

# STATE OF TEXAS

## DEPARTMENT OF TRANSPORTATION

### PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENTS

FEDERAL AID PROJECT NO. STP 2023(335)TAPS

### WHEELER COUNTY

### FOR THE CONSTRUCTION OF MISCELLANEOUS

CONSISTING OF SIDEWALK AND LIGHTING  
IMPROVEMENTS

LIMITS:  
FROM: ON FM2473, SH152, SOUTH  
TO: TEXAS AVE.

FEDERAL AID PROJECT NO.			
STP 2023(335)TAPS			
CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST		COUNTY	SHEET NO.
25		WHEELER	1

DESIGN SPEED - 30 MPH  
A.A.D.T. (2042) - 952  
A.A.D.T. (2022) - 680

THE TCP HAS BEEN REVIEWED BY  
TRAFFIC SAFETY COMMITTEE

*Jacob R. Slane, P.E.*

TRAFFIC SAFETY CHAIRMAN

REQUIRED SIGNS SHALL BE IN ACCORDANCE WITH  
BC (1)- 21 THRU BC (12)- 21 AND THE "TEXAS  
MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

REGISTERED ACCESSIBILITY SPECIALIST (RAS) INSPECTION  
REQUIRED FOR TDLR NO. TABS2024020131

### FINAL PLANS

CONTRACTOR NAME: \_\_\_\_\_

CONTRACTOR ADDRESS: \_\_\_\_\_

LETTING DATE: \_\_\_\_\_

DATE TIME CHARGES BEGAN: \_\_\_\_\_

DATE WORK BEGAN: \_\_\_\_\_

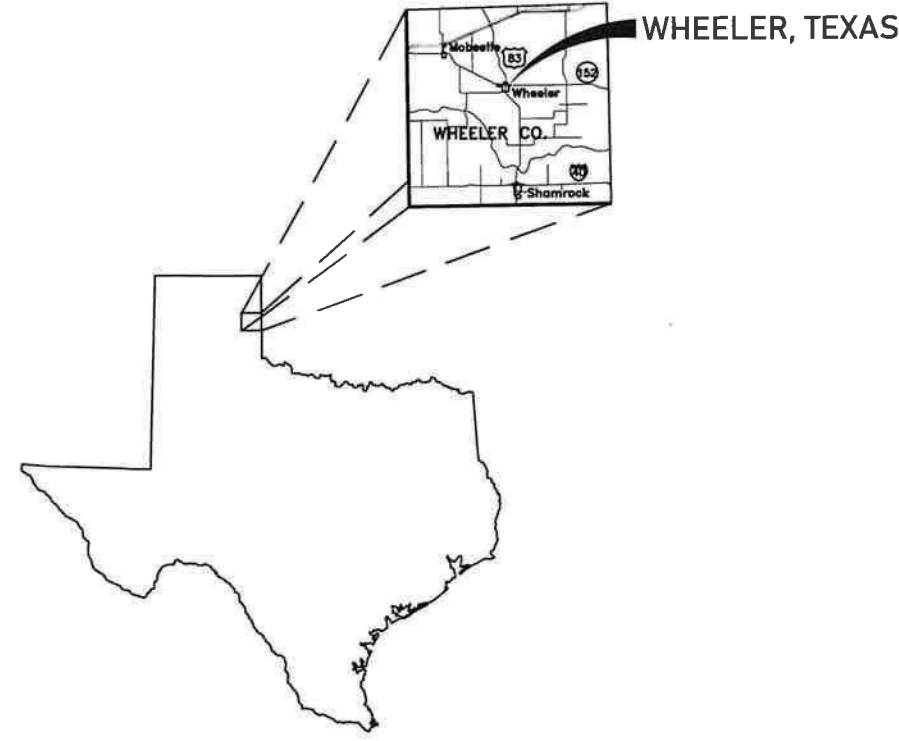
DATE WORK COMPLETED: \_\_\_\_\_

DATE OF WORK ACCEPTANCE: \_\_\_\_\_

I, \_\_\_\_\_, P.E. DO HEREBY CERTIFY  
THAT THE CONSTRUCTION WORK WAS PERFORMED IN ACCORDANCE  
WITH THE PLANS, CONTRACT, AND CHANGES THERETO.

\_\_\_\_\_  
AREA ENGINEER

\_\_\_\_\_  
DATE



EXCEPTIONS: NONE  
EQUATIONS: NONE  
RAILROAD CROSSINGS: NONE

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION,  
NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS,  
SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL  
FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, OCTOBER 23, 2023)

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RECOMMENDED FOR LETTING: 05/28/2024

LMCDOW Digitally signed by LMCDOW  
Date: 2024.05.28 09:40:49 -05'00'

\_\_\_\_\_  
AREA ENGINEER

*Adolfo Jimenez*  
CONSULTANT ENGINEER

SUBMITTED FOR LETTING: 05/28/2024

*Luca P.E.*  
\_\_\_\_\_  
DESIGN ENGINEER

APPROVED FOR LETTING: 05/29/2024

*Jim Ford*  
\_\_\_\_\_  
DISTRICT ENGINEER

SHEET NO.	DESCRIPTION
<u>GENERAL</u>	
SHEET 1	- TITLE SHEET
SHEET 2	- INDEX OF SHEETS
SHEET 3	- VICINITY MAP
SHEET 4,A-D	- GENERAL NOTES
SHEET 5	- ESTIMATE & QUANTITY SHEET
SHEET 6	- QUANTITY SUMMARY
<u>ROADWAY DETAILS</u>	
SHEET 7	- DIMENSIONAL CONTROL LAYOUT
SHEET 8	- DIMENSIONAL CONTROL COORDINATES
SHEET 9	- MAIN ST. DEMOLITION PLAN - STA 249+00 TO STA 250+25
SHEET 10	- MAIN ST. DEMOLITION PLAN - STA 250+25 TO STA 251+70
SHEET 11	- MAIN ST. DEMOLITION PLAN - STA 251+70 TO END OF PROJECT
SHEET 12	- MAIN ST. PROPOSED SIDEWALK - STA 249+00 TO STA 250+30
SHEET 13	- MAIN ST. PROPOSED SIDEWALK - STA 250+30 TO STA 251+85
SHEET 14	- MAIN ST. PROPOSED SIDEWALK - STA 251+85 TO END OF PROJECT
SHEET 15	- SIDEWALK CROSS SECTIONS I
SHEET 16	- SIDEWALK CROSS SECTIONS II
SHEET 17	- STAIR DETAILS
SHEET 18	- CONCRETE DETAILS
SHEET 19	- STRIPING PLAN
SHEET 20	- MAIN ST. LIGHTING PLAN
<u>ROADWAY DETAIL STANDARDS</u>	
** SHEET 21	- CCCG-22
** SHEET 22	- CPCD-14
** SHEET 23	- JS-14
** SHEET 24	- PRD-13 (1)
** SHEET 25	- PRD-13 (3)
** SHEET 26	- PED-1B (1)
** SHEET 27	- PED-1B (2)
** SHEET 28	- PED-1B (4)
<u>TRAFFIC CONTROL PLAN STANDARDS</u>	
** SHEET 29	- PM(AP)-21
** SHEET 30	- BC(1)-21
** SHEET 31	- BC(2)-21
** SHEET 32	- BC(3)-21
** SHEET 33	- BC(4)-21
** SHEET 34	- BC(5)-21
** SHEET 35	- BC(6)-21
** SHEET 36	- BC(7)-21
** SHEET 37	- BC(8)-21
** SHEET 38	- BC(9)-21
** SHEET 39	- BC(10)-21
** SHEET 40	- BC(11)-21
** SHEET 41	- BC(12)-21
** SHEET 42	- TCP(1-1)-1B
** SHEET 43	- TCP(2-1)-1B
<u>ENVIRONMENTAL ISSUES</u>	
SHEET 44	- EPIC

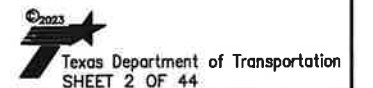
\*\* THE STANDARD TxDOT SHEETS SPECIFICALLY IDENTIFIED ON THIS SHEET HAVE BEEN ISSUED BY ADOLFO GARCIA, P.E. AND ARE APPLICABLE TO THIS PROJECT.

*Adolfo Garcia*  
ENGINEER      5/24/24  
DATE



*Adolfo Garcia* 5/24/24  
HI-PLAINS CIVIL ENGINEERS  
F-4174

INDEX OF SHEETS

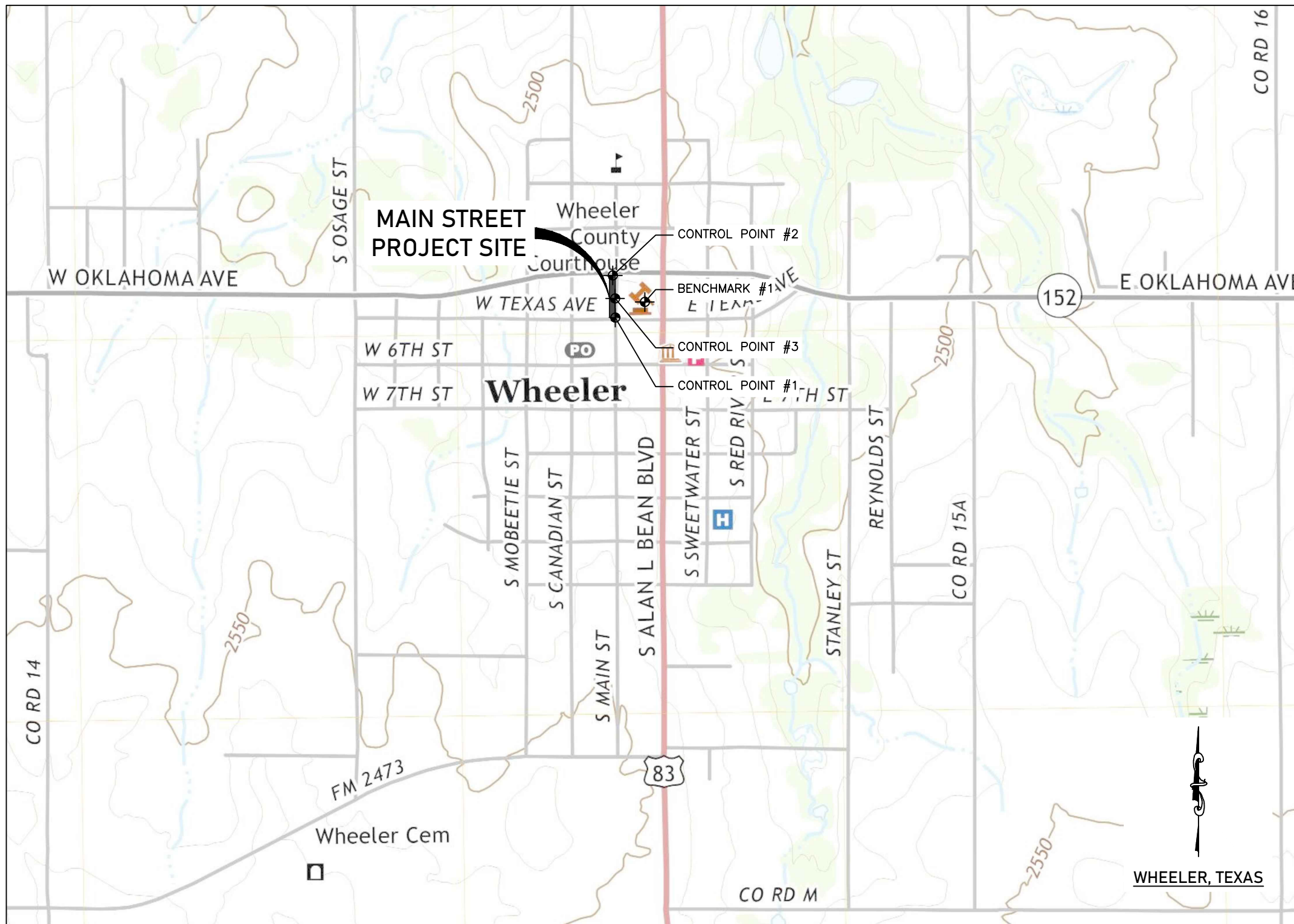


REVISIONS	DATE

**HI-PLAINS CIVIL ENGINEERS**  
FIRM REGISTRATION NO. 4174  
4537 CANYON DRIVE - AMARILLO, TEXAS 79110 - 806.353.7233

CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	2	

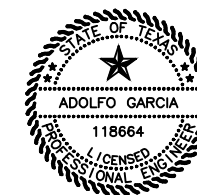




VICINITY MAP

	BENCHMARK/ CONTROL POINT	NORTHING	EASTING	ELEVATION
BM1	BENCHMARK #1 - USGS BRASS DISC STAMPED "P 139"	3808843.28	1021694.77	2528.65
CP1	CONTROL POINT #1 - PK NAIL & SHINER	3808747.42	1021513.14	2524.93
CP2	CONTROL POINT #2 - PK NAIL & SHINER	3809051.65	1021442.38	2520.87
CP3	CONTROL POINT #3 - PK NAIL & SHINER	3808884.35	1021512.82	2522.61

- NOTE:
- IF DISCREPANCY EXISTS BETWEEN COORDINATES SHOWN & STRUCTURE DIMENSIONS, BUILDING DIMENSIONS, CONTACT ENGINEER FOR CLARIFICATION BEFORE CONSTRUCTION OF FACILITY OR ANY RELATED FACILITY.
  - IF DISCREPANCY EXIST BETWEEN RELATIVE ELEVATIONS OR BENCHMARK ELEVATION CONTACT ENGINEER FOR CLARIFICATION OF FACILITY OR ANY RELATED FACILITY.
  - ± AT SPOT ELEVATION INDICATES TO TIE TO EXISTING GRADE AT STRUCTURES. CONTACT ENGINEER IF DISCREPANCY FOUND.



*Adolfo Garcia* 5/24/24  
 HI-PLAINS CIVIL ENGINEERS  
 F-4174

VICINITY MAP

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CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	3	

REVISIONS	DATE

**HI-PLAINS CIVIL ENGINEERS**  
 FIRM REGISTRATION NO. 4174  
 4537 CANYON DRIVE - AMARILLO, TEXAS 79110 - 806.353.7233

COUNTY: WHEELER

HIGHWAY: FM 2473

**GENERAL NOTES AND SUPPLEMENTAL INFORMATION**

*BASIS FOR ESTIMATE		
ITEM	DESCRIPTION	RATE
216	PROOF ROLLING	1 HR/1000 FT
310	PRIME COAT (MC-30)	0.30 GAL/SY
3076	D-GR HMA (PER BID ITEM DESCRIPTION)	110 LB/SY/IN

\*RATES SHOWN IN THIS TABLE HAVE BEEN USED FOR PLAN QUANTITY CALCULATIONS AND MAY BE ADJUSTED BY THE ENGINEER DURING CONSTRUCTION FOR APPLICATION PURPOSES.

CONTRACTOR QUESTIONS ON THIS PROJECT ARE TO BE ADDRESSED TO THE FOLLOWING INDIVIDUAL(S):

**LOUIS.MCDOW@TXDOT.GOV**

QUESTIONS MAY BE SUBMITTED VIA THE LETTING PRE-BID Q&A WEB PAGE. THIS WEBPAGE CAN BE ACCESSED FROM THE NOTICE TO CONTRACTORS DASHBOARD LOCATED AT THE FOLLOWING ADDRESS:

[HTTPS://TABLEAU.TXDOT.GOV/VIEWS/PROJECTINFORMATIONDASHBOARD/NOTICETOCONTRACTORS](https://tableau.txdot.gov/views/projectinformationdashboard/noticetocontractors)

ALL CONTRACTOR QUESTIONS WILL BE REVIEWED BY THE ENGINEER. ALL QUESTIONS AND ANY CORRESPONDING RESPONSES THAT ARE GENERATED WILL BE POSTED THROUGH THE SAME LETTING PRE-BID Q&A WEB PAGE.

THE LETTING PRE-BID Q&A WEB PAGE FOR EACH PROJECT CAN BE ACCESSED BY USING THE DASHBOARD TO NAVIGATE TO THE PROJECT YOU ARE INTERESTED IN BY SCROLLING OR FILTERING THE DASHBOARD USING THE CONTROLS ON THE LEFT. HOVER OVER THE BLUE HYPERLINK FOR THE PROJECT YOU WANT TO VIEW THE Q&A FOR AND CLICK ON THE LINK IN THE WINDOW THAT POPS UP.

**ITEM 5 - CONTROL OF THE WORK**

CONSTRUCTION SURVEYING ON THIS CONTRACT WILL BE IN ACCORDANCE WITH ARTICLE 5.9.3, "METHOD C". THE CONTRACTOR SHALL PLACE CONSTRUCTION STAKES NEAR THE RIGHT-OF-WAY LINE AT INTERVALS OF NO MORE THAN 200', OR AS DIRECTED, WITH STATIONING.

CORRECT ANY DEFICIENCIES IDENTIFIED DURING FINAL INSPECTION, INCLUDING REQUIRED PAPERWORK. SUBMIT ALL REQUIRED DOCUMENTATION WITHIN 14 DAYS OF FINAL ACCEPTANCE AS DIRECTED BY THE ENGINEER.

WHEN A PRECAST OR CAST-IN-PLACE CONCRETE ELEMENT IS INCLUDED IN THE PLANS, A PRECAST CONCRETE ALTERNATE MAY BE SUBMITTED IN ACCORDANCE WITH "STANDARD OPERATING PROCEDURE FOR ALTERNATE PRECAST PROPOSAL SUBMISSION" FOUND ONLINE AT THE FOLLOWING ADDRESS:

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[HTTPS://FTP.TXDOT.GOV/PUB/TXDOT-INFO/BRG/DESIGN/ALTERNATE-PRECAST-PROPOSAL-SUBMISSION.PDF](https://ftp.txdot.gov/pub/txdot-info/brg/design/alternate-precast-proposal-submission.pdf)

AN ACCEPTANCE OR DENIAL OF AN ALTERNATE IS AT THE SOLE DISCRETION OF THE ENGINEER. IMPACTS TO THE PROJECT SCHEDULE AND ANY ADDITIONAL COSTS RESULTING FROM THE USE OF ALTERNATES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

**ITEM 6 – CONTROL OF MATERIALS**

TO COMPLY WITH THE LATEST PROVISIONS OF BUILD AMERICA, BUY AMERICA ACT (BABA ACT) OF THE BIPARTISAN INFRASTRUCTURE LAW, THE CONTRACTOR MUST SUBMIT AN ORIGINAL TXDOT CONSTRUCTION MATERIAL BUY AMERICA CERTIFICATION FORM FOR ALL ITEMS CLASSIFIED AS CONSTRUCTION MATERIALS. THIS FORM IS NOT REQUIRED FOR MATERIALS CLASSIFIED AS A MANUFACTURED PRODUCT.

REFER TO THE BUY AMERICA MATERIAL CLASSIFICATION SHEET FOR CLARIFICATION ON MATERIAL CATEGORIZATION.

THE BUY AMERICA MATERIAL CLASSIFICATION SHEET IS LOCATED AT THE BELOW LINK.

[HTTPS://WWW.TXDOT.GOV/BUSINESS/RESOURCES/MATERIALS/BUY-AMERICA-MATERIAL-CLASSIFICATION-SHEET.HTML](https://www.txdot.gov/business/resources/materials/buy-america-material-classification-sheet.html)

**ITEM 7 - LEGAL RELATIONS AND RESPONSIBILITIES**

PROVIDE INGRESS & EGRESS TO THE ADJACENT PROPERTIES IN AREAS UNDER CONSTRUCTION. PHASED CONSTRUCTION OF DRIVEWAYS AND STREETS SHALL BE REQUIRED TO PROVIDE UNINTERRUPTED ACCESS TO ADJACENT PROPERTIES. COORDINATE WORK WITH THE PROPERTY OWNERS BEFORE BEGINNING ANY CONSTRUCTION IN THE VICINITY OF THE DRIVE.

DO NOT INITIATE ACTIVITIES IN A PROJECT SPECIFIC LOCATION (PSL) ASSOCIATED WITH A U.S. ARMY CORPS OF ENGINEERS (USACE) PERMIT AREA THAT HAS NOT BEEN PREVIOUSLY EVALUATED BY THE USACE AS PART OF THE PERMIT REVIEW FOR THIS PROJECT. SUCH ACTIVITIES INCLUDE BUT ARE NOT LIMITED TO, HAUL ROADS, EQUIPMENT STAGING AREAS, BORROW AND DISPOSAL SITES. "ASSOCIATED", AS DEFINED HEREIN, INCLUDES MATERIALS DELIVERED TO OR FROM THE PSL. THE PERMIT AREA INCLUDES ALL WATERS OF THE U.S. OR ASSOCIATED WETLANDS AFFECTED BY PROJECT ACTIVITIES. SPECIAL RESTRICTIONS MAY BE REQUIRED FOR SUCH WORK. CONSULT WITH THE USACE REGARDING ACTIVITIES, INCLUDING PROJECT SPECIFIC LOCATIONS (PSLS) THAT HAVE NOT BEEN PREVIOUSLY EVALUATED BY THE USACE. PROVIDE THE DEPARTMENT WITH A COPY OF ALL CONSULTATION(S) OR APPROVAL(S) FROM THE USACE PRIOR TO INITIATING ACTIVITIES.

PROCEED WITH ACTIVITIES IN PSLs THAT DO NOT AFFECT A USACE PERMIT AREA IF A SELF DETERMINATION HAS BEEN MADE THAT THE PSL IS NON-JURISDICTIONAL OR PROPER USACE CLEARANCES HAVE BEEN OBTAINED IN JURISDICTIONAL AREAS OR HAVE BEEN PREVIOUSLY EVALUATED BY THE USACE AS PART OF THE PERMIT REVIEW FOR THIS PROJECT. DOCUMENT ANY DETERMINATION(S) THAT PROJECT ACTIVITIES DO NOT AFFECT A USACE PERMIT AREA. MAINTAIN COPIES OF DETERMINATION(S) FOR REVIEW BY THE DEPARTMENT OR ANY REGULATORY AGENCY.

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DOCUMENT AND COORDINATE WITH THE USACE, IF REQUIRED, PRIOR TO ANY EXCAVATION HAULED FROM OR EMBANKMENT HAULED INTO A USACE PERMIT AREA BY EITHER (1) OR (2) BELOW.

### 1. RESTRICTED USE OF MATERIALS FOR THE PREVIOUSLY EVALUATED PERMIT AREAS.

DOCUMENT BOTH THE PROJECT SPECIFIC LOCATION (PSL) AND AUTHORIZATION. MAINTAIN COPIES FOR REVIEW BY THE DEPARTMENT OR ANY REGULATORY AGENCY. WHEN AN AREA WITHIN THE PROJECT LIMITS HAS BEEN EVALUATED BY THE USACE AS PART OF THE PERMIT PROCESS FOR THIS PROJECT:

- SUITABLE EXCAVATION OF REQUIRED MATERIAL IN THE AREAS SHOWN ON THE PLANS AND CROSS SECTIONS AS SPECIFIED IN ITEM 110 IS USED FOR PERMANENT OR TEMPORARY FILL (ITEM 132, EMBANKMENT) WITHIN A USACE PERMIT AREA;
- SUITABLE EMBANKMENT (ITEM 132) FROM WITHIN THE USACE PERMIT AREA IS USED AS FILL WITHIN A USACE EVALUATED AREA; AND,
- UNSUITABLE EXCAVATION OR EXCESS EXCAVATION [“WASTE”] (ITEM 110) THAT IS DISPOSED OF AT A LOCATION APPROVED BY THE ENGINEER WITHIN A USACE EVALUATED AREA.

### 2. CONTRACTOR MATERIALS FROM AREAS OTHER THAN PREVIOUSLY EVALUATED AREAS.

PROVIDE THE DEPARTMENT WITH A COPY OF ALL USACE COORDINATION OR APPROVAL(S) PRIOR TO INITIATING ANY ACTIVITIES FOR AN AREA WITHIN THE PROJECT LIMITS THAT HAS NOT BEEN EVALUATED BY THE USACE OR FOR ANY OFF RIGHT OF WAY LOCATIONS USED FOR THE FOLLOWING, BUT NOT LIMITED TO, HAUL ROADS, EQUIPMENT STAGING AREAS, BORROW AND DISPOSAL SITES:

- ITEM 132, EMBANKMENT, USED FOR TEMPORARY OR PERMANENT FILL WITHIN A USACE PERMIT AREA; AND,
- UNSUITABLE EXCAVATION OR EXCESS EXCAVATION [“WASTE”] (ITEM 110, EXCAVATION) THAT IS DISPOSED OF OUTSIDE A USACE EVALUATED AREA.

THE DISTURBED AREA IN THIS PROJECT, ALL PROJECT LOCATIONS IN THE CONTRACT, AND THE CONTRACTOR’S PROJECT SPECIFIC LOCATIONS (PSLS), WITHIN ONE (1) MILE OF THE PROJECT LIMITS, FOR THE CONTRACT WILL FURTHER ESTABLISH THE AUTHORIZATION REQUIREMENTS FOR STORM WATER DISCHARGES. THE DEPARTMENT WILL OBTAIN AN AUTHORIZATION TO DISCHARGE STORM WATER FROM THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) FOR THE CONSTRUCTION ACTIVITIES SHOWN ON THE PLANS. THE CONTRACTOR IS TO OBTAIN REQUIRED AUTHORIZATION FROM THE TCEQ FOR CONTRACTOR PSLs FOR CONSTRUCTION SUPPORT ACTIVITIES ON OR OFF THE ROW. WHEN THE TOTAL AREA DISTURBED IN THE CONTRACT AND PSLs WITHIN ONE (1) MILE OF THE PROJECT LIMITS EXCEEDS FIVE (5) ACRES, PROVIDE A COPY OF THE CONTRACTOR’S NOI FOR PSLs ON THE ROW TO THE ENGINEER AND TO THE LOCAL GOVERNMENT THAT OPERATES A SEPARATE STORM SEWER SYSTEM.

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MINIMIZE THE USE OF EQUIPMENT IN STREAMS AND RIPARIAN AREAS DURING CONSTRUCTION. WHEN POSSIBLE, EQUIPMENT ACCESS SHOULD BE FROM THE BANKS OR BRIDGE DECKS.

WHEN TEMPORARY STREAM CROSSINGS ARE UNAVOIDABLE, REMOVE STREAM CROSSINGS ONCE THEY ARE NO LONGER NEEDED AND STABILIZE BANKS AND SOILS AROUND THE CROSSING.

AVOID PLACING RIPRAP ACROSS STREAMS IF POSSIBLE. WHEN RIPRAP IS NECESSARY, THE PLACEMENT SHOULD NOT IMPEDE THE MOVEMENT OF AQUATIC AND TERRESTRIAL WILDLIFE UNDERNEATH THE BRIDGE.

CONTRACTORS SHOULD PLACE STAGING AREAS, STOCKPILES, AND OTHER PROJECT RELATED SITES IN PREVIOUSLY DISTURBED AREAS OUTSIDE OF THE RIPARIAN CORRIDOR BY AT LEAST 100 FEET WHEN EVER POSSIBLE.

### NO SIGNIFICANT TRAFFIC GENERATOR EVENTS IDENTIFIED.

### ITEM 8 – PROSECUTION AND PROGRESS

WORKING DAYS WILL BE CHARGED IN ACCORDANCE WITH ARTICLE 8.3.1.4, STANDARD WORKWEEK.

PROVIDE A MINIMUM OF 2 WORKING DAYS ADVANCED NOTICE TO THE ENGINEER FOR WORK TO BE PERFORMED ON SATURDAYS AND/OR STATE HOLIDAYS. WORK ON SUNDAYS AND/OR NATIONAL HOLIDAYS WILL NOT BE PERMITTED.

WORK THAT RESTRICTS OR INTERFERES WITH TRAFFIC, TO INCLUDE MOBILE OPERATIONS OR SHORT-TERM LANE CLOSURES, WILL NOT BE ALLOWED ON THE FOLLOWING DATES DUE TO EXPECTED INCREASES IN HOLIDAY TRAFFIC:

- FRIDAY AND SATURDAY IMMEDIATELY PRECEDING EASTER SUNDAY
- FRIDAY AND SATURDAY IMMEDIATELY PRECEDING MEMORIAL DAY
- JULY 3<sup>RD</sup> AND JULY 5<sup>TH</sup> (INDEPENDENCE DAY HOLIDAY)
- FRIDAY AND SATURDAY IMMEDIATELY PRECEDING LABOR DAY
- WEDNESDAY IMMEDIATELY PRECEDING THANKSGIVING
- FRIDAY AND SATURDAY IMMEDIATELY AFTER THANKSGIVING
- DECEMBER 23<sup>RD</sup>, 24<sup>TH</sup>, 25<sup>TH</sup>, AND 26<sup>TH</sup> (CHRISTMAS HOLIDAY)
- DECEMBER 31<sup>ST</sup> (NEW YEARS EVE)

SUBMIT WRITTEN REQUESTS TO THE ENGINEER FOR CONSIDERATION OF TEMPORARY SUSPENSION OF WORK AND/OR WORKING DAY CHARGES DUE TO CONDITIONS NOT UNDER THE CONTROL OF THE CONTRACTOR. SUCH REQUESTS WILL BE EVALUATED BY THE ENGINEER ON A CASE-BY-CASE BASIS AND A WRITTEN RESPONSE WILL BE PROVIDED TO THE CONTRACTOR.

COORDINATE WITH THE ENGINEER TO DETERMINE THE APPROPRIATE PROJECT SCHEDULE TYPE IN ACCORDANCE WITH ARTICLE 5.5 PRIOR TO SUBMISSION OF THE BASELINE SCHEDULE.



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**ITEM 104 - REMOVING OLD CONCRETE**

REMOVE EXISTING CONCRETE WITHOUT DAMAGING PRIVATE PROPERTY. NEATLY SAW THE EXISTING SIDEWALK ADJACENT TO BUILDINGS, BUT NO CLOSER THAN 8" FROM THE FACE OF THE BUILDING, IF APPLICABLE.

ANY DAMAGE TO EXISTING PAVEMENT DURING REMOVAL OF CURB & GUTTER WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE USING HOT MIX ASPHALT OR OTHER APPROVED MATERIAL.

PROTECTION NOTES FOR THE REMOVAL OF EXISTING PAVEMENT, CURB OR SIDEWALK AND CONSTRUCTION OF NEW PAVEMENT, CURB OR SIDEWALK ADJACENT TO HISTORIC BUILDINGS, CANOPIES, MATERIALS, FENCES, AND RETAINING WALLS

IN THE CITY OF WHEELER, WHEELER COUNTY, TEXAS:

ALONG THE WEST SIDE OF SOUTH MAIN STREET BETWEEN EAST OKLAHOMA AVENUE AND WEST TEXAS AVENUE.

WHERE PROPOSED WORK IS IN PROXIMITY TO HISTORIC BUILDINGS OR OTHER STRUCTURES (WALLS, CANOPIES, RETAINING WALLS, FENCES), AND PLANTING BEDS, AND VEGETATION/GROUND COVER, FOLLOW THE PROCEDURES LISTED BELOW FOR DEMOLITION, PROTECTION, AND CONSTRUCTION AT THESE ADDRESSES:

1. TO MINIMIZE POTENTIAL DAMAGE TO HISTORIC STRUCTURES AND MATERIALS, CONTRACTOR TO SAW CUT EXISTING SIDEWALK 8 TO 12 INCHES AWAY FROM THE HISTORIC STRUCTURE, CANOPY SUPPORTS, FENCE, OR RETAINING WALL.
2. CONTRACTOR TO CONSTRUCT NEW SIDEWALK NEXT TO THE SAW CUT EDGE WITH INSTALLATION OF EXPANSION JOINT IN BETWEEN. IF EXISTING SIDEWALK IS TO BE REMOVED ENTIRELY, THE REMAINING 8 TO 12 INCHES NEXT TO THE HISTORIC STRUCTURE, CANOPY SUPPORTS, MATERIAL, FENCE, OR RETAINING WALL WILL BE REMOVED BY HAND. EXPANSION JOINT TO BE PLACED BETWEEN HISTORIC STRUCTURE, CANOPY SUPPORT, MATERIAL, FENCE, OR RETAINING WALL AND NEW SIDEWALK. WHEN POURING CONCRETE FOR REPAIR OR NEW INSTALL, CONTRACTOR SHALL PREVENT SPLASH-BACK OF CONCRETE ONTO HISTORIC RESOURCE.
3. CONTRACTOR IS RESPONSIBLE FOR PREVENTING DAMAGE TO HISTORIC STRUCTURE, CANOPY AND ITS SUPPORTS, MATERIALS, FENCES, RETAINING WALLS, INCLUDING GARDEN ELEMENTS (PLANTING BEDS, PLANTINGS) DURING THE ENTIRE CONSTRUCTION PROJECT, ESPECIALLY DURING REMOVAL OF EXISTING PAVEMENT, CURB, OR SIDEWALK. DURING THE SAW CUT AND HAND REMOVAL PROCESS, CONTRACTOR WILL EXERCISE UTMOST CAUTION AND WILL PHYSICALLY PROTECT HISTORIC STRUCTURE FOUNDATION, CANOPY SUPPORTS, MATERIALS, ELEVATIONS, ENTRYWAYS WITH DECORATIVE FLOORING, FENCES, RETAINING WALLS, AND LANDSCAPE ELEMENTS.

CONTRACTOR TO REPAIR OR REPLACE IN KIND, AT HIS OWN EXPENSE, ANY HISTORIC MATERIALS DAMAGED IN THE COURSE OF EXECUTING THE WORK. CONTRACTOR IS RESPONSIBLE FOR LOCATING REPLACEMENT SOURCE FOR HISTORIC MATERIALS DAMAGED IN THE COURSE OF THE WORK. TXDOT-ENVIRONMENTAL AFFAIRS DIVISION TO BE INFORMED OF

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PROPOSED REPAIRS TO FACILITATE CONSULTATION WITH TEXAS HISTORICAL COMMISSION PRIOR TO EXECUTION OF REPAIR WORK.

**ITEM 105 – REMOVING TREATED AND UNTREATED BASE AND ASPHALT PAVEMENT**

EXISTING TYPICAL SECTIONS ARE BASED UPON INFORMATION AVAILABLE AT THE TIME OF PLAN DEVELOPMENT. THE TYPICAL SECTIONS MAY NOT ACCOUNT FOR ALL MAINTENANCE WORK SUCH AS PAVEMENT REPAIRS. A CHANGE IN MATERIAL TYPE OR INDIVIDUAL LAYER THICKNESS DOES NOT WARRANT ADDITIONAL PAYMENT.

**ITEM 132 – EMBANKMENT**

EMBANKMENT MATERIALS SHOWN ON THE PLANS TO BE TREATED WITH CEMENT OR LIME WILL BE SAMPLED AND TESTED BY THE ENGINEER FOR SULFATE AND ORGANIC CONTENT IN ACCORDANCE WITH TEX-145-E & TEX-148-E, PRIOR TO TREATMENT. ONCE THE BORROW SOURCE HAS BEEN DETERMINED, PROVIDE THE ENGINEER A MINIMUM OF 30 CALENDAR DAYS NOTICE PRIOR TO THE SCHEDULED COMMENCEMENT DATE OF TREATMENT TO PROVIDE ADEQUATE TIME FOR TESTING AND APPROVAL.

MATERIAL WILL SAMPLED AND TESTED EVERY 5,000 CY. WHEN THE EMBANKMENT SOURCE HAS A SULFATE CONTENT GREATER THAN 3,000 PPM OR AN ORGANIC CONTENT GREATER THAN 1.0%, PROCEED AS DIRECTED BY THE ENGINEER. SUSPEND OPERATIONS WHEN SULFATE CONTENT IS GREATER THAN 7,000 PPM.

**ITEM 300 – ASPHALTS, OILS AND EMULSIONS**

PROVIDE DOCUMENTATION THAT INCLUDES THE CURRENT LAB NUMBER SHOWING THAT THE OIL SAMPLE HAS BEEN PRE-TESTED AND APPROVED FOR THE MONTH OF APPLICATION. THIS DOCUMENTATION MUST BE PROVIDED AND VERIFIED BY THE ENGINEER PRIOR TO APPLICATION OF THE MATERIAL.

DO NOT DILUTE EMULSIFIED ASPHALT WITH ADDITIONAL WATER UNDER ANY CIRCUMSTANCES. PROVIDE EMULSIONS MEETING THE REQUIREMENTS UNDER ITEM 300.

**ITEM 351 – FLEXIBLE PAVEMENT STRUCTURE REPAIR**

PERFORM FLEXIBLE PAVEMENT REPAIRS IN ACCORDANCE WITH ITEM 3076 AND APPLICABLE SUPPORTING NOTES. USE OF A MOTOR GRADER FOR PAVING OPERATIONS WILL NOT BE ALLOWED UNLESS AUTHORIZED BY THE ENGINEER. PERFORM ALL REPAIRS DURING A SINGLE DAYTIME OPERATION ONLY. DO NOT EXTEND OPERATIONS OVERNIGHT.

**ITEM 421 – HYDRAULIC CEMENT CONCRETE**

USE "CLASS A" CONCRETE FOR SIDEWALKS, DRIVEWAYS, CURB & GUTTER, AND TEXTURED CONCRETE.

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THE CONTRACTOR WILL SAMPLE ALL CONCRETE AND TEST ACCORDING TO TEX-414-A OR TEX-416-A (IF AIR ENTRAINED CONCRETE IS SPECIFIED), TEX-415-A, TEX-422-A, AND TEX-447-A. CONTRACTOR PERSONNEL PERFORMING TESTING MUST BE ACI CERTIFIED. PERSONNEL PERFORMING THESE TESTS ARE SUBJECT TO DEPARTMENT APPROVAL. USE OF A COMMERCIAL LABORATORY IS PERMITTED.

THE CONTRACTOR WILL NOT BE REQUIRED TO SUPPLY COMPRESSION TESTING EQUIPMENT. TXDOT PERSONNEL WILL PERFORM THE COMPRESSION TESTING.

PROVIDE THE ENGINEER WITH ACI CERTIFICATES, CURRENT EQUIPMENT CALIBRATION RECORDS, AND THE EMAIL ADDRESSES OF TESTING PERSONNEL.

**ITEM 427 - SURFACE FINISHES FOR CONCRETE**

PROVIDE A SURFACE AREA I RUB FINISH UNLESS OTHERWISE APPROVED BY THE ENGINEER.

**ITEM 440 – REINFORCING STEEL**

ALL REINFORCING STEEL LOCATED IN APPROACH SLABS, ABUTMENTS, BRIDGE DECKS, TOP SLABS OF DIRECT TRAFFIC CULVERTS, AND CAPS SHALL BE GALVANIZED. MATERIALS CONFORMING TO ARTICLE 440.2.14 OR 440.2.15 AS REFERENCED IN SPECIAL PROVISION 440-004 WILL BE ACCEPTABLE FOR USE.

MECHANICAL COUPLERS TO BE USED ON THE PROJECT SHALL BE SAMPLED AND TESTED IN ADVANCE OF PLACEMENT. SCHEDULE SAMPLING A MINIMUM OF 30 CALENDAR DAYS IN ADVANCE OF THE SCHEDULED USAGE DATE TO ALLOW ADEQUATE TIME FOR TESTING BY THE ENGINEER. THE CONTRACTOR SHALL ASSEMBLE THREE MECHANICAL COUPLER ASSEMBLIES PER QUANTITY OF 500, PER PRODUCER, TYPE, MODEL, AND SIZE IN CONFORMANCE WITH THE MANUFACTURER'S ASSEMBLY INSTRUCTIONS IN THE PRESENCE OF THE ENGINEER. ASSEMBLE MECHANICAL COUPLER TEST SPECIMENS WITH THE SAME EQUIPMENT, TOOLS, AND METHODS THAT WILL BE USED ON THE FINAL PRODUCT. PROVIDE COPIES OF REQUIRED "BUY AMERICA" DOCUMENTATION WITH EACH SAMPLE SUBMITTED FOR TESTING.

**ITEM 450 – RAILING**

THE CONTRACTOR WILL BE RESPONSIBLE FOR THE SURVEY OF NEWLY CONSTRUCTED CONCRETE ELEMENTS AND PROVIDING THE FABRICATOR OF HANDRAILS WITH FIELD-VERIFIED DIMENSIONS AND GRADES.

**ITEM 502 - BARRICADES, SIGNS, AND TRAFFIC HANDLING**

THE CONTRACTOR'S RESPONSIBLE PERSON FOR TCP COMPLIANCE SHALL BE AVAILABLE BY PHONE AND SHALL HAVE A RESPONSE TIME WITHIN 45 MINUTES.

WORK WILL NOT BE ALLOWED ON BOTH SIDES OF THE ROAD AT THE SAME TIME UNLESS OTHERWISE APPROVED BY THE ENGINEER.

ALL EQUIPMENT AND MATERIALS SHALL BE STORED OUTSIDE THE ROADWAY CLEAR ZONE.

COUNTY: WHEELER

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EQUIP ALL WORK VEHICLES WITHIN 30 FEET OF THE TRAVELED WAY WITH A FUNCTIONING AMBER STROBE LIGHT OR ROTATING BEACON VISIBLE FROM ALL DIRECTIONS.

THE CONTRACTOR SHALL TAKE ACTION AT THE TIME OF RECEIPT OF THE BARRICADE INSPECTION IN ACORDANCE WITH THE DEFICIENCY PRIORITY. MAKE CORRECTIONS WITHIN 1 CALENDAR DAY FOR A PRIORITY 1 DEFICIENCY, OR WITHIN 7 CALENDAR DAYS FOR A PRIORITY 2 DEFICIENCY. THE ENGINEER MAY REQUIRE THE TEMPORARY SUSPENSION OF WORK WITHOUT SUSPENSION OF TIME CHARGES FOR FAILURE TO MAKE CORRECTIONS WITHIN THE APPROPRIATE TIME FRAMES.

THE CONTRACTOR FORCE ACCOUNT "SAFETY CONTINGENCY" THAT HAS BEEN ESTABLISHED FOR THIS PROJECT IS INTENDED TO BE UTILIZED FOR WORK ZONE ENHANCEMENTS AND TO IMPROVE THE EFFECTIVENESS OF THE TRAFFIC CONTROL PLAN. THESE ENHANCEMENTS WILL BE MUTUALLY AGREED UPON BY THE ENGINEER AND THE CONTRACTOR'S RESPONSIBLE PERSON IN WRITING. THE ENGINEER MAY CHOOSE TO USE EXISTING BID ITEMS IF IT DOES NOT SLOW THE IMPLEMENTATION OR ENHANCEMENT.

THE USE OF A PILOT CAR WILL BE REQUIRED FOR ONE-LANE, TWO-WAY TRAFFIC CONTROL. ONE-LANE, TWO-WAY TRAFFIC CONTROL WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED SUBSIDIARY TO ITEM 502.

