TRAFFIC CONTROL PLAN

FOR

Middlesex BRF 024-1(37)

(State of Vermont, Agency of Transportation

VT Highway 12, Middlesex, VT)

FOR

A.L. St. Onge Contractor, Inc.

PO BOX 65
MONTGOMERY, VT 05470

July, 2015

Prepared by:

Rev. 8/4/15

RUGGLES ENGINEERING SERVICES INC.

Ruggles Engineering Services, 4580 Memorial Drive, St. Johnsbury, VT 05819

www.rugglesengineeringservices.com

Table of Contents

Section 1 – General Information

1.1 Purpose ……..1

1.2 Description of Project ……..1

1.3 Work Zone Limitations …….…….2

(Lane Width, Speed Reduction, Pedestrian Traffic, Lane Closure, Roadway Surface Conditions, Temporary Pavement Markings, Detours and Signage

1.4 Flaggers and UTO's Utilized in the Work Zones ……..3

1.5 Key Personnel and Contact Info ……..3

1.6 Emergency Contact Information ……..4

Section 2 – Construction Phasing and Sequencing

2.1 General ……..5

(Traffic Impact, Delay Time, Portable Changeable Message Signs, Updates, Signage for Working Phases)

2.2 Phase 1 Permanent Sign Plan ……..…….….....5

2.3 Phase 2 – Detour ……..7

2.4 Phase 3 – Road Base, Shoulder Improvements, Intersection s and Detour Removal …….…….....……..9

2.5 Phase 4 – Guardrail, Signs and Final Pavement Markings ……11

Appendix A – Schedules and Supporting Information

Flagger Hand Signals

Sign Installation

Appendix B –Standard Sheets for Traffic Control

T-1 Traffic Control General Notes and Contract Notes.

T-35 Construction Zone Longitudinal Drop Offs.

T-36 Construction Zone Longitudinal Drop-Offs for Pavement.

SECTION 1 – GENERAL INFORMATION

1.1 Purpose:

The purpose of this Traffic Control Plan is to present site specific construction methods for work zone traffic control. This work consists of furnishing, installing, maintaining and removing traffic control devices necessary to provide reasonable protection & advanced warning for motorists, pedestrians and construction workers.

A copy of this Traffic Control Plan will be available at the construction site through the Key Personnel listed in section 1.5.

1.2 Description of Project:

The project includes the removal and replacement of Bridge 77 on VT Highway 12 in Middlesex. The bridge is located approximately 0.53 miles north of the Montpelier-Middlesex Town Line. The area is also known as Wrightsville.
The existing 34 foot bridge will be replaced with a 44 foot bridge. The project includes a temporary bridge detour and other miscellaneous approach and shoulder work. This project will include the need for traffic control devices phased throughout the project.

Work within this traffic control plan will include the installation of permanent traffic control signs, barriers, etc. and will include the phasing of traffic control for the installation of the temporary bridge, removal and replacement of the permanent structure and miscellaneous approach and shoulder work.

Work which requires temporary traffic control with flaggers will occur during daylight hours, Monday through Friday.

1.3 Work Zone Limitations

a. <u>Lane Width</u>

11 foot wide lanes will be open for passage by vehicle traffic at all times except when the road is closed. This will be reduced to one (1) 11 foot lane during working hours.

b. <u>Speed Reduction</u>

Detour

- Speed reduction is necessary for the temporary bridge.
- Existing speed on the highway is 50 miles per hour (MPH). Speed will be reduced in two increments. 50 to 35 and 35 to 20 MPH (advisory). Northbound traffic will come into permanent sign package at 40 MPH. This will require the existing 50 MPH sign to be covered so traffic does not increase from 40 to 50 prior to reducing speed for the work zone..
- Speed Limit 35 Ahead (W3-5) and Speed Limit 35/Advisory 20 MPH signs (W13-1P) will be used on permanent sign posts as shown on the permanent sign placement plan.
- Two local roads intersect with VT 12 in the construction zone. Horn of the Moon and Culver Hill Road. No additional signage is proposed for notification of reduced

speeds since traffic at the intersection will be at rest and will accelerate as needed through the work zone. Advisory 20 MPH is proposed beyond these intersections for the purpose of advanced warning for the higher speed traffic on VT12.

c. Pedestrian Traffic

Pedestrian traffic is not anticipated, no sidewalks exist along the project, however there are residential homes in the vicinity.

d. Lane Closure

Lane Closures will be used when building the temporary bridge, removing the temporary bridge and during the shoulder and intersection work. Lane closures will use daily lane closure signs (One Lane Road Ahead, Be Prepared to Stop, Flagger). These signs will be placed at 500 foot increments.

e. Roadway Surface Conditions

The road surface will be temporary asphalt through the temporary bridge detour. The road surface will only be reduced to gravel during the replacement of the bridge approaches. Signs for "Pavement Ends" and "Bump" will be used as shown on the phase 3 plan. Standards T-36 will also need to be used when lanes are uneven.

f. Temporary Pavement Markings

Temporary RPMs will be used prior to final paving.

g. Detours

The project will use an 80 foot temporary bridge.

h. Signage

- Portable signs will be placed on the edge of the roadway and a minimum of 1 foot above the travel way.
- Vegetation that interferes with the visibility of the signs will be removed.
- When signs are placed behind Guardrails, the sign face will be above the top of the rail.
- Permanent signs will be as identified on the Permanent Sign Plans.

1.4 Flaggers and UTO's utilized in the Work Zones

Flaggers and Uniform Traffic Officers will be used during the installation of traffic devices and lane shifting/closure.

Flaggers:

- Whenever flaggers are used the FLAGGER AHEAD sign or symbol will be incorporated in the work zone sign package for proper advance notice of the presents of the flagger.
- Sufficient certified flaggers will be available onsite to provide for continuous flagging operations during break periods as needed.
- Flaggers will be informed in advance of the traffic plan and their responsibilities during the daily construction on the project. Any changes throughout the day during construction will be relayed to the flaggers to provide a safe working environment for the construction personnel and the traveling public.
- Flaggers will have two way radio communication.
- See the hand signal figure in the Appendix in case of radio failure or for emergencies.

