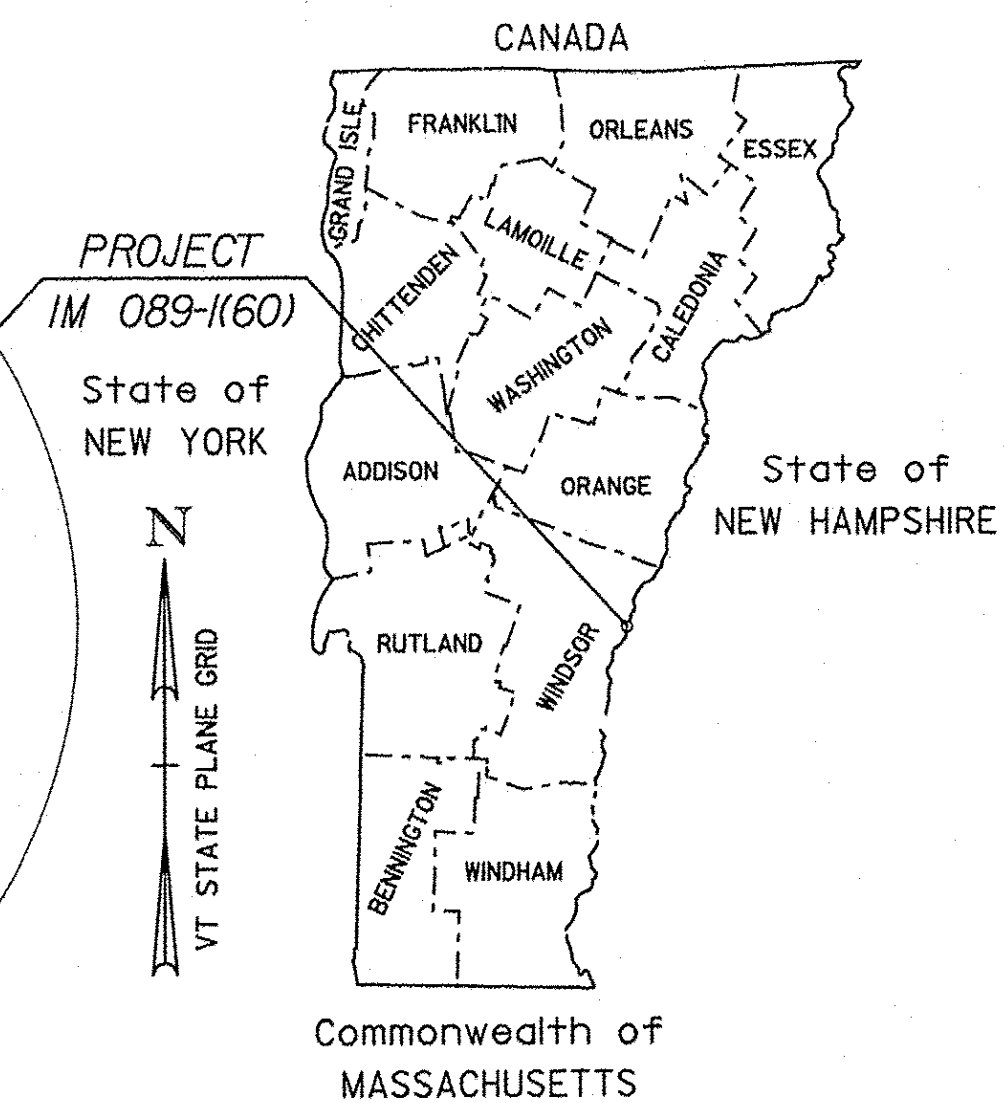
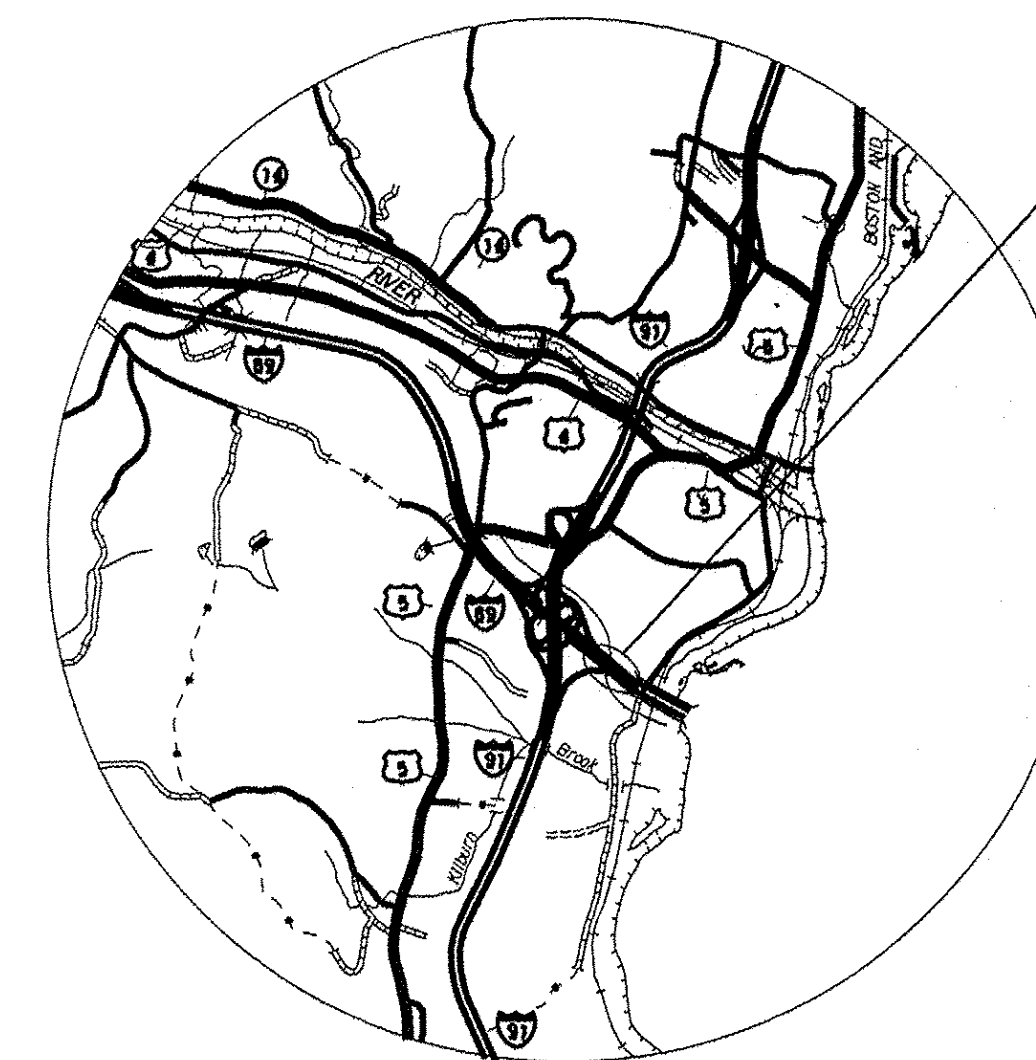


- 1 TITLE SHEET
- 2 TYPICAL SECTION SHEET
- 3 QUANTITY SHEET
- 4 LAYOUT SHEET
- 5-10 TEMPORARY TRAFFIC CONTROL SHEETS

# STATE OF VERMONT AGENCY OF TRANSPORTATION



## PROPOSED IMPROVEMENT TOWN OF HARTFORD COUNTY OF WINDSOR



RECORD PLANS	
CONTRACTOR:	J. A. MCDONALD INC. - LYNDON CENTER, VT
RESIDENT ENGINEER:	RYAN DARLING
CONSTRUCTION BEGAN:	OCTOBER 24, 2013
CONSTRUCTION COMPLETE:	JUNE 1, 2014
RECORD PLANS BY:	RYAN DARLING & AARON JAMES
I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.	
BY	RESIDENT ENGINEER
DATE <u>03/20/14</u>	
NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.	

