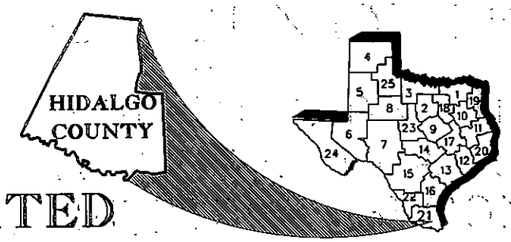
RENE A. RAMIREZ.....COUNTY JUDGE
A. C. CUELLAR, Jr.....PRECINCT NO. 1
HECTOR "Tito" PALACIOS.....PRECINCT NO. 2
JOE M. FLORES.....PRECINCT NO. 3
OSCAR L. GARZA, Jr.....PRECINCT NO. 4

HIDALGO COUNTY PRECINCT NO. 2



SOUTH SIDE VILLAGE
CONSTRUCTION PLANS FOR BORDER ACCESS COLONIA PROJECT SECOND ROUND - ALLOCATED 2010

		LF	MILES	AREA OF DISTURBED SOIL (AC)
CSJ: 2C-1080-693	CATHY LANE	652.40	0.12	0.15
	DENISE DRIVE	652.40	0.12	0.15
	JOHNSON STREET	651.28	0.12	0.15
	BETHANY STREET	670.00	0.13	0.15
	TOTAL =	2,626.08	0.49	0.60

LIMITS: SOUTH SIDE VILLAGE (SEE PROJECT LAYOUTS)
CONSTRUCTION OF LOCAL STREETS CONSISTING OF: OVERLAYING, STORM SEWER, & S.E.T.

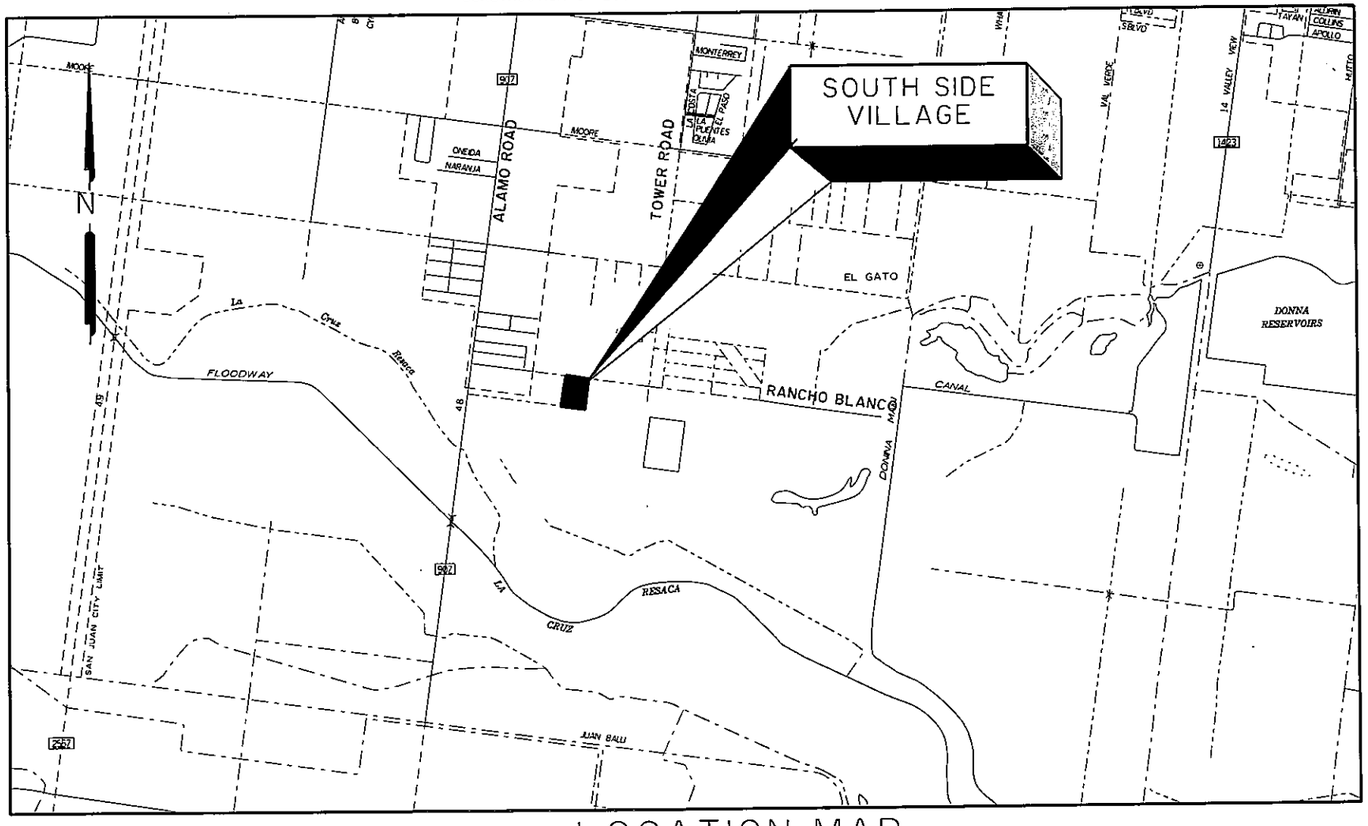
INDEX

LEGEND

[S] STATE STANDARD

STATE OF TEXAS
RAMIRO GUTIERREZ
65948
REGISTERED
PROFESSIONAL ENGINEER
P.E.

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RAMIRO GUTIERREZ, P.E. 65948
DATE: 9-8-10
ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE LAW.



LOCATION MAP

APPROVAL: COLONIA ACCESS PROGRAM — DATE : 02.15.2011
NAME — TITLE: Exec. Dir.

APPROVAL: HIDALGO COUNTY PCT. 2 — DATE :
NAME — TITLE

APPROVAL: HIDALGO COUNTY PLANNER — DATE : 4/25/11
NAME: PE — TITLE: PLAN ADM

CONCURRENCE: HIDALGO COUNTY DRAINAGE DIST. No.1 — DATE : 2/27/11
NAME — TITLE: Dist. Mgr.

PROJECT DATA

DESIGN SPEED: 30 MPH

EXCEPTION: NONE

EQUATION: NONE

STANDARD SHEETS IDENTIFIED ON THE INDEX OF SHEETS HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

9-8-10
DATE
RAMIRO GUTIERREZ, P.E.

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION ON JUNE 1, 2004 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS SHALL GOVERN ON THIS PROJECT.

R. Gutierrez Engineering Corporation
Professional Engineers & Land Surveyors
130 E. PARK AVENUE • PHARR, TEXAS 78577
(TEL) 956 782-2557 • (FAX) 956 782-2558
FIRM No. 486

F:\2005\Eng\012-N-SouthSide-Village\PLANS\title.dgn

RENE A. RAMIREZ.....COUNTY JUDGE
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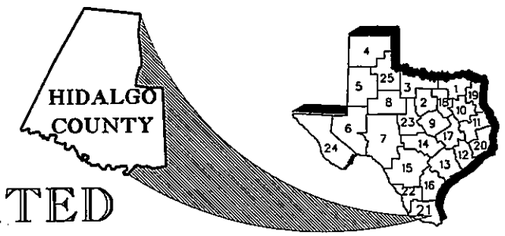
HIDALGO COUNTY PRECINCT NO. 2

SOUTH SIDE VILLAGE
CONSTRUCTION PLANS FOR BORDER ACCESS COLONIA PROJECT SECOND ROUND - ALLOCATED
2010



		LF	MILES	AREA OF DISTURBED SOIL (AC)
CSJ: 2C-1080-693	CATHY LANE	652.40	0.12	0.15
	DENISE DRIVE	652.40	0.12	0.15
	JOHNSON STREET	651.28	0.12	0.15
	BETHANY STREET	670.00	0.13	0.15
	TOTAL =	2,626.08	0.49	0.60

LIMITS: SOUTH SIDE VILLAGE (SEE PROJECT LAYOUTS)
CONSTRUCTION OF LOCAL STREETS CONSISTING OF: OVERLAYING, STORM SEWER, & S.E.T.

INDEX

LEGEND

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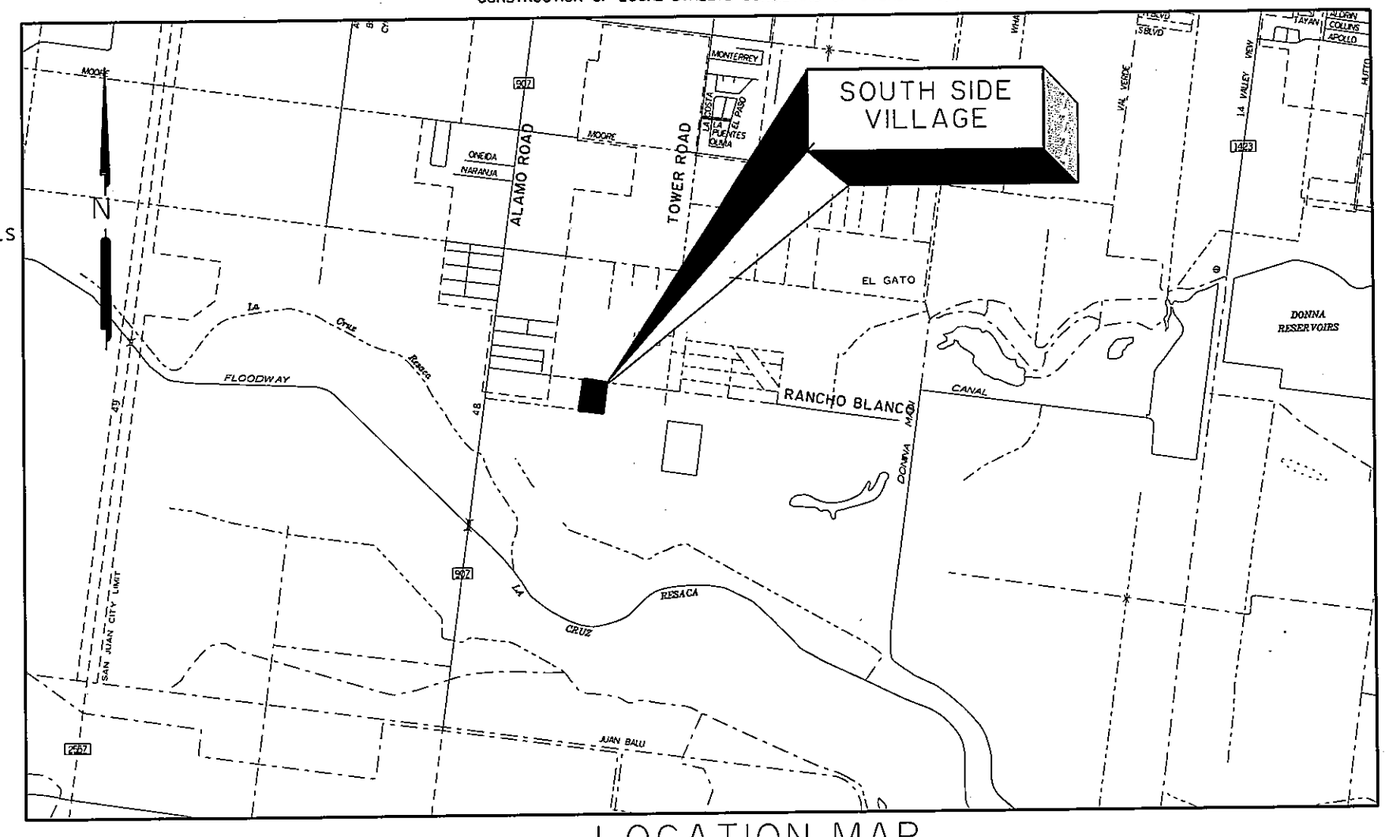

LOCATION MAP

APPROVAL:
COLONIA ACCESS PROGRAM — DATE :
NAME — TITLE

APPROVAL:
HIDALGO COUNTY PCT. 2 — DATE :
NAME — TITLE

APPROVAL:
HIDALGO COUNTY PLANNER — DATE :
NAME — TITLE

CONCURRENCE:
HIDALGO COUNTY DRAINAGE DIST. No.1 — DATE :
NAME — TITLE

PROJECT DATA

DESIGN SPEED: 30 MPH

EXCEPTION: NONE

EQUATION: NONE

STANDARD SHEETS IDENTIFIED ON THE INDEX OF SHEETS HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

9-8-10
DATE
P.E.
RAMIRO GUTIERREZ, P.E.

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Professional Engineers & Land Surveyors
130 E. PARK AVENUE • PHARR, TEXAS 78577
(TEL) 956 782-2557 • (FAX) 956 782-2558
FIRM No. 486

F:\2005\Eng\012-N-SouthSide-Village\PLANS\1title.dgn

BASIS OF ESTIMATE (ROADWAY)

CSJ #	SUBDIVISION/ROAD NAME	AREA ⊗	PRIME COAT ITEM 310 ASPH MAT'L. (TACK COAT) (0.2 GAL/SY)	ASPH.CONC. PAV. ITEM 340 ACP (SURF) TY "D"	ITEM 400 CUT & RESTORING PAV.
		(SY)	(GAL)	(SY)	(SY)
2C-1080-693	SOUTHSIDE VILLAGE	6,137.00	1,228.00	6137.0	65.00
	CATHY LANE				
	DENISE DRIVE				
	JOHNSON STREET				
	BETHANY STREET				
TOTAL		6,137.00	1,228.00	6137.0	65.00

SUMMARY OF TEMPORARY EROSION SEDIMENTATION AND ENVIROMENTAL CONTROLS

CSJ	ROAD	ITEM 506 TEMPORARY SEDIMENT # CONTROL FENCE (LF)	ITEM 506 CONST. EXITS TY (II) (INSTALL) (SY)	ITEM 506 CONST. EXITS TY (II) (REMOVE) (SY)	ITEM 166 ⊗ FERTILIZER (TON)	ITEM 164 CELL FIBER MULCH SEED (TEMP) (WARM) (SY)	ITEM 164 CELL FIBER MULCH SEED (TEMP) (COOL) (SY)	ITEM 164 CELL FIBER MULCH SEED (PERM.) (URBAN CLAY) (SY)	ITEM 168-2001 VEGETATED WATERING (MG) ⊗
		EST.	EST.	EST.	EST.	EST.	EST.	EST.	EST.
2C-1080-693	SOUTHSIDE VILLAGE								
	CATHY LANE	60.0	84.0	84.0	0.015	719.0	719.0	1438.0	16.1
	DENISE DRIVE	60.0	-	-	0.015	719.0	719.0	1438.0	16.1
	JOHNSON STREET	40.0	-	-	0.015	719.0	719.0	1438.0	16.1
	BETHANY STREET	-	84.0	84.0	0.015	719.0	719.0	1438.0	16.1
	TOTAL	160.0	168.0	168.0	0.060	2876.0	2876.0	5752.0	64.4

NOTE:

1.) THE TONNAGE OF FERTILIZER IS BASED ON A RATE THAT WILL PROVIDE 100 LBS. OF NITROGEN PER ACRE AS IS BASED ON FERTILIZER CONTENT (N-P-K) OF 10-5-5,

2.) VEGETATED WATERING IS BASED ON A RATE OF 1.4 GAL/SY FOR EACH OF 8 CYCLES.

