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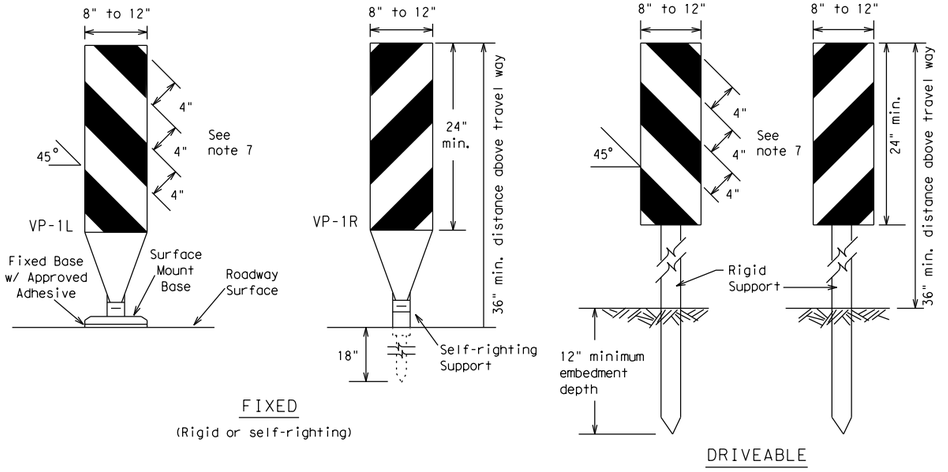
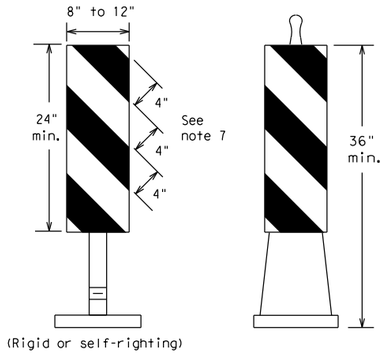


FIXED

(Rigid or self-righting)

DRIVEABLE

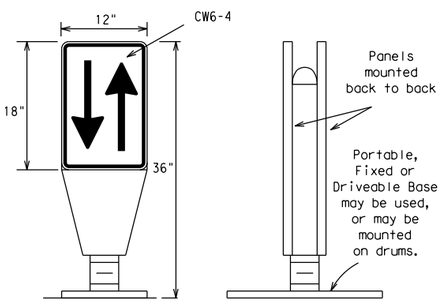


(Rigid or self-righting)

PORTABLE

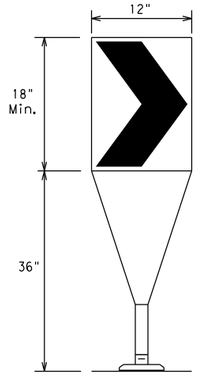
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



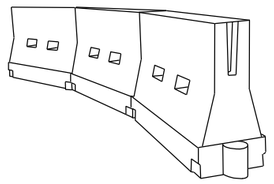
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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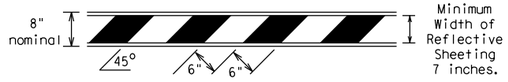
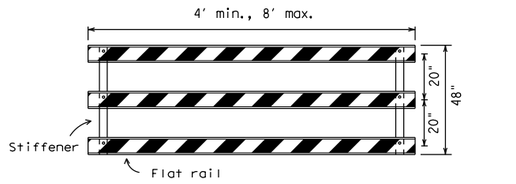
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



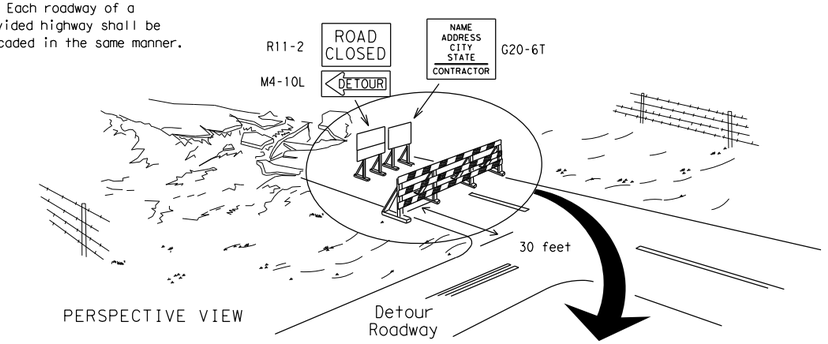
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES

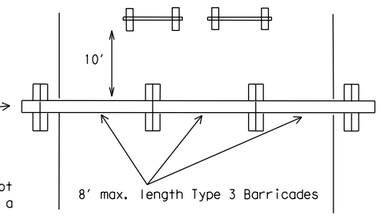
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

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

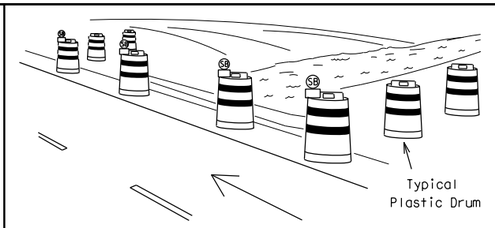
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

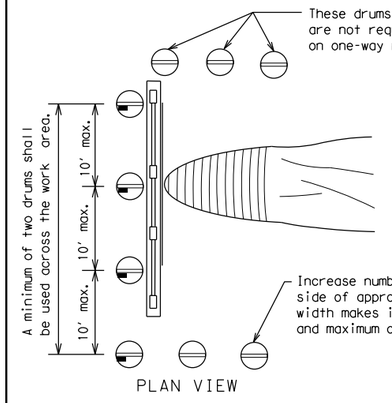
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

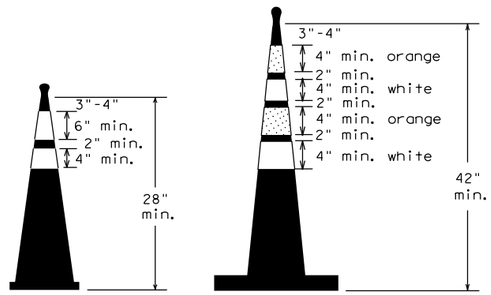
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



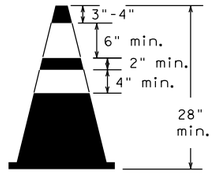
PLAN VIEW

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

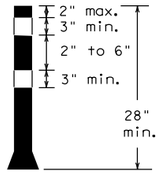
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

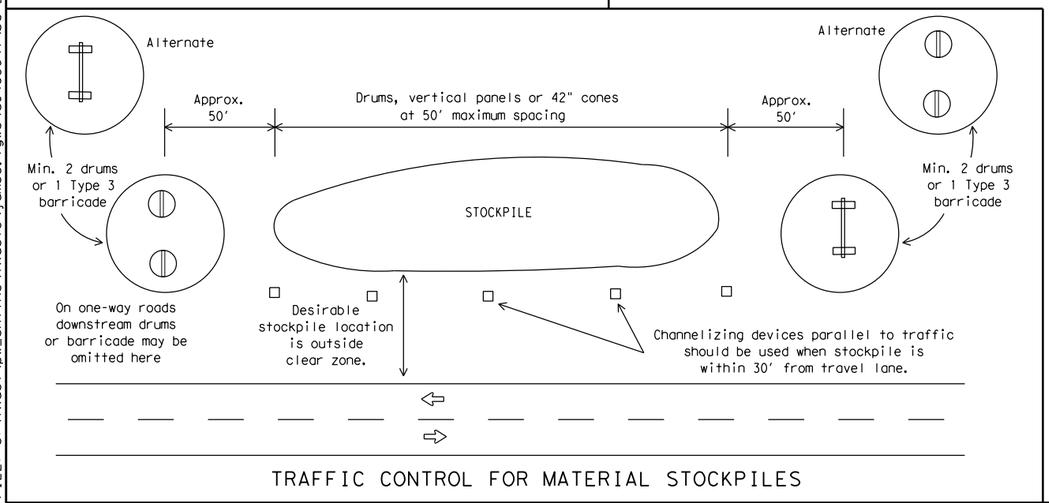


Tubular Marker

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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

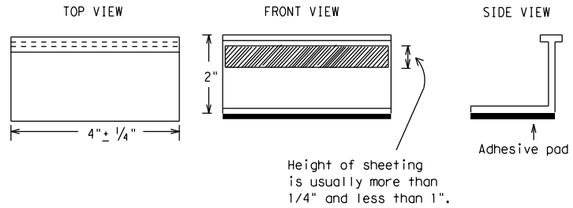
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

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11-02 8-14	DAL	COLLIN		88

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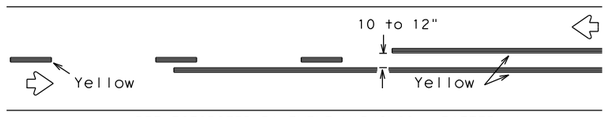
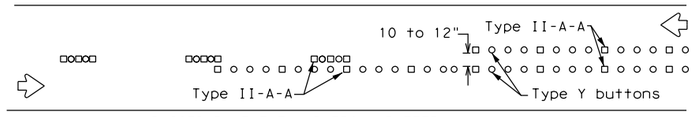
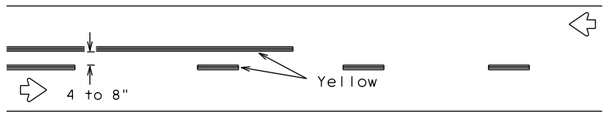
PAVEMENT MARKING PATTERNS



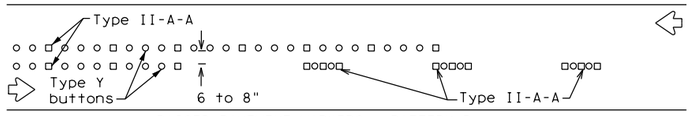
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



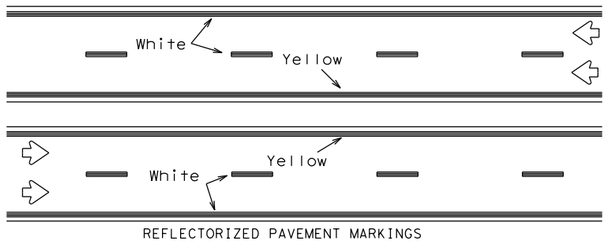
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



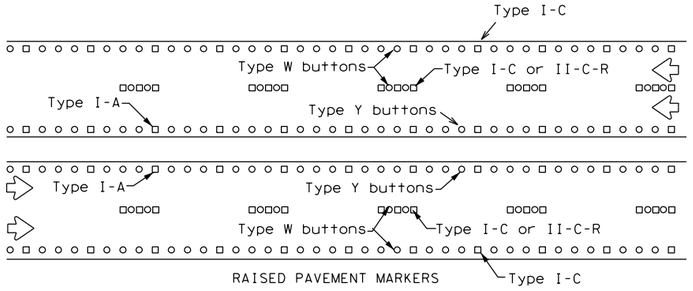
RAISED PAVEMENT MARKERS - PATTERN B

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

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



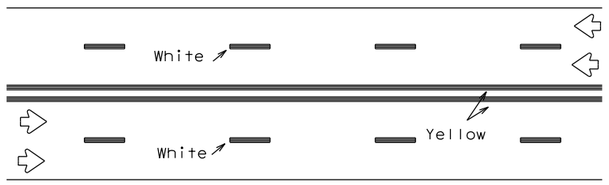
REFLECTORIZED PAVEMENT MARKINGS



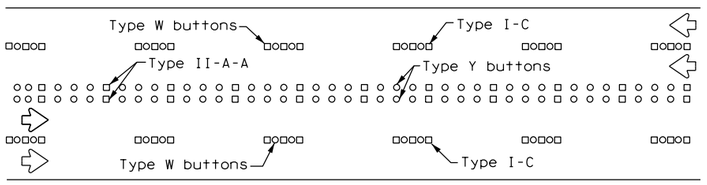
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



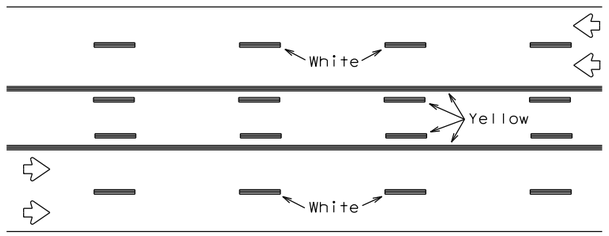
REFLECTORIZED PAVEMENT MARKINGS



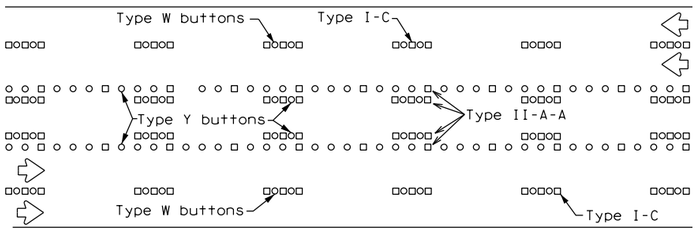
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

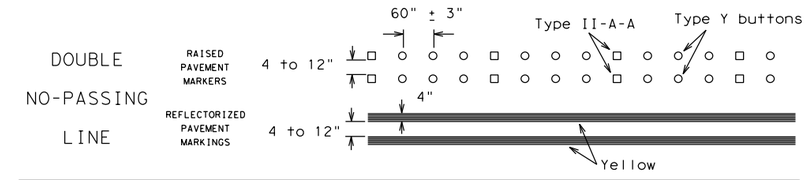
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

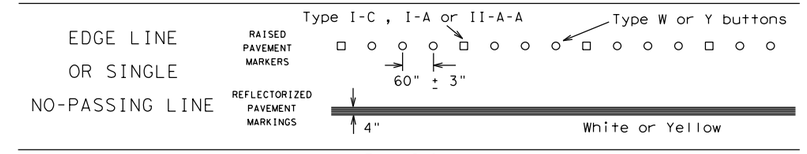
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

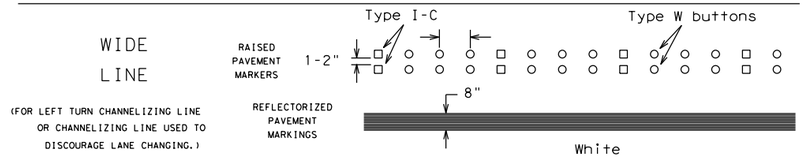


EDGE LINE OR SINGLE NO-PASSING LINE



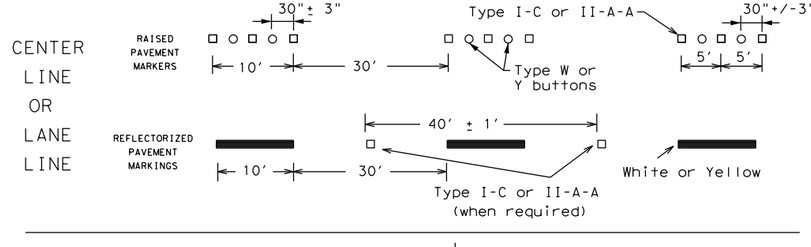
WIDE LINE

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

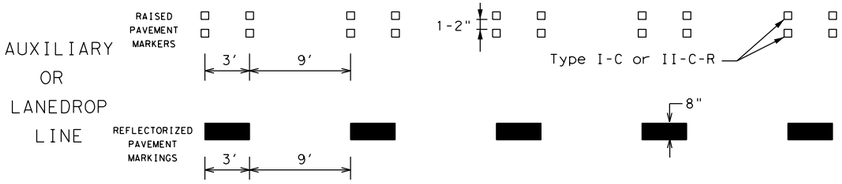


BROKEN LINES

CENTER LINE OR LANE LINE

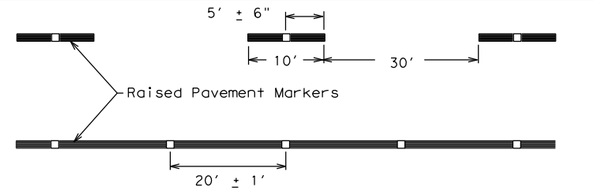


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	1392	01	044, ETC.	FM 1378, ETC.
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		89

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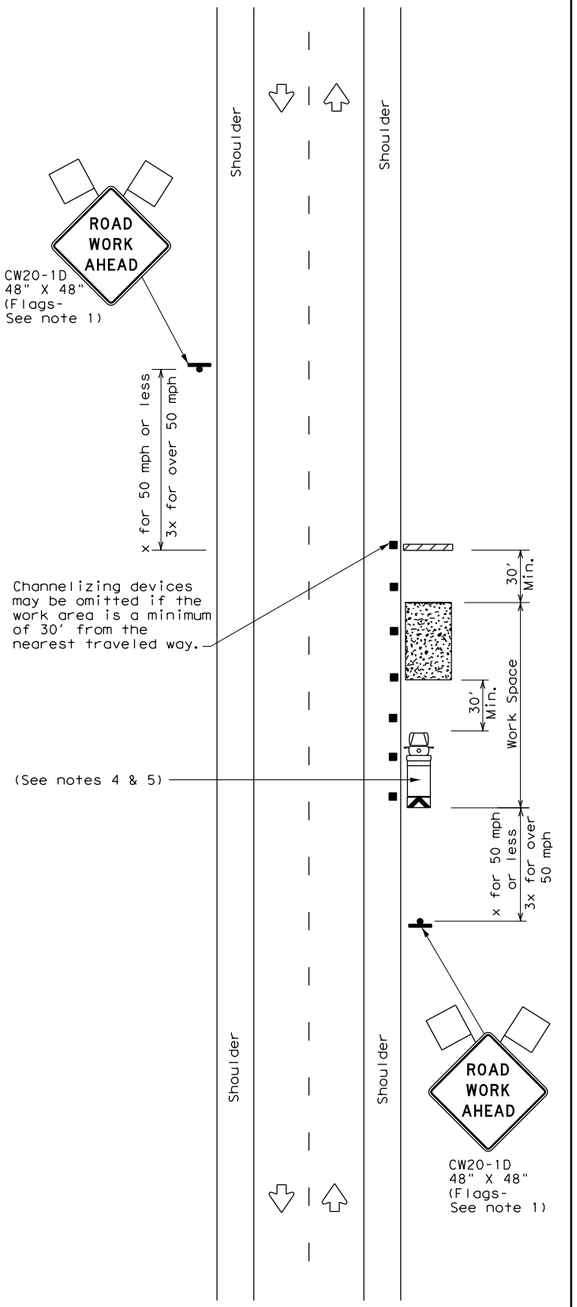
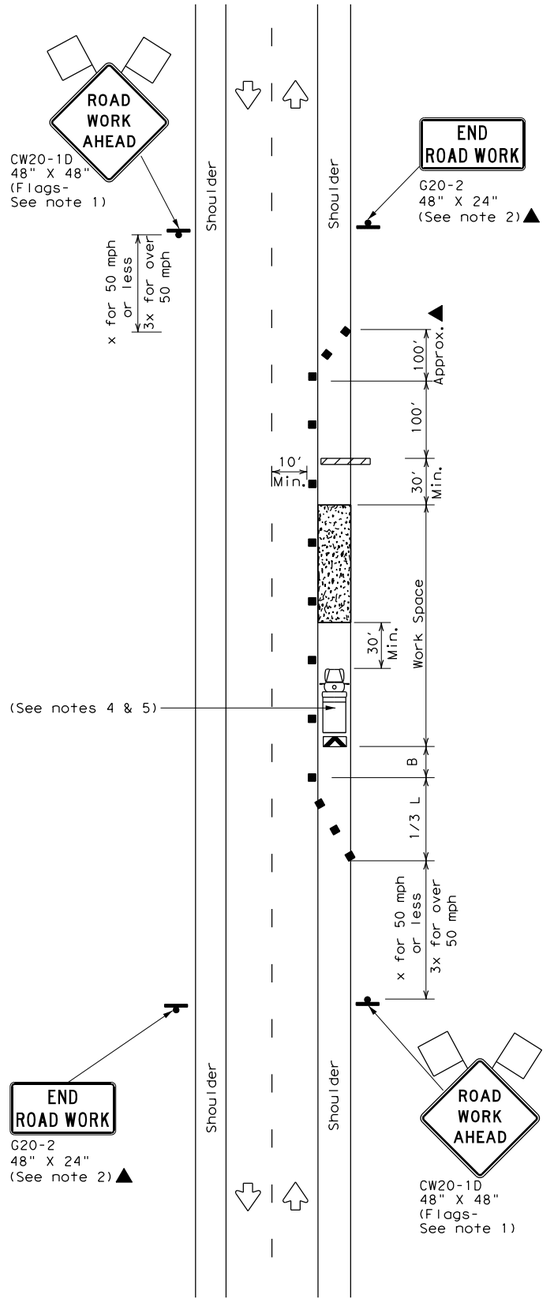


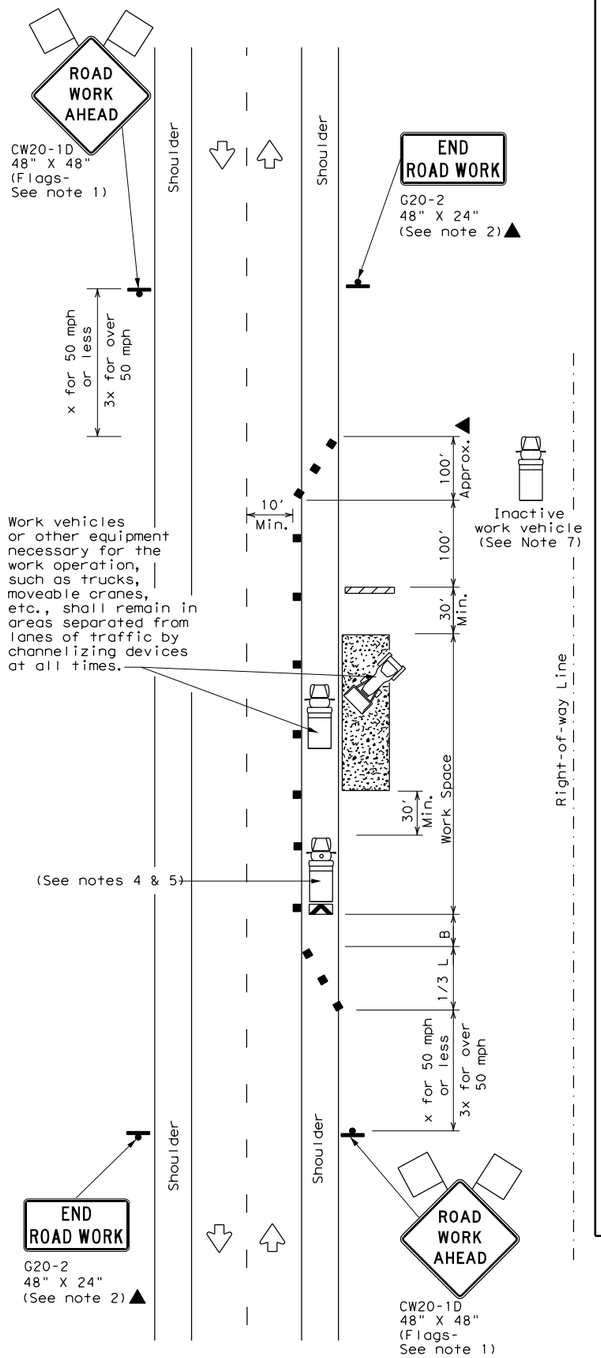
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.	FM 1378, ETC.
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	DAL	COLLIN		90
1-97 2-18				

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DATE: 10/29/2022 9:05:13 PM
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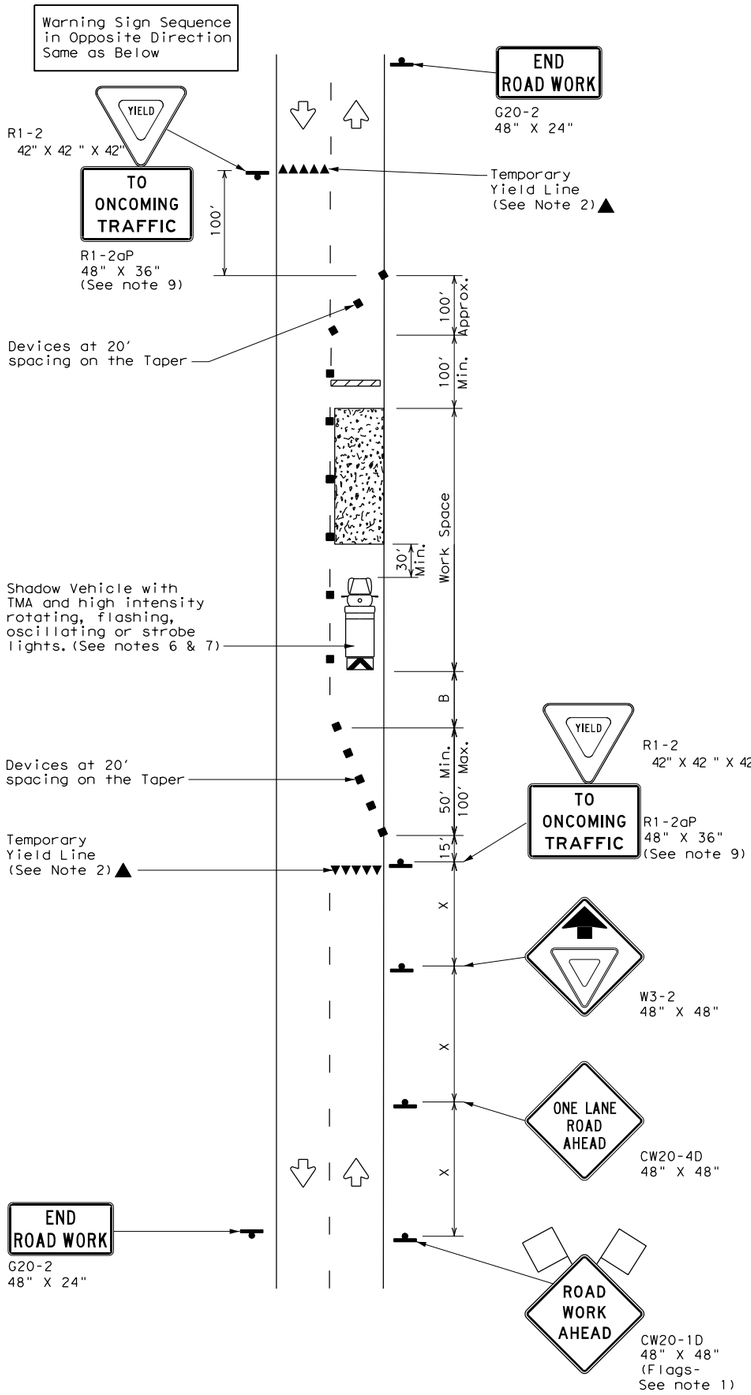


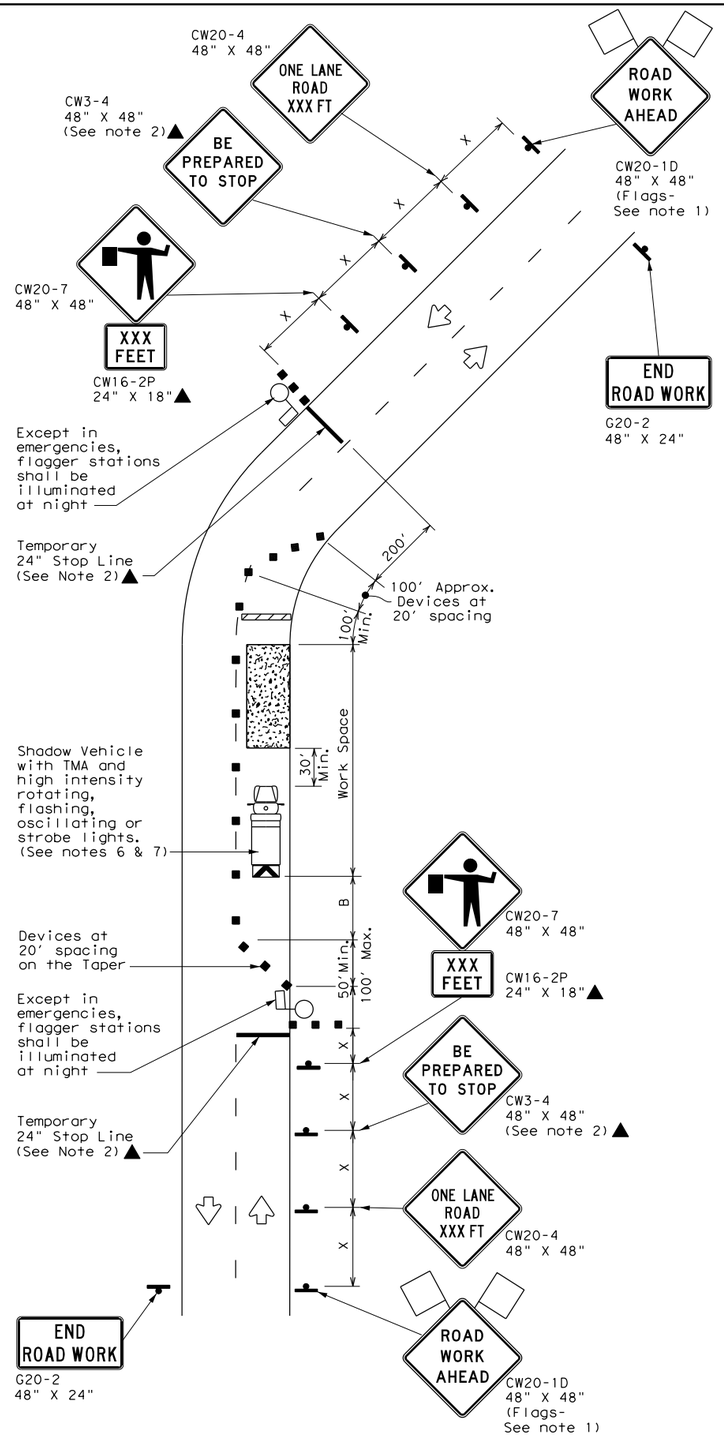
TCP (2-2a)

2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY

CONTROL WITH YIELD SIGNS

(Less than 2000 ADT - See Note 9)



TCP (2-2b)

2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY

CONTROL WITH FLAGGERS

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only

** Taper lengths have been rounded off.

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
4. Flaggers should use two-way radios or other methods of communication to control traffic.
5. Length of work space should be based on the ability of flaggers to communicate.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-2a)

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

TCP (2-2b)

10. Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
12. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situtations.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP(2-2)-18

FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03 1-97 2-12 4-98 2-18	1392	01	044, ETC.	FM 1378, ETC.
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		91

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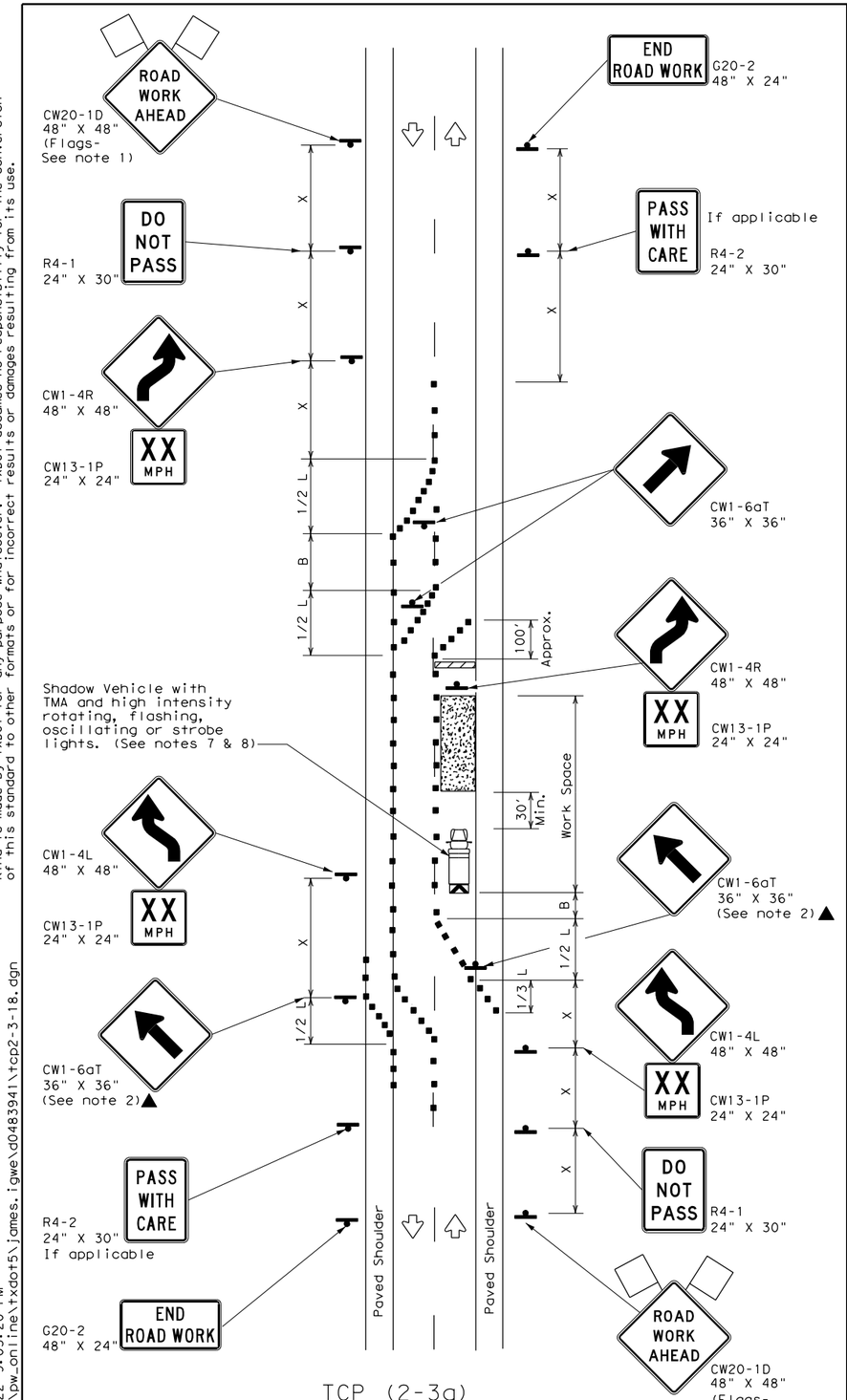
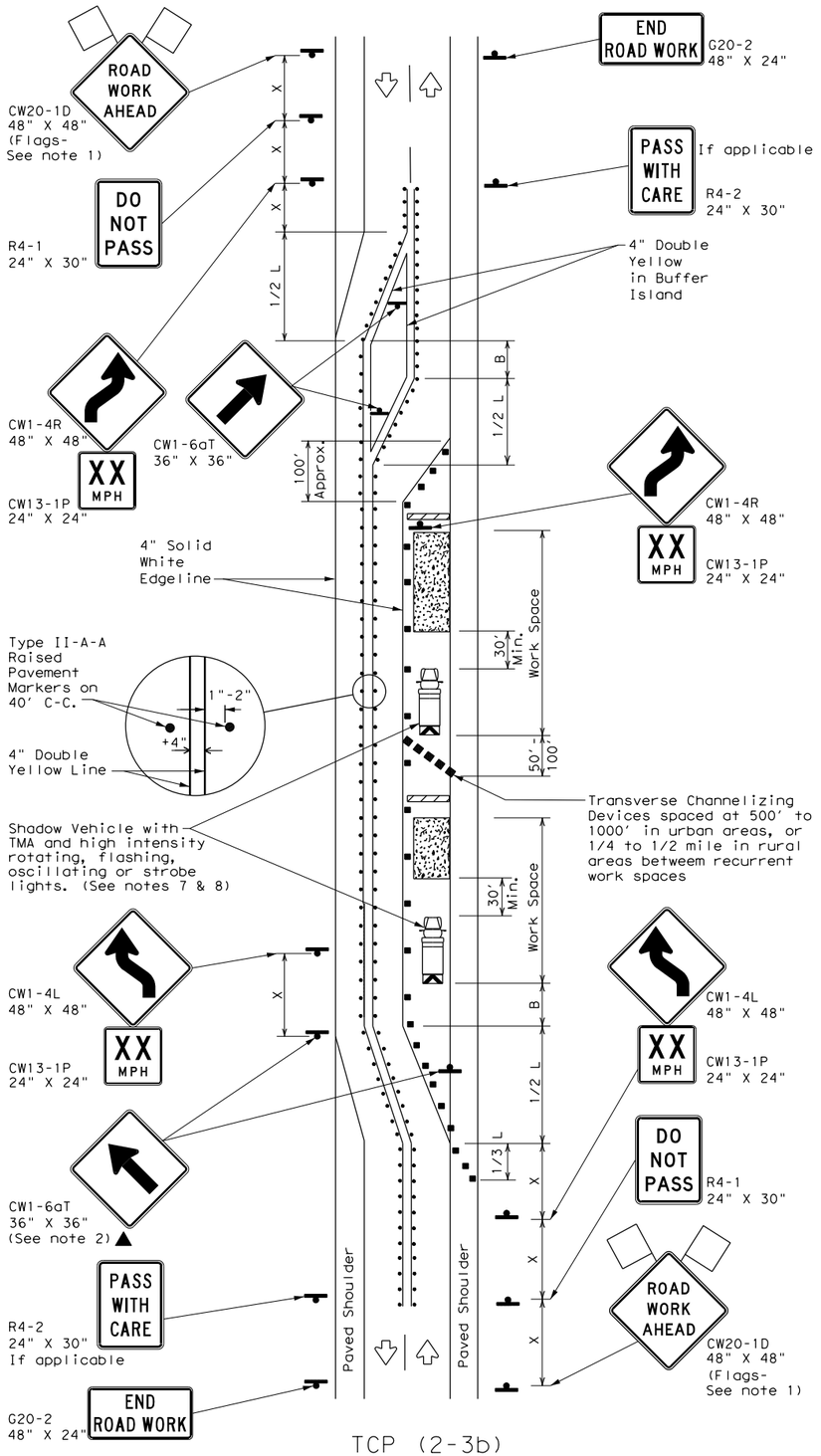


TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



TCP (2-3b)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Raised Pavement Markers Ty II-AA
	Sign		Traffic Flow
	Flag		Flagger

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

* Conventional Roads Only

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
				TCP(2-3b)ONLY
			✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
4. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
5. The R4-1 "DO NOT PASS," R4-2 " PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
6. Conflicting pavement marking shall be removed for long term projects.
7. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted.
8. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-3a)

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

Texas Department of Transportation | Traffic Operations Division Standard

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

TCP(2-3)-18

FILE: tcp(2-3)-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.	FM 1378, ETC.
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	DAL	COLLIN		92
4-98 2-18				

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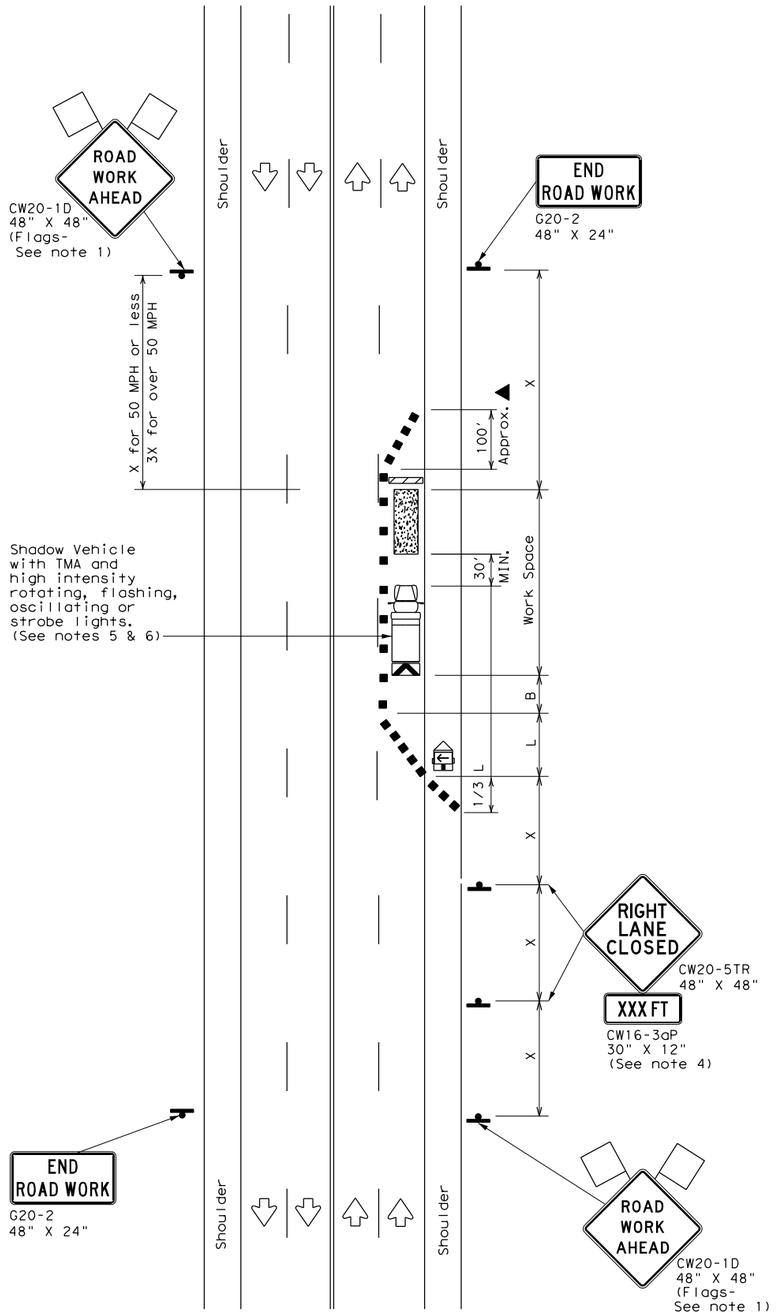
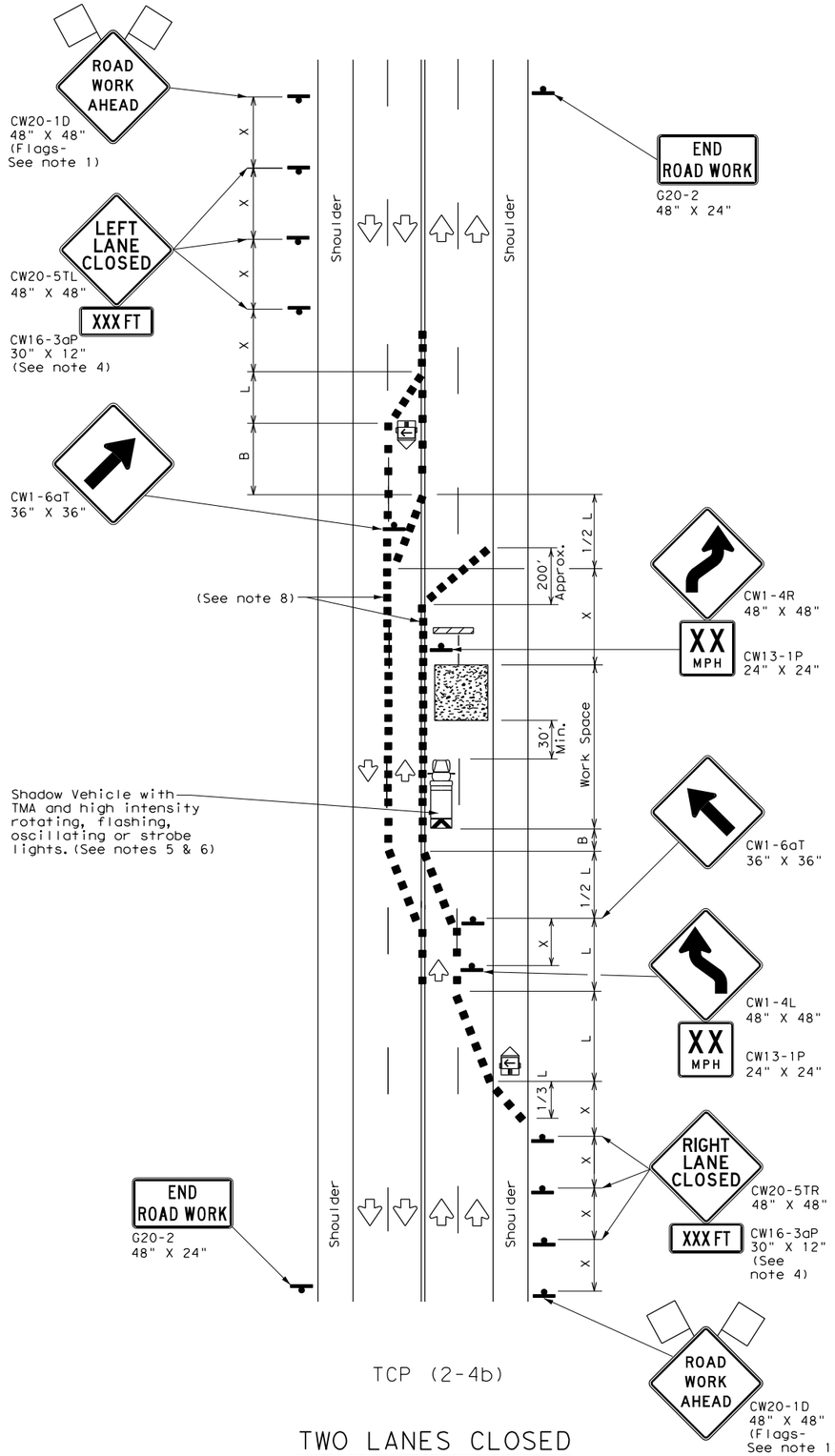


TCP (2-4a)

ONE LANE CLOSED



TCP (2-4b)

TWO LANES CLOSED

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

TCP (2-4a)

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

TCP (2-4b)

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(2-4)-18

FILE: tcp2-4-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03	1392	01	044, ETC.	FM 1378, ETC.
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	DAL	COLLIN		93

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DATE: 10/29/2022 9:05:33 PM
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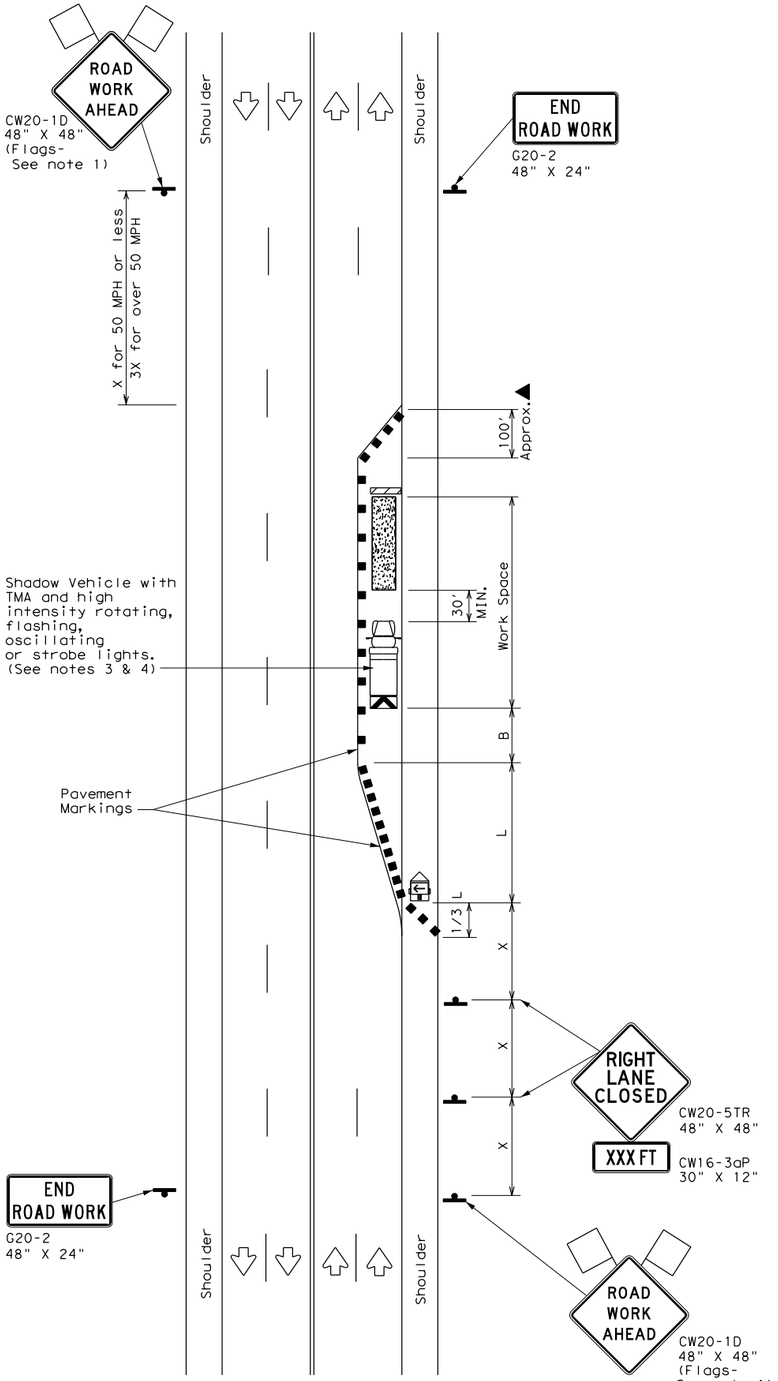
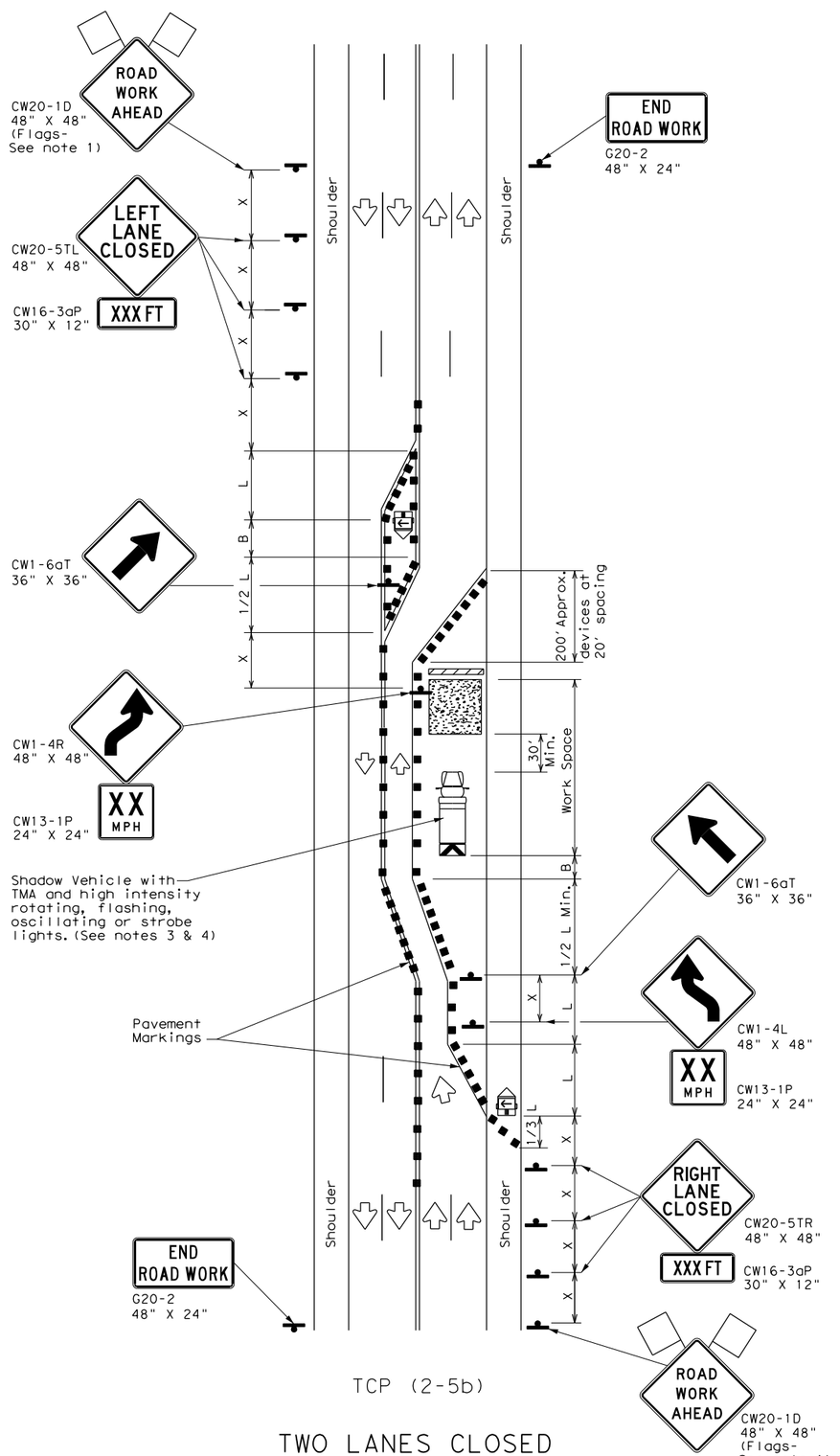


TCP (2-5a)

ONE LANE CLOSED



TCP (2-5b)

TWO LANES CLOSED

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

TCP (2-5a)

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

TCP (2-5b)

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
LONG TERM LANE CLOSURES
MULTILANE CONVENTIONAL RDS.

TCP(2-5)-18

FILE: tcp2-5-18.dgn	DN:	CK:	DW:	CK:
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REVISIONS 8-95 2-12	1392	01	044, ETC.	FM 1378,ETC.
1-97 3-03	DIST	COUNTY		SHEET NO.
4-98 2-18	DAL	COLLIN		94

165

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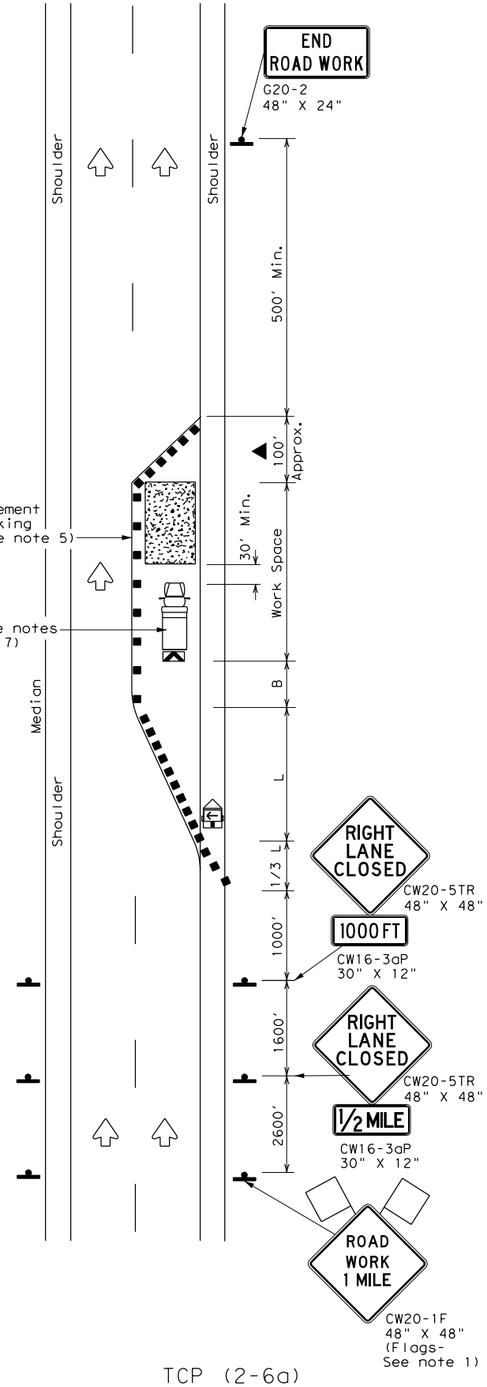
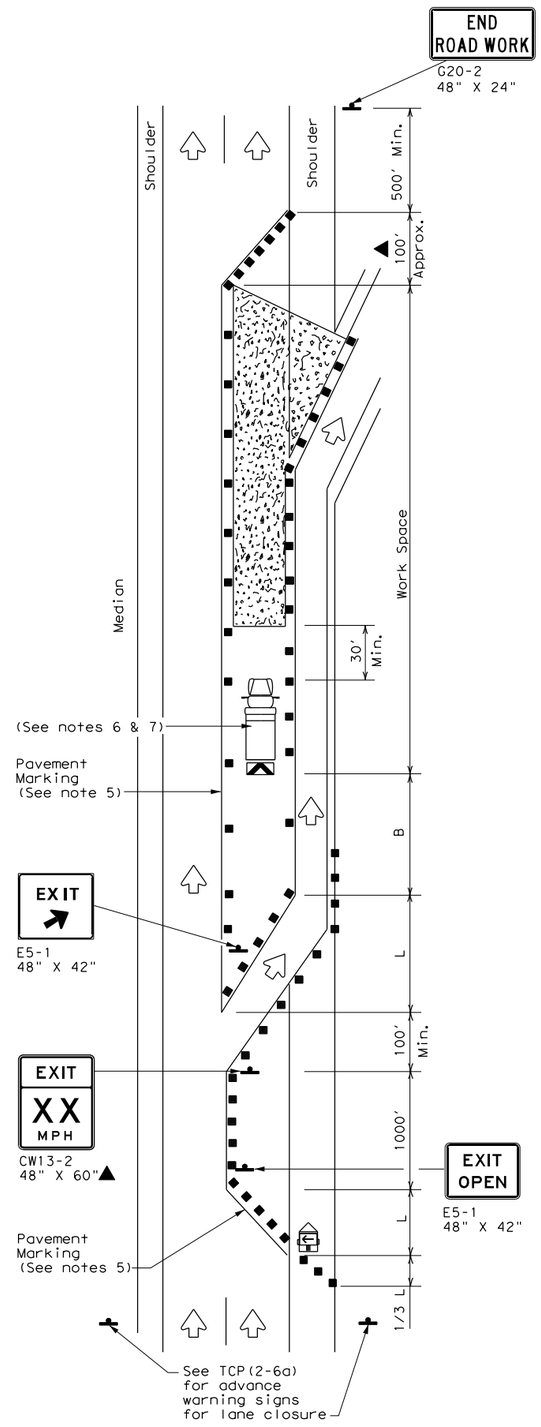


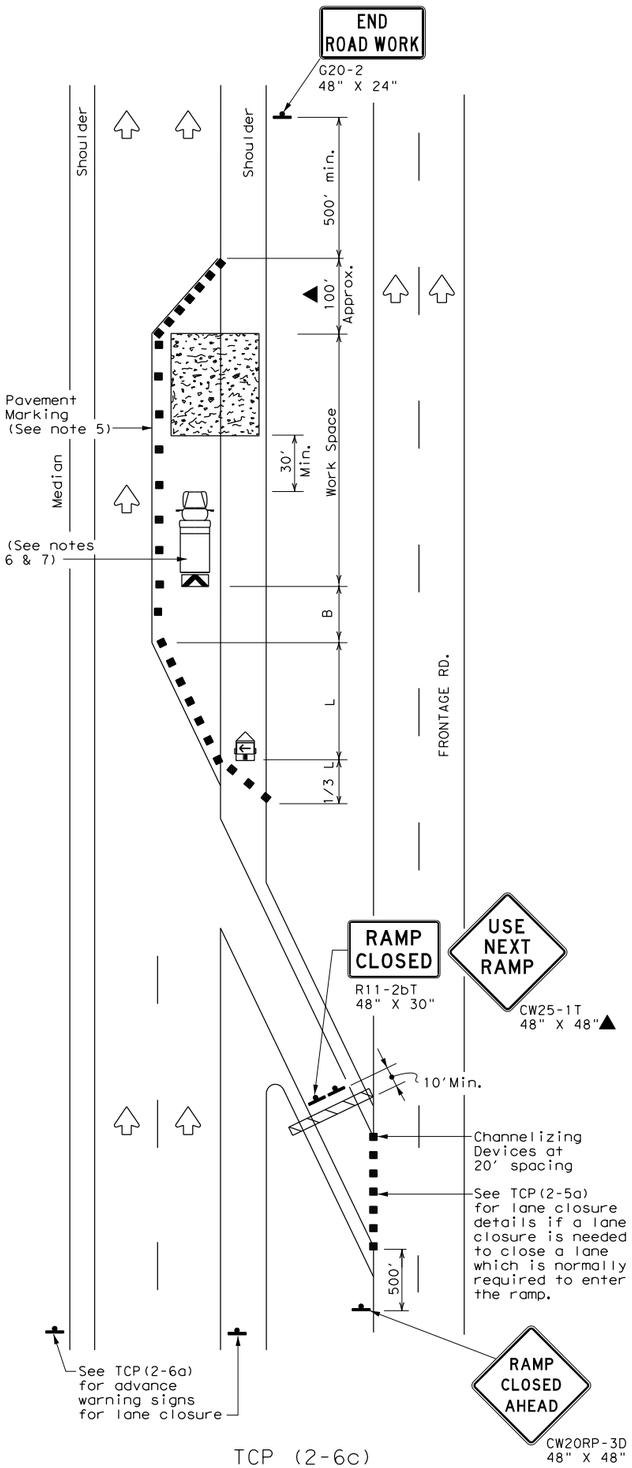
TCP (2-6a)

ONE LANE CLOSURE



TCP (2-6b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (2-6c)

LANE CLOSURE NEAR ENTRANCE RAMPS

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

TCP(2-6)-18

FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	1392	01	044, ETC.	FM 1378, ETC.
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		95

166

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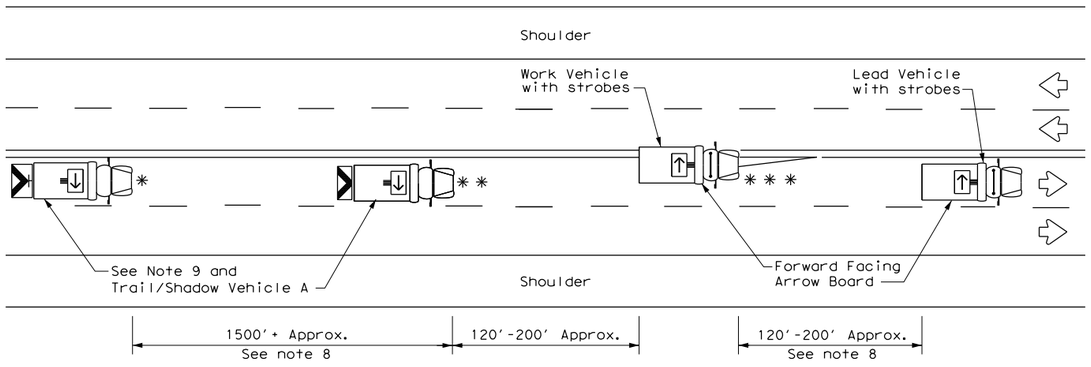
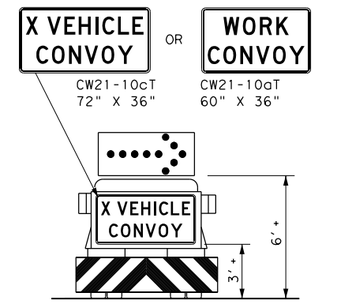


TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

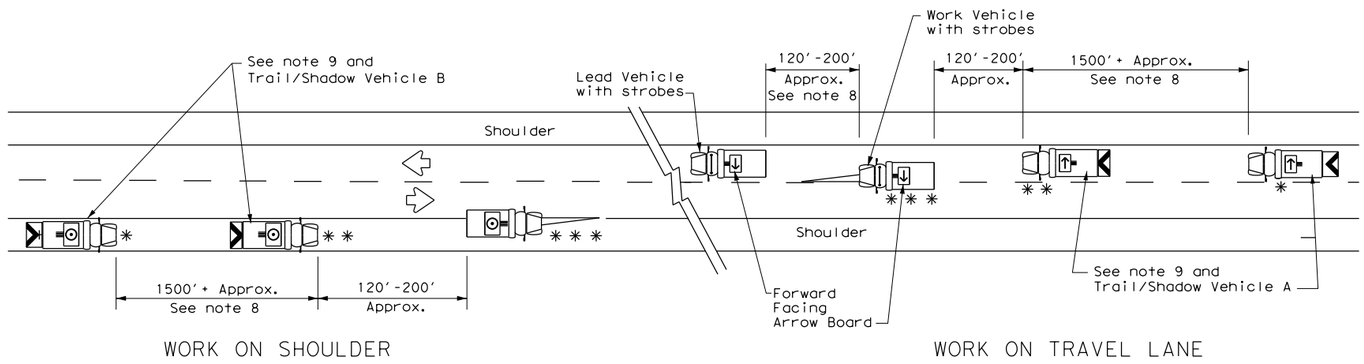
with RIGHT Directional display Flashing Arrow Board

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

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

GENERAL NOTES

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

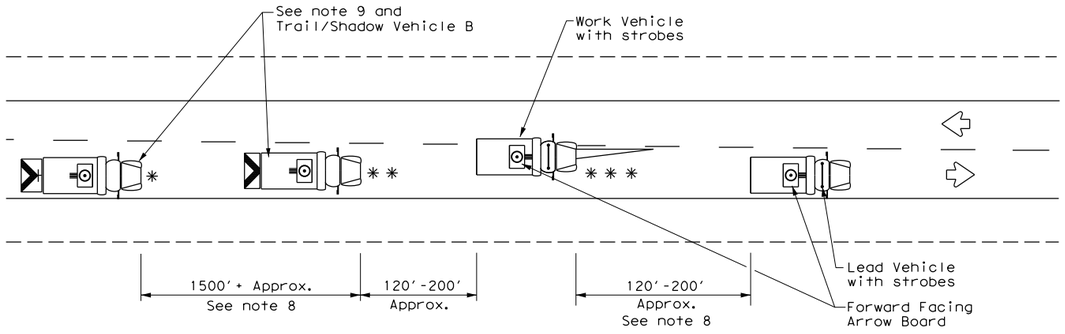


WORK ON SHOULDER

WORK ON TRAVEL LANE

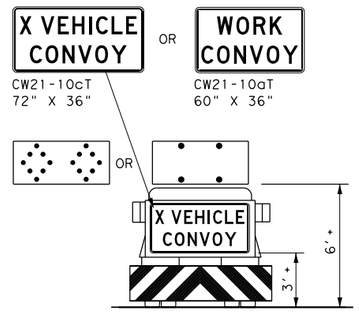
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



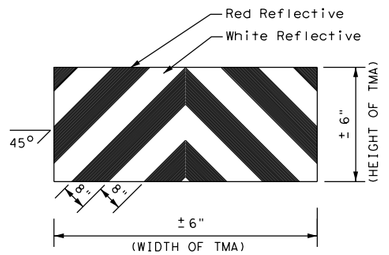
TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board in CAUTION display



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

TCP(3-1)-13

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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 7-13 1-97	1392	01	044, ETC.	FM 1378, ETC
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		96

DATE:
FILE:

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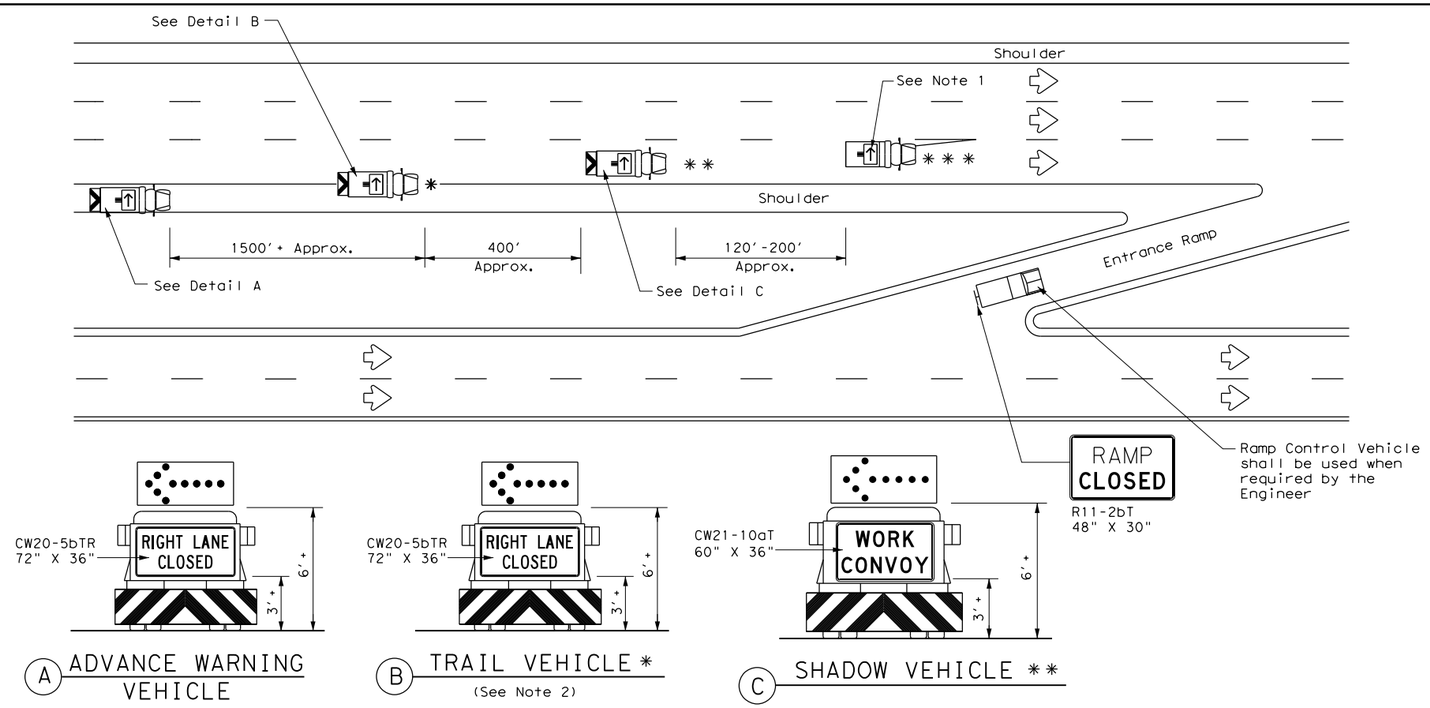
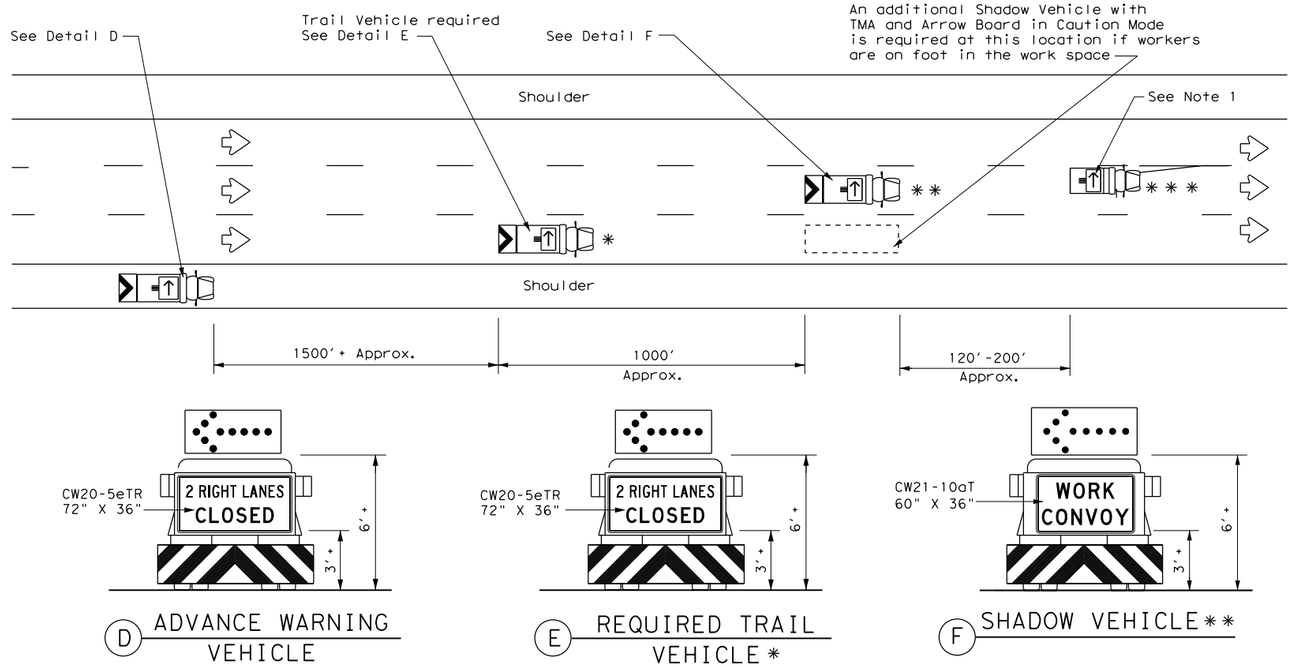


RIGHT LANE CLOSURE ON DIVIDED HIGHWAY - TCP(3-2a)



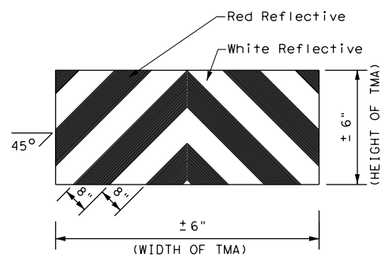
INTERIOR LANE CLOSURE ON MULTI-LANE DIVIDED HIGHWAY - TCP(3-2b)

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

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

GENERAL NOTES

1. ADVANCE WARNING, TRAIL and SHADOW vehicles shall be equipped with Type B or Type C flashing arrow boards as per the Barricade and Construction (BC) standards. Arrow boards on WORK vehicles will be optional based on the type of work being performed. The arrow boards shall be operated from inside the vehicle.
2. For TCP(3-2a) the Engineer will determine if the TRAIL VEHICLE is required based on prevailing roadway conditions, traffic volume, and sight distance restrictions. All other vehicles shown for both TCP(3-2a) and TCP(3-2b) are required.
3. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
4. The use of truck mounted attenuators (TMA) on the ADVANCE WARNING, SHADOW, and TRAIL vehicles are required.
5. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DMS 8300, Type A.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE may vary according to terrain, work activity and other factors.
9. Standard 48" X 48" diamond shaped warning signs with the same message as those shown may be used where adequate mounting space exists.
10. The signs shown should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or a truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board, must be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
12. The principles on this sheet may be used to close lanes from the left side of the roadway considering the number of lanes, shoulder width, sight distance, and ramp frequency.
13. Signs and flashing arrow board modes shall be appropriately altered when implementing left lane closures or interior closures which close the left lanes.
14. The Advance Warning Vehicle may straddle the edgeline when shoulder width makes it necessary.



