

	LEGEND								
~~~~	Type 3 Barricade		Channelizing Devices						
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)						
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)						
-	Sign	∿	Traffic Flow						
$\Diamond$	Flag	Lo	Flagger						

Posted Speed	Formula	D	Minimur esirab Lengtl <del>XX</del>	le	Spacir Channe		Suggested Longitudinal Buffer Space
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	"B"
45		450′	495′	540'	45′	90′	195′
50		500′	550′	600′	50′	100′	240′
55	L=WS	550′	605′	660′	55′	110′	295′
60	L-#3	600′	660′	720′	60′	120′	350′
65		650′	715′	780′	65′	130′	410′
70		700′	770′	840′	70′	140′	475′
75		750′	825′	900′	75′	150′	540′
80		800′	880′	960′	80′	160′	615′

** Taper lengths have been rounded off.

L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

	TYPICAL USAGE						
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY			
	1	1	1				

#### GENERAL NOTES

- 1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
- 2. Drums or 42"cones are the typical channelizing devices. For Intermediate Term Stationary work, drums shall be used on tapers with drums or 42" cones used on tangent sections. Other channelizing devices may be used as directed by the Engineer.
- 3. All construction signs and barricades placed during any phase of work shall remain in place until removal is approved by the Engineer.
- 4. The Engineer may direct the Contractor to furnish additional signs and barricades as required to maintain traffic flow, detours and motorist safety during construction.