**ITEM 506 – TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS**

THE ENGINEER MAY REQUIRE THE TEMPORARY SUSPENSION OF WORK WITHOUT SUSPENSION OF TIME CHARGES FOR FAILURE TO MAKE CORRECTIONS TO DEFICIENCIES NOTED ON FORM 2118 WITHIN THE APPROPRIATE TIME FRAMES.

**ITEM 529 – CONCRETE CURB & GUTTER**

CONCRETE CURB AND GUTTER WILL HAVE #4 REINFORCING BARS IN ACCORDANCE WITH CCCG-21

**ITEM 531 – SIDEWALKS**

PLACE STUBS FOR NEW OR RELOCATED SIGNS DURING SIDEWALK CONSTRUCTION.

CONSTRUCT SIDEWALKS SUCH THAT EXPANSION MATERIAL IS PLACED EVERY 12.0' ALONG THE LENGTH OF PLACEMENT.

PROVIDE REINFORCEMENT FOR SIDEWALKS IN ACCORDANCE ARTICLE 432.3.1.

**ITEM 666 - REFLECTORIZED PAVEMENT MARKINGS**

THE CONTRACTOR SHALL PLACE GUIDE MARKS TO ESTABLISH THE LOCATION OF THE PROPOSED PAVEMENT MARKINGS. THE CONTRACTOR MAY USE YELLOW TABS SPACED AT 40' ON CENTER OR OTHER METHODS NOT NOTED IN THE PLANS. ALTERNATE METHODS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO STRIPING. ANY ALTERNATE GUIDE



COUNTY: WHEELER

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MARKINGS PLACED WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED SUBSIDIARY TO PERTINENT BID ITEMS.

**ITEM 3076 – DENSE GRADED HOT-MIX ASPHALT**

ANY REPAIRS MADE TO NEW HOTMIX WILL BE PERFORMED FULL LANE WIDTH OR FULL SHOULDER WIDTH AT THE CONTRACTOR'S EXPENSE.

TEMPORARY PLACEMENT OR WINDROWING OF LOOSE HOT MIX MATERIAL ON THE FINAL SURFACE OF THE ROADWAY WILL NOT BE ALLOWED.

MINIMUM CRUSHED FACE COUNT FOR COURSE GRAVEL AGGREGATE IS 95%.

MINERAL FILLER OTHER THAN DRIED STONE DUST MUST BE APPROVED.

LIME OR LIQUID ANTISTRIPPING AGENT WILL BE REQUIRED.

DESIGN THE MIXTURE USING A SUPERPAVE GYRATORY COMPACTOR (SGC) AT 50 GYRATIONS.

TARGET LAB MOLDED DENSITY IS 97.0%.

MINIMUM ASPHALT CONTENT WILL BE 5%.

TEX-530-C BOIL TEST WILL BE WAIVED.

TWO (2) VERIFICATION TESTS PER DESIGN WILL BE PERFORMED BY THE CHILDRESS DISTRICT LABORATORY. ANY ADDITIONAL DESIGN VERIFICATION TESTING WILL BE PAID FOR BY THE CONTRACTOR AT \$5,000 EACH.

THE MAXIMUM CONTENT OF RECYCLED MATERIALS FOR ALL HOT MIX ASPHALT CONCRETE SHALL BE 10%.

RAS WILL NOT BE ALLOWED.

A MATERIAL TRANSFER VEHICLE (MTV) WITH REMIXING CAPABILITIES WILL BE REQUIRED.

A TAPERED LONGITUDINAL JOINT WILL BE REQUIRED UNLESS OTHERWISE APPROVED BY THE ENGINEER.

TRACKING RESISTANT ASPHALT INTERLAYER (TRAIL) APPROVED MATERIALS SHALL BE USED FOR TACK COAT.

BASIS FOR ESTIMATE FOR TMA				
PHASE	STANDARD	REQUIRED	ADDITIONAL	TOTAL
TMA (MOBILE)				
DEMOLITION	TCP (1-1)-18	0	0	0
RCP PLACE	TCP (1-1)-18	0	0	0
ACP PLACE	TCP (1-1)-18	0	0	0
STRIPING	TCP (1-1)-18	0	0	0

**LEGEND**

EXISTING		PROPOSED
W	WATER LINE	
[W]	WATER METER	
⊗	WATER VALVE (GATE & BUTTERFLY)	
⊙	FIRE HYDRANT	
▶	FITTING	
E	ELECTRICAL CABLE	
⊙	POWER POLE OR TELEPHONE POLE	
⊙	LIGHT POLE	⊙
S	SEWER LINE	
T	TELEPHONE CABLE	
[T]	TELEPHONE PEDESTAL	
⊙	SIGN	⊙
G	GAS LINE	
[G]	GAS METER	
FO	FIBER OPTIC LINE	
[FO]	FIBER OPTIC PEDESTAL	
P	PROPERTY LINE	
---	EXPANSION JOINT	---
---	TOOLED OR SAW JOINT	---
=	CURB & GUTTER	=
[Concrete Pattern]	CONCRETE	[Concrete Pattern]
[Hatched Pattern]	BUILDING	
[Dotted Pattern]	PAVEMENT	[Dotted Pattern]
[Diagonal Hatched Pattern]	PAVEMENT REPAIR	[Diagonal Hatched Pattern]
[Triangle Pattern]	VEHICULAR CONCRETE	[Triangle Pattern]
[Cross-hatched Pattern]	STAMPED CONCRETE	
[Grid Pattern]	TRUNCATED DOMES	[Grid Pattern]
97.96±	TIE TO EXISTING CONTRACTOR TO NOTIFY ENGINEER IF FIELD ELEV. DIFFERS FROM PLANS	97.96±
96.50±	SPOT ELEVATION	96.50±
[Diagram]	SECTION NUMBER	
[Diagram]	CURRENT SHEET	
[Diagram]	SHEET ON WHICH DETAIL IS SHOWN	



# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 2051-01-014

DISTRICT Childress  
HIGHWAY FM 2473

COUNTY Wheeler

CONTROL SECTION JOB				2051-01-014		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00188019			
COUNTY				Wheeler			
HIGHWAY				FM 2473			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	104-6015	REMOVING CONC (SIDEWALKS)	SY	360.000		360.000	
	104-6019	REMOVING CONC (OTHER APPURTENANCES)	SY	100.000		100.000	
	104-6024	REMOVING CONC (RETAINING WALLS)	SY	120.000		120.000	
	104-6067	REMOVING CONC (SAWCUT)	LF	470.000		470.000	
	105-6170	REM TRT & UNTRT BASE & ASPH (4"-10")	SY	520.000		520.000	
	132-6001	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	60.000		60.000	
	216-6001	PROOF ROLLING	HR	10.000		10.000	
	351-6006	FLEXIBLE PAVEMENT STRUCTURE REPAIR(10")	SY	120.000		120.000	
	360-6002	CONC PVMT (CONT REINF - CRCP) (8")	SY	60.000		60.000	
	420-6132	CL A CONC (STEPS)	CY	30.000		30.000	
	423-6008	RETAINING WALL (CAST - IN - PLACE)	SF	1,170.000		1,170.000	
	450-6047	RAIL (HANDRAIL)(TY A)	LF	290.000		290.000	
	450-6084	RAIL (HANDRAIL)(DECORATIVE)	LF	210.000		210.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	6.000		6.000	
	529-6008	CONC CURB & GUTTER (TY II)	LF	390.000		390.000	
	531-6001	CONC SIDEWALKS (4")	SY	460.000		460.000	
	531-6004	CURB RAMPS (TY 1)	EA	2.000		2.000	
	531-6005	CURB RAMPS (TY 2)	EA	1.000		1.000	
	531-6051	CONCRETE RAMP WITH WALL	CY	30.000		30.000	
	666-6170	REFL PAV MRK TY II (W) 4" (SLD)	LF	210.000		210.000	
	1002-6027	LANDSCAPE AMENITY (ADA PARKING SIGN)	EA	1.000		1.000	
	5008-6001	WHEEL STOPS	EA	1.000		1.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	

**QUANTITY SUMMARY:**

SPEC NUMBER	ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY	TOTAL FINAL QUANTITY
0104	6015	REMOVING CONC (SIDEWALKS)	SY	360	
0104	6019	REMOVING CONC (OTHER APPURTENANCES)	SY	100	
0104	6024	REMOVING CONC (RETAINING WALLS)	SY	120	
0104	6067	REMOVING CONC (SAWCUT)	LF	470	
0105	6170	REM TRT & UNTRT BASE & ASPH (4"-10")	SY	520	
0132	6001	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	60	
0216	6001	PROOF ROLLING	HR	10	
0351	6006	FLEXIBLE PAVEMENT STRUCTURE REPAIR (10")	SY	120	
0360	6002	CONC PVMT (CONT REINF - CRCP) (8")	SY	60	
0420	6132	CONC (STEPS)	CY	30	
0423	6008	RETAINING WALL (CAST-IN-PLACE)	SF	1170	
0450	6047	RAIL (HANDRAIL) (TY A)	LF	290	
0450	6084	RAIL (HANDRAIL)(DECORATIVE)	LF	210	
0500	6001	MOBILIZATION	LS	1	
0502	6001	BARRICADES, SIGNS, AND TRAFFIC HANDLING	MO	6	
0529	6008	CONC CURB & GUTTER (TY II)	LF	390	
0531	6001	CONC SIDEWALKS (4")	SY	460	
0531	6004	CURB RAMPS (TY 1)	EA	2	
0531	6005	CURB RAMPS (TY 2)	EA	1	
0531	6051	CONCRETE RAMP WITH WALL	CY	30	
0666	6170	REFL PAV MRK TY II (W) 4" (SLD)	LF	210	
1002	6027	LANDSCAPE AMENITY (ADA PARKIGN SIGN)	EA	1	
5008	6001	WHEEL STOPS	EA	1	

QUANTITY SUMMARY



Texas Department of Transportation  
SHEET 6 OF 44

REVISIONS	DATE

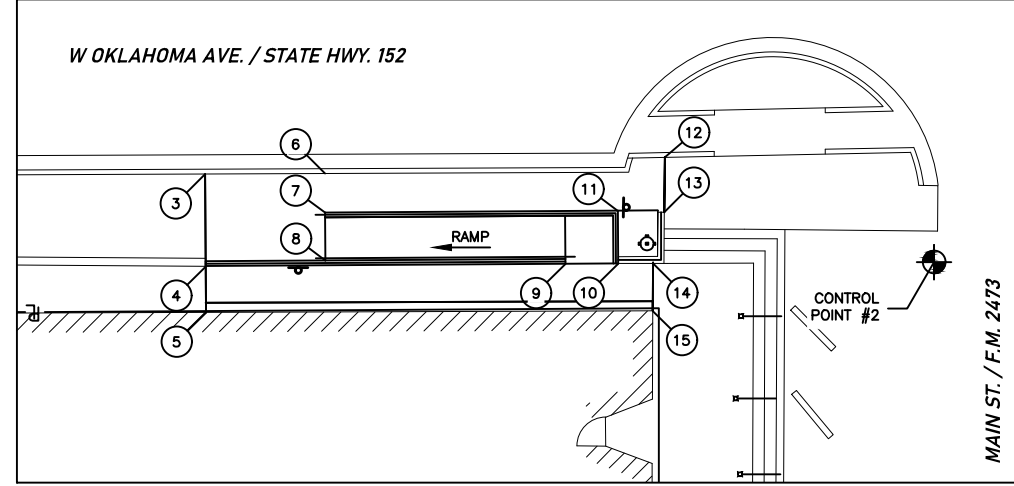
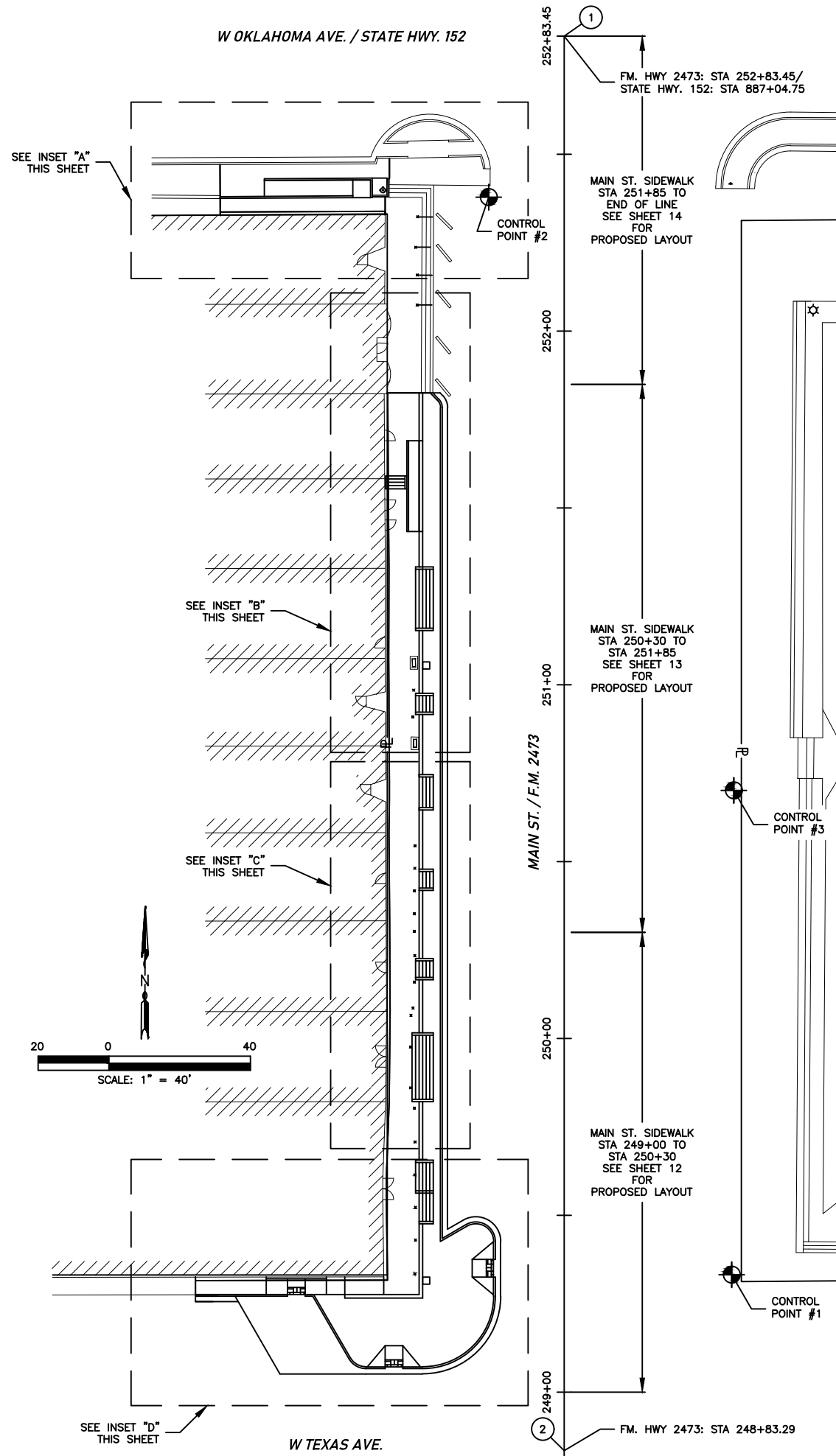


**HI-PLAINS CIVIL ENGINEERS**  
FIRM REGISTRATION NO. 4174

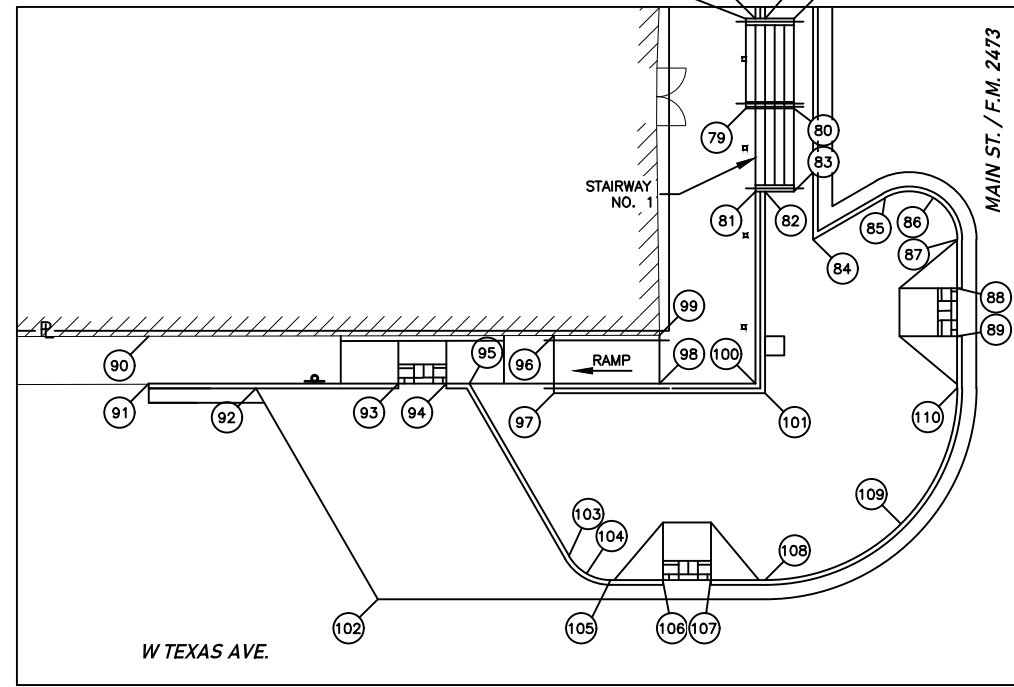
4537 CANYON DRIVE - AMARILLO, TEXAS 79110 - 806.353.7233

CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	6	

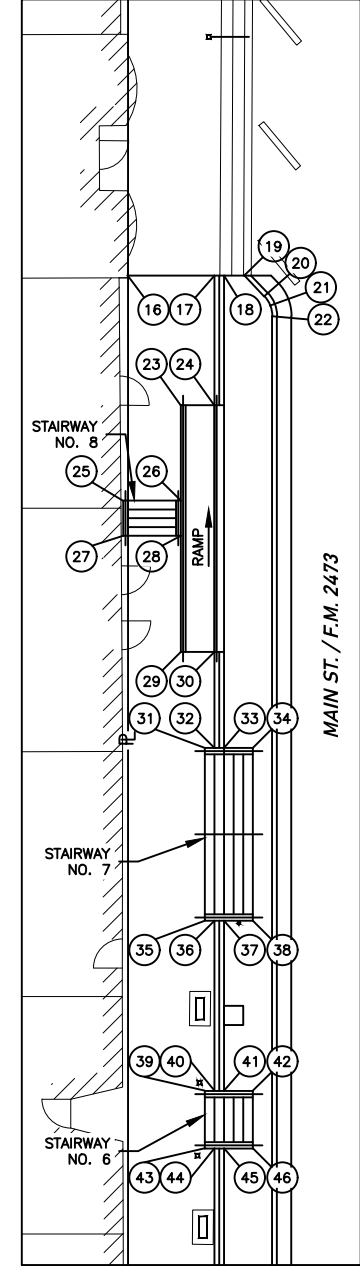
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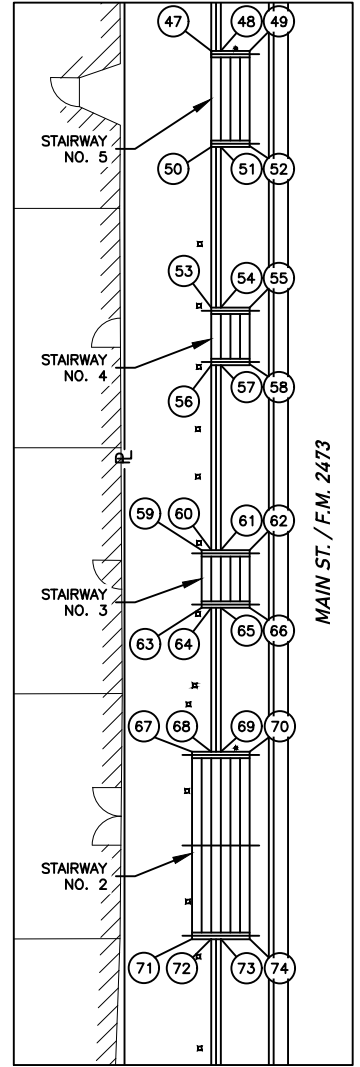
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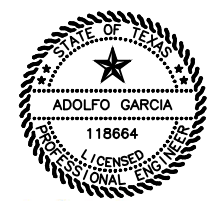
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INSET "B"  
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INSET "C"  
SCALE: 1"=20'



*Adolfo Garcia* 5/24/24  
HI-PLAINS CIVIL ENGINEERS  
F-4174

DIMENSIONAL CONTROL LAYOUT

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SHEET 7 OF 44

REVISIONS	DATE

**HI-PLAINS CIVIL ENGINEERS**  
FIRM REGISTRATION NO. 4174  
4537 CANYON DRIVE - AMARILLO, TEXAS 79110 - 806.353.7233

CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	7	

#	POINT DESCRIPTION	NORTHING	EASTING
1	Q FM. HWY 2473: STA 252+83.45/ STATE HWY. 152: STA 887+04.75	3809097.29	1021463.40
2	Q FM. HWY 2473: STA 248+83.29	3808697.15	1021466.20
3	CONCRETE CORNER	3809060.28±	1021366.38±
4	CONCRETE CORNER	3809050.70±	1021366.51±
5	CONCRETE CORNER - TIE-IN TO BUILDING	3809045.86±	1021366.57±
6	EDGE OF CONCRETE	3809060.42	1021378.86
7	CONCRETE CORNER - BOTTOM OF RAMP	3809056.36	1021378.91
8	CONCRETE CORNER - BOTTOM OF RAMP	3809051.37	1021378.98
9	CONCRETE CORNER	3809051.19	1021403.98
10	CONCRETE CORNER - TOP OF RAMP	3809051.26	1021409.48
11	CONCRETE CORNER - TOP OF RAMP	3809056.76	1021409.41
12	CONCRETE CORNER	3809062.35	1021414.25
13	CONCRETE CORNER	3809056.65	1021414.25
14	CONCRETE CORNER - TIE-IN TO EXISTING CONCRETE	3809051.29±	1021413.10 ±
15	CONCRETE CORNER - TIE-IN TO EXISTING CONCRETE	3809046.36±	1021413.10±
16	CONCRETE CORNER - TIE-IN TO EXISTING CONCRETE	3808996.06±	1021414.07±
17	CONCRETE CORNER/EDGE OF RETAINING WALL	3808996.11±	1021423.11±
18	EDGE OF RETAINING WALL	3808996.12±	1021424.11±
19	BACK OF CURB	3808996.14±	1021426.24±
20	BACK OF CURB - PC CURVE	3808993.99	1021428.30
21	BACK OF CURB - MIDPOINT CURVE 3'R	3808993.04	1021428.92
22	BACK OF CURB - PT CURVE	3808991.93	1021429.14
23	CONCRETE CORNER - BOTTOM OF RAMP	3808982.58	1021419.70
24	CONCRETE CORNER - BOTTOM OF RAMP	3808982.60	1021423.20
25	CORNER OF STEP	3808972.61	1021413.77
26	CORNER OF STEP/EDGE OF RETAINING WALL	3808972.65	1021419.77
27	CORNER OF STEP	3808968.94	1021413.80
28	CORNER OF STEP/EDGE OF RETAINING WALL	3808968.99	1021419.80
29	CONCRETE CORNER - TOP OF RAMP	3808956.90	1021419.88
30	CONCRETE CORNER - TOP OF RAMP	3808956.93	1021423.38
31	CORNER OF STEP	3808946.92	1021422.45
32	CORNER OF STEP/EDGE OF RETAINING WALL	3808946.93	1021423.45
33	EDGE OF RETAINING WALL	3808946.94	1021424.45
34	CORNER OF STEP	3808946.96	1021427.45
35	CORNER OF STEP	3808928.92	1021422.58
36	CORNER OF STEP/EDGE OF RETAINING WALL	3808928.93	1021423.58
37	EDGE OF RETAINING WALL	3808928.94	1021424.58
38	CORNER OF STEP	3808928.96	1021427.58
39	CORNER OF STEP	3808911.20	1021422.71
40	CORNER OF STEP/EDGE OF RETAINING WALL	3808911.21	1021423.71
41	EDGE OF RETAINING WALL	3808911.21	1021424.71
42	CORNER OF STEP	3808911.23	1021427.71
43	CORNER OF STEP	3808905.20	1021422.75
44	CORNER OF STEP/EDGE OF RETAINING WALL	3808905.21	1021423.75
45	EDGE OF RETAINING WALL	3808905.21	1021424.75
46	CORNER OF STEP	3808905.23	1021427.75
47	CORNER OF STEP/EDGE OF RETAINING WALL	3808888.20	1021423.87
48	EDGE OF RETAINING WALL	3808888.21	1021424.87
49	CORNER OF STEP	3808888.23	1021427.87
50	CORNER OF STEP/EDGE OF RETAINING WALL	3808878.20	1021423.94

#	POINT DESCRIPTION	NORTHING	EASTING
51	CORNER OF STEP/EDGE OF RETAINING WALL	3808878.21	1021424.94
52	CORNER OF STEP	3808878.23	1021427.94
53	EDGE OF RETAINING WALL	3808861.47	1021424.05
54	EDGE OF RETAINING WALL	3808861.48	1021425.05
55	CORNER OF STEP	3808861.50	1021428.05
56	EDGE OF RETAINING WALL	3808855.47	1021424.10
57	EDGE OF RETAINING WALL	3808855.48	1021425.10
58	CORNER OF STEP	3808855.50	1021428.10
59	CORNER OF STEP	3808836.20	1021423.23
60	EDGE OF RETAINING WALL	3808836.21	1021424.23
61	EDGE OF RETAINING WALL	3808836.21	1021425.23
62	CORNER OF STEP	3808836.24	1021428.23
63	CORNER OF STEP	3808830.20	1021423.27
64	EDGE OF RETAINING WALL	3808830.21	1021424.27
65	EDGE OF RETAINING WALL	3808830.21	1021425.27
66	CORNER OF STEP	3808830.24	1021428.27
67	CORNER OF STEP	3808815.19	1021422.38
68	EDGE OF RETAINING WALL	3808815.21	1021424.38
69	EDGE OF RETAINING WALL	3808815.21	1021425.38
70	CORNER OF STEP	3808815.24	1021428.38
71	CORNER OF STEP	3808795.69	1021422.52
72	EDGE OF RETAINING WALL	3808795.71	1021424.51
73	EDGE OF RETAINING WALL	3808795.72	1021425.51
74	CORNER OF STEP	3808795.74	1021428.51
75	CORNER OF STEP	3808779.20	1021423.63
76	EDGE OF RETAINING WALL	3808779.21	1021424.63
77	EDGE OF RETAINING WALL	3808779.22	1021425.63
78	CORNER OF STEP	3808779.24	1021428.63
79	CORNER OF STEP	3808769.87	1021423.70
80	CORNER OF STEP	3808769.90	1021428.70
81	CORNER OF STEP/EDGE OF RETAINING WALL	3808761.21	1021424.76
82	EDGE OF RETAINING WALL	3808761.22	1021425.76
83	CORNER OF STEP	3808761.24	1021428.76
84	BACK OF CURB	3808756.25	1021430.79
85	BACK OF CURB - PC CURVE	3808760.63	1021438.26
86	BACK OF CURB - MIDPOINT CURVE 5'R	3808760.67	1021443.26
87	BACK OF CURB - PT CURVE	3808756.36	1021445.79
88	BACK OF CURB	3808751.29	1021445.82
89	BACK OF CURB	3808746.29	1021445.86
90	CORNER CONCRETE	3808745.69±	1021361.66±
91	BACK OF CURB	3808740.76±	1021361.70±
92	CONCRETE CORNER	3808740.34	1021372.88
93	CONCRETE CORNER	3808740.94	1021387.70
94	CONCRETE CORNER	3808740.98	1021392.70
95	BACK OF CURB	3808741.00	1021395.10
96	CONCRETE CORNER - BOTTOM OF RAMP	3808746.06	1021403.86
97	CONCRETE CORNER - BOTTOM OF RAMP/EDGE OF RETAINING WALL	3808740.06	1021403.91
98	CONCRETE CORNER - TOP OF RAMP	3808741.13	1021414.90
99	CONCRETE CORNER - TOP OF RAMP	3808746.16	1021414.86
100	CORNER CONCRETE/ EDGE OF RETAINING WALL	3808741.20	1021424.90

#	POINT DESCRIPTION	NORTHING	EASTING
101	CORNER CONCRETE/ EDGE OF RETAINING WALL	3808740.21	1021425.90
102	CONCRETE CORNER	3808718.46	1021385.72
103	BACK OF CURB - PC CURVE	3808723.10	1021405.60
104	BACK OF CURB - MIDPOINT CURVE 5'R	3808721.29	1021407.45
105	BACK OF CURB - PT CURVE	3808720.63	1021409.95
106	BACK OF CURB	3808720.67	1021415.39
107	BACK OF CURB	3808720.71	1021420.38
108	BACK OF CURB - PC CURVE	3808720.75	1021426.04
109	BACK OF CURB - MIDPOINT CURVE 20' R	3808726.70	1021440.14
110	BACK OF CURB - PT CURVE	3808740.89	1021445.90

#	BENCHMARK/ CONTROL POINT	NORTHING	EASTING	ELEVATION
BM1	BENCHMARK #1 - USGS BRASS DISC STAMPED "P 139"	3808843.28	1021694.77	2528.65
CP1	CONTROL POINT #1 - PK NAIL & SHINER	3808747.42	1021513.14	2524.93
CP2	CONTROL POINT #2 - PK NAIL & SHINER	3809051.65	1021442.38	2520.87
CP3	CONTROL POINT #3 - PK NAIL & SHINER	3808884.35	1021512.82	2522.61

- NOTE:
- IF DISCREPANCY EXISTS BETWEEN COORDINATES SHOWN & STRUCTURE DIMENSIONS, BUILDING DIMENSIONS, CONTACT ENGINEER FOR CLARIFICATION BEFORE CONSTRUCTION OF FACILITY OR ANY RELATED FACILITY.
  - IF DISCREPANCY EXIST BETWEEN RELATIVE ELEVATIONS OR BENCHMARK ELEVATION CONTACT ENGINEER FOR CLARIFICATION OF FACILITY OR ANY RELATED FACILITY.
  - ± AT SPOT ELEVATION INDICATES TO TIE TO EXISTING GRADE AT STRUCTURES. CONTACT ENGINEER IF DISCREPANCY FOUND.



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 F-4174

DIMENSIONAL CONTROL  
 COORDINATES

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 SHEET 8 OF 44



REVISIONS	DATE


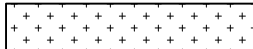
CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	8	



**QUANTITY SUMMARY:**

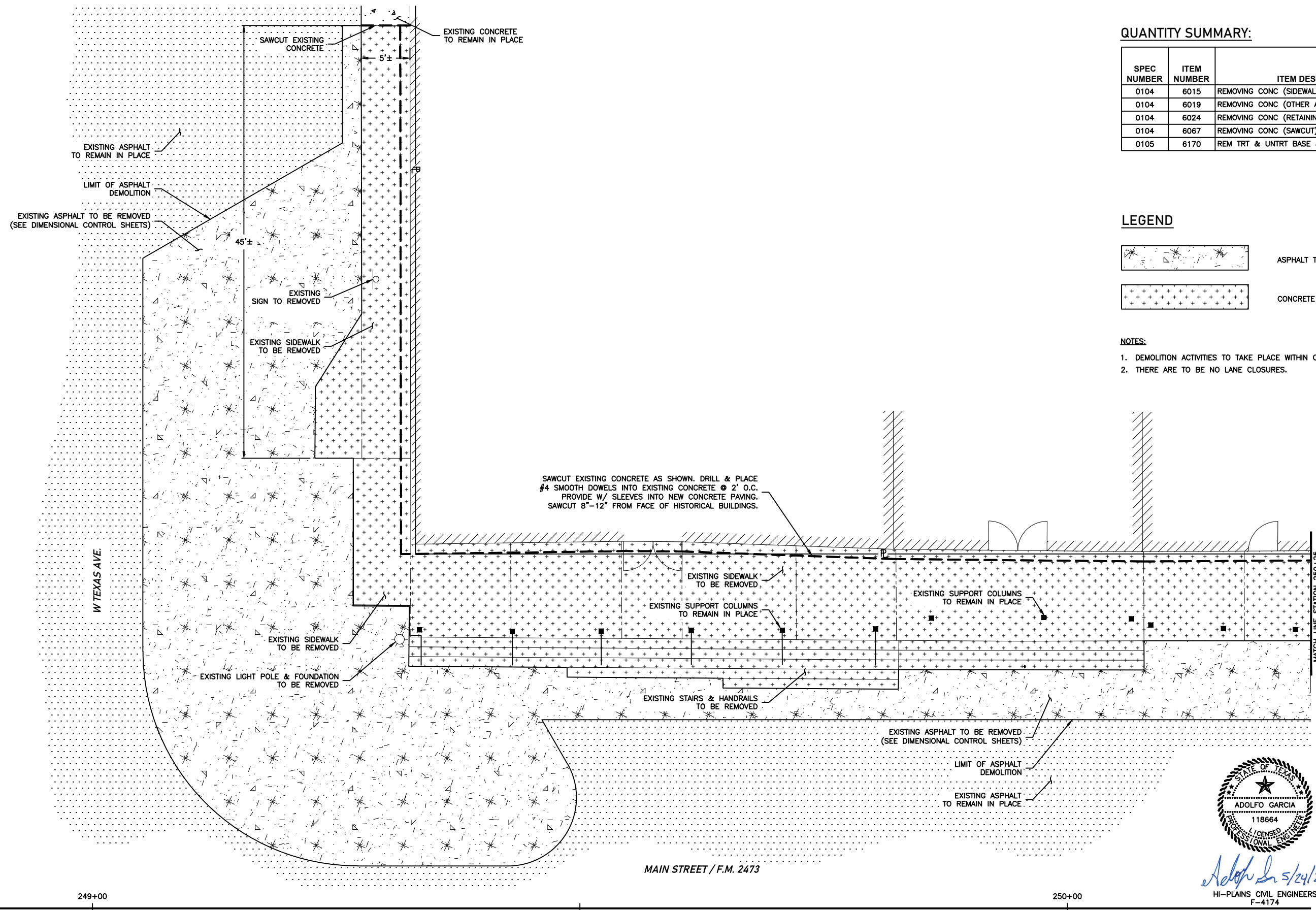
SPEC NUMBER	ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY
0104	6015	REMOVING CONC (SIDEWALKS)	SY	140
0104	6019	REMOVING CONC (OTHER APPURTENANCES)	SY	40
0104	6024	REMOVING CONC (RETAINING WALLS)	SY	30
0104	6067	REMOVING CONC (SAWCUT)	LF	160
0105	6170	REM TRT & UNTRT BASE & ASPH (4"-10")	SY	330

**LEGEND**

	ASPHALT TO BE DEMOLISHED
	CONCRETE TO BE DEMOLISHED

**NOTES:**

- DEMOLITION ACTIVITIES TO TAKE PLACE WITHIN CONSTRUCTION ZONE.
- THERE ARE TO BE NO LANE CLOSURES.

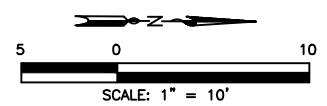


SAWCUT EXISTING CONCRETE AS SHOWN. DRILL & PLACE #4 SMOOTH DOWELS INTO EXISTING CONCRETE @ 2' O.C. PROVIDE W/ SLEEVES INTO NEW CONCRETE PAVING. SAWCUT 8"-12" FROM FACE OF HISTORICAL BUILDINGS.



*Adolfo Garcia*  
5/24/24  
HI-PLAINS CIVIL ENGINEERS  
F-4174

MAIN ST.  
DEMOLITION PLAN  
STA 249+00 TO  
STA 250+25



**EXISTING SIDEWALK LAYOUT / DEMOLITION PLAN**  
SCALE: 1" = 10'

REVISIONS	DATE

**HI-PLAINS CIVIL ENGINEERS**  
FIRM REGISTRATION NO. 4174  
4537 CANYON DRIVE - AMARILLO, TEXAS 79110 - 806.353.7233

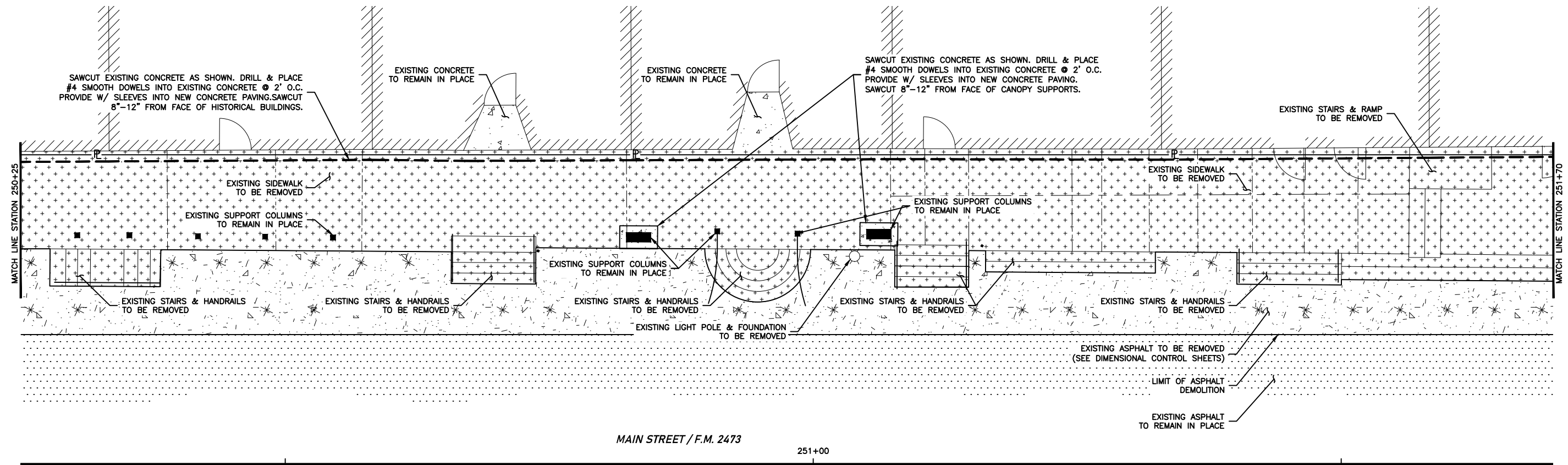
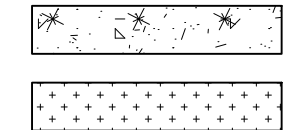
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SHEET 9 OF 44

CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	9	

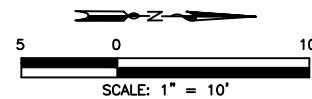
QUANTITY SUMMARY:

SPEC NUMBER	ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY
0104	6015	REMOVING CONC (SIDEWALKS)	SY	150
0104	6019	REMOVING CONC (OTHER APPURTENANCES)	SY	30
0104	6024	REMOVING CONC (RETAINING WALLS)	SY	60
0104	6067	REMOVING CONC (SAWCUT)	LF	150
0105	6170	REM TRT & UNTRT BASE & ASPH (4"-10")	SY	150

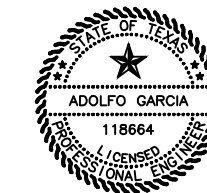
LEGEND



- NOTES:
- DEMOLITION ACTIVITIES TO TAKE PLACE WITHIN CONSTRUCTION ZONE.
  - THERE ARE TO BE NO LANE CLOSURES.

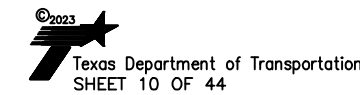


**EXISTING SIDEWALK LAYOUT / DEMOLITION PLAN**  
SCALE: 1" = 10'



*Adolfo Garcia* 5/24/24  
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F-4174

MAIN ST.  
DEMOLITION PLAN  
STA 250+25 TO  
STA 251+70



**HI-PLAINS CIVIL ENGINEERS**  
FIRM REGISTRATION NO. 4174  
4537 CANYON DRIVE - AMARILLO, TEXAS 79110 - 806.353.7233

REVISIONS	DATE

CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	10	

QUANTITY SUMMARY:

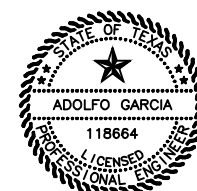
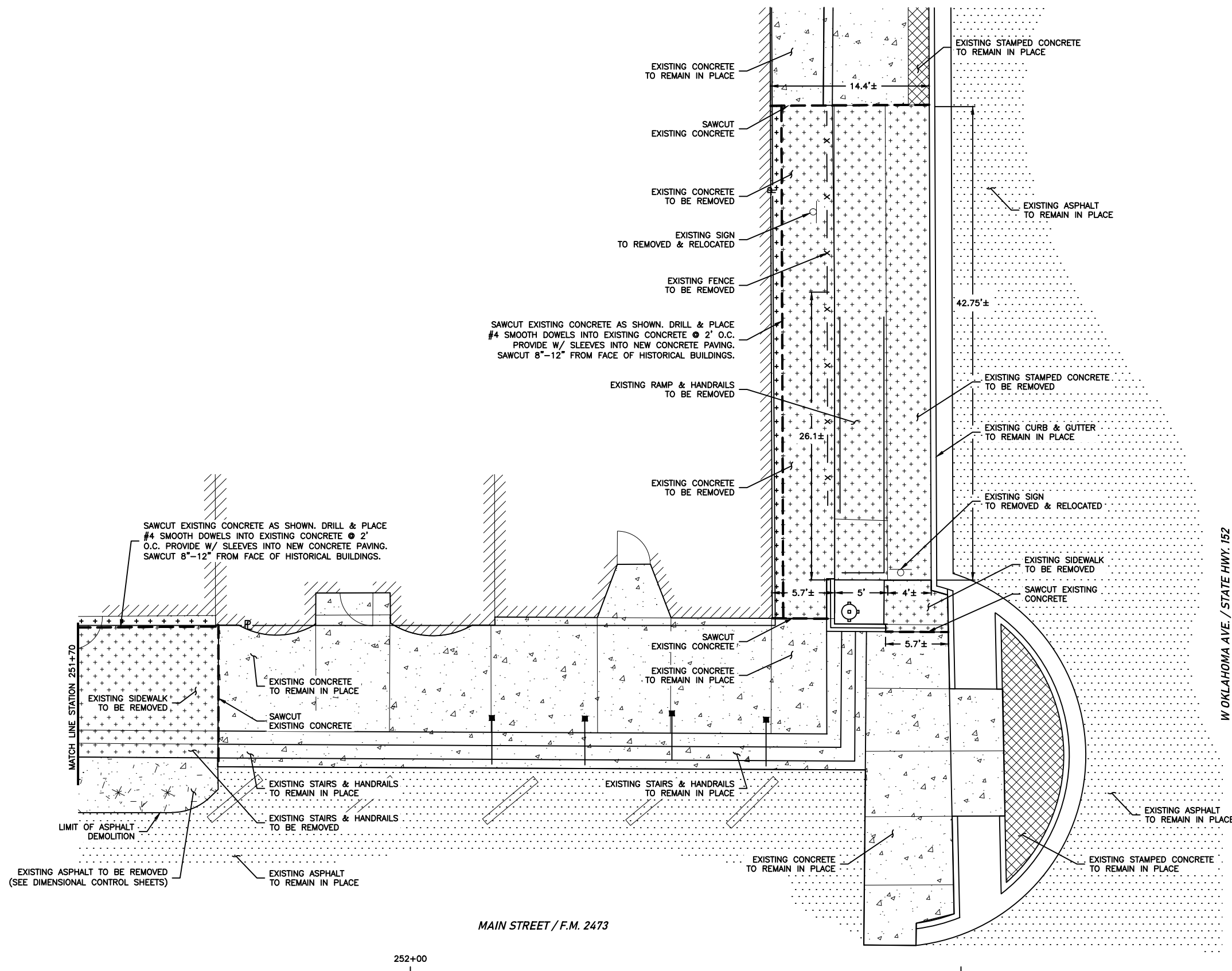
SPEC NUMBER	ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY
0104	6015	REMOVING CONC (SIDEWALKS)	SY	70
0104	6019	REMOVING CONC (OTHER APPURTENANCES)	SY	30
0104	6024	REMOVING CONC (RETAINING WALLS)	SY	30
0104	6067	REMOVING CONC (SAWCUT)	LF	160
0105	6170	REM TRT & UNTRT BASE & ASPH (4"-10")	SY	40

LEGEND

	ASPHALT TO BE DEMOLISHED
	CONCRETE TO BE DEMOLISHED

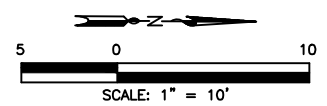
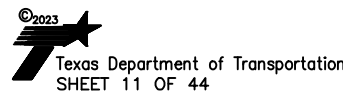
NOTES:

- DEMOLITION ACTIVITIES TO TAKE PLACE WITHIN CONSTRUCTION ZONE.
- THERE ARE TO BE NO LANE CLOSURES.