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS

TCP(3-2)-13

FILE: tcp3-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 7-13 1-97	1392	01	044, ETC.	FM 1378, ETC
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		97

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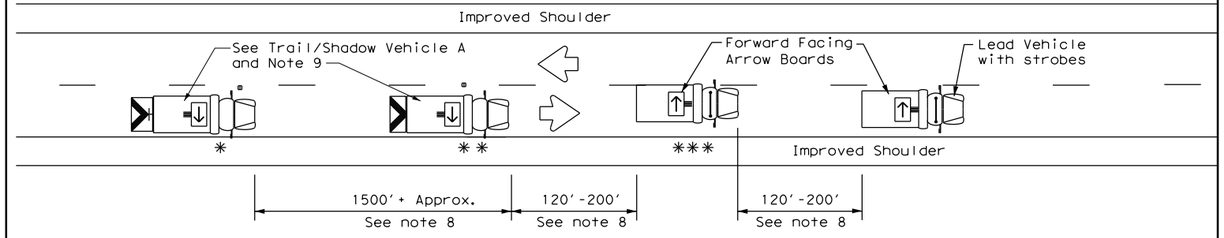
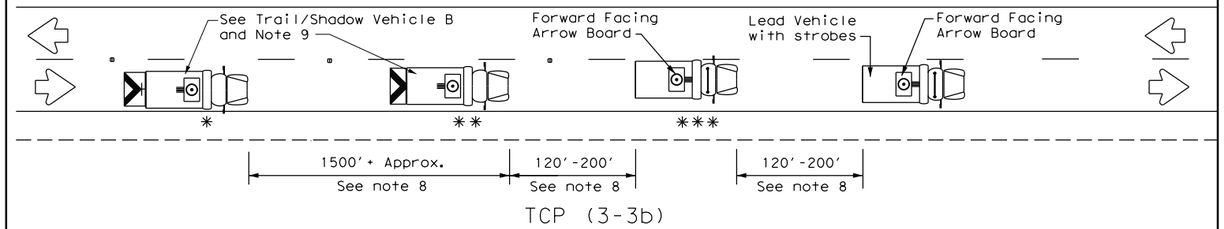


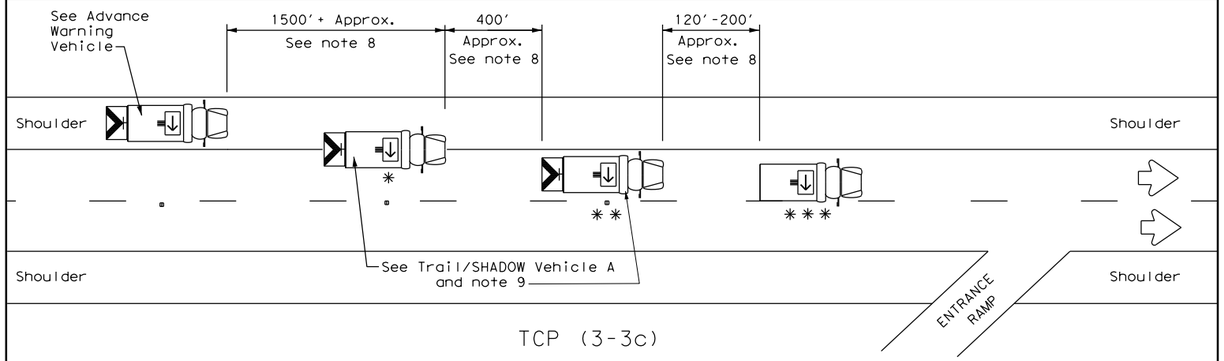
TCP (3-3a)

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



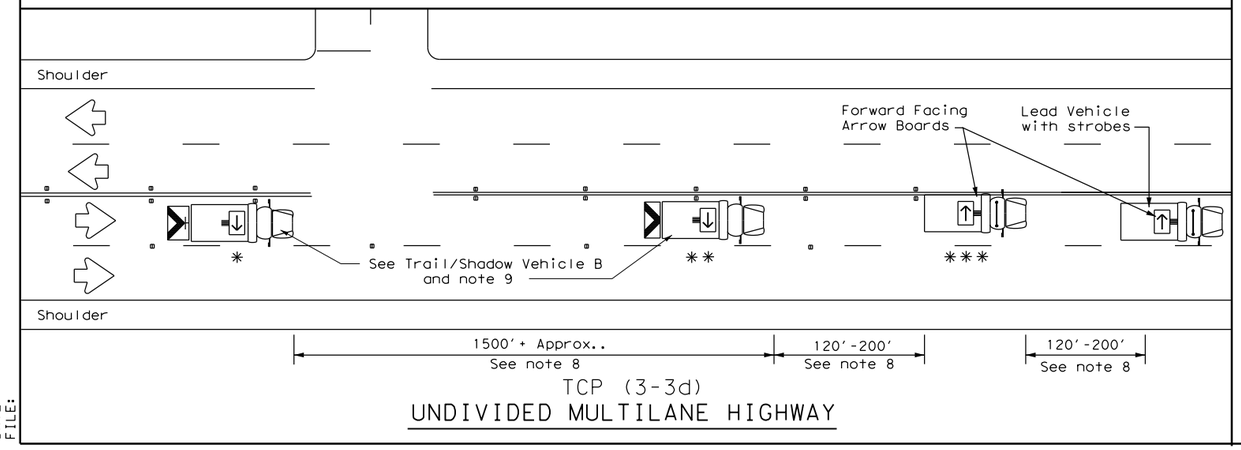
TCP (3-3b)

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



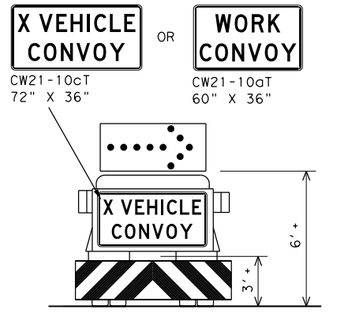
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



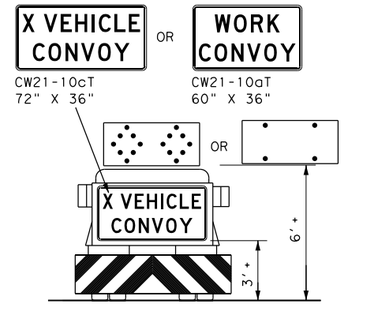
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



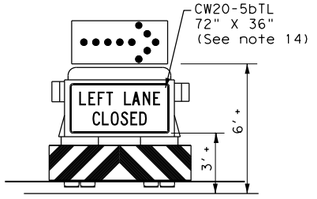
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

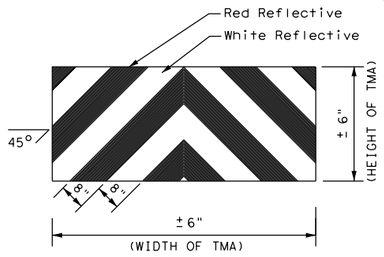


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION/ REMOVAL

TCP(3-3)-14

FILE: tcp3-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
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8-95 7-13	DAL	COLLIN		98
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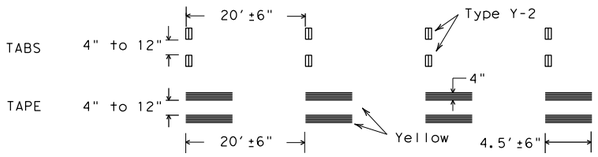
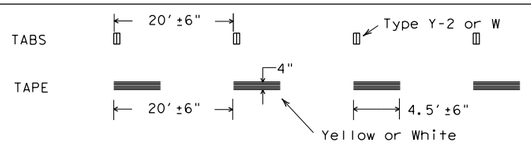
WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

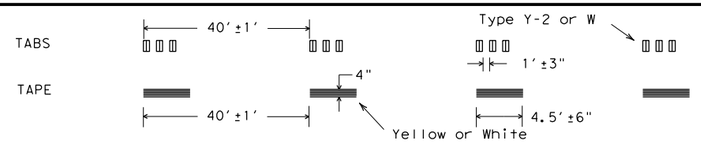


SINGLE NO-PASSING LINE or CHANNELIZATION LINE



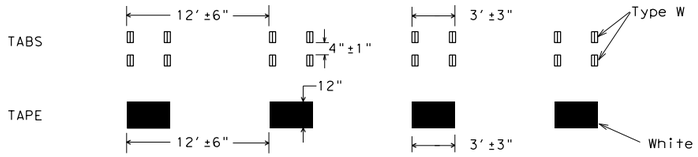
BROKEN LINES

(FOR CENTER LINE OR LANE LINE)

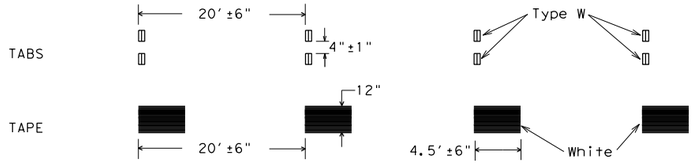


WIDE DOTTED LINES

(FOR LANE DROP LINES)



WIDE GORE MARKINGS



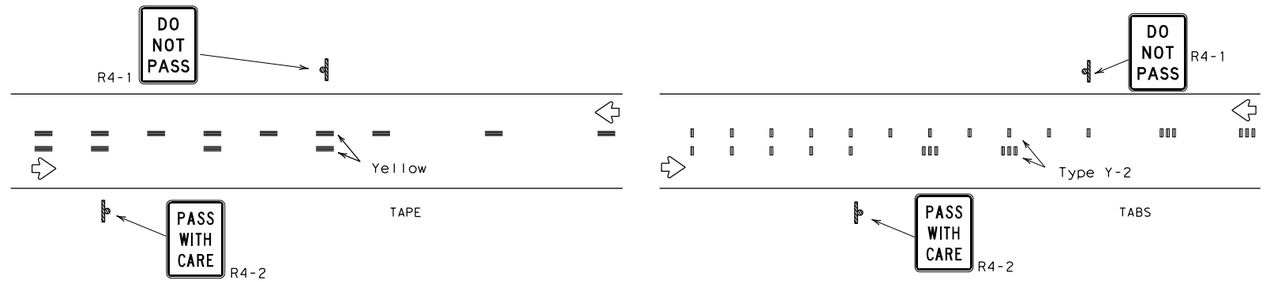
NOTES:

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

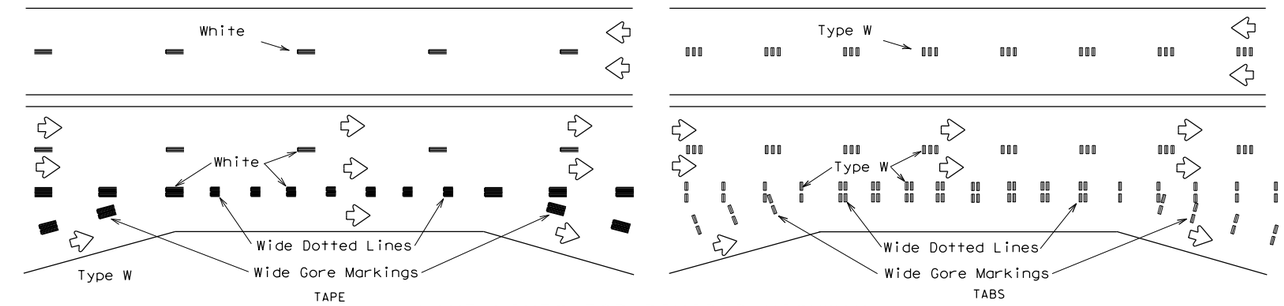
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

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

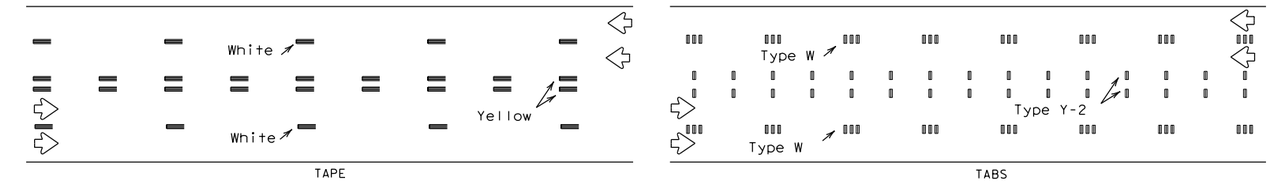
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



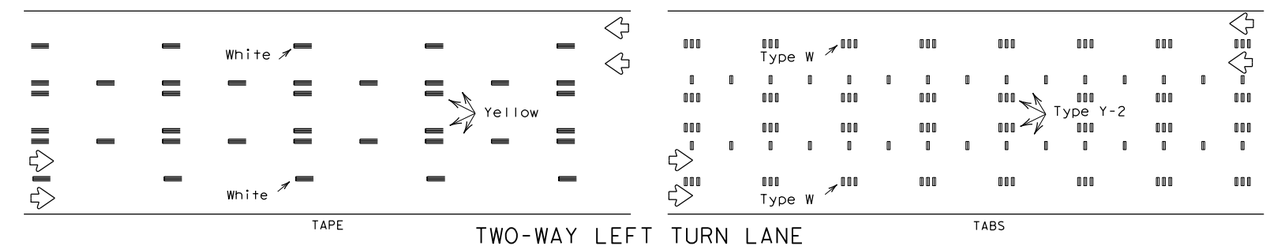
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



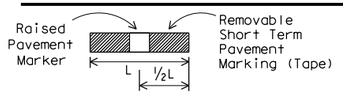
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



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

PREFABRICATED PAVEMENT MARKINGS

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

RAISED PAVEMENT MARKERS

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

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

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

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-13

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©TxDOT	April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS		1392	01	044, ETC.	FM 1378, ETC.
1-97		DIST	COUNTY		SHEET NO.
3-03		DAL	COLLIN		99
7-13					

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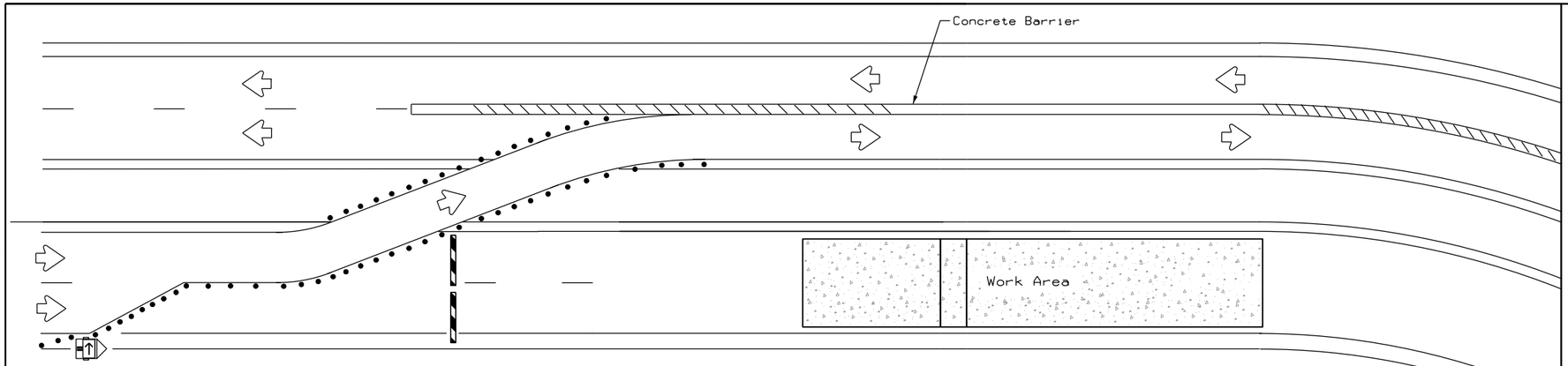


NOTES:

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

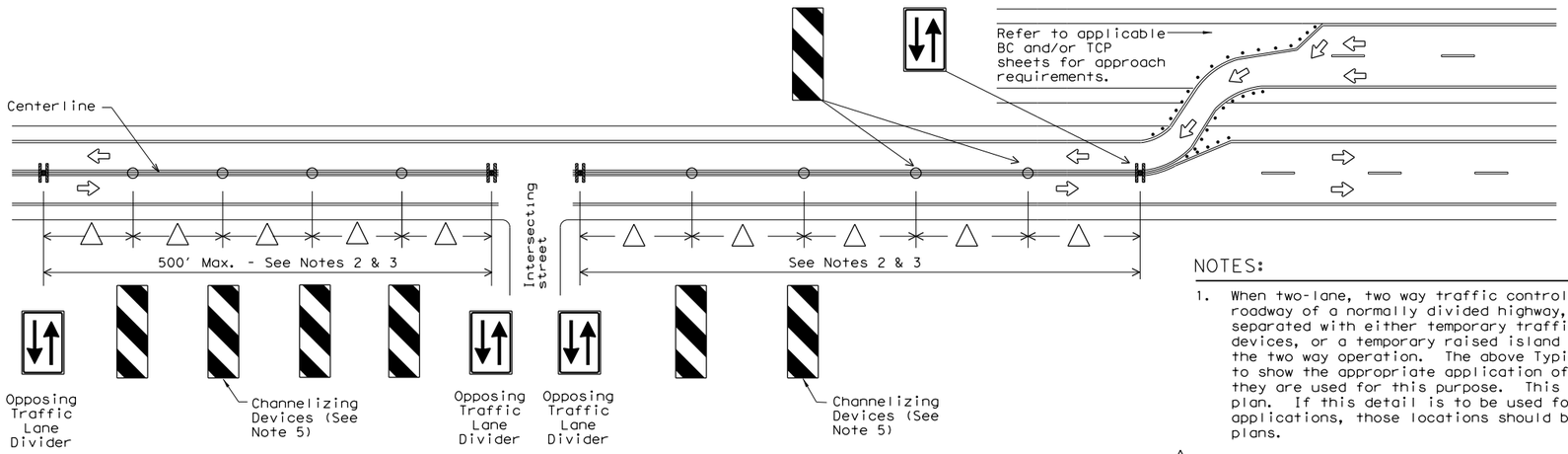
BARRIER DELINEATION WITH MODULAR GLARE SCREENS

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

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

Only pre-qualified products shall be used. A copy of the Compliant Work Zone Traffic Control Devices List" CWZTCD)describes pre-qualified products and their sources and may be found at the following web address:

http://www.txdot.gov/business/resources/producer-list.html



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

NOTES:

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

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

3. Every fifth device should be an OTLD except when spaced closer to accommodate an intersection. An OTLD should be the first device on each side of intersecting streets or roads.
4. Locations where surface mount bases with adhesives or self-righting devices will be required in order to maintain them in their proper position should be noted elsewhere in the plans.
5. Channelizing devices are to be vertical panels, 42" cones or tubular markers that are at least 36" tall. Tubular markers used to separate traffic should have a rubber base weighing at least 30 pounds. Tubular markers that are 42" tall or more shall have four bands of reflective material as detailed for 42" cones on BC(10). Tubular markers less than 42" but at least 36" tall shall have three bands of 3" wide white reflective material spaced 2" apart. Reflective material shall meet DMS-8300, Type A.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN TYPICAL DETAILS

WZ(TD)-17

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©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
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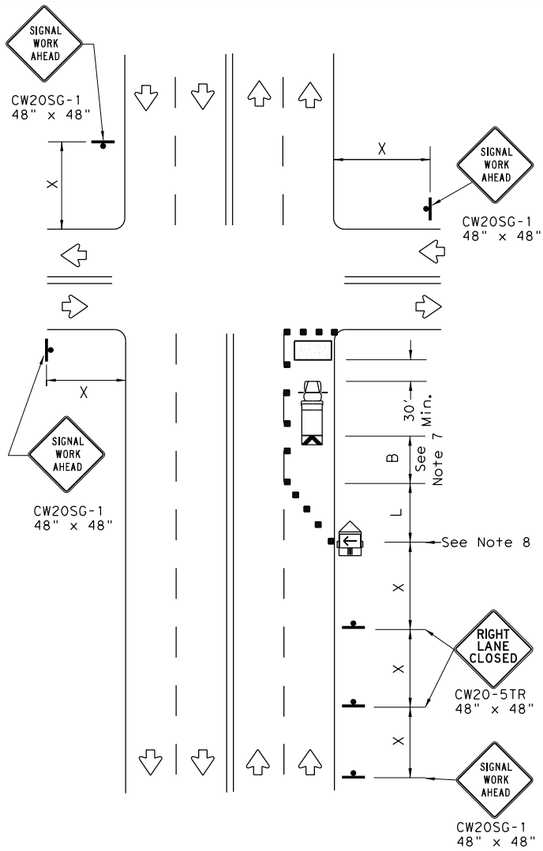
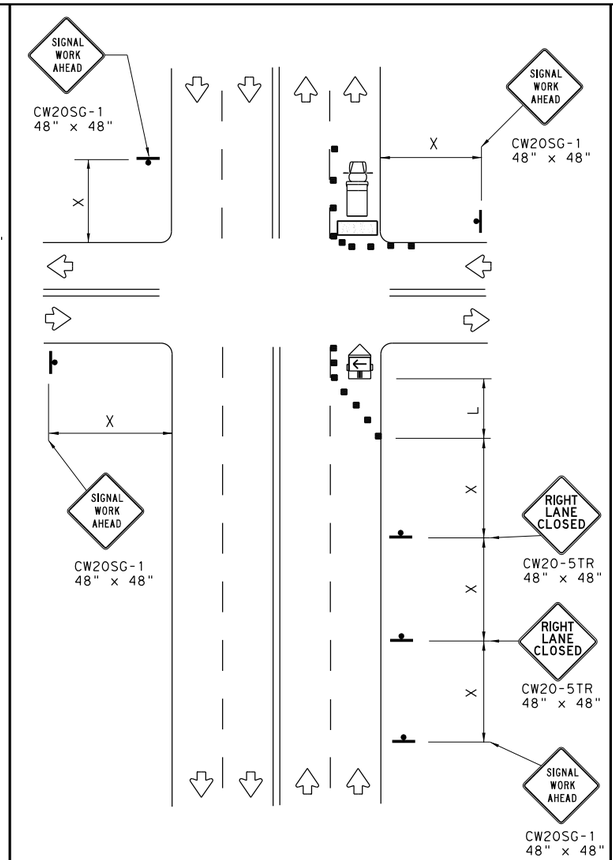


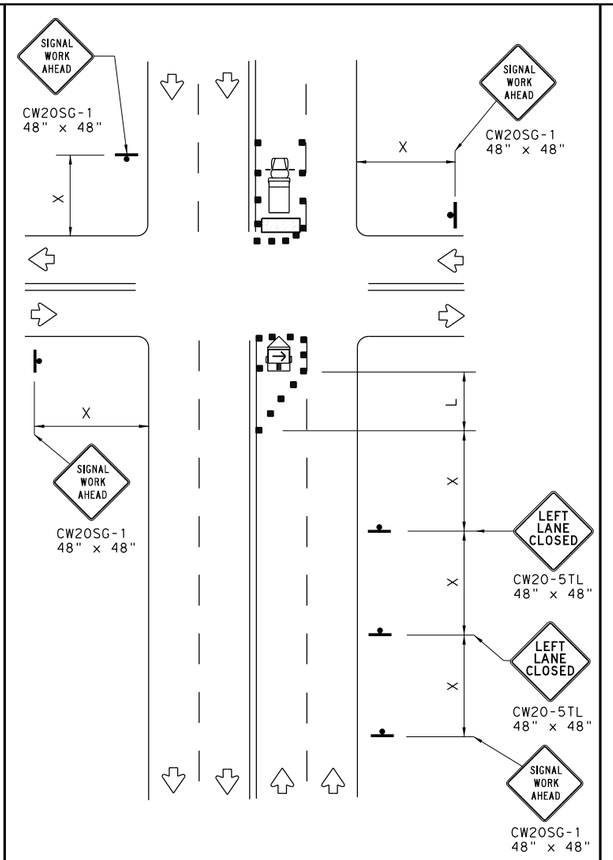
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



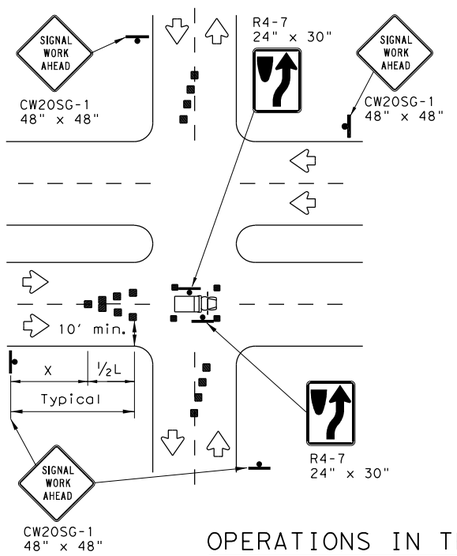
FAR SIDE RIGHT LANE CLOSURE

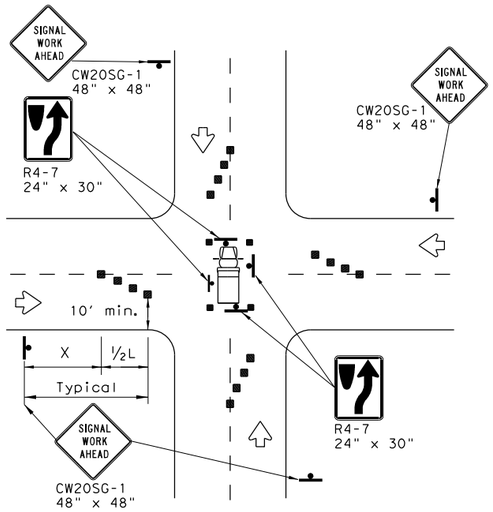
SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY





OPERATIONS IN THE INTERSECTION

SHORT DURATION

GENERAL NOTES

1. The minimum size channelizing device is the 28" cone. 42" Two-piece cones, drums, vertical panels or barricades will be required when the device must be left unattended at night.
2. Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
3. Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
4. Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
5. High level warning devices (flag trees) may be used at corners of the vehicle.
6. When work operations are performed on existing signals, the signals may be placed in flashing red mode when approved by the engineer. If existing signals do not have power, All-Way Stop (R1-1 and R1-3P) signs may be implemented when approved by the engineer.
7. For Short-Term Stationary work the buffer space "B" from the above table should be used if field conditions permit. For Short Duration (less than 1 hour) any buffer space provided will enhance the safety of the setup.
8. The arrow board at this location may be omitted for Short Duration work if the work vehicle has an arrow board in operation. As an option, the arrow board may be placed at the end of the taper in the closed lane if space is not available at the beginning of the taper.
9. Signs and devices for the NEAR SIDE LANE CLOSURE may be altered for a left lane closure by using a LEFT LANE CLOSED (CW20-5TL) and adding channelizing devices on the centerline to protect the work space from opposing traffic.

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

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

* Conventional Roads Only

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

WORKERS IN BUCKET TRUCKS SHALL NOT WORK ABOVE OPEN LANES OF TRAFFIC.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK TYPICAL DETAILS

WZ(BTS-1)-13

FILE: wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
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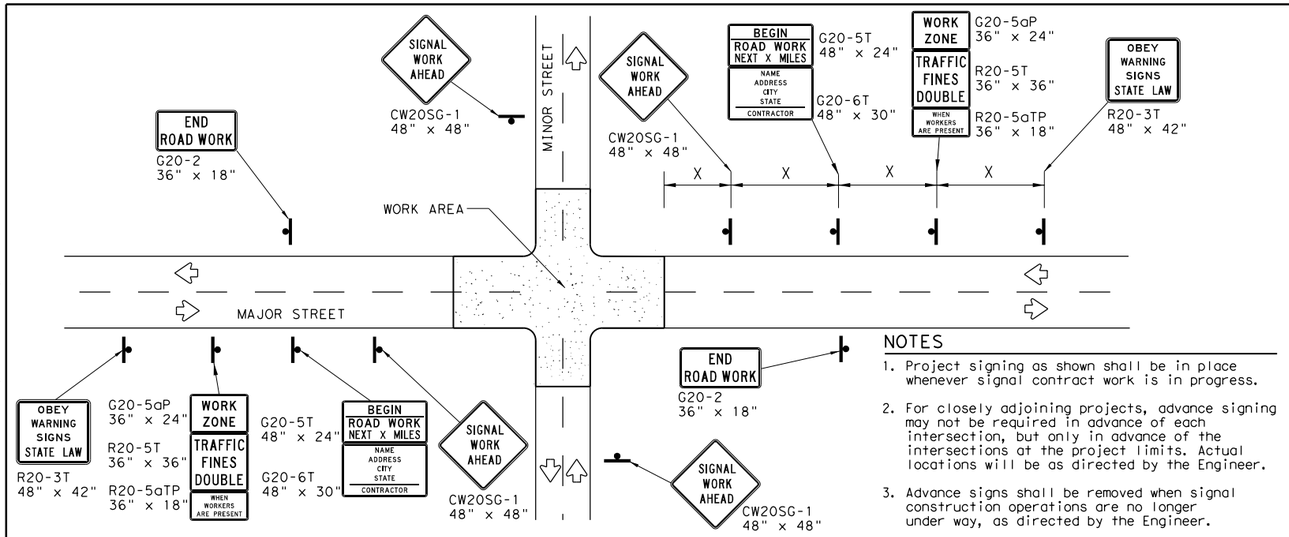


TYPICAL ADVANCE SIGNAL PROJECT SIGNING

FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

NOTES

1. Project signing as shown shall be in place whenever signal contract work is in progress.
2. For closely adjoining projects, advance signing may not be required in advance of each intersection, but only in advance of the intersections at the project limits. Actual locations will be as directed by the Engineer.
3. Advance signs shall be removed when signal construction operations are no longer under way, as directed by the Engineer.
4. Warning sign spacing shown is typical for both directions.
5. See the Table on sheet 1 of 2 for Typical warning sign spacing.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Signs shall be installed and maintained in a straight and plumb condition.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. Nails shall NOT be used to attach signs to any support.
5. All signs shall be installed in accordance with the plans or as directed by the Engineer.
6. The Contractor shall furnish the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD).
7. The Contractor shall furnish sign supports and substrates listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD), installed as per the manufacturer's recommendations.
8. Temporary signs that have damaged or cracked substrates and/or damaged or marred reflective sheeting shall be replaced as directed by the Engineer.
9. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1".
10. Damaged wood posts shall be replaced. Splicing wood posts will not be allowed.

DURATION OF WORK

1. Work zone durations are defined in Part 6, Section 6G.02 of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

SIGN MOUNTING HEIGHT

1. Sign height of Long-term/Intermediate-term warning signs shall be as shown on Figure 6F-1 of the TMUTCD.
2. Sign height of Short-term/Short Duration warning signs shall be as shown on Figure 6F-2 of the TMUTCD.
3. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered, unless otherwise approved by the Engineer.
2. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night without damaging the sign sheeting. Burlap, or heavy materials such as plywood or aluminum shall not be used to cover signs.
3. Duct tape or other adhesive material shall NOT be affixed to a sign face.
4. Signs and anchor stubs shall be removed and holes back filled upon completion of the work.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the requirements of the DMS and color usage table shown on this sheet.

SIGN SUPPORT WEIGHTS

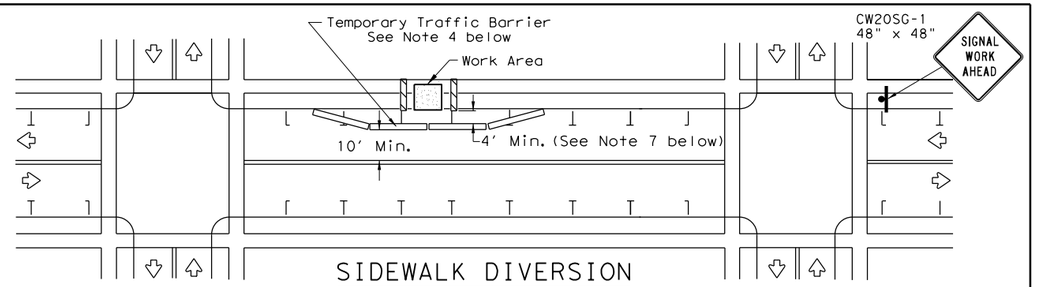
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support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

LEGEND	
	Sign
	Channelizing Devices
	Type 3 Barricade

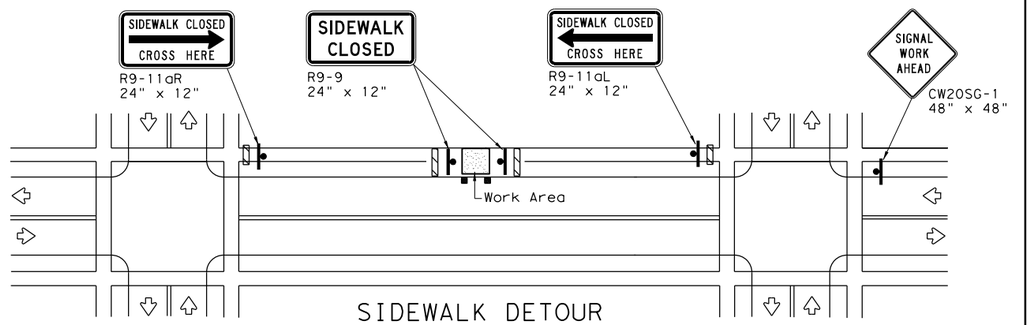
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL} SHEETING
WHITE	BACKGROUND	TYPE A SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

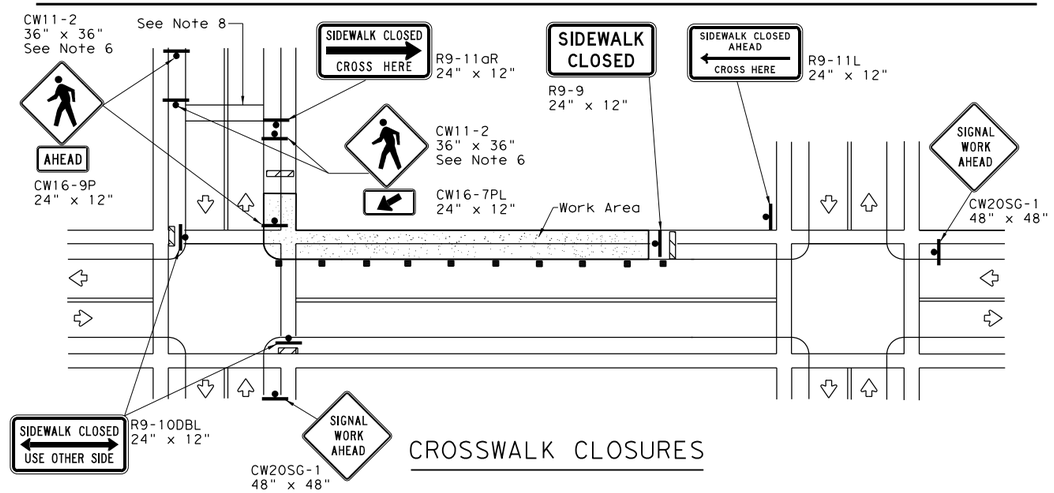
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

1. Holes, trenches or other hazards shall be adequately protected by covering, delineating or surrounding the hazard with orange plastic pedestrian fencing or longitudinal channelizing devices, or as directed by the Engineer.
2. "CROSSWALK CLOSURES" as detailed above will require the Engineer's approval prior to installation.
3. R9 series signs shown may be placed on supports detailed on the BC standards or CWZTCD list, or when fabricated from approved lightweight plastic substrates, they may be mounted on top of a plastic drum at or near the location shown.
4. For speeds less than 45 mph longitudinal channelizing devices may be used instead of traffic barriers when approved by the Engineer. Attenuation of blunt ends and installation of water filled devices shall be as per BC(9) and manufacturer's recommendations.
5. Location of devices are for general guidance. Actual device spacing and location must be field adjusted to meet actual conditions.
6. Where pedestrians with visual disabilities normally use the closed sidewalk Detectable Pedestrian Barricades should be used instead of the Type 3 Barricades shown.
7. The width of existing sidewalk should be maintained if practical.
8. Pavement markings for mid-block crosswalks shall be paid for under the appropriate bid items.
9. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

WZ(BTS-2)-13

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©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.	FM 1378, ETC.
2-98 10-99 7-13	DIST	COUNTY		SHEET NO.
4-98 3-03	DAL	COLLIN		102

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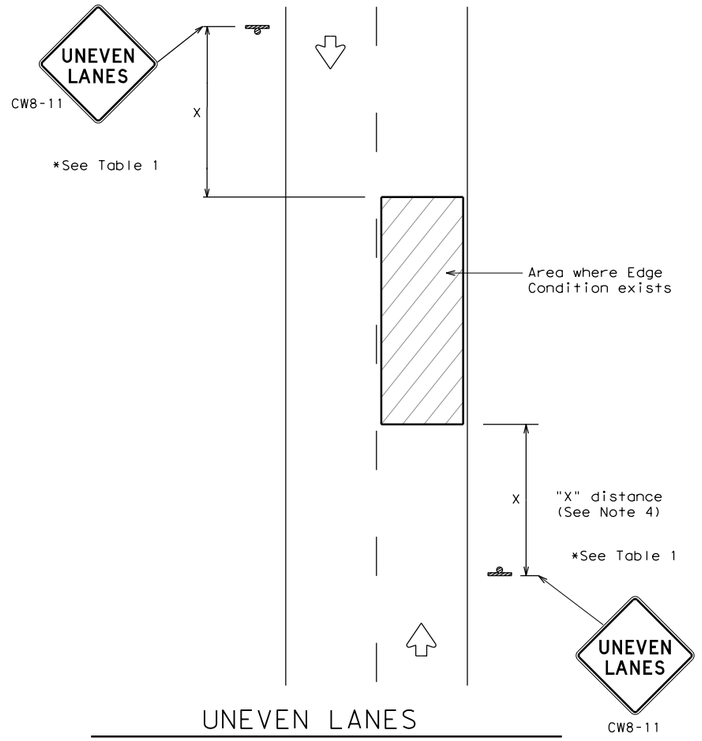
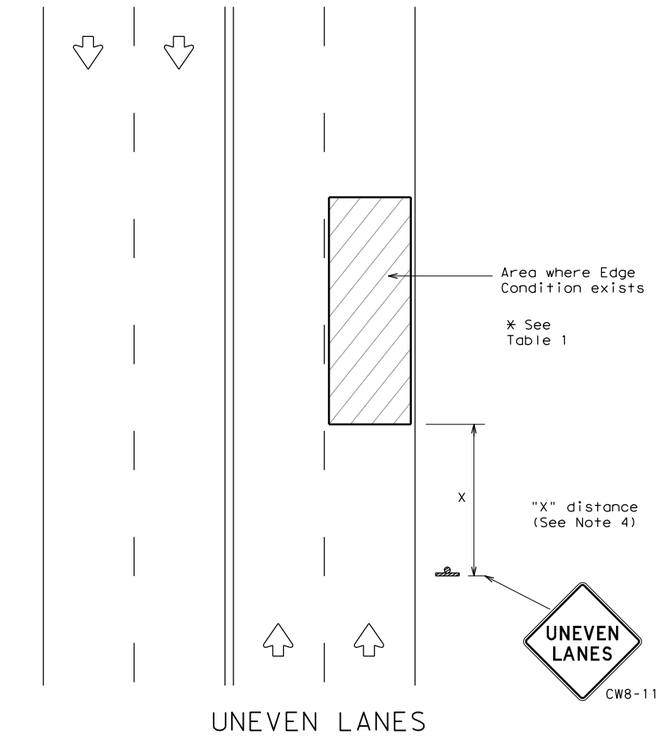
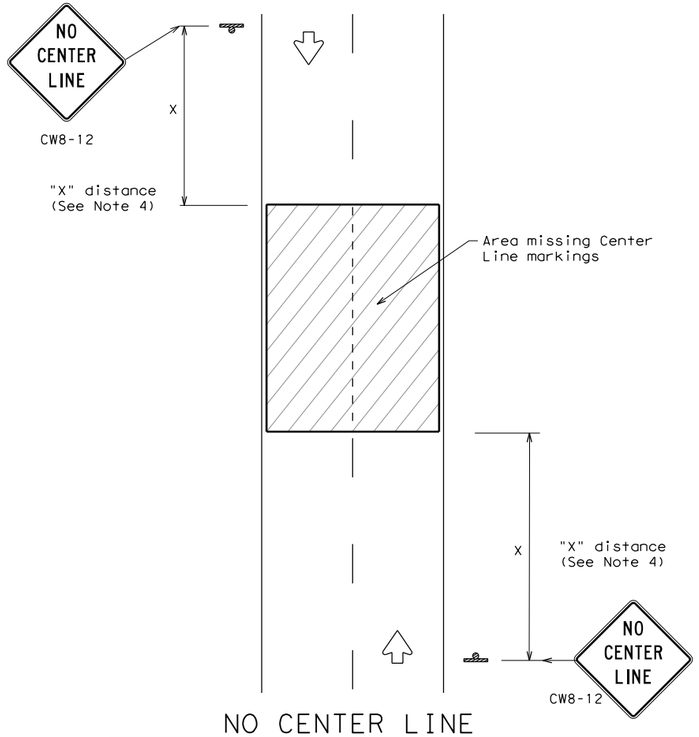


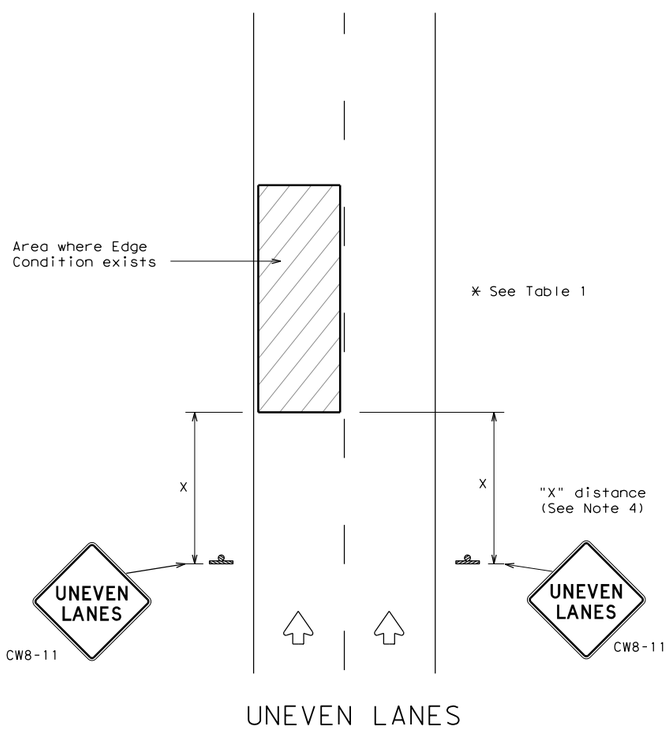
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

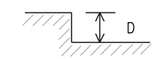
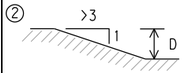
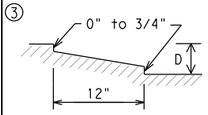
DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL} SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

GENERAL NOTES

1. If spalling or holes occur, ROUGH ROAD (CW8-8) signs should be placed in advance of the condition and be repeated every two miles where the condition persists.
2. UNEVEN LANES (CW8-11) signs shall be installed in advance of the condition and repeated every mile. Signs installed along the uneven lane condition may be supplemented with the NEXT XX MILES (CW7-3aP) plaque or Advisory Speed (CW13-1P) plaque.
3. NO CENTER LINE (CW8-12) signs and temporary pavement markings as per the WZ(STPM) standard shall be installed if yellow centerlines separating two way traffic are obscured or obliterated. Repeat NO CENTER LINE signs every two miles where the center line markings are not in place. The signs and markings shall remain in place until permanent pavement markings are installed.
4. Signs shall be spaced at the distances recommended as per BC standards.
5. Additional signs may be required as directed by the Engineer. Signs shall remain in place until final surface is applied. Signs shall be considered subsidiary to Item 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING."
6. Signs shall be fabricated and mounted on supports as shown on the BC standards and/or listed on the "Compliant Work Zone Traffic Control Devices" list.
7. Short term markings shall not be used to simulate edge lines.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition.

TABLE 1

Edge Condition	Edge Height (D)	* Warning Devices
① 	Less than or equal to: 1¼" (maximum-planing) 1½" (typical-overlay)	Sign: CW8-11
	Distance "D" may be a maximum of 1 1/4 " for planing operations and 2" for overlay operations if uneven lanes with edge condition 1 are open to traffic after work operations cease.	
② 	Less than or equal to 3"	Sign: CW8-11
③  Notched Wedge Joint	Distance "D" may be a maximum of 3" if uneven lanes with edge condition 2 or 3 are open to traffic after work operations cease. Uneven lanes should not be open to traffic when "D" is greater than 3".	

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

MINIMUM WARNING SIGN SIZE	
Conventional roads	36" x 36"
Freeways/expressways, divided roadways	48" x 48"

Texas Department of Transportation

Traffic Operations Division Standard

SIGNING FOR UNEVEN LANES

WZ(UL)-13

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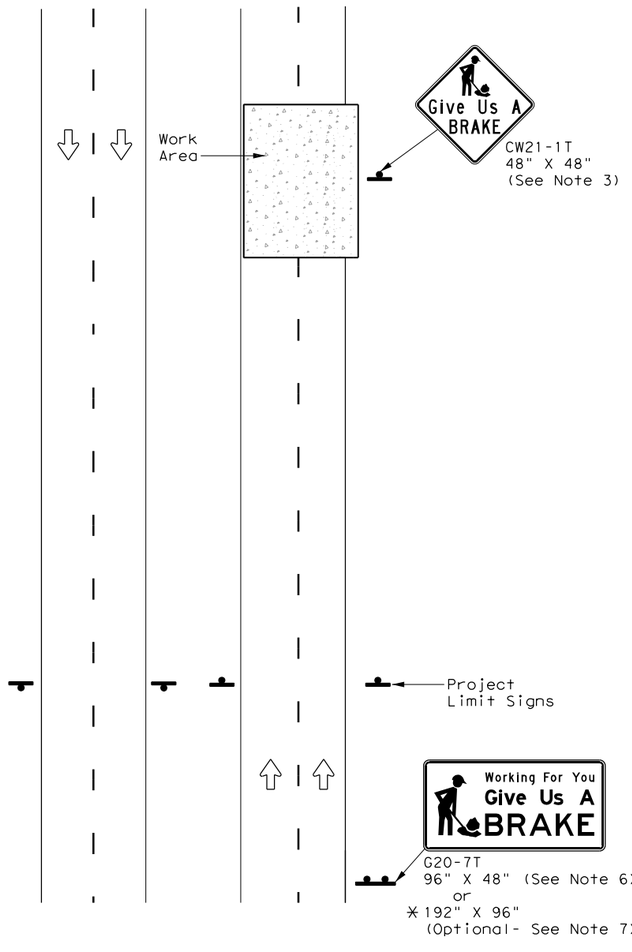
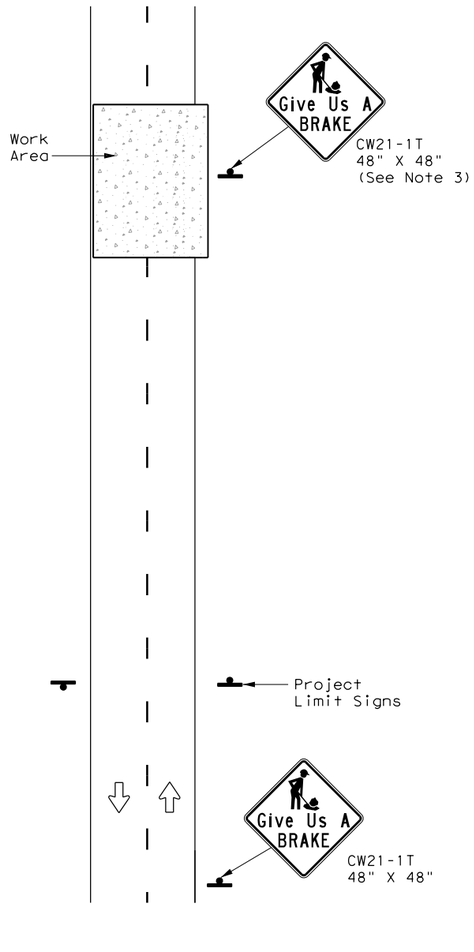


DIVIDED HIGHWAY



UNDIVIDED HIGHWAY

SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

* When the optional larger WORKING FOR YOU GIVE US A BRAKE (G20-7T) 192" x 96" sign is required, the locations shall be noted elsewhere in the plans.

SUMMARY OF LARGE SIGNS

BACKGROUND COLOR	SIGN DESIGNATION	SIGN	SIGN DIMENSIONS	REFLECTIVE SHEETING	SQ FT	GALVANIZED STRUCTURAL STEEL			DRILLED SHAFT 24" DIA. (LF)
						Size	(LF) ①	(LF) ②	
Orange	G20-7T	Working For You Give Us A BRAKE	96" X 48"	Type B_{FL} or C_{FL}	32	▲	▲	▲	▲
Orange	G20-7T	Working For You Give Us A BRAKE	192" X 96"	Type B_{FL} or C_{FL}	128	W8x18	16	17	12

▲ See Note 6 Below

LEGEND	
	Sign
	Large Sign
	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL}
BLACK	LEGEND & BORDERS	NON-REFLECTIVE ACRYLIC FILM

GENERAL NOTES

1. See BC and SMD sheets for additional sign support details.
2. Sign locations shall be approved by the Engineer.
3. For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.
4. Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.
5. Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."
6. The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.
7. The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:
   Item 636 - Aluminum Signs
   Item 647 - Large Roadside Sign Supports and Assemblies.
   Item 416 - Drilled Shaft Foundations
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE "GIVE US A BRAKE" SIGNS

WZ(BRK)-13

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8-96 3-03	DAL	COLLIN		104

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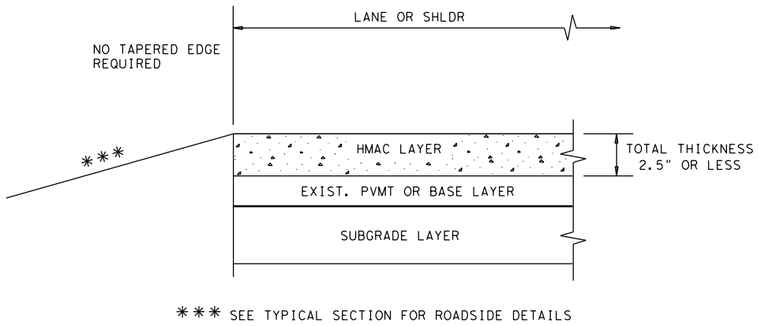
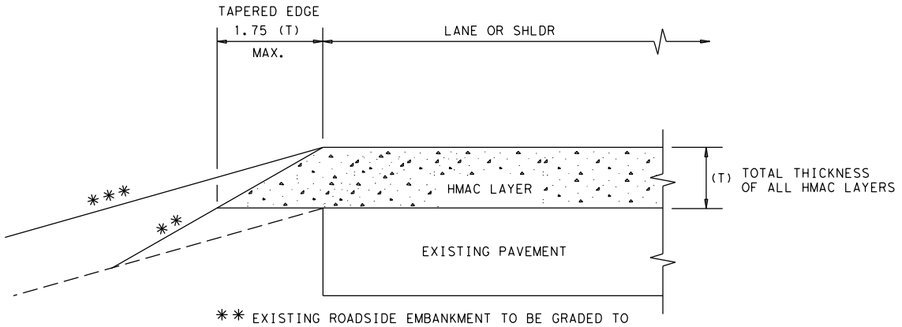


*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 1

THIN HMAC SURFACES OR HMAC OVERLAY
WITH THICKNESS OF 2.5" OR LESS

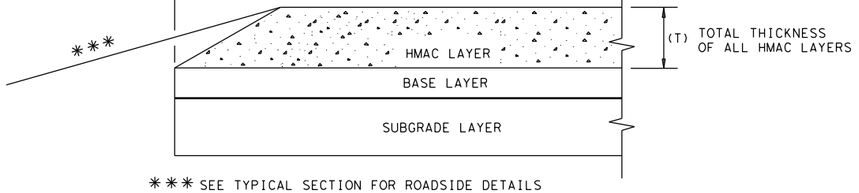


** EXISTING ROADSIDE EMBANKMENT TO BE GRADED TO PRODUCE A SMOOTH LEVEL SURFACE FOR PLACEMENT OF TAPERED EDGE. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS.

*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 2

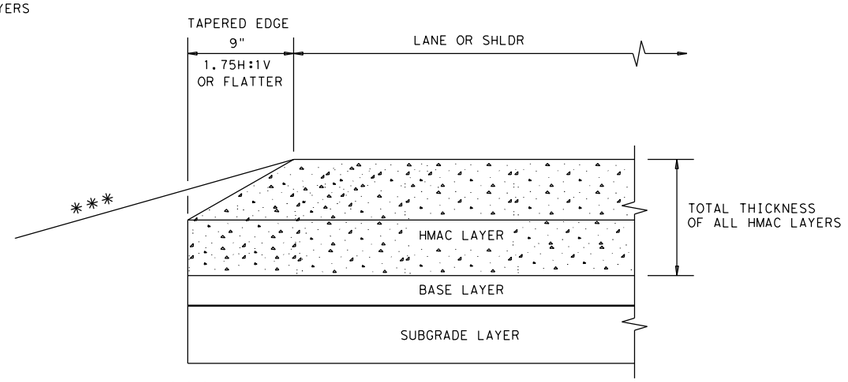
OVERLAY OF EXISTING PAVEMENT
HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 3

NEW OR RECONSTRUCTED PAVEMENT
HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 4

NEW OR RECONSTRUCTED PAVEMENT
HMAC THICKNESS 5" OR GREATER

(NOT TO SCALE)

GENERAL NOTES

1. UNLESS OTHERWISE SHOWN IN THE PLANS, A VERTICAL EDGE IS PERMISSIBLE FOR HMAC PLACED GREATER THAN 5" BELOW THE EDGE OF PAVEMENT AND FOR THICKNESS OF HMAC LESS THAN 2.5".
2. FOR FURTHER INFORMATION REGARDING THE ROADSIDE AND PAVEMENT DETAILS, SEE TYPICAL SECTIONS.
3. PAYMENT FOR TAPERED EDGE WILL BE IN ACCORDANCE WITH APPLICABLE ITEMS IN THE CONTRACT.
4. THE SLOPE OF THE TAPERED EDGE SHALL BE 1.75H:1V OR FLATTER.
5. THE TAPERED EDGE SHALL BE PRODUCED BY USE OF A SCREED ATTACHMENT CAPABLE OF PRODUCING A SMOOTH COMPACTED SURFACE. ADDITIONAL COMPACTING EFFORT BEHIND THE SCREED IS NOT REQUIRED.

Texas Department of Transportation

Design Division Standard

TAPERED EDGE DETAILS
HMAC PAVEMENT

TE(HMAC)-11

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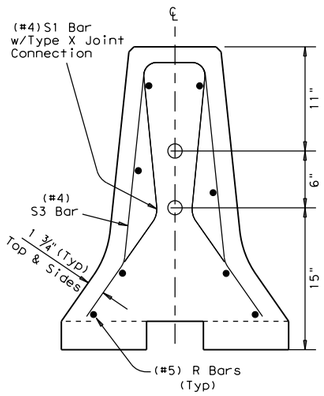
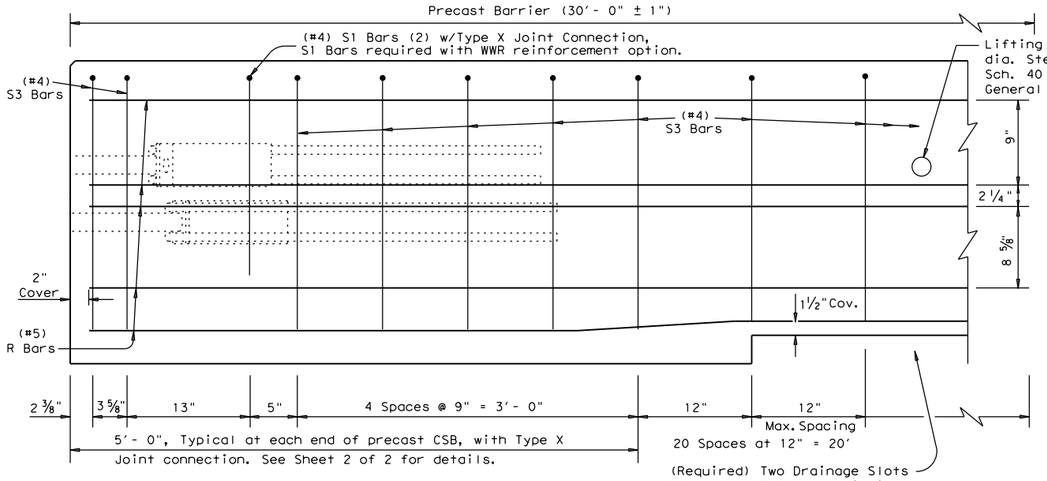


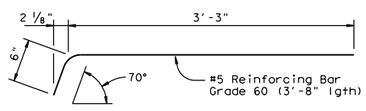
End View
Precast Barrier

See sheet 2 of 3 for Joint connection Type X



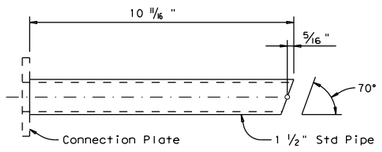
Reinforcement for Precast (CSB)
Concrete Safety Barrier (Type 1)

Showing reinforcement for Joint Type X



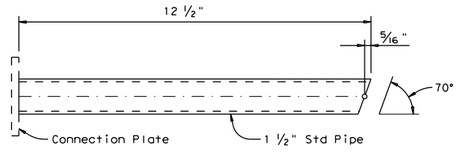
DEFORMED BAR ANCHOR DETAILS

Two (2) Bars required per assembly.
Eight (8) required per Joint.



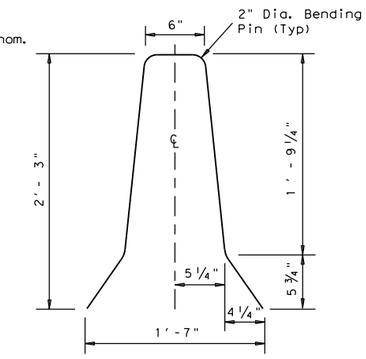
UPPER CONNECTION PIPE DETAILS

One (1) Steel Pipe required per Upper Assembly.
Two (2) required per Joint.

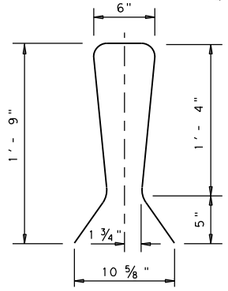


LOWER CONNECTION PIPE DETAILS

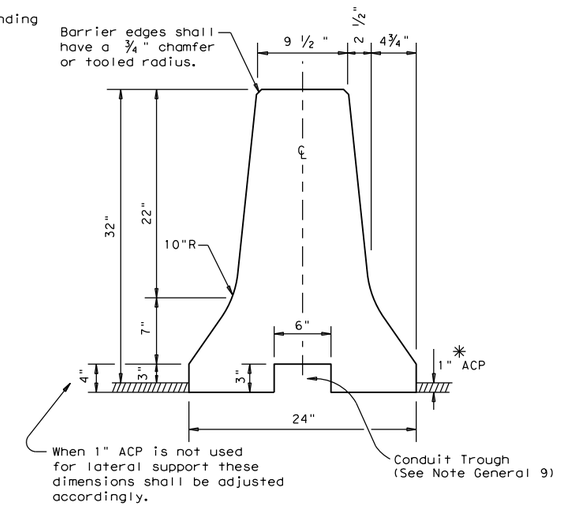
One (1) Steel Pipe required per Lower Assembly.
Two (2) required per Joint.



S3 Bar
#4 Bar



S1 Bar
#4 Bar (2)
(Joint Type X)

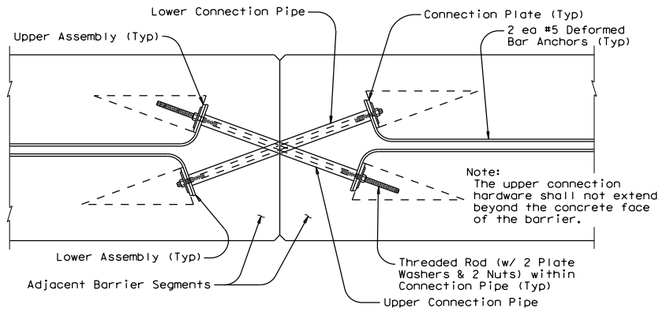


Concrete Safety Barrier

✳ When 1" ACP is "not" used as lateral support for permanent barrier placement. A permissible method of attaining the equivalent lateral support may be used, See CSB(6) sheet.

GENERAL NOTES

1. Concrete shall be Class H with a minimum compressive strength of 3,600 psi.
2. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
3. Precast barrier length shall be 30 ft. unless otherwise specified on the plans.
4. All precast barrier edges shall have a 3/4" chamfer or tooled radius.
5. All concrete, reinforcement, joint connection systems, grout etc. as shown, are considered as part of the barrier payment.
6. All steel assemblies for joint shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."
7. Regardless of the method of handling, barrier lifting points shall be approx. 7.5 feet from the ends of the barrier. Lifting devices and attachments to barrier sections shall be approved by the Engineer.
8. Surface finishing and grouting (where required) shall be two parts sand one part cement with enough water to make the mixture plastic. Grouting shall be done in a manner that will assure a smooth surface. Surface finishing shall be considered subsidiary to the various bid items involved.
9. Conduit trough when required shall be shown elsewhere on the plans, or as directed by the Engineer.



TYPE X JOINT INSTALLATION DETAIL

Barrier reinforcing and Type X Joint Leave-Out dimensions not shown for clarity.

