



**PERMIT APPLICATION REVIEW FORM FOR
CABLE, CONDUIT, AND POLE LINE ACTIVITY
IN FORT BEND COUNTY**

**Fort Bend County
Engineering Department**
301 Jackson Suite 401
Richmond, Texas 77469
281.633.7500
Permits@fortbendcountytx.gov

☐

Right of Way Permit

☒

Commercial Driveway Permit

Permit No: 2018-23902

The following "Notice of Proposed Cable, Conduit, and/or Pole Line activity in Fort Bend County" and accompanying attachments have been reviewed and the notice conforms to appropriate regulations set by Commissioner's Court of Fort Bend County, Texas.

(1) COMPLETE APPLICATION FORM:

☒
☒
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a. Name of road, street, and/or drainage ditch affected.

b. Vicinity map showing course of directions

c. Plans and specifications

(2) BOND:

☐

County Attorney, approval when applicable.

☐

Perpetual bond currently posted.

Bond No: _____

Amount: _____

☒

Performance bond submitted.

Bond No: XXXXXXXXXX

Amount: \$5,000.00

☐

Cashier's Check

Check No: _____

Amount: _____

(3) DRAINAGE DISTRICT APPROVAL (WHEN APPLICABLE):

Drainage District Approval

Date

We have reviewed this project and agree it meets minimum requirements.



Permit Administrator

10/16/2018

Date

**PERFORMANCE BOND COVERING ALL CABLE, CONDUIT AND/OR POLE LINE
ACTIVITY IN, UNDER, ACROSS OR ALONG FORT BEND COUNTY ROAD,
COMMERCIAL DRIVEWAY AND MEDIAN OPENINGS OR MODIFICATIONS
(AUTHORIZED)**

BOND NO. [REDACTED]

THE STATE OF TEXAS §
COUNTY OF FORT BEND §

KNOW ALL MEN BY THESE PRESENTS:

THAT WE, Natural Gas Pipeline Company of America LLC whose (address, phone) is 1001 Louisiana St., Suite 1000, Houston, Texas 77002, (713) 269-8873, hereinafter called the Principal, and Continental Casualty Company, a Corporation existing under and by virtue of the laws of the state of Illinois and authorized to do an indemnifying business in the state of Texas, and whose principal office is located at (name/address/phone) 333 S. Wabash Ave., Chicago, Illinois 60604, (312) 822-5000, whose officer residing in the State of Texas, authorized to accept service in all suits and actions brought within said state is Ron Bartulla, and whose address is 5151 San Felipe, Suite 1200, Houston, Texas 77056, hereinafter called the Surety, and held and firmly bound unto, Robert E. Hebert, County Judge of Fort Bend County, Texas, or his successors in office, in the full sum of Five Thousand and No/100 Dollars (\$5,000.00) current, lawful money of the United States of America, to be paid to said Robert E. Hebert, County Judge of Fort Bend County, Texas, or his successors in office, to which payment well and truly to be made and done, we, the undersigned, bind ourselves and each of us, our heirs, executors, administrators, successors, assigns, and legal representatives, jointly and severally, by these presents.

THE CONDITION OF THIS BOND IS SUCH THAT, WHEREAS, the above bounden principal contemplates laying, constructing, maintaining and/or repairing one or more cables, conduits, and/or pole lines in, under, across and/or along roads, streets and highways, commercial driveway and median openings or modifications in the County of Fort Bend, and the State of Texas, under the jurisdiction of the Commissioners' Court of Fort Bend County, Texas, pursuant to the Commissioners' Court order adopted on the 1st day of December, A.D. 1980, recorded in Volume 13, of the Commissioners' Court Minutes of Fort Bend County, Texas, regulating same, which Commissioners' Court order is hereby referred to and made a part hereof for all purposes as though fully set out herein;

AND WHEREAS, the principal desires to provide Fort Bend County with a performance bond covering all such cable, conduit and/or pole line activity, commercial driveway and median openings or modifications;

NOW, THEREFORE, if the above bounden principal shall faithfully perform all its cable, conduit and/or pole line activity (including, but not limited to the laying, construction, maintenance and/or repair of cables, conduits and/or pole lines) in, under, across and/or along roads, streets and highways, commercial driveway and median openings or modifications in the County of Fort Bend and State of Texas, under the jurisdiction of the Commissioners Court of Fort Bend County, Texas, pursuant to and in accordance with minimum requirements and conditions of the above mentioned Commissioners' Court order set forth and specified to be by said principal done and performed, at the time and in the manner therein specified, and shall pay over and make good and reimburse Fort Bend County, all loss and damages which Fort Bend County may sustain by reason of any failure or default on the part of said principal, then this obligation shall be null and void, otherwise to remain in full force and effect.

This bond is payable at the County Courthouse in the County of Fort Bend and State of Texas.

It is understood that at any time Fort Bend County deems itself insecure under this bond, it may require further and/or additional bonds of the principal.

EXECUTED this 12th day of October, 2018.

Natural Gas Pipeline Company of America LLC
PRINCIPAL

BY 

Continental Casualty Company
SURETY

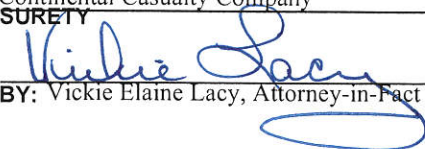
BY:  Vickie Elaine Lacy, Attorney-in-Fact

Figure: 28 TAC §1.601(a)(3)

1 IMPORTANT NOTICE

To obtain information or make a complaint:

2 You may contact Continental Casualty Company, National Fire Insurance Company, American Casualty Company or Continental Insurance Company at 312-822-5000.

3 You may call Continental Casualty Company, National Fire Insurance Company, American Casualty Company or Continental Insurance Company's toll-free telephone number for information or to make a complaint at:

1-877-672-6115

4 You may also write to Continental Casualty Company, National Fire Insurance Company, American Casualty Company or Continental Insurance Company at:

CNA Surety
333 South Wabash
Chicago, IL 60604

5 You may contact the Texas Department of Insurance to obtain information on companies, coverages, rights or complaints at:

1-800-252-3439

6 You may write the Texas Department of Insurance:

P.O. Box 149104
Austin, TX 78714-9104
Fax: (512) 475-1771
Web: <http://www.tdi.state.tx.us>
E-Mail: ConsumerProtection@tdi.state.tx.us

7 PREMIUM OR CLAIM DISPUTES:

Should you have a dispute concerning your premium or about a claim you should contact Continental Casualty Company, National Fire Insurance Company, American Casualty Company or Continental Insurance Company first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

8 ATTACH THIS NOTICE TO YOUR POLICY:

This notice is for information only and does not become a part or condition of the attached document.

Form F8277

AVISO IMPORTANTE

Para obtener informacion o para someter una queja:

Puede comunicarse con Continental Casualty Company, National Fire Insurance Company, American Casualty Company or Continental Insurance Company al 312-822-5000.

Usted puede llamar al numero de telefono gratis de Continental Casualty Company, National Fire Insurance Company, American Casualty Company or Continental Insurance Company's para informacion o para someter una queja al:

1-877-672-6115

Usted tambien puede escribir a Continental Casualty Company, National Fire Insurance Company, American Casualty Company or Continental Insurance Company:

CNA Surety
333 South Wabash
Chicago, IL 60604

Puede comunicarse con el Departamento de Seguros de Texas para obtener informacion acerca de companias, coberturas, derechos o quejas al:

1-800-252-3439

Puede escribir al Departamento de Seguros de Texas:

P.O. Box 149104
Austin, TX 78714-9104
Fax: (512) 475-1771
Web: <http://www.tdi.state.tx.us>
E-Mail: ConsumerProtection@tdi.state.tx.us

DISPUTAS SOBRE PRIMAS O RECLAMOS:

Si tiene una disputa concerniente a su prima o a un reclamo, debe comunicarse con el Continental Casualty Company, National Fire Insurance Company, American Casualty Company or Continental Insurance Company primero. Si no se resuelve la disputa, puede entonces comunicarse con el departamento (TDI).

UNA ESTE AVISO A SU POLIZA: Este aviso es solo para proposito de informacion y no se convierte en parte o condicion del documento adjunto.

POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That Continental Casualty Company, an Illinois insurance company, National Fire Insurance Company of Hartford, an Illinois insurance company, and American Casualty Company of Reading, Pennsylvania, a Pennsylvania insurance company (herein called "the CNA Companies"), are duly organized and existing insurance companies having their principal offices in the City of Chicago, and State of Illinois, and that they do by virtue of the signatures and seals herein affixed hereby make, constitute and appoint

Marc W Boots, P T Osburn, Maria D Zuniga, Joseph R Aulbert, Richard Allen Covington, Vickie Elaine Lacy, Individually

of Houston, TX, their true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on their behalf bonds, undertakings and other obligatory instruments of similar nature

- In Unlimited Amounts -

and to bind them thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of their insurance companies and all the acts of said Attorney, pursuant to the authority hereby given is hereby ratified and confirmed.

This Power of Attorney is made and executed pursuant to and by authority of the By-Law and Resolutions, printed on the reverse hereof, duly adopted, as indicated, by the Boards of Directors of the insurance companies.

In Witness Whereof, the CNA Companies have caused these presents to be signed by their Vice President and their corporate seals to be hereto affixed on this 18th day of August, 2016.

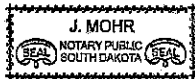


Continental Casualty Company
National Fire Insurance Company of Hartford
American Casualty Company of Reading, Pennsylvania

Paul T. Bruflat Vice President

State of South Dakota, County of Minnehaha, ss:

On this 18th day of August, 2016, before me personally came Paul T. Bruflat to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is a Vice President of Continental Casualty Company, an Illinois insurance company, National Fire Insurance Company of Hartford, an Illinois insurance company, and American Casualty Company of Reading, Pennsylvania, a Pennsylvania insurance company described in and which executed the above instrument; that he knows the seals of said insurance companies; that the seals affixed to the said instrument are such corporate seals; that they were so affixed pursuant to authority given by the Boards of Directors of said insurance companies and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said insurance companies.



