- **PTZ C01**, located on I-91 NB, mm 69.95 left. Refer to Map 2 of SWZ plans.
 - I91 INSIDE LANE CLOSURE
- **PQT Q04**, located on I-91 NB, mm 70.05 left. Refer to Map 2 of SWZ plans.
 - I91 INSIDE LANE CLOSURE
- **PTZ C02**, located on I-91 NB / US Route 5. Refer to Map 2 of SWZ plans.
 - PARTIAL RAMP CLOSURE
- PCMS M07, located on I-89 SB, mm 1.2 left. Refer to Map 2 of SWZ plans.
 - UTO ESCORT TO AND FROM SITE
- PCMS M11, located on Sykes Mountain Ave., WB. Refer to Map 2 of SWZ plans.
 - NO MOT ANTICIPATED
- PCMS M06, located on I-89 NB, mm 0.01 left. Refer to Map 3 of SWZ plans.
 - UTO ESCORT TO AND FROM SITE Need to remove existing 55 MPH sign.
- PCMS M02, located on I-91 NB, mm 67.05 right. Refer to Map 5 of SWZ plans.
 - I91 SHOULDER CLOSURE
- PCMS M10, located on US Route 5 NB, north of Drew Rd. Refer to Map 6 of SWZ plans.
 - ONE LANE ROAD W/ FLAGGERS
- **PQT Q08**, located on I-91 SB, mm 70.8 left. Refer to Map 9 of SWZ plans.
 - I91 INSIDE LANE CLOSURE
- **PCMS M03**, located on I-91 SB, mm 70.8 left. Refer to Map 9 of SWZ plans.
 - I91 INSIDE LANE CLOSURE
- **PCMS M12**, located on US Route 5 SB, left. Refer to Map 9 of SWZ plans.
 - RT4 INSIDE LANE CLOSURE

Just to clarify, remove the left side SL-55 to open up sight lines, leave the right side SL-55 in place. At the end of the project the removed sign will need to be re-installed. Thanks.

Note: US-5 and US-4 are co-joined here; US-5 is the primary route. Note as RT5.

All of the locations that are highlighted in **yellow** are areas that may need to be done between the hours of 9 am and 4:00 pm. Locations not highlighted do not require lane closures so traffic will not be affected. PCMS M06 is in a U-turn area, PCMS M07 is in a U-turn area, PCMS M11 is on US Route 5, proposing to be located at the Ford Dealership but will need permission.

No UTO escort to and from site when bringing in equipment for snow removal. Will need a left lane closure at this location between 9:00 AM - 4:00 PM at PCMS 07 and at PCMS 06 at a time when the traffic counts show the traffic volume is low.

BALANCE OF EQUIPMENT

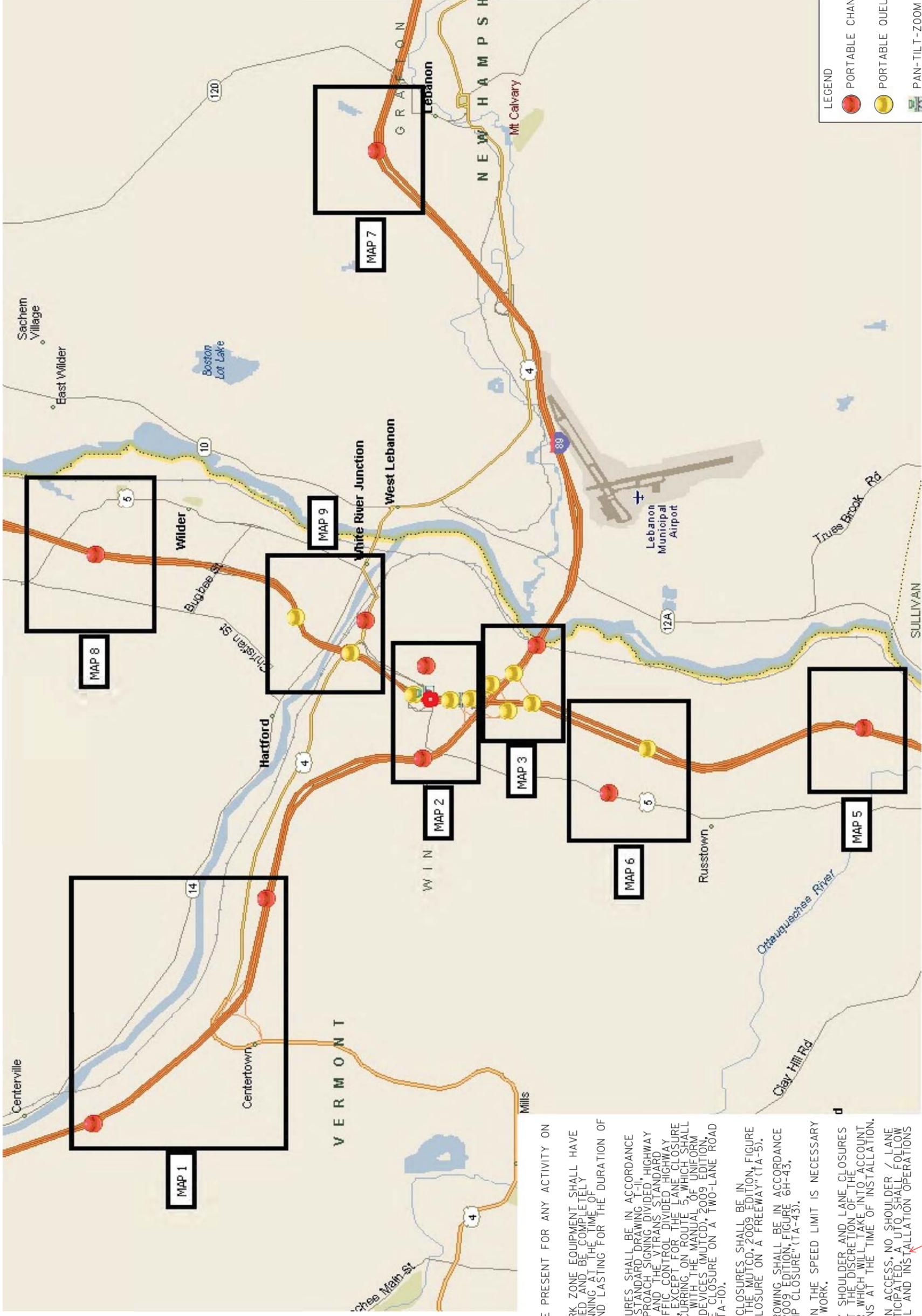
The balance of the equipment can be deployed during much safer conditions once the snow subsides. Tentatively planned for April, but required to be functional 14 days prior to any sitework is done on I-9. Those pieces are:

I-91

- PCMS M08, located on I-89 NB, mm 2.90 right. Refer to Map 1 of SWZ plans.
- PCMS M09, located on I-89 SB, mm 5.00 right. Refer to Map 1 of SWZ plans.
- PQT Q09, located on I-91 SB, mm 70.30 right. Refer to Map 2 of SWZ plans.
- PQT Q01, located on I-89 NB, mm 0.30 left. Refer to Map 3 of SWZ plans.
- PQT Q02, located on I-91 NB on-ramp from I-89 NB. Refer to Map 3 of SWZ plans.
- PQT Q05, located on I-91 NB on-ramp from I-89 SB. Refer to Map 3 of SWZ plans.
- PQT Q06, located on I-91 NB on-ramp from I-89 SB. Refer to Map 3 of SWZ plans.
- PQT Q11, located on I-91 NB, mm 69.50 left. Refer to Map 3 of SWZ plans.
- PCMS M01, located on I-91 NB, mm 59.25 right. Refer to Map 4 of SWZ plans.
- PQT Q10, located on I-91 NB, mm 68.60 left. Refer to Map 6 of SWZ plans.
- PCMS M05, located on I-89 NB, mm 56.90 right (in NH). Refer to Map 7 of SWZ plans.
- PCMS M04, located on I-91 SB, mm 72.70 left. Refer to Map 8 of SWZ plans.
- PQT Q07, located on I-91 SB, mm 71.20 right. Refer to Map 9 of SWZ plans.

