



PASS

WITH

CARE

R4-2



R11-2 48"x30"



48"x24"

BE PREPARED TO STOP

W3-4

48"x48"

NARROWS

36"x36" W5-1-A 48"x48"

ROAD



W8-12 48"x48"



W13-1(25) 18"x18" W13-1(25)-A 24"x24"



W14-3 36"x48"x48" W14-3-A 48"x64"x64"





W20-2

36"x36"





36"x36"



W20-5(L)

36"x36"

FEET W20-7a



W21-1 36"x36"



W21-1a 36"x36"



36"x36"







30"x30"



48"x48"





42"x36"

500

36"x36" W16-2 24"x18"





W8-6 30"x30"

## GENERAL NOTES

- 1. Sign details shall conform to the latest editions of FHWA publications "Manual on Uniform Traffic Control Devices for Streets and Highways," "Standard Alphabets for Highway Signs," and "Standard Highway Signs," and as amended.
- 2. All construction signs shall be reflectorized.
- 3. All construction signs shall have 3/8" bolt holes drilled at appropriate loactions.
- 4. Numerals in ( ) indicate numerals to be inserted for sign message. (R) or (L) indicates right or left.
- 5. At the beginning of the project and at the end of the project, the Contractor erects advance construction warning signs as indicated on the plans or as directed by the Contracting Officer for the duration of the highway project and is maintained by the Contractor. These signs are placed in addition to the required traffic control signs called for in Section 635-Traffic Control. The advance construction warning signs are new and become the property of the State. The Contractor removes, cleans, and delivers the signs and posts to the Hilo District Baseyard or as directed by the Contracting Officer at the end of the project.

ROAD WORK NEXT 5 MILES

> G20-1(5) 36"x18"

**END** ROAD WORK

G20-2 36"x18" PILOT CAR FOLLOW ME

G20-4 36"x18"



M4-9(R)30"x24"



M4-10(R)48"x18"





U.S DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION CENTRAL FEDERAL LANDS HIGHWAY DIVISION

7/1/87

DATE

SPECIAL 635 (HDOT STD TE-08)

Revised Stan CW21-1

REVISION

CONSTRUCTION SIGNS

Scale: N.T.S.

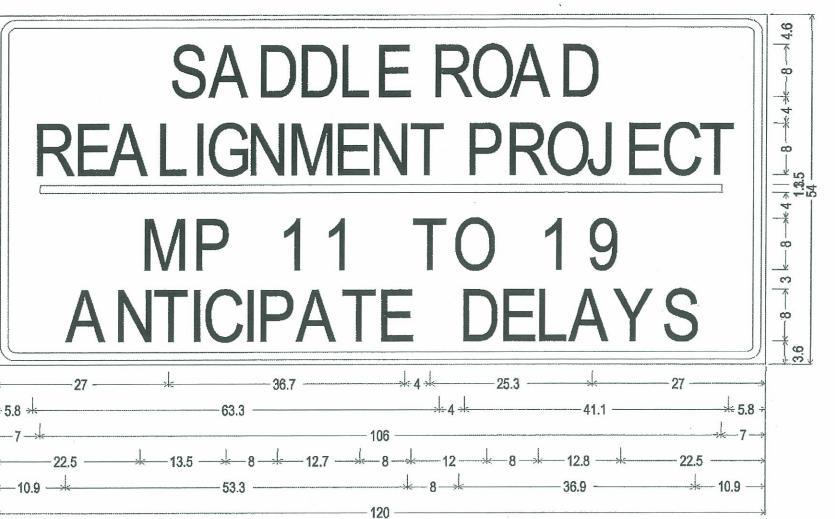
Date: June 5, 2009

APP'D.

SHEET No. 1 OF

REVISED 07/14/09 AMENDMENT A002

STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI HP # TI 200(2)	Q2	Q19



3.0" Radius, 1.3" Border, 0.8" Indent, Black on Orange; [SADDLE ROAD] D 50} spacing; [REALIGNMENT PROJECT] D 50} spacing; [MP 11 TO 19] D; [ANTICIPATE DELAYS] D 50} spacing;

### NOTE:

Confirm with CO before sign fabrication. Post one sign at the Saddle Road-Hwy 190 junction and one sign at MP7 of the Saddle Road. Face both signs to warn Mauna Kea-bound traffic.

SADDLE ROAD REALIGNMENT PROJECT
CONSTRUCTION SIGN



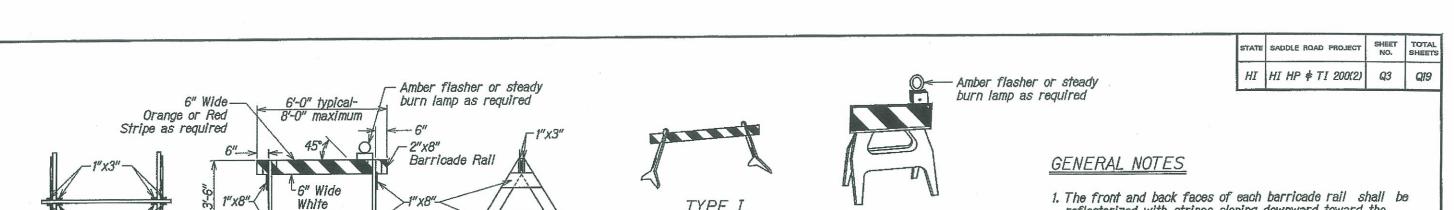
U.S DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

SPECIAL 635 SADDLE ROAD CONSTRUCTION SIGN

Scale: N.T.S.

N.T.S. Date: June 5, 2009

SHEET No. 1 OF 1



TYPE II

PLAN VIEW

Barricade Rails

FRONT VIEW

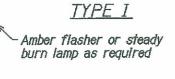
Stripe

END VIEW

TYPE I BARRICADE

Scale: 1/2"=1'-0"

TYPE I



PLASTIC MOLDED BARRICADE OPTIONS\*

- reflectorized with stripes sloping downward toward the same side (traveled way) of each barricade.
- 2. Contractor may submit alternate barricade designs for
- 3. Sandbags or other approved weights shall not be placed on top of any striped rail.
- 4. The Contractor Is directed to Section 635.

8"x4" Galvanized Steel Hinges Amber flasher or steady burn lamp as required 6" Wide White Stripe

6" Wide Orange or Red Stripe as required 3'-0" typ-4'-0" max.

FRONT VIEW

END VIEW

each support pair

Rope or chain for

Edge of Traveled Way

Not to Scale

\* Shop Drawings must be submitted for approval.