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MAIN ST.  
 DEMOLITION PLAN  
 STA 251+70 TO  
 END OF PROJECT



**EXISTING SIDEWALK LAYOUT / DEMOLITION PLAN**  
 SCALE: 1" = 10'

REVISIONS	DATE

**HI-PLAINS CIVIL ENGINEERS**  
 FIRM REGISTRATION NO. 4174  
 4537 CANYON DRIVE - AMARILLO, TEXAS 79110 - 806.353.7233

CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	11	

**QUANTITY SUMMARY:**

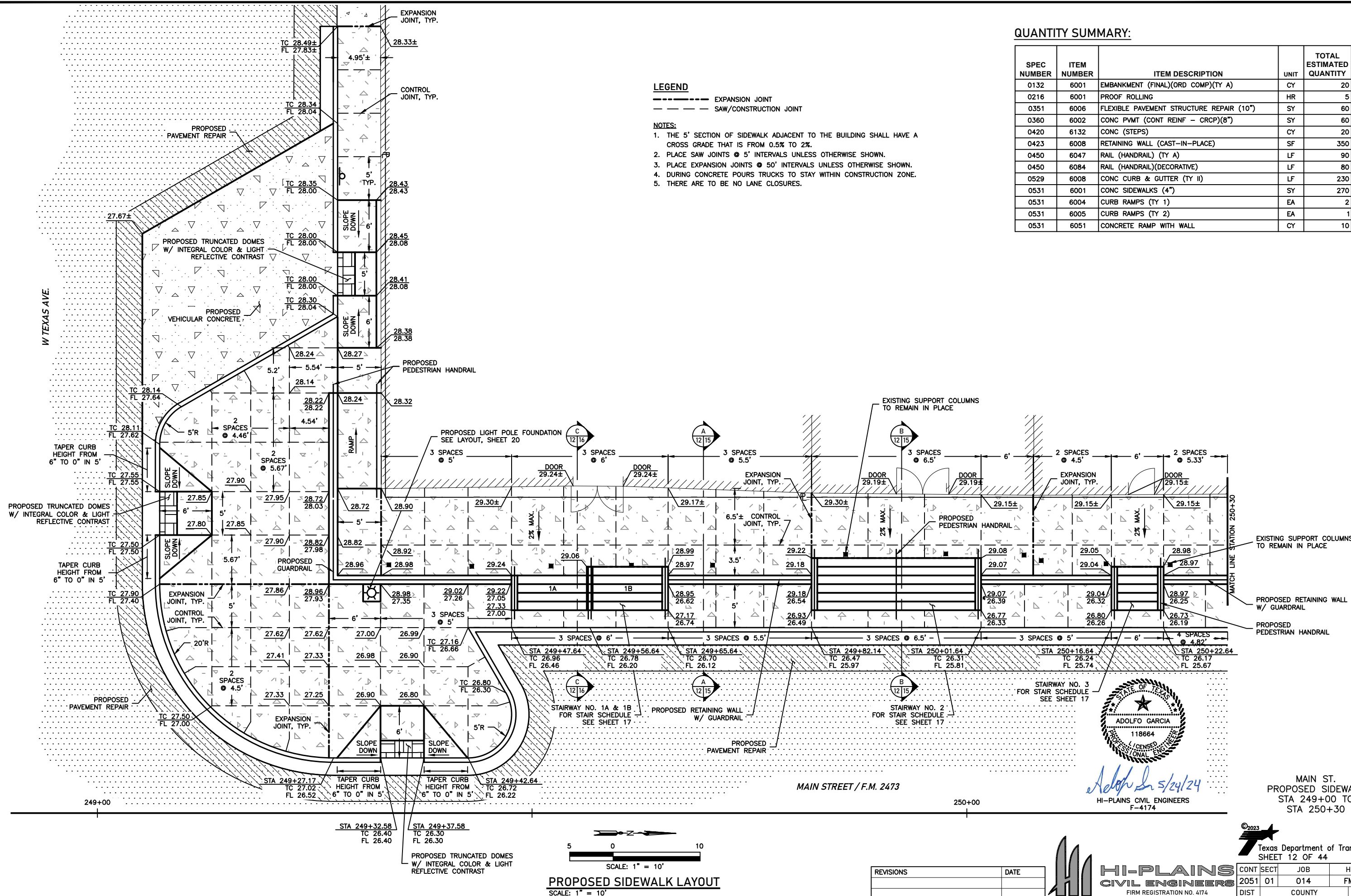
SPEC NUMBER	ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY
0132	6001	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	20
0216	6001	PROOF ROLLING	HR	5
0351	6006	FLEXIBLE PAVEMENT STRUCTURE REPAIR (10")	SY	60
0360	6002	CONC PVMT (CONT REINF - CRCP)(8")	SY	60
0420	6132	CONC (STEPS)	CY	20
0423	6008	RETAINING WALL (CAST-IN-PLACE)	SF	350
0450	6047	RAIL (HANDRAIL) (TY A)	LF	90
0450	6084	RAIL (HANDRAIL)(DECORATIVE)	LF	80
0529	6008	CONC CURB & GUTTER (TY II)	LF	230
0531	6001	CONC SIDEWALKS (4")	SY	270
0531	6004	CURB RAMPS (TY 1)	EA	2
0531	6005	CURB RAMPS (TY 2)	EA	1
0531	6051	CONCRETE RAMP WITH WALL	CY	10

**LEGEND**

- EXPANSION JOINT
- SAW/CONSTRUCTION JOINT

**NOTES:**

1. THE 5' SECTION OF SIDEWALK ADJACENT TO THE BUILDING SHALL HAVE A CROSS GRADE THAT IS FROM 0.5% TO 2%.
2. PLACE SAW JOINTS @ 5' INTERVALS UNLESS OTHERWISE SHOWN.
3. PLACE EXPANSION JOINTS @ 50' INTERVALS UNLESS OTHERWISE SHOWN.
4. DURING CONCRETE POURS TRUCKS TO STAY WITHIN CONSTRUCTION ZONE.
5. THERE ARE TO BE NO LANE CLOSURES.



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5/24/24  
HI-PLAINS CIVIL ENGINEERS  
F-4174



**PROPOSED SIDEWALK LAYOUT**  
SCALE: 1" = 10'

REVISIONS	DATE

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FIRM REGISTRATION NO. 4174  
4537 CANYON DRIVE - AMARILLO, TEXAS 79110 - 806.353.7233

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SHEET 12 OF 44

CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	12	



**QUANTITY SUMMARY:**

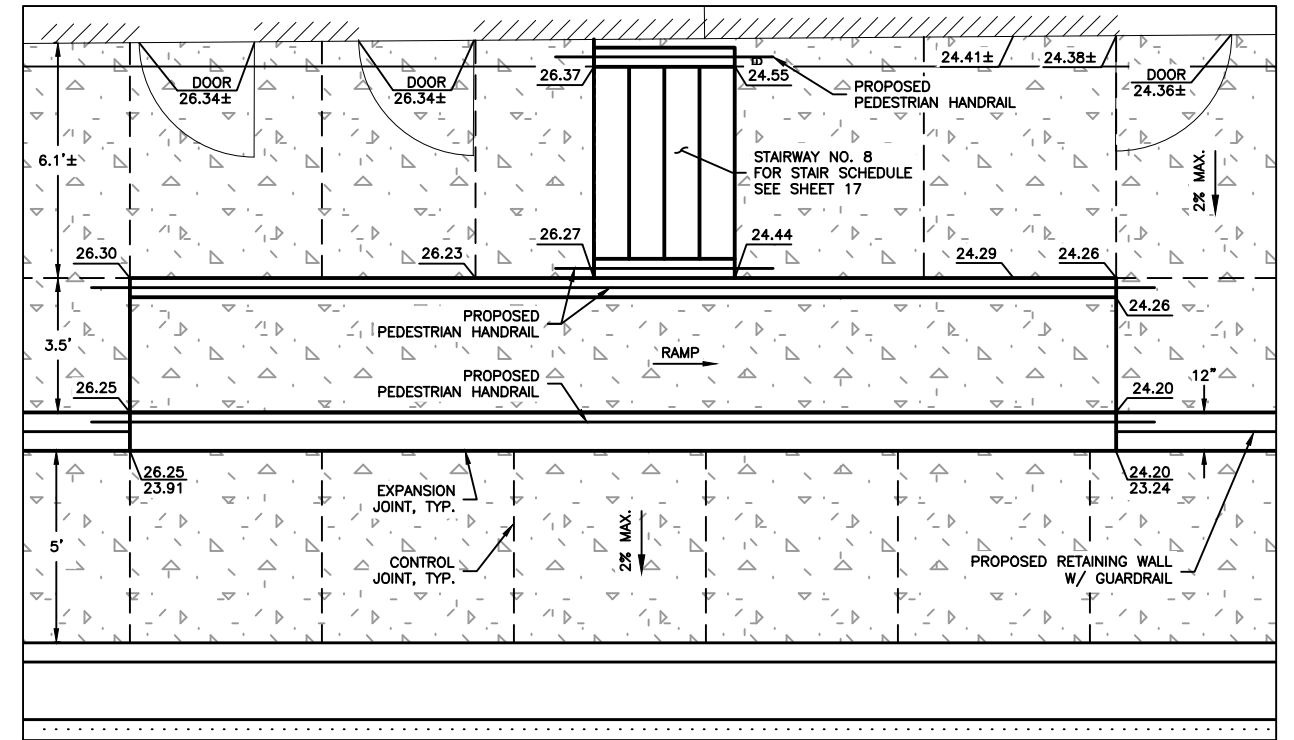
SPEC NUMBER	ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY
0132	6001	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	20
0216	6001	PROOF ROLLING	HR	3
0351	6006	FLEXIBLE PAVEMENT STRUCTURE REPAIR (10")	SY	60
0420	6132	CONC (STEPS)	CY	10
0423	6008	RETAINING WALL (CAST-IN-PLACE)	SF	450
0450	6047	RAIL (HANDRAIL) (TY A)	LF	130
0450	6084	RAIL (HANDRAIL)(DECORATIVE)	LF	90
0529	6008	CONC CURB & GUTTER (TY II)	LF	160
0531	6001	CONC SIDEWALKS (4")	SY	130
0531	6051	CONCRETE RAMP WITH WALL	CY	10

**LEGEND**

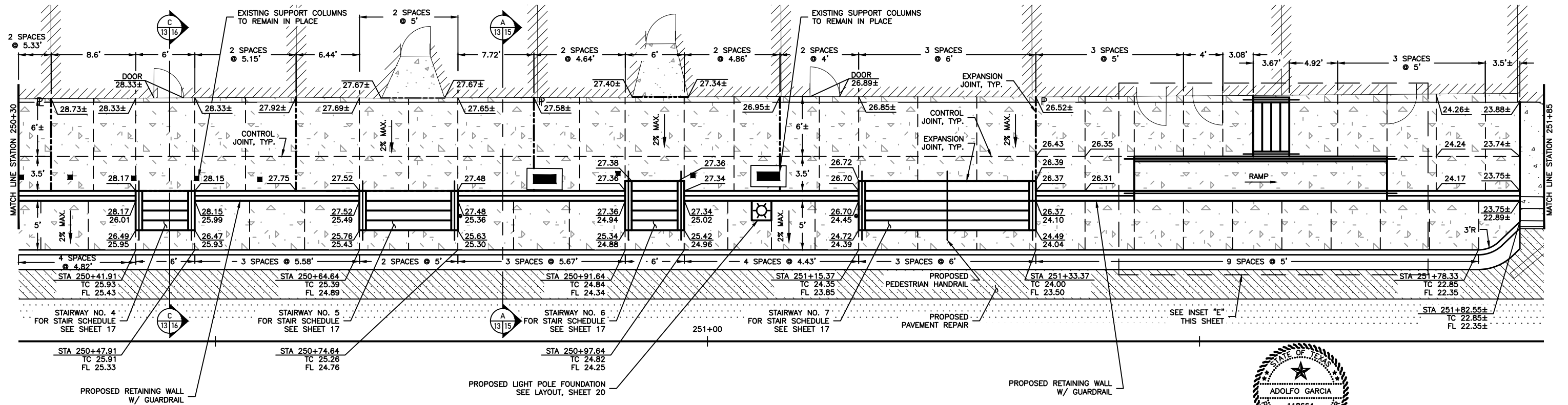
- EXPANSION JOINT
- SAW/CONSTRUCTION JOINT

**NOTES:**

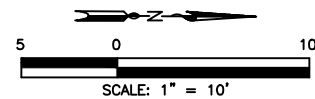
1. THE 5' SECTION OF SIDEWALK ADJACENT TO THE BUILDING SHALL HAVE A CROSS GRADE THAT IS FROM 0.5% TO 2%.
2. PLACE SAW JOINTS @ 5' INTERVALS UNLESS OTHERWISE SHOWN.
3. PLACE EXPANSION JOINTS @ 50' INTERVALS UNLESS OTHERWISE SHOWN.
4. DURING CONCRETE POURS TRUCKS TO STAY WITHIN CONSTRUCTION ZONE.
5. THERE ARE TO BE NO LANE CLOSURES.



INSET "E"  
SCALE: 1"=5'



MAIN STREET / F.M. 2473



**PROPOSED SIDEWALK LAYOUT**  
SCALE: 1" = 10'



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FIRM REGISTRATION NO. 4174  
4537 CANYON DRIVE - AMARILLO, TEXAS 79110 - 806.353.7233

REVISIONS	DATE

CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	13	



**QUANTITY SUMMARY:**

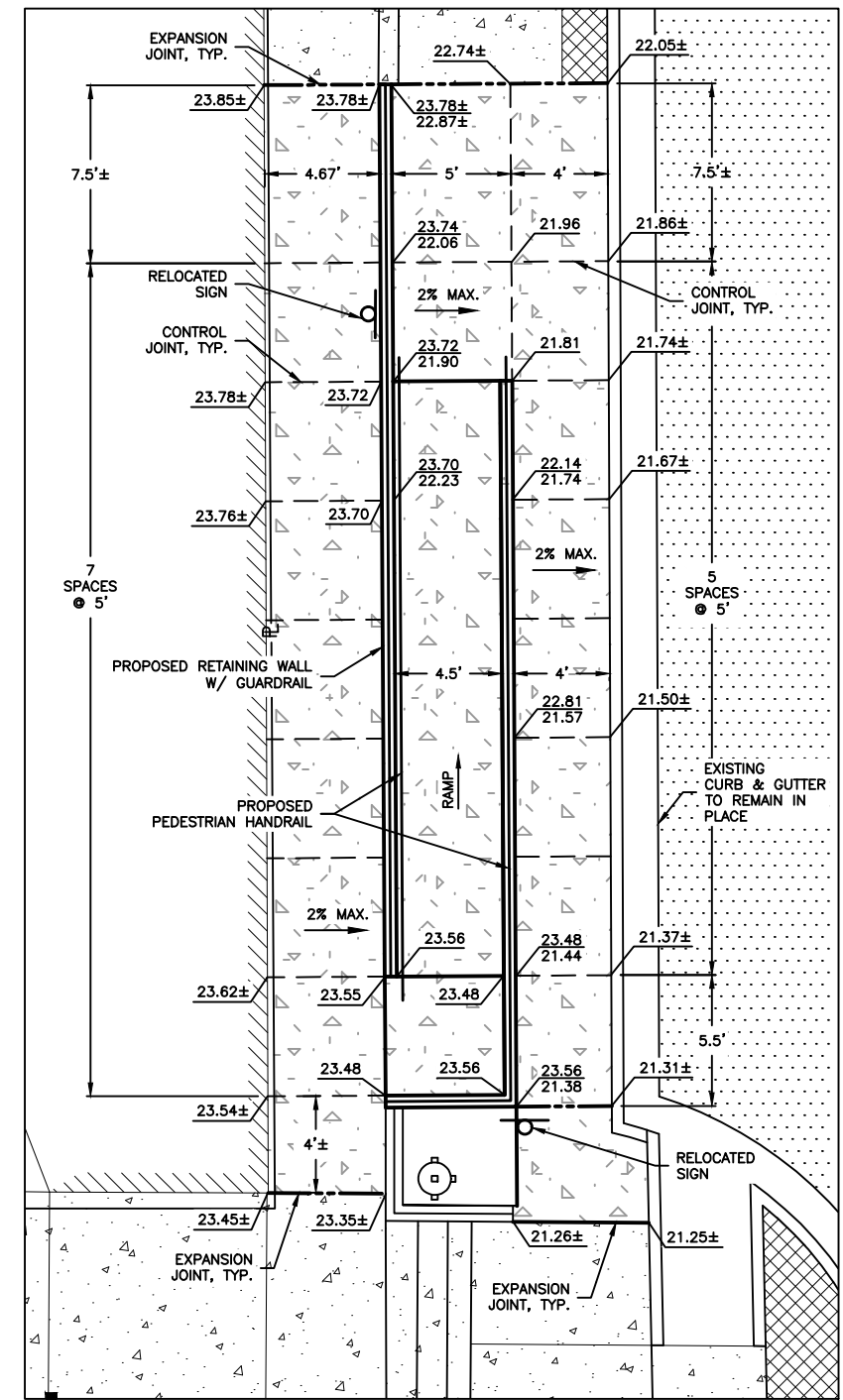
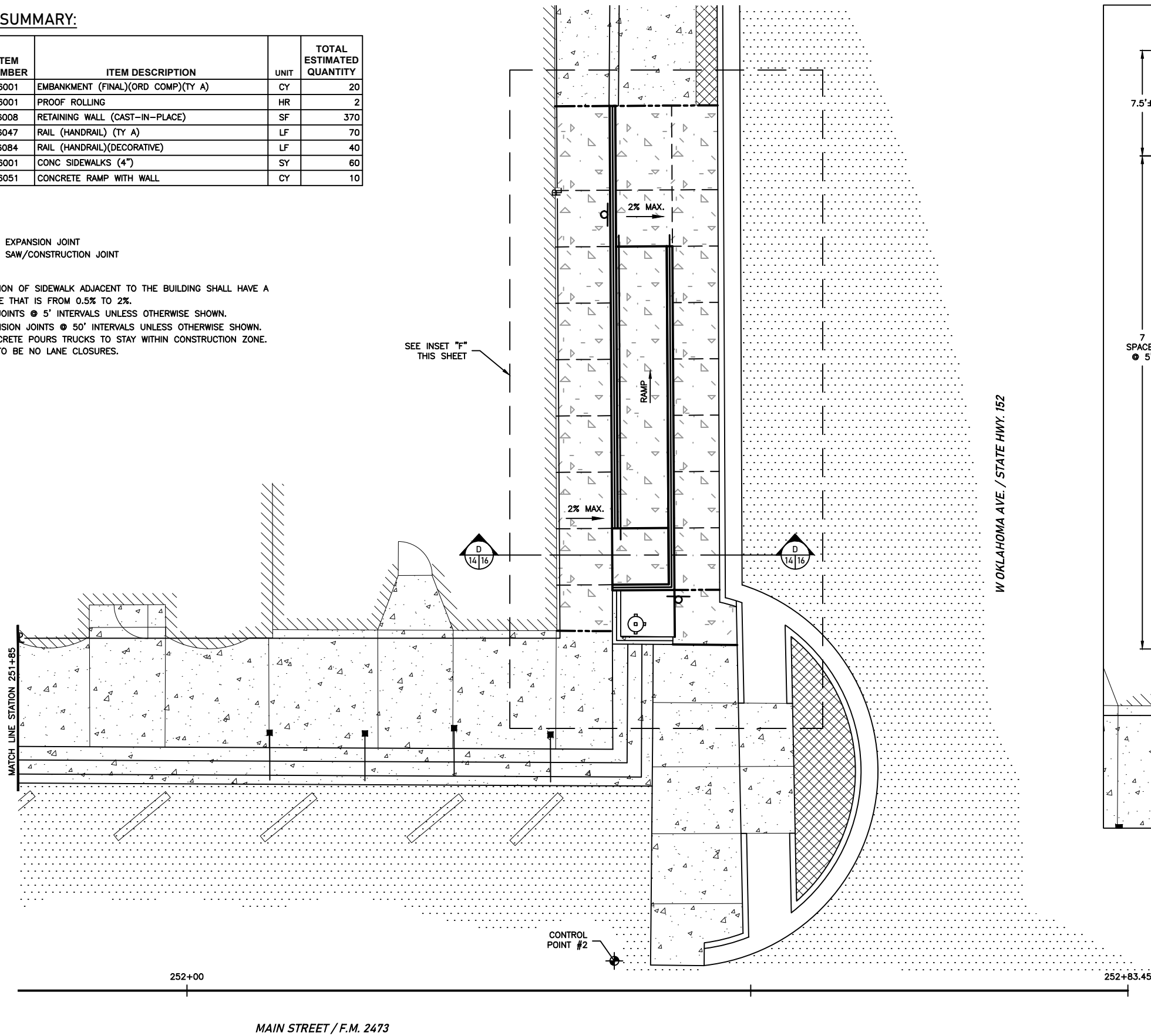
SPEC NUMBER	ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY
0132	6001	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	20
0216	6001	PROOF ROLLING	HR	2
0423	6008	RETAINING WALL (CAST-IN-PLACE)	SF	370
0450	6047	RAIL (HANDRAIL) (TY A)	LF	70
0450	6084	RAIL (HANDRAIL)(DECORATIVE)	LF	40
0531	6001	CONC SIDEWALKS (4")	SY	60
0531	6051	CONCRETE RAMP WITH WALL	CY	10

**LEGEND**

- EXPANSION JOINT
- SAW/CONSTRUCTION JOINT

**NOTES:**

1. THE 5' SECTION OF SIDEWALK ADJACENT TO THE BUILDING SHALL HAVE A CROSS GRADE THAT IS FROM 0.5% TO 2%.
2. PLACE SAW JOINTS @ 5' INTERVALS UNLESS OTHERWISE SHOWN.
3. PLACE EXPANSION JOINTS @ 50' INTERVALS UNLESS OTHERWISE SHOWN.
4. DURING CONCRETE POURS TRUCKS TO STAY WITHIN CONSTRUCTION ZONE.
5. THERE ARE TO BE NO LANE CLOSURES.

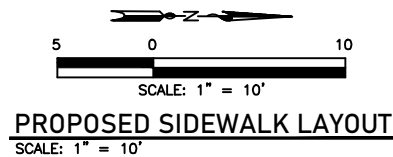
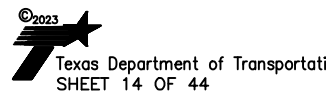


INSET "F"  
SCALE: 1"=8'



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F-4174

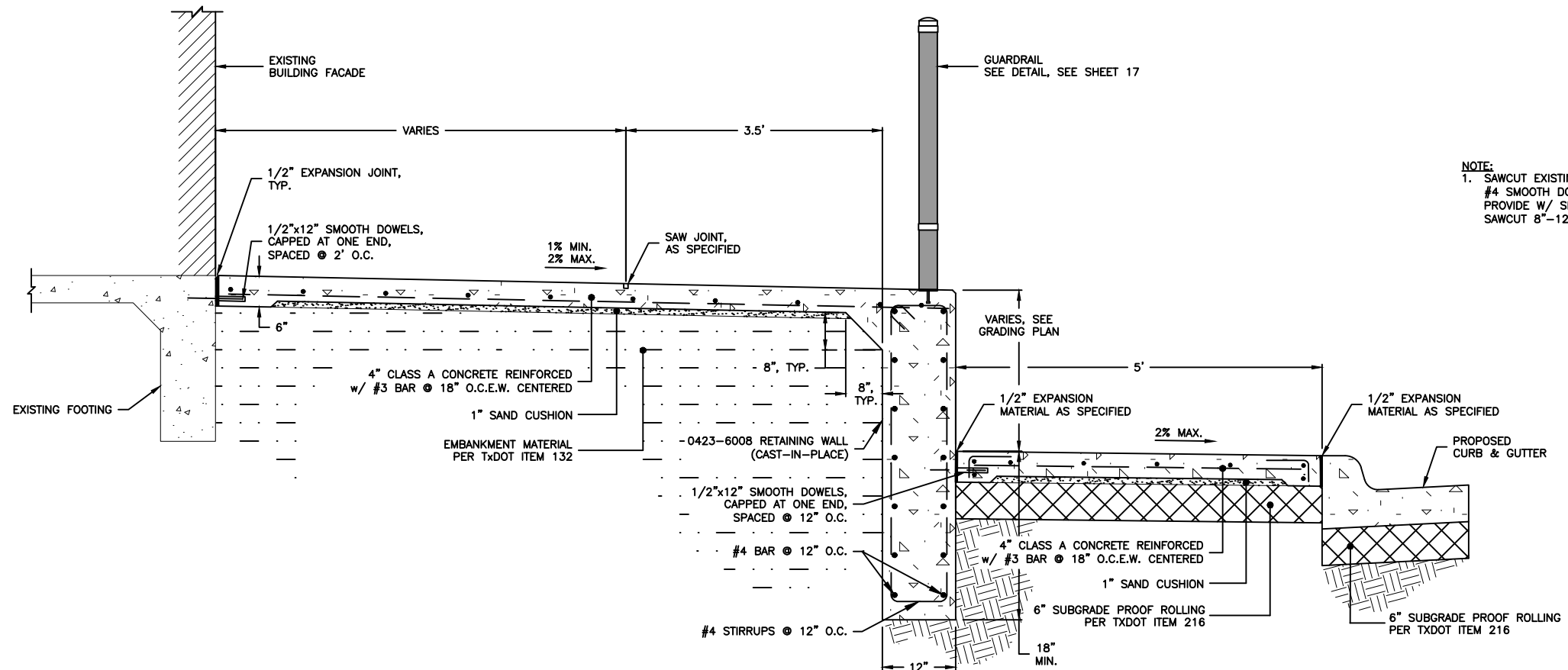
MAIN ST.  
PROPOSED SIDEWALK  
STA 251+85 TO  
END OF PROJECT



REVISIONS	DATE

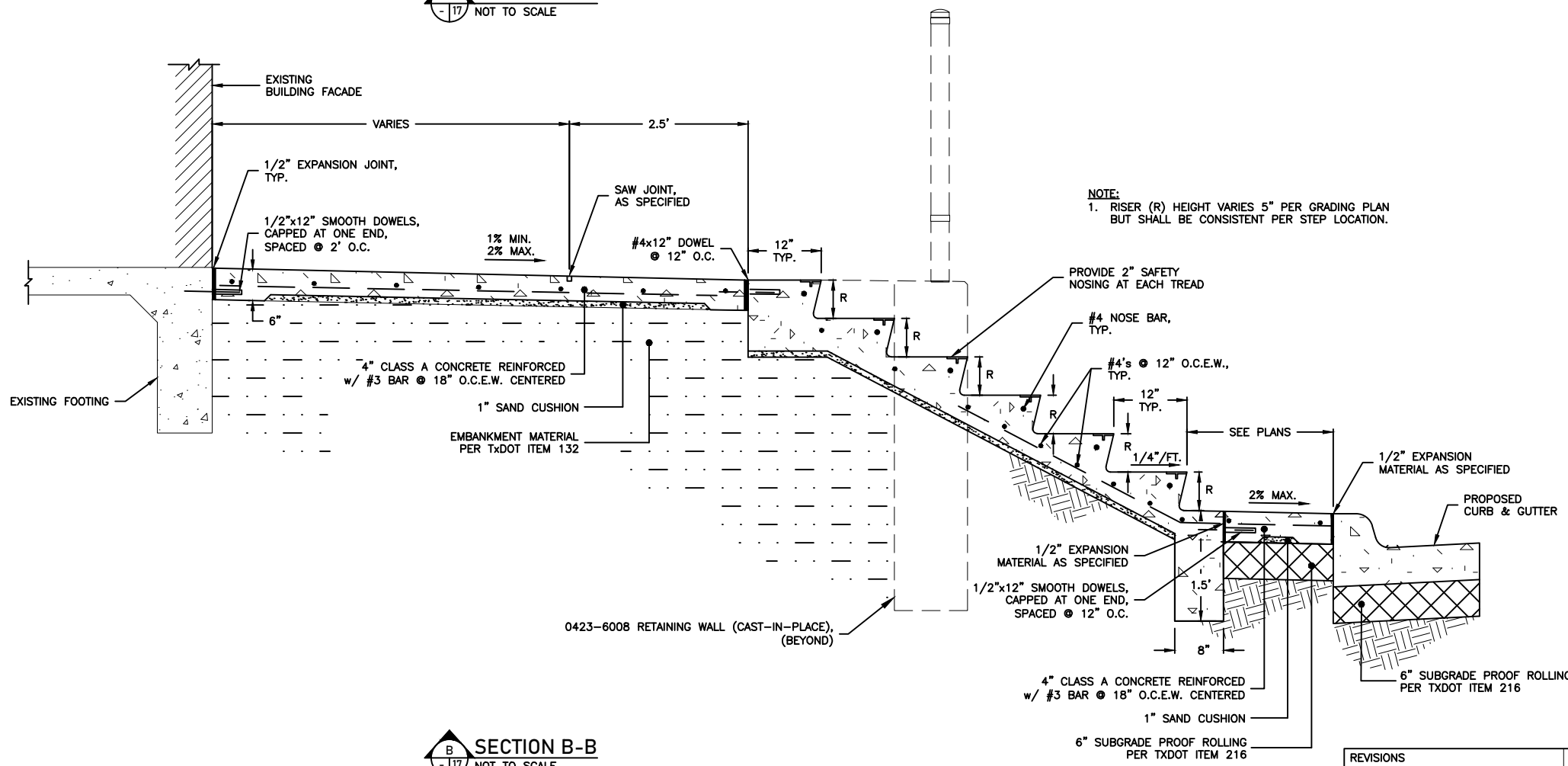
**HI-PLAINS CIVIL ENGINEERS**  
FIRM REGISTRATION NO. 4174  
4537 CANYON DRIVE - AMARILLO, TEXAS 79110 - 806.353.7233

CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	14	



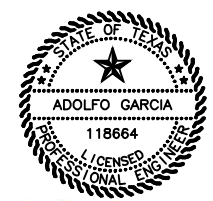
NOTE:  
 1. SAWCUT EXISTING CONCRETE AS SHOWN. DRILL & PLACE #4 SMOOTH DOWELS INTO EXISTING CONCRETE @ 2' O.C. PROVIDE W/ SLEEVES INTO NEW CONCRETE PAVING. SAWCUT 8"-12" FROM FACE OF HISTORICAL BUILDINGS.

SECTION A-A  
 NOT TO SCALE



NOTE:  
 1. RISER (R) HEIGHT VARIES 5" PER GRADING PLAN BUT SHALL BE CONSISTENT PER STEP LOCATION.

SECTION B-B  
 NOT TO SCALE



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 5/24/24  
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 F-4174

SIDEWALK CROSS SECTIONS I

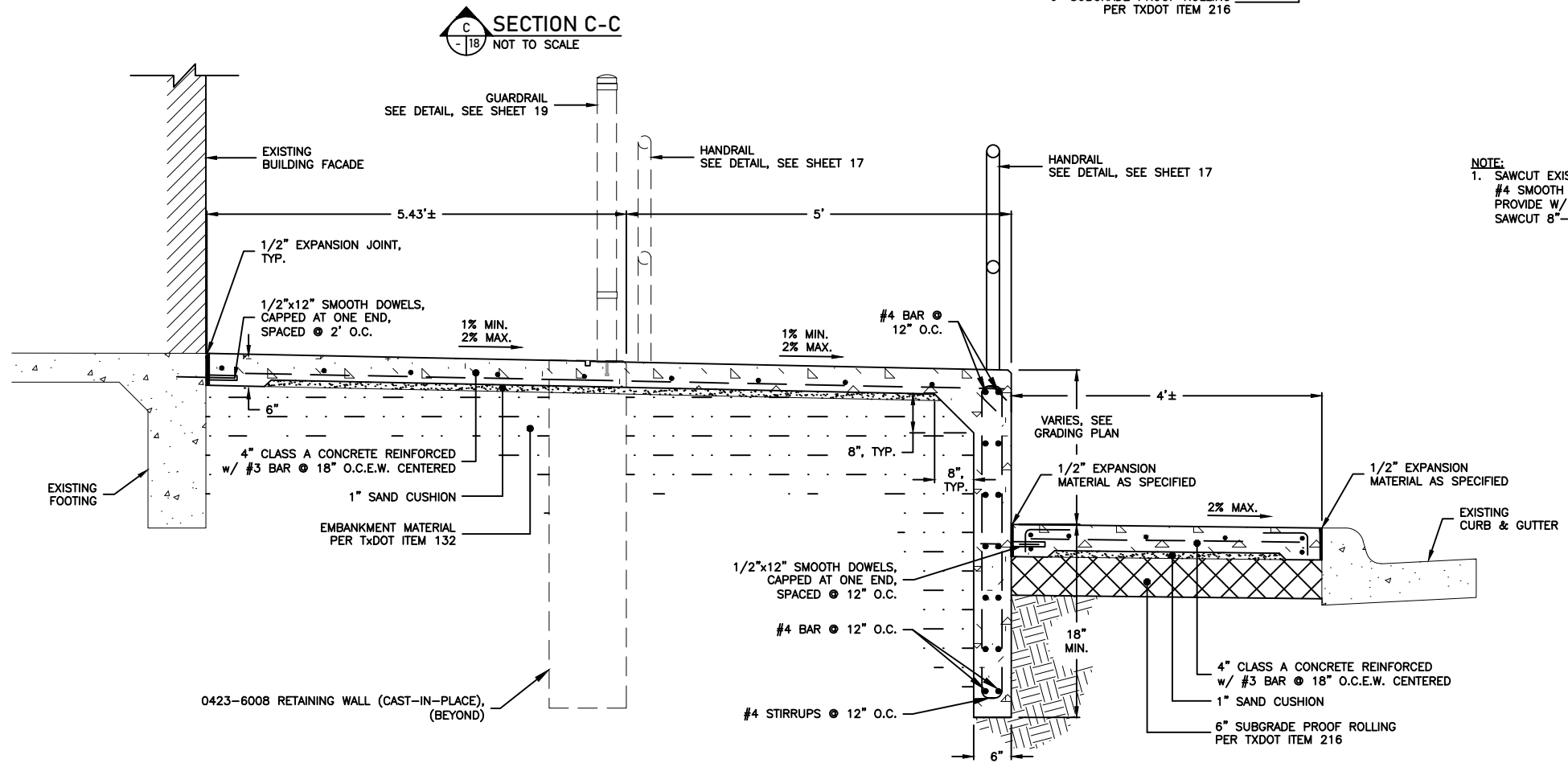
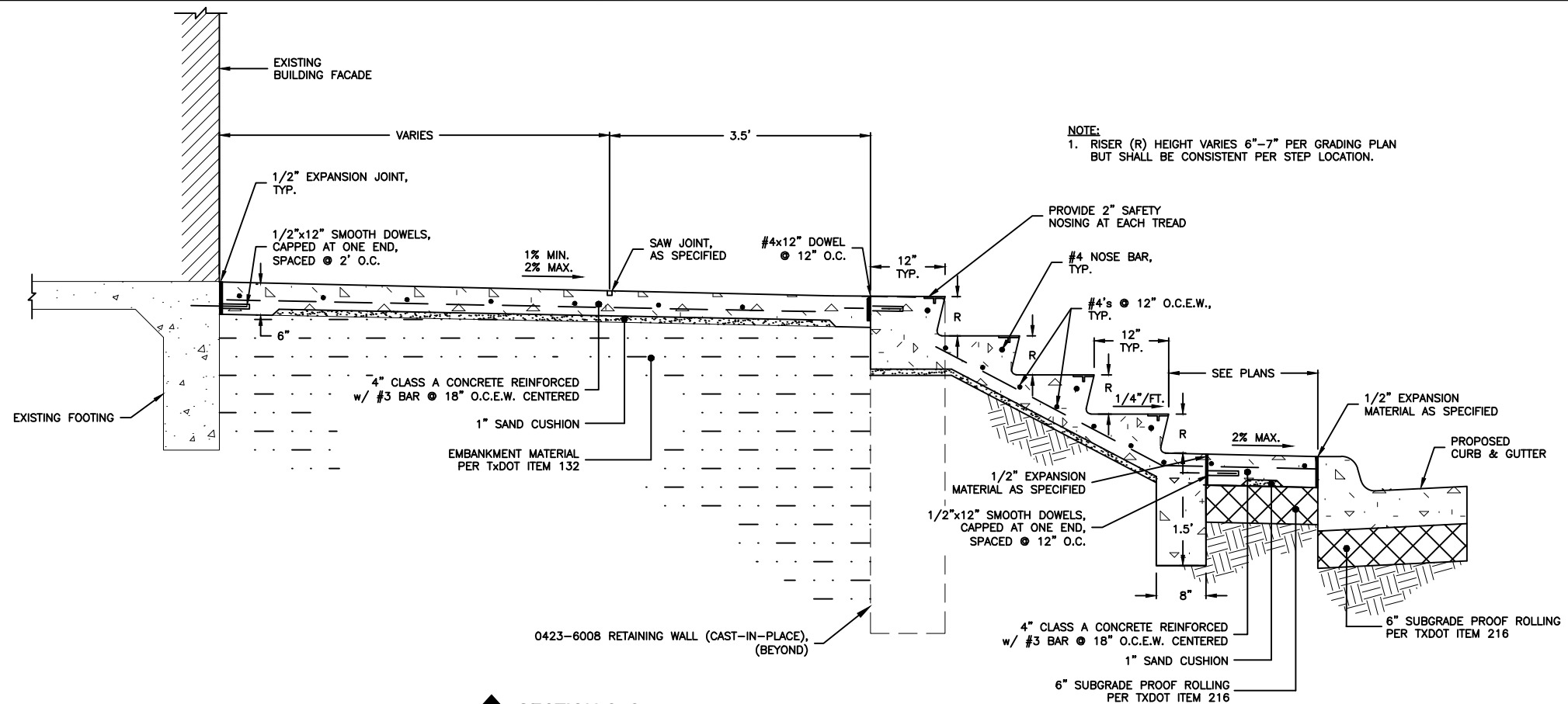
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REVISIONS	DATE

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 FIRM REGISTRATION NO. 4174  
 4537 CANYON DRIVE - AMARILLO, TEXAS 79110 - 806.353.7233

CON	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
25		COUNTY	SHEET NO.
		WHEELER	15

HI-PLAINS CIVIL ENGINEERS, LTD. 2024  
 SUBMISSION: FINAL



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HI-PLAINS CIVIL ENGINEERS  
F-4174

SIDEWALK CROSS SECTIONS II

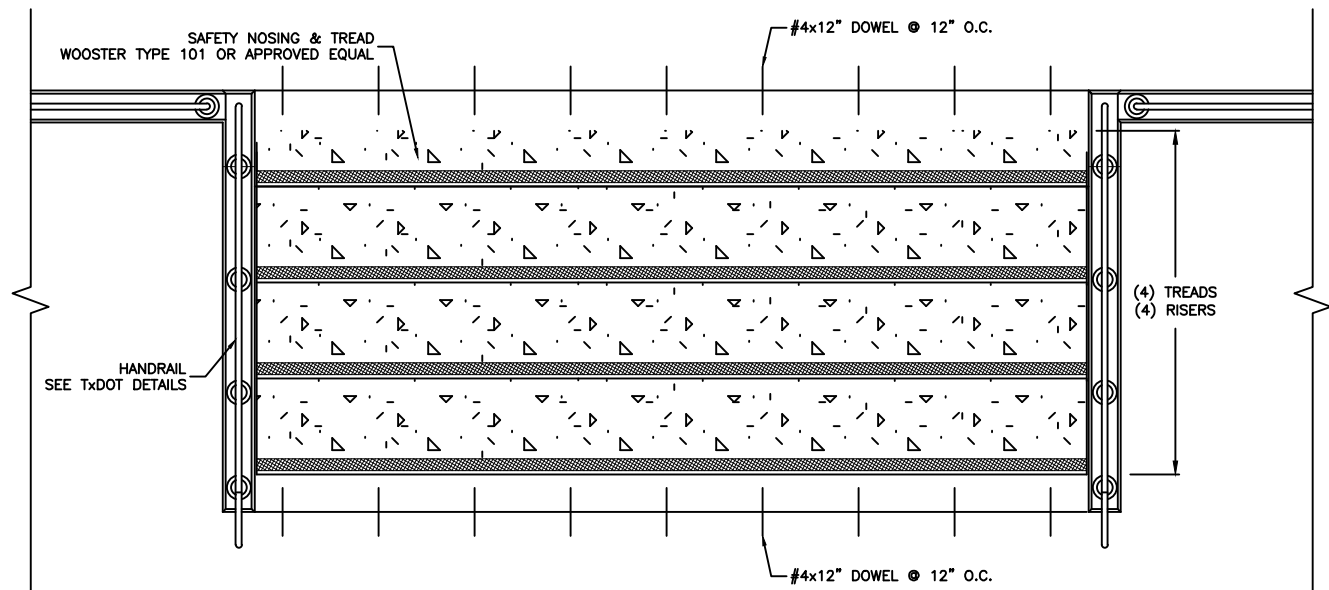
Texas Department of Transportation  
SHEET 16 OF 44

