BID AND CONTRACT DOCUMENTS, SPECIFICATIONS AND CONSTRUCTION PLANS FOR

# GULF BOULEVARD AND SUNSET DRIVE IMPROVEMENTS

7/3/14

STATE OF TEXAS
BRIAN C. BOECKER
94886
LICENSED PROFESSIONAL ENGINEER

Brian C. Boecker PE
TX FIRM F-128

South Padre ISLAND

## CITY OF SOUTH PADRE ISLAND

DEPARTMENT OF PUBLIC WORKS
4601 PADRE BOULEVARD, SOUTH PADRE ISLAND, TEXAS 78597
TELEPHONE (956)-761-3044 - FAX (956)761-3898

**JULY 2014**

# INVITATION TO BIDDERS

PROJECT: GULF BOULEVARD AND SUNSET DRIVE STREET IMPROVEMENTS PROJECT

BID DATE: July 21, 2014

BID TIME: 10:00 A.M.

ENGINEER: KIMLEY-HORN AND ASSOCIATES, INC.
BRIAN BOECKER, P.E.
Telephone - (512) 418-1771 / (956) 761-8160
Fax - (512) 418-1791 / (956) 761-3898

Sealed Bids for the GULF BOULEVARD IMPROVEMENT PROJECT, South Padre Island, Texas will be received by the City of South Padre Island, at the office of the City Secretary, located at 4601 Padre Boulevard, South Padre Island, Texas, until the time stated above.

All Bids must be on a Unit Cost basis for the Contract Work. Bids received after the stated time will not be accepted.

Copies of the above documents may be obtained at the office of the Department of Public Works in accordance with the Instructions to Bidders. There is no charge for the documents.

Bid security in the amount of 5% of the bid submitted must accompany each bid in accordance with the Instructions to Bidders.

Statutory Bonds for performance of the contract and for payment of mechanics and materials will be required in an amount equal to 100% of the accepted bids.

The Owner reserves the right to hold all bids for 30 days from date of receipt without action, to reject any and all bids, to waive irregularities and to require statements or evidence of bidder's qualifications including financial statements**.**

## INSTRUCTIONS TO BIDDERS

1. Proposal shall be submitted on the Bid form furnished. Fill in all blank spaces and all amounts must be in figures clearly marked.

   It is the intent of the City of South Padre Island to award the contract for the work as deemed the most advantageous by the City of South Padre Island.

   Proposals shall be signed with the name typed below the signature. Where the bidder is a Corporation, proposals shall be signed with the legal name of the Corporation followed by the name of the officer authorized to bind the Corporation to a contract. The completed form shall be without interlineation, alternation, or erasure. Seal bid documents in an envelope addressed to the office of the City Secretary, City of South Padre Island, 4601 Padre Blvd.,South Padre Island, Texas, 78597, and clearly labeled with the full title of the project. The bidder's firm name shall appear on the outside of the envelope.

2. Certified or Cashier's check on a State or National Bank of State of Texas, or a Bidder's Bond from an acceptable Surety Company authorized to transact business in the State of Texas, in the total amount of not less than five percent (5%) of the maximum amount of the proposal payable without recourse to the City of South Padre Island, must accompany each proposal as a guarantee that if awarded the contract, the bidder will promptly enter into contract and execute required bonds on the forms provided. The Cashier's Check or envelope clearly marked and attached to the envelope containing the proposal. All bid securities will be returned thirty (30) days after bid opening.

3. The City of South Padre Island will require payment and performance bonds in the amount of 100% of the contract amount payable to the City of South Padre Island.

4. The bidder, before submitting the proposal, shall investigate and familiarize himself with existing conditions on the site, and be prepared to complete the work as indicated and specified.

5. Within thirty (30) days after the opening of the proposal, the City of South Padre Island will act upon them. The acceptance of the proposal will be in writing.

6. The successful bidder shall commence work within ten (10) days after receipt of written notice to proceed and shall progress therewith so that the work shall be completed in accordance with the terms of the contract documents within the time allowed after the date of the written notice to proceed.

# PROPOSAL

The Bidder shall fill in all blanks with the required information.

TO: CITY OF SOUTH PADRE ISLAND
4601 PADRE BOULEVARD
SOUTH PADRE ISLAND, TEXAS 78597
ATTN: CITY SECRETARY

GENTLEMEN:

The undersigned, as bidder, declares that the only person or parties interested in this proposal as principals are those named herein; that this proposal is made without collusion with any other person, firm or corporation; that I/we have examined the invitation to Bid, Instructions to Bidders, the Contract, the General and Supplementary Conditions, General Requirements and the Drawings and Specifications referred to therein; that I/we have visited the site and hereby offer to and will furnish all necessary equipment, appliances, tools, labor, supervision, insurance and other accessories and services required by said documents for the following work for the following sum of money:

Note, one contract will be awarded for the Sunset Drive and Gulf Boulevard Improvements. The City will select which elements of Gulf Boulevard may be constructed within the City's budget based on bids received. Low bid will be determined based on which option(s) the City has the ability to fund. For example, the City may choose to disregard the Part B Gulf Blvd Base Bid in leiu of Add-Alt #1 or Add Alt #2; or the City may choose to combine the Base Bid (or Add-Alt #2) with Add-Alt #1 if funding became available. The following describes the elements of the bid and the add-alternatives for Gulf Boulevard:

Part A – Sunset Drive
*Limits from Padre Boulevard to Gulf Boulevard*
Part B – Gulf Boulevard Base Bid
*Limits from North of Sunset Drive to Morningside Drive*
Gulf Boulevard Add-Alt #1
*Limits from Cora Lee Drive to Constellation Drive*
Gulf Boulevard Add-Alt #2
*Limits from North of Sunset Drive to Cora Lee Drive*

| ITEM No. | DESCRIPTION | QUANTITY | UNIT | UNIT PRICE | TOTAL PRICE |
|---|---|---|---|---|---|
| | **PART A - SUNSET DRIVE** | | | | |
| | *Limits from Padre Boulevard to Gulf Boulevard* | | | | |
| 1 | 2" Thick H.M.A.C., Type D | 2712 | S.Y. | | |

| | | | | | |
|---|---|---|---|---|---|
| 2 | 6” Crushed Limestone Base | 2712 | S.Y. | | |
| 3 | 8” Cement Stabilized Subgrade | 3187 | S.Y. | | |
| 4 | Prime Coat (MC-30) | 543 | Gal | | |
| 5 | Cement | 51 | Ton | | |
| 6 | 6” Reinforced Concrete Pavement | 91 | S.Y. | | |
| 7 | Concrete Residential Driveways | 497 | S.Y. | | |
| 8 | Concrete Valley Gutter | 703 | L.F. | | |
| 9 | Concrete Curb and Gutter (Type II) | 1207 | L.F. | | |
| 10 | 4” Concrete Sidewalk | 379 | S.Y. | | |
| 11 | Pedestrian Ramp (TY 5) | 1 | Ea. | | |
| 12 | Pedestrian Ramp (TY 10) | 4 | Ea. | | |
| 13 | Remove Small Sign | 7 | Ea. | | |
| 14 | Adjust Manholes | 2 | Ea. | | |
| 15 | Adjust Valves and Cleanouts | 3 | Ea. | | |
| 16 | Clearing, Grubbing, Demolition and Removal of Existing Roadway and Driveways | 1 | LS | | |
| 17 | Saw Cutting Existing Asphalt | 160 | LF | | |
| 18 | Saw Cutting Existing Concrete | 438 | LF | | |

PART A SUBTOTAL $_____

| ITEM No. | DESCRIPTION | QUANTITY | UNIT | UNIT PRICE | TOTAL PRICE |
|---|---|---|---|---|---|
| | **PART B - GULF BOULEVARD BASE BID** | | | | |
| | *Limits from North of Sunset Drive to Morningside Drive* | | | | |
| 1 | 1.5” Thick H.M.A.C., Type D (Overlay) | 5396 | S.Y. | | |
| 2 | Mill Asphalt Pavement | 5396 | S.Y. | | |
| 3 | 2” Thick H.M.A.C., Type D | 350 | S.Y. | | |

| | | | | | |
|---|---|---|---|---|---|
| 4 | 6” Crushed Limestone Base | 350 | S.Y. | | |
| 5 | 8” Cement Stabilized Subgrade | 456 | S.Y. | | |
| 6 | Prime Coat (MC-30) | 70 | Gal | | |
| 7 | Cement | 7 | Ton | | |
| 8 | Concrete Residential Driveways | 693 | S.Y. | | |
| 9 | Concrete Valley Gutter | 739 | L.F. | | |
| 10 | Concrete Curb and Gutter (Type II) | 948 | L.F. | | |
| 11 | Concrete Curb (Type II) | 470 | L.F. | | |
| 12 | 4” Concrete Sidewalk | 841 | S.Y. | | |
| 13 | Brick Paver Crosswalks | 215 | S.Y. | | |
| 14 | Pedestrian Ramp (TY 5) | 1 | Ea. | | |
| 15 | Pedestrian Ramp (TY 7) | 16 | Ea. | | |
| 16 | Clearing , Grubbing, and Finishing Slopes | 1 | L.S. | | |
| 17 | Temporary Striping for Traffic Control and Removal of Existing Striping in Conflict with Temporary Striping | 1 | L.S. | | |
| 18 | Saw Cutting Existing Asphalt | 1821 | L.F. | | |
| 19 | Saw Cutting Existing Concrete | 120 | L.F. | | |
| 20 | Remove Concrete Sidewalk | 8 | S.Y. | | |
| 21 | Remove Concrete Driveway | 266 | S.Y. | | |
| 22 | Remove Asphalt Driveway | 291 | S.Y. | | |
| 23 | Remove Brick Driveway | 115 | S.Y. | | |
| 24 | Relocate Small Sign (Type 10BWG) | 2 | Ea. | | |
| 25 | Remove Small Sign | 5 | Ea. | | |
| 26 | Reflectorized Pavement Marking Type I (White) 4" (Solid)(090MIL) | 1782 | L.F. | | |
| 27 | Reflectorized Pavement Marking Type I (White) 12" (Solid)(090MIL) | 215 | L.F. | | |

| | | | | | |
|---|---|---|---|---|---|
| 28 | Reflective Pavement Marking Type I (White) 24" (Solid)(090MIL) | 43 | L.F. | | |
| 29 | Reflectorized Pavement Marking Type I (Yellow) 4" (Broken)(090MIL) | 270 | L.F. | | |
| 30 | Reflectorized Pavement Marking Type I (White) (Bike Symbol)(090MIL) | 7 | Ea. | | |
| 31 | Reflectorized Pavement Marking Type I (White) (Ped Symbol)(090MIL) | 8 | Ea. | | |
| 32 | Reflectorized Profile Pattern Edge Line Type I (White) 4” (Solid)(090MIL) | 2072 | L.F. | | |
| 33 | Reflective Raised Pavement Marker (Type II-A-A) | 13 | Ea. | | |
| 34 | Adjust Manholes | 4 | Ea. | | |

PART B - BASE BID SUBTOTAL $_____

| ITEM No. | DESCRIPTION | QUANTITY | UNIT | UNIT PRICE | TOTAL PRICE |
|---|---|---|---|---|---|
| | **PART B - GULF BOULEVARD ADD-ALT #1** | | | | |
| | *Limits from Cora Lee Drive to Constellation Drive* | | | | |
| 1 | 1.5” Thick H.M.A.C., Type D (Overlay) | 8331 | S.Y. | | |
| 2 | Mill Asphalt Pavement | 8331 | S.Y. | | |
| 3 | 2” Thick H.M.A.C., Type D | 303 | S.Y. | | |
| 4 | 6” Crushed Limestone Base | 303 | S.Y. | | |
| 5 | 8” Cement Stabilized Subgrade | 303 | S.Y. | | |
| 6 | Prime Coat (MC-30) | 61 | Gal | | |
| 7 | Cement | 5 | Ton | | |
| 8 | Concrete Curb and Gutter (Type II) | 484 | L.F. | | |
| 9 | Concrete Curb (Type II) | 221 | L.F. | | |

| | | | | | |
|---|---|---|---|---|---|
| 10 | 4” Concrete Sidewalk | 153 | S.Y. | | |
| 11 | Brick Paver Crosswalks | 338 | S.Y. | | |
| 12 | Pedestrian Ramp (TY 2) | 2 | Ea. | | |
| 13 | Pedestrian Ramp (TY 7) | 14 | Ea. | | |
| 14 | Sidewalk Box Drain | 3 | Ea. | | |
| 15 | Clearing , Grubbing, and Finishing Slopes | 1 | L.S. | | |
| 16 | Temporary Striping for Traffic Control and Removal of Existing Striping in Conflict with Temporary Striping | 1 | L.S. | | |
| 17 | Saw Cutting Existing Asphalt | 134 | L.F. | | |
| 18 | Remove Concrete Sidewalk | 124 | S.Y. | | |
| 19 | Remove Wheel Stop | 6 | Ea. | | |
| 20 | Remove Median Island at Intersections | 14 | Ea. | | |
| 21 | Install Small Sign (Type 10BWG) | 15 | Ea. | | |
| 22 | Reflectorized Pavement Marking Type I (White) 4" (Solid)(090MIL) | 4252 | L.F. | | |
| 23 | Reflectorized Pavement Marking Type I (White) 12" (Solid)(090MIL) | 228 | L.F. | | |
| 24 | Reflective Pavement Marking Type I (White) 24" (Solid)(090MIL) | 57 | L.F. | | |
| 25 | Reflectorized Pavement Marking Type I (Yellow) 4" (Broken)(090MIL) | 430 | L.F. | | |
| 26 | Reflectorized Pavement Marking Type I (White) (Bike Symbol)(090MIL) | 10 | Ea. | | |
| 27 | Reflectorized Pavement Marking Type I (White) (Ped Symbol)(090MIL) | 11 | Ea. | | |
| 28 | Reflectorized Pavement Marking Type I (White) (Handicap Symbol)(090MIL) | 2 | Ea. | | |

| | | | | | |
|---|---|---|---|---|---|
| 29 | Reflectorized Pavement Marking Type I (White) (Word)(090MIL) | 3 | Ea. | | |
| 30 | Reflectorized Profile Pattern Edge Line Type I (White) 4” (Solid)(090MIL) | 3782 | L.F. | | |
| 31 | Reflective Raised Pavement Marker (Type II-A-A) | 21 | Ea. | | |
| 32 | Adjust Manholes | 7 | Ea. | | |

PART B – ADD-ALT #1 SUBTOTAL $_____

| ITEM No. | DESCRIPTION | QUANTITY | UNIT | UNIT PRICE | TOTAL PRICE |
|---|---|---|---|---|---|
| | **PART B - GULF BLVD ADD-ALT #2** | | | | |
| | *Limits from North of Sunset Drive to Cora Lee Drive* | | | | |
| 1 | 1.5” Thick H.M.A.C., Type D (Overlay) | 6715 | S.Y. | | |
| 2 | Mill Asphalt Pavement | 6715 | S.Y. | | |
| 3 | 2” Thick H.M.A.C., Type D | 383 | S.Y. | | |
| 4 | 6” Crushed Limestone Base | 383 | S.Y. | | |
| 5 | 8” Cement Stabilized Subgrade | 496 | S.Y. | | |
| 6 | Prime Coat (MC-30) | 77 | Gal | | |
| 7 | Cement | 8 | Ton | | |
| 8 | Concrete Residential Driveways | 933 | S.Y. | | |
| 9 | Concrete Valley Gutter | 890 | L.F. | | |
| 10 | Concrete Curb and Gutter (Type II) | 1054 | L.F. | | |
| 11 | Concrete Curb (Type II) | 525 | L.F. | | |
| 12 | 4” Concrete Sidewalk | 924 | S.Y. | | |
| 13 | Brick Paver Crosswalks | 262 | S.Y. | | |
| 14 | Pedestrian Ramp (TY 5) | 1 | Ea. | | |

| | | | | | |
|---|---|---|---|---|---|
| 15 | Pedestrian Ramp (TY 7) | 20 | Ea. | | |
| 16 | Clearing , Grubbing, and Finishing Slopes | 1 | L.S. | | |
| 17 | Temporary Striping for Traffic Control and Removal of Existing Striping in Conflict with Temporary Striping | 1 | L.S. | | |
| 18 | Saw Cutting Existing Asphalt | 2127 | L.F. | | |
| 19 | Saw Cutting Existing Concrete | 206 | L.F. | | |
| 20 | Remove Concrete Sidewalk | 8 | S.Y. | | |
| 21 | Remove Concrete Driveway | 429 | S.Y. | | |
| 22 | Remove Asphalt Driveway | 328 | S.Y. | | |
| 23 | Remove Brick Driveway | 115 | S.Y. | | |
| 24 | Remove and Relocate Fire Hydrant | 1 | Ea. | | |
| 25 | Install Small Sign (Type 10BWG) | 2 | Ea. | | |
| 26 | Relocate Small Sign (Type 10BWG) | 3 | Ea. | | |
| 27 | Remove Small Sign | 7 | Ea. | | |
| 28 | Reflectorized Pavement Marking Type I (White) 4" (Solid)(090MIL) | 2249 | L.F. | | |
| 29 | Reflectorized Pavement Marking Type I (White) 12" (Solid)(090MIL) | 340 | L.F. | | |
| 30 | Reflective Pavement Marking Type I (White) 24" (Solid)(090MIL) | 89 | L.F. | | |
| 31 | Reflectorized Pavement Marking Type I (Yellow) 4" (Broken)(090MIL) | 340 | L.F. | | |
| 32 | Reflectorized Pavement Marking Type I (White) (Bike Symbol)(090MIL) | 9 | Ea. | | |
| 33 | Reflectorized Pavement Marking Type I (White) (Ped Symbol)(090MIL) | 10 | Ea. | | |
| 34 | Reflectorized Profile Pattern Edge Line Type I (White) 4” (Solid)(090MIL) | 2698 | L.F. | | |

| | | | | | |
|---|---|---|---|---|---|
| 35 | Reflective Raised Pavement Marker (Type II-A-A) | 17 | Ea. | | |
| 36 | Adjust Manholes | 5 | Ea. | | |
| 37 | Adjust Valves and Cleanouts | 1 | Ea. | | |

PART B – ADD-ALT #2 SUBTOTAL $_____

Bidder acknowledges receipt of the following addendum:

_____ Date _____

_____ Date _____

_____ Date _____

Bidder understands that the City of South Padre Island reserves the right to reject any and all bids, to waive any informalities, and to accept the proposed deemed to be in the best interest of the City of South Padre Island.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of thirty (30) calendar days after the scheduled closing time for receiving bids.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in written Notice to Proceed from the City of South Padre Island and to fully complete the project within the limits established by the Supplementary Conditions hereto attached and made a part hereof. Bidder further agrees to pay as liquidated damages the amount or amounts specified in the Supplementary Conditions. BIDDER EXPRESSLY ACKNOWLEDGES THAT HE READ AND FULLY UNDERSTANDS THE PROVISIONS FOR LIQUIDATED DAMAGES AS DESCRIBED IN ITEMS 8 AND 9 OF THE SUPPLEMENTARY CONDITIONS, AND; FURTHER BIDDER ACKNOWLEDGES HE IS IN FULL AGREEMENT THEREWITH.

The Bidder further agrees that from the compensation otherwise to be paid, the Owner may retain the sum which is indicated in the schedule set forth in Item 9 of the Supplementary Conditions for each calendar day after the completion date that the work at the time stipulated in Item 8 of the Supplementary Conditions of these documents. This sum is not to be construed in any sense a penalty.

Upon receipt of a written notice to the acceptance of this bid, Bidder will execute the formal contract agreement immediately, and shall deliver the Surety Bonds and Insurance as required by the Instruction to the Bidders.

Bid security as required by the Instructions to Bidder in sum of _____ ($_____) is hereto attached. The Bid security is to become the property of the City of South Padre Island in the event the Proposal is accepted by the City of South Padre Island and the contract and bond are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the City of South Padre Island caused there by.

Respectfully submitted,

Signature:_____

Print) By: _____

(Print) Title: _____

(Seal, if bid by a corporation)

_____
Business Name

_____
Business Address

_____
Business Phone

# STANDARD FORM OF AGREEMENT

As Adopted By
THE TEXAS SECTION OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS
October 7, 1971

Approved as to Legal Form by
Legal Counsel

STATE OF TEXAS
COUNTY OF CAMERON

THIS AGREEMENT, made and entered into this ___ day of _____**2014**, by and between the City of South Padre Island of the County of Cameron and State of Texas, acting through Joni Clarke, City Manager thereunto duly authorized so to do, Party of the First Part, hereinafter termed OWNER, and _____, of the City of _____, County of _____, and State of Texas, Party of the Second Part, hereinafter termed CONTRACTOR.

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the Party of the First Part (OWNER), and under the conditions expressed in the bond bearing ever date herewith, the said Party of the Second Part (CONTRACTOR), hereby agrees with the said Party of the First Part (OWNER) to commence and complete the construction of certain improvements described as follows:

## GULF BOULEVARD IMPROVEMENT PROJECT

and all extra work in connection therewith, under the terms as stated in the General Conditions of the Agreement and at his (or their) own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said construction, in accordance with the Notice to Contractors, prices stated in the Proposal attached hereto, and in accordance with the Notice to Contractors, General and Special Conditions of Agreement, Plans and other drawings and printed or written explanatory matter thereof, and the Specifications and addenda therefore, as prepared by

Kimley-Horn and Associates, Inc., herein entitled the ENGINEER, each of which has been identified by the CONTRACTOR and the ENGINEER, together with the CONTRACTOR'S written Proposal, the General Conditions of the Agreement, and the Performance and Payment bonds hereto attached; all of which are made a part hereof and collectively evidence and constitute the entire contract.

The CONTRACTOR hereby agrees to commence work within ten (10) days after the date written notice to do so shall have been given to him, and to substantially complete the same within 55 calendar days after the date of the written notice to commence work, subject to such extensions of time as are provided by the General and Special Conditions of the contract.

The OWNER agrees to pay the CONTRACTOR in current funds the price or prices shown in the proposal, which forms a part of this contract, such payments to the subject to the General and Special Conditions of the contract.

IN WITNESS WHEREOF, the parties to these presents have executed this Agreement in the year and day first above written.

| | |
|---|---|
| CITY OF SOUTH PADRE ISLAND<br>Party of the First Part (OWNER) | _____<br>Party of the Second Part (CONTRACTOR) |
| By:_____<br>William DiLibero | By:_____ |
| ATTEST: | ATTEST: |
| _____ | _____ |

# PERFORMANCE BOND

STATE OF TEXAS
COUNTY OF_____

KNOW ALL MEN BY THESE PRESENTS: That_____
_____ Of the City of_____
County of_____, and State of_____, as
principal, and _____
authorized under the laws of the State of Texas to act as surety on bonds for principals, are held and firmly bound unto_____(Owner), in the penal sum of _____Dollars ($_____) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, by these presents:

WHEREAS, the Principal has entered into a certain written contract with the Owner, dated the _____day of _____, 20___, to which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied a length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall faithfully perform and said Contract and shall in all respects duly and faithfully observe and perform all and singular the covenants, conditions and agreements in and by said contract agreed and covenanted by the Principal to be observed and performed, and according to the true intent and meaning of said Contract and Plans and Specification hereto annexed, then this obligation shall be void; otherwise to remain in full force and effect;

"PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of (Article 5160 for Public Work) (Article 5472d for Private Work)* of the Revised Civil Statutes of Texas as amended and all liabilities, on this bond shall be determined in accordance with the provisions of said Article to the same extent as if it were copied at length herein."

Surety, for value received, stipulates and agrees that no charge, extension of time, alteration or addition to the terms of the contract, or to the work performed thereunder, or the plans, specifications, or drawings accompanying the same, shall in anyway affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work to be performed thereunder.

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*Not applicable for federal work. See "The Miller Act," 40 U.S.C. S270.

Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work to be performed thereunder.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____day of_____20_____.

| | |
|---|---|
| _____ | _____ |
| Principal | Surety |
| By_____ | By_____ |
| Title_____ | Title_____ |
| Address_____ | Address_____ |
| _____ | _____ |
| _____ | _____ |

The name and address of the Resident Agent of Surety is:

_____
_____
_____

# PAYMENT BOND

STATE OF TEXAS
COUNTY OF_____

KNOW ALL MEN BY THESE PRESENTS: That_____
_____ Of the City of_____
County of_____, and State of_____, as
principal, and _____
authorized under the laws of the State of Texas to act as surety on bonds for principals, are held and firmly bound unto_____(Owner), in the penal sum of _____Dollars ($_____) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, by these presents:

WHEREAS, the Principal has entered into a certain written contract with the Owner, dated the _____day of _____, 20___, to which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied a length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall pay all claimants supplying labor and material to him or a subcontractor in the prosecution of the work provided for in said contract, then, this obligation shall be void; otherwise to remain in full force and effect;

"PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Article 5160 of the Revised Civil Statutes of Texas as amended and all liabilities, on this bond shall be determined in accordance with the provisions of said Article to the same extent as if it were copied at length herein."

Surety, for value received, stipulates and agrees that no charge, extension of time, alteration or addition to the terms of the contract, or to the work performed thereunder, or the plans, specifications, or drawings accompanying the same, shall in anyway affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work to be performed thereunder.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____day of_____20_____.

| | |
|---|---|
| _____ | _____ |
| Principal | Surety |
| By_____ | By_____ |
| Title_____ | Title_____ |
| Address_____ | Address_____ |
| _____ | _____ |
| _____ | _____ |

The name and address of the Resident Agent of Surety is:_____
_____

(SAMPLE FORM)
CERTIFICATE OF INSURANCE

TO: Date_____

Project No._____

_____ Type of_____
Owner

Project_____

_____
Address

THIS IS TO CERTIFY THAT_____
(Name and address of insured)
is, at the date of this certificate, insured by this Company with respect to the business operations hereinafter described, for the types of Insurance and in accordance with the provisions of the standard policies used by this Company, and further hereinafter described. Exceptions to standard policy noted on reverse side hereof.

| TYPE OF INSURANCE | Policy No. | Effective | Expires | Limits of Liability |
|---|---|---|---|---|
| Workmen's Compensation | | | | |
| Public Liability | | | | 1 Person $_____ |
| Contingent Liability | | | | 1 Accident$_____ |
| Property Damage | | | | 1 Person$_____ |
| Builder's Risk | | | | 1 Accident_____ |
| Automobile | | | | |
| Other | | | | |

The foregoing Policies (do) (do not) cover all sub-contractors.
Locations Covered:_____

Descriptions of Operations Covered:_____

The above policies either in the body thereof of by appropriate endorsement provide that they may not be changed or canceled by the insurer in less than five days after the insured has received written notice of such change or cancellation.

Where applicable local laws or regulations require more than five days actual notice of change or cancellation to the assured, the above policies contain such special requirements, either in the body thereof or by appropriate endorsement thereto attached.

_____
(Name of Insurer)

By_____

Title_____

# GENERAL CONDITIONS OF THE AGREEMENT

1. GENERAL

It is the intent of these instructions, plans and specifications to provide guidance for the construction of this project.

2. REGULATIONS AND DISCREPANCIES

All applicable laws, ordinances, policy, rules, regulations and other directives of all authorities having jurisdiction over the projects shall apply to the contract throughout and will be deemed to be included in the contract the same as those written out in full. Discrepancies between regulations or conflicting parts of the Specifications shall be brought to the attention of and clarified by the ENGINEER before proceeding with any work. Proceeding with the affected work without instructions from the ENGINEER can result in the Contractor being responsible for taking the necessary steps in insure the work conforms to the governing regulation.

3. ENGINEER

Whenever the word "ENGINEER" is used in this contract with reference to the execution and interpretation of plans, specifications, and contract documents, it shall be understood as referring to the City of South Padre Island Public Works Director.

4. INTERPRETATION OF PHRASES

Whenever the words "Directed", "Required", "Permitted", "Designated", "Considered Necessary", "Prescribed", or words of like importance are used, it shall be understood that the direction, requirements, permission, order, designation, or prescription, of the ENGINEER is intended and similarly, the words "Approval", "Acceptable", "Satisfactory", or word of like importance shall mean approved by or acceptable or satisfactory to the ENGINEER.

Whenever, in the specifications or drawings accompanying this agreement, the terms or description of various qualities relative to finish, workmanship, or other qualities of similar kind which cannot, from their nature, be specifically and clearly described and specified, but are necessarily described in general terms, then, in all such cases, any question of the fulfillment of said specifications shall be decided by the ENGINEER, and said work shall be done in accordance with his interpretations of the meanings of the words, terms, or clauses defining the character of the work.

5. EXHIBITS

All work shall be done and all materials finished in strict conformity with the appended advertisement, “Information for Bidder”, “Proposal”, “Supplementary General Conditions”, “Agreement”, “Bonds”, “Insurance”, specifications and plans all of which are hereto attached.

6. KEEPING OF PLANS AND SPECIFICATIONS ACCESSIBLE

The Contractor shall be furnished with three (3) copies of all plans, profiles, and specifications without expense to him, and shall keep one copy of the same constantly accessible on the work site.

7. QUANTITIES AND MEASUREMENTS

No extra or customary measurements of any kind will be allowed, but the actual length, area, solid, contents, number and weight only shall be considered, unless otherwise specifically provided.

8. LINE AND GRADE STAKING

All layout and construction staking shall be done by the Contractor from control points shown on the plans.

9. ENGINEER AND INSPECTION

It is agreed by the Contractor that the Owner shall be and is hereby authorized to appoint from time to time such engineers and inspectors as the said Owner may deem proper, to inspect the material furnished and the work done under this Agreement, and to see that the said material is furnished, and said work is done in accordance with the specifications therefore. The Contractor shall furnish all reasonable aid and assistance required by the engineers or inspectors for the proper inspection and examination of the work and all parts of the same. The Contractor shall furnish all reasonable aid and assistance required by the engineers or inspectors as appointed, when the same are consistent with the obligations of the Agreement and the accompanying specifications provided; however, should the Contractor object to any order by any subordinate engineer or inspector, the Contractor may within six (6) days make written appeal to the Director of Public Works for his decision.

10. DISCREPANCIES AND OMISSIONS

It is further agreed that it is the intent of this contract that all work must be done, all material must be furnished in accordance with the generally accepted practice, and the event of any discrepancies between the plans and specifications, or otherwise, or in the event of any doubt as to the meaning and intent of any portion of the contract,

specifications or plans, the ENGINEER shall define which is intended to apply to the work.

11. LOSSES FROM NATURAL CAUSES

All loss or damage arising out of the nature of work to be done, or from the action of the elements, or from any unforeseen circumstances in the prosecution of the same, or from unusual obstructions or difficulties which may be encountered in the prosecution of the work, shall be sustained and borne by the Contractor at his own cost and expense.

12. ESTIMATED QUANTITIES

This agreement, including the specifications, plans, and estimates, is intended to show clearly all work to be done and material to be furnished under this contract at unit prices are approximate and are to be used only as a basis for estimating the probable cost of the work and for comparing the proposals offered for the work. It is understood and agreed that the actual amount of work to be done and material to be furnished under this contract may differ somewhat from these estimates, and that where the basis for payment under this contract is the unit price method, payment shall be for the actual amount of such work and material furnished.

Where payment is based on the unit price methods, the Contractor agree that he will make no claim for damages, anticipated profits or otherwise on account of any differences which may be found between the quantities of work actually done, the material actually furnished under this contract, and the estimated quantities contemplated and contained in the proposal; provided, however, that in case the actual quantity of any "Major Item" should become as much as 50% more than, or 50% less than the estimated or contemplated quantity for such items, then either parts of this Agreement, upon demand, shall be entitled to a revised consideration upon the portion of the work above or below 50% of the estimated quantity.

A "Major Item" shall be construed to be any individual bid item incurred in the proposal that has a total cost equal to or greater than five percent (5%) of the total contract cost, computed on the basis of the final Contract Price.

13. CHANGES AND ALTERATIONS

The Contractor further agrees that the OWNER may make such changes and alterations as the Owner may see fit, in the line, grade, form, dimensions, plans, or materials for the work herein contemplated, or any part therefore, either before or after the beginning of the construction, without affecting the validity of this contract and the accompanying bond.

If such changes or alterations diminish the quantity of the work to be done, they shall not constitute the basis for a claim for damages, or anticipated profits on the work that may be dispensed with. If they increase the amount of work, and the increased work can fairly

be classified under the specifications, such increase shall be paid for according to the quantity actually done and at the unit price established for such work under this contract; otherwise, such additional work shall be paid for as provided under Extra Work. In case the OWNER shall make such changes or alterations as shall make useless any work, then the OWNER shall recompense the Contractor used in said work, for any material or labor so used, and for any actual loss occasioned by such changes, due to actual expenses incurred in preparation for the work as originally planned.

14. EXTRA WORK

The term "Extra Work" as used in this contract shall be understood to mean and include all work that may be required by the ENGINEER and OWNER to be done by the Contractor to accomplish any change, alteration, or addition to the work shown upon the plans, or reasonably implied by the specifications, and are not covered by the Contractor's Proposal, except as provided under Change and alterations in Paragraph 14 herein above.

It is agreed that the Contractor shall perform all extra work under the direction of the ENGINEER when presented with a Written Work Order signed by the ENGINEER; subject, however, to the right of the Contractor to require a written confirmation to pay the Contractor for performing said Extra Work shall then be determined by one or more of the following methods.

Method (A) - By agreed unit prices;

Method (B) - By agreed lump sum; or

Method (C) - If neither Method (A) nor Method (B) can be agreed upon before the Extra Work is commenced, then the Contractor shall be paid the "actual field cost" of the work, plus (15%).

In the event said Extra Work be performed and paid for under Method (C), then the provisions of this paragraph shall apply and the "actual field cost" is hereby defined to include the cost of all workmen, such as foreman, timekeepers, mechanics, and laborers, and materials, supplies, teams, trucks, rentals on machinery and equipment, for the time actually employed or used on such Extra Work, plus actual transportation charges necessarily incurred, if the kind of equipment or machinery be not already at the jobsite, together with all power, fuel, lubricants, water and similar operating expenses; also, all necessary incidental expenses incurred directly on account of such Extra Work, including Social Security, Old Age Benefits, and other payroll taxes, and a ratable portion of premiums on Construction and Maintenance Bonds, Public Liability and Property Damages and Workmen's Compensation, and all other insurance as may be required by any law or ordinance, or directed by the ENGINEER, or by them agreed to. The

ENGINEER may direct the form in which accounts of the "actual field cost" shall be kept and may also specify in writing, before the work commences, the method of doing the work and the type and kind of machinery and equipment to be used, otherwise these matters shall be determined by the Contactor. Unless otherwise agreed upon, the prices for the use of machinery and equipment shall be determined by using 90 percentage of the latest schedule of Equipment Ownership Expense adopted by the Associated General Contractors of America. Where practicable, the terms and prices for the use of machinery and equipment shall be incorporated in the Written Extra Work Order. The fifteen percent (15%) of the "actual field cost" to be paid the Contractor shall compensate him for his profit, overhead, general superintendence, and field office expenses, and all other elements of cost and expense not embraced within the "actual field cost" as herein defined, saved that where the Contractor's Camp or Field Office must be maintained primarily on account of such Extra Work, then the cost to maintain and operate the same shall be included in the "actual field cost".

No claim for Extra Work of any kind will be allowed unless ordered in writing by the ENGINEER. Notice is hereby given that all change orders must be executed in writing before the work is started; any extra work performed otherwise will be at the Contractor's risk. In case any orders or instructions, whether oral or written, appear to the Contractor to involve Extra Work for which he should receive compensation, he shall make written request to the ENGINEER for written order authorizing such Extra Work. Should a difference of opinion arises as to what does or does not constitute Extra Work, or as to the payment therefore, and ENGINEER insists upon its performance, the Contractor shall proceed with the work after making written request for written order and shall keep an accurate account of the "actual field cost" therefore, as provided under Method (C).

15. PRELIMINARY APPROVAL

No Engineer, supervisor, or inspector shall have any power to waive the obligations of this contract for the furnishing by the Contractor of good material, and of his performing good work as herein described, and in full accordance with the plans and specifications. No failure or omission of any Engineer, supervisor, or inspector to condemn any defective work or material shall release the Contractor from the obligations to at once tear out, remove, and properly replace the same at any time prior to final acceptance upon the discovery of said defective work, or material; provided, however, that the ENGINEER, shall upon request of the Contractor, inspect and accept or reject any material furnished, and in event the material has been once accepted by the ENGINEER, such acceptance shall be binding on the OWNER, unless it can be clearly shown that such material furnished does not meet the specifications for this work.

16. DEFECTS AND THEIR REMEDIES

It is further agreed that the work or any part therefore, or any material brought on the ground for use in the work or selected for the same, shall be deemed by the ENGINEER as unsuitable or not in conform it with the specifications, the Contractor shall, after

receipt of written notice thereof from the ENGINEER, forthwith remove such material and rebuilt or otherwise remedy such work so that it shall be in full accordance with this contract.

17. TIME AND ORDER OF COMPLETION

It is the meaning and intent of this contract, except as otherwise provided or in the Supplementary and General Requirements Specifications, that the Contractor shall be allowed to prosecute his work at such times and seasons, in such order of precedence, and in such manner as shall be most conductive to economy of construction provided, however, that the order and time of prosecution shall be such that the work shall be substantially completed as a whole and in part, in accordance with this contract, plans and specifications and within the time of completion hereafter designated; provided, also, that when the OWNER is having other work done, either by contract or by his own force, the Department of Public Works may direct the time and manner of construction the work done under this contract, so that conflict will be avoided and the construction of the various works being done for the OWNER shall be harmonized.

The Contractor further agrees that he will commence within ten days after the date of the written Notice to proceed, and will progress therewith so that the work shall be substantially completed in accordance with the terms of the agreement as stated in the Proposal and Supplementary conditions. By term “substantially completed” it is meant that the structure has been made suitable for use or occupancy and is in condition to serve its intended purpose, but still may require minor miscellaneous work and adjustment.

18. EXTENSION OF TIME

Should the Contractor be unduly delayed in the completion of the work by any cause which the ENGINEER shall decide justifies the delay, then an extension of time will allowed for completing the work, sufficient to compensate for the delay, the amount of the extension to be determined by the Department of Public Works; provided, however, that the Contractor shall give the Public Works Director/ENGINEER notice in writing within ten days of the cause of such delay.

19. HINDRANCESS AND DELAYS

No charge shall be made by the Contractor for hindrances or delays from any cause (except where the work is stopped by of the OWNER) during the progress of any portion of the work embraced in this contract. In case said work shall be stopped by the act of the OWNER, then such expense as in the judgment of the ENGINEER is caused by such stopping of said work shall be paid by the OWNER to the Contractor.

20. PRICE FOR WORK

In consideration of the furnishing of all the necessary labor, equipment, and material, and the completion of all work by the Contractor, and on the completion of all work and delivery of all material embraced in this contract in full conformity with the specifications and stipulations herein contained, the OWNER agrees to pay the Contractor the prices set forth in the Proposal hereto attached, which has been made a part of this contract; and the Contractor hereby agrees to receive such prices in full furnishing all material and all labor required for the aforesaid work, also for all expenses incurred by him, and for well and truly performing the same and the whole thereof in the manner and according to this Agreement, the attached specifications, and requirements of the ENGINEER.

21. PARTIAL PAYMENT

The Contractor shall submit a written statement showing as completely as practicable the total value of the work he has accomplished up to and including the last day of the preceding month (said statement shall include the value of all sound materials delivered on the job site that are to be fabricated into the work and for which invoices are furnished to the ENGINEER on or before the third ($3^{rd}$) day of each month).

The Department of Public Works shall then prepare a statement for partial payment to the Contractor on or before the tenth (10) day of each month.

The OWNER shall then pay the Contractor once a month the total amount of the statement (provided the Contractor has timely submitted his statement to the ENGINEER and timely submitted his payroll reports to the OWNER), less then percent (10%) of the amount thereof, which ten percent (10%) shall be retained until final payments, and further less all previous payments, and further less or further sums that may be retained by the Owner under the terms of this Agreement and other Contract Documents, It is understood, however, that in case the whole work be near to completions and some unexpected and unusual delay occur due to no fault or neglect on the part of the Contractor, the OWNER may, upon written recommendation of the ENGINEER , pay a reasonable and equitable portion of the retained percentage to the Contractor; or, the Contractor at the OWNER'S option, may be relieved of the obligation to fully completed the work, and thereupon, the Contractor shall receive payment of the balance due him under the contract subject only to the conditions stated in Paragraph 24 hereof.

22. FINAL COMPLETION AND ACCEPTANCE

Within fifteen (15) days after the Contractor has given the ENGINEER written notice that the work has been completed, or substantially completed, the ENGINEER, and the OWNER shall inspect the work and within said time, if the work is found to be completed in accordance with the Plans and Specifications, the OWNER will issue the Contractor a Certificate of Completion.

23. FINAL PAYMENT

Upon the issuance of the Certificate of Completion, the ENGINEER shall proceed to make final measurements and prepare final statement of the value of all work performed and materials furnished under the terms of the Agreement and shall certify same to the OWNER, who shall pay to the Contractor on or before the thirtieth ($30^{th}$) day after the date of the Certificate of Approval has been issued, provided he has fully performed his contractual obligations under the terms of this contract; and said payment shall become due in any event upon said performance by the Contractor.

24. DELAYED PAYMENTS

Should the OWNER fail to make payment to the Contractor of the sum named in any partial or final statement, when payment is due, or should the ENGINEER fail to issue any statement on or before the date above provided, then the OWNER shall pay to the Contractor in addition to the sum shown as due by such statement, interest thereon at the rate of five percent (5%) per annum from date due as provided in Paragraphs 22 and 24, until fully paid, which shall fully liquidate any injury to the Contractor growing out of such delay in payment.

25. ENGINEER'S AUTHORITY AND DUTY

It is mutually agreed between the parties of this Agreement that the ENGINEER shall inspect all work included herein and give directions relative to the execution of the work.

The ENGINEER shall determine the amount, quality, acceptability, and fitness of the several kinds of work and materials which are to be paid for under this contract and shall decide all questions which may arise in relation to said work and this construction thereof. The ENGINEER'S estimates and decisions shall be final and conclusive, expect as herein otherwise expressly provided. In any case any question shall arise between the parties hereto relative to said contract or specifications, the determination or decision of the ENGINEER shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this contract affected in any manner or to any extent by such question.

The ENGINEER shall decide the meaning and intent of any portion of the specifications and of any plans or drawings where the same may be found obscure or be in dispute. Any differences or conflicts in regard to their work which may arise between the Contractor under this contract and other Contractors performing work for the OWNER shall be adjusted and determined by the ENGINEER.

26. CONTRACTOR'S DUTY

The Contractor shall give personal attention to the faithful prosecution and completion of this work and shall be present either in person or by duly authorized representative on the

site of the work continually during its progress. The Contractor will make available emergency staff and telephone numbers for non-working hours in case of emergencies or other problems related to the project which must be taken care if immediately. The emergency staff representing the Contractor must respond within 30 minutes from notification.

27. CONTRACTOR'S AGENT

The Contractor during his absence from the work shall keep a competent superintendent or manager upon the work, fully authorized to act for him in his absence and to receive such orders as may be given for the proper continuance of the work. Notice to do any work, to alter work, to cease work which the Contractor is obligated to do; or concerning any imperfections in work or any material furnished when given to the superintendent or manager of the Contractor in charge of any operation of the work in the absence of the Contractor, provided any notice given under this paragraph shall be in writing.

28. CHARACTER OF EMPLOYEES

The Contractor agrees to employ only orderly, competent and skillful employees to do the work; and that whenever the ENGINEER shall inform him in writing that any person or persons on the work are, in his opinion, incompetent, unfaithful or disorderly, such man or men shall be discharged from the work and shall not again be employed on the same without the ENGINEER'S written consent.

29. CONSTRUCTION PLANT

The Contractor shall provide all labor, tools, equipment, machinery, and material necessary in the prosecution and completion of this contract where it is not otherwise specifically provided that the OWNER, shall furnish the same, and it is also understood that the OWNER shall not be held responsible for care, preservation, conservation, or protection of any material, tools or machinery or any part of the work until it is finally completed and accepted. It should be understood that the OWNER will not loan plant tools or equipment to the Contractor.

30. RIGHT OF ENGINEER TO MODIFY METHODS AND EQUIPMENT

If, at any time, the methods or equipment used by the Contractor are found to be inadequate to secure the quality of work or the rate or progress required under this contract, the ENGINEER may order the Contractor in writing to increase their safety or improve their character and efficiency, and the Contractor shall comply with such order.

If at any time the working force of the Contractor is inadequate for securing the progress herein specified, the Contractor shall, if so ordered in writing increase his force or equipment, or both, to such an extent as to give reasonable assurance of compliance with the schedule of progress.

31. SANITATION

Necessary sanitary conveniences for use of laborers on the work, properly scheduled from public observation, shall be constructed and maintained by the Contractor in such manner and at such points as shall be approved by the ENGINEER and their use shall be strictly enforced.

32. CONTRACTOR'S BUILDINGS

The building of structures or other forms of protection will be permitted only at such places as the ENGINEER shall direct and the sanitary conditions of the grounds in or about such structures shall, at all times, be maintained in a manner satisfactory to the Department of Public Works and the ENGINEER.

33. PROTECTION AGAINST ACCIDENT TO EMPLOYEES AND THE PUBLIC

Contractor assumes the sole responsibility for the safety and protection of the premises, adjoining property, employees, pedestrian, vehicles, vehicle operators, and other persons and shall provide and maintain suitable signs, barricades, and at night shall also maintain warning lights, as will effectual warn pedestrians and vehicular traffic of any obstruction and safeguard the public and the work from injury or damage.

The Contractor shall be liable for and shall indemnify and save harmless the OWNER, its agents and employees from any and all claims for damages on account of his failure to fully protect the premises, vehicular traffic, all adjoining property, employees and other persons.

34. PROTECTION OF ADJOINING PROPERTY

The Contractor shall take proper means to protect the adjacent or adjoining property or properties in any way encountered and which might be injured or seriously affected by any process of construction, to be undertaken by this agreement, from any damages or injury by reason of said process of construction.
The Contractor shall be liable for and shall indemnify and save harmless the OWNER, its agents and employees from any and all claims for damages on account of his failure to fully protect the premises, all adjoining property, employees and other persons.

35. PROTECTION AGAINST CLAIMS SUBCONTRACTORS, LABORERS, MATERIALMEN AND FURNISHERS OF MACHINERY, EQUIPMENT AND SUPPLIES

The Contractor agrees that he will indemnify and save the OWNER harmless from all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools and all supplies, including commissary, incurred in the furtherance of the

performance of this contract. When so desired by the OWNER, the Contractor shall furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged or waived. If the Contractor fails to do so, then the OWNER may pay unpaid bills, of which the OWNER has written notice direct and withhold from the Contractor's unpaid compensation a sum of money deemed reasonable sufficient to liquidate any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged, whereupon payments to the Contractor shall be resumed in full, in accordance with the terms of this contract, but in no event shall no provisions of this sentence be construed to impose any obligation upon the OWNER by either the Contractor or his Surety.

36. PROTECTION AGAINST ROYALTIES OR PATENTED INVENTION

The Contractor shall protect and save harmless the OWNER from all and every demand for damages, royalties or fees on any patented invention used by him in connection with the work done or material furnished under his contract; provided, however, that if any patented material, machinery, appliance, or invention is clearly specified in this contract, then, and in that event, the cost of procuring the rights of use and the legal release or indemnity shall be borne and paid by the OWNER, direct unless such cost is determined and directed to be included in the bid price at the time the proposal is submitted.

37. LAWS AND ORDINANCES

The Contractor shall, at all times, observe and comply with all Federal, State, and Local law, ordinances and regulations, which in any manner effect the contract of the work, shall be responsible for obtaining all necessary permits, such as buildings, plumbing, fire, tree, creek and etc. as required for the work, and shall indemnify and save harmless the OWNER against any claim arising from the violation of any such law and ordinance, whether by the Contractor or his employees. In case the OWNER is a body politic and corporate, the law from which it derives its powers, insofar as the same regulates the objects for which, or the manner in which, or the conditions under which, the OWNER may enter into contract, shall be controlling, and shall be considered as part of this contract, to the same effect as though embodied herein.

38. LIQUIDATED DAMAGES FOR DELAY

And the Contractor agrees that time is of the essence of this contract, and that for each day of delay beyond the date stated in the Supplementary Conditions for the completion of the work herein specified and contracted for, the OWNER may withhold permanently from the Contractor's total compensation the sum or amount stated in the Supplementary Conditions as stipulated liquidated damages for such delay.

39. ASSIGNMENT AND SUBLETTING

The Contractor further agrees that he will retain personal control and will give his personal

attention to the fulfillment of this contract and that he will not assign by Power of Attorney, or otherwise, nor sublet said contract without the written consent of the Owner, and that no part or feature of the work will be sublet to anyone objectionable to the ENGINEER or the OWNER. The Contractor further agrees that the subletting of any portion or feature of the work or materials required in the performance of this contract, shall not relieve the Contractor from his full obligations to the OWNER, as provided by this Agreement.

40. ABANDONMENT BY CONTRACTOR

In case the Contractor should abandon and fall or refuse in resume work within ten (10) days after written notification from the OWNER, or the ENGINEER, or when such orders are consistent with this Contract, or with this Agreement, or with the Specifications hereto attached, then, and in that case, the Surety on the bond shall be notified in writing and directed to complete the work, and a copy of said notice shall be delivered to the Contractor.

After receiving said notice of abandonment, the Contractor shall not remove from the work any machinery, equipment, tools, materials or supplies then on the job, but the same, together with any materials and equipment under contract for the work, may be held for use on the work by the OWNER or the Surety on the construction bond, or another Contractor, in completion of the work; and the Contractor shall not receive any rental or credit therefore, (except when used in connection with Extra Work, where credit shall be allowed as provided for under Paragraph 15, Extra Work); it being understood that the use of such equipment and materials will ultimately reduce the cost to complete the work and be reflected in the final settlement.

In case the Surety should fail to commence compliance with the notice for completion hereinbefore provided for, within ten (19) days after service of such notice, then the OWNER may provide for completion of the work in either of the following elective manners:

(a) The OWNER may thereupon employ such force on men and use such machinery, equipment, tools, materials and supplies as said OWNER may deem necessary to complete the work and charge the expense of such labor, machinery, equipment, tools, materials, and supplies to said Contractor, and the expense so charged shall be deducted and paid by the OWNER out of such monies as may be due, or that may thereafter at any time become due to the Contractor under any by virtue of the Agreement. In case such expense is less than the sum which would have been payable under this contract, if the same has been completed by the Contractor, then said Contractor shall receive the difference. In case such expense is greater than the sum which would have been payable under this contract, if the same had been completed by said Contractor, then the Contractor and/or Surety shall pay the amount of such expenses to the OWNER; or

(b) The Owner under sealed bids, after five (5) days notice published one or more times in a newspaper having a general circulation in the county of the location of the work, may let the contract for the completion of the work under substantially the same terms and conditions which are provided in this contract. Incase of any increase in cost under this contract, such increase shall be charged to the Contractor, and the Surety shall be and main bound therefore. However, should the cost to complete any such contract prove to be less than what would have been the cost to complete under this contract, the contractor and/or his Surety shall be credited therewith.

When the work shall have been substantially completed the Contractor and his Surety shall be so notified and Certificates of Completion and Acceptance, as provided in Paragraph 23 hereinabove, shall be issued. A complete itemized statement of the contract accounts certified to by the Department of Public Works and the ENGINEER as being correct, shall then be prepared and delivered to the Contractor and his surety, whereupon the Contractor and/or his Surety, or the OWNER as the case may be, shall pay the balance due as reflected by said statement, within fifteen (15) days after the date of such Certificate of Completion.

In the event the statement of accounts shows that the cost to complete the work is less than that which would have been the cost to the OWNER had the work been completed by the Contractor and/or his Surety shall pay the balance shown to be due by them to the OWNER, then all machinery, equipment, tools, materials or supplies left on the sire of the work shall be turned over to the Contractor and/or his Surety. Should the cost to complete the work exceed the contract price, and the Contractor and/or his Surety fail to pay the amount due the OWNER, within the time designated herein above, and there remains any machinery, equipment, tools, materials, or supplies on the site of the work, notice thereof, shall be mailed to the Contractor and his Surety at the respective addresses designated in this contract; provided, however, that actual written notice given in any manner will satisfy this condition. After mailing, or otherwise giving of such notice, such property shall be held at the risk of the Contractor and his Surety subject only to the duty of the OWNER to exercise ordinary care to protect such property. After fifteen (15) days of said notice, the OWNER may sell such machinery, equipment, tools, materials, or supplies and apply the net sum derived from such sale to the credit of the Contractor and his Surety. Such sale may be made at either public or private sale, with or without notice, as the OWNER may elect. The OWNER shall release any machinery, on the work, and belong to persons other than the Contractor or his Surety, to their proper OWNERS.

41. BOND

It is further agreed by the parties to this contract that the Contractor will execute payment and performance bonds for the satisfactory performance of the work in accordance with this contract in the forms provides for this purpose, and it is agreed that this contract not be affect until such bonds are furnished to and approved by the OWNER.

42. TIME OF FILING CLAIMS

It is further agreed by both parties hereto that all questions or adjustment presented by the Contractor shall be in writing and filed with the Department of Public Works and the ENGINEER within a reasonable time after the ENGINEER has given any directions, orders, or instructions to which the Contractor desires to take exceptions. The Department of Public Works and the ENGINEER shall reply to such written exceptions by the Contractor and render his final decision in writing. In case the Contractor should appeal from the Department of Public Works and the ENGINEER'S decision, such appeal shall be filed with the ENGINEER and the OWNER in writing with ten (10) days after the date of the Department of Public Works and the ENGINEER'S final decision. It is further agreed that final acceptance of the work by the OWNER and the acceptance by the Contractor of the final payment shall be a bar to any claims by either party, except where noted otherwise in the Contract Documents.

END OF GENERAL CONDITIONS OF AGREEMENT

# GENERAL REQUIREMENTS

## A. GENERAL

The specifications contain detailed instructions and descriptions covering the major items of construction and workmanship necessary for building and completing the various units or elements of the project. The specifications are intended to be so written that only first class workmanship and finish of the best grade quality will result. The fact that these specifications may fail to be so complete as to cover all details will not relieve the Contractor of full responsibility for providing a completed project of high quality, first class finish and appearance and satisfactory for operation all within the apparent intent of the plans and specifications.

## B. MATERIALS

These specifications are intended to be so written that only materials of the best quality and grade will be furnished. The fact that the specifications may fail to be sufficiently complete is some detail will not relieve the Contractor of full responsibility for providing materials of high quality. The specifications for materials set out the minimum standard of quality which the owner believes necessary to procure a satisfactory project. No substitutions will be permitted unless the Contractor has received written permission of the ENGINEER to make a substitution for the material which has been specified.

Where the term “Or Equal” or “Or Approval Equal” is used, it is understood that if a material, product or piece of equipment bearing the name so used is furnished, it will be approvable as the particular trade name was used for the purpose of establishing a standard of quality acceptable to the Owner. If a product of any other name is proposed for use, the Engineer’s approval thereof must be obtained before the proposed substitute is procured by the Contractor. Wherever the alternate “Or Equal” is used, it is understood to mean “Or Approved Equal”.

The manufacturer of each item of material and/or equipment shall furnish the Owner with a sworn statement that all material furnished by him under this contract complies with these specifications and all applicable ASTM, AWWA, ASA, and Federal Specification as set forth herein.

## C. MANUFACTURER’S QUALIFICATIONS

All material and equipment furnished under this Contract shall be the product of manufacturers who are known to be skilled and who have been regularly engaged for a period of five years or more in the manufacturer of each specified type of equipment, or its counterpart.

## D. CHANGE OF LOCATION

Unless otherwise shown in the plans, no change of the alignment is contemplated.

However, should a change be necessary due to difficulty in right-of-way, or other reasons, the Owner, reserved the right to make such change. Unless it can be clearly shown that such change will be allowed the Contractor, except as provided by unit prices applicable to such change.

E. HANDLING MATERIALS NOT APPROVED

The contractor shall remove from the site any materials found to be damaged and any materials not meeting the specifications shall be taken off the site. These materials shall be removed promptly, unless the Department of Public Works and the Engineer will accept the materials after repairing. Materials found to be damaged, or not acceptable to the Engineer, shall be removed if installed and then found to be damaged or not acceptable. Inspection before installation shall not relieve the contractor from any responsibility to furnish good quality materials.

F. SAFETY AND PROPERTY PROTECTION

1. Barricades, Guards and Safety Provision: To protect persons from injury and to avoid property damage, adequate barricades, construction signs, torches, red lanterns, and guards as required shall be placed and maintained during the progress of the construction work and until is it safe for traffic to use the roadway. When necessary, watchmen shall be provided to prevent accidents and no extra compensation will be allowed therefore. Rules and regulations of the local authorities respecting safety provisions shall be observed.

2. Property Protection: Trees, Fences, signs, poles, guy wires, and all other property shall be protected unless their removal is authorized, and any property damage shall be satisfactorily restored by the Contractor.

   The Contractor shall make adequate provisions for the protection of permanent paving, both concrete and asphalt, from damage by construction equipment.

# SUPPLEMENTARY CONDITIONS

The Supplementary Conditions are in addition to and do not void any portions of the General Conditions of the Agreement or other parts of the Contract Documents; however, wherever there is a direct conflict in meaning, these General Supplementary Conditions take precedence.

## 1. MATERIAL AND EQUIPMENT

It shall be clearly understood the responsibility for the protection and safekeeping of equipment and materials on the project site will be entirely that of the Contractor and that no claim shall be made against by reason of any act of another Contractor, an employee, or trespasser. It shall be further understood that should any occasion arise necessitating access to the sites occupied by these stored materials and equipment, the Contractor owning or responsible for the stored materials or equipment shall immediately moved same. No materials or equipment may be placed upon any property until the OWNER has approved the location contemplated by the Contractor to be used for storage.

## 2. USE OF PREMISES AND REMOVAL OF DEBRIS

The Contractor expressly undertakes at his own expense;

a. To take every prevention against injuries to persons or damage to property;

b. To store his apparatus, materials, supplies and equipment in such orderly fashion at this site of the work as will not unduly interfere with the progress of his work or the work of any other Contractor;

c. To clean up frequently and remove all refuse, scrap materials, and debris caused by his operations, to the end that all times the site of the work shall present a neat, orderly and workmanlike appearance.

d. Before final payment, to remove all surplus materials, false work, temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from his operations, and to put the site in a neat, orderly condition.

## 3. SAFETY REQUIRMENTS

Every reasonable and proper precaution shall be taken by the Contractor to insure the safety of the work and employed personnel, the public, and the adjacent property whether publicly or privately owned.

To protect persons from injury and to avoid property damage, barricades, signs, lanterns, or lights and guards as required shall be placed and maintained by the Contractor at the site and access way during the progress of the construction.

Rules and Regulations governing “Occupational Safety and Health Standards” as published by the Occupational Safety and Health Administration, Department of Labor, shall be observed for all operations and all work performed under this contract.

All costs involved in complying with the above requirements shall be borne by the Contractor.

4. DETOURS

The Contractor shall provide barricades, signs, lights or guards and any other items required to maintain properly marked detours around his operations.

All costs involved in complying with the above requirements shall be born on by the Contractor.

5. SCOPE, NATURE, AND INTENT OF SPECIFICATIONS AND PLANS

The specifications and plans are intended to supplement but not necessarily duplicate each other. Any work exhibited in the one and not in the other shall be executed as if it had been set forth in both.

Should anything necessary for a clear understanding of the work be omitted from the specifications and plans or should the requirements appear to be in conflict, the Contractor shall secure written instructions from the ENGINEER before proceeding with the construction affected thereby. It is understood and agreed that the work shall be performed according to the true intent of the contract documents.

All products specified by manufacturer’s name shall be installed in accordance with manufacturer’s printed instructions.

When equipment or material furnished by the Contractor cannot be installed as specified or as shown on the plans, the Contractor shall, without extra cost to the OWNER, make all modifications required to properly install the equipment or material. Such modifications shall be subject to the approval of the ENGINEER.

Dimensions and elevations shown on the plans shall be accurately followed even if they differ from scaled measurements. No work shown on the plans, the dimensions of which are not indicated, shall be executed until necessary dimensions have been obtained from the ENGINEER.

The general arrangement of all accessories and appurtenances shall be as indicated on the plans or as later furnished on approved shop drawings.