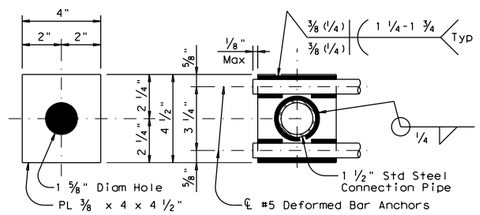
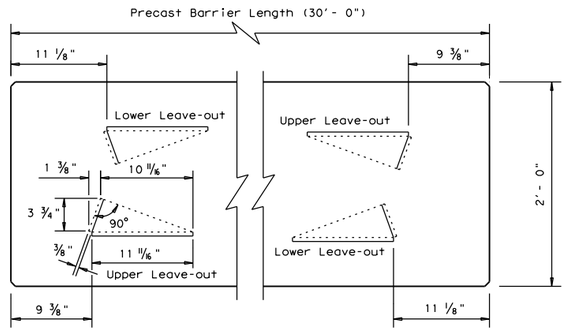


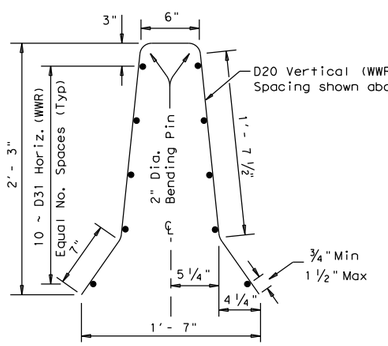
PLATE DIMENSIONS WELDING DETAILS

CONNECTION PLATE DETAILS

One (1) Plate required per assembly.
Four (4) required per Joint. All steel fittings for joint Type X shall be galvanized after fabrication in accordance with Item 445.



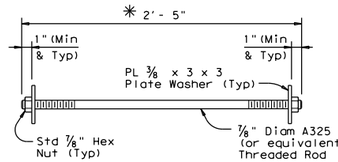
BARRIER PLAN AT END JOINTS



Welded Wire Reinforcement
(WWR) Option for Bars R and S3

(WWR) General Notes

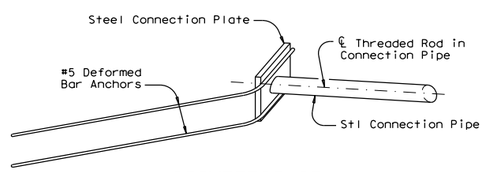
1. Deformed Welded Wire Reinforcement (WWR) shall conform to ASTM A497.
2. Welded wire cage may be cut or bent to accommodate the Type X joint connection and drainage slots, as directed by the Engineer.
3. All reinforcement shall comply with Item 440, "Reinforcing Steel."
4. Combinations of reinforcing steel and WWR will be permitted, as directed by the Engineer. The dimension from the end of the barrier section to the first wire shall not exceed 3".



CONNECTION BOLT OR THREADED ROD DETAIL

Two (2) Threaded Rods (Or Equivalent Hex Hd. Bolts)
(w/ Two (2) PL 3/8 x 3 x 3 Plate Washers & Two (2) Std Hex Nuts)
required per Joint.

✳ The connection hardware shall not extend beyond the concrete face of the barrier. Hex head bolts may be provided. The proper length of all hardware should be verified.



ISOMETRIC OF TYPICAL WELDED ASSEMBLY

Four (4) [2 Upper & 2 Lower] Assemblies required per Joint.

Weight of one Precast 30 ft. (CSB) segment = Approx. 6.5 Tons or 440 lbs per ft.

SHEET 1 OF 2

Texas Department of Transportation | Design Division Standard

CONCRETE SAFETY BARRIER (F-SHAPE)

PRECAST BARRIER
(TYPE 1)

CSB(1)-10

FILE: csb110.dgn	DN: TxDOT	CK: AM	DW: BD	CK: VP
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.	FM 1378, ETC.
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		106

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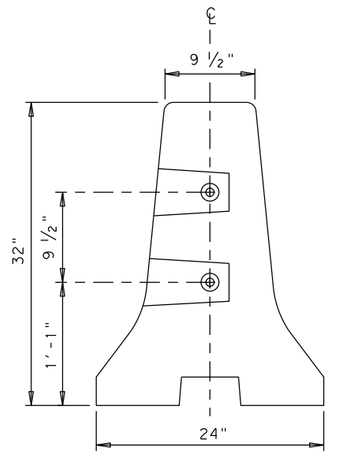
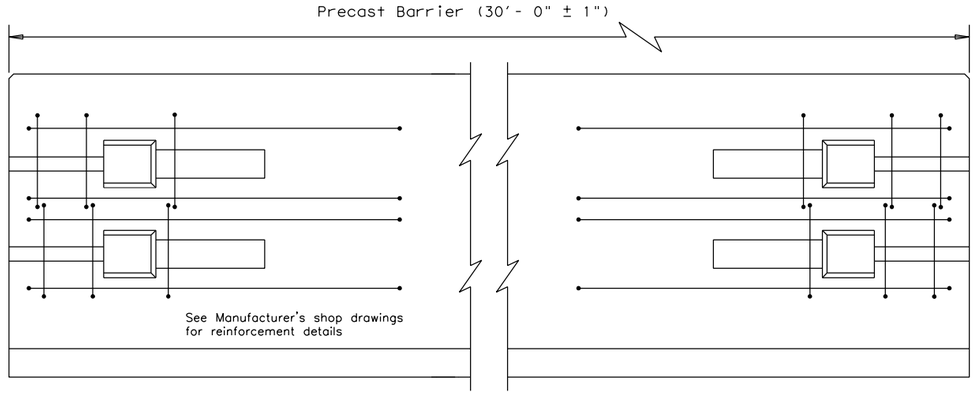
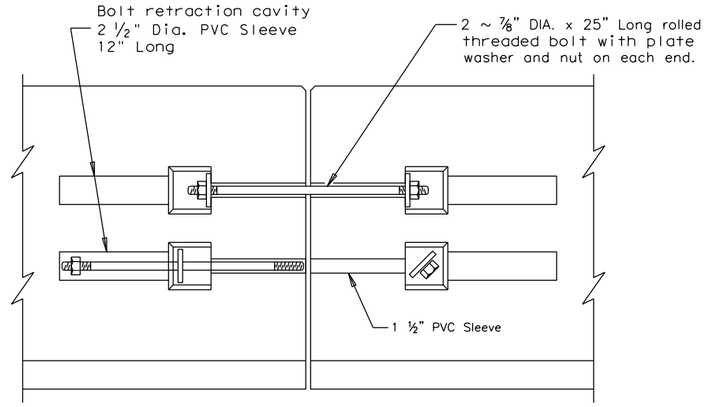
FILE: c:\txdot\pw_online\txdot5\james.igwe\d0483941\csb110.dgn



END VIEW (CSB) QUICK-BOLT
QUICK-BOLT POCKET LOCATIONS

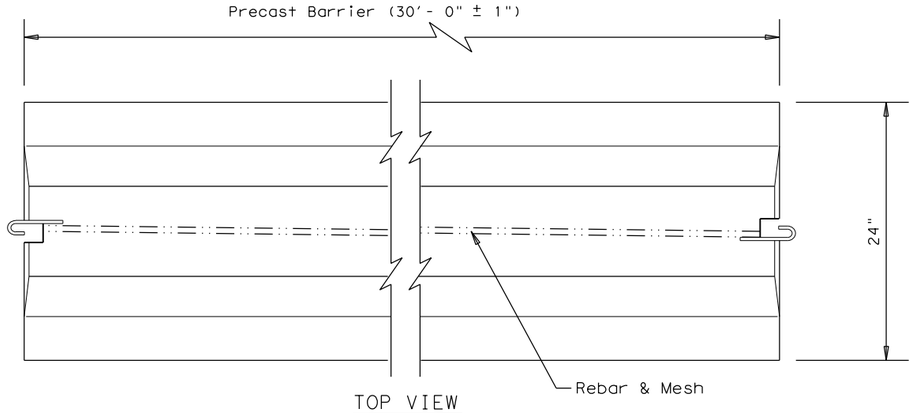


ELEVATION (CSB) QUICK-BOLT
See Manufacturer's shop drawing for additional details

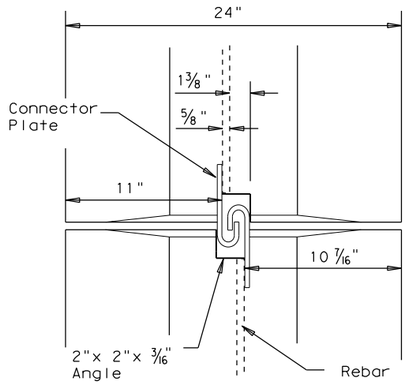


ELEVATION VIEW SHOWING JOINT CONNECTION
"QUICK-BOLT"

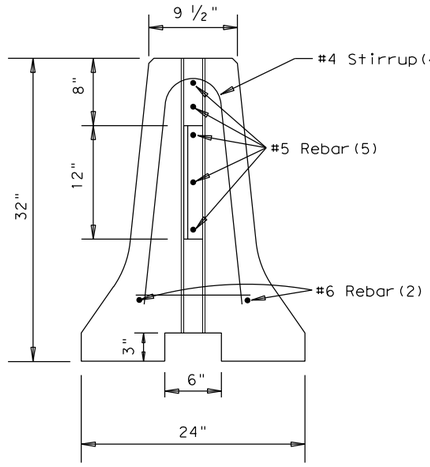
Joint Connection (Type Q)



TOP VIEW
PRECAST (CSB) WITH J-J HOOKS
See Manufacturer's shop drawing for additional details



VIEW FROM ABOVE
J-J HOOK CONNECTION



END VIEW
J-J HOOK CONNECTION

Joint Connection (Type J)

Proprietary Joint Connections (CSB)

Two proprietary joint connections are acceptable as alternates to the (Type X) connection shown, here on. These joint connections types are:

J-J Hooks by Easi-Set Industries, (800)547-4045
Quick-Bolt by Bexar Concrete, (210)497-3773

If one of these connection systems are exclusively specified in the plans, prior approval for sole source use must be obtained. Details of the connection components and barrier reinforcement for these systems, will be shown on the manufacturer's shop drawing(s) furnished to the Engineer.

Texas Department of Transportation | Design Division Standard

CONCRETE SAFETY BARRIER (F-SHAPE)

PRECAST BARRIER
(TYPE 1)

CSB(1)-10

FILE: csb110.dgn	DN: TxDOT	CK: AM	DW: BD	CK: VP
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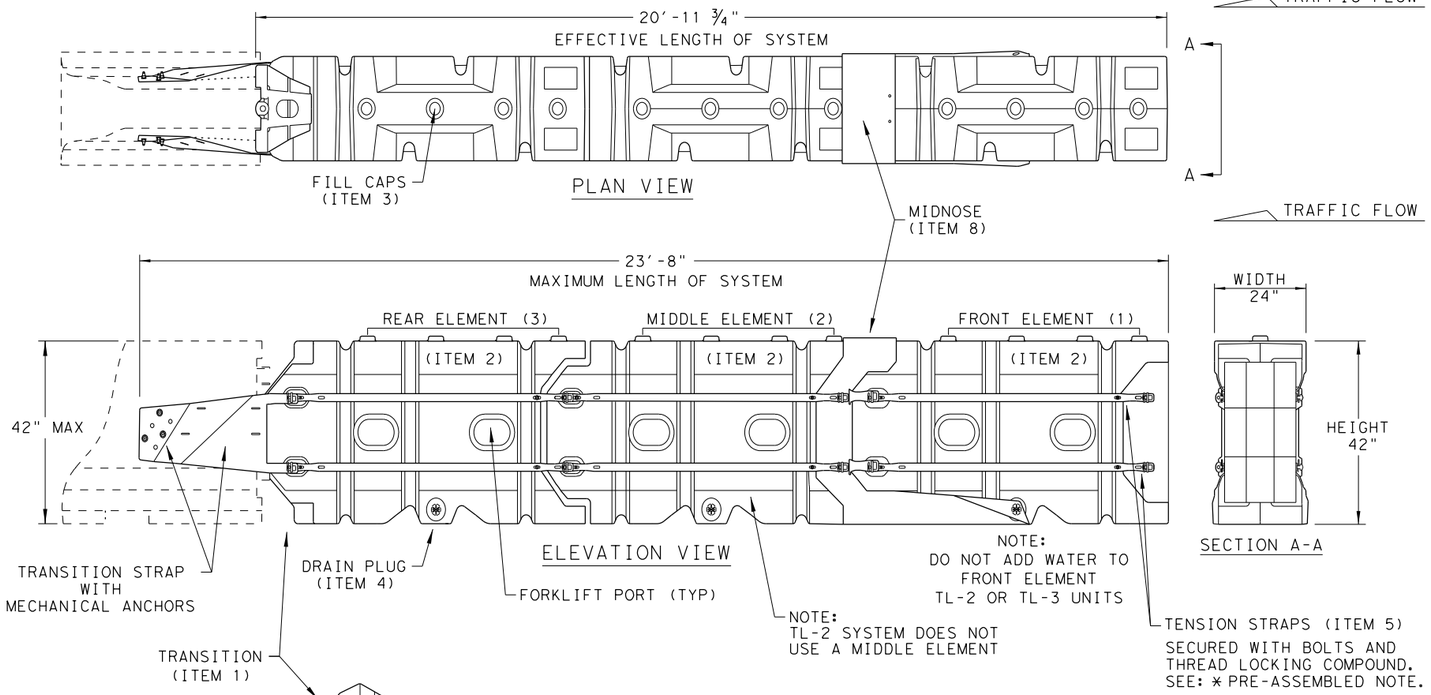
SYSTEM SHOWN - ABSORB-M TL-3



THE ABSORB-M IS A NON-REDIRECTIVE, GATING, CRASH CUSHION DESIGNED TO MEET THE LATEST TL-3 & TL-2 MASH REQUIREMENTS.

THE SYSTEM IS DESIGNED TO ACCOMMODATE A VARIETY OF F-SHAPE AND SINGLE SLOPE CONCRETE BARRIERS. CONTACT THE MANUFACTURER FOR GUIDANCE REGARDING OTHER ALLOWABLE SHAPES.

TEST LEVEL	NUMBER OF ELEMENTS	EFFECTIVE LENGTH	MAXIMUM LENGTH
TL-2	2	14'- 7 3/4"	17'- 4"
TL-3	3	20'- 11 3/4"	23'- 8"

NOTE:
CROSS SLOPES OF UP TO 8% (OR 1:12 SLOPE) CAN BE ACCOMMODATED WITH STANDARD HARDWARE SHOWN WITHIN THE INSTRUCTIONS MANUAL. FOR SLOPES WITH EXCESS OF 8% (OR 1:12) CONTACT, LINDSAY TRANSPORTATION SOLUTIONS.

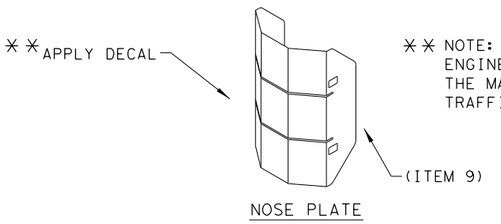
GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING THE INSTALLATION AND TECHNICAL GUIDANCE, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800. 180 RIVER ROAD, RIO VISTA, CA 94571
2. THE ABSORB-M SYSTEM IS ONLY APPROVED FOR USE IN (TEMPORARY WORK ZONE) LOCATIONS.
3. THE ABSORB-M IS A WATER FILLED NON-REDIRECTIVE, GATING CRASH CUSHION THAT DOES NOT NEED TO BE ATTACHED TO A FOUNDATION AND CAN BE INSTALLED ON TOP OF CONCRETE, ASPHALT, OR ANY SURFACE CAPABLE OF BEARING THE WEIGHT OF THE SYSTEM.
4. MAXIMUM PERMISSIBLE CROSS-SLOPE IS 8%.
5. THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
6. THE ABSORB-M SHOULD BE LOCATED APPROXIMATELY PARALLEL WITH THE BARRIER.
7. THE USE OF THE ABSORB-M IS RESTRICTED TO A BARRIER HEIGHT OF UP TO 42 INCHES.
8. DO NOT ADD WATER TO FRONT ELEMENT (TL-2 OR TL-3 UNIT).

BILL OF MATERIALS (BOM) ABSORB-M TL-3 & TL-2 SYSTEMS			QTY	QTY
ITEM #	PART NUMBER	PART DESCRIPTION	TL-2 SYSTEM	TL-3 SYSTEM
1	BSI-1809036-00	TRANSITION-(GALV)	1	1
* 2	BSI-1808002-00	PRE-ASSEMBLED ABSORBING (ELEMENTS)	2	3
* 3	BSI-4004598	FILL CAPS	8	12
* 4	BSI-4004599	DRAIN PLUGS	2	3
* 5	BSI-1809053-00	TENSION STRAP-(GALV)	8	12
* 6	BSI-2001998	C-SCR FH 3/8-16 X 1 1/2 GR5 PLT	8	12
* 7	BSI-2001999	C-SCR FH 3/8-16 X 1 GR5 PLT	8	12
8	BSI-1809035-00	MIDNOSE-(GALV)	1	1
9	BSI-1808014-00	NOSE PLATE	1	1
10	BSI-1809037-00	TRANSITION STRAP (LEFT-HAND)-(GALV)	1	1
11	BSI-1809038-00	TRANSITION STRAP (RIGHT-HAND)-(GALV)	1	1
12	BSI-1808005-00	PIN ASSEMBLY	8	10
13	BSI-2002001	ANC MECH 5/8-11X5 (GALV)	6	6
14	ABSORB-M	INSTALLATION AND INSTRUCTIONS MANUAL	1	1

*COMPONENTS PRE-ASSEMBLED WITH ELEMENT ASSEMBLY

DELINEATION DECAL PLACEMENT GUIDE



** NOTE: (PROVIDED BY OTHERS) ENGINEER OR CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER FOR THE CORRECT DECAL PER TRAFFIC FLOW, LEFT, RIGHT OR BOTH-SIDES.

NOTE:
APPLY A HIGH REFLECTIVE DECAL TO THE NOSE PLATE. DELINEATION DECAL ORIENTATION IS SHOWN ON THE CONSTRUCTION PLAN SET AND SHALL BE IN ACCORDANCE WITH THE TEXAS MUTCD FOR (TRAFFIC CONTROL DEVICES). DECALs ARE AVAILABLE FOR TRAFFIC FLOW ON THE LEFT-SIDE, BOTH -SIDES AND RIGHT-SIDE.

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE ABSORB-M, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

SACRIFICIAL

Texas Department of Transportation — Design Division Standard

LINDSAY TRANSPORTATION SOLUTIONS
CRASH CUSHION
(MASH TL-3 & TL-2)
TEMPORARY - WORK ZONE
ABSORB(M)-19

FILE: absorbm19	DN: TxDOT	CK: KM	DW: VP	CK:
© TxDOT: JULY 2019	CONT	SECT	JOB	HIGHWAY
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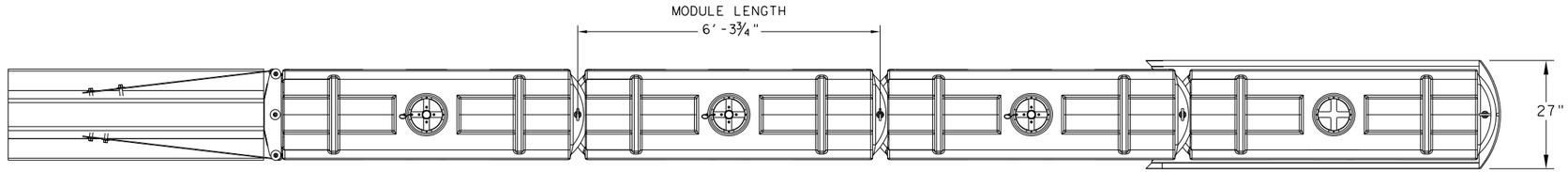
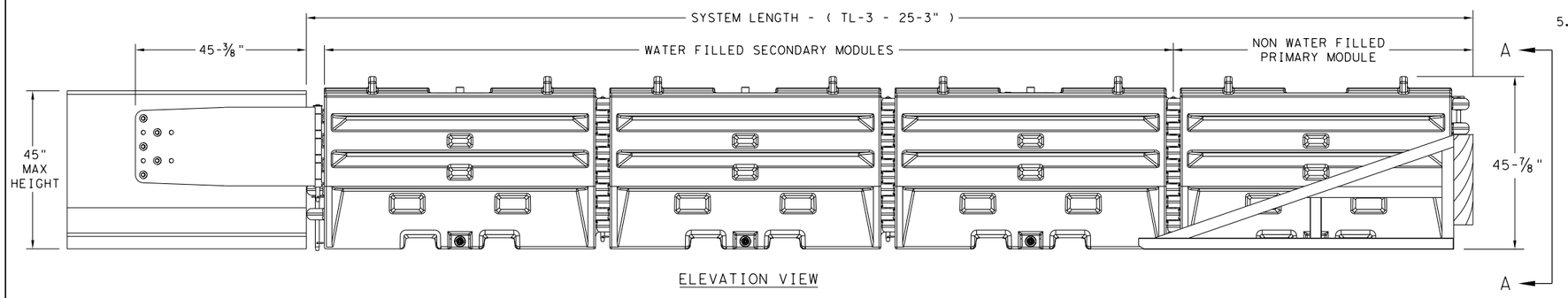


PLAN VIEW



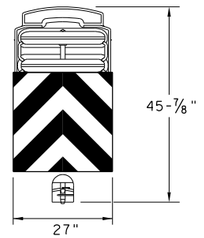
ELEVATION VIEW

GENERAL NOTES

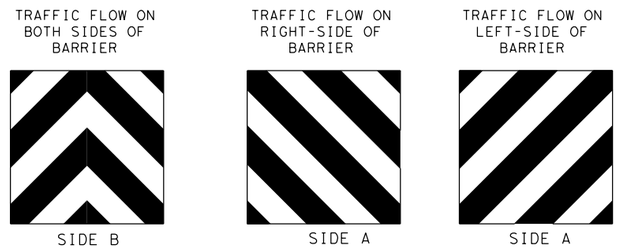
1. REFER TO THE INSTALLATION MANUAL FOR SPECIFIC SYSTEM ASSEMBLY AND MODULE ORIENTATION. FOR ADDITIONAL INFORMATION, CONTACT TRAFFIX, INC. AT (949) 361-5663.
2. THE SLED SYSTEM IS A MASH APPROVED TEST LEVEL 3 (TL-3) CRASH CUSHION APPROVED FOR USE IN TEMPORARY WORK ZONES. THE SLED SYSTEM IS A NON-REDIRECTIVE, GATING CRASH CUSHION THAT DOES NOT NEED TO BE ATTACHED TO THE GROUND AND CAN BE INSTALLED ON CONCRETE, ASPHALT, GRAVEL OR COMPACTED SOIL.
3. MAXIMUM PERMISSIBLE CROSS SLOPE IS 8° (DEGREES) (14%).
4. THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
5. THE SLED SYSTEM CAN BE ATTACHED TO:

- CONCRETE BARRIER, TEMPORARY OR PERMANENT, 45" MAXIMUM HEIGHT
- STEEL BARRIER
- PLASTIC BARRIER
- CONCRETE BRIDGE ABUTMENTS
- W-BEAM GUARD RAIL
- THRIE BEAM GUARD RAIL

TEST LEVEL	NUMBER OF SECONDARY MODULES	SYSTEM LENGTH
TL-3	3	25' 3"



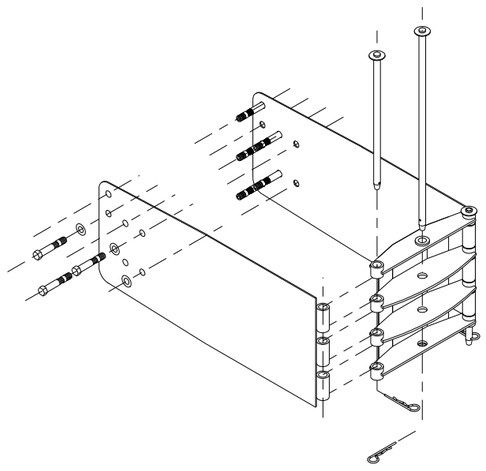
SECTION A-A



NOSE SHEETING PANEL DELINEATION

NOTE:
SEE INSTALLATION MANUAL FOR CUSTOMIZED DELINEATION NOSE SHEETING FOR DECAL PLACEMENT.

BILL OF MATERIAL		
PART NUMBER	DESCRIPTION	QTY: TL-3
45131	TRANSITION FRAME, GALVANIZED	1
45150	TRANSITION PANEL, GALVANIZED	2
45147-CP	TRANSITION SHORT DROP PIN W/ KEEPER PIN, GALVANIZED	2
45148-CP	TRANSITION LONG DROP PIN W/ KEEPER PIN, GALVANIZED	1
45050	ANCHOR BOLTS	9
12060	WASHER, 3/4" ID X 2" OD	9
45044-Y	SLED YELLOW WATER FILLED MODULE	3
45044-YH	SLED YELLOW "NO FILL" MODULE	1
45044-S	CIS (CONTAINMENT IMPACT SLED), GALVANIZED	1
45043-CP	T-PIN W/ KEEPER PIN	4
18009-B-I	FILL CAP W/ "DRIVE BY" FLOAT INDICATOR	3
45033-RC-B	DRAIN PLUG	3
45032-DPT	DRAIN PLUG REMOVAL TOOL	1



SLED TRANSITION COMPONENTS FOR ATTACHMENT TO CMB

NOTE:
SEE MANUFACTURER'S INSTALLATION MANUAL FOR FURTHER DETAILS.

TRANSITION OPTIONS
SLED TRANSITION TO CONCRETE TRAFFIC BARRIER (TEMPORARY OR PERMANENT)
SLED TRANSITION TO STEEL TRAFFIC BARRIER (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO PLASTIC TRAFFIC BARRIER (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO W-BEAM OR THRIE BEAM GUARD RAIL (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO CONCRETE BRIDGE ABUTMENT

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE SLED, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

SACRIFICIAL

Texas Department of Transportation

Design Division Standard

SLED
CRASH CUSHION
TL-3 MASH COMPLIANT
(TEMPORARY, WORK ZONE)
SLED-19

FILE: sled19.dgn	DN: TxDOT	CK: KM	DW: VP	CK:
©TxDOT: DECEMBER 2019	CONT	SECT	JOB	HIGHWAY
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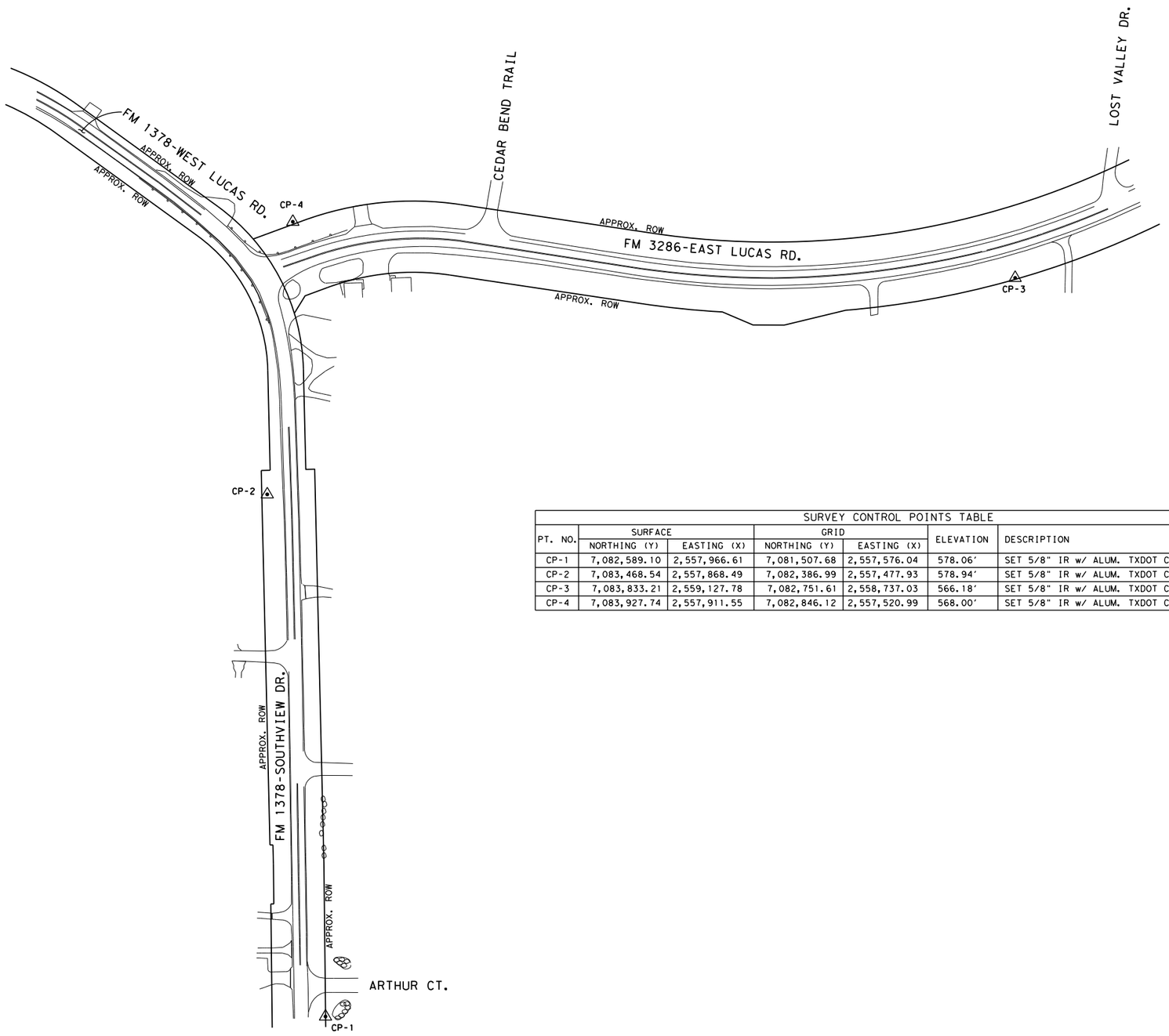
	DAL	COLLIN		109



0 100 200

SCALE: 1"=100' (22" x 34")
SCALE: 1"=200' (11" x 17")

SURVEY CONTROL POINTS TABLE

PT. NO.	SURFACE		GRID		ELEVATION	DESCRIPTION
	NORTHING (Y)	EASTING (X)	NORTHING (Y)	EASTING (X)		
CP-1	7,082,589.10	2,557,966.61	7,081,507.68	2,557,576.04	578.06'	SET 5/8" IR w/ ALUM. TXDOT CAP IN CONC.
CP-2	7,083,468.54	2,557,868.49	7,082,386.99	2,557,477.93	578.94'	SET 5/8" IR w/ ALUM. TXDOT CAP IN CONC.
CP-3	7,083,833.21	2,559,127.78	7,082,751.61	2,558,737.03	566.18'	SET 5/8" IR w/ ALUM. TXDOT CAP IN CONC.
CP-4	7,083,927.74	2,557,911.55	7,082,846.12	2,557,520.99	568.00'	SET 5/8" IR w/ ALUM. TXDOT CAP IN CONC.

NOTES

ALL COORDINATES AND BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983 (NAD83) (2011 ADJUSTMENT, 2010 EPOCH), NORTH CENTRAL ZONE (4202), AS ESTABLISHED BY GPS OBSERVATIONS AND BASED ON THE TXDOT RTN MOUNT POINT: NAD83_(2010)-NORTH_VRS_RTCM.

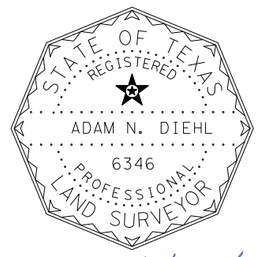
ALL ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (2011 ADJUSTMENT, 2010 EPOCH) GEOID 12A, AS ESTABLISHED BY GPS OBSERVATIONS AND BASED ON THE TXDOT RTN MOUNT POINT: NAD83_(2010)-NORTH_VRS_RTCM.

THE UNIT OF MEASURE IS THE U.S. SURVEY FOOT.

ALL COORDINATES AND DISTANCES ARE SURFACE VALUES AND CAN BE CONVERTED TO GRID VALUES BY DIVIDING BY THE PROJECT SURFACE ADJUSTMENT FACTOR OF 1.000152710.

FIELD SURVEY PERFORMED IN JANUARY, 2019.

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E



01/30/2019

Adam N. Diehl

ADAM N. DIEHL
REGISTERED PROFESSIONAL LAND SURVEYOR
NO. 6346

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Texas Department of Transportation

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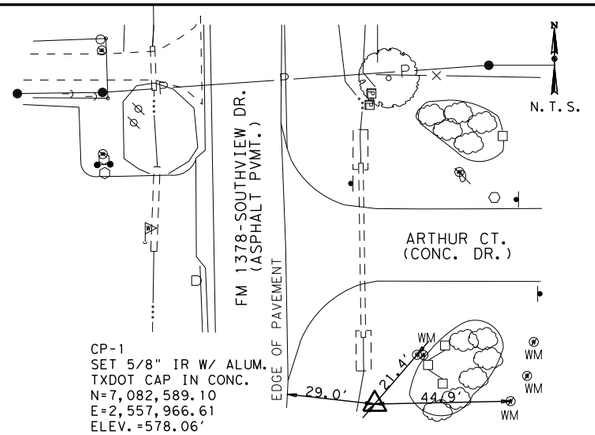
2525 North Loop West, Suite 300,
Houston, Texas 77008
T: 713-861-7068 F: 713-861-4131
TBPE Registration No. F-1364; TBPLS Registration No. 10019100

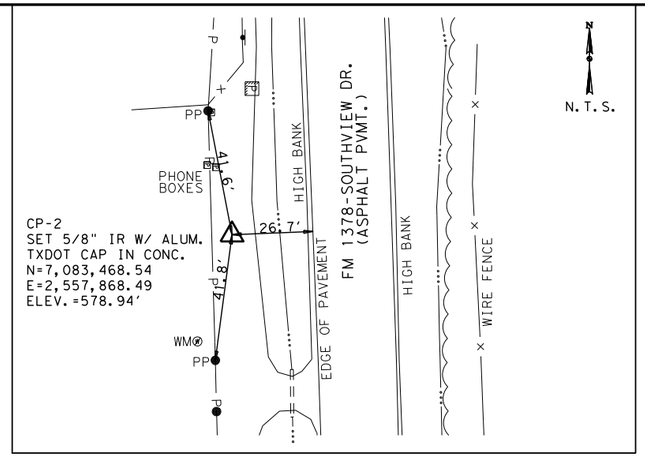
FM 1378
SURVEY CONTROL INDEX SHEET

FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
6	TX					FM 1378
STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
24	COLLIN	1392	01	044		110

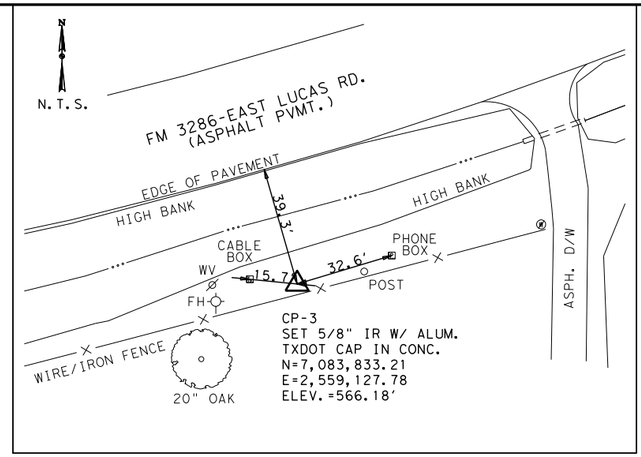
S:\2018\1820198\CADD\SURVEY CONTROL MAP\MRF139201044*Survey Control Sheet-1.dgn



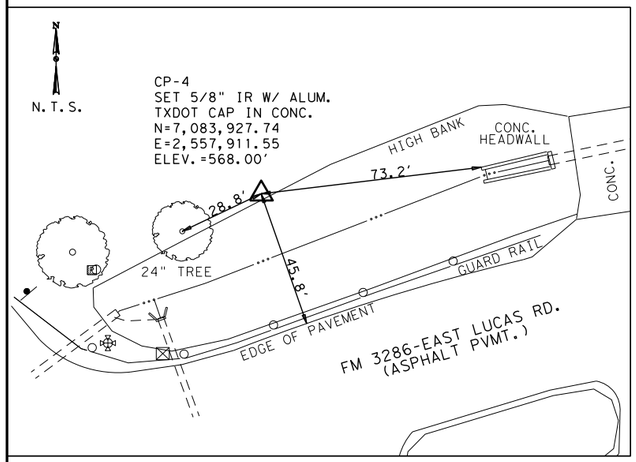
CP-1: LOCATED AT THE SOUTHEAST CORNER OF THE INTERSECTION OF FM 1378-SOUTHVIEW DR. AND ARTHUR CT.



CP-2: LOCATED WEST OF FM 1378-SOUTHVIEW DR. APPROX. 370' SOUTH OF FM 3286-EAST LUCAS RD.



CP-3: LOCATED SOUTH OF FM 3286-EAST LUCAS RD., APPROX. 1,250' EAST OF FM 1378-SOUTHVIEW DR.



CP-4: LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF FM 3286-EAST LUCAS RD. AND FM 1378-SOUTHVIEW DR.

NOTES

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ALL ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (2011 ADJUSTMENT, 2010 EPOCH) GEOID 12A, AS ESTABLISHED BY GPS OBSERVATIONS AND BASED ON THE TXDOT RTN MOUNT POINT: NAD83_(2010)-NORTH_VRS_RTCM.

THE UNIT OF MEASURE IS THE U.S. SURVEY FOOT.

ALL COORDINATES AND DISTANCES ARE SURFACE VALUES AND CAN BE CONVERTED TO GRID VALUES BY DIVIDING BY THE PROJECT SURFACE ADJUSTMENT FACTOR OF 1.000152710.

FIELD SURVEY PERFORMED IN JANUARY, 2019.

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PS&E

STATE OF TEXAS
REGISTERED
ADAM N. DIEHL
6346
PROFESSIONAL
LAND SURVEYOR

01/30/2019

Adam N. Diehl

ADAM N. DIEHL
REGISTERED PROFESSIONAL LAND SURVEYOR
NO. 6346

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2525 North Loop West, Suite 300,
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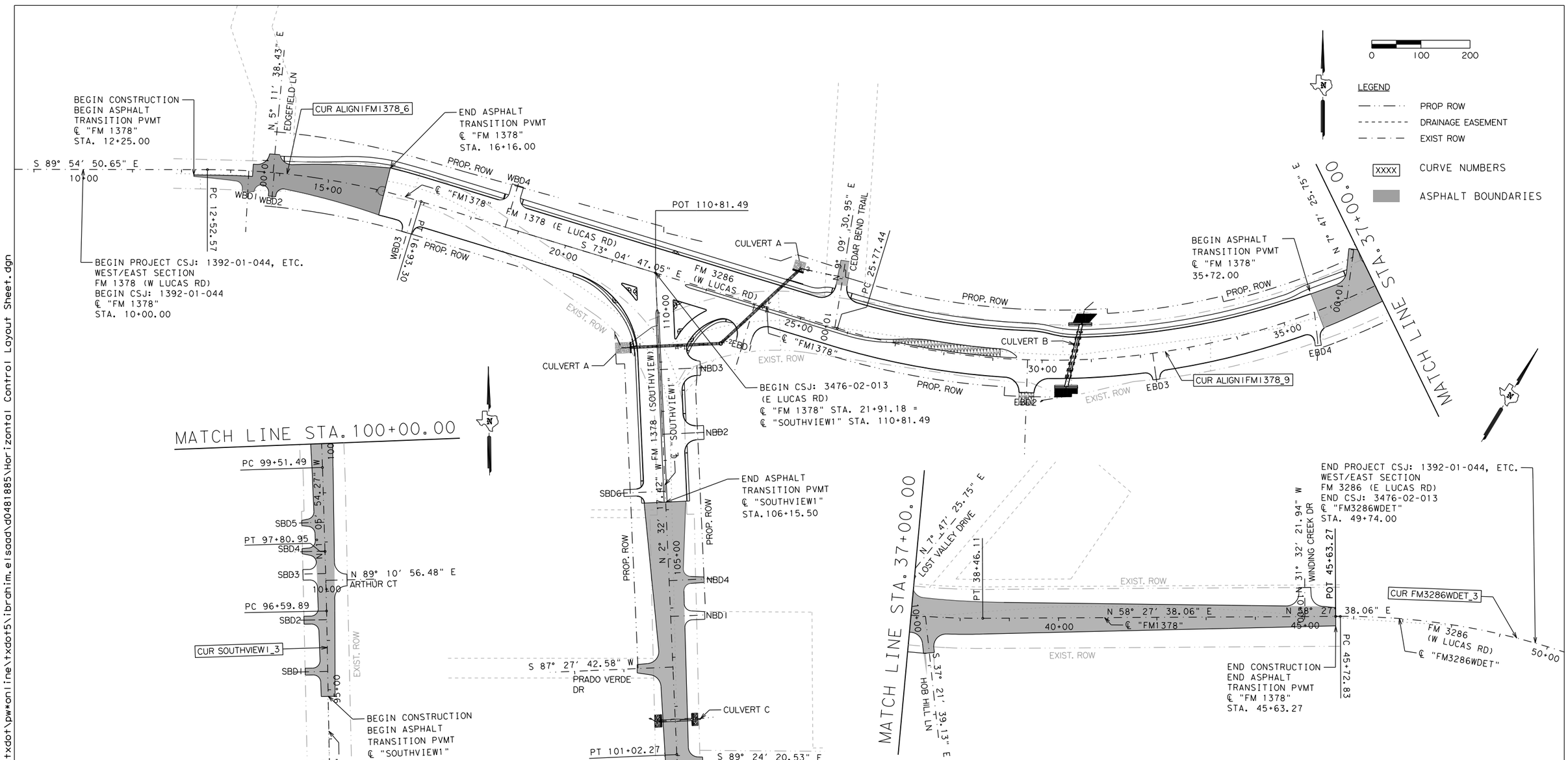
TBPE Registration No. F-1364; TBPLS Registration No. 10019100

FM 1378
HORZ/VERT CONTROL MAP

FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
6	TX					FM 1378
STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
24	COLLIN	1392	01	044		111

S:\2018\1820198\CADD\SURVEY CONTROL MAP\MRF139201044* Horz Vert Control Sheet-1.dgn

DATE: 11/7/2022 TIME: 3:14:21 PM FILE: c:\txdot\pw*online\txdot5\ibrahim.elsaad\d0481885\Horizontal Control Layout Sheet.dgn



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FM 1378
AT FM 3286
HORIZONTAL CONTROL LAYOUT

SCALE: 1"=200' SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RI	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS RI	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK IE	TEXAS	DAL	COLLIN	112
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 11-7-22
Signature of Registrant & Date

PROP. ℄ "FM1378" FM 1378(E LUCAS RD) & FM 3286 (W LUCAS RD) "ALIGN1FM1378"

```
<*     I DESCRIBE CHAIN ALIGNIFM1378

Chain ALIGNIFM1378 contains:
 AL50 CUR ALIGNIFM1378_3 CUR ALIGNIFM1378_6 CUR ALIGNIFM1378_9 AL51

Beginning chain ALIGNIFM1378 description
Feature: Geom_Centerline
===============================================================================

Point AL50            X      2,555,709.22 Y    7,084,203.05 Sta      0+00.00

Course from AL50 to PC ALIGNIFM1378_3 N 89° 24' 39.05" E Dist 615.85

                                  Curve Data
                                 *----------*

Curve ALIGNIFM1378_3
P.I.  Station          6+86.55  X         2,556,395.73  Y        7,084,210.11
Delta         =     0° 40' 30.30" (RT)
Degree        =     0° 28' 38.87"
Tangent   =            70.70
Length        =        141.39
Radius         =       12,000.00
External  =            0.21
Long Chord  =          141.39
Mid. Ord.   =          0.21
P.C.  Station          6+15.85  X         2,556,325.04  Y        7,084,209.38
P.T.  Station          7+57.24  X         2,556,466.42  Y        7,084,210.00
C.C.                            X         2,556,448.43  Y        7,072,210.02
Back          = N   89° 24' 39.05" E
Ahead          = S   89° 54' 50.65" E
Chord Bear  = N   89° 44' 54.20" E

Course from PT ALIGNIFM1378_3 to PC ALIGNIFM1378_6 S 89° 54' 50.65" E Dist 495.33

                                  Curve Data
                                 *----------*

Curve ALIGNIFM1378_6
P.I.  Station          14+74.53  X        2,557,183.71 Y         7,084,208.93
Delta         =     16° 50' 03.60" (RT)
Degree        =     3° 49' 10.99"
Tangent   =            221.96
Length        =        440.72
Radius         =       1,500.00
External  =            16.33
Long Chord  =          439.14
Mid. Ord.   =          16.16
P.C.  Station          12+52.57  X        2,556,961.75  Y        7,084,209.26
P.T.  Station          16+93.30  X        2,557,396.07  Y        7,084,144.33
C.C.                             X        2,556,959.51 Y         7,082,709.26
Back          = S   89° 54' 50.65" E
Ahead          = S   73° 04' 47.05" E
Chord Bear  = S   81° 29' 48.85" E

Course from PT ALIGNIFM1378_6 to PC ALIGNIFM1378_9 S 73° 04' 47.05" E Dist 884.14

                                  Curve Data
                                 *----------*

Curve ALIGNIFM1378_9
P.I.  Station          32+52.50  X        2,558,887.78  Y        7,083,690.54
Delta         =     48° 27' 34.89" (LT)
Degree        =     3° 49' 10.99"
Tangent   =            675.07
Length        =        1,268.67
Radius         =       1,500.00
External  =            144.91
Long Chord  =          1,231.19
Mid. Ord.   =          132.14
P.C.  Station          25+77.44  X        2,558,241.93  Y        7,083,887.01
P.T.  Station          38+46.11 X        2,559,463.12  Y        7,084,043.65
C.C.                             X        2,558,678.49  Y        7,085,322.07
Back          = S   73° 04' 47.05" E
Ahead          = N   58° 27' 38.06" E
Chord Bear  = N   82° 41' 25.50" E

Course from PT ALIGNIFM1378_9 to AL51 N 58° 27' 38.06" E Dist 717.16

Point AL51      X      2,560,074.35 Y     7,084,418.79 Sta      45+63.27

===============================================================================
Ending chain ALIGNIFM1378 description
```

PROP. ℄ "SOUTHVIEW1" FM 1378 (SOUTHVIEW RD)

```
<*     I DESCRIBE CHAIN SOUTHVIEW1

Chain SOUTHVIEW1 contains:
 SOUTHVIEW11 CUR SOUTHVIEW1_3 CUR SOUTHVIEW1_6 SOUTHVIEW18

Beginning chain SOUTHVIEW1 description
Feature: Geom_Centerline
===============================================================================

Point SOUTHVIEW11   X      2,557,931.05 Y     7,081,769.04 Sta      88+50.00

Course from SOUTHVIEW11 to PC SOUTHVIEW1_3 N 0° 23' 27.23" W Dist 809.89

                                  Curve Data
                                 *----------*

Curve SOUTHVIEW1_3
P.I.  Station          97+20.42  X        2,557,924.97  Y        7,082,639.44
Delta         =     0° 34' 40.85" (LT)
Degree        =     0° 28' 38.87"
Tangent   =            60.53
Length        =        121.06
Radius         =       12,000.00
External  =            0.15
Long Chord  =          121.06
Mid. Ord.   =          0.15
P.C.  Station          96+59.89  X        2,557,925.52  Y        7,082,578.91
P.T.  Station          97+80.95  X        2,557,923.81 Y         7,082,699.95
C.C.                             X        2,545,926.02  Y        7,082,469.92
Back          = N   0° 31' 13.43" W
Ahead          = N   1° 05' 54.27" W
Chord Bear  = N   0° 48' 33.85" W

Course from PT SOUTHVIEW1_3 to PC SOUTHVIEW1_6 N 1° 05' 54.27" W Dist 170.55

                                  Curve Data
                                 *----------*

Curve SOUTHVIEW1_6
P.I.  Station          100+26.88  X       2,557,919.10  Y        7,082,945.85
Delta         =     1° 26' 23.14" (LT)
Degree        =     0° 57' 17.75"
Tangent   =            75.39
Length        =        150.77
Radius         =       6,000.00
External  =            0.47
Long Chord  =          150.77
Mid. Ord.   =          0.47
P.C.  Station          99+51.49  X        2,557,920.54  Y        7,082,870.47
P.T.  Station          101+02.27  X       2,557,915.76  Y        7,083,021.16
C.C.                              X       2,551,921.64  Y        7,082,755.45
Back          = N   1° 05' 54.27" W
Ahead          = N   2° 32' 17.42" W
Chord Bear  = N   1° 49' 05.85" W

Course from PT SOUTHVIEW1_6 to SOUTHVIEW18 N 2° 32' 17.42" W Dist 979.22

Point SOUTHVIEW18     X      2,557,872.39 Y     7,083,999.42 Sta      110+81.49

===============================================================================
Ending chain SOUTHVIEW1 description
```

PROP. ℄ "FM3286WDET" FM 3286 (W LUCAS RD)

```
<*     I DESCRIBE CHAIN FM3286WDET

Chain FM3286WDET contains:
 AL60 CUR FM3286WDET_3 AL61

Beginning chain FM3286WDET description
Feature: Geom_Centerline
===============================================================================

Point AL60            X      2,560,074.34 Y    7,084,418.78 Sta      45+63.27

Course from AL60 to PC FM3286WDET_3 N 58° 27' 38.06" E Dist 9.57

                                  Curve Data
                                 *----------*

Curve FM3286WDET_3
P.I.  Station          50+06.63  X        2,560,452.20  Y        7,084,650.70
Delta         =     33° 58' 27.32" (RT)
Degree        =     4° 02' 05.69"
Tangent   =            433.79
Length        =        842.01
Radius         =       1,420.00
External  =            64.78
Long Chord  =          829.73
Mid. Ord.   =          61.95
P.C.  Station          45+72.84  X        2,560,082.49  Y        7,084,423.79
P.T.  Station          54+14.85  X        2,560,885.60  Y        7,084,632.27
C.C.                             X        2,560,825.27  Y        7,083,213.55
Back          = N   58° 27' 38.06" E
Ahead          = S   87° 33' 54.62" E
Chord Bear  = N   75° 26' 51.72" E

Course from PT FM3286WDET_3 to AL61 S 87° 33' 54.62" E Dist 733.36

Point AL61      X      2,561,618.30 Y     7,084,601.11 Sta      61+48.21

===============================================================================
Ending chain FM3286WDET description
```

STATE OF TEXAS
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PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 11-7-22
Signature of Registrant & Date

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FM 1378
AT FM 3286
HORIZONTAL ALIGNMENT DATA

SHEET 1 OF 5

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RI	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
RI	TEXAS	DAL	COLLIN	113
CHECK	CONTROL	SECTION	JOB	
SM/IE	1392	01	044, ETC.	
CHECK				

DATE: 8/26/2022 TIME: 1:37:12 PM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0481885\Horizontal Alignment Data Sheet.dgn

PROP. ℄ CULVERT A "CLVACL"

<• 1 DESCRIBE CHAIN CLVACL

Chain CLVACL contains:
CLVACLI CLVACL3 CLVACL5 CLVACL7 CLVACL8

Beginning chain CLVACL description
Feature: Geom_Centerline
****

Point CLVACLI X 2,557,790.87 Y 7,083,873.72 Sta 10+00.00

Course from CLVACLI to CLVACL3 S 24° 45' 56.89" E Dist 29.33

Point CLVACL3 X 2,557,803.16 Y 7,083,847.09 Sta 10+29.33

Course from CLVACL3 to CLVACL5 N 87° 27' 20.92" E Dist 202.00

Point CLVACL5 X 2,558,004.96 Y 7,083,856.06 Sta 12+31.33

Course from CLVACL5 to CLVACL7 N 46° 55' 11.05" E Dist 223.04

Point CLVACL7 X 2,558,167.86 Y 7,084,008.40 Sta 14+54.37

Course from CLVACL7 to CLVACL8 S 77° 51' 35.12" E Dist 63.43

Point CLVACL8 X 2,558,229.88 Y 7,083,995.06 Sta 15+17.80

****
Ending chain CLVACL description

PROP. ℄ CULVERT B "CLVBCL"

<• 2 DESCRIBE CHAIN CLVBCL

Chain CLVBCL contains:
CLVBCLI CLVBCL3 CLVBCL5 CLVBCL7 CLVBCL8

Beginning chain CLVBCL description
Feature: Geom_Centerline
****

Point CLVBCLI X 2,558,656.21 Y 7,083,740.30 Sta 10+00.00

Course from CLVBCLI to CLVBCL3 N 81° 03' 08.00" E Dist 46.65

Point CLVBCL3 X 2,558,702.29 Y 7,083,747.55 Sta 10+46.65

Course from CLVBCL3 to CLVBCL5 N 13° 21' 48.08" E Dist 156.12

Point CLVBCL5 X 2,558,738.37 Y 7,083,899.45 Sta 12+02.77

Course from CLVBCL5 to CLVBCL7 N 13° 21' 48.08" E Dist 25.95

Point CLVBCL7 X 2,558,744.37 Y 7,083,924.69 Sta 12+28.72

Course from CLVBCL7 to CLVBCL8 N 49° 04' 22.88" E Dist 25.52

Point CLVBCL8 X 2,558,763.65 Y 7,083,941.41 Sta 12+54.23

****
Ending chain CLVBCL

PROP. ℄ CULVERT C "CLVCCL"

<• 3 DESCRIBE CHAIN CLVCCL

Chain CLVCCL contains:
CLVCCLI CLVCCL3 CLVCCL5 CLVCCL6

Beginning chain CLVCCL description
Feature: Geom_Centerline
****

Point CLVCCLI X 2,557,862.04 Y 7,083,095.30 Sta 10+00.00

Course from CLVCCLI to CLVCCL3 S 53° 57' 29.84" E Dist 10.75

Point CLVCCL3 X 2,557,870.74 Y 7,083,088.97 Sta 10+10.75

Course from CLVCCL3 to CLVCCL5 N 87° 28' 27.02" E Dist 76.93

Point CLVCCL5 X 2,557,947.59 Y 7,083,092.36 Sta 10+87.69

Course from CLVCCL5 to CLVCCL6 N 83° 38' 04.28" E Dist 43.66

Point CLVCCL6 X 2,557,990.99 Y 7,083,097.20 Sta 11+31.35

****
Ending chain CLVCCL description

****

PROP. ℄ EDGEFIELD LANE "EDGEFD"

<• 7 DESCRIBE CHAIN EDGEFD

Chain EDGEFD contains:
EDGEFDI EDGEFD3 EDGEFD4

Beginning chain EDGEFD description
Feature: Geom_Driveway_Centerline
****

Point EDGEFDI X 2,557,095.30 Y 7,084,203.10 Sta 10+00.00

Course from EDGEFDI to EDGEFD3 N 5° 11' 38.43" E Dist 122.15

Point EDGEFD3 X 2,557,106.36 Y 7,084,324.75 Sta 11+22.15

Course from EDGEFD3 to EDGEFD4 N 5° 11' 38.43" E Dist 127.85

Point EDGEFD4 X 2,557,117.93 Y 7,084,452.08 Sta 12+50.00

****
Ending chain EDGEFD description

PROP. ℄ CEDAR BEND TRAIL "CEDARTR"

<• 6 DESCRIBE CHAIN CEDARTR

Chain CEDARTR contains:
CEDARTRI CEDARTR3 CEDARTR5 CEDARTR6

Beginning chain CEDARTR description
Feature: Geom_Driveway_Centerline
****

Point CEDARTRI X 2,558,236.69 Y 7,083,888.60 Sta 10+00.00

Course from CEDARTRI to CEDARTR3 N 9° 09' 30.95" E Dist 168.47

Point CEDARTR3 X 2,558,263.50 Y 7,084,054.93 Sta 11+68.47

Course from CEDARTR3 to CEDARTR5 N 9° 09' 30.95" E Dist 46.06

Point CEDARTR5 X 2,558,270.83 Y 7,084,100.40 Sta 12+14.53

Course from CEDARTR5 to CEDARTR6 N 9° 09' 30.95" E Dist 35.47

Point CEDARTR6 X 2,558,276.48 Y 7,084,135.42 Sta 12+50.00

****
Ending chain CEDARTR description

PROP. ℄ LOST VALLEY DRIVE "LOSTVD"

<• 9 DESCRIBE CHAIN LOSTVD

Chain LOSTVD contains:
LOSTVDI LOSTVD3 LOSTVD4

Beginning chain LOSTVD description
Feature: Geom_Driveway_Centerline
****

Point LOSTVDI X 2,559,277.81 Y 7,083,947.00 Sta 10+00.00

Course from LOSTVDI to LOSTVD3 N 7° 47' 25.75" E Dist 83.58

Point LOSTVD3 X 2,559,289.14 Y 7,084,029.81 Sta 10+83.58

Course from LOSTVD3 to LOSTVD4 N 7° 47' 25.75" E Dist 166.42

Point LOSTVD4 X 2,559,311.70 Y 7,084,194.69 Sta 12+50.00

****
Ending chain LOSTVD description

STATE OF TEXAS
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Ibrahim El Saad, P.E. 11-7-22
Signature of Registrant & Date

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FM 1378
AT FM 3286
HORIZONTAL ALIGNMENT DATA

SHEET 2 OF 5

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RI	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS RI	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK SM/IE	TEXAS	DAL	COLLIN	114
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

DATE: 8/26/2022 TIME: 1:37:18 PM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0481885\Horizontal Alignment Data Sheet.dgn

PROP. ℄ HOB HILL LANE "HOBLN"

<• 8 DESCRIBE CHAIN HOBLN

Chain HOBLN contains:
HOBLN1 HOBLN3 HOBLN4

Beginning chain HOBLN description
Feature: Geom_Driveway_Centerline
****

Point HOBLN1 X 2,559,361.40 Y 7,083,986.54 Sta 10+00.00

Course from HOBLN1 to HOBLN3 S 37° 21' 39.13" E Dist 155.38

Point HOBLN3 X 2,559,455.69 Y 7,083,863.04 Sta 11+55.38

Course from HOBLN3 to HOBLN4 S 37° 21' 39.13" E Dist 94.62

Point HOBLN4 X 2,559,513.11 Y 7,083,787.84 Sta 12+50.00

****
Ending chain HOBLN description

PROP. ℄ WINDING CREEK "WINDCK"

<• 1 DESCRIBE CHAIN WINDCK

Chain WINDCK contains:
WINDCK1 WINDCK3 WINDCK5 WINDCK6

Beginning chain WINDCK description
Feature: Geom_Driveway_Centerline
****

Point WINDCK1 X 2,560,021.04 Y 7,084,386.08 Sta 0+00.00

Course from WINDCK1 to WINDCK3 N 31° 32' 21.94" W Dist 21.11

Point WINDCK3 X 2,560,010.00 Y 7,084,404.07 Sta 0+21.11

Course from WINDCK3 to WINDCK5 N 31° 32' 21.94" W Dist 39.67

Point WINDCK5 X 2,559,989.25 Y 7,084,437.88 Sta 0+60.79

Course from WINDCK5 to WINDCK6 N 31° 32' 21.94" W Dist 22.77

Point WINDCK6 X 2,559,977.34 Y 7,084,457.29 Sta 0+83.56

****
Ending chain WINDCK description

PROP. ℄ ARTHUR CT "ARTHURCT"

<• 4 DESCRIBE CHAIN ARTHURCT

Chain ARTHURCT contains:
ARTHURCT1 ARTHURCT3 ARTHURCT5 ARTHURCT6

Beginning chain ARTHURCT description
Feature: Geom_Driveway_Centerline
****

Point ARTHURCT1 X 2,557,924.79 Y 7,082,641.16 Sta 10+00.00

Course from ARTHURCT1 to ARTHURCT3 N 89° 10' 56.48" E Dist 6.88

Point ARTHURCT3 X 2,557,931.67 Y 7,082,641.26 Sta 10+06.88

Course from ARTHURCT3 to ARTHURCT5 N 89° 10' 56.48" E Dist 36.46

Point ARTHURCT5 X 2,557,968.13 Y 7,082,641.78 Sta 10+43.34

Course from ARTHURCT5 to ARTHURCT6 N 89° 10' 56.48" E Dist 56.92

Point ARTHURCT6 X 2,558,025.04 Y 7,082,642.59 Sta 11+00.26

****
Ending chain ARTHURCT description

PROP. ℄ PRADO VERDE DIRVE "PRADO"

<• 10 DESCRIBE CHAIN PRADO

Chain PRADO contains:
PRADO1 PRADO3 PRADO5 PRADO6

Beginning chain PRADO description
Feature: Geom_Driveway_Centerline
****

Point PRADO1 X 2,557,907.87 Y 7,083,199.04 Sta 10+00.00

Course from PRADO1 to PRADO3 S 87° 27' 42.58" W Dist 113.16

Point PRADO3 X 2,557,794.82 Y 7,083,194.03 Sta 11+13.16

Course from PRADO3 to PRADO5 S 87° 27' 42.58" W Dist 60.17

Point PRADO5 X 2,557,734.71 Y 7,083,191.36 Sta 11+73.34

Course from PRADO5 to PRADO6 S 87° 27' 42.58" W Dist 76.66

Point PRADO6 X 2,557,658.12 Y 7,083,187.97 Sta 12+50.00

****
Ending chain PRADO description

PROP. ℄ CAREY LANE "CAREYLN"

<• 5 DESCRIBE CHAIN CAREYLN

Chain CAREYLN contains:
CAREYLN1 CAREYLN3 CAREYLN4

Beginning chain CAREYLN description
Feature: Geom_Driveway_Centerline
****

Point CAREYLN1 X 2,557,916.42 Y 7,083,005.91 Sta 10+00.00

Course from CAREYLN1 to CAREYLN3 S 89° 24' 20.53" E Dist 123.76

Point CAREYLN3 X 2,558,040.17 Y 7,083,004.62 Sta 11+23.76

Course from CAREYLN3 to CAREYLN4 S 89° 24' 20.53" E Dist 126.24

Point CAREYLN4 X 2,558,166.40 Y 7,083,003.31 Sta 12+50.00

****
Ending chain CAREYLN description

PROP. ℄ WB DRIVEWAY 1 "WBD1"

<• 8 DESCRIBE CHAIN WBD1

Chain WBD1 contains:
WBD11 WBD12

Beginning chain WBD1 description
Feature: Geom_Driveway_Centerline
****

Point WBD11 X 2,557,045.93 Y 7,084,206.77 Sta 10+00.00

Course from WBD11 to WBD12 S 2° 57' 41.73" W Dist 124.38

Point WBD12 X 2,557,039.50 Y 7,084,082.56 Sta 11+24.38

****
Ending chain WBD1 description

PROP. ℄ WB DRIVEWAY 2 "WBD2"

<• 3 DESCRIBE CHAIN WBD2

Chain WBD2 contains:
WBD21 WBD22

Beginning chain WBD2 description
Feature: Geom_Driveway_Centerline
****

Point WBD21 X 2,557,097.50 Y 7,084,202.90 Sta 10+00.00

Course from WBD21 to WBD22 S 5° 16' 42.61" W Dist 71.42

Point WBD22 X 2,557,090.93 Y 7,084,131.79 Sta 10+71.42

****
Ending chain WBD2 description

PROP. ℄ WB DRIVEWAY 3 "WBD3"

<• 1 DESCRIBE CHAIN WBD3

Chain WBD3 contains:
WBD31 WBD32

Beginning chain WBD3 description
Feature: Geom_Driveway_Centerline
****

Point WBD31 X 2,557,386.91 Y 7,084,147.08 Sta 10+00.00

Course from WBD31 to WBD32 S 16° 33' 18.45" W Dist 124.48

Point WBD32 X 2,557,351.44 Y 7,084,027.76 Sta 11+24.48

****
Ending chain WBD3 description

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PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 11-7-22
Signature of Registrant & Date

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FM 1378
AT FM 3286

HORIZONTAL ALIGNMENT DATA

SHEET 3 OF 5

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RI	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS RI	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK SM/IE	TEXAS	DAL	COLLIN	115
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

DATE: 8/26/2022 TIME: 1:37:24 PM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0481885\Horizontal Alignment Data Sheet.dgn

PROP. ℄ WB DRIVEWAY 4 "WBD4"

<* 1 DESCRIBE CHAIN WBD4

Chain WBD4 contains:
WBD41 WBD42

Beginning chain WBD4 description
Feature: Geom_Driveway_Centerline
****

Point WBD41 X 2,557,567.02 Y 7,084,092.32 Sta 10+00.00

Course from WBD41 to WBD42 N 16° 55' 12.95" E Dist 108.94

Point WBD42 X 2,557,598.72 Y 7,084,196.55 Sta 11+08.94

****
Ending chain WBD4 description

PROP. ℄ NB DRIVEWAY 3 "NBD3"

<* 11 DESCRIBE CHAIN NBD3

Chain NBD3 contains:
NBD31 NBD33 NBD35 NBD36

Beginning chain NBD3 description
Feature: Geom_Driveway_Centerline
****

Point NBD31 X 2,557,881.10 Y 7,083,802.99 Sta 10+00.00

Course from NBD31 to NBD33 N 87° 27' 42.58" E Dist 47.11

Point NBD33 X 2,557,928.16 Y 7,083,805.08 Sta 10+47.11

Course from NBD33 to NBD35 N 87° 27' 42.58" E Dist 31.66

Point NBD35 X 2,557,959.79 Y 7,083,806.48 Sta 10+78.77

Course from NBD35 to NBD36 N 87° 27' 42.58" E Dist 17.61

Point NBD36 X 2,557,977.39 Y 7,083,807.26 Sta 10+96.38

****
Ending chain NBD3 description

PROP. ℄ NB DRIVEWAY 2 "NBD2"

<* 10 DESCRIBE CHAIN NBD2

Chain NBD2 contains:
NBD21 NBD23 NBD25 NBD26

Beginning chain NBD2 description
Feature: Geom_Driveway_Centerline
****

Point NBD21 X 2,557,886.92 Y 7,083,671.71 Sta 10+00.00

Course from NBD21 to NBD23 N 87° 27' 42.58" E Dist 49.17

Point NBD23 X 2,557,936.04 Y 7,083,673.88 Sta 10+49.17

Course from NBD23 to NBD25 N 87° 27' 42.58" E Dist 18.83

Point NBD25 X 2,557,954.86 Y 7,083,674.72 Sta 10+68.00

Course from NBD25 to NBD26 N 87° 27' 42.58" E Dist 19.40

Point NBD26 X 2,557,974.24 Y 7,083,675.58 Sta 10+87.40

****
Ending chain NBD2 description

PROP. ℄ NB DRIVEWAY 4 "NBD4"

<* 1 DESCRIBE CHAIN NBD4

Chain NBD4 contains:
NBD41 NBD42

Beginning chain NBD4 description
Feature: Geom_Driveway_Centerline
****

Point NBD41 X 2,557,900.10 Y 7,083,374.43 Sta 10+00.00

Course from NBD41 to NBD42 N 87° 27' 42.58" E Dist 75.44

Point NBD42 X 2,557,975.47 Y 7,083,377.77 Sta 10+75.44

****
Ending chain NBD4 description

PROP. ℄ NB DRIVEWAY 1 "NBD1"

<* 1 DESCRIBE CHAIN NBD1

Chain NBD1 contains:
NBD11 NBD12

Beginning chain NBD1 description
Feature: Geom_Driveway_Centerline
****

Point NBD11 X 2,557,903.32 Y 7,083,301.67 Sta 10+00.00

Course from NBD11 to NBD12 N 87° 27' 42.58" E Dist 72.42

Point NBD12 X 2,557,975.67 Y 7,083,304.88 Sta 10+72.42

****
Ending chain NBD1 description

PROP. ℄ SB DRIVEWAY 6 "SBD6"

<* 1 DESCRIBE CHAIN SBD6

Chain SBD6 contains:
D6 D62

Beginning chain SBD6 description
Feature: Geom_Driveway_Centerline

****

Point D6 X 2,557,892.06 Y 7,083,555.87 Sta 10+00.00

Course from D6 to D62 S 87° 27' 42.58" W Dist 97.35

Point D62 X 2,557,794.80 Y 7,083,551.56 Sta 10+97.35

****
Ending chain SBD6 description

PROP. ℄ SB DRIVEWAY 5 "SBD5"

<* 9 DESCRIBE CHAIN SBD5

Chain SBD5 contains:
SBD51 SBD53 SBD55 SBD56

Beginning chain SBD5 description
Feature: Geom_Driveway_Centerline
****

Point SBD51 X 2,557,922.67 Y 7,082,759.31 Sta 10+00.00

Course from SBD51 to SBD53 S 88° 56' 20.05" W Dist 31.69

Point SBD53 X 2,557,890.99 Y 7,082,758.72 Sta 10+31.69

Course from SBD53 to SBD55 S 88° 56' 20.05" W Dist 12.22

Point SBD55 X 2,557,878.77 Y 7,082,758.49 Sta 10+43.91

Course from SBD55 to SBD56 S 88° 56' 20.05" W Dist 7.31

Point SBD56 X 2,557,871.46 Y 7,082,758.36 Sta 10+51.22

****
Ending chain SBD5 description

PROP. ℄ SB DRIVEWAY 4 "SBD4"

