CITY OF ALAMO
REQUEST FOR SEALED BIDS (RE-BID)
(RFB#2024-12-12)

The City of Alamo is soliciting sealed Bids for the following:

City of Alamo Signage Project at the Intersection of FM 907 and I.H. 2

Sealed bids addressed to **Robert L. Salinas, City Manager, at 420 N. Tower Rd., Alamo, Texas 78516**. City of Alamo normal business days are Monday through Friday between the hours of 8:00 a.m. to 5:00 p.m. and shall be closed on recognized holidays.

RFB'S will be received until **3:00 p.m. Central Time**, on **Thursday, December 12, 2024**, shortly thereafter all submitted RFB'S will be gathered and taken to the City's Conference Room, to be publicly opened and read aloud. Any RFB received after the closing time will not be accepted and will be returned to the submitter unopened. It is the responsibility of the submitter to see that any RFB submitted shall have sufficient time to be received by the City prior to the RFB opening date and time. The receiving time at the City Hall Front Desk will be the governing time for acceptability of the RFB's. RFB's will not be accepted by telephone or facsimile machine. All RFB'S must bear original signatures and figures.

The City of Alamo reserves the right to accept or reject any and all bids and to accept the bid to be the best and most advantageous to the City and to hold bids for a period of forty-five (45) days from the date of the bid opening without taking action for the purpose of reviewing the bids and investigation of bidders' qualifications prior to award. Bids submitted past the aforementioned date and time will not be accepted.

A **Pre-Bid Conference** will be held at City Hall for the City of Alamo located **at 420 N Tower RD, Alamo, TX 78516 at 10:30 am on Thursday, December 5, 2024.**

VENDOR'S NOTICE OF INTENT TO SUBMIT A BID

If you intend to submit a bid for the Signage Project with the City of Alamo as outlined in the specifications, please indicate your intention by signing, dating, and returning this form to the fax or email below so that you may receive any addendums to the specifications should the need arise.

Adela Perez

Purchasing Agent

City of Alamo

Purchasing Department

420 N. Tower Road

Alamo, Texas 78516

Phone:(956) 787-0006, ext. 141

Fax:(956) 283-8855

Email:aperez@alamotexas.org

Name: _____ Signature: _____

(print)

Title: _____ Company/Agency: _____

Mailing

Address: _____ City/State/Zip: _____

Phone: _____ Fax: _____

Email address: _____

STATE OF TEXAS
CITY OF ALAMO

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

PROJECT NO.: CSJ: 0039-03-XXX

NET LENGTH OF PROJECT = .2 MILES

HIDALGO COUNTY

INTERSTATE HIGHWAY IH 2

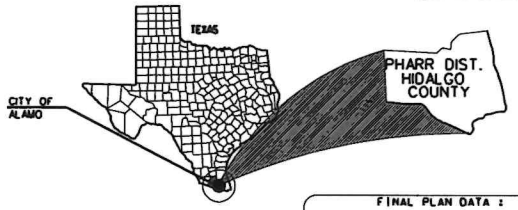
LIMITS: AT INTERSECTION OF FM 907 AND IH 2 INTERCHANGE

AT THE INTERSECTION OF FM 907 AND IH 2 WITHIN THE CITY OF ALAMO, TEXAS
CONSTRUCTION OF LANDSCAPE IMPROVEMENTS CONSISTING OF CITY LOGO, VAGETATION PLANTINGS WITH DRIP IRRIGATION

STATE AID PROJECT NO.		SHEET NO.
		1

STATE	STATE DIST.NO.	COUNTY
TEXAS	21	HIDALGO

CONT.	SECT.	JOB	HIGHWAY NO.
0039	03	XXX	IH 2



IH 2 & FM 907 CITY LOGO, LANDSCAPE AND IRRIGATION IMPROVEMENTS
CSJ 0039-03-XXX

COUNTY HIDALGO PROJ. NO. CSJ:0039-03-XXX
HWY. NO. IH 2 LETTING DATE 21 OCT 2024
DATE ACCEPTED

INDEX OF SHEETS

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SUMMARY OF ESTIMATED QUANTITIES	SHEET NO. 2
CONTRACT TIME LINE	SHEET NO. 3
GENERAL NOTES	SHEET NO. 4-4A
LANDSCAPE LAYOUT SHEETS	SHEET NO. 5-9
PLANTING AND ESTABLISHMENT SHEETS	SHEET NO. 9-13
IRRIGATION LAYOUTS	SHEET NO. 14-15
LANDSCAPE IRRIGATION DETAIL	SHEET NO. 16-17
CITY LOGO MOUNTING LAYOUT AND DETAILS	SHEET NO. 18-20
BARRICADE AND CONSTRUCTION STANDARDS	SHEET NO. 21-32
TCP (2-12)13 2-6	SHEET NO. 33-36
TCP WZ (TD)- 13	SHEET NO. 37
EPIC SHEET	SHEET NO. 38-39
SW3P SHEET	SHEET NO. 40
TEMP. EROSION CONTROL LOG	SHEET NO. 41

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

ARON R. BADIOZZAMANI P.E. 98862

DATE

STATE OF TEXAS
ARON R. BADIOZZAMANI
98862
LICENSED
PROFESSIONAL ENGINEER

THE TEXAS BOARD OF ARCHITECTURAL EXAMINERS, P.O. BOX 12337, AUSTIN, TEXAS 78711-2337 TELEPHONE (512) 305-8500, HAS JURISDICTION OVER COMPLAINTS REGARDING THE PROFESSIONAL PRACTICES OF PERSONS REGISTERED AS LANDSCAPE ARCHITECTS IN TEXAS.

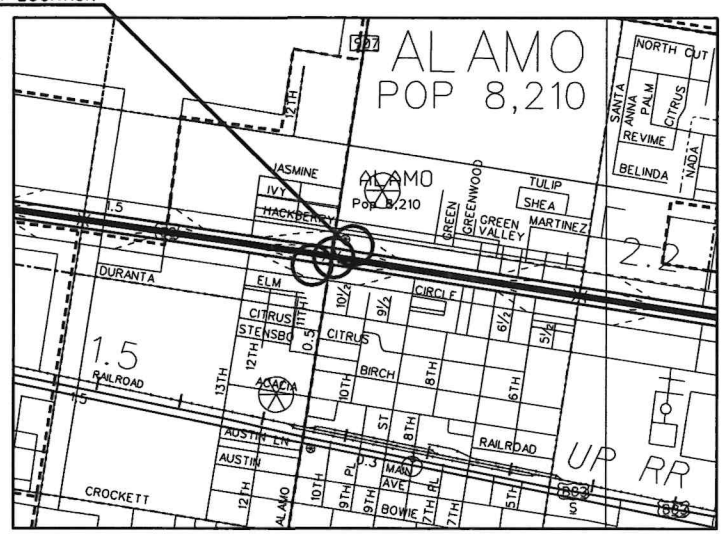
21 OCT 2024
DATE

REGISTERED LANDSCAPE ARCHITECT
STEPHEN R.W. ALVER
1774
STATE OF TEXAS

STANDARD SHEETS NO. 19 THRU NO. 30 HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

21 OCT 2024
DATE

PROJECT LOCATION



NO SCALE

FINAL PLAN DATA :

FINAL CONTRACT PRICE: _____
CONTRACTORS NAME: _____
CONTRACTORS ADDRESS: _____
LETTING DATE: _____
DATE WORK BEGAN: _____
DATE WORK COMPLETED: _____
DATE OF ACCEPTANCE: _____

CHANGE ORDERS & SUPP. AGREEMENTS :

LOCAL ENTITIES

CITY OF ALAMO CONCURRENCE — DATE :

NAME — TITLE

TDLR INSPECTION NOT REQUIRED

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION ON JUNE 1, 2004 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT:
REQUIRED CONTRACT PROVISIONS FOR FEDERAL - AID CONSTRUCTION CONTRACTS (FORM FHWA 1273 MAY 2012).

PROJECT DATA

DESIGN SPEED: N/A MPH

EXCEPTION: NONE

EQUATION: NONE

RAILROAD CROSSING: NONE

TEXAS DEPARTMENT OF TRANSPORTATION

RECOMMEND FOR LETTING : _____ SUBMITTED FOR LETTING : _____

DISTRICT ENGINEER — DISTRICT DESIGN SUPPORT ENGINEER

APPROVED FOR LETTING : _____ APPROVED FOR LETTING : _____

DIRECTOR, TRAFFIC OPERATIONS DIVISION — DIRECTOR, DESIGN DIVISION

SUMMARY OF LANDSCAPE ITEMS

ITEM CODE	1005	164	170	192	192	192	192	192	192	192	192	500	502	529	XXXX		
DESCRIPTIVE CODE		6005	6001	6002	6004	6005	6005	6006	6045	6045	6063	6001	6001	6033	XXXX		
SHEET NO.	WASH ROCK SQ/YDS	SEEDING ERO CONT. SQ/YD	IRRIGATION SYSTEM LS	LANDSCAPE PLANTING 1 GAL EA	LANDSCAPE PLANTING 5 GAL EA	LANDSCAPE PLANTING 10 GAL EA	LANDSCAPE PLANTING 15 GAL EA	LANDSCAPE PLANTING 30 GAL EA	LANDSCAPE PLANTING 2.5 B&B EA	LANDSCAPE PLANTING 4' PALM	PLANT BED PREP. SY	MOBILIZATION LS	BARRICADES SIGN & TRAFFIC HAND. MO.	CONC. MOW STRIP (SEE DETAIL) LF	SIGN/LOGO SYSTEM EA		
5-8	224	364		34	94	12	12	4	2	4	224			209			
14-17			1														
18-20															2		
GENERAL ITEM												1	2				
TOTAL	224	364	1	34	94	12	12	4	2	4	224	1	2	209	2		

SUMMARY OF ENVIRONMENTAL CONTROL ITEMS

ITEM CODE	506	506
DESCRIPTIVE CODE	6040	6043
SHEET NO.	BIODEGD ERO CONT. LOG 8" INSTL LF	BIODEGD ERO CONT. LOGS REMOVE LF
GENERAL ITEM	550	550
TOTAL	46	46

REGISTERED LANDSCAPE ARCHITECT
STEPHEN P. WALKER
1774
STATE OF TEXAS

Stephen P. Walker 21 Oct 2024

STEPHEN P. WALKER L.A. DATE

THE TEXAS BOARD OF ARCHITECTURAL EXAMINERS, P.O. BOX 12337, AUSTIN, TEXAS 78711-2337 TELEPHONE (512) 305-9000, HAS JURISDICTION OVER COMPLAINTS REGARDING THE PROFESSIONAL PRACTICES OF PERSONS REGISTERED AS LANDSCAPE ARCHITECTS IN TEXAS.

LANDSCAPE SUMMARY OF ESTIMATED QUANTITIES

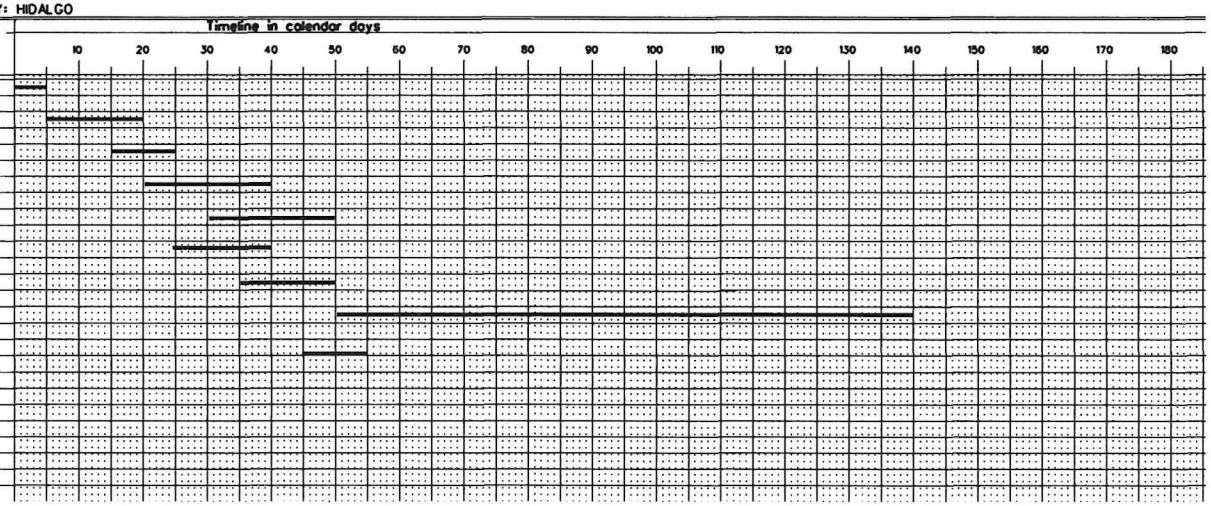
SHEET 1 OF 1

STATE PROJECT NO.						SHEET NO.
						2
STATE	DIST.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
6	TEXAS	PHARR	HIDALGO	0039	03	XXX	IH 2

CONTRACT TIME ESTIMATE WORKSHEET

Highway: IH 2 / 907 CITY OF ALAMO LANDSCAPE IMPROVEMENT PROJECT
Project: XXXXX
Date: OCT 2024
C-S-J: 0039-03-XXX
COUNTY: HIDALGO

ID No.	Work Item (Unit)	Quantity	Duration days	Start Day	Finish Day
1	ITEM 500 / 502 MOBILIZATION & SIGNS SWPPP	1	5	1	5
2	ITEM 529 CONC. MOW STRIP L/FT	209	15	5	20
3	ITEM 192 PLANT BED PREPARATON O/YDS	244	10	15	25
4	ITEM 170 IRRIGATION SYSTEM L/S	1	20	20	40
5	ITEM XXXXX SIGNAGE EACH	2	20	30	50
6	ITEM 192 LANDSCAPE PLANTING EACH	162	15	5	25
7	ITEM 302 AGGREG. SURFACE TREATMENT SQ/YDS	224	15	35	50
8	90 PLANT MAINTENANCE EACH	1	90	50	140
9	CLEAN UP EACH	1	10	45	55



REGISTERED LANDSCAPE ARCHITECT
STEPHEN P. WALKER
1774
STATE OF TEXAS

Stephen P. Walker 21 Oct 2024
STEPHEN P. WALKER L.A. DATE

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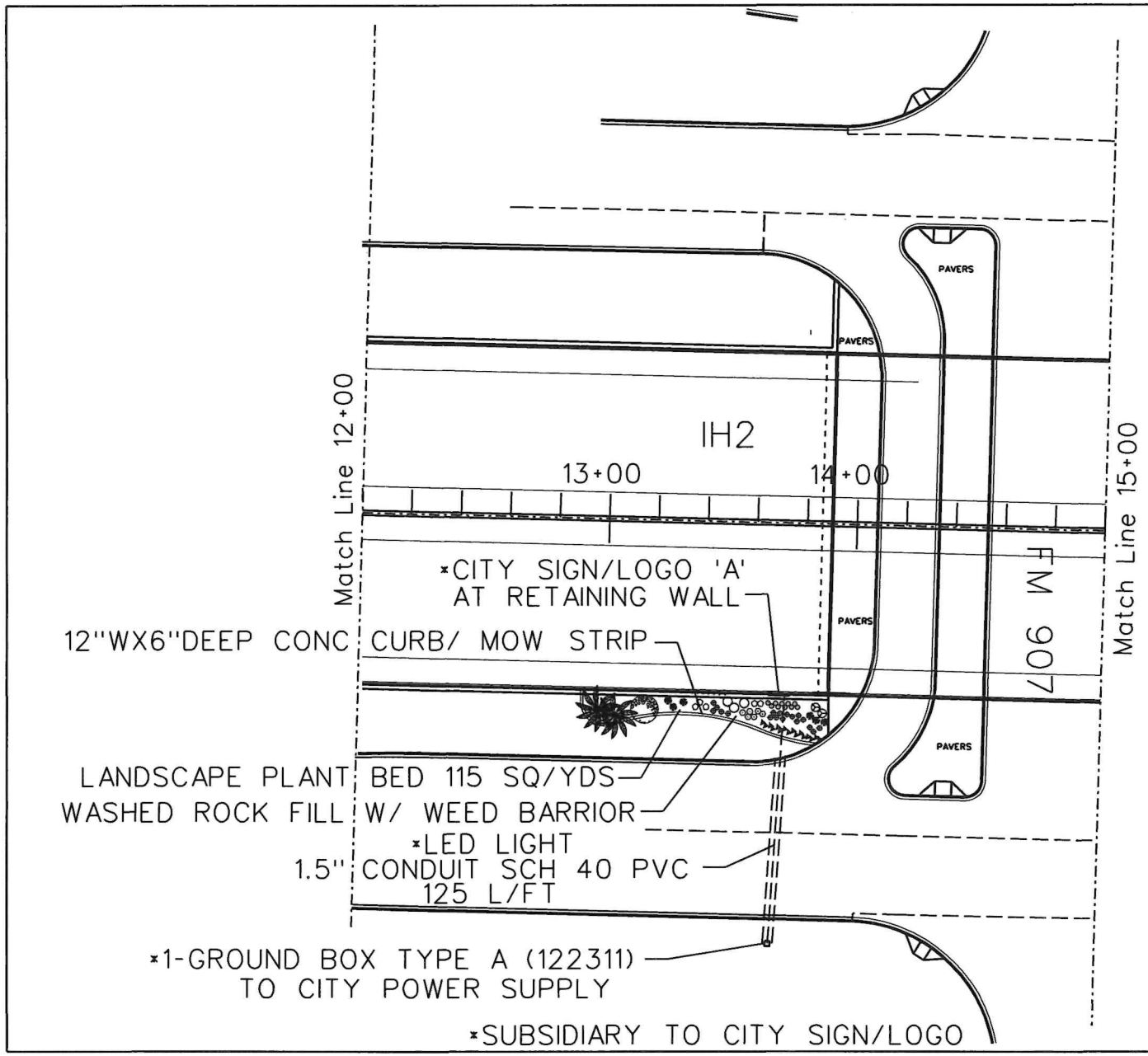
CONTRACT TIME LINE

SHEET 1 OF 1

STATE PROJECT NO.						SHEET NO.
						3
STATE	DIST.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
6	TEXAS	PHARR	HIDALGO	0039	03	XXX	IH 2



REGISTERED LANDSCAPE ARCHITECT
STEPHEN P. WALKER
1774
STATE OF TEXAS

21 Oct 2024

THE TEXAS BOARD OF ARCHITECTURAL EXAMINERS,
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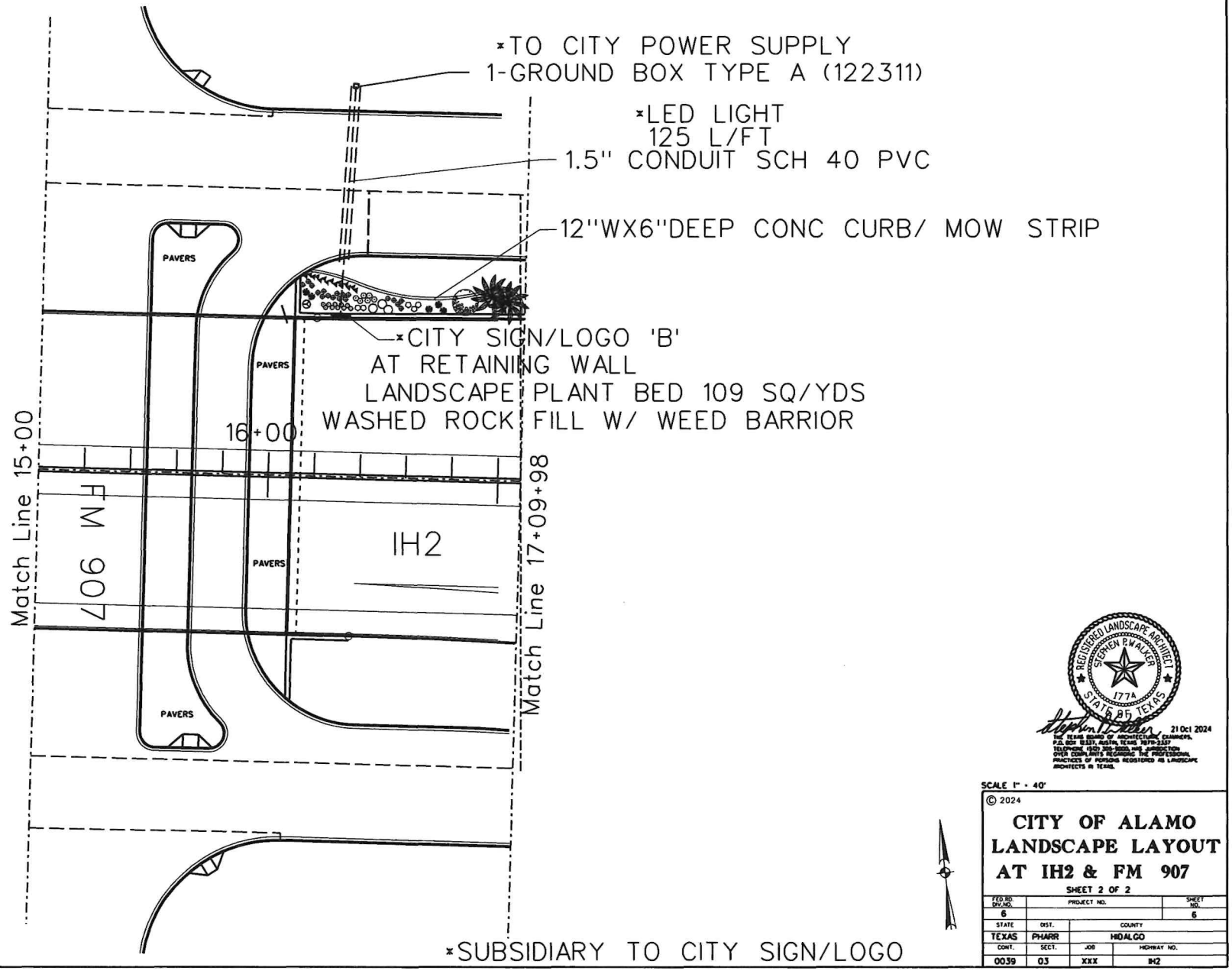
TELEPHONE (512) 305-9000, HAS JURISDICTION
OVER COMPLAINTS REGARDING THE PROFESSIONAL
PRACTICES OF PERSONS REGISTERED AS LANDSCAPE
ARCHITECTS IN TEXAS.

SCALE 1" = 40'

CITY OF ALAMO
LANDSCAPE LAYOUT
AT IH2 & FM 907

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			5
STATE	DIST.	COUNTY	
TEXAS	PHARR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
0039	03	XXX	IH2



REGISTERED LANDSCAPE ARCHITECT
STEPHEN P. WALKER
1774
STATE OF TEXAS

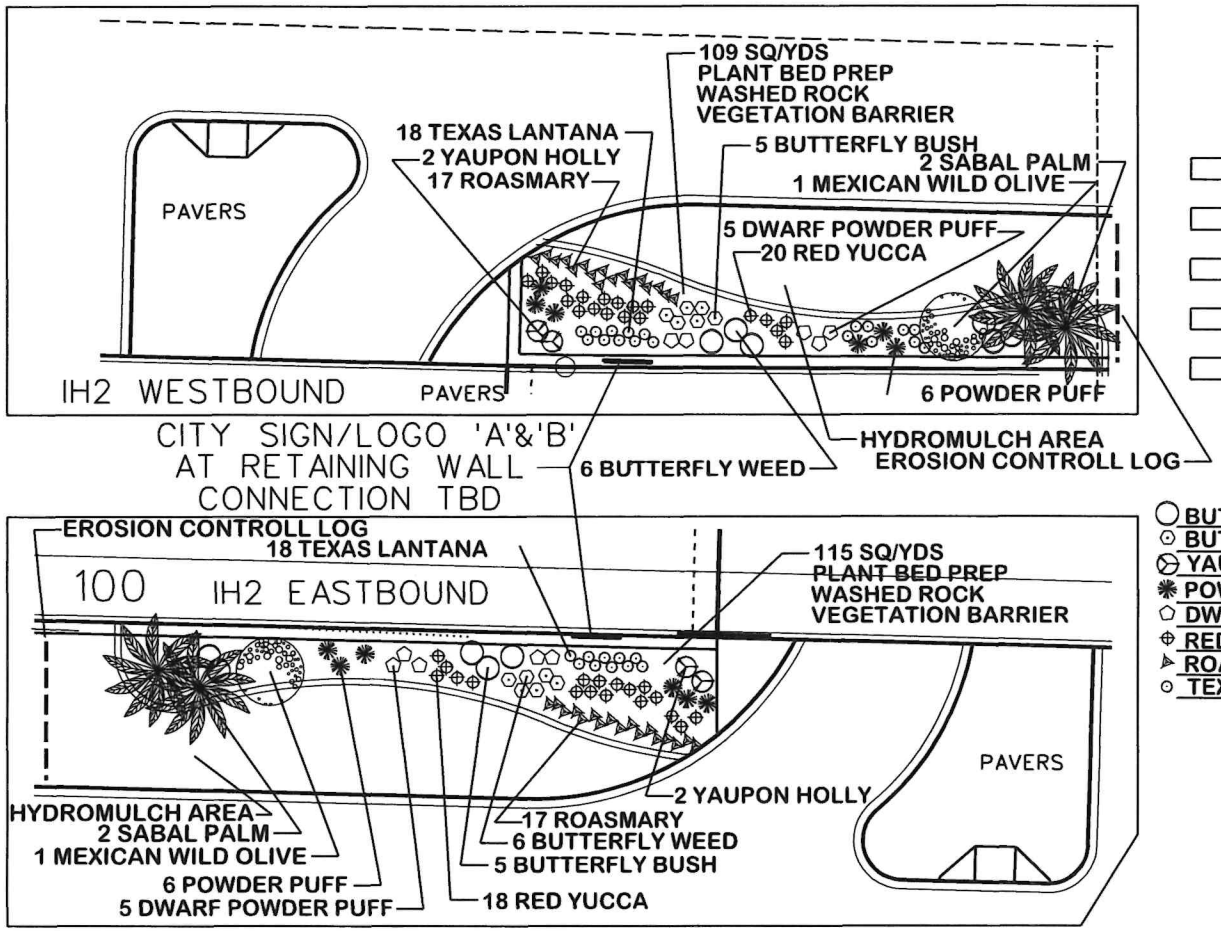
21 Oct 2024

SCALE 1" = 40'

CITY OF ALAMO
LANDSCAPE LAYOUT
AT IH2 & FM 907

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			6
STATE	DIST.	COUNTY	
TEXAS	PHARR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
0039	03	XXX	IH2



ITEM 192 LANDSCAPE PLANTING

COMMON NAME	SCIENTIFIC NAME	
SABAL PALM	SABAL TEXANA	4
WILD OLIVE	CORDIA BOISSERI	2
YAUPON HOLLY	ILEX VOMITORIA	4
POWDER PUFF	CALLIANDRA EMARGINATA	12
ROASMARY	DESERT OFFICINALLS 'ARP'	34
DWARF POWDER PUFF	CALLIANDRA EMARGINATA	10
BUTTERFLY BUSH	BUDDLEIA SP. (LAVENDER)	10
BUTTERFLY WEED	ASCLEPIAS TUBEROSA	12
TEXAS RED YUCCA	HESPERALOE PARVIFLORA	38
TEXAS LANTANA	LANTANA HORRIDA	36

ITEM 1005 WASHED ROCK.		SQ/YD
WASHED ROCK	1"-1.5" ROCK*	224

ITEM 1005 VEGETATION BARRIER		SQ/YD
VEGETATION BARRIER		224

ITEM 192 PLANT BED PREP.		SQ/YD
PLANT BED PREP. AT PLANT BEDS		224

ITEM 164 SEEDING FOR EROSION CONTROL		SQ/YD
SEEDING FOR EROSION CONTROL		364

ITEM 506 SEEDING FOR EROSION CONTROL		L/FT
EROSION CONTROL LOG		46

— — — — EROSION CONTROL LOG LIMITS

* 1"-1.5" ROCK - COLOR TO BE APPROVED

PLANT LEGEND

- BUTTERFLY BUSH
- BUTTERFLY WEED
- YAUPON HOLLY
- POWDER PUFF
- DWARF POWDER PUFF
- RED YUCCA
- ROASMARY
- TEXAS LANTANA

SABAL PALM

MEXICAN WILD OLIVE

SCALE 1" = 20'

REGISTERED LANDSCAPE ARCHITECT
STEPHEN R. WALKER
1774
STATE OF TEXAS

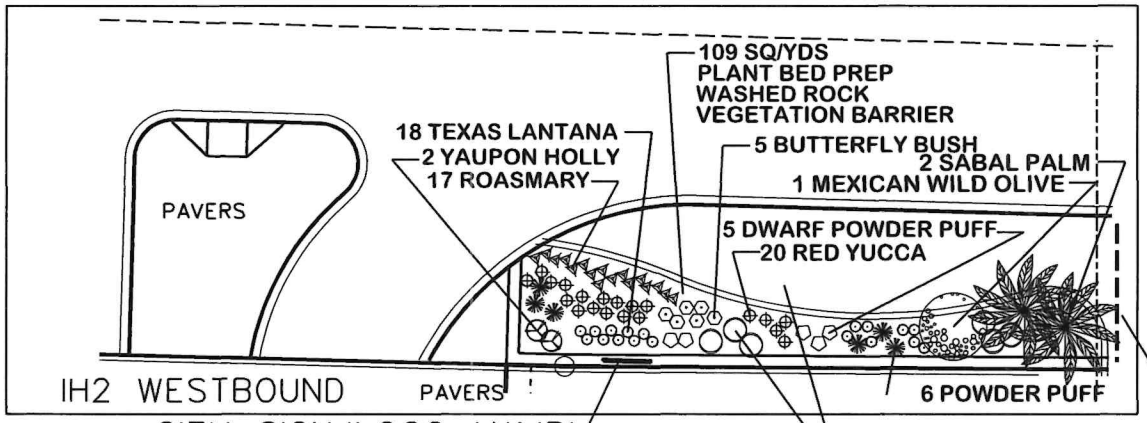
21 Oct 2024

THE TEXAS BOARD OF ARCHITECTURAL EXAMINERS,
P.O. BOX 12337, AUSTIN, TEXAS 78711-2337
TELEPHONE (512) 305-9000, FAX JURISDICTION
OVER COMPLAINTS REGARDING THE PROFESSIONAL
PRACTICES OF PERSONS REGISTERED AS LANDSCAPE
ARCHITECTS IN TEXAS.

