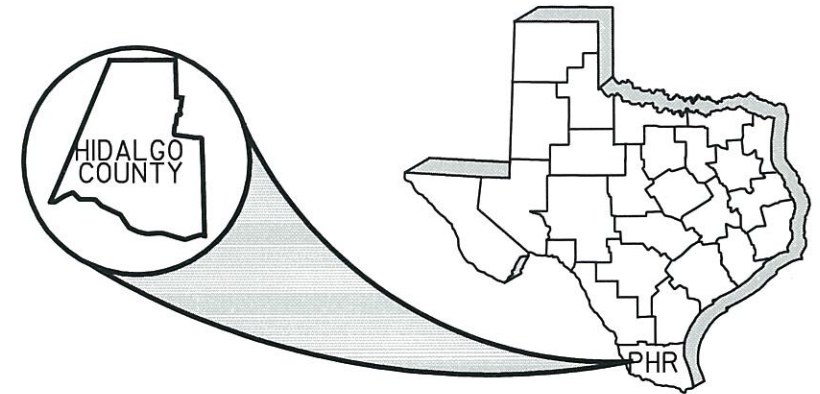


HIDALGO COUNTY PRECINCT NO. 1

CONSTRUCTION PLANS NORTH CAPISALLO SUBDIVISION BORDER ACCESS COLONIA PROJECT ROUND III COMPETITIVE CSJ 2C-1080-495



PROJECT LIMITS:

JUDGE BETO GARZA DR = 1192.5' = 0.23 MI

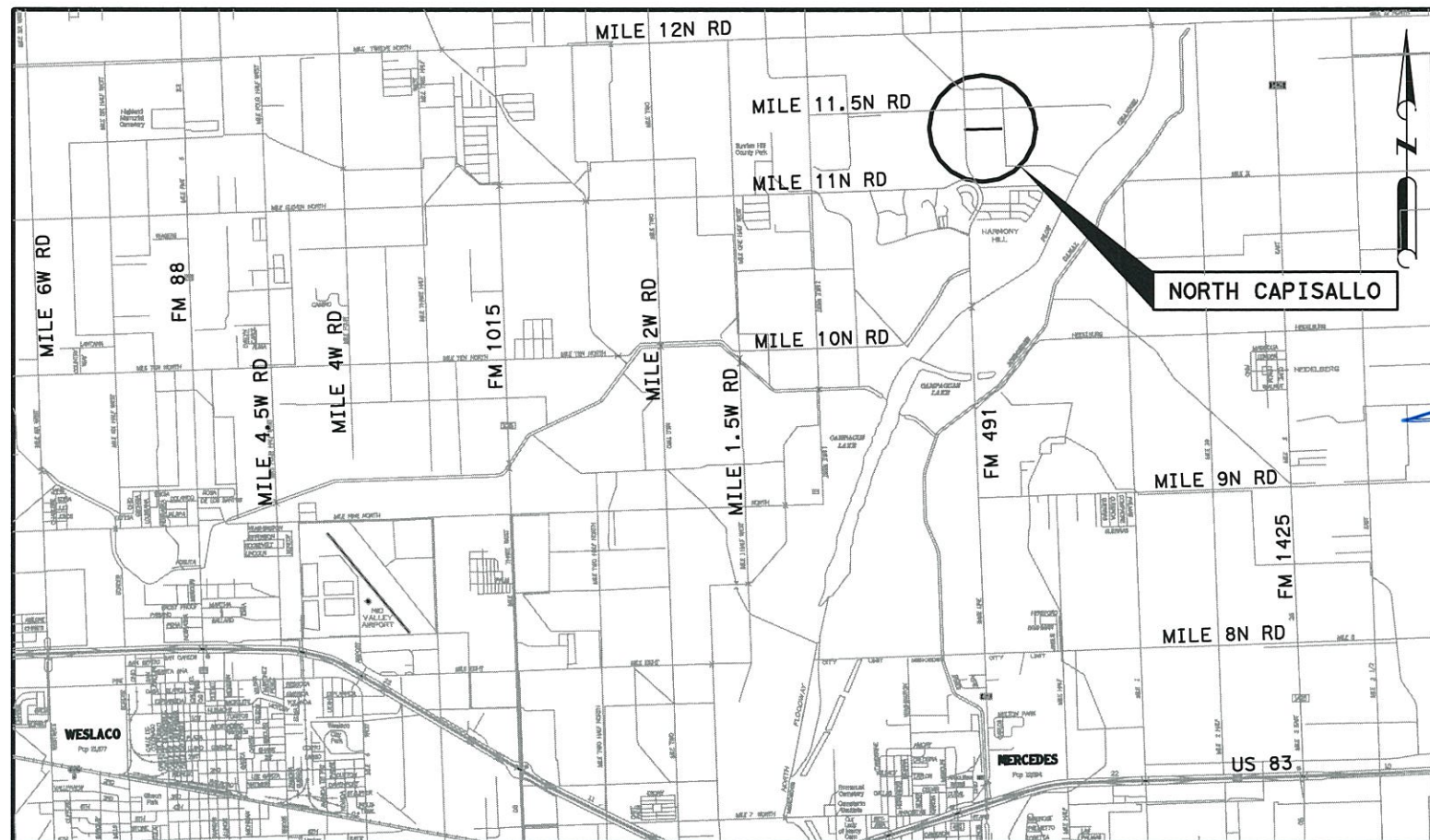
TOTAL LENGTH OF PROJECT = 1192.5' = 0.23 MI

TOTAL AREA OF DISTURBED SOIL = 1.32 AC

INDEX OF SHEETS

| SHEET NO. | DESCRIPTION |
|------------------|---------------------------------------|
| 1 | TITLE SHEET |
| 2 | PROJECT LAYOUT |
| 3 | SUMMARY OF QUANTITIES |
| 4 | GENERAL NOTES |
| 5 | TYPICAL SECTIONS |
| 6 | TRAFFIC CONTROL PLAN GENERAL NOTES |
| 7 | TRAFFIC CONTROL PLAN TYPICAL SECTIONS |
| 8-10 | PLAN & PROFILE |
| 11 | DRIVEWAY TABLES |
| 12 | EARTHWORKS |
| 13-15 | CROSS-SECTIONS |
| 16 | PAVEMENT MARKINGS |
| 17 | SW3P |
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| 18 | DRIVEWAY PROFILE DETAILS |
| 19 | DRIVEWAY DETAILS PRIVATE |
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| 35 | TCP(1-2)-12 |
| 36 | TCP(2-2)-12 |
| 37 | TCP(3-3)-98 |
| 38 | TCP(7-1)-98 |
| 39 | PM(1)-12 |
| 40 | TECL-06(PHR) |

CONSTRUCTION WILL CONSIST OF HOT MIX ASPHALT, NEW FLEXBASE, SUBGRADE, ROADSIDE DITCHES AND STRIPING.



LOCATION MAP
N.T.S.

| | |
|--|----------------------|
| APPROVAL HIDALGO COUNTY COLONIA ACCESS PROGRAM | DATE : 03/20/2012 |
| <i>[Signature]</i> | |
| APPROVAL HIDALGO COUNTY COUNTY PRECINCT No 1 | DATE : 03/20/2012 |
| <i>[Signature]</i> | |
| APPROVAL HIDALGO COUNTY PLANNER | DATE : 03/20/12 |
| <i>[Signature]</i> CRISTINA PLAN. ADM. | |
| CONCURRENCE: HIDALGO COUNTY DRAINAGE DISTRICT No 1 | DATE : 3/21/12 |
| <i>[Signature]</i> | |

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE, HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.



[Signature]
03/19/2012

TEDSI INFRASTRUCTURE GROUP

TEDSI
TBPE F-1640

Consulting Engineers
1201 E. Expressway 83
Mission, Texas 78572
(956) 424-7898

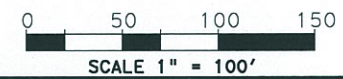
HIDALGO COUNTY OFFICIALS

| | |
|------------------------|----------------------|
| RAMON GARCIA | - COUNTY JUDGE |
| JOEL QUINTANILLA | - PCT 1 COMMISSIONER |
| HECTOR "TITO" PALACIOS | - PCT 2 COMMISSIONER |
| JOE M. FLORES | - PCT 3 COMMISSIONER |
| JOSEPH PALACIOS | - PCT 4 COMMISSIONER |



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

NO EXCEPTIONS
NO EQUATIONS
NO RAILROAD CROSSINGS



| NO. | DATE | REVISION | APP. |
|-----|------|----------|------|
| | | | |



Jose A. Sanchez
03/19/2012



HIDALGO COUNTY

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 E. Expressway 83
Mission, Texas 78572
(936) 424-7898

NORTH CAPISALLO

PROJECT LAYOUT

SHEET 1 OF 1

| | | |
|------------------------|--------------|------------------------------------|
| FED. RD. DIV. NO. 6 | PROJECT NO. | SHEET NO. 2 |
| STATE TEXAS | DIST. PHR | COUNTY HIDALGO |
| CSJ | PCT 1 | HIGHWAY NO. JUDGE BETO GARZA DR |

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APPLICATION RATES:

HOT MIX ASPHALT - 1" = 114 LB/SY
 PRIME COAT - 0.2 GAL/SY
 LIME (FLEXBASE) - 2% BY WT
 LIME (SUBGRADE) - 3% BY WT
 FLEXBASE WT - 3375 LB/CY (APPROX)
 SUBGRADE WT - 2970 LB/CY (APPROX)
 WATERING - FIRST 4 WKS - 3 CYCLES/WK AT 2.5 GAL/SY/CYCLE
 NEXT 8 WKS - 1 CYCLE/WK AT 2.5 GAL/SY/CYCLE
 FERTILIZER - 100 LBS OF NITROGEN/ACRE
 THE N-P-K RATIO TO INCLUDE AT LEAST 5%P AND 5%K

| ROADWAY SUMMARY | | | |
|-----------------|--|------|-------|
| ITEM-CODE | DESCRIPTION | UNIT | TOTAL |
| 0100-2002 | PREPARING ROW | STA | 11.92 |
| 0110-2001 | EXCAVATION(ROADWAY) | CY | 723 |
| 0132-2006 | EMBANKMENT(FINAL)(DENS CONT)(TY C) | CY | 46 |
| 0164-2027 | CELL FBR MLCH SEED(PERM)(URBAN)(CLAY) | SY | 3382 |
| ⊕ 0166-2001 | FERTILIZER | AC | 0.7 |
| 0168-2001 | VEGETATIVE WATERING | MG | 169.1 |
| 0247- | FL BS(CMP IN PLC)(TY E GR 4)(FNAL POS) | SY | 3734 |
| 0260-2006 | LIME TRT(EXST MATL)(6") | SY | 4004 |
| 0260-2012 | LIME(HYD,COM OR QK)(SLRY)OR QK(DRY) | TON | 28.1 |
| 0260-2012 | LIME(HYD,COM OR QK)(SLRY)OR QK(DRY) | TON | 45.1 |
| 0260-2015 | LIME TRT(NEW BASE)(8") | SY | 4002 |
| 0310-2001 | PRIME COAT(MC-30) | GAL | 640 |
| 0340- | D-GR HMA(METH)TY-D SAC-B PG64-22 | SY | 3200 |
| ⊕ 0496-2007 | REMOV STR(PIPE) | LF | 246 |
| 0500-2001 | MOBILIZATION | LS | 1 |
| 0502-2001 | BARRICADES, SIGNS AND TRAFFIC HANDLING | MO | 2 |
| 0666-2012 | REFL PAV MRK TY I(W)4"(SLD)(100MIL) | LF | 2350 |
| 0666-2048 | REFL PAV MRK TY I(W)24"(SLD)(100MIL) | LF | 12 |
| 0666-2105 | REFL PAV MRK TY I(Y)4"(BRK)(100MIL) | LF | 270 |
| 0666-2111 | REFL PAV MRK TY I(Y)4"(SLD)(100MIL) | LF | 200 |

| DRAINAGE SUMMARY | | | |
|------------------|------------------------------------|------|-------|
| ITEM-CODE | DESCRIPTION | UNIT | TOTAL |
| 0506-2034 | TEMPORARY SEDIMENT CONTROL FENCE | LF | 26 |
| 0530-2011 | DRIVEWAYS(ACP) | SY | 390 |
| 4378- | THERMOPLASTIC PIPE (15 IN)(TY III) | LF | 320 |

⊕ FOR CONTRACTOR'S INFORMATION ONLY. ITEM WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS ITEMS.

| NO. | DATE | REVISION | APP. |
|-----|------|----------|------|
| | | | |



HIDALGO COUNTY



NORTH CAPISALLO

SUMMARY OF QUANTITIES

SHEET 1 OF 1

| | | |
|------------------------|--------------|------------------------------------|
| FED. RD. DIV. NO. 6 | PROJECT NO. | SHEET NO. 3 |
| STATE TEXAS | DIST. PHR | COUNTY HIDALGO |
| CSJ | PCT 1 | HIGHWAY NO. JUDGE BETO GARZA DR |

GENERAL NOTES AND SPECIFICATION DATA

For all pits or quarries, comply with the "Texas Aggregate Quarry and Pit Safety Act." Provide on a weekly basis a list of equipment, including idle equipment, utilized on the project that week.

The 1-800 call services for utility locations do not include TxDOT facilities. Contact the Pharr District Signal Section (956-702-6225) for coordination with TxDOT underground lines.

ITEM 5. Control of the Work

Prior to contract letting, bidders may obtain a free computer diskette or a computerized transfer of files (from the Engineer's office) that contains the earthwork information. If copies of the actual cross-sections in addition to, or instead of, the diskette are requested, they will be available at the Engineers office for borrowing by copying companies for the purpose of making copies for the bidder at the bidders expense.

ITEM 8. Prosecution and Progress

Working days will be computed and charged in accordance with Article 8.3.A.1 Five-Day Workweek.

ITEM 132. Embankment

The native soils within the project area are not considered suitable for use as select fill materials. Borrow used as embankment material in the top two feet (Select Fill) below the bottom of pavement flexible base shall meet the following requirements:

1. TxDOT Bid Item 247, Type E, Grade 4

2. Alternative select fill material

- The following soils, as classified according to the USCS, may be considered satisfactory for use as select fill materials at this site: SC,GC,CL and combinations of these soils.
- In addition to the USCS classification, alternative select fill materials shall have a maximum liquid limit of 35 percent, a plasticity index between 5 and 17 percent and a maximum particle size not exceeding 4 inches or one-half the loose lift thickness, whichever is smaller.
- In addition, if these materials are utilized, grain size analyses and Atterberg Limits must be performed during placement at a minimum rate of one test each per 5,000 cubic yards of material due to the high degree of variability associated with pit-run materials.
- If the above listed alternative materials are being considered for bidding purposes, the materials should be submitted to the Geotechnical Engineer for pre-approval at a minimum of 10 working days or more prior to the bid date. Failure to do so will be the responsibility of the General Contractor.
- The General Contractor will be responsible for ensuring that the properties of all delivered alternate select fill materials are similar to those of the pre-approved submittal. It should also be noted that when using alternative fill materials, difficulties may be experienced with respect to moisture control during and subsequent to fill placement, as well as with erosion, particularly when exposed to inclement weather. This may result in sloughing of beam trenches and/or pumping of the fill materials.
- Soils classified as CH, CL, MH, ML, SM, GM, OH,OL and Pt under the USCS and not meeting the alternative select fill material requirements are not considered suitable for use as select fill materials at this site.
- Select fill should be placed in loose lifts not exceeding 8 inches in thickness and compacted to at least 98 percent of maximum dry density as determined by ASTM D698. The moisture content of the fill should be maintained within the range of two percentage points below the optimum moisture content to two percentage points above the optimum moisture content until the final lift of fill is permanently covered.
- The select fill should be properly compacted in accordance with these recommendations and tested by the Geotechnical Engineer for compaction as specified.

ITEMS 134. Backfilling Pavement Edges

Areas to be backfilled shall extend approximately 3-ft out from the edges of the proposed overlay. Final slopes shall be uniform and smooth. The 100-foot station payment includes Backfilling of both sides.

Backfill Ty A shall not contain particles more than two inches in size and shall have a minimum PI of 10 and a maximum PI of 20.

Any additional backfill material necessary due to pre-existing edge conditions or to replace existing fill removed during blading operations will not be paid for directly. It will be considered subsidiary to this bid item.

ITEM 247. Flexible Base

Flexible Base Type E will be composed of caliche (argillaceous Limestone, calcareous or calcareous clay particles) and may contain stone, conglomerate, gravel, sand or granular materials when these materials are in situ with the caliche.

Blended material for Flexible Base TY E GR 4

Flexible Base TY E GR 4 (caliche base) does not meet the requirements of TY A GR 1 base material. The Contractor may blend base material with another caliche source or with crushed concrete, meeting the requirements for TY "D" materials provided a minimum of 50% caliche is used. The crushed concrete may contain sand or granular materials. Stabilizing additives will not be allowed in the raw crushed concrete base. Acceptance will be under the following conditions:

Condition One (1): When both components of the blend in their individual stockpiles meet all the physical requirements of this Item, then field blending will be allowed.

Condition Two (2): When only one component of the blend passes the physical requirements of this Item, the materials shall be blended through a plant for stockpile testing and approval.

Flexible Base (TY E GR 4) shall conform to the following requirements:

BEFORE LIME IS ADDED

| Retained on Sq. Sieve | Percent Retained |
|---------------------------|--------------------------------|
| 2" | 0 |
| 1/2" | 20-60 |
| No. 4 | 40-75 |
| No. 40 | 70-90 |
| Max. PI: | 15 |
| Max Wet Ball PI: | 15 |
| Wet Ball Mill Max Amount: | 20 |
| Min. Comp. Strength PSI | 150 at 15 psi lateral pressure |

The Wet Ball Test (Tex-116-E) shall be run and the Plasticity Index of the material passing the No. 40 sieve shall be determined (Wet Ball PI).

After 1% lime (laboratory) is added to unlimed material

| | |
|------------------------------|--------------------------------|
| Max PI | 12 |
| Min. Comp. Strength PSI: | 180 at 15 psi Lateral Pressure |
| Triaxial Test (Lime Treated) | Tex-121-E |

2% lime shall be incorporated into the Flexible Base in the field at the owner's expense.

The percent of density as determined by Compaction Ratio (Tex-113-E) for the new Flexible Base shall be a minimum of 98%.

The percent of density as determined by Tex-121-E for the new and salvage Flexible Base shall be a minimum of 98% for all courses.

The Contractor's attention is called to the fact that certain existing and/or proposed structures may be within the limits of the Flexible Base. It shall be the Contractor's responsibility to perform construction operations without damage to these structures.

ITEM 300. Asphalt's, Oils and Emulsions

Temporary ramps/detours and driveways may use performance grade binder 76-22.

ITEM 310. Prime Coat (Cutback Asphaltic Material)

The Contractor shall exercise diligence in the application of asphalt by the use of flagging and rolling procedures to keep from spraying or splattering the traveling public with asphaltic material.

ITEM 400. Excavation and Backfill for Structures

If the Contractor elects to cut pavement (existing/detour) for structural work beyond that required by the construction phasing shown in the plans and approved by the Engineer, it shall be restored at his expense and backfilled to its original condition or better in accordance with Item 400.

ITEM 464. Reinforced Concrete Pipe

Use tongue and groove pipe where the RCP extends into the lime treated subgrade. The 4-foot depth restriction for heavy equipment passage over pipe structures is voided. The Contractor will be responsible for any construction damage to these facilities.

Do not use mortar joints.

All reinforced concrete pipe shall include rubber gaskets unless shown otherwise on the plans or directed by the engineer.

ITEM 467. Safety End Treatment

All Type II SET's shall have riprap, Class "A" minimum, aprons as shown on the plans. The contractor may submit an alternate precast SET design for approval by the Engineer.

ITEM 496. Removing Old Structures

Store the following items to be salvaged at a location designated by the Engineer.

ITEM 502. Barricades, Signs and Traffic Handling

A pilot car and radio equipped flagmen shall be required for all undivided roadway locations as directed by the Engineer. The pilot car with necessary flagmen and/or radio equipped flagmen and all signs, equipment, labor and incidentals required for this method of traffic control will not be paid for directly, but shall be considered subsidiary to Item 502.

Replace/relocate all regulatory signs removed due to construction operations with a same sign on fixed support(s) immediately upon its removal. First obtain project Engineer approval before removing any regulatory roadway sign. Required flaggers are to be available to direct traffic during sign intermediate down time.

Relocate any Directional Sign Assemblies removed during construction operations immediately upon their removal.

These signs shall be relocated to a location in accordance with the Latest Version of the "Texas Manual on Uniform Traffic Control Devices". In no case will a sign be removed without a replaceable sign and support(s) being readily available and a location established. Removal and relocation of these signs required for traffic control will not be paid for directly, but shall be considered subsidiary to Item 502.

ITEM 504. Field Office and Laboratory

For this project a field office will not be required at the project site.

ITEM 530. Driveways and Turnouts

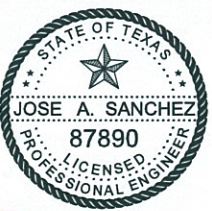



Prime coat shall meet the requirements of Item 310.

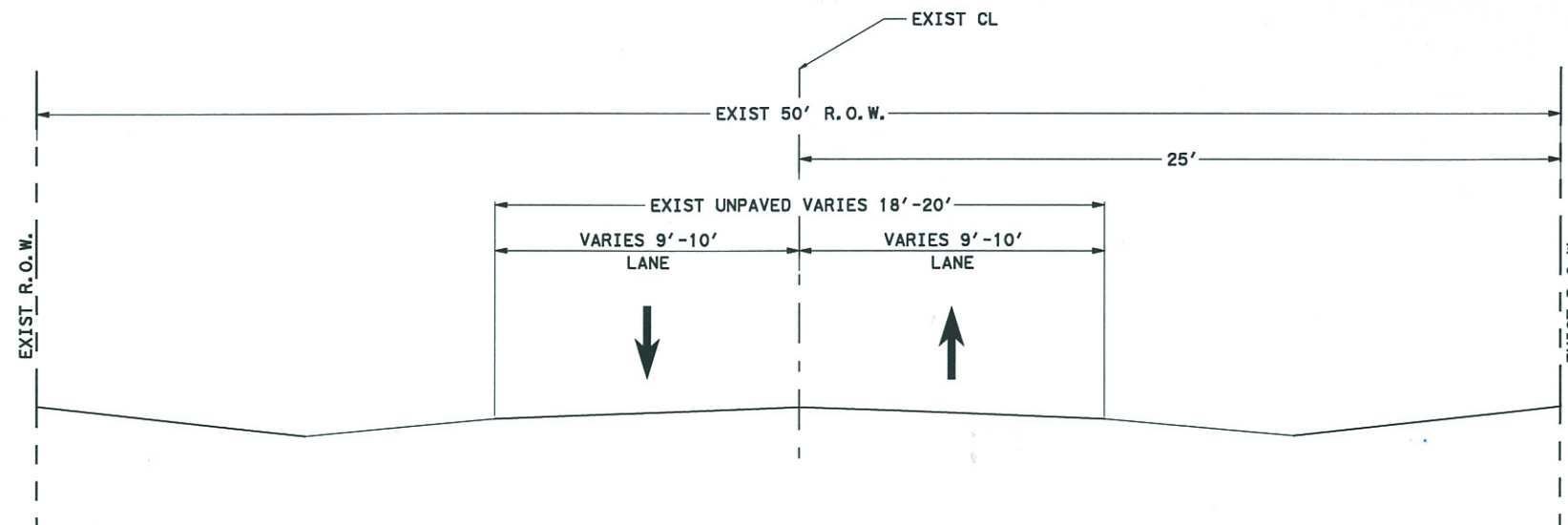
Daily testing requirements for Hot Mix Asphaltic Concrete Pavements for drives, commercial entrances and/or turnouts may be waived by the Engineer.

MISC

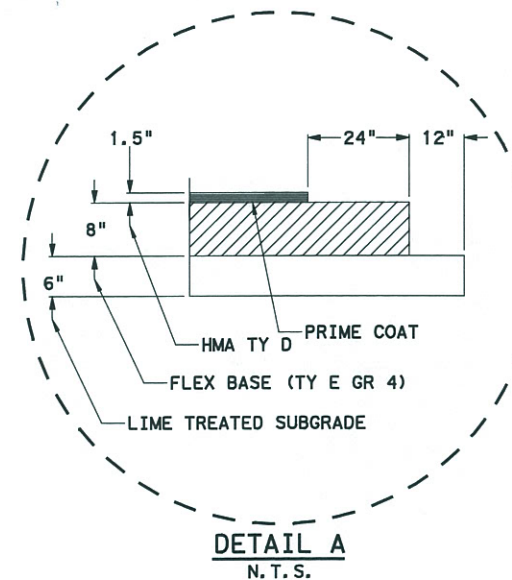
The contractor shall be responsible for maintenance of sediment traps. Damaged/missing sediment traps shall be replaced by the contractor at no additional cost. R.O.W. sediment traps may be shown on plans for clarity purposes only. Actual placement shall be done within R.O.W.

The contractor shall be responsible for posting Small Construction Site Notice and any additional permits required by T.E.C.Q.

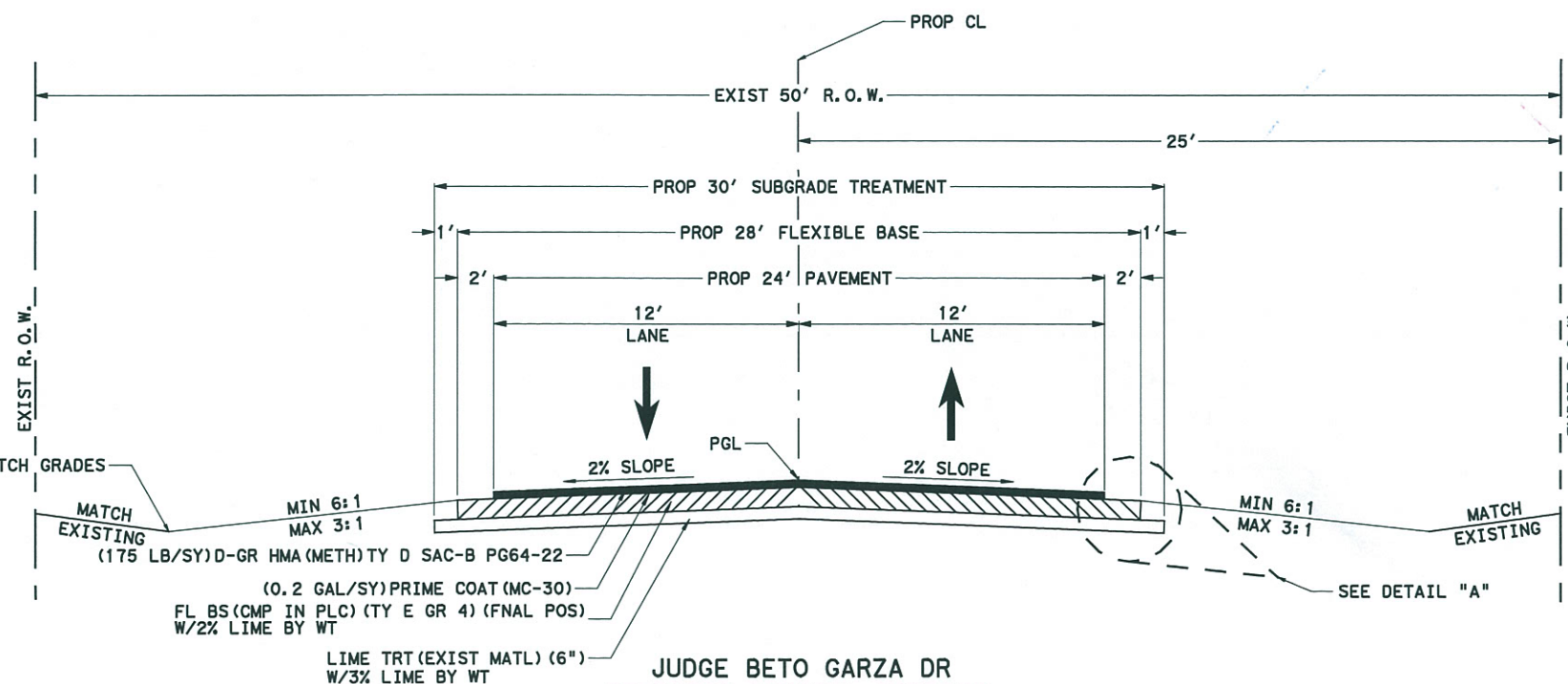
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|   03/19/2012 | | | |
|  HIDALGO COUNTY | | | |
|  TEDSI INFRASTRUCTURE GROUP Consulting Engineers 1201 E. Expressway 83 Mission, Texas 78572 (956) 424-7898 | | | |
| NORTH CAPISALLO GENERAL NOTES | | | |
| SHEET 1 OF 1 | | | |
| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
| 6 | | | 4 |
| STATE | DIST. | COUNTY | |
| TEXAS | PHR | HIDALGO | |
| CSJ | | PCT | HIGHWAY NO. |
| 2C-1080-495 | | 1 | JUDGE BETO GARZA DR |



**JUDGE BETO GARZA DR
EXISTING TYPICAL SECTION**
N. T. S.
STA 0+67.5 TO STA 12+60



DETAIL A
N. T. S.



**JUDGE BETO GARZA DR
PROPOSED TYPICAL SECTION**
N. T. S.
STA 0+67.5 TO STA 12+60

SEE P&P SHEETS FOR DITCH GRADES

MATCH EXISTING
(175 LB/SY) D-GR HMA (METH) TY D SAC-B PG64-22
(0.2 GAL/SY) PRIME COAT (MC-30)
FL BS (CMP IN PLC) (TY E GR 4) (FNAL POS)
W/2% LIME BY WT
LIME TRT (EXIST MATL) (6")
W/3% LIME BY WT

SEE DETAIL "A"

NOTES:

- PGL - PROFILE GRADE LINE
- PERMISSIBLE CONSTRUCTION JOINTS SHALL FALL ON THE PROPOSED ROADWAY CENTERLINE.
- ALL GRADING SHALL BE WITHIN THE EXISTING RIGHT OF WAY LIMITS.
- WHERE REQUIRED BY FIXTURES OR UNUSUAL CONDITIONS THE GOVERNING SLOPES MAY BE VARIED WHEN SPECIFICALLY DIRECTED BY THE ENGINEER.
- THE SUBGRADE SHALL BE SHAPED, BLADED, ROLLED AND PROOF ROLLED A MINIMUM DISTANCE OF 12" BEYOND THE EDGE OF THE PROPOSED BASE COURSE.
- THE COMPLETE BASE SHALL BE PROOF ROLLED BEFORE THE EARTH SHOULDER IS SHAPED. FINAL COMPACTION WILL BE DONE OVER BASE AND EDGE OF SHOULDER.
- PROOF ROLLING WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS ITEMS.
- A STATION EQUAL TO 100 FT.
- APPLICATION RATES AS FOLLOWS:

- HOT MIX ASPHALT - 1.5" = 175 LB/SY
- PRIME COAT - 0.2 GAL/SY
- LIME (FLEXBASE) - 2% BY WT
- LIME (SUBGRADE) - 3% BY WT
- FLEXBASE WT - 3375 LB/CY (APPROX)
- SUBGRADE WT - 2970 LB/CY (APPROX)

| NO. | DATE | REVISION | APP. |
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| | | | |
| TEDSI INFRASTRUCTURE GROUP Consulting Engineers 1201 E. Expressway 83 Mission, Texas 78572 (956) 424-7898 | | | |
| NORTH CAPISALLO | | | |
| TYPICAL SECTIONS | | | |
| N. T. S. | | | SHEET 1 OF 1 |
| FED. RD. DIV. NO. 6 | PROJECT NO. | | SHEET NO. 5 |
| STATE TEXAS | DIST. PHR | COUNTY HIDALGO | |
| CSJ | PCT | HIGHWAY NO. | |
| 2C-1080-495 | 1 | JUDGE BETO GARZA DR | |

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GENERAL NOTES

THE CONTRACTOR MAY SUBMIT AN ALTERNATE TRAFFIC CONTROL PLAN TO THE ENGINEER FOR APPROVAL. APPROVED ALTERNATE TRAFFIC CONTROL PLANS SHALL REQUIRE THE SEAL OF A LICENSED ENGINEER. NO PHASE OF CONSTRUCTION SHALL START UNLESS OTHERWISE APPROVED BY ENGINEER.

BARRICADES/DEVICES/SIGNS SHALL BE ERECTED AND PLACED PRIOR TO COMMENCING ANY PROPOSED ROADWAY CONSTRUCTION AND SHALL REMAIN IN PLACE FOR THE DURATION OF THE PROJECT AND UNTIL COMPLETION AND ACCEPTANCE OF THE PROJECT BY OWNER.

BARRICADES, SIGNS, CHANNELIZATION DEVICES AND OTHER TRAFFIC HANDLING DEVICES MAY BE ADJUSTED OR SHIFTED TO FIT FIELD CONDITIONS AS REQUIRED FOR CONSTRUCTION.

ADEQUATE SIGNS AND BARRICADES SHALL BE INSTALLED BY THE CONTRACTOR AND APPROVED BY ENGINEER PRIOR TO OPENING ANY ROADWAY SECTIONS TO TRAFFIC. THE ENGINEER MAY DIRECT THE CONTRACTOR TO FURNISH ADDITIONAL SIGNS, BARRICADES AND CHANNELIZING DEVICES AS REQUIRED TO MAINTAIN TRAFFIC AND MOTORIST SAFETY DURING CONSTRUCTION. ANY SUCH ADDITIONAL SIGNS AND BARRICADES, ETC, SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS ITEMS.

THE CONTRACTOR SHALL INSURE THAT BARRICADES, SIGNS, CHANNELIZING DEVICES AND TRAFFIC HANDLING DEVICES ARE MAINTAINED IN A CLEAN AND FUNCTIONAL CONDITIONS AT ALL TIMES, INCLUDING MAINTENANCE DUE TO VANDALISM OR ACCIDENTS. THE CONTRACTOR SHALL HAVE ENOUGH BARRICADES AND SIGNS AVAILABLE, AT ALL TIMES, TO REPLACE THOSE DAMAGED.

ALL STRIPING AND SIGNING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE IN ACCORDANCE WITH THE PLANS, BC STANDARDS AND THE LATEST VERSION OF THE TMTCD.

EXISTING SIGNS SHALL NOT BE REMOVED UNTIL CONSTRUCTION SIGNS HAVE BEEN INSTALLED. THE CONTRACTOR WILL BE RESPONSIBLE FOR REMOVING EXISTING SIGNS IN CONFLICT WITH PROPOSED CONSTRUCTION SIGNS. ANY SUCH REMOVAL OF SIGNS SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS ITEMS.

WHEN CONNECTING PROPOSED ROADWAY TO SECTIONS OF EXISTING TRAFFIC BEING USED BY TRAFFIC AND SUCH OPERATIONS RESULT IN A DROP-OFF OF MORE THAN 2" A 4' BUFFER ZONE AND 3:1 SLOPE WILL BE REQUIRED. THE SLOPE MUST BE CONSTRUCTED WITH A COMPACTED MATERIAL CAPABLE OF SUPPORTING VEHICLES AND/OR AS APPROVED BY ENGINEER. THIS WORK SHALL BE DONE EXPEDITIOUSLY DURING DAYLIGHT HOURS. FLAGGERS AND APPROPRIATE SIGNING TO SAFELY GUIDE TRAFFIC THROUGH THE WORK ARE WILL BE REQUIRED, AS APPROVED BY ENGINEER.

