Permit to Construct Access Driveway Facilities on Highway Right of Way

PERMIT NUMBER: 25040034				
	* Attach kmz or kml file, OR	ROADWAY		
REQUESTOR	provide GPS Lat./Long.	HWY NAME	FM	1093
	29.692291 -95.8823599	FOR TxDOT'S USE		
		CONTROL	0543	
NAME	Fort Bend County, Texas c/o HJ Consulting	SECTION	02	
MAILING ADDRESS	29310 FM1093			
CITY, STATE, ZIP	Fulshear, Texas 77441			
PHONE NUMBER	(832) 687-9551			
EMAIL ADDRESS	dhiren@hjconsultinginc.com			

*LOCATION OR COORDINATES AT INTERSECTION OF DRIVEWAY CENTERLINE WITH ABUTTING ROADWAY

The Texas Department of Transportation, hereinafter called the State, hereby authorizes Fort Bend County, Texas, hereinafter called the Permittee (i.e., property owner) ☒ construct / ☐ reconstruct a street tie in, commercial, sw (residential, convenience store, retail mall, farm, etc.) access driveway on the highway right of way abutting highway number FM1093 in Fort Bend County, located approximately 1250' West of Texas Heritage Parkway - WB.

USE ADDITIONAL SHEETS AS NEEDED

Is this parcel in current litigation with the State of Texas? ☐ YES ☒ NO (If Yes, TxDOT will coordinate with District ROW Office.)

Is the Permittee or a family member of Permittee an employee or official of the Texas Department of Transportation? ☐ YES ☒ NO
(If Yes, name of employee or official _____)

Does an employee or official of the Texas Department of Transportation serve as an employee or officer of Permittee or own a controlling interest in Permittee? ☐ YES ☒ NO (If Yes, name of employee or official _____)

This permit is subject to the Access Driveway Policy described on page 2 and the following:

1. The undersigned hereby agrees to comply with the terms and conditions set forth in this permit for construction and maintenance of an access driveway on the state highway right of way.
2. The Permittee represents that the design of the facilities, as shown in the attached design sketch, is in accordance with the Roadway Design Manual, Hydraulic Design Manual and the access management standards set forth in the Access Management Manual (except as otherwise permitted by an approved variance).
3. Construction of the driveway shall be in accordance with the attached design sketch, and is subject to inspection and approval by the State.
4. Maintenance of facilities constructed hereunder shall be the responsibility of the Permittee, and the State reserves the right to require any changes, maintenance or repairs as may be necessary to provide protection of life or property on or adjacent to the highway. Changes in design will be made only with prior written approval of the State. The department shall maintain all portions of public driveways that lie within the state highway right of way and that connect to highways that are the maintenance responsibility of the department.
5. The Permittee shall hold harmless the State and its duly appointed agents and employees against any action for personal injury or property damage related to the driveway permitted hereunder.
6. Except for regulatory and guide signs at county roads and city streets, the Permittee shall not erect any sign on or extending over any portion of the highway right of way. The Permittee shall ensure that any vehicle service fixtures such as fuel pumps, vendor stands, or tanks shall be located at least 12 feet from the right of way line to ensure that any vehicle services from these fixtures will be off the highway right of way.
7. The State reserves the right to require a new access driveway permit in the event of: (i) a material change in land use, driveway traffic volume or vehicle types using the driveway, or (ii) reconstruction or other modification of the highway facility by the State.
8. The State may revoke this permit upon violation of any provision of this permit by the Permittee.
9. This permit will become null and void if the above-referenced driveway facilities are not constructed within one year from the issuance date of this permit.
10. The Permittee will contact the State's representative Juan M. Mata telephone, (713) 448-0527, at least twenty-four (24) hours prior to beginning the work authorized by this permit.
11. The requesting Permittee will be provided instructions on the appeal process if this permit request is denied by the State. Note, a driveway involving an Access Denial Line (ADL) does not have a right to appeal.

The undersigned hereby agrees to comply with the terms and conditions set forth in this permit for construction and maintenance of an access driveway on the highway right of way.

Date: _____ Signed: _____

(Property owner or owner's representative)

Access Driveway Policy

Title 43 Texas Administrative Code (Transportation), Part 1 (Texas Department of Transportation) Chapter 11 (Design), Subchapter C (Access Connections To State Highways) and the "Access Management Manual" establish policy for the granting of access and the design, materials and construction of driveways connecting to state highways. All driveway facilities must follow this policy. To the extent there is any conflict between this permit and the policy, the policy shall control. If a proposed driveway does not comply with the access management standards, the owner may seek a variance to a requirement contained in the access management standards by contacting the local TxDOT office.

As to driveway permits that are issued under §11.59 of Subchapter C (Access Connections To State Highways), no rights of access are conveyed by issuance of a driveway permit. Issuance of a driveway permit under this section does not convey any property right, including a right of access to the highway facility. The department, in its sole discretion, may revoke a permit issued under this section on its determination that the access location is needed for a highway purpose. Such a revocation may not be the basis for any claim of a constitutional taking of property for the loss of access to the highway facility.

TxDOT Driveway Permit Request Contact

For a local contact for your TxDOT Driveway Permit Request or variance request, visit: http://www.txdot.gov/inside-txdot/district.html. You can select the respective District, and then select the District Contacts which will include the applicable Area Engineers.

Other Conditions

In addition to Items 1 thru 11 on page 1 of this permit, the driveway facility shall also be in accordance with the attached design sketch and subject to the following additional conditions stated below:

Provide for a 41' wide street tie-in with 35' radii in a curb and gutter section of TxDOT FM1093. Construction of deceleration lane from TxDOT FM1093 per executed LOSA and plans dated 10-28-2025. Provide sidewalk to TxDOT and ADA standards. TR25040034 FM 1093 Hydraulics Section No Objection on 11-21-2025 Drainage Summary: • No additional drainage flow coming to TxDOT ROW. • Proposed GM Library Road tie-in FM 1093 • Proposed 1 right turn lane. • Plan File Name on DAP: 20251029-Drawings-100%Phase4-HJ-20318x.pdf • Last updated drainage plan sheet signed and sealed on: 10/28/2025
Construction cannot begin until LOSA is completed.
Also, attached Special Provisions dated July 1, 2022 must be followed."

Variance Documentation Justification

(A variance to any requirement contained in the access management standards may be granted if justified in accordance with an item below and approved by the district engineer, or the district engineer's designee.)

For a Variance request, please indicate which of the below are applicable, as required by TAC §11.52(e):

☐ a significant negative impact to the owner's real property or its use will likely result from the denial of its request for the variance, including the loss of reasonable access to the property or undue hardship on a business located on the property.

☐ an unusual condition affecting the property exists that was not caused by the property owner and justifies the request for the variance.

For the conditions selected above, provide written justification below. (Attach additional sheets, if needed)

For TXDOT use below:

For Variance denials, please indicate which of the below conditions, as provided in TAC §11.52(e), were determined:

☐ adversely affect the safety, design, construction, mobility, efficient operation, or maintenance of the highway; or

☐ likely impair the ability of the state or the department to receive funds for highway construction or maintenance from the federal government.

For driveway permits to be issued under TAC §11.59:
Is this driveway crossing an access denial line? ☐ YES ☐ NO

(If Yes, is this a ☐ private driveway or a ☐ commercial driveway?)

Private Driveway Fee: ☐ $250

Commercial Driveway Fee: ☐ $2,500 ☐ $10,000 ☐ $25,000

Date of Issuance of permit that crosses an access denial line	District Engineer Approval (No Delegation)
Date of Issuance of permit that does not cross an access denial line	District Engineer, or designee Approval
Date of Issuance as per Variance to AMM	District Engineer, or designee Approval
Date of Denial	District Engineer Denial (No Delegation)

Attachments:

Sketch of Installation

All Variance Documentation

Permit Special Provisions

Revised July 1, 2022

1. The Permittee is responsible for all costs associated with the construction of this access driveway.

2. All Pipes used shall be Reinforced Concrete Pipe (RCP), unless otherwise specified.

3. Culvert crossings within the 30-foot clear zone (parallel culverts) shall be required to have minimum 6:1 sloping ends known as Safety End Treatments (SETs). The culvert shall have sufficient length to allow the 6:1 slope to be achieved from the edge of pavement to the flowline at the end of the SET. Culverts that exceed 50'f in length shall have a junction box for clean out, or as specified by the TxDOT Area Engineer.

4. Culverts larger than single 33-inch diameter, double 30-inch diameter, or three or more 12-inch diameter shall require safety pipe runners.

5. Riprap or stabilizing material shall be provided and installed by grantee at time of construction, or as directed by the TxDOT Area Engineer.

6. For TxDOT-maintained ASPHALT SURFACED PAVEMENT, no concrete pavement or curbing shall be allowed within State right of way.

7. For TxDOT-maintained CONCRETE SURFACED PAVEMENT, additional full-depth saw cuts may be made as needed to facilitate removal of the concrete within the limits of the required full-depth cuts. Concrete adjacent to the patch shall not be spalled or fractured by the removal procedure.

8. Placement or removal of beautification on State right of way shall be under the direction of TxDOT.

9. The Permittee certifies that its storm water runoff to the State's right of way shall not be contaminated by any industrial processes or significant pollutants, and the State shall not be held liable for any pollutants entering State right of way through storm water connections.

10. The Permittee be in compliance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the Texas Accessibility Standards (TAS), and Texas Department of Licensing and Regulation (TDLR) requirements for items including but not limited to sidewalks, landings, and wheelchair ramps.

11. Permittee shall obtain overall environmental clearance with all appropriate regulatory agencies prior to beginning construction. Approval of this request by TxDOT does not relieve the Permittee or its agents of this obligation.

12. Work performed on railroad right-of-way, or easements controlled by others, is subject to the concurrence of the owner of said properties. Approval of this request by TxDOT does not relieve the Permittee of this obligation.

13. The complete permit package shall be on the project site at all times and available for review by TxDOT.

14. TxDOT will inspect the construction and may provide the flow-line elevation.

Permit Special Provisions

Revised July 1, 2022

15. All work within the State of Texas right-of-way shall be performed in accordance with State standards and specifications as to the installation and materials used. All materials and mix designs to be placed in TxDOT right-of-way must be obtained from TxDOT approved sources and be of approved TxDOT mix designs.

16. At least five (5) working days prior to any excavation, permittee shall request the location of all underground utilities within the work area by calling 811, and contacting local municipalities, utility districts, school districts, or any other utility owners. TxDOT-owned fiber optic, communications, power, illumination, and traffic signal cabling and conduit can be located by calling the TxDOT Houston District Traffic Operations Office at HOU-LocateRequest@txdot.gov. Do not perform underground work on the project until TxDOT – owned facilities have been located and marked. Use caution when working in these areas to avoid damaging or interfering with existing facilities. Permittee shall be responsible for relocating and/or adjusting any utilities within the work area.

17. This permit is subject to a separate traffic control plan being approved by the Area Engineer. All work must follow the TxDOT Traffic Control Plan Standards, Latest Revision, or if approved, Typical Applications shown in the Texas Manual on Uniform Traffic Control Devices, Latest Revision, Chapter 6-H. The advanced warning signage shown on standards BC(1)-21 thru BC(12)-21 will be required. It is mutually agreed and understood that the implementation and maintenance of the traffic control plan shall be the responsibility of the Permittee. Contractor is required to supply all sub-contractors with a copy of this permit and approved traffic control plan.

18. The Permittee shall coordinate the sequence of construction and traffic control plan with any adjacent highway construction or maintenance projects. No overnight lane closures will be permitted, unless otherwise approved by the Area Engineer.

19. Work performed within the waterways, such as rivers, creeks, bayous, and drainage ditches, is subject to the concurrence of appropriate regulatory agencies. Permittee shall use Best Management Practices to minimize erosion and sedimentation resulting from proposed activities. Permittee certifies that its drainage system meets all storm water quality criteria of the County and/or City where the permit is located. Construction and/or maintenance of this project shall not adversely affect the drainage patterns within the area.

20. All excavations within the right-of-way shall be backfilled according to the TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (SPECS), Item 400, as currently amended. All surplus material shall be removed from the right-of-way, and the excavation finished flush with surrounding natural ground.

21. In no event will an edge drop-off be permitted during the hours of darkness. If the Contractor is unable to complete a section before the end of the workday, base material capable of vehicle support shall be pulled back to the existing edge on a 4:1 or flatter slope, to provide for driver and pedestrian safety.

22. The Contractor shall not create a dirt nuisance or safety hazard in any roadway. The pavement shall be cleaned daily.

23. All exposed dirt surfaces shall be sodded, unless otherwise approved by the Area Engineer. A slope of 4:1, or flatter, shall be required on the ditch front slope.

24. No trees, vegetation, valves, meter boxes, cleanouts, ground boxes, handholes, manhole covers, etc. will be allowed in the pavement. These appurtenances shall be relocated elsewhere within the right-of-way, unless otherwise approved by the Area Engineer.

25. The Texas Universal Triangular Slip Base Sign Supports shall be required for all signage within TxDOT right-of-way. Proposed signs, or those which require relocation, shall be done in accordance with the following TxDOT Sign Mounting Details Standards: SMD (GEN)-08, SMD (SLIP-1)-08, SMD (SLIP-2)-08, and SMD (SLIP-3)-08.

26. All work zone pavement markings shall meet the requirements of SPECS, Item 662. All permanent pavement markings shall meet the requirements of SPECS, Item 666, and be placed in accordance with the following TxDOT Pavement Standards: PM(1)-20, PM(2)-20, PM(3)-20, and PM(4)-22. All raised pavement markers shall meet the requirements of SPECS, Item 672.

27. Existing pavement markings shall be removed according to the requirements of SPECS, Item 677, or to the satisfaction of the Area Engineer. All pavement surfaces shall be cleaned and prepared in accordance with SPECS, Item 678.

28. For roadway improvements and Street Tie-Ins, the Contractor shall employ at his/her expense, an approved commercial testing laboratory to perform testing on concrete to determine the in-situ strength. Make at least one set of test specimens for each element cast each day. Cure these specimens under the same conditions as the portion of the structure involved for all stages of construction. Ensure safe handling, curing, and storage of all test specimens. Sample and test the hardened concrete in accordance with SPECS, Item 421. Certified reports of all test results shall be submitted to the Area Engineer.

29. Should the existing roadway pavement or other feature be damaged, it shall be repaired as specified by the Area Engineer.

30. Construction Access Permits are to expire after 12 months, unless renewed.

31. The Permittee acknowledges and fully accepts responsibility and liability for the design, construction, maintenance, and operation of this project, which shall be the responsibility of the Grantee for the life of the project. The Permittee shall indemnify and save harmless the State from any and all damages or losses that may develop due to this project.

32. All TxDOT Standard Sheets are available online for free download:
    Statewide http://www.dot.state.tx.us/business/standardplanfiles.htm
    Houston District http://www.dot.state.tx.us/hou/specinfo/specs.htm

33. The contractor or sub-contractor is required to contact the TxDOT Local Maintenance Office Supervisor a minimum of 72 hours prior to commencing any work.

- Brazoria Maintenance Office – Permit Section 2: 979-864-8550
- Galveston Maintenance Office – Permit Section 3: 409-978-2551
- Fort Bend Maintenance Office – Permit Section 4: 281-238-7950
- Montgomery Maintenance Office – Permit Section 5: 936-538-3350
- Southeast Harris Maintenance Office – Permit Section 6: 281-464-5540
- Waller Maintenance Office – Permit Section 7: 979-921-2400
- West Harris Maintenance Office – Permit Section 8: 713-934-5900
- Metro Houston Maintenance Office – Permit Section 9: 713-636-7400
- North Harris Maintenance Office – Permit Section 10: 281-319-6450

TR25040034

Contact Information

Application Name	TR25040034	**Application Status**	Complete - No Objections
Date of Submittal	2/18/2025	**Upload to Box**	☐
Date of Latest Resubmittal	8/18/2025	**Review Phase**	Submit - Phase 3
First Name (Authorized Agent)	Dhiren	**Record Type**	Application record Type
Last Name (Authorized Agent)	Srivastava	**Mailing Street**	4771 SWEETWATER BLVD, SUITE 254,
Name of Owner as shown on Property Deed	Fort Bend County, Texas	**Mailing City**	SUGAR LAND
Last Name (Property Owner)		**Mailing State/Province**	TX
Consulting Firm	HJ Consulting	**Mailing Zip/Postal Code**	77479
User edited Address	☐	**Login Account Email**	dhiren@hjconsultinginc.com
Need Agreement	☑	**Owner Email**	
Need ROW Land Donation Agreement	☐	**Developer or Additional Email**	
Upload to OnBase Complete	☐	**Business Phone**	8326879551
Area Engineer	Carlos M Zepeda Jr., P.E.	**Cell Phone**	8326879551
Assistant Area Engineer	Daniel J Dvorak	**Contact Person**	
Permit Coordinator	Cindy S Kurtz	**Owner**	Dhiren Srivastava
Maintenance Section Supervisor	Juan M Mata		
Maintenance Section Supervisor Number	(713) 448-0527		
Permit Coordinator Phone Number	(281) 238-7956		
Due Date Status			

Comments

Maintenance Office Comments	
Application Withdrawn Comments	
Applicant Response	; 2025-08-18 Sponsorship Letter, Amended Plat, and TxDOT ROW Map with Project Highlighted; 2025-10-29 Resubmittal after attending to comments; 2026-01-21 Per discussions with FBC and TxDOT, future developments will provide TIAs to be reviewed by TxDOT; 2026-02-20 Please review the attached email communication between FBC Engineer and TxDOT. The autoturn design is similar to other roadway connections along this corridor, many of which were designed by TxDOT.
Maintanence Office Comments History	3/5/2025 Missing documentation: Copy of the executed property deed. Sponsorship Letter from the Local Government that will maintain the Street Tie-In once it is completed. Sponsorship only applies to Street Tie-Ins. Include TxDOT Right-of-Way (ROW) map (site MUST be marked on map), also showing exact location of access. Maps can be obtained from TxDOT Houston Mapping Group by email: HOU-ROW-MapRequest@txdot.gov .

Site Information

Site Name	LIBRARY ACCESS ROAD PHASE 4	**Latitude**	29.692291
Site Address	29310 Farm to Market Road 1093	**Longitude**	-95.8823599
City	Fulshear	**Is this parcel in current litigation?**	No
State	TX	**Control**	0543
Zip Code	77441	**Road Section**	02
County	Fort Bend County		
Section	Fort Bend		

Application Information

Permit Type	Street Tie-In; Commercial; Sidewalk	**Number of requested driveway(s)**	0
Highway	FM1093	**Number of requested street tie-in(s)**	1
Closest Cross Street	TIKI DR	**Number of requested turn lanes**	1
Is Highway within an incorporated city?	☐	**No of Existing access(s) to be modified**	0
City		**Date of Signed & Sealed Plans Submitted**	2/20/2026
Assigned Maintenance Section	Fort Bend	**Type of highway design?**	Both
Property on which side of highway?	Westbound	**If open ditch, inside diameter of Pipes**	18"
Applicant Status	Complete - No Objections	**Existing Roadway within 1000 ft**	☑
External Link for Community Users	https://txdot.my.site.com/houstondrivewaypermit/houstondrivewaypermit/s/dp-application/a07cs000012L7bs/TR25040034	**Any drainage coming to TxDOT**	☑
		If no, name of entity/agency/authority	

Access Details

Purpose of Request	Proposed Library Access Road for Fort Bend County. Right turn lane and a new street tie-in at FM1093 is proposed
Background	NA
Existing roadway characteristics	4 Lane divided highway
Environmental Clearance Requirements	NA
Agreements	LOSA

Request Customer Information.

Banner Message		**Needs Attention**	☐

Banner History	Cindy Kurtz : 3/5/2025 Please see comments. Cindy Kurtz : 9/11/2025 Please see comments. Cindy Kurtz : 12/8/2025 Please see comments. Cindy Kurtz : 2/18/2026 Please see comments.	**Banner Mode**	

Permit Information

Permit Issued Date	
1058 Status	
Permit Expiration Date	
Extension Issued Date	

DocuSign Fields

c/o Account Name	c/o HJ Consulting		
DSign Phone	(832) 687-9551		
Firm Address	4771 SWEETWATER BLVD, SUITE 254,, SUGAR LAND, TX 77479		
Location	29310 Farm to Market Road 1093, Fulshear, TX 77441		
Created By	Dhiren Srivastava, 2/18/2025, 9:32 AM	**Last Modified By**	Cindy Kurtz, 4/16/2026, 1:20 PM

Notes

Copy FBC

Last Modified	**4/10/2026, 7:30 AM**
Owner	**Cindy Kurtz**
Text Preview	**Copy Jillian Peterson and Rick Staigle when permitting.**

FBC - No Objections

Last Modified	**3/24/2025, 1:00 PM**
Owner	**Cindy Kurtz**
Text Preview	**Email in files of No Objections.**

AO review

Last Modified	**3/6/2025, 8:26 AM**
Owner	**Cindy Kurtz**
Text Preview	**Street tie-in appears to go straight into outfall. Please note if re-alignment is necessary when reviewing.**

FBC

Last Modified	**3/5/2025, 11:05 AM**
Owner	**Cindy Kurtz**
Text Preview	**Sent to Rick Staigle for review.**

LOSA TR25040034

Last Modified	**12/10/2025, 11:54 AM**
Owner	**Angela Coakley**
Text Preview	**Initial contact with applicant 8/27/25. 2nd request sent 12/8/25. LOSA application received 12/9/25. Submitted to Milad Ajir to determine to waive/charge state costs. Pending reply.**

TR25040034_AO Review

Last Modified	**3/19/2025, 3:05 PM**
Owner	**Tarik Taheri**
Text Preview	**Pdf of review comments is attached.**

ROW - Deceleration Lane

Last Modified	**3/5/2025, 1:46 PM**
Owner	**Cindy Kurtz**
Text Preview	**Per Carlos Zepeda, no ROW donation required.**

Files

2023107298.pdf

Last Modified	**4/16/2026, 1:20 PM**
Created By	**DP Mulesoft Integration**

Special Provisions

Last Modified	**4/16/2026, 1:16 PM**
Created By	**Cindy Kurtz**

25040034 FM1093 - 1058

Last Modified	**4/16/2026, 1:15 PM**

Fully executed LOSA TR25040034

Last Modified	**4/16/2026, 1:14 PM**

Created By	**Cindy Kurtz**	Created By	**Cindy Kurtz**

Activity History

Email: TxDOT DAP: TR25040034 – Application Paused Pending Your Response

Name	
Task	✓
Due Date	**1/19/2026**
Assigned To	**Sambit Sourav Jena**
Last Modified Date/Time	**1/19/2026, 7:00 AM**
Comments	**To: dhiren@hjconsultinginc.com** **CC: hou-ftbend-permitapplication@txdot.gov** **BCC:** **Attachment: --none--** **Subject: TxDOT DAP: TR25040034 – Application Paused Pending Your Response** **Body:** **Dear Applicant,** **You previously received notification that a response from you was needed on your application TR25040034.** **Your permit application is awaiting further review until you respond. You will continue to receive this notification every two weeks until we receive your response. If after 2 months you have not responded and updated your TR, your application will be cancelled. However, you can submit a new application and include the previous TR number when you are ready to proceed with your access request.** **You will be able to view the submitted application only if you are the DAP login account holder or know the login credentials.Please click on the button below to login and review the application. Once selected, you will be navigated out to TxDOT.Click here to login and view your applicationIf the link above does not work, please copy and paste the URL below in a new browser window.https://txdot.my.site.com/houstondrivewaypermit/houstondrivewaypermit/s/dp-application/a07cs000012L7bs/TR25040034**

Email: TxDOT DAP: TR25040034 – Application Paused Pending Your Response

Name	
Task	✓
Due Date	**1/5/2026**
Assigned To	**Sambit Sourav Jena**
Last Modified Date/Time	**1/5/2026, 7:00 AM**
Comments	**To: dhiren@hjconsultinginc.com** **CC: hou-ftbend-permitapplication@txdot.gov** **BCC:** **Attachment: --none--** **Subject: TxDOT DAP: TR25040034 – Application Paused Pending Your Response** **Body:** **Dear Applicant,** **You previously received notification that a response from you was needed on your application TR25040034.** **Your permit application is awaiting further review until you respond. You will continue to receive this notification every two weeks until we receive your response. If after 2 months you have not responded and updated your TR, your application will be cancelled. However, you can submit a new application and include the previous TR number when you are ready to proceed with your access request.** **You will be able to view the submitted application only if you are the DAP login account holder or know the login credentials.Please click on the button below to login and review the application. Once selected, you will be navigated out to TxDOT.Click here to login and view your applicationIf the link above does not work, please copy and paste the URL below in a new browser window.https://txdot.my.site.com/houstondrivewaypermit/houstondrivewaypermit/s/dp-application/a07cs000012L7bs/TR25040034**

Email: TxDOT DAP: TR25040034 – Application Paused Pending Your Response

Name	
Task	✓
Due Date	**12/22/2025**
Assigned To	**Sambit Sourav Jena**
Last Modified Date/Time	**12/22/2025, 7:00 AM**

Comments	**To: dhiren@hjconsultinginc.com** **CC: hou-ftbend-permitapplication@txdot.gov** **BCC:** **Attachment: --none--** **Subject: TxDOT DAP: TR25040034 – Application Paused Pending Your Response** **Body:** **Dear Applicant,** **You previously received notification that a response from you was needed on your application TR25040034.** **Your permit application is awaiting further review until you respond. You will continue to receive this notification every two weeks until we receive your response. If after 2 months you have not responded and updated your TR, your application will be cancelled. However, you can submit a new application and include the previous TR number when you are ready to proceed with your access request.** **You will be able to view the submitted application only if you are the DAP login account holder or know the login credentials.Please click on the button below to login and review the application. Once selected, you will be navigated out to TxDOT.Click here to login and view your applicationIf the link above does not work, please copy and paste the URL below in a new browser window.https://txdot.my.site.com/houstondrivewaypermit/houstondrivewaypermit/s/dp-application/a07cs000012L7bs/TR25040034**

Email: TxDOT DAP: TR25040034 – Application Paused Pending Your Response

Name	
Task	✓
Due Date	**10/23/2025**
Assigned To	**Sambit Sourav Jena**
Last Modified Date/Time	**10/23/2025, 7:00 AM**
Comments	**To: dhiren@hjconsultinginc.com** **CC: hou-ftbend-permitapplication@txdot.gov** **BCC:** **Attachment: --none--** **Subject: TxDOT DAP: TR25040034 – Application Paused Pending Your Response** **Body:** **Dear Applicant,** **You previously received notification that a response from you was needed on your application TR25040034.** **Your permit application is awaiting further review until you respond. You will continue to receive this notification every two weeks until we receive your response. If after 2 months you have not responded and updated your TR, your application will be cancelled. However, you can submit a new application and include the previous TR number when you are ready to proceed with your access request.** **You will be able to view the submitted application only if you are the DAP login account holder or know the login credentials.Please click on the button below to login and review the application. Once selected, you will be navigated out to TxDOT.Click here to login and view your applicationIf the link above does not work, please copy and paste the URL below in a new browser window.https://txdot.my.site.com/houstondrivewaypermit/houstondrivewaypermit/s/dp-application/a07cs000012L7bs/TR25040034**

Email: TxDOT DAP: TR25040034 – Application Paused Pending Your Response

Name	
Task	✓
Due Date	**10/9/2025**
Assigned To	**Sambit Sourav Jena**
Last Modified Date/Time	**10/9/2025, 7:00 AM**
Comments	**To: dhiren@hjconsultinginc.com** **CC: hou-ftbend-permitapplication@txdot.gov** **BCC:** **Attachment: --none--** **Subject: TxDOT DAP: TR25040034 – Application Paused Pending Your Response** **Body:** **Dear Applicant,** **You previously received notification that a response from you was needed on your application TR25040034.** **Your permit application is awaiting further review until you respond. You will continue to receive this notification**

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You will be able to view the submitted application only if you are the DAP login account holder or know the login credentials.Please click on the button below to login and review the application. Once selected, you will be navigated out to TxDOT.Click here to login and view your applicationIf the link above does not work, please copy and paste the URL below in a new browser
window.https://txdot.my.site.com/houstondrivewaypermit/houstondrivewaypermit/s/dp-application/a07cs000012L7bs/TR25040034

Email: TxDOT DAP: TR25040034 – Application Paused Pending Your Response

Name	
Task	✓
Due Date	**9/25/2025**
Assigned To	**Sambit Sourav Jena**
Last Modified Date/Time	**9/25/2025, 7:00 AM**
Comments	**To: dhiren@hjconsultinginc.com** **CC: hou-ftbend-permitapplication@txdot.gov** **BCC:** **Attachment: --none--** **Subject: TxDOT DAP: TR25040034 – Application Paused Pending Your Response** **Body:** **Dear Applicant,** **You previously received notification that a response from you was needed on your application TR25040034.** **Your permit application is awaiting further review until you respond. You will continue to receive this notification every two weeks until we receive your response. If after 2 months you have not responded and updated your TR, your application will be cancelled. However, you can submit a new application and include the previous TR number when you are ready to proceed with your access request.** **You will be able to view the submitted application only if you are the DAP login account holder or know the login credentials.Please click on the button below to login and review the application. Once selected, you will be navigated out to TxDOT.Click here to login and view your applicationIf the link above does not work, please copy and paste the URL below in a new browser** **window.https://txdot.my.site.com/houstondrivewaypermit/houstondrivewaypermit/s/dp-application/a07cs000012L7bs/TR25040034**

Email: TxDOT DAP: TR25040034 – Application Paused Pending Your Response

Name	
Task	✓
Due Date	**5/14/2025**
Assigned To	**Sambit Sourav Jena**
Last Modified Date/Time	**5/14/2025, 7:00 AM**
Comments	**To: dhiren@hjconsultinginc.com** **CC: hou-ftbend-permitapplication@txdot.gov** **BCC:** **Attachment: --none--** **Subject: TxDOT DAP: TR25040034 – Application Paused Pending Your Response** **Body:** **Dear Applicant,** **You previously received notification that a response from you was needed on your application TR25040034.** **Your permit application is awaiting further review until you respond. You will continue to receive this notification every two weeks until we receive your response. If after 2 months you have not responded and updated your TR, your application will be cancelled. However, you can submit a new application and include the previous TR number when you are ready to proceed with your access request.** **You will be able to view the submitted application only if you are the DAP login account holder or know the login credentials.Please click on the button below to login and review the application. Once selected, you will be navigated out to TxDOT.Click here to login and view your applicationIf the link above does not work, please copy and paste the URL below in a new browser** **window.https://txdot.my.site.com/houstondrivewaypermit/houstondrivewaypermit/s/dp-application/a07cs000012L7bs/TR25040034**

Email: TxDOT DAP: TR25040034 – Application Paused Pending Your Response

Name	
Task	✓
Due Date	**4/30/2025**
Assigned To	**Sambit Sourav Jena**
Last Modified Date/Time	**4/30/2025, 7:00 AM**
Comments	**To: dhiren@hjconsultinginc.com** **CC: hou-ftbend-permitapplication@txdot.gov** **BCC:** **Attachment: --none--** **Subject: TxDOT DAP: TR25040034 – Application Paused Pending Your Response** **Body:** **Dear Applicant,** **You previously received notification that a response from you was needed on your application TR25040034.** **Your permit application is awaiting further review until you respond. You will continue to receive this notification every two weeks until we receive your response. If after 2 months you have not responded and updated your TR, your application will be cancelled. However, you can submit a new application and include the previous TR number when you are ready to proceed with your access request.** **You will be able to view the submitted application only if you are the DAP login account holder or know the login credentials.Please click on the button below to login and review the application. Once selected, you will be navigated out to TxDOT.Click here to login and view your applicationIf the link above does not work, please copy and paste the URL below in a new browser window.https://txdot.my.site.com/houstondrivewaypermit/houstondrivewaypermit/s/dp-application/a07cs000012L7bs/TR25040034**

Email: TxDOT DAP: TR25040034 – Application Paused Pending Your Response

Name	
Task	✓
Due Date	**4/16/2025**
Assigned To	**Sambit Sourav Jena**
Last Modified Date/Time	**4/16/2025, 7:00 AM**
Comments	**To: dhiren@hjconsultinginc.com** **CC: hou-ftbend-permitapplication@txdot.gov** **BCC:** **Attachment: --none--** **Subject: TxDOT DAP: TR25040034 – Application Paused Pending Your Response** **Body:** **Dear Applicant,** **You previously received notification that a response from you was needed on your application TR25040034.** **Your permit application is awaiting further review until you respond. You will continue to receive this notification every two weeks until we receive your response. If after 2 months you have not responded and updated your TR, your application will be cancelled. However, you can submit a new application and include the previous TR number when you are ready to proceed with your access request.** **You will be able to view the submitted application only if you are the DAP login account holder or know the login credentials.Please click on the button below to login and review the application. Once selected, you will be navigated out to TxDOT.Click here to login and view your applicationIf the link above does not work, please copy and paste the URL below in a new browser window.https://txdot.my.site.com/houstondrivewaypermit/houstondrivewaypermit/s/dp-application/a07cs000012L7bs/TR25040034**

Email: TxDOT DAP: TR25040034 – Application Paused Pending Your Response

Name	
Task	✓
Due Date	**4/2/2025**
Assigned To	**Sambit Sourav Jena**
Last Modified Date/Time	**4/2/2025, 7:00 AM**
Comments	**To: dhiren@hjconsultinginc.com** **CC: hou-ftbend-permitapplication@txdot.gov** **BCC:** **Attachment: --none--**

Subject: TxDOT DAP: TR25040034 – Application Paused Pending Your Response
Body:
Dear Applicant,

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Email: TxDOT DAP: TR25040034 – Application Paused Pending Your Response

Name	
Task	✓
Due Date	**3/19/2025**
Assigned To	**Sambit Sourav Jena**
Last Modified Date/Time	**3/19/2025, 7:00 AM**
Comments	**To: dhiren@hjconsultinginc.com** **CC: hou-ftbend-permitapplication@txdot.gov** **BCC:** **Attachment: --none--** **Subject: TxDOT DAP: TR25040034 – Application Paused Pending Your Response** **Body:** **Dear Applicant,** **You previously received notification that a response from you was needed on your application TR25040034.** **Your permit application is awaiting further review until you respond. You will continue to receive this notification every two weeks until we receive your response. If after 2 months you have not responded and updated your TR, your application will be cancelled. However, you can submit a new application and include the previous TR number when you are ready to proceed with your access request.** **You will be able to view the submitted application only if you are the DAP login account holder or know the login credentials.Please click on the button below to login and review the application. Once selected, you will be navigated out to TxDOT.Click here to login and view your applicationIf the link above does not work, please copy and paste the URL below in a new browser window.https://txdot.my.site.com/houstondrivewaypermit/houstondrivewaypermit/s/dp-application/a07cs000012L7bs/TR25040034**

Agreement requested - Deceleration

Name	
Task	✓
Due Date	
Assigned To	**DP Contract Specialist Queues**
Last Modified Date/Time	**4/9/2026, 3:27 PM**
Comments	**Please contact the applicant to begin the process for a LOSA or donation agreement for the TR referenced above. SEE APP NOTES.** **1/15/26 Per Milad Ajir, charge state cost. Request for CSJ sent to PT&D. Pending response.** **2/13/26 email to consultant re: date of docket for LOSA to be presented. Pending reply.** **3/5/26 email to consultant re: date of docket for LOSA to be presented. Pending reply. 2nd request** **3/11/26 Received court order. Submitted to CLM for review. Pending comments.** **3/16/26 Response to CSD comments Review#1. Pending requested revisions to TxC from TP&D.** **3/23/26 TP&D replied to request for revisions. Budget page sent again to change IDC and DC to LG. Pending reply.**

Engineering team review requests

TR25040034

Reviewing Office Area	**AO**
Status	**No Objections**
Assigned to	

TR25040034

Reviewing Office Area	**TRAFFIC**
Status	**No Objections**
Assigned to	**Suzanna Set**

TR25040034

Reviewing Office Area	**HYDRAULICS**
Status	**No Objections**
Assigned to	**Tan Luong**

Application History

4/16/2026, 1:20 PM

User	**Cindy Kurtz**
Action	**Changed Accepted Date to 4/16/2026. Changed Application Status from New - Resubmittal to Complete - No Objections.**

2/20/2026, 10:46 AM

User	**Dhiren Srivastava**
Action	**Changed Application Status from Complete - Pending Resubmittal to New - Resubmittal.**

2/18/2026, 3:19 PM

User	**Cindy Kurtz**
Action	**Changed Application Status from New - Resubmittal to Complete - Pending Resubmittal.**

1/21/2026, 9:03 AM

User	**Dhiren Srivastava**
Action	**Changed Application Status from Complete - Pending Resubmittal to New - Resubmittal.**

12/8/2025, 2:03 PM

User	**Cindy Kurtz**
Action	**Changed Application Status from New - Resubmittal to Complete - Pending Resubmittal.**

10/29/2025, 3:44 PM

User	**Dhiren Srivastava**
Action	**Changed Application Status from Complete - Pending Resubmittal to New - Resubmittal.**

9/11/2025, 10:34 AM

User	**Cindy Kurtz**
Action	**Changed Application Status from In Progress to Complete - Pending Resubmittal.**

8/26/2025, 11:35 AM

User	**Cindy Kurtz**
Action	**Deleted NA in Last Name (Property Owner). Changed Name of Owner as shown on Property Deed from NA to Fort Bend County, Texas.**

8/22/2025, 1:50 PM

User	**Cindy Kurtz**
Action	**Changed Permit Type.**

8/22/2025, 1:22 PM

User	**Cindy Kurtz**
Action	**Changed Evaluation Date to 8/22/2025. Changed Application Status from Revised to In Progress.**

8/18/2025, 4:08 PM

User	**Dhiren Srivastava**
Action	**Changed Application Status from Request Missing Documents or Additional Clarification to Revised.**

3/5/2025, 10:33 AM

User	**Cindy Kurtz**
Action	**Changed Maintenance Office Comments.** Changed **Application Status** from New to **Request Missing Documents or Additional Clarification.** Changed **Maintenance Office Comments.**

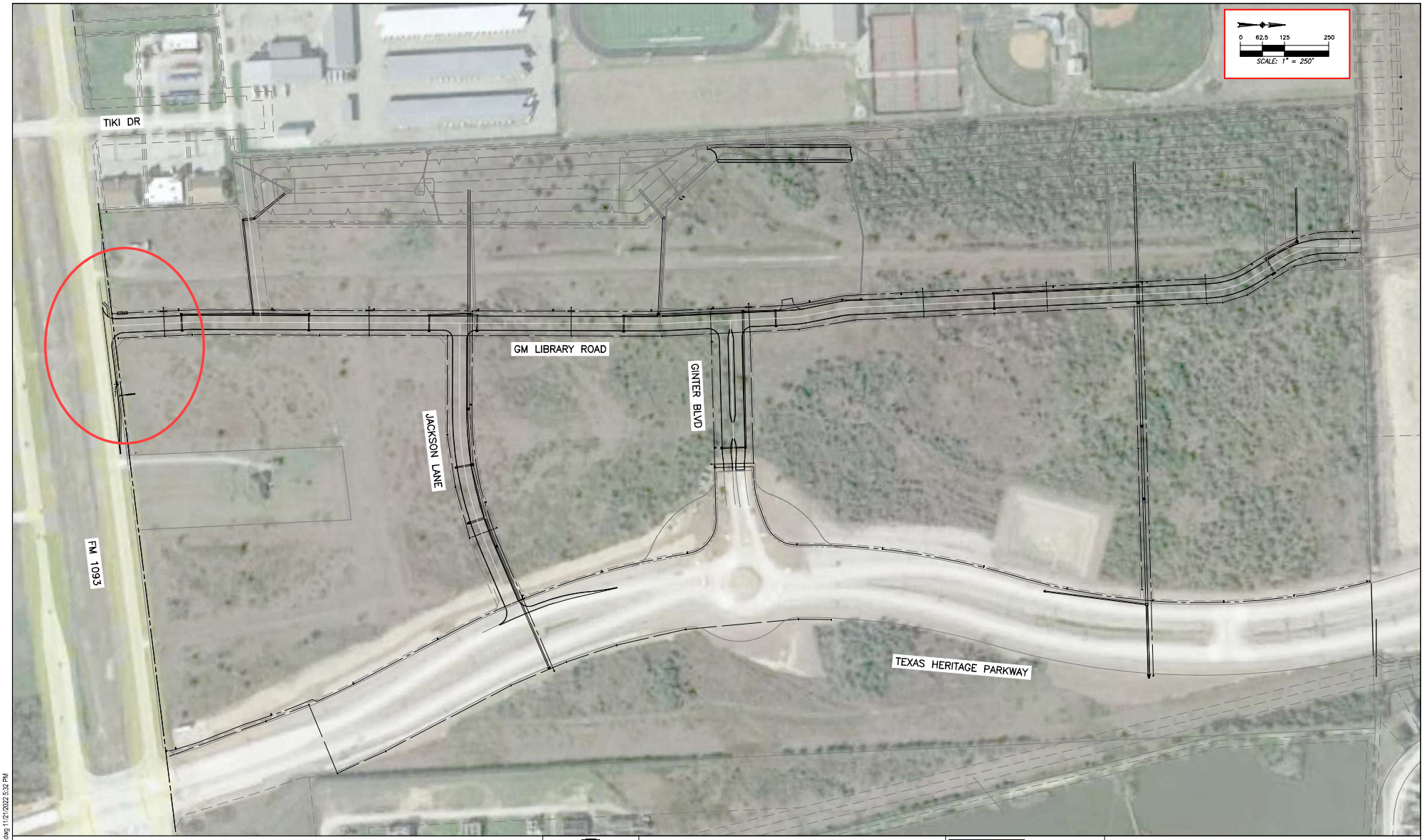
2/18/2025, 9:32 AM

User	**Dhiren Srivastava**
Action	**Changed Application Name to TR25040034.** Created.

Explanations

E-01407

File upload Question	**Copy of the recorded property deed.**
Answer	**NA**



THE STATE OF TEXAS
FORT BEND COUNTY

PRECINCT 1
LIBRARY ACCESS ROAD
PAVING AND DRAINAGE

HJ Consulting
4771 Sweetwater Blvd
Suite 254
Sugar Land, Texas, 77479
(832) 338-3202 C
(832) 553-3103 F
TBPE FIRM F-15945

SHEET DESCRIPTION:

EXHIBIT NO. 2
AERIAL MAP

24-Library Access Road-Aerial.dwg 11/21/2022 5:32 PM

Fort Bend County Engineering
FORT BEND COUNTY, TEXAS

J. Stacy Slawinski, P.E.
County Engineer

May 27, 2025

Judge KP George
Fort Bend County Judge
401 Jackson Street
Richmond, Texas 77406-0148

Re: Public Road Connection for GM Library Road at FM 1093 on behalf of Fort Bend County and GM Equity Group, LLC – Sponsorship

Honorable Judge George:

Fort Bend County Engineering Department, on behalf of GM Equity Group, LLC, is requesting to sponsor a project for a public road connection for GM Library Road at FM 1093. The road connection will provide a secondary point of access for the GM Equity tract.

Any and all cost involved with the project will be borne by Fort Bend County Mobility Project No. 20318x.

The Texas Department of Transportation requests that an agency, such as Fort Bend County, act as a sponsor for the project. This means that the permit for the work will be issued in the name of Fort Bend County. The County accepts responsibility for the terms and conditions of the permit.

We recommend acceptance of the sponsorship and request that this item be placed on the 05/27/2025 Commissioners Court agenda. We have prepared a letter to Texas Department of Transportation for the County Judge's signature.

If there are any questions please do not hesitate to call.

Sincerely,

Rick J. Staigle, PE, PTOE
First Assistant County Engineer

cc: Commissioner Vincent M. Morales, Jr., Precinct 1
Dhiren Srivastava, HJ Consulting dhiren@hjconsultinginc.com
File

COUNTY JUDGE
Fort Bend County, Texas

The Honorable KP George
County Judge

May 27, 2025

Glenn Allbritton
Houston District Engineer
Texas Department of Transportation
7600 Washington Avenue
Houston, Texas 77007-1044

Re: ***Public Road Connection for GM Library Road at FM 1093 on behalf of Fort Bend County and GM Equity Group, LLC – Sponsorship***

Dear Ms. Paul:

Fort Bend County is requesting to sponsor a Texas Department of Transportation project on behalf of GM Equity Group, LLC for a public road connection for GM Library Road at FM 1093.

The request was approved by Fort Bend County Commissioners Court at their meeting dated 05/27/2025. We request that a permit for the public road connection be issued with Fort Bend County as sponsor for this project.

If there are any questions or need for additional information, please call Rick Staigle in our Engineering Department at 281-633-7500.

Sincerely,

KP George
Fort Bend County Judge

Attachments: Resolution
Drawing

cc: Denese Laskowoski, TxDOT denese.laskowski@txdot.gov
File

THE STATE OF TEXAS §

COUNTY OF FORT BEND §

RESOLUTION TO SPONSOR A PROJECT FOR A PUBLIC ROAD CONNECTION FOR GM LIBRARY ROAD AT FM 1093 ON BEHALF OF GM EQUITY GROUP, LLC.

On this 27 day of May, 2025, the Commissioners Court, sitting as the governing body of Fort Bend County, Texas, at a regular meeting, upon motion of Commissioner Meyers, seconded by Commissioner Prestage, duly put and carried;

WHEREAS, the proposed sponsorship project includes the installation of a public road connection at FM 1093 for GM Library Road.

WHEREAS, the funding for such sponsorship of the project is to be provided through Fort Bend County Mobility Project No. 20318x.

NOW, THEREFORE, BE IT RESOLVED that Fort Bend County expresses its support and sponsorship of such project with the Texas Department of Transportation to cause such improvements to be made at FM 1093 for GM Library Road.

FORT BEND COUNTY

By: KP George
KP George, County Judge

ATTEST:

COMMISSIONERS COURT TEXAS FORT BEND COUNTY, TEXAS

Laura Richard
Laura Richard, County Clerk

CSJ #	**0543-02-092**
District #	**12**
Code Chart 64 #	**50080**
Project Name	**FM 359; at GM Library Road**

STATE OF TEXAS §

COUNTY OF TRAVIS §

AGREEMENT
For A
LOCAL ON-SYSTEM IMPROVEMENT PROJECT

THIS AGREEMENT (Agreement) is made by and between the State of Texas, acting by and through the Texas Department of Transportation called the "State", and the **Fort Bend County**, acting by and through its duly authorized officials, called the "Local Government." The State and Local Government shall be collectively referred to as "the parties" hereinafter.

WITNESSETH

WHEREAS, the Texas Transportation Code, Section 201.103 establishes that the State shall design, construct and operate a system of highways in cooperation with local governments and Section 222.052 authorizes the Texas Transportation Commission to accept contributions from political subdivisions for development and construction of public roads and the state highway system within the political subdivision; and

WHEREAS, the Texas Transportation Commission passed Minute Order Number **116752**, authorizing the State to accept Local Government funded projects performed on the state highway system. The project covered by this Agreement includes only work within the state right of way as described in the Agreement, Article 2, Scope of Work (Project); and,

WHEREAS, the Governing Body of the Local Government has approved entering into this Agreement by resolution, ordinance, or commissioners court order dated **02/12/2026**, which is attached to and made a part of this Agreement as Attachment C, Resolution, Ordinance, or Commissioners Court Order (Attachment C) for the improvement covered by this Agreement. A map showing the Project location appears in Attachment A, Project Location Map (Attachment A), which is attached to and made a part of this Agreement**.**

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements of the parties, to be by them respectively kept and performed as set forth in this Agreement, it is agreed as follows:

AGREEMENT

1. Period of the Agreement

This Agreement becomes effective when signed by the last party whose signing makes the Agreement fully executed. This Agreement shall remain in effect until the completed Project is accepted by the State or unless terminated as provided below.

CSJ #	**0543-02-092**
District #	**12**
Code Chart 64 #	**50080**
Project Name	**FM 359; at GM Library Road**

2. Scope of Work

The Project consists of the design and construction of a right turn lane from West bound FM 359 onto the GM Library Road in Fulshear, Fort Bend County, Texas, as shown in Attachment A.

3. Local Project Sources and Uses of Funds

A. The total estimated cost of the Project is shown in Attachment B, Local On-System Improvement Project Budget (Attachment B), which is attached to and made a part of this Agreement. The estimated funds from the Local Government are shown in Attachment B. The State will pay for no Project costs performed by or managed by Local Government under this Agreement.

B. Attachment B shows how necessary resources for completing the Project will be provided by major cost categories. These categories may include but are not limited to: (1) costs of real property (right of way); (2) costs of utility work; (3) costs of environmental assessment and remediation; (4) cost of preliminary engineering and design; (5) cost of construction and construction management; and (6) any other Project costs.

C. The Local Government shall be solely responsible for all of its costs associated with the Project provided for in this Agreement. The Local Government shall be responsible for cost overruns for the Project in excess of the estimated amount to be paid by the Local Government on Attachment B. The Local Government shall also be responsible for direct and indirect costs incurred by the State related to performance of this project if so indicated on Attachment B. If the State determines that the on-system improvements are of significant operational benefit to the State, the State may waive its direct or indirect costs. The State's waiver of its direct or indirect costs shall be indicated on Attachment B by showing the State as responsible for these costs. When the Local Government is responsible for the State's direct or indirect costs, the amount indicated on Attachment B is a fixed fee and not subject to adjustment except through the execution of an amendment to this Agreement.

D. Prior to the performance of any engineering review work by the State, the Local Government shall pay to the State the amount of direct and indirect State costs specified in Attachment B.

E. Whenever funds are paid by the Local Government to the State under this Agreement, the Local Government shall remit a check or warrant made payable to the "Texas Department of Transportation" or may use the State's Automated Clearing House (ACH) system for electronic transfer of funds in accordance with instructions provided by TxDOT's Financial Management Division. The funds shall be deposited and managed by the State and are not refundable.

F. The Local Government will begin construction on the Project within 12 months after execution of the Agreement.

G. The Local Government will complete construction and receive the State's acceptance of the project within 36 months after the date the State authorizes in writing for the Local Government to commence construction of the Project.

H. If the Local Government chooses not to or fails to complete the work once construction on the Project commences, the State may terminate this Agreement in accordance with paragraph 4.C. below. The State may address unfinished construction work as it determines necessary to protect the interests of the State, which includes returning the

Project area to its original condition or completing the work using State forces or contractors. The Local Government shall pay all costs incurred by the State under this provision.

4. Termination of this Agreement

This Agreement shall remain in effect until the Project is completed and accepted by the State, unless:

A. The Agreement is terminated in writing with the mutual consent of the parties;

B. The State terminates the Agreement in writing due to the Local Government's failure to comply with paragraphs 3.F or 3.G; or

C. The Agreement is terminated by one party because of a breach, in which case any cost incurred because of the breach shall be paid by the breaching party.

5. Amendments

Amendments to this Agreement due to changes in the character of the work, terms of the Agreement, or responsibilities of the parties relating to the Project may be enacted through a mutually agreed upon, written amendment. Amendments may not include the addition of State or Federal funds. If any funds other than Local Government funds are proposed, this Agreement must be terminated and a new agreement with appropriate terms and clauses executed in its place.

6. Remedies

This Agreement shall not be considered as specifying the exclusive remedy for any Agreement default, but all remedies existing at law and in equity may be availed of by either party to this Agreement and shall be cumulative.

7. Architectural and Engineering Services

The Local Government has responsibility for the performance of architectural and engineering services. The engineering plans shall be developed in accordance with the applicable *State's Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges* and the special specifications and special provisions related to it. The Project design shall, at a minimum conform to applicable State manuals.

The State shall review the plans, specifications, and estimates provided by the Local Government upon completion or at any time deemed necessary by the State. Should the State determine that the complete plans, specifications, and estimates for the Project are not acceptable, the Local Government shall correct the design documents to the State's satisfaction. Should additional specifications or data be required by the State, the Local Government shall redesign the plans and specifications to the State's satisfaction. The costs for additional work on the plans, specifications, and estimates shall be borne by the Local Government.

8. Environmental Assessment and Mitigation

Development of a transportation project must comply with applicable environmental laws. The Local Government is responsible for:

A. The identification and assessment of any environmental problems associated with the development of the Project governed by this Agreement.

B. The cost of any environmental problem's mitigation and remediation.

C. Providing any public meetings or public hearings required for development of all required environmental documents and obtaining all required permits and approvals.
D. The preparation of documents required for the environmental clearance of the Project.

Before the advertisement for bids, the Local Government shall provide to the State written documentation from the appropriate regulatory agency or agencies that all environmental clearances and approvals have been obtained.