Reference to standard specifications of any technical society, organization, or association or to codes of local or state authorities shall mean the latest standard, code, specification

or tentative specification adopted and published at the date of taking bids, unless specifically stated otherwise.

No attempt has been made in the specifications to segregate work to be performed by any trade or subcontract. Any segregation between the trades or crafts will be solely a matter for agreement between the Contractor and his employees and his subcontractors.

6. PERMITS AND FEES

The Contractor shall make applications for, secure and pay all costs for permits, inspection fees, licenses and deposits required for the work to be performed.

Each subcontractor shall bear the cost of permits and fees relative to work.

7. SUNDAY, HOLIDAY, AND NIGHT WORK

No work shall be done between the hours of 7:00p.m. and 7:00a.m. nor on Sundays or Legal Holidays without the written approval of the Owner in each case, except such work as may be necessary for the proper care, maintenance, and protection of work already done or of equipment or in case of emergency.

Any work necessary to be performed after or outside regular working hours, on Sundays, or Legal Holidays, shall be performed without additional expense to the OWNER.

8. TIME OF COMPLETION

Article 17 of the General Conditions of the Agreement shall be supplemented as follows.

The Contractor shall have substantially completed all construction work undertaken by him no later than fifty-five (55) calendar days from the date of issuance or a written notice to proceed from the OWNER

9. LIQUIDATED DAMAGES

Article 38 of the General Conditions of the Agreement shall be supplemental as follows:

The Contractor agrees that time is of the essence on this contract and that for each calendar day of delay beyond the time established for completion of the work specified and contract for the OWNER may withhold permanently from the Contractor's compensation the sum of Two Hundred Dollars ($200.00) as stipulated liquidated damages for delay.

10. PROGRESS SCHEDULES

Prior to beginning work, the Contractor shall furnish the Engineer with an anticipated progress schedule covering all the work to be performed under this contract. During construction, the Contractor shall revise the schedule periodically as requested to reflect as nearly as possible to actual construction operations. The Contractor shall also furnish the ENGINEER as soon as possible with a schedule showing ordering delivery dates of all equipment materials to be incorporated in the work; these dates shall be keyed to the proposed progress schedule for the work.

11. SUBCONTRACTING

a. The Contractor may utilize the service of specialty subcontractors on those parts of the work which, under normal contracting practices, are performed by specialty subcontractors.

b. The Contractor shall not award any work to any subcontractor without prior written approval of the ENGINEER, which approval will not be given until the Contractor submits to the Department of Public Works and the ENGINEER a written statement concerning the proposed award to the subcontractor, which statement shall contain such information as the Department of Public Works and the ENGINEER may require.

c. The Contractor shall be as fully responsible to the OWNER for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by them as he is for the acts and omissions of persons directly employed by him.

d. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the Notice to Bidders, General and Supplementary Conditions and other Contract Documents insofar as applicable to the work of subcontractors and to give the Contractor the same power as regards terminating any subcontract that the OWNER may exercise over the Contractor under provisions of the Contract Documents.

e. The General Contractor will be responsible for and make good at is own expense any damage or injury to work done by subcontractors until final completion and final acceptance of all the work to be done.

f. Nothing contained in this contract shall create any contractual relation between subcontractor and the OWNER.

12. INSPECTION AND TESTING

If Contract specifications, codes, or OWNER'S instructions require any work to be specially tested or approval, the Contractor shall give the ENGINEER a 24 hour notion of

its readiness for inspection and make all necessary thereof. The Contractor shall finish at his expense all labor and assistance that may be needed by the Department of Public Works and the ENGINEER in performing any testing or supervision thereof.

13. MEASURMENT AND PAYMENT

The total bid price of the contract shall cover all work shown on the contract drawings and required by the specifications and other contract documents. All costs in connection with the work, including furnishing of all materials, equipment, supplies, and appurtenances; providing all construction plant, equipment and tools; and performing of all necessary labor to fully complete the work, shall be included in the prices submitted in the "Proposal". No item that is required by the Contract Documents for the proper and successful completion of the work will be paid for outside of or in addition to prices submitted in the "Proposal". All work not specifically set forth as a pay item in the Proposal shall be considered a subsidiary obligation of the Contractor, and all costs in connection therewith shall be included in the prices names in the "Proposal.

14. PAYMENT WITHHELD

The Department of Public Works and the ENGINEER may withhold, or on account of subsequently discovered evidence, nullify the whole or a part of any certificate to such extent as may be necessary to protect the OWNER from loss on account of:

a. Defective work not remedied.

b. Claims filed or reasonable evidence indicating probable filing of claims.

c. Failure of the Contractor to make payments when due to subcontractors or for materials or for labor.

d. A reasonable doubt that the contract can be completed for the balance then unpaid.

15. DEFENSE OF SUITS

In case any action in court is brought against the OWNER, the Department of Public Works and the ENGINEER, or any officer or agent of either of them, for the failure, omission or neglect of the Contractor to perform any of the covenants, acts matters, or things by this contract undertaken; or for injury or damage caused by the alleged negligence of the Contractor of his subcontractors or his or their agents, or in connection with any claim based on lawful demands of subcontractors, workmen, materialmen, or suppliers; the Contractor shall indemnify and save harmless the OWNER, and the Department of Public Works and the ENGINEER and their officers and agents from all losses, damages, costs, expenses, judgments, or decrees arising out of such action.

16. GUARANTEE

The Contractor shall furnish the OWNER with a Maintenance Bond for a period of one (1) year to be effective from the date of issue of Certificate of Acceptance. This Maintenance Bond is for the guarantee for the work, performed to be free from defects due to faulty workmanship or materials installed on this project. Neither final acceptance nor finally payment not any provision in the Contract Documents relieves notifies the Contractor in writing that certain maintenance work needs to be done, and the Contractor does not do the maintenance work within a reasonable time, such time to be governed by the hazard or inconvenience to the public or the OWNER, the OWNER is to do, or to have such work done, and these charges will be paid for by the Contractor, under the Maintenance Bond provision.

17. DRAWINGS AND SPECIFICATIONS FURNISHED

The contractor will be furnished with three (3) sets of drawings and specifications without cost, additional copies will be paid for by the Contractor. The charges will be the actual cost of reproduction per set.

18. TESTING LABORATORY SERVICES

A recognized testing laboratory will be selected to perform the testing services.

Payment for Testing: The first shall be paid for by the OWNER.

Any re-testing required due to failing test will be paid for by the Contractor.

All tests shall be made when, according to the Contractor, the item is ready for testing.

19. INSURANCE AND BONDING REQUIREMENTS

The following bonding and issuance requirements shall be provided:

A. A bid guarantee from each bidder equivalent to five percent of the bid price. The “bid guarantee” shall consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of his bid, execute such contractual documents as may be required within the time specified.

B. A performance bond on the part of the Contractor for 100 percent of the contract price. A “performance bond” is one executed in connection with a contract to secure fulfillment to all the Contractor’s obligations under such contract.

C. A payment bond on the part of the Contractor for 100 percent of the contract price. A “payment bond” is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

D. The successful bidder, to whom the contract is awarded, will be required to carry the hereinafter listed types and amounts of insurance, which will protect the Owner, and furnish acceptable proof of payment to premiums thereon:

Comprehensive General

Liability……...$1,000,000/$1,000,000

Comprehensive Form

Premises – Operations

Explosion and Collapse Hazard

Underground Hazard

Products/Completed Operations Hazard

Contractual Insurance

Independent Contractors

Personal Injury

Property Damage…….$100,000

Builder's Risk……..…….$ Amount of Contract

Workmen's Compensation……In Accordance with Statutory Requirements

Broad Form Comprehensive General Liability……..……$500,000/$500,000

Automobile Public Liability and Property Damage…….....In Accordance with Statutory Requirements

20. <u>INDEMNITY</u>

The "Contractor agrees to and shall indemnify and hold harmless the OWNER, its officers, agents, employees and Engineer from and against any and all claims, losses, damages, causes of action, suits and liabilities of every kind, including all expenses of litigation, court cost, and attorney's fees, for injury to or death of any person, or for damage to any property, arising out of or in connection with the work done by the Contractor under this contract."

END OF SUPPLEMENTARY CONDITIONS

# TECHNICAL SPECIFICATIONS

# TECHNICAL SPECIFICATIONS

All work under this contract is to be in accordance with the City's Standards and Specifications for the Acceptance of Public Improvements. All provisions of pertinent items of the Texas Department of Transportation 2004 Standard Specifications for Construction of Highways, Streets and Bridges as referenced to the City Specifications shall govern all work to be done under this Contract. All references within these Standard Specifications to TxDOT, the STATE, the DEPARTMENT, or other such terms shall be understood to refer to the CITY OF SOUTH PADRE ISLAND for the purposes of this contract.

If there is a conflict between TxDOT and City Specification, the more stringent shall control unless otherwise authorized by the ENGINEER.

Any conflicts between TxDOT or City Specification and the following Technical Specifications, the project's Technical Specification shall govern.

Copies of the City's Specification are available for review at the Public Works Department, or are available for purchase for $25.00 per set.

The following City Standard Specification Items are incorporated into the Contract by Reference. References to the pertinent TxDOT Standard Specification Items are included within the City Standard Specifications:

ARTICLE 2.04 CLEARING, GRUBBING, EXCAVATION, AND EMBANKMENT
ARTICLE 2.05 SUBGRADE
ARTICLE 2.06 BASE COURSE
ARTICLE 2.07 BITUMINOUS PAVEMENT (HOT ASPHALT CONCRETE)
ARTICLE 2.08 HYDRAULIC CEMENT CONCRETE PAVEMENT
ARTICLE 2.09 PAVEMENT MARKINGS, STREET SIGNS, AND TRAFFIC CONTROL DEVICES
ARTICLE 2.10 FINISHING SHOULDERS, DITCHES, AND SLOPES
ARTICLE 2.12 CURBS AND GUTTERS
ARTICLE 2.13 SIDEWALKS
ARTICLE 2.14 DRIVEWAYS, ALLEYS, ENTRANCES, AND APPROACHES
ARTICLE 2.16 BACKFILL AND COMPACTION
ARTICLE 2.19 VALLEY GUTTERS
ARTICLE 3.07 VALVES AND FIRE HYDRANTS
ARTICLE 3.10 SETTING FIRE HYDRANTS
ARTICLE 7.05 EROSION AND SEDIMENT CONTROL REQUIREMENTS

# FLEXIBLE BASE TYPE A GRADE I (CRUSHED LIMESTONE)

A. DESCRIPTION

This item shall govern the material placement and compaction of Crushed Limestone Base to the lines and grades that are shown on the construction drawings. Crushed Limestone Base thickness for various pavement types are shown on the plans.

B. MATERIAL

The Crushed Limestone material shall be Type A, Grade I Texas Department of Transportation, 2004, Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, "Item 247 Flexible Base".

The Contractor shall not place crushed limestone on the road bed until the Department of Public Works and the ENGINEER has accepted the shaped and compacted subgrade.

The Contractor must maintain the roadbed free of holes, ruts and depressions and in condition to receive the crushed limestone.

The Contractor upon request shall provide certification that the material supplied meet the above requirements prior to delivery to the job site. Samples for testing of the material must be taken prior to the compaction operations.

C. CONSTRUCTION METHODS

The flexible base material shall be placed on the approved subgrade in courses not to exceed six (6) inches compacted depth. It shall be the responsibility of the contractor that the required amount of material be delivered and uniformly spread and shaped. All materials has been cut into the windows, it shall be sprinkled, spread, and rolled in proper sequence to prevent segregation and as necessary for required compaction.

The surface on completion shall be smooth and in conformity with typical sections and to the established lines and grades. Any deviation in excess of ¼ inch in cross-section and in length of 16 feet measured longitudinally shall be corrected.

Flexible base shall be compacted to an apparent dry density of not less that 98 percent of the maximum dry density as determined in accordance with ASTM Test method D698 ( Standard Proctor). Tests for density will be made within 24 hours after compaction operations are completed. If the material fails to meet the density specified, it shall be reworked as necessary to meet the density required. Prior to placing any succeeding course of flexible base or surfacing on a previously completed course the density and moisture of the top three (3) inches of flexible base shall be checked and if the test show the density to be more than 2 percent below the specified compaction and moisture content, it shall be reworked as a necessary the density and moisture required.

The first density and depth test as a specific location will be made by commercial testing laboratory designated by the Owner and said tests shall be paid for the Owner. If the test fails, all other tests at the location shall be paid for by the Contractor, by deducting from the final payment.

D. MEASUREMENT & PAYMENT

This item “Crushed Limestone Base” will be measured by the square yard complete in place as planned and detailed on the cross-section. “Crushed Limestone Base”, price shall include full compensation for all materials, for water required and for all equipment, tools, labor and incidentals necessary to complete the work to the required compaction.

# HOT MIX ASPHALTIC CONCRETE PAVEMENT

A. DESCRIPTION

This item shall consist of a base course, a leveling-up course, a surface course, or any combination of these courses as shown on the plans, each to be composed of a compacted mixture of mineral aggregate and asphaltic material.

The pavement shall be constructed on the previously completed and approved subgrade, base, existing pavement, bituminous surface, or in the case of a bridge, on the prepared floor slab, as herein specified and in accordance with the details shown on the plans.

B. MATERIAL

Hot Mix Asphaltic Concrete, Type "D" (fine graded surface course). The hot mix asphaltic concrete shall conform to the requirements of the Texas Department of Transportation, 2004 Standard Specifications for Construction and maintenance of Highway, Streets, and Bridges, "Item 340 Dense-Graded Hot-Mix Asphalt". The successful bidder shall submit an asphalt mix design within ten (10) days upon award of contract to ENGINEER demonstrating that the hot mix asphaltic concrete to be used meets these specifications. The asphalt to be used shall be PG 64-22. Special Modifications to Standard Specification Item 340, for this project are as follows:

1. Asphalt Content. Asphaltic Material PG 64-22 shall form from a percent of the mixture by weight obtained from the approved Job Mix Formula (JMF).

2. Hveem Stability. Hveem stability shall not be less than 30.

C. CONSTRUCTION METHODS

Construction methods used in Hot Mix Asphaltic Concrete Pavement shall meet the requirements as set form in the Texas Department of Transportation, 2004 Standard Specifications for Construction and maintenance of Highway, Streets, and Bridges, "Item 340 Dense-Graded Hot-Mix Asphalt", with the following additions:

If the temperature of the asphaltic mixture of a load of any part of a load becomes less than 225$^{o}$F or more than 350$^{o}$F after being dumped from the mixer and prior to passing through the lay-down machine, all or any part of the load may be rejected.

1. Transporting Asphaltic Concrete. The asphaltic mixture, prepared as specified above, shall be hauled to the work in tight vehicles previously cleaned of all foreign material. The dispatching of the vehicles shall be arranged so that all material delivered may be placed, and all rolling shall be completed during daylight hours. In cool weather or for long hauls, canvas covers and insulating of the truck bodies may be required. The inside of the truck body may be given a light coating of oil, lime slurry, or other material satisfactory to the Department of Public Works Director and/or the ENGINEER, if necessary, to prevent mixture from adhering to the body.

2. Placing

a. Generally, the asphaltic mixture shall be dumped and spread on the approved prepared surface with specified spreading and finishing machine, in such manner that when properly compact the finished pavement will be smooth, of uniform density and will meet the requirements of the typical cross sections and the surface tests. Spreading machine must have electronic controls and be able to lay a minimum of 19 feet of asphalt per pass. During the application of asphaltic material, care shall be taken to prevent splattering of adjacent pavement, curb, gutter and structures.

b. In placing a level-up course with the spreading and finishing machine, binder twine or cord shall be set to line and grade established by the Department of Public Works and the ENGINEER. If approved by the Department of Public Works and the ENGINEER, level-up courses may be spread with a motor grader.

c. When the asphaltic mixture is placed in a narrow strip along the edge of an existing pavement, or used to level up small areas of an existing pavement or placed in small irregular areas where the use of a finishing machine is not practical, the finishing machine may be eliminated when authorized by the ENGINEER, provided a satisfactory surface can be obtained by other approved methods.

d. Flush Structures. Adjacent to flash curbs, gutters, liners, and structures, the surface shall be finished uniformly high so that when compacted it will be slightly above the edge of the curb or flush structure.

3. Conditions for Placement. The asphaltic mixture when placed with a spreading and finishing machine shall not be placed when the air temperature is below $50^{o}$F and is falling, but it may be when the air temperature is above $50^{o}$F and is rising. The air temperature shall be taken in the shade away from artificial heat. It is further provided that the asphaltic mixture shall be placed only when the humidity, general weather conditions, temperature, and moisture conditions of the base, in the opinion of the ENGINEER, are suitable.

4. Compacting

a. Rolling with the three-wheel and tandem rollers shall start longitudinally at the sides and proceed toward the center of the pavement, overlapping on successive trips by at least half the width of the rear wheel unless otherwise directed by the Department of Public Works and the ENGINEER. Alternative trips of the roller shall be slightly different in length. On super-elevated

curves, rolling shall begin at the low side and progress toward the high side unless otherwise directed by the Department of Public Works and the ENGINEER. Rolling with pneumatic-tire roller shall be done as needed. Rolling shall be continued until not further compression can be obtained and all roller markers are eliminated. One tandem roller, one pneumatic-tire roller and at least one three-wheel roller as specified above shall be provided for each job. If the Contractor elects, he may substitute the three-axle tandem roller for the two-axle tandem roller but in no case shall less than three rollers be in use on each job. Additional rollers shall be provided if needed. The motion of the roller shall be slow enough at all times to avoid displacement of the mixture. If any displacement occurs, it shall be corrected at once by the use of rakes and of fresh mixtures when required. The roller shall not be allowed to stand on pavement which has not been fully compacted. To prevent adhesion of the surface mixture to the roller, the wheels shall be kept thoroughly moistened with water, but an excess of water will not be permitted. All rollers must be in good mechanical condition. Necessary precautions shall be taken to prevent the dropping of gasoline, oil, grease, or other foreign matter on the pavement, either when the rollers are in operation or when standing.

In lieu of the rolling equipment specified, the Contractor may, upon written permission from the ENGINEER, operate other compacting equipment that will produce equivalent relative compaction as the specified equipment. If the substituted compaction equipment fails to produce the desired compaction as would be expected of the specified equipment, as determined by the ENGINEER, its use shall be discontinued.

b. Hand Tamping. The edges of the pavement along curbs, headers, and similar structures, and all places not accessible to the roller, or in such positions as will not allow thorough compaction may be compacted using lightly oiled tamps.

5. Opening to Traffic. The pavement shall be opened to traffic when directed by the Department of Public Works and the ENGINEER. The Contractor's attention is directed to the fact that all construction traffic allowed on pavement open to public will be subject to the laws governing traffic on Public Roads and Streets.

If the surface ravels or presents a rough appearance, it will be the Contractor's responsibility to correct this condition at his expense. A fog seal and/or sand seal will be applied.

6. Density Test. Acceptance of Sampling andTesting of Hot Mix Asphaltic Concrete (Compaction):

Hot Mix Asphaltic Concrete will be accepted for density on lot basis. A lot will

consist of 5,000 square feet of paving area. One test shall be made for each lot.

Each lot of pavement will be accepted with respect to density, when the average field density is compacted between 91% and 97% as determined in accordance with ASTM D2041, and when no individual determination is less that 90% of the average laboratory density. Four field density determinations will be made for each lot. A Nuclear Gauge will be used to determine field density during laying of the HMAC. The densities shall be determined in accordance with ASTM D2950. The number of tests will be determined by this specification or by request of the ENGINEER. An asphalt sample specimen shall be provided to the testing laboratory for determining the maximum theoretical density and laboratory density. If heating is necessary, the specimen shall be heated to the lowest temperatures required for proper preparation of the sample.

7. Surface Tests. Tests for conformity with the specified crowns and grade shall be made by the Contractor immediately after final rolling. Any variation exceeding the specified tolerances shall immediately be corrected by removing the defective work and replacing with new material, as directed by the ENGINEER. Any correction required shall be at the sole expense of the Contractor.

   For surface course, the finished surface shall not vary more than ¼ inch (6.3mm), when tested with a 16 foot straightedge applied parallel with, or at right angles to the centerline.

   The finished surfaces of hot mix asphaltic concrete shall not vary from the gradeline, elevations and cross sections shown on the plans by more than ¼ inch (6.3 mm). The Contractor shall correct pavement areas varying in excess of this amount by removing and replacing the defective work. Skin patching shall not be permitted for correction of low areas nor shall be permitted for correction of high areas.

8. Sampling Pavement. Samples for determination of thickness and density of completed pavements shall be obtained by the Owner. The size, number, and locations of the samples will be as directed by the Department of Public Works and the ENGINEER.

All tests necessary to determine conformance with the specified requirements will be performed without cost to the Contractor; however, any required retests shall be performed at the Contractor's expense.

Upon delivery of the Hot Mix Asphaltic Concrete to the site, the Owner will hire a reputable commercial Testing Laboratory to sample the material and run laboratory tests to verify that the mixture conforms to project specifications (Gradation, Extraction, and Stability).

D. MEASUREMENT & PAYMENT

This item; “Hot Mix Asphaltic Concrete”, will be measured and paid for by the square yard to the depth specified. No additional payment will be made for thickness or width exceeding that shown on the plans. The unit price shall include full compensation for surface preparation, all materials including tack coat, placement, equipment, tools, labor, and incidentals necessary to complete the work.

## ADJUSTING MANHOLES, CLEANOUTS, INLETS & WATER VALVE RISERS

A. DESCRIPTION

This item shall govern for the furnishing of materials and for adjusting manholes, cleanouts inlets or water valve risers where required by the plans. Manholes, cleanouts, inlets and water valve risers shall be adjusted to position and/or elevation as shown on the plans, or as ordered by the Department of Public Works and the ENGINEER and in accordance with these specifications.

B. MATERIALS

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Manhole, cleanout, and inlet covers, water valve risers, and brick in good condition, removed in the process of adjustment, may be re-used. Additional materials needed shall be provided as needed.

Mortar for brick work shall be composed of one part Portland Cement and two parts clean, sharp mortar sand suitably graded for the purpose. Lime may be added to the mix but in no case shall it exceed 10% by weight of the total dry mix.

Bricks for Sanitary Sewer Manholes shall be concrete brick conforming to the requirements of ASTM Designation C 32, Grade NA or equal.

Concrete for inlets shall be 4000 psi (28 day compressive strength) concrete containing a minimum of 6 sacks of cement per cubic yard.

Reinforcing steel shall be deformed and shall conform to ASTM Designation A-615.

When prefabricated steel extension rings are furnished, the material shall be ASTM A36 or equal.

C. CONSTRUCTION

Existing manholes, cleanouts and water valve risers located within areas of base and sub-base construction shall be located and referenced; covers, and risers shall be removed carefully and stored by the Contractor. Rings, covers, plates, or grates broken in the process of removal and cleaning lost or stolen shall be replaced in kind by the Contractor at his expense. Manholes shall be broken down below subgrade elevation and covered with hatch covers prior to beginning excavation and subgrade preparation. If manholes are to be lowered the brick work shall be removed to a point where the corbell will not exceed 1" per course of brick, in order to obtain the proper diameter at the top for resetting the ring and cover. Upon completion of the flexible base, the manholes, and the water valves shall be located from the reference points and the top portion of the manhole rebuilt, and water valve risers reset so that they will be within ½ inch of the proposed asphalt surfacing.
When manholes are located within pavement areas to be overlaid with hot mix asphaltic

concrete, the Contractor may, upon removal of the cast iron ring and adding concrete adjustment rings, provide prefabricated steel extension rings. They shall be either of the one-piece or two-piece type as necessary for the amount of adjustment. They will be installed in accordance with the manufacturer's instructions.

Inlets to be adjusted shall be broken down as necessary and rebuilt to the elevations as shown on the plans.

D. MEASUREMENT & PAYMENT

This item; "ADJUSTING MANHOLES, CLEANOUTS, INLETS & WATER VALVE RISERS", will be measured and paid for under a per item basis. The unit price shall include full compensation for all materials, equipment, tools, labor, and incidentals necessary to complete the work to the required.

## DETOUR, BARRICADE AND WARNING SIGNS

The Contractor shall place and maintain in good condition, standard barricades and warning signs at each end of the project and at other locations as shown in the plans to maintain the safety of the public and employees. Traffic control devices shall be in accordance with the Current "Texas Manual on Uniform Traffic Control Devices".

All barricades and signs remaining in place at night and all points of hazard to traffic shall be illuminated by flares, flashers or both, as determined by the Department of Public Works and the ENGINEER.

Upon completion of the work, all signs and evidence thereof shall be removed by the Contractor.

All materials furnished and work performed under these provisions will not be paid for directly, but shall be considered as subsidiary work pertaining to the various bid items of the contract.

No direct payment shall be made to the Contractor for any temporary detours which may be needed during the construction of this project.

# PRIME COAT

A. DESCRIPTION

"Prime Coat" shall consists of an application of asphaltic material on the completed base course and/or other approved areas in accordance with these specifications as directed by the Inspector.

B. MATERIALS

The asphaltic material for prime coat shall meet the requirement for Cut-Back Asphalt, MC-30, Item 300, "Asphalt, Oils, and Emulsions" of the Texas highway Department Standard Specifications 2004 Edition.

C. CONSTRUCTION METHODS

When, in the opinion of the Inspector, the area and/or base is satisfactory to receive the prime coat, the surface shall be cleaned by sweeping or other approved methods as directed by the Inspector. If directed by the Inspector, the surface shall be lightly sprinkled with water just prior to application of the asphaltic material. The asphaltic material shall be applied on the clean surface by an approved distributor at a rate not to exceed 0.2 and not below 0.1 gallons per square yard of surface, evenly, and smoothly, under a pressure necessary for proper distribution. During the application of prime coat, care shall be taken to prevent splattering of adjacent pavement, curb and gutter or structures.

Prime coat shall not be applied when the air temperature if below $60^{o}$F and falling, but may be applied when the air temperature is about $50^{o}$F and is rising; the air temperature being taken in the shade and away from artificial heat. Asphaltic material shall not be placed when general weather conditions, in the opinion of the Inspector, are not suitable.

D. MEASUREMENT & PAYMENT

The work performed and materials furnished as prescribed by this item will be measured and paid for by the gallon at the unit price bid for "Prime Coat" of the type and grade of bituminous material provided. This price is full compensation for cleaning and spinkling the area to be primed; materials, including blotter material; and rolling, equipment, labor, tools, and incidentals.

# TACK COAT

A. DESCRIPTION

"Tack Coat" shall consist of an application of asphaltic material on the existing pavement in accordance with these specifications as directed by the Inspector.

B. MATERIALS

The asphalt material for tack coat shall meet the requirement for Cut-Back Asphalt, RC-250, Item 3000, "Asphalt, Oils, and Emulsions" of the Texas Highway Department Standard Specifications 2004 Edition.

C. CONSTRUCTION METHODS

When, in the opinion of the Inspector, the existing pavement base is satisfactory to receive the tack coat, the surface shall be cleaned by sweeping or other approved methods as directed by the inspector. The asphaltic material shall be applied on the clean surface by an approved distributor at a rate not to exceed 0.11 or below 0.05 gallons per square yard of surface, evenly, and smoothly, under a pressure necessary for proper distribution. During the application of tack coat, care shall be taken to prevent splattering of adjacent curb and gutter or structures.

Tack coat shall not be applied when the air temperature is below $60^{o}$F and falling, but may be applied when the air temperature is about $50^{o}$F and is rising; the air temperature being taken in the shade and away from artificial heat. Asphaltic material shall not be placed when general weather conditions, in the opinion of the Inspector, are not suitable.

D. MEASUREMENT & PAYMENT

The work performed and materials furnished as prescribed by this item will not be paid for separately, the cost of tack coat material, cleaning the existing payment, furnishing, heating, hauling, and distributing the tack coat as specified, for all freight involved and for all manipulations, labor, tools, equipment, and incidentals necessary to complete the work shall be included in the unit price for "Hot Mix Asphaltic Concrete".

# TRENCH DRAIN

**A. Description.** Construct cast in place surface drainage trench.

**B. Materials.** Provide a trench with a slope as shown on the plans. Furnish forms capable of maintaining proper alignment during the concrete placement. Ensure connections to structures do not restrict the hydraulic flow of the trench drain.

- Use High Early Strength Concrete (min f'c=3,600 psi) conforming to Item 420, "Concrete Structures."

Furnish trench drain rails fabricated with structural steel meeting the requirements of ASTM A 36 with a minimum cross section of 2 in. x 2 in. x 3/16 in. Furnish trench drain rails having 1/4 in. minimum diameter steel anchoring rods at a maximum spacing of 20 in. between each rod, measured in the direction of travel, and a means for securing adjoining trench rails. Furnish steel that is galvanized per ASTM A 123, after fabrication.

Fabricate trench drain grates from ductile iron in accordance with ASTM A 536, Grade 65-45-12 and meet an AASHTO proof load rating of AASHTO M 306. Provide galvanized grates per ASTM A 123, after fabrication.

Furnish stainless grate retainers and rails that withstand the following loads:

a. Vertical up-1,000 lbs.
b. Transverse-6,000 lbs
c. Longitudinal-6,000 lbs

Furnish trench drain grates that have a minimum of 66% open space of total top surface area and are held in place with a non-rigid, four-point locking system in the four corners of the grate. Provide approved trench drain grate retaining devices that do not obstruct the flow area of the trench. Furnish removable trench grates. Provide shop drawings sealed by a professional engineer stating that trench drain system meets loading requirements or if a proprietary system, submit documents showing design loadings.

**C. Construction.** Perform excavation in accordance with Item 400, "Excavation and Backfill for Structures." Construct trench with a slope as shown on the plans. Submit shop drawings that provide enough detail to ensure seamless installation of the trench drain adjacent to the proposed or existing pavement structure.

If using a proprietary system, provide shop drawings that contain the manufacturer's installation guidelines and any sequential order of construction. Construct the trench drain with a maximum allowable tolerance of +/- 0.063 in. for dimensional accuracy and rail co-planarity. Provide a smooth finish on the surface of the trench that will convey runoff. Make connections to new or existing structures as shown on the plans or as directed.

Remove trench drain forms and dispose of properly. Install grates with retaining pins on each of the four corners. Remove all construction debris from the trench drain.

**D. Measurement.** This item will be measured by the foot, between the longitudinal ends of the trench drain along the pavement surface, as installed.

**E. Payment.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit bid price for "Trench Drain".

This price is full compensation for furnishing the labor, materials (including forms, rails, anchorages, support bars, concrete, and grates), tools, equipment, and incidentals necessary to install the trench drain, complete in place, including structural excavation, reinforcement anchor, and other connecting devices as shown on the plans and as directed.

# LANDSCAPE PAVERS

**A. Description.** Furnish and install landscape pavers.

**B. Materials.**

**(a) Concrete.** Furnish High Early Strength concrete (f'c = 3,600 psi min) in accordance with Item:
Item 420, "Concrete Structures"
Item 421, "Hydraulic Cement Concrete"
Item 440, "Reinforcing Steel."

**(b) Pavers.** Furnish pavers meeting the requirements of ASTM C 936; made using normal-weight aggregates conforming to ASTM C 33; and conforming to the shape, color, laying pattern, and dimensions shown on the plans. Furnish certification from the manufacturer stating that the interlocking paving units have been tested and meet all the requirements of ASTM C 936. Furnish additional paving units when required for testing by the Department.

**(c) Bedding Sand.** Furnish fine aggregate as specified in Item 421, "Hydraulic Cement Concrete," with the gradation given in Table 1.

**Table 1**
**Bedding Sand Gradation**

| Sieve Size | Percent Passing |
|---|---|
| 3/8" | 100 |
| No. 4 | 85–100 |
| No. 100 | 10–30 |

Spread the sand at a uniform moisture content of 3% to 7%. Protect the sand against rain if it is stockpiled on-site before spreading.

**(d) Joint-Filling Sand.** Meet the requirements for bedding sand, except with the gradation given in Table 2.

**Table 2**
**Joint-filling Sand Gradation**

| Sieve Size | Percent Passing |
|---|---|
| No. 4 | 100 |
| No. 8 | 90–100 |
| No. 16 | 60–100 |
| No. 30 | 25–70 |
| No. 50 | 10–30 |
| No. 100 | 2–15 |
| No. 200 | Less than 10 |

**B. Construction Methods.**

**(a) Concrete Installation.** Perform excavation and embankment work for the subgrade. Replace unsuitable material encountered in the subgrade and compact to a uniform grade. Place concrete in accordance with Item 420, and to the depth specified on the plans. Grade the concrete surface so that the finished grade of the pavers meets the requirements shown on the plans (or matches existing conditions).

**(b) Bedding Sand Installation.** Screed a layer of uncompacted sand to a depth of 1 in. to 1-1/2 in. over the compacted base. Do not use bedding sand for leveling.
Maintain the spread sand in a loose condition and protect against precompaction before and after screeding. Protect screeded sand against accidental precompaction, including compaction by rain or dew. Loosen precompacted sand or screeded sand in advance of the laying face only to an extent to which paving will be completed that day. Lightly screed the sand in a loose condition to the predetermined depth slightly ahead of laying the paving units.

**(c) Paver Installation.** Place paving units on an uncompacted, screeded sand bed to the required laying pattern shown on the plans. Align all joints and provide nominal 1/8-in. gaps between adjacent units. Place the first row to abut an edge restraint with a gap of 1/8 in. Place at a suitable angle to the edge

restraint to achieve the required visual orientation of paving units in the completed pavement. In each row, lay full-size units first followed by closure units consisting of at least 25% of a full unit. Cut units using a power saw. To fill smaller edge spaces, use a grout mix matching the color of the pavers that consists of 1 part hydraulic cement to 2 parts concrete sand. Use cement and sand that meet Item 421, "Hydraulic Cement Concrete."

Do not allow construction traffic on pavers during installation and compaction.

**(d) Paver Compaction.** Provide a high-frequency, low-amplitude mechanical flat plate vibrator compactor with a plate area large enough to cover at least 12 paving units and that can deliver a 3,500- to 5,000-lb. centrifugal compaction force. Compact paving units immediately after placement to achieve consolidation of the sand bedding before any traffic is allowed. Bring to design levels and profiles by at least 2 passes of the plate compactor.

Do not compact within 3 ft. of the laying face. Continue compaction until lipping has been eliminated between the adjoining units. Compact all work to within 3 ft. of the laying face at the completion of each work day.

Spread joint-filling sand as soon as practical after compaction but in all cases before the termination of each work day, before acceptance of the day's work, and before permitting construction traffic. Allow joint-filling sand to dry, and then sweep to fill the joints. Compact the pavers and joint-filling sand with a single pass of the compactor.

**C. Measurement.** This Item will be measured by the square yard.

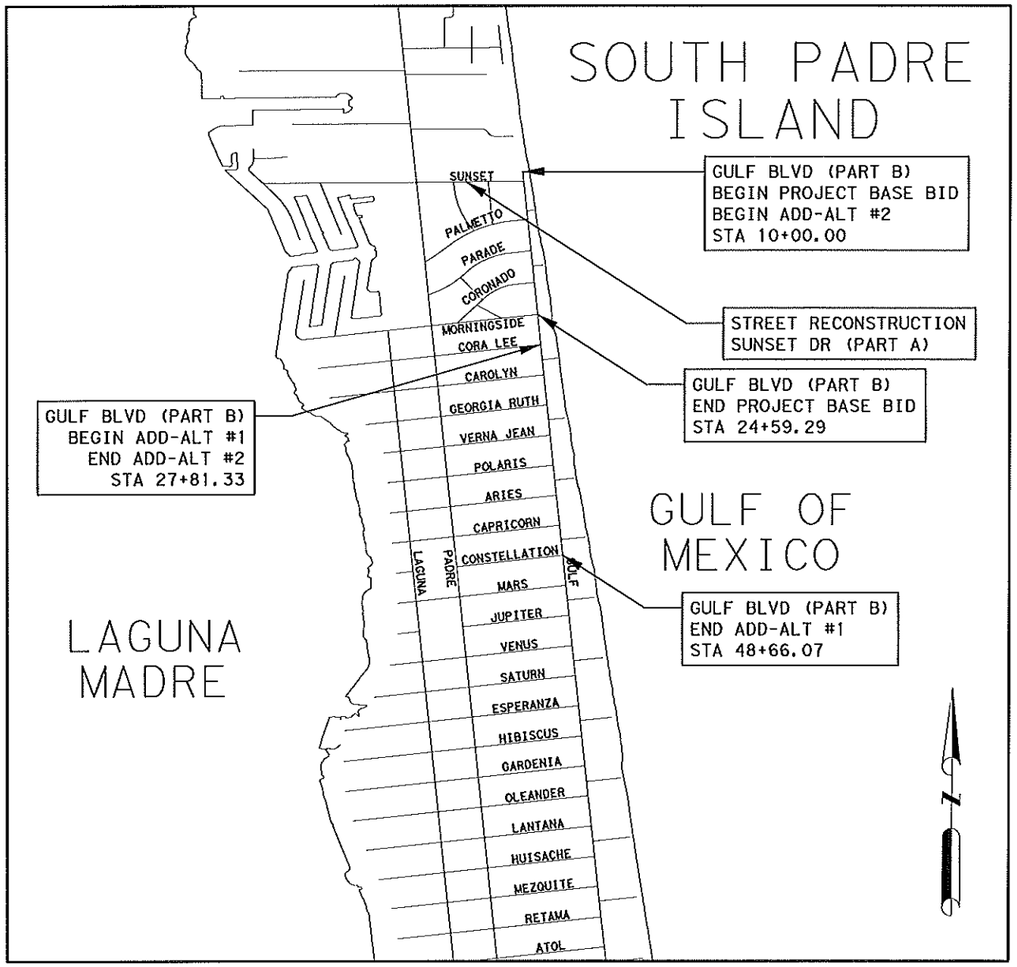
**D. Payment.** Excavation and embankment will not be paid for directly but will be subsidiary to this Item, unless otherwise shown on the plans.

The work performed and measured as provided under "Measurement" will be paid for at the unit price bid for "Landscape Pavers." This price is full compensation for furnishing, placing, and compacting pavers; bedding and joint-filling sand; and equipment, labor, materials, tools, and incidentals. Paver units damaged during compaction or paving operations will be replaced at the Contractor's expense. Concrete base required for landscape pavers will not be paid for directly but will be subsidiary to this Item.

INDEX OF SHEETS


| | DESCRIPTION |
|---|---|
| **I. GENERAL** | |
| 1 | TITLE SHEET |
| 2 | HORIZONTAL ALIGNMENT DATA |
| 3 | TRAFFIC CONTROL PLAN |
| **II. GULF BLVD** | |
| 4 -- 7 | EROSION CONTROL PLAN AND REMOVAL LAYOUT |
| 8 -- 16 | PLAN & PAVEMENT MARKINGS & SIGNAGE |
| 17 -- 18 | MISCELLANEOUS DETAILS |
| **III. SUNSET DR** | |
| 19 | TYPICAL SECTION AND PAVING DETAILS |
| 20 | EROSION CONTROL PLAN AND REMOVAL LAYOUT |
| 21 -- 25 | PLAN & PAVEMENT MARKINGS & SIGNAGE |
| 26 | DRIVEWAY SUMMARY |
| 27 -- 28 | INTERSECTION LAYOUT |
| **IV. STANDARDS** | |
| 29 -- 40 | * BC (1-12)-13 |
| 41 | * WZ(STPM)-13 |
| 42 | * TCP(1-2)-12 |
| 43 | * TCP(2-1)-12 |
| 44 | * TCP(3-1)-13 |
| 45 | * TCP(3-3)-13 |
| 46 | * TCP(7-1)-13 |
| 47 | * CCCG-12 |
| 48 -- 51 | * PED-12A |
| 52 | * EC(1)-09 |
| 53 | * EC(3)-93 |
| 54 | * TSR(4)-13 |
| 55 | * SMD(GEN)-08 |
| 56 | * SMD(SLIP 1)-08 |
| 57 | * SMD(SLIP-2)-08 |
| 58 | * SMD(SLIP-3)-08 |
| 59 -- 60 | * PM(1-2)-12 |
| 61 | * PM(AP)-98 |


# SOUTH PADRE ISLAND, TX
# GULF BOULEVARD AND SUNSET DRIVE IMPROVEMENTS




VICINITY MAP

0' 1500' 3000'

SCALE: 1"= 1500'

## SOUTH PADRE ISLAND OFFICIALS

| | |
|---|---|
| ROBERT PINKERTON JR | MAYOR |
| BARRY PATEL | COUNCIL MEMBER (PLACE 1) |
| ALEX AVALOS | COUNCIL MEMBER (PLACE 2) |
| SAM LISTI | COUNCIL MEMBER (PLACE 3) |
| JO ANN EVANS | MAYOR PRO-TEM (PLACE 4) |
| ALITA BAGLEY | COUNCIL MEMBER (PLACE 5) |
| PAUL CUNNINGHAM | CITY ATTORNEY |
| WILLIAM DILIBERO | CITY MANAGER |
| DARLA JONES | ASSISTANT CITY MANAGER |


PLANS PREPARED BY:

Kimley»Horn
TX FIRM NO. F-928


STATE OF TEXAS
BRIAN C. BOECKER
94886
LICENSED
PROFESSIONAL ENGINEER

SUBMITTED FOR LETTING 7/3/14

Brian C. Boecker, PE

PROJECT MANAGER
KIMLEY-HORN AND ASSOCIATES, INC.

South Padre ISLAND

FILENAME: G:\069234000\Gulf\Rehabs\Design\GULFtitle01.dgn
PLOTTED: 7/3/2014 11:37:41 AM

# GULF BLVD

℄ GULF contains:
GULF01 CUR GULF01 CUR GULF02 CUR GULF03 CUR GULF04 CUR GULF05 CUR GULF06 CUR GULF07 CUR GULF08 CUR GULF09 CUR GULF10 CUR GULF11 CUR GULF12 CUR GULF13 CUR GULF14 CUR GULF15 CUR GULF16 GULF18
Beginning ℄ GULF description

| | | | | | |
|---|---|---|---|---|---|
| Point GULF01 | N | 18,442.982 | E | 3,512.480 | Sta 9+90.00 |

Course from GULF01 to PC GULF01 S 5° 58' 59.94" E Dist 1,256.626

Curve Data

Curve GULF01

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 22+56.62 | N | 17,183.260 | E | 3,644.511 |
| Delta = | 2° 17' 26.20" | (LT) | | | |
| Degree = | 11° 27' 32.96" | | | | |
| Tangent = | 9.996 | | | | |
| Length = | 19.989 | | | | |
| Radius = | 500.000 | | | | |
| External = | 0.100 | | | | |
| Long Chord = | 19.988 | | | | |
| Mid. Ord. = | 0.100 | | | | |
| P.C. Station | 22+46.63 | N | 17,193.202 | E | 3,643.469 |
| P.T. Station | 22+66.62 | N | 17,173.368 | E | 3,645.949 |
| C.C. | | N | 17,245.321 | E | 4,140.745 |
| Back = S | 5° 58' 59.94" E | | | | |
| Ahead = S | 8° 16' 26.14" E | | | | |
| Chord Bear = S | 7° 07' 43.04" E | | | | |

Course from PT GULF01 to PC GULF02 S 8° 16' 26.14" E Dist 30.048

Curve Data

Curve GULF02

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 23+06.66 | N | 17,133.741 | E | 3,651.712 |
| Delta = | 2° 17' 26.20" | (RT) | | | |
| Degree = | 11° 27' 32.96" | | | | |
| Tangent = | 9.996 | | | | |
| Length = | 19.989 | | | | |
| Radius = | 500.000 | | | | |
| External = | 0.100 | | | | |
| Long Chord = | 19.988 | | | | |
| Mid. Ord. = | 0.100 | | | | |
| P.C. Station | 22+96.66 | N | 17,143.633 | E | 3,650.274 |
| P.T. Station | 23+16.65 | N | 17,123.800 | E | 3,652.754 |
| C.C. | | N | 17,071.680 | E | 3,155.478 |
| Back = S | 8° 16' 26.14" E | | | | |
| Ahead = S | 5° 58' 59.94" E | | | | |
| Chord Bear = S | 7° 07' 43.04" E | | | | |

Course from PT GULF02 to PC GULF03 S 5° 58' 59.94" E Dist 247.067

Curve Data

Curve GULF03

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 25+73.72 | N | 16,868.137 | E | 3,679.550 |
| Delta = | 2° 17' 26.20" | (RT) | | | |
| Degree = | 11° 27' 32.96" | | | | |
| Tangent = | 9.996 | | | | |
| Length = | 19.989 | | | | |
| Radius = | 500.000 | | | | |
| External = | 0.100 | | | | |
| Long Chord = | 19.988 | | | | |
| Mid. Ord. = | 0.100 | | | | |
| P.C. Station | 25+63.72 | N | 16,878.079 | E | 3,678.508 |
| P.T. Station | 25+83.71 | N | 16,858.162 | E | 3,680.194 |
| C.C. | | N | 16,825.959 | E | 3,181.232 |
| Back = S | 5° 58' 59.94" E | | | | |
| Ahead = S | 3° 41' 33.75" E | | | | |
| Chord Bear = S | 4° 50' 16.85" E | | | | |

Course from PT GULF03 to PC GULF04 S 3° 41' 33.75" E Dist 30.048

Curve Data

Curve GULF04

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 26+23.75 | N | 16,818.201 | E | 3,682.773 |
| Delta = | 2° 17' 26.20" | (LT) | | | |
| Degree = | 11° 27' 32.96" | | | | |
| Tangent = | 9.996 | | | | |
| Length = | 19.989 | | | | |
| Radius = | 500.000 | | | | |
| External = | 0.100 | | | | |
| Long Chord = | 19.988 | | | | |
| Mid. Ord. = | 0.100 | | | | |
| P.C. Station | 26+13.76 | N | 16,828.176 | E | 3,682.129 |
| P.T. Station | 26+33.75 | N | 16,808.260 | E | 3,683.815 |
| C.C. | | N | 16,860.379 | E | 4,181.091 |
| Back = S | 3° 41' 33.75" E | | | | |
| Ahead = S | 5° 58' 59.94" E | | | | |
| Chord Bear = S | 4° 50' 16.85" E | | | | |

Course from PT GULF04 to PC GULF05 S 5° 58' 59.94" E Dist 93.037

Curve Data

Curve GULF05

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 27+36.78 | N | 16,705.788 | E | 3,694.555 |
| Delta = | 2° 17' 26.20" | (LT) | | | |
| Degree = | 11° 27' 32.96" | | | | |
| Tangent = | 9.996 | | | | |
| Length = | 19.989 | | | | |
| Radius = | 500.000 | | | | |
| External = | 0.100 | | | | |
| Long Chord = | 19.988 | | | | |
| Mid. Ord. = | 0.100 | | | | |
| P.C. Station | 27+26.78 | N | 16,715.729 | E | 3,693.513 |
| P.T. Station | 27+46.77 | N | 16,695.896 | E | 3,695.993 |
| C.C. | | N | 16,767.849 | E | 4,190.789 |
| Back = S | 5° 58' 59.94" E | | | | |
| Ahead = S | 8° 16' 26.14" E | | | | |
| Chord Bear = S | 7° 07' 43.04" E | | | | |

Course from PT GULF05 to PC GULF06 S 8° 16' 26.14" E Dist 30.374

Curve Data

Curve GULF06

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 27+86.82 | N | 16,656.269 | E | 3,701.756 |
| Delta = | 2° 12' 57.53" | (RT) | | | |
| Degree = | 11° 27' 32.96" | | | | |
| Tangent = | 9.670 | | | | |
| Length = | 19.338 | | | | |
| Radius = | 500.000 | | | | |
| External = | 0.094 | | | | |
| Long Chord = | 19.337 | | | | |
| Mid. Ord. = | 0.093 | | | | |
| P.C. Station | 27+77.15 | N | 16,665.838 | E | 3,700.364 |
| P.T. Station | 27+96.48 | N | 16,646.652 | E | 3,702.776 |
| C.C. | | N | 16,593.885 | E | 3,205.569 |
| Back = S | 8° 16' 26.14" E | | | | |
| Ahead = S | 6° 03' 28.61" E | | | | |
| Chord Bear = S | 7° 09' 57.38" E | | | | |

Course from PT GULF06 to PC GULF07 S 6° 03' 28.61" E Dist 247.216

Curve Data

Curve GULF07

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 30+63.62 | N | 16,381.008 | E | 3,730.968 |
| Delta = | 2° 16' 56.49" | (RT) | | | |
| Degree = | 5° 43' 46.48" | | | | |
| Tangent = | 19.920 | | | | |
| Length = | 39.835 | | | | |
| Radius = | 1,000.000 | | | | |
| External = | 0.198 | | | | |
| Long Chord = | 39.832 | | | | |
| Mid. Ord. = | 0.198 | | | | |
| P.C. Station | 30+43.70 | N | 16,400.817 | E | 3,728.866 |
| P.T. Station | 30+83.54 | N | 16,361.131 | E | 3,732.280 |
| C.C. | | N | 16,295.282 | E | 2,734.451 |
| Back = S | 6° 03' 28.61" E | | | | |
| Ahead = S | 3° 46' 32.13" E | | | | |
| Chord Bear = S | 4° 55' 00.37" E | | | | |

Course from PT GULF07 to PC GULF08 S 3° 46' 32.13" E Dist 60.041

Curve Data

Curve GULF08

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 31+63.70 | N | 16,281.146 | E | 3,737.559 |
| Delta = | 2° 18' 18.39" | (LT) | | | |
| Degree = | 5° 43' 46.48" | | | | |
| Tangent = | 20.119 | | | | |
| Length = | 40.232 | | | | |
| Radius = | 1,000.000 | | | | |
| External = | 0.202 | | | | |
| Long Chord = | 40.229 | | | | |
| Mid. Ord. = | 0.202 | | | | |
| P.C. Station | 31+43.58 | N | 16,301.221 | E | 3,736.234 |
| P.T. Station | 31+83.81 | N | 16,261.140 | E | 3,739.690 |
| C.C. | | N | 16,367.069 | E | 4,734.063 |
| Back = S | 3° 46' 32.13" E | | | | |
| Ahead = S | 6° 04' 50.52" E | | | | |
| Chord Bear = S | 4° 55' 41.32" E | | | | |

Course from PT GULF08 to PC GULF09 S 6° 04' 50.52" E Dist 1,290.263

Curve Data

Curve GULF09

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 44+93.90 | N | 14,958.418 | E | 3,878.467 |
| Delta = | 2° 16' 19.28" | (LT) | | | |
| Degree = | 5° 43' 46.48" | | | | |
| Tangent = | 19.830 | | | | |
| Length = | 39.654 | | | | |
| Radius = | 1,000.000 | | | | |
| External = | 0.197 | | | | |
| Long Chord = | 39.652 | | | | |
| Mid. Ord. = | 0.197 | | | | |
| P.C. Station | 44+74.07 | N | 14,978.137 | E | 3,876.366 |
| P.T. Station | 45+13.73 | N | 14,938.799 | E | 3,881.347 |
| C.C. | | N | 15,084.066 | E | 4,870.740 |
| Back = S | 6° 04' 50.52" E | | | | |
| Ahead = S | 8° 21' 09.80" E | | | | |
| Chord Bear = S | 7° 13' 00.16" E | | | | |

Course from PT GULF09 to PC GULF10 S 8° 21' 09.80" E Dist 60.177

Curve Data

Curve GULF10

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 45+93.98 | N | 14,859.400 | E | 3,893.005 |
| Delta = | 2° 17' 59.82" | (RT) | | | |
| Degree = | 5° 43' 46.48" | | | | |
| Tangent = | 20.074 | | | | |
| Length = | 40.142 | | | | |
| Radius = | 1,000.000 | | | | |
| External = | 0.201 | | | | |
| Long Chord = | 40.139 | | | | |
| Mid. Ord. = | 0.201 | | | | |
| P.C. Station | 45+73.90 | N | 14,879.261 | E | 3,890.089 |
| P.T. Station | 46+14.04 | N | 14,839.438 | E | 3,895.122 |
| C.C. | | N | 14,733.994 | E | 2,900.696 |
| Back = S | 8° 21' 09.80" E | | | | |
| Ahead = S | 6° 03' 09.99" E | | | | |
| Chord Bear = S | 7° 12' 09.89" E | | | | |

Course from PT GULF10 to PC GULF11 S 6° 03' 09.99" E Dist 257.055

Curve Data

Curve GULF11

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 48+85.94 | N | 14,569.058 | E | 3,923.792 |
| Delta = | 2° 16' 01.94" | (RT) | | | |
| Degree = | 7° 38' 21.97" | | | | |
| Tangent = | 14.841 | | | | |
| Length = | 29.678 | | | | |
| Radius = | 750.000 | | | | |
| External = | 0.147 | | | | |
| Long Chord = | 29.676 | | | | |
| Mid. Ord. = | 0.147 | | | | |
| P.C. Station | 48+71.10 | N | 14,583.816 | E | 3,922.227 |
| P.T. Station | 49+00.78 | N | 14,554.250 | E | 3,924.771 |
| C.C. | | N | 14,604.733 | E | 3,176.408 |
| Back = S | 6° 03' 09.99" E | | | | |
| Ahead = S | 3° 47' 08.05" E | | | | |
| Chord Bear = S | 4° 55' 09.02" E | | | | |

Course from PT GULF11 to PC GULF12 S 3° 47' 08.05" E Dist 45.281

Curve Data

Curve GULF12

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 49+60.99 | N | 14,494.163 | E | 3,928.747 |
| Delta = | 2° 16' 55.07" | (LT) | | | |
| Degree = | 7° 38' 21.97" | | | | |
| Tangent = | 14.937 | | | | |
| Length = | 29.871 | | | | |
| Radius = | 750.000 | | | | |
| External = | 0.149 | | | | |
| Long Chord = | 29.869 | | | | |
| Mid. Ord. = | 0.149 | | | | |
| P.C. Station | 49+46.06 | N | 14,509.068 | E | 3,927.761 |
| P.T. Station | 49+75.93 | N | 14,479.310 | E | 3,930.326 |
| C.C. | | N | 14,558.585 | E | 4,676.124 |
| Back = S | 3° 47' 08.05" E | | | | |
| Ahead = S | 6° 04' 03.12" E | | | | |
| Chord Bear = S | 4° 55' 35.58" E | | | | |

Course from PT GULF12 to PC GULF13 S 6° 04' 03.12" E Dist 1,355.275

Curve Data

Curve GULF13

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 63+41.20 | N | 13,121.687 | E | 4,074.636 |
| Delta = | 2° 17' 26.20" | (LT) | | | |
| Degree = | 11° 27' 32.96" | | | | |
| Tangent = | 9.996 | | | | |
| Length = | 19.989 | | | | |
| Radius = | 500.000 | | | | |
| External = | 0.100 | | | | |
| Long Chord = | 19.988 | | | | |
| Mid. Ord. = | 0.100 | | | | |
| P.C. Station | 63+31.20 | N | 13,131.627 | E | 4,073.579 |
| P.T. Station | 63+51.19 | N | 13,111.797 | E | 4,076.089 |
| C.C. | | N | 13,184.477 | E | 4,570.778 |
| Back = S | 6° 04' 03.12" E | | | | |
| Ahead = S | 8° 21' 29.31" E | | | | |
| Chord Bear = S | 7° 12' 46.22" E | | | | |

Course from PT GULF13 to PC GULF14 S 8° 21' 29.31" E Dist 30.048

Curve Data

Curve GULF14

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 63+91.24 | N | 13,072.178 | E | 4,081.910 |
| Delta = | 2° 17' 26.20" | (RT) | | | |
| Degree = | 11° 27' 32.96" | | | | |
| Tangent = | 9.996 | | | | |
| Length = | 19.989 | | | | |
| Radius = | 500.000 | | | | |
| External = | 0.100 | | | | |
| Long Chord = | 19.988 | | | | |
| Mid. Ord. = | 0.100 | | | | |
| P.C. Station | 63+81.24 | N | 13,082.068 | E | 4,080.457 |
| P.I. Station | 64+01.23 | N | 13,062.238 | E | 4,082.966 |
| C.C. | | N | 13,009.388 | E | 3,585.767 |
| Back = S | 8° 21' 29.31" E | | | | |
| Ahead = S | 6° 04' 03.12" E | | | | |
| Chord Bear = S | 7° 12' 46.22" E | | | | |

Course from PT GULF14 to PC GULF15 S 6° 04' 03.12" E Dist 278.553

Curve Data

Curve GULF15

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 66+89.78 | N | 12,775.306 | E | 4,113.466 |
| Delta = | 2° 17' 26.20" | (RT) | | | |
| Degree = | 11° 27' 32.96" | | | | |
| Tangent = | 9.996 | | | | |
| Length = | 19.989 | | | | |
| Radius = | 500.000 | | | | |
| External = | 0.100 | | | | |
| Long Chord = | 19.988 | | | | |
| Mid. Ord. = | 0.100 | | | | |
| P.C. Station | 66+79.78 | N | 12,785.246 | E | 4,112.410 |
| P.T. Station | 66+99.77 | N | 12,765.332 | E | 4,114.125 |
| C.C. | | N | 12,732.396 | E | 3,615.211 |
| Back = S | 6° 04' 03.12" E | | | | |
| Ahead = S | 3° 46' 36.92" E | | | | |
| Chord Bear = S | 4° 55' 20.02" E | | | | |

Course from PT GULF15 to PC GULF16 S 3° 46' 36.92" E Dist 30.048

Curve Data

Curve GULF16

| | | | | | |
|---|---|---|---|---|---|
| P.I. Station | 67+39.82 | N | 12,725.375 | E | 4,116.762 |
| Delta = | 2° 17' 26.20" | (LT) | | | |
| Degree = | 11° 27' 32.96" | | | | |
| Tangent = | 9.996 | | | | |
| Length = | 19.989 | | | | |
| Radius = | 500.000 | | | | |
| External = | 0.100 | | | | |
| Long Chord = | 19.988 | | | | |
| Mid. Ord. = | 0.100 | | | | |
| P.C. Station | 67+29.82 | N | 12,735.349 | E | 4,116.104 |
| P.T. Station | 67+49.81 | N | 12,715.435 | E | 4,117.819 |
| C.C. | | N | 12,768.285 | E | 4,615.018 |
| Back = S | 3° 46' 36.92" E | | | | |
| Ahead = S | 6° 04' 03.12" E | | | | |
| Chord Bear = S | 4° 55' 20.02" E | | | | |

Course from PT GULF16 to GULF18 S 6° 04' 03.12" E Dist 394.359

| | | | | | |
|---|---|---|---|---|---|
| Point GULF18 | N | 12,323.285 | E | 4,159.503 | Sta 71+44.17 |

Ending ℄ GULF description

# SUNSET DR

Chain SUNSET contains:
SUN01 SUN02

Beginning chain SUNSET description

| | | | | | |
|---|---|---|---|---|---|
| Point SUN01 | N | 18,283.300 | E | 2,487.549 | Sta 10+00.00 |

Course from SUN01 to SUN02 S 89° 55' 00.00" E Dist 1,047.131

| | | | | | |
|---|---|---|---|---|---|
| Point SUN02 | N | 18,281.777 | E | 3,534.679 | Sta 20+47.13 |

Ending chain SUNSET description

STATE OF TEXAS
BRIAN C. BOECKER
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LICENSED PROFESSIONAL ENGINEER
7/3/14

Kimley»Horn F-928

South Padre ISLAND

HORIZONTAL ALIGNMENT DATA

GULF BLVD & SUNSET DR IMPROVEMENTS

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| | . | 2 |

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GULF BOULEVARD TRAFFIC CONTROL GENERAL NOTES:

1. MAINTAIN ACCESS TO PROPERTY AT ALL TIMES
2. TIE-IN PAVEMENT (IF NEEDED) TO MAINTAIN ACCESS TO ADJACENT PROPERTIES WILL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.
3. UNLESS OTHERWISE APPROVED IN WRITING BY THE ENGINEER, NO WORK ALLOWED ON GULF BOULEVARD ON THE WEEKEND AND SHOULD BE OPEN TO TWO-LANES AT ALL TIMES 7:00 PM ON FRIDAY THROUGH 7:00 AM ON THE FOLLOWING MONDAY.
4. ABOVE GROUND AND BURIED UTILITIES ARE LOCATED IN THE RIGHT OF WAY. UTILITIES SHOWN IN PLANS ARE APPROXIMATE AND NOT NECESSARILY ALL ENCOMPASSING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITIES PRIOR TO CONSTRUCTION TO VERIFY IF ANY CONFLICTS EXIST.