My Commission Expires June 23, 2021

J. Mohr Notary Public

CERTIFICATE

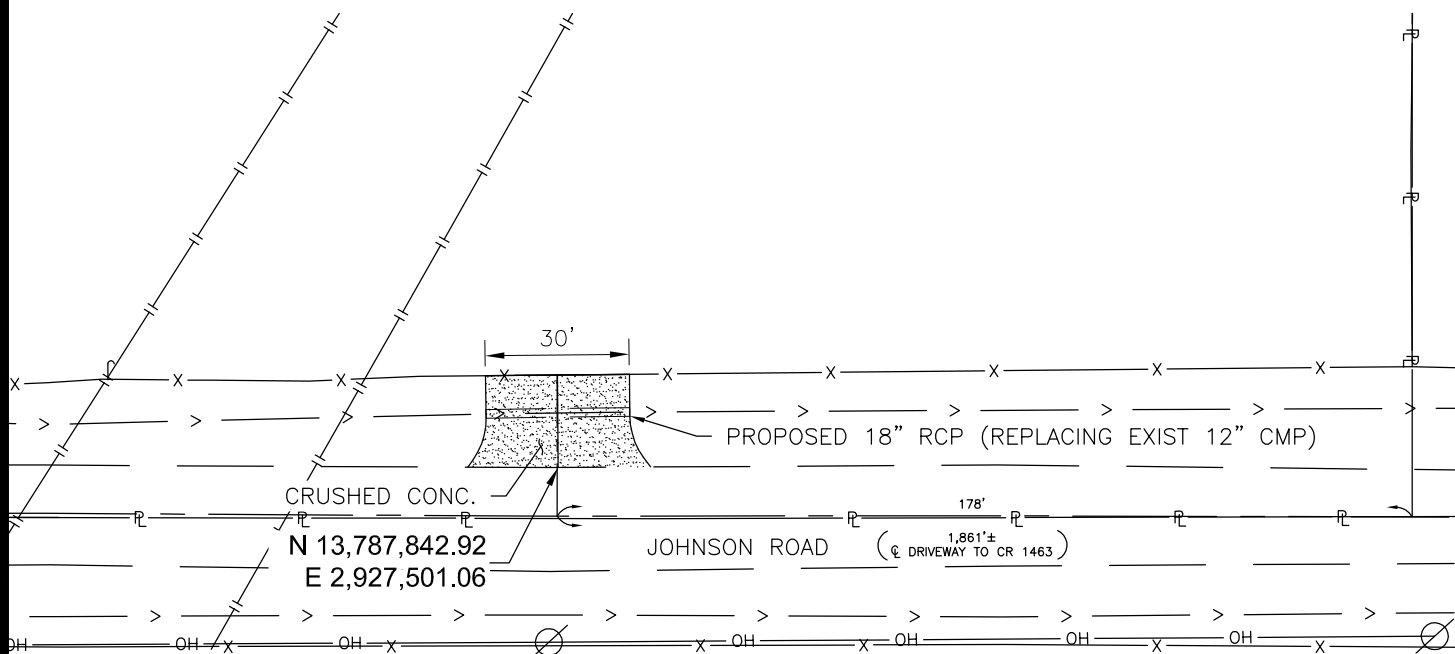
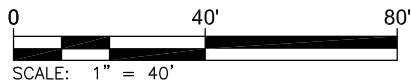
I, D. Bult, Assistant Secretary of Continental Casualty Company, an Illinois insurance company, National Fire Insurance Company of Hartford, an Illinois insurance company, and American Casualty Company of Reading, Pennsylvania, a Pennsylvania insurance company do hereby certify that the Power of Attorney herein above set forth is still in force, and further certify that the By-Law and Resolution of the Board of Directors of the insurance companies printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said insurance companies this 12th day of October, 2018.



Continental Casualty Company
National Fire Insurance Company of Hartford
American Casualty Company of Reading, Pennsylvania

D. Bult Assistant Secretary

FORT BEND COUNTY, TEXAS



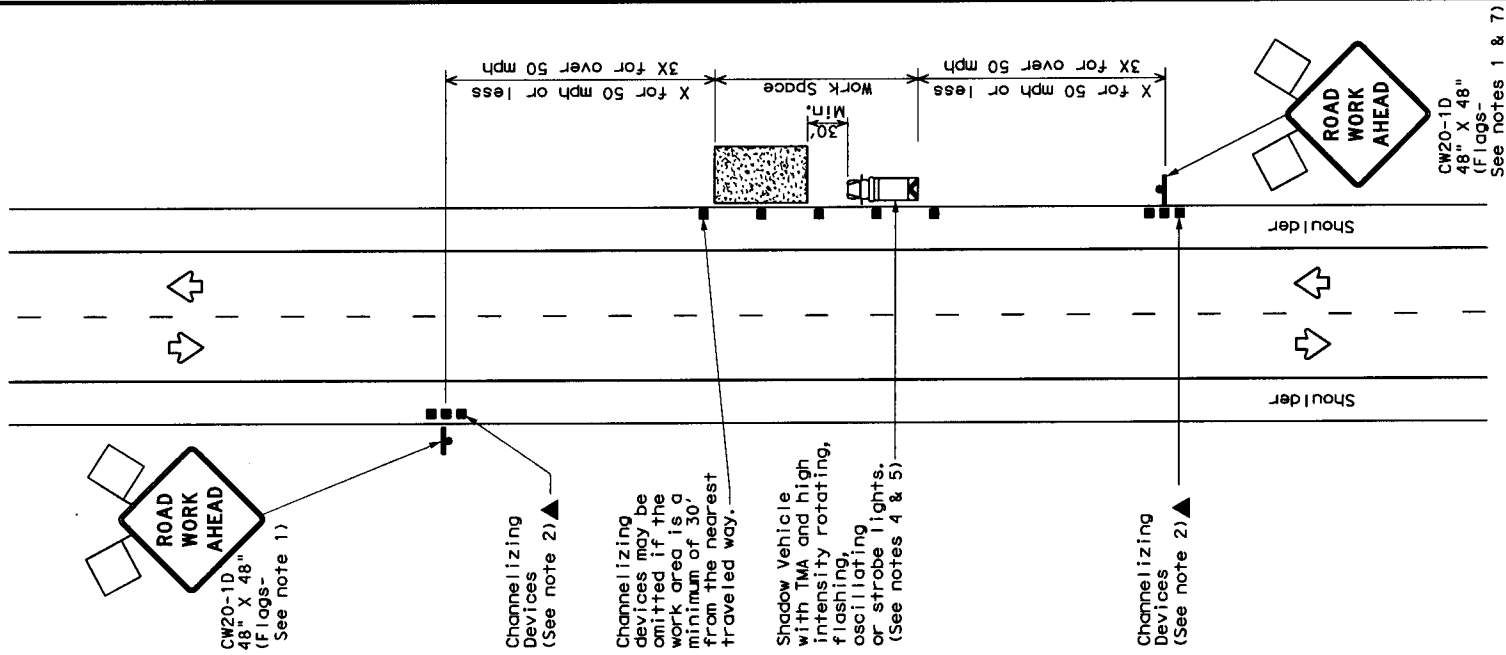
ISSUED

TEXAS FIRM NO. F-19727
BURROW GLOBAL
 MIDSTREAM



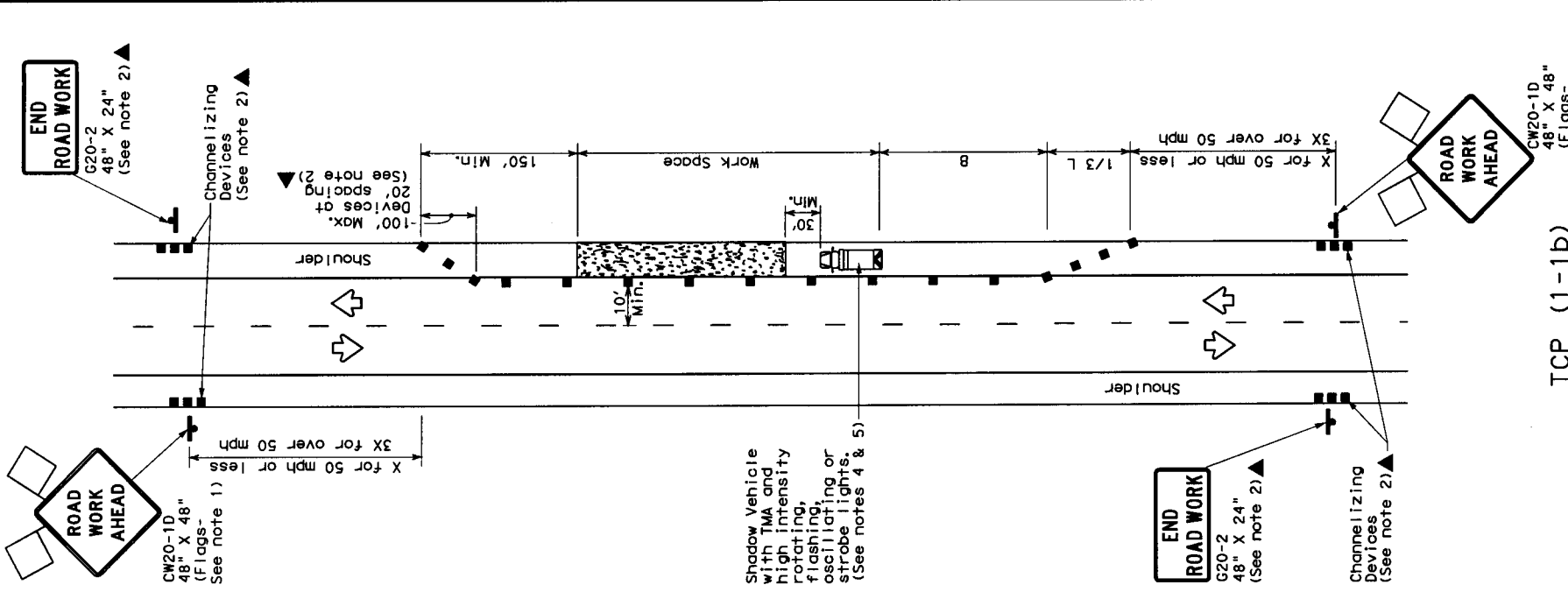
BGM PROJECT: 70800010

NO.	REVISION	DATE	DRAWN BY	DATE	KINDER MORGAN			
			CMV	10/18				
			CHECKED BY	DATE				
			SKB	10/18				
			ENGR. APPD	DATE	FORT BEND COUNTY 30' DRIVEWAY PERMIT			
			PROJ. MGR. APPD	DATE				
0	ISSUED	10/18			SCALE: 1" = 40'	PROJ. NO. 70800010	DWG. NO. 70800010-88-001	REV. 0