9. Right of Way and Real Property

The Local Government shall acquire all required right of way and necessary right of entry for performance of the Project in accordance with applicable requirements of the Texas Department of Transportation Right of Way Manual, State law, and Federal law governing the acquisition of real property including but not limited to Title II and Title III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 Title 42 U.S.C.A. Section 4601 et seq. Right of way acquired for improvements to the state highway system shall be acquired in the name of the State. Local Government shall provide right of entry to State personnel and its authorized representatives to areas off the state highway system throughout the duration of the Project for the State to perform inspection and oversight of the Project.

10. Utilities

The Local Government shall be responsible for the adjustment, removal, or relocation of utility facilities for the Project in accordance with applicable State and Federal laws, regulations, rules, policies, and procedures, including any cost to the State of a delay resulting from the Local Government's failure to ensure that utility facilities are adjusted, removed, or relocated before the scheduled beginning of construction. The Local Government will not be reimbursed for the cost of required utility work. The Local Government must obtain advance approval for any variance from established procedures.

11. Compliance with Texas Accessibility Standards and ADA

Local Government shall ensure that the plans for and the construction of the Project are in compliance with standards issued or approved by the Texas Department of Licensing and Regulation (TDLR) as meeting or consistent with minimum accessibility requirements of the Americans with Disabilities Act (P.L. 101-336) (ADA).

12. Construction Responsibilities

A. The Local Government shall advertise for construction bids, issue bid proposals, receive and tabulate the bids, and award and administer the contract for construction of the Project. Administration of the contract includes the responsibility for construction engineering and for issuance of any change orders, supplemental agreements, amendments, or additional work orders that may become necessary subsequent to the award of the construction contract. Project plans and specifications for improvements on the state highway system must be approved by the State prior to advertising for construction. Upon selection of a contractor and prior to commencing construction within the state highway system right of way, the Local Government shall request and obtain written authorization to commence construction of the Project from the State. The Local Government will supervise and inspect all work performed hereunder and provide such engineering inspection and testing services as may be required to ensure

that the construction is accomplished in accordance with the approved plans and specifications. All construction change orders impacting the proposed improvements, traffic control, environmental mitigation, or drainage on the state highway system require written pre-approval by the State prior to execution by the Local Government.

B. Upon completion of the Project, the Local Government will issue and sign a "Notification of Completion" acknowledging the Project's construction completion. A copy will be provided to the State prior to State's final acceptance of the improvements.

C. Prior to the State's acceptance of the improvements on the state highway system, Local Government shall furnish to the State written certification from a Texas Registered Professional Engineer that the Project was constructed in substantial compliance with the Project's plans, specifications, and quality assurance requirements.

13. Project Maintenance

After Local Government completion of the work and acceptance by the State, the State will be responsible for maintenance of the improvements within the state highway system right of way outside the boundaries of an incorporated city. This obligation may be fulfilled through other agreements signed by the State.

14. Notices

All notices to either party shall be delivered personally or sent by certified or U.S. mail, postage prepaid, addressed to that party at the following address:

Local Government	State
County Judge Fort Bend County 301 Jackson St. Richmond, Texas 77469	Director of Contract Services Texas Department of Transportation 125 E. 11th Street Austin, Texas 78701

All notices shall be deemed given on the date delivered in person or deposited in the mail, unless otherwise provided by this Agreement. Either party may change the above address by sending written notice of the change to the other party. Either party may request in writing that notices shall be delivered personally or by certified U.S. mail, and that request shall be carried out by the other party.

15. Legal Construction

If one or more of the provisions contained in this Agreement shall for any reason be held invalid, illegal, or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provisions and this Agreement shall be construed as if it did not contain the invalid, illegal, or unenforceable provision.

16. Responsibilities of the Parties

The State and the Local Government agree that neither party is an agent, servant, or employee of the other party, and each party agrees it is responsible for its individual acts and deeds as well as the acts and deeds of its contractors, employees, representatives, and agents.

CSJ #	**0543-02-092**
District #	**12**
Code Chart 64 #	**50080**
Project Name	**FM 359; at GM Library Road**

17. Ownership of Documents

Upon completion or termination of this Agreement, copies of all documents and data prepared under this Agreement by the Local Government for improvements within the state highway system right of way shall be provided to the State prior to State acceptance of the Project without restriction or limitation on their further use. The originals shall remain the property of the Local Government. At the request of the State, the Local Government shall submit any Project information required by the State in the format directed by the State.

18. Compliance with Laws

The parties shall comply with all federal, state, and local laws, statutes, ordinances, rules and regulations, and the orders and decrees of any courts or administrative bodies or tribunals in any manner affecting the performance of this Agreement. When required, the Local Government shall furnish the State with satisfactory proof of this compliance.

19. Sole Agreement

This Agreement constitutes the sole and only agreement between the parties and supersedes any prior understandings or written or oral agreements respecting the Agreement's subject matter.

20. Inspection of Books and Records

The parties to this Agreement shall maintain all books, documents, papers, accounting records, and other documentation relating to costs incurred and engineering inspection and testing services performed under this Agreement and shall make such materials available to the State and the Local Government or their duly authorized representatives for review and inspection at its office during the Agreement period and for seven (7) years from the date of completion of work defined under this Agreement or until any impending litigation or claims are resolved. Additionally, the State and the Local Government and their duly authorized representatives shall have access to all the governmental records that are directly applicable to this Agreement for the purpose of making audits, examinations, excerpts, and transcriptions.

21. Insurance

Before beginning work on the state highway system, the Local Government and its contractor performing the work shall provide the State with a fully executed copy of the State's Form 1560 Certificate of Insurance verifying the existence of coverage in the amounts and types specified on the Certificate of Insurance for all persons and entities working on state right of way. Self-insurance documentation acceptable to the State may be substituted for all or part of the coverage's required for the Local Government. This coverage shall be maintained until all work on the state right of way is complete. If coverage is not maintained, all work on state right of way shall cease immediately, and the State may recover damages and all costs of completing the work.

22. Pertinent Non-Discrimination Authorities

During the performance of this Agreement, the Local Government, for itself, its assignees, and successors in interest agree to comply with all applicable Federal and State nondiscrimination statutes and authorities.

CSJ #	**0543-02-092**
District #	**12**
Code Chart 64 #	**50080**
Project Name	**FM 359; at GM Library Road**

23. Signatory Warranty

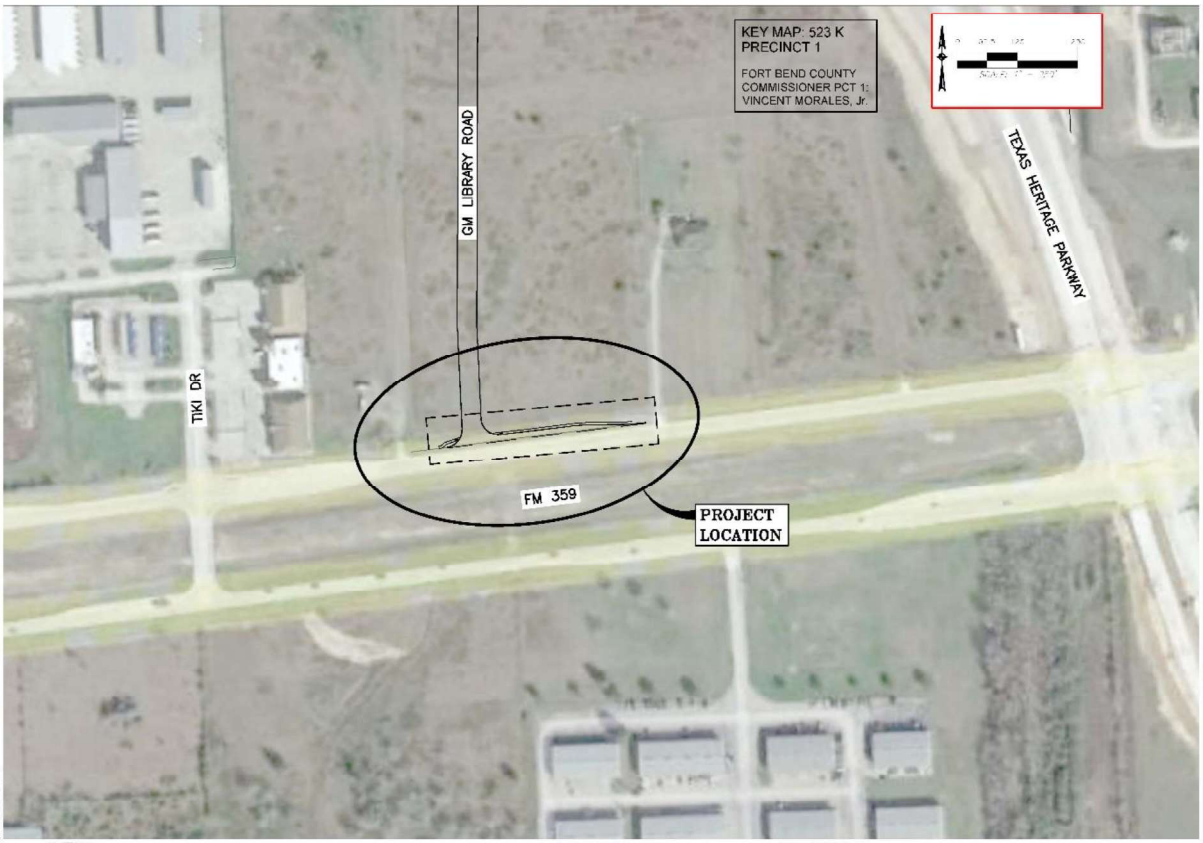
Each signatory warrants that the signatory has necessary authority to execute this Agreement on behalf of the entity represented.

Each party is signing this agreement on the date stated under that party's signature.

THE STATE OF TEXAS	**THE LOCAL GOVERNMENT**
DocuSigned by: Kenneth Stewart F1CDA80ED1B8C4B6...	DocuSigned by: KP George F546587DD2BD433...
Signature	Signature
Kenneth Stewart	KP George
Typed or Printed Name	Typed or Printed Name
Director, Contract Services	Presiding Officer of Commissioners Court
Typed or Printed Title	Typed or Printed Title
4/9/2026	4/9/2026
Date	Date

CSJ #	**0543-02-092**
District #	**12**
Code Chart 64 #	**50080**
Project Name	**FM 359; at GM Library Road**

ATTACHMENT A
PROJECT LOCATION MAP



CSJ #	**0543-02-092**
District #	**12**
Code Chart 64 #	**50080**
Project Name	**FM 359; at GM Library Road**

ATTACHMENT B
LOCAL ON-SYSTEM IMPROVEMENT PROJECT BUDGET
(Locally Funded and Performed Project)

The Local Government is responsible for 100% of the costs allocated to it as described below, including overruns.

Description	Estimated Costs	Subtotals
PROJECT PHASES: Work performed by the Local Government or its Consultant or Contractor		
Environmental	$0.00	
Right of Way	$0.00	
Engineering	$75,000.00	
Utility Work	$0.00	
Construction	$175,000.00	
Subtotal for Project Phases		$250,000.00
DIRECT STATE COSTS:	**Paid By: ☒ Local Government ☐ State**	
Environmental	$200.00	
Right of Way	$200.00	
Engineering	$3,000.00	
Utility Work	$200.00	
Construction	$7,000.00	
Subtotal for Direct State Costs		$10,600.00
INDIRECT STATE COSTS:	**Paid By: ☒ Local Government ☐ State**	
Subtotal for Indirect State Costs		$584.06
TOTAL ESTIMATED COST OF PROJECT		$261,184.06

$11,184.06	Fixed price amount of payment by the Local Government to the State for the State's direct and indirect costs as stated in Article 3, C and D of the Agreement.

CSJ #	**0543-02-092**
District #	**12**
Code Chart 64 #	**50080**
Project Name	**FM 359; at GM Library Road**

ATTACHMENT C
RESOLUTION, ORDINANCE, OR COMMISSIONERS COURT ORDER

351

ORDER OF COMMISSIONERS COURT

The Commissioners Court of Fort Bend County, Texas, convened in regular session at a regular term of said Court, open to the public, at the Fort Bend County Courthouse in the City of Richmond, Texas, on February 12, 2026 with a quorum of said Court present:

Whereupon, among other business, the County considered the following:

AN ORDER AUTHORIZING EXECUTION OF AN AGREEMENT FOR A LOCAL ON-SYSTEM IMPROVEMENT PROJECT BETWEEN FORT BEND COUNTY AND THE STATE OF TEXAS ACTING BY AND THROUGH THE TEXAS DEPARTMENT OF TRANSPORTATION TO DESIGN AND CONSTRUCT A RIGHT TURN LANE FROM WEST BOUND FM 359 ONTO THE GM LIBRARY ROAD IN FULSHEAR, FORT BEND COUNTY, TEXAS.

Commissioner Meyers introduced an order and moved that Commissioners Court adopt the order. Commissioner Prestage seconded the motion for adoption of the order. The motion, carrying with it the adoption of the order, prevailed by the following vote:

	Yes	No	Abstain
Judge KP George	✓	–	–
Commissioner Vincent Morales	✓	–	–
Commissioner Grady Prestage	✓	–	–
Commissioner Andy Meyers	✓	–	–
Commissioner Dexter McCoy	✓	–	–

The County Judge thereupon announced that the motion had duly and lawfully carried and that the order had been duly and lawfully adopted. The order thus adopted follows:

IT IS ORDERED THAT:

1. The Fort Bend County Judge is authorized to execute on behalf of Fort Bend County the Agreement for a Local On-System Improvement Project between Fort Bend County and the State of Texas acting by and through the Texas Department of Transportation to design and construct a right turn lane from West bound FM 359 onto the GM Library Road in Fulshear, Fort Bend County, Texas. Fort Bend County will be responsible for one hundred percent of the Local Participation Cost as estimated and shown in the Advance Funding Agreement.

2. All Fort Bend County officials and employees are authorized to do any and all things necessary or convenient to accomplish the purposes of this order.

02/24/2026 Original (e) sent to Miguel Serrano / Jillian Peterson, Engineering

CSJ #	**0543-02-092**
District #	**12**
Code Chart 64 #	**50080**
Project Name	**FM 359; at GM Library Road**

Approved by the Commissioners Court of Fort Bend County, Texas, this 12th day of February, 2026.

FORT BEND COUNTY, TEXAS

By: _____
KP George, County Judge

ATTEST:

_____
Laura Richard, County Clerk

FORT BEND COUNTY ENGINEERING DEPARTMENT

PLANS FOR CONSTRUCTION OF LIBRARY ACCESS ROAD (PHASE 4) AT GINTER TRACT

PROJECT NO. 20318X

100% SUBMITTAL

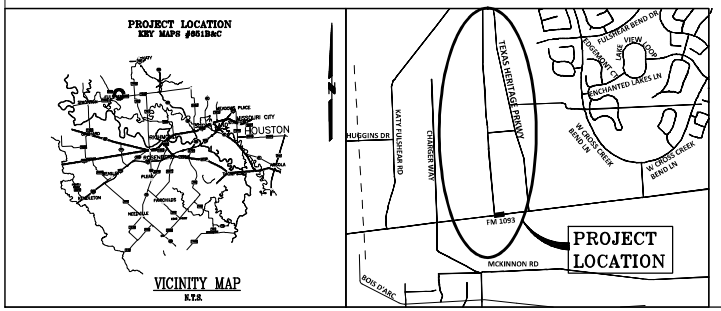
VINCENT MORALES, JR.
COMMISSIONER PRECINCT 1

GRADY PRESTAGE
COMMISSIONER PRECINCT 2

K.P. GEORGE
COUNTY JUDGE

ANDY MEYERS
COMMISSIONER PRECINCT 3

DEXTER L. McCOY
COMMISSIONER PRECINCT 4



THE STATE OF TEXAS
FORT BEND COUNTY

OCT 2025
PRECINCT # 1
Fort Bend County, Texas

STATE OF TEXAS
HARISH C. JAJOO
62217
LICENSED PROFESSIONAL ENGINEER
10/28/2025

4771 Sweetwater Blvd Suite 254
Sugar Land, Texas, 77479
(832) 338-3202 C; (832) 553-3103 F
TBPE FIRM F-15945

APPROVED: _____
COUNTY ENGINEER
J. STACY SLAWINSKI, P.E.

FBCED, STANDARD 01

Z:\Projects\2113PVHJ\Working\Phase 4\2113PVHJ-01-COVER-Phase 4.dwg

INDEX OF DRAWINGS

NO.	DATE	REVISION	APPROVED

STATE OF TEXAS
HARISH C. JAJOO
62217
LICENSED
PROFESSIONAL ENGINEER
10/28/2025

4771 Sweetwater Blvd Suite 254
Sugar Land, Texas, 77479
(832) 338-3202 C; (832) 553-3103 F
TBPE FIRM F-15945

FORT BEND COUNTY
ENGINEERING DEPARTMENT

PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)

INDEX OF DRAWINGS

PROJECT NUMBER
20318x
DRAWING SCALE
N.A.
SHEET NO. 2 OF 73

THE STATE OF TEXAS
FORT BEND COUNTY

GENERAL

1. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS BEFORE BEGINNING CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SECURITY TO PROTECT THE PROJECT SITE, CONTRACTOR PROPERTY, EQUIPMENT, AND WORK.
3. THE CONTRACTOR IS RESPONSIBLE FOR CLEANING STREETS OF CONSTRUCTION DIRT AND DEBRIS AT CLOSE OF EACH WORK DAY.
4. THE CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY, UPON COMPLETION OF THE JOB SHALL BE AS GOOD AS OR BETTER THAN PRIOR TO STARTING WORK.
5. PRIOR TO CONSTRUCTION, THE CONTRACTOR, ALONG WITH CONCURRENCE FROM THE FIELD ENGINEER, SHALL DETERMINE HIS/HER LAY-DOWN AND/OR STAGING AREA LOCATIONS.
6. THE CONTRACTOR SHALL NOTIFY ALL PROPERTY OWNERS A MINIMUM OF 24 HOURS PRIOR TO BLOCKING DRIVEWAYS OR ENTERING UTILITY EASEMENTS.
7. TRAFFIC INGRESS AND EGRESS FOR DRIVEWAYS AND PEDESTRIAN ACCESS FACILITIES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION WITH ALL WEATHER SURFACES.
8. THE CONTRACTOR SHALL REMOVE ANY FENCES, POSTS, MAILBOXES, PLANTERS, PERMANENT TRASH CONTAINERS, CULVERTS, ETC. OR SECTIONS THEREOF, THAT ENCROACH WITHIN THE COUNTY'S RIGHT-OF-WAY. NOTE: PRIOR TO CONSTRUCTION, THE PROPERTY OWNER WAS PAID TO RELOCATE OR REPLACE THESE ITEMS OUTSIDE OF THE COUNTY'S RIGHT-OF-WAY. IF THE OWNER HAS FAILED TO DO SO, THE CONTRACTOR WILL REPLACE THEM WITH THE MINIMUM LEVEL OF QUALITY NEEDED TO SECURE THE PROPERTY AND/OR MAINTAIN MAIL DELIVERY. IN THAT CASE, PAYMENT FOR THESE INSTALLATIONS WILL BE INCLUDED AS EXTRA WORK ITEMS OR AS OVERRUNS TO EXISTING PAY ITEMS.

   ANY DAMAGE CAUSED BY THE CONTRACTOR TO SUCH ITEMS LOCATED OUTSIDE OF THE COUNTY'S RIGHT-OF-WAY, SHALL BE REPLACED WITH LIKE-KIND OR BETTER AT THE CONTRACTOR'S EXPENSE.

   ALSO, IF THESE ITEMS ARE LOCATED WITHIN THE PROJECT RIGHT-OF-WAY AND ARE DESIGNATED TO REMAIN, ANY DAMAGE CAUSED BY THE CONTRACTOR TO SUCH ITEMS, SHALL BE REPLACED WITH LIKE-KIND OR BETTER AT THE CONTRACTOR'S EXPENSE.

   TREES, BUSHES, SHRUBBERY AND OTHER DAMAGED PLANTINGS DESIGNATED TO REMAIN SHALL BE REPLACED WITHIN 72 HOURS OF REMOVAL AND ARE TO BE THOROUGHLY WATERED-IN. NO SEPARATE PAY.
9. PAVED SURFACES, PAVEMENT MARKERS AND MARKINGS SHALL BE PROTECTED FROM DAMAGE BY TRACKED EQUIPMENT.
10. IRON RODS DISTURBED DURING CONSTRUCTION ARE TO BE REPLACED BY A REGISTERED PROFESSIONAL LAND SURVEYOR FOR THE ORIGINAL PROPERTY OWNER AT NO SEPARATE PAY.
11. CONSTRUCTION STAKING WILL BE PROVIDED BY THE CONTRACTOR. TWO COPIES OF STAKING NOTES TO BE PROVIDED TO THE ENGINEER PRIOR TO CONSTRUCTION.
12. THE COUNTY OR THE COUNTY'S SURVEYOR SHALL PROVIDE A BENCHMARK OR TEMPORARY BENCHMARK AND SURVEY CONTROLS.
13. THE CONTRACTOR SHALL MAINTAIN UPDATED RED-LINED RECORD DRAWINGS ON SITE FOR INSPECTION BY THE ENGINEER.
14. MOWING, MAINTENANCE, AND CLEAN-UP OF THE PROJECT SHALL MEET THE REQUIREMENT OF SPECIFICATION ITEM 560 (NO SEPARATE PAY). MOWING, MAINTENANCE, AND CLEAN-UP IS REQUIRED FOR THE PROJECT LIMITS AND DURATION, REGARDLESS OF THE CONTRACTOR'S SCOPE OF ACTIVITIES WITHIN THE PROJECT LIMITS.
15. THE REMOVAL OF ANY ABANDONED UTILITIES REQUIRED TO COMPLETE THE WORK SHALL BE INCIDENTAL AND NO SEPARATE PAYMENT SHALL BE MADE.
16. IT IS THE CONTRACTOR'S RESPONSIBILITY TO STOCKPILE NECESSARY MATERIAL ON-SITE OR AT A SECURED OFF-SITE LOCATION AT NO ADDITIONAL EXPENSE TO FORT BEND COUNTY. ANY SUITABLE EXCAVATED MATERIAL ON THE PROJECT WHICH IS AVAILABLE AT THE TIME OF NEED; WHETHER FROM STORM SEWER, ROADWAY, AND/OR CHANNEL EXCAVATION, SHALL BE USED BEFORE BORROW IS BROUGHT ON-SITE.
17. MANHOLES, JUNCTION BOXES, INLETS, AND RISERS ARE TO BE PRE-CAST OR CAST IN PLACE.
18. THE FOLLOWING DETAILS ARE MINIMUM REQUIREMENTS AND MAY BE SUPERSEDED BY GEOTECHNICAL ENGINEER RECOMMENDATIONS OR MORE STRINGENT REQUIREMENTS FROM THE CITY'S ETJ PROJECT IS WITHIN.
19. POP UP DRAINS ARE NOT ALLOWED IN FORT BEND COUNTY RIGHT OF WAY.

TRAFFIC CONTROL

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE MOST RECENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND THE APPROVED TRAFFIC CONTROL PLAN.
2. THE CONTRACTOR SHALL MAINTAIN AT LEAST ONE LANE OF TRAFFIC IN EACH DIRECTION DURING WORKING HOURS EXCEPT DURING FLAGGING OPERATION
3. LANE CLOSURES SHALL BE DURING OFF-PEAK HOURS ONLY (MONDAY THROUGH FRIDAY 9 A.M. TO 4 P.M.) UNIFORMED PEACE OFFICERS OR FLAGGERS IN RADIO CONTACT ARE REQUIRED TO DIRECT TRAFFIC DURING LANE CLOSURES.
4. DETOURS REQUIRE PRIOR APPROVAL OF THE FIELD ENGINEER AND PRECINCT. DETOUR PLANS, IF ALLOWED, MUST INCLUDE APPROPRIATE DETOUR SIGNAGE, PUBLIC NOTICE VIA SIGNAGE TWO WEEKS IN ADVANCE STATING THE DATES OF THE AGREED UPON DATE OF CLOSURE AND DATE THE ROAD WILL RE-OPEN TO TRAFFIC. CONTRACTOR TO USE (WITH PRIOR APPROVAL OF THE FIELD ENGINEER) HIGH EARLY STRENGTH CONCRETE AND OTHER RELATED CONSTRUCTION METHODS TO MINIMIZE THE DURATION OF THE DETOUR AND TO ENSURE THAT THE ROADWAY IS OPEN ON, OR PRIOR TO, THE AGREED UPON DATE.
5. ONE DAY PRIOR TO THE IMPLEMENTATION OF A TRAFFIC CONTROL PLAN PHASE OR STEP, OR THE IMPLEMENTATION OF AN ADDITIONAL, REVISED, OR NEW TRAFFIC CONTROL ELEMENT, THE CONTRACTOR SHALL MEET WITH THE ENGINEER TO GIVE A DETAILED DESCRIPTION OF THE CONTRACTOR'S PLAN AND PREPARATIONS. THE CONTRACTOR SHALL OBTAIN WRITTEN CONCURRENCE FROM THE ENGINEER THAT ADEQUATE PROJECT PROGRESS HAS BEEN ACHIEVED AND THAT ADEQUATE PREPARATIONS ARE IN PLACE PRIOR TO SWITCHING TRAFFIC. IF, IN THE OPINION OF THE ENGINEER, REQUIRED PROGRESS AND ADEQUATE PREPARATIONS ARE NOT COMPLETE, THE CONTRACTOR SHALL NOT IMPLEMENT THE NEXT PHASE, STEP, OR ELEMENT OF TRAFFIC CONTROL UNTIL INCOMPLETE CONSTRUCTION ITEMS OR PREPARATIONS ARE COMPLETED. TIME EXTENSIONS WILL NOT BE GRANTED FOR DELAYS CAUSED BY THE INCOMPLETE CONSTRUCTION ITEMS OR INADEQUATE CONTRACTOR PREPARATIONS REQUIRED TO IMPLEMENT TRAFFIC CONTROL.
6. TRAFFIC CONTROL PER THE CONTRACT IS REQUIRED FOR THE ENTIRE DURATION OF THE PROJECT, INCLUDING THE PUNCHLIST PERIOD. PAYMENT FOR TRAFFIC CONTROL THAT IS PROPERLY INSTALLED FOR LESS THAN A FULL MONTH SHALL BE BASED ON A PERCENTAGE BASIS OF THE TIME INSTALLED. TRAFFIC CONTROL PAYMENTS TO THE CONTRACTOR SHALL END 10 DAYS AFTER SUBSTANTIAL COMPLETION, ALTHOUGH PROPER TRAFFIC CONTROL MUST BE MAINTAINED UNTIL PUNCHLIST COMPLETION.
7. THE PURPOSE OF THE CONSTRUCTION SEQUENCE AND TRAFFIC HANDLING OUTLINED HEREIN IS TO DOCUMENT A VIABLE TCP THAT CAN BE UTILIZED TO CONSTRUCT THE PROJECT. IT IS THE BASIS OF ESTIMATION FOR THE TRAFFIC CONTROL BID ITEMS, AND IS TO BE UTILIZED AND IMPLEMENTED, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT TCP, HE/SHE SHALL PREPARE AND SUBMIT THE ALTERNATIVE TCP TO THE COUNTY FOR APPROVAL NO LESS THAN 10 WORKING DAYS PRIOR TO THE PROPOSED IMPLEMENTATION DATE. THE TCP SHALL BE DRAWN TO SCALE AND SIGNED & SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS. UPON APPROVAL BY FORT BEND COUNTY, THE ALTERNATIVE PLAN SHALL BECOME THE BASIS FOR A "CHANGE IN CONTRACT" TO REVISE THE TRAFFIC CONTROL BID ITEMS ACCORDINGLY AND BECOME PART OF THE CONTRACT DOCUMENTS.
8. ALL TEMPORARY PAVEMENT MARKINGS ON PERMANENT PAVEMENT SHOULD BE RPMS OR TABS.
9. TRAFFIC PATTERN CHANGES REQUIRE CHANGEABLE MESSAGE BOARDS PLACED AT LEAST 2 WEEKS IN ADVANCE OF PROPOSED CHANGE. QUANTITY, PLACEMENT AND WORDING TBD BY FBC.

NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	3-1-22	RJS
2	UPDATED BID ITEM SPECS	10-1-24	RJS

FORT BEND COUNTY
ENGINEERING DEPARTMENT

THE STATE OF TEXAS · FORT BEND COUNTY ·

PROJECT TITLE:

DRAWN BY: INIT		FBCED STANDARD
CK'D BY: INIT	SHEET DESCRIPTION: PUBLIC WORKS AND SUBDIVISION	03
SCALE: NONE	GENERAL NOTES	SHEET NO: 3 / 73
DATE: 10-1-24	APPROVED BY:	

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CONSTRUCTION

1. FORT BEND COUNTY MUST BE INVITED TO THE PRE-CONSTRUCTION MEETING.
2. CONTRACTOR SHALL NOTIFY FORT BEND COUNTY ENGINEERING DEPARTMENT 48 HOURS PRIOR TO COMMENCING CONSTRUCTION AND 48 HOUR NOTICE TO ANY CONSTRUCTION ACTIVITY WITHIN THE LIMITS OF THE PAVING AT CONSTRUCTION@FBCTX.GOV.
3. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FROM FORT BEND COUNTY PRIOR TO COMMENCING CONSTRUCTION OF ANY IMPROVEMENTS WITHIN COUNTY ROAD RIGHT OF WAYS.
4. ALL PAVING IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FORT BEND COUNTY "RULES, REGULATIONS AND REQUIREMENTS" RELATING TO THE APPROVAL AND ACCEPTANCE OF IMPROVEMENTS IN SUBDIVISIONS AS CURRENTLY AMENDED.
5. ALL ROAD WIDTHS, CURB RADII AND CURB ALIGNMENT SHOWN INDICATES BACK OF CURB.
6. A CONTINUOUS LONGITUDINAL REINFORCING BAR SHALL BE USED IN THE CURBS.
7. ALL CONCRETE PAVEMENT SHALL BE 5½ SACK CEMENT WITH A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI AT 28 DAYS. TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT EACH CURB RETURN AND AT A MAXIMUM SPACING OF 60 FEET.
8. ALL WEATHER ACCESS TO ALL EXISTING STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.
9. 4" X 12" REINFORCED CONCRETE CURB SHALL BE PLACED IN FRONT OF SINGLE FAMILY LOTS ONLY. ALL OTHER AREAS SHALL BE 6" REINFORCED CONCRETE CURB.
10. CURB HEADERS ARE REQUIRED AT CURB CONNECTIONS TO HANDICAP RAMPS, WITH NO CONSTRUCTION JOINT WITHIN 5' OF RAMPS.
11. GUIDELINES ARE SET FORTH IN THE TEXAS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", AS CURRENTLY AMENDED, SHALL BE OBSERVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE FLAGMEN, SIGNING, STRIPING AND WARNING DEVICES, ETC., DURING CONSTRUCTION – BOTH DAY AND NIGHT.
12. ALL R1-1 STOP SIGNS SHALL BE A MINIMUM OF 36"X36" WITH DIAMOND GRADE SHEETING PER TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
13. STREET NAME SIGNAGE SHALL BE ON A 9" HIGH SIGN FLAT BLADE W/REFLECTIVE GREEN BACKGROUND. STREET NAMES SHALL BE UPPER AND LOWERCASE LETTERING WITH UPPERCASE LETTERS OF 6" MINIMUM AND LOWERCASE LETTERS OF 4.5" MINIMUM. THE LETTERS SHALL BE REFLECTIVE WHITE. STREET NAME SIGNS SHALL BE MOUNTED ON STOP SIGN POST.
14. A BLUE DOUBLE REFLECTORIZED BUTTON SHALL BE PLACED AT ALL FIRE HYDRANT LOCATIONS. THE BUTTON SHALL BE PLACED 12 INCHES OFF OF THE CENTERLINE OF THE STREET ON THE SAME SIDE AS THE HYDRANT.
15. THE PROJECT AND ALL PARTS THEREOF SHALL BE SUBJECT TO INSPECTION FROM TIME TO TIME BY INSPECTORS DESIGNATED BY FORT BEND COUNTY. NO SUCH INSPECTIONS SHALL RELIEVE THE CONTRACTOR OF ANY OF ITS OBLIGATIONS HEREUNDER. NEITHER FAILURE TO INSPECT NOR FAILURE TO DISCOVER OR REJECT ANY OF THE WORK AS NOT IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS, REQUIREMENTS AND SPECIFICATIONS OF FORT BEND COUNTY OR ANY PROVISION OF THIS PROJECT SHALL BE CONSTRUED TO IMPLY AN ACCEPTANCE OF SUCH WORK OR TO RELIEVE THE CONTRACTOR OF ANY OF ITS OBLIGATIONS HEREUNDER.
16. STABILIZED SUBGRADE: DETERMINE THE THICKNESS OF THE STABILIZED SUBGRADE AFTER CURING AND COMPACTION. IF THE SUBGRADE DEPTH IS GREATER THAN THE PROPOSED THICKNESS BY 20% OR MORE, THE CMT LAB MUST PROVIDE VERIFICATION THE PERCENTAGE OF MATERIAL BEING USED TO STABILIZE THE SUBGRADE MEETS OR EXCEEDS PROJECT REQUIREMENTS. TEST RESULTS REQUIRED.
17. CONTRACTOR TO PROVIDE MONTHLY SCHEDULE UPDATES AND WEEKLY LOOK AHEAD
18. ALL DRAINAGE AND DETENTION CAPACITY MUST BE IN PLACE PRIOR TO THE BEGINING ANY PAVING ACTIVITIES
19. ALL TURN LANES AND MEDIAN OPENINGS SHALL HAVE THE SURFACE AS THE EXISTING STREET. FROM YHR ROW, ALL STREET AND DRIVEWAY CONNECTIONS SHALL HAVE THE SAME SURFACE AS THE EXISTING OR PROPOSED STREET.
20. MINIMUM DEPTH FOR BORES/UTILITIES SHALL BE AS FOLLOWS:
    OPEN DITCH: -3' MIN. BELOW FLOWLINE; 5' MIN BELOW TOP OF PAVEMENT
    CURBED TREETS -5' MIN. BELOW TOP OF PAVEMENT

NOTE: FORT BEND COUNTY NOTES SUPERSEDE ANY CONFLICTING NOTES.

NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	3-1-22	RJS
2	ADDED NOTE 17	3-1-23	RJS
3	ADDED NOTE 18, 19 & 20	10-1-24	RJS
4			
5			

FORT BEND COUNTY ENGINEERING DEPARTMENT

THE STATE OF TEXAS FORT BEND COUNTY

PROJECT TITLE:

DRAWN BY: INIT		FBCED STANDARD
CK'D BY: INIT	SHEET DESCRIPTION: CONSTRUCTION GENERAL NOTES	02
SCALE: NONE		SHEET NO:
DATE: 10-1-24	APPROVED BY:	4 / ##

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CENTERPOINT NOTES:

CAUTION: UNDERGROUND GAS FACILITIES

Locations of Centerpoint Gas main lines (to include Unit Gas Transmission and/or Industrial Gas Supply Corporation where applicable) are shown in an approximate location only. Service lines are usually not shown. The Contractor shall contact the Utility Coordinating committee at (713) 223-4567 or 1-800-669-8344 a minimum of 48 hours prior to construction to have main and service lines field located.

When Centerpoint Gas pipe line markings are not visible, call (713) 967-8037 (7:00 a.m. to 4:30 p.m.) for status of line location request before excavation begins.
When excavating within eighteen inches (18") of the indicated location of Centerpoint Gas facilities, all excavation must be accomplished using non-mechanized excavation procedures.
When Centerpoint Gas facilities are exposed, sufficient support must be provided to the facilities to prevent excessive stress on the piping.

The contractor is fully responsible for any damages caused by his failure to exactly locate and preserve these underground facilities.

WARNING: OVERHEAD ELECTRICAL FACILITIES

Overhead lines may exist on the property. We have not attempted to mark those lines since they are clearly visible, but you should locate them prior to beginning any construction. Texas law, Section 752, Health & Safety code, forbids all activities in which persons or things May come within six (6) feet of live overhead high voltage lines. Parties responsible for the work, including contractors, are legally responsible for the safety of construction workers under this law. This law carries both criminal and civil liability. To arrange for lines to be turned off or removed call Centerpoint Electric at 713-207-7777.

GENERAL NOTES

IN ALL INSTANCES, CITY OF FULSHEAR CONSTRUCTION SPECIFICATIONS WILL SUPERCEDE CITY OF HOUSTON CONSTRUCTION SPECIFICATIONS.

1. SURFACE RESTORATION: AT THE END OF ALL CONSTRUCTION PROJECTS, THE CONTRACTOR SHALL RESTORE EXISTING FACILITY (I.E. PROPERTY) EQUAL TO OR BETTER THAN EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION.

2. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, EQUIPMENT, AND LABOR FOR EXCAVATION, INSTALLATION, BACKFILLING OF WATER AND/OR SEWER MAINS AND RELATED APPURTENANCES AS SHOWN ON THE PLANS AND/OR DESCRIBED IN THE SPECIAL PROVISIONS.

3. THE LOADING AND UNLOADING OF ALL PIPE, VALVES, HYDRANTS, MANHOLES AND OTHER ACCESSORIES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PRACTICES AND SHALL AT ALL TIMES BE PERFORMED WITH CARE TO AVOID ANY DAMAGE TO THE MATERIAL. THE CONTRACTOR SHALL LOCATE AND PROVIDE THE NECESSARY STORAGE AREAS FOR MATERIALS AND EQUIPMENT.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFEGUARDING AND PROTECTING ALL MATERIAL AND EQUIPMENT STORED ON THE JOB SITE THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STORAGE OF MATERIALS IN A SAFE AND WORKMANLIKE MANNER TO PREVENT INJURIES, DURING AND AFTER WORKING HOURS, UNTIL PROJECT COMPLETION.

5. CONTRACTOR SHALL PROVIDE SHEETING, SHORING AND BRACING AS NECESSARY TO PROTECT WORKMEN AND EXISTING UTILITIES DURING ALL PHASES OF CONSTRUCTION, AS PER O.S.H.A. REQUIREMENTS.

6. ALL TESTING PROCEDURES USED ON THIS PROJECT SHALL CONFORM TO THE CITY OF FULSHEAR STANDARDS. THE INITIAL TESTING EXPENSE SHALL BE BORNE BY THE OWNER. IF ANY OF THE TEST RESULTS DO NOT MEET THE TESTING STANDARDS, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE OR REPLACE SUCH MATERIAL SO THAT THE TESTING STANDARDS CAN BE MET. ADDITIONAL TESTING TO COMPLY WITH THESE STANDARDS SHALL BE AT THE CONTRACTOR'S EXPENSE.

7. CONTRACTOR SHALL UNCOVER EXISTING UTILITIES AT ALL "POINTS OF CROSSING" TO DETERMINE IF CONFLICTS EXIST BEFORE COMMENCING ANY CONSTRUCTION. NOTIFY THE ENGINEER AT ONCE OF ANY CONFLICT.

8. CONTACT THE LOCAL MUD OPERATOR TO OPERATE EXISTING UTILITIES.

9. CONTACT THE LOCAL MUD OPERATOR PRIOR TO MAKING TIE-INS TO EXISTING UTILITIES.

10. WHEN HYDROMULCH IS REQUIRED, CONTRACTOR SHALL KEEP MULCH MOIST AFTER INSTALLATION AND UNTIL AREA SHOWS GROWTH.

WATER DISTRIBUTION NOTES

1. WATER MAINS WITH PIPE SIZES 4" THROUGH 12" SHALL BE PVC AWWA C900, CLASS 235, DR18. DIP SHALL BE CLASS 51 MINIMUM.

2. ALL FLUSHING VALVES ARE TO BE LOCATED AS SHOWN ON PLANS AND SET 3' (THREE FEET) BEHIND BACK OF CURB OR AT APPROVED LOCATION IN RURAL PAVEMENT SECTIONS.

3. CONTRACTOR SHALL PROVIDE FOR A MINIMUM OF 12" (TWELVE INCHES) CLEARANCE AT STORM SEWER AND WATER LINE CROSSINGS AND 24" (TWENTY-FOUR INCHES) MINIMUM CLEARANCE AT SANITARY SEWER AND WATER LINE CROSSINGS. WATER LINE SHALL BE LOCATED AT A HIGHER ELEVATION THAN THE SEWER WHEREVER POSSIBLE.

4. ALL WATER MAINS TO HAVE MINIMUM OF 4' (FOUR FEET) COVER FROM PROPOSED TOP OF CURB WHEN CONSTRUCTED IN STREET RIGHT-OF-WAY AND 4' (FOUR FEET) COVER FROM FINISHED GRADE WHEN CONSTRUCTED WITHIN EASEMENTS.

5. CONTRACTOR SHALL PROVIDE FOR A MINIMUM HORIZONTAL CLEARANCE OF 9' (NINE FEET) BETWEEN WATER MAINS AND SANITARY SEWER LINES AND MANHOLES.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING LOCATION OF ALL EXISTING UTILITIES PRIOR TO EXCAVATION.

7. ALL SINGLE AND DOUBLE WATER SERVICE LEADS TO BE 1" (ONE INCH). ALL WATER SERVICE LEADS TO EXTEND TO OPPOSITE PROPERTY LINE AT COMMON LOT LINE UNLESS OTHERWISE SHOWN ON PLANS.

8. NO CONNECTIONS SHALL BE MADE TO EXISTING WATER LINES UNTIL ALL PROPOSED WATER LINES HAVE BEEN THOROUGHLY CLEANED, TESTED, DISINFECTED AND APPROVED BY THE ENGINEER.

9. ALL WATER LINE FITTINGS SHALL BE CAST IRON, ALL BELL, UNLESS OTHERWISE NOTED, (MORTAR LINED).

10. ALL WATER LINE LEADS SHALL BE MARKED WITH A 4" x 4" BURIED TIMBER WHICH WILL EXTEND 2' (TWO FEET) ABOVE FINISHED GRADE AND PAINTED BLUE.

11. METAL WATER LINE FITTINGS TO BE WRAPPED WITH 8 MILL POLYETHYLENE IN ACCORDANCE WITH ANSI/AWWA C105 REQUIREMENTS.

12. NOTIFY THE DISTRICT OPERATOR 48 HOURS IN ADVANCE FOR BACTERIOLOGICAL SAMPLING AND PRESSURE TESTING OF WATER MAINS.

13. CONTRACTOR SHALL PLACE ONE FULL SECTION OF RESTRAINED JOINT WATERLINE CENTERED AT SANITARY SEWER.

14. WATERLINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY FULSHEAR'S "SUBDIVISION ORDINANCE CONSTRUCTION STANDARDS" AS CURRENTLY AMENDED.

SANITARY SEWER NOTES

1. ALL SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST REVISION OF THE TEXAS NATURAL RESOURCES CONSERVATION COMMISSION "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS" AND CITY OF HOUSTON STANDARD DETAIL SHEETS AND THE LATEST REVISIONS AND/OR AMENDMENTS OF SAME SHALL BE OBSERVED.

2. ALL SANITARY SEWERS SHALL BE CONSTRUCTED OF P.V.C. PIPE AND SHALL MEET A.S.T.M. SPECIFICATIONS D-2241 SDR 26 PIPE WITH RUBBER GASKETS CONFORMING TO A.S.T.M. F-477 UNLESS OTHERWISE NOTED ON PLANS, BELL ENDS OF PIPE TO FACE UPSTREAM.

3. ALL SANITARY SEWER MANHOLES TO BE CITY OF HOUSTON STANDARD PRECAST MANHOLES FOR SANITARY SEWER CONSTRUCTION AND SHALL BE LOCATED A MINIMUM OF 3' BACK OF CURB.

4. FINAL ELEVATION ON SANITARY SEWER MANHOLE RIMS SHALL BE 4" ABOVE FINISHED GRADE WITHIN STREET R.O.W. AND 6" ABOVE NATURAL GROUND WITHIN EASEMENTS. CLEAN FILL SHALL BE ADDED AND SLOPED AWAY FROM MANHOLE RIM FOR STORM WATER DRAINAGE.

5. STACKS SHALL BE BUILT IN ACCORDANCE WITH STANDARD DETAILS. EXACT LOCATION OF STACKS SHALL BE SUPPLIED TO THE ENGINEER ON COMPLETION OF CONSTRUCTION. ALL STACKS TO BE TOPPED OUT AT 4'-0" BELOW NATURAL GROUND (UNLESS OTHERWISE NOTED) AND MARKED W/4x4 TIMBER OR 6" PVC PIPE AND PAINTED RED.

6. EACH SEWER LEAD, WYE AND STACK SHALL BE MARKED WITH A 4" X 4" TIMBER AT THE TIME OF CONSTRUCTION. IT WILL BEGIN AT THE FLOW LINE OF THE STUB AND EXTEND 2' (TWO FEET) ABOVE FINISHED GRADE. IT SHALL BE LABELED (SIZE) SEWER LEAD AND BE MAINTAINED PLUMB AND IN GOOD CONDITION THROUGHOUT THE REMAINDER OF THE PROJECT, AND SHALL BE PAINTED RED.

7. ALL SANITARY SEWER MANHOLE COVERS MUST INCLUDE ONLY THE WORDS "SANITARY SEWER" AND EITHER GENERIC OR THE CITY OF FULSHEAR EMBLEM.

8. ALL SANITARY SEWER LEADS SHALL EXTEND TO THE R.O.W. LINE.

9. ALL SANITARY SEWER MANHOLE ADJUSTMENTS BY THROAT RINGS ONLY. TIE-INS TO EXISTING MANHOLES OR LIFT STATIONS TO BE BY CORE ONLY.

10. PLACE MINIMUM ONE FULL SECTION OF SANITARY SEWER, 150 PSI LINED DUCTILE IRON OR PVC PIPE CENTERED AT THE WATERLINE AND PROVIDE RESTRAINED JOINTS FOR BOTH WATER AND SANITARY SEWER LINES AT EACH END OF PROPOSED PIPE SECTION. USE CEMENT-STABILIZED SAND BACKFILL FOR ALL PORTIONS OF THE SANITARY SEWER WITHIN 9 FEET OF THE WATERLINE, AS MEASURED PERPENDICULARLY FROM ANY POINT ON THE WATERLINE TO THE SANITARY SEWER (MINIMUM 2.5 SACKS CEMENT PER CUBIC YARD OF SAND). THE CEMENT STABILIZED SAND BEDDING SHALL START AT A POINT 6 INCHES BELOW THE BOTTOM OF SANITARY SEWER TO 6 INCHES ABOVE THE TOP OF SANITARY SEWER AND ONE QUARTER OF THE PIPE DIAMETER OR 6 INCHES WHICH EVER IS GREATER, ON THE SIDE OF THE SANITARY SEWER PIPE.

11. SANITARY SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY FULSHEAR'S "SUBDIVISION ORDINANCE CONSTRUCTION STANDARDS" AS CURRENTLY AMENDED.

TCEQ WATER DISTRIBUTION SYSTEM GENERAL CONSTRUCTION NOTES

1. This water distribution system must be constructed in accordance with the current Texas Commission on Environmental Quality (TCEQ) Rules and Regulations for Public Water Systems 30 Texas Administrative Code (TAC) Chapter 290 Subchapter D. When conflicts are noted with local standards, the more stringent requirement shall be applied. At a minimum, construction for public water systems must always meet TCEQ's "Rules and Regulations for Public Water Systems."

2. All newly installed pipes and related products must conform to American National Standards Institute (ANSI)/NSF International Standard 61 and must be certified by an organization accredited by ANSI [§290.44(a)(1)].

3. Plastic pipe for use in public water systems must bear the NSF International Seal of Approval (NSF-pw) and have an ASTM design pressure rating of at least 150 psi or a standard dimension ratio of 26 or less [§290.44(a)(2)].

4. No pipe which has been used for any purpose other than the conveyance of drinking water shall be accepted or relocated for use in any public drinking water supply [§290.44(a)(3)].

5. All water line crossings of wastewater mains shall be perpendicular [§290.44(e)(4)(B)].

6. Water transmission and distribution lines shall be installed in accordance with the manufacturer's instructions. However, the top of the water line must be located below the frost line and in no case shall the top of the water line be less than 24 inches below ground surface [§290.44(a)(4)].

7. The maximum allowable lead content of pipes, pipe fittings, plumbing fittings, and fixtures is 0.25 percent [§290.44(b)].

8. The contractor shall install appropriate air release devices with vent openings to the atmosphere covered with 16-mesh or finer, corrosion resistant screening material or an acceptable equivalent [§290.44(d)(1)].

9. The contractor shall not place the pipe in water or where it can be flooded with water or sewage during its storage or installation [§290.44(f)(1)].

10. When waterlines are laid under any flowing or intermittent stream or semi-permanent body of water the waterline shall be installed in a separate watertight pipe encasement. Valves must be provided on each side of the crossing with facilities to allow the underwater portion of the system to be isolated and tested [§290.44(f)(2)].

11. Pursuant to 30 TAC §290.44(a)(5), the hydrostatic leakage rate shall not exceed the amount allowed or recommended by the most current AWWA formulas for PVC pipe, cast iron and ductile iron pipe. Include the formulas in the notes on the plans.
o The hydrostatic leakage rate for polyvinyl chloride (PVC) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-605 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;

$$Q = \frac{LD\sqrt{P}}{148{,}000}$$

Where:
- Q = the quantity of makeup water in gallons per hour,
- L = the length of the pipe section being tested, in feet,
- D = the nominal diameter of the pipe in inches, and
- P = the average test pressure during the hydrostatic test in pounds per square inch (psi).

o The hydrostatic leakage rate for ductile iron (DI) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-600 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;

$$Q = \frac{SD\sqrt{P}}{148{,}000}$$

Where:
- L = the quantity of makeup water in gallons per hour,
- S = the length of the pipe section being tested, in feet,
- D = the nominal diameter of the pipe in inches, and
- P = the average test pressure during the hydrostatic test in pounds per square inch (psi).

12. The contractor shall maintain a minimum separation distance in all directions of nine feet between the proposed waterline and wastewater collection facilities including manholes. If this distance cannot be maintained, the contractor must immediately notify the project engineer for further direction. Separation distances, installation methods, and materials utilized must meet §290.44(e)(1)-(4).

13. The separation distance from a potable waterline to a wastewater main or lateral manhole or cleanout shall be a minimum of nine feet. Where the nine-foot separation distance cannot be achieved, the potable waterline shall be encased in a joint of at least 150 psi pressure class pipe at least 18 feet long and two nominal sizes larger than the new conveyance. The space around the carrier pipe shall be supported at five-foot intervals with spacers or be filled to the springline with washed sand. The encasement pipe shall be centered on the crossing and both ends sealed with cement grout or manufactured sealant [§290.44(e)(5)].

14. Fire hydrants shall not be installed within nine feet vertically or horizontally of any wastewater line, wastewater lateral, or wastewater service line regardless of construction [§290.44(e)(6)]

15. Suction mains to pumping equipment shall not cross wastewater mains, wastewater laterals, or wastewater service lines. Raw water supply lines shall not be installed within five feet of any tile or concrete wastewater main, wastewater lateral, or wastewater service line [§290.44(e)(7)].

16. Waterlines shall not be installed closer than ten feet to septic tank drainfields [§290.44(e)(8)].

17. The contractor shall disinfect the new waterlines in accordance with AWWA Standard C- 651-14 or most recent, then flush and sample the lines before being placed into service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure which shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed waterline will be required or at the next available sampling point beyond 1,000 feet as designated by the design engineer [§290.44(f)(3)].

18. Dechlorination of disinfecting water shall be in strict accordance with current AWWA Standard C655-09 or most recent

NO.	DATE	REVISION	APPROVED

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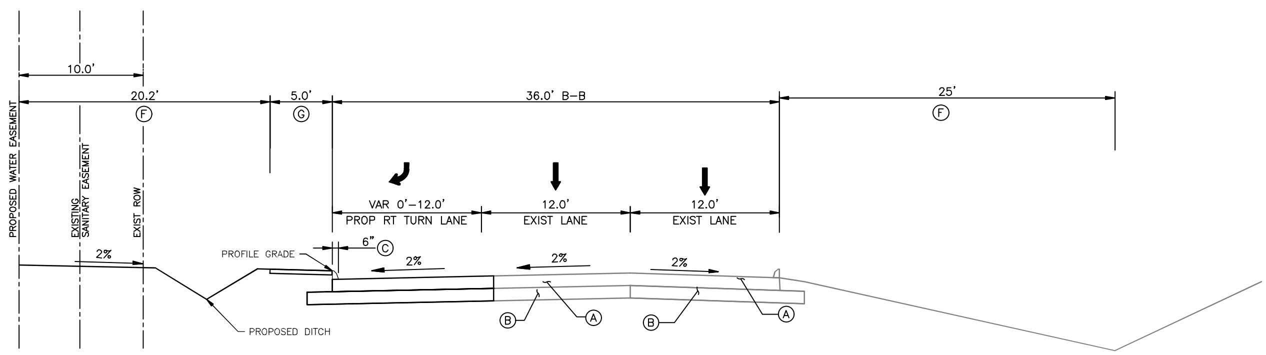
FORT BEND COUNTY
ENGINEERING DEPARTMENT

PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)

UTILITIES NOTES

PROJECT NUMBER
20318x
DRAWING SCALE
N.A.