- 5. Static message boards or changeable message signs stating the date and duration of ramp or freeway lane closures shall be placed a minimum of seven (7) calendar days in advance of the actual closure.
- 6. Phase 2 of the PCMS message should include appropriate information formatted as shown on BC(6), such as "MERGE LEFT," recommended advisory speed, delay information, or other specific warnings.
- 7. Duplicate construction warning signs should be erected on the medians side of freeways where median width will permit and traffic volume justifies the signing.
- 8. The number of closed lanes may be increased provided the spacing of traffic control
- devices, taper lengths and tangent lengths meet the requirements of the TMUTCD. 9. Warning signs for intermediate term stationary work should be mounted at  $7^{\prime}$  to the bottom of the sign.
- 10. Warning signs shown shall be appropriately altered for left lane closures. When signs are mounted at 1' height for short term stationary or short duration work, sign versions shown in the SHSD for Texas with distances on the sign face rather than mounted on a plaque below the sign may be used.
- 11. When possible, PCMS units should be located in advance of the last available exit ramp prior to the lane closure to allow motorists an alternate route. They may also be relocated to improve advance warning in case of unanticipated queuing or congestion.
- 12. For Intermediate Term Stationary work at night, floodlights should be used to illuminate the work area and equipment crossings. Floodlights shall not produce a disabling glare condition for road users or workers.
- 13. The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

X A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.



TRAFFIC CONTROL PLAN FREEWAY LANE CLOSURES

TCP (6-1)-12

FILE:	tcp6-1.dgn	DN: T	×DOT	ck: TxDOT	DW:	TxDOT	ck: TxDOT
ℂ TxD0T	February 1998	CONT	SECT	JOB		H1	GHWAY
8-12	REVISIONS						
8-12		DIST		COUNTY			SHEET NO.

	LEGEND							
<i>////</i>	Type :	3 Barr	icade			Cr	nannelizi	ng Devices
	Heavy Work Vehicle						ruck Mour ttenuator	
	Trailer Mounted Flashing Arrow Board			pard	M	Portable Changeable Message Sign (PCMS)		
-	Sign				♦	Traffic Flow		
$\Diamond$	Flag			Щ	F	lagger		
			Minimur	n	l s		d 16-0-17-0-1	
Posted Speed	ted Formula Desirable Taper Lengths "L"		Spa Chan	Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space		
		10' Offset	11' Offset	12' Offset	On a Taper		On a Tangent	"B"
45		450′	495′	540′	45′		90′	195′
50		5001	5501	600′	50′		1001	240′

Posted Speed	Formula	Desirable Taper Lengths "L" **		Spacii Channe		Suggested Longitudinal Buffer Space	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	"B"
45		450′	495′	540′	45′	90′	195′
50		500′	550′	600′	50′	100′	240′
55	L=WS	550′	605′	660′	55′	110′	295′
60	" " "	600′	660′	720′	60′	120′	350′
65		650′	715′	780′	65′	130′	410′
70		700′	770′	840′	70′	140′	475′
75		750′	825′	900′	75′	150′	540′
80		800′	880′	960′	80′	160′	615′