Edge of Traveled Way

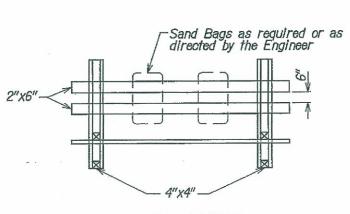
FRONT FACE

BACK FACE

# TYPICAL BARRICADE STRIPING DETAILS\*\*

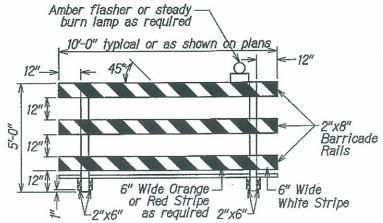
\*\* Similar for Types I # II

TYPE II BARRICADE Scale: 1/2"=1'-0"



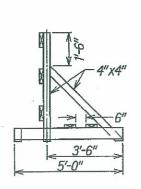
PLAN VIEW

PLAN VIEW



FRONT VIEW

TYPE III BARRICADE Scale: 1/2"=1'-0"



END VIEW



U.S DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION CENTRAL FEDERAL LANDS HIGHWAY DIVISION

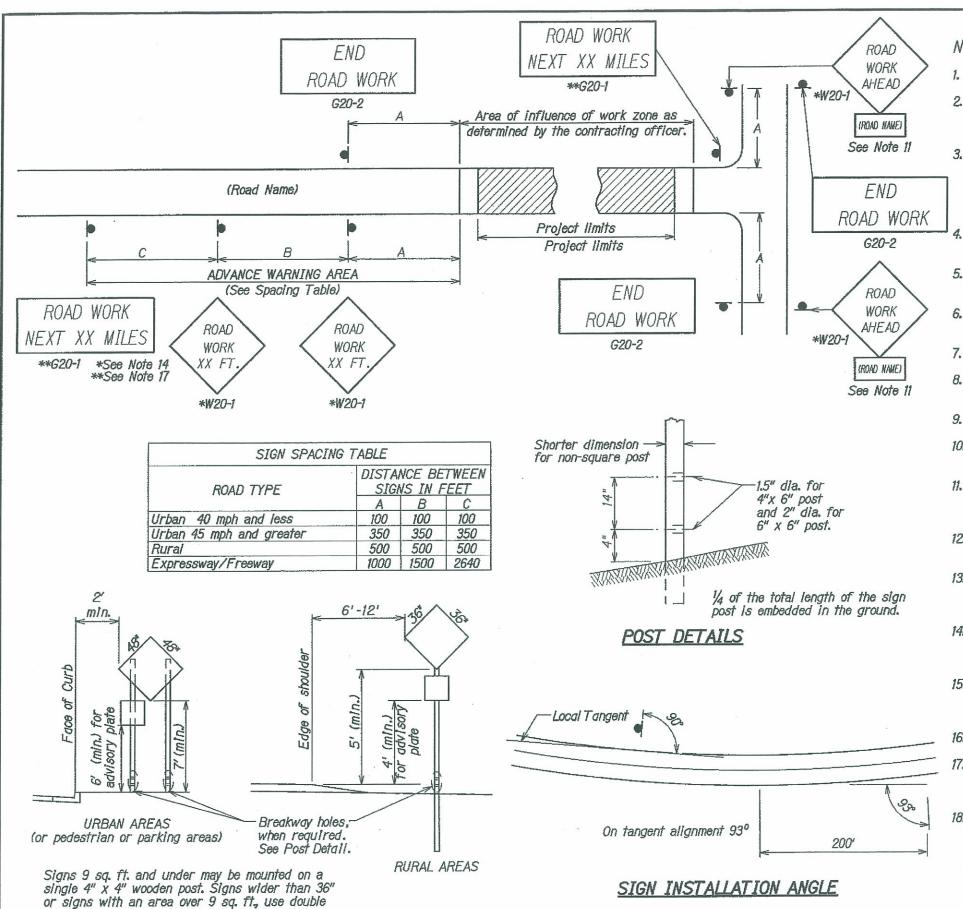
SPECIAL 635 (HDOT STD TE-66)

BARRICADES

Expiration Date of Listense 4/10 Scale: N.T.S. Date: June 5, 2009

SHEET No. 1 OF

Q3



wooden posts. Steel may be used in lieu of

SIGN PLACEMENT

wooden posts (see note #8)

NOTE:

SHEET TOTAL STATE SADDLE ROAD PROJECT HI HI HP # TI 200(2) Q4 Q19

- 1. Erect all advance warning signs before construction work is started.
- 2. Where advance warning signs, placed as shown, interfere with permanent signs, locate the warning signs as determined by the CO for best results. Vary messages as required.
- 3. Use Type III or higher type sheeting on all signs and channelizing devices. Warning lights are not normally needed on devices with Type III or higher type sheeting, but may be beneficial to attract the driver's attention in fog or other special conditions. When used, apply the appropriate type of warning light (Type A, B, C, or D) per the MUTCD Section.
- 4. When established in contract, furnish beacons with appropriate lens color as specified in the MUTCD, Section 4K.
- 5. Additional or different message signs may be required to fit the actual construction conditions.
- 6. Install advisory speed plates under the W-20 series warning signs as needed to indicate a maximum recommended speed through the construction area.
- 7. Ensure all wooden sign posts larger than 4" x 4" have breakaway holes as shown,
- 8. Ensure all sign supports exposed to impact by traffic meet the requirements of NCHRP-350 for crash worthiness.
- 9. Maintain two-way traffic during all non-work hours except as approved by the CO.
- 10. Do not store traffic control devices along the roadway when not in use. Cover post-mounted signs when not applicable.
- 11. If W20-1 is on a roadway other than that on which the actual construction work occurs, include a supplementary plaque indicating the name of the road the work is on.
- 12. If signing on a roadway under a jurisdiction other than the client agency, verify that an encroachment permit has been obtained.
- 13. Not all details shown on the traffic control plan sheets may be applicable to this project. The contractor may add or delete information and details in his traffic control plan as necessary to accommodate actual operations.
- 14. The message on the W20-1 signs may be 'ROAD WORK AHEAD' or may specify the distance to the work area in feet or in miles. Install at least two W20-1 signs in series for each main road approach.
- 15. When flagger warning sign series extend into project advance warning area, the second and third signs in the flagger series may be placed over the second and third signs in project advance warning series.
- 16. State standards may be used as an alternative if approved by the CO.
- 17. For work zones that are more than two miles in length, install the G20-1 sign. Show the distance on the G20-1 sign to the negrest whole mile. For work zones two miles or less in length, install a W20-1 sign in place of the G20-1.