CONSTRUCTION PHASE 1: WIDENING FROM SUNSET DRIVE THROUGH MORNINGSIDE DRIVE (BASE BID) OR CORA LEE DRIVE (ADD-ALT #2)

1. PLACE ADVANCED WARNING SIGNS IN ACCORDANCE WITH TXDOT STANDARD BC(2)-13.
2. PLACE TEMPORARY EROSION CONTROL DEVICES AS SHOWN IN PLANS.
3. REMOVE EXISTING CENTER LINE STRIPING AND INSIDE PARKING STRIPING. STRIPING FOR PEDESTRIAN PATH TO REMAIN.
4. PLACE WORK ZONE STRIPING FOR TERMPORARY CENTER LINE AND EDGE LINES PROVIDING A 3' MIN BUFFER BETWEEN WORK ZONE AND SOUTHBOUND LANE. TEMPORARY LANES WILL BE ~12'. PLACE CHANNELIZING DEVICES BETWEEN WORK ZONE AND SOUTHBOUND LANE IN ACCORDANCE WITH TCP (2-1)-12
5. CONSTRUCT CURB AND GUTTER, PAVEMENT WIDENING, PARKING BAYS, SIDEWALKS, AND DRIVEWAYS AS SHOWN IN PLANS. MAINTAIN POSITIVE DRAINAGE TOWARDS SIDE STREETS.
6. SHAPE SLOPES TO MAINTAIN POSITIVE DRAINAGE. RE-VEGETATE AS NECESSARY OR AS DIRECTED BY THE ENGINEER.

CONSTRUCTION PHASE 2: WIDENING FROM CORA LEE DRIVE THROUGH CONSTELLATION DRIVE (IF ADD-ALT #1 USED)

1. ADJUST ADVANCED WARNING SIGNS IN ACCORDANCE WITH TXDOT STANDARD BC(2)-13.
2. PLACE TEMPORARY EROSION CONTROL DEVICES AS SHOWN IN PLANS.
3. TRAFFIC TO REMAIN IN EXISTING LANES. PLACE CHANNELIZING DEVICES BETWEEN SOUTHBOUND LANE AND WORK ZONE IN ACCORDANCE WITH TCP (2-1)-12.
4. RECONSTRUCT ISLANDS AND PEDESTRIAN RAMPS AS SHOWN ON PLANS.

CONSTRUCTION PHASE 3: CROSSWALKS, FINAL PAVING, MISCELLANEOUS ITEMS, AND FINAL SIGNING & STRIPING.

1. ADJUST ADVANCED WARNING SIGNS IN ACCORDANCE WITH TXDOT STANDARD BC(2)-13.
2. TEMPORARY EROSION CONTROL DEVICES AS SHOWN IN PLANS TO REMAIN.
3. PHASE CONSTRUCT THE PROPOSED BRICK PAVED CROSSWALKS STARTING WITH THE WEST END. CONSTRUCT CONCRETE BASE USING HES CONCRETE. SHIFT TRAFFIC TO ONE-LANE TWO-WAY OPERATION WITH FLAGGERS IN ACCORDANCE WITH TCP STANDARD TCP(1-2)-12. MAINTAIN ONE LANE OF TRAFFIC AT ALL TIMES DURING CROSSWALK INSTALLATION.
4. PLACE CHANNELIZING DEVICES IN ACCORDANCE WITH TCP (2-1)-12 AND CONSTRUCT CURB AND GUTTER AND RAISED SIDEWALK FOR SHARED PATH AT SPECIFIC LOCATIONS SHOWN IN PLANS ON EAST SIDE OF GULF BLVD.
5. MILL & OVERLAY 1.5" OF EXIST PAVEMENT AS SHOWN IN PLANS. REFER TO TCP STANDARD TCP(7-1)-13 FOR PLACEMENT OF 1.5" MILL AND OVERLAY FINAL SURFACE.
6. INSTALL FINAL SIGNING AND PLACE FINAL PAVEMENT MARKINGS IN ACCORDANCE WITH TXDOT STANDARDS TCP(3-1)-13 AND TCP(3-3)-13.
7. REMOVE EXISTING PAVEMENT MARKINGS FROM EAST DRIVEWAYS ALONG GULF BLVD AND ANY STRIPING REMAINING IN EXISTING PARKING BAYS THAT MAY BE IN CONFLICT WITH FINAL STRIPING BY SANDBLASTING OR OTHER METHOD TO BE APPROVED BY THE ENGINEER.
8. ENSURE VEGETATION IS RE-ESTABLISHED AND REMOVE EROSION CONTROL DEVICES.

SUNSET DRIVE RECONSTRUCTION SEQUENCE:

1. PLACE ADVANCED WARNING SIGNS IN ACCORDANCE WITH TXDOT STANDARD BC(2)-13.
2. PLACE TEMPORARY EROSION CONTROL DEVICES AS SHOWN IN PLANS.
3. CLOSE SUNSET DRIVE TO THROUGH TRAFFIC BETWEEN PADRE BOULEVARD AND GULF BOULEVARD. MAINTAIN ACCESS TO PROPERTY OWNERS AT ALL TIMES.
4. CONSTRUCT PROPOSED PAVEMENT IN ONE-HALF SECTIONS AS SHOWN IN PLANS FROM STATION 10+59.72 TO STATION 20+31.10.
5. TIE-IN PAVEMENT (IF NEEDED) TO MAINTAIN ACCESS TO ADJACENT PROPERTIES WILL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.
6. INSTALL FINAL SIGNING AND OPEN TO TRAFFIC UNRESTRICTED.

STATE OF TEXAS
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7/3/14

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South Padre ISLAND

TRAFFIC CONTROL PLAN

GULF BLVD & SUNSET DRIVE IMPROVEMENTS

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| | . | 3 |

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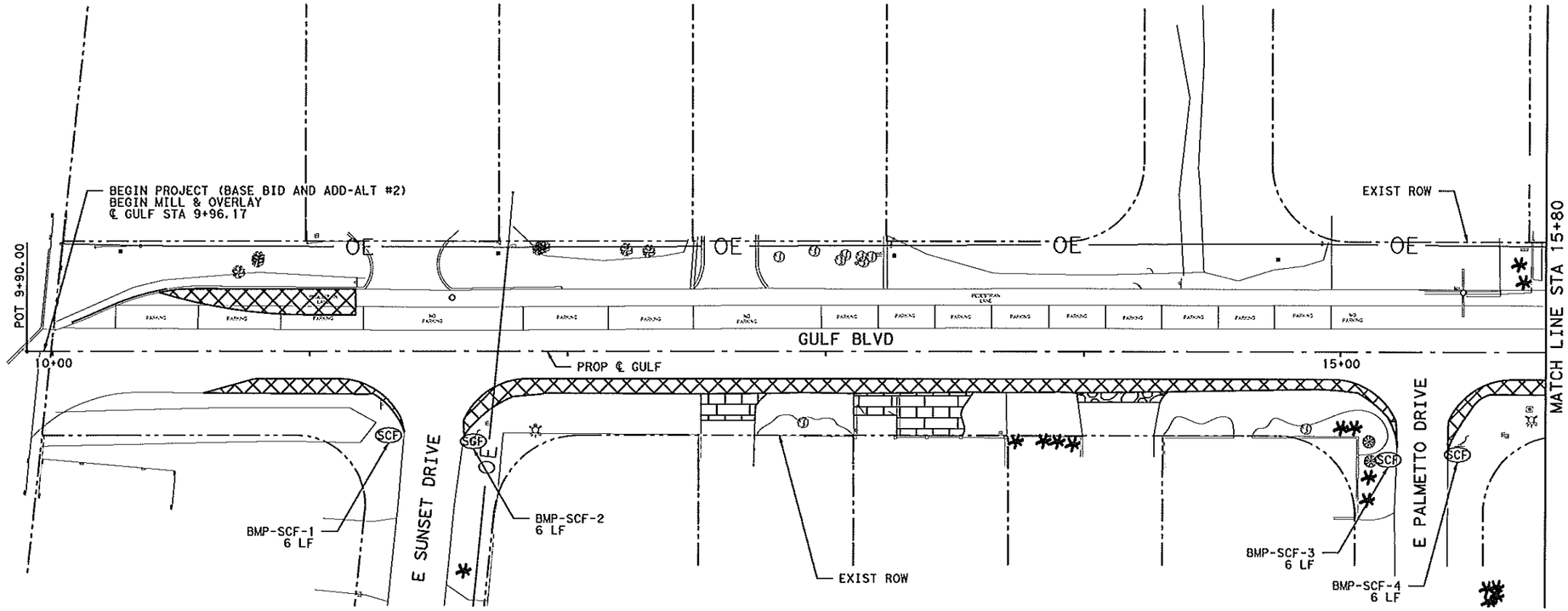


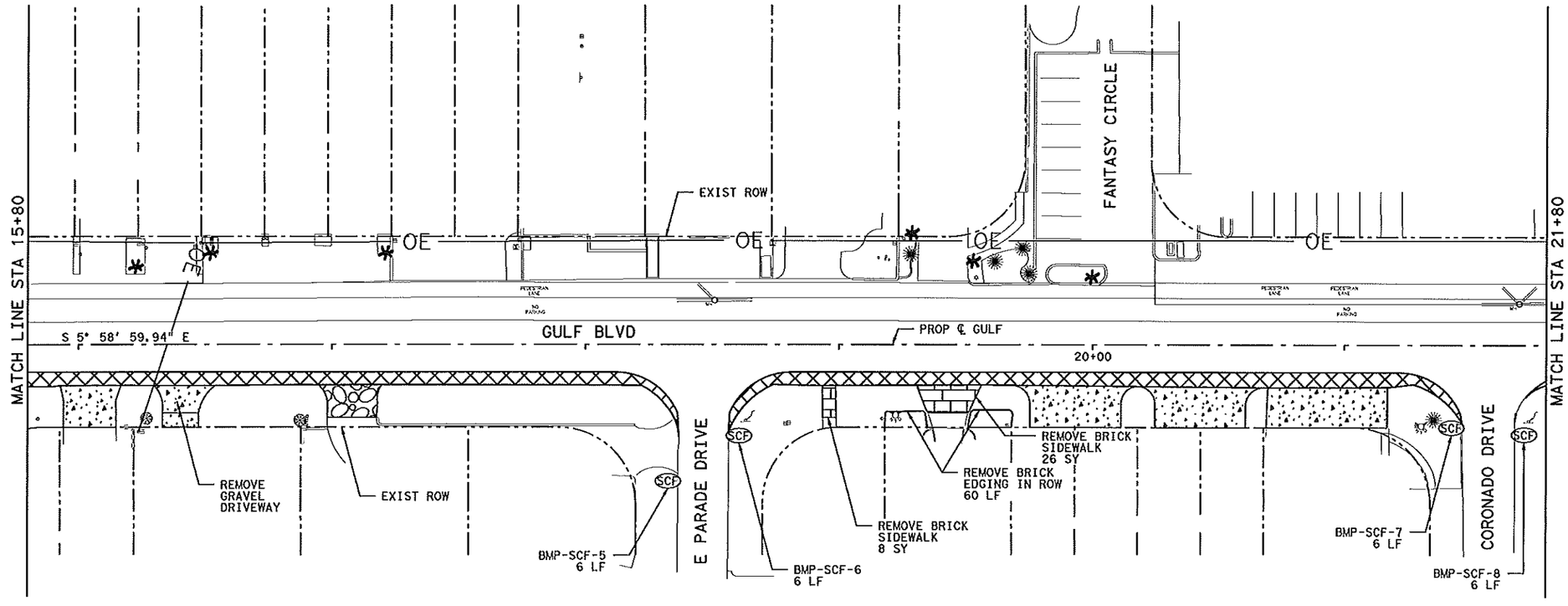


## LEGEND

- PAVEMENT REMOVAL
- VALLEY GUTTER REMOVAL
- ASPHALT DRIVEWAY REMOVAL
- CONCRETE DRIVEWAY REMOVAL
- BRICK DRIVEWAY REMOVAL
- MEDIAN ISLAND REMOVAL
- (SCF) SEDIMENT CONTROL FENCE

NOTES:

1. CONTRACTOR WILL BE REQUIRED TO PROTECT PALM TREES SHOWN TO REMAIN.
2. APPLY SEEDING TO DISTURBED AREAS WITHIN ROW. SEEDING SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.
3. EROSION CONTROL DEVICES SHOWN SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.
4. INSTALL SEDIMENT CONTROL FENCE IN DITCHES LOCATED ALONG THE CROSS STREETS OF GULF BLVD.
5. CONTRACTOR TO REMOVE EXISTING STRIPING ON EAST DRIVEWAYS BY SAND BLASTING OR OTHER METHOD OF REMOVAL TO BE APPROVED BY ENGINEER. THIS SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.
6. BURIED UTILITIES EXIST WITHIN CORRIDOR. CONTRACTOR TO LOCATE UTILITIES PRIOR TO CONSTRUCTION.

0 25 50
SCALE: 1"=50'

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South Padre ISLAND

# EROSION CONTROL PLAN AND REMOVAL LAYOUT

## GULF BLVD IMPROVEMENTS

SHEET 1 OF 4

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 50' | | 4 |

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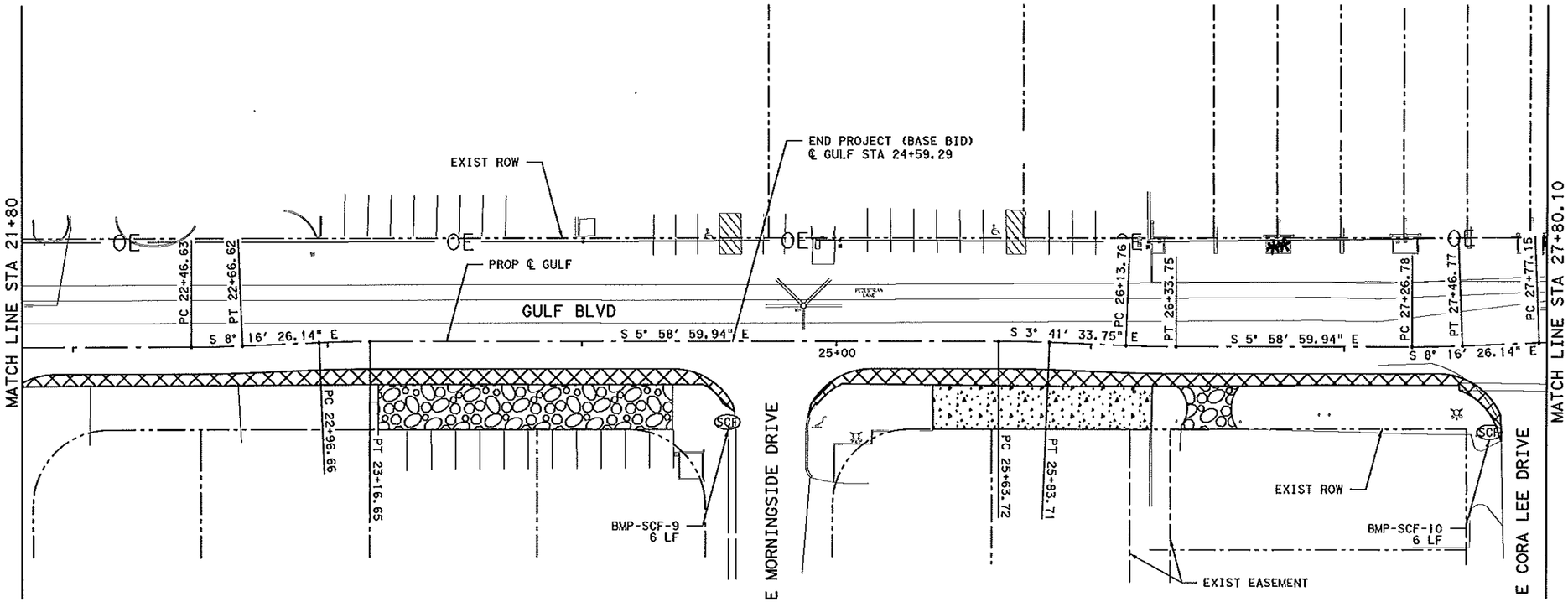


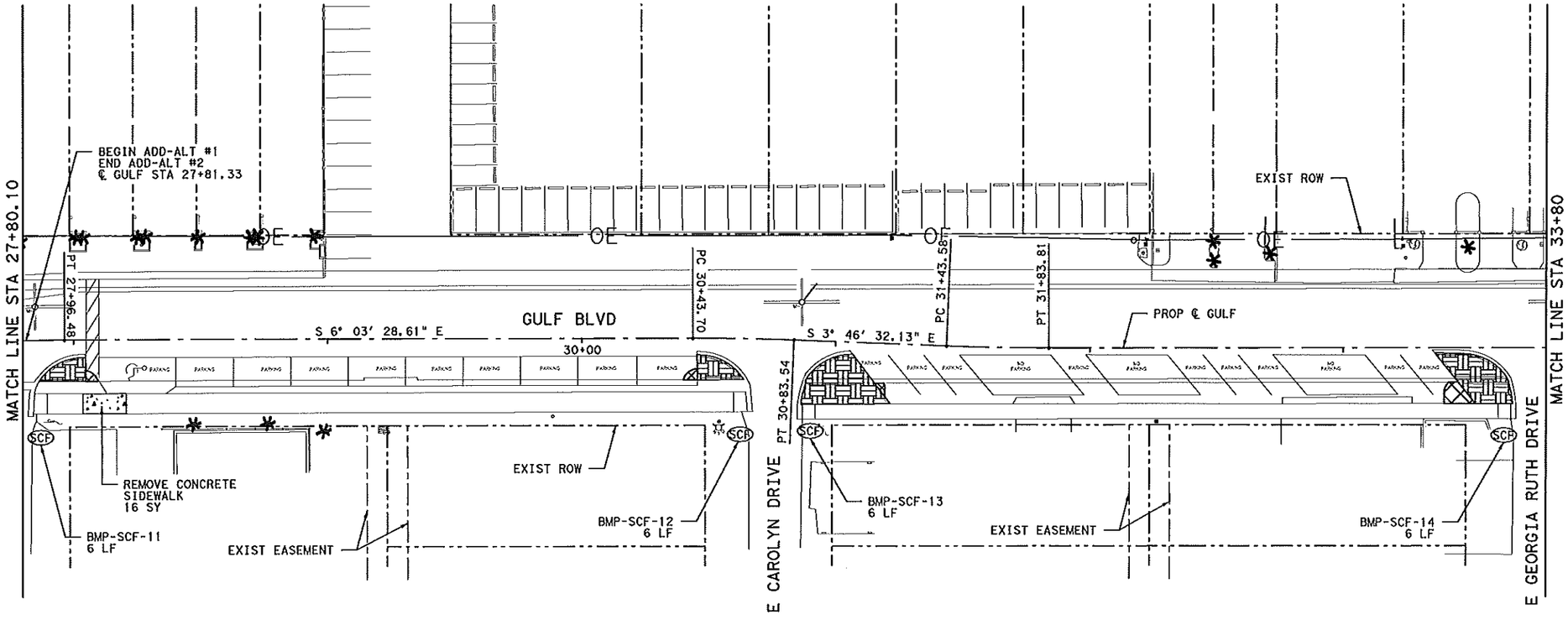


## LEGEND

- PAVEMENT REMOVAL
- VALLEY GUTTER REMOVAL
- ASPHALT DRIVEWAY REMOVAL
- CONCRETE DRIVEWAY REMOVAL
- BRICK DRIVEWAY REMOVAL
- MEDIAN ISLAND REMOVAL
- (SCF) SEDIMENT CONTROL FENCE

NOTES:

1. CONTRACTOR WILL BE REQUIRED TO PROTECT PALM TREES SHOWN TO REMAIN.
2. APPLY SEEDING TO DISTURBED AREAS WITHIN ROW. SEEDING SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.
3. EROSION CONTROL DEVICES SHOWN SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.
4. INSTALL SEDIMENT CONTROL FENCE IN DITCHES LOCATED ALONG THE CROSS STREETS OF GULF BLVD.
5. CONTRACTOR TO REMOVE EXISTING STRIPING ON EAST DRIVEWAYS BY SAND BLASTING OR OTHER METHOD OF REMOVAL TO BE APPROVED BY ENGINEER. THIS SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.
6. BURIED UTILITIES EXIST WITHIN CORRIDOR. CONTRACTOR TO LOCATE UTILITIES PRIOR TO CONSTRUCTION.

0 25 50
SCALE: 1"=50'

STATE OF TEXAS
BRIAN C. BOECKER
94886
LICENSED
PROFESSIONAL ENGINEER
7/3/14

Kimley»Horn F-928

South Padre ISLAND

# EROSION CONTROL PLAN AND REMOVAL LAYOUT

GULF BLVD IMPROVEMENTS
SHEET 2 OF 4

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 50' | · | 5 |

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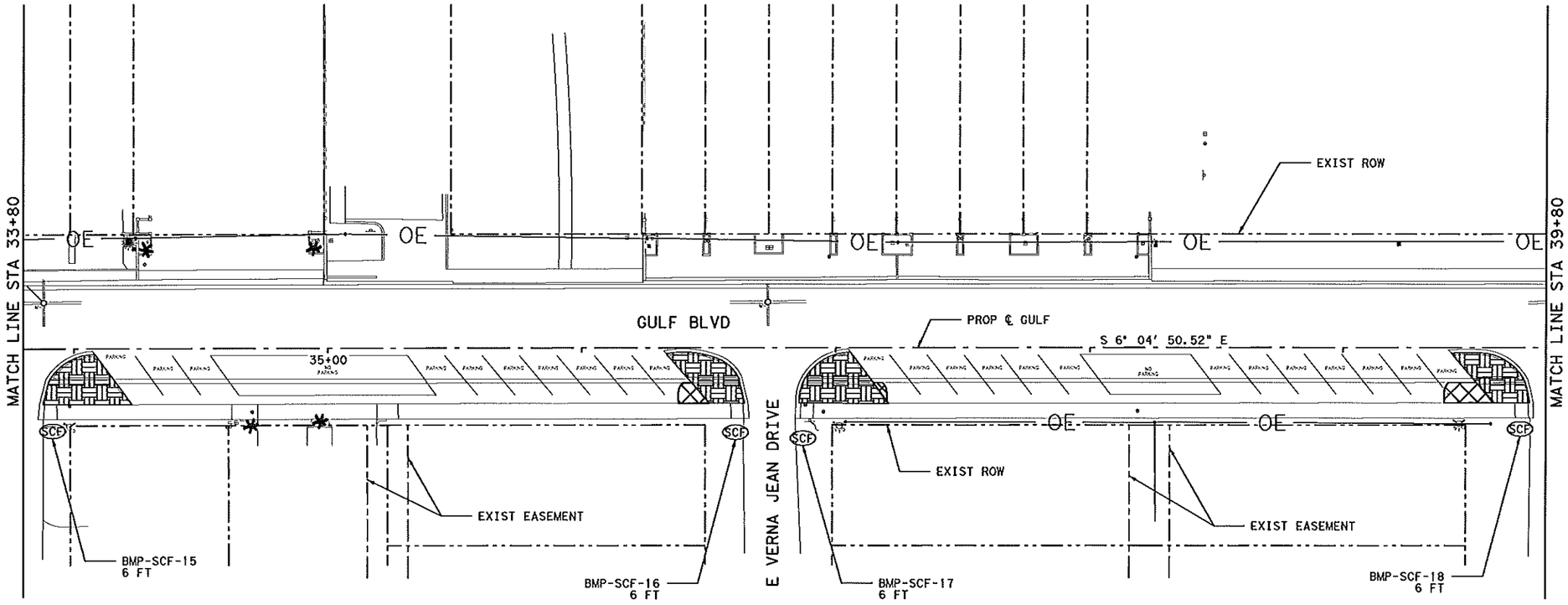


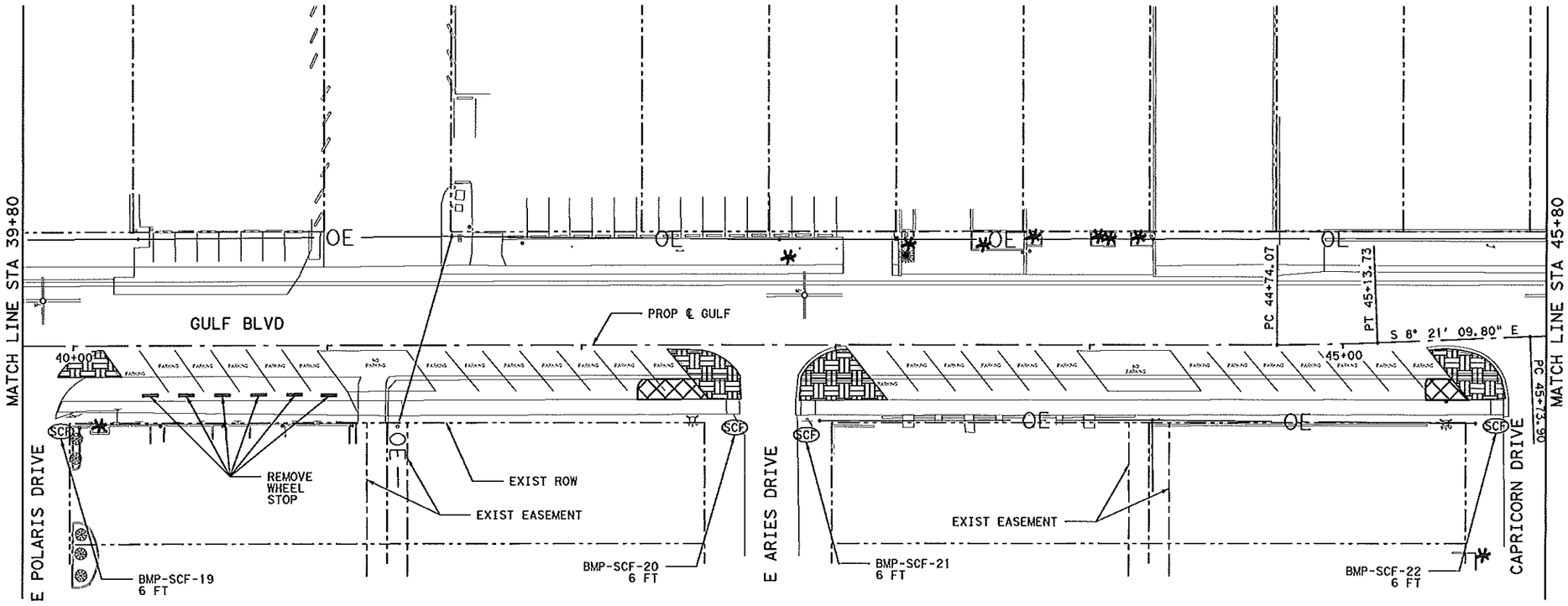


## LEGEND

- PAVEMENT REMOVAL
- VALLEY GUTTER REMOVAL
- ASPHALT DRIVEWAY REMOVAL
- CONCRETE DRIVEWAY REMOVAL
- BRICK DRIVEWAY REMOVAL
- MEDIAN ISLAND REMOVAL
- SCF SEDIMENT CONTROL FENCE

NOTES:

1. CONTRACTOR WILL BE REQUIRED TO PROTECT PALM TREES SHOWN TO REMAIN.
2. APPLY SEEDING TO DISTURBED AREAS WITHIN ROW. SEEDING SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.
3. EROSION CONTROL DEVICES SHOWN SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.
4. INSTALL SEDIMENT CONTROL FENCE IN DITCHES LOCATED ALONG THE CROSS STREETS OF GULF BLVD.
5. CONTRACTOR TO REMOVE EXISTING STRIPING ON EAST DRIVEWAYS BY SAND BLASTING OR OTHER METHOD OF REMOVAL TO BE APPROVED BY ENGINEER. THIS SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.
6. BURIED UTILITIES EXIST WITHIN CORRIDOR. CONTRACTOR TO LOCATE UTILITIES PRIOR TO CONSTRUCTION.

0 25 50
SCALE: 1"=50'

STATE OF TEXAS
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7/3/14

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South Padre ISLAND

# EROSION CONTROL PLAN AND REMOVAL LAYOUT

GULF BLVD IMPROVEMENTS
SHEET 3 OF 4

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 50' | | 6 |

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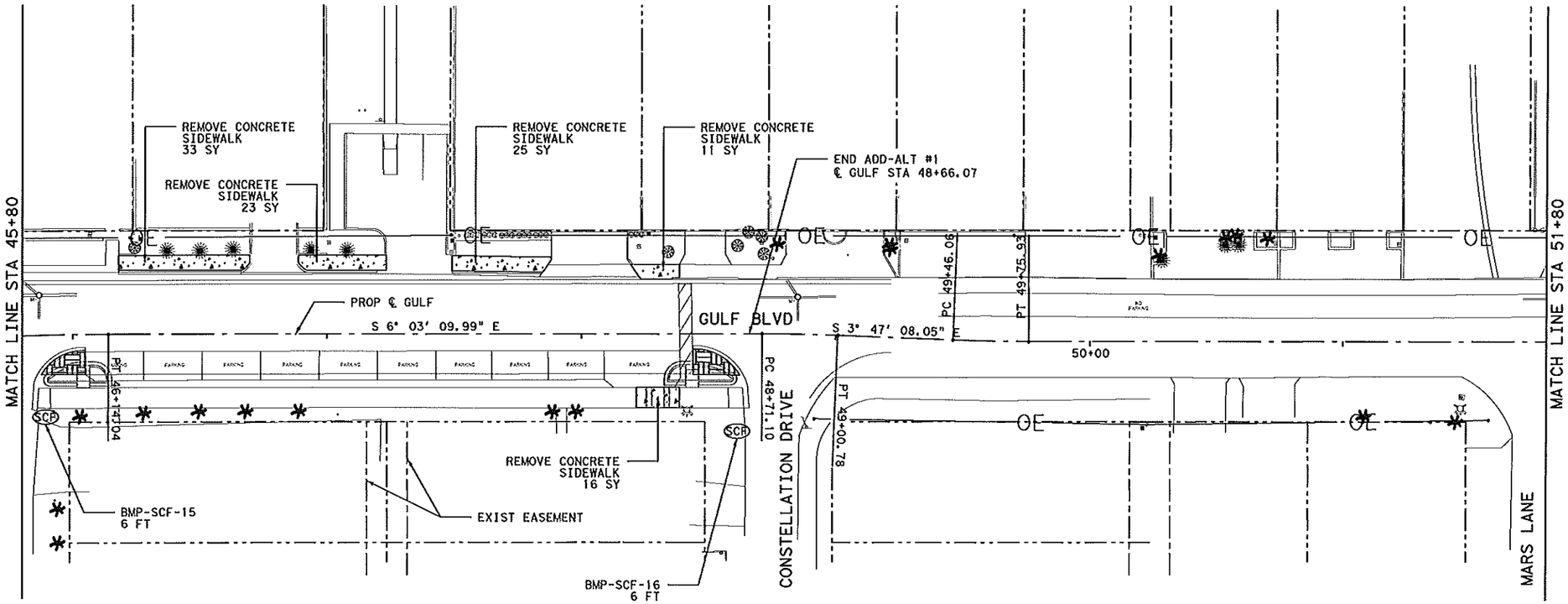


## LEGEND

- PAVEMENT REMOVAL
- VALLEY GUTTER REMOVAL
- ASPHALT DRIVEWAY REMOVAL
- CONCRETE DRIVEWAY REMOVAL
- BRICK DRIVEWAY REMOVAL
- MEDIAN ISLAND REMOVAL
- (SCF) SEDIMENT CONTROL FENCE

NOTES:

1. CONTRACTOR WILL BE REQUIRED TO PROTECT PALM TREES SHOWN TO REMAIN.
2. APPLY SEEDING TO DISTURBED AREAS WITHIN ROW. SEEDING SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.
3. EROSION CONTROL DEVICES SHOWN SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.
4. INSTALL SEDIMENT CONTROL FENCE IN DITCHES LOCATED ALONG THE CROSS STREETS OF GULF BLVD.
5. CONTRACTOR TO REMOVE EXISTING STRIPING ON EAST DRIVEWAYS BY SAND BLASTING OR OTHER METHOD OF REMOVAL TO BE APPROVED BY ENGINEER. THIS SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.
6. BURIED UTILITIES EXIST WITHIN CORRIDOR. CONTRACTOR TO LOCATE UTILITIES PRIOR TO CONSTRUCTION.

0 25 50
SCALE: 1"=50'

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER
7/3/14

Kimley»Horn F-928

South Padre ISLAND

EROSION CONTROL PLAN AND REMOVAL LAYOUT

GULF BLVD IMPROVEMENTS
SHEET 4 OF 4

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 50' | · | 7 |

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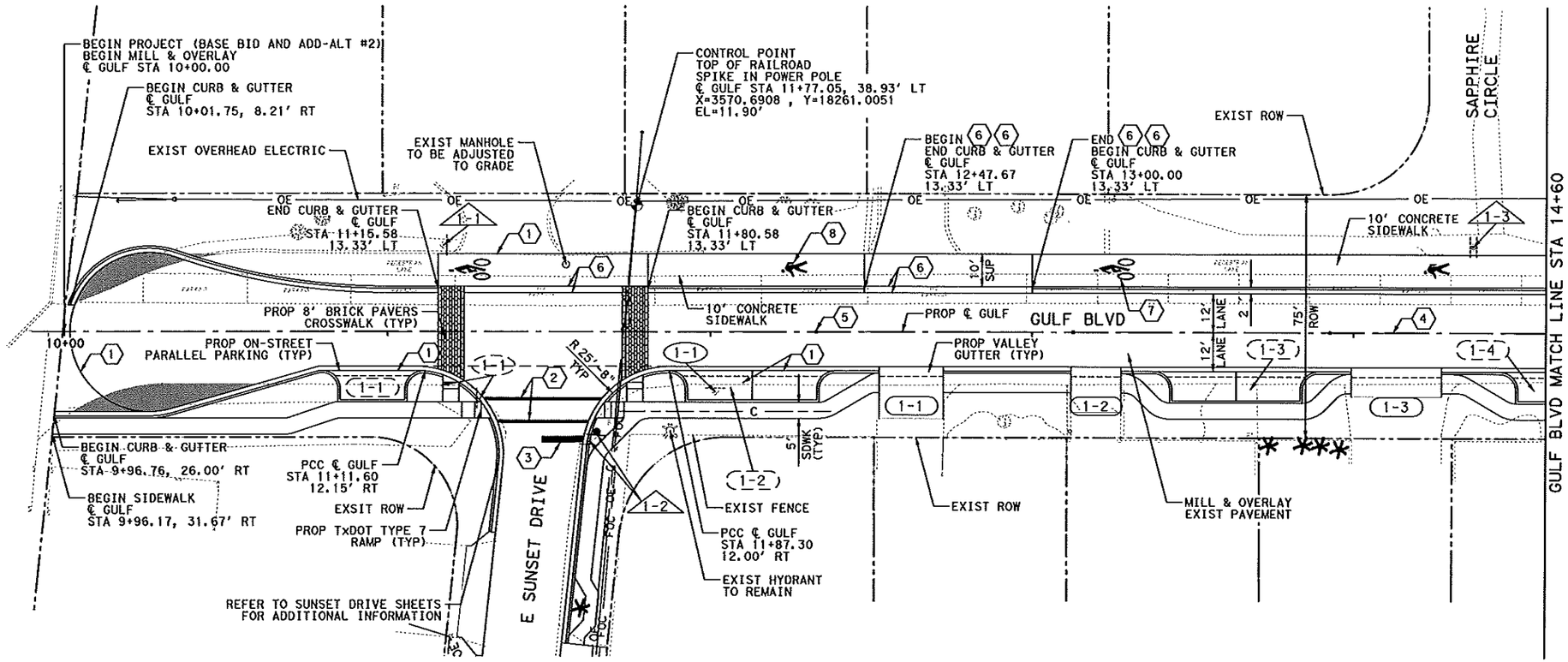



## LEGEND

| | |
|---|---|
| X-X | PROPOSED SIGN |
| X-X | EXISTING SIGN TO REMAIN |
| X-X | EXISTING SIGN TO BE REMOVED |
| X-X | EXISTING SIGN TO BE RELOCATED |
| X-X | PROPOSED DRIVEWAY |
| X-X | PROPOSED PARKING BAY |
| 1 | REFL PAV MRK TY I (W) 4" (SLD) |
| 2 | REFL PAV MRK TY I (W) 12" (SLD) |
| 3 | REFL PAV MRK TY I (W) 24" (SLD) |
| 4 | REFL PAV MRK TY I (Y) 4" (BRK) |
| 5 | REFL PAV MRKR TY II-A-A |
| 6 | REFL PAV MRKR PROF PATTERN EDGELINE |
| 7 | REFL PAV MRK TY 1 (W) BIKE SYML |
| 8 | REFL PAV MRK TY 1 (W) PED SYML |
| 9 | REFL PAV MRK TY I (W) HANDICAP SYML |
| 10 | REFL PAV MRK TY I (W) WORD |
| SUP | SHARED USE PATH |

0 20 40
SCALE: 1"=40'

R1-1 (1-1) — STOP

R7-2 (1-1) — NO PARKING FROM HERE TO CORNER ⇨

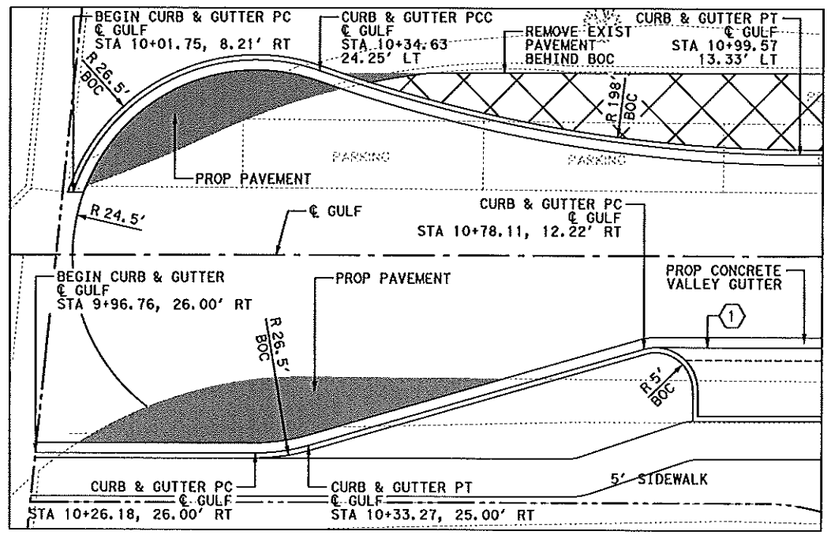
R1-1 (1-2) — STOP

W14-1 (1-1) — DEAD END

D56 (1-2) — PUBLIC BEACH ACCESS

NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. SEE MISCELLANEOUS DETAILS FOR DRIVEWAY AND PARKING BAY DETAILS.
3. SEE REMOVAL SHEETS FOR LIMITS OF DRIVEWAY REMOVAL.
4. SEE MISCELLANEOUS DETAILS FOR CURB TRANSITION DETAILS AT BEGIN/END CURBS.




INSET CUL-DE-SAC DETAIL

STATE OF TEXAS
BRIAN C. BOECKER
94886
LICENSED PROFESSIONAL ENGINEER
7/3/14

Kimley»Horn F-928

South Padre ISLAND

PLAN & PAVEMENT MARKINGS & SIGNAGE

GULF BLVD IMPROVEMENTS
SHEET 1 OF 9

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 40' | · | 8 |

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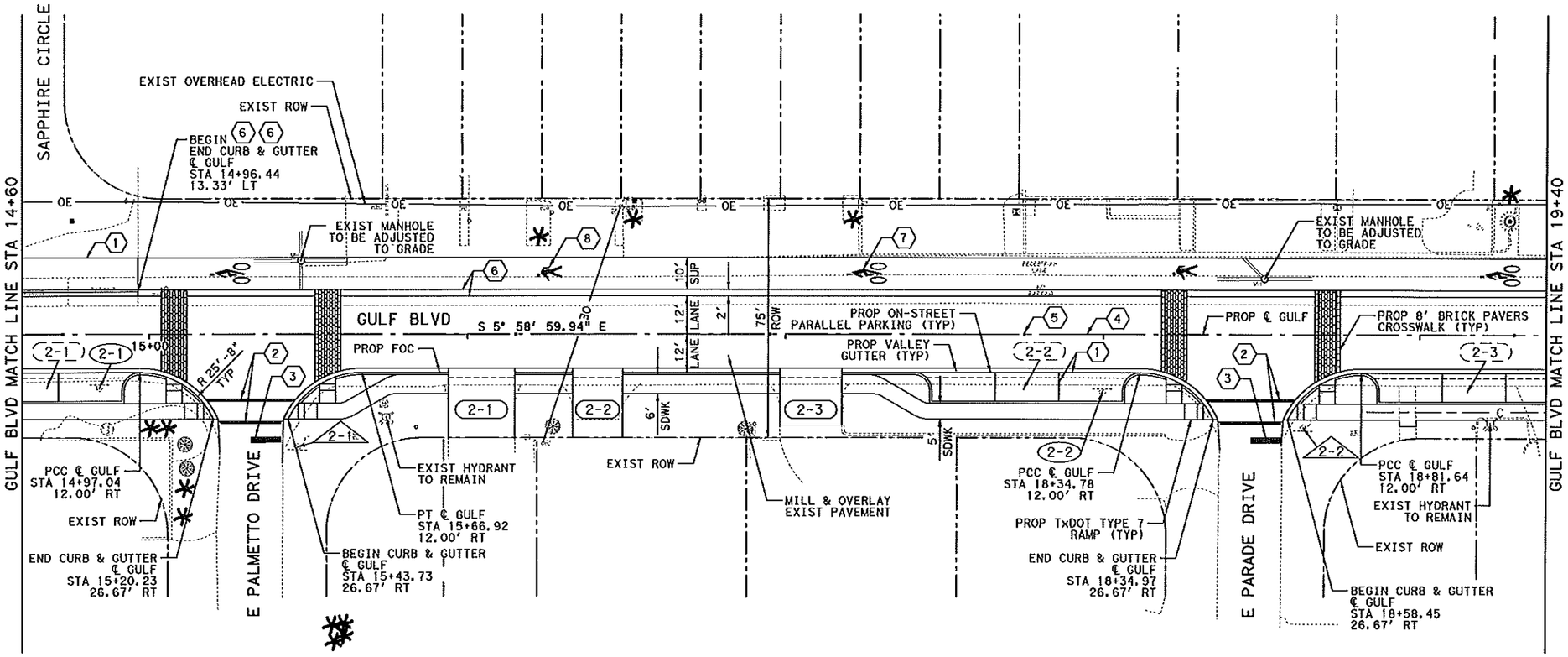


## LEGEND

| | |
|---|---|
| X-X | PROPOSED SIGN |
| X-X | EXISTING SIGN TO REMAIN |
| X-X | EXISTING SIGN TO BE REMOVED |
| X-X | EXISTING SIGN TO BE RELOCATED |
| X-X | PROPOSED DRIVEWAY |
| X-X | PROPOSED PARKING BAY |
| 1 | REFL PAV MRK TY I (W) 4" (SLD) |
| 2 | REFL PAV MRK TY I (W) 12" (SLD) |
| 3 | REFL PAV MRK TY I (W) 24" (SLD) |
| 4 | REFL PAV MRK TY I (Y) 4" (BRK) |
| 5 | REFL PAV MRKR TY II-A-A |
| 6 | REFL PAV MRKR PROF PATTERN EDGELINE |
| 7 | REFL PAV MRK TY 1 (W) BIKE SYML |
| 8 | REFL PAV MRK TY 1 (W) PED SYML |
| 9 | REFL PAV MRK TY I (W) HANDICAP SYML |
| 10 | REFL PAV MRK TY I (W) WORD |
| SUP | SHARED USE PATH |

0 20 40
SCALE: 1"=40'

NO PARKING FROM HERE TO CORNER ⇦
R7-2
2-1
2-2

STOP
R1-1
2-1
2-2

NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. SEE MISCELLANEOUS DETAILS FOR DRIVEWAY AND PARKING BAY DETAILS.
3. SEE REMOVAL SHEETS FOR LIMITS OF DRIVEWAY REMOVAL.
4. SEE MISCELLANEOUS DETAILS FOR CURB TRANSITION DETAILS AT BEGIN/END CURBS.

STATE OF TEXAS
BRIAN C. BOECKER
94886
LICENSED PROFESSIONAL ENGINEER
7/3/14

Kimley»Horn F-928

South Padre ISLAND

PLAN & PAVEMENT MARKINGS & SIGNAGE

GULF BLVD IMPROVEMENTS
SHEET 2 OF 9

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 40' | · | 9 |

FILENAME: G:\069234000*Gulf*Rehabs\Design\GULFrpp03.dgn
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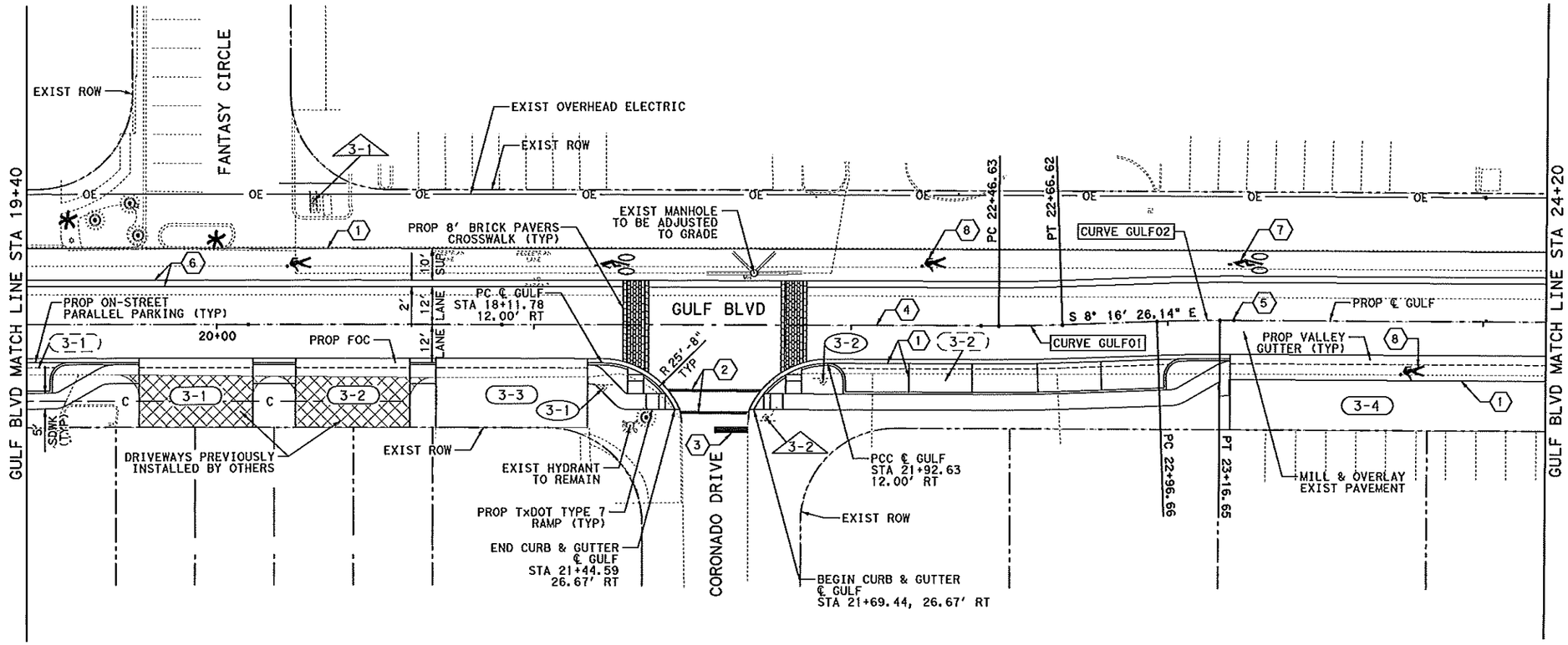


## LEGEND

| | |
|---|---|
| X-X | PROPOSED SIGN |
| X-X | EXISTING SIGN TO REMAIN |
| X-X | EXISTING SIGN TO BE REMOVED |
| X-X | EXISTING SIGN TO BE RELOCATED |
| X-X | PROPOSED DRIVEWAY |
| X-X | PROPOSED PARKING BAY |
| 1 | REFL PAV MRK TY I (W) 4" (SLD) |
| 2 | REFL PAV MRK TY I (W) 12" (SLD) |
| 3 | REFL PAV MRK TY I (W) 24" (SLD) |
| 4 | REFL PAV MRK TY I (Y) 4" (BRK) |
| 5 | REFL PAV MRKR TY II-A-A |
| 6 | REFL PAV MRKR PROF PATTERN EDGELINE |
| 7 | REFL PAV MRK TY I (W) BIKE SYML |
| 8 | REFL PAV MRK TY I (W) PED SYML |
| 9 | REFL PAV MRK TY I (W) HANDICAP SYML |
| 10 | REFL PAV MRK TY I (W) WORD |
| SUP | SHARED USE PATH |

0 20 40
SCALE: 1"=40'





NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. SEE MISCELLANEOUS DETAILS FOR DRIVEWAY AND PARKING BAY DETAILS.
3. SEE REMOVAL SHEETS FOR LIMITS OF DRIVEWAY REMOVAL.
4. SEE MISCELLANEOUS DETAILS FOR CURB TRANSITION DETAILS AT BEGIN/END CURBS.

STATE OF TEXAS
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South Padre ISLAND

PLAN & PAVEMENT MARKINGS & SIGNAGE

GULF BLVD IMPROVEMENTS
SHEET 3 OF 9

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 40' | · | 10 |

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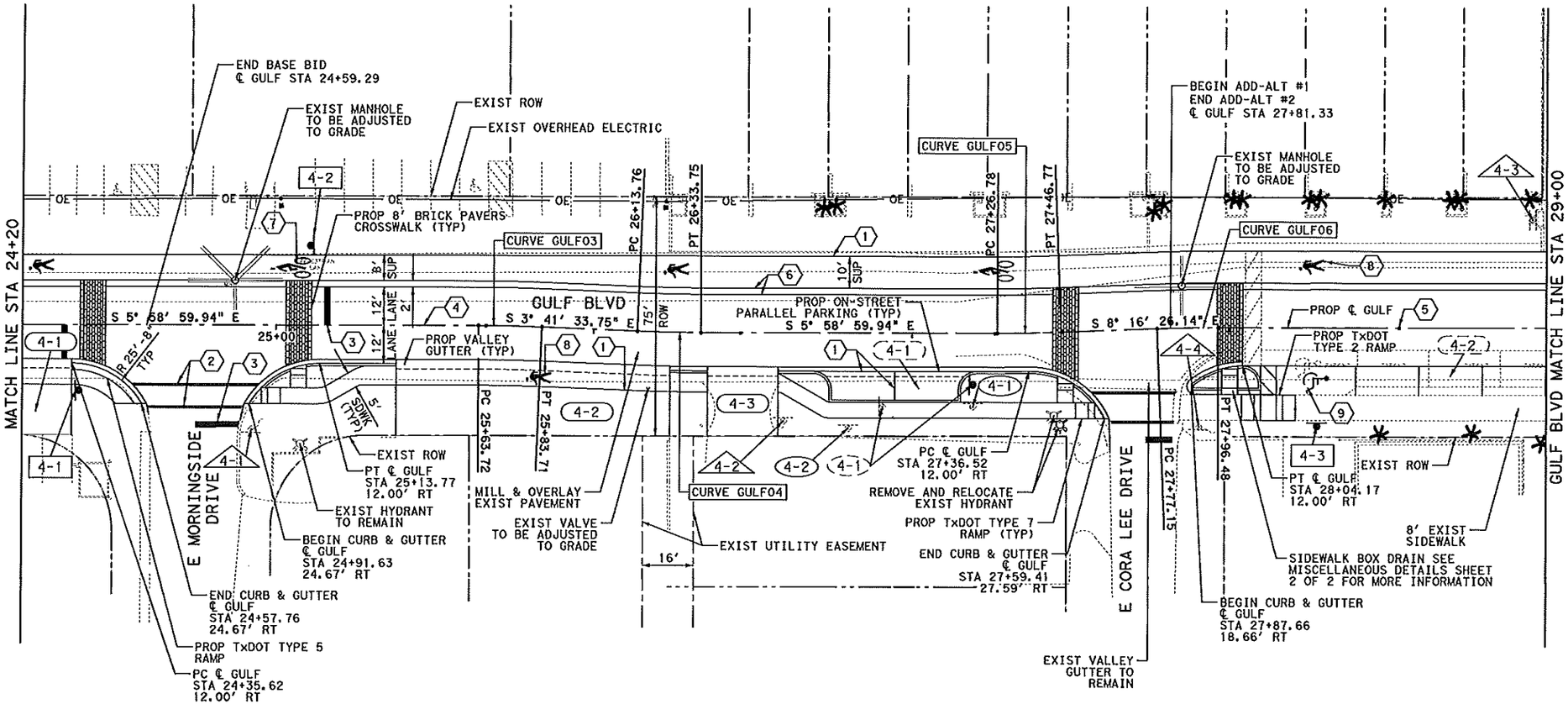
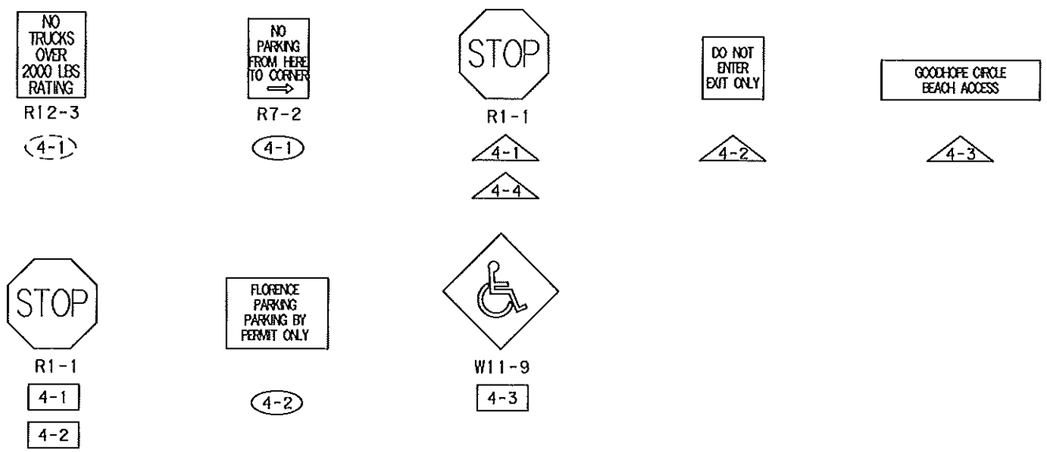



## LEGEND

| | |
|---|---|
| X-X | PROPOSED SIGN |
| X-X | EXISTING SIGN TO REMAIN |
| X-X | EXISTING SIGN TO BE REMOVED |
| X-X | EXISTING SIGN TO BE RELOCATED |
| X-X | PROPOSED DRIVEWAY |
| X-X | PROPOSED PARKING BAY |
| 1 | REFL PAV MRK TY I (W) 4" (SLD) |
| 2 | REFL PAV MRK TY I (W) 12" (SLD) |
| 3 | REFL PAV MRK TY I (W) 24" (SLD) |
| 4 | REFL PAV MRK TY I (Y) 4" (BRK) |
| 5 | REFL PAV MRKR TY II-A-A |
| 6 | REFL PAV MRKR PROF PATTERN EDGELINE |
| 7 | REFL PAV MRK TY I (W) BIKE SYML |
| 8 | REFL PAV MRK TY I (W) PED SYML |
| 9 | REFL PAV MRK TY I (W) HANDICAP SYML |
| 10 | REFL PAV MRK TY I (W) WORD |
| SUP | SHARED USE PATH |

0 20 40
SCALE: 1"=40'




NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. SEE MISCELLANEOUS DETAILS FOR DRIVEWAY AND PARKING BAY DETAILS.
3. SEE REMOVAL SHEETS FOR LIMITS OF DRIVEWAY REMOVAL.
4. SEE MISCELLANEOUS DETAILS FOR CURB TRANSITION DETAILS AT BEGIN/END CURBS.

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South Padre ISLAND

PLAN & PAVEMENT MARKINGS & SIGNAGE

GULF BLVD IMPROVEMENTS
SHEET 4 OF 9

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 40' | | 11 |

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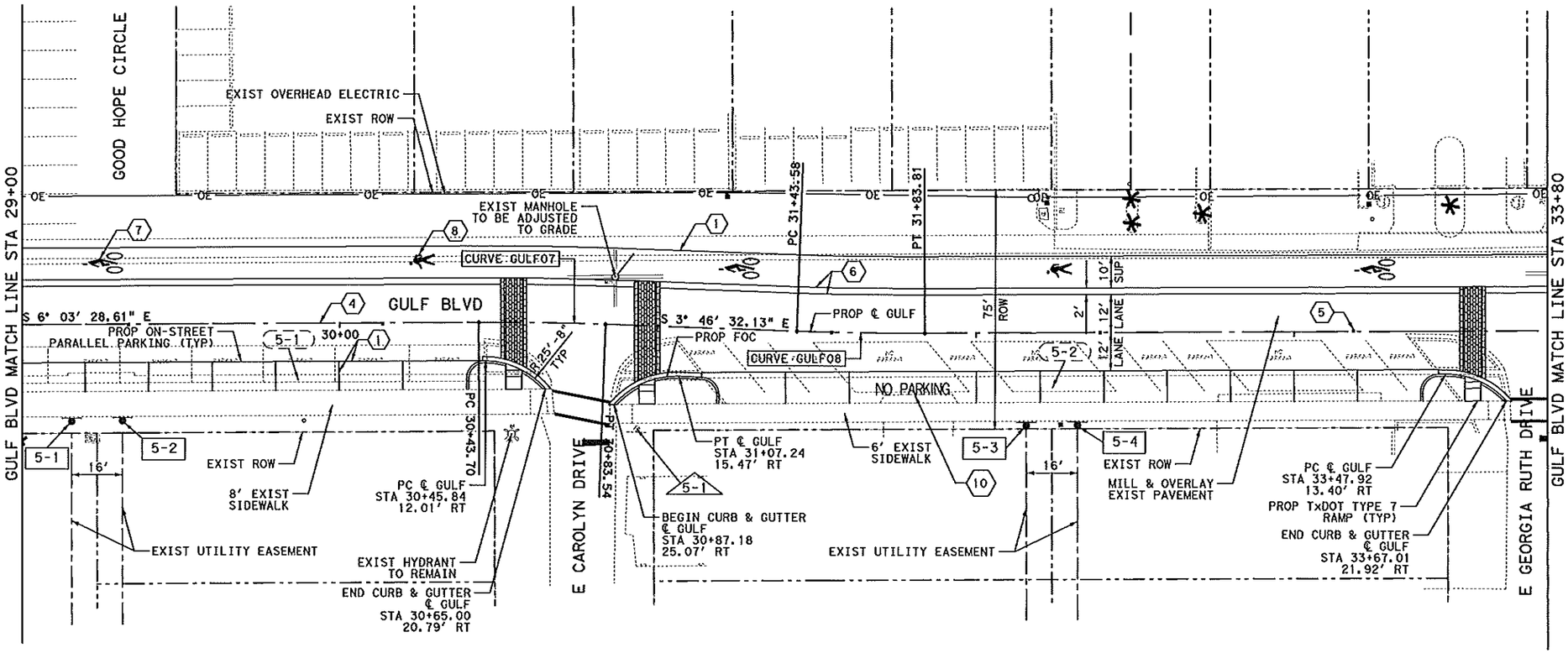
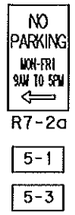
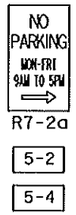



## LEGEND

| | |
|---|---|
| X-X | PROPOSED SIGN |
| X-X | EXISTING SIGN TO REMAIN |
| X-X | EXISTING SIGN TO BE REMOVED |
| X-X | EXISTING SIGN TO BE RELOCATED |
| X-X | PROPOSED DRIVEWAY |
| X-X | PROPOSED PARKING BAY |
| 1 | REFL PAV MRK TY I (W) 4" (SLD) |
| 2 | REFL PAV MRK TY I (W) 12" (SLD) |
| 3 | REFL PAV MRK TY I (W) 24" (SLD) |
| 4 | REFL PAV MRK TY I (Y) 4" (BRK) |
| 5 | REFL PAV MRKR TY II-A-A |
| 6 | REFL PAV MRKR PROF PATTERN EDGELINE |
| 7 | REFL PAV MRK TY I (W) BIKE SYML |
| 8 | REFL PAV MRK TY I (W) PED SYML |
| 9 | REFL PAV MRK TY I (W) HANDICAP SYML |
| 10 | REFL PAV MRK TY I (W) WORD |
| SUP | SHARED USE PATH |

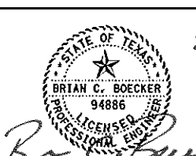
0 20 40
SCALE: 1"=40'


NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. SEE MISCELLANEOUS DETAILS FOR DRIVEWAY AND PARKING BAY DETAILS.
3. SEE REMOVAL SHEETS FOR LIMITS OF DRIVEWAY REMOVAL.
4. SEE MISCELLANEOUS DETAILS FOR CURB TRANSITION DETAILS AT BEGIN/END CURBS.