### PRINCIPAL ARTERIAL INTERSTATE 89 (SOUTHBOUND) (NHS)

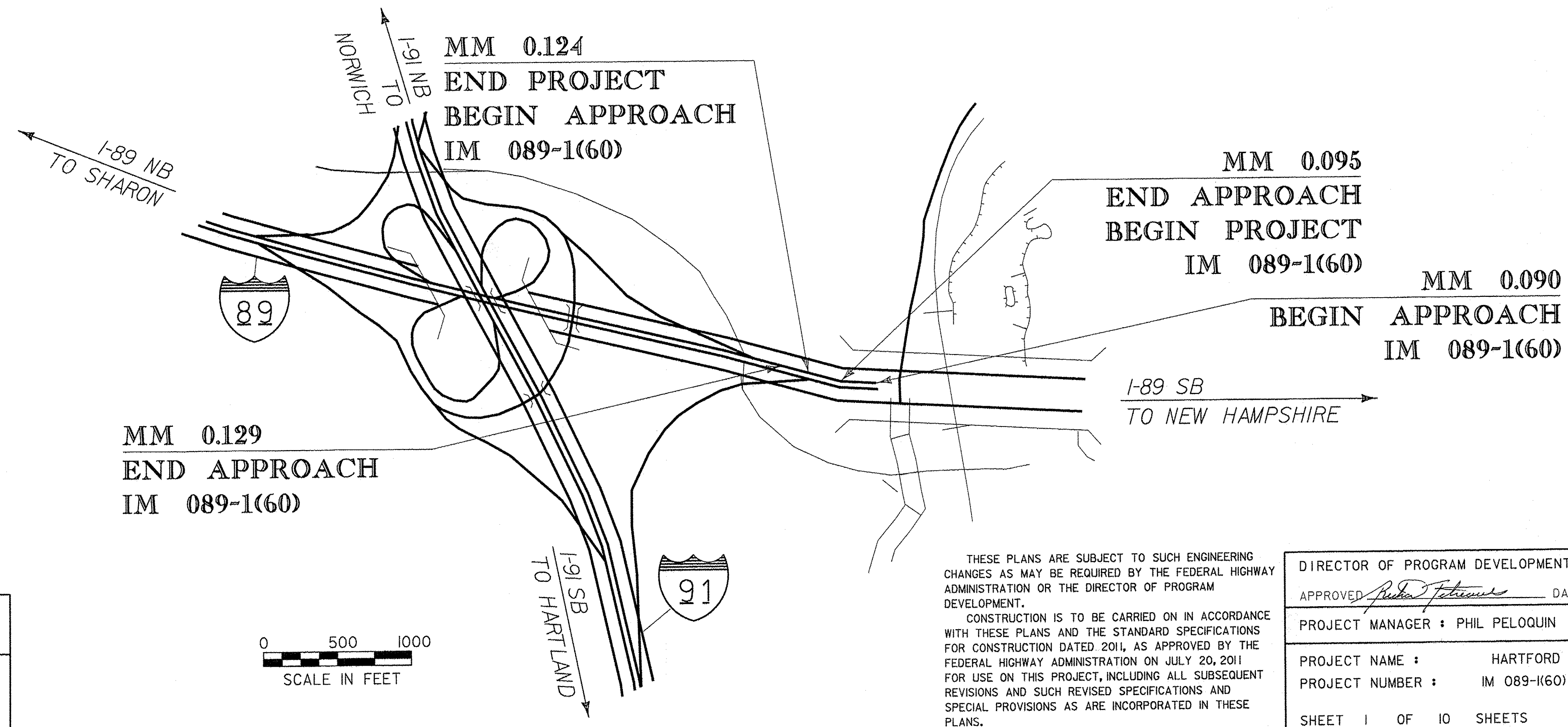
PROJECT LOCATION: BEGINNING AT A POINT ON INTERSTATE I-89 AT APPROXIMATELY MM 0.095 AND EXTENDING NORTHERLY 0.029 MILES TO APPROXIMATELY MM 0.124 IN THE SOUTHBOUND LANES ONLY

PROJECT DESCRIPTION: WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES EXPERIMENTAL DEEP SOIL INJECTION, COLD PLANING, PAVEMENT, TRAFFIC CONTROL, AND OTHER HIGHWAY RELATED ITEMS.

LENGTH OF PROJECT: 153 FT      0.029 MILES

#### TRAFFIC DATA INTERSTATE 89 SOUTHBOUND

	2013	2033
<b>AADT</b>	18,600	22,400
<b>DHV</b>	2,800	3,300
<b>ADTT</b>	1,900	3,800
<b>%T</b>	11.3	18.1
<b>%D</b>	100	100



QUALITY ASSURANCE PROGRAM: LEVEL I

#### CONVENTIONAL SYMBOLS

COUNTY LINE	
TOWN LINE	
LIMITS OF ACCESS	
POINT OF ACCESS	
FENCE LINE	
STONE WALL	
TRAVELED WAY	
GUARD RAIL	
RAILROAD	
SURVEY LINE	
CULVERT	
POWER POLE	
TELEPHONE POLE	
TREES	
CONTROL OF ACCESS	
PROPERTY LINE	
R.O.W. TAKING LINE	
SLOPE RIGHTS	
TOP OF CUT	
TOE OF SLOPE	

SURVEYED BY : N/A  
SURVEYED DATE : N/A

DATUM  
VERTICAL N/A  
HORIZONTAL N/A

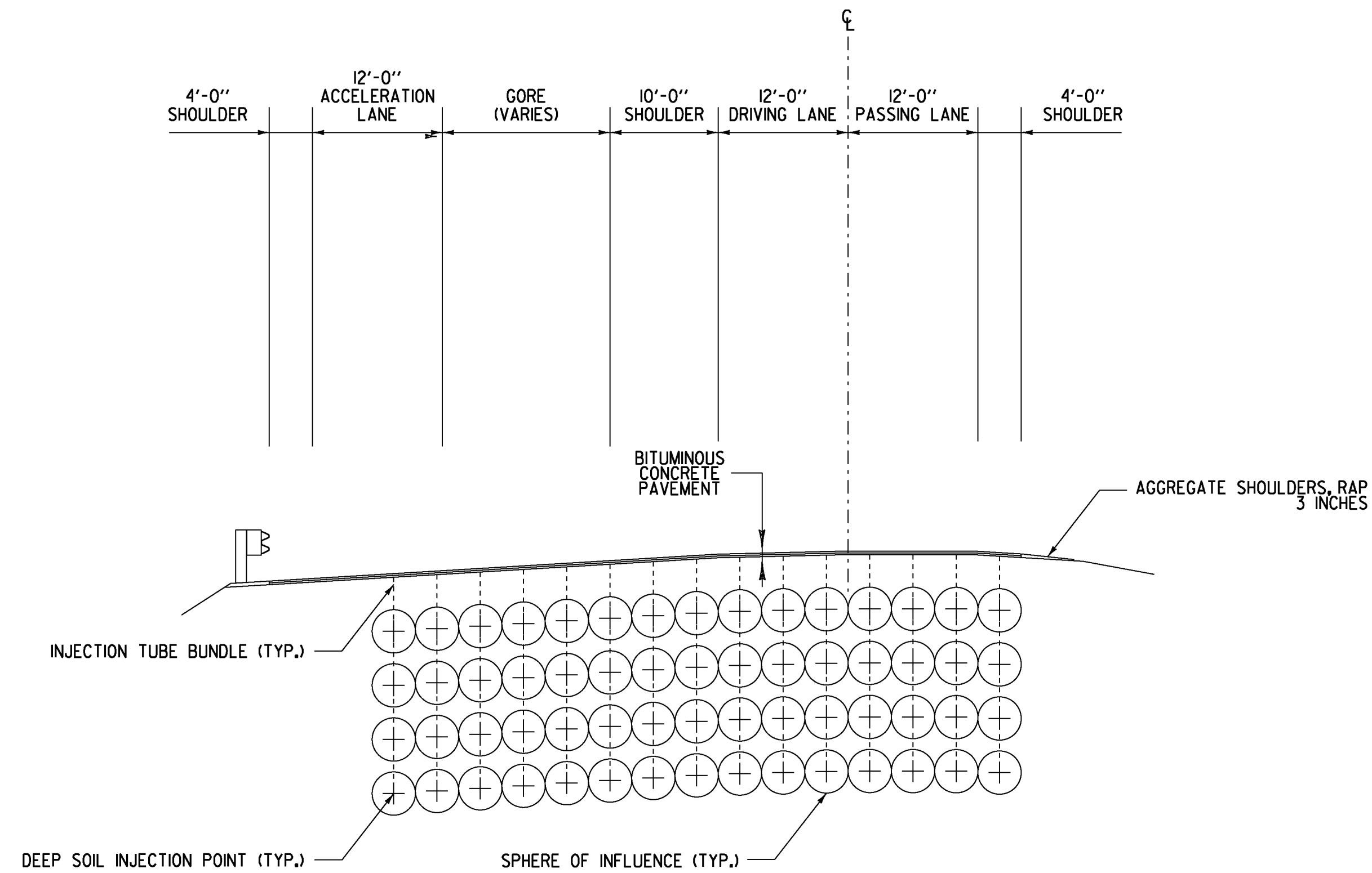
THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