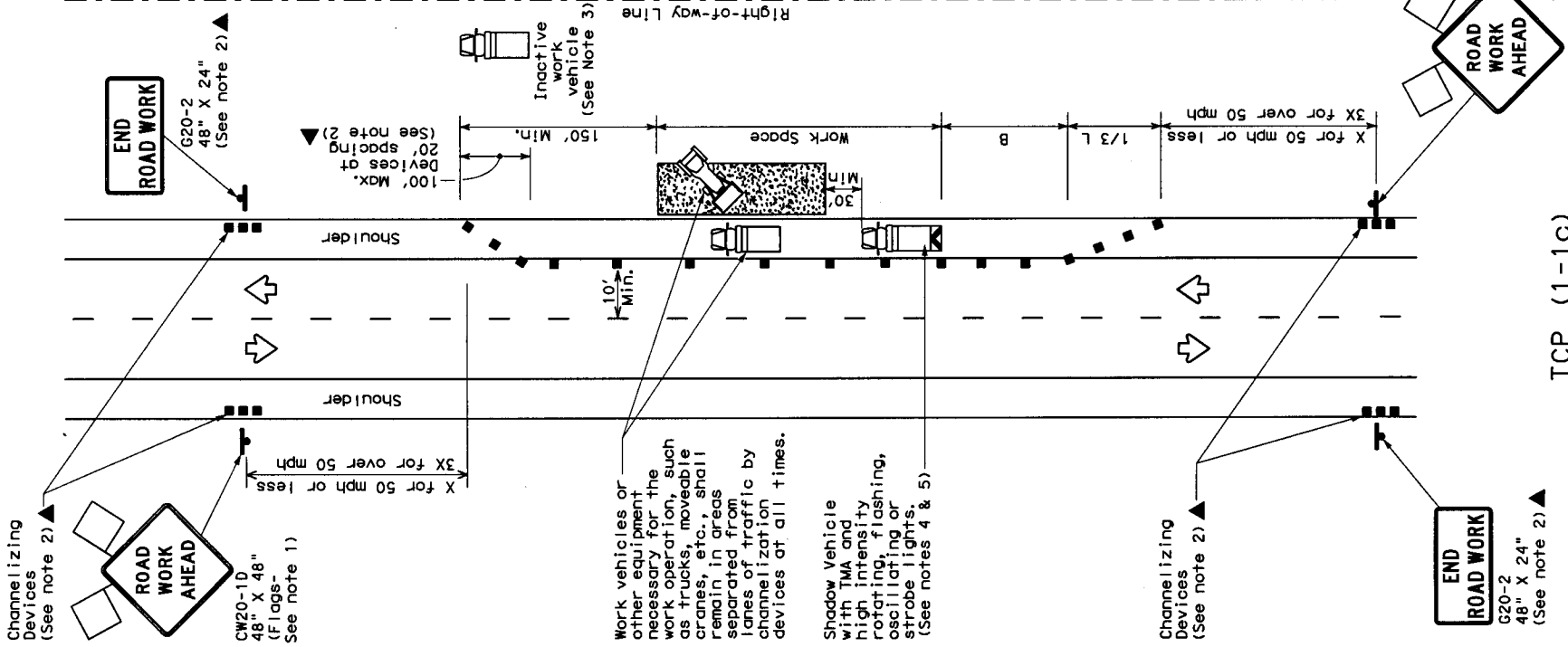
TCP (1-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (1-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (1-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

LEGEND	
Type 3 Barricade	Channelizing Devices
Heavy Work Vehicle	Truck Mounted Attenuator (TMA)
Trailer Mounted Flashing Arrow Board	Portable Changeable Message Sign (PCMS)
Sign	Traffic Flow
Flag	Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths **		Suggested Maximum Spacing of Channelizing Devices "X"	Minimum Sign Spacing "X"	Suggested Longitudinal Buffer Space "B"
		10' Offset	12' Offset			
30	$L = \frac{WS^2}{60}$	150'	165'	30'	60'	120'
35		205'	225'	35'	70'	160'
40		265'	295'	40'	80'	240'
45	$L = WS$	450'	495'	45'	90'	320'
50		500'	550'	50'	100'	400'
55		550'	605'	55'	110'	500'
60		600'	660'	60'	120'	600'
65		650'	715'	65'	130'	700'
70		700'	770'	70'	140'	800'
75		750'	825'	75'	150'	900'

* Conventional Roads Only

** Taper lengths have been rounded off.

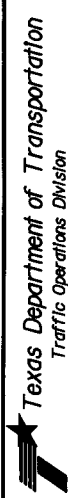
L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

TYPICAL USAGE			
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
4. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
6. See TCP (5-1) for shoulder work on divided highways, expressways and freeways.
7. "ROAD WORK AHEAD" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.



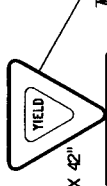
TRAFFIC CONTROL PLAN
CONVENTIONAL ROAD
SHOULDER WORK

TCP (1-1) -12

REVISED	1-12	1-97	4-98
2-94	8-95	1-97	4-98
DATE	FILE	PROJECT	SHEET NO.
151			

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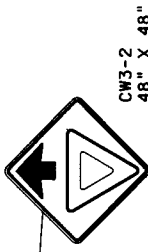
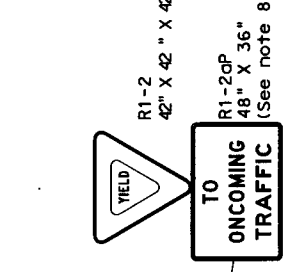
Warning Sign Sequence in Opposite Direction Same as Below



TO ONCOMING TRAFFIC
R1-2aP
48" X 36"
(See note 8)

Channelizing devices separate work space from traveled way

Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. (See notes 5 & 6)

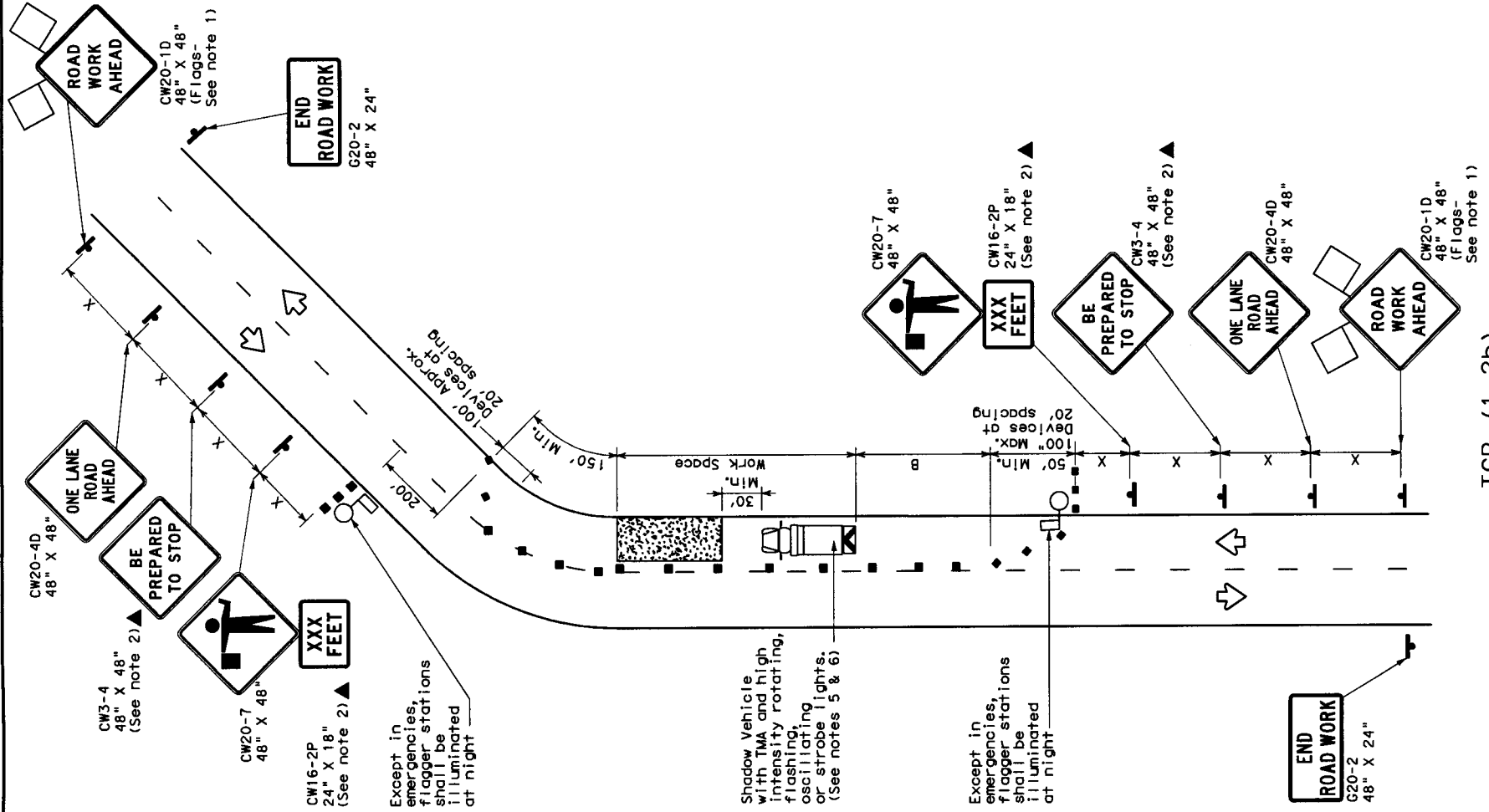


TCP (1-2a)

ONE LANE TWO-WAY

CONTROL WITH YIELD SIGNS

(Less than 2000 ADT - See note 7)



TCP (1-2b)

ONE LANE TWO-WAY

CONTROL WITH FLAGGERS

LEGEND	
Type 3 Barricade	Channelizing Devices
Heavy Work Vehicle	Truck Mounted Attenuator (TMA)
Trailer Mounted Flashing Arrow Board	Portable Changeable Message Sign (PCMS)
Sign	Traffic Flow
Flag	Flagger

Posted Speed * Formula	Minimum Desirable Taper Lengths * Offset 10' 11' 12'	Suggested Maximum Spacing of Channelizing Devices * On a Taper	Minimum Sign Spacing Distance * On a Tangent	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30 $L = \frac{WS^2}{60}$	150' 165' 180'	30' 60'	60'	90'	200'
35	205' 225' 245'	35' 70'	120'	120'	250'
40	265' 295' 320'	40' 80'	240'	155'	305'
45	450' 495' 540'	45' 90'	320'	195'	360'
50	550' 550' 600'	50' 100'	400'	240'	425'
55	550' 605' 660'	55' 110'	500'	295'	495'
60	600' 660' 720'	60' 120'	600'	350'	570'
65	650' 715' 780'	65' 130'	700'	410'	645'
70	700' 770' 840'	70' 140'	800'	475'	730'
75	750' 825' 900'	75' 150'	900'	540'	820'

* Conventional Roads Only

** 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
	✓	✓		

GENERAL NOTES

- Flags attached to signs where shown are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
- Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

- R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work spaces should be no longer than one half city block. In rural areas on roadways with less than 2000 ADT, work spaces should be no longer than 400 feet.
- R1-2 "YIELD" sign with R1-2aP "TO ONCOMING TRAFFIC" plaque shall be placed on a support at a 7 foot minimum mounting height.