REVISIONS	DATE

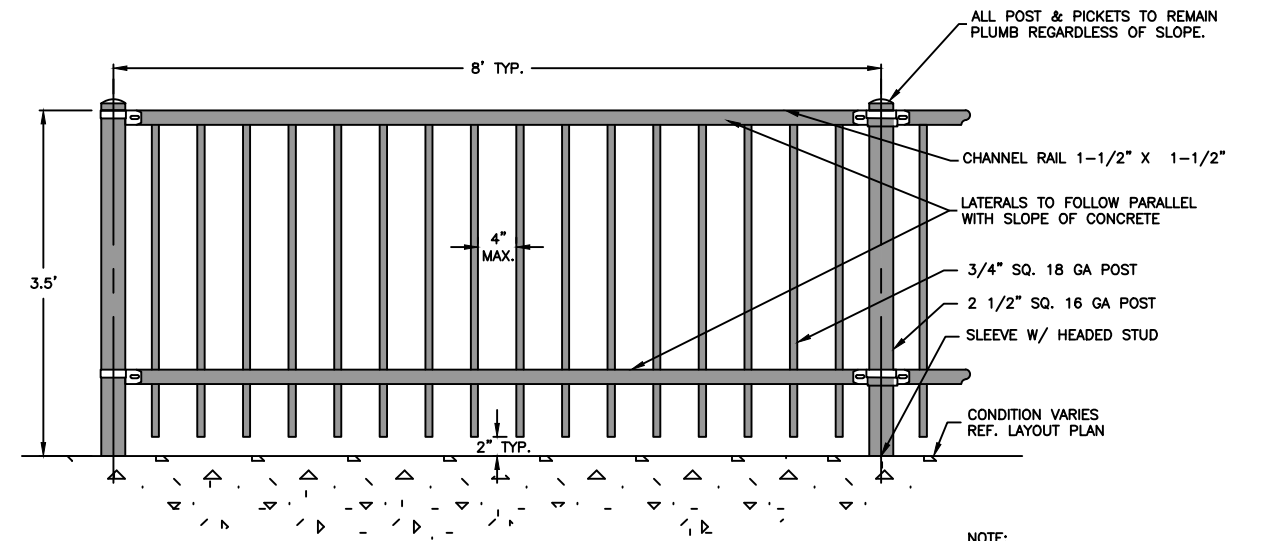
**HI-PLAINS CIVIL ENGINEERS**  
FIRM REGISTRATION NO. 4174  
4537 CANYON DRIVE - AMARILLO, TEXAS 79110 - 806.353.7233

CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	16	

STAIR SCHEDULE									
STAIRWAY	1A	1B	2	3	4	5	6	7	8
LOCATION	STA 249+47.64	STA 249+56.97	STA 249+82.14	STA 250+16.64	STA 250+41.91	STA 250+64.64	STA 250+91.64	STA 251+15.37	STA 251+57
T" = TREAD	12"	12"	12"	12"	12"	12"	12"	12"	11"
R" = RISE	0.54'	0.43'	0.44'	0.54'	0.54'	0.50'	0.46'	0.44'	0.44'
NUMBER OF RISERS	4	5	6	5	4	4	5	5	4
NUMBER OF TREADS	4	5	6	5	4	4	5	5	4
TOP OF LANDING (SOUTH SIDE)	2529.24	2529.06	2529.22	2529.05	2528.17	2527.52	2527.38	2526.72	2526.37
STAIR TOE ELEVATION (SOUTH SIDE)	2527.00	2526.82	2526.49	2526.26	2525.95	2525.43	2524.88	2524.39	2524.55

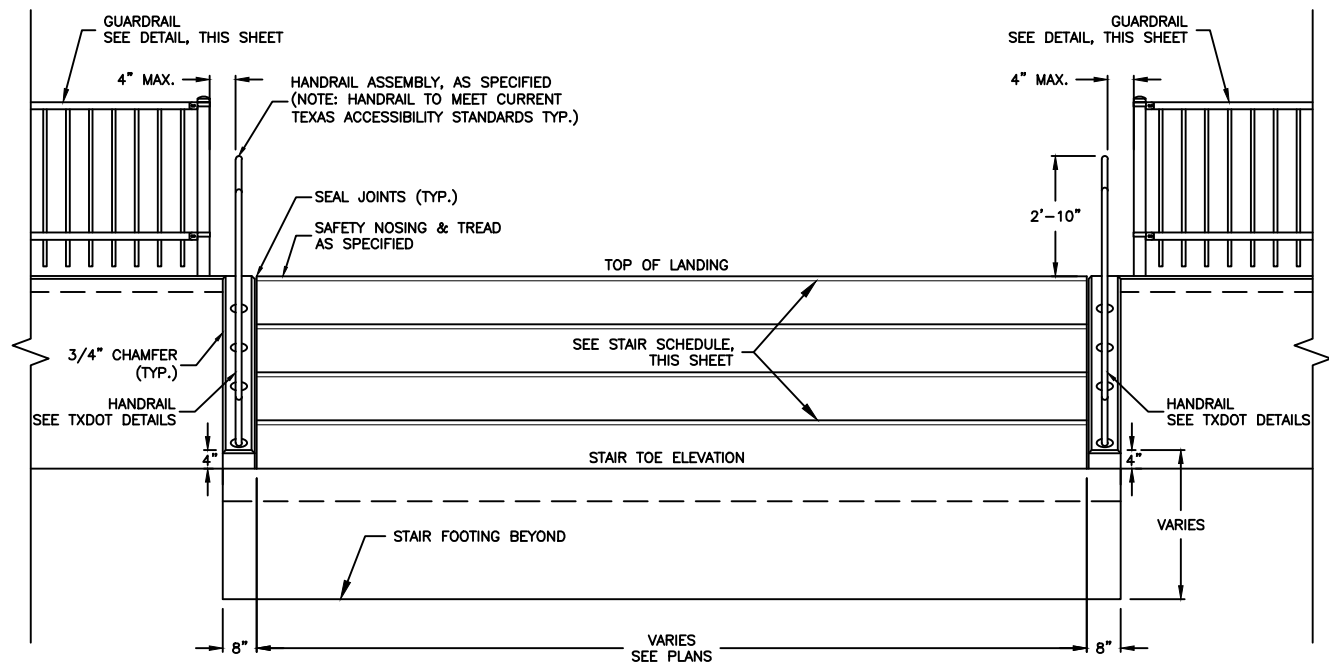


**STAIRWAY PLAN**  
NOT TO SCALE



NOTE:  
AMERISTAR 3.5' MONTAGE PLUS  
MAJESTIC 2-RAIL FENCE  
COLOR: BLACK  
INSTALL PER MANUFACTURER  
RECOMMENDATIONS

**TYPICAL GUARDRAIL DETAIL**  
NOT TO SCALE



**STAIRWAY ELEVATION**  
NOT TO SCALE

**STAIR GENERAL NOTES**

1. ALL HANDRAILS ON STAIRS TO BE GALVANIZED STEEL.
2. RAILING POST LOCATIONS SHALL BE FIELD MEASURED AND RAILING FABRICATED TO FIT.
3. ALL HANDRAILS ON STAIRS SHALL BE SIMILAR TO DETAIL SHOWN.
4. HANDRAILS TO BE DESIGNED, FABRICATED AND INSTALLED IN ACCORDANCE WITH CURRENT TEXAS ACCESSIBILITY STANDARDS.
5. HANDRAIL SHALL BE THE PRODUCT OF A COMPANY NORMALLY ENGAGED IN THE MANUFACTURE OF PIPE RAILING.
6. HANDRAILS SHALL BE DESIGNED TO WITHSTAND A 200 LBS. CONCENTRATED LOAD APPLIED IN ANY DIRECTION TO THE TOP OF RAIL.
7. POST SPACING SHALL NOT EXCEED MAXIMUM SPACING REQUIRED BY LOCAL OR STATE CODES OR OSHA REQUIREMENTS OF 8'-0" CENTERS WHICHEVER IS LEAST. GUARDRAIL POSTS AT STAIRS SHALL BE SPACED AS REQUIRED TO PRODUCE UNIFORM SPACING BETWEEN POSTS.



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HI-PLAINS CIVIL ENGINEERS  
F-4174

STAIR DETAILS

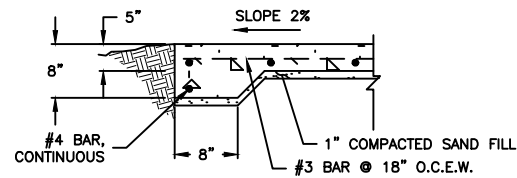


Texas Department of Transportation  
SHEET 17 OF 44

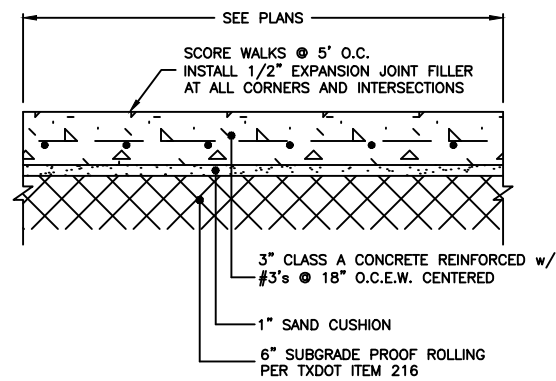
REVISIONS	DATE

**HI-PLAINS CIVIL ENGINEERS**  
FIRM REGISTRATION NO. 4174  
4537 CANYON DRIVE - AMARILLO, TEXAS 79110 - 806.353.7233

CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	17	

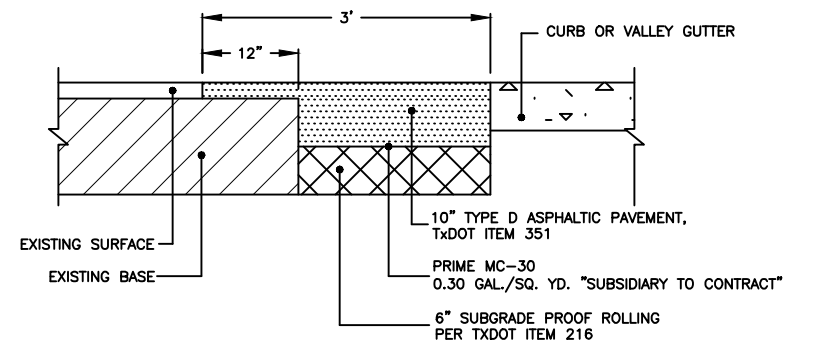


**TYPICAL SIDEWALK FOOTING DETAIL**  
NOT TO SCALE

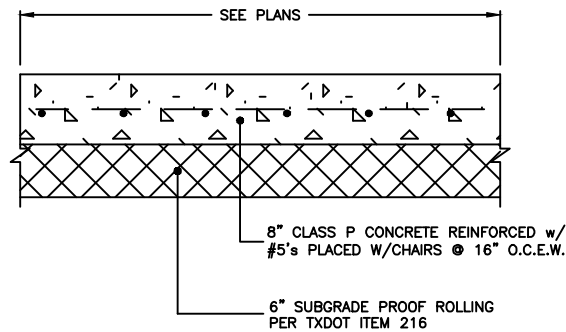


- NOTES:**
- WHERE PROPOSED SIDEWALK JOINS EXISTING, JOINT LOCATION TO MATCH EXISTING.
  - ALL OTHER JOINT LOCATIONS TO BE AS SHOWN ON THE PLANS OR IF NOT SHOWN AS SPECIFIED.

**TYPICAL CONCRETE SIDEWALK PAVEMENT SECTION**  
NOT TO SCALE



**PAVEMENT REPAIR DETAIL**  
NOT TO SCALE

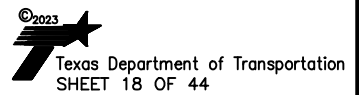


**TYPICAL CONCRETE VEHICULAR PAVEMENT SECTION**  
NOT TO SCALE



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HI-PLAINS CIVIL ENGINEERS  
F-4174

CONCRETE DETAILS



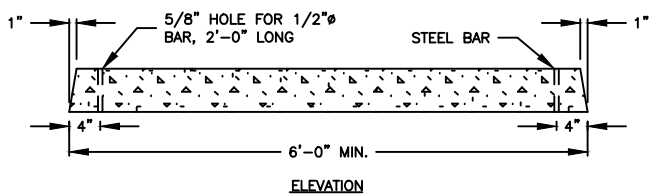
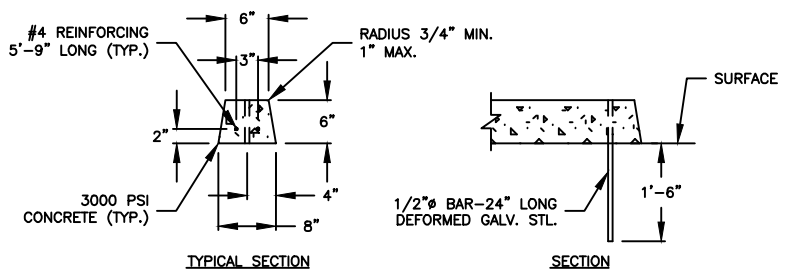
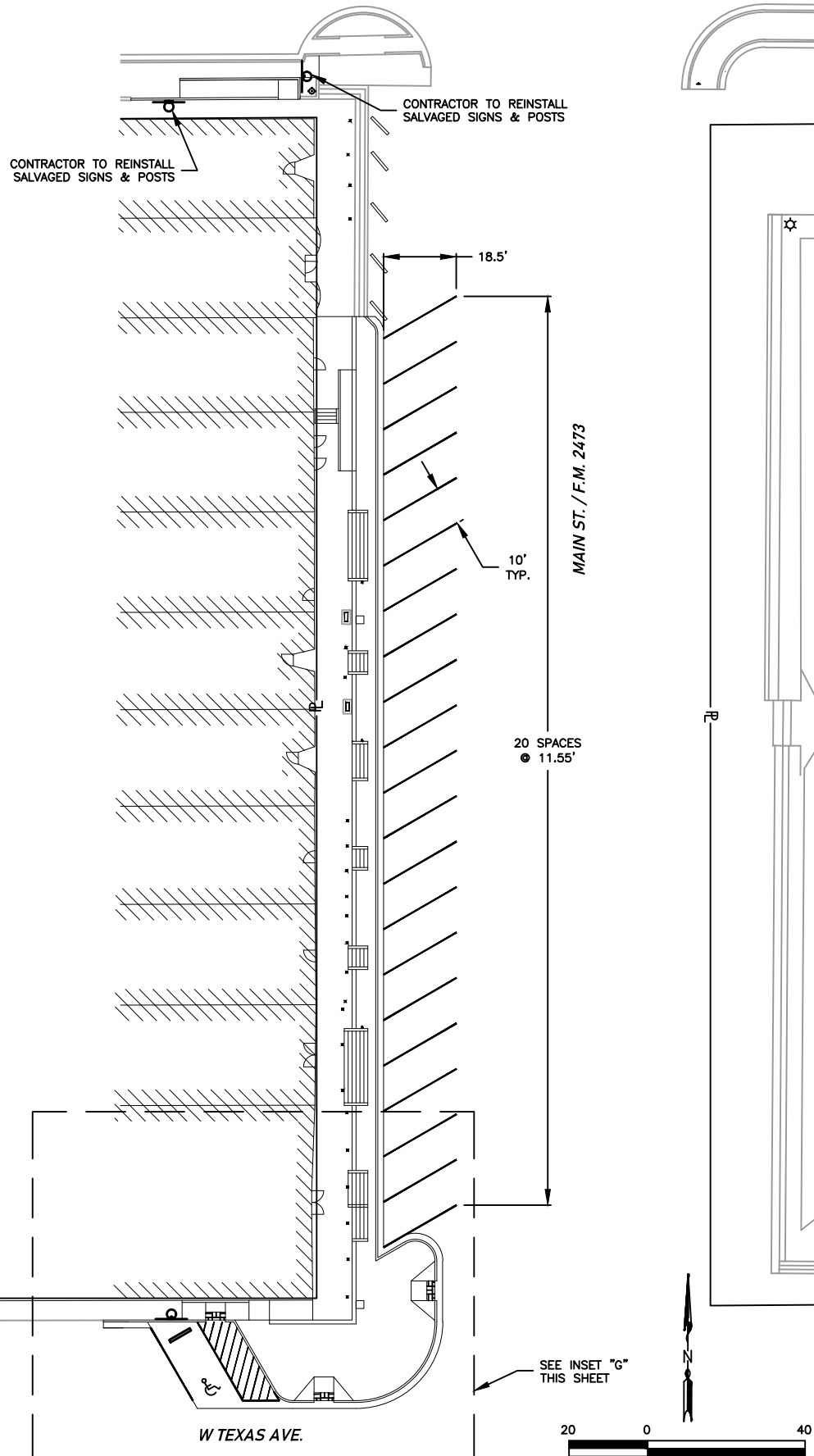
REVISIONS	DATE

**HI-PLAINS CIVIL ENGINEERS**  
FIRM REGISTRATION NO. 4174  
4537 CANYON DRIVE - AMARILLO, TEXAS 79110 - 806.353.7233

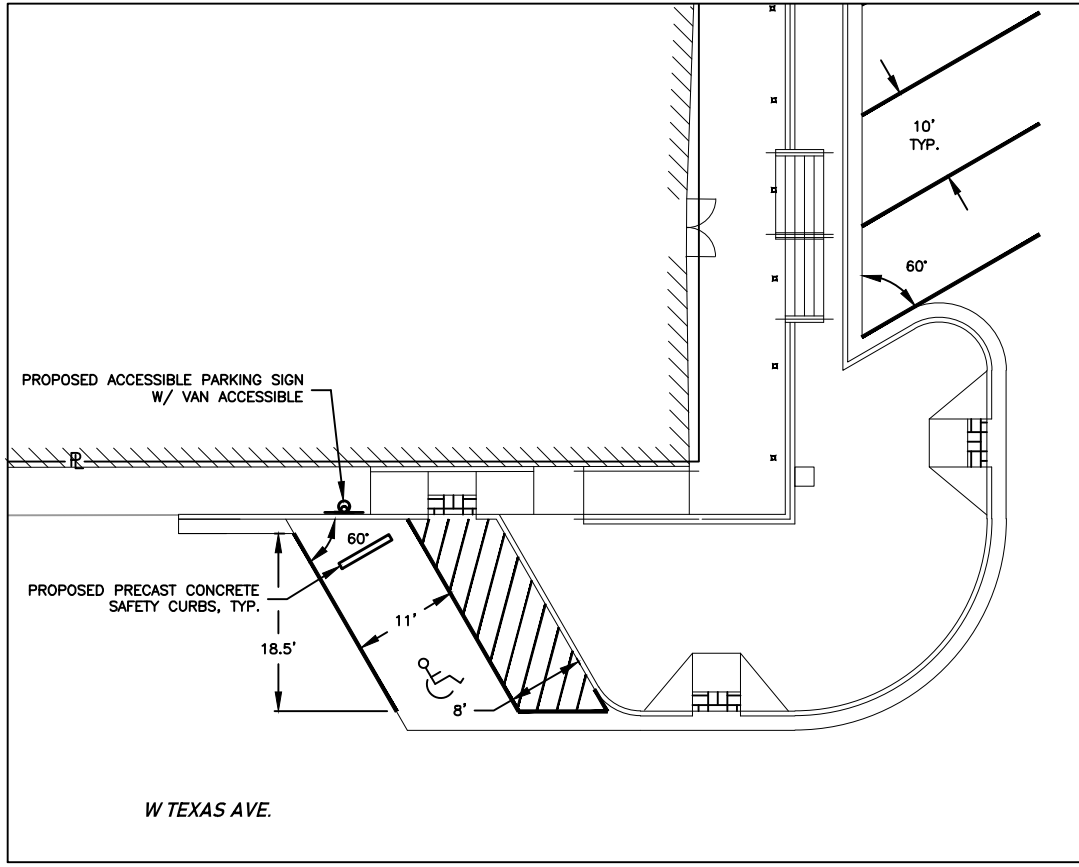
CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	18	



W OKLAHOMA AVE. / STATE HWY. 152



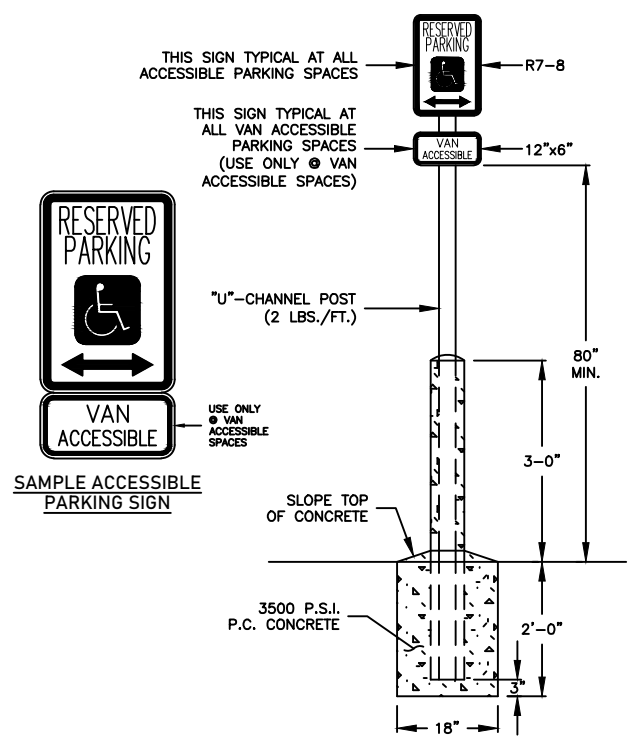
**PRE CAST CONCRETE SAFETY CURB**  
NOT TO SCALE (WHEEL STOP)



INSET "G"  
SCALE: 1" = 20'

**QUANTITY SUMMARY:**

SPEC NUMBER	ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY
0666	6323	RE PM W/RET REQ TY II (W) 4"	LF	210
1002	6027	LANDSCAPE AMENITY (ADA PARKIGN SIGN)	EA	1
5008	6001	WHEEL STOPS	EA	1



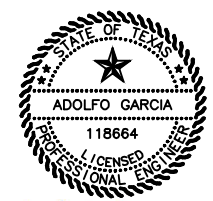
**ACCESSIBLE PARKING SIGN DETAIL**  
NOT TO SCALE

**LEGEND**

○ ACCESSIBLE PARKING SIGN

**STRIPING NOTES:**

- MARKING FOR STREETS SHALL BE ACCORDING TO REQUIREMENTS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES ON STREETS AND HIGHWAYS.
- CROSSWALK MARKINGS ARE TO BE PAINTED REFLECTIVE WHITE.
- CROSSWALK MARKINGS ARE TO BE 4" WHITE STRIPES.
- SPACING OF CROSSWALK MARKINGS ARE TO COMPLY WITH APPLICABLE ADA STANDARDS.
- PARKING STALL MARKINGS ARE TO BE 4" WHITE STRIPES.
- FURNISH AND INSTALL POLE MOUNTED ACCESSIBLE PARKING SIGNS AT ALL NEW ACCESSIBLE PARKING SPACES. SEE DETAILS.
- ACCESSIBLE PARKING MARKINGS AND SYMBOLS SHALL BE IN COMPLIANCE WITH CURRENT STANDARDS.



*Adolfo Garcia* 5/24/24  
HI-PLAINS CIVIL ENGINEERS  
F-4174

STRIPING PLAN

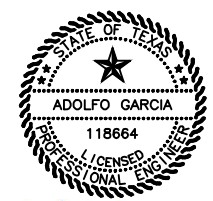
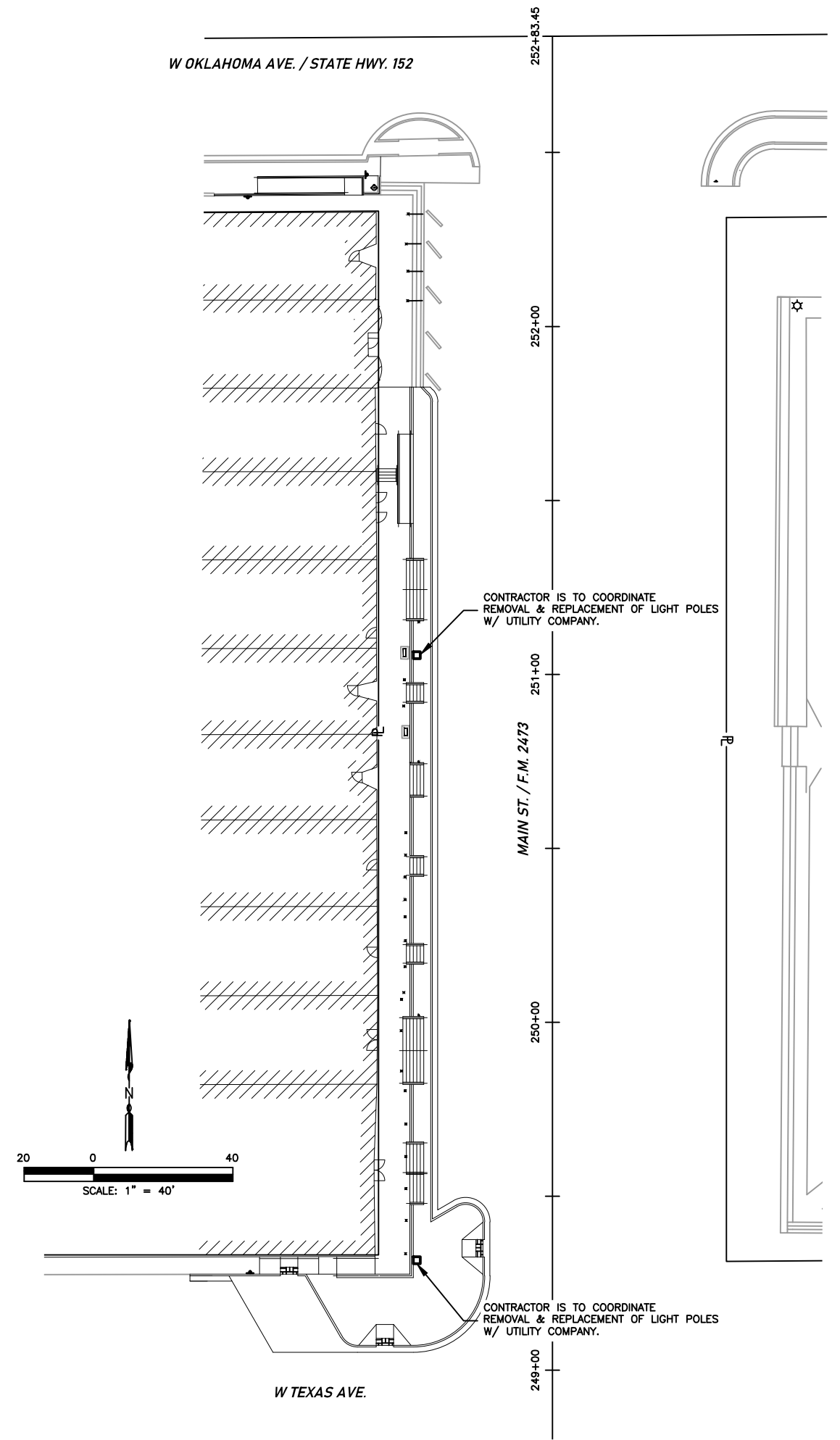
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Texas Department of Transportation			
SHEET 19 OF 44			
CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	19	

REVISIONS	DATE

HI-PLAINS CIVIL ENGINEERS, LTD. 2024  
SUBMISSION: FINAL



*Adolfo Garcia* 5/24/24  
HI-PLAINS CIVIL ENGINEERS  
F-4174

MAIN ST.  
LIGHTING PLAN

Texas Department of Transportation  
SHEET 20 OF 44

REVISIONS	DATE

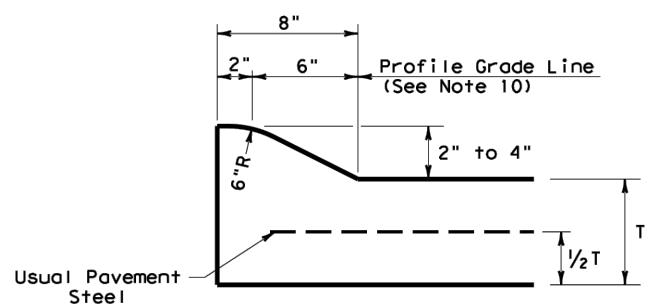
**HI-PLAINS CIVIL ENGINEERS**  
FIRM REGISTRATION NO. 4174  
4537 CANYON DRIVE - AMARILLO, TEXAS 79110 - 806.353.7233

CONT	SECT	JOB	HIGHWAY
2051	01	014	FM 2473
DIST	COUNTY	SHEET NO.	
25	WHEELER	20	

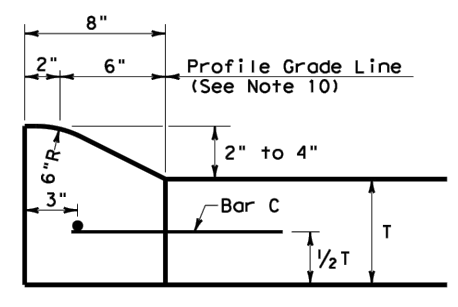
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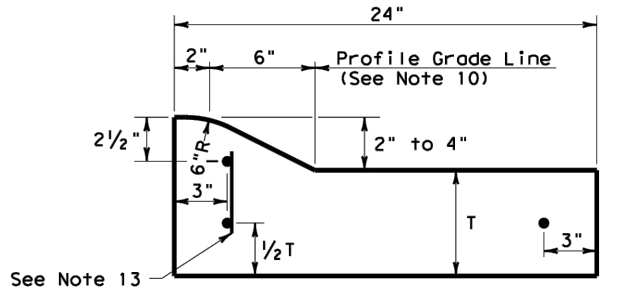
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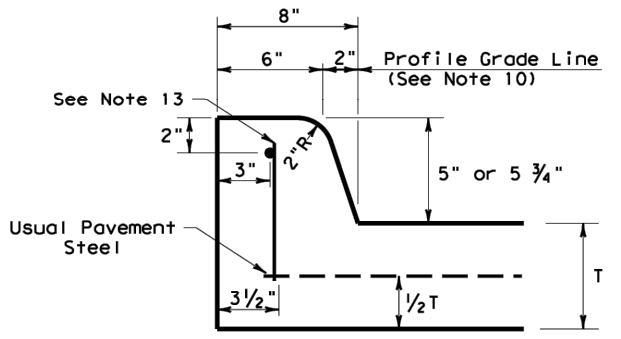
**TYPE I CURB (MONOLITHIC)  
2" - 4" HEIGHT**



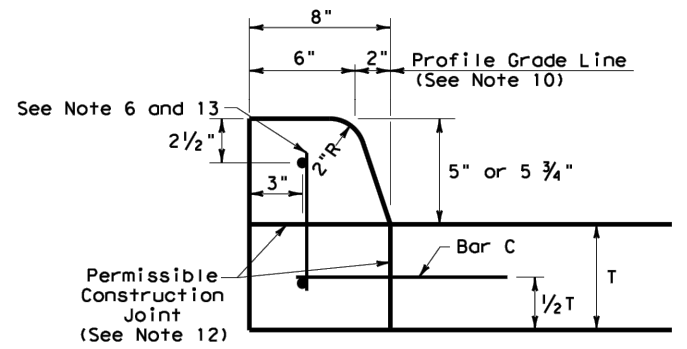
**TYPE I CURB  
2" - 4" HEIGHT**



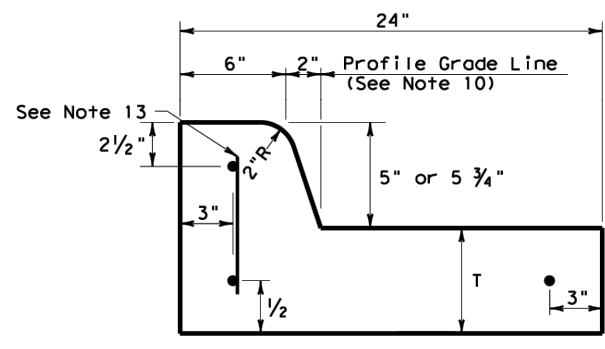
**TYPE I CURB AND GUTTER  
2" - 4" HEIGHT**



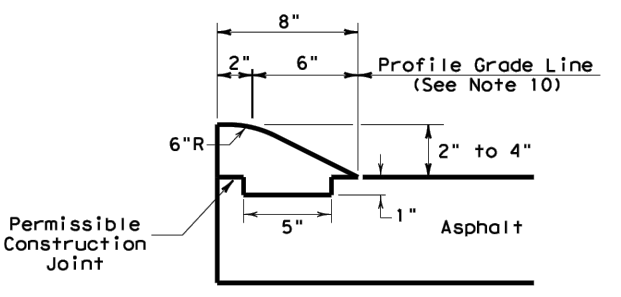
**TYPE II CURB (MONOLITHIC)  
5" - 5 3/4" HEIGHT**



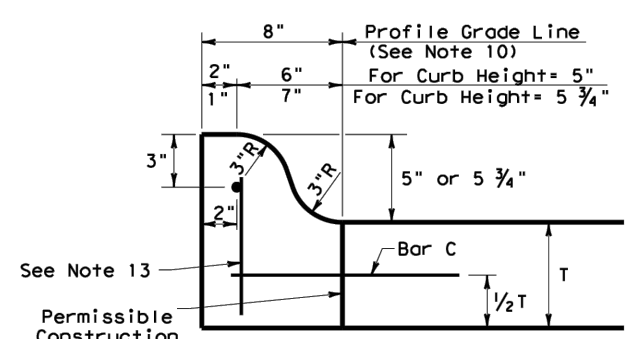
**TYPE II CURB  
5" - 5 3/4" HEIGHT**



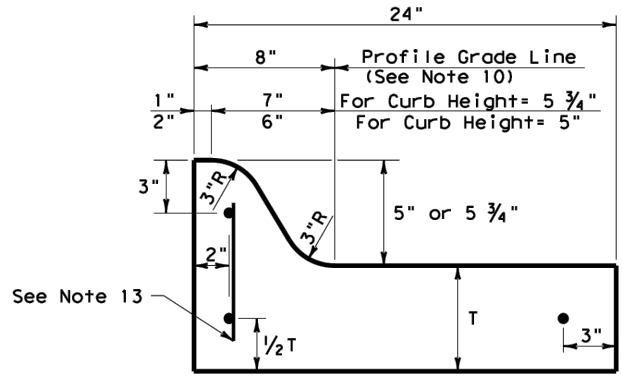
**TYPE II CURB AND GUTTER  
5" - 5 3/4" HEIGHT**



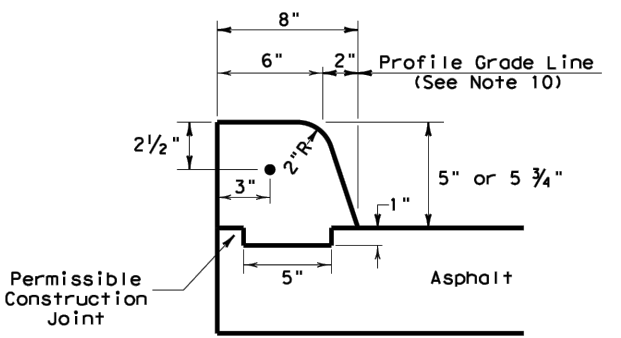
**TYPE III CURB (KEYED)  
2" - 4" HEIGHT**



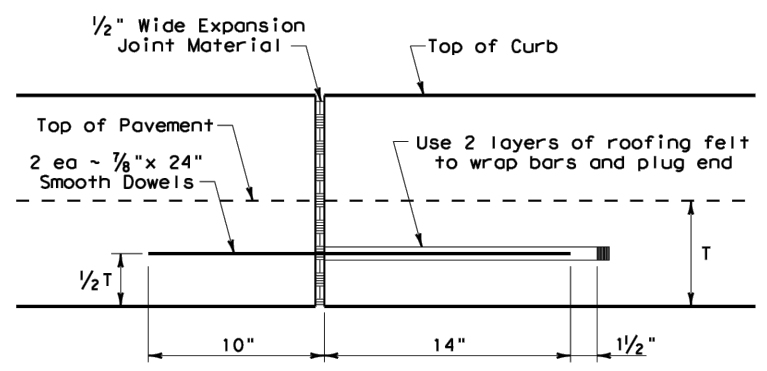
**TYPE IIa CURB  
5" - 5 3/4" HEIGHT**



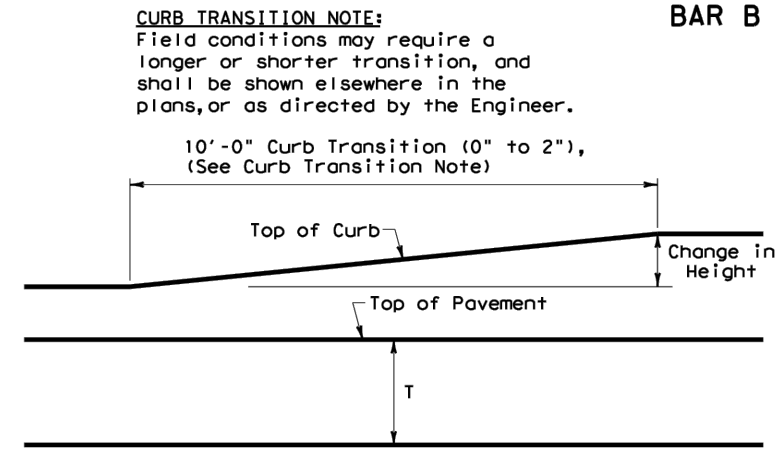
**TYPE IIa CURB AND GUTTER  
5" - 5 3/4" HEIGHT**



**TYPE IV CURB (KEYED)  
5" - 5 3/4" HEIGHT**



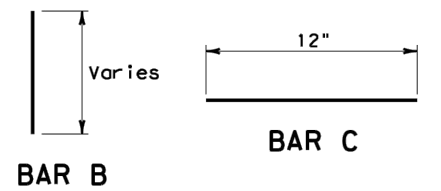
**EXPANSION JOINT DETAIL**



**CURB TRANSITION**  
Note: To be paid for as Highest Curb

**GENERAL NOTES**

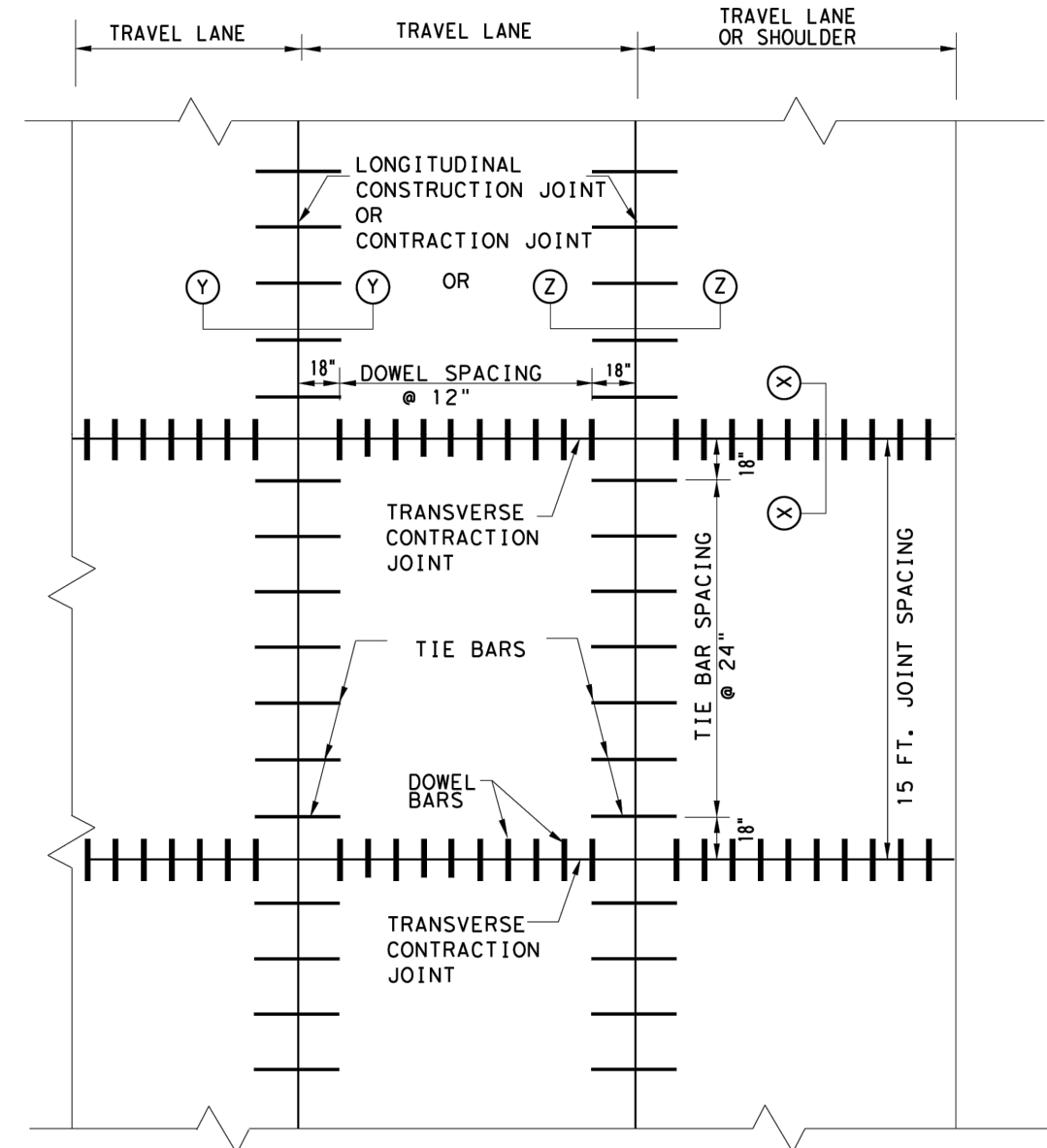
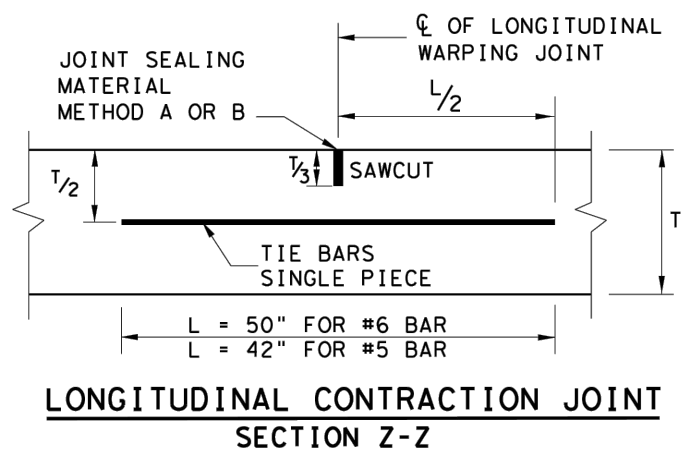
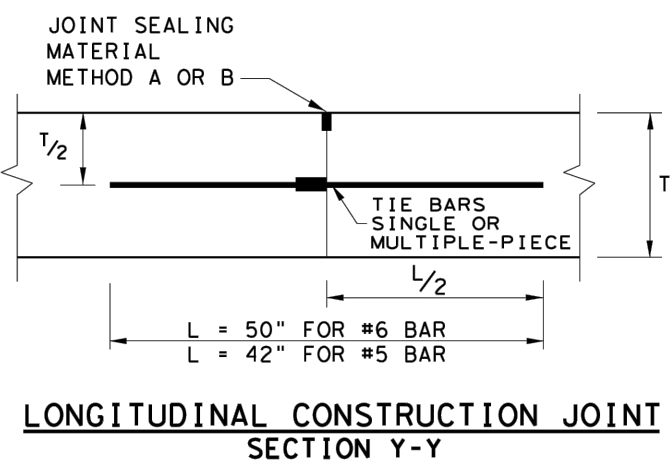
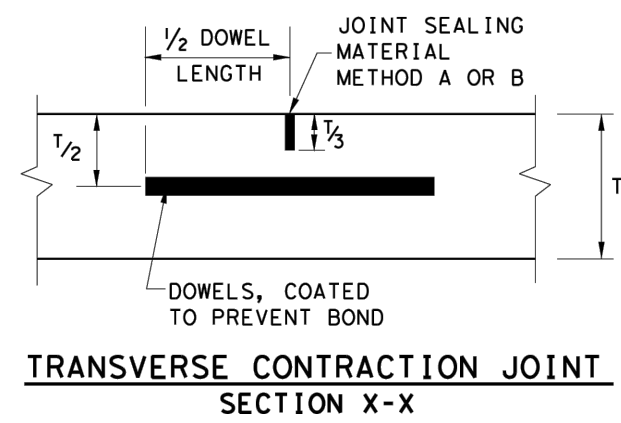
- All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
- Concrete shall be Class A.
- When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is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



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

		<b>Design Division Standard</b>	
<h2>CONCRETE CURB AND GUTTER</h2>			
<h3>CCCG-22</h3>			
FILE: cccg21.dgn	DN: TxDOT	CK: AN	DW: CS
© TxDOT: JUNE 2022	CONT SECT	JOB	HIGHWAY
REVISIONS	2051 01	014	FM 2473
	DIST	COUNTY	SHEET NO.
	25	WHEELER	21

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TYPICAL PAVEMENT LAYOUT  
PLAN VIEW (NOT TO SCALE)

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

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

GENERAL NOTES

1. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS. PAVEMENTS WIDER THAN 100 FT. WITHOUT A FREE LONGITUDINAL JOINT ARE NOT COVERED BY THIS STANDARD.
2. FOR FURTHER INFORMATION REGARDING THE PLACEMENT OF CONCRETE AND LOAD TRANSFER DEVICES REFER TO THE GOVERNING SPECIFICATION FOR "CONCRETE PAVEMENT".
3. THE SPACING BETWEEN TRANSVERSE CONTRACTION JOINTS SHALL BE 15 FT. UNLESS OTHERWISE SHOWN IN THE PLANS.
4. TRANSVERSE CONSTRUCTION JOINTS MAY BE FORMED BY USE OF METAL OR WOOD FORMS EQUAL IN DEPTH TO THE DEPTH OF PAVEMENT, OR BY METHODS APPROVED BY THE ENGINEER.
5. USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL THE FORMED JOINTS.
6. PAVEMENT WIDTHS OF MORE THAN 15 FT. SHALL HAVE A LONGITUDINAL JOINT (SECTION Z-Z OR SECTION Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6 IN. OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON THE PLANS.
7. THE JOINT BETWEEN OUTSIDE LANE AND SHOULDER SHALL BE A LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z) UNLESS OTHERWISE SHOWN IN THE PLANS. THE SAW CUT DEPTH FOR THE LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z) SHALL BE ONE THIRD OF THE SLAB THICKNESS (T/3).
8. WHEN TYING CONCRETE GUTTER AT A LONGITUDINAL JOINT, THE TIE BAR LENGTH OR POSITION MAY BE ADJUSTED. PROVIDE 3 IN. OF CONCRETE COVER FROM THE BACK OF GUTTER TO THE END OF TIE BAR.
9. REPLACE MISSING OR DAMAGED TIE BARS WITHOUT ADDITIONAL COMPENSATION BY DRILLING MIN. 10 IN. DEEP AND GROUTING TIE BARS WITH TYPE III, CLASS C EPOXY. MEET THE PULL-OUT TEST REQUIREMENTS IN ITEM 361.
10. WHEN AN MONOLITHIC CURB IS SPECIFIED, THE JOINT IN THE CURB SHALL COINCIDE WITH PAVEMENT JOINTS AND MAY BE FORMED BY ANY MEANS APPROVED BY THE ENGINEER.
11. DOWEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1/4 IN. HORIZONTALLY AND VERTICALLY UNLESS OTHERWISE SPECIFIED. WHERE DOWEL BAR BASKETS ARE USED, REMOVE THE SHIPPING WIRES.
12. THE DETAIL FOR JOINT SEALANT AND RESERVOIR IS SHOWN ON STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."

