



February 22, 2021

RE: Invitation to Bid Howard County RFB 2020013 GRH CR 21

Dear Contractor,

Howard County Road & Bridge thanks you for your interest in our Howard County RFB 2020013. In order to bid this Project you must be prequalified with the Road & Bridge Department. After reviewing the attached plans if you are interested in bidding please contact me for the prequalification questionnaire. The questionnaire must be returned to us a minimum of 5 days before the bid is due, in order for us to review. We will be taking bids now through March 18, 2021, 10:00 A.M. Your Bid Packet and specifications will be sent in a separate email once your questionnaire is sent. If you have any questions please feel free to contact me at (432) 264-2208 or brian.klinksiek@howardcountytexas.gov

Sincerely,

A handwritten signature in green ink that reads 'Brian J. Klinksiek'.

Brian J. Klinksiek P.E., D.R.

Invitation To Bid Howard County RFB 2020013 GRH CR 21

The Howard County Auditor will accept sealed bids until 10:00 AM on March 18, 2021. This bid requires prequalification with Howard County Road and Bridge Department, specifications may be obtained at that office, 3604 Old Colorado City Road, Big Spring, Texas 79720. The work is to supply labor, materials and equipment to rehabilitate CR 21 from FM 2230 to CR 32. Work includes reshaping ditches, widening subgrade, additional base, scarifying and shaping roadway, inverted prime & surface treatment.

Bids may be mailed to the Howard County Auditor, at P.O. Box 1949, Big Spring, Texas 79721-1949 or delivered to the Auditor's Office, Room 202, Howard County Courthouse. **Mark Sealed Envelope "RFB2020013"**

Bids will be presented to the Commissioner's Court at 3:30 PM March 22nd for their consideration. The Court reserves the right to reject any or all bids.

Jackie Olson-Howard County Auditor

NOTICE TO BIDDERS RFB 2020013

1. Bids are to be submitted on this form. Be sure to include pages 1-3. Each bid shall be placed in an envelope, sealed and properly identified with the bid title and delivered to the County Auditor's Office before 10:00 A.M., Wednesday, March 18, 2021. Late bids will not be considered under any circumstances. Mark Bids "RFB 2020013".

This is a bid to provide materials, labor and equipment to provide a completed project to Howard County. Bidders must be prequalified through the Howard County Road & Bridge Engineer to be opened. Contact Brian Klinksiek, P.E. at (432)-264-2208 to obtain this prequalification. All items must meet 2014 TxDOT Standard Specification. **Bid Bond or Check (5% of Bid), and Payment / Performance Bonds are required.** The successful bidder will be notified within 1 business day. The County will send the bidder a contract. **Insurance coverage limits shall conform to the attached Exhibit A.**

2. All work shown must be completed on or before September 15, 2021. Unless authorized in writing by the Howard County Road & Bridge Engineer, the open season for the application of asphalt is May 1 to September 15. Sunday work will only be allowed with written permission from the engineer.
3. Traffic control is subsidiary to the various items, however the safety of the traveling public of the utmost importance. Project Signage (Name signs, etc.) are not required, except at Centerpoint Rd. However double fines may not be enforceable without work zone signage. The Contract is to make this determination and provide sign with current TxDOT Standards.
4. The quantities in the proposal are approximate. The quantities of work and materials may be increased or decreased as considered necessary to complete the work as planned and contemplated.
5. The County is exempt from Federal Excise Tax, State Tax and Local Tax. Do not include tax in bid. If it is determined that tax was included in the bid, it will not be included in the tabulation or any awards and will be deleted from subsequent invoices.
6. Bids cannot be altered or amended after opening time. Any alterations made before opening time must be signed by the bidder or his agent. No bid can be withdrawn after the opening time without approval of the Commissioners' Court based on reasonable acceptable reason.
7. The County will evaluate the bids and make awards for supplies, materials, services and equipment on the basis of the lowest and best bid, which meet the specifications. Awarded bid will be paid for out of current county funds.
8. The County reserves the right to accept or reject all or any part of any bid and award the bid to best serve the interest of the County.
9. By signing and executing this bid, the bidder certifies and represents to the County that bidder has not offered, conferred or agreed to confer any pecuniary benefit or other thing of value for the receipt of special treatment, advantage, information, recipient's decision, opinion, recommendation, vote or any other exercise of discretion concerning this bid.

NOTICE TO BIDDERS RFB 2020013

10. Bidder further certifies and represents that bidder has not violated any State, Federal, Local Law regulations or ordinance relating to bribery, improper influence, collusion, discrimination or other similar crimes and all items or services provided or delivered under and awarded shall conform hereto.
11. Bid unit price on quantity specified, extend and show total. In case of errors in extension, unit price shall govern.
12. Unless otherwise noted, bid prices must be firm for acceptance 60 days from opening date of bid.
13. Engineer's estimate for this project is \$194,091.62.

EXHIBIT A

- A. Contractor shall, at all times during the term hereof, maintain such insurance coverage as may be required by County. All such insurance, including renewals, shall be subject to the approval of County for adequacy of protection and evidence of such coverage shall be furnished to County on Certificates of Insurance indicating such insurance to be in force and effect and providing that it will not be canceled during the performance of Work under this Agreement without thirty (30) calendar days prior written notice to County. Completed Certificates of Insurance shall be filed with County prior to the performance of services hereunder, provided however, that Contractor shall at any time upon request, file duplicate copies of the policies of such insurance with County.
- B. If in the judgment of County, prevailing conditions warrant the provision by Contractor of additional liability insurance coverage or coverage which is different in kind, County reserves the right to require the provision by Contractor of an amount of coverage different from the amounts or kind previously required and shall afford written notice of such change in requirements thirty (30) days prior to the date on which the requirements shall take effect. Should the Contractor fail or refuse to satisfy the requirement of changed coverage within thirty (30) days following County's written notice, this Agreement shall be considered terminated on the date that the required change in policy coverage would otherwise take effect.

General Conditions

The following conditions shall apply to all insurance policies obtained by Contractor for the purpose of complying with this Agreement:

- 1) Named Insureds: All insurance policies required herein shall be drawn in the name of Contractor, with County, its council members, board and commission members, officials, agents, guests, invitees, consultants and employees named as additional insureds, except on Workers' Compensation coverage.
- 2) Waiver of Subrogation: Contractor shall require its insurance carrier(s), with respect to all insurance policies, to waive all rights of subrogation against County, its council members, board and commission members, officials, agents, guests, invitees, consultants and employees.
- 3) Certificates of Insurance: At or before the time of execution of this Agreement,

Contractor shall furnish County's Risk Manager with certificates of insurance as evidence that all of the policies required herein are in full force and effect and provide the required coverage and limits of insurance. All certificates of insurance shall clearly state that all applicable requirements have been satisfied. The certificates shall provide that any company issuing an insurance policy shall provide to County not less than thirty (30) days advance notice in writing of cancellation, non-renewal, or material change in the policy of insurance. In addition, Contractor and insurance company shall immediately provide written notice to County's Risk Manager upon receipt of notice of cancellation of any insurance policy, or of a decision to terminate or alter any insurance policy. Certificates of insurance and notices of cancellations, terminations, or alterations shall be furnished to:
County Engineer at 3604 Old Colorado City Rd, Big Spring Texas 79720.

- 4) Contractor's Liability: The procurement of such policy of insurance shall not be construed to be a limitation upon Contractor's liability or as a full performance on its part of the indemnification provisions of this Agreement. Contractor's obligations are, notwithstanding any policy of insurance, for the full and total amount of any damage, injury, or loss caused by or attributable to its activities conducted at or upon the premises. Failure of Contractor to maintain adequate coverage shall not relieve Contractor of any contractual responsibility or obligation.
- 5) Subcontractors' Insurance: Contractor shall cause each Subcontractor and Sub-Sub-Contractor of Contractor to purchase and maintain insurance of the types and in the amounts specified below. Contractor shall require Subcontractors and Sub-Subcontractors to furnish copies of certificates of insurance to the County Engineer evidencing coverage for each Subcontractor and Sub-Subcontractor.

Types And Amounts Of Insurance Required

Contractor shall obtain and continuously maintain in effect at all times during the term hereof, at Contractor's sole expense, insurance coverage as follows with limits not less than those set forth below:

- 1) Commercial General Liability: This policy shall be occurrence-type policy and shall protect Contractor and additional insureds against all claims arising from bodily injury, sickness, disease or death of any person (other than Contractor's employees) and damage to property of County or others arising out of the act or omission of Contractor or its agents and employees. This policy shall include completed operations, products liability, contractual coverage, broad form property coverage, explosion, collapse, underground, premises/operations, and independent contractors (to remain in force for two years after final payment). Coverage limits shall not be less than:

\$ 1,000,000.00 General Aggregate
\$ 1,000,000.00 Products Completed Operations
\$ 1,000,000.00 Personal & Advertising Injury
\$ 1,000,000.00 Each Occurrence
\$ 100,000.00 Fire Damage (Any one Fire)

- 2) Business Automobile Liability: This policy shall protect Contractor and the additional insureds against all claims for injuries to members of the public and damage to property of others arising from the use of motor vehicles and shall cover operation on and off the premises of all motor vehicles licensed for highway use, whether they are owned, non-owned or hired. Coverage limits shall not be less than:

\$ 1,000,000.00 Combined Single Limit

- 3) Workers' Compensation and Employer's Liability: If Contractor hires any employees, Contractor shall maintain Workers' Compensation and Employer's Liability insurance, which shall protect Contractor against all claims under applicable state workers' compensation laws and employer's liability. The insured shall also be protected against claim for injury, disease or death of employees which for any reason, may not fall within the provisions of a workers' compensation law. Coverage shall not be less than:

Statutory Amount	Workers' Compensation
\$ 500,000.00	Employer's Liability, Each Accident
\$ 500,000.00	Employer's Liability, Disease - Each Employee
\$ 500,000.00	Employer's Liability, Disease - Policy Limit

DISCLOSURE OF CERTAIN RELATIONSHIPS

Effective January 1, 2006, Chapter 176 of the Texas Local Government Code requires that any vendor or person considering doing business with a local government entity disclose in the Questionnaire Form CIQ, the vendor or person's affiliation or business relationship that might cause a conflict of interest with a local government entity. By law, this questionnaire must be filed with the County Clerk of Howard County no later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code. A person commits an offense if the person violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

A copy of the law is available at:

<https://statutes.capitol.texas.gov/Docs/LG/htm/LG.176.htm>

Frequently ask questions are available at:

<https://www.county.org/TAC/media/TACMedia/Legal/Legal%20Publications%20Documents/2019-Disclosure-of-Certain-Business-Relationships.pdf>

The forms for reporting are available at:

<https://www.ethics.state.tx.us/data/forms/conflict/CIQ.pdf>

By submitting a response to this request, the vendor represents that it is in compliance with the requirements of Chapter 176 of the Texas Local Government Code.

Please turn completed forms to the Howard County Auditor's Office located at 300 Main, Room 202 Big Spring, TX or mail to P.O. Box 1949, Big Spring, TX 79721.