All of the locations that are highlighted in green are areas that may possibly require assistance to Worksafe during deployment with a UTO. Once the snow is gone, we can confirm prior to performing with the Resident Engineer.

Show on the map that these devices will be done at a later date once the snow has gone.



- NOTES:
1. A UTO SHALL BE PRESENT FOR ANY ACTIVITY ON THE INTERSTATE.
 2. ALL SMART WORK ZONE EQUIPMENT SHALL HAVE VISIBILITY MAINTAINED AND BE COMPLETELY OPERATIONAL BEGINNING AT THE TIME OF IMPLEMENTATION AND LASTING FOR THE DURATION OF THE PROJECT.
 3. ALL LANE CLOSURES SHALL BE IN ACCORDANCE WITH THE VTRANS STANDARD DRAWING T-11, "CONSTRUCTION APPROACH SIGNING DIVIDED HIGHWAY ONE LANE CLOSED" AND THE VTRANS STANDARD DRAWING T-12, "TRAFFIC CONTROL DIVIDED HIGHWAY ONE LANE CLOSED". EXCEPT FOR THE LANE CLOSURE FOR PCMS MIO OCCURRING ON ROUTE 5, WHICH SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), 2009 EDITION, FIGURE 6H-10, "LANE CLOSURE ON A TWO-LANE ROAD USING FLAGGERS" (TA-10).
 4. ALL SHOULDER CLOSURES SHALL BE IN ACCORDANCE WITH THE MUTCD, 2009 EDITION, FIGURE 6H-5, "SHOULDER CLOSURE ON A FREEWAY" (TA-5).
 5. ALL RAMP NARROWING SHALL BE IN ACCORDANCE WITH THE MUTCD, 2009 EDITION, FIGURE 6H-45, "PARTIAL EXIT RAMP CLOSURE" (TA-45).
 6. NO REDUCTION IN THE SPEED LIMIT IS NECESSARY TO PERFORM THIS WORK.
 7. ALL TEMPORARY SHOULDER AND LANE CLOSURES SHALL BE DONE AT THE DISCRETION OF THE RESIDENT ENGINEER WHICH WILL TAKE INTO ACCOUNT THE SITE CONDITIONS AT THE TIME OF INSTALLATION.
 8. FOR ALL U-TURN ACCESS, NO SHOULDER / LANE CLOSURES ARE ANTICIPATED. A UTO SHALL FOLLOW THE SNOW REMOVAL AND INSTALLATION OPERATIONS AT ALL TIMES.

SMART WORK ZONE OVERALL PLAN 1

PROJECT NAME: HARTFORD
 PROJECT NUMBER: IM 09I-2(79)

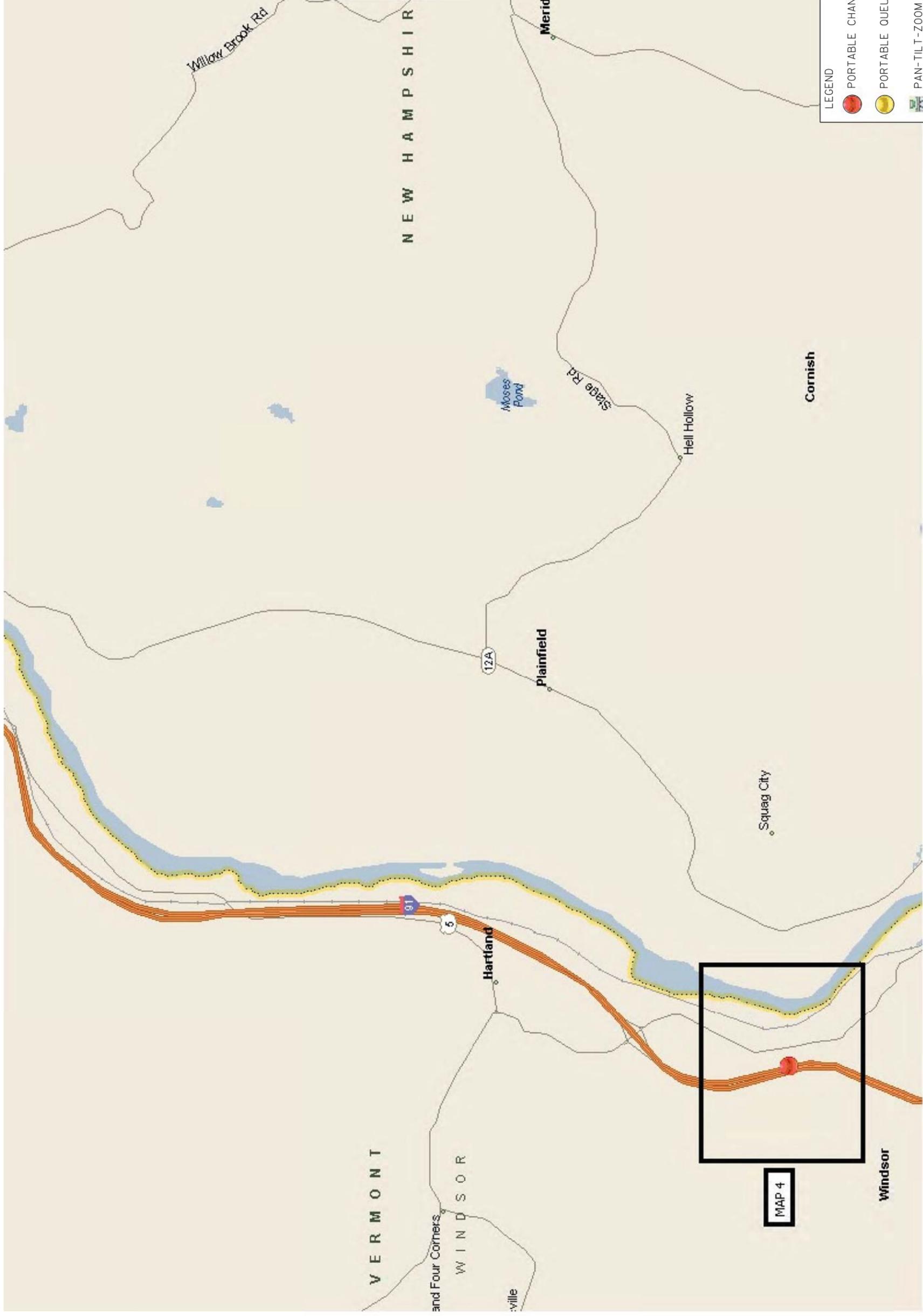
FILE NAME: s120026.SWZ.TCP.dgn
 PROJECT LEADER: K. HIGGINS
 DESIGNED BY: S. DESCHAMPS
 SMART WORK ZONE TCP

PLOT DATE: 02/25/15
 DRAWN BY: B. LYON
 CHECKED BY: S. SAWYER
 SHEET 4 OF ??