18. If signs will be in place more than 72 consecutive hours, use ground-mounted post as shown. ILS DEPARTMENT OF TRANSPORTATION

The work was prepared by ma or under my supervision and astruction of this project wi be under my observation.

Expiration Date of Libense 4/10

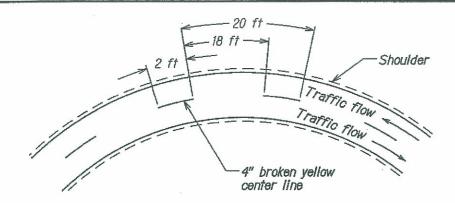
FEDERAL HIGHWAY ADMINISTRATION CENTRAL FEDERAL LANDS HIGHWAY DIVISION DETAIL C635-01

WORK ZONE TRAFFIC CONTROL ADVANCE SIGNING

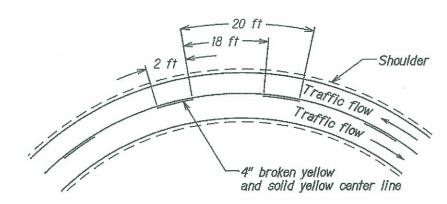
Date: June 5, 2009

Scale: N.T.S. SHEET No. 1 OF

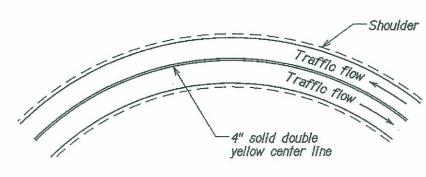
04



DETAIL At Passing zone both directions Two-way traffic



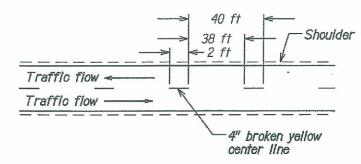
DETAIL A2 No passing zone one direction Two-way traffic



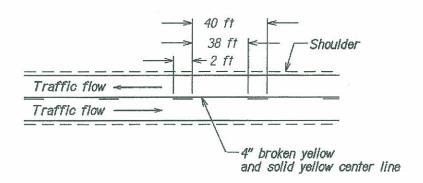
DETAIL A3 No passing zone both directions Two-way traffic

DETAIL A

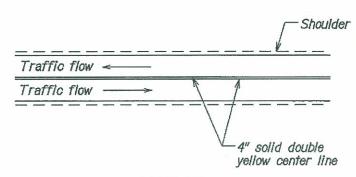
Curves of <500 ft Radius



DETAIL BI Passing zone both directions Two-way traffic



DETAIL B2 No Passing zone one direction Two-way traffic



DETAIL B3 No Passing zone both directions Two-way traffic

**DETAIL B**Tangents or Curves of ≥500 ft Radius

### NOTE:

- Use permanent striping layout as designated in the contract to determine no passing zones for each direction of travel.
- To substitute raised pavement markers for lines, use the following patterns:
   2 ft broken line: two pavement markers spaced 2 ft apart followed by the gap shown based on curvature.

Single solid line: pavement markers spaced on 10 ff centers.

Double solid line: two pavement markers, side

Double solid line: two pavement markers, side by side, spaced on 10 ft centers.

- 3. For ADT's of greater than 1000 and periods of 3 days or less, C635-03 may be used as an alternate to this detail. For ADT's of 1000 or less, C635-03 may be used as an alternate to this detail for the full 14 day temporary marking period.
- 4. If sections of severe curvature or restricted visibility dominate the construction area such that passing is inappropriate throughout the project, include Two-Way Traffic Sign (W6-3) with a supplemental plaque bearing the legend 'NO PASSING NEXT \_\_ MILES' in the advance warning series at the beginning of the project.



U.S DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

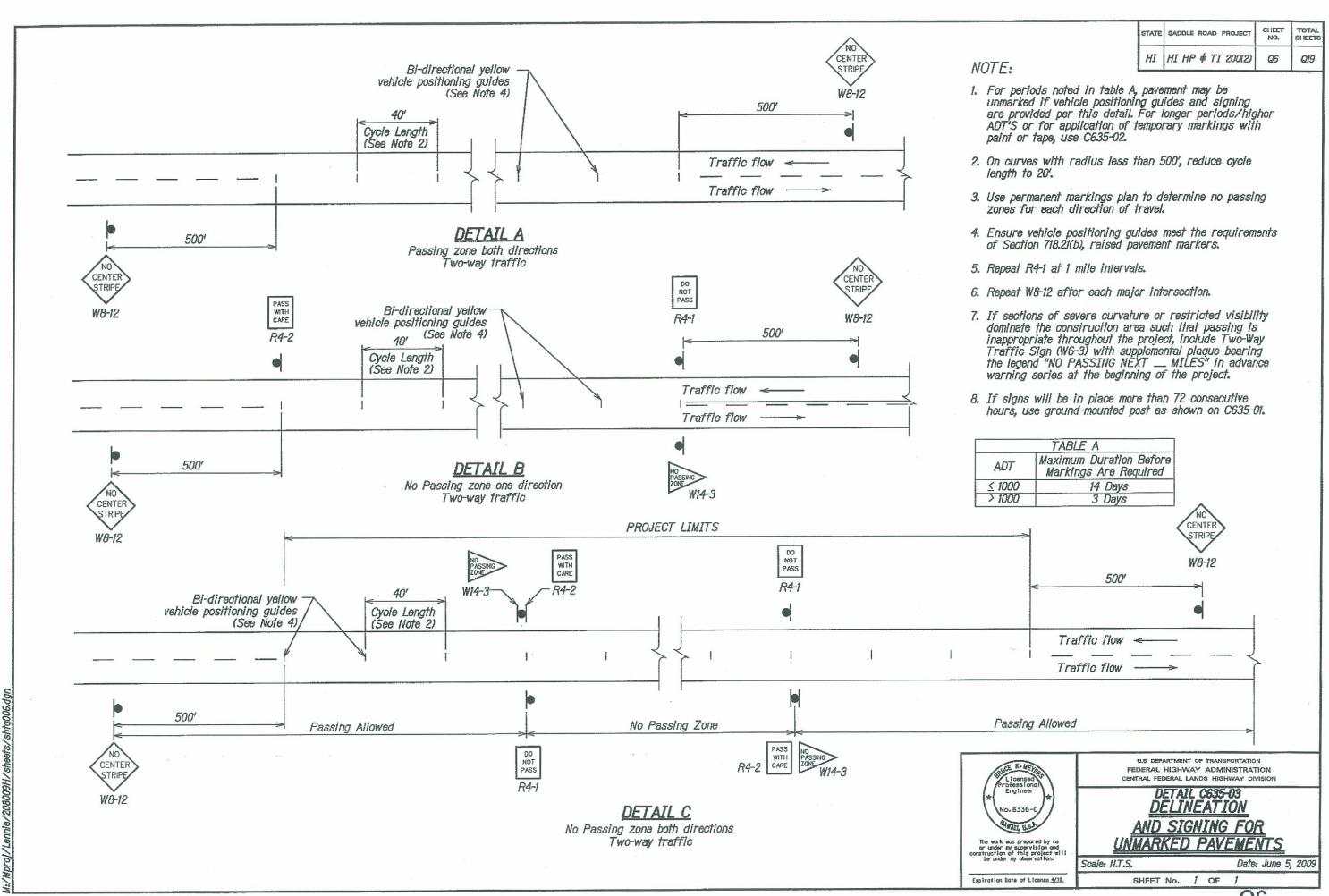
DETAIL C635-02 <u>TEMPORARY</u> PAVEMENT MARKINGS