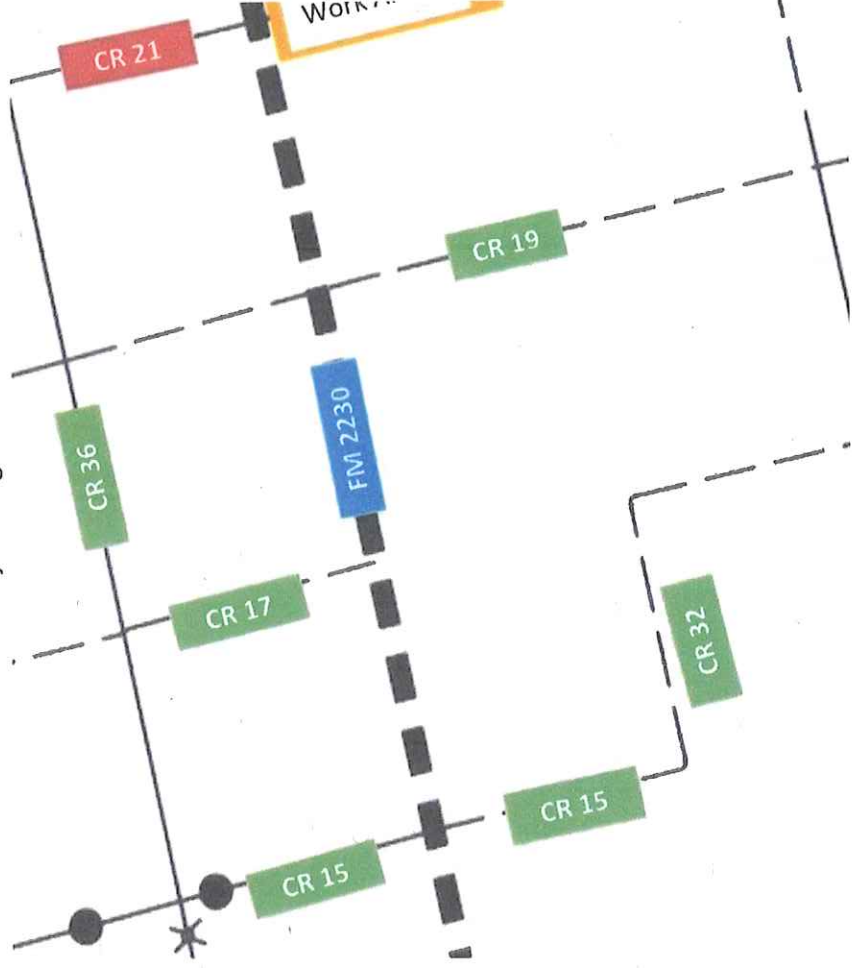
HOWARD COUNTY ROAD & BRIDGE DEPARTMENT PLANS OF PROPOSED COUNTY ROAD IMPROVEMENT

Project 2020013

For the Rehabilitation of CR 21 From FM 2230 T

Consisting of subgrade widening, base, scarifying & shaping, inverted surface treatment, and traffic control

Project Length: 5,105 Feet
Project Length: 0.97 Miles



1	Title Sheet
2	Typical Sections
3	General Notes
4	Estimated Quantities & Sequence of Work
5	Project Work Segments
6-17	BC (1)-14 Through BC (12)-14 *
18	TCP (1-2) - 18 *
19	Storm Water Pollution Prevention Plan
20	Environmental Permits, Issues and
	Commitments (EPIC)
21	EC(2)-16 Rock Filter Dams

The standard sheets specifically identified above with an (*) have been selected by me or under my responsible supervision as being applicable to this project.

Brian J. Klinksiek, P.E.
Date: 1-25-2021



R.O.W.

60ft

20ft

20ft

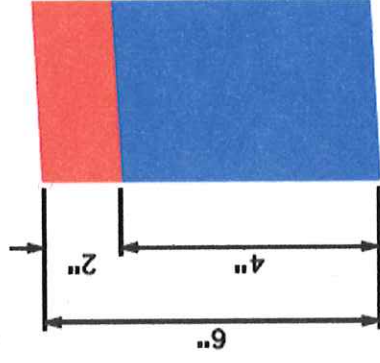
20ft

Travel Way

10ft Lane

10ft Lane

Existing Typ. Section



Proposed

R.O.W.

18ft

24ft Reclaim

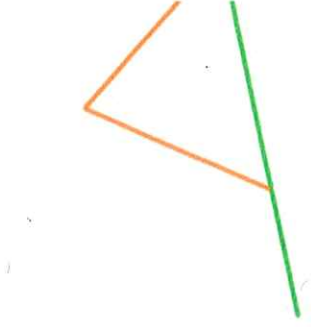
18ft

Travel Way

12ft Lane

12ft Lane

Proposed Typ. Section



Proposed

Contractor to wi

General Notes

All pages of the bid package must be initialed or signed as indicated for a bid to be considered complete. This package has 3 pages

All Items reference the Texas Department of Transportation 2014 English Specification Book

Bids will be opened at 10:00 AM March 18, 2021 in the Howard County Auditor's Office. Final acceptance of bids will made be during the regular session of Howard County Commissioner's Court at 3:30 PM March 22, 2021.

In order to qualify to have a bid read the contractor must prove that they have the knowledge and capability to perform the work described herein. Provide the Howard County Road & Bridge (HC R&B) Engineer with a list of personnel, their experience, and references from recent jobs. Traffic control is of the utmost importance for the safety of the traveling public of Howard County. Documentation on traffic control certifications must also be provided. The Engineer will supply to the Auditor a list of all contractors meeting the qualification process before the bid opening. If a contractor has worked for Howard County Road & Bridge within the last 8 years they may request placement on the list based solely on their previous work without the need for documentation.

Delineate stockpiles located in the right of way with 42" cones at 75 foot on center or as approved in writing by the Engineer. Failure to meet this requirement will impact payment of Material on Hand. Stockpiles should maintain a 7 foot clear zone from the edge of pavement. Stockpile placed on TxDOT right of way must conform to the Abilene district stockpile procedure to qualify for payment of Material on hand.

The Engineer has secured stockpile locations and will assist the contractor in locating these locations. These locations are noted on the plans. If the Contractor sees the need for additional stockpile locations the Engineer is willing to assist in locating and securing additional sites. The Contractor is not limited to these locations and may find their own alternate locations. Howard County is not responsible for cleaning these locations and any material left there must be delivered to the Howard County Road & Bridge Yard in Big Spring prior to final payment being made

A Preconstruction conference shall be held at the Howard County Road & Bridge Office, located at 3604 Old Colorado City Road, in order to establish starting date and location. A written notice to proceed will be given at this conference and work may then commence.

Payment for Material on Hand will be allowed. Contractor must submit the supplier's invoice to the Road & Bridge Engineer's office. Road & Bridge will verify quantity in place within Howard County and check for proper traffic control before submitting the invoice to be paid. Materials so submitted and paid become the property of Howard County.

Unless authorized in writing by the Howard County Road & Bridge Engineer, the open season for the application of

Item 247-6043 FL BS (CMP IN PLC

- a) **Aggregate:** Furnish uncr specifications. Notify th Engineer may sample ar the project to assure sp
- b) **Water:** Howard County is located at the interse
- c) **Compaction:** Howard Cr in accordance with the

Item 310-9000 RC 250, GR-5 INVE Aggregate will conform t 120 to 130 SY/CY. Adjust

Asphalt will conform to T Gal/Sy. Adjustment may

Item 316-6005 SEALCOAT COUNT Aggregate will conform 100 SY/CY. Adjustment

Asphalt will conform to application rate will be l the Engineer

INTERSECTIONS:

Howard County Road & Bridge mai Section. By agreement with TxDOT TxDOT maintained roadways. This i cover the same intersection in the however it is The Road & Bridge En Therefore a \$500.00 penalty will b inverted primed and or sealcoated.

Engineer's Estimate:

Howard County Road & Bridge Eng



Estimated Project Quantities						
Length	Existing Width	Design Width	Widening Depth	Plating Depth	FL BS (CMP IN PLC) (TY B GR 3) (FNAL POS)	0247 6047 INVERT PRIME CNTY RDS (RC-250) (TY-B GR 5S)
Ft	Ft	Ft	In	In	CY	SY
5,105	20	24	6	2	1,008	13,613

Suggested Sequence of Work	
1) Widen 1/2 mile section	1.1) Place daily temporary traffic control. Reference TCP 1-1
	1.2) Using road widener remove existing material to form 2 foot widening for length of section on eac
	1.3) Using Drag Box place base windrow. Once Motor Grader complete item 2 remove road widen anc
	1.4) Water, Compact and Sweep to allow for overnight traffic
	1.5) fold all sign down for night.
2) Cap existing Pavement	2.1) Place daily temporary traffic control. Reference details page 5
	2.2) Using Drag Box place base windrow on half of roadway. Spread to an even 2" layer w/ Motor Grai
	2.3) Water, and Compact to allow for overnight traffic
3) Reclaim Widened & Capped Section	3.1) Place daily temporary traffic control. Reference details page 5. Note this section will be 1 mile in l
	3.2) Using Reclaimer, Water tanker reclaim to a 5" depth, controlling moisture across roadway.
	3.3) Compact reclaimed strips until reclaimed roadway is compacted.
	3.4-3.8) repeat steps 1.1 through 1.5 on next section.
	3.9) Shape reclaimed roadway to allow night traffic.
4) Repeat ltrms 1-3 until all segments of the road are reclaimed	Refere to page 4 for number of segm
5) Shape roadway.	5.1) Place daily temporary traffic control. Reference details page 5. Note this section will be variable L
	5.2 Shape with motor Grader, Water, and Compact
	5.3) open roadway to traffic at night.
6) Clean and shape ditches	