STATE OF VERMONT
 DEPARTMENT OF TRANSPORTATION
 2/25/15

A lane closure will be required for snow removal at u turns.



- LEGEND
- PORTABLE CHANGEABLE MESSAGE SIGN
 - PORTABLE QUEUE TRAILER
 - PAN-TILT-ZOOM CAMERA

PROJECT NAME: HARTFORD
 PROJECT NUMBER: IM 09I-2(79)

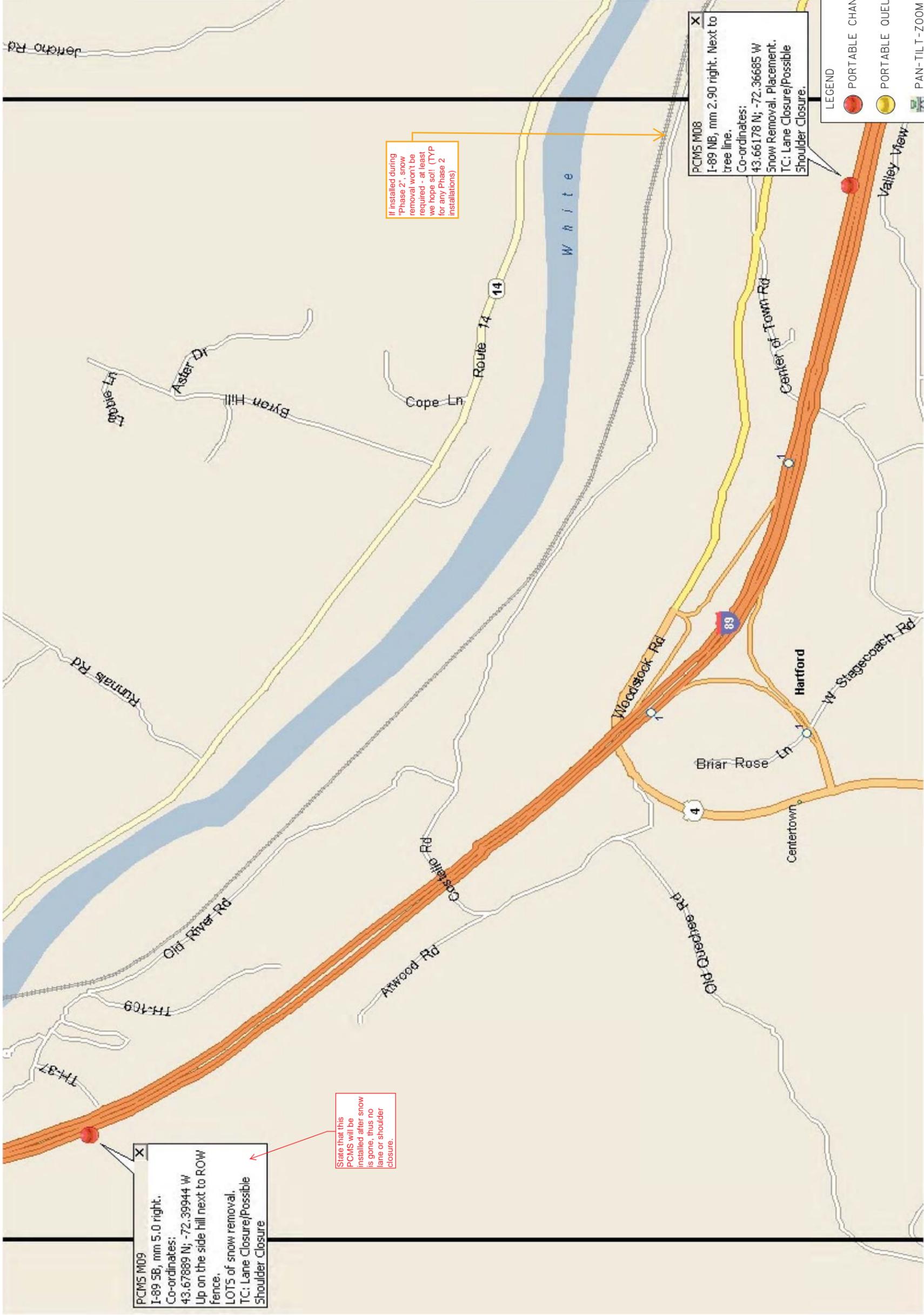
FILE NAME: s120026.SWZ.TCP.dgn
 PROJECT LEADER: K. HIGGINS
 DESIGNED BY: S. DESCHAMPS
 SMART WORK ZONE TCP



SMART WORK ZONE OVERALL PLAN 2

[Signature]
 2/25/15





PCMS M09
 I-89 SB, mm 5.0 right.
 Co-ordinates:
 43.67889 N; -72.39944 W
 Up on the side hill next to ROW
 fence.
 LOTS of snow removal.
 TC: Lane Closure/Possible
 Shoulder Closure

State that this
 PCMS will be
 installed after snow
 is gone, thus no
 lane or shoulder
 closure.

If installed during
 "Phase 2", snow
 removal won't be
 required - at least
 we hope so!! (TYP
 for any Phase 2
 installations)

PCMS M08
 I-89 NB, mm 2.90 right. Next to
 tree line.
 Co-ordinates:
 43.66178 N; -72.36685 W
 Snow Removal, Placement.
 TC: Lane Closure/Possible
 Shoulder Closure.