SHEET 1 OF 2



CONCRETE PAVEMENT DETAILS  
CONTRACTION DESIGN  
T-6 to 12 INCHES

CPCD-14

FILE: cpcd14.dgn	DN: TxDOT	DN: HC	DW: HC	CK: AN
© TxDOT: DECEMBER 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	2051	01	014	FM 2473
	DIST	COUNTY		SHEET NO.
	25	WHEELER		22

HI-PLAINS CIVIL ENGINEERS, LTD. 2024  
SUBMISSION: FINAL

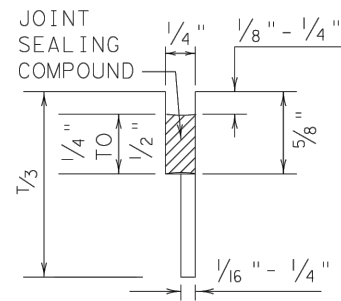
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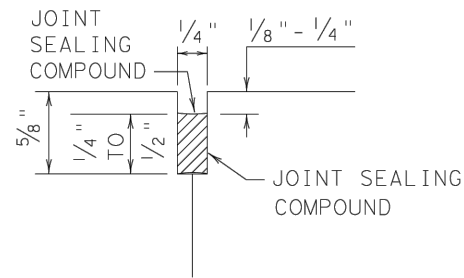
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DATE:  
FILE:

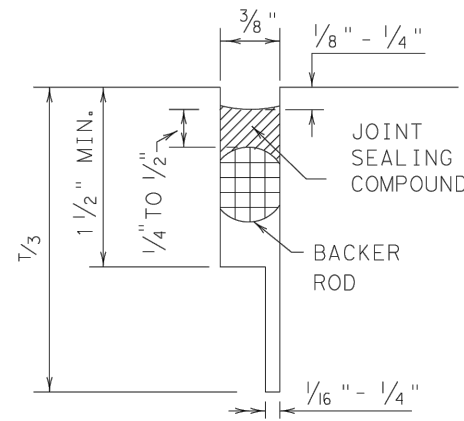
METHOD B: JOINT SEALING COMPOUND



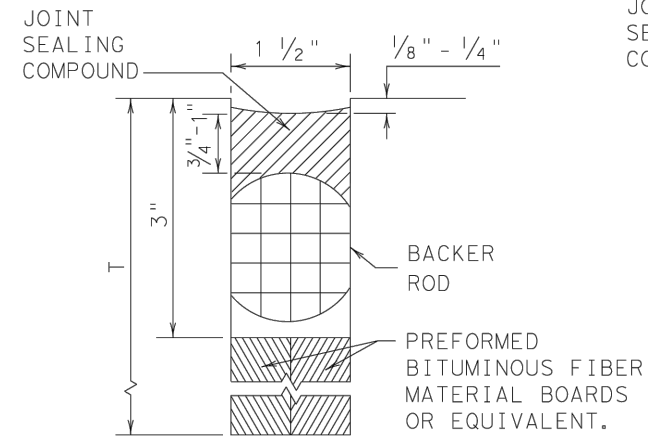
LONGITUDINAL SAWED  
CONTRACTION JOINT



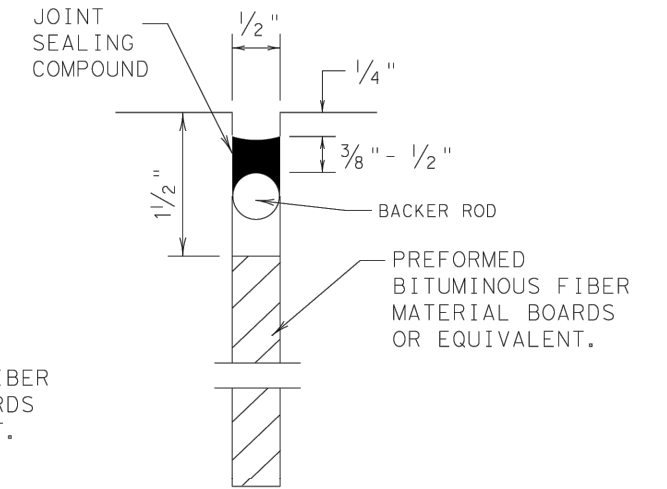
LONGITUDINAL OR TRANSVERSE  
CONSTRUCTION JOINT



TRANSVERSE SAWED  
CONTRACTION JOINT

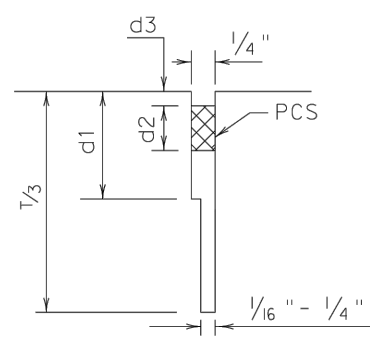


TRANSVERSE FORMED  
EXPANSION JOINT

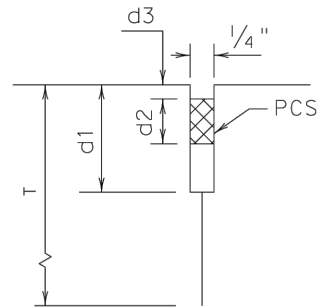


FORMED  
ISOLATION JOINT

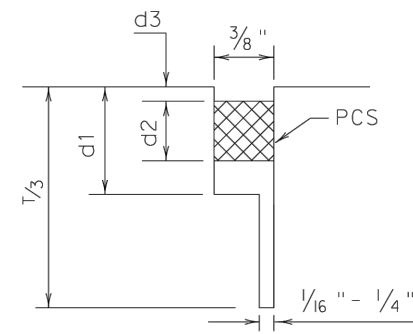
METHOD A: PREFORMED COMPRESSION SEALS  
(PCS) (DMS-6310 CLASS 6)



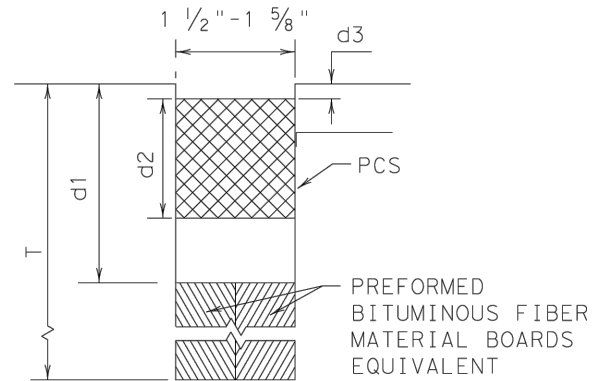
LONGITUDINAL SAWED  
CONTRACTION JOINT



LONGITUDINAL  
CONSTRUCTION JOINT



TRANSVERSE SAWED  
CONTRACTION JOINT



TRANSVERSE FORMED  
EXPANSION JOINT

GENERAL NOTES

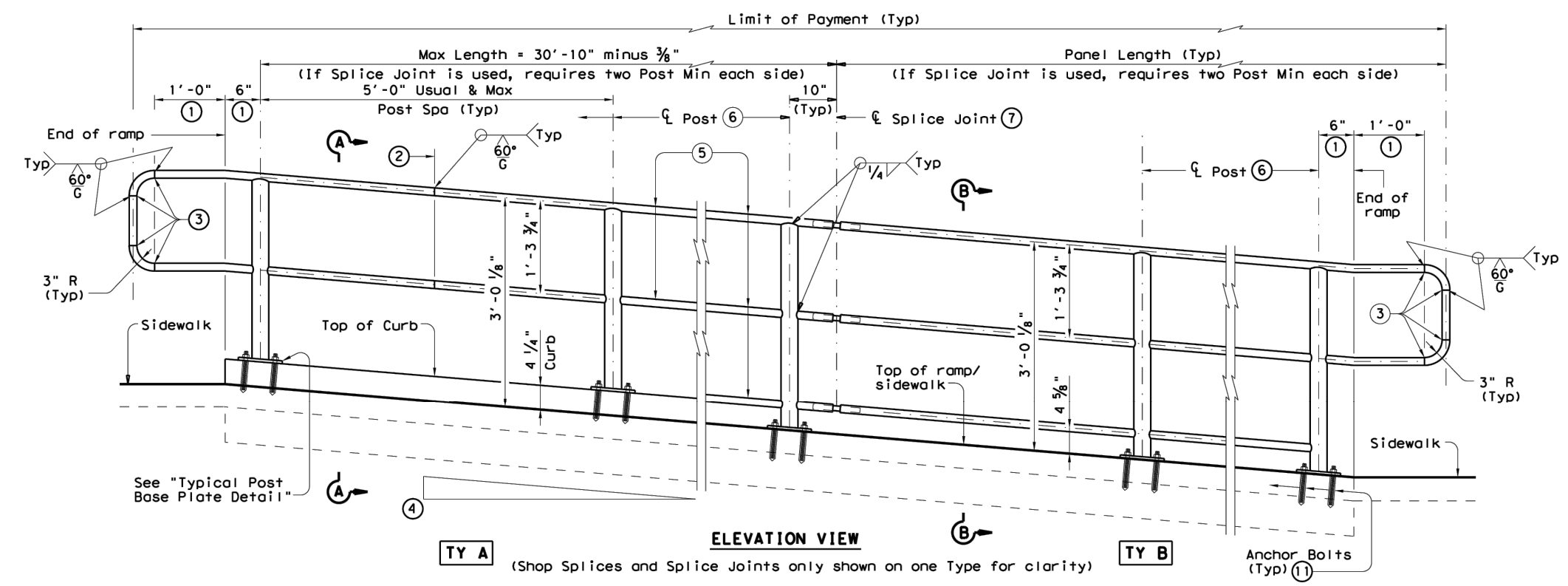
- UNLESS OTHERWISE SHOWN IN THE PLANS, EITHER METHOD "A" OR METHOD "B" MAY BE USED.
- THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
- THE JOINT RESERVOIR FOR SEALANT OR PCS SHALL BE SAWED UNLESS OTHERWISE SHOWN ON THE PLANS FOR THE LONGITUDINAL AND TRANSVERSE CONSTRUCTION JOINTS AND THE SAWED JOINTS.
- DIMENSIONS d1, d2, AND d3 SHOWN IN METHOD A SHALL BE IN ACCORDANCE WITH THE PREFORMED COMPRESSION SEAL MANUFACTURER'S RECOMMENDATION.
- REFER TO DMS-6310 "JOINT SEALANTS AND FILLERS" FOR THE CLASSIFICATIONS.
- FOR SAWED LONGITUDINAL JOINT, LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT, USE JOINT SEALANT CLASS 5 OR 8 UNLESS OTHERWISE SHOWN ON THE PLAN OR APPROVED.
- FOR TRANSVERSE SAWED CONTRACTION, TRANSVERSE FORMED EXPANSION JOINT, AND ISOLATION JOINT USE JOINT SEALANT CLASS 5 OR 8 AT NEW JOINTS. USE JOINT SEALANT CLASS 4,5,7,OR 8 FOR MAINTAINING EXISTING JOINTS.
- THE JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE ITEM 438 "CLEANING AND SEALING JOINTS" OR ITEM 713 "CLEANING AND SEALING JOINTS AND CRACKS (CONCRETE PAVEMENT)".
- ISOLATION JOINTS ACCOMMODATE HORIZONTAL AND VERTICAL MOVEMENTS THAT OCCUR BETWEEN A PAVEMENT AND A STRUCTURE. ISOLATION JOINTS MAY BE USED FOR BRIDGE ABUTMENTS, INTERSECTIONS, CURB AND GUTTER, OLD AND NEW PAVEMENTS, OR AROUND DRAINAGE INLETS, MANHOLES, FOOTINGS AND LIGHTING STRUCTURES.

		<b>Design Division Standard</b>	
<b>CONCRETE PAVING DETAILS</b> <b>JOINT SEALS</b> <b>JS-14</b>			
FILE: js14.dgn	DN: TxDOT	DN: HC	CK: AN
© TxDOT: DECEMBER 2014	CONT	SECT	HIGHWAY
REVISIONS	2051	01	014 FM 2473
	DIST	COUNTY	SHEET NO.
	25	WHEELER	23

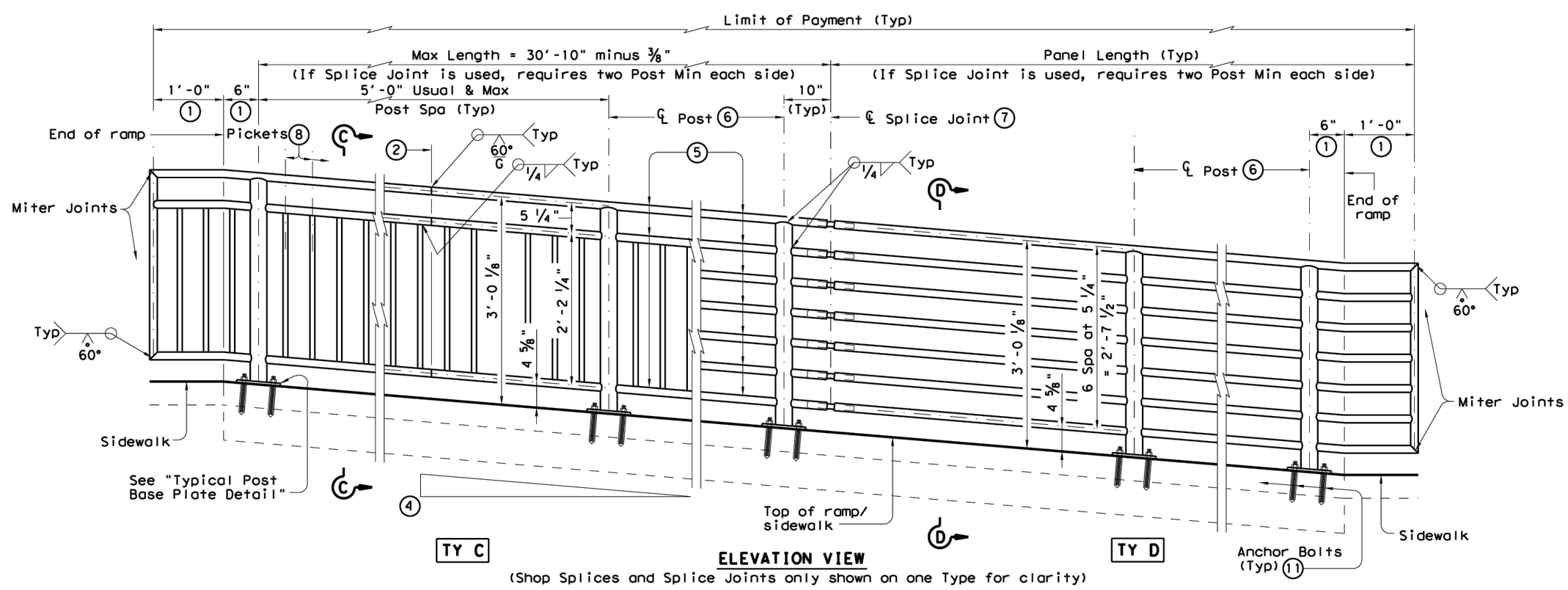
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SUBMISSION: FINAL

DATE:  
FILE:



**TY A** (Shop Splices and Splice Joints only shown on one Type for clarity) **TY B**

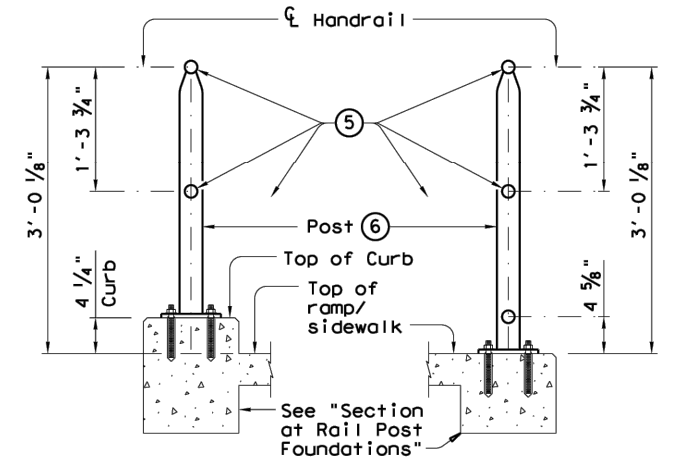


**TY C** (Shop Splices and Splice Joints only shown on one Type for clarity) **TY D**

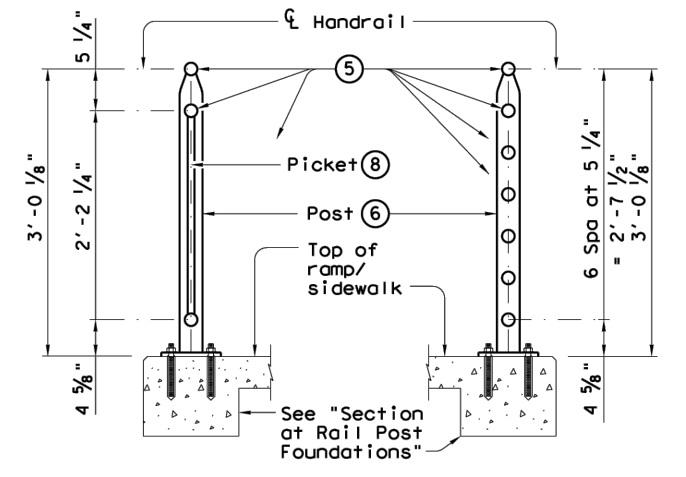
- ① Parallel to ground.
- ② One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
- ③ Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
- ④ See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
- ⑤ 1 1/2" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 1/2" Dia. pipe for galvanizing drainage and venting.

- ⑥ 2 1/2" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
- ⑦ See "Handrail Fabrication Details" for Splice Joints.
- ⑧ 5/8" Dia. Round Bar equal spacing at 4 1/2" Max. Plumb all pickets.
- ⑨ When needed for accessibility (grade > 5 percent) or as needed for pedestrian safety.
- ⑩ Not to be used on bridges.
- ⑪ See "General Notes" for anchor bolt information.

RECOMMENDED USAGE ⑨ ⑩	
Dropoff Height/Condition	Recommended Rail Options
< 30" dropoff	TY A, TY B, TY C, or TY D
≥ 30" dropoff, or along Bike Path	TY E or TY F



**SECTION A-A** (Showing Handrail TY A) **SECTION B-B** (Showing Handrail TY B)



**SECTION C-C** (Showing Handrail TY C) **SECTION D-D** (Showing Handrail TY D)

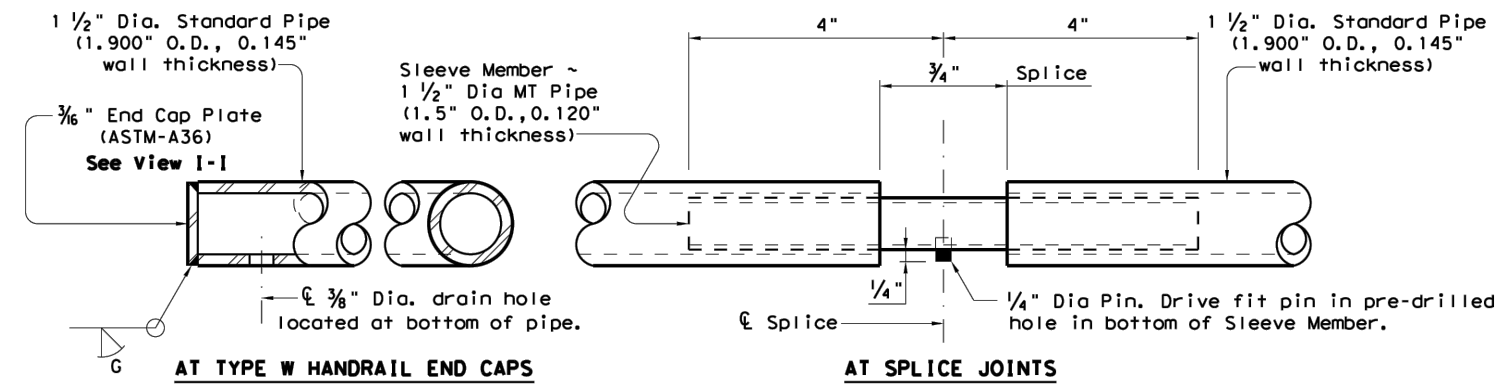
SHEET 1 OF 3

**Texas Department of Transportation** Design Division Standard

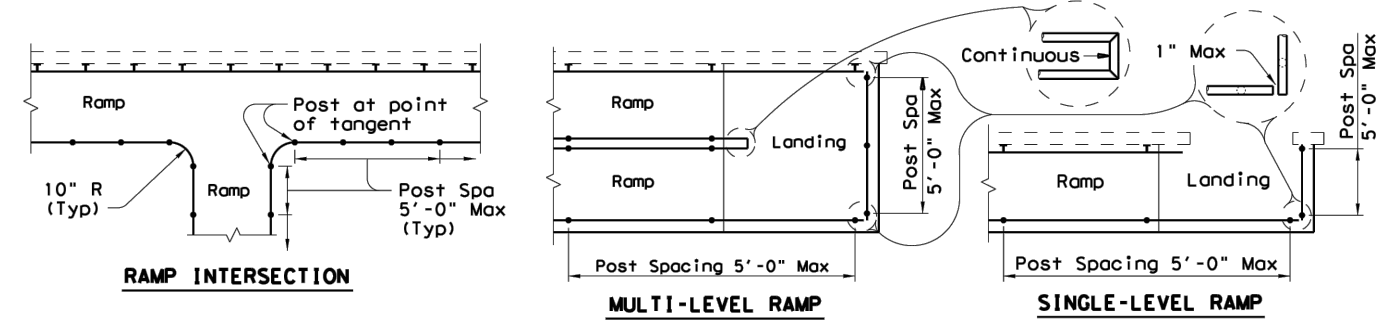
## PEDESTRIAN HANDRAIL DETAILS PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
© TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	2051	01	014	FM 2473
REVISED MAY, 2013 (VP)	DIST	COUNTY		SHEET NO.
	25	WHEELER		24

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**HANDRAIL FABRICATION DETAILS**



**PLAN SHOWING RAIL AT RAMP CONDITIONS**

**GENERAL NOTES**

Designed according to ADAAG, Texas Accessibility Standards, Uniform Building Code, and AASHTO LRFD Specifications.

Handrail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Pipe will conform to ASTM-A53 Grade B or A500 Grade B. Steel plates and steel bars will conform to ASTM-A36. Mechanical tubing (MT) will conform to ASTM A513 Grade 1015 or higher. Galvanize all steel components except reinforcing steel unless noted otherwise.

Concrete for foundations will be in accordance with Item 531 "Sidewalks". All reinforcing steel must be Grade 60. Bar laps, where required, will be as follows: Uncoated ~ #4 = 1'-5" Epoxy coated ~ #4 = 2'-1"

When the plans require painted steel, follow the requirements for painting galvanized steel in Item 446, "Cleaning and Painting Steel". Sleeve Members will receive galvanization and only get field painted after installation unless directed otherwise by Engineer.

Epoxy Anchor bolts for wall mount and post base plate will be 5/8 inch diameter ASTM A36 threaded rods with one hex nut and one hardened steel washer at each bolt. 5/8 inch diameter threaded rod embedment depth for wall mounts is 3 1/2 inches and embedment depth for post base plate is 5 inches.

Embed threaded rods into concrete with a Type III (Class C) epoxy meeting the requirements of DMS-6100, "Epoxyes and Adhesives". Mix and dispense adhesive with the manufacturer's static mixing nozzle/dual cartridge system. Core drill holes (percussion drilling not permitted).

At the contractor's option the post base plate anchor bolts may be cast with the Ramp/Sidewalk (See Cast-in-Place Anchor Bolt Options).

Optional cast-in-place anchor bolts will be 5/8 inch diameter ASTM A307 Grade A bolts (or A36 threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer at each bolt. Embedment depth of cast-in-place bolt will be 8 inches for post base plate.

Handrails and any wall or other surface adjacent to them will be free of any sharp or abrasive elements.

Submit shop drawings to the Engineer unless otherwise noted. For curved handrail applications, fabricate the handrail to the curve if radius is less than 600 feet. Shop drawings are required when rail is fabricated to the curve.

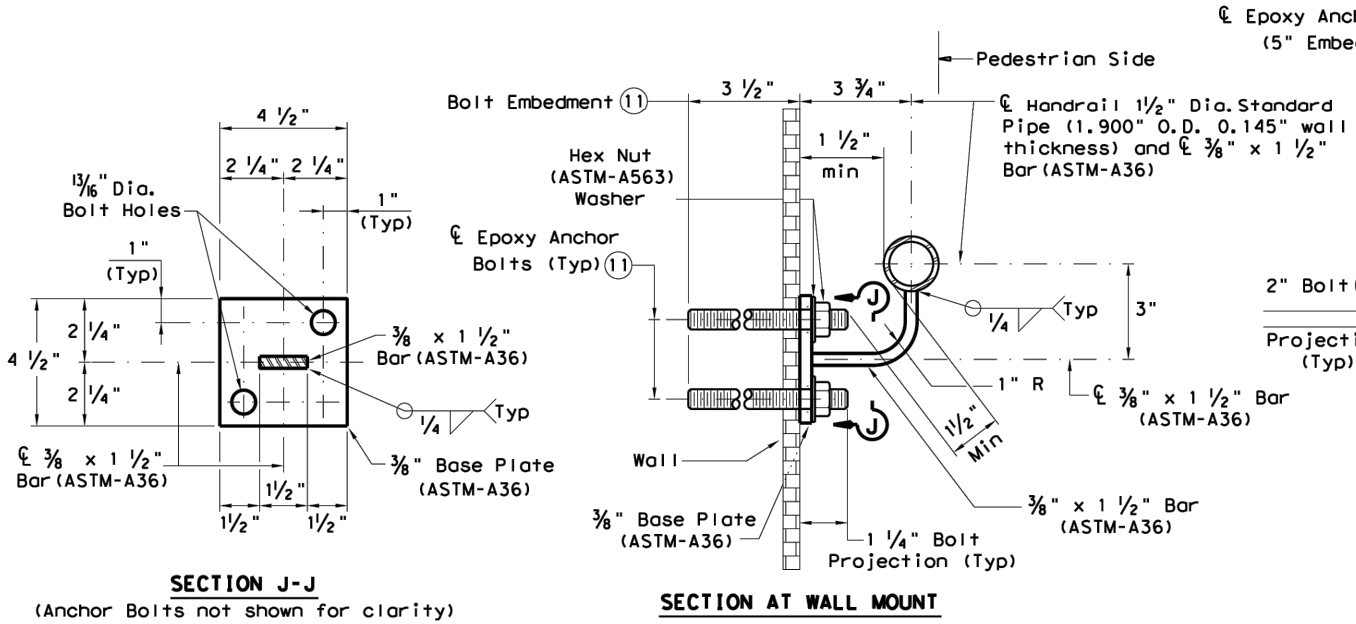
For all handrails, erection drawings will be submitted to the Engineer for approval to ensure proper installation.

Drawings will show handrail mount locations with bolts setting, spacing, ramp slope, and/or splice joint locations, and handrail lengths with identification showing where each handrail goes on the layout.

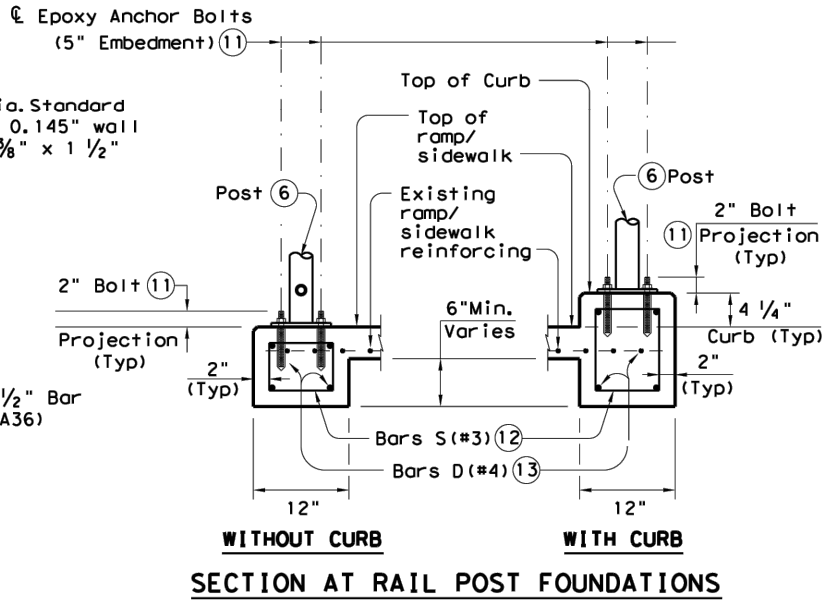
Payment for concrete sidewalks or curb ramps will be paid for in accordance with Item 531 "Sidewalks".

Payment for all items shown is to be included in unit price bid in accordance with Item 450 "Railing" of the type specified.

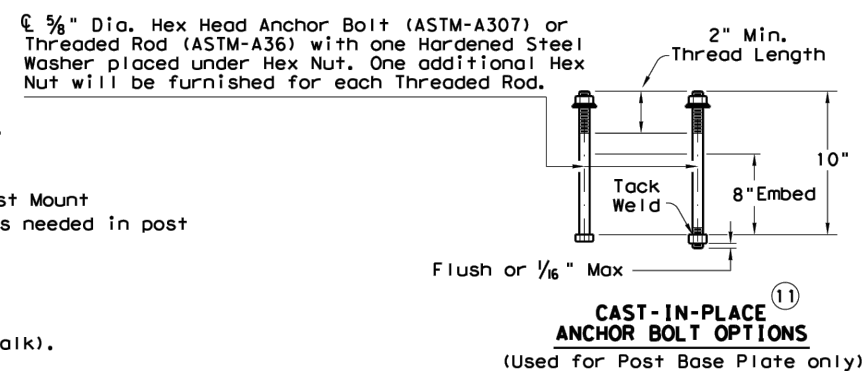
All exposed edges will be rounded or chamfered to approximately 1/8 inch by grinding.



**TYPICAL WALL MOUNT DETAILS**

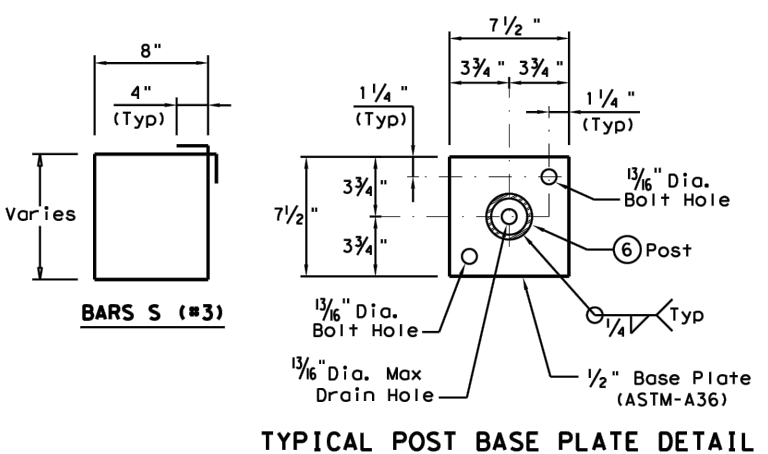


**SECTION AT RAIL POST FOUNDATIONS**

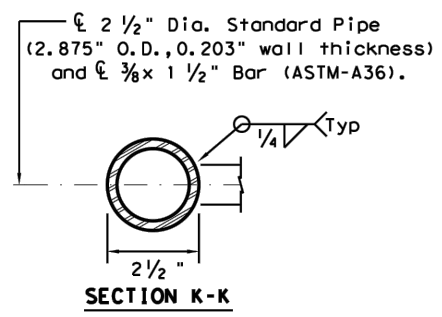


**CAST-IN-PLACE ANCHOR BOLT OPTIONS**  
(Used for Post Base Plate only)

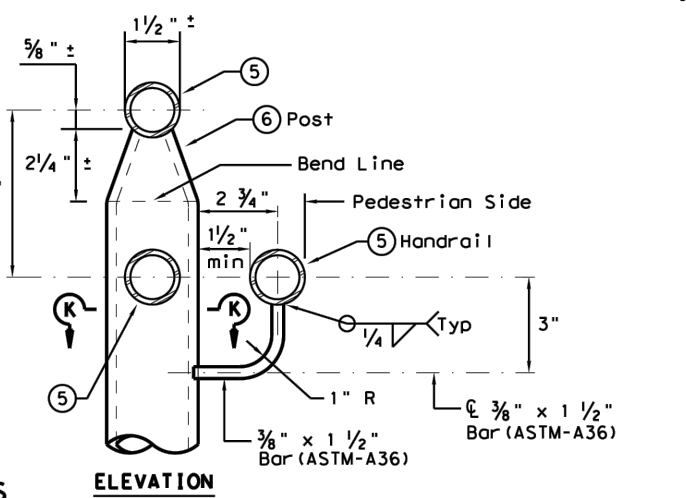
- ⑤ 1 1/2" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 1/2" Dia. pipe for galvanizing drainage and venting.
- ⑥ 2 1/2" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). Plumb all posts. See "Post Mount Detail" for crimping and trimming post to fit the diameter of top rail. Provide holes as needed in post for galvanizing drainage and venting.
- ⑪ See "General Notes" for anchor bolt information.
- ⑫ Bars S(#3) spaced at 12" Max (Spaced 3" from outside edge of overall length of Ramp/Sidewalk).
- ⑬ Provide 1 1/2" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.