Estimated Disturbed Soil Quantities

CR 32

CR 21

Seg 1 (1/2

Seg 2 (1/2

CR 19

FM 2230

CR 17

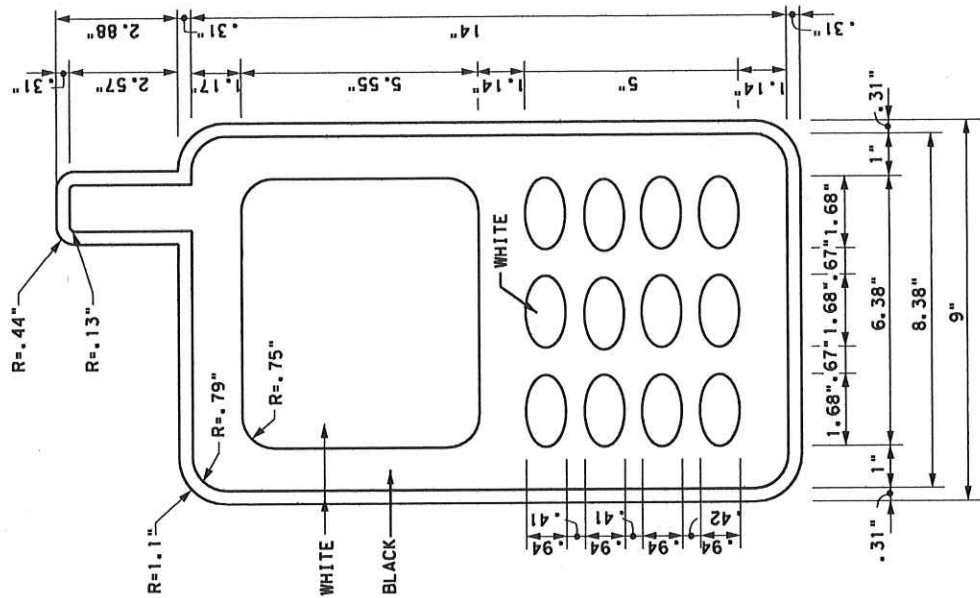
CR 32

CR 17

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
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 approximate location of any device without the approval of the Engineer.
5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.
6. When projects about, 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 shall 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.
7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. 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.
9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
10. As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER (see Sign Detail G20-10T) and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.
11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer has the final decision on the location of all traffic control

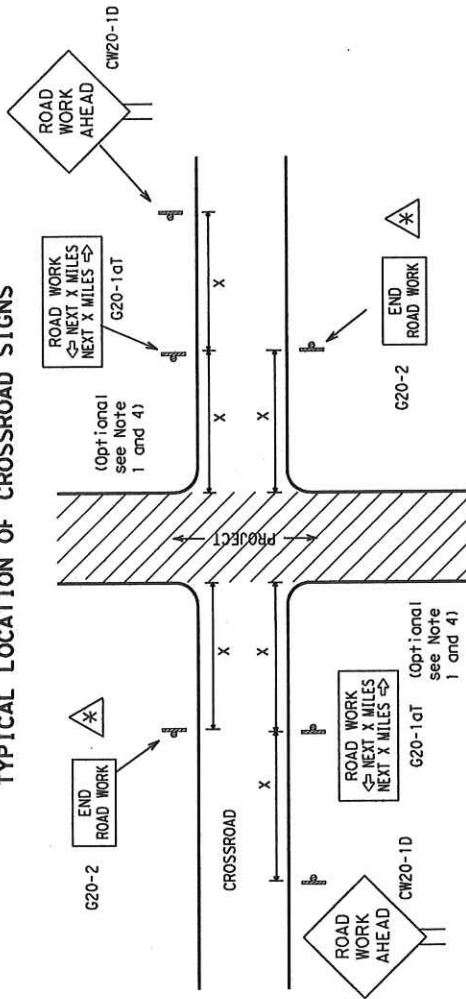
UNDISCLAIMED: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



Only pre-qualified products shall be us Traffic Control Devices List" (CWZTCD) and their sources and may be found on-l below or by contacting:

Texas Department of Transportation
Traffic Operations Division - TE
phone (512) 416-3118

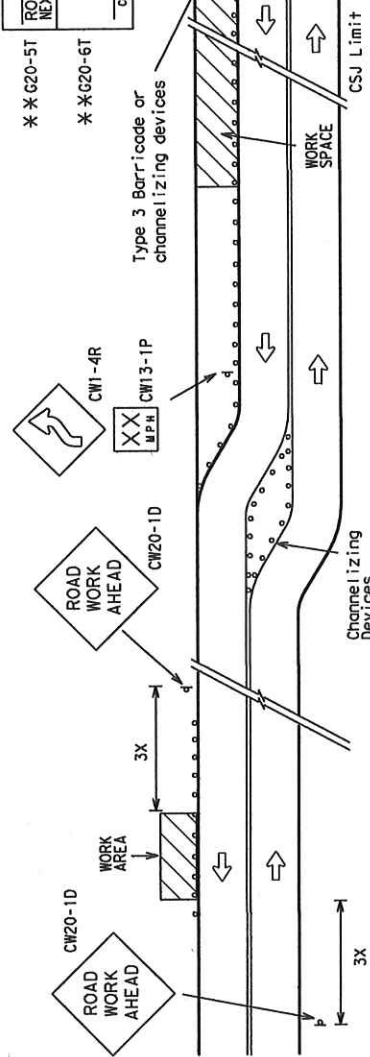
TYPICAL LOCATION OF CROSSROAD SIGNS



May be mounted on back of "ROAD WORK AHEAD" (CW20-1D) sign with approval of Engineer.
(See note 2 below)

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D) sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" "ROAD WORK AHEAD" (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK" (G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). 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 "ROAD WORK NEXT X MILES" (G20-1aT) sign shall be required at high volume 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.

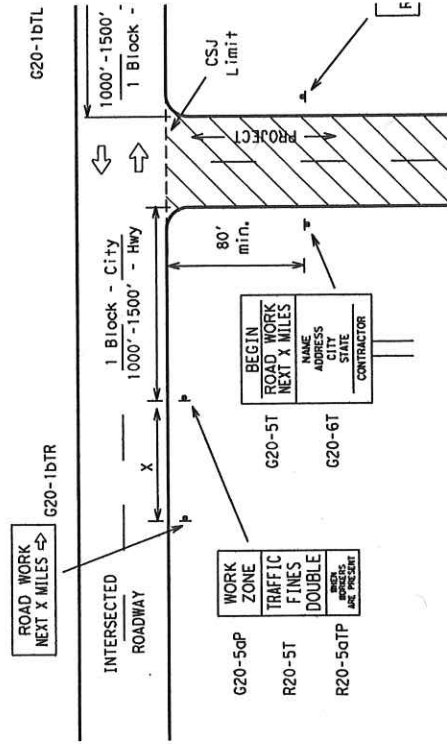
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



When extended distances occur between minimal work spaces, 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.

CAMPAIGN 1 ADVISORY OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS

T-INTERSECTION

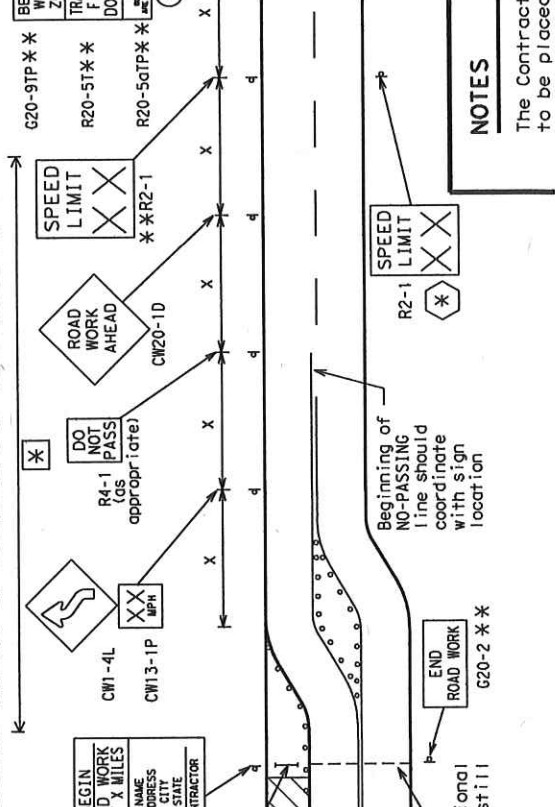


CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional such as a flagger and accompanying signs, or other signs, that shall be performed at or near an intersection.

2. If construction closes the road at a T-intersection the Contractor NAME" (G20-6T) sign behind the Type 3 Barricades for the road closure. The "ROAD WORK NEXT X MILES" left arrow (G20-1bTL) and "ROAD WORK NEXT X MILES" (G20-1bTR) signs shall be replaced by the detour signing called for

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMIT



NOTES

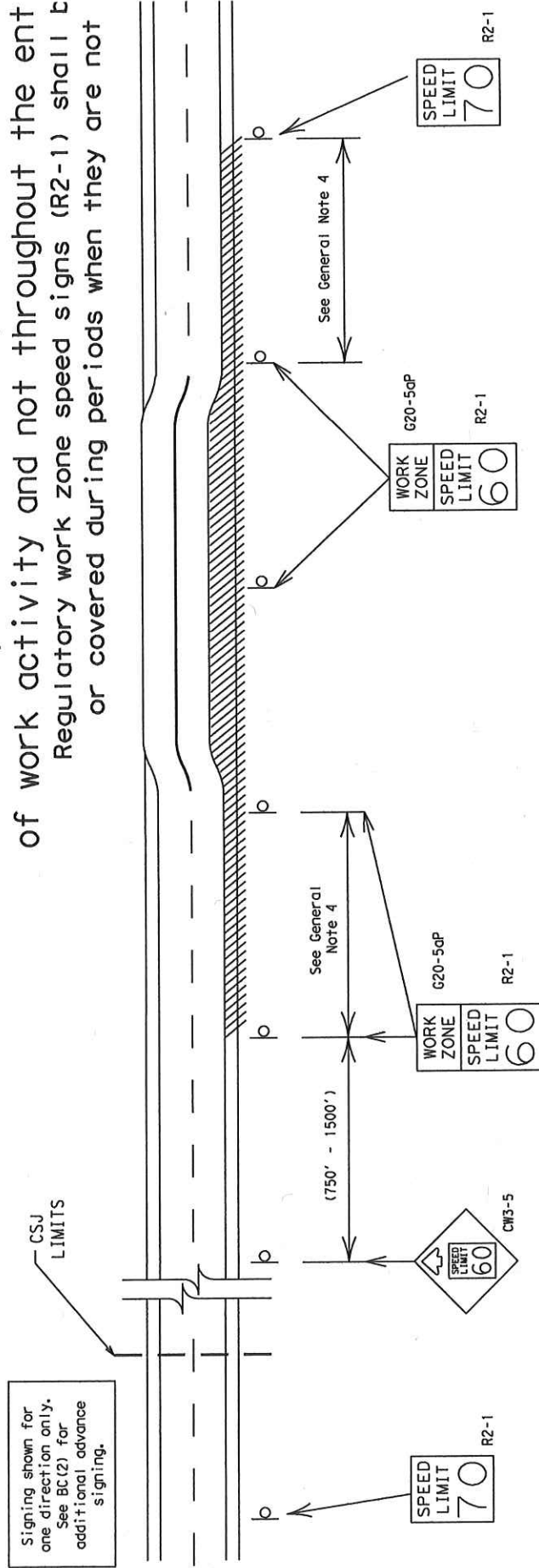
The Contract to be placed

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

TYPICAL APPLICATION OF WORK ZONE SPEED

Work zone speed limits shall be regulatory, established in accordance with the "Procedures and approved by the Texas Transportation Commission, or by City Ordinance when within

Reduced speeds should only be posted in the of work activity and not throughout the entire Regulatory work zone speed signs (R2-1) shall be or covered during periods when they are not



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, when approved as described above, should be posted and visible to the motorist when work activity is present. 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:

- rough road or damaged pavement surface
 - substantial alteration of roadway geometrics (diversions)
 - construction detours
 - grade
 - width
 - 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.