<* 8 DESCRIBE CHAIN SBD4

Chain SBD4 contains:
SBD41 SBD43 SBD45 SBD47 SBD48

Beginning chain SBD4 description
Feature: Geom_Driveway_Centerline
****

Point SBD41 X 2,557,923.80 Y 7,082,700.77 Sta 10+00.00

Course from SBD41 to SBD43 S 88° 53' 51.76" W Dist 26.29

Point SBD43 X 2,557,897.51 Y 7,082,700.26 Sta 10+26.29

Course from SBD43 to SBD45 S 88° 53' 51.76" W Dist 6.28

Point SBD45 X 2,557,891.24 Y 7,082,700.14 Sta 10+32.56

Course from SBD45 to SBD47 S 88° 53' 51.76" W Dist 1.21

Point SBD47 X 2,557,890.03 Y 7,082,700.12 Sta 10+33.77

Course from SBD47 to SBD48 S 88° 53' 51.76" W Dist 30.92

Point SBD48 X 2,557,859.11 Y 7,082,699.52 Sta 10+64.70

****
Ending chain SBD4 description

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 11-7-22
Signature of Registrant & Date

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FM 1378
AT FM 3286

HORIZONTAL ALIGNMENT DATA

SHEET 4 OF 5

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RI	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS: RI	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK: SM/IE	TEXAS	DAL	COLLIN	116
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

DATE: 8/26/2022 TIME: 1:37:36 PM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0481885\Horizontal Alignment Data Sheet.dgn

PROP. ℄ SB DRIVEWAY 3 "SBD3"

```
<*    7   DESCRIBE CHAIN SBD3

Chain SBD3 contains:
  SBD31 SBD33 SBD34

Beginning chain SBD3 description
Feature: Geom_Driveway_Centerline
*****************************************************************

Point SBD31      X      2,557,924.59 Y      7,082,655.17 Sta      10+00.00

Course from SBD31 to SBD33 S 89°06' 55.57" W  Dist 26.51

Point SBD33            X      2,557,898.08 Y      7,082,654.76 Sta      10+26.51

Course from SBD33 to SBD34 S 89°06' 55.57" W  Dist 43.48

Point SBD34            X      2,557,854.60 Y      7,082,654.09 Sta      10+69.99

*****************************************************************
Ending chain SBD3 description
```

PROP. ℄ SB DRIVEWAY 2 "SBD2"

```
<*    6   DESCRIBE CHAIN SBD2

Chain SBD2 contains:
  SBD21 SBD23 SBD25 SBD26

Beginning chain SBD2 description
Feature: Geom_Driveway_Centerline
*****************************************************************

Point SBD21      X      2,557,925.64 Y      7,082,561.26 Sta      10+00.00

Course from SBD21 to SBD23 S 89°36' 32.77" W  Dist 23.56

Point SBD23            X      2,557,902.08 Y      7,082,561.10 Sta      10+23.56

Course from SBD23 to SBD25 S 89°36' 32.77" W  Dist 13.98

Point SBD25            X      2,557,888.10 Y      7,082,561.00 Sta      10+37.54

Course from SBD25 to SBD26 S 89°36' 32.77" W  Dist 20.36

Point SBD26            X      2,557,867.74 Y      7,082,560.87 Sta      10+57.91

*****************************************************************
Ending chain SBD2 description
```

PROP. ℄ SB DRIVEWAY 1 "SBD1"

```
<*    5   DESCRIBE CHAIN SBD1

Chain SBD1 contains:
  SBD11 SBD13 SBD14

Beginning chain SBD1 description
Feature: Geom_Driveway_Centerline
*****************************************************************

Point SBD11      X      2,557,926.36 Y      7,082,456.22 Sta      10+00.00

Course from SBD11 to SBD13 S 89°36' 32.77" W  Dist 52.36

Point SBD13            X      2,557,874.00 Y      7,082,455.87 Sta      10+52.36

Course from SBD13 to SBD14 S 89°36' 32.77" W  Dist 19.62

Point SBD14            X      2,557,854.38 Y      7,082,455.73 Sta      10+71.98

*****************************************************************
Ending chain SBD1 description
```

PROP. ℄ EB DRIVEWAY 1 "EBD1"

```
<*    2   DESCRIBE CHAIN EBD1

Chain EBD1 contains:
  EBD11 EBD13 EBD15 EBD16

Beginning chain EBD1 description
Feature: Geom_Driveway_Centerline
*****************************************************************

Point EBD11      X      2,558,074.70 Y      7,083,937.88 Sta      10+00.00

Course from EBD11 to EBD13 S 16°55' 12.95" W  Dist 87.02

Point EBD13            X      2,558,049.37 Y      7,083,854.62 Sta      10+87.02

Course from EBD13 to EBD15 S 16°55' 12.95" W  Dist 26.81

Point EBD15            X      2,558,041.57 Y      7,083,828.98 Sta      11+13.83

Course from EBD15 to EBD16 S 16°55' 12.95" W  Dist 29.59

Point EBD16            X      2,558,032.96 Y      7,083,800.67 Sta      11+43.42

*****************************************************************
Ending chain EBD1 description
```

PROP. ℄ EB DRIVEWAY 2 "EBD2"

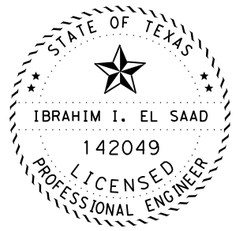
```
<*    1   DESCRIBE CHAIN EBD2

Chain EBD2 contains:
  EBD21 EBD22

Beginning chain EBD2 description
Feature: Geom_Driveway_Centerline
*****************************************************************

Point EBD21      X      2,558,628.59 Y      7,083,822.90 Sta      10+00.00

Course from EBD21 to EBD22 S 1°54' 23.58" W  Dist 191.84

Point EBD22            X      2,558,622.21 Y      7,083,631.17 Sta      11+91.84

*****************************************************************
Ending chain EBD2 description
```

PROP. ℄ EB DRIVEWAY 3 "EBD3"

```
<*    3   DESCRIBE CHAIN EBD3

Chain EBD3 contains:
  EBD31 EBD33 EBD35 EBD36

Beginning chain EBD3 description
Feature: Geom_Driveway_Centerline
*****************************************************************

Point EBD31      X      2,558,883.03 Y      7,083,836.08 Sta       0+00.00

Course from EBD31 to EBD33 S 7°50' 13.85" E  Dist 26.71

Point EBD33            X      2,558,886.67 Y      7,083,809.62 Sta       0+26.71

Course from EBD33 to EBD35 S 7°50' 13.86" E  Dist 15.35

Point EBD35            X      2,558,888.77 Y      7,083,794.42 Sta       0+42.05

Course from EBD35 to EBD36 S 7°50' 13.85" E  Dist 11.53

Point EBD36            X      2,558,890.34 Y      7,083,783.00 Sta       0+53.58

*****************************************************************
Ending chain EBD3 description
```

PROP. ℄ EB DRIVEWAY 4 "EBD4"

```
<*    4   DESCRIBE CHAIN EBD4

Chain EBD4 contains:
  EBD41 EBD43 EBD45 EBD46

Beginning chain EBD4 description
Feature: Geom_Driveway_Centerline
*****************************************************************

Point EBD41      X      2,559,211.55 Y      7,083,919.98 Sta      10+00.00

Course from EBD41 to EBD43 S 5°49' 17.92" E  Dist 30.87

Point EBD43            X      2,559,214.68 Y      7,083,889.27 Sta      10+30.87

Course from EBD43 to EBD45 S 5°49' 17.92" E  Dist 20.73

Point EBD45            X      2,559,216.78 Y      7,083,868.65 Sta      10+51.60

Course from EBD45 to EBD46 S 5°49' 17.92" E  Dist 23.91

Point EBD46            X      2,559,219.21 Y      7,083,844.86 Sta      10+75.51

*****************************************************************
Ending chain EBD4 description
```



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Signature of Registrant & Date

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FM 1378
AT FM 3286

HORIZONTAL ALIGNMENT DATA

SHEET 5 OF 5

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RI	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS RI	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK SM/IE	TEXAS	DAL	COLLIN	117
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

DATE: 8/26/2022 TIME: 1:37:41 PM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0481885\Horizontal Alignment Data Sheet.dgn

CORE NAME	APPROXIMATE	Latitude	Longitude	Asphalt Thickness	Concrete Thickness	Base Thickness	PI
D-1	24+09	N33.0842318°	W96.5762221°	7.00		6.00	
D-2	25+61	N33.0844296°	W96.5756244°	6.25	3.50	4.00	
E-3, P-3	26+54	N33.0842822°	W96.5753668°	12.25		3.00	35.00
D-3	36+72	N33.0845482°	W96.5722031°	14.25		2.00	
D-4	37+40	N33.0843902°	W96.5718673°	4.50		1.25	
E-4, P-4	39+11	N33.0847079°	W96.5714301°	4.00		3.00	52.00
D-6	109+00	N33.0841066°	W96.5766102°	7.25		0.75	
E-5, P-5	108+43	N33.0839476°	W96.5767665°	4.00		1.25	37.00
D-7	102+85	N33.0824094°	W96.5768756°	4.50		3.50	
D-8	100+80	N33.0818513°	W96.5766234°	10.00		6.00	
E-6, P-6	98+47	N33.0812117°	W96.5767149°	15.20		2.50	28.00
D-9	97+31	N33.0808908°	W96.5766315°		7.50	5.00	
B-6	19+07	N33.086467°	W96.57761°	6.00		10.00	30.00

DATE: 11/2/2022 TIME: 8:30:50 AM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0647285\Cores..dgn

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 11-7-22
Signature of Registrant & Date

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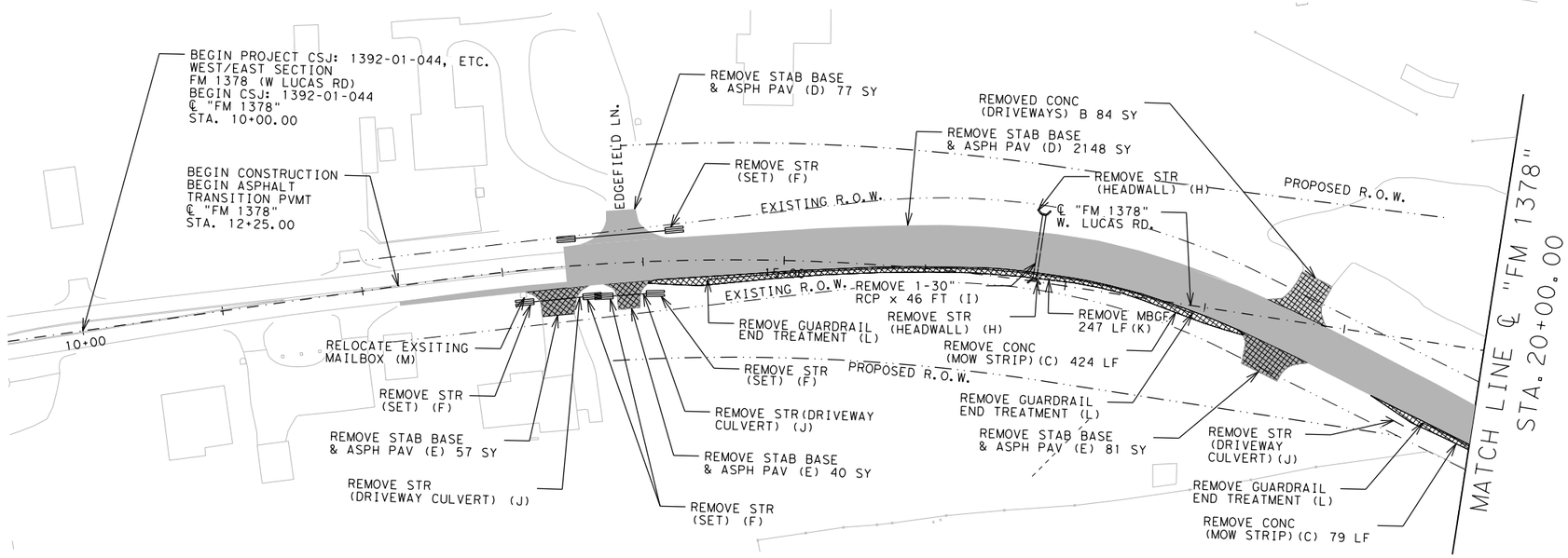
FM 1378
AT FM 3286

EXISTING PAVEMENT CORES

SCALE: 1"=100' SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK JI	TEXAS	DAL	COLLIN	118
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	



0 50 100

LEGEND

- CONCRETE PAVEMENT
- CONCRETE DRIVEWAYS
- 5"-8" ASPHALT PAV
- 4"-22" ASPHALT PAV
- CONCRETE MOW STRIP

NOTE:

SEE TRAFFIC CONTROL PLAN FOR EXISTING PAVEMENT MARKING REMOVAL QUANTITY & LOCATIONS.

SEE SIGNING LAYOUT FOR SIGNS REMOVAL.

SEE CORE BORING SHEETS FOR ADDITIONAL PAVEMENT INFORMATION.

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 2-20-23
Signature of Registrant & Date

QUANTITIES (THIS SHEET) (CSJ: 1392-01-044)

A	B	C	D	E	F	H	I	J	K	L	M
104-6001	104-6017	104-6054	105-6049	105-6092	496-6004	496-6006	496-6007	496-6050	542-6001	544-6003	560-6025
REMOVING CONC (PAV)	REMOVING CONC (DRIVEWAYS)	REMOVING CONCRETE (MOW STRIP)	REMOVING STAB BASE & ASPH PAV (4"-22")	REMOVING STAB BASE & ASPH PAV (5"-8")	REMOV STR (SET)	REMOV STR (HEADWALL)	REMOV STR (PIPE)	REMOV STR (DRIVEWAY CULVERT)	REMOVE METAL BEAM GUARD FENCE	GUARDRAIL END TREATMENT (REMOVE)	RELOCATE EXISTING MAILBOX
SY	SY	LF	SY	SY	EA	EA	LF	EA	LF	EA	EA
	84	503	2225	178	5	2	46	3	247	3	1

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AT FM 3286

REMOVAL LAYOUT

SCALE: 1"=100' SHEET 1 OF 4

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RRP	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
RRP	TEXAS	DAL	COLLIN	119
CHECK JI	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	

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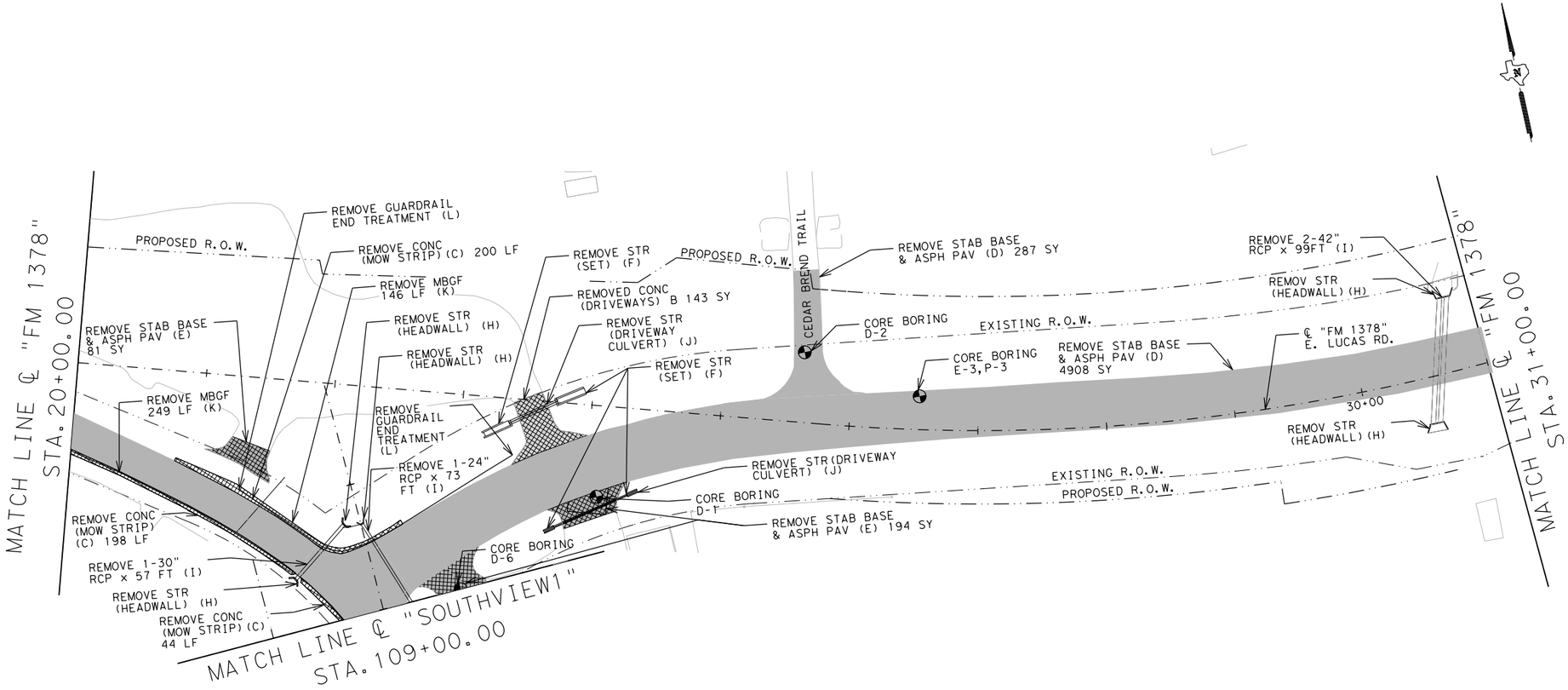

0 50 100

LEGEND

- CONCRETE PAVEMENT
- CONCRETE DRIVEWAYS
- 5"-8" ASPHALT PAV
- 4"-22" ASPHALT PAV
- CONCRETE MOW STRIP

NOTE:

SEE TRAFFIC CONTROL PLAN FOR EXISTING PAVEMENT MARKING REMOVAL QUANTITY & LOCATIONS.

SEE SIGNING LAYOUT FOR SIGNS REMOVAL.

SEE CORE BORING SHEETS FOR ADDITIONAL PAVEMENT INFORMATION.

QUANTITIES (THIS SHEET) (CSJ: 1392-01-044)

A	B	C	D	E	F	H	I	J	K	L	M
104-6001	104-6017	104-6054	105-6049	105-6092	496-6004	496-6006	496-6007	496-6050	542-6001	544-6003	560-6025
REMOVING CONC (PAV)	REMOVING CONC (DRIVEWAYS)	REMOVING CONCRETE (MOW STRIP)	REMOVING STAB BASE & ASPH PAV (4"-22")	REMOVING STAB BASE & ASPH PAV (5"-8")	REMOV STR (SET)	REMOV STR (HEADWALL)	REMOV STR (PIPE)	REMOV STR (DRIVEWAY CULVERT)	REMOVE METAL BEAM GUARD FENCE	GUARDRAIL END TREATMENT (REMOVE)	RELOCATE EXISTING MAILBOX
SY	SY	LF	SY	SY	EA	EA	LF	EA	LF	EA	EA
		417	978	81		3	130		319	1	

QUANTITIES (THIS SHEET) (CSJ: 3476-02-013)

A	B	C	D	E	F	H	I	J	K	L	M
104-6001	104-6017	104-6054	105-6049	105-6092	496-6004	496-6006	496-6007	496-6050	542-6001	544-6003	560-6025
REMOVING CONC (PAV)	REMOVING CONC (DRIVEWAYS)	REMOVING CONCRETE (MOW STRIP)	REMOVING STAB BASE & ASPH PAV (4"-22")	REMOVING STAB BASE & ASPH PAV (5"-8")	REMOV STR (SET)	REMOV STR (HEADWALL)	REMOV STR (PIPE)	REMOV STR (DRIVEWAY CULVERT)	REMOVE METAL BEAM GUARD FENCE	GUARDRAIL END TREATMENT (REMOVE)	RELOCATE EXISTING MAILBOX
SY	SY	LF	SY	SY	EA	EA	LF	EA	LF	EA	EA
	143	25	4217	194	4	2	198	2	76	1	

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 2-28-23
Signature of Registrant & Date

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AT FM 3286

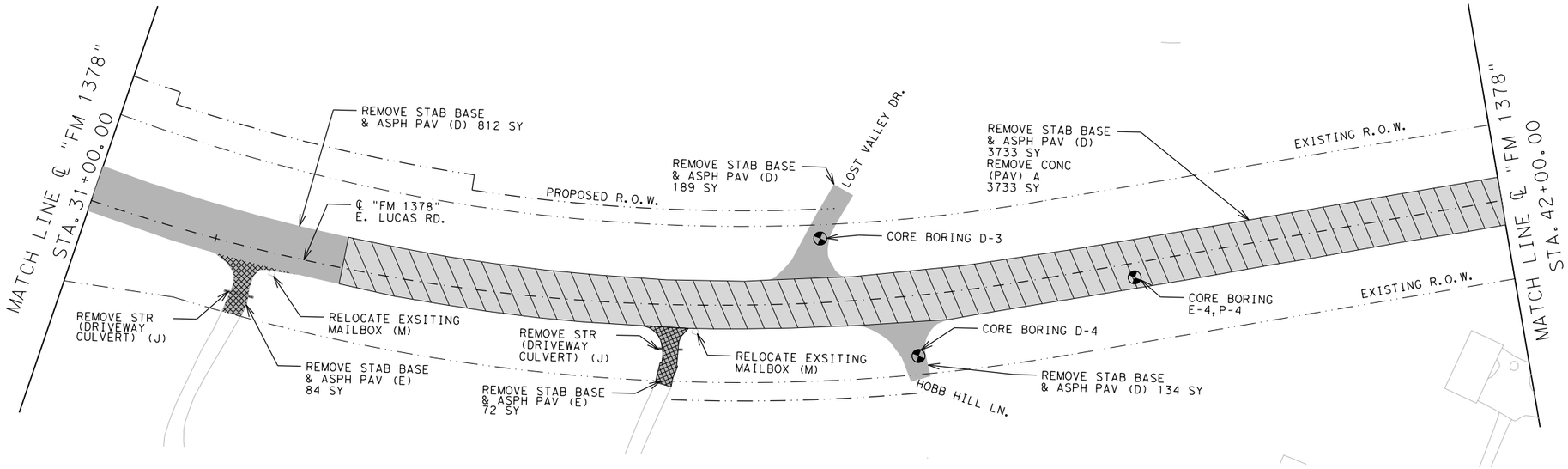
REMOVAL LAYOUT

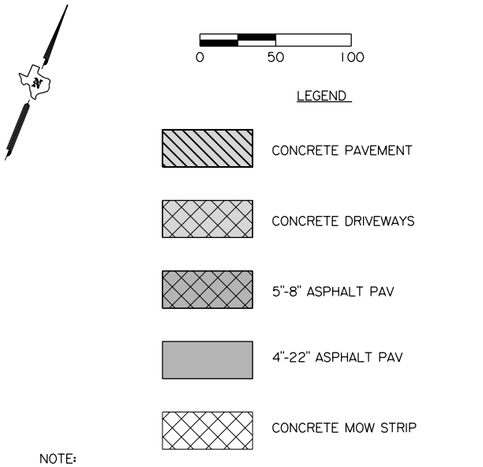
SCALE: 1"=100'

SHEET 2 OF 4

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RRP	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
RRP	TEXAS	DAL	COLLIN	120
CHECK	CONTROL	SECTION	JOB	
JI	1392	01	044, ETC.	
CHECK				

DATE: 2/28/2023 TIME: 1:13:52 PM FILE: c:\txdot\pw*online1\txdot5\ibrahim.elsaad\d0647285\Removal Sheets FM1378.dgn



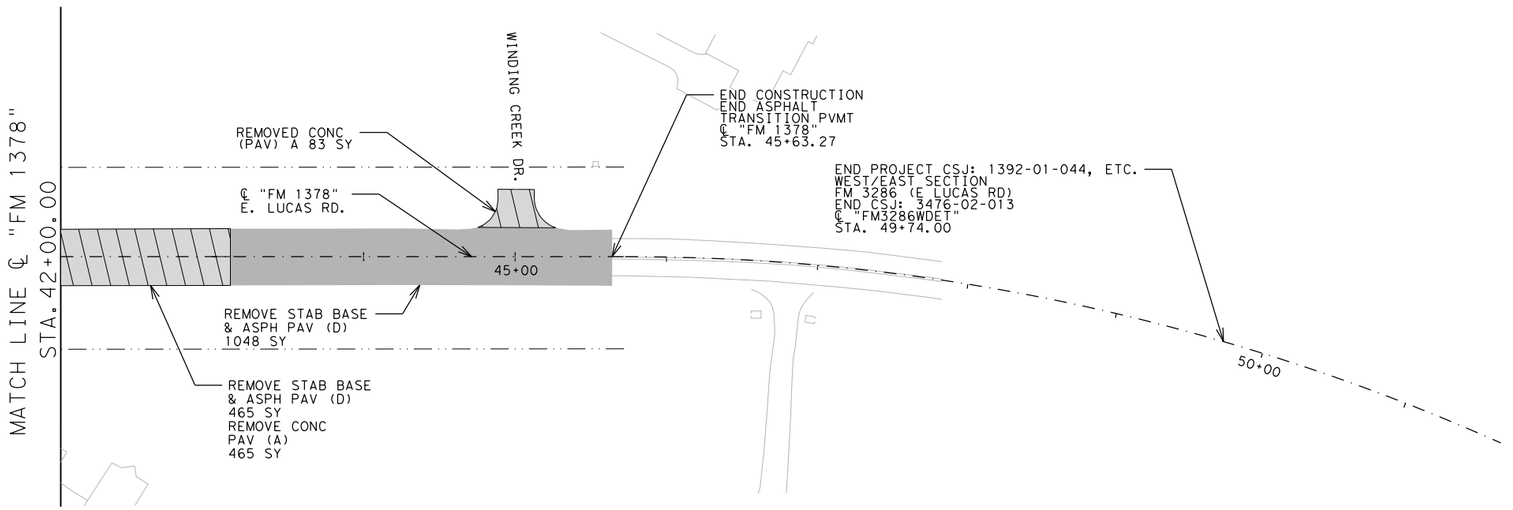


NOTE:

SEE TRAFFIC CONTROL PLAN FOR EXISTING PAVEMENT MARKING REMOVAL QUANTITY & LOCATIONS.

SEE SIGNING LAYOUT FOR SIGNS REMOVAL.

SEE CORE BORING SHEETS FOR ADDITIONAL PAVEMENT INFORMATION.



QUANTITIES (THIS SHEET) (CSJ: 3476-02-013)

A	B	C	D	E	F	H	I	J	K	L	M
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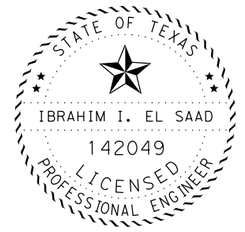
REMOVING CONC (PAV)	REMOVING CONC (DRIVEWAYS)	REMOVING CONCRETE (MOW STRIP)	REMOVING STAB BASE & ASPH PAV (4"-22")	REMOVING STAB BASE & ASPH PAV (5"-8")	REMOV STR (SET)	REMOV STR (HEADWALL)	REMOV STR (PIPE)	REMOV STR (DRIVEWAY CULVERT)	REMOVE METAL BEAM GUARD FENCE	GUARDRAIL END TREATMENT (REMOVE)	RELOCATE EXISTING MAILBOX
SY	SY	LF	SY	SY	EA	EA	LF	EA	LF	EA	EA
4281			6381	156				2			2



Ibrahim El Saad, P.E. 2-20-23
Signature of Registrant & Date

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FM 1378
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REMOVAL LAYOUT

SCALE: 1"=100' SHEET 3 OF 4

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RRP	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS RRP	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK JI	TEXAS	DAL	COLLIN	121
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

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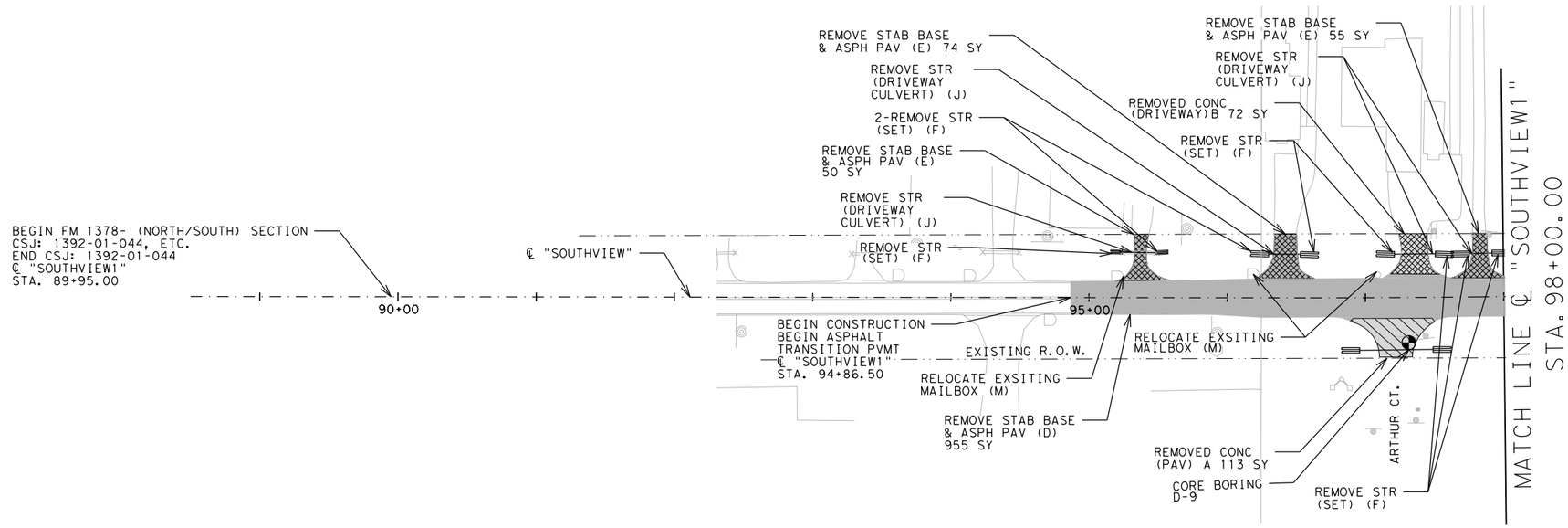
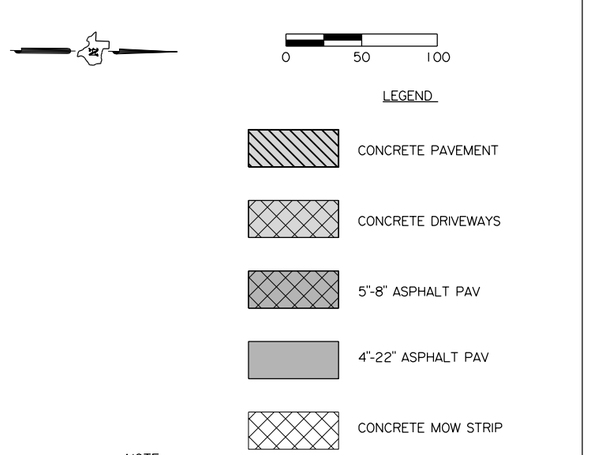


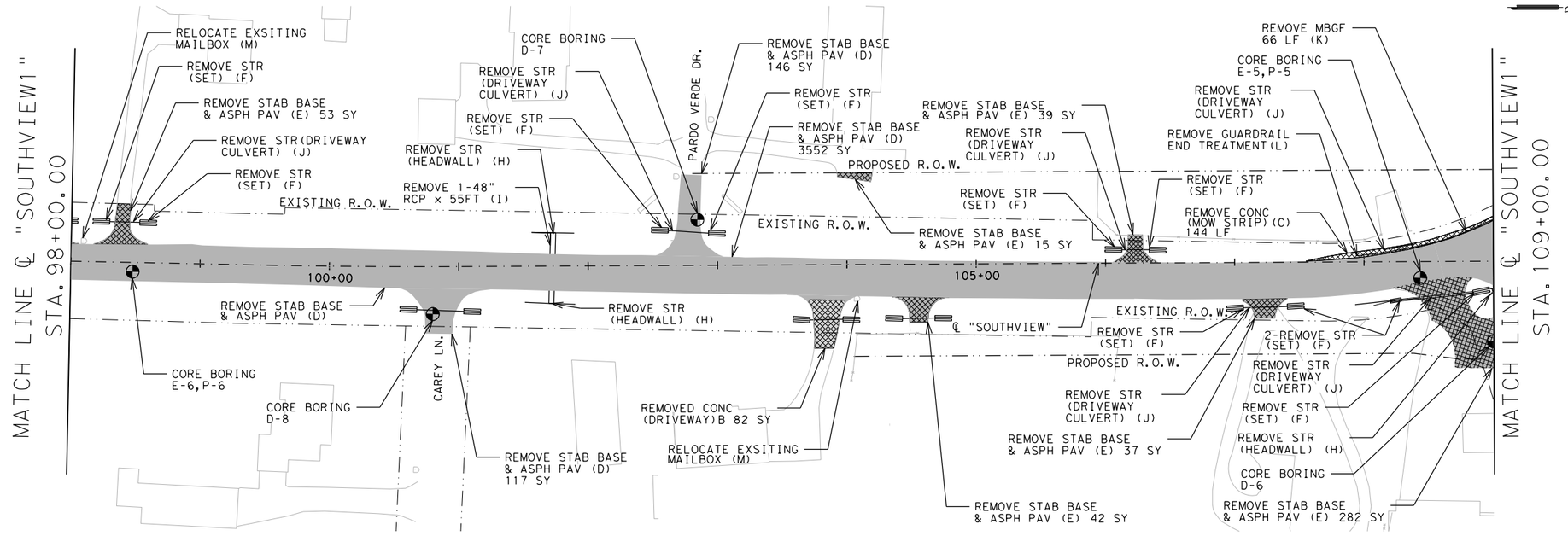


NOTE:

SEE TRAFFIC CONTROL PLAN FOR EXISTING PAVEMENT MARKING REMOVAL QUANTITY & LOCATIONS.

SEE SIGNING LAYOUT FOR SIGNS REMOVAL.

SEE CORE BORING SHEETS FOR ADDITIONAL PAVEMENT INFORMATION.



QUANTITIES (THIS SHEET) (CSJ: 1392-01-044)

A	B	C	D	E	F	H	I	J	K	L	M
104-6001	104-6017	104-6054	105-6049	105-6092	496-6004	496-6006	496-6007	496-6050	542-6001	544-6003	560-6025
REMOVING CONC (PAV)	REMOVING CONC (DRIVEWAYS)	REMOVING CONCRETE (MOW STRIP)	REMOVING STAB BASE & ASPH PAV (4"-22")	REMOVING STAB BASE & ASPH PAV (5"-8")	REMOV STR (SET)	REMOV STR (HEADWALL)	REMOV STR (PIPE)	REMOV STR (DRIVEWAY CULVERT)	REMOVE METAL BEAM GUARD FENCE	GUARDRAIL END TREATMENT (REMOVE)	RELOCATE EXISTING MAILBOX
SY	SY	LF	SY	SY	EA	EA	LF	EA	LF	EA	EA
113	154	144	4770	648	18	3	55	9	66	1	5

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 2-20-23
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FM 1378
AT FM 3286

REMOVAL LAYOUT

SCALE: 1"=100' SHEET 4 OF 4

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RRP	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
RRP	TEXAS	DAL	COLLIN	122
CHECK	CONTROL	SECTION	JOB	
JI	1392	01	044, ETC.	
CHECK				

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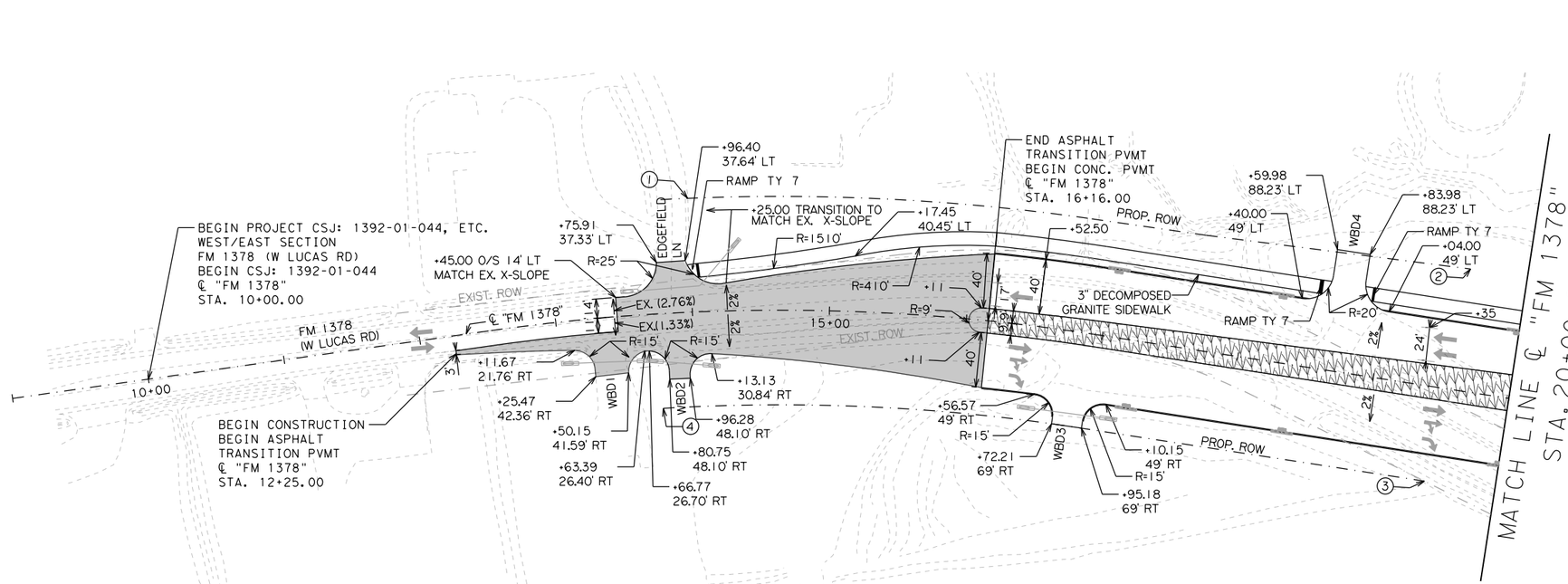
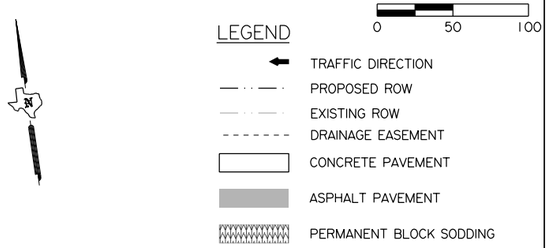


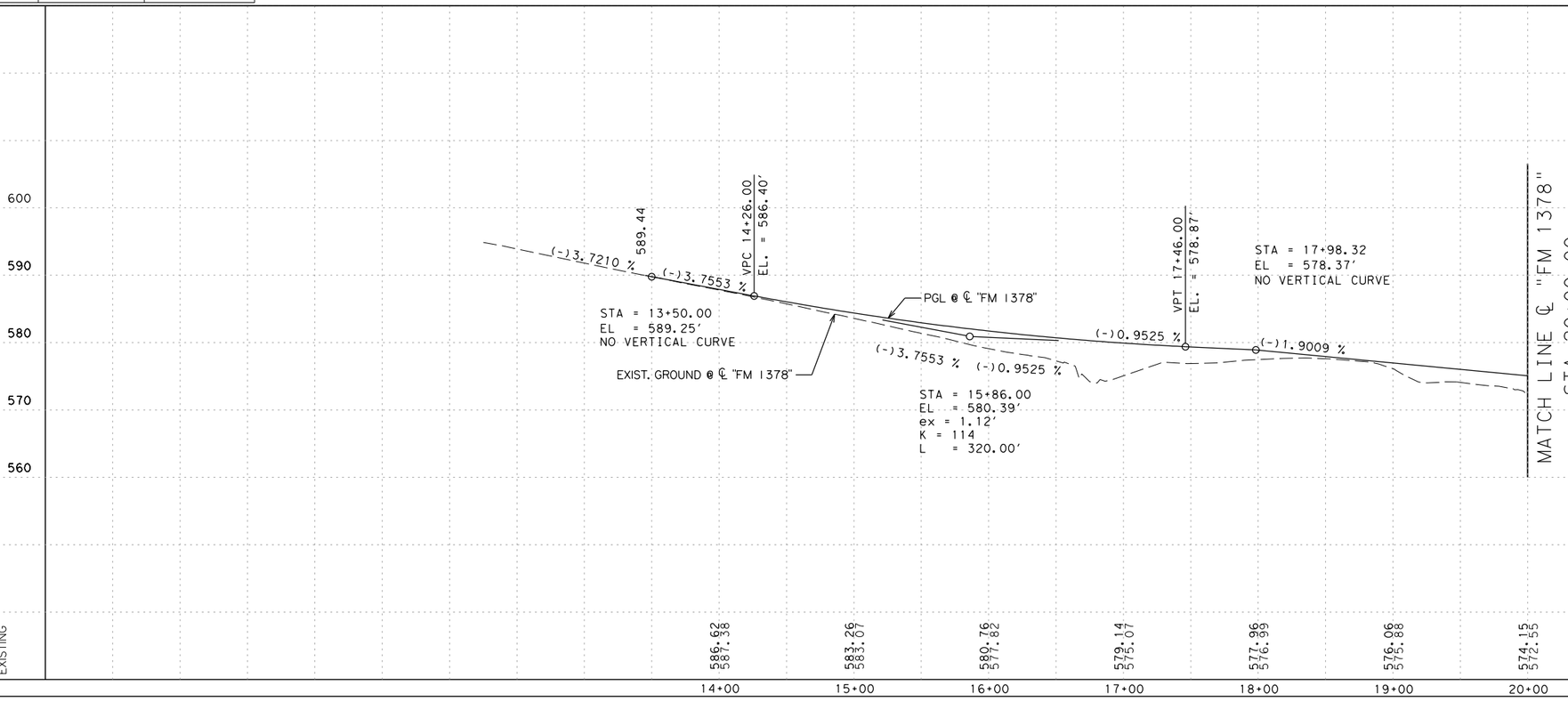


ITEM #	DESCRIPTION: FM 1378 CSJ 1392-01-044	UNIT	SHEET TOTAL
161-6017	COMPOST MANUF TOPSOIL (4")	SY	874
162-6002	BLOCK SODDING	SY	874
260-6027	LIME TRT(EXST MATL)(8")	SY	6100
260-6016	LIME (HYD,COM,OR QK(SLURRY))	TON	102
3077-6001	SP MIXES SP-B PG64-22	TON	1,543
3077-6013	SP MIXES SP-C SAC-B PG64-22	TON	253
360-6002	CONC PVMT(CONT REINF-CRCP)(8")	SY	3,366
360-6027	CURB (TY II)	LF	1475
2004-6001	DECOMPOSED GRANITE (3"DEPTH)	SY	628
530-6004	DRIVEWAYS(CONC)	SY	176
530-6005	DRIVEWAYS(ACP)	SY	76
531-6010	CURB RAMPS (TY 7)	EA	3
3077-6075	TACK COAT	GAL	264

TYPE II RIGHT OF WAY MARKERS

	EASTING	NORTHING
1	2557117.303	7084284.377
2	2557675.191	7084152.323
3	2557619.988	7084004.086
4	2557077.998	7084135.347

NOTES:
1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR ADDITIONAL INFORMATION
2. SEE METAL BEAM GUARD FENCE (MOW STRIP) STANDARD FOR MOW STRIP LOCATION.
3. ALL DIMENSIONS ARE MEASURED FROM FACE TO FACE UNLESS OTHERWISE SHOWN.
4. SEE MISCELANEOUS ROADWAY DETAILS FOR ADDITIONAL INFORMATION.



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142049
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FM 1378
AT FM 3286

PLAN & PROFILE

SCALE: 1"=100'-H
1"=20'-V

SHEET 1 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378,ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JI	TEXAS	DAL	COLLIN	123
CHECK	CONTROL	SECTION	JOB	
IIE	1392	01	044, ETC.	
CHECK				

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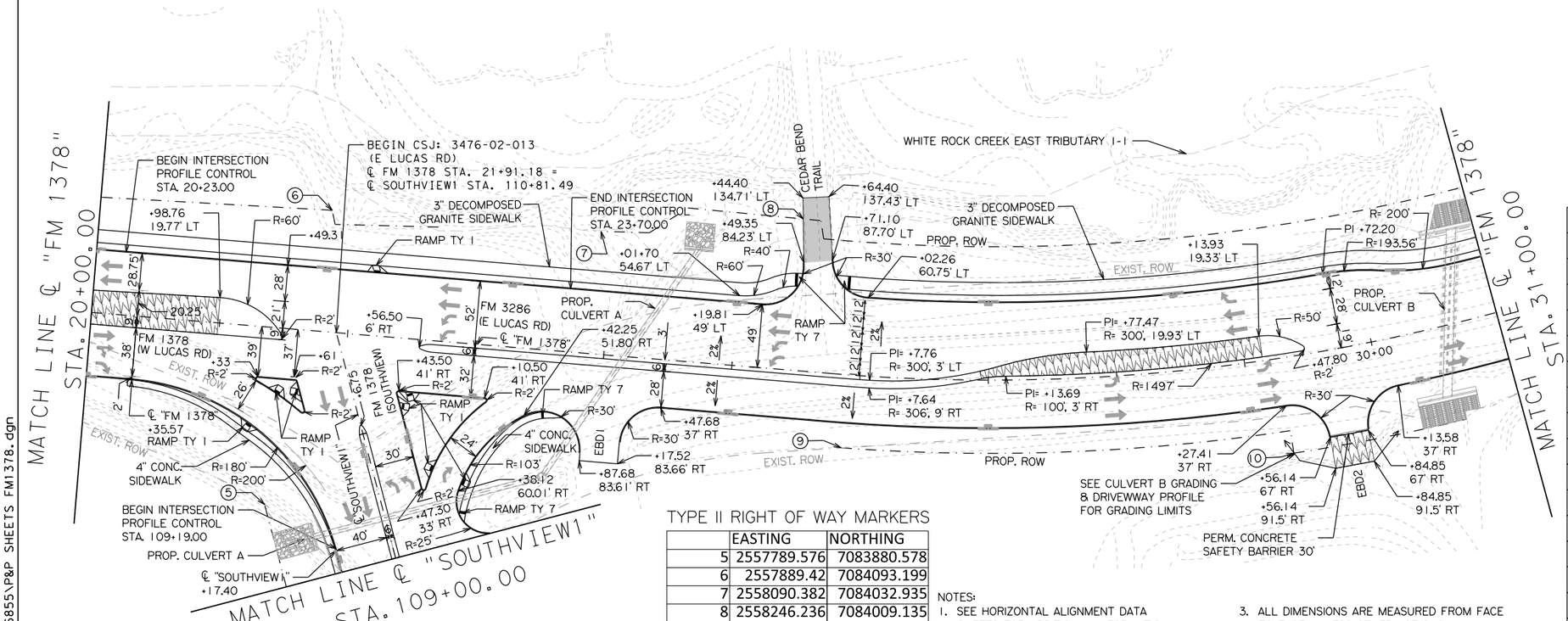


TYPE II RIGHT OF WAY MARKERS

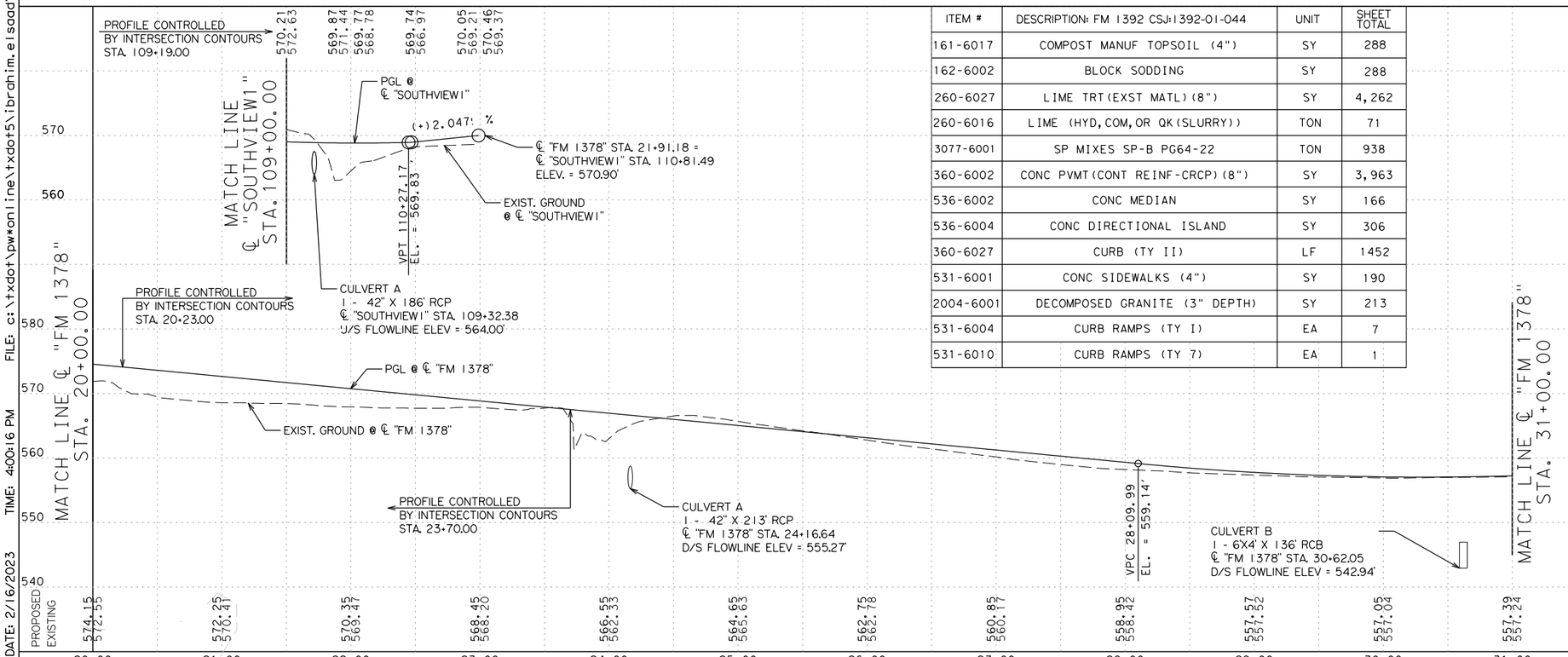
	EASTING	NORTHING
5	2557789.576	7083880.578
6	2557889.42	7084093.199
7	2558090.382	7084032.935
8	2558246.236	7084009.135
9	2558237.505	7083828.829
10	2558580.94	7083750.397

NOTES:
1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR ADDITIONAL INFORMATION
2. SEE METAL BEAM GUARD FENCE (MOW STRIP) STANDARD FOR MOW STRIP LOCATION.
3. ALL DIMENSIONS ARE MEASURED FROM FACE TO FACE UNLESS OTHERWISE SHOWN.
4. SEE MISCELANEOUS ROADWAY DETAILS FOR ADDITIONAL INFORMATION.

LEGEND
- TRAFFIC DIRECTION
- PROPOSED ROW
- EXISTING ROW
- DRAINAGE EASEMENT
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT
- PERMANENT BLOCK SODDING

0 50 100

ITEM #	DESCRIPTION: FM 3286 CSJ: 3476-02-013	UNIT	SHEET TOTAL
161-6017	COMPOST MANUF TOPSOIL (4")	SY	451
162-6002	BLOCK SODDING	SY	451
260-6027	LIME TRT(EXST MATL)(8")	SY	9807
260-6016	LIME (HYD,COM,OR QK(SLURRY))	TON	164
3077-6001	SP MIXES SP-B PG64-22	TON	2166
3077-6013	SP MIXES SP-C SAC-B PG64-22	TON	14
360-6002	CONC PVMT(CONT REINF-CRCP)(8")	SY	9218
536-6002	CONC MEDIAN	SY	278
360-6027	CURB (TY II)	LF	3110
2004-6001	DECOMPOSED GRANITE (3" DEPTH)	SY	940
530-6004	DRIVEWAYS(CONC)	SY	334
531-6004	CURB RAMPS (TY I)	EA	1
531-6010	CURB RAMPS (TY 7)	EA	3
512-6005	PORT CTB (FUR & INST)(F-SHAPE)(TY I)	LF	30
3077-6075	TACK COAT	GAL	15



ITEM #	DESCRIPTION: FM 1392 CSJ:1392-01-044	UNIT	SHEET TOTAL
161-6017	COMPOST MANUF TOPSOIL (4")	SY	288
162-6002	BLOCK SODDING	SY	288
260-6027	LIME TRT(EXST MATL)(8")	SY	4,262
260-6016	LIME (HYD,COM,OR QK(SLURRY))	TON	71
3077-6001	SP MIXES SP-B PG64-22	TON	938
360-6002	CONC PVMT(CONT REINF-CRCP)(8")	SY	3,963
536-6002	CONC MEDIAN	SY	166
536-6004	CONC DIRECTIONAL ISLAND	SY	306
360-6027	CURB (TY II)	LF	1452
531-6001	CONC SIDEWALKS (4")	SY	190
2004-6001	DECOMPOSED GRANITE (3" DEPTH)	SY	213
531-6004	CURB RAMPS (TY I)	EA	7
531-6010	CURB RAMPS (TY 7)	EA	1

STATE OF TEXAS
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142049
LICENSED PROFESSIONAL ENGINEER

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FM 1378
AT FM 3286

PLAN & PROFILE

SCALE: 1"=100'-H
1"=20'-V

SHEET 2 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS JI	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK IIE	TEXAS	DAL	COLLIN	124
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

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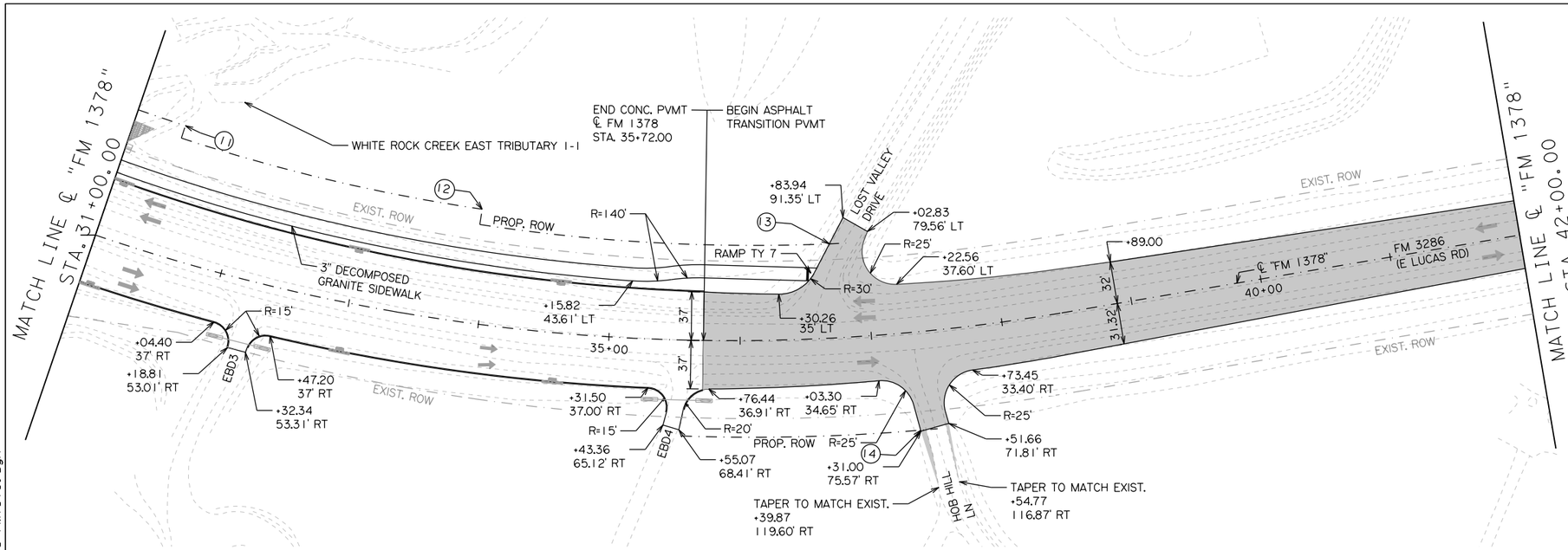


TYPE II RIGHT OF WAY MARKERS

	EASTING	NORTHING
11	2558790.496	7083927.034
12	2559024.054	7083952.338
13	2559279.288	7084026.518
14	2559396.836	7083920.585

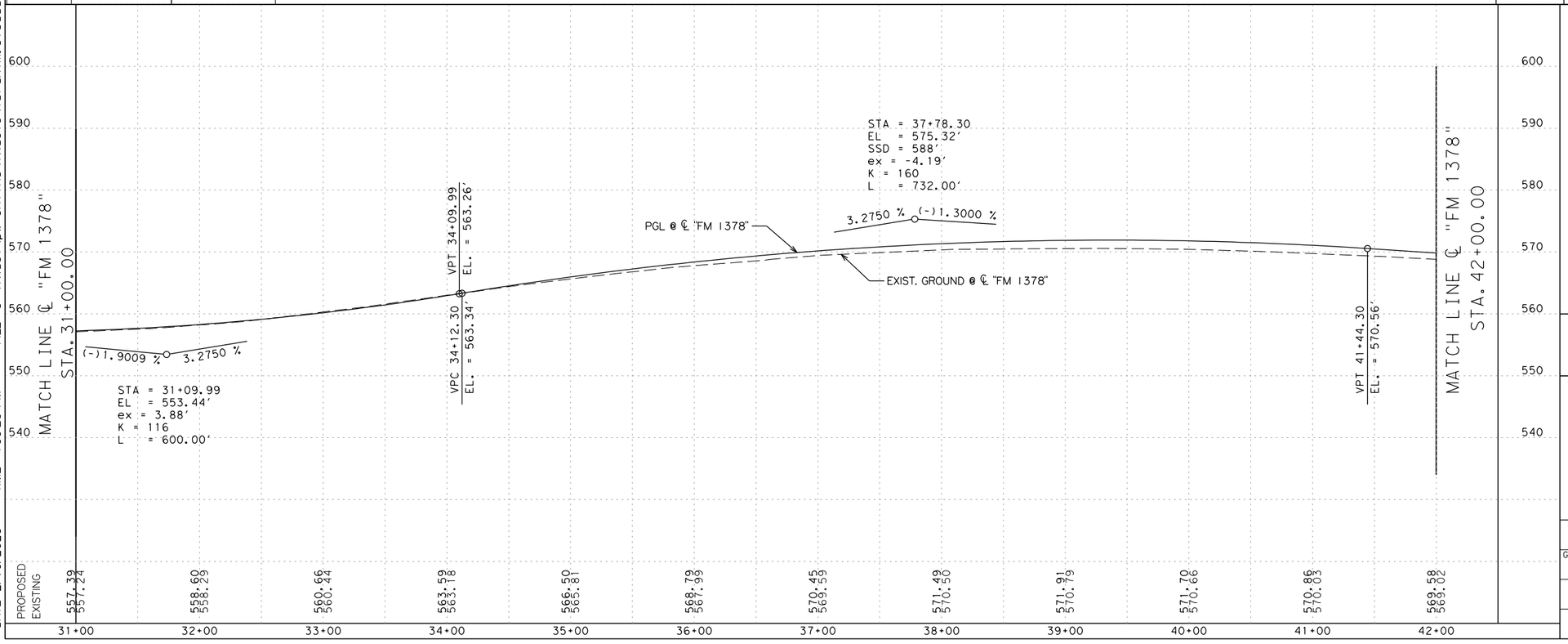
NOTES:
1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR ADDITIONAL INFORMATION
2. SEE METAL BEAM GUARD FENCE (MOW STRIP) STANDARD FOR MOW STRIP LOCATION.
3. ALL DIMENSIONS ARE MEASURED FROM FACE TO FACE UNLESS OTHERWISE SHOWN.
4. SEE MISCELANEOUS ROADWAY DETAILS FOR ADDITIONAL INFORMATION.

LEGEND

0 50 100

- TRAFFIC DIRECTION
- PROPOSED ROW
- EXISTING ROW
- DRAINAGE EASEMENT
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT
- PERMANENT BLOCK SODDING

ITEM #	DESCRIPTION: FM 3286 CSJ: 3476-02-013	UNIT	SHEET TOTAL
260-6027	LIME TRT(EXST MATL)(8")	SY	9412
260-6016	LIME (HYD,COM,OR QK(SLURRY))	TON	157
3077-6001	SP MIXES SP-B PG64-22	TON	2552
3077-6013	SP MIXES SP-C SAC-B PG64-22	TON	527
360-6002	CONC PVMT(CONT REINF-CRCP)(8")	SY	4153
360-6027	CURB (TY II)	LF	969
2004-6001	DECOMPOSED GRANITE (3" DEPTH)	SY	593
530-6004	DRIVEWAYS(CONC)	SY	95
531-6010	CURB RAMPS (TY 7)	EA	1
3077-6075	TACK COAT	GAL	578



STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED PROFESSIONAL ENGINEER

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FM 1378
AT FM 3286

PLAN & PROFILE

SCALE: 1"=100'-H
1"=20'-V

SHEET 3 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JI	TEXAS	DAL	COLLIN	125
CHECK	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	

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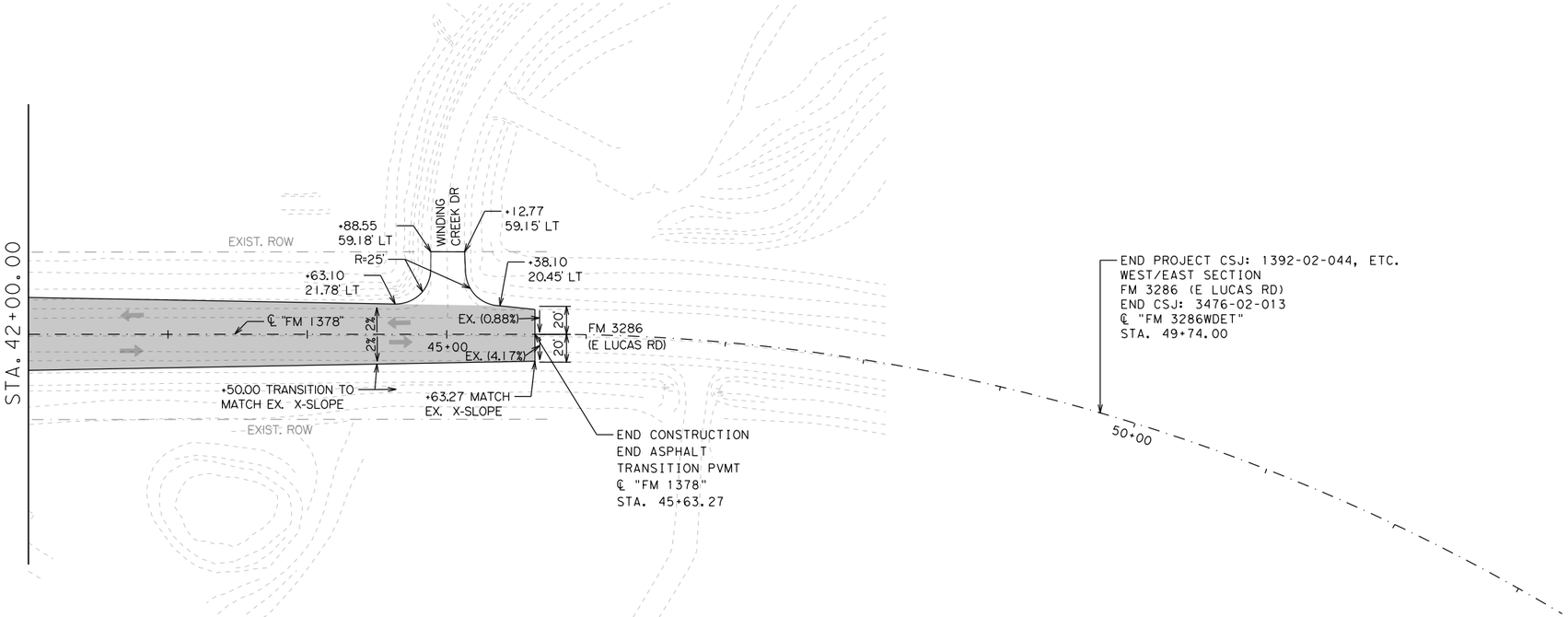
DATE: 2/16/2023



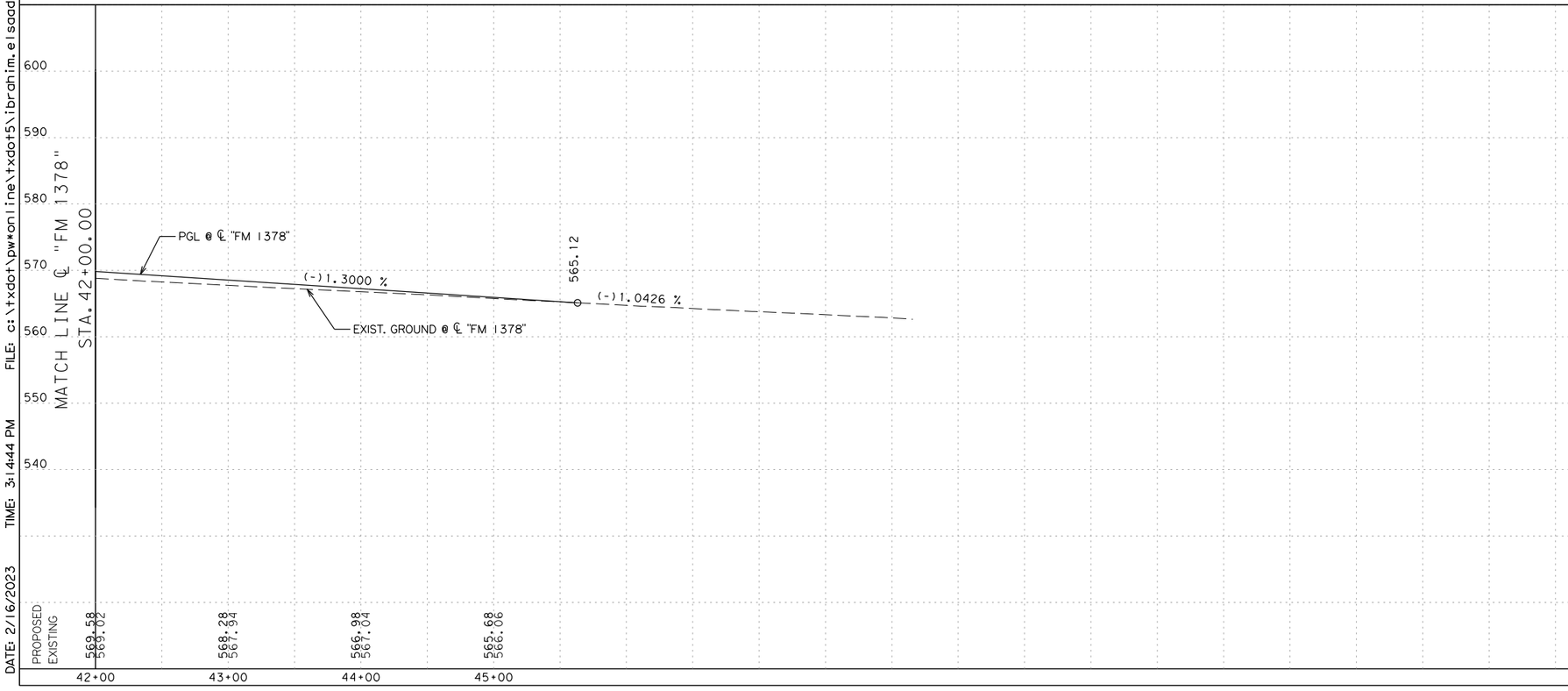
LEGEND

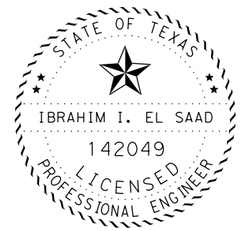
0 50 100

- TRAFFIC DIRECTION
- PROPOSED ROW
- EXISTING ROW
- DRAINAGE EASEMENT
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT
- PERMANENT BLOCK SODDING

NOTES:
1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR ADDITIONAL INFORMATION
2. SEE METAL BEAM GUARD FENCE (MOW STRIP) STANDARD FOR MOW STRIP LOCATION.
3. ALL DIMENSIONS ARE MEASURED FROM FACE TO FACE UNLESS OTHERWISE SHOWN.
4. SEE MISCELANEOUS ROADWAY DETAILS FOR ADDITIONAL INFORMATION.