THE PORTION OF THIS PROJECT WHICH COINCIDES WITH THE EXISTING ROADS AND/OR PRIVATE DRIVEWAYS SHALL BE KEPT OPEN TO TRAFFIC AT ALL TIMES, UNLESS OTHERWISE SPECIFIED IN THE PLANS OR APPROVED BY THE ENGINEER. THE CONTRACTOR WILL BE REQUIRED TO COORDINATE WITH ADJACENT PROPERTY OWNERS TO PROVIDE ADEQUATE EGRESS AND INGRESS DURING ALL PHASES OF CONSTRUCTION.

THE CONTRACTOR SHALL KEEP TRAVELED PAVED SURFACES USED IN HIS HAULING OPERATIONS CLEAR AND FREE OF DIRT AND OTHER UNACCEPTABLE MATERIAL AT ALL TIMES. A POWER BROOM SHALL ONLY BE USED TO CLEAN THE ROADWAY.

THE CONTRACTOR SHALL COORDINATE THE TRAFFIC CONTROL PLAN WITH ANY ADJACENT CONSTRUCTION PROJECTS TO INSURE THE UNINTERRUPTED FLOW OF TRAFFIC WITHIN THE VICINITY OF THE PROJECT AREAS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TEMPORARY DRAINAGE DURING CONSTRUCTION THROUGHOUT THE PROJECT LIMITS DURING ALL PHASES OF CONSTRUCTION. EXCAVATED MATERIALS SHALL BE HANDLED BY THE CONTRACTOR IN SUCH WAY IT DOES NOT BLOCK DRAINAGE.

THE CONTRACTOR SHALL NOT LEAVE ANY OPEN TRENCHES OR EXCAVATIONS OVERNIGHT, UNLESS PROPERLY PROTECTED AND/OR AS APPROVED BY THE ENGINEER.

CONSTRUCTION FENCING (4' HIGH MINIMUM) SHALL BE USED AROUND ALL OPEN TRENCHES OR EXCAVATIONS, AS APPROVED BY THE ENGINEER. THIS WORK SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO VARIOUS BID ITEMS.

ALL DRUMS USED IN THIS PROJECT FOR TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE PROJECTS. MATERIALS FURNISHED, INSTALLED AND REMOVED BY THE CONTRACTOR SHALL BECOME PROPERTY OF THE CONTRACTOR.

ALL EXISTING UTILITIES THAT ARE IN CONFLICT WITH THE PROPOSED ROADWAY IMPROVEMENTS FOR THIS PROJECT SHALL BE RELOCATED AND/OR ADJUSTED BY OTHERS EXCEPT AS NOTED IN THE PLANS. THE CONTRACTOR SHALL COORDINATE WITH THE VARIOUS UTILITY COMPANIES THE RELOCATION, ADJUSTMENT AND INSTALLATION OF UTILITY LINES. THE ROADWAY WORK SHALL BE ONGOING DURING ADJUSTMENT, RELOCATION AND INSTALLATION OF UTILITY LINES.

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE REQUIREMENTS OF ITEM 7 "LEGAL RELATIONS AND RESPONSIBILITIES" OF THE STANDARD SPECIFICATIONS.

THE PORTION OF THIS PROJECT WHICH COINCIDES WITH EXISTING ROADS AND/OR PRIVATE DRIVEWAYS WILL BE KEPT OPEN TO TRAFFIC AT ALL TIMES, UNLESS OTHERWISE PROVIDED FOR AND APPROVED BY THE ENGINEER.

THE CONTRACTOR WILL BE ALLOWED TO CLOSE ROADWAY TO THRU TRAFFIC, BUT MUST ALLOW ALL LOCAL TRAFFIC EGRESS AND INGRESS AT ALL TIMES.

THE CONTRACTOR WILL BE ALLOWED TO WORK ONE HALF OF THE PROPOSED SECTION AT A TIME UNLESS OTHERWISE APPROVED BY THE ENGINEER.

THE CONTRACTOR MUST REMOVE EXISTING GRASS AND TOPSOIL FROM THE SHOULDER.

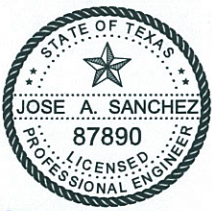



AFTER PREPARATION OF THE SUBGRADE AND/OR FLEXBASE, THE ROADWAY SHALL BE ADEQUATELY FINISHED TO SAFELY CARRY TRAFFIC AFTER WORKING HOURS.

THE CONTRACTOR SHALL WORK ONLY THAT LENGTH OF ROADWAY IN ONE WORKING DAY WHICH HE CAN ADEQUATELY FINISH TO SAFELY CARRY TRAFFIC AFTER WORKING HOURS.

ALL SIGNS AND MAILBOXES AFFECTED BY CONSTRUCTION SHALL BE RELOCATED. RELOCATION WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.

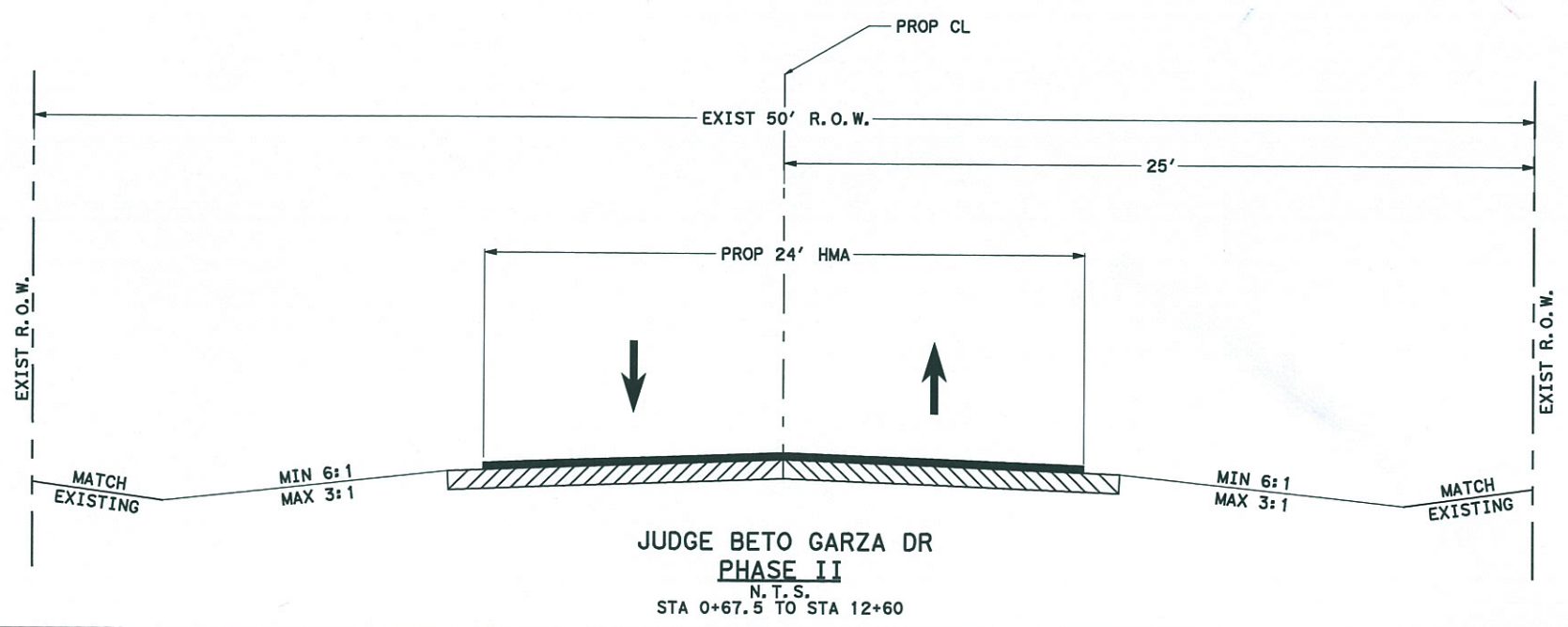
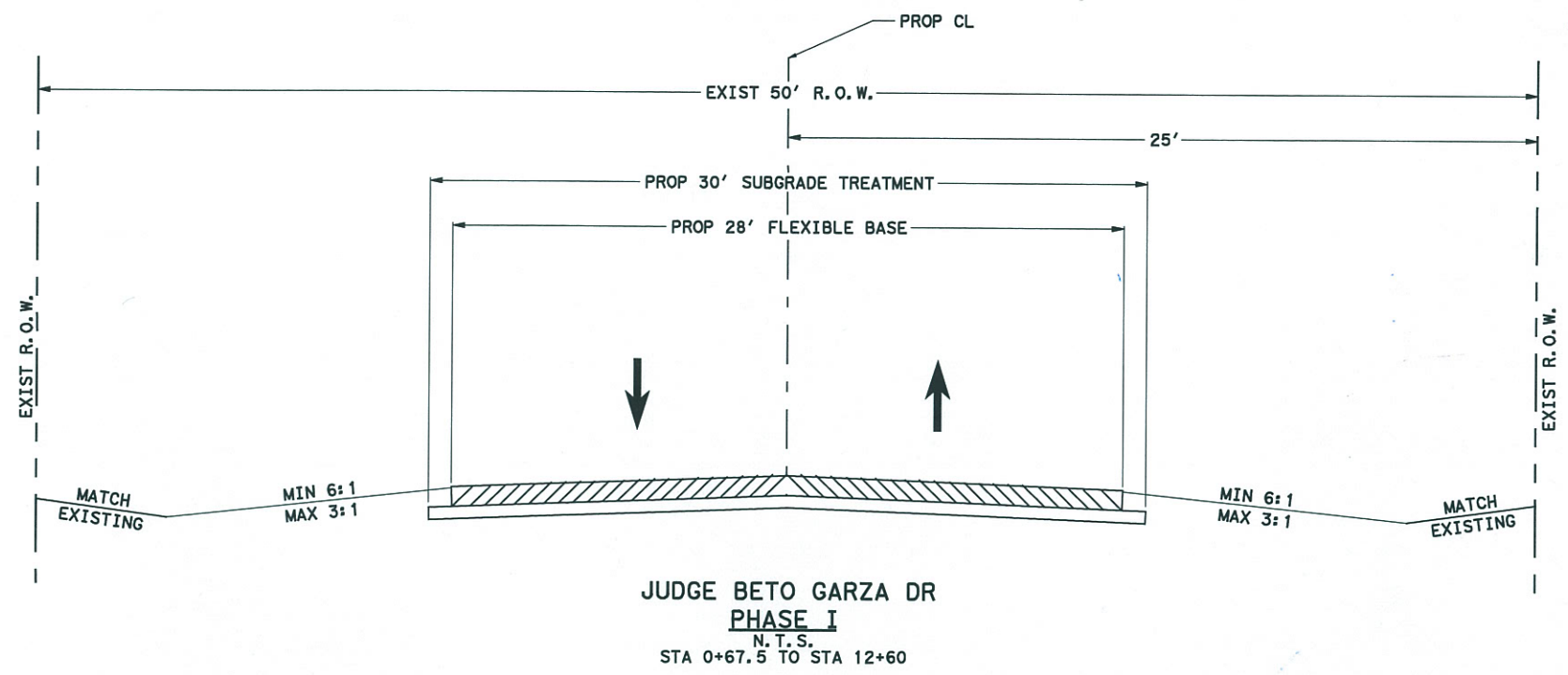
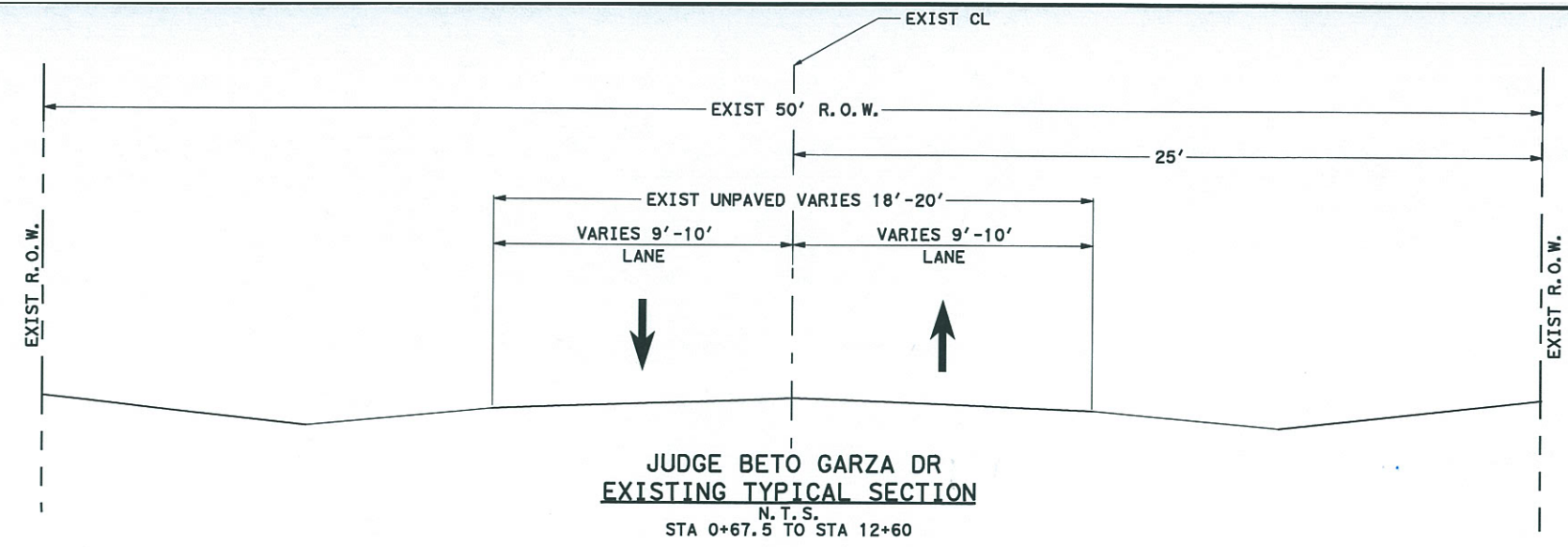
ALL SIGNS AND MAILBOXES DAMAGED DURING CONSTRUCTION SHALL BE REPLACED NEW AT CONTRACTOR'S EXPENSE.

ALL EXISTING SIGNS SHALL REMAIN IN PLACE DURING CONSTRUCTION, THE CONTRACTOR IS TO RELOCATE/ADJUST SIGNS DURING CONSTRUCTION AT NO ADDITIONAL COST.

| NO. | DATE | REVISION | APP. |
|---|--------------|-------------------|------------------------------------|
|   03/19/2012 | | | |
|  HIDALGO COUNTY | | | |
|  TEDSI INFRASTRUCTURE GROUP Consulting Engineers 1201 E. Expressway 83 Mission, Texas 78572 (956) 424-7898 | | | |
| NORTH CAPISALLO | | | |
| TRAFFIC CONTROL PLAN GENERAL NOTES | | | |
| N. T. S. | | | SHEET 1 OF 1 |
| FED. RD. DIV. NO. 6 | PROJECT NO. | | SHEET NO. 6 |
| STATE TEXAS | DIST. PHR | COUNTY HIDALGO | |
| CSJ | | PCT 1 | HIGHWAY NO. JUDGE BETO GARZA DR |
| 2C-1080-495 | | | |

3/19/2012 4:01:33 PM p:\2009\2009-1027-02 hobeap III addit\ional_c\om\cs\des\gn\04 north_oap\sal\o\cs\Roadway\NC-top-gn.dgn


3/19/2012 4:01:42 PM ps:\2009\2009-1027-02 hobcap III additional column\design\04 north cap\set\to\as\Roadway\NC-top-typ.dgn




SEQUENCE OF CONSTRUCTION

- PHASE I**
1. INSTALL PROJECT LIMITS AND ADVANCE WARNING SIGNS
 2. INSTALL CROSSROAD BARRICADES/SIGNS, IN ACCORDANCE WITH MUTCD, BC STANDARDS AND/OR AS DIRECTED BY ENGINEER
 3. INSTALL STORM WATER POLLUTION CONTROLS
 4. EXCAVATION WORK/INSTALL STORM DRAINAGE STRUCTURES
 5. SUBGRADE WORK
 6. FLEXIBLE BASE WORK
- PHASE II**
1. APPLY HOT MIX ASPHALT MATERIAL IN ONE COURSE
 2. BACKFILL PAVEMENT EDGES
 3. REINSTALL EXISTING SIGNS/MAILBOXES
 4. REMOVE STORM WATER POLLUTION CONTROLS
 5. INSTALL PAVEMENT MARKINGS
 6. FINAL CLEANUP

| NO. | DATE | REVISION | APP. |
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| | | | |



03/19/2012



HIDALGO COUNTY


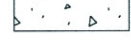









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 Consulting Engineers
 1201 E. Expressway 83
 Mission, Texas 78572
 (956) 424-7898

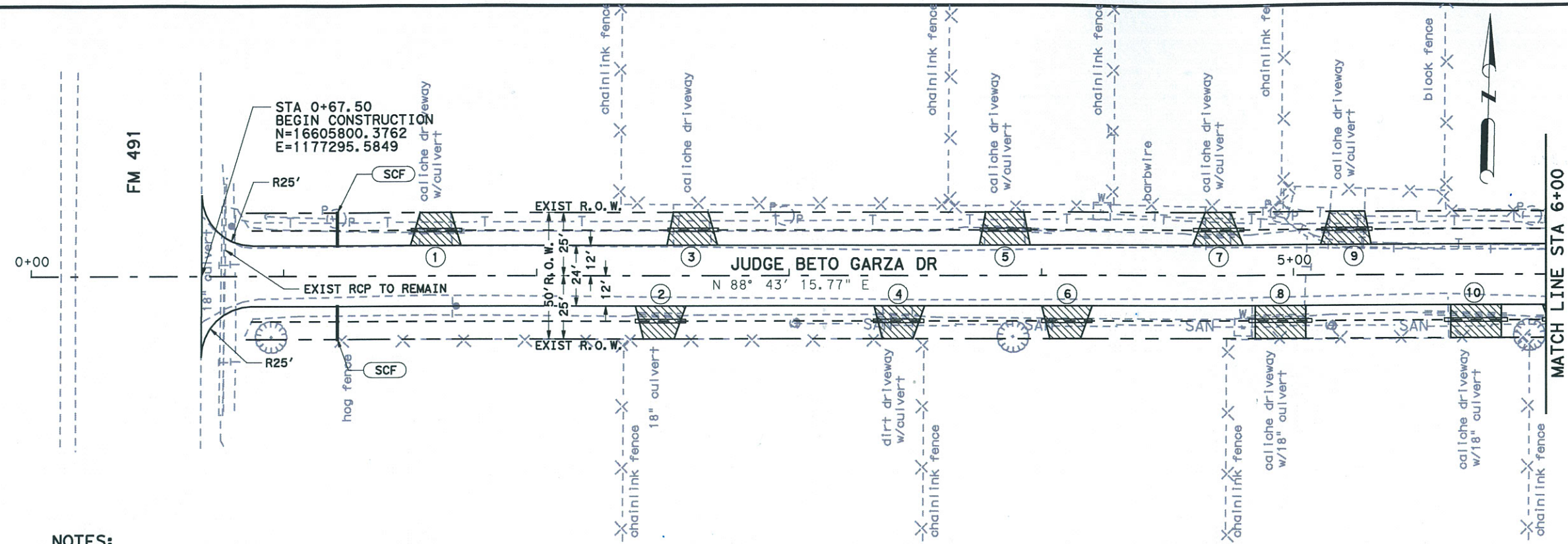
NORTH CAPISALLO

TRAFFIC CONTROL PLAN
TYPICAL SECTIONS

| | | |
|------------------------|--------------|------------------------------------|
| N. T. S. | | SHEET 1 OF 1 |
| FED. RD. DIV. NO. 6 | PROJECT NO. | SHEET NO. 7 |
| STATE TEXAS | DIST. PHR | COUNTY HIDALGO |
| CSJ 2C-1080-495 | PCT 1 | HIGHWAY NO. JUDGE BETO GARZA DR |

LEGEND

- GAS — EXIST GAS LINE
- T — EXIST UG PHONE LINE
- W — EXIST WATER LINE
- x-x-x-x- EXIST CHAINLINK FENCE
-  ASPHALT DRIVEWAY
-  CONCRETE DRIVEWAY
- - - - - PROP DITCH
-  DRIVEWAY ID NUMBER
-  EXIST MAILBOX
-  EXIST WATER METER
-  EXIST WATER VALVE
-  EXIST POWER POLE
-  EXIST FIRE HYDRANT
-  EXIST TELEPHONE BOX
-  EXIST GAS METER
-  TEMP SED CTRL FENCE

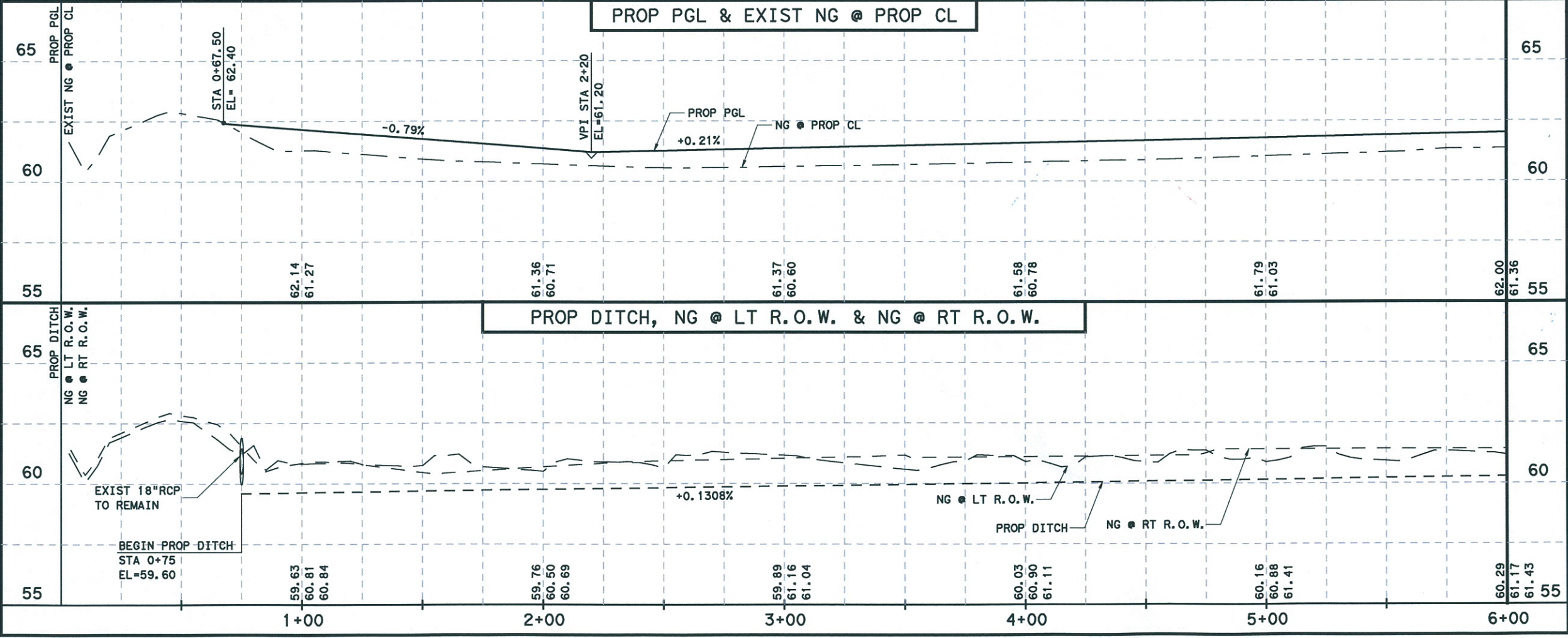


NOTES:

1. EXISTING ABOVE GROUND UTILITIES AND TOPOGRAPHY HAVE BEEN PLOTTED BY DIRECT FIELD INFORMATION AND AS SPOTTED BY UTILITY LOCATE REQUEST. THE CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING WITH UTILITY COMPANIES THE ESTABLISHING OF EXACT LOCATION, DEPTH, AND SIZE OF UTILITY LINES. THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR COORDINATING WITH THE UTILITY COMPANIES FOR REPLACEMENT OR REPAIRS OF ALL CUT OR BROKEN WATER LINES, IRRIGATION LINES, FORCE MAINS, SPRINKLER SYSTEMS, GAS LINES, POWER LINES, TELEPHONE CABLES, AND/OR ANY OTHER UTILITIES.
2. MAILBOXES AND SIGNS TO BE ADJUSTED/REPLACED/RELOCATED DURING CONSTRUCTION. ITEMS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS ITEMS.
3. UNLESS OTHERWISE SPECIFIED IN THE PLANS, TREES OR OTHER OBSTRUCTIONS IN CONFLICT WITH CONSTRUCTION SHALL BE REMOVED. REMOVAL WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS ITEMS.
4. CONTRACTOR SHALL SEED ALL NON-PAVED AREAS WITHIN R.O.W.
5. PROPOSED SIDE DRAINS TO BE INSTALLED WITH MINIMUM COVER FROM BOTTOM OF ASPHALT AS FOLLOWS:
RESIDENTIAL AND COMMERCIAL DRIVEWAYS: 6"
COUNTY AND CITY ROADWAYS: 15"
6. STATIONS/OFFSETS MEASURED FROM CENTERLINE OF ROAD TO CENTER OF DRAINAGE STRUCTURES.
7. CONTRACTOR SHALL PERFORM ITS OWN CONSTRUCTION STAKING.

BM DATA:

| | |
|---|--|
| BM#1 NAIL STA 7+69.8 OFFSET 6.3' RT EL=61.80' | BM#2 NAIL STA 10+54.7 OFFSET 10' RT EL=62.10 |
|---|--|



| NO. | DATE | REVISION | APP. |
|-----|------|----------|------|
| | | | |



[Signature]
03/19/2012



HIDALGO COUNTY

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 E. Expressway 83
Mission, Texas 78572
(956) 424-7898

NORTH CAPISALLO

PLAN & PROFILE

SCALE:
HORZ: 1" = 50'
VERT: 1" = 5'

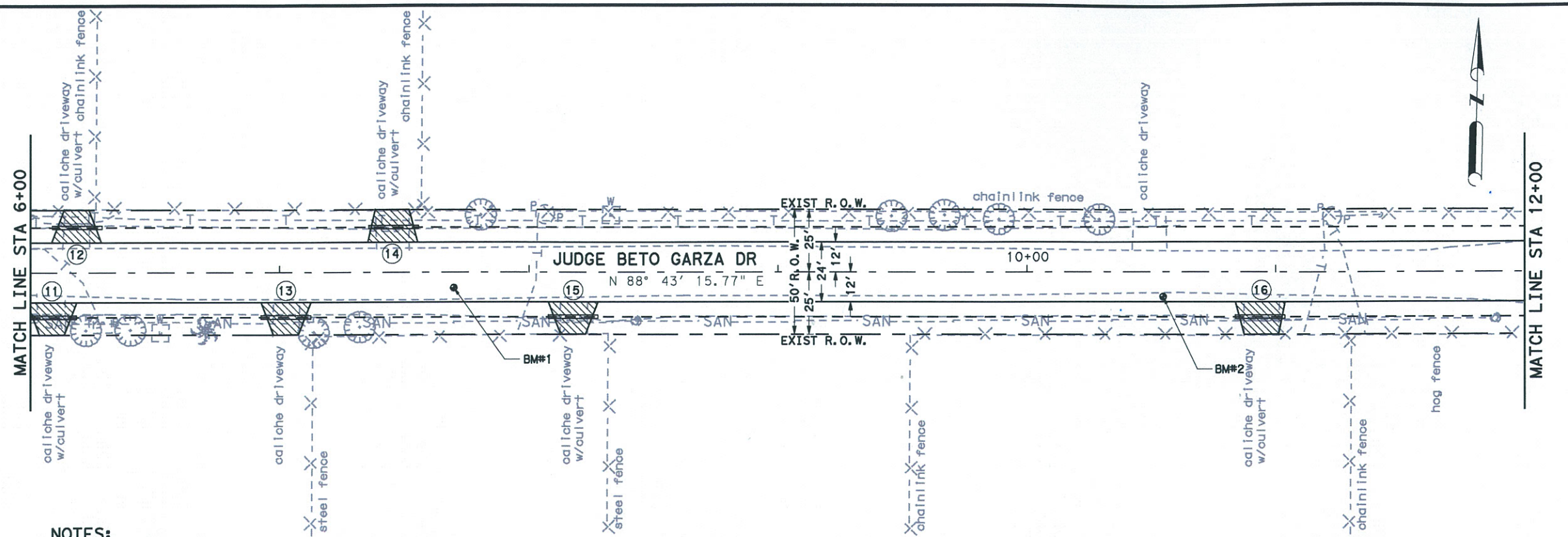
SHEET 1 OF 3

| | | |
|------------------------|--------------|------------------------------------|
| FED. RD. DIV. NO. 6 | PROJECT NO. | SHEET NO. 8 |
| STATE TEXAS | DIST. PHR | COUNTY HIDALGO |
| CSJ | PCT 1 | HIGHWAY NO. JUDGE BETO GARZA DR |

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LEGEND

- GAS — EXIST GAS LINE
- T — EXIST UG PHONE LINE
- W — EXIST WATER LINE
- x-x-x-x- EXIST CHAINLINK FENCE
- [Hatched Box] ASPHALT DRIVEWAY
- [Dotted Box] CONCRETE DRIVEWAY
- - - - - PROP DITCH
- (*) DRIVEWAY ID NUMBER
- (M) EXIST MAILBOX
- (W) EXIST WATER METER
- (V) EXIST WATER VALVE
- (P) EXIST POWER POLE
- (F) EXIST FIRE HYDRANT
- (T) EXIST TELEPHONE BOX
- (G) EXIST GAS METER
- (SCF) TEMP SED CTRL FENCE

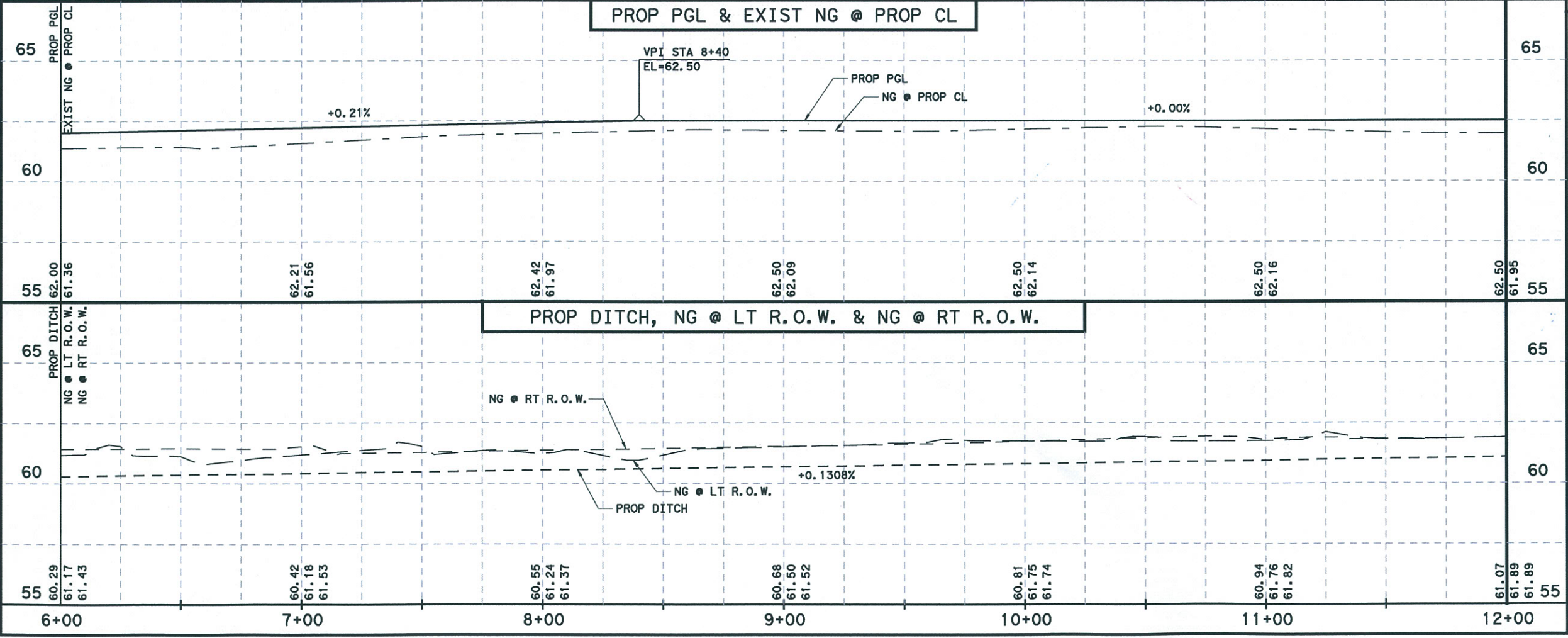


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BM DATA:

| | |
|---|--|
| BM#1 NAIL STA 7+69.8 OFFSET 6.3' RT EL=61.80' | BM#2 NAIL STA 10+54.7 OFFSET 10' RT EL=62.10 |
|---|--|



| NO. | DATE | REVISION | APP. |
|-----|------|----------|------|
| | | | |



[Signature]
03/19/2012



HIDALGO COUNTY

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 E. Expressway 83
Mission, Texas 78572
(936) 424-7898

NORTH CAPISALLO

PLAN & PROFILE


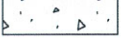









SCALE:
HORZ: 1" = 50'
VERT: 1" = 5'

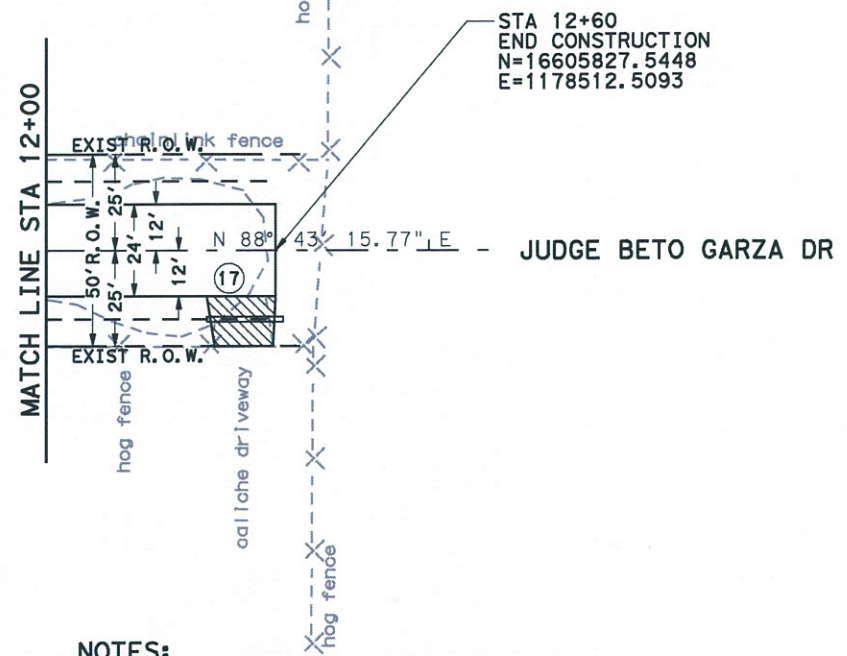
SHEET 2 OF 3

| | | |
|------------------------|--------------|------------------------------------|
| FED. RD. DIV. NO. 6 | PROJECT NO. | SHEET NO. 9 |
| STATE TEXAS | DIST. PHR | COUNTY HIDALGO |
| CSJ | PCT 1 | HIGHWAY NO. JUDGE BETO GARZA DR |

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LEGEND

- GAS — EXIST GAS LINE
- T — EXIST UG PHONE LINE
- W — EXIST WATER LINE
- x-x-x-x- EXIST CHAINLINK FENCE
-  ASPHALT DRIVEWAY
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-  EXIST MAILBOX
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-  EXIST POWER POLE
-  EXIST FIRE HYDRANT
-  EXIST TELEPHONE BOX
-  EXIST GAS METER
-  TEMP SED CTRL FENCE