DIRECTOR OF PROGRAM DEVELOPMENT	
APPROVED	DATE 7-25-13
PROJECT MANAGER : PHIL PELOQUIN	
PROJECT NAME :	HARTFORD
PROJECT NUMBER :	IM 089-1(60)
SHEET 1 OF 10 SHEETS	

**I-89 TYPICAL SECTION MAINLINE**

MM 0.090 TO MM 0.129  
 2" TYPE III WEARING COURSE  
 1" TYPE IVS LEVELING COURSE (VARIES)



**NOTES:**

1. PAVEMENT SURFACE TO BE COLD PLANED TO A DEPTH OF THREE INCHES PRIOR TO DEEP SOIL INJECTION. THE CONTRACTOR SHALL COORDINATE WITH URETEK.
2. COLD PLANING SHALL INCLUDE THE ENTIRE WIDTH OF PAVEMENT FROM MM 0.090 TO 0.129, INCLUDING TWO 25 FOOT TAPERS.
3. THE DEEP SOIL INJECTION TREATMENT AREA SHALL BEGIN AT MM 0.095 AND END AT MM 0.124. TREATMENT WIDTH SHALL BEGIN AT THE EDGE OF PAVEMENT IN THE MEDIAN AND EXTEND A VARYING WIDTH ENDING HALF WAY THROUGH THE ACCELERATION LANE.
4. ALL DEEP SOIL INJECTION SHALL BE COMPLETE PRIOR TO PAVING.
5. REMOVAL AND DISPOSAL OF ALL WASTE MATERIAL FROM THE INJECTION HOLE DRILLING SHALL BE INCIDENTAL TO ITEM 900.620 SPECIAL PROVISION (INJECTION HOLE)(2").
6. BANKING SHALL MATCH TO EXISTING AT MM 0.090 AND MM 0.129.
7. TRAFFIC CONTROL SHALL INCLUDE ALL TRAFFIC CONTROL FOR COLD PLANING, PAVING AND DEEP SOIL INJECTION OPERATIONS.
8. ALL PROJECT OPERATIONS WITHIN THE ROADWAY SHALL BE LIMITED TO BETWEEN THE HOURS OF 6:00 P.M. AND 6:00 AM. SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
9. FOUR INJECTION TUBES ARE TO BE BUNDLED TOGETHER FOR EACH INJECTION HOLE. EACH INJECTION TUBE WILL END SO AS TO CREATE INJECTION POINTS AT 5, 10, 15 AND 20 FEET BELOW THE COLD PLANED SURFACE, CREATING FOUR INJECTION POINTS PER INJECTION HOLE.
10. INJECTIONS POINTS ARE TO BE BASED ON A FOUR FOOT GRID.
11. THE SPHERE OF INFLUENCE IS THE AREA AROUND EACH INJECTION POINT TO WHICH THE URETEK 486 POLYMER IS ANTICIPATED TO EXPAND TO.
12. EACH INJECTION HOLE AND INJECTION TUBE BUNDLE SHALL BE DRILLED OUT SO THAT ALL TUBES ARE RECESSED TWO INCHES BELOW THE COLD PLANED SURFACE. EACH AREA SHALL BE PATCHED WITH BITUMINOUS MATERIAL PRIOR TO OPENING THE LANE TO TRAFFIC.

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	IM 089-1(60)
FILE NAME:	IIA306/Design/dla306frm.dgn
PROJECT LEADER:	K. ROBIE
DESIGNED BY:	P. PELOQUIN
TYPICAL SECTION SHEET	
PLOT DATE:	25-JUL-2013
DRAWN BY:	P. PELOQUIN
CHECKED BY:	S. MENARD
SHEET	2 OF 10

# QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES													TOTALS			DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
												ROADWAY	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS	
												1200	1200		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10	32				
												250	250		LF	MILLED RUMBLE STRIPS	213.10	44				
												10	10		CY	AGGREGATE SHOULDERS, IN PLACE	402.10	1				
												2	2		CWT	EMULSIFIED ASPHALT	404.65	0.04				
												1	1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50	--				
												350	350		HR	UNIFORMED TRAFFIC OFFICERS	630.10	14				
												1	1		LS	MOBILIZATION/DEMobilIZATION	635.11	--				
												1	1		LS	TRAFFIC CONTROL	641.10	--				
												3	3		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15	--				
												275	275		LF	DURABLE 6 INCH WHITE LINE, TYPE I TAPE	646.421	18				
												225	225		LF	DURABLE 6 INCH YELLOW LINE, TYPE I TAPE	646.431	19				
												300	300		LF	DURABLE 12 INCH WHITE LINE, TYPE I TAPE	646.461	25				
												275	275		LF	TEMPORARY 6 INCH WHITE LINE	646.620	18				
												225	225		LF	TEMPORARY 6 INCH YELLOW LINE	646.630	19				
												300	300		LF	TEMPORARY 12 INCH WHITE LINE	646.660	25				
												7	7		EACH	SPECIAL PROVISION (DYNAMIC CONE PENETRATION TEST)	900.620	--				
												111000	111000		LB	SPECIAL PROVISION (HIGH DENSITY POLYMER INJECTION, URETEK 486 STAR)	900.635	432				
												8400	8400		LF	SPECIAL PROVISION (INJECTION HOLE)(2")	900.640	100				
												1	1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY)(N.A.B.I.)	900.650	--				
												1	1		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT)(N.A.B.I.)	900.650	--				
												200	200		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680	--				