** Taper lengths have been rounded off.

L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

	TYPICAL USAGE						
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY			
	1	1	<b>√</b>				

### GENERAL NOTES

- 1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
- 2. ADDED LANE Symbol (CW4-3) sign may be omitted when sign
- between ramp and mainlane can be seen from both roadways.

  3. See "Advance Notice List" on BC(6) for recommended date and time formatting options for PCMS Phase 2 message.
- 4. The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.



TRAFFIC CONTROL PLAN WORK AREA NEAR RAMP

TCP (6-2) -12

FILE:	top6-2.dgn	DN: T:	×DOT	ck: TxDOT	DW:	TxDOT	ck: TxDOT
© TxDOT	February 1994	CONT	SECT	JOB		HI	SHWAY
	REVISIONS						
1-97 8-9	•	DIST		COUNTY			SHEET NO.
4-98 8-1	12						

ENTRANCE RAMP CLOSED

 $\Diamond$  $\Diamond$ 

Shadow Vehicle with TMA and

high intensity rotating, flashing, oscillating or strobe lights

**RAMP** 

CLOSED

R11-2bT

48" X 30"

**NEXT** 

**RAMP** 

CW25-1T ▲

48" X 48"

Ramp to remain closed until work space is 1500'

past entrance to freeway

ENT RAMP

TO BE

CLOSED

PHASE 1

RAMP

**CLOSED** 

AHEAD

CW20RP-3D

(See note 1)

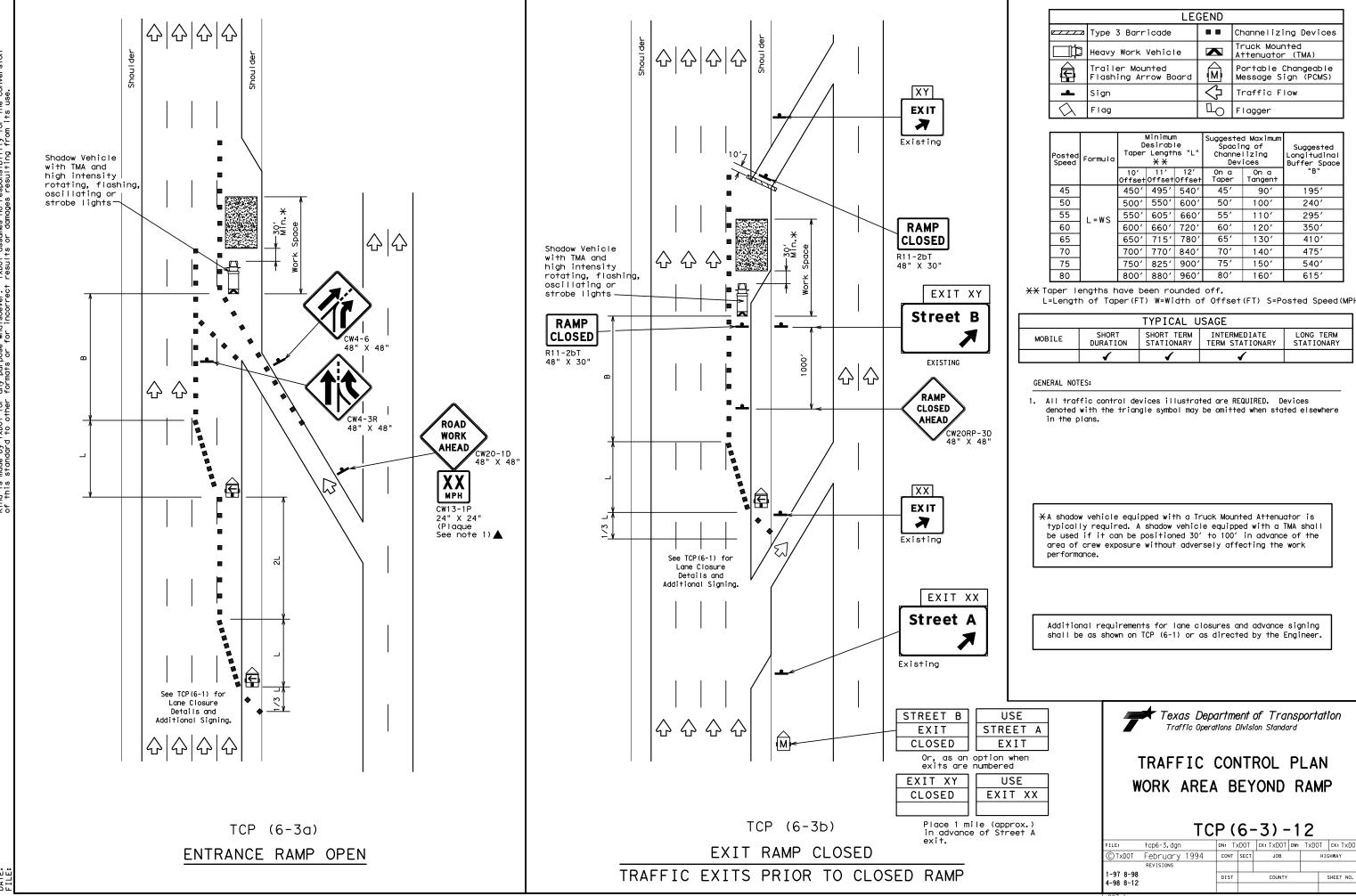
XXXX

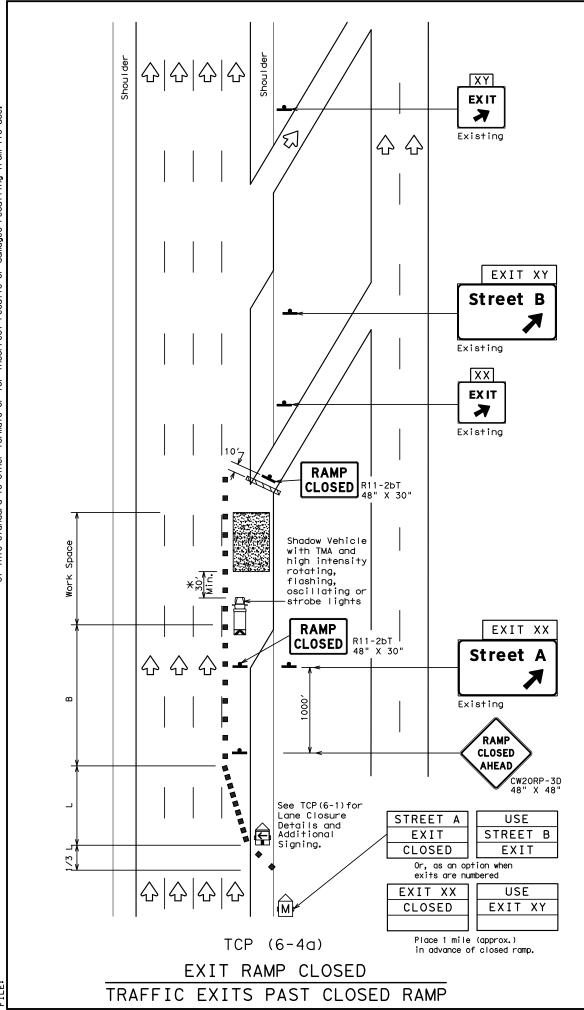
XXXX

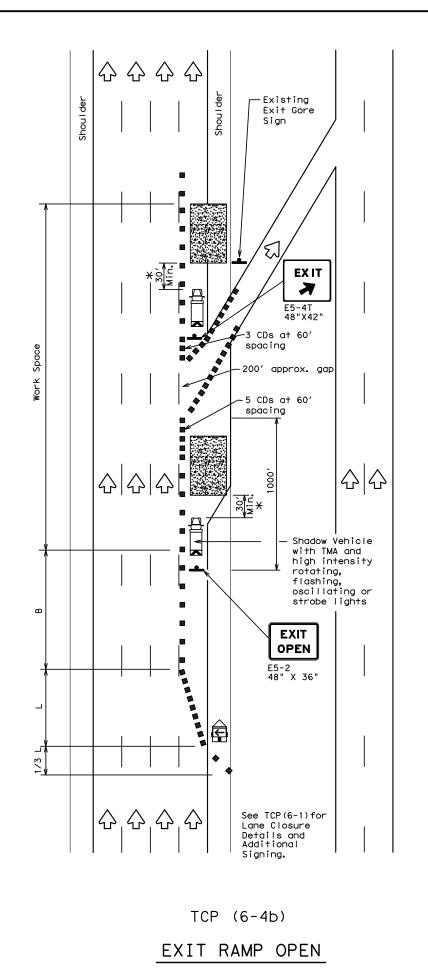
XXXX

PHASE 2

(See note 3)







Type 3 Barricade

Type 3 Barricade

Channelizing Devices (CDs)

Truck Mounted Attenuator (TMA)

Trailer Mounted Flashing Arrow Board

Sign

Flag

Flag