- LEGEND
- PORTABLE CHANGEABLE MESSAGE SIGN
 - PORTABLE QUEUE TRAILER
 - PAN-TILT-ZOOM CAMERA

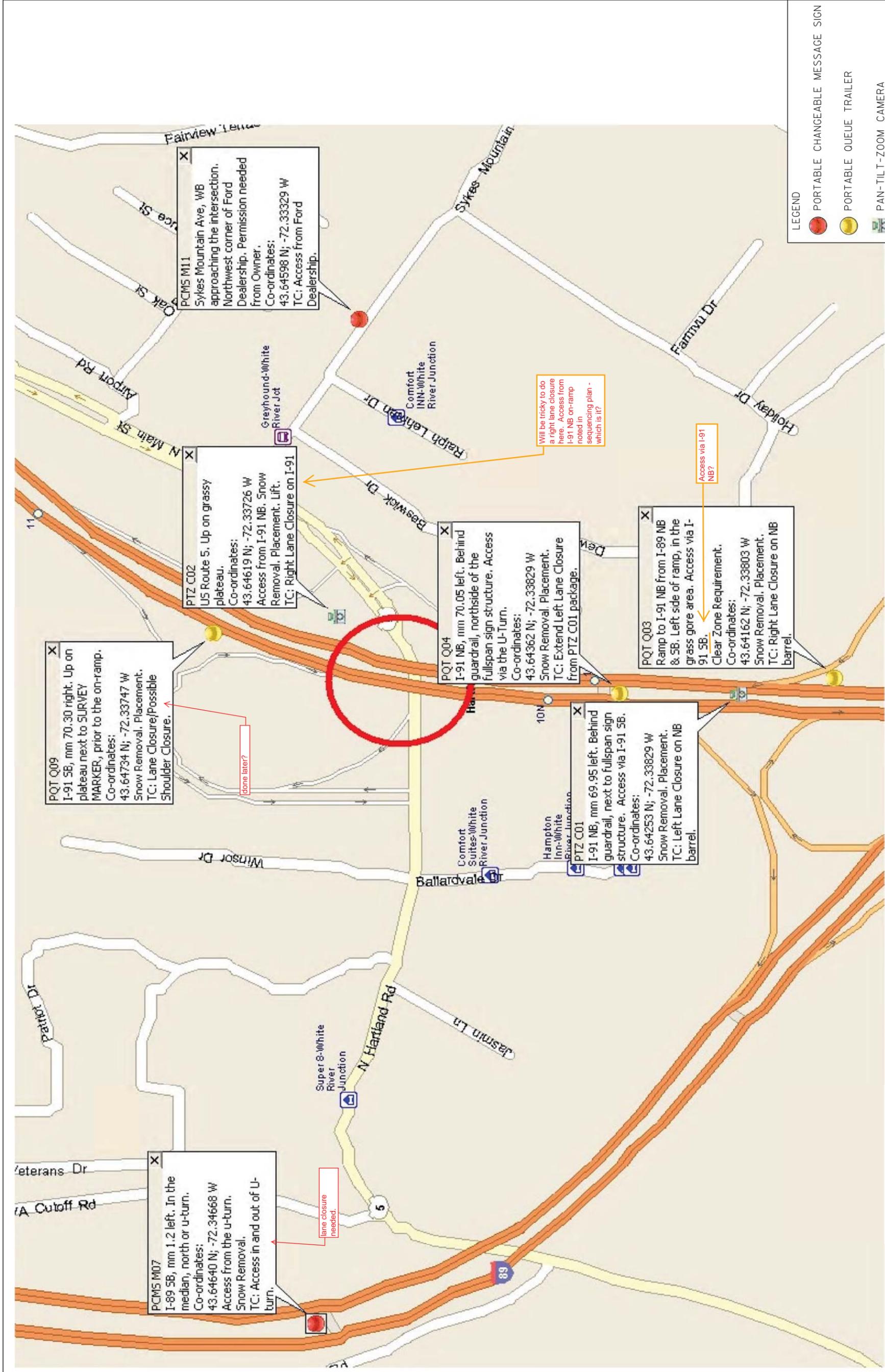
SMART WORK ZONE MAP 1



PROJECT NAME: HARTFORD
 PROJECT NUMBER: IM 091-2(79)
 FILE NAME: s120026.SWZ.TCP.dgn
 PROJECT LEADER: K. HIGGINS
 DESIGNED BY: S. DESCHAMPS
 SMART WORK ZONE TCP
 SHEET 6 OF 22
 PLOT DATE: 02/25/15
 DRAWN BY: B. LYON
 CHECKED BY: S. SAWYER

[Signature]
 2/25/15





LEGEND

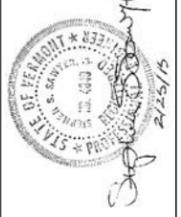
- PORTABLE CHANGEABLE MESSAGE SIGN
- PORTABLE QUEUE TRAILER
- 📷 PAN-TILT-ZOOM CAMERA

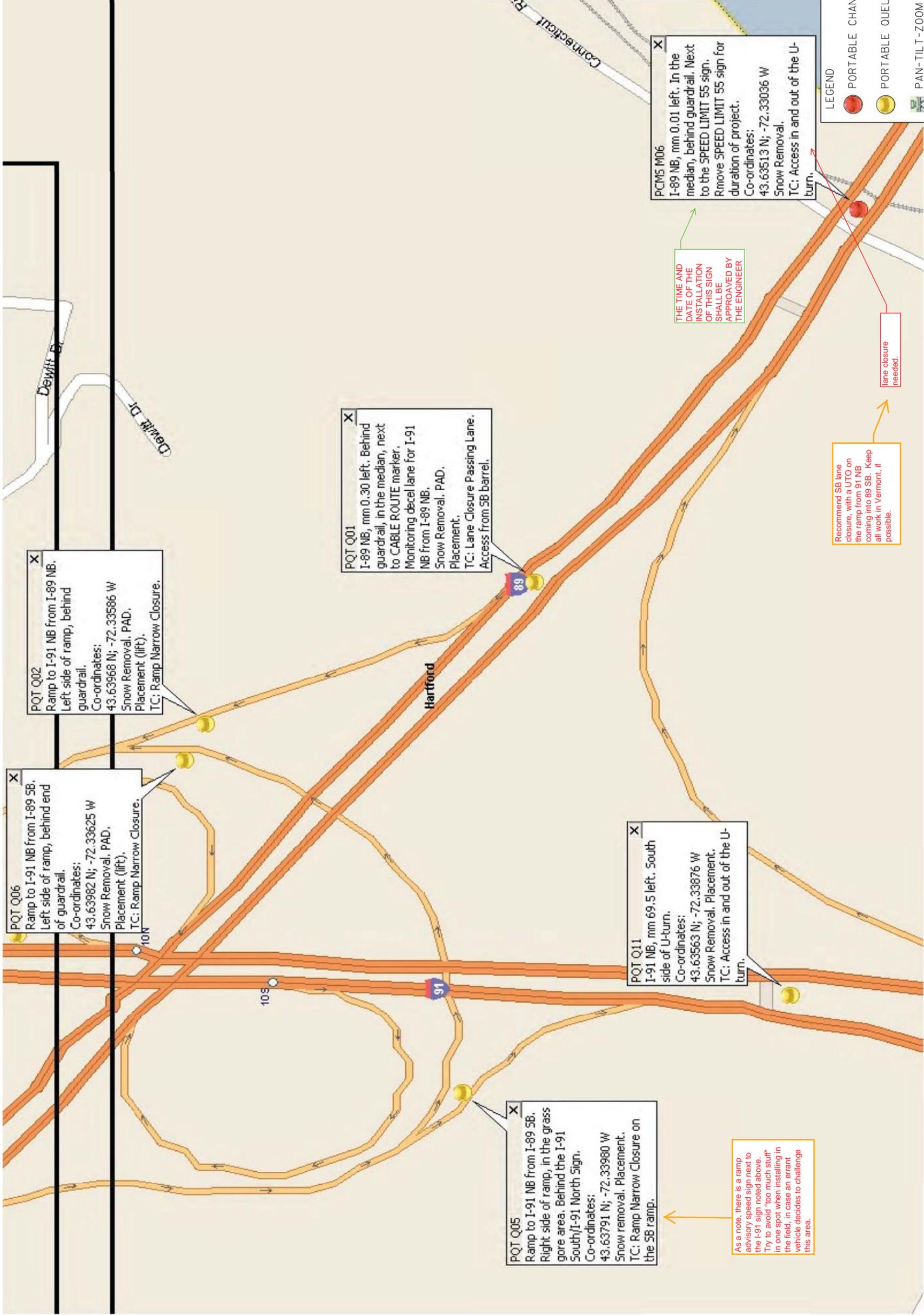
PROJECT NAME: HARTFORD
 PROJECT NUMBER: IM 091-2(79)
 FILE NAME: s12c026.SWZ.TCP.dgn
 PROJECT LEADER: K. HIGGINS
 DESIGNED BY: S. DESCHAMPS
 SMART WORK ZONE TCP