210.10 COLD PLANING, BITUMINOUS PAVEMENT  
MM 0.090 TO MM 0.129 (FULL WIDTH)

213.10 MILLED RUMBLE STRIPS  
MM 0.090 RT TO MM 0.129 RT

402.10 AGGREGATE SHOULDERS, IN PLACE  
MM 0.090 RT TO MM 0.129 RT

646.421 DURABLE 6 INCH WHITE LINE, TYPE I TAPE  
MM 0.090 LT TO MM 0.129 LT  
MM 0.090 CL TO MM 0.129 CL

646.431 DURABLE 6 INCH YELLOW LINE TYPE I TAPE  
MM 0.090 RT TO MM 0.129 RT

646.461 DURABLE 12 INCH WHITE LINE, TYPE I TAPE  
MM 0.098 LT TO MM 0.124 LT  
MM 0.098 RT TO MM 0.124 RT

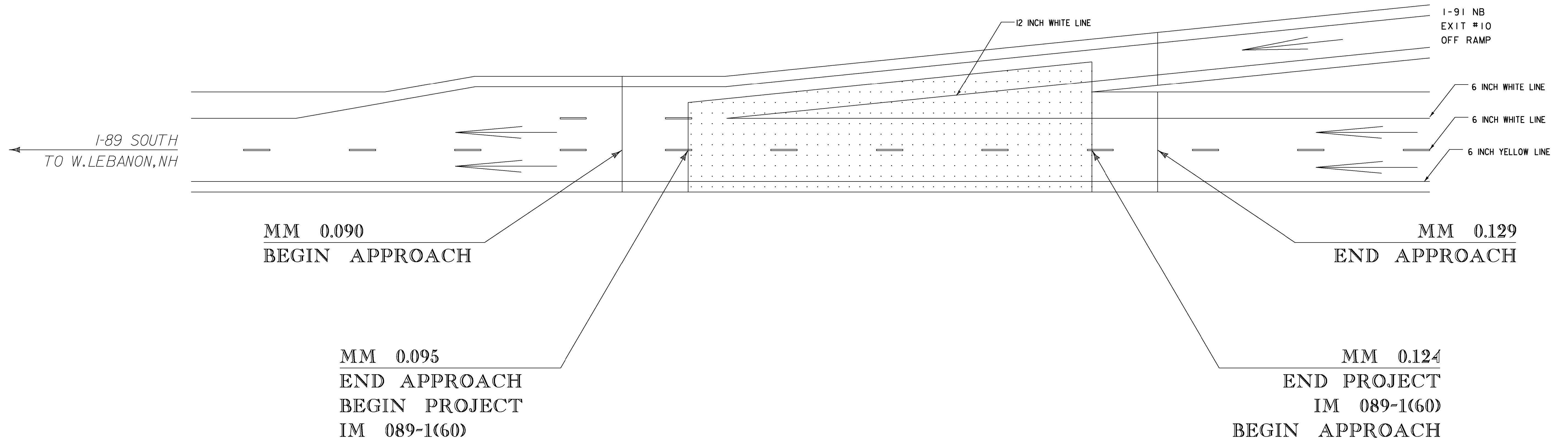
646.620 TEMPORARY 6 INCH WHITE LINE  
MM 0.090 LT TO MM 0.129 LT  
MM 0.090 CL TO MM 0.129 CL

646.630 TEMPORARY 6 INCH YELLOW LINE  
MM 0.090 RT TO MM 0.129 RT

646.660 TEMPORARY 12 INCH WHITE LINE  
MM 0.098 LT TO MM 0.124 LT  
MM 0.098 RT TO MM 0.124 RT

900.640  
~~900.620~~ SPECIAL PROVISION (2 INCH INJECTION HOLES)  
MM 0.095 TO MM 0.124

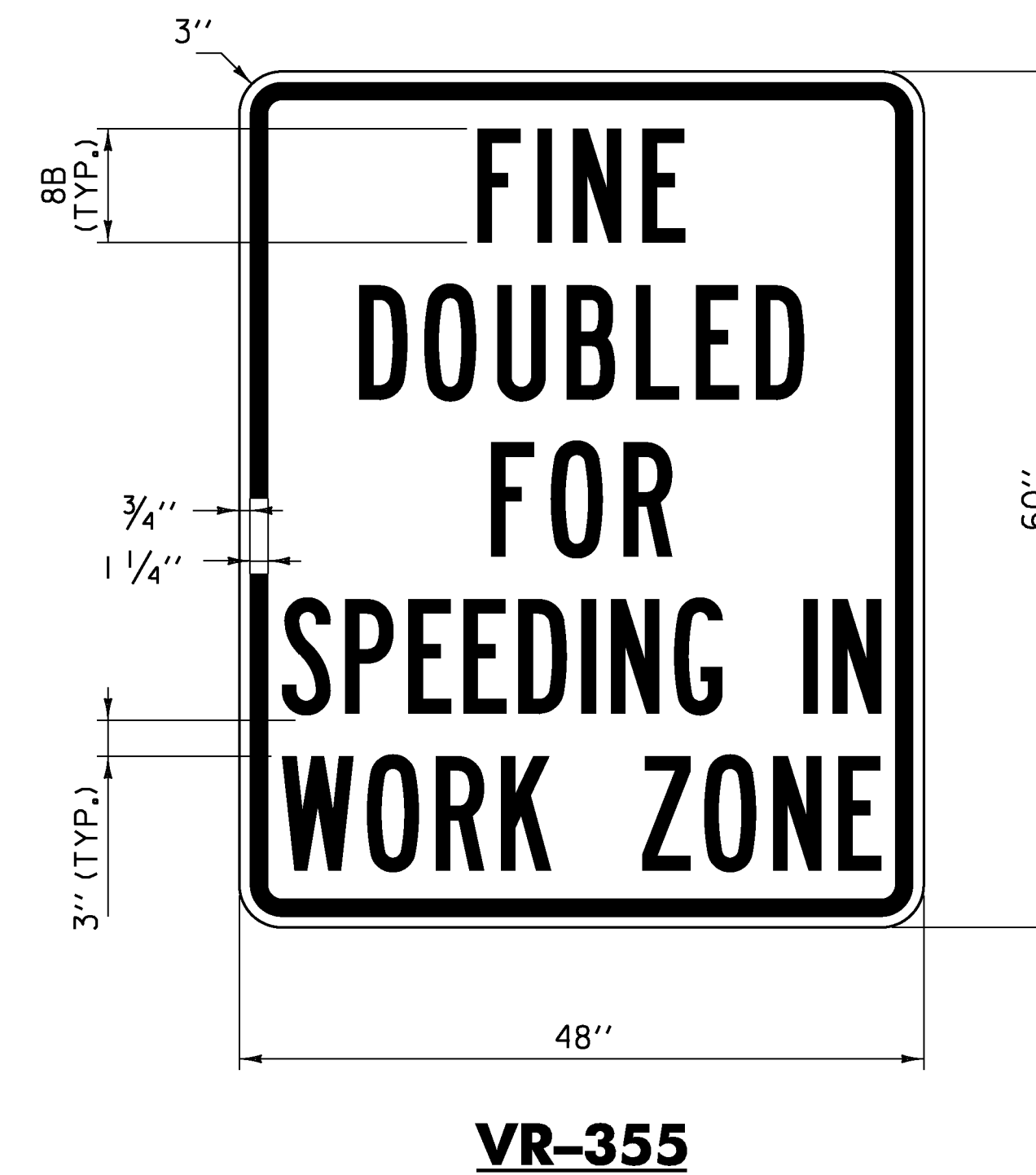
900.635 SPECIAL PROVISION (URETEK 486 POLYMER)  
MM 0.095 TO MM 0.124



NOT TO SCALE

PROJECT NAME: HARTFORD	PLOT DATE: 25-JUL-2013
PROJECT NUMBER: IM 089-1(60)	DRAWN BY: P. PELOQUIN
FILE NAME: IIA306/Design/dla306frm.dgn	CHECKED BY: S. MENARD
PROJECT LEADER: K. ROBBE	SHEET 4 OF 10
DESIGNED BY: P. PELOQUIN	
LAYOUT SHEET	

1. TRAFFIC CONTROL DEVICES NOT DETAILED IN 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, DEFACTED 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 SEVEN 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.
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.  
  
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. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A SITE SPECIFIC TRAFFIC CONTROL PLAN FOR APPROVAL PRIOR TO ANY WORK BEING PERFORMED.
13. TEMPORARY CONSTRUCTION SIGNS SHALL NOT BLOCK OR INTERFERE WITH EXISTING TRAFFIC CONTROL DEVICES (SIGNS, ETC.) ALREADY IN PLACE. ADJUST SPACING OF TEMPORARY SIGNS, AS NECESSARY.
15. NO EXPOSED SIGN POST ANCHORS/STUBS HIGHER THAN 4 INCHES ABOVE GROUND IF NOT PROTECTED BY RAIL.