Flag

Flagger

Posted Speed	Formula	Desirable Taper Lengths "L" **			Spacir Channe		Suggested Longitudinal Buffer Space
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	"B"
45		450′	495′	540′	45′	90′	195′
50		500′	550′	600′	50′	100′	240′
55	L=WS	550′	605′	660′	55′	110′	295′
60		600′	660′	720′	60′	120′	350′
65		650′	715′	780′	65′	130′	410′
70		700′	770′	840′	70′	140′	475′
75		750′	825′	900′	75′	150′	540′
80		800′	880′	960′	80′	160′	615′

XX Taper lengths have been rounded off.

L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

	TYPICAL USAGE						
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY			
	1	1	1				

### GENERAL NOTES

- All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
- 2. See BC Standards for sign details.

*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30′ to 100′ in advance of the area of crew exposure without adversely affecting the work performance.

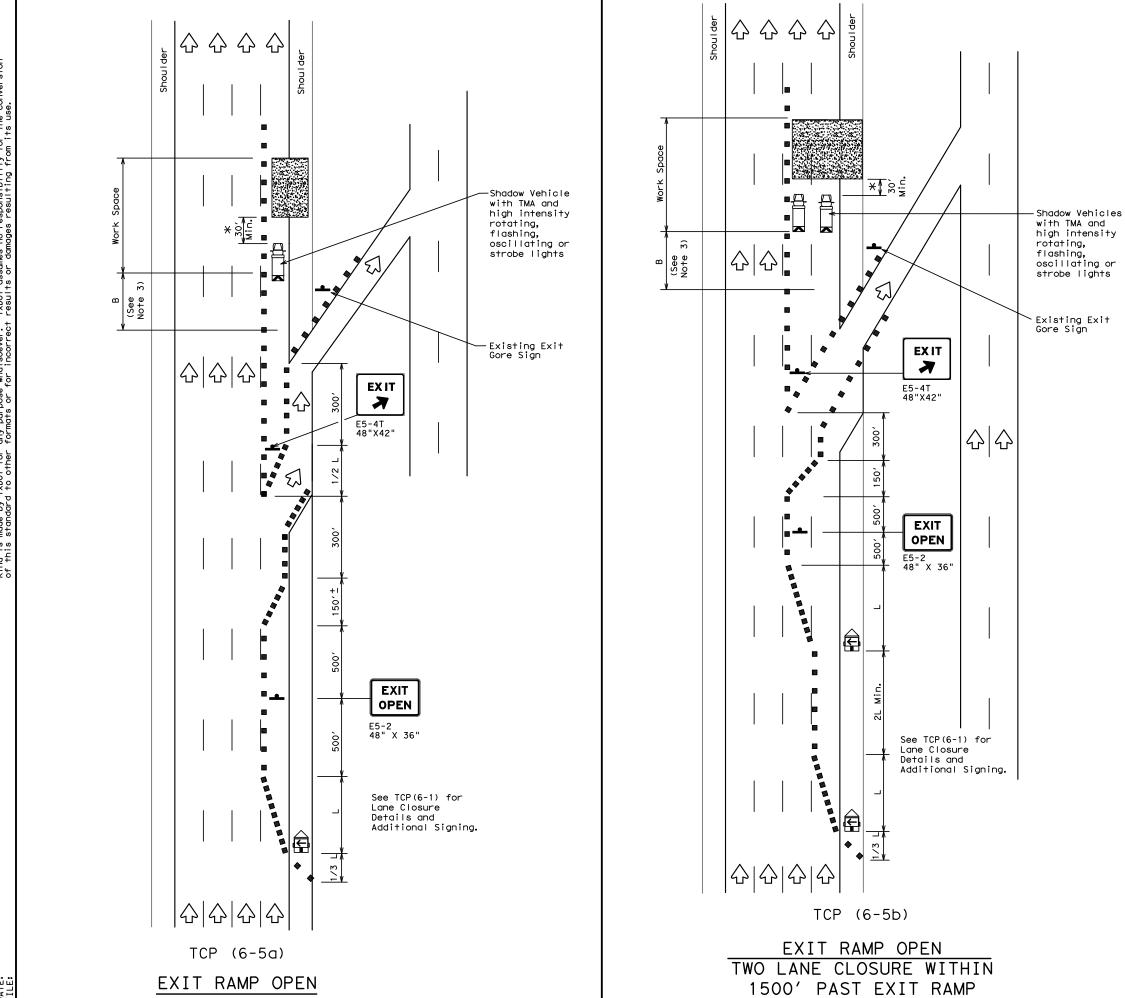
Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.



## TRAFFIC CONTROL PLAN WORK AREA AT EXIT RAMP

TCP(6-4)-12

FILE:	tcp6-4.dgn	DN: T	xD0T	ck: TxDOT	DW:	TxDOT	ck: TxDOT
© TxDOT	Feburary 1994	CONT	SECT	JOB		HIC	SHWAY
	REVISIONS						
1-97 8-9	-	DIST		COUNTY		:	SHEET NO.
4-98 8-1	2						



	LEGEND								
~~~	Type 3 Barricade		Channelizing Devices						
□坤	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)						
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)						
-	Sign	₹ V	Traffic Flow						
\Diamond	Flag	LO	Flagger						