STATE OF TEXAS
FORT BEND COUNTY



PROPOSED TYPICAL SECTION

FM 1093

LEGEND:

- (A) 8" REINFORCED CONCRETE PAVEMENT
- (B) 8" LIME STABILIZED SUBGRADE
- (C) 6" CONCRETE CURB
- (D) BLOCK SOD
- (E) EARTH FILLING INSIDE MEDIAN
- (F) HYDROMULCH SEEDING
- (G) 4½" THK CONCRETE SIDE WALK
- R.O.W RIGHT-OF WAY

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ENGINEERING DEPARTMENT

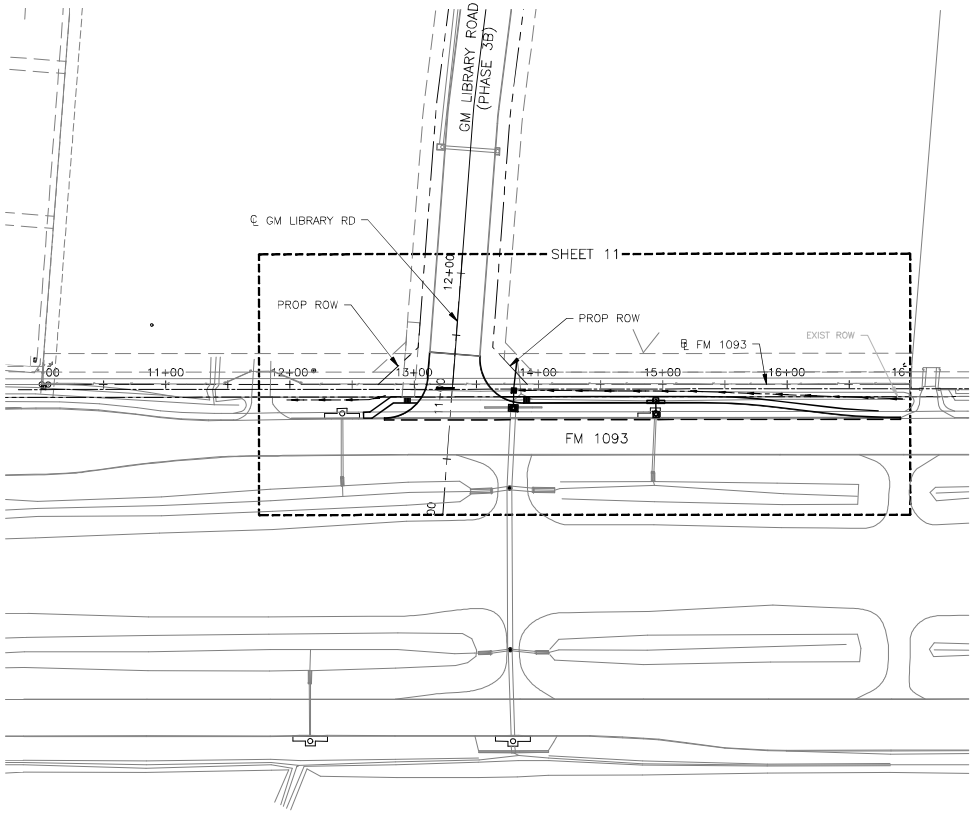
PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)
PROPOSED
TYPICAL SECTION

PROJECT NUMBER: 20318x
DRAWING SCALE: N.T.S.

THE STATE OF TEXAS — FORT BEND COUNTY

SHEET NO. 6 OF 73

2113PVHJ-05-THP Ginter-Typical Section Phase4.dwg 10/28/2025 9:54 PM DISHA.ctb



0 25 50 100

SCALE: 1" = 100'

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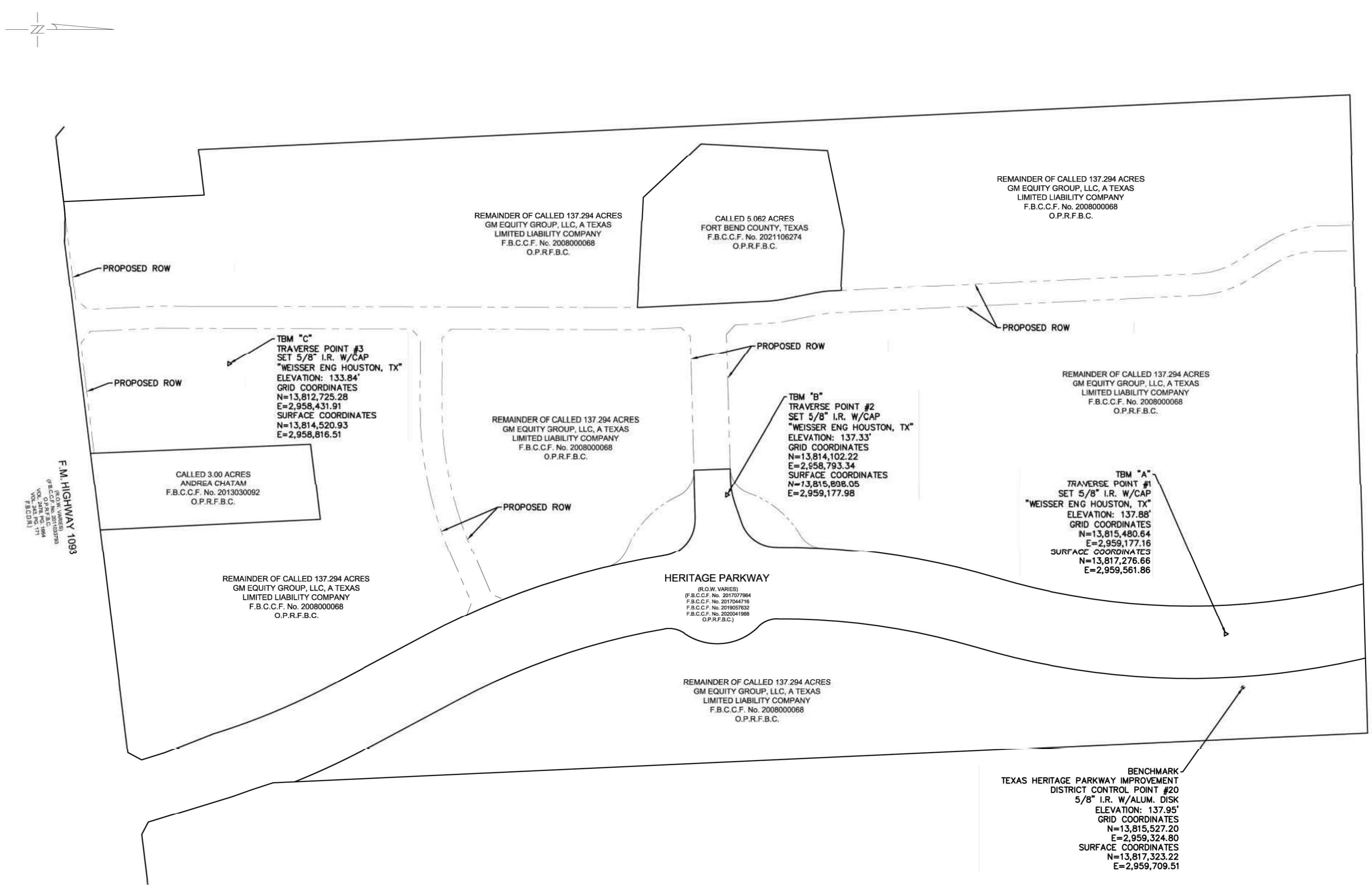
ENGINEERING DEPARTMENT

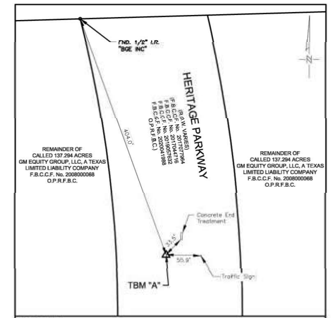
PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)

PROJECT LAYOUT

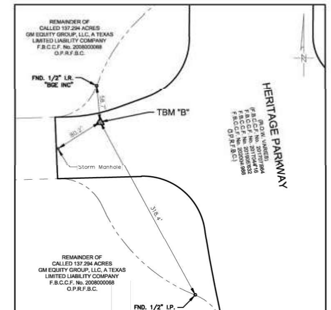
PROJECT NUMBER
20318x
DRAWING SCALE
1"=100'
SHEET NO. 7 OF 73

THE STATE OF TEXAS
FORT BEND COUNTY





TBM "A"
TRAVERSE POINT #1
5/8" I.R. W/ CAP STAMPED
"WEISSER ENG HOUSTON, TX"
SCALE: 1" = 100'



TBM "B"
TRAVERSE POINT #2
5/8" I.R. W/ CAP STAMPED
"WEISSER ENG HOUSTON, TX"
SCALE: 1" = 100'

BENCHMARK:
TEXAS HERITAGE PARKWAY IMPROVEMENT DISTRICT CONTROL POINT 20
DESCRIPTION: 5/8" I.R. W/ALUM. DISK STAMPED "CONTROL POINT 20"
LOCATION: APPROX. 3,080' NORTH OF THE NORTH ROW LINE OF FM 1093, 1,250' SOUTH OF THE SOUTH ROW LINE OF FULSHEAR BEND DR, 341.1' SOUTH OF A WIRE FENCE, 344.3' SOUTWEST OF THE CORNER OF A CONCRETE WALL, 100.7' NORTH OF AN ENTERPRISE PIPELINE MARKER.
ELEVATION = 137.95', NAVD88 (2001 ADJUSTMENT)

ENOCH LATHAM SURVEY, A-50

PRELIMINARY

THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE AND SHALL NOT BE USED OR VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT.
DATE OF LATEST ISSUE: 12/08/2022

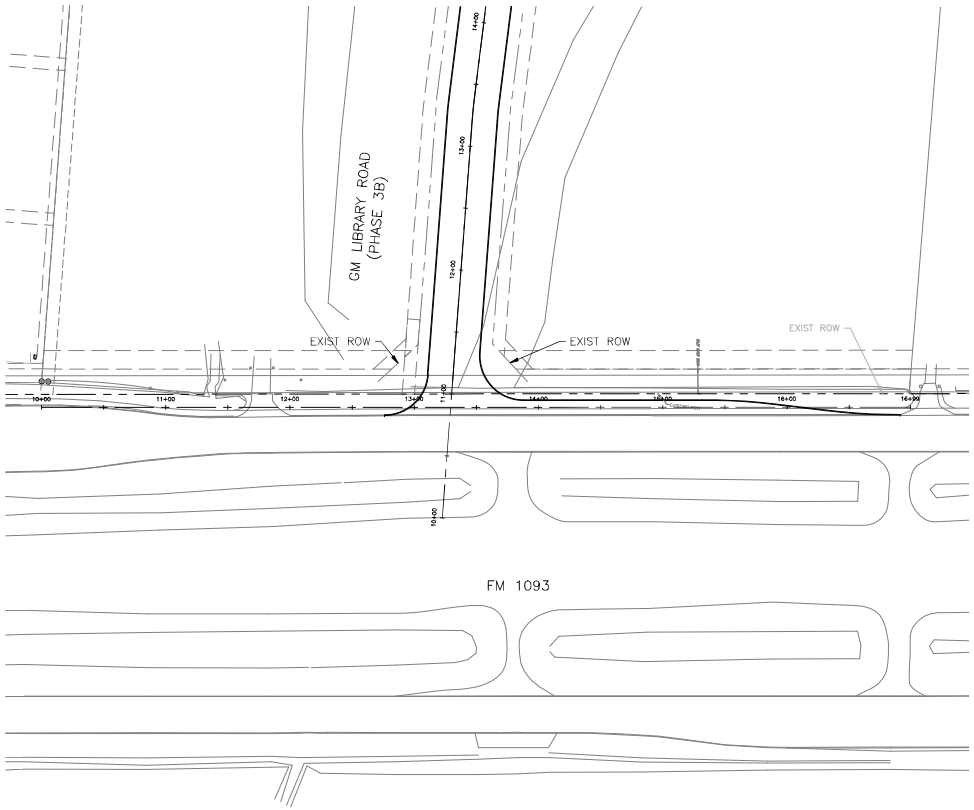
WALTER P. SASS
REGISTERED PROFESSIONAL LAND SURVEYOR
STATE OF TEXAS, No. 4410

NO.	REVISIONS	DATE	NAME

FORT BEND COUNTY
ENGINEERING DEPARTMENT

WEISSER Engineering & Surveying

PROJECT TITLE:	GINTER PROPERTY
DRAWN BY: S.P.	
CK'D BY: J.H.	SHEET DESCRIPTION: SURVEY CONTROL
SCALE: N.T.S.	SHEET NO:
DATE: 04/21/22	APPROVED BY: 01 / 01



0 25 50 100
SCALE: 1" = 100'

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FORT BEND COUNTY
ENGINEERING DEPARTMENT

PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)

RIGHT OF WAY MAP

PROJECT NUMBER
20318x
DRAWING SCALE
1"=100'
SHEET NO. 9 OF 73

THE STATE OF TEXAS
FORT BEND COUNTY

Horizontal Alignment Report

****
File: Z:\Projects\2113PVHJ\Working\Phase
1_THP_Alignments-40sc.dwg
Report Date: 7/31/2024 11:36:02 PM
Alignment Name: WESTPARK-WB
Station Range: Start: 10+00.00, End:
16+99.14
Description:
****

Begin WESTPARK-WB
N 13,814,063.5028 E 2,958,367.9608
10+00.00

Line (1)
N83° 00' 39.21"E 699.143'
N 13,814,148.5750 E 2,959,061.9089
16+99.14
Line (1)

N 13,814,148.5750 E 2,959,061.9089
16+99.14
End WESTPARK-WB

****
Alignment Length: 699.143'
****

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FORT BEND COUNTY
ENGINEERING DEPARTMENT

PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)

ALIGNMENT DATA SHEET

PROJECT NUMBER
20318x
DRAWING SCALE
SHEET NO. 10 OF 73

THE STATE OF TEXAS
FORT BEND COUNTY

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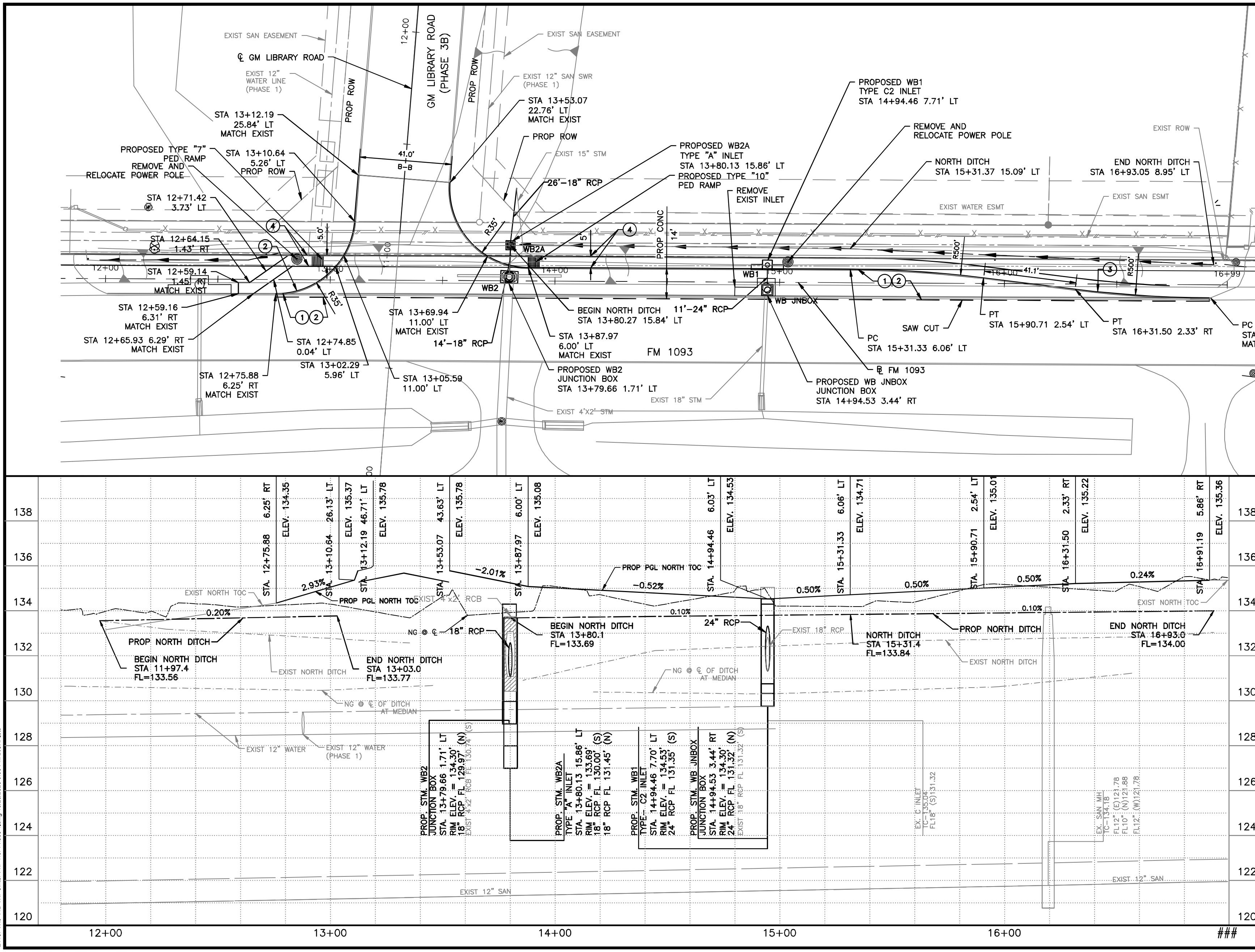

LEGEND

- G1 DRIVEWAY #
- 1 8" REINF CONC PVMT
- 2 8" LIME TREATED SUBGRADE
- 3 6" CONCRETE CURB
- 4 4-1/2" CONCRETE SIDEWALK
- 5 HYDROMULCH SEEDING
- 6 BLOCK SOD
- 7 EARTH FILLING INSIDE MEDIAN
- 8 HEADER
- DIRECTION OF TRAFFIC
- FLOW DIRECTION OF DITCH

NOTES:

1. SEE ALIGNMENT DATA SHEET FOR ALL BASELINE AND CURVE DATA.
2. SEE TYPICAL SECTIONS FOR SODDING LIMITS.
3. ALL DIMENSIONS ARE TO BACK OF CURB OR EDGE OF ASPHALT PAVEMENT UNLESS OTHERWISE NOTED.
4. STORM SEWER LENGTHS SHOWN ARE FROM CENTERLINE TO CENTERLINE WHICH DIFFER FROM PAY LENGTHS.

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FORT BEND COUNTY

ENGINEERING DEPARTMENT

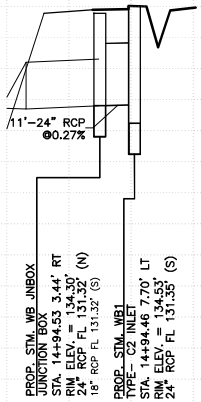
PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)
FM 1093
PLAN & PROFILE

PROJECT NUMBER: 20318x

DRAWING SCALE: V: 1"=4' H: 1"=40'

THE STATE OF TEXAS · FORT BEND COUNTY

FM 1093
STA 14+94.46



138 136 134 132 130 128 126 124 122 120

0 10 20 40
SCALE: 1" = 40' (H)
SCALE: 1" = 4' (V)

NO.	DATE	REVISION	APPROVED

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10/28/2025

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ENGINEERING DEPARTMENT

PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)

STORM LATERALS

PROJECT NUMBER
20318x
DRAWING SCALE
V: 1"=4' H: 1"=40'

THE STATE OF TEXAS
FORT BEND COUNTY

DATE:
FILE:

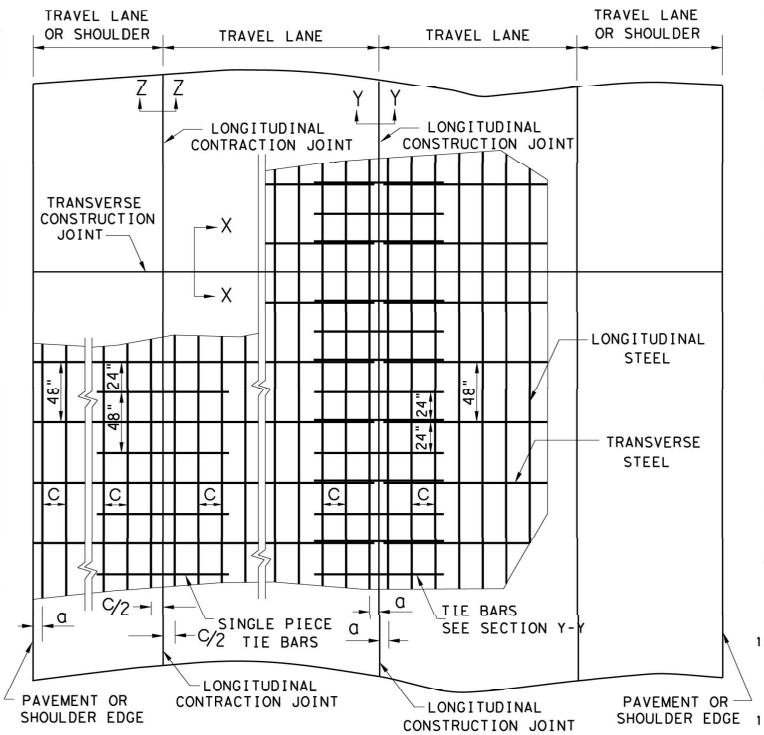
TABLE NO. 1 LONGITUDINAL STEEL

SLAB THICKNESS AND BAR SIZE		LONGITUDINAL STEEL BARS	FIRST SPACING AT EDGE OR JOINT	LONG. STEEL VERTICAL POSITION FROM BOTTOM OF PAVEMENT
T (IN.)	BAR SIZE	SPACING C (IN.)	SPACING a (IN.)	T1 (IN.)
7.0	#5	6.5	3 TO 4	3.5
7.5	#5	6.0	3 TO 4	3.75
8.0	#6	9.0	3 TO 4	4.0
8.5	#6	8.5	3 TO 4	4.25
9.0	#6	8.0	3 TO 4	4.5
9.5	#6	7.5	3 TO 4	4.75
10.0	#6	7.0	3 TO 4	5.0
10.5	#6	6.75	3 TO 4	5.5
11.0	#6	6.5	3 TO 4	6.0
11.5	#6	6.25	3 TO 4	6.5
12.0	#6	6.0	3 TO 4	7.0
12.5	#6	5.75	3 TO 4	7.5
13.0	#6	5.5	3 TO 4	8.0

TABLE NO. 2 TRANSVERSE STEEL AND TIE BARS

SLAB THICKNESS (IN.)	TRANSVERSE STEEL		TIE BARS AT LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z)		TIE BARS AT LONGITUDINAL CONSTRUCTION JOINT (SECTION Y-Y)	
	BAR SIZE	SPACING (IN.)	BAR SIZE	SPACING (IN.)	BAR SIZE	SPACING (IN.)
7.0 - 7.5	#5*	48	#5*	48	#5*	24
8.0 - 13.0	#5*	48	#6	48	#6	24

*CONTRACTOR MAY USE #6 REINFORCING STEEL INSTEAD OF #5 REINFORCING STEEL OR COMBINATION OF EACH SIZE

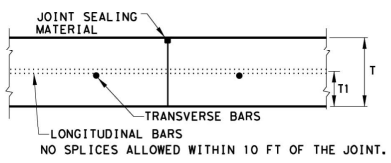


TYPICAL PAVEMENT LAYOUT

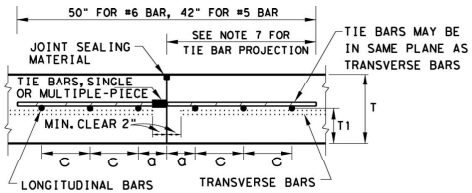
PLAN VIEW (NOT TO SCALE)

GENERAL NOTES

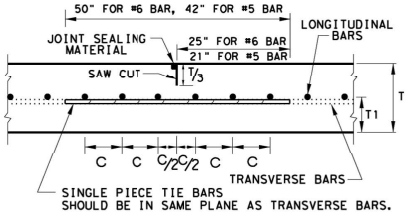
1. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS. FOR PAVEMENTS WIDER THAN 100 FT. WITHOUT A FREE LONGITUDINAL JOINT, ADDITIONAL DETAIL MAY BE SHOWN ELSEWHERE IN THE PLANS.
2. USE COARSE AGGREGATES WITH A RATED COEFFICIENT OF THERMAL EXPANSION (CoTE) OF NOT MORE THAN 5.5 X 10^{-6} IN/IN/ °F AS LISTED IN THE CONCRETE RATED SOURCE QUALITY CATALOG (CRSQC).
3. ALL THE REINFORCING STEEL AND TIE BARS SHALL BE DEFORMED STEEL BARS CONFORMING TO ASTM A 615 (GRADE 60) OR ASTM A 996 (GRADE 60) OR ABOVE. STEEL BAR SIZES AND SPACINGS SHALL CONFORM TO TABLE NO. 1 AND TABLE NO. 2.
4. STEEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1 IN. HORIZONTALLY AND +/- 0.5 IN. VERTICALLY. CALCULATED AVERAGE BAR SPACING (CONCRETE PLACEMENT WIDTH / NUMBER OF LONGITUDINAL BARS) SHALL CONFORM TO TABLE NO. 1.
5. ADJUST REINFORCING STEEL VERTICALLY *USING SHIMS OR OTHER METHODS*, AS APPROVED, TO MEET VERTICAL TOLERANCES PRIOR TO CONCRETE PLACEMENT.
6. PAVEMENT WIDTHS OF MORE THAN 15 FT. SHALL HAVE A LONGITUDINAL JOINT (SECTION Z-Z OR SECTION Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6 IN. OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON THE PLANS.
7. THE MINIMUM PROJECTION OF TIE BARS INTO THE ADJACENT PLACEMENT IS 22.5 IN. for #6 BARS AND 18.5 IN. FOR #5 BARS.
8. SEE STANDARD SHEET "CONCRETE CURB AND CURB AND GUTTER," FOR DETAILS WHEN TYING CONCRETE CURB OR CURB GUTTER AT A LONGITUDINAL JOINT.
9. REPLACE MISSING OR DAMAGED TIE BARS WITHOUT ADDITIONAL COMPENSATION BY DRILLING MIN. 10 IN. DEEP AND GROUTING TIE BARS WITH TYPE III, CLASS C EPOXY. MEET THE PULL-OUT TEST REQUIREMENTS IN ITEM 361.
10. OMIT TIE BARS LOCATED WITHIN 18-IN. OF THE TRANSVERSE CONSTRUCTION JOINTS (SECTION X-X). USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL FORMED JOINTS.
11. THE DETAIL FOR THE JOINT SEALANT AND RESERVOIR IS SHOWN ON STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."
12. LONGITUDINAL REINFORCING STEEL SPLICES SHALL BE A MINIMUM OF 25-IN.



TRANSVERSE CONSTRUCTION JOINT
SECTION X - X



LONGITUDINAL CONSTRUCTION JOINT
SECTION Y - Y



LONGITUDINAL CONTRACTION JOINT
SECTION Z - Z

SHEET 1 OF 2

Texas Department of Transportation

Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

ONE LAYER STEEL BAR PLACEMENT T - 7 to 13 INCHES

CRCP(1)-24

FILE: crcp124.dgn	DN: CES	CK: KM	DW: CES	CK: AN
©TxDOT: Sept 2024	CONT	SECT	JOB	HIGHWAY
REVISIONS				FM 1093
	DIST	COUNTY		SHEET NO.
	HOU	FORT BEND		13 / 73

DATE:
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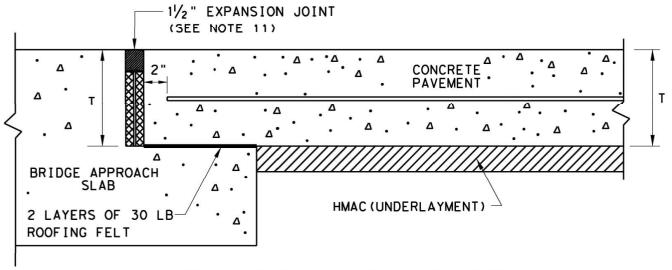
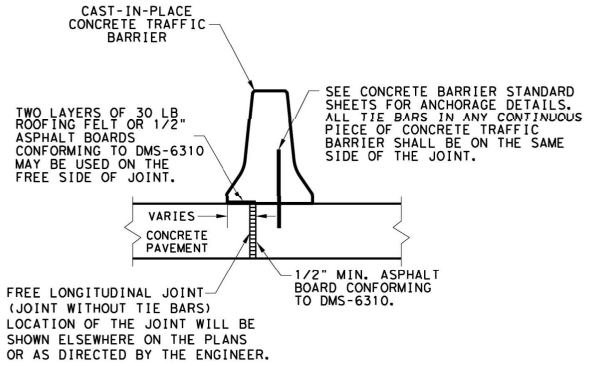
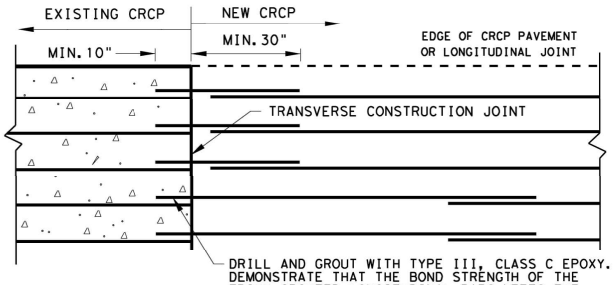


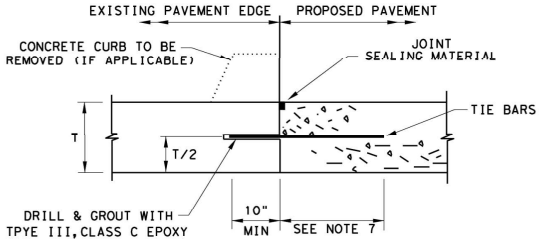
TRANSVERSE EXPANSION JOINT DETAIL
AT BRIDGE APPROACH



CENTERLINE FREE LONGITUDINAL JOINT DETAIL

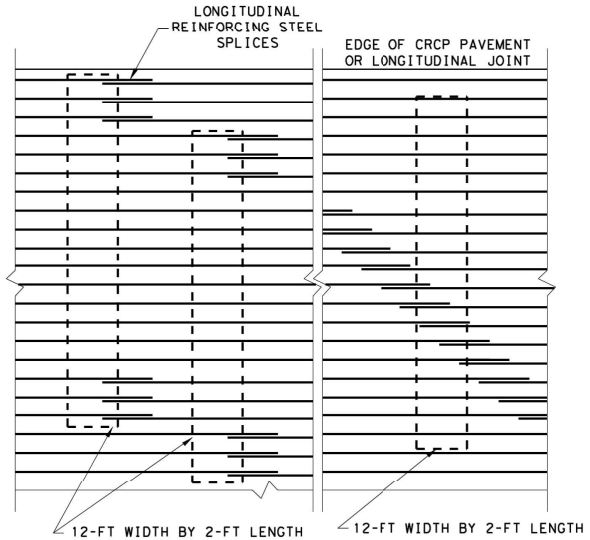


OPTION A: DRILL AND EPOXY
PLAN VIEW (NOT TO SCALE)



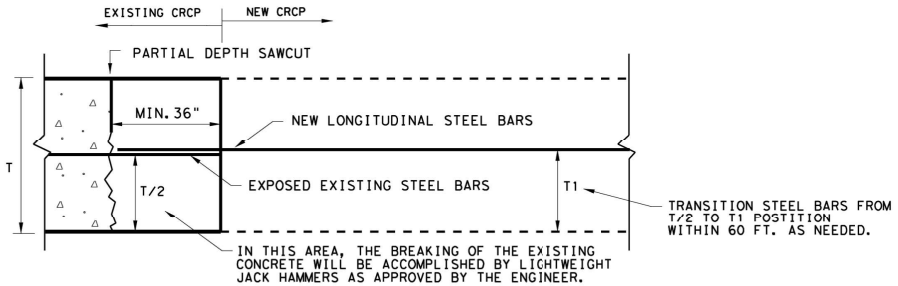
1. BEFORE CONCRETE PLACEMENT, PERFORM PULL-OUT TESTS ON EPOXY-GROUTED TIE BARS IN ACCORDANCE WITH ITEM 360.
2. SPACE TIE BARS AT 24" SPACING. USE #6 TIE BARS FOR 8" AND THICKER PAVEMENTS, USE #5 TIE BARS FOR LESS THAN 8" THICK PAVEMENTS.

LONGITUDINAL WIDENING JOINT DETAIL



STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT. ANY OTHER LAP CONFIGURATION MEETING THIS REQUIREMENT WILL BE ALLOWED.

EXAMPLES OF LAP CONFIGURATION
PLAN VIEW (NOT TO SCALE)



OPTION B: BREAKBACK AND LAP

TRANSVERSE TIE JOINT DETAIL
NEW CRCP TO EXISTING CRCP

SHEET 2 OF 2

Texas Department of Transportation — Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

ONE LAYER STEEL BAR PLACEMENT
T - 7 to 13 INCHES

CRCP(1)-24

FILE: crcp124.dgn	DN: TxDOT	CK: KM	DW: CES	CK: AN
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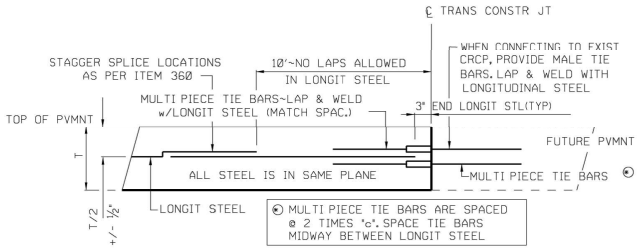
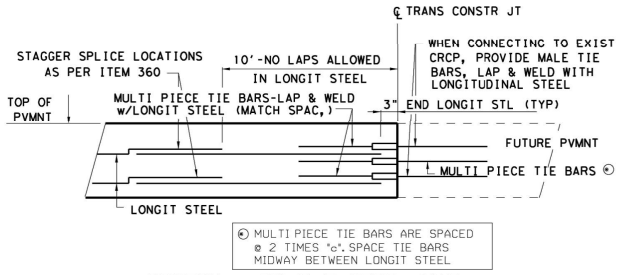


SECTION - SINGLE STEEL MAT
AT END OF PROJECT OR TEMPORARY END OF PAVEMENT



SECTION - DOUBLE STEEL MAT
AT END OF PROJECT OR TEMPORARY END OF PAVEMENT

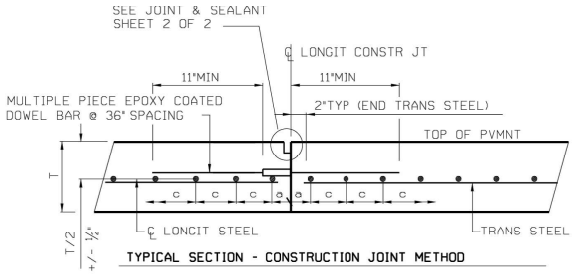
GENERAL NOTES

1. DETAILS FOR 7.0 IN. TO 13.0 IN. THICK CONCRETE PAVEMENT ARE SHOWN ON STANDARD CRCP(1)-17. DETAILS FOR 14 IN. TO 15 IN. THICK CONCRETE PAVEMENT ARE SHOWN ON STANDARD CRCP(2)-17.
2. DOWELS AND TIE BARS - DOWELS ARE ONE INCH MINIMUM DIAMETER. ENSURE DOWELS ARE FREE OF GREASE AND ARE EPOXY COATED. DO NOT SHEAR CUT DOWELS DURING FABRICATION. PROVIDE TIE BARS PER ITEM 360. FURNISH MULTI PIECE TIE BARS AND DOWELS WITH STOP COUPLINGS AND WITH THREADS ON THE BARS.
3. USE CHAIRS OF *SUFFICIENT STRUCTURAL QUALITY AND NUMBER TO SUPPORT* THE MAT TO THE VERTICAL TOLERANCES. CHAIRS WILL BE APPROVED BY THE ENGINEER AND DO NOT REQUIRE GALVANIZING.
4. MECHANICALLY PLACING REINFORCING STEEL IS NOT ALLOWED. NO BARS, DOWELS OR TIE BARS MAY BE VIBRATED INTO POSITION.
5. WHERE DIFFERENT THICKNESS PAVEMENTS MEET, TRANSITION THE THINNER SECTION TO THE THICKER SECTION OVER A DISTANCE OF 20 FT. PLACE REINFORCING STEEL WITHIN THE TRANSITION THE SAME AS IN THE THICKER PAVEMENT.
6. PERFORM WELDING PER ITEM 448. FURNISH WELDABLE REBAR PER ITEM 440.

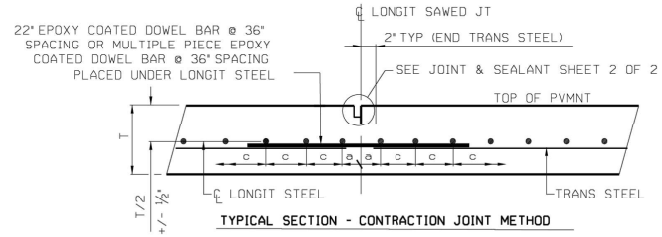
LONGITUDINAL DOWEL JOINT DETAILS

LOCATE WHERE SHOWN IN THE PLANS OR AS APPROVED. CONTRACTOR MAY USE EITHER METHOD

SINGLE STEEL MAT

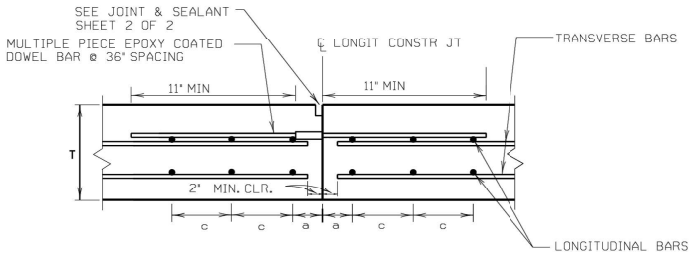


TYPICAL SECTION - CONSTRUCTION JOINT METHOD

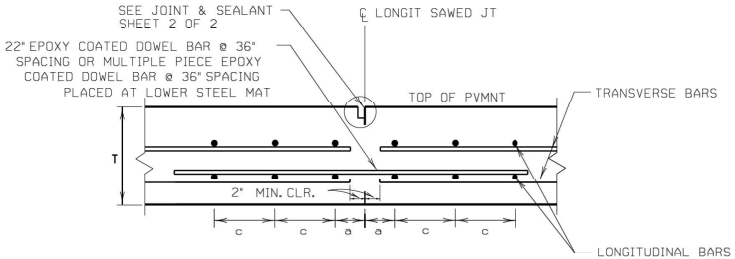


TYPICAL SECTION - CONTRACTION JOINT METHOD

DOUBLE STEEL MAT



TYPICAL SECTION - CONSTRUCTION JOINT METHOD



TYPICAL SECTION - CONTRACTION JOINT METHOD

Texas Department of Transportation

Houston District Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT HOUSTON SUPPLEMENT

CRCP-HS-25 (HOU)

FILE: CRCP-HS-25 (HOU).dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT	
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DATE:
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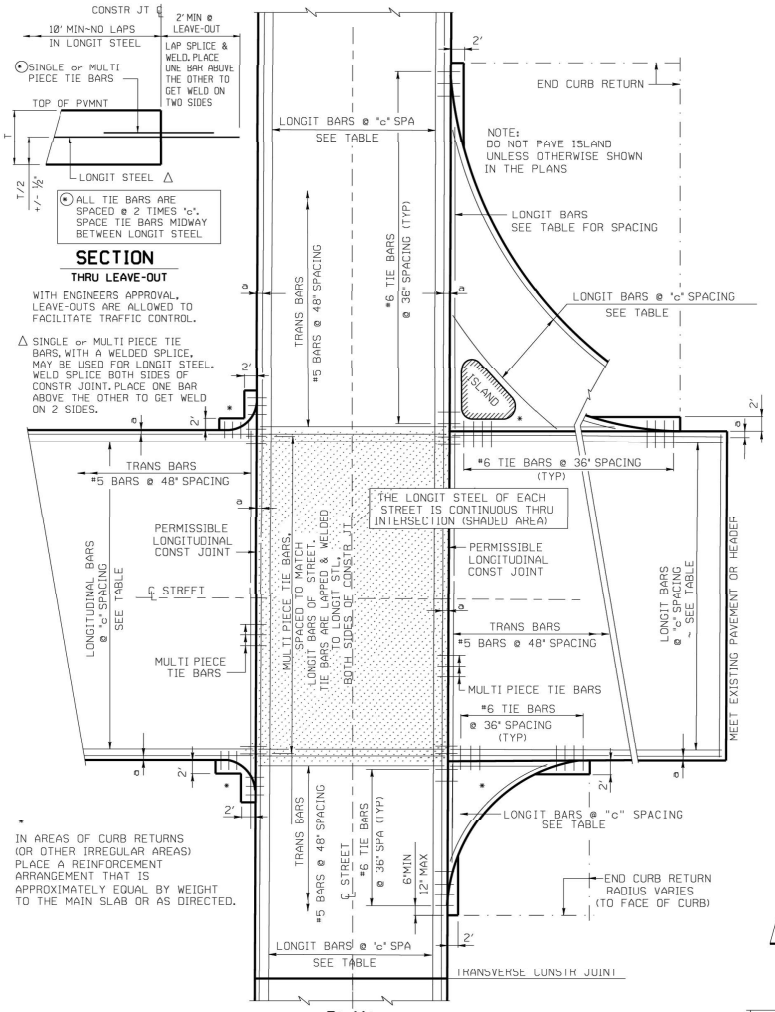
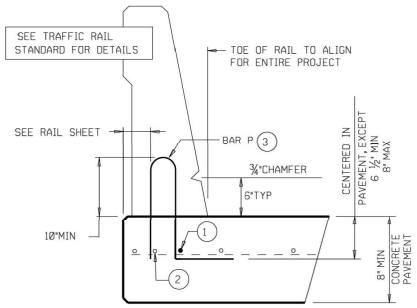


PLAN

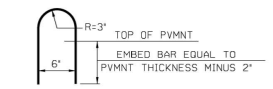
SHOWING TYPICAL CONCRETE PAVEMENT INTERSECTION

1. AS AN AID IN SUPPORTING REINFORCEMENT, ADDITIONAL LONGITUDINAL BARS MAY BE USED IN THE SLAB WITH THE APPROVAL OF THE ENGINEER. FURNISH SUCH BARS AT NO EXPENSE TO THE DEPARTMENT.
2. LONGITUDINAL SLAB BAR MAY BE ADJUSTED LATERALLY 3" +/- TO TIE REINFORCING.
3. ANCHORAGE BAR SHOWN IS FOR AN SSTR OR T551 RAIL. SEE RAILING DETAIL SHEET FOR SPACING OF BAR P. FOR OTHER RAIL TYPES SEE RAILING DETAIL SHEET.

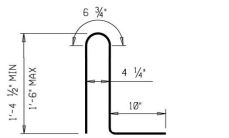


RAIL DETAIL

FOR ADDITIONAL DETAILS, SEE RAIL STANDARD SHEET. THE MINIMUM LENGTH OF A CONCRETE RAILING PANEL IS FIVE FEET.

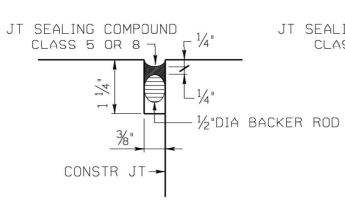


BAR A (#3)

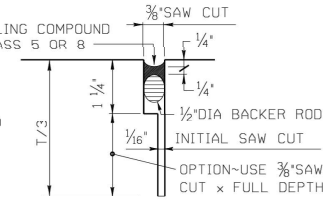


BAR P (#5)

RAIL ANCHOR INSTALLED IN PAVEMENT (3)

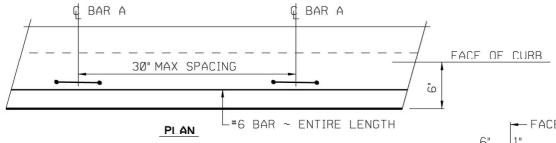


DETAIL 1 ~ CONSTR JOINT

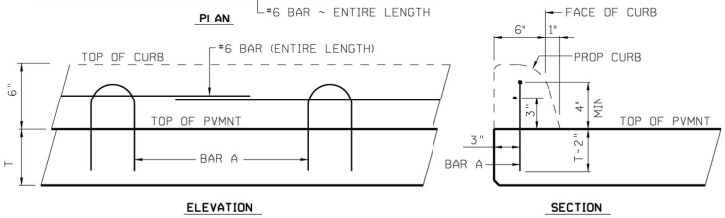


DETAIL 2 ~ SAWED JOINT

JOINT AND SEALANT DETAILS



PLAN



ELEVATION

SECTION

CURB DETAIL

SEE CC & DID STANDARD

SHEET 2 OF 2

Texas Department of Transportation

Houston District Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT HOUSTON SUPPLEMENT

CRCP-HS-25 (HOU)

FILE: CRCP-HS-25 (HOU).dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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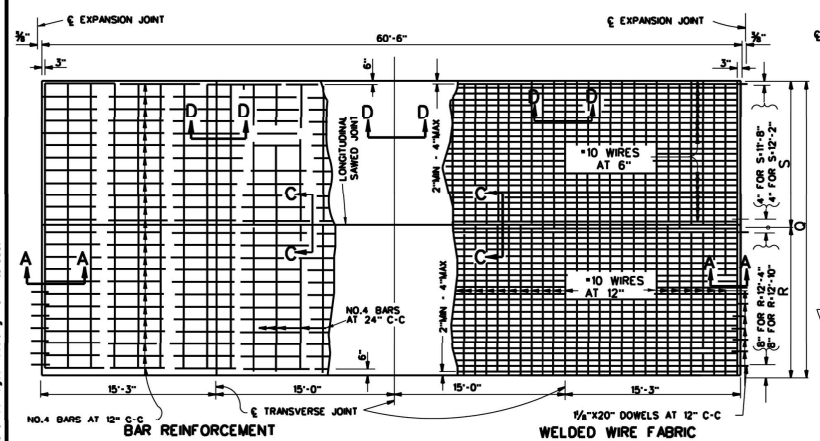
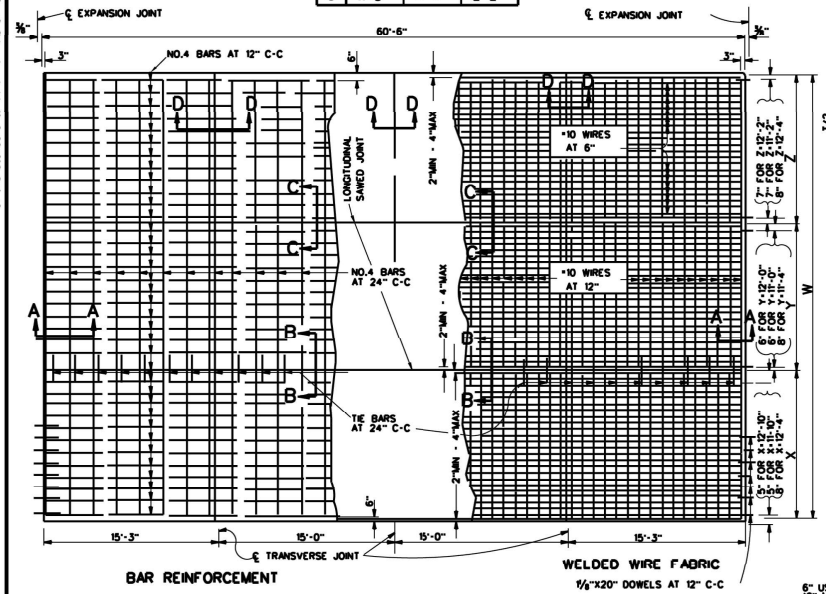


TWO LANE PAVEMENT PLAN

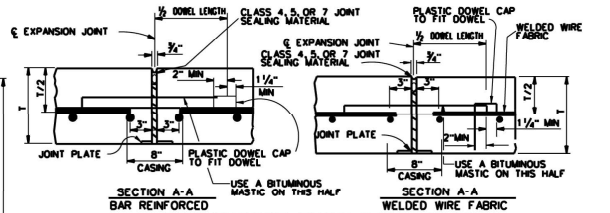
	WIDTH - Q		
	24'-0"	24'-6"	25'-0"
R	12'-4"	12'-4"	12'-10"
S	11'-8"	12'-2"	12'-2"



THREE LANE PAVEMENT PLAN

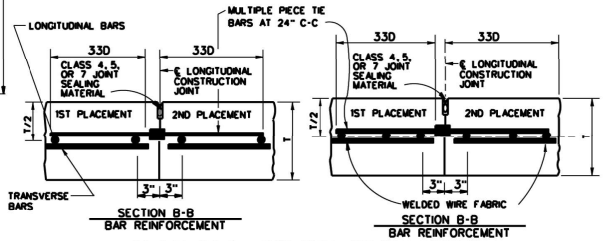
	WIDTH - W		
	37'-0"	36'-0"	34'-0"
X	12'-10"	12'-4"	11'-10"
Y	12'-0"	11'-4"	11'-0"
Z	12'-2"	12'-4"	11'-2"

D = DIAMETER
R = RADIUS
T = THICKNESS

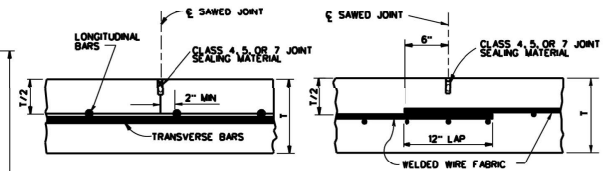


TRANSVERSE EXPANSION JOINTS

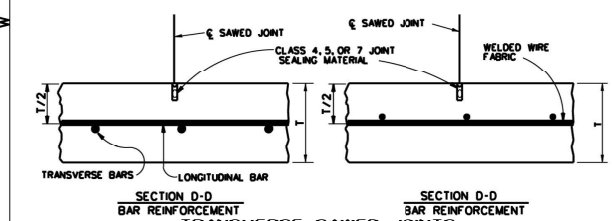
NOTE: DOWEL BARS CONFORMING TO ASTM A615 OR A616 GRADE 60 ARE ACCEPTABLE



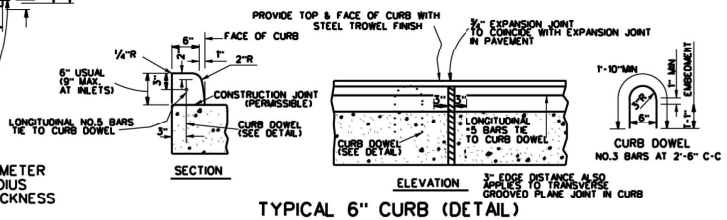
LONGITUDINAL CONSTRUCTION JOINTS



LONGITUDINAL SAWED JOINTS



TRANSVERSE SAWED JOINTS



TYPICAL 6" CURB (DETAIL)

GENERAL NOTES

1. MULTIPLE PIECE TIE BARS ARE REQUIRED AT LONGITUDINAL CONSTRUCTION JOINTS. USE MULTIPLE PIECE TIE BAR ASSEMBLIES WITH STOP TYPE COUPLINGS AND WITH THREADS ON THE BARS. ENSURE THE MULTIPLE PIECE TIE BAR ASSEMBLIES DEVELOP A MINIMUM ULTIMATE TENSILE STRENGTH EQUAL TO 1.25 TIMES THE YIELD STRENGTH OF THE TRANSVERSE BARS BEING JOINED. USE DEFORMED REINFORCING BARS FOR TIE BARS. TIE BAR ASSEMBLIES MADE FROM STEELS OTHER THAN ASTM GRADE 60 AND WITH DEFORMATIONS OTHER THAN ASTM STANDARD MAY BE USED IF IT CAN BE PROVEN TO THE ENGINEER THAT THEY ARE IN EVERY RESPECT THE EQUAL OF THE ASSEMBLIES SPECIFIED. LABORATORY TESTING OF THE PROPOSED ASSEMBLIES, AT THE CONTRACTOR'S EXPENSE, MAY BE REQUIRED.
2. FORM CONSTRUCTION JOINTS WITH METAL OR WOOD FORMS EQUAL IN DEPTH TO THE NOMINAL DEPTH OF THE PAVEMENT OR BY OTHER MEANS APPROVED PRIOR TO THEIR USE.
3. SAW LONGITUDINAL AND TRANSVERSE JOINTS AS SOON AS SAWING CAN BE ACCOMPLISHED WITHOUT DAMAGE TO THE PAVEMENT AND BEFORE 24 HOURS AFTER PLACING THE CONCRETE. THE EXACT TIME WILL BE APPROVED BY THE ENGINEER. PREFORMED JOINT WITH ASPHALT STRIP IS NOT ACCEPTABLE.
4. LONGITUDINAL JOINTS ARE SHOWN OFFSET FOUR INCHES FROM THE THEORETICAL LANE LINE AND MAY BE OFFSET TO EITHER SIDE IF THE WIDTH OF THE WIRE FABRIC IS PROPERLY ADJUSTED.
5. ONE OF THE LONGITUDINAL JOINTS OF PAVEMENT SLABS WIDER THAN TWO LANES MAY BE A CONSTRUCTION JOINT. FOR PAVEMENT SLABS WIDER THAN 15 FT. PROVIDE A LOGITUDINAL SAWED JOINT UNLESS OTHERWISE DIRECTED.
6. FORM THE JOINT SEAL SPACE AT TRANSVERSE EXPANSION JOINTS BY USING A STRAIGHT FORM PLACED BEHIND THE LONGITUDINAL FLOAT. LOOSEN THE FORM AS SOON AS THE CONCRETE WILL RETAIN ITS SHAPE AND EDGE WITH AN APPROVED EDGING TOOL. TOOL BOTH EDGES OF LONGITUDINAL CONSTRUCTION JOINTS TO A ⅛IN. RADIUS AT THE PAVEMENT SURFACE.
7. DO NOT DISCHARGE CONCRETE FROM THE MIXER DIRECTLY ON TOP OF OR ON THE SIDES OF THE EXPANSION JOINT ASSEMBLIES.
8. LAP TRANSVERSE EDGES OF SHEETS OF WELDED WIRE FABRIC 12 INCHES EXCEPT AT TRANSVERSE EXPANSION JOINTS. LAP LONGITUDINAL EDGES 6 INCHES EXCEPT AT LONGITUDINAL CONSTRUCTION JOINTS.
9. DOWEL BARS MAY BE COATED WITH STAINLESS STEEL, MONEL METAL, OR IN ACCORDANCE WITH THE ITEM "REINFORCING STEEL" SECTION ON EPOXY COATING: WITH A WELDED DOWEL ASSEMBLY SUPPORT, AS APPROVED. ENSURE THE CASING CONFORMS TO THE REQUIREMENTS OF ONE OF THE GRADES OF ASTM A167-70 OR A176-71 AND IS NOT LESS THAN 0.010 INCH THICK. PROVIDE A CASING AT LEAST 8 INCHES LONG AND THAT COVERS THE MIDDLE 8 INCHES OF THE DOWEL.
10. SECURE DOWELS PARALLEL TO THE PAVEMENT SURFACE AND PERPENDICULAR TO THE JOINT WITH THE AID OF APPROVED WELDED WIRE BASKET ARRANGEMENTS. ENSURE WELDED WIRE BASKET ARRANGEMENTS DO NOT CROSS THE EXPANSION JOINT. UNIFORMLY COAT DOWELS WITH A BITUMINOUS MASTIC ON THE END WITH THE DOWEL CAP.
11. DO NOT BEND TIE BARS AND DOWEL BARS. TO PREVENT DISPLACEMENT OF WIRE FABRIC BY CONCRETE PLACEMENT, TIE THE FABRIC PANEL TOGETHER AND TIE THE INITIAL FABRIC PANELS OF EACH SLAB TO THE DOWEL BASKET OR AS DIRECTED.
12. TOOL PAVEMENT EDGES TO A RADIUS OF ⅛ IN. WITH AN APPROVED EDGING TOOL.
13. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS, AND CROWN-SLOPE ARE ELSEWHERE SHOWN ON THE PLANS.
14. THE CONTRACTOR HAS THE OPTION OF USING WELDED WIRE FABRIC OR BAR REINFORCEMENT. LOCATE THE LONGITUDINAL STEEL AT THE CENTER OF THE SLAB. TAKE NECESSARY PRECAUTIONS TO INSURE THAT THE FINAL POSITION OF STEEL IS WITHIN ½ IN. OF THE SLAB CENTER. ENSURE THE LONGITUDINAL AND TRANSVERSE STEEL SPACING DOES NOT VARY MORE THAN ONE-TWELFTH OF SPACING SHOWN.
15. LONGITUDINAL STEEL MAY BE SPLICED WITH 33 TIMES BAR DIAMETER LAPS.
16. FOR LANE WIDTHS NOT SHOWN OR FOR VARIABLE PANEL LENGTHS AND WIDTHS, SPACE REINFORCING STEEL AND DOWELS AS DIRECTED.
17. USE APPROVED BAR MAT CHAIRS. DO NOT EXCEED CHAIR SPACING OF 30 IN. C-C (TRANSVERSE) AND 48 IN. C-C (LONGITUDINAL). GALVANIZING THE CHAIRS IS NOT REQUIRED.
18. OBTAIN BOARDS FOR EXPANSION JOINT FILLER FROM REDWOOD TIMBER.
19. PROVIDE AND CONSTRUCT THE JOINT PLATE AS APPROVED.
20. WHEN CURB IS PLACED SEPARATELY FROM THE CONCRETE PAVEMENT, PROVIDE THE REINFORCING STEEL AS SHOWN IN THE CURB DETAIL. THE CURB REINFORCING STEEL MAY BE OMITTED WHEN THE CURB IS PLACED MONOLITHICALLY.