TCP (1-2b)

- Flaggers should use two-way radios or other methods of communication to control traffic.
- Length of work space should be based on the ability of flaggers to communicate.
- If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
- Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
- Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

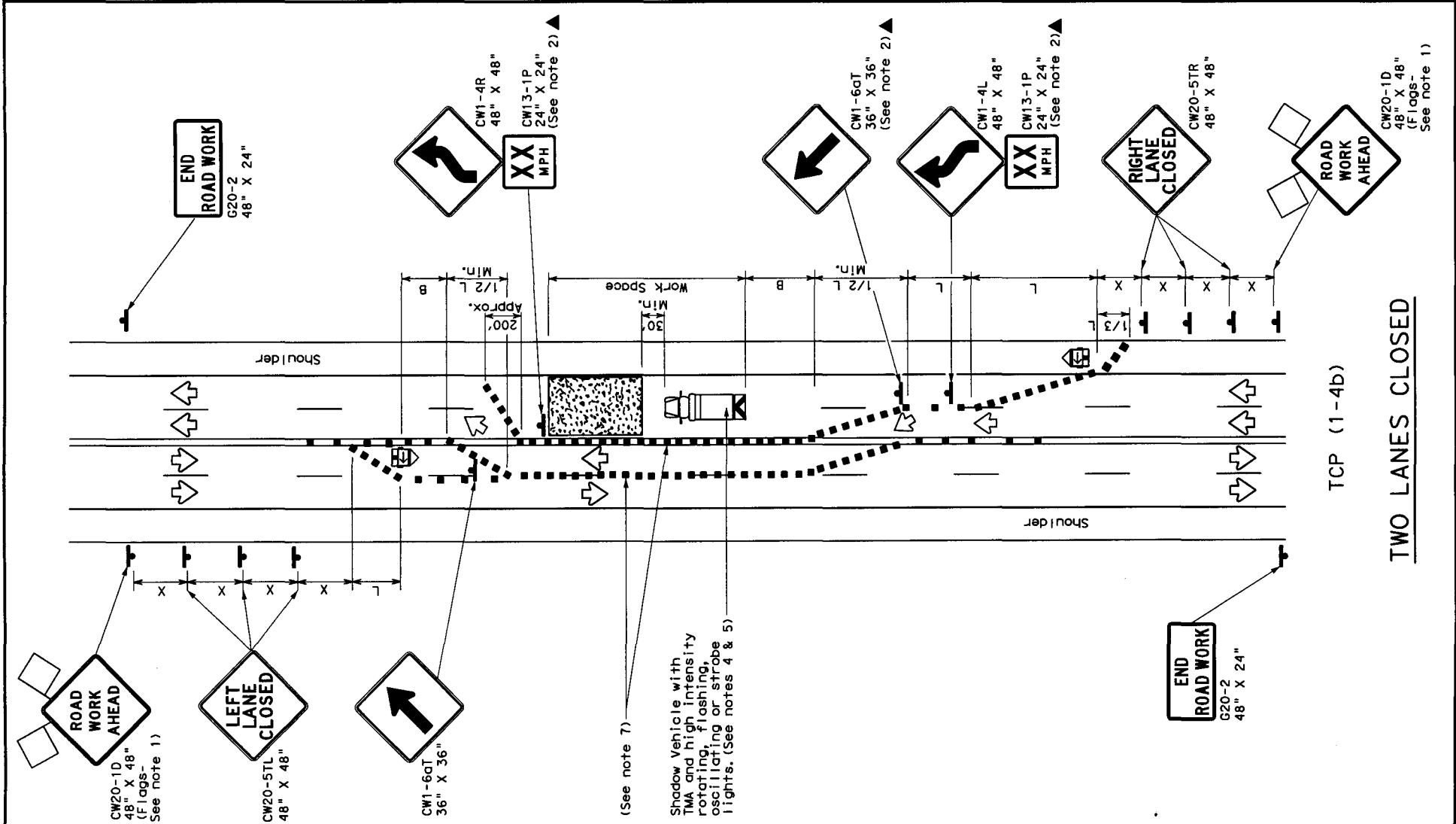
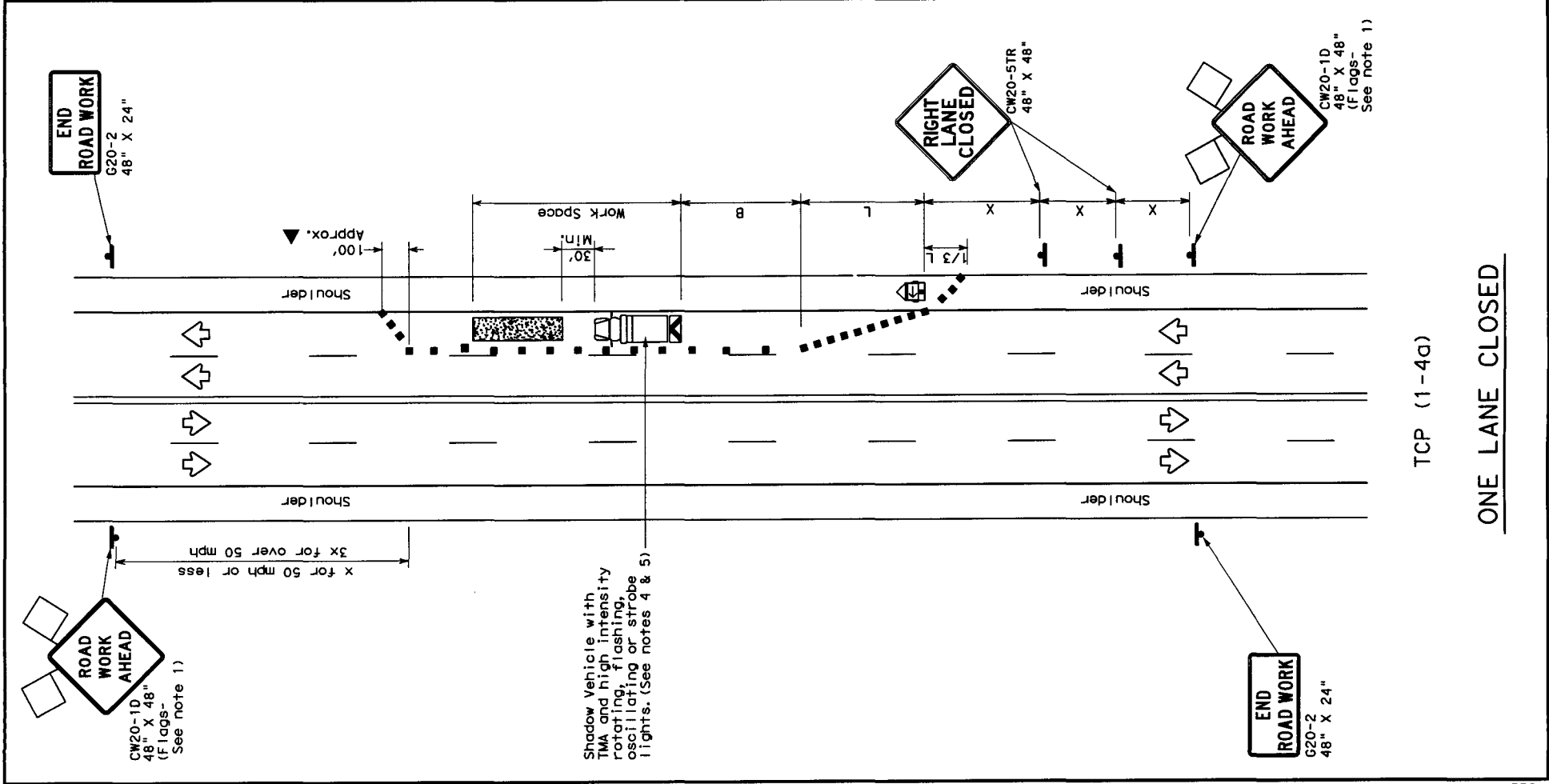
For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP (1-2) - 12

① TxDOT December 1985	REVISED	DATE	BY	CHK	DATE	BY	CHK	DATE	BY
4-90	1-12								
2-94									
1-97									
4-98									



LEGEND

Type 3 Barricade	Channelizing Devices
Heavy Work Vehicle	Truck Mounted Attenuator (TMA)
Trailer Mounted Flashing Arrow Board	Portable Changeable Message Sign (PCMS)
Sign	Traffic Flow
Flag	Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths **		Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X"	Suggested Longitudinal Buffer Space "B"
		Offset	On a Taper	On a Taper	On a Taper		
30	WS	10'	11'	12'	30'	60'	120'
35	L = 60	150'	165'	180'	30'	60'	120'
40		205'	225'	245'	35'	70'	160'
45		265'	295'	320'	40'	80'	240'
50		450'	495'	540'	45'	90'	320'
55	L = WS	500'	550'	600'	50'	100'	400'
60		550'	605'	660'	55'	110'	500'
65		600'	660'	720'	60'	120'	600'
70		650'	715'	780'	65'	130'	700'
75		700'	770'	840'	70'	140'	800'
		750'	825'	900'	75'	150'	900'

* Conventional Roads Only

** 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
	✓			

GENERAL NOTES

- Flags attached to signs where shown are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- The CW20-1D "ROAD WORK AHEAD" sign may be repeated if the visibility of the work zone is less than 1500 feet.
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-4a)

6. If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline where needed to protect the work space from opposing traffic with the arrow panel placed in the closed lane near the end of the merging taper.

TCP (1-4b)

7. Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the areas of conflicting markings, not the entire work zone.