**TYPICAL POST BASE PLATE DETAIL**



**POST MOUNT DETAILS**



**ELEVATION**



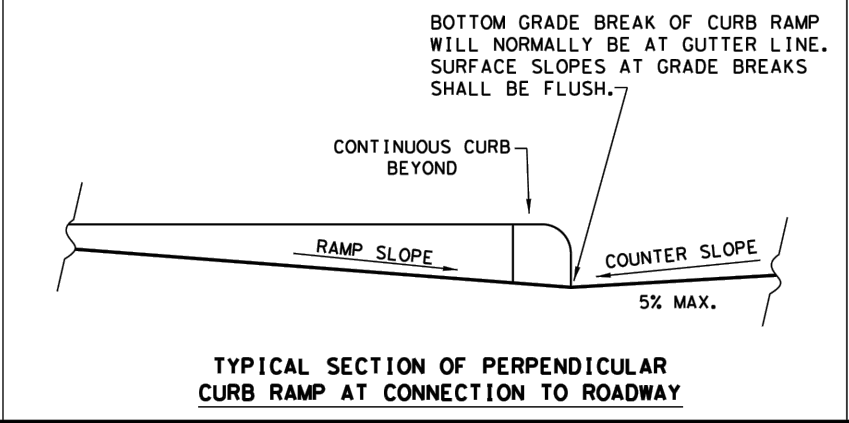
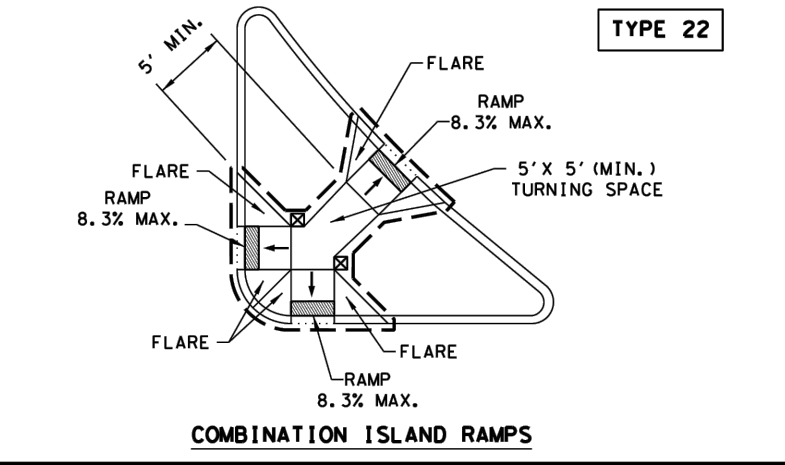
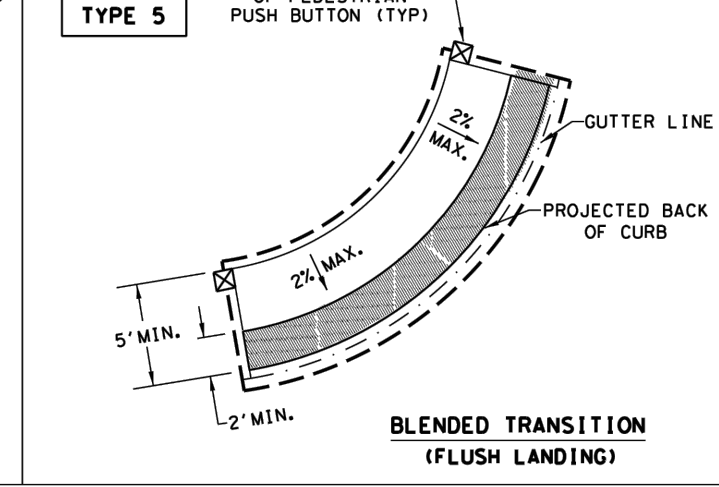
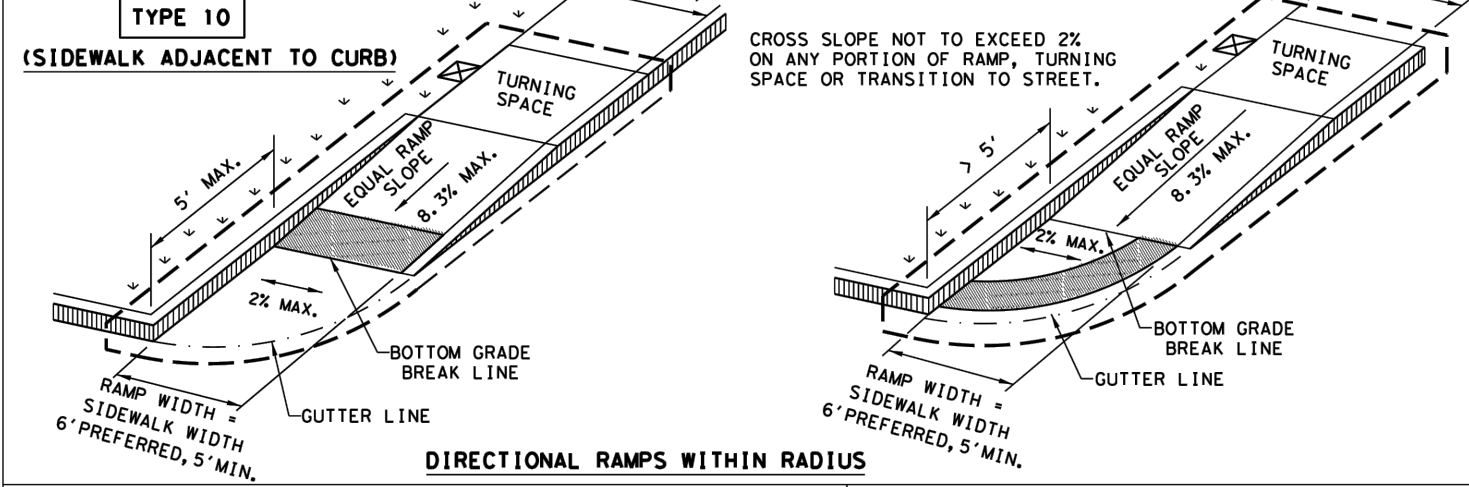
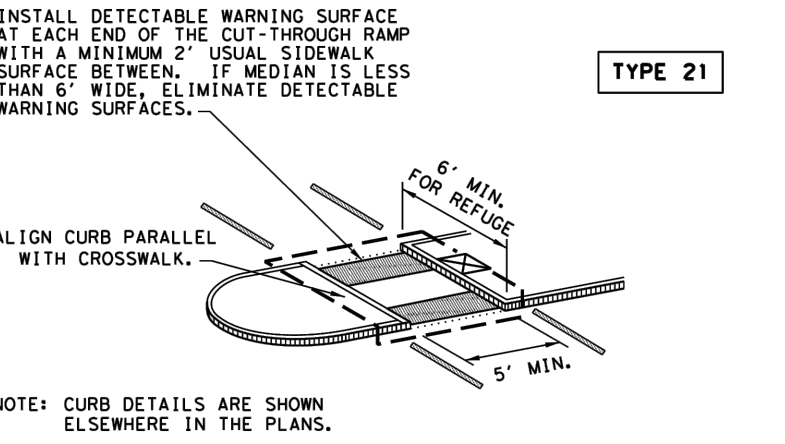
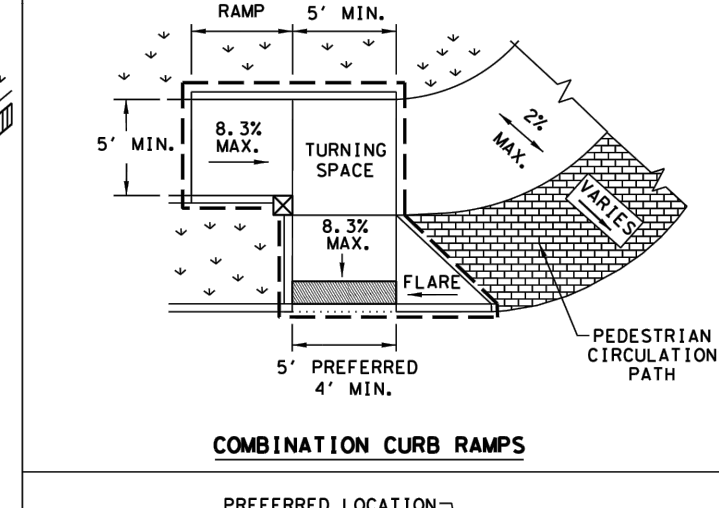
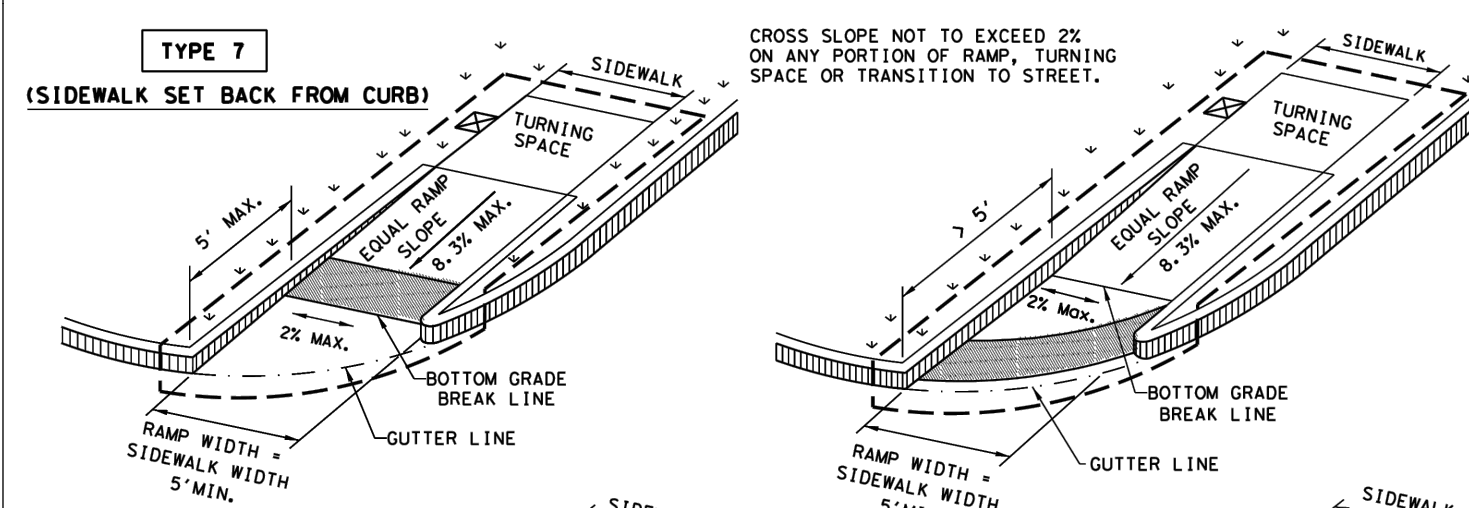
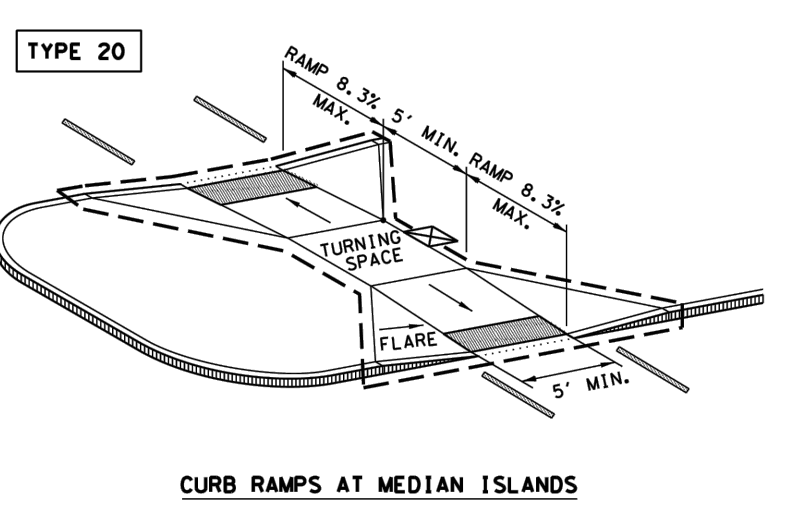
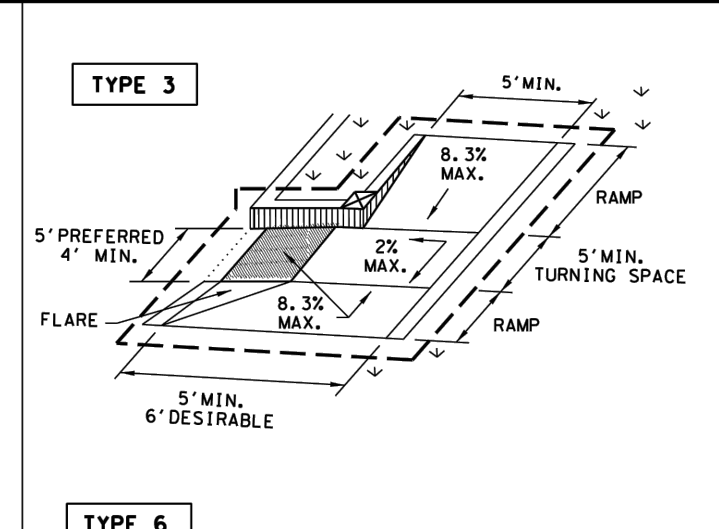
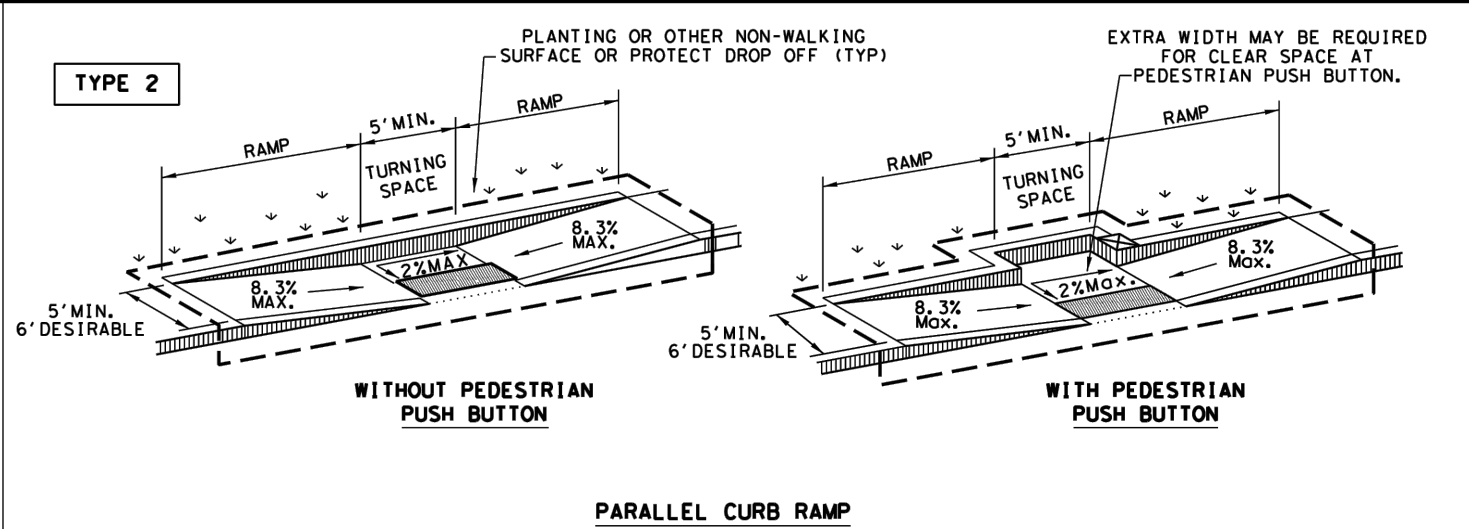
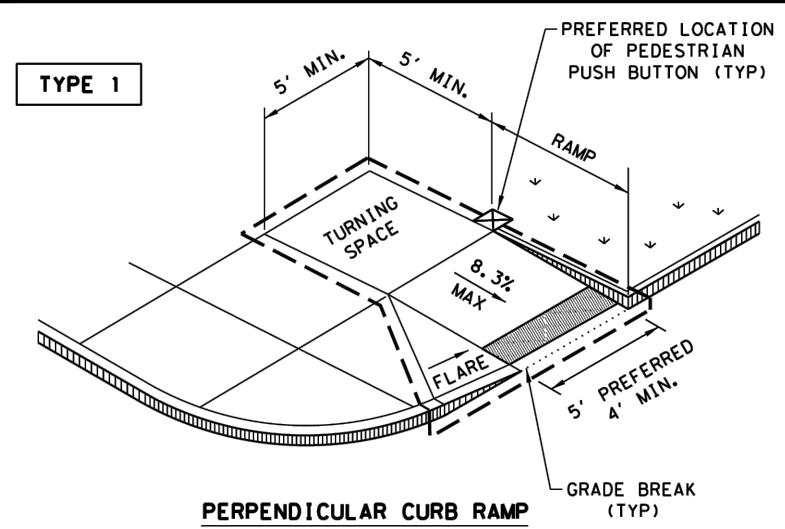
**PEDESTRIAN HANDRAIL DETAILS**  
**PRD-13**

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
© TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	2051	01	014	FM 2473
REVISED MAY, 2013 (VP)	DIST	COUNTY	SHEET NO.	
	25	WHEELER	25	

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FILE:

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**NOTES / LEGEND:**

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

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

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

**PEDESTRIAN FACILITIES CURB RAMPS**

**PED-18**

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISED 08, 2005	2051	01	014	FM 2473
REVISED 06, 2012	DIST	COUNTY	SHEET NO.	
REVISED 01, 2018	25	WHEELER	26	

*Design Division Standard*

HI-PLAINS CIVIL ENGINEERS, LTD. 2024  
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FILE: \_\_\_\_\_



**GENERAL NOTES**

**CURB RAMPS**

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

**DETECTABLE WARNING MATERIAL**

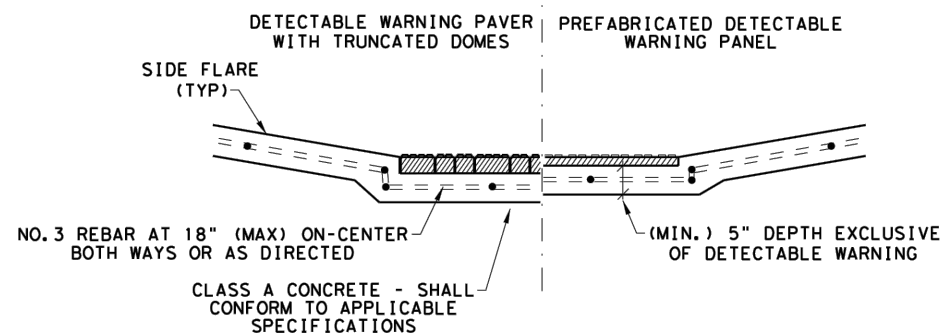
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material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

**DETECTABLE WARNING PAVERS (IF USED)**

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

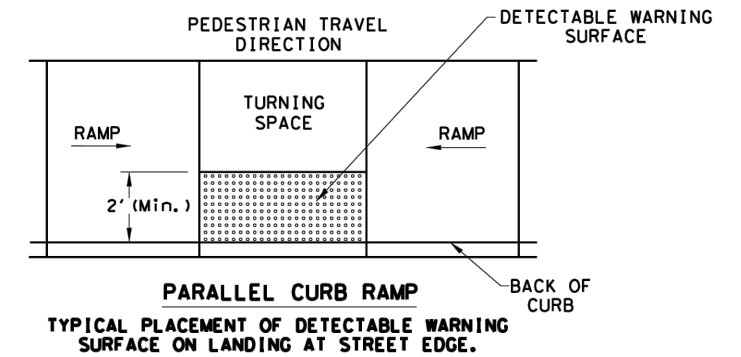
**SIDEWALKS**

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

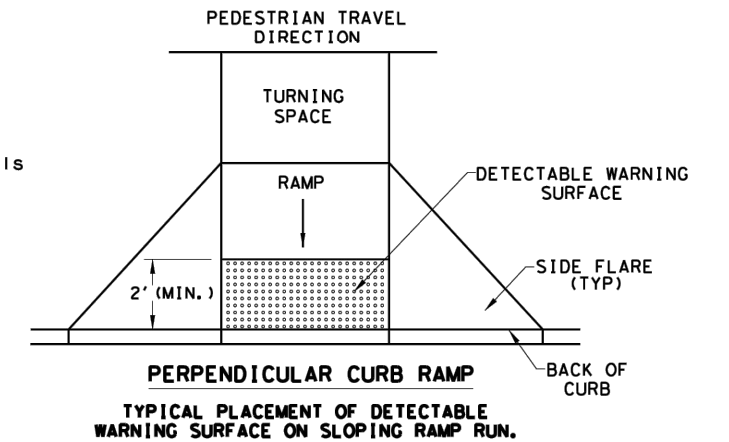


**SECTION VIEW DETAIL  
CURB RAMP AT DETECTIBLE WARNINGS**

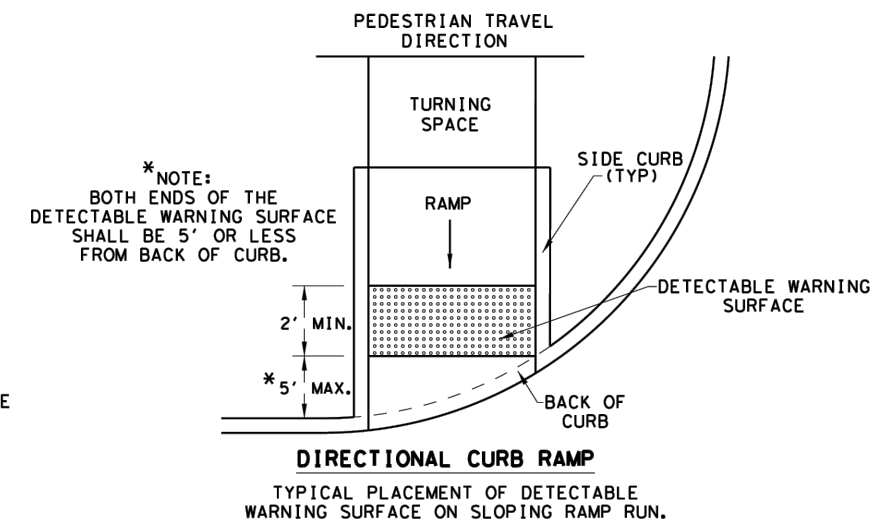
**DETECTABLE WARNING SURFACE DETAILS**



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



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



\*NOTE:  
BOTH ENDS OF THE  
DETECTABLE WARNING SURFACE  
SHALL BE 5' OR LESS  
FROM BACK OF CURB.

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

SHEET 2 OF 4

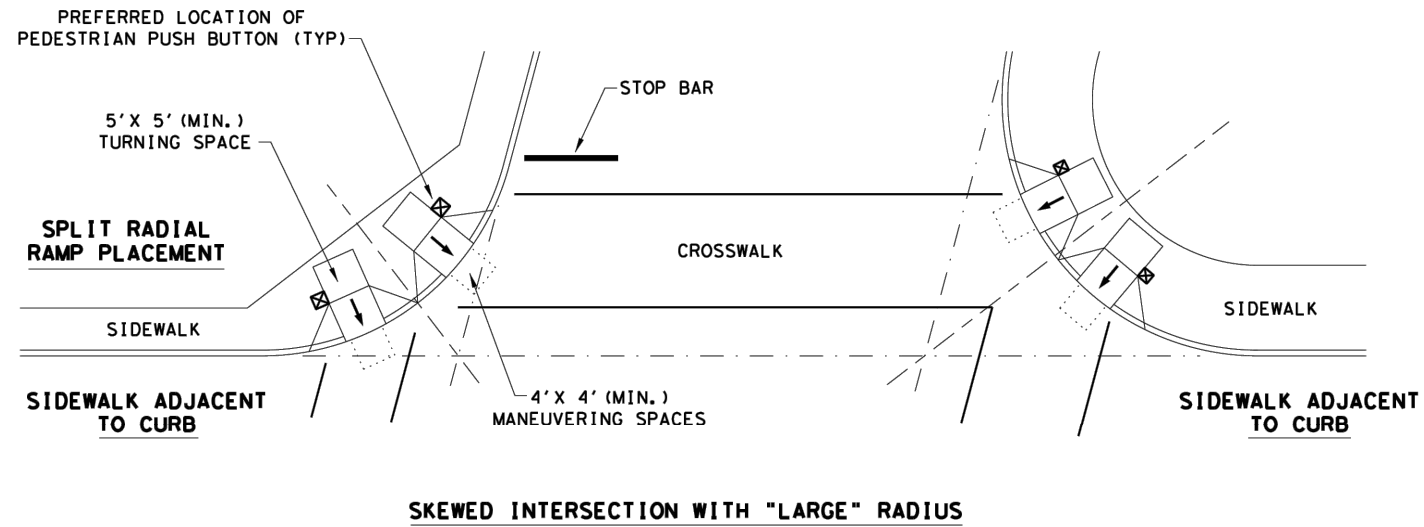
		Design Division Standard	
<h1>PEDESTRIAN FACILITIES CURB RAMPS</h1>			
<h2>PED-18</h2>			
FILE: ped18	DN: TxDOT	DW: VP	CK: KM
© TxDOT: MARCH, 2002	CONT	SECT	JOB
REVISIONS	2051	01	014
REVISED 08, 2005	DIST	COUNTY	SHEET NO.
REVISED 06, 2012	25	WHEELER	27
REVISED 01, 2018			

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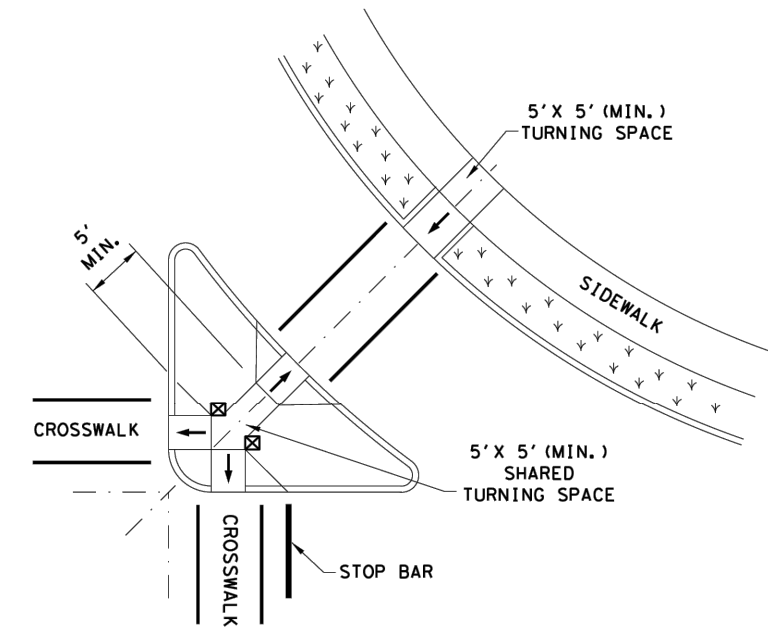
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FILE:

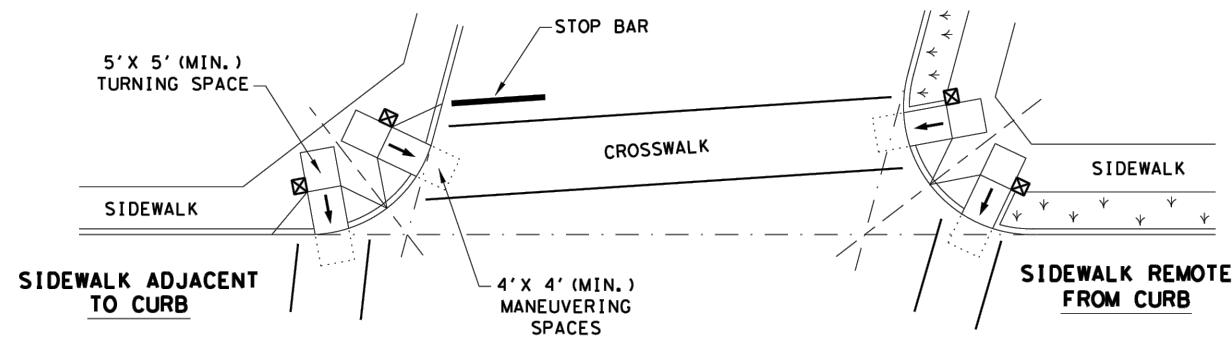
TYPICAL CROSSING LAYOUTS  
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



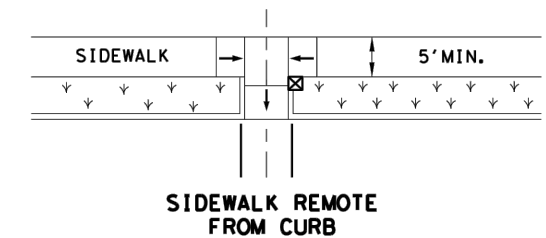
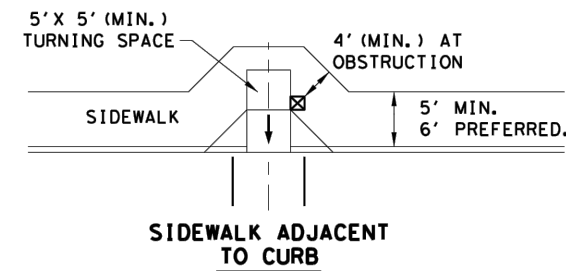
SKewed INTERSECTION WITH "LARGE" RADIUS



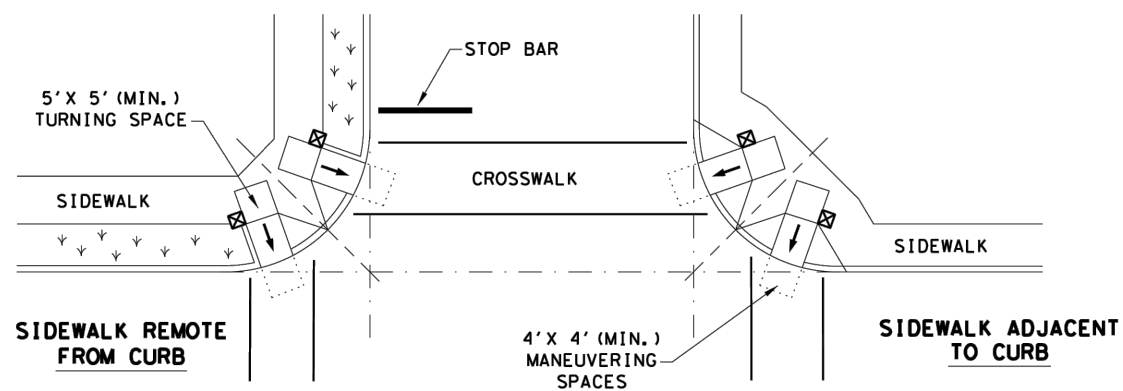
AT INTERSECTION  
W/FREE RIGHT TURN & ISLAND



SKewed INTERSECTION WITH "SMALL" RADIUS



MID-BLOCK PLACEMENT  
PERPENDICULAR RAMPS



NORMAL INTERSECTION WITH "SMALL" RADIUS

LEGEND:

SHOWS DOWNWARD SLOPE. →

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

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH. ↙ ↘ ↗ ↖

SHEET 4 OF 4



PEDESTRIAN FACILITIES  
CURB RAMPS

PED-18

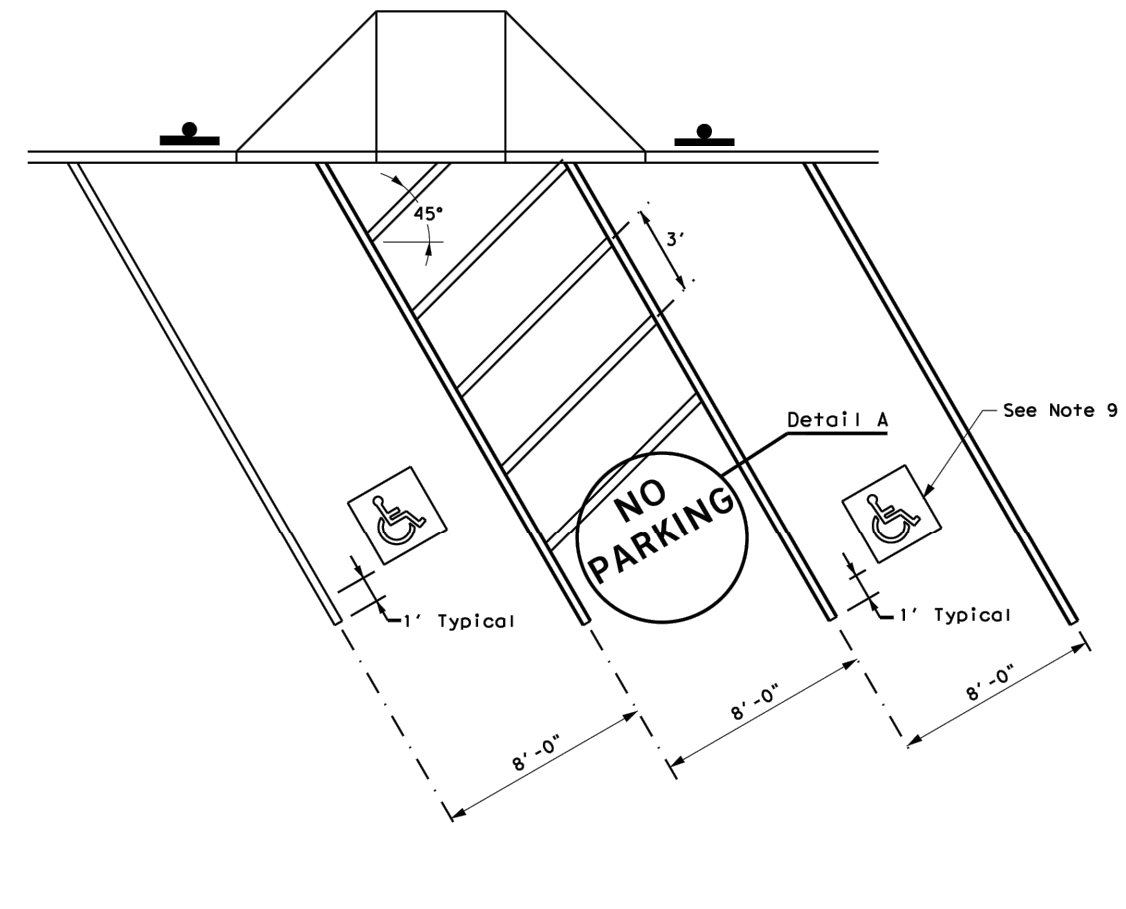
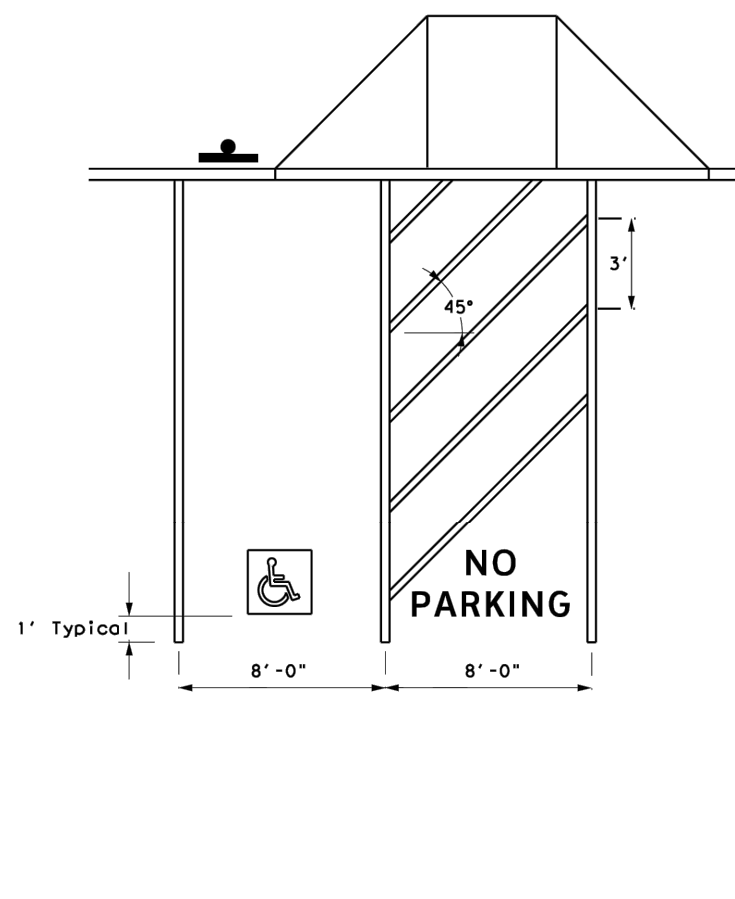
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© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	2051	01	014	FM 2473
REVISED 08, 2005	DIST	COUNTY	SHEET NO.	
REVISED 06, 2012	25	WHEELER	28	
REVISED 01, 2018				

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PERPENDICULAR OR ANGLED ACCESSIBLE PARKING SPACE DIMENSIONS



R7-8T



R7-8P



R7-8aPT

ACCESSIBLE PARKING SIGNS




Detail A


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

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
SIGN FACE MATERIALS	DMS-8300

GENERAL NOTES:

- All paved accessible parking space limit lines shall be 4" solid white lines.
- Paved accessible parking spaces must include a white International Symbol of Accessibility applied conspicuously on the surface in a color that contrasts the pavement. A blue background with white border may supplement the symbol for additional contrast.
- The words "NO PARKING" must be applied on any access aisle adjacent to the parking space. The words must be white, applied:
  - in all capital letters.
  - centered within each access aisle adjacent to the parking space.
- RESERVED PARKING (R7-8T) sign including the International Symbol of Accessibility.
  - shall be REQUIRED for each accessible parking space.
  - shall NOT be placed between two accessible parking spaces.
  - shall NOT be placed in a location that restricts movement of wheelchairs within the adjacent sidewalk.
  - shall have a mounting height of 7 feet to the bottom of the sign.
- A sign identifying the consequences of parking illegally in a paved accessible parking space. Must:
  - at a minimum state "VIOLATORS SUBJECT TO FINE AND TOWING" (Plaque) (R7-8aPT).
  - be mounted on a pole, post, wall or freestanding board.
  - be no more than eight inches (8") below sign R7-8T a sign required by the Texas Accessibility Standards, 502.6.
  - be installed so that the bottom edge of the sign is no lower than 48 inches and no higher than 80 inches above the ground level.
- Signs identifying van parking spaces shall contain the designation "VAN ACCESSIBLE" (R7-8P) Signs shall be 60 inches minimum above the ground level measured to the bottom of the sign.
- Perpendicular or angled parking spaces shall be 8 feet wide minimum with an access aisle 8 feet minimum wide (van accessible). Two parking spaces are permitted to share a common access aisle.
- Access aisles shall be at street level, extend the full length of the parking space they serve, follow ADA surface requirements, and marked to discourage parking in the access aisle. Curb ramps shall connect the access aisle to the adjacent pedestrian access route. Curb ramps shall not be located within the access aisle.
- International Symbol of Accessibility Parking Space Marking and sign details can be found in The Standard Highway Sign Designs for Texas (SHSD) at the following website. <http://www.txdot.gov/>


  
 Texas Department of Transportation


  
 Traffic Safety Division Standard

**PAVEMENT MARKINGS AND SIGNING FOR ACCESSIBLE PARKING**

**PM(AP) -21**

FILE: pm(ap)-21	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT July 2021	CONT	SECT	JOB	HIGHWAY
REVISIONS	2051	01	014	FM 2473
	DIST	COUNTY		SHEET NO.
	25	WHEELER		29

**BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:**

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

**WORKER SAFETY NOTES:**

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

**COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES**

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.
2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

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

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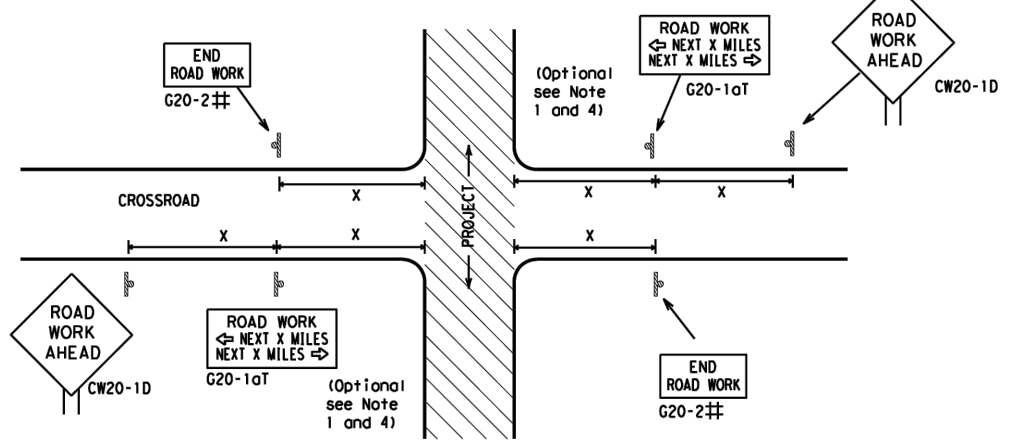
**BARRICADE AND CONSTRUCTION  
 GENERAL NOTES  
 AND REQUIREMENTS**  
  
**BC (1) - 21**

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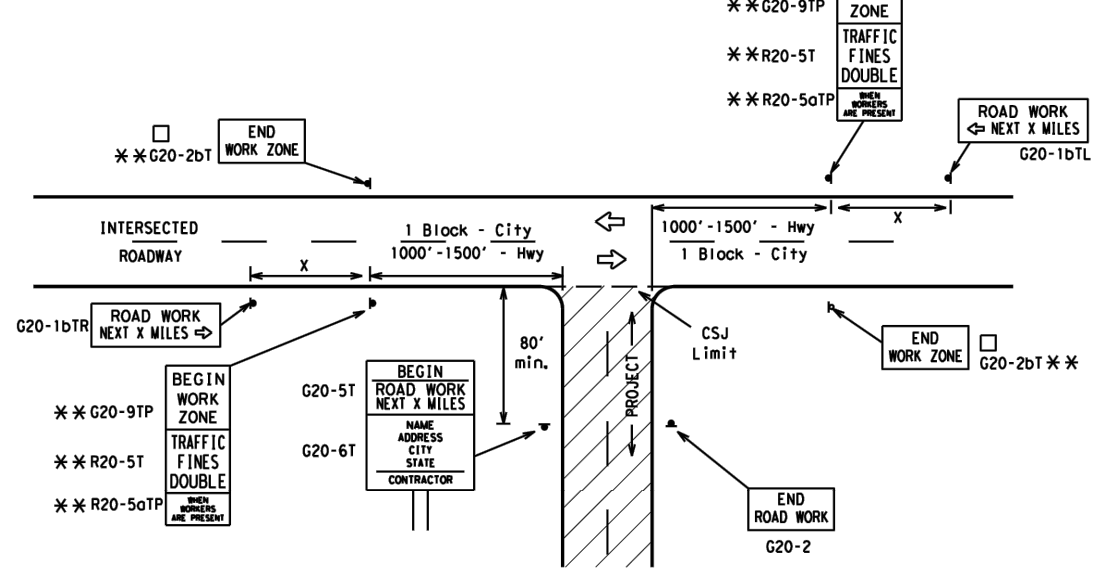
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**TYPICAL LOCATION OF CROSSROAD SIGNS**



- ## May be mounted on back of "ROAD WORK AHEAD" (CW20-1D) sign with approval of Engineer. (See note 2 below)
- The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D) sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
  - The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK" (G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume as per TMUTCD Part 5. This information shall be shown in the plans.
  - 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 "ROAD WORK NEXT X MILES" (G20-1aT) sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
  - 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 "CONTRACTOR NAME" (G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow (G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR) signs shall be replaced by the detour signing called for in the plans.

**TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING<sup>1,5,6</sup>**

Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/Freeway	Posted Speed MPH	Sign Δ Spacing "X" Feet (Apprx.)
CW20 <sup>4</sup>	48" x 48"	48" x 48"	30	120
CW21			35	160
CW22			40	240
CW23			45	320
CW25	36" x 36"	48" x 48"	50	400
CW1, CW2, CW7, CW8, CW9, CW11, CW14			55	500 <sup>2</sup>
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12			60	600 <sup>2</sup>
			65	700 <sup>2</sup>
	48" x 48"	48" x 48"	70	800 <sup>2</sup>
			75	900 <sup>2</sup>
			80	1000 <sup>2</sup>
			*	* <sup>3</sup>

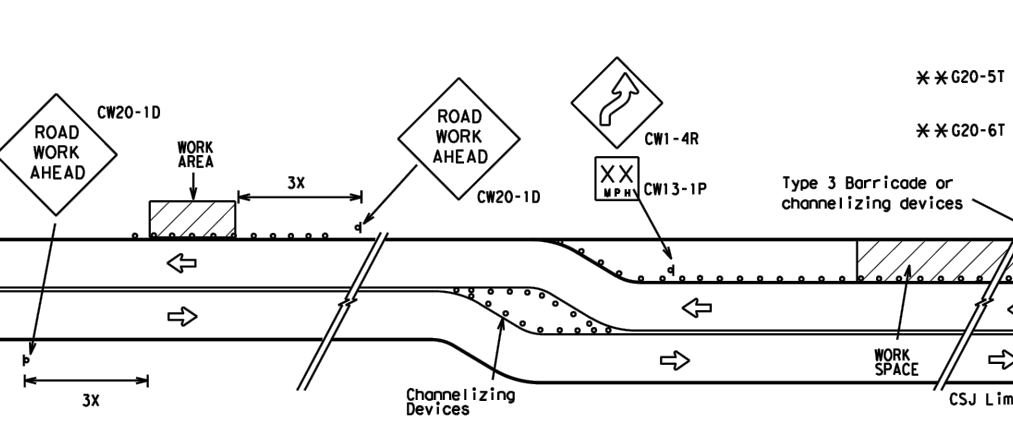
\* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

**GENERAL NOTES**

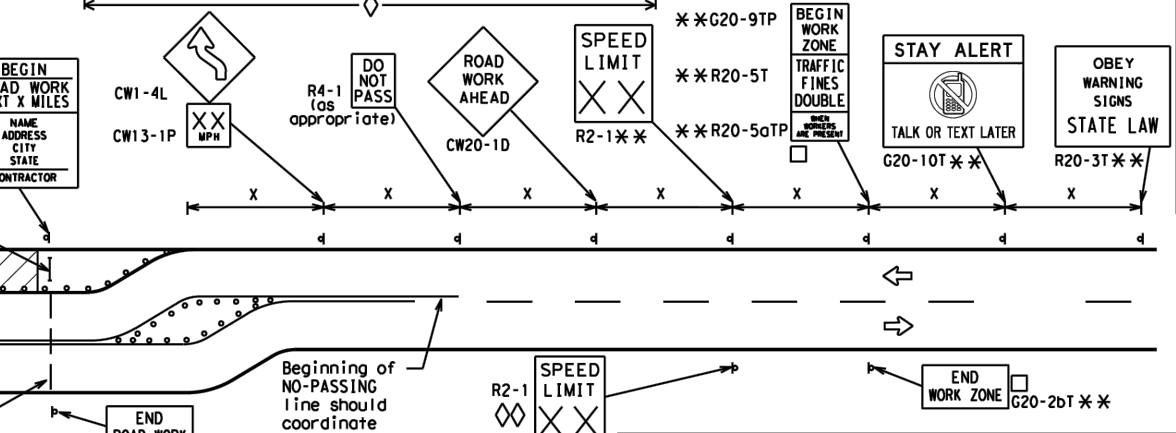
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
- 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**

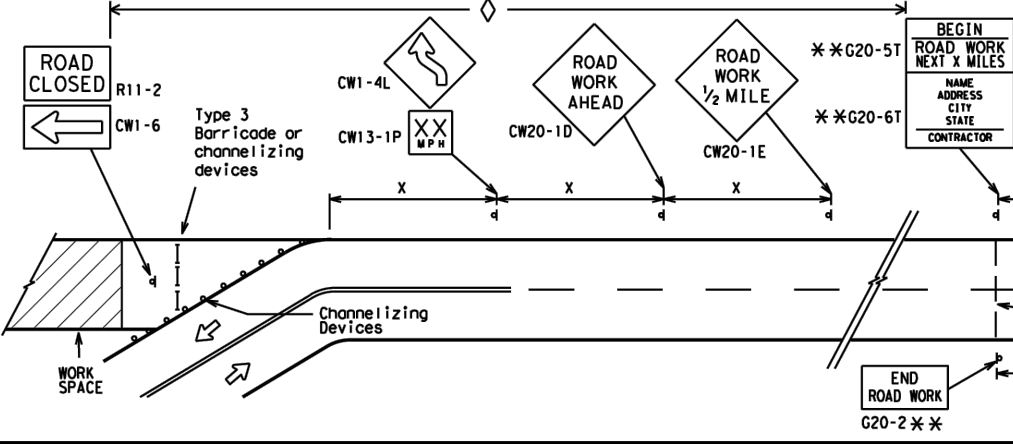


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

**SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS**



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



**NOTES**

- The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES" (G20-5T) sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.
- The "BEGIN WORK ZONE" (G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.
  - CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.
  - Area for placement of "ROAD WORK AHEAD" (CW20-1D) sign and other signs or devices as called for on the Traffic Control Plan.
  - Contractor will install a regulatory speed limit sign at the end of the work zone.

**LEGEND**

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



**BARRICADE AND CONSTRUCTION PROJECT LIMIT**

**BC(2) - 21**

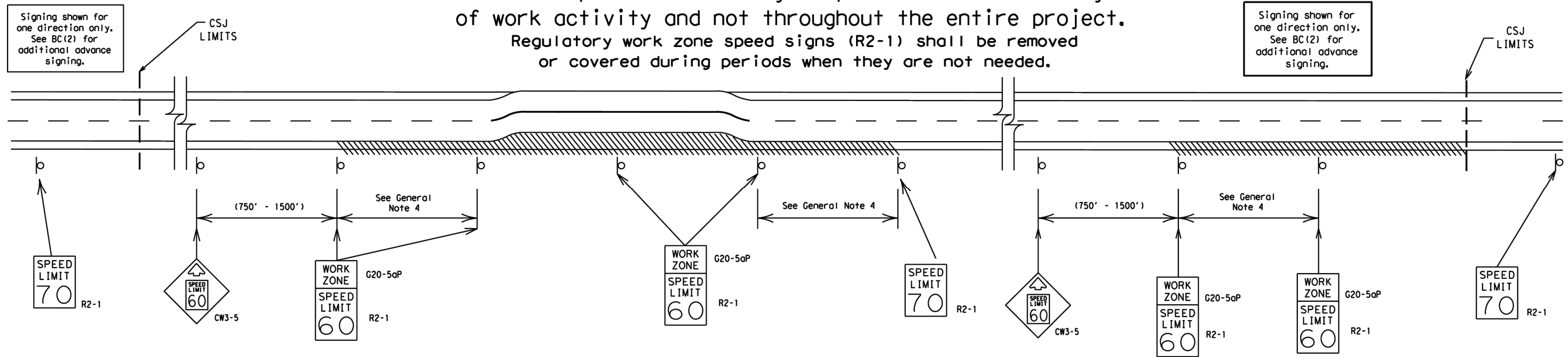
FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
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# TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

## GENERAL NOTES

- 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 "ADVANCE SPEED LIMIT" (CW3-5) sign, "WORK ZONE" (G20-5aP) plaque and the "SPEED LIMIT" (R2-1) signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
- Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
- 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.
- For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

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SHEET 3 OF 12



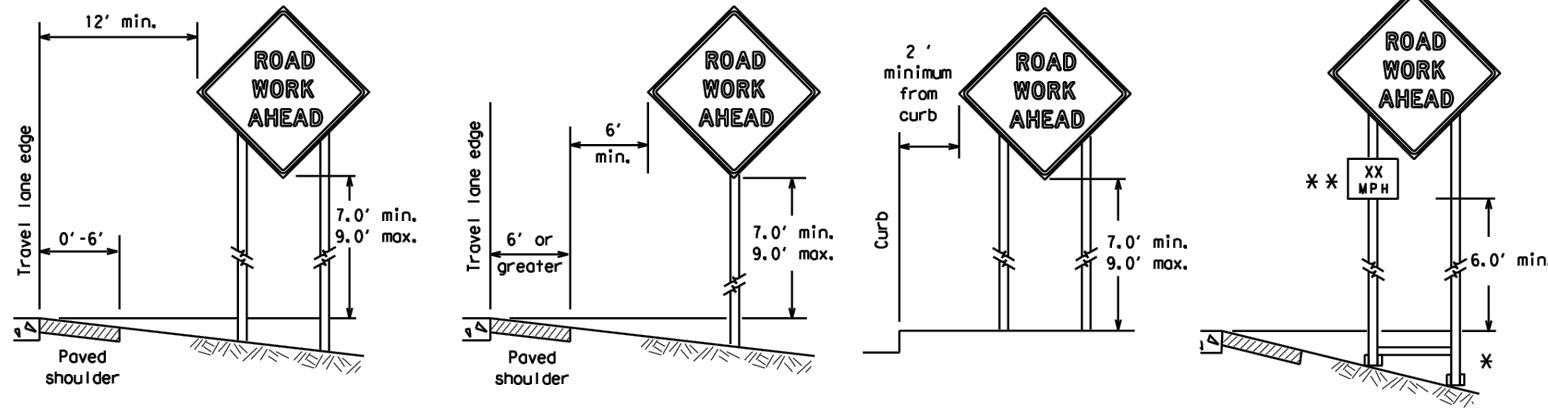
## BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC (3) - 21

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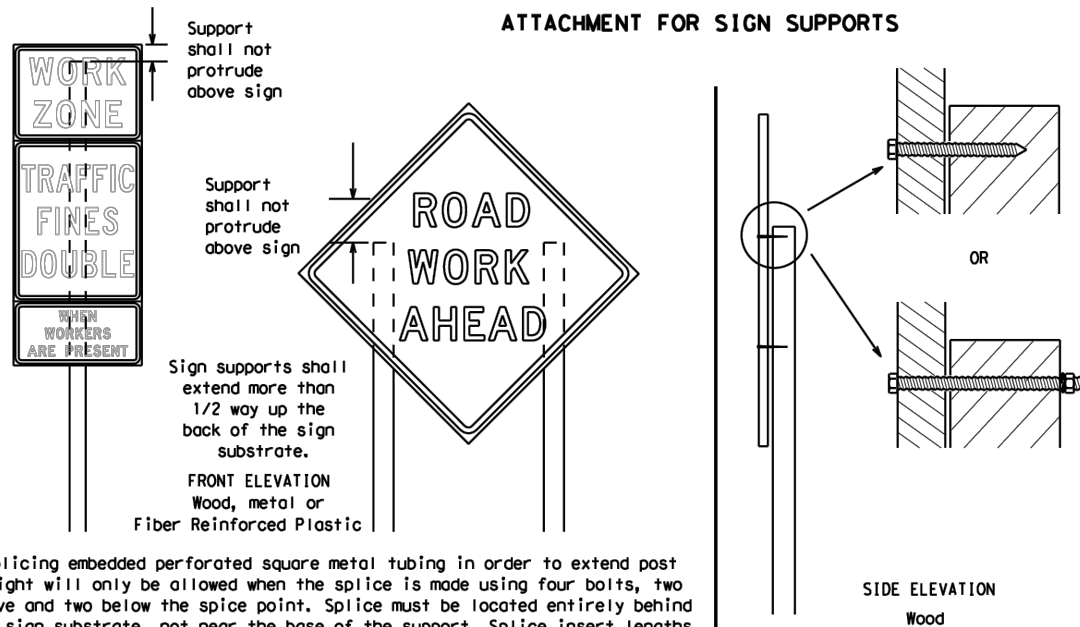
**TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS**



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

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

**ATTACHMENT FOR SIGN SUPPORTS**



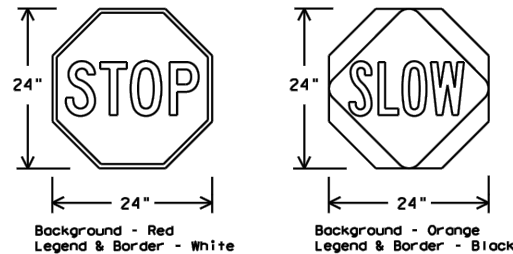
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

**STOP/SLOW PADDLES**

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24".
2. STOP/SLOW paddles shall be retroreflectORIZED when used at night.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



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

**CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS**

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

**GENERAL NOTES FOR WORK ZONE SIGNS**

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

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

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

**SIGN MOUNTING HEIGHT**

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

**SIZE OF SIGNS**

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

**SIGN SUBSTRATES**

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

**REFLECTIVE SHEETING**

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type B<sub>L</sub> or Type C<sub>L</sub>, shall be used for rigid signs with orange backgrounds.

**SIGN LETTERS**

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

**REMOVING OR COVERING**

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

**SIGN SUPPORT WEIGHTS**

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

**FLAGS ON SIGNS**

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

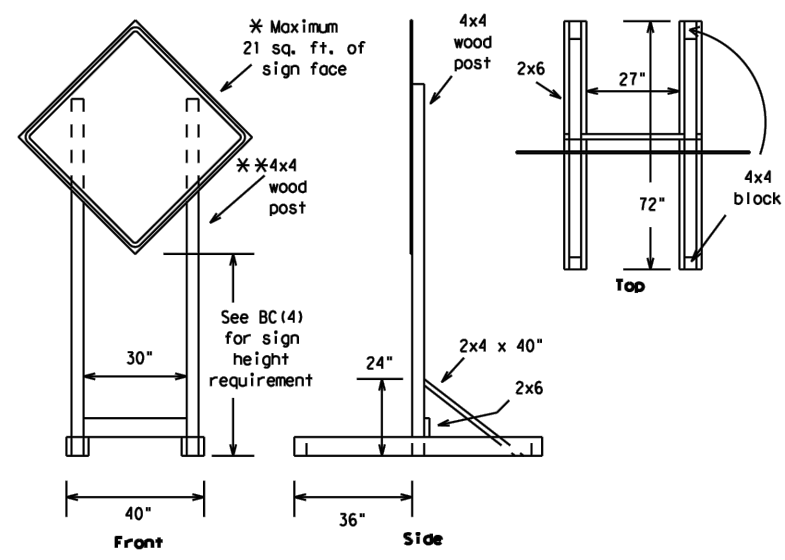


**BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES**

**BC (4) - 21**

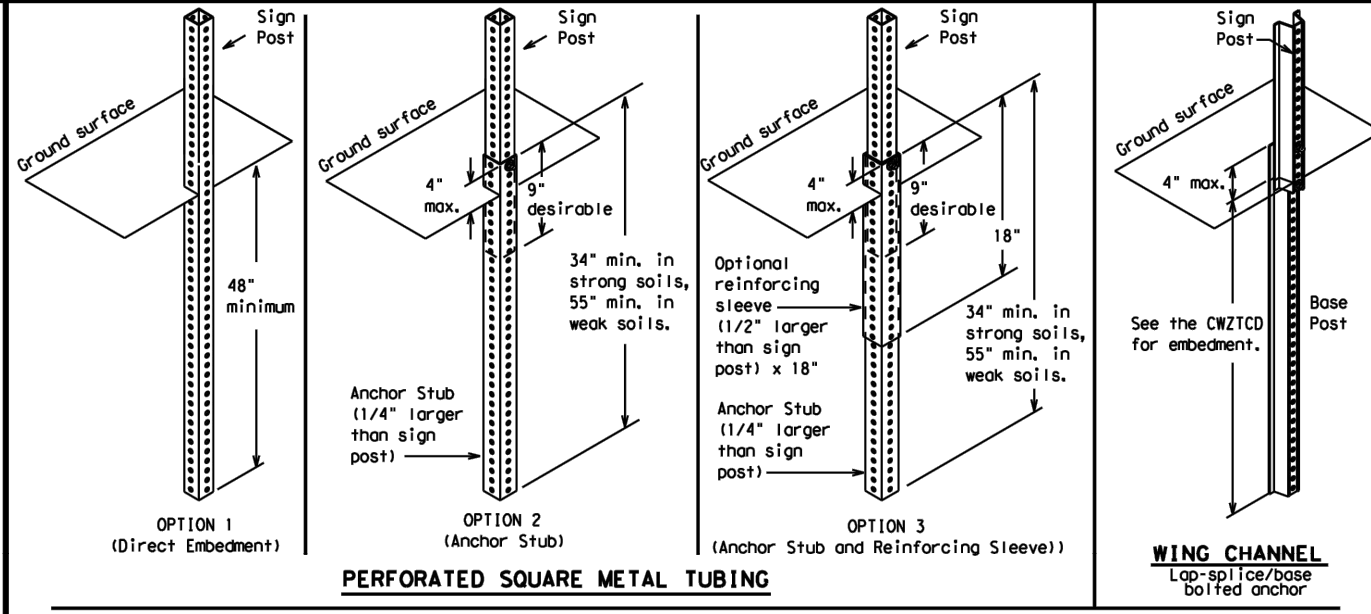
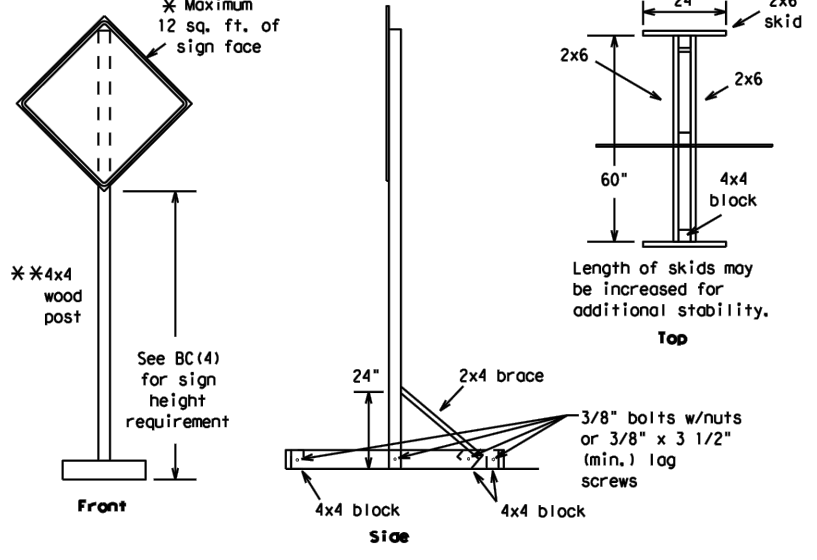
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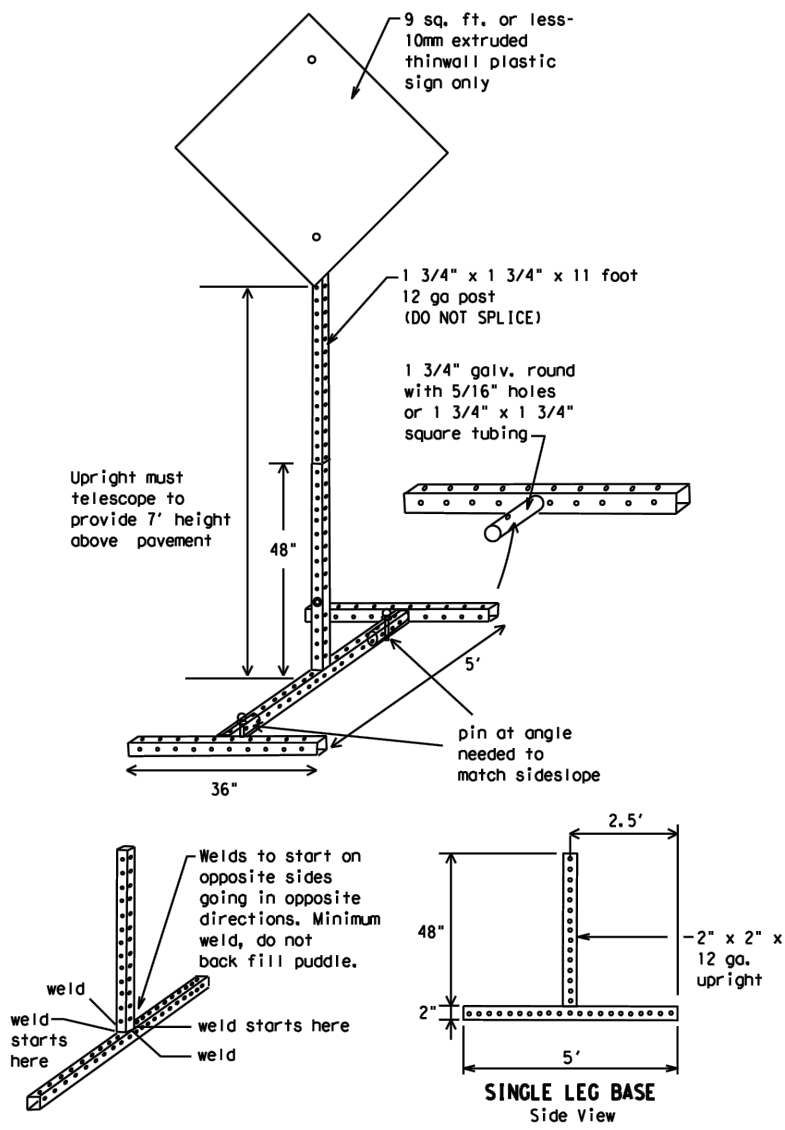
### SKID MOUNTED WOOD SIGN SUPPORTS

\* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS



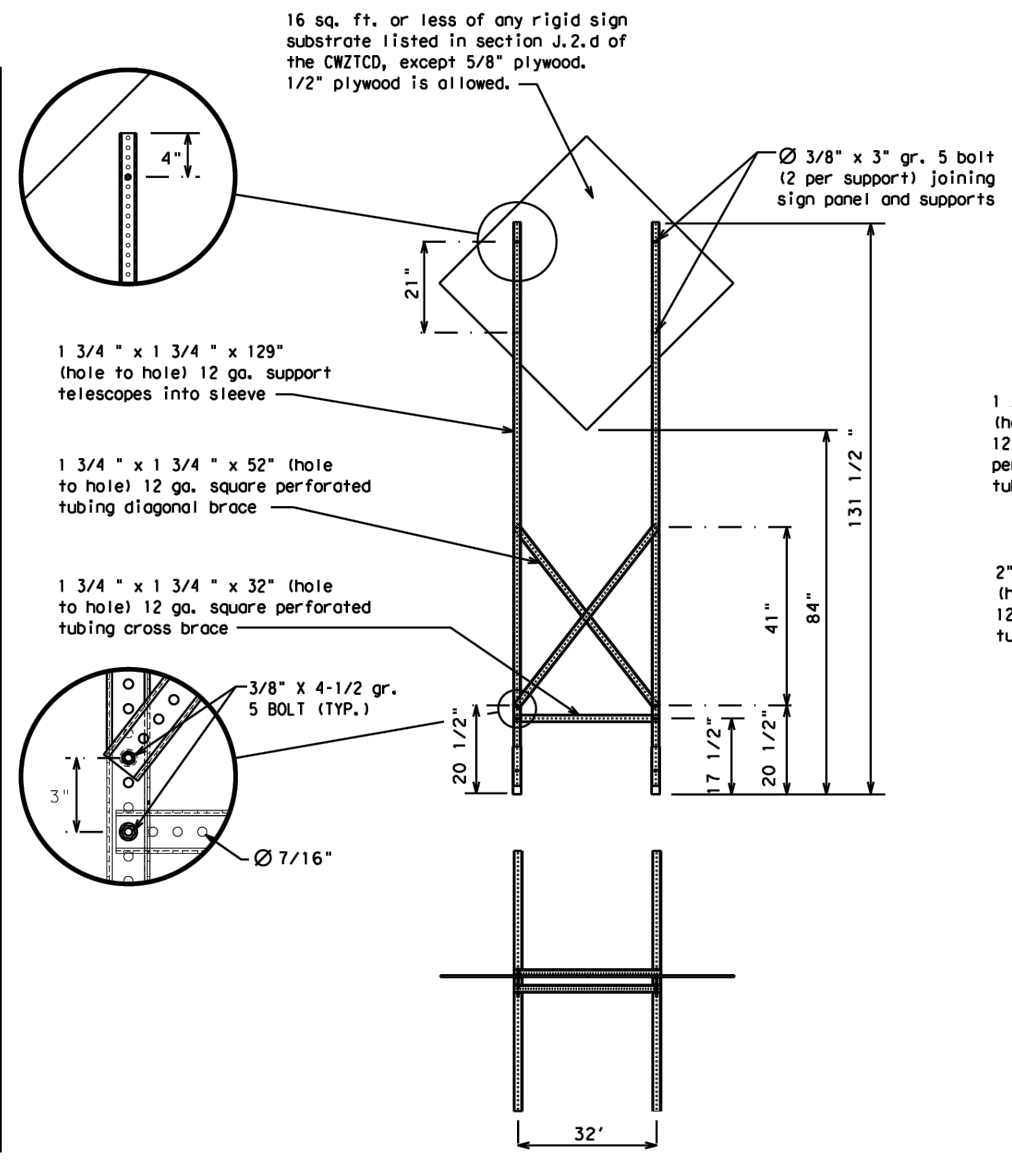
### GROUND MOUNTED SIGN SUPPORTS

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



### SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

\* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS



### WEDGE ANCHORS

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

### OTHER DESIGNS

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

### GENERAL NOTES

- Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" log screws must be used on every joint for final connection.
- 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.

SHEET 5 OF 12



## BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5) - 21

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

# RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

## PORTABLE CHANGEABLE MESSAGE SIGNS

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

## 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.

## 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.

## 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.

## 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, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

## FULL MATRIX PCMS SIGNS

- 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 "Flagger Symbol" (CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
- 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 board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

SHEET 6 OF 12



# BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC (6) - 21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	2051	01	014	FM 2473
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	25	WHEELER	35	

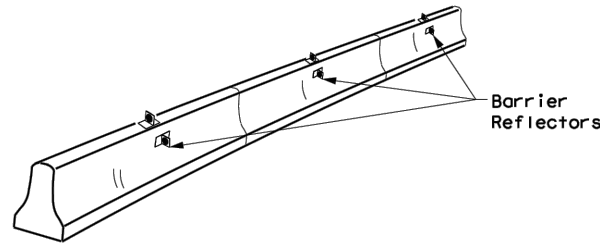
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

WORD OR PHRASE	ABBREVIATION	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major	MAJ
Alternate	ALT	Miles	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MNR
Boulevard	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Canot	CANT	North	N
Center	CTR	Northbound	(route) N
Construction Ahead	CONST AHD	Parking	PKING
CROSSING	XING	Road	RD
Detour Route	DETOUR RTE	Right Lane	RT LN
Do Not	DONT	Saturday	SAT
East	E	Service Road	SERV RD
Eastbound	(route) E	Shoulder	SHLDR
Emergency	EMER	Slippery	SLIP
Emergency Vehicle	EMER VEH	South	S
Entrance, Enter	ENT	Southbound	(route) S
Express Lane	EXP LN	Speed	SPD
Expressway	EXPWY	Street	ST
XXXX Feet	XXXX FT	Sunday	SUN
Fog Ahead	FOG AHD	Telephone	PHONE
Freeway	FRWY, FWY	Temporary	TEMP
Freeway Blocked	FWY BLKD	Thursday	THURS
Friday	FRI	To Downtown	TO DWNTN
Hazardous Driving	HAZ DRIVING	Traffic	TRAF
Hazardous Material	HAZMAT	Travelers	TRVLRS
High-Occupancy	HOV	Tuesday	TUES
Vehicle Highway	HWY	Time Minutes	TIME MIN
Hour(s)	HR, HRS	Upper Level	UPR LEVEL
Information	INFO	Vehicles (s)	VEH, VEHS
It Is	ITS	Warning	WARN
Junction	JCT	Wednesday	WED
Left	LFT	Weight Limit	WT LIMIT
Left Lane	LFT LN	West	W
Lane Closed	LN CLOSED	Westbound	(route) W
Lower Level	LWR LEVEL	Wet Pavement	WET PVMT
Maintenance	MAINT	Will Not	WONT

Roadway designation \* IH-number, US-number, SH-number, FM-number

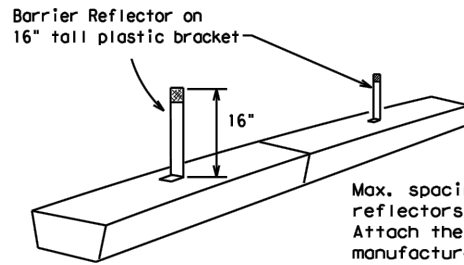
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors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



**CONCRETE TRAFFIC BARRIER (CTB)**

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

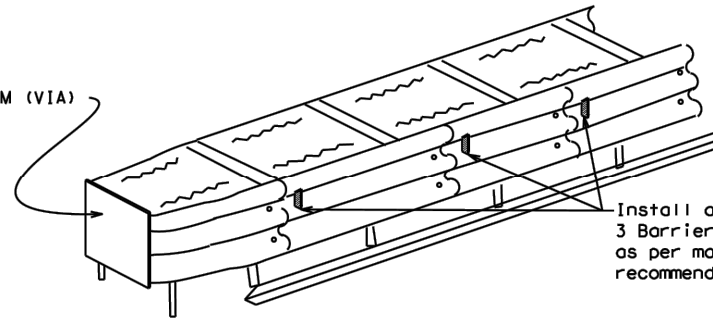


**LOW PROFILE CONCRETE BARRIER (LPCB)**

**LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES**

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

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



**DELINEATION OF END TREATMENTS**

**END TREATMENTS FOR CTB'S USED IN WORK ZONES**

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

**BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS**

**WARNING LIGHTS**

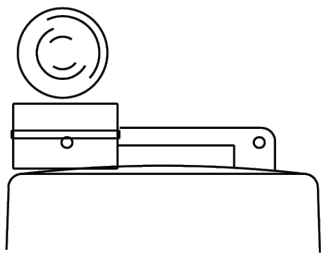
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet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

**WARNING LIGHTS MOUNTED ON PLASTIC DRUMS**

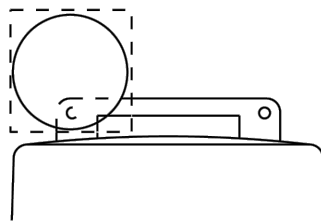
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing 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 B or Type C.
- 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.



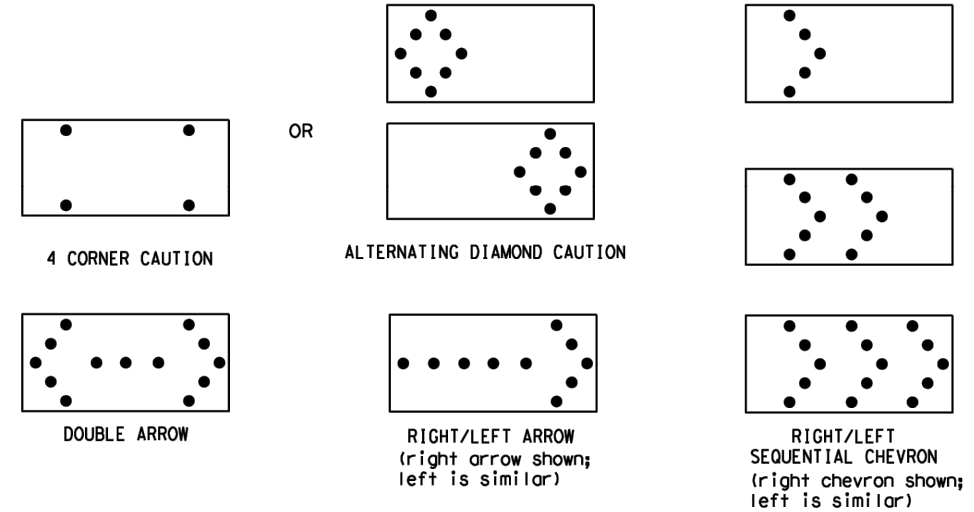
Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



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

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

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



- The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
- The straight line caution display is NOT ALLOWED.
- The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
- 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.
- The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
- A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
- A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
- Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

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

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

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

**FLASHING ARROW BOARDS**

SHEET 7 OF 12

**TRUCK-MOUNTED ATTENUATORS**

- Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
- Refer to the CWZTCD for the requirements of Level 2 or Level 3 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 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**

**BC (7) - 21**

FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		2051	01	014	FM 2473				
9-07	8-14	DIST	COUNTY		SHEET NO.				
7-13	5-21	25	WHEELER		36				

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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**

Pre-qualified plastic drums shall meet the following requirements:

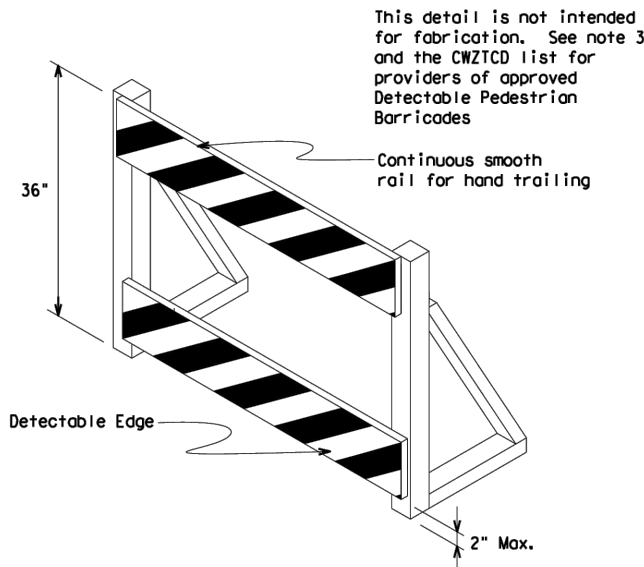
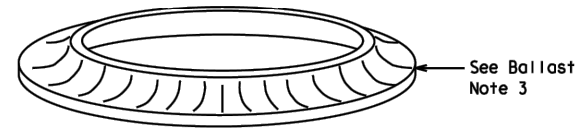
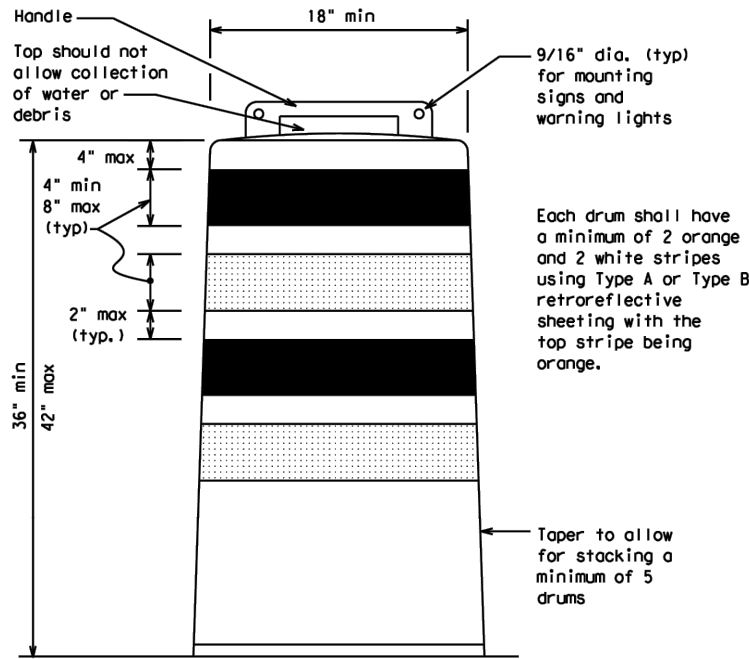
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents 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 maximum unballasted weight of 11 lbs.
- 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, "Sign Face Materials." Type A or Type B reflective 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.
- Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
- 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.

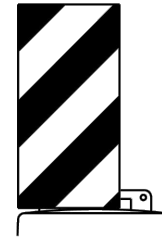


**DETECTABLE PEDESTRIAN BARRICADES**

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



18" x 24" Sign  
(Maximum Sign Dimension)  
Chevron CWI-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**

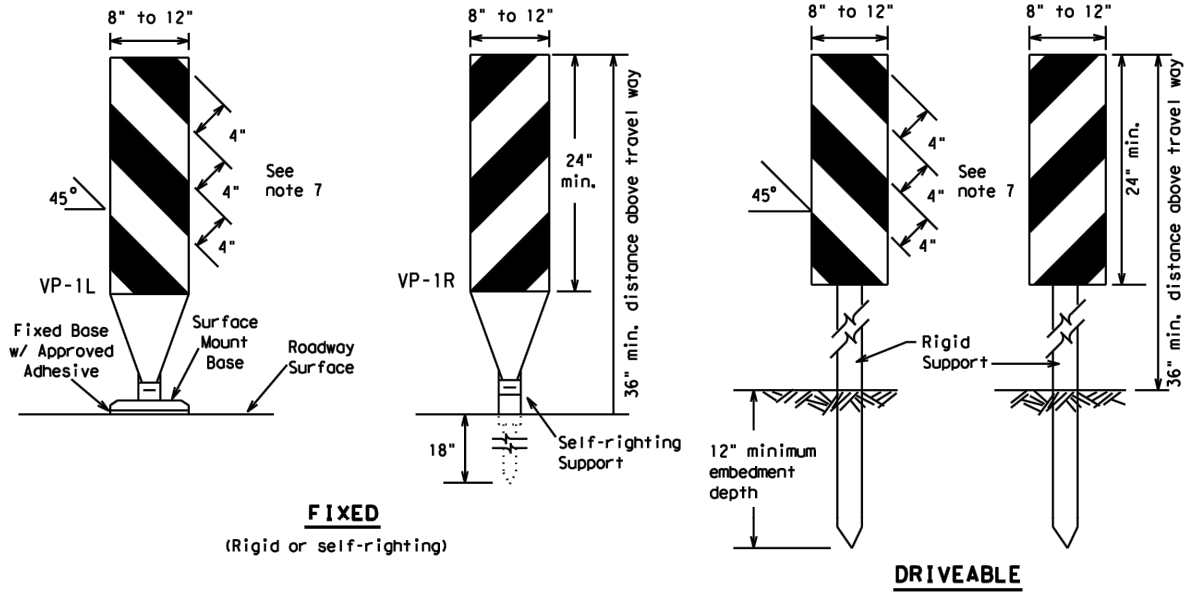
**SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS**

- 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 B<sub>FL</sub> or Type C<sub>FL</sub> Orange 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 A or Type B. 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, except for the R9 series signs discussed in note 8 below.
- 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.

SHEET 8 OF 12

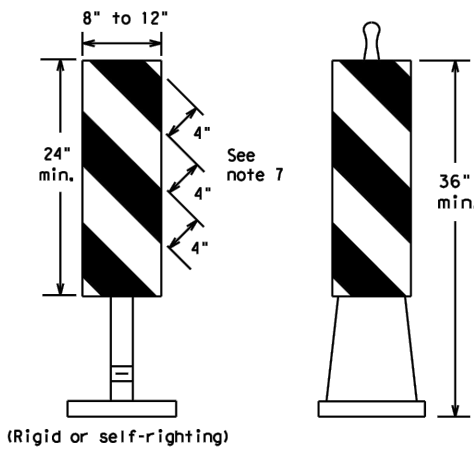
<b>BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES</b>			
<b>BC (8) - 21</b>			
FILE#	bc-21.dgn	DWG: TxDOT	CHK: TxDOT
© TxDOT	November 2002	CONT	SECT
REVISIONS		JOB	HIGHWAY
4-03	8-14	2051 01	014 FM 2473
9-07	5-21	DIST	COUNTY SHEET NO.
7-13		25	WHEELER 37

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**FIXED**  
(Rigid or self-righting)

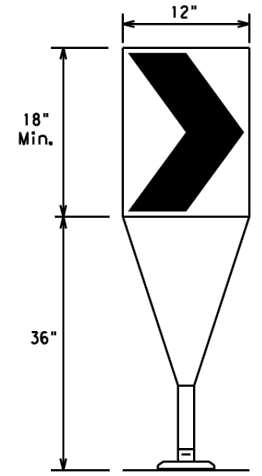
**DRIVEABLE**



**PORTABLE**

**VERTICAL PANELS (VPs)**

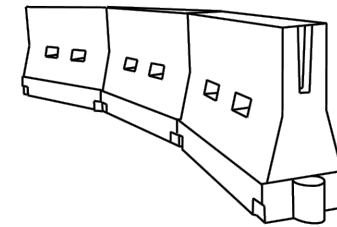
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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



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

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

**CHEVRONS**



**LONGITUDINAL CHANNELIZING DEVICES (LCD)**

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

**WATER BALLASTED SYSTEMS USED AS BARRIERS**

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

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

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

**GENERAL NOTES**

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

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

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

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

SHEET 9 OF 12



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

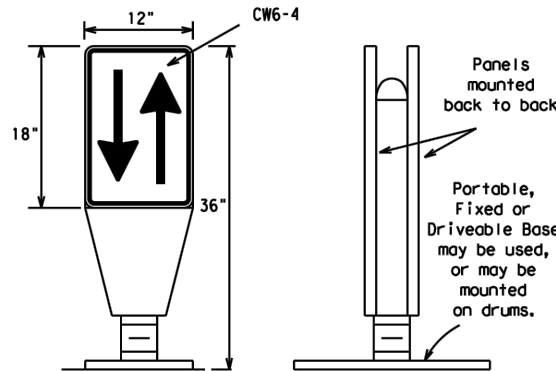
**BC (9) - 21**

FILE#	bc-21.dgn	DWG	TxDOT	CHK	TxDOT	DWG	TxDOT	CHK	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		2051	01	014	FM 2473				
9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13	5-21	25	WHEELER	38					

HI-PLAINS CIVIL ENGINEERS, LTD. 2024  
SUBMISSION: FINAL

DATE:  
FILE:

**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 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B<sub>FL</sub> or Type C<sub>FL</sub> conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.



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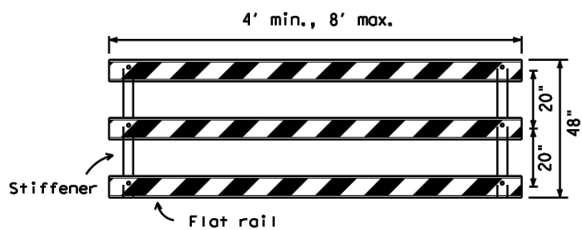
**TYPE 3 BARRICADES**

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

Barricades shall NOT be used as a sign support.