(GENERAL NOTES CONTINUED ON SHEET 2 OF 2)

DATE:
FILE:

Texas Department of Transportation

Houston District Standard

JOINTED REINFORCED CONCRETE PAVEMENT DETAILS

(FOR PAVEMENT THICKNESS 10 INCHES OR LESS)

JRCP-25 (HOU)

FILE: JRCP-25 (HOU).dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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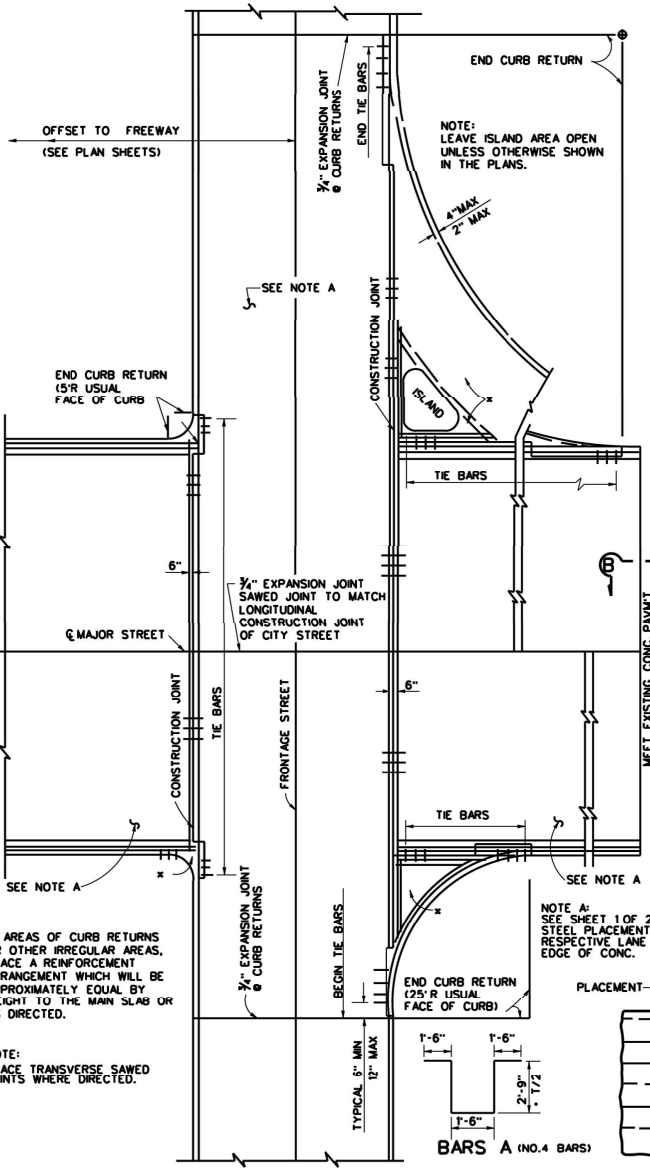
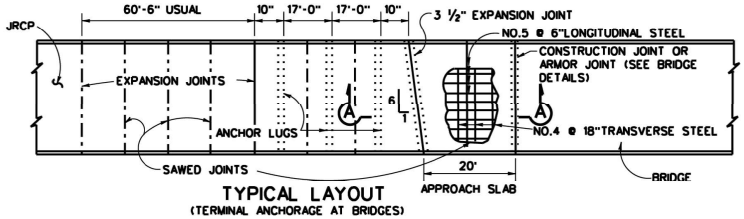


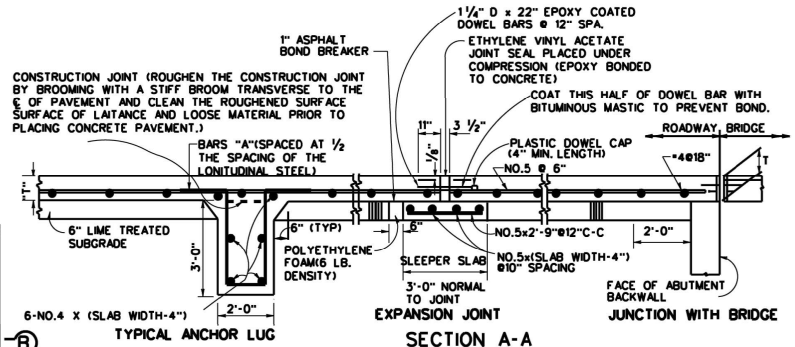
INTERSECTION OF MAJOR STREET WITH FRONTAGE STREET
TYPICAL REINFORCING PLAN

* IN AREAS OF CURB RETURNS OR OTHER IRREGULAR AREAS, PLACE A REINFORCEMENT ARRANGEMENT WHICH WILL BE APPROXIMATELY EQUAL BY WEIGHT TO THE MAIN SLAB OR AS DIRECTED.

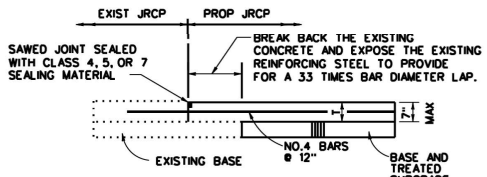
NOTE:
PLACE TRANSVERSE SAWED JOINTS WHERE DIRECTED.



TYPICAL LAYOUT
(TERMINAL ANCHORAGE AT BRIDGES)

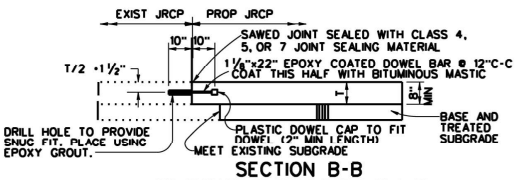


TYPICAL ANCHOR LUG
EXPANSION JOINT
SECTION A-A
JUNCTION WITH BRIDGE



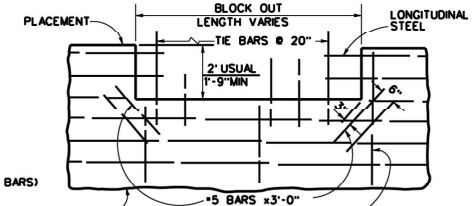
SECTION B-B
(FOR PROPOSED PAVEMENT DEPTHS OF 7" MAX)

REPLACE ANY BENT LONGITUDNIAL REINFORCING. IF THERE IS NOT SUFFICIENT EXPOSED REINFORCING TO PROVIDE A MINIMUM OF A 33 TIMES BAR DIAMETER LAP, REMOVE THE EXISTING PAVEMENT AND SUFFICIENTLY EXPOSE THE EXISTING REINFORCING TO PROVIDE A 33 TIMES BAR DIAMETER LAP. REPLACE ANY SHEAR BARS THAT ARE DISTURBED, BY DRILLING AND GROUTING AS REQUIRED BY NOTE *29. PERFORM THS CORRECTIVE ACTION AT NO EXPENSE TO THE DEPARTMENT.

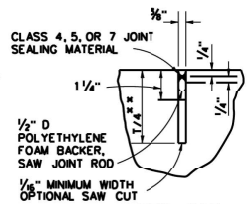


SECTION B-B
(FOR PROPOSED PAVEMENT DEPTHS OF 8" MIN)

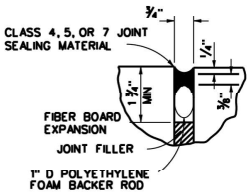
NOTE A:
SEE SHEET 1 OF 2 FOR STEEL PLACEMENT FOR THE RESPECTIVE LANE WIDTHS. EDGE OF CONC.



DETAIL OF BLOCKOUT
*OMIT TIE BARS @ INLET BLOCK-OUT



SAWED JOINT



EXPANSION JOINTS

** IF SILICEOUS RIVER GRAVEL IS USED AS THE COARSE AGGREGATE, THIS DEPTH IS T/3.

JOINT SEALING DETAILS

GENERAL NOTES (CONTINUED FROM SHEET 1 OF 2)

21. CONSTRUCT ANCHOR LUGS, EXPANSION JOINTS, AND SLEEPER SLABS AS DETAILED IN SECTION A-A. THESE WILL BE PAID FOR IN ACCORDANCE WITH ITEM, "CONCRETE PAVEMENT TERMINALS."
22. REINFORCING STEEL FOR TERMINAL ANCHOR SYSTEMS MAY BE GRADE 40 OR GRADE 60.
23. PLACE CONCRETE FOR ANCHOR LUGS AS SOON AS POSSIBLE AFTER COMPLETING EXCAVATION,TO PRESERVE THE INHERENT SOIL CHARACTERISTICS. EXCAVATING FOR AND PLACING CONCRETE FOR ANCHOR SYSTEM MAY BE IN PREFORMED SECTIONS CORRESPONDING TO THE WIDTH OF PAVING PLACEMENT.
24. APPLY A STEEL TROWEL FINISH TO SLEEPER SLABS AND AND COAT WITH AN ASPHALT BOND BREAKER.
25. THE DETAILS FOR ANCHORS, LUGS, EXPANSION JOINTS, AND SLEEPER SLABS ARE NOT APPLICABLE UNLESS SHOWN ELSEWHERE IN THE PLANS.
26. APPROACH SLAB WILL BE PAID FOR IN ACCORDANCE WITH THE ITEM "CONCRETE STRUCTURES."
27. WITHIN 5 MINUTES OF SAWING, COMPLETELY REMOVE THE RESULTING SLURRY FROM THE JOINT BY FLUSHING WITH HIGH PRESSURE WATER. THEN ALLOW THE JOINT TO DRY FOR A MINIMUM OF 48 HOURS BEFORE SANDBLASTING THE JOINT.
28. DO NOT SHEAR CUT DOWEL BARS.
29. SIZE ADDITIONAL SHEAR BARS AS LONGITUDIAL BARS AND SPACE THEM MIDWAY BETWEEN ALTERNATE LONGITUDINAL BARS ALONG THE TRANSVERSE CONSTRUCTION JOINT FORMED AT THE LEAVE-OUT.
30. IF THE CONCRETE DESIGN REQUIRES GREATER THAN 5.5 SACKS OF CEMENTITIOUS MATERIAL PER CUBIC YARD, WRITTEN APPROVAL BY THE AREA ENGINEER WILL BE REQUIRED. ENSURE CONCRETE PAVEMENT MIXES PLACED FROM APRIL 1 TO OCTOBER 31 CONTAIN A MINIMUM OF 25 PERCENT BY WEIGHT OF CLASS "F" FLY ASH.
31. IN LOCATIONS WHERE THE PLANS CALL FOR FAST TRACK CONCRETE PAVEMENT IN LIEU OF JRCP (LAID ON COMPACTED OR STABILIZED SUBGRADE), USE DETAILS IN THIS STANDARD IN CONJUNCTION WITH THE APPROPRIATE FAST TRACK CONCRETE SPECIFICATION. IF THE JRCP IS LAID UPON A BASE STRUCTURE, ADD 3" TO THE FAST TRACK PAVEMENT THICKNESS TO COMPENSATE FOR THE BASE.

DATE:
FILE:

SHEET 2 OF 2

Texas Department of Transportation — Houston District Standard

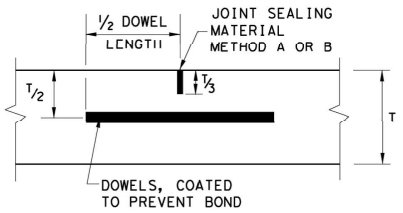
JOINTED REINFORCED CONCRETE PAVEMENT DETAILS

EXPANSION JOINT DESIGN
(FOR PAVEMENT THICKNESS 10 INCHES OR LESS)

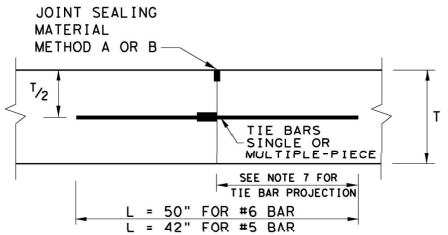
JRCP-25 (HOU)

FILE: JRCP-25 (HOU).dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT February 2025	CONT	SECT	JOB	HIGHWAY
REVISIONS				FM 1093
02-25: 2024 Spec Updates	DIST	COUNTY		SHEET NO.
	HOU	FORT BEND		18 / 73

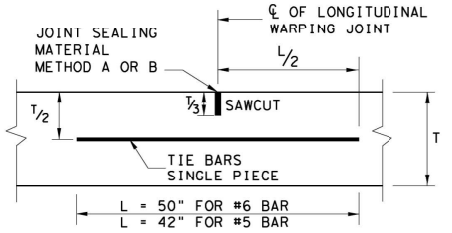
DATE:
FILE:



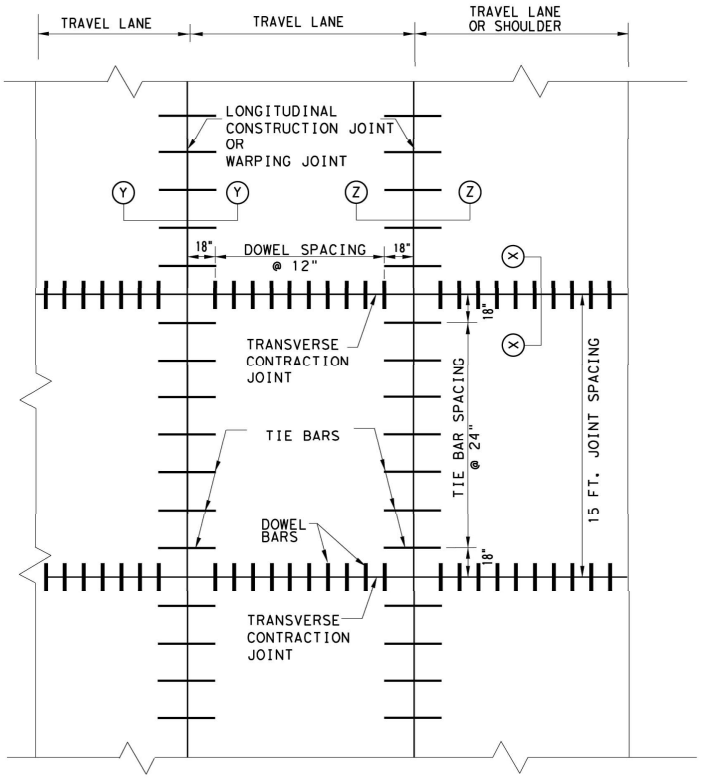
TRANSVERSE CONTRACTION JOINT
SECTION X-X



LONGITUDINAL CONSTRUCTION JOINT
SECTION Y-Y



LONGITUDINAL WARPING JOINT
SECTION Z-Z



TYPICAL PAVEMENT LAYOUT
PLAN VIEW (NOT TO SCALE)

GENERAL NOTES

1. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS. FOR PAVEMENTS WIDER THAN 100 FT. WITHOUT A FREE LONGITUDINAL JOINT, ADDITIONAL DETAILS MAY BE SHOWN ELSEWHERE IN THE PLANS.
2. FOR FURTHER INFORMATION REGARDING THE PLACEMENT OF CONCRETE AND LOAD TRANSFER DEVICES REFER TO THE GOVERNING SPECIFICATION FOR "CONCRETE PAVEMENT".
3. THE SPACING BETWEEN TRANSVERSE CONTRACTION JOINTS SHALL BE 15 FT. UNLESS OTHERWISE SHOWN IN THE PLANS.
4. TRANSVERSE CONSTRUCTION JOINTS MAY BE FORMED BY USE OF METAL OR WOOD FORMS EQUAL IN DEPTH TO THE DEPTH OF PAVEMENT, OR BY METHODS APPROVED BY THE ENGINEER.
5. USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL THE FORMED JOINTS.
6. PAVEMENT WIDTHS OF MORE THAN 15 FT. SHALL HAVE A LONGITUDINAL JOINT (SECTION Z-Z OR SECTION Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6 IN. OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON THE PLANS.
7. THE MINIMUM PROJECTION OF TIE BARS INTO THE ADJACENT PLACEMENT IS 22.5 IN. FOR #6 BARS AND 18.5 IN. FOR #5 BARS.
8. WHEN TYING CONCRETE GUTTER AT A LONGITUDINAL JOINT, THE TIE BAR LENGTH OR POSITION MAY BE ADJUSTED. PROVIDE 3 IN. OF CONCRETE COVER FROM THE BACK OF GUTTER TO THE END OF TIE BAR.
9. REPLACE MISSING OR DAMAGED TIE BARS WITHOUT ADDITIONAL COMPENSATION BY DRILLING MIN. 10 IN. DEEP AND GROUTING TIE BARS WITH TYPE III, CLASS C EPOXY. MEET THE PULL-OUT TEST REQUIREMENTS IN ITEM 361.
10. WHEN A MONOLITHIIC CURB IS SPECIFIED, THE JOINT IN THE CURB SHALL COINCIDE WITH PAVEMENT JOINTS AND MAY BE FORMED BY ANY MEANS APPROVED BY THE ENGINEER.
11. DOWEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1/4 IN. HORIZONTALLY AND VERTICALLY UNLESS OTHERWISE SPECIFIED. WHERE DOWEL BAR BASKETS ARE USED, REMOVE OR CUT THE SHIPPING WIRES.
12. THE DETAIL FOR JOINT SEALANT AND RESERVOIR IS SHOWN ON STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."

TABLE NO. 1 DOWELS (SMOOTH BARS)

SLAB THICKNESS T (IN.)	BAR DIA. AND LENGTH	AVERAGE SPACING (IN.)
6 to 7.5	1" X 18"	12
8 to 10	1 1/4" X 18"	12
>= 10.5	1 1/2" X 18"	12

TABLE NO. 2 TIE BARS (DEFORMED BARS)

SLAB THICKNESS T, (IN.)	BAR SIZE	AVERAGE SPACING (IN.)
6 to 7.5	#5	24
>= 8	#6	24

Texas Department of Transportation — Design Division Standard

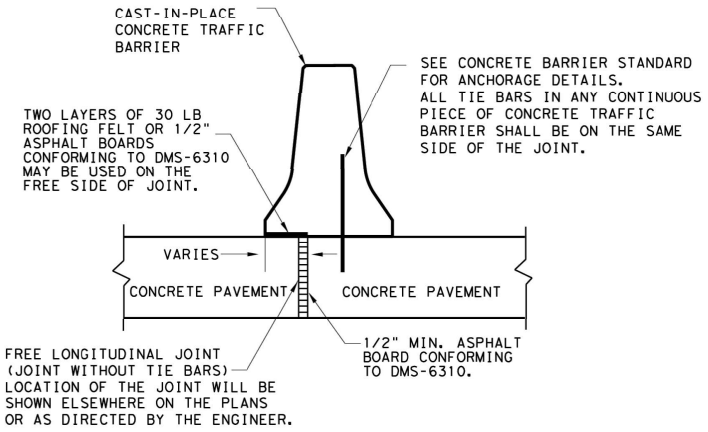
CONCRETE PAVEMENT CONTRACTION DESIGN

T-6 to 12 INCHES

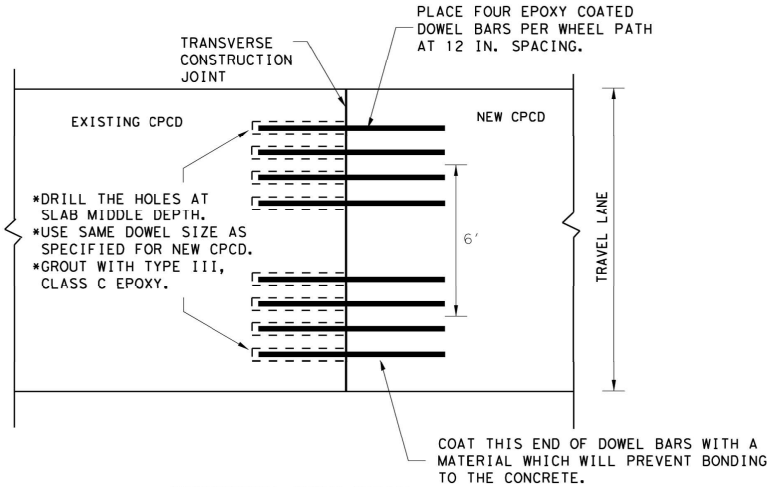
CPCD-24

FILE: cpcd24.dgn	DN: CES		DN: KM	DW:	CK: AN
©TxDOT: Sept 2024	CONT	SECT	JOB		HIGHWAY
REVISIONS					FM 1093
	DIST	COUNTY			SHEET NO.
	HOU	FORT BEND			19 / 73

DATE:
FILE:



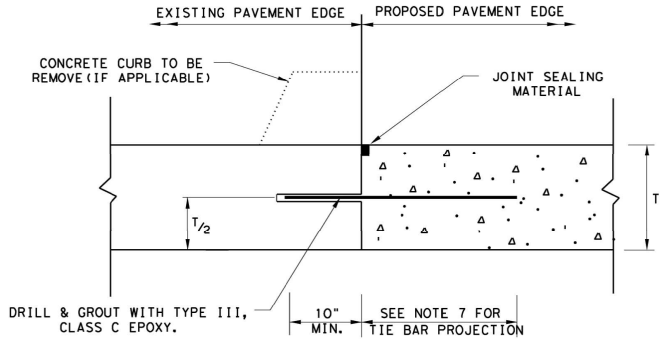
FREE LONGITUDINAL JOINT DETAIL



TRANSVERSE JOINT DETAIL

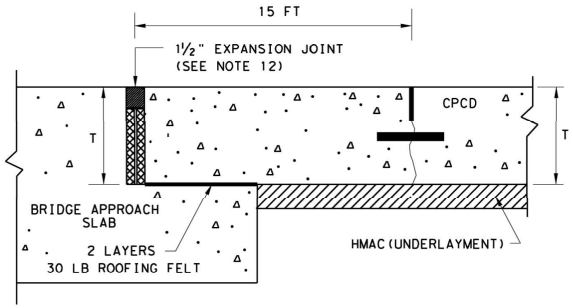
EXISTING CPCD TO NEW CPCD

PLAN VIEW (NOT TO SCALE)



1. USE A DRILL BIT WITH A DIAMETER THAT IS 1/8 IN. GREATER THAN THAT OF THE TIE BAR DIAMETER.
2. BEFORE CONCRETE PLACEMENT, PERFORM PULL-OUT TESTS ON EPOXY-GROUTED TIE BARS IN ACCORDANCE WITH ITEM 360.
3. SPACE TIE BARS AT 24" SPACING. USE #6 TIE BARS FOR 8" AND THICKER PAVEMENTS, USE #5 TIE BARS FOR LESS THAN 8" THICK PAVEMENTS.
4. THE TRANSVERSE JOINTS OF PROPOSED PAVEMENT SHALL COINCIDE WITH EXISTING PAVEMENT JOINTS UNLESS OTHERWISE SHOWN ON THE PLANS.

LONGITUDINAL WIDENING JOINT DETAIL



TRANSVERSE EXPANSION JOINT DETAIL

AT BRIDGE APPROACH

SHEET 2 OF 2

Texas Department of Transportation — Design Division Standard

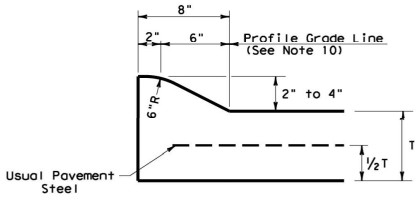
CONCRETE PAVEMENT CONTRACTION DESIGN

T-6 to 12 INCHES

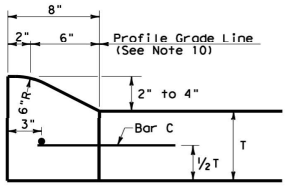
CPCD-24

FILE: cpcd24.dgn	DN: CES	DN: KM	DW:	CK: AN
© TxDOT: Sept 2024	CONT	SECT	JOB	HIGHWAY
REVISIONS				FM 1093
	DIST	COUNTY		SHEET NO.
	HOU	FORT BEND		20 / 73

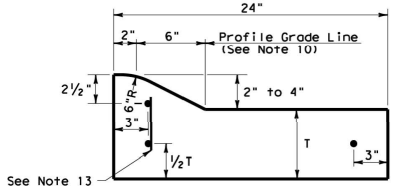
DATE:
FILE:



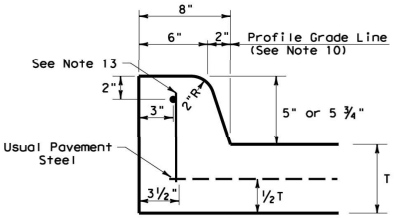
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



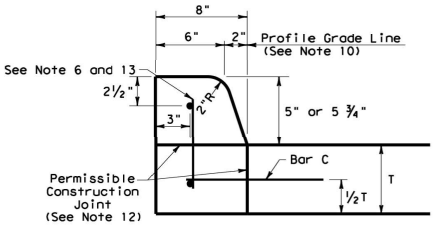
TYPE I CURB
2" - 4" HEIGHT



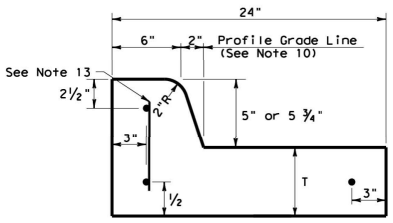
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



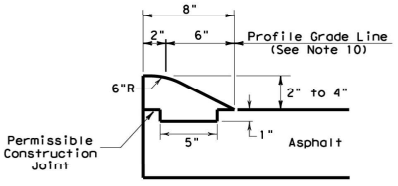
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



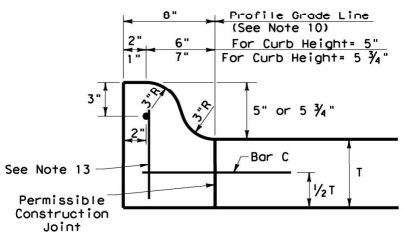
TYPE II CURB
5" - 5 ¾" HEIGHT



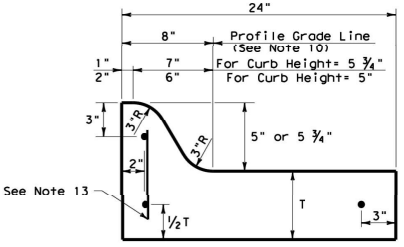
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



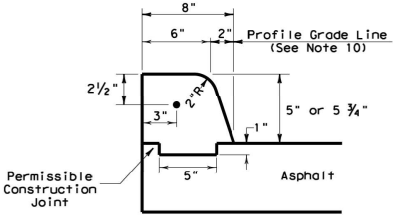
TYPE III CURB (KEYED)
2" - 4" HEIGHT



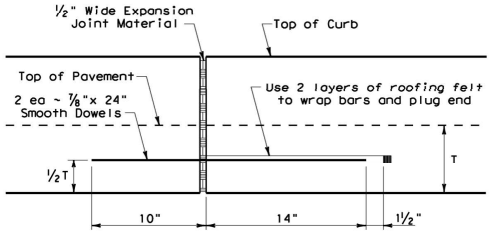
TYPE IIa CURB
5" - 5 ¾" HEIGHT



TYPE IIa CURB AND GUTTER
5" - 5 ¾" HEIGHT

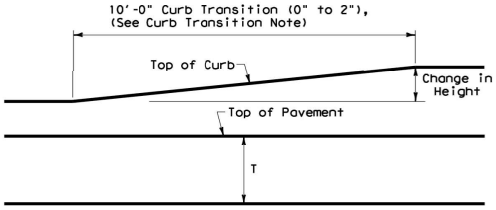


TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.

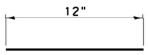


CURB TRANSITION
Note: To be paid for as Highest Curb

GENERAL NOTES

1. All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
2. Concrete shall be Class A.
3. When reinforcing bars are used, they shall be No. 4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
4. Round exposed sharp edges with a rounding tool, to a minimum radius of ¼ inch.
5. All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
6. Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and grouted in place, or may be inserted into fresh concrete.
7. Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
8. Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C-C.
9. Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
10. Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
11. One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
12. When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
13. Bar B placement as needed (typically at four ft. C-C) to support curb reinforcing steel during concrete placement.

BAR B



BAR C

Texas Department of Transportation

Design Division Standard

CONCRETE CURB AND CURB AND GUTTER

CCCG-22

FILE: cccg21.dgn	DN: TXDOT	CK: AN	DW: CS	CK: KM	
©TxDOT: JUNE 2022	CONT	SECT	JOB	HIGHWAY	
REVISIONS				FM 1093	
	DIST	COUNTY		SHEET NO.	
	HOU	FORT BEND		21 / 73	

DATE:
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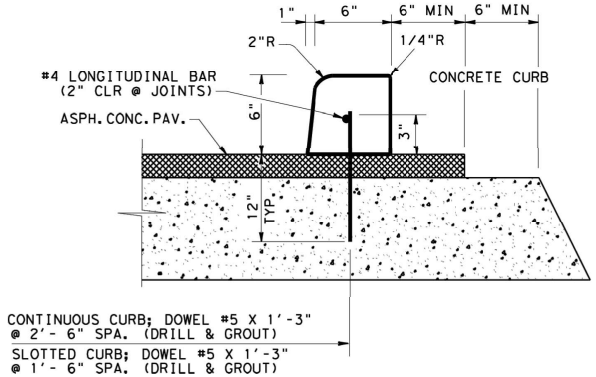
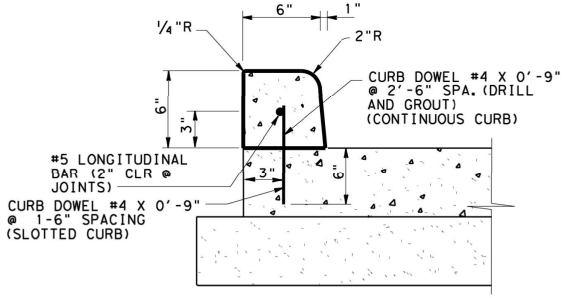


SHOWN ON EXISTING OR PROPOSED ACP PAVEMENT

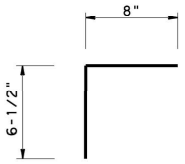
(PAY ITEM 529-7014) - FOR CONTINUOUS



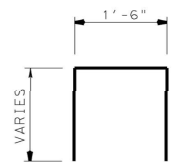
SHOWN ON EXISTING OR PROPOSED CONCRETE PAVEMENT

(PAY ITEM 529-7014) - FOR CONTINUOUS

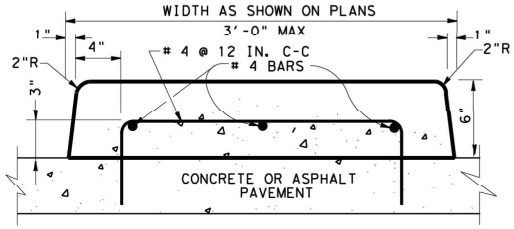
CONCRETE CURB (DOWEL) (6 IN.)



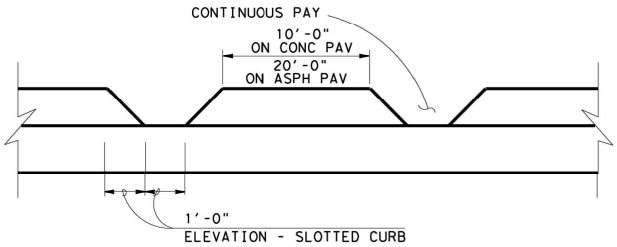
BAR K
#4



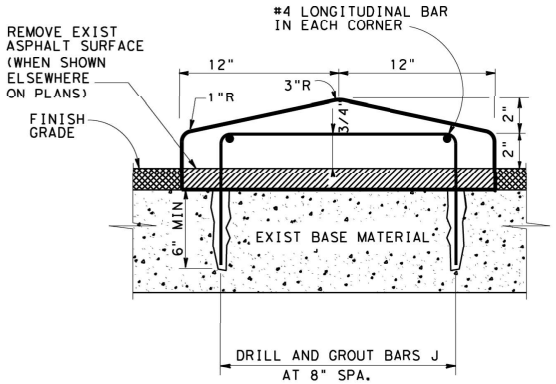
BAR J
#4



ITEM 536-7001 CONCRETE MEDIAN
SEE NOTE 2

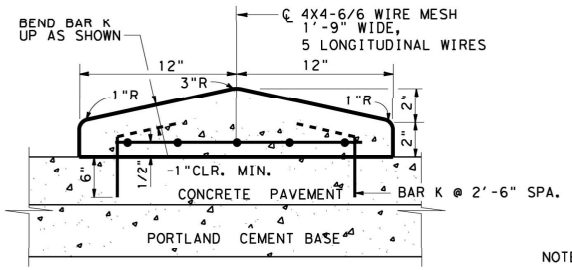


ITEM 529-7013 CONCRETE CURB (SLOTTED) - ON CONC.
ITEM 529-7026 CONC CURB (DOWEL)(SLOTTED) - ON ASPH.



SHOWN ON EXISTING ACP PAVEMENT

SEE NOTE 2 - ITEM 536-7003 CONC DIRECTIONAL ISLAND



SHOWN ON EXISTING OR PROPOSED CONCRETE PAVEMENT

SEE NOTE 2 - ITEM 536-7003 CONC DIRECTIONAL ISLAND

CONCRETE DIRECTIONAL ISLAND

NOTES:

1. DRILL AND GROUT BARS SHOWN AS PER ITEM 420.4.7.10, 6" EMBEDMENT, MINIMUM ON CONC.
2. INSTALL A 2 INCH DRAINAGE OPENING AT 10 FT C-C WHEN CURB/ISLAND IS NOT ON TOP OF CROSS SECTION. (LOCATED ON A 2 OR 3 PERCENT TRANSVERSE GRADE, OR SUPERELEVATION.)

Texas Department of Transportation

Houston District Standard

CONCRETE CURB AND DIRECTIONAL ISLAND DETAILS

CC & DID-24 (HOU)

FILE: CC & DID-24 (HOU).dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT November 2024	CONT	SECT	JOB	HIGHWAY
REVISIONS				FM 1093
11-24: 2024 Spec Updates	DIST	COUNTY		SHEET NO.
	HOU	FORT BEND		22 / 73

TYPE OF WORK

ITEMS AND REQUIREMENTS FOR EACH TYPE OF WORK

SODDING	PERMANENT SEEDING	TEMPORARY SEEDING	Reference Item 161, 162, 164, 166, 168 of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2024 for specifications, dimensions, volumes and measurements that are not shown. Use latest Houston District, Special Provisions for those items indicated.		
	✓		**161-7002 COMPOST MANUF TOPSOIL (4") SY**	APPLICATION RATE Item 161.2.1. Compost Manufactured Topsoil (CMT)	Item 161.2. Materials Submit quality control (QC) documentation to the Engineer. Compost producer's STA certification must be dated to meet STA requirements (certification must be within 30 or 90 days per STA requirements). Lab analysis performed by an STA-certified lab must be dated within 30 days before delivery of the compost.
✓			**162-7002 BLOCK SODDING SY**	GRASS SPECIES Item 162.2. Materials Common Bermuda (Cynodon Dactylon)	Item 162.2.1. Block Sod Use block palletized or roll type sod. **REMOVE PLASTIC BACKING FROM ROLL TYPE SOD.** Place sod within 48 hours of delivery to site. No exceptions. Place sod with joints alternating on each row to prevent continuous joint lines. Peg sod as needed with wood pegs to hold sod in place. Pegging sod is subsidiary to Item 162.
	✓		**164-7016 DRILL SEEDING (OPT1) SY** Item 164.1. Description Provide and install seeding as shown on District Standard	PLANTING MONTH / SEED MIX March, April, May, June, July, August, September, October: Hulled - Bermudagrass (Cynodon dactylon).....40.0 lbs PLS/acre Foxtail Millet (Setaria italica).....34.0 lbs PLS/acre Green Sprangletop (Leptochloa dubia).....4.0 lbs PLS/acre Sideoats Grama (Bouteloua curtipendula).....3.2 lbs PLS/acre Little Bluestem (Schizachyrium scoparium).....1.4 lbs PLS/acre	Item 164.2.1. Seed Provide documentation of PLS (Pure Live Seed) requirements. Item 164.3. Construction Scarify the area to a depth of 4 inches before placing the seed unless otherwise directed. When performing permanent seeding after an established temporary seeding, scarify the seedbed to a depth of 4 inches or mow the area before placement of the permanent seed. Plant the seed and place the straw or hay mulch after the area has been completed to lines and grades as shown on the plans. Item 164.3.2. Broadcast Seeding Use broadcast seeding method where site conditions prevent drill seeding method. Distribute the dry seed or dry seed mixture uniformly over the areas shown on the plans using hand or mechanical distribution on top of soil. **HYDRO SEEDING NOT ALLOWED.** Item 164.3.5. Drill Seeding Plant seed or seed mixture uniformly over the area shown on the plans at a depth of 1/4 to 1/3 inch using a cultipacker(turfgrass) type seeder. Plant seed along the contour of the slopes.
	✓		**164-7008 BROADCAST SEED (OPT1) SY** Item 164.1. Description Provide and install seeding as shown on District Standard	November, December, January, February: Unhulled - Bermudagrass (Cynodon dactylon).....40.0 lbs PLS/acre Oats (Avena sativa).....72.0 lbs PLS/acre Green Sprangletop (Leptochloa dubia).....4.0 lbs PLS/acre Sideoats Grama (Bouteloua curtipendula).....3.2 lbs PLS/acre Little Bluestem (Schizachyrium scoparium).....1.4 lbs PLS/acre	
		✓	**164-7015 DRILL SEED (TEMP_WARM_COOL) SY** Item 164.1. Description Provide and install seeding as shown on District Standard	PLANTING MONTH / SEED MIX March, April, May, June, July, August, September, October: Foxtail Millet (Setaria italica).....34.0 lbs PLS/acre	
		✓	**164-7007 BROADCAST SEED (TEMP_WARM_COOL) SY** Item 164.1. Description Provide and install seeding as shown on District Standard	November, December, January, February: Oats (Avena sativa).....72.0 lbs PLS/acre	
	✓	✓	**164-7065 STRAW OR HAY MULCH SY**	APPLICATION RATE Immediately after planting the seed or seed mixture, apply straw or hay mulch uniformly over the seeded area. Apply straw or hay mulch at 2 tons per acre. Use tacking agent with straw or hay mulch as described on this sheet.	Use straw or hay mulch in conformance with Article 162.2.5. Mulch. Use biodegradable tacking agents only applied at a rate in accordance with manufacturer's recommendations. Use the following products or an approved equal(see note this sheet): Conweb/Contac Guar Gum, Profile Products Corporation, (307) 655-9565, Ramtec/Procol/Viscol Guar Gum, Ramtec Corporation, (800) 366-1180
✓	✓	✓	**166-7001 FERTILIZER AC** Item 166.2. Materials Use fertilizer as shown in District Standard	APPLICATION RATE Deliver and evenly distribute fertilizer at a rate of 4000 lbs/acre.	Use a NON-CHEMICAL fertilizer which meets all the following criteria: (1) BRAND NAME must be registered with the Texas State Chemist as a commercial fertilizer. (2) Meets USEPA guidelines for unrestricted use. (3) Derived from biological sources such as, but not limited to: sewage sludge, manures, vegetation, etc. (4) In granular form and essentially dust free. Submit proof of registration and nutrient source to Engineer. Use the following products or an approved equal(see note this sheet): Sigma, SIGMA AgriScience, 281-706-8171 Sustanite-standard grade, Automation Nation, Inc., 713-675-4999 Milorganite, MMSD, 800-287-9645
✓	✓	✓	**168-7001 VEGETATIVE WATERING TGL**	APPLICATION RATE Item 168.3. Construction 6 TGL (6000 gallons/acre per working day) x 20 consecutive working days = 120 TGL (120,000 gallons total/acre)	Begin watering immediately after installation of seed or sod. Replace, fertilize, and water any seed or sod in poor condition due to the failure to apply the specified amount of water within the time allowed at no expense to the Department.

SEQUENCE OF WORK

SODDING	PERMANENT SEEDING	TEMPORARY SEEDING
1. FERTILIZER 2. SCARIFY SOIL (ITEM 162.3) 3. BLOCK SOD 4. VEGETATIVE WATERING	1.FERTILIZER 2.COMPOST MANUFACTURED TOPSOIL (ITEM 161.2.1) 3.BLEND/SCARIFY SOIL (ITEMS 161.3.1 AND 164.3) 4.PERMANENT SEEDING 5.STRAW/HAY MULCH 6.VEGETATIVE WATERING	1.FERTILIZER 2.SCARIFY SOIL (ITEM 164.3) 3.TEMPORARY SEEDING 4.STRAW/HAY MULCH 5.VEGETATIVE WATERING

Texas Department of Transportation

HOUSTON DISTRICT

FERTILIZER, SEED, SOD, STRAW, COMPOST, AND WATER

SHEET 1 OF 1

FSSSCW-15

REVISIONS
10/2014 UPDATED TO 2014 SPECS
3/2015 MINOR CORRECTIONS
3/2023 ADDED SHEET ABBREVIATION
6/2024 UPDATED TO 2024 SPECS

FILE:	FED DIV	STATE	PROJECT NUMBER			SHEET
	6	TEXAS				23 / 73
ORIGINAL:	DIST	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	12	FORT BEND				FM 1093

STD K-1

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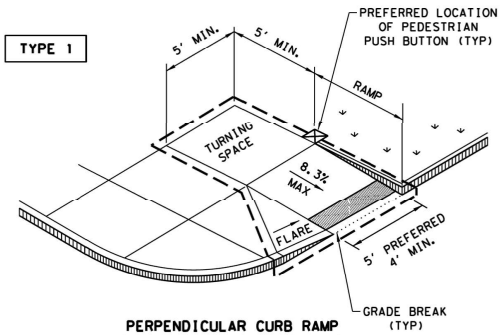
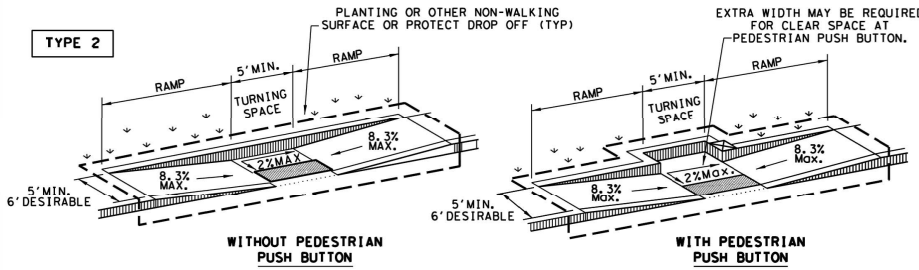
DATE:
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

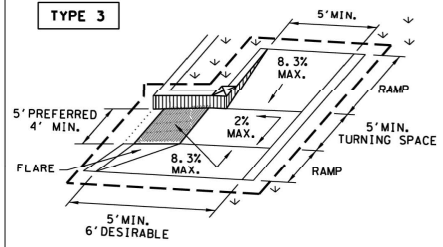


WITHOUT PEDESTRIAN PUSH BUTTON

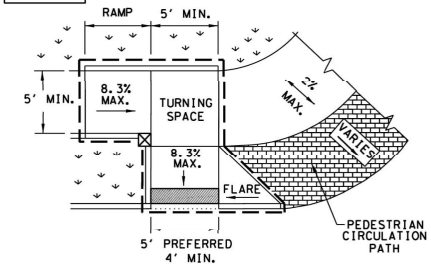
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

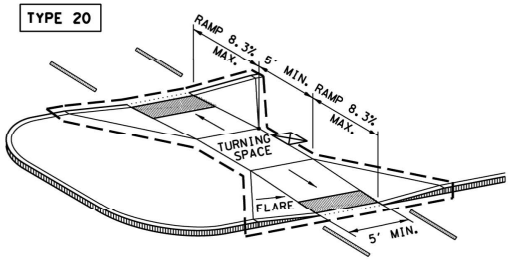


TYPE 6



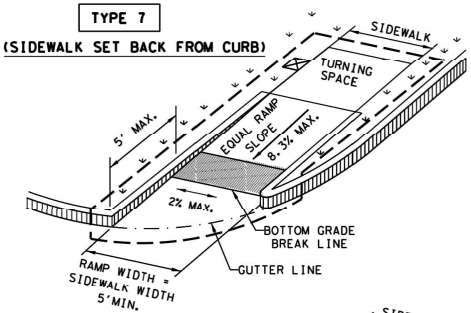
COMBINATION CURB RAMPS

TYPE 20

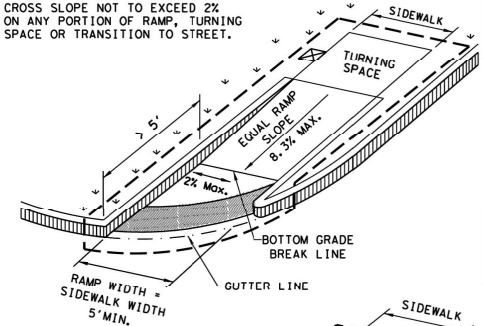


CURB RAMPS AT MEDIAN ISLANDS

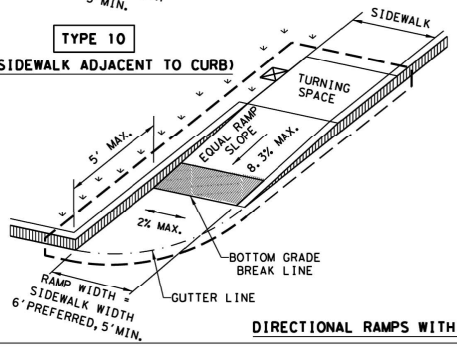
TYPE 7
(SIDEWALK SET BACK FROM CURB)



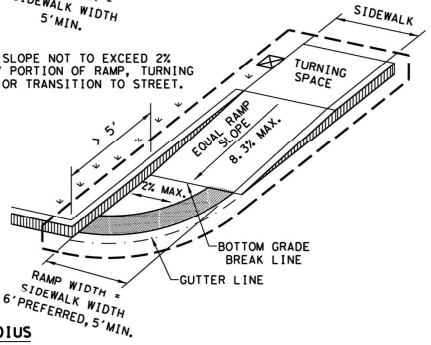
CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



TYPE 10
(SIDEWALK ADJACENT TO CURB)

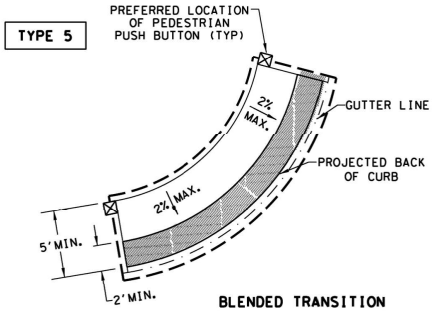


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

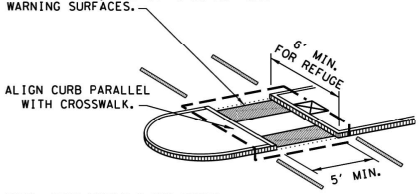
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

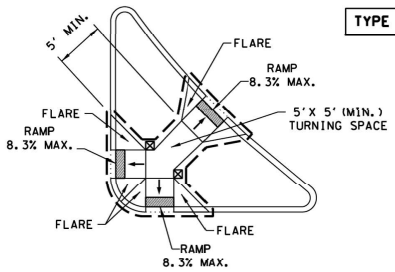
TYPE 21

INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.