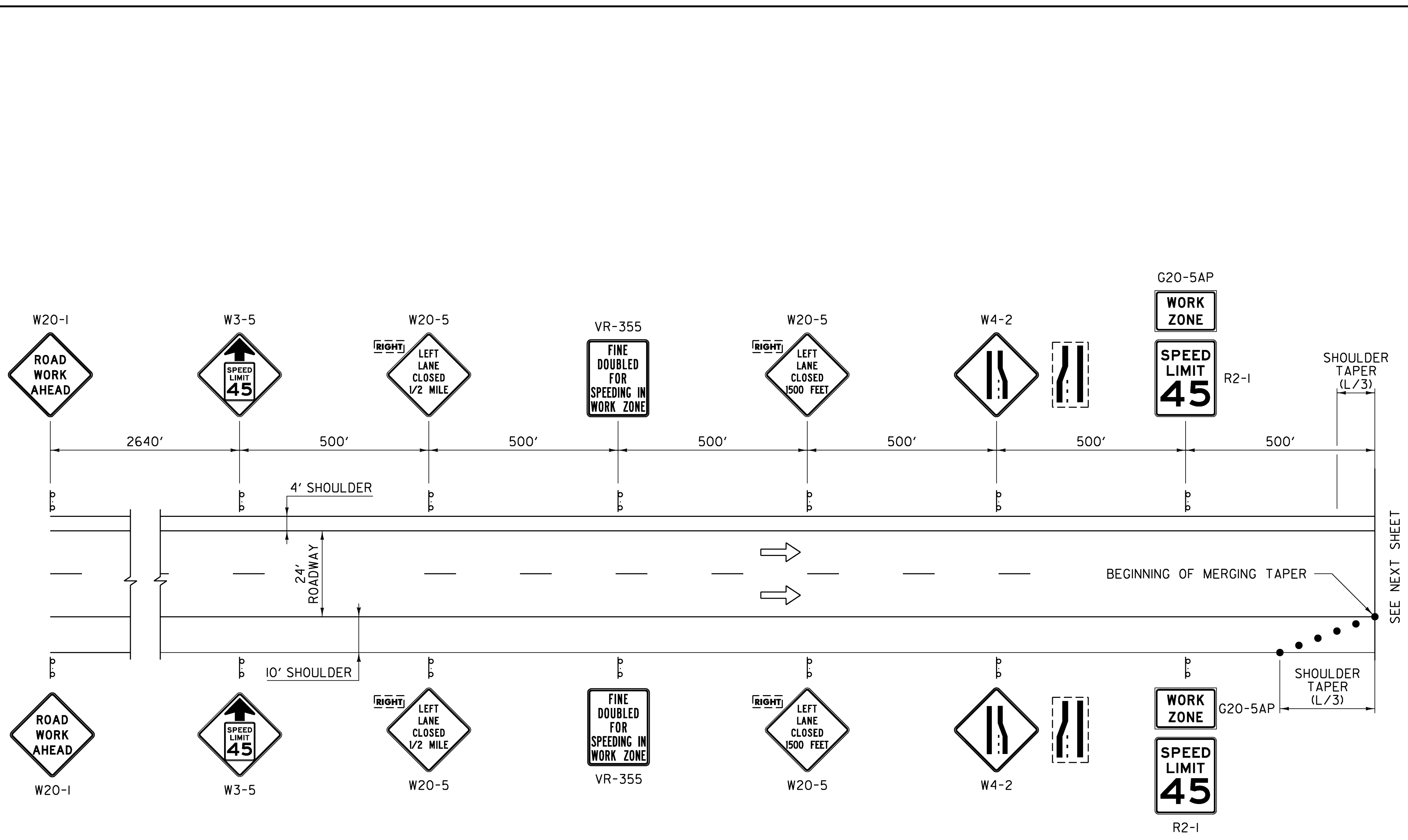


**NOTES:**

1. "SPEEDING IN" AND "WORK ZONE" SHALL EACH HAVE A SPECIFIED WIDTH OF 42 INCHES FOR EXPRESSWAY/FREEWAY.
2. THE SIGN SHALL HAVE BLACK LEGEND AND BORDER ON A WHITE BACKGROUND WITH RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) M 268 ["AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) D 4956] TYPE III.
3. LEGEND SHALL BE CENTERED HORIZONTALLY AND VERTICALLY.

## TRAFFIC CONTROL GENERAL NOTES

PROJECT NAME: HARTFORD	
PROJECT NUMBER: IM 089-1(60)	
FILE NAME: /IIA306/DESIGN/DIIA306TRF.DGN	PLOT DATE: 25-JUL-2013
PROJECT LEADER: P.PELOQUIN	DRAWN BY: P. BEYOR
DESIGNED BY: P. PELOQUIN	CHECKED BY: P. PELOQUIN
TEMPORARY TRAFFIC CONTROL SHEET #1	SHEET 5 OF 10



