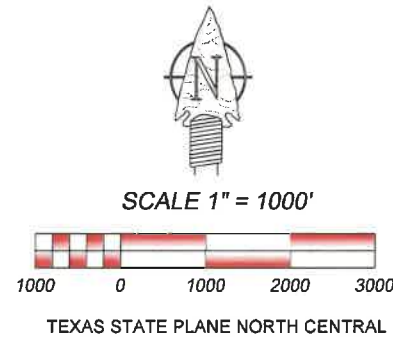


FINAL PLANS

NAME OF CONTRACTOR: _____
 DATE OF LETTING: _____
 DATE WORK BEGAN: _____
 DATE WORK COMPLETED: _____
 DATE WORK ACCEPTED: _____
 SUMMARY OF CHANGE ORDERS: _____



STATE OF TEXAS

PLANS OF PROPOSED COUNTY ROAD 653 PAVEMENT IMPROVEMENTS FARMERSVILLE, COLLIN CO., TX

FOX ENGINEERING
 Fox Engineering, Inc.
 211 E Street N.W., PO Box 666
 Ardmore, Oklahoma 73401
 Phone: 580.223.2319
 Fax: 580.223.2482
 E-mail: foxengineering@foxglobal.net
 ARDMORE-OKLAHOMA

DESIGN	FED. RD. DIV. NO.	FEDERAL AID or STATE PROJECT NO.		HIGHWAY NO.
GRAPHICS		DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	COLLINS	1
CHECK	CONTROL	SECTION	JOB	
			22066	

NOTE:

- ALL TRAFFIC CONTROL SHALL COMPLY TO TXDOT STANDARDS, SPECIFICATIONS, STANDARD PLANS, AND TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- EXISTING ROADWAY SURFACE SHALL BE MILLED AND STOCKPILED, FOR USE OF SHOULDERING OF NE CONSTRUCTION.

SCOPE OF WORK:

THE INTENT OF THIS PROJECT IS TO CONSTRUCT RE CONSTRUCT APPROX. A HALF MILE OF COUNTY ROAD 653, TO ALLOW FOR BETTER TRAFFIC FLOW FOR THE ENTERING AND EXITING OF THE MARTIN MARIETTA FARMERSVILLE SITE, FARMERSVILLE, COLLIN CO., TX.

QUANTITIES

ITEM	DESCRIPTION	UNIT	QUANT.
500	MOBILIZATION	LS	1
502	BARRICADE AND TRAFFIC CONTROL	LS	1
105	ASPHALT PAVEMENT REMOVAL	SY	5720
110	EXCAVATION	CY	3,100
132	EMBANKMENT (COMPACTED)	CY	700
460	36" CGMP	LF	34.0
420	CONCRETE HEADWALL FOR 36" CGMP	EA	2
460	17" X 13" ARCHED CGMP	LF	105
420	CONCRETE HEADWALL FOR 17" X 13" ARCHED CGMP	EA	2
432	RIP RAP	TONS	4
247	6" TXDOT ITEM 247 TYPE D GRADE 1 OR 2 FLEXIBLE BASE	TONS	1300.0
250	8" LIME SUBGRADE TREATMENT (8% PER GEO. REPORT)	SY	7,350
360	12" REINFORCED CONCRETE PAVEMENT	SY	7,205
666	STRIPING - DOUBLE 4" YELLOW	LF	2,350

TYPE OF WORK: CONSTRUCTION OF 24' WIDE CONCRETE ROAD SECTION.



SHEET INDEX:


- TITLE SHEET

CIVIL SHEETS:

- ALIGNMENT PLAN
- 24' ROADWAY PLAN AND PROFILE
- TYPICAL ROADWAY SECTIONS
- SAW JOINT DETAILS

TXDOT STANDARD DRAWINGS:

- REINFORCED CONCRETE PAVEMENT DETAILS - CRCP(1)-20, CRCP (1)-20, JS-14
- TRAFFIC CONTROL - BC(1)-14, BC(5)-14, BC(6)-14, BC(8)-14, BC(10)-14, BC(11)-14
- CONCRETE HEADWALL DETAILS - CH-FW-O
- PAVEMENT MARKINGS - PM (1)-12
- STREET SIGNAGE - SMD(GEN)-08, SMD(SLIP-1)-08 (DAL)

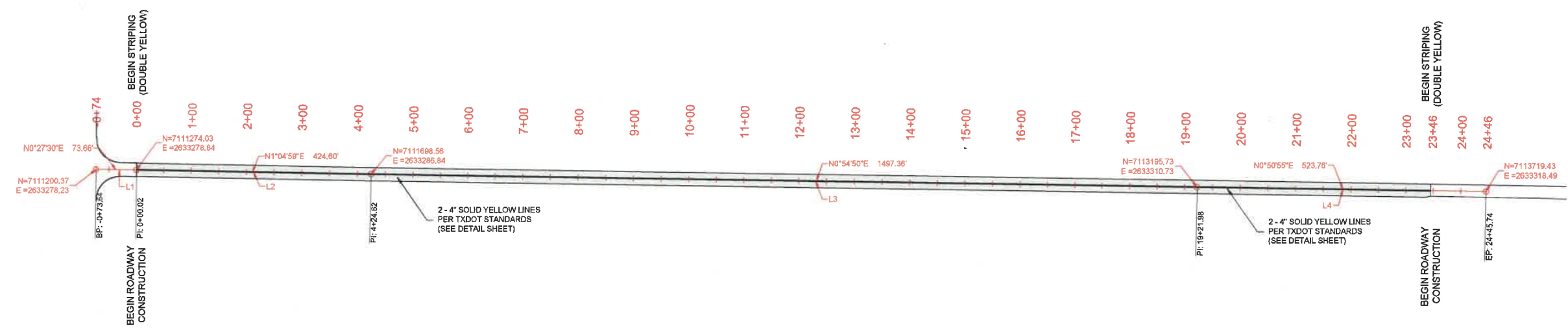
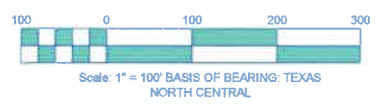
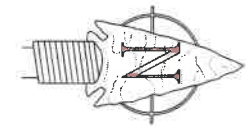


J. Steven Fox

SUBMITTED FOR LETTING: DECEMBER 12, 2022

J. STEVEN FOX P.E. 63036
CONSULTANT DESIGN ENGINEER OR PROJECT MANAGER

Approved for Collin County
 by: *M. J. Jones* 2/9/2023



LINE TABLE: ALIGNMENTS

Line #	Length	Direction	Start Point	End Point
L1	73.66	N0° 27' 29.73"E	(2633278.23,7111200.37)	(2633278.82,7111274.03)
L2	424.80	N1° 04' 59.13"E	(2633278.82,7111274.03)	(2633286.84,7111698.56)
L3	1497.36	N0° 54' 50.39"E	(2633286.84,7111698.56)	(2633310.73,7113195.73)
L4	523.76	N0° 50' 55.49"E	(2633310.73,7113195.73)	(2633318.49,7113719.43)

SURVEY CONTROL POINTS

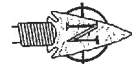
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
BENCHMARKS				
BM #1	7111247.32	2634152.56	634.97	CONC MONUMENT
BM #2	7111238.31	2635218.56	639.31	BENCHMARK
PROJECT CONTROL				
CP #1	7111267.84	2633280.89	654.96	BRASS DISC FND
CP #2	7111237.33	263330.37	651.82	BRASS DISC FND
CP #3	7111267.73	2633301.10	654.06	BRASS DISC FND
CP #4	7111229.63	2634227.45	637.66	BRASS DISC FND



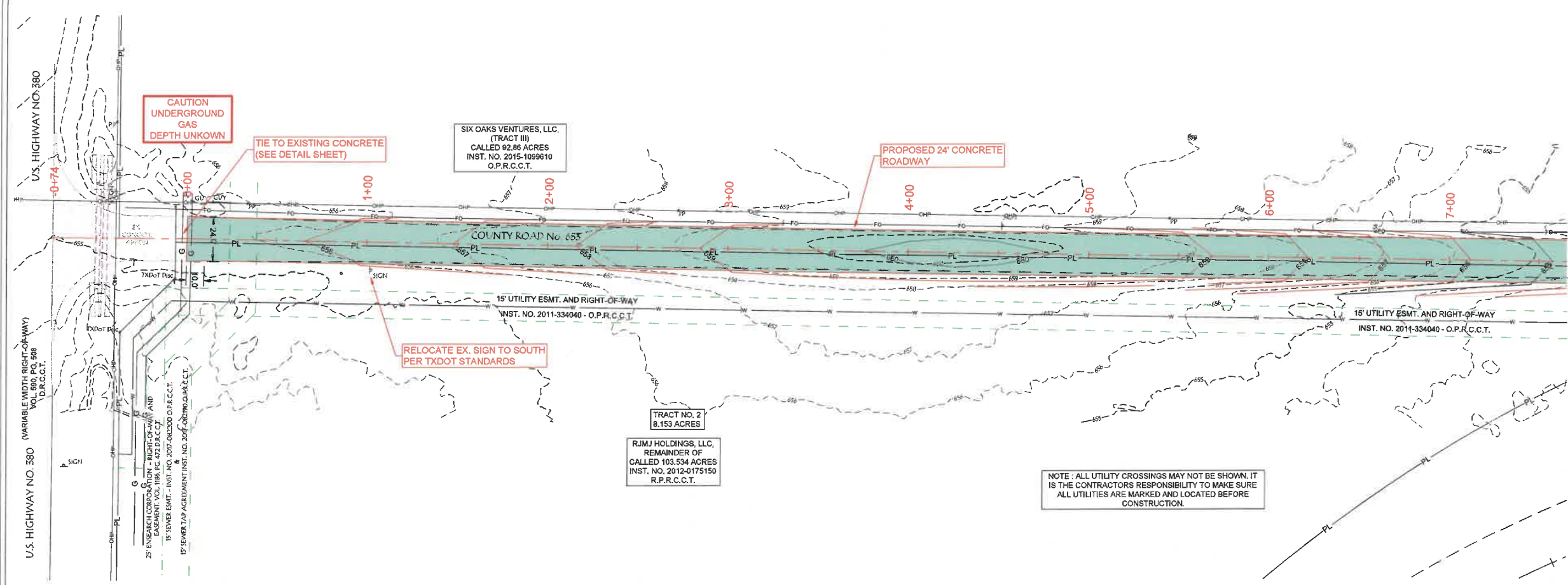
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 E-mail: foxengineering@sbcglobal.net

**ALIGNMENT / STRIPING PLAN
 COUNTY ROAD #653
 PAVING IMPROVEMENTS
 FARMERSVILLE
 COLLIN CO., TX**

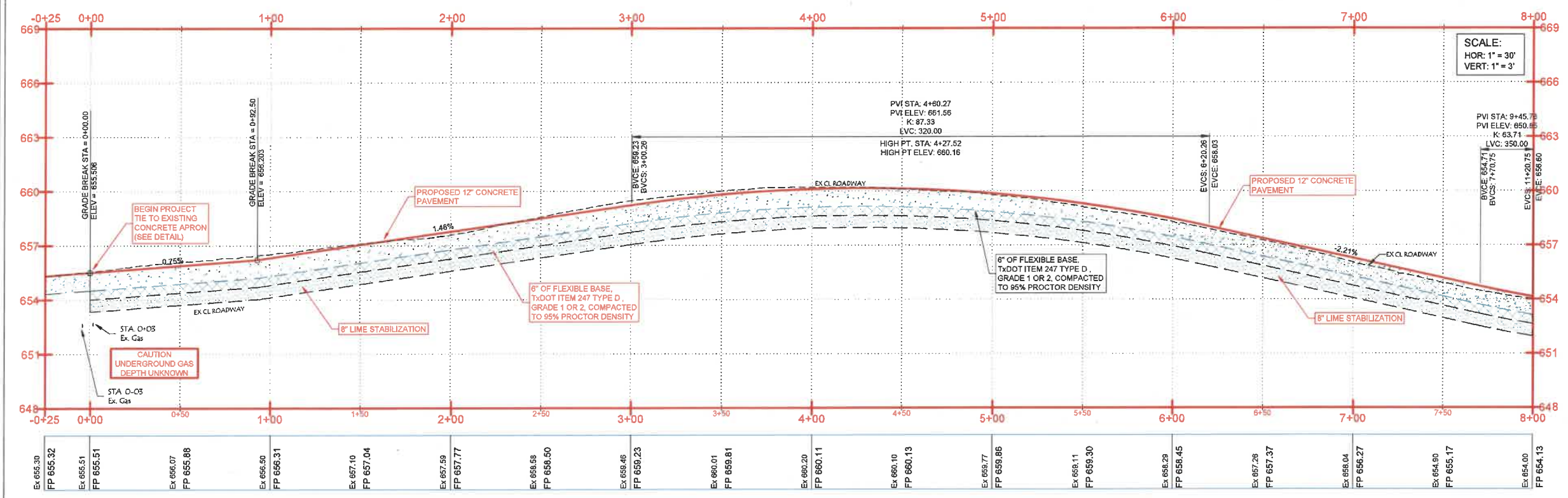
ISSUE DATE:	12-12-2022
Rev #	Revision Date/Description
PROJ. PHASE:	SHEET NO
PROJ. NO: 22-068	2



NORTH
SCALE 1" = 30'
BASIS OF BEARING
ASSUMED NORTH



NOTE - ALL UTILITY CROSSINGS MAY NOT BE SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE SURE ALL UTILITIES ARE MARKED AND LOCATED BEFORE CONSTRUCTION.



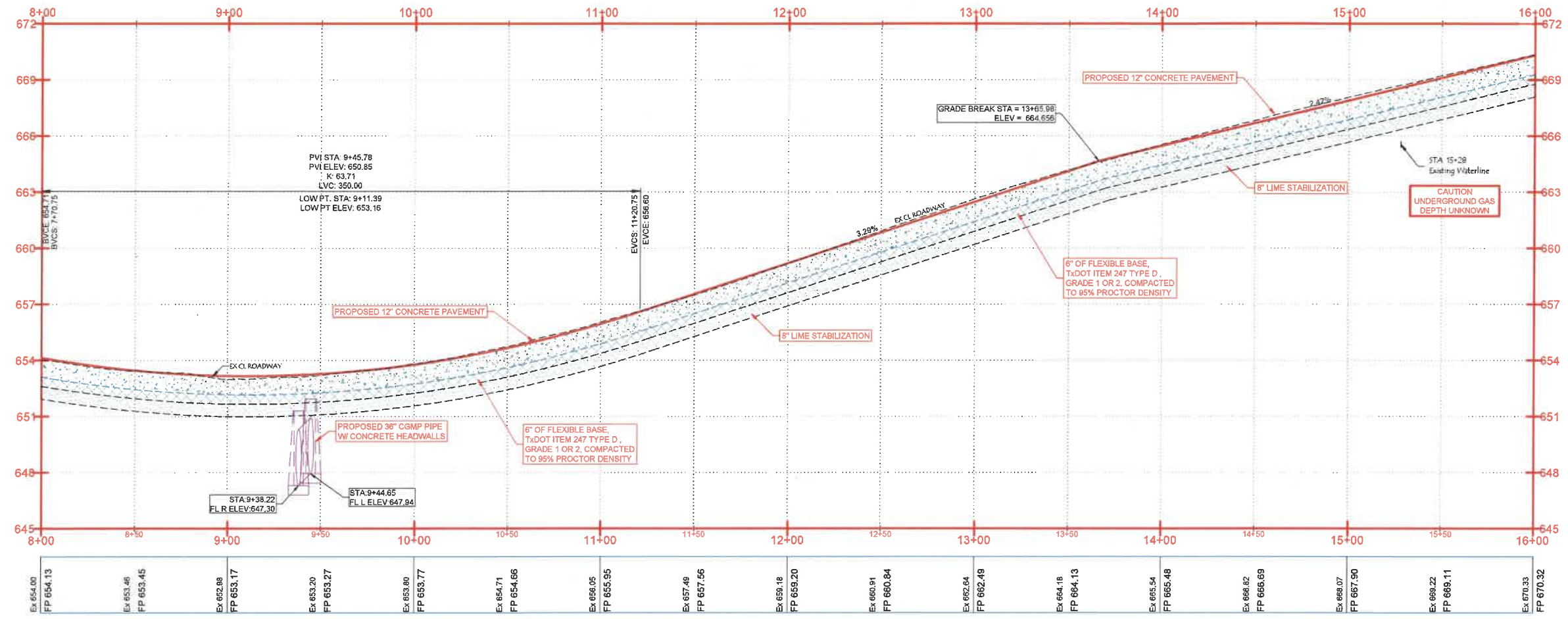
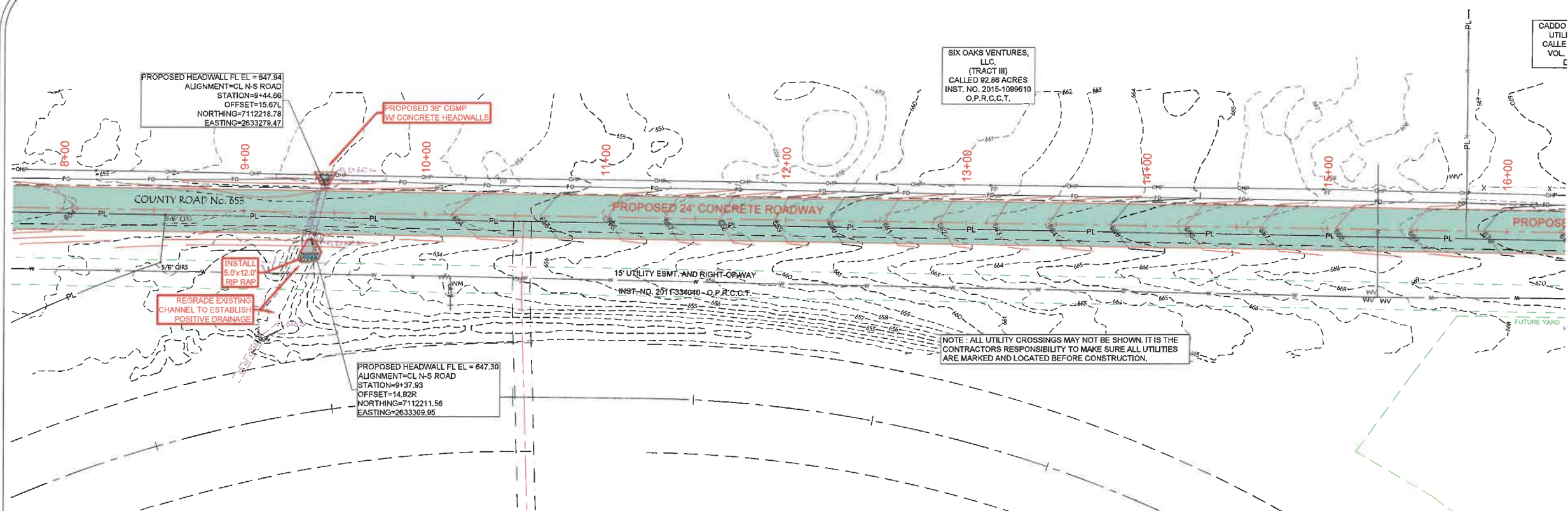
SCALE:
HOR: 1" = 30'
VERT: 1" = 3'



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**24' ROADWAY
PLAN & PROFILE
COUNTY ROAD #653
PAVING IMPROVEMENTS
FARMERSVILLE
COLLIN CO., TX.**

Project: 22-066	Sheet:
Issue Date: DEC. 15, 2022	3
Scale: 1" = 30'	



SCALE:
HOR: 1" = 30'
VERT: 1" = 3'



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**24' ROADWAY
PLAN & PROFILE**
COUNTY ROAD #653
PAVING IMPROVEMENTS
FARMERSVILLE
COLLIN CO., TX.