Scale: N.T.S.

Date: June 5, 2009

SHEET No. 1 OF

**Q5** 



ATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
ΉI	HI HP <b>∲</b> TI 200(2)	Q7	Q19

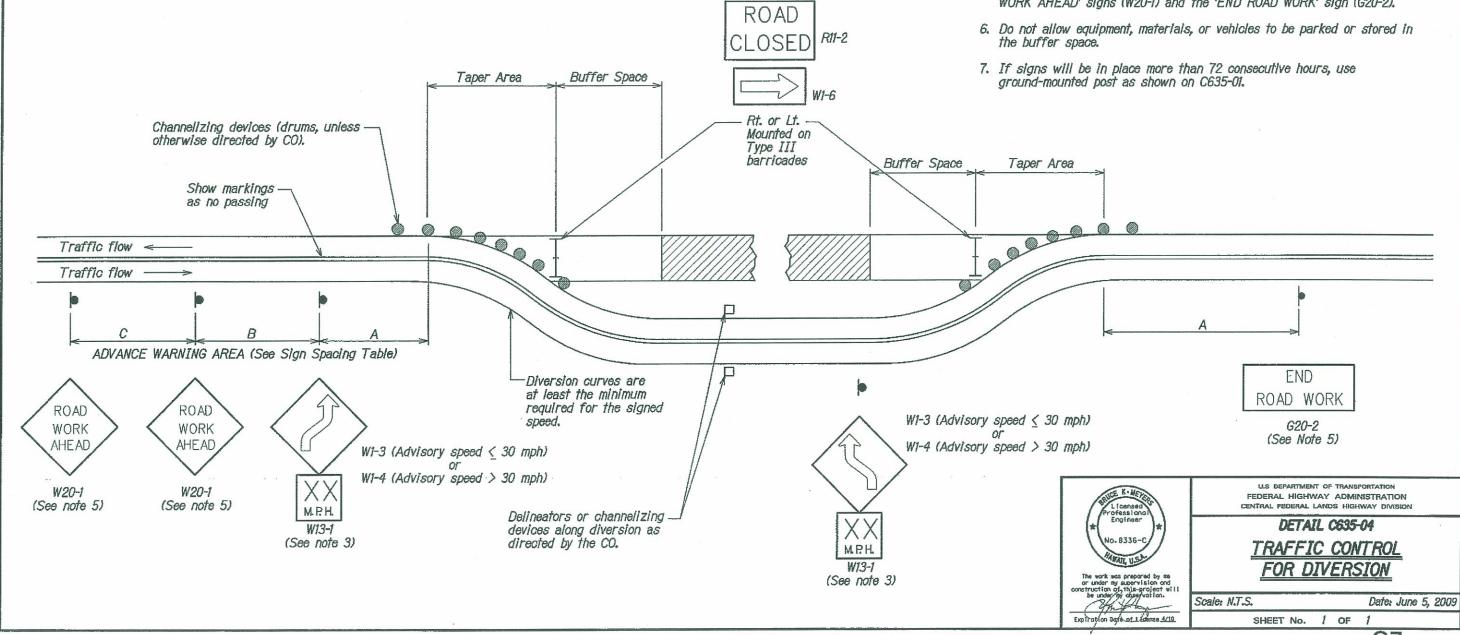
	LENGTH AND SPA	CING TAI	BLE			
APPROACH		DEVICE SPACING				
SPEED * MILES	LENGTH OF BUFFER SPACE IN FEET	TAPER AREA	BUFFER SPACE			
PER HOUR	SPACE IN FEET	SPACING IN FEET				
25	155	25	50	50		
30	200	30	60	60		
35	250	35	70	70		
40	305	40	80	80		
45	360	45	90	90		
50	425	50	100	100		
55	495	55	110	110		

*Speed is L	based	on	the	regulatory	posted	speed,
not the advis	sory s	Dee	d.			

SIGN SPACIN	G TABLE		
ROAD TYPE		NCE BE VS IN F	TWEEN
	A	В	C
Urban 40 mph and less	100	100	100
Urban 45 mph and greater	350	350	350
Rural	500	500	500
Expressway/Freeway	1000	1500	2640

### NOTE:

- 1. Signs are shown for one direction of travel only. Place devices similar to those depicted for the opposite direction of travel.
- If the area approaching diversion is not already signed and marked as a no passing zone, add signing and/or marking as appropriate. Remove conflicting pavement markings.
- 3. If the tangent distance along the temporary diversion is less than 600', use the 'DOUBLE REVERSE CURVE' sign (W24-1) at the location of the first Reverse Curve sign and eliminate the second Reverse Curve sign.
- 4. Place channelizing devices outside temporary roadway.
- 5. If diversion is completely within the project limits, eliminate the 'ROAD WORK AHEAD' signs (W20-1) and the 'END ROAD WORK' sign (G20-2).



LENGTH AN	ID SPACING TABLE
APPROACH SPEED * MILES PER HOUR	LENGTH OF BUFFER SPACE IN FEET
25	155
30	200
35	250
40	305
45	360
50	425
55	495

\* Speed is based on the regulatory posted speed, not the advisory speed.