SUMMARY OF DRAINAGE STRUCTURE

CSJ #	SUBDIVISION/ROAD NAME	ITEM 464 RC PIPE (CL III) (12")	ITEM 465 SET (TY II) (12")(RCP) (4:1)(P)
		(LF)	(EA)
		EST.	EST.
2C-1080-693	SOUTHSIDE VILLAGE		
	CATHY LANE	48	4
	DENISE DRIVE	48	4
	JOHNSON STREET	24	2
	TOTAL	120	10

LEGEND

⊗ FOR CONTRACTORS INFORMATION ONLY (NON- PAY)

PROJECT QUANTITIES

SOUTHSIDE VILLAGE SUBDIVISION
CATHY LANE, DENISE DRIVE, JOHNSON STREET, & BETHANY STREET
CSJ: 2C-1080-693

ITEM	UNIT	DESCRIPTION	PROJECT TOTAL EST	FIN
ROADWAY				
164	SY	CELL FIBER MULCH SEED (TEMP)(WARM)	2876.0	
164	SY	CELL FIBER MULCH SEED (TEMP)(COOL)	2876.0	
164	SY	CELL FIBER MULCH SEED (PERM)(URBAN CLAY)	5752.0	
⊗ 166	TON	FERTILIZER	0.06	
⊗ 168	MG	VEGETATIVE WATERING	64.4	
310	GAL	PRIME COAT (MC-30)	1,228	
340	SY	ACP (SURF.) TY. "D"	6,137	
400	SY	CUT & RESTORING PAV.	65	
502	MO	BARRICADES, SIGNS, & TRAFFIC	1	
506	SY	CONSTRUCTION EXITS (TY II) (INSTALL)	168	
506	SY	CONSTRUCTION EXITS (TY II) (REMOVE)	168	
DRAINAGE				
464	LF	RC PIPE CL III 12"	120	
467	EA	SET TY II 12" RCP (4:1)(P)	10	
506	LF	TEMPORARY SEDIMENT CONTROL FENCE	160	

STATE OF TEXAS
RAMIRO GUTIERREZ
65948
REGISTERED
PROFESSIONAL ENGINEER
R. Gutierrez, P.E.

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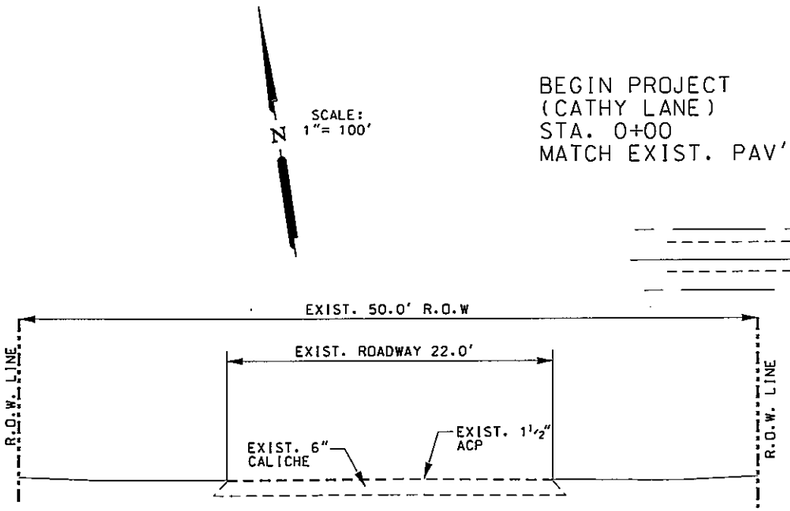
HIDALGO COUNTY PRECINCT No.2
SOUTHSIDE VILLAGE SUBDIVISION
ESTIMATE & QUANTITIES/ PROJECT QUANTITIES

REVISIONS	DATE:	BY:

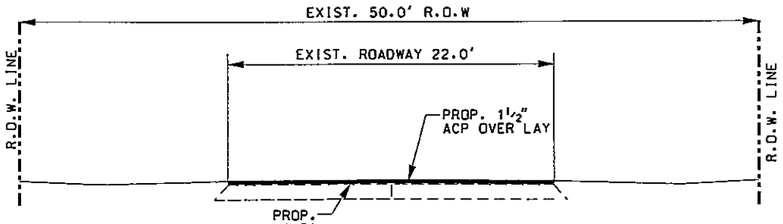
R. Gutierrez Engineering Corporation
Professional Engineers & Land Surveyors
130 E. PARK AVENUE • PHARR, TEXAS 78577
(TEL) 956 782-2557 • (FAX) 956 782-2558
FIRM No. 486

PROJECT NUMBER	COUNTY	HIGHWAY NO.
DRAWN BY:	CHECKED BY:	SHEET No.
DESIGNED BY:	CHECKED BY:	2



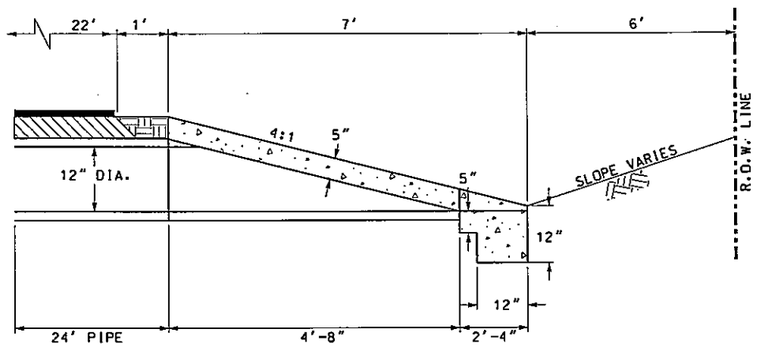
EXIST. TYPICAL SECTION

N.T.S.



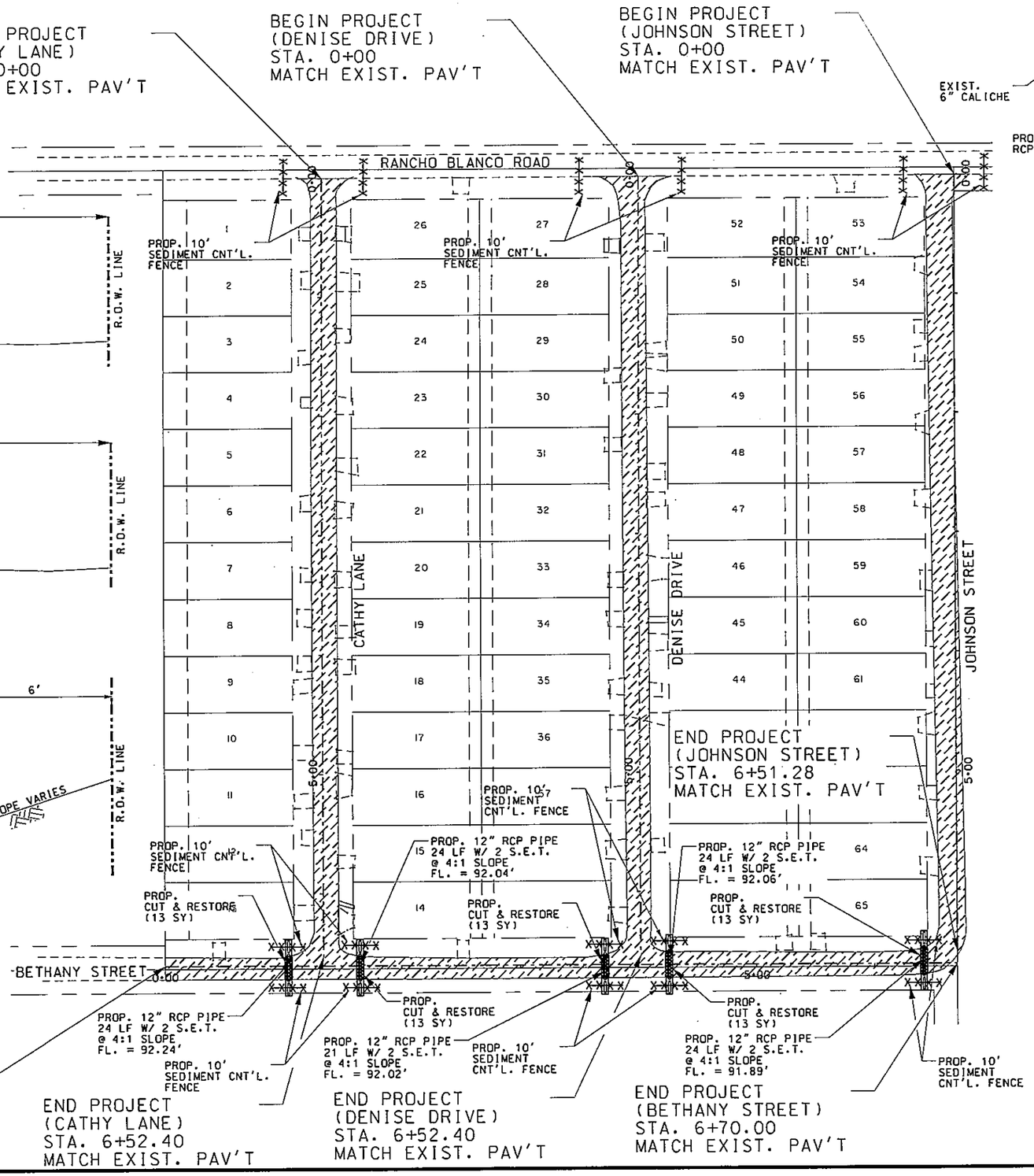
PROP. TYPICAL SECTION

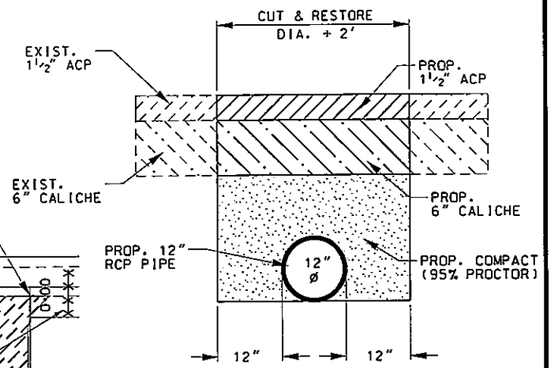
N.T.S.



S.E.T. DETAIL

N.T.S.





CUT & RESTORE PAVEMENT DETAIL

N.T.S.

LEGEND

PROP. 1½" ACP OVERLAY

XXXX TEMPORARY SEDIMENT CNT'L. FENCE

STATE OF TEXAS — RAMIRO GUTIERREZ — 65948 — REGISTERED PROFESSIONAL ENGINEER — P.E.

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HIDALGO COUNTY PRECINCT No.2
SOUTHSIDE VILLAGE SUBDIVISION
PROJECT LAYOUT

REVISIONS	DATE:	BY:

R. Gutierrez Engineering Corporation
Professional Engineers & Land Surveyors
130 E. PARK AVENUE • PHARR, TEXAS 78577
(TEL) 956 782-2557 • (FAX) 956 782-2558
FIRM No. 486

PROJECT NUMBER	COUNTY	HIGHWAY NO.
DRAWN BY:	CHECKED BY:	SHEET No.
DESIGNED BY:	CHECKED BY:	3

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
ACC:

Definition of Responsibilities and Purpose of the Barricade and Construction (BC) Standard Sheets

1. The Barricade and Construction Standard Sheets (BC SHEETS) are intended to show typical examples for placement of traffic control devices, construction pavement markings, and typical construction signs. These sheets alone shall not be used for the Traffic Control Plan (TCP), but may be used to supplement the TCP. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The BC SHEETS are intended for use by the following groups:
   a. **TxDOT Engineers**-these sheets provide typical design requirements and guidelines for TCP's, example sign placement locations, information on approved sign supports, reflective sheeting, sign substrates and other approved traffic control devices. An evaluation of field conditions and engineering judgement must be considered when designing and implementing the TCP in the field.
   b. **TxDOT Inspectors**-these sheets show typical sign placement and guidelines. These sheets provide information on approved traffic control devices and lists responsibilities of TxDOT and Contractor personnel for implementing and maintaining the TCP.
   c. **Contractors**-these sheets show approved devices and locations the Contractor may install and maintain on the roadway. The BC Sheets serve as a reminder that the Engineer is responsible for the design of the TCP and the Contractor may not alter the TCP without written approval of the Engineer. The Contractor is responsible for implementation of the TCP, including maintaining the traffic control devices.
3. The development and design of the TCP is the responsibility of the Engineer. The Engineer/Designer, when possible, shall ensure lane shifts and detours meet the applicable design criteria contained in the American Association of State Highway and Transportation Officials (AASHTO) "Policy on the Geometric Design of Highways and Streets" or the TxDOT "Roadway Design Manual." The Engineer or his/her assigned responsible person, typically an inspector, has the final decision on the location of all traffic control devices shown in the plans.
4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the location of any device without the approval of the Engineer/Inspector. Any variation in the plans shall be documented by written agreement between the Engineer/Inspector and the Contractor's Responsible Person. All agreed upon changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary or a memorandum to the project file.
5. The Engineer/Inspector shall ensure that construction work zone signs are installed with adequate spacing between the signs so the legibility of existing permanent and other work zone signs is not obstructed or compromised. All signs should fulfill a need, command attention, convey a clear and simple message, command respect of the road users and give adequate time for proper response.
6. Additional traffic control devices are needed in advance of the Control-Section-Job (CSJ) limits in those cases where a work area is at or less than 2000 feet inside the CSJ limits. Follow the applicable TCP sheets for exact spacing of signs and channelizing devices placed outside the CSJ limits.
7. The traffic control devices used in the illustrations shown on the BC sheets are examples only. The TxDOT Engineer/ Inspector must evaluate field conditions and use their judgement to determine the most appropriate traffic control device to be used. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary or a memorandum to the project file.
8. As shown on BC(2), the OBSERVE WARNING SIGNS STATE LAW, BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The Engineer/Inspector should ensure adequate spacing between existing signs.
9. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor will erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
10. The Engineer/Inspector may require duplicate construction warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
11. Except for devices required by Note 8, traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer/Inspector shall specify the sign size based on the TMUTCD or the table, "Typical Construction Warning Sign Size and Spacing," shown on BC(2).
13. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas 1980." Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
14. After the traffic control devices have been installed, the Engineer/Inspector should drive the work zone area both during the day and after dark to ensure the devices are properly positioned, spaced, legible and are reflective. The Contractor shall be notified of any deficiencies and shall correct the deficiencies within an agreed upon time.

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3120
Fax (512) 416-3299

Instructions to locate the "CWZTCD" on TxDOT website are:

Start at website - www.dot.state.tx.us
Click on "About TxDOT",
Click on "Functional Organizational Chart",
Click on Traffic Operations Box,
Click on "Compliant Work Zone Traffic Control Devices",
again click on "Compliant Work Zone Traffic Control Devices".
This site is printable.