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South Padre ISLAND

PLAN & PAVEMENT MARKINGS & SIGNAGE

GULF BLVD IMPROVEMENTS

SHEET 5 OF 9

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 40' | | 12 |

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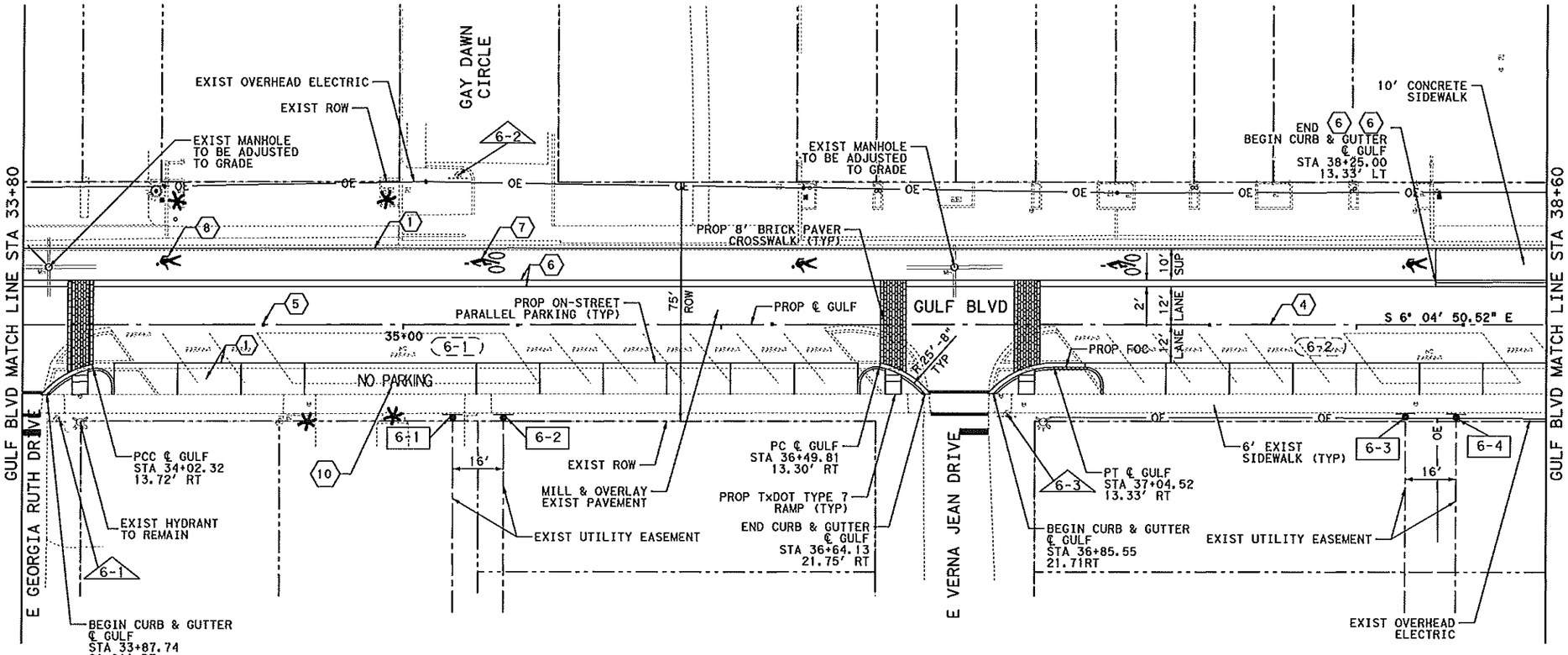
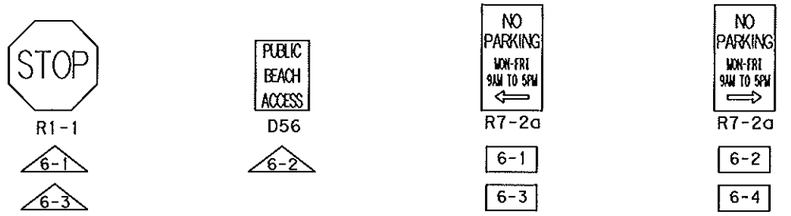



## LEGEND

| | |
|---|---|
| X-X | PROPOSED SIGN |
| X-X | EXISTING SIGN TO REMAIN |
| X-X | EXISTING SIGN TO BE REMOVED |
| X-X | EXISTING SIGN TO BE RELOCATED |
| X-X | PROPOSED DRIVEWAY |
| X-X | PROPOSED PARKING BAY |
| 1 | REFL PAV MRK TY I (W) 4" (SLD) |
| 2 | REFL PAV MRK TY I (W) 12" (SLD) |
| 3 | REFL PAV MRK TY I (W) 24" (SLD) |
| 4 | REFL PAV MRK TY I (Y) 4" (BRK) |
| 5 | REFL PAV MRKR TY II-A-A |
| 6 | REFL PAV MRKR PROF PATTERN EDGELINE |
| 7 | REFL PAV MRK TY 1 (W) BIKE SYML |
| 8 | REFL PAV MRK TY 1 (W) PED SYML |
| 9 | REFL PAV MRK TY I (W) HANDICAP SYML |
| 10 | REFL PAV MRK TY I (W) WORD |
| SUP | SHARED USE PATH |




NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. SEE MISCELLANEOUS DETAILS FOR DRIVEWAY AND PARKING BAY DETAILS.
3. SEE REMOVAL SHEETS FOR LIMITS OF DRIVEWAY REMOVAL.
4. SEE MISCELLANEOUS DETAILS FOR CURB TRANSITION DETAILS AT BEGIN/END CURBS.

STATE OF TEXAS
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7/3/14

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South Padre ISLAND

# PLAN & PAVEMENT MARKINGS & SIGNAGE

GULF BLVD IMPROVEMENTS
SHEET 6 OF 9

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 40' | · | 13 |

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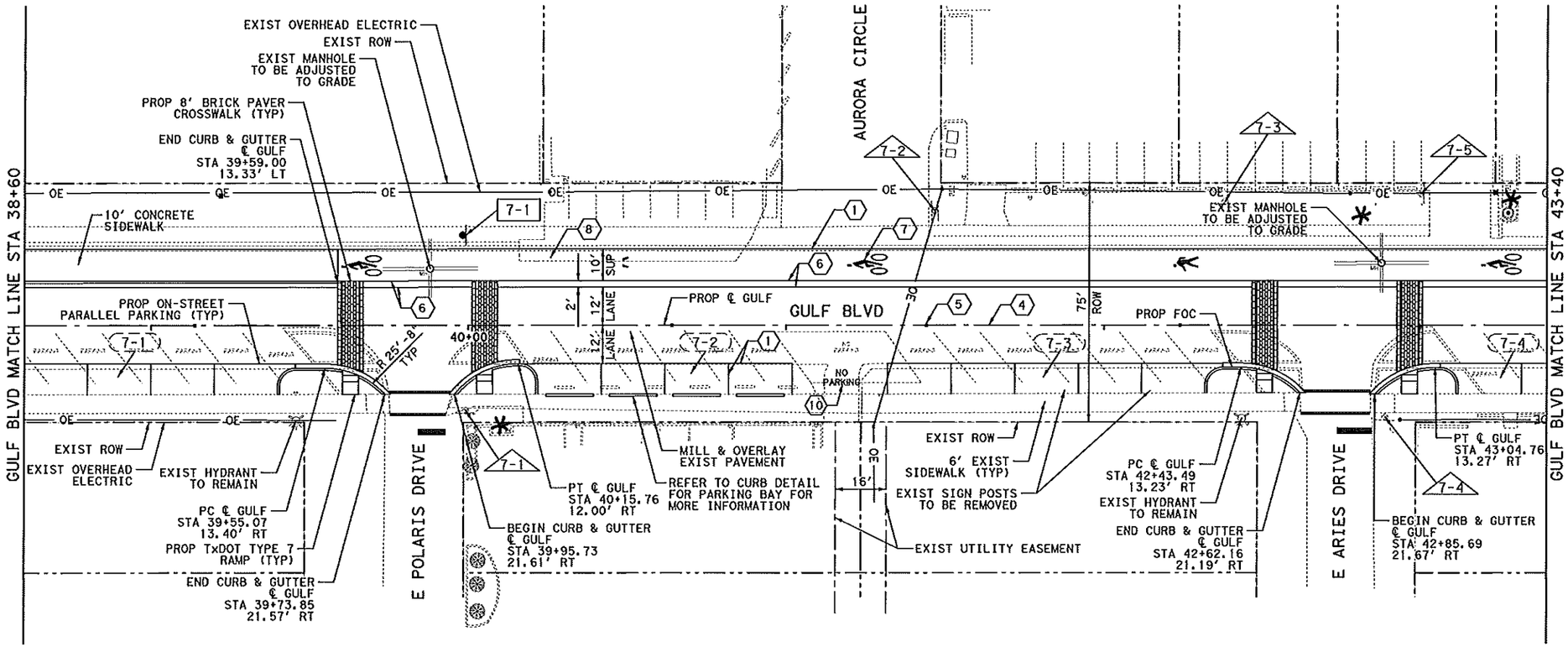



## LEGEND

| | |
|---|---|
| X-X | PROPOSED SIGN |
| X-X | EXISTING SIGN TO REMAIN |
| X-X | EXISTING SIGN TO BE REMOVED |
| X-X | EXISTING SIGN TO BE RELOCATED |
| X-X | PROPOSED DRIVEWAY |
| X-X | PROPOSED PARKING BAY |
| 1 | REFL PAV MRK TY I (W) 4" (SLD) |
| 2 | REFL PAV MRK TY I (W) 12" (SLD) |
| 3 | REFL PAV MRK TY I (W) 24" (SLD) |
| 4 | REFL PAV MRK TY I (Y) 4" (BRK) |
| 5 | REFL PAV MRKR TY II-A-A |
| 6 | REFL PAV MRKR PROF PATTERN EDGELINE |
| 7 | REFL PAV MRK TY 1 (W) BIKE SYML |
| 8 | REFL PAV MRK TY 1 (W) PED SYML |
| 9 | REFL PAV MRK TY I (W) HANDICAP SYML |
| 10 | REFL PAV MRK TY I (W) WORD |
| SUP | SHARED USE PATH |

0 20 40
SCALE: 1"=40'

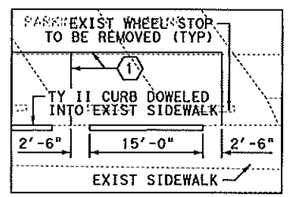
R1-1
7-1
7-4

7-2


R8-3A
7-1

7-3

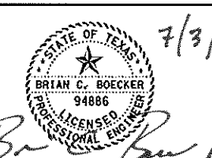
7-5



CURB DETAIL FOR PARKING BAY 7-2

NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. SEE MISCELLANEOUS DETAILS FOR DRIVEWAY AND PARKING BAY DETAILS.
3. SEE REMOVAL SHEETS FOR LIMITS OF DRIVEWAY REMOVAL.
4. SEE MISCELLANEOUS DETAILS FOR CURB TRANSITION DETAILS AT BEGIN/END CURBS.



7/3/14

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South Padre ISLAND

PLAN & PAVEMENT MARKINGS & SIGNAGE

GULF BLVD IMPROVEMENTS
SHEET 7 OF 9

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 40' | · | 1-4 |

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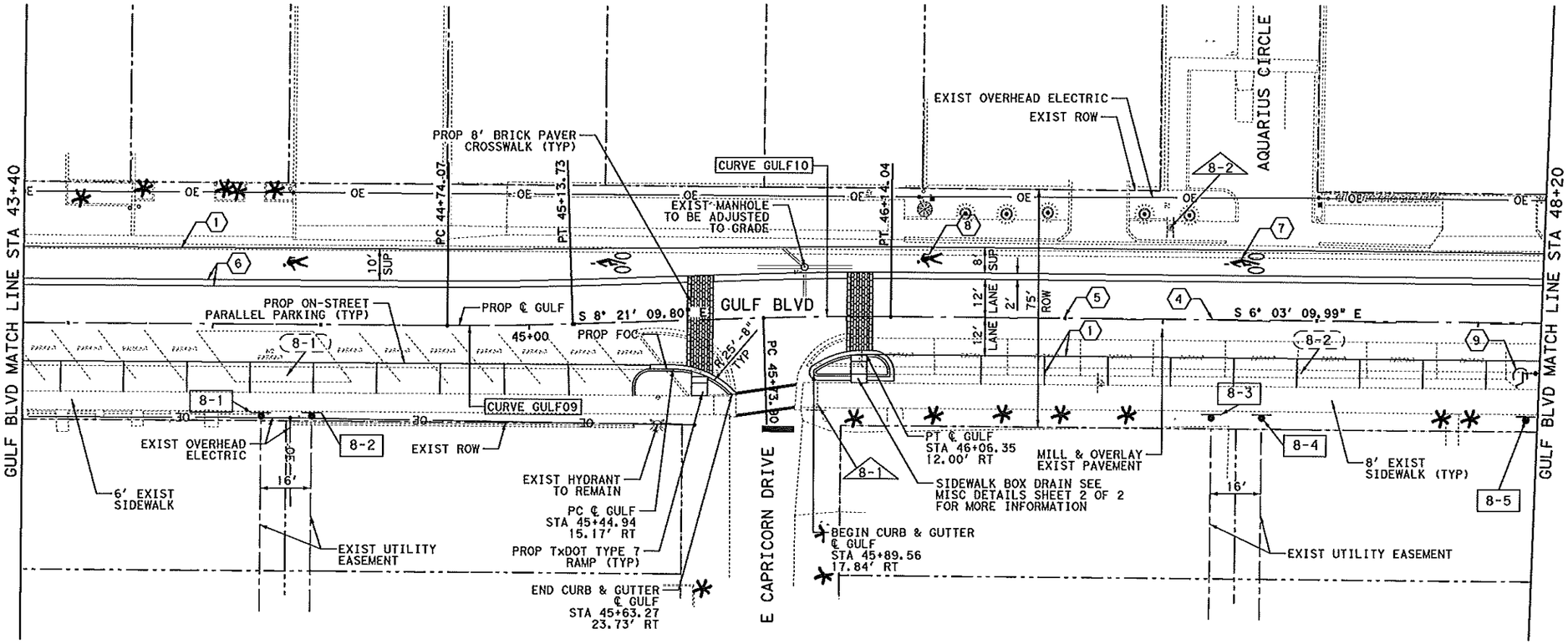



## LEGEND

| | |
|---|---|
| X-X | PROPOSED SIGN |
| X-X | EXISTING SIGN TO REMAIN |
| X-X | EXISTING SIGN TO BE REMOVED |
| X-X | EXISTING SIGN TO BE RELOCATED |
| X-X | PROPOSED DRIVEWAY |
| X-X | PROPOSED PARKING BAY |
| 1 | REFL PAV MRK TY I (W) 4" (SLD) |
| 2 | REFL PAV MRK TY I (W) 12" (SLD) |
| 3 | REFL PAV MRK TY I (W) 24" (SLD) |
| 4 | REFL PAV MRK TY I (Y) 4" (BRK) |
| 5 | REFL PAV MRKR TY II-A-A |
| 6 | REFL PAV MRKR PROF PATTERN EDGELINE |
| 7 | REFL PAV MRK TY 1 (W) BIKE SYML |
| 8 | REFL PAV MRK TY 1 (W) PED SYML |
| 9 | REFL PAV MRK TY I (W) HANDICAP SYML |
| 10 | REFL PAV MRK TY I (W) WORD |
| SUP | SHARED USE PATH |

0 20 40
SCALE: 1"=40'

R1-1
8-1

8-2

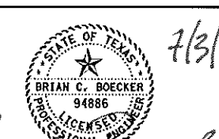
R7-2a
8-1
8-3

R7-2a
8-2
8-4


W11-9
8-5

NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. SEE MISCELLANEOUS DETAILS FOR DRIVEWAY AND PARKING BAY DETAILS.
3. SEE REMOVAL SHEETS FOR LIMITS OF DRIVEWAY REMOVAL.
4. SEE MISCELLANEOUS DETAILS FOR CURB TRANSITION DETAILS AT BEGIN/END CURBS.



7/3/14

Kimley»Horn F-928

South Padre ISLAND

PLAN & PAVEMENT MARKINGS & SIGNAGE

GULF BLVD IMPROVEMENTS
SHEET 8 OF 9

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 40' | · | 15 |

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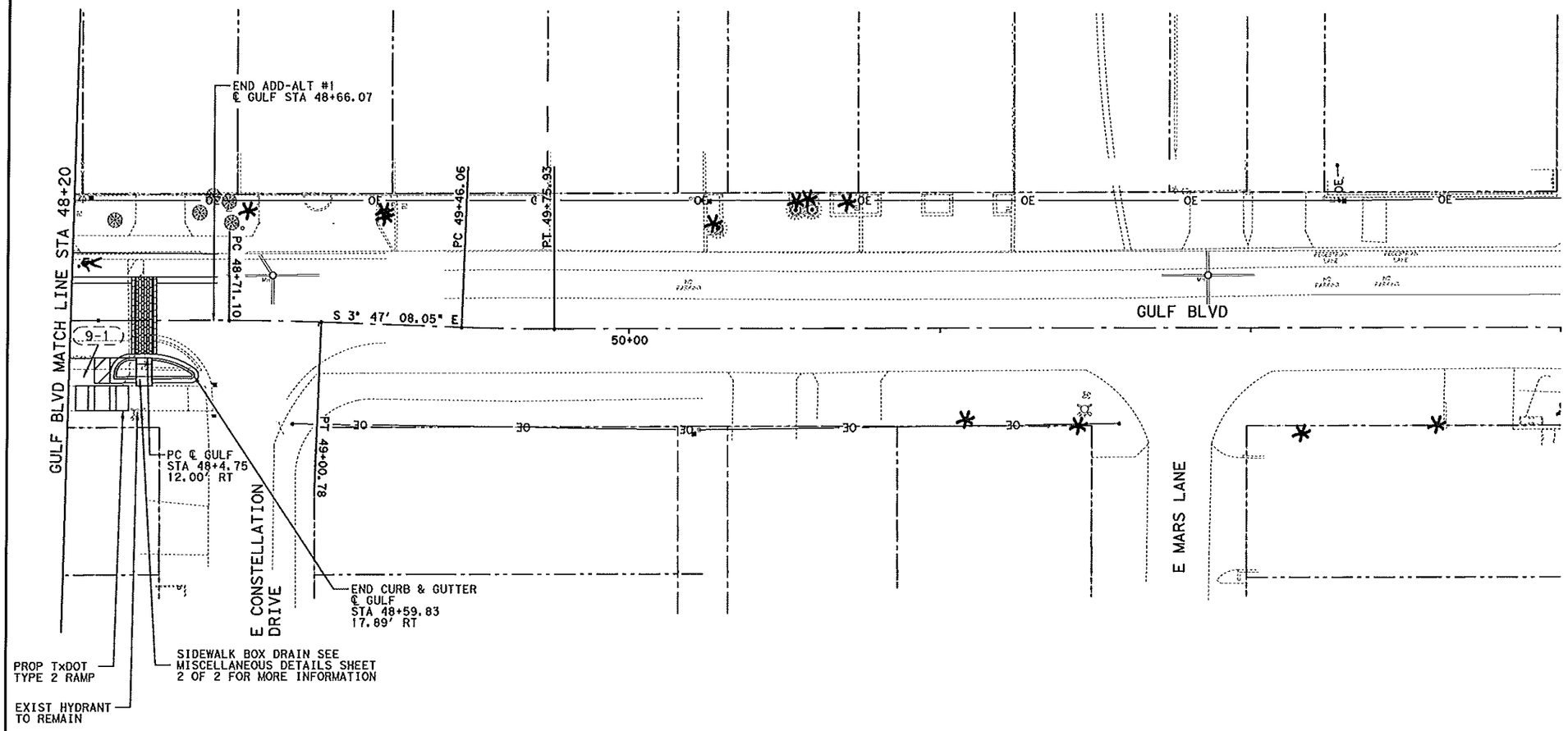


## LEGEND

| | |
|---|---|
| X-X | PROPOSED SIGN |
| X-X | EXISTING SIGN TO REMAIN |
| X-X | EXISTING SIGN TO BE REMOVED |
| X-X | EXISTING SIGN TO BE RELOCATED |
| X-X | PROPOSED DRIVEWAY |
| X-X | PROPOSED PARKING BAY |
| 1 | REFL PAV MRK TY I (W) 4" (SLD) |
| 2 | REFL PAV MRK TY I (W) 12" (SLD) |
| 3 | REFL PAV MRK TY I (W) 24" (SLD) |
| 4 | REFL PAV MRK TY I (Y) 4" (BRK) |
| 5 | REFL PAV MRKR TY II-A-A |
| 6 | REFL PAV MRKR PROF PATTERN EDGELINE |
| 7 | REFL PAV MRK TY 1 (W) BIKE SYML |
| 8 | REFL PAV MRK TY 1 (W) PED SYML |
| 9 | REFL PAV MRK TY I (W) HANDICAP SYML |
| 10 | REFL PAV MRK TY I (W) WORD |
| SUP | SHARED USE PATH |

0 20 40
SCALE: 1"=40'

NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. SEE MISCELLANEOUS DETAILS FOR DRIVEWAY AND PARKING BAY DETAILS.
3. SEE REMOVAL SHEETS FOR LIMITS OF DRIVEWAY REMOVAL.
4. SEE MISCELLANEOUS DETAILS FOR CURB TRANSITION DETAILS AT BEGIN/END CURBS.

STATE OF TEXAS
BRIAN C. BOECKER
94886
LICENSED PROFESSIONAL ENGINEER
7/3/14

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South Padre ISLAND

PLAN & PAVEMENT MARKINGS & SIGNAGE

GULF BLVD IMPROVEMENTS
SHEET 9 OF 9

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 40' | | 16 |

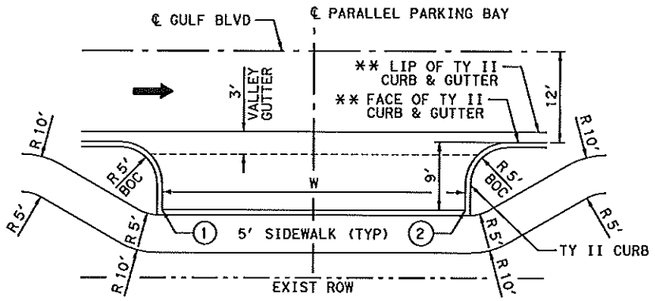
FILENAME: G:\069234000*Gulf*Rehaba\Design\GULFmisdet01.dgn
PLOTTED: 7/3/2014 11:38:14 AM

## PARALLEL PARKING BAY DETAILS

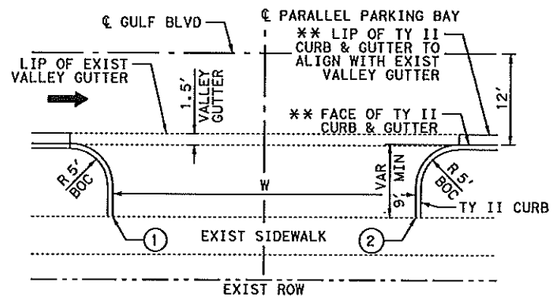
| PLAN AND PROFILE SHEET | PARKING BAY NUMBER | ELEVATION TYPE | POINT 1 | | POINT 2 | | W (FT) | # OF SPACES |
|---|---|---|---|---|---|---|---|---|
| | | | STA | OFF (FT) | STA | OFF (FT) | | |
| 1 OF 9 | 1-1 | A | 10+85.33 | 21 | 11+05.33 | 21 | 20 | 1 |
| 1 OF 9 | 1-2 | A | 11+90.06 | 21 | 12+30.06 | 21 | 40 | 2 |
| 1 OF 9 | 1-3 | A | 13+43.54 | 21 | 13+83.54 | 21 | 40 | 2 |
| 1,2 OF 9 | 1-4 2-1 | A | 14+51.37 | 21 | 14+91.37 | 21 | 40 | 2 |
| 2 OF 9 | 2-2 | A | 17+46.11 | 21 | 18+06.11 | 21 | 60 | 3 |
| 2,3 OF 9 | 2-3 3-1 | A | 18+87.31 | 21 | 20+47.31 | 21 | 30 | 3 |
| 3 OF 9 | 3-2 | A | 21+98.29 | 21 | 22+98.29 | 21 | 100 | 5 |
| 4 OF 9 | 4-1 | A | 26+74.61 | 21 | 27+14.61 | 21 | 40 | 2 |
| 4,5 OF 9 | 4-2 5-1 | B | 28+09.83 | 21.06 | 30+39.83 | 21.06 | 230 | 11 |
| 5 OF 9 | 5-2 | B | 31+20.00 | 23.59 | 33+40.00 | 21.85 | 220 | 9 |
| 6 OF 9 | 6-1 | B | 34+09.00 | 21.90 | 36+43.00 | 21.73 | 220 | 9 |
| 6,7 OF 9 | 6-2 7-1 | B | 37+20.00 | 21.80 | 39+40.00 | 21.63 | 220 | 11 |
| 7 OF 9 | 7-2 | B | 40+22.00 | 21.61 | N/A | N/A | 80 | 4 |
| 7 OF 9 | 7-3 | B | N/A | N/A | 42+32.00 | 21.30 | 100 | 5 |
| 7,8 OF 9 | 7-4 8-1 | B | 43+12.00 | 21.57 | 45+32.00 | 23.08 | 220 | 11 |
| 8,9 OF 9 | 8-2 9-1 | B | 46+14.00 | 21 | 48+34.00 | 21 | 220 | 10 |
| | | | | | | TOTAL PARKING SPACES = | | 90 |

## DRIVEWAY DETAILS

| PLAN AND PROFILE SHEET | DRIVEWAY NUMBER | STATION | PROP WIDTH (FT) | SIDEWALK WIDTH, X (FT) | PROP LENGTH, Y (FT) | (S1)% | EXIST SURF TYPE | PROP SURF TYPE |
|---|---|---|---|---|---|---|---|---|
| GULF BLVD | | | | | | | | |
| 1 OF 9 | 1-1 | 12+62.41 | 20.05 | 5 | 8.00 | 0.48 | BRICK | CONCRETE |
| 1 OF 9 | 1-2 | 13+19.85 | 15.55 | 5 | 6.00 | 0.76 | BRICK | CONCRETE |
| 1 OF 9 | 1-3 | 14+13.53 | 28.13 | 5 | 1.00 | 0.84 | ASPHALT | CONCRETE |
| 2 OF 9 | 2-1 | 16+04.48 | 20.72 | 5 | 13.83 | 0.92 | CONCRETE | CONCRETE |
| 2 OF 9 | 2-2 | 16+40.33 | 15.71 | 5 | 13.83 | 3.08 | CONCRETE | CONCRETE |
| 2 OF 9 | 2-3 | 17+08.01 | 19.35 | 5 | 9.87 | 5.59 | ASPHALT | CONCRETE |
| 3 OF 9 | 3-1 | 19+93.45 | 36 | 5 | 13.83 | 7.00 | CONCRETE | CONCRETE |
| 3 OF 9 | 3-2 | 20+42.95 | 36 | 5 | 13.83 | 7.00 | CONCRETE | CONCRETE |
| 3 OF 9 | 3-3 | 20+93.06 | 47.80 | 5 | 13.83 | 7.00 | CONCRETE | CONCRETE |
| 3,4 OF 9 | 3-4 4-1 | 23+77.81 | 115.62 | 5 | 15.83 | 10.10 | ASPHALT | CONCRETE |
| 4 OF 9 | 4-2 | 25+82.29 | 86.07 | 5 | 13.92 | 7.04 | CONCRETE | CONCRETE |
| 4 OF 9 | 4-3 | 26+46.91 | 22.08 | 5 | 13.80 | 1.12 | ASPHALT | CONCRETE |



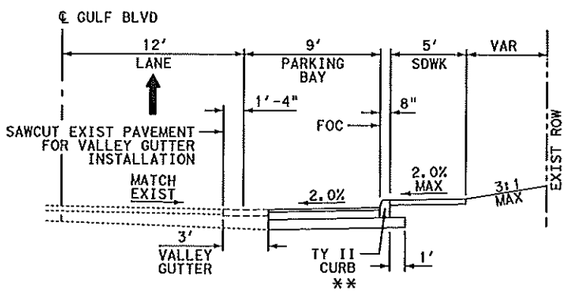

PARALLEL PARKING BAY TYPE A
NTS




PARALLEL PARKING BAY TYPE B
NTS

PLAN VIEWS

** SEE TXDOT STANDARD CCCG-12 FOR MORE INFORMATION.




PARALLEL PARKING BAY TYPE A
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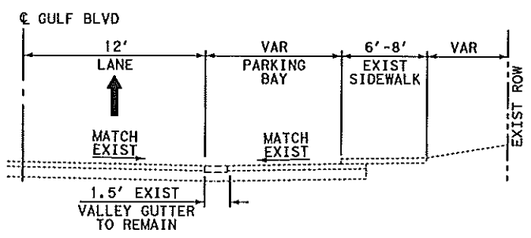
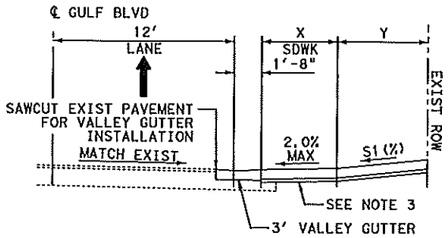
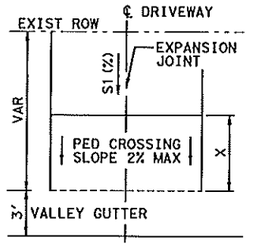



PARALLEL PARKING BAY TYPE B
NTS

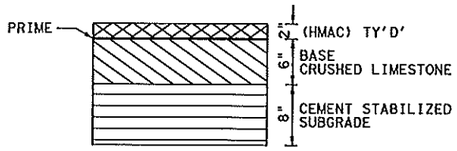
ELEVATION VIEWS




DRIVEWAY ELEVATION VIEW
NTS




DRIVEWAY PLAN VIEW
NTS




ASPHALT PAVEMENT SECTION
NTS

NOTES:

1. DRIVEWAYS SHOULD EXTEND TO THE LIMITS SHOWN IN PLANS UNLESS DIRECTED BY THE ENGINEER TO TIE INTO EXIST DRIVEWAY JOINTS WITHIN ROW.
2. PLACE A ½" ASPHALT BOARD EXPANSION JOINT ALONG THE ROW OR END OF DRIVEWAY RECONSTRUCTION AND DOWN THE CENTER OF DRIVEWAY IF NECESSARY.
3. CONCRETE DRIVEWAYS SHALL BE IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS FOR RESIDENTIAL AND COMMERICIAL DRIVEWAYS.

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER
7/3/14

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South Padre ISLAND

# MISCELLANEOUS DETAILS

GULF BLVD IMPROVEMENTS
SHEET 1 OF 2

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 40' | · | 17 |

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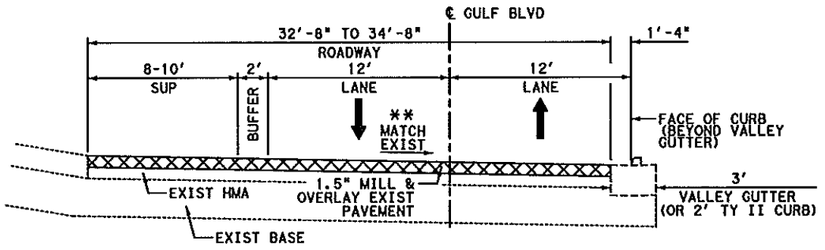
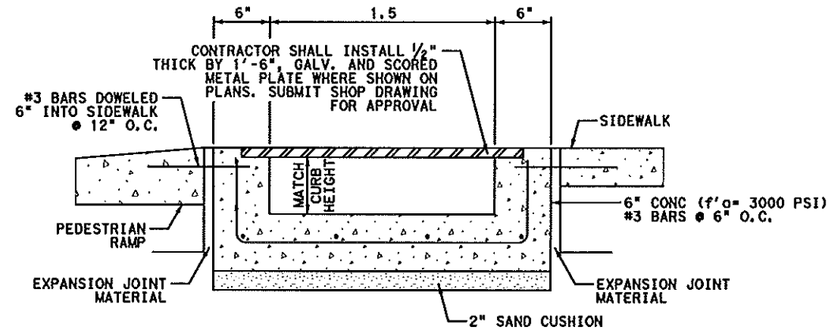
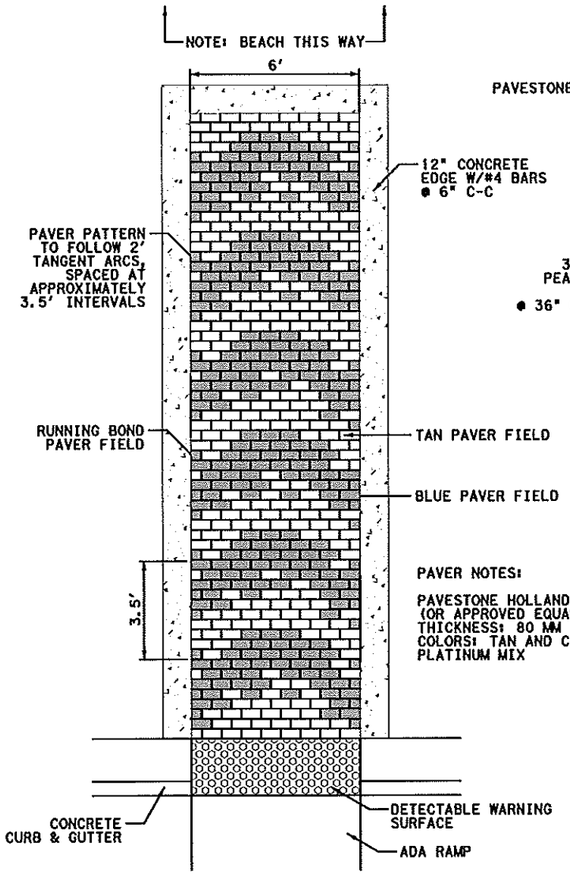



MILL & OVERLAY DETAIL
NTS

** CONTRACTOR TO VERIFY POSITIVE DRAINAGE MAINTAINED.



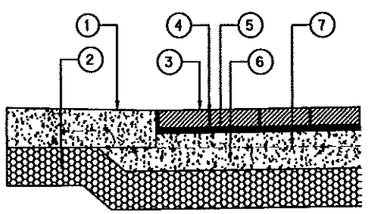

SIDEWALK BOX DRAIN DETAIL
NTS




CROSSWALK PAVER PATTERN
NTS

PAVER NOTES:

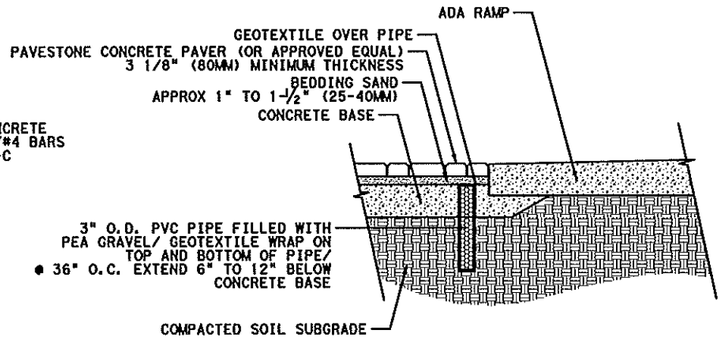
PAVESTONE HOLLAND STONE II PAVERS
(OR APPROVED EQUAL)
THICKNESS: 80 MM
COLORS: TAN AND CUSTOM BLUE
PLATINUM MIX



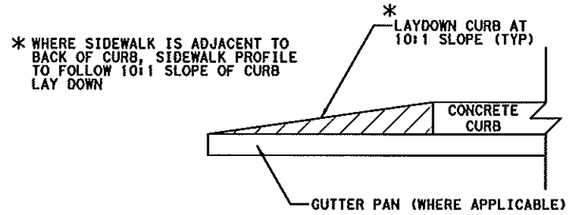

VEHICULAR PAVERS ON CONCRETE BASE ELEVATION
NTS

NOTE: CONTRACTOR TO PROVIDE 5'X5' MOCK-UP OF CONCRETE PAVERS FOR CITY APPROVAL PRIOR TO INSTALLING CONCRETE PAVERS.

1. ADA RAMP
2. COMPACTED SUBGRADE
3. 3-⅛" VEHICULAR PAVER, ASTM 1272. REFERENCE PLAN VIEW FOR PATTERNING SET IN A CONCRETE BASE.
4. BRUSH SAND INTO JOINT. JOINTS NO GREATER THAN ⅛".
5. 1" TO 1-¼"SAND SETTING BED
6. 6" HES CONCRETE BASE
7. #4 @ 6" C-C REINFORCING STEEL

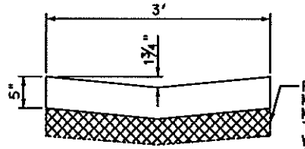



BRICK PAVERS ON CONCRETE BASE
NTS




* WHERE SIDEWALK IS ADJACENT TO BACK OF CURB, SIDEWALK PROFILE TO FOLLOW 10:1 SLOPE OF CURB LAY DOWN

ELEVATION
CURB LAYDOWN DETAILS
NTS




PLACE VALLEY GUTTER ON EXISTING BASE MATERIAL. IF FINAL SURFACE OF BASE MATERIAL IS DISTURBED, CONTRACTOR TO CORRECT SURFACE IN ACCORDANCE WITH SPECIFICATIONS FOR NEW BASE. CONSIDER ANY CORRECTIONS SUBSIDIARY TO PAY ITEM FOR CONCRETE VALLEY GUTTER

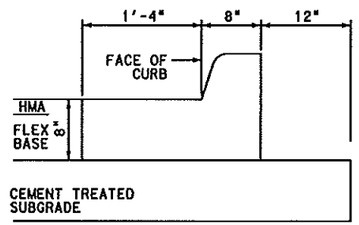
EXPANSION JOINTS @ 20' MAX
TRANSVERSE JOINT @ 10' MAX
STEEL #3 @ 12" C-C
3000 PSI CONCRETE

VALLEY GUTTER DETAIL
NTS

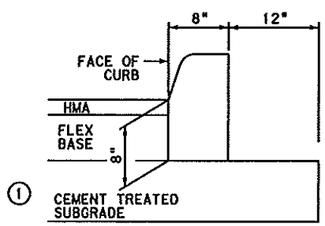
NOTES:

1. SIDEWALK REINFORCING SHOULD BE #3 BARS @ 6" C-C. IF CONCRETE CURB & GUTTER IS AGAINST SIDEWALK, JOINTS SHOULD MATCH.
2. CURB AND GUTTER JOINTS SPACING SHOULD BE: 10' MAX FOR TRANSVERSE JOINTS 25' MAX EXPANSION JOINTS

① IF TYPE II CURB/CURB AND GUTTER IS INSTALLED ON EXISTING BASE, CONTRACTOR TO COMPACT EXISTING BASE ACCORDING TO BASE SPECIFICATIONS. PLACE CURB/CURB AND GUTTER ON EXISTING BASE MATERIAL. IF FINAL SURFACE OF BASE MATERIAL IS DISTURBED, CONTRACTOR TO CORRECT SURFACE IN ACCORDANCE WITH SPECIFICATIONS FOR NEW BASE. CONSIDER ANY CORRECTIONS SUBSIDIARY TO PAY ITEM FOR CONCRETE CURB/CURB AND GUTTER




TY II CURB & GUTTER
NTS
(SHOWN ON NEW PAVING)




TY II CURB
NTS

CURB DETAILS (SEE TXDOT STANDARD CCCG-12 FOR ADDITIONAL INFORMATION)

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7/3/14

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MISCELLANEOUS DETAILS

GULF BLVD IMPROVEMENTS
SHEET 2 OF 2

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| | · | 1-8 |

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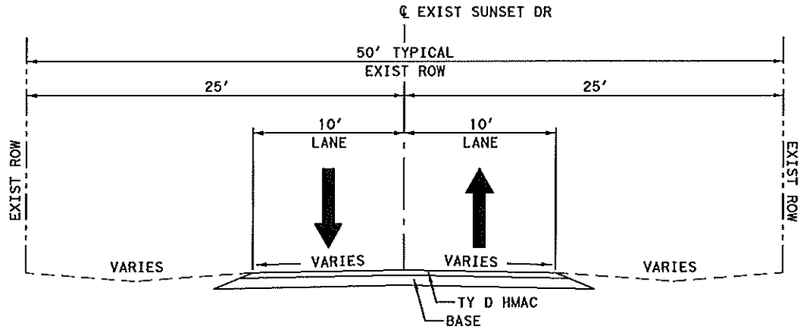
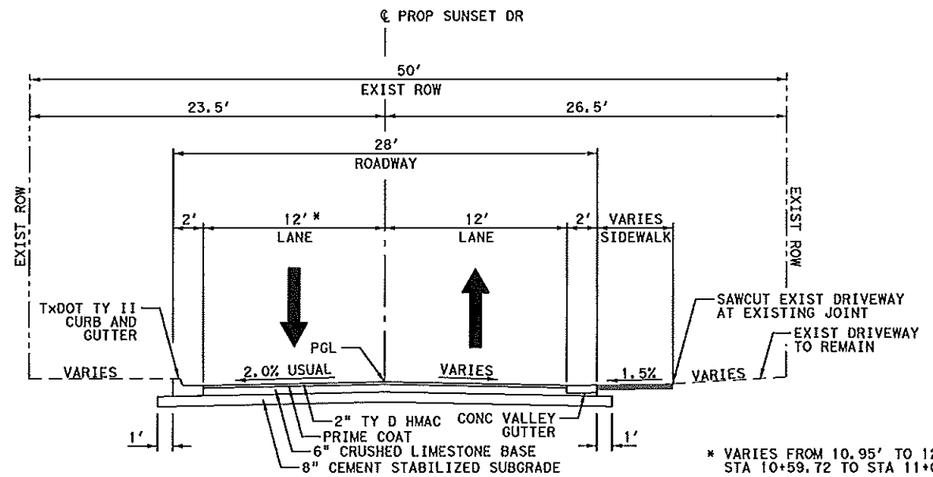



## SUNSET DRIVE EXIST TYPICAL SECTION

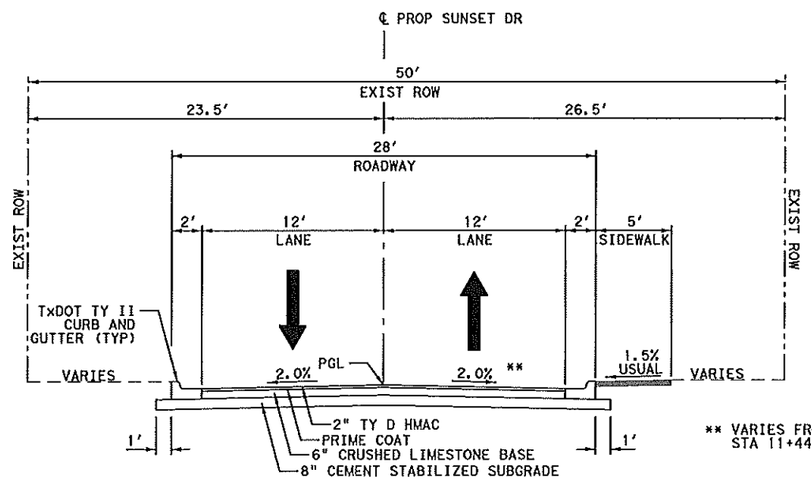
STA 10+59.72 TO 20+31.10




* VARIES FROM 10.95' TO 12'
STA 10+59.72 TO STA 11+00.00

## SUNSET DRIVE PROP TYPICAL SECTION

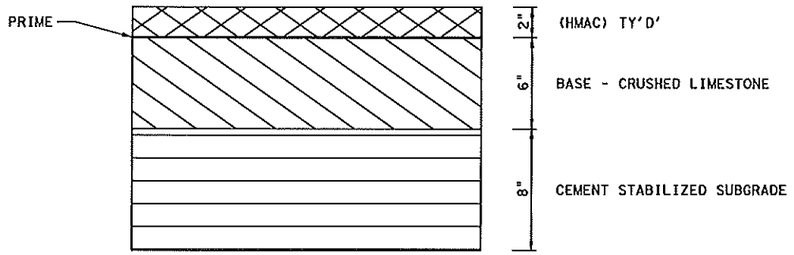
STA 10+59.72 TO 11+44.00




** VARIES FROM 1.5% TO 2.0%
STA 11+44.00 TO STA 12+50.00

## SUNSET DRIVE PROP TYPICAL SECTION

STA 11+44.00 TO 20+31.10




## ASPHALT PAVEMENT RECONSTRUCTION SECTION

NTS

(FOR USE AT SUNSET DRIVE)

STATE OF TEXAS
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LICENSED
PROFESSIONAL ENGINEER

7/3/14

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South Padre ISLAND

**TYPICAL SECTION AND PAVING DETAILS**

SUNSET DRIVE IMPROVEMENT
FULL RECONSTRUCTION
SHEET 1 OF 1

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 20' | | 19 |

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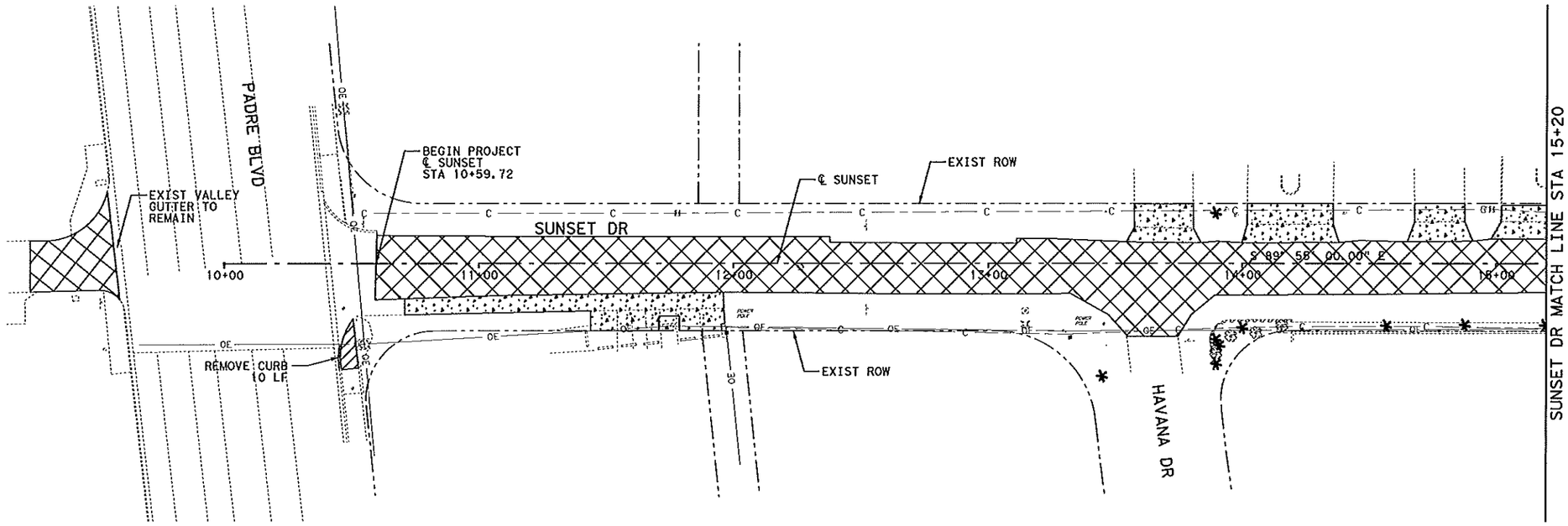


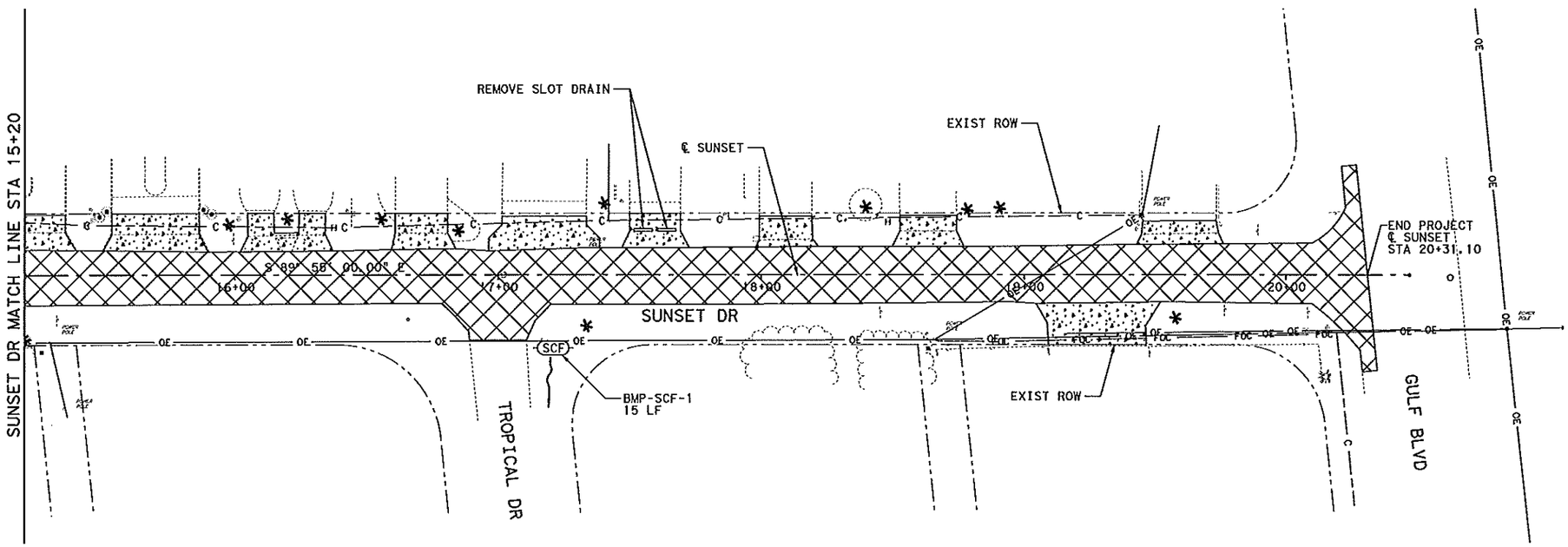


0 25 50
SCALE: 1"=50'

## LEGEND

- REMOVE ASPHALT PAVEMENT
- REMOVE CONCRETE DRIVEWAY
- REMOVE PEDESTRIAN RAMP
- (SCF) PROP SEDIMENT CONTROL FENCE
- FLOW ARROW

NOTES:

1. CONTRACTOR WILL BE REQUIRED TO PROTECT PALM TREES SHOWN TO REMAIN.
2. CONTRACTOR TO PROVIDE 15 LF OF SANDBAGS AT DOWNSTREAM INLET JUST NORTH OF SUNSET DR.
3. APPLY SEEDING TO DISTURBED AREAS WITHIN ROW. SEEDING SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.
4. EROSION CONTROL DEVICES SHOWN WILL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS.

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# EROSION CONTROL PLAN AND REMOVAL LAYOUT

## SUNSET DRIVE IMPROVEMENT FULL RECONSTRUCTION

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 50' | | 20 |

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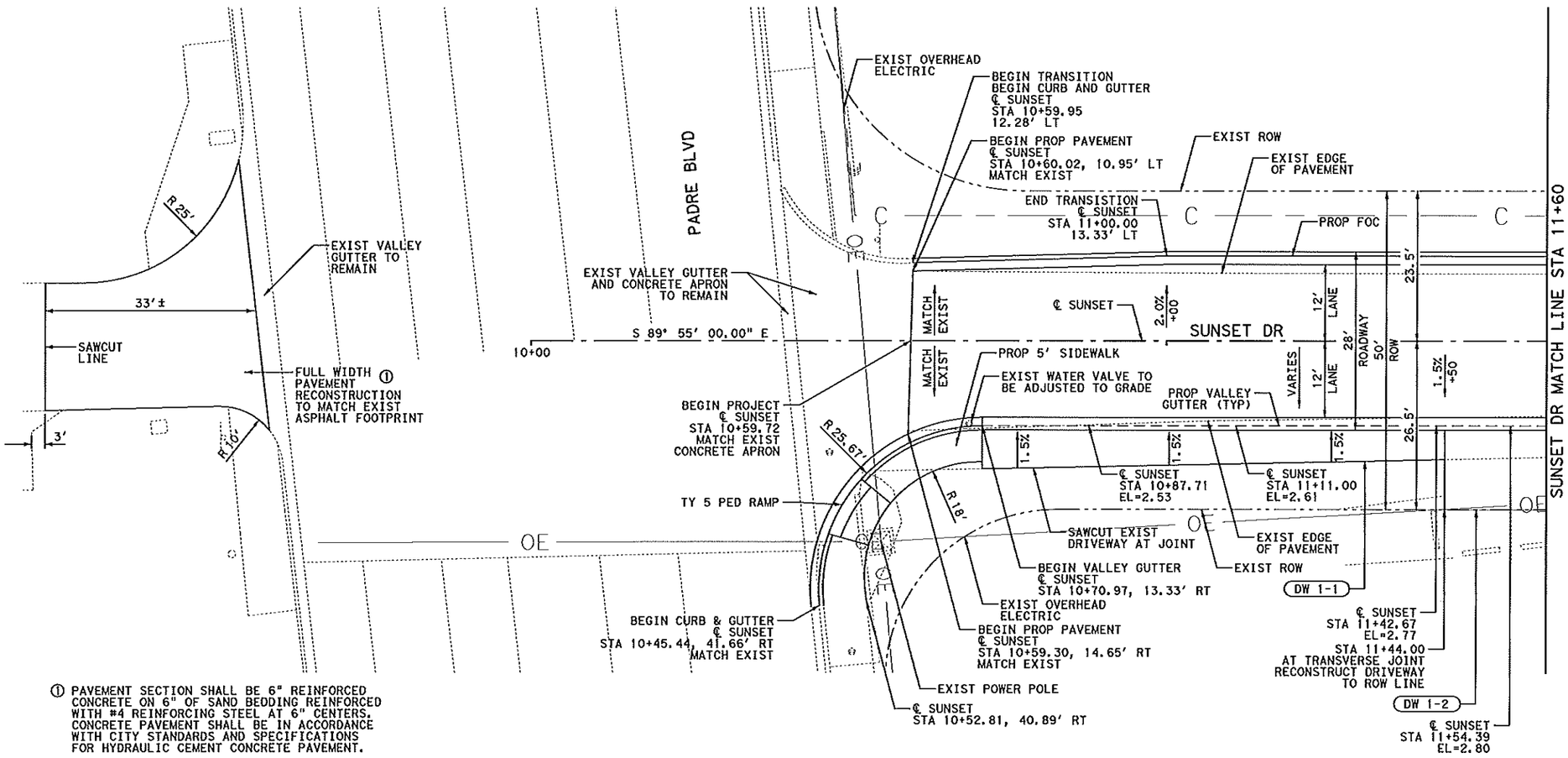
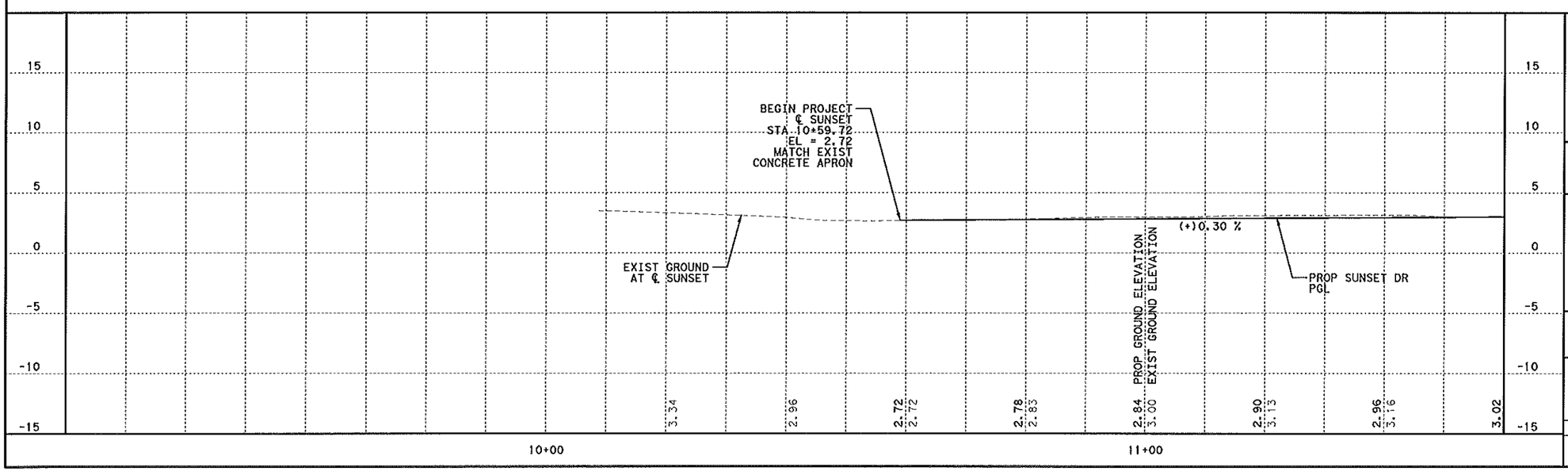
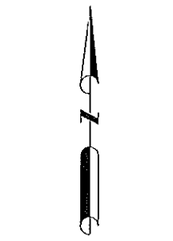



① PAVEMENT SECTION SHALL BE 6" REINFORCED CONCRETE ON 6" OF SAND BEDDING REINFORCED WITH #4 REINFORCING STEEL AT 6" CENTERS. CONCRETE PAVEMENT SHALL BE IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS FOR HYDRAULIC CEMENT CONCRETE PAVEMENT.




## LEGEND

| | |
|---|---|
| (X-X) | EXISTING SIGN TO BE REMOVED |
| (X-X) | EXISTING SIGN TO BE RELOCATED |
| ① | REFL PAV MRK TY I (W) 12" (SLD) |
| ② | REFL PAV MRK TY I (W) 24" (SLD) |

NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. SEE DRIVEWAY SUMMARY SHEET FOR DRIVEWAY DETAILS.
3. SEE REMOVAL SHEET FOR LIMITS OF DRIVEWAY REMOVAL.
4. BURIED UTILITIES EXIST WITHIN CORRIDOR. CONTRACTOR TO LOCATE UTILITIES PRIOR TO CONSTRUCTION.