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" **			Spacir Channe	d Maximum ng of lizing ices	Suggested Longitudinal Buffer Space	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	"B"	
45		450′	495′	540′	45′	90′	195′	
50		500′	550′	600′	50′	100′	240′	
55	L=WS	550′	605′	660′	55′	110′	295′	
60	L-W5	600′	660′	720′	60′	120′	350′	
65		650′	715′	780′	65 <i>'</i>	130′	410′	
70		700′	770′	840′	70′	140′	475′	
75		750′	825′	900′	75′	150′	540′	
80		800′	880′	960′	80′	160′	615′	

** Taper lengths have been rounded off.

L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE						
MOBILE	MOBILE SHORT SHORT TERM INTERMEDIATE LONG TERM DURATION STATIONARY TERM STATIONARY STATIONARY					
	√	1	√			

GENERAL NOTES

- All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
- 2. See BC standards for sign details.
- If adequate longitudinal buffer length "B" does not exist between the work space and the exit ramp, consideration should be given to closing the ramp.

*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30′ to 100′ in advance of the area of crew exposure without adversely affecting the work performance.

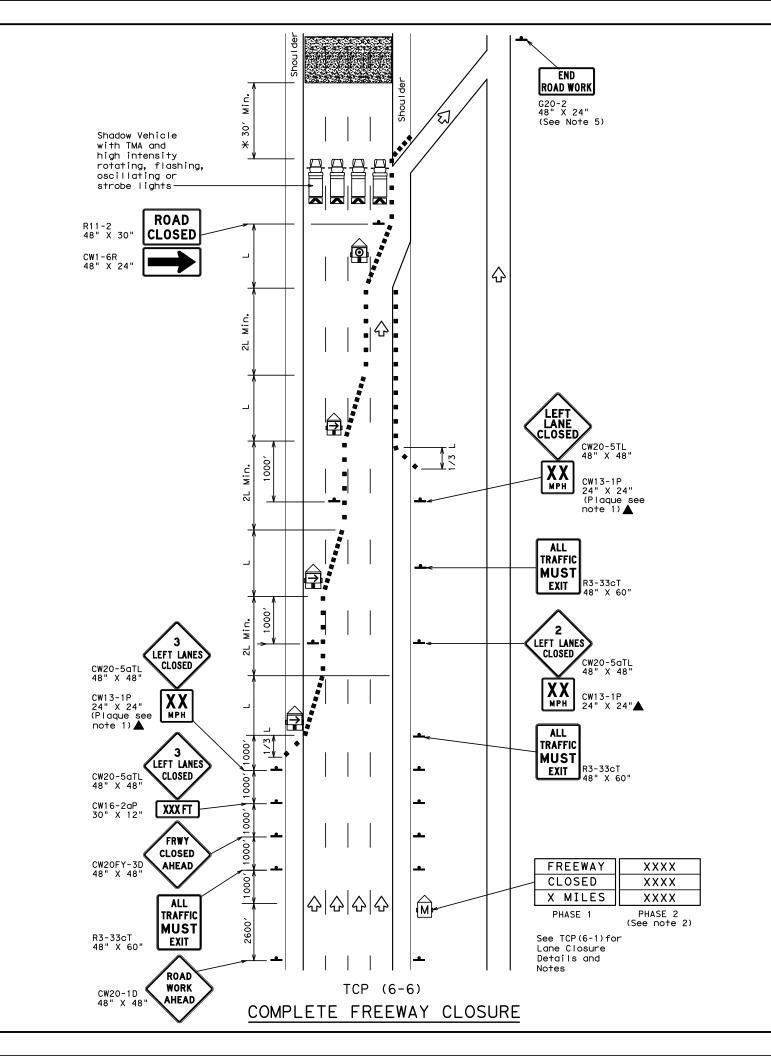
Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.



TRAFFIC CONTROL PLAN WORK AREA BEYOND EXIT RAMP

TCP(6-5)-12

FILE:	tcp6-5.dgn		DN: T	<dot< td=""><td>ck: TxDOT</td><td>DW:</td><td>TxDOT</td><td>ck: TxDOT</td></dot<>	ck: TxDOT	DW:	TxDOT	ck: TxDOT
© TxD0T	Feburary	1998	CONT SECT		JOB		HIGHWAY	
	REVISIONS							
1-97 8-98		DIST	COUNTY			SHEET NO.		
4-98 8-	12							



	LEGEND							
	Type 3 Barricade		Channelizing Devices					
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)					
	Trailer Mounted Flashing Arrow Board	(<u>\$</u>	Portable Changeable Message Sign (PCMS)					
	Flashing Arrow Board in Caution Mode	∜	Traffic Flow					
-	Sign							

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" **			Spaci Channe	ed Maximum ng of elizing vices	Suggested Longitudinal Buffer Space
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	"B"
45		450′	495′	540′	45′	90′	195′
50		500′	550′	600′	50′	100′	240′
55	L=WS	550′	605′	660′	55′	110′	295′
60	- ""	600′	660′	720′	60′	120′	350′
65		650′	715′	780′	65′	130′	410′
70		700′	770′	840′	70′	140′	475′
75		750′	825′	900′	75′	150′	540′
80		800′	880′	960′	80′	160′	615′

XX Taper lengths have been rounded off.

L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE							
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY			
	1	1	1				

GENERAL NOTES

- 1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
- Phase 2 of the PCMS message should include appropriate information formatted as shown on BC(6), such as "MERGE RIGHT," recommended speed, delay, exit information, or other specific warnings.
- 3. Where queuing is anticipated beyond signing shown, additional PCMS signs, other warning signs, devices or Law Enforcement Officers should be available to warn approaching high speed traffic of the end of the queue, as directed by the Engineer.
- 4. Entrance ramps located from the advance warning area to the exit ramp should be closed whenever possible.
- 5. The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30′ to 100′ in advance of the area of crew exposure without adversely affecting the work performance.