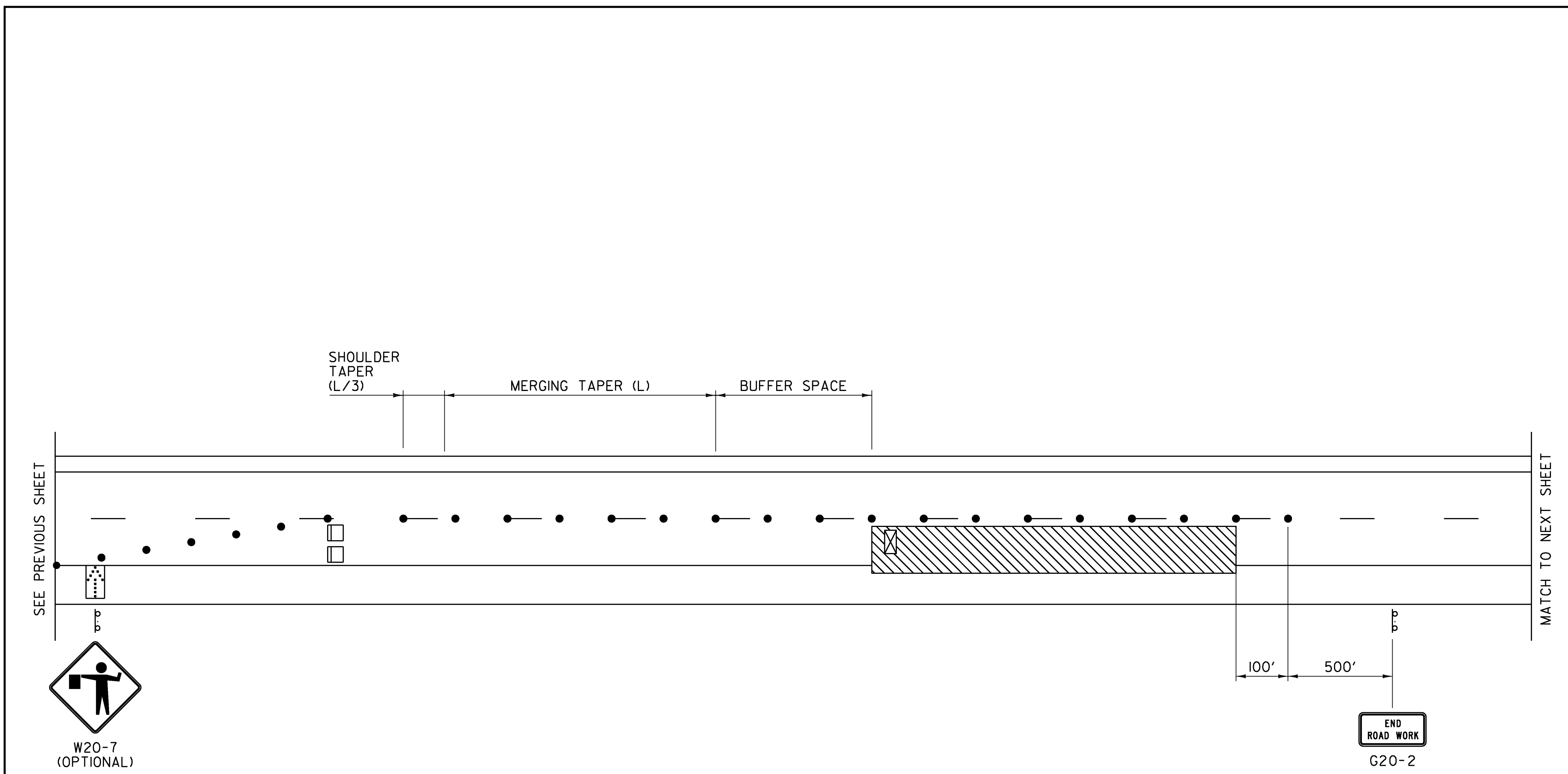
**GENERAL NOTES:**

1. IF APPLICABLE, THE CONTRACTOR SHALL HAVE SIGNS FOR CLOSURE OF RIGHT AND LEFT LANES ON PROJECT BEFORE WORK COMMENCES.
2. THE "SPEED LIMIT XX" (R2-1) AND "SPEED REDUCTION WARNING" (W3-5) SIGNS SHALL ONLY BE USED IF A TEMPORARY SPEED LIMIT CERTIFICATE HAS BEEN APPROVED. THE "SPEED LIMIT XX" (R2-1) AND OTHER RELATED SIGNS SHALL BE REMOVED OR COVERED WHEN WORK IS NOT IN PROGRESS AND ROADWAY IS NOT RESTRICTED.
3. "FINE DOUBLED FOR SPEEDING IN WORK ZONE" (VR-355) SHALL ONLY BE USED IF TEMPORARY SPEED LIMIT CERTIFICATE HAS BEEN APPROVED.
4. EXISTING SPEED LIMIT SIGNS SHALL BE COVERED WHEN TEMPORARY SPEED LIMIT SIGNS ARE POSTED.
5. FOR SHORT TERM PROJECTS (THREE CONSECUTIVE DAYS OR LESS) WITH NO OFFICIAL TEMPORARY SPEED LIMIT, THE "SPEED LIMIT XX" (R2-1) AND "SPEED REDUCTION WARNING" (W3-5) SIGNS MAY BE SUBSTITUTED WITH ADVISORY SPEED PLAQUES (W13-1P) MOUNTED AS SUPPLEMENTAL SIGNS BELOW THE "LANE ENDS" (W4-2) SIGNS.
6. FOR AN ANTICIPATED LONG TERM CLOSURE (GREATER THAN THREE CONSECUTIVE DAYS) WITH A NON-MOVING OPERATION, ALL SIGNS SHALL BE POST MOUNTED.
7. FOR A LONG TERM CLOSURE WITH A MOVING OPERATION, THE "ROAD WORK AHEAD" (W20-1) SIGN SHALL BE POST MOUNTED. THE REMAINING SIGNS MAY BE PORTABLE AND SHALL MOVE AS THE WORK AREA CHANGES.
8. FOR A SHORT TERM PROJECT (THREE CONSECUTIVE DAYS OR LESS), SIGNS MAY BE POST MOUNTED OR PORTABLE.
9. THE "SPEED LIMIT XX" (R2-1) SOLID SUBSTRATE SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING AASHTO M 268 [ASTM D 4956] TYPE III.

**LEGEND**  
 → FLOW OF TRAFFIC  
 ● RETROREFLECTIVE PLASTIC DRUM

CONSTRUCTION APPROACH  
 SIGNING DIVIDED HIGHWAY  
 ONE LANE CLOSED

PROJECT NAME: HARTFORD	PLOT DATE: 25-JUL-2013
PROJECT NUMBER: IM 089-1(60)	DRAWN BY: P. BEYOR
FILE NAME: /IIA306/DESIGN/DIIA306TRF.DGN	CHECKED BY: P. PELOQUIN
DESIGNED BY: P. PELOQUIN	TEMPORARY TRAFFIC CONTROL SHEET #2
SHEET 6 OF 10	



**GENERAL NOTES:**

1. FOR LONG TERM CLOSURES, DASHED LANE LINE REMOVAL SHALL BEGIN 750 FEET IN ADVANCE OF THE BEGINNING OF THE SHOULDER TAPER AND TEMPORARY PAVEMENT MARKINGS SHALL BE PLACED ALONG THE CHANNELIZING DEVICES.
2. CHANNELIZING DEVICES OTHER THAN RETROREFLECTIVE PLASTIC DRUMS SHALL BE ALLOWED ALONG THE BUFFER SPACE AND WORK AREA. THE TYPE OF DEVICE SHALL BE CONSISTENT THROUGHOUT THE BUFFER SPACE AND WORK AREA AND SHALL REMAIN STABLE WHILE UNATTENDED.
3. THE NUMBER OF CHANNELIZING DEVICES, TYPE III BARRICADE AND OTHER TRAFFIC CONTROL DEVICES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED ARE TO BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR, CURVE, ETC.). WARNING LIGHTS SHALL NOT BE USED ON CHANNELIZING DEVICES.
4. PLACE LAST CHANNELIZING DEVICE 100 FEET BEYOND THE ANTICIPATED WORK ZONE TERMINAL POINT EACH DAY.
5. THE ARROW PANEL SHALL BE PLACED ON THE SHOULDER OF THE ROADWAY, AS CLOSE AS PRACTICAL TO THE BEGINNING OF THE MERGING TAPER.
6. THE "ROAD WORK NEXT XX MILES" SIGN (G20-1) SHALL BE INSTALLED IN ADVANCE OF TEMPORARY TRAFFIC CONTROL ZONES THAT ARE MORE THAN TWO MILES IN LENGTH, OR AS DIRECTED BY THE ENGINEER. DISTANCES SHALL BE STATED TO THE NEAREST WHOLE MILE.
7. WHEN FLAGGER IS PRESENT THE "FLAGGER" (W20-7) SIGN SHALL BE USED; TO BE REMOVED IF FLAGGING STOPS FOR 15 MINUTES OR MORE.
8. "SPEED LIMIT XX" (R2-1) SIGN TO BE USED IF A TEMPORARY SPEED ZONE IS IN PLACE.
9. TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATION:  
 $L = WS$  FOR POSTED SPEEDS OF 45 MPH OR GREATER.  
 $L = WS/60$  FOR POSTED SPEEDS OF 40 MPH OR LESS.  
 L = MINIMUM LENGTH OF TAPER  
 W = WIDTH OF OFFSET IN FEET (TYPICAL)  
 S = POSTED SPEED IN MPH
10. TAPER LENGTHS FOR SHOULDER WIDTHS OTHER THAN 10 FEET NEED TO BE CALCULATED.

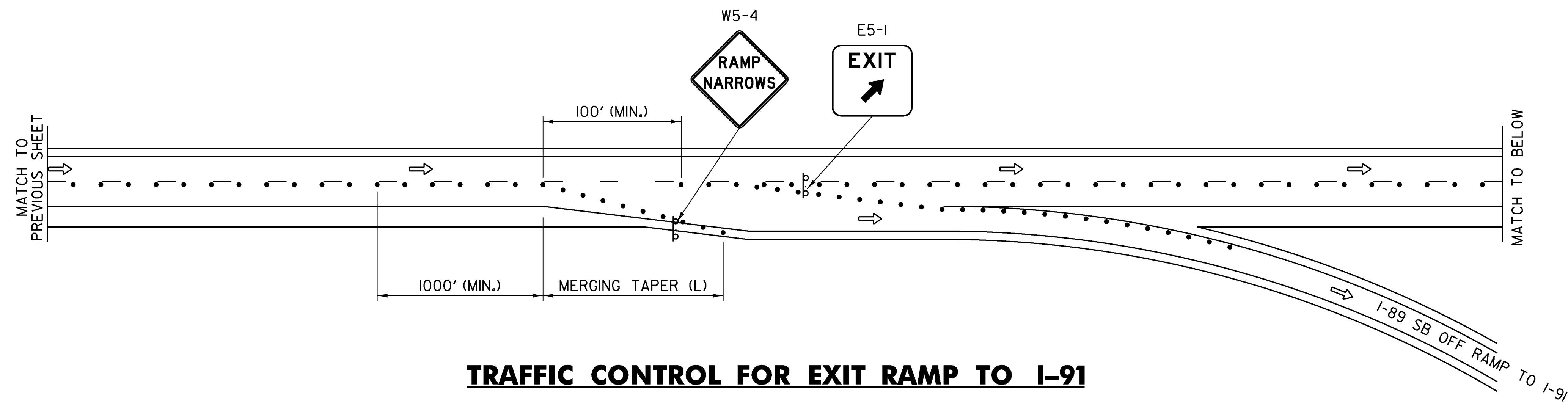
POSTED SPEED (MPH)	TAPER LENGTHS (FT)		TANGENT W=12 FT (L/2)	BARRIER FLARE RATE (MINIMUM)	MINIMUM BUFFER SPACE LENGTH (FT)	MAXIMUM CHANNELIZING DEVICE SPACING (FT)	
	SHOULDER W=10 FT (L/3)	MERGING 12 FT LANE (L)				TAPER (S)	TANGENT (2S)
≤ 40	90	320	160	1:9	305	40	80
45	150	540	270	1:9	360	45	90
50	170	600	300	1:11	425	50	100
55	185	660	330	1:13	495	55	110
60	200	720	360	1:13	570	60	120
65	215	780	390	1:13	645	65	130