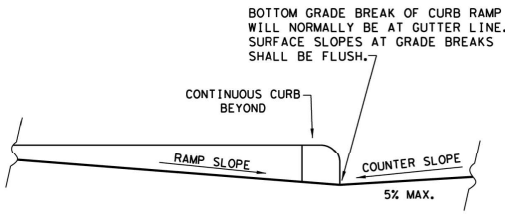


NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	CK: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				FM 1093
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	HOU	FORT BEND		24 / 73

DATE:
FILE:

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicable standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

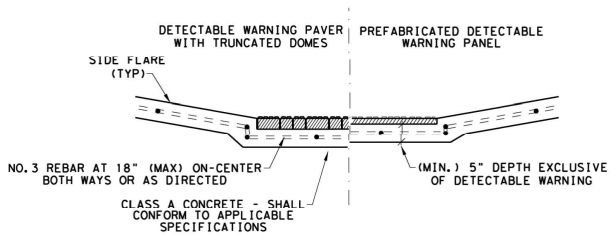
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be *a minimum* of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

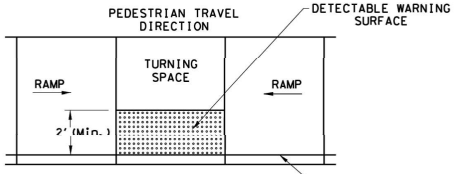
SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.

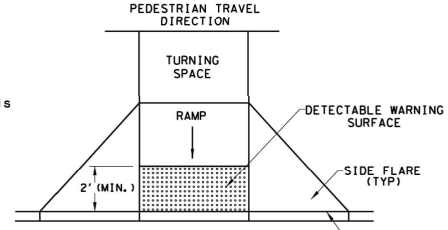


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

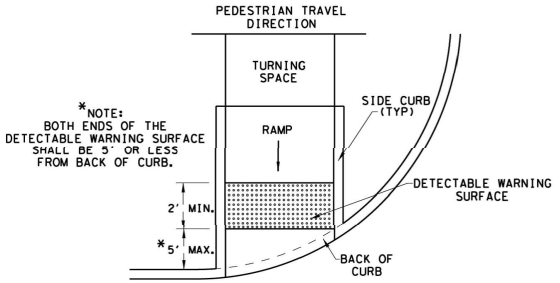
DETECTABLE WARNING SURFACE DETAILS



PARALLEL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

Texas Department of Transportation — Design Division Standard

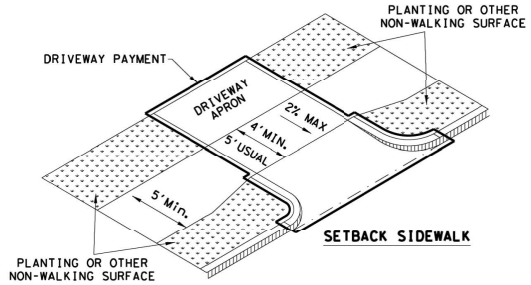
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

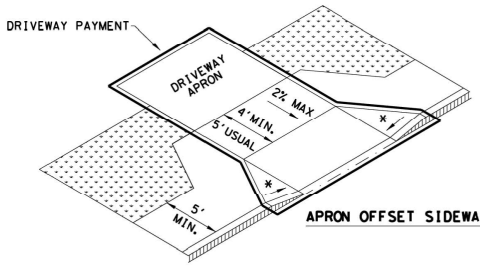
FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					FM 1093
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	HOU	FORT BEND			25 / 73

DATE:
FILE:

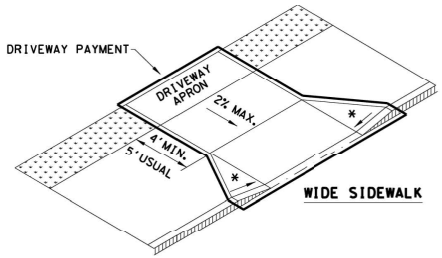
SIDEWALK TREATMENT AT DRIVEWAYS



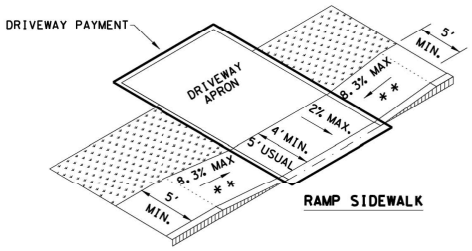
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

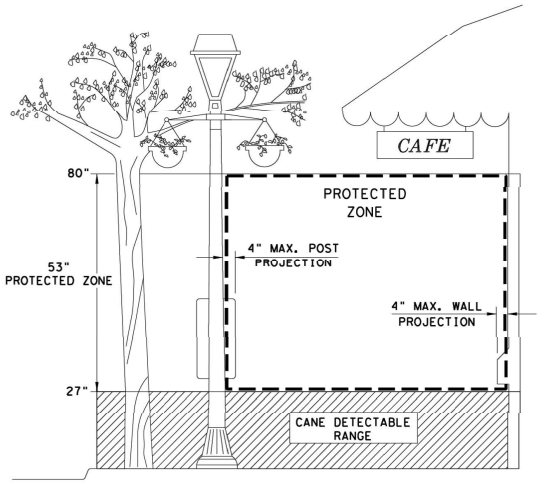


RAMP SIDEWALK

NOTES:

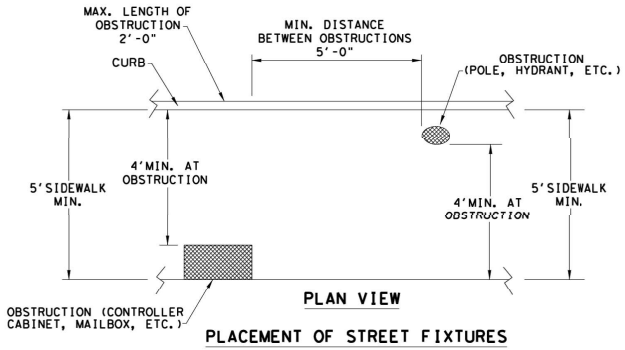
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

** IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.



PROTECTED ZONE

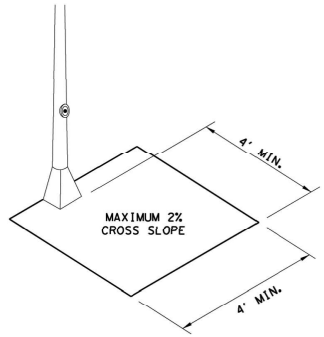
NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



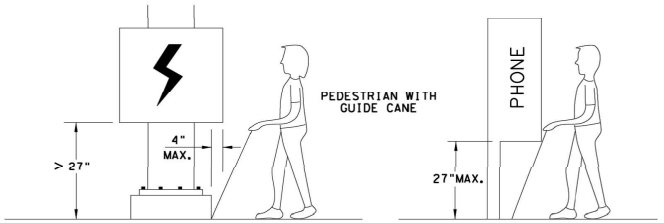
PLAN VIEW

PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.

PROTRUDING OBJECTS OF A HEIGHT ≤ 27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

SHEET 3 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS

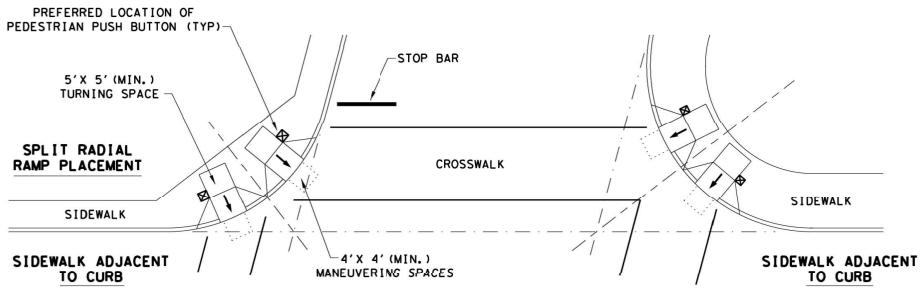
PED-18

FILE: ped18	DN: TxDOT	CK: VP	CK: KM	CK: PK & JC
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				FM 1093
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.
	HOU	FORT BEND		26 / 73

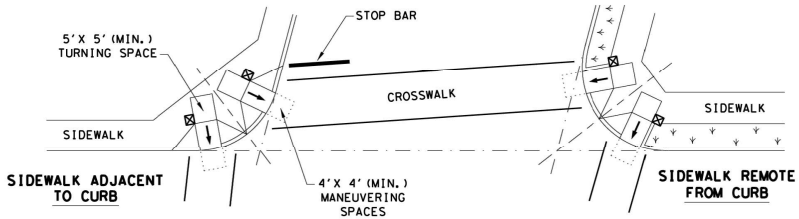
DATE:
FILE:

TYPICAL CROSSING LAYOUTS

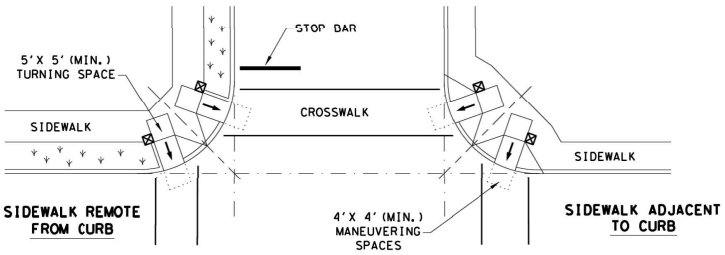
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



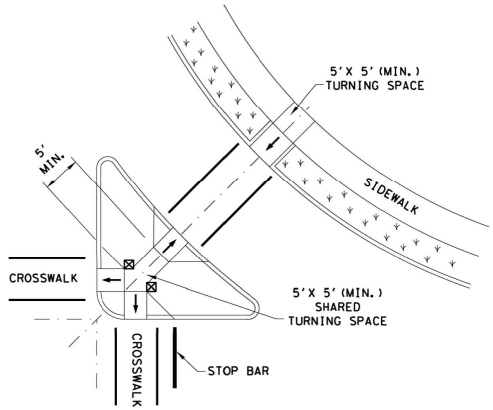
SKEWED INTERSECTION WITH "LARGE" RADIUS



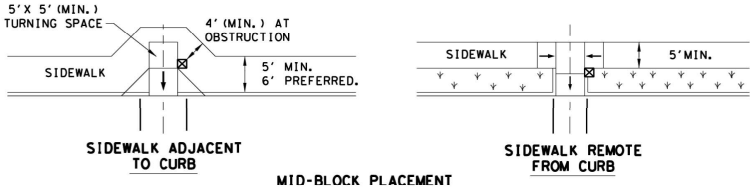
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE). ⊠

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

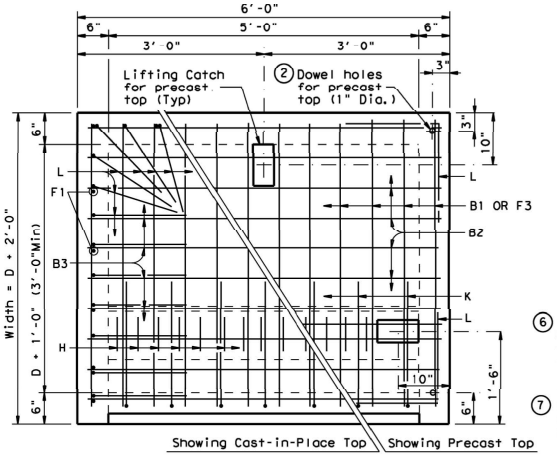
Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

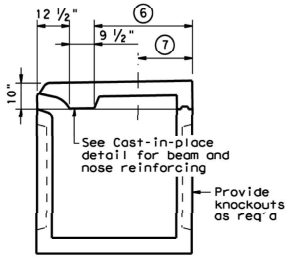
PED-18

FILE: ped18	DN: TxDOT		DN: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					FM 1093
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	HOU	FORT BEND			27 / 73

DATE:
FILE:



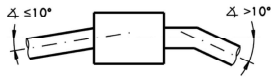
PLAN



PREFABRICATED INLET

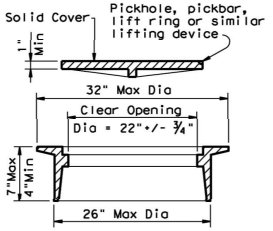
(6) For reinforcing steel and dimensions not shown, see fabricators shop drawings. Structure shall be of the size required to accommodate size of pipe shown elsewhere in the plans. Length of inlet = 6'-0"

(7) 1'-6" Min, 1'-9" Max Adjust placement of Ring and Cover as necessary to avoid conflict with Bars H.



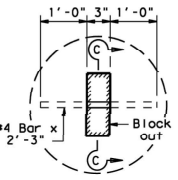
PIPE CONNECTION DETAIL

Connecting pipes should enter within 10° of normal to inlet wall. If necessary, pipe elbow or curved approach alignment should be used to stay within this limit.

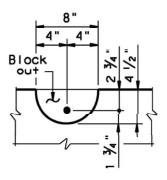


RING AND COVER DETAILS

(10) EJ V-1418 or Neenah No R-1930-24

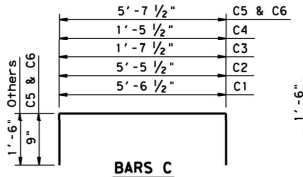


PLAN

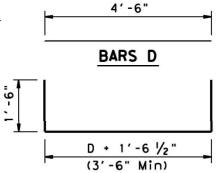


SECTION C-C

LIFTING CATCH

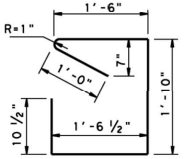


BARS C

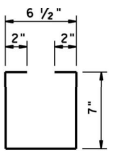


BARS D

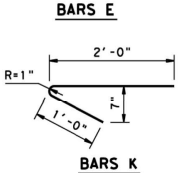
BARS E



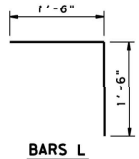
BARS G



BARS H



BARS K

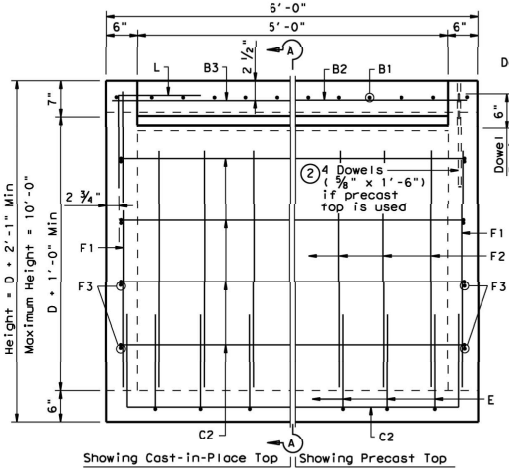


BARS L

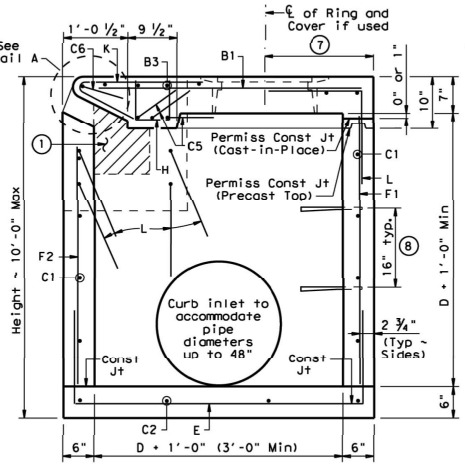
REINF STEEL

Bar	Size	Spacing
B1	#4	6"
B2	#5	6"
B3	#4	6"
C1-C2	#4	12"
C3-C4	#4	(9)
C5	#6	(9)
C6	#4	(9)
D	#4	(9)
E	#4	12"
F1-F3	#4	12"
G	#4	6"
H	#3	4"
K	#4	9"
L	#4	6"

(9) As shown



ELEVATION



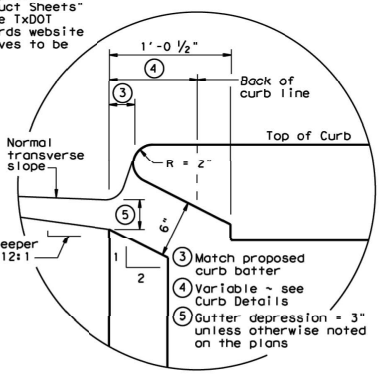
SECTION A-A

(1) Block out to accommodate extension if used and to place 4 Bars L.

(2) If precast top is used, provide 4 ~ ⅝" dia x 1'-6" smooth bars in inlet walls for 1" dia holes

(8) Ladder rung is Ductile Iron, Aluminum or Cast Iron.

(10) Alternative ring and covers may only used if approved by Engineer. Refer to the "TxDOT approved Cast IronProduct Sheets" located on the TxDOT Bridge Standards website for alternatives to be approved.



DETAIL A

GENERAL NOTES:

No alternate designs nor alternate details shall be permitted for precast or cast in place inlets.

Quantities shown herein are for Contractor's information only. Unless otherwise shown in the plans, payment will be made for each inlet of the type specified and for each extension. Each five foot curb opening of extension is considered "one extension" regardless of whether placed monolithically or precast. Extension length shall be in multiples of 5 feets.

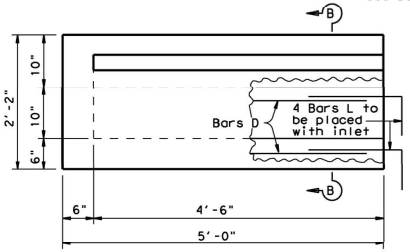
Engineer has the option of specifying cast-in-place top with ring and cover or removable precast top as specified elsewhere in plans.

Shop drawings will be required for Precast construction of inlets.

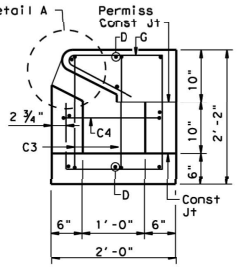
In areas of conflict between reinforcing steel, blockouts, pipes, anchor bolts or otherreinforcing steel, the reinforcement shall be bent or adjusted to clear as directed by the Engineer.

Ring and cover shall conform to the requirements of AASHTO M 306-10, "Standard Specification for Drainage, Sewer, Utility, and Related Castings". Materials shall conform to ASTM A48, Class 35B for gray iron castings or ASTM A536, Grade 65-45-12 for ductile iron castings. Aluminum alloy castings shall not be permitted.

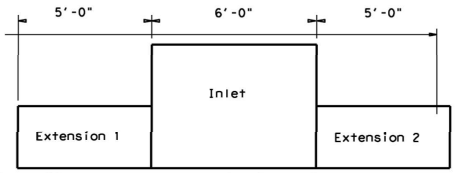
Provide Class "C" Concrete for CIP or Class "H" Concrete for Precast Elements With Modifications Per Item 465. Provide Min f'c=3,600psi. Provide Grade 60 Reinforcing Steel.



EXTENSION ELEVATION



SECTION B-B



Note: If more than one extension is required, they should be located as indicated above. No slope is required in flowline of extension.

EXTENSION PLACEMENT

INSTALL A 3 FT. (HORIZ.) x 6 IN. (VERT.) OPENING ON THE BACK OF THE INLET WHEN SPECIFIED ELSEWHERE ON THE PLANS. MOVE STEPS AS NEEDED. NO REINFORCING ON OPENING/ON 2 IN. ADJACENT TO OPENING.

DESIGNERS:
CLARIFY FLOWLINE OF OPENING AND INCLUDE OPENING IN HYDRAULIC CALCULATIONS.

D = Diameter
R = Radius

Texas Department of Transportation

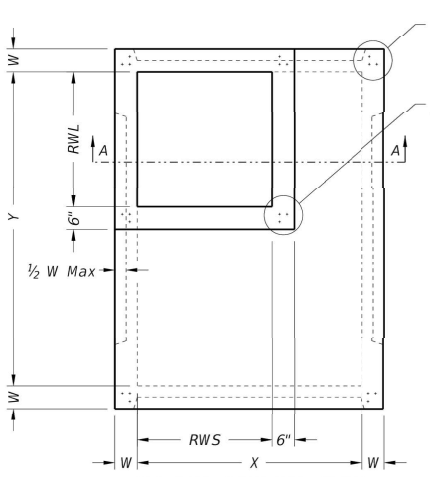
Bridge Houston District Standard

CURB INLET TYPE C
(WITH OR WITHOUT EXTENSION)

HIL-C-25(HOU)

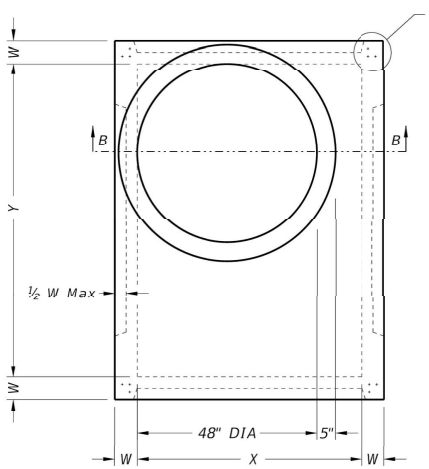
FILE: HIL-C-25(HOU).DGN	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT May 2025	CONT	SECT	JOB	HIGHWAY
REVISIONS				FM 1093
02/2010: Added note concerning opening on the back of inlet	DIST	COUNTY		SHEET NO.
10/2014: Removed Note 10	HOU	FORT BEND		28 / 73
05/2025: 2024 Spec Updates Added Note 10 for alternate ring & cover				

DATE:
FILE:



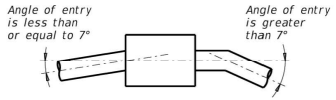
PLAN VIEW "A"

SQUARE REDUCED RISER OPTION



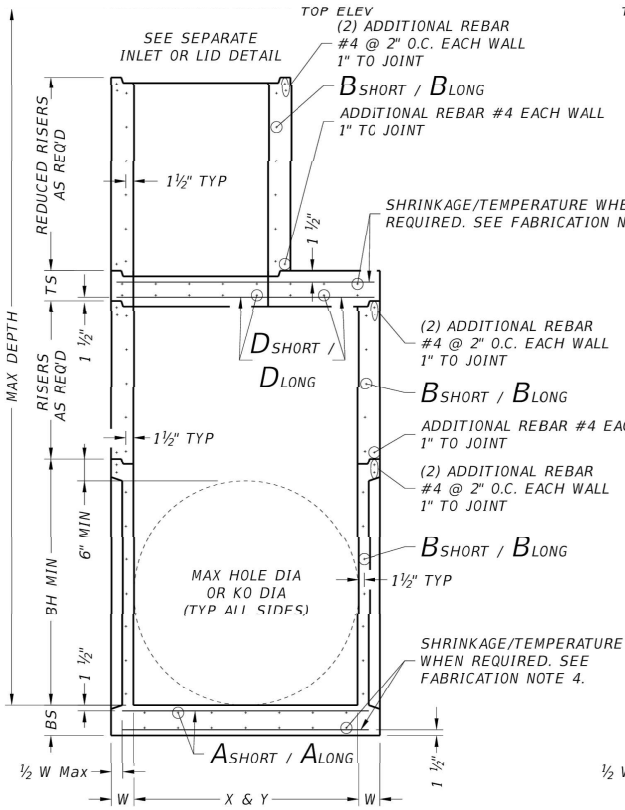
PLAN VIEW "B"

ROUND REDUCED RISER OPTION



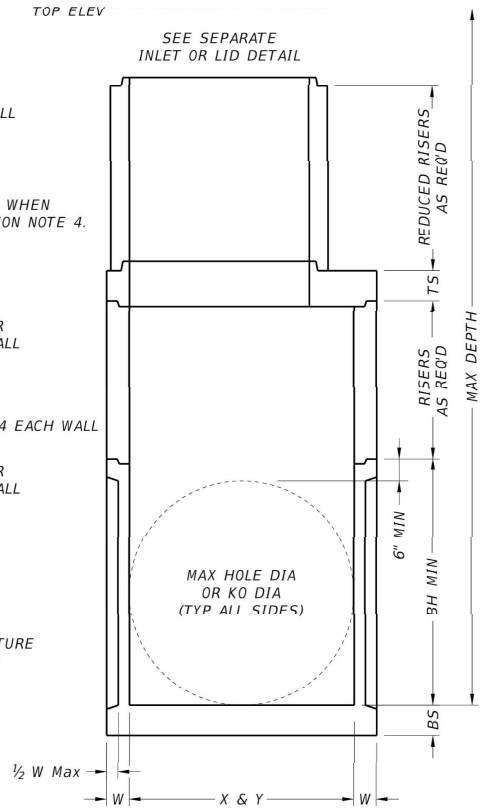
PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PB wall.
If necessary, use pipe elbow or curved approach alignment to stay within this limit.



SECTION A-A

SQUARE REDUCED RISER OPTION



SECTION B-B

ROUND REDUCED RISER OPTION

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.

Cover dimensions are clear dimensions, unless noted otherwise.

INSTALLATION NOTES:

1. If required elsewhere. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to specified inlet or manhole.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for precast base is subsidiary to the specified inlet, per Item 465, "Junction Boxes, Manholes, and Inlets."

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST BASE

PB

FILE: CD-PB-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				FM 1093
	DIST	COUNTY		SHEET NO.
	HOU	FORT BEND		29 / 73

	Size	MAX DEPTH = 15 ft. to top of BASE SLAB										MAX DEPTH = 25 ft. to top of BASE SLAB										Min Height (See Gen Note 3)	Max HOLE DIA (See Fab Note 2)	Max KO DIA (See Fab Note 2)
		Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)				Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)						
		Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness			
	X x Y	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	BH MIN	HOLE DIA	KO DIA
	ft.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	ft.	in.	in.
Precast Junction Box (PJB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	0.37	0.37	9	0.29	0.29	6	0.24	0.24	6	N/A	0.37	0.37	9	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	0.41	0.41	9	0.47	0.47	6	0.38	0.38	6	N/A	0.41	0.41	9	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	N/A	0.48	0.48	9	0.39	0.18	6	0.23	0.59	6	N/A	0.48	0.48	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	N/A	0.42	0.42	9	0.53	0.26	6	0.39	0.59	6	N/A	0.42	0.42	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	N/A	0.43	0.43	9	0.62	0.62	6	0.59	0.59	6	N/A	0.43	0.43	9	5.5	60	60
	5x6	0.27	0.27	9	0.34	0.45	6	N/A	0.48	0.48	9	0.47	0.45	9	0.38	0.54	8	N/A	0.48	0.48	9	5.5	60/72	60/72
	6x6	0.27	0.27	9	0.45	0.45	6	N/A	0.56	0.56	9	0.52	0.52	9	0.54	0.54	8	N/A	0.56	0.56	9	6.5	72	72
	8x8	0.46	0.46	9	0.51	0.51	8	N/A	0.45	0.45	12	0.87	0.87	9	0.59	0.59	10	N/A	0.45	0.45	12	8.5	96	72
Precast Base (PB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	N/A	N/A	N/A	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	0.47	0.47	6	0.38	0.38	6	N/A	N/A	N/A	N/A	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	3x3	0.30	0.34	9	0.39	0.18	6	0.23	0.59	6	3x3	0.40	0.40	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x3	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	3x3	0.46	0.37	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	4x4	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	4x4	0.39	0.39	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	48"	0.39	0.39	9	0.53	0.26	6	0.39	0.59	6	48"	0.47	0.47	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x5	0.33	0.40	9	0.53	0.26	6	0.39	0.59	6	3x5	0.48	0.48	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	3x3	0.34	0.34	9	0.62	0.62	6	0.59	0.59	6	3x3	0.53	0.53	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	4x4	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	4x4	0.64	0.64	9	5.5	60	60
	5x5	0.38	0.38	6	0.34	0.34	6	48"	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	48"	0.64	0.64	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	3x5	0.34	0.40	9	0.62	0.62	6	0.59	0.59	6	3x5	0.53	0.53	9	5.5	60	60
	5x6	0.31	0.31	9	0.34	0.45	6	3x3	0.34	0.34	9	0.47	0.45	9	0.38	0.54	8	3x3	0.61	0.50	9	5.5	60/72	60/72
	5x6	0.27	0.27	9	0.34	0.45	6	4x4	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	4x4	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	48"	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	48"	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	3x5	0.45	0.45	9	0.47	0.45	9	0.38	0.54	8	3x5	0.61	0.61	9	5.5	60/72	60/72
	6x6	0.29	0.29	9	0.45	0.45	6	3x3	0.41	0.41	9	0.52	0.52	9	0.54	0.54	8	3x3	0.74	0.74	9	6.5	72	72
	6x6	0.27	0.27	9	0.45	0.45	6	4x4	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	4x4	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	48"	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	48"	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	3x5	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	3x5	0.87	0.87	9	6.5	72	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x3	0.61	0.61	12	0.91	0.91	9	0.70	0.70	10	3x3	0.85	0.85	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	4x4	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	4x4	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	48"	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	48"	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x5	0.70	0.85	12	0.87	0.87	9	0.70	0.70	10	3x5	1.01	1.01	12	8.5	96	72

** Unless otherwise indicated.

HL93 LOADING

FABRICATION NOTES:

1. Maximum spacing of reinforcement is 8".
2. At manufacturer's option, provide cast or cored holes or thin wall panels (KO) to the maximum diameter shown for each. When no penetration is required, it is acceptable to provide a wall with no sectional reduction.

GENERAL NOTES:

1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PJB for details.
2. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PB for details.
3. Min Height shown is for stock base units. Use stock base units whenever practical. Smaller height base units can be used in special installation circumstances, when noted elsewhere in the plans. Absolute minimum height of base units is 2'-6".

Texas Department of Transportation

Bridge Division Standard

DESIGN DATA FOR PRECAST BASE AND JUNCTION BOX

PDD

FILE: CD-PDD-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				FM 1093
	DIST	COUNTY		SHEET NO.
	HOU	FORT BEND		30 / 73

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DATE:
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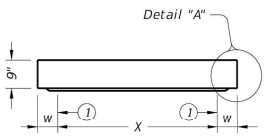
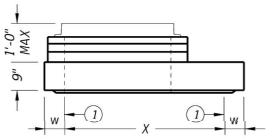


ELEVATION VIEW



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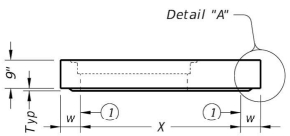
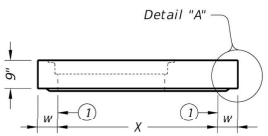
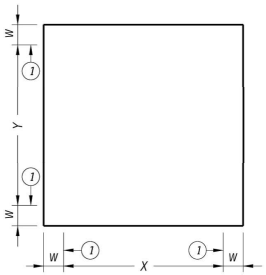


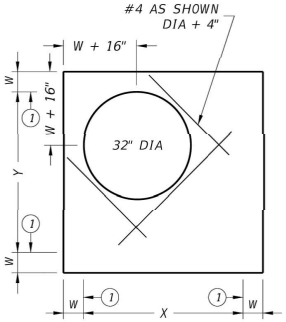
ELEVATION VIEW



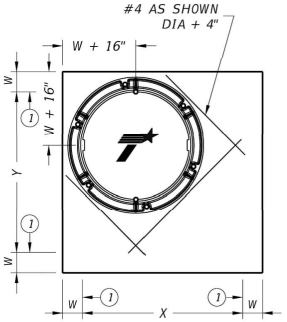
ELEVATION VIEW



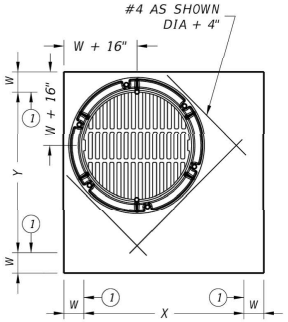
PLAN VIEW
NO OPENINGS
STYLE 'SL'



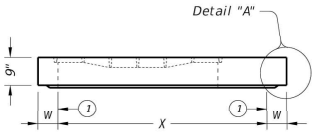
PLAN VIEW
SHIP LOOSE RING & COVER
STYLE 'RH'



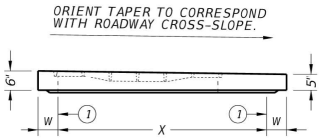
PLAN VIEW
32" DIA CAST-IN RING & COVER
STYLE 'RC'



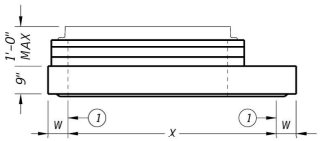
PLAN VIEW
32" DIA CAST-IN RING & GRATE
STYLE 'RG'



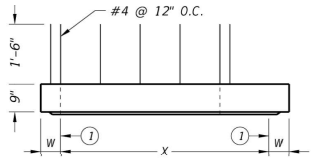
STYLE 'FG'



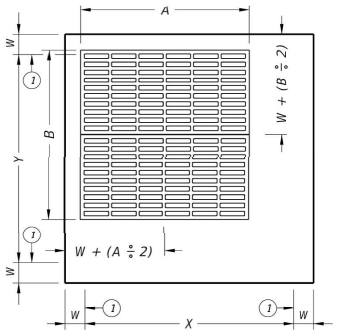
STYLE 'SFG'
ELEVATION VIEW



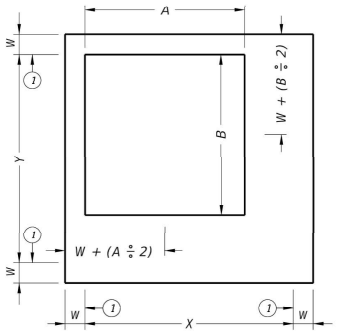
ELEVATION VIEW



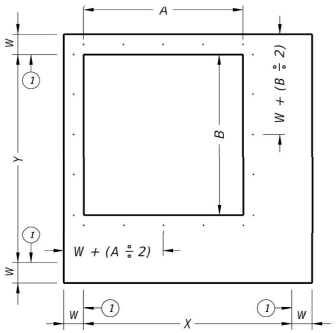
ELEVATION VIEW



PLAN VIEW
CAST-IN FRAME & GRATE
STYLES 'FG' & 'SFG'



PLAN VIEW
SHIP LOOSE FRAME & GRATE
STYLE 'SH'



PLAN VIEW
EXPOSED REBAR
STYLE 'S1'

(1) Matches inside face of wall of precast base or riser below inlet.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST SLAB LID

PSL

FILE: CD-PSL-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				FM 1093
	DIST	COUNTY		SHEET NO.
	HOU	FORT BEND		31 / 73

DATE:
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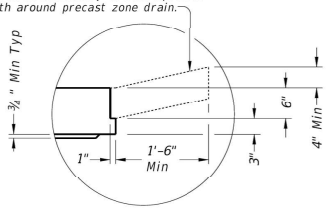
Style	Size (X x Y)	W (2)	A x B (nominal)	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	6"	n/a	0.37 in²/ft	0.37 in²/ft
RH,RC,RG,SH,S1,FG	3'x3'	6"	3'x3' or 32" Dia	0.37 in²/ft	0.37 in²/ft
SFG	3'x3'	6"	3'x3'	0.32 in²/ft	0.32 in²/ft
SL	4'x4'	6"	n/a	0.34 in²/ft	0.34 in²/ft
RH,RC,RG,SH,S1,FG	4'x4'	6"	3'x3' or 32" Dia	0.41 in²/ft	0.41 in²/ft
SH,S1,FG	4'x4'	6"	4'x4'	0.41 in²/ft	0.41 in²/ft
SFG	4'x4'	6"	4'x4'	0.32 in²/ft	0.32 in²/ft
SL	3'x5'	6"	n/a	0.39 in²/ft	0.39 in²/ft
RH,RC,RG,SH,S1,FG	3'x5'	6"	3'x3' or 32" Dia	0.48 in²/ft	0.48 in²/ft
SH,S1,FG	3'x5'	6"	3'x5'	0.48 in²/ft	0.48 in²/ft
SFG	3'x5'	6"	3'x5'	0.32 in²/ft	0.32 in²/ft
SL	4'x5'	6"	n/a	0.42 in²/ft	0.42 in²/ft
RH,RC,RG,SH,S1,FG	4'x5'	6"	3'x3' or 32" Dia	0.42 in²/ft	0.42 in²/ft
SH,S1,FG	4'x5'	6"	4'x4'	0.63 in²/ft	0.63 in²/ft
SH,S1,FG	4'x5'	6"	3'x5'	0.66 in²/ft	0.66 in²/ft
SL	5'x5'	6"	n/a	0.36 in²/ft	0.36 in²/ft
RH,RC,RG,SH,S1,FG	5'x5'	6"	3'x3' or 32" Dia	0.43 in²/ft	0.43 in²/ft
SH,S1,FG	5'x5'	6"	4'x4'	0.63 in²/ft	0.63 in²/ft
SH,S1,FG	5'x5'	6"	3'x5'	0.63 in²/ft	0.63 in²/ft
SL	5'x6'	6"/8"	n/a	0.48 in²/ft	0.48 in²/ft
RH,RC,RG,SH,S1,FG	5'x6'	6"/8"	3'x3' or 32" Dia	0.48 in²/ft	0.48 in²/ft
SH,S1,FG	5'x6'	6"/8"	4'x4'	0.60 in²/ft	0.60 in²/ft
SH,S1,FG	5'x6'	6"/8"	3'x5'	0.60 in²/ft	0.60 in²/ft
SL	6'x6'	6"/8"	n/a	0.43 in²/ft	0.43 in²/ft
RH,RC,RG,SH,S1,FG	6'x6'	6"/8"	3'x3' or 32" Dia	0.56 in²/ft	0.56 in²/ft
SH,S1,FG	6'x6'	6"/8"	4'x4'	0.56 in²/ft	0.56 in²/ft
SH,S1,FG	6'x6'	6"/8"	3'x5'	0.59 in²/ft	0.59 in²/ft
SL	8'x8'	8"/10"	n/a	0.45 in²/ft	0.45 in²/ft
RH,RC,RG,SH,S1,FG	8'x8'	8"/10"	3'x3' or 32" Dia	0.45 in²/ft	0.45 in²/ft
SH,S1,FG	8'x8'	8"/10"	4'x4'	0.45 in²/ft	0.45 in²/ft
SH,S1,FG	8'x8'	8"/10"	3'x5'	0.45 in²/ft	0.45 in²/ft

(2) See sheet PDD for corresponding wall thickness (W) of base unit or riser.

Construct cast-in-place reinforced concrete apron, when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PSL. Apron is 1'-6" Min width around precast zone drain.



DETAIL "A"

(Reinforcing not shown for clarity)

When an apron is to be cast around PSL, use detail above to create an apron ledge on all 4 sides.

FABRICATION NOTES:

1. Locate penetration (Style 'RH'), ring and cover (Style 'RC'), ring and grate (Style 'RG'), and frame and grate (Style 'FG') in a corner. Only one penetration is allowed per slab lid.
2. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
3. Provide Grade 60 reinforcing steel or equivalent area of WWR.
4. Provide clear cover of ¾" to reinforcing from lower outside shoulder of slab for structural reinforcement, and 2" from top of slab for shrinkage and temperature reinforcement. Place short span reinforcing closest to surface.
5. Slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing. Provide steel area = 0.11 in²/ft each way.
6. No substitution is allowed for diagonal #4 bars around openings.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:

1. Precast slab lids are intended for direct traffic and may be placed in roadway.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. Initial installation of grade adjustment rings for Styles 'RH' and 'SH' is limited to 1'-0" Max as shown.
5. Grade adjustment rings for Styles 'RH' and 'SH' may be increased to 2'-0" Max when future construction affects final grade of structure. Make adjustments greater than 2'-0" with additional risers. Adjustments can be made up to Max depth shown on sheet PDD. Structure must be evaluated if Max depth will be exceeded.
6. Orient long dimension of grate slots perpendicular to traffic, unless noted otherwise on plans.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Payment for lid is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST SLAB LID

PSL

FILE: CD-PSL-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				FM 1093
	DIST	COUNTY		SHEET NO.
	HOU	FORT BEND		32 / 73

DATE:
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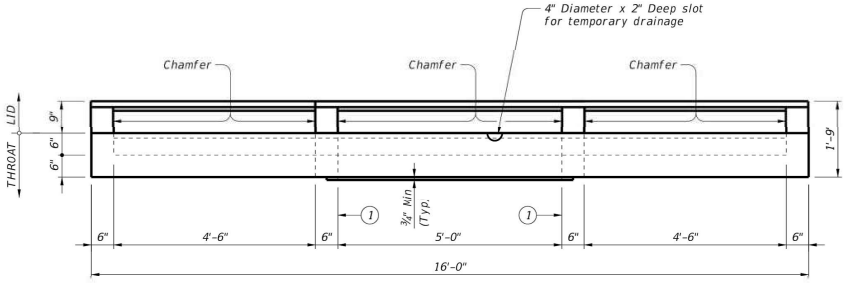
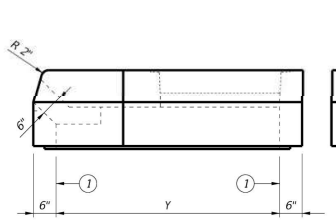
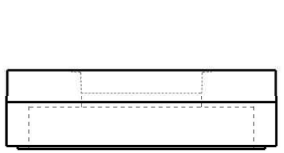


FRONT VIEW

(Showning left and right extensions)

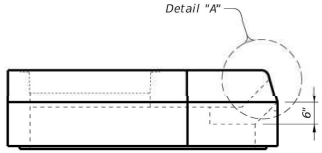


RIGHT VIEW

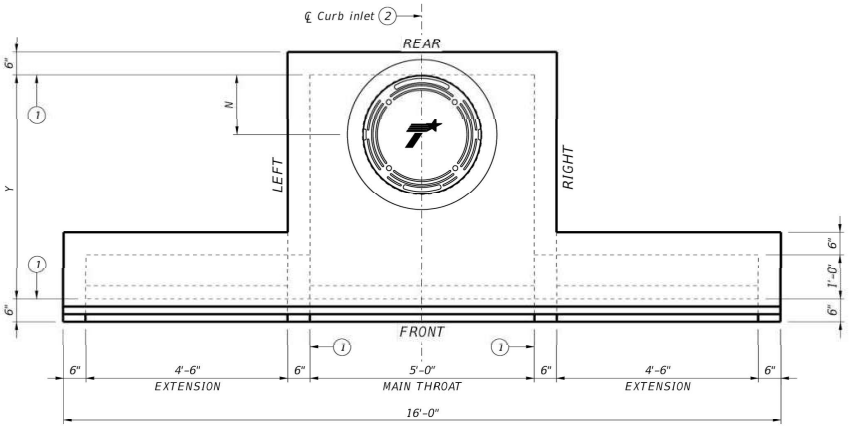


REAR VIEW

(Extensions not shown)



LEFT VIEW

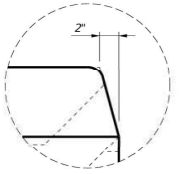


PLAN VIEW

(Showning left and right extensions)

(1) Matches inside face of wall of precast base or riser below inlet.

(2) Reference point is located where the ℄ of the main throat intersects the normal gutter line. See Curb and Gutter Transition Details for PCO Inlet (CGT PCO) standard for more information.



DETAIL "A"

HS20 LOADING

SHEET 1 OF 2

Texas Department of Transportation

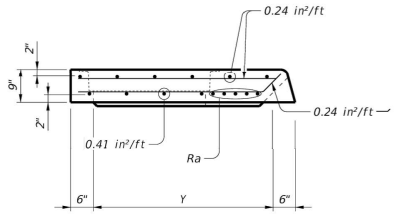
Bridge Division Standard

PRECAST CURB INLET OUTSIDE ROADWAY

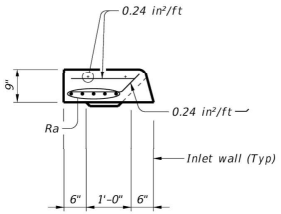
PCO

FILE: CD-PCO-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT		
©TxDOT February 2020	CONT	SECT	JOB		HIGHWAY	
REVISIONS					FM 1093	
06-2023: Added reference point.	DIST	COUNTY			SHEET NO.	
	HOU	FORT BEND			33 / 73	

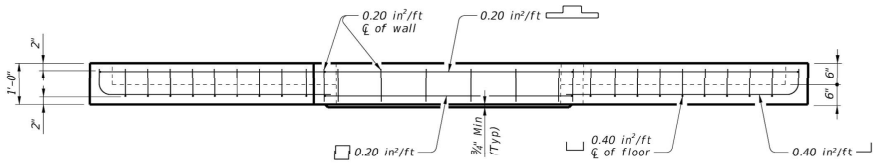
DATE:
FILE:



LID SECTION A-A

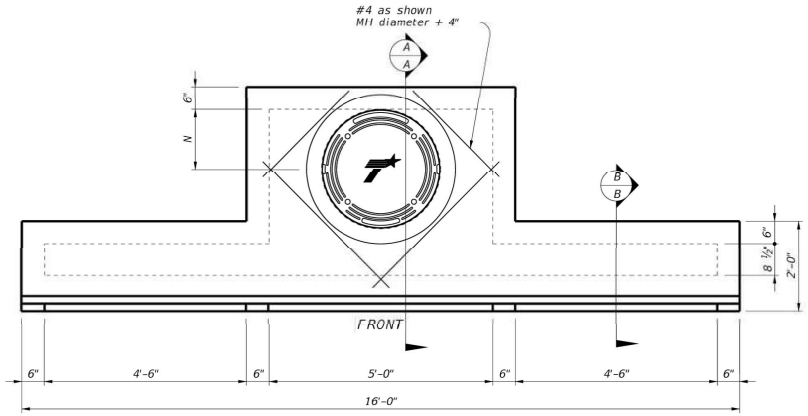


LID SECTION B-B



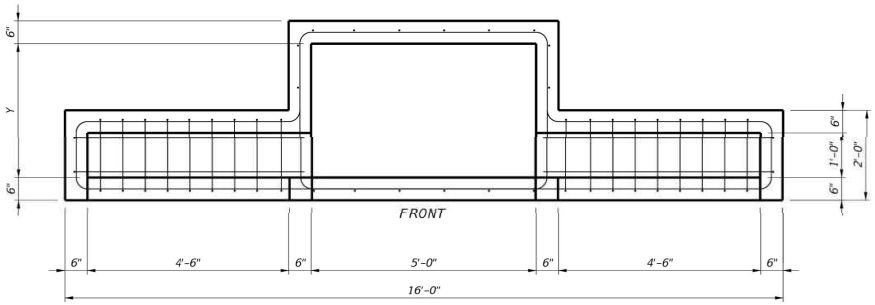
THROAT ELEVATION VIEW

(Showning left and right extensions)



LID PLAN VIEW

(Showning left and right extensions)



THROAT PLAN VIEW

(Showning left and right extensions)

Size (Y)	N	MH Dia*	Ra
3'	9"	18"	(4) #5 Additional
4'	16"	32"	(4) #5 Additional
5'	16"	32"	(4) #5 Additional
6'	16"	32"	(4) #5 Additional

*Nominal ring and cover size.

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Extensions may be right, left, both or none. Provide extensions as specified elsewhere in the plans.
4. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾". Lid may employ a butt joint with dowels at the Contractor's option.
5. Provide lifting devices in conformance with Manufacturer's recommendations.
6. Provide cast iron solid cover, unless noted otherwise elsewhere in the plans.
7. Chamfer vertical edges of inlet lid ¾" as shown in Front View, sheet 1.

INSTALLATION NOTES:

1. Inlet throat and lid are not intended for direct traffic. Do not place in roadway.
2. Seal tongue and groove joints and butt joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Open area of main throat = 360 sq in. Open area of one extension throat = 324 sq in.
3. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, size, and extension placement. Extensions are subsidiary to inlet.

Cover dimensions are clear dimensions, unless noted otherwise.

HS20 LOADING

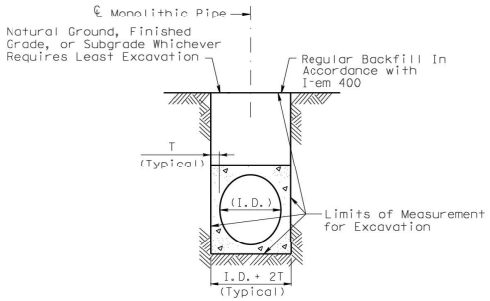
Texas Department of Transportation

Bridge Division Standard

PRECAST CURB INLET OUTSIDE ROADWAY

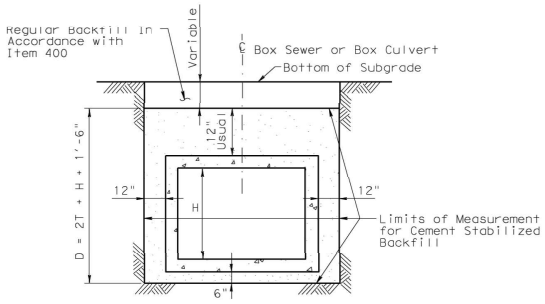
PCO

FILE: CD-PCO-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				FM 1093
06-2023: Added reference point.	DIST	COUNTY		SHEET NO.
	HOU	FORT BEND		34 / 73



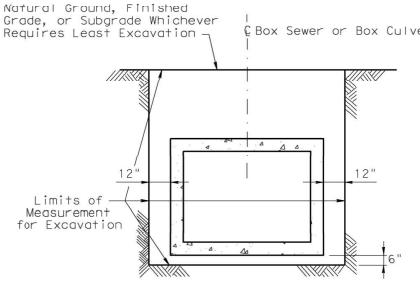
EXCAVATION DETAIL

MONOLITHIC PIPE
IN A PAVED OR GRADED AREA



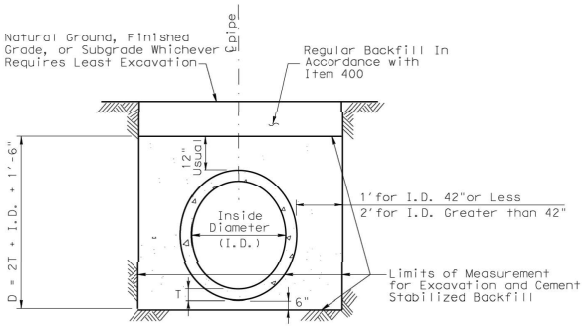
BACKFILL DETAIL

BOX CULVERTS
IN A GRADED OR PAVED AREA
INCLUDING DETOURS *



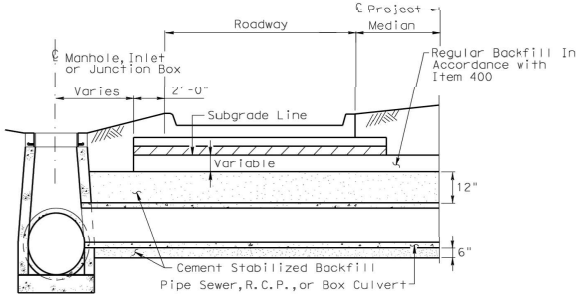
EXCAVATION DETAIL

BOX CULVERTS
IN A GRADED AREA



EXCAVATION & BACKFILL DETAIL

REINFORCED CONCRETE PIPE
IN A GRADED OR PAVED AREA
INCLUDING DETOURS



BACKFILL DETAIL

AT MANHOLE, INLET OR JUNCTION BOX

D = Depth
H = Height
T = Thickness
R = Radius
Dia = Diameter

REINFORCED CONCRETE PIPE

EXCAVATION AND BACKFILL QUANTITIES

PIPE DIA. IN.	T FT.	CULVERT OR SEWER EXCAVATION IN A PAVED OR GRADED AREA C.Y. PER L.F. PER FT. OF DEPTH	CEMENT STABILIZED BACKFILL IN A PAVED OR GRADED AREA C.Y. PER L.F. OF PIPE
18	0.19	0.144	0.383
24	0.23	0.165	0.478
30	0.29	0.188	0.586
36	0.33	0.210	0.692
42	0.38	0.231	0.808
48	0.42	0.327	1.394
54	0.46	0.349	1.560
60	0.50	0.370	1.731
66	0.54	0.392	1.907
72	0.58	0.414	2.088
78	0.62	0.435	2.275
84	0.67	0.457	2.474

MONOLITHIC PIPE

EXCAVATION QUANTITIES

PIPE DIA. IN.	T FT.	EXCAVATION C.Y. PER L.F. PER FT. OF DEPTH
36	0.417	0.142
42	0.458	0.164
48	0.458	0.182
54	0.500	0.204
60	0.583	0.228
66	0.583	0.247
72	0.625	0.269
78	0.625	0.287
84	0.625	0.306

NOTE:

Cement stabilized backfill may be omitted in private driveways as indicated elsewhere in the plans.

Rubber gaskets shall be required for all joints on proposed cross drainage, pipe culverts and proposed storm sewer systems, unless otherwise shown in the plans.