Texas Department of Transportation

Traffic Operations Division

TRAFFIC CONTROL PLAN

LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP (1-4) -12

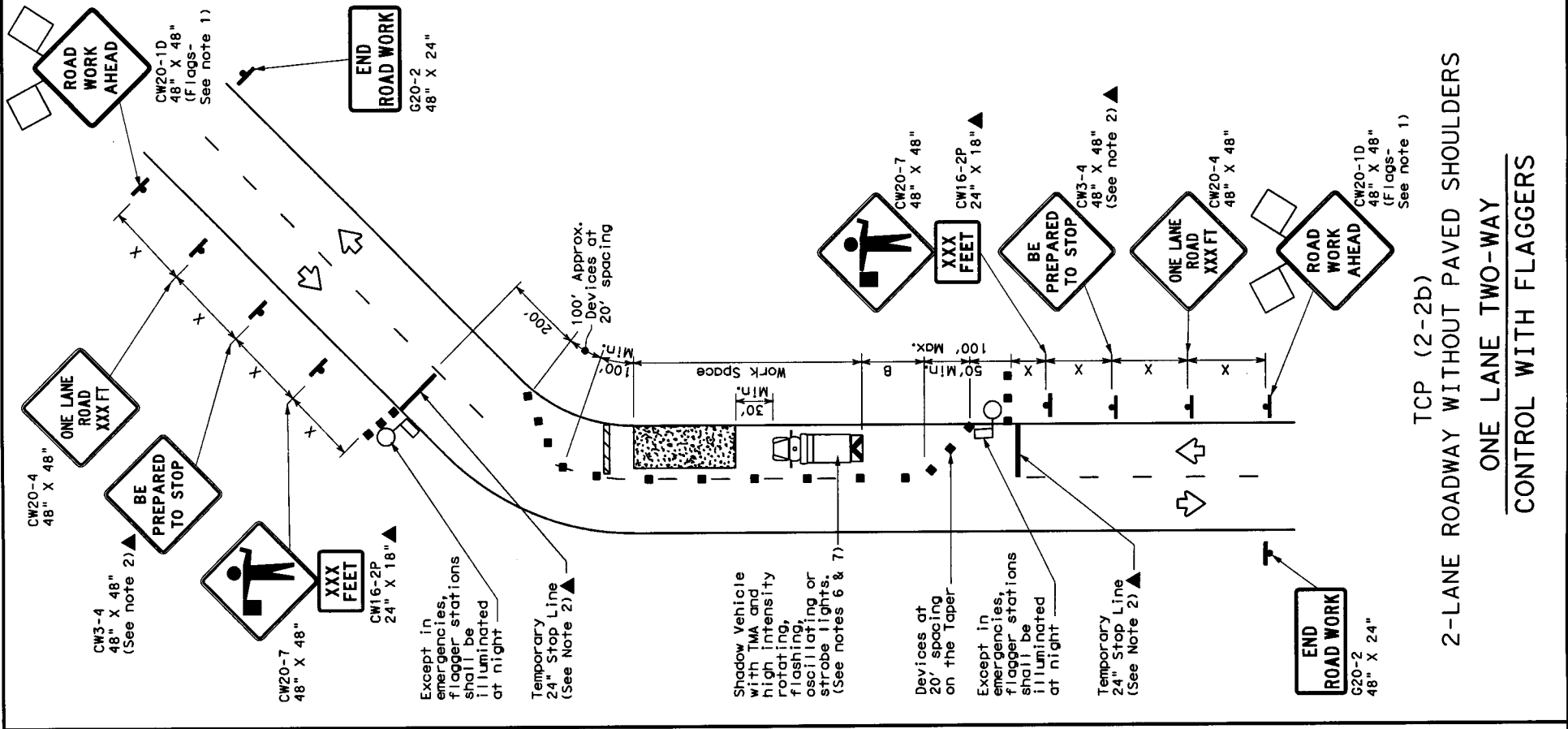
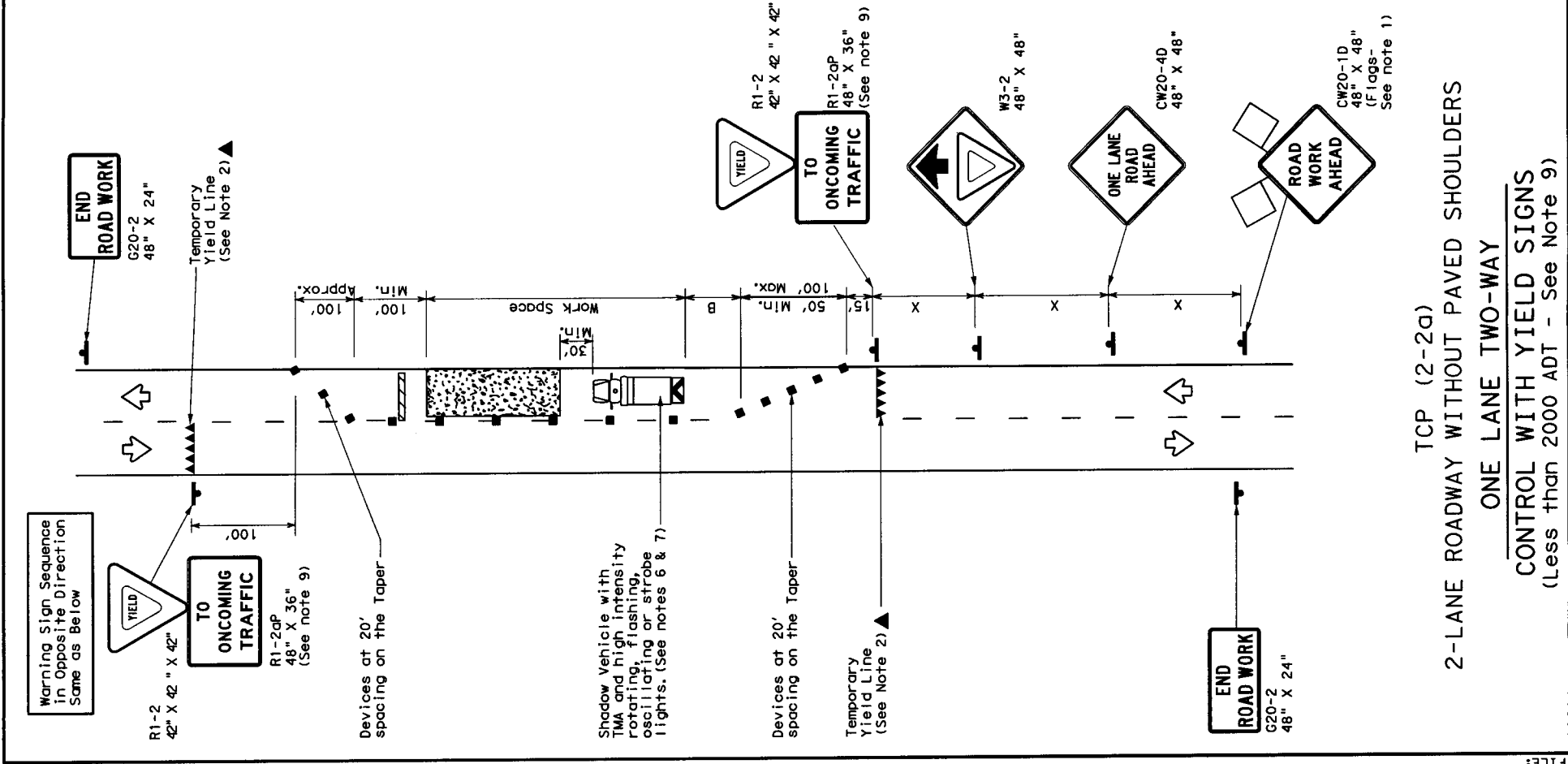
REVISIONS

NO.	DATE	DESCRIPTION
2-94	1-12	
8-95		
1-97		
4-98		

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.

DATE: FILE:

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LEGEND			
Type 3 Barricade	Channelizing Devices	Truck Mounted Attenuator (TMA)	
Heavy Work Vehicle	Truck Mounted Attenuator (TMA)	Portable Changeable Message Sign (PCMS)	
Trailer Mounted Flashing Arrow Board	Trailer Mounted Flashing Arrow Board	Traffic Flow	
Sign	Sign	Flag	
Flag	Flag	Flag	

Posted Speed *	Formula	Minimum Desirable Taper Lengths **	Suggested Maximum Spacing of Channelizing Devices	Minimum Sign Spacing Distance "X"	Stopping Sight Distance "S"
30	WS	10' 11' 12' Offset/Offset/Offset	On a Taper	On a Tangent	90'
35	WS	150' 165' 180'	30'	60'	120'
40	WS	205' 225' 245'	35'	70'	150'
45	WS	265' 295' 320'	40'	80'	185'
50	WS	350' 395' 440'	45'	90'	225'
55	WS	450' 505' 560'	50'	100'	275'
60	WS	550' 605' 660'	55'	110'	335'
65	WS	650' 715' 780'	60'	120'	405'
70	WS	750' 825' 900'	70'	140'	485'
75	WS	850' 925' 1000'	75'	150'	575'

* Conventional Roads Only

** 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	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓

GENERAL NOTES

- Flags attached to signs where shown, are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
- Flaggers should use two-way radios or other methods of communication to control traffic.
- Length of work space should be based on the ability of flaggers to communicate.
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA. If workers are no longer present but road or work conditions require the traffic to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-2a)

- The R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work space should be no longer than one half city block. In rural areas, roadways with less than 2000 ADT, work space should be no longer than 400 feet.
- The R1-2aP "YIELD TO ONCOMING TRAFFIC" sign shall be placed on a support at a 7 foot minimum mounting height.

TCP (2-2b)

- Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
- If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
- Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502. Barricades, Signs and Traffic Handling.

Texas Department of Transportation
Traffic Operations Division

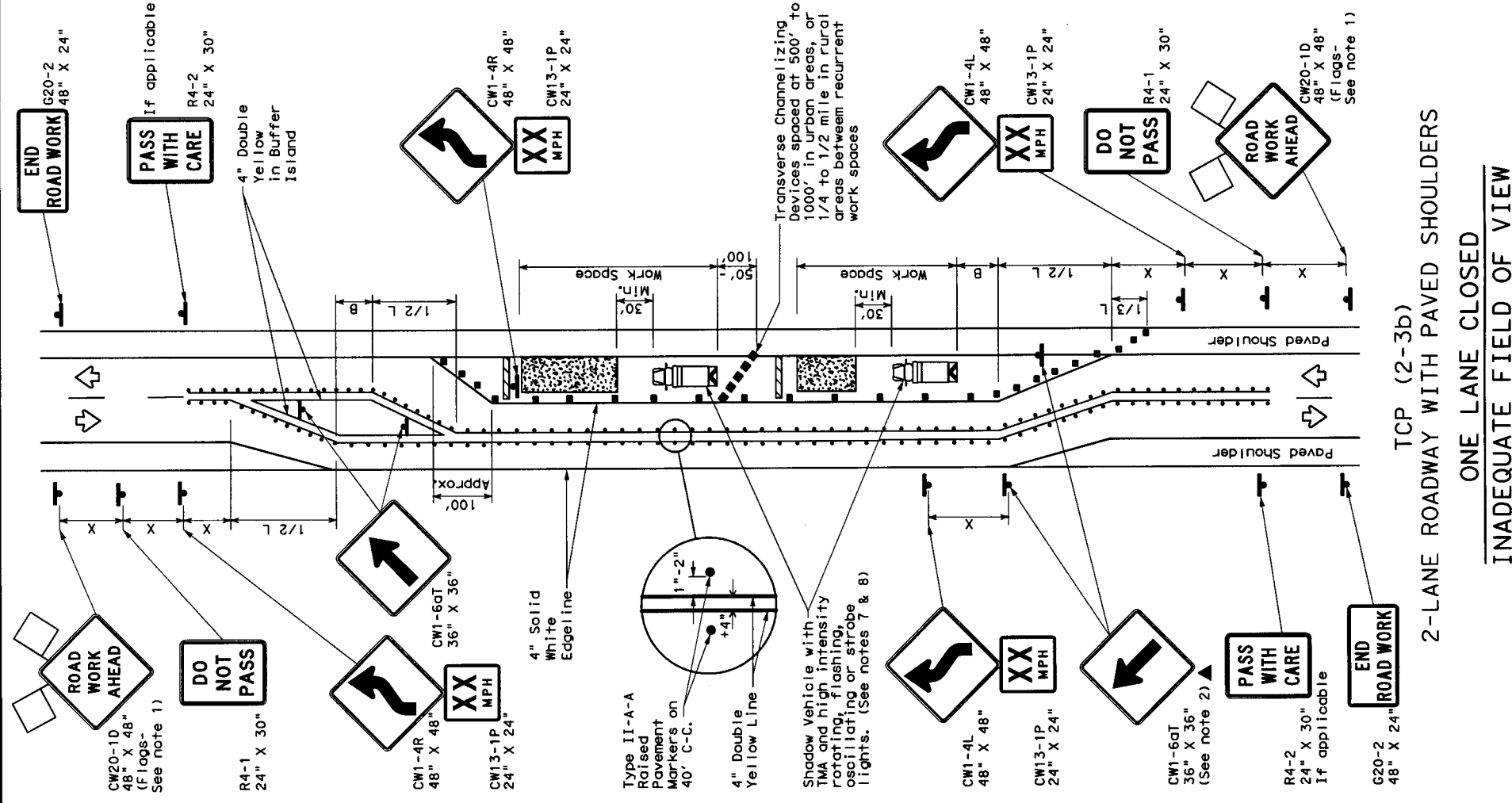
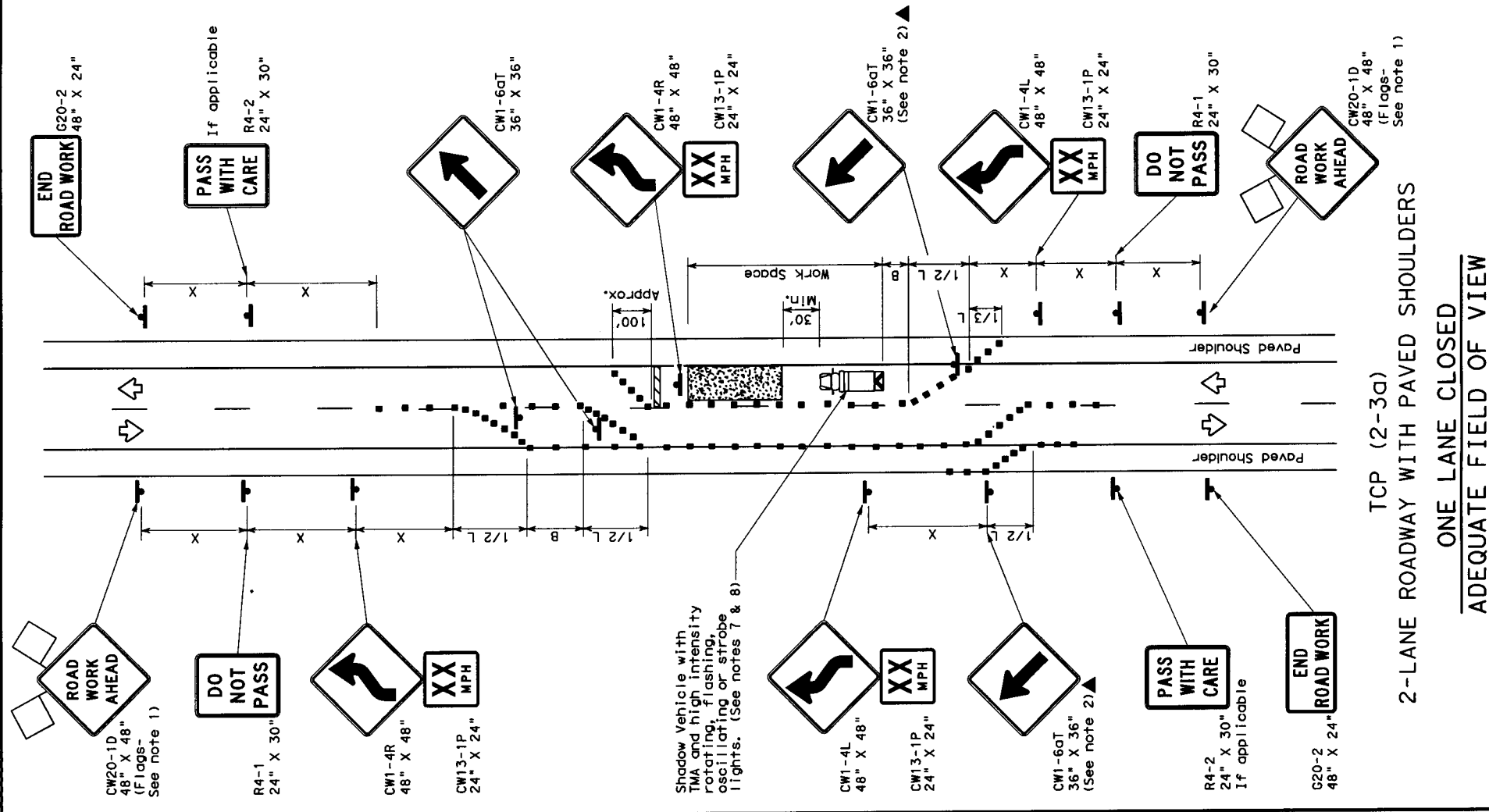
TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP (2-2) -12