STATE OF TEXAS
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PROFESSIONAL ENGINEER

7/3/14

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South Padre ISLAND

# PLAN & PROFILE

## SUNSET DRIVE IMPROVEMENT FULL RECONSTRUCTION

SHEET 1 OF 5

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 20' | · | 21 |

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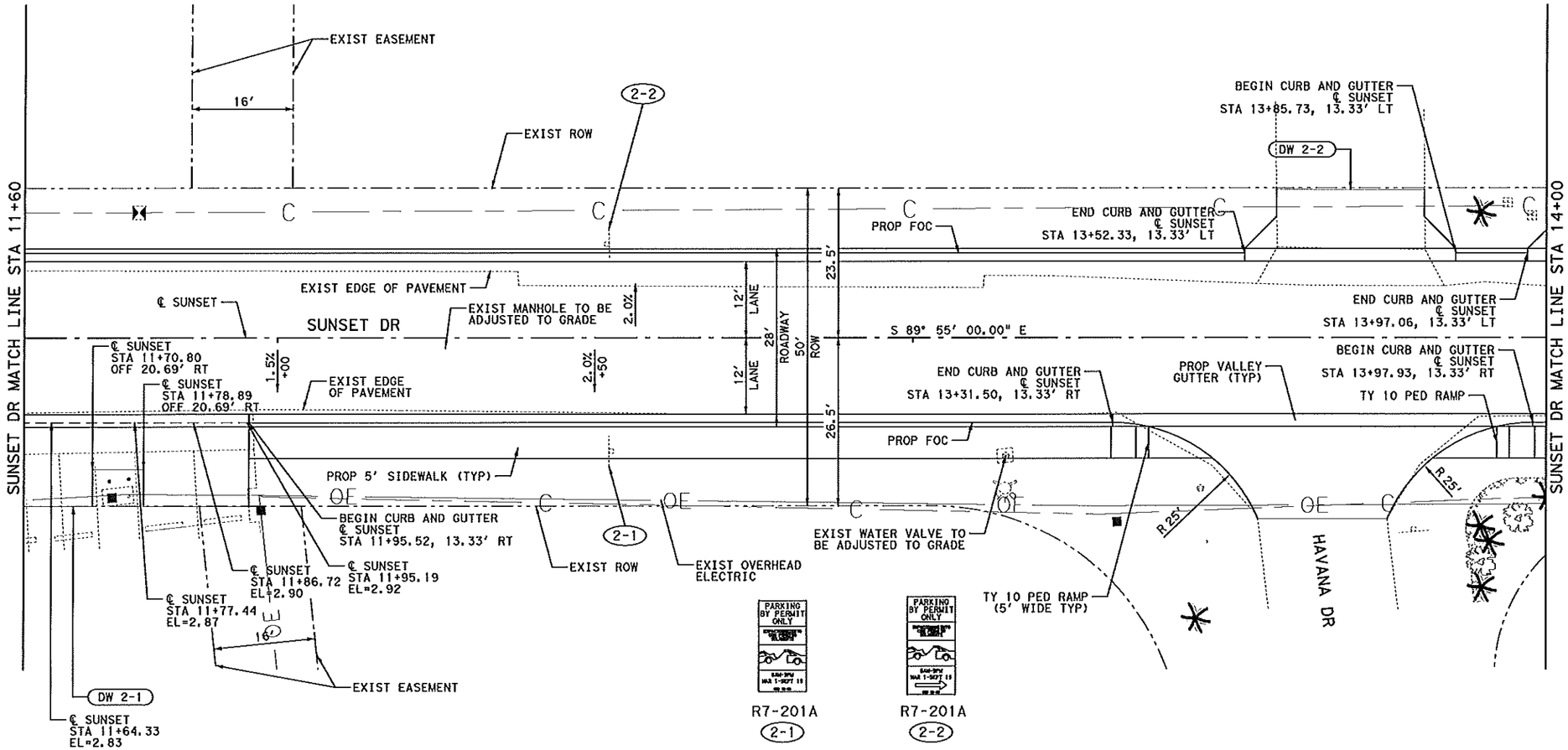


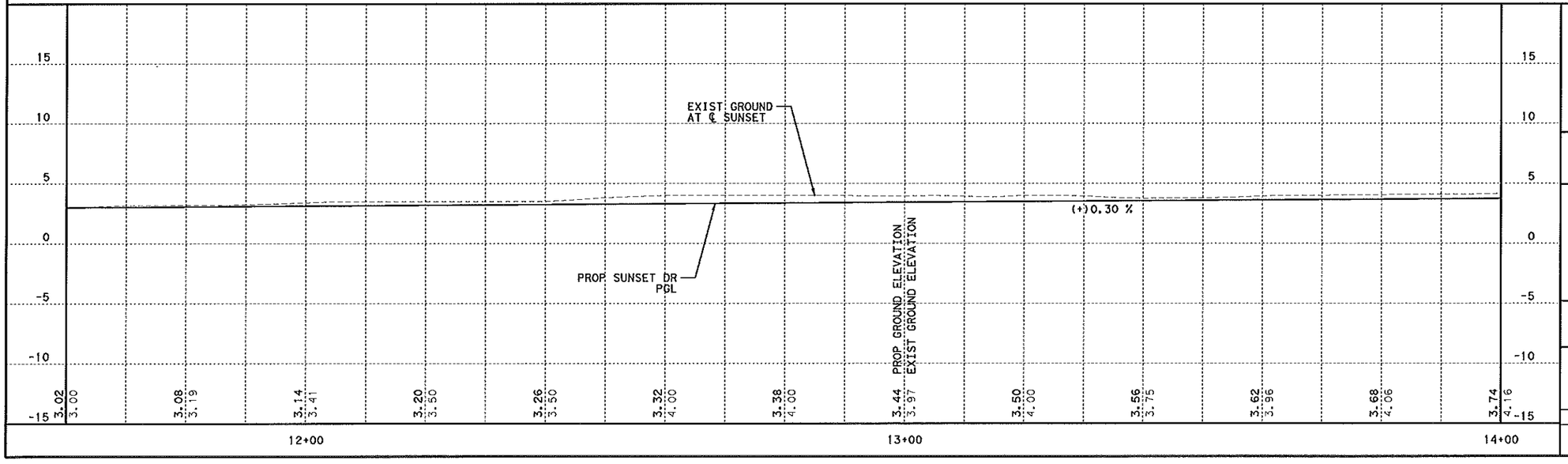


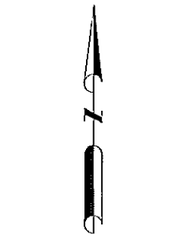


## LEGEND

| | |
|---|---|
| (X-X) | EXISTING SIGN TO BE REMOVED |
| (X-X) | EXISTING SIGN TO BE RELOCATED |
| 1 | REFL PAV MRK TY I (W) 12" (SLD) |
| 2 | REFL PAV MRK TY I (W) 24" (SLD) |

NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. SEE DRIVEWAY SUMMARY SHEET FOR DRIVEWAY DETAILS.
3. SEE REMOVAL SHEET FOR LIMITS OF DRIVEWAY REMOVAL.
4. SEE INTERSECTION LAYOUT FOR HAVANA DR DETAILS.
5. BURIED UTILITIES EXIST WITHIN CORRIDOR. CONTRACTOR TO LOCATE UTILITIES PRIOR TO CONSTRUCTION.

STATE OF TEXAS
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7/3/14

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South Padre ISLAND

PLAN & PROFILE

SUNSET DRIVE IMPROVEMENT
FULL RECONSTRUCTION
SHEET 2 OF 5

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 20' | | 22 |

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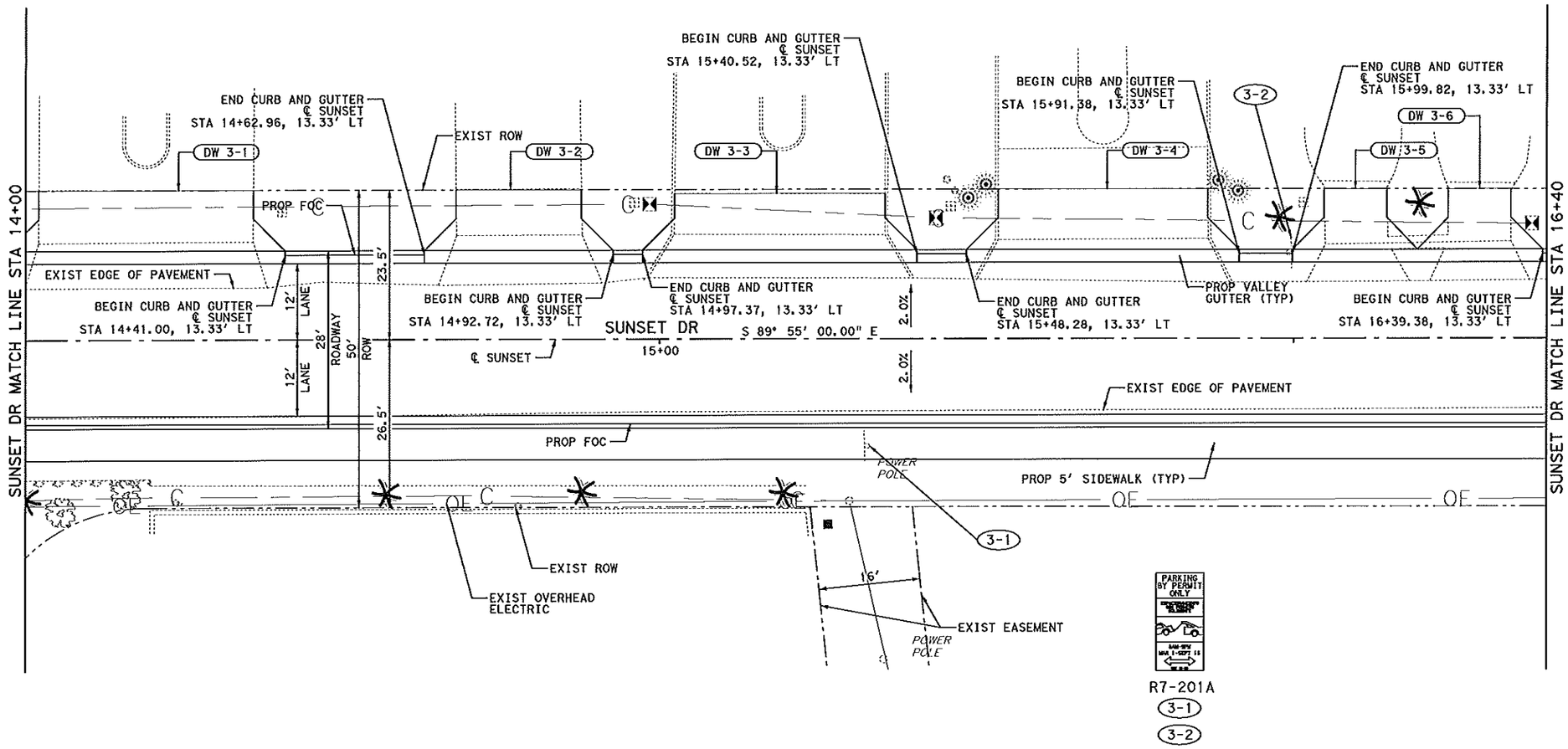


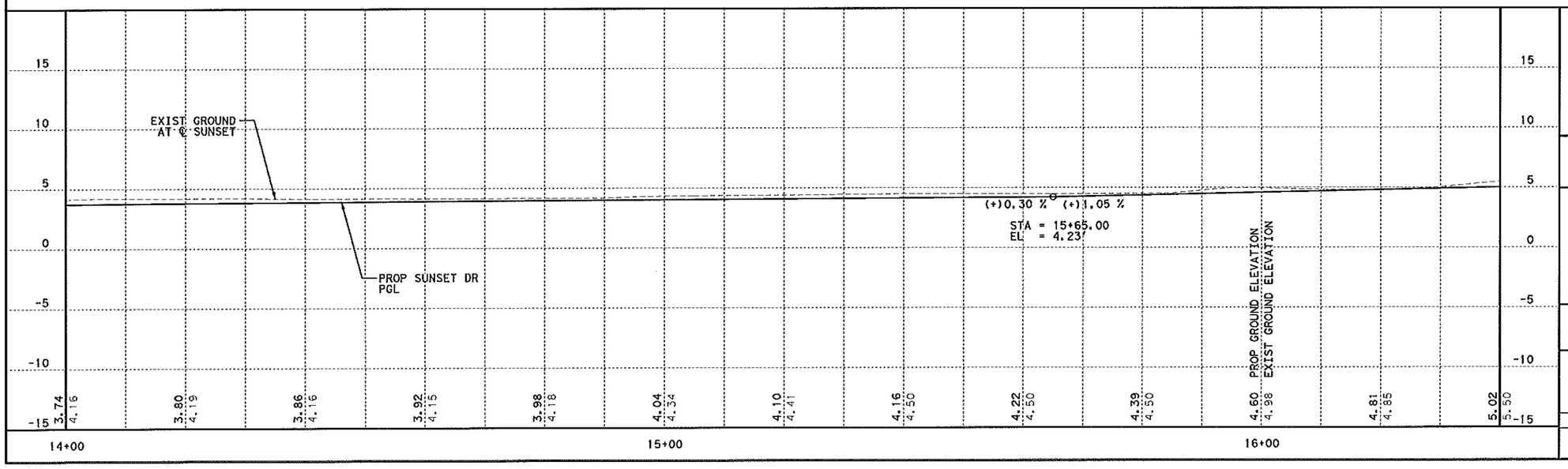


0 10 20
SCALE: 1"=20'

## LEGEND

| | |
|---|---|
| (X-X) | EXISTING SIGN TO BE REMOVED |
| (X-X) | EXISTING SIGN TO BE RELOCATED |
| (1) | REFL PAV MRK TY I (W) 12" (SLD) |
| (2) | REFL PAV MRK TY I (W) 24" (SLD) |

NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. SEE DRIVEWAY SUMMARY SHEET FOR DRIVEWAY DETAILS.
3. SEE REMOVAL SHEET FOR LIMITS OF DRIVEWAY REMOVAL.
4. BURIED UTILITIES EXIST WITHIN CORRIDOR. CONTRACTOR TO LOCATE UTILITIES PRIOR TO CONSTRUCTION.

STATE OF TEXAS
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7/3/14

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PLAN & PROFILE

SUNSET DRIVE IMPROVEMENT
FULL RECONSTRUCTION
SHEET 3 OF 5

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 20' | · | 23 |

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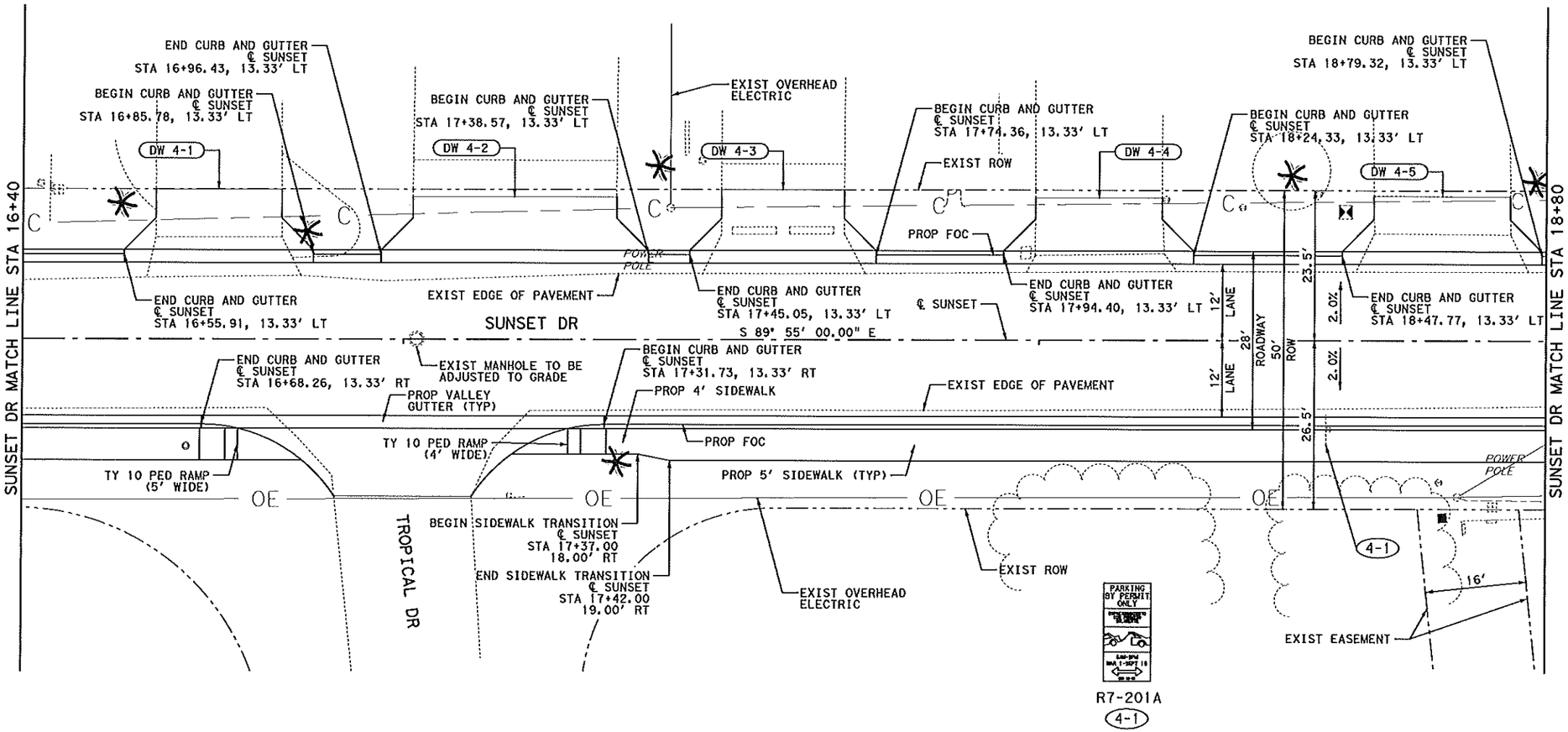
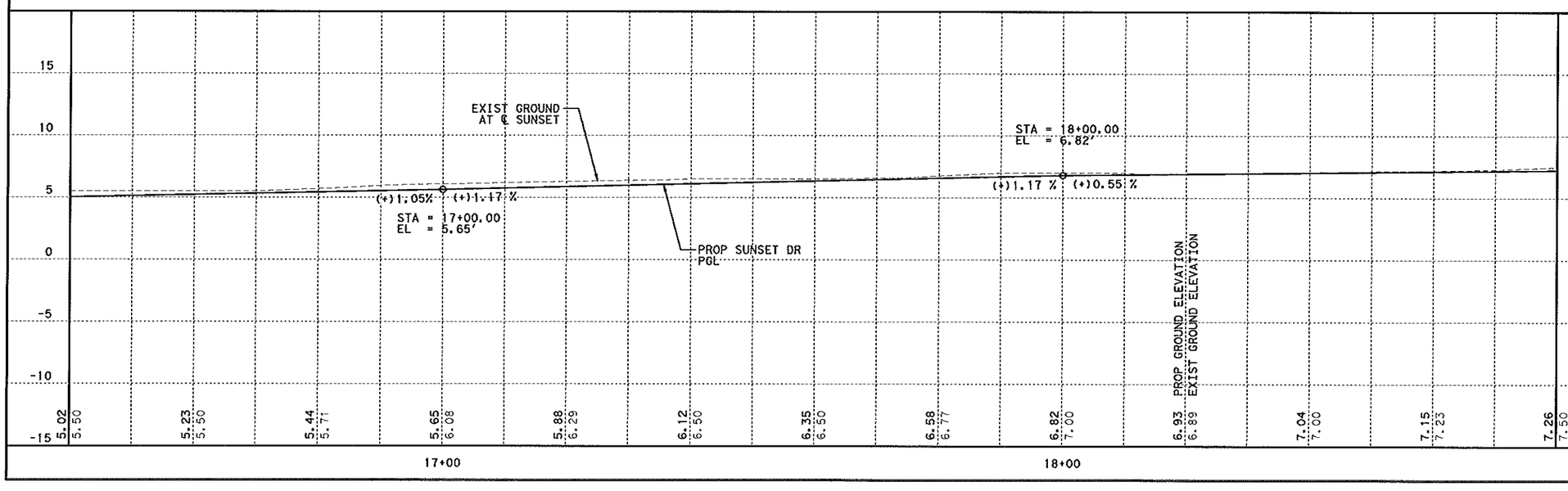



## LEGEND

| | |
|---|---|
| (X-X) | EXISTING SIGN TO BE REMOVED |
| (X-X) | EXISTING SIGN TO BE RELOCATED |
| 1 | REFL PAV MRK TY I (W) 12" (SLD) |
| 2 | REFL PAV MRK TY I (W) 24" (SLD) |

NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. SEE DRIVEWAY SUMMARY SHEET FOR DRIVEWAY DETAILS.
3. SEE REMOVAL SHEET FOR LIMITS OF DRIVEWAY REMOVAL.
4. SEE INTERSECTION LAYOUT FOR TROPICAL DR DETAILS.
5. BURIED UTILITIES EXIST WITHIN CORRIDOR. CONTRACTOR TO LOCATE UTILITIES PRIOR TO CONSTRUCTION.

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7/3/14

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South Padre ISLAND

PLAN & PROFILE

SUNSET DRIVE IMPROVEMENT
FULL RECONSTRUCTION
SHEET 4 OF 5

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 20' | | 24 |

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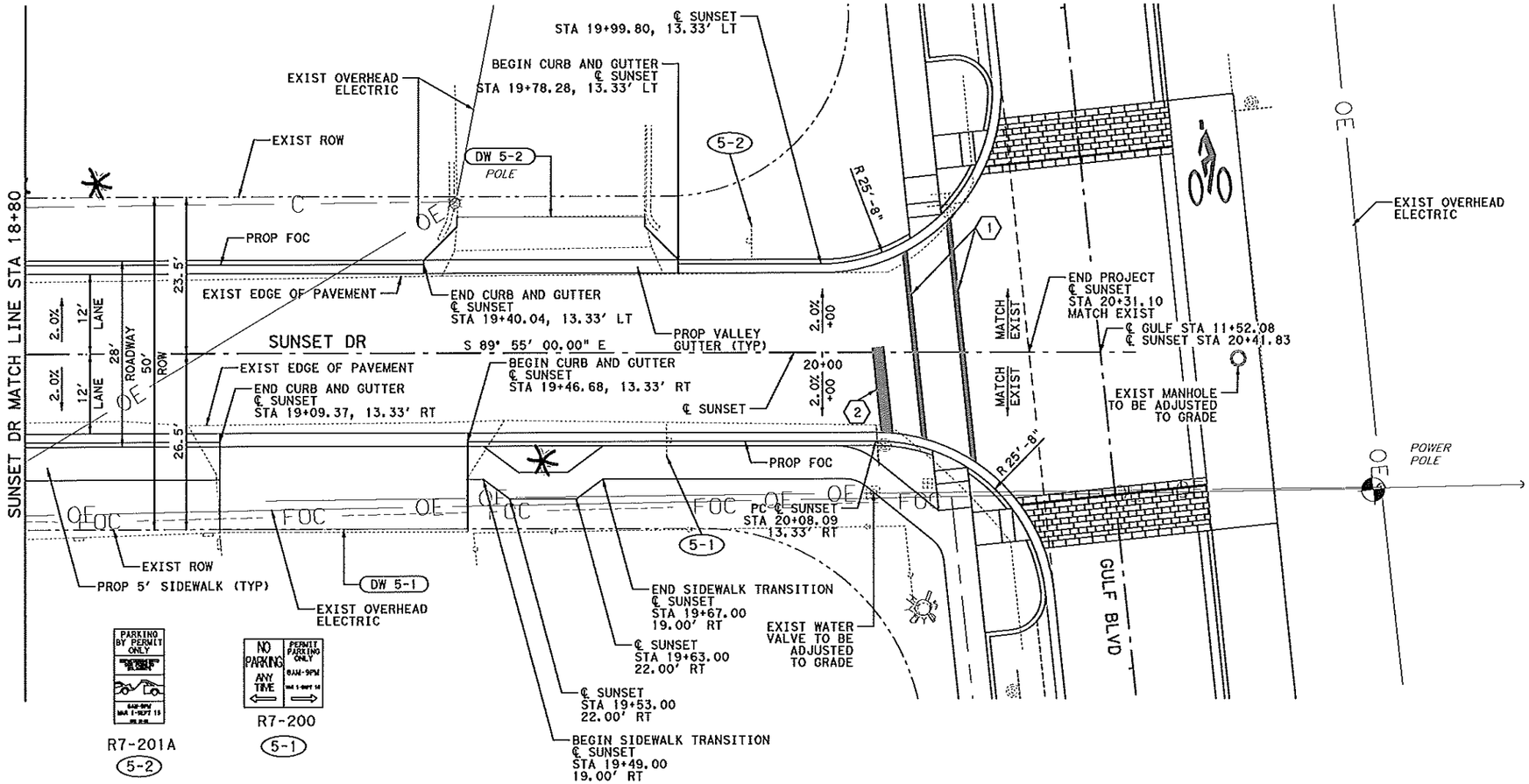
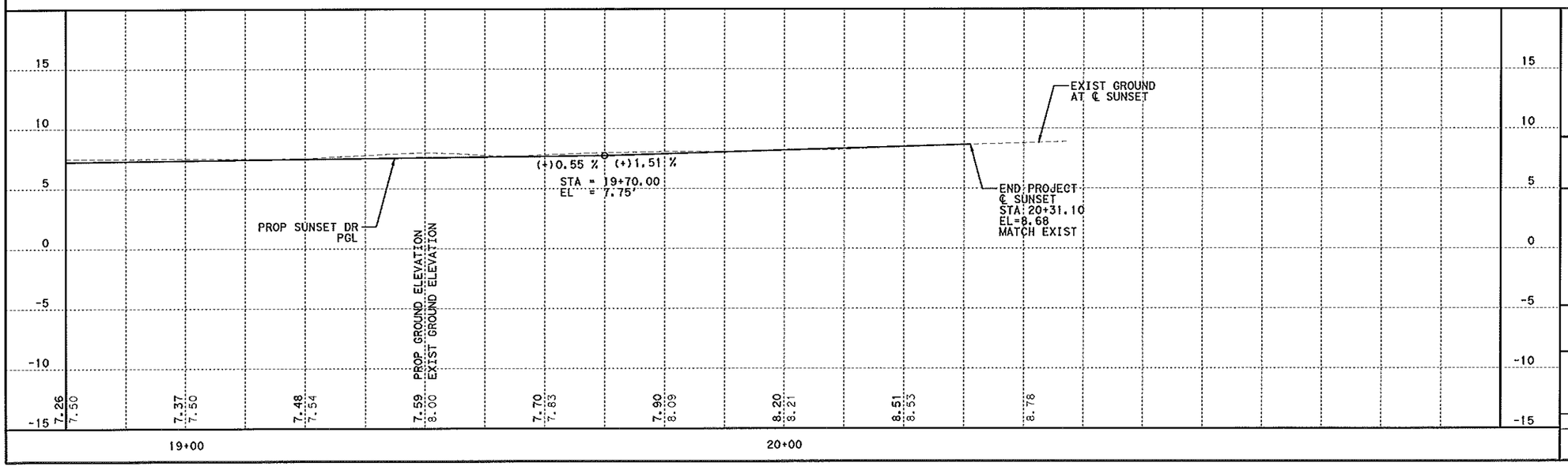



## LEGEND

| | |
|---|---|
| (X-X) | EXISTING SIGN TO BE REMOVED |
| (X-X) | EXISTING SIGN TO BE RELOCATED |
| (1) | REFL PAV MRK TY I (W) 12" (SLD) |
| (2) | REFL PAV MRK TY I (W) 24" (SLD) |

NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. SEE DRIVEWAY SUMMARY SHEET FOR DRIVEWAY DETAILS.
3. SEE REMOVAL SHEET FOR LIMITS OF DRIVEWAY REMOVAL.
4. SEE GULF BLVD SHEETS FOR ADDITIONAL INFORMATION.
5. BURIED UTILITIES EXIST WITHIN CORRIDOR. CONTRACTOR TO LOCATE UTILITIES PRIOR TO CONSTRUCTION.

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PLAN & PROFILE

SUNSET DRIVE IMPROVEMENT
FULL RECONSTRUCTION
SHEET 5 OF 5

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 20' | | 25 |

FILENAME: C:\069234000*Gulf*Rehab\Design\SUNdrv01.dgn
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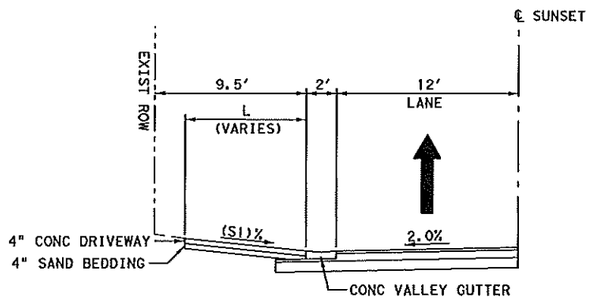
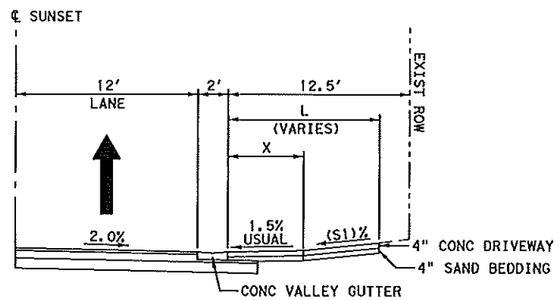
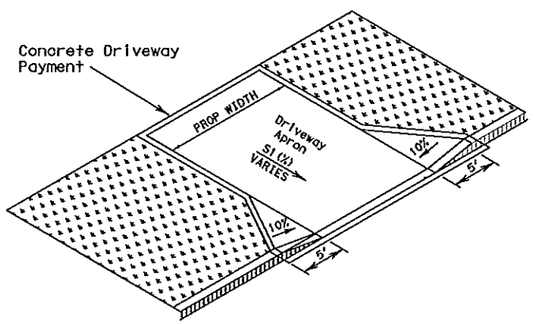
| PLAN AND PROFILE SHEET | DRIVEWAY NUMBER | STATION | LEFT OR RIGHT | PROP WIDTH (FT) | SIDEWALK WIDTH, X (FT) | PROP LENGTH, L (FT) | (S1)% | EXIST SURF TYPE | PROP SURF TYPE |
|---|---|---|---|---|---|---|---|---|---|
| 1 OF 5 | (1-1) | 11+07.48 | RT | 73.03 | VAR | 0.00 | N/A | CONCRETE | CONCRETE |
| 1, 2 OF 5 | (1-2), (2-1) | 11+69.76 | RT | 51.52 | 5 | 12.50 | 11.6 | CONCRETE | CONCRETE |
| 2 OF 5 | (2-2) | 13+69.03 | LT | 23.40 | N/A | 9.28 | 5.0 | CONCRETE | CONCRETE |
| 3 OF 5 | (3-1) | 14+19.03 | LT | 33.94 | N/A | 9.50 | 14.4 | CONCRETE | CONCRETE |
| 3 OF 5 | (3-2) | 14+77.84 | LT | 19.75 | N/A | 9.50 | 7.5 | CONCRETE | CONCRETE |
| 3 OF 5 | (3-3) | 15+18.94 | LT | 33.15 | N/A | 8.86 | 7.7 | CONCRETE | CONCRETE |
| 3 OF 5 | (3-4) | 15+69.83 | LT | 33.10 | N/A | 9.50 | 10.6 | CONCRETE | CONCRETE |
| 3 OF 5 | (3-5) | 16+09.78 | LT | 9.93 | N/A | 9.50 | 15.0 | CONCRETE | CONCRETE |
| 3 OF 5 | (3-6) | 16+29.42 | LT | 9.92 | N/A | 9.50 | 13.3 | CONCRETE | CONCRETE |
| 4 OF 5 | (4-1) | 16+70.84 | LT | 19.87 | N/A | 9.48 | 9.7 | CONCRETE | CONCRETE |
| 4 OF 5 | (4-2) | 17+17.50 | LT | 32.13 | N/A | 8.33 | 10.0 | CONCRETE | CONCRETE |
| 4 OF 5 | (4-3) | 17+59.71 | LT | 19.31 | N/A | 9.50 | 8.6 | CONCRETE | CONCRETE |
| 4 OF 5 | (4-4) | 18+09.37 | LT | 19.94 | N/A | 8.30 | 15.0 | CONCRETE | CONCRETE |
| 4 OF 5 | (4-5) | 18+63.54 | LT | 21.56 | N/A | 8.62 | 11.3 | CONCRETE | CONCRETE |
| 5 OF 5 | (5-1) | 19+28.02 | RT | 37.31 | 5 | 12.50 | 6.5 | CONCRETE | CONCRETE |
| 5 OF 5 | (5-2) | 19+59.16 | LT | 28.24 | N/A | 6.45 | 1.8 | CONCRETE | CONCRETE |



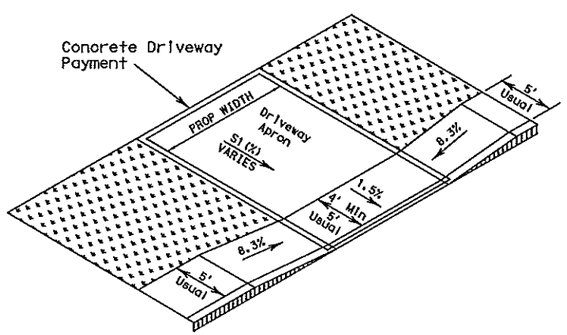

SUNSET DR PROPOSED TYPICAL RESIDENTIAL DRIVEWAY SECTIONS WITHOUT SIDEWALK




SUNSET DR PROPOSED TYPICAL RESIDENTIAL DRIVEWAY SECTIONS WITH SIDEWALK




DRIVEWAY DETAIL WITHOUT SIDEWALK




DRIVEWAY DETAIL WITH SIDEWALK

NOTES:

1. DRIVEWAYS SHOULD EXTEND TO THE LIMITS SHOWN IN PLANS UNLESS DIRECTED BY THE ENGINEER TO TIE INTO EXIST DRIVEWAY JOINTS WITHIN ROW.
2. PLACE A ½" ASPHALT BOARD EXPANSION JOINT ALONG THE ROW OR END OF DRIVEWAY RECONSTRUCTION AND DOWN THE CENTER OF DRIVEWAY IF NECESSARY.
3. CONCRETE DRIVEWAYS SHALL BE IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS FOR RESIDENTIAL AND COMMERICIAL DRIVEWAYS.

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South Padre ISLAND

DRIVEWAY SUMMARY

SUNSET DRIVE IMPROVEMENT
FULL RECONSTRUCTION
SHEET 1 OF 1

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| | | 26 |

FILENAME: G:\069234000*Gulf*Rehabs\Design\SUNInt01.dgn
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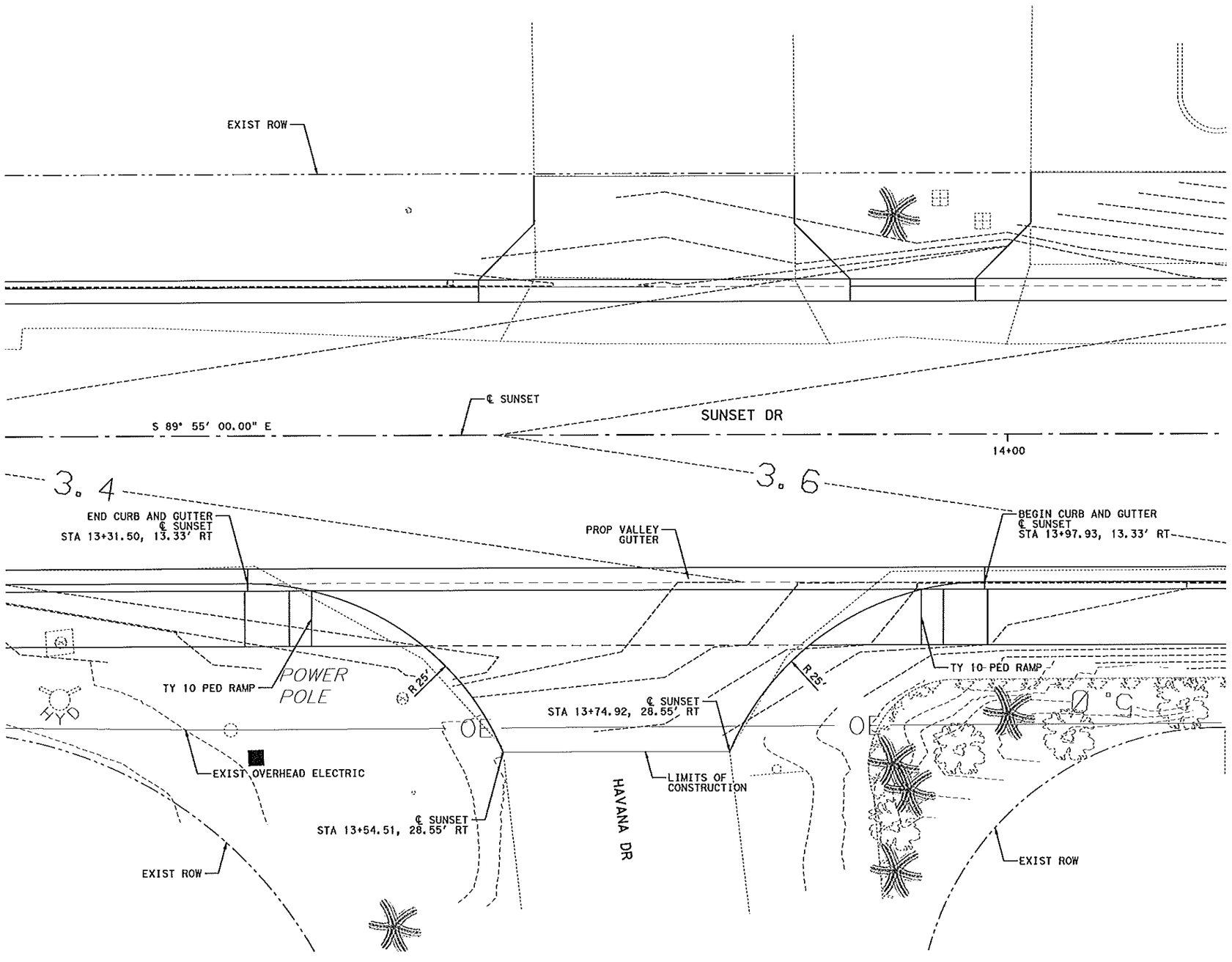


N

0 5 10
SCALE: 1"=10'

NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. REFER TO ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.

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South Padre ISLAND

# INTERSECTION LAYOUT

## SUNSET DRIVE IMPROVEMENT FULL RECONSTRUCTION

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 10' | | 27 |

FILENAME: G:\069234000*Gulf*Rehoba\Design\SUNInt02.dgn
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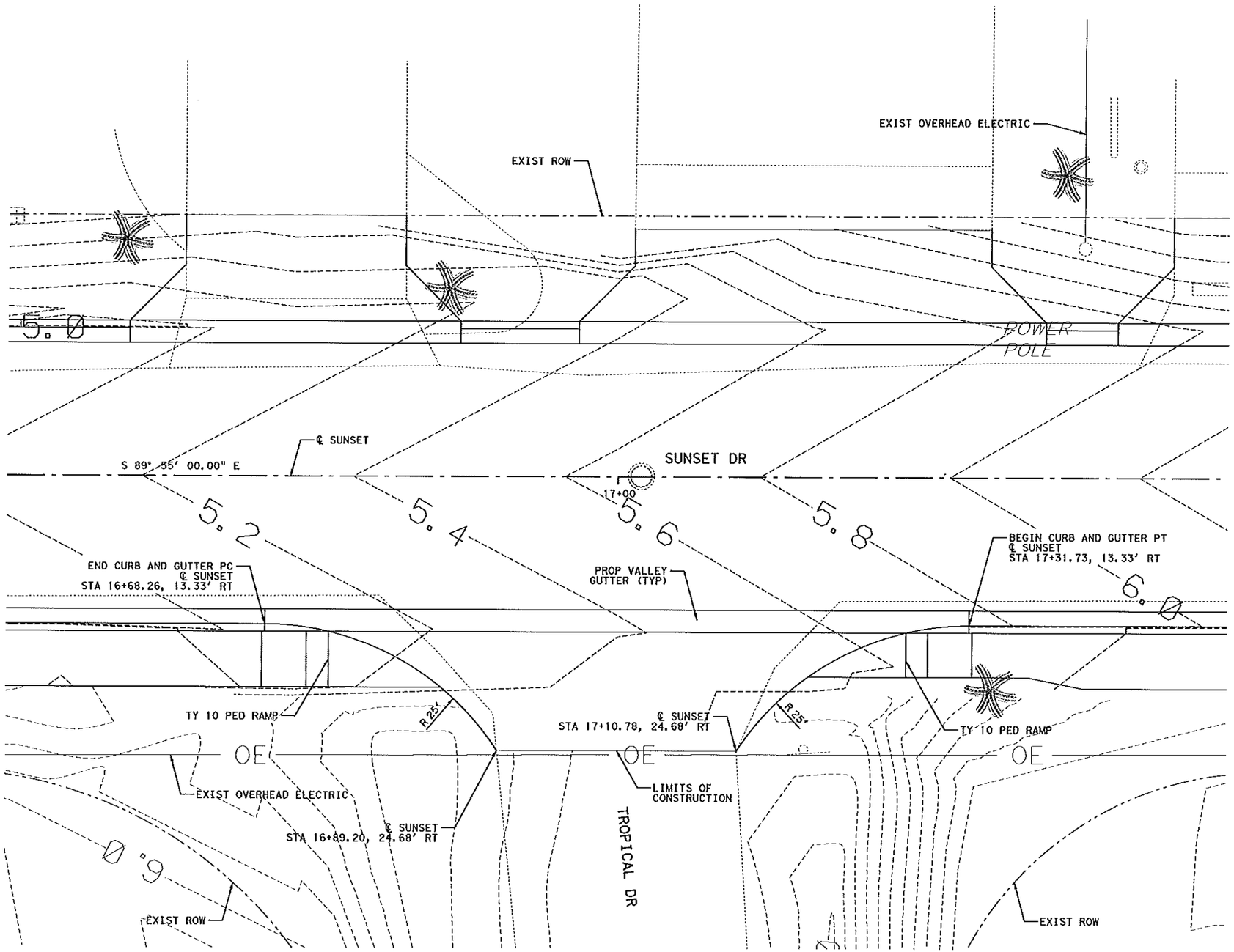


0 5 10
SCALE: 1"=10'

NOTES:

1. DIMENSIONS, STATIONS, AND OFFSETS GIVEN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. REFER TO ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.

STATE OF TEXAS
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7/3/14

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South Padre ISLAND

# INTERSECTION LAYOUT

## SUNSET DRIVE IMPROVEMENT FULL RECONSTRUCTION

| SCALE | PROJECT NO. | SHEET NO. |
|---|---|---|
| 1" = 10' | | 28 |

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. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.

11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

12. The Engineer has the final decision on the location of all traffic control 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) 416-3118

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



Texas Department of Transportation | Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

# BC(1)-13

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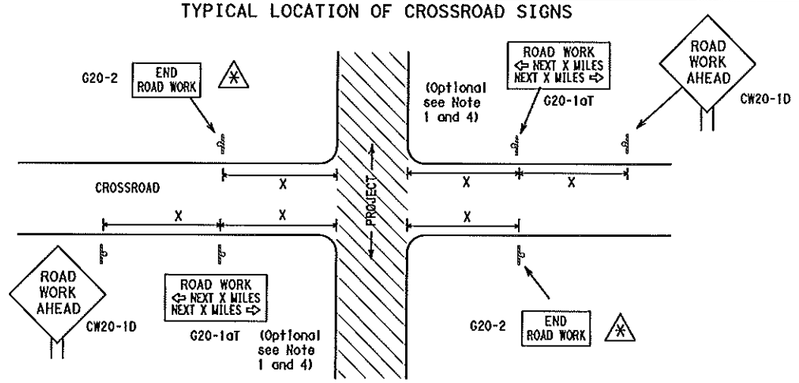
|---|---|---|---|---|
| ©TxDOT November 2002 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | - | - | - | - |
| 4-03 5-10 | DIST | COUNTY | | SHEET NO. |
| 9-07 7-13 | - | - | | 29 |

95

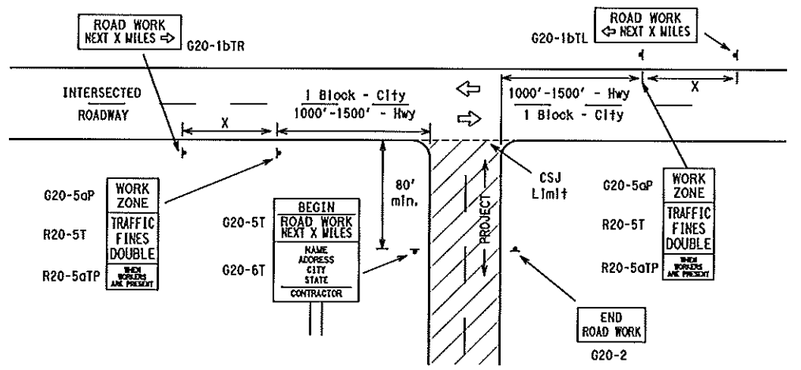
## TYPICAL LOCATION OF CROSSROAD SIGNS




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

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

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

## TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING [1,5,6]

### SIZE

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

### SPACING

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

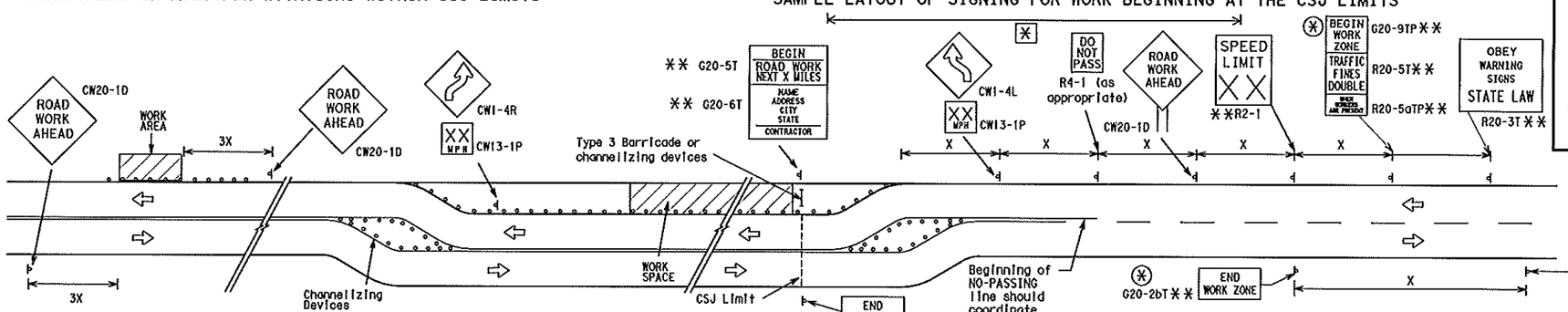
* For typical sign spaoings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

### GENERAL NOTES

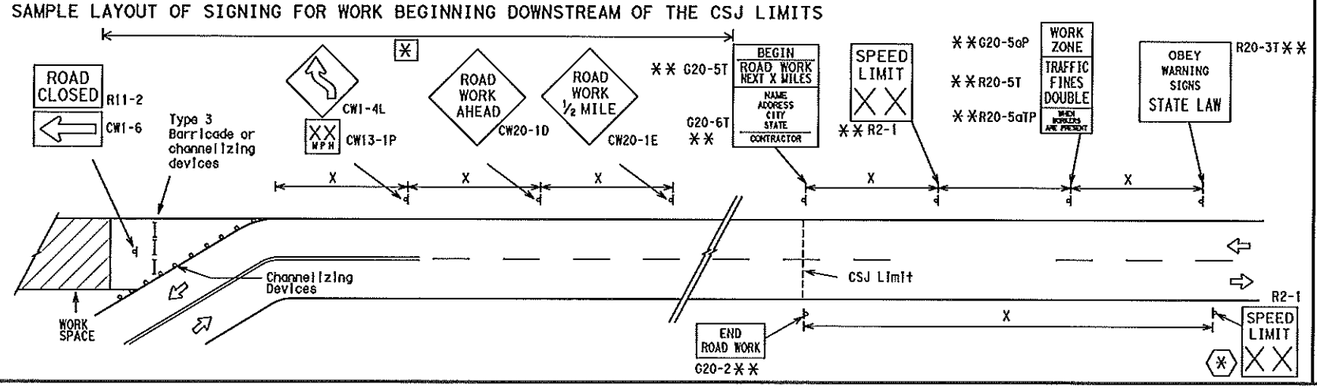
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may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

## WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS




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

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




### NOTES

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

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

** Required CSJ Limit signing. See Note 10 on BC(1). TRAFFIC FINES DOUBLE signs will not be required on projects consisting solely of mobile operations work.

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

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

### LEGEND

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

SHEET 2 OF 12

Texas Department of Transportation — Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION PROJECT LIMIT

# BC(2)-13

| FILE: bc-13.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT November 2002 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | . | . | . | . |
| 9-07 | DIST | COUNTY | | SHEET NO. |
| 7-13 | . | . | | 30 |

DATE:
FILE:

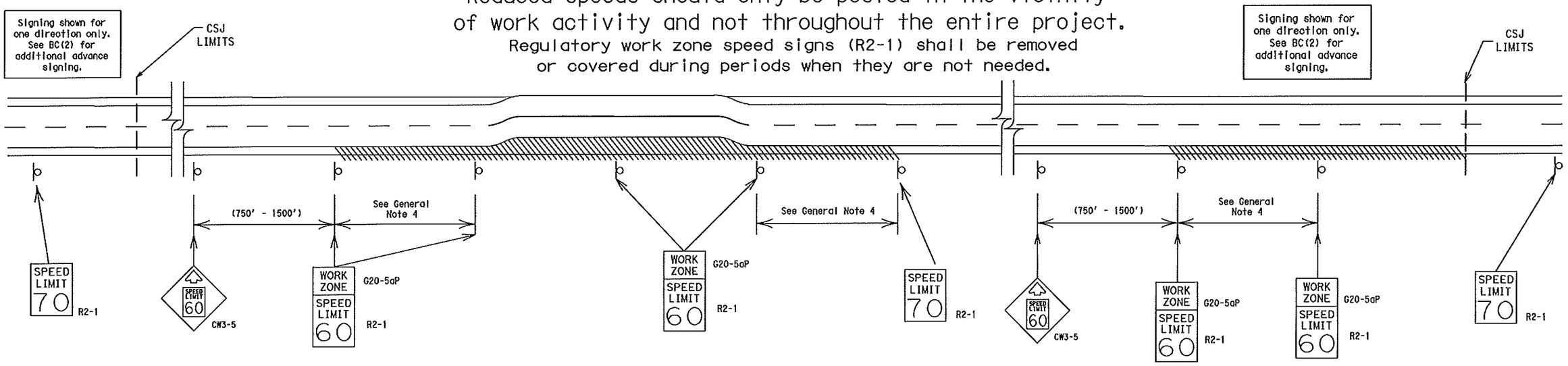
DATE:
FILE:

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

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

## GENERAL NOTES

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be:
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the"ADVANCE SPEED LIMIT"(CW3-5)sign, "WORK ZONE"(G20-5aP) plaque and the "SPEED LIMIT"(R2-1)signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.



Texas Department of Transportation

Traffic Operations Division Standard

## BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

## BC(3)-13

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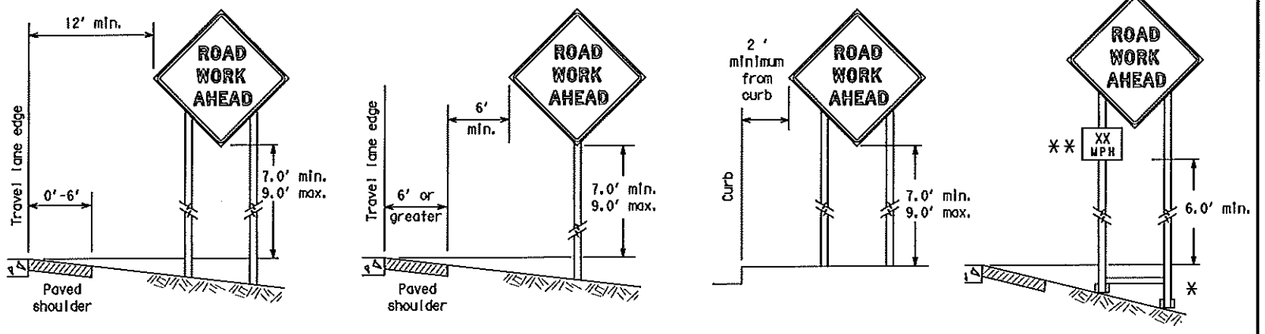
| 7-13 | . | . | | 31 |

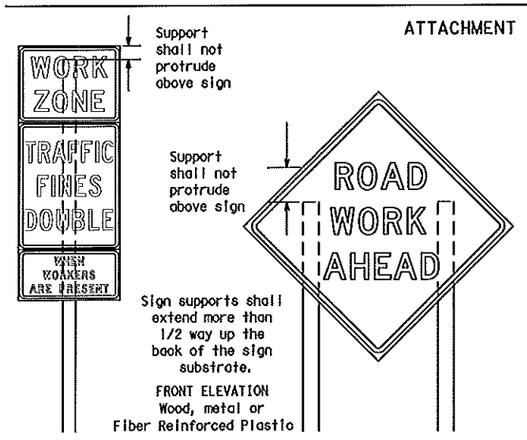
## TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



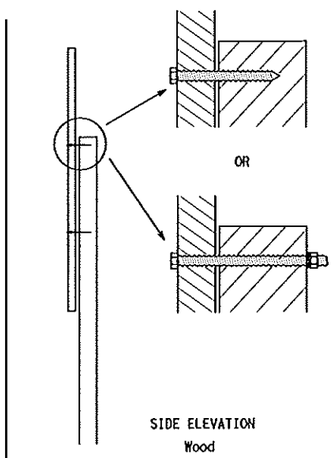

* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

## ATTACHMENT FOR SIGN SUPPORTS




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

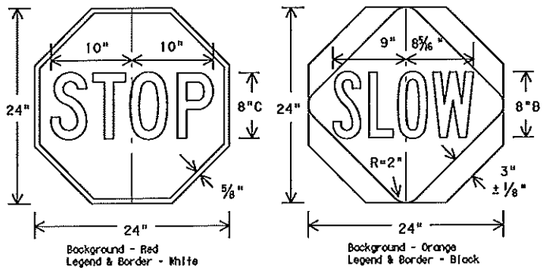



Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

## STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24" 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. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
5. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD). The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

## DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

1. The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

## SIGN MOUNTING HEIGHT

1. The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
2. The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
3. Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

## SIZE OF SIGNS

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

## SIGN SUBSTRATES

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

## REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type $B_{FL}$ or Type $C_{FL}$, shall be used for rigid signs with orange backgrounds.