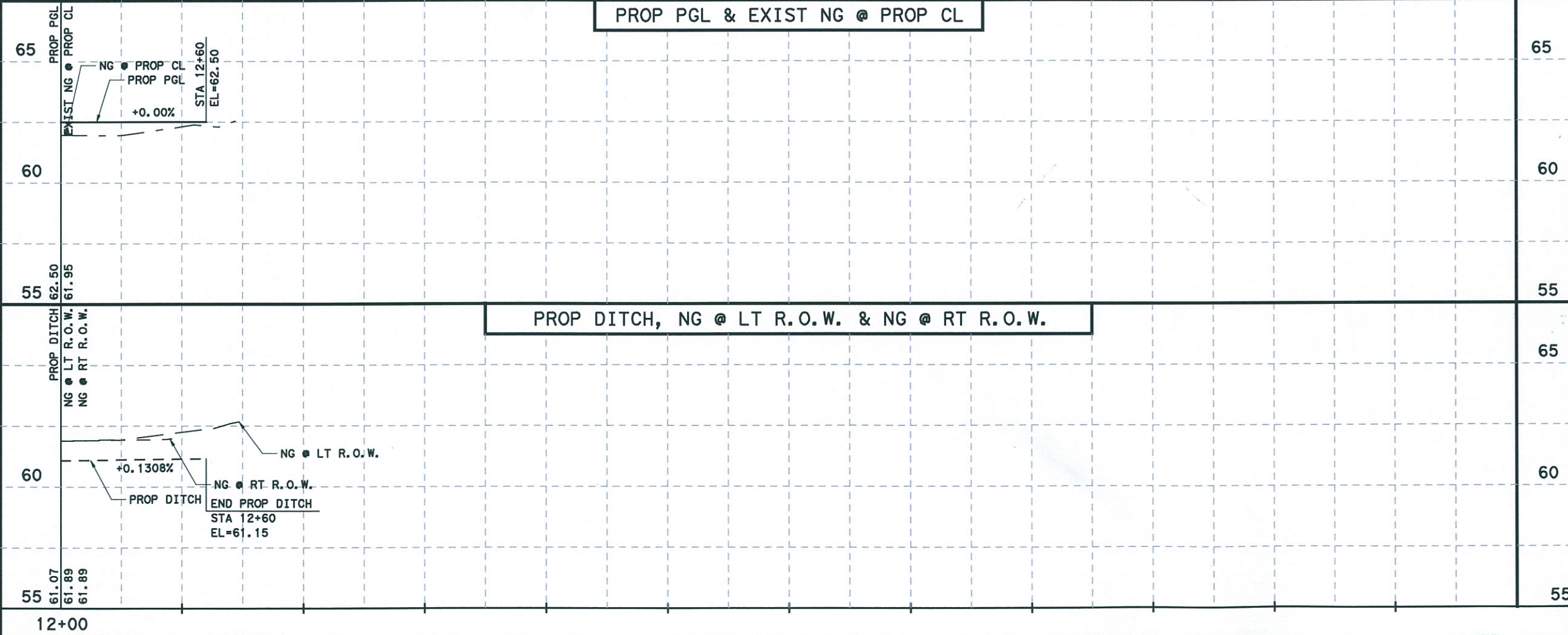


NOTES:

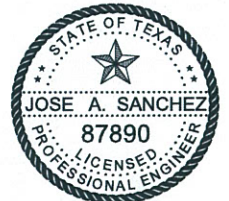
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| | |
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| BM#1 NAIL STA 7+69.8 OFFSET 6.3' RT EL=61.80' | BM#2 NAIL STA 10+54.7 OFFSET 10' RT EL=62.10 |
|---|--|




| NO. | DATE | REVISION | APP. |
|-----|------|----------|------|
| | | | |



[Signature]



HIDALGO COUNTY



TEDSI INFRASTRUCTURE GROUP

Consulting Engineers
1201 E. Expressway 83
Mission, Texas 78372
(936) 424-7898

NORTH CAPISALLO

PLAN & PROFILE

SCALE:
HORZ: 1" = 50'
VERT: 1" = 5'

SHEET 3 OF 3

| | | |
|------------------------|--------------|------------------------------------|
| FED. RD. DIV. NO. 6 | PROJECT NO. | SHEET NO. 10 |
| STATE TEXAS | DIST. PHR | COUNTY HIDALGO |
| CSJ | PCT 1 | HIGHWAY NO. JUDGE BETO GARZA DR |

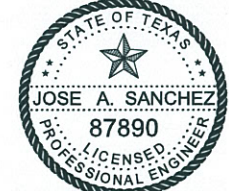
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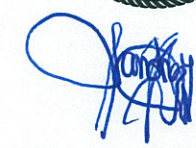
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| NORH CAPISALLO | | | | | | | | |
|----------------|---------|--------|--------------------|-------------------------------|--------------|------------------|------------------|-----------------|
| ID | STATION | OFFSET | EXISTING STRUCTURE | EXISTING DRIVEWAY DESCRIPTION | 556 | 0496-2016 | 0530-2010 | 0530-2011 |
| | | | | | ADS PIPE 15" | REMOV STR (PIPE) | DRIVEWAYS (CONC) | DRIVEWAYS (ACP) |
| | | | | | LF | LF | SY | SY |
| 1 | 1+60 | LT | 18" RCP | UNPAVED | 20 | 20 | | 24 |
| 2 | 2+48 | RT | 18" RCP | UNPAVED | 20 | 16 | | 24 |
| 3 | 2+61 | LT | | UNPAVED | 20 | | | 25 |
| 4 | 3+43 | RT | 18" RCP | UNPAVED | 20 | 16 | | 24 |
| 5 | 3+85 | LT | 18" RCP | UNPAVED | 20 | 28 | | 26 |
| 6 | 4+09 | RT | | UNPAVED | 20 | | | 24 |
| 7 | 4+70 | LT | 18" RCP | UNPAVED | 20 | 12 | | 22 |
| 8 | 4+95 | RT | 18" RCP | UNPAVED | 20 | 24 | | 29 |
| 9 | 5+21 | LT | 18" RCP | UNPAVED | 20 | 18 | | 25 |
| 10 | 5+72 | RT | 18" RCP | UNPAVED | 20 | 32 | | 29 |
| 11 | 6+08 | RT | 18" RCP | UNPAVED | 20 | 20 | | 22 |
| 12 | 6+18 | LT | 18" RCP | UNPAVED | 20 | 14 | | 22 |
| 13 | 7+02 | RT | | UNPAVED | 20 | | | 22 |
| 14 | 7+45 | LT | 18" RCP | UNPAVED | 20 | 10 | | 25 |
| 15 | 8+18 | RT | | UNPAVED | 20 | 16 | | 22 |
| 16 | 10+94 | RT | 18" RCP | UNPAVED | 20 | 20 | | 25 |
| TOTAL | | | | | 320 | 246 | 0 | 390 |

DRIVEWAY NOTES:
 ASPHALT THICKNESS = 1.5"
 CONCRETE THICKNESS = 4"
 FLEXIBLE BASE THICKNESS = 6"


| NO. | DATE | REVISION | APP. |
|-----|------|----------|------|
| | | | |




03/19/2012



HIDALGO COUNTY



TEDSI INFRASTRUCTURE GROUP
 Consulting Engineers
 1201 E. Expressway 83
 Mission, Texas 78572
 (956) 424-7898

NORTH CAPISALLO


DRIVEWAY TABLES

SHEET 1 OF 1

| | | |
|-------------------|-------------|---------------------|
| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
| 6 | | 11 |
| STATE | DIST. | COUNTY |
| TEXAS | PHR | HIDALGO |
| CSJ | PCT | HIGHWAY NO. |
| 2C-1080-495 | 1 | JUDGE BETO GARZA DR |

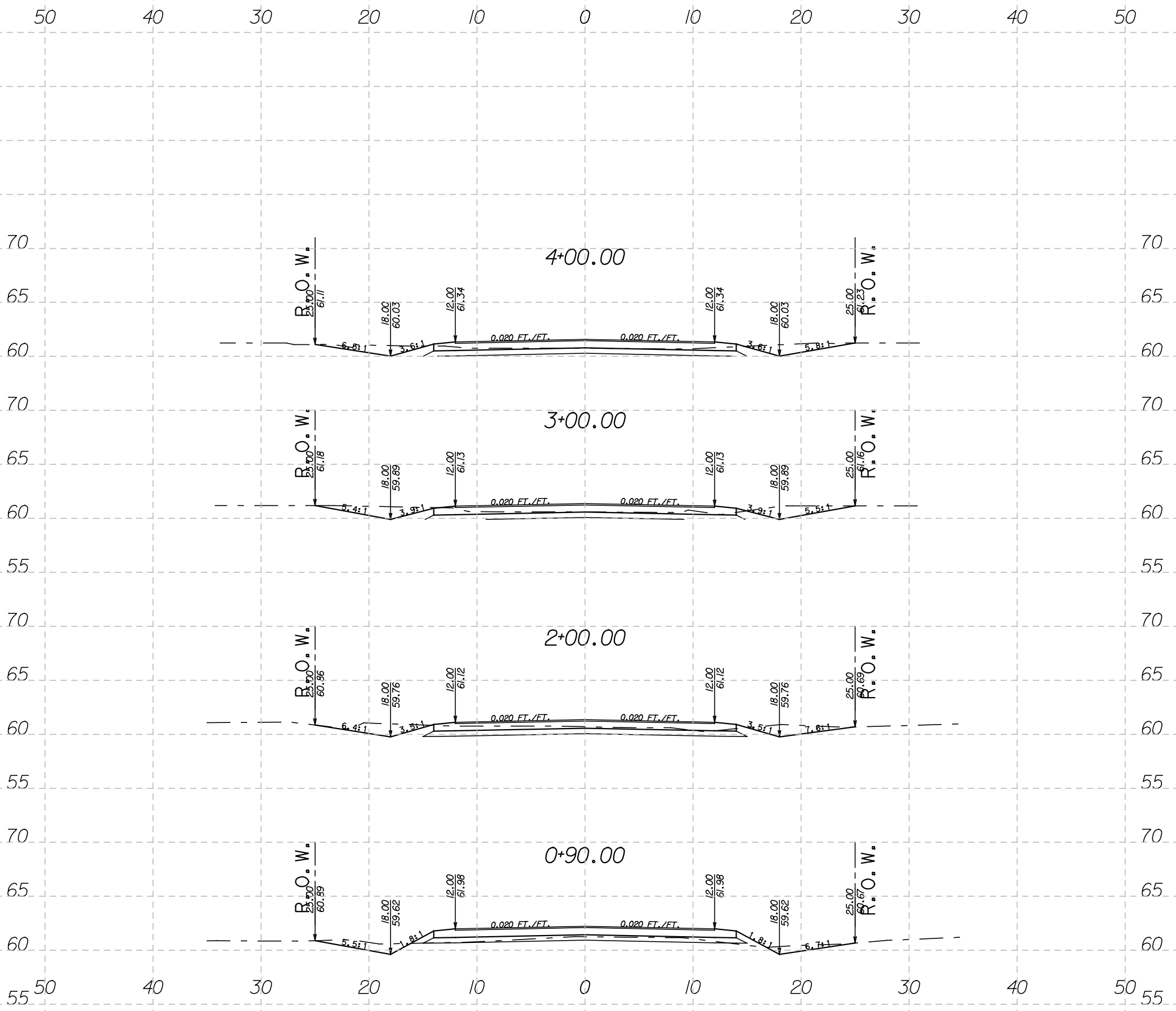
FOR CONTRACTOR'S INFORMATION ONLY

| Station | Material Name | End Areas (sq. ft.) | Unadjusted Volumes (cu. yd.) | Adjusted Volumes (cu. yd.) | Mult Factor | Mass Ordinate | |
|---------|-------------------------------------|------------------------|------------------------------------|----------------------------------|----------------|------------------|--|
| ----- | | | | | | | |
| | 0+90.00 PROP | | | | | | |
| | Excavation | | 0 | 0 | 0 | 1.00 | |
| | Fill | 10.1 | 0.0 | 0 | 1.00 | 0 | |
| | 0.0 | 8.0 | EXIST | 0 | 0 | 1.00 | |
| | Excavation | | 0 | 0 | 0 | 1.00 | |
| | Fill | 0.0 | 0.0 | 0 | 1.00 | 0 | |
| | 2+00.00 PROP | | | | | | |
| | Excavation | | 0 | 0 | 0 | 1.00 | |
| | Fill | 0.3 | 0.0 | 21 | 21 | 1.00 | |
| | 0.0 | 17.7 | EXIST | 0 | 0 | 1.00 | |
| | Excavation | | 52 | 52 | 1.00 | 31 | |
| | Fill | 0.0 | 0.0 | 0 | 1.00 | 31 | |
| | 3+00.00 PROP | | | | | | |
| | Excavation | | 0 | 0 | 0 | 1.00 | |
| | Fill | 0.2 | 0.0 | 1 | 1 | 1.00 | |
| | 0.0 | 18.2 | EXIST | 66 | 66 | 1.00 | |
| | Excavation | | 0 | 0 | 66 | 1.00 | |
| | Fill | 0.0 | 0.0 | 0 | 1.00 | 96 | |
| | 4+00.00 PROP | | | | | | |
| | Excavation | | 0 | 0 | 0 | 1.00 | |
| | Fill | 0.1 | 0.0 | 1 | 1 | 1.00 | |
| | 0.0 | 14.1 | EXIST | 60 | 60 | 1.00 | |
| | Excavation | | 0 | 0 | 60 | 1.00 | |
| | Fill | 0.0 | 0.0 | 0 | 1.00 | 155 | |
| | 5+00.00 PROP | | | | | | |
| | Excavation | | 0 | 0 | 0 | 1.00 | |
| | Fill | 0.1 | 0.0 | 1 | 1 | 1.00 | |
| | 0.0 | 16.3 | EXIST | 56 | 56 | 1.00 | |
| | Excavation | | 0 | 0 | 56 | 1.00 | |
| | Fill | 0.0 | 0.0 | 0 | 1.00 | 210 | |
| | 6+00.00 PROP | | | | | | |
| | Excavation | | 0 | 0 | 0 | 1.00 | |
| | Fill | 0.7 | 0.0 | 2 | 2 | 1.00 | |
| | 0.0 | 17.6 | EXIST | 63 | 63 | 1.00 | |
| | Excavation | | 0 | 0 | 63 | 1.00 | |
| | Fill | 0.0 | 0.0 | 0 | 1.00 | 271 | |
| | 7+00.00 PROP | | | | | | |
| | Excavation | | 0 | 0 | 0 | 1.00 | |
| | Fill | 1.1 | 0.0 | 3 | 3 | 1.00 | |
| | 0.0 | 13.9 | EXIST | 58 | 58 | 1.00 | |
| | Excavation | | 0 | 0 | 58 | 1.00 | |
| | Fill | 0.0 | 0.0 | 0 | 1.00 | 326 | |
| | 8+00.00 PROP | | | | | | |
| | Excavation | | 0 | 0 | 0 | 1.00 | |
| | Fill | 3.0 | 0.0 | 8 | 8 | 1.00 | |
| | 0.0 | 12.1 | EXIST | 48 | 48 | 1.00 | |
| | Excavation | | 0 | 0 | 48 | 1.00 | |
| | Fill | 0.0 | 0.0 | 0 | 1.00 | 366 | |
| | 9+00.00 PROP | | | | | | |
| | Excavation | | 0 | 0 | 0 | 1.00 | |
| | Fill | 0.3 | 0.0 | 6 | 6 | 1.00 | |
| | 0.0 | 16.3 | EXIST | 53 | 53 | 1.00 | |
| | Excavation | | 0 | 0 | 53 | 1.00 | |
| | Fill | 0.0 | 0.0 | 0 | 1.00 | 413 | |
| | 10+00.00 PROP | | | | | | |
| | Excavation | | 0 | 0 | 0 | 1.00 | |
| | Fill | 0.2 | 0.0 | 1 | 1 | 1.00 | |
| | 0.0 | 21.1 | EXIST | 69 | 69 | 1.00 | |
| | Excavation | | 0 | 0 | 69 | 1.00 | |
| | Fill | 0.0 | 0.0 | 0 | 1.00 | 481 | |
| | 11+00.00 PROP | | | | | | |
| | Excavation | | 0 | 0 | 0 | 1.00 | |
| | Fill | 0.3 | 0.0 | 1 | 1 | 1.00 | |
| | 0.0 | 20.0 | EXIST | 76 | 76 | 1.00 | |
| | Excavation | | 0 | 0 | 76 | 1.00 | |
| | Fill | 0.0 | 0.0 | 0 | 1.00 | 556 | |
| | 12+00.00 PROP | | | | | | |
| | Excavation | | 0 | 0 | 0 | 1.00 | |
| | Fill | 0.3 | 0.0 | 1 | 1 | 1.00 | |
| | 0.0 | 15.8 | EXIST | 66 | 66 | 1.00 | |
| | Excavation | | 0 | 0 | 66 | 1.00 | |
| | Fill | 0.0 | 0.0 | 0 | 1.00 | 621 | |
| | 12+58.00 PROP | | | | | | |
| | Excavation | | 0 | 0 | 0 | 1.00 | |
| | Fill | 0.0 | 0.0 | 0 | 0 | 1.00 | |
| | 0.0 | 36.2 | EXIST | 56 | 56 | 1.00 | |
| | Excavation | | 0 | 0 | 56 | 1.00 | |
| | Fill | 0.0 | 0.0 | 0 | 1.00 | 677 | |
| | G R A N D S U M M A R Y T O T A L S | | | | | | |
| | Material Name | | Unadjusted Volumes (cu. yd.) | Adjusted Volumes (cu. yd.) | Mult Factor | | |
| | PROP | | 0 | 0 | 1.00 | | |
| | Excavation | | 0 | 0 | 1.00 | | |
| | Fill | | 46 | 46 | 1.00 | | |
| | EXIST | | | | | | |
| | Excavation | | 723 | 723 | 1.00 | | |
| | Fill | | 0 | 0 | 1.00 | | |
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| NORTH CAPISALLO EARTHWORK | | | | | | | |
| SHEET 1 OF 1 | | | | | | | |
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FOR CONTRACTOR'S INFORMATION ONLY



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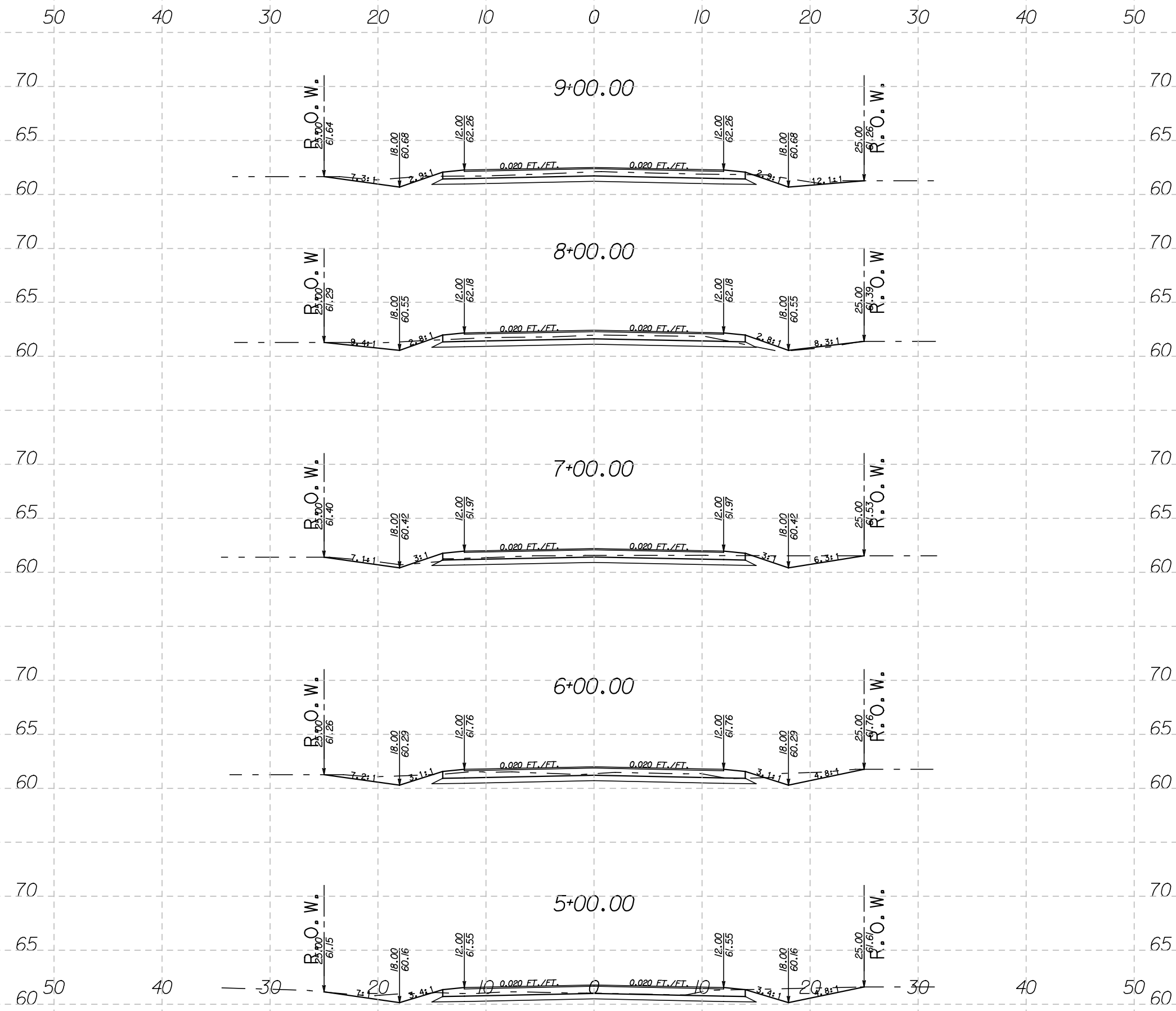
TEDSI INFRASTRUCTURE GROUP
 Consulting Engineers
 1201 E. Expressway 83
 Mission, Texas 78372
 (936) 424-7898

NORTH CAPISALLO

ROADWAY CROSS-SECTIONS

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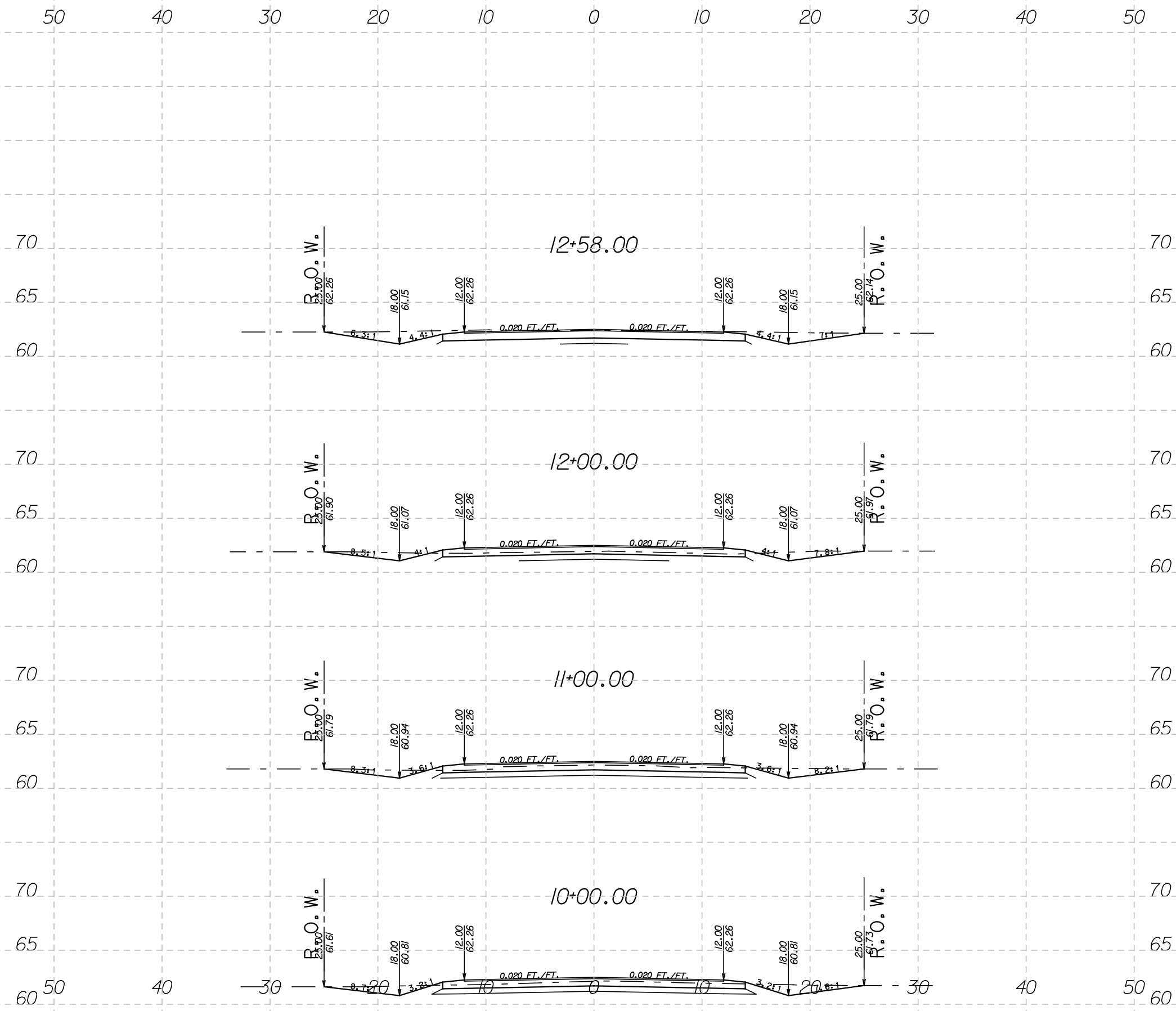
TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
 1201 E. Expressway 83
 Mission, Texas 78372
 (936) 424-7898

NORTH CAPISALLO

ROADWAY CROSS-SECTIONS

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NORTH CAPISALLO

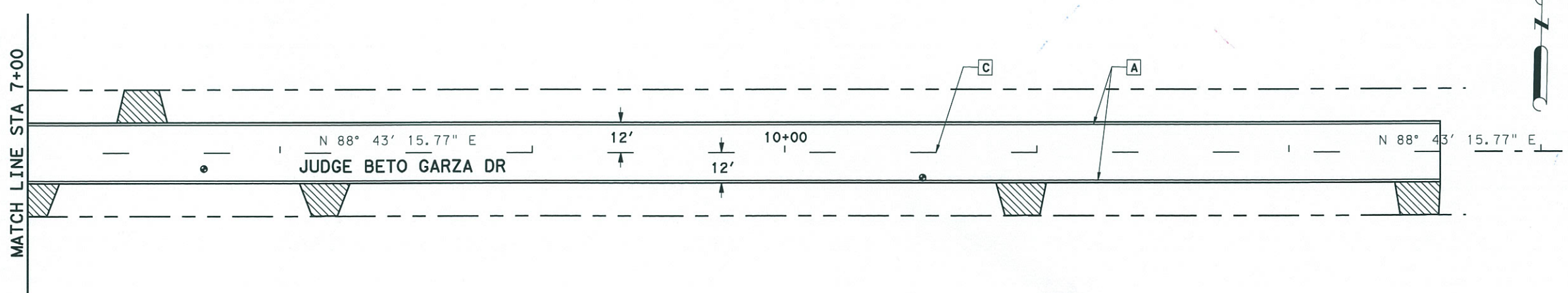
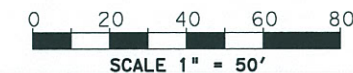
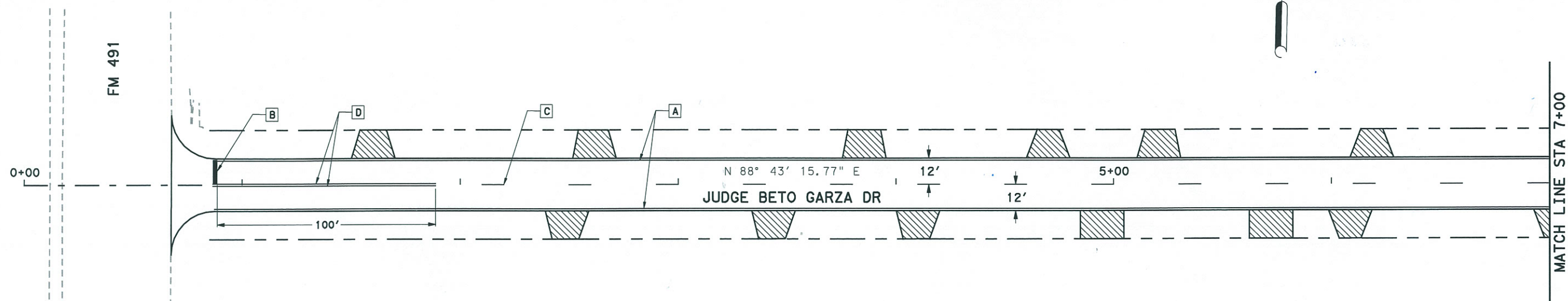
ROADWAY CROSS-SECTIONS

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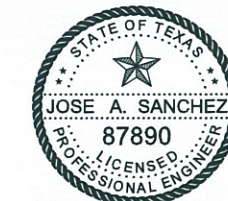
PAVEMENT MARKINGS LEGEND

(REFL PAV MRK TYPE 1) (100 MIL)

- A (W) (04") (SLD)
- B (W) (24") (SLD)
- C (Y) (04") (BRK)
- D (Y) (04") (SLD)



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03/19/2012



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Mission, Texas 78572
(936) 424-7898

NORTH CAPISALLO

PAVEMENT MARKINGS

SHEET 1 OF 1

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| FED. RD. DIV. NO. | PROJECT NO. | SHEET NO. |
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SITE DESCRIPTION

PROJECT LIMITS: North Capisallo Subdivision: Judge Beto Garza Dr-1192.5'

PROJECT SITE MAPS: *Project Location Map: Title Sheet (Sheet 1)
*Approx. Slopes Anticipated After Major Gradients and Areas of Soil Disturbance: Typ Sects (Sheet 5)
*Major Controls and Locations of Stabilization Practices: SW3P Site Map Sheets (Sheets 8-10)
*Project Specific Locations: To be specified by Project Field Office and located in the Project SW3P File

PROJECT DESCRIPTION: Construction will consist of hot mix asphalt, flexible base, subgrade and roadside ditches.

MAJOR SOIL DISTURBING ACTIVITIES: Roadway reconstruction

TOTAL PROJECT AREA: 1.36 Acres

TOTAL AREA TO BE DISTURBED: 1.36 Acres (100%)

WEIGHTED RUNOFF COEFFICIENT:
Before Construction: 0.30
After Construction: 0.59

EXISTING CONDITION OF SOIL & VEGETATIVE
Existing dirt roadway (41%), Short grass between edge of pavement and ROW 59%

NAME OF RECEIVING WATERS:
Drainage from site drains into the IBWC Levee System which eventually empties into the lower Laguna Madre.

ENDANGERED SPECIES, DESIGNATED CRITICAL HABITAT AND HISTORICAL PROPERTY:

A. No Endangered Species, Designated Critical Habitat or Historic Property has not been found on this project site.

EROSION AND SEDIMENT CONTROLS

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

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

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

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

STORM WATER MANAGEMENT:

Storm water drainage is provided by existing open ditches and culverts. System will carry drainage within the ROW to designated outfalls

STORM WATER MANAGEMENT ACTIVITIES:

The order of activities will be as follows:
1. Install perimeter controls, clear R.O.W. on side where construction will take place, and make required utility adjustments
2. Install proposed culverts, install sediment control fence as specified in plans.
3. Construct proposed roadway.
4. Once all construction activity is complete, permanent seeding on proposed areas shall be done according to plans or as instructed by the engineer.

NON-STORM WATER MANAGEMENT DISCHARGES:

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

OTHER REQUIREMENTS & PRACTICES

OTHER EROSION AND SEDIMENT CONTROLS:

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

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

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

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

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

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

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

OTHER:
1. Construction materials stored on site to be provided by Project Field Office.
2. The project SW3P File located at the project field office shall contain the Small Construction Site Notice and any additional permits required by T.E.C.O.