Uniform Traffic Officers (UTO)

ii. UTO's may be utilized in work zones including;

- Temporary traffic control device installation.
- Lane shifting.
- as required by the Resident Inspector.

1.5 Key Personnel and Contact Info:

A.L. St. Onge Contractors, Inc.

Office	(802) 326-4792
Carl Gleason	(802) 782-3978

RUGGLES ENGINEERING SERVICES, INC.
Nathan P. Sicard, P.E. (802) 748-5898, nate.res@myfairpoint.net

1.6 Emergency Contact Information

The following is a list of contact numbers for notifying the Resident & local emergency officials, and local government officials whenever significant traffic impacts are anticipated or an emergency occurs.

EMERGENCY PHONE NUMBERS:

FIRE – POLICE – AMBULANCE …… ….911

Robert Suckert, Project Resident (VAOT Resident)	(802) 782-3978
Carl Gleason	(802) 782-3978
Town of Middlesex (Town Office)	(802) 223-5915
Town of Middlesex (Garage)	(802) 229-0838
State Police Barracks (Middlesex)	(802) 229-9191

SECTION 2 – CONSTRUCTION PHASING AND SEQUENCING

2.1 GENERAL:

a. Traffic Impact:

i. Delay Time

Work will be conducted to maintain traffic and reduce delays.

ii. Portable Changeable Message Signs (PCMS)

PCM Signs are not a requirement of this project.

b. Updates:

The phasing of the traffic control plan will be coordinated with the Project Schedule. Although no issues or conflicts are expected, weekly meetings will be held as required to discuss any issues that may arise, to resolve any conflicts on this portion of the project and to ensure the least possible disruption to the traveling public as possible.

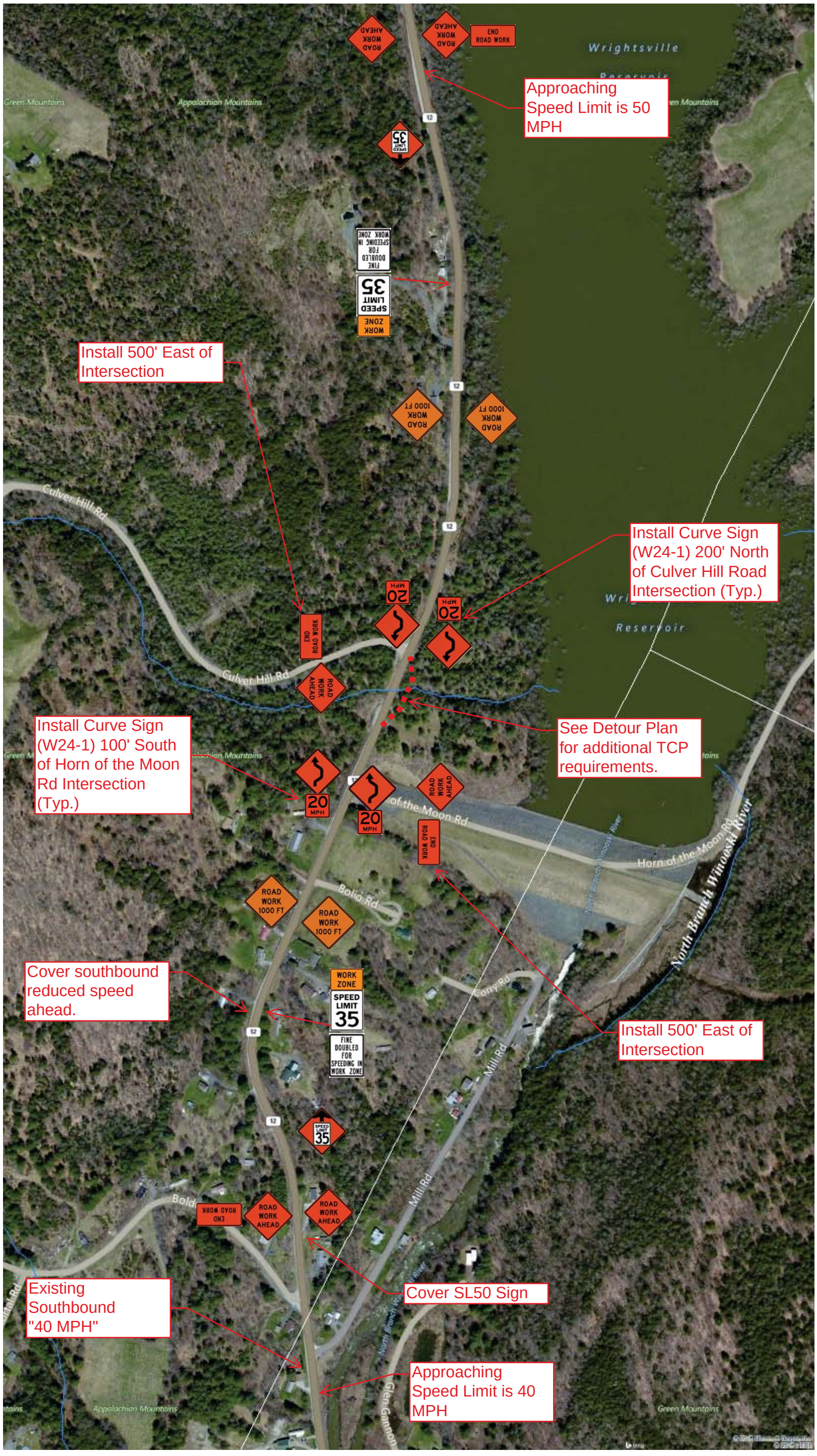
c. Signage for Working Phases:

Permanent signs will be installed as shown on the layout plans.

2.2 PHASE 1 – Installation of Permanent Signage:

Phase 1 will include the installation of Permanent Project Approach Signing. Signs will be installed as described in the following Plan.

Permanent Sign Layout Plan



NOTES:
1. Cover double reverse curve signs until detour is installed and in service.
2. Advanced Warning signs to be placed 500' apart.