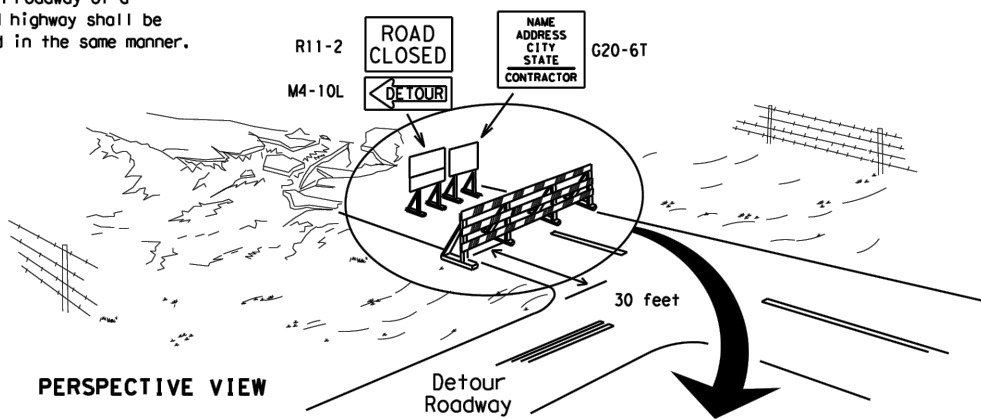
**TYPICAL STRIPING DETAIL FOR BARRICADE RAIL**



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

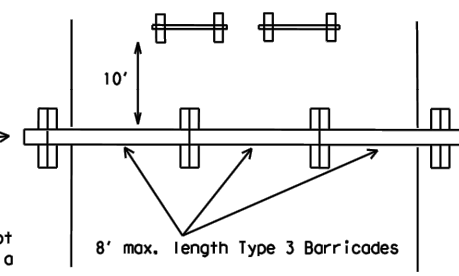
**TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES**

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



PERSPECTIVE VIEW

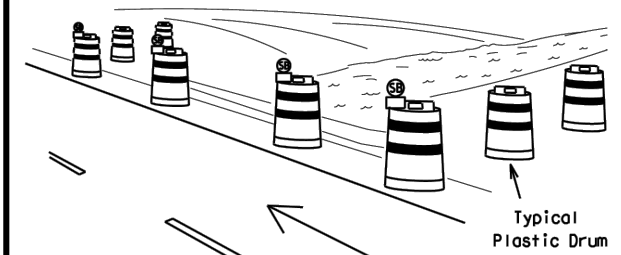
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



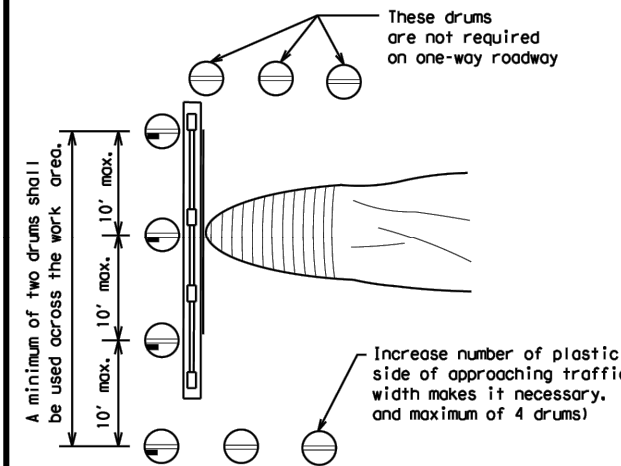
PLAN VIEW

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

**TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION**



PERSPECTIVE VIEW

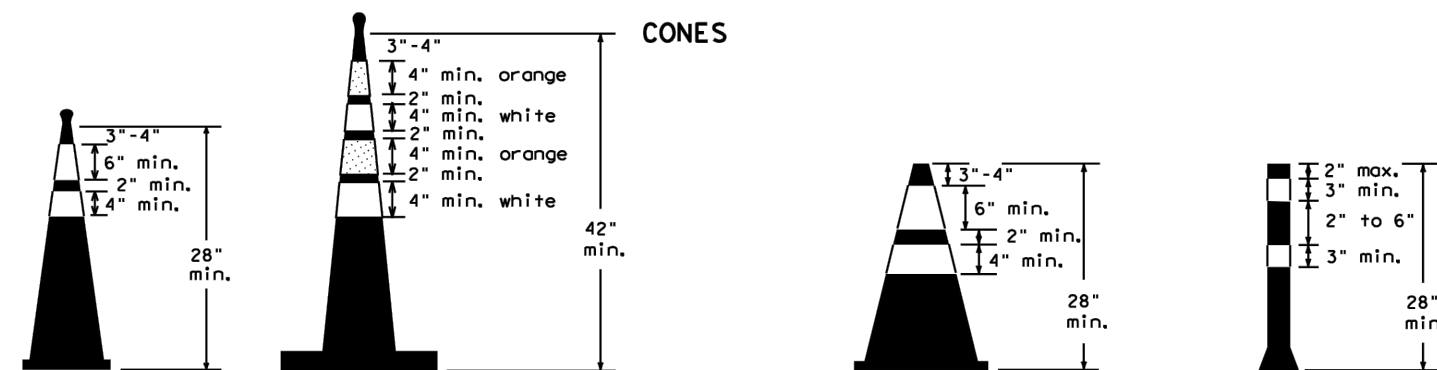


PLAN VIEW

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.

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

**CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS**

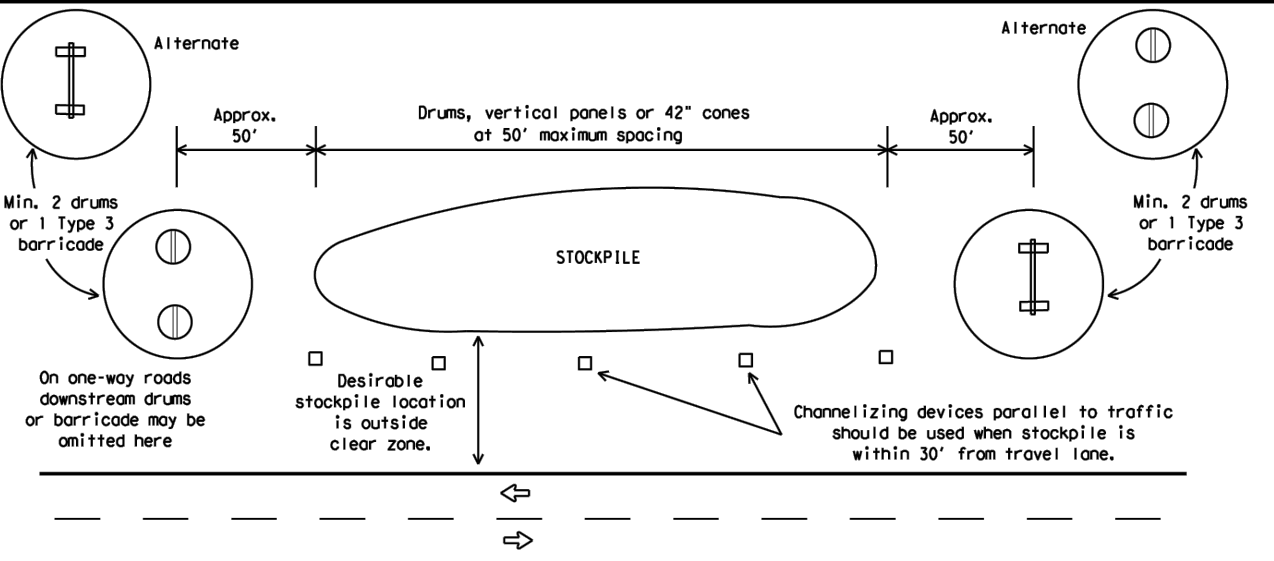


Two-Piece cones

One-Piece cones

Tubular Marker

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.



**TRAFFIC CONTROL FOR MATERIAL STOCKPILES**

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

**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (10) - 21**

FILE:	bc-21.dgn	DW:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		2051	01	014	FM 2473				
9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13	5-21	25	WHEELER	39					

DATE:  
FILE:



## 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.

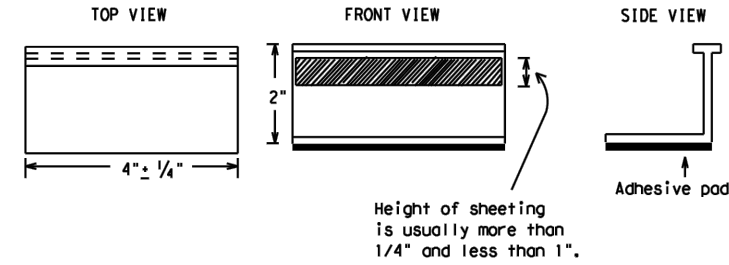
### MAINTAINING WORK ZONE PAVEMENT MARKINGS

- 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 three days, 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 as described in Item 677.
- 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
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS	DMS-8241
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS	DMS-8242

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

SHEET 11 OF 12



## BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

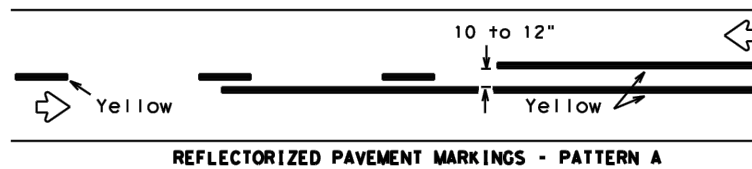
**BC(11)-21**

FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	February 1998	CONT	SECT	JOB	HIGHWAY				
REVISIONS		2051	01	014	FM	2473			
2-98	9-07	5-21							
1-02	7-13			COUNTY		SHEET NO.			
11-02	8-14	25	WHEELER		40				

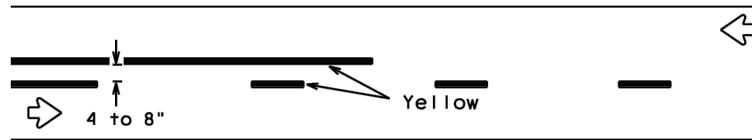
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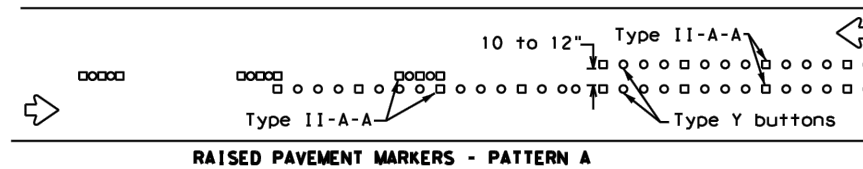
## PAVEMENT MARKING PATTERNS



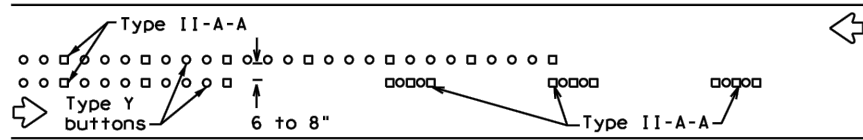
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



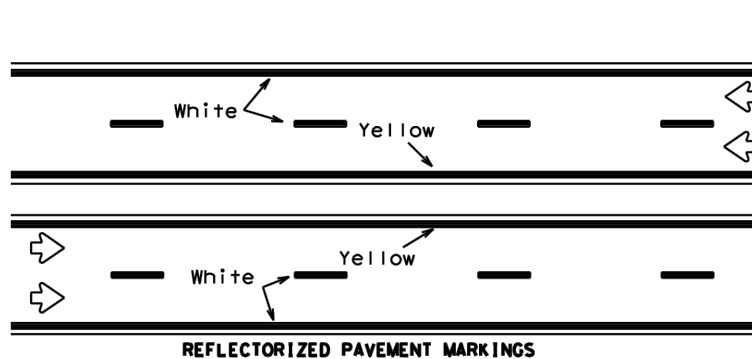
RAISED PAVEMENT MARKERS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN B

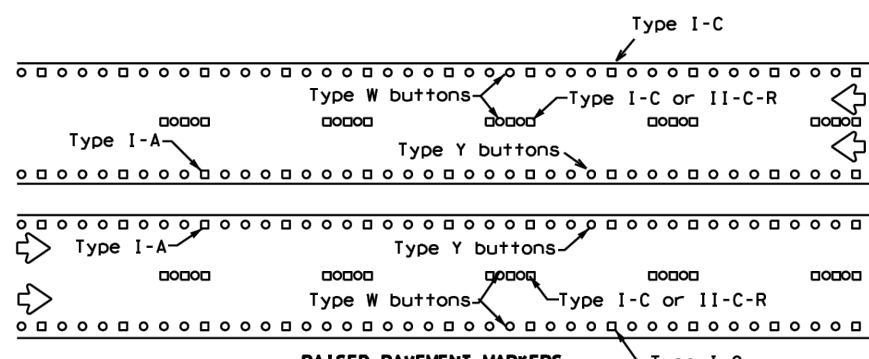
Pattern A is the TxDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectORIZED pavement markings.

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



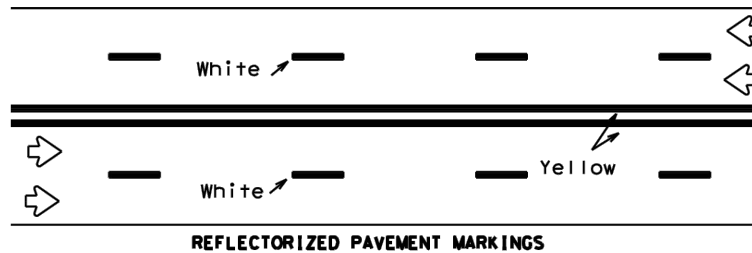
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



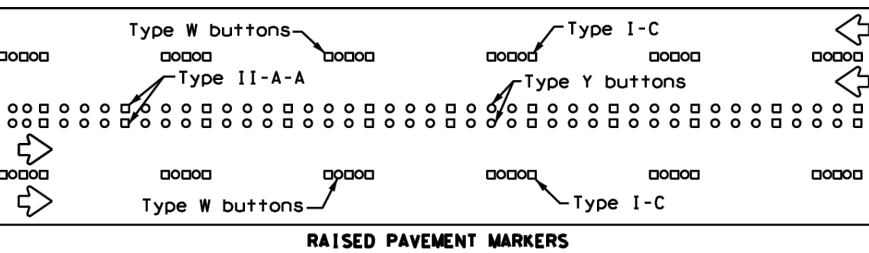
RAISED PAVEMENT MARKERS

## EDGE & LANE LINES FOR DIVIDED HIGHWAY



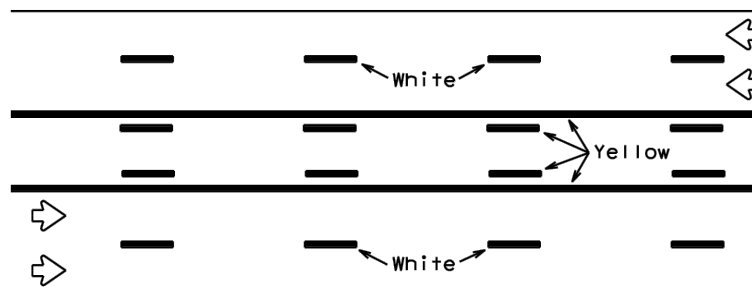
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



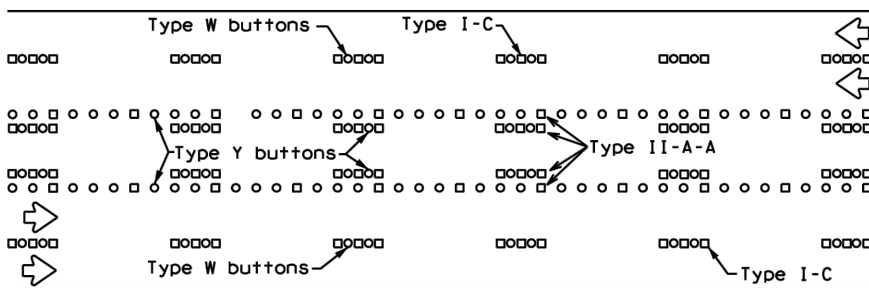
RAISED PAVEMENT MARKERS

## LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

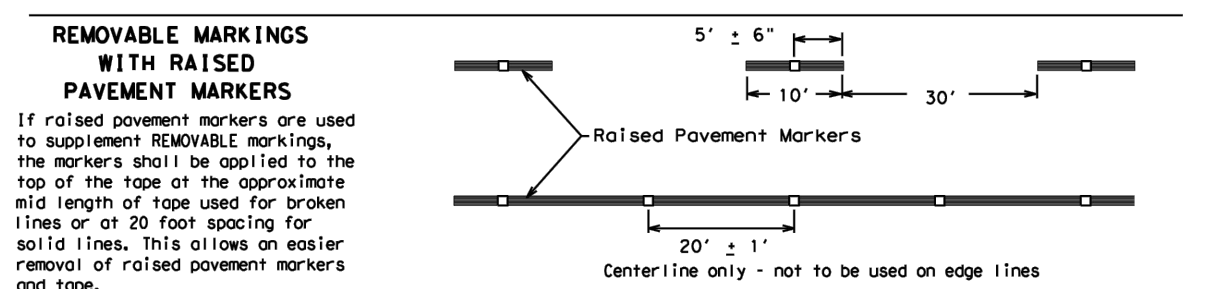
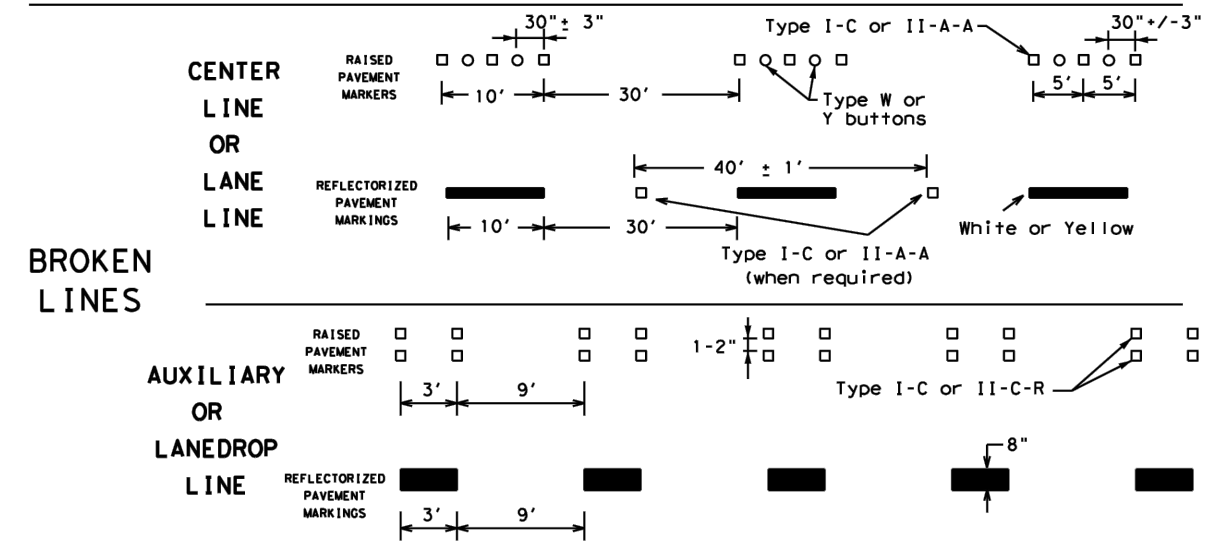
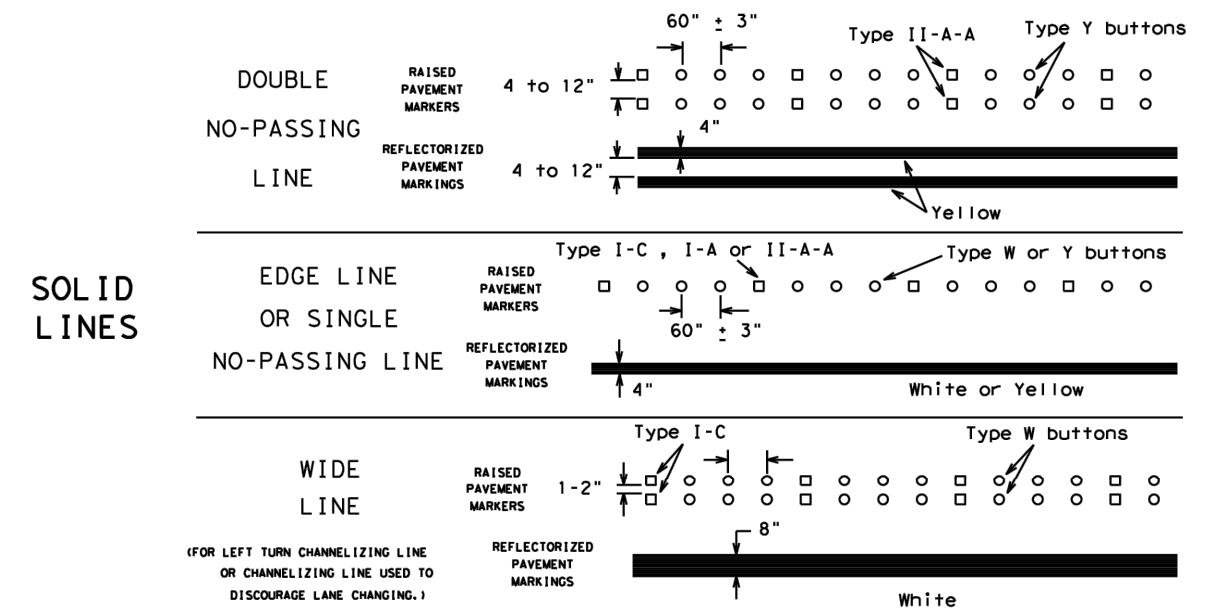
Prefabricated markings may be substituted for reflectORIZED pavement markings.




RAISED PAVEMENT MARKERS

## TWO-WAY LEFT TURN LANE

## STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



SHEET 12 OF 12



Texas Department of Transportation

Traffic Safety Division Standard

### BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

## BC (12) - 21

FILE: bc-21.dgn	DWG: TxDOT	CHK: TxDOT	DWG: TxDOT	CHK: TxDOT
© TxDOT February 1998	CONT: 2051	SECT: 01	JOB: 014	HIGHWAY: FM 2473
REVISIONS				
1-97 9-07 5-21				
2-98 7-13				
11-02 8-14	DIST: 25	COUNTY: WHEELER	SHEET NO.: 41	

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

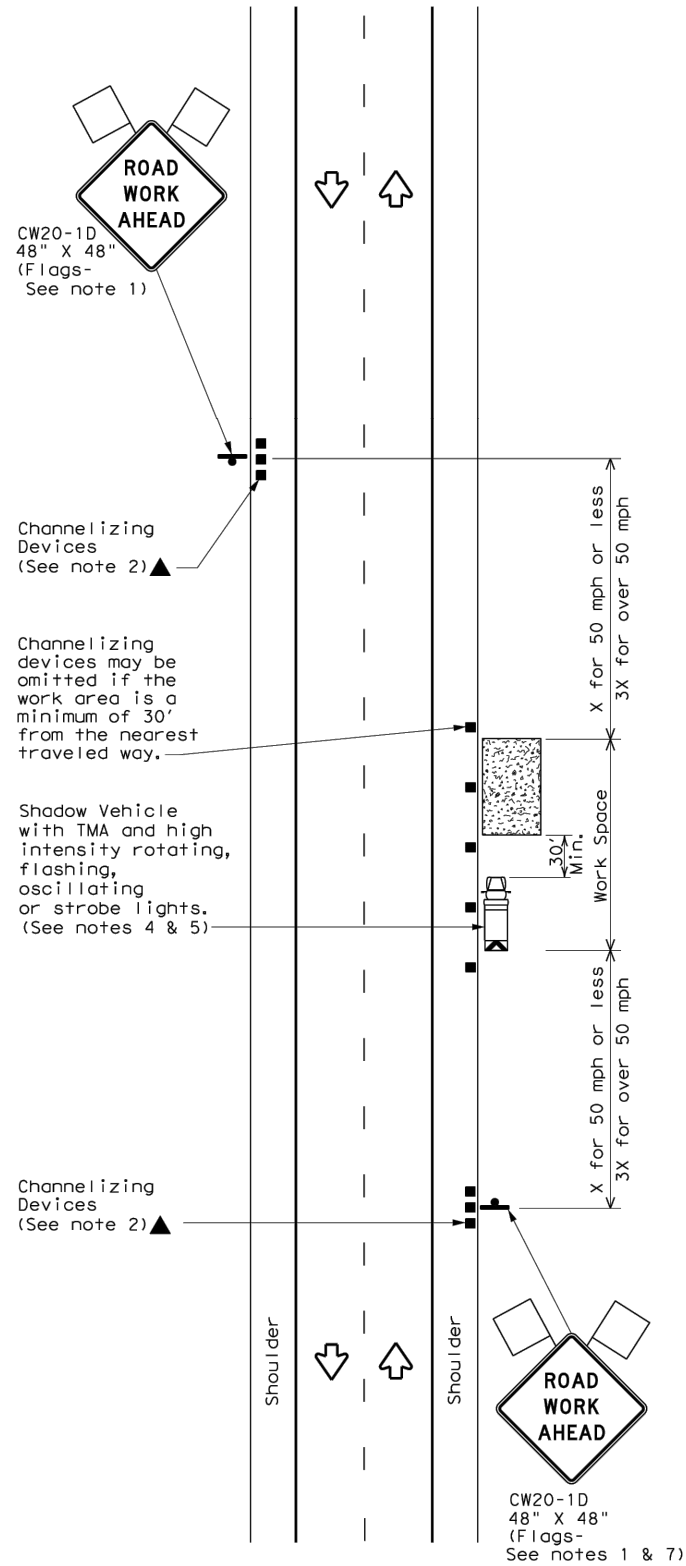
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HI-PLAINS CIVIL ENGINEERS, LTD. 2024  
SUBMISSION: FINAL

DATE:  
FILE:

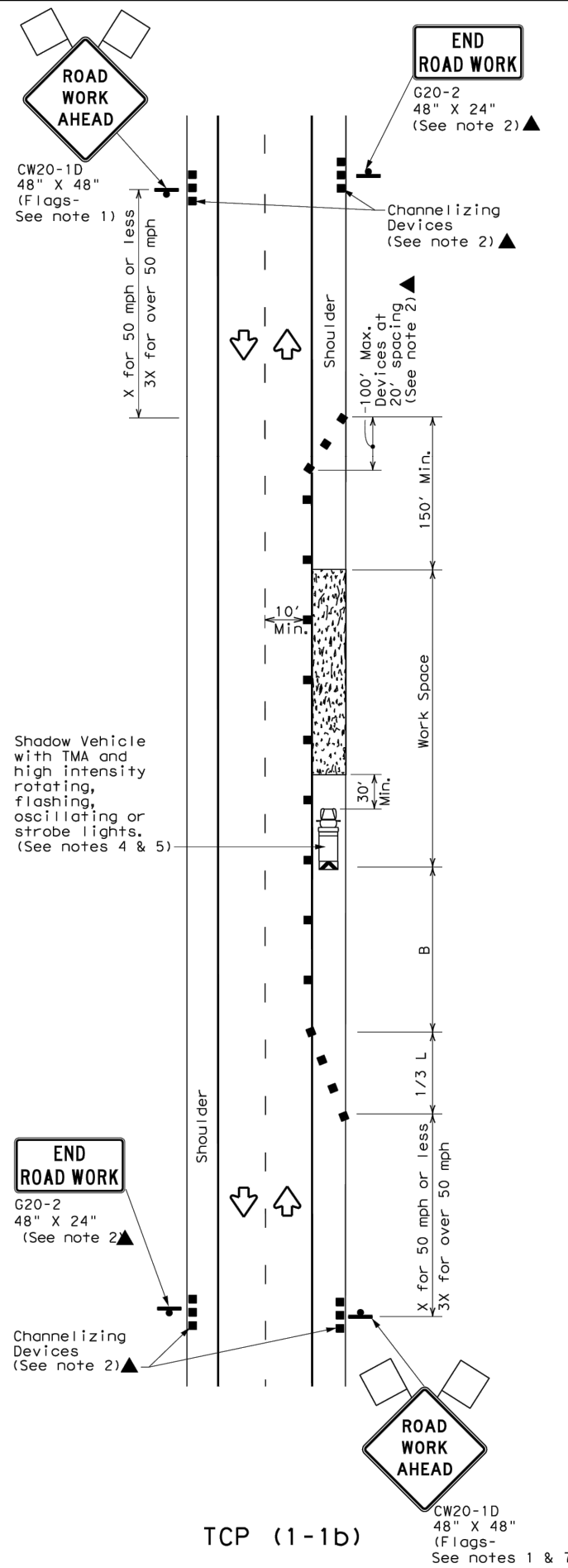
DISCLAIMER: This standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:



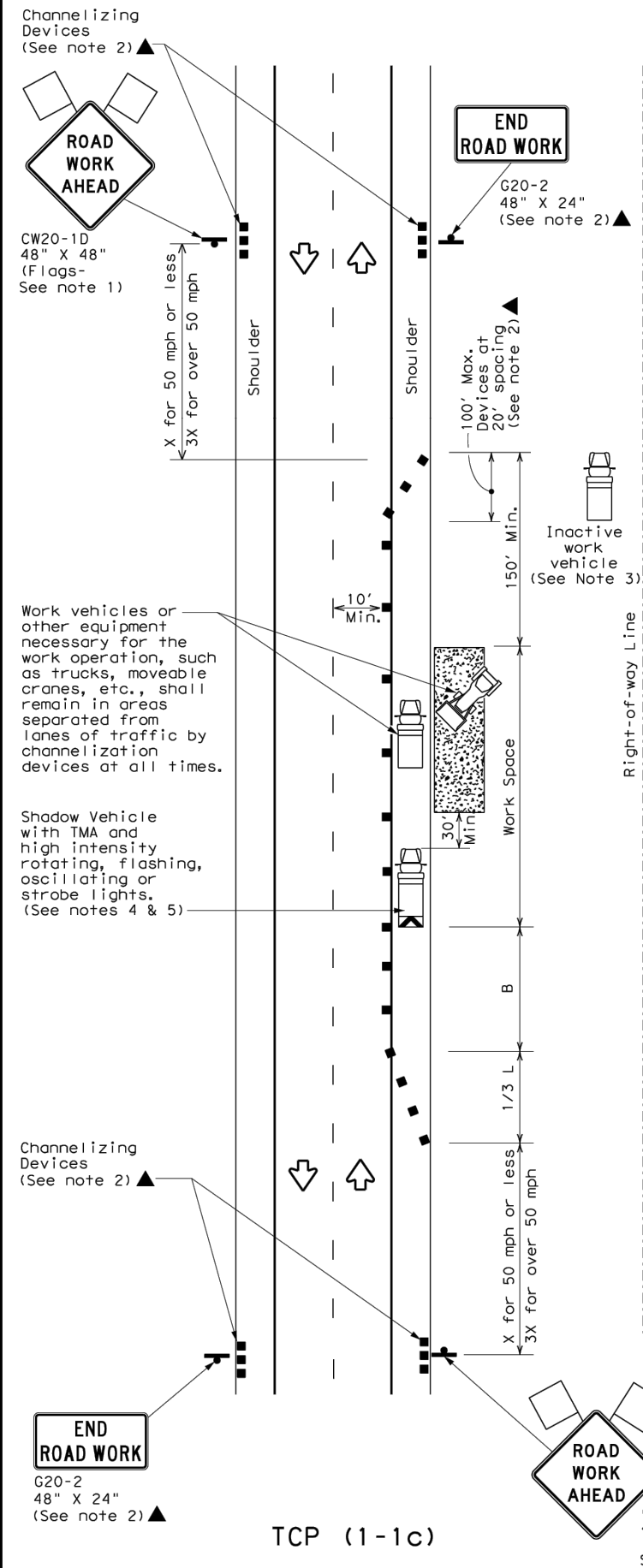
TCP (1-1a)

**WORK SPACE NEAR SHOULDER**  
Conventional Roads



TCP (1-1b)

**WORK SPACE ON SHOULDER**  
Conventional Roads



TCP (1-1c)

**WORK VEHICLES ON SHOULDER**  
Conventional Roads

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		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"
		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'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L = WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

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

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

- GENERAL NOTES**
- 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.
  - Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
  - 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.
  - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
  - See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
  - CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.



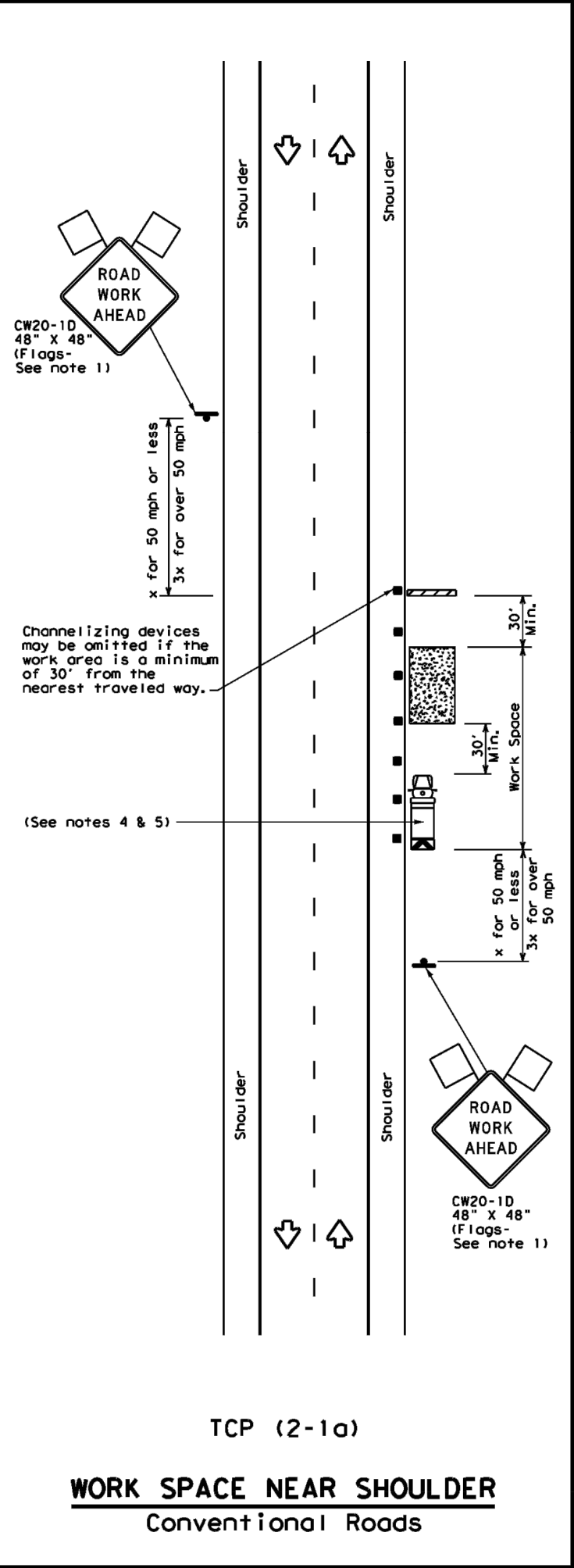
**TRAFFIC CONTROL PLAN**  
CONVENTIONAL ROAD  
SHOULDER WORK

TCP (1-1)-18

FILE: tcp1-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	2051	01	014	FM 2473
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 2-12	25	WHEELER	42	
1-97 2-18				

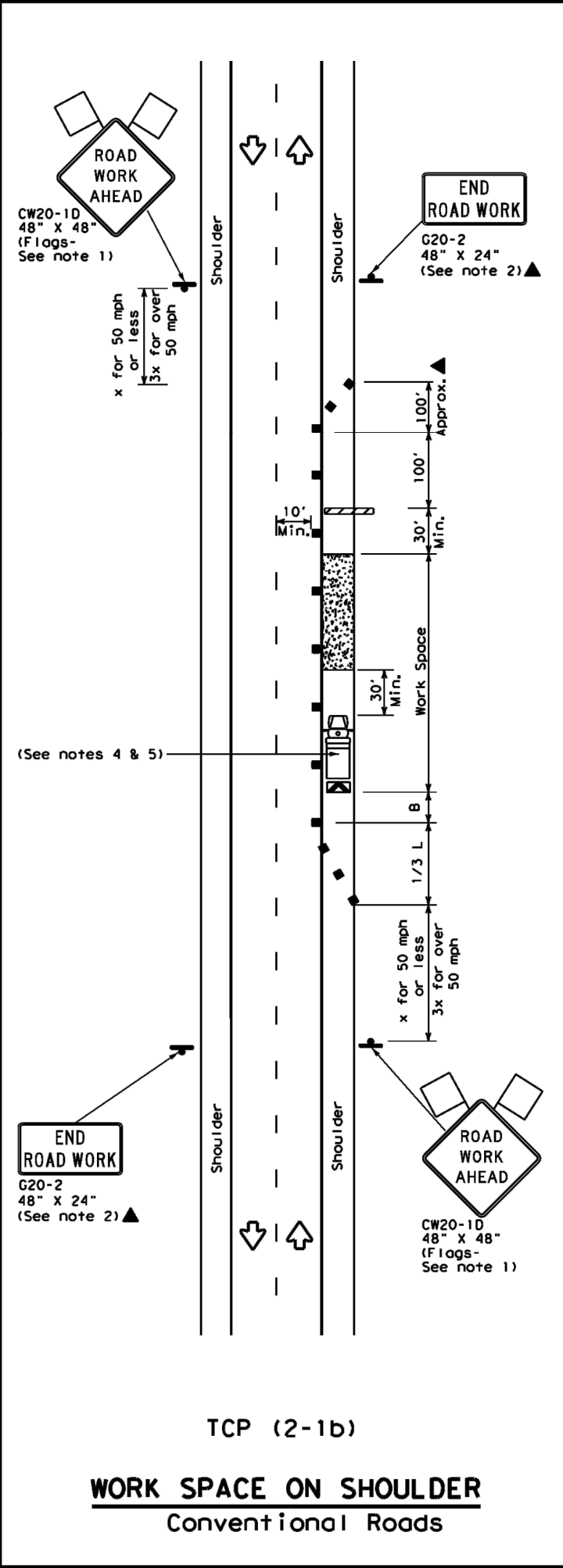
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DATE:  
FILE:



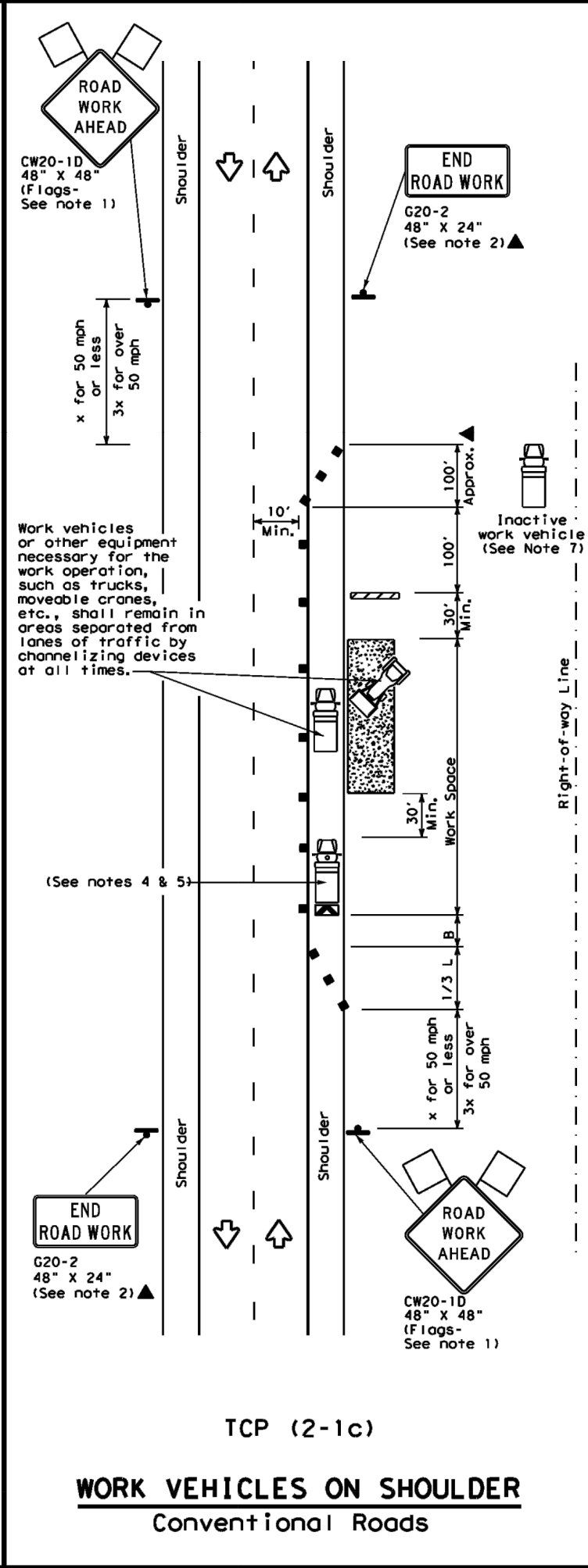
TCP (2-1a)

**WORK SPACE NEAR SHOULDER**  
Conventional Roads



TCP (2-1b)

**WORK SPACE ON SHOULDER**  
Conventional Roads



TCP (2-1c)

**WORK VEHICLES ON SHOULDER**  
Conventional Roads

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		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"
		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'
35		205'	225'	245'	35'	70'	160'	120'
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70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

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

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

- GENERAL NOTES**
- 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 in the plans, or for routine maintenance work, when approved by the Engineer.
  - Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
  - Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
  - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
  - See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
  - Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
  - CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.



**TRAFFIC CONTROL PLAN**  
**CONVENTIONAL ROAD**  
**SHOULDER WORK**

**TCP (2-1) - 18**

FILE:	tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT	December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS		2051	01	014	FM 2473
2-94	4-98	DIST		COUNTY	SHEET NO.
8-95	2-12	25		WHEELER	43
1-97	2-18				



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DATE:  
FILE:

**I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402**

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

- -
- No Action Required     Required Action

Action No.

- Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
- Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
- Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
- When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

**II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404**

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

- No Permit Required
- Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)
- Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)
- Individual 404 Permit Required
- Other Nationwide Permit Required: NWP# \_\_\_\_\_

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

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The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

**Best Management Practices:**

Erosion	Sedimentation	Post-Construction TSS
<input type="checkbox"/> Temporary Vegetation	<input type="checkbox"/> Silt Fence	<input type="checkbox"/> Vegetative Filter Strips
<input type="checkbox"/> Blankets/Matting	<input type="checkbox"/> Rock Berm	<input type="checkbox"/> Retention/Irrigation Systems
<input type="checkbox"/> Mulch	<input type="checkbox"/> Triangular Filter Dike	<input type="checkbox"/> Extended Detention Basin
<input type="checkbox"/> Sodding	<input type="checkbox"/> Sand Bag Berm	<input type="checkbox"/> Constructed Wetlands
<input type="checkbox"/> Interceptor Swale	<input type="checkbox"/> Straw Bale Dike	<input type="checkbox"/> Wet Basin
<input type="checkbox"/> Diversion Dike	<input type="checkbox"/> Brush Berms	<input type="checkbox"/> Erosion Control Compost
<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Mulch Filter Berm and Socks
<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks
<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Vegetation Lined Ditches
	<input type="checkbox"/> Stone Outlet Sediment Traps	<input type="checkbox"/> Sand Filter Systems
	<input type="checkbox"/> Sediment Basins	<input type="checkbox"/> Grassy Swales

**III. CULTURAL RESOURCES**

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

- No Action Required     Required Action

Action No.

- Refer to ITEM 104; protection notes.
- Notes shall be reviewed with contractor during pre-construction meeting.
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**IV. VEGETATION RESOURCES**

Preserve native vegetation to the extent practical. Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

- No Action Required     Required Action

Action No.

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**V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS.**

- No Action Required     Required Action

Action No.

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If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediate area, and contact the Engineer immediately.

**LIST OF ABBREVIATIONS**

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

**VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES**

General (applies to all projects):

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

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

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

Contact the Engineer if any of the following are detected:

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

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

- Yes     No

If "No", then no further action is required.

If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

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

- Yes     No

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

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

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

- No Action Required     Required Action

Action No.

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**VII. OTHER ENVIRONMENTAL ISSUES**

(includes regional issues such as Edwards Aquifer District, etc.)

- No Action Required     Required Action

Action No.

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- 



*Adolfo Garcia* 5/24/24  
HI-PLAINS CIVIL ENGINEERS  
F-4174



**ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS EPIC**

FILE: epic.dgn	DW: TxDOT	CK: RG	DW: VP	CK: AR
© TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY
12-12-2011 (DS)	2051	01	014	FM 2473
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY		SHEET NO.
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	25	WHEELER		44