SMART WORK ZONE MAP 2

DESIGNED BY: [Signature]
 PREPARED BY: [Signature]
 PLOT DATE: 02/25/15
 DRAWN BY: B. LYON
 CHECKED BY: S. SAWYER
 SHEET 7 OF 22





PQT Q02
 Ramp to I-91 NB from I-89 NB. Left side of ramp, behind guardrail.
 Co-ordinates: 43.63968 N; -72.33586 W
 Snow Removal. PAD. Placement (lift).
 TC: Ramp Narrow Closure.

PQT Q06
 Ramp to I-91 NB from I-89 SB. Left side of ramp, behind end of guardrail.
 Co-ordinates: 43.63982 N; -72.33625 W
 Snow Removal. PAD. Placement (lift).
 TC: Ramp Narrow Closure.

PQT Q01
 I-89 NB, mm 0.30 left. Behind guardrail, in the median, next to CABLE ROUTE marker. Monitoring decel lane for I-91 NB from I-89 NB. Snow Removal. PAD. Placement.
 TC: Lane Closure Passing Lane. Access from SB barrel.

PQT Q05
 Ramp to I-91 NB from I-89 SB. Right side of ramp, in the grass gore area. Behind the I-91 South/I-91 North Sign.
 Co-ordinates: 43.63791 N; -72.33980 W
 Snow removal. Placement.
 TC: Ramp Narrow Closure on the SB ramp.

PQT Q11
 I-91 NB, mm 69.5 left. South side of U-turn.
 Co-ordinates: 43.63563 N; -72.33876 W
 Snow Removal. Placement.
 TC: Access in and out of the U-turn.

PCMS M006
 I-89 NB, mm 0.01 left. In the median, behind guardrail. Next to the SPEED LIMIT 55 sign. Remove SPEED LIMIT 55 sign for duration of project.
 Co-ordinates: 43.63513 N; -72.33036 W
 Snow Removal.
 TC: Access in and out of the U-turn.

LEGEND
 ● PORTABLE CHANGEABLE MESSAGE SIGN
 ● PORTABLE QUEUE TRAILER
 📷 PAN-TILT-ZOOM CAMERA

THE TIME AND DATE OF THE INSTALLATION OF THIS SIGN SHALL BE APPROVED BY THE ENGINEER

Recommend SB lane closure, with a UTO on the ramp from 91 NB coming into 89 SB. Keep all work in Vermont, if possible.

lane closure needed.

As a note, there is a ramp advisory speed sign next to the I-91 sign noted above. Try to avoid "too much stuff" in one spot when installing in the field, in case an errant vehicle decides to challenge this area.

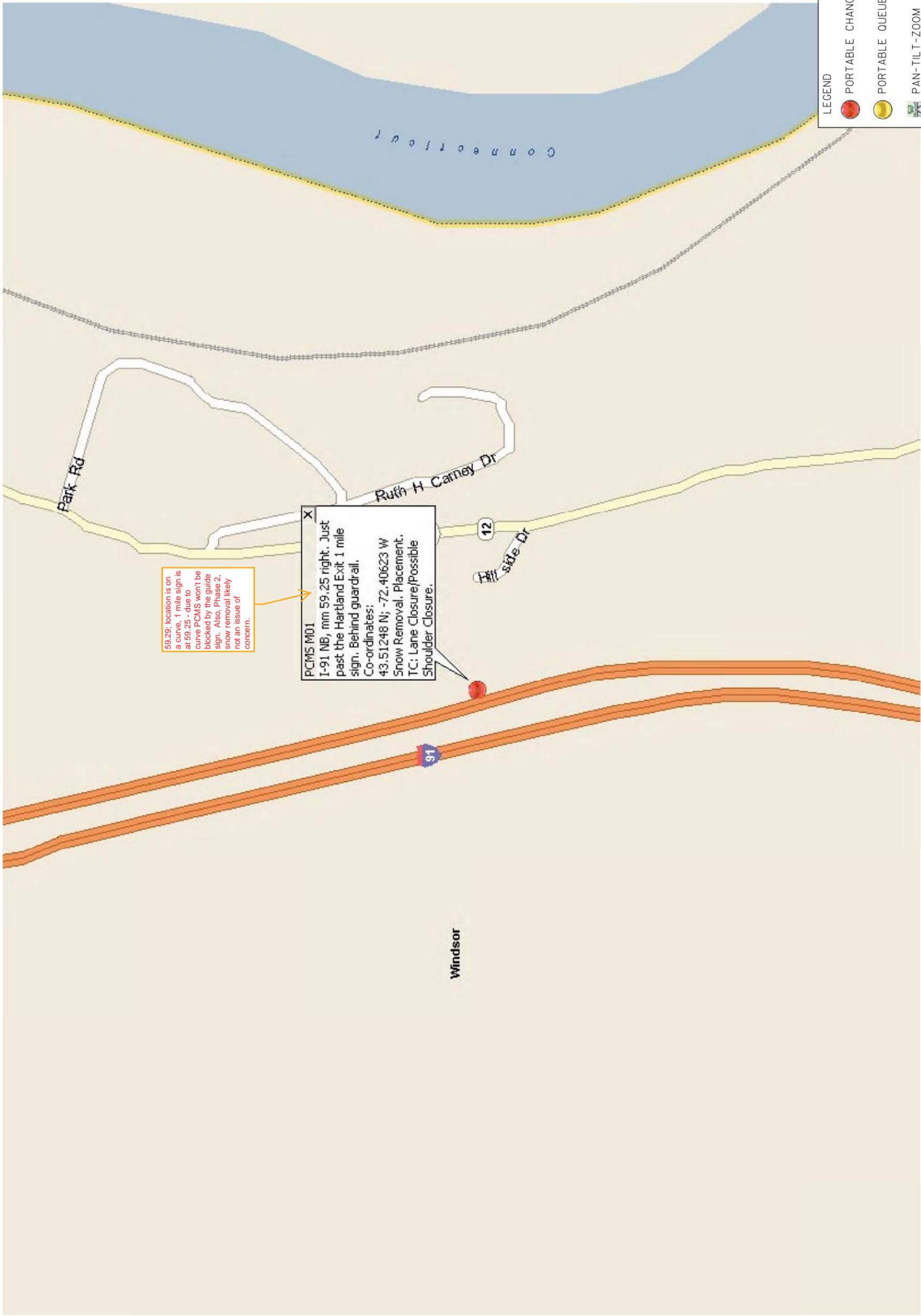
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 PROJECT NUMBER: IM 091-2(79)

FILE NAME: s120026.SWZ.TCP.dgn
 PROJECT LEADER: K. HIGGINS
 DESIGNED BY: S. DESCHAMPS
 SMART WORK ZONE TCP
 PLOT DATE: 02/25/15
 DRAWN BY: B. LYON
 CHECKED BY: S. SAWYER
 SHEET 8 OF ??