CITY OF ALAMO
LANDSCAPE PLANTING
AT IH2 & FM 907

SHEET 2 OF 2

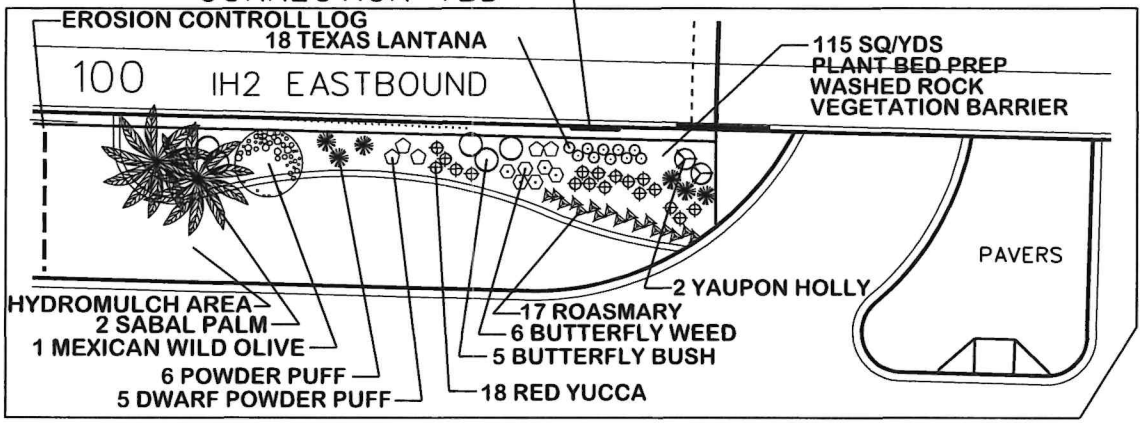
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			8
STATE	DIST.	COUNTY	
TEXAS	PHARR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
0039	03	XXX	IH2



CITY SIGN/LOGO 'A'&'B'
AT RETAINING WALL
CONNECTION TBD

6 BUTTERFLY WEED

HYDROMULCH AREA
EROSION CONTROLL LOG



ITEM 192 LANDSCAPE PLANTING

COMMON NAME	SCIENTIFIC NAME	
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BUTTERFLY WEED	ASCLEPIAS TUBEROSA	12
TEXAS RED YUCCA	HESPERALOE PARVIFLORA	38
TEXAS LANTANA	LANTANA HORRIDA	36

ITEM 1005 WASHED ROCK.		SQ/YD
WASHED ROCK	1"-1.5" ROCK•	224

ITEM 1005 VEGETATION BARRIER		SQ/YD
VEGETATION BARRIER		224

ITEM 192 PLANT BED PREP.		SQ/YD
PLANT BED PREP. AT PLANT BEDS		224

ITEM 164 SEEDING FOR EROSION CONTROL		SQ/YD
SEEDING FOR EROSION CONTROL		364

ITEM 506 SEEDING FOR EROSION CONTROL		L/FT
EROSION CONTROL LOG		46

EROSION CONTROL LOG LIMITS

• 1"-1.5" ROCK - COLOR TO BE APPROVED

PLANT LEGEND

- BUTTERFLY BUSH
- BUTTERFLY WEED
- YAUPON HOLLY
- POWDER PUFF
- DWARF POWDER PUFF
- RED YUCCA
- ROASMARY
- TEXAS LANTANA

SABAL PALM

MEXICAN WILD OLIVE

SCALE 1" = 20'

REGISTERED LANDSCAPE ARCHITECT
STEPHEN P. WALKER
1774
STATE OF TEXAS

21 Oct 2024

THE TEXAS BOARD OF ARCHITECTURAL EXAMINERS,
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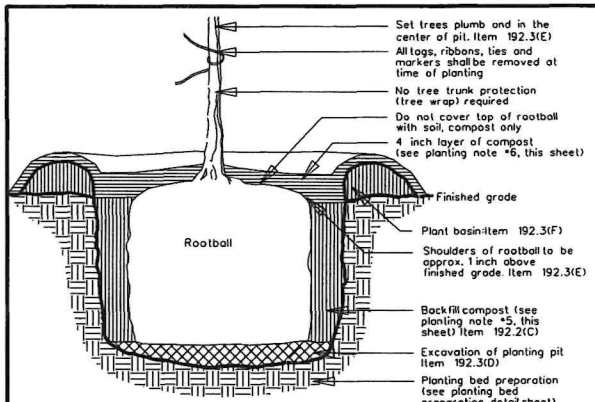
ARCHITECTS IN TEXAS.

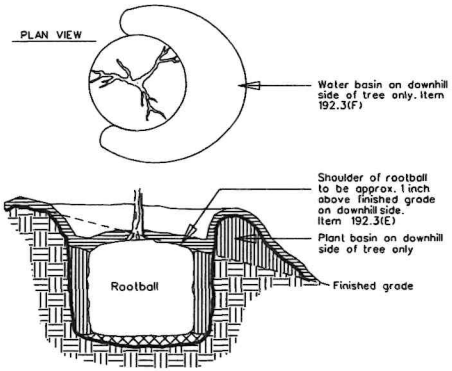
CITY OF ALAMO
LANDSCAPE PLANTING
AT IH2 & FM 907

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			8
STATE	DIST.	COUNTY	
TEXAS	PHARR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
0039	03	XXX	IH2



TREE PLANTING



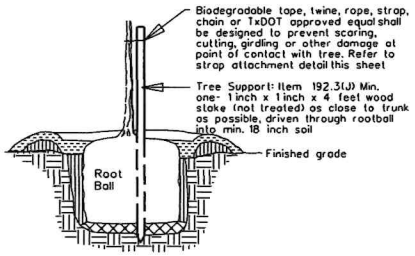
TREE PLANTING ON SLOPE

VEGETATIVE WATERING SCHEDULE FOR SHRUBS

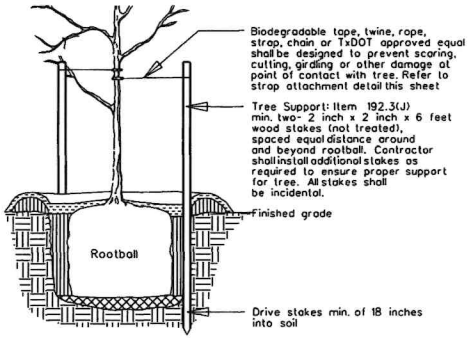
PHASE	ITEM DESCRIPTION	FREQUENCY		RATE
Construction/installation operations, Item 192.3(G)	Watering will be provided by the irrigation system. If the automatic system is unavailable, water shall be provided by other means to meet watering requirements at the contractor's expense.	JANUARY through DECEMBER	Same day as planting and 2 times per week with 2 days minimum between waterings	2 times plant container gallon size per plant
90-day Establishment period, Item 192.3(D)(1)				

NOTES:
Rate and frequency may be adjusted to meet site conditions and weather as approved or directed by Engineer.
Refer to Item 168.2 for water quality information.

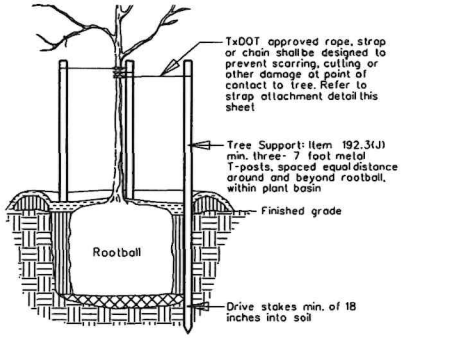
Plants which will have an automatic irrigation system shall not be installed until appropriate irrigation section valve assembly and quick coupler devices are operable. At time of installation all plants shall be watered-in manually the same day as planting at a rate and frequency shown above. Irrigation emission device shall be installed immediately after plant installation.
Water delivered through irrigation system shall be paid according to general irrigation notes on "Irrigation Details Sheet(s).
Stressed plant material will be rejected according to Item 192.2(B) and replaced at Contractor's expense.



TREE SUPPORT - 1 GALLON



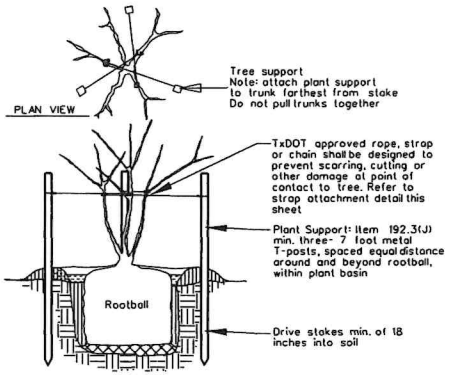
TREE SUPPORT - 3 TO 15 GALLON



TREE SUPPORT - LARGER THAN 15 GALLON

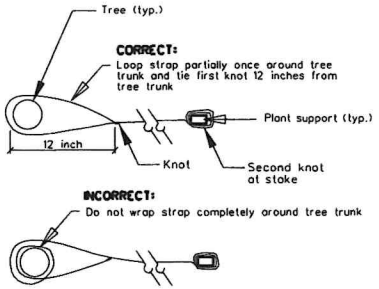
PLANTING NOTES:

1. Contractor shall be responsible for referencing Item 192 of the Texas Standard Specifications for Construction and Maintenance of Highways Streets and Bridges 2004 for specifications dimensions, volumes and measurements that have been modified or not shown
2. Rejection of plants shall be in accordance with Item 192.2(B)
3. Contractor shall verify that all planting meets the following clear zone minimum standards unless specified on plans: trees: 30 feet from edge of travel lane unless protected by a barrier, shrubs: 15 feet from edge of travel lane unless protected by a barrier, vines and groundcover: no min. distance. If protected by barrier, the engineer shall determine the distance that shall be considered minimum. Roadway edges shown on the plans are to be considered the edge of travel lane unless labeled otherwise
4. All locations of trees, shrubs and beds shall be staked in the field by the Contractor in accordance with Item 192.3(C)
5. Backfill shall be of the following: 70% existing soil removed from the plant pit, 30% general use compost as described in Special Specification Item 161 Compost and shall be incidental
6. Compost for surface application for tree planting shall be general use compost as described in Special Specification Item 161 Compost Compost for surface application for tree planting shall be incidental and not paid for separately. Areas with compost for surface application shall be maintained in accordance with Item 192.3(D)(3)

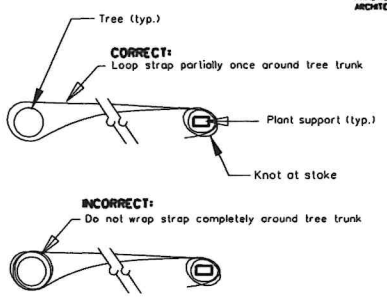


TREE SUPPORT - MULTI-TRUNKED

For 10-65 gallon trees only



STRAP ATTACHMENT - 10 TO 65 GALLON



STRAP ATTACHMENT - 1 TO 7 GALLON

Stephen P. Walker 21 Oct 2024

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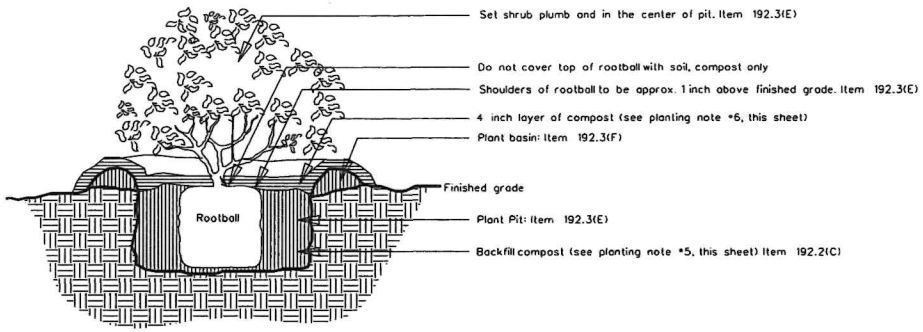
REGISTERED LANDSCAPE ARCHITECT STEPHEN P. WALKER 1774 STATE OF TEXAS

PLANTING AND ESTABLISHMENT SHEET 1 OF 5

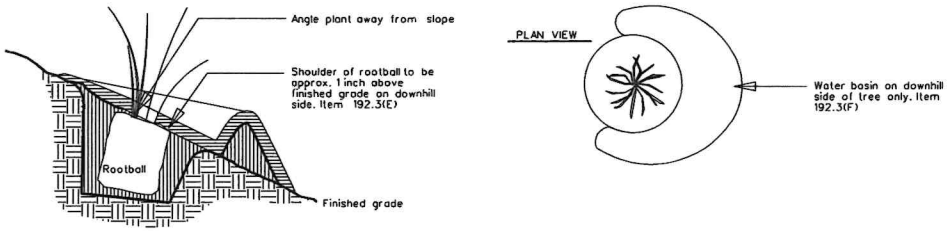
Details not to scale

TREE

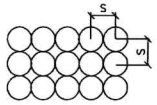
FILE:	FED DIV	STATE	STATE AID PROJECT NUMBER			SHEET
	6	TEXAS	C 39-17-XXX			9
ORIGINAL:	DIST	COUNTY	CONTROL	SECT	JOB	HIGHWAY
		HIDALGO	0039	17	XXX	IH2



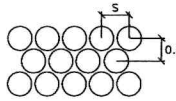
SHRUB AND VINE PLANTING



SHRUB AND VINE PLANTING ON SLOPES

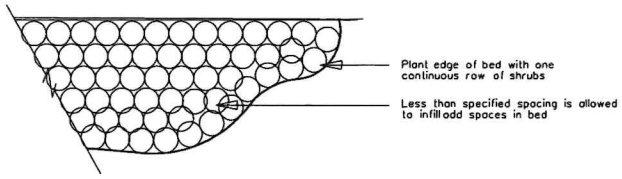


SQUARE SPACING



TRIANGULAR SPACING

S- Spacing as indicated on the plans. Square or triangular spacing will be shown by the placement of the plants on the drawing. The spacing will be called out in the plant label



SHRUB AND VINE SPACING IN MASS PLANTING BEDS

VEGETATIVE WATERING SCHEDULE FOR TREES

PHASE	ITEM DESCRIPTION	FREQUENCY	RATE
Construction/installation operations. Item 192.3(G) 90-day Establishment period, Item 192.3(O)(1)	Watering will be provided by the irrigation system. If the automatic system is unavailable, water shall be provided by other means to meet watering requirements at the contractor's expense.	JANUARY through DECEMBER: Same day as planting and 2 times per week with 2 days minimum between waterings	2 times plant container gallon size per plant

NOTES:
Rate and frequency may be adjusted to meet site conditions and weather as approved or directed by Engineer.
Refer to Item 168.2 for water quality information.

Plants which will have an automatic irrigation system shall not be installed until appropriate irrigation section valve assembly and quick coupler devices are operable. At time of installation all plants shall be watered-in manually the same day as planting at a rate and frequency shown above. Irrigation emission device shall be installed immediately after plant installation.
Water delivered through irrigation system shall be paid according to general irrigation notes on "Irrigation Details Sheet(s).
Stressed plant material will be rejected according to Item 192.2(B) and replaced at Contractor's expense.

PLANTING NOTES:

1. Contractor shall be responsible for referencing Item 192 of the Texas Standard Specifications for Construction and Maintenance of Highways Streets and Bridges 2004 for specifications dimensions volumes and measurements that have been modified or not shown
2. Rejection of plants shall be in accordance with Item 192.2(B)
3. Contractor shall verify that all planting meets the following clear zone minimum standards unless specified on plans: trees: 30 feet from edge of travel lane unless protected by a barrier, shrubs: 15 feet from edge of travel lane unless protected by a barrier, vines and groundcover: no min. distance. If protected by barrier, the Engineer shall determine the distance that shall be considered minimum. Roadway edges shown on the plans are to be considered the edge of travel lane unless labeled otherwise
4. All locations of trees, shrubs and beds shall be staked in the field by the Contractor in accordance with Item 192.3(C)
5. Backfill shall be of the following: 70% existing soil removed from the plant pit, 30% general use compost as described in Special Specification Item 161 Compost and shall be incidental
6. Compost for surface application for shrub planting shall be general use compost as described in Special Specification Item 161 Compost Compost for surface application for shrub planting shall be incidental and not paid for separately. Areas with compost for surface application shall be maintained in accordance with Item 192.3(O)(3)

REGISTERED LANDSCAPE ARCHITECT
STEPHEN P. WALKER
1774
STATE OF TEXAS

Stephen P. Walker 21 Oct 2024

THE TEXAS BOARD OF ARCHITECTURAL EXAMINERS,
P.O. BOX 12337, AUSTIN, TEXAS 78711-2337
TELEPHONE (512) 305-9000, HAS JURISDICTION OVER COMPLAINTS REGARDING THE PROFESSIONAL PRACTICES OF PERSONS REGISTERED AS LANDSCAPE ARCHITECTS IN TEXAS.

PLANTING AND ESTABLISHMENT

SHEET 2 OF 5

Details not to scale — SHRUB AND VINE

FILE:	FED DIV	STATE	STATE AID PROJECT NUMBER				SHEET
	6	TEXAS	C 39-17-XXX				10
ORIGINAL:	DST	COUNTY	CONTROL	SECT	JOB		HIGHWAY
		HIDALGO	0039	17	XXX		IH2

PLANT SPECIFICATIONS

Botanical Name	Common Name	Color	Quantity	Root Condition	Caliper	Height	Spread	Remarks
TREES								
SABAL PALM	SABAL TEXANA		4	B&B	4 TRUNK FOOT	4' MIN.	4'-5'	NURSERY-GROWN
WILD OLIVE	CORDIA BOISSERI		2	B&B	2 1/2"	6' - 8 '	3'-4'	NURSERY-GROWN
YAUPON HOLLY	ILEX VOMITORIA		4	30 GALLON CONT.	2 "	6' - 8 '	3'-4'	NURSERY-GROWN
SHRUBS								
POWDER PUFF	CALLIANDRA EMARGINATA		12	10 GAL.		MIN. 3'	MIN. 2'	NURSERY-GROWN
BUTTERFLY WEED	BUDDLEIA SP. (LAVENDER)		12	15 GAL.		MIN. 3'	MIN. 2'	NURSERY-GROWN
DWARF POWDER PUFF	CALLIANDRA EMARGINATA		10	5 GAL.		MIN. 12"	MIN. 12"	NURSERY-GROWN
BUTTERFLY BUSH	BUDDLEIA SP. (LAVENDER)		10	5 GAL.		MIN. 2'	MIN. 2'	NURSERY-GROWN
TEXAS RED YUCCA	HESPERALOE PARVIFLORA		38	5 GAL.		MIN. 2'	MIN. 2'	NURSERY-GROWN
ROASMARY	DESERT OFFICINALLS 'ARP'		34	1 GAL.		MIN. 12'	MIN. 12"	NURSERY-GROWN
TEXAS LANTANA	LANTANA HORRIDA		36	5 GAL.		MIN. 2'	MIN. 2'	NURSERY-GROWN
VINE/GROUND COVER								

PLANT SPECIFICATIONS:

1. Contractor shall be responsible for referencing Item 192 of the Texas Standard Specifications for Construction Maintenance of Highways Streets and Bridges 2014 for specifications dimensions volumes and measurements that have been modified or not shown.
2. Rejection of plants shall be in accordance with Item 192.2(8).
3. The contractor shall be responsible for the safe transportation of plants to the project site and their condition upon arrival.
4. Plant materials shall not be stored on hard surface or left exposed to the sun. Protect the root balls and water regularly until planting. If plants are left in storage over the weekend or holiday, a means of periodically watering and inspection container moisture shall be provided.
5. All plants shall be hardy, symmetrical, tight knit, and so trained or favored in development and appearence as to be superior in form, number of branches, and compactness. Plants shall be sound, healthy and vigorous, well branched, and densely foliated when in leaf, and shall have healthy, well developed root systems.
6. All plants shall be nursery-grown in containers unless otherwise shown on plans.

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Stephen P. Walker 21 Oct 2024

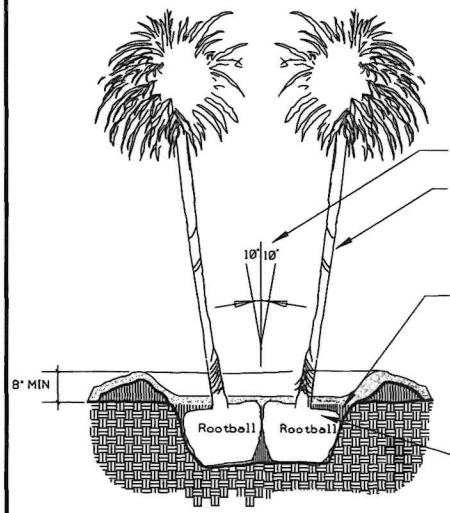
STEPHEN P. WALKER L.A. DATE

PLANTING AND ESTABLISHMENT
PLANT SPECIFICATIONS

SHEET 5 OF 5

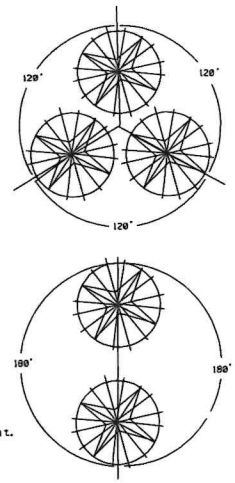
FILE:	DIST	COUNTY	CONTROL	SECT	JOB	SHEET NO.
ORIGINAL:	21	HIDALGO	0029	03	1115	11

FED. DIV.	STATE	PROJECT NUMBER	HIGHWAY
6	TEXAS		LM. 2



PALM TREE PLANTING IN CLUSTERS

NOT TO SCALE



PALM TREE PLANTING (PLAN VIEW) IN CLUSTERS

NOT TO SCALE

VEGETATIVE WATERING SCHEDULE FOR PALMS

PHASE	ITEM DESCRIPTION	FREQUENCY	RATE
Construction/installation operations, Item 192.3(C)	Watering will be provided by the irrigation system. If the automatic system is unavailable, water shall be provided by other means to meet watering requirements at the contractor's expense.	JANUARY through DECEMBER: Same day as planting and 2 times per week with 2 days minimum between waterings	2 times plant container gallon size per plant
90-day Establishment period, Item 192.3(D)(1)			
or as required in Item 161 'Transplanting Palm by Tree Spade' (7) (c). IF APPLICABLE TO THIS PROJECT)			or 60 gallons per palm

NOTES:

Rate and frequency may be adjusted to meet site conditions and weather as approved or directed by Engineer.
Refer to Item 168.2 for water quality information.

Plants which will have an automatic irrigation system shall not be installed until appropriate irrigation section valve assembly and quick coupler devices are operable. At time of installation all plants shall be watered-in manually the same day as planting at a rate and frequency shown above. Irrigation emission device shall be installed immediately after plant installation.
Water delivered through irrigation system shall be paid according to general irrigation notes on "Irrigation Details Sheet(s).
Stressed plant material will be rejected according to Item 192.2(B) and replaced at Contractor's expense.

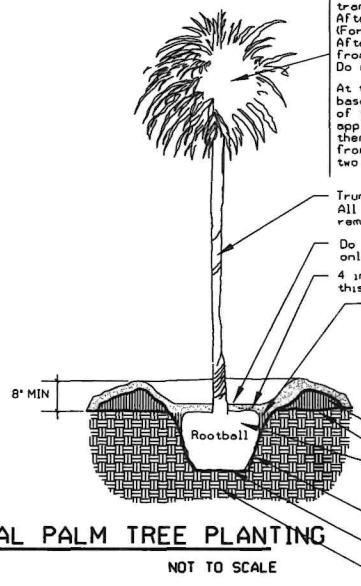
REGISTERED LANDSCAPE ARCHITECT
STEPHEN P. WALKER
1774
STATE OF TEXAS

Stephen P. Walker 21 Oct 2024

THE TEXAS BOARD OF ARCHITECTURE EXAMINERS, P.O. BOX 12337, AUSTIN, TEXAS 78711-2337 TELEPHONE (512) 305-8000, HAS JURISDICTION OVER COMPLAINTS REGARDING THE PROFESSIONAL PRACTICES OF PERSONS REGISTERED AS LANDSCAPE ARCHITECTS IN TEXAS.

PLANTING NOTES:

1. Contractor shall be responsible for referencing Item 192 of the Texas Standard Specifications for Construction and Maintenance of Highways Streets and Bridges 2004 for specifications dimensions volumns and measurements that have been modified or not shown.
2. Rejection of plants shall be in accordance with Item 192.2(B).
3. Contractor shall verify that all planting meets the following clear zone minimum standards unless specified by Engineers: trees: 30 feet from edge of traveled lane unless protected by a barrier, shrubs: 15 feet from edge of travellane unless protected by a barrier, vines/groundcover: no min. distance. If protected by barrier, the Engineer shall determine the distance that shall be considered minimum. Roadway edges shown on the plans are to be considered the edge of travellane unless labeled otherwise.
4. All locations of trees, shrubs and beds shall be staked in the field by the Contractor in accordance with Item 192.3(C).
5. Backfill shall be of the following: 70% existing soil removed from the plant pit and 15% compost for erosion control as described in Special Specification Item 161 Compost and 15% rock limited to 1 inch to 1-1/2 inch, both shall be incidental. Work backfill equally around the rootball in 6 inch lifts to eliminate air pockets. Soak each lift up to finish grade using a liquid form of vitamins and hormones specifically for palms diluted with water at a ratio recommended by manufacturer.
6. Fertilizer to be NPK-12-4-12 with min. 2% water soluble magnesium, min. 6% sulfur, min. 2% iron, and min. 2% total manganese.
7. All chemicals shall be approved for use on palms.
8. Compost for surface application for palm planting shall be general use compost as described in Special Specification Item 1058 Compost. Compost for surface application for palm planting shall be incidental and not paid for separately. Areas with compost for surface application shall be maintained in accordance with Item 192.3(D)(3)



Set tree plumb and in center of pit, top 1/3 of rootball should be above finished grade

Backfill and basin to be as provided in 'Typical Palm Planting Detail'.

Bundle foliage tightly with jute twine prior to transport. At time of planting loosen bundle. After 60 days, untie and remove jute twine. (For Sables, untie and remove jute twine after 90 days.) After untying, prune off damaged fronds 6 inches from base of stem as approved by the engineer. Do not use chainsaws to prune

At the time of planting, apply an aluminum based foliar fungicide to tops and bottoms of fronds and nut. After fungicide has dried, apply insecticide to the fronds and trunk and then apply antistress/antitranspirants to the fronds and trunk. Repeat application after two weeks from planting.