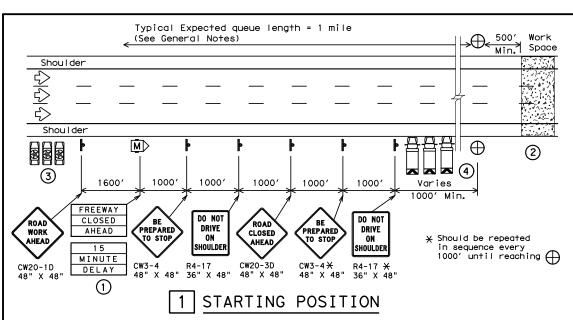
Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.



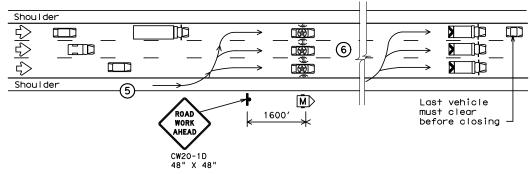
TRAFFIC CONTROL PLAN FREEWAY CLOSURE

TCP (6-6) -12

FILE:	tcp6-6.dgn		DN: T	(DOT	ск: TxDOT	DW:	TxDOT	ck: TxDOT
© TxD0T	February	1994	CONT	SECT	JOB		HIGHWAY	
	REVISIONS							
1-97 8-98 4-98 8-12		DIST	COUNTY		SHEET NO.			

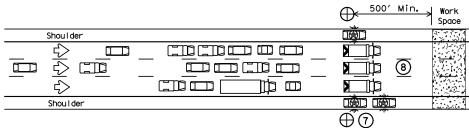


- 1 Traffic control devices should be installed or located near their intended position prior to beginning temporary roadway closure sequence. Duplicate signs should be erected on the median side of the roadway when median width permits. Warning signs should not be placed on the paved shoulders that will be used by the WARNING LEOV, or where movement of the LEOVs or barrier vehicles will be impeded
- Prior to beginning the roadway closure sequence, all equipment, materials, personnel, and other items necessary to complete the work should be gathered near the work area. Entrance ramps located in the area where a queue is expected to build should be closed.
- There should be one LEOV for every lane to be controlled, plus a minimum of one to warn traffic approaching a queue. An additional lead law enforcement officer is desirable to remain with the Engineer's or Contractor's point of contact (POC) during the operation in order to improve communication with all LEOVs involved.
- (4) One barrier vehicle with a Truck Mounted Attenuator and amber or blue and amber high intensity flashing/oscillating/strobe lighting shall be used for each lane to be closed.



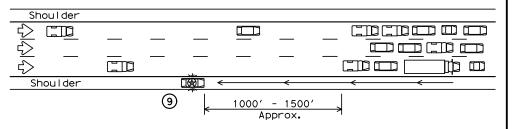
REDUCING SPEED OPERATION

- (5) Starting position of the LEOVs should be in advance of the most distant warning signs.
- (6) Once the LEOVs have achieved an abreast blocking formation while traveling toward the CP, emergency lights and headlights should be turned "ON". The LEOVs should maintain formation, not allow traffic to pass, and begin to decelerate. The LEOVs should continue to decelerate, giving the barrier vehicles opportunity to be staged upstream of the work space after traffic has cleared. The LEOVs should then continue to decelerate slowly until bringing traffic to a stop near the barrier vehicles.



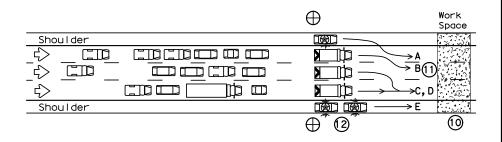
ALL TRAFFIC STOPPED AT CP

- Once traffic is stopped the LEOVs should park on the shoulders with emergency lighting "ON" in order to provide law enforcement presence at the closure and keep shoulders blocked ahead of the work space. They should stay in radio contact with the WARNING LEOV.
- The barrier vehicles should be parked, one in each lane, the parking brake set, with the high visibility flashing/oscillating/strobe lighting "ON," and the transmission in gear.