REVISED	DATE	BY	CHK'D	APP'D
8-95	1-12			
1-97				
4-98				
3-03				

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LEGEND	
	Type 3 Barricade
	Heavy Work Vehicle
	Trailer Mounted Flashing Arrow Board
	Sign
	Flag

Posted Speed * *	Formula	Minimum Desirable Taper Lengths **	Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "x"	Suggested Longitudinal Buffer Space "g"
			On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	10' 11'	150'	30'	60'	90'
35		150'	165'	30'	60'	120'
40		205'	225'	35'	70'	120'
45		265'	295'	40'	80'	155'
50		450'	495'	45'	90'	195'
55		550'	605'	50'	100'	240'
60		600'	660'	55'	110'	295'
65		650'	715'	60'	120'	350'
70		700'	770'	65'	130'	410'
75		750'	825'	70'	140'	475'

* Conventional Roads Only

** Taper lengths have been rounded off.

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

TYPICAL USAGE

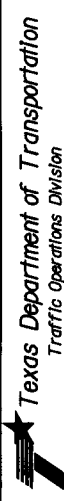
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
				TCP (2-3b) ONLY

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
4. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
5. The R4-1 "DO NOT PASS," R4-2 "PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
6. Conflicting pavement marking shall be removed for long term projects.
7. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted.
8. Additional Shadow Vehicles with TMA's may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-3a)

Conflicting pavement markings shall be removed for long-term projects. For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter device spacing is intended for the area of the conflicting markings, not the entire work zone.



TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

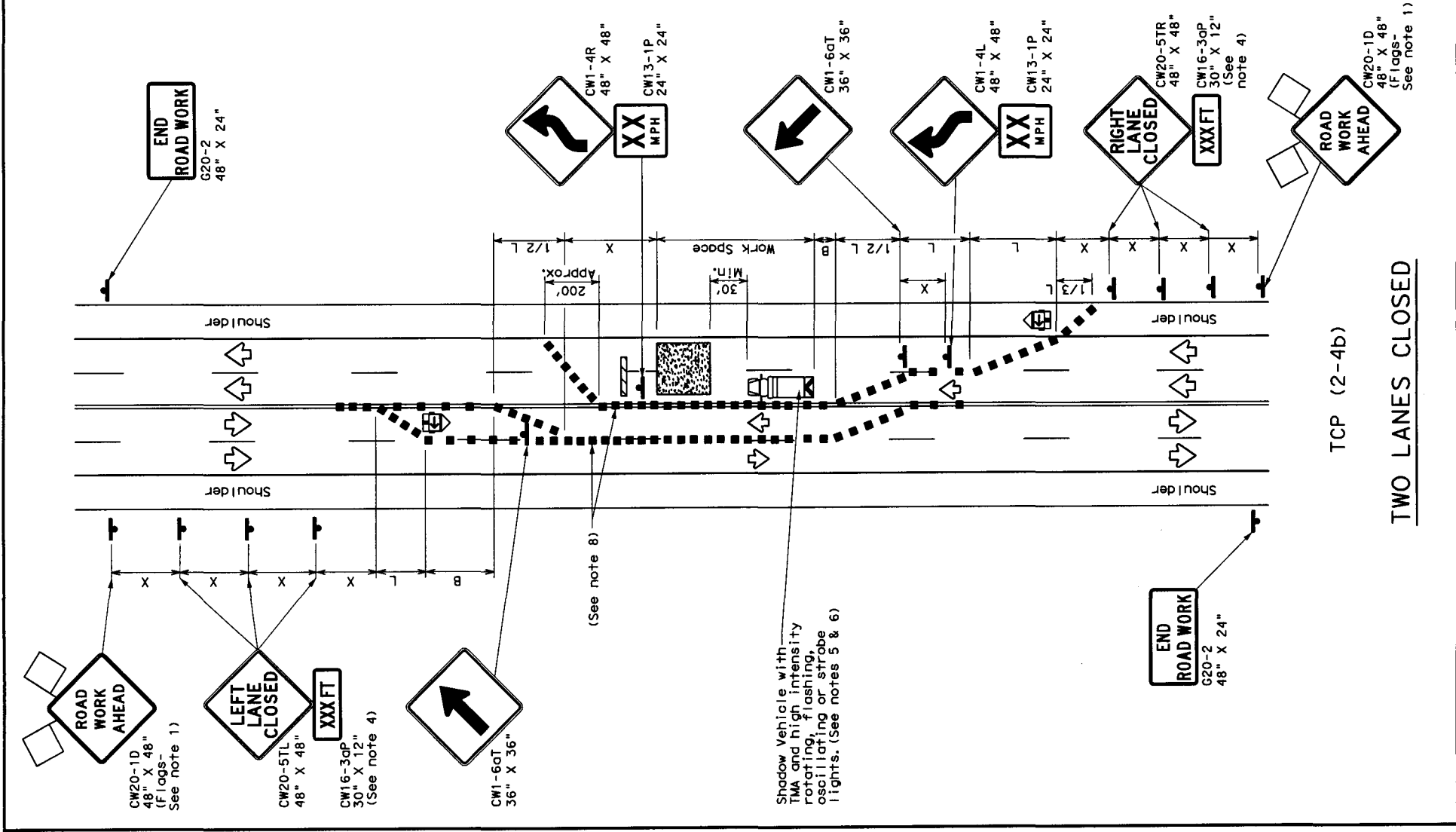
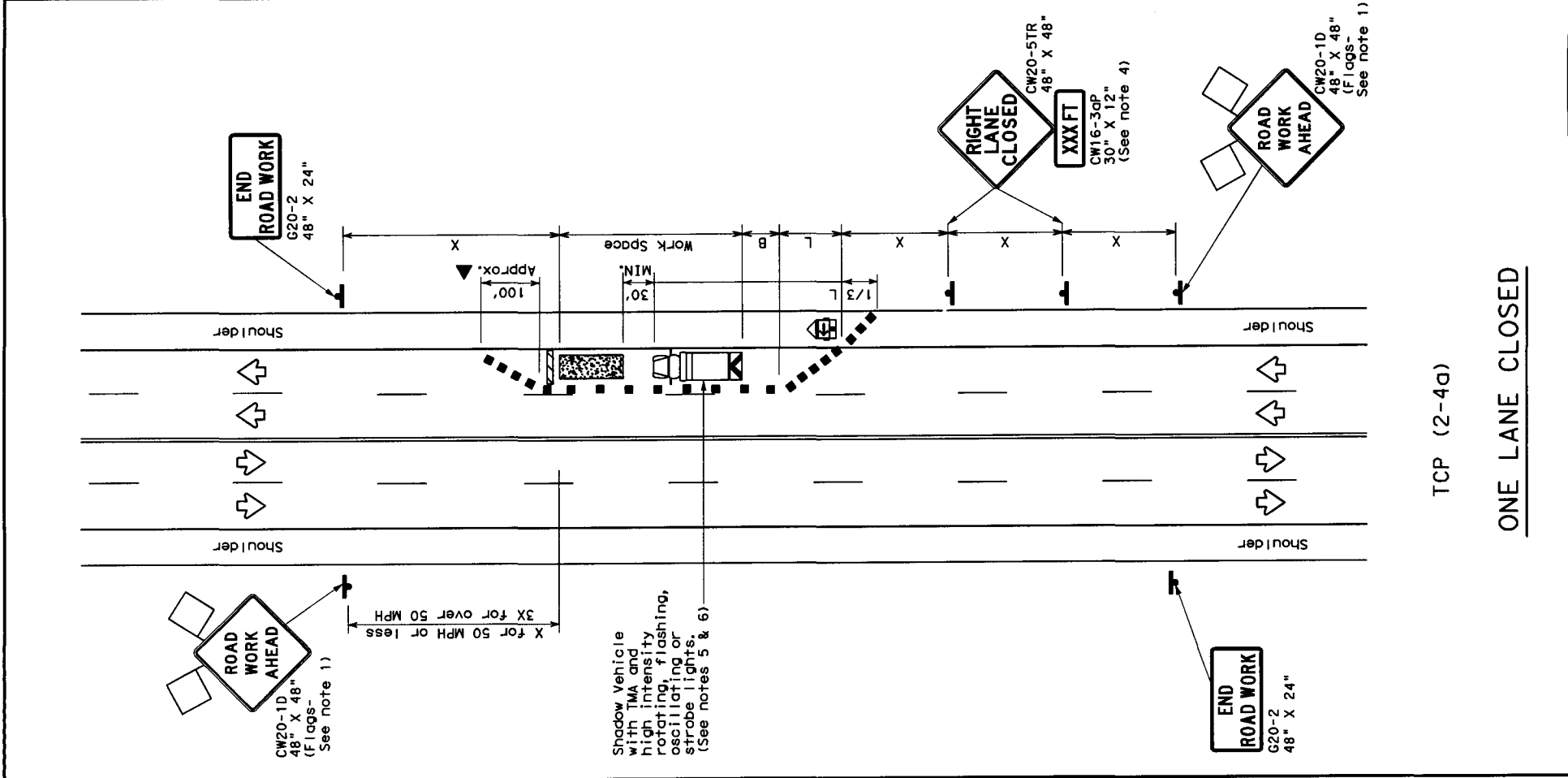
TCP (2-3) -12

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Signs and Traffic Handling.