Trunks shall not be skinned, boots shall remain All tags, ribbons, ties and markers shall be removed at time of planting

Do not cover top of rootball with soil, mulch only

4 inch layer of mulch (see planting note #7, this sheet)

Backfill area between rootball and sides of planting pit. Backfill will consist of 70% backfill (see planting note #6, this sheet) and 30% rock limited to 1 inch to 1-1/2 inch. Work backfill equally around the ball in 6 inch lifts. Soak in each lift up to finished grade using a liquid form of vitamin and hormones specifically for palms diluted with water at a ratio recommended by manufacturer. (Item 192.2(C) & 192.3 (E)

Plant basin: Item 192.3(F)

Finished grade

Rootball size to be min. 12 inches from the edge of trunk

Apply soil fungicide and slow release fertilizer to rootball

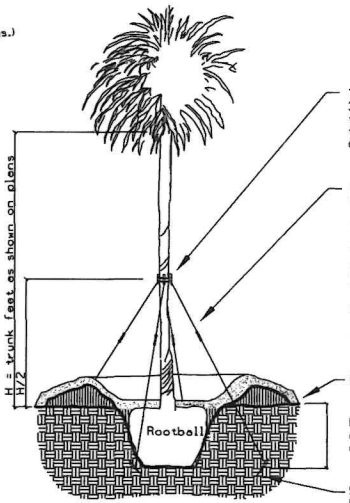
Pit to be 2/3 depth and same shape of rootball Item 192.3(E)

Compacted backfill to level tree and to establish proper rootball elevation

Undisturbed soil

TYPICAL PALM TREE PLANTING

NOT TO SCALE



TxDOT approved support collar 3 - 2"X4"X12" nailer blocks wrapped to trunk with 2 nylon straps designed to prevent scaring, cutting or other damage at point of contact to tree

Plant Support: Item 192.3(J)
Greater than 10 foot tree: Four 1/4 inch galvanized steel aircraft cables with turnbuckle, eye and eye, zinc plated, 3/8 inch thread diameter with 6 inch take-up, spaced equal distance around and beyond rootball. Less than 18 foot tree: three 1/8 inch galvanized steel aircraft cables with turnbuckle, eye and eye, zinc plated, 3/8 inch thread diameter with 3 inch take-up, spaced equal distance around and beyond rootball

Finished grade

Min. 36 inch when manufacturer recomendation is less

Steel anchor as specified by guying manufacturer for tree height

TYPICAL PALM TREE SUPPORT

NOT TO SCALE

PLANTING AND ESTABLISHMENT SHEET 3 OF 5

Details not to scale — PALM TREE

FILE:	FED RDY	STATE	STATE AID PROJECT NUMBER	SHEET
	6	TEXAS	C 39-17-XXX	12
ORIGINAL:	DIST	COUNTY	CONTROL SECT JOB	HIGHWAY
		HIDALGO	0039 17 XXX	PH2

LANDSCAPE ESTABLISHMENT AND MAINTENANCE REQUIREMENTS

DESCRIPTION	LIMITS	REQUIREMENTS	FREQUENCY
192 PLANTING AND ESTABLISHMENT AFTER COMPLETION OF THE PROJECT INSTALLATION, AS SHOWN ON THE PLANS AND AS APPROVED BY THE ENGINEER, THE CONTRACTOR SHALL PERFORM MAINTENANCE AND REPLACEMENT ACTIVITIES FOR A PERIOD OF 90 CALENDAR DAYS AS DESCRIBED IN ITEM 192.3(O). ALL WORK DURING 90 CALENDAR DAY ESTABLISHMENT PERIOD SHALL BE INCIDENTAL AND NOT PAID FOR SEPARATELY UNLESS OTHERWISE SHOWN IN PLANS. THE 90 CALENDAR DAY ESTABLISHMENT PERIOD WILL BEGIN ONLY WHEN APPROVED BY THE ENGINEER AND END ACCORDING TO ITEM 192.5. PAYMENT SHALL BE AS DESCRIBED IN ITEM 192.7.	LIMITS OF PLANTING ARE AS SHOWN ON THE PLANS.	CONTRACTOR SHALL COMPLETE INSTALLATION AS SHOWN IN THE PLANS AND PERFORM THE 90 CALENDAR ESTABLISHMENT PERIOD AS DESCRIBED IN 192.3(O) WITH THE FOLLOWING EXCEPTIONS: METHODS FOR MAINTAINING PLANTING AREAS WEED FREE SHALL BE AS DESCRIBED ON THIS SHEET UNDER ITEM 193 PLANT MAINTENANCE REQUIREMENTS WATERING SHALL OCCUR AS SHOWN ON "TREE OR SHRUB PLANTING" SHEETS. METHODS FOR MAINTAINING THE IRRIGATION SYSTEM SHALL BE AS DESCRIBED ON THIS SHEET UNDER ITEM 193 IRRIGATION SYSTEM OPERATION AND MAINTENANCE REQUIREMENTS STRESSED, DAMAGED, OR DEAD PLANTS RESULTING FROM CONTRACTOR'S ACTIONS OR INADEQUATE MAINTENANCE SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.	PLANTING AND ESTABLISHMENT ACTIVITIES SHALL OCCUR AT LEAST ONCE PER MONTH MINIMUM. VEGETATIVE WATERING SHALL OCCUR AS SHOWN ON "TREE OR SHRUB PLANTING" SHEETS. ADDITIONAL MAINTENANCE AND ESTABLISHMENT MAY BE REQUIRED TO MEET REQUIREMENTS DURING NORMAL GROWING PERIODS. ADDITIONAL MAINTENANCE FOR GROWING PERIODS SHALL BE INCIDENTAL AND NOT PAID FOR SEPARATELY.
193-501 PLANT MAINTENANCE (MO) (IF APPLICABLE TO THIS PROJECT) PLANT MAINTENANCE APPLIES TO LANDSCAPE AFTER COMPLETION OF 90-CALENDAR DAY ESTABLISHMENT PERIOD ACCORDING TO ITEM 192.3(O) MAINTENANCE REQUIREMENTS SHALL BE LIMITED TO THOSE ACTIVITIES SHOWN OR REFERENCED ON THIS SHEET.	LIMITS OF PLANTING ARE AS SHOWN ON THE PLANS.	CONTRACTOR SHALL MAINTAIN ALL PLANTING AREAS GENERALLY WEED AND GRASS FREE. WEEDS AND GRASS SHALL BE MANUALLY REMOVED OR CONTROLLED WITH HERBICIDE APPLICATION. CORD TRIMMERS SHALL NOT BE USED TO KEEP AREA WEED FREE. ANY WORK USING CORD TRIMMERS FOR WEED CONTROL IN TREE, SHRUB, AND VINE PLANTING AREAS SHALL NOT BE PAID FOR. HERBICIDE AND HERBICIDE APPLICATION METHOD SHALL BE APPROVED BY THE ENGINEER PRIOR TO APPLICATION. EXTREME CARE SHALL BE TAKEN TO INSURE THAT THE HERBICIDE DOES NOT COME INTO CONTACT WITH ANY PART OF THE DESIRABLE PLANTS. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL PLANT STAKING AND SUPPORTS SO THAT ALL PLANTS REMAIN APPROXIMATELY VERTICAL AND STRAIGHT. CONTRACTOR SHALL REMOVE OR ADJUST METAL STAKES AND SUPPORTS FOR LARGE PLANTS WHEN DIRECTED BY ENGINEER. BIODEGRADABLE STAKING SYSTEM ON SMALLER PLANTS SHALL REMAIN UNTIL PLANT STAKES AND SUPPORTS DECOMPOSE NATURALLY. REMOVAL OF BIODEGRADABLE STAKES AND SUPPORTS WILL NOT BE REQUIRED. CONTRACTOR SHALL COLLECT AND DISPOSE OF ALL LITTER WITHIN ALL PLANTING AREAS. STRESSED, DAMAGED, OR DEAD PLANTS RESULTING FROM CONTRACTOR'S ACTIONS OR INADEQUATE MAINTENANCE SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.	PLANT MAINTENANCE ACTIVITIES SHALL OCCUR AT LEAST ONCE PER MONTH MINIMUM. VEGETATIVE WATERING SHALL OCCUR AS SHOWN ON "TREE OR SHRUB PLANTING" SHEETS. ADDITIONAL MAINTENANCE AND ESTABLISHMENT MAY BE REQUIRED TO MEET REQUIREMENTS DURING NORMAL GROWING PERIODS. ADDITIONAL MAINTENANCE FOR GROWING PERIODS SHALL BE INCIDENTAL AND NOT PAID FOR SEPARATELY.
193-2006 VEGETATIVE WATERING (MG) (IF APPLICABLE TO THIS PROJECT)		VEGETATIVE WATERING SHALL OCCUR AS SHOWN ON "TREE PLANTING DETAILS, WATERING SCHEDULE, NOTES AND SPECIFICATIONS" SHEETS. STRESSED, DAMAGED, OR DEAD PLANTS RESULTING FROM CONTRACTOR'S ACTIONS OR INADEQUATE WATERING SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.	VEGETATIVE WATERING SHALL OCCUR AS SHOWN ON "TREE PLANTING DETAILS, WATERING SCHEDULE, NOTES AND SPECIFICATIONS" SHEETS.
193-2007 IRRIGAT SYS OPER AND MAINT (MO) (IF APPLICABLE TO THIS PROJECT)	LIMITS OF IRRIGATION SYSTEM MAINTENANCE WILL BE THE ENTIRE SYSTEM(S) FROM THE WATER METER(S)	CONTRACTOR SHALL MAINTAIN ALL IRRIGATION SYSTEMS ACCORDING TO ITEM 193.7 AND THE REQUIREMENTS DESCRIBED ON THE "IRRIGATION DETAILS SHEET(s)". STRESSED, DAMAGED, OR DEAD PLANTS RESULTING FROM CONTRACTOR'S ACTIONS OR INADEQUATE MAINTENANCE SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.	CONTRACTOR SHALL INSPECT IRRIGATION SYSTEM AT LEAST ONCE PER MONTH MINIMUM AT ALL PROJECT LOCATIONS. ADJUSTMENTS MADE TO IRRIGATION TIMERS SHALL BE MADE BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER ADJUSTMENTS WILL BE REQUIRED AT SEASONAL CHANGES, EXCESSIVE WET OR DRY PERIODS, OR OTHER TIMES AS DIRECTED BY THE ENGINEER. ADJUSTMENTS SHALL BE INCIDENTAL.

REGISTERED LANDSCAPE ARCHITECT
STEPHEN P. WALKER
1774
STATE OF TEXAS

Stephen P. Walker 21 Oct 2024

THE TEXAS BOARD OF ARCHITECTURAL EXAMINERS, P.O. BOX 12337, AUSTIN, TEXAS 78711-2337 TELEPHONE (512) 305-9000, HAS JURISDICTION OVER COMPLAINTS REGARDING THE PROFESSIONAL PRACTICES OF PERSONS REGISTERED AS LANDSCAPE ARCHITECTS IN TEXAS.

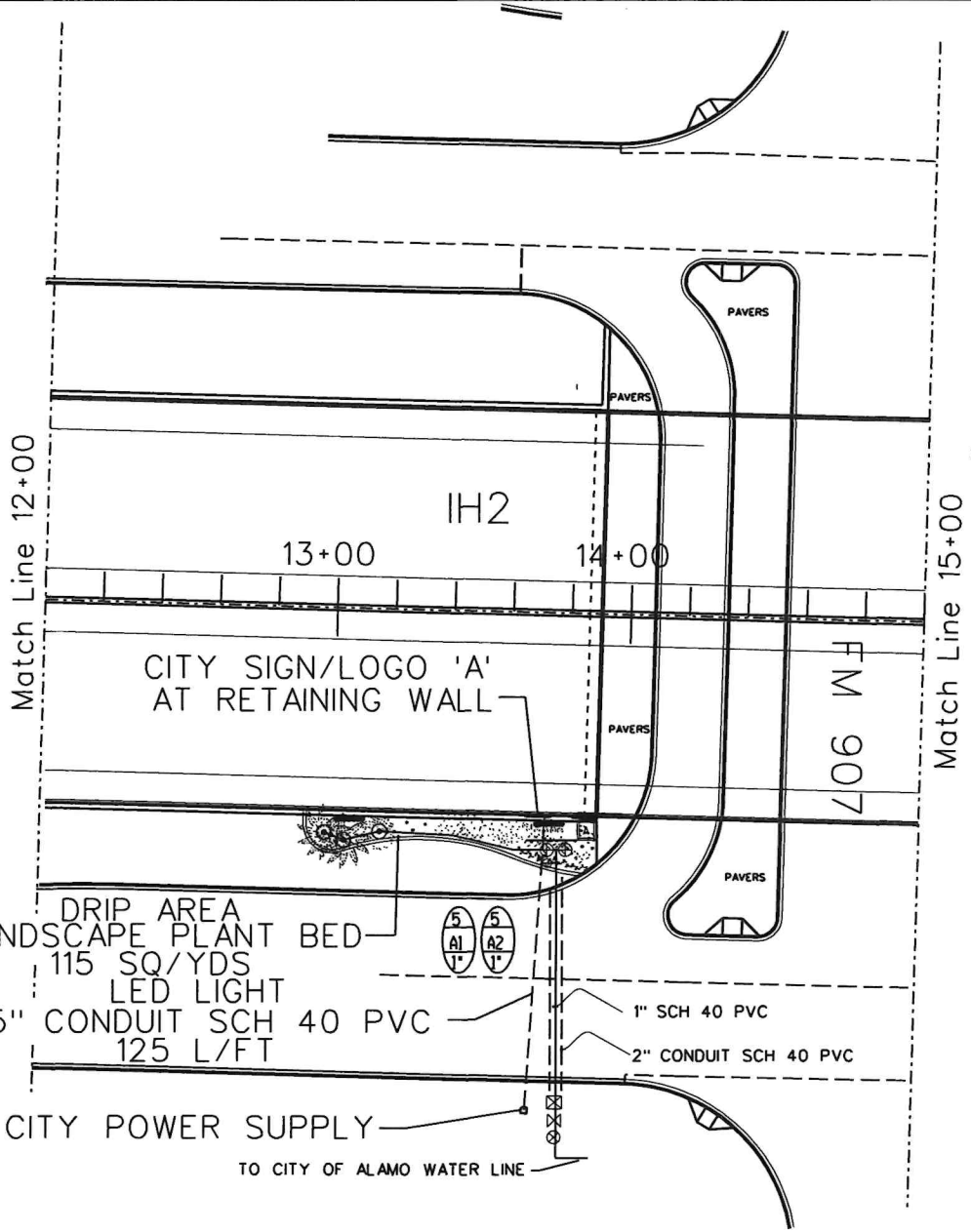
DESIGN DIVISION

PLANTING AND ESTABLISHMENT
SHEET 5 OF 5

Details not to scale

MAINTENANCE

FILE:	FED DIV	STATE	STATE AID PROJECT NUMBER			SHEET
	6	TEXAS	C 39-17-XXX			13
ORIGINAL:	DIST	COUNTY	CONTROL	SECT	JOB	HIGHWAY
		HIDALGO	0039	17	XXX	IH2



LEGEND

- 1" WATER METER
- 1" RP BACKFLOW PREVENTION DEVICE WITH GUARDSHACK ENCLOSURE (SEE DETAIL SHEET)
- 1" MAIN SHUT-OFF VALVE
- RAINBIRD PEB 1" ELECTRIC REMOTE CONTROL VALVE 100-PEB
- RAIN BIRD 5LRC QUICK COUPLING VALVE
- RAINBIRD DRIP SYSTEM OPERATION POP-UP VISUAL INDICATOR KIT
- A *BASELINE 1000 IRRIGATION CONTROLLER TWO WIRE SYSTEM W/2 STATIONS (MIN). WITH BL-5315B ORIGINAL BISENSOR AND BASELINE P SS CABINET MOUNT. RAIN-CLICK RAIN SENSOR AND VALVE DECODERS. VERIFY FINAL LOCATION WITH OWNER.
- SOIL MOISTER SENSOR LOCATIONS
- CITY MAIN
- MAINLINE PIPE: CLASS 200 PVC (1 - 3" INCH SIZE)
- LATERAL PIPE: CLASS 200 PVC (SIZED AS SHOWN)
- 28 / A1 / 1" — INDICATES LATERAL DISCHARGE IN GPM; INDICATES CONTROLLER AND CONTROLLER STATION NUMBER; INDICATES REMOTE CONTROL VALVE SIZE
- BORING WITH 2", 4" OR 6" SCH 40 SLEEVE BY CONTRACTOR
- PLANT WITH DRIP LOOP AND WATERING RING (10 GPH)
- 126 SQ/YDS PLANT BED XFD SURFACE DRIPLINE 18" O.C. / 1 GPH RAINBIRD OR EQUEL

*OR EQUAL

REGISTERED LANDSCAPE ARCHITECT
STEPHEN P. WALKER
1774
STATE OF TEXAS

21 Oct 2024

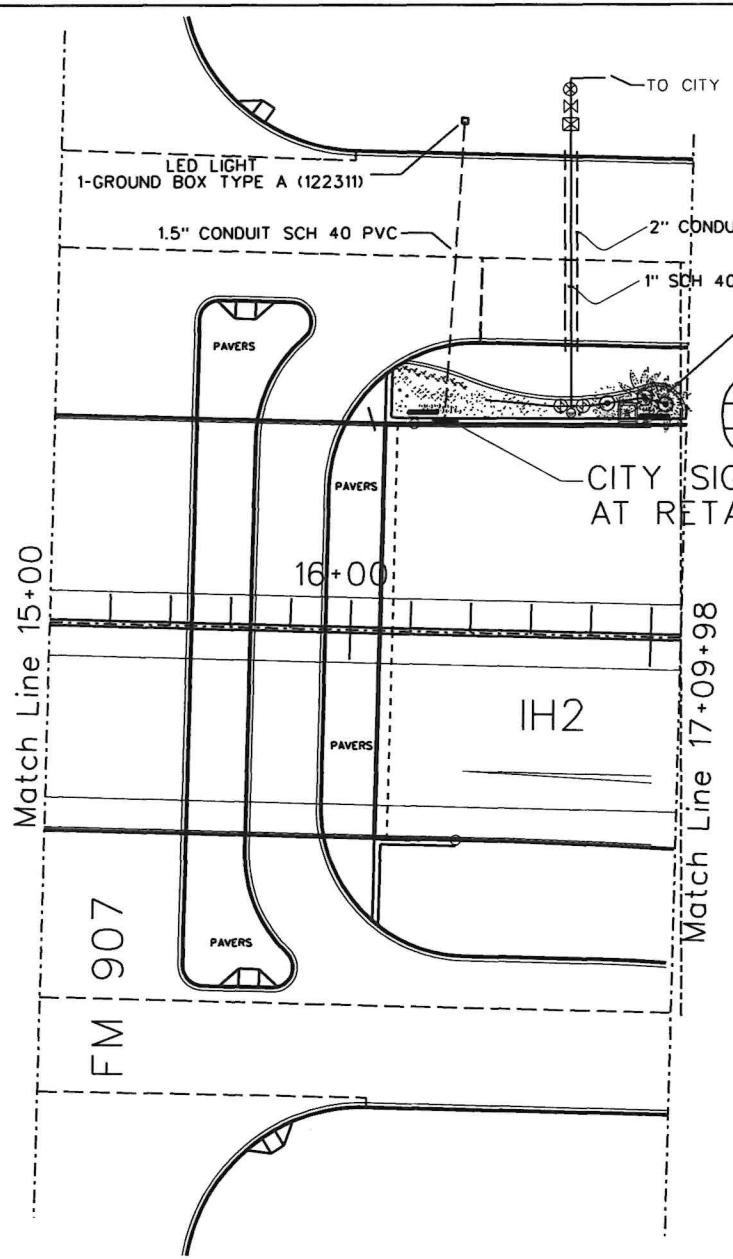
THE TEXAS BOARD OF ARCHITECTURAL EXAMINERS, P.O. BOX 12337, AUSTIN, TEXAS 78711-2337 TELEPHONE (512) 305-9000, 9AM - 5PM JURISDICTION OVER COMPLAINTS REGARDING THE PROFESSIONAL PRACTICES OF PERSONS REGISTERED AS LANDSCAPE ARCHITECTS IN TEXAS.

SCALE 1" = 40'

LANDSCAPE IRRIGATION AT IH2 & FM 907

SHEET 1 OF 10

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			14
STATE	DIST.	COUNTY	
TEXAS	PHARR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
0039	03	XXX	IH2



LEGEND

- 1" WATER METER
- 1" RP BACKFLOW PREVENTION DEVICE WITH GUARDSHACK ENCLOSURE (SEE DETAIL SHEET)
- 1" MAIN SHUT-OFF VALVE
- RAINBIRD PEB 1" ELECTRIC REMOTE CONTROL VALVE 100-PEB
- RAIN BIRD 5LRC QUICK COUPLING VALVE
- RAINBIRD DRIP SYSTEM OPERATION POP-UP VISUAL INDICATOR KIT
- A — *BASELINE 1000 IRRIGATION CONTROLLER TWO WIRE SYSTEM W/2 STATIONS (MIN). WITH BL-5315B ORIGINAL BISENSOR AND BASELINE P SS CABINET MOUNT. RAIN-CLICK RAIN SENSOR AND VALVE DECODERS. VERIFY FINAL LOCATION WITH OWNER.
- SOIL MOISTER SENSOR LOCATIONS
- CITY MAIN
- MAINLINE PIPE: CLASS 200 PVC (1 - 3" INCH SIZE)
- LATERAL PIPE: CLASS 200 PVC (SIZED AS SHOWN)
- 28 — INDICATES LATERAL DISCHARGE IN GPM
- A1 — INDICATES CONTROLLER AND CONTROLLER STATION NUMBER
- 1" — INDICATES REMOTE CONTROL VALVE SIZE
- BORING WITH 2", 4" OR 6" SCH 40 SLEEVE BY CONTRACTOR
- PLANT WITH DRIP LOOP AND WATERING RING (10 GPH)
- 126 SQ/YDS PLANT BED XFD SURFACE DRIPLINE 18" O.C. / 1 GPH RAINBIRD OR EQUEL

*OR EQUAL

REGISTERED LANDSCAPE ARCHITECT
STEPHEN P. WALKER
1774
STATE OF TEXAS

21 Oct 2024

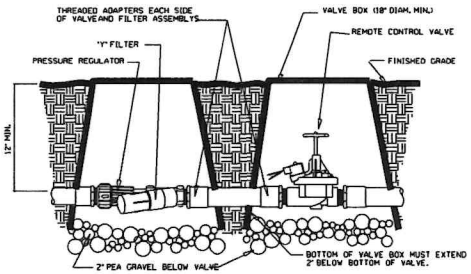
THE TEXAS BOARD OF ARCHITECTURAL EXAMINERS, P.O. BOX 12337, AUSTIN, TEXAS 78711-2337 TELEPHONE (512) 305-9000. HAS JURISDICTION OVER COMPLAINTS REGARDING THE PROFESSIONAL PRACTICES OF PERSONS REGISTERED AS LANDSCAPE ARCHITECTS IN TEXAS.

SCALE 1" = 40'

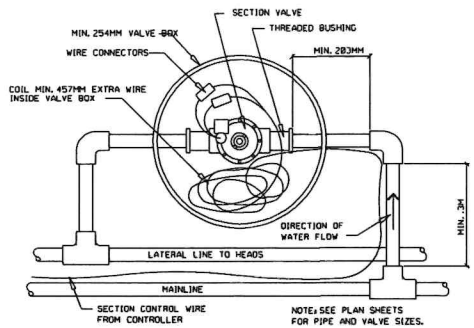
LANDSCAPE IRRIGATION
AT IH2 & FM 907

SHEET 2 OF 10

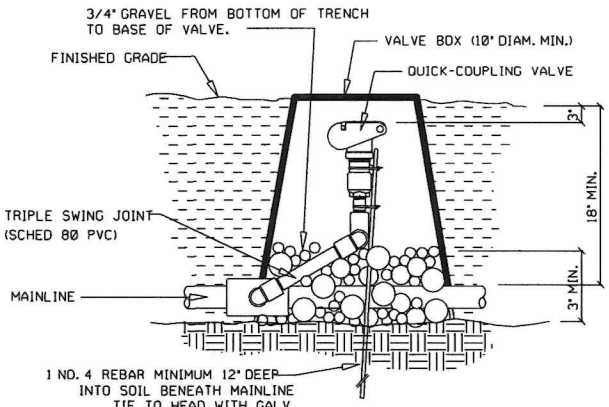
FED.RD DIV.NO.	PROJECT NO.		SHEET NO.
6			15
STATE	DIST.	COUNTY	
TEXAS	PHARR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
0039	03	XXX	IH2



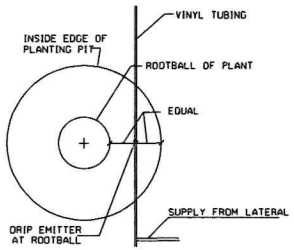
VALVE ASSEMBLY FOR DRIP IRRIGATION SECTIONS N.T.S.



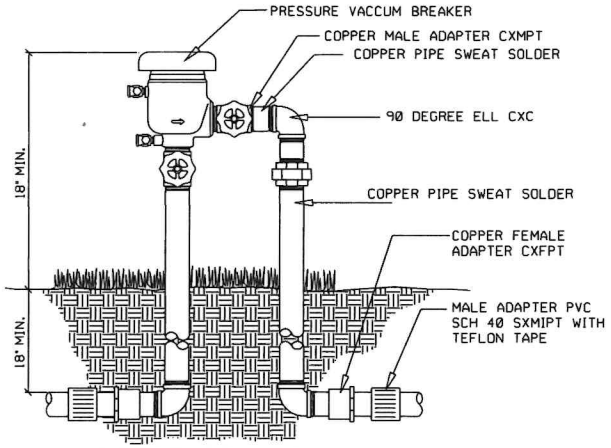
PLAN OF PIPING TO SECTION VALVE N.T.S.



QUICK-COUPLING VALVE

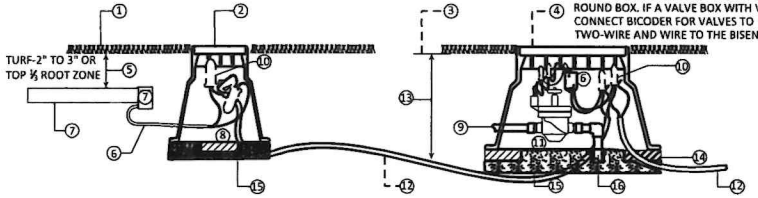


PLAN VIEW AT SHRUB WITH EMITTERS



PRESSURE VACUUM BREAKER NTS

1. LAWN OR SURFACE TREATMENT
2. 6" ROUND JUNCTION BOX
3. FINISHED GRADE
4. RECTANGULAR STANDARD OR JUMBO VALVE BOX AS REQUIRED
5. BURY DEPTH - biSENSOR
6. SLEEVED WIRE
7. *biSENSOR - SET LENGTH HORIZONTALLY AND BLADE IN VERTICAL POSITION WITH WIRES OUT OF BOTTOM*
8. SUPPORT BLOCK - 2 REQUIRED
9. LATERAL - SIZE PER PLANS
10. RED TO RED AND BLK TO BLK IN MOISTURE-RESISTANT SPLICE CAP. 3M DBR/Y OR EQ.
11. 24 VOLT REMOTE CONTROL VALVE
12. TWO-WIRE - GAUGE AS PER PLAN
13. 12" WIRE BURY OR PER NEC
14. SUPPORT BLOCK - TYPICAL EACH CORNER (4 REQUIRED)
15. GRANULAR MATERIAL FOR DRAINAGE 2" MINUMUM DEPTH
16. PRESSURE LINE - SIZE PER PLAN



BL-5315B biSENSOR SOIL MOISTURE SENSOR TWO-WIRE INSTALLATION & WIRING DETAIL NTS

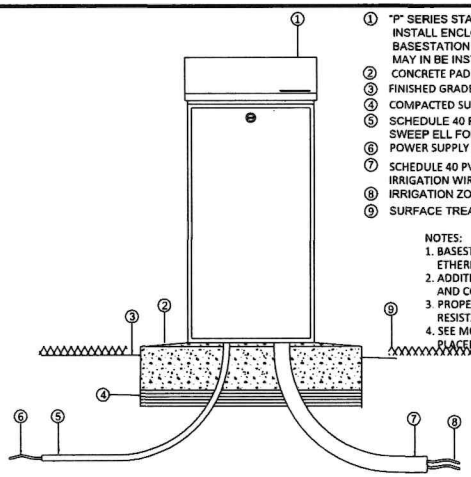
REGISTERED LANDSCAPE ARCHITECT STEPHEN P. WALKER 1774 STATE OF TEXAS

21 Oct 2024

THE TEXAS BOARD OF ARCHITECTURAL EXAMINERS, P.O. BOX 12337, AUSTIN, TEXAS 78711-2337 TELEPHONE (512) 305-9000. HAS JURISDICTION OVER COMPLAINTS REGARDING THE PROFESSIONAL PRACTICES OF PERSONS REGISTERED AS LANDSCAPE ARCHITECTS IN TEXAS.

LANDSCAPE IRRIGATION DETAILS

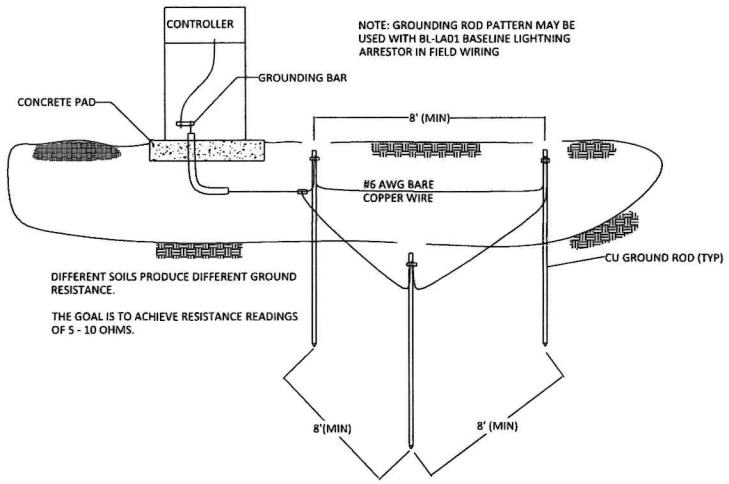
STATE PROJECT NO.						SHEET NO.
C 39-17-XXX			SHEET 1 OF 1 SHEETS			15
FED.RD. DIV.NO.	STATE	DIST.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
6	TEXAS	21	HIDALGO	0039	17	XXX	



1. "P" SERIES STAINLESS STEEL PEDESTAL ENCLOSURE. INSTALL ENCLOSURE PER MFG. INSTRUCTIONS. BASESTATION 3200 OR BASESTATION 1000 CONTROLLERS MAY IN BE INSTALLED IN THIS PEDESTAL.
2. CONCRETE PAD 6" MIN. THICKNESS
3. FINISHED GRADE
4. COMPACTED SUB-GRADE
5. SCHEDULE 40 PVC CONDUIT SIZE PER CODE. FITTINGS AND SWEEP ELL FOR POWER SUPPLY
6. POWER SUPPLY
7. SCHEDULE 40 PVC CONDUIT, FITTINGS AND SWEEP ELL FOR IRRIGATION WIRES. SIZE PER LOCAL CODE
8. IRRIGATION ZONE WIRES TO FIELD
9. SURFACE TREATMENT OR LAWN

NOTES:
1. BASESTATION CONTROLLERS ARE EQUIPPED WITH BUILT-IN ETHERNET PORT.
2. ADDITIONAL CONDUITS MAY BE REQUIRED FOR GROUNDING AND COMMUNICATION CABLES.
3. PROPER GROUNDING IS REQUIRED TO ACHIEVE GROUND RESISTANCE OF 10 OHMS OR LESS.
4. SEE MOUNTING TEMPLATE INSTRUCTIONS FOR PROPER PLACEMENT AND MOUNTING OF THE PEDESTAL TO THE CONCRETE.

"P" STAINLESS STEEL PEDESTAL
NTS



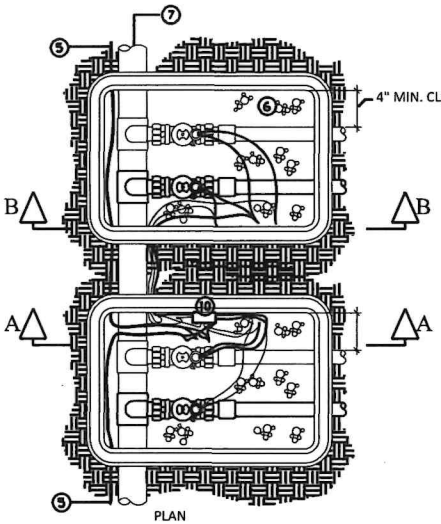
NOTE: GROUNDING ROD PATTERN MAY BE USED WITH BL-LAD1 BASELINE LIGHTNING ARRESTOR IN FIELD WIRING

DIFFERENT SOILS PRODUCE DIFFERENT GROUND RESISTANCE.

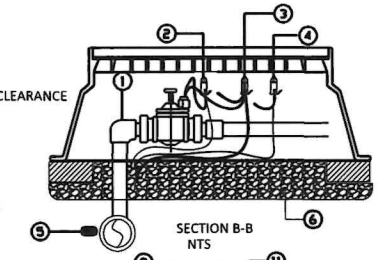
THE GOAL IS TO ACHIEVE RESISTANCE READINGS OF 5 - 10 OHMS.

BASELINE CONTROLLER IN P PEDESTAL GROUNDING DETAIL
NTS

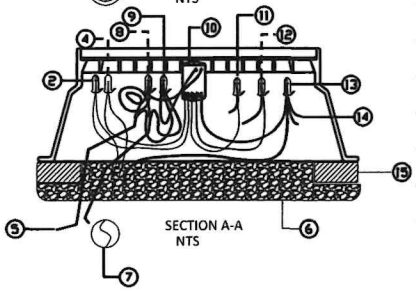
NOTE: MOISTURE-RESISTANT CONNECTORS 3M DBR/Y-6 OR EQUAL TO BE INSTALLED IN VERTICAL POSITION AS SHOWN.