Project: 22-066
Issue Date: DEC. 15, 2022
Scale: 1" = 30'

Sheet:
4

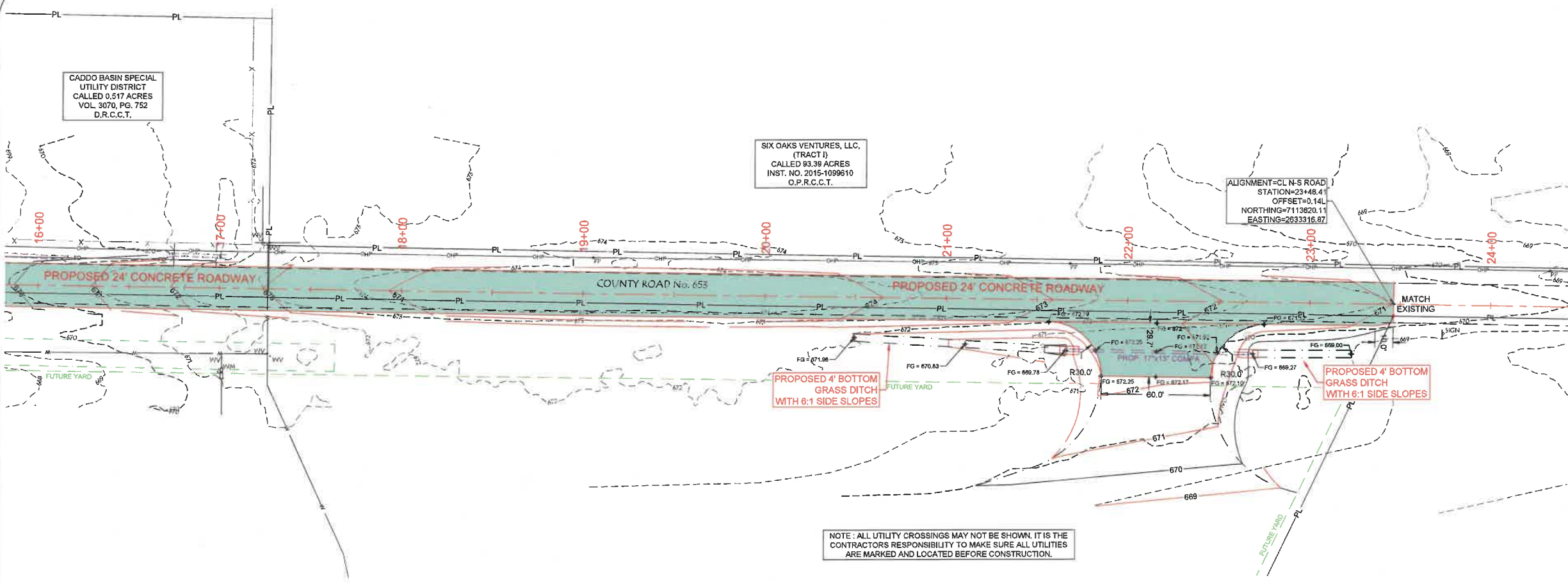
CADD BASIN SPECIAL UTILITY DISTRICT CALLED 0.517 ACRES VOL. 3070, PG. 752 D.R.C.C.T.

SIX OAKS VENTURES, LLC. (TRACT D) CALLED 93.39 ACRES INST. NO. 2015-1099610 O.P.R.C.C.T.

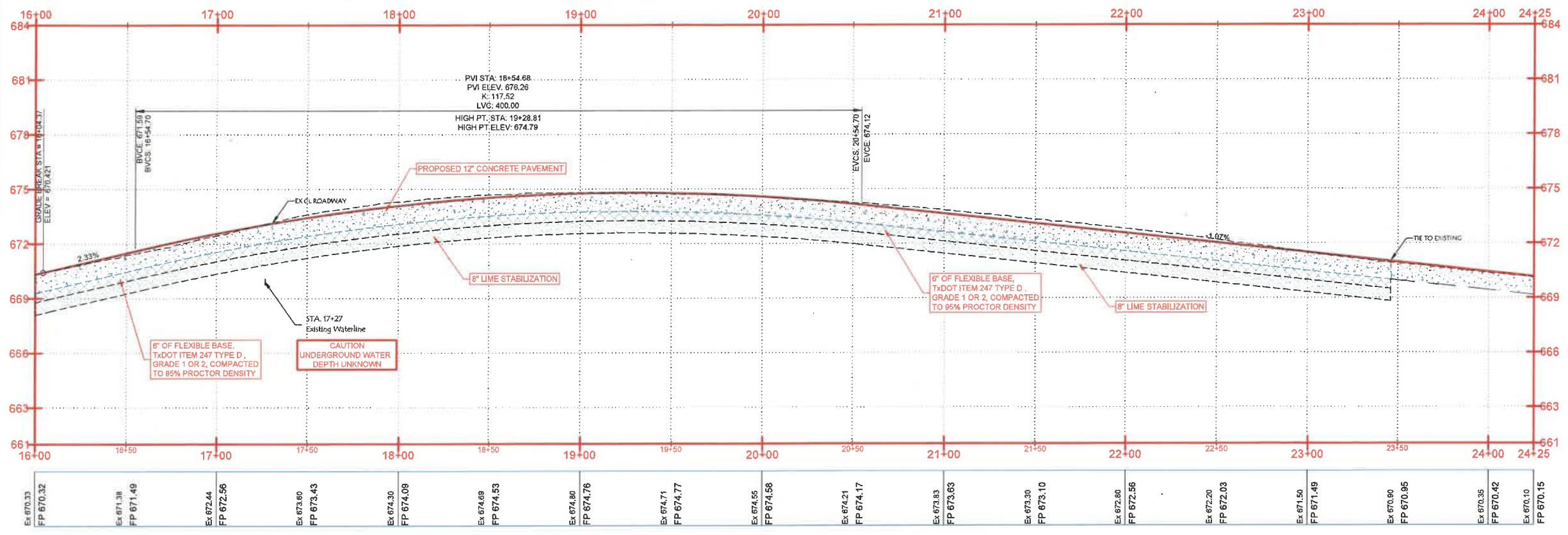
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NORTH SCALE 1" = 30' BASIS OF BEARING ASSUMED NORTH



NOTE: ALL UTILITY CROSSINGS MAY NOT BE SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO MAKE SURE ALL UTILITIES ARE MARKED AND LOCATED BEFORE CONSTRUCTION.



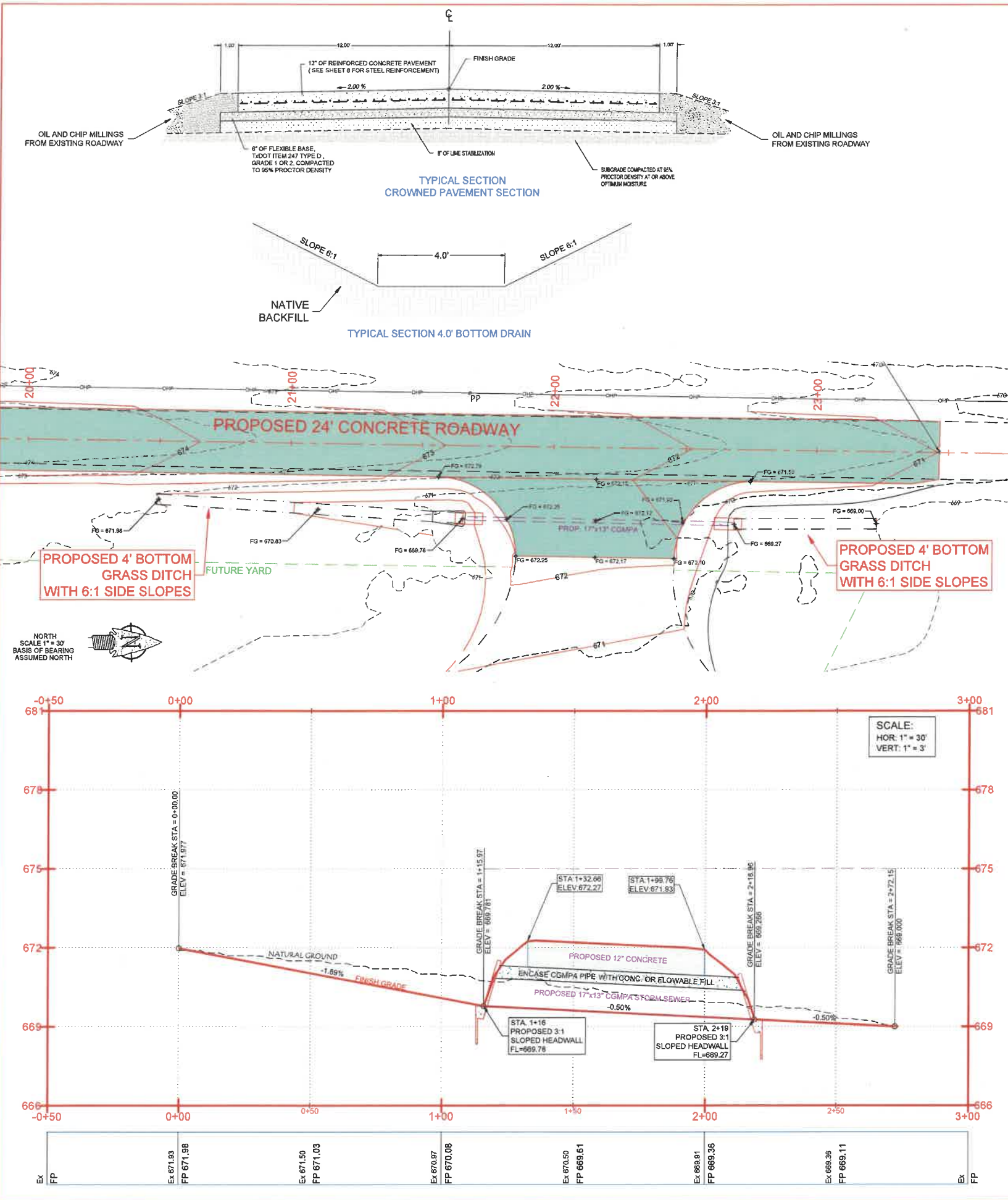
SCALE: HOR: 1" = 30' VERT: 1" = 3'



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**24' ROADWAY
PLAN & PROFILE
COUNTY ROAD #653
PAVING IMPROVEMENTS
FARMERSVILLE
COLLIN CO., TX.**

Project: 22-066	Sheet: 5
Issue Date: DEC. 15, 2022	
Scale: 1" = 30'	



CONSTRUCTION NOTES

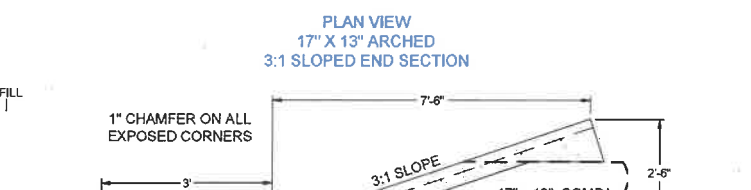
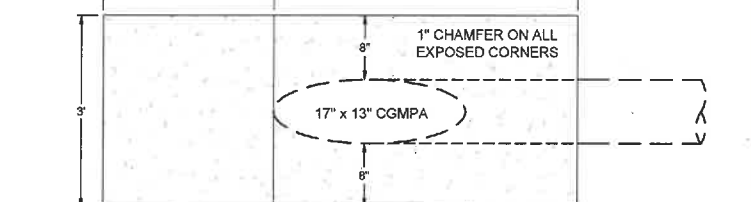
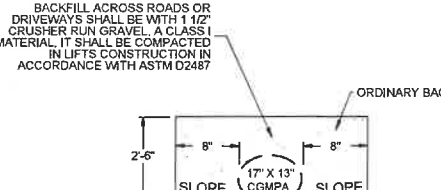
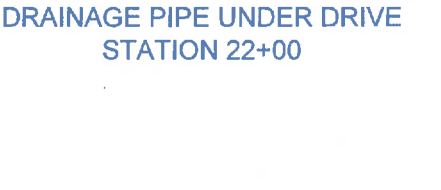
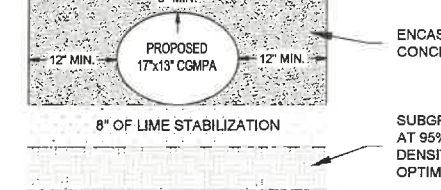
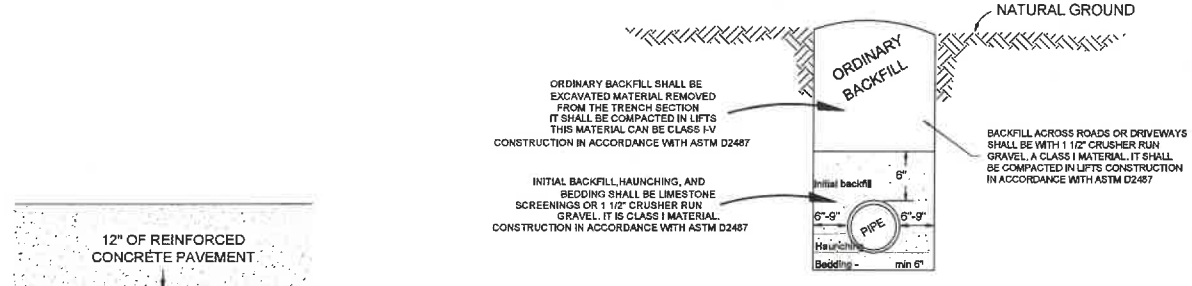
- Contractor will be allowed to close the roadway during the duration of construction.
- Contractor is responsible for maintaining all traffic control barricade, detour signs during the duration of construction.
- Asphalt material of existing roadway shall be removed and hauled to designated on-site location. Excavation shall extend to 6\"/>

LIME TREATMENT OF SUBGRADE

Lime treatment of the cohesive subgrade soils should be in accordance with Section 02300, Section II Lime Stabilized Subgrade, of the KCS Technical Specifications for Construction Projects (Revised May 2014). A sufficient quantity of hydrated lime should be mixed with the subgrade soils to produce a minimum unconfined compressive strength of 50 psi, based on the average of three specimens cured for 7 days and then soaked for 48 hours. For estimating purposes, we recommend that 7 to 8 percent hydrated lime by dry soil weight be assumed for treatment. Prior to construction, we recommend that the optimum lime content of the subgrade soils be determined by appropriate laboratory testing. Lime-treated subgrade soils should be compacted to a minimum of 95 percent of the maximum dry density at a moisture content within the range of optimum moisture content to 3 percentage points above the optimum moisture content as determined by ASTM D698.

GENERAL NOTES

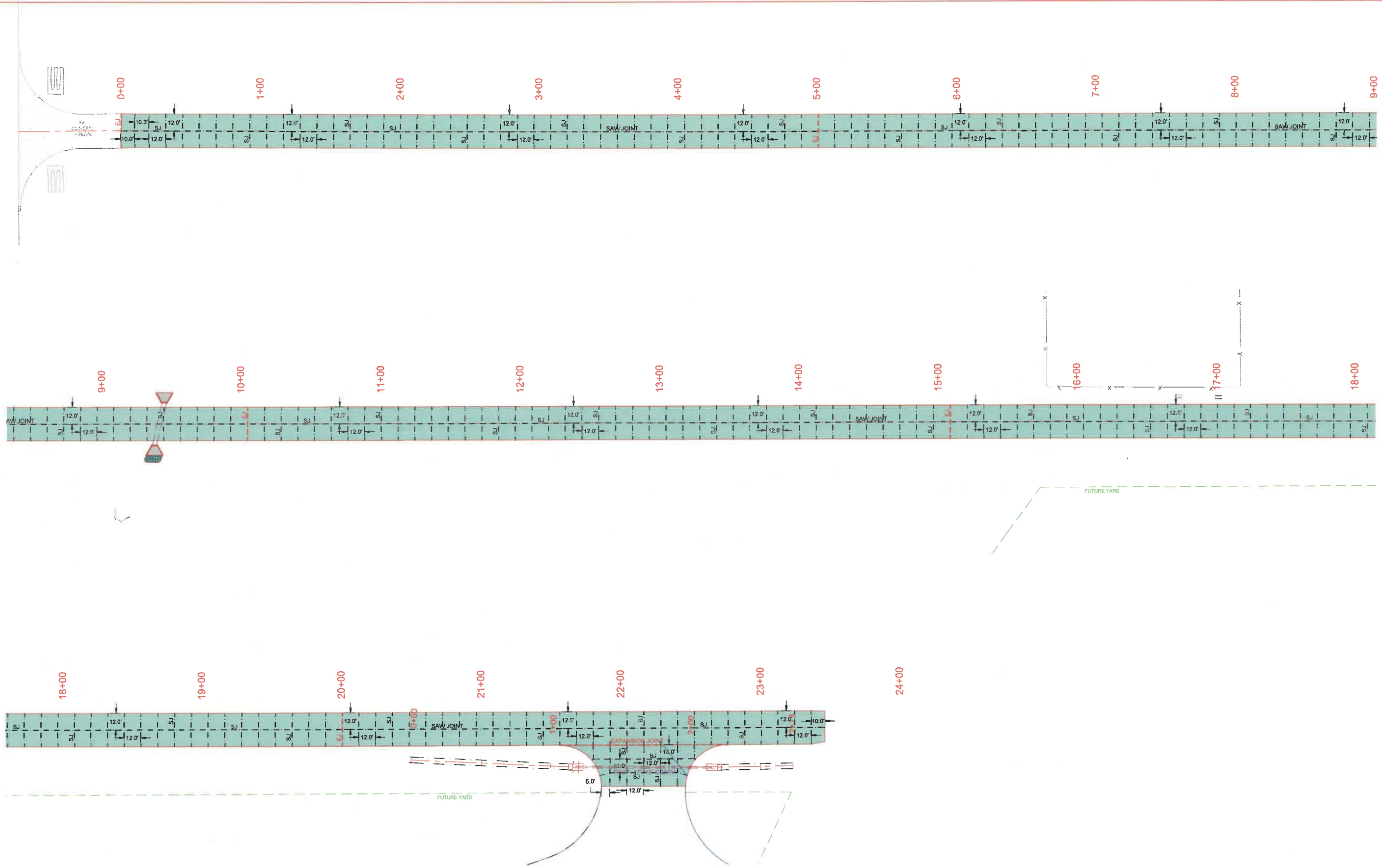
- Excess excavation and all concrete (and asphalt pavement) to be removed from site shall be the property of and be disposed of by the contractor. Removal of existing pavement, concrete curbs, headwalls, and other removal items called for on the plans shall not be paid for separately, but shall be included in the price bid for other items of work.
- Concrete & asphalt shall be removed to a straight and even joint or shall be sawed on a line to provide straight, even connection.
- The contractor shall take care not to damage existing utility lines, drainage structures, driveways, sidewalks, poles or any other structures adjacent to the work area. The contractor shall be responsible for verifying the existence and location of underground utilities and obstructions, whether shown on the plans or not and shall be responsible for the protection thereof. Compliance with the warning and barricade sign specification will be required.
- All site concrete shall contain 6 sacks of cement per cu. yd. and shall obtain a minimum compressive strength of 4000 psi at 28 days.
- During compaction of subgrade to 95% proctor density; if soft material is encountered, and compaction cannot be achieved, this area shall be removed and replaced with other select material.
- Silicone Sealant shall be gray and meet the requirements of current Federal specifications TT-S-001543 for Class A Sealants. The self-leveling silicone sealant (gun grade for curbs) shall be furnished in a one part silicone formulation. Acetic acid cure sealants are not acceptable.
- All dowel bars shall be anchored with 'CONSPEC' SpecBond 101 or Equal.
- The contractor shall protect all drainage structures from loads encountered during construction activities.
- All pipe shall be backfilled to a point 1 ft. above the pipe with 1 1/2\"/>



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 ARDMORE - OKLAHOMA
 CERTIFICATE OF AUTHORIZATION NO. F-8612
 CERTIFICATE OF AUTHORIZATION EXPIRES 3-31-2023

TYPICAL SECTIONS
COUNTY ROAD #653
PAVING IMPROVEMENTS
FARMERSVILLE
COLLIN CO., TX

ISSUE DATE: 12-08-2022
 Proj # / Revision Date / Description
 PROJ. PHASE: SHEET NO:
 PROJ. NO: 22-066 6