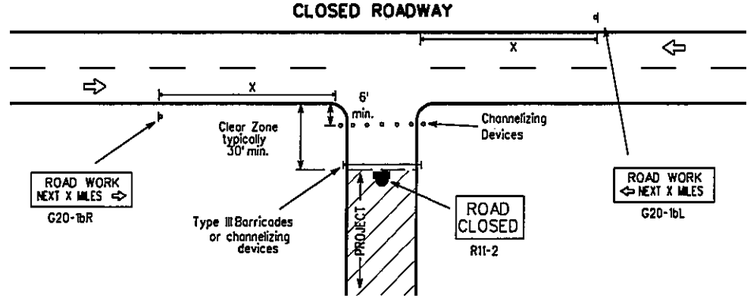
STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

1 of 12 BC(1)-03

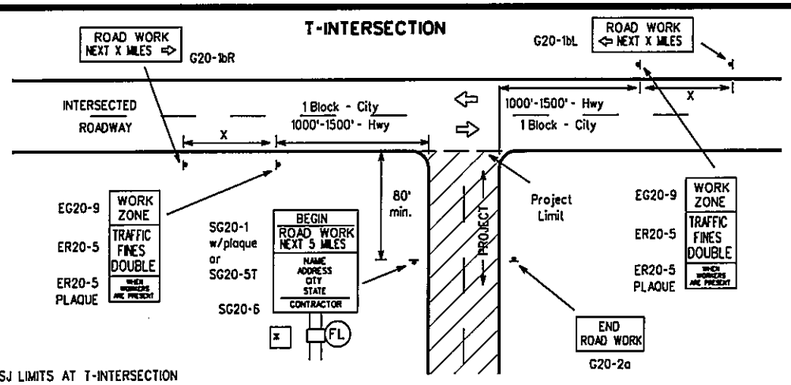
©TxDOT 11-4-02	DN: BAS	CK: GRB	DW: FDN	CK: CAL
REVISIONS	STATE DISTRICT	FEDERAL ROAD	FEDERAL AID PROJECT	SHEET
	21			4
	COUNTY	CONTROL	SECTION	JOB	HIGHWAY
	HIDALGO				

CLOSED ROADWAY



Barricades or channelizing devices shall be erected completely across roadway. Drums, vertical panels or cones shall be used in place of Type III Barricades when shown in plans or as specified by the Engineer.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. A ROAD WORK NEXT X MILES (G20-1bR(L)) sign should be erected on the intersected highway as shown above.
2. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
3. The Engineer/Inspector shall ensure that construction work zone signs are installed with adequate spacing between the signs so the legibility of existing permanent and other work zone signs is not obstructed.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING

1,5,6

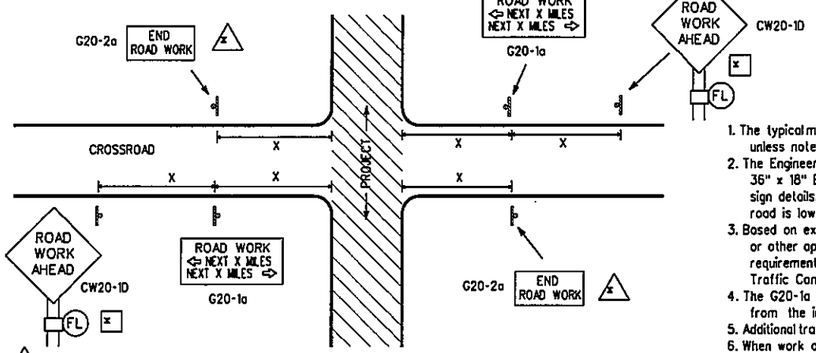
Posted Speed	Sign Spacing "X" △	Long-term Or Intermediate-term Stationary Approach Warning Signs CW20 and CW21 Series		Short-term Stationary Or Short Duration Approach Warning Signs CW21 Series		Other Warning Signs
MPH	Feet (Apprx.)	Standard inches	Minimum [4] inches	Standard inches [7]	Minimum [4] inches [7]	Standard inches [7]
30	120	48 x 48	36 x 36	30 x 30 or 36 x 36	24 x 24 or 30 x 30	30 x 30 or 36 x 36
35	160	↓	↓	↓	↓	↓
40	240	↓	↓	↓	↓	↓
45	320	↓	Use Standard Size	↓	Use Standard Size	↓
50	400	↓	↓	↓	↓	↓
55	500 [2]	↓	↓	↓	↓	↓
60	600 [2]	↓	↓	48 x 48	↓	48 x 48
65	700 [2]	↓	↓	↓	↓	↓
70	800 [2]	↓	↓	↓	↓	↓
75	900 [2]	↓	↓	↓	↓	↓
*	* [3]	↓	↓	↓	↓	↓

* For typical sign spacings on expressways and freeways, see Part VI of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ Minimum distance from work area to first Advance Warning sign and/or distance between each additional sign.

General Notes:
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have ½ mile or more advance warning.
4. For use only on secondary roads or city streets where speeds are low.
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Appendix A or the "Standard Highway Sign Design" manual for complete list of available sign design sizes.
7. Where two sizes are listed, see sign size listing in "TMUTCD", Appendix A or the "Standard Highway Sign Design" manual for proper size.

TYPICAL LOCATION OF CROSSROAD SIGNS



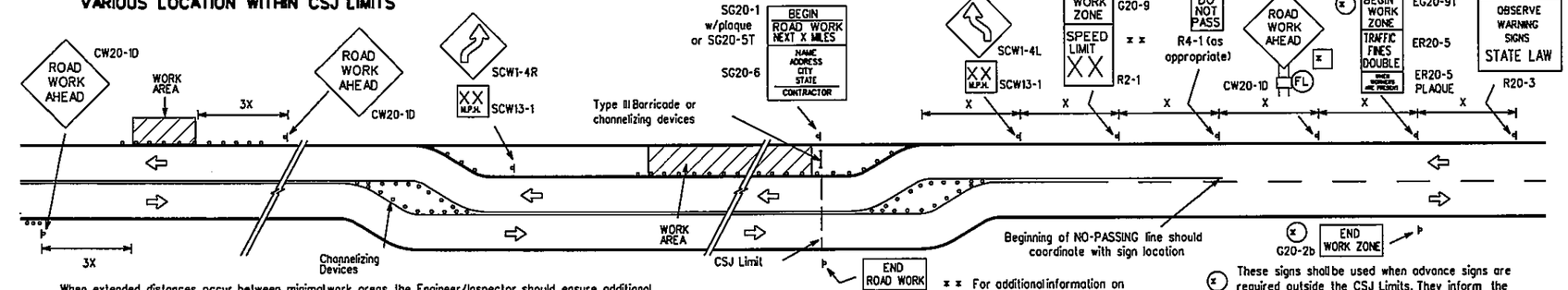
x May be mounted on back of CW20-1D sign with approval of engineer. (See note 2 at right)

1. The typical minimum signing on a crossroad approach should be a CW20-1D ROAD WORK AHEAD sign and a G20-2a END ROAD WORK sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (MCW20-1D) sign mounted back to back with the reduced size 36" x 18" END ROAD WORK (SG20-2a) sign on low volume crossroads. See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The G20-1a sign shall be required on major crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

TYPICAL SIGNING AND TRAFFIC CONTROL DEVICE DETAILS FOR WORK BEGINNING AT THE CSJ LIMITS

(Less than 2000 feet between project limits and work area) (Typical signing shall be installed at all CSJ Limits)

TYPICAL DETAILS FOR WORK AREAS IN VARIOUS LOCATION WITHIN CSJ LIMITS



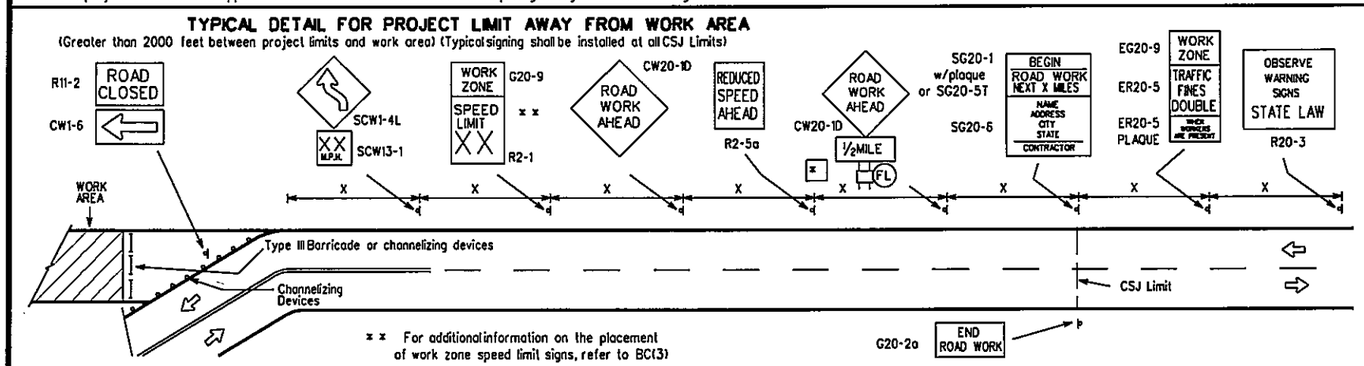
When extended distances occur between minimal work areas, the Engineer/Inspector should ensure additional Road Work Ahead (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

x x For additional information on the placement of work zone speed limit signs, refer to BC(3)

x These signs shall be used when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a work zone where traffic fines may double if workers are present.

TYPICAL DETAIL FOR PROJECT LIMIT AWAY FROM WORK AREA

(Greater than 2000 feet between project limits and work area) (Typical signing shall be installed at all CSJ Limits)



x x For additional information on the placement of work zone speed limit signs, refer to BC(3)

LEGEND

- Sign
- (FL) Flashing Type A-Low Intensity Warning Light
- ○ ○ Channelizing Devices
- I Type III Barricade
- [x] The Type A Warning Lights shall not be used with signs manufactured with Type E Sheeting (Fluorescent Prismatic) meeting the requirements of Departmental Material Specification DMS-8300.
- X See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3120
Fax (512) 416-3299

Instructions to locate the "CWZTCD" on TxDOT website are:

Start at website - www.dot.state.tx.us
Click on "About TxDOT",
Click on "Functional Organizational Chart",
Click on Traffic Operations Box,
Click on "Compliant Work Zone Traffic Control Devices",
again click on "Compliant Work Zone Traffic Control Devices".
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LEVELS DISPLAYED ACC:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
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STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

BARRICADE AND CONSTRUCTION PROJECT LIMIT STANDARD

2 of 12 **BC(2)-03**

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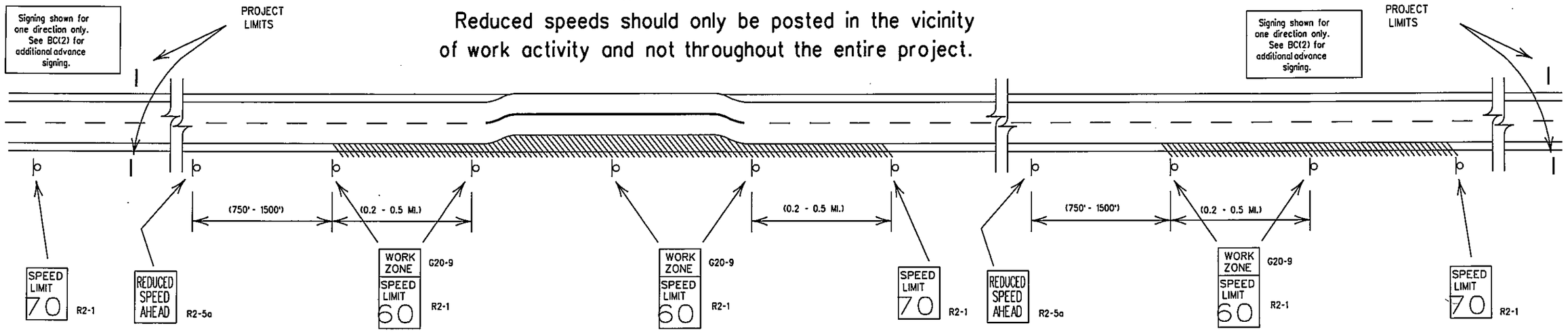
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
	21			5
	COUNTY	CONTROL	SECTION	JOB	HIGHWAY
	HIDALGO				

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63
ACC:

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission.

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when restricted geometrics with a lower design speed are present in the work zone and modification of the geometrics to a higher design speed is not feasible.

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMIT signs should be posted and visible to the motorists at all times. Work activity in the area of reduced speed zone should be greater than 12 consecutive hours per day. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver

As long as any of these conditions exist, the work zone speed limit signs should remain in place.

SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, work activity is within 15 feet of pavement edge or actually on the pavement.

SHORT TERM WORK ZONE SPEED LIMIT signs should be posted and visible to the motorists only when work activity is present. Work activity in the area of reduced speed should be less than 12 consecutive hours. When work activity is not present, signs should be covered with an approved sign cover or removed from work area.

GENERAL NOTES:

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance. Regulatory work zone speed signs (R2-1) should be removed during periods when they are not needed to minimize interference with traffic.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of speed limit signs should be:
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background.
6. Fabrication, erection and maintenance of REDUCED SPEED AHEAD sign, WORK ZONE plaque and SPEED LIMIT signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless otherwise noted.
8. Techniques that may help reduce traffic speeds. (In order of effectiveness.)
   A. Flagger stationed next to sign.
   B. Law enforcement.
   C. Portable changeable message sign (PCMS).
   D. Low-power radar transmitter.
9. Refer to "Work Zone Speed Limit Work Sheets 1 and 2" to determine when a construction speed zone should be required.

STANDARD PLANS
Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT STANDARD

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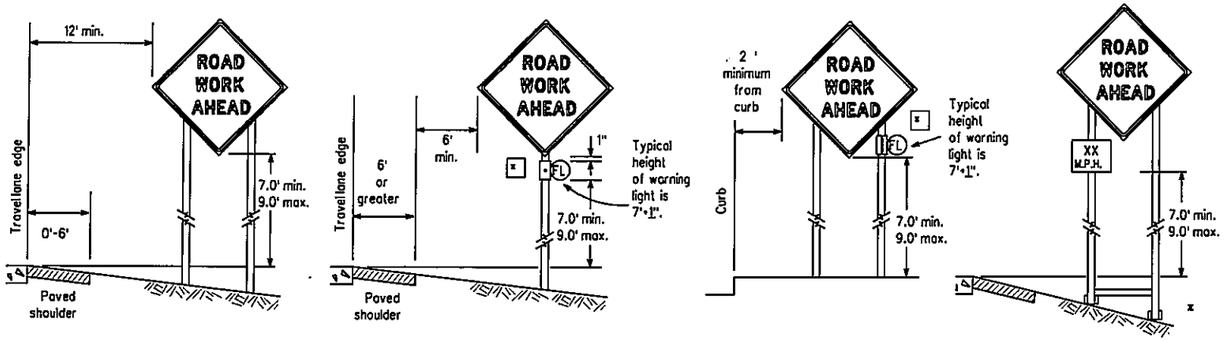
	21			6
	COUNTY	CONTROL	SECTION	JOB	HIGHWAY
	HIDALGO				

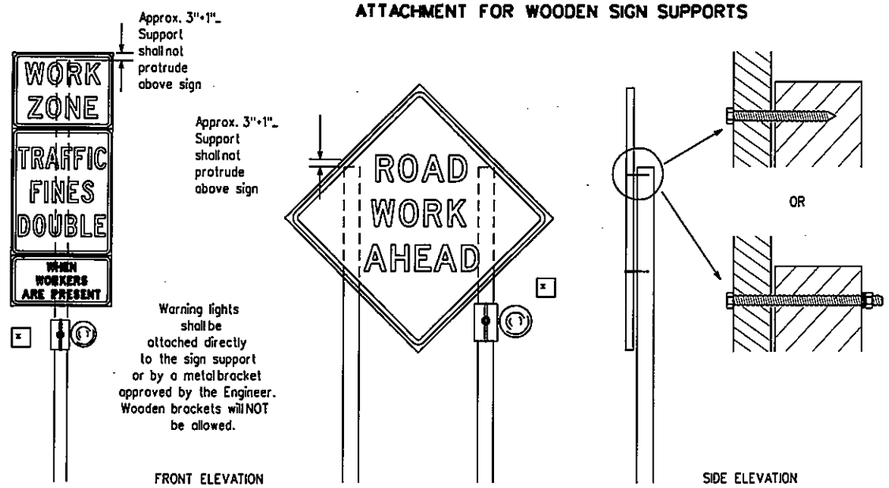
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



It is the intent of these plans to provide positive guidance to motorists throughout the project limits by the use of signs, pavement markings, delineation and/or channelizing devices. All traffic control devices shall conform with the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" list (CWZTCD).

x When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

ATTACHMENT FOR WOODEN SIGN SUPPORTS



Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

Nails will NOT be allowed.

Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Supports shall not be extended or repaired by splicing or other means.

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3120
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Click on Traffic Operations Box,
Click on "Compliant Work Zone Traffic Control Devices",
again click on "Compliant Work Zone Traffic Control Devices".
This site is printable.

(FL) Flashing Type A - Low Intensity Warning Light

x The Type A Warning lights shall not be used with Type E Sheeting (Fluorescent Prismatic) meeting the requirements of DMS-8300.

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC sheets or the CWZTCD. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. Nails shall NOT be used to attach signs to any support.
5. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
6. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes. The additional signs requested by the Engineer/Inspector shall not be subsidiary.
7. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD). The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so that the Engineer can verify the correct procedures are being followed.
8. The contractor is responsible for sign installations and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
9. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1".
10. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

Duration of Work (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part VI)

1. The types of sign supports, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring that the sign support and substrate meets crashworthiness and length of work requirements.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. Intermediate-term stationary - work that occupies a location from overnight to 3 days.
   c. Short-term stationary - daytime work that occupies a location from 1 to 12 hours.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves intermittently or continuously. Does not stop for more than 15 minutes at a time.

SIGN MOUNTING HEIGHT

1. The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface.
2. The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
3. Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9.0 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

1. The Engineer may allow the use of smaller size construction warning signs on secondary roads or city streets where speeds are low if the sign size is listed as an option on the "Typical Construction Warning Sign Size and Spacing" chart shown on BC(2).
2. The Contractor shall furnish the sign sizes shown in plans, the BC Sheets, the TCP sheets or as directed by the Engineer.

SIGN SUBSTRATES

1. The Contractor shall ensure that the sign substrate is allowed for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
2. "Mesh" type materials are NOT an approved sign substrate.
3. All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign faces.

REFLECTIVE SHEETING

1. Reflectorized signs shall be constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 or DMS-8310. The DMS specifications can be accessed from the following web address: http://manuals.dot.state.tx.us:80/dynaweb/colmates/dms/@Generic_BookView
2. White sheeting, meeting the requirements of DMS-8300 Type C (High Specific Intensity), shall be used for signs with white background and channelizing devices.
3. Orange sheeting, meeting the requirements of DMS-8300 Type E (Fluorescent Prismatic), shall be used for signs with orange backgrounds.

SIGN LETTERS

1. All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This type of sign support meets the crashworthiness standards regardless of the direction of impact. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy mil black plastic.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face. These materials can damage the retroreflectivity of sign sheeting.
7. Signs shall be removed upon completion of the work.

SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact.
6. Rubber (such as tire inner tubes) shall NOT be used for sandbags.
7. Rubber ballasts (such as those used with cones or edgeline channelizers) shall NOT be used as sign support weights.
8. Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
9. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

STANDARD PLANS
Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES STANDARD

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REVISIONS	STATE DISTRICT	FEDERAL ROADS	FEDERAL AID PROJECT	SHEET
	21			7
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	HIDALGO			

LEVELS DISPLAYED
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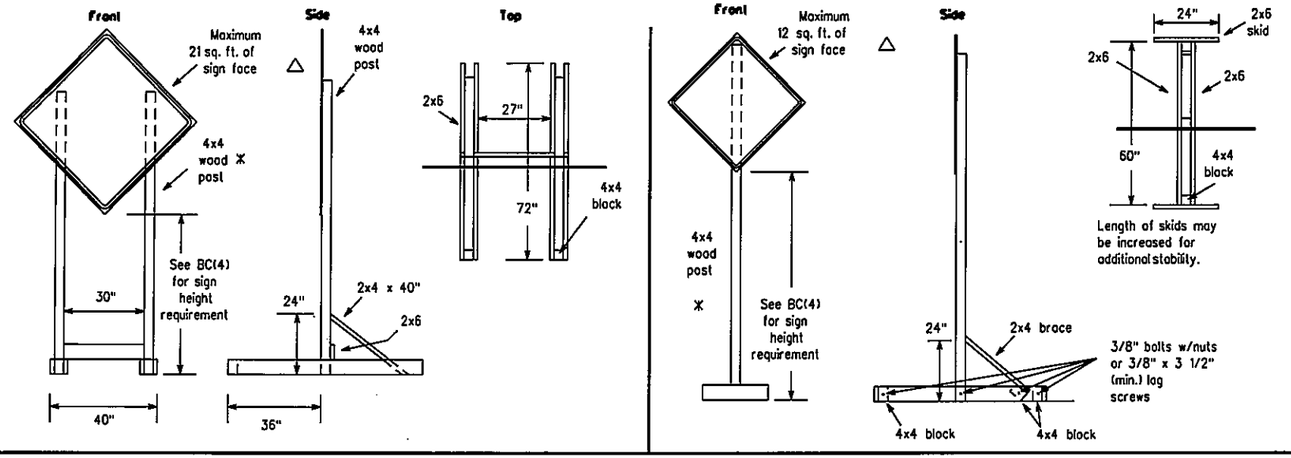
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64

ACC:

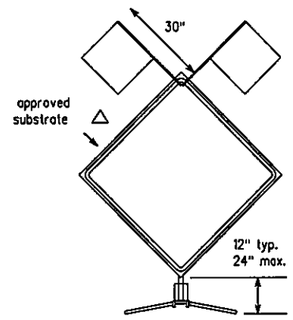
EXAMPLES OF SKID MOUNTED SIGN SUPPORTS

LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □

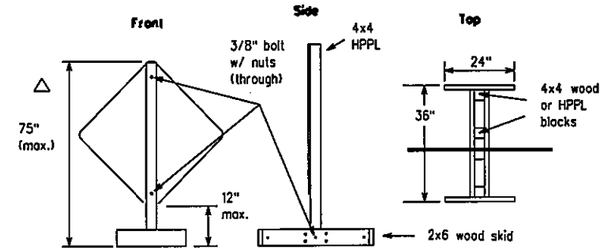


SHORT TERM STATIONARY/SHORT DURATION - PORTABLE SIGN SUPPORTS □

For Daytime use only.
1 Foot Mounting Height

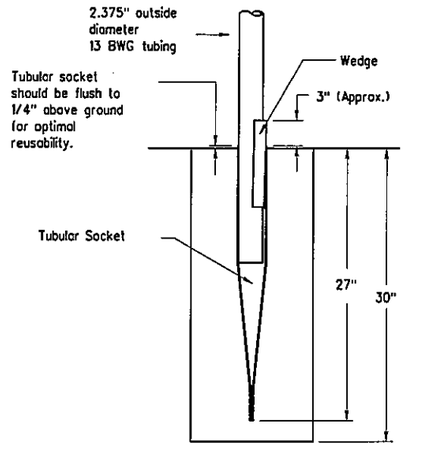


Flags as required by Engineer or as shown on plans



The upright SHALL be made of hollow-profile plastic lumber (HPPL). Wood or metal shall NOT be used.

EXAMPLES OF GROUND MOUNTED SIGN SUPPORTS



WEDGE ANCHOR SYSTEM WITH THIN-WALL TUBE

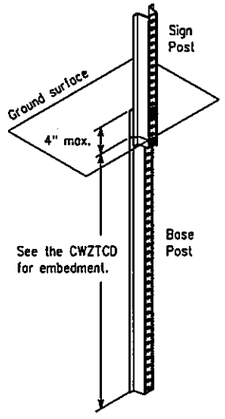
The wedge anchor system with thin wall tubing may be used to support up to 10 sq. ft. of sign area.

Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18 inches. When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18 inches or provide a minimum foundation depth of 30 inches. If solid rock is encountered, the socket/stub may be reduced in length as required to a min. length of 18 inches. Any material removed from the socket/stub shall be from the bottom and the clearance requirements shown above must still be adhered to. The inner surfaces of the socket/stub must remain free of debris.
Install Wedge Anchor System per manufacturer recommendations.
Attach the sign to the sign post.
Insert the sign post into the socket and align the sign face with the roadway.
Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

Supports shall be straight within 1/4 inch per 5 feet of length and shall have a smooth, uniform finish free from defects affecting strength or appearance. Any bolt holes and sheared ends shall be free from burrs.

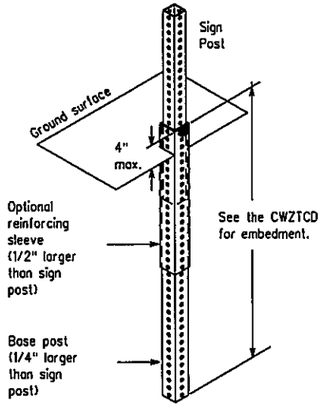
WING CHANNEL

Lap-splice/base bolted anchor

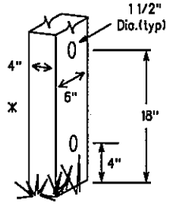


PERFORATED SQUARE METAL TUBING

With Anchor



Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support.
The maximum sign square footage shall adhere to the manufacturer's recommendation. Two post installations can be used for larger signs.



WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS

Nominal Post Size	Maximum No. of Sq. Posts	feet of Sign Face	Minimum Soil Hole(s) Embedment	Drilled Required	
4 x 4	1	12	36"	NO	
4 x 4	2	21	36"	NO	
4 x 6	1	21	36"	YES	
4 x 6	2	36	36"	YES	

No more than 2 sign posts shall be mounted within a 7 ft. circle.

When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

□ See BC(4) for definition of "Work Duration."

* Sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

△ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3120
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STANDARD PLANS
Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT STANDARD

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REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
	21			8
	COUNTY	CONTROL	SECTION	JOB	HIGHWAY
	HIDALGO				

LEVELS DISPLAYED — ACC:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
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LEVELS DISPLAYED

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49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	

ACC:

PORTABLE CHANGEABLE MESSAGE SIGNS

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. PCMS placed on the shoulder or within the R-O-W, but are not behind a concrete traffic barrier shall have a minimum of four plastic drums placed perpendicular to traffic, on the upstream side of the PCMS.
3. Messages on PCMS should contain no more than 8 words (four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
4. Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed.
5. Each phase of the message should convey a single thought.
6. Use the word "EXIT" to refer to an exit ramp on a freeway: i.e., "EXIT CLOSED." Do not use the term "RAMP."
7. Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
8. Specify the actual days of the week: e.g., TUES THROUGH FRI or TUES-FRI in the coming week that work activity will occur.
9. The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
10. The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for two seconds each.
11. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
12. Do not present redundant information on a two-phase message: i.e., keeping two lines of the message the same and changing the third line.
13. Do not use the words "Danger" or "Caution" in message.
14. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
15. Do not display messages that scroll horizontally or vertically across the face of the sign.
16. The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated.

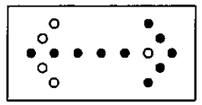
Word or Phrase	Abbreviation	Word or Phrase	Abbreviation
Access Road	ACCES RD	Miles	MI
Air Quality	AIR QLTY	Miles Per Hour	MPH
Avenue	AVE	Time Minutes	Time MIN
Best Route	BEST RTE	Monday	MON
Boulevard	BLVD	Normal	NORM
Bridge	BRDG	North	N
Cannot	CANT	Parking	PKING
Center	CNTR	Parking Lot	PRK LOT
Construction Ahead	CONST AHEAD	Road	RD
Detour Route	DETOUR RTE	Right Lane	RGT LN
East	E	Saturday	SAT
Emergency	EMER	Service Road	SERV RD
Emergency Vehicle	EMER VEH	Shoulder	SHLDR
Entrance, Enter	ENT	Slippery	SLIP
Express Lanes	EXP LANE	South	S
Expressway	EXPWY	Speed	SPD
Distance Feet	Distance FT	Street	ST
Fog Ahead	FOG AHD	Sunday	SUN
Freeway	FRWY, FWY	Telephone	PHONE
Freeway Blocked	FWY BLKD	Thursday	THURS
Friday	FRI	To Downtown	TO DWNTN
Hazardous Driving	HAZ DRIVING	Traffic	TRAF
Highway	HWY	Travelers	TRVLRS
Hours	HR	Tuesday	TUES
Information	INFO	Turnpike	Nome TRNPK
Left	LFT	Upper Level	UPPR LVL
Left Lane	LFT LN	Warning	WARN
Lane Closed	LN CLSD	Wednesday	WED
Lower Level	LOWR LVL	Weight Limit	WT LIMIT
Maintenance	MAINT	Wet Pavement	WET PVMT
Roadway designation *	IH-number, US-number, SH-number, FM-number	West	W

WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND CONCRETE TRAFFIC BARRIER.

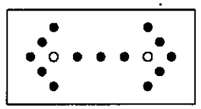
TYPICAL FLASHING ARROW PANEL

1. The Flashing Arrow Panel should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
2. Flashing Arrow Panels should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display (see detail below) is used.
3. The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Panel.
4. The Flashing Arrow Panel should be able to display the following symbols:

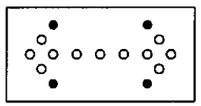
Flashing RIGHT (LEFT) ARROW



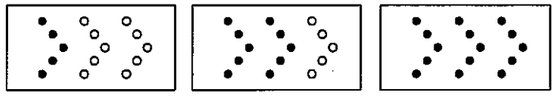
Flashing DOUBLE ARROW



Flashing CAUTION



5. The "CAUTION" display consists of four corner lamps flashing simultaneously.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Panel shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
8. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential Chevron display may be used during daylight operations.



11. The Flashing Arrow Panel shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Panel SHOULD NOT BE USED to laterally shift all lanes of traffic on a multi-lane roadway at once.

REQUIREMENTS

TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE
B	30 x 60	13	3/4 mile
C	48 x 96	15	1 mile

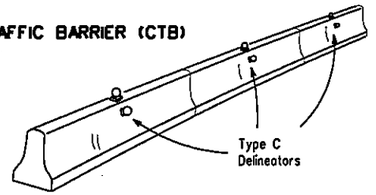
ATTENTION: Flashing Arrow Panels shall be equipped with automatic dimming devices.

WHEN NOT IN USE, REMOVE THE ARROW PANEL FROM THE RIGHT-OF-WAY OR PLACE THE ARROW PANEL BEHIND CONCRETE TRAFFIC BARRIER.

TYPE C DELINEATORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

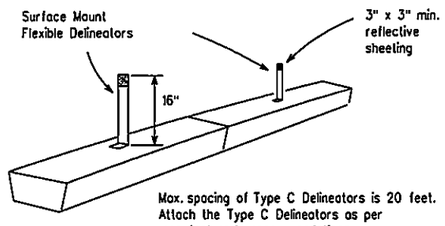
1. Type C Delineators shall be prequalified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Type C Delineators can be found at the following Web site: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/pdf/dms8600preq.pdf.
2. Color of delineators shall be as specified in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD). The cost of the Type C Delineators shall be considered subsidiary to Item 502.

CONCRETE TRAFFIC BARRIER (CTB)



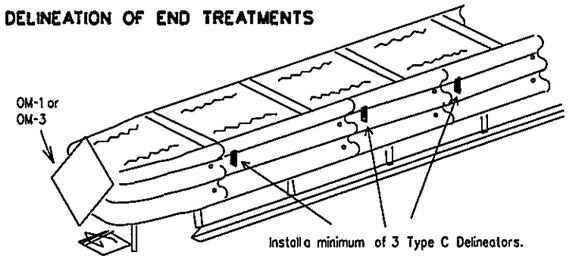
3. Two (2) Type C Delineators should be mounted on each section of CTB in approximately the midsection of the CTB. The Type C Delineator on the side of the CTB shall be installed directly below the Type C Delineator mounted on top of the CTB.
4. Maximum spacing of Type C Delineators is 40 feet.
5. Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
6. Attach Type C Delineators on CTB as per manufacturer's recommendations.
7. Missing or damaged Type C Delineators shall be replaced as directed by the Engineer.