**LEGEND**

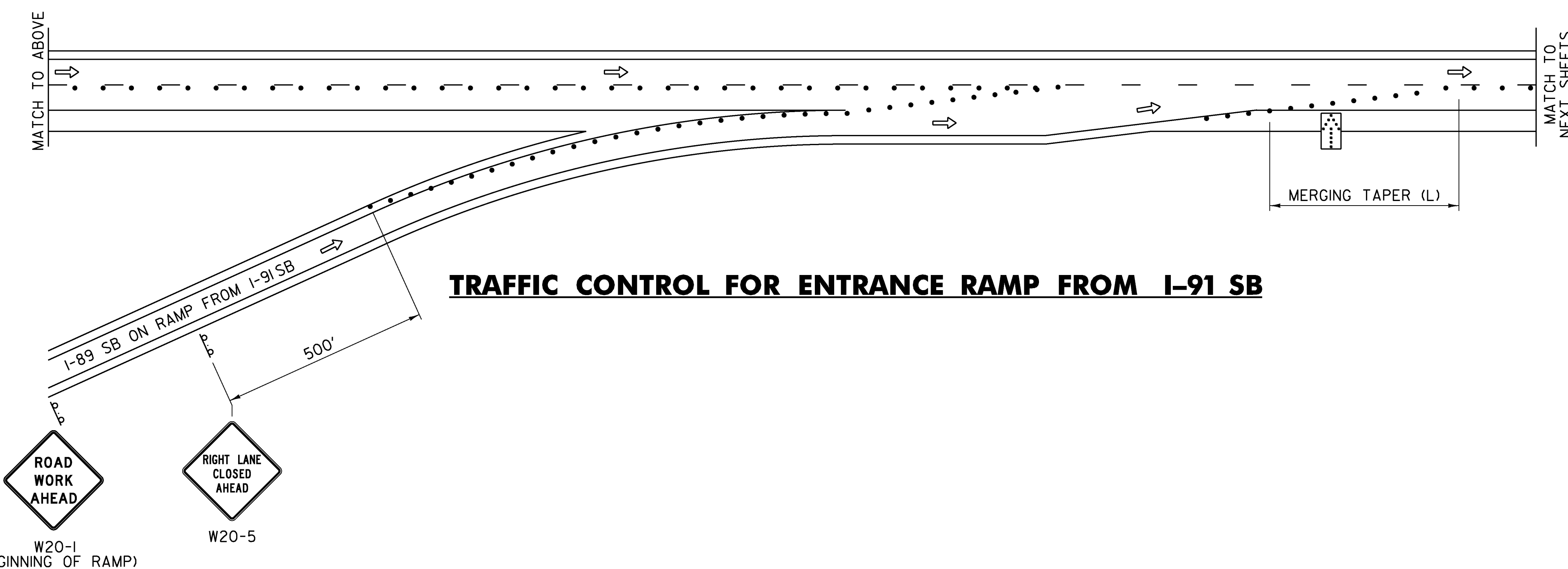
- FLOW OF TRAFFIC
- RETROREFLECTIVE PLASTIC DRUM
- ⬢ FLASHING ARROW PANEL
- TYPE III BARRICADE
- ▨ WORK AREA
- ⊠ TRUCK/TRAILER MOUNTED ATTENUATOR (OPTIONAL)

TRAFFIC CONTROL  
DIVIDED HIGHWAY  
ONE LANE CLOSED

PROJECT NAME: HARTFORD  
 PROJECT NUMBER: IM 089-1(60)  
 FILE NAME: /IIA306/DESIGN/DIIA306TRF.DGN PLOT DATE: 25-JUL-2013  
 PROJECT LEADER: P.PELOQUIN DRAWN BY: P. BEYOR  
 DESIGNED BY: P. PELOQUIN CHECKED BY: P. PELOQUIN  
 TEMPORARY TRAFFIC CONTROL SHEET #3 SHEET 7 OF 10



**TRAFFIC CONTROL FOR EXIT RAMP TO I-91**



**TRAFFIC CONTROL FOR ENTRANCE RAMP FROM I-91 SB**

**GENERAL NOTES:**

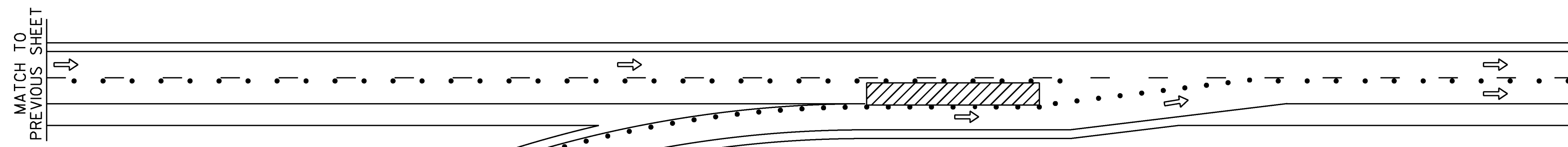
1. ALL WORK VEHICLES SHALL DISPLAY HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS, IN ADDITION TO VEHICLE HAZARD LIGHTS.
2. A UNIFORMED TRAFFIC OFFICER SHALL BE PRESENT DURING ENTRANCE AND EXIT RAMP PAVEMENT MARKING.
3. CONE SPACING SHALL BE TWICE THE SPEED LIMIT, IN FEET.
4. THE NUMBER OF CHANNELIZING DEVICES AND OTHER TRAFFIC CONTROL DEVICES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED ARE TO BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR, CURVE, ETC.). WARNING LIGHTS SHALL NOT BE USED ON CHANNELIZING DEVICES.
5. ALL DISTANCES ARE DESIRABLE MINIMUMS. FIELD CONDITIONS SHALL CONTROL THE ACTUAL PLACEMENT.
6. HAND WORK MUST BE PERFORMED WITH A SPOTTER AT ALL TIMES.
7. TRAFFIC CONTROL DEVICES SHALL BE PLACED A MINIMUM OF TWO FEET OUTSIDE OF THE AREA BEING PAINTED ON ENTRANCE AND EXIT RAMP.
8. AT ENTRANCE RAMP; THE "YIELD" (RI-2) SIGN SHALL BE PLACED AT THE THEORETICAL GORE TO PROVIDE ADEQUATE SIGHT DISTANCE OF ONCOMING MAINLINE VEHICULAR TRAFFIC.

**LEGEND**

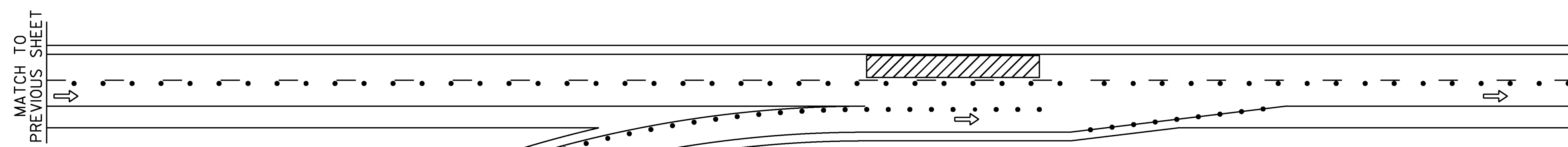
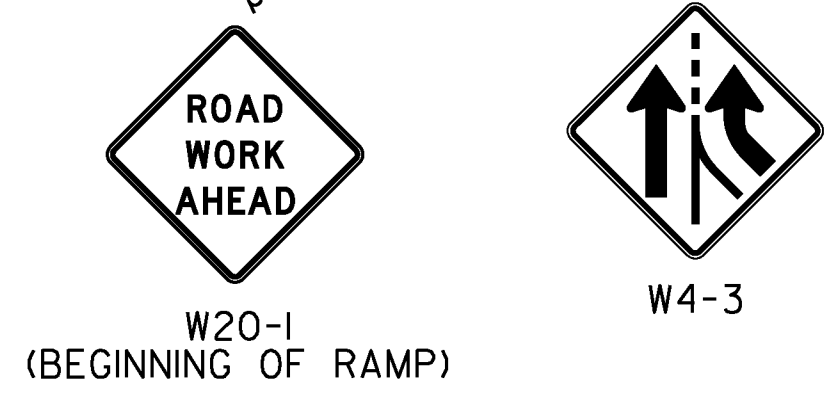
- ⇒ FLOW OF TRAFFIC
- RETROREFLECTIVE PLASTIC DRUM
- ▣ FLASHING ARROW PANEL