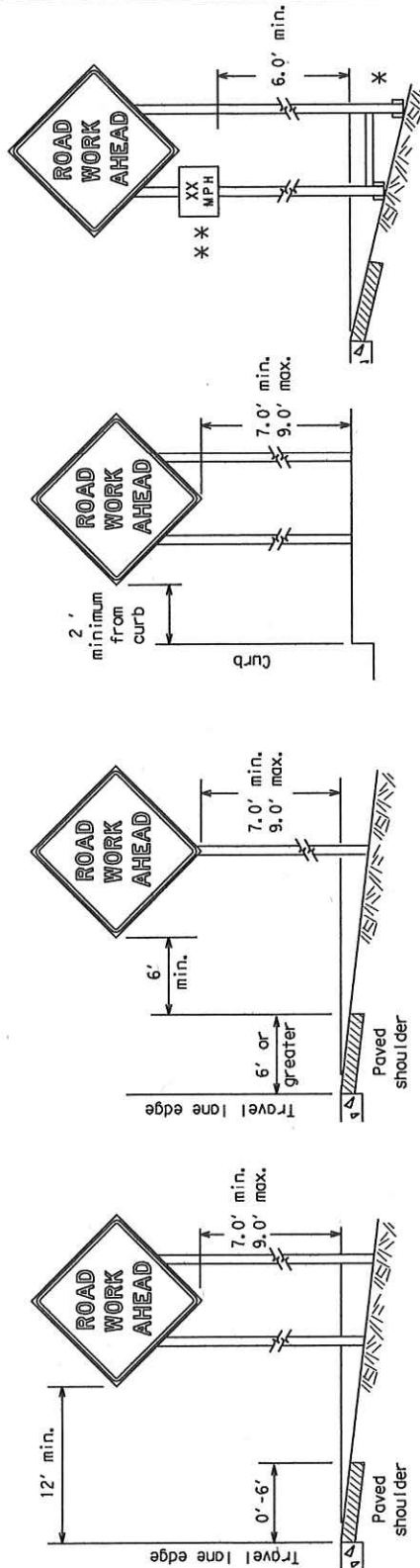
SHORT TERM WORK ZONE SPEED LIMITS

GENERAL NOTES

- Regulatory work zone speed limits should be used on projects where speed control is of major importance.
- Regulatory work zone speed limit signs shall be placed mounting height.
- Speed zone signs are illustrated for one direction c for each direction of travel.
- Frequency of work zone speed limit signs should be:

40 mph and greater	0.2 to 2 miles
35 mph and less	0.2 to 1 mile
- Regulatory speed limit signs shall have black legend background (See "Reflective Sheeting" on BC(4)).
- Fabrication, erection and maintenance of the "ADVANCE WORK ZONE" (G20-5aP) plaque and the "SPEED LIMIT" (R2) directly, but shall be considered subsidiary to Item
- Turning signs from view, laying signs over or down w otherwise noted under "REMOVING OR COVERING" on BC(4)

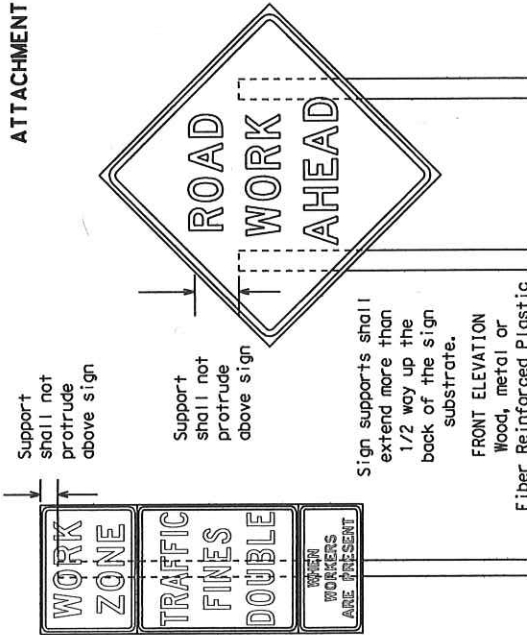
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



* When placing skid supports on uneven 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.

** When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS



Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the splice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24" as detailed below.
2. When used at night, the STOP/SLOW paddle shall be retroreflectORIZED.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.

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. Before installation through a work zone read the sign if not better suited.

GENERAL NOTES FOR WORK

1. Contractor shall install signs.
2. Wooden sign posts shall be installed in accordance with the Texas Engineering Practice Act.
3. Barricades shall NOT be used to guide the traveling public.
4. All signs shall be installed in accordance with the Texas Engineering Practice Act.
5. The Contractor may furnish the plans. Any work done by the Contractor shall be in accordance with the Texas Engineering Practice Act.
6. The Contractor shall install the signs in accordance with the Texas Engineering Practice Act.
7. The Contractor is responsible for the correct placement of the signs.
8. Identification marking shall be used for identification of the signs.
9. The Contractor shall install the signs in accordance with the Texas Engineering Practice Act.

DURATION OF WORK

1. The types of sign support work being performed. Contractor is responsible for the duration of the work in regard to crashworthiness.
 - a. Long-term stations
 - b. Intermediate-term more than one hour
 - c. Short-term station
 - d. Short, duration - Mobile - work that

SIGN MOUNTING HEIGHT

1. The bottom of Long-term sign shall be 7.0' min. to 9.0' max. as shown for supplement work.
2. The bottom of Short-term sign shall be 6.0' min. to 7.0' max. as shown for supplement work.
3. Long-term/Intermediate-term sign shall be 7.0' min. to 9.0' max. as shown for supplement work.
4. Short-term/Short Duration sign shall be 6.0' min. to 7.0' max. as shown for supplement work.
5. Regulatory signs shall be 6.0' min. to 7.0' max. as shown for supplement work.

SIZE OF SIGNS

1. The Contractor shall install signs in accordance with the Texas Engineering Practice Act.

SIGN SUBSTRATES

1. The Contractor shall use the following materials for sign substrates:
 1. "Mesh" type materials
 2. All wooden individual fasteners to the back of signs that do not penetrate the sign center. The Engineer shall determine the fasteners to be used.

REFLECTIVE SHEETING

1. All signs shall be retroreflectORIZED for rigid signs or DMS for flexible signs.
2. White sheeting, meet in the center.
3. Orange sheeting, meet in the center.

SIGN LETTERS

1. All sign letters and numbers shall be in accordance with the Texas Engineering Practice Act.

REMOVING OR COVERING

1. When sign messages may be removed or covered, the Contractor shall install a temporary sign in the same location.
2. Long-term stations where the sign message is not to be removed or covered, the Contractor shall install a temporary sign in the same location.

SIGNS INSTALLED ON WOOD

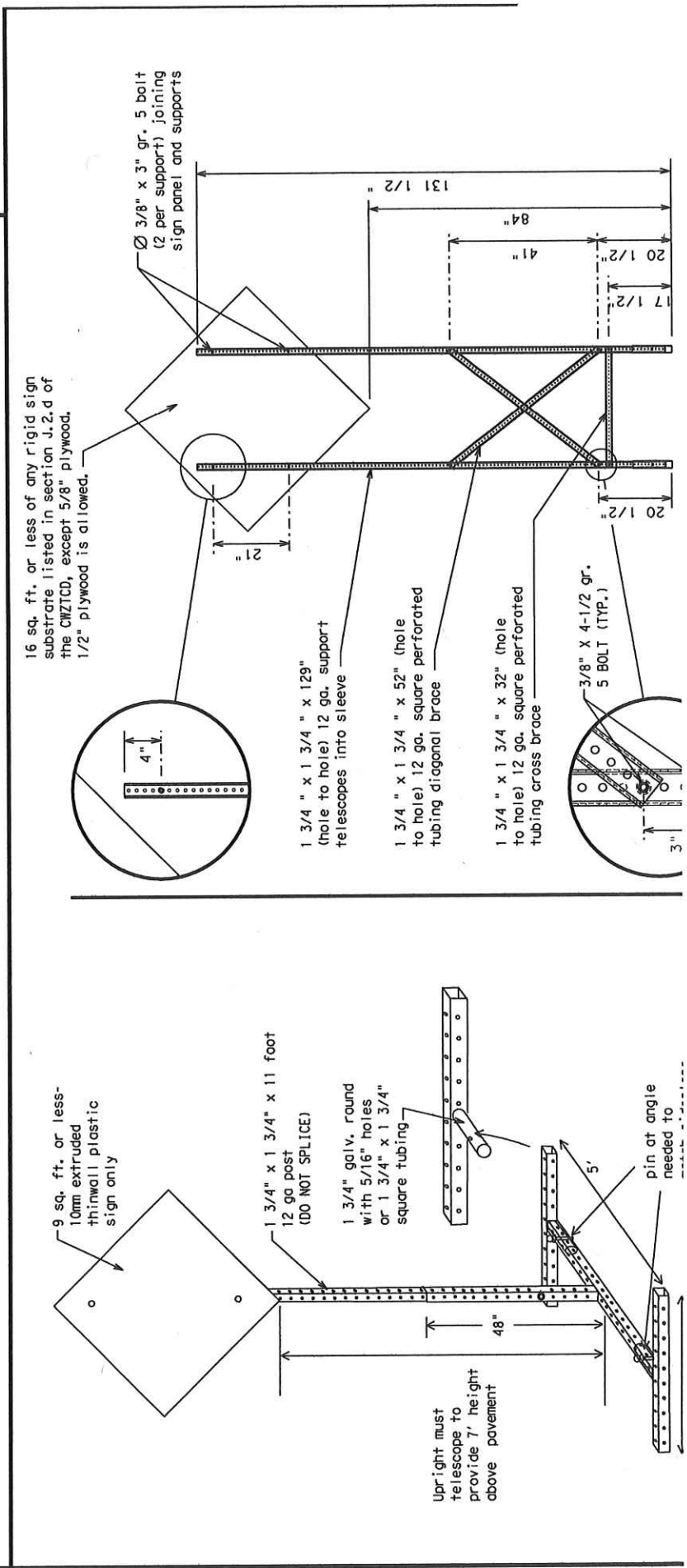
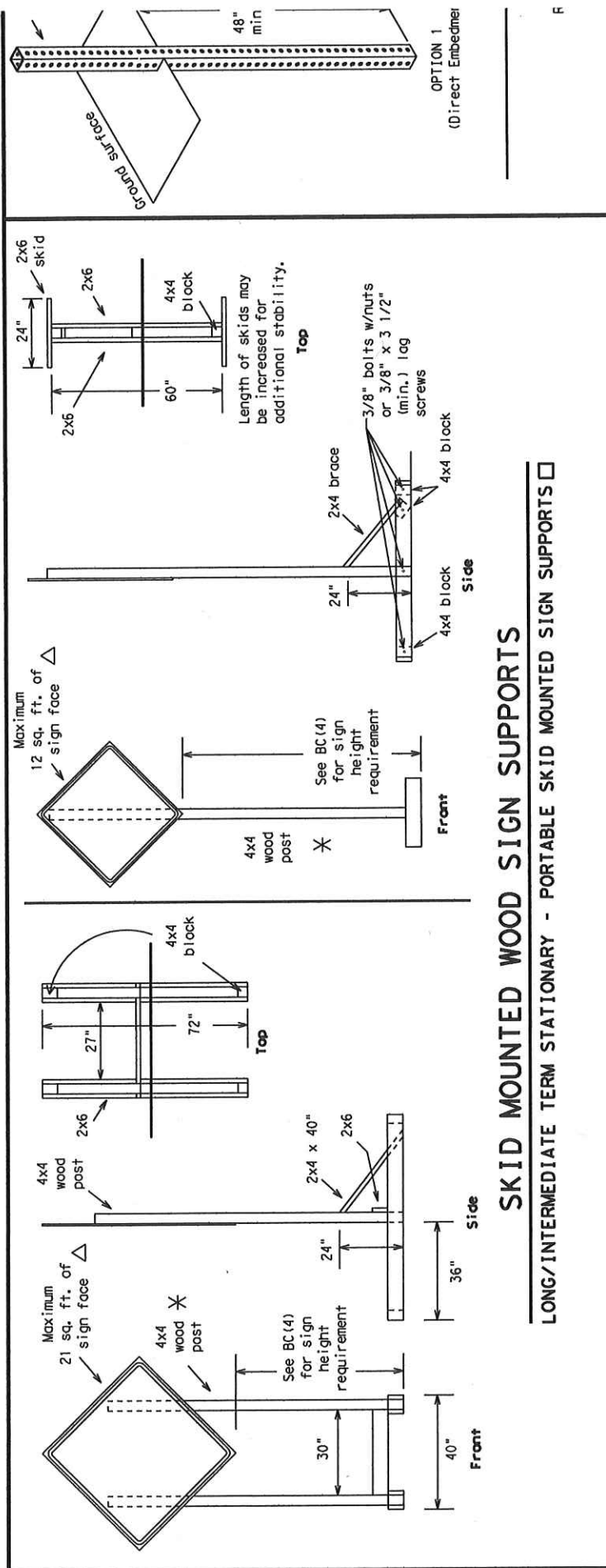
1. Signs installed on wood shall be covered when not required.
2. When signs are covered, the Contractor shall install a temporary sign in the same location.
3. Burlap shall NOT be used to cover signs.
4. Duct tape or other adhesive shall NOT be used to cover signs.
5. Signs and anchor studs shall be installed in accordance with the Texas Engineering Practice Act.