833.0 0 416.00 833.0 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 417 Ft. 1cm = 50 Meters

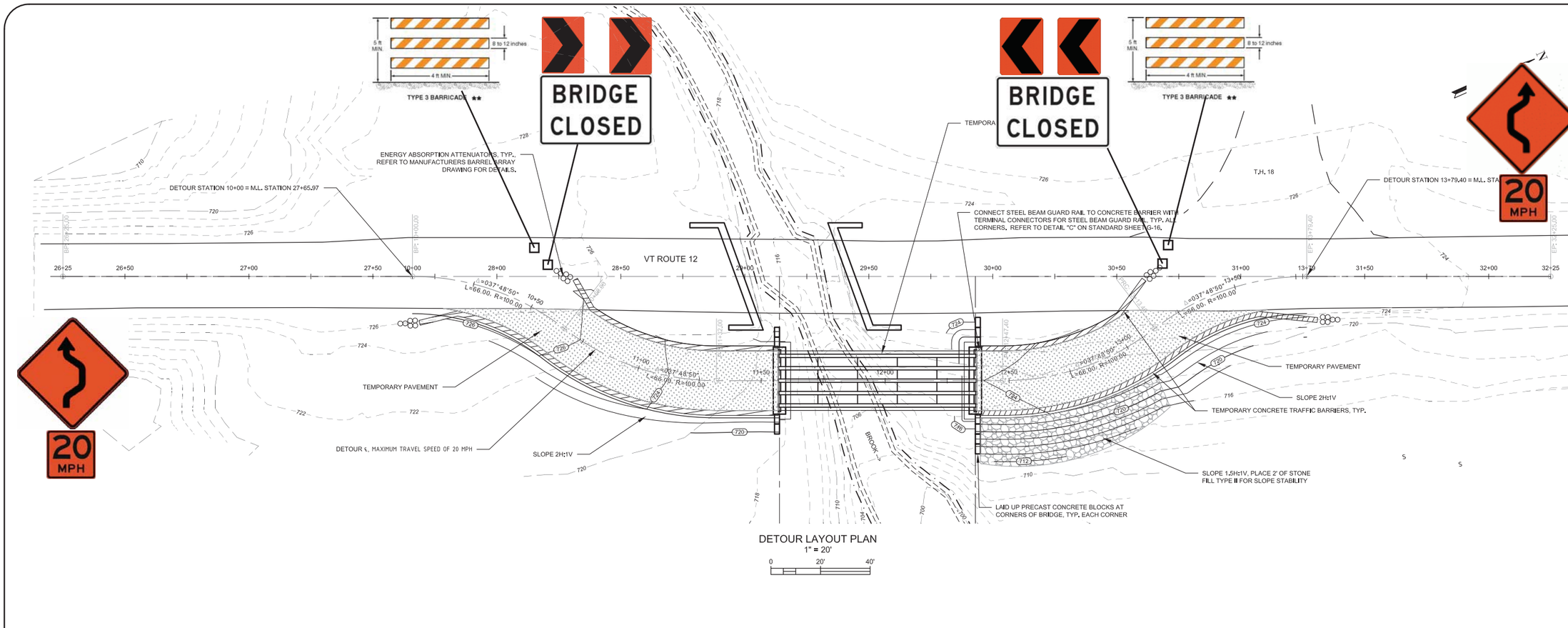
© Vermont Agency of Natural Resources

THIS MAP IS NOT TO BE USED FOR NAVIGATION

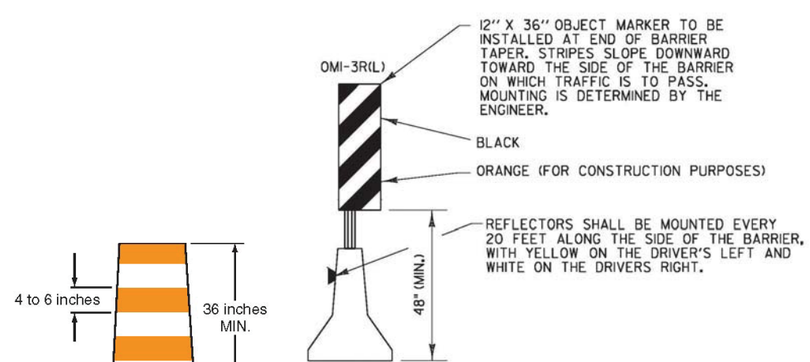
DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

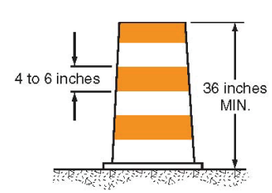
2.3 PHASE 1I – DETOUR:

Phase 2 will occur when the temporary bridge is installed. All detour related signs will be uncovered. "Bridge Closed" signs will be in place in advance of the work area and detour concrete barriers. Closed lanes that will be open daily for construction movement will be barricaded at night with Type III barricades. See the traffic control plan for the detour for devices and placement.



DETOUR LAYOUT PLAN
1" = 20'
0 20' 40'





DRUM

OBJECT MARKER

NOTES

1.TEMPORARY EDGE LINE AND CENTER LINE STRIPING SHALL BE INSTALLED ON DETOUR.
2.DESIGN SPEED = 20 MPH, SEE PHASE II PERMANENT SIGN PLAN FOR SPEED REDUCTION SIGNS.
3. OBJECT MARKERS TO BE INSTALLED ON BARRIER ENDS WHEN LOCATED IN CLEAR SPACE.
4. STANDARD T-35/T-36 TO BE USED FOR CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS.