12/16/2022 8:00:26 AM, 1:1



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ARDMORE - OKLAHOMA

CERTIFICATE OF AUTHORIZATION NO. F-9812
 CERTIFICATE OF AUTHORIZATION EXPIRES 3-31-2023

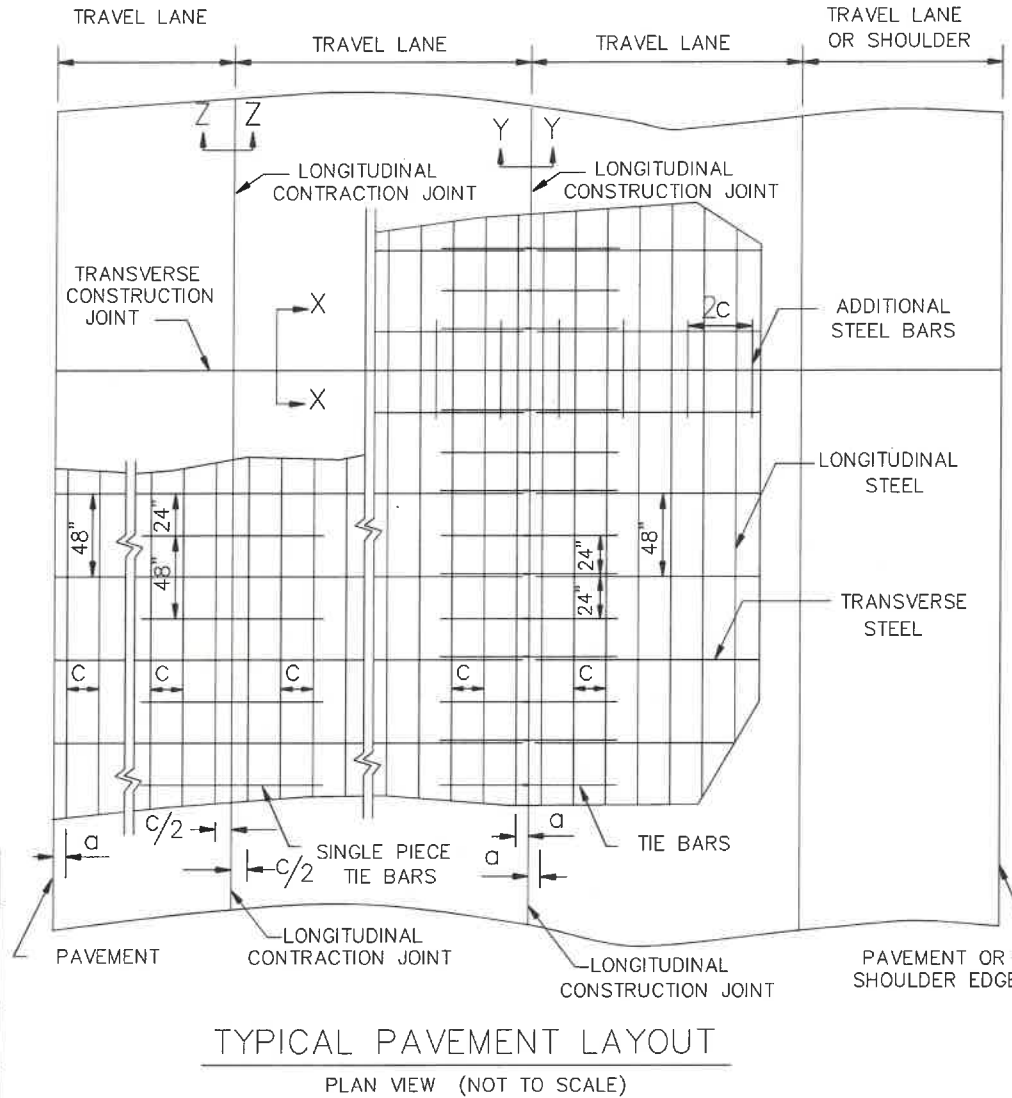
**SAW JOINT PLAN
 COUNTY ROAD #653
 PAVING IMPROVEMENTS
 FARMERSVILLE
 COLLIN CO., TX**

ISSUE DATE:	12-06-2022
Rev #	Revision Date/Description
PROJ. PHASE:	SHEET NO.
PROJ. NO: 22-066	7

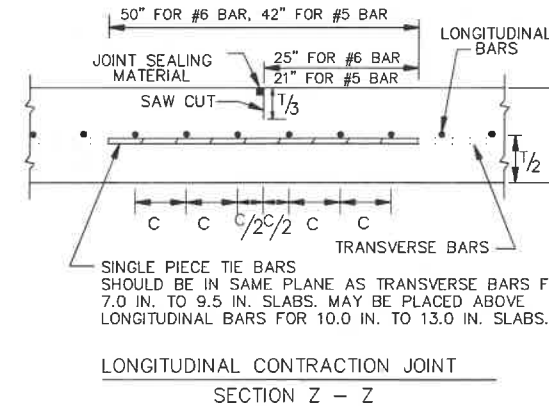
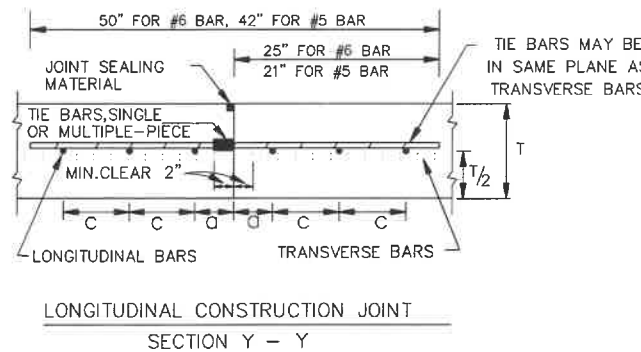
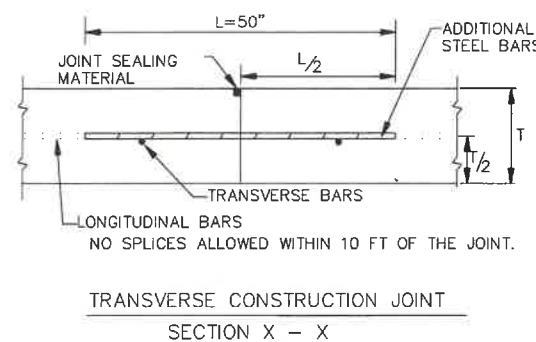
GENERAL NOTES

SLAB THICKNESS AND BAR SIZE		REGULAR STEEL BARS	FIRST SPACING AT EDGE OR JOINT	ADDITIONAL STEEL BARS AT TRANSVERSE CONSTRUCTION JOINT (SECTION X-X)	
T (IN.)	BAR SIZE	SPACING C (IN.)	SPACING a (IN.)	SPACING 2 x c (IN.)	LENGTH L (IN.)
7.0	#5	6.5	3 TO 4	13	50
7.5	#5	6.0	3 TO 4	12	50
8.0	#6	9.0	3 TO 4	18	50
8.5	#6	8.5	3 TO 4	17	50
9.0	#6	8.0	3 TO 4	16	50
9.5	#6	7.5	3 TO 4	15	50
10.0	#6	7.0	3 TO 4	14	50
10.5	#6	6.75	3 TO 4	13.5	50
11.0	#6	6.5	3 TO 4	13	50
11.5	#6	6.25	3 TO 4	12.5	50
12.0	#6	6.0	3 TO 4	12	50
12.5	#6	5.75	3 TO 4	11.5	50
13.0	#6	5.5	3 TO 4	11	50

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



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. USE COARSE AGGREGATES WITH A RATED COEFFICIENT OF THERMAL EXPANSION (CoTE) OF NOT MORE THAN 5.5×10^{-6} IN/IN/°F AS LISTED IN THE CONCRETE RATED SOURCE QUALITY CATALOG (CRSQC).
3. ALL THE REINFORCING STEEL AND TIE BARS SHALL BE DEFORMED STEEL BARS CONFORMING TO ASTM A 615 (GRADE 60) OR ASTM A 996 (GRADE 60) OR ABOVE. STEEL BAR SIZES AND SPACINGS SHALL CONFORM TO TABLE NO.1 AND TABLE NO.2.
4. STEEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1 IN. HORIZONTALLY AND +/- 0.5 IN. VERTICALLY. CALCULATED AVERAGE BAR SPACING (CONCRETE PLACEMENT WIDTH / NUMBER OF LONGITUDINAL BARS) SHALL CONFORM TO TABLE NO.1
5. 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.
6. THE SAW CUT DEPTH FOR THE LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z) SHALL BE ONE THIRD OF THE SLAB THICKNESS (T/3).
7. 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.
8. 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.
9. OMIT TIE BARS LOCATED WITHIN 18-IN. OF THE TRANSVERSE CONSTRUCTION JOINTS (SECTION X-X). USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL FORMED JOINTS.
10. LONGITUDINAL REINFORCING STEEL SPLICES SHALL BE A MINIMUM OF 25 IN. STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT.
11. THE DETAIL FOR THE JOINT SEALANT AND RESERVOIR IS SHOWN ON STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALANTS."



SHEET 1 OF 2



CONTINUOUSLY REINFORCED CONCRETE PAVEMENT
ONE LAYER STEEL BAR PLACEMENT
T - 7 TO 13 INCHES
CRCP(1)-20

FILE: crcp120.dgn	DN: TxDOT	CR: KM	DW: AN	CR: VP
©TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY
10/10/2011 ADD CH #12				
04/06/2013 REMOVE 6" AND 6.5" ADD CTE REQUIREMENTS				
05/05/2017 COTE AS RATED 4.3				
	DIST	COUNTY	SHEET NO.	

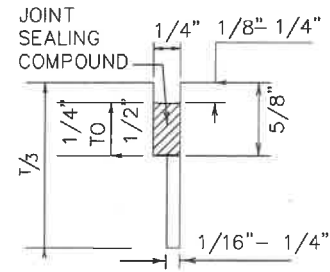
FOX ENGINEERING
ARDMORE - OKLAHOMA
CERTIFICATE OF AUTHORIZATION NO. F-8812
CERTIFICATE OF AUTHORIZATION EXPIRES 3-31-2022

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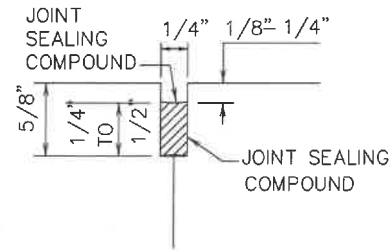
**COUNTY ROAD #653
PAVING IMPROVEMENTS
FARMERSVILLE
COLLIN CO., TX**

ISSUE DATE: 12-12-2022
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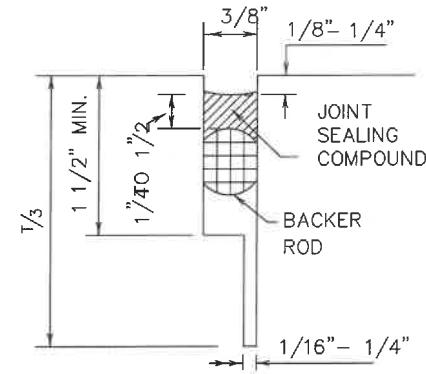
METHOD B: JOINT SEALING COMPOUND



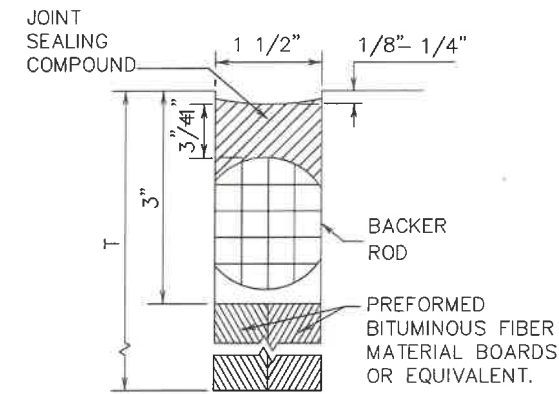
LONGITUDINAL SAWED CONTRACTION JOINT



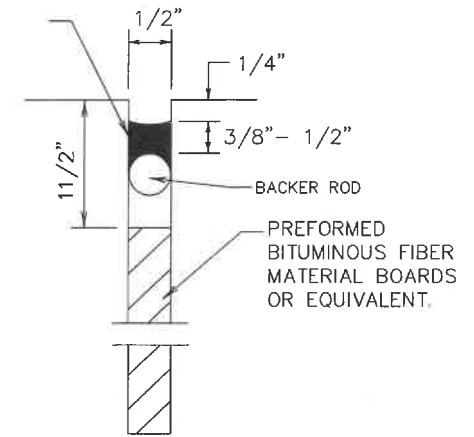
LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT



TRANSVERSE FORMED EXPANSION JOINT

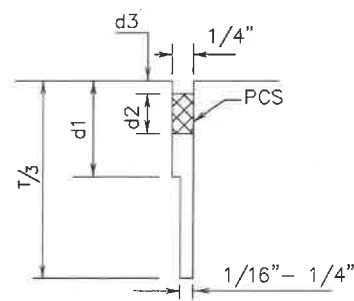


FORMED ISOLATION JOINT

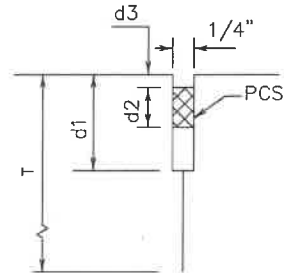
GENERAL NOTES

- 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.

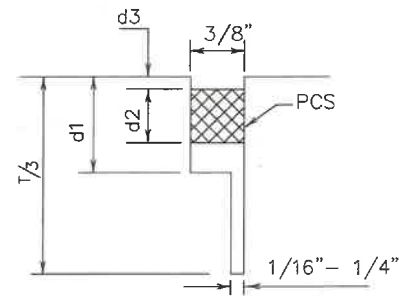
METHOD A: PREFORMED COMPRESSION SEALS (PCS)(DMS-6310 CLASS 6)



LONGITUDINAL SAWED CONTRACTION JOINT



LONGITUDINAL CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT

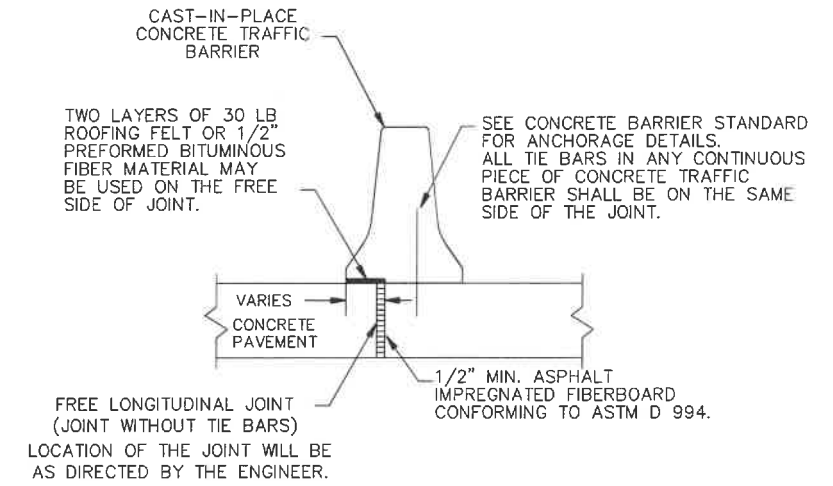


		<i>Design Division Standard</i>	
CONCRETE PAVING DETAILS			
JOINT SEALS			
JS-14			
FILE: js14.dgn	DN: TxDOT	DN: HC	DN: HC
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REVISIONS		DIST	COUNTY
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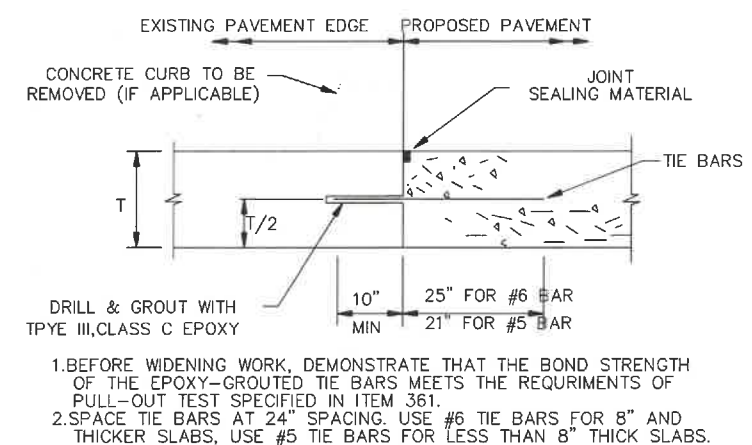
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 Fax: 580.223.2492
 E-mail: foxengineering@sbcglobal.net
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 CERTIFICATE OF AUTHORIZATION EXPIRES 3-31-2022

COUNTY ROAD #653
PAVING IMPROVEMENTS
FARMERSVILLE
COLLIN CO., TX

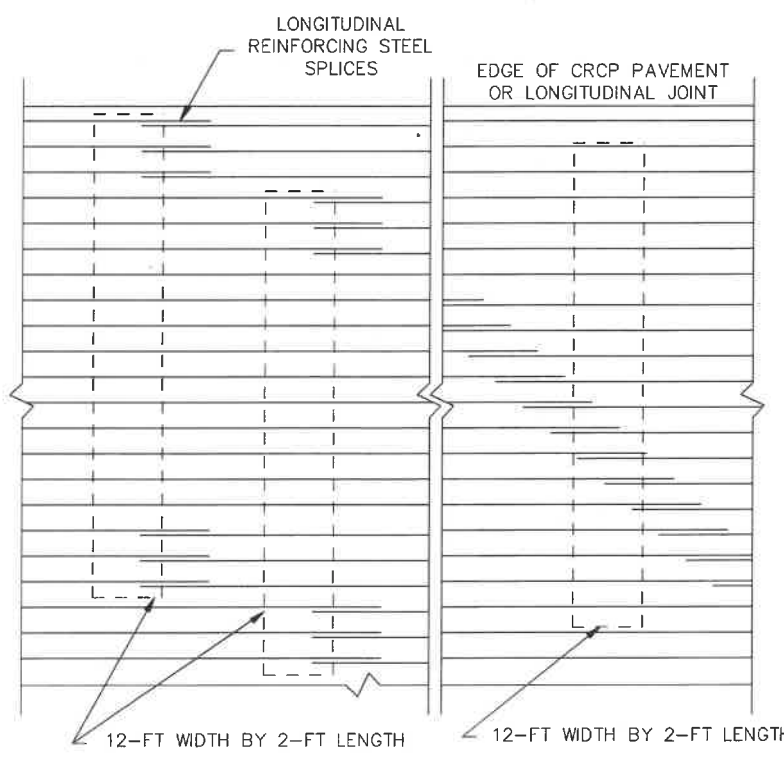
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Proj # Revision Date Description
PROJ. PHASE: SHEET NO:
PROJ. NO: 22-065 10



FREE LONGITUDINAL JOINT DETAIL

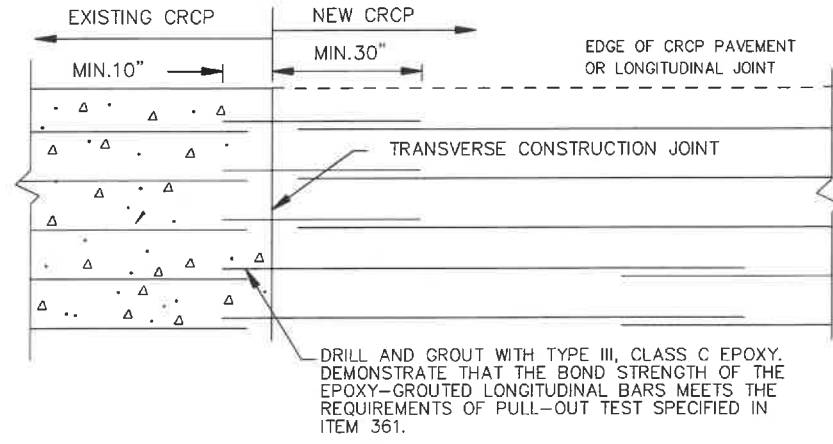


LONGITUDINAL WIDENING JOINT DETAIL

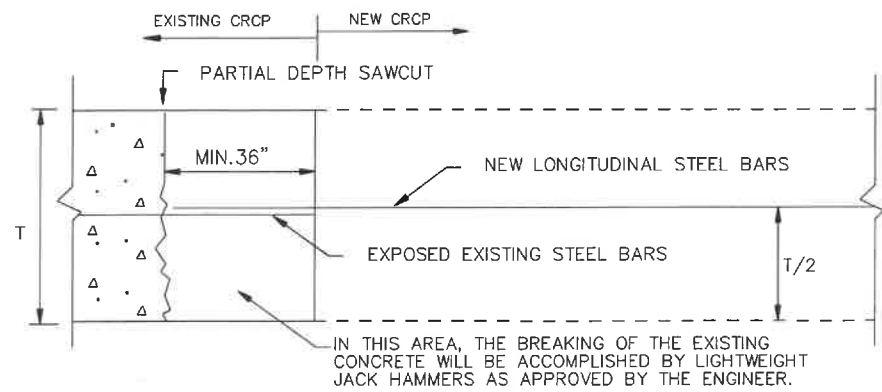


STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT. ANY OTHER LAP CONFIGURATION MEETING THIS REQUIREMENT WILL BE ALLOWED.

EXAMPLES OF LAP CONFIGURATION
PLAN VIEW (NOT TO SCALE)



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



OPTION B: BREAKBACK AND LAP
TRANSVERSE TIE JOINT DETAIL
EXISTING CRCP TO NEW CRCP

SHEET 2 OF 2



CONTINUOUSLY REINFORCED CONCRETE PAVEMENT
ONE LAYER STEEL BAR PLACEMENT
T - 7 TO 13 INCHES
CRCP(1)-20

FILE: crcp120.dgn	DN: TxDOT	CK: KM	DW: AN	CK: VP
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03/16/2020 REMOVED TABLE 1A	DIST	COUNTY	SHEET NO.	