SIGN SUPPORT WEIGHTS

1. Where sign supports are installed, the Contractor shall install a temporary sign in the same location.

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RECOMMENDED PHASES AND FORMATS FOR PCM:

(The Engineer may approve other messages not :

WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

PORTABLE CHANGEABLE MESSAGE SIGNS

- The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
- Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
- Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
- Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
- Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
- When in use the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
- 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.
- 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 three seconds each.
- Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
- 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.
- Do not use the word "Danger" in message.
- Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
- Do not display messages that scroll horizontally or vertically across the face of the sign.
- 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, unless shown in the TMCOD.
- PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
- Each line of text should be centered on the message board rather than left or right justified.
- If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

WORD OR PHRASE	ABBREVIATION	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major	MAJ
Alternate	ALT	Miles	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MNR
Boulevard	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Cannot	CANT	North	N
Center	CTR	Northbound	(route) N
Construction Ahead	CONST AHD	Parking	PKING
CROSSING	XING	Road	RD
Detour Route	DETOUR RTE	Right Lane	RT LN
Do Not	DONT	Saturday	SAT
East	E	Service Road	SERV RD
Eastbound	(route) E	Shoulder	SHLDR
Emergency	EMER	Slippery	SLIP
Emergency Vehicle	EMER VEH	South	S
Entrance, Enter	ENT	Southbound	(route) S
Express Lane	EXP LN	Speed	SPD
		Street	ST

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Phase 1: Condition Lists

Road/Lane/Ramp Closure List

FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED	ROADWORK XXX FT	ROAD REPAIRS XXXX FT
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT	FLAGGER XXXX FT	LANE NARROWS XXXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT	RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
RIGHT X LANES CLOSED	RIGHT X LANES OPEN	MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
CENTER LANE CLOSED	DAYTIME LANE CLOSURES	LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED	DETOUR X MILE	ROUGH ROAD XXXX FT
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE	ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
EXIT CLOSED	RIGHT LN TO BE CLOSED	BUMP XXXX FT	US XXX EXIT X MILES
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI	TRAFFIC SIGNAL XXXX FT	LANES SHIFT
XXXXXXXXXX BLVD CLOSED			*

Other Condition List

ROADWORK XXX FT	ROAD REPAIRS XXXX FT
FLAGGER XXXX FT	LANE NARROWS XXXX FT
RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
DETOUR X MILE	ROUGH ROAD XXXX FT
ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
BUMP XXXX FT	US XXX EXIT X MILES
TRAFFIC SIGNAL XXXX FT	LANES SHIFT

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

APPLICATION GUIDELINES

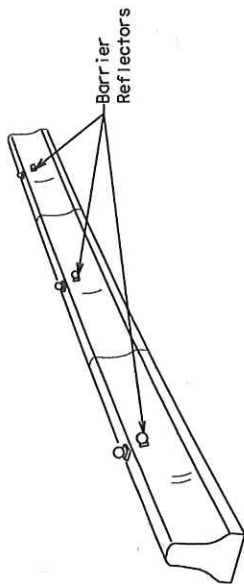
- Only 1 or 2 phases are to be used on a PCMS.
- The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
- A 2nd phase can be selected from the "Action to Take/Effect on Travel", Location, General Warning, or Advance Notice Phase Lists.
- A Location Phase is necessary only if a distance or location is not included in the first phase selected.
- If two PCMS are used in sequence, they must be separated by a minimum of 1000 ft. Each PCMS shall be limited to two phases, and should be understandable by themselves.
- For advance notice, when the current date is within seven days of the actual work date, calendar days should be replaced with days of the week. Advance notification should typically be for no more than one week prior to the work.

WORI
1. Tr
2. R
3. E
4. H
5. R
6. A
7. F
8. A
9. D
10. L

Action

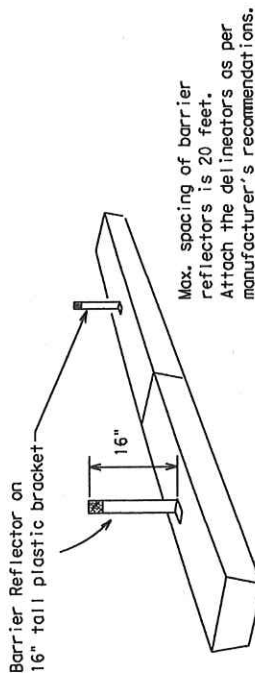
ME RI	ROAD REPAIRS XXXX FT
DET NE X E	LANE NARROWS XXXX FT
U EXIT	TWO-WAY TRAFFIC XX MILE
STA US SO	CONST TRAFFIC XXX FT
TR U US	UNEVEN LANES XXXX FT
WA F TRL	ROUGH ROAD XXXX FT
EXF DEL	ROADWORK NEXT FRI-SUN
REL SP XX	US XXX EXIT X MILES
U OT ROL	LANES SHIFT
ST 1 L	

- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors shall be as specified in the TMTCD. The cost of the reflectors shall be considered subsidiary to Item 512.

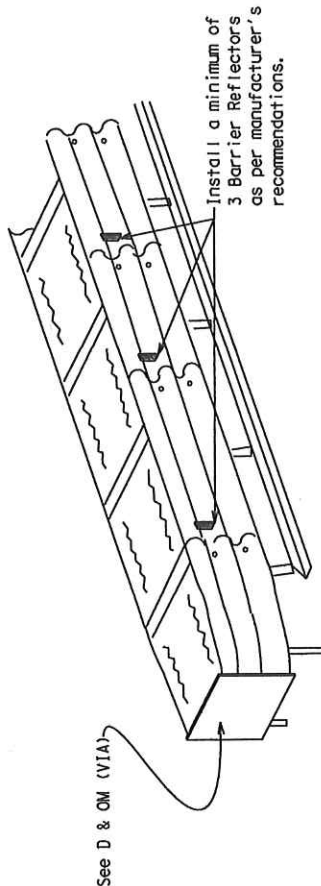


CONCRETE TRAFFIC BARRIER (CTB)

- Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
- Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (Bi-Directional) while the reflectors on each side of the barrier shall have one yellow reflective face, as shown in the detail above.
- When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
- Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
- Maximum spacing of Barrier Reflectors is forty (40) feet.
- Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
- Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
- Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
- Single slope barriers shall be delineated as shown on the above detail.



LOW PROFILE CONCRETE BARRIER (LPCB)



DELINEATION OF END TREATMENTS

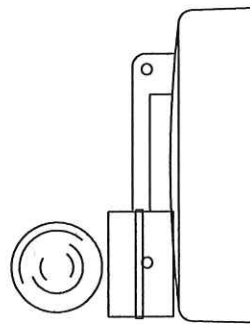
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

- Warning lights shall meet the requirements of the TMTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the Departmental Material Specification DMS-8300, not be used with signs manufactured with Type B_{FL} or C_{FL} Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
- Type-C and Type D 360 degree 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".
- The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
- 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.
- When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
- The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.



Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.