## SIGN LETTERS

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

## REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

## SIGN SUPPORT WEIGHTS

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

## FLAGS ON SIGNS

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



Texas Department of Transportation | Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

# BC(4)-13

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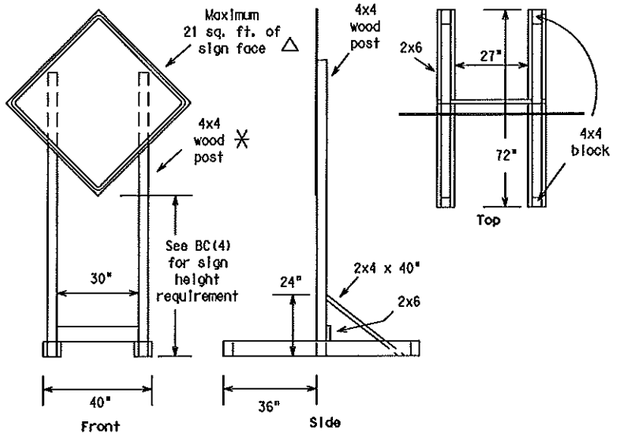
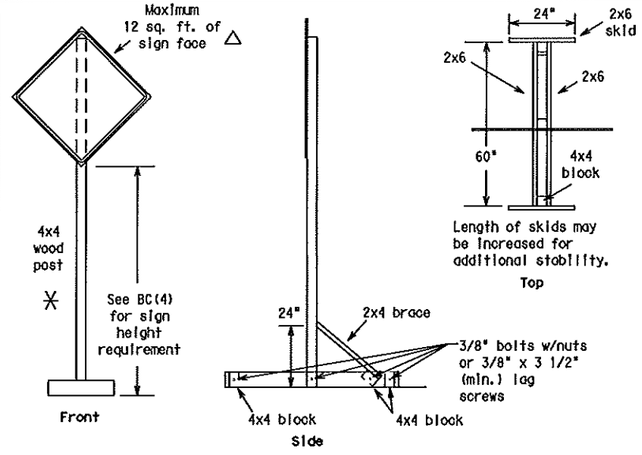
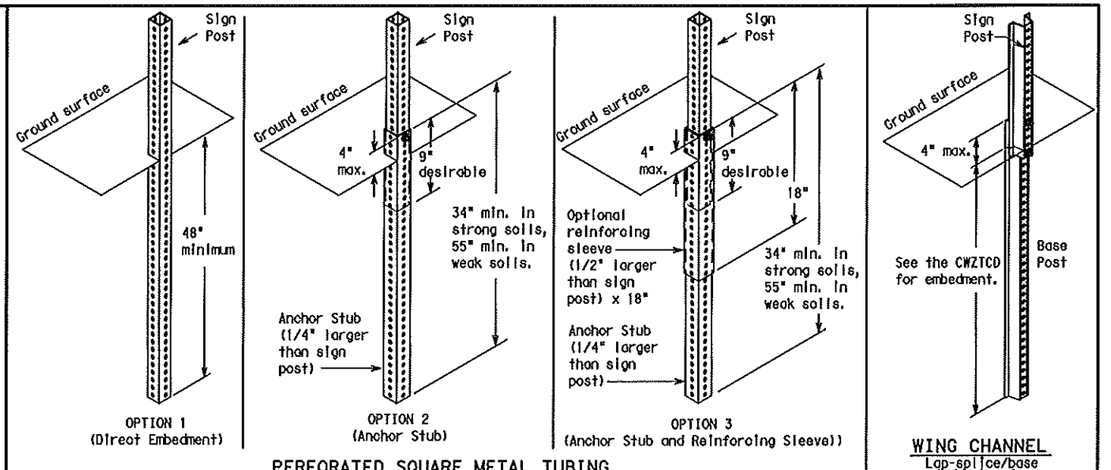



# SKID MOUNTED WOOD SIGN SUPPORTS

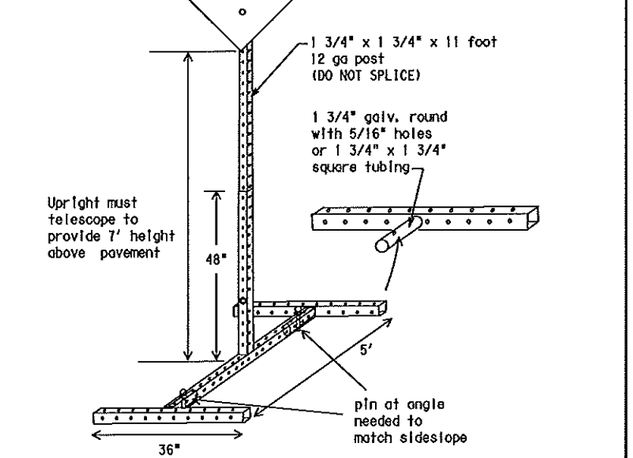
LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □

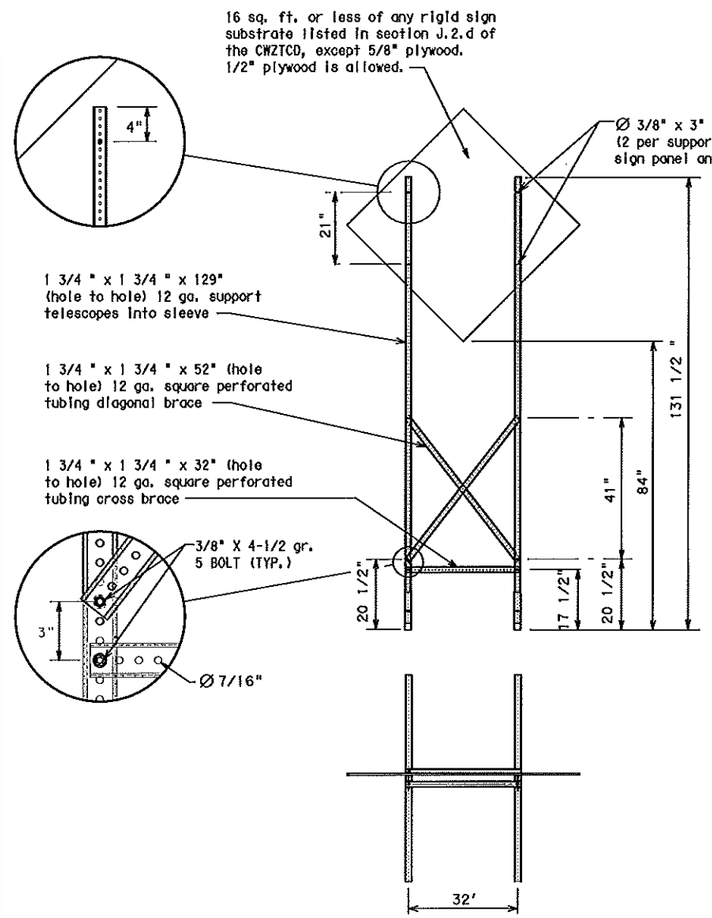


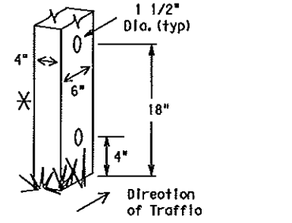

PERFORATED SQUARE METAL TUBING

# GROUND MOUNTED SIGN SUPPORTS

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

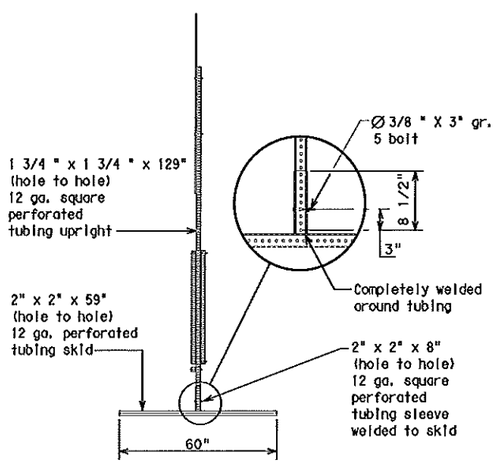



| Nominal Post Size | Number of Posts | Maximum Sq. feet of Sign Face | Minimum Soil Embedment | Drilled Hole(s) Required |
|---|---|---|---|---|
| 4 x 4 | 1 | 12 | 36" | NO |
| 4 x 4 | 2 | 21 | 36" | NO |
| 4 x 6 | 1 | 21 | 36" | YES |
| 4 x 6 | 2 | 36 | 36" | YES |

WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS




## WEDGE ANCHORS

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

## OTHER DESIGNS

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

## GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

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

✳ Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

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



Texas Department of Transportation — Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

# BC(5)-13

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# SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

## PORTABLE CHANGEABLE MESSAGE SIGNS

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
3. Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
4. Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
5. Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
6. When in use the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
7. The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
8. The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
9. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
10. Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
11. Do not use the word "Danger" in message.
12. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
13. Do not display messages that scroll horizontally or vertically across the face of the sign.
14. The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated, unless shown in the TMUTCD.
15. PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
16. Each line of text should be centered on the message board rather than left or right justified.
17. If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

| WORD OR PHRASE | ABBREVIATION |
|---|---|
| Access Road | ACCS RD |
| Alternate | ALT |
| Avenue | AVE |
| Best Route | BEST RTE |
| Boulevard | BLVD |
| Bridge | BRDG |
| Cannot | CANT |
| Center | CTR |
| Construction Ahead | CONST AHD |
| CROSSING | XING |
| Detour Route | DETOUR RTE |
| Do Not | DONT |
| East | E |
| Eastbound | (route) E |
| Emergency | EMER |
| Emergency Vehicle | EMER VEH |
| Entrance, Enter | ENT |
| Express Lane | EXP LN |
| Expressway | EXPWY |
| XXXX Feet | XXXX FT |
| Fog Ahead | FOG AHD |
| Freeway | FRWY, FWY |
| Freeway Blocked | FWY BLKD |
| Friday | FRI |
| Hazardous Driving | HAZ DRIVING |
| Hazardous Material | HAZMAT |
| High-Occupancy | HOV |
| Vehicle Highway | HWY |
| Hour(s) | HR, HRS |
| Information | INFO |
| It Is | ITS |
| Junction | JCT |
| Left | LFT |
| Left Lane | LFT LN |
| Lane Closed | LN CLOSED |
| Lower Level | LWR LEVEL |
| Maintenance | MAINT |

| WORD OR PHRASE | ABBREVIATION |
|---|---|
| Major | MAJ |
| Miles | MI |
| Miles Per Hour | MPH |
| Minor | MNR |
| Monday | MON |
| Normal | NORM |
| North | N |
| Northbound | (route) N |
| Parking | PKING |
| Road | RD |
| Right Lane | RT LN |
| Saturday | SAT |
| Service Road | SERV RD |
| Shoulder | SHLDR |
| Slippery | SLIP |
| South | S |
| Southbound | (route) S |
| Speed | SPD |
| Street | ST |
| Sunday | SUN |
| Telephone | PHONE |
| Temporary | TEMP |
| Thursday | THURS |
| To Downtown | TO DWNTN |
| Traffic | TRAF |
| Travelers | TRVLRS |
| Tuesday | TUES |
| Time Minutes | TIME MIN |
| Upper Level | UPR LEVEL |
| Vehicles (s) | VEH, VEHS |
| Warning | WARN |
| Wednesday | WED |
| Weight Limit | WT LIMIT |
| West | W |
| Westbound | (route) W |
| Wet Pavement | WET PVMT |
| Will Not | WONT |

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

# RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

## Phase 1: Condition Lists

### Road/Lane/Ramp Closure List

- FREEWAY CLOSED X MILE
- FRONTAGE ROAD CLOSED
- ROAD CLOSED AT SH XXX
- SHOULDER CLOSED XXX FT
- ROAD CLSD AT FM XXXX
- RIGHT LN CLOSED XXX FT
- RIGHT X LANES CLOSED
- RIGHT X LANES OPEN
- CENTER LANE CLOSED
- DAYTIME LANE CLOSURES
- NIGHT LANE CLOSURES
- I-XX SOUTH EXIT CLOSED
- VARIOUS LANES CLOSED
- EXIT XXX CLOSED X MILE
- EXIT CLOSED
- RIGHT LN TO BE CLOSED
- MALL DRIVEWAY CLOSED
- X LANES CLOSED TUE - FRI
- XXXXXXXX BLVD CLOSED

### Other Condition List

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

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

## Phase 2: Possible Component Lists

### Action to Take/Effect on Travel List

- MERGE RIGHT
- FORM X LINES RIGHT
- DETOUR NEXT X EXITS
- USE XXXXX RD EXIT
- USE EXIT XXX
- USE EXIT I-XX NORTH
- STAY ON US XXX SOUTH
- USE I-XX E TO I-XX N
- TRUCKS USE US XXX N
- WATCH FOR TRUCKS
- WATCH FOR TRUCKS
- EXPECT DELAYS
- EXPECT DELAYS
- PREPARE TO STOP
- REDUCE SPEED XXX FT
- END SHOULDER USE
- USE OTHER ROUTES
- WATCH FOR WORKERS
- STAY IN LANE *

### Location List

- AT FM XXXX
- BEFORE RAILROAD CROSSING
- NEXT X MILES
- PAST US XXX EXIT
- XXXXXXX TO XXXXXXX
- US XXX TO FM XXXX

### Warning List

- SPEED LIMIT XX MPH
- MAXIMUM SPEED XX MPH
- MINIMUM SPEED XX MPH
- ADVISORY SPEED XX MPH
- RIGHT LANE EXIT
- USE CAUTION
- DRIVE SAFELY
- DRIVE WITH CARE

### ** Advance Notice List

- TUE-FRI XX AM- X PM
- APR XX-XX X PM-X AM
- BEGINS MONDAY
- BEGINS MAY XX
- MAY X-X XX PM - XX AM
- NEXT FRI-SUN
- XX AM TO XX PM
- NEXT TUE AUG XX
- TONIGHT XX PM- XX AM

** See Application Guidelines Note 6.

### APPLICATION GUIDELINES

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

### WORDING ALTERNATIVES

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

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

### FULL MATRIX PCMS SIGNS

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



Texas Department of Transportation | Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

# BC(6)-13

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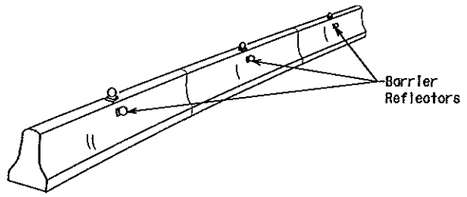
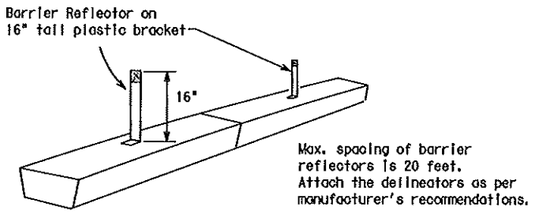
| 7-13 | . | . | | 34 |

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

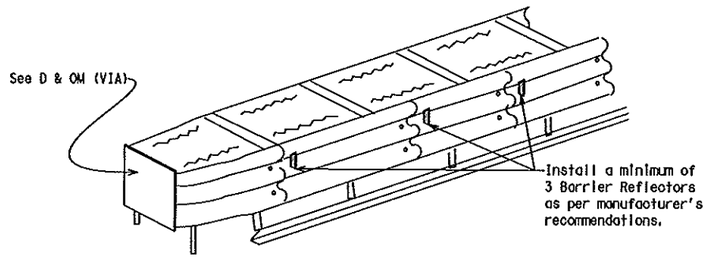



CONCRETE TRAFFIC BARRIER (CTB)

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




LOW PROFILE CONCRETE BARRIER (LPCB)

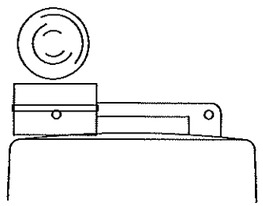



DELINEATION OF END TREATMENTS

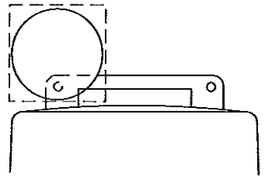
END TREATMENTS FOR
CTB'S USED
IN WORK ZONES

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

# BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



Warning reflector may be round or square. Must have a yellow 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 $B_{FL}$ or $C_{FL}$ Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
4. Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
7. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

## WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

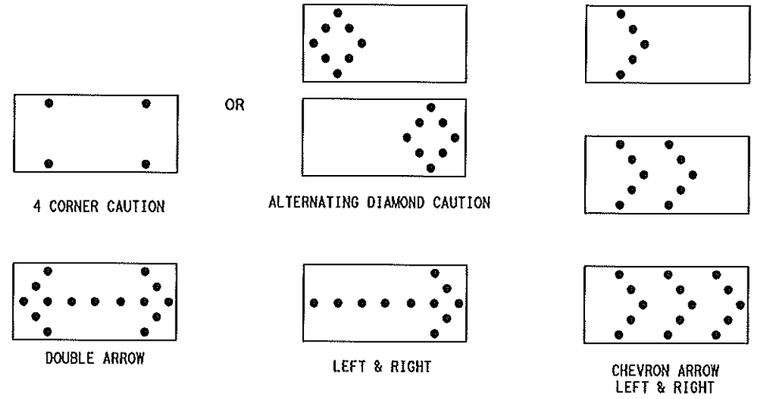
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
4. Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

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

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

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

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




5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
8. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential Chevron display may be used during daylight operations.
11. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
14. Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

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

| ATTENTION |
|---|
| Flashing Arrow Boards shall be equipped with automatic dimming devices. |

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

# FLASHING ARROW BOARDS

## TRUCK-MOUNTED ATTENUATORS

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



Texas Department of Transportation

Traffic Operations Division Standard

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

# BC(7)-13

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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:

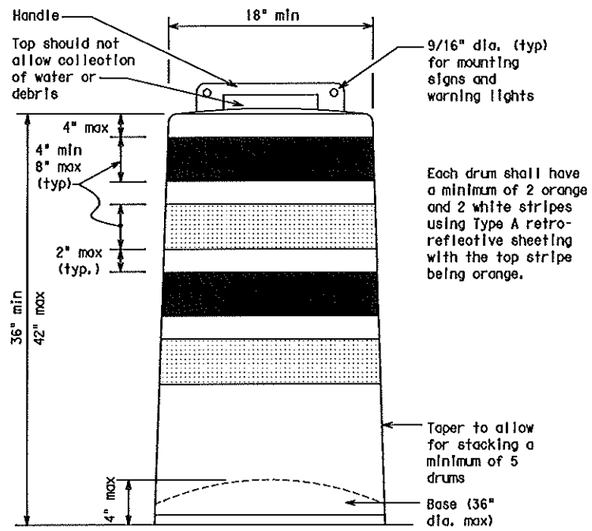
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents 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 maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

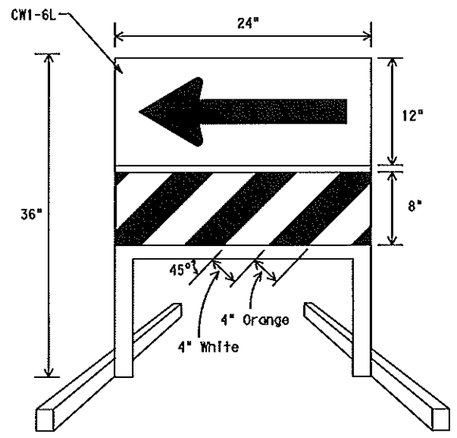
## RETROREFLECTIVE SHEETING

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

## BALLAST

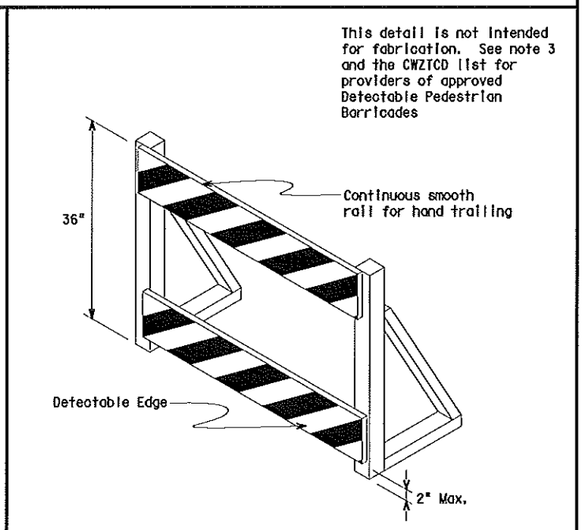
1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other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



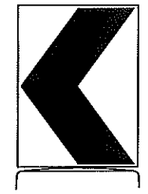

## DIRECTION INDICATOR BARRICADE

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 $B_{FL}$ or Type $C_{FL}$ Orange retroreflective sheeting above a rail with Type A retroreflective sheeting in alternating 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Sheeting types shall be as per DMS 8300.
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.

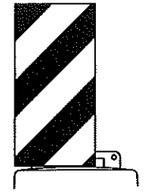



## DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

## SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type $B_{FL}$ or Type $C_{FL}$ Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.



Texas Department of Transportation

Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

## BC(8)-13

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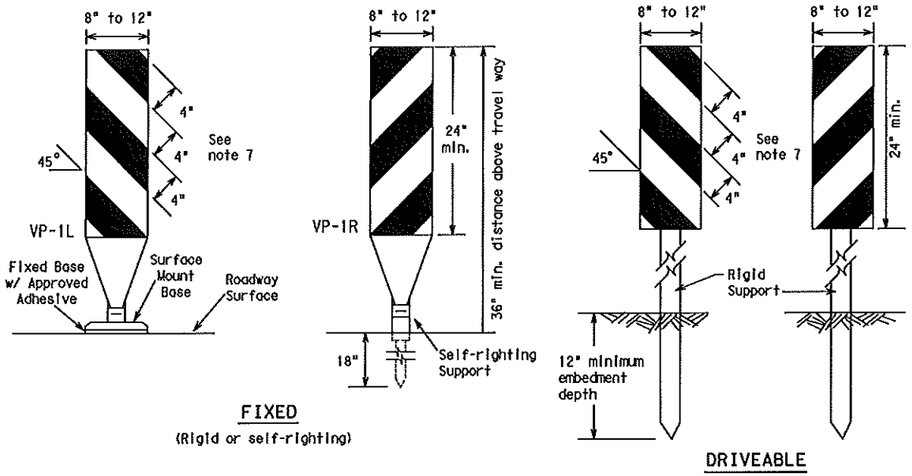
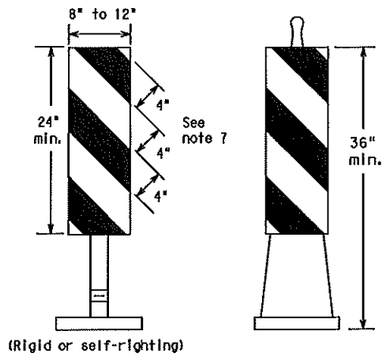



FIXED
(Rigid or self-righting)

DRIVEABLE

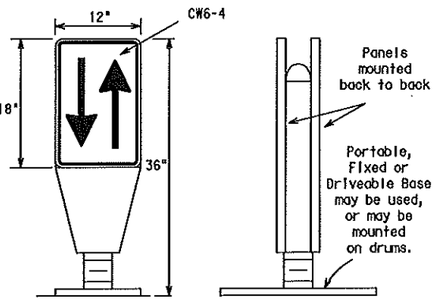



(Rigid or self-righting)

PORTABLE

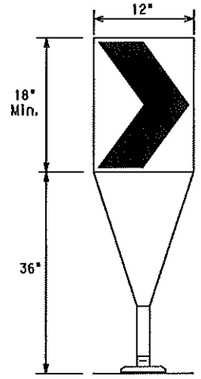
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual Appendix B "Treatment of Pavement Drop-offs in Work Zones" for additional guidelines on the use of VP's for drop-offs.
3. VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
4. VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.

## VERTICAL PANELS (VPs)




1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type $B_{FL}$ or Type $C_{FL}$ conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

## OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



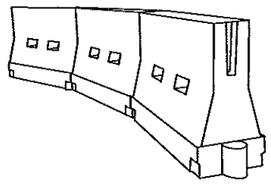

Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type $B_{FL}$ or Type $C_{FL}$ conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
6. For Long Term Stationary use on tapers or transitions on freeways and divided highways self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

## CHEVRONS

### GENERAL NOTES

1. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
4. The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
6. Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.



### LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

### WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate 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 a point outside the clear zone.

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

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

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

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

## SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS



Texas Department of Transportation

Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

# BC(9)-13

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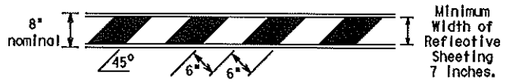
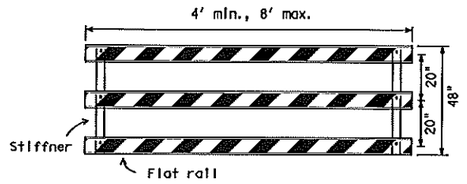
## TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



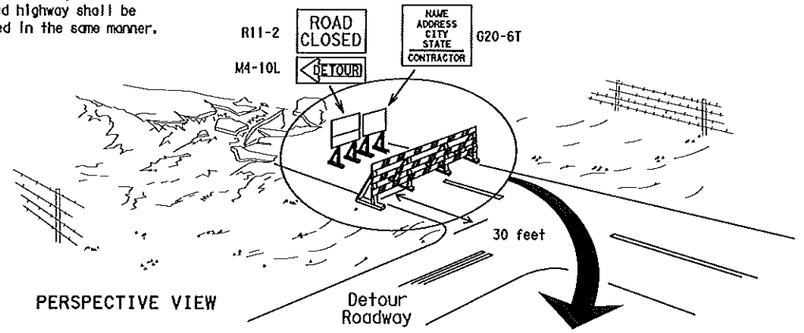

TYPICAL STRIPING DETAIL FOR BARRICADE RAIL




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

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

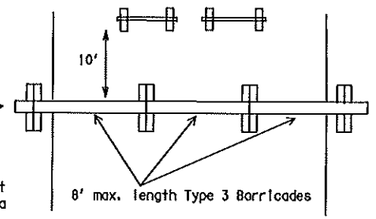
Each roadway of a divided highway shall be barricaded in the same manner.




PERSPECTIVE VIEW

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

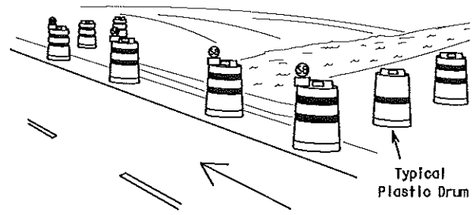
Barricade striping should slant downward in the direction of detour.




PLAN VIEW

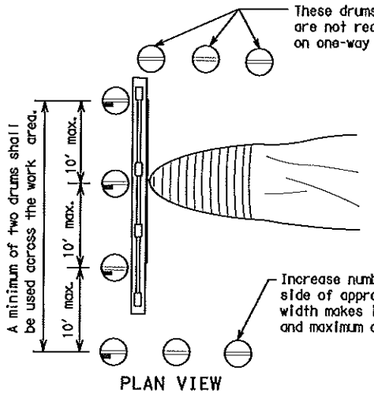
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION




PERSPECTIVE VIEW

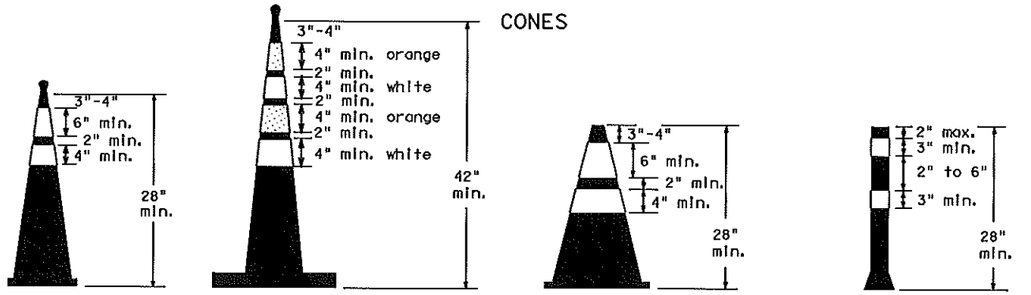
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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




PLAN VIEW

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

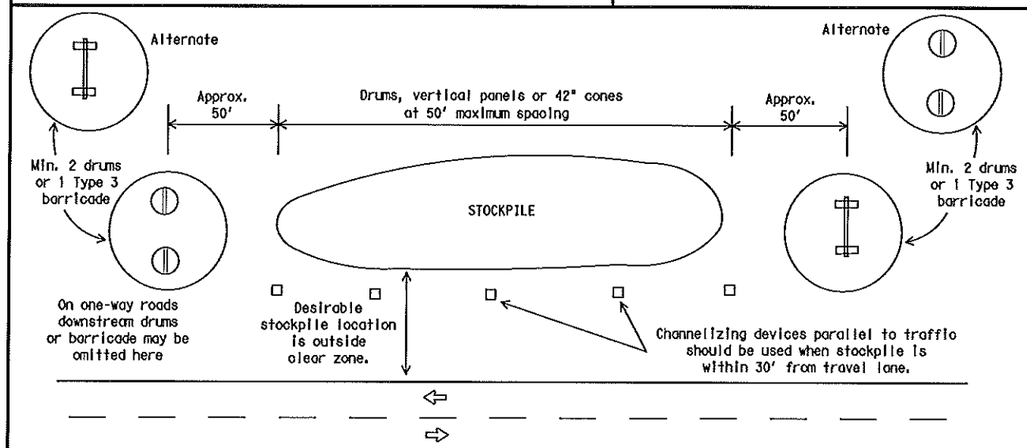
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS




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

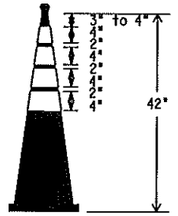
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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




TRAFFIC CONTROL FOR MATERIAL STOCKPILES

THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.




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 A conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.



Texas Department of Transportation

Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

## BC(10)-13

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| | DIST | COUNTY | | SHEET NO. |
| | . | . | | 38 |

DATE:
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# WORK ZONE PAVEMENT MARKINGS

## GENERAL

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

## RAISED PAVEMENT MARKERS

1. Raised pavement markers are to be placed according to the patterns on BC(12).
2. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

## PREFABRICATED PAVEMENT MARKINGS

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

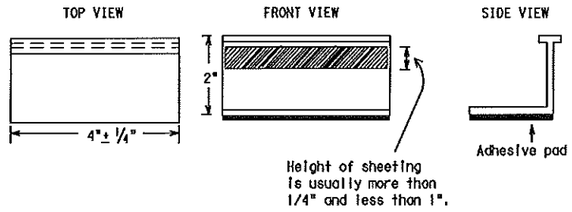
## MAINTAINING WORK ZONE PAVEMENT MARKINGS

1. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
2. Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
3. The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 160 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
4. Markings failing to meet this criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

## REMOVAL OF PAVEMENT MARKINGS

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

# Temporary Flexible-Reflective Roadway Marker Tabs




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

1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
   A. Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
   B. Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
3. Small design variances may be noted between tab manufacturers.
4. See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on seal coat work.

## RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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



Texas Department of Transportation

Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

## BC(11)-13

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| 2-98 11-02 7-13 | DIST | COUNTY | | SHEET NO. |
| 1-02 9-07 | - | - | | 39 |

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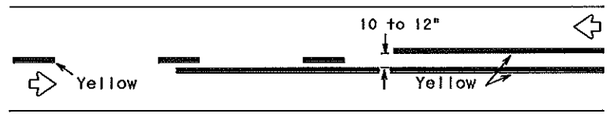
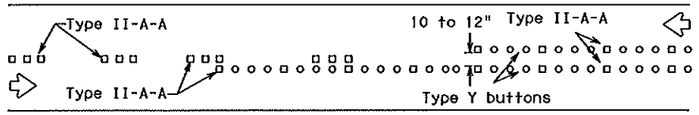
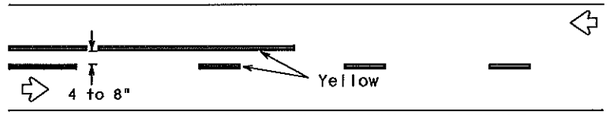
# PAVEMENT MARKING PATTERNS



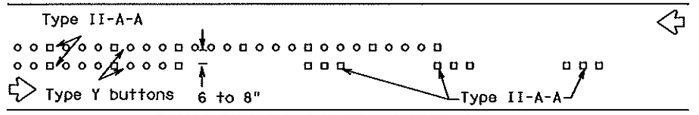

REFLECTORIZED PAVEMENT MARKINGS - PATTERN A




RAISED PAVEMENT MARKERS - PATTERN A



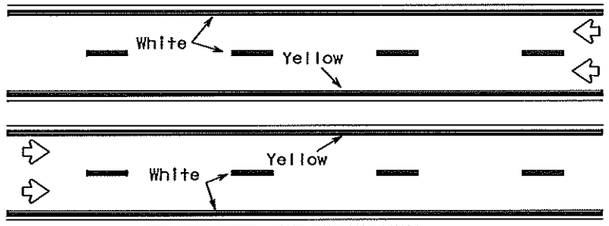

REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



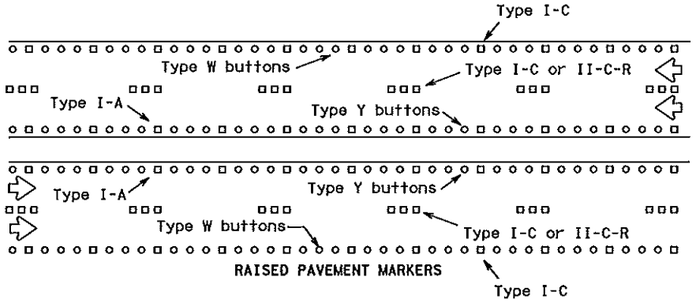

RAISED PAVEMENT MARKERS - PATTERN B

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

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



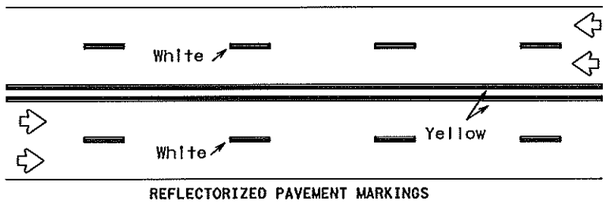

REFLECTORIZED PAVEMENT MARKINGS



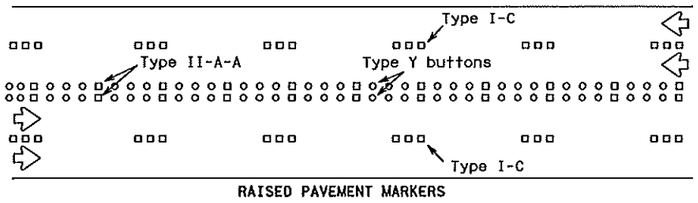

RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

## EDGE & LANE LINES FOR DIVIDED HIGHWAY



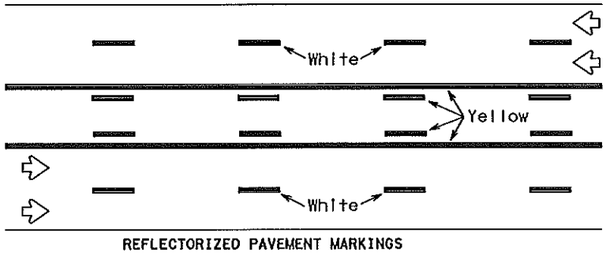

REFLECTORIZED PAVEMENT MARKINGS



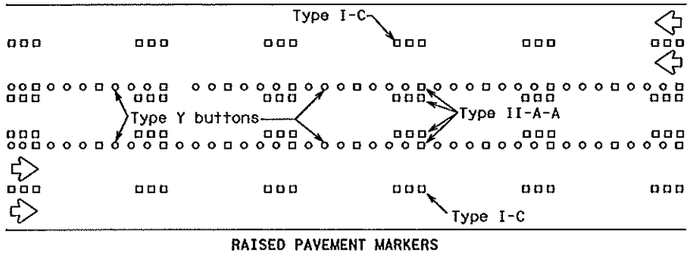

RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

## LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS




REFLECTORIZED PAVEMENT MARKINGS

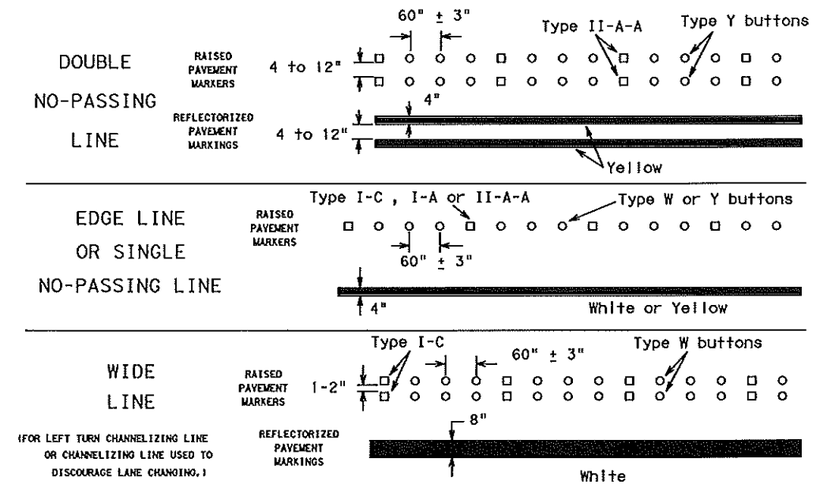



RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

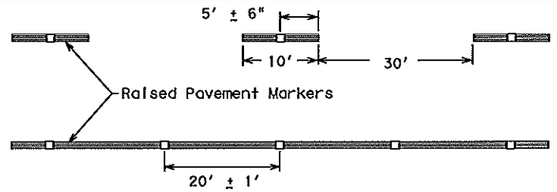
## TWO-WAY LEFT TURN LANE

# STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS




### REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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




Centerline only - not to be used on edge lines

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



Texas Department of Transportation

Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

## BC(12)-13

| FILE: bc-13.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT February 1998 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | - | - | - | - |
| 1-97 11-02 7-13 | DIST | COUNTY | | SHEET NO. |
| 2-98 9-07 | - | - | | 40 |

DATE:
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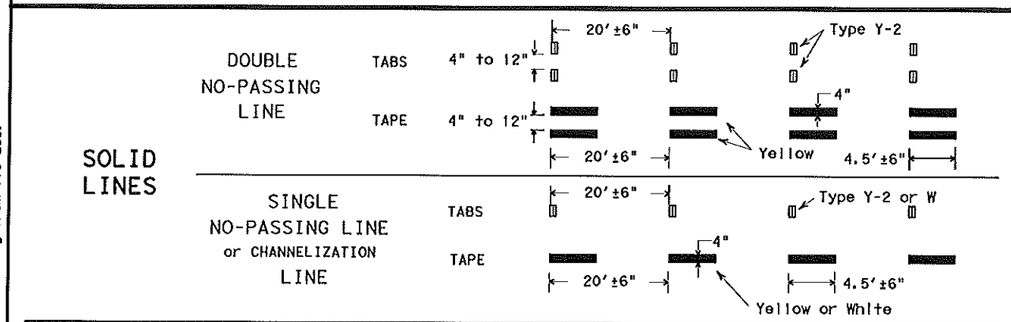
# WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



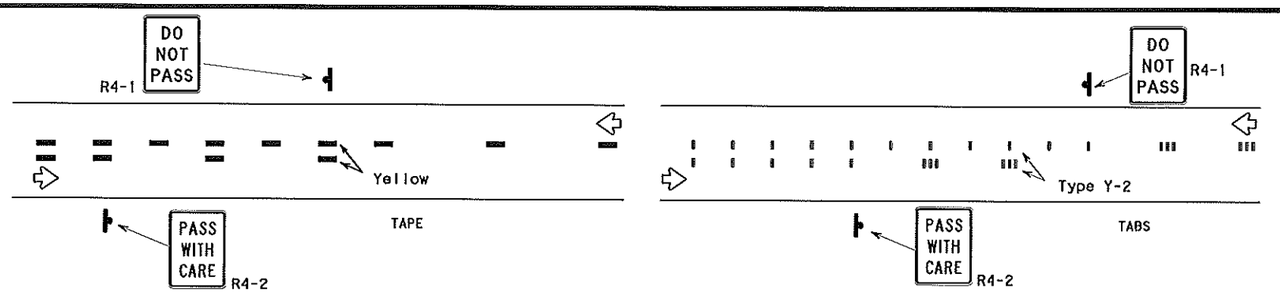

## NOTES:

1. Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible-reflective roadway marker tabs unless otherwise specified elsewhere in plans.
2. Short term pavement markings shall NOT be used to simulate edge lines.
3. Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.
4. Temporary flexible-reflective roadway marker tabs will require normal maintenance replacement when used on roadways with an ADT per lane of up to 7500 vehicles with no more than 10% truck mix. When roadways exceed these values, additional maintenance replacement of devices should be planned.
5. No segment of roadway open to traffic shall remain without permanent pavement markings for a period greater than 14 calendar days. The Contractor will be responsible for maintaining short term pavement markings until permanent pavement markings are in place. When the Contractor is responsible for placement of permanent pavement markings, no segment of roadway shall remain without permanent pavement markings for a period greater than 14 calendar days unless weather conditions prohibit placement. Permanent pavement markings shall be placed as soon as weather permits.
6. For two lane, two-way roadways, DO NOT PASS signs shall be erected to mark the beginning of sections where passing is prohibited and PASS WITH CARE signs shall be erected to mark the beginning of sections where passing is permitted. Signs shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and may be used to indicate the limits of no-passing zones for up to 14 calendar days. Permanent pavement markings should then be placed.
7. For low volume two lane, two-way roadways of 4000 ADT or less, no-passing lines may be omitted when approved by the Engineer. DO NOT PASS and PASS WITH CARE signs shall be erected (see note 6).
8. For exit gores where a lane is being dropped place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are not allowed for this purpose.

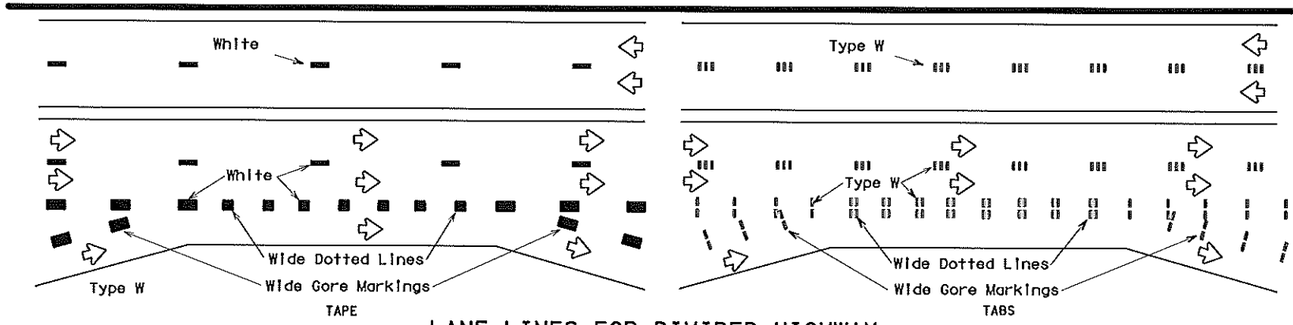
## TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

1. Temporary flexible-reflective roadway marker tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(11).
2. Tabs shall meet requirements of Departmental Material Specification DMS-8242.
3. When dry, tabs shall be visible for a minimum distance of 200 feet during normal daylight hours and when illuminated by automobile low-beam head light at night, unless sight distance is restricted by roadway geometrics.
4. No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of Note 3.

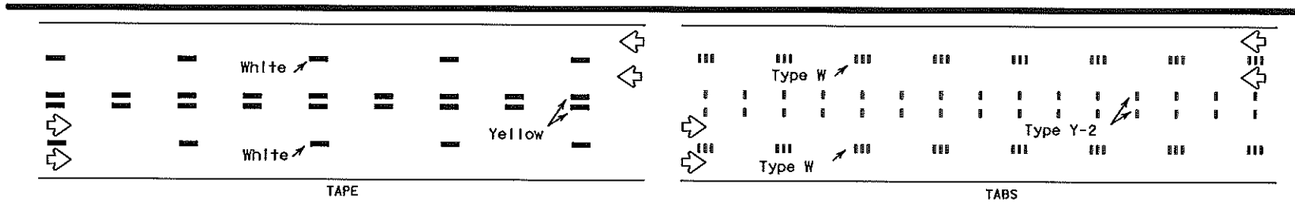
# WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



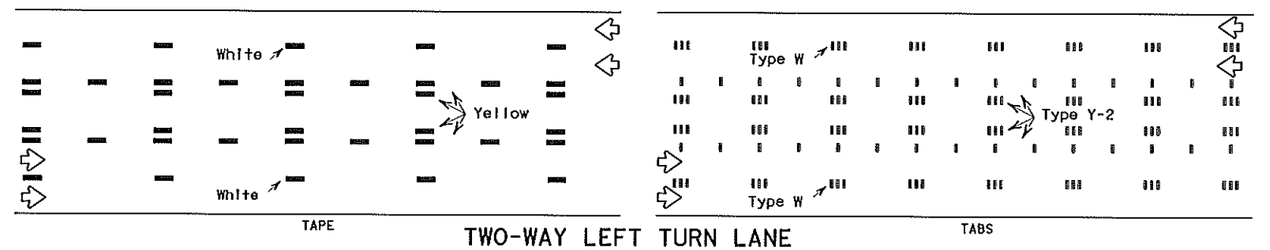

CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



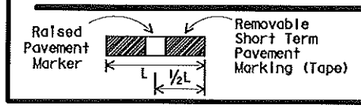

LANE LINES FOR DIVIDED HIGHWAY




LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS




TWO-WAY LEFT TURN LANE




If raised pavement markers are used to supplement REMOVABLE short term markings, the markers shall be applied to the top of the tape at the approximate mid length of the tape. This allows an easier removal of raised markers and tape.

## PREFABRICATED PAVEMENT MARKINGS

1. Temporary Removable Prefabricated Pavement Markings shall meet the requirements of DMS-8241.
2. Non-removable Prefabricated Pavement Markings shall meet the requirements of either DMS-8240 "Permanent Prefabricated Pavement Markings" or DMS-8243 "Temporary Construction-Grade Prefabricated Pavement Markings."

## RAISED PAVEMENT MARKERS

1. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and DMS-4200.

## DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)

1. DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:
   http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm

Texas Department of Transportation

Traffic Operations Division Standard

# WORK ZONE SHORT TERM PAVEMENT MARKINGS

## WZ(STPM)-13

| FILE: wzstpm-13.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT April 1992 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | - | - | - | - |
| 1-97 | DIST | COUNTY | | SHEET NO. |
| 3-03 | - | - | | 41 |
| 7-13 | | | | |

DATE:
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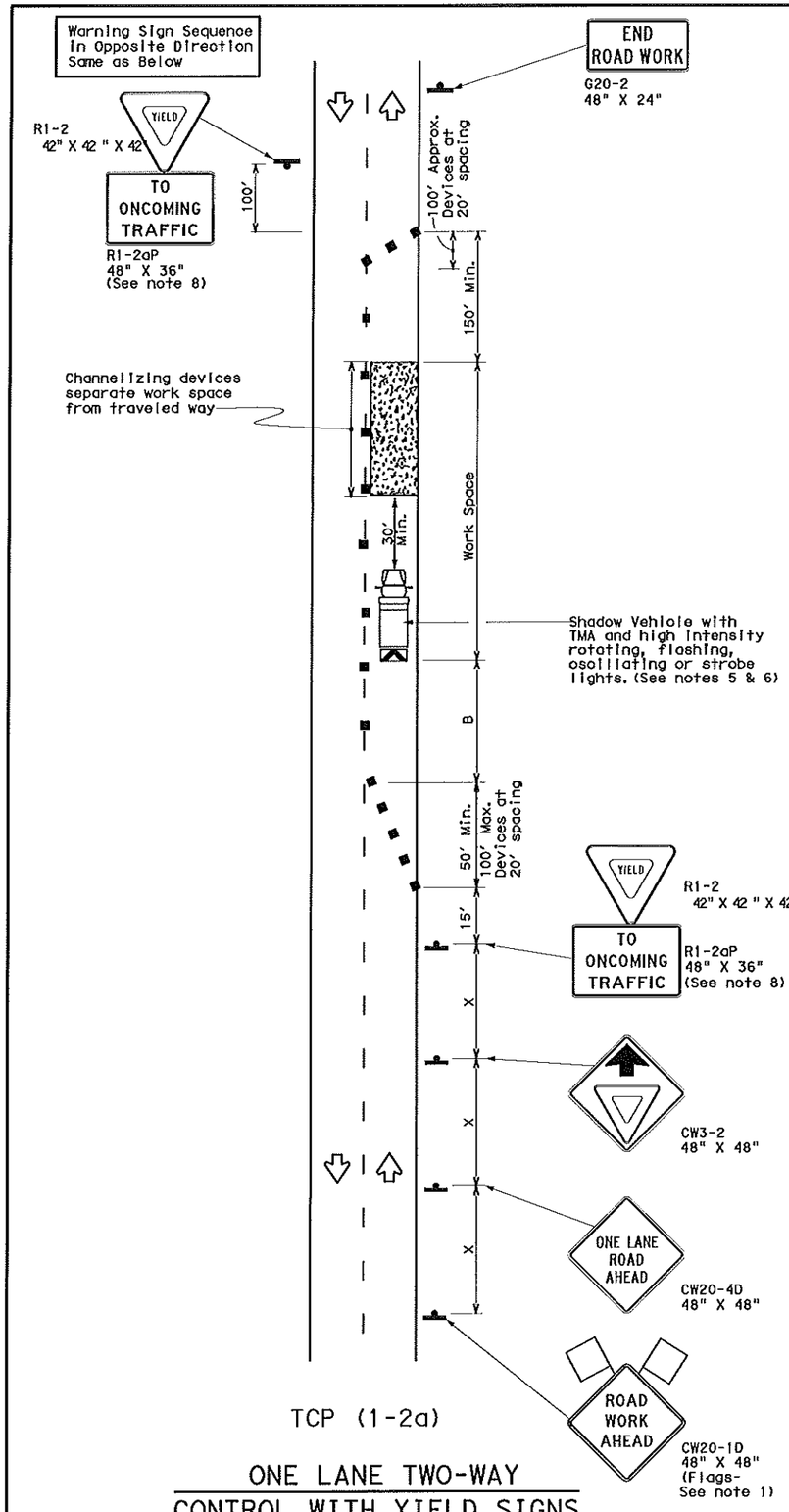
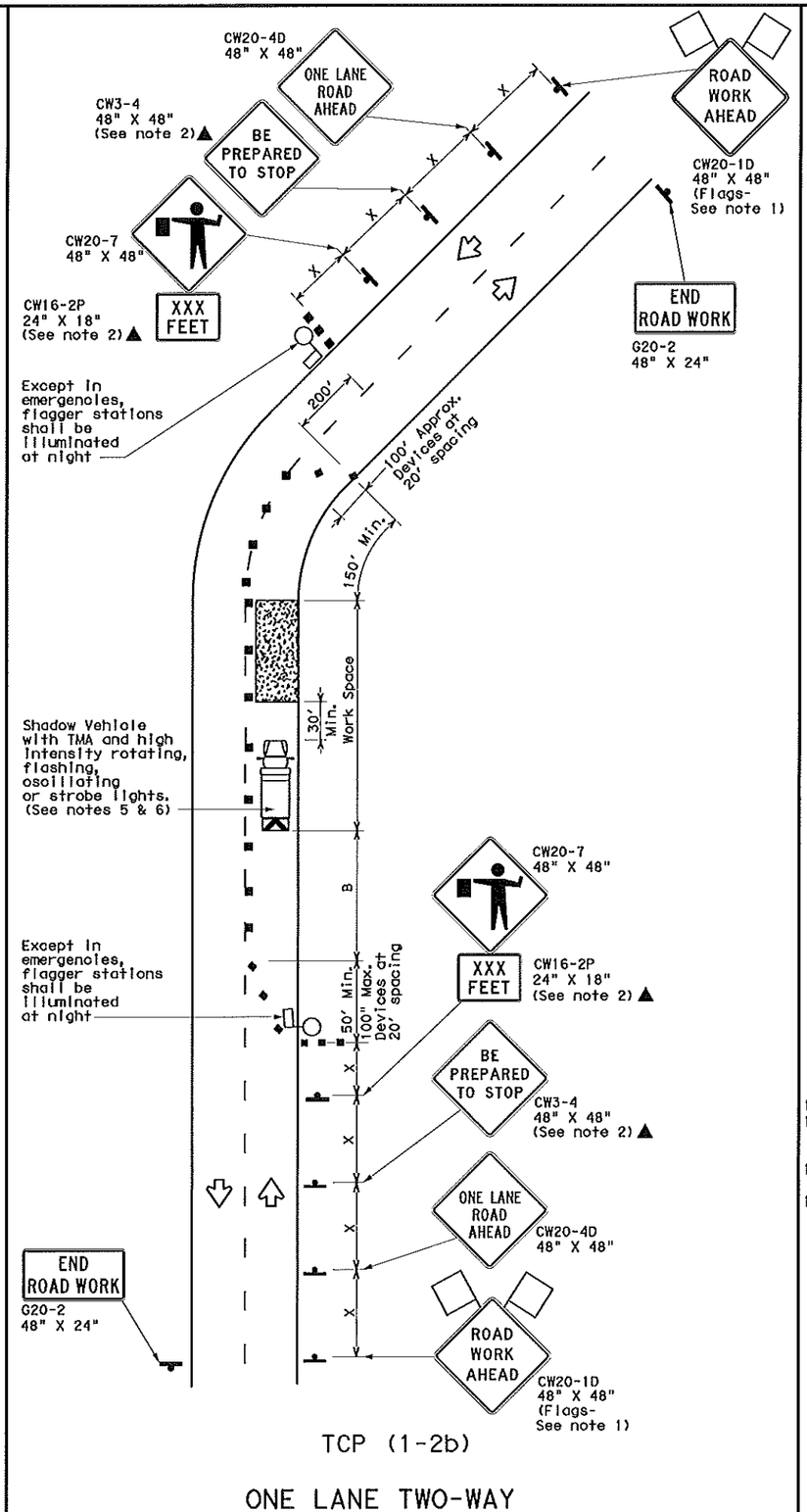



TCP (1-2a)

## ONE LANE TWO-WAY CONTROL WITH YIELD SIGNS

(Less than 2000 ADT - See note 7)




TCP (1-2b)

## ONE LANE TWO-WAY CONTROL WITH FLAGGERS

| LEGEND | | | |
|---|---|---|---|
| | Type 3 Barricade | | Channelizing Devices |
| | Heavy Work Vehicle | | Truck Mounted Attenuator (TMA) |
| | Trailer Mounted Flashing Arrow Board | 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" | Stopping Sight Distance |
|---|---|---|---|---|---|---|---|---|---|
| 30 | $L=\frac{WS^2}{60}$ | 150' | 165' | 180' | 30' | 60' | 120' | 90' | 200' |
| 35 | | 205' | 225' | 245' | 35' | 70' | 160' | 120' | 250' |
| 40 | | 265' | 295' | 320' | 40' | 80' | 240' | 155' | 305' |
| 45 | L=WS | 450' | 495' | 540' | 45' | 90' | 320' | 195' | 360' |
| 50 | | 500' | 550' | 600' | 50' | 100' | 400' | 240' | 425' |
| 55 | | 550' | 605' | 660' | 55' | 110' | 500' | 295' | 495' |
| 60 | | 600' | 660' | 720' | 60' | 120' | 600' | 350' | 570' |
| 65 | | 650' | 715' | 780' | 65' | 130' | 700' | 410' | 645' |
| 70 | | 700' | 770' | 840' | 70' | 140' | 800' | 475' | 730' |
| 75 | | 750' | 825' | 900' | 75' | 150' | 900' | 540' | 820' |

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

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

## GENERAL NOTES

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 CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
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 off the paved surface, next to those shown in order to protect wider work spaces.

### TCP (1-2a)

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

### TCP (1-2b)

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

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

Texas Department of Transportation
Traffic Operations Division

# TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(1-2)-12



| DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|

| REVISIONS | CONT | SECT | JOB | HIGHWAY |
|---|---|---|---|---|
| 4-90 2-12 | | | | |
| 2-94 | DIST | COUNTY | | SHEET NO. |
| 1-97 | | | | 42 |
| 4-98 | | | | |

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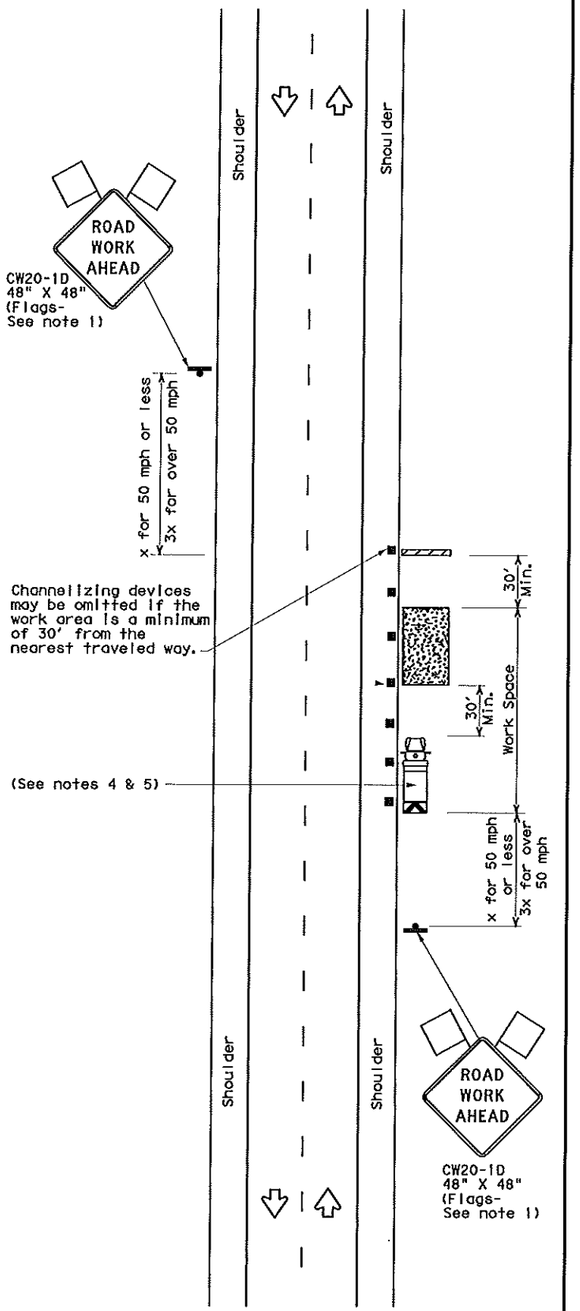
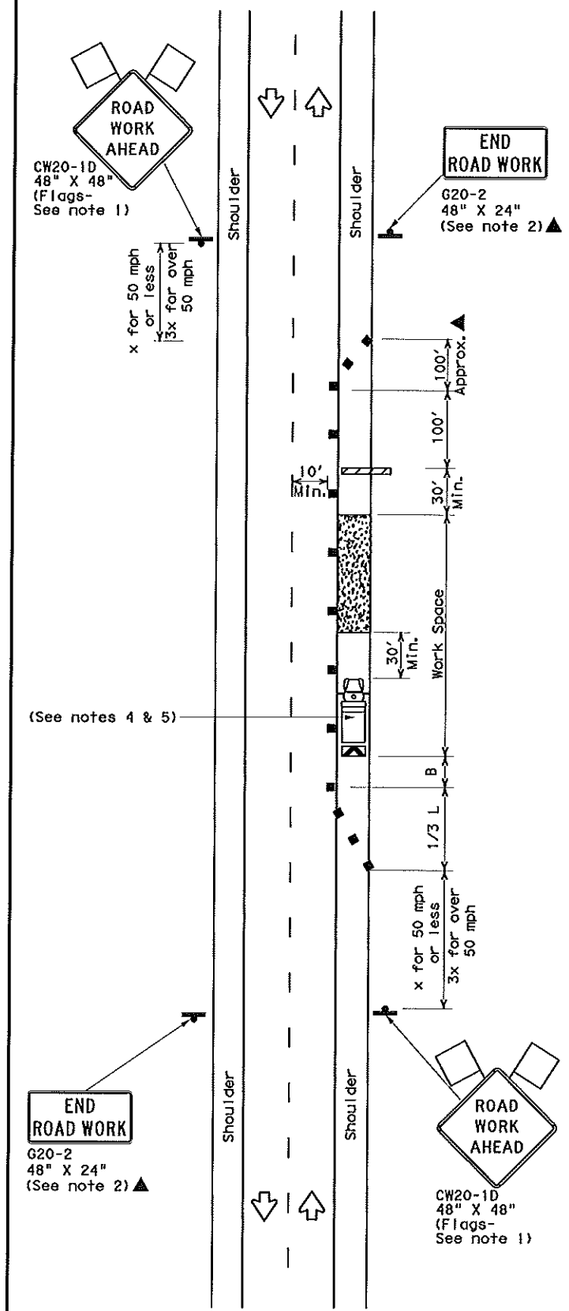


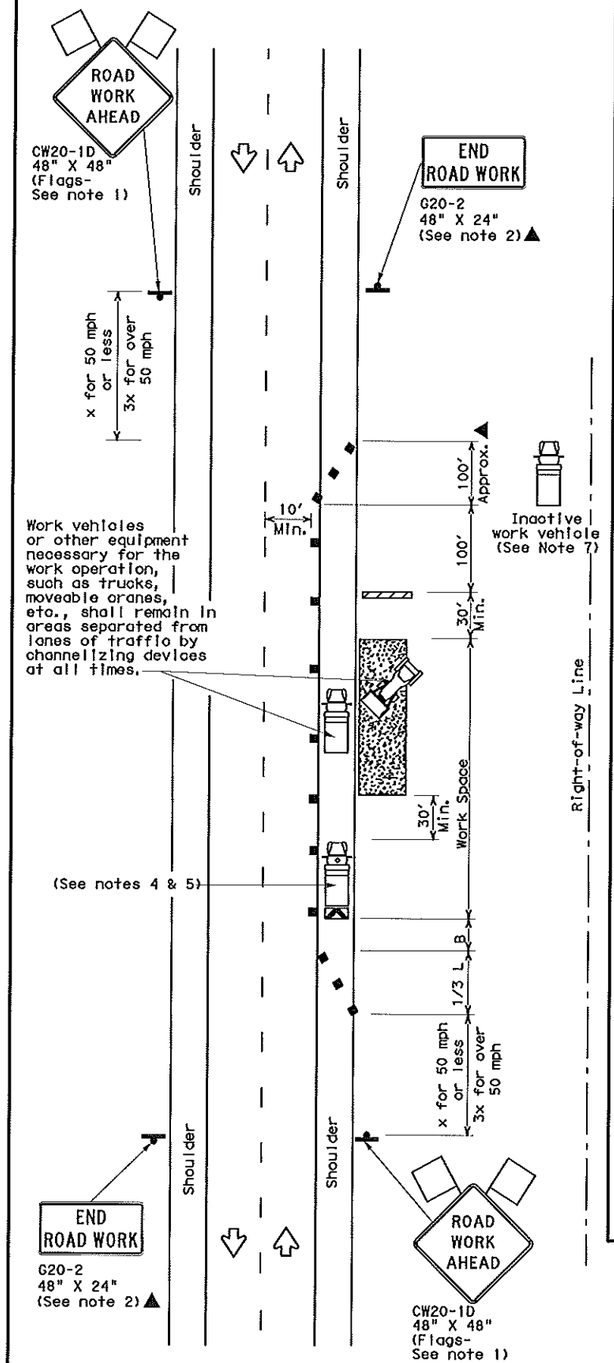

TCP (2-1a)

## WORK SPACE NEAR SHOULDER
Conventional Roads




TCP (2-1b)

## WORK SPACE ON SHOULDER
Conventional Roads




TCP (2-1c)

## WORK VEHICLES ON SHOULDER
Conventional Roads

| LEGEND | | | |
|---|---|---|---|
| | Type 3 Barricade | ■ ■ | Channelizing Devices |
| | Heavy Work Vehicle | | Truck Mounted Attenuator (TMA) |
| | Trailer Mounted Flashing Arrow Board | (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 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



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| DIST | COUNTY | | SHEET NO. |
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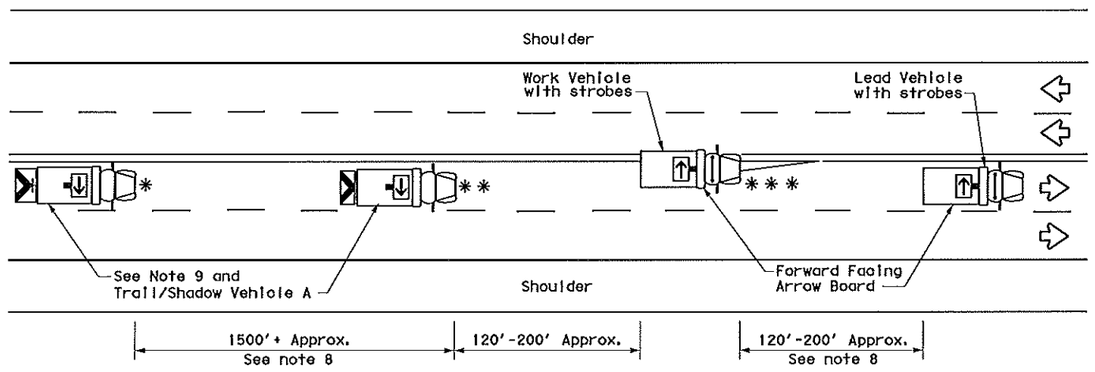
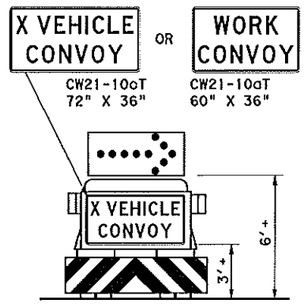



TCP (3-1a)

## UNDIVIDED MULTILANE ROADWAY




## TRAIL/SHADOW VEHICLE A

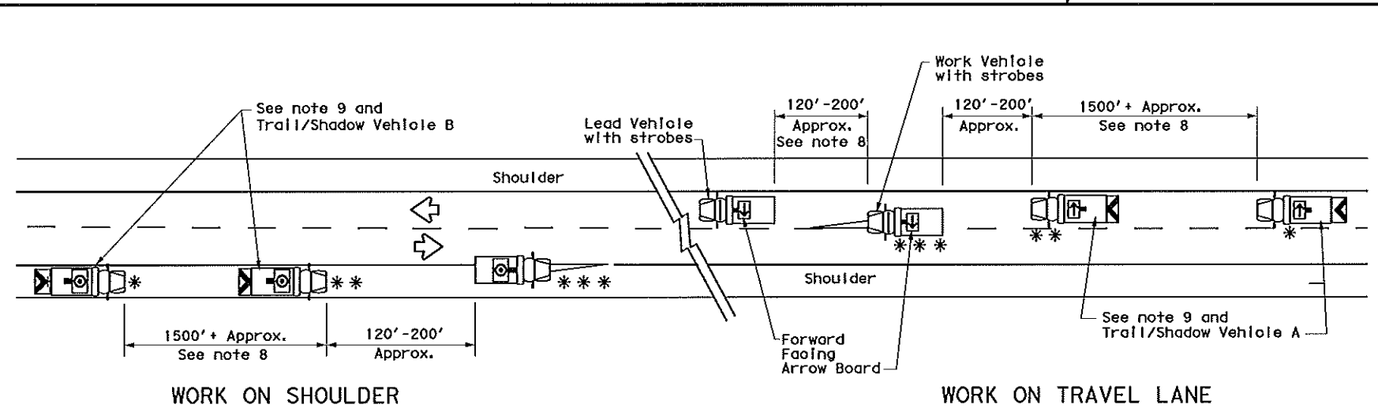
with RIGHT Directional display Flashing Arrow Board

| LEGEND | | | |
|---|---|---|---|
| * | Trail Vehicle | ARROW BOARD DISPLAY | |
| ** | Shadow Vehicle | | |
| *** | Work Vehicle | | RIGHT Directional |
| | Heavy Work Vehicle | | LEFT Directional |
| | Truck Mounted Attenuator (TMA) | | Double Arrow |
| | Traffic Flow | | CAUTION (Alternating Diamond or 4 Corner Flash) |

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

## GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the WORK vehicle must be equiped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, osscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, osscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. "X VEHICLE CONVOY" (CW21-10oT) or "WORK CONVOY" (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" X 48" diamond shaped "WORK CONVOY"(CW21-10T) or "X VEHICLE CONVOY" (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The "X VEHICLE CONVOY" sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a "DO NOT PASS" (R4-1) sign should be placed on the back of the rearmost protection vehicle.