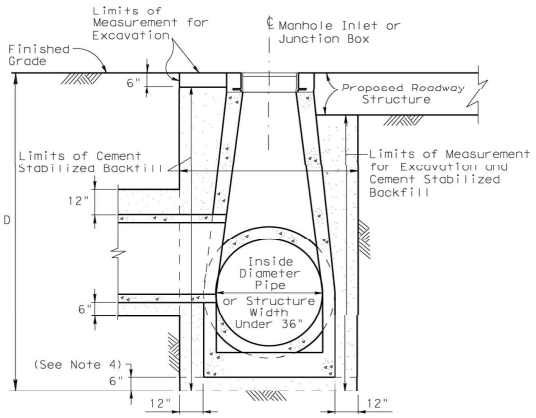
* Backfill with cement stabilized material will be required for all structures under detours unless noted otherwise in the General Notes.

Texas Department of Transportation
Houston District

EXCAVATION AND BACKFILL DIAGRAMS

E&BD

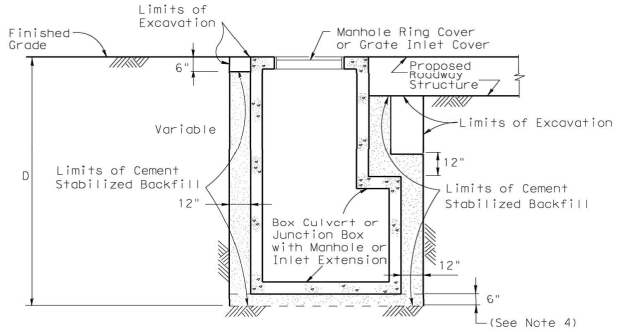
FILE: STDE1.DGN	DN: TxDot	CK: TxDot	DW: TxDot	CK: TxDot
© TxDOT FEB 2010	DIST	FED REG	PROJECT NO.	SHEET
REVISIONS REVISED 11/05 REVISED 2/2010 Added note to Table 1, Sht 2 of 2. REVISED 6/12 REVISED 9/14	HOUSTON	6		35 / 73
	COUNTY		CONTROL SECT JOB	HIGHWAY
	FORT BEND			FM 1093



EXCAVATION AND BACKFILL DETAIL

MANHOLES SMALLER THAN 36 IN.
IN A PAVED OR GRADED AREAS

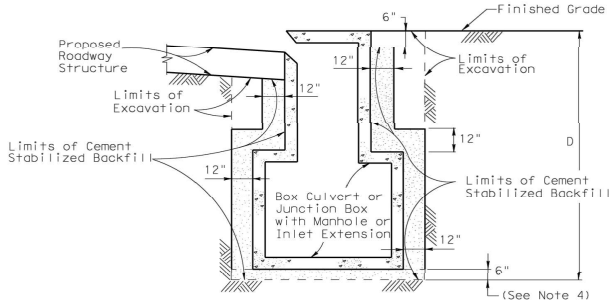
N. T. S.



EXCAVATION AND BACKFILL DETAIL

JUNCTION BOXES IN A
PAVED OR GRADED AREA

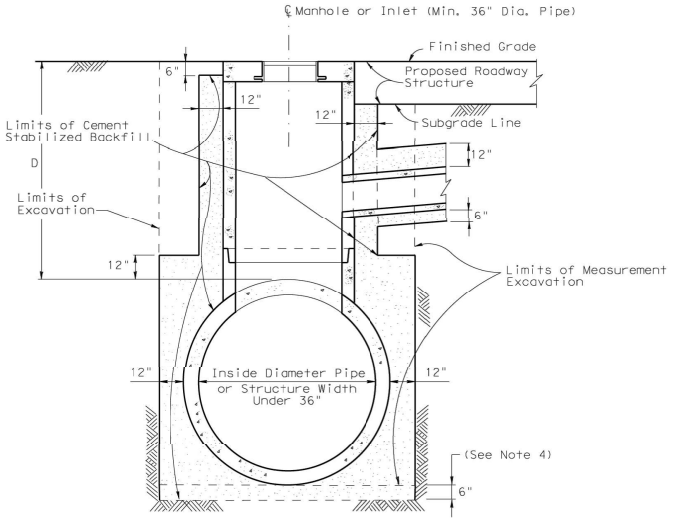
N. T. S.



EXCAVATION AND BACKFILL DETAIL

INLET EXTENSIONS ON A BOX CULVERT
IN A PAVED OR GRADED AREA

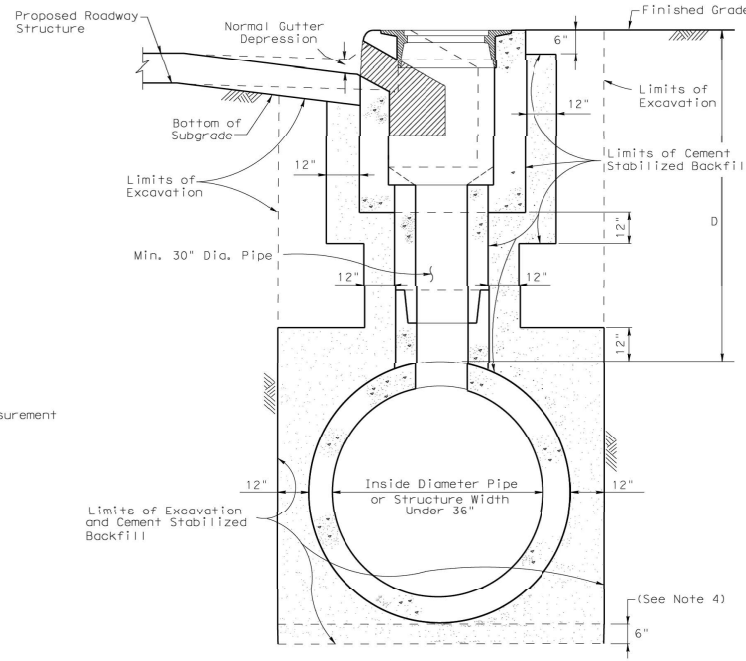
N. T. S.



EXCAVATION AND BACKFILL DETAIL

MANHOLES 36 IN. AND GREATER
IN A PAVED OR GRADED AREA

N. T. S.



EXCAVATION AND BACKFILL DETAIL

CURB INLETS IN A PAVED OR GRADED AREA

N. T. S.

TO BE PAID UNDER ITEM 400-6009 CEMENT STABILIZED BACKFILL (INLET OR MANHOLE)

TABLE I

SCHEDULE FOR PAY QUANTITIES OF CEMENT STABILIZED BACKFILL (SEE NOTE 1)

MANHOLE OR INLET DEPTH (D) IN FEET	CEMENT STABILIZED BACKFILL IN CUBIC YARDS
0 through 5	5.75
> 5 through 10	8.25
greater than 10	12.75

NOTES:

1. The Contractor is paid a fixed estimated amount for cement stabilized backfill based on depth (D) and Table. 1.
2. Proposed roadway structure includes pavement, base and any subgrade.
3. For backfill of intersecting pipes and box culverts, see "Excavation and Backfill Diagram for Pipes and Box Culverts."
4. 6" cement stabilized backfill will be required only for precast units.

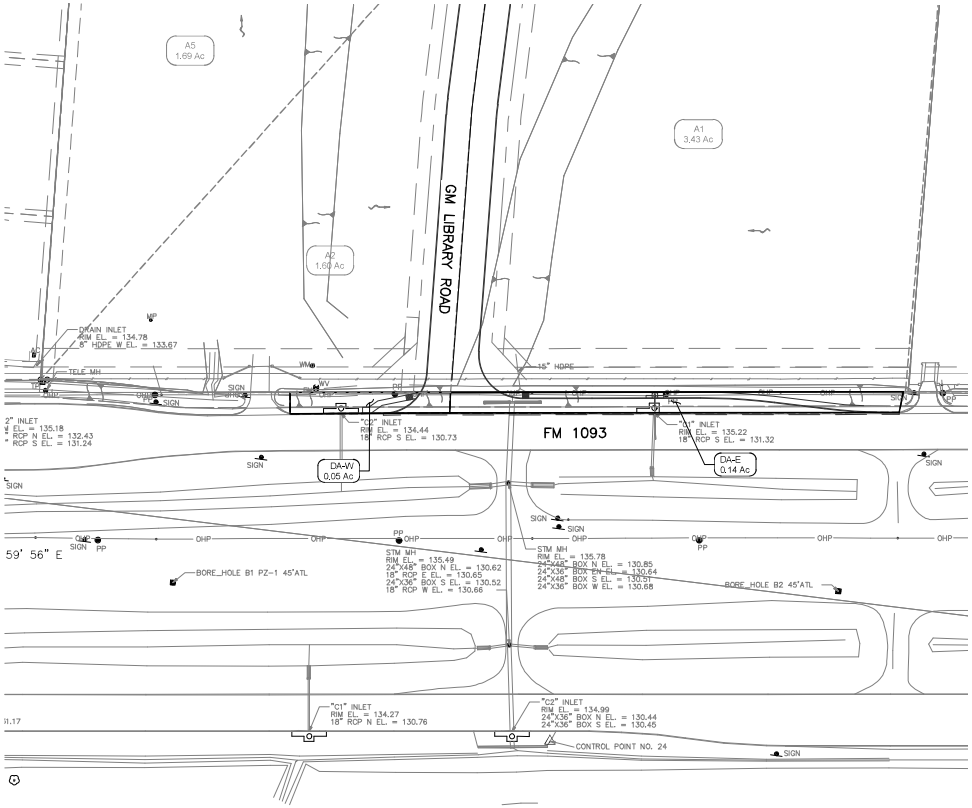
D = Depth
H = Height
T = Thickness
R = Radius
Dia = Diameter

Texas Department of Transportation
Houston District

EXCAVATION AND BACKFILL DIAGRAMS

E&BD

FILE: STDE1.DGN	DN: TxDot	CK: TxDot	DW: TxDot	CK: TxDot
© TxDOT FEB 2010	DIST	FED REG	PROJECT NO.	SHEET
REVISIONS	HOUSTON	6		36 / 73
REVISED 2/2010 Added note to Table 1.	COUNTY		CONTROL	SECT	JOB	HIGHWAY
REVISED 6/12	FORT BEND					FM 1093
REVISED 9/14						
REVISED 3/15						



0 25 50 100
SCALE: 1" = 100'

LEGEND

ID / X.XX AC	DRAINAGE AREA ID / DRAINAGE AREA (AC)
	DRAINAGE AREA BOUNDARY
	FLOW DIRECTION

NO.	DATE	REVISION	APPROVED

STATE OF TEXAS
HARISH C. JAJOO
62217
LICENSED
PROFESSIONAL ENGINEER
10/28/2025

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Sugar Land, Texas, 77479
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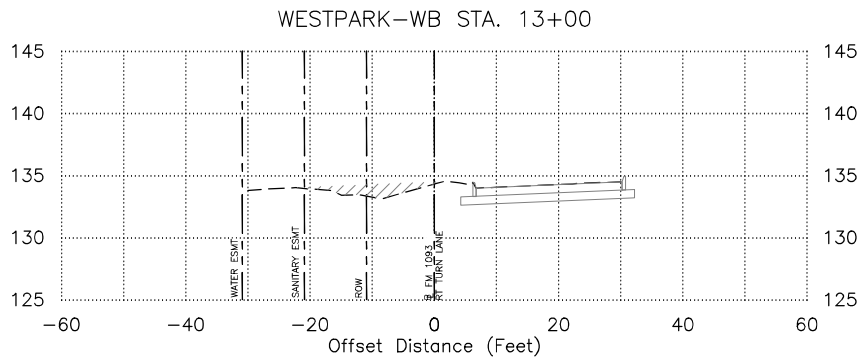
TBPE FIRM F-15945

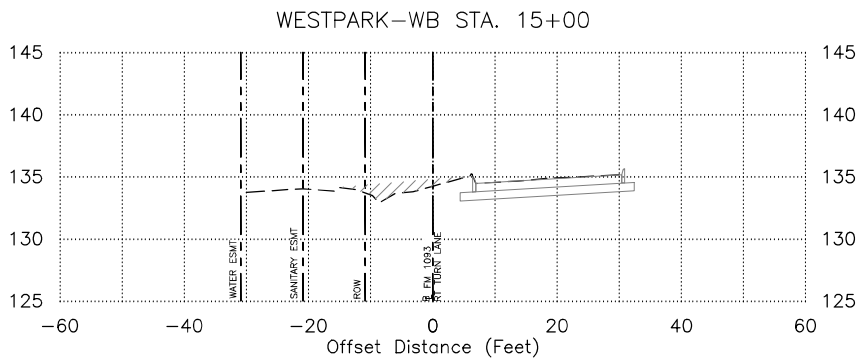
FORT BEND COUNTY
ENGINEERING DEPARTMENT

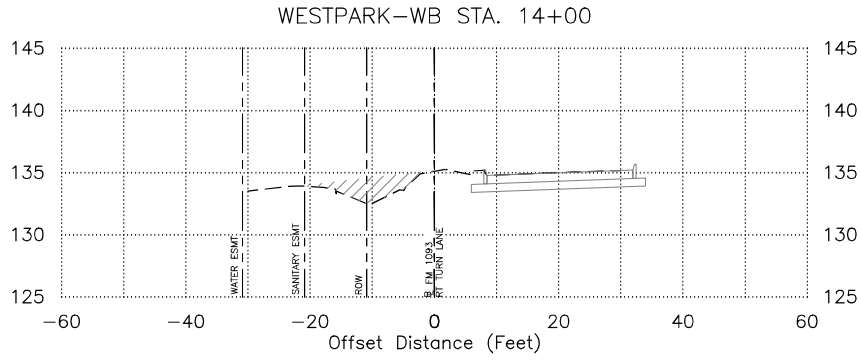
PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)
PROPOSED DRAINAGE
AREA MAP

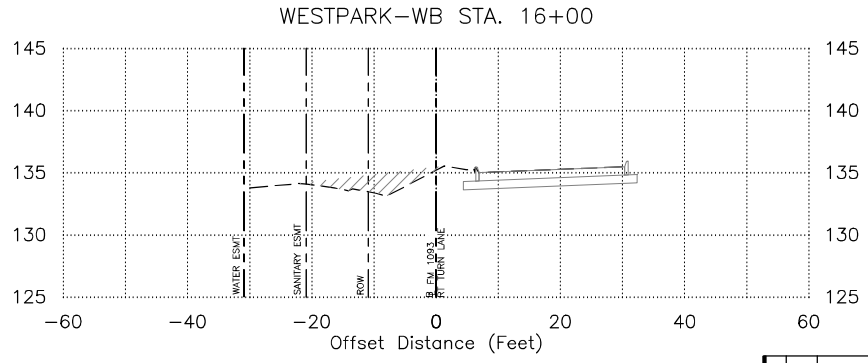
PROJECT NUMBER	20318x
DRAWING SCALE	1"=100'
SHEET NO. 37 OF 73	

THE STATE OF TEXAS
FORT BEND COUNTY









EXISTING HYDRAULIC CALCULATIONS OF FM1093 NORTH BOUND
DITCHES CONTRIBUTION OF GINTER ROAD ONLY

DA ID	Drainage Area (Ac)	Cummulative Drainage Area (Ac)	Lawn	Street/walk brick, Concrete or asphalt	Business Neighborhood Area	Industrial, school	Detention basins	Unimproved	Weighted Runoff Coeff. C	Tc (min) calculated	Design Capacity (cfs)	10-YEAR FREQUENCY			100-YEAR FREQUENCY		
			0,2	0,9	0,65	0,65	1	0,2				Intensity I (in/hr)	Flow Q (cfs)	Cumulative Flow Q (cfs)	Intensity I (in/hr)	Flow Q (cfs)	Cumulative Flow Q (cfs)
FM1093 DITCH EAST																	
DA_E	0,14	0,14	-0,04	0,18					1,33	10,00	2,26	7,87	1,46	1,46	11,56	2,15	2,15
FM1093 DITCH WEST																	
DA_W	0,05	0,05	-0,23	0,28					5,92	10,00	6,67	7,87	2,33	3,79	11,56	3,42	5,57

NO.	DATE	REVISION	APPROVED

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FORT BEND COUNTY
ENGINEERING DEPARTMENT

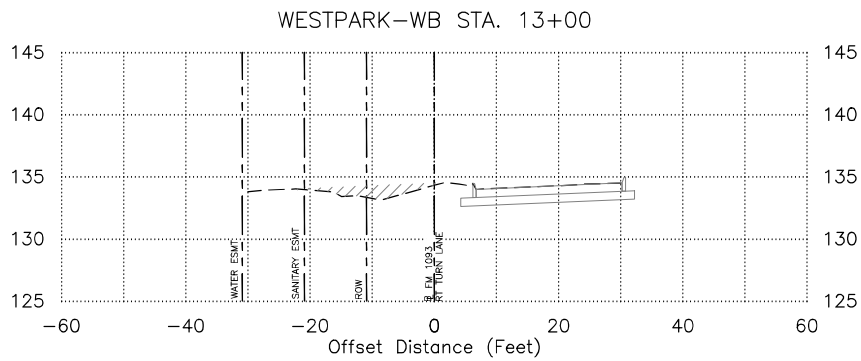
PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)

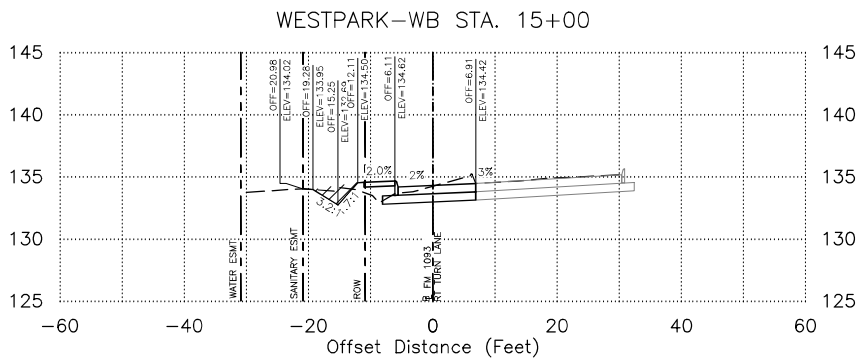
EXISTING DITCH SECTIONS AND HYDRAULIC CALCULATIONS

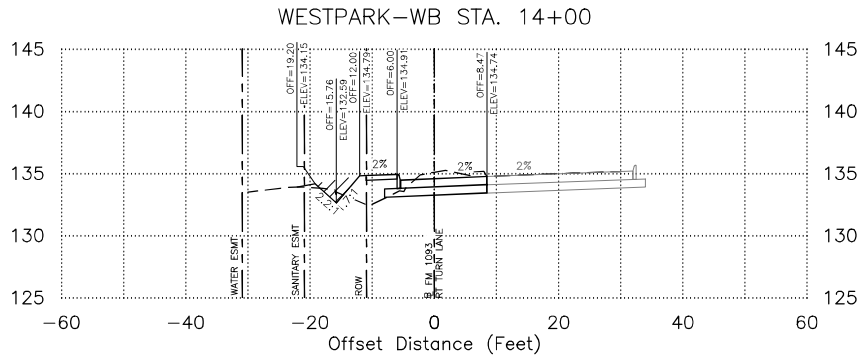
PROJECT NUMBER
20318x
DRAWING SCALE
N.A.
SHEET NO. 38 OF 73

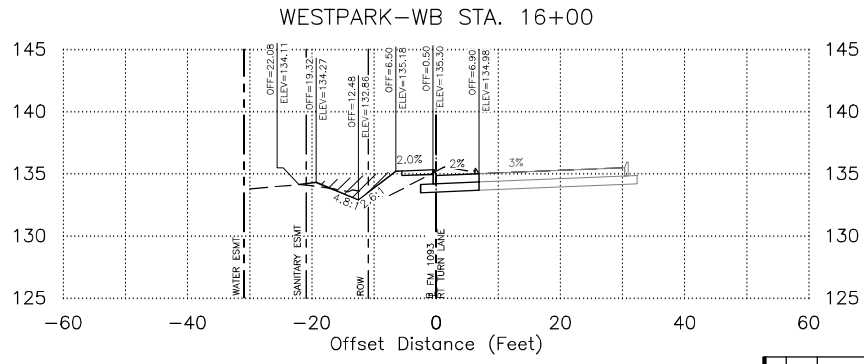
STATE OF TEXAS
FORT BEND COUNTY

2113PVHJ-15-DrainageAreaMaps-PROP-Phase 4.dwg 10/28/2025 9:54 PM DISHA.ctb









PROPOSED HYDRAULIC CALCULATIONS OF FM1093 NORTH BOUND
DITCHES CONTRIBUTION OF GINTER ROAD ONLY

DA ID	Drainage Area (Ac)	Cummulative Drainage Area (Ac)	Lawn	Street/walk brick, Concrete or asphalt	Business Neighborhood Area	Industrial, school	Detention basins	Unimproved	Weighted Runoff Coeff. C	Tc (min) calculated	Design Capacity (cfs)	10-YEAR FREQUENCY			100-YEAR FREQUENCY		
			0,2	0,9	0,65	0,65	1	0,2				Intensity I (in/hr)	Flow Q (cfs)	Cumulative Flow Q (cfs)	Intensity I (in/hr)	Flow Q (cfs)	Cumulative Flow Q (cfs)
FM1093 DITCH EAST																	
DA_E	0,14	0,14	-0,08	0,22					1,30	10,00	1,85	7,87	1,43	1,43	11,56	2,10	2,10
FM1093 DITCH WEST																	
DA_W	0,05	0,05	0,15	0,35					6,90	10,00	6,48	7,87	2,71	4,15	11,56	3,99	3,99

NO.	DATE	REVISION	APPROVED

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10/28/2025

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FORT BEND COUNTY
ENGINEERING DEPARTMENT

PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)
PROPOSED DITCH SECTIONS AND HYDRAULIC CALCULATIONS
SHEET 1 OF 2

PROJECT NUMBER
20318x
DRAWING SCALE
N.A.

THE STATE OF TEXAS
FORT BEND COUNTY

SHEET NO. 39 OF 73

DRAINAGE SUMMARY TABLE		
TxDOT Trackingnumber (TR#)	TR25040034	
Highway	FM1093	
TxDOT frontage	491.56	FT
TxDOT Area (the strip of site within 150-ft frontage)	0.19	AC
Total tract area based on submitted survey map	5.03	AC
Proposed disturbed area	5.03	AC
Project contributing drainage area to TxDOT	0.19	AC
Off-site contributing drainage area (if applicable)	0	AC
Increased impervious area (draining to SH6)	0.12	AC
Increased impervious area (entire project)	0.15	AC
10-yr required detention volume	NA	AC-FT
10-yr proposed detention volume	NA	AC-FT
10-yr design W.S.E.	0	FT
10-yr Pre-developedpeak flow	2.33	CFS
10-yr Post-developed peak flow (Before detention/restrictor)	2.71	CFS
10-yr Proposed discharge to TxDOT R.O.W. (With detention/restrictor)	2.71	CFS
100-yr required detention volume	NA	AC-FT
100-yr proposed detention volume	NA	AC-FT
100-yr design W.S.E.	0	FT
100-yr Pre-developedpeak flow	3.42	CFS
100-yr Post-developed peak flow (Before detention/restrictor)	3.99	CFS
100-yr Proposed dischargeto TxDOT R.O.W. (With detention/restrictor)	3.99	CFS
TxDOT as-built or calculated allowable discharge	4.4	CFS
Primary tie-in/outfall structure size	NA	Inch
Primary restrictor size	NA	Inch
Primary restrictor maximum discharge	NA	CFS
Secondary outfall device size (If applicable)	NA	CFS
Secondary outfall discharge (If applicable)	NA	CFS
Maximum combined pumped discharge (If applicable)	NA	GPM (CFS)
% Pumped discharge volume (If applicable)	NA	AC-FT
Effective gravity discharge elevation (If applicable)	NA	FT
B.F.E. per effective FIRM (If applicable)	NA	FT
Proposed fill below B.F.E. (If applicable)	NA	AC-FT
Proposed cut below B.F.E. (If applicable)	NA	AC-FT

NO.	DATE	REVISION	APPROVED

STATE OF TEXAS
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10/28/2025

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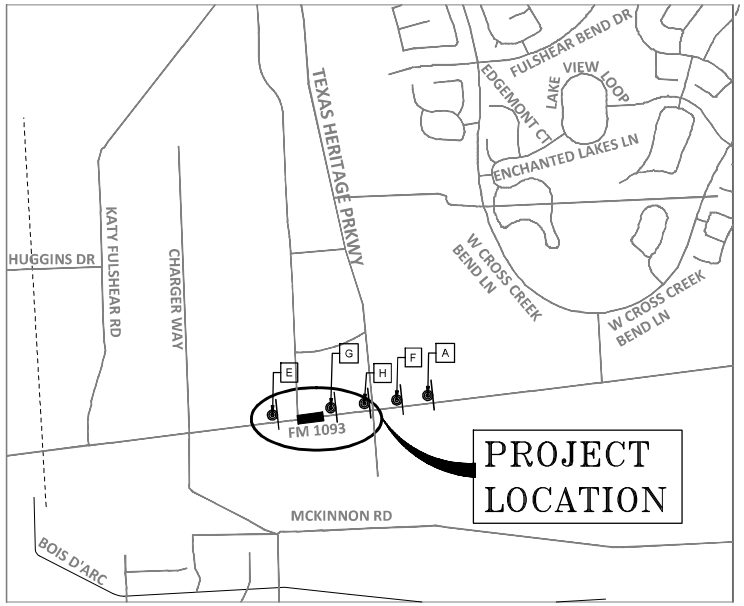
FORT BEND COUNTY
ENGINEERING DEPARTMENT

PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)
PROPOSED
HYDRAULIC CALCULATIONS
SHEET 2 OF 2

PROJECT NUMBER
20318x
DRAWING SCALE
N.A.
SHEET NO. 40 OF 73

THE STATE OF TEXAS
FORT BEND COUNTY



EXISTING POSTED SPEED:
FM 1093: 50MPH

PROPOSED WORK ZONE SPEED:
FM 1093 : 40MPH

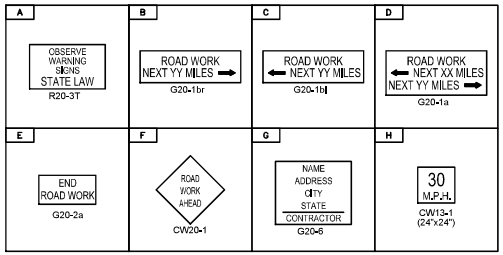
CONSTRUCTION SEQUENCE PHASING NOTES:

1. ALL ADVANCE WARNING SIGNS TO BE SET PRIOR TO START OF CONSTRUCTION ACTIVITIES AND TO REMAIN IN PLACE UNTIL ALL CONSTRUCTION ACTIVITIES ARE COMPLETE AND ACCEPTED BY FORT BEND COUNTY. THE CONTRACTOR WILL COORDINATE WITH THE FORT BEND COUNTY PUBLIC INFRASTRUCTURE DEPARTMENT, ENGINEERING DIVISION IN ESTABLISHING TRAFFIC ROUTES AND LOCATION OF SIGNS.
2. LANE CLOSURES SHALL BE DURING OFF PEAK HOURS ONLY MON–FRI 9AM – 4PM.
3. ALL SIGNS MARKED (*) SHALL HAVE WARNING FLAGS MOUNTED ON TOP OF THE SIGN.
4. MAX. PAVEMENT DROP–OFF SHALL NOT EXCEED 2".
5. POLICE SHALL BE NEEDED TO CONTROL TRAFFIC AT ALL MAJOR INTERSECTIONS.
6. ALL FLAGGERS SHALL BE IN RADIO CONTACT WITH EACH OTHER AT ALL TIMES.
7. ALL PAVEMENT MARKINGS COVERED BY OVERLAY SHALL BE REPLACED BEFORE OPENING TO TRAFFIC.
8. ADVANCE SIGNING SHALL BE PLACED A MINIMUM OF TWO WEEKS IN ADVANCE TO INFORM OF POSSIBLE DELAY. CONTRACTOR SHALL NOTIFY THE FORT BEND COUNTY ENGINEERING DEPARTMENT AT LEAST TWO WEEKS PRIOR TO ANY CONSTRUCTION.
9. ALL PORTABLE SIGNING, DRUMS AND CONES SHALL BE REMOVED AT THE END OF EACH DAY.
10. AS OVERLAY IS COMPLETED, ALL CHANNELIZATION SHALL BE MOVED ON TO LANE LINES TO OPEN CENTER LEFT TURN LANE TO TRAFFIC.
11. IF WORK ZONE IS NEEDED OVERNIGHT ALL CONES OR TUBULAR MARKERS SHALL BE REPLACED WITH DRUMS W/VP'S AND TEMPORARY PAVEMENT MARKINGS SHALL BE IN PLACE FOR NIGHT TIME OPERATION AS DIRECTED BY THE ENGINEER.
12. SIGN R20–3 IS REQUIRED IN ADVANCE OF PROJECT LIMITS.
13. ACCESS TO EXISTING SCHOOL, BUSINESSES OR RESIDENCES SHALL BE MAINTAINED AT ALL TIMES.

TYPICAL SIGN SPACING, TAPER LENGTHS, AND SUGGESTED SPACING OF CHANNELIZATION DEVICES							
Posted Speed Limit (mph)	Sign Spacing "X"	Formula	Min. Desirable Taper Length "L"			Suggested Maximum Spacing of Device	
			Formula	Formula	Formula	Formula	Formula
30	120'	L=WS^2/60	150'	165'	180'	30'	60'–75'
35	160'		205'	225'	245'	35'	70'–95'
40	240'		265'	295'	320'	40'	80'–100'
45	320'	L=WS	450'	495'	540'	45'	90'–100'
50	400'		500'	550'	600'	50'	100'–125'
55	500'		550'	605'	660'	55'	110'–140'
60	600'		600'	660'	720'	60'	120'–150'
65	700'		650'	715'	780'	65'	130'–175'

Length for Buffers	
Posted Speed (mph)	Length in Feet (B)
20	40'
25	60'
30	90'
35	120'
40	155'
45	195'
50	240'
55	295'
60	350'
65	410'
70	475'

Taper Length Criteria	
Type of Taper	Taper Length
Merging	at least L
Shifting	at least 0.5L
Shoulder	at least 0.33L
One Lane, Two Way	50' min, 100' max
Downstream	50' min, 100' max



NO.	DATE	REVISION	APPROVED

STATE OF TEXAS
HARISH C. JAJOO
62217
LICENSED PROFESSIONAL ENGINEER
10/28/2025

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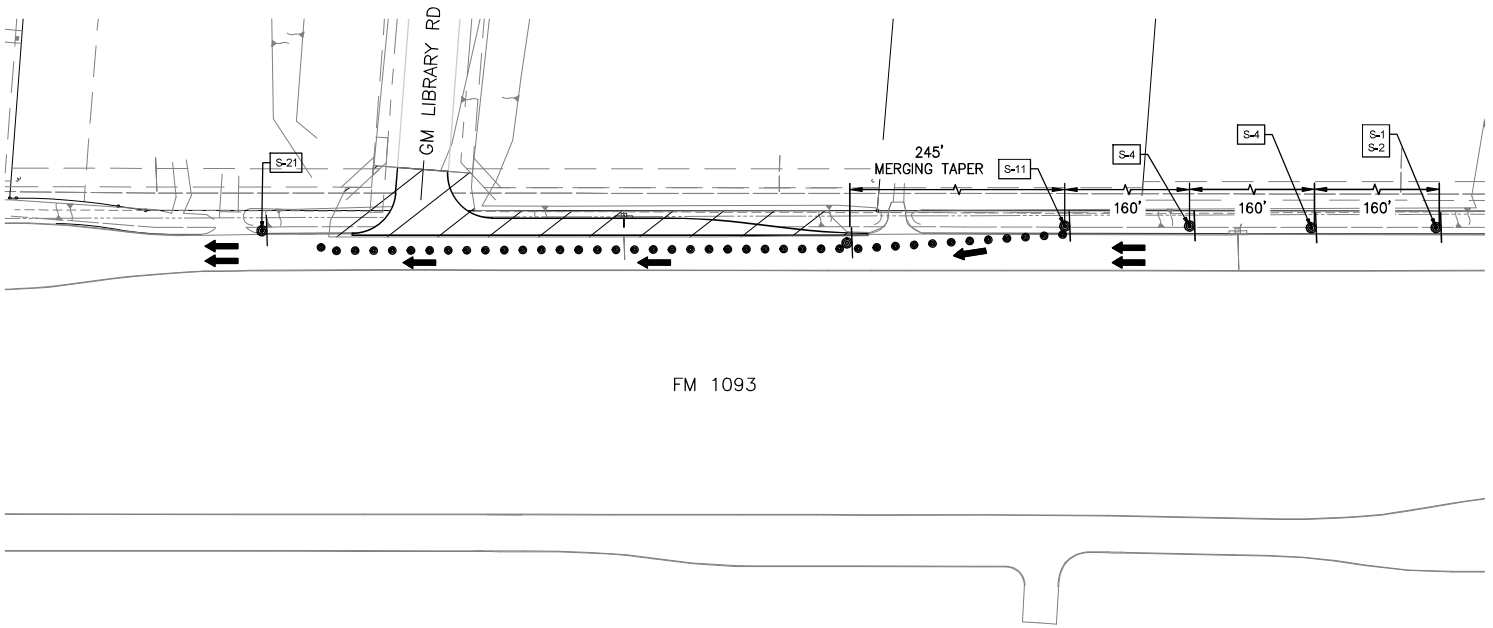
TBPE FIRM F–15945

FORT BEND COUNTY
ENGINEERING DEPARTMENT

PRECINCT 1
LIBRARY ACCESS ROAD (PHASE 4)
TRAFFIC CONTROL PLAN
ADVANCE WARNING SIGNS & NOTES

PROJECT NUMBER
20318x
DRAWING SCALE
N/A



0 62.5 125 250

SCALE: 1" = 250'

LEGEND

PHASE 1

TCP LEGEND

CURRENT PHASE/STEP	TEMPORARY ASPHALT	PREVIOUS PHASE/STEP
TRAFFIC SIGN	DRUMS	TUBULAR MARKERS
		EXISTING TRAVEL DIRECTION
		PROPOSED TRAVEL DIRECTION
FLAGGER	TYPE III BARRICADE	TUB. MKRS. SPACED @20' C-C
3VP	L-LEFT; R-RIGHT DRUM WITH VP EDGE LINE DELINEATOR SPACED @20' C-C (ALONG WORK) SPACED @5' C-C (INTERSECTIONS)	
3CW	L-LEFT; R-RIGHT DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM SPACED @20' C-C (ALONG WORK) SPACED @5' C-C (INTERSECTIONS)	
4" TEMP. MKG. WR-WHITE REMOV. YR-YELLOW REMOV.		4" TEMP. MKG. DR. YELLOW REMOV.
LOW PROFILE CONCRETE BARRIER (TYPE II)		24" TEMP. MKG. STOP BAR

LEGEND - SIGNS

S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	S-10	S-11	S-12	S-13	S-14	S-15
ROAD WORK AHEAD CW20-1 (36"x36")	40 M.P.H. CW13-1 (24"x24")	LEFT LANE CLOSED AHEAD CW20-5L (36"x36")	RIGHT LANE CLOSED AHEAD CW20-5R (36"x36")	LEFT LANE MUST TURN LEFT R3-7L (30"x30")	RIGHT LANE MUST TURN RIGHT R3-7R (30"x30")	DO NOT ENTER R5-1 (30"x30")	ROAD CLOSED R11-2 (48"x30")	ROAD CLOSED TO THRU TRAFFIC R11-4 (60"x30")	CW1-6a (30"x30")	CW1-6a (30"x30")	CW6-3 (30"x30")	CW1-3R (30"x30")	CW1-3L (30"x30")	ROAD CLOSED AHEAD CW20-3 (36"x36")
S-16	S-17	S-18	S-19	S-20	S-21	S-22	S-23	S-24	DA	DR	DL	DS	STREET	DE
CW20-7a (48"x48")	NO LEFT TURN R3-2 (24"x24")	NO RIGHT TURN R3-1 (24"x24")	ONE WAY R6-1L (36"x12")	ONE WAY R6-1R (36"x12")	END ROAD WORK G20-2a (36"X18")	NARROW LANES AHEAD CW20-8T (36"x36")	ONLY R3-5l (30"x36")	ONLY R3-5r (30"x36")	DETOUR AHEAD CW20-2 (36"x36")	DETOUR M4-9R (30"x24")	DETOUR M4-9L (30"x24")	DETOUR M4-9S (30"x24")	STREET M4-9N (30"x12")	END DETOUR M4-8A (24"x18")

NO.	DATE	REVISION	APPROVED

STATE OF TEXAS
HARISH C. JAJOO
62217
LICENSED PROFESSIONAL ENGINEER
10/28/2025

4771 Sweetwater Blvd Suite 254
Sugar Land, Texas, 77479
(832) 338-3202 C; (832) 553-3103 F
TBPE FIRM F-15945

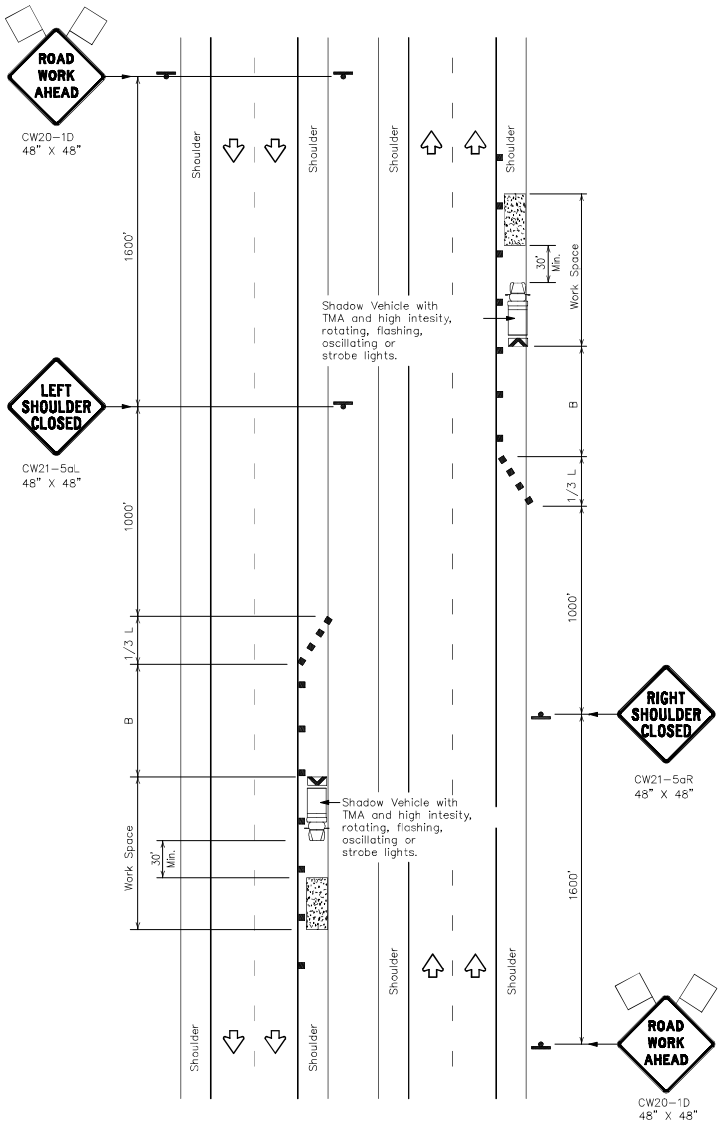
FORT BEND COUNTY
ENGINEERING DEPARTMENT

PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)
TRAFFIC CONTROL PLAN
PHASING LAYOUT
PHASE 1

PROJECT NUMBER	20318x
DRAWING SCALE	1"=250'
SHEET NO. 42 OF 73	

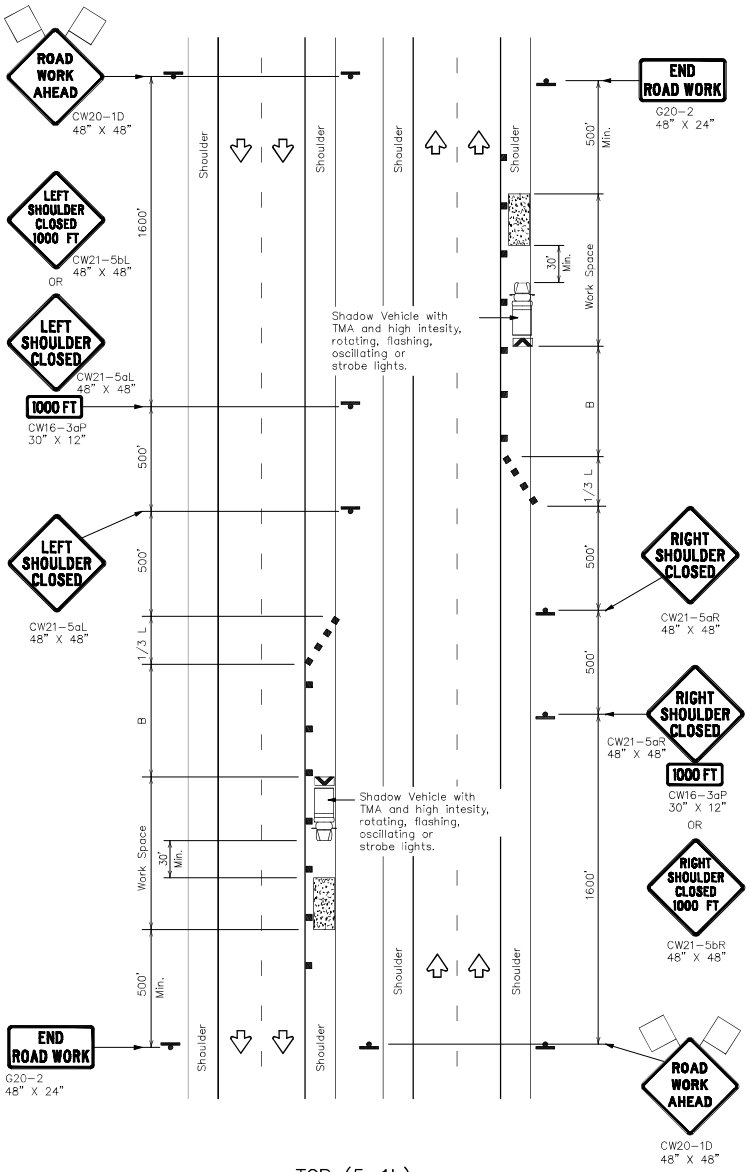
THE STATE OF TEXAS FORT BEND COUNTY

DATE:
FILE:



TCP (5-1a)

WORK AREA ON SHOULDER



TCP (5-1b)

WORK AREA ON SHOULDER

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

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	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	90'
35		205'	225'	245'	35'	70'	120'
40		265'	295'	320'	40'	80'	155'
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	TCP(5-1a)	TCP(5-1b)	TCP(5-1b)	

GENERAL NOTES

1. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30' to 100' in advance of the area of crew exposure without adversely effecting the performance or quality of the work. Type 3 barricades or drums may be substituted when workers on foot are no longer present when approved by the Engineer.
2. 28" tall or taller one-piece cones will be allowed only for Short Duration or Short Term stationary operations when workers are present to maintain the devices upright and in proper location. Intermediate Term stationary work areas should use Drums, Vertical Panels or 42" tall two-piece cones.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN SHOULDER WORK FOR FREEWAYS / EXPRESSWAYS

TCP(5-1)-18

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©TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-18				FM 1093
	DIST	COUNTY		SHEET NO.
	HOU	FORT BEND		43 / 73

190

DATE:
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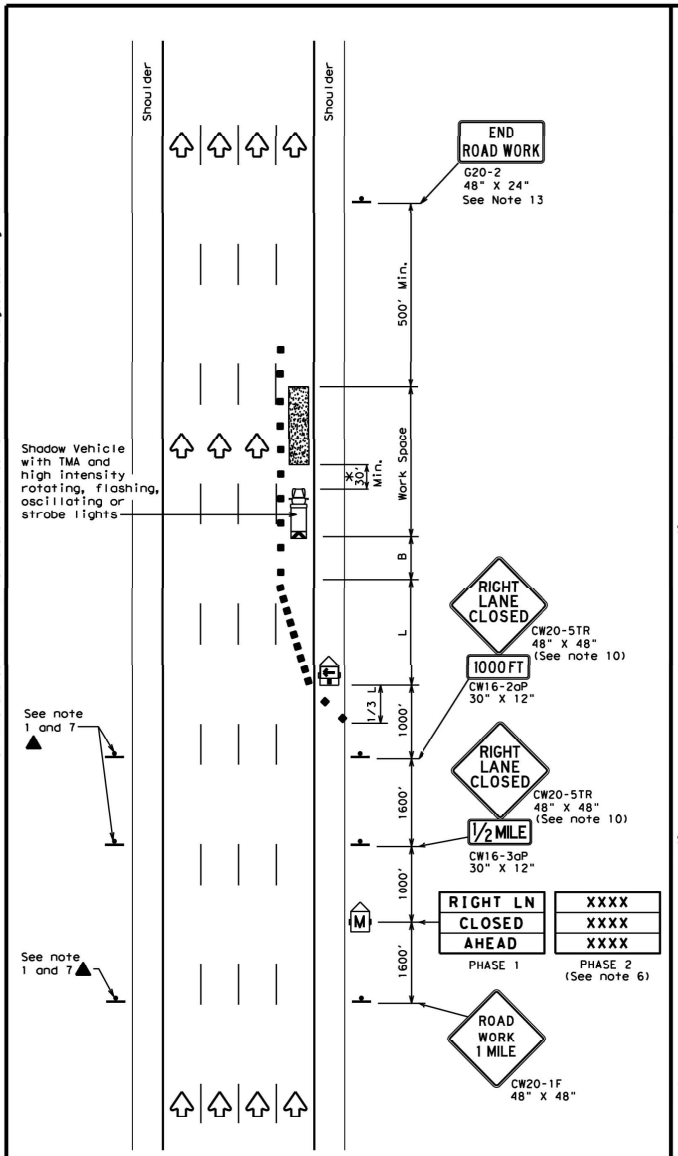
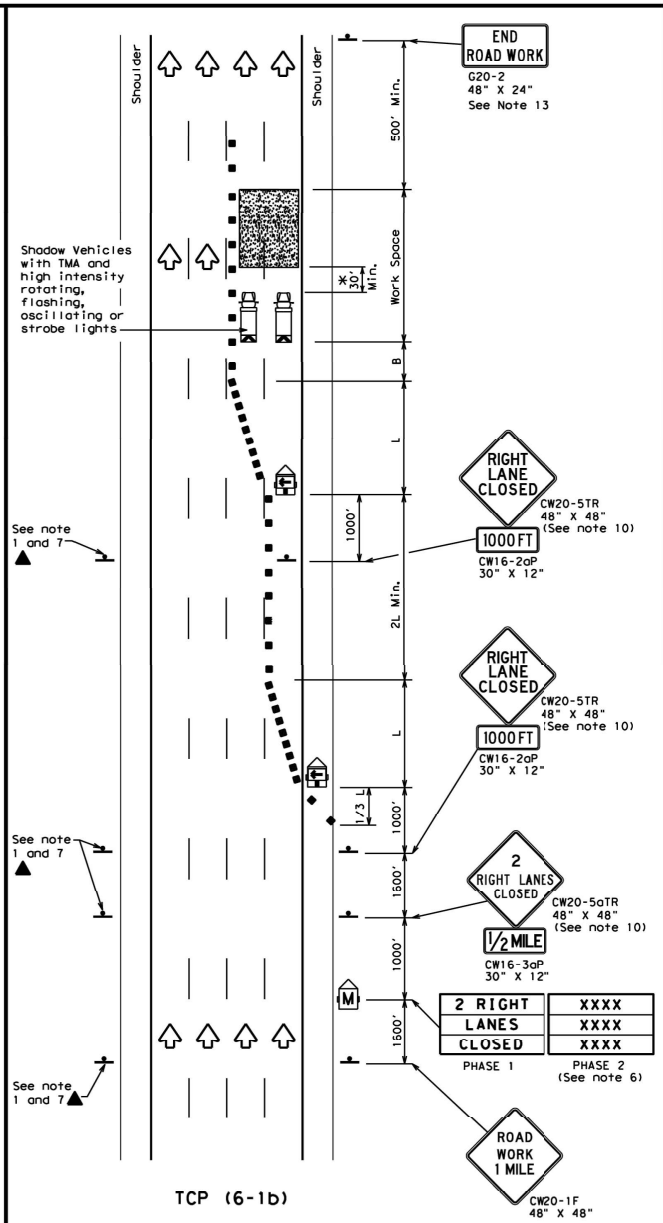


TCP (6-1a)

TYPICAL FREEWAY ONE LANE CLOSURE



TCP (6-1b)

TYPICAL FREEWAY TWO LANE CLOSURE

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

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

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

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

GENERAL NOTES

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

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

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN FREEWAY LANE CLOSURES

TCP(6-1)-12

FILE: tcp6-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998 REVISIONS	CONT	SECT	JOB	HIGHWAY
8-12				FM 1093
	DIST	COUNTY		SHEET NO.
	HOU	FORT BEND		44 / 73

201

DATE:
FILE:

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 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 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. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.

11. 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 devices.

13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:

1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel," or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.

2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.

2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL – SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: _bc-21.dgn_	DN: _TxDOT_	CK: TxDOT	DW: _TxDOT_	CK: TxDOT
©TxDOT November_2002_	CONT	SECT	JOB	HIGHWAY
REVISIONS				
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14				45 / 73
5-10 5-21				

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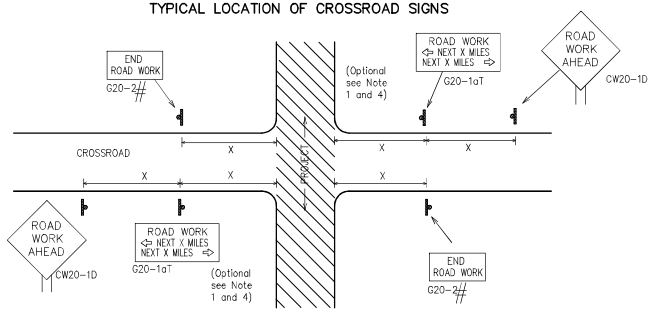
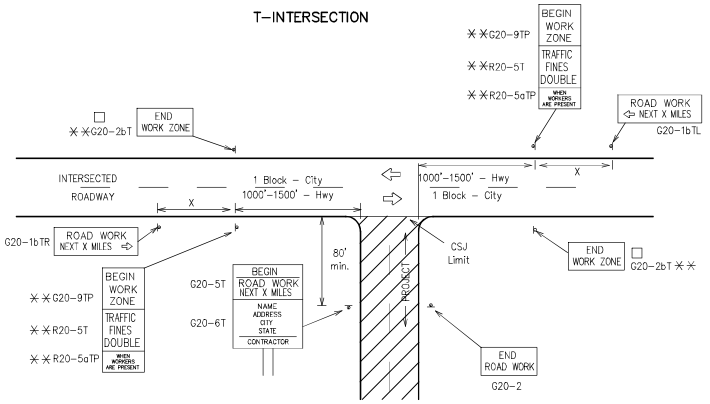
TYPICAL LOCATION OF CROSSROAD SIGNS



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 as per TMUTCD Part 5. 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.