SMART WORK ZONE MAP 3



STATE OF VERMONT
 2/25/15
[Signature]



59.29; location is on a curve, 1 mile sign is at 59.25 - due to curve PCMS won't be blocked by the guide sign. Also, Phase 2, snow removal likely not an issue of concern.

X
 PCMS M01
 I-91 NB, mm 59.25 right. Just past the Hartland Exit 1 mile sign. Behind guardrail.
 Co-ordinates:
 43.51248 N; -72.40623 W
 Snow Removal, Placement.
 TC: Lane Closure/Possible Shoulder Closure.

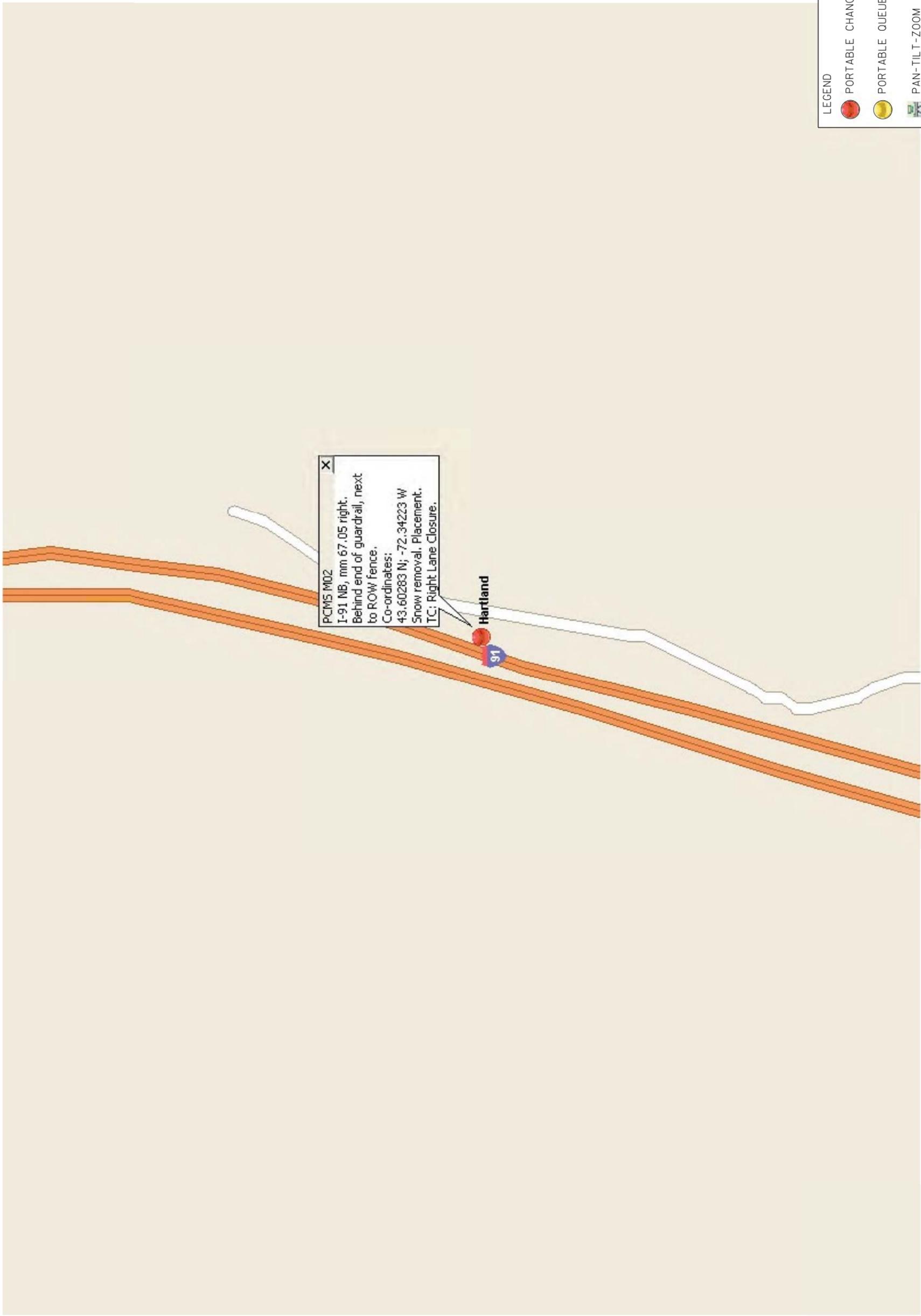
SMART WORK ZONE MAP 4



DESIGNED BY:
 PREPARED BY:
 PROJECT NAME: HARTFORD
 PROJECT NUMBER: IM 09J-2(79)

FILE NAME: s12c026.SWZ.TCP.dgn
 PROJECT LEADER: K. HIGGINS
 DESIGNED BY: S. DESCHAMPS
 SMART WORK ZONE TCP
 PLOT DATE: 02/25/15
 DRAWN BY: B. LYON
 CHECKED BY: S. SAWYER
 SHEET 9 OF ??

STATE OF VERMONT
 REGISTERED PROFESSIONAL ENGINEER
 No. 4519
 S. Deschamps
 2/25/15



- LEGEND
- PORTABLE CHANGEABLE MESSAGE SIGN
 - PORTABLE QUEUE TRAILER
 - PAN-TILT-ZOOM CAMERA

PROJECT NAME: HARTFORD
 PROJECT NUMBER: IM 091-2(79)