ITEM #	DESCRIPTION: FM 3286 CSJ: 3476-02-013	UNIT	SHEET TOTAL
260-6027	LIME TRT(EXST MATL)(8")	SY	2146
260-6016	LIME (HYD,COM,OR QK(SLURRY))	TON	36
3077-6001	SP MIXES SP-B PG64-22	TON	645
3077-6013	SP MIXES SP-C SAC-B PG64-22	TON	205
360-6002	CONC PVMT(CONT REINF-CRCP)(8")	SY	135
3077-6075	TACK COAT	GAL	225





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FM 1378
AT FM 3286

PLAN & PROFILE

SCALE: 1"=100'-H
1"=20'-V

SHEET 4 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378,ETC.
GRAPHICS JI	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK IIE	TEXAS	DAL	COLLIN	126
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

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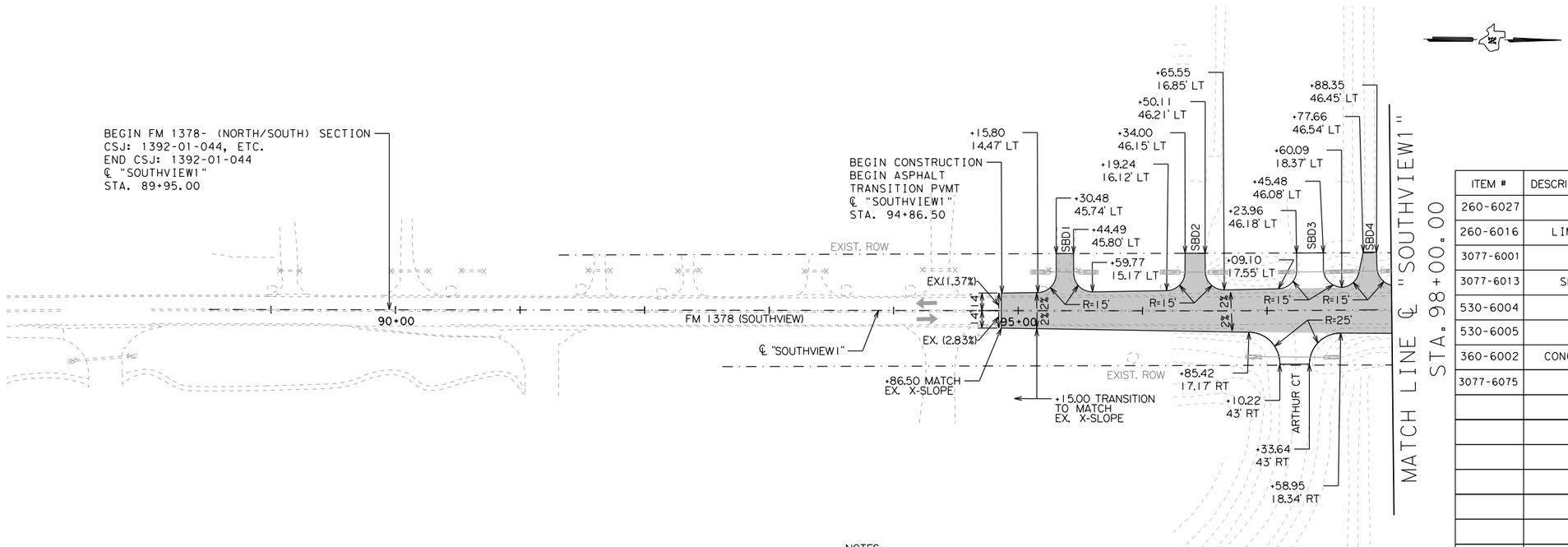


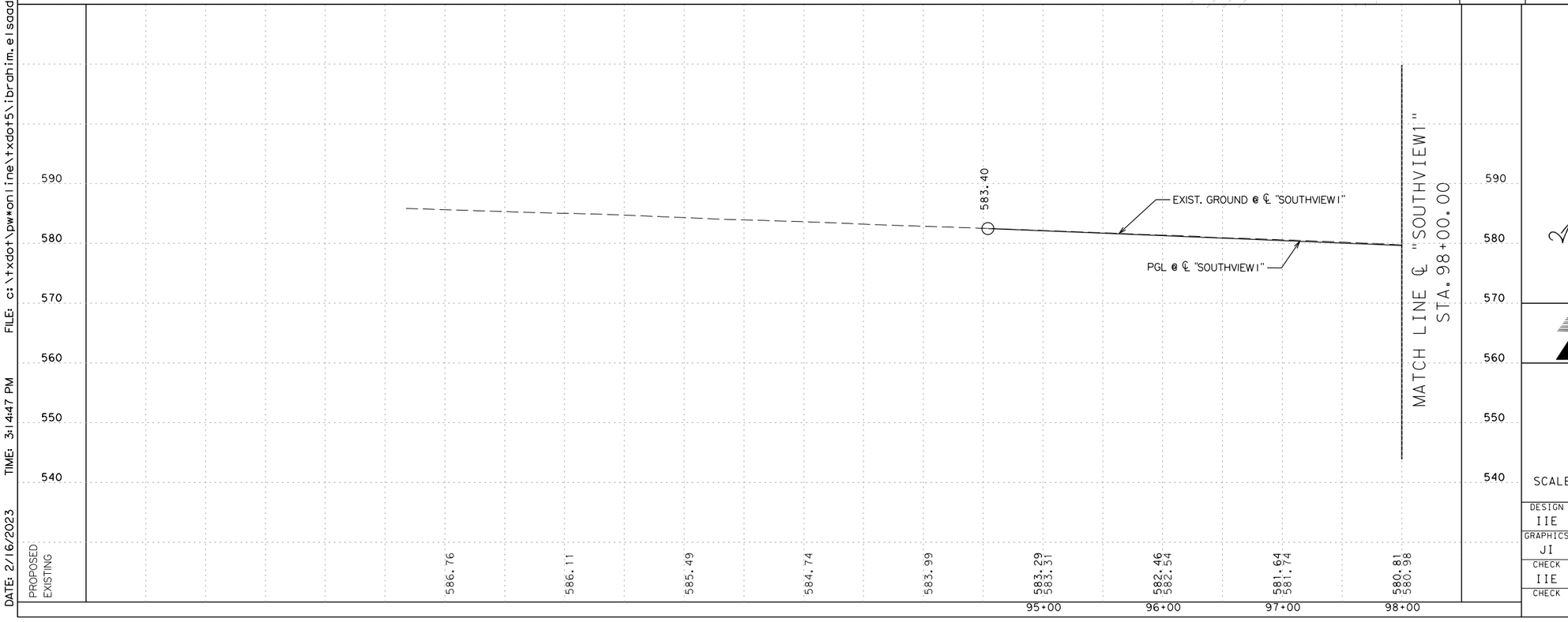
NOTES:
1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR ADDITIONAL INFORMATION
2. SEE METAL BEAM GUARD FENCE (MOW STRIP) STANDARD FOR MOW STRIP LOCATION.
3. ALL DIMENSIONS ARE MEASURED FROM FACE TO FACE UNLESS OTHERWISE SHOWN.
4. SEE MISCELANEOUS ROADWAY DETAILS FOR ADDITIONAL INFORMATION.

LEGEND

0 50 100

- TRAFFIC DIRECTION
- PROPOSED ROW
- EXISTING ROW
- DRAINAGE EASEMENT
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT
- PERMANENT BLOCK SODDING

ITEM #	DESCRIPTION: FM 1378 CSJ 1392-01-044	UNIT	SHEET TOTAL
260-6027	LIME TRT(EXST MATL)(8")	SY	1387
260-6016	LIME (HYD,COM,OR QK(SLURRY))	TON	24
3077-6001	SP MIXES SP-B PG64-22	TON	410
3077-6013	SP MIXES SP-C SAC-B PG64-22	TON	127
530-6004	DRIVEWAYS(CONC)	SY	78
530-6005	DRIVEWAYS(ACP)	SY	175
360-6002	CONC PVMT(CONT REINF-CRCP)(8")	SY	104
3077-6075	TACK COAT	GAL	140



IBRAHIM I. EL SAAD
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FM 1378
AT FM 3286

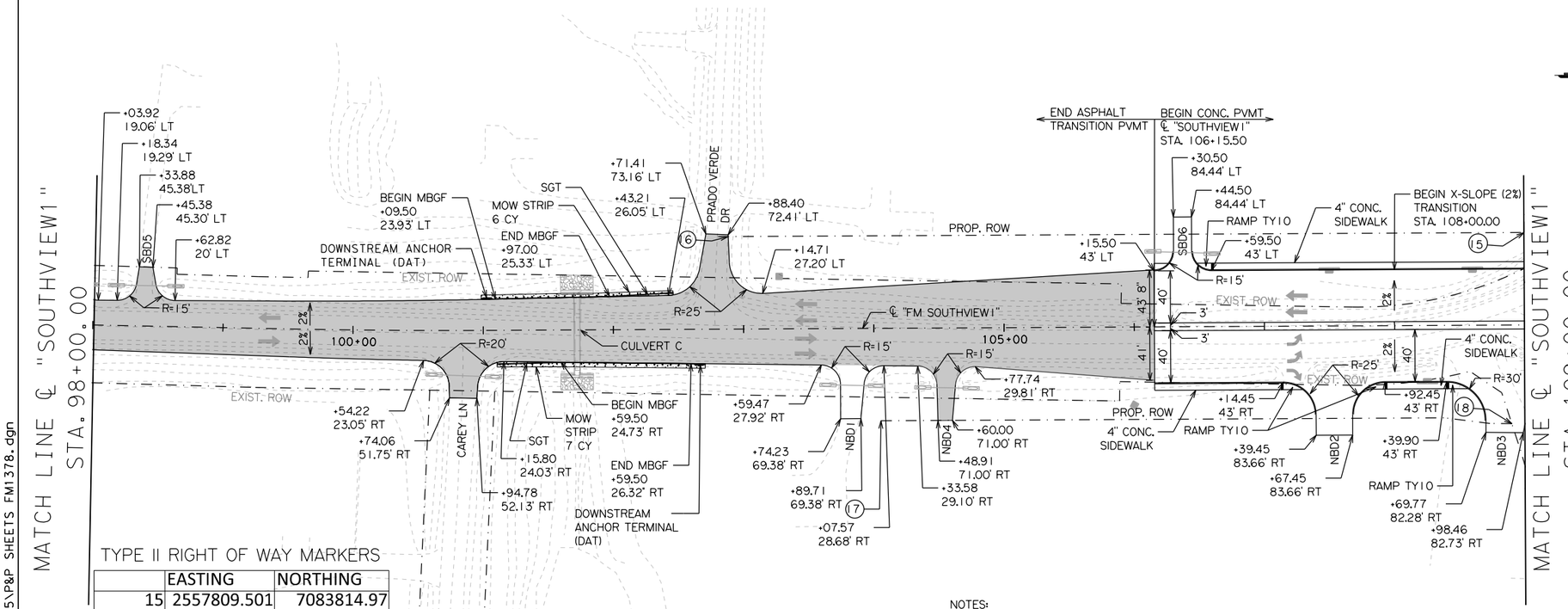
PLAN & PROFILE

SCALE: 1"=100'-H
1"=20'-V

SHEET 5 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378,ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JI	TEXAS	DAL	COLLIN	
CHECK	CONTROL	SECTION	JOB	
IIE	1392	01	044, ETC.	127
CHECK				

DATE: 2/16/2023 TIME: 3:14:47 PM FILE: c:\txdot\pw*online\txdot5\ibrahim.elsaad\d0326855\P&P SHEETS FM1378.dgn



LEGEND

- TRAFFIC DIRECTION
- PROPOSED ROW
- EXISTING ROW
- DRAINAGE EASEMENT
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT
- PERMANENT BLOCK SODDING

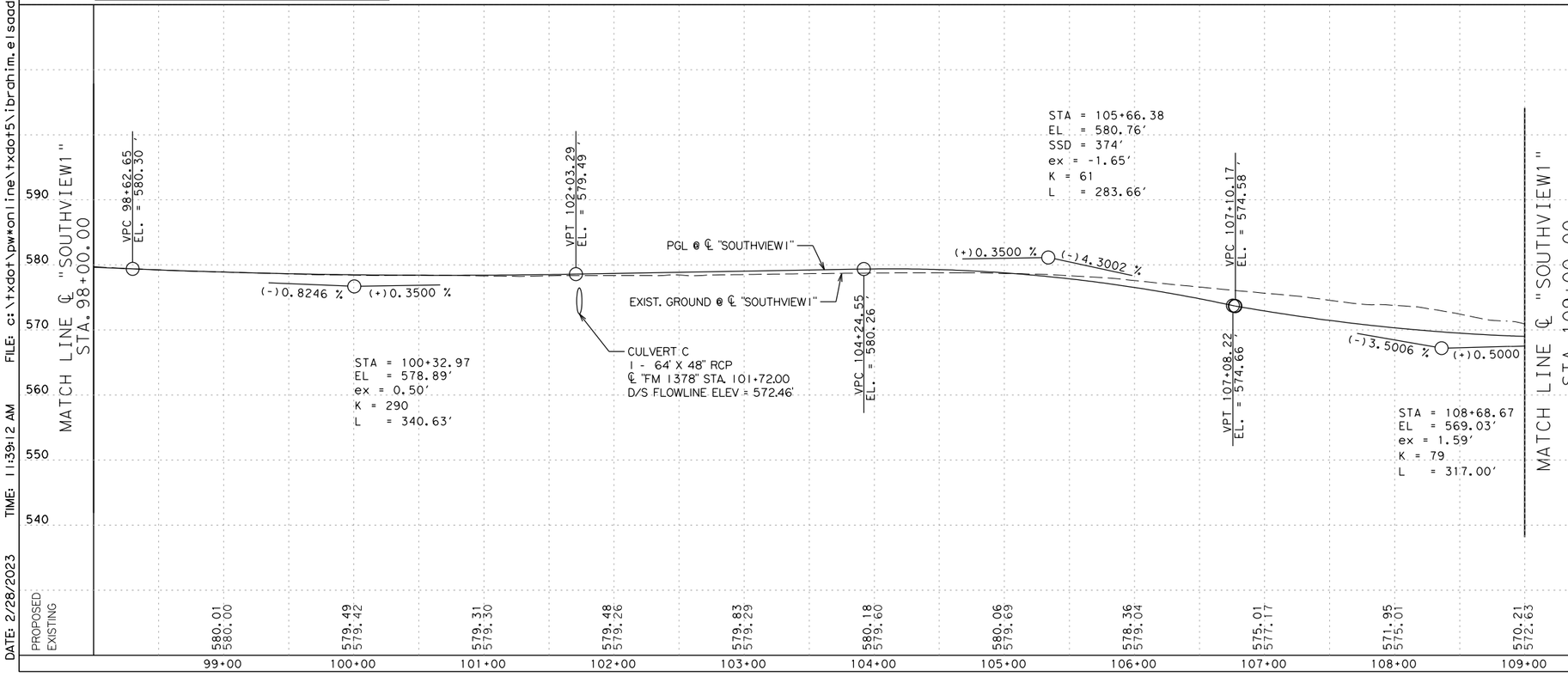
TYPE II RIGHT OF WAY MARKERS

	EASTING	NORTHING
15	2557809.501	7083814.97
16	2557836.587	7083204.024
17	2557973.277	7083326.868
18	2557956.56	7083811.235

NOTES:

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR ADDITIONAL INFORMATION
2. SEE METAL BEAM GUARD FENCE (MOW STRIP) STANDARD FOR MOW STRIP LOCATION.
3. ALL DIMENSIONS ARE MEASURED FROM FACE TO FACE UNLESS OTHERWISE SHOWN.
4. SEE MISCELANEOUS ROADWAY DETAILS FOR ADDITIONAL INFORMATION.

ITEM #	DESCRIPTION: FM 1378 CSJ: 1392-01-044	UNIT	SHEET TOTAL
260-6027	LIME TRT(EXST MATL)(8")	SY	8387
260-6016	LIME (HYD,COM,OR QK(SLURRY))	TON	141
360-6002	CONC PVMT(CONT REINF-CRCP)(8")	SY	2590
360-6027	CURB (TY II)	LF	1130
3077-6001	SP MIXES SP-B PG64-22	TON	2402
3077-6013	SP MIXES SP-C SAC-B PG64-22	TON	576
530-6004	DRIVEWAYS(CONC)	SY	466
530-6005	DRIVEWAYS(ACP)	SY	122
531-6001	CONC SIDEWALKS (4")	SY	216
536-6002	CONC MEDIAN	SY	148
531-6013	CURB RAMPS (TY 10)	EA	4
432-6045	RIPRAP (MOW)(STRIP)(4IN)	CY	13
540-6001	MTL W-BEAM GD FEN (TIM POST)	LF	187.5
540-6016	DOWNSTREAM ANCHOR TERMINAL SECTION	EA	2
544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA	2
3077-6075	TACK COAT	GAL	628



STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 2-28-23
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FM 1378
AT FM 3286

PLAN & PROFILE

SCALE: 1"=100'-H
1"=20'-V

SHEET 6 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378,ETC.
GRAPHICS JI	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK IIE	TEXAS	DAL	COLLIN	128
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

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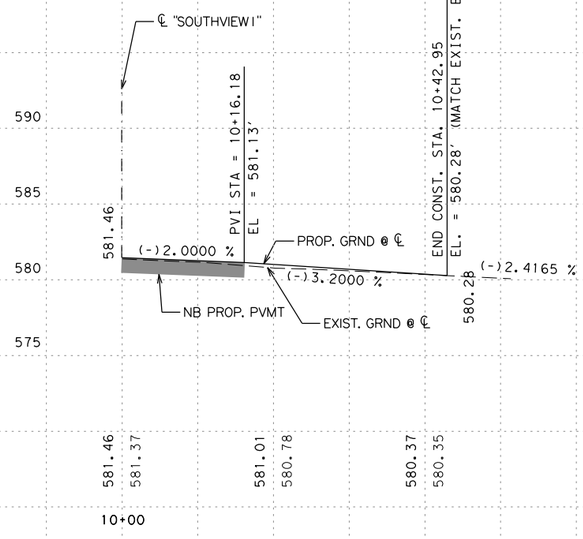
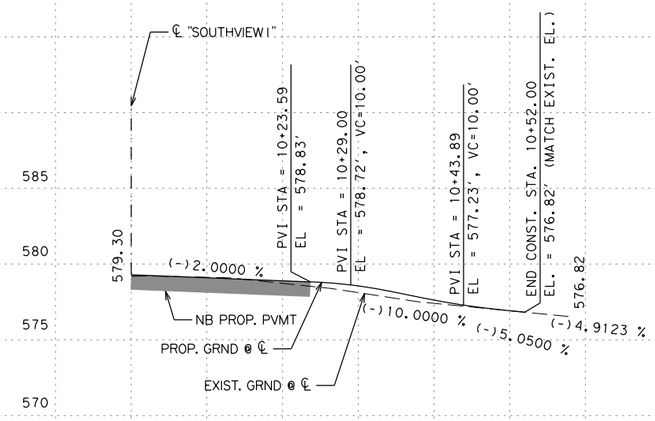
TIME: 11:39:12 AM
DATE: 2/28/2023

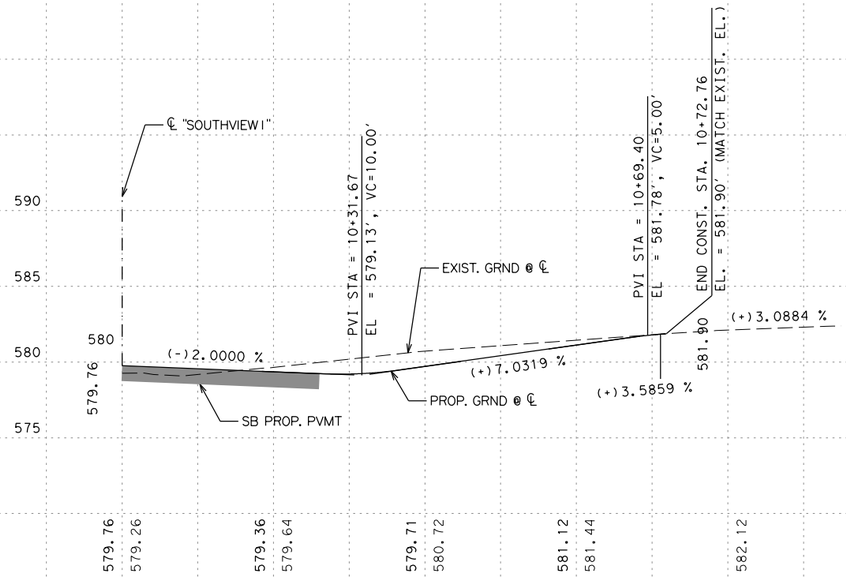
ARTHUR CT - ℄ "SOUTHVIEW1" STA 97+22.14



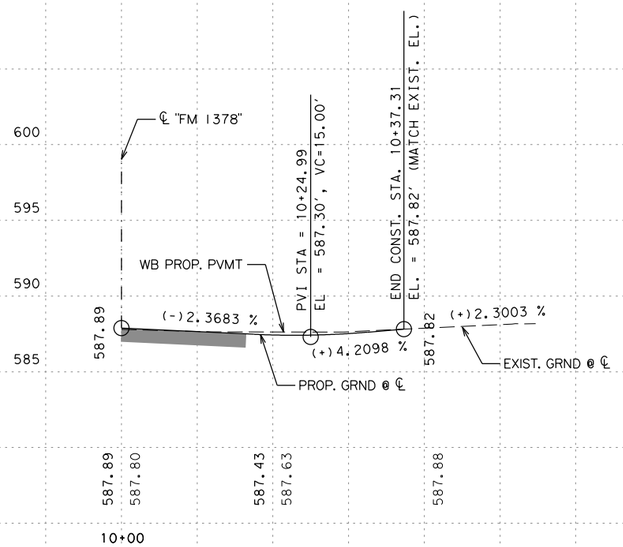
CAREY LN - ℄ "SOUTHVIEW1" STA 100+86.99



PRADO VERDE DR. - ℄ "SOUTHVIEW1" STA 100+80.32



EDGEFIELD LANE- - ℄ "FM 1378" STA 13+86.30



IBRAHIM I. EL SAAD
142049
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

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FM 1378
AT FM 3286

CROSS STREETS PROFILES

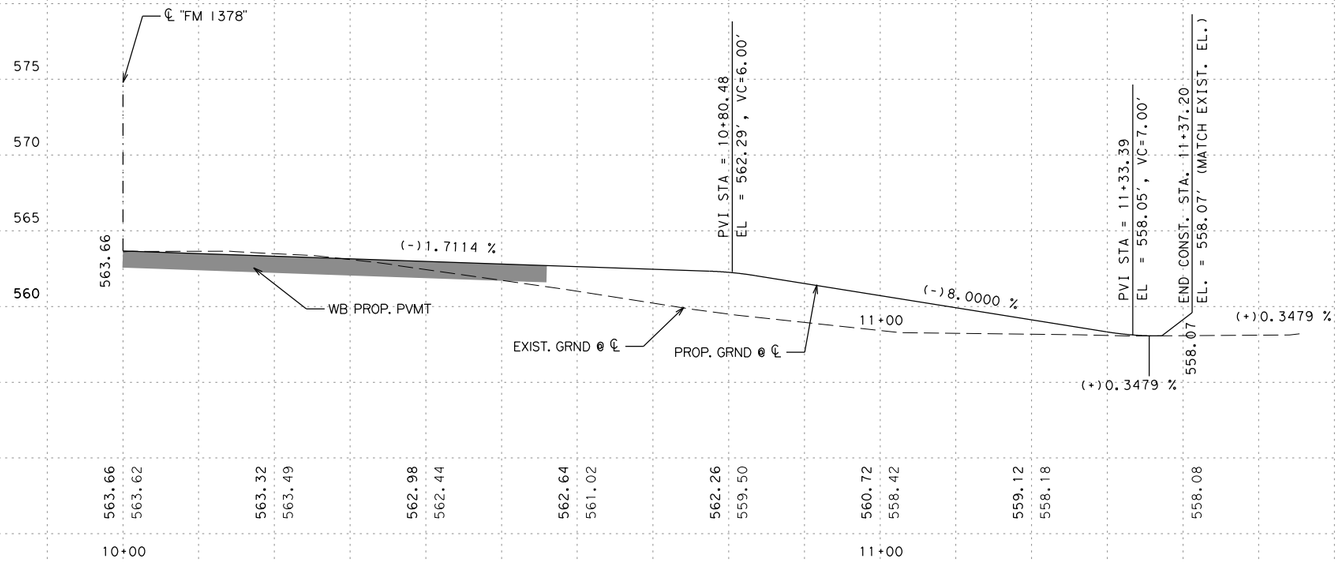
SCALE: 1"=20'-H
1"=10'-V

SHEET 1 OF 3

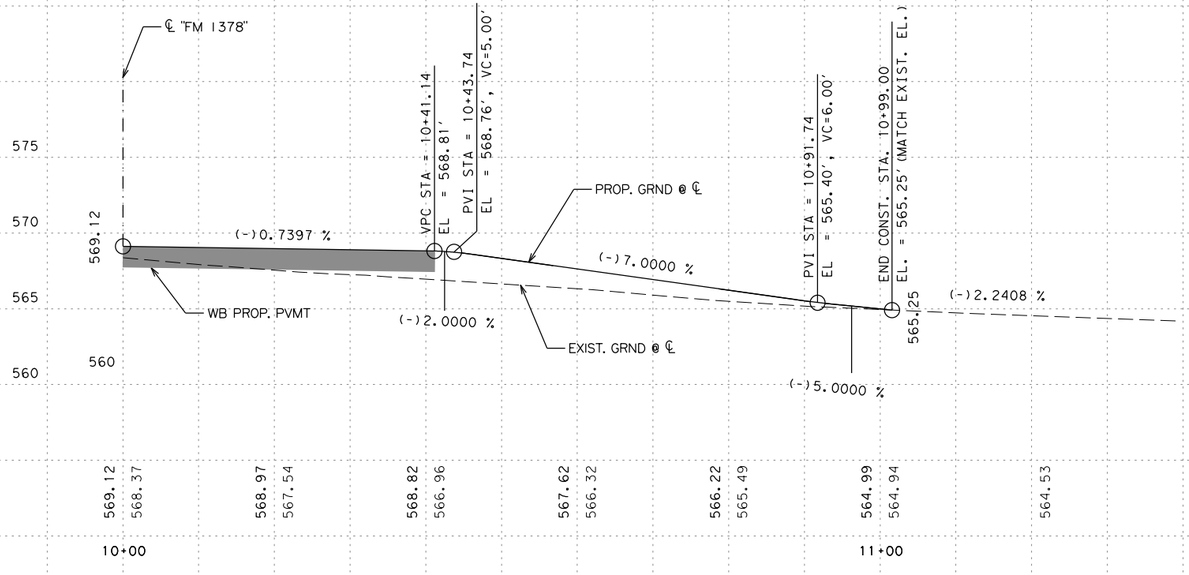
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RI	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
RI	TEXAS	DAL	COLLIN	129
CHECK	CONTROL	SECTION	JOB	
IE	1392	01	044, ETC.	
CHECK				

DATE: 10/30/2022 TIME: 12:31:09 AM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0326855\Cross Streets Profile Sheets.dgn

CEDAR BEND TRAIL - ℄ "FM 1378" STA 25+71.95



LOST VALLEY DRIVE - ℄ "FM 1378" STA 36+36.94



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142049
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

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AT FM 3286

CROSS STREETS PROFILES

SCALE: 1"=20'-H
1"=10'-V

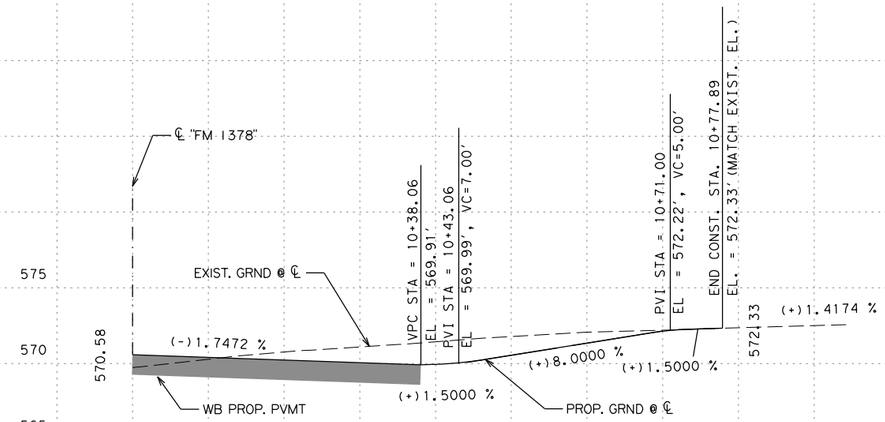
SHEET 2 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RI	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS RI	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK IE	TEXAS	DAL	COLLIN	130
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

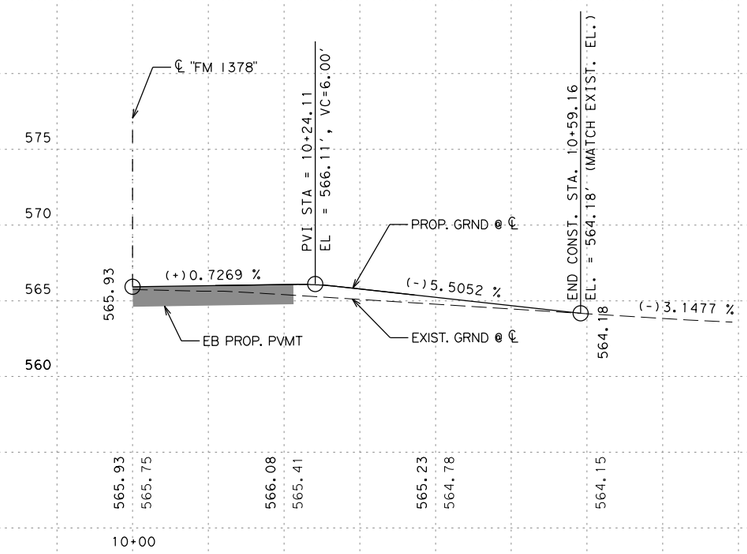
DATE: 11/2/2022 TIME: 9:51:27 AM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0326855\Cross Streets Profile Sheets.dgn

DATE: 10/30/2022 TIME: 12:31:13 AM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0326855\Cross Streets Profile Sheets.dgn

HOB HILL LANE - ℄ "FM 1378" STA 37+29.42



WINDING CREEK - ℄ "FM 1378" STA 45+00.73



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FM 1378
AT FM 3286

CROSS STREETS PROFILES

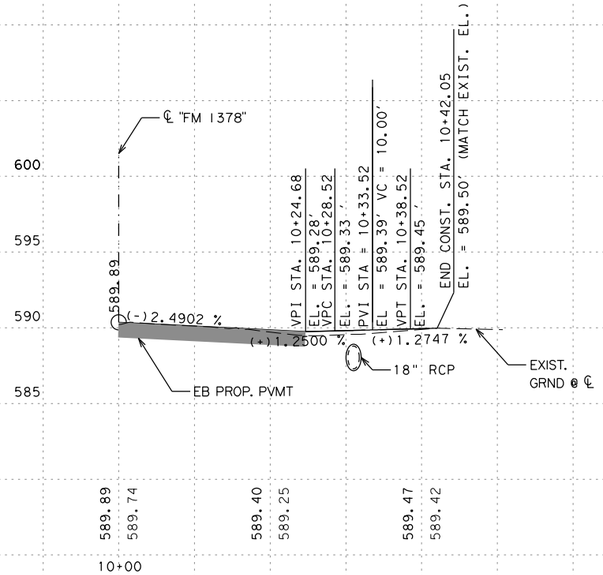
SCALE: 1"=20'-H
1"=10'-V

SHEET 3 OF 3

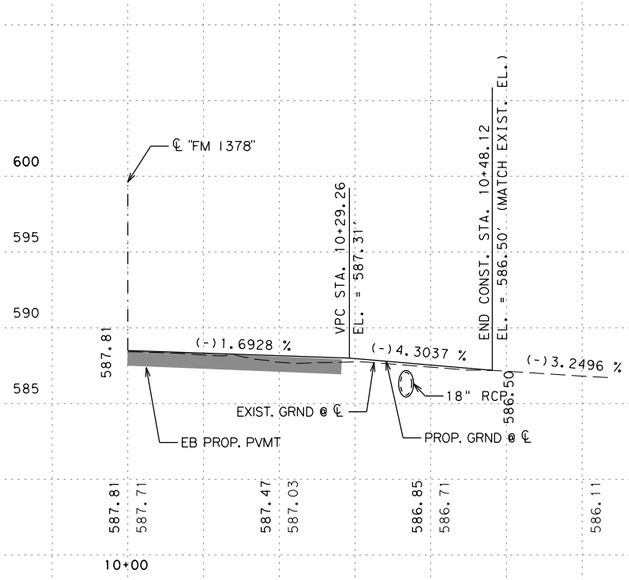
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RI	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS RI	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK IE	TEXAS	DAL	COLLIN	131
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

DATE: 10/30/2022 TIME: 12:29:31 AM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0326855\Driveway Profile Sheets.dgn

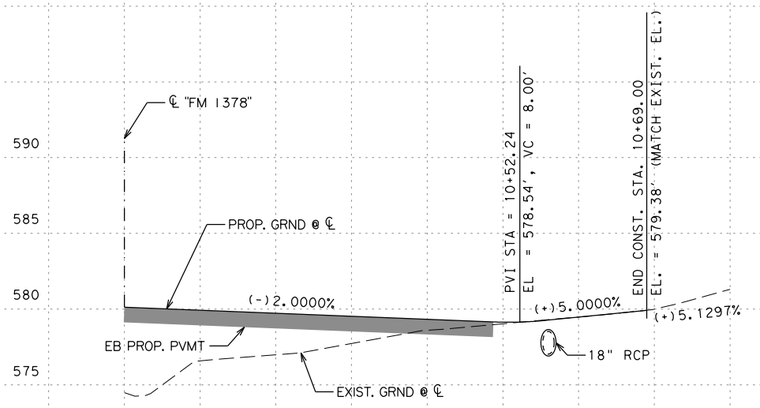
WBD1 - ℄ "FM 1378" STA 13+37.00



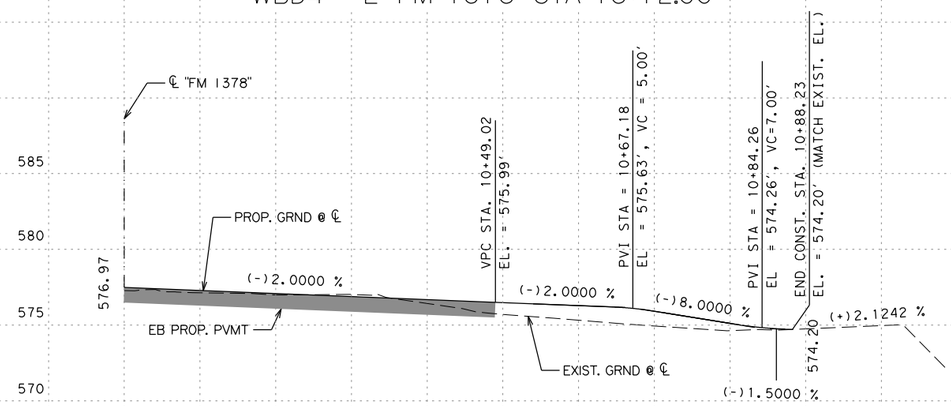
WBD2 - ℄ "FM 1378" STA 13+88.50



WBD3 - ℄ "FM 1378" STA 16+83.50



WBD4 - ℄ "FM 1378" STA 18+72.00



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FM 1378
AT FM 3286

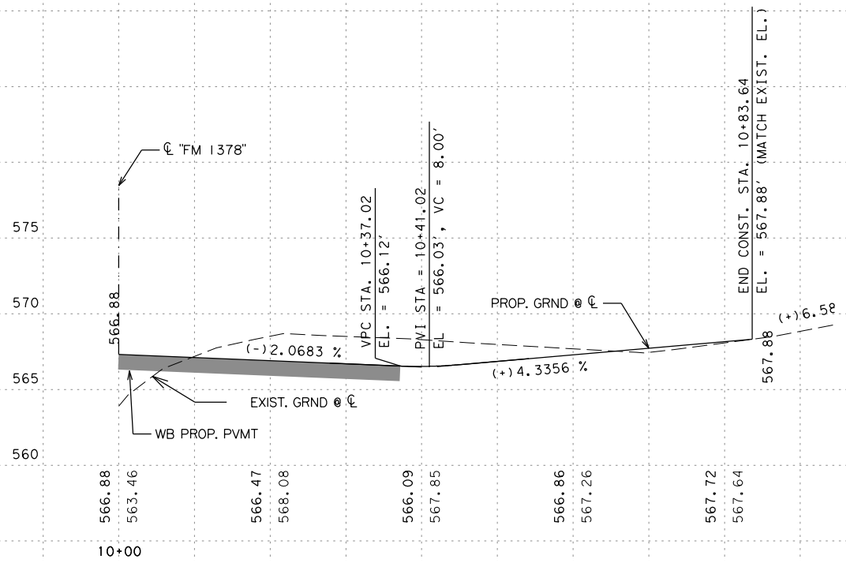
DRIVEWAY PROFILES

SCALE: 1"=20'-H
1"=10'-V

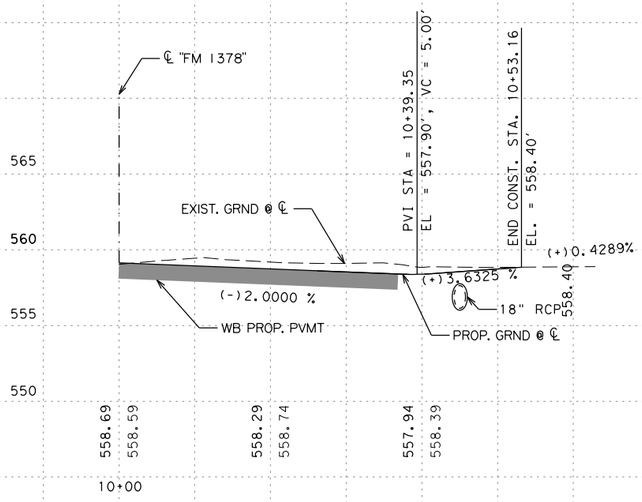
SHEET 01 OF 05

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	132
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

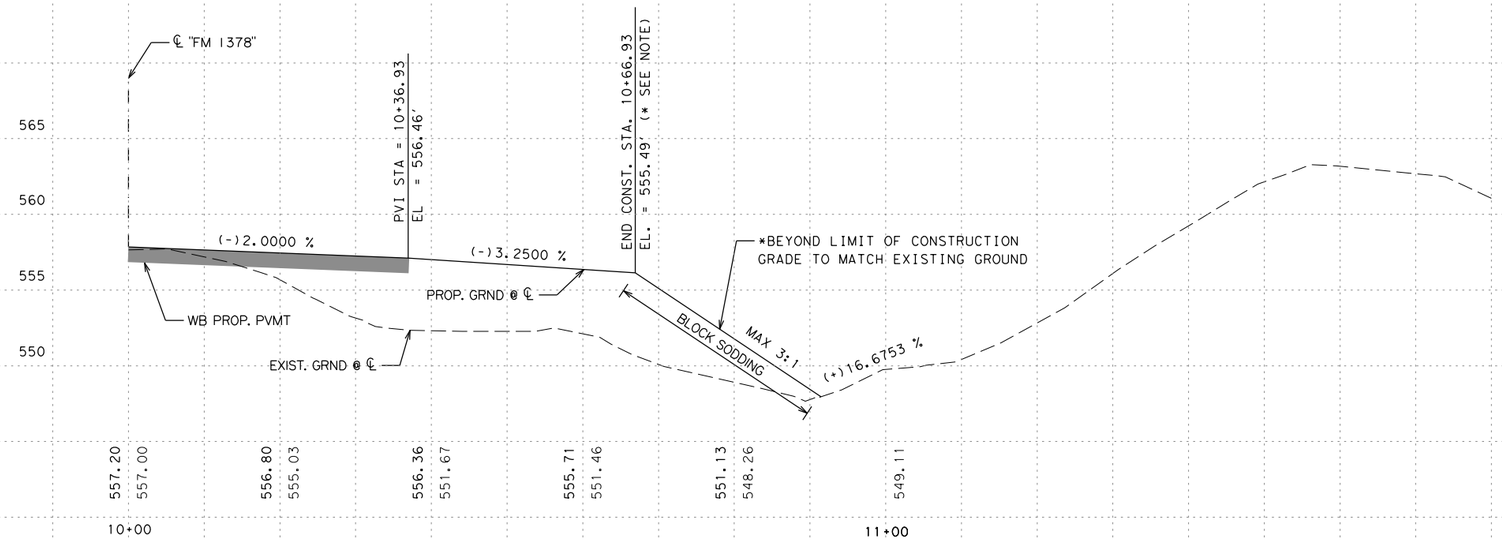
EBD1 - ℄ "FM 1378" STA 24+02.50



EBD3 - ℄ "FM 1378" STA 32+25.50



EBD2 - ℄ "FM 1378" STA 29+70.50



IBRAHIM I. EL SAAD
142049
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

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FM 1378
AT FM 3286

DRIVEWAY PROFILES

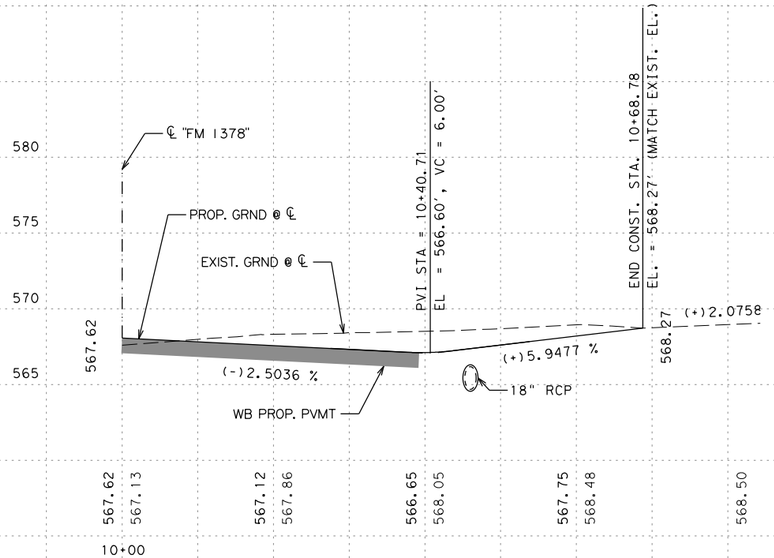
SCALE: 1"=20'-H
1"=10'-V

SHEET 02 OF 05

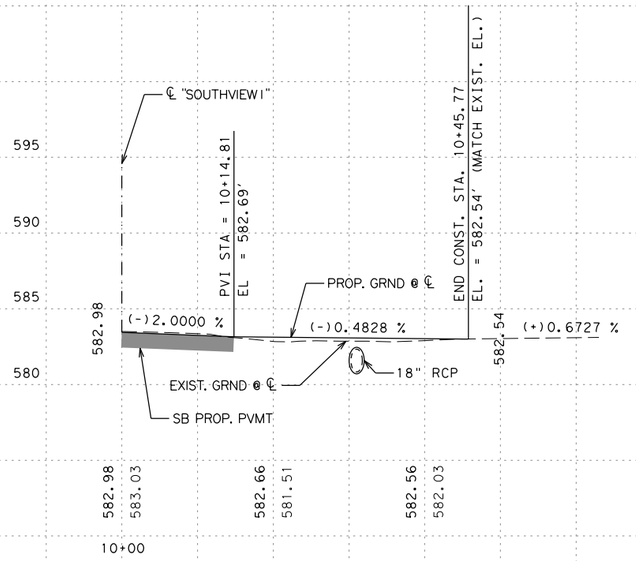
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	133
CHECK	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	

DATE: 10/30/2022 TIME: 12:29:33 AM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0326855\Driveway Profile Sheets.dgn

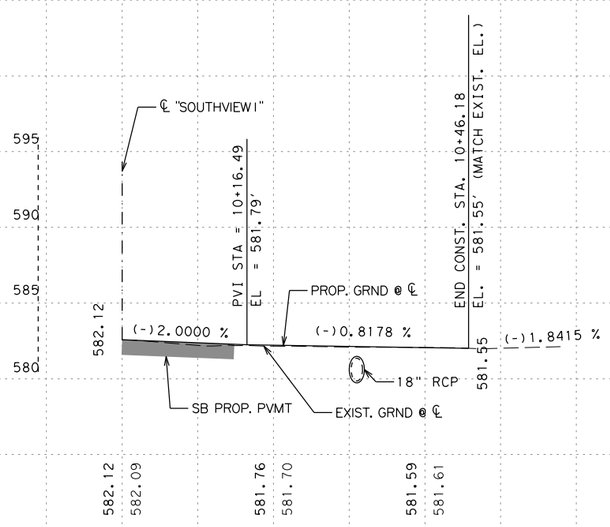
EBD4 - ℄ "FM 1378" STA 35+65.50



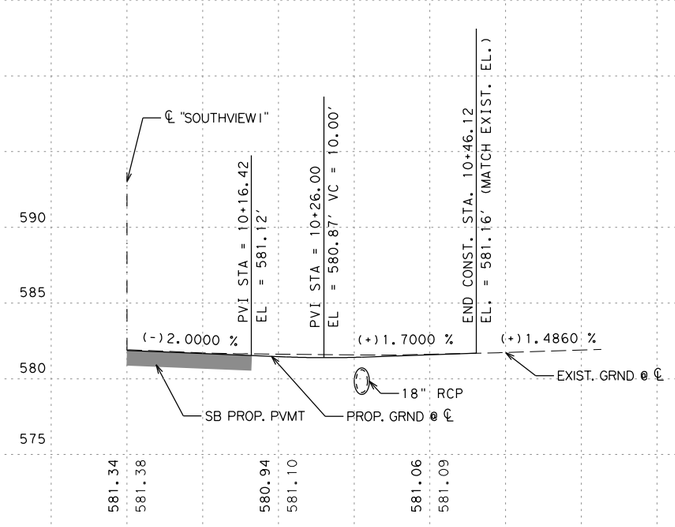
SBD1 - ℄ "SOUTHVIEW1" STA 95+37.00



SBD2 - ℄ "SOUTHVIEW1" STA 96+42.00



SBD3 - ℄ "SOUTHVIEW1" STA 97+36.00



IBRAHIM I. EL SAAD
142049
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STATE OF TEXAS

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AT FM 3286

DRIVEWAY PROFILES

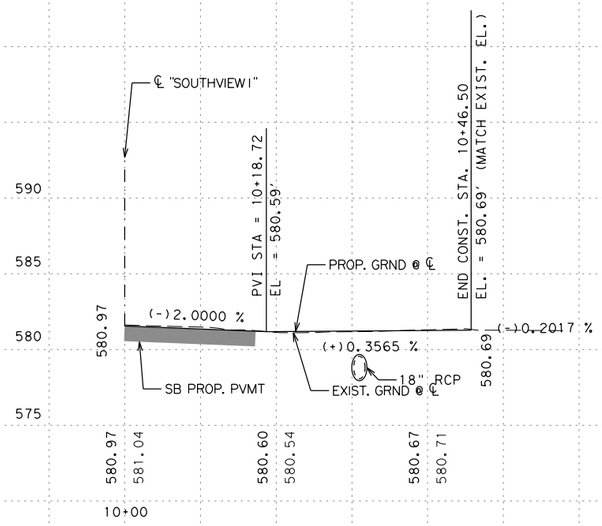
SCALE: 1"=20'-H
1"=10'-V

SHEET 03 OF 05

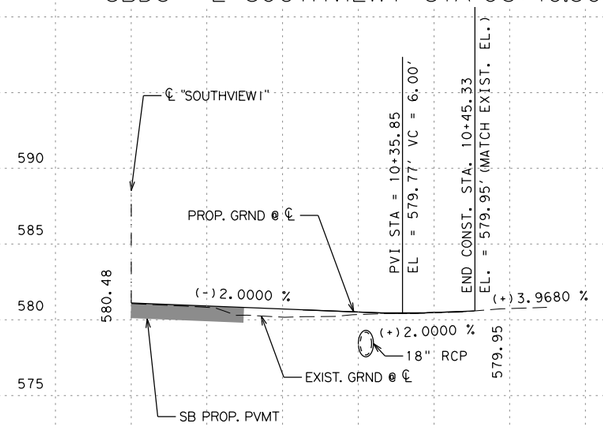
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	134
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

DATE: 10/30/2022 TIME: 12:29:35 AM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0326855\Driveway Profile Sheets.dgn

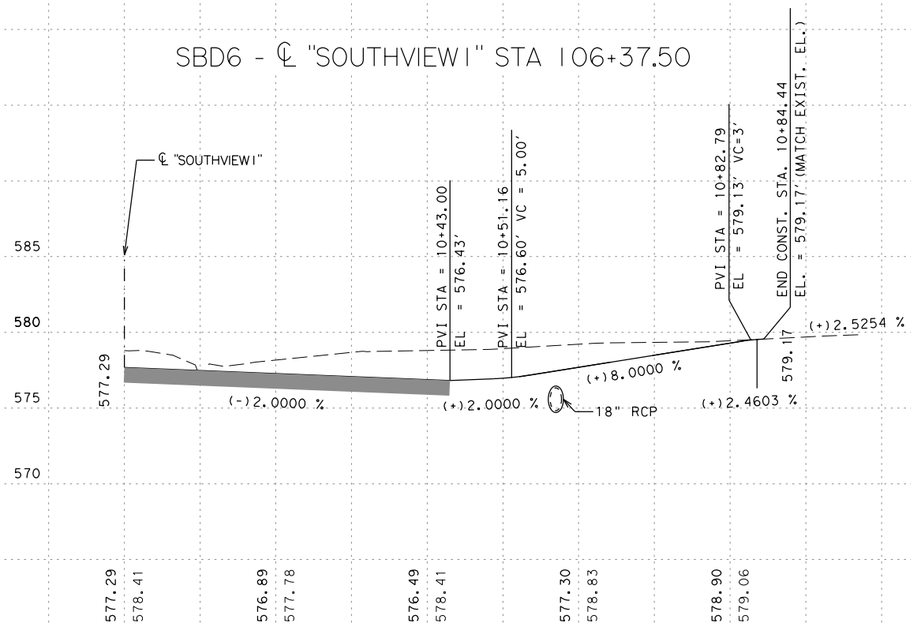
SBD4 - ℄ "SOUTHVIEW1" STA 97+82.00



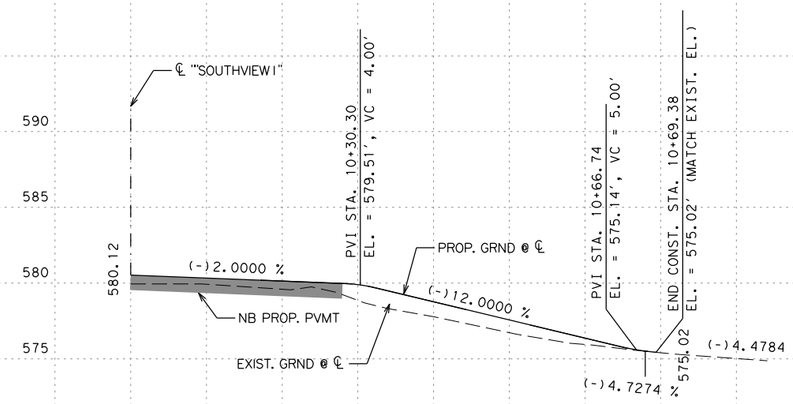
SBD5 - ℄ "SOUTHVIEW1" STA 98+40.50



SBD6 - ℄ "SOUTHVIEW1" STA 106+37.50



NBD1 - ℄ "SOUTHVIEW1" STA 103+83.00



STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 11-7-22
Signature of Registrant & Date

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FM 1378
AT FM 3286

DRIVEWAY PROFILES

SCALE: 1"=20'-H
1"=10'-V

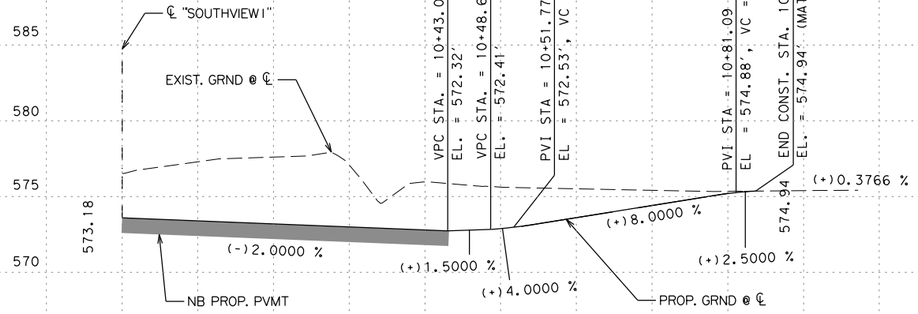
SHEET 04 OF 05

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	135
CHECK	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	

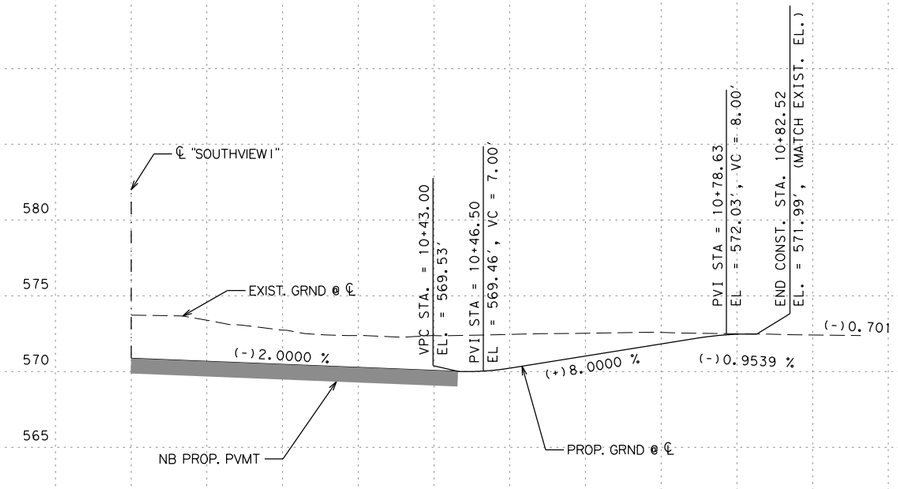
DATE: 10/30/2022 TIME: 12:29:37 AM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0326855\Driveway Profile Sheets.dgn

FILE: c:\txdot\pw*online\txdot5\james.igwe\d0326855\Driveway Profile Sheets.dgn
DATE: 10/30/2022 TIME: 12:29:39 AM

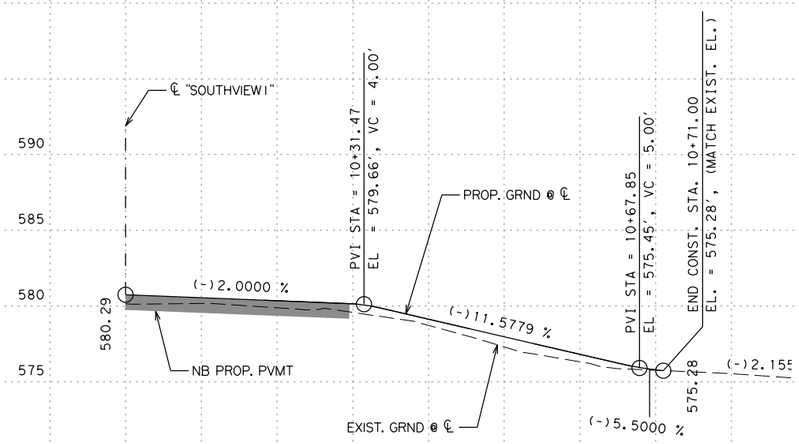
NBD2 - ℄ "SOUTHVIEW I" STA 107+53.50



NBD3 - ℄ "SOUTHVIEW I" STA 108+85.00



NBD4 - ℄ "SOUTHVIEW I" STA 104+56.00



IBRAHIM I. EL SAAD
142049
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

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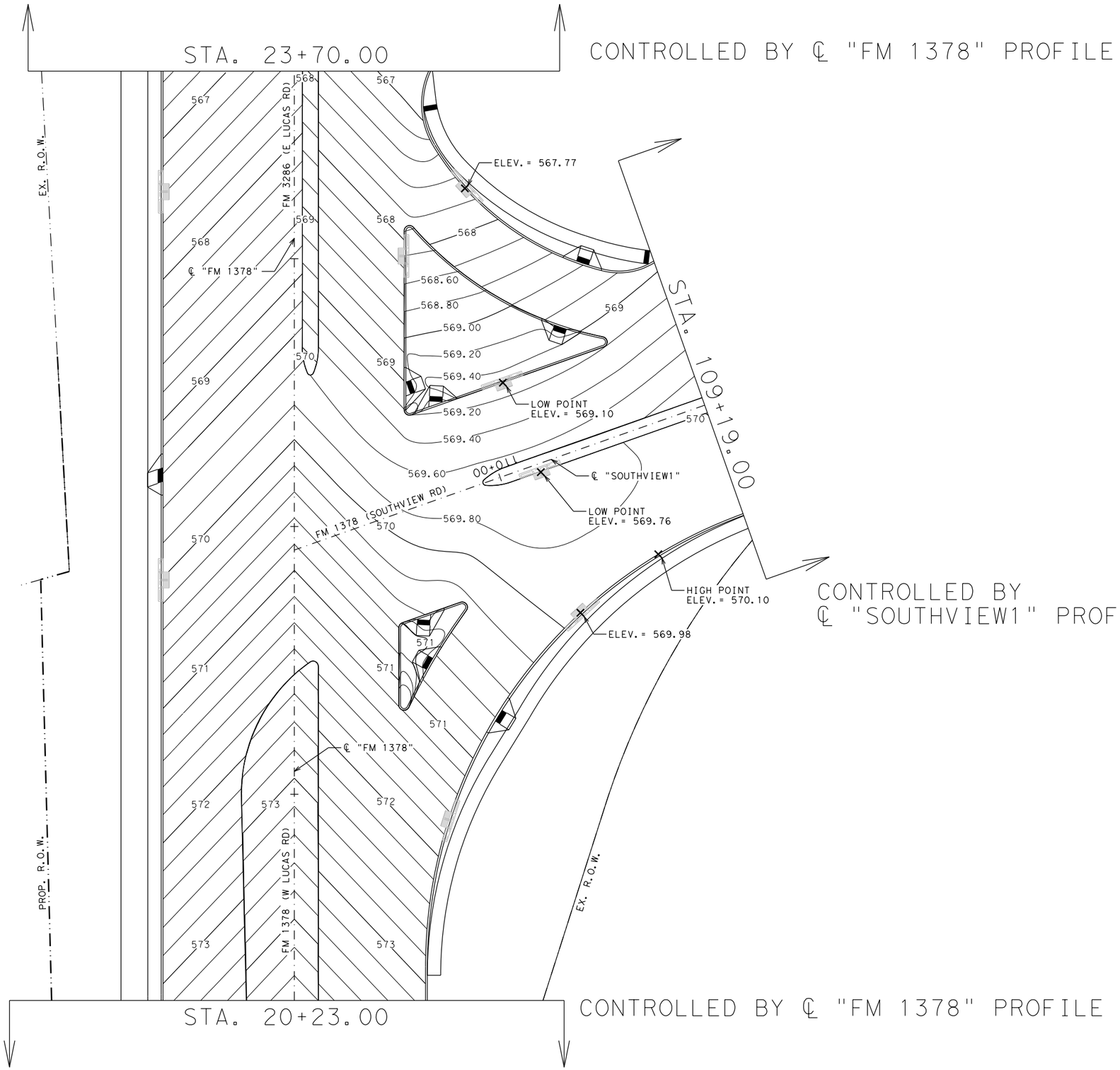
FM 1378
AT FM 3286

DRIVEWAY PROFILES

SCALE: 1"=20'-H
1"=10'-V

SHEET 05 OF 05

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	136
CHECK	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	



NOTE:
HIGH AND LOW POINT ELEVATIONS ARE TAKEN FROM THE FACE OF CURB ALONG THE GUTTER LINE.

STATE OF TEXAS
KEVIN Y. BROSAM
138369
LICENSED
PROFESSIONAL ENGINEER

Kevin Brosam, P.E. 11/02/22
Signature of Registrant & Date

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FM 1378
AT FM 3286
INTERSECTION CONTOURS
FM 1378

SCALE: 1"=40'

SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
KB	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS KB	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK KB	TEXAS	DAL	COLLIN	137
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

DATE: 10/31/2022 TIME: 9:05:37 AM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0326855\Intersection*Contour*Sheet.dgn

0 10 20

LEGEND

PROPOSED CONTOURS
EXISTING CONTOURS
EASEMENT

EXIST ROW

EDGEFIELD LANE

EXIST ROW

589 588 587 586 585 584 583 582 581

13+00

℄ FM 1378
STA. 13+45.00

14+00

℄ FM 1378
STA. 14+25.00
2% ROADWAY SLOPE

℄ FM 1378
WEST LUCAS ROAD

15+00

594 593 592 591 590 589 588 587 590 589 588 587

T ROW

EXIST ROW

587 586 585 584 583 582 581 580 579

PROPOSED ROW

DATE: 2/8/2023 TIME: 10:04:38 AM FILE: c:\txdot\pw*online\txdot5\ibrahim.elsaad\d0326855\Pavement Contours.dgn

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED PROFESSIONAL ENGINEER

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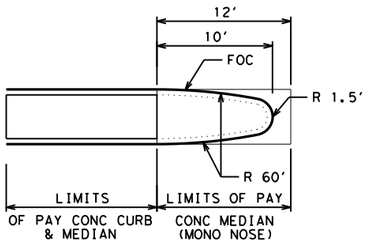
MISCELLANEOUS ROADWAY CONTOUR

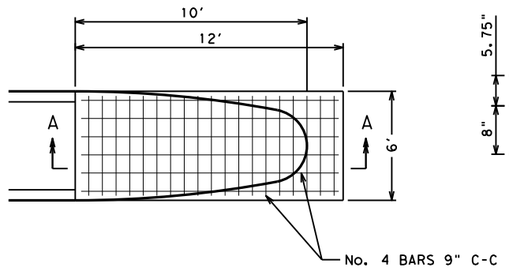
SCALE: 1"=20' SHEET 1 OF 1

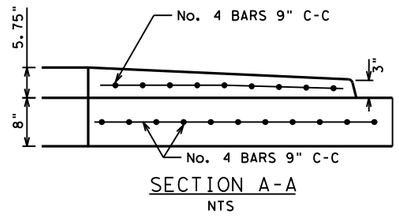
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
PR	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
PR	TEXAS	DAL	COLLIN	138
CHECK	CONTROL	SECTION	JOB	
KB	1392	01	044, ETC.	
CHECK				



6' MEDIAN NOSE DETAIL

NTS



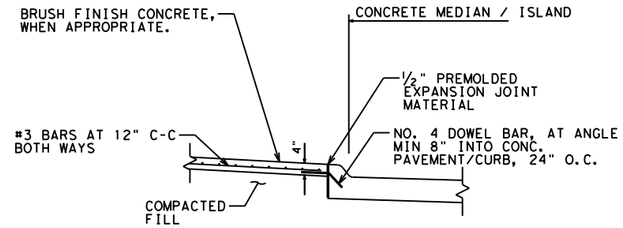


SECTION A-A

NTS

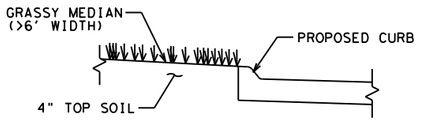
MEDIAN NOSE REINFORCING DETAIL

NTS



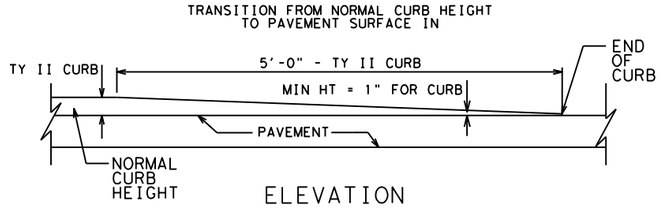
CONCRETE MEDIAN & ISLAND DETAIL

NTS



MEDIAN DETAILS

NTS

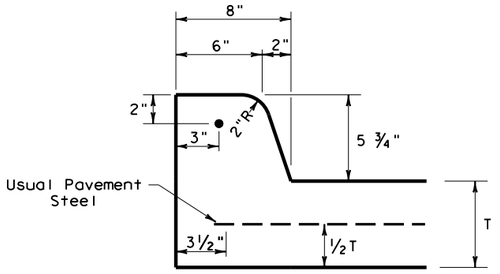


ELEVATION

CURB END TRANSITION

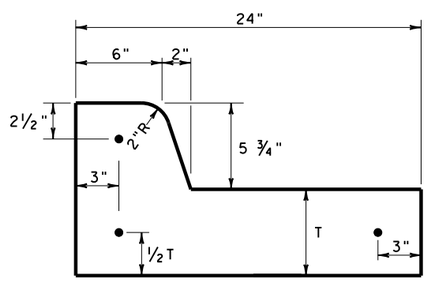
NTS

TYPE II CURB (MONOLITHIC)

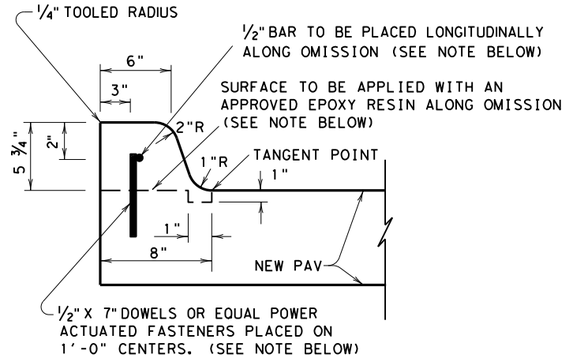


TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT

TYPE II CURB & GUTTER



TYPE II DOWEL CURB



NOTE:
IF CONTINUOUS MONOLITHIC CURB HAS TO BE OMITTED FOR ANY REASON, THE CURB SHALL BE DOWELED AS SHOWN ABOVE.