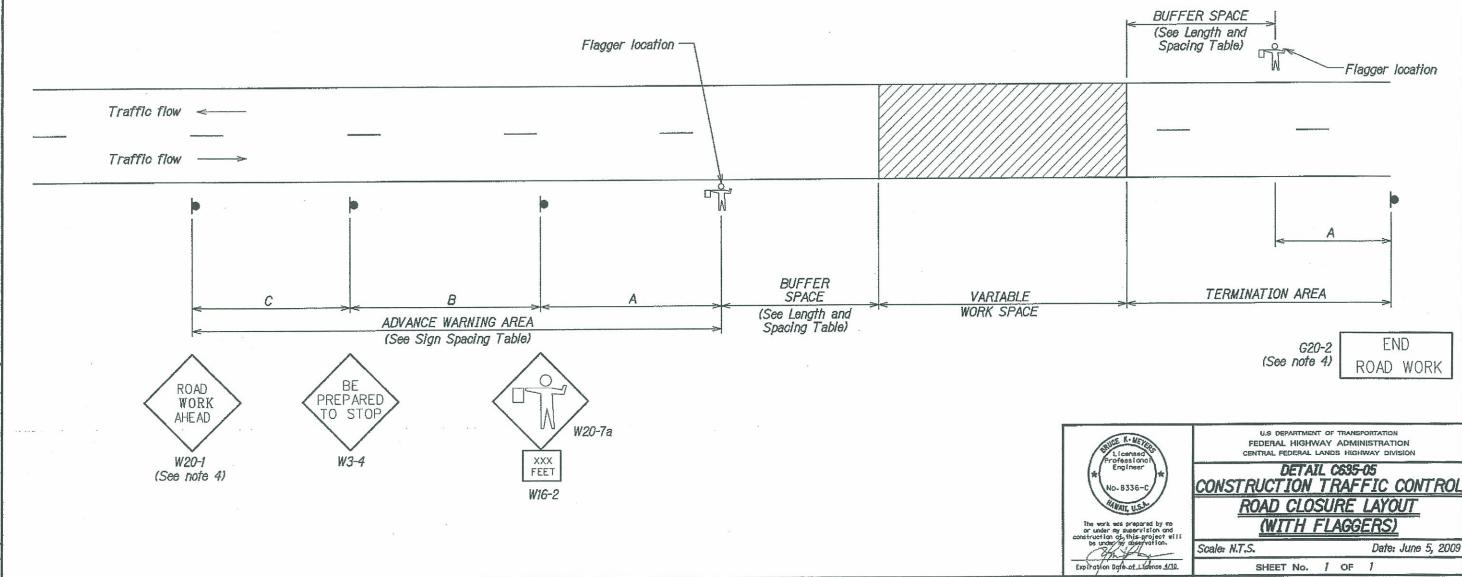
SIGN SPACIN	IG TABLE				
ROAD TYPE	DIST A	NCE BE VS IN F	TWEEN		
7107.05 7.17 =	A	В	C		
Urban 40 mph and less	100	100	100		
Urban 45 mph and greater	350	350	350		
Rural	500	500	500		
Expressway/Freeway	1000				

NOTE:

STATE SADDLE ROAD PROJECT SHEET NO. SHEETS

HI HI HP \$ TI 200(2) Q8 Q19

- Signs are shown for one direction of travel only. Place devices similar to those depicted for the opposite direction of travel.
- Final location and spacing of signs and devices may be changed to fit field conditions as approved by the CO.
- For pilot car operation, mount the 'PILOT CAR
  FOLLOW ME' (G20-4) sign at a conspicuous
  location on the rear of vehicle. Prominently
  display the name of the contractor on the pilot car.
- If closure is completely within the project limits, eliminate the 'ROAD WORK AHEAD' sign (W20-1) and 'END ROAD WORK' sign (G20-2).
- 5. For night time flagging operation, provide floodlighting at flagger stations.
- 6. Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.
- 7. If signs will be in place more than 72 consecutive hours, use ground-mounted post as shown on C635-01.



	LENGTH AND	SPACING	TABLE	
* MILES	LENGTH OF BUFFER SPACE IN FEET		IZING DEVIO BUFFER SPACE	CE SPACING WORK SPACE
PER HOUR 25	155	20 20	PACING IN 1 50	EET 50
30	200	20	60	60
35	250	20	70	70
40 45	305 360	20 20	80 90	90 90
50	425	20	100	100
55	495	20	110	110

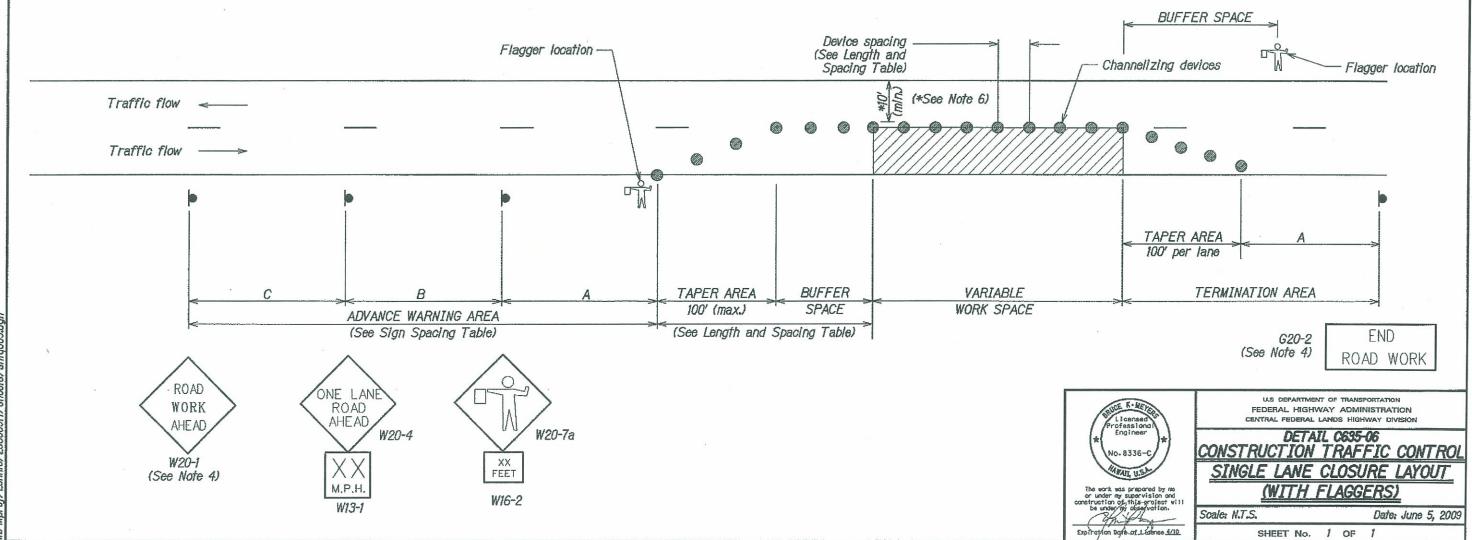
							1	
* Speed is based	on the	regulatory	postea	speed,	nor	The	aavisory	speca.