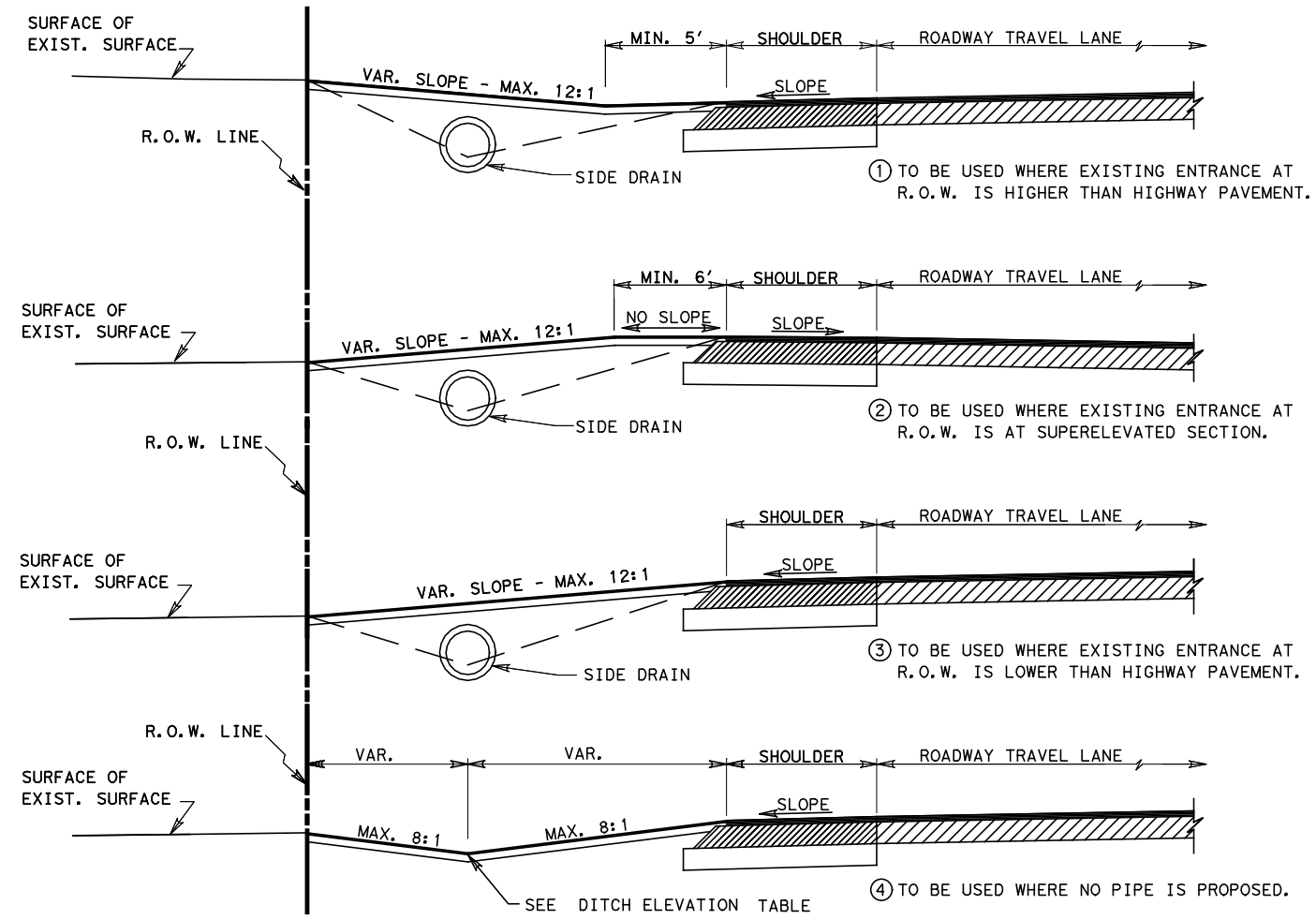


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TxDOT STORM WATER POLLUTION PREVENTION PLAN (SW3P)

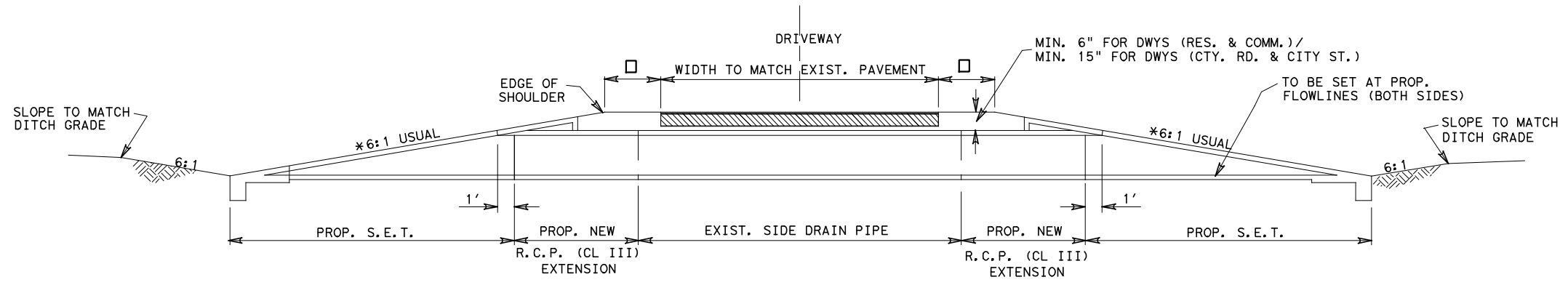
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| STATE TEXAS | DIST. PHARR | COUNTY HIDALGO | |
| CONT. 2C | SECT. 1080 | JOB 230 | HIGHWAY NO. VARIOUS |



NOTES:

- ALL ENTRANCES CONSTRUCTED ON THIS PROJECT ARE SUBJECT TO CONCURRENCE WITH EXISTING GOVERNING REGULATIONS AS SET OUT BY THE STATE HIGHWAY COMMISSION.
- ENTRANCE'S BASE AND SURFACING MAY BE EXTENDED BEYOND R.O.W. LINE AS REQUIRED TO MEET EXISTING GRADE IN A SATISFACTORY MANNER OF WHICH NO STEEPER THAN 12:1 SLOPE WILL BE CONSTRUCTED.
- ALL FLEXIBLE BASE USED FOR PRIVATE DRIVES & COMMERCIAL DRIVES WILL NOT REQUIRE LIME TREATMENT.
- EXACT LOCATIONS, DIMENSIONS, AND TYPE TO BE ESTABLISHED DURING CONSTRUCTION BY THE ENGINEER.
- PROP. WIDTH OF DRIVEWAYS TO MATCH EXISTING WIDTH AT R.O.W. LINE.
- 114 #/SY ACP (COMPACTED) IS EQUAL TO 1 IN. DEPTH
171 #/SY ACP (COMPACTED) IS EQUAL TO 1/2 IN. DEPTH.
- SIDE DRAINS TO BE INSTALLED WHERE ROADWAY DITCH DRAINAGE IS NECESSARY, AS INDICATED ON PLANS AND/OR AS DIRECTED BY THE ENGINEER.
- SIDE DRAINS TO BE INSTALLED WITH A MINIMUM OF 6" COVER BY PROPOSED RESIDENTIAL & COMMERCIAL MATERIAL OR 15" COVER OF PROPOSED COUNTY RD. & CITY STREET ROADWAY MATERIAL.
- AVERAGE DIMENSIONS SHOWN ON TABLE OF DRIVEWAYS ARE FOR ESTIMATING PURPOSES ONLY.
- THE RATE OF PRIME SHALL BE 0.10 GAL/SY FOR PRIVATE AND/OR COMMERCIAL DRIVEWAYS AND 0.20 GAL/SY FOR PUBLIC DRIVEWAYS.

TYPICAL ENTRANCE PROFILE FOR DRIVEWAYS W/OUT C&G



- - 1' MIN. ON DRIVEWAYS (RES. & COMM.)
2' MIN. ON DRIVEWAYS (COUNTY RD. & CITY ST.)
- * - 6:1 SLOPE USUAL
UNLESS OTHERWISE NOTED ON PLANS

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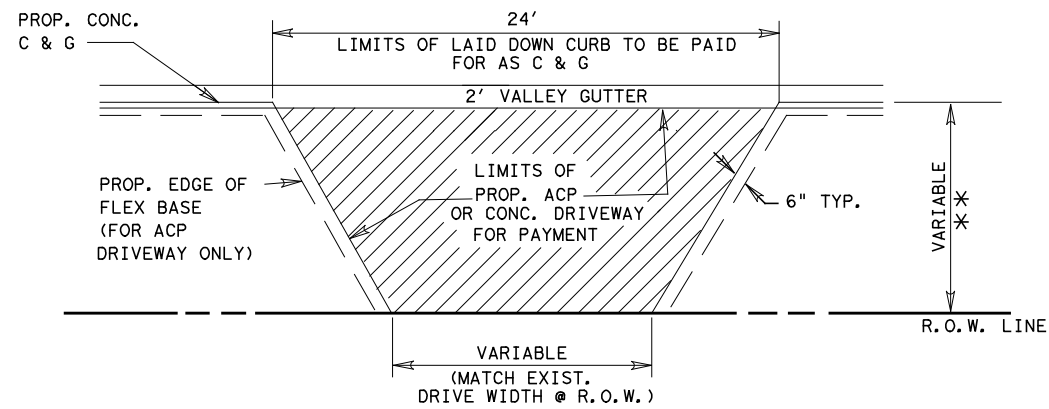
TEXAS DEPARTMENT OF TRANSPORTATION

DRIVEWAY PROFILE DETAILS

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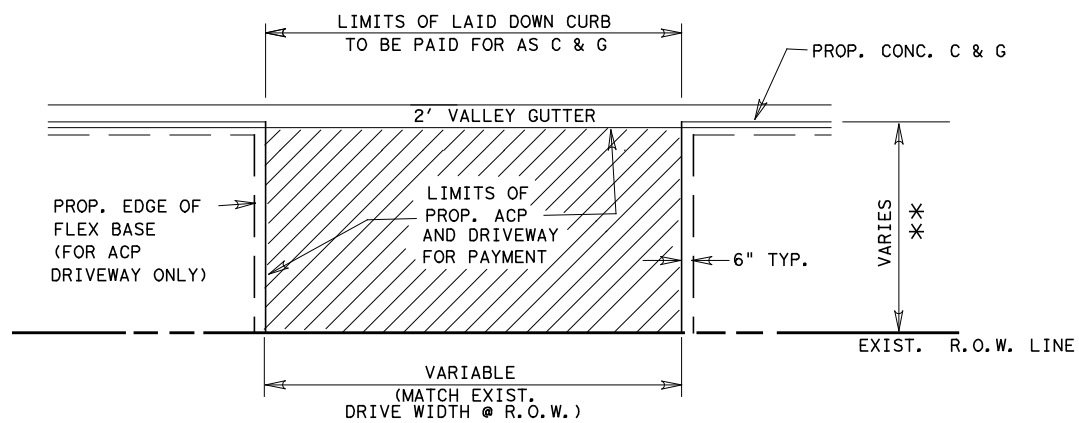
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| STATE | STATE DIST. NO. | COUNTY | CONT. SECT. JOB HIGHWAY NO. |
| TEXAS | PHR | HIDALGO | 2C 1080 495 BETO GARZA |

PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER



PLAN OF PRIVATE AND COMMERCIAL DRIVES
(W/DRIVEWAY WIDTH LESS THAN 24')

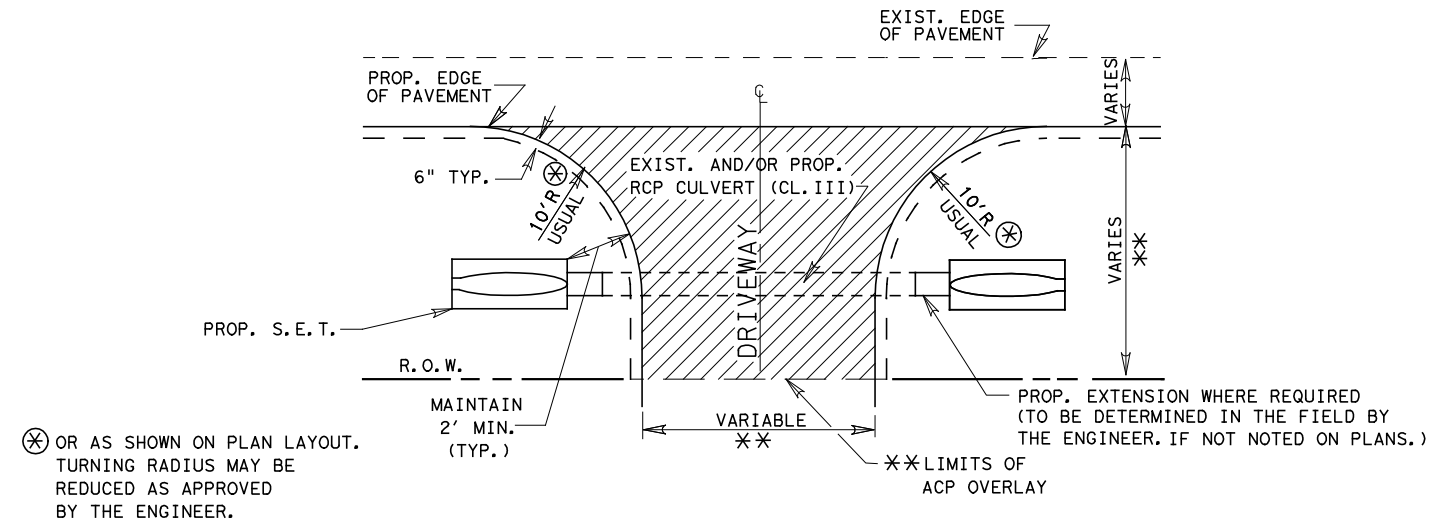
** SEE P&P SHEETS



PLAN OF PRIVATE AND COMMERCIAL DRIVES
(W/DRIVEWAY WIDTH EQUAL TO OR GREATER THAN 24' @ R.O.W. LINE)

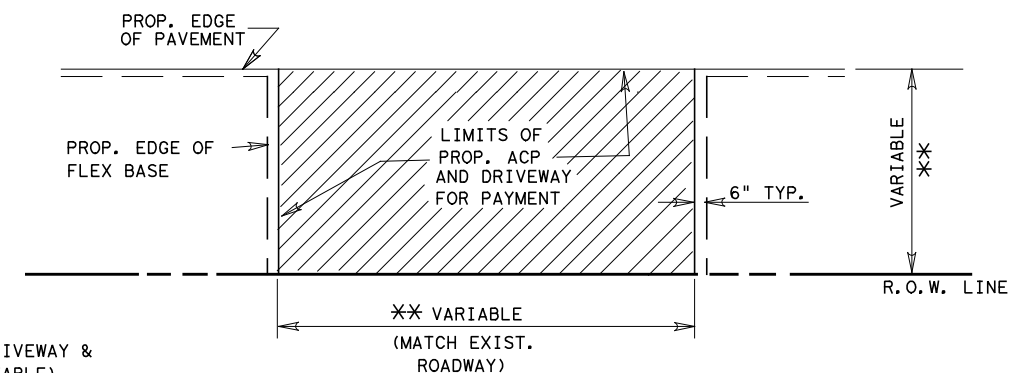
N. T. S.

PRIVATE AND COMMERCIAL DRIVES WITHOUT CURB & GUTTER



PLAN OF PRIVATE AND COMMERCIAL DRIVES

*W/DRIVEWAY WIDTH LESS THAN 24'

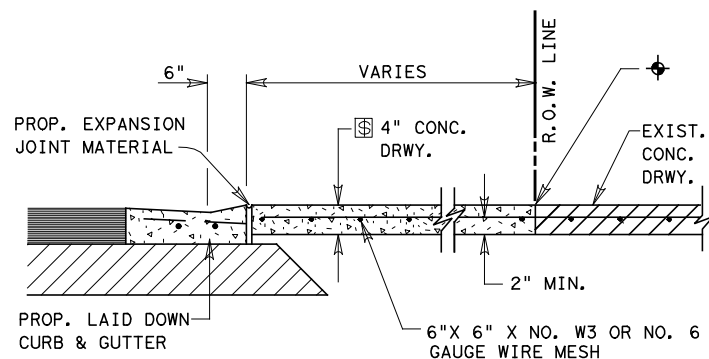


PLAN OF PRIVATE AND COMMERCIAL DRIVES
(W/DRIVEWAY WIDTH EQUAL TO OR GREATER THAN 24' @ R.O.W. LINE)

N. T. S.

** FOR DETAILS SEE DRIVEWAY & TURNOUT DETAILS (TABLE)

PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER

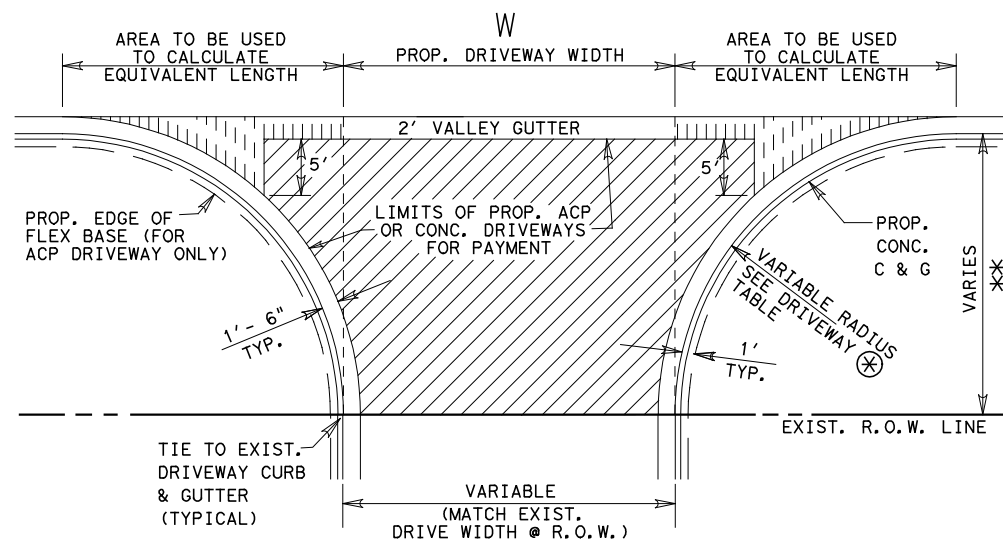


TYPICAL CONCRETE DRIVEWAY SECTION

◆ CONC. SHALL BE SAW CUT TO THE LIMITS OF REMOVAL WHERE APPLICABLE.

Ⓢ 6" FOR COMMERCIAL DRIVES

N. T. S.



PLAN OF PRIVATE AND COMMERCIAL DRIVES

SEE P&P SHEETS FOR LOCATIONS OF DRIVES

N. T. S.

LF EQUIVALENT TABLE FOR PAYMENT LIMITS OF 2' VALLEY GUTTER

| LF OF VALLEY GUTTER = W + X1 + X2 | |
|--|----------------------------|
| WHERE X1 AND X2 MAY VARY DEPENDING ON RADIUS | |
| Prop. Driveway Radius | X1 or X2 (Sq Ft Area / 2') |
| 5' | 1 |
| 8' | 2 |
| 10' | 4 |
| 12' | 6 |
| 15' | 9 |
| 18' | 12 |
| 20' | 15 |
| 22' | 18 |
| 25' | 24 |
| 28' | 30 |
| 30' | 34 |

SEE DRIVEWAY TABLE FOR LIMITS OF LAID DOWN CURB TO BE PAID FOR AS CURB AND GUTTER

DRIVEWAY TYPES

- TY PRB-1
EXIST. PAVED CALICHE AND /OR GRAVEL DRIVEWAYS TO BE SCARIFIED AND RECONSTRUCTED WITH 3" NEW AND/OR SALVAGE FLEX. BASE TO MATCH THE PROPOSED WIDENED SECTION. THEN PRIMED AND SURFACED WITH 114#/SY ACP (TY "D")
- TY PB-1
EXIST. UNPAVED PRIVATE OR COMMERCIAL DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" NEW AND/OR SALVAGE FLEX. BASE, PRIMED AND SURFACED WITH 114#/SY ACP.
- TY P1
EXIST. PAVED DRIVEWAYS TO BE PAVED WITH 114#/SY ACP TY "D".

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TEXAS DEPARTMENT OF TRANSPORTATION

DRIVEWAY DETAILS

PRIVATE

(RESIDENTIAL-COMMERCIAL)

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| | | SECT. 1080 | JOB 495 |
| | | | HIGHWAY NO. BETO GARZA |

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Barricade and Construction (BC) Standard Sheets General Notes:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets", the TxDOT "Roadway Design Manual" or engineering judgment.
6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
10. As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.
11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer has the final decision on the location of all traffic control devices.
13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

Worker Safety Apparel Notes:

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

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

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

WEB ADDRESSES FOR REFERENCED DOCUMENTS

- Compliant Work Zone Traffic Control Devices List (CWZTCD)
<http://www.txdot.gov/publications/traffic.htm>
- Texas Manual on Uniform Traffic Control Devices (TMUTCD)
<http://www.txdot.gov/publications/traffic.htm>
- Standard Highway Sign Designs for Texas (SHSD)
<http://www.txdot.gov/publications/traffic.htm>
- Traffic Engineering Standard Sheets
<http://www.txdot.gov/business/discclaim.htm>
- Material Producer List
http://www.txdot.gov/business/producer*list.htm
- Departmental Material Specifications (DMS)
http://www.txdot.gov/services/construction/material*specifications/
- Roadway Design Manual
http://www.txdot.gov/services/general*services/manuals.htm



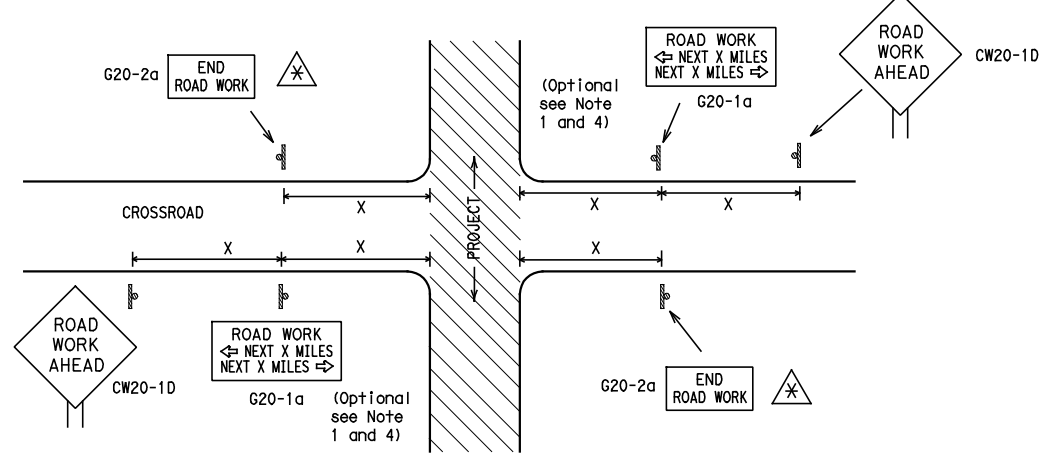
**BARRICADE AND CONSTRUCTION
 GENERAL NOTES
 AND REQUIREMENTS**

1 of 12 BC(1)-07

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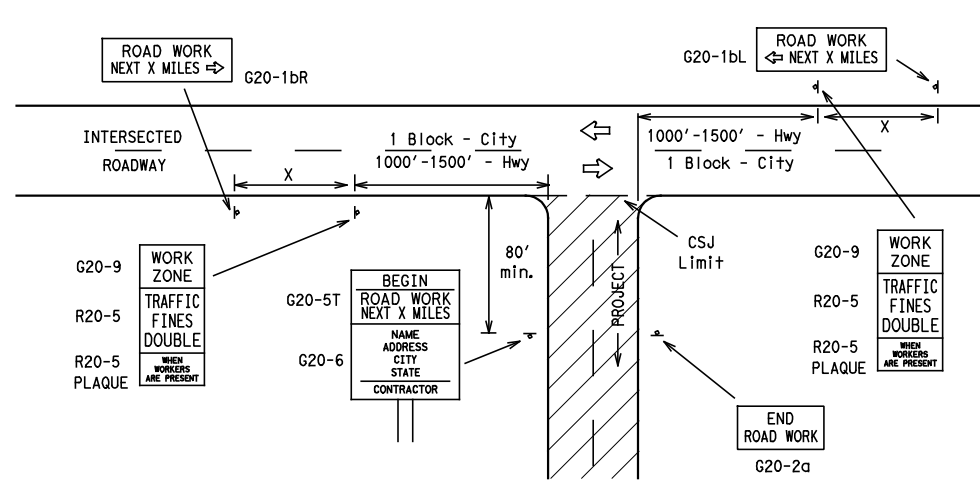
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TYPICAL LOCATION OF CROSSROAD SIGNS



- May be mounted on back of CW20-10 sign with approval of engineer. (See note 2 below)
- The typical minimum signing on a crossroad approach should be a CW20-10 ROAD WORK AHEAD sign and a G20-2a END ROAD WORK sign, unless noted otherwise in plans.
 - The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-10) sign mounted back to back with the reduced size 36" x 18" END ROAD WORK (G20-2a) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume. This information shall be shown in the plans.
 - 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.
 - The G20-1a sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
 - Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
 - 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

- The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
- If construction closes the road at a T-Intersection the Contractor shall place the G20-6 "Contractor Name" sign behind the Type III Barricades for the road closure (see BC(10) also). The G20-1bL and G20-1bR signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING^{1,5,6}

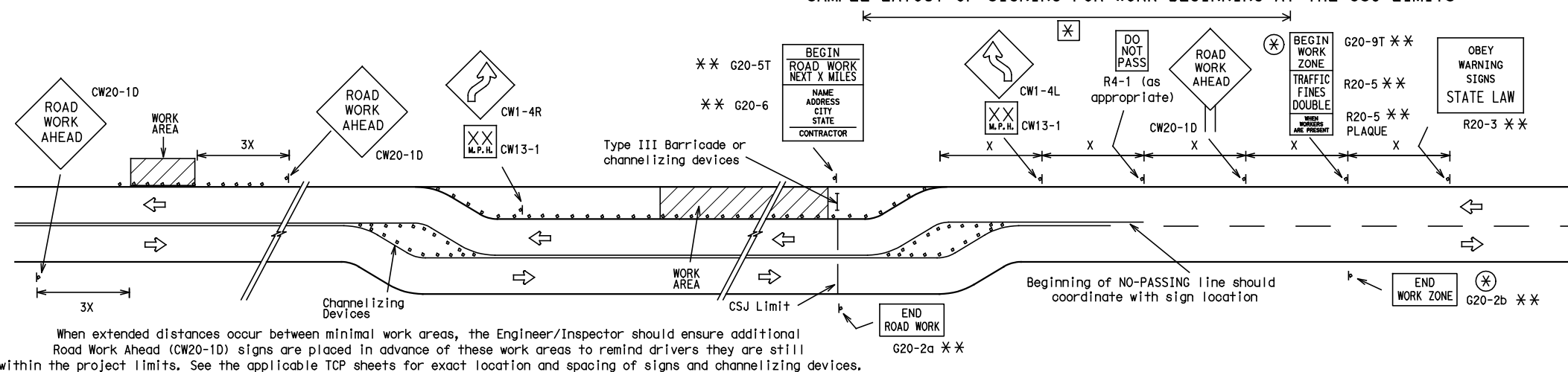
| Sign Number or Series | SIZE | | SPACING | |
|---------------------------------------|-------------------|--------------------|------------------|----------------------------------|
| | Conventional Road | Expressway/Freeway | Posted Speed MPH | Sign Spacing "x" (Feet (Apprx.)) |
| CW20 CW21 CW22 CW23 CW25 | 48" x 48" | 48" x 48" | 30 | 120 |
| CW1, CW2, CW7, CW8, CW9, CW11, CW14 | 36" x 36" | 48" x 48" | 35 | 160 |
| CW3, CW4, CW5, CW6, CW8-3, CW10, CW12 | 48" x 48" | 48" x 48" | 40 | 240 |
| | | | 45 | 320 |
| | | | 50 | 400 |
| | | | 55 | 500 ² |
| | | | 60 | 600 ² |
| | | | 65 | 700 ² |
| | | | 70 | 800 ² |
| | | | 75 | 900 ² |
| | | | 80 | 1000 ² |
| | | | * | * |

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

General Notes:

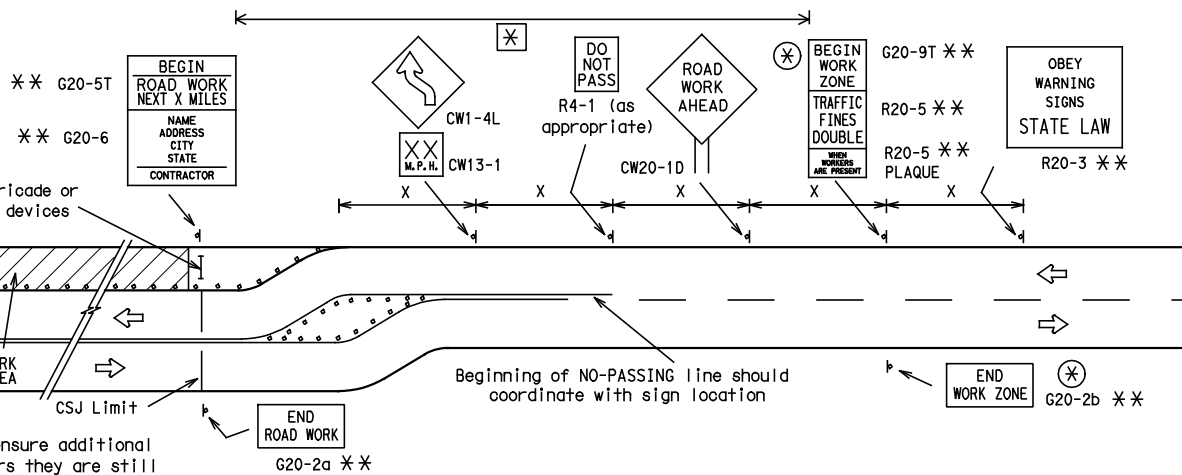
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" ROAD WORK AHEAD (CW20-10) signs may be used on low volume crossroads at the discretion of the Engineer. See Note 2 under "Typical Location of Crossroad Signs".
- Only diamond shaped warning sign sizes are indicated.
- See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

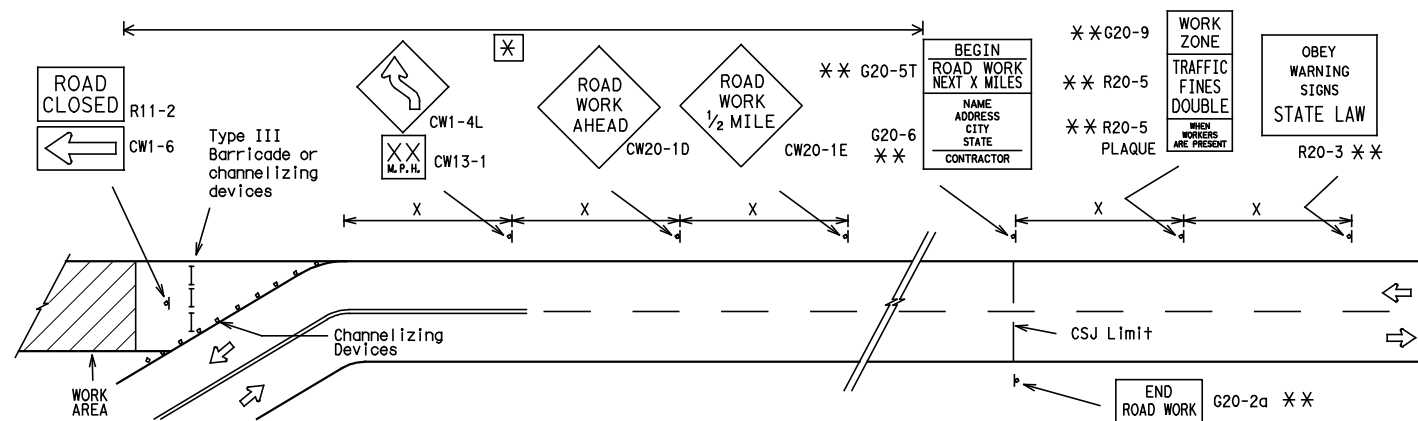


When extended distances occur between minimal work areas, the Engineer/Inspector should ensure additional Road Work Ahead (CW20-10) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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

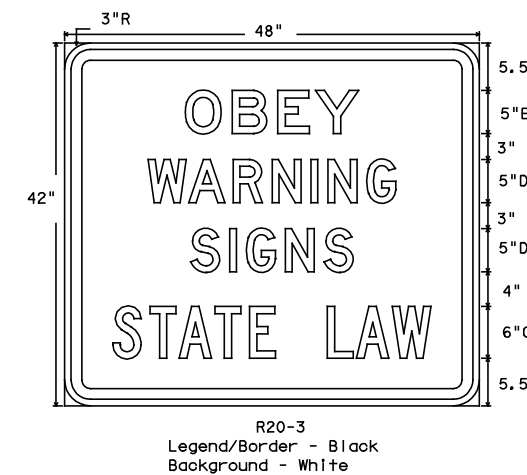


NOTES

- The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and G20-5T sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.
- The G20-9T and G20-2b shall be used when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a work zone where traffic fines may double if workers are present.
- ** Required CSJ Limit signing. See Note 10 on BC(1).
- * Area for placement of "ROAD WORK AHEAD" sign and other signs or devices as called for on the Traffic Control Plan.

LEGEND

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



R20-3
Legend/Border - Black
Background - White

Texas Department of Transportation
 Traffic Operations Division

BARRICADE AND CONSTRUCTION PROJECT LIMIT STANDARD

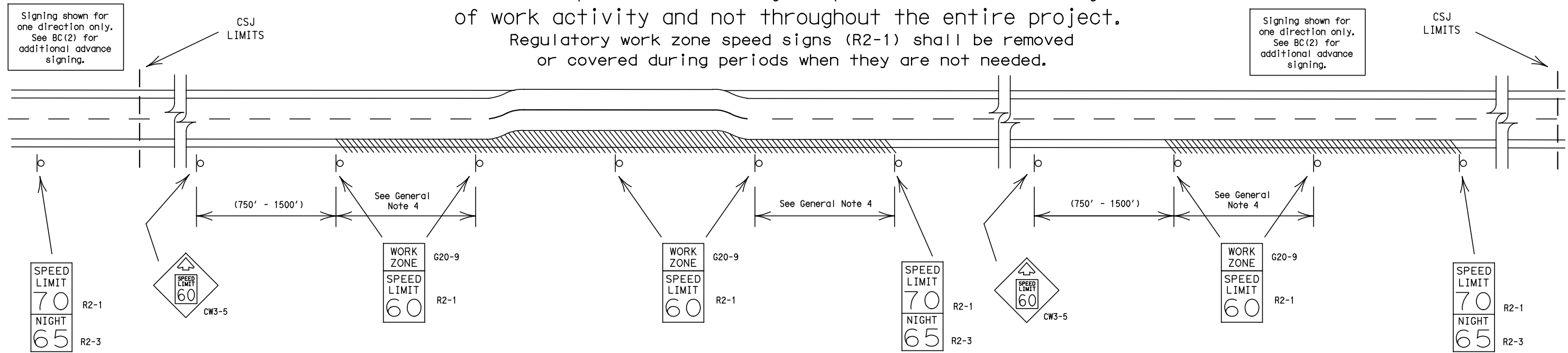
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TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

Long/Intermediate Term Work Zone Speed Limit signs, when approved as described above, should be posted and visible to the motorist when work activity is present. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:

- rough road or damaged pavement surface
- substantial alteration of roadway geometrics (diversions)
- construction detours
- grade
- width
- other conditions readily apparent to the driver

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES:

- Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
- Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
- Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
- Frequency of work zone speed limit signs should be:
 - 40 mph and greater 0.2 to 2 miles
 - 35 mph and less 0.2 to 1 mile
- Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
- Fabrication, erection and maintenance of the CW3-5 sign, G20-9 plaque and the R2-1 and R2-3 signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
- Turning signs from view, laying signs over or down will not be allowed, unless otherwise noted.
- Techniques that may help reduce traffic speeds include but are not limited to:
 - Law enforcement.
 - Flagger stationed next to sign.
 - Portable changeable message sign (PCMS).
 - Low-power (drone) radar transmitter.
 - Speed monitor trailers or signs.
- Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.

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BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT STANDARD

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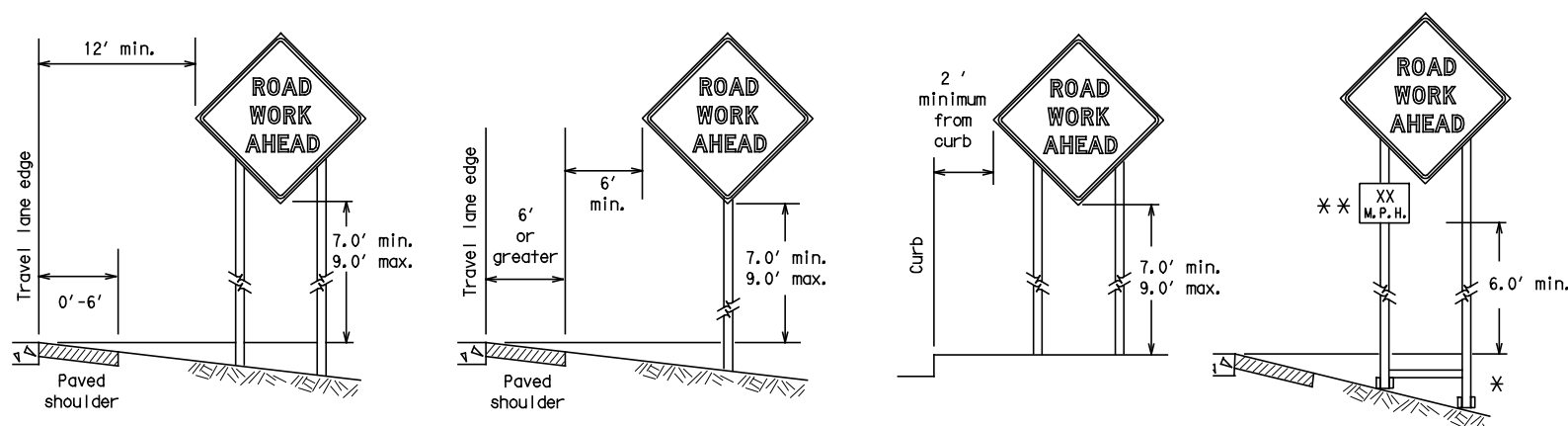
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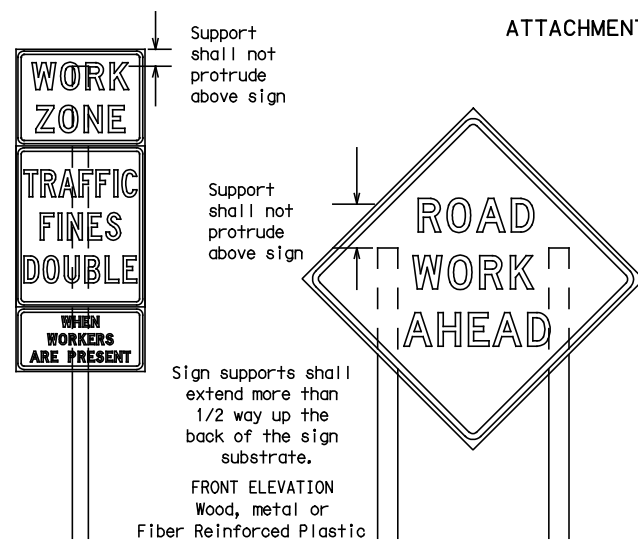
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



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

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

ATTACHMENT FOR SIGN SUPPORTS

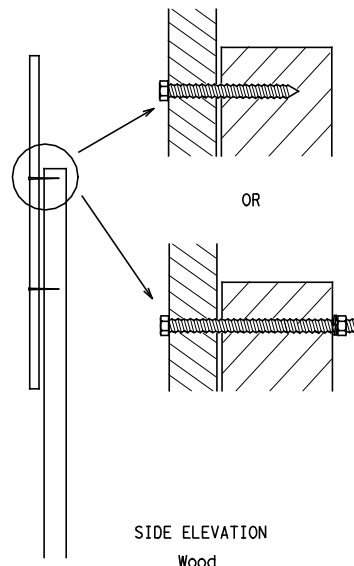


Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the splice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should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

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

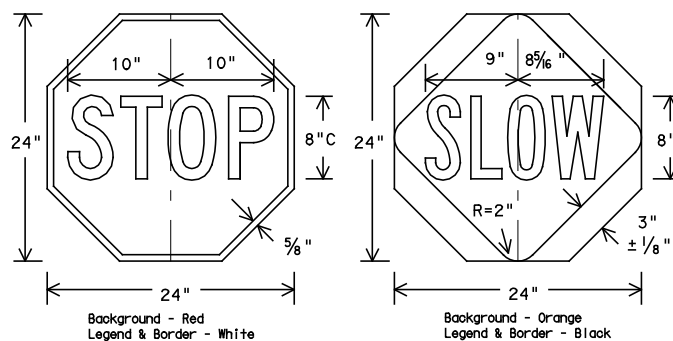
Nails will NOT be allowed.