RUGGLES ENGINEERING SERVICES, INC.
4580 MEMORIAL DRIVE, ST. JOHNSBURY, VT 05819
Civil Engineering-Site Development
Septic System Design-Soils Analysis
802-748-5898

JOB No. 15030

PREPARED FOR:
A.L. ST. ONGE CONTRACTORS, INC.
Address P.O. BOX 65 MONTGOMERY, VT 05470

DETOUR PLAN
MIDDLESEX BRF 024-1(37)

REVISIONS

No.	Description	Date
1	MINOR NOTE REVISIONS	07/22/15
-	-	-
-	-	-
-	-	-

Designed: T.R.
Drawn: -
Checked: -
DATE: 07/13/15

Sheet of

2.4 Road Base, Shoulder Improvements, Intersections and Detour Removal:

Traffic control will use flaggers and a daily shift pattern to maintain 1-way traffic. Standards T-35 and T-36 will also be required when there are uneven lanes. Daily lane closures will be required.

Daily Lane Closure Sign Layout Plan

NOTES:
1. Signs to be mounted on ground stands.
2. Signs to be turned away or laid down when not in use.
3. Daily Lane Closure signs to be coordinated with Permanent Sign Layout Plan.

Use as needed in advance of graveled surface, pavement drops or milled approaches.

833.0 0 416.00 833.0 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 417 Ft. 1cm = 50 Meters

© Vermont Agency of Natural Resources

THIS MAP IS NOT TO BE USED FOR NAVIGATION

DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

2.5 Guardrail, Signs and Final Pavement Marking:

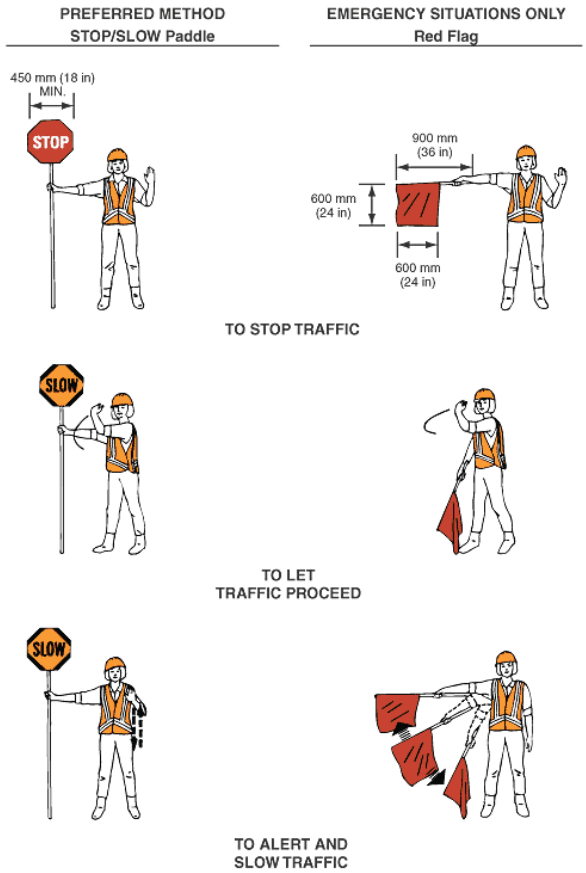
Traffic control will use flaggers and a daily shift pattern to maintain 1-way traffic.

Appendix A – Schedules and Supporting Information

Flagger Hand Signals

Sign Installation

Figure 6E-1. Use of Hand-Signaling Devices by Flaggers



Standard: The following methods of signaling with paddles shall be used:

A. To stop road users, the flagger shall face road users and aim the STOP paddle face toward road users in a stationary position with the arm extended horizontally away from the body. The free arm shall be held with the palm of the hand above shoulder level toward approaching traffic.

B. To direct stopped road users to proceed, the flagger shall face road users with the SLOW paddle face aimed toward road users in a stationary position with the arm extended horizontally away from the body. The flagger shall motion with the free hand for road users to proceed.

C. To alert or slow traffic, the flagger shall face road users with the SLOW paddle face aimed toward road users in a stationary position with the arm extended horizontally away from the body.

Option: To further alert or slow traffic, the flagger holding the SLOW paddle face toward road users may motion up and down with the free hand, palm down.

Standard: The following methods of signaling with a flag shall be used:

A. To stop road users, the flagger shall face road users and extend the flag staff horizontally across the road users' lane in a stationary position so that the full area of the flag is visibly hanging below the staff. The free arm shall be held with the palm of the hand above the shoulder level toward approaching traffic.

B. To direct stopped road users to proceed, the flagger shall stand parallel to the road user movement and with flag and arm lowered from the view of the road users, and shall motion with the free hand for road users to proceed. Flags shall not be used to signal road users to proceed.

C. To alert or slow traffic, the flagger shall face road users and slowly wave the flag in a sweeping motion of the extended arm from shoulder level to straight down without raising the arm above a horizontal position. The flagger shall keep the free hand down.

General Sign Installations

Figure 6F-1. Height and Lateral Location of Signs—Typical Installations

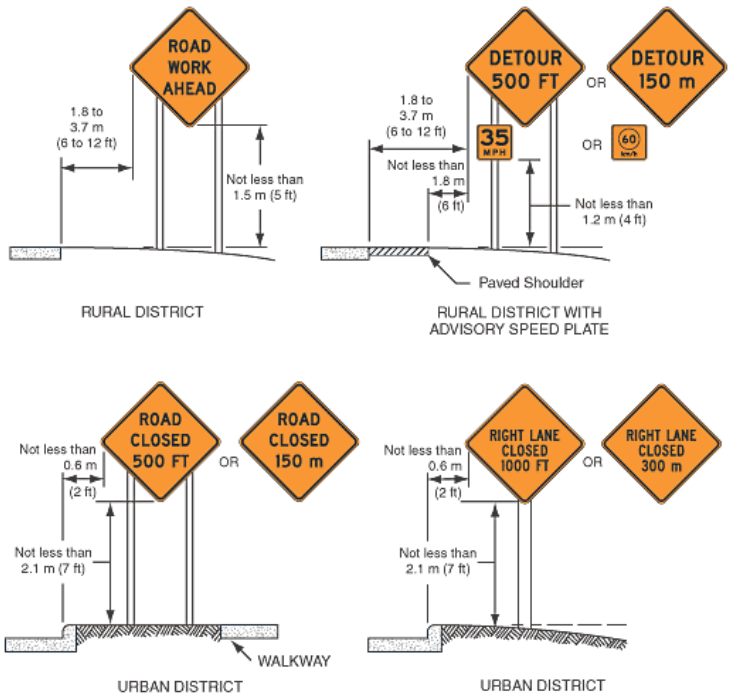


Figure 6F-1. Height and Lateral Location of Signs—Typical Installations

This figure shows four examples of the height and lateral location of signs for typical installations.