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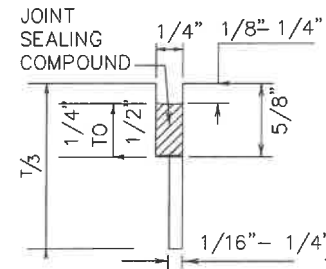
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CERTIFICATE OF AUTHORIZATION NO. F-6612
CERTIFICATE OF AUTHORIZATION EXPIRES 3-31-2022

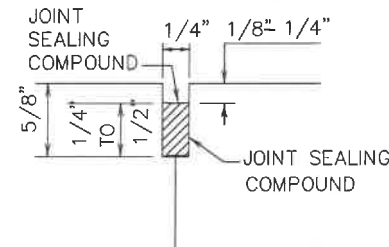
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PAVING IMPROVEMENTS
FARMERSVILLE
COLLIN CO., TX**

ISSUE DATE: 12-12-2022
PROJ. PHASE: SHEET NO.
PROJ. NO: 22-056 9

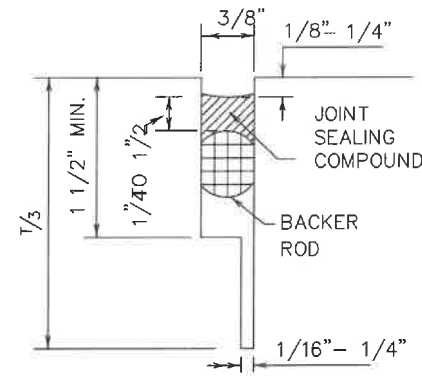
METHOD B: JOINT SEALING COMPOUND



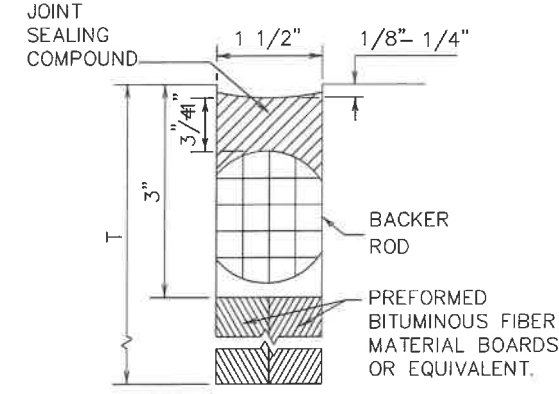
LONGITUDINAL SAWED CONTRACTION JOINT



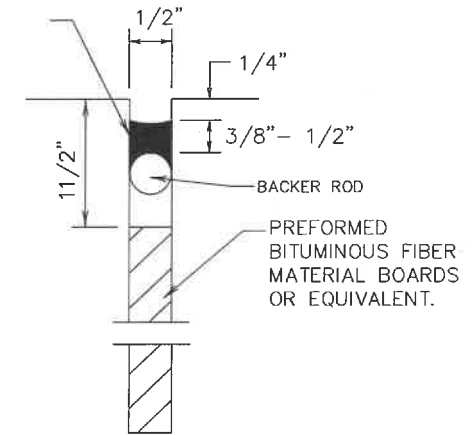
LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT



TRANSVERSE FORMED EXPANSION JOINT

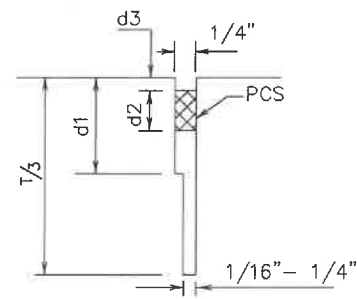


FORMED ISOLATION JOINT

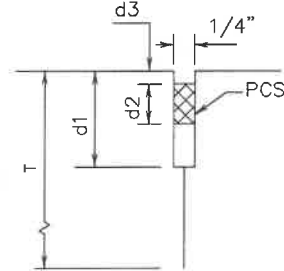
GENERAL NOTES

1. UNLESS OTHERWISE SHOWN IN THE PLANS, EITHER METHOD "A" OR METHOD "B" MAY BE USED.
2. THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
3. 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.
4. DIMENSIONS d1, d2, AND d3 SHOWN IN METHOD A SHALL BE IN ACCORDANCE WITH THE PREFORMED COMPRESSION SEAL MANUFACTURER'S RECOMMENDATION.
5. REFER TO DMS-6310 "JOINT SEALANTS AND FILLERS" FOR THE CLASSIFICATIONS.
6. FOR SAWED LONGITUDINAL JOINT, LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT, USE JOINT SEALANT CLASS 5 OR 8 UNLESS OTHERWISE SHOWN ON THE PLAN OR APPROVED.
7. 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.
8. 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)".
9. 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.

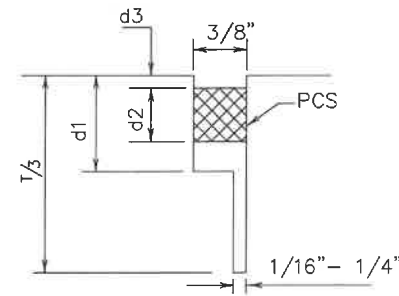
METHOD A: PREFORMED COMPRESSION SEALS (PCS)(DMS-6310 CLASS 6)



LONGITUDINAL SAWED CONTRACTION JOINT



LONGITUDINAL CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT



CONCRETE PAVING DETAILS				
JOINT SEALS				
JS-14				
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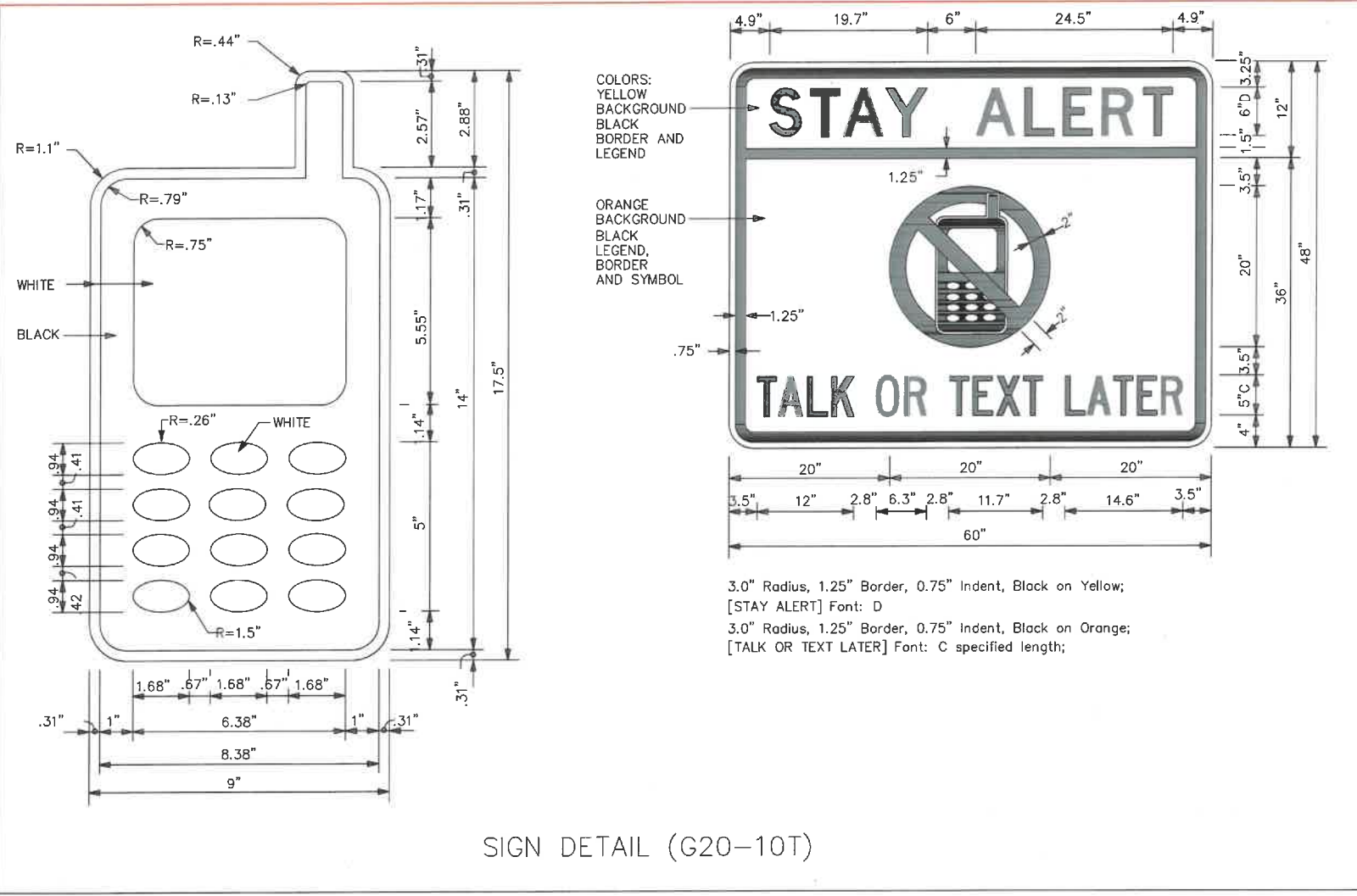
ISSUE DATE: 12-12-2022
Rev # Revision Description
PROJ. NO. 22-066
SHEET NO. 10

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

- 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).
- The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER (see Sign Detail G20-10T) and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.
- Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.
- The Engineer has the final decision on the location of all traffic control devices.
- Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY APPAREL NOTES:

- 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.



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

Texas Department of Transportation
 Traffic Operations Division - TE
 Phone (512) 416-3118

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

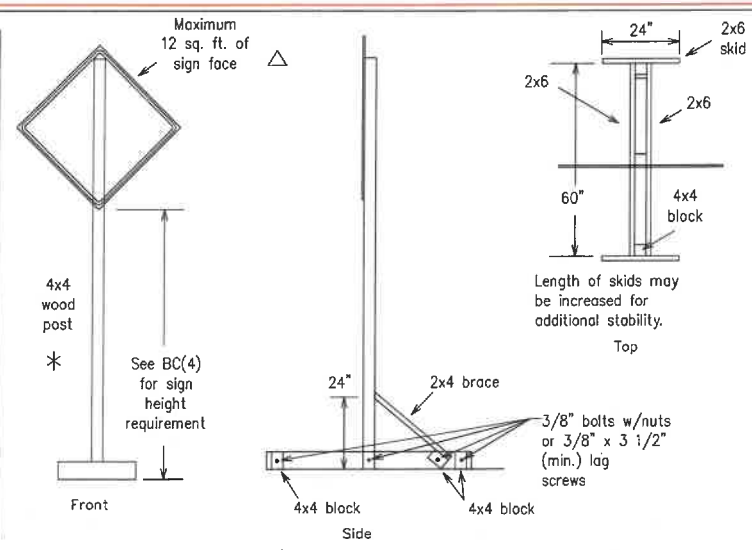
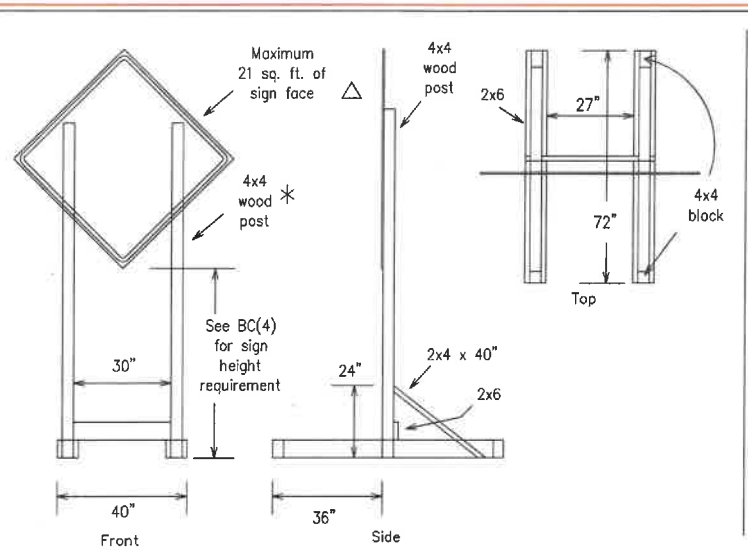
SHEET 1 OF 12

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS BC(1)-14				
FILE: bc-14.dgn	DN: TxDOT	CR: TxDOT	DW: TxDOT	CK: TxDOT
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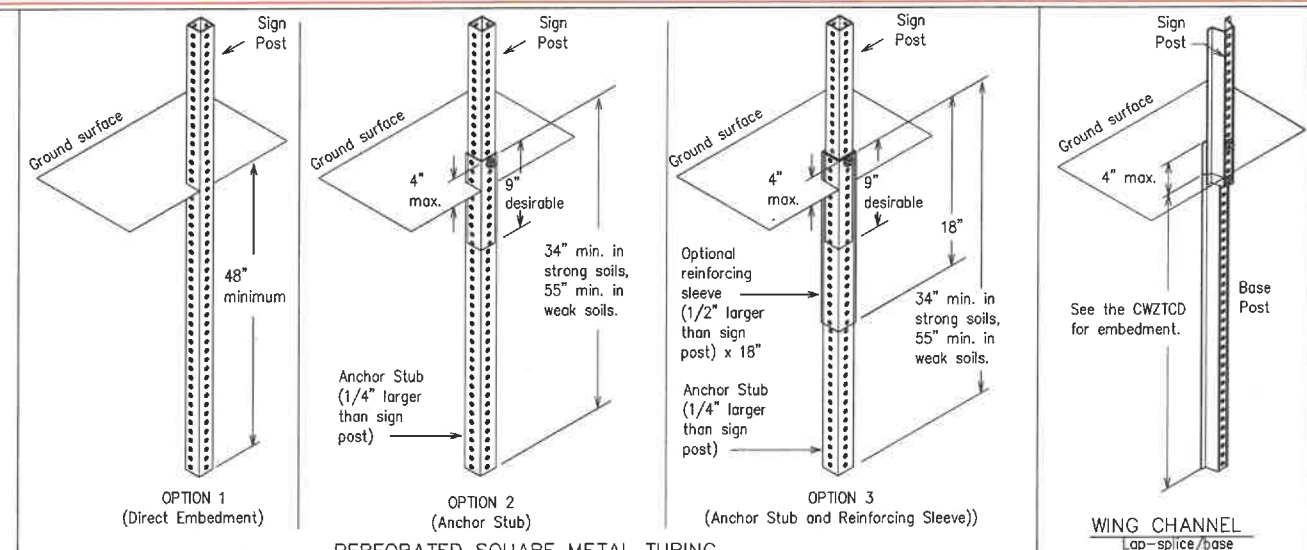
COUNTY ROAD #653
 PAVING IMPROVEMENTS
 FARMERSVILLE
 COLLIN CO., TX

ISSUE DATE: 12-12-2022
Rev # Revision Date/Description
PROJ. PHASE: SHEET NO.
PROJ. NO: 23-086 11



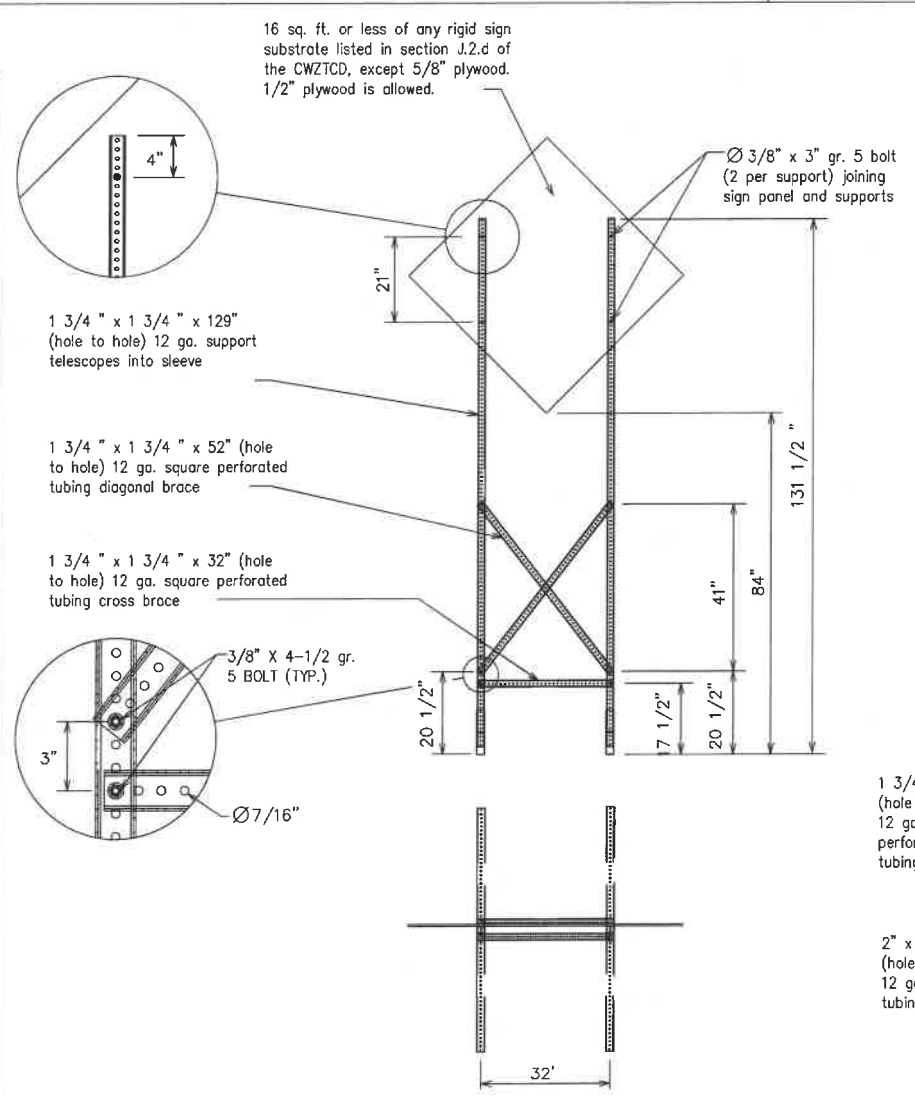
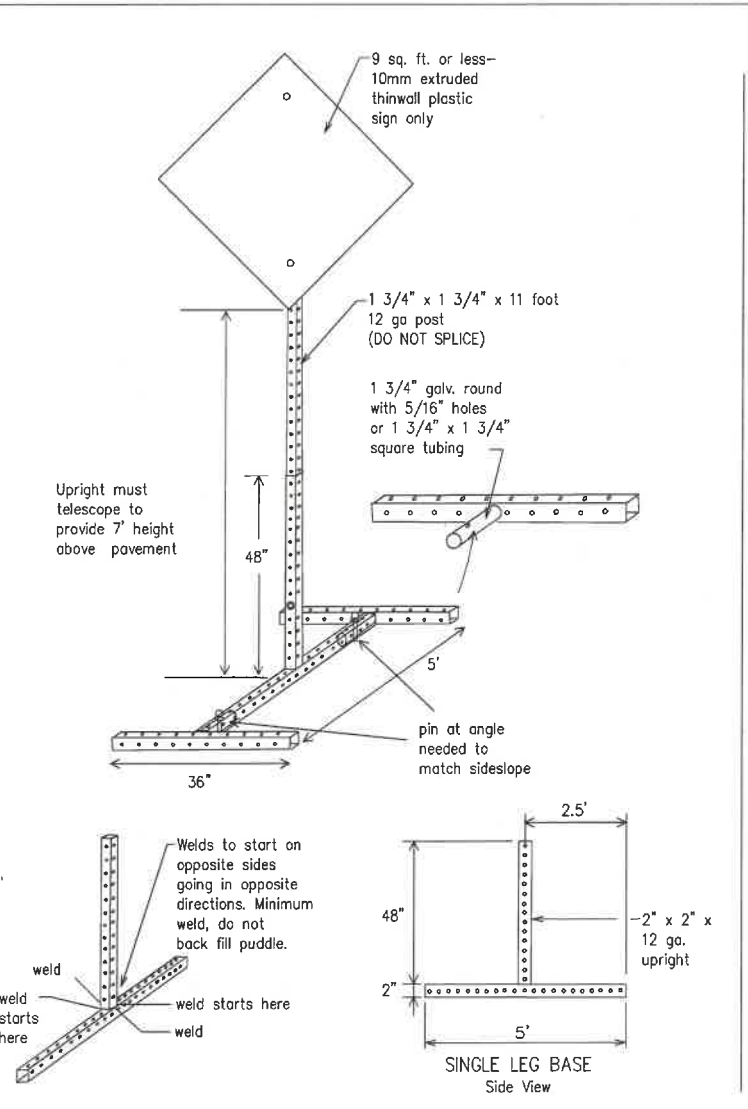
SKID MOUNTED WOOD SIGN SUPPORTS

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

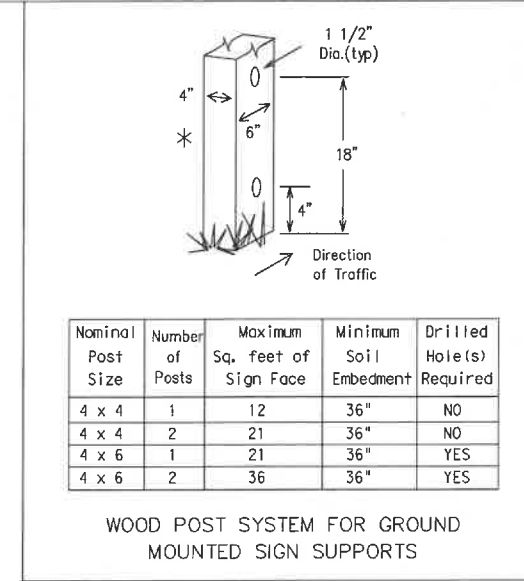


GROUND MOUNTED SIGN SUPPORTS

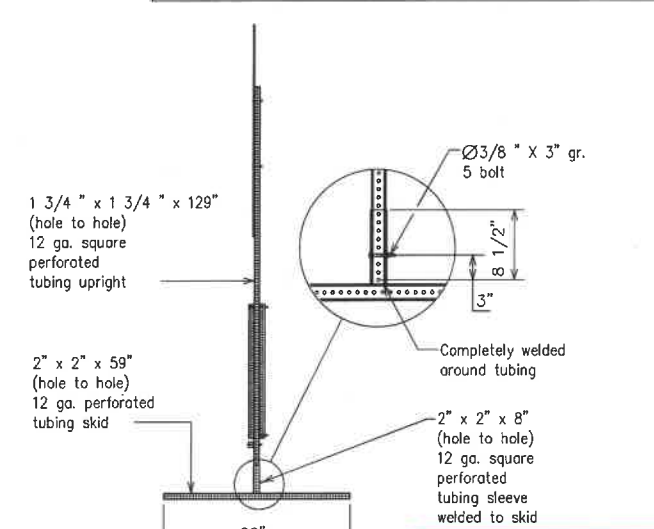
Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support. The maximum sign square footage shall adhere to the manufacturer's recommendation. Two post installations can be used for larger signs.



SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS



WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS



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

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

GENERAL NOTES

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

Texas Department of Transportation
Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-14

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COUNTY ROAD #653 PAVING IMPROVEMENTS FARMERSVILLE COLLIN CO., TX

ISSUE DATE: 12-12-2022
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PROJ. NO.: 22-066

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

PORTABLE CHANGEABLE MESSAGE SIGNS

- 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 T MUTCD.
- 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.

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 DWNIN
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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED	ROADWORK XXX FT	ROAD REPAIRS XXXX FT
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT	FLAGGER XXXX FT	LANE NARROWS XXXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT	RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
RIGHT X LANES CLOSED	RIGHT X LANES OPEN	MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
CENTER LANE CLOSED	DAYTIME LANE CLOSURES	LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED	DETOUR X MILE	ROUGH ROAD XXXX FT
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE	ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
EXIT CLOSED	RIGHT LN TO BE CLOSED	BUMP XXXX FT	US XXX EXIT X MILES
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI	TRAFFIC SIGNAL XXXX FT	LANES SHIFT *
XXXXXXXXX BLVD CLOSED			

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

Phase 2: Possible Component Lists

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

** 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

Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-14

FILE	bc-14.dgn	DATE	TxDOT	DATE	TxDOT	DATE	TxDOT
REVISED	November 2002	CONT	SECT	JOB	HIGHWAY	DATE	BY
9-07	8-14	EST	COUNTY	NOV	NOV	NOV	NOV
7-13							
100							

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CERTIFICATE OF AUTHORIZATION NO. F-8612
CERTIFICATE OF AUTHORIZATION EXPIRES 3-31-2022

COUNTY ROAD #653
PAVING IMPROVEMENTS
FARMERSVILLE
COLLIN CO., TX

ISSUE DATE: 12-12-2022

Proj #	Revision	Date	Description

PROJ. PHASE: SHEET NO:
PROJ. NO.: 22-056 13

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:

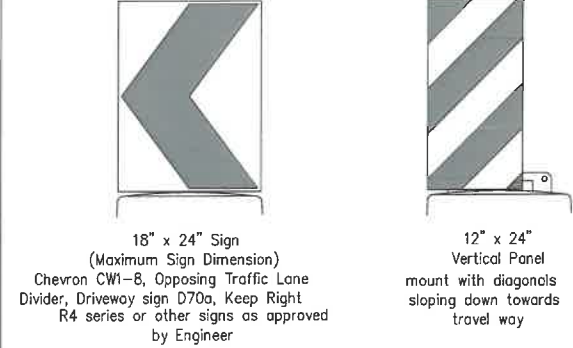
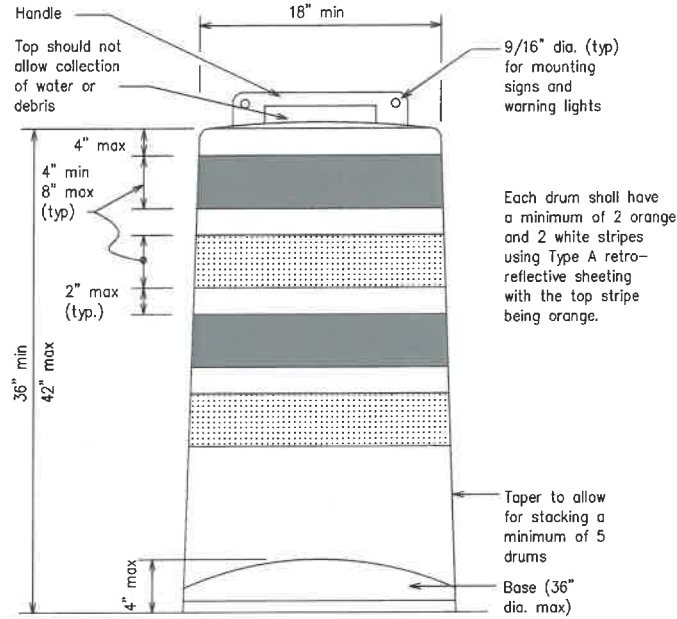
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

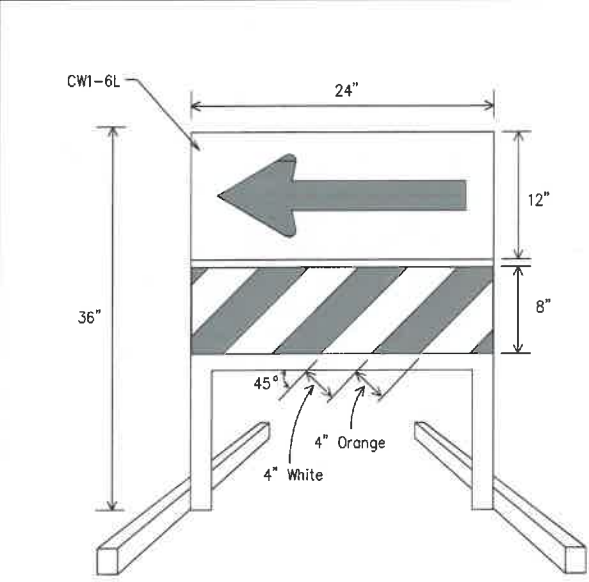
- Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other 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.



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

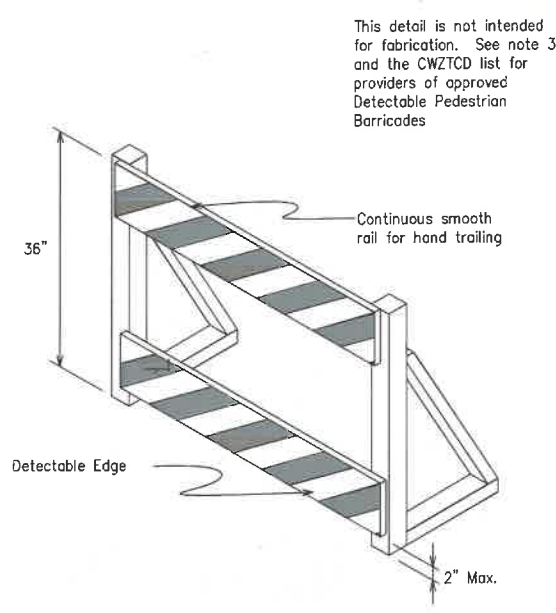
SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

- 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 or Type C Orange_{FL} 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 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 one 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.



DIRECTION INDICATOR BARRICADE

- The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
- If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
- The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CW1-6) sign in the size shown with a black arrow on a background of Type B or Type C Orange retroreflective sheeting above a rail with Type A retroreflective sheeting in alternating 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Sheet types shall be as per DMS 8300.
- Double arrows on the Direction Indicator Barricade will not be allowed.
- Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.



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.
- Where pedestrians with visual disabilities normally use the closed sidewalk, a device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
- 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 for Buildings and Facilities (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 may use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.

SHEET 8 OF 12

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-14

FILED: bc-14.dgn	DATE: 12-13-2022	BY: [Signature]	CHECKED: [Signature]
DATE: November 2002	DATE: []	DATE: []	DATE: []
REVISIONS	DATE	DESCRIPTION	BY
4-03 7-13			
9-07 8-14			

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CERTIFICATE OF AUTHORIZATION NO. F-9612
CERTIFICATE OF AUTHORIZATION EXPIRES 3-31-2022

COUNTY ROAD #653 PAVING IMPROVEMENTS FARMERSVILLE COLLIN CO., TX

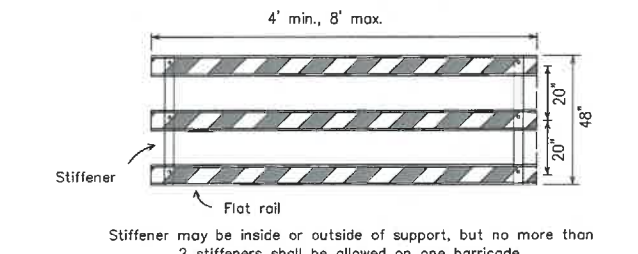
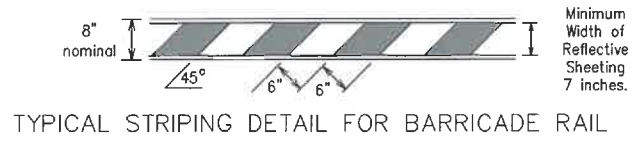
ISSUE DATE: 12-13-2022

PROJ. PHASE: [] SHEET NO: 14

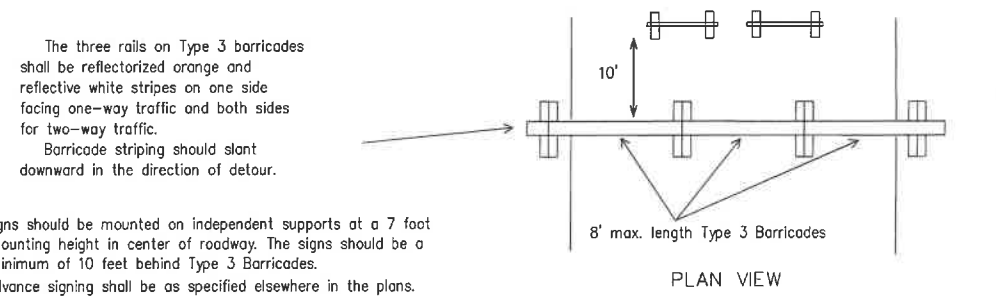
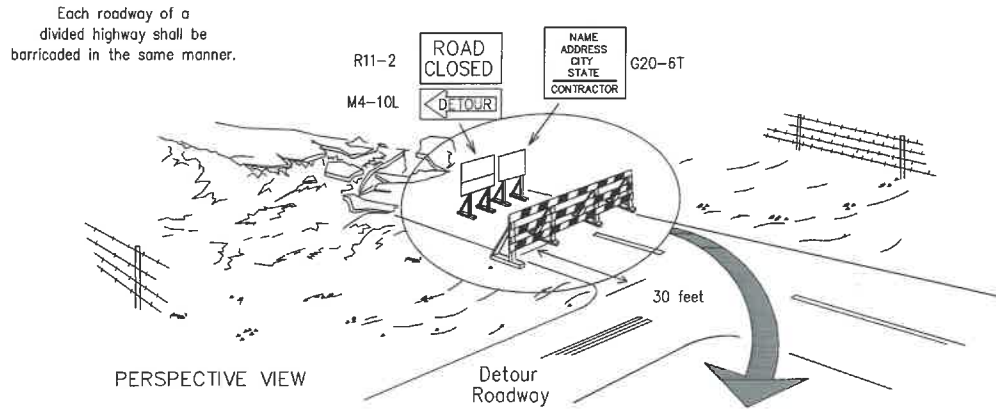
TYPE 3 BARRICADES

- 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.
- Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
- 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.
- 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.
- 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".
- Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
- Warning lights shall NOT be installed on barricades.
- Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stocked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
- Sheeting for barricades shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.

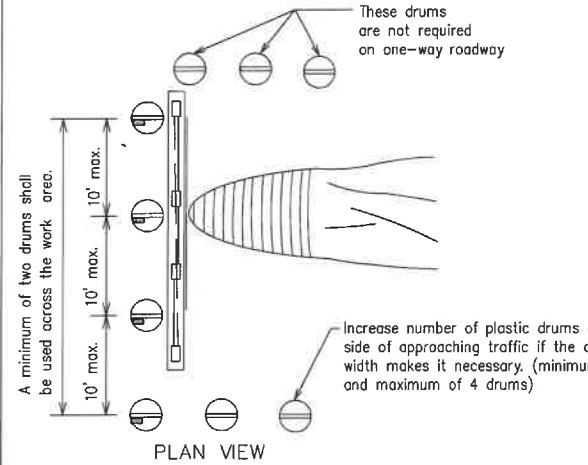
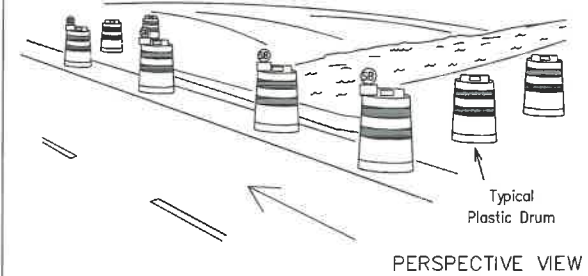


TYPICAL STRIPING DETAIL FOR BARRICADE RAIL
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES



TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION

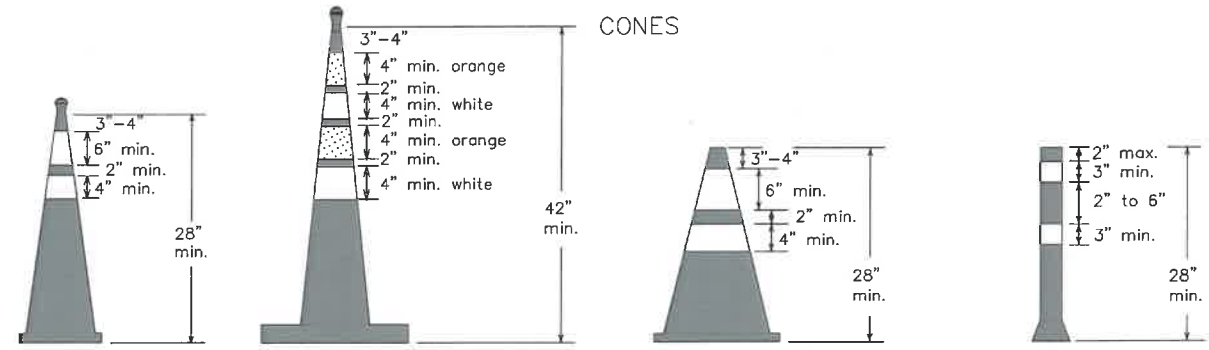
- Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
- Advance signing shall be as specified elsewhere in the plans.



CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

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

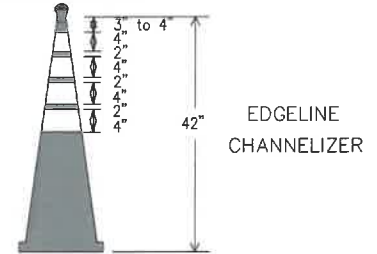


CONES
Two-Piece cones One-Piece cones Tubular Marker

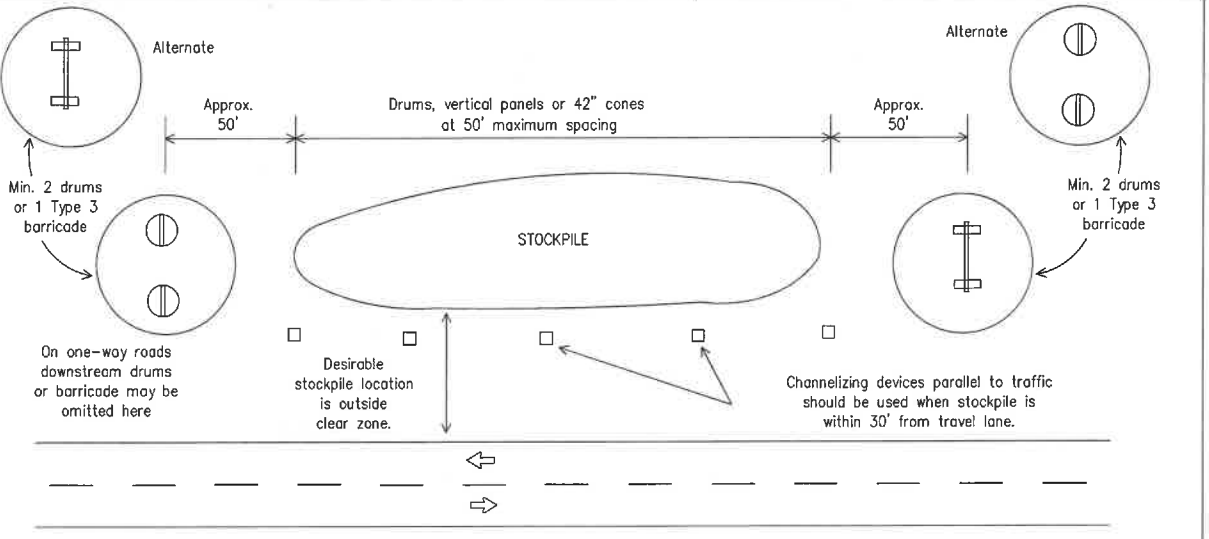
28" Cones shall have a minimum weight of 9 1/2 lbs.
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

- Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
- 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.
- 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.
- Cones or tubular markers used at night shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A.
- 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.
- 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
- Cones or tubular markers used on each project should be of the same size and shape.

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



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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12	
Texas Department of Transportation	
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES	
BC(10)-14	
FILE: bc-14.dgn	DATE: 11/01/02
DESIGNED BY: November 2002	CHECKED BY: JWB
REVISED BY: 8-14	DATE: 7-13
PROJECT: COUNTY	SHEET NO. 10

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COUNTY ROAD #653 PAVING IMPROVEMENTS FARMERSVILLE COLLIN CO., TX

ISSUE DATE: 12-12-2022
PROJ. PHASE: SHEET NO. 15
PROJ. NO.: 22-066

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.