FILE NAME: s12c026.SWZ.TCP.dgn
 PROJECT LEADER: K. HIGGINS
 DESIGNED BY: S. DESCHAMPS
 SMART WORK ZONE TCP

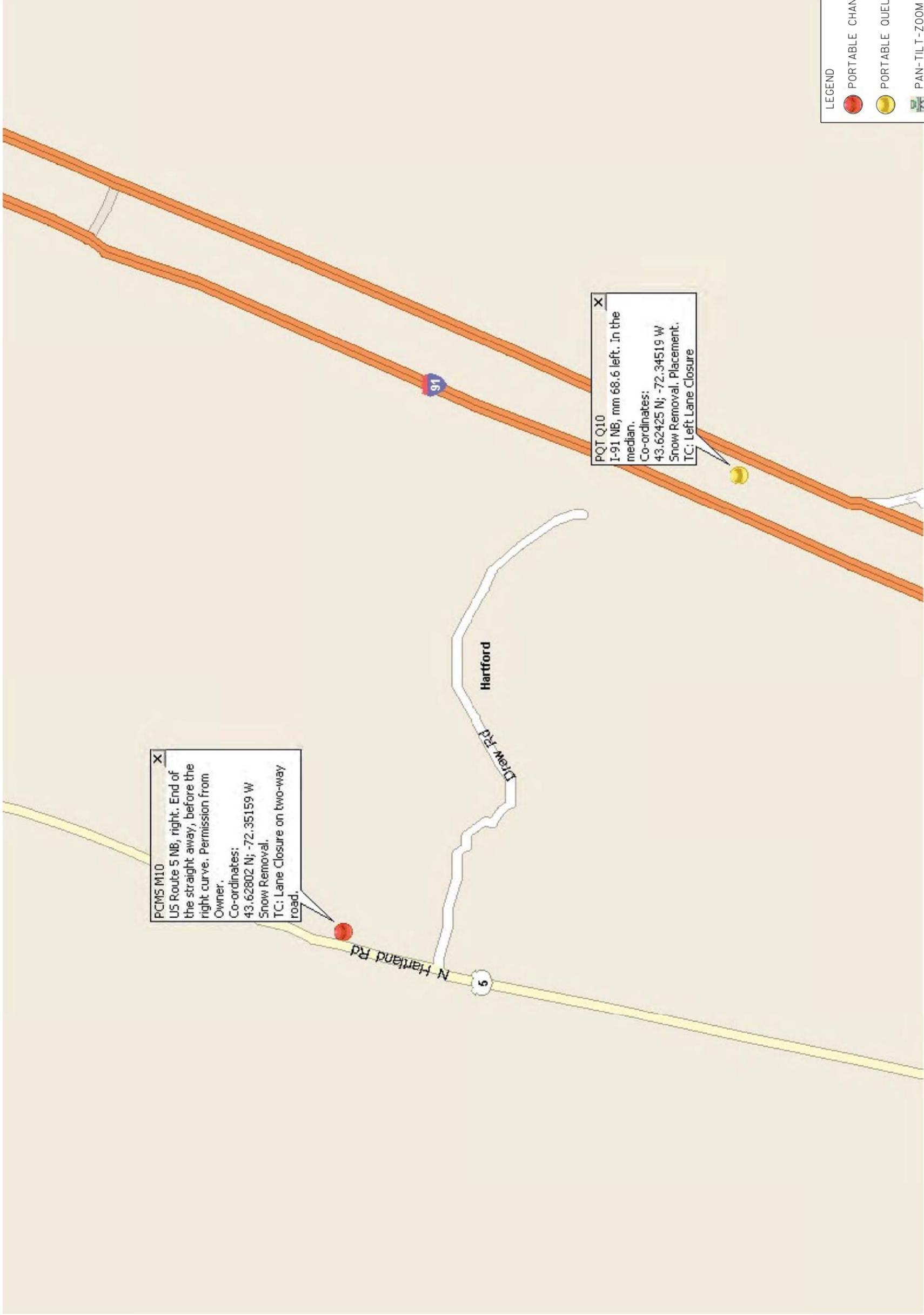


SMART WORK ZONE MAP 5

STATE OF VERMONT
 DEPARTMENT OF TRANSPORTATION
 2/25/15

[Signature]
 2/25/15

PLOT DATE: 02/25/15
 DRAWN BY: B. LYON
 CHECKED BY: S. SAWYER
 SHEET 10 OF ??



PCMS M10
 US Route 5 NB, right. End of the straight away, before the right curve. Permission from Owner.
 Co-ordinates: 43.62802 N; -72.35159 W
 Snow Removal.
 TC: Lane Closure on two-way road.

PQT Q10
 I-91 NB, mm 68.6 left. In the median.
 Co-ordinates: 43.62425 N; -72.34519 W
 Snow Removal. Placement.
 TC: Left Lane Closure

- LEGEND
- PORTABLE CHANGEABLE MESSAGE SIGN
 - PORTABLE QUEUE TRAILER
 - PAN-TILT-ZOOM CAMERA

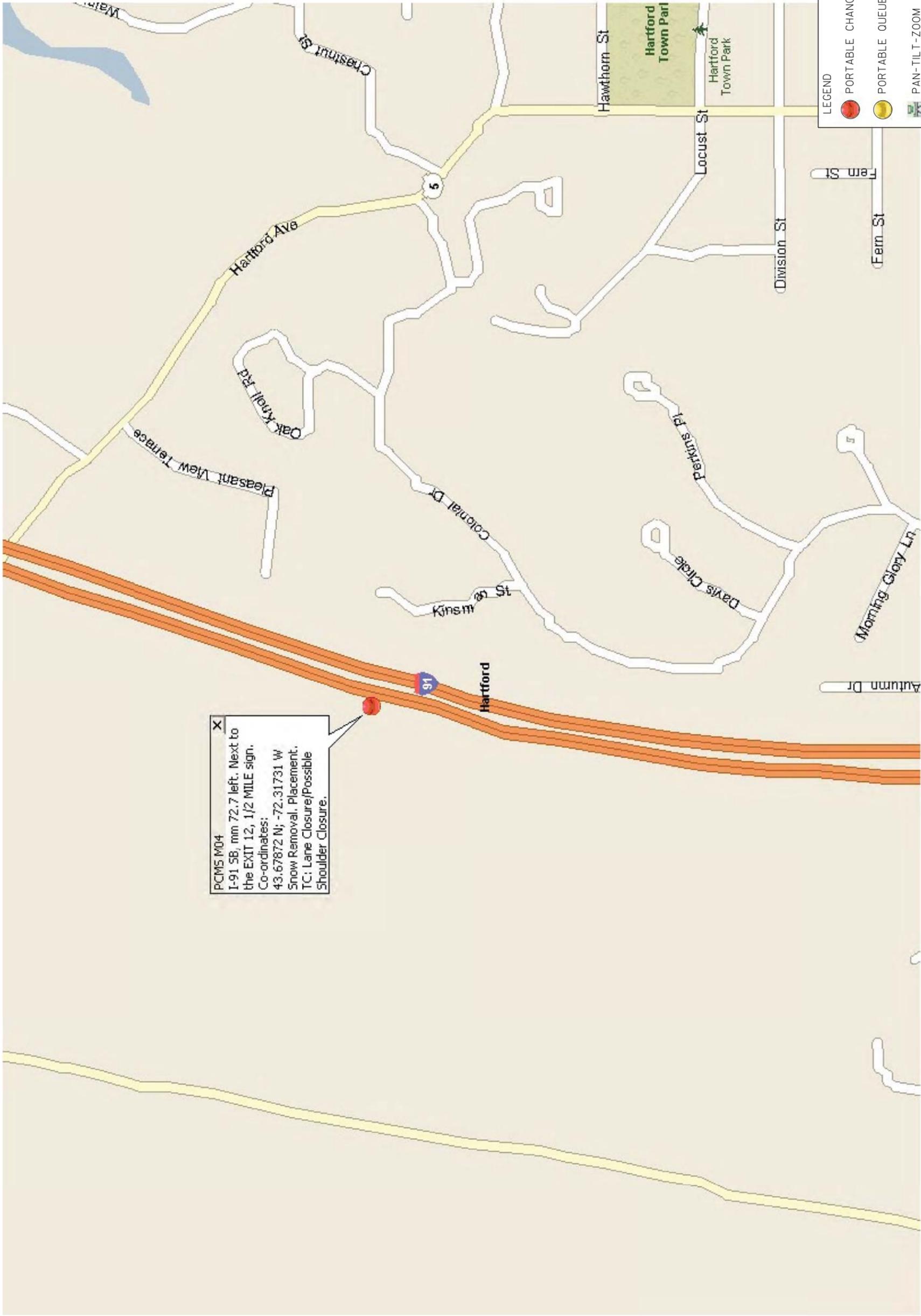
PROJECT NAME: HARTFORD
 PROJECT NUMBER: IM 091-2(79)