PLAN
NTS



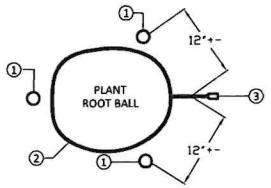
SECTION B-B
NTS



SECTION A-A
NTS

1. VALVE AND PIPING PER PLANS
2. MOISTURE-RESISTANT CONNECTION TO VALVE #3 (DBR/Y-6 OR EQ.)
3. MOISTURE-RESISTANT CONNECTION FOR COMMON WIRES FOR VALVES #3 & #4 (DBR/Y-6 OR EQ.)
4. MOISTURE-RESISTANT CONNECTION TO VALVE #4 (DBR/Y-6 OR EQ.)
5. TWO-WIRE - GAUGE PER PLANS
6. POROUS MATERIAL FOR DRAINAGE - 3" *MINIMUM*
7. MAINLINE AS PER PLANS
8. *TWO-WIRE* RED TO RED *biCODER* MOISTURE-RESISTANT CONNECTION (DBR/Y-6 OR EQ.)
9. *TWO-WIRE* BLACK TO *biCODER* BLACK MOISTURE-RESISTANT CONNECTION (DBR/Y-6 OR EQ.)
10. BASELINE BL-5404 VALVE *biCODER* - ATTACH TO VALVE BOX WITH TIE OR METAL SCREW
11. MOISTURE-RESISTANT CONNECTION TO VALVE #2 (DBR/Y-6 OR EQ.)
12. MOISTURE-RESISTANT CONNECTION TO VALVE #1 (DBR/Y-6 OR EQ.)
13. MOISTURE-RESISTANT CONNECTION FOR COMMON WIRES (DBR/Y-6 OR EQ.)
14. COMMON WIRES FOR VALVE #1 & #2
15. CORNER VALVE BOX SUPPORT (TYPICAL OF EIGHT)

BASELINE BL-5404 VALVE *biCODER* INSTALLATION
NTS



1. EMITTER
2. ROOT BALL
3. BASELINE biSENSOR

BASELINE BL-5315B SOIL MOISTURE SENSOR DRIP PLACEMENT
NTS

REGISTERED LANDSCAPE ARCHITECT
STEPHEN P. WALKER
1774
STATE OF TEXAS

21 Oct 2024

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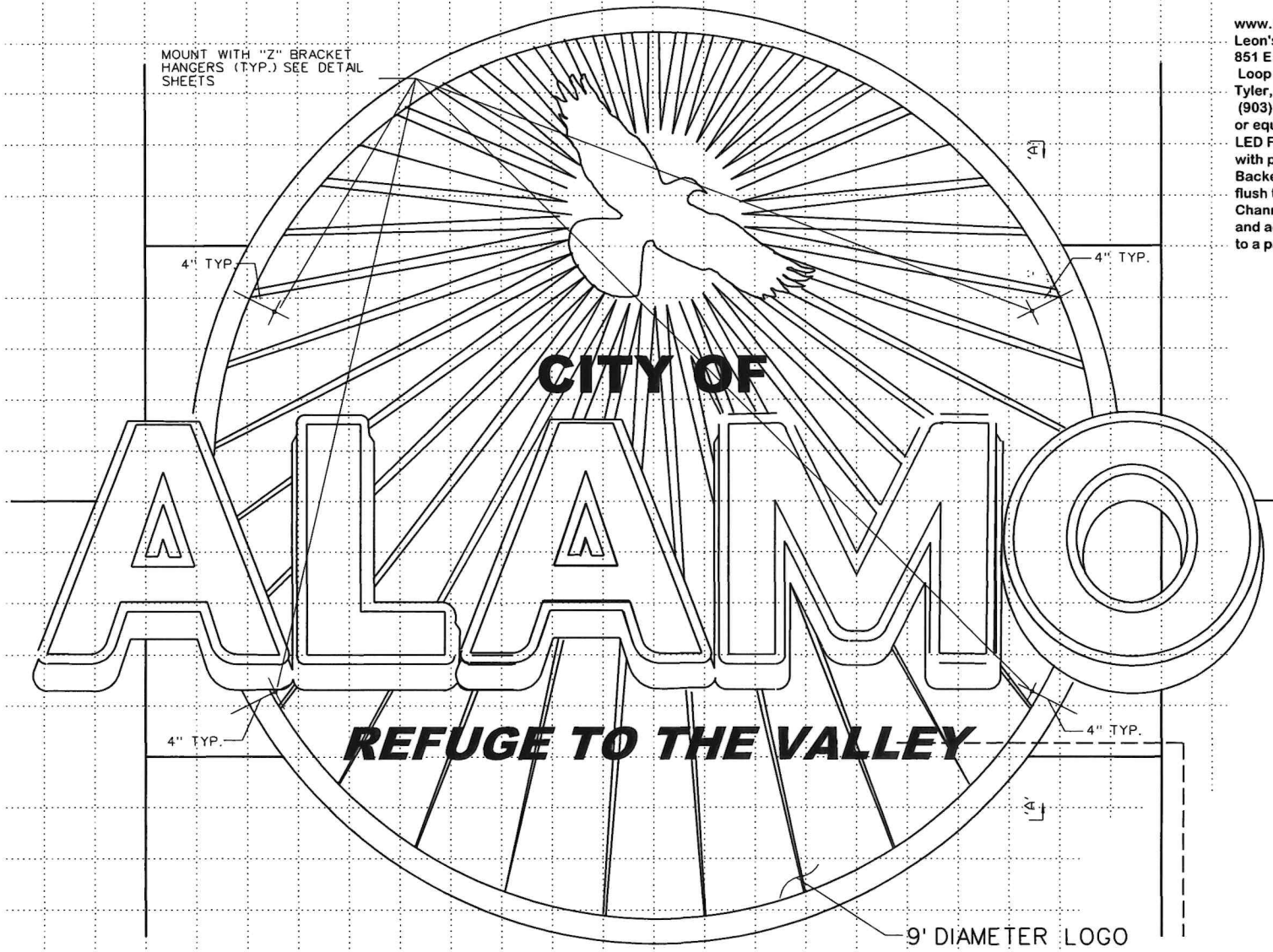
LANDSCAPE IRRIGATION DETAILS

STATE PROJECT NO.							SHEET NO.
C 39-17-159			SHEET 1 OF 1 SHEETS				17
FED.RD. DIV NO.	STATE	DIST.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
6	TEXAS	21	HIDALGO	0039	17	XXX	IH2



www.leonssignsinc.com
Leon's Signs Inc
851 E Northeast
Loop 323,
Tyler, TX 75708
(903) 597-7731
or equal

LED Face-lit/halo-lit aluminum-frame cabinets with polycarbonate faces with vinyl copy applied. Backer-mounted face-lit channel letters attach flush to polycarbonate-face cabinets.
Channel letters constructed with aluminum cans and acrylic faces with vinyl copy applied, attached to a painted aluminum backer.

REGISTERED LANDSCAPE ARCHITECT
STEPHEN P. WALKER
1774
STATE OF TEXAS

21 Oct 2024

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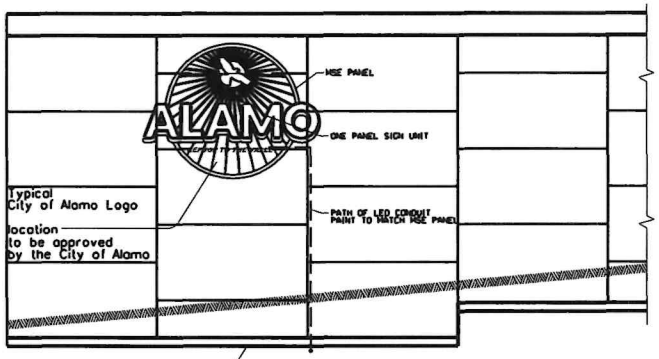
OVER COMPLAINTS REGARDING THE PROFESSIONAL
PRACTICES OF PERSONS REGISTERED AS LANDSCAPE
ARCHITECTS IN TEXAS.

RETAINING WALL
CITY LOGO DETAIL SHEET

FILE:		DN:	CK:	DW:	CK:	
		DISTRICT				SHEET
	6	21				18
	STATE	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	TEXAS	[illegible]	0039	03	[illegible]	[illegible]

LEVELS DISPLAYED



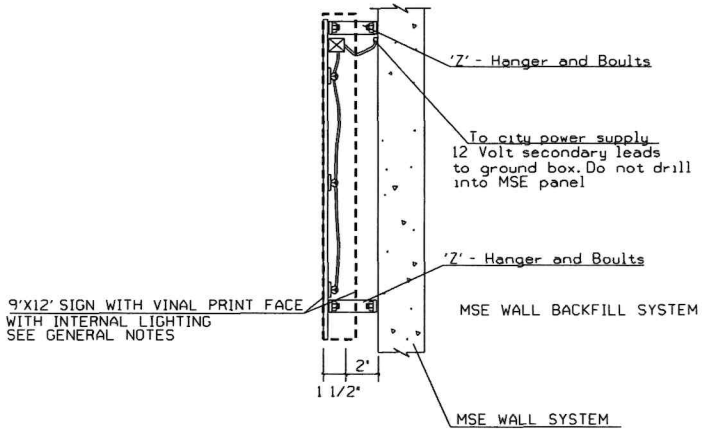
LOGO AND SIGN ELEVATION

No Scale

TWO LOCATIONS REQUIRED

Location 'A' North East corner of IH 2 and FM 907

Location 'B' South West corner of IH 2 and FM 907



SECTION 'A' - 'A'

TYPICAL SECTION OF SIGN PANEL

ITEM CITY SIGN & LOGO AT MSE PANEL

2 PANELS

SHEET 3 OF 3

NO SCALE

REGISTERED LANDSCAPE ARCHITECT
STEPHEN P. WALKER
1774
STATE OF TEXAS

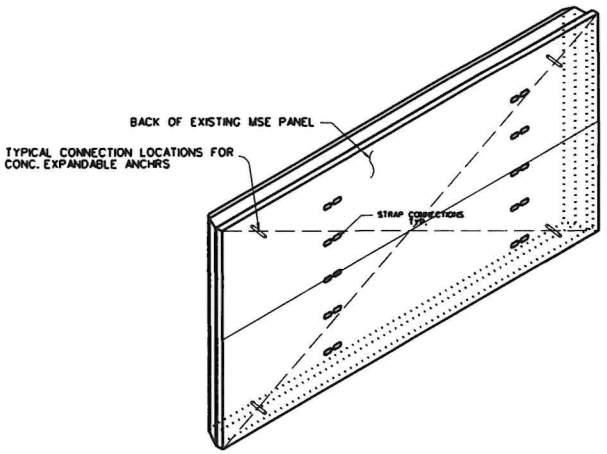
21 Oct 2024

THE TEXAS BOARD OF ARCHITECTURAL EXAMINERS, P.O. BOX 12337, AUSTIN, TEXAS 78711-2337 TELEPHONE (512) 305-9000, HAS JURISDICTION OVER COMPLAINTS REGARDING THE PROFESSIONAL PRACTICES OF PERSONS REGISTERED AS LANDSCAPE ARCHITECTS IN TEXAS.

RETAINING WALL
CITY LOGO AND LETTERS
DETAIL SHEET

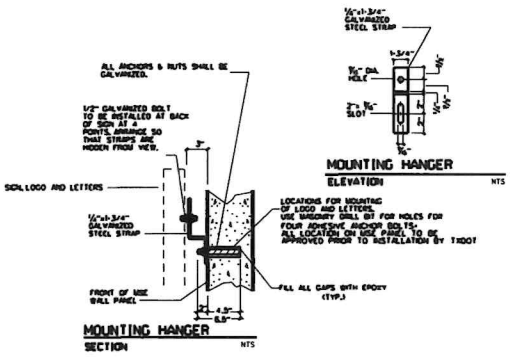
FILE:	Fed. Rd. Div. No.	DN:	CK:	DW:	CK:	
	6	DISTRICT 21				SHEET 18
	STATE	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	TEXAS	[illegible]	0039	03	[illegible]	[illegible]

LEVELS DISPLAYED

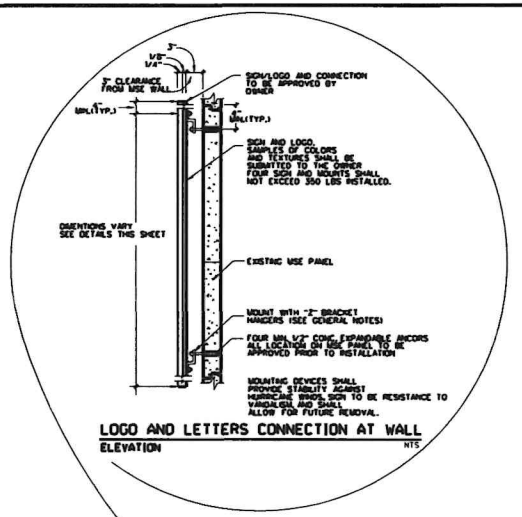


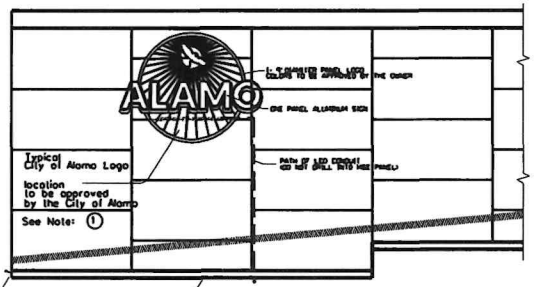
REVERSE OF RECTANULAR MSE PANEL

TYPICAL CONNECTION LOCATIONS No Scale
5 FOOT X 10 FOOT PANEL



ART HANGERS ("Z" HANGER)
AT MSE PANELS No Scale

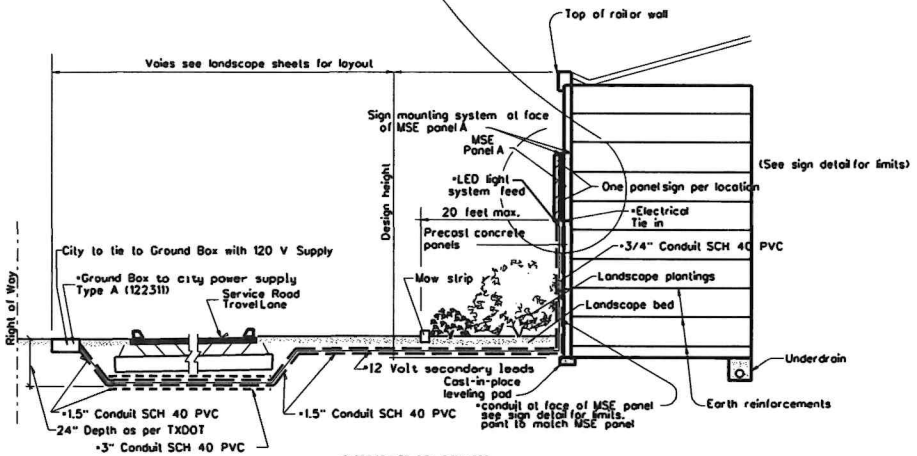




LOGO AND SIGN ELEVATION

No Scale

TWO LOCATIONS REQUIRED
Location 'A' North East corner of IH 2 and FM 907
Location 'B' South West corner of IH 2 and FM 907



*SUBSIDIARY TO CITY SIGN/LOGO

TYPICAL SECTION POWER SUPPLY

TWO LOCATIONS No Scale

① NOTE: The contractor shall provide shop drawings of the complete logo and sign assembly for approval prior to installation. Details of the letters and logo shall provide adequate clearance to avoid interference with mounting bolts and LED lights.

All threaded inserts and attachment bolts shall be hot dip galvanized.

Sign and Logo and LED system, mounting hardware, labor and incidentals shall be considered subsidiary to the item 'Sign and Logo'. Final location to be approved by the owner

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

ARON R. BADIOZZAMANI P.E. 98862
21 Oct 2024
DATE

STATE OF TEXAS
ARON R. BADIOZZAMANI
98862
LICENSED PROFESSIONAL ENGINEER

RETAINING WALL CITY LOGO ATTACHMENT DETAIL SHEET

SHEET 1 OF 3

Fed. Rd. Div. No.	DN: TxDOT	CK: TxDOT	DW:	CK:	
6	DISTRICT 21				SHEET 30
STATE	COUNTY	CONTROL	SECT	JOB	HIGHWAY
TEXAS					

LEVELS DISPLAYED

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. As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign 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.
11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer has the final decision on the location of all traffic control 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 Apparel 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" 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.

Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes prequalified products and their sources and may be found on-line at the web address given below or by contacting:

Texas Department of Transportation
Traffic Operations Division - TE
Phone (512) 416-3134

WEB ADDRESSES FOR REFERENCED DOCUMENTS

Compliant Work Zone Traffic Control Devices List (CWZTCD)
http://www.txdot.gov/publications/traffic.htm

Texas Manual on Uniform Traffic Control Devices (TMUTCD)
http://www.txdot.gov/publications/traffic.htm

Standard Highway Sign Designs for Texas (SHSD)
http://www.txdot.gov/publications/traffic.htm

Traffic Engineering Standard Sheets
http://www.txdot.gov/business/disclaim.htm

Material Producer List
http://www.txdot.gov/business/producer-list.htm

Departmental Material Specifications (DMS)
http://www.txdot.gov/services/construction/material-specifications/

Roadway Design Manual
http://www.txdot.gov/services/general-services/manuals.htm

Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

1 of 12

BC(1)13

© TxDOT 11-4-02	DW: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
4-03	0039	03	XXX	IH 2
9-07	DIST	COUNTY		SHEET NO.
	PHARR	HIDALGO		21

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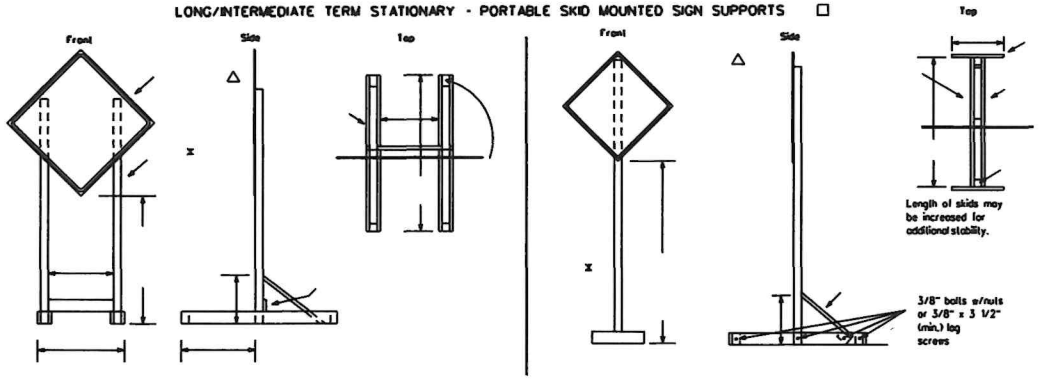
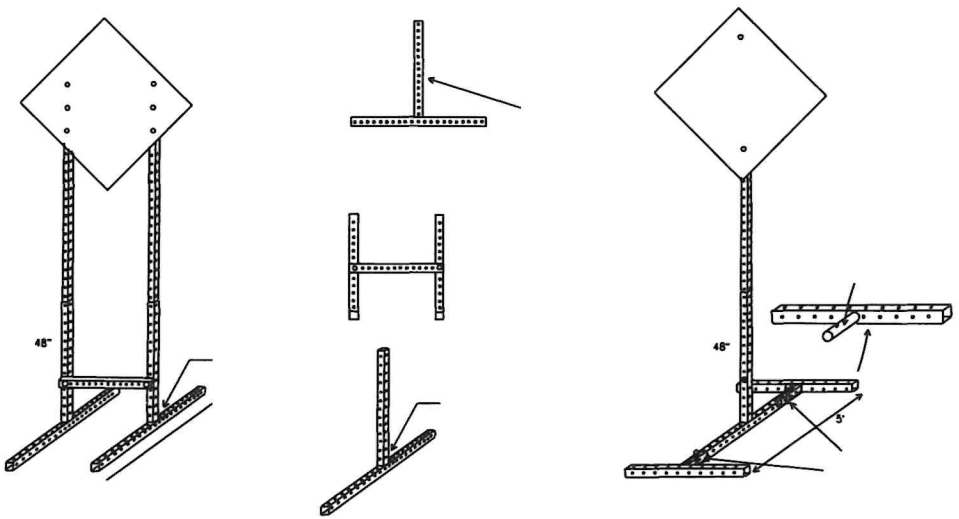
DATE:
FILE:

SKID MOUNTED WOOD SIGN SUPPORTS

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

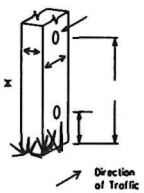


SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS



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)).



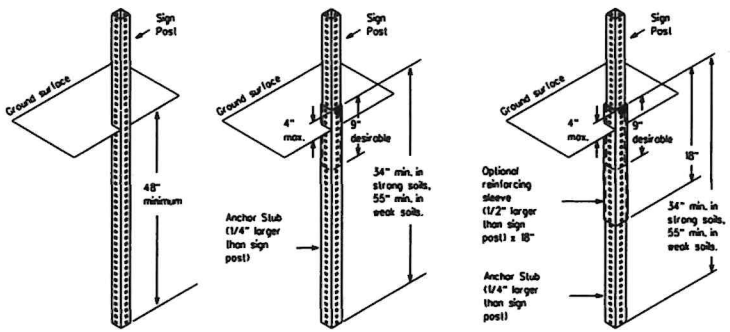
WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS

Nominal Size	Posts	Maximum Sign Face	Minimum Embedment Required	Drilled	

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.

PERFORATED SQUARE METAL TUBING



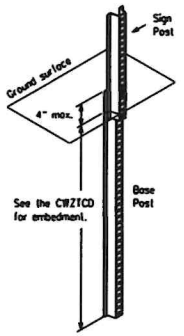
OPTION 1 (Direct Embedment)

OPTION 2 (Anchor Stub)

OPTION 3 (Anchor Stub and Reinforcing Sleeve))

WING CHANNEL

Lap-splice/base bolted anchor



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. More details of approved Long/Intermediate and Short Term supports can be found on the CWZTCD list. See BC(1) for website location.
3. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
4. 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."

x 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.

Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT STANDARD

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9-07 REVISIONS		CONT	SECT	JOB	HIGHWAY
		0039	03	XXX	IH 2
		DIST	COUNTY		SHEET NO.
		PHARR	HIDALGO		22

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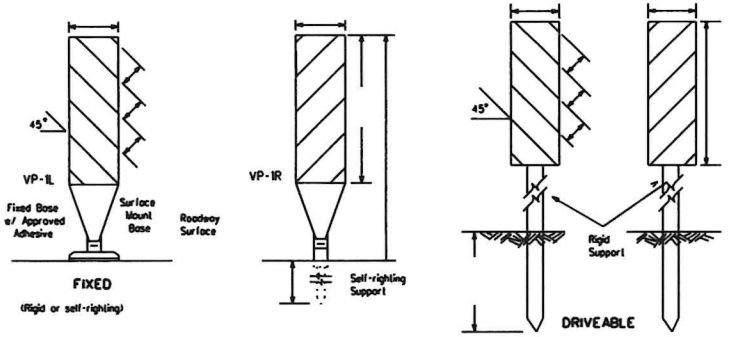
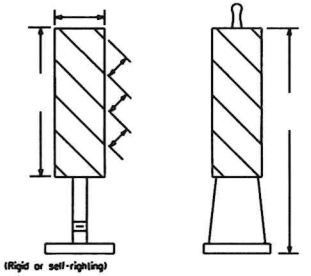
CHANNELIZING DEVICES

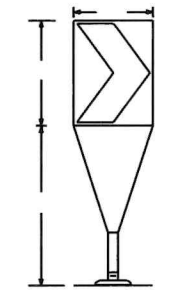
VERTICAL PANELS (VPs)



1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual Appendix B "Treatment of Pavement Drop-offs in Work Zones" for additional guidelines on the use of VP's for drop-offs.
3. VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
4. VP's used on expressways and freeways or other high speed roadways, shall have a minimum of 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 C (High Specific Intensity) conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panels is greater than 36 inches, a panel stripe of 6 inches shall be used.

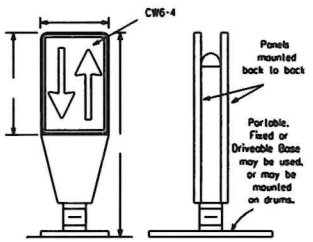


CHEVRONS



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 E (Fluorescent Prismatic) conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall be black vinyl non-reflective decal sheeting meeting the requirements of DMS-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.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with simple tubular markers or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. Tubular markers 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 E (Fluorescent Prismatic) conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall be black vinyl non-reflective decal sheeting meeting the requirements of DMS-8300.

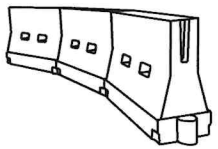
GENERAL NOTES:

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 approximately 35 lbs.
6. Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.
8. Examples on this sheet are commonly used channelizing devices in work zones. For other devices, refer to the CWZTCD.

Posted Speed	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'-75'
35		205'	225'	245'	35'	70'-90'
40		265'	295'	320'	40'	80'-100'
45	$L = WS$	450'	495'	540'	45'	90'-110'
50		500'	550'	600'	50'	100'-125'
55		550'	605'	660'	55'	110'-140'
60		600'	660'	720'	60'	120'-150'
65		650'	715'	780'	65'	130'-165'
70		700'	770'	840'	70'	140'-175'
75		750'	825'	900'	75'	150'-185'
80		800'	880'	960'	80'	160'-195'

** Taper lengths have been rounded off.

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



LONGITUDINAL CHANNELIZING DEVICES

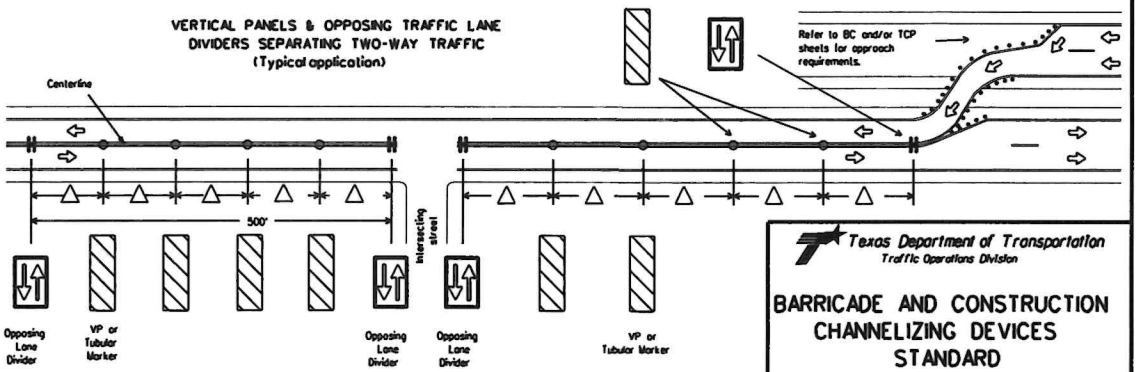
1. Longitudinal channelizing devices are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are [illegible] on impact.
2. Longitudinal channelizing devices may be used instead of a line of cones or drums.
3. Longitudinal channelizing devices shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Longitudinal channelizing devices should not be used to provide positive protection for obstacles, pedestrians or workers.
5. Longitudinal channelizing devices shall be retroreflective, or supplemented with retroreflective delineation as required for temporary barriers on BC(7)-07.

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 NCHRP 350 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 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 be not less than 32 inches in height.

VERTICAL PANELS & OPPOSING TRAFFIC LANE DIVIDERS SEPARATING TWO-WAY TRAFFIC (Typical application)



△ Spacing between the VP's or tubular markers shall not exceed 100 feet. On roadways with speeds less than 45 MPH, spacing between the tubular markers or VP's shall be as shown on the channelizing spacing table shown on this page. If the table shows spacing greater than 100 feet based on the roadway speed, then use a maximum of 100 feet spacing between the tubular markers or VP's. Every fifth channelizing device shall be an OTLD, except when the OLTD must be spaced closer to accomodate an intersection. Spacing between the OTLD shall not exceed 500 feet.

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		DIST	COUNTY		SHEET NO.
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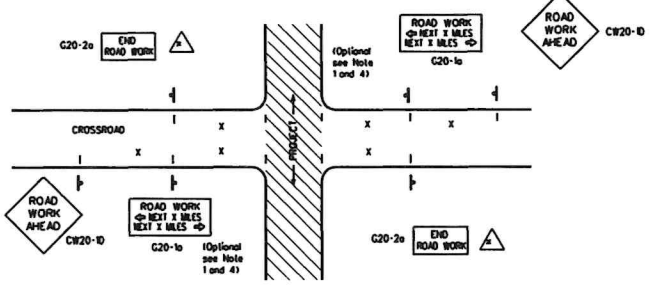
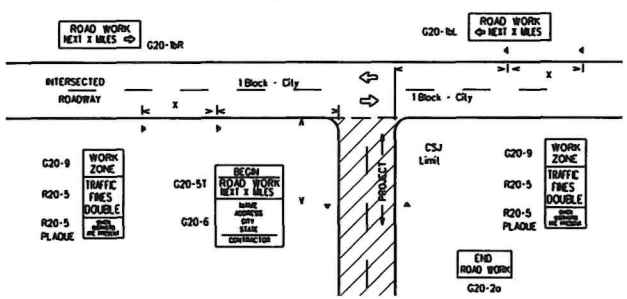
TYPICAL LOCATION OF CROSSROAD SIGNS



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

1. The typical minimum signing on a crossroad approach should be a CW20-1D ROAD WORK AHEAD sign and a G20-2a END ROAD WORK sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" END ROAD WORK (G20-2a) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The G20-1a 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 G20-6 "Contractor Name" sign behind the Type III Barricades for the road closure (see BC(1)D also). The G20-1bL and G20-1bR 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 CW21 CW22 CW23 CW25 [4]	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	(Approx.)
30	
35	
40	
45	
50	
55	2
60	2
65	2
70	2
75	2
80	2
⊕	⊕ [3]

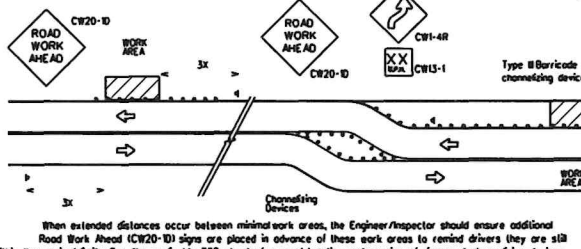
⊕ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.
△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

General Notes:

1. Special or larger size signs may be used as necessary.

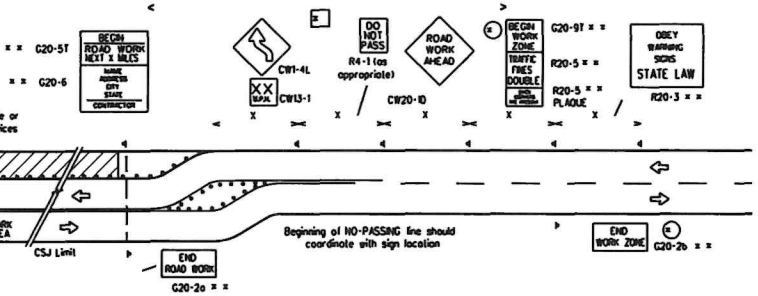
4. 36" x 36" ROAD WORK AHEAD (CW20-1D) signs may be used on low volume crossroads at the discretion of the Engineer. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

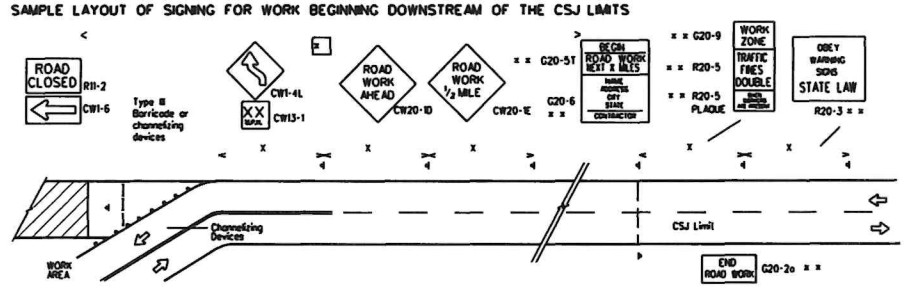


When extended distances occur between minimal work areas, the Engineer/Inspector should ensure additional Road Work Ahead (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

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 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 G20-9T and G20-2b shall be used when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a work zone where traffic fines may double if workers are present.

x x Required CSJ Limit signing. See Note 10 on BC(1).