LOW PROFILE CONCRETE BARRIER (LPCB)



Max. spacing of Type C Delineators is 20 feet.
Attach the Type C Delineators as per manufacturer's recommendations.

DELINEATION OF END TREATMENTS



	APPROACHING TRAFFIC	
	BOTH SIDES	ONE SIDE
DELINEATION	OM-1	OM-3 or Vertical Panel

Attach the Type C Delineators as per manufacturer's recommendations.

WARNING LIGHTS

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with signs. They are intended to warn of an approaching potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation " FL". The Type A Warning Lights shall not be used with signs manufactured with Type E Sheeting (Fluorescent Prismatic) meeting the requirements of Departmental Material Specification DMS-8300.
4. Type-C Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation " SB ".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.

END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet crashworthy standards as defined in the National Cooperative Highway Research Report 350. Refer to the CWZTCD List for approved end treatments and manufacturers.

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3120
Fax (512) 416-3299

Instructions to locate the "CWZTCD" on TxDOT website are:

Start at website - www.dot.state.tx.us
Click on "About TxDOT".
Click on "Functional Organizational Chart".
Click on Traffic Operations Box.
Click on "Compliant Work Zone Traffic Control Devices".
again click on "Compliant Work Zone Traffic Control Devices".
This site is printable.

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the dates shown in the CWZTCD to ensure that the TMA meets the age requirements and the crashworthiness criteria established by the Federal Highway Administration (FHWA) for TMAs.
4. Refer to the CWZTCD for a list of approved TMAs.
5. TMAs are required on freeways unless otherwise noted in the plans.
6. A TMA should be used anytime that it can be positioned approximately 100 feet or less in advance of the area of crew exposure without adversely affecting the work performance.
7. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

STANDARD PLANS
Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION ARROW & MESSAGE SIGNS, REFLECTORS & WARNING LIGHT STANDARD

6 of 12 BC(6)-03

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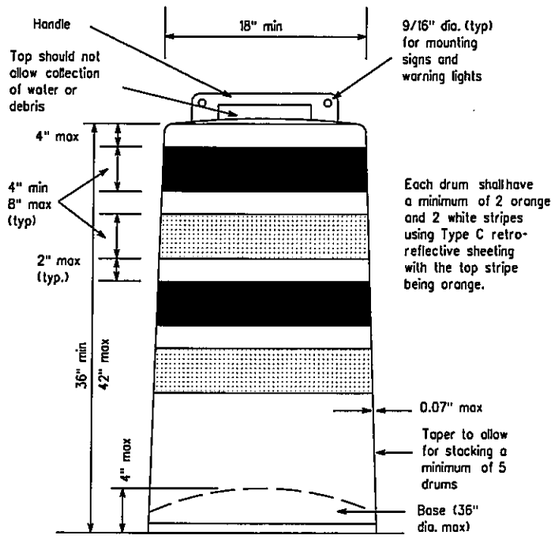
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
	21			9

COUNTY	CONTROL	SECTION	JOB	HIGHWAY
HIDALGO				



GENERAL NOTES

1. Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
2. Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
3. The Engineer/Inspector shall provide written notice to the Contractor regarding the replacement of drums or other traffic control devices. The Contractor shall have a maximum of 24 hours to replace any plastic drums or other traffic control devices identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

Prequalified plastic drums shall meet the following requirements:

GENERAL DESIGN REQUIREMENTS

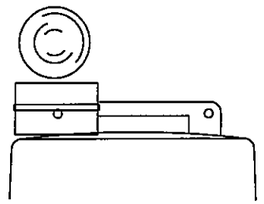
1. Plastic drums shall be a two-piece design: the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
3. Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
4. Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
5. The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, delineator reflector unit or non-plywood sign.
6. The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in width.
7. Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
9. Drum body shall have a minimum unballasted weight of 7.7 lbs. and maximum unballasted weight of 11 lbs. The wall of the drum body shall be a minimum of 0.07 inch in thickness. Weight of any drum supplied shall not vary more than 0.5 lb. from that of the prequalified sample.
10. Drum and base shall be marked with manufacturer's name and model number.

RETROREFLECTIVE SHEETING

1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Flat Surface Reflective Sheeting." High Specific Intensity (Type C) retro-reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, checking, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

BALLAST

1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
2. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
3. The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
4. When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
5. Ballast shall not be placed on top of drums.
6. Adhesives may be used to secure base of drums to pavement.

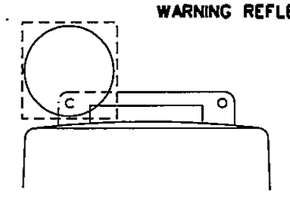


Type C Warning Light or approved substitute mounted adjacent to the travelway.

WARNING LIGHTS AND DELINEATORS MOUNTED ON PLASTIC DRUMS

1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A flashing warning lights are not intended for delineation and shall not be used in a series.
3. Type C steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
4. Type A and Type C warning lights shall be installed at locations as detailed on other sheets in the plans.
5. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
6. Type A Class 1, Type A Class 2, or Type B Reflector Units (D & OM Standard) may be attached to drums to delineate the intended vehicular path. The color of the reflector unit shall correspond to the pavement marking it is supplementing or for which it is substituting (left edgeline-yellow or right edgeline-white). The reflective unit shall be attached to the handle of the drum using the mounting hole nearest the travel lane and shall be aligned perpendicular to approaching traffic.
7. Delineators may be used as directed by the Engineer. Delineators may not be used as a substitute for warning lights.

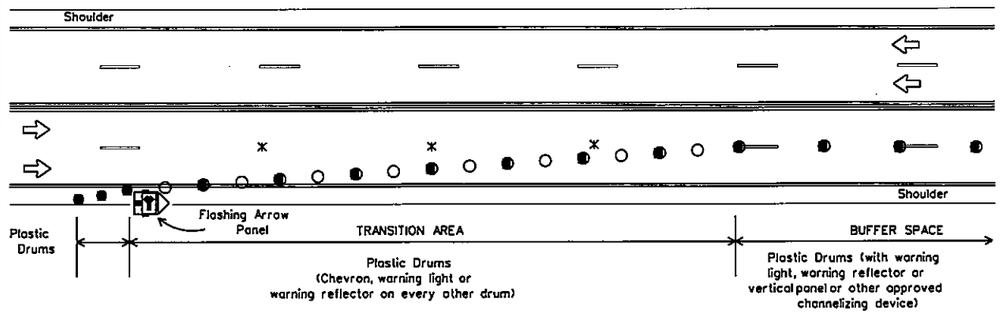
WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C WARNING LIGHTS



Warning reflector may be round or square. Must have a reflective surface area of at least 30 square inches

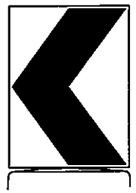
1. A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
2. The warning reflector shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
3. The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
6. The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type D (Non-fluorescent Prismatic).
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.

TYPICAL DETAIL OF LANE CLOSURE USING PLASTIC DRUMS AS CHANNELIZING DEVICES

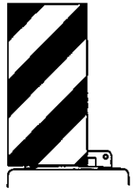


Provide adequate sight distance when placing lane closures. Do not place lane closures in vertical or horizontal curves.
See BC(8) for table showing the spacing of channelizing devices in the taper and tangent section.

* **NOTE: Lane lines shall be removed when the lane closure occupies a location for longer than 2 weeks.**



18" x 24" Sign (Maximum Sign Dimension) Chevron CW1-8, Driveway sign D70a, Keep Right R4 series or other signs as approved by Engineer



12" x 24" Vertical Panel mount with diagonals sloping down towards travelway

Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type E (Fluorescent Prismatic) sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Flat Surface Reflective Sheeting," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type C (High Specific Intensity). Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3120
Fax (512) 416-3299

Instructions to locate the "CWZTCD" on TxDOT website are:

Start at website - www.dot.state.tx.us
Click on "About TxDOT",
Click on "Functional Organizational Chart",
Click on Traffic Operations Box,
Click on "Compliant Work Zone Traffic Control Devices",
again click on "Compliant Work Zone Traffic Control Devices".
This site is printable.

LEVELS DISPLAYED / ACC:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63		

STANDARD PLANS
Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION PLASTIC DRUM STANDARD

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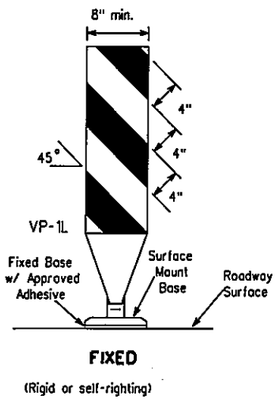
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
	21			10
	COUNTY	CONTROL	SECTION	JOB	HIGHWAY
	HIDALGO				

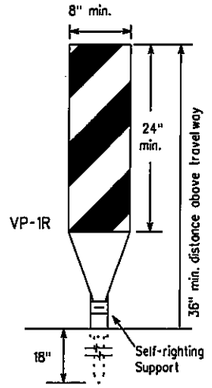
CHANNELIZING DEVICES

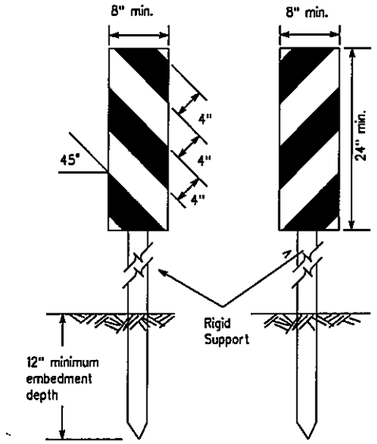
VERTICAL PANELS



FIXED

(Rigid or self-righting)





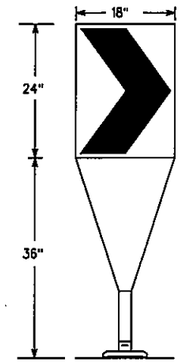
DRIVEABLE

(Rigid or self-righting)

PORTABLE

1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual Appendix B "Treatment of Pavement Drop-offs in Work Zones" for additional guidelines on the use of VP's for drop-offs.
3. VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
4. VP's used on expressways, freeways, and on high speed roadways shall have a minimum of 2 square feet of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type C (High Specific Intensity) conforming to Departmental Material Specification DMS-8300, unless noted otherwise.

CHEVRONS



Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black non-reflective legend. Sheeting for the chevron shall be retroreflective Type E (Fluorescent Prismatic) conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall be black vinyl non-reflective decal sheeting meeting the requirements of DMS-8320.

GENERAL NOTES:

1. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
4. The contractor shall maintain devices in a clean condition and replace damaged, non-reflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh approximately 35 lbs.
6. Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.
8. Examples on this sheet are the most commonly used channelizing devices in work zones. For other devices, refer to the CWZTCD.

Posted Speed	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'-75'
35		205'	225'	245'	35'	70'-90'
40		265'	295'	320'	40'	80'-100'
45	L=WS	450'	495'	540'	45'	90'-110'
50		500'	550'	600'	50'	100'-125'
55		550'	605'	660'	55'	110'-140'
60		600'	660'	720'	60'	120'-150'
65		650'	715'	780'	65'	130'-165'
70		700'	770'	840'	70'	140'-175'
75		750'	825'	900'	75'	150'-185'

** Taper lengths have been rounded off.
L=Length of Taper (FT.) W=Width of Offset (FT.) S=Posted Speed (MPH)

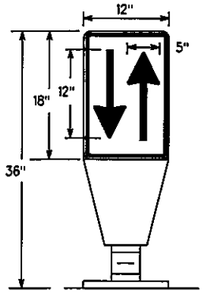
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

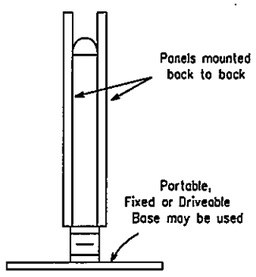
Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3120
Fax (512) 416-3299

Instructions to locate the "CWZTCD" on TxDOT website are:

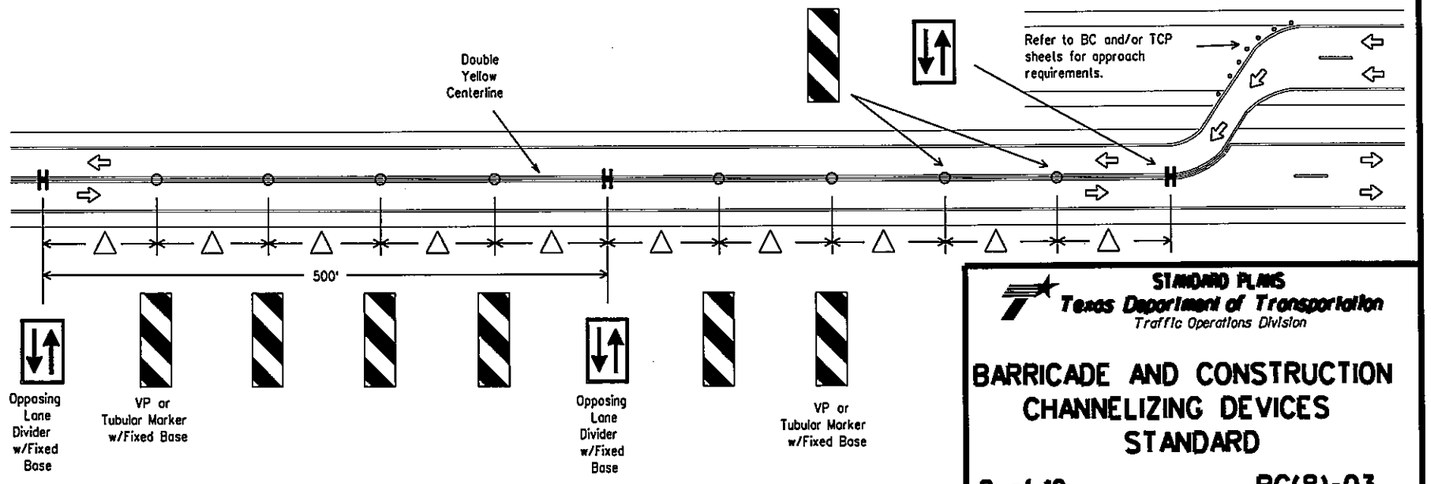
Start at website - www.dot.state.tx.us
Click on "About TxDOT",
Click on "Functional Organizational Chart",
Click on Traffic Operations Box,
Click on "Compliant Work Zone Traffic Control Devices",
again click on "Compliant Work Zone Traffic Control Devices".
This site is printable.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)





1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust. The OTLD is placed on a flexible self-righting support that returns to an upright position when impacted by a vehicle.
2. The OTLD may be used in combination with simple tubular markers or vertical panels (vp's).
3. Spacing between the OTLD shall not exceed 500 feet. Tubular markers or vp's placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type E (Fluorescent Prismatic) conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall be black vinyl non-reflective decal sheeting meeting the requirements of DMS-8320.



△ Spacing between the VP's or tubular markers shall not exceed 100 feet. On roadways with speeds less than 45 MPH, spacing between the tubular markers or VP's shall be as shown on the channelizing spacing table shown on this page. If the table shows spacing greater than 100 feet based on the roadway speed, then use a maximum of 100 feet spacing between the tubular markers or VP's. Every fifth channelizing device shall be an OTLD. Spacing between the OTLD shall not exceed 500 feet. When using this type of traffic control set-up, the OTLD, VP's or tubular markers shall have the fixed base with approved adhesive per the manufacturer's recommendations.