REVISIONS	DATE	BY	CHK	APP	DESCRIPTION
8-95	1-12				
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3-03					

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DATE: FILE:



LEGEND

Type	3 Barricade	Channelizing Devices
Heavy Work Vehicle	Truck Mounted Attenuator (TMA)	
Trailer Mounted Flashing Arrow Board	Portable Changeable Message Sign (PCMS)	
Sign	Traffic Flow	
Flag	Flagger	

Posted Speed *	Formula	Minimum Taper Lengths **	Suggested Maximum Spacing of Channelizing Devices	Minimum Sign Spacing "X"	Suggested Longitudinal Buffer Space "B"
30	$L = \frac{WS^2}{60}$	10', 11', 12', 150', 165', 180', 205', 225', 245', 265', 295', 320', 35', 35', 70', 160', 120', 90', 120', 155', 195', 240', 295', 350', 410', 475', 540'	On a Taper	Distance	
40					
45					
50					
55					
60					
65					
70					
75					

* Conventional Roads Only
** 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
	✓	✓	✓	✓

GENERAL NOTES

- Flags attached to signs where shown, are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
- For short term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a CW16-3aP supplemental plaque.
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-4a)

If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic with the arrow board placed in the closed lane near the end of the merging taper.

TCP (2-4b)

For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter device spacing is intended for the area of conflicting markings, not the entire work zone.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN
LANE CLOSURES ON MULTILANE
CONVENTIONAL ROADS

TCP (2-4) -12

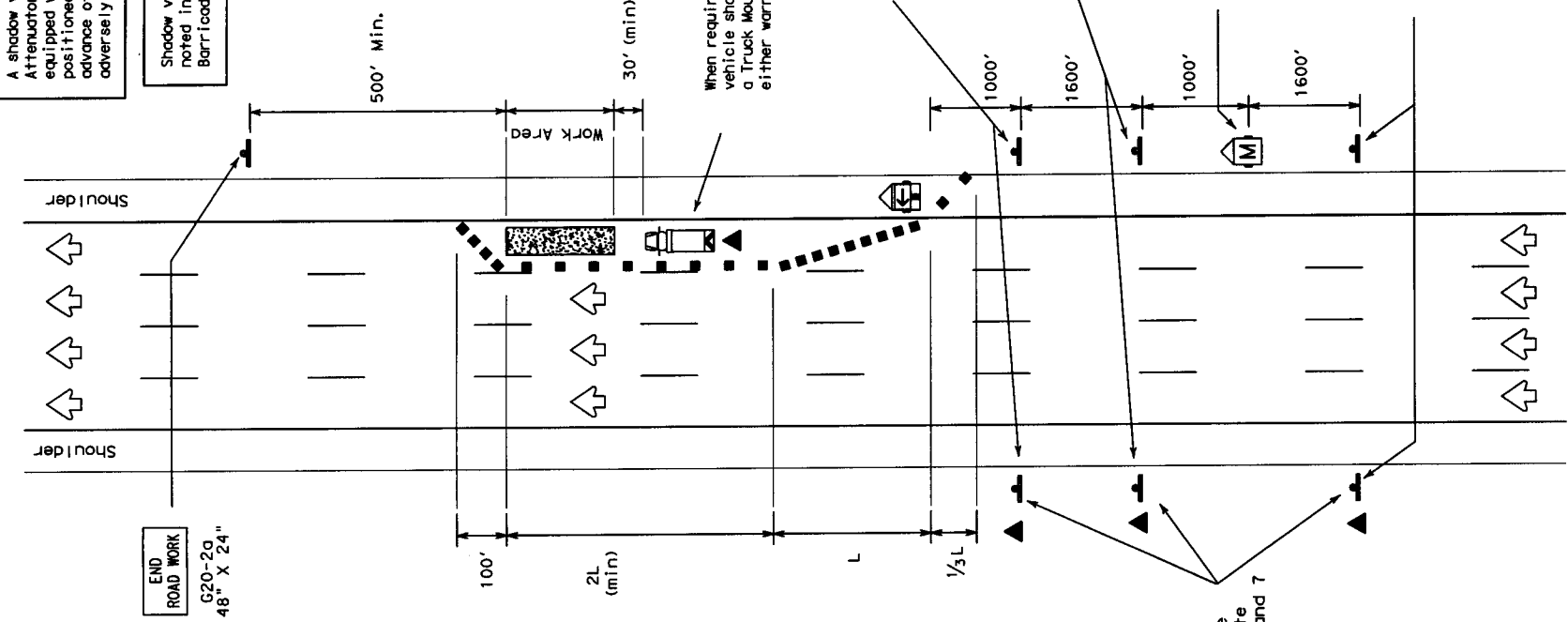
For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Signs and Traffic Handling.

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8-95 1-12
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3-03

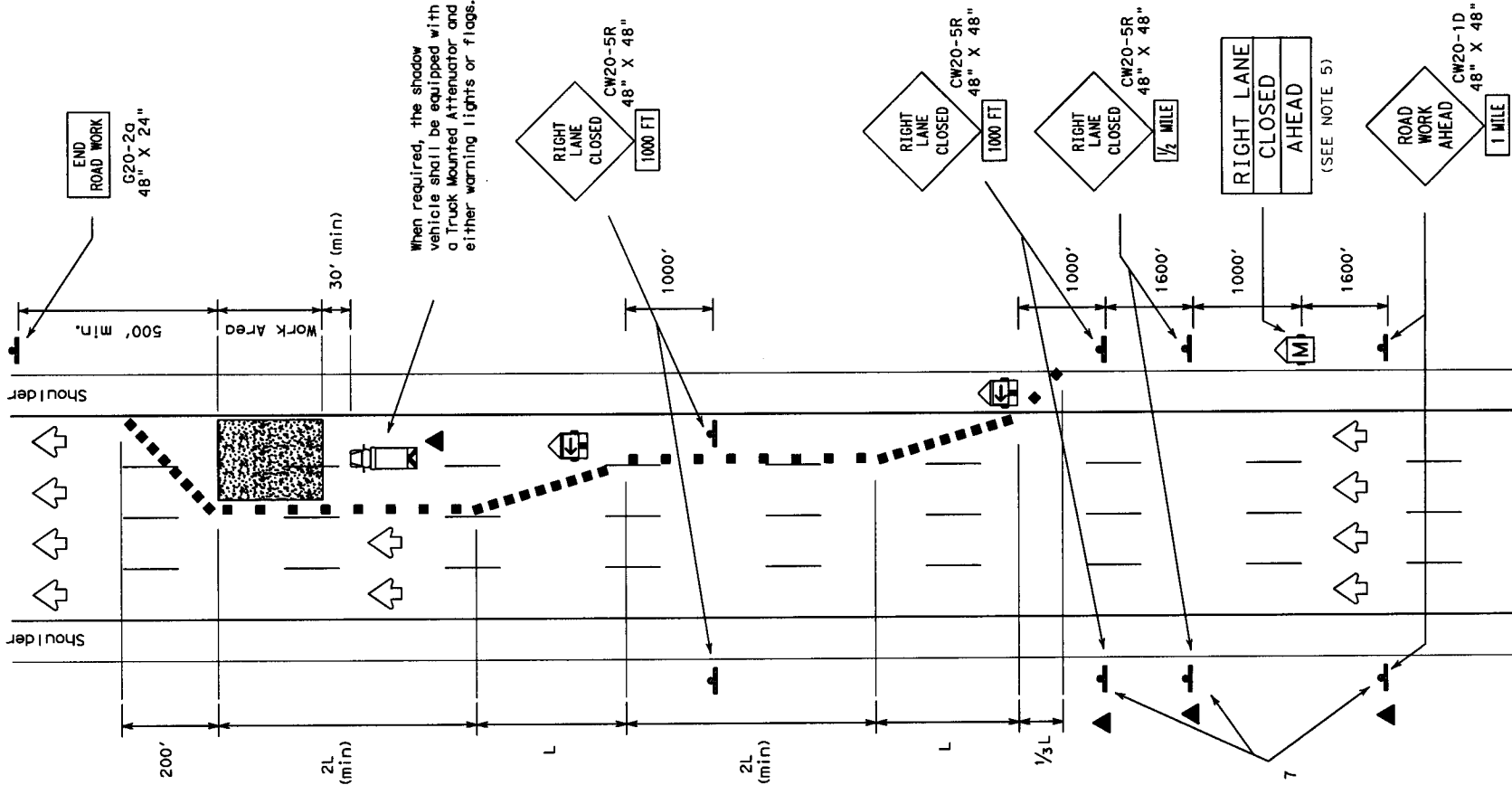
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A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned approximately 100 ft. or less in advance of the area of crew exposure without adversely affecting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

Shadow vehicles are required unless otherwise noted in the GENERAL NOTES, Item 502, Barricades, Signs and Traffic Handling.