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GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
3. For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
4. 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).
5. 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.
6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following 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, warning reflector unit or approved compliant 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 maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

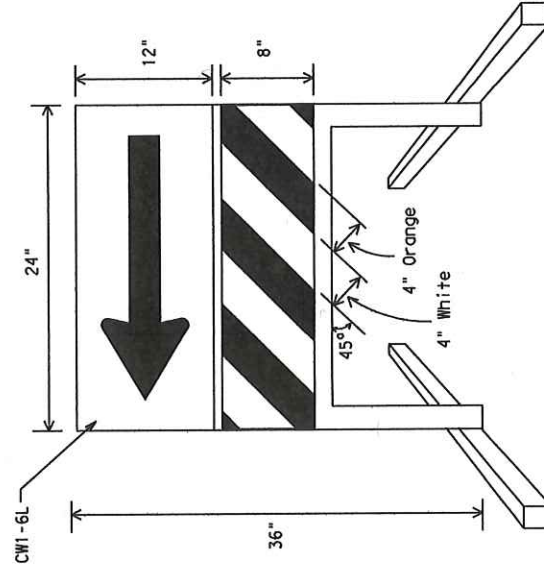
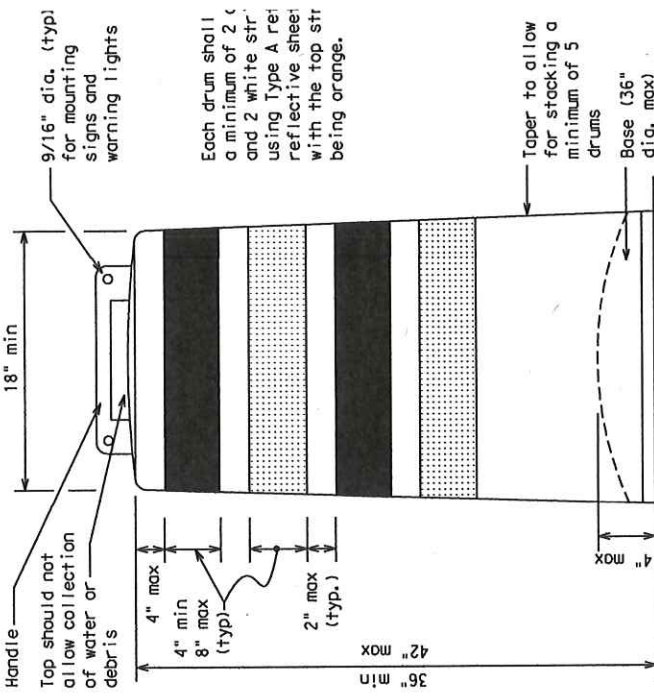
RETROREFLECTIVE SHEETING

1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A 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, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

BALLAST

DIRECTION INDICATOR BARRICADE

1. The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional

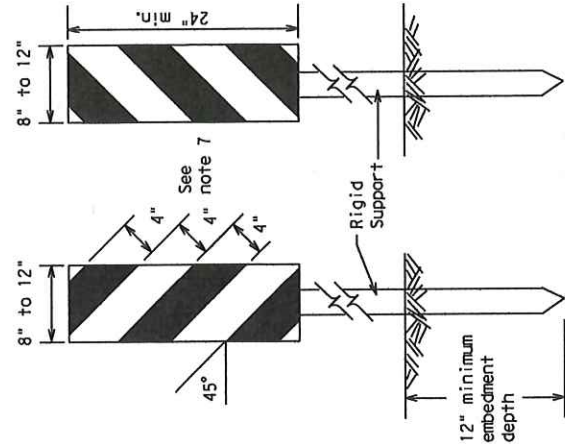
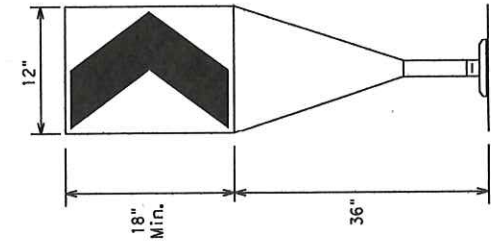


DETECTABLE PEDESTAL

1. When existing pedestrian

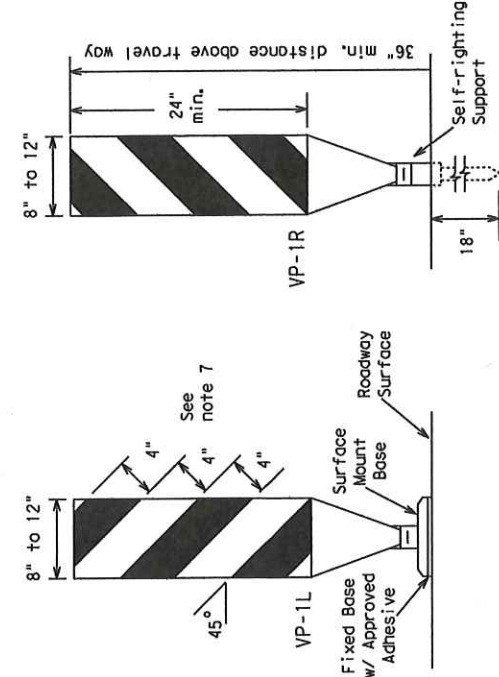
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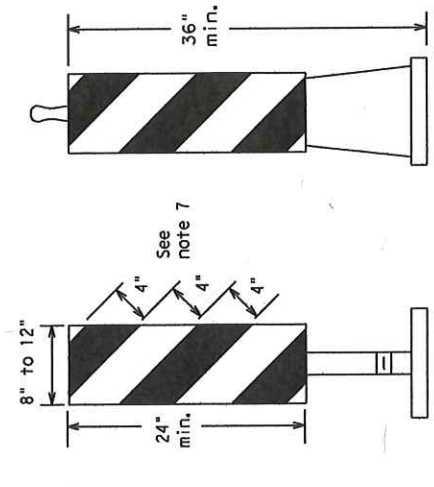
DRIVEABLE

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 and freeways or other high speed roadways, may have more than 270 square inches 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 A conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.



FIXED

(Rigid or self-righting)

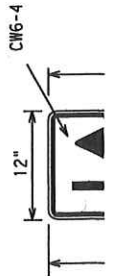


(Rigid or self-righting)

PORTABLE

VERTICAL PANELS (VPs)

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

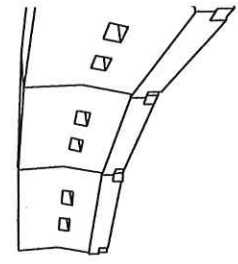


WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used so work space per the appropriate NCHRP 350 crashworthiness requirement.

CHEVRONS

1. The chevron shall be minimum size of 12 by 18 inches.
2. Chevrons are intended to change of alignment and provide additional vehicle operators with horizontal alignment.
3. Chevrons, when used, side of a sharp curve of an intersection. T and at right angles to spacing should be such has three in view, un eliminates its need.
4. To be effective, the for at least 500 feet
5. Chevrons shall be arative legend. Sheeting retroreflective Type Departmental Material unless noted otherwise's requirements of DMS-8
6. For Long Term Station transitions on freeway self-righting chevron plastic drums but not



LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs are crashworthy, lightweight, deformable devices that are connected together. They are not designed to contain or redire
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installic used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obs
5. LCDs shall be supplemented with retroreflective delineation as on BC(7) when placed roughly parallel to the travel lanes.
6. LCDs used as barricades placed perpendicular to traffic shall sheeting meeting the requirements for barricade rails as shown LCD along the full length of the device.

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

1. Refer to the Compliant Work Zone Traffic Control Devices List (CHWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 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 strapping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road strapping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, strapping 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. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. 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.
9. Sheeting for barricades shall be retroreflective type A conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Minimum width of Reflective Sheet 7 inches.

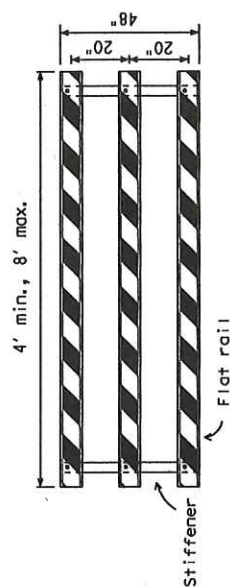
8" nominal

45°

6"

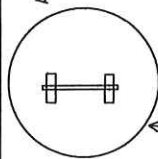
6"

ATYPICAL STRIPING DETAIL FOR BARRICADE RAIL



Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

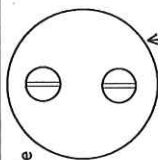
**TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES**



Alternate

Approx.

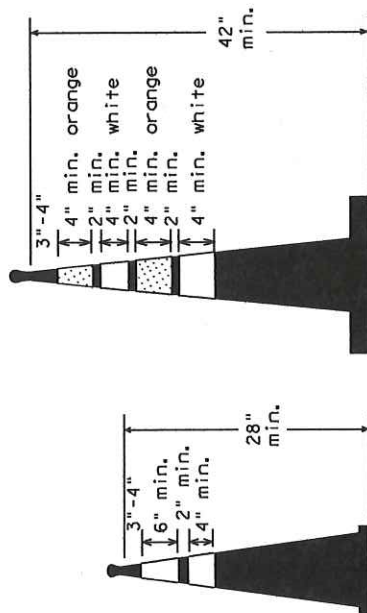
Drums, vertical panels or 42" cones
at 50' maximum spacing



Alternate

Approx.

Two-Piece cones



One-Piece cones

28" Cones shall have a minimum weight of 30 lbs. including base.

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

1. Refer to the Compliant Work Zone Traffic Control Devices List (CHWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 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 strapping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road strapping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, strapping 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. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. 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.
9. Sheeting for barricades shall be retroreflective type A conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

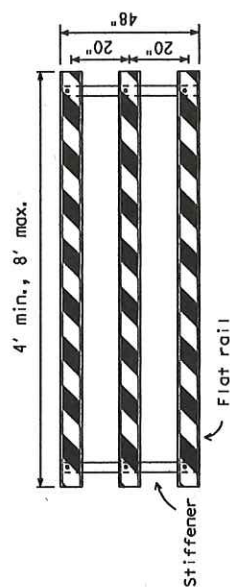
Minimum width of Reflective Sheet 7 inches.

8" nominal

45°

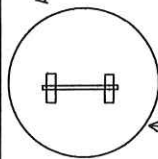
6" 6"

ATYPICAL STRIPING DETAIL FOR BARRICADE RAIL



Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

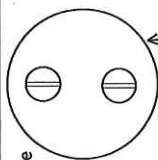
**TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES**



Alternate

Approx.

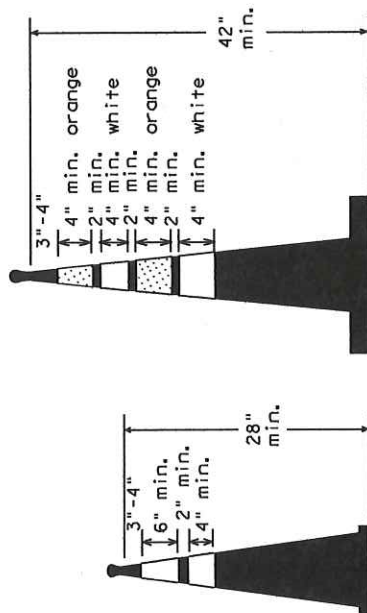
Drums, vertical panels or 42" cones
at 50' maximum spacing



Alternate

Approx.

Two-Piece cones



One-Piece cones

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

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 PASS WITH CARE signs at the beginning of 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(12).
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.

PREFABRICATED PAVEMENT MARKINGS

1. Removable prefabricated pavement markings shall meet the requirements of DMS-8241.
2. Non-removable prefabricated pavement markings (foil back) shall meet the requirements of DMS-8240.