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 11-7-22
Signature of Registrant & Date

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Texas Department of Transportation

FM 1378
AT FM 3286

MISCELLANEOUS ROADWAY DETAILS

SHEET 1 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	139
CHECK	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	

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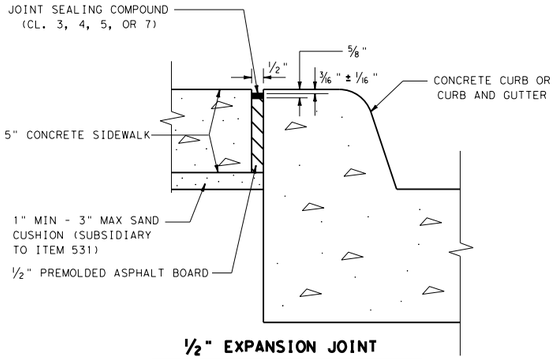
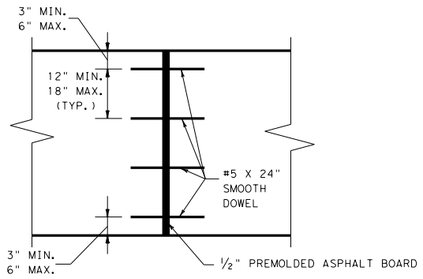
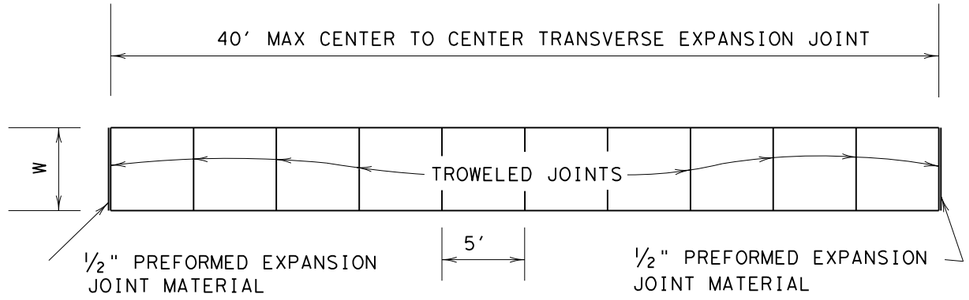


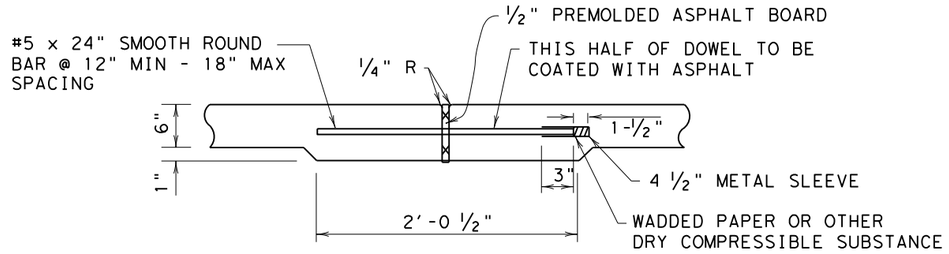
1/2" EXPANSION JOINT
(SIDEWALK ADJACENT TO CURB)



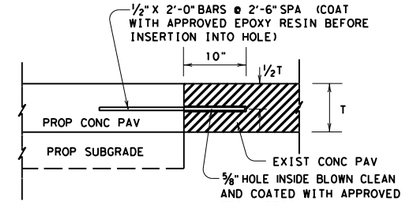
SIDEWALK TRANSVERSE EXPANSION JOINT
PLAN VIEW



SIDEWALK PLAN



SIDEWALK TRANSVERSE EXPANSION JOINT DETAIL

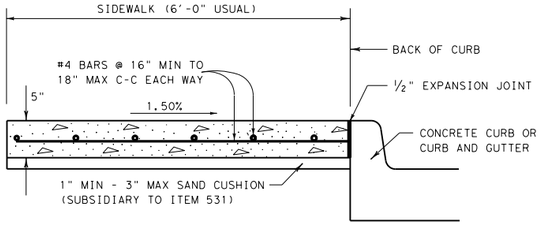


TO BE USED WHERE PROPOSED CONCRETE
PAVEMENT MEETS EXISTING CONCRETE
PAVEMENT

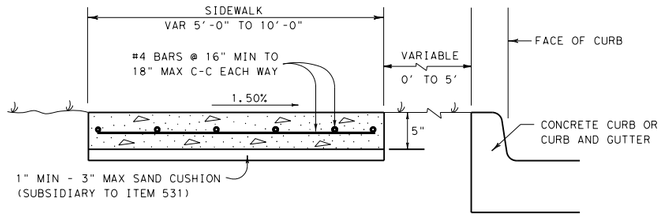
ANCHOR JOINT DETAIL

General Notes For Concrete Curb and Curb and Gutter

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



CONCRETE SIDEWALK
(ADJACENT TO CURB)



CONCRETE SIDEWALK
(REMOTE FROM CURB)

CONCRETE SIDEWALK DETAILS

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 11-7-22
Signature of Registrant & Date

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FM 1378
AT FM 3286

MISCELLANEOUS ROADWAY DETAILS

SHEET 2 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	140
CHECK	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	

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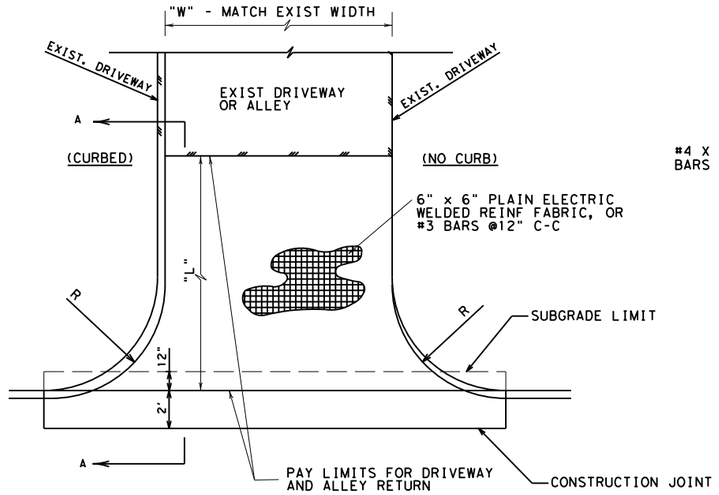
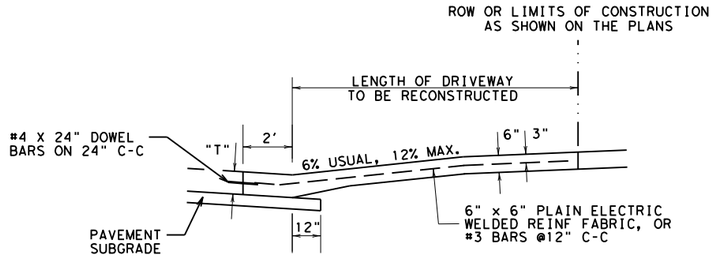




SECTION A-A

CONCRETE DRIVEWAYS

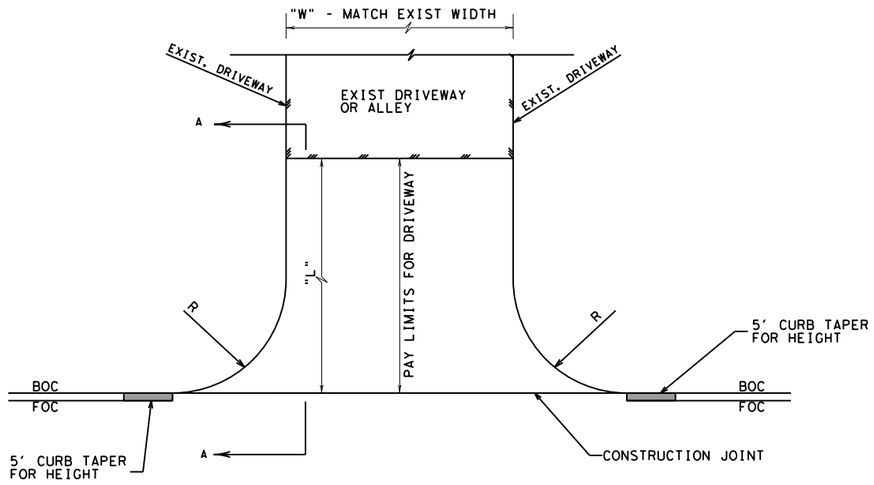
NTS

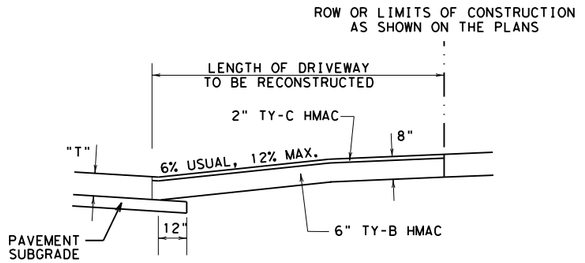
NOTES:

1) DRIVEWAY LOCATIONS MAY BE SHIFTED AT TIME OF CONSTRUCTION AS DIRECTED BY THE ENGINEER TO MATCH EXISTING CONDITIONS.

2) OMIT PAYMENT FOR CURB WITHIN LIMITS OF DRIVEWAY. CURBS ON DRIVEWAYS SHALL BE CONSIDERED SUBSIDIARY TO THE PRICE BID PER SQUARE YARD FOR DRIVEWAY AND WILL NOT BE PAID FOR DIRECTLY.

3) PLACE CONCRETE IN MEDIAN AREAS OF WIDTH 6 FEET (CURB TO CURB) OR LESS.





SECTION A-A

ASPHALT DRIVEWAYS

NTS

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 11-7-22
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MISCELLANEOUS ROADWAY DETAILS

SHEET 3 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	141
CHECK	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	

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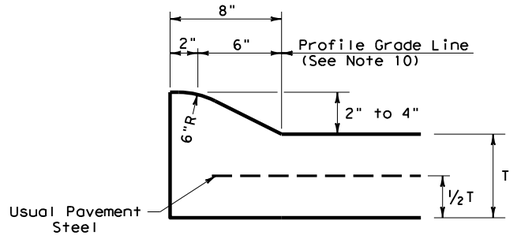
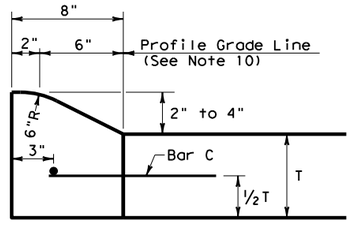
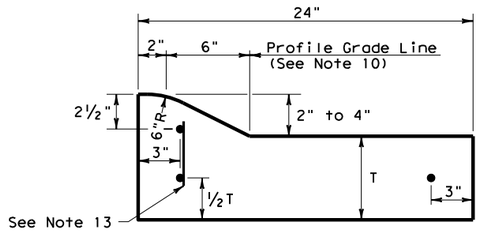
DATE:
FILE:



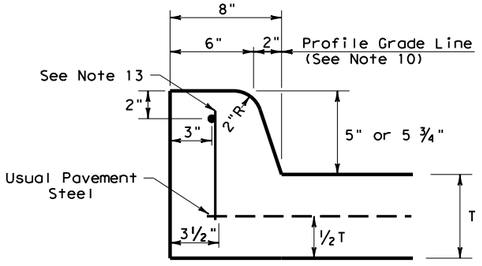
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



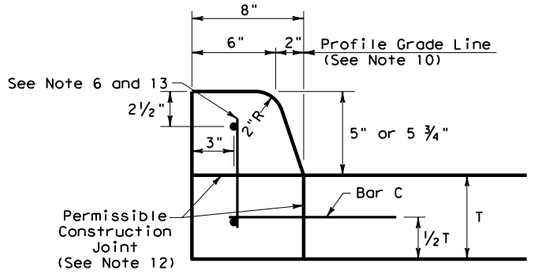
TYPE I CURB
2" - 4" HEIGHT



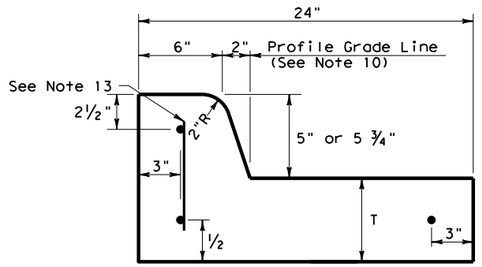
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



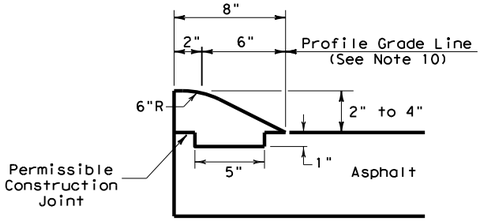
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



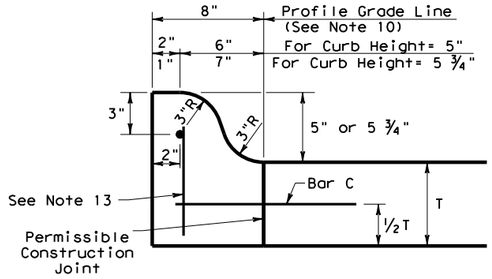
TYPE II CURB
5" - 5 ¾" HEIGHT



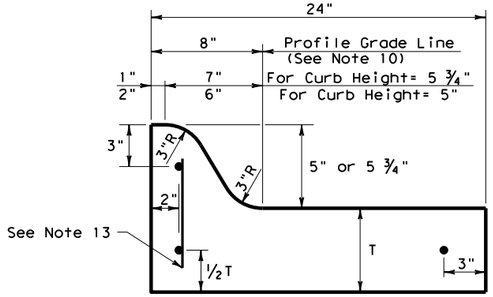
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



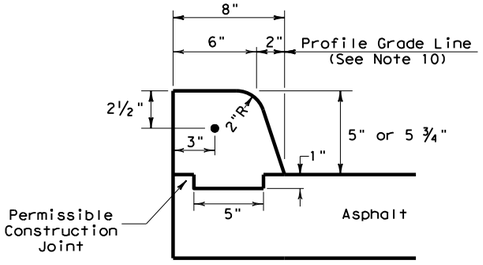
TYPE III CURB (KEYED)
2" - 4" HEIGHT



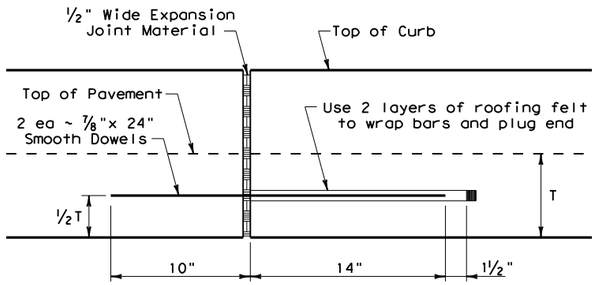
TYPE IIa CURB
5" - 5 ¾" HEIGHT



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

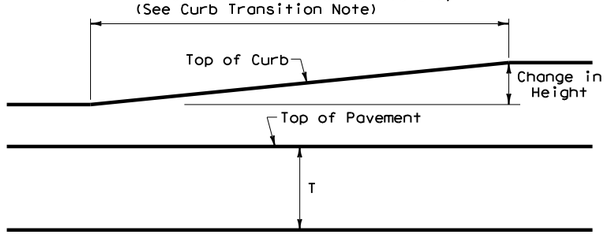


TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

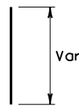
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



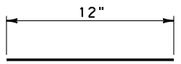
CURB TRANSITION
Note: To be paid for as Highest Curb

GENERAL NOTES

1. All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
2. Concrete shall be Class A.
3. When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
4. Round exposed sharp edges with a rounding tool, to a minimum radius of ¼ inch.
5. All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
6. Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and grouted in place, or may be inserted into fresh concrete.
7. Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
8. Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C~C.
9. Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
10. Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
11. One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
12. When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
13. Bar B placement as needed (typically at four ft. C-C) to support curb reinforcing steel during concrete placement.



BAR B



BAR C

Texas Department of Transportation

Design Division Standard

CONCRETE CURB AND CURB AND GUTTER

CCCG-22

FILE: cccg21.dgn	DN: TXDOT	CK: AN	DW: CS	CK: KM
© TxDOT: JUNE 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.	FM 1378, ETC.
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		142

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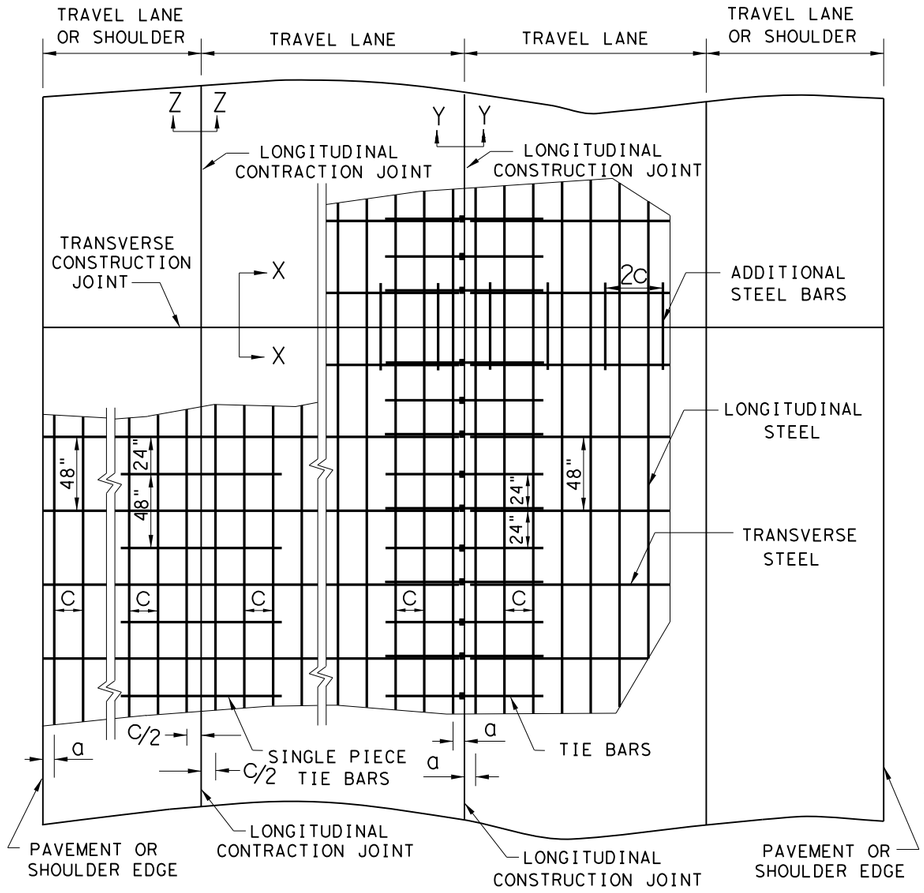
TABLE NO. 1 LONGITUDINAL STEEL					
SLAB THICKNESS AND BAR SIZE		REGULAR STEEL BARS	FIRST SPACING AT EDGE OR JOINT	ADDITIONAL STEEL BARS AT TRANSVERSE CONSTRUCTION JOINT (SECTION X-X)	
T (IN.)	BAR SIZE	SPACING C (IN.)	SPACING a (IN.)	SPACING 2 X C (IN.)	LENGTH L (IN.)
7.0	#5	6.5	3 TO 4	13	50
7.5	#5	6.0	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

TABLE NO. 2 TRANSVERSE STEEL AND TIE BARS						
SLAB THICKNESS (IN.)	TRANSVERSE STEEL		TIE BARS AT LONGITUDINAL CONTRACTION 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

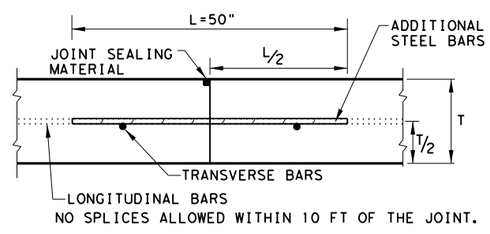


TYPICAL PAVEMENT LAYOUT

PLAN VIEW (NOT TO SCALE)

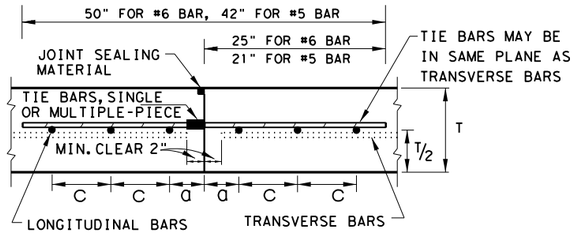
GENERAL NOTES

1. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS. PAVEMENTS WIDER THAN 100 FT. WITHOUT A FREE LONGITUDINAL JOINT ARE NOT COVERED BY THIS STANDARD.
2. USE COARSE AGGREGATES WITH A RATED COEFFICIENT OF THERMAL EXPANSION (CoTE) OF NOT MORE THAN 5.5 X 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 SEALS."



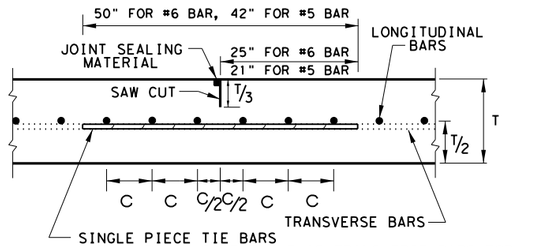
TRANSVERSE CONSTRUCTION JOINT

SECTION X - X



LONGITUDINAL CONSTRUCTION JOINT

SECTION Y - Y



LONGITUDINAL CONTRACTION JOINT

SECTION Z - Z

Texas Department of Transportation — Design Division Standard

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
© TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.	FM 1378, ETC.
10/10/2011 ADD GN #12	DIST	COUNTY		SHEET NO.
04/09/2013 REMOVE 6" AND 6.5" ADD CTE REQUIREMENTS	DAL	COLLIN		143
05/05/2017 CoTE AS RATED 4.3				

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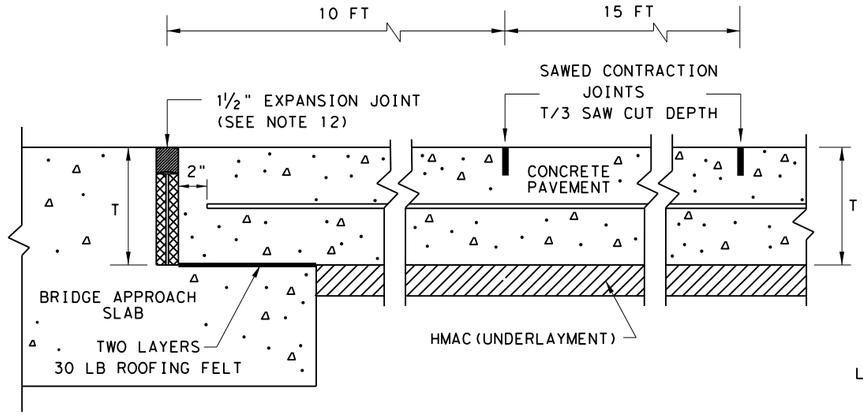
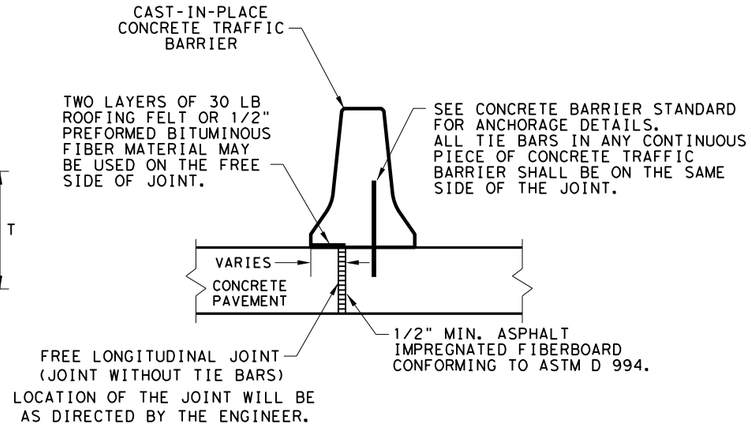
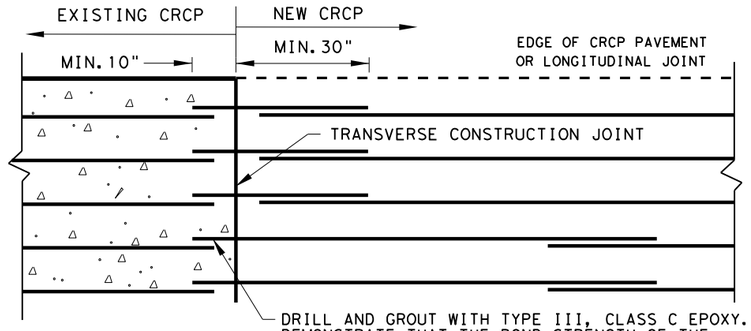


TRANSVERSE EXPANSION JOINT DETAIL
AT BRIDGE APPROACH



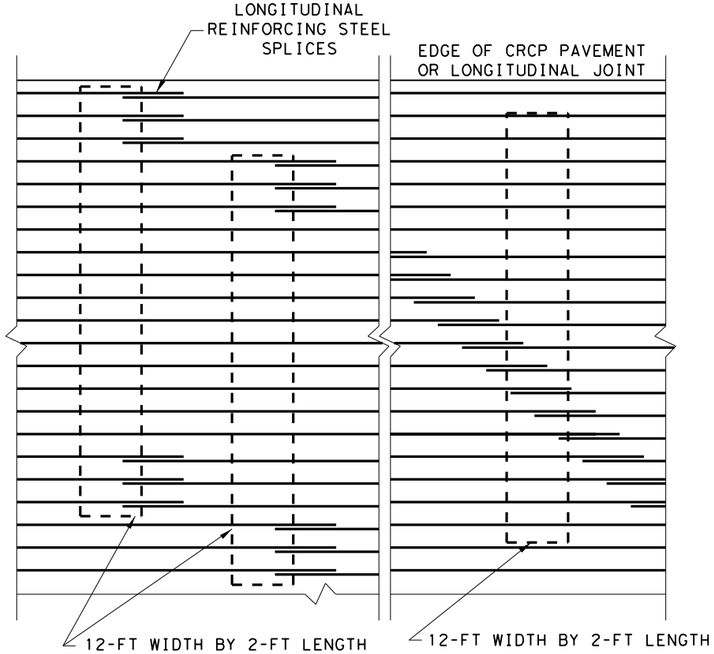
FREE LONGITUDINAL JOINT DETAIL



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

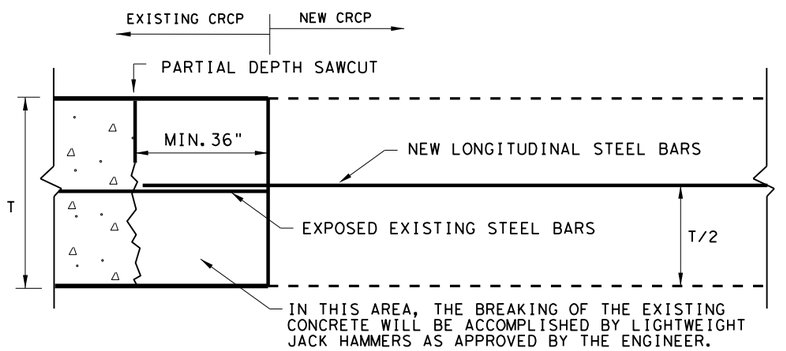
1. BEFORE WIDENING WORK, DEMONSTRATE THAT THE BOND STRENGTH OF THE EPOXY-GROUTED TIE BARS MEETS THE REQUIRMENTS OF PULL-OUT TEST SPECIFIED IN ITEM 361.
2. SPACE TIE BARS AT 24" SPACING. USE #6 TIE BARS FOR 8" AND THICKER SLABS, USE #5 TIE BARS FOR LESS THAN 8" THICK SLABS.

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 B: BREAKBACK AND LAP

TRANSVERSE TIE JOINT DETAIL
EXISTING CRCP TO NEW CRCP

SHEET 2 OF 2

Texas Department of Transportation

Design Division Standard

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
© TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 03/16/2020 REMOVED TABLE 1A	1392	01	044, ETC.	FM 1378, ETC.
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		144

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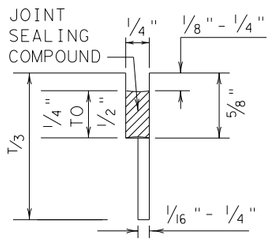
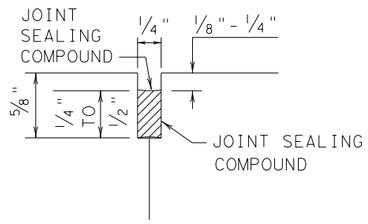
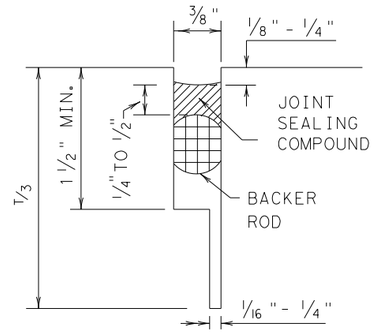
METHOD B: JOINT SEALING COMPOUND



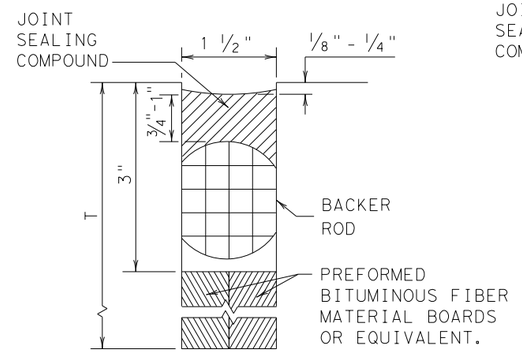
LONGITUDINAL SAWED
CONTRACTION JOINT



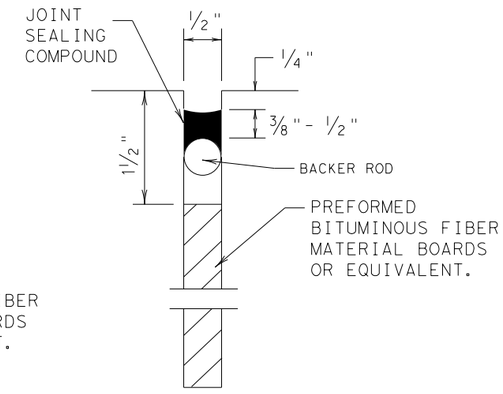
LONGITUDINAL OR TRANSVERSE
CONSTRUCTION JOINT



TRANSVERSE SAWED
CONTRACTION JOINT

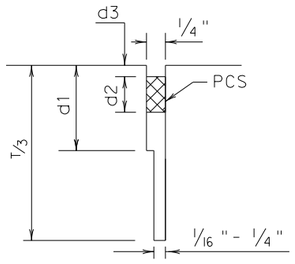


TRANSVERSE FORMED
EXPANSION JOINT

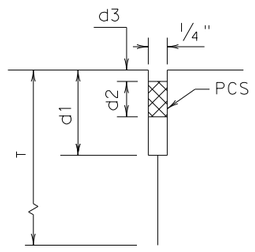


FORMED
ISOLATION JOINT

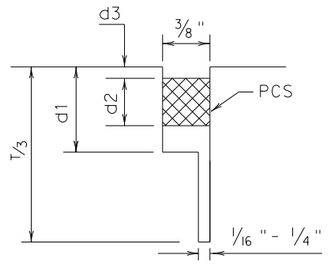
METHOD A: PREFORMED COMPRESSION SEALS (PCS)(DMS-6310 CLASS 6)



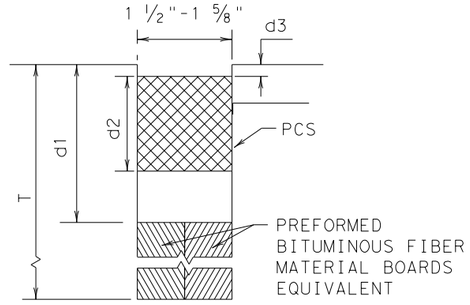
LONGITUDINAL SAWED
CONTRACTION JOINT



LONGITUDINAL
CONSTRUCTION JOINT



TRANSVERSE SAWED
CONTRACTION JOINT



TRANSVERSE FORMED
EXPANSION JOINT

GENERAL NOTES

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.

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CONCRETE PAVING DETAILS

JOINT SEALS

JS-14

FILE: js14.dgn	DN: TxDOT		DN: HC		DW: HC	CK: AN
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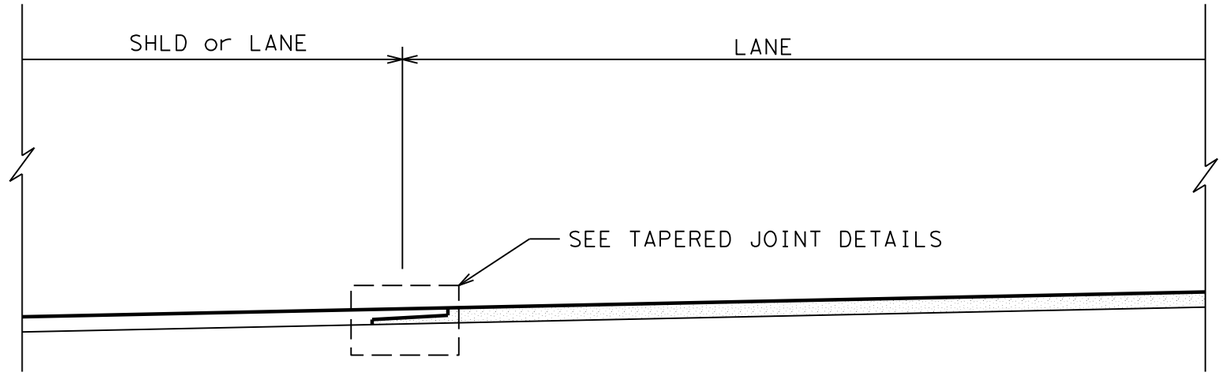
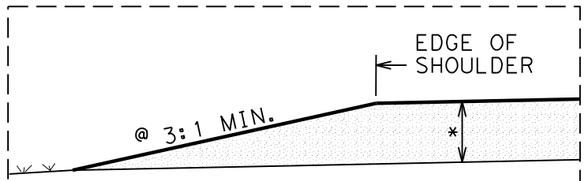
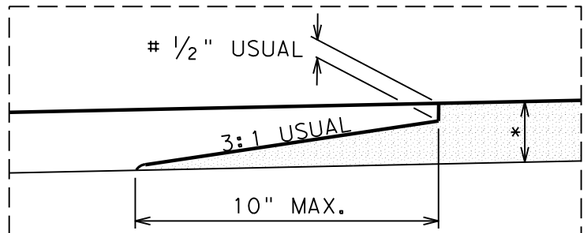
	DAL	COLLIN			145	

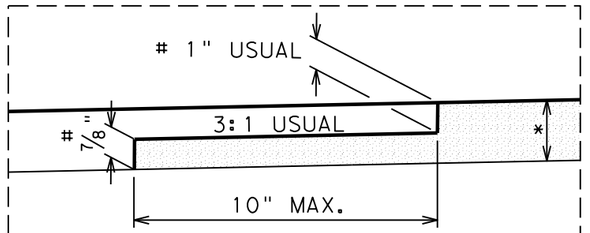




TAPERED OUTSIDE EDGE DETAIL



TAPERED JOINT DETAIL 1.5" TO 4" LIFTS



TAPERED JOINT DETAIL OVER 4" LIFTS

@ IF BACKFILLED SLOPE IS LESS THAN 3:1, COVER WEDGE WITH APPROVED BACKFILL.

* SEE TYPICAL SECTION FOR DEPTH AND TYPE OF HMA.
# NOTCH DEPTH SHALL NOT BE LESS THAN NOMINAL AGGREGATE SIZE.

NOTES:

1. THE ABOVE DETAILS SHALL BE CONSTRUCTED BY TAPERING THE BITUMINOUS MAT. THE TAPERED PORTION SHALL EXTEND BEYOND THE NORMAL LANE WIDTH AND BE LAID MONOLITHICALLY WITH ADJOINING MAT. THE TAPERED PORTION OF THE MAT SHALL BE CONSTRUCTED BY THE USE OF AN APPROVED STRIKE-OFF DEVICE THAT WILL PROVIDE A UNIFORM SLOPE AND WILL NOT RESTRICT THE MAIN SCREED. CLEAN WEDGE PRIOR TO PLACEMENT OF TACK COAT. TACK COAT SHALL BE APPLIED UNIFORMLY TO THE IN-PLACE TAPER WITH A DISTRIBUTOR BEFORE THE ADJACENT MAT IS PLACED. FINAL DENSITY REQUIREMENTS FOR THE ENTIRE PAVEMENT, INCLUDING THE TAPER AREA, WILL REMAIN UNCHANGED. COMPACTION OF THE INITIAL TAPER SECTION WILL BE REQUIRED AS NEAR TO FINAL DENSITY AS POSSIBLE. ROLL ADJACENT MAT FROM HOT SIDE TO COLD.

2. THE TYPE OF DEVICE TO PRODUCE ABOVE REFERENCED DETAILS SHALL PROVIDE INITIAL COMPACTION EQUIVALENT TO LAYDOWN MACHINE, WITH FINAL DENSITY ADHERING TO NOTE 1, AND BE APPROVED BY THE ENGINEER.

3. HOT MIX MATERIAL AND PLACEMENT SHALL BE PAID FOR UNDER THE PERTINENT ITEM. ANY ADDITIONAL SURFACE PREPARATION, TACK COAT, TACK COAT PLACEMENT, EQUIPMENT, LABOR, TOOLS AND INCIDENTALS TO PRODUCE TAPERED EDGE AND JOINTS AS DESCRIBED ABOVE SHALL BE CONSIDERED SUBSIDIARY TO THE HOT MIX ITEM.

4. THE TAPERED JOINT DETAIL IS NOT INTENDED FOR USE ON 2 WAY 2 LANE ROADBED CENTERLINE WITH LESS THAN 22' OVERALL WIDTH.

5. FULL PAVING OF ALL LANES AND SHOULDRS BY THE END OF EACH DAY PRODUCTION WILL NOT REQUIRE A TAPERED JOINT.

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HOT MIX EDGE AND LONGITUDINAL JOINT DETAILS DALLAS DISTRICT STANDARD

LJD(1-1)-07

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NUMBER
18	SEE TITLE SHEET		146
STATE	DISTRICT	COUNTY	
TEXAS	DALLAS	COLLIN	
CONTROL	SECTION	SECTION	HIGHWAY NUMBER
1392	01	044	FM 1378

REVISED ON 9/10/08

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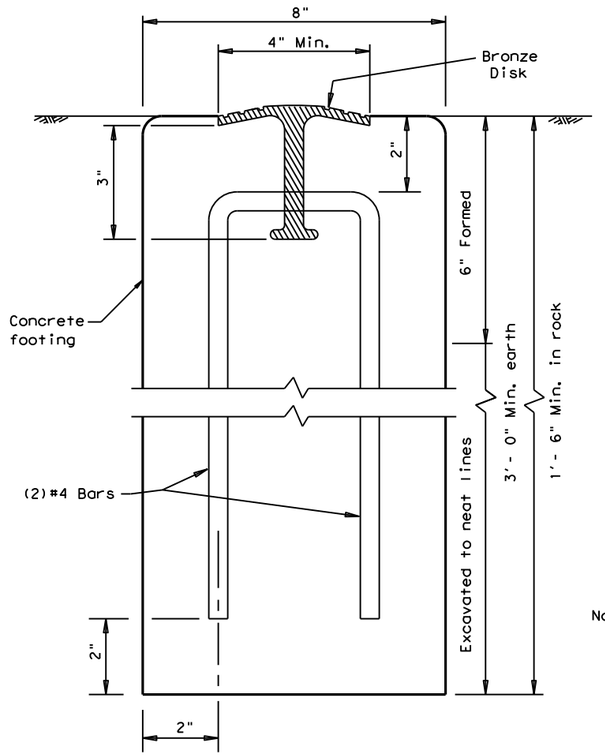
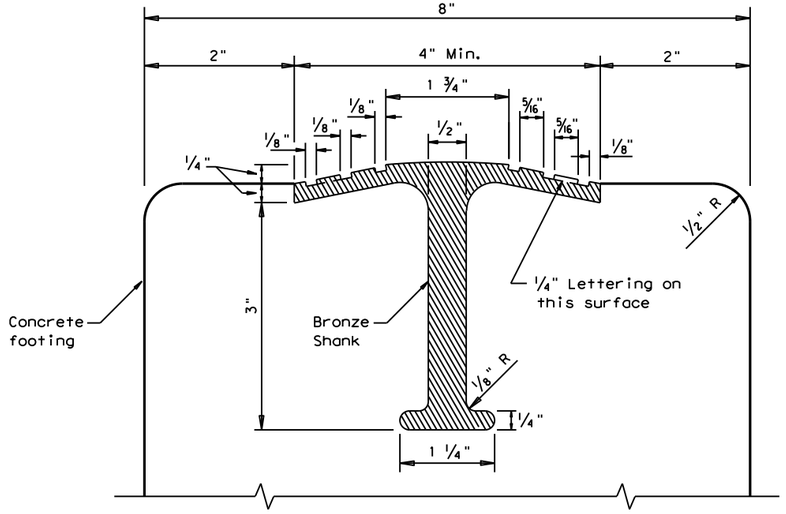
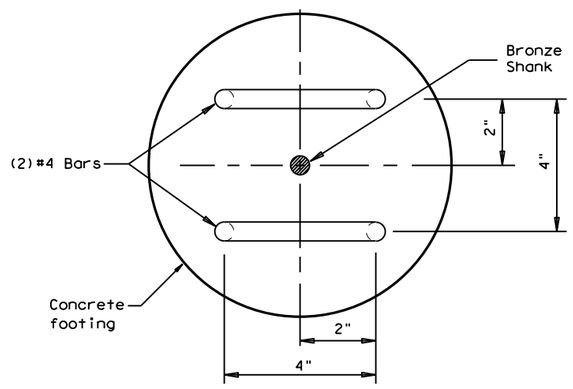


SECTION A-A

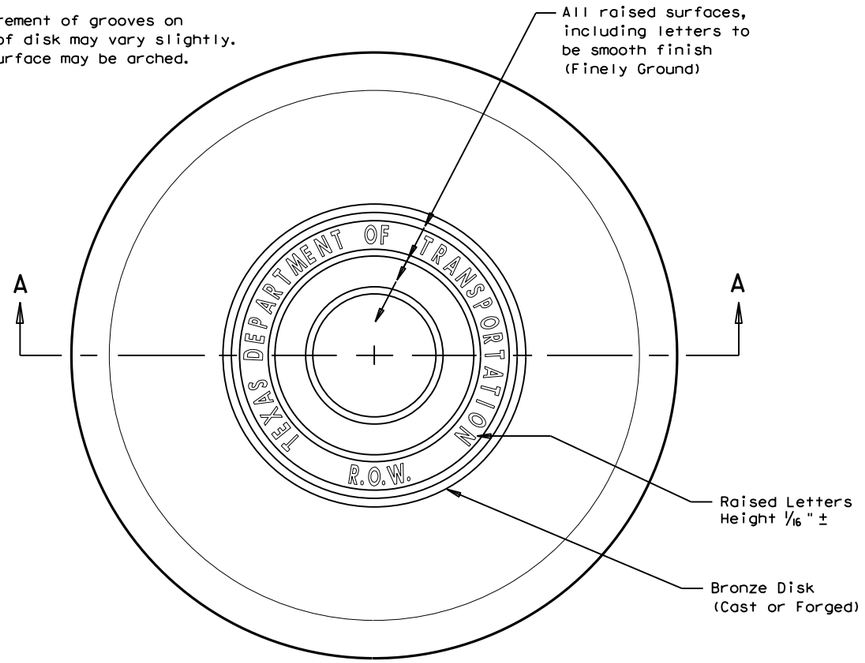


SECTION THRU TOP OF ROW MARKER



CROSS SECTION THRU MARKER

Note:
Measurement of grooves on face of disk may vary slightly. Top surface may be arched.



TOP VIEW OF ROW MARKER

GENERAL NOTES

1. All materials and construction shall be in accordance with Item 538, "Right of way markers."
2. Right-of-Way marker concrete shall be poured in place. The bronze disks shall be set to the correct line and grade, as directed by the Engineer.
3. The bronze disk shall be of architectural bronze with the following composition: Copper 85%, Tin 5%, Lead 5%, Zinc 5%. Excavation of the marker locations shall be made of uniform lines except for the top of 6 inches which shall be formed with removable forms. The top part of the marker around the bronze disk shall receive a trowel finish.
4. Once the concrete has set, the Engineer will stencil the required survey data and, with a chisel or center punch, cut across marker the exact location of the Right-of-Way line in the bronze disk.

Texas Department of Transportation

Design Division Standard

RIGHT-OF-WAY MARKER

M-10

FILE: m10.dgn	DN: TxDOT	CK: AM	DW: BD/VP	CK: VP
© TxDOT February 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.	FM 1378, ETC.
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	DAL	COLLIN		147

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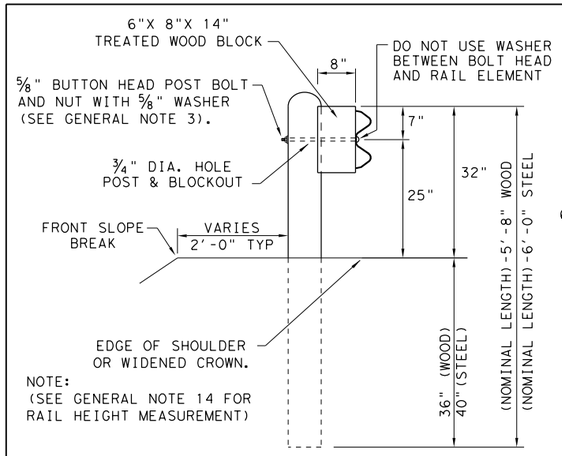
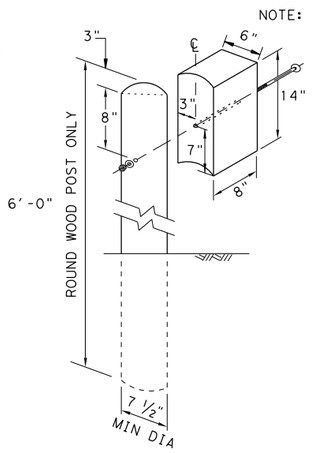
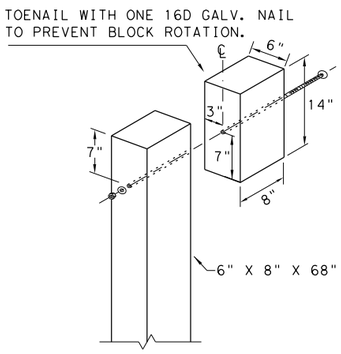


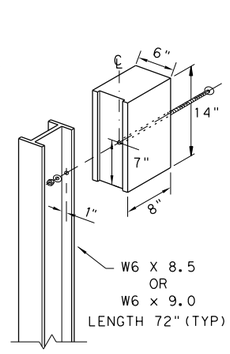
TYPICAL POST PLACEMENT



WOOD BLOCK TO
ROUND WOOD POST

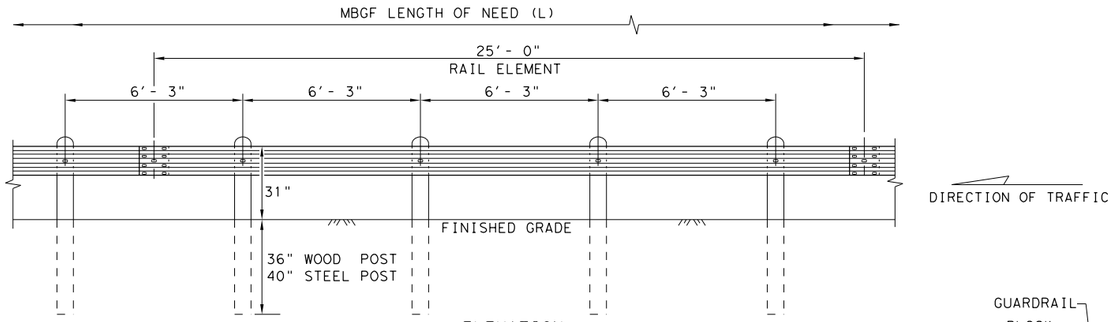


WOOD BLOCK TO
RECTANGULAR WOOD POST



ROUTED WOOD BLOCK
TO I-BEAM STEEL POST

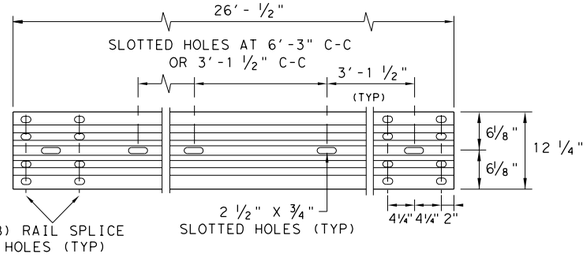
NOTE: ** "WOOD" INDICATES DIMENSIONS FOR BOTH ROUND AND RECTANGULAR WOOD POST SYSTEMS.



DIRECTION OF TRAFFIC

ELEVATION
MID-SPAN RAIL SPLICE

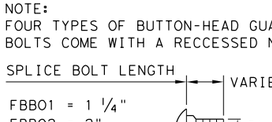
SHOWING A 25'- 0" SECTION OF W-BEAM RAIL. (SEE GENERAL NOTE 2)



ELEVATION 25'- 0"(NOM.) W-BEAM SECTION

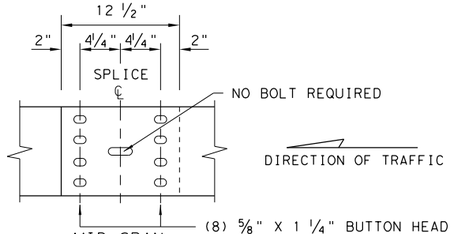
NOTES: SEE GENERAL NOTE 2 FOR ALLOWABLE RAIL TYPES.
SEE RAIL SPLICE DETAIL FOR REQUIRED HARDWARE.

NOTE:
FOUR TYPES OF BUTTON-HEAD GUARD RAIL
BOLTS COME WITH A RECCESSED NUT.



BUTTON HEAD BOLT

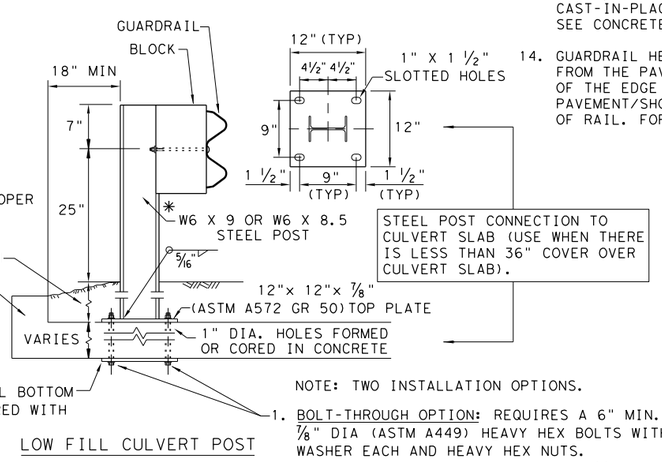
NOTE: SEE GENERAL NOTE 3 FOR SPLICE & POST BOLT DETAILS.



DIRECTION OF TRAFFIC

MID-SPAN
RAIL SPLICE DETAIL

NOTE: GF(31), MID-SPAN RAIL SPLICES ARE REQUIRED WITH 6'-3" POST SPACINGS.



* POST(S) MAY REQUIRE FIELD MODIFICATION TO ENSURE PROPER GUARDRAIL HEIGHT.

STEEL POST CONNECTION TO CULVERT SLAB (USE WHEN THERE IS LESS THAN 36" COVER OVER CULVERT SLAB).

LOW FILL CULVERT POST

NOTE: TWO INSTALLATION OPTIONS.

1. BOLT-THROUGH OPTION: REQUIRES A 6" MIN. SLAB THICKNESS. ⅞" DIA (ASTM A449) HEAVY HEX BOLTS WITH TWO HARDENED WASHER EACH AND HEAVY HEX NUTS.
   NOTE: BOLT LENGTH = SLAB PLUS 2 ¼" MIN.

2. EPOXY ANCHOR OPTION: THIS OPTION MAY ONLY BE USED IF THE CULVERT SLAB IS 9" MIN. THICK. THREADED ANCHOR RODS MUST BE ⅞" DIA. ASTM A449 OR A193 GRADE B7 WITH HEAVY HEX NUT, AND ONE HARDENED WASHER EACH. EMBED ANCHOR RODS 6" WITH HILTI HIT RE 500 EPOXY ADHESIVE. OTHER TYPE III CLASS C EPOXY ADHESIVES MEETING THE REQUIREMENTS OF DMS-6100, "EPOXIES AND ADHESIVES", MAY BE USED IF IT CAN BE DEMONSTRATED THAT THEY MEET OR EXCEED THE STRENGTH OF HILTI HIT RE 500 WITH THE SAME EMBEDMENT DEPTH AND THREADED ROD DIA. FOLLOW THE MANUFACTURER'S REQUIREMENTS FOR INSTALLING EPOXIED THREADED RODS. EXTEND RODS ¼" MIN. BEYOND NUT.

NOTE: CULVERTS OF 25 FT. OR LESS, SEE GF(31)LS STANDARD FOR "LONG SPAN" OPTION.

NOTE: TRANSISTIONS TO BRIDGE RAILS OR TRAFFIC BARRIERS.
SEE GF(31)TL3 TR STANDARD FOR HIGH-SPEED TL-3 TRANSITIONS.
SEE GF(31)TL2 TR STANDARD FOR LOW-SPEED TL-2 TRANSITIONS.

GENERAL NOTES

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540,"METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'- 0", OR 12'- 6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 ½" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND ⅝" WASHER (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445,"GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 25:1 OR FLATTER.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25 INCHES ABOVE THE GUTTER PAN OR EDGE OF SHOULDER.
9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210,"COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MD.
14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL, MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.

Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE
TL-3 MASH COMPLIANT
GF(31)-19

FILE: gf3119.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.	FM 1378, ETC.
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		147A

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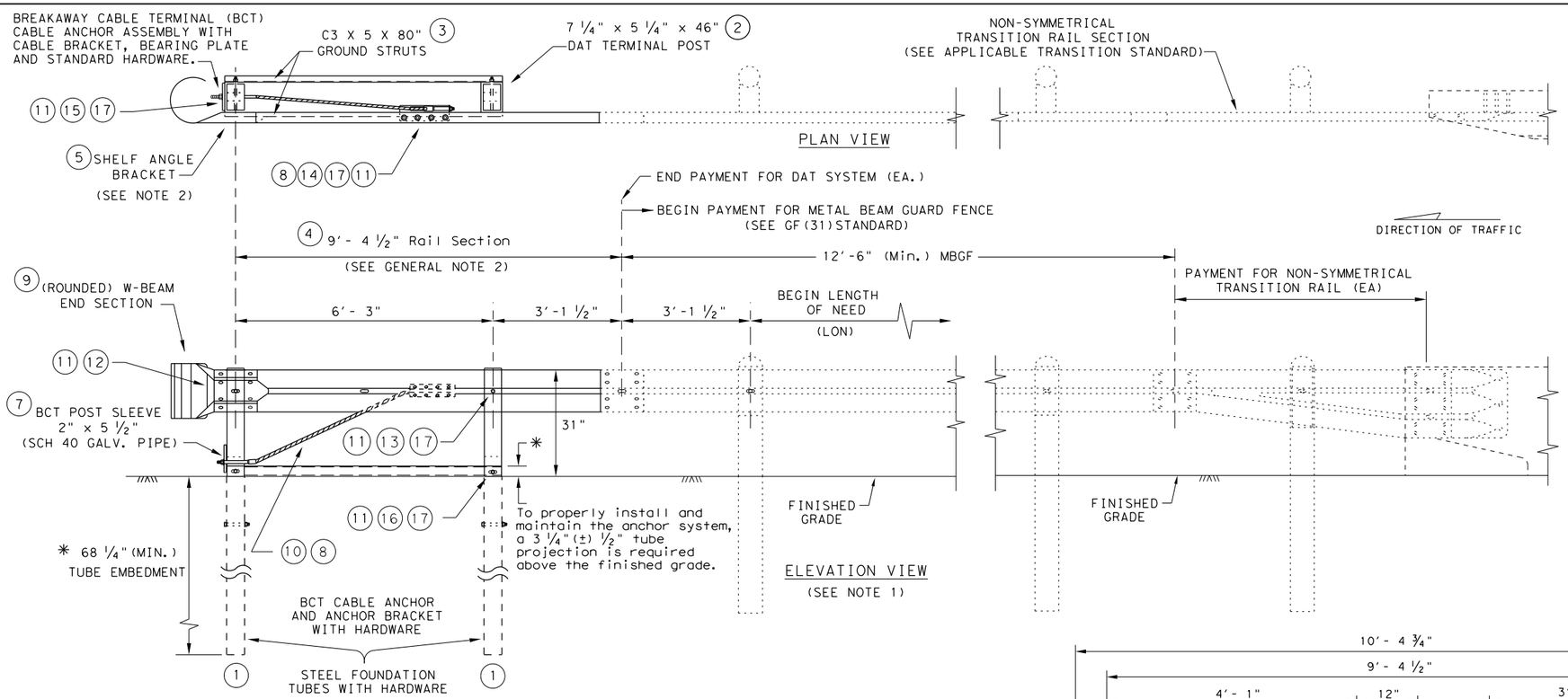
DATE: 2/28/2023
FILE: c:\txdot\pw_online\txdot5\ibrahim.elsaad\d0480388\gf31dat19.dgn



DOWNSTREAM ANCHOR TERMINAL (DAT)

NOTE: ONLY FOR DOWNSTREAM USE, WHEN LOCATED OUTSIDE THE HORIZONTAL CLEARANCE AREA OF OPPOSING TRAFFIC.

GENERAL NOTES

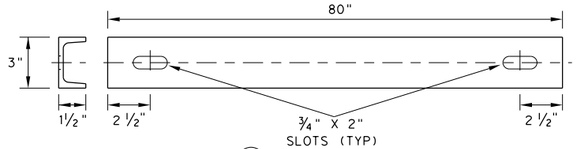
1. THE DETAIL SHOWN IS THE MINIMUM LENGTH OF NEED (LON) FOR A DOWNSTREAM ANCHOR TERMINAL (DAT) CONNECTED TO A CONCRETE RAIL.
2. THE RAIL SECTION AT THE END POST IS SUPPORTED BY THE SHELF ANGLE BRACKET. THE RAIL ELEMENT IS NOT ATTACHED TO THE END POST.
3. THE FOUNDATION TUBES SHALL NOT PROJECT MORE THAN 3 3/4" ABOVE THE FINISHED GRADE.
4. ALL HARDWARE FOR DAT SHALL BE ASTM A307 UNLESS OTHERWISE SHOWN.
5. REFER TO GF(31) SHEET FOR TERMINAL CONNECTION DETAILS.

MOW STRIP INSTALLATION

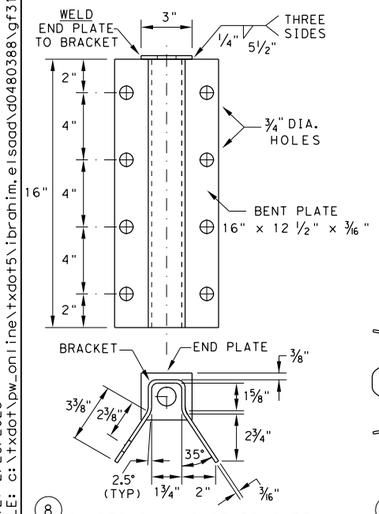
IF A MOW STRIP IS REQUIRED WITH THE DAT INSTALLATION THE LEAVE-OUT AREA AROUND THE STEEL FOUNDATION TUBES AND THE TWO CHANNEL STRUTS MAY BE OMITTED. THIS WILL REQUIRE A FULL POUR AT THE FOUNDATION TUBES.

#	(DAT) PARTS LIST	QTY
(1)	STEEL FOUNDATION TUBE	2
(2)	DAT TERMINAL POST	2
(3)	CHANNEL STRUT	2
(4)	TERMINAL RAIL ELEMENT	1
(5)	SHELF ANGLE BRACKET	1
(6)	BCT BEARING PLATE	1
(7)	BCT POST SLEEVE	1
(8)	GUARDRAIL ANCHOR BRACKET	1
(9)	(ROUNDED) W-BEAM END SECTION	1
(10)	BCT CABLE ANCHOR	1
(11)	RECESSED NUT, GUARDRAIL	20
(12)	1 1/4" BUTTON HEAD BOLT	4
(13)	10" BUTTON HEAD BOLT	2
(14)	5/8" X 2" HEX HEAD BOLT	8
(15)	5/8" X 8" HEX HEAD BOLT	4
(16)	5/8" X 10" HEX HEAD BOLT	2
(17)	5/8" FLAT WASHER	18

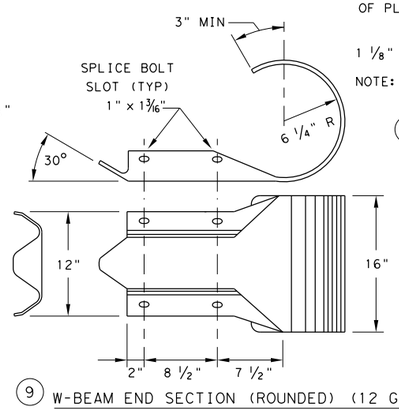
(4) TERMINAL RAIL ELEMENT FOR DAT



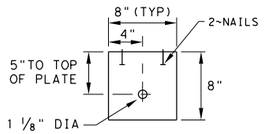
(3) CHANNEL STRUT
C3 X 5 X 80", GRADE A36



(8) GUARDRAIL ANCHOR BRACKET

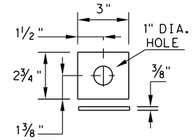


(9) W-BEAM END SECTION (ROUNDED) (12 GA.)

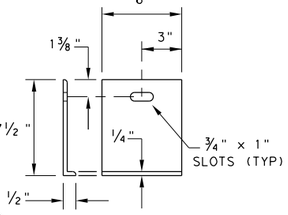


NOTE: DRIVE NAILS AND BEND OVER TO PREVENT PLATE ROTATION

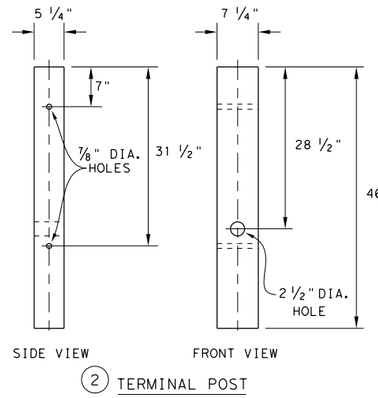
(6) BEARING PLATE
8"x 8"x 5/8" R



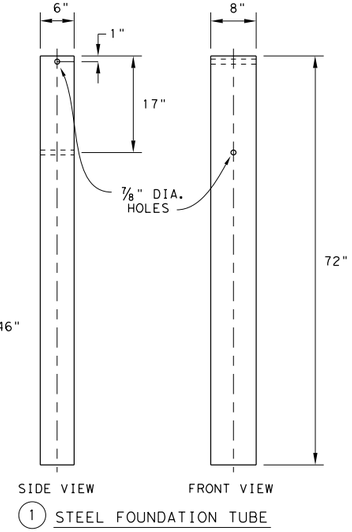
END PLATE



(5) SHELF ANGLE BRACKET



(2) TERMINAL POST
7 1/4"x 5 1/4"x 46" WOOD POST



(1) STEEL FOUNDATION TUBE
6"x 8"x 1/8" x 72" STEEL TUBE

Texas Department of Transportation — Design Division Standard

METAL BEAM GUARD FENCE
(DOWNSTREAM ANCHOR TERMINAL)
TL-3 MASH COMPLIANT

GF(31)DAT-19

FILE: gf31dat19.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
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DATE: 2/28/2023
FILE: c:\txdot\pw_online\txdot5\ibrahim.elsaad\d0480388\sgt10s3116.dgn

NOTE: STEEL I-BEAM POST W6 X 8.5 (6'-0") PN: 533G
STANDARD WOOD BLOCKOUTS (6"X8"X14") PN: 4076B
AT (POSTS 2 THRU 8)

⅝" X 10" HGR BOLT PN: 3500G
⅝" HGR NUT PN: 3340G

LINE AT THE BACK OF POST #2 THRU #8

FROM THE CENTERLINE OF POST(1) & POST(0)

ANGLE STRUT PN: 15202G

ANCHOR PADDLE PN: 15204A

16"

POST(8) POST(7) POST(6) POST(5) POST(4) POST(3)

DO NOT BOLT ANCHOR RAIL TO - POST (2)

SEE DETAIL 1

POST(1)

POST(0)

TRAFFIC FLOW

MASH TEST LEVEL 3 (TL-3) LENGTH OF SoftStop TERMINAL (50'-9 ½")

PLAN VIEW

BEGIN LENGTH OF NEED

50'-9 ½" STANDARD INSTALLATION LENGTH (MASH TL-3 SoftStop)

BEGIN STANDARD MBGF

END PAYMENT FOR SGT

6¼" 3'-1 ½" 6'-3" 6'-3"

ANCHOR RAIL WITH SLOTS - (THREADED THRU HEAD)
SEE SoftStop MANUAL FOR COMPLETE DETAILS

MIDDLE SLOT CUTOUT (1) 1 ¾" X 6'-10 ¼"

OUTSIDE SLOTS CUTOUT (2)½" X 6'-9 ⅝"

MBGF LAPPED IN DIRECTION OF TRAFFIC FLOW

25'-0" DOWNSTREAM W-BEAM GUARDRAIL PN: 61G

SoftStop ANCHOR RAIL (12GA) PN: 15215G

SoftStop FACE SEE GN(3) & NOTE: B

3'-1 ½"(+/-) 6'-3" 6'-3" 6'-3" 6'-3" 6'-3" 6'-3" 5'-8" 4'-7"

ANCHOR PADDLE PN: 15204A

END OF ANCHOR RAIL PN: 15215G

SEE NOTE: C

POST 32" HEIGHT

31"

RAIL HEIGHT

RAIL 25'-0" PN: 61G

RAIL 25'-0" PN: 15215G

DO NOT BOLT ANCHOR RAIL TO POST(2)

SEE DETAIL 2

SEE NOTE: A

(8) ⅝"x 1- ¼" GR BOLTS PN: 3360G
⅝" HEX NUTS PN: 3340G

POST 40" DEPTH (TYP 1-8)

(8) ⅝"x 1- ¼" HGR BOLTS PN: 3360G
⅝" HEX NUTS PN: 3340G

13/16" DIA. YIELDING HOLES

13/16" DIA. YIELDING HOLES

SEE DETAIL 3

6'-1⅜"

POST(8) POST(7) POST(6) POST(5) POST(4) POST(3) POST(2) 6'-0" (SYTP) PN: 15000G POST(1) 4'-9 ½" SYTP PN: 15203G POST(0) 6'-5 ⅜" PN: 15205A

ELEVATION VIEW

HARDWARE FOR POST(2) THRU POST(8)
(1) ⅝"x 10" HGR BOLT PN: 3500G
(1) ⅝" HGR HEX NUT PN: 3340G

NOTE: DO NOT BOLT ANCHOR RAIL PANEL TO POST(2)

(1) ⅝" x 1 ¾" HEX HD BOLT PN 3391G

ANGLE STRUT PN: 15202G

(2) ⅝" WASHERS PN 4372G

(1) ⅝" HGR HEX NUT PN 3340G

DETAIL 1
SHOWN AT POST(1) NEAR GROUND

(1) ⅝" HEX NUT

(1) ⅝" x 1- ½" HEX HD BOLT-GR-5 PN: 105286

(2) ⅝" ROUND WASHERS PN: 3240G

DETAIL 2
SHOWN AT POST(1)

ANCHOR KEEPER PLATE (24 GA) PN: 15207G

ANCHOR PLATE WASHER ½" THICK PN: 15206G

1" ROUND WASHER F463 PN: 4902G

(2) ⅝" x 2 ½" HEX HD BOLT GR-5 PN: 105285G

ALTERNATE BLOCKOUT SEE GENERAL NOTE: 6

(2) ⅝" ROUND WASHER (WIDE) PN: 3240G

1" NUT PN: 3908G SHALL BE SECURELY TIGHTENED AFTER FINAL ASSEMBLY, BUT NOT DEFORMING THE KEEPER PLATE.

ANCHOR PADDLE PN: 15204A

(2) ⅝" HEX NUT A563 GR.DH PN: 3245G

W-BEAM FLATTENED (4 PLIES)

ANGLE STRUT PN: 15202G

SEE NOTE: A

(2) ¾" x 2 ½" HEX BOLT (TYP) PN: 3717G

(4) ¾" FLAT WASHER (TYP) PN: 3701G

(2) ¾" HEX NUT (TYP) PN: 3704G

6'-1 ⅜" POST DEPTH

(2) ANCHOR POST ANGLE PN: 15201G

DETAIL 3
AT POST(0)
6'-5 ⅜" (W6 X 15)
I-BEAM POST PN: 15205A

TRAFFIC FLOW

ALTERNATE BLOCKOUT SEE GENERAL NOTE: 6

4" X 7 ½" X 14" BLOCKOUT COMPOSITE PN: 6777B

6" X 8" X 14" BLOCKOUT WOOD PN: 4076B

NOTE: DO NOT BOLT ANCHOR RAIL TO POST(2)

8" 6" 14"

⅝" HGR NUT PN: 3340G

⅝" X 10" HGR POST BOLT PN: 3500G

13/16" DIAMETER YIELDING HOLES LOCATED IN FLANGES

FINISHED GRADE

(HOLES APROXIMATELY CENTERED AT FINISHED GRADE)

ISOMETRIC VIEW
POST(1 & 2)
W6 X 8.5 I-BEAM POST SHOWING STANDARD WOOD BLOCKOUT

NOTE: NO BLOCKOUT INSTALLED AT POST(1)

W-BEAM RAIL 25'-0"

6" X 8" X 14" BLOCKOUT WOOD

⅝" X 10" HGR POST BOLT PN: 3500G

⅝" HGR NUT PN: 3340G

POST HEIGHT 32"

31" RAIL HEIGHT

40"

LINE POST (3, 4, 5, 6, 7 & 8)

FINISHED GRADE

SECTION VIEW B-B
6'-0" (W6 X 8.5)
I-BEAM POST PN: 533G

W-BEAM RAIL 25'-0"

6" X 8" X 14" BLOCKOUT WOOD

⅝" X 10" HGR POST BOLT PN: 3500G

⅝" HGR NUT PN: 3340G

POST HEIGHT 32"

31" RAIL HEIGHT

40"

POST(2)

FINISHED GRADE

SECTION VIEW A-A
6'-0" (W6 X 8.5)
(SYTP) I-BEAM POST PN: 15000G

NOTE: DO NOT BOLT ANCHOR RAIL PANEL TO POST(2)

POST 17"- ½" HEIGHT

4'- 9 ½"

13/16" DIA. YIELDING HOLES

40"

POST(1)

FRONT VIEW POST(1)
4'-9 ½" (W6 X 8.5)
(SYTP) I-BEAM POST PN: 15203G

NOTE: NO BLOCKOUT INSTALLED AT POST(1)

APPROX 5'-10"

5'-0"

50' APPROACH GRADING

2'-0"

STANDARD MBGF

EDGE OF PAVEMENT

NOTE: ADJUST WIDTH ACCORDINGLY WHEN OFFSET IS USED. (OFFSET "OPTION" SHOWN)

2'-0" MAX. RAIL OFFSET

APPROACH GRADING (1V:10H OR FLATTER) SEE PRODUCT ASSEMBLY MANUAL FOR ADDITIONAL GUIDANCE.