Area for placement of "ROAD WORK AHEAD" sign and other signs or devices as called for on the Traffic Control Plan.

LEGEND

- Sign
- O O Channelizing Devices
- I Type III Barricade
- X See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

OBEY WARNING SIGNS STATE LAW

Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION PROJECT LIMIT STANDARD

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BC(2)13

DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
CONT	SECT	JOB	HIGHWAY
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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.
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 720 feet. 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	Abb.	Word or Phrase	Abb.
Access Road	ACCS RD	Major	MAJ
Air Quality	AIR QLTY	Mile	MI
Alternate	ALT	Miles Per Hour	MPH
Avenue	AVE	Minor	MNR
Best Route	BEST RTE	Monday	MON
Boulevard	BLVD	Normal	NORM
Bridge	BRDG	North	N
Cannot	CANT	Northbound	(route) N
Center	CNTR	Parking	PKING
Construction Ahead	CONST AHEAD	Parking Lot	PRK LOT
Detour Route	DETOUR RTE	Road	RD
Do Not	DONT	Right Lane	RGT LN
East	E	Saturday	SAT
Eastbound	(route) E	Service Road	SERV RD
Emergency	EMER	Shoulder	SHLDR
Emergency Vehicle	EMER VEH	Slippery	SLIP
Entrance, Enter	ENT	South	S
Express Lanes	EXP LANE	Southbound	(route) S
Expressway	EXPWY	Speed	SPD
XXXX Feet	XXXX FT	Street	ST
Fog Ahead	FOG AHD	Sunday	SUN
Freeway	FRWY, FWY	Telephone	PHONE
Freeway Blocked	FWY BLKD	Temporary	TEMP
Friday	FRI	Thursday	THURS
Hazardous Driving	HAZ DRIVING	To Downtown	TO DWNTN
Hazardous Material	HAZMAT	Traffic	TRAF
High-Occupancy Vehicle	HOV	Travelers	TRVLRS
Highway	HWY	Tuesday	TUES
Hours	HR	Time Minutes	TIME MIN
Information	INFO	Upper Level	UPPR LVL
It Is	ITS	Vehicle	VEH
Junction	JCT	Warning	WARN
Left	LFT	Wednesday	WED
Left Lane	LFT LN	Weight Limit	WT LIMIT
Lane Closed	LN CLSD	West	W
Lower Level	LOWR LVL	Westbound	(route) W
Maintenance	MAINT	Wet Pavement	WET PVMT
		Will Not	WONT

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

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

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 for 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.

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 W20-7a Flagger Symbol, 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 panel provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) STANDARD

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DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
CONT	SECT	JOB	HIGHWAY
0039	03	XXX	IH 2
DIST	COUNTY		SHEET NO.
PHARR	HIDALGO		25

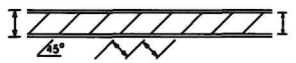
9-07 REVISIONS

TYPE III BARRICADES

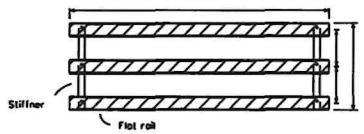
1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type III Barricades and a list of all materials used in the construction of Type III Barricades.
2. Type III Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. 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 stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type C (High Specific Intensity) 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



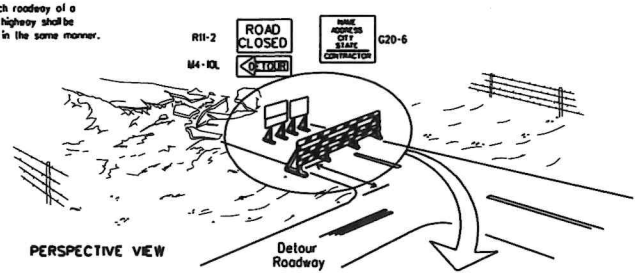
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES



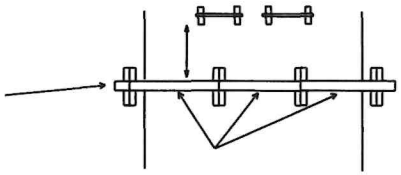
Stiffner may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

TYPE III BARRICADE (POST AND SKID) TYPICAL APPLICATION

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



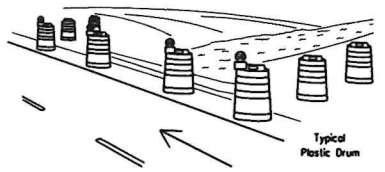
The three rails on Type III barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



2. Advance signing shall be as specified elsewhere in the plans.

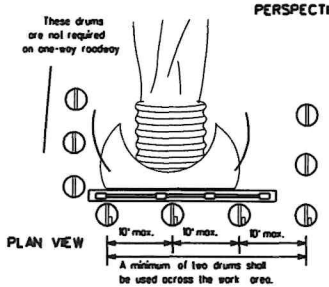
PLAN VIEW

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



PERSPECTIVE VIEW

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

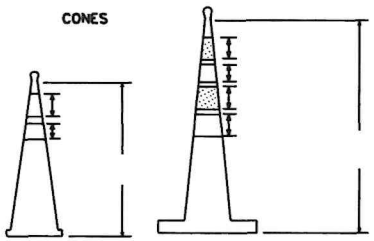


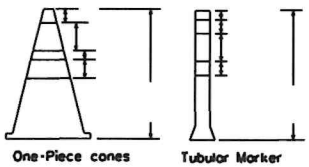
PLAN VIEW

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

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

CONES

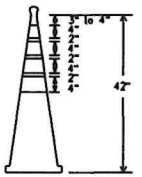




28" Cones shall have a minimum weight of 9 1/2 lbs.

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

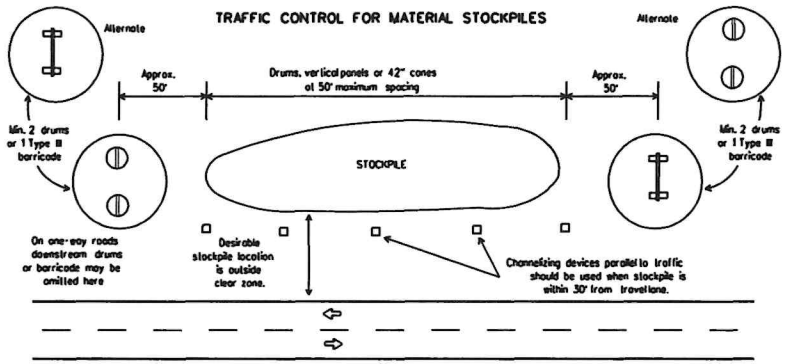
1. Traffic cones and tubular markers shall be a minimum of 28 inches in height when used either on freeways or at nighttime.
2. Cones or tubular markers shall be predominantly orange, fluorescent red-orange, or fluorescent yellow-orange. They should be kept clean and bright for maximum visibility.
3. Cones used only for daytime operations do not require the reflectorized bands.
4. Cones and tubular markers used for nighttime operations shall be reflectorized. Reflectorized material shall have a smooth, sealed outer surface that displays the same approximate color during the day and night. The reflectorized bands shall be retroreflective Type C (High Specific Intensity) conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
5. When used at night, appropriate personnel shall ensure that cones and tubular markers remain in their proper location and in an upright position.
6. Reflectorization of 28" cones shall consist of a minimum 6 inch band placed at least 3 inches but not more than 4 inches from the top, supplemented by a minimum 4 inch band spaced a minimum of 2 inches below the 6 inch band.
7. Reflectorization of 42" cones shall be provided by alternating 4 to 6" orange and white stripes with orange on top.
8. Reflectorization of tubular markers shall be a minimum of two 3 inch bands placed a maximum of 2 inches from the top with a maximum of 6 inches between bands.
9. One-piece cones or tubular markers are generally suitable for temporary usage (up to 8 hours) with other channelization devices such as vertical panels, drums or two-piece cones for long term usage. Care should be taken to ensure they remain in their proper location and in an upright position.
10. Cones or tubular markers used on each project shall be of the same size and shape.
11. The handle may be designed as a hook or other shape, fabricated from non-rigid materials similar to the cone material, and may extend up to a maximum of 8 inches above the top of cone. Length of the handle shall not be considered with regard to the overall height of the cone.



EDGELINE CHANNELIZER

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

TRAFFIC CONTROL FOR MATERIAL STOCKPILES



Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES STANDARD

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©TxDOT 11-4-02	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-07 REVISIONS	CONT	SECT	JOB	HIGHWAY
	0039	03	XXX	RM 2
	DIST	COUNTY		SHEET NO.
	PHARR	HIDALGO		26

109A

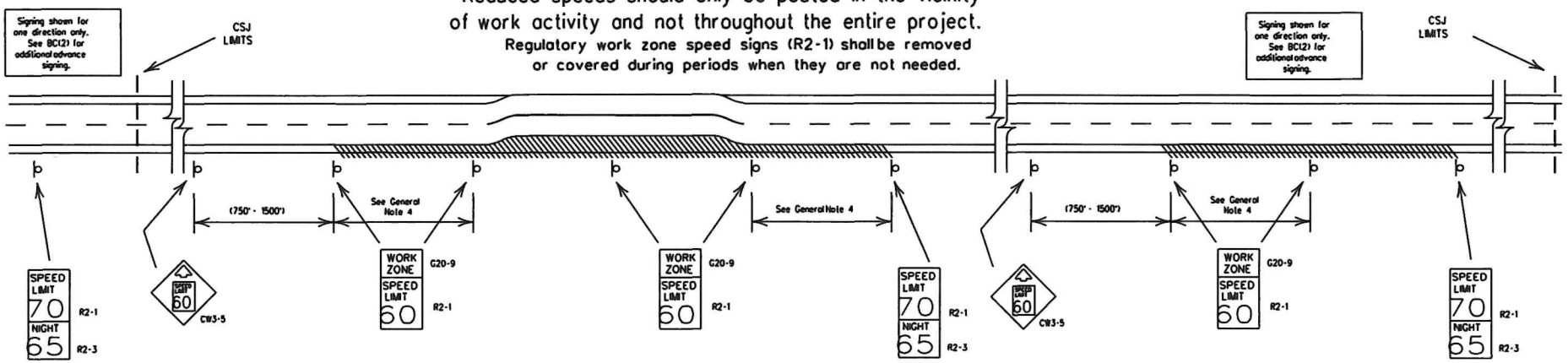
DATE:
FILE:

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

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. 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, errection and maintenance of the CW3-5 sign, G20-9 plaque and the R2-1 and R2-3 signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless otherwise noted.
8. Techniques that may help reduce traffic speeds 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.

DATE:
FILE:

Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT STANDARD

3 of 12 BC(3)13

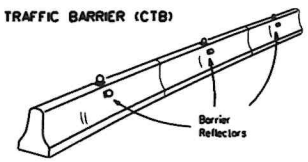
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

9-07 REVISIONS	CONT	SECT	JOB	HIGHWAY
	0039	03	XXX	IH 2
	DIST	COUNTY		SHEET NO.
	PHAR	HIDALGO		27

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

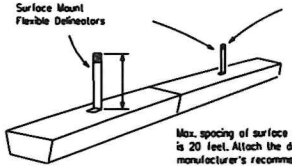
1. Barrier Reflectors shall be prequalified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors (Type C Delineators) can be found at the Material Producer List web address shown on BCID.
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 502.

CONCRETE TRAFFIC BARRIER (CTB)



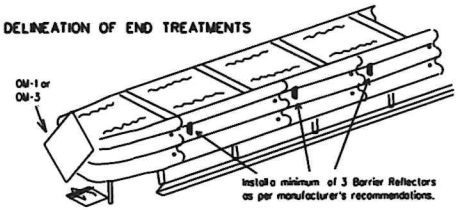
3. Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. 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 shall be required on top of the CTB.
6. Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented. Yellow Barrier Reflectors shall be made with Type E Fluorescent Prismatic Yellow Retroreflective Sheeting. White reflectors shall be made with Type D White Prismatic sheeting.
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.

LOW PROFILE CONCRETE BARRIER (LPCB)



Max. spacing of surface mount flexible delineators is 20 feet. Attach the delineators as per manufacturer's recommendations.

DELINEATION OF END TREATMENTS



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

END TREATMENTS FOR CTB'S USED IN WORK ZONES

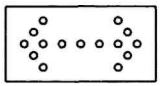
End treatments used on CTB's in work zones shall meet crashworthy standards as defined in the National Cooperative Highway Research Report 350. Refer to the CWZTCD List for approved end treatments and manufacturers.

TYPICAL FLASHING ARROW PANEL

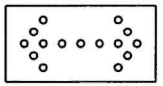
Arrow Panels may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

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

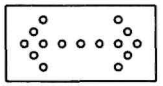
Flashing RIGHT (LEFT) ARROW



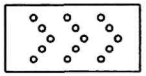
Flashing DOUBLE ARROW



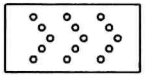
Flashing CAUTION

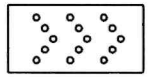


5. The "CAUTION" display consists of four corner lamps flashing simultaneously.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Panel shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than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



Sequential Chevron





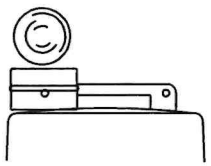
REQUIREMENTS

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

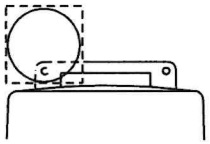
ATTENTION: Flashing Arrow Panels shall be equipped with automatic dimming devices.

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

11. The Flashing Arrow Panel shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Panel SHALL NOT BE USED to laterally shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Panel 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 panels should be 7 feet from roadway to bottom of panel.



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



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

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 E Sheeting (Fluorescent Prismatic) 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.

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 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 D (Non-fluorescent Prismatic).
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the dates shown in the CWZTCD to ensure that the TMA meets the age requirements and the crashworthiness criteria established by the Federal Highway Administration (FHWA) for TMAs.
4. Refer to the CWZTCD for a list of approved TMAs.
5. TMAs are required on freeways unless otherwise noted in the plans.
6. A TMA should be used anytime that it can be positioned approximately 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
7. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

Texas Department of Transportation
Traffic Operations Division

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

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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 (tail back) shall meet the requirements of DMS-8240.

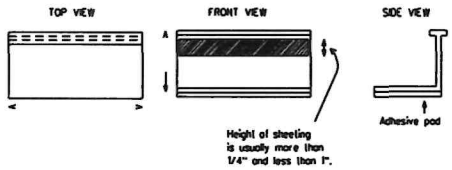
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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 150 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
4. Markings failing to meet this criteria 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 two weeks, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
3. Pavement markings shall be removed to the fullest extent possible, so as not to leave a 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.
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
PREFABRICATED PAVEMENT MARKINGS-PERMANENT	DMS-8240
PREFABRICATED PAVEMENT MARKINGS-REMOVABLE	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 Operations Division

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS STANDARD

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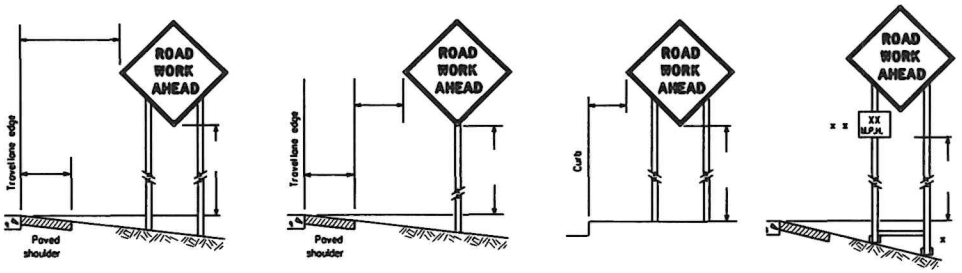
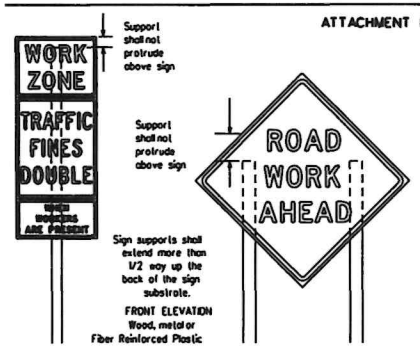
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

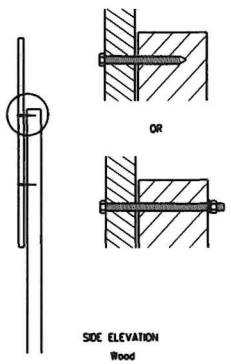


x When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





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

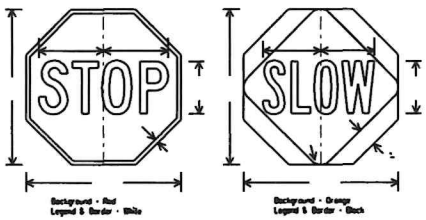
Nails will NOT be allowed.

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

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

STOP/SLOW PADDLES

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



CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

SIGN SUBSTRATES

1. The Contractor shall ensure 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 BC1D.
2. White sheeting, meeting the requirements of DMS-8300 Type C (High Specific Intensity), shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type E (Fluorescent Prismatic), 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 type of sign support meets the crashworthiness standards regardless of the direction of impact. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on 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. These materials can damage the retroreflectivity of sheeting.
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 is recommended.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects 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.
6. Rubber (such as tire inner tubes) shall NOT be used for sandbags.
7. 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.
8. Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
9. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES STANDARD

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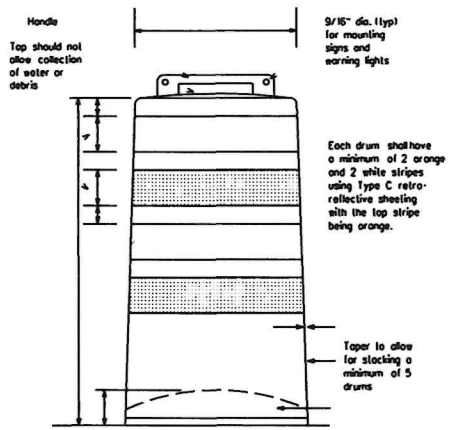


GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
3. For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
4. Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
5. Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

Prequalified plastic drums shall meet the following requirements:

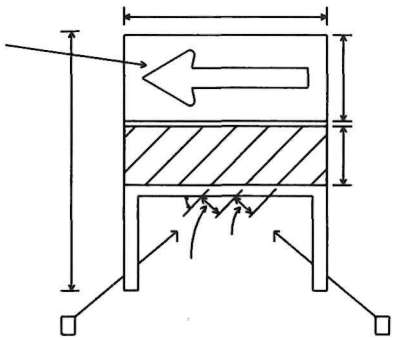
1. Plastic drums shall be a two-piece design: the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents 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 minimum unballasted weight of 7.7 lbs. and maximum unballasted weight of 11 lbs. The wall of the drum body shall be a minimum of 0.07 inch in thickness. Weight of any drum supplied shall not vary more than 0.5 lb. from that of the prequalified sample.
10. Drum and base shall be marked with manufacturer's name and model number.

RETROREFLECTIVE SHEETING

1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Flat Surface Reflective Sheeting." High Specific Intensity (Type C) retroreflective 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.

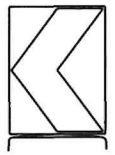
BALLAST

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. The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
4. When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
5. Ballast shall not be placed on top of drums.
6. Adhesives may be used to secure base of drums to pavement.

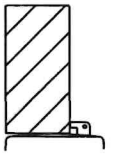


DIRECTION INDICATOR BARRICADE

1. The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
2. If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
3. The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CW1-6) sign in the size shown with a black arrow on a background of Type E Fluorescent Prismatic Orange above a rail with Type C High Specific Intensity retroreflective sheeting in alternation 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass.
4. Double arrows on the Direction Indicator Barricade will not be allowed.
5. Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.



(Maximum Sign Dimension)
Chevron CW1-8, Opposing Traffic Lane Divider, Driveway sign 070a, Keep Right R4 series or other signs as approved by Engineer



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 E (Fluorescent Prismatic) 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 C (High Specific Intensity). Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
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 side may be mounted on plastic drums, with approval of the Engineer.

Texas Department of Transportation
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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES STANDARD

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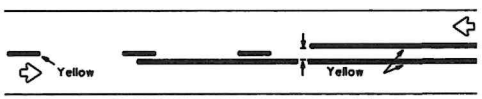
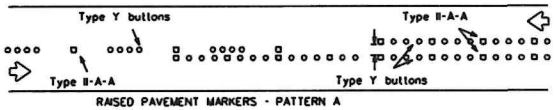
PAVEMENT MARKING PATTERNS

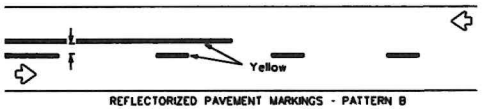
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS



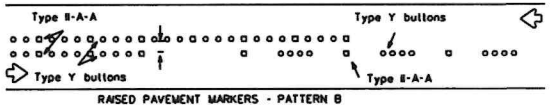
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



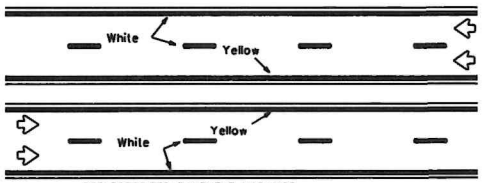
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



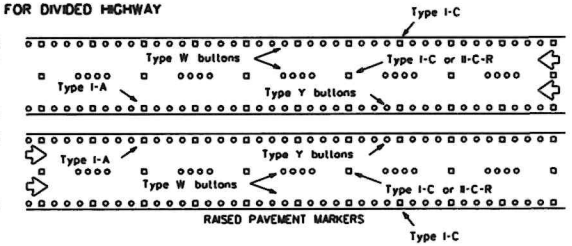
RAISED PAVEMENT MARKERS - PATTERN B

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

EDGE & LANE LINES FOR DIVIDED HIGHWAY



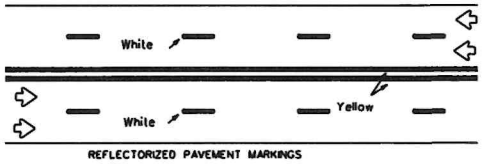
REFLECTORIZED PAVEMENT MARKINGS



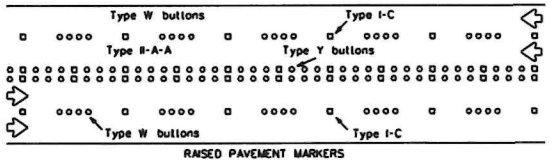
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



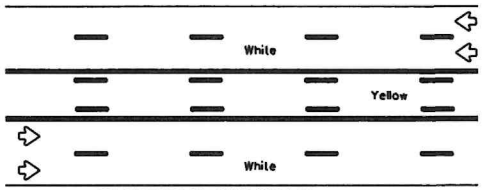
REFLECTORIZED PAVEMENT MARKINGS



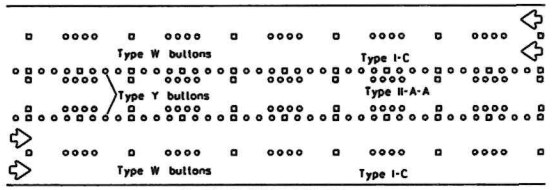
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

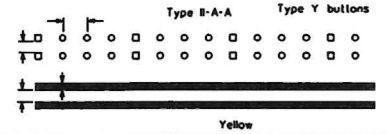
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

RAISED PAVEMENT MARKERS

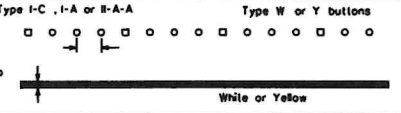
REFLECTORIZED PAVEMENT MARKINGS



EDGE LINE OR SINGLE NO-PASSING LINE

RAISED PAVEMENT MARKERS

REFLECTORIZED PAVEMENT MARKINGS

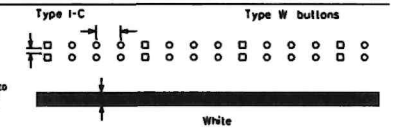


WIDE LINE

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

RAISED PAVEMENT MARKERS

REFLECTORIZED PAVEMENT MARKINGS

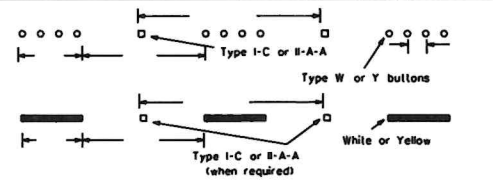


BROKEN LINE

(FOR CENTER LINE OR LANE LINE)

RAISED PAVEMENT MARKERS

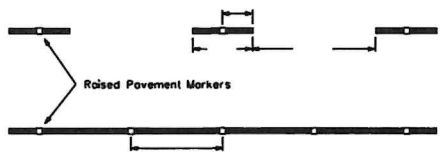
REFLECTORIZED PAVEMENT MARKINGS



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

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."

Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS STANDARD

12 of 12 BC(12)-07

DW: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS	CONT	SECT	JOB	HIGHWAY
1-97	0921	03	XXX	IH 2
2-98	DIST		COUNTY	SHEET NO.
11-02	21		HIDALGO	32
9-07				

109C

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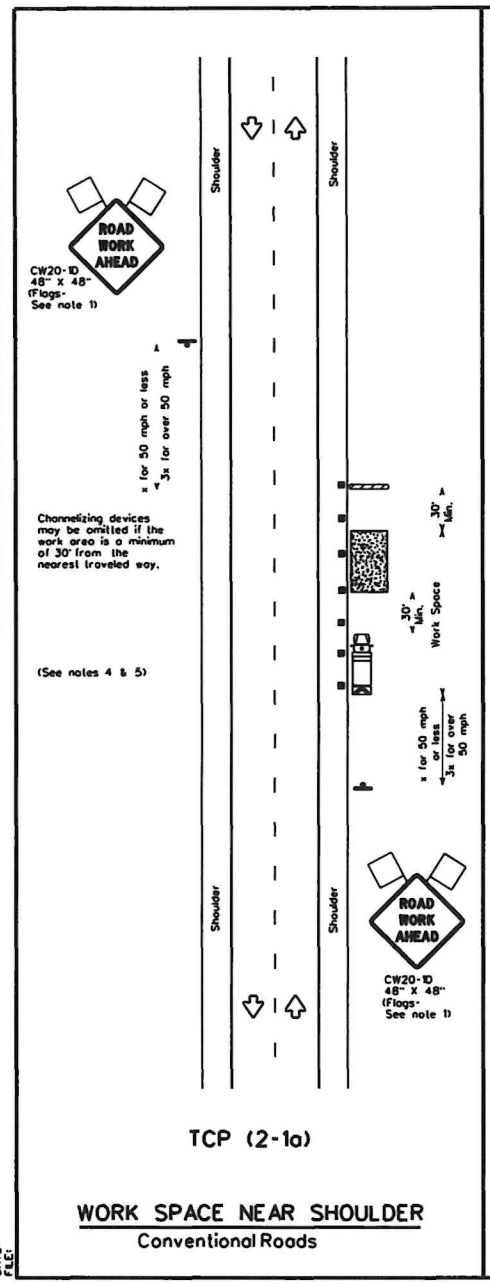
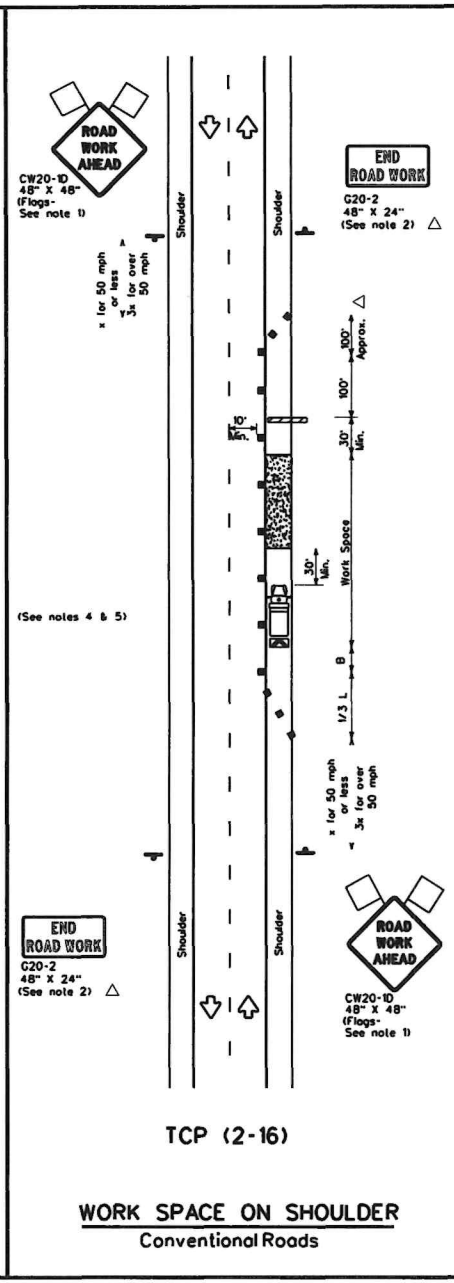
DATE:
FILE:



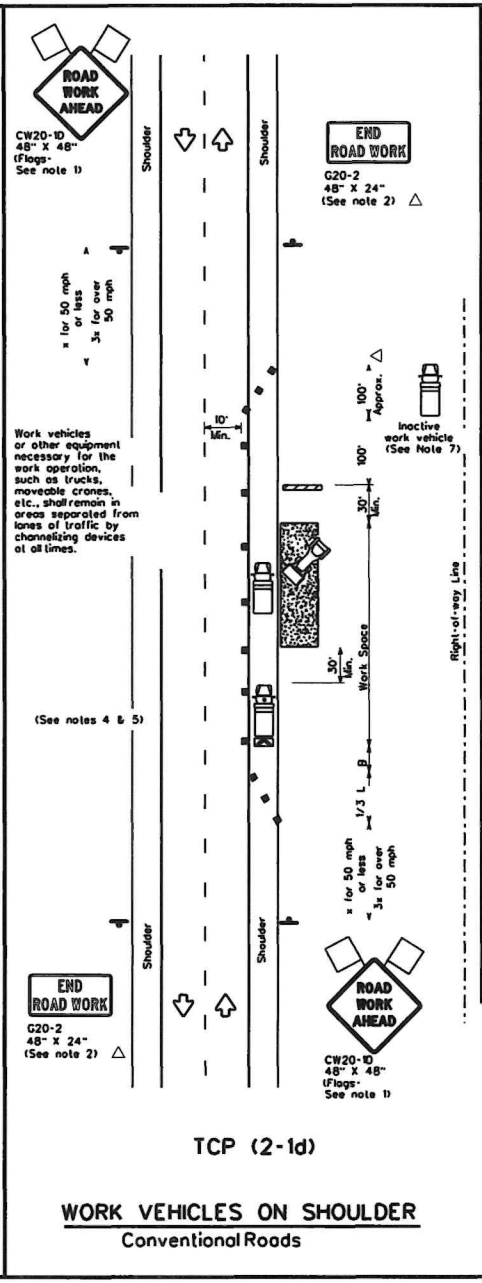
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1d)

WORK VEHICLES ON SHOULDER
Conventional Roads

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 x	Formula	Minimum Desirable Taper Lengths x x 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	L = WS²/60	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L = WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

x Conventional Roads Only
x x 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. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
3. Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
4. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
6. See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
7. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
8. CW21-5 "SHOULDER WORK" signs may be used in place of CW21-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

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

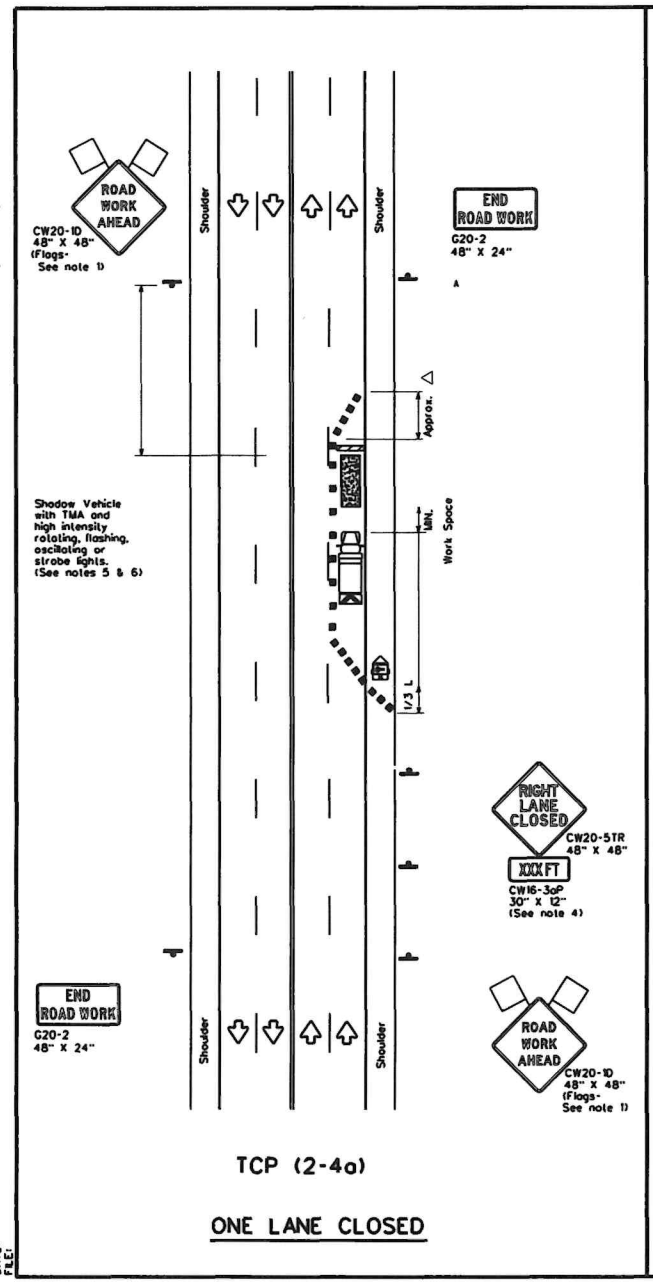
Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN
CONVENTIONAL ROAD
SHOULDER WORK

TCP (2-1) 12

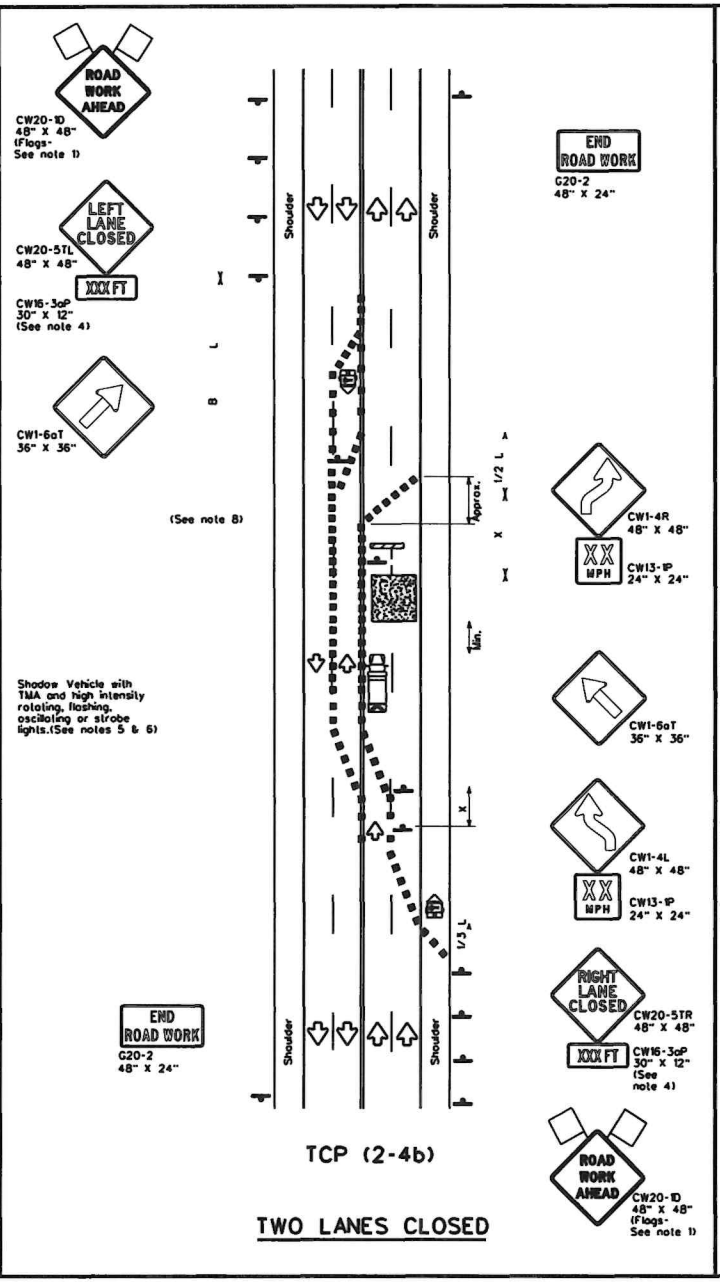
REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
2-94 2-12	CONT	SECT	JOB	HIGHWAY
8-95	0039	03	XXX	IH 2
1-97	DIST	COUNTY		SHEET NO.
4-98	PHARR	HIDALGO		33

DATE:
FILE:



TCP (2-4a)

ONE LANE CLOSED



TCP (2-4b)

TWO LANES CLOSED

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 x	Formula	Minimum Desirable Taper Lengths x x 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L = WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

x Conventional Roads Only

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

TCP (2-4a)

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

TCP (2-4b)

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

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

Texas Department of Transportation
Traffic Operations Division

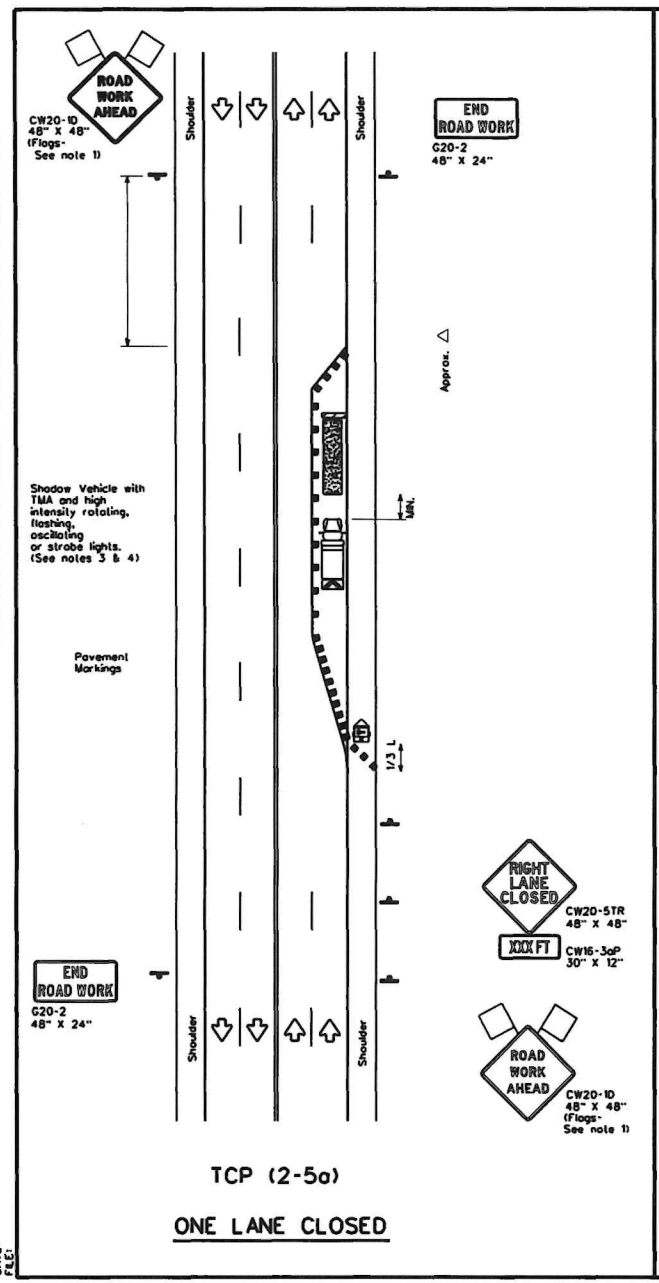
TRAFFIC CONTROL PLAN
LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS
TCP (2-4) 12

DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT

REVISIONS
8-95 2-12
1-97
4-98
3-03

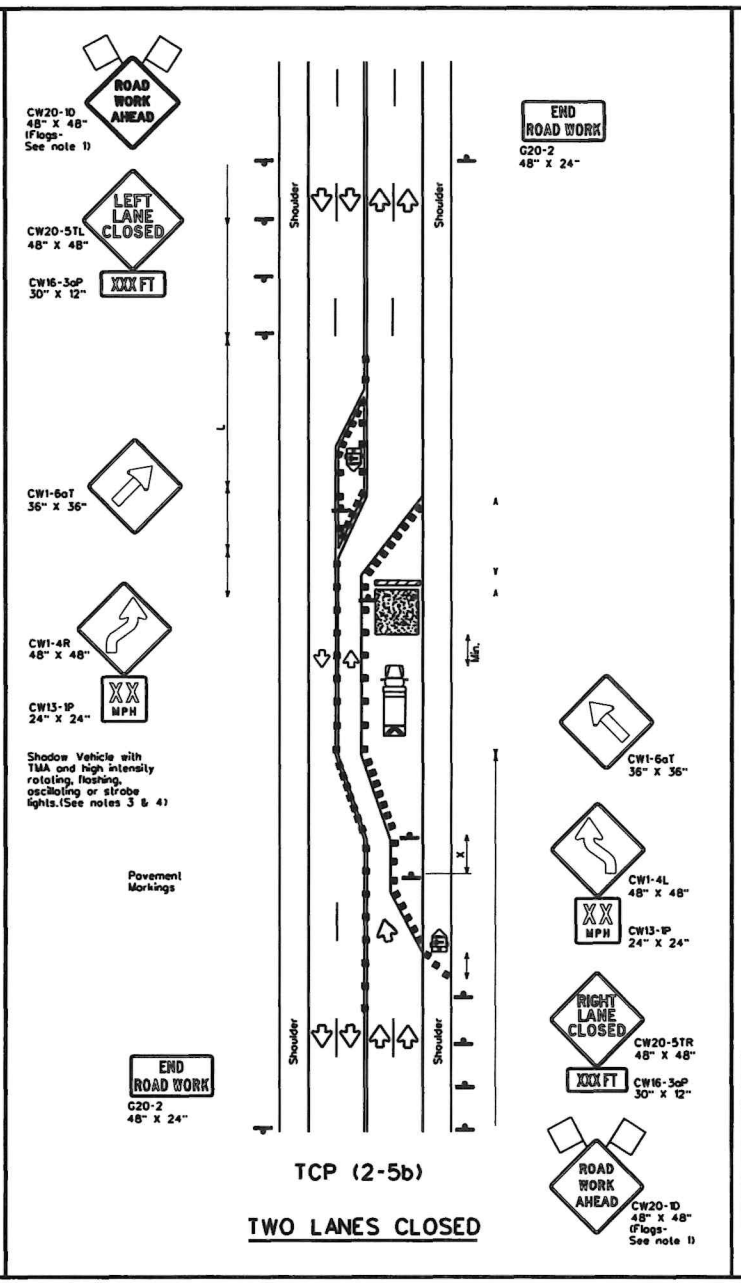
CONT	SECT	JOB	HIGHWAY
0039	03	XXX	RM 2
DIST	COUNTY		SHEET NO.
PHARR	HIDALGO		34

DATE:
FILE:



TCP (2-5a)

ONE LANE CLOSED



TCP (2-5b)

TWO LANES CLOSED

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 x	Formula	Minimum Desirable Taper Lengths x x 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

x Conventional Roads Only

x x 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. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
4. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
5. The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.

TCP (2-5a)

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

TCP (2-5b)

7. Conflicting pavement markings shall be removed for long-term projects.

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

Texas Department of Transportation
Traffic Operations Division

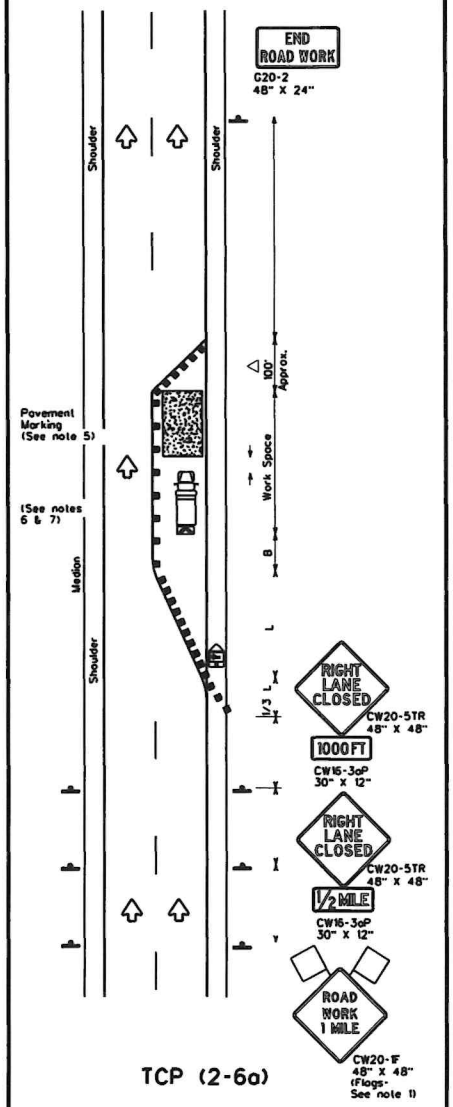
TRAFFIC CONTROL PLAN
LONG TERM LANE CLOSURES
MULTILANE CONVENTIONAL RDS.

TCP (2-5) 12

DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT

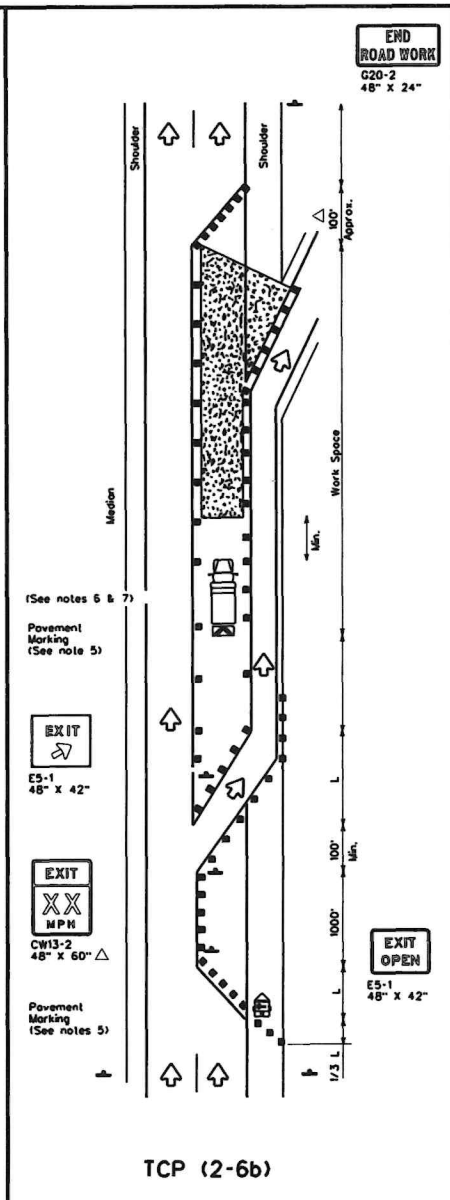
REVISIONS	CONT	SECT	JOB	HIGHWAY
8-95 2-12	0039	03	XXX	RM 2
1-97				
4-98	DIST	COUNTY		SHEET NO.
5-03	PHARR	HIDALGO		35

DATE:
FILE:



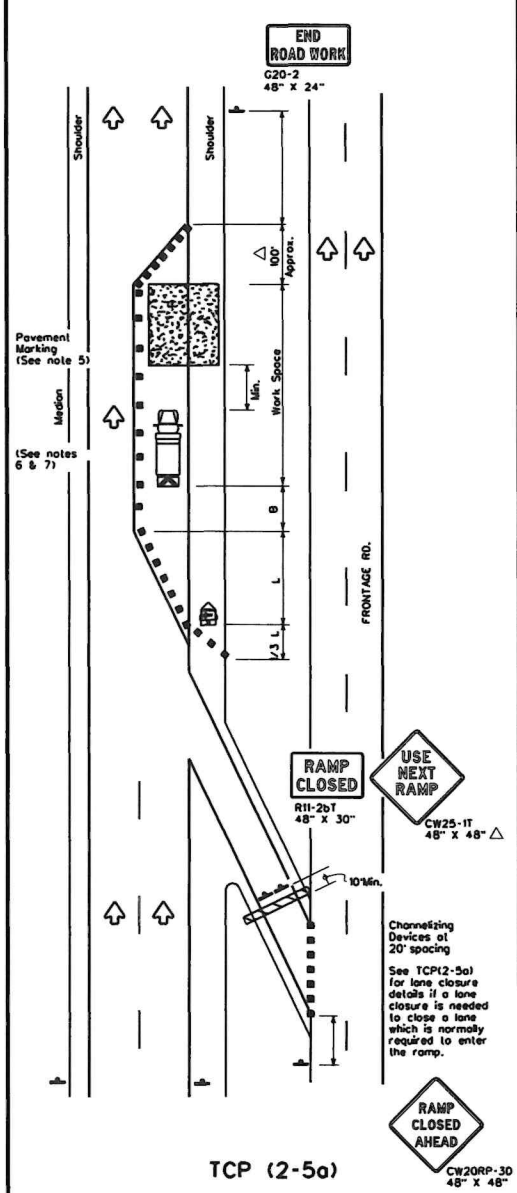
TCP (2-6a)

ONE LANE CLOSURE



TCP (2-6b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (2-5a)

LANE CLOSURE NEAR ENTRANCE RAMPS

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	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

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

TYPICAL USAGE

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Channelizing devices used to close lanes may be supplemented with the Chevron Alignment Sign placed on every other channelizing device. Chevrons may be attached to plastic drums as per BC Standards.
4. Channelizing devices used along the work space or along tangent sections may be supplemented with vertical panels (VP) placed on every other channelizing device. If night time conditions make it difficult to see at least two VPs, the VPs may be placed on each channelizing device.
5. The placement of pavement markings may be omitted on intermediate-term stationary work zones with the approval of the Engineer.
6. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

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

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

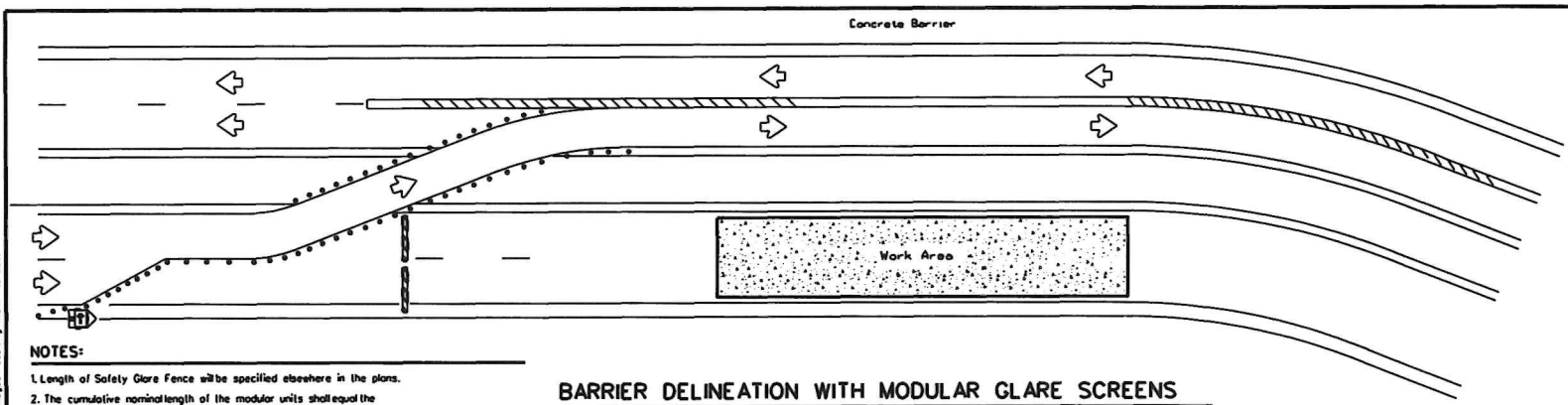
TCP (2-6) 12

DW: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
2-94 2-12
8-95
1-97
4-98

CONT	SECT	JOB	HIGHWAY
0039	03	XXX	IH 2
DIST	COUNTY		SHEET NO.
PHARR	HIDALGO		36

DATE:
FILE:
DOCUMENT NAME

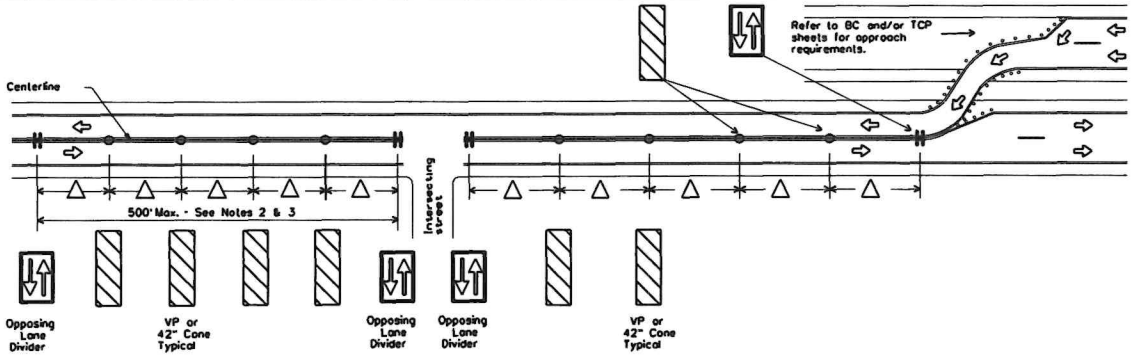


LEGEND	
	Type 3 Barricade
• • •	Channelizing Devices
	Trailer Mounted Flashing Arrow Board
	Sign
\ \ \ \	Safety glare fence

BARRIER DELINEATION WITH MODULAR GLARE SCREENS

NOTES:

1. Length of Safety Glare Fence will be specified elsewhere in the plans.
2. The cumulative nominal length of the modular units shall equal the length of the individual sections of temporary concrete traffic barrier on which they are installed so the joint between barrier sections will not be spanned by any one unit.
3. Panel/blades will be designed such that reflective sheeting conforming with Departmental Material Specification DMS-8300, Sign Face Materials, Type B or C Yellow, minimum size of 2 inches by 12 inches can be attached to the edge of the panel/blade. The sheeting shall be attached to one panel/blade per section of concrete barrier not to exceed a spacing of 30 feet. Barrier reflectors are not necessary when panel/blades are installed with reflective sheeting as described.
4. Payment for these devices will be under statewide Special Specification "Modular Glare Screens for Headlight Barrier."
5. This detail is only intended to show types of locations where Glare Screens could be appropriate. Required signing and other devices shall be as shown elsewhere in the plans.



VERTICAL PANELS & OPPOSING TRAFFIC LANE DIVIDERS (OTLD) SEPARATING TWO-WAY TRAFFIC ON NORMALLY DIVIDED HIGHWAYS

NOTES:

1. When two-lane, two way traffic control must be maintained on one roadway of a normally divided highway, opposing traffic shall be separated with either temporary traffic barriers, channelizing devices, or a temporary raised island throughout the length of the two way operation. The above Typical Application is intended to show the appropriate application of channelizing devices when they are used for this purpose. This is not a traffic control plan. If this detail is to be used for other types of roads or applications, those locations should be stated elsewhere in the plans.

△ 2. Space devices according to the Tangent Spacing shown on the Device Spacing table on BC(9) but not exceeding 100'.

3. Every fifth device should be an OTLD except when spaced closer to accommodate an intersection. An OTLD should be the first device on each side of intersecting streets or roads.

4. Locations where surface mount bases with adhesives or self-righting devices will be required in order to maintain them in their proper position should be noted elsewhere in the plans.

DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
DELINEATORS AND OBJECT MARKERS	DMS-8600
MODULAR GLARE SCREENS FOR HEADLIGHT BARRIER	DMS-8610

Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN TYPICAL DETAILS

WZ(TD)-13

FILE:	wzid-13.dgn	DW: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS		0039	03	XXX	IH 2
4-98		DIST	COUNTY		SHEET NO.
3-03		PHARR	HIDALGO		37
7-13					

During the planning phase of project development, the following Environmental Permits, Issues and Commitments have been developed during coordination with resource agencies, local governmental entities and the general public. Any change orders and/or deviations from the final design must be reported to the Engineer prior to the commencement of construction activities as additional environmental clearances may be required.

I. Clean Water Act, Section 402: Stormwater Pollution Prevention

Action Items Required : ☐ No Action Required

1. ☒ The contractor must implement the SW3P by installing Best Management Practices (BMPs) as indicated in the construction plans and maintained appropriately throughout construction. BMPs must be in place prior to the start of construction. The SW3P may need to be revised as necessary as construction progresses.
2. ☒ For all construction PSL's off the ROW, the contractor must certify compliance with all applicable laws, rules and regulations pertaining to the preservation of cultural resources, natural resources and the environment.
3. ☒ Based on the acreage of impact, select the appropriate box below:
   - ☒ This project will disturb less than 1 acre of soil and is not part of a larger common plan of development; therefore, a NOI and TPDES Site Notice are not required for this project.

   or
   - ☐ This project will disturb equal to or more than 1 acre of soil but less than 5 acres; therefore a NOI is not required but a TPDES Site Notice is required. The Construction Site Notice (CSN) is required to be posted at the construction site in a publicly accessible location for review by the public, TCEQ, EPA and other Inspectors.

   or
   - ☐ This project will disturb equal to or more than 5 acres of soil and will require a NOI and TPDES Site Notice. The NOI and Site Notice are required to be posted at the construction site in a publicly accessible location.
4. ☒ Need to address MS4 requirements (Cameron & Hidalgo Counties only) ☐ MS4 requirements not needed

II. Clean Water Act, Sections 401 and 404 Compliance

Action Items Rquired : ☐ No Action Required

1. ☒ Filling, dredging or excavating in any water bodies, rivers, creeks, streams, wetlands or wet areas is prohibited unless specified in the USACE permit and approved by the Engineer. The contractor shall adhere to all agreements, mitigation plans, and BMPs required by the NWP as regulated by the USACE.