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



STOP/SLOW PADDLES

- 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.
- When used at night, the STOP/SLOW paddle shall be retroreflectORIZED.
- STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
- 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

- 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.
- 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.
- When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
- 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.
- 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.
- 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

- Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
- Wooden sign posts shall be painted white.
- Barricades shall NOT be used as sign supports.
- Nails shall NOT be used to attach signs to any support.
- 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.
- The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
- The 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.
- 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.
- 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.
- 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)

- 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.
 - Long-term stationary - work that occupies a location more than 3 days.
 - 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.
 - Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
 - Short, duration - work that occupies a location up to 1 hour.
 - Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

- 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.
- 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.
- Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
- 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.
- 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

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

SIGN SUBSTRATES

- 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.
- "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
- 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

- 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).
- White sheeting, meeting the requirements of DMS-8300 Type C (High Specific Intensity), shall be used for signs with a white background.
- Orange sheeting, meeting the requirements of DMS-8300 Type E (Fluorescent Prismatic), shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

- 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

- When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
- Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This type of sign support meets the crashworthiness standards regardless of the direction of impact. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
- 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.
- 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.
- Burlap shall NOT be used to cover signs.
- Duct tape or other adhesive material shall NOT be affixed to a sign face. These materials can damage the retroreflectivity of sheeting.
- Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
- 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.
- 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.
- 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.
- Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.



BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES STANDARD

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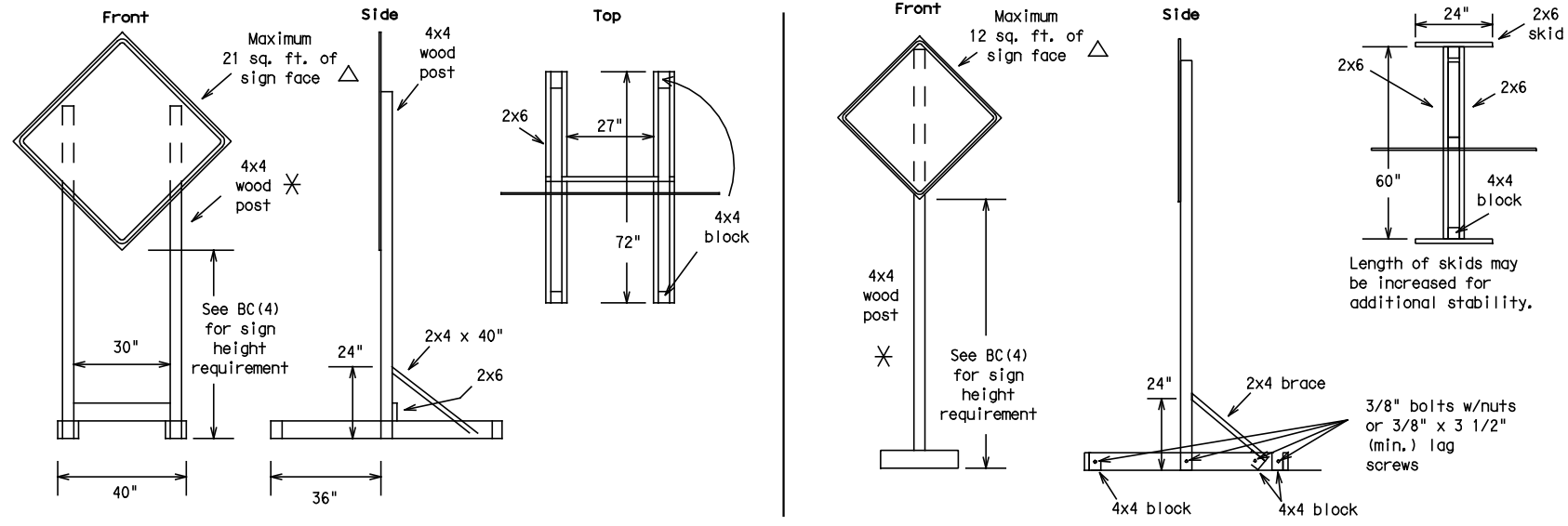
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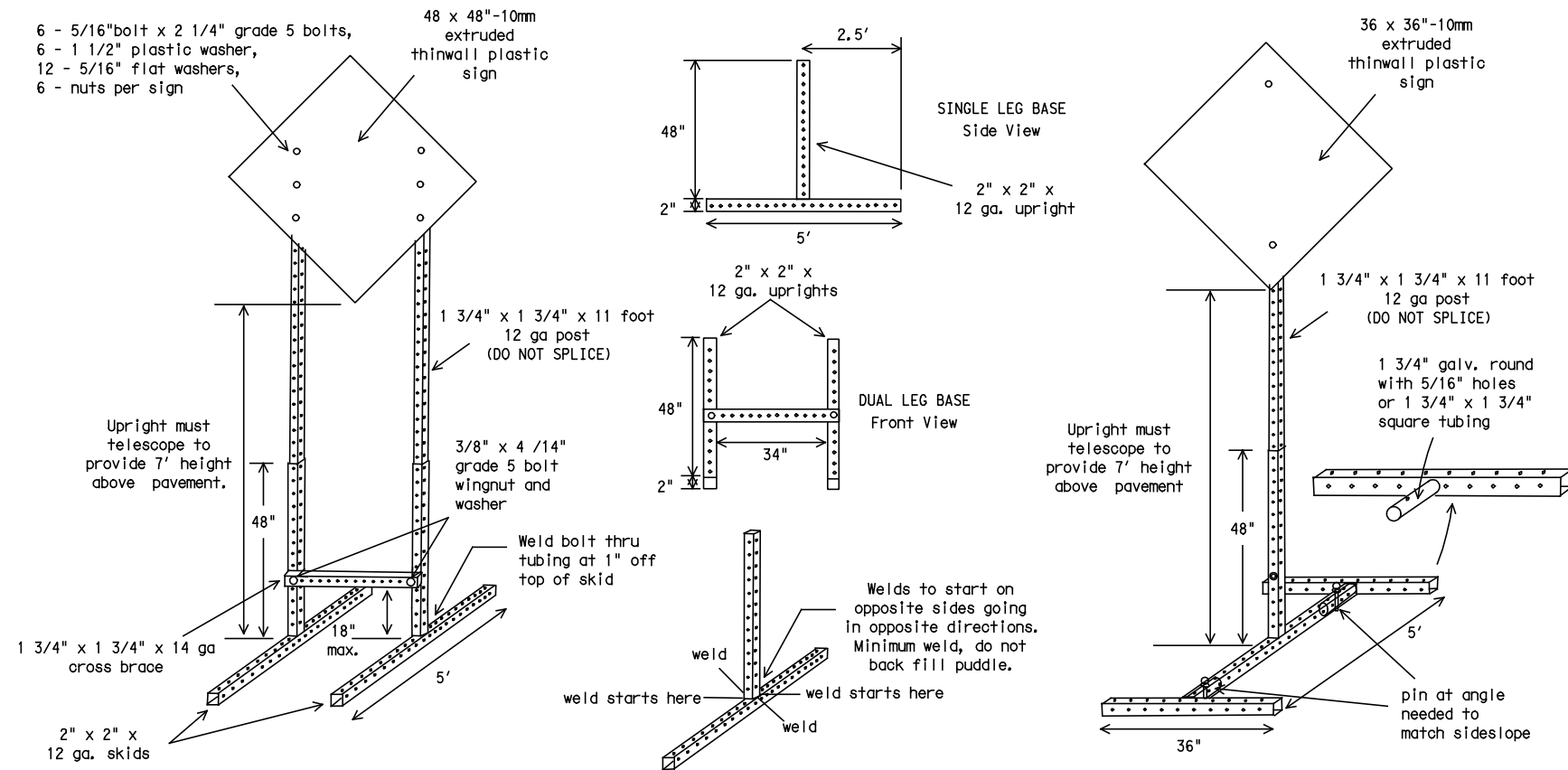
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SKID MOUNTED WOOD SIGN SUPPORTS

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

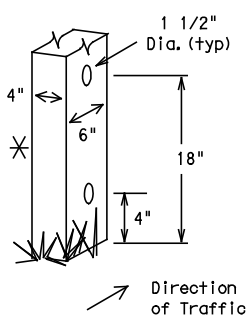


SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS



WEDGE ANCHORS

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



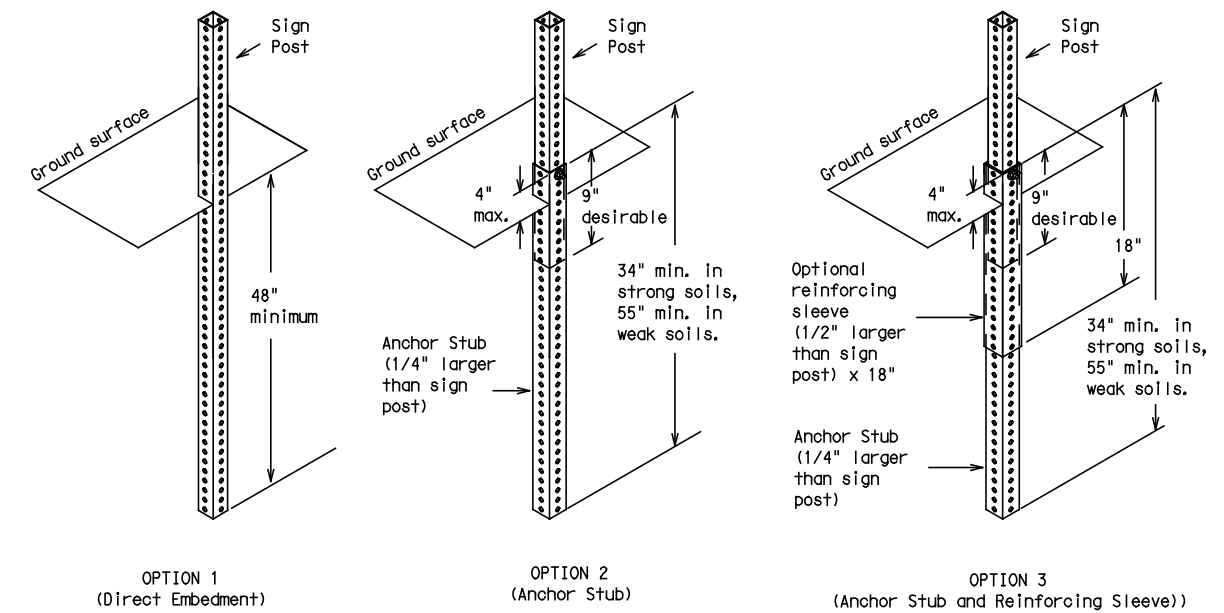
WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS

| Nominal Post Size | No. 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 |

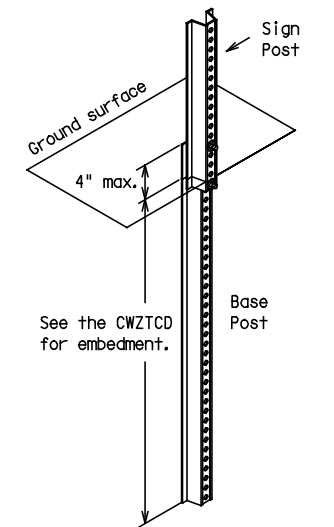
GROUND MOUNTED SIGN SUPPORTS

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

PERFORATED SQUARE METAL TUBING



WING CHANNEL



GENERAL NOTES

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

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT STANDARD

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PORTABLE CHANGEABLE MESSAGE SIGNS

- The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
- Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
- Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
- Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
- Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
- When in use the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
- The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
- The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
- Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
- Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
- Do not use the word "Danger" in message.
- Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
- Do not display messages that scroll horizontally or vertically across the face of the sign.
- The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated.
- PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 720 feet. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
- Each line of text should be centered on the message board rather than left or right justified.
- If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

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

Roadway designation # IH-number, US-number, SH-number, FM-number
 WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

| | |
|-----------------------|--------------------------|
| 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 |
| XXXXXXXXX BLVD CLOSED | |

Other Condition List

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

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

Application Guidelines

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

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 |
| XXXXXXXXX TO XXXXXXXX |
| 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.

Wording Alternatives

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

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS.

FULL MATRIX PCMS SIGNS

- 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.
- When symbol signs, such as the CW20-7a Flagger Symbol, are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
- 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.
- A full matrix PCMS may be used to simulate a flashing arrow panel provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.


Texas Department of Transportation
 Traffic Operations Division

BARRICADE AND CONSTRUCTION
 PORTABLE CHANGEABLE
 MESSAGE SIGN (PCMS)
 STANDARD

6 of 12 BC (6) - 07

| | | | | |
|-----------------|------------|-----------|-----------|-----------|
| © TxDOT 11-4-02 | DNF: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
| 9-07 | REVISONS | CONT | SECT | JOB |
| | | 2C | 1080 | 495 |
| | | DIST | COUNTY | SHEET NO. |
| | | PHR | HIDALGO | 25 |

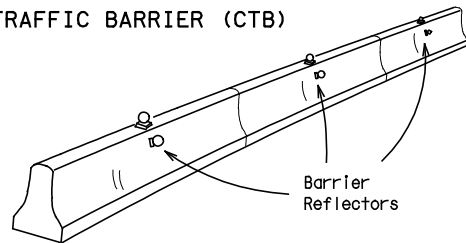
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BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

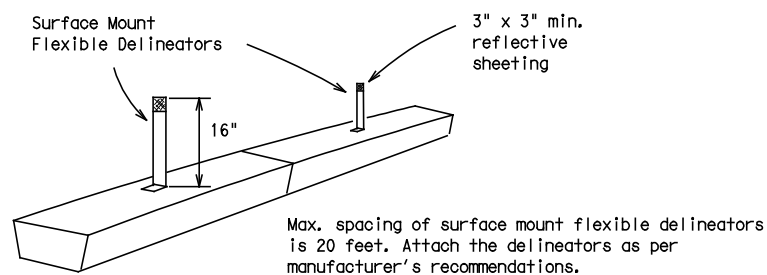
- Barrier Reflectors shall be prequalified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors (Type C Delineators) can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors shall be as specified in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

CONCRETE TRAFFIC BARRIER (CTB)

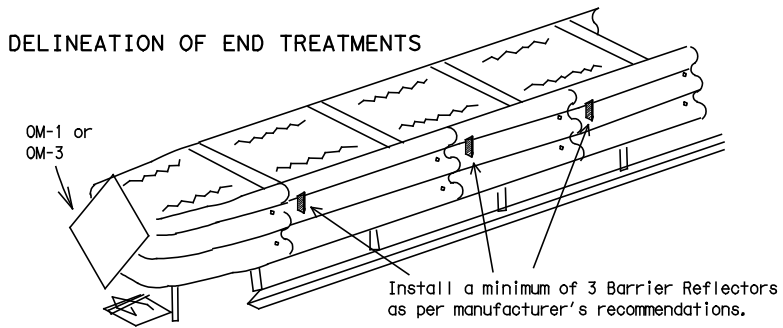


- Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector.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

LOW PROFILE CONCRETE BARRIER (LPCB)



DELINEATION OF END TREATMENTS

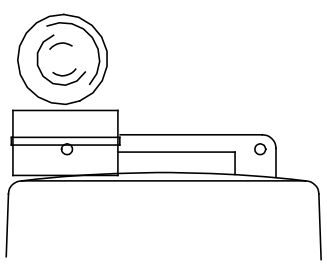


| | APPROACHING TRAFFIC | |
|-------------|---------------------|------------------------|
| | BOTH SIDES | ONE SIDE |
| DELINEATION | OM-1 | OM-3 or Vertical Panel |

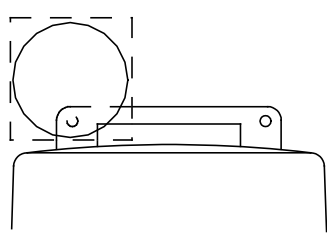
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

WARNING LIGHTS



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



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

- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type E Sheeting (Fluorescent Prismatic) meeting the requirements of Departmental Material Specification DMS-8300.
- Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
- The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
- When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
- When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

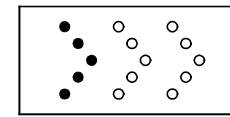
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
- 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.
- Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
- Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
- 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

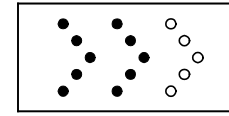
- A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
- The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
- The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
- Round reflectors shall be fully reflectorized, including the area where attached to the drum.
- 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.
- The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type D (Non-fluorescent Prismatic).
- When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
- The warning reflector should be mounted on the side of the handle nearest approaching traffic.
- The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

TYPICAL FLASHING ARROW PANEL

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

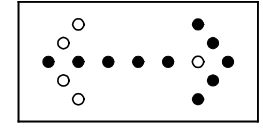


Sequential Chevron

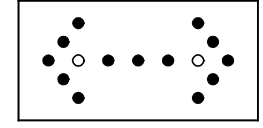


- The Flashing Arrow Panel should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
- Flashing Arrow Panels should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display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

Flashing RIGHT (LEFT) ARROW



Flashing DOUBLE ARROW



Flashing CAUTION

- The "CAUTION" display consists of four corner lamps flashing simultaneously.
- The straight line caution display is NOT ALLOWED.
- The Flashing Arrow Panel shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
- 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.
- The sequential arrow display is NOT ALLOWED.
- The flashing arrow display is the TxDOT standard; however, the sequential Chevron display may be used during daylight operations.

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

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

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

- The Flashing Arrow Panel shall be mounted on a vehicle, trailer or other suitable support.
- A Flashing Arrow Panel SHALL NOT BE USED to laterally shift traffic.
- A full matrix PCMS may be used to simulate a Flashing Arrow Panel provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
- Minimum mounting height of trailer mounted arrow panels should be 7 feet from roadway to bottom of panel.

TRUCK-MOUNTED ATTENUATORS

- Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350).
- Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
- Refer to the dates shown in the CWZTCD to ensure that the TMA meets the age requirements and the crashworthiness criteria established by the Federal Highway Administration (FHWA) for TMAs.
- Refer to the CWZTCD for a list of approved TMAs.
- TMAs are required on freeways unless otherwise noted in the plans.
- A TMA should be used anytime that it can be positioned approximately 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
- 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.

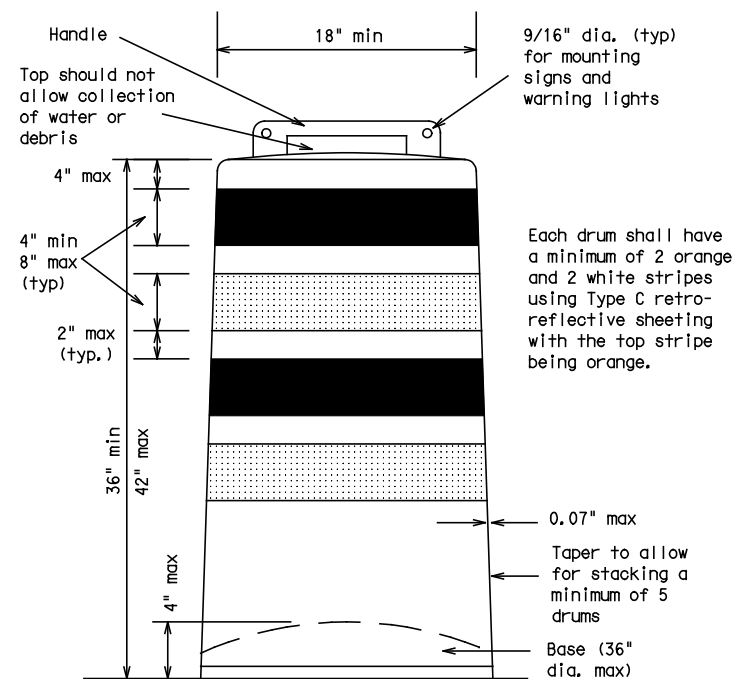


BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR STANDARD

7 of 12 BC (7) - 07

| | | | | | |
|-----------------|-----------|-----------|-----------|-----------|---------|
| © TxDOT 11-4-02 | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT | |
| 9-07 | REVISIONS | CONT | SECT | JOB | HIGHWAY |
| | | 2C | 1080 | 495 | GARZA |
| | | DIST | COUNTY | SHEET NO. | |
| | | PHR | HIDALGO | 26 | |

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GENERAL NOTES

- For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
- 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.
- 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.
- 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).
- 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.
- 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:

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.

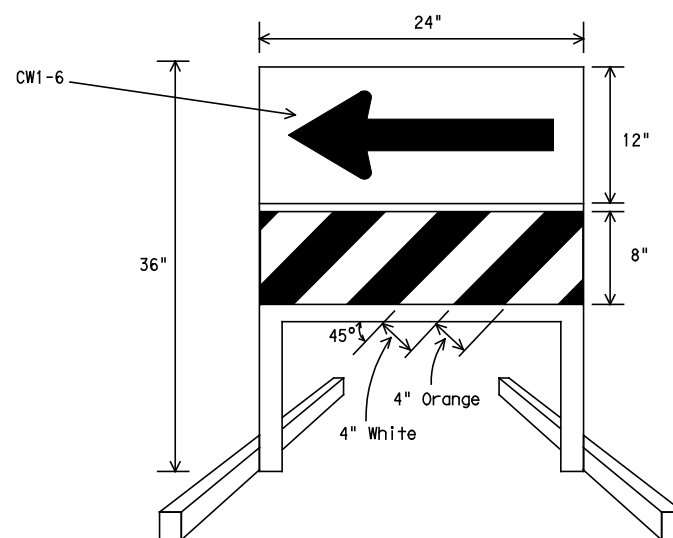
- Drum body shall have a minimum unballasted weight of 7.7 lbs. and maximum unballasted weight of 11 lbs. The wall of the drum body shall be a minimum of 0.07 inch in thickness. Weight of any drum supplied shall not vary more than 0.5 lb. from that of the prequalified sample.
- Drum and base shall be marked with manufacturer's name and model number.

RETROREFLECTIVE SHEETING

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

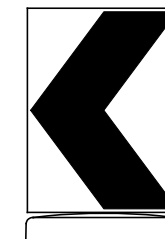
BALLAST

- 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.
- 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.
- 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.
- 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.
- Ballast shall not be placed on top of drums.
- Adhesives may be used to secure base of drums to pavement.

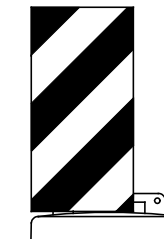


DIRECTION INDICATOR BARRICADE

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



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

- Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
- Chevrons and other work zone signs with an orange background shall be manufactured with Type E (Fluorescent Prismatic) sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
- Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type C (High Specific Intensity). Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
- 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.
- Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
- Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
- 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.
- 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.



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES STANDARD

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BC(8)-07

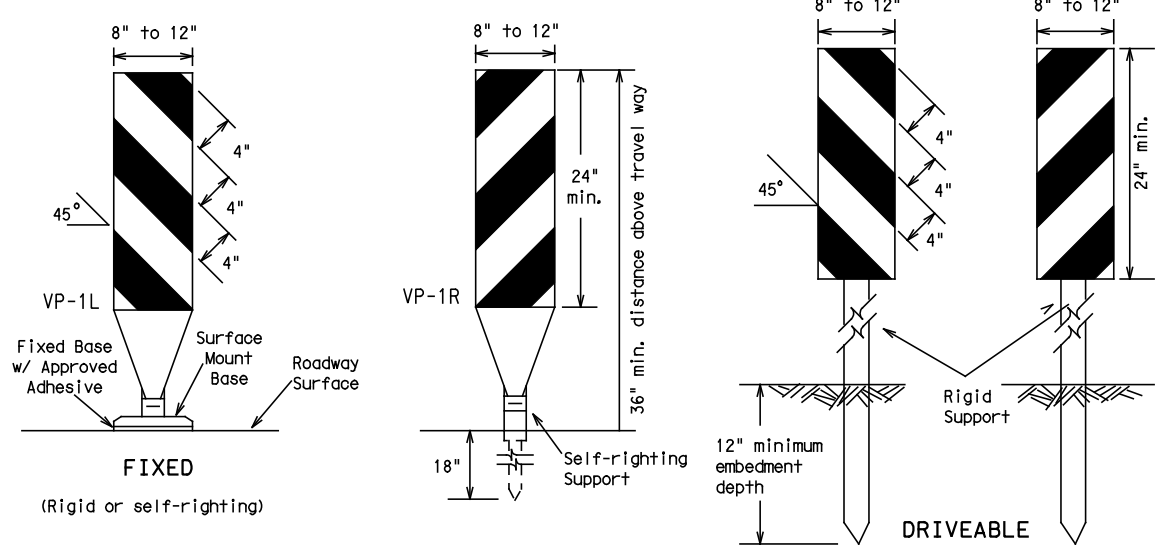
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| 9-07 | | 2C | 080 | 495 | GARZA |
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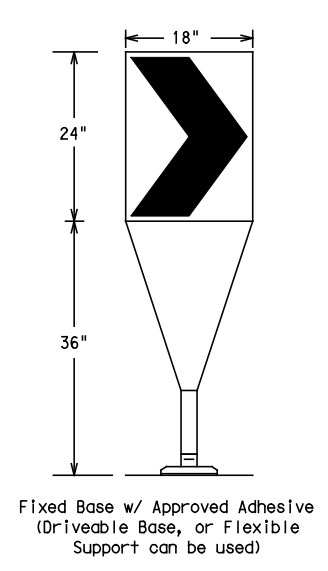
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CHANNELIZING DEVICES

VERTICAL PANELS (VPs)



CHEVRONS



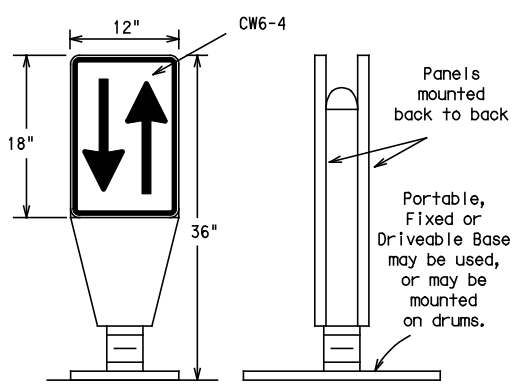
1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of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

GENERAL NOTES:

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

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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

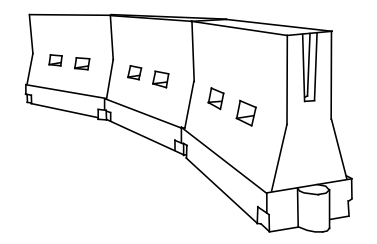


1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The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

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

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

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



LONGITUDINAL CHANNELIZING DEVICES

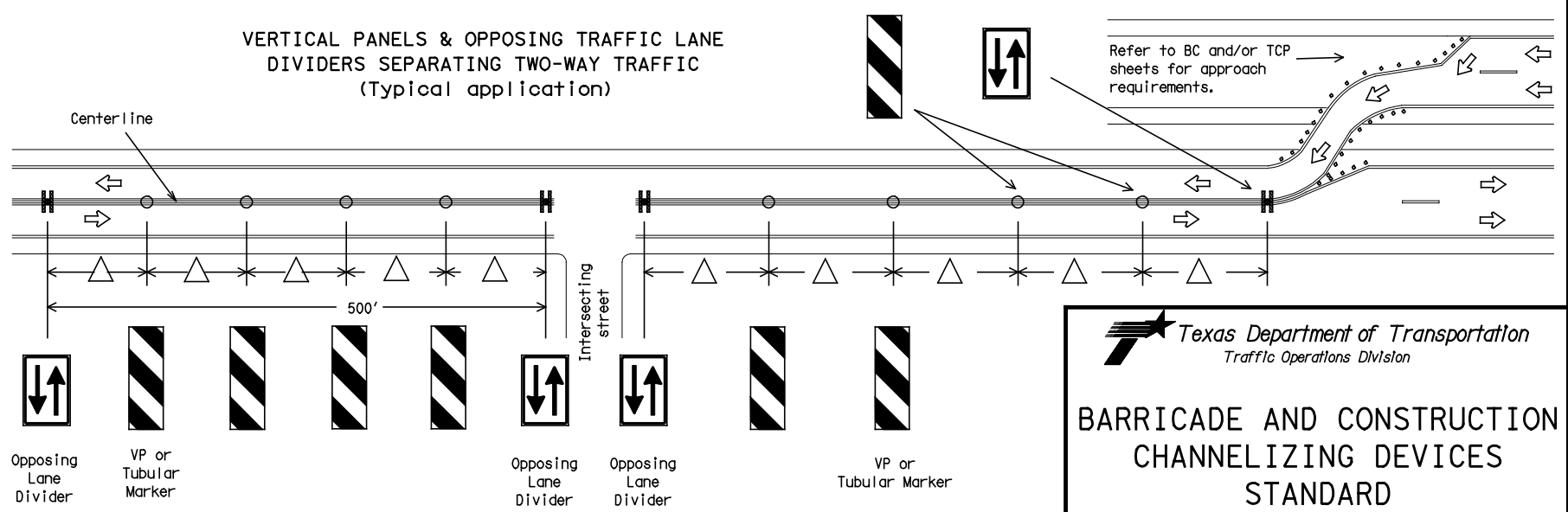
1. Longitudinal channelizing devices are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. **They are not designed to contain or redirect a vehicle on impact.**
2. Longitudinal channelizing devices may be used instead of a line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

WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to point outside the clear zone.

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

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



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

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TYPE III BARRICADES

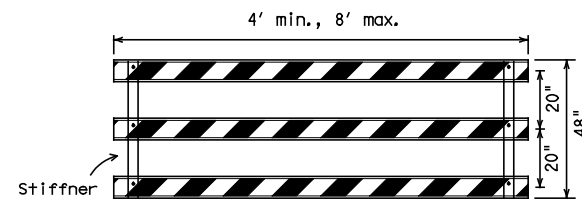
1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type III Barricades and a list of all materials used in the construction of Type III Barricades.
2. Type III Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades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

Barricades shall NOT be used as a sign support.

TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



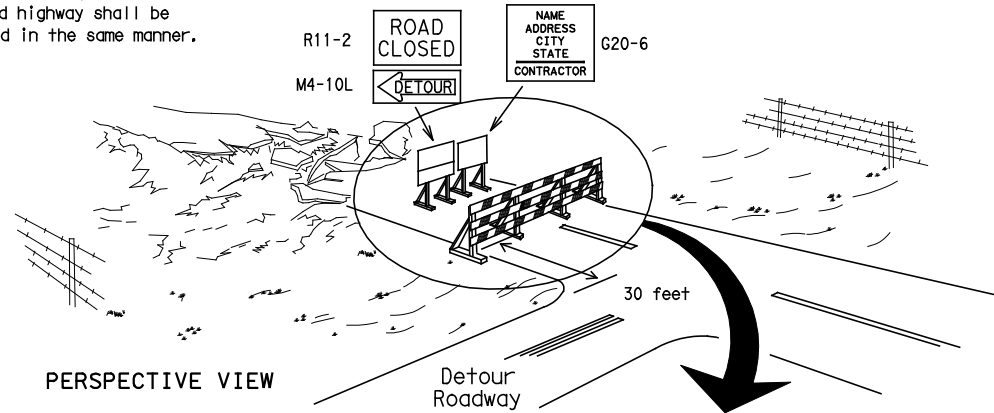
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES



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

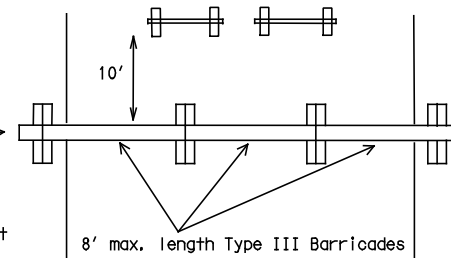
TYPE III BARRICADE (POST AND SKID) TYPICAL APPLICATION

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



PERSPECTIVE VIEW

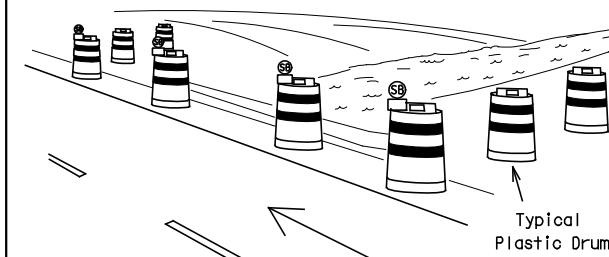
The three rails on Type III barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



PLAN VIEW

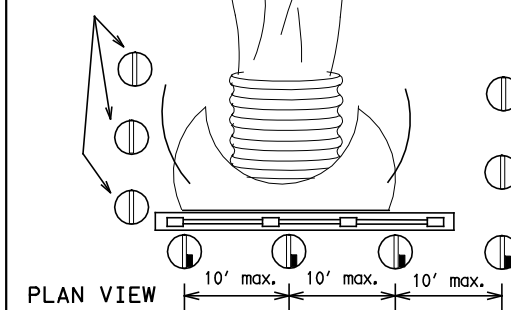
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type III Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



PERSPECTIVE VIEW

These drums are not required on one-way roadway



PLAN VIEW

A minimum of two drums shall be used across the work area.