STANDARD PLANS
Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES STANDARD

8 of 12 BC(8)-03

©TxDOT 11-4-02	DN: BAS	CK: GRB	DW: FDN	CK: CAL
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
	21			11
	COUNTY	CONTROL	SECTION	JOB	HIGHWAY
	HIDALGO				

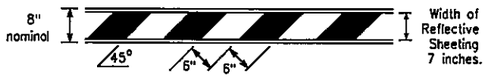
LEVELS DISPLAYED
ACC:
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
7 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

TYPE III BARRICADES

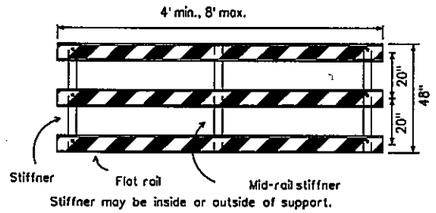
1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type III Barricades and a list of all materials used in the construction of Type III Baricades.
2. Type III Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.

Barricades shall NOT be used as a sign support.

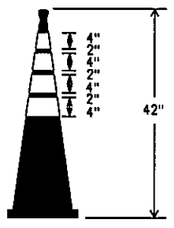
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES



Stiffner may be inside or outside of support.

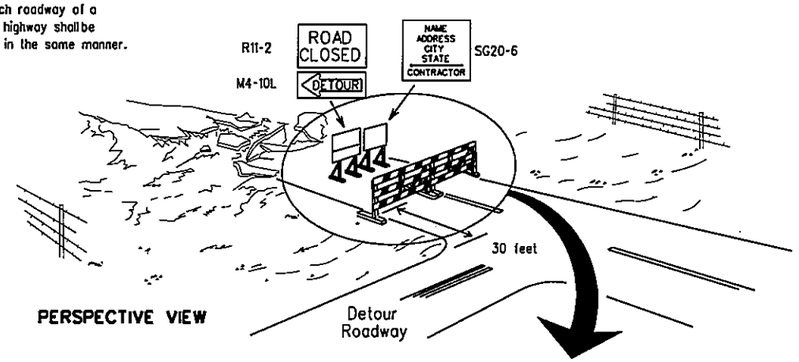


EDGELINE CHANNELIZER

1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type C (High Specific Intensity) conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.

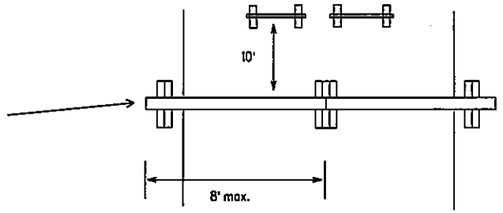
TYPE III BARRICADE (POST AND SKID) TYPICAL APPLICATION

Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

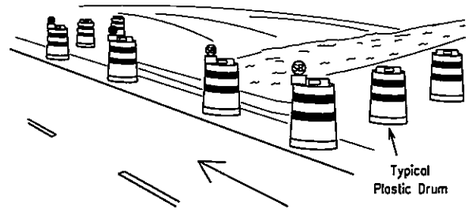
The three rails on Type III barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

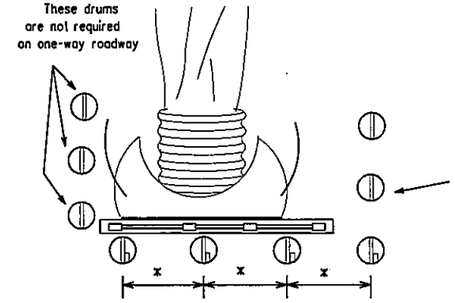
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type III Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



PERSPECTIVE VIEW

1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.



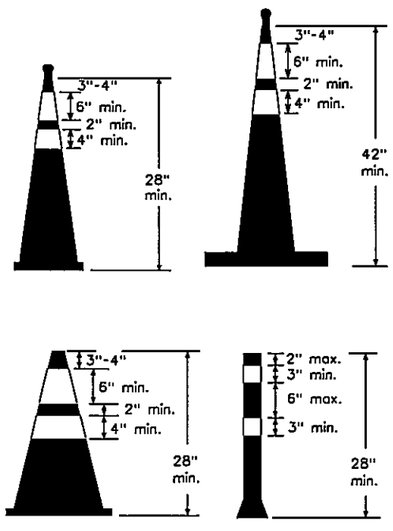
Increase number of plastic drums on the side of approaching traffic if the crown width makes it necessary. (minimum of 2 and maximum of 4 drums)

x Maximum spacing between drums shall be 10 feet. A minimum of two drums shall be used across the work area.

PLAN VIEW

Legend
- Plastic drum
- Plastic drum with steady burn light

CONES



28" Cones shall have a minimum weight of 9 1/2 lbs.

42" 2-piece cones shall have a minimum weight of 30 lbs.

1. Traffic cones and tubular markers shall be a minimum of 28 inches in height when used either on freeways or at nighttime.
2. Cones or tubular markers shall be predominantly orange, fluorescent red-orange, or fluorescent yellow-orange. They should be kept clean and bright for maximum visibility.
3. Cones used only for daytime operations do not require the reflectorized bands.
4. Cones used for nighttime operations shall be reflectorized. Reflectorized material shall have a smooth, sealed outer surface that displays the same approximate color during the day and night. The reflectorized bands shall be retroreflective Type C (High Specific Intensity) conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
5. When used at night, appropriate personnel shall ensure that cones and tubular markers remain in their proper location and in an upright position.
6. Reflectorization of cones shall consist of a minimum 6 inch band placed at least 3 inches but not more than 4 inches from the top, supplemented by a minimum 4 inch band spaced a minimum of 2 inches below the 6 inch band.
7. Reflectorization of tubular markers shall be a minimum of two 3 inch bands placed a maximum of 2 inches from the top with a maximum of 6 inches between bands. The reflectorized bands shall be retroreflective Type C (High Specific Intensity) conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
8. One-piece cones or tubular markers are generally suitable for temporary usage (up to 8 hours) with other channelization devices such as vertical panels, drums or two-piece cones for long term usage. Care should be taken to ensure they remain in their proper location and in an upright position.
9. Cones or tubular markers used on each project shall be of the same size and shape.
10. The handle may be designed as a hook or other shape, fabricated from non-rigid materials similar to the cone material, and may extend up to a maximum of 8 inches above the top of cone. Length of the handle shall not be considered with regard to the overall height of the cone.

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3120
Fax (512) 416-3299

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Click on Traffic Operations Box,
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again click on "Compliant Work Zone Traffic Control Devices".
This site is printable.

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63
ACC:

STANDARD PLANS
Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION TYPE III BARRICADE & CONES STANDARD

9 of 12 — BC(9)-03

© TxDOT 11-4-02	DN- BAS	CK- GRB	DW- FDN	CK- CAL
REVISIONS	STATE DISTRICT: 21	FEDERAL REGION	FEDERAL AID PROJECT	SHEET: 12
	COUNTY: HIDALGO	CONTROL	SECTION	JOB	HIGHWAY

LEVELS DISPLAYED

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	ACC:
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63		

WORK ZONE PAVEMENT MARKINGS

GENERAL

1. The Contractor shall be responsible for maintaining work zone and existing pavement markings, in accordance with the standard specifications and special provisions, on all roadways open to traffic within the CSJ limits unless otherwise stated in the plans.
2. Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
3. Additional supplemental pavement marking details may be found in the plans or specifications.
4. Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
5. When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard Plan Sheet WZ(STPM).
6. When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and the sections where passing is permitted.
7. All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

1. Raised pavement markers are to be placed according to the patterns on BC(11).
2. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.
3. A list of prequalified reflective raised pavement markers can be found at the following web site:
   ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/pdf/dms4200preq.pdf
4. A list of prequalified non-reflective traffic buttons can be found at the following web site:
   ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/pdf/4300preq.pdf

PREFABRICATED PAVEMENT MARKINGS

1. Removable prefabricated pavement markings shall meet the requirements of DMS-8241. A list of prequalified products can be found at the following web site:
   ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/pdf/pavemark.pdf
2. Non-removable prefabricated pavement markings (foil back) shall meet the requirements of DMS-8240 or the TXDOT Purchase Specification No. 550-74-89. A list of prequalified products and a copy of the TXDOT Purchase Specifications can be found at web sites:
   ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/pdf/pavement.pdf
   ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/pdf/tss/tss377.pdf

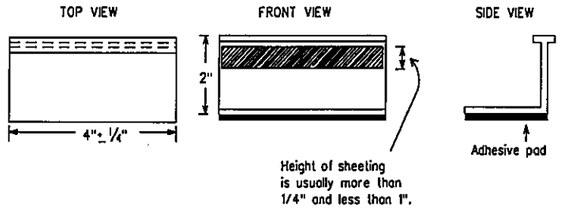
MAINTAINING WORK ZONE PAVEMENT MARKINGS

1. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
2. Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
3. The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 150 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
4. Markings failing to meet this criteria shall be replaced as required by the Engineer at the expense of the Contractor.

REMOVAL OF PAVEMENT MARKINGS

1. Pavement markings that are no longer applicable, could create confusion or direct a motorist toward or into the closed portion of the roadway, shall be removed or obliterated before the roadway is opened to traffic.
2. The above shall not apply to detours in place for less than two weeks, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
3. Pavement markings shall be removed to the fullest extent possible, so as not to leave a discernible marking, by any method that does not materially damage the surface or texture of the pavement.
4. The removal of pavement markings may require resurfacing or seal coating portions of the roadway.
5. Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
6. Blast cleaning may be used but will not be required unless specifically shown in the plans.
7. Over-painting of the markings SHALL NOT BE permitted.
8. Removal of raised pavement markers shall be as directed by the Engineer.
9. Removal of existing pavement markings and markers will be paid for directly in accordance with Item 677, "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS," unless otherwise stated in the plans.

Temporary Flexible-Reflective Roadway Marker Tabs



STAPLES OR NAILS SHALL NOT BE USED TO SECURE TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS TO THE PAVEMENT SURFACE

1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
   A. Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
   B. Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
3. Small design variances may be noted between tab manufacturers.

Raised Pavement Markers used as Guidemarks

1. Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
2. All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
3. Adhesive for guidemarks shall be bituminous material hot applied or butyl rubber pad for all surfaces, or thermoplastic for concrete surfaces.

Guidemarks shall be designated as:
YELLOW - (two amber reflective surfaces with yellow body).
WHITE - (one silver reflective surface with white body).

DEPARTMENTAL MATERIAL SPECIFICATIONS

PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
TRAFFIC BUTTONS	DMS-4300
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
PREFABRICATED PAVEMENT MARKINGS-PERMANENT	DMS-8240
PREFABRICATED PAVEMENT MARKINGS-REMOVABLE	DMS-8241
TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS	DMS-8242

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Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
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This site is printable.

STANDARD PLANS
Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS STANDARD

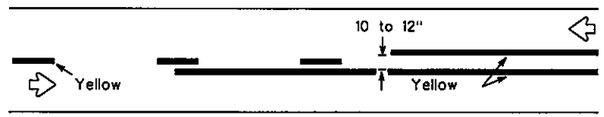
10 of 12 BC(10)-03

 DN: LR CK: DTN DW: FDN CK: CAL

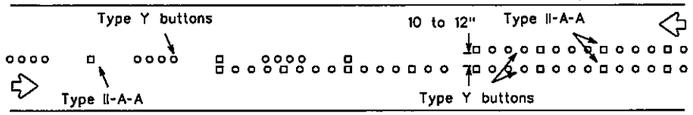
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT			SHEET
1-97	21					13
2-98	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
1-02	HIDALGO					
11-02						

PAVEMENT MARKING PATTERNS

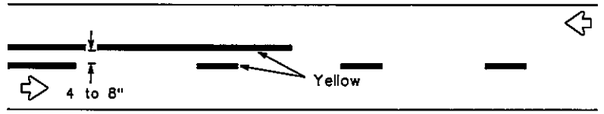
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS



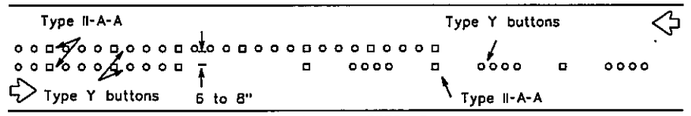
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



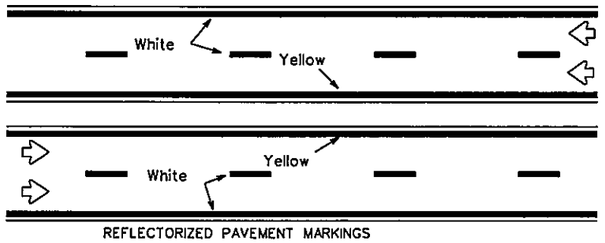
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



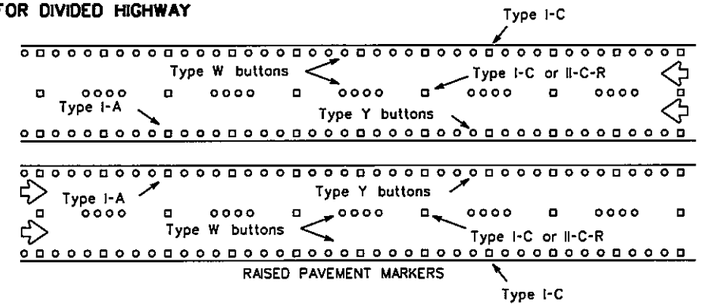
RAISED PAVEMENT MARKERS - PATTERN B

Pattern A is the TXDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



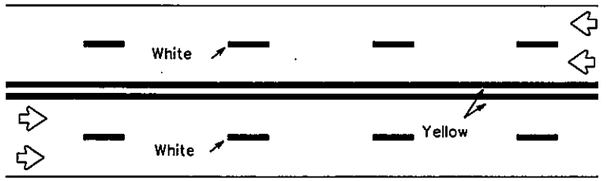
REFLECTORIZED PAVEMENT MARKINGS



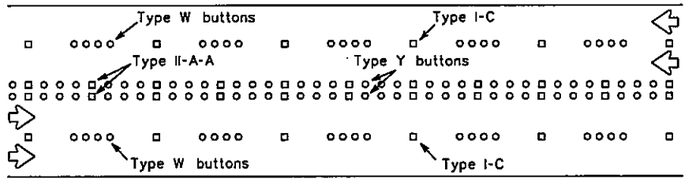
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



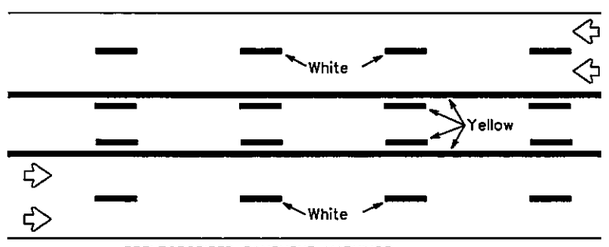
REFLECTORIZED PAVEMENT MARKINGS



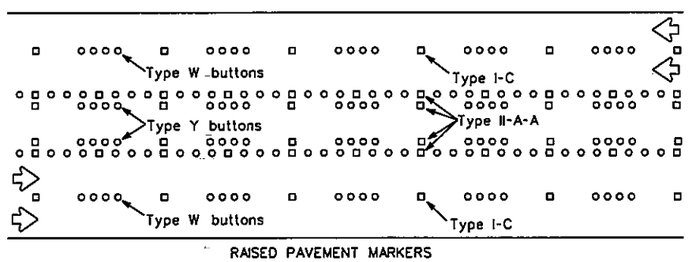
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE



REFLECTORIZED PAVEMENT MARKINGS



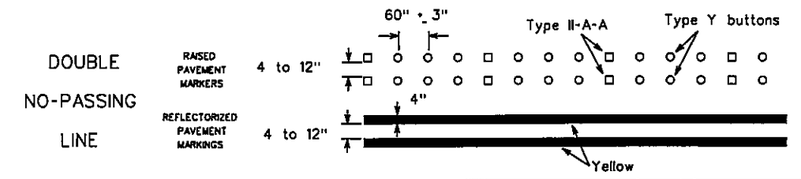
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

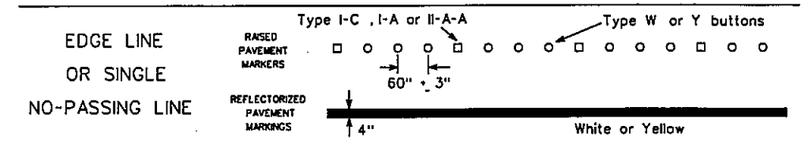
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

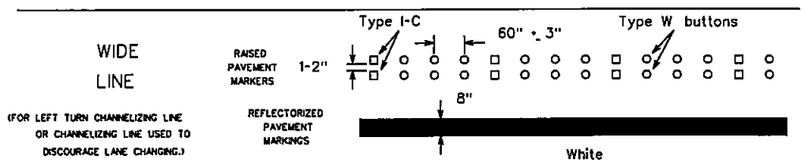


EDGE LINE OR SINGLE NO-PASSING LINE



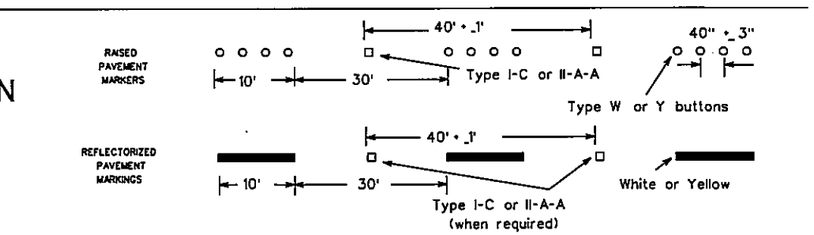
WIDE LINE

(FOR LEFT TURN CHANNELIZING LINE OR CHANNELIZING LINE USED TO DISCOURAGE LANE CHANGING.)