APPROACH GRADING AT GUARDRAIL END TREATMENTS

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: TRINITY HIGHWAY AT 1(888)323-6374. 2525 N. STEMMONS FREEWAY, DALLAS, TX 75207
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE; SoftStop END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL. PN: 620237B
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. A COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
7. IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL AND REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
8. POSTS SHALL NOT BE SET IN CONCRETE.
9. IT IS ACCEPTABLE TO INSTALL THE SoftStop IMPACT HEAD PARALLEL TO THE GRADE LINE OR WITH AN UPWARD TILT.
10. DO NOT ATTACH THE SoftStop SYSTEM DIRECTLY TO A RIGID BARRIER.
11. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE SoftStop SYSTEM BE CURVED.
12. A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.

NOTE: A	THE INSTALLATION HEIGHT OF FULLY ASSEMBLED ANCHOR POST WILL VARY FROM 3-¾" MIN. TO 4" MAX. ABOVE FINISHED GRADE.
NOTE: B	PART PN: 5852B RIGHT-SIDE (HIGH INTENSITY REFLECTIVE SHEETING) PART PN: 5851B LEFT-SIDE (HIGH INTENSITY REFLECTIVE SHEETING)
NOTE: C	W-BEAM SPLICE LOCATED BETWEEN LINE POST(4) AND LINE POST(5) GUARDRAIL PANEL 25'-0" PN: 61G ANCHOR RAIL 25'-0" PN: 15215G LAP GUARDRAIL IN DIRECTION OF TRAFFIC FLOW.

PART	QTY	MAIN SYSTEM COMPONENTS
620237B	1	PRODUCT DESCRIPTION ASSEMBLY MANUAL (LATEST REV.)
15208A	1	SoftStop HEAD (SEE MANUAL FOR RIGHT-LEFT APPROACH)
15215G	1	SoftStop ANCHOR RAIL (12GA) WITH CUTOUT SLOTS
61G	1	SoftStop DOWNSTREAM W-BEAM RAIL (12GA) (25'- 0")
15205A	1	POST #0 - ANCHOR POST (6'- 5 ⅞")
15203G	1	POST #1 - (SYTP) (4'- 9 ½")
15000G	1	POST #2 - (SYTP) (6'- 0")
533G	6	POST #3 THRU #8 - I-BEAM (W6 x 8.5) (6'- 0")
4076B	7	BLOCKOUT - WOOD (ROUTED) (6" x 8" x 14")
6777B	7	BLOCKOUT - COMPOSITE (4" x 7 ½" x 14")
15204A	1	ANCHOR PADDLE
15207G	1	ANCHOR KEEPER PLATE (24 GA)
15206G	1	ANCHOR PLATE WASHER (½" THICK)
15201G	2	ANCHOR POST ANGLE (10" LONG)
15202G	1	ANGLE STRUT
		HARDWARE
4902G	1	1" ROUND WASHER F436
3908G	1	1" HEAVY HEX NUT A563 GR.DH
3717G	2	¾" x 2 ½" HEX BOLT A325
3701G	4	¾" ROUND WASHER F436
3704G	2	¾" HEAVY HEX NUT A563 GR.DH
3360G	16	⅝" x 1 ¼" W-BEAM RAIL SPLICE BOLTS HGR
3340G	25	⅝" W-BEAM RAIL SPLICE NUTS HGR
3500G	7	⅝" x 10" HGR POST BOLT A307
3391G	1	⅝" x 1 ¾" HEX HD BOLT A325
4489G	1	⅝" x 9" HEX HD BOLT A325
4372G	4	⅝" WASHER F436
105285G	2	⅝" x 2 ½" HEX HD BOLT GR-5
105286G	1	⅝" x 1 ½" HEX HD BOLT GR-5
3240G	6	⅝" ROUND WASHER (WIDE)
3245G	3	⅝" HEX NUT A563 GR.DH
5852B	1	HIGH INTENSITY REFLECTIVE SHEETING - SEE NOTE: B

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE SoftStop END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

Texas Department of Transportation

Design Division Standard

TRINITY HIGHWAY
SOFTSTOP END TERMINAL
MASH - TL-3
SGT(10S)31-16

FILE: sgt10s3116	DN: TxDOT	CK: KM	DW: VP	CK: MB/VP		
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY		
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(SEE GN NOTE 15)
STANDARD 31" MBGF

ITEM (6)
INNER SIDE SLIDER
(ISS) PANEL FOR RAIL 3

FIELD-SIDE
(RAIL 3)

NOTE:
RECESSED HEX NUTS FACING
TRAFFIC-SIDE SEE DETAIL (C)

REFERENCE LINE USED TO INSTALL
LINE POST(9) THRU POST(2)

POST 1 OFFSET DISTANCE MEASURED
7-⅝" FROM REFERENCE LINE

ITEM (10)
CABLE ASSEMBLY

ITEM (2)
GROUNDSTRUT

NO BLOCKOUT
AT (POST 1)

POST 9 POST 8 POST 7 POST 6 POST 5 POST 4 POST 3 POST 2

RAIL 4 RAIL 3 RAIL 2 RAIL 1

CABLES

NOTES:
1. ITEM (12) COMPOSITE BLOCKOUTS INSTALLED AT LINE POST(9) THRU LINE POST(2).
2. DO NOT INSTALL A BLOCKOUT AT LINE POST(1).

PLAN VIEW

ITEM (5)
TRAFFIC SIDE SLIDER
(TSS) PANEL FOR RAIL 2

NOTE: SECURE THE (TSS) PANEL TO OUTSIDE OF RAIL 2 WITH THE PANEL ARROWS POINTING TOWARDS THE HEAD.

INSTALL GUARD FENCE RECESSED
HEX NUTS ON TRAFFIC-SIDE

MBGF
RAIL 2

MBGF
RAIL 1

DETAIL (C)

TRAFFIC FLOW

END PAYMENT (SGT) BY EACH

DO NOT BOLT
RAIL TO POST 6

BEGIN LENGTH OF NEED

INSTALLATION LENGTH 55'- ½"

49'-8 ⅝"

6'-3" 6'-3" 6'-3" 6'- ¾" 6'-3" 6'-3" 6'-3" 37 ½" 5'-3 11/16"

ITEM (25)
MAX-TENSION HEAD
SEE DETAIL (A)

RAIL
HEIGHT
31"

ARROWS

DETAIL
(D)

ITEM (13) RAIL 4 ITEM (13) RAIL 3 ITEM (13) RAIL 2 ITEM (13) RAIL 1

RAIL
HEIGHT
31"

HEAD
HEIGHT

DETAIL
(B)

32-¼"

68-⅛"

FINISHED
GRADE

CABLES

FINISHED
GRADE

ITEM (10)
CABLE
ASSEMBLY

ITEM (2)
GROUNDSTRUT

POST 9 POST 8 POST 7 POST 6 POST 5 POST 4 POST 3 POST 2 POST 1

ITEM (4)
I-BEAM
W6 X 9

NO BLOCKOUT
AT (POST 1)

(8) X-LITE LINE POST - ITEM (11)

ELEVATION VIEW

SOIL
ANCHOR POST
ITEM (1)

A

A

TSS PANEL
GALVANIZED
ITEM (5)

RSS PLATE
GALVANIZED
ITEM (8)

INSTALL THE TSS AND RSS
WITH THE ARROWS POINTING
TOWARDS THE MAX-HEAD

TSS PANEL AND RSS PLATE
DETAIL (D)

HEAD
HEIGHT
32-¼"

TOP OF POST

31-⅞"

FINISHED
GRADE

40-⅛"

68-⅛"
ANCHOR POST
DEPTH

ITEM (1)
ANCHOR

ITEM (11)
LINE POSTS
2 THRU 9
(NOTE: ITEM (4) POST 1 (NOT SHOWN),
TO BE INSTALLED AT SAME DEPTH
AS LINE POSTS.)

SOIL ANCHOR, POST 1
& LINE POST 2 THRU 9

SECTION VIEW A-A

NOTE:
USE THE MASH APPROVED
X-TENSION CABLE ASSEMBLY.

7 5/16"

2 ⅛"

UPPER CABLE
(BACK SIDE)

LOWER CABLE
(TRAFFIC SIDE)

DETAIL (B)

CABLE
FRICTION PLATE
HEAD UNIT
ITEM (9)

NOTE:
INSTALL ⅝" RECESSED HEX
NUTS ON TRAFFIC SIDE.

ITEM (24)

ITEM (21)

ITEM (20)
8X

ITEM (17)
8X

ITEM (23)
6X
3 SCREWS
EACH SIDE

(RAIL 1)

ITEM (22)
BRACKET
SHIPPED FLAT

ITEM (3)

ITEM (16)
4X

✳ ITEM (25)
HIGH INTENSITY
REFLECTIVE SHEETING

NOTE: DELINEATION MARKER IN ACCORDANCE WITH TEXAS MUTCD.

SPLICE FOR IMPACT-HEAD
TO GUARD FENCE (RAIL1)

DETAIL (A)

✳ TO BE PROVIDED BY DISTRIBUTOR OR CONTRACTOR.

✳✳ ALTERNATIVE ITEMS NOT SHOWN.
ITEM(26) 8" WOOD-BLOCKOUTS
ITEM(27) 25'GUARD FENCE PANELS

APPROX 5'-10"

5'-0"

50' APPROACH GRADING

STANDARD
MBGF

2'-0"

EDGE OF PAVEMENT

NOTE: ADJUST WIDTH ACCORDINGLY WHEN OFFSET IS USED. (OFFSET "OPTION" SHOWN)

2'-0" MAX.
RAIL OFFSET

APPROACH GRADING
(1V:10H OR FLATTER)
SEE PRODUCT ASSEMBLY MANUAL
FOR ADDITIONAL GUIDANCE.

TRAFFIC FLOW

NOTE: TXDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

APPROACH GRADING AT GUARDRAIL END TREATMENTS

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE MAX-TENSION END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800
2. FOR INSTALLATION, REPAIR, & MAINTENANCE REFER TO THE; MAX-TENSION INSTALLATION INSTRUCTION MANUAL. P/N MANMAX REV D (ECN 3516).
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURE'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. ALL STEEL COMPONENTS ARE GALVANIZED PER ASTM A123 OR EQUIVALENT UNLESS OTHERWISE STATED.
6. SYSTEM SHOWN USING STEEL WIDE FLANGE POST WITH COMPOSITE BLOCKOUTS.
7. COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST(MPL)FOR CERTIFIED PRODUCERS.
8. REFER TO INSTALLATION MANUAL FOR SPECIFIC PANEL LAPPING GUIDANCE.
9. IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL FOR INSTALLATION GUIDANCE.
10. POSTS SHALL NOT BE SET IN CONCRETE.
11. A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POST TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST.
12. MAX-TENSION SYSTEM SHALL NEVER BE INSTALLED WITHIN A CURVED SECTION OF GUARDRAIL.
13. IF A DELINEATION MARKER IS REQUIRED, MARKER SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
14. THE SYSTEM IS SHOWN WITH 12'-6" MBGF PANELS, 25'-0" MBGF PANELS ARE ALSO ALLOWED.
15. A MINIMUM OF 12'-6" OF 12GA. MBGF IS REQUIRED IMMEDIATELY DOWNSTREAM OF THE MAX-TENSION SYSTEM.

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	BSI-1610060-00	SOIL ANCHOR - GALVANIZED	1
2	BSI-1610061-00	GROUND STRUT - GALVANIZED	1
3	BSI-1610062-00	MAX-TENSION IMPACT HEAD	1
4	BSI-1610063-00	W6x9 I-BEAM POST 6FT.-GALVANIZED	1
5	BSI-1610064-00	TSS PANEL - TRAFFIC SIDE SLIDER	1
6	BSI-1610065-00	ISS PANEL - INNER SIDE SLIDER	1
7	BSI-1610066-00	TOOTH - GEOMET	1
8	BSI-1610067-00	RSS PLATE - REAR SIDE SLIDER	1
9	B061058	CABLE FRICTION PLATE - HEAD UNIT	1
10	BSI-1610069-00	CABLE ASSEMBLY - MASH X-TENSION	2
11	BSI-1012078-00	X-LITE LINE POST-GALVANIZED	8
12	B090534	8" W-BEAM COMPOSITE-BLOCKOUT XT110	8
13	BSI-4004386	12'-6" W-BEAM GUARD FENCE PANELS 12GA.	4
14	BSI-1102027-00	X-LITE SQUARE WASHER	1
15	BSI-2001886	⅝" X 7" THREAD BOLT HH (GR.5)GEOMET	1
16	BSI-2001885	¾" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET	4
17	4001115	⅝" X 1 ¼" GUARD FENCE BOLTS (GR.2)MGAL	48
18	2001840	⅝" X 10" GUARD FENCE BOLTS MGAL	8
19	2001636	⅝" WASHER F436 STRUCTURAL MGAL	2
20	4001116	⅝" RECESSED GUARD FENCE NUT (GR.2)MGAL	59
21	BSI-2001888	⅝" X 2" ALL THREAD BOLT (GR.5)GEOMET	1
22	BSI-1701063-00	DELINEATION MOUNTING (BRACKET)	1
23	BSI-2001887	¼" X ¾" SCREW SD HH 410SS	7
24	4002051	GUARDRAIL WASHER RECT AASHTO FWR03	1
✳ 25	SEE NOTE BELOW	HIGH INTENSITY REFLECTIVE SHEETING	1
✳✳ 26	4002337	8" W-BEAM TIMBER-BLOCKOUT, PDB01B	8
✳✳ 27	BSI-4004431	25' W-BEAM GUARDRAIL PANEL,8-SPACE,12GA.	2
28	MANMAX Rev-(D)	MAX-TENSION INSTALLATION INSTRUCTIONS	1

Texas Department of Transportation

Design Division Standard

MAX-TENSION END TERMINAL
MASH - TL-3
SGT(11S)31-18

FILE: sgt11s3118.dgn	DN: TxDOT	CK: KM	DW: TxDOT	CK: CL
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REVISIONS	1392	01	044, ETC.	FM 1378,ETC.
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		147D

DISCLAIMER:
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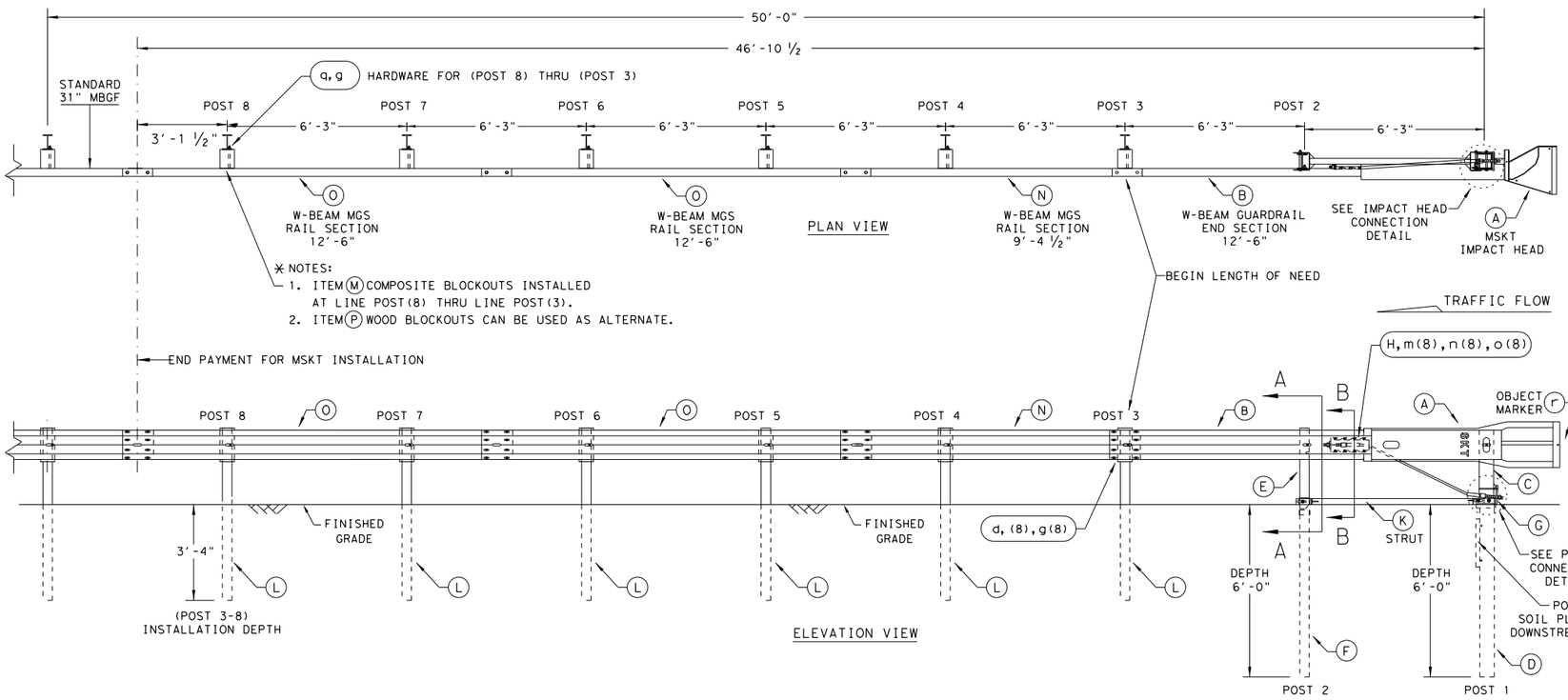


NOTE: SEE (GENERAL NOTE 14) FOR DRIVING CAP INFORMATION.

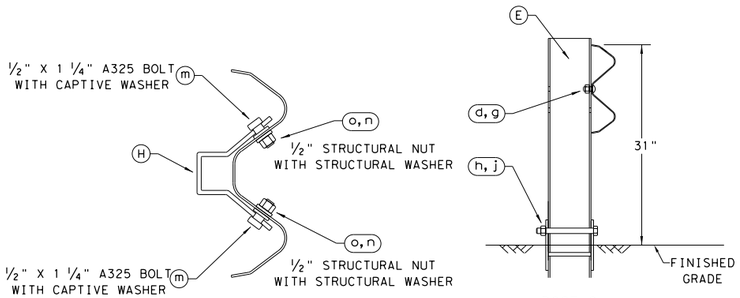
GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE; MSKT END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL (PUBLICATION~062717).
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. SYSTEM SHOWN USING STEEL WIDE FLANGE POSTS WITH COMPOSITE BLOCKOUTS.
7. A COMPOSITE MATERIAL BLOCKOUTS THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
8. IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, & REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
9. POSTS SHALL NOT BE SET IN CONCRETE.
10. SYSTEM MUST BE ATTACHED TO STANDARD 31" MBGF.
11. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
12. A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
13. THE SYSTEM IS SHOWN WITH TWO 12'-6" MBGF PANELS, ONE 25'-0" MBGF PANEL IS ALSO ALLOWED IN THEIR PLACE.
14. A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POSTS 3-8 TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST. SPECIAL DRIVING CAP TO BE USED ON LOWER POSTS 1 & 2 TO PREVENT DAMAGE TO THE WELDED PLATES.

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM NUMBERS
A	1	MSKT IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	SF1303
C	1	POST 1 - TOP (6" X 6" X ⅛" TUBE)	MTPHP1A
D	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
E	1	POST 2 - ASSEMBLY TOP	UHP2A
F	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	GROUND STRUT	MS785
L	6	W6x9 OR W6x8.5 STEEL POST	P621
M	6	COMPOSITE BLOCKOUTS	CBSP-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 ½")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
P	6	WOOD BLOCKOUT 6" X 8" X 14"	P675
Q	1	W-BEAM MGS RAIL SECTION (25'-0")	G1209
		SMALL HARDWARE	
a	2	⅝" x 1" HEX BOLT (GRD 5)	B5160104A
b	4	⅝" WASHER	W0516
c	2	⅝" HEX NUT	N0516
d	25	⅝" Dia. x 1 ¼" SPLICE BOLT (POST 2)	B580122
e	2	⅝" Dia. x 9" HEX BOLT (GRD A449)	B580904A
f	3	⅝" WASHER	W050
g	33	⅝" Dia. H.G.R NUT	N050
h	1	¾" Dia. x 8 ½" HEX BOLT (GRD A449)	B340854A
j	1	¾" Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	½" x 1 ¼" A325 BOLT WITH CAPTIVE WASHER	SB12A
n	8	½" STRUCTURAL NUTS	N012A
o	8	1 1/16" O.D. x ⅜" I.D. STRUCTURAL WASHERS	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	⅝" x 10" H.G.R. BOLT	B581002
r	1	OBJECT MARKER 18" X 18"	E3151

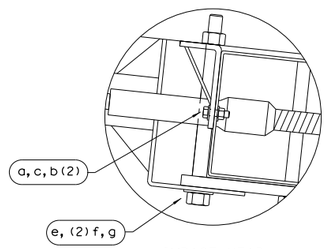
SEE NOTES: ✳

ALTERNATIVE ITEMS NOT SHOWN. ✳✳
✳ ITEM(P) 8" WOOD-BLOCKOUT
✳✳ ITEM(Q) 25'GUARD FENCE PANEL

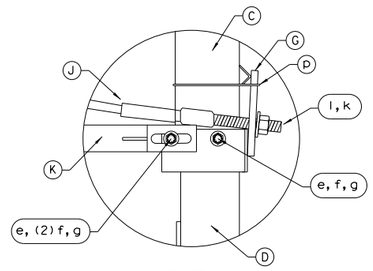


SECTION B-B
ANCHOR BRACKET

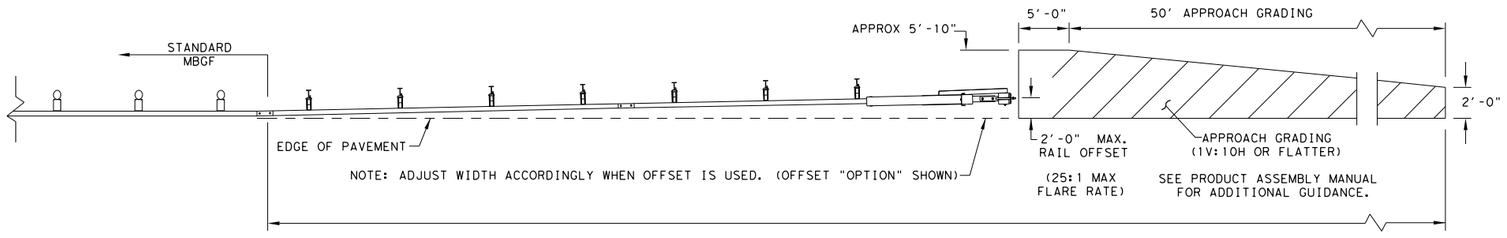
POST 2
SECTION A-A



IMPACT HEAD
CONNECTION DETAIL



POST 1
CONNECTION DETAIL



APPROACH GRADING AT GUARDRAIL END TREATMENTS

TRAFFIC FLOW

NOTE: TXDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE MSKT END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

Texas Department of Transportation

Design Division Standard

SINGLE GUARDRAIL TERMINAL

MSKT-MASH-TL-3

SGT(12S)31-18

FILE: sgt12s3118.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CL	
© TxDOT: APRIL 2018	CONT	SECT	JOB	HIGHWAY	
REVISIONS	1392	01	044, ETC.	FM 1378, ETC.	
	DIST	COUNTY		SHEET NO.	
	DAL	COLLIN		147E	

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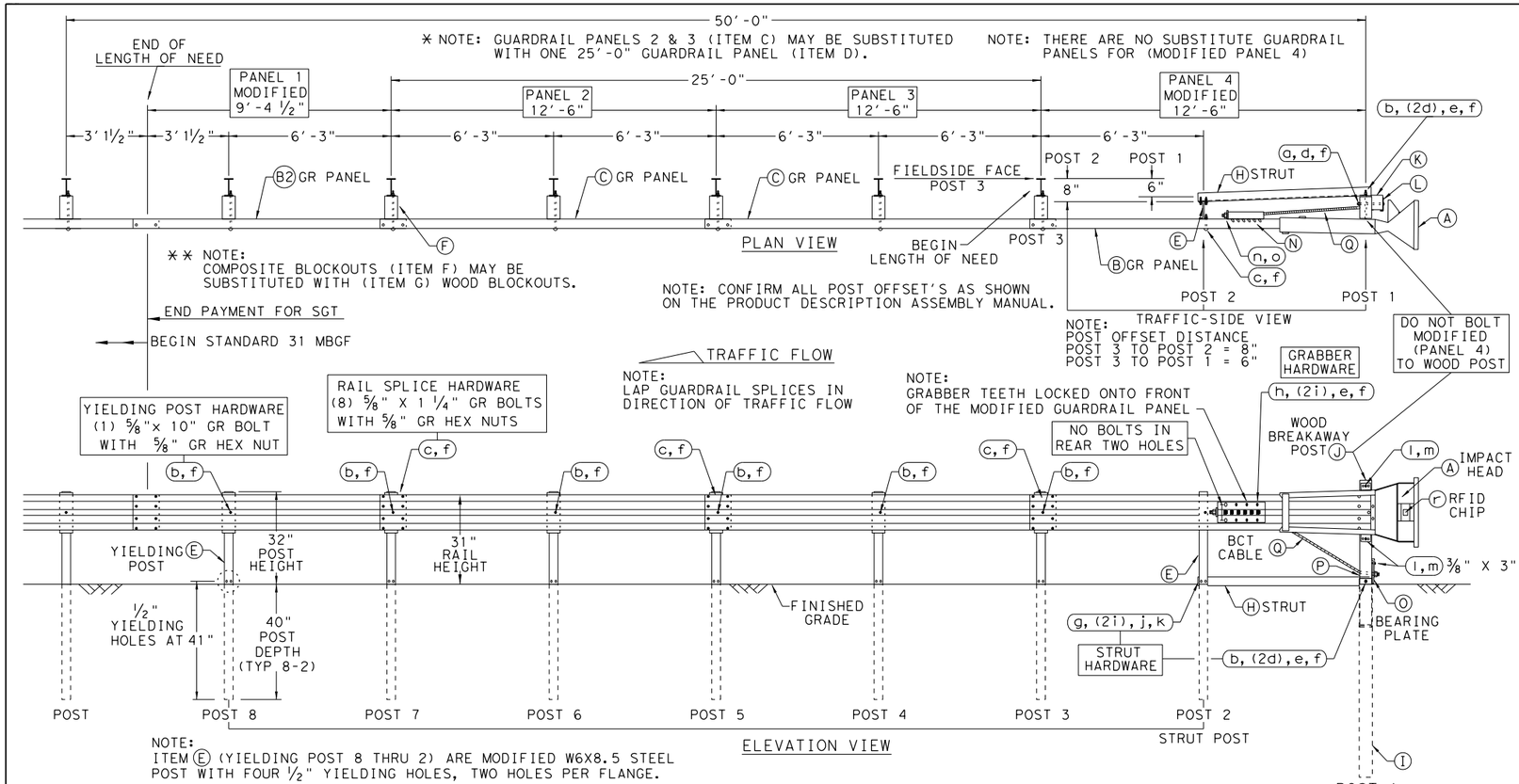
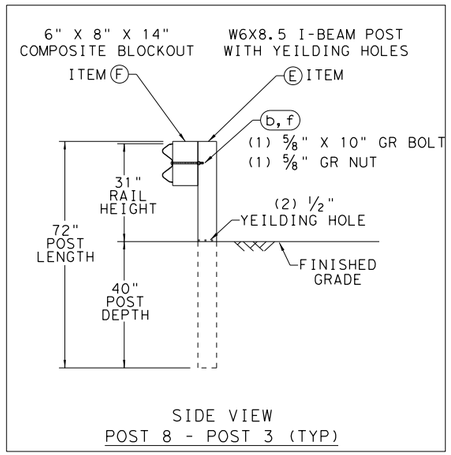


GENERAL NOTES

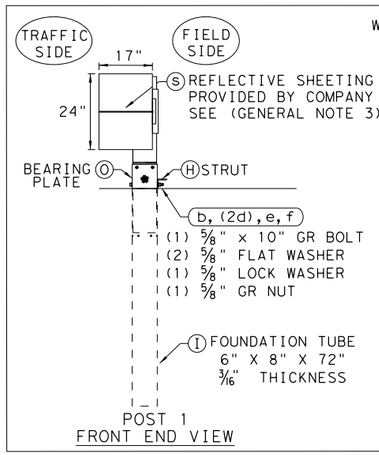
1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: SPIG INDUSTRY, INC. AT 1(267) 644-9510. 14675 INDUSTRIAL PARK RD; BRISTOL, VA 24202
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE MANUFACTURER'S; SGET END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL.
3. MANUFACTURER WILL APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" TO THE FACE PLATE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. THE OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. THE NOMINAL HEIGHT OF THE GUARDRAIL BEAM IS 31 INCHES WITH A TOLERANCE OF +/- ONE INCH.
5. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
6. (POST 2 THROUGH POST 8) ARE MODIFIED STEEL-YIELDING POSTS WITH YIELDING HOLES AT GROUND LEVEL. THERE ARE NO SUBSTITUTE POSTS.
7. POSTS SHALL NOT BE SET IN CONCRETE.
8. IF SOLID ROCK IS ENCOUNTERED FOR ANY OF THE POSTS IN THE SYSTEM, CONTACT THE MANUFACTURER FOR SPECIFIC INSTALLATION GUIDANCE.
9. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445,"GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
10. A COMPOSITE MATERIAL BLOCKOUT THAT MEETS DMS-7210 REQUIREMENTS MAY BE SUBSTITUTED FOR AN APPROVED WOOD BLOCKOUT. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
11. THE ENTIRE SYSTEM MUST BE INSTALLED IN A STRAIGHT LINE WITHOUT ANY CURVE. HOWEVER, THE SYSTEM CAN BE OFFSET BY TWO FEET AS SHOWN ON THE APPROACH GRADING DETAIL TO HELP OFF-SET THE IMPACT HEAD FROM SHOULDER OF THE ROAD.

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM #
A	1	SGET IMPACT HEAD	SIH1A
B	1	MODIFIED GUARDRAIL PANEL 12'-6" 12GA	126SPZGP
B2	1	MODIFIED GUARDRAIL PANEL 9'-4 1/2" 12GA	GP94
C	2	STANDARD GUARDRAIL PANEL 12'-6" 12GA	GP126
D *	1	STANDARD GUARDRAIL PANEL 25'-0" 12GA	GP25
E	7	MODIFIED YIELDING I-BEAM POST W6x8.5	YP6MOD
F	6	COMPOSITE BLOCKOUT 6" X 8" X 14"	CBO8
G **	6	WOOD BLOCKOUT 6" X 8" X 14"	WBO8
H	1	STRUT 3" X 3" X 80" x 1/4" A36 ANGLE	STR80
I	1	FOUNDATION TUBE 6" X 8" X 72" x 3/16"	FNDT6
J	1	WOOD BREAKAWAY POST 5 1/2" x 7 1/2" x 50"	WBRK50
K	1	WOOD STRIKE BLOCK	WSBLK14
L	1	STRIKE PLATE 1/4" A36 BENT PLATE	SPLT8
M	1	REINFORCEMENT PLATE 12 GA. GR55	REPLT17
N	1	GUARDRAIL GRABBER 2 1/2" X 2 1/2" X 16 1/2"	GGR17
O	1	BEARING PLATE 8" X 8 5/8" X 5/8" A36	BPLT8
P	1	PIPE SLEEVE 4 1/4" X 2 3/8" O.D. (2 1/8" I.D.)	PSLV4
Q	1	BCT CABLE 3/4" X 81" LENGTH	CBL81
		SMALL HARDWARE	
a	1	5/8" X 12" GUARDRAIL BOLT 307A HDG	12GRBLT
b	7	5/8" X 10" GUARDRAIL BOLT 307A HDG	10GRBLT
c	33	5/8" X 1 1/4" GR SPLICE BOLTS 307A HDG	1GRBLT
d	3	5/8" FLAT WASHER F436 A325 HDG	58FW436
e	1	5/8" LOCK WASHER HDG	58LW
f	39	5/8" GUARDRAIL HEX NUT HDG	58HN563
g	2	1/2" X 2" STRUT BOLT A325 HDG	2BLT
h	6	1/2" X 1 1/4" PLATE BOLT A325 HDG	125BLT
i	16	1/2" FLAT WASHER F436 A325 HDG	12FWF436
j	8	1/2" LOCK WASHER HDG	12LW
k	8	1/2" HEX NUT A563 HDG	12HN563
l	4	3/8" X 3" HEX LAG SCREW GR5 HDG	38LS
m	4	3/8" FLAT WASHER F436 A325 HDG	38FW844
n	2	1" FLAT WASHER F436 A325 HDG	1FWF436
o	2	1" HEX NUT A563DH HDG	1HN563
p	1	18" TO 24" LONG ZIP TIE RATED 175-200LB	ZPT18
q	1	1 1/2" X 4" SCH-40 PVC PIPE	PSPCR4
r	1	RFID CHIP RATED MIL-STD-810F	RFID810F
s	1	IMPACT HEAD REFLECTIVE SHEETING	RS30M

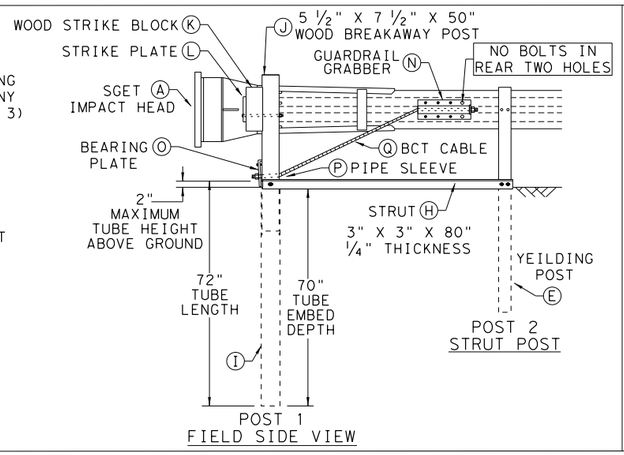
* ALTERNATIVE ITEMS
** NOTE: SEE PLAN VIEW



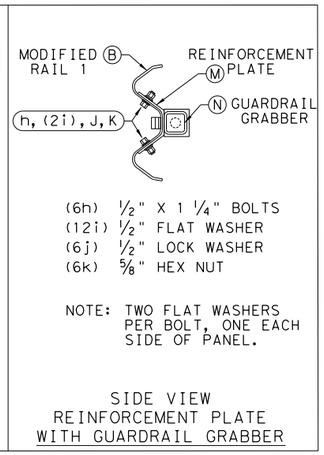
SIDE VIEW
POST 8 - POST 3 (TYP)



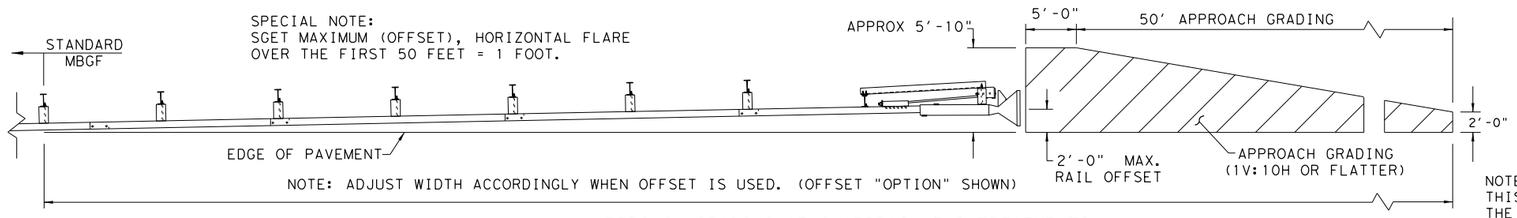
POST 1
FRONT END VIEW



POST 1
FIELD SIDE VIEW



SIDE VIEW
REINFORCEMENT PLATE
WITH GUARDRAIL GRABBER



APPROACH GRADING AT GUARDRAIL END TREATMENTS

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE SGET TERMINAL SYSTEM AND IS NOT INTENDED TO REPLACE THE MANUFACTURER'S ASSEMBLY MANUAL.

Texas Department of Transportation

Design Division Standard

SPIG INDUSTRY, LLC
SINGLE GUARDRAIL TERMINAL
SGET - TL-3 - MASH
SGT(15)31-20

FILE: sgt153120.dgn	DN: TxDOT	CK: KM	DW: VP	CK: VP		
©TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY		
REVISIONS	1392	01	044, ETC.	FM 1378, ETC.		
	DIST	COUNTY		SHEET NO.		
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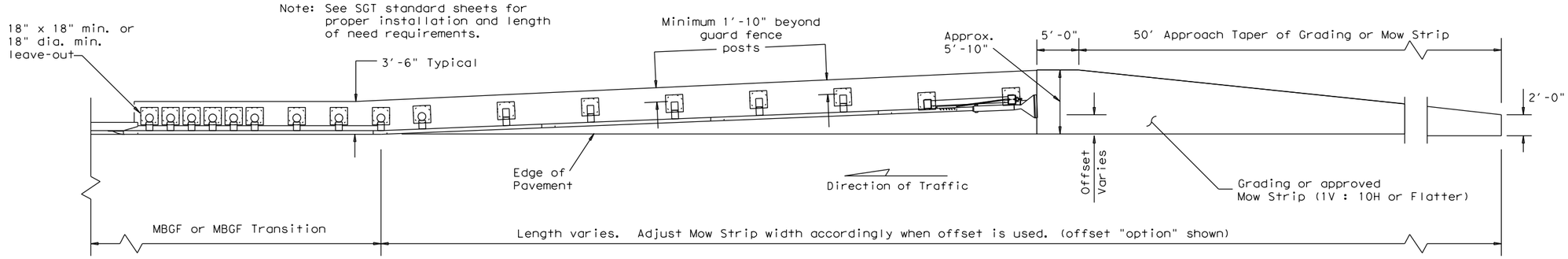
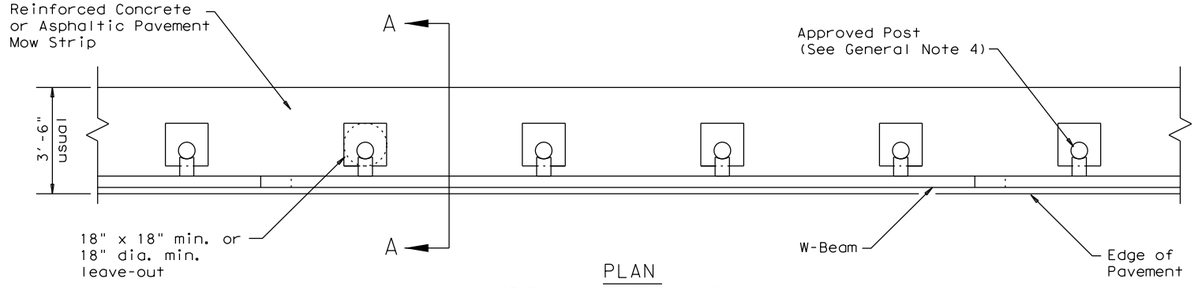
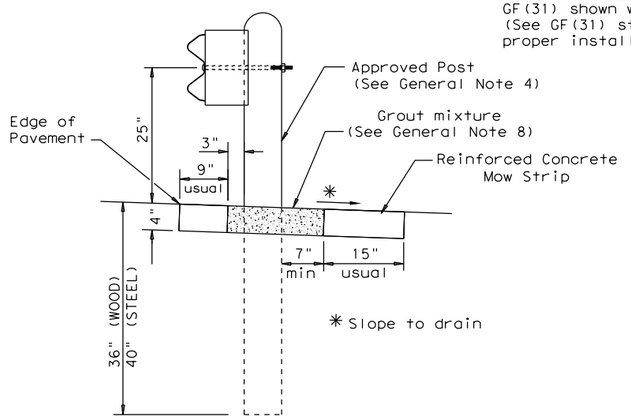


GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS



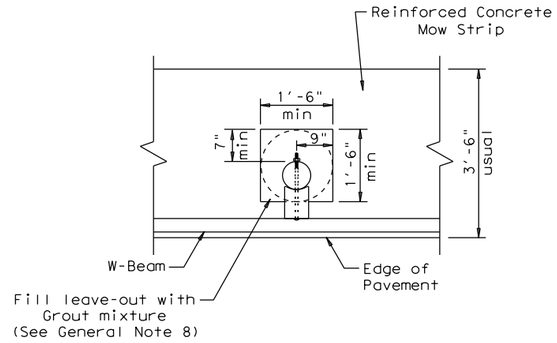
PLAN

GF(31) shown with Mow Strip
(See GF(31) standard sheet for proper installation)



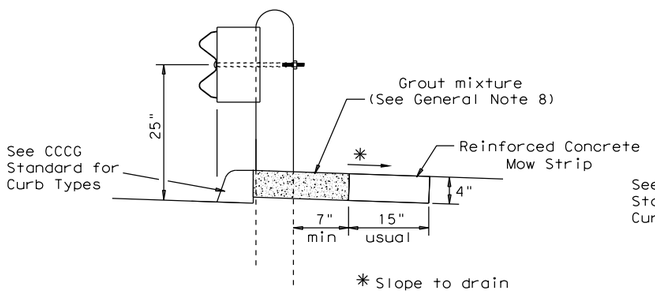
SECTION A-A

Typical



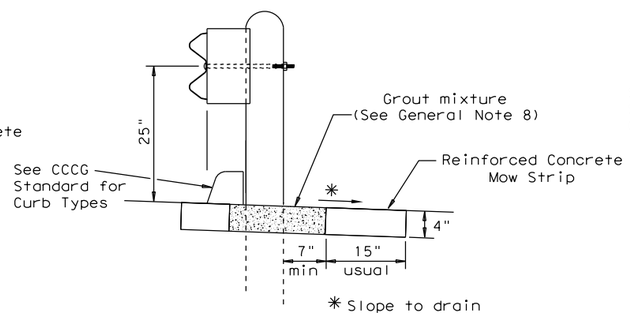
MOW STRIP DETAIL

Reinforced Concrete Mow Strip with 18" x 18" Square or 18" Dia. minimum leave-out.



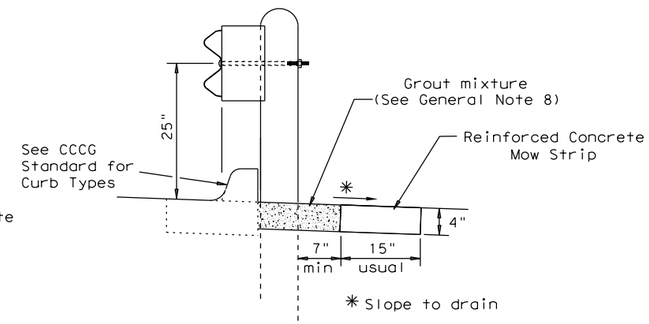
CURB OPTION (1)

This option will increase the post embedment throughout the system.



CURB OPTION (2)

Curb shown on top of mow strip



CURB OPTION (3)

Note: Site Condition(s)

Site conditions may exist where grading is required for the proper installation of metal guard fence and end treatments.

Approach grading or mow strip may be decreased or eliminated, as directed by the Engineer.

GENERAL NOTES

1. This mow strip design is for use with metal beam guard fence, guard fence transitions, and guard fence end treatments. See applicable GF(31) MBGF or GF(31) Transition Standard sheet for additional information.
2. Mow strips shall be reinforced concrete with (wire mesh or synthetic fiber), as shown on the plans and will be paid for under the pertinent bid item. Reinforced concrete shall be placed in accordance with Item 432, "Riprap." The use of the synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Material Producer List (MPL), maintained by TxDOT, Construction Division.
3. The leave-out behind the post shall be a minimum of 7".
4. Only steel (W6 x 8.5 or W6 x 9.0), or 7 ½" Dia. round wood posts are acceptable for use in the mow strip. See GF(31) Standard for additional details.
5. Other curb placement options may be used. Curbs are not considered part of the mow strip and will be paid for under other pertinent bid item.
6. Thickness of the mow strip will be 4".
7. The limits of payment for reinforced concrete will include leave-outs for the posts.
8. The leave-outs shall be filled with a Grout mixture consisting of: 2719 pounds sand, 188 pounds Type 1 or II cement, and 550 pounds of water per cubic yard, with a 28-day compressive strength of approximately 230 psi or less. Provide grout with a consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (Suggested Maximum leave-out of 20"). Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of riprap mow strip.

Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE (MOW STRIP) TL-3 MASH COMPLIANT

GF(31)MS-19

FILE: gf31ms19.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG	
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY	
REVISIONS	1392	01	044, ETC.	FM 1378, ETC.	
	DIST	COUNTY		SHEET NO.	
	DAL	COLLIN		147G	

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DATE: 8/30/2022
FILE: c:\txdot\pw_online\txdot5\james.igwe\d0480388\ped18.dgn

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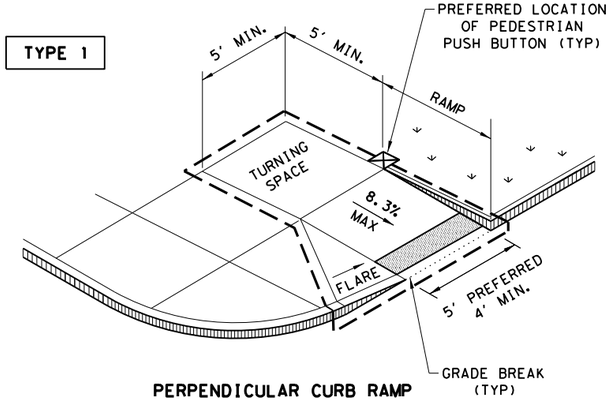
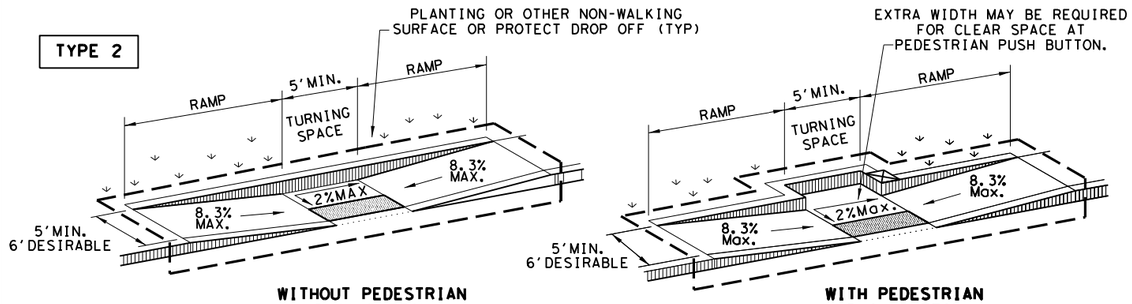


PERPENDICULAR CURB RAMP

TYPE 2

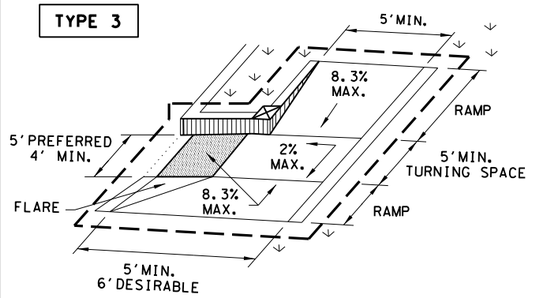


WITHOUT PEDESTRIAN PUSH BUTTON

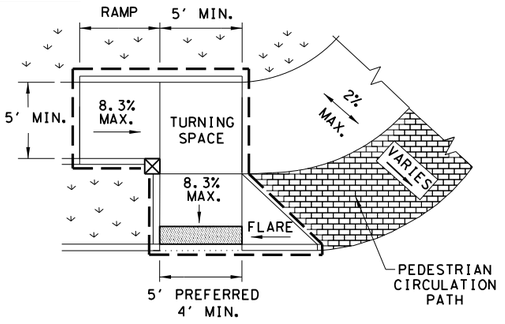
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

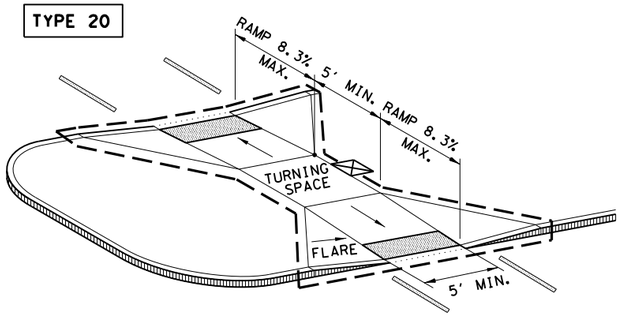


TYPE 6



COMBINATION CURB RAMPS

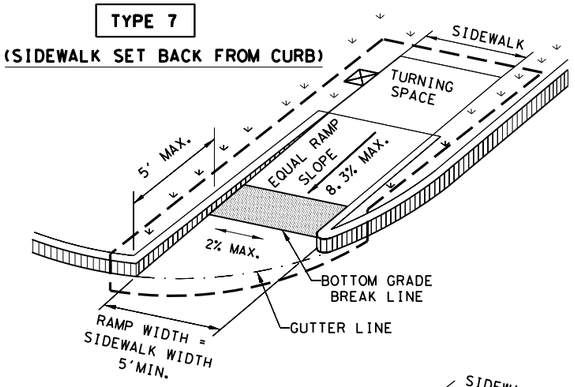
TYPE 20



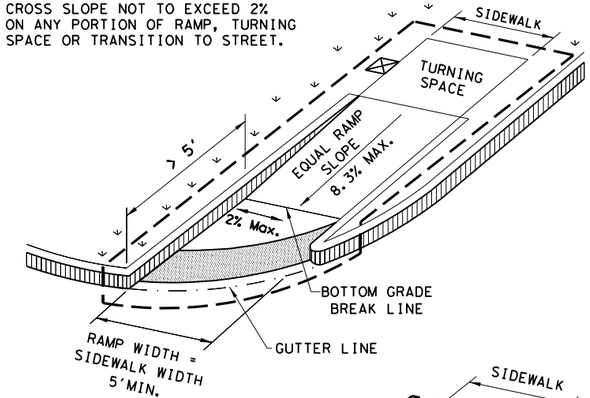
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

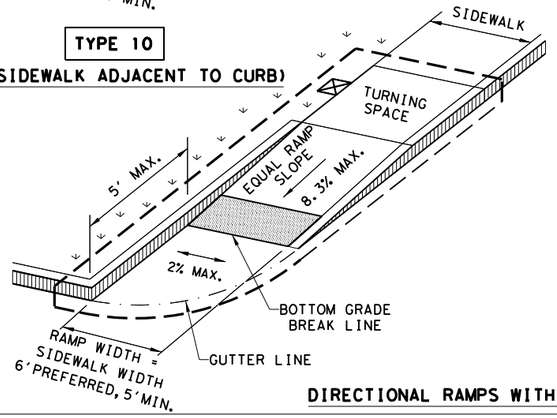


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

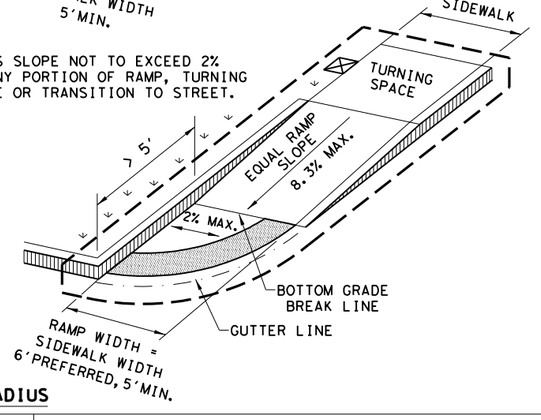


TYPE 10

(SIDEWALK ADJACENT TO CURB)

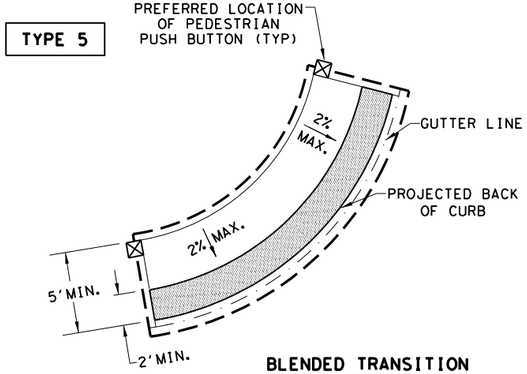


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

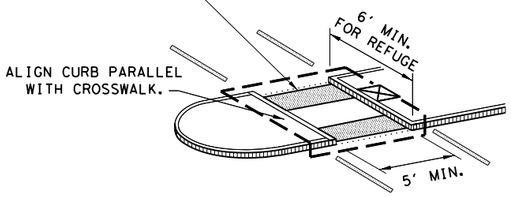
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

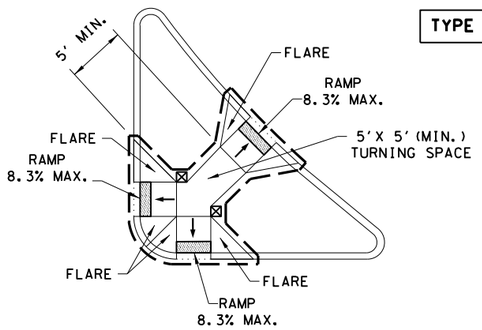
TYPE 21

INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.



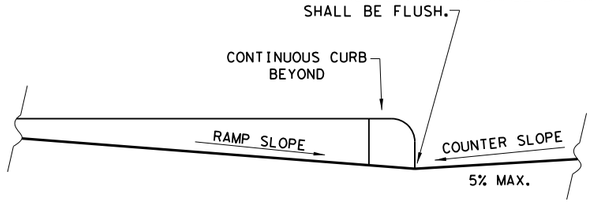
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

BOTTOM GRADE BREAK OF CURB RAMP WILL NORMALLY BE AT GUTTER LINE. SURFACE SLOPES AT GRADE BREAKS SHALL BE FLUSH.



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

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

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

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK .....

RAMP LIMITS OF PAYMENT

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.	FM 1378, ETC.
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		148

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DATE: 8/30/2022
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GENERAL NOTES

CURB RAMPS

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

DETECTABLE WARNING MATERIAL

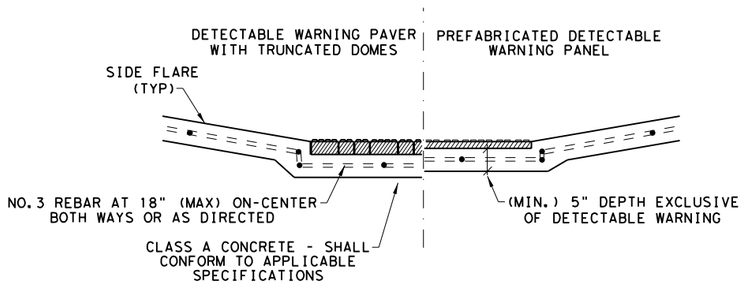
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material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

DETECTABLE WARNING PAVERS (IF USED)

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

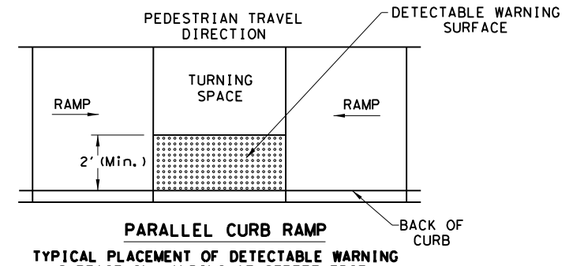
SIDEWALKS

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

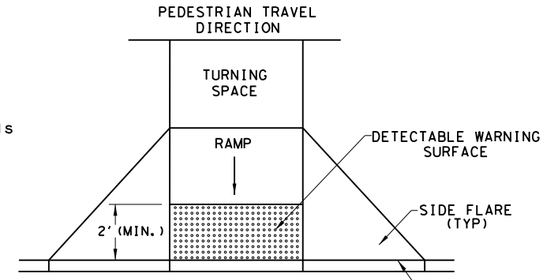


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

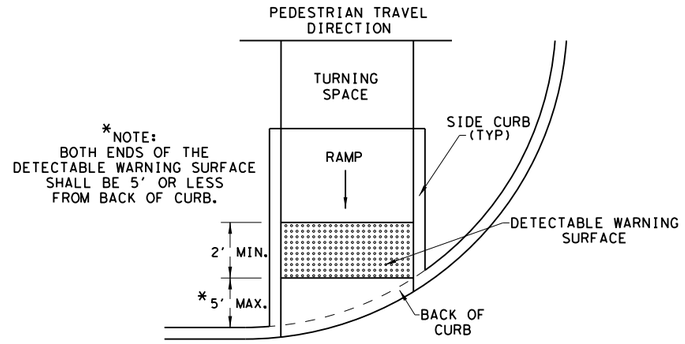
DETECTABLE WARNING SURFACE DETAILS



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



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



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

Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG	
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY	
REVISIONS REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	1392	01	044, ETC.	FM 1378, ETC.	
	DIST	COUNTY		SHEET NO.	
	DAL	COLLIN		149	

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DATE: 8/30/2022
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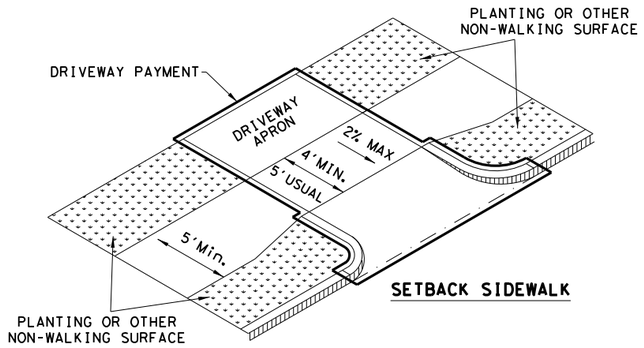
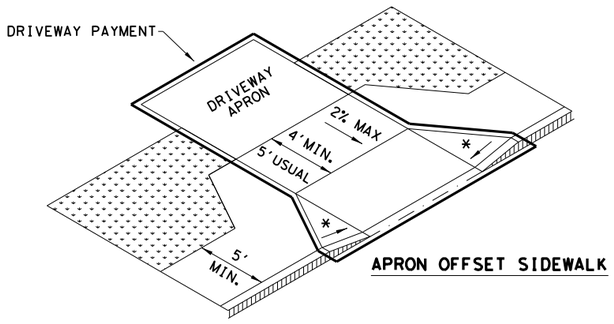
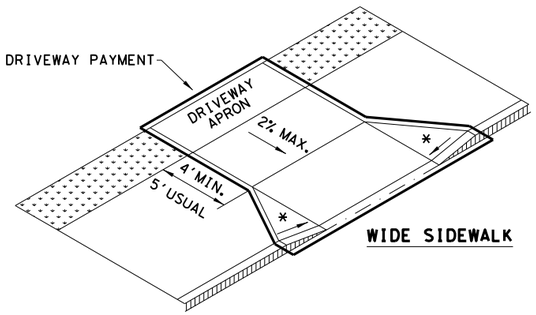
SIDEWALK TREATMENT AT DRIVEWAYS



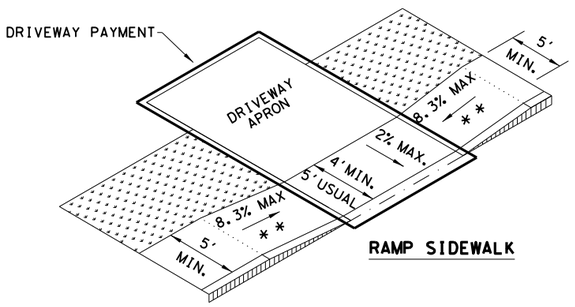
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

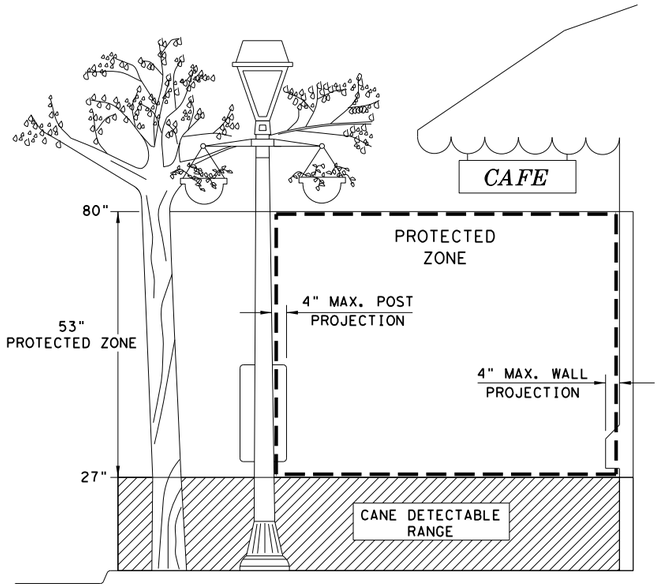


RAMP SIDEWALK

NOTES:

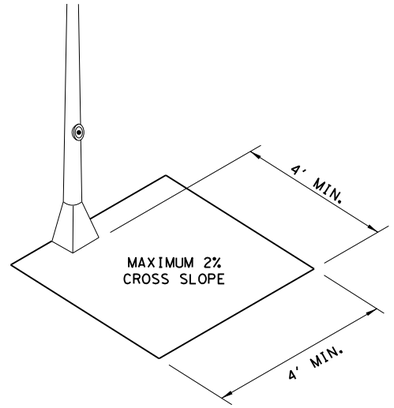
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

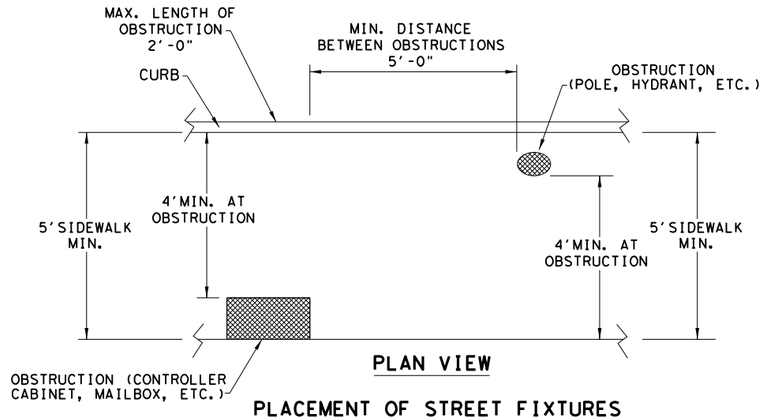


PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



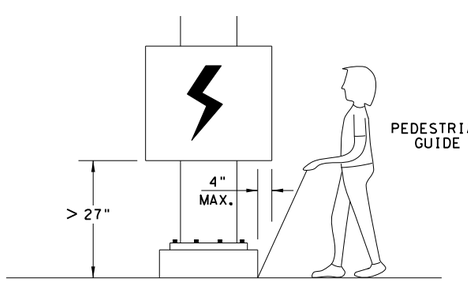
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



PLAN VIEW

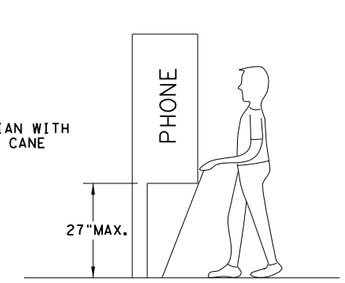
PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



PEDESTRIAN WITH GUIDE CANE

WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.