**TRAFFIC CONTROL FOR DIVIDED HIGHWAY**

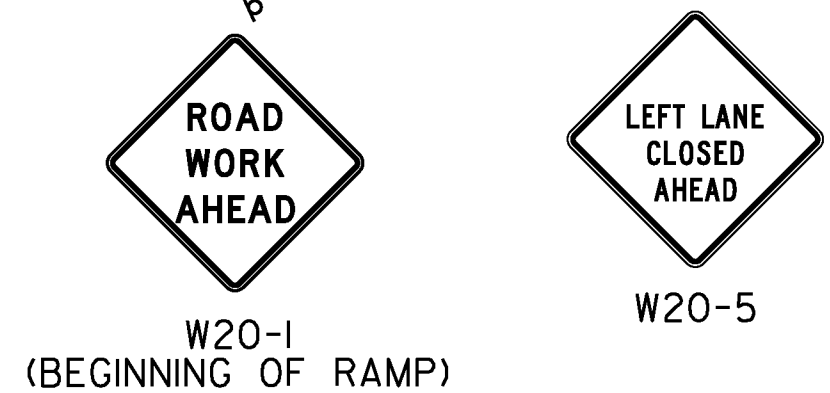
PROJECT NAME:	HARTFORD
PROJECT NUMBER:	IM 089-1(60)
FILE NAME:	/IIA306/DESIGN/DIIA306TRF.DGN
PROJECT LEADER:	P.PELOQUIN
DESIGNED BY:	P. PELOQUIN
TEMPORARY TRAFFIC CONTROL SHEET #4	
PLOT DATE:	25-JUL-2013
DRAWN BY:	P. BEYOR
CHECKED BY:	P. PELOQUIN
SHEET	8 OF 10



**PHASE I TRAFFIC CONTROL FOR  
ENTRANCE RAMP FROM I-91 NB**

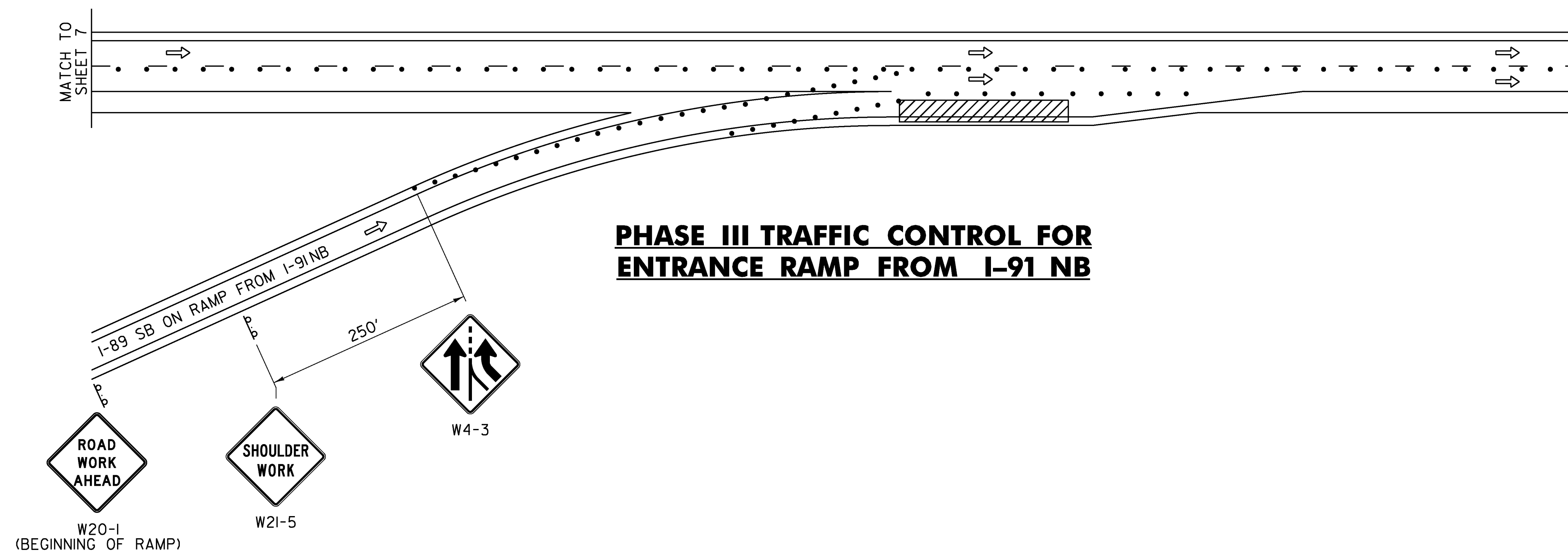


**PHASE II TRAFFIC CONTROL FOR  
ENTRANCE RAMP FROM I-91 NB**



SEE SHEET 10 FOR PHASING NOTES.

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	IM 089-1(60)
FILE NAME:	/IIA306/DESIGN/DIA306TRF.DGN
PROJECT LEADER:	P. PELOQUIN
DESIGNED BY:	P. PELOQUIN
TEMPORARY TRAFFIC CONTROL SHEET #5	
PLOT DATE:	25-JUL-2013
DRAWN BY:	P. BEYOR
CHECKED BY:	P. PELOQUIN
SHEET	9 OF 10



**PHASE III TRAFFIC CONTROL FOR  
ENTRANCE RAMP FROM I-91 NB**

**TRAFFIC PHASING PLAN**

**PHASE 1**  
 CLOSE I-89 SOUTHBOUND (SB) PASSING LANE FOR WORK  
 MERGE ALL I-89 SB TRAFFIC TO THE I-89 SB DRIVING LANE  
 ALLOW THE I-91 NB OFF-RAMP TRAFFIC TO CONTINUE ALONG RAMP AND MERGE INTO I-89 SB DRIVING LANE  
 UTILIZE TEMPORARY TRAFFIC CONTROL SHEETS #1 THRU #4; AS WELL AS MUTCD TYPICAL APPLICATION #44

**PHASE 2**  
 CLOSE I-89 SB DRIVING LANE FOR WORK  
 MERGE I-89 SB DRIVING LANE INTO I-89 SB PASSING LANE  
 ALLOW THE I-91 NB OFF-RAMP TRAFFIC TO CONTINUE ALONG RAMP AND MERGE INTO I-89 SB DRIVING LANE  
 UTILIZE TEMPORARY TRAFFIC CONTROL SHEETS #1 THRU #4; AS WELL AS MUTCD TYPICAL APPLICATION #44

**PHASE 3**  
 CLOSE I-91 NB OFF-RAMP FOR WORK  
 MERGE ALL I-89 SB TRAFFIC TO THE I-89 SB PASSING LANE  
 MOVE TRAFFIC FROM I-91 NB OFF-RAMP TO I-89 SB DRIVING LANE  
 UTILIZE TEMPORARY TRAFFIC CONTROL SHEETS #1 THRU #4; AS WELL AS MUTCD TYPICAL APPLICATION #44

PROJECT NAME:	HARTFORD
PROJECT NUMBER:	IM 089-1(60)
FILE NAME:	/IIA306/DESIGN/DIA306TRF.DGN
PROJECT LEADER:	P. PELOQUIN
DESIGNED BY:	P. PELOQUIN
TEMPORARY TRAFFIC CONTROL SHEET #6	
PLOT DATE:	25-JUL-2013
DRAWN BY:	P. BEYOR
CHECKED BY:	P. PELOQUIN
SHEET	10 OF 10