   The Contractor must adhere to all of the terms and conditions associated with the following permit(s):
   - ☒ No Permit Required
   - ☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)
   - ☐ Nationwide Permit 14 - PCN Required (1/10th to <1/2 acre, 1/3 in tidal waters)
   - ☐ Individual 404 Permit Required
   - ☐ Other Nationwide Permit Required: NWP* _____
2. ☐ The contractor is responsible for obtaining new or revised Section 404 permit(s) for Contractor initiated changes in construction methods that change Impacts To Waters Of The U.S., including wetlands. The Contractor will ensure that the water quality of the State will be maintained and not degraded.
3. ☒ Best Management Practices for applicable Section 401 General Conditions:

General Condition 12 - Categories I and II BMPs required

Category I (Erosion Control)

☐ Temporary Vegetation	☐ Interceptor Swale	☒ Mulch Filter Berms and/or Socks
☐ Blankets, Matting	☐ Diversion Dike	☒ Compost Filter Berms and/or Socks
☒ Mulch	☒ Erosion Control Compost	☐ Compost Blankets
☐ Sodding		

Category II (Sedimentation Control)

☐ Silt Fence	☐ Hay (Straw) Bale Dike	☐ Mulch Filter Berms and/or Socks
☐ Rock Berm	☐ Brush Berms	☒ Compost Filter Berms and/or Socks
☐ Triangular Filter Dike	☐ Sediment Basins	☐ Stone Outlet Sediment Traps
☐ Sand Bag Berm	☒ Erosion Control Compost	

General Condition 21 - Category III BMPs required

Category III (Post-Construction TSS Control)

☐ Vegetative Filter Strips	☐ Wet Basins	☐ Mulch Filter Berms and/or Socks
☐ Retention/Irrigation	☐ Grassy Swales	☒ Compost Filter Berms and/or Socks
☐ Extended Detention Basin	☐ Vegetation-Lined Ditches	☐ Sand Filter Systems
☐ Constructed Wetlands	☒ Erosion Control Compost	☐ Sedimentation Chambers

II. Clean Water Act, Sections 401 and 404 Compliance - Continued:

4. ☒ The Contractor's designated and qualified Contractor Responsible Person Environmental (CRPe) will monitor the project site daily to ensue compliance with SW3P and TPDES General Permit TXR 150000. Daily Monitoring Reports shall be provided to TxDOT within 48 hours, in accordance with Item 506.3.1.
5. ☐ Other Project Specific Actions:
   1. Appropriate measures would be taken to maintain normal downstream flows and minimize flooding. Temporary fills would consist of materials and be placed in a maner that would not be eroded by expected high flows. Temporary fills would be removed in their entirely and the affected area returned to pre-construction elevations, and revegetated as appropriate.

III. Cultural Resources

Action Items Required : ☐ No Action Required

1. ☒ Refer to the 2014 TxDOT Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges, Item 7.7.1., in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.
2. ☐ Other Project Specific Actions:
   1. N/A
   2. N/A

IV. Vegetation Resources

Action Items Required : ☐ No Action Required

1. ☒ In accordance with the 2014 TxDOT Standard Specifications: Item 164 - Seeding For Erosion Control: provide and install temporary or permanent seeding for erosion control as shown on the plans or as directed by the Engineer for all seeding and replanting of right of way where possible. (Required for Urban Settings)
2. ☐ In accordance with Executive Order 13112 on invasive species and the Executive Memorandum on Beneficial Landscaping, native species of plants shall be used for all seeding and replanting of right of way where possible for rural roadways. (Required for Rural Settings)
3. ☒ Preserve vegetation where possible throughout the project and minimize clearing, grubbing and excavation within stream banks, bed and approach sections.
4. ☐ Other Project Specific Actions:
   1. N/A
   2. N/A

Pharr District Contact No. 956-702-6100 Revised 02/19/2015

List of Abbreviations

BMP: Best Management Practice
CGP: Construction General Permit
CRPe: Contractor Responsible Person Environmental
DSHS: Texas Department of State Health Services
FEMA: Federal Emergency Management Agency
FHWA: Federal Highway Administration
MOA: Memorandum of Agreement
MOU: Memorandum of Understanding
MS4: Municipal Separate Stormwater Sewer System
MSAT: Mobile Source Air Toxic
MBTA: Migratory Bird Treaty Act
NOI: Notice of Intent
NOT: Notice of Termination
NWP: Nationwide Permit
PCN: Pre-Construction Notification
PSL: Project Specific Location
SPCC: Spill Prevention Control and Countermeasure
SW3P: Storm Water Pollution Prevention Plan
TCEQ: Texas Commission on Environmental Quality
THC: Texas Historical Commission
TPDES: Texas Pollutant Discharge Elimination System
TPWD: Texas Parks and Wildlife Department
TxDOT: Texas Department of Transportation
T&E: Threatened and Endangered Species
USACE: U.S. Army Corp of Engineers
USFWS: U.S. Fish and Wildlife Service

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PHARR DISTRICT

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6			
STATE	DISTRICT	COUNTY	IH 2
TEXAS	PHR	HIDALGO	
CONTROL	SECTION	JOB	SHEET NO.
0039	03	XXX	38

Date Printed: X-X-XX

V. Federal Listed, and Proposed Threatened and Endangered Species, Critical Habitat, State Listed Species, Candidate Species and Migratory Birds

Action Items Required : ☐ No Action Required

1. ☒ Under the Migratory Bird Treaty Act of 1918 (MBTA), codified at 16 U.S.C. 703-712 and as enforced by the USFWS, the proposed construction work will not remove active nests from bridges, trees, ground and other structures during migratory bird nesting season, (February 15th. through October 1st.). If the Contractor needs to perform work within right of way during nesting season, a qualified Biologist shall conduct a survey to determine if nests are present. If present, Contractor shall maintain a minimum 25 foot buffer zone of vegetation around the nest until the young have fledged or the nest is not occupied. A MBTA Nest Survey Form may be obtained from the Pharr District Office Environmental Section.

2. ☐ There is the potential for the presence of state-listed species & species of concern in the project area and state law prohibits the taking (incidental or otherwise) of state-listed species. Taking is defined as the collection, hooking, hunting, netting, shooting, or share by any means or devices. If any listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately.

3. ☒ Other Project Specific Actions:

   1. BIRD BMP'S
      - Not disturbing, destroying, or removing active nest, including ground nesting birds, during nesting season:
      - Avoiding the removal of unoccupied, inactive nest, as practicable;
      - Preventing the establishment of active nest during the nesting season on TXDOT owned and operated facilities and structures proposed for replacment or repair,
      - Not collected, capturing, relocating, or transporting birds, eggs, yong, or active nestwithout permit.
   2. N/A
   3. N/A

VI. Hazardous Materials on Contamination Issues

Action Items Required : ☐ No Action Required

General (applies to all projects):

Comply with the Hazard Communication Act (HCA) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the HCA.

Maintain an adequate supply of on-site spill response materials as indicated in the MSDS. In the event of a spill, take immediate action to mitigate the spill as indicated in the MSDS and in accordance with safe work practices. Contact the TxDOT Pharr District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

- Dead or distressed vegetation (identified as not normal)
- Trash piles, drums, canisters, barrels, etc.
- Undesirable smells or odors
- Evidence of leaching or seepage of contaminant substances

Any other evidence indicating possible hazardous materials or contamination discovered on site.

1. ☒ If potentially hazardous material and/or contaminated media (i.e.: soil, groundwater, surface water, sediment, building materials) are unexpectedly encountered during construction, assure that such materials and contamination are handled according to applicable federal and state regulations, cease work in the immediate area and contact the Engineer immediately.

VI. Hazardous Materials on Contamination Issues - Continued:

2. Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

   ☒ Yes ☐ No

   If "No", then no further action required.
   If "Yes", then TxDOT is responsible for completing an asbestos assessment/inspection.

3. Are the results of the asbestos inspection positive (is asbestos present)?

   ☐ Yes ☐ No

   If "Yes", then TxDOT must retain a Texas Department of State Health Services (DSHS) licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled abatement activities and/or demolition.

   If "No", then TxDOT is still required to notify DSHS 15 working days prior to any scheduled demolition.

4. ☐ The Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and an Asbestos Consultant in order to minimize construction delays and subsequent claims.

VII. Other Environmental Issues

Action Items Required : ☐ No Action Required

1. ☒ Noise

   Contractor shall make every reasonable effort to minimize construction noise through abatement measures such as work hour controls and proper maintenance of equipment mufflers.

2. ☐ Air

   Contractor shall practice common dust control techniques such as surface chemical treatment or watering of unpaved road surfaces and vehicle speed reduction shall be implemented to minimize and prevent airborne dust during construction.

   Contractor should minimize MSAT by utilizing measures to encourage use of EPA required cleaner diesel fuels, limits on idling, increase use of cleaner burning diesel engines, and other emission limitation techniques, as appropriate.

Pharr District Contact No. 956-702-6100 Revised 02/19/2015

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T&E: Threatened and Endangered Species
USACE: U.S. Army Corp of Engineers
USFWS: U.S. Fish and Wildlife Service

Texas Department of Transportation

PHARR DISTRICT

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)

SHEET 2 OF 2

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6			H 2
STATE	DISTRICT	COUNTY	
TEXAS	PHR	HIDALGO	SHEET NO.
CONTROL	SECTION	JOB	
0039	03	XXX	39

Date Printed: X-X-XX

SITE DESCRIPTION

PROJECT LIMITS: LIMITS: AT INTERSECTION OF IH 2 AND FM 907 INTERSECTION

CONSTRUCTION OF LANDSCAPE IMPROVEMENTS CONSISTING OF LANDSCAPE AND IRRIGATION WITH LED ENTRY SIGNS.

PROJECT SITE MAPS:

- *Project Location Map: Title Sheet I*
- *Drainage Patterns: Drainage Area Maps - N/A, NO CHANGE*
- *Approx. Slopes Anticipated After Major Gradings and Areas of Soil Distrubance: NO CHANGE*
- *Major Controls and Locations of Stabilization Practices: SW3P*
- *Project Specific Locations: To be specified by Project Field Office and located in the Project SW3P File*
- *Surface Waters and Discharge Locations: EXISTING, NO CHANGE*

PROJECT DESCRIPTION:
CONSTRUCTION OF LANDSCAPE IMPROVEMENTS CONSISTING OF LANDSCAPE AND IRRIGATION, WITH 2 ENTRY SIGNS.

MAJOR SOIL DISTURBING ACTIVITIES: LANDSCAPE IMPROVEMENTS PLANTING, IRRIGATION AND SIGNAGE

TOTAL PROJECT AREA: .5 Acres

TOTAL AREA TO BE DISTURBED: .5 Acres (100%)

WEIGHTED RUNOFF COEFFICIENT:
Before Construction: N/A
After Construction: N/A

EXISTING CONDITION OF SOIL & VEGETATIVE
GRASS AREAS UNDER AND ADJACENT TO OVERPASS

NAME OF RECEIVING WATERS:
N/A

ENDANGERED SPECIES, DESIGNATED CRITICAL HABITAT AND HISTORICAL PROPERTY:
A. No Endangered Species, Designated Critical Habitat or Historic Property has been found on this project site.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- ___ TEMPORARY SEEDING
- ___ MULCHING (Hay or Straw)
- ___ BUFFER ZONES
- P PLANTING
- P SEEDING
- ___ SODDING
- ___ OTHER: (Specify Practice)
- ___ PRESERVATION OF NATURAL RESOURCES
- ___ FLEXIBLE CHANNEL LINER
- ___ RIGID CHANNEL LINER
- ___ SOIL RETENTION BLANKET
- P COMPOST MANUFACTURED COMPOST
- P BIODEGRADABLE EROSION CONTROL SOCKS

STRUCTURAL PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- ___ SILT FENCES
- T BIODEGRADABLE EROSION CONTROL SOCKS
- ___ HAY BALES
- ___ ROCK FILTER DAMS
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- ___ DIVERSION DIKE AND SWALE COMBINATIONS
- ___ PIPE SLOPE DRAINS
- ___ PAVED FLUMES
- ___ ROCK BEDDING AT CONSTRUCTION EXIT
- ___ TIMBER MATTING AT CONSTRUCTION EXIT
- ___ PIPE MATTING OR EQUAL AT CONSTRUCTION EXIT
- ___ CHANNEL LINERS
- ___ SEDIMENT TRAPS
- ___ SEDIMENT BASINS
- ___ STORM INLET SEDIMENT TRAP
- ___ STONE OUTLET STRUCTURES
- ___ CURBS AND GUTTERS
- ___ STORM SEWERS
- ___ VELOCITY CONTROL DEVICES
- P OTHER: (Specify Practice)
  LANDSCAPE PLANTING OF TREES AND SHRUBS

STORM WATER MANAGEMENT:
Storm water drainage is existing and will not be altred
Drainage will be to the existing designated outfall.

STORM WATER MANAGEMENT ACTIVITIES:

The order of activities will be as follows:
Installation of plant beds, concrete planter curbs, concrete pavers, decomposed granate, irrigation, system, synthetic grass and landscape plantings of trees, palms and shrubs.
Installation of signage with lighting facing away from the IH 2 main lanes.

NON-STORM WATER MANAGEMENT DISCHARGES:
Non-storm water discharges should be filtered, or held in retention basins, before being allowed to mix with storm water. These discharges consist of non-polluted ground water, spring water, foundation and/or footing drain water; and water used for dust control, pavement washing and vehicle wastewater containing no detergents.

OTHER REQUIREMENTS & PRACTICES

OTHER EROSION AND SEDIMENT CONTROLS:

MAINTENANCE: *All erosion and sediment controls will be maintained in good working order. If a repair is necessary, it will be done at the earliest date possible, but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from heavy equipment. The areas adjacent to creeks and drainage ways shall have priority followed by devices protecting storm sewer inlets.*

INSPECTION: *For areas of the construction site that have not been finally stabilized, area used for storage of materials, structural control measures, and locations where vehicles enter or exit the site, personnel provided by the permittee and familiar with the SW3P must inspect disturbed areas at least once every fourteen (14) calendar days and within twenty-four (24) hours of the end of a storm event 0.5 inches or greater.*

WASTE MATERIALS: *All waste materials will be collected and stored in a securely lidded dumpster. All trash and construction debris from the site will be deposited as necessary at a local dump. No construction waste material will be buried on site.*

HAZARDOUS WASTE (INCLUDING SPILL REPORTING): *At a minimum, any products in the following categories to be hazardous: Paints, Acids for cleaning masonry surfaces, Cleaning Solvents, Asphalt products, Chemical additives for soil stabilization, or Concrete curing compounds and additives. In the event of a spill which may be hazardous, the spill Coordinator should be contacted immediately. Emptying of excess concrete should not be allowed on site. Likewise, washout of concrete trucks should not be performed on site. These discharges are considered non-allowable non-storm water discharges. Concrete trucks should never be allowed to dump into storm drains or sanitary sewers.*

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

OFFSITE VEHICLE TRACKING: *The Contractor shall be required, on a regular basis or as may be directed by the Engineer, to dampen haul roads for dust control, stabilize construction entrances and to remove excess dirt from the roadway.*

MANAGEMENT PRACTICES: *(Example Below - May be used as applicable, revised or expanded)*
1. Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wetland, water body or stream bed.
2. Construction staging areas and vehicle maintenance areas shall be constructed by the Contractor in a manner to minimize the runoff of pollutants.
3. All waterways shall be cleared as soon as practicable of temporary embankment, temporary bridges, matting, falsework, piling, or debris or other obstructions placed during construction operations that are not a part of the finished work.

OTHER: *Contractor shall adhere to the following:*
1. Construction Materials List of materials stored on job site to be provided by Contractor.
2. The project SW3P File shall be located at the project field office or within the Contractor's mobile office at all times and shall contain the N.O.I., CGP, Signature Authorization, Certification/Qualification Statements, Inspection Reports, Required Maps, and the TPDES Permit, Part II. This File to be presented to authorized State and Federal Agents upon request.

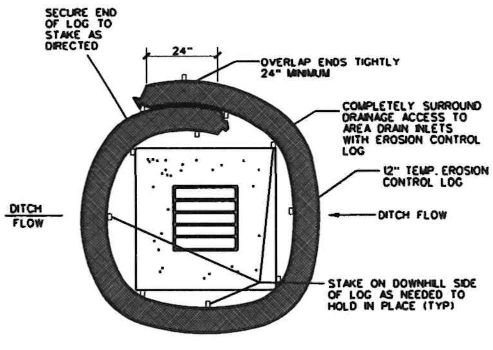
Texas Department of Transportation

TxDOT STORM WATER POLLUTION PREVENTION PLAN (SW3P)

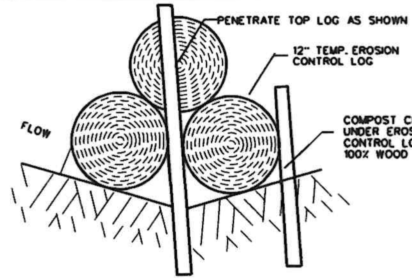
REV. 2-20-14 SW3P.DGN

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			40
STATE	DIST.	COUNTY	
TEXAS	PHARR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.
0039	03	XXX	IH 2

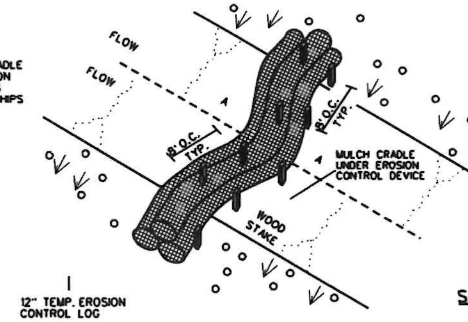
LEVELS DISPLAYED



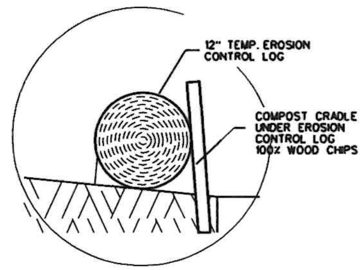
DROP INLET SEDIMENT TRAP
NTS
(DI-ST)



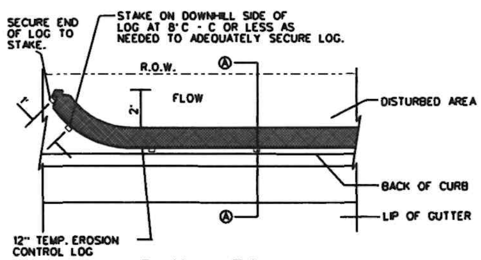
DITCH LINE SEDIMENT TRAP A-A
(DL-ST)



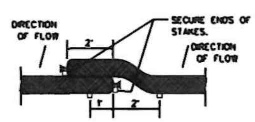
DITCH LINE SEDIMENT TRAP
(DL-ST)



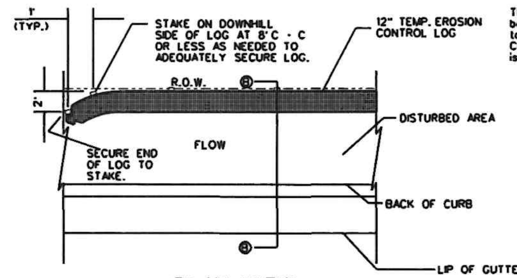
COMPOST CRADLE



PLAN VIEW
NTS



LAP DETAIL
NTS



PLAN VIEW
NTS

PLANS SHEET LEGEND

(DI-ST) DROP INLET SEDIMENT TRAP

(DL-ST) DITCH LINE SEDIMENT TRAP

(BOCI-ST) BACK OF CURB INLET SEDIMENT TRAP

(ROW-ST) RIGHT OF WAY SEDIMENT TRAP

(CI-ST) CURB INLET SEDIMENT TRAP

SEDIMENT BASIN & TRAP USAGE GUIDELINES

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

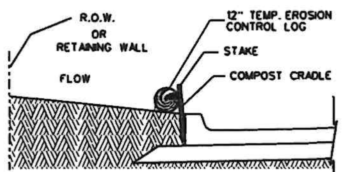
Traps: the drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Sediment traps should be placed in the following locations:
1. Immediately preceding drain inlets
2. Just before the drainage enters a water course
3. Just before the drainage leaves the right of way
4. Just before the drainage leaves the construction limits where drainage flows away from the project

The trap should be cleaned when the capacity has been reduced by 1/2, or the sediment has accumulated to a depth of 1', whichever is less.
Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for seperately.

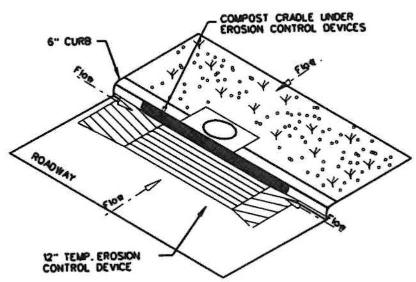
GENERAL NOTES

1. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED. MAXIMUM LENGTH OF LOGS SHALL BE 30' FOR 12" DIAMETER LOGS.
2. 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.
3. STUFF LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE DENSITY THAT WILL HOLD SHAPE WITHOUT EXCESSIVE DEFORMATION.
4. STAKES SHALL BE 2" X 2" WOOD 4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG.
5. COMPOST CRADLE MATERIAL IS INCIDENTAL AND WILL NOT BE PAID FOR SEPARATELY.

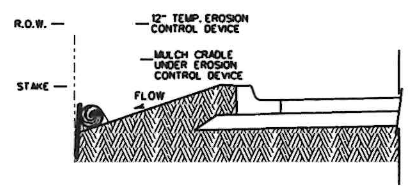


SECTION A-A

BACK OF CURB INLET SEDIMENT TRAP
NTS
(BOCI-ST)



CURB INLET SEDIMENT TRAP
NTS
(CI-ST)



SECTION B-B

RIGHT-OF-WAY SEDIMENT TRAP
NTS
(ROW-ST)

PHARR DISTRICT STANDARD

Texas Department of Transportation
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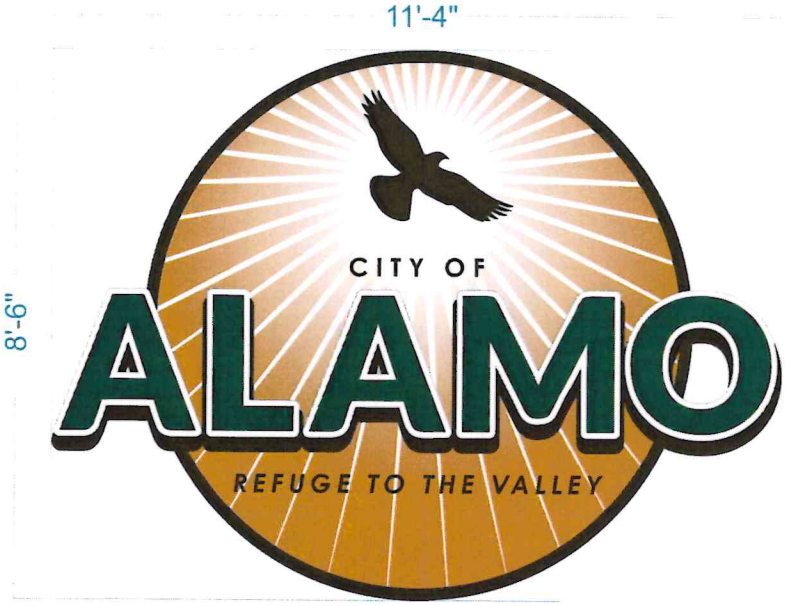
EROSHION CONTROL LOG

FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
6			IH 2
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	PHARR	HIDALGO	41
CONTROL	SECTION	JOB	
0039	03	XXX	

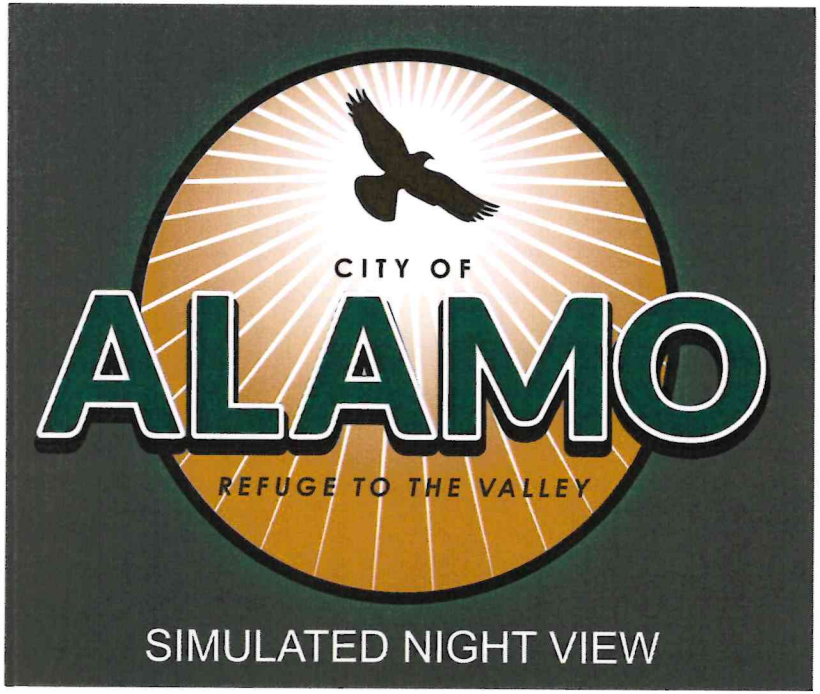
QUANTITY 2x



Front View

NEED VECTOR ARTWORK

Side View



Paint Chips:	Vinyl Chips:	Trim Cap Chips:
TBD - CUSTOM	DIGITAL PRINT	WHITE
	3630-126 DARK EMERALD	Return Chips:
		TBD - CUSTOM
		LED Chips:
		GREEN

Leon's SIGNS Inc. QUALITY SINCE 1946
Full Service Sign Company
LeonsSignsInc.com
851 East Northeast Loop 323 Tyler, Texas 75708
903-597-7731
Texas Electrical Sign Contractor License #18080

Acct. Mgr. :	Margaret M.
Drawn By :	SMG
Acct. Mgr. Approval :	

Job # :	240457-02
SOW / # :	Lighted Wall Signs / Scope 2
Date :	05/14/2024
Client Approval :	
Approval Date :	

CITY OF ALAMO

851 E NE Loop 323
Tyler, TX 75708

*** DO NOT APPROVE THIS PROOF UNTIL ARTWORK IS 100% CORRECT ***

Notes:
...

Revisions:
04/16 - SMG
05/14 - SMG

File Location: fileserv\DATA\Art & Production\Master Drawings\City of Alamo\240457.cdr

SECTION 32 91 13 Planting Bed Preparation

All shrub beds shall be prepared for installation of plant material in the following manner:

1. Apply round-up @ herbicide 20 days and again 10 days before plant bed preparation in accordance with manufactures label.

2. Apply three inches (3") of mulch material for soil amendments as described in general notes to backfill material.

3. Till beds to a depth of 18 inches.

4. Level and re-grade to bring level with the sidewalks and raked smooth prior to planting.

5. The Owner shall inspect the beds prior to and after back filling.

SECTION 32 90 00

PLANTING

PART 1 - GENERAL

32 93 00 Planting and Establishment

The Contractor shall make an examination of the project site and completely familiarize himself with the nature and extent of the work to be accomplished. No extra compensation will be allowed for any work made necessary by unusual conditions or obstacles encountered during the progress of the work, which are readily apparent upon a visit to the site. If there are any questions in this regard, or discrepancies between the plans and actual site conditions, the Contractor shall notify the owner prior to the submission of bids.

All material and work required for repair and replacement shall meet with the approval of the owner, and will not be paid for directly, but will be subsidiary to this bid item.

The Contractor shall be responsible for contacting, locating, and protecting all underground utilities and structures. The owner may assist the Contractor in locating underground utilities and structures. However, any damage to existing utilities or structures shall be repaired at the Contractor's expense. If in the course of the work, underground utilities or structures are encountered and are in conflict with the work, the Contractor shall contact the owner who will recommend necessary adjustments. Changes of this nature are considered incidental to the work and shall not entitle the Contractor to additional compensation.

If the Contractor needs additional area for employee parking, servicing, storage, and securing of equipment and materials used in the performance of the specified work, the owner will, upon request from the Contractor, designate an area for this purpose. Upon completion of the work, the Contractor shall promptly remove all equipment, structures, and excess materials from the site and restore the area to its original condition, including the reestablishment of surface vegetation. This work shall be accomplished to the satisfaction of the owner and shall be subsidiary to the bid Item.

The Contractor shall be responsible for protection of his materials and equipment from theft, vandalism, animals, fire, etc., while said materials and equipment are on the project site, whether stored or installed in place, until the project has been accepted by the owner. In like manner, the Contractor shall protect all earthwork.

Upon completion of the project, the site(s) as defined herein, shall be cleaned of all debris and left in a neat and presentable condition. This shall include but not be limited to, the removal of all noxious weeds and debris from planted areas as specified herein or as specified by the owner. This work shall not be paid for directly, but shall be subsidiary to the bid Item.

The Contractor shall be responsible for providing material samples as well as any manufacturer's literature of materials used on this project as required by the owner. Any costs associated with any sampling and testing shall be the responsibility of the Contractor. These costs shall be considered as incidental and the Contractor will not be entitled to any additional compensation.

Any water hauled to the site during the plant installation period, a 90-day maintenance period shall be paid for by the Contractor.

The Contractor shall be required to verify and adhere to the requirements and codes of the controlling utility authorities in the event any materials or installation of any utilities shown on the plans are not adequate to meet the requirements or codes of the controlling utility authorities. Any changes that may be necessary shall be considered incidental and the Contractor shall not be entitled to any additional compensation.

Pre-construction conference

Prior to beginning work on the project and soon after the award of the contract, a conference will be held between the representatives of the owner, the Contractor, and any sub-Contractors that will be involved in the work. At this time the Contractor shall submit charts or briefs, outlining the manner of execution of the work that is intended in order to complete the specified work within the allotted time. This conference will more completely establish the sequence of work to be followed and establish the estimated progress schedule for completion of the various tasks.

In addition, at this conference, the Contractor shall be responsible for furnishing the owner with all of the following, as specified herein or as directed by the owner:

1. Samples of all materials, except plants, to be used on the project with identification as to product name, name, location, phone number (including area code), and mailing address of product source and manufacturer, if different from source, content of product, amount of each ingredient in the product, and manufacturer's directions as to use and application of the product, if applicable.