T–INTERSECTION



CSJ LIMITS AT T–INTERSECTION

1. 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.
2. If construction closes the road at a T–intersection, the Contractor shall place the "CONTRACTOR NAME"(G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow(G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR)" signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING 1,5,6

SIZE

Sign Number or Series	Conventional Road	Expressway/ Freeway
CW20[4] CW21 CW22 CW23 CW25	48" x 48"	48" x 48"
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"
CW3, CW4, CW5, CW6, CW8–3, CW10, CW12	48" x 48"	48" x 48"

SPACING

Posted Speed	Sign ? Spacing "X"
MPH	Feet (Apprx.)
30	120
35	160
40	240
45	320
50	400
55	500 [2]
60	600 [2]
65	700 [2]
70	800 [2]
75	900 [2]
80	1000 [2]
*	* [3]

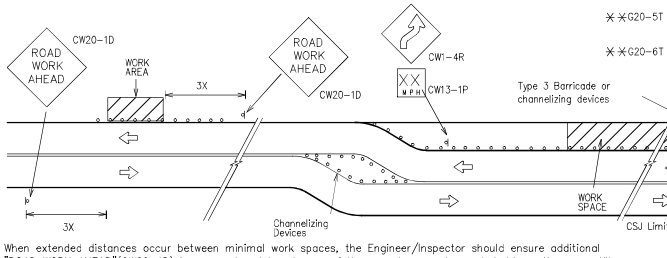
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

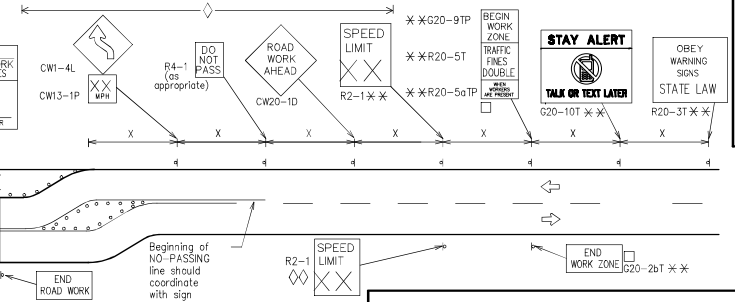
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

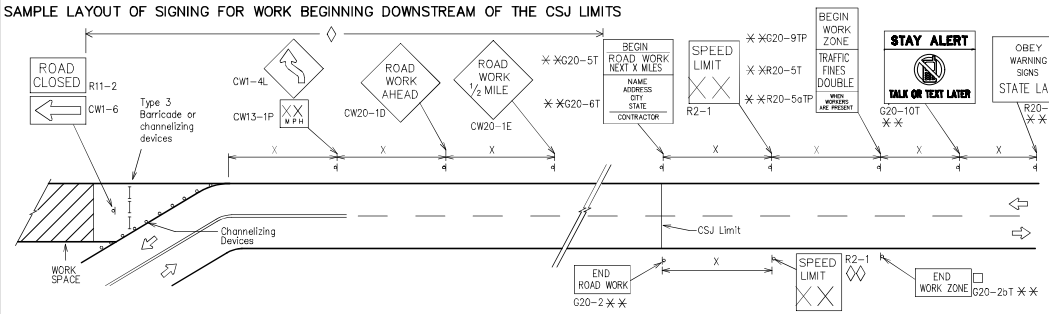


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS



NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

☐ The "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.

✳✳ CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

◊ Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

◊◊ Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

⊢⊣	Type 3 Barricade
○ ○ ○	Channelizing Devices
▬	Sign
X	See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

SHEET 2 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)–21

FILE: _bc-21.dgn_	DN: _TxDOT_	CK: TxDOT_	DW: _TxDOT_	CK: TxDOT
©TxDOT November_2002_	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				46 / 73
96				

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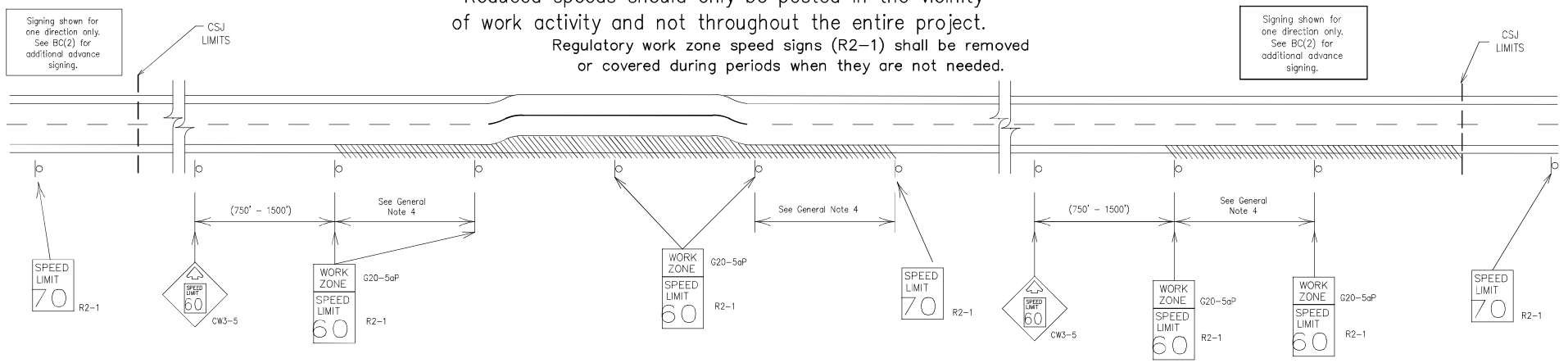
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission, or by City Ordinance when within Incorporated City Limits.

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

Regulatory work zone speed signs (R2–1) shall be removed or covered during periods when they are not needed.



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:

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 may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the traveled way.

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. When work activity is not present, signs shall be removed or covered.
(See Removing or Covering on BC(4)).

GENERAL NOTES

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum 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 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
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the"ADVANCE SPEED LIMIT"(CW3–5)sign, "WORK ZONE"(G20–5aP) plaque and the "SPEED LIMIT"(R2–1)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 as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low–power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e–form system.

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BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)–21

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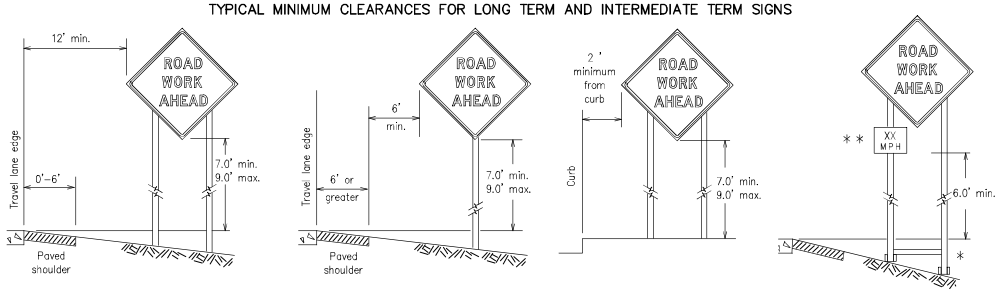
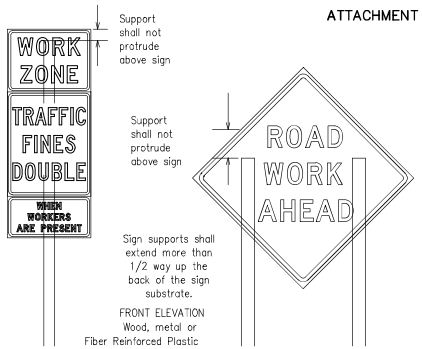
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



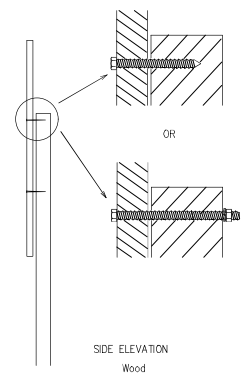
* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

* * 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 spice 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.

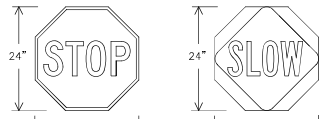


Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

Nails shall NOT be allowed. Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.

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".
2. STOP/SLOW paddles shall be retroreflectorized when used at night.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



Background – Red
Legend & Border – White

Background – Orange
Legend & Border – Black

SHEETING REQUIREMENTS (WHEN USED AT NIGHT)		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B OR C SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

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, specific service (LOGO), 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. For details for covering large guide signs see the TS-CD standard.
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 standard sheets, TLRS standard sheets or the CWZTCD list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets 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. 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.
5. 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.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets.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 the Engineer can verify the correct procedures are being followed.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. 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 inch.
9. 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 6)

1. The types of sign supports, sign mounting height,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 the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration 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 more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
   c. Short-term stationary – daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration – work that occupies a location up to 1 hour.
   e. Mobile – work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

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, except as shown for supplemental plaques mounted below other signs.
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 or raised to appropriate Long-term/Intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

1. The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

1. The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations 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, regardless of the tightness of the weave.
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 face.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type B or Type C_{FL}, shall be used for rigid 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 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 wooden 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, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of 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 should be used.
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 shall 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. Rubber (such as tire inner tubes) shall NOT be used.
6. Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
7. 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.
8. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

1. Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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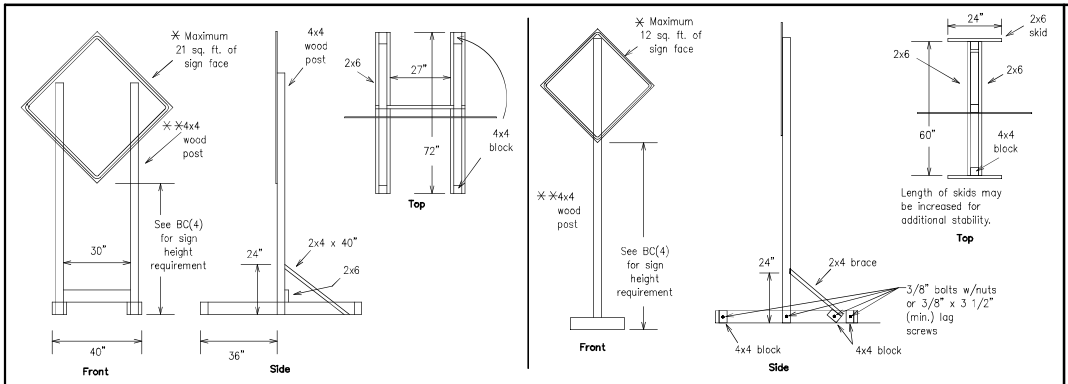
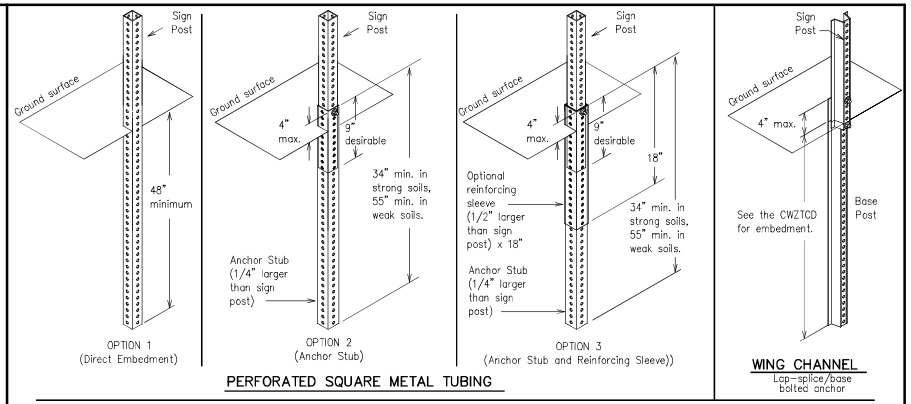


SKID MOUNTED WOOD SIGN SUPPORTS

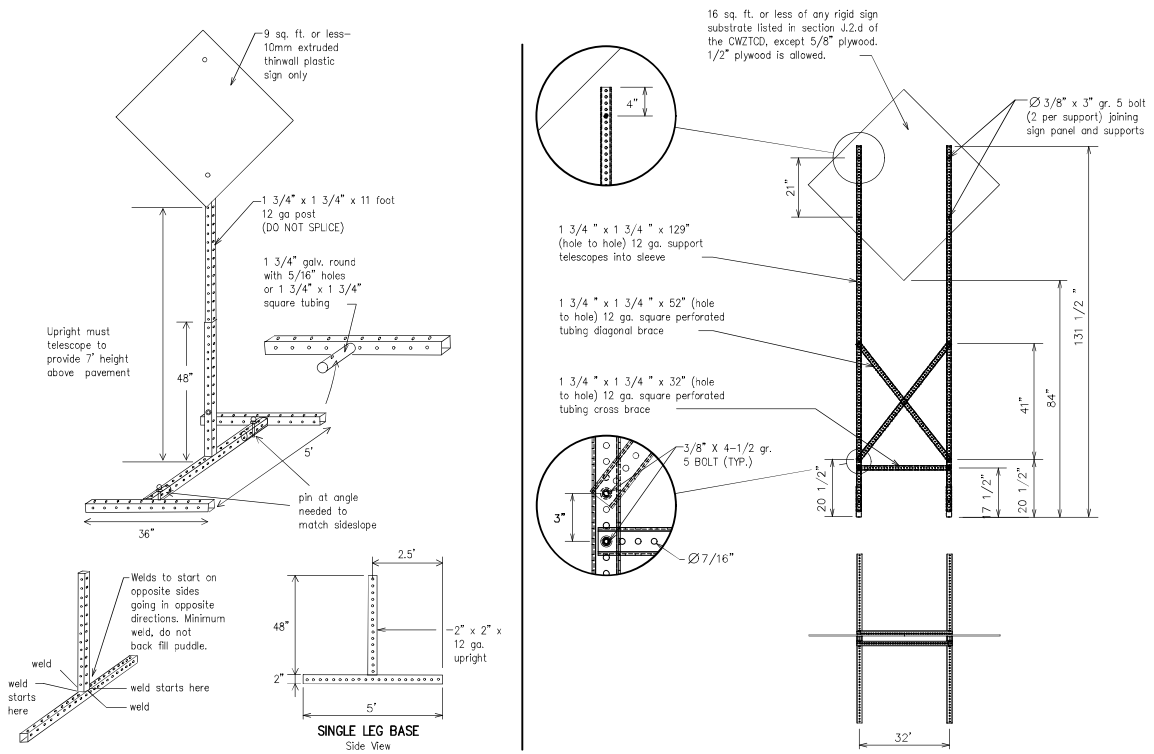
* LONG/INTERMEDIATE TERM STATIONARY – PORTABLE SKID MOUNTED SIGN SUPPORTS



PERFORATED SQUARE METAL TUBING

GROUND MOUNTED SIGN SUPPORTS

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.



SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY – PORTABLE SKID MOUNTED SIGN SUPPORTS

WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. 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."

** Wood 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.

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Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)–21

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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

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. 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.
3. 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.
4. Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
5. Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
6. When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
7. 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.
8. 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.
9. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
10. 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.
11. Do not use the word "Danger" in message.
12. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
13. Do not display messages that scroll horizontally or vertically across the face of the sign.
14. 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 TMUTCD.
15. 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.
16. Each line of text should be centered on the message board rather than left or right justified.
17. 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
Access Road	ACCS RD
Alternate	ALT
Avenue	AVE
Best Route	BEST RTE
Boulevard	BLVD
Bridge	BRDG
Cannot	CANT
Center	CTR
Construction Ahead	CONST AHD
CROSSING	XING
Detour Route	DETOUR RTE
Do Not	DONT
East	E
Eastbound	(route) E
Emergency	EMER
Emergency Vehicle	EMER VEH
Entrance, Enter	ENT
Express Lane	EXP LN
Expressway	EXPWY
XXXX Feet	XXXX FT
Fog Ahead	FOG AHD
Freeway	FRWY, FWY
Freeway Blocked	FWY BLKD
Friday	FRI
Hazardous Driving	HAZ DRIVING
Hazardous Material	HAZMAT
High-Occupancy	HOV
Vehicle Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
Will Not	WONT

Roadway designation # IH-number, US-number, SH-number, FM-number

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

(The Engineer may approve other messages not specifically covered here.)

Phase 1: Condition Lists

Road/Lane/Ramp Closure List		Other Condition 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 *
XXXXXXXX BLVD CLOSED			

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List		Location List	Warning List	**Advance Notice List
MERGE RIGHT	FORM X LINES RIGHT	AT FM XXXX	SPEED LIMIT XX MPH	TUE-FRI XX AM-X PM
DETOUR NEXT X EXITS	USE XXXXX RD EXIT	BEFORE RAILROAD CROSSING	MAXIMUM SPEED XX MPH	APR XX-XX X PM-X AM
USE EXIT XXX	USE EXIT I-XX NORTH	NEXT X MILES	MINIMUM SPEED XX MPH	BEGINS MONDAY
STAY ON US XXX SOUTH	USE I-XX E TO I-XX N	PAST US XXX EXIT	ADVISORY SPEED XX MPH	BEGINS MAY XX
TRUCKS USE US XXX N	WATCH FOR TRUCKS	XXXXXXX TO XXXXXXX	RIGHT LANE EXIT	MAY X-X XX PM - XX AM
WATCH FOR TRUCKS	EXPECT DELAYS	US XXX TO FM XXXX	USE CAUTION	NEXT FRI-SUN
EXPECT DELAYS	PREPARE TO STOP		DRIVE SAFELY	XX AM TO XX PM
REDUCE SPEED XXX FT	END SHOULDER USE		DRIVE WITH CARE	NEXT TUE AUG XX
USE OTHER ROUTES	WATCH FOR WORKERS			TONIGHT XX PM-XX AM
STAY IN LANE *				

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

1. Only 1 or 2 phases are to be used on a PCMS.
2. The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
3. A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
4. A Location Phase is necessary only if a distance or location is not included in the first phase selected.
5. 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.
6. 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.

WORDING ALTERNATIVES

1. The words RIGHT, LEFT and ALL can be interchanged as appropriate.
2. Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
3. EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
4. Highway names and numbers replaced as appropriate.
5. ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
6. AHEAD may be used instead of distances if necessary.
7. FT and MI, MILE and MILES interchanged as appropriate.
8. AT, BEFORE and PAST interchanged as needed.
9. Distances or AHEAD can be eliminated from the message if a location phase is used.

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

FULL MATRIX PCMS SIGNS

1. When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
2. When symbol signs, such as the "Flagger Symbol"(CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
3. When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
4. A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

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BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

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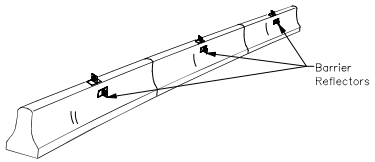
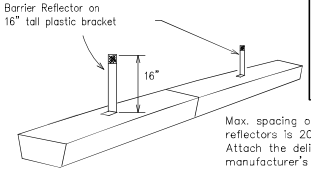
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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



CONCRETE TRAFFIC BARRIER (CTB)

3. 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.
4. 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.
5. When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
6. Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
7. Maximum spacing of Barrier Reflectors is forty (40) feet.
8. Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
9. Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
10. Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
11. Single slope barriers shall be delineated as shown on the above detail.

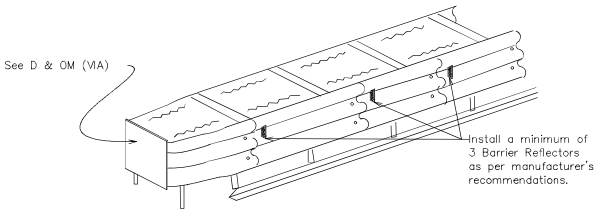


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

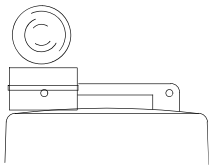


DELINEATION OF END TREATMENTS

END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet the appropriate crashworthy standards as defined in the Manual for Assessing Safety Hardware (MASH). Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



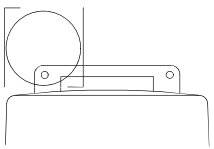
Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.

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 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 plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B or C Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
4. 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".
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.
7. 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.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS 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 random flashing warning lights are not intended for delineation and shall not be used in a series.
3. 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.
4. Type C and D 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.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.



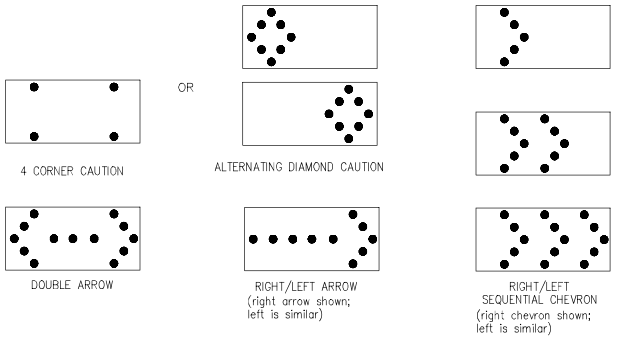
Warning reflector may be round or square.Must have a yellow reflective surface area of at least 30 square inches

WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

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 yellow in color and 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 B or Type C.
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.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

1. The Flashing Arrow Board 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 Boards 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 Board.
4. The Flashing Arrow Board should be able to display the following symbols:



5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board 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 Board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
14. Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

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 Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. 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.

DATE:
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SHEET 7 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR

BC(7)-21

FILE: _bc-21.dgn_	DN: _TxDOT_	CK: TxDOT	DW: _TxDOT_	CK: TxDOT
©TxDOT November_2002_	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				51 / 73

101

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:

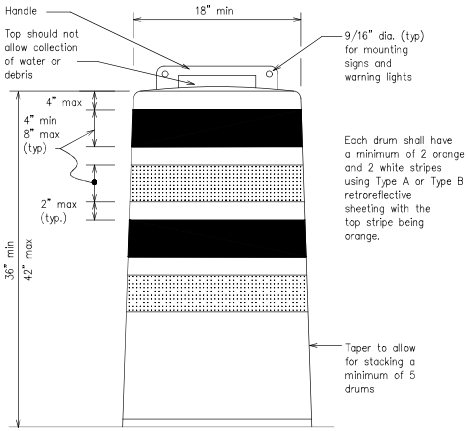
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents 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.

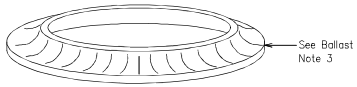
RETROREFLECTIVE SHEETING

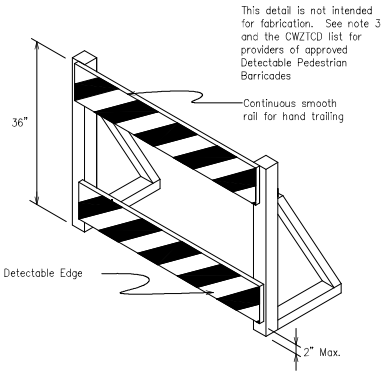
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall 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

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. Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
4. 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.
5. 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.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.

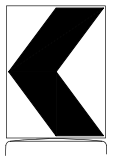




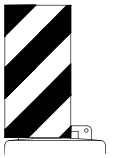


DETECTABLE PEDESTRIAN BARRICADES

1. When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Refer to WZ(BTS-2) for Pedestrian Control requirements for Sidewalk Diversions, Sidewalk Detours and Crosswalk Closures.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a Detectable Pedestrian Barricade shall be placed across the full width of the closed sidewalk instead of a Type 3 Barricade.
3. Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
4. Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines (ADAAG)" and should not be used as a control for pedestrian movements.
5. Warning lights shall not be attached to detectable pedestrian barricades.
6. Detectable pedestrian barricades should use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



18" x 24" Sign
(Maximum Sign Dimension)
Chevron CW1-8, Opposing Traffic Lane Divider, 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 travel way

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 B or Type C Orange$_{FL}$ sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A or Type B. 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, except for the R9 series signs discussed in note 8 below.
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.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations, they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

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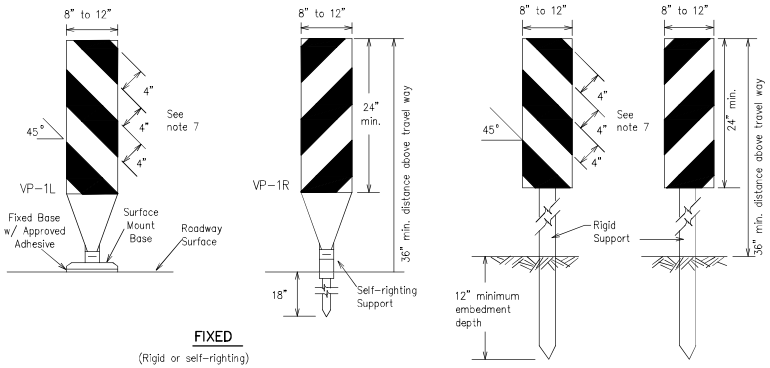
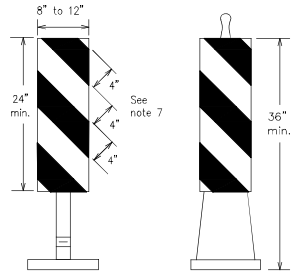


FIXED

(Rigid or self-righting)

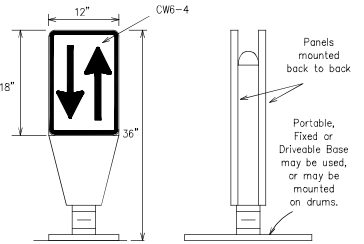
DRIVEABLE



PORTABLE

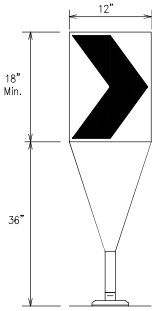
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual for additional requirements on the use 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 or Type B 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.

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 caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs 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 B or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



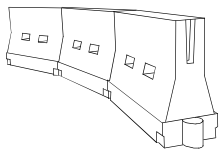
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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 nonreflective legend. Sheeting for the chevron shall be retroreflective Type B or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
6. For Long Term Stationary use on tapers or transitions on freeways and divided highways, self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS

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, nonreflective, 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 a minimum of 30 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.



LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
6. LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10). Place reflective sheeting near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate Manual for Assessing Safety Hardware (MASH) crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long canes and the top of the unit shall not be less than 32 inches in height.

HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS

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'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45	L=WS	450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55		550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80		800'	880'	960'	80'	160'

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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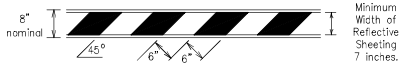
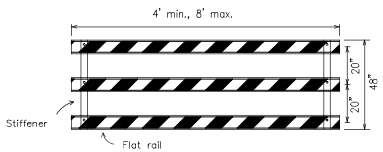
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) 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 striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road, striping 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, 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. Sand bags shall not be stocked 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 or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



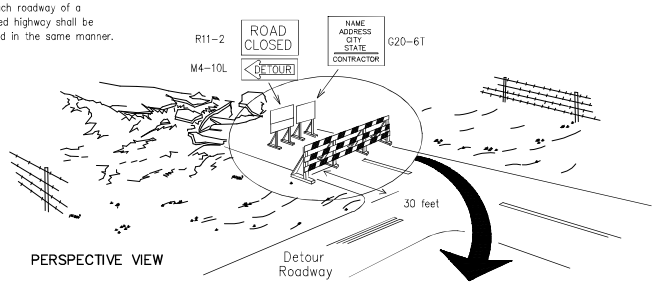
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

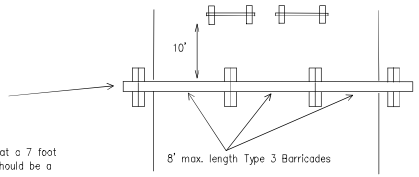
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.

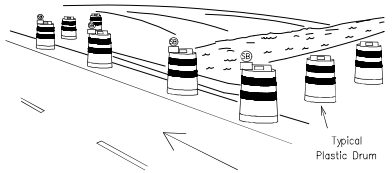
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

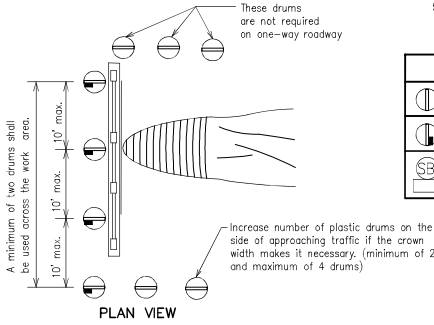
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

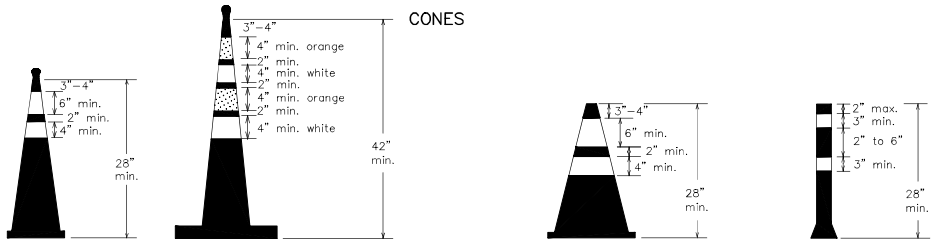
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder 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.



PLAN VIEW

LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

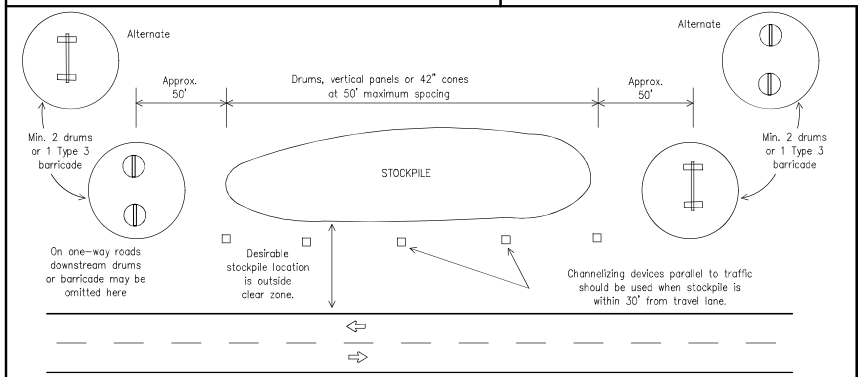
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones

One-Piece cones

Tubular Marker



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

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

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

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A or Type B.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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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.

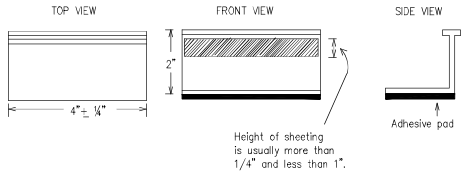
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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.

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 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 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.

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.
4. See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on seal coat work.

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
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS	DMS-8241
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS	DMS-8242

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC(1).

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

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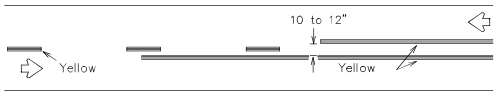
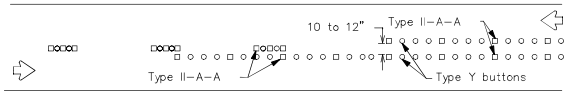
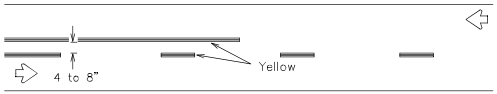
PAVEMENT MARKING PATTERNS



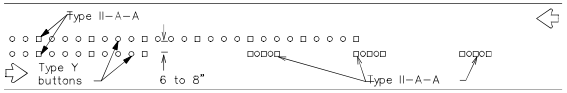
REFLECTORIZED PAVEMENT MARKINGS – PATTERN A



RAISED PAVEMENT MARKERS – PATTERN A



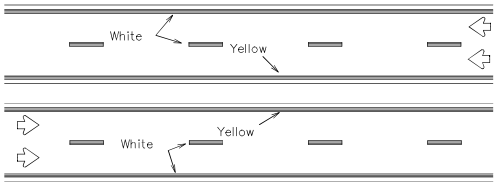
REFLECTORIZED PAVEMENT MARKINGS – PATTERN B



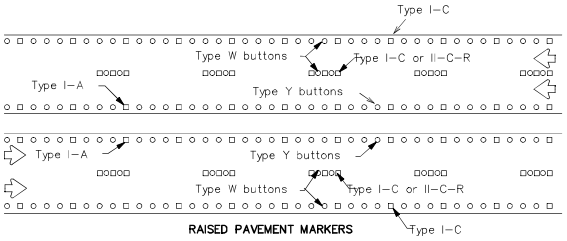
RAISED PAVEMENT MARKERS – PATTERN B

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.

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



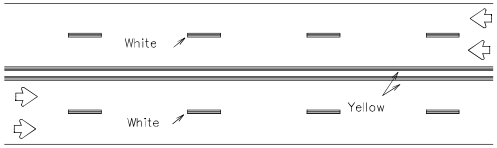
REFLECTORIZED PAVEMENT MARKINGS



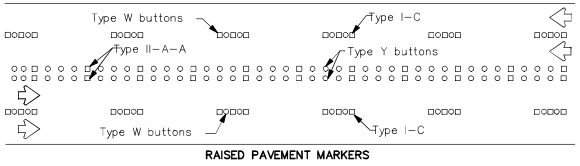
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



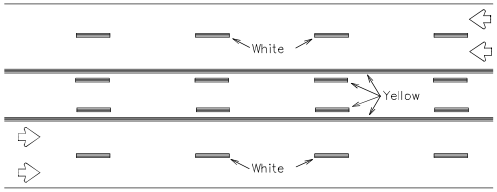
REFLECTORIZED PAVEMENT MARKINGS



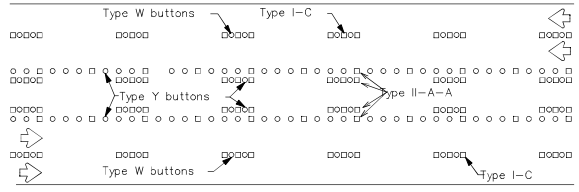
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

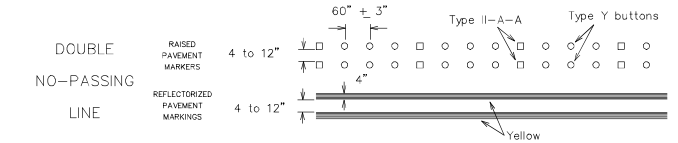


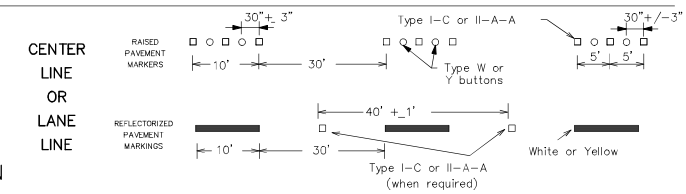
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

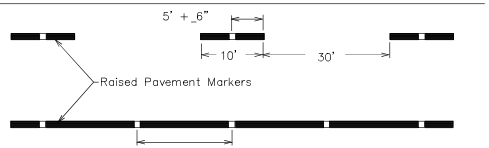
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS





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

Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

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BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

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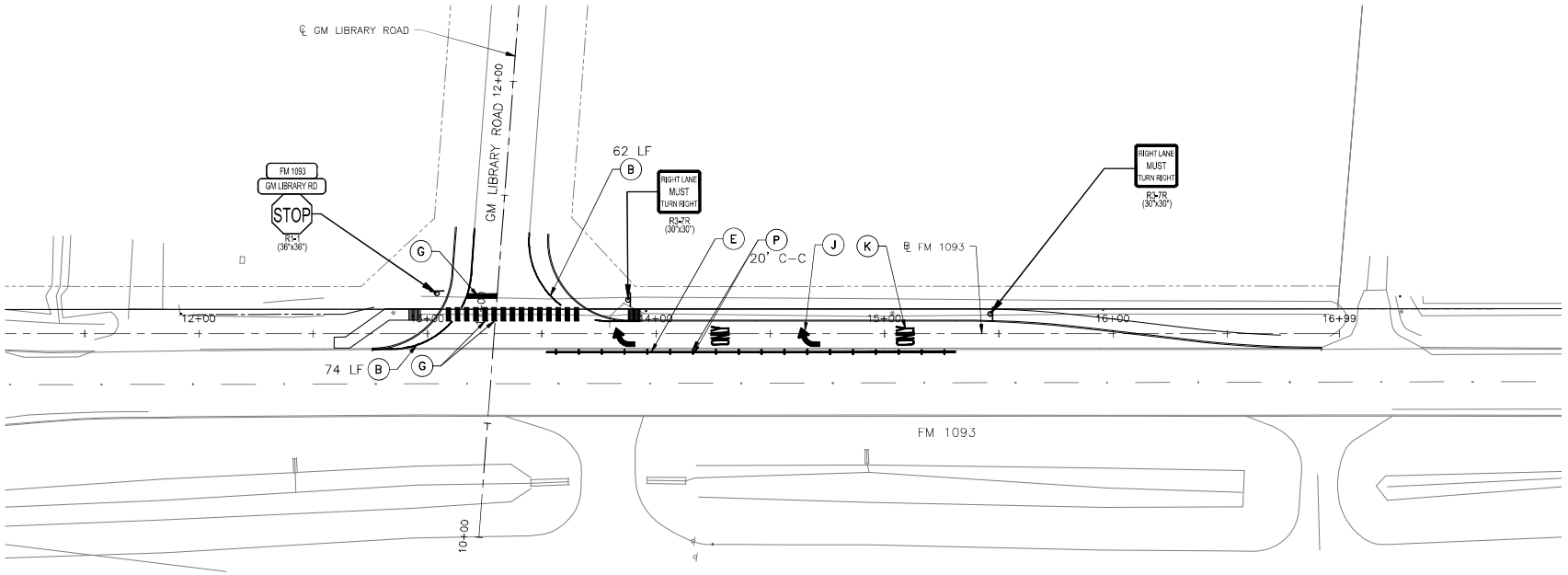
11-02 8-14				
106				



LEGEND- PAVEMENT MARKING:

- (A) INSTALL 4-INCH DASHED WHITE THERMOPLASTIC LINE (TYPE-II)
- (B) INSTALL 4-INCH SOLID WHITE THERMOPLASTIC LINE (TYPE-II)
- (C) INSTALL 4-INCH DASHED YELLOW THERMOPLASTIC LINE (TYPE-II)
- (D) INSTALL 4-INCH SOLID YELLOW THERMOPLASTIC LINE (TYPE-II)
- (E) INSTALL 8-INCH SOLID WHITE THERMOPLASTIC LINE (TYPE-II)
- (F) INSTALL 12-INCH SOLID WHITE THERMOPLASTIC LINE (TYPE-II)
- (G) INSTALL 24-INCH SOLID WHITE THERMOPLASTIC LINE (TYPE-II)
- (J) INSTALL WHITE THERMOPLASTIC PAVEMENT MARKING SYMBOL ARROW
- (K) INSTALL WHITE THERMOPLASTIC PAVEMENT MARKING WORD "ONLY" (TYPE-II)
- (L) INSTALL YELLOW MEDIAN (ESPLANADE) NOSE PAINT (TYPE-II)
- (M) 4" SQ PAVEMENT MARKER ONE WAY REFLECTIVE WHITE (TYPE I-C)
- (N) INSTALL DOUBLE SIDED REFLECTORIZED RAISED PAVEMENT MARKER- YELLOW (TYPE II-A-A)
- (P) INSTALL DOUBLE SIDED REFLECTORIZED RAISED PAVEMENT MARKER-WHITE (TYPE II-C-R)

NO.	DATE	REVISION	APPROVED

STATE OF TEXAS
HARISH C. JAJOO
62217
LICENSED PROFESSIONAL ENGINEER
10/28/2025

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Sugar Land, Texas, 77479
(832) 338-3202 C; (832) 553-3103 F
TBPE FIRM F-15945

FORT BEND COUNTY
ENGINEERING DEPARTMENT

PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)
SIGNING AND PAVEMENT MARKING PLAN

PROJECT NUMBER
20318x
DRAWING SCALE
1"=50'
SHEET NO. 57 OF 73

STATE OF TEXAS
FORT BEND COUNTY

SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
57	1	D3-1G	GM Library Road	24 X 9	X		10 BWG	1	SA	P		
		D3-1G	FM 1093	18 X 9	X							
		R1-1	STOP	36 X 36	X							
57	2	R3-7R	RIGHT LANE MUST TURN RIGHT	30 X 30	X		10 BWG	1	SA	P		
57	3	R3-7R	RIGHT LANE MUST TURN RIGHT	30 X 30	X		10 BWG	1	SA	P		

NO.	DATE	REVISION	APPROVED

STATE OF TEXAS
HARISH C. JAJOO
62217
LICENSED PROFESSIONAL ENGINEER
10/28/2025

HJ Consulting
4771 Sweetwater Blvd Suite 254
Sugar Land, Texas, 77479
(832) 338-3202 O; (832) 553-3103 F
TBPE FIRM F-15945

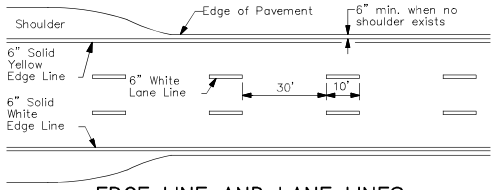
FORT BEND COUNTY
ENGINEERING DEPARTMENT

PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)
SUMMARY OF
SMALL SIGNS

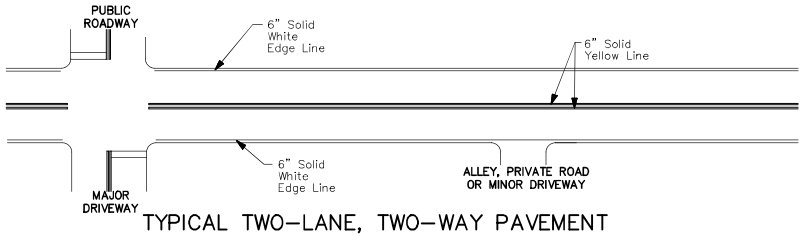
PROJECT NUMBER
20318x
DRAWING SCALE
N.A.

THE STATE OF TEXAS
FORT BEND COUNTY

SHEET NO. 58 OF 73



EDGE LINE AND LANE LINES ONE–WAY ROADWAY WITH OR WITHOUT SHOULDERS



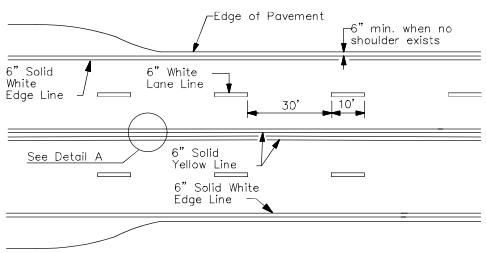
TYPICAL TWO–LANE, TWO–WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

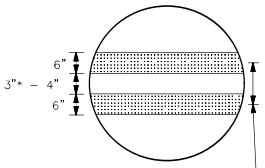
GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS–4200
EPOXY AND ADHESIVES	DMS–6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS–6130
TRAFFIC PAINT	DMS–8200
HOT APPLIED THERMOPLASTIC	DMS–8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS–8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

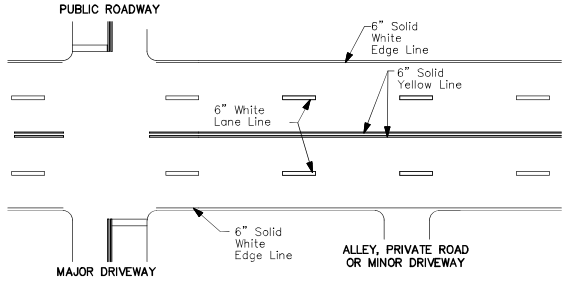




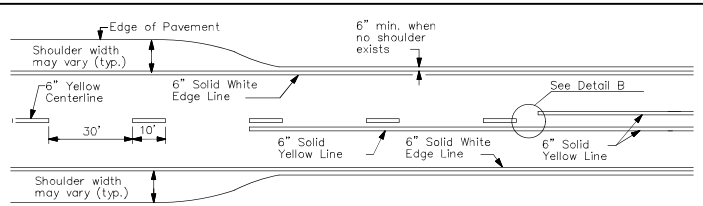
DETAIL "A"

CENTERLINE AND LANE LINES FOUR LANE TWO–WAY ROADWAY WITH OR WITHOUT SHOULDERS

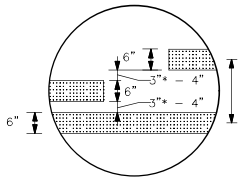
* 2" minimum for restripe projects when approved by the Engineer.
** 8" minimum for restripe projects when approved by the Engineer.



TYPICAL MULTI–LANE, TWO–WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

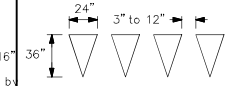


TWO LANE TWO–WAY ROADWAY WITH OR WITHOUT SHOULDERS



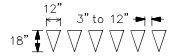
DETAIL "B"

* 2" minimum for restripe projects when approved by the Engineer.

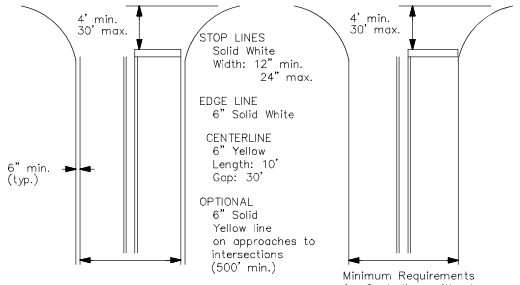


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



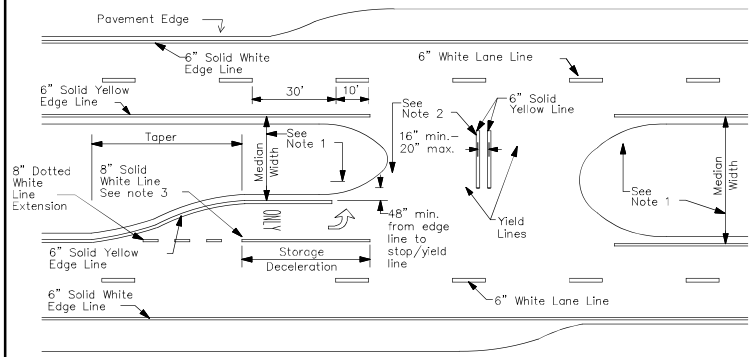
For posted speed on road being marked equal to or less than 40 MPH.



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.

   Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.

2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.

3. Length of turn bays, including taper, deceleration, and storage l… the plans or as directed by the Engineer.

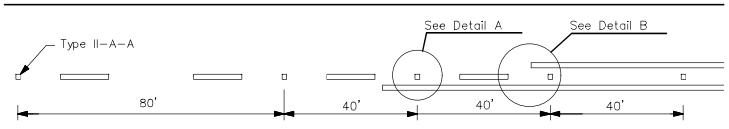
Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

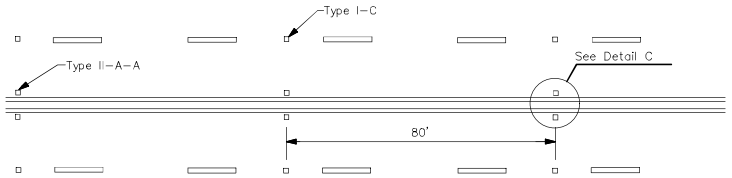
PM(1)–22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20				
8-95 3-03 12-22	DIST	COUNTY		SHEET NO.
5-00 2-12				59 / 73
22A				

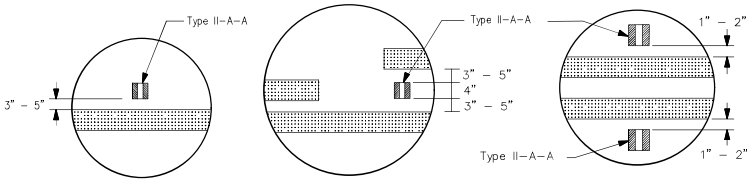
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

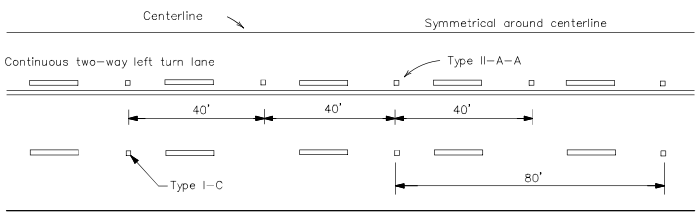


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

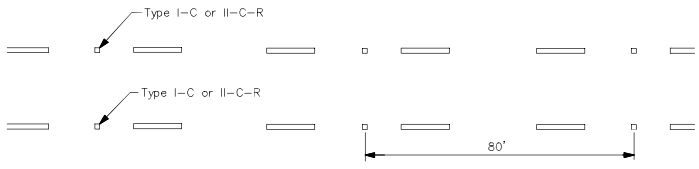


CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY ROADWAYS





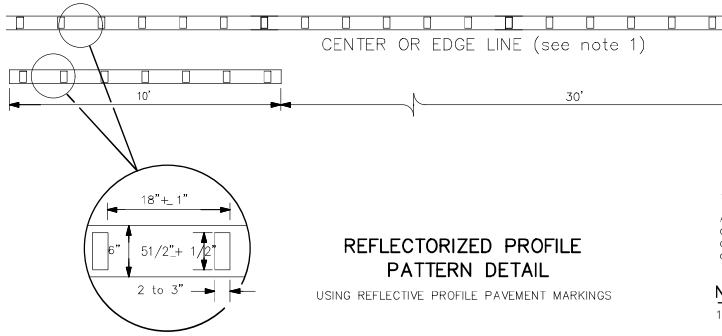
CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

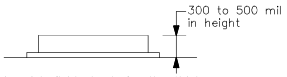
Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

See Note 3.



REFLECTORIZED PROFILE
PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS



A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

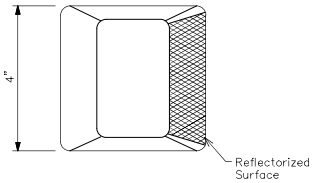
NOTES

1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

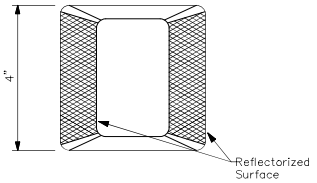
GENERAL NOTES

1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

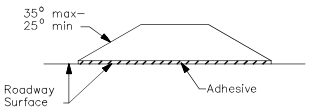
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240



Type I (Top View)



Type II (Top View)



SECTION A

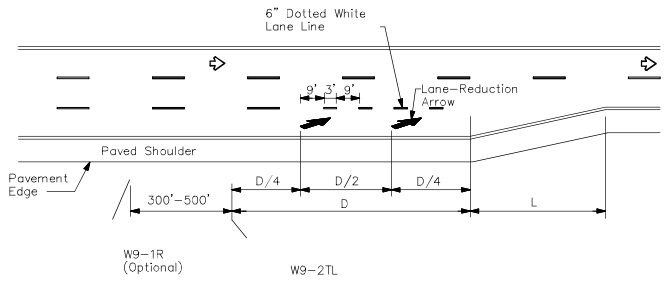
RAISED PAVEMENT MARKERS

Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-22

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS				
4-77 8-00 6-20	DIST	COUNTY		SHEET NO.
4-92 2-10 12-22				60 / 73
5-00 2-12				

228



LANE REDUCTION

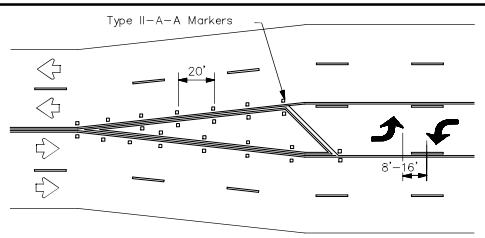
NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

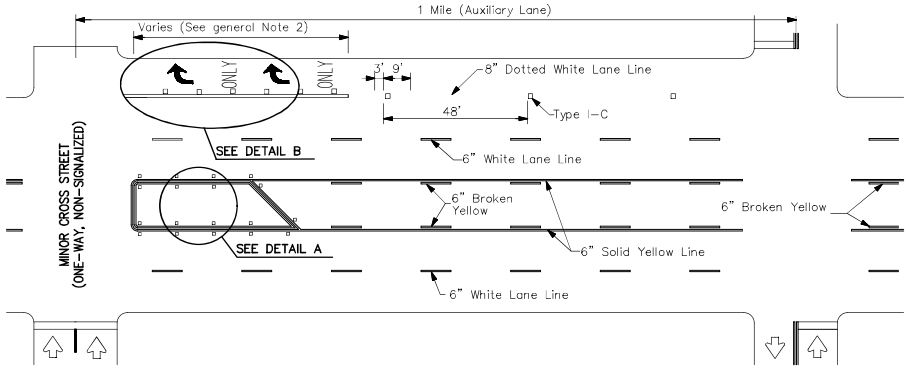
GENERAL NOTES

1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas. 2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

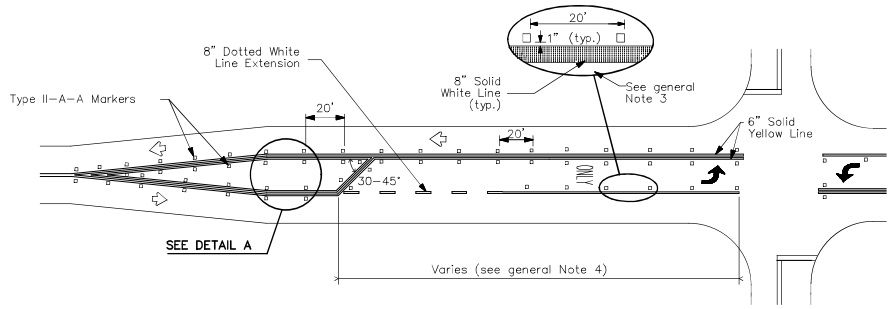


A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

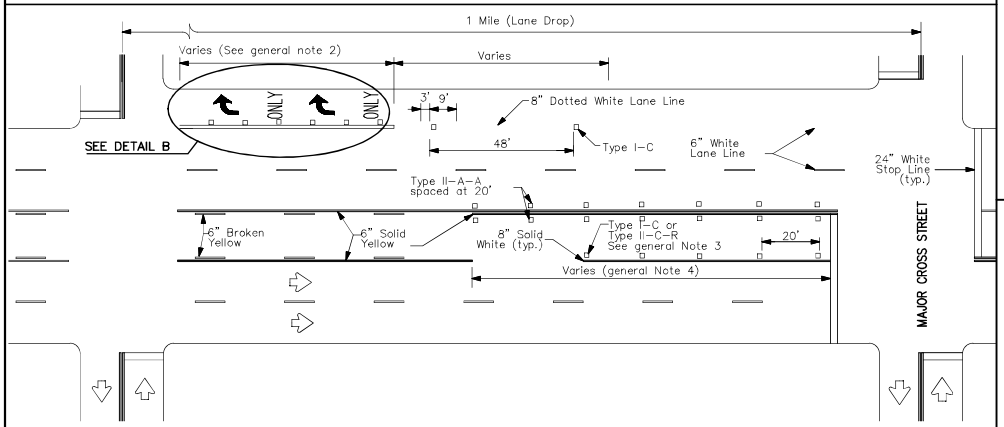
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY



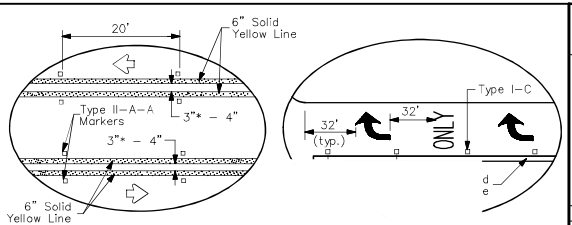
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



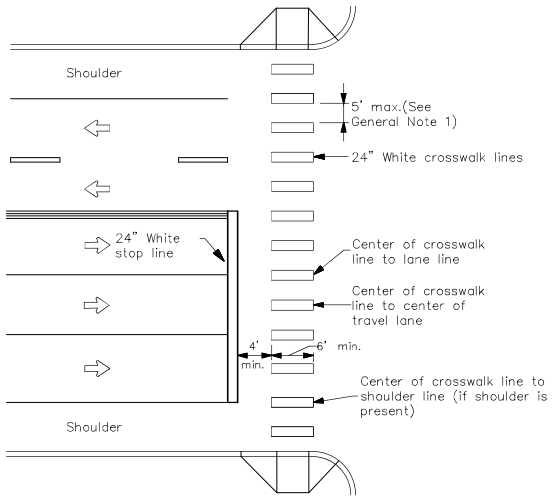
DETAIL A

* 2" minimum allowed for restr . . . . . he Engineer.

Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 3-03 6-20 / 5-00 2-10 12-22 / 8-00 2-12	DIST	COUNTY		SHEET NO. 61 / 73
22C				

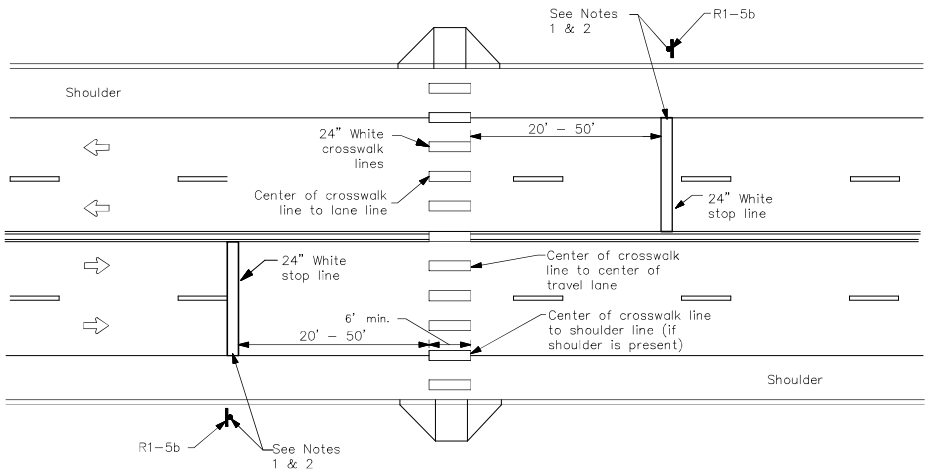


HIGH–VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High–Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS–4200
EPOXY AND ADHESIVES	DMS–6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS–6130
TRAFFIC PAINT	DMS–8200
HOT APPLIED THERMOPLASTIC	DMS–8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS–8240



UNSIGNALIZED MIDBLOCK HIGH–VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

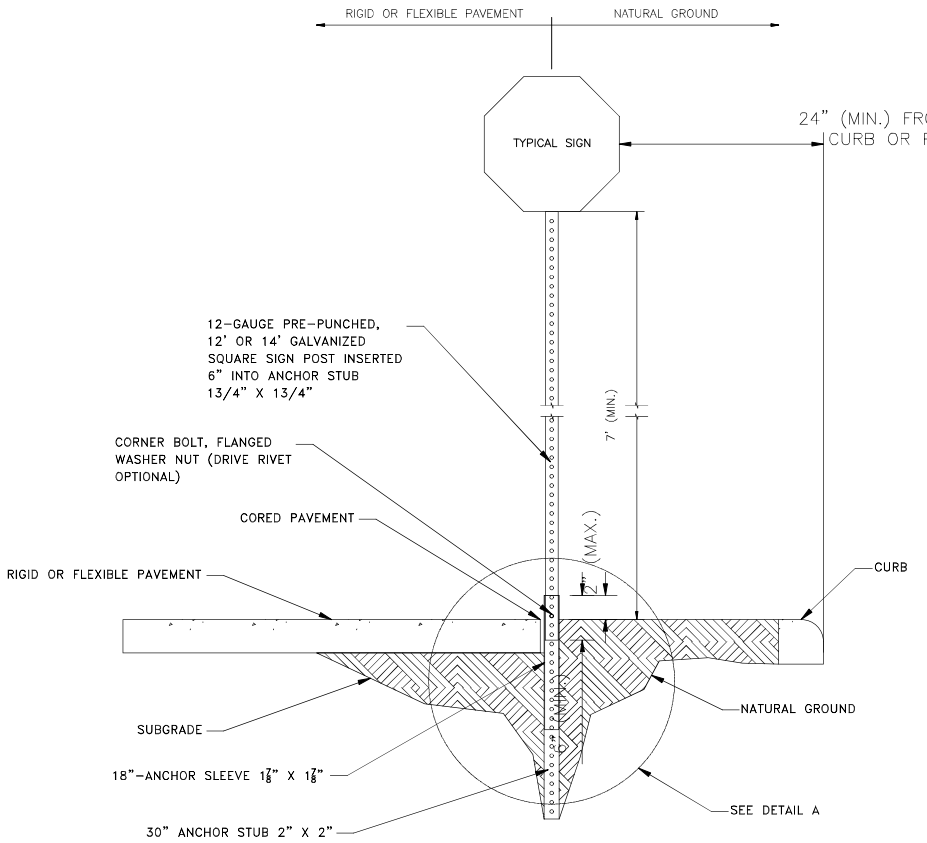
1. Use stop bars with Stop Here For Pedestrians (R1–5b) signs at unsignalized midblock cross walks.
2. Use stop bars with STOP HERE ON RED (R10–6 or R10–6a) signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

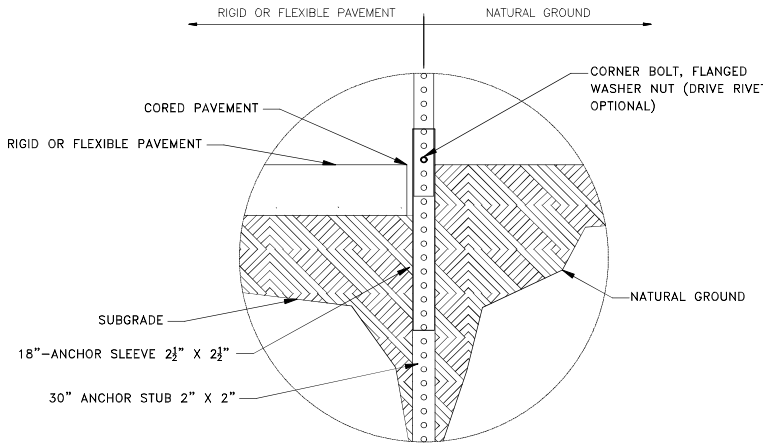
Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)–22A

FILE: pm4–22a.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS				
6–20	DIST	COUNTY		SHEET NO.
6–22				62 / 73
12–22				
220				





TYPICAL GROUND SIGN INSTALLATION
DETAIL A

NOTES:

1. THE CROSS SECTION OF ALL MEMBERS SHALL BE SQUARE TUBE FORMED OF 12 GAUGE AND MANUFACTURED FROM HOT-GALVANIZED STEEL
2. THE TELESCOPE BREAKAWAY SYSTEM OR "SYSTEM" IS DEFINED AS FOLLOW:
- A MINIMUM 30" ANCHOR STUB;
- 18" ANCHOR SLEEVE.

1. DRIVE THE SYSTEM TOGETHER MAKING SURE THE HOLES ARE ALIGNED.
2. THE SYSTEM IS TO BE DRIVEN INTO NATURAL GROUND EXPOSED SUBGRADE UNTIL ONLY 1 TO 2 INCHES ARE LEFT EXPOSED.
5 ATTACH THE SIGN TO AN 1 3/4" SQUARE POST AT THE DESIRED HEIGHT, SUCH THAT IT MEETS THE MINIMUM VERTICAL CLEARANCE.
6. SIGNS ARE FASTENED TO THE POST BY USING DRIVE RIVETS OR BOLTS.
7. INSERT THE SIGN POST APPROXIMATELY 6 TO 8 INCHES INTO THE ANCHOR BASE.
8. BOLT THE SIGN POST TO THE ANCHOR ASSEMBLY WITH A CORNER BOLT.
9. WHEN INSTALLING IN RIGID OR FLEXIBLE PAVEMENT, USE A CORING MACHINE TO EXPOSE THE SUBGRADE MATERIAL AND INSTALL THE SYSTEM.

NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	3-1-22	RJS

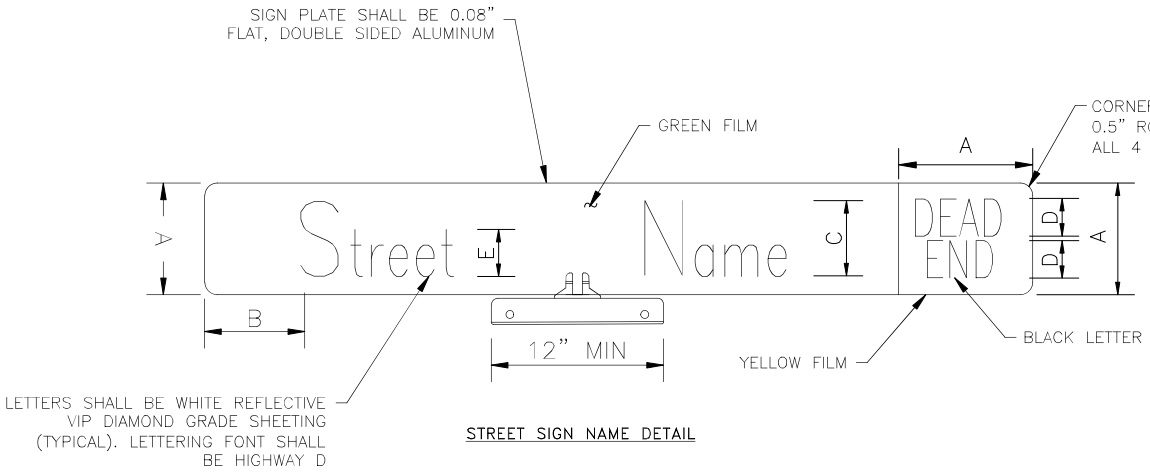
FORT BEND COUNTY
ENGINEERING DEPARTMENT

THE STATE OF TEXAS · FORT BEND COUNTY

PROJECT TITLE:

DRAWN BY: INIT		FBCED STANDARD
CK'D BY: INIT	SHEET DESCRIPTION: TYPICAL GROUND SIGN INSTALLATION	58
SCALE: AS NOTED		SHEET NO:
DATE: 3-1-22	APPROVED BY:	63 / 73

z:\Projects\2113PVHJ\Working\Phase 4\2113PVHJ-18E-FBC STD TYPICAL GROUND SIGN INSTALLATION-Phase 4.dwg



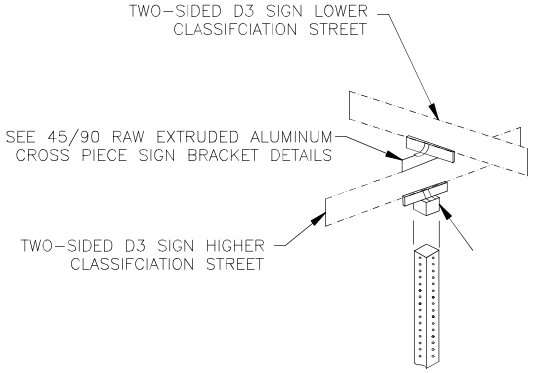
STREET SIGN NAME DETAIL

DIMENSION SCHEDULE

9" SIGN	
'A'	9"
'B'	2"
'C'	6"
'D'	3.5"
'E'	4.5"

NOTES:

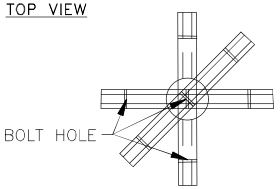
ALL STREET BLADES SHALL BE 9" IN HEIGHT



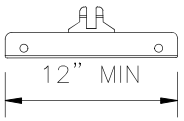
DUAL SIDED STREET SIGN DETAIL

45°/90° RAW EXTRUDED ALUMINUM CROSS PIECE SIGN BRACKET DETAILS

TOP VIEW



SIDE VIEW



RAW ALUMINUM SQUARE POST CAP BRACKET DETAILS

FRONT VIEW

SIDE VIEW

NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	3-1-22	RJS
2			
3			
4			
5			

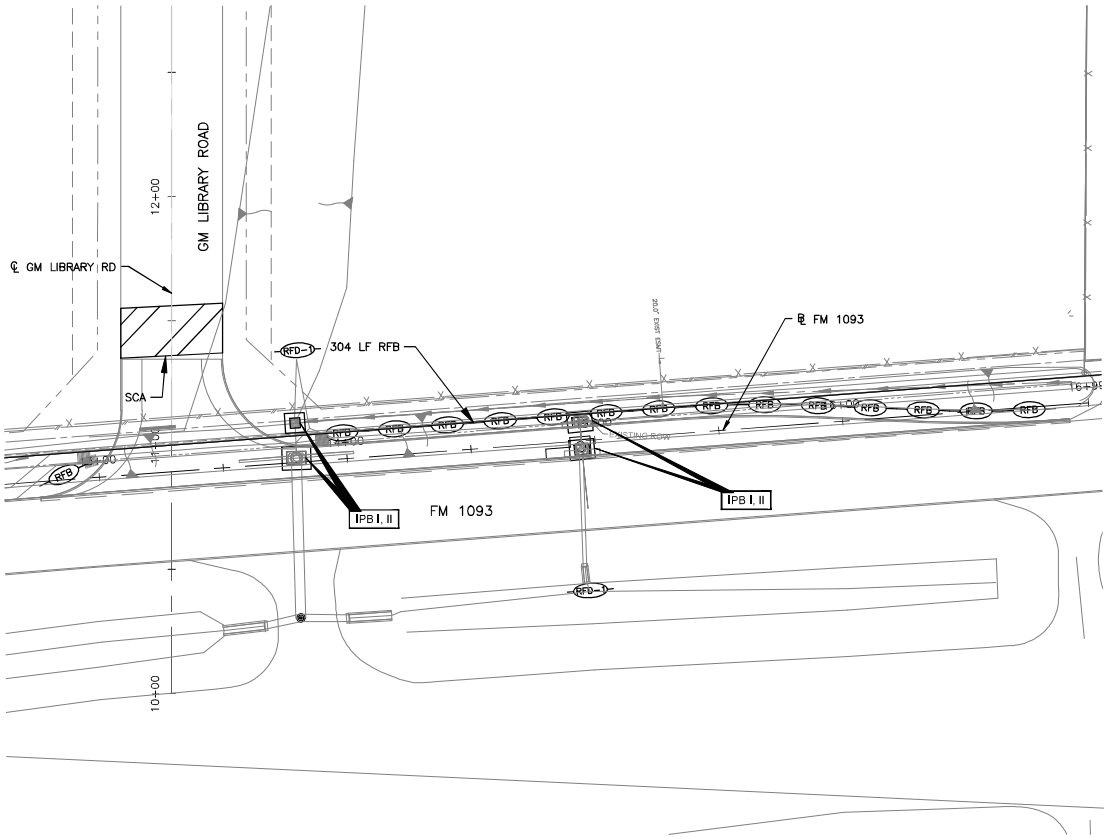
FORT BEND COUNTY
ENGINEERING DEPARTMENT

THE STATE OF TEXAS FORT BEND COUNTY

PROJECT TITLE:

DRAWN BY: INIT		FBCED STANDARD
CK'D BY: INIT	SHEET DESCRIPTION: STREET SIGN NAME DETAILS	59
SCALE: AS NOTED		SHEET NO:
DATE: 3-1-22	APPROVED BY:	64 / 73

z:\Projects\2113PVHJ\Working\Phase 4\2113PVHJ-18F-FBC STD STREET SIGN NAME DETAILS-Phase 4.dwg



50 0 25 50

SCALE: 1" = 50'-0"

LEGEND

RFB	SEDIMENT CONTROL FENCE
	FLOW DIRECTION
IPB II	INLET PROTECTION BARRIER (STAGE II & EXISTING)
IPB I	INLET PROTECTION BARRIER STORM INLET SEDIMENT TRAP (STAGE I)
RFD-X	ROCK FILTER DAM TYPE X
	SCA (STABILIZED CONSTRUCTION ACCESS)

NO.	DATE	REVISION	APPROVED

STATE OF TEXAS
HARISH C. JAJOO
62217
LICENSED PROFESSIONAL ENGINEER
10/28/2025

4771 Sweetwater Blvd Suite 254
Sugar Land, Texas, 77479
(832) 338-3202 O; (832) 553-3103 F
TBPE FIRM F-15945

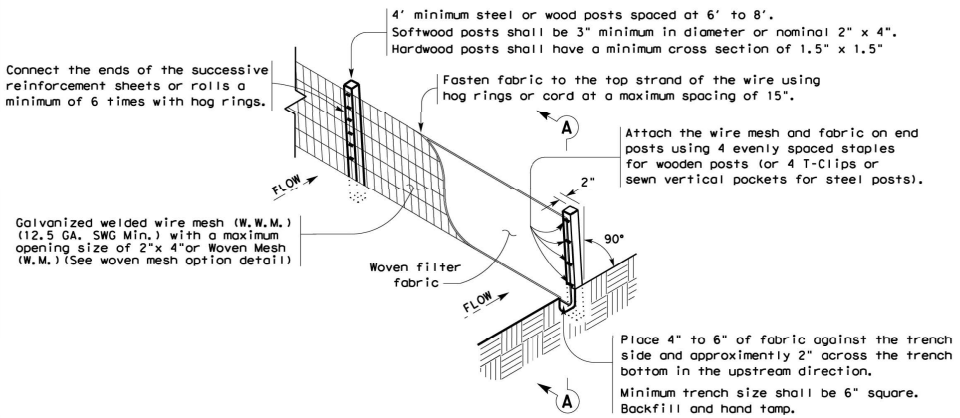
FORT BEND COUNTY
ENGINEERING DEPARTMENT

PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)
STORM WATER POLLUTION
PREVENTION PLAN

PROJECT NUMBER
20318x
DRAWING SCALE
1"=50'

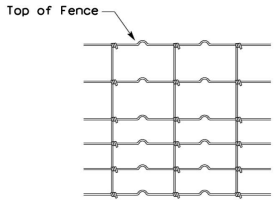
THE STATE OF TEXAS
FORT BEND COUNTY

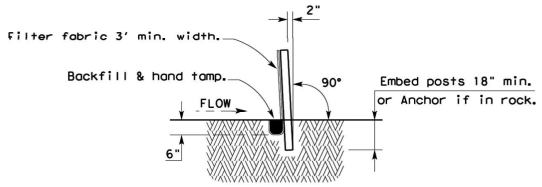
SHEET NO. 65 OF 73



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

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 maximum 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.

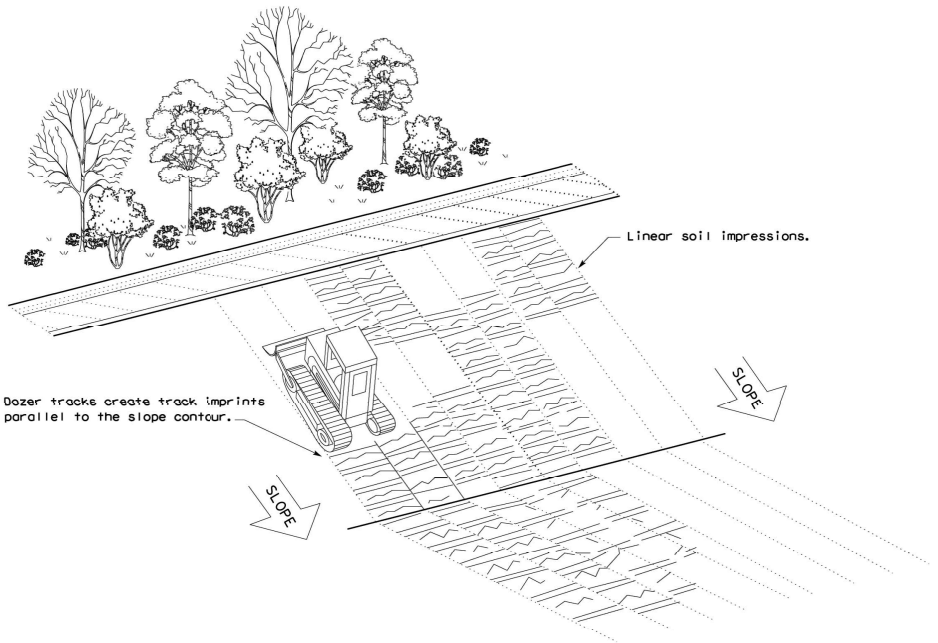
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

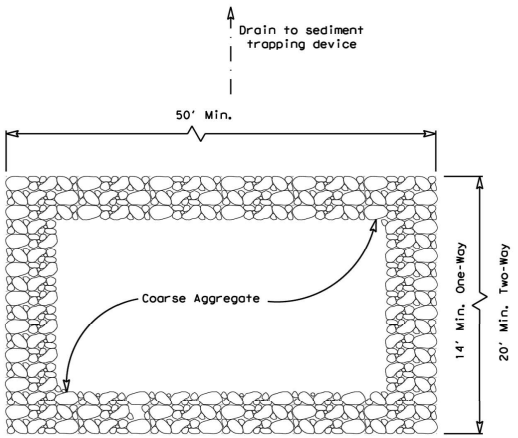
FENCE & VERTICAL TRACKING

EC(1)-16

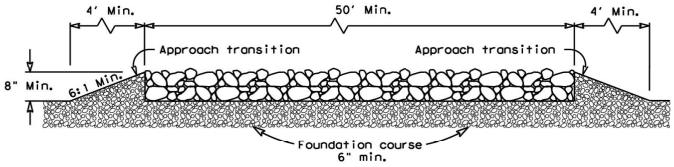
FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS				FM 1093	
	DIST	COUNTY		SHEET NO.	
	HOU	FORT BEND		66 / 73	

DATE
FILE

DATE: $DATE$
FILE: $FILE$



PLAN VIEW



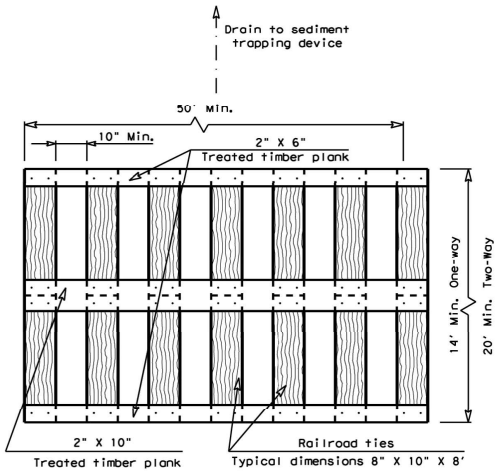
ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

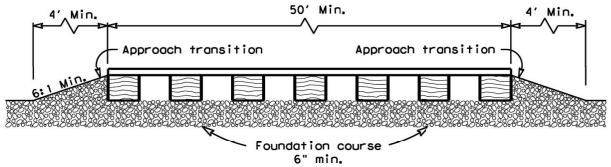
ROCK CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



PLAN VIEW



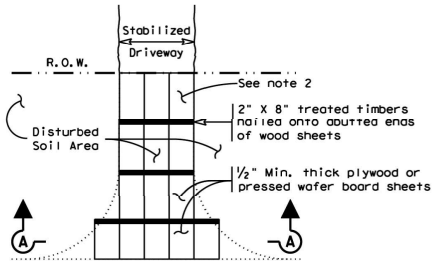
ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

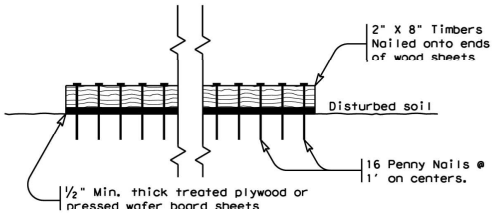
TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attachec to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

SHORT TERM

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

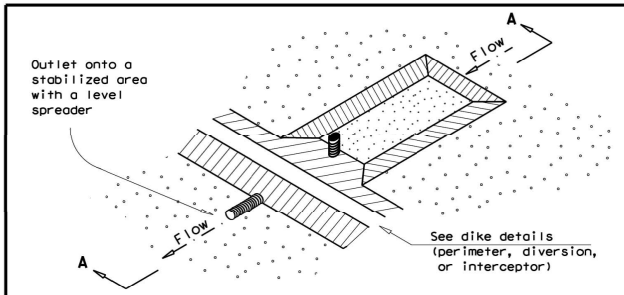
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-16

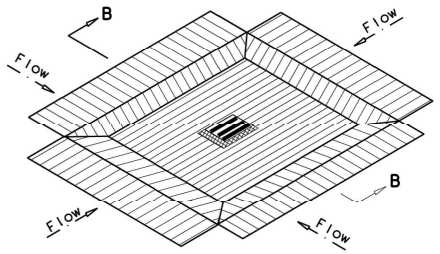
FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				FM 1093
	DIST	COUNTY		SHEET NO.
	HOU	FORT BEND		67 / 73

DATE:
FILE:



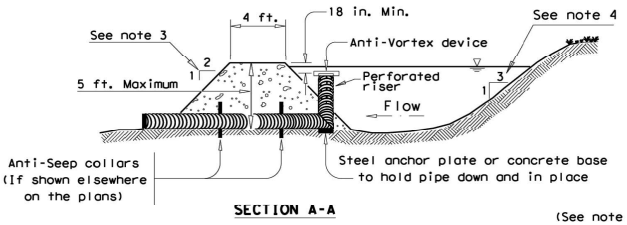
SEDIMENT BASIN AND/OR TRAP WITH PIPE OUTLET

ST/PO

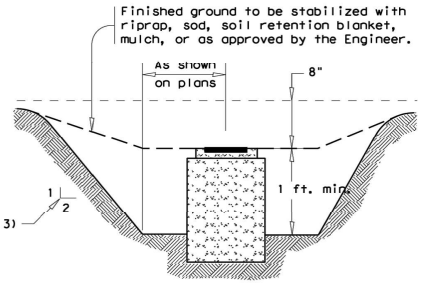


DROP INLET SEDIMENT TRAP

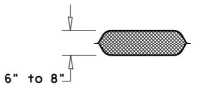
ST-DI



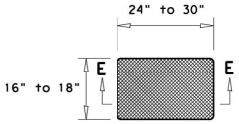
SECTION A-A



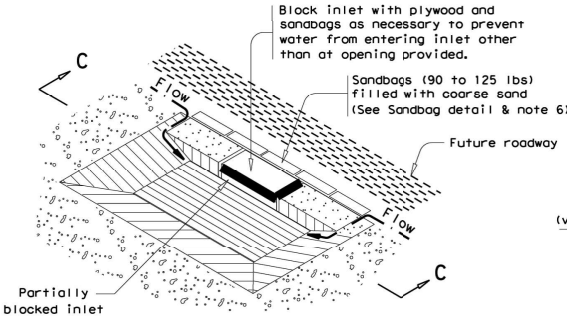
SECTION B-B



SECTION E-E

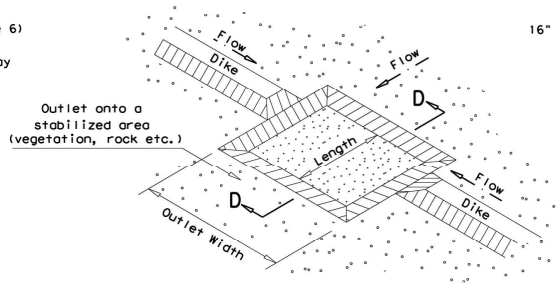


SANDBAG DETAIL



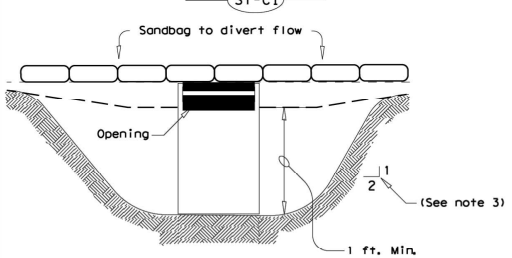
CURB INLET SEDIMENT TRAP

ST-CI

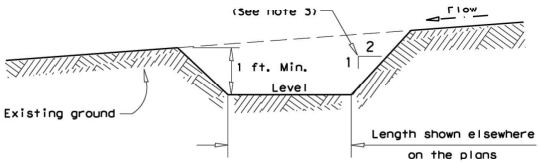


SEDIMENT TRAP WITH LEVEL STABILIZED OUTLET

ST



SECTION C-C



SECTION D-D

GENERAL NOTES

1. Pipe outlet material shall conform to the Item "Pipe Underdrains" or as accepted by the Engineer.
2. All pipe connections shall be watertight.
3. Side slopes within the safety clear zone of a roadway shall be 6:1 or flatter. Protect the traveling public from inlet stacks within the clear zone.
4. Sediment basins shall have side slopes of 3:1 or flatter.
5. The dimensions and limits of excavation for sediment basins and traps will be as shown elsewhere on the plans.
6. The sandbag material shall be made of polypropylene, polyethylene or polyamide woven fabric, min. unit weight 4 ounces /SY, Mullen burst strength exeeding 300 psi and ultraviolet stability exeeding 70%.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

A sediment basin and/or trap may be used to precipitate sediment out of runoff draining from an unstabilized area.

Basins: The drainage area for a sediment basin should not exceed 100 acres. The basin capacity shall be at least 1800 CF/Acre of drainage area (0.5" over the drainage area). If the disturbed area draining to the basin is larger than 10 acres, the basin capacity should be 3600 CF/Acre (1.0" over the drainage area).

The basin should have a 40 hour draw-down time with an emergency spillway. The spillway may be designed to pass the peak rate of runoff from a 25 year frequency storm. The 100 year storm should be investigated to consider possible flooding impacts.

The entrance into the basin should be protected from erosion. The basin should be cleaned when the capacity has been reduced by 1/3.

Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Sediment traps should be placed in the following locations:
1. Within drainage ditches spaced @ 500'± on center
2. Immediately preceding ditch inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way

The trap outlet may either be through a perforated riser and pipe assembly designed to achieve a 40 hour draw-down time or over a level stabilized area (vegetation, rock, etc.).

The trap should be cleaned when the capacity has been reduced by ½ or the sediment has accumulated to a depth of 1', whichever is less.

PLANS SHEET LEGEND

ST/PO
Sediment Basin and / or Trap with Pipe Outlet

ST-DI
Drop Inlet Sediment Trap

ST-CI
Curb Inlet Sediment Trap

ST
Sediment Trap with Level Stabilized Outlet

Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
SEDIMENT BASINS AND TRAPS (EARTHWORK FOR EROSION CONTROL)

EC(6)-16

FILE: ec616	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
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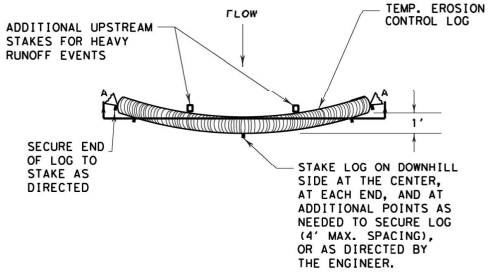
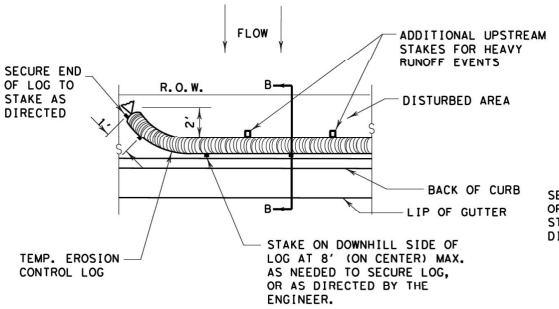
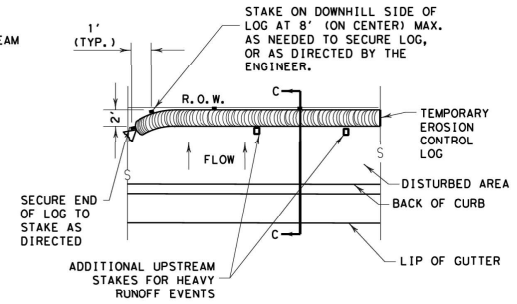


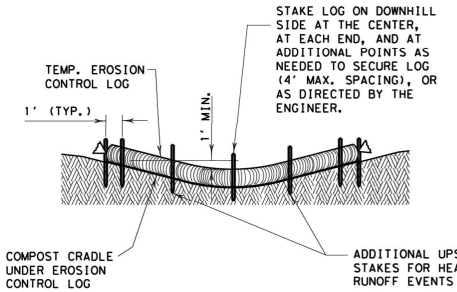
PLAN VIEW



PLAN VIEW



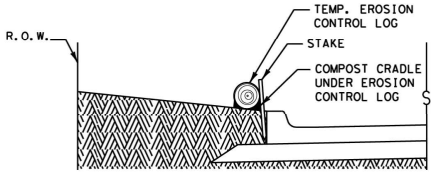
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

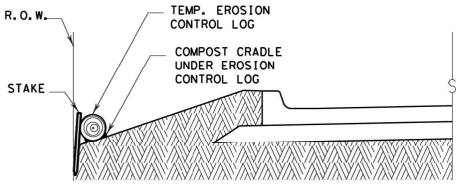
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

CL-BOC



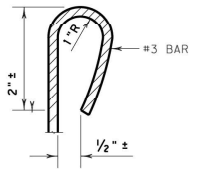
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW

LEGEND

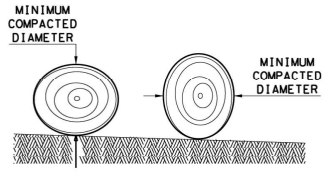
- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET



REBAR STAKE DETAIL

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:
1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

Texas Department of Transportation — Design Division Standard

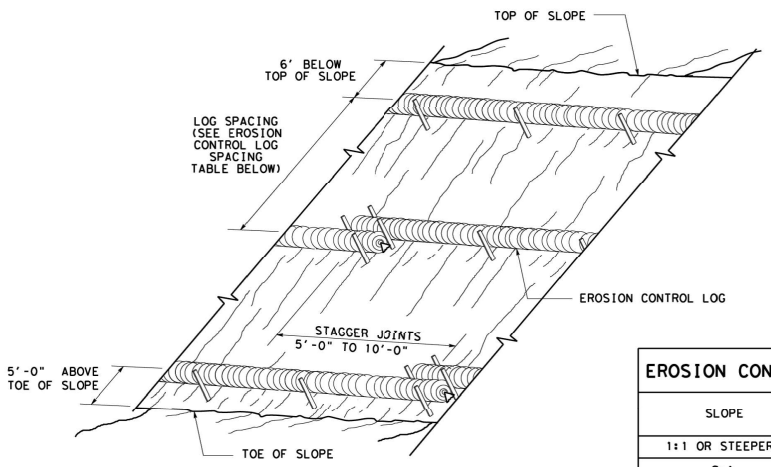
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

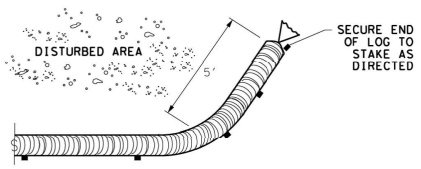
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS				FM 1093	
	DIST	COUNTY		SHEET NO.	
	HOU	FORT BEND		69 / 73	

DATE:
FILE:



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

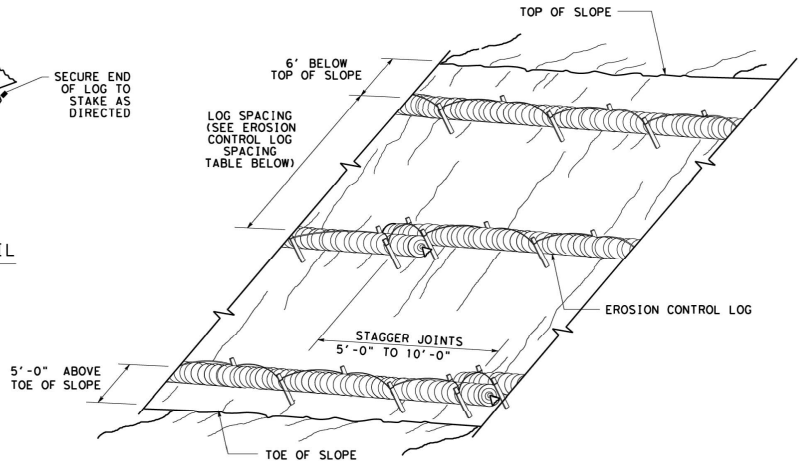
CL-SST



END SECTION RAP DETAIL

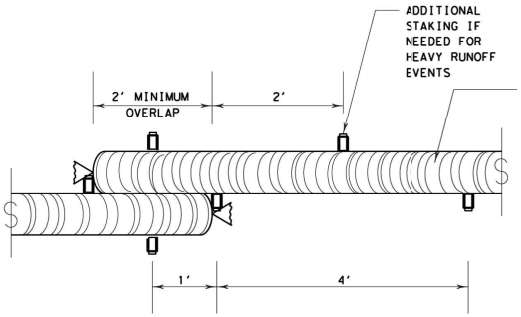
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

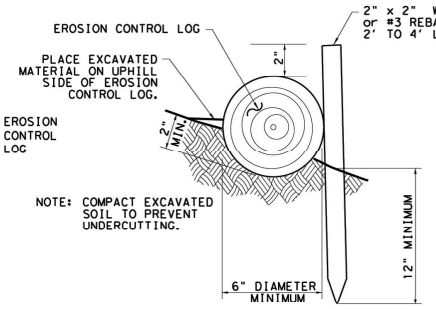
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

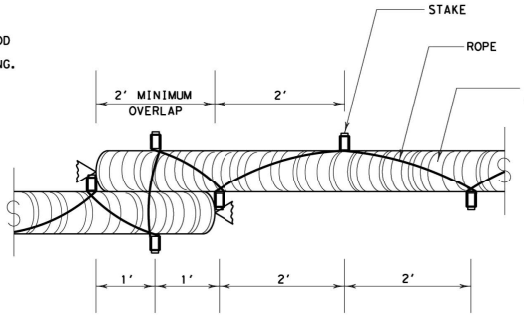


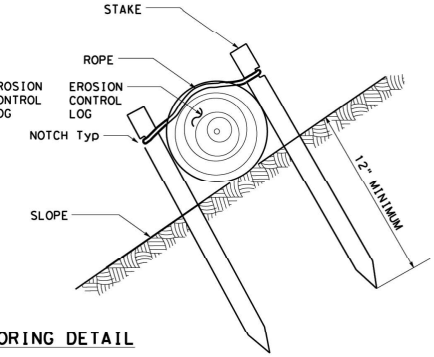


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

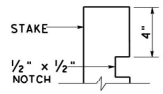
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

Texas Department of Transportation

Design Division Standard

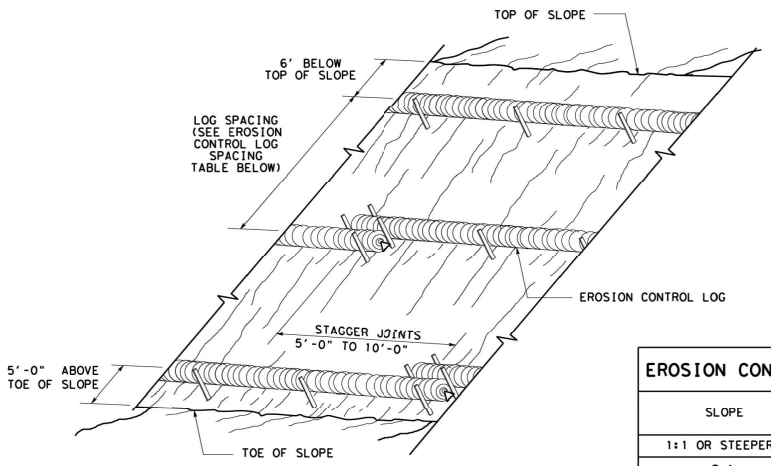
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

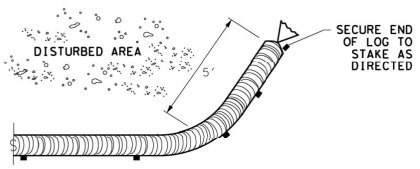
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS				FM 1093	
	DIST	COUNTY		SHEET NO.	
	HOU	FORT BEND		70 / 73	

DATE:
FILE:



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

CL-SST



END SECTION RAP DETAIL

EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
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1:1 OR STEEPER	5'	10'	15'	20'
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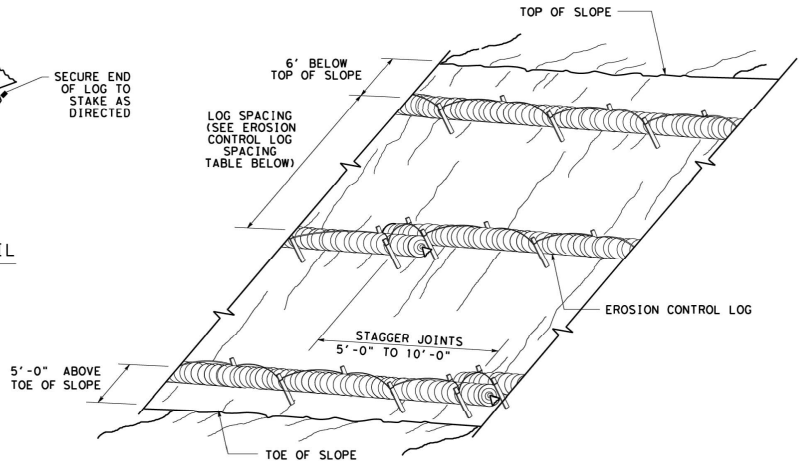
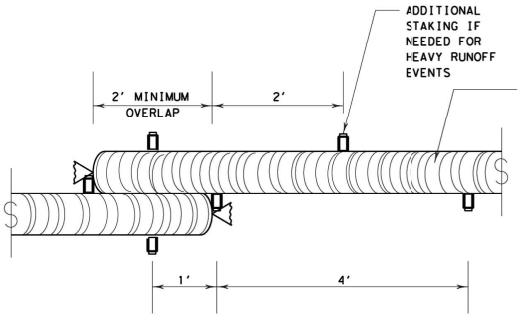
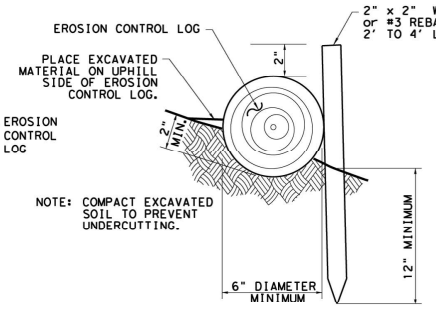


EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

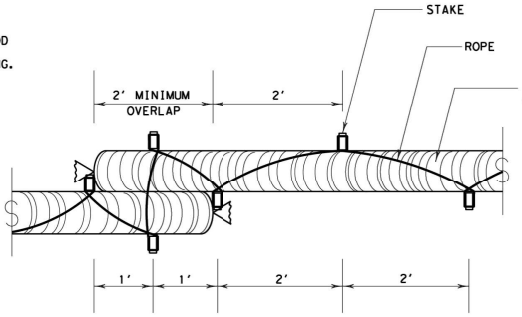


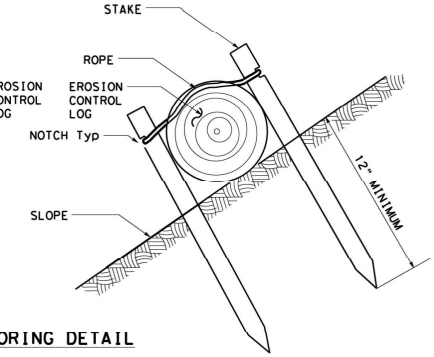


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

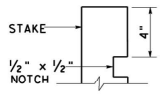
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

SHEET 2 OF 3

Texas Department of Transportation

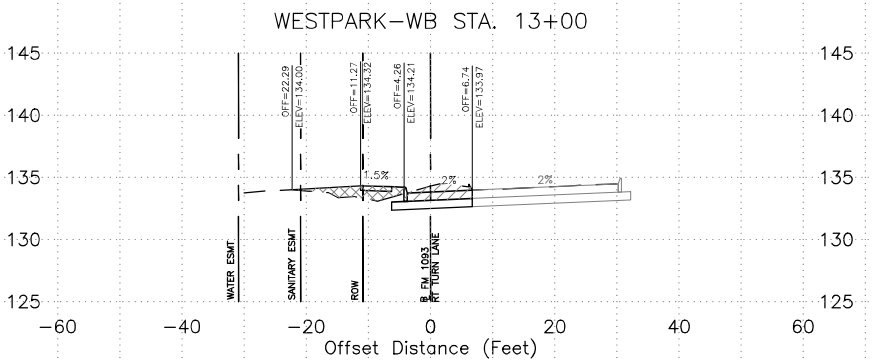
Design Division Standard

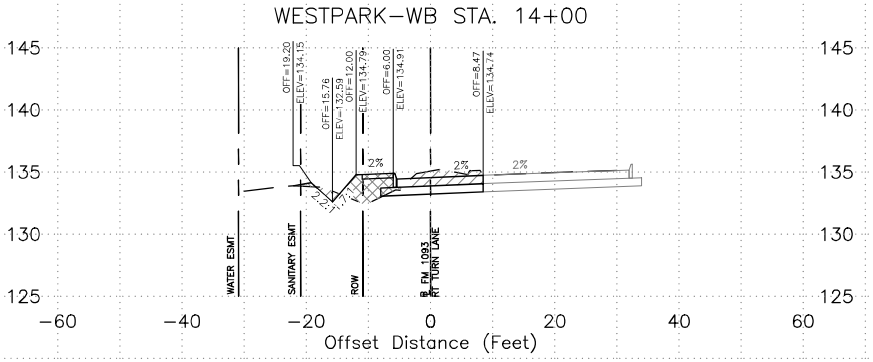
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

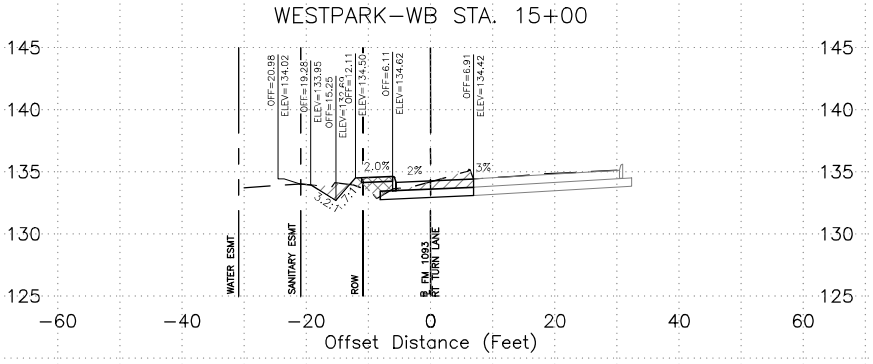
EROSION CONTROL LOG

EC(9)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
	DIST	COUNTY		SHEET NO.	







0 10 20
0 5 10
SCALE: 1" = 20'-0" (HORZ.)
1" = 10'-0" (VERT.)

LEGEND:

NOTE:

1. ALL AREA UNITS SHOWN ARE IN SQUARE FEET AND ALL VOLUME UNITS ARE IN CUBIC YARD, UNLESS OTHERWISE SPECIFIED.

NO.	DATE	REVISION	APPROVED

STATE OF TEXAS
HARISH C. JAJOO
62217
LICENSED
PROFESSIONAL ENGINEER
10/28/2025

4771 Sweetwater Blvd Suite 254
Sugar Land, Texas, 77479
(832) 338-3202 Cl (832) 553-3103 F
TBPE FIRM F-15945

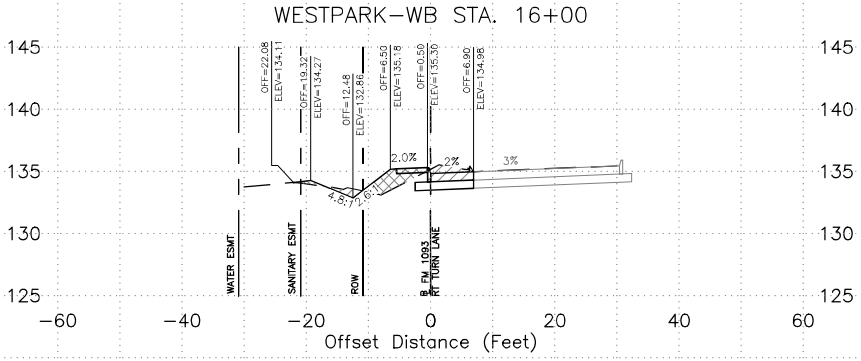
FORT BEND COUNTY
ENGINEERING DEPARTMENT

PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)

CROSS SECTIONS
SHEET 1 OF 2

PROJECT NUMBER
20318x
DRAWING SCALE
V: 1"=10' H: 1"=20'
SHEET NO. 72 OF 73

THE STATE OF TEXAS
FORT BEND COUNTY



Station	Cross Sectional Areas		Average Cross Sectional Areas		Distance Between Stations	Volumes	
	Total Roadway Excavation [SF]	Embankment Area [SF]	Average Total Roadway Excavation [SF]	Average Embankment Area [SF]	Distance Between Stations [FT]	ROADWAY CUT [CY]	ROADWAY EMBANKMENT [CY]
	X	F	AX	AF	D	VX	VF
FM1093 RIGHT TURN LANE							
013+00	22.89	23.76					
			26.01	27.64	100	96	102
014+00	29.12	31.51					
			27.13	22.98	100	100	85
015+00	25.13	14.44					
			22.49	18.44	100	83	68
016+00	19.84	22.43					
TOTAL EARTHWORK FM1093 RIGHT TURN LANE						280	256

ROADWAY EXCAVATION SUMMARY:

ROADWAY CUT = 280 CY
ROADWAY FILL = 256 CY

ASSUMPTIONS:
1. ASSUMING EXCESS OF 20CY OF CUT AT INTERSECTION. SO ADDITIONAL CUT VOLUME = 20CY.

TOTAL ROADWAY CUT = 300 CY
TOTAL ROADWAY FILL = 256 CY

NET EXTRA MATERIAL ON SITE = 44 CY.
USE EXISTING MATERIAL ON SITE FOR FILL AREAS.

THEREFORE, TOTAL ROADWAY EXCAVATION PAY ITEM = 44
BASED ON ROADWAY EXCAVATION TABLE, EXTRA MATERIAL TO HAUL OFF-SITE = 44 CY.

0 10 20
0 5 10
SCALE: 1" = 20'-0" (HORZ.)
1" = 10'-0" (VERT.)

LEGEND:

NOTE:

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FORT BEND COUNTY
ENGINEERING DEPARTMENT

PRECINCT 1
LIBRARY ACCESS ROAD
(PHASE 4)

CROSS SECTIONS
SHEET 2 OF 2

PROJECT NUMBER
20318x
DRAWING SCALE
V: 1"=10' H: 1"=20'
SHEET NO. 73 OF 73