The first illustration is labeled "Rural District." The roadway is shown with no shoulder. The sign in this example is a diamond-shaped Road Work Ahead sign. The distance between the edge of the pavement and the near edge of the sign is shown as a dimension of 1.8 to 3.7 m (6 to 12 ft). The distance from the bottom edge of the sign to the level of the edge of the pavement is shown as a dimension not less than 1.5 m (5 ft).

The second illustration is labeled "Rural District with Advisory Speed Plate." The roadway is shown with a paved shoulder. The sign in this example is a diamond-shaped Detour sign with an advisory speed plaque mounted below it, with the metric alternate signs shown to the right. The distance between the outside edge of the roadway and the near edge of the sign is shown as a dimension of 1.8 to 3.7 m (6 to 12 ft). The distance between the outside edge of the paved shoulder and the near edge of the sign is shown as a dimension not less than 1.8 m (6 ft). The distance from the bottom edge of the advisory speed plaque to the level of the edge of the roadway at the inside edge of the shoulder is shown as a dimension not less than 1.2 m (4 ft).

The third illustration is labeled "Urban District." The roadway is shown with a curb along the outside edge of the pavement and a walkway to the right of the sign. The sign in this example is a diamond-shaped Road Closed sign with a metric alternate shown to the right. The distance from the edge of the roadway to the near edge of the sign is shown as a dimension no less than 0.6 m (2 ft). The distance from the bottom edge of the sign to the surface of the curbing is shown as a dimension no less than 2.1 m (7 ft).

The fourth illustration is labeled "Urban District." The roadway is shown with a curb along the outside edge of the pavement. The sign in this example is a diamond-shaped Right Lane Closed sign with a metric alternative shown to the right. The distance from the edge of the roadway to the near edge of the warning sign is shown as a dimension not less than 0.6 m (2 ft). The distance from the bottom edge of the sign to the level edge of the travel lane at the top of the curbing is shown as a dimension of not less than 2.1 m (7 ft).

Appendix B –Standard Sheets for Traffic Control

T-1 Traffic Control General Notes and Contract Notes.

T-35 Construction Zone Longitudinal Drop Offs.

T-36 Construction Zone Longitudinal Drop-Offs for Pavement.

1. TRAFFIC CONTROL DEVICES NOT DETAILED IN THE VERMONT AGENCY OF TRANSPORTATION (VAOT) ''STANDARD DRAWINGS'' OR THE PROJECT PLANS SHALL BE IN ACCORDANCE WITH THE "MANUAL ON TRAFFIC CONTROL DEVICES" (MUTCD) AND THE ''STANDARD HIGHWAY SIGNS AND MARKINGS'' BOOK (SHSM) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).

2. CONSTRUCTION SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES, DURING PERIODS OF INACTIVITY OR UPON COMPLETION OF THE WORK. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER.

3. CONSTRUCTION SIGN COVERS SHALL CONSIST OF A PANEL, PAINTED FLAT BLACK, THE SAME SIZE AS THE SIGN IT COVERS. THE PANEL SHALL BE OF WOOD, PLYWOOD, HARDBOARD OR ANY MATERIAL SATISFACTORY TO THE ENGINEER. NO MATERIAL WILL BE APPROVED THAT WILL DETERIORATE BY EXPOSURE TO THE WEATHER DURING THE PROJECT. MOUNTING OF THE PANEL SHALL BE DONE IN SUCH A WAY AS NOT TO DAMAGE THE SIGN FACE MATERIAL.

4. SIGNS SHALL BE MAINTAINED IN A CLEAN AND LEGIBLE CONDITION SATISFACTORY TO THE ENGINEER. THEY SHALL BE KEPT PLUMB AND LEVEL, AND ALWAYS PRESENT A NEAT APPEARANCE. DAMAGED, DEFACED OR DIRTY SIGNS SHALL BE REPAIRED, CLEANED OR REPLACED AS ORDERED BY THE ENGINEER.

5. NO CROSS-BRACING OR BACK-BRACING TO KEEP POSTS PLUMB WILL BE ALLOWED. CONCRETE FOUNDATIONS, COLLARS OR SOIL BEARING PLATES ARE NOT PERMITTED. CONSTRUCTION SIGNS SHALL BE PLACED ON TWO POSTS.

6. CONSTRUCTION SIGNS INSTALLED ON POSTS SHALL BE SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST FIVE FEET ABOVE THE EDGE OF PAVEMENT AND THE NEAREST EDGE OF A SIGN SHALL BE AT LEAST SIX FEET OUTSIDE THE SHOULDER POINT, FOUR FEET OUTSIDE GUARDRAIL, OR TWO FEET OUTSIDE CURBING OR SIDEWALK. THE INSTALLATION OF SIGNS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER. IN URBAN AREAS, THE BOTTOM OF THE SIGN SHALL BE AT LEAST SEVEN FEET ABOVE THE SIDEWALK OR EDGE OF PAVEMENT, WHICHEVER IS HIGHER.

7. PORTABLE SIGNS SHALL BE PLACED ON THE EDGE OF ROADWAY AND A MINIMUM OF ONE FOOT ABOVE THE TRAVELED WAY. ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. WHEN PLACED BEHIND GUARDRAIL, THE BOTTOM OF THE SIGN FACE SHALL BE ABOVE THE TOP OF THE GUARDRAIL.

8. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.

9. ROLL UP CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) M 268 ["AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) D 4956] TYPE VI AND TYPE VII UNLESS OTHERWISE NOTED.

10. SOLID SUBSTRATE CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) M 268 ["AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) D 4956] TYPE VIII OR IX REQUIREMENTS UNLESS OTHERWISE NOTED.