2. Manufacturer's literature of all materials and equipment installed on the project.

3. Any and all State and Federal certifications stating that the plant materials are free from disease and insect infestation.

4. All nursery locations, names, phone numbers (including area codes), and mailing addresses where the Contractor intends to procure plant material for the project so that critical plants may be inspected at the source, if necessary. Also, indicate which materials shall be used from each nursery.

5. A plan for transporting plant materials.

6. The source of water and the means of distribution on the project (this may be irrigation system or by other means as required by the project).

All of the requirements listed under the "pre-construction conference" will be subject to review, testing, and approval by the owner. If Items fail to meet approval, the Contractor shall correct the deficiencies and resubmit for approval as directed by the owner prior to beginning work on the project. If these Items fail a second approval, the owner will determine the course of action for the Contractor to follow. Any approval given, as stated above, shall not relieve the Contractor from providing quality materials, products, and equipment during construction. The owner has the option to review, test, approve, or disapprove any phase of the construction or maintenance as the work progresses. It is understood that some materials for the project will require mixing. Therefore, these materials after mixing may be reviewed, tested, and approved as Stated within these general notes.

Mulch materials

1. Mulch material for soil amendment required in the backfill mix shall be 100% organic composted material, factory blended to contain non-defoliated (arsenic acid free) weed free, and containing an approximate non-leachable N-P-K analysis of 2.0-2.0-2.0 with trace elements.

   Example: Sweet soil, soil amendment
   Manufactured by:

   Organic Compost Inc.
   Box 1637
   Edinburg, Texas 78504
   (956) 383-1121
   (or approved equal)

2. All mulch for surface application shall be shredded pine bark. The texture shall correspond to the Type I, Class B classification of the Federal Specification Q-P-166E, with particles ranging between the size from 3/8 inch to about 1 inch, with a minimum (not over 25% by volume) of finer particles and dust. Mulch of this type and class shall be free of sticks, stones, clay, or other foreign matter.

3. One cubic foot (1 CF) samples of each type of ingredient along with a label from the manufacturer's packages shall be submitted to the owner for approval. If bulk materials are used, typical samples of each type of material shall be provided to the Architect for approval prior to the preparation of the planting mix. These samples, if approved by the owner, shall be

used as the standard by which other materials shall be judged. Any material that, in the judgment of the owner, is below the quality of these samples may be tested in accordance with the specifications set forth herein. Any rejected material shall be immediately removed from the site at the Contractors expense. Payment for any testing required under this section shall be the responsibility of the Contractor.

Planting soil mix

Backfilling of all plant pits shall be done with a planting soil mix as specified herein. Native soil removed from the planting pits and beds shall be used to form the watering basins. Excess soil shall be removed from the site or distributed and leveled on the site by the Contractor as directed by the owner. Watering basin shall be formed using the soil mix and raked smooth.

Planting soil mix used for backfilling planting pits shall be prepared in the following proportions by volume:

60% sandy loam topsoil (pH 7.0-7.8). Soil shall be typical of the area with no noxious weeds, grasses, sticks, roots, or stones present and shall be consistent in texture. (maximum lump size is 1").
40% mulch as listed above.

The owner may require the Contractor to mix all ingredients of the planting soil mix in the presence of the owner.

All ingredients shall be thoroughly blended to provide a homogeneous mixture. Mixing shall be in one cubic yard or greater batches using mechanical mixing one in a designated on-site area or it may be accomplished off-site if approved by the owner and the finished material transported to the site.

Samples of at least one cubic foot (1 CF) for each ten cubic yards (10 CY) of planting soil mix used on the site shall be submitted to the owner for approval. In the event deficiencies are found in the planting mix they shall be corrected immediately. If the material is rejected on the project site by the owner for any reason, all of the rejected material shall be immediately removed from the site and disposed of by the Contractor at his expense. If any of the rejected material has been used in the planting operations, the owner, at his discretion, may require the Contractor to remove and replace the soil mix with an approved mixture. Any testing required by the owner shall be the responsibility of the Contractor and shall be considered subsidiary to the work and no additional compensation shall be awarded.

Fertilizer application at planting

All plants shall be fertilized with an approved slow release tablet applied at the rate shown on the plans, or at a comparable rate for an approved substitute. The Contractor shall submit complete Manufacturer's literature and analysis data for approval of the owner prior to beginning work on the project.

Application shall be as follows:

(1) gallon material - one (1) tablets
(5) gallon material - two (2) tablets
(10)gallon material - two (2) tablets
(15)gallon material - three (3) tablets
Palms - eight (8) tablets each
Trees - one (1) tablet per ½ inch caliper

Placement of tablets are as designated on the plans.

Staking and guying shall be considered subsidiary to landscape plantings and the Contractor shall not be entitled any additional compensation.

Staking of plant material locations

All trees and palms shall be staked in the field by the Contractor and approved by the owner prior to any excavation of plant pits. Stakes shall be color coded to denote tree locations at the time when tree locations have been staked, the owner shall have the right to make adjustments to the plant locations to meet field conditions. These changes shall be considered incidental and the Contractor shall not be entitled to any additional compensation.

Staking and guying

The Contractor shall install and maintain the guying material as detailed on the plans or as directed by the owner.

Water and watering

Water for all planting and a 90 day maintenance operations shall be the responsibility of the Contractor. Water shall be clean, clear, and free of industrial wastes or other substances harmful to plants. The Contractor shall provide all required facilities, to make connections and convey the water to the places where it will be used and to increase the water pressure if required. At the Pre-construction Conference, the Contractor should be prepared to identify the source of water and the means for delivery and distribution of water on the site.

During the planting operations, the Contractor shall provide a quantity and frequency of water application to keep the ground and backfill material moist to a depth of at least twelve inches (12") below the root ball and for the duration of the 90-day maintenance period as a part of this contract. The Contractor shall be required to meet the minimum watering requirement stated above by a method approved by the owner or, if applicable, in the event the irrigation system fails.

Pruning

Any necessary pruning shall be done at the time of planting as directed by the owner and in accordance with approved horticultural methods. All pruning shall be accomplished with clean sharp tools specifically designed for these purposes. Pruning and selective thinning equal to Class I, "Fine Pruning" shall be accomplished as needed during the contract period. The removal of sucker growth shall be required to keep the plant material free of sucker growth.

Plant basin maintenance

During the installation and 90 day maintenance period all plant basins and planting beds shall be maintained weed free. Nylon string trimmers shall not be used within the plant basins or planting beds. A two inch (2") layer of pine bark mulch or shredded cypress mulch, fine grade and free of debris, shall be established and maintained at all times within the basins and beds. Existing mulch shall be worked as to eliminate mulch compaction.

Watering basins shall be maintained as per details. Back fill material listed above, free of weed seed or other undesirable debris, shall be used to build basins and shall be compacted to adequately reduce erosion during watering or excessive rainfall.

Tree bracing and wrapping

Tree bracing will be required under this contract, as detailed on the plans.

Tree wrapping will not be required for this contract.

Plant wrapping

Plant wrapping will not be required under this contract.

Plant material

As directed by the Architect, the Contractor shall be required to furnish and install the following plants within the project limits as needed. The quantity of each plant type listed within the estimate summary sheet and within the project proposal may be increased or decreased as necessary. The Contractor shall

be paid for the actual number of plants installed based on the unit price bid for each type. Replacement plant material shall meet or exceed the following specifications:

Plant installation shall include all back fill, mulch, fertilizer, staking and guying, water, labor etc. to install and establish plant material, complete and in place.

Plants shall be subject to inspection and approval by the owner at the place of growth and upon delivery to the project site for conformity to the specifications. Such approval shall not impair the right of

inspection and rejection during progress of the work. The owner reserves the right to refuse inspection at any time if in his judgment a sufficient quantity of plants is not available for inspection.

All plants inspected at the place of growth by the owner shall be tagged with serialized self-locking tags. Plants delivered to the site without these tags or with broken tags may be sufficient reason for rejection. Tags shall be furnished by the Contractor and approved by the owner.

The Contractor shall submit for approval a plan to the owner for transplanting plant material from the place of growth to the site. Such a plan shall include: date of pick-up, place of growth, nursery or place of storage, type of vehicle used for shipping, method of protecting plants during transit, date of delivery to site, projected date of installation, a means of storage and care. Watering and shading used between delivery and planting which shall be subject to review by the owner. Do not store plant materials on hard surfaces and immediately untie material upon delivery.

The following considerations for product handling by the Contractor shall be evaluated during hot weather and when practical:

1) The Contractor may be required to transport plant materials between sunset and sunrise if transported in an open trailer or un-refrigerated van.

2) Dug material shall be maintained and watered as required at the nursery to guarantee their vitality and health until installation.

3) Protect trunks, stems, branches, and root balls from all damage during digging, handling, typing, wrapping, loading, unloading, and untying operations.

4) Load containers onto transport vehicle and secure in a manner that protects the structural integrity of the root balls and branches.

5) The Contractor shall be solely responsible for the safe transportation of plants to the site and their condition upon arrival.

6) Plants damaged, dehydrated or abused during transit and storage will be rejected.

7) Plant materials shall not be stored on concrete or left exposed to the sun.

8) Protect the root balls and water regularly until planting.

9) If plants are left in storage over the weekend or holiday a means of periodically watering and inspecting root ball moisture shall be provided.

The owner may inspect any phase of product handling and may reject any plant material improperly handled during any point of this operation.

Where specified to be nursery-grown, either in containers or in the field, such plants shall be nursery-grown in accordance with horticultural practices under climatic conditions similar to those of the project for at least twelve (12) months, unless specifically otherwise authorized by the owner in writing. Unless specifically noted otherwise, all plants shall be heavy, symmetrical, tightly knit, so trained or favored in development and appearance as to be superior in form, number of branches, compactness and symmetry.

Plants shall be sound, healthy and vigorous, well branched and densely foliated, when in leaf. They shall be free of disease, insect infestation, eggs, or larvae, and shall have healthy, well-developed root systems. They shall be free from physical damage or adverse conditions that would prevent thriving growth.

Plants that meet the measurements specified but do not possess a normal balance between height and spread shall be rejected.

All plants specified in containers shall be provided in structurally sound, nursery plant containers with the minimum size as specified. Container dimensions shall be as recommended by the "American Standard for Nursery Stock", (current edition). If a container is not listed in the "American Standard for Nursery Stock", then the owner will have final approval of container dimensions.

Samples must prove no root bound conditions exist. No container plants that have cracked or broken balls of earth when taken from container shall be planted. Container stock shall not be pruned before delivery. Field grown plants recently transplanted into containers will not be accepted.

The Contractor shall neither work subsoil for planting operations when moisture content is so great that excessive compaction will not occur nor when it is so dry that the clods will not break readily. Water shall be applied, if necessary.

Canned stock shall be removed carefully after cans have been cut on two or three sides with an approved tool. Do not use spade to cut cans. Do not lift or handle container plant by tops, stems, or trunks at any time.

Do not bind or handle any plant with wire or rope at any time so as to damage bark or break branches. Lift and handle plants only form bottom of ball.

The Contractor shall follow these steps for the installation of pit planted materials:

1) Scarify the walls and bottom of all plant pits immediately prior to the placement of plant and backfill mix to insure the removal of all glazing caused by an auger or mechanical hole digger.

2) Fill plant pits with backfill mix to compact depth to receive root ball, so that the top of the root ball is two inches (2") above finished grade.

3) For boxed material, break vertical bands and remove top and bottom of container. Carefully lower plant into pit with backhoe or approved method and adjust elevation, cut horizontal bands and remove sides.

4) Prune away girdled roots and tease root hair masses. Carefully fill pit with backfill mix and compact by watering in to support root ball.

5) Smooth planted areas to conform to specified grades after full settlement has occurred. Create watering basins as shown on the plans. Water all plants immediately after planting.

6) Spread mulch in required areas to the compacted depth of three inches (3") or as specified in the details or by the owner.

7) Trees should be staked for support during the same day as planting. Plants shall stand plumb after staking. The Contractor shall be responsible for material remaining plumb and straight for all given conditions throughout the contract period. Free support shall be done as outlined in the details.

Replacement of Material

If at any time during the contract period and a 90-day maintenance period, a plant is found to be dead, it shall be replaced to the satisfaction of the owner, and within the period specified in the formal written notification from the owner. Failure to accomplish replacement of plant materials during the specified time period will be considered non-performance of the guarantee and maintenance requirements included in this contract and the owner may withhold payment until the required replacement has been accomplished.

Planting Requirement for Plant Replacement

The Contractor shall utilize the same process for replacement of planting or materials as used in the original installation process.

SECTION 32 84 23 Underground Irrigation System

This project includes an irrigation system with electric controllers and valves. It shall be the Contractor's responsibility to program and maintain the system so that the minimum watering requirements are met. In the event the irrigation system fails, the Contractor shall meet the watering requirements by a method approved by the owner. The cost of water used by the automated irrigation system for this Item shall be paid for by the owner.

The drawings are generally diagrammatic and indicative of the work to be installed. Due to the scale of the drawings, it is not possible to indicate all offsets, fittings, and sleeves, which may be required. The Contractor shall carefully investigate the site conditions affecting all work and shall plan his work accordingly, furnishing such offsets, fittings, and sleeves as may be required to meet site conditions.

The Contractor shall not willfully install the irrigation system as shown on the drawings when it is obvious in the field that obstructions, grade differences or discrepancies in area dimensions exist that might not have been known the owner. Such obstructions or differences should be brought to the attention the owner who will recommend necessary changes. This work shall be considered incidental to the project. In the event this notification is not performed, the Contractor shall assume full responsibility for any revisions necessary.

The Contractor shall field verify dimensions and minimum 55 PSI static water pressure at each meter before trenching, if discrepancies exist, notify the owner before proceeding. If the Contractor fails to verify pressures, he assumes full responsibility and costs for any system alterations.

A copy of the complete project and all additional project information shall be with the irrigation Contractor at all times. The Contractor must coordinate his installation activities and the site needs with the general Contractor.

All necessary boring for electrical work and water sleeves shall be subsidiary to this item.

Sleeving material to be installed by the Contractor.

Use of sleeves for all roadway crossings shall be required.

Materials:

All irrigation system utility meters, for billing purposes only, shall be applied for by the Contractor in the name of the owner. The Contractor shall be responsible for paying the cost of all meters, taps, installation, and any fees or other costs associated with the utility meters. The owner will be responsible only for the cost of the water and electricity used on this project to operate the irrigation system.

Any water hauled to the site during the installation of a ninety (90)-day maintenance period shall be paid by the Contractor.

Above ground pipe. All aboveground pipe and buried risers and swing-joint components shall be schedule 40 PVC pipe rated for direct sunlight exposure.

1. Underground pipe. All underground pipe shall be domestic extruded pipe manufactured from PVC 1120, Type I, grade I, PVC compound. The pipe shall be SDR 13.5, 315, for all 1/2", pipe and SDR 21, Class 200 for all other sizes, pressure rated with twin gasket couplings and fittings or slip type solvent welded joints. All fittings incorporated into the system shall be of the same type and class material as the pipe. All fittings shall be regularly manufactured parts (reducers, bushings, and other appurtenances), intended for use with the aforementioned materials. All pipe and fittings shall conform to ASTM D-1784 and shall be marked in accordance with ASTM D-2241.

2. Remote control valves. All remote control valves shall be as indicated in the plans or approved equal in the sizes indicated on the plans. The Contractor shall furnish valve data to the owner for approval prior to beginning the work.

3. Water meter. Water meter shall as specified in the plans.

4. Valve boxes. All gate valves, remote control valves, and quick coupling valves shall be mounted below grade in Ametek or approved equal valve boxes. Minimum size of any box shall be ten (10) inches and shall be installed with the top flush with finished grade. No more than one (1) valve is to occupy the same box to allow easy access for maintenance operations as determined by the owner.

5. Rotary and pop up heads and spray heads: irrigation heads on this system shall as shown in the plans, or approved equal. The Contractor shall furnish head data to the owner for approval prior to beginning the work.

6. Miscellaneous Fittings. The Contractor shall furnish all other fittings and appurtenances necessary to complete the system.

7. Irrigation Controller. The contractor shall as specified in the plans.

8. Control wire. All low voltage control wire shall be 14 ga. Color coded and specifically manufactured for direct burial. All wire connections and splices shall be made with waterproof compression clamps covered with scotch fill and coated with Scotch Kote, or an approved equal.

13. Backflow prevention devices. Backflow shall as specified in the plans.

Example: FEBCO PVB (2") or an approved equal

11. Solvent cement. Solvent cement shall be the type recommended by the pipe manufacturer.

Installation method

1. Excavation and backfilling. The Contractor shall do all necessary excavating and backfilling required for the proper installation of the pipe and other irrigation equipment. Excavation depth and pipe location shall be in strict accordance with the dimensions and notes on the plans. Deviations in the piping as shown on the plans shall not be permitted without approval, in writing, from owner. Minor adjustments to the layout that may be necessary to avoid unforeseen underground obstructions may be made by the Contractor so long as they are recorded on the field drawings and incorporated into the "as-built drawings" described hereinafter.

   (a) Trench excavation. Trench excavation shall follow, as much as possible, the layout indicated on the drawings. Dig trenches straight and support pipe continuously on bottom of trench. Lay pipe to an even grade. Trench shall be clean and smooth with all organic debris and sharp objects removed. Trench depths shall be as shown on the plans.

   Pipe shall be snaked in the trench, with scheduling facing up for clear inspection by the owner and in order to allow for expansion and contraction. Solvent weld pipe shall not be installed when air temperature is below forty (40) degrees Fahrenheit. Plastic pipe shall be cut with a handsaw, hacksaw, or other cutter, in a manner that will insure a square cut. Burrs at cut ends shall be removed prior to installation so that a smooth unobstructed flow will be obtained. Plastic to plastic joints shall be made following manufacturer's recommendations.

   All main and lateral lines are to be pressure tested and inspected by the owner prior to any backfilling.

   (b) Depth of Cover. Irrigation mains shall have a minimum of eighteen (18) inches of cover, and lateral lines shall have a minimum cover of twelve (12) inches of soil.

   (c) Backfill. All backfill material shall be free of sharp rock, large stones, or other materials that could damage the pipe during the backfilling operation.

Backfilling shall not be done in freezing weather except with written approval of the owner. The site of the work shall be continuously cleared of excess and/or waste materials as the backfilling progresses, and shall be left in a workmanlike condition to the satisfaction of the owner. In order to prevent accidental injury, any open trenches shall be covered or clearly flagged to the owner's satisfaction.

(d) Compaction of Backfill. All trenches shall be backfilled in lifts of no more than twelve (12) inches and then compacted by an approved method. Compaction of the pipe trenches must be sufficient to limit short term settling of the backfill to no more than

one-tenth (0.10) of a vertical foot. The Contractor shall be responsible for correcting any settling greater than this without additional compensation.

2. Installation of Spray Heads. All spray heads shall be installed in accordance with the details in the drawings. All heads shall only be installed on the risers after the system has been thoroughly flushed to remove all soil and trash that may have accumulated in the lines during the installation.

3. Installation of Valves. All valves, remote, electric, or manual, shall be installed in accordance with the details in the drawings and in an approved valve box which shall reach to at least two (2) inches below the bottom of the valve. A minimum of eighteen (18) inches of extra control wire shall be coiled below the valve in the valve box.

4. Installation of Control Wire. All low voltage control wire shall be laid in the pipe trenches below the pipe. Any wire that cannot be installed directly in a pipe trench shall be placed in a minimum two (2) inch conduit over its entire run. All wire runs shall be continuous lengths. No splices shall be made in the trench. Any wire splices that are required shall be made at the values using waterproof materials specified herein.

5. Installation of controllers. Controllers shall be installed in accordance with the drawings and details. The location of the controllers shall be as shown on the plans. Adjustment of the location may be necessary to meet unforeseen site conditions. Should relocation be necessary the Contractor shall contact the owner immediately and the owner will work with the Contractor to establish the final location. Such a relocation shall be considered an incidental change, and there will be no additional compensation.

6. Installation of water meters and backflow preventers. If required, Water meters and backflow preventers shall be installed in accordance with the drawings and details. The location of water meters and backflow preventers shall be as shown on the plans. Adjustment of the location may be necessary to meet unforeseen site conditions. Should relocation be necessary the Contractor

shall contact the owner immediately and the owner will work with the Contractor to establish the final location. Such a relocation shall be considered an incidental change and there will be no additional compensation.

10. Project supervision. The Contractor shall continuously maintain a competent superintendent, licensed by the State of Texas as an irrigator and satisfactory to the owner, on the site during all construction operations. The superintendent shall be able to make decisions and direct the work as the representative of the Contractor. It shall be the responsibility of the superintendent to notify the owner of work accomplished at least forty-eight (48) hours in advance of required onsite inspections and to maintain a set of plans on the site at all times on which all field adjustments or deviations from the drawings are to be recorded for the preparation of the as-built drawings. The field plans shall at all times be available for the inspection of the owner.

Guarantee and acceptance

1. Maintenance Period. The irrigation system shall be inspected concurrently with, and subject to the same 180-day maintenance period required by the owner. During the 180-day maintenance period, the Contractor shall perform the following maintenance activities as a minimum and to the satisfaction of the owner:

   (a) Install and maintain the controller program to insure the proper distribution of water.

   (b) Inspect, repair, and/or replace any equipment that is found to be defective or that may be damaged by other maintenance activities.

   (c) Make any adjustments that may become necessary to insure the proper delivery of water to the plant material.

2. As-built Drawings. Upon completion of the 90-day maintenance period, the owner will make an inspection of the project at this time. The Contractor shall furnish the owner a set of as built drawings on reproducible film base sheets prepared by a qualified draftsman. The owner will check these base sheets to be sure they are a true reflection of the project conditions and will direct the Contractor to correct any errors that are found. The drawings shall show all valve locations by triangulation from a fixed object and any change to sprinkler head location and rerouting of main and lateral lines. Any changes of this nature shall be approved by the owner prior to installation.

3. Operating and maintenance data. The Contractor shall provide instructions covering full operation, care and maintenance of the equipment, including a schedule showing length of time each valve is to be open to provide determined amount of water and instruct the owner's designated personnel in proper operation of the system.

4. Test. Testing of the system for leakage shall be in accordance with the local plumbing codes. The Contractor shall also test and assure the proper electrical working order of the system to the satisfaction of the owner. The Contractor shall set the valve sequence as directed by the owner to ensure grass establishment.

SECTION 32 91 00 Furnishing and Placing Topsoil

Topsoil required for this item to be from a pre-approved contractor obtained source. Topsoil shall be easily cultivated, fertile loam (pH 6.8-7.6), typical of the area, with no noxious weeds, grasses, sticks, or stones present and shall be consistent maximum lump size of 1". The contractor shall provide soil test prior to placement for approval by the engineer by a certified soil-testing laboratory.

Texas Plant &Soil Lab, Inc. (or equivalent)
5115 West Monte Cristo Road
Edinburg, Texas
(956)-383-0730

Soil test shall provide a standard soil analysis, mico-nutrient soil determination and interpretation with recommendations.

Topsoil shall have a soil texture rating of '3' (loam) or less (sandy loam) in accordance with standard soils testing. Soil source shall also test for sodium levels of 180 or less.

Before soil placement the contractor shall prepare all areas by applying an approved postemergent herbicide in accordance with the product label and as required by the Texas Commission on Environmental Quality.

Fusilade II turf and ornamental herbicide (or equivalent)
Syngenta Crop Protection, Inc.
P.O. Box 18300, Greensboro, NC 27419

Upon approval of the topsoil source the contractor shall apply an activated charcoal (humane) at a rate of 250 lbs. per acre on the site(s) specified. Topsoil then to be placed and tilled till into the existing soil to a depth of 6 inches by approved mechanical methods. The contractor shall then bring topsoil mix to grade as provided in the plans and specifications then raked to a smooth even finish. Contractor to finish work by watering and rolling with a light roller or other suitable equipment.

Earthwise Organics (or equivalent)
Composted Products
P.O. Box 533816
Harlingen, Texas 78553

In the event that irrigation systems exist at the project site(s) the contractor shall locate and protect all irrigation valves, irrigation heads and controllers. The contractor shall contact and determine wiring and piping depth for verification of possible conflicts in the work. A licensed irrigator shall provide repair to any damage to existing irrigation systems. Irrigation protection or repairs shall be considered subsidiary to the various bid items and shall not be paid for separately.

SECTION 02900

32 92 13 FIBER MULCH SEEDING

Cellulose fiber mulch seeding shall be applied in areas designated on the plans or as directed by the Engineer. This work shall not be performed until all construction and planting activities have been completed. Prior to seeding, the areas designated shall be finished to a smooth surface for a uniform application of seed.

Seeding shall be accomplished by the Hydromulch Method in two applications as shown below:

1st application -
Grass seed and Fertilizer
2nd application -
Cellulose fiber mulch Minimum pure live seed required 85%.

Fertilizer shall be applied at the rate of 100 pounds of nitrogen per acre. Fertilizer shall be homogenized.

Cellulose Fiber Mulch shall be applied a rate of 2000 lbs. per acre.

Re-seeding

Areas requiring re-seeding due to the non-establishment of sufficient vegetative cover, shall be re-seeded with in a 90-day time frame. The cost for re-seeding shall be paid for by the owner provided that the Contractor has followed the seeding and watering requirements as specified.

Seed mixture

Seed mixture shall be as specified

Bermudagrass 'cynodon dactylon' a rate of 65 lbs. Pure live seed per acre.

Fertilizer:

Fertilizer rate is based on a rate of 100 lbs. of Nitrogen per acre. The Nitrogen-Phosphorous-Potassium (NPK) ratio shall include a minimum of 19 percent Nitrogen-19 percent Phosphorous and 19 percent Potassium.

Areas to receive fertilizer are same as shown for Item, "Cellulose Fiber Mulch Seeding".

Note: All areas to be irrigated shall be seeded as noted in this contract.

See plan sheets for areas to be seeded.

INSURANCE

Proposer shall at all times during the Contract maintain in full force and effect Employer's Liability, Worker's compensation (or equivalent), Public Liability, and Property Damage insurance.

Should there be any changes regarding such insurance, the City shall be notified, in writing, within ten (10) working days of such changes.

Before commencement of work hereunder, Proposer agrees to furnish to the City a certificate of insurance to the effect that such insurance has been procured and is in full force. The auto liability and commercial general liability policies shall include a Notice of Cancellation endorsement stating that the City will be provided 30 days' notice of any cancellation of material change in such policies.

Proposer shall carry the following types of insurance in at least the limits specified below:

Coverage:	**Limits of Liability:**
Worker's Compensation	Statutory Limit
Employer's Liability	$500,000.00
Bodily Injury Liability Except Automobile	$500,000.00 each occurrence $1,000,000.00 aggregate
Property Damage Liability Except Automobile	$500,000.00 each occurrence $1,000,000.00 aggregate
Automobile Bodily Injury Liability	$500,000.00 each occurrence $1,000,000.00 Automobile
Property Damage Liability	$500,000.00 each occurrence
Excess Umbrella Liability	$500,000.00 each occurrence

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor doing business with local governmental entity

FORM CIQ

This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. *See* Section 176.006(a-1), Local Government Code.

A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.

OFFICE USE ONLY

Date Received

1 **Name of vendor who has a business relationship with local governmental entity.**

2 ☐ **Check this box if you are filing an update to a previously filed questionnaire.** (The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)

3 **Name of local government officer about whom the information is being disclosed.**

_____

Name of Officer

4 **Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.**

A. Is the local government officer or a family member of the officer receiving or likely to receive taxable income, other than investment income, from the vendor?

☐ Yes ☐ No

B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer or a family member of the officer AND the taxable income is not received from the local governmental entity?

☐ Yes ☐ No

5 **Describe each employment or business relationship that the vendor named in Section 1 maintains with a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more.**

6 ☐ Check this box if the vendor has given the local government officer or a family member of the officer one or more gifts as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.003(a-1).

7

_____ _____

Signature of vendor doing business with the governmental entity Date

CONFLICT OF INTEREST QUESTIONNAIRE
For vendor doing business with local governmental entity

A complete copy of Chapter 176 of the Local Government Code may be found at http://www.statutes.legis.state.tx.us/Docs/LG/htm/LG.176.htm. For easy reference, below are some of the sections cited on this form.

Local Government Code § 176.001(1-a): "Business relationship" means a connection between two or more parties based on commercial activity of one of the parties. The term does not include a connection based on:

(A) a transaction that is subject to rate or fee regulation by a federal, state, or local governmental entity or an agency of a federal, state, or local governmental entity;

(B) a transaction conducted at a price and subject to terms available to the public; or

(C) a purchase or lease of goods or services from a person that is chartered by a state or federal agency and that is subject to regular examination by, and reporting to, that agency.

Local Government Code § 176.003(a)(2)(A) and (B):

(a) A local government officer shall file a conflicts disclosure statement with respect to a vendor if:

***

(2) the vendor:

(A) has an employment or other business relationship with the local government officer or a family member of the officer that results in the officer or family member receiving taxable income, other than investment income, that exceeds $2,500 during the 12-month period preceding the date that the officer becomes aware that

(i) a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor;

(B) has given to the local government officer or a family member of the officer one or more gifts that have an aggregate value of more than $100 in the 12-month period preceding the date the officer becomes aware that:

(i) a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor.

Local Government Code § 176.006(a) and (a-1)

(a) A vendor shall file a completed conflict of interest questionnaire if the vendor has a business relationship with a local governmental entity and:

(1) has an employment or other business relationship with a local government officer of that local governmental entity, or a family member of the officer, described by Section 176.003(a)(2)(A);

(2) has given a local government officer of that local governmental entity, or a family member of the officer, one or more gifts with the aggregate value specified by Section 176.003(a)(2)(B), excluding any gift described by Section 176.003(a-1); or

(3) has a family relationship with a local government officer of that local governmental entity.

(a-1) The completed conflict of interest questionnaire must be filed with the appropriate records administrator not later than the seventh business day after the later of:

(1) the date that the vendor:

(A) begins discussions or negotiations to enter into a contract with the local governmental entity; or

(B) submits to the local governmental entity an application, response to a request for proposals or bids, correspondence, or another writing related to a potential contract with the local governmental entity; or

(2) the date the vendor becomes aware:

(A) of an employment or other business relationship with a local government officer, or a family member of the officer, described by Subsection (a);

(B) that the vendor has given one or more gifts described by Subsection (a); or

(C) of a family relationship with a local government officer.