SIGN SPACIN	G TABLE				
DISTANCE BETWE ROAD TYPE SIGNS IN FEET					
	A	В	C		
Urban 40 mph and less	100	100	100		
Urban 45 mph and greater	350	350	350		
Rural	500	500	500		
Expressway/Freeway	reeway 1000 1500 264				

NOTE:

 STATE	SADDLE ROAD PROJECT	SHEET NO,	TOTAL SHEETS
 HI	HI HP \$ TI 200(2)	Q9	Q19

- Signs are shown for one direction of travel only. Place devices similar to those depicted for the opposite direction of travel.
- 2. Final location and spacing of signs and devices may be changed to fit field conditions as approved by the CO.
- 3. For pilot car operation, mount the 'PILOT CAR FOLLOW ME' (G20-4) sign at a conspicuous location on the rear of vehicle. Prominently display the name of the contractor on the pilot car.
- 4. If closure is completely within the project limits, eliminate the 'ROAD WORK AHEAD' sign (W20-1) and 'END ROAD WORK' sign (G20-2).
- For night time flagging operation, provide floodlighting at flagger stations.
- Refer to Special Contract Requirements, Section 156, for project specific minimum width.
- 7. Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.
- 8. If signs will be in place more than 72 consecutive hours, use ground-mounted post as shown on C635-01.



	LENGTH AND SPA	CING TABLE			
APPROACH SPEED * MILES PER HOUR	** MINIMUM TAPER LENGTH IN FEET	LENGTH OF BUFFER SPACE IN FEET	** TAPER AREA	ZING DEVIC BUFFER SPACE ACING IN FE	WORK SPACE
25	Shoulder taper formula:	155	25	50	50
30	$L = \frac{WS^2}{180}$ for speeds of 40 mph or less	200	30	60	60
35	$L=\frac{WS}{2}$ for speeds of 45 mph or greater	250	35	70	70
40	Where:	305	40	80	80
45	L= Minimum length of taper W= Width of offset in feet	360	45	90	90
50	S= Numerical value of posted speed	425	50	100	100
55	limit or 85 percentile speed prior to work in miles per hour.	495	55	110	110

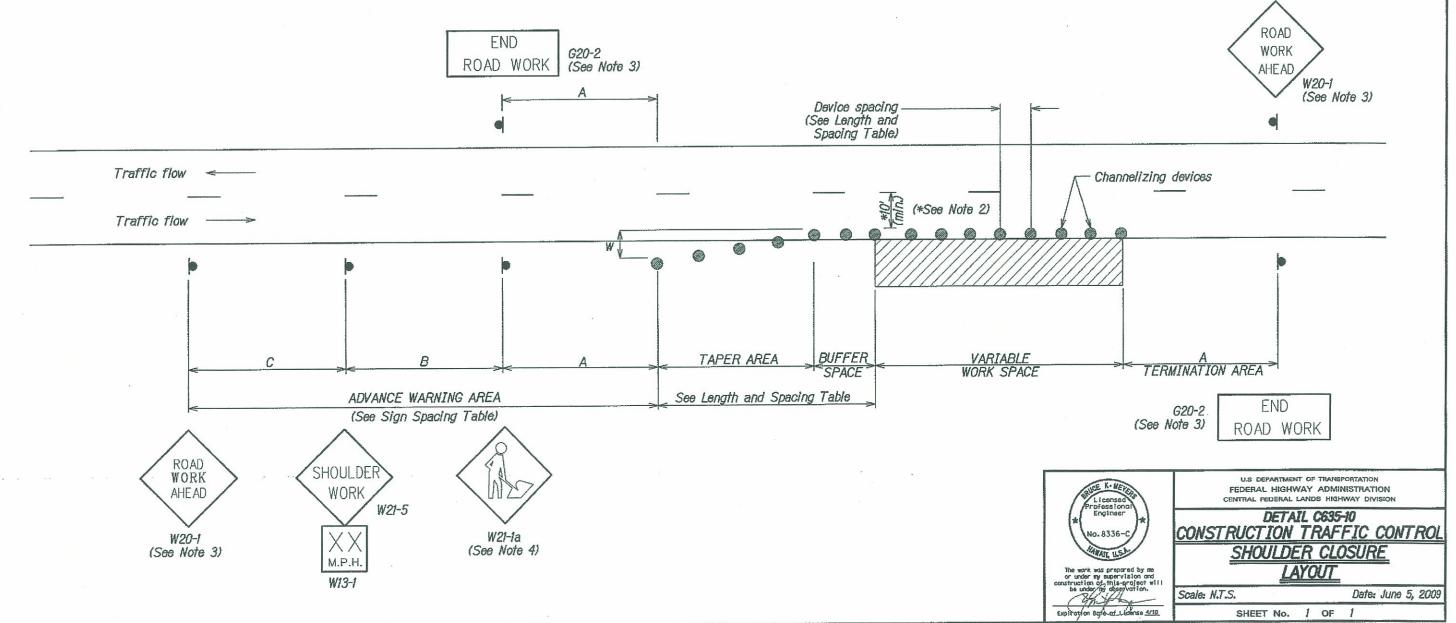
* Speed is based on th	he regulatory posted speed	and not the advisory	speed.
** Lengthen taper as n	needed to provide minimum	of three channelizing	devices in taper at
required spacing			

SIGN SPACIN	IG TABLE				
ROAD TYPE		DISTANCE BETWEEN SIGNS IN FEET			
	A	В	C		
Urban 40 mph and less	100	100	100		
Urban 45 mph and greater			350		
Rural	500	500	500		
Expressway/Freeway	1000	1500	2640		

NO7	-
AH II	-
1101	_

STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI HP # TI 200(2)	Q10	Q19

- Final location and spacing of signs and devices may be changed to fit field conditions as approved by the CO.
- 2. Refer to Special Contract Requirements, Section 156, for minimum width.
- 3. If shoulder closure is completely within the project limits, eliminate the 'ROAD WORK AHEAD' sign (W20-1) and the 'END ROAD WORK' sign (G20-2).
- 4. Remove or cover Worker Symbol sign (W21-1a) when workers are not present.
- 5. Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.
- If signs will be in place more than 72 consecutive hours, use ground-mounted post as shown on C635-01.