11. WHERE CONSTRUCTION SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARDRAIL OR OTHER APPROVED TRAFFIC BARRIERS, ALL SIGN STANDS AND POST INSTALLATIONS SHALL MEET "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 OR THE AASHTO "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH). THE APPROPRIATE RESOURCE SHALL BE DETERMINED AS DESCRIBED IN THE MASH PUBLICATION. NO SIGN POSTS SHALL EXTEND OVER THE TOP OF THE SIGN INSTALLED ON SAID POSTS. WHEN ANCHORS ARE INSTALLED, STUBS SHALL NOT BE GREATER THAN FOUR INCHES ABOVE EXISTING GROUND.

12. ROADWAY AND SHOULDER WIDTHS DEPICTED ON THE STANDARD DRAWINGS MAY VARY.

13. THESE STANDARD DRAWINGS ARE INTENDED TO SERVE AS VTRANS STANDARD OPERATING PROCEDURE. IT IS NOTED THAT COMPONENT PARTS OF A TEMPORARY TRAFFIC CONTROL WORK ZONE MAY BE MODIFIED DUE TO FIELD CONDITIONS, AT THE DISCRETION OF THE ENGINEER.

TRAFFIC CONTROL

22. FULL ACCESS TO ALL SIDE ROADS AND DRIVES WITHIN THE PROJECT LIMITS SHALL BE MAINTAINED AT ALL TIMES. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 900.645 "SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)".

23. ANY TEMPORARY MEANS OF SUPPORTING FILL SHALL BE INCIDENTAL TO THE ITEM 528.11 "TWO-WAY TEMPORARY BRIDGE". TEMPORARY PAVEMENT MARKINGS ON APPROACHES TO THE TEMPORARY BRIDGE WILL BE INCLUDED FOR PAYMENT UNDER CONTRACT ITEM 528.11.

24. THE CONTRACTOR SHALL ADD SIGN G20-5AP TO THE TOP OF ALL TEMPORARY SPEED LIMIT SIGNS AS DETAILED IN THE MUTCD.

25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF A SITE SPECIFIC TRAFFIC CONTROL PLAN. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A DETAILED TRAFFIC CONTROL PLAN FOR ALL STAGES OF CONSTRUCTION. NO WORK SHALL BEGIN UNTIL THE TRAFFIC CONTROL PLAN HAS BEEN APPROVED.

26. PAYMENT FOR ALL ON AND OFF-PROJECT CONSTRUCTION SIGNING AND TRAFFIC CONTROL DEVICES, INCLUDING DRUMS, TRAFFIC DIVIDERS AND BARRICADES, AND FOR ALL COSTS RELATED TO TRAFFIC CONTROL NOT OTHERWISE PAID UNDER A SEPARATE CONTRACT ITEM(S), INCLUDING PREPARATION OF AND IF NECESSARY REVISION(S) TO THE SITE-SPECIFIC TRAFFIC CONTROL PLAN, WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 900.645 "SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)".

OTHER STDS. REQUIRED: **NONE**

REVISIONS AND CORRECTIONS

AUG. 6, 2012 - ORIGINAL APPROVAL DATE

APPROVED

HIGHWAY SAFETY & DESIGN ENGINEER

DIRECTOR OF PROGRAM DEVELOPMENT

Mark D. Richter

FEDERAL HIGHWAY ADMINISTRATION

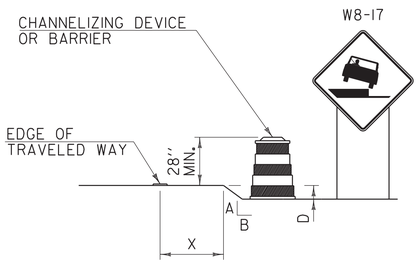
TRAFFIC CONTROL GENERAL NOTES

VERMONT AGENCY OF TRANSPORTATION

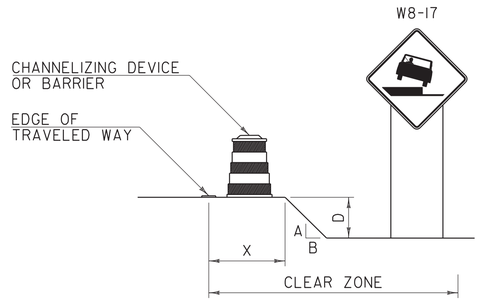
STANDARD

T-1

DROP-OFF ADJACENT TO TRAVELED WAY



TYPE 1

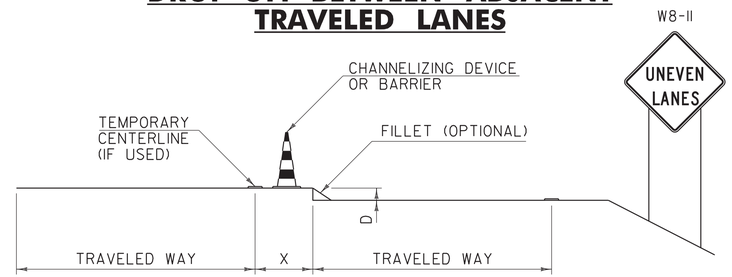


TYPE 2

NOTES:

1. CHANNELIZING DEVICES OR BARRIER SHOULD BE PLACED TO MAXIMIZE THE WIDTH OF THE TRAVELED WAY.
2. SEE CHART "A" FOR SPECIFIC REQUIREMENTS.
3. IF THE DROP-OFF REQUIRES CHANNELIZING DEVICES TO REMAIN IN PLACE OVERNIGHT, THEN "SHOULDER DROP-OFF SYMBOL" (W8-17) SIGNS SHOULD BE INSTALLED.