WARNING THE TRAFFIC QUEUE

The WARNING LEOV should proceed to the right shoulder of the roadway, with emergency lights on approximately 1000' in advance of the traffic queue (stopped traffic) as the queue develops. When determined that limited sight distance situations (crest of hills, sharp roadway curvature, etc.) may occur to motorists approaching the queue, the WARNING LEOV may proceed 1/4 mile or more in advance of the queue.



RELEASING STOPPED TRAFFIC

- (0) All equipment, materials, personnel, and other items should be removed from the roadway and maintain an adequate clear zone.
- $\widehat{\mbox{(1)}}$ When the roadway is clear for traffic, the LEOV should proceed forward from the left shoulder followed by the barrier vehicles, from left to right, as shown alphabetically in the plan view.
- (12) The LEOV or LEOVs on the right shoulder may remain on the shoulder until satisfied that traffic is moving satisfactorily before merging or proceeding.
- (13) LEOVs and barrier vehicles should re-group at their respective starting positions if necessary.

	LEGEND							
	Channelizing Devices	\oplus	Control Position (CP)					
M	Portable Changeable Message Sign (PCMS)		Barrier Vehicle with Truck Mounted Attenuator					
	Law Enforcement Officer's Vehicle(LEOV)	4	Traffic Flow					

TYPICAL USAGE							
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY			
	√						

GENERAL NOTES

- 1.All traffic control devices shall conform with the latest edition of the Texas Manual on Uniform Traffic Control Devices (TMUTCD). Additional guidelines for traffic control devices may be found in the TMUTCD. Signs conflicting with the roadway closure sequence should be completely removed or covered. Additional traffic control devices may be required for closure of access roads, cross streets, exit and entrance ramps as directed by the Engineer.
- 2. Law enforcement officers and all workers involved should review and understand all procedures before the roadway closure sequence begins. Pre-work meetings may be held for this purpose. Local emergency services and media should have advance notification of roadway closure, expected dates and approximate times of closures.
- 3. Law enforcement officers shall be in uniform and have jurisdiction in the locale of the work area. An additional WARNING Law Enforcement Officer's Vehicle (LEOV) may be used on the median side of the roadway where median shoulder width permits (See sequence #9).
- 4. The roadway closure should be during off-peak hours, as shown in the plans, or as directed by the Engineer.
- 5. Work should be limited to approximately 15 minutes maximum duration unless otherwise directed by the Engineer based on existing roadway conditions. If the work is not complete within 15 minutes, or if the end of the traffic queue extends past the most distant advance warning signs, the work area should be cleared of all equipment, materials, personnel, and other items, and the roadway reopened. When the queue has dissipated and the traffic flow appears normal the roadway closure sequence may be repeated.
- 6. For traffic volumes greater than 1000 Passenger Cars Per Hour Per Lane (PCPHPL), or for roadway closures that exceed 15 minutes, see details elsewhere in the plan.
- 7. If traffic queues beyond the advance warning signs during one road closure sequence, the advance warning should be extended prior to repeating the road closure sequence. When possible, PCMS signs should be located in advance of the last available exit prior to the closure to allow motorists the choice of an alternate route.

THIS PLAN IS INTENDED TO BE USED AT LOCATIONS/TIMES WHEN TRAFFIC VOLUMES ARE LESS THAN 1000 PASSENGER CARS PER HOUR PER LANE.



TRAFFIC CONTROL PLAN SHORT DURATION FREEWAY CLOSURE SEQUENCE

TCP(6-7)-12

FILE:	tcp6-7.dgn	DN: T	×DOT	ck: TxDOT	DW:	TxDOT	ck: TxD0
© TxD0T	Feburary 1998	CONT	SECT	JOB H		ні	GHWAY
	REVISIONS						
1-97 8-12		DIST		COUNTY			SHEET NO.
4-98							