FILE NAME: s12c026.SWZ.TCP.dgn
 PROJECT LEADER: K. HIGGINS
 DESIGNED BY: S. DESCHAMPS
 SMART WORK ZONE TCP

DESIGNED BY: PREPARED BY:

SMART WORK ZONE MAP 6

Stephen Sawyer
 2/25/15



X
 PCMS M04
 I-91 SB, mm 72.7 left. Next to
 the EXIT 12, 1/2 MILE sign.
 Co-ordinates:
 43.67872 N; -72.31731 W
 Snow Removal. Placement.
 TC: Lane Closure/Possible
 Shoulder Closure.

- LEGEND
- PORTABLE CHANGEABLE MESSAGE SIGN
 - PORTABLE QUEUE TRAILER
 - PAN-TILT-ZOOM CAMERA

PROJECT NAME: HARTFORD
 PROJECT NUMBER: IM 091-2(79)

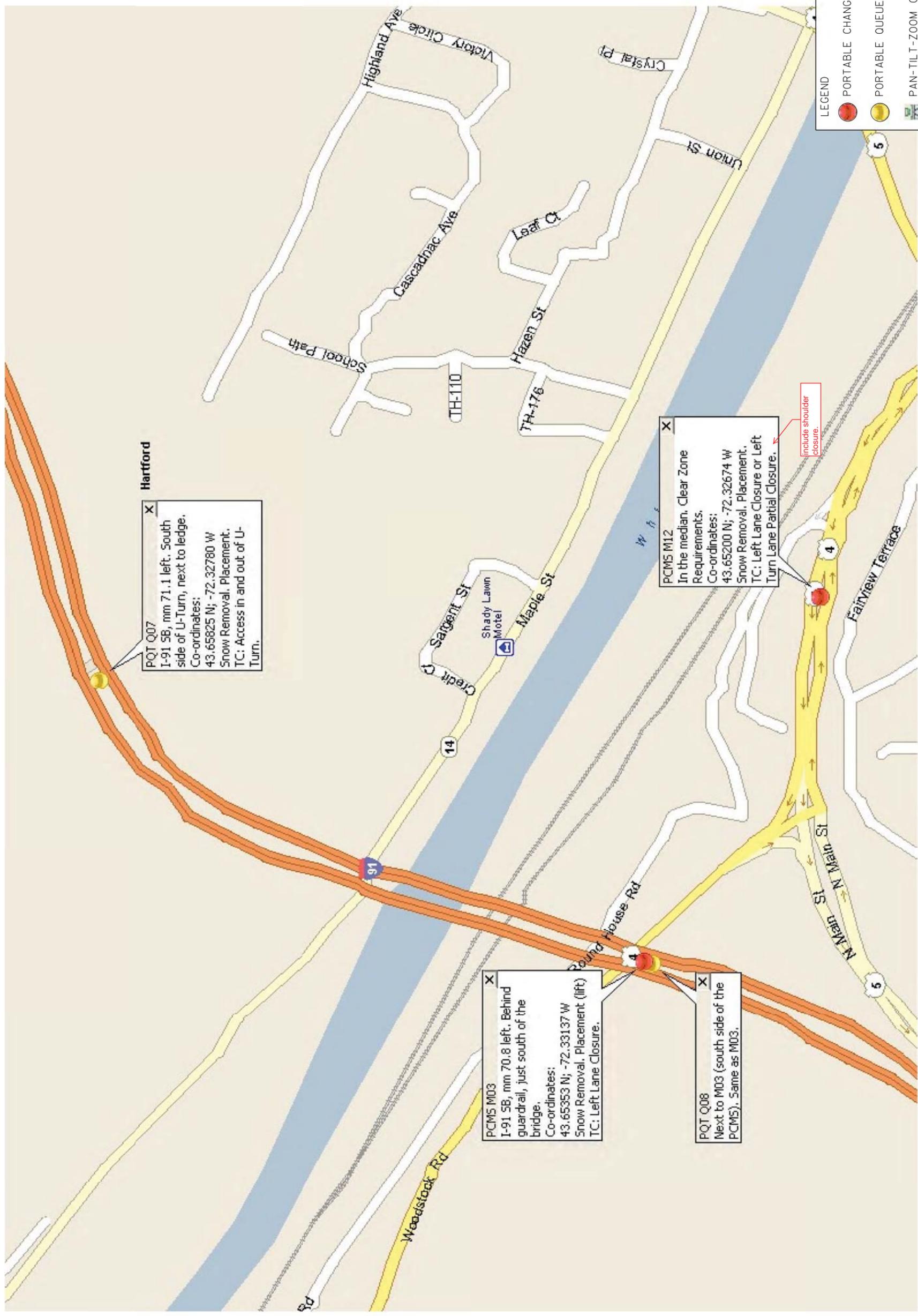
FILE NAME: s120026.SWZ.TCP.dgn
 PROJECT LEADER: K. HIGGINS
 DESIGNED BY: S. DESCHAMPS
 SMART WORK ZONE TCP



SMART WORK ZONE MAP 8

STATE OF VERMONT
 DEPARTMENT OF TRANSPORTATION
 2/25/15

PLOT DATE: 02/25/15
 DRAWN BY: B. LYON
 CHECKED BY: S. SAWYER
 SHEET 13 OF 22



Hartford

X
PQT Q07
 I-91 SB, mm 71.1 left. South side of U-Turn, next to ledge.
 Co-ordinates: 43.65825 N; -72.32780 W
 Snow Removal. Placement. TC: Access in and out of U-Turn.

X
PCMS M03
 I-91 SB, mm 70.8 left. Behind guardrail, just south of the bridge.
 Co-ordinates: 43.65353 N; -72.33137 W
 Snow Removal. Placement (lift) TC: Left Lane Closure.

X
PQT Q08
 Next to M03 (south side of the PCMS). Same as M03.

X
PCMS M12
 In the median. Clear Zone Requirements.
 Co-ordinates: 43.65200 N; -72.32674 W
 Snow Removal. Placement. TC: Left Lane Closure or Left Turn Lane Partial Closure.

include shoulder closure.

- LEGEND**
- PORTABLE CHANGEABLE MESSAGE SIGN
 - PORTABLE QUEUE TRAILER
 - PAN-TILT-ZOOM CAMERA

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 SMART WORK ZONE TCP
 PLOT DATE: 02/25/15
 DRAWN BY: B. LYON
 CHECKED BY: S. SAWYER
 SHEET 14 OF 22

SMART WORK ZONE MAP 9



Stephen Deschamps
 2/25/15