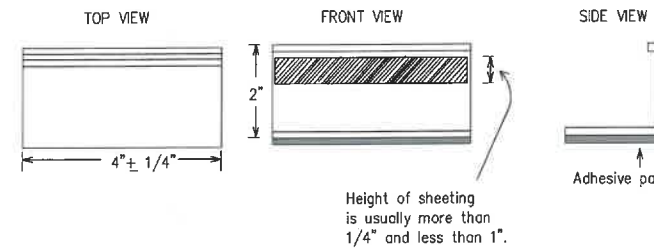
MAINTAINING WORK ZONE PAVEMENT MARKINGS

- 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

Texas Department of Transportation <small>Traffic Operations Division</small>	
BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS	
BC(11)-14	
FILE: bc-14.dgn DATE: February 1999 REVISIONS: 2-98 9-07 1-02 7-13 11-02 8-14	JOB: BARRICADE AND CONSTRUCTION COUNTY: COLLIN SHEET NO.: 11 OF 12

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**COUNTY ROAD #653
PAVING IMPROVEMENTS
FARMERSVILLE
COLLIN CO., TX**

ISSUE DATE: 12-12-2022
Rev # Revision Date/Description
PROJ. PHASE: SHEET NO.
PROJ. NO: 22-088 16

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL ⑤

Span Dia of Pipe ID	Values for One Pipe					Values to be Added for Each Additional Pipe			
	W	X	Y	L	Reinf (Lbs)	Conc (CY)	X and W	Reinf (Lbs)	Conc (CY)
12"	4'-7 1/2"	2'-6"	2'-10"	3'-3 1/2"	88	0.6	1'-9"	20	0.2
15"	5'-5 3/4"	2'-9 1/2"	3'-4"	3'-10 1/4"	103	0.7	2'-2"	24	0.3
18"	6'-4 1/4"	3'-1"	3'-10"	4'-5"	124	0.9	2'-8"	32	0.3
21"	7'-2 3/4"	3'-4 1/2"	4'-4"	5'-0"	143	1.1	3'-1"	43	0.4
24"	8'-2 1/2"	3'-9 1/2"	4'-10"	5'-7"	164	1.3	3'-7"	50	0.5
27"	9'-1"	4'-1"	5'-4"	6'-2"	179	1.5	3'-11"	56	0.6
30"	9'-11 1/2"	4'-4 1/2"	5'-10"	6'-8 3/4"	203	1.7	4'-4"	65	0.8
33"	10'-10"	4'-8"	6'-4"	7'-3 3/4"	224	2.0	4'-8"	71	0.9
36"	11'-8 1/4"	4'-11 1/2"	6'-10"	7'-10 3/4"	249	2.2	5'-1"	81	1.0
42"	13'-5 1/4"	5'-6 1/2"	7'-10"	9'-0 1/2"	298	2.8	5'-10"	97	1.3
48"	15'-9"	6'-1 1/2"	9'-4"	10'-9 1/4"	360	3.8	6'-7"	117	1.7
54"	17'-5 3/4"	6'-8 1/2"	10'-4"	11'-11 1/4"	427	4.5	7'-6"	151	2.1
60"	19'-2 3/4"	7'-3 1/2"	11'-4"	13'-1"	481	5.3	8'-3"	174	2.5
66"	20'-11 1/2"	7'-10 1/2"	12'-4"	14'-3"	544	6.2	8'-9"	194	2.9
72"	22'-8 1/2"	8'-5 1/2"	13'-4"	15'-4 3/4"	601	7.1	9'-4"	213	3.3
12"	6'-3"	2'-6"	4'-3"	4'-11"	118	0.8	1'-9"	22	0.2
15"	7'-5"	2'-9 1/2"	5'-0"	5'-9 1/4"	137	1.1	2'-2"	28	0.3
18"	8'-6 3/4"	3'-1"	5'-9"	6'-7 3/4"	170	1.3	2'-8"	37	0.5
21"	9'-8 3/4"	3'-4 1/2"	6'-6"	7'-6"	195	1.6	3'-1"	48	0.6
24"	11'-0"	3'-9 1/2"	7'-3"	8'-4 1/2"	227	2.0	3'-7"	58	0.7
27"	12'-2"	4'-1"	8'-0"	9'-2 3/4"	251	2.3	3'-11"	67	0.8
30"	13'-4"	4'-4 1/2"	8'-9"	10'-1 1/4"	293	2.7	4'-4"	77	1.0
33"	14'-5 3/4"	4'-8"	9'-6"	10'-11 3/4"	318	3.1	4'-8"	84	1.2
36"	15'-7 1/4"	4'-11 1/2"	10'-3"	11'-10"	351	3.5	5'-1"	96	1.4
42"	17'-11 1/2"	5'-6 1/2"	11'-9"	13'-6 3/4"	432	4.5	5'-10"	119	1.7
48"	21'-1 3/4"	6'-1 1/2"	14'-0"	16'-2"	537	6.1	6'-7"	146	2.3
54"	23'-5 1/2"	6'-8 1/2"	15'-6"	17'-10 3/4"	630	7.3	7'-6"	186	2.9
60"	25'-9 1/4"	7'-3 1/2"	17'-0"	19'-7 1/2"	719	8.7	8'-3"	219	3.4
66"	28'-1"	7'-10 1/2"	18'-6"	21'-4 1/4"	811	10.1	8'-9"	242	3.9
72"	30'-4 3/4"	8'-5 1/2"	20'-0"	23'-1 1/4"	924	11.7	9'-4"	272	4.4
12"	7'-10 3/4"	2'-6"	5'-8"	6'-6 1/2"	148	1.1	1'-9"	34	0.3
15"	9'-1"	2'-9 1/2"	6'-8"	7'-8 1/2"	181	1.5	2'-2"	32	0.4
18"	10'-9 1/2"	3'-1"	7'-8"	8'-10 1/4"	221	1.9	2'-8"	42	0.5
21"	12'-2 3/4"	3'-4 1/2"	8'-8"	10'-0"	260	2.3	3'-1"	57	0.7
24"	13'-9 1/2"	3'-9 1/2"	9'-8"	11'-2"	301	2.8	3'-7"	67	0.9
27"	15'-3"	4'-1"	10'-8"	12'-3 3/4"	334	3.3	3'-11"	77	1.0
30"	16'-8 1/4"	4'-4 1/2"	11'-8"	13'-5 3/4"	385	3.8	4'-4"	89	1.3
33"	18'-1 3/4"	4'-8"	12'-8"	14'-7 1/2"	435	4.5	4'-8"	101	1.4
36"	19'-7"	4'-11 1/2"	13'-8"	15'-9 1/4"	472	5.1	5'-1"	115	1.7
42"	22'-5 3/4"	5'-6 1/2"	15'-8"	18'-1"	583	6.5	5'-10"	141	2.1
48"	26'-6 1/4"	6'-1 1/2"	18'-8"	21'-6 3/4"	730	8.9	6'-7"	175	2.8
54"	29'-5"	6'-8 1/2"	20'-8"	23'-10 1/4"	875	10.7	7'-6"	226	3.6
60"	32'-3 3/4"	7'-3 1/2"	22'-8"	26'-2"	996	12.7	8'-3"	264	4.3
66"	35'-2 1/2"	7'-10 1/2"	24'-8"	28'-5 3/4"	1,140	14.9	8'-9"	300	4.9
72"	38'-1 1/4"	8'-5 1/2"	26'-8"	30'-9 1/2"	1,297	17.3	9'-4"	334	5.6
12"	11'-2"	2'-6"	8'-6"	9'-9 3/4"	274	1.9	1'-9"	38	0.4
15"	13'-2 1/4"	2'-9 1/2"	10'-0"	11'-6 1/2"	368	2.5	2'-2"	37	0.5
18"	15'-2 1/2"	3'-1"	11'-6"	13'-3 1/2"	330	3.2	2'-8"	50	0.7
21"	17'-2 3/4"	3'-4 1/2"	13'-0"	15'-0 1/4"	387	3.9	3'-1"	69	0.9
24"	19'-4 1/2"	3'-9 1/2"	14'-6"	16'-9"	453	4.8	3'-7"	80	1.2
27"	21'-4 3/4"	4'-1"	16'-0"	18'-5 3/4"	512	5.7	3'-11"	96	1.4
30"	23'-5 1/4"	4'-4 1/2"	17'-6"	20'-2 1/2"	593	6.7	4'-4"	110	1.7
33"	25'-5 3/4"	4'-8"	19'-0"	21'-11 1/4"	675	7.8	4'-8"	127	2.0
36"	27'-5 3/4"	4'-11 1/2"	20'-6"	23'-8"	735	9.0	5'-1"	144	2.3
42"	31'-6 1/2"	5'-6 1/2"	23'-6"	27'-1 1/2"	927	11.5	5'-10"	179	3.0
48"	37'-3 1/2"	6'-1 1/2"	28'-0"	32'-4"	1,191	15.9	6'-7"	231	4.0
54"	41'-4 1/4"	6'-8 1/2"	31'-0"	35'-9 1/2"	1,474	19.2	7'-6"	300	5.0
60"	45'-4 3/4"	7'-3 1/2"	34'-0"	39'-3"	1,631	22.9	8'-3"	353	6.0

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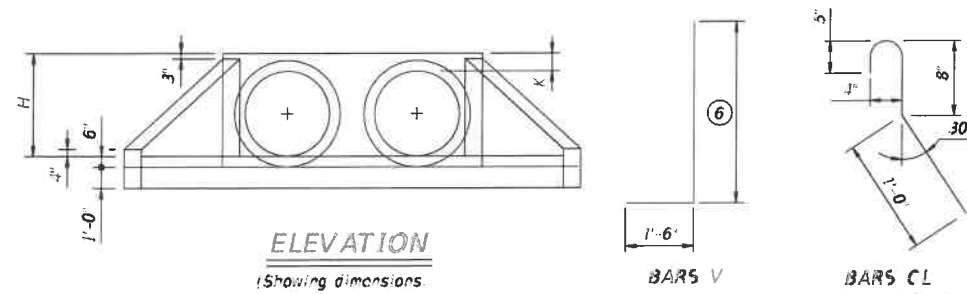
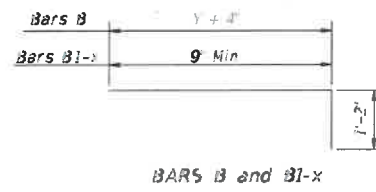
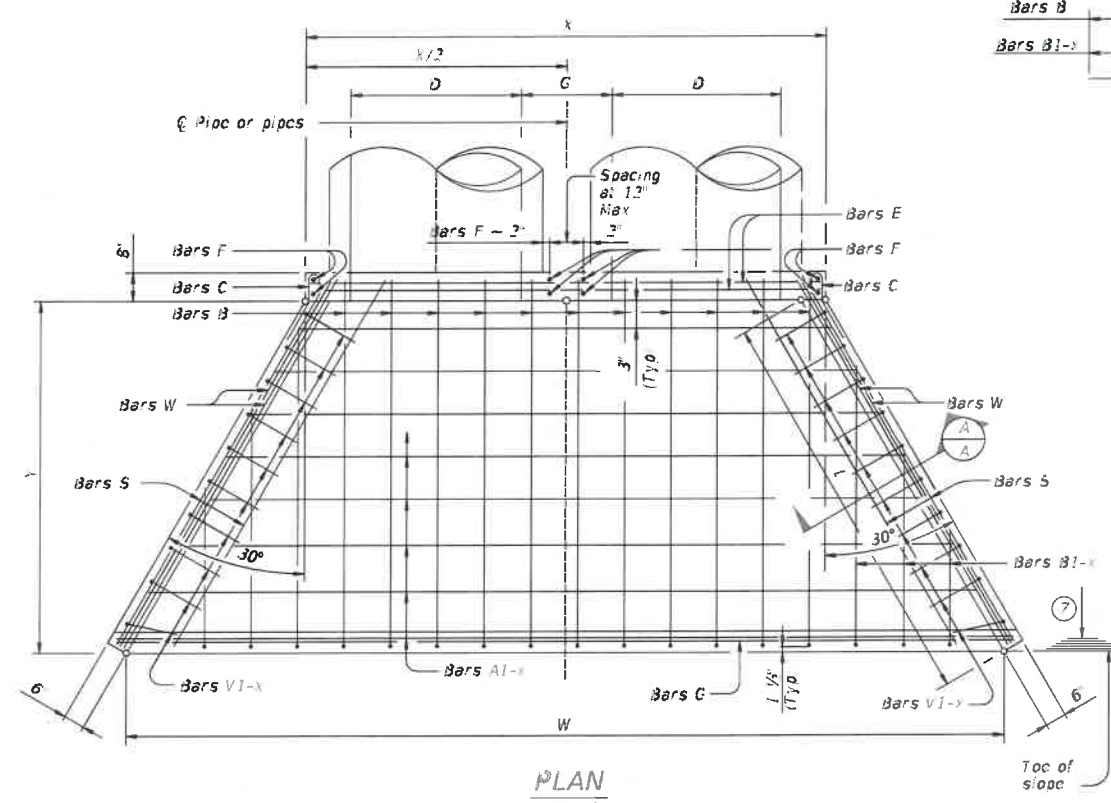


TABLE OF REINFORCING STEEL

Bar	Size	Spac	No
A	#4	1'-0"	-
B	#3	1'-6"	-
C	#4	1'-0"	-
D	#3	1'-0"	-
E	#5	-	4
F	#5	-	-
G	#3	-	7
S	#4	-	6
V	#4	1'-0"	-
W	#5	-	4

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe ID	G	K (1)	H
12"	0'-9"	1'-0"	2'-0"
15"	0'-11"	1'-0"	2'-3"
18"	1'-2"	1'-0"	2'-6"
21"	1'-4"	1'-0"	2'-9"
24"	1'-7"	1'-0"	3'-0"
27"	1'-8"	1'-0"	3'-3"
30"	1'-10"	1'-0"	3'-6"
33"	1'-11"	1'-0"	3'-9"
36"	2'-1"	1'-0"	4'-0"
42"	2'-4"	1'-0"	4'-6"
48"	2'-7"	1'-3"	5'-3"
54"	3'-0"	1'-3"	5'-9"
60"	3'-3"	1'-3"	6'-3"
66"	3'-3"	1'-3"	6'-9"
72"	3'-4"	1'-3"	7'-3"

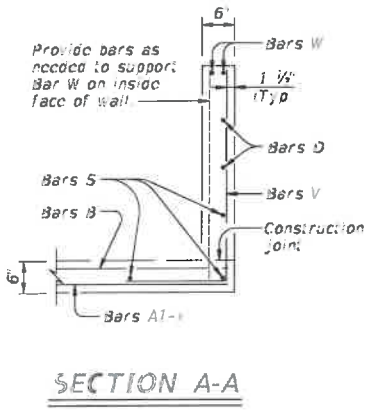
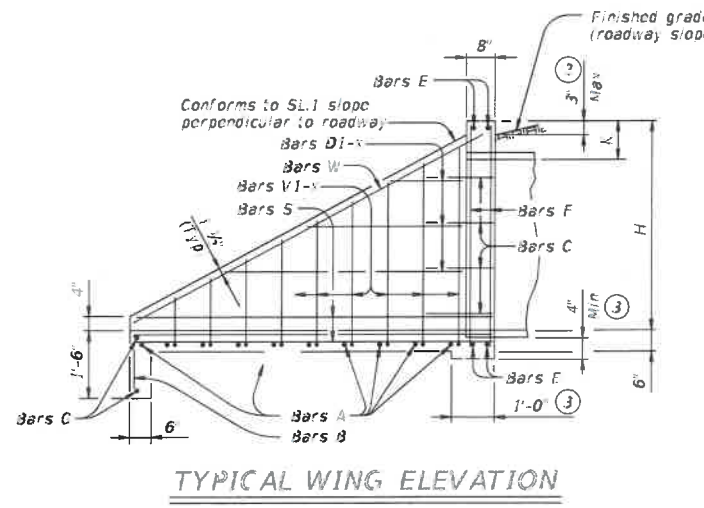


- Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
- For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- Provide a 1'-0" footing as shown where required to maintain 4" minimum cover for pipes.
- Dimensions shown are usual and maximum.
- Quantities shown are for one structure and only one headwall.
- Min Length = $6' + 3' \times \left(\frac{12 \times H - 7}{12 \times L} \right)$
Max Length = $12 \times H - 3' \times \left(\frac{12 \times H - 7}{12 \times L} \right) - 1'$
- Lengths of wings based on S1:1 slope along this line.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these curbs, headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing dimensions are out-to-out of bars.



Texas Department of Transportation
Bridge Division Standard

CONCRETE HEADWALLS WITH FLARED WINGS FOR 0° SKEW PIPE CULVERTS

CH-FW-0

FILE	CH-FW-0-01	DATE	12/12/2022
REV	1	DATE	12/12/2022
PROJECT	COUNTY ROAD #653 PAVING IMPROVEMENTS FARMERSVILLE COLLIN CO., TX	PROJECT NO.	22-066
SHEET NO.			17

FOX ENGINEERING
ARDMORE - OKLAHOMA

Fox Engineering, Inc.
211 E. Street N.W., PO Box 666
Ardmore, Oklahoma 73401
Phone: 580.223.2319
Fax: 580.223.2492
E-mail: foxengineering@sbglobal.net

CERTIFICATE OF AUTHORIZATION NO. F-9812
CERTIFICATE OF AUTHORIZATION EXPIRES 3-31-2022

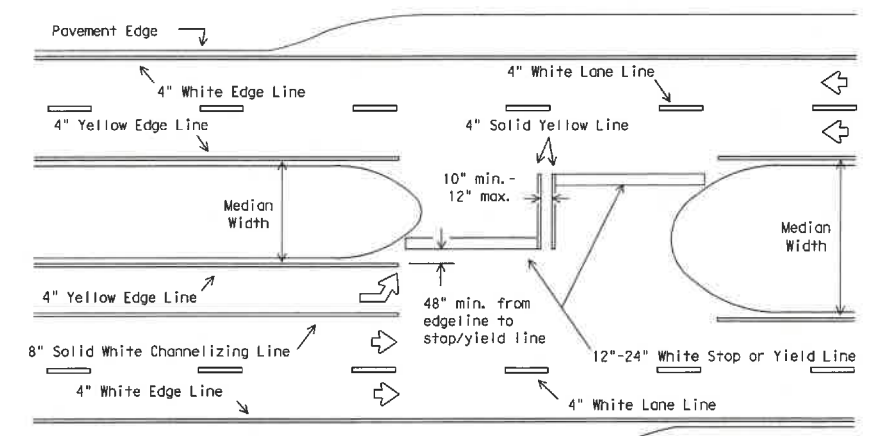
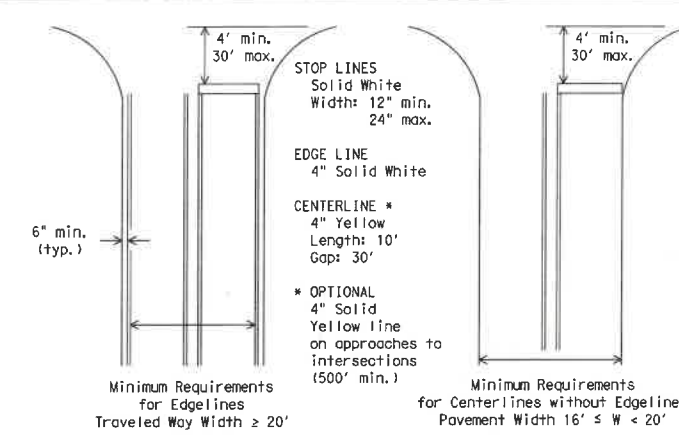
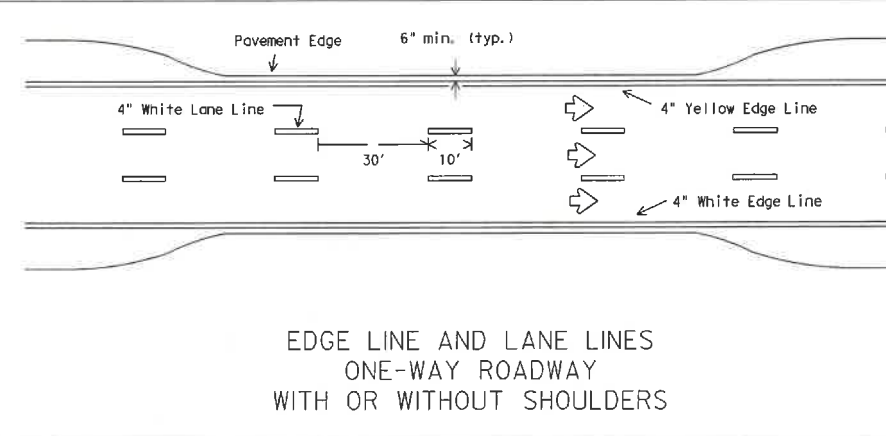
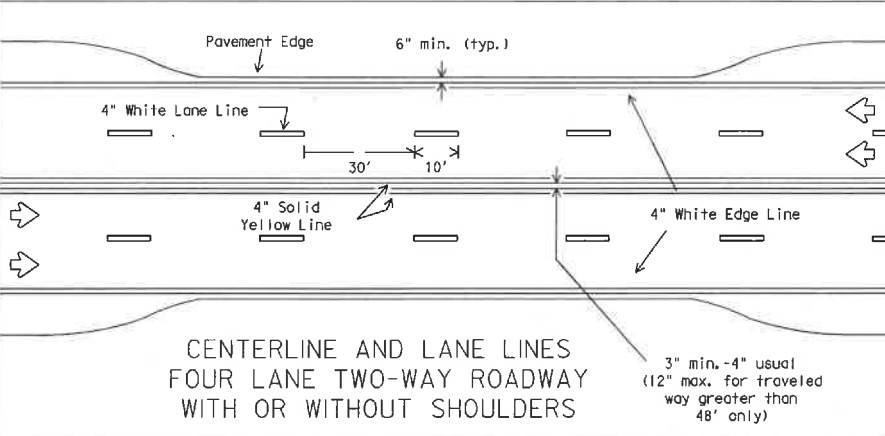
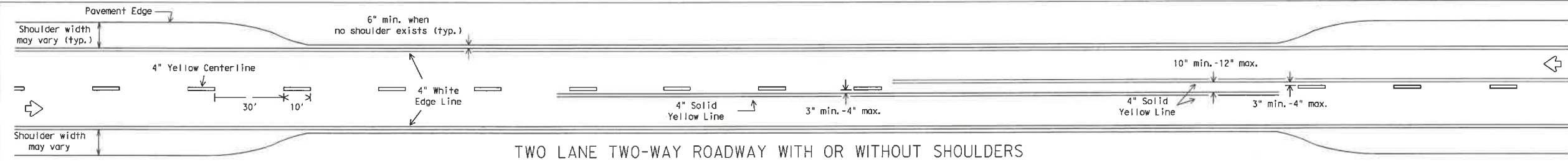
COUNTY ROAD #653
PAVING IMPROVEMENTS
FARMERSVILLE
COLLIN CO., TX

ISSUE DATE: 12-12-2022

Rev	Revision Description

PROJECT NO: 22-066 SHEET NO: 17

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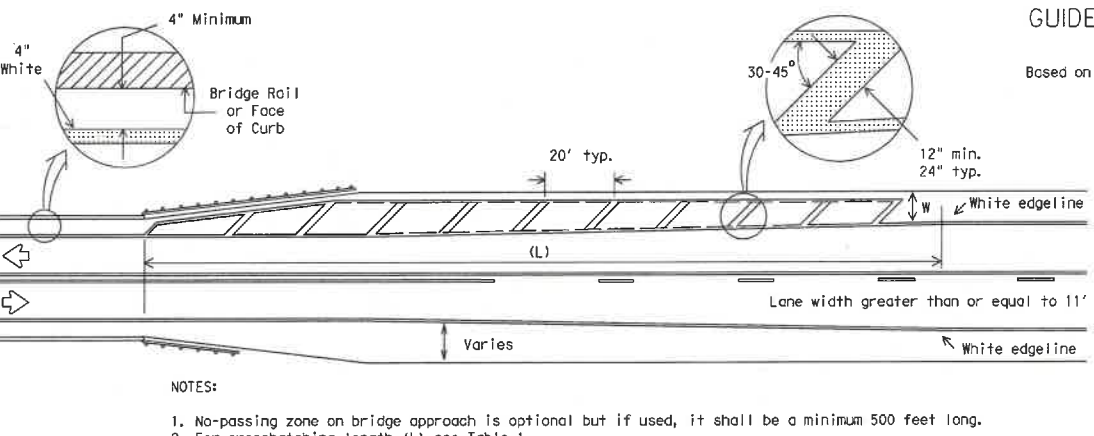


All medians shall be field measured to determine the location of necessary striping. Stop/Yield bars and centerlines shall be placed when the median width is greater than 30 ft. The median width is defined as the area between two roadways of a divided highway measured from edge of traveled way to edge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

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

MATERIAL SPECIFICATIONS table with columns for material name and specification number. Includes Pavement Markers (ReflectORIZED), Epoxy and Adhesives, Bituminous Adhesive for Pavement Markers, Traffic Paint, Hot Applied ThermoPlastic, and Permanent Prefabricated Pavement Markings.