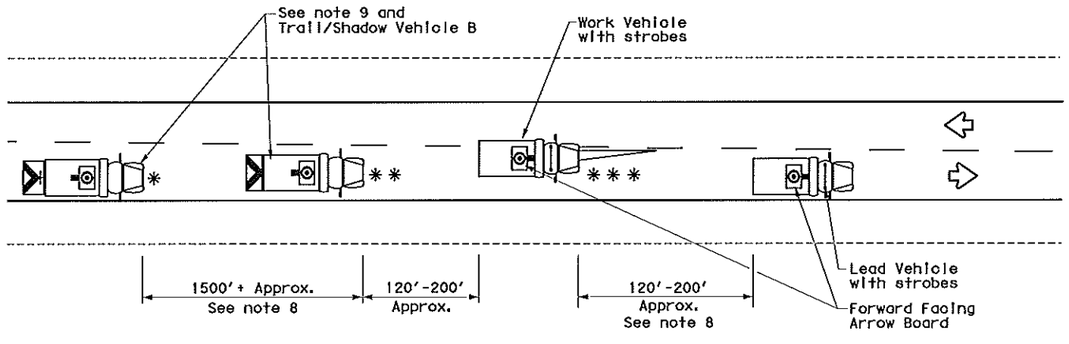



WORK ON SHOULDER

WORK ON TRAVEL LANE

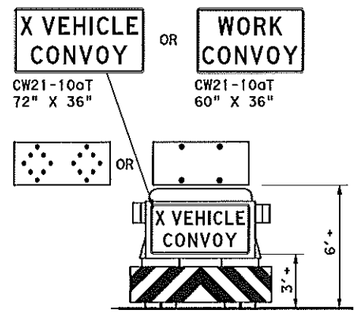
TCP (3-1b)

## TWO-WAY ROADWAY WITH PAVED SHOULDERS



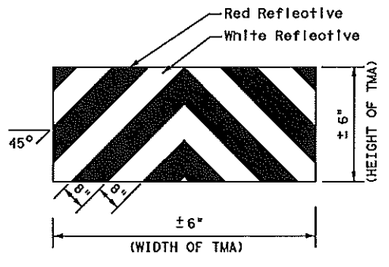

TCP (3-1c)

## TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS




## TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board In CAUTION display




## STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

# TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

## TCP(3-1)-13

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|---|---|---|---|---|
| ©TxDOT December 1985 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | . | . | . | . |
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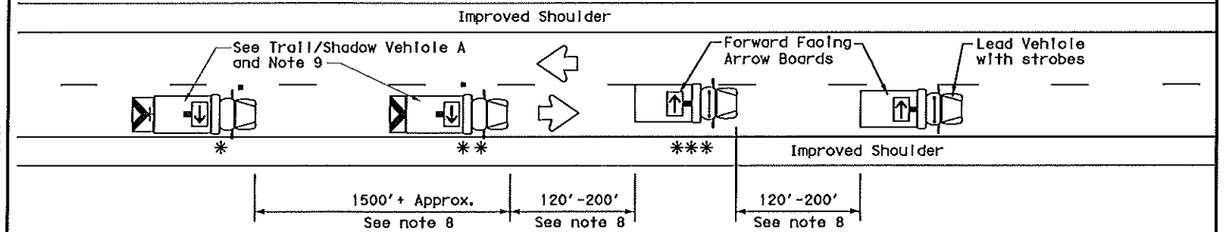
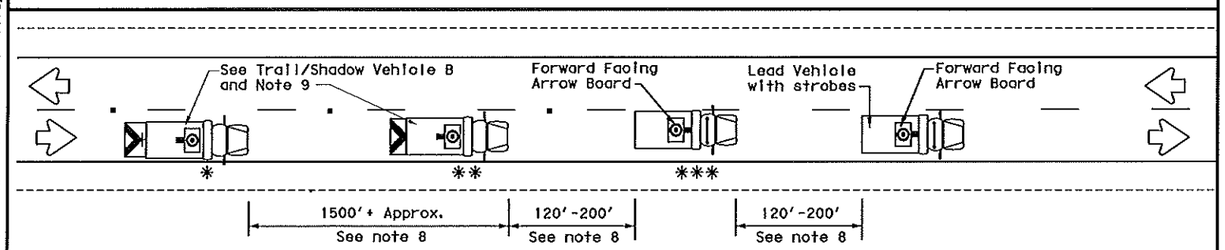


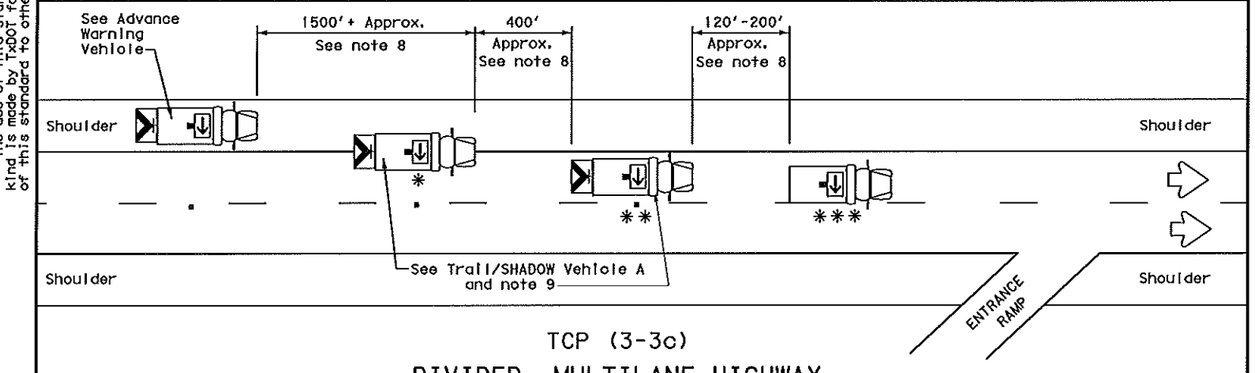

TCP (3-3a)

## TWO LANE HIGHWAY WITH PAVED SHOULDERS (WORK ON TRAVEL LANE)



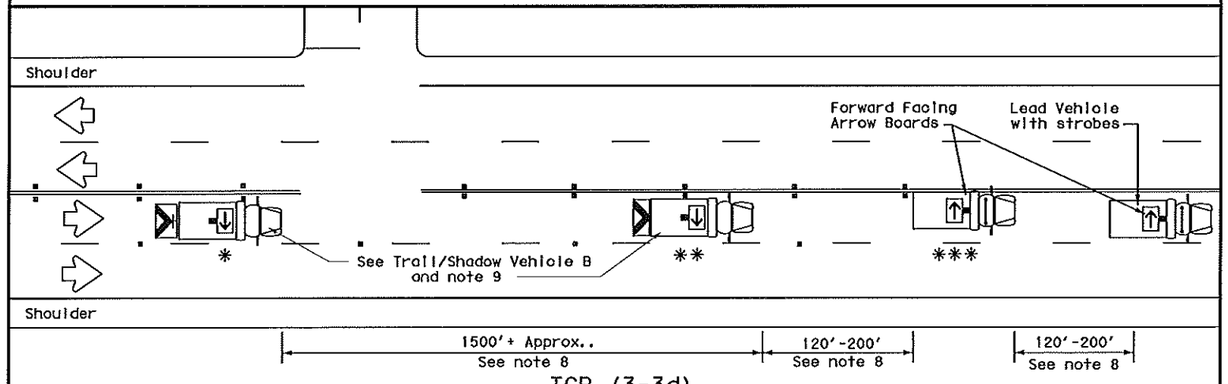

TCP (3-3b)

## TWO LANE HIGHWAY WITHOUT PAVED SHOULDERS (WORK ON TRAVEL LANE)



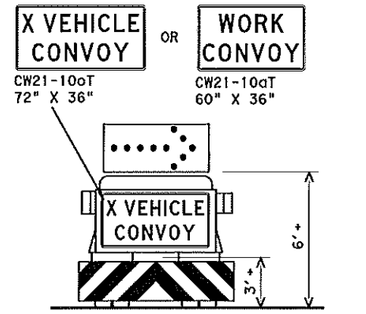

TCP (3-3c)

## DIVIDED MULTILANE HIGHWAY



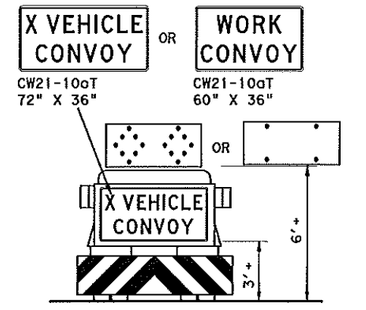

TCP (3-3d)

## UNDIVIDED MULTILANE HIGHWAY



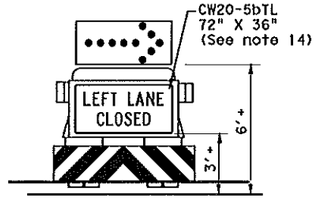

## TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

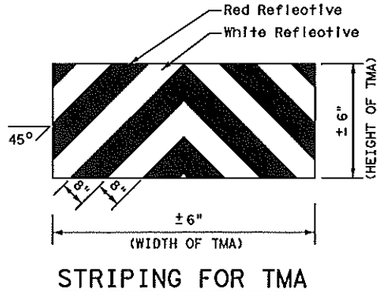



## TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode




## ADVANCE WARNING VEHICLE




## STRIPING FOR TMA

| LEGEND | | | |
|---|---|---|---|
| * | Trail Vehicle | ARROW BOARD DISPLAY | |
| ** | Shadow Vehicle | | |
| *** | Work Vehicle | | RIGHT Directional |
| | Heavy Work Vehicle | | LEFT Directional |
| | Truck Mounted Attenuator (TMA) | | Double Arrow |
| | Traffic Flow | | CAUTION (Alternating Diamond or 4 Corner Flash) |

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

## GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used on two way roads the WORK vehicle must have an arrow board. For divided roadways, the arrow board on the WORK vehicle is optional based on the type of work being performed. The Engineer will determine if the LEAD vehicle and/or TRAIL vehicle are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating, or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE, ADVANCE WARNING and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. X VEHICLE CONVOY (CW21-10oT) or WORK CONVOY (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" x 48" diamond shaped WORK CONVOY (CW21-10T) or X VEHICLE CONVOY (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The X VEHICLE CONVOY sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. For divided highways with two or three lanes in one direction, the appropriate LEFT LANE CLOSED (CW20-5bTL), RIGHT LANE CLOSED (CW20-5bTR), or CENTER LANE CLOSED (CW20-5dT) sign should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board may be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. A double arrow shall not be displayed on the arrow board on the Advance Warning Vehicle.
12. For divided highways with three or four lanes in each direction, use TCP(3-2).
13. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
14. The Advance Warning Vehicle may straddle the edgeline when Shoulder width makes it necessary.
15. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a DO NOT PASS (R4-1) sign should be placed on the back of the rearmost protection vehicle.

Texas Department of Transportation

Traffic Operations Division Standard

# TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION

# TCP(3-3)-13

| FILE: tcp3-3.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT September 1987 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | . | . | . | . |
| 2-94 4-98 | DIST | COUNTY | | SHEET NO. |
| 8-95 7-13 | | | | |
| 1-97 | . | . | | 45 |

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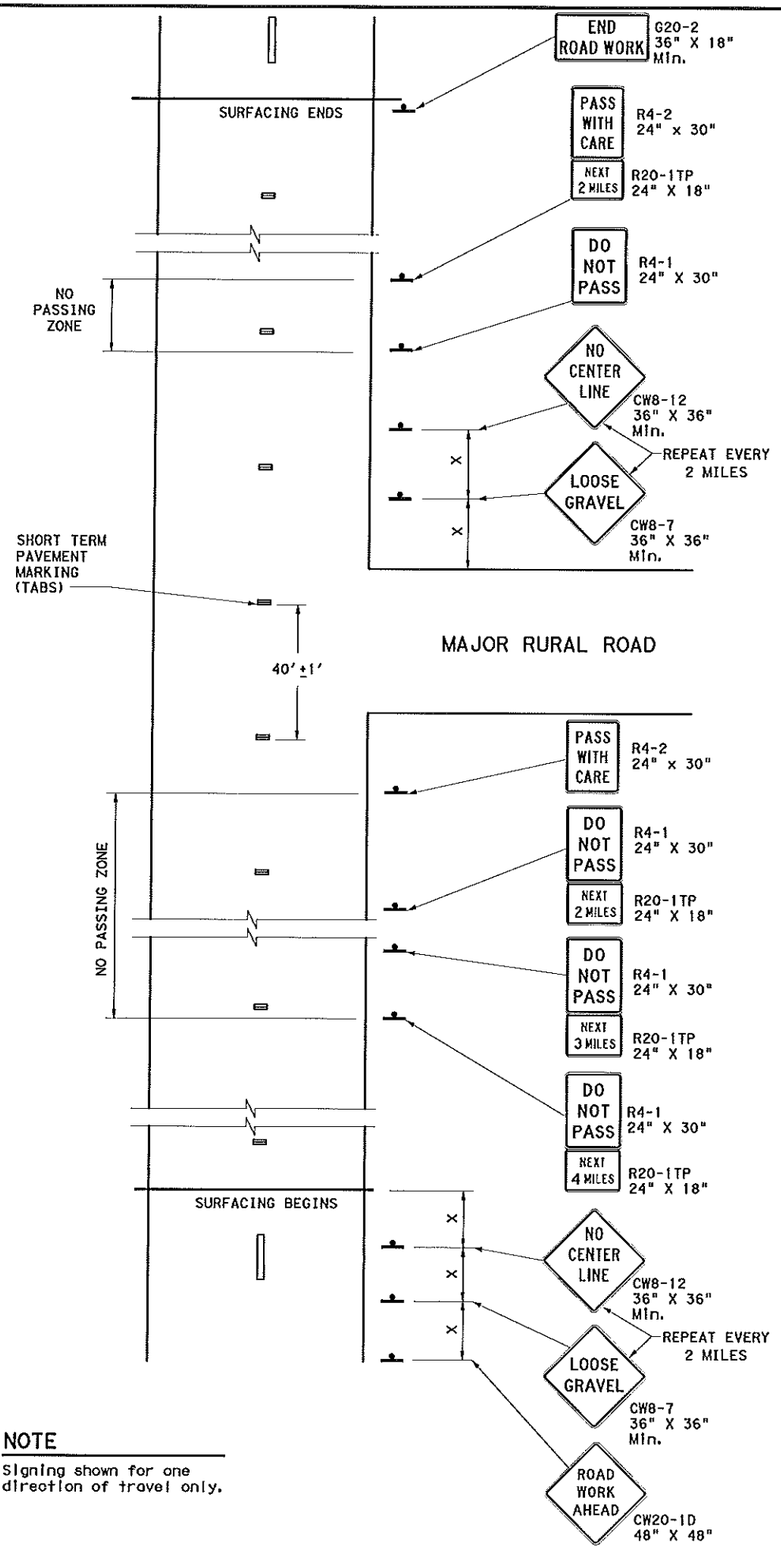
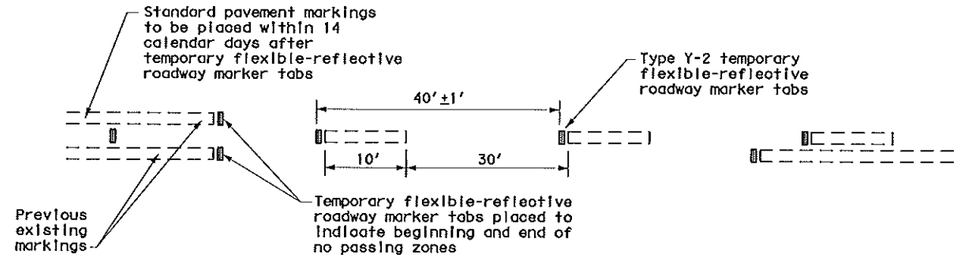



## NOTE

Signing shown for one direction of travel only.

# NO PASSING ZONES ON TWO-LANE TWO-WAY ROADS




# TABS ON CENTERLINES OF TWO-LANE TWO-WAY ROADS

For seal coat, micro-surface or similar operations

## "DO NOT PASS" SIGN (R4-1) and NO-PASSING ZONES

A. Prior to the beginning of construction, all currently striped no-passing zones shall be signed with the DO NOT PASS (R4-1) signs and PASS WITH CARE (R4-2) signs placed at the beginning and end of each zone for each direction of travel except as otherwise provided herein. Signs marking these individual no-passing zones need not be covered prior to construction if the signs supplement the existing pavement markings.

B. At the discretion of the Engineer, in areas of numerous no-passing zones, several zones may be combined as a single zone. If passing is to be prohibited over one or more lengthy sections, a DO NOT PASS sign and a NEXT XX MILES (R20-1TP) plaque may be used at the beginning of such zones. The DO NOT PASS sign and the NEXT XX MILES plaque should be repeated every mile to the end of the no-passing zone. In areas where there is considerable distance between no-passing zones, the end of the no-passing zone may be signed with a PASS WITH CARE sign and a NEXT XX MILES plaque.

C. Depending on traffic volumes and length of sections, it may be desirable to prohibit passing throughout the project to prevent damage to windshield and lights. The DO NOT PASS sign and NEXT XX MILES plaque should be used and repeated as often as necessary for this purpose. Where several existing zones are to be combined into one individual no-passing zone, the sign at the beginning of the zone should be covered until the surfacing operation has passed this location so as not to have the DO NOT PASS sign conflict with the existing pavement markings. Also, unless one days operation completes the entire length of such combined zones, appropriate DO NOT PASS and PASS WITH CARE signs should be placed at the beginning and end of the no-passing zones where the surfacing operation has stopped for the day.

D. R4-1 and R4-2 are to remain in place until standard pavement markings are installed.

## "NO CENTER LINE" SIGN (CW8-12)

A. Center line markings are yellow pavement markings that delineate the separation of travel lanes that have opposite directions of travel on a roadway. Divided highways do not typically have center line markings.

B. At the time construction activity obliterates the existing center line markings(low volume roads may not have an existing centerline), a NO CENTER LINE (CW8-12) sign should be erected at the beginning of the work area, at approximately 2 mile intervals within the work area, beyond major intersections and other locations deemed necessary by the Engineer.

C. The NO CENTER LINE signs are to remain in place until standard pavement markings are installed.

## "LOOSE GRAVEL" SIGN (CW8-7)

A. When construction begins, a LOOSE GRAVEL (CW8-7) sign should be erected at each end of the work area and repeated at intervals of approximately 2 miles in rural areas and closer in urban areas.

B. The LOOSE GRAVEL signs are to remain in place until the condition no longer exists.

## PAVEMENT MARKINGS

A. Temporary markings for surfacing projects shall be Temporary Flexible-reflective Roadway Marker Tabs unless otherwise approved by the Engineer. Tabs are to be installed to provide true alignment for striping crews or as directed by the Engineer. Tabs will be placed at the spacing indicated. Tabs should be applied to the pavement
no more than two (2) days before the surfacing is applied. After the surfacing is rolled and swept, the cover over the reflective strip shall be removed.

B. Tabs shall not be used to simulate edge lines.

C. Tab placement for overlay/inlay operations shall be as shown on the WZ(STPM) standard sheet.

## COORDINATION OF SIGN LOCATIONS

A. The location of warning signs at the beginning and end of a work area are to be coordinated with other signing typically shown on the Barricade and Construction Standards for project limits to ensure adequate sign spacing.

B. Where possible the ROAD WORK AHEAD (CW20-1D), LOOSE GRAVEL (CW8-7), and NO CENTER LINE (CW8-12) signs should be placed in the sequence shown following the OBEY WARNING SIGNS STATE LAW (R20-3T) and the TRAFFIC FINES DOUBLE (R20-5T) sign, and one "X" sign spacing prior to the CONTRACTOR (G20-6T)sign typically located at or near the limits of surfacing. LOOSE GRAVEL and NO CENTER LINE signs will then be repeated as described above.

| Posted Speed * | Minimum Sign Spacing "X" Distance |
|---|---|
| 30 | 120' |
| 35 | 160' |
| 40 | 240' |
| 45 | 320' |
| 50 | 400' |
| 55 | 500' |
| 60 | 600' |
| 65 | 700' |
| 70 | 800' |
| 75 | 900' |

* Conventional Roads Only

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

## GENERAL NOTES

1. The traffic control devices detailed on this sheet will be furnished and erected as directed by the Engineer on sections of roadway where tabs must be placed prior to the surfacing operation which will cover or obliterate the existing pavement markings.
2. The devices shown on this sheet are to be used to supplement those required by the BC Standards or others required elsewhere in the plans.
3. Signs shall be erected as detailed on the BC Standards or the Compliant Work Zone Traffic Control Devices List (CWZTCD) on supports approved for Long-Term / Intermediate-Term Work Zone Sign Supports.
4. When surfacing operations take place on divided highways, freeways or expressways, the size of diamond shaped construction warning signs shall be 48" x 48".
5. Signs on divided highways, freeways and expressways will be placed on both right and left sides of the roadway based on roadway conditions as directed by the Engineer.

Texas Department of Transportation

Traffic Operations Division Standard

# TRAFFIC CONTROL DETAILS FOR SURFACING OPERATIONS

# TCP(7-1)-13

| FILE: | tcp7-1.dgn | ENG: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|---|
| ©TxDOT | March 1991 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | . | . | . | . |
| 4-92 4-98 | | DIST | COUNTY | | SHEET NO. |
| 1-97 7-13 | | . | . | | 46 |

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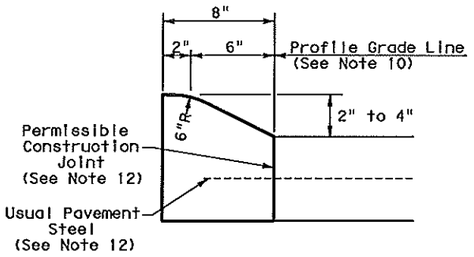
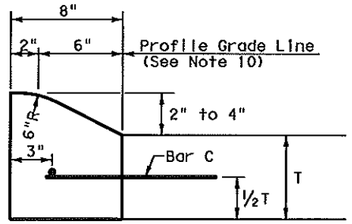
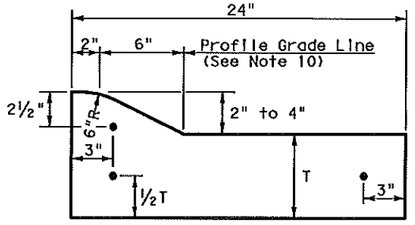


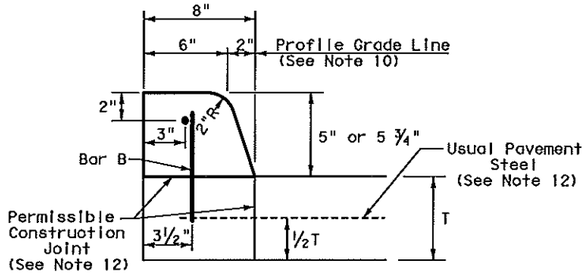

TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



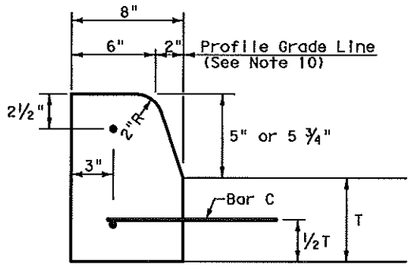

TYPE I CURB
2" - 4" HEIGHT



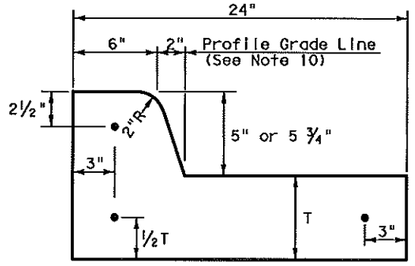

TYPE I CURB AND GUTTER
2" - 4" HEIGHT



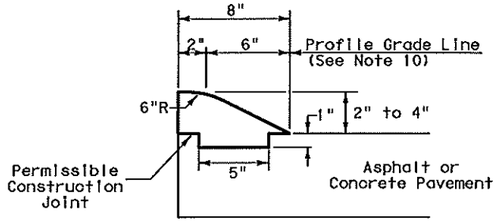

TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



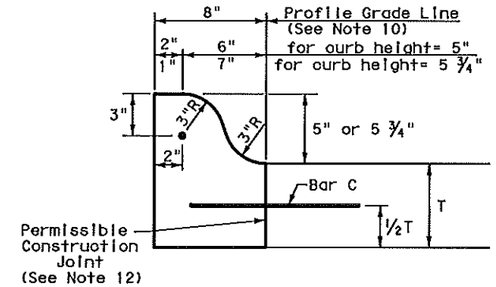

TYPE II CURB
5" - 5 ¾" HEIGHT



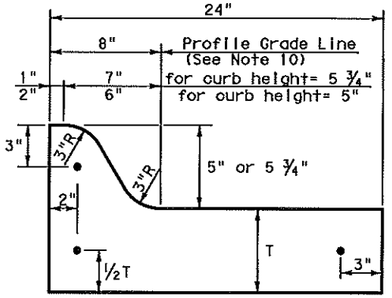

TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



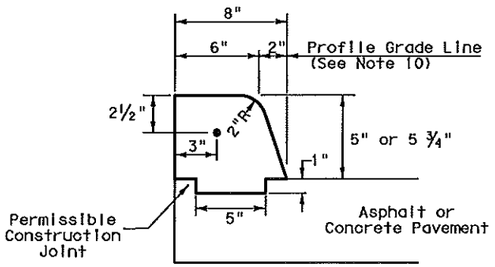

TYPE III CURB (KEYED)
2" - 4" HEIGHT



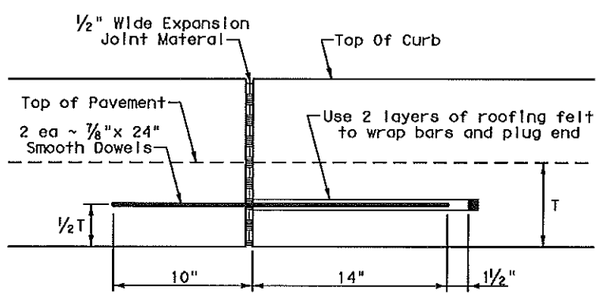

TYPE IIa CURB
5" - 5 ¾" HEIGHT




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

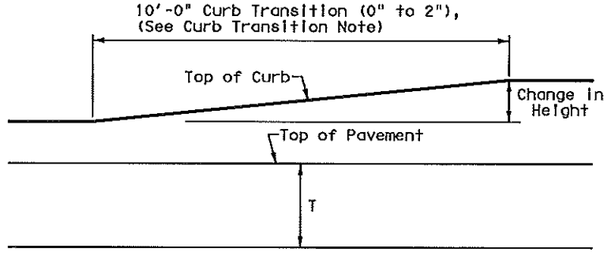



TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT




EXPANSION JOINT DETAIL

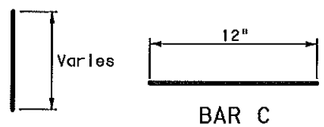
Curb Transition Note:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.




CURB TRANSITION
Note: To be paid for as Highest Curb

## General Notes

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




BAR B BAR C

Texas Department of Transportation
Design Division Standard

# CONCRETE CURB AND CURB AND GUTTER

# CCCG-12

| | | | | | |
|---|---|---|---|---|---|
| FILE: cccg12 | DN: TxDOT | CK: AV | DW: VP | CK: | |
| © TxDOT 1995 | CONT | SECT | JOB | HIGHWAY | |
| REVISIONS | · | · | · | · | |
| | DIST | COUNTY | | SHEET NO. | |
| | · | · | | 47 | |

DATE:
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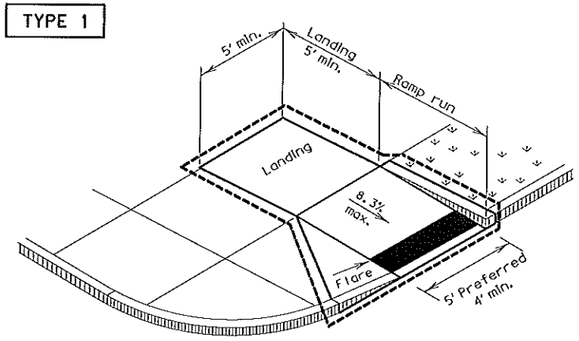
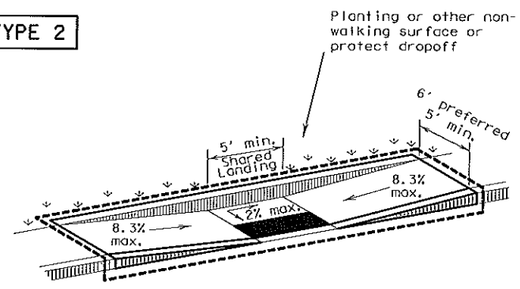
## TYPE 1



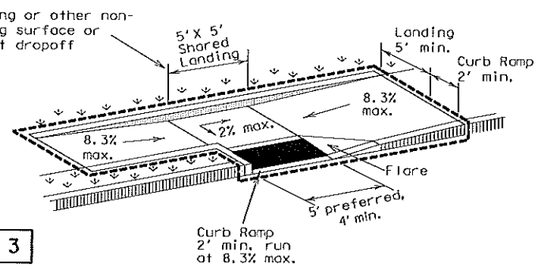

PERPENDICULAR CURB RAMP

## TYPE 2

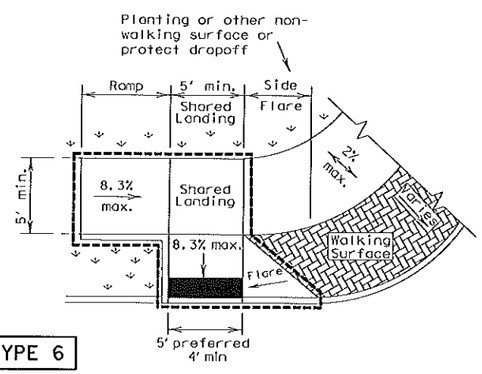



PARALLEL CURB RAMP
(Use only where water will not pond in the landing.)

## TYPE 3

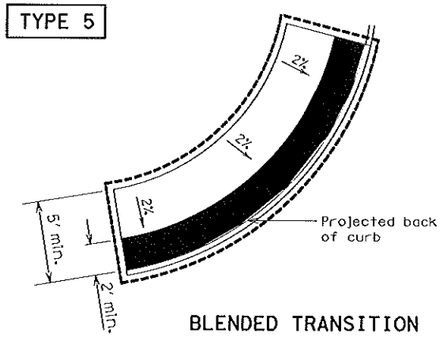



## TYPE 6



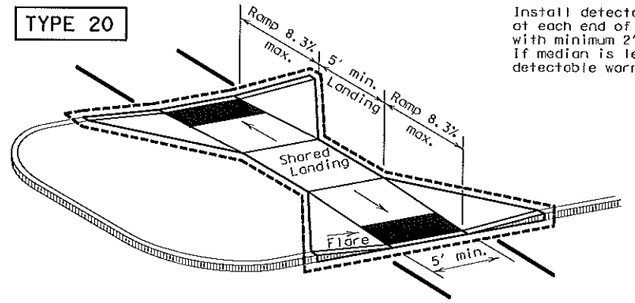

COMBINATION CURB RAMPS

## TYPE 5



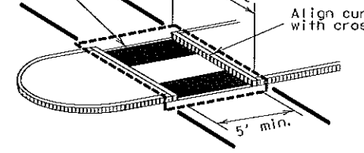

BLENDED TRANSITION

## TYPE 20




Install detectable warning surface at each end of cut-through ramp with minimum 2' smooth surface between. If median is less than 6' wide, eliminate detectable warning surfaces.

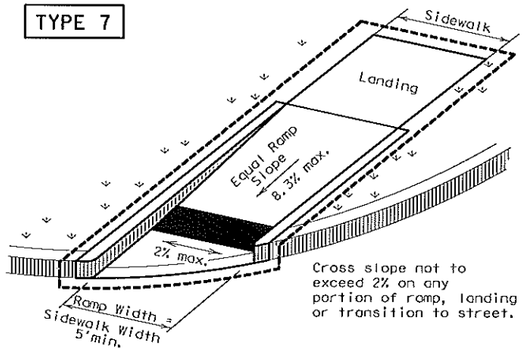
## TYPE 21




Curb details are shown elsewhere in the plans.

CURB RAMPS AT MEDIAN ISLANDS

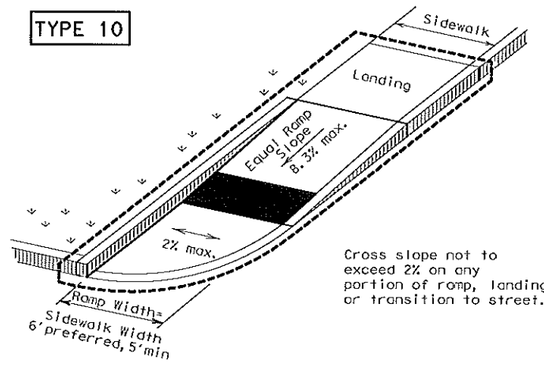
## TYPE 7




Cross slope not to exceed 2% on any portion of ramp, landing or transition to street.

(Sidewalk set back from curb)

## TYPE 10

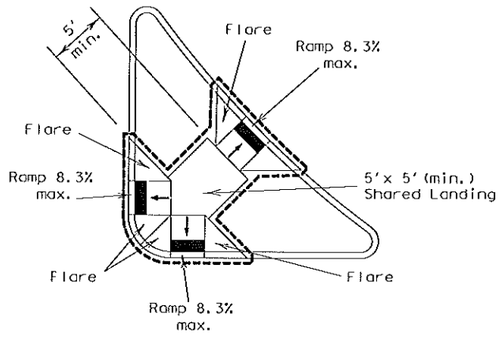



Cross slope not to exceed 2% on any portion of ramp, landing or transition to street.

(Sidewalk adjacent to curb)

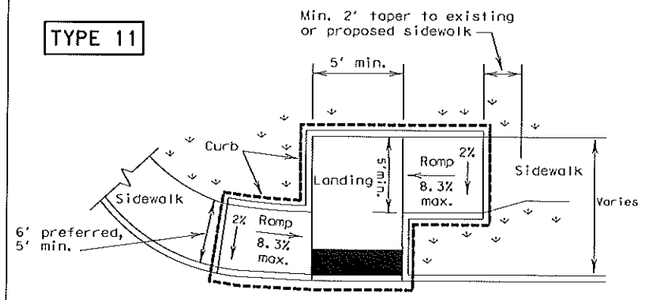
DIRECTIONAL RAMPS WITHIN RADIUS

## TYPE 22




COMBINATION ISLAND RAMPS

## TYPE 11




OFFSET PARALLEL CURB RAMP

NOTES / LEGEND:

See General Notes on sheet 2 of 4 for more information.

Denotes planting or non-walking surface not part of pedestrian circulation path.

Ramp Limits of Payment

Detectable Warning Surface

SHEET 1 OF 4

Texas Department of Transportation
Design Division Standard

# PEDESTRIAN FACILITIES CURB RAMPS

# PED-12A

| FILE: ped12a.dgn | DN: TxDOT | CK: PK | DW: TxDOT | CK: HD |
|---|---|---|---|---|
| © TxDOT March 2002 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| VP June 13, 2012 | DIST | COUNTY | | SHEET NO. |
| SHEET 1 OF 4 | | | | 48 |

DATE:
FILE:

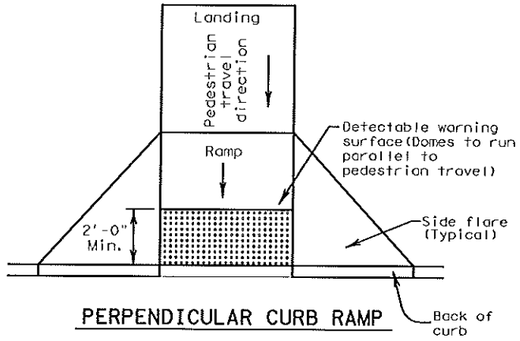
# General Notes

## Curb Ramps

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Lesser slopes that will still drain properly should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
4. Landings shall be 5'x 5' minimum with a maximum 2% slope in any direction.
5. Maneuvering space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
6. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the current edition of the Texas Accessibility Standards (TAS) and 16 TAC 68.102.
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Handrails are not required on curb ramps. Provide curb ramps wherever an accessible route crosses (penetrates) a curb.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Provide a smooth transition where the curb ramps connect to the street.
16. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
17. Existing features that comply with TAS may remain in place unless otherwise shown on the plans.

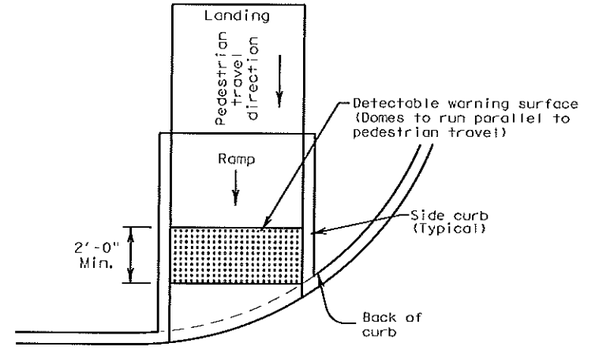
## Detectable Warning Material

18. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with Section 705 of the TAS. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
19. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
20. Detectable warning surfaces must be slip resistant and not allow water to accumulate.
21. Detectable warning surfaces shall be a minimum of 24" in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
22. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb. Align the rows of domes to be perpendicular to the grade break between the ramp run and the street. Detectable warning surfaces may be curved along the corner radius.
23. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.



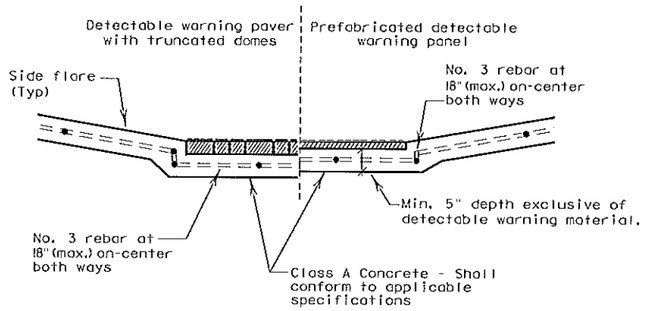

PERPENDICULAR CURB RAMP

Typical placement of detectable warning surface on sloping ramp run.

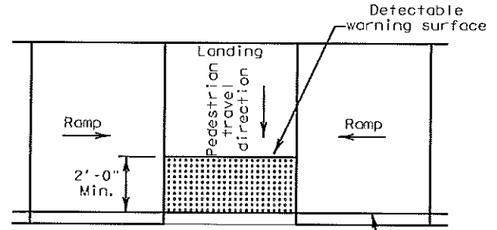



DIRECTIONAL CURB RAMP

Typical placement of detectable warning surface on sloping ramp run.




SECTION: CURB RAMP AT DETECTABLE WARNING




PARALLEL CURB RAMP

Typical placement of detectable warning surface on landing at street edge.

# DETECTABLE WARNINGS

## Detectable Warning Pavers

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

## Sidewalks

26. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within one or more reach ranges specified in TAS 308.
27. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
28. Street grades and cross slopes shall be as shown elsewhere in the plans.
29. Changes in level greater than 1/4 inch are not permitted.
30. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than 5% must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with TAS 505.
31. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
32. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be construted and paid for in accordance with Item, "Sidewalks".
33. Sidewalk details are shown elsewhere in the plans.



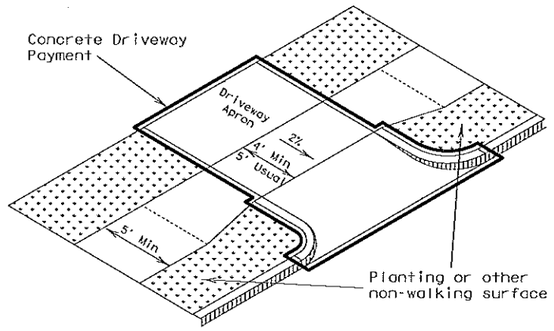
Texas Department of Transportation
Design Division Standard

# PEDESTRIAN FACILITIES CURB RAMPS

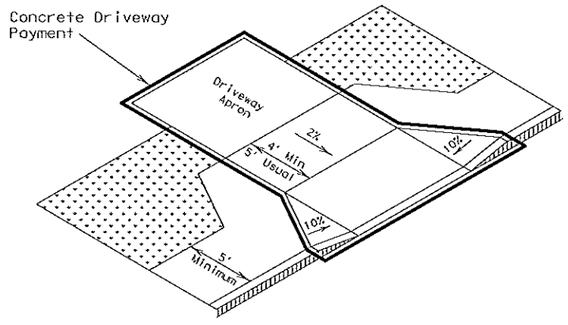
# PED-12A

| | | | | | | |
|---|---|---|---|---|---|---|
| FILE: ped12a.dgn | DN: TxDOT | CK: PK | DW: TxDOT | CK: HD | | |
|  | CONT | SECT | JOB | | HIGHWAY | |
| REVISIONS | | | | | | |
| VP June 13, 2012 | DIST | COUNTY | | | SHEET NO. | |
| SHEET 2 OF 4 | | | | | 49 | |

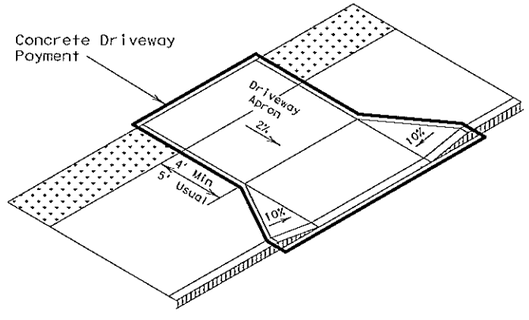
DATE:
FILE:



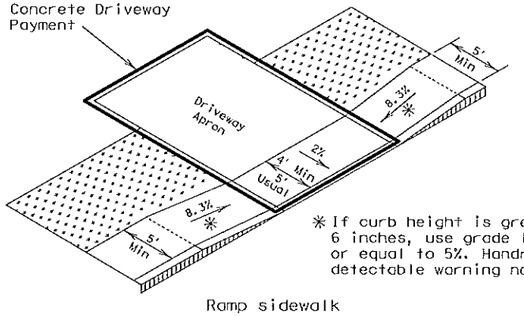

Setback sidewalk




Apron offset sidewalk



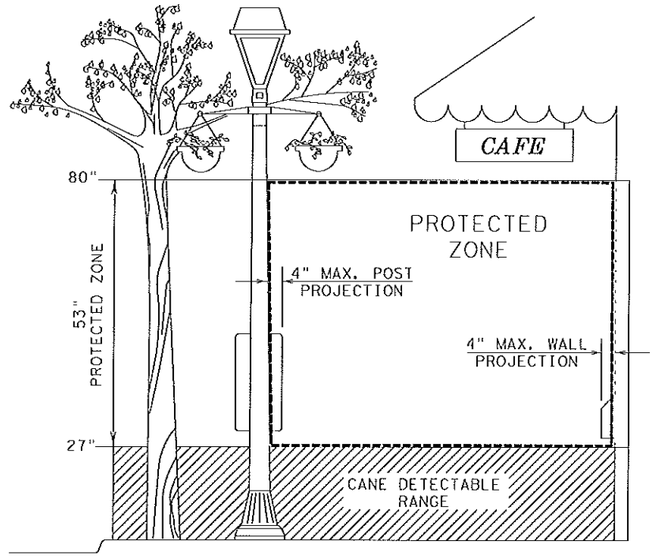

Wide sidewalk




* If curb height is greater than 6 inches, use grade less than or equal to 5%. Handrail and detectable warning not required.

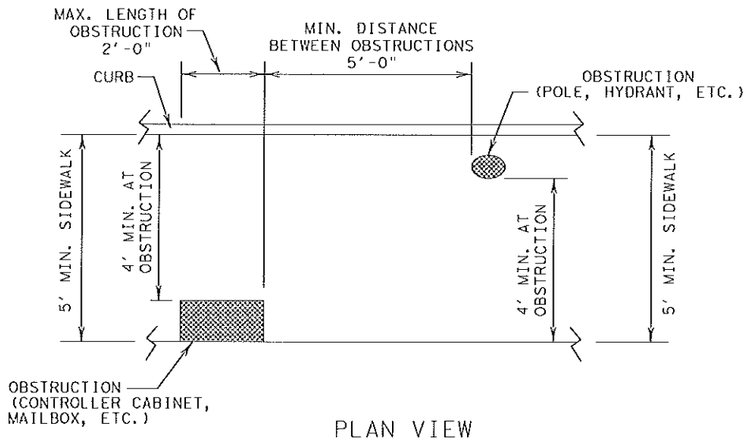
Ramp sidewalk

## SIDEWALK TREATMENT AT DRIVEWAYS




## PROTECTED ZONE

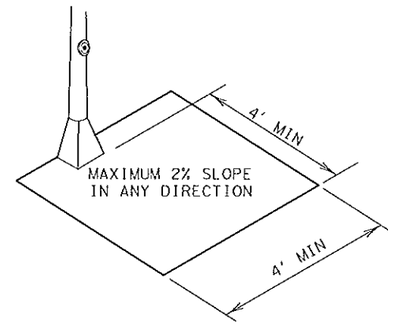
In pedestrian circulation area, maximum 4" projection for post or wall mounted objects between 27"and 80" above the surface.



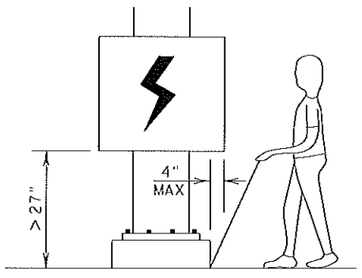

PLAN VIEW

## PLACEMENT OF STREET FIXTURES

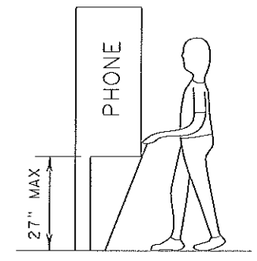
(ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' x 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.)




## CLEAR GROUND SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON




When an obstruction of a height greater than 27" from the surface would create a protrusion of more than 4" into the pedestrian circulation area, construct additional curb or foundation at the bottom to provide a maximum 4" overhang.




Protruding objects of a height ≤ 27" are detectable by cane and do not require additional treatment.

## DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

SHEET 3 OF 4

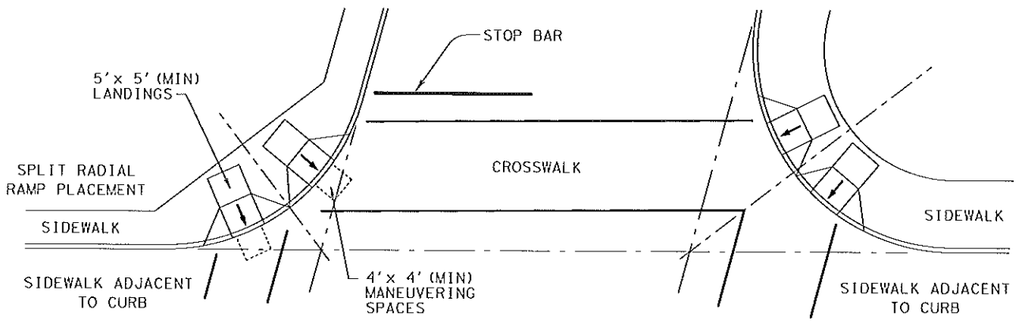
Texas Department of Transportation
Design Division Standard

# PEDESTRIAN FACILITIES CURB RAMPS

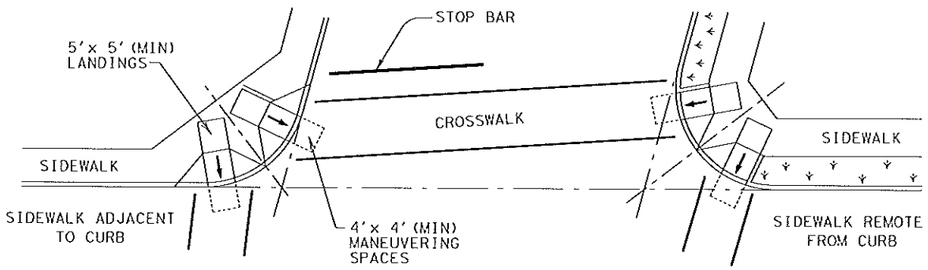
# PED-12A

| | | | | | | |
|---|---|---|---|---|---|---|
| FILE: ped12a.dgn | DN: TxDOT | CK: PK | DW: TxDOT | CK: HD | | |
| ©TxDOT March 2002 | CONT | SECT | JOB | | HIGHWAY | |
| REVISIONS | | | | | | |
| VP June 13, 2012 | DIST | COUNTY | | | SHEET NO. | |
| SHEET 3 OF 4 | | | | | 50 | |

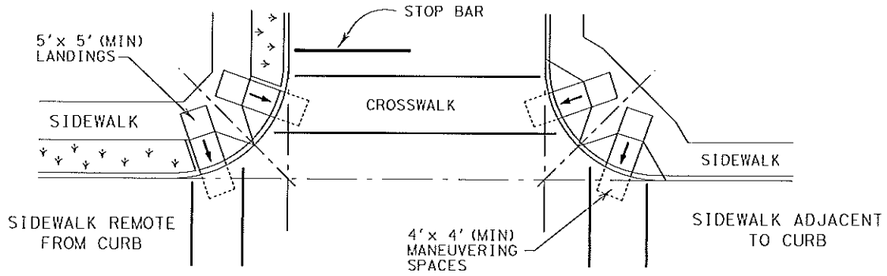
DATE:
FILE:



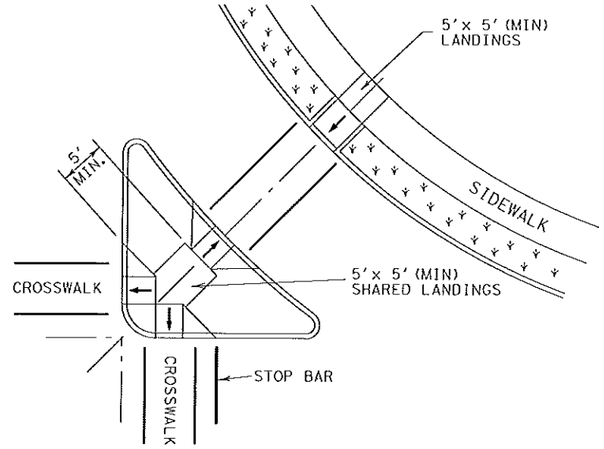

SKEWED INTERSECTION WITH "LARGE" RADIUS



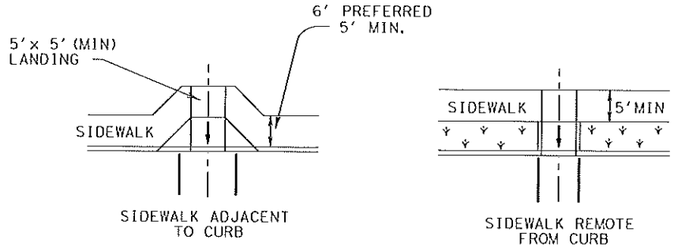

SKEWED INTERSECTION WITH "SMALL" RADIUS




NORMAL INTERSECTION WITH "SMALL" RADIUS




AT INTERSECTION
W/FREE RIGHT TURN & ISLAND




MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

TYPICAL CROSSING LAYOUTS



Texas Department of Transportation
Design Division Standard

# PEDESTRIAN FACILITIES CURB RAMPS

## PED-12A

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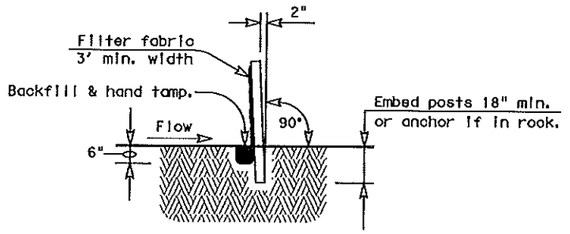
| FILE: ped12a.dgn | | DN: TxDOT | CK: PK | DW: TxDOT | CK: MD | | |
| ©TxDOT March 2002 | | CONT | SECT | JOB | HIGHWAY | | |
| REVISIONS | | | | | | | |
| VP June 13, 2012 | | DIST | COUNTY | | SHEET NO. | | |
| SHEET 4 OF 4 | | | | | 61 | | |




SECTION A-A

GENERAL NOTES

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

PLAN SHEET LEGEND

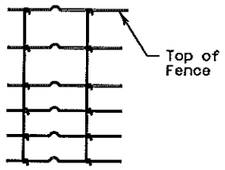
Sediment Control Fence —— SCF ——

SEDIMENT CONTROL FENCE USAGE GUIDELINES

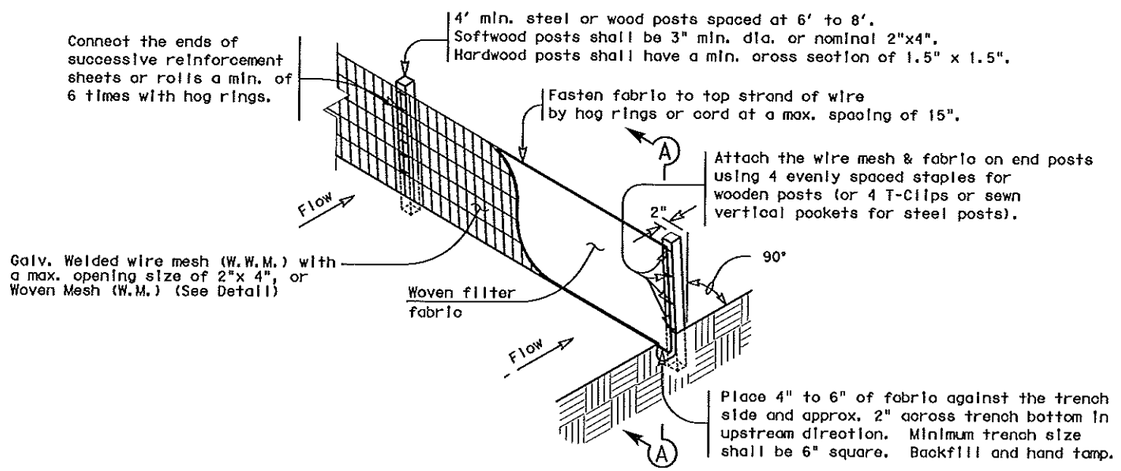
A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

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

Galv. Hinge joint knot woven mesh (12.5 Ga. Min.) requires a minimum of five horizontal wires spaced at a max. 12 inches apart and all vertical wires spaced at a max. 12 inches apart.

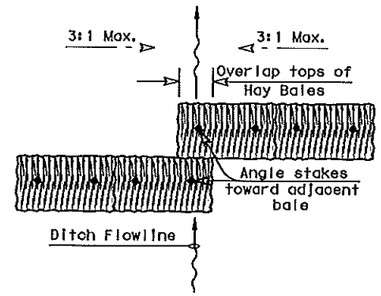



Hinge Joint Knot Woven Mesh (Option)

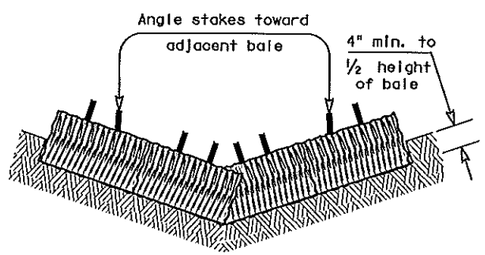



TEMPORARY SEDIMENT CONTROL FENCE

SCF




PLAN VIEW




PROFILE VIEW

PLANS SHEET LEGEND

Baled Hay —— BH ——

BALED HAY USAGE GUIDELINES

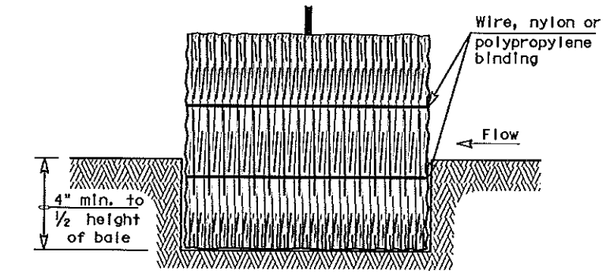
A Baled Hay installation may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A two year storm frequency may be used to calculate the flow rate to be filtered. The installation should be sized to filter a maximum flow thru rate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

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

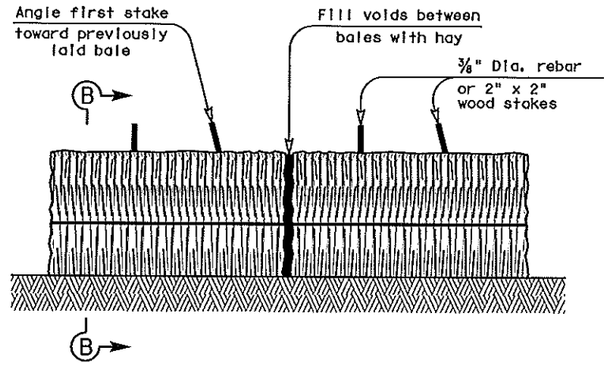
For Baled Hay installations in small ditches, the additional following considerations apply:

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

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




SECTION B-B




BALED HAY FOR EROSION CONTROL

BH

GENERAL NOTES

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

Texas Department of Transportation
Design Division (Roadway)

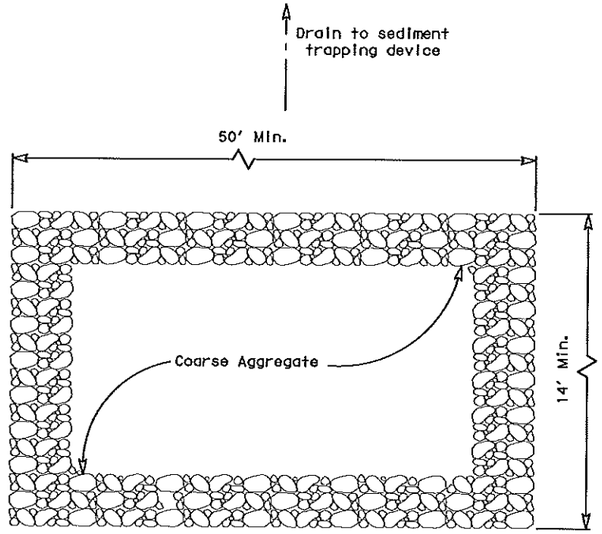
# TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

## FENCE & BALED HAY

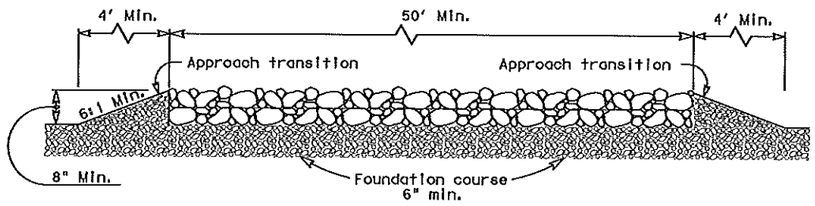
## EC(1)-09

| FILE: ec109.dgn | DN: HEJ | CK: HEJ | DW: BGD / TV | CK: |
|---|---|---|---|---|
| ©TxDOT JUNE 1993 | DISTRICT | FEDERAL AID PROJECT | | SHEET |
| REVISIONS | . | . | | 52 |
| Language added to the end of the standard sheet note for silt fence to allow for the use of the new backing. | COUNTY | CONTROL | SECT | JOB | HIGHWAY |
| | . | . | . | . | . |

LEVELS DISPLAYED




PLAN

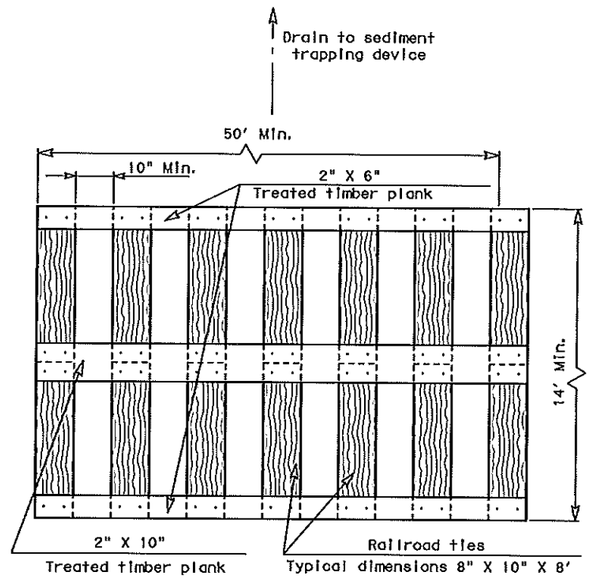



PROFILE

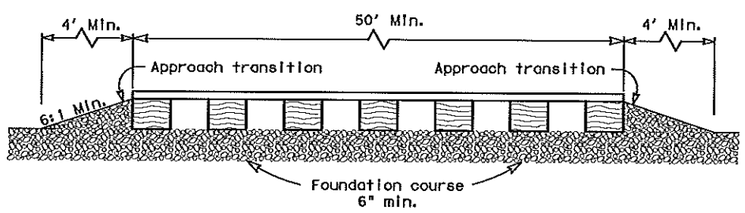
## CONSTRUCTION EXIT (TYPE 1)

### GENERAL NOTES

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.