MAINTAINING WORK ZONE PAVEMENT MARKINGS

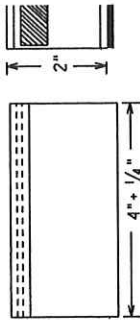
1. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
2. Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
3. The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 160 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 within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

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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 three days, where floggers 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 discernable marking. This shall be by any method approved by TxDOT Specification Item 677 for "Eliminating Existing Pavement Markings and Markers".
4. The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
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.
10. Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

TOP VIEW



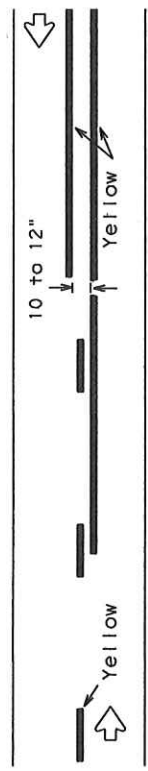
STAPLES OR NAILS SHA TEMPORARY FLEXIBLE-F TABS TO THE

1. Temporary flexible-reflective shall meet the requirements of
2. Tabs detailed on this sheet or Engineer or designated representative required, however at or "B" below may be imposed to roadway.
3. Small design variances may be
4. See Standard Sheet WZ(STPM) for Standard Sheet TCP(7-1) for
5. Select five (5) or more and submit to the Construction Section to determine spe
6. Select five (5) tabs and (5) tabs at 24 inch intervals straight line. Using a m run over the markers with of 35 to 40 miles per ho more than one (1) out of be lost or displaced as

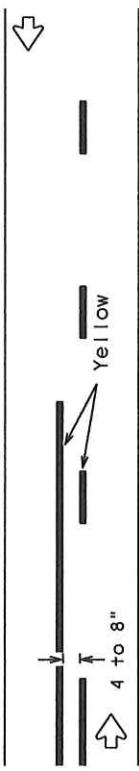
RAISED PAVEMENT MARK

1. Raised pavement markers used product list, and meet the re
2. All temporary construction ra project shall be of the same
3. Adhesive for guidemarks shall butyl rubber pad for all surf surfaces.
4. Guidemarks shall be designated a YELLOW - (two amber reflectiv WHITE - (one silver reflectiv

PAVEMENT MARKING PATTERNS



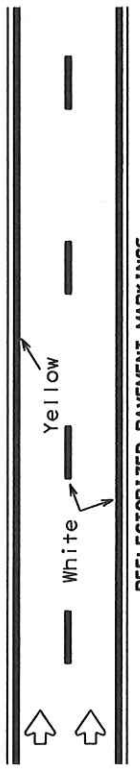
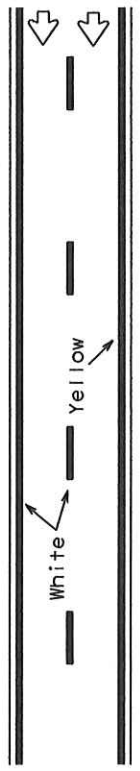
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

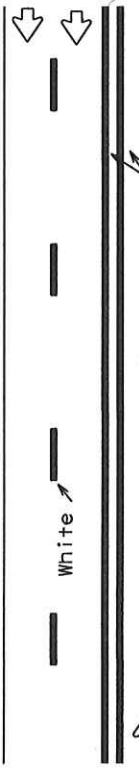
Pattern A is the TxDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectorized pavement markings.

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

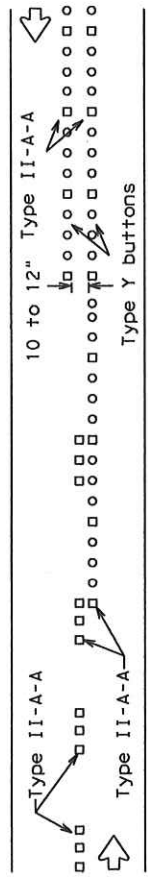


Prefabricated markings may be substituted for reflectorized pavement markings.

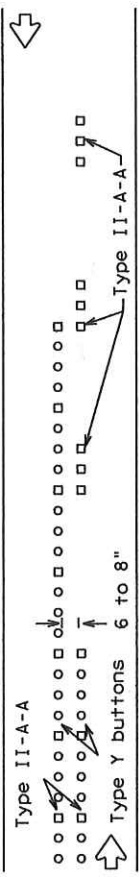
EDGE & LANE LINES FOR DIVIDED HIGHWAY



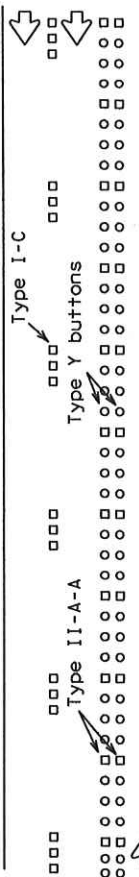
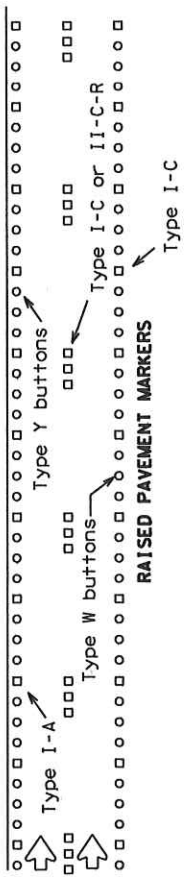
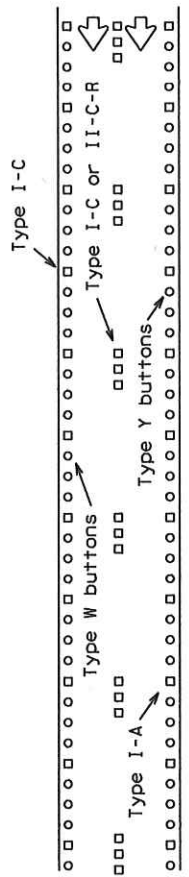
Prefabricated markings may be substituted for reflectorized pavement markings.



RAISED PAVEMENT MARKERS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN B



RAISED PAVEMENT MARKERS

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS

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SOL
LIN

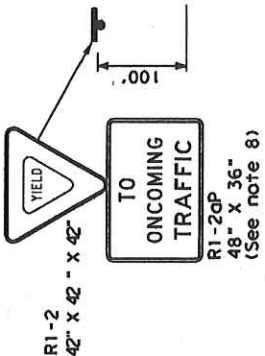
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LIN

REM
PAI

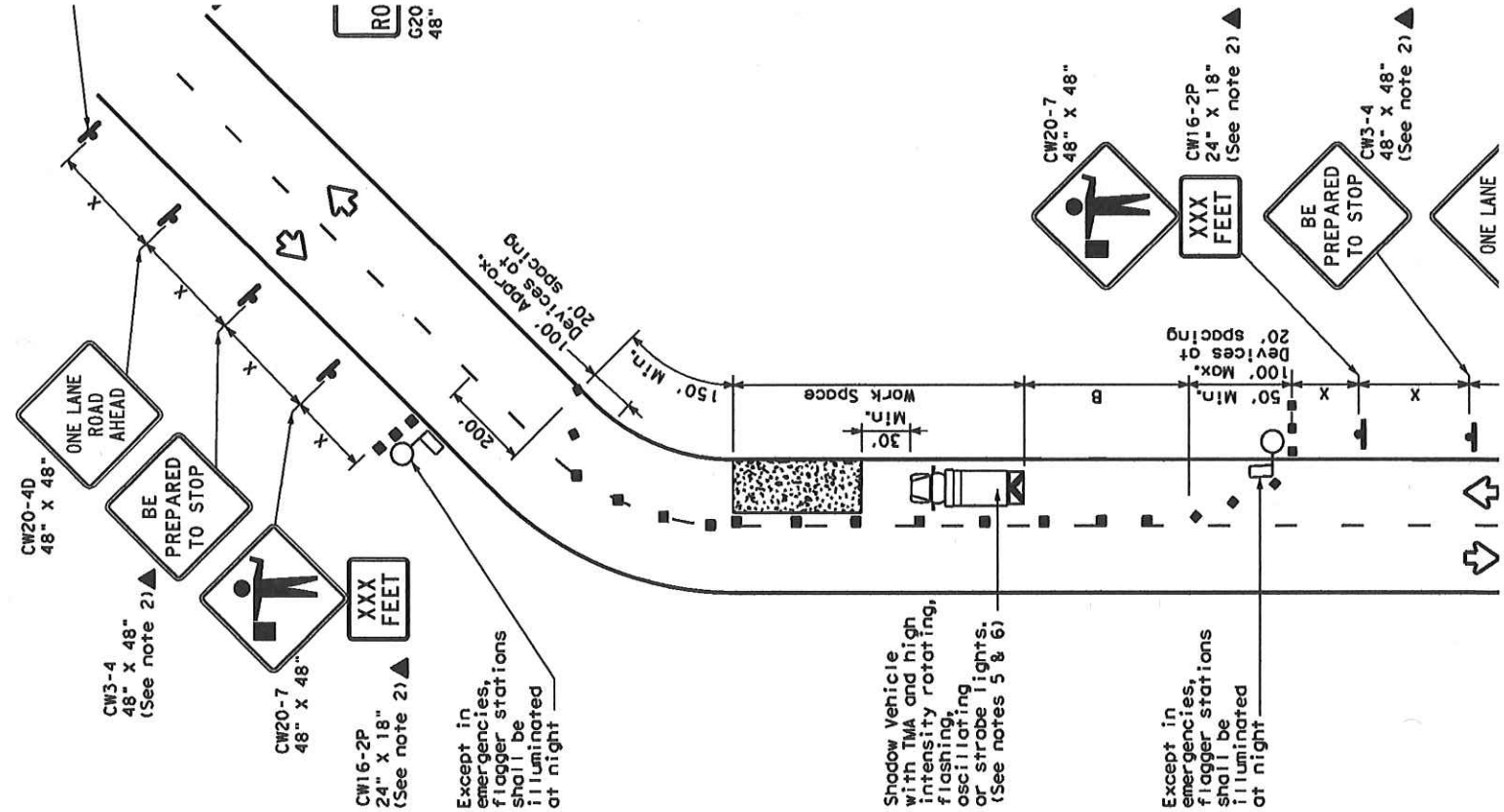
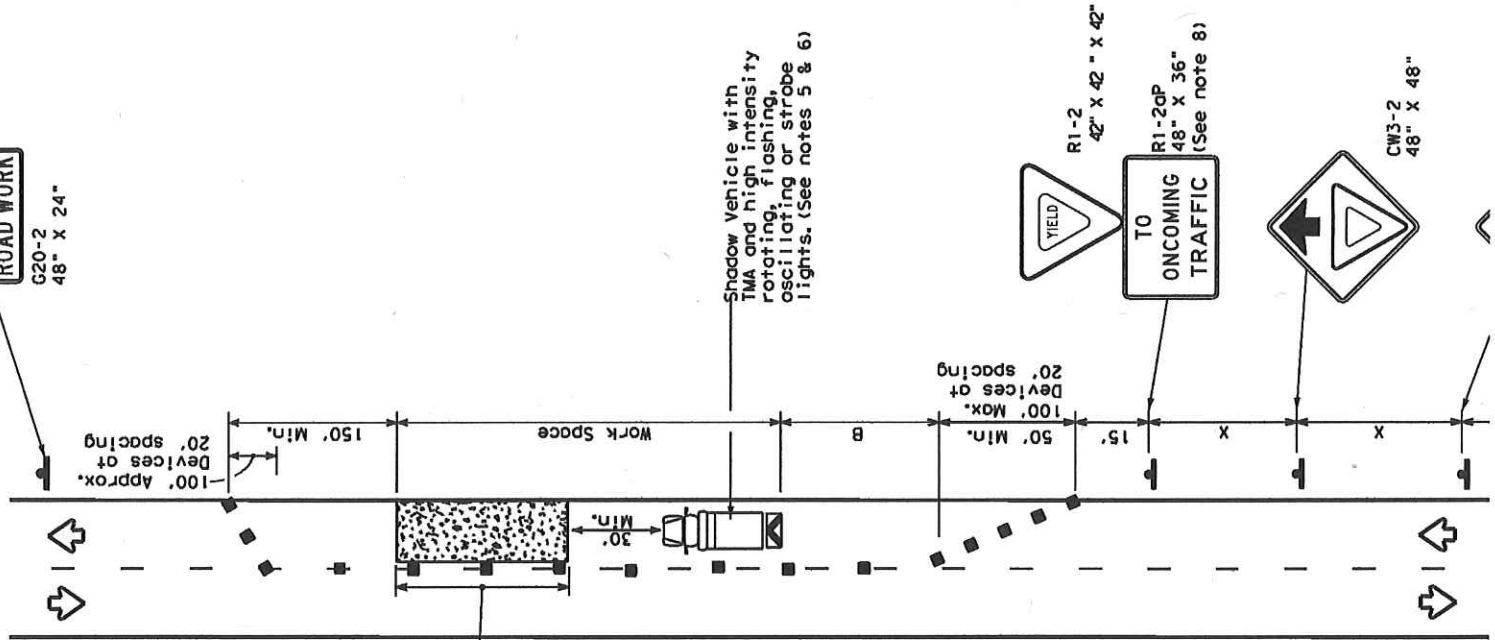
If raised to supply the mark top of the mid length lines or solid line removal and tape.