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



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

TABLE 1 - TYPICAL LENGTH (L)

Table with 2 columns: Posted Speed and Formula. Rows for speed <= 40 (L = WS^2/60) and speed >= 45 (L = WS).

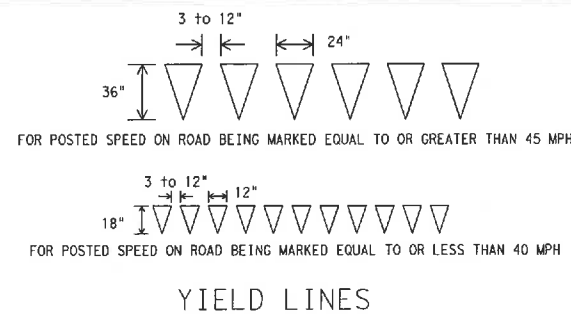
* 85th Percentile Speed may be used on roads where traffic speeds normally exceed the posted speed limit. Crosshatching length should be rounded up to nearest 5 foot increment. L=Length of Crosshatching (FT.) W=Width of Offset (FT.) S=Posted Speed (MPH)

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

Texas Department of Transportation Traffic Operations Division

TYPICAL STANDARD PAVEMENT MARKINGS PM(1)-12

Table with columns for Revisions (Date, Cont, Sect, Job, Highway) and District/County/Sheet No.



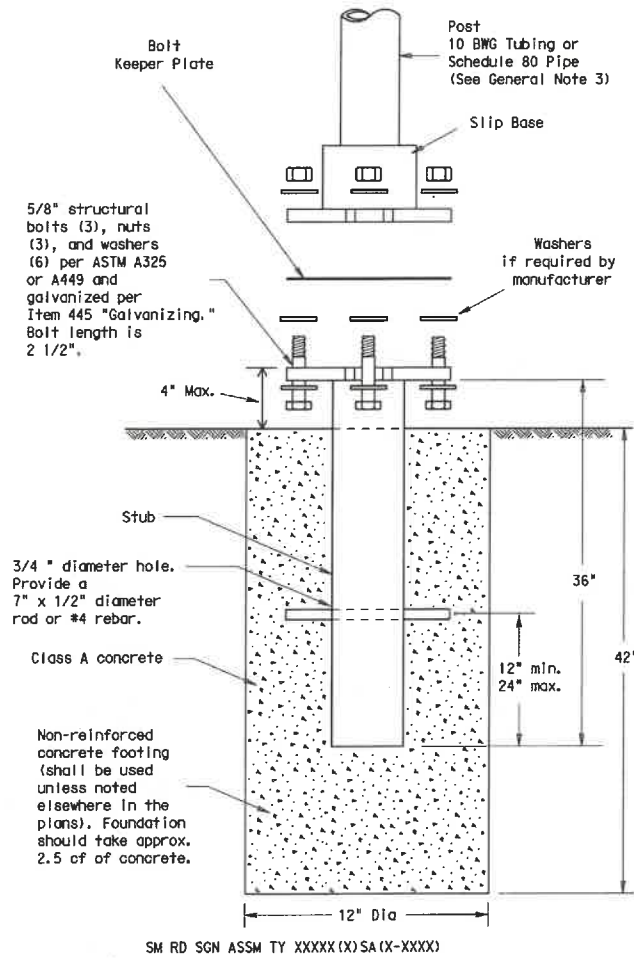
DATE: FILE:

FOX ENGINEERING logo and contact information: 211 E. Street N.W., P.O. Box 666, Ardmore, Oklahoma 73401. Phone: 580.223.2319. Fax: 580.223.2492. E-mail: foxengineering@globalnet.net.

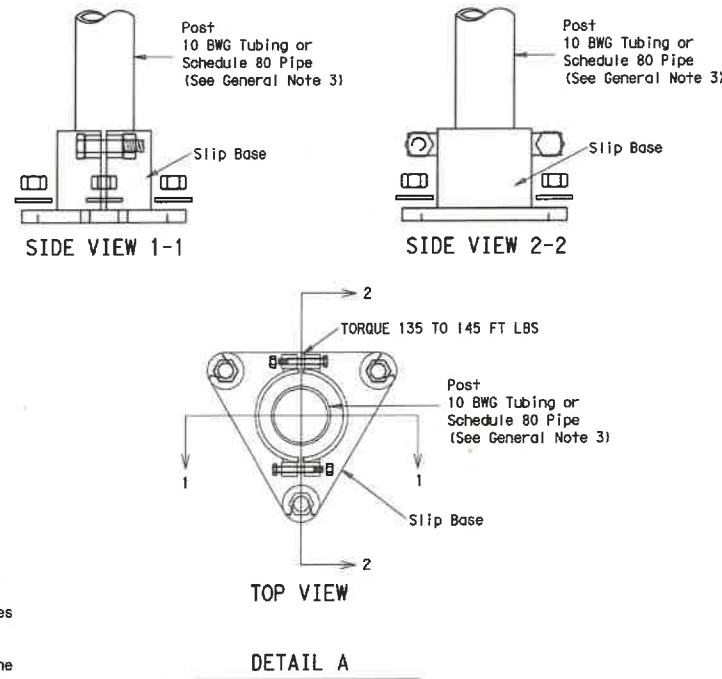
COUNTY ROAD #653 PAVING IMPROVEMENTS FARMERSVILLE COLLIN CO., TX

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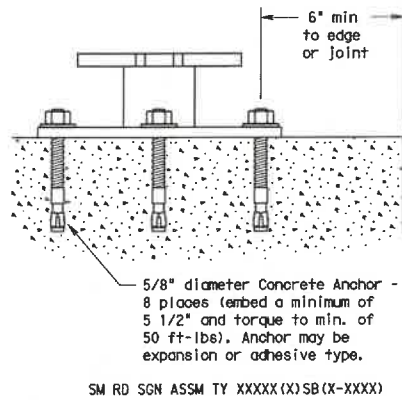
TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



NOTE
The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.



CONCRETE ANCHOR



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

GENERAL NOTES:

- Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
- Material used as post with this system shall conform to the following specifications:
 10 BWG Tubing (2.875" outside diameter)
 0.134" nominal wall thickness
 Seamless or electric-resistance welded steel tubing or pipe
 Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
 Other steels may be used if they meet the following:
 55,000 PSI minimum yield strength
 70,000 PSI minimum tensile strength
 20% minimum elongation in 2"
 Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
 Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
 Galvanization per ASTM A123 or ASTM A653 G210. For pre-coated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
 Schedule 80 Pipe (2.875" outside diameter)
 0.276" nominal wall thickness
 Steel tubing per ASTM A500 Gr C
 Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
 46,000 PSI minimum yield strength
 62,000 PSI minimum tensile strength
 21% minimum elongation in 2"
 Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
 Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
 Galvanization per ASTM A123
- See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is:
<http://www.txdot.gov/publications/traffic.htm>
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation

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

Support

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

ADDED DETAIL A FOR CLAMP BASE
10-2010

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM SMD (SLIP-1) -08 (DAL)

© TxDOT July 2002	DIV TxDOT	CRJ TxDOT	DIV TxDOT	CRJ TxDOT
9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
12-10 (DISTRICT) ADDED CLAMP BASE DETAIL FOR SLIP BASE INSTALLATION	DIST	COUNTY	SHEET NO.	
26B	DALLAS			



ARDMORE - OKLAHOMA
CERTIFICATE OF AUTHORIZATION NO. F-8612
CERTIFICATE OF AUTHORIZATION EXPIRES 3-31-2022

ISSUE DATE: 12-12-2022
 COUNTY ROAD #653
 PAVING IMPROVEMENTS
 FARMERSVILLE
 COLLIN CO., TX
 PROJ. PHASE: SHEET NO.
 PROJ. NO: 22-066 19

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

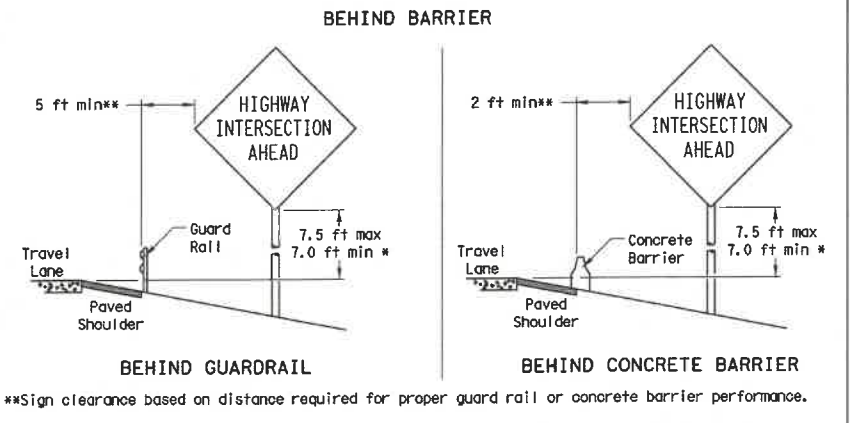
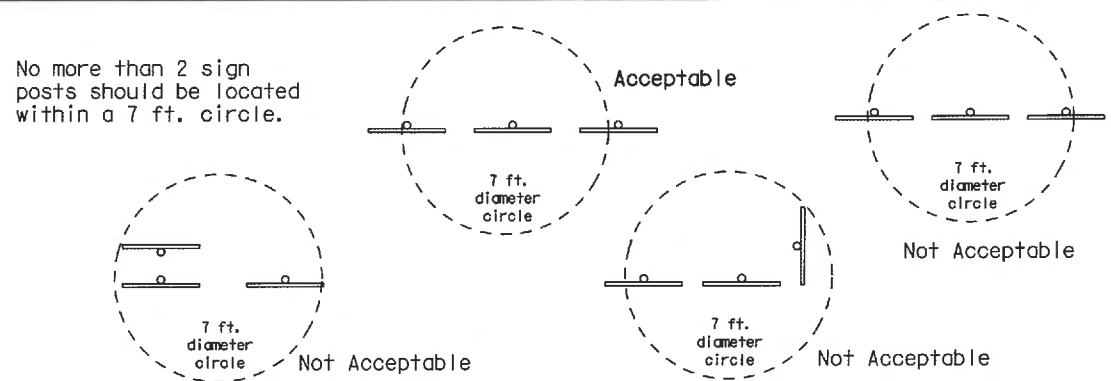
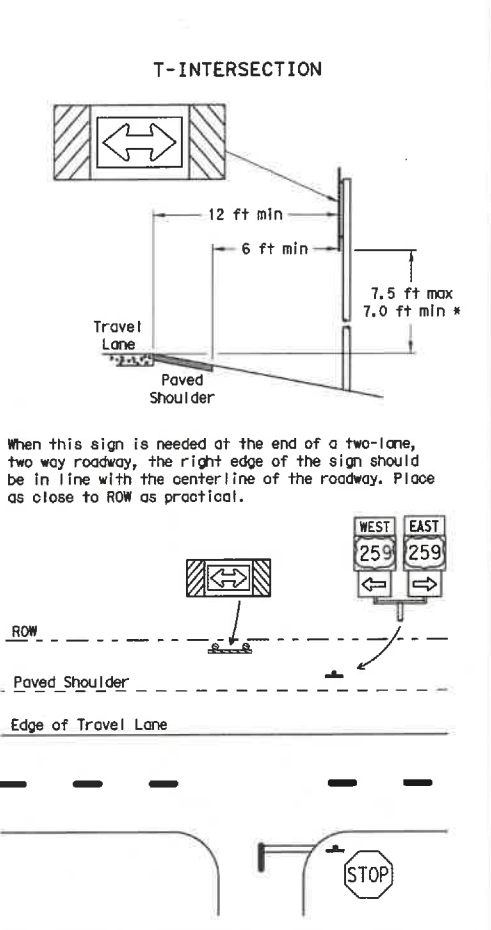
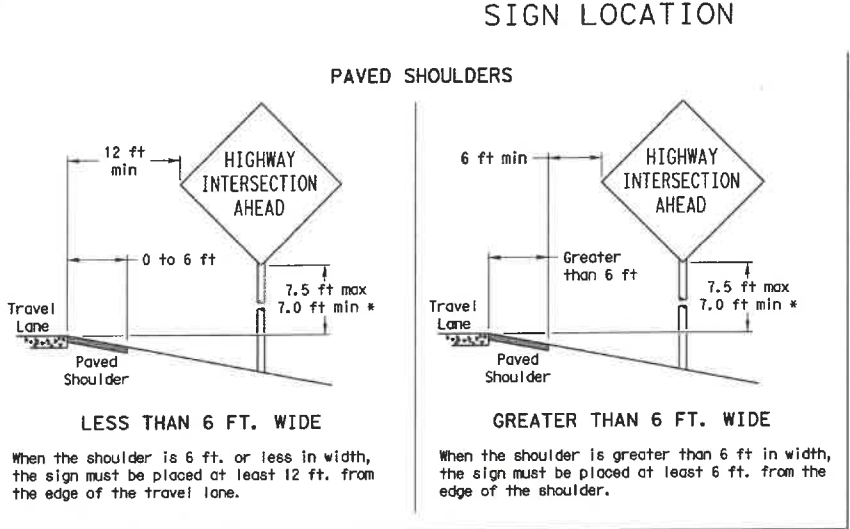
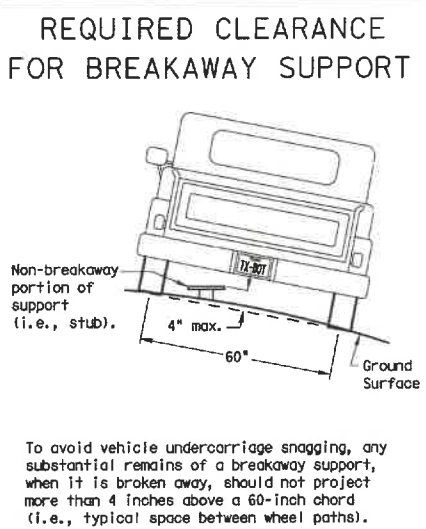
SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

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

Number of Posts (1 or 2)

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

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



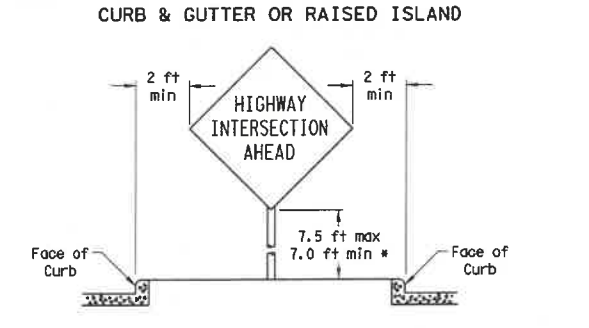
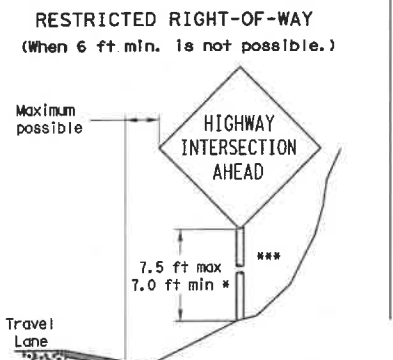
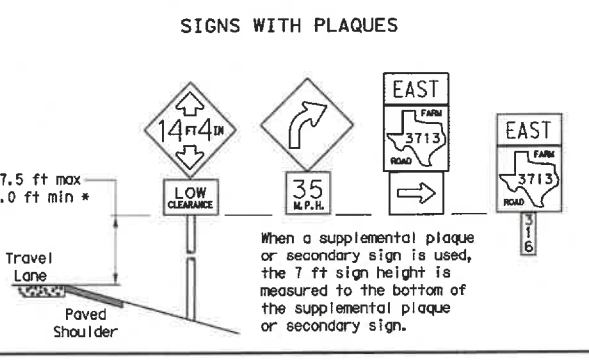
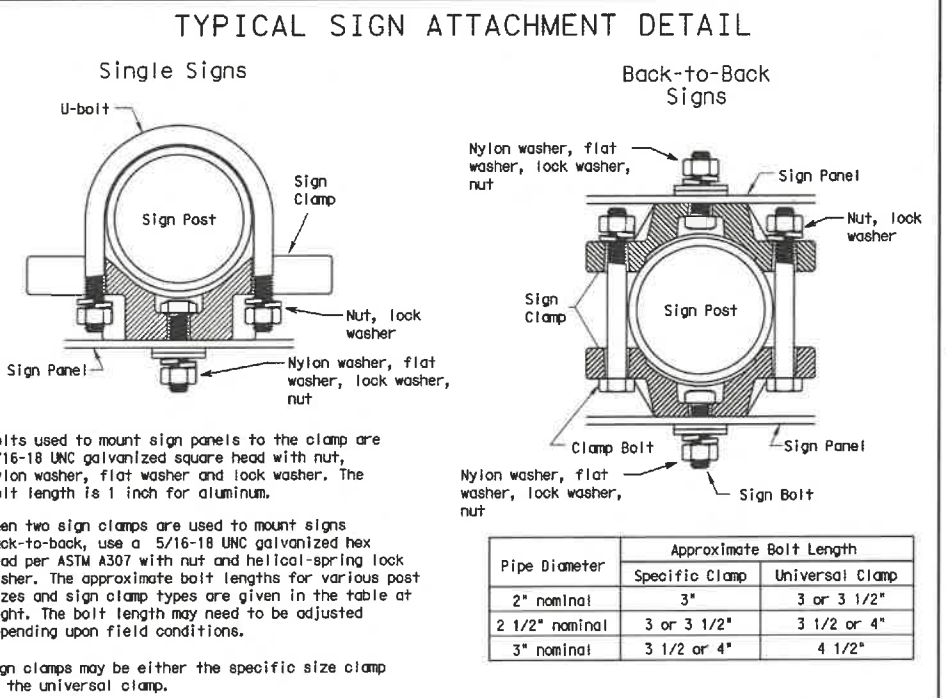
* Signs shall be mounted using the following condition that results in the greatest sign elevation:

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

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

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

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



Texas Department of Transportation
 Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD (GEN) -08