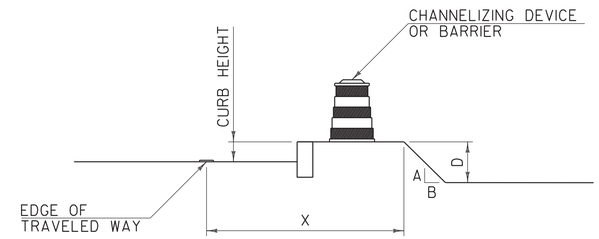
DROP-OFF BETWEEN ADJACENT TRAVELED LANES



NOTES:

1. WHENEVER A LONGITUDINAL DROP-OFF BETWEEN ADJACENT TRAVELED LANES IS TO BE LEFT OVERNIGHT, THEN "UNEVEN LANES" (W8-11) SIGNS AND CHANNELIZING DEVICES SHOULD BE INSTALLED.
2. IF REQUIRED, THE CHANNELIZING DEVICES USED SHOULD BE THOSE WHICH MAXIMIZE THE WIDTH OF THE TRAVELED LANE (I.E. CONES, VERTICAL PANELS OR TUBULAR MARKERS).
3. A BITUMINOUS CONCRETE FILLET WITH A 1.5:1 SLOPE MAY BE USED IN PLACE OF CHANNELIZING DEVICES, HOWEVER THE "UNEVEN LANES" (W8-11) SIGNS SHOULD STILL BE INSTALLED.
4. SEE CHART "A" FOR SPECIFIC REQUIREMENTS.

DROP-OFF BEYOND SHOULDER OR CURB



NOTES:

1. USE CHART "A" FOR VERTICAL CURBS UNDER SIX INCHES, MOUNTABLE CURBS OR ROADWAYS WITH A POSTED SPEED ABOVE 40 MPH.
2. USE CHART "B" FOR VERTICAL CURBS SIX INCHES OR GREATER.

CHART "A"
ALL SPEEDS WITH NO CURB OR MOUNTABLE CURB

X (FEET)	DROP (D) (INCHES)	A:B SLOPE	RECOMMENDED DEVICE
0 TO 4'	LESS THAN 2"	ANY	NONE
	2" TO 6"	1:1.5 OR FLATTER	NONE
		STEEPER THAN 1:1.5	CHANNELIZING DEVICE
	GREATER THAN 6"	1:3 OR FLATTER	NONE
		STEEPER THAN 1:3	BARRIER
4' TO 10'	LESS THAN 6"	ANY	NONE
	6" TO 12"	1:3 OR FLATTER	NONE
		STEEPER THAN 1:3	BARRIER
	GREATER THAN 12"	1:3 OR FLATTER	NONE
		STEEPER THAN 1:3	BARRIER
10' TO CZ	LESS THAN OR EQUAL TO 12"	ANY	NONE
	GREATER THAN 12"	1:3 OR FLATTER	NONE
		STEEPER THAN 1:3	BARRIER

NOTES:

1. THE MINIMUM CLEAR ZONE FOR FREEWAYS IS TO BE DETERMINED PER THE CURRENT AASHTO ROADSIDE DESIGN GUIDE. ALL OTHER HIGHWAYS WILL BE DETERMINED PER THE CURRENT "VERMONT STATE STANDARDS" BOOK.
2. CHANNELIZING DEVICES MAY BE USED INSTEAD OF BARRIER FOR SHORT TERM OPERATIONS.
3. ON BORDERLINE CONDITIONS, THE ENGINEER SHOULD DETERMINE WHICH TREATMENT IS ADEQUATE FOR THE EXISTING CONDITIONS.

CHART "B"
40 MPH OR LESS WITH VERTICAL CURB

X (FEET)	DROP (D) (INCHES)	DEVICE REQUIRED
0-10'	LESS THAN OR EQUAL TO 12"	NONE
0-10'	GREATER THAN 12"	CHANNELIZING DEVICE
GREATER THAN 10'	ANY	NONE

GENERAL NOTES:

1. THESE CONDITIONS AND TREATMENTS ARE ONLY PART OF THE TRAFFIC CONTROL SYSTEM AND SHOULD BE USED IN ADDITION TO THE PROPER WORK ZONE SIGNING.
2. THE FOLLOWING ARE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) COMPLIANT CHANNELIZING DEVICES:

   A. VERTICAL PANEL
   B. TYPE I OR TYPE II BARRICADE
   C. PLASTIC DRUM
   D. CONE - WHERE APPLICABLE
   E. TUBULAR MARKERS

   IF CHANNELIZING DEVICES ARE REQUIRED TO STAY IN PLACE DURING NIGHTTIME HOURS, THEY SHALL BE STABILIZED WHILE UNATTENDED IN ACCORDANCE WITH THE MUTCD.

3. WHERE BARRIER IS NECESSARY, THE BARRIER SHALL BE TAPERED BEYOND THE CLEAR ZONE. WHEN THE BARRIER CANNOT BE TAPERED BEYOND THE CLEAR ZONE, A MUTCD COMPLIANT END TREATMENT SHALL BE USED. BARRIER AND END TREATMENT SHALL MEET "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 OR THE "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH). THE APPROPRIATE RESOURCE SHALL BE DETERMINED AS DESCRIBED IN THE MASH PUBLICATION.
4. CHANNELIZING DEVICE SPACING ALONG A LONGITUDINAL DROP-OFF (TANGENT) SHALL BE AS FOLLOWS:

   TANGENT - CHANNELIZING DEVICES SHALL BE SPACED "2S" ("S" IS EQUAL TO THE POSTED SPEED LIMIT IN FEET) APART.

5. "LOW SHOULDER" (W8-9) AND "SHOULDER DROP-OFF SYMBOL" (W8-17) SIGNS, WHEN USED, SHOULD BEGIN PRIOR TO THE DROP-OFF CONDITION AND SHOULD BE REPEATED EVERY 1500 FEET.