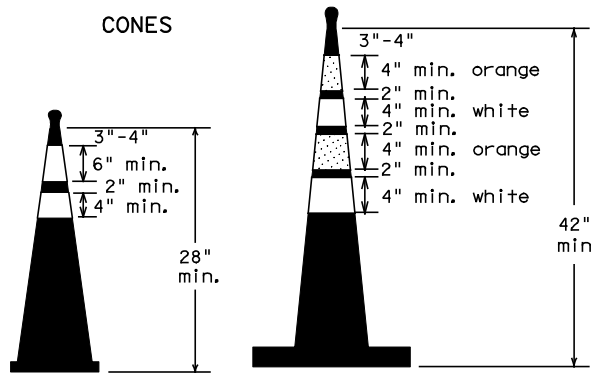
1. Where positive redirection capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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

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

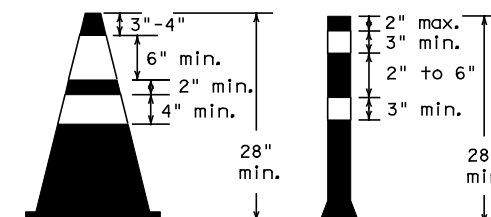
Legend

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

CONES



Two-Piece cones



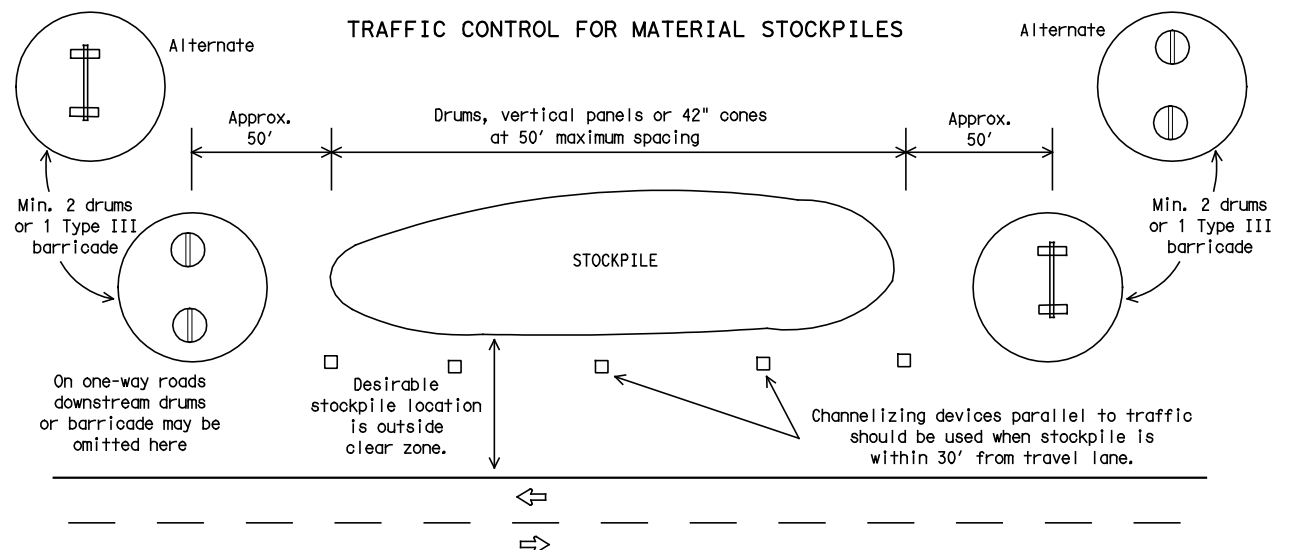
One-Piece cones Tubular Marker

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

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

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

TRAFFIC CONTROL FOR MATERIAL STOCKPILES

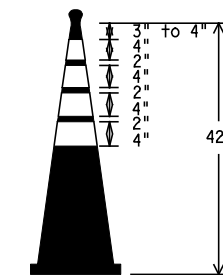


On one-way roads downstream drums or barricade may be omitted here

Desirable stockpile location is outside clear zone.

Channelizing devices parallel to traffic should be used when stockpile is within 30' from travel lane.

EDGE LINE CHANNELIZER



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

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WORK ZONE PAVEMENT MARKINGS

GENERAL

- 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.
- Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Additional supplemental pavement marking details may be found in the plans or specifications.
- Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
- 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).
- 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.
- All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

- Raised pavement markers are to be placed according to the patterns on BC(12).
- 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

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

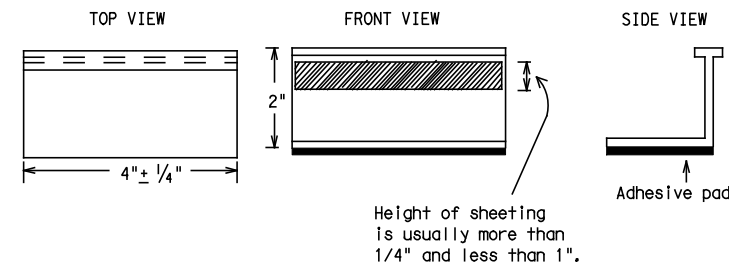
MAINTAINING WORK ZONE PAVEMENT MARKINGS

- The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
- 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.
- 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.
- 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

- 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.
- The above shall not apply to detours in place for less than two weeks, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
- 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".
- The removal of pavement markings may require resurfacing or seal coating portions of the roadway.
- Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
- Blast cleaning may be used but will not be required unless specifically shown in the plans.
- Over-painting of the markings SHALL NOT BE permitted.
- Removal of raised pavement markers shall be as directed by the Engineer.
- 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.
- 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**

- Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
- 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.
 - 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.
 - 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.
- Small design variances may be noted between tab manufacturers.
- 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

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


Guidemarks shall be designated as:

- YELLOW - (two amber reflective surfaces with yellow body).
- WHITE - (one silver reflective surface with white body).

DEPARTMENTAL MATERIAL SPECIFICATIONS

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

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



Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS STANDARD

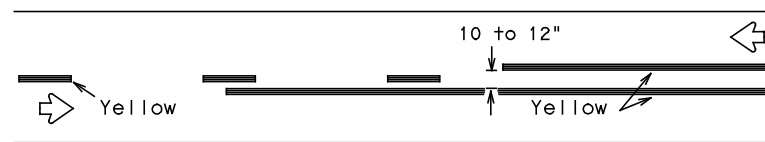
11 of 12 BC(11)-07

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| 1-02 | | 2C | 1080 | 495 | GARZA |
| 11-02 | | DIST | COUNTY | | SHEET NO. |
| 9-07 | | PHR | HIDALGO | | 30 |

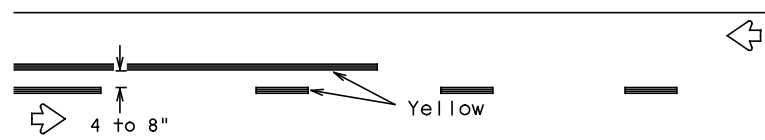
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PAVEMENT MARKING PATTERNS

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

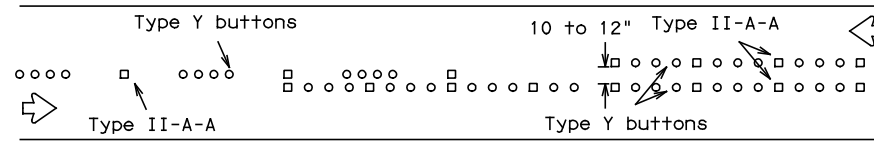


REFLECTORIZED PAVEMENT MARKINGS - PATTERN A

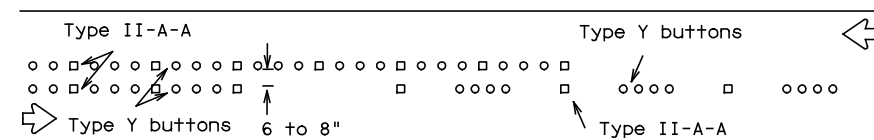


REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

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

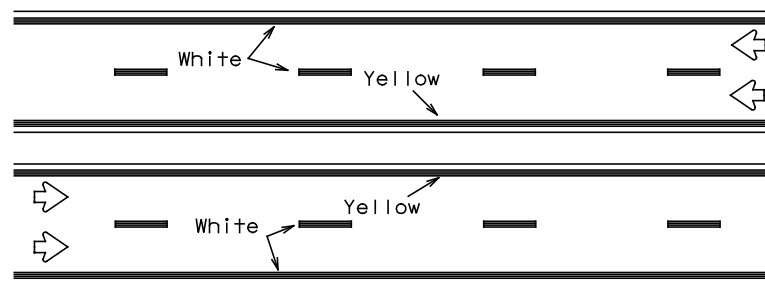


RAISED PAVEMENT MARKERS - PATTERN A



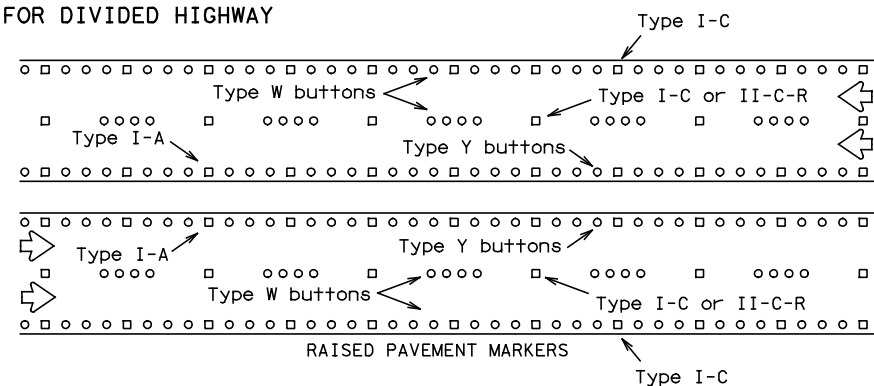
RAISED PAVEMENT MARKERS - PATTERN B

EDGE & LANE LINES FOR DIVIDED HIGHWAY



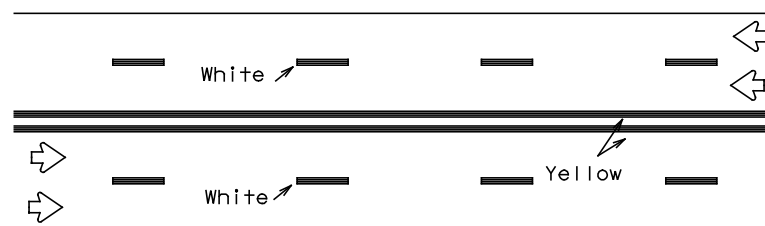
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



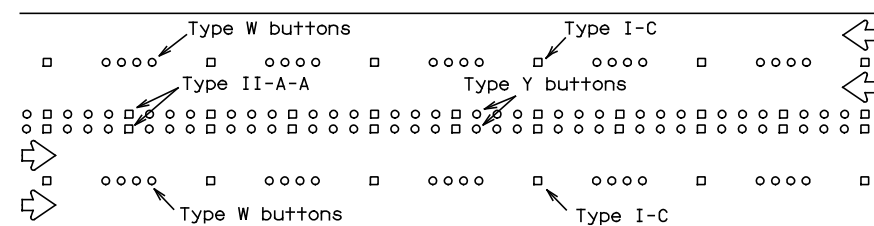
RAISED PAVEMENT MARKERS

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



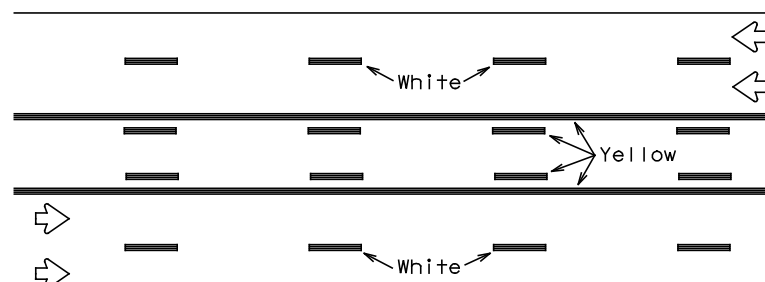
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



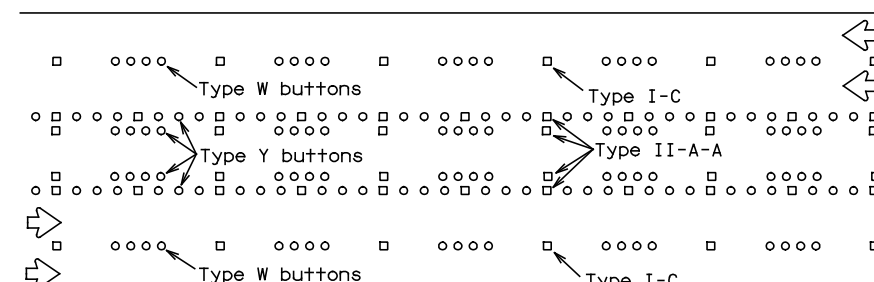
RAISED PAVEMENT MARKERS

TWO-WAY LEFT TURN LANE



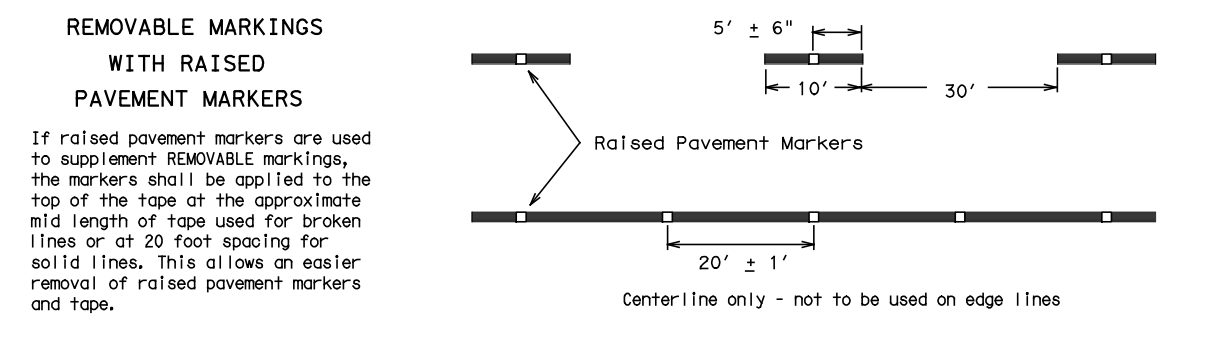
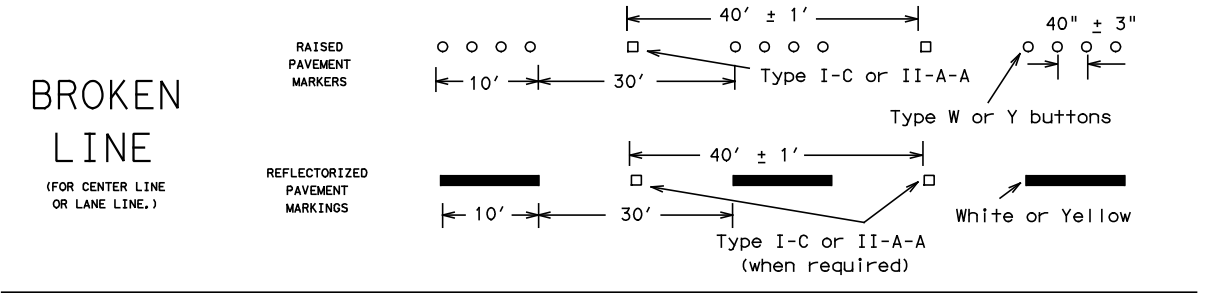
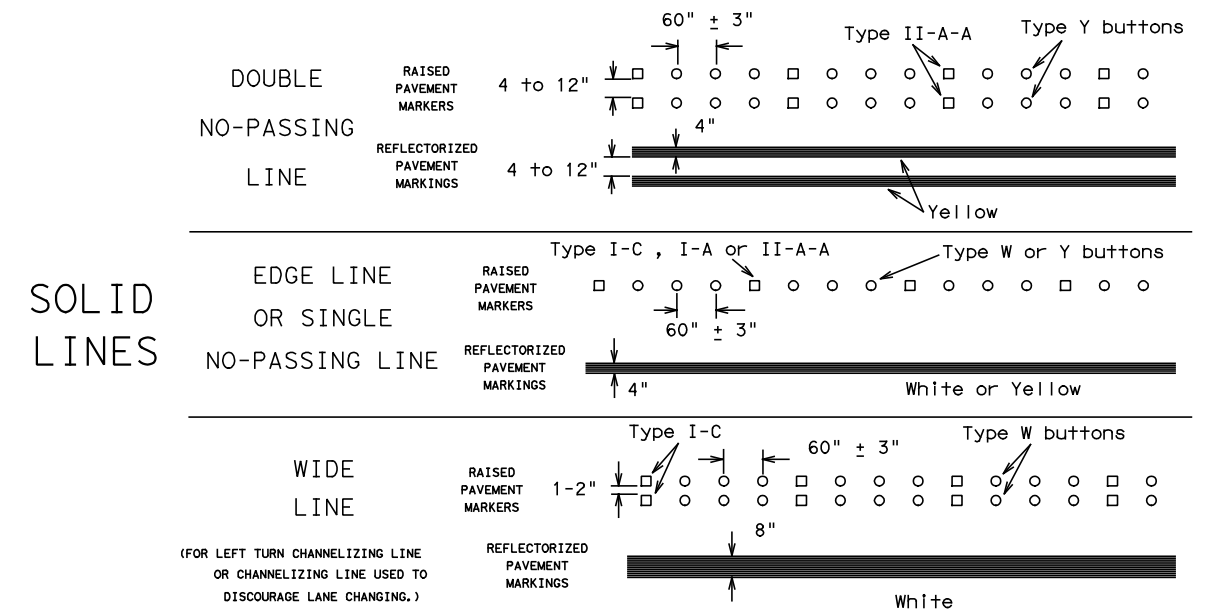
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



RAISED PAVEMENT MARKERS

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



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



BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS STANDARD

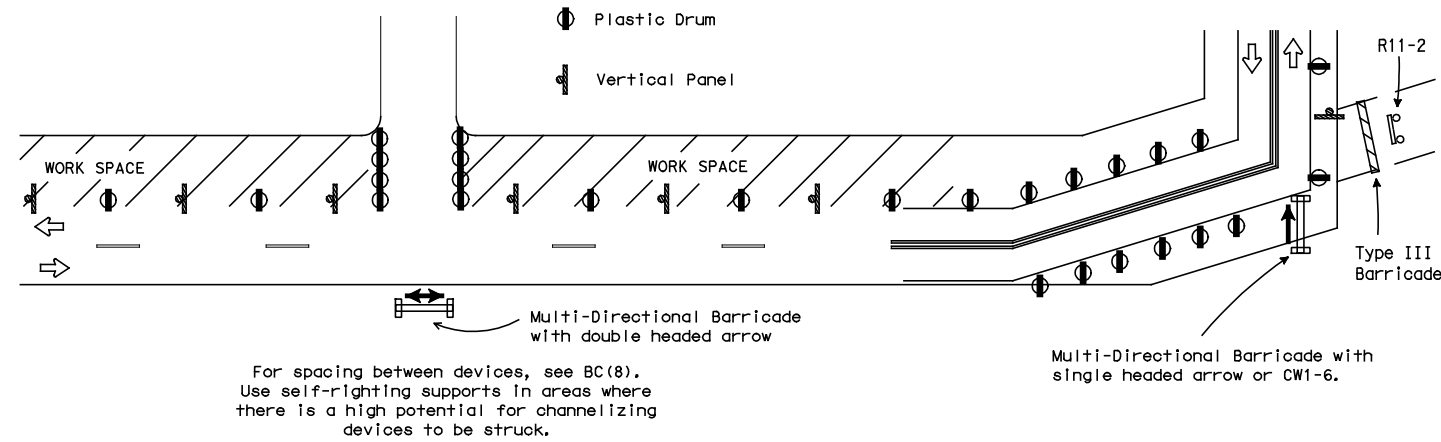
12 of 12 BC(12)-07

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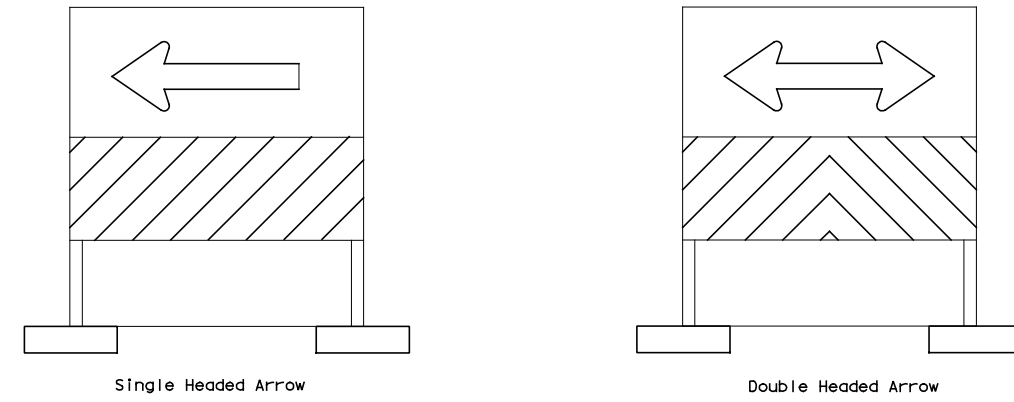
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CHANNELIZING DEVICES FOR URBAN ROADWAY TYPE PROJECT



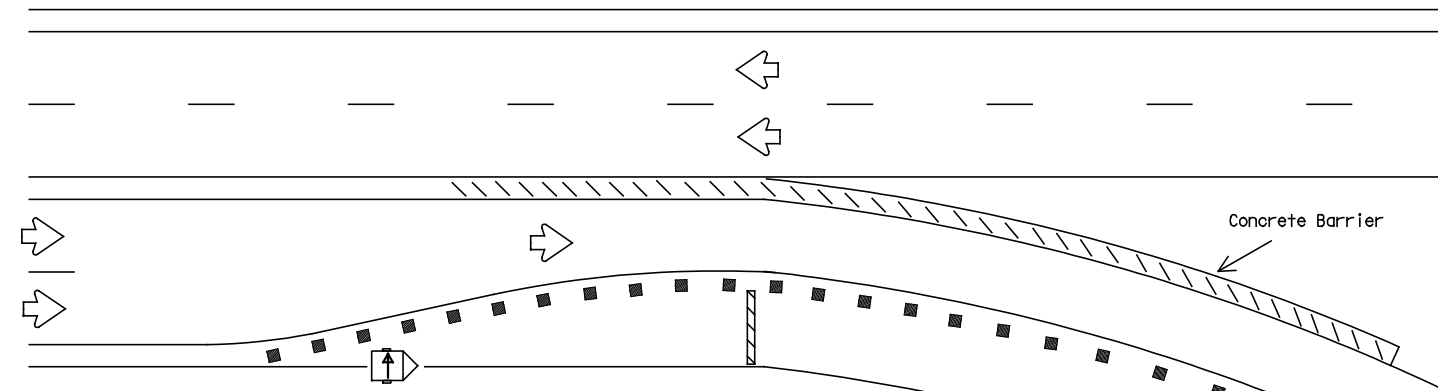
For spacing between devices, see BC(8). Use self-righting supports in areas where there is a high potential for channelizing devices to be struck.

MULTI-DIRECTIONAL BARRICADE



1. Multi-directional barricade shall not be used for lane closures.
2. May be used for sharp changes in alignment, or across roadway from stem of "T" Intersection.
3. Typically used for Intermediate Term Stationary, Short Term Stationary or Short Duration work zone operations.
4. See the CWZTCD List for approved designs.

BARRIER DELINEATION WITH SAFETY GLARE FENCE



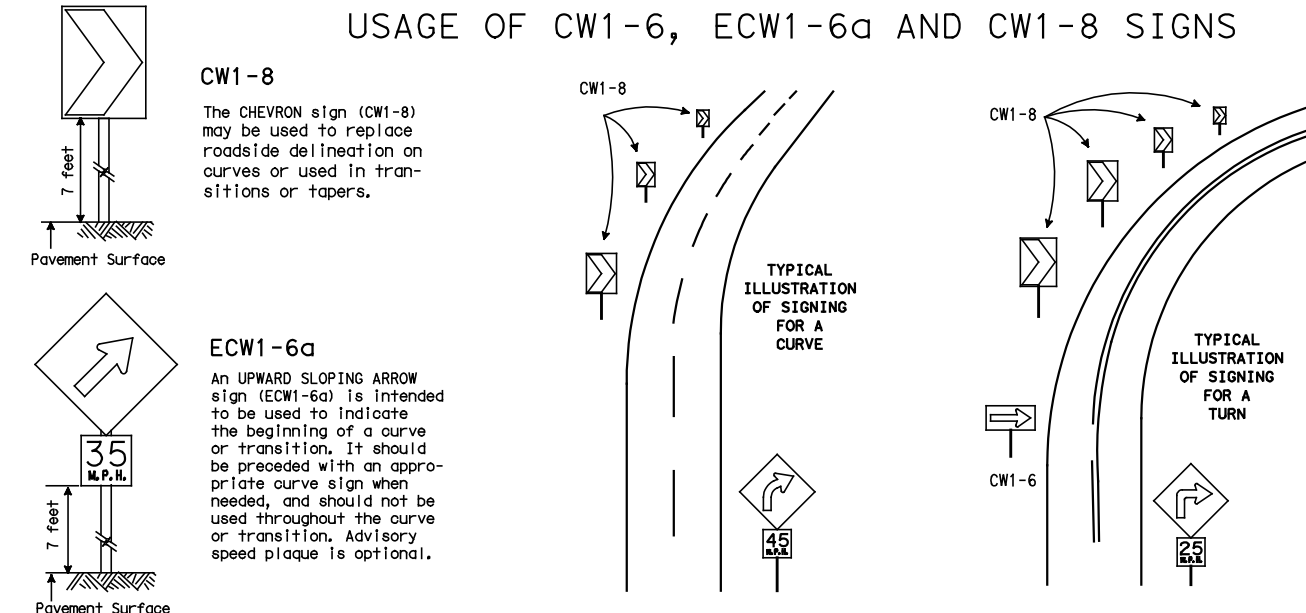
NOTES:

1. Length of Safety Glare Fence will be specified elsewhere in the plans.
2. The cumulative nominal length of the modular units shall equal the length of the individual sections of temporary concrete traffic barrier on which they are installed so the joint between barrier sections will not be spanned by any one unit.
3. Panel/blades will be designed such that reflective sheeting conforming with Departmental Material Specification DMS-8300, Flat Surface Reflective Sheeting, Type C (High Specific Intensity), minimum size of 2 inches by 12 inches can be attached to the edge of the panel/blade. The sheeting shall be attached to one panel/blade per section of concrete barrier not to exceed a spacing of 30 feet. Barrier reflectors are not necessary when panel/blades are installed.
4. Moduler Glare Screens for head light barrier shall meet the requirements of DMS-8610.

LEGEND

| | |
|--|--------------------------------------|
| | Barricade |
| | Channelizing devices |
| | Trailer mounted flashing arrow panel |
| | Safety glare fence |

USAGE OF CW1-6, ECW1-6a AND CW1-8 SIGNS



NOTES:

1. CW1-6, ECW1-6a & CW1-8 signs shall be mounted on fixed supports.
2. 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.
3. For two-way traffic, use same arrangement of signs on outside of curve for each direction of travel.
4. Appropriate advance warning CURVE or TURN sign with Advisory Speed plaque should be used when needed.

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

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

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

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

PREQUALIFICATION PROCEDURES ARE OBTAINED FROM:
 CONSTRUCTION DIVISION-MATERIALS AND TESTS SECTION
 TEXAS DEPARTMENT OF TRANSPORTATION (TxDOT)
 125 EAST 11th STREET
 AUSTIN, TX 78701-2483

DEPARTMENTAL MATERIAL SPECIFICATIONS

| | |
|----------------------------------|----------|
| FLAT SURFACE REFLECTIVE SHEETING | DMS-8300 |
| DELINEATORS AND OBJECT MARKERS | DMS-8600 |
| MODULER GLARE SCREENS | DMS-8610 |

| COLOR | USAGE | SIGN SHEETING |
|--------|------------------|----------------------------------|
| ORANGE | BACKGROUND | TYPE E (FLUORESCENT PRISMATIC) |
| WHITE | BACKGROUND | TYPE C (HIGH SPECIFIC INTENSITY) |
| BLACK | LEGEND & BORDERS | VINYL NON-REFLECTIVE SHEETING |

REFER TO THE BC SHEETS FOR SHEETING REQUIREMENT ON CHANNELIZING DEVICES.

The five categories of work duration and their time at a location shall be:

- A. Long-term stationary is work that occupies a location more than 3 days.
- B. Intermediate-term stationary is work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than 1 hour.
- C. Short-term stationary is daytime work that occupies a location for more than 1 hour, but less than 12 hours.
- D. Short duration is work that occupies a location up to 1 hour.
- E. Mobile is work that moves intermittently or continuously.



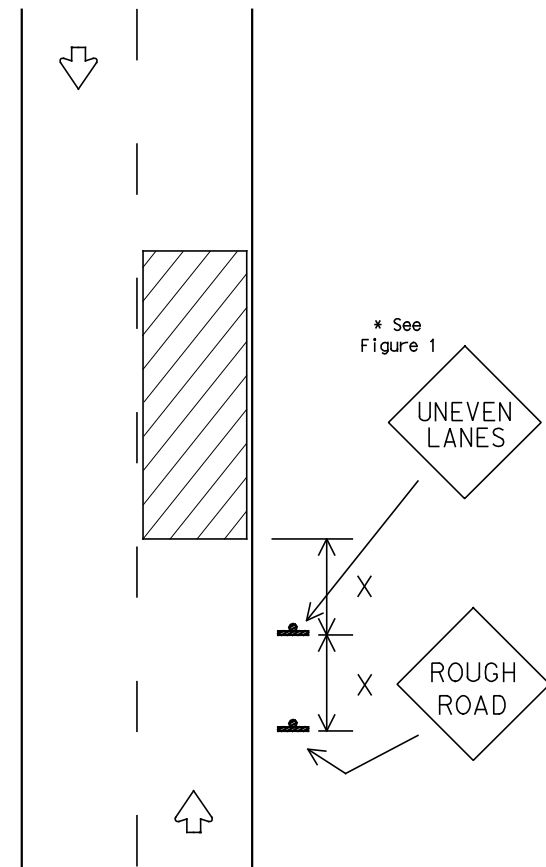
TRAFFIC CONTROL PLAN TYPICAL DETAILS

WZ (TD) -03

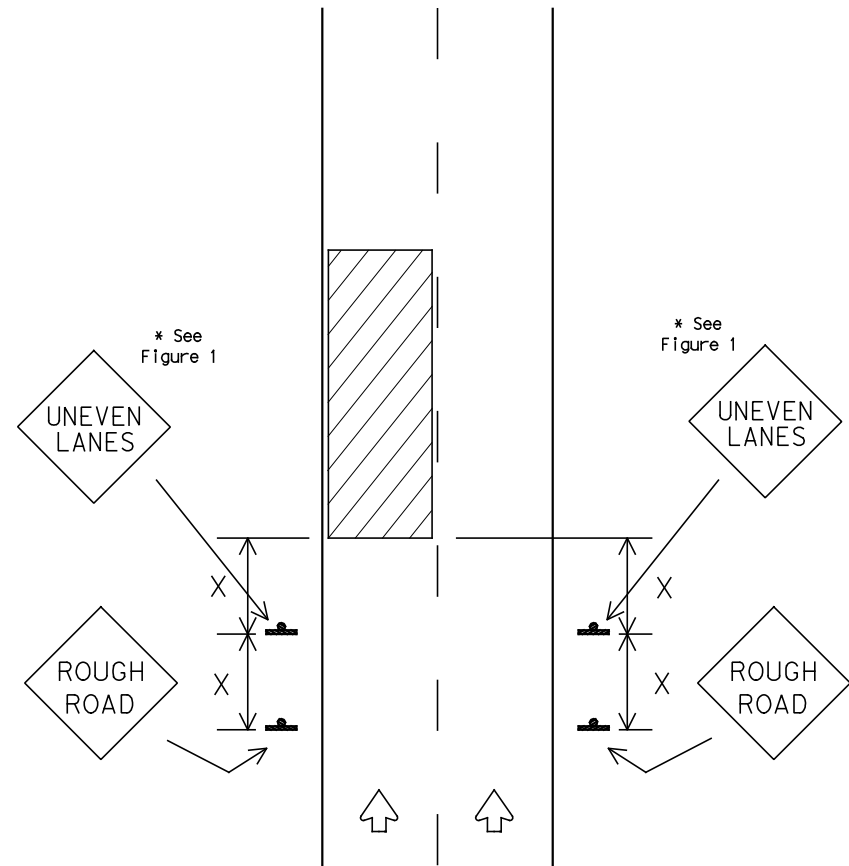
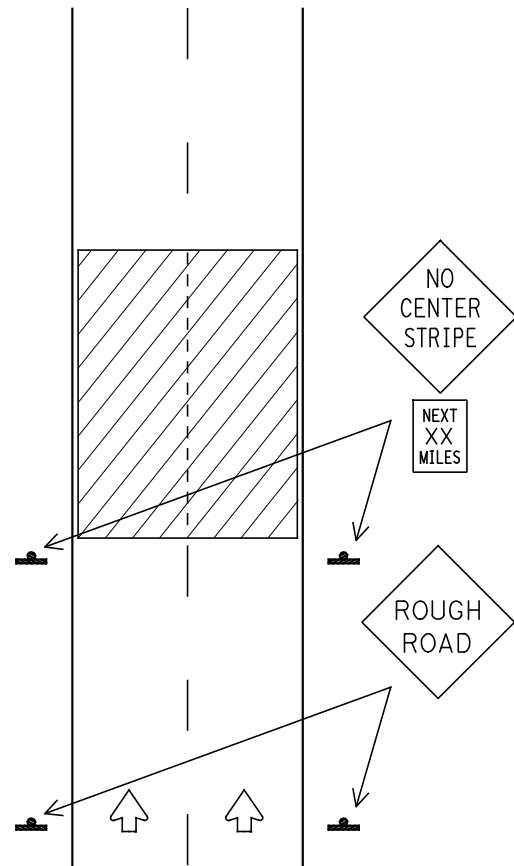
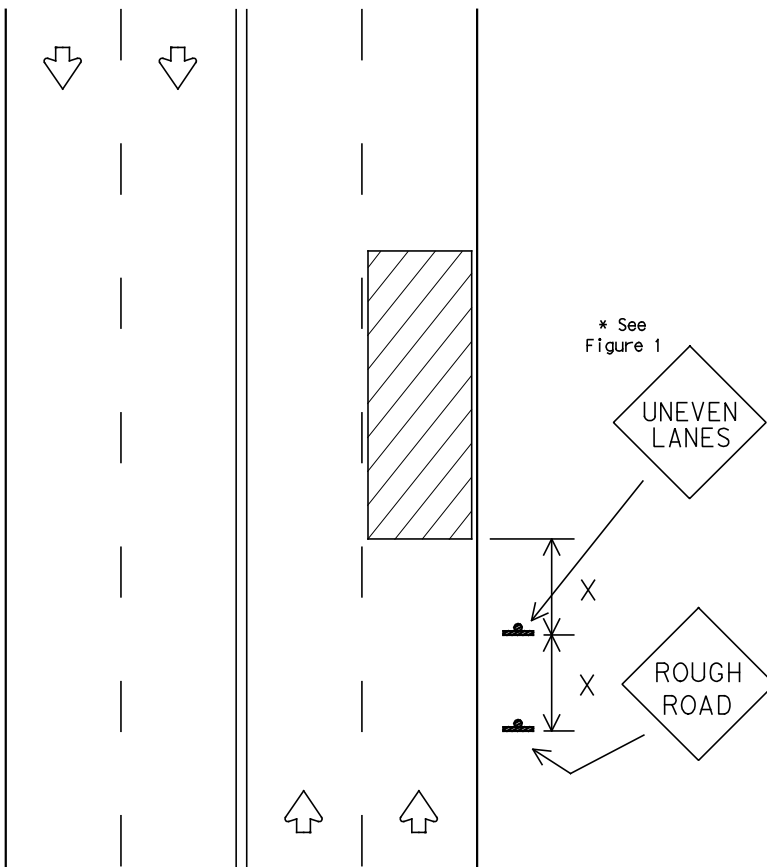
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| 3-03 | | 2C | 1080 | 495 |
| | | DIST | COUNTY | SHEET NO. |
| | | PHR | HIDALGO | 32 |

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Signing shown for one direction.