TCP (6-1a)
Typical Freeway
One Lane Closure



TCP (6-1b)
Typical Freeway
Two Lane Closure

TYPICAL USAGES:			
MOBILE	SHORT DURATION	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓		

LEGEND

- Type III Barricade
- Heavy Work Vehicle
- Trailer Mounted Flashing Arrow Panel
- Flagger
- Channelizing Devices
- Truck Mounted Attenuator
- Portable Changeable Message Sign
- Sign Post

Posted Speed	Formula	Minimum Desirable Taper Lengths	Suggested Maximum Spooling of Device On a Taper
30	$L = \frac{WS^2}{60}$	10' 11' 12'	60' - 75'
35		150' 165' 180'	30' 60' - 75'
40		205' 225' 245'	35' 70' - 90'
45		265' 295' 320'	40' 80' - 100'
50		450' 495' 540'	45' 90' - 110'
55		500' 550' 600'	50' 100' - 125'
60		550' 605' 660'	55' 110' - 140'
65		600' 660' 720'	60' 120' - 150'
70		650' 715' 780'	65' 130' - 165'
		700' 770' 840'	70' 140' - 175'

XX-Taper lengths have been rounded off.
L=Length of Taper (ft.) W=Width of Offset (ft.) S=Posted Speed (mph)

GENERAL NOTES:

- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
- Drums are the typical channelizing device. Cones or other devices may be used if approved by the Engineer. Drums shall be used during nighttime operations.
- All construction signs and barricades placed during any phase of work shall remain in place until removal is approved by the Engineer.
- The Engineer may direct the Contractor to furnish additional signs and barricades as required to maintain traffic flow and motorist safety during construction.
- Static message board or changeable message signs stating the date and duration of ramp or freeway closure shall be placed a minimum of seven (7) calendar days in advance of actual closure.
- High level warning flags should be used on advance warning signs during daytime operations. Warning lights may be used to add emphasis to advance warning signs during nighttime operations.
- Duplicate construction warning signs should be erected on the median side of freeways where median width will permit and traffic volume justifies the signing.
- The number of closed lanes may be increased provided the spacings of traffic control devices, taper lengths and tangent lengths meet the requirements of the TMA/TCD.
- Warning signs shown shall be appropriately altered for left lane closures.
- The TCP details may require additional and/or relocation of route shields, guide signs, etc. to guide motorists along entire length of detour due to ramp and freeway closures.
- See BC Standards for additional sign details.
- When possible, changeable message signs should be located 500 feet in advance of the last available exit ramp prior to the lane closure to allow motorists an alternate route.

Only pre-qualified products shall be used. A list of compliant products and their sources may be obtained by writing or faxing:

Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3335
Fax (512) 416-3161
E-mail TRF-STANDARD@mailgw.dot.state.tx.us

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN

FREEWAY LANE CLOSURE

TCP (6-1) - 98A

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REVISED

1-97
4-98
8-98

DATE

SECTION

LIST

QUANTITY

SHEET NO.

Notes for Figure 6H-1—Typical Application 1
Work Beyond the Shoulder

Guidance:

1. *If the work space is in the median of a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.*

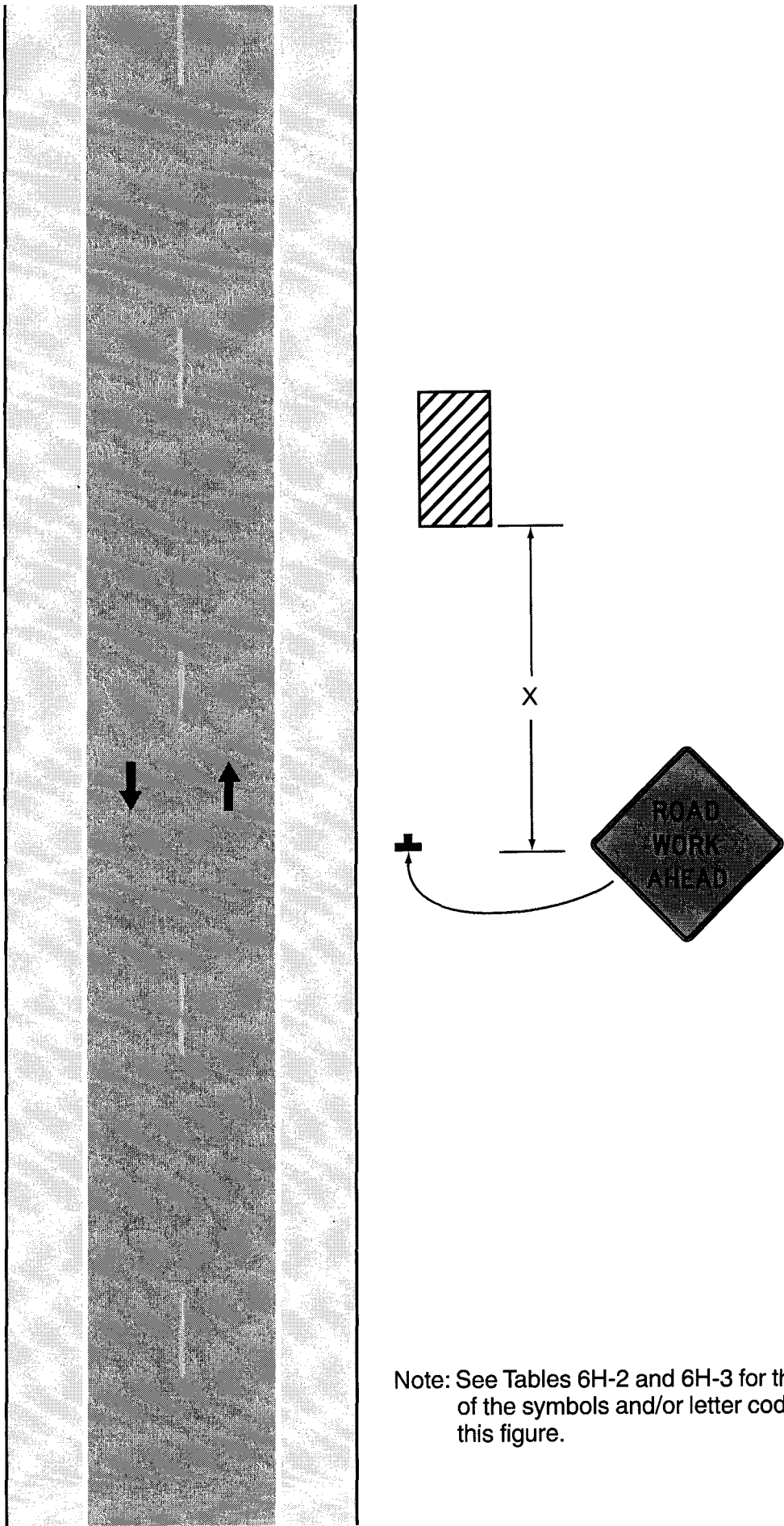
Option:

2. The ROAD WORK AHEAD sign may be replaced with other appropriate signs such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.
3. The ROAD WORK AHEAD sign may be omitted where the work space is behind a barrier, more than 24 inches behind the curb, or 15 feet or more from the edge of any roadway.
4. For short-term, short duration or mobile operation, all signs and channelizing devices may be eliminated if a vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used.
5. Vehicle hazard warning signals may be used to supplement high-intensity rotating, flashing, oscillating, or strobe lights.

Standard:

6. **Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.**

Figure 6H-1. Work Beyond the Shoulder (TA-1)



Typical Application 1

Notes for Figure 6H-33—Typical Application 33
Stationary Lane Closure on a Divided Highway

Standard:

1. **This information also shall be used when work is being performed in the lane adjacent to the median on a divided highway. In this case, the LEFT LANE CLOSED signs and the corresponding Lane Ends signs shall be substituted.**
2. **When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed as needed.**

Guidance:

3. *When paved shoulders having a width of 8 feet or more are closed, channelizing devices should be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the traveled way.*

Option:

4. A truck-mounted attenuator may be used on the work vehicle and/or shadow vehicle.
- 4A. For Short-Term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a supplemental plaque.

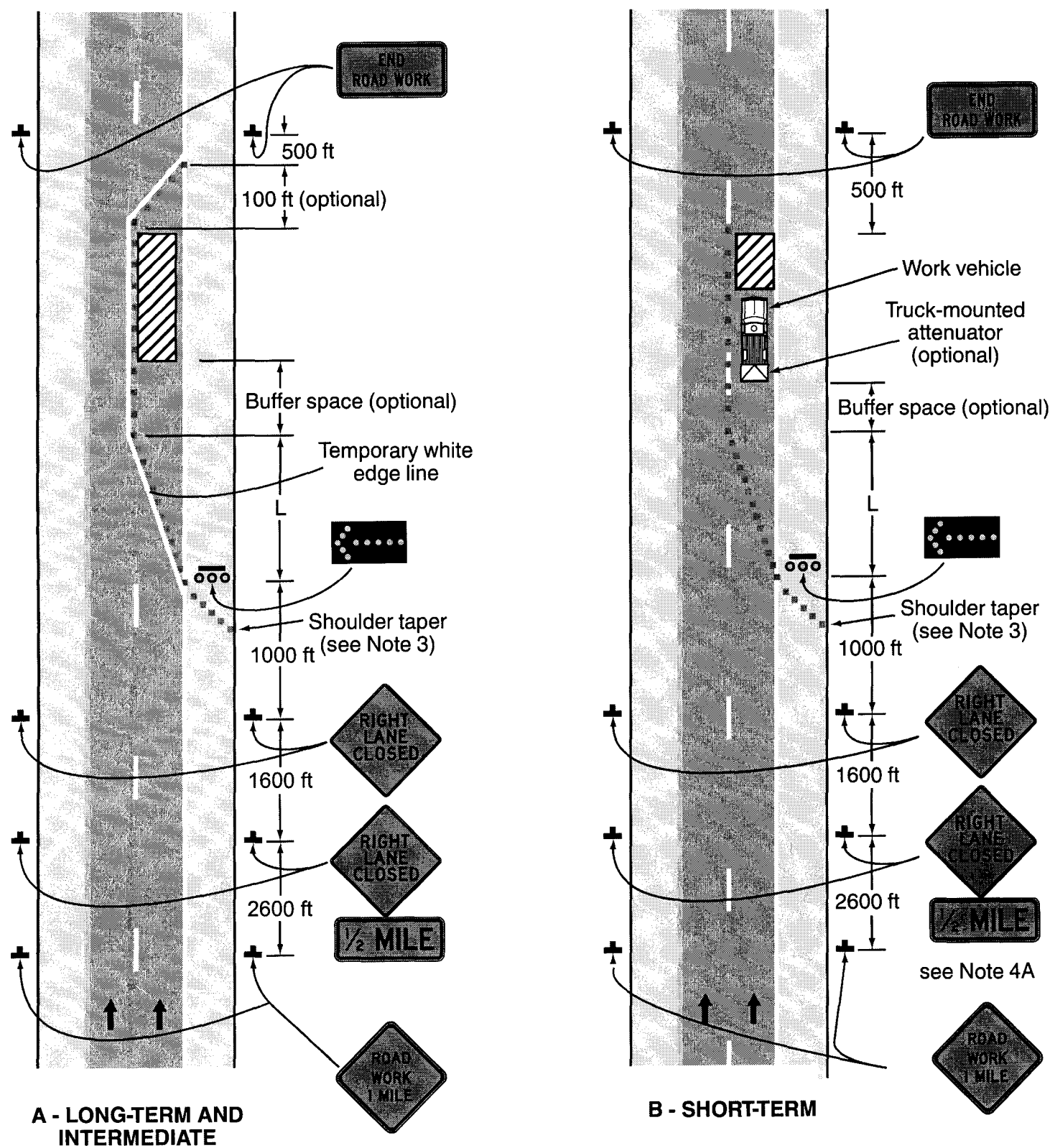
Support:

5. Where conditions permit, restricting all vehicles, equipment, workers, and their activities to one side of the roadway might be advantageous.

Standard:

6. **An arrow board shall be used when a freeway lane is closed. When more than one freeway lane is closed, a separate arrow board shall be used for each closed lane.**

Figure 6H-33. Stationary Lane Closure on a Divided Highway (TA-33)



Note: See Tables 6H-2, 6H-3 and 6H-4 for the meaning of the symbols and/or letter codes used in this figure.

Typical Application 33