PROTRUDING OBJECTS OF A HEIGHT ≤ 27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.	FM 1378, ETC.
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		150

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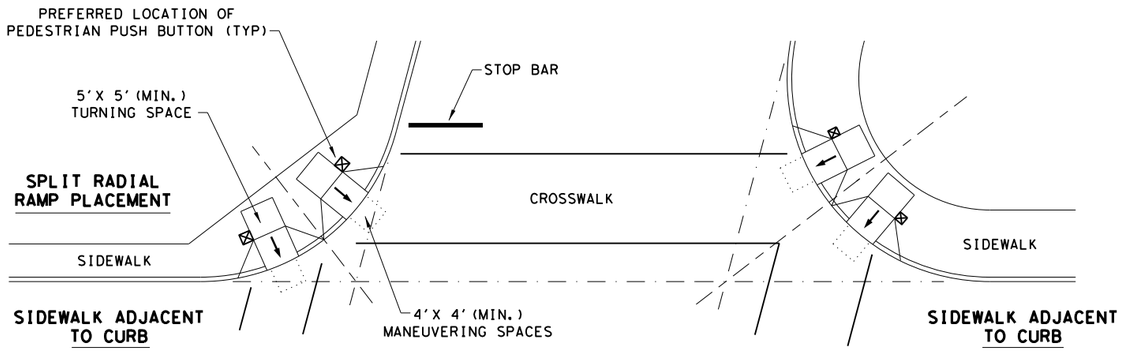
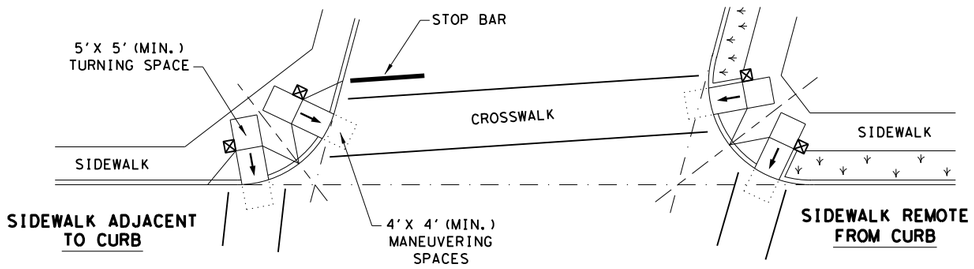
TYPICAL CROSSING LAYOUTS

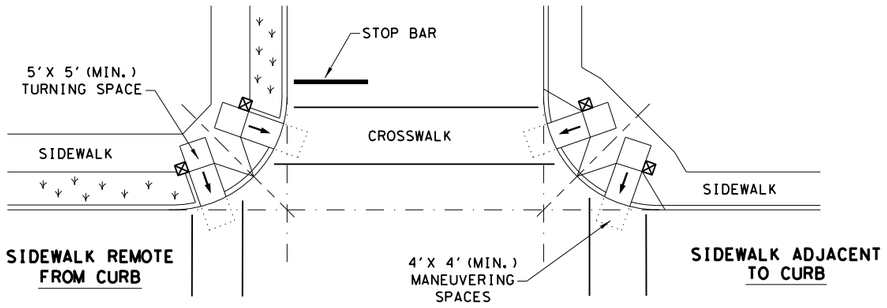
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



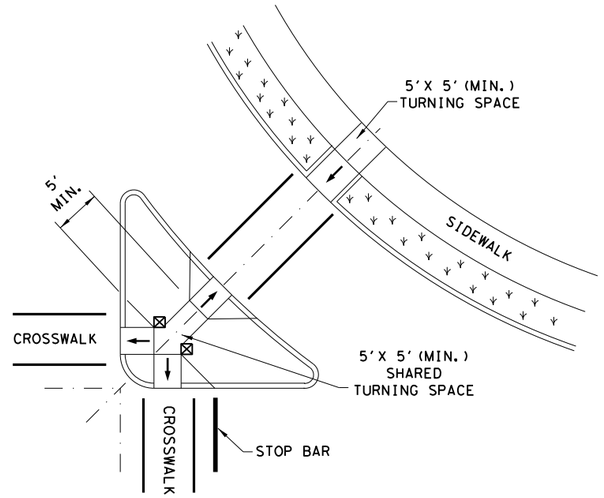
SKEWED INTERSECTION WITH "LARGE" RADIUS



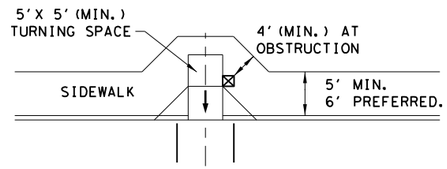
SKEWED INTERSECTION WITH "SMALL" RADIUS

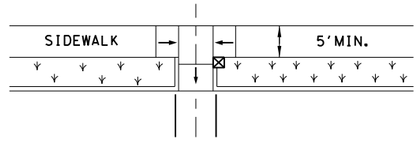


NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND





MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

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

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

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1392	01	044, ETC.	FM 1378, ETC.
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		151

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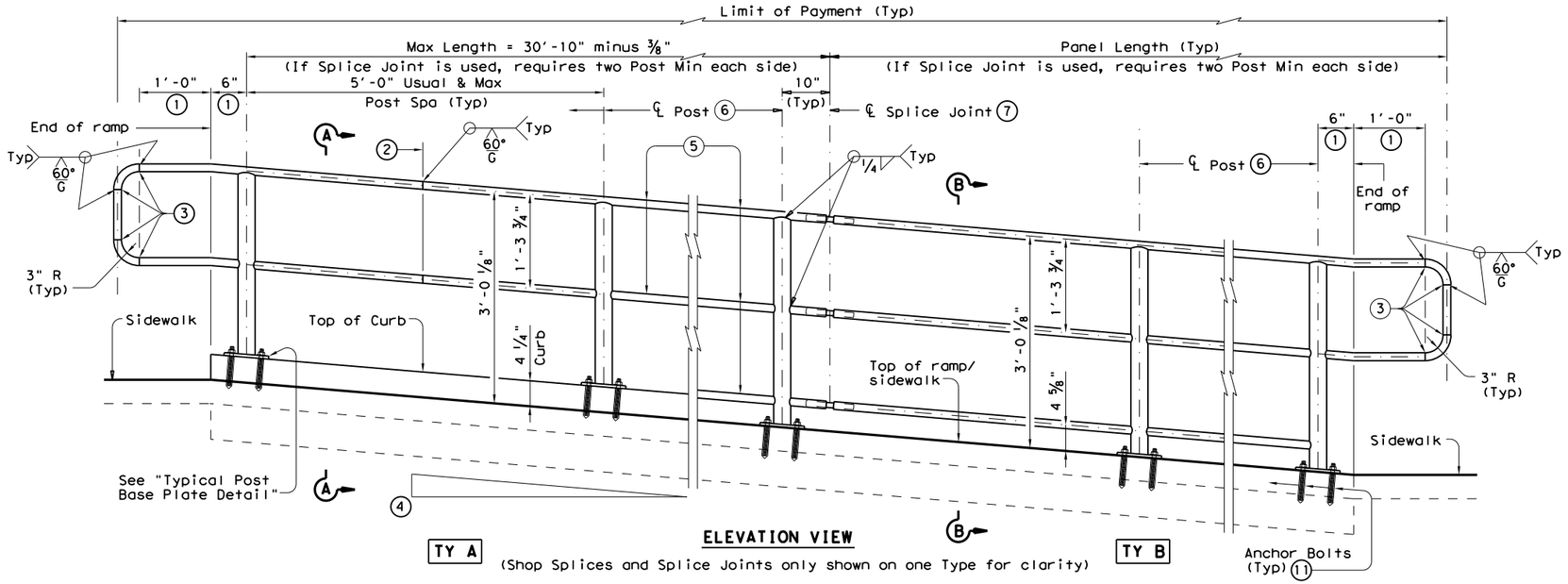
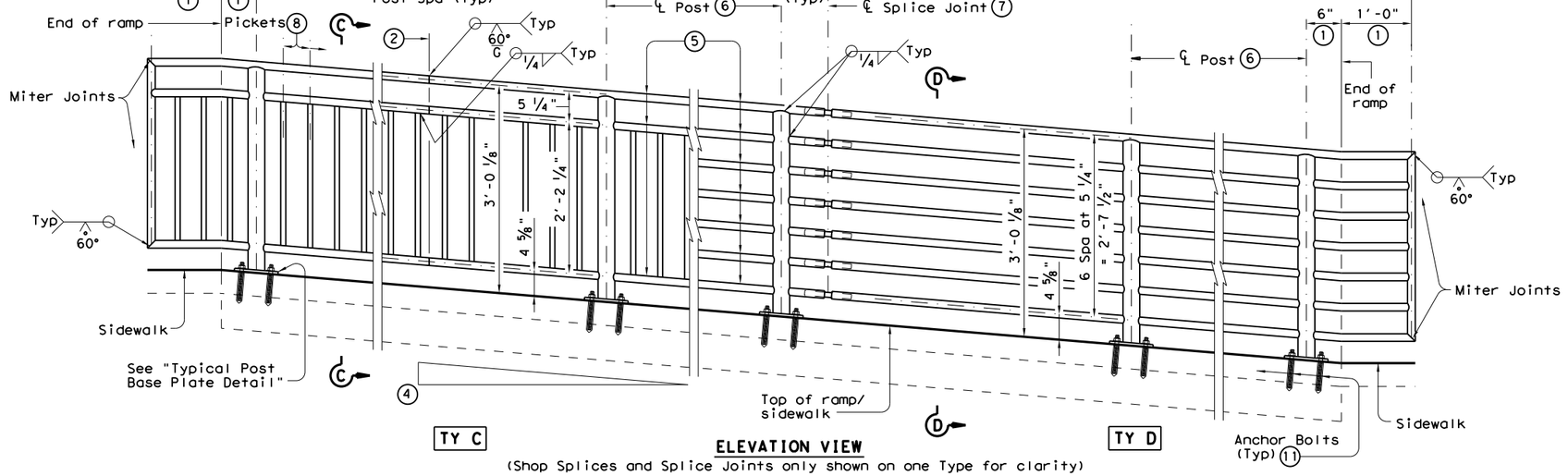
FILE: c:\txdot\pw_online\txdot5\james.igwe\d0480388\prd13.dgn



ELEVATION VIEW

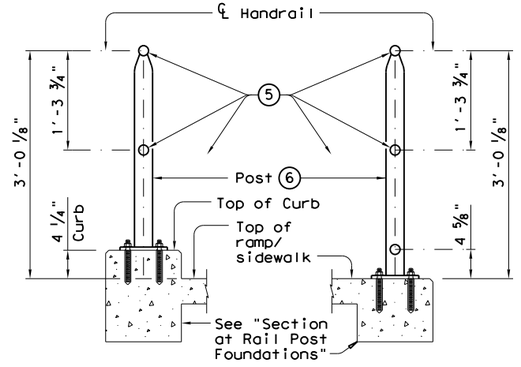
(Shop Splices and Splice Joints only shown on one Type for clarity)



ELEVATION VIEW

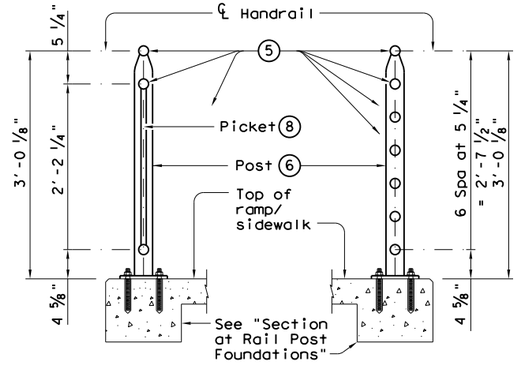
(Shop Splices and Splice Joints only shown on one Type for clarity)

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



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

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



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

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

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.
6. 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
9. When needed for accessibility (grade > 5 percent) or as needed for pedestrian safety.
10. Not to be used on bridges.
11. See "General Notes" for anchor bolt information.

SHEET 1 OF 3

Texas Department of Transportation

Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
© TxDOT Decmeber 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	1392	01	044, ETC.	FM 1378, ETC.
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		152

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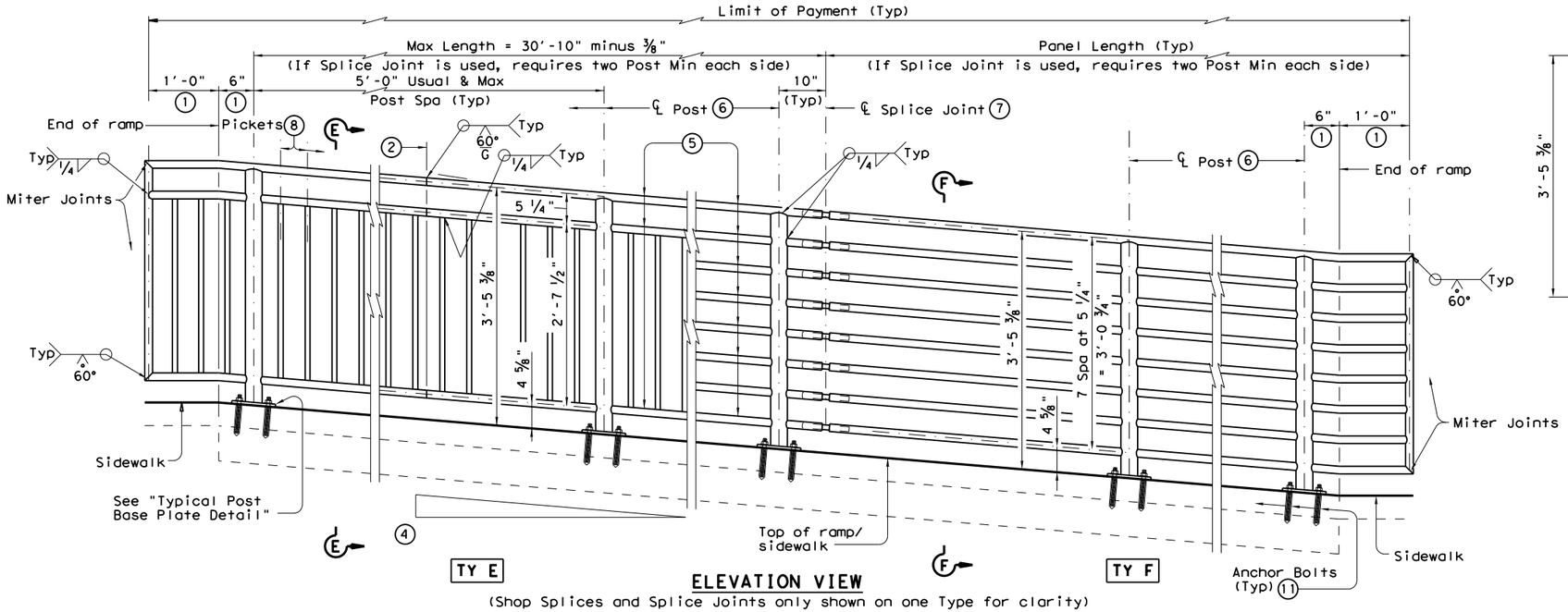
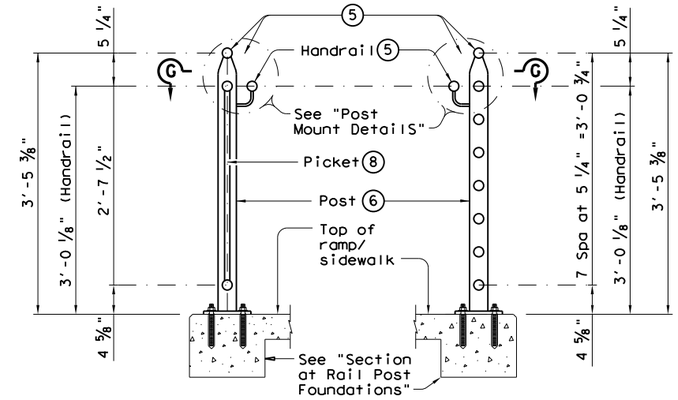
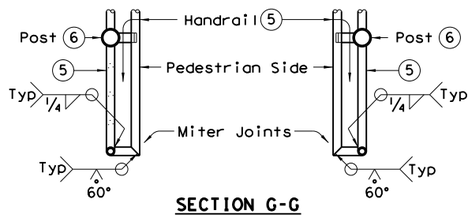


ELEVATION VIEW
(Shop Splices and Splice Joints only shown on one Type for clarity)

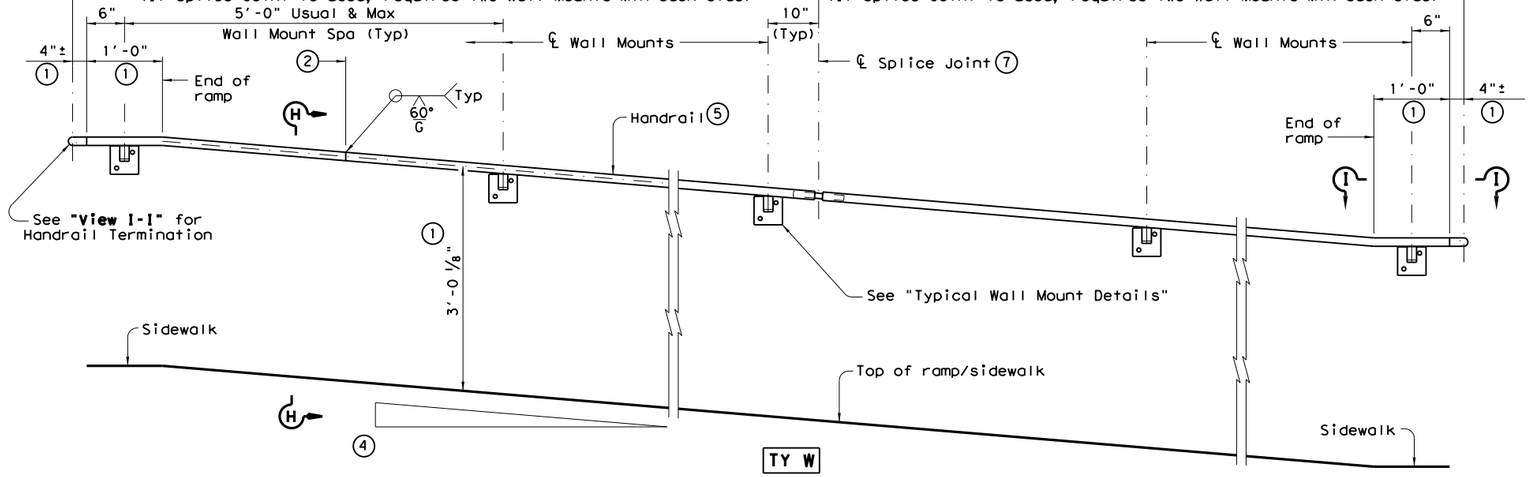


SECTION E-E
(Showing Handrail **TY E**)

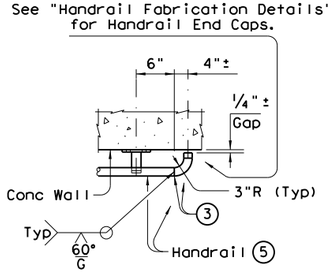
SECTION F-F
(Showing Handrail **TY F**)



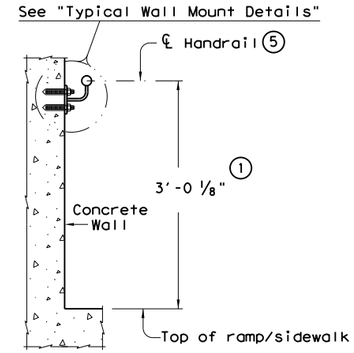
SECTION G-G
(Showing Handrail Termination)



ELEVATION VIEW



VIEW I-I
(Showing Handrail Termination)



SECTION H-H
(Showing Handrail **TY W**)

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.
6. 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
11. See "General Notes" for anchor bolt information.

Texas Department of Transportation | Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	1392	01	044, ETC.	FM 1378, ETC.
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		153

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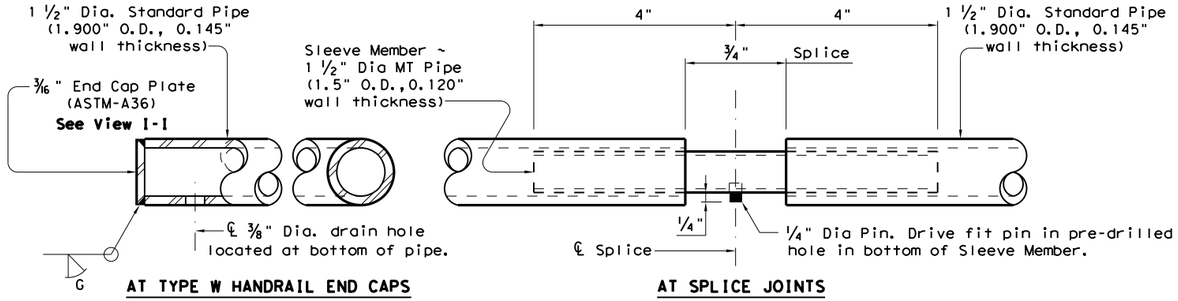
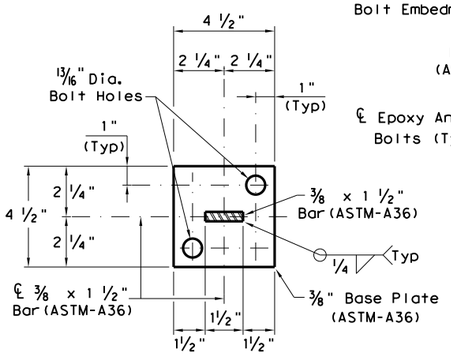


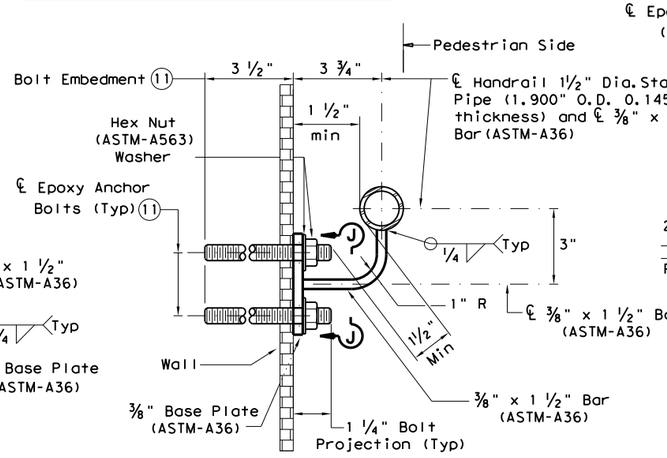
AT TYPE W HANDRAIL END CAPS

AT SPLICE JOINTS

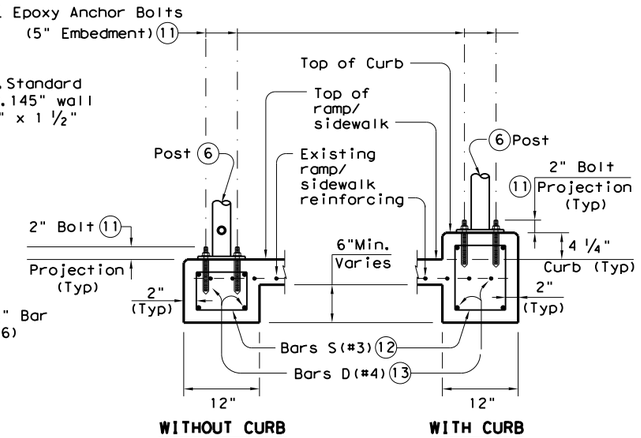
HANDRAIL FABRICATION DETAILS



SECTION J-J
(Anchor Bolts not shown for clarity)



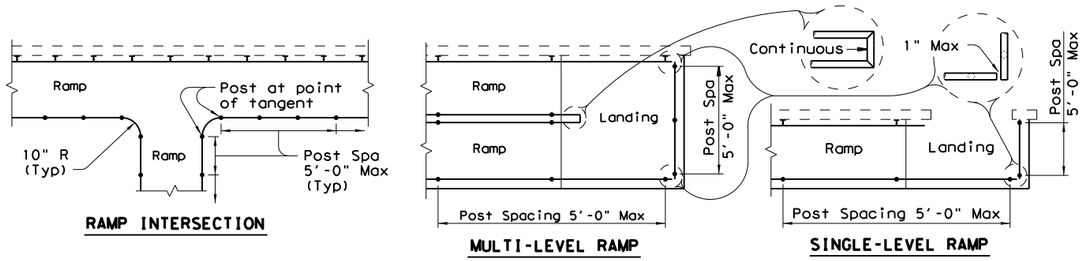
SECTION AT WALL MOUNT



WITHOUT CURB

WITH CURB

SECTION AT RAIL POST FOUNDATIONS



RAMP INTERSECTION

MULTI-LEVEL RAMP

SINGLE-LEVEL RAMP

PLAN SHOWING RAIL AT RAMP CONDITIONS

TYPICAL WALL MOUNT DETAILS

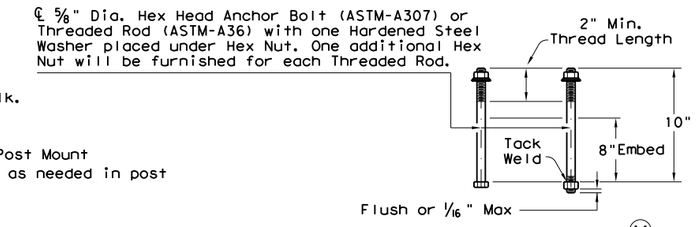
(5) 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.

(6) 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). Plumb all posts. See "Post Mount Detail" for crimping and trimming post to fit the diamenter of top rail. Provide holes as needed in post for galvanizing drainage and venting.

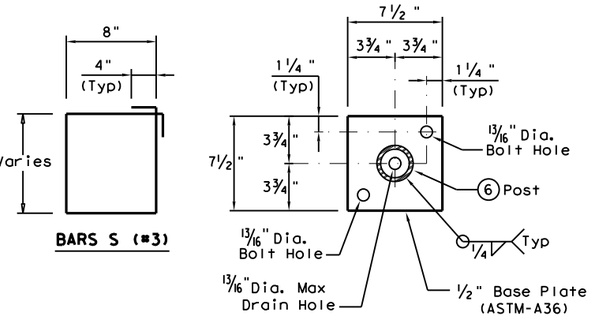
(11) See "General Notes" for anchor bolt information.

(12) Bars S(#3) spaced at 12" Max (Spaced 3" from outside edge of overall length of Ramp/Sidewalk).

(13) Provide 1 ½" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.

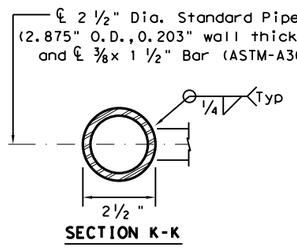


CAST-IN-PLACE ANCHOR BOLT OPTIONS
(Used for Post Base Plate only)

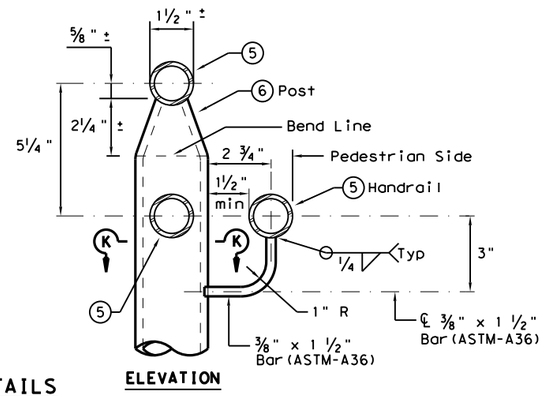


BARS S (#3)

TYPICAL POST BASE PLATE DETAIL



SECTION K-K



ELEVATION

POST MOUNT DETAILS

GENERAL NOTES

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

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

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

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

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

Epoxy Anchor bolts for wall mount and post base plate will be ⅝" Dia. ASTM A36 threaded rods with one hex nut and one hardened steel washer at each bolt. ⅝" Dia. threaded rod embedment depth for wall mounts is 3 ½" and embedment depth for post base plate is 5".

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

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

Optional cast-in-place anchor bolts will be ⅝" Dia ASTM A307 Grade A bolts (or A36 threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer at each bolt. Embedment depth of cast-in-place bolt will be 8" for post base plate.

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

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

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

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

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

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

All exposed edges will be rounded or chamfered to approximately ⅛" by grinding.

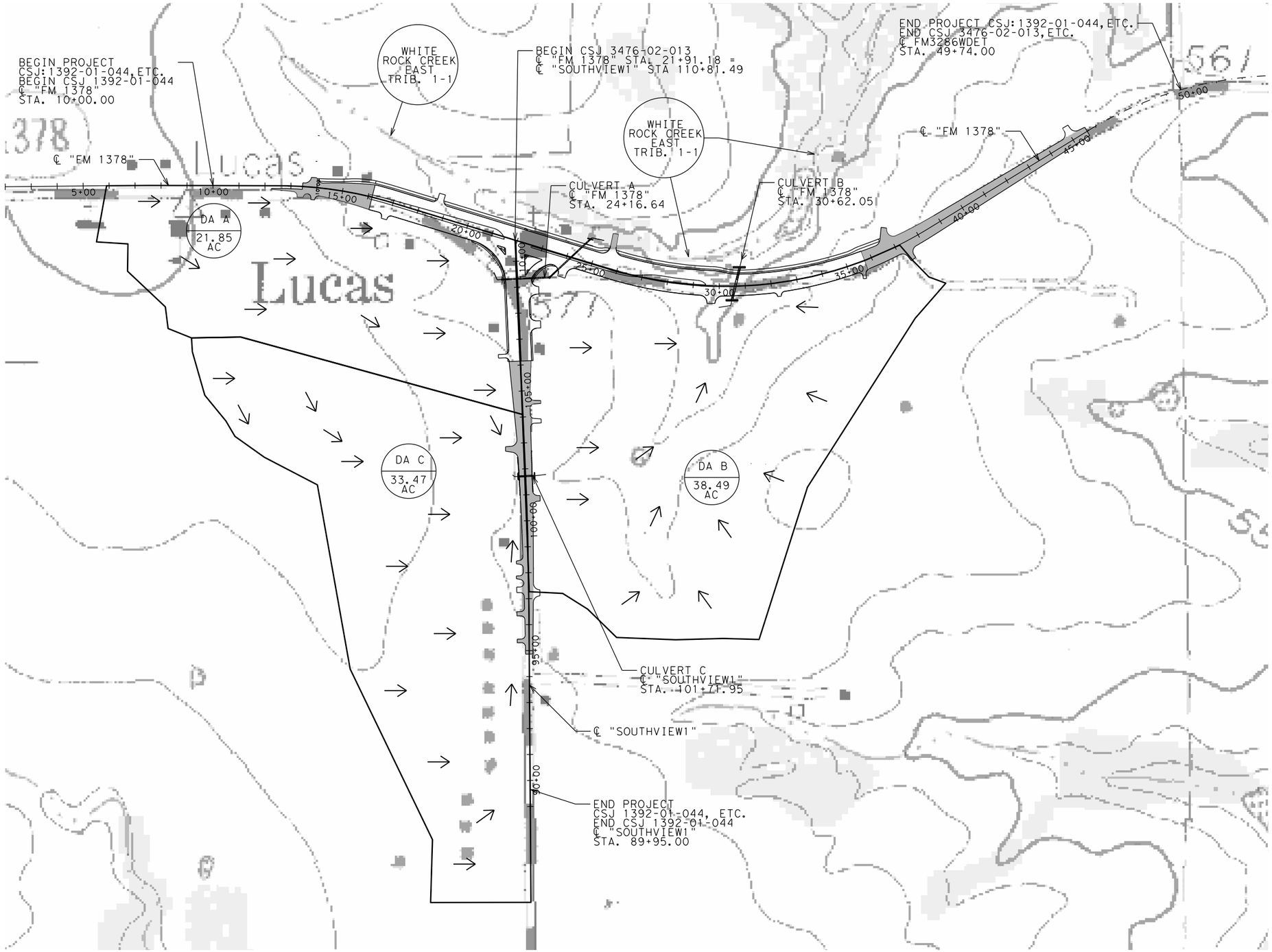
Texas Department of Transportation

Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	1392	01	044, ETC.	FM 1378, ETC.
	DIST	COUNTY		SHEET NO.
	DAL	COLLIN		154



LEGEND

- DA X / XX.XX AC — DRAINAGE AREA NUMBER / DRAINAGE AREA (ACRES)
- STRUCTURE LOCATION
- DRAINAGE AREA BOUNDARY
- DIRECTION OF FLOW

NOTE:
USGS MAP USED TO DELINEATE DRAINAGE AREAS. RATIONAL METHOD USED TO CALCULATE DISCHARGE.

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 11-7-22
Signature of Registrant & Date

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FM 1378

AT FM 3286

EXTERIOR DRAINAGE AREA MAP

SCALE: 1"=400'

SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	155
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

DESCRIPTION	DA I.D.	STATION	DISCHARGE CALCULATION (RATIONAL METHOD AREA) A (acres)	Streets	Unimproved Areas	Residential	Industrial	C	T_c (min)	2-YEAR I_2 (in/hr)	2-YEAR Q_2 (cfs)	5-YEAR I_5 (in/hr)	5-YEAR Q_5 (cfs)	10-YEAR I_{10} (in/hr)	10-YEAR Q_{10} (cfs)	25-YEAR I_{25} (in/hr)	25-YEAR Q_{25} (cfs)	50-YEAR I_{50} (in/hr)	50-YEAR Q_{50} (cfs)	100-YEAR I_{100} (in/hr)	100-YEAR Q_{100} (cfs)
PROP 181' & 213' 42"RCP	A	24+16.64	21.85	2.09	13.42	6.34	0.00	0.35	19.0	3.32	25.40	4.25	32.47	4.94	37.76	5.84	44.67	6.51	49.78	7.18	54.89
PROP 136' 6'X4' RCB	B	30+62.05	38.49	3.33	26.90	8.26	0.00	0.35	16.0	3.62	48.72	4.62	62.17	5.36	72.24	6.34	85.35	7.05	95.03	7.77	104.66
PROP 64' 48" RCP	C	101+71.95	33.47	1.25	24.69	7.53	0.00	0.35	20.0	3.24	37.90	4.14	48.46	4.81	56.38	5.70	66.72	6.35	74.37	7.00	82.03

Culvert B - Values Used in Analysis

	Area (ac)	Q (cfs)
25 yrs	71.96	152.07
100 yrs	71.96	186.69

NOTE:
AS STATED IN THE TxDOT HYDRAULIC DESIGN MANUAL IN CHAPTER 4. SECTION 12 RATIONAL METHOD UNDER THE SUB-SECTION TITLED "RUNOFF COEFFICIENTS", FOR A RURAL WATERSHED THE RUNOFF COEFFICIENT (C) SHALL BE EQUAL TO THE SUM OF COEFFICIENT COMPONENTS THAT ACCOUNT FOR: WATERSHED RELIEF, SOIL INFILTRATION, VEGETAL COVER, AND SURFACE TYPE. THROUGH THE USE FO TABLE 4-11 "RUNOFF COEFFICIENTS FOR RURAL WATERSHEDS" THE PROJECT AREA WAS DETERMINED TO HAVE A TOTAL C OF 0.35. THIS COEFFICIENT WAS USED INSTEAD OF THE WEIGHTED C USING THE AREA DELINEATION METHOD.

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 11-7-22
Signature of Registrant & Date

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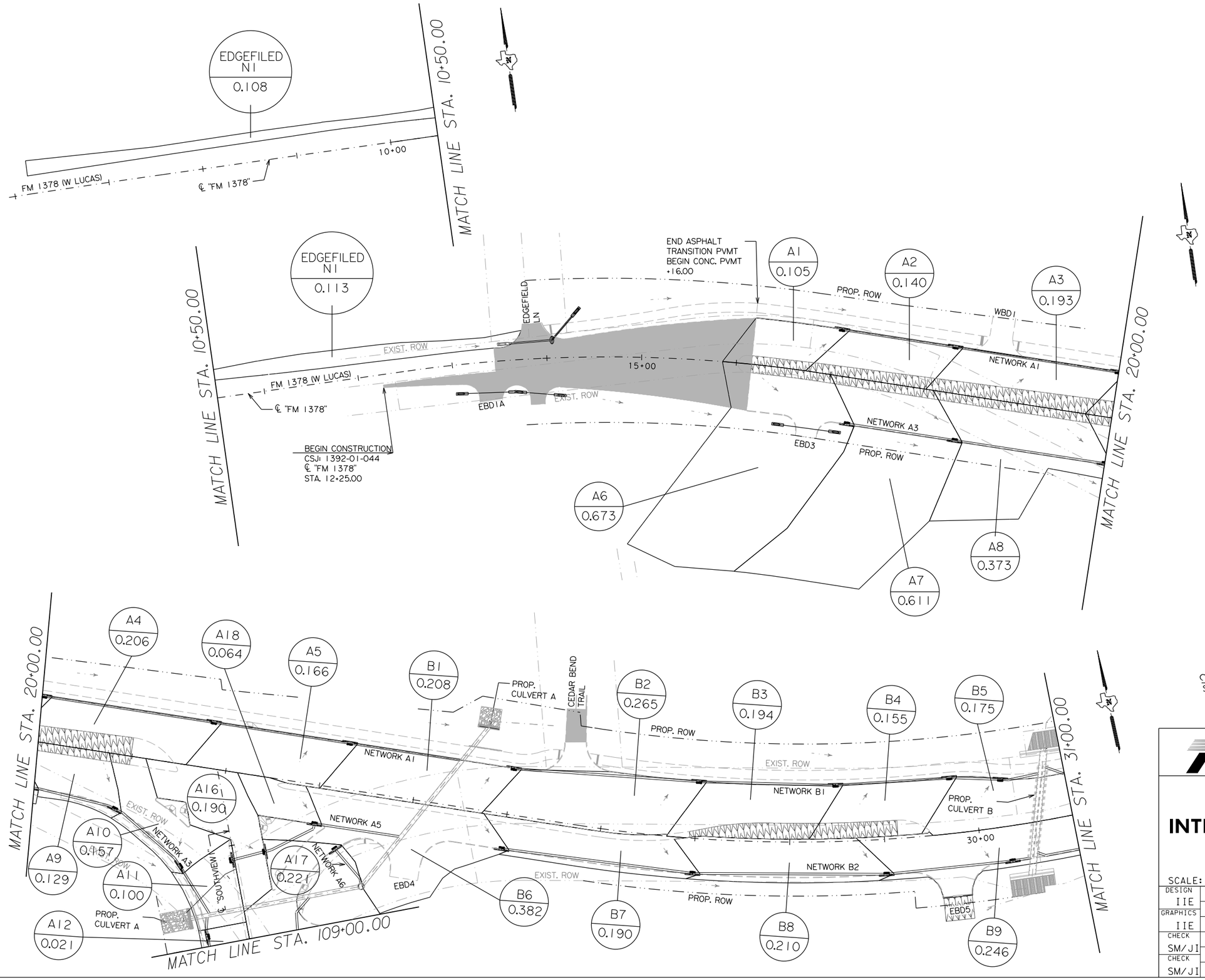
FM 1378

AT FM 3286

EXTERIOR DRAINAGE AREA MAP

SHEET 2 OF 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN	156
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	



STATE OF TEXAS
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142049
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PROFESSIONAL ENGINEER

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Signature of Registrant & Date

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FM 1378

AT FM 3286

INTERIOR DRAINAGE AREA MAP

SCALE: 1"=100'

SHEET 1 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	157
CHECK	CONTROL	SECTION	JOB	
SM/JI	1392	01	044, ETC.	
CHECK				
SM/JI				

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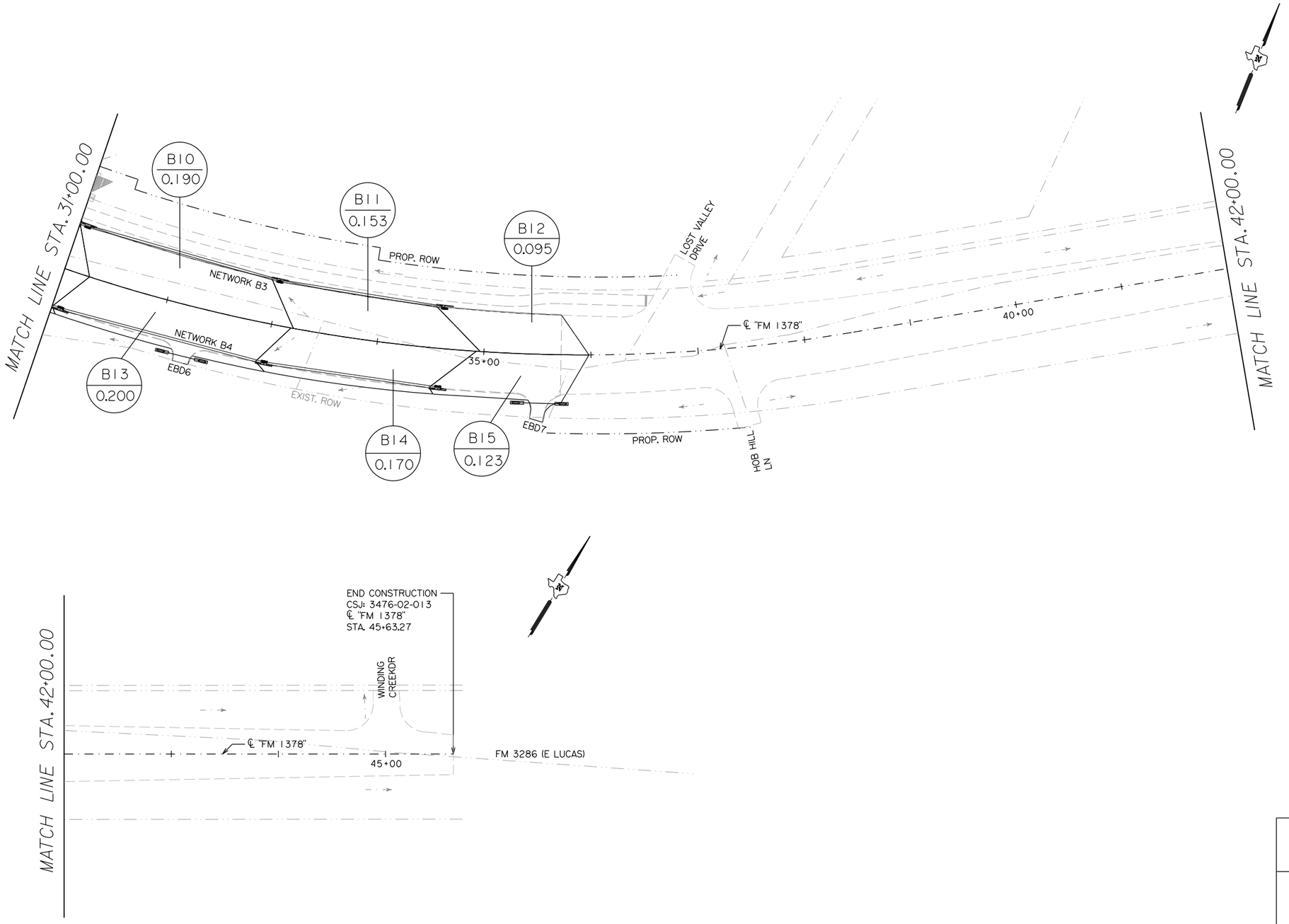

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 11-7-22
Signature of Registrant & Date

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FM 1378

AT FM 3286

INTERIOR DRAINAGE AREA MAP

SCALE: 1"=100'

SHEET 2 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK SM/JI	TEXAS	DAL	COLLIN	158
CHECK SM/JI	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

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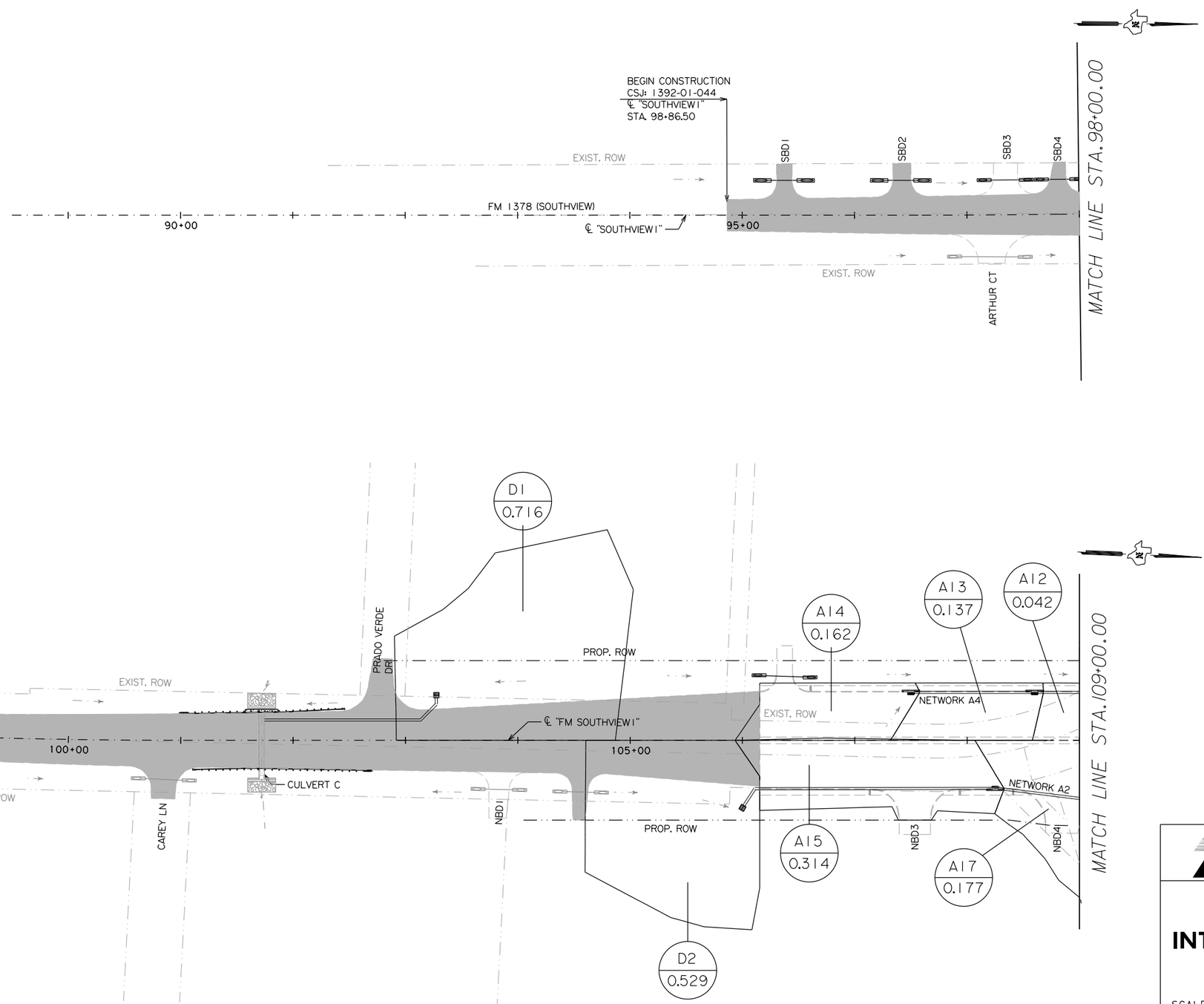

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FM 1378
AT FM 3286

INTERIOR DRAINAGE AREA MAP

SCALE: 1"=100' SHEET 3 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK SM/JI	TEXAS	DAL	COLLIN	159
CHECK SM/JI	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

DATE: 10/31/2022 TIME: 8:47:36 AM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0476892\Interior Drainage Area Map Sheets.dgn

Area ID	Description	Composite Area (AC)	Composite C Value	Time of Concentration (MIN)	Tc Used (MIN)	Intensity (IN/HR)	Discharge (CFS)
NETWORK A1							
A1	Culvert A	0.105	0.93	1.019	10	5.637	0.552
A2	Culvert A	0.14	0.93	1.199	10	5.637	0.736
A3	Culvert A	0.193	0.93	1.199	10	5.637	1.012
A4	Culvert A	0.206	0.93	1.199	10	5.637	1.081
A5	Culvert A	0.166	0.93	1.199	10	5.637	0.871
EDGEFIELD LATERAL							
Edgefield N1	Proposed Ditch	0.221	0.5	1.31	10	5.637	0.624
NETWORK A2							
A15	Culvert A	0.314	0.857	0.976	10	5.637	1.517
D2	Culvert A	0.529	0.582	1.019	10	5.637	1.738
NETWORK A3							
A6	Culvert A	0.673	0.597	1.125	10	5.637	2.265
A7	Culvert A	0.611	0.59	1.14	10	5.637	2.032
A8	Culvert A	0.373	0.712	1.136	10	5.637	1.497
A9	Culvert A	0.129	0.902	1.125	10	5.637	0.658
A10	Culvert A	0.157	0.925	1.13	10	5.637	0.819
NETWORK A4							
A12	Culvert A	0.063	0.912	1.006	10	5.637	0.326
A13	Culvert A	0.137	0.911	1.019	10	5.637	0.705
A14	Culvert A	0.162	0.91	1.019	10	5.637	0.83
NETWORK A5							
A11	Culvert A	0.1	0.904	1.089	10	5.637	0.507
A16	Culvert A	0.19	0.93	1.124	10	5.637	0.994
A18	Culvert A	0.064	0.93	1.124	10	5.637	0.338
NETWORK A6							
A17	Culvert A	0.398	0.787	1.017	10	5.637	1.764
NETWORK B1							
B1	Culvert B	0.208	0.93	1.184	10	5.637	1.089
B2	Culvert B	0.265	0.93	1.193	10	5.637	1.391
B3	Culvert B	0.194	0.93	1.183	10	5.637	1.017
B4	Culvert B	0.155	0.93	1.183	10	5.637	0.813
B5	Culvert B	0.175	0.93	1.183	10	5.637	0.917
NETWORK B2							
B6	Culvert B	0.382	0.856	0.948	10	5.637	1.842
B7	Culvert B	0.19	0.93	0.943	10	5.637	0.994
B8	Culvert B	0.21	0.879	0.945	10	5.637	1.042
B9	Culvert B	0.246	0.899	1.089	10	5.637	1.246
NETWORK B3							
B10	Culvert B	0.19	0.93	1.068	10	5.637	0.996
B11	Culvert B	0.153	0.93	1.004	10	5.637	0.802
B12	Culvert B	0.095	0.93	0.984	10	5.637	0.496
NETWORK B4							
B13	Culvert B	0.2	0.879	0.993	10	5.637	0.993
B14	Culvert B	0.17	0.871	1.018	10	5.637	0.832
B15	Culvert B	0.123	0.895	1.129	10	5.637	0.619
NETWORK D1							
D1	Culvert C	0.716	0.578	1.019	10	5.637	2.336

NOTE: DESIGN CRITERIA FOR STORM DRAIN DESIGN/ANALYSIS BASED ON 5 YRS DESIGN.

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STATE OF TEXAS
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Texas Department of Transportation

FM 1378

AT FM 3286

STORM SEWER RUNOFF CALCULATIONS

SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JI	TEXAS	DAL	COLLIN	160
CHECK	CONTROL	SECTION	JOB	
IIE	1392	01	044, ETC.	
CHECK				

Inlet ID	Inlet Type	Profile Type	Chain	Station	Offset (FT)	Discharge (CFS)	Capacity (CFS)	By Pass Flow (CFS)	By Pass Flow Into (CFS)	Inlet Length (FT)	Max Ponded Width (FT)	Computed Ponded Width (FT)	Computed Ponded Depth (FT)	Right Spread Intercept	Longitudinal Slope (%)
NETWORK A1															
A1	Curb and Grate	On Grade	ALIGN1FM1378	17+05.00	-49.000	0.552	0.552	0	0	14	14	5.368	0.107	5.368	1.312
A2	Curb and Grate	On Grade	ALIGN1FM1378	18+26.00	-49.000	0.736	0.736	0	0	14	14	5.576	0.112	5.576	1.901
A3	Curb and Grate	On Grade	ALIGN1FM1378	19+99.00	-49.000	1.012	1.012	0	0	14	14	6.281	0.126	6.281	1.901
A4	Curb and Grate	On Grade	ALIGN1FM1378	21+80.00	-49.000	1.081	1.081	0	0	14	14	6.439	0.129	6.439	1.901
A5	Curb and Grate	On Grade	ALIGN1FM1378	23+25.00	-49.000	0.871	0.871	0	0	14	14	5.94	0.119	5.94	1.901
EDGEFIELD LATERAL															
Edgefield N1	SET	On Grade	ALIGN1FM1378	13+60.92	-17.622	1.766	1.766	0	0	n/a	14	12.725	0.242	12.725	n/a
Edgefield N3	SET	On Grade	ALIGN1FM1378	14+27.67	-43.384	1.766	1.766	0	0	n/a	14	12.725	0.242	12.725	n/a
NETWORK A2															
D2	Grate	Sag	SOUTHVIEW1	106+00.00	60.000	1.738	9.095	0	0	n/a	14	15.54	0.166	8.293	n/a
A15	Curb and Grate	On Grade	SOUTHVIEW1	108+25.00	43.000	1.517	1.515	0.002	0	14	14	7.23	0.144	7.23	2.051
NETWORK A3															
A6	Curb and Grate	On Grade	ALIGN1FM1378	17+25.00	49.000	2.265	2.248	0.016	0	14	14	9.353	0.187	9.353	1.136
A7	Curb and Grate	On Grade	ALIGN1FM1378	18+40.00	49.000	2.049	2.024	0.024	0.016	14	14	8.181	0.164	8.181	1.901
A8	Curb and Grate	On Grade	ALIGN1FM1378	20+00.00	49.000	1.521	1.52	0.001	0.024	14	14	7.318	0.146	7.318	1.901
A9	Curb and Grate	On Grade	ALIGN1FM1378	20+90.00	57.674	0.659	0.659	0	0.001	14	14	5.351	0.107	5.351	1.901
A10	Curb and Grate	Sag	SOUTHVIEW1	109+88.00	-57.720	0.819	17.798	0	0	14	14	0	0.168	0	n/a
NETWORK A4															
A12	Curb and Grate	On Grade	SOUTHVIEW1	109+10.00	-43.000	0.326	0.326	0	0	14	14	9.473	0.061	9.473	0.979
A13	Curb and Grate	On Grade	SOUTHVIEW1	108+60.00	-43.000	0.705	0.705	0	0	14	14	7.578	0.095	7.578	1.61
A14	Curb and Grate	On Grade	SOUTHVIEW1	107+50.00	-43.000	0.83	0.83	0	0	14	14	5.355	0.107	5.355	2.998
NETWORK A5															
A11	Curb and Grate	Sag	SOUTHVIEW1	109+85.00	-3.000	0.507	17.798	0	0	14	14	0	0.122	0	n/a
A16	Curb and Grate	Sag	SOUTHVIEW1	109+87.25	33.000	0.994	17.798	0	0	14	14	10.043	0.191	10.043	n/a
A18	Curb and Grate	On Grade	ALIGN1FM1378	23+01.00	41.000	0.338	0.338	0	0	14	14	4.544	0.079	4.544	1.901
NETWORK A6															
A17	Curb and Grate	On Grade	SOUTHVIEW1	109+75.00	105.518	1.766	1.766	0	0.002	14	14	12.725	0.242	12.725	0.158
NETWORK B1															
B1	Curb and Grate	On Grade	ALIGN1FM1378	25+00.00	-49.000	1.089	1.089	0	0	14	14	6.456	0.129	6.456	1.901
B2	Curb and Grate	On Grade	ALIGN1FM1378	27+00.00	-60.315	1.391	1.391	0	0	14	14	7.076	0.142	7.076	1.901
B3	Curb and Grate	On Grade	ALIGN1FM1378	28+50.00	-59.612	1.017	1.017	0	0	14	14	6.535	0.131	6.535	1.556
B4	Curb and Grate	On Grade	ALIGN1FM1378	29+75.00	-58.853	0.813	0.813	0	0	14	14	7.495	0.15	7.495	0.477
B5	Curb and Grate	Sag	ALIGN1FM1378	30+30.50	-50.272	0.917	17.798	0	0	14	14	9.037	0.181	9.037	n/a
NETWORK B2															
B6	Curb and Grate	On Grade	ALIGN1FM1378	25+00.00	37.000	1.842	1.831	0.012	0	14	14	7.862	0.157	7.862	1.901
B7	Curb and Grate	On Grade	ALIGN1FM1378	27+00.00	37.000	1.005	1.005	0	0.012	14	14	6.267	0.125	6.267	1.901
B8	Curb and Grate	On Grade	ALIGN1FM1378	29+00.00	37.000	1.042	1.042	0	0	14	14	7.008	0.14	7.008	1.124
B9	Curb and Grate	Sag	ALIGN1FM1378	30+30.50	37.000	1.246	17.798	0	0	14	14	11.087	0.222	11.087	n/a
NETWORK B3															
B10	Curb and Grate	On Grade	ALIGN1FM1378	31+08.00	-44.794	0.996	0.996	0	0	14	14	7.591	0.152	7.591	0.67
B11	Curb and Grate	On Grade	ALIGN1FM1378	33+00.00	-41.578	0.802	0.802	0	0	14	14	5.544	0.111	5.544	2.326
B12	Curb and Grate	On Grade	ALIGN1FM1378	34+60.00	-38.898	0.496	0.496	0	0	14	14	4.422	0.088	4.422	2.977
NETWORK B4															
B13	Curb and Grate	On Grade	ALIGN1FM1378	31+08.00	37.000	0.993	0.993	0	0	14	14	7.582	0.152	7.582	0.67
B14	Curb and Grate	On Grade	ALIGN1FM1378	33+00.00	37.000	0.832	0.832	0	0	14	14	5.621	0.112	5.621	2.326
B15	Curb and Grate	On Grade	ALIGN1FM1378	34+60.00	37.000	0.619	0.619	0	0	14	14	4.804	0.096	4.804	2.977
NETWORK D1															
D1	Grate	Sag	SOUTHVIEW1	103+27.50	-40.250	2.336	9.095	0	0	n/a	14	10.1	0.202	10.1	n/a

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FM 1378
AT FM 3286

STORM SEWER INLET CALCULATIONS

SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JI	TEXAS	DAL	COLLIN	161
CHECK	CONTROL	SECTION	JOB	
IIE	1392	01	044, ETC.	
CHECK				

LINK ID	NODE U/S	NODE U/S	PIPE SIZE	LENGTH (FT)	DISCHARGE (CFS)	CAPACITY (CFS)	SLOPE (%)	FL U/S (FT)	FL D/S (FT)	HGL U/S (FT)	HGL D/S (FT)	EGL U/S (FT)	EGL D/S (FT)	ACTUAL VELOCITY (FPS)	ACTUAL DEPTH (FT)
NETWORK A1															
A1-A2	A1	A2	24 Inch Dia. Circular	116	0.552	29.475	1.25	573.32	571.807	573.662	572.004	573.756	572.192	3.464	0.197
A2-A3	A2	A3	24 Inch Dia. Circular	168	1.289	36.923	1.962	571.893	568.5	572.319	568.765	572.455	569.19	5.224	0.265
A3-A4	A3	A4	24 Inch Dia. Circular	176	2.3	36.814	1.95	568.58	565.05	569.145	565.402	569.334	566.001	6.187	0.352
A4-A5	A4	A5	24 Inch Dia. Circular	140	3.381	37.283	2	565.15	562.25	565.831	562.672	566.064	563.437	6.997	0.422
A5-OA1	A5	A1-OUTLET	24 Inch Dia. Circular	115.404	4.253	58.965	5.003	562.42	556.522	563.187	556.9	563.454	558.564	10.314	0.378
EDGEFIELD LATERAL															
Edgefield L1	Edgefield N1	Edgefield N2	18 Inch Dia. Circular	45.648	0.624	27.892	5.192	586.49	584.12	586.885	584.281	586.989	584.871	6.113	0.161
Edgefield L2	Edgefield N2	Edgefield N3	18 Inch Dia. Circular	32.986	0.624	22.857	3.486	584.12	582.97	584.453	583.147	584.557	583.593	5.322	0.177
NETWORK A2															
D2-Junction	D2	D2 Junction	24 Inch Dia. Circular	18.251	1.738	36.243	1.89	569.964	569.582	570.582	569.904	570.743	570.342	5.291	0.323
D2J-A15	D2 Junction	A15	24 Inch Dia. Circular	211.5	1.738	36.243	1.89	569.58	565.507	570.132	565.816	570.293	566.31	5.635	0.309
A15-JA1	A15	A2-Junction	24 Inch Dia. Circular	91.34	3.255	35.468	1.81	565.569	563.87	566.549	564.296	566.778	564.988	6.659	0.426
JA1-OA2	A2-Junction	A2-OUTLET	24 Inch Dia. Circular	20.262	3.255	35.468	1.81	563.867	563.5	564.589	563.958	564.817	564.521	6.007	0.458
NETWORK A3															
A6-A7	A6	A7	24 Inch Dia. Circular	110	2.265	32.822	1.55	573.032	571.25	573.742	571.619	573.928	572.125	5.689	0.369
A7-A8	A7	A8	24 Inch Dia. Circular	155	4.297	35.857	1.85	571.21	568.25	571.996	568.736	572.265	569.565	7.287	0.486
A8-JA1	A8	A3-Junction1	24 Inch Dia. Circular	6	5.794	34.675	1.73	568.197	568.05	569.092	568.737	569.413	569.311	6.069	0.687
A3_JA1-JA2	A3-Junction1	A3-Junction2	24 Inch Dia. Circular	75.157	5.794	34.672	1.73	568.05	566.75	568.921	567.333	569.243	568.237	7.613	0.583
JA2-A9	A3-Junction2	A9	24 Inch Dia. Circular	4.944	5.794	34.675	1.73	566.749	566.62	567.626	567.314	567.948	567.872	5.986	0.694
A9-JA3	A9	A3-Junction3	24 Inch Dia. Circular	7.056	6.452	36.339	1.9	566.7	566.518	567.637	567.231	567.981	567.874	6.424	0.713
A3_JA3-JA4	A3-Junction3	A3-Junction4	24 Inch Dia. Circular	72.089	6.452	36.541	1.921	566.518	565.133	567.447	565.736	567.792	566.756	8.088	0.603
JA4-A10	A3-Junction4	A10	24 Inch Dia. Circular	8.204	6.452	36.339	1.9	565.133	564.93	566.062	565.636	566.407	566.296	6.511	0.706
A10-OA3	A10	A3-OUTLET	24 Inch Dia. Circular	55.896	7.271	28.879	1.2	565.001	564.3	566.004	565.028	566.376	565.8	7.04	0.728
NETWORK A4															
A14-A13	A14	A13	24 Inch Dia. Circular	105	0.83	36.814	1.95	567.3	565.155	567.721	565.37	567.832	565.694	4.566	0.215
A13-A12	A13	A12	24 Inch Dia. Circular	45	1.534	24.305	0.85	565.232	564.807	565.692	565.161	565.843	565.422	4.091	0.354
A12-JA1	A12	A4-Junction4	24 Inch Dia. Circular	6	1.861	42.916	2.65	564.885	564.66	565.374	564.998	565.541	565.436	5.293	0.338
JA1-OA4	A4-Junction4	A4-OUTLET	24 Inch Dia. Circular	12.55	1.861	42.916	2.65	564.66	564.327	565.353	564.652	565.521	565.143	5.601	0.325
NETWORK A5															
A11-A16	A11	A16	24 Inch Dia. Circular	33.076	0.507	44.817	2.89	564.793	563.75	565.12	563.906	565.199	564.223	4.484	0.156
A16-JA1	A16	A5-Junction1	24 Inch Dia. Circular	6	1.502	50.71	3.7	563.758	563.48	564.229	563.766	564.377	564.232	5.457	0.286
A5_JA1-JA2	A5-Junction1	A5-Junction2	24 Inch Dia. Circular	49.513	1.502	50.71	3.7	563.482	561.65	563.917	561.897	564.066	562.614	6.758	0.247
JA2-A18	A5-Junction2	A18	24 Inch Dia. Circular	4	1.502	50.71	3.7	561.654	561.45	562.147	561.747	562.296	562.164	5.166	0.297
A18-OA5	A18	A5-OUTLET	24 Inch Dia. Circular	87.77	1.84	55.924	4.5	561.489	557.427	562.172	557.684	562.338	558.625	7.78	0.257
NETWORK A6															
A17-JA1	A17	A6-JA1	24 Inch Dia. Circular	39.612	1.764	22.892	0.754	562.77	562.46	563.392	562.851	563.554	563.11	4.081	0.391
JA1-OA6	A6-JA1	A6-OUTLET	24 Inch Dia. Circular	6.002	1.764	22.831	0.75	562.46	562.415	562.955	562.826	563.116	563.05	3.8	0.411
NETWORK B1															
B1-B2	B1	B2	24 Inch Dia. Circular	190.628	1.089	34.875	1.75	558.343	554.92	558.828	555.171	558.955	555.527	4.77	0.251
B2-B3	B2	B3	24 Inch Dia. Circular	138.976	2.48	36.625	1.93	554.94	552.161	555.546	552.527	555.742	553.147	6.296	0.366
B3-B4	B3	B4	24 Inch Dia. Circular	115.022	3.497	33.033	1.57	552.214	550.33	552.919	550.787	553.157	551.44	6.467	0.457
B4-B5	B4	B5	24 Inch Dia. Circular	48.924	4.309	67.213	6.5	550.495	546.99	551.269	547.354	551.538	549.255	11.019	0.364
B5-JA1	B5	B1-Junction	24 Inch Dia. Circular	6.497	5.226	71.957	7.45	546.93	546.26	547.781	546.758	548.083	547.901	8.557	0.498
JA1-OB1	B1-Junction	B1-OUTLET	24 Inch Dia. Circular	32.175	5.226	71.957	7.45	546.258	543.86	547.09	544.269	547.392	546.273	11.317	0.409
NETWORK B2															
B6-B7	B6	B7	24 Inch Dia. Circular	197.933	1.842	34.068	1.67	558.75	555.361	559.387	555.688	559.553	556.161	5.496	0.327
B7-B8	B7	B8	24 Inch Dia. Circular	199.759	2.836	34.068	1.67	555.379	551.96	556.017	552.364	556.228	552.971	6.231	0.405
B8-B9	B8	B9	24 Inch Dia. Circular	128.66	3.878	52.726	4	552.016	546.67	552.759	547.051	553.011	548.4	9.283	0.381
B9-OB2	B9	B2-OUTLET	24 Inch Dia. Circular	16.802	5.124	81.256	9.5	546.804	544.97	547.657	545.379	547.955	547.308	11.106	0.409
NETWORK B3															
B12-B11	B12	B11	24 Inch Dia. Circular	150.691	0.496	46.641	3.13	559.04	554.167	559.364	554.317	559.44	554.652	4.617	0.15
B11-B10	B11	B10	24 Inch Dia. Circular	181.414	1.298	55.299	4.4	554.312	546.11	554.749	546.329	554.887	547.083	6.954	0.219
B10-JA1	B10	B3-Junction	24 Inch Dia. Circular	6	2.294	81.256	9.5	546.318	545.51	546.893	545.802	547.081	546.827	8.086	0.292
JA1-OB3	B3-Junction	B3-OUTLET	24 Inch Dia. Circular	20.852	2.294	81.256	9.5	545.509	543.528	546.075	543.784	546.262	545.291	9.794	0.256
NETWORK B4															
B15-B14	B15	B14	24 Inch Dia. Circular	158.849	0.619	44.894	2.9	559.06	554.308	559.423	554.478	559.521	554.841	4.805	0.17
B14-B13	B14	B13	24 Inch Dia. Circular	191.58	1.451	41.683	2.5	554.443	549.529	554.905	549.793	555.051	550.337	5.898	0.264
B13-JA1	B13	B4-Junction	24 Inch Dia. Circular	41.552	2.444	79.089	9	549.785	545.82	550.378	546.073	550.572	547.835	10.588	0.253
JA1-OB4	B4-Junction	B4-OUTLET	24 Inch Dia. Circular	9.777	2.444	79.089	9	545.817	544.937	546.402	545.237	546.596	546.308	8.265	0.3
NETWORK D1															
D1-Junction1	D1	D1-Junction1	24 Inch Dia. Circular	6	2.336	13.354	0.257	573.561	573.54	574.315	574.193	574.426	574.331	2.619	0.653
D1_JA1-JA2	D1-Junction1	D1-Junction2	24 Inch Dia. Circular	19.962	2.336	13.577	0.265	573.543	573.49	574.193	574.101	574.331	574.28	2.871	0.611
D1J_OD1	D1-Junction2	D1-OUTLET	24 Inch Dia. Circular	139.382	2.336	15.587	0.35	573.487	573	574.101	573.532	574.28	573.721	3.489	0.532

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DATE: 2/20/2023

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
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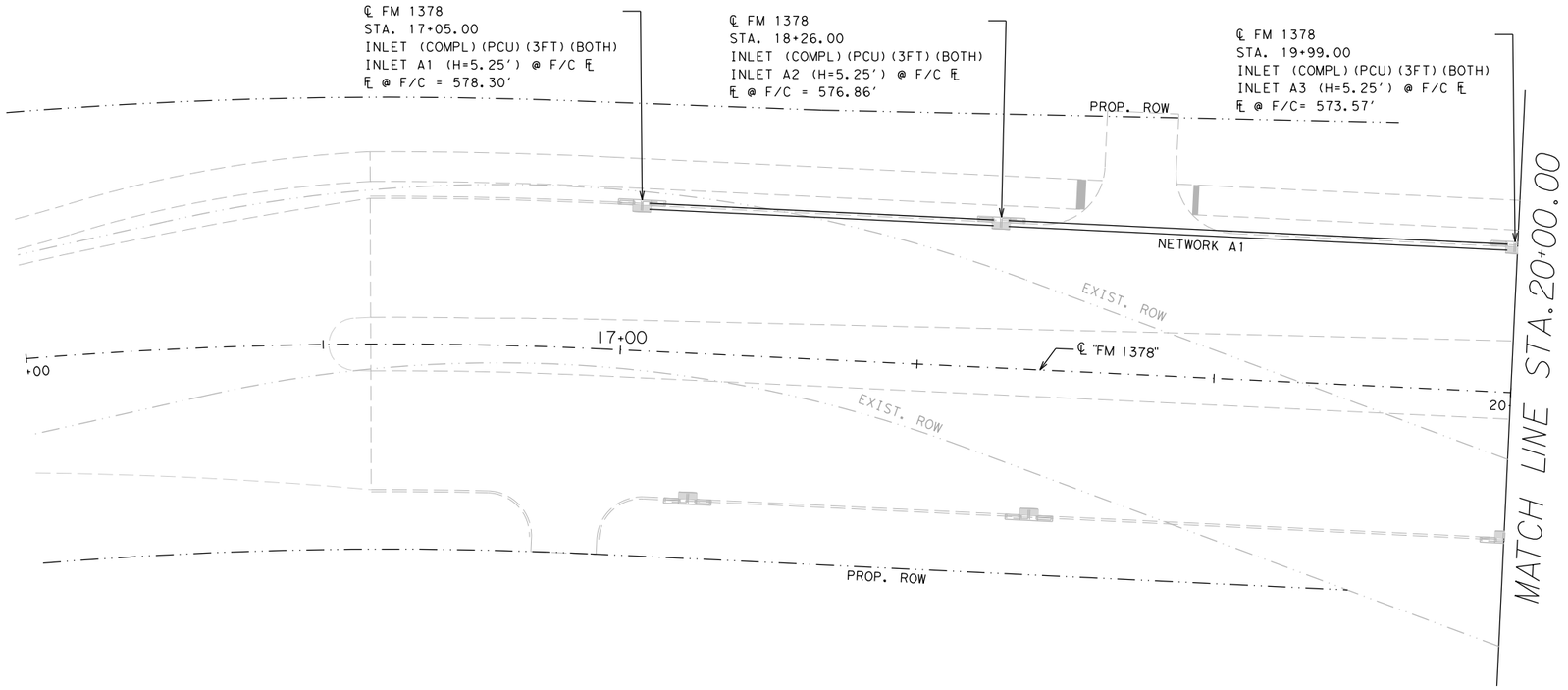