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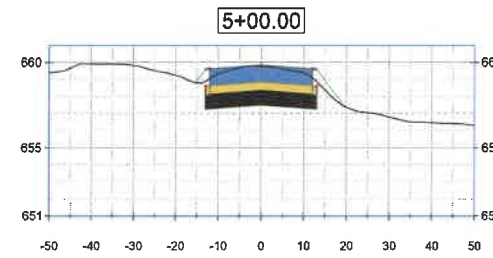
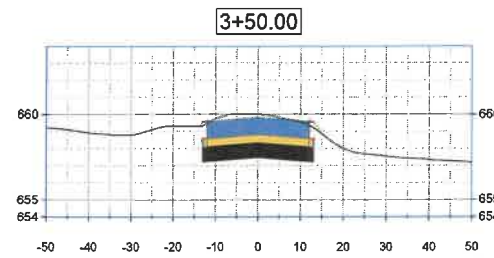
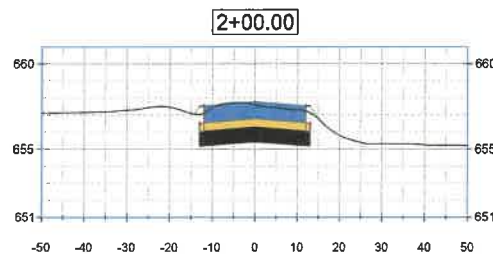
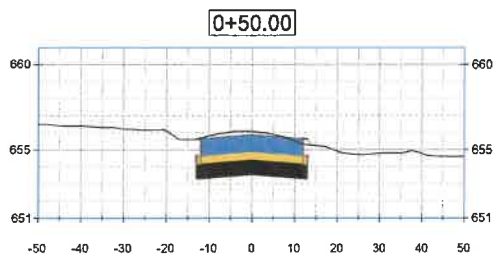
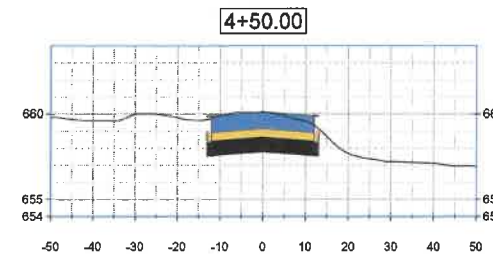
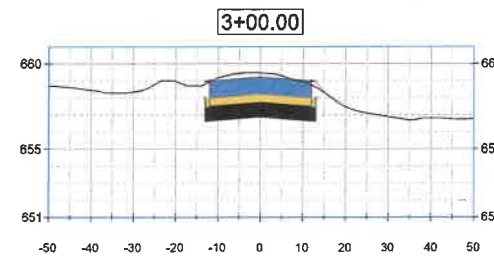
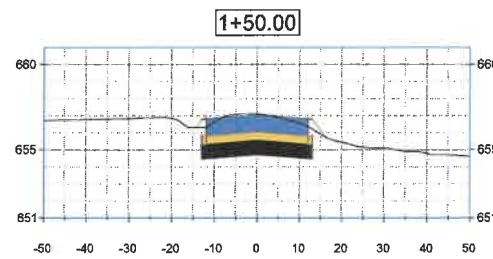
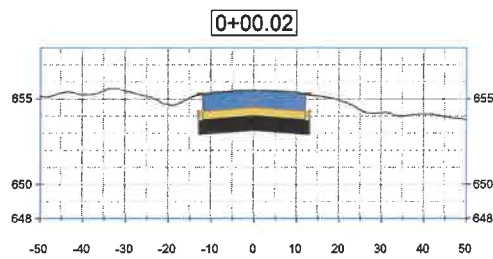
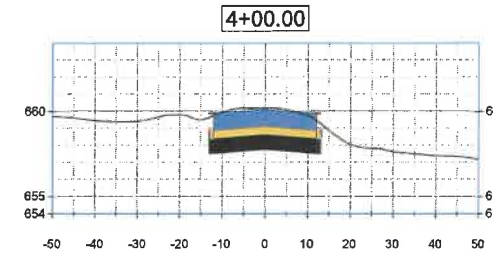
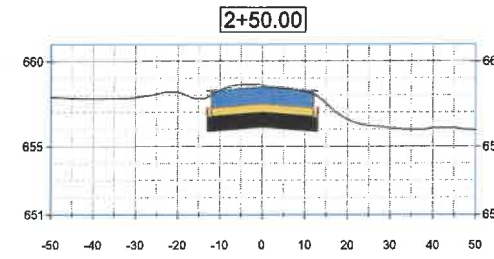
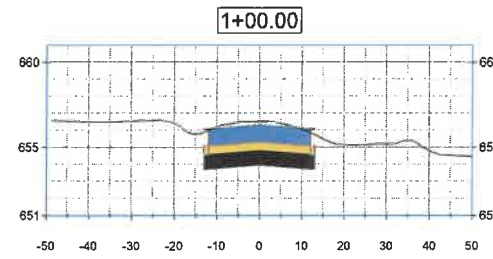
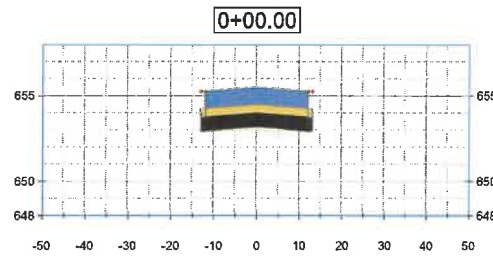
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26A

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**COUNTY ROAD #653
 PAVING IMPROVEMENTS
 FARMERSVILLE
 COLLIN CO., TX**

ISSUE DATE: 12-12-2022
 Rev # Revision Date/Description
 PROJ. PHASE: SHEET NO: 20
 PROJ. NO: 22-066

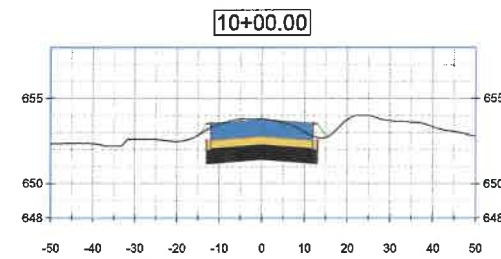
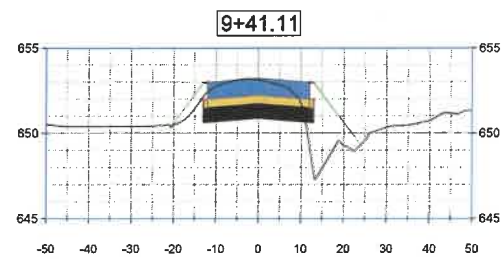
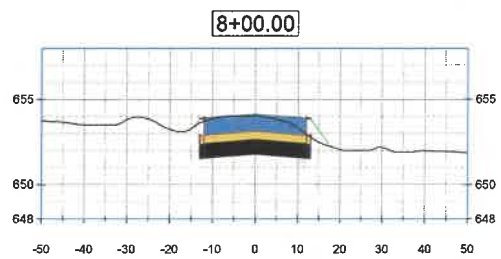
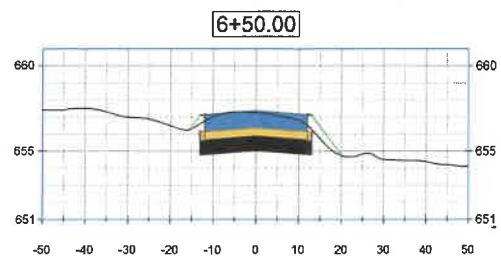
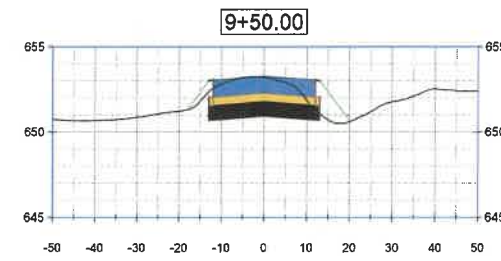
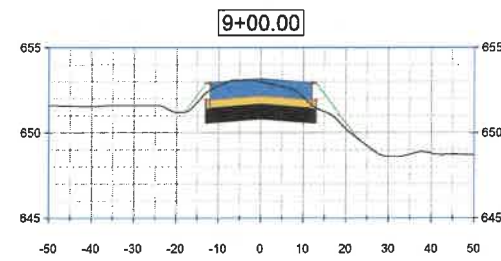
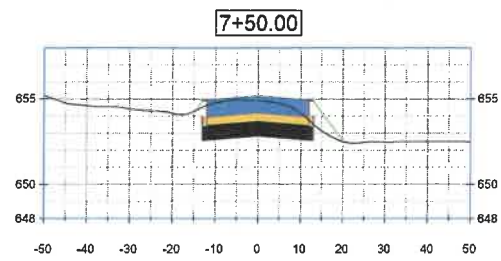
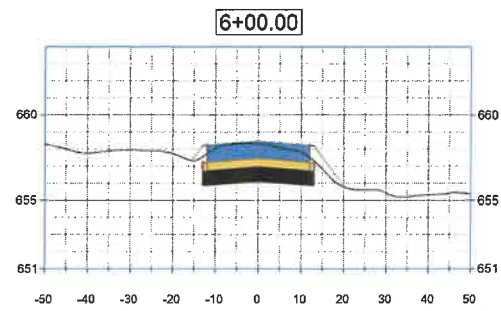
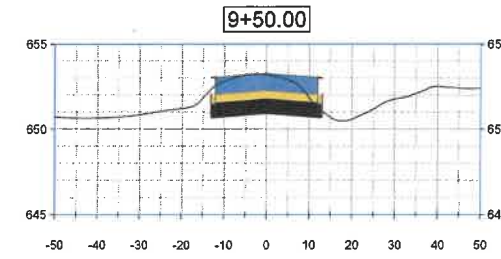
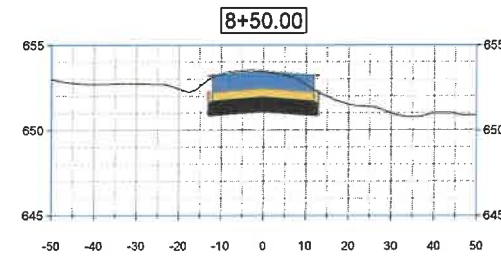
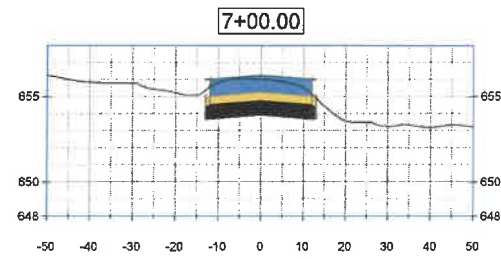
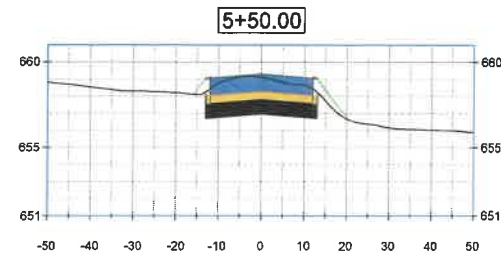


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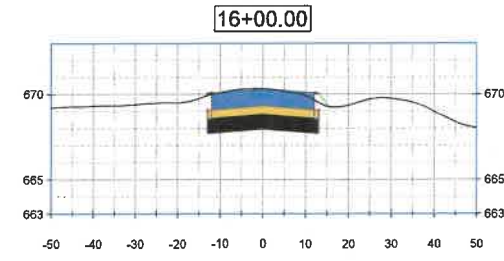
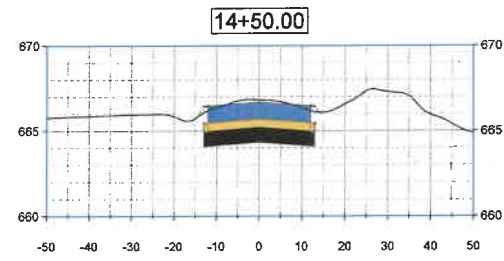
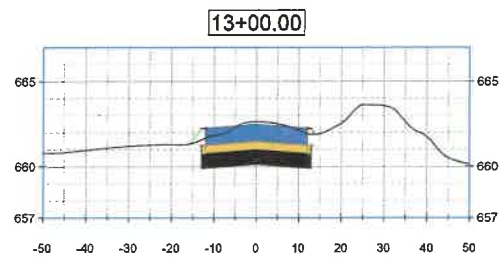
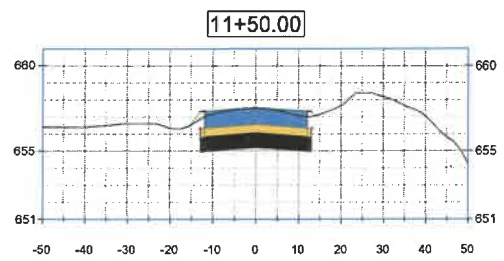
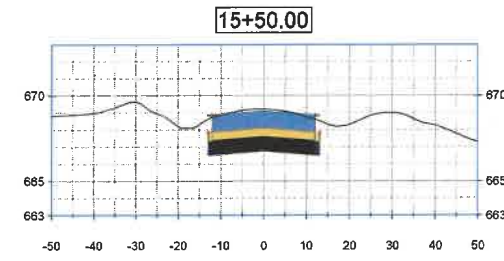
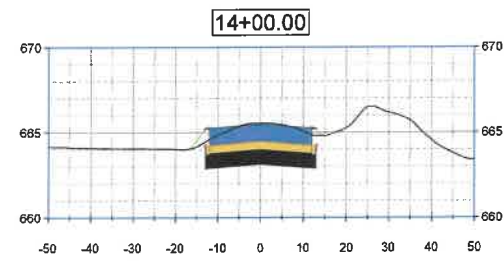
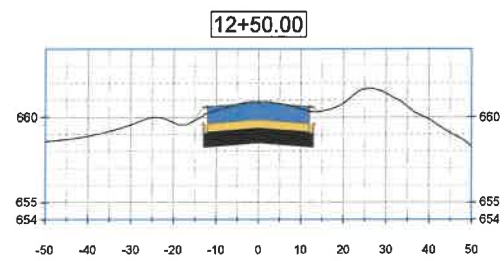
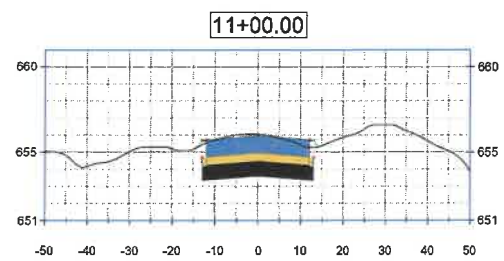
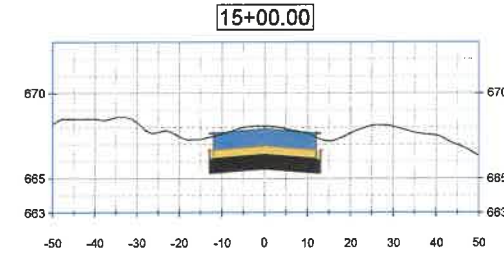
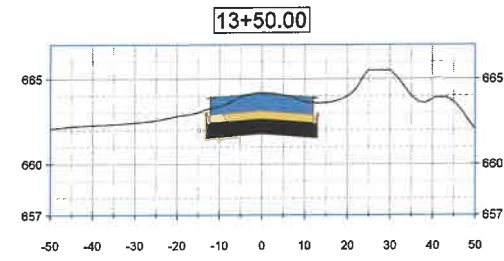
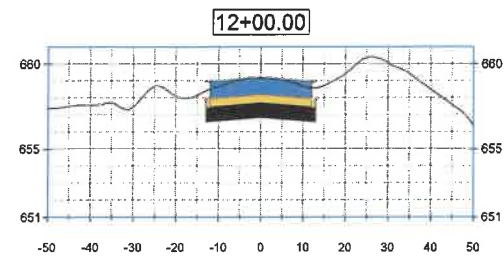
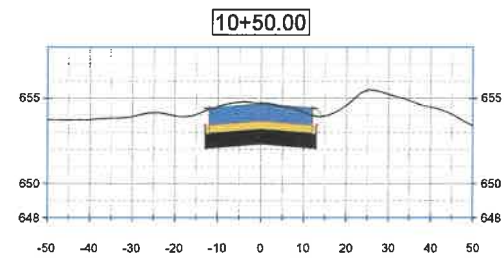
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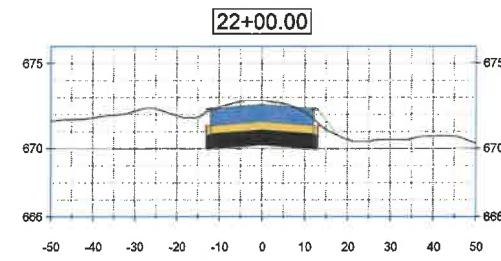
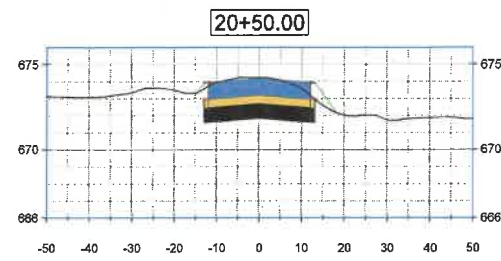
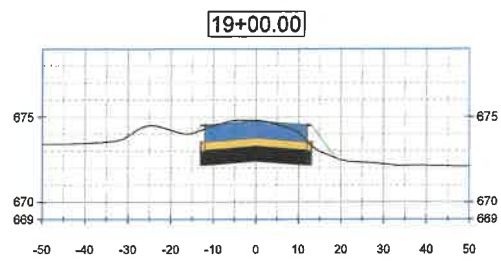
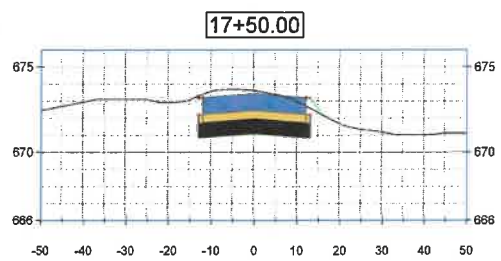
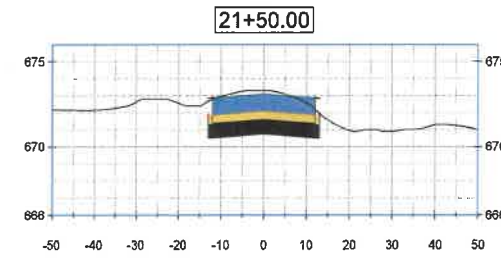
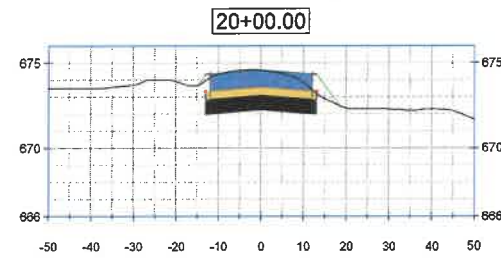
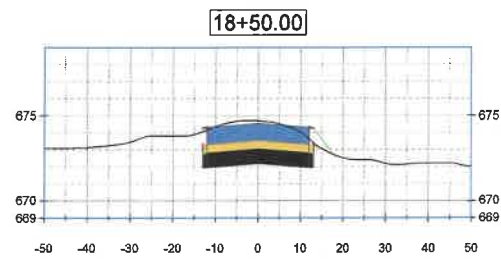
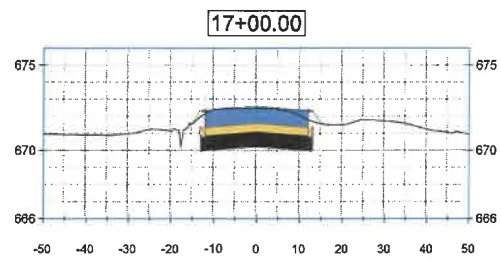
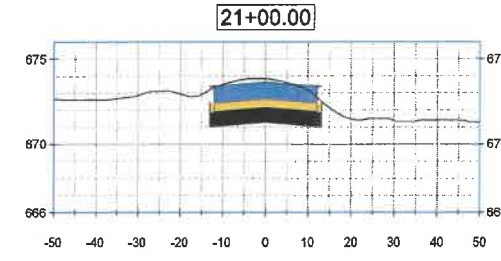
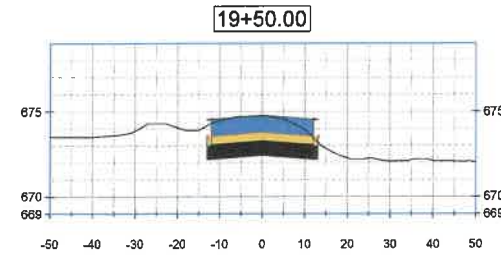
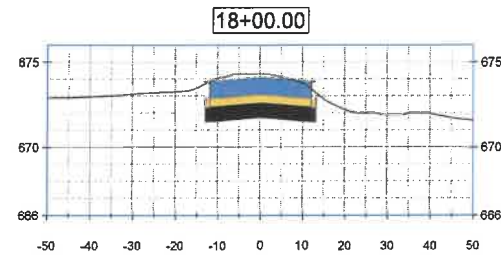
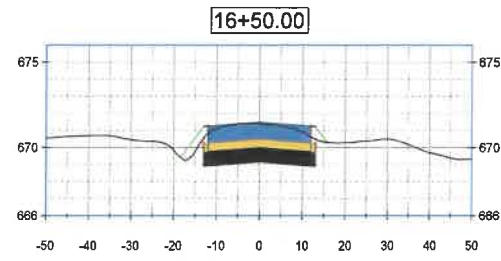
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