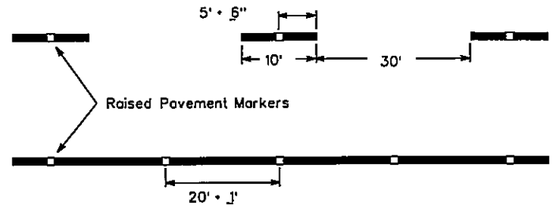
BROKEN LINE

(FOR CENTER LINE OR LANE LINE.)



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

If raised pavement markers are used to supplement REMOVABLE markings, the markers shall be applied to the top of the tape at the approximate mid length of tape used for broken lines or at 20 foot spacing for solid lines. This allows an easier removal of raised pavement markers and tape.



Centerline only - not to be used on edge lines

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be obtained by contacting:

Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3120
Fax (512) 416-3299

Instructions to locate the "CWZTCD" on TxDOT website are:

Start at website - www.dot.state.tx.us
Click on "About TxDOT",
Click on "Functional Organizational Chart",
Click on Traffic Operations Box,
Click on "Compliant Work Zone Traffic Control Devices",
again click on "Compliant Work Zone Traffic Control Devices".
This site is printable.

Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item "RAISED PAVEMENT MARKERS."

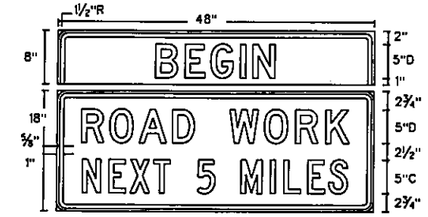
STANDARD PLANS
Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS STANDARD

11 of 12 BC(11)-03

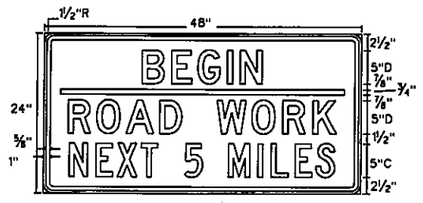
© TxDOT February 1998	DN: LR	CK: DTN	DW: FDN	CK: CAL
REVISIONS	STATE DISTRICT	FEDERAL ROADS	FEDERAL AID PROJECT	SHEET
2-94				14
1-97	21			
2-98	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
11-02	HIDALGO					

LEVELS DISPLAYED / ACC:
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
7 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63



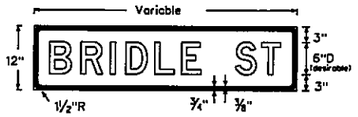
SG20-1 w/plaque
48" X 26"

Letters - Black
Numbers - Black
Border - Black
Background - Orange Refl.



SG20-5T
48" X 24"

Letters - Black
Numbers - Black
Border - Black
Background - Orange Refl.

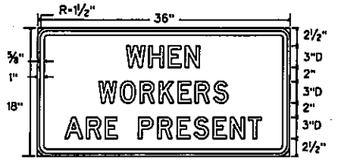


M4-9N
Variable X 12"

Letters - Black
Border - Black
Background - Orange Refl.

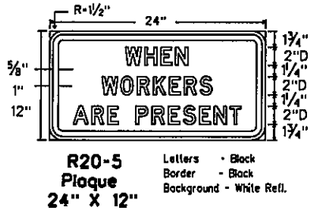
The M4-9R,L or S sign is to be used to detour local streets or roads that are not a State or Federal numbered highway; however, it should not be used in lieu of the M4-10 sign at the beginning of the detour or to detour State or Federal numbered routes.

Also, when the M4-9R,L or S sign is used, a sign (M4-9N) with the name of the street being detoured may be mounted above it.



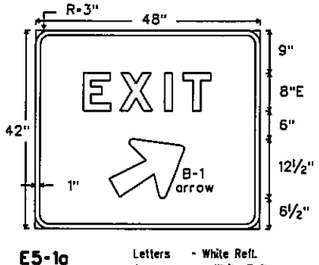
ER20-5
Plaque
36" X 18"

Letters - Black
Border - Black
Background - White Refl.



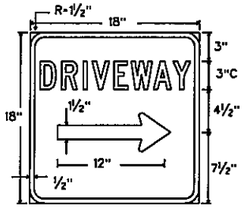
R20-5
Plaque
24" X 12"

Letters - Black
Border - Black
Background - White Refl.



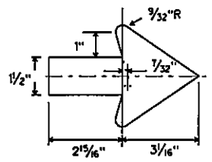
E5-1a
48" X 42"

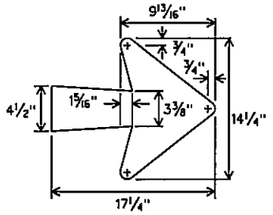
Letters - White Refl.
Arrow - White Refl.
Border - White Refl.
Background - Green Refl.



D-70a
18" X 18"

Letters - White Refl.
Symbol - White Refl.
Border - White Refl.
Background - Blue Refl.





B-1 Arrow Detail

D-70S
42" X 14"

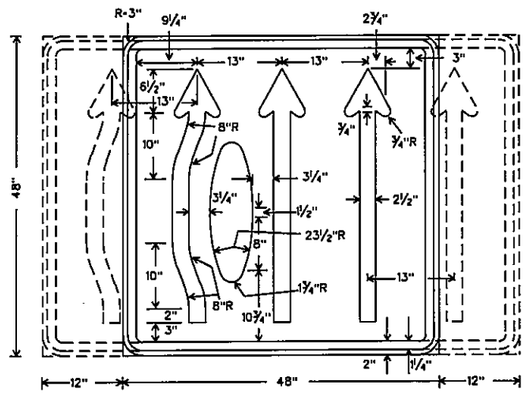
Letters - White Refl.
Symbol - White Refl.
Border - White Refl.
Background - Blue Refl.

* Alternate first line legend for D-70S

RESTAURANT	D70R	4"C
BUSINESS	D70B	4"C
MOTEL	D70M	4"C
GAS	D70G	4"C

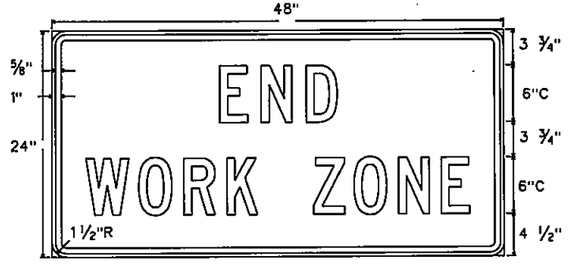
E5-2
48" X 48"

Letters - Black
Border - Black
Background - Orange Refl.



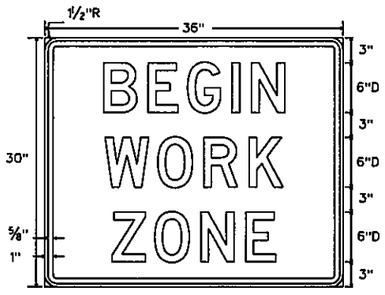
CW24-2
Var. X 48"

A mirror image may be used to show proper lane alignment.



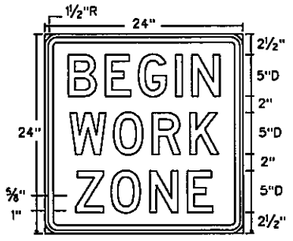
G20-2b
48" X 24"

Letters - Black
Border - Black
Background - Orange Refl.



EG20-9T
36" X 30"

Letters - Black
Border - Black
Background - Orange Refl.



G20-9T
24" X 24"

Letters - Black
Border - Black
Background - Orange Refl.

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Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3120
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Click on Traffic Operations Box,
Click on "Compliant Work Zone Traffic Control Devices",
again click on "Compliant Work Zone Traffic Control Devices".
This site is printable.

DEPARTMENT MATERIAL SPECIFICATIONS

PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
FLAT SURFACE REFLECTIVE SHEETING	DMS-8300
VINYL NON-REFLECTIVE DECAL SHEETING	DMS-8320

COLOR	USAGE	REFLECTIVE SHEETING OR OTHER MATERIAL
BLUE	BACKGROUND	TYPE C (HIGH SPECIFIC INTENSITY)
RED	BACKGROUND	TYPE C (HIGH SPECIFIC INTENSITY)
GREEN	BACKGROUND	TYPE C (HIGH SPECIFIC INTENSITY)
ORANGE	BACKGROUND	TYPE E (FLUORESCENT PRISMATIC)
WHITE	BACKGROUND	TYPE C (HIGH SPECIFIC INTENSITY)
YELLOW	BACKGROUND	TYPE C (HIGH SPECIFIC INTENSITY)
BLACK	LEGEND & BORDERS	VINYL NON-REFLECTIVE DECAL SHEETING
WHITE	LEGEND & BORDERS	TYPE C (HIGH SPECIFIC INTENSITY)

STANDARD PLANS
Texas Department of Transportation
Traffic Operations Division

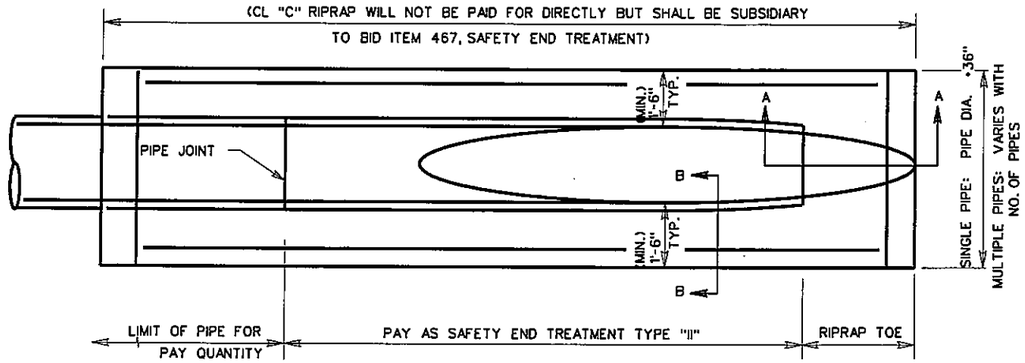
BARRICADE AND CONSTRUCTION REGULATORY & GUIDE SIGNS STANDARDS

12 of 12 **BC(12)-03**

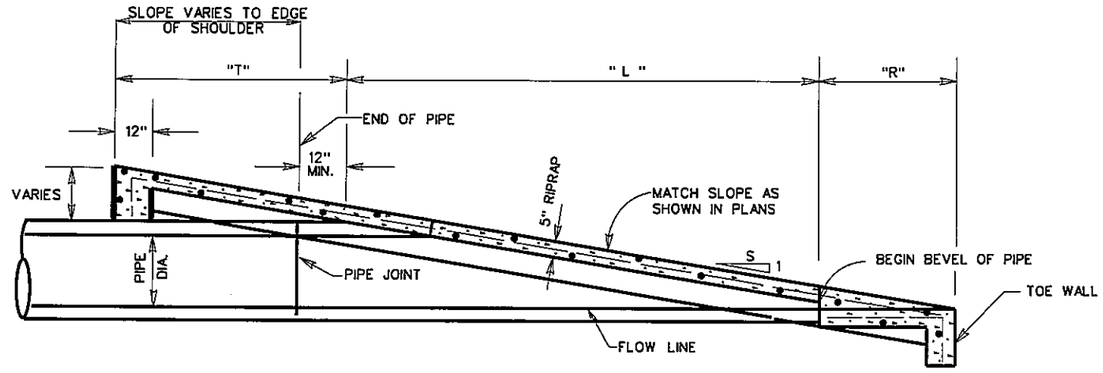
©TxDOT February 1998	DN: GRB	CK: BAS	DW: FDN	CK: CAL	
REVISIONS 10-99 11-02	STATE DISTRICT 21	FEDERAL REGION	FEDERAL AID PROJECT		SHEET 15
COUNTY HIDALGO		CONTROL	SECTION	JOB	HIGHWAY

LEVELS DISPLAYED

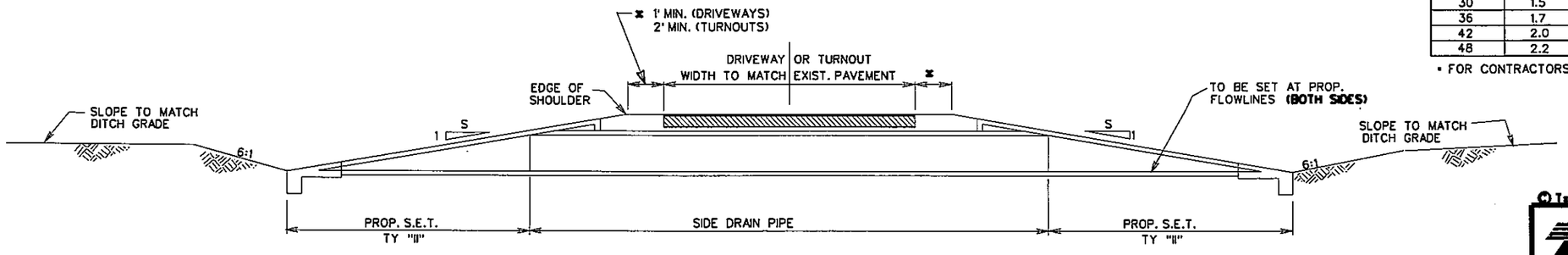
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	ACC:
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63		



PLAN VIEW



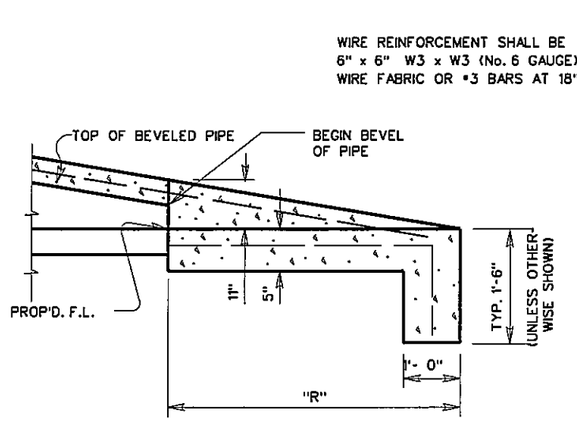
ELEVATION
SAFETY END TREATMENT



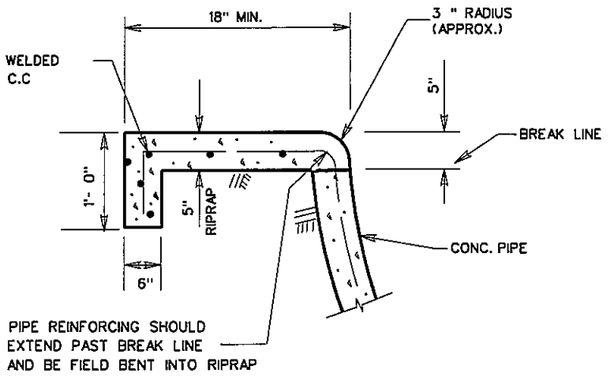
TYPICAL SIDEDRAIN SECTION

NOTE:

ALL EXCAVATION AND BACKFILL REQUIRED AT ALL PIPE SIDE DRAIN CONNECTIONS, ADJUSTMENTS AND/OR EXTENSIONS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE SUBSIDIARY TO THE BID ITEMS INVOLVED AND IN ACCORDANCE WITH ITEM 400 "STRUCTURAL EXCAVATION".