	LENGTH AND SPA	CING TABLE			
APPROACH		LENGTH		ZING DEVI	CE SPACING
SPEED	**MINIMUM TAPER LENGTH	OF BUFFER			WORK
*MILES	IN FEET	SPACE_IN	AREA	SPACE	SPACE
PER HOUR		FEET	SF	PACING IN F	EET
25	Shifting taper formula:	155	25	50	50
30	$L=\frac{WS^2}{120}$ for speeds of 40 mph or less	200	30	60	60
35	$L = \frac{WxS}{2}$ for speeds of 45mph or greater	250	35	70	70
40	Where:	305	40	80	80
45	L= Minmum length of taper W= Width of offset in feet	360	45	90	90
50	S= Numerical value of posted speed limit or 85 percentile speed prior	425	50	100	100
55	to work in miles per hour	495	55	110	110

\*\* Lengthen taper as needed to provide minimum of three channalizing

W20-1

(See Note 5)

devices in taper at required spacing.

SIGN SPACIN	IG TABLE				
ROAD TYPE		DISTANCE BETWEEN SIGNS IN FEET			
,,,,,,	A	В	C		
Urban 40 mph and less	100	100	100		
Urban 45 mph and greater 350 350					
Rural	500	500	500		
Expressway/Freeway	1000	1500	2640		

NOTE:

1. Signs are shown for one direction of travel only. Place devices similar to those depicted for the opposite direction of travel.

2. Final location and spacing of signs and devices may be changed to fit field conditions as approved by the CO.

3. Refer to Special Contract Requirements, Section 156, for minimum width.

4. Install temporary pavement markings if roadway surface is paved. Remove conflicting pavement markings. If nearest no-passing zone is within 400', extend markings to connect zones.

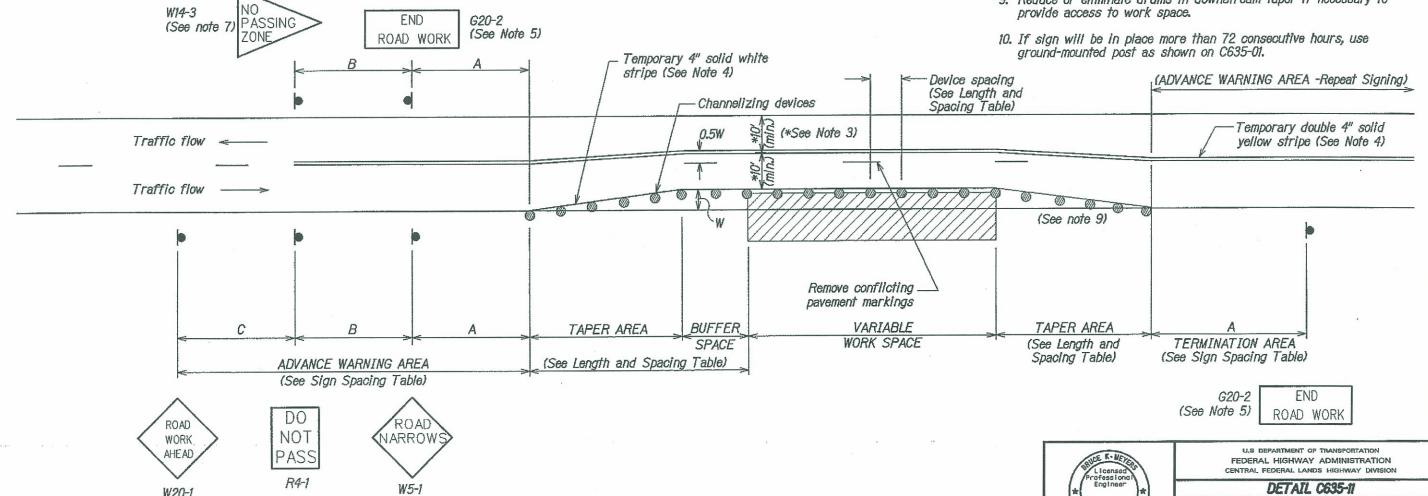
5. If closure is completely within the project limits, eliminate the 'ROAD WORK AHEAD' sign (W20-1) and the 'END ROAD WORK' sign (G20-2).

6. Install 'PASS WITH CARE' sign (R4-2) at ends of no-passing zone if directed by the CO.

7. Omit the W14-3 sign if already within a no-passing zone.

8. Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.

9. Reduce or eliminate drums in downstream taper if necessary to provide access to work space.



Date: June 5, 2009

CONSTRUCTION TRAFFIC CONTROL

PART LANE WIDTH # SHOULDER CLOSURE LAYOUT

SHEET No. 1 OF

Scale: N.T.S.

TOTAL

Q19

SADDLE ROAD PROJECT

HI HI HP # TI 200(2)

	LENGTH AND	SPACING TA	ABLE			
APPROACH SPEED *MILES PER HOUR	** MINIMUM TAPER LENGTH IN FEET	LENGTH OF BUFFER SPACE IN FEET	**TAPER AREA		CE SPACING WORK SPACE FEET	CONCRETÉ BARRÏER FLARE RATE
25	Shifting taper formula:	155	25	50	50	1:8
30	$L = \frac{WS^2}{120}$ for speeds of 40 mph or less	200	30	60	60	1:8
35	$L=\frac{WxS}{2}$ for speeds of 45 mph or greater	250	35	70	70	1:9
	Where: L = Minimum length of taper	305	40	80	80	1:10
45	W = Width of offset in feet	360	45	90	90	1:12
50	S = Numerical value of posted speed limit or 85 percentile speed	425	50	100	100	1:14
55	prior to work in miles per hour	495	55	110	110	1:16