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Warning Sign Sequence
in Opposite Direction
Same as Below



Channelizing devices
separate work space
from traveled way





Storm Water Pollution Prevention Plan (SW3P)		
Site Description	Soil Stabilization Practices	Sequence of Construct
CR 15 is located approximately 11.56 Miles Northwest of Big Spring on FM 2230, in Howard County. Project Begins at FM 2230 and ends at CR 32. It is 1.00 Miles in length with 75% running through cultivated farm land.	Temporary Seeding Permanent Planting, Sodding or Seeding Mulching Buffer Zones Preservation of Natural Resources	A 1 Install & Mai 2 Perform Con A) clean & St B) excavate f C) Widen, re & D) backfill pa 3 When all cor complete, sit by the Road all temporary
	Silt Fence Hay Bales Rock Berms Erosion Control Logs Rock Bedding @ Construction Exits Timber Mats @ Construction Exits Sediment traps Sediment Basins	
Project Description		Maintenance:
Project will widen the existing pavement structure by 4 feet (2 foot on each side). Add an additional 2 inches of to existing. Road will be scarified, compacted, reshaped. Inverted prime and a one course surface treatment applied.		All Erosion And Sediment Controls Will
Total Project Area		
Length - 5105	Width - 60	

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work immediately and contact the Engineer immediately.

☒ No Action required ☐ Action Required

- | No Action required | X Action required. |
|--------------------|--------------------|
| | |

No Action required	X Action required.

Action Number :

- 1 2 3 4

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical.

Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, & 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal

- | | |
|----------|--------------------|
| X | No Permit required |
|----------|--------------------|

X	No Permit required
----------	--------------------

X	No Action required
----------	--------------------

X	No Action required
----------	--------------------

Action Number :

Action Number :

1 2 3 4

Action Required

Action Required

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES

AND MIGRATORY BIRDS

1 2 3 4

- If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not resume until the following conditions are met:
- Remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If coves or sinkholes are discovered, cease work in the immediate area, and contact the Engineer immediately.

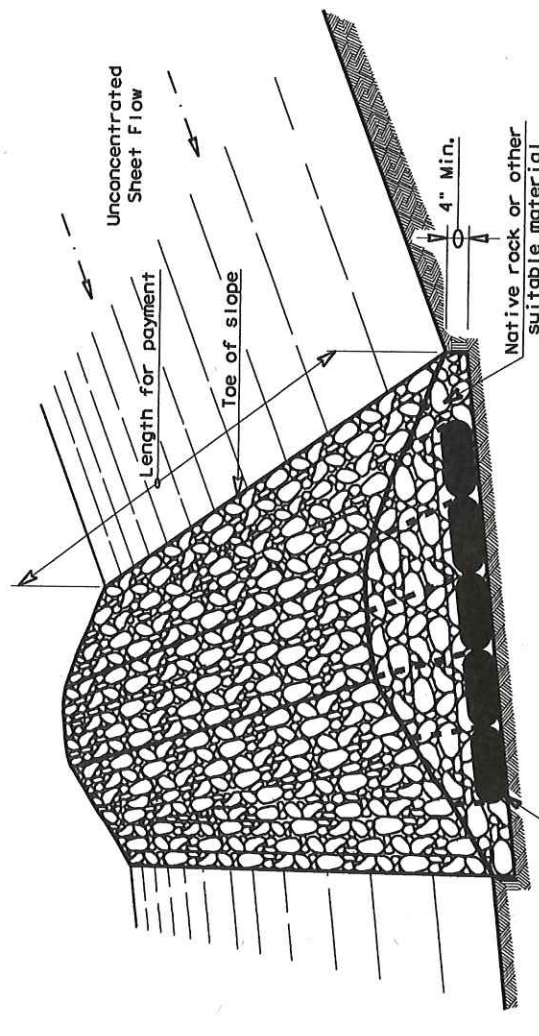
Post-Construction TSS

Sediment

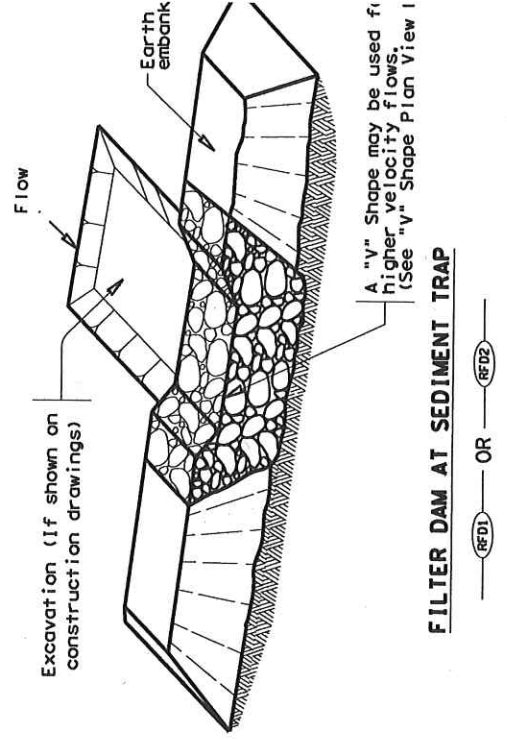
Post-Construction TSS

LIST OF ABBREVIATIONS

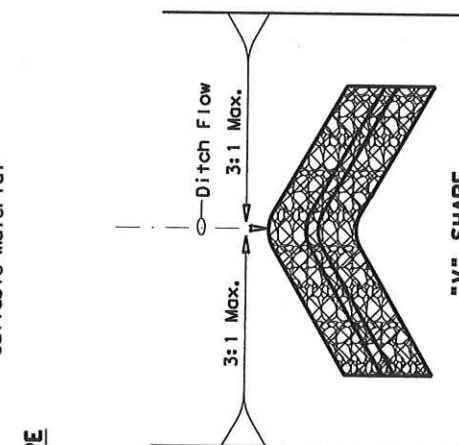
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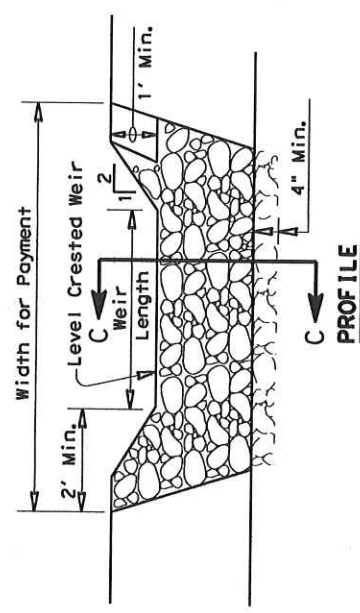
FILTER DAM AT TOE OF SLOPE



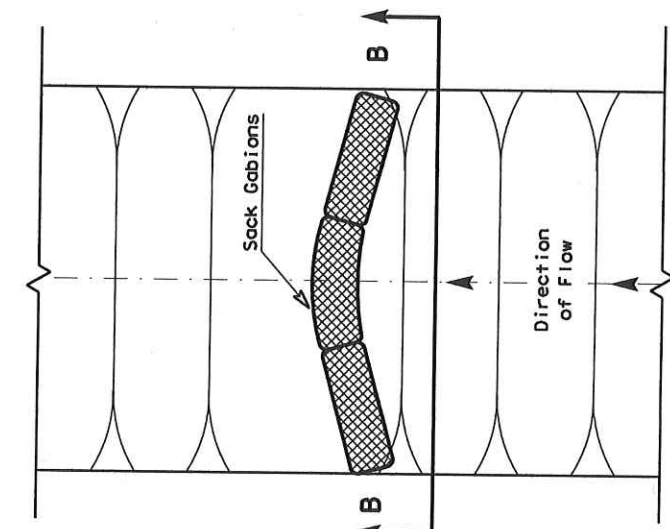
FILTER DAM AT SEDIMENT TRAP



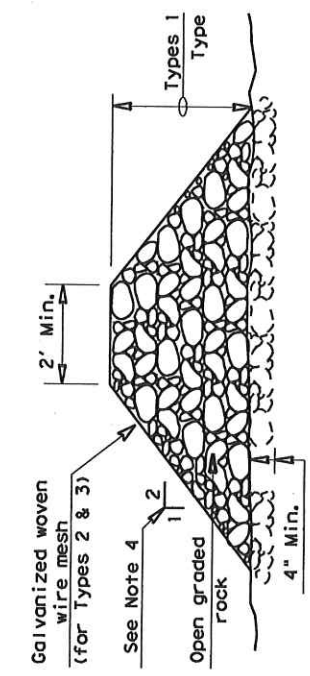
**"V" SHAPE
PLAN VIEW**



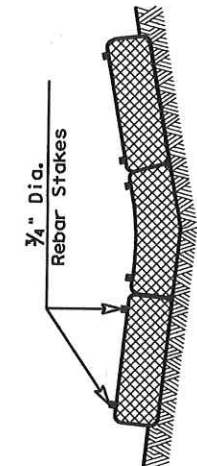
PROFILE



PLAN VIEW



SECTION C-C



SECTION B-B

ROCK FILTER DAM USAGE GUIDELINES
Rock Filter Dams should be constructed downstream from dist to intercept sediment from overland runoff and/or concentr The dams should be sized to filter a maximum flow through r GPM/FT² of cross sectional area. A 2 year storm frequency n to calculate the flow rate.