PLAN

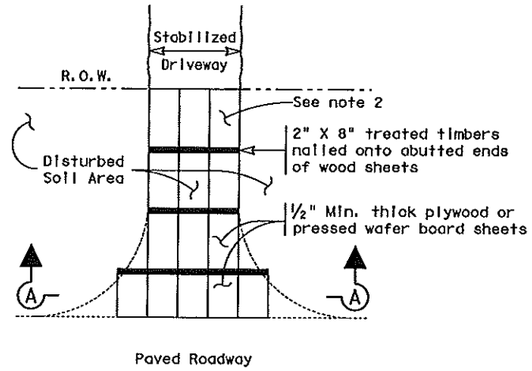



PROFILE

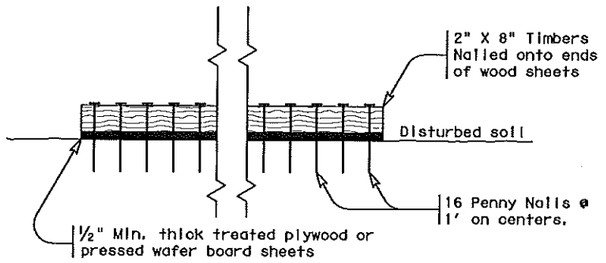
## CONSTRUCTION EXIT (TYPE 2)

### GENERAL NOTES

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




PLAN




SECTION A-A

## CONSTRUCTION EXIT (TYPE 3)

### GENERAL NOTES

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

Texas Department of Transportation
Design Division (Roadway)

# TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

## CONSTRUCTION EXITS

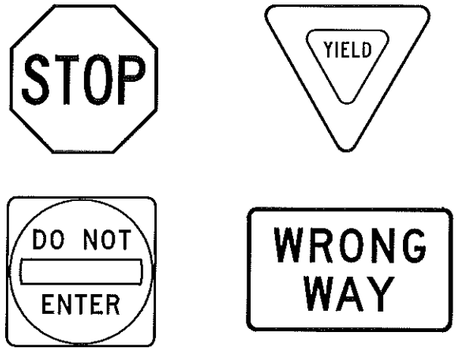
## EC(3)-93

| FILE: EC393.DGN | DN: HEJ | CK: HEJ | DW: BGD | CK: |
|---|---|---|---|---|
| ©TxDOT JUNE 1993 | DISTRICT | FEDERAL AID PROJECT | | SHEET |
| REVISIONS | - | - | | 53 |
| | COUNTY | CONTROL | SECT | JOB | HIGHWAY |
| | - | - | - | - | - |

LEVELS DISPLAYED

DATE:
FILE:

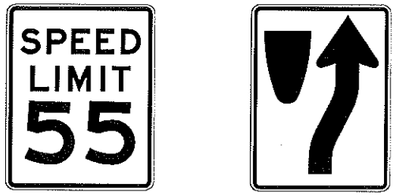
## REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS
### (STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)




REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

| SHEETING REQUIREMENTS | | |
|---|---|---|
| USAGE | COLOR | SIGN FACE MATERIAL |
| BACKGROUND | RED | TYPE B OR C SHEETING |
| BACKGROUND | WHITE | TYPE B OR C SHEETING |
| LEGEND & BORDERS | WHITE | TYPE B OR C SHEETING |
| LEGEND | RED | TYPE B OR C SHEETING |

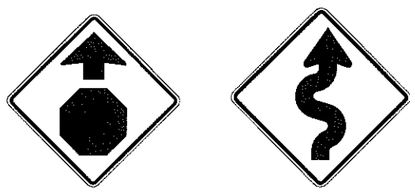
## REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS
### (EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)




TYPICAL EXAMPLES

| SHEETING REQUIREMENTS | | |
|---|---|---|
| USAGE | COLOR | SIGN FACE MATERIAL |
| BACKGROUND | WHITE | TYPE A SHEETING |
| BACKGROUND | ALL OTHERS | TYPE B OR C SHEETING |
| LEGEND, BORDERS AND SYMBOLS | BLACK | ACRYLIC NON-REFLECTIVE FILM |
| LEGEND, BORDERS AND SYMBOLS | ALL OTHER | TYPE B OR C SHEETING |

## REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

| SHEETING REQUIREMENTS | | |
|---|---|---|
| USAGE | COLOR | SIGN FACE MATERIAL |
| BACKGROUND | FLOURESCENT YELLOW | TYPE $B_{FL}$ OR $C_{FL}$ SHEETING |
| LEGEND & BORDERS | BLACK | ACRYLIC NON-REFLECTIVE FILM |
| LEGEND & SYMBOLS | ALL OTHER | TYPE B OR C SHEETING |

## REQUIREMENTS FOR SCHOOL SIGNS


TYPICAL EXAMPLES

| SHEETING REQUIREMENTS | | |
|---|---|---|
| USAGE | COLOR | SIGN FACE MATERIAL |
| BACKGROUND | WHITE | TYPE A SHEETING |
| BACKGROUND | FLOURESCENT YELLOW GREEN | TYPE $B_{FL}$ OR $C_{FL}$ SHEETING |
| LEGEND, BORDERS AND SYMBOLS | BLACK | ACRYLIC NON-REFLECTIVE FILM |
| SYMBOLS | RED | TYPE B OR C SHEETING |

## GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

| ALUMINUM SIGN BLANKS THICKNESS | |
|---|---|
| Square Feet | Minimum Thickness |
| Less than 7.5 | 0.080 |
| 7.5 to 15 | 0.100 |
| Greater than 15 | 0.125 |

| DEPARTMENTAL MATERIAL SPECIFICATIONS | |
|---|---|
| ALUMINUM SIGN BLANKS | DMS-7110 |
| SIGN FACE MATERIALS | DMS-8300 |

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

*Traffic Operations Division Standard*

# TYPICAL SIGN REQUIREMENTS

# TSR(4)-13

| FILE: tsr4-13.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT October 2003 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS 12-03 7-13 9-08 | DIST | COUNTY | | SHEET NO. 54 |

4

# SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

**Post Type**

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

**Number of Posts (1 or 2)**

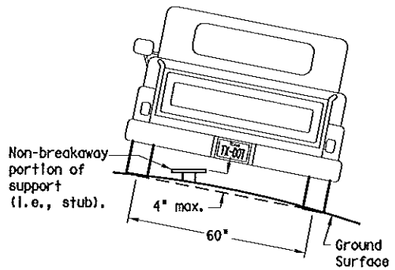
**Anchor Type**

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

**Sign Mounting Designation**

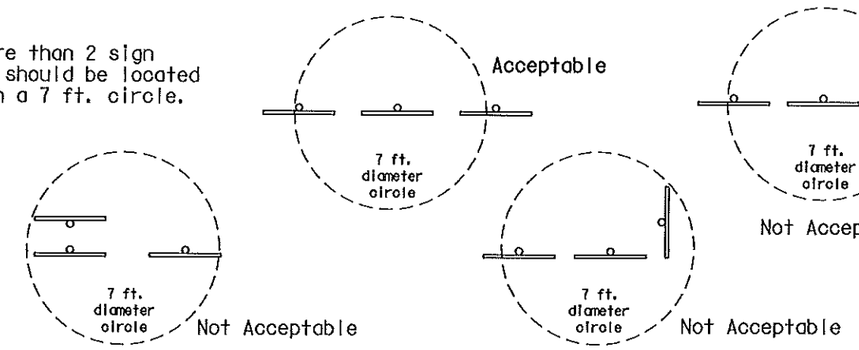
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

# REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



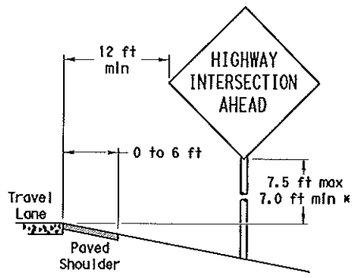

To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

No more than 2 sign posts should be located within a 7 ft. circle.



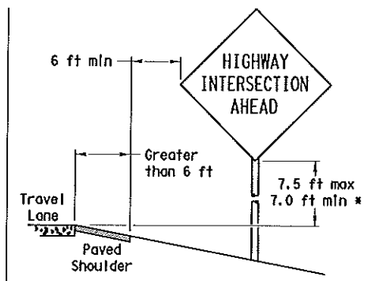

# SIGN LOCATION

## PAVED SHOULDERS




LESS THAN 6 FT. WIDE

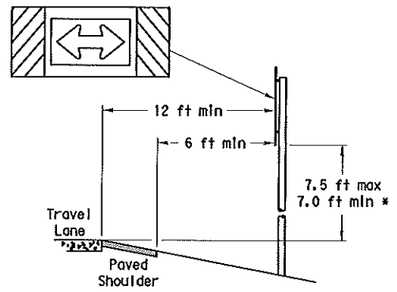
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



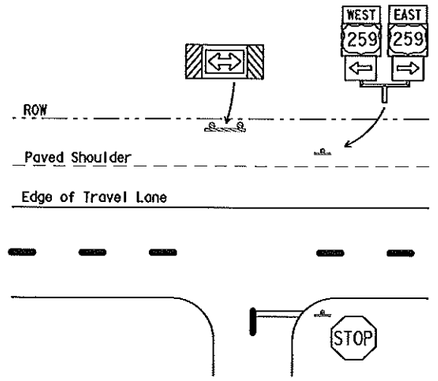

GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

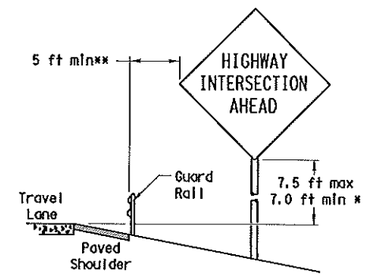
## T-INTERSECTION



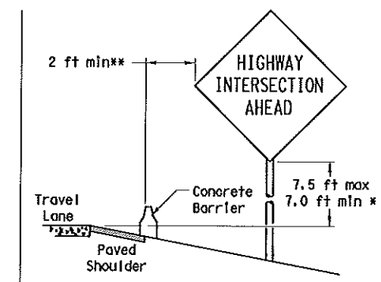

When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.




## BEHIND BARRIER




BEHIND GUARDRAIL




BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

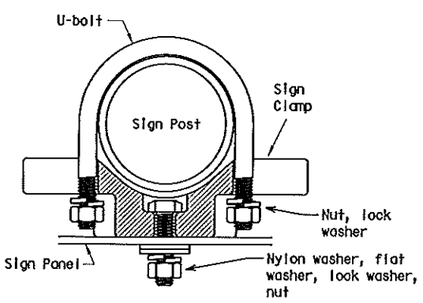
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
http://www.txdot.gov/publications/traffic.htm

# TYPICAL SIGN ATTACHMENT DETAIL

## Single Signs

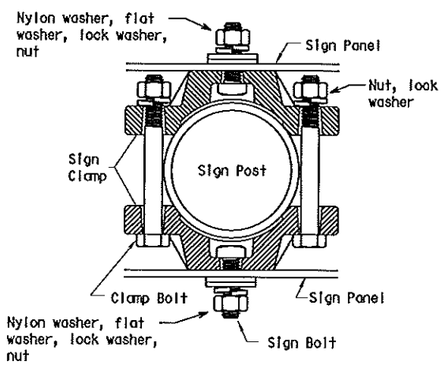



Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

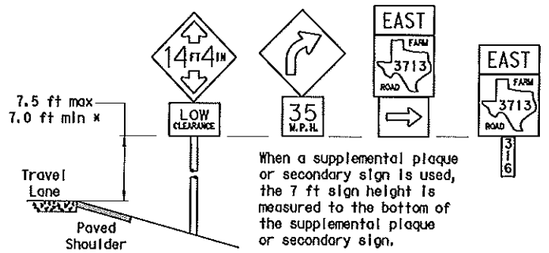
Sign clamps may be either the specific size clamp or the universal clamp.

## Back-to-Back Signs



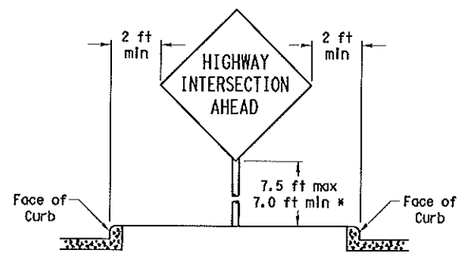

| Pipe Diameter | Approximate Bolt Length | |
|---|---|---|
| | Specific Clamp | Universal Clamp |
| 2" nominal | 3" | 3 or 3 1/2" |
| 2 1/2" nominal | 3 or 3 1/2" | 3 1/2 or 4" |
| 3" nominal | 3 1/2 or 4" | 4 1/2" |

## SIGNS WITH PLAQUES



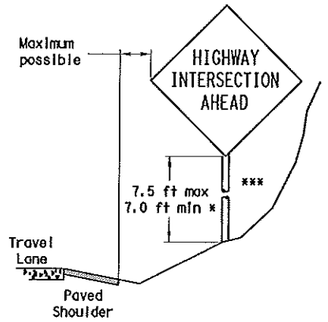

When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

## CURB & GUTTER OR RAISED ISLAND




## RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)




Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
*Traffic Operations Division*

# SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

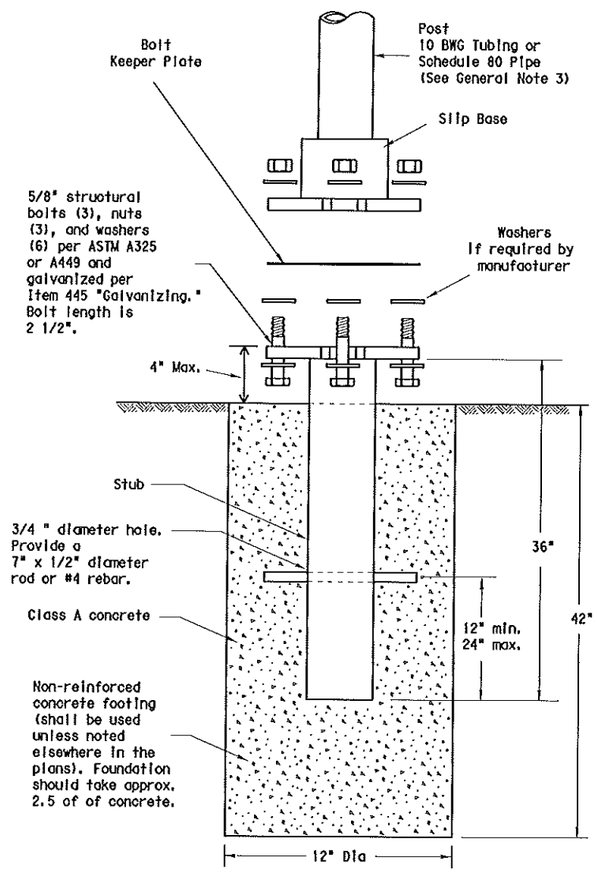
SMD(GEN)-08

| ©TxDOT July 2002 | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| REVISIONS 9-08 | STATE DISTRICT | FEDERAL AID PROJECT | | SHEET |
| | 6 | | | 55 |
| | COUNTY | CONTROL | SECTION | JOB | HIGHWAY |
| | | | | | |

(58A)

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

# TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS




SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

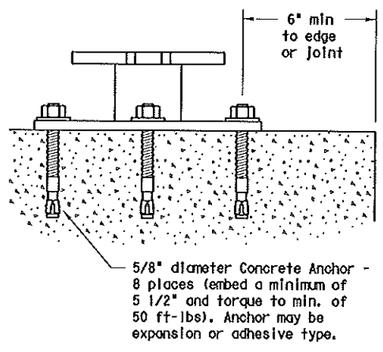
Foundation

1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support

1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

## CONCRETE ANCHOR




SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

LEVELS DISPLAYED

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

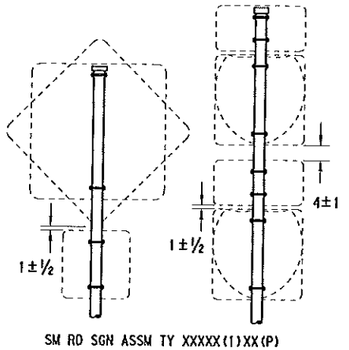
ACC:

STANDARD PLANS
*Texas Department of Transportation*
*Traffic Operations Division*

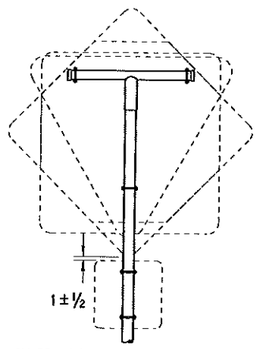
## SIGN MOUNTING DETAILS
## SMALL ROADSIDE SIGNS
## TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

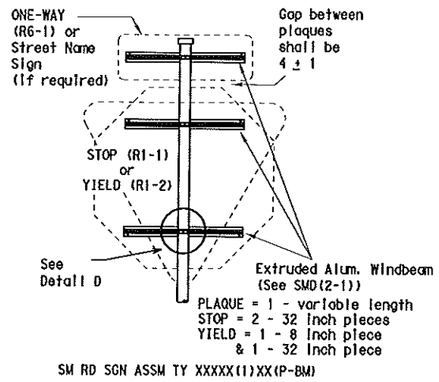
| ©TxDOT July 2002 | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| REVISIONS 9-08 | STATE DISTRICT · | FEDERAL REGION 6 | FEDERAL AID PROJECT · | SHEET 56 |
| | COUNTY · | CONTROL · | SECTION · | JOB · |



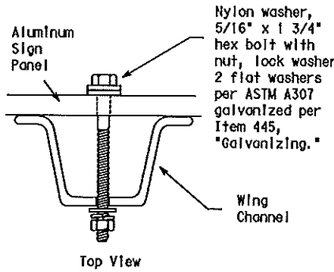

SM RD SGN ASSM TY XXXXX(1)XX(P)



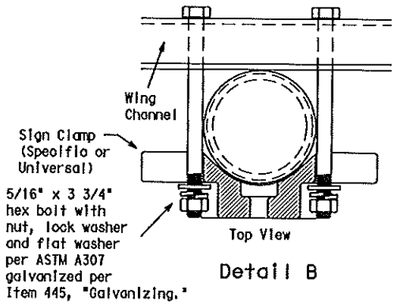

SM RD SGN ASSM TY XXXXX(1)XX(T)



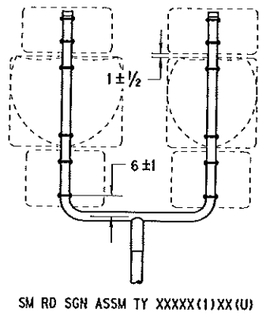

SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



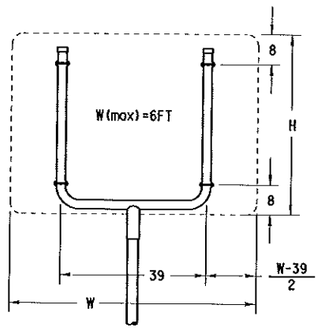

Detail A



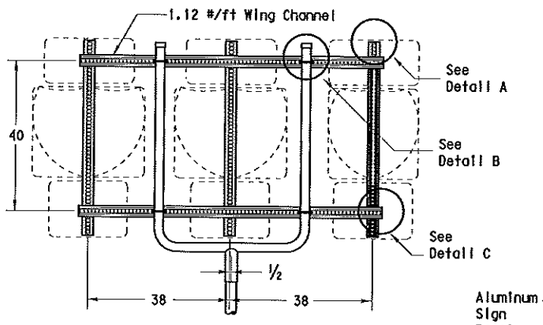

Detail B



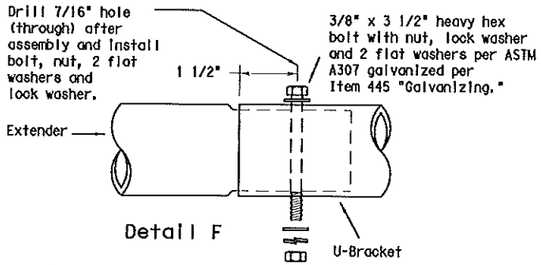

SM RD SGN ASSM TY XXXXX(1)XX(U)




SM RD SGN ASSM TY XXXXX(1)XX(U)

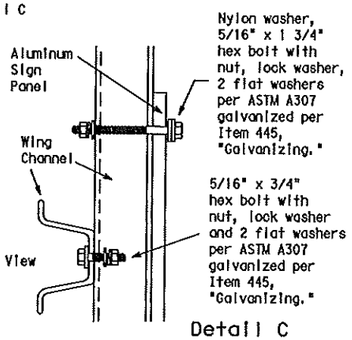



SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)



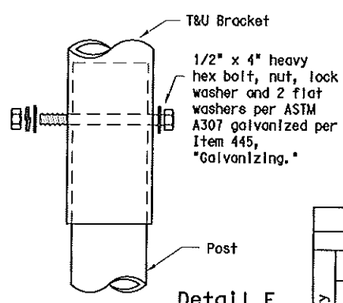

Detail F

Splices shall only be allowed behind the sign substrate.

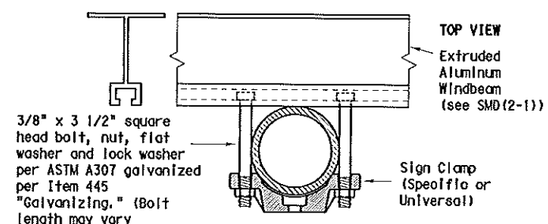



SIDE VIEW

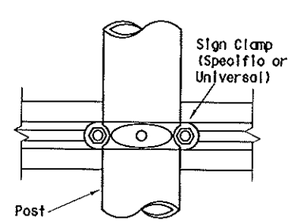
Detail C

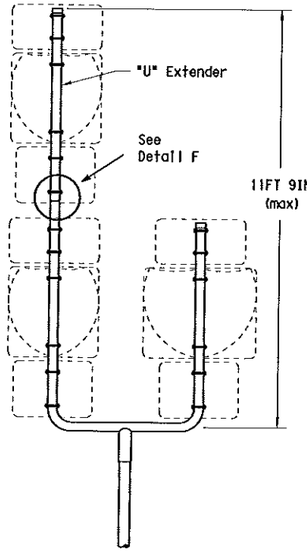



Detail E

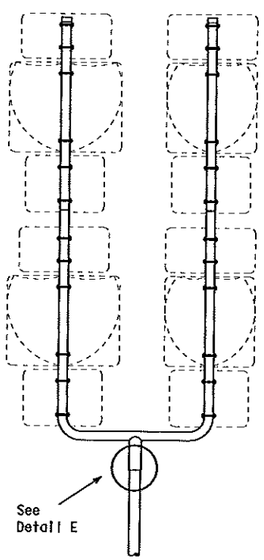



Detail D




SM RD SGN ASSM TY S80(1)XX(U-1EXT)

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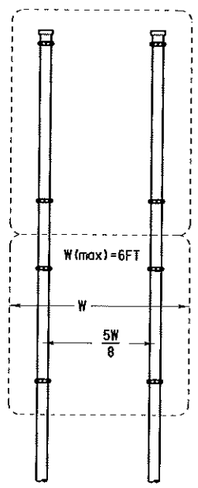
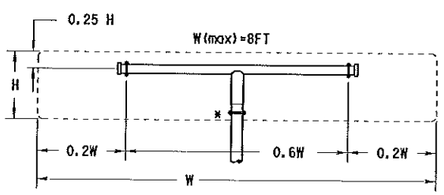


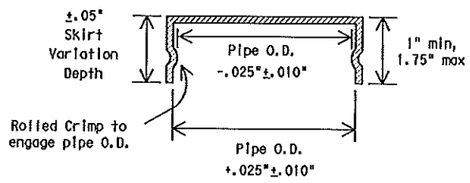

SM RD SGN ASSYM TY XXXXX(2)XX(P)




SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

All dimensions are in english unless detailed otherwise.

## FRICTION CAP DETAIL




Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

GENERAL NOTES:

| SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|---|---|---|
| 10 BWG | 1 | 16 SF |
| 10 BWG | 2 | 32 SF |
| Sch 80 | 1 | 32 SF |
| Sch 80 | 2 | 64 SF |

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT

| | SIGN DESCRIPTION | SUPPORT |
|---|---|---|
| Regulatory | 48-Inch STOP sign (R1-1) | TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM) |
| | 60-Inch YIELD sign (R1-2) | TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM) |
| | 48x16-Inch ONE-WAY sign (R6-1) | TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM) |
| | 36x48, 48x36, and 48x48-Inch signs | TY 10BWG(1)XX(T) |
| | 48x60-Inch signs | TY S80(1)XX(T) |
| Warning | 48x48-Inch signs (diamond or square) | TY 10BWG(1)XX(T) |
| | 48x60-Inch signs | TY S80(1)XX(T) |
| | 48-Inch Advance School X-ing sign (S1-1) | TY 10BWG(1)XX(T) |
| | 48-Inch School X-ing sign (S2-1) | TY 10BWG(1)XX(T) |
| | Large Arrow sign (W1-6 & W1-7) | TY 10BWG(1)XX(T) |

STANDARD PLANS
*Texas Department of Transportation*
*Traffic Operations Division*

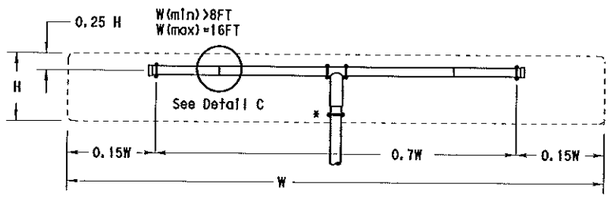
# SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

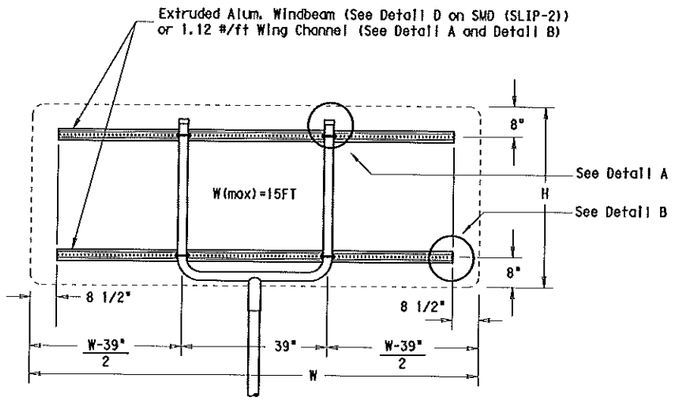
| ©TxDOT July 2002 | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| REVISIONS 9-08 | STATE DISTRICT 6 | FEDERAL REGION | FEDERAL AID PROJECT | SHEET 57 |
| | COUNTY | CONTROL | SECTION | JOB | HIGHWAY |

ACC:

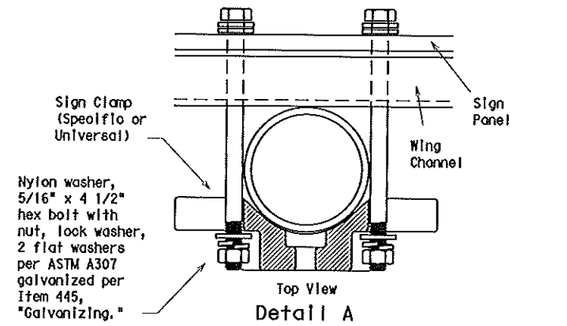
| LEVELS DISPLAYED | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | |
| 33 | 34 | 35 | 36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



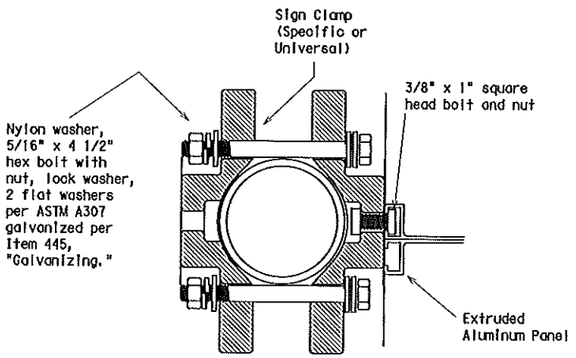

SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



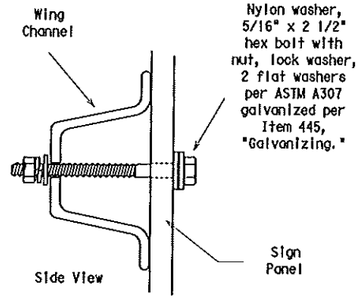

SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



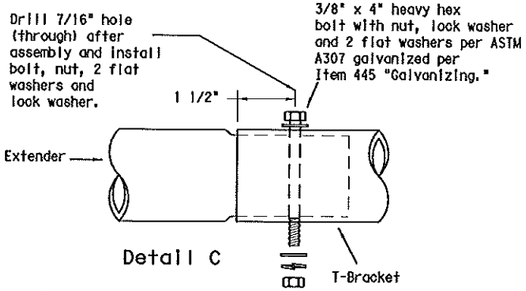

Detail A




Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

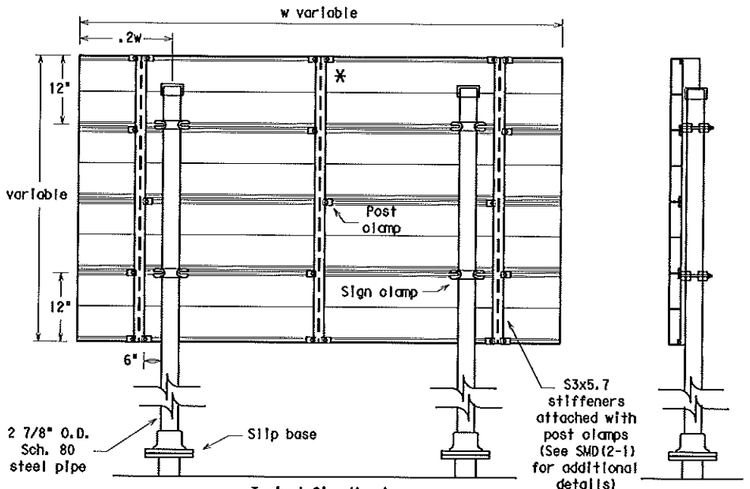



Detail B




Detail C

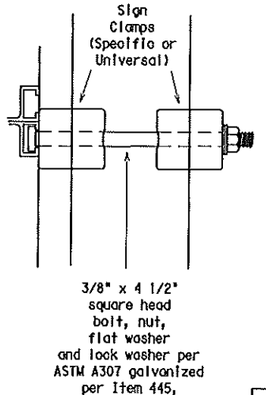
Splices shall only be allowed behind the sign substrate.




Typical Sign Mount
SM RD SGN ASSM TY S80(2)XX(P-EXAL)
* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

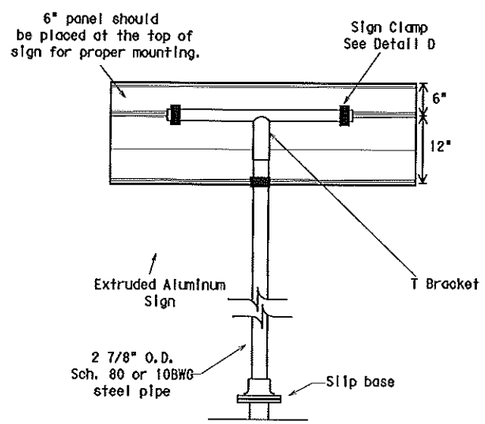


See Detail E
for clamp installation

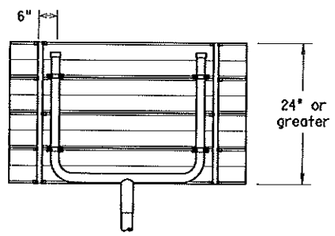



3/8" x 4 1/2"
square head
bolt, nut,
flat washer
and lock washer per
ASTM A307 galvanized
per Item 445,
"Galvanizing."

Detail E




Extruded Aluminum Sign
With T Bracket




Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

**GENERAL NOTES:**

1.

| SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|---|---|---|
| 10 BWG | 1 | 16 SF |
| 10 BWG | 2 | 32 SF |
| Sch 80 | 1 | 32 SF |
| Sch 80 | 2 | 64 SF |

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
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6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT

| | SIGN DESCRIPTION | SUPPORT |
|---|---|---|
| Regulatory | 48-inch STOP sign (R1-1) | TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM) |
| | 60-inch YIELD sign (R1-2) | TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM) |
| | 48x16-inch ONE-WAY sign (R6-1) | TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM) |
| | 36x48, 48x36, and 48x48-inch signs | TY 10BWG(1)XX(T) |
| | 48x60-inch signs | TY S80(1)XX(T) |
| Warning | 48x48-inch signs (diamond or square) | TY 10BWG(1)XX(T) |
| | 48x60-inch signs | TY S80(1)XX(T) |
| | 48-inch Advance School X-ing sign (S1-1) | TY 10BWG(1)XX(T) |
| | 48-inch School X-ing sign (S2-1) | TY 10BWG(1)XX(T) |
| | Large Arrow sign (W1-6 & W1-7) | TY 10BWG(1)XX(T) |

STANDARD PLANS
*Texas Department of Transportation*
*Traffic Operations Division*

# SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

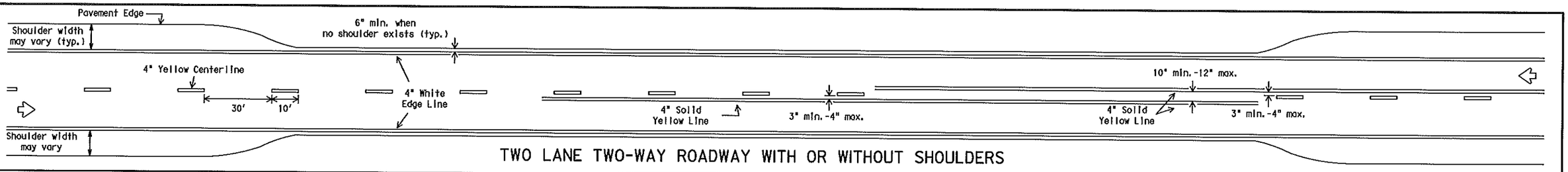
## SMD(SLIP-3)-08

| ©TxDOT July 2002 | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| REVISIONS 9-08 | STATE DISTRICT 6 | FEDERAL REGION - | FEDERAL AID PROJECT - | SHEET 58 |
| COUNTY - | CONTROL - | SECTION - | JOB - | HIGHWAY - |

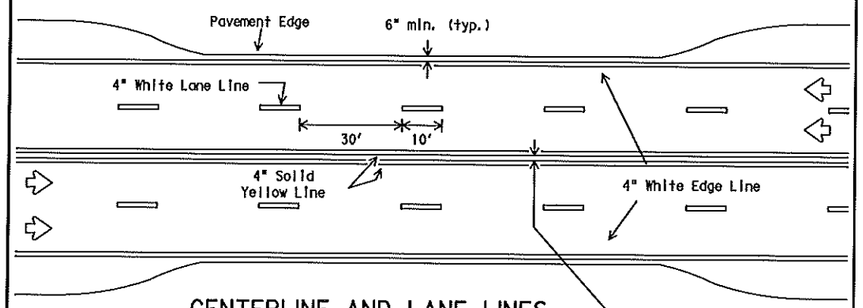
26D

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

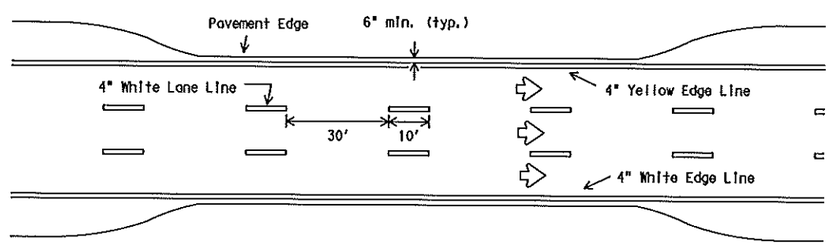
DATE:
FILE:



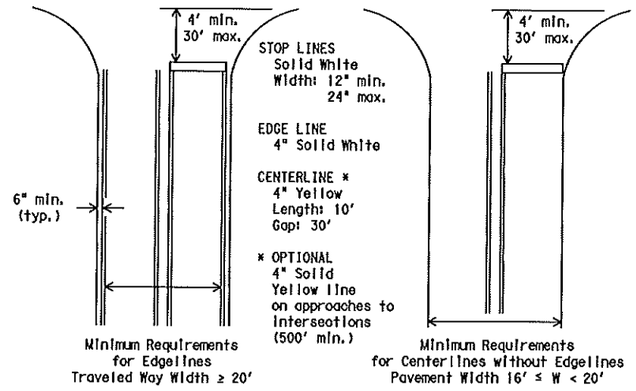

## TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS




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

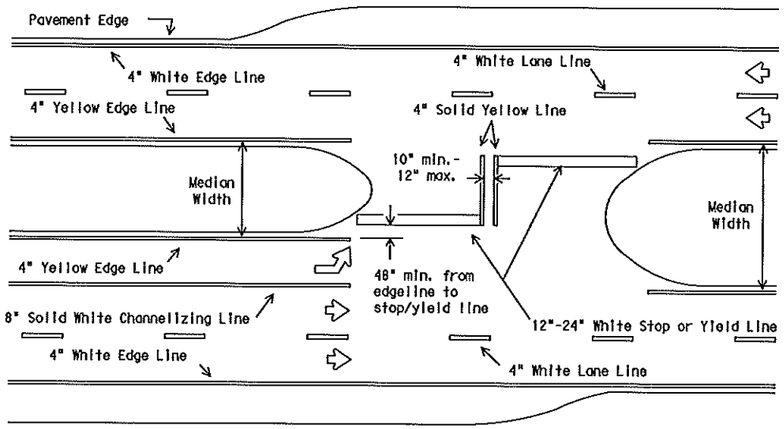



## EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



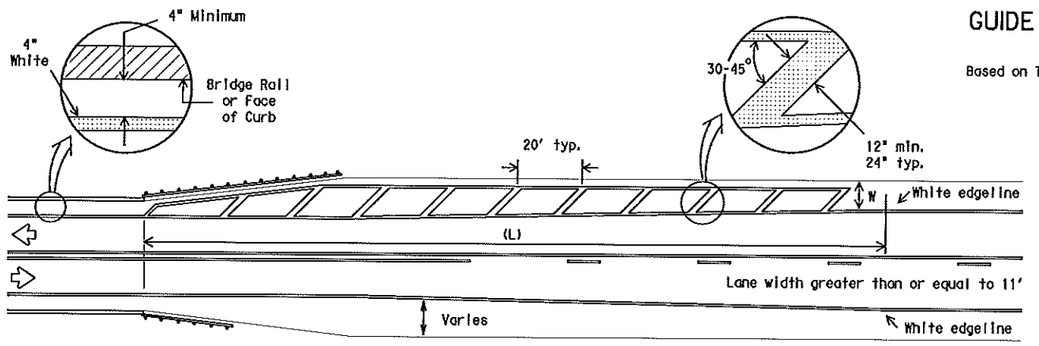

## GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways




All medians shall be field measured to determine the location of necessary striping. Stop/Yield bars and centerlines shall be placed when the median width is greater than 30 ft. The median width is defined as the area between two roadways of a divided highway measured from edge of traveled way to edge of traveled way. The median excludes turn lanes. The median width might be different between intersections, interchanges and of opposite approaches of the same intersection. The narrow median width will be the controlling width to determine if markings are required.

## FOUR LANE DIVIDED ROADWAY INTERSECTIONS




NOTES:

1. No-passing zone on bridge approach is optional but if used, it shall be a minimum 500 feet long.
2. For crosshatching length (L) see Table 1.
3. The width of the offset (W) and the required crosshatching width is the full shoulder width in advance of the bridge.
4. The crosshatching is not required if delineators or barrier reflectors are used along the structure.
5. For guard fence details, refer elsewhere in the plans.

## ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT

## TABLE 1 - TYPICAL LENGTH (L)

| Posted Speed * | Formula |
|---|---|
| ≤ 40 | $L = \frac{WS^2}{60}$ |
| ≥ 45 | L=WS |

* 85th Percentile Speed may be used on roads where traffic speeds normally exceed the posted speed limit. Crosshatching length should be rounded up to nearest 5 foot increment.

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

EXAMPLES:

An 8 foot shoulder in advance of a bridge reduces to 4 feet on a 70 MPH roadway. The length of the crosshatching should be:

L = 8 x 70 = 560 ft.

A 4 foot shoulder in advance of a bridge reduces to 2 feet on a 40 MPH roadway. The length of the crosshatching should be:

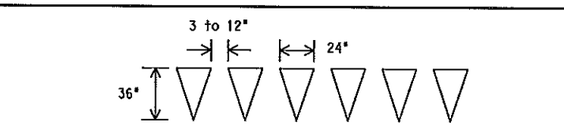
L = 4(40)² / 60 = 106.67 ft. rounded to 110 ft.

### GENERAL NOTES

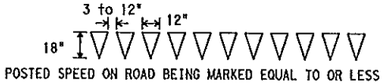
1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should typically be placed a minimum of 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.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

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

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




FOR POSTED SPEED ON ROAD BEING MARKED EQUAL TO OR GREATER THAN 45 MPH




FOR POSTED SPEED ON ROAD BEING MARKED EQUAL TO OR LESS THAN 40 MPH

## YIELD LINES

Texas Department of Transportation
Traffic Operations Division

# TYPICAL STANDARD PAVEMENT MARKINGS

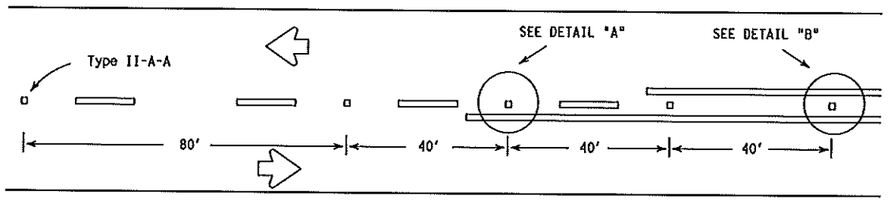
PM(1)-12



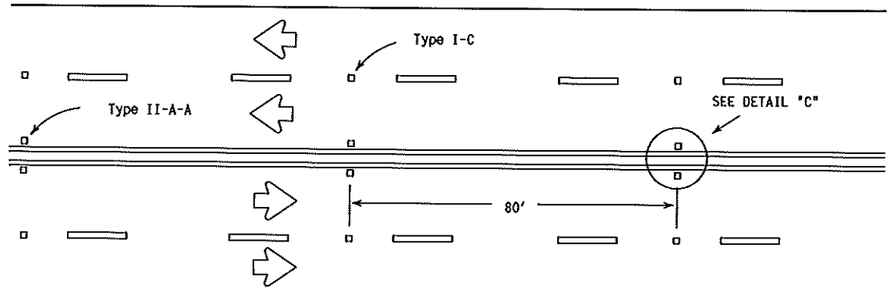
| REVISIONS | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| 8-95 2-12 | CONT | SECT | JOB | HIGHWAY |
| 5-00 | . | . | . | . |
| 8-00 | DIST | COUNTY | | SHEET NO. |
| 3-03 | . | . | | 59 |

22A

# REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

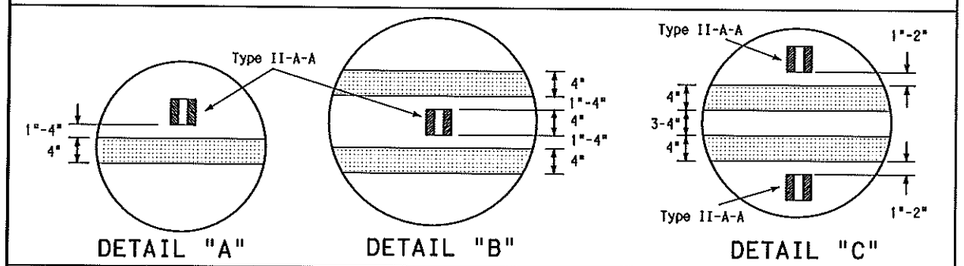


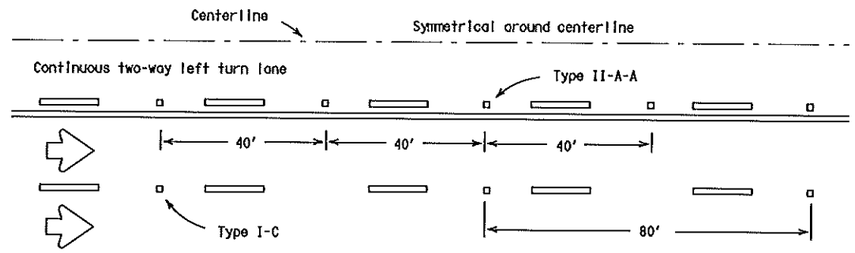

## CENTERLINE FOR ALL TWO LANE ROADWAYS



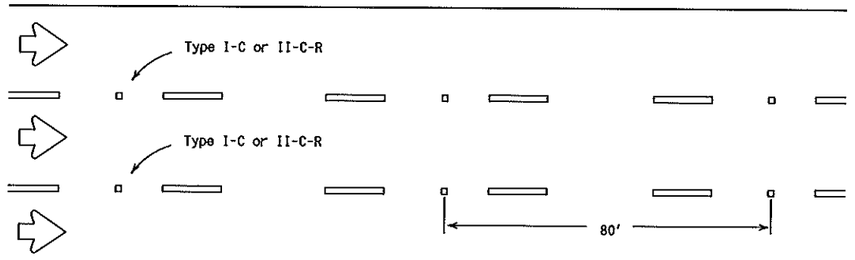

## CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS

Raised pavement marker Type I-C, clear face toward normal traffic, shall be placed on 80-foot centers.



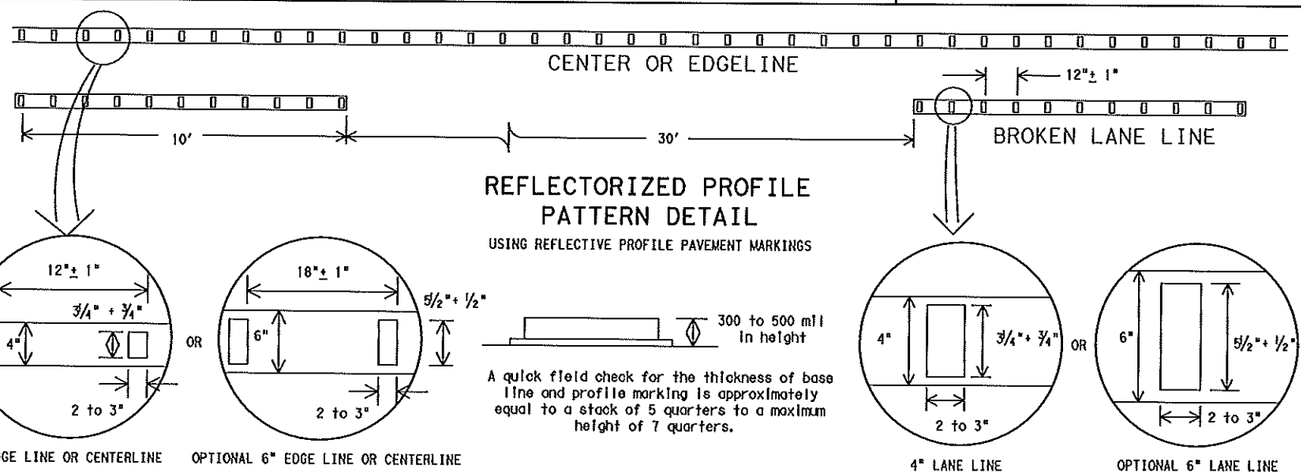




## CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE




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

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




**NOTE:**
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

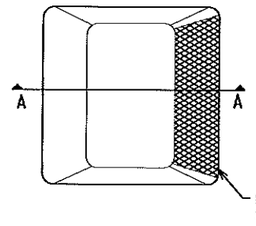
## GENERAL NOTES

All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.

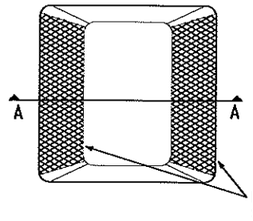
On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

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

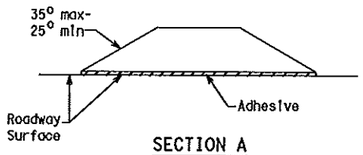
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.




Type I (Top View)




Type II (Top View)




SECTION A

## RAISED PAVEMENT MARKERS

Texas Department of Transportation
Traffic Operations Division

## POSITION GUIDANCE USING RAISED MARKERS
## REFLECTORIZED PROFILE MARKINGS
## PM(2)-12



| DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|
| CONT | SECT | JOB | HIGHWAY |
| - | - | - | - |
| DIST | COUNTY | | SHEET NO. |
| - | - | | 60 |

REVISIONS
4-92 2-10
5-00 2-12
8-00
2-08

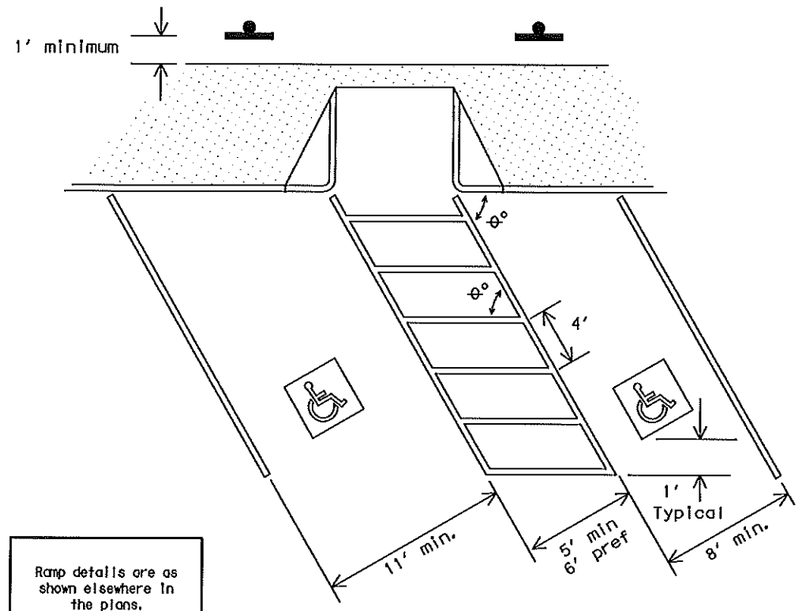
22B

DATE:
FILE:

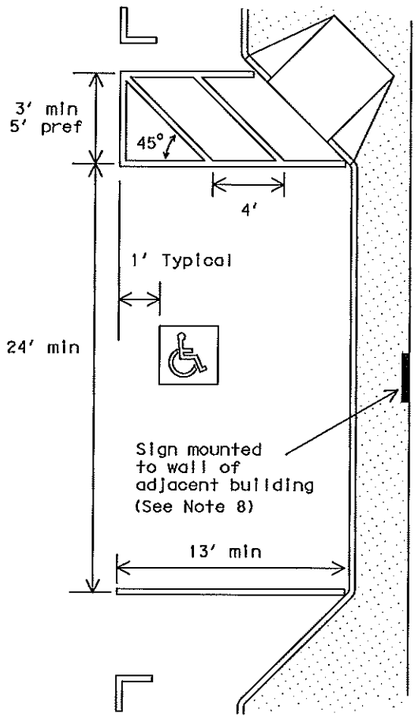
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

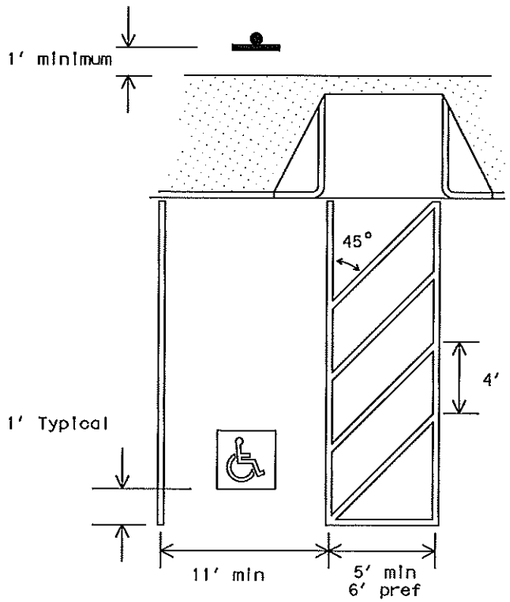
DATE:
FILE:

# TYPICAL ACCESSIBLE PARKING SPACE DIMENSIONS

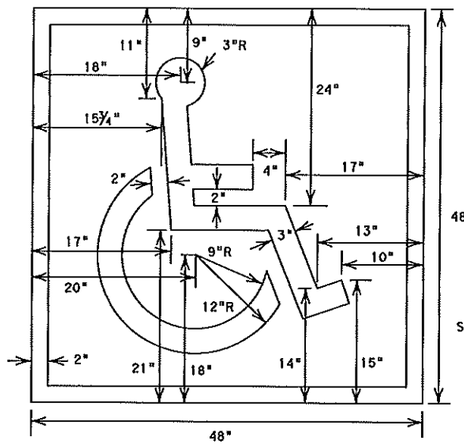



Ramp details are as shown elsewhere in the plans.



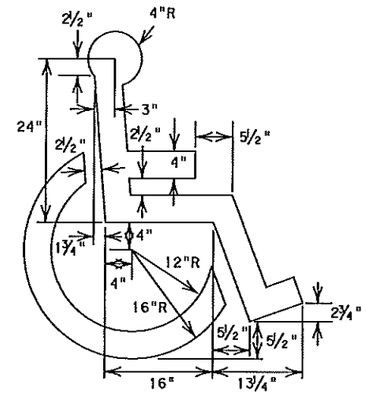




# PAVEMENT MARKINGS




With Background

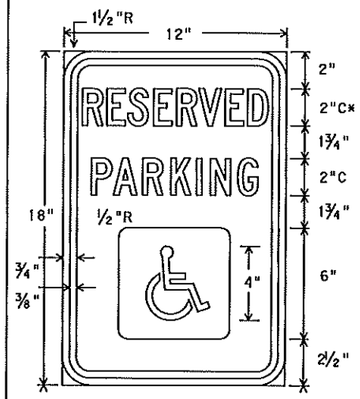
SYMBOL & BORDER: WHITE
BACKGROUND: BLUE




Symbol Only

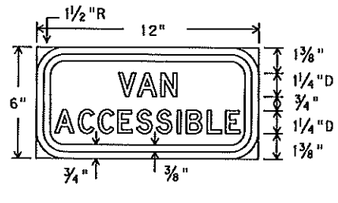
SYMBOL: BLUE OR WHITE

# HANDICAPPED PARKING SIGN




R7-8a

LEGEND AND BORDER: GREEN
WHITE SYMBOL ON BLUE BACKGROUND
BACKGROUND: WHITE




R7-8 plaque

LEGEND AND BORDER: GREEN
BACKGROUND: WHITE

| SPECIFICATION REFERENCE TABLE | |
|---|---|
| MATERIALS AND TESTS DIVISION SPECIFICATIONS | |
| ALUMINUM SIGN BLANKS | D-9-7110 |
| REFLECTIVE SHEETING, TYPE C (HIGH SPECIFIC INTENSITY) | D-9-8300 |

GENERAL SIGN NOTES:

The Alphabets and lateral spacing between letters and numerals shall conform with the Texas "Manual on Uniform Traffic Control Devices for Streets and Highways", latest edition, and any approved changes thereto. Lateral spacing of text shall provide a balanced appearance. All materials shall conform to Department Specifications.

Legend shall be applied by screening process of black and/or transparent colored ink, cut-out black vinyl non-reflective decal sheeting and/or reflective sheeting or combination thereof. Background shall be white reflective sheeting (Type C).

Sign blanks shall be one piece 0.08 inch thick sheet aluminum alloy (Type A), unless otherwise noted elsewhere in the plans.

GENERAL NOTES:

1. All parking space limit lines shall be 4" solid white lines.
2. Aisle markings shown are examples only. Other methods to indicate a NO PARKING area are acceptable. Aisle markings shall be white.
3. Dimensions of limit lines, aisle markings, and symbol (with or without background) may vary ± 10%.
4. Pavement marking symbols (with background):
   a) are REQUIRED unless stated elsewhere in the plans,
   b) should be placed toward the far end of the parking spaces so as to be visible to motorists in the travel lane,
   c) may be painted or prefabricated material, and
   d) shall be 30" x 30" minimum.
5. With approval of the Engineer, prefabricated pavement marking symbols with background of other dimensions exceeding the 30" x 30" minimum may be used. Alternative designs shall include a proportion sized symbol of accessibility, and shall conform to the illustrated colors for background, symbol and border.
6. An R7-8 sign:
   a) shall be REQUIRED for each accessible parking space,
   b) shall NOT be placed between two accessible parking spaces,
   c) shall NOT be placed in a location that restricts movement of wheelchairs within the adjacent sidewalk, and
   d) shall have a minimum mounting height of 7 feet. If mounted to wall or located so as not to be near pedestrian traffic minimum mounting height may be 7 feet.
7. Post mounted signs should be placed approximately 1 foot (or greater) behind the curb to prevent damage from vehicle overhang.
8. Signs may be mounted directly to an adjacent wall of a building when post mounting is impractical.

Texas Department of Transportation
Traffic Operations Division

# PAVEMENT MARKINGS AND SIGNING FOR ACCESSIBLE PARKING

PM(AP)-98



REVISIONS
4-98

| DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|
| CONT | SECT | JOB | HIGHWAY |
| - | - | - | - |
| DIST | COUNTY | | SHEET NO. |
| - | - | | 61 |

22K