"X" distance - See Note 4 on this page.

| DEPARTMENTAL MATERIAL SPECIFICATIONS | | |
|---|--|----------|
| PLYWOOD SIGN BLANKS | | DMS-7100 |
| ALUMINUM SIGN BLANKS | | DMS-7110 |
| SIGN HARDWARE | | DMS-7120 |
| PREFABRICATED PAVEMENT MARKINGS-PERMANENT | | DMS-8240 |
| PREFABRICATED PAVEMENT MARKINGS-REMOVABLE | | DMS-8241 |
| FLAT SURFACE REFLECTIVE SHEETING | | DMS-8300 |
| VINYL NON-REFLECTIVE DECAL SHEETING | | DMS-8320 |

| COLOR | USAGE | SHEETING MATERIAL |
|--------|------------------|-------------------------------------|
| ORANGE | BACKGROUND | TYPE E (FLUORESCENT PRISMATIC) |
| BLACK | LEGEND & BORDERS | VINYL NON-REFLECTIVE DECAL SHEETING |

- GENERAL NOTES:
1. If spalling or holes occur, ROUGH ROAD signs should be placed in advance of the condition and may be repeated throughout the project.
 2. UNEVEN LANES sign (CW8-11) should be installed in advance of the condition and repeated every mile. Signs installed along the uneven lane condition may be supplemented with the NEXT XX MILES sign (CW21-16) or Advisory Speed sign (CW13-1).
 3. NO CENTER STRIPE signs (CW8-12) should be installed if centerlines or lane lines are obscured or obliterated. The signs should remain in place until permanent pavement markings are installed.
 4. Signs shall be spaced at the distances recommended as per BC standards.
 5. When operations are completed and final surface treatment will not be applied as part of this project, advance signs shall be left in place and become the property of the State. These signs shall be installed on approved permanent sign supports as per TxDOT standards. Additional signs may be required as directed by the Engineer. Minimum mounting height of signs is 7 feet. Signs shall remain in place until final surface is applied. Signs shall be considered subsidiary to the item "BARRICADES, SIGNS AND TRAFFIC HANDLING."
 6. Pavement markings shall be replaced as operations proceed.
 7. Short term markings shall not be used to simulate edge lines.
 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.

TRAFFIC CONTROL DURING PLANING, OVERLAY AND LEVELING OPERATIONS ARE SHOWN ELSEWHERE IN THE PLANS.

| FIGURE 1 | | |
|---|---|-----------------------|
| Edge Condition | Edge Height (D) | Warning Devices |
| | less than or equal to 1" | Signs: ECW8-8 |
| | greater than 1" to: 1/4" (maximum-planing) 1/2" (typical-overlay) | Signs: CW8-11, ECW8-8 |
| Distance "D" may be a maximum of 1/4" for planing operations and 2" for overlay operations if uneven lanes are open to traffic after work operations cease. | | |

Texas Department of Transportation
 Traffic Operations Division

SIGNING FOR UNEVEN LANES

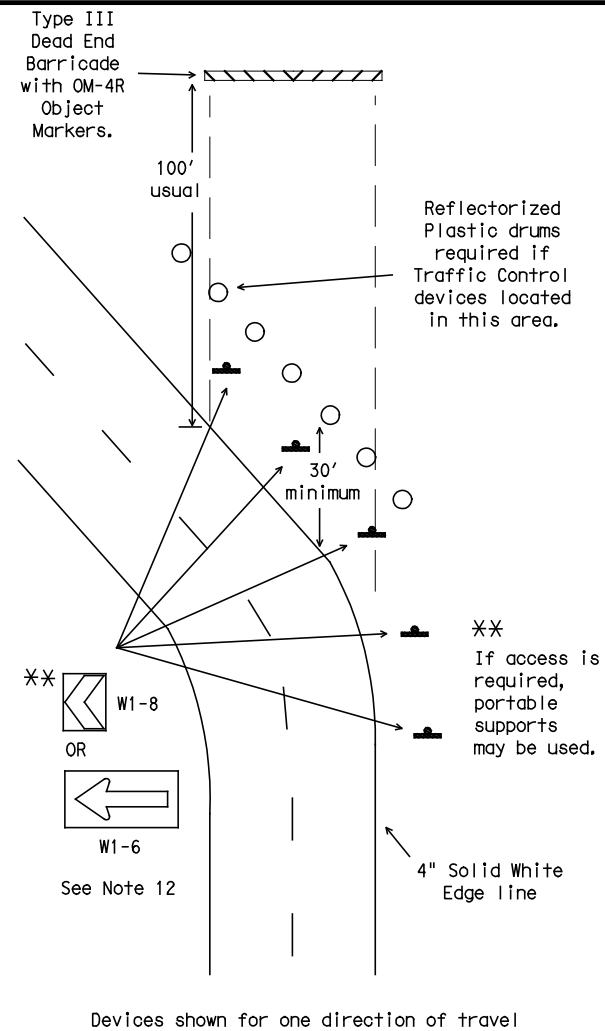
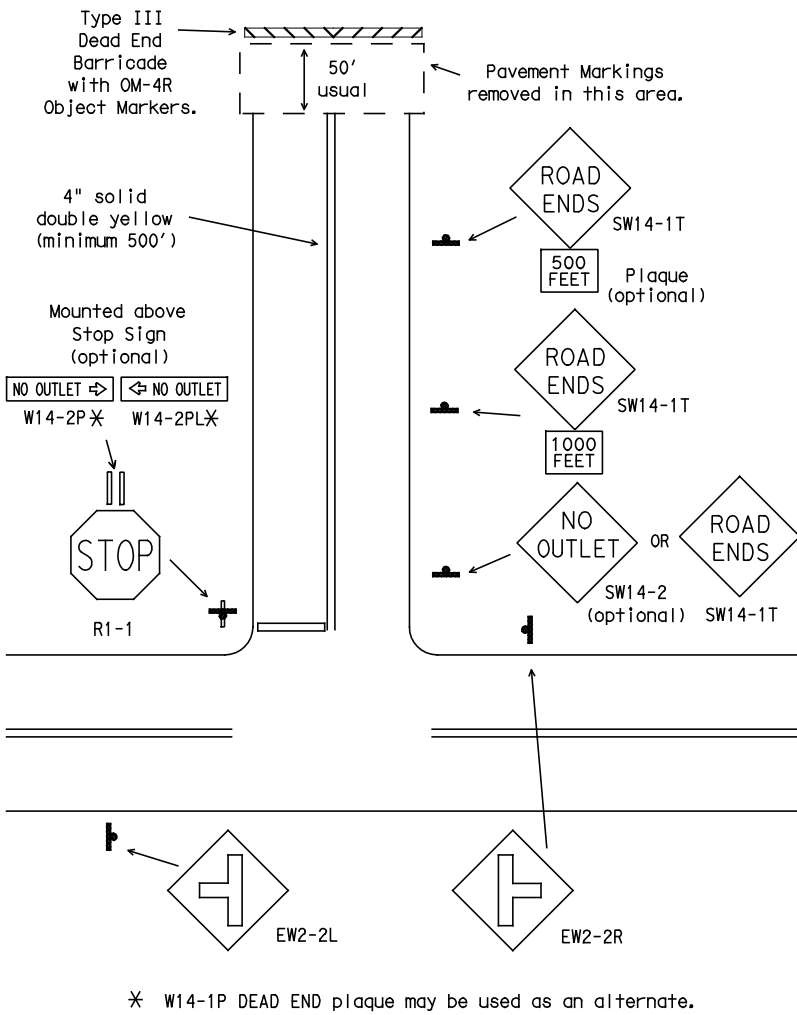
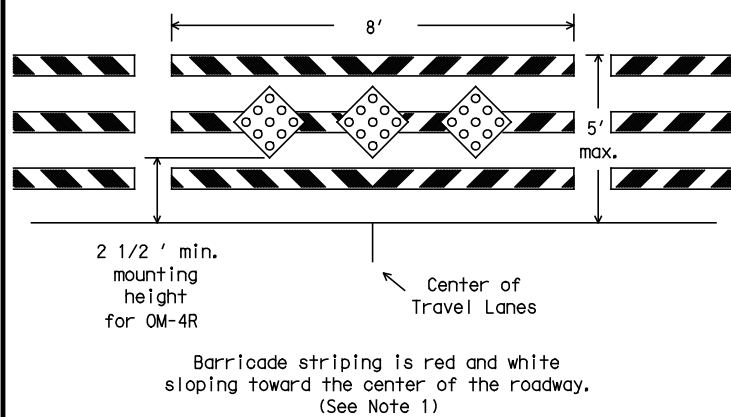
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| 2-98 | | DIST | COUNTY | | SHEET NO. |
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TYPICAL DEAD END BARRICADE INSTALLATION



| DEPARTMENTAL MATERIAL SPECIFICATIONS | | |
|--------------------------------------|------------------|----------------------------------|
| COLOR | USAGE | SHEETING MATERIAL |
| RED | BACKGROUND | TYPE C (HIGH SPECIFIC INTENSITY) |
| WHITE | BACKGROUND | TYPE C (HIGH SPECIFIC INTENSITY) |
| YELLOW | BACKGROUND | TYPE C (HIGH SPECIFIC INTENSITY) |
| BLACK | LEGEND & BORDERS | VINYL NON-REFLECTIVE SHEETING |
| PLYWOOD SIGN BLANKS | | DMS-7100 |
| ALUMINUM SIGN BLANKS | | DMS-7110 |
| SIGN HARDWARE | | DMS-7120 |
| WINGED CHANNEL POSTS | | DMS-7130 |
| FLAT SURFACE REFLECTIVE SHEETING | | DMS-8300 |
| VINYL NON-REFLECTIVE DECAL SHEETING | | DMS-8320 |
| DELINEATORS AND OBJECT MARKERS | | DMS-8600 |

- GENERAL NOTES:
- Barricade striping shall be red and white reflective sheeting for all permanent road closures. Orange and white reflective sheeting may be substituted for locations where duration of road closure is expected to be 18 months or less, or when approved by the Engineer. Red and orange reflective sheeting shall not be combined on barricades or locations.
 - Barricades shall be designed and constructed to Compliant Work Zone Traffic Control Device List (CWZTCD) standards in a first-class workmanship manner of clean sound material. Components made of lumber shall be painted with a minimum of two coats of white paint to ensure thorough coverage and a uniform white color. Barricade striping material shall meet the color and retroreflective requirements of Departmental Material Specification DMS-8300, Type C.
 - Post type breakaway supports shall be used as barricade supports. Barricades may be fabricated with "skid" supports if approved by the Engineer. Skid supports should be anchored using sand bags to prevent movement. For construction details of post (fixed Type III barricades) see CWZTCD list Part D.2.f. The dead end road barricades may also be anchored to the pavement using the bolt down median anchor manufactured by Universal Anchor System shown on SMD (FRP). The barricades shall be built using FRP posts and approved rails as shown on the CWZTCD List.
 - Barricades shall not be placed parallel to traffic unless a minimum adequate clear zone of 30 feet from edge of travel lane is provided.
 - A minimum of one 8-foot wide barricade and three OM-4R object markers shall be required for all locations. Barricades shall extend across all travel lanes and shoulders if shoulders are present. Barricades may be extended to the ROW as directed by Engineer.
 - Stockpiled materials shall not be placed on traffic side of barricades.
 - OM-4 object markers shall be mounted to the middle rail using two 1/2" through bolts with flat washers and lock washers.
 - OM-4 object markers shall be constructed of 0.063 aluminum and shall meet the color and reflective requirements of DMS-8300 Type C and DMS-8600.
 - Plastic drums shall meet the requirements as listed on the CWZTCD list or the BC Standards. Plastic drums may be anchored with adhesive to prevent movement.
 - All signs and chevrons shall be installed with hardware and support at the minimum mounting height in accordance with the SMD and BC Standards. Signs shall be mounted at a 7 foot minimum height. Signs shall not be attached to barricades.
 - Motorists should be able to see at least three chevron signs as they approach the curve and as they drive through the curve from either direction.
 - Delineation devices such as the chevron or large arrow signs shall only be placed on the outside portion of a curve.

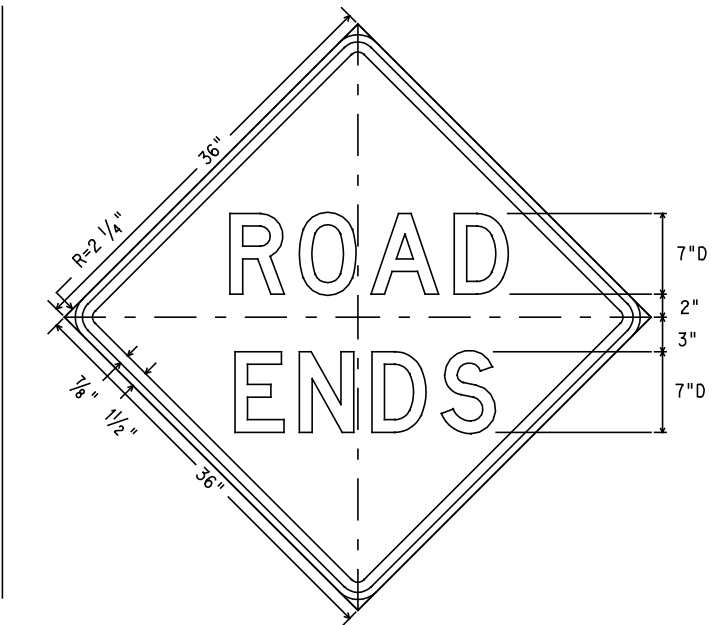
- GENERAL NOTE FOR SIGNS:
- The alphabets and lateral spacing between letters and numerals shall conform with the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways" (TMUTCD), latest edition, and any approved changes thereto.
 - Lateral spacing of text shall provide a balanced appearance.
 - All materials shall conform to Departmental Material Specifications.
 - Legend shall be black and applied by screening process, cut-out vinyl non-reflective sheeting or combination thereof.
 - Sign blanks shall be any material that meets the DMS requirements for permanent sign substrates.

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

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

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 Click on "Organizational Chart",
 Click on Traffic Operations Box,
 Click on "Compliant Work Zone Traffic Control Devices",
 Click on "View PDF".
 This site is printable.



SW14-1T
 36" X 36"
 Letters - Black
 Border - Black
 Background - Yellow Refl.

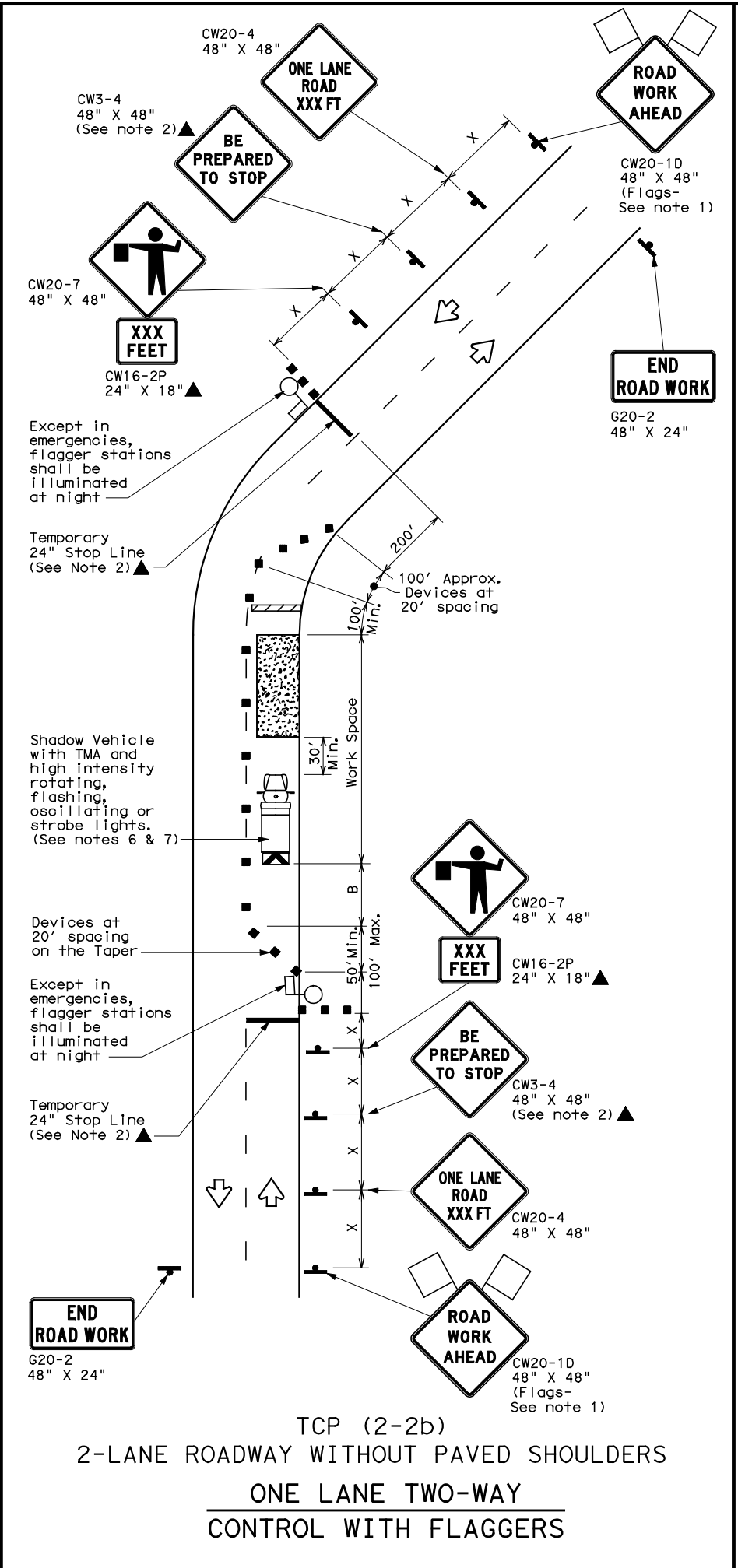
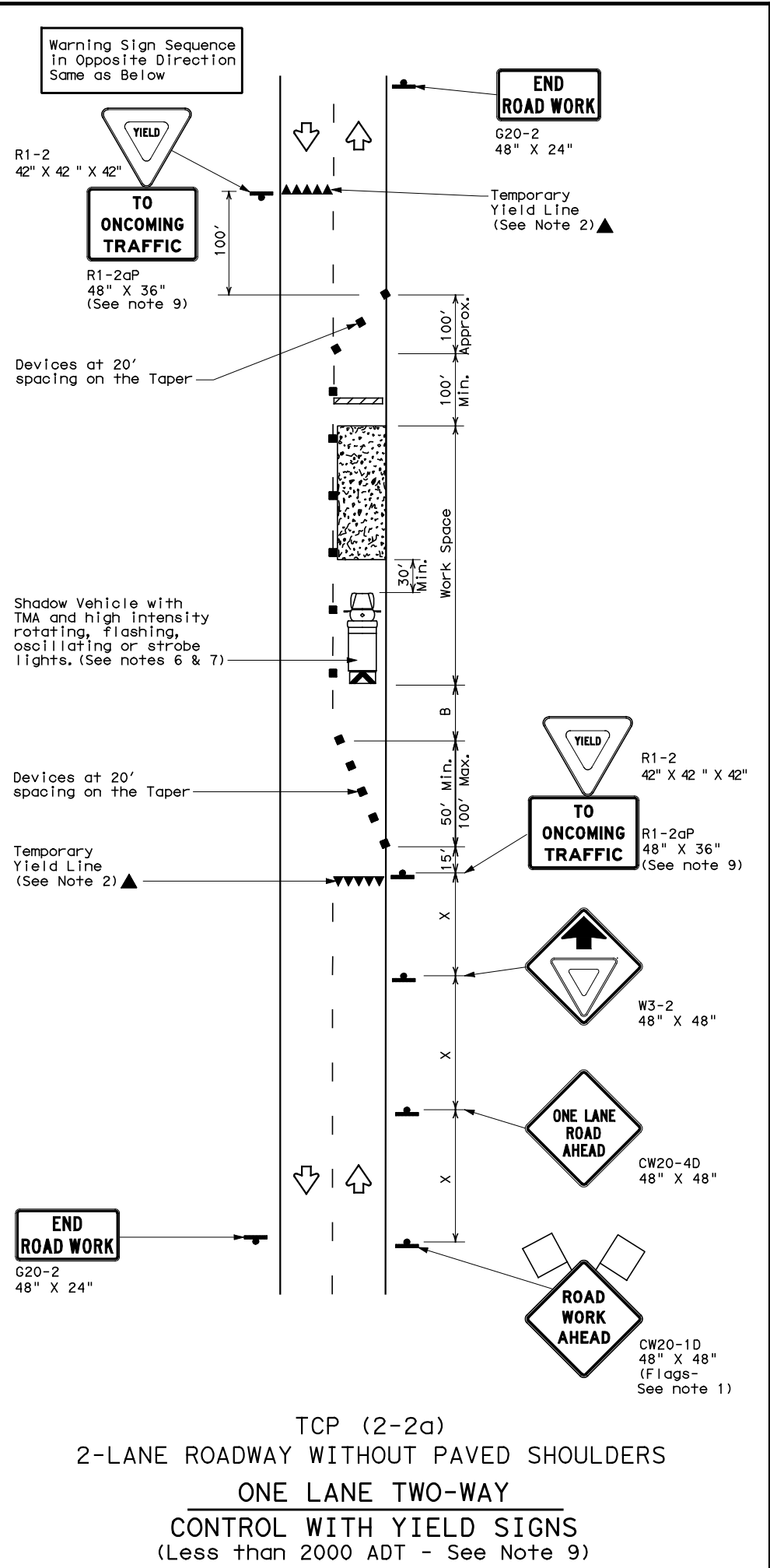
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WORK ZONE
 DEAD END
 ROADWAY DETAILS

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

| Posted Speed * | Formula | Minimum Desirable Taper Lengths ** | | | Suggested Maximum Spacing of Channelizing Devices | | Minimum Sign Spacing "X" Distance | Suggested Longitudinal Buffer Space "B" | Stopping Sight Distance |
|----------------|-----------------------|------------------------------------|------------|------------|---|--------------|-----------------------------------|---|-------------------------|
| | | 10' Offset | 11' Offset | 12' Offset | On a Taper | On a Tangent | | | |
| 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' | 575' |
| 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**
- Flags attached to signs where shown, are REQUIRED.
 - 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.
 - The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
 - Flaggers should use two-way radios or other methods of communication to control traffic.
 - Length of work space should be based on the ability of flaggers to communicate.
 - 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. 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.
 - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
- TCP (2-2a)**
- The R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work space should be no longer than one half city block. In rural areas, roadways with less than 2000 ADT, work space should be no longer than 400 feet.
 - The R1-2aP "YIELD TO ONCOMING TRAFFIC" sign shall be placed on a support at a 7 foot minimum mounting height.
- TCP (2-2b)**
- Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
 - If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
 - 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 (2-2) -12

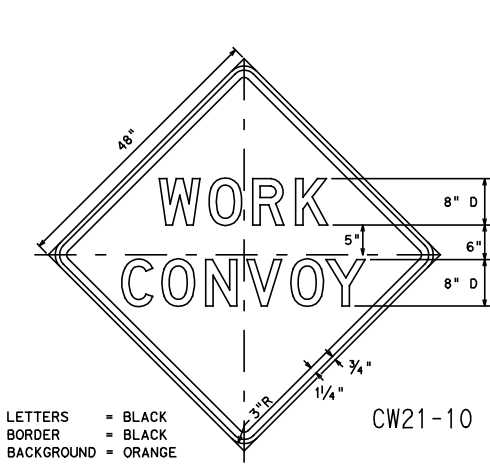
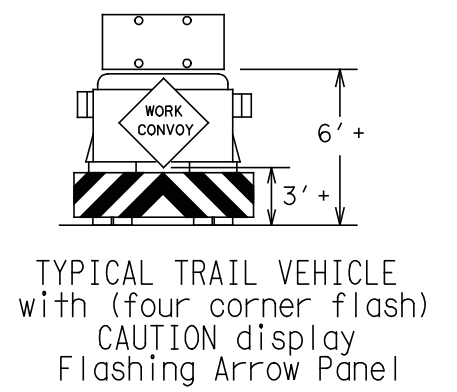
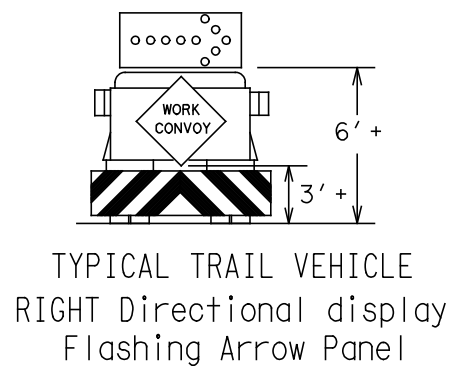
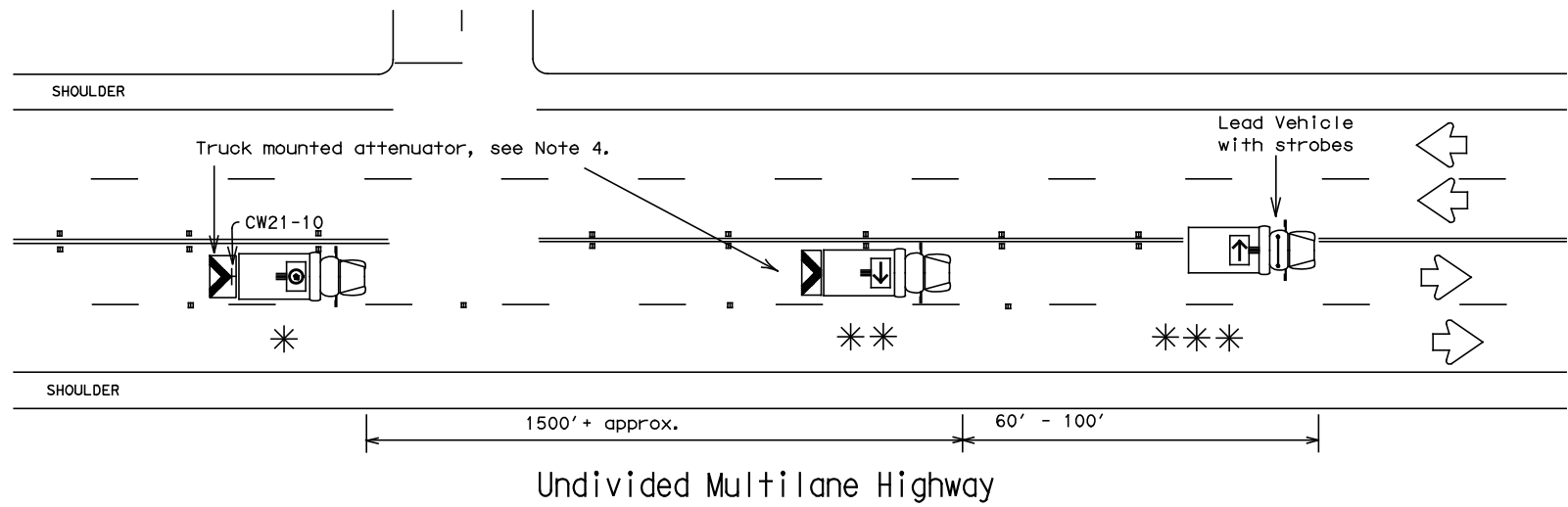
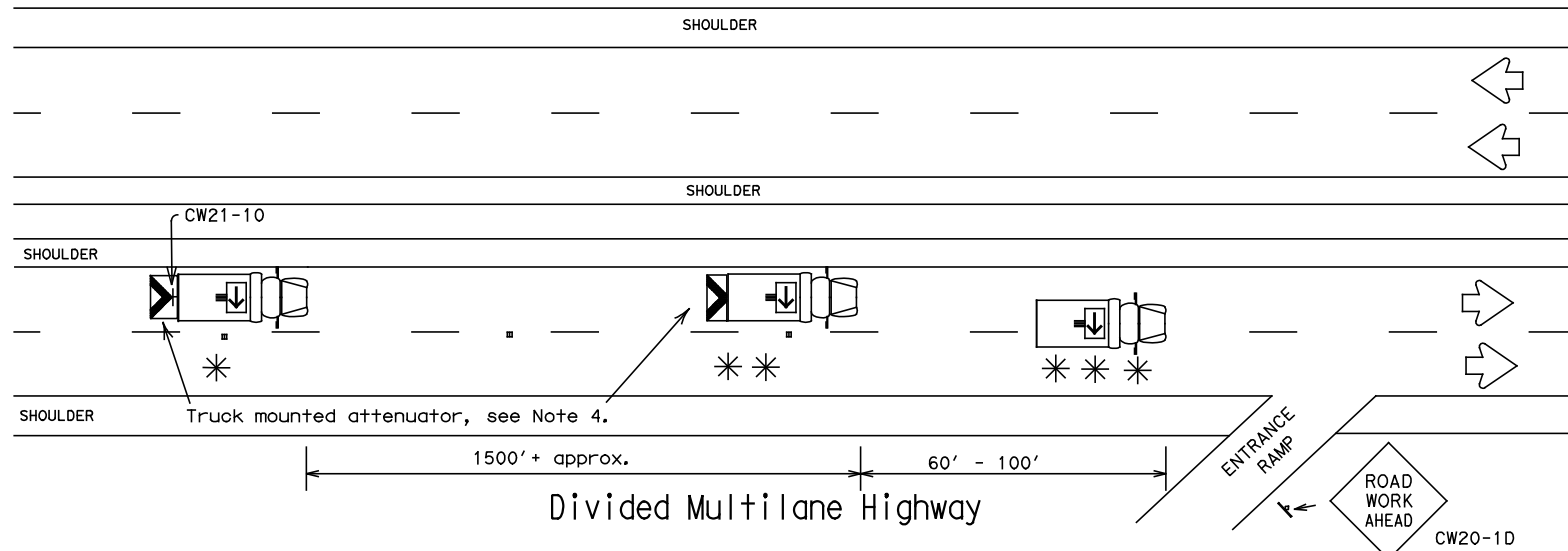
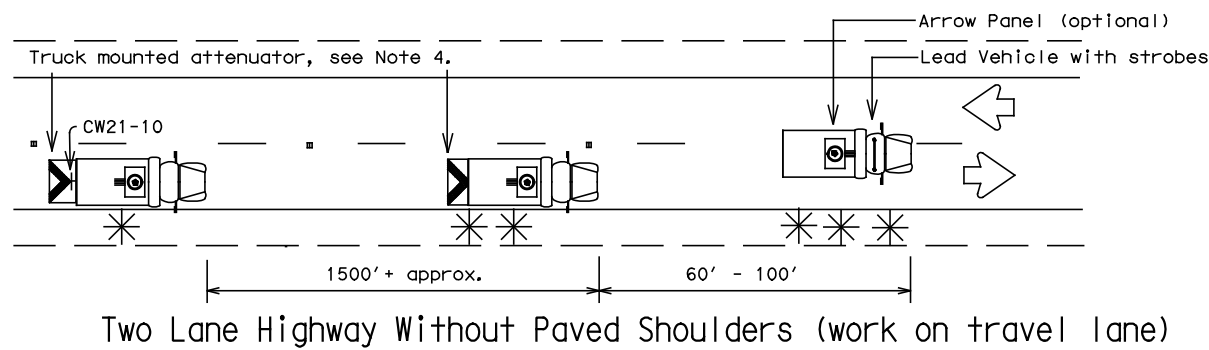
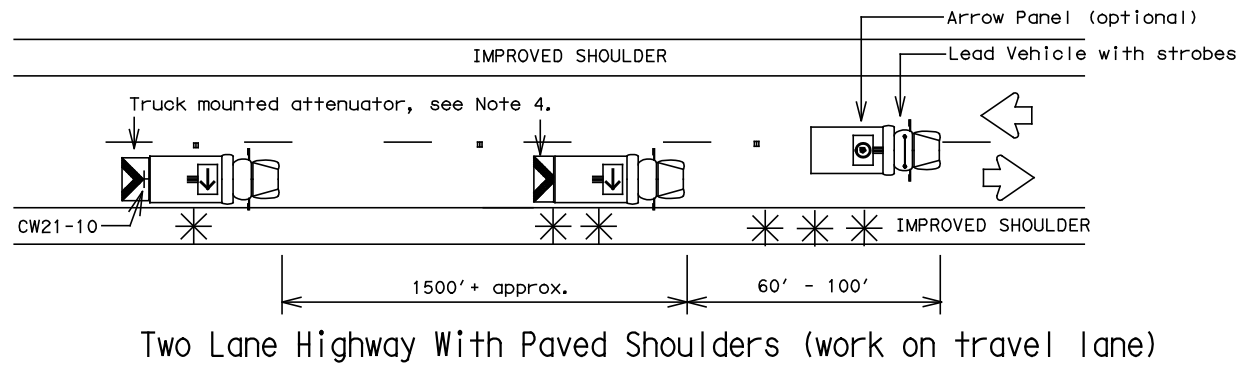
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| REVISIONS | | | | | |
| 8-95 | 2-12 | CONT | SECT | JOB | HIGHWAY |
| 1-97 | | 2C | 080 | 495 | GARZA |
| 4-98 | | DIST | COUNTY | | SHEET NO. |
| 3-03 | | PHR | HIDALGO | | 36 |

162

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DISCLAIMER:

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- Legend:
- * TRAIL VEHICLE
 - ** SHADOW VEHICLE
 - *** WORK VEHICLE
 - Truck mounted attenuator
 - HEAVY WORK VEHICLE
- Arrow Panel Displays
- RIGHT Directional
 - LEFT Directional
 - RIGHT or LEFT Directional
 - CAUTION mode

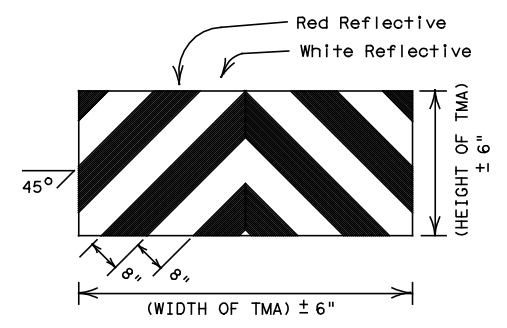
GENERAL NOTES:

1. TRAIL, SHADOW, LEAD, and work vehicles shall be equipped with arrow panels as illustrated. 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. All traffic control devices shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD), latest edition.
3. The use of yellow rotating beacons or strobe lights on vehicles are required unless otherwise stated elsewhere in the plans.
4. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and the TRAIL VEHICLE are required.
5. Optional striping on the back panel of all truck mounted attenuators shall be 8" red and white reflective sheeting placed in an inverted "V" design. Reflective sheeting shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION D-9-8300, TYPE C.
6. Flashing Arrow Panels shall be Type B or Type C as per BC Standards. The panel operation shall be controlled from inside the vehicle.
7. Each vehicle shall have two-way radio communication capability.
8. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
9. Vehicle spacing between TRAIL VEHICLE and 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.

Only pre-qualified products shall be used. A list of compliant products and their sources may be obtained by writing or faxing:

Standards Engineer
 Traffic Operations Division - TE
 Texas Department of Transportation
 125 East 11th Street
 Austin, Texas 78701-2483
 Phone (512) 416-3335
 Fax (512) 416-3161
 E-mail TRF-STANDARD@mailgw.dot.state.tx.us

Shadow and trail vehicle shall be equipped with Truck Mounted Attenuator.