OTHER STDS. REQUIRED: **T-1**

REVISIONS AND CORRECTIONS

AUG. 6, 2012 - ORIGINAL APPROVAL DATE

APPROVED

HIGHWAY SAFETY & DESIGN ENGINEER

DIRECTOR OF PROGRAM DEVELOPMENT

Mark D. Richter

FEDERAL HIGHWAY ADMINISTRATION

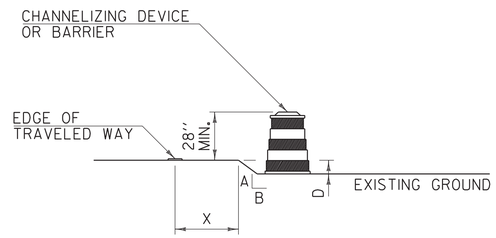
CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS

VERMONT AGENCY OF TRANSPORTATION

STANDARD

T-35

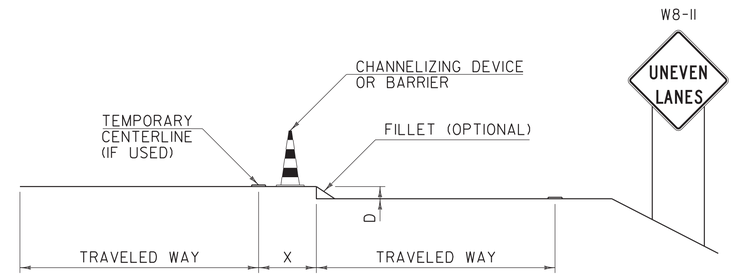
DROP-OFF ADJACENT TO TRAVELED WAY



NOTES:

1. CHANNELIZING DEVICES SHOULD BE PLACED TO MAXIMIZE THE WIDTH OF THE TRAVELED WAY.
2. SEE CHART "A" FOR SPECIFIC REQUIREMENTS.
3. IF THE DROP-OFF REQUIRES CHANNELIZING DEVICES TO REMAIN IN PLACE OVERNIGHT, THEN "LOW SHOULDER" (W8-9) OR "SHOULDER DROP-OFF SYMBOL" (W8-17) SIGNS SHOULD BE INSTALLED.

DROP-OFF BETWEEN ADJACENT TRAVELED LANES



NOTES:

1. WHENEVER A LONGITUDINAL DROP-OFF BETWEEN ADJACENT TRAVELED LANES IS TO BE LEFT OVERNIGHT, THEN "UNEVEN LANES" (W8-11) SIGNS AND CHANNELIZING DEVICES SHOULD BE INSTALLED.
2. IF REQUIRED, THE CHANNELIZING DEVICES USED SHALL BE THOSE WHICH MAXIMIZE THE WIDTH OF THE TRAVELED LANE (I.E. CONES, VERTICAL PANELS OR TUBULAR MARKERS).
3. A BITUMINOUS CONCRETE FILLET WITH A 1.5:1 SLOPE MAY BE USED IN PLACE OF CHANNELIZING DEVICES, HOWEVER THE "UNEVEN LANES" (W8-11) SIGNS SHOULD STILL BE INSTALLED.
4. SEE CHART "A" FOR SPECIFIC REQUIREMENTS.

CHART "A"
ALL SPEEDS WITH NO CURB

X (FEET)	DROP (D) (INCHES)	A:B SLOPE	DEVICE REQUIRED
0 TO 4'	LESS THAN 2"	ANY	NONE
	2" TO 6"	1:1.5 OR FLATTER	NONE
		STEEPER THAN 1:1.5	CHANNELIZING DEVICE
	GREATER THAN 6"	1:3 OR FLATTER	NONE
		STEEPER THAN 1:3	BARRIER
4' TO 10'	LESS THAN 6"	ANY	NONE
	6" TO 12"	1:3 OR FLATTER	NONE
		STEEPER THAN 1:3	BARRIER

NOTE:

1. ON BORDERLINE CONDITIONS, THE ENGINEER SHOULD DETERMINE WHICH TREATMENT IS ADEQUATE FOR THE EXISTING CONDITIONS.

GENERAL NOTES:

1. THESE CONDITIONS AND TREATMENTS ARE ONLY PART OF THE TRAFFIC CONTROL SYSTEM AND SHOULD BE USED IN ADDITION TO THE PROPER WORK ZONE SIGNING.
2. THE FOLLOWING ARE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) COMPLIANT CHANNELIZING DEVICES:

   A. VERTICAL PANEL
   B. TYPE I OR TYPE II BARRICADE
   C. PLASTIC DRUM
   D. CONE - WHERE APPLICABLE
   E. TUBULAR MARKERS

   IF CHANNELIZING DEVICES ARE REQUIRED TO STAY IN PLACE DURING NIGHTTIME HOURS, THEY SHALL BE STABILIZED WHILE UNATTENDED IN ACCORDANCE WITH THE MUTCD.
3. WHERE BARRIER IS NECESSARY, THE BARRIER SHALL BE TAPERED BEYOND THE CLEAR ZONE. WHEN THE BARRIER CANNOT BE TAPERED BEYOND THE CLEAR ZONE, A MUTCD COMPLIANT END TREATMENT SHALL BE USED. BARRIER AND END TREATMENT SHALL MEET "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 OR THE "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH). THE APPROPRIATE RESOURCE SHALL BE DETERMINED AS DESCRIBED IN THE MASH PUBLICATION.
4. CHANNELIZING DEVICE SPACING ALONG A LONGITUDINAL DROP-OFF (TANGENT) SHALL BE AS FOLLOWS:

   TANGENT - CHANNELIZING DEVICES SHALL BE SPACED "2S" ("S" IS EQUAL TO THE POSTED SPEED LIMIT IN FEET) APART.
5. "LOW SHOULDER" (W8-9) AND "SHOULDER DROP-OFF SYMBOL" (W8-17) SIGNS, WHEN USED, SHOULD BEGIN PRIOR TO THE DROP-OFF CONDITION AND SHOULD BE REPEATED EVERY 1500 FEET.

OTHER STDS. REQUIRED: **T-1**

REVISIONS AND CORRECTIONS

AUG. 6, 2012 - ORIGINAL APPROVAL DATE

APPROVED

HIGHWAY SAFETY & DESIGN ENGINEER

DIRECTOR OF PROGRAM DEVELOPMENT

Mark D. Richter

FEDERAL HIGHWAY ADMINISTRATION

CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS FOR PAVING

VERMONT AGENCY OF TRANSPORTATION

STANDARD

T-36