SEC. A-A



SEC. B-B

SAFETY END TREATMENT PIPE LENGTHS

PIPE DIA. (IN.)	"L" 3:1	4:1	5:1	6:1
12	2'-0"	2'-8"	3'-4"	4'-0"
15	2'-9"	3'-8"	4'-7"	5'-6"
18	3'-6"	4'-8"	5'-10"	7'-0"
24	5'-1½"	6'-10"	8'-6½"	10'-3"
30	6'-9"	9-0"	11'-3"	13'-6"
36	8'-6"	11'-4"	14'-2"	17'-0"
42	10'-1½"	13'-6"	16'-10½"	20'-3"
48	11'-9"	15'-8"	19'-7"	23'-6"

RIPRAP TOE LENGTHS

SLOPE	" R "	"T"
3:1	2'-9"	1'-9"
4:1	3'-8"	2'-4"
5:1	4'-7"	2'-11"
6:1	5'-6"	3'-6"

ESTIMATED RIPRAP CL "C" VOLUME (CY)

PIPE DIA. (IN.)	3:1	4:1	5:1	6:1
12	.9	1.1	1.3	1.6
15	1.0	1.2	1.5	1.8
18	1.1	1.4	1.6	1.9
24	1.3	1.6	2.0	2.3
30	1.5	1.9	2.3	2.7
36	1.7	2.2	2.7	3.2
42	2.0	2.5	3.1	3.6
48	2.2	2.8	3.4	4.1

* FOR CONTRACTORS INFORMATION ONLY (SINGLE PIPE)

PHARR DISTRICT STANDARDS

TEXAS DEPARTMENT OF TRANSPORTATION

SAFETY END TREATMENT DETAILS

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT				SHEET
REV. 4/02	21						16
	COUNTY		CONTROL	SECTION	JOB		HIGHWAY
	HIDALGO						

SITE DESCRIPTION

PROJECT LIMITS: FROM:
CATHY LANE, DENISE DRIVE
JOHNSON STREET, & BETHANY STREET

PROJECT DESCRIPTION: Construction of a non-freeway facility consisting of: Overlaying, storm sewer

MAJOR SOIL DISTURBING ACTIVITIES: preparing the right-of-way
Embankment
Excavation
Grading storm drains
erosion & sediment controls

TOTAL PROJECT AREA: 0.60 ACRES

TOTAL AREA TO BE DISTURBED: 0.60 ACRES

WEIGHTED RUNOFF COEFFICIENT (AFTER CONSTRUCTION): 0.45

EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER: Existing soil condition is Hidalgo sandy clay loam: Nearly level soil is on convex uplands. The areas are broad and irregular in shape with a surface layer of dark grayish brown sandy clay loam about 17 inches thick. This soil is well drained. Surface runoff is slow, permeability moderate, and available water capacity is high.

NAME OF RECEIVING WATERS: A county drain ditches will receive all 0.60 acres. Ultimately the runoff will flow into the Laguna Madre approximately 8.05 km south of Port Mansfield. The Laguna Madre is located within Stream Segment NO.2491.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- [x] TEMPORARY SEEDING
- [x] PERMANENT PLANTING, SODDING, OR SEEDING
- [ ] MULCHING
- [ ] SOIL RETENTION BLANKET
- [ ] BUFFER ZONES
- [x] PRESERVATION OF NATURAL RESOURCES

OTHER: Disturbed areas on which construction activity has ceased (temporarily or permanently) shall be stabilized within 14 days unless activities are scheduled to resume within 21 days.

STRUCTURAL PRACTICES:

- [x] SILT FENCES
- [ ] HAY BALES
- [ ] ROCK BERMS
- [ ] DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- [ ] DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- [ ] DIVERSION DIKE AND SWALE COMBINATIONS
- [ ] PIPE SLOPE DRAINS
- [ ] PAVED FLUMES
- [ ] ROCK BEDDING AT CONSTRUCTION EXIT
- [x] TIMBER MATTING AT CONSTRUCTION EXIT
- [ ] CHANNEL LINERS
- [ ] SEDIMENT TRAPS
- [ ] SEDIMENT BASINS
- [ ] STORM INLET SEDIMENT TRAP
- [ ] STONE OUTLET STRUCTURES
- [ ] CURBS AND GUTTERS
- [x] STORM SEWERS
- [ ] VELOCITY CONTROL DEVICES

OTHER:

NARRATIVE - SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES:

The order of activities will be as follows:

1. Install controls for ingress and egress into the project site.

2. Install sediment control fences around culverts and other locations as shown on the plans or as directed by the engineer.

3. Seed entire disturbed area from back of curb to the right of way.

4. When all construction activity is complete and the site is stabilized and approved by the Project Engineer, remove all temporary erosion controls and stabilize any areas disturbed by their removal.

STORM WATER MANAGEMENT: Storm water drainage will be provided by conc.curb & gutter,curbs, curb openings and a storm ditch system.

OTHER EROSION AND SEDIMENT CONTROLS:

MAINTENANCE: All erosion and sediment controls will be maintained in good working order. If a repair is necessary, it will be done at the earliest date possible, but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from heavy equipment.

INSPECTION: An inspection will be performed by a TxDOT Inspector every week as well as after every half inch or more of rain (as recorded on a non-freezing rain gauge to be located at the Project Site). An Inspection and Maintenance Report will be made per each inspection. Based on the inspection results, the controls shall be revised per the inspection report.

WASTE MATERIALS: All waste materials will be collected and stored in a securely lidded dumpster meeting all state and local city solid waste management regulations. All trash and construction debris from the site will be deposited as necessary, or as required by local regulations, at a local dump. No construction waste material will be buried on site.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING): At a minimum, any products in the following categories to be hazardous: Paints, Acids for cleaning masonry surfaces, Cleaning Solvents, Asphalt products, Chemical additives for soil stabilization, or Concrete curing compounds and additives. In the event of a spill which may be hazardous, the spill Coordinator should be contacted immediately. Wash water and concrete will not be allowed to enter any storm drain or waterway. Likewise, washout of concrete trucks shall not be performed onsite without a system of containment these discharges are considered non-allowable non-storm water discharges. Concrete trucks shall not dump into storm drains or sanitary sewers.

SANITARY WASTE: All sanitary waste will be collected from the portable units as necessary or as required by local regulation by a licensed sanitary waste management contractor.

OFFSITE VEHICLE TRACKING:

- [x] HAUL ROADS DAMPENED FOR DUST CONTROL
- [ ] LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
- [x] EXCESS DIRT ON ROAD REMOVED DAILY
- [x] STABILIZED CONSTRUCTION ENTRANCE

OTHER:

REMARKS: Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wetland, waterbody or streambed.
Construction staging areas and vehicle maintenance areas shall be constructed by the Contractor in a manner to minimize the runoff of pollutants.

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED
PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY JOSE N. SALDIVAR, P.E. 94076

DATE: 8/27/07

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HIDALGO COUNTY PRECINCT No.2
SOUTHSIDE VILLAGE SUBDIVISION
STORM WATER POLLUTION PREVENTION PLAN (SW3P)

Texas Department of Transportation
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FIRM NO. 486

FED.RD. DIV. No.	STATE AID PROJECT NO.		HIGHWAY NO.
STATE	DIST.	COUNTY	
TEXAS	21	HIDALGO	

DN:	DW:	CONT.	SECT.	JOB	SHEET No.
CK:	CK:				17

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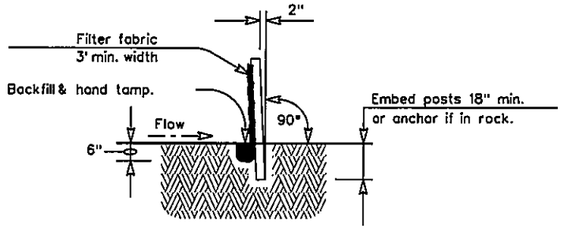


SECTION A-A

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

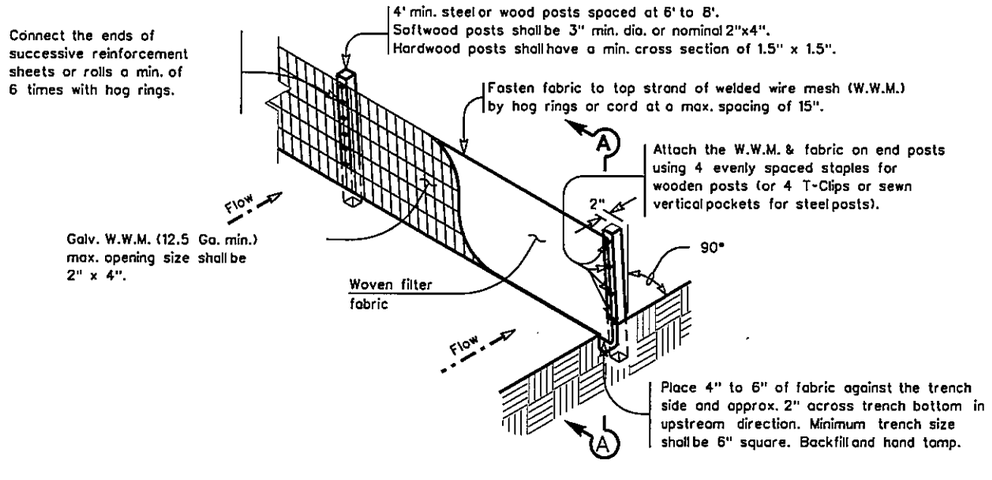
Sediment control fence should be sized to filter a max. flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

PLAN SHEET LEGEND

Sediment Control Fence —— SCF ——

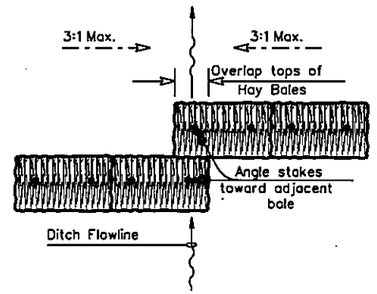
GENERAL NOTES

1. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

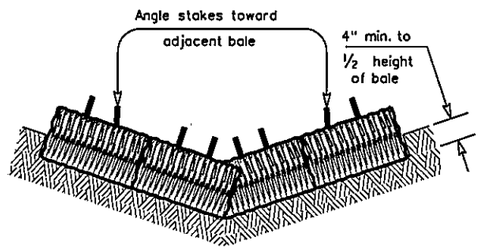


TEMPORARY SEDIMENT CONTROL FENCE

SCF



PLAN VIEW



PROFILE VIEW

PLANS SHEET LEGEND

Baled Hay —— BH ——

BALED HAY USAGE GUIDELINES

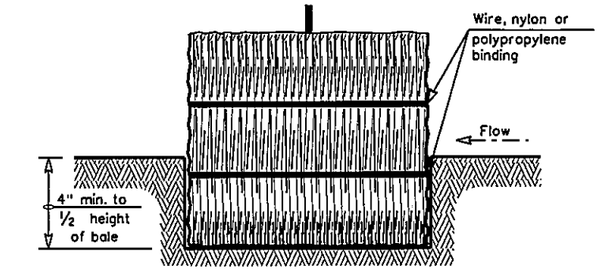
A Baled Hay installation may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A two year storm frequency may be used to calculate the flow rate to be filtered. The installation should be sized to filter a maximum flow thru rate of 5 GPM/FT^2 of cross sectional area. Baled hay may be used at the following locations:

1. Where the runoff approaching the baled hay flows over disturbed soil for less than 100'. If the slope of the disturbed soil exceeds 10%, the length of slope upstream the baled hay should be less than 50'.
2. Where the installation will be required for less than 3 months.
3. Where the contributing drainage area is less than ½ acre.

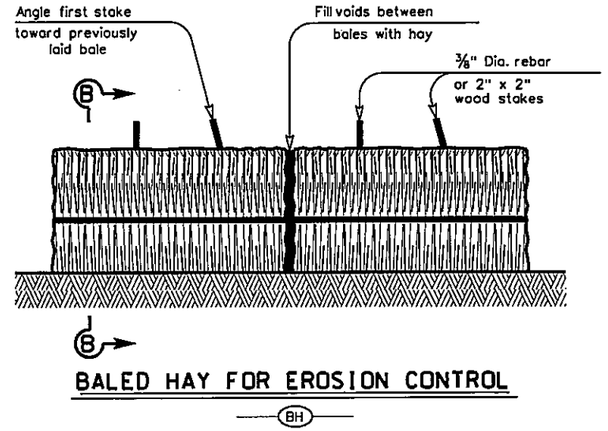
For Baled Hay installations in small ditches, the additional following considerations apply:

1. The ditch sideslopes should be graded as flat as possible to maximize the drainage flowrate thru the hay.
2. The ditch should be graded large enough to contain the overtopping drainage when sediment has filled to the top of the baled hay.

Bales should be replaced usually every 2 months or more often during wet weather when loss of structural integrity is accelerated.



SECTION B-B



BALED HAY FOR EROSION CONTROL

BH

GENERAL NOTES

1. Hay bales shall be a minimum of 30" in length and weigh a minimum of 50 Lbs.
2. Hay bales shall be bound by either wire or nylon or polypropylene string. The bales shall be composed entirely of vegetable matter.
3. Hay bales shall be embedded in the soil a minimum of 4" and where possible ½ the height of the bale.
4. Hay bales shall be placed in a row with ends tightly abutting the adjacent bales. The bales shall be placed with bindings parallel to the ground.
5. Hay bales shall be securely anchored in place with ⅜" Dia. rebar or 2" x 2" wood stakes, driven through the bales. The first stake shall be angled towards the previously laid bale to force the bales together.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

TEXAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & BALED HAY

EC(1)-93

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT				SHEET
	21						18
	COUNTY		CONTROL	SECTION	JOB		HIGHWAY
	HIDALGO						