STRIPING FOR TMA WILL BE REQUIRED ON ALL PROJECTS AWARDED AFTER JANUARY 1, 2000

Texas Department of Transportation
 Traffic Operations Division

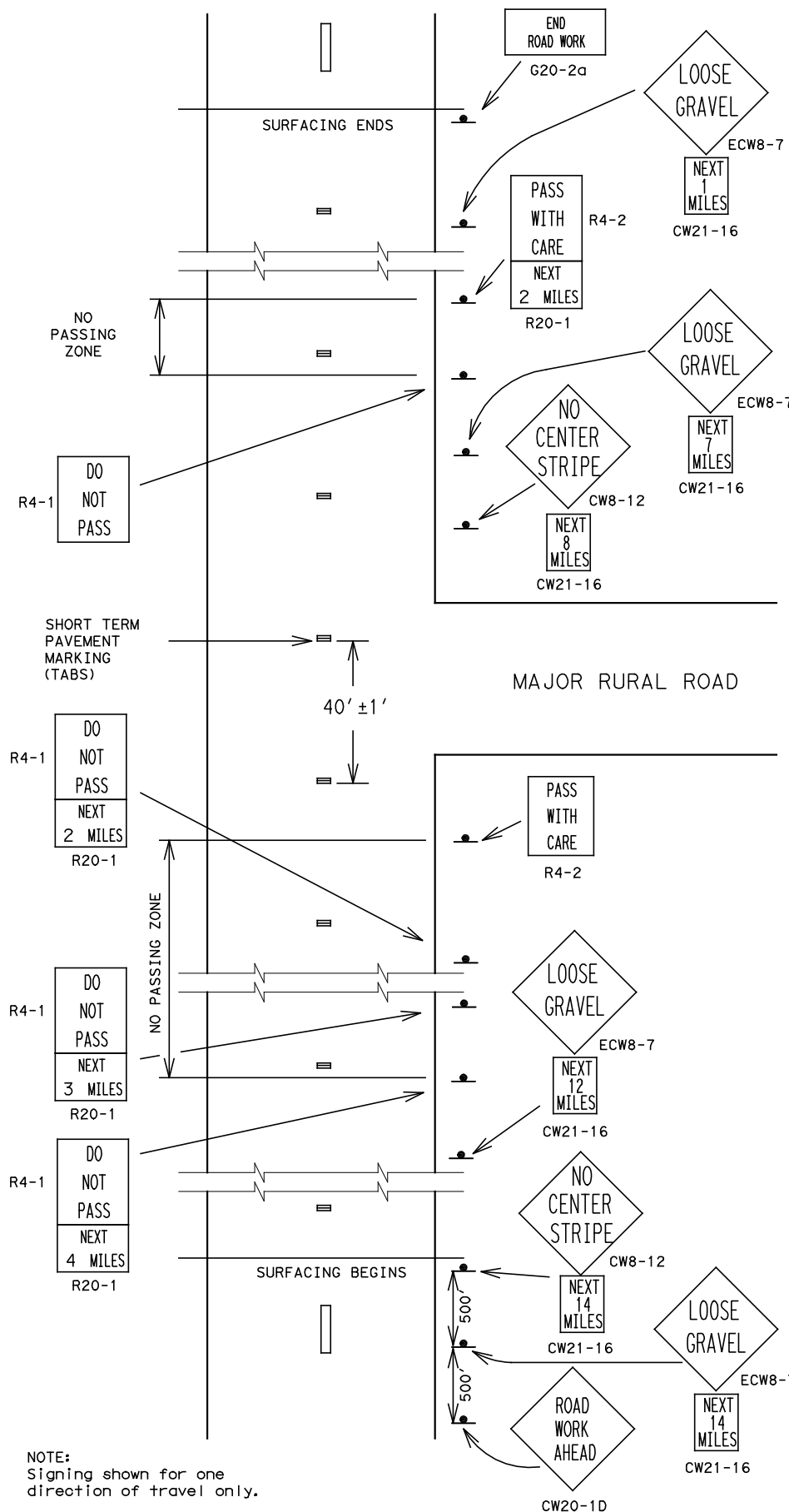
**TRAFFIC CONTROL PLAN
 MOBILE OPERATIONS
 RAISED PAVEMENT
 MARKER INSTALLATION**

TCP (3-3) -98

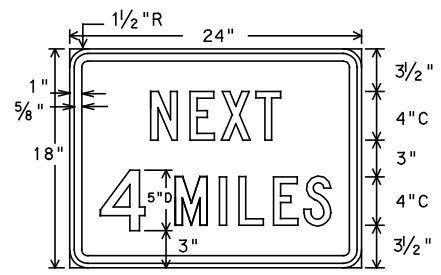
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|------------------------|------|-----------|-----------|-----------|-----------|
| © TxDOT September 1987 | | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
| REVISIONS | | | | | |
| 2-94 | CONT | SECT | JOB | HIGHWAY | |
| 8-95 | 2C | 1080 | 495 | GARZA | |
| 1-97 | DIST | COUNTY | | SHEET NO. | |
| 4-98 | PHR | HIDALGO | | 37 | |

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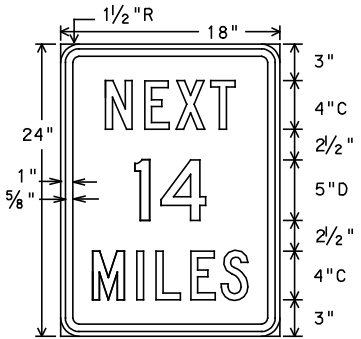
NOTE: Signing shown for one direction of travel only.



R20-1
24"x18"

Legend - Black
 Border - Black
 Background - White Refl.

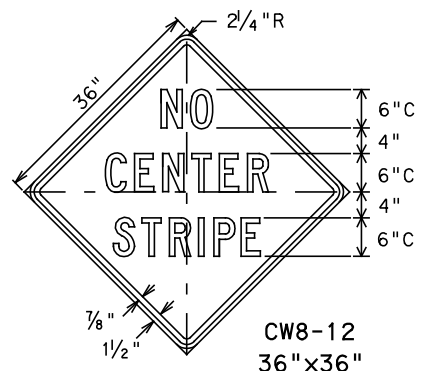
FOR USE WITH REGULATORY SIGNS ONLY



CW21-16
18"x24"

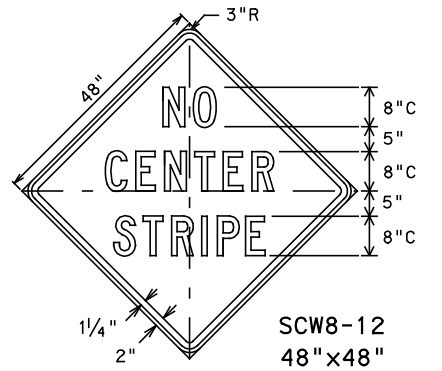
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FOR USE WITH CONSTRUCTION WARNING SIGNS ONLY



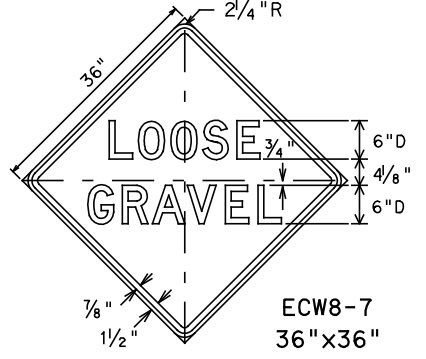
CW8-12
36"x36"

Legend - Black
 Border - Black
 Background - Orange Refl.



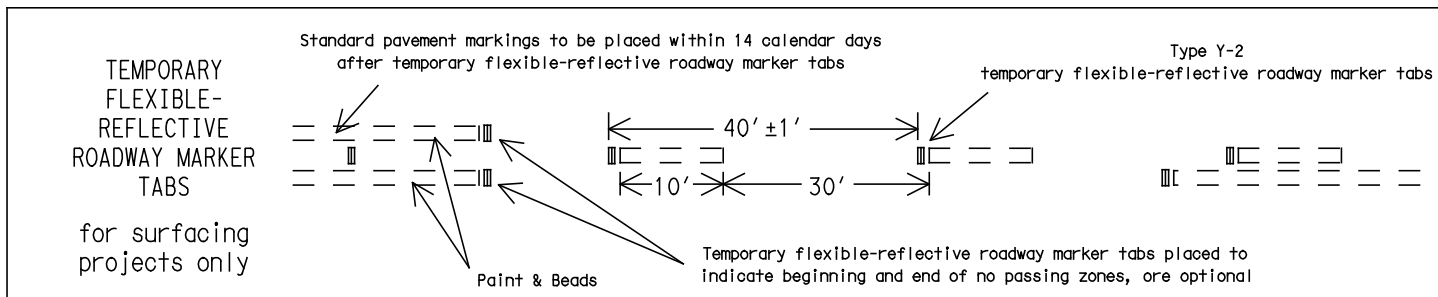
SCW8-12
48"x48"

Legend - Black
 Border - Black
 Background - Orange Refl.



ECW8-7
36"x36"

Legend - Black
 Border - Black
 Background - Orange Refl.



GENERAL NOTES

The traffic control devices detailed on this sheet will be furnished and erected as directed by the Engineer on sections of roadway where the surfacing operation has covered or obliterated existing pavement markings. These traffic control devices are to be used to supplement those required by BC Standards.

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

Prior to the beginning of construction, all currently striped no-passing zones should be signed with the DO NOT PASS sign (R4-1) and PASS WITH CARE sign (R4-2) 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.

At the discretion of the Engineer, in areas of numerous no-passing zones, several zones may be combined and signed 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 sign (R20-1) may be used at the beginning of such zones. The DO NOT PASS and NEXT XX MILES signs 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 a no-passing zone may be signed with a PASS WITH CARE and NEXT XX MILES sign.

Depending on traffic volumes and length of sections, it may be desirable to prohibit passing throughout the project to prevent damage to windshields and lights. The DO NOT PASS and NEXT XX MILES sign 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 existing pavement markings. Also, unless one day's operation completes the entire length of such combined zones, care must be taken to place DO NOT PASS and PASS WITH CARE signs in order to sign the beginning and end of the no-passing zones in the area where the surfacing operation has stopped for the day.

R4-1 and R4-2 signs should be mounted on fixed supports as detailed on BC Standards. These signs are to remain in place until standard pavement markings are placed.

"NO CENTER STRIPE" SIGN (CW21-15)

At the time construction activity obliterates the existing centerline (low volume roads may not have an existing centerline), a NO CENTER STRIPE sign (CW8-12) should be erected at each end of the work area and just beyond major rural intersections and other location deemed necessary by the Engineer. Where possible, the signs erected at each end of the work area should be located in such a manner that drivers can read the sign and immediately see the change to no centerline. The NO CENTER STRIPE sign should be supplemented with the NEXT XX MILES sign (CW21-16) mounted below it. The NO CENTER STRIPE sign should be erected as detailed on BC Standards. These signs are to remain in place until standard pavement markings are placed.

"LOOSE GRAVEL" SIGN (ECW8-7)

When construction begins, a LOOSE GRAVEL sign (ECW8-7) should be erected at each end of the work area and repeated at intervals of approximately two (2) miles in rural areas and closer in urban areas. The LOOSE GRAVEL sign should be supplemented with the NEXT XX MILES sign (CW21-16) mounted below it.

The LOOSE GRAVEL sign should be erected as detailed on BC Standards. They should remain in place until the loose gravel condition no longer exists.

PAVEMENT MARKINGS

Short term pavement markings for surfacing projects shall use Temporary Flexible-reflective Roadway Marker Tabs. 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. Tabs shall NOT be used to simulate edge lines.

Only pre-qualified products shall be used. A list of compliant products and their sources may be obtained by writing or faxing:

Standards Engineer
 Traffic Operations Division - TE
 Texas Department of Transportation
 125 East 11th Street
 Austin, Texas 78701-2483
 Phone (512) 416-3335
 Fax (512) 416-3161
 E-mail TRF-STANDARD@mailgw.dot.state.tx.us

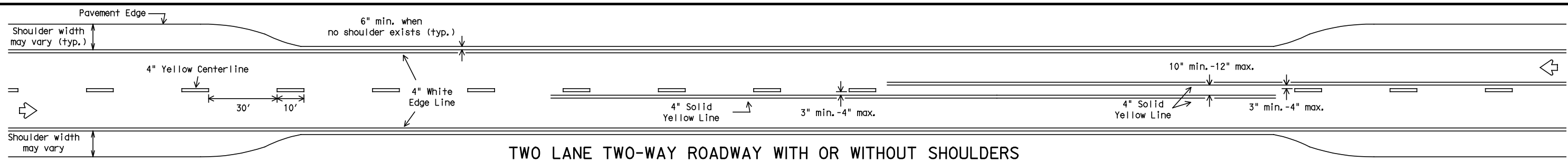
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|----------------|----------------|-----------------------|------------------------------|----------------------|
| MOBILE | SHORT DURATION | SHORT TERM STATIONARY | INTERMEDIATE TERM STATIONARY | LONG TERM STATIONARY |
| | ✓ | ✓ | ✓ | ✓ |

Texas Department of Transportation
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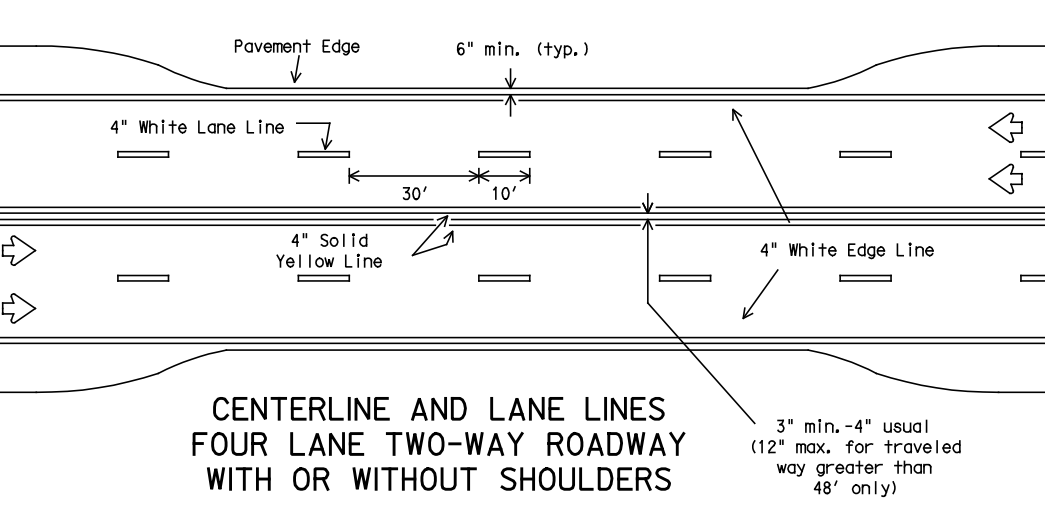
TRAFFIC CONTROL DETAILS
 for
 SURFACING OPERATIONS
 TCP (7-1) - 98

| | | | | | |
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| REVISIONS | | CONT | SECT | JOB | HIGHWAY |
| 4-92 | | 2C | 1080 | 495 | GARZA |
| 1-97 | | DIST | COUNTY | | SHEET NO. |
| 4-98 | | PHR | HIDALGO | | 38 |

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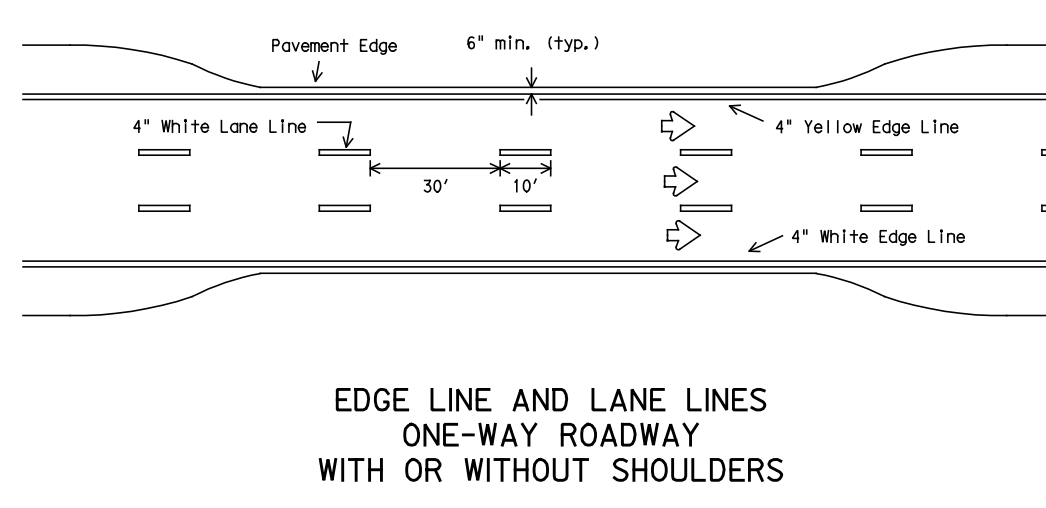


TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

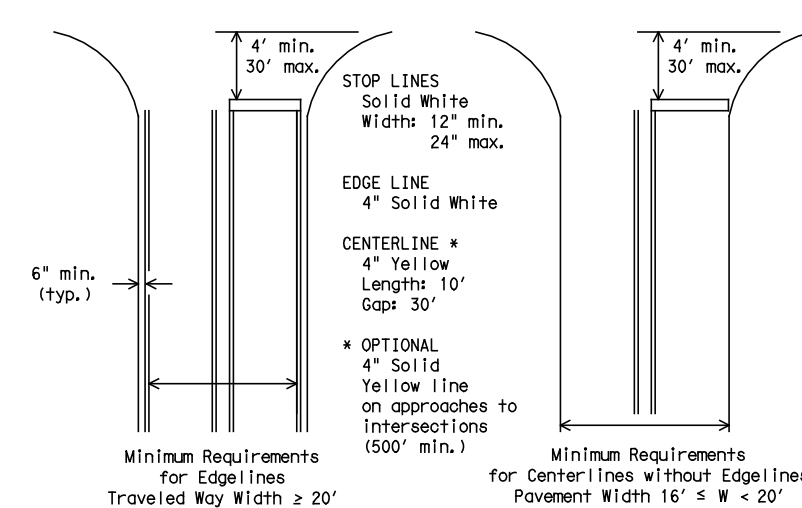


**CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**

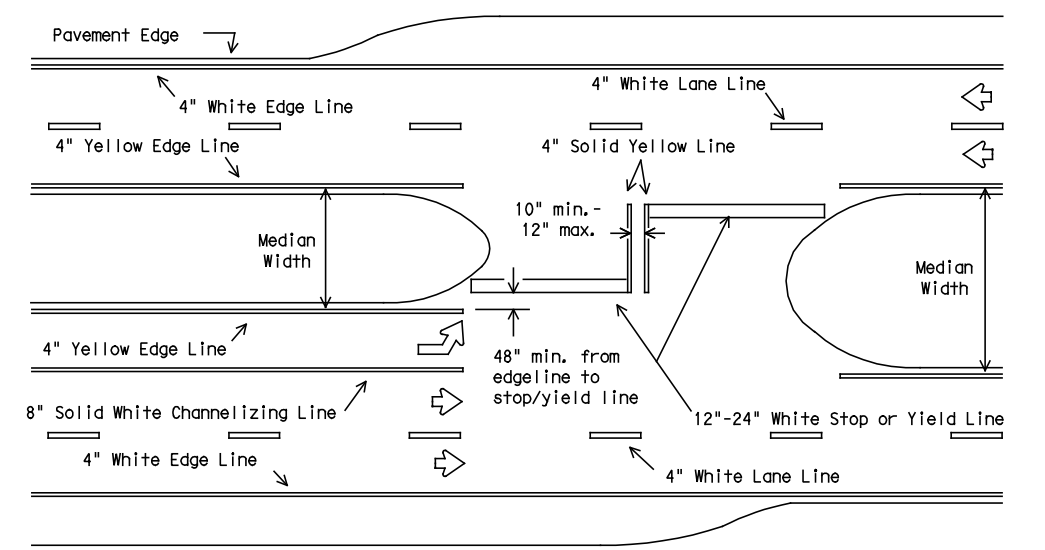
3" min. - 4" usual
(12" max. for traveled
way greater than
48' only)



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

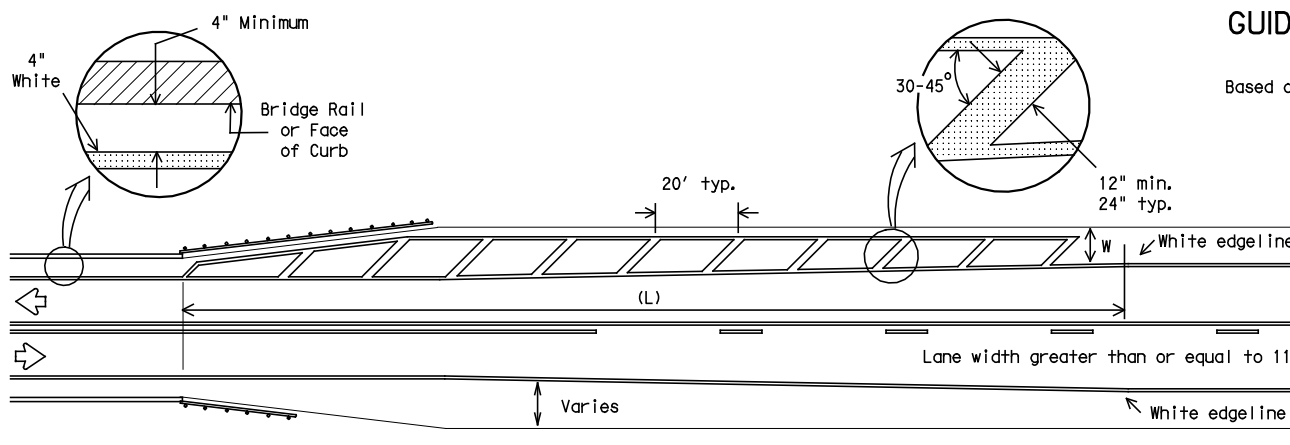


**GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE**
Based on Traveled Way and Pavement Widths for Undivided Highways



FOUR LANE DIVIDED ROADWAY INTERSECTIONS

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.



**ROADWAYS WITH REDUCED SHOULDER
WIDTHS ACROSS BRIDGE OR CULVERT**

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

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)

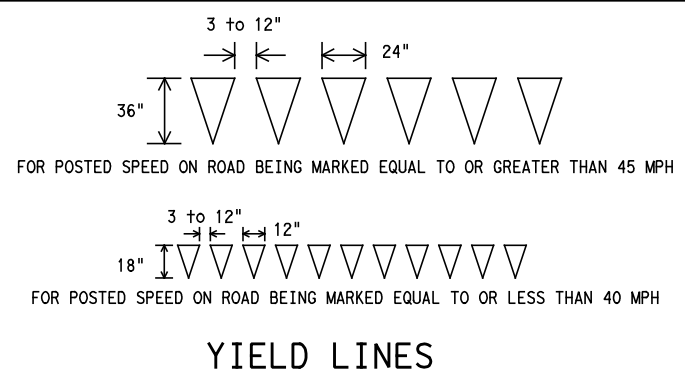
EXAMPLES:
An 8 foot shoulder in advance of a bridge reduces to 4 feet on a 70 MPH roadway. The length of the crosshatching should be:
 $L = 8 \times 70 = 560$ ft.
A 4 foot shoulder in advance of a bridge reduces to 2 feet on a 40 MPH roadway. The length of the crosshatching should be:
 $L = 4(40)^2 / 60 = 106.67$ ft. rounded to 110 ft.

GENERAL NOTES

- 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.
- 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.



YIELD LINES

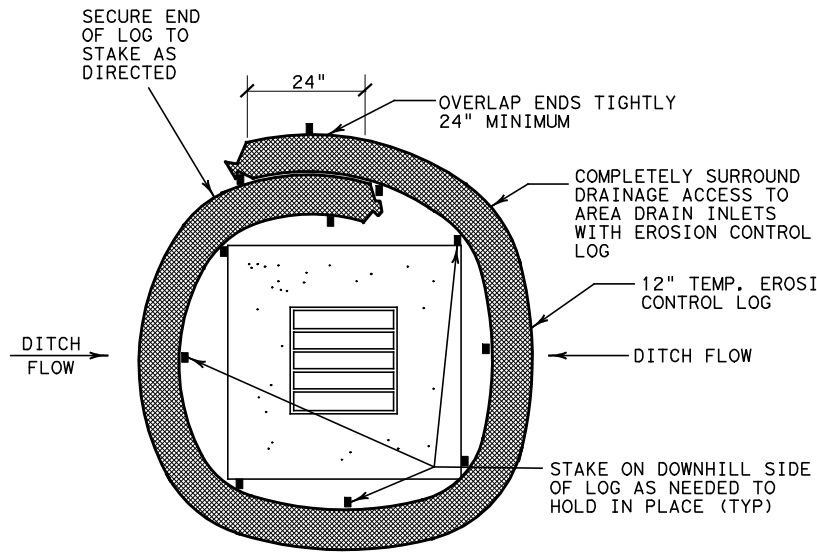
Texas Department of Transportation
Traffic Operations Division

**TYPICAL STANDARD
PAVEMENT MARKINGS**

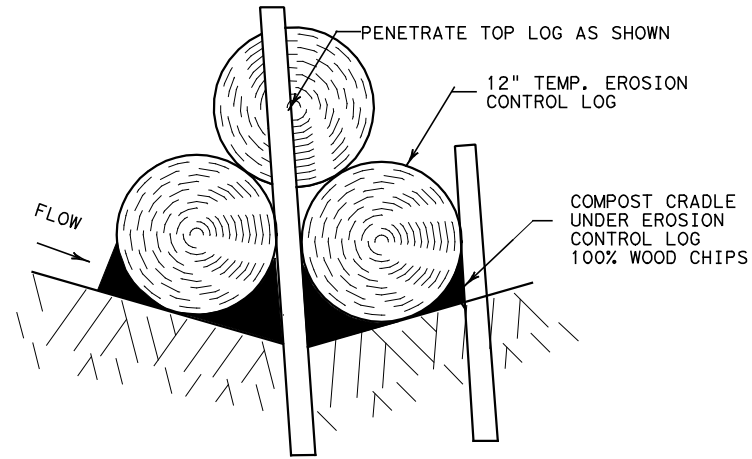
PM(1)-12

| | | | | |
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| REVISIONS | CONT | SECT | JOB | HIGHWAY |
| 8-95 2-12 | 2C | 1080 | 495 | GARZA |
| 5-00 | DIST | COUNTY | | SHEET NO. |
| 8-00 | PHR | HIDALGO | | 39 |
| 3-03 | | | | |

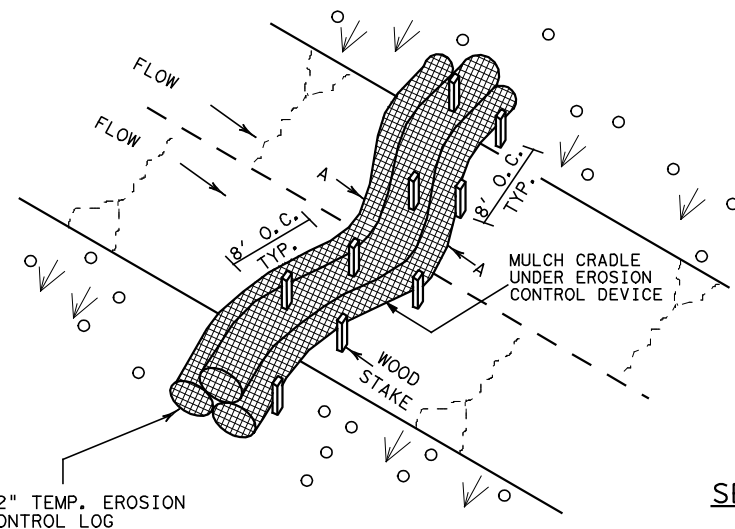
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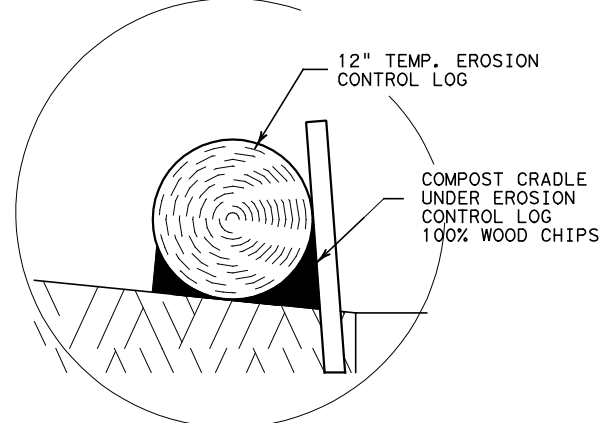
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DI-ST NTS



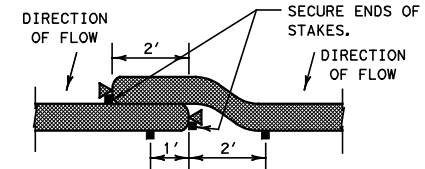
DITCH LINE SEDIMENT TRAP A-A
DL-ST



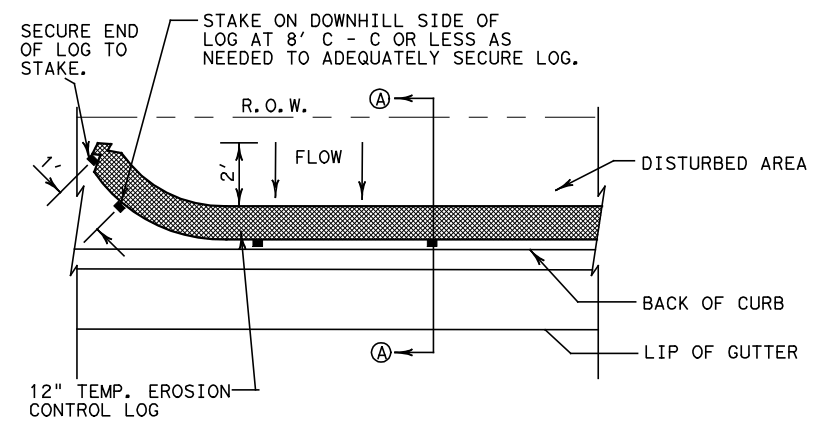
DITCH LINE SEDIMENT TRAP
DL-ST



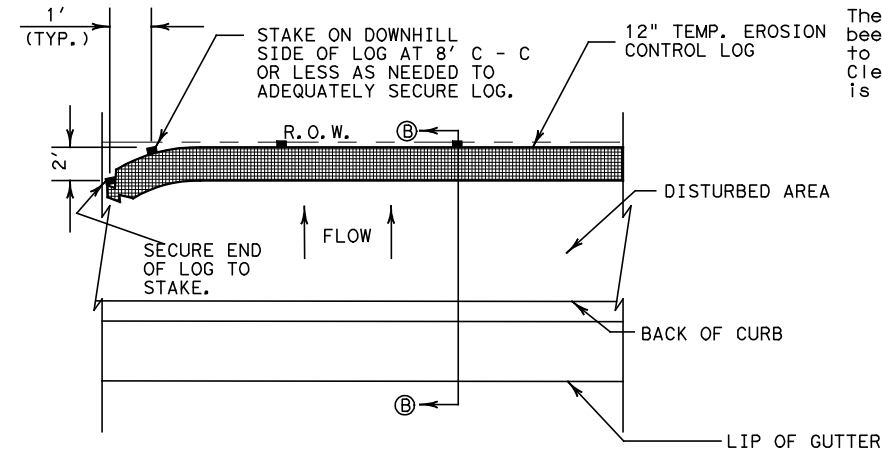
COMPOST CRADLE



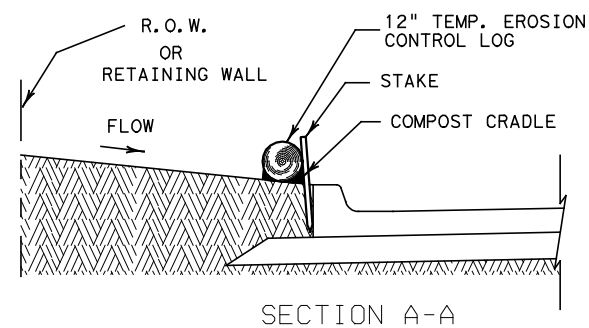
LAP DETAIL
NTS



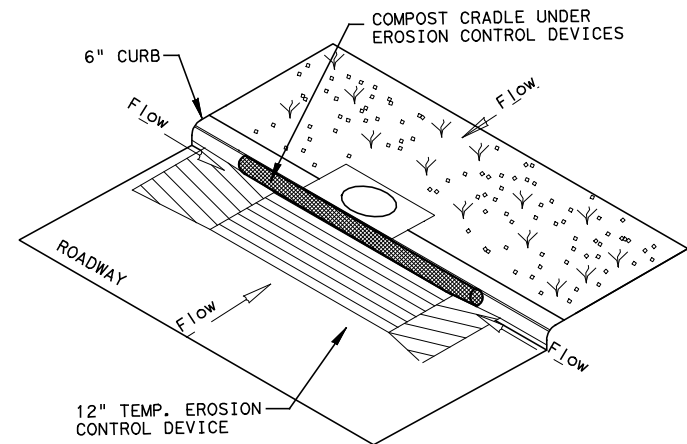
PLAN VIEW
NTS



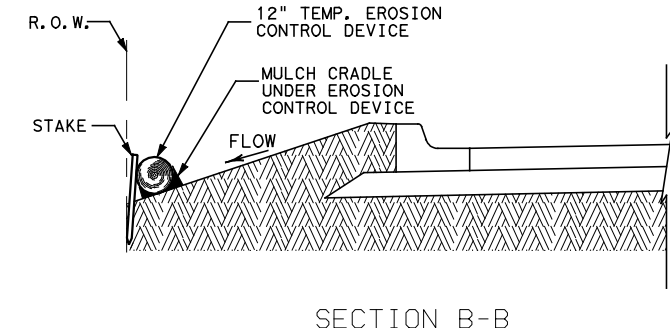
PLAN VIEW
NTS



BACK OF CURB INLET SEDIMENT TRAP
BOCI-ST NTS



CURB INLET SEDIMENT TRAP
CI-ST NTS



RIGHT-OF-WAY SEDIMENT TRAP
ROW-ST NTS

PLANS SHEET LEGEND

- DI-ST DROP INLET SEDIMENT TRAP
- DL-ST DITCH LINE SEDIMENT TRAP
- BOCI-ST BACK OF CURB INLET SEDIMENT TRAP
- ROW-ST RIGHT OF WAY SEDIMENT TRAP
- CI-ST CURB INLET SEDIMENT TRAP

SEDIMENT BASIN & TRAP USAGE GUIDELINES

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

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

Sediment traps should be placed in the following locations:

1. Immediately preceding drain inlets
2. Just before the drainage enters a water course
3. Just before the drainage leaves the right of way
4. Just before the drainage leaves the construction limits where drainage flows away from the project

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

GENERAL NOTES

1. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED. MAXIMUM LENGTH OF LOGS SHALL BE 30' FOR 12" DIAMETER LOGS.
2. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
3. STUFF LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE DENSITY THAT WILL HOLD SHAPE WITHOUT EXCESSIVE DEFORMATION.
4. STAKES SHALL BE 2" X 2" WOOD 4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG.
5. COMPOST CRADLE MATERIAL IS INCIDENTAL AND WILL NOT BE PAID FOR SEPARATELY.

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 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

PHARR DISTRICT STANDARD

Texas Department of Transportation
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**TEMPORARY EROSION CONTROL LOGS
TECL-06 (PHR)**

| | | | |
|-------------------|-------------|---------|-------------|
| FED. RD. DIV. NO. | PROJECT NO. | | HIGHWAY NO. |
| 6 | | | BETO GARZA |
| STATE | DISTRICT | COUNTY | SHEET NO. |
| TEXAS | PHR | HIDALGO | 40 |
| CONTROL | SECTION | JOB | |
| 2C | 1080 | 495 | |