\*\* Lengthen taper as needed to provide minimum of three channelizing devices

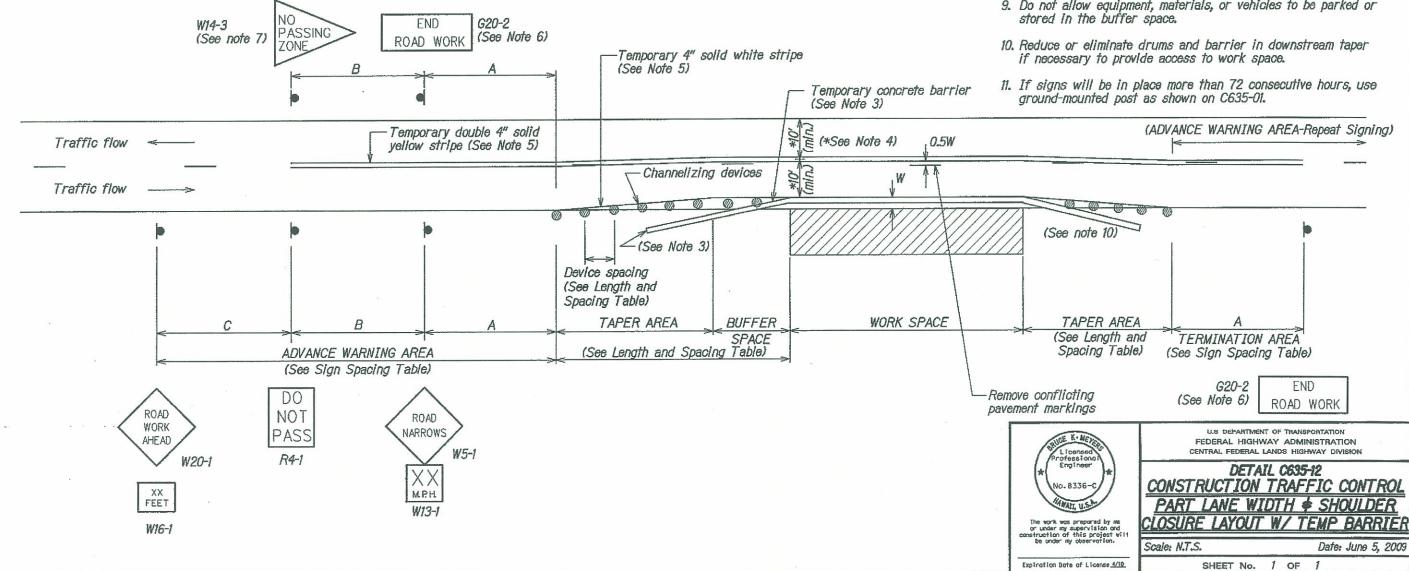
in taper at required spacing.

SIGN SPACIN	AND MESSE SECTION				
ROAD TYPE	DISTAI	DISTANCE BETWEEN SIGNS IN FEET			
	A	В	C		
Urban 40 mph and less	100	100	100		
Urban 45 mph and greater	350	350	350		
Rural	500	500	500		
Expressway/Freeway	1000	1500	2640		

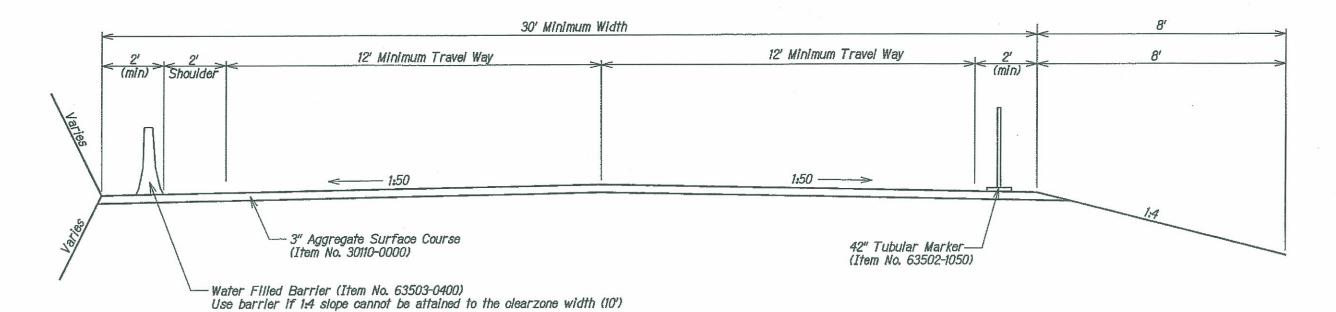
TOTAL SHEET NO. STATE SADDLE ROAD PROJECT HI HI HP # TI 200(2) Q12 Q19

NOTE:

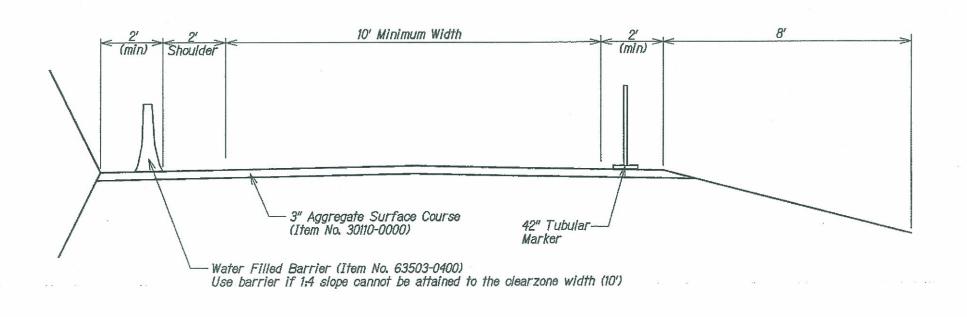
- 1. Signs are shown for one direction of travel only. Place devices similar to those depicted for the opposite direction of travel.
- 2. Final location and spacing of signs and devices may be changed to fit field conditions as approved by the CO.
- 3. Place the barrier according to the Roadside Design Guide by the American Association of State Highway and Transportation Officials (AASHTO). Terminate barrier ends outside the clear zone or protect the ends of the barrier with a crash cushion.
- 4. Refer to Special Contract Requirements, Section 156, for minimum
- 5. Install temporary pavement markings if roadway surface is paved. Remove conflicting pavement markings.
- 6. If closure is completely within the project limits, eliminate the 'END ROAD WORK' sign (G20-2).
- 7. Install 'PASS WITH CARE' signs (R4-2) at ends of no-passing zones if directed by CO.
- 8. Omit the W14-3 sign if already within a no-passing zone.
- 9. Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.



STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI HP # TI 200(2)	Q13	Q19



<u>Work Zone Typical Section</u> (For Two-Way Traffic During Non-Working Hours)



<u>Work Zone Typical Section</u> (For Alternate One-Way Traffic During Work Hours)

U.S DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION CENTRAL FEDERAL LANDS HIGHWAY DIVISION

TRAFFIC CONTROL WORK ZONE TYPICAL SECTION

Scale: N.T.S.

Date: June 5, 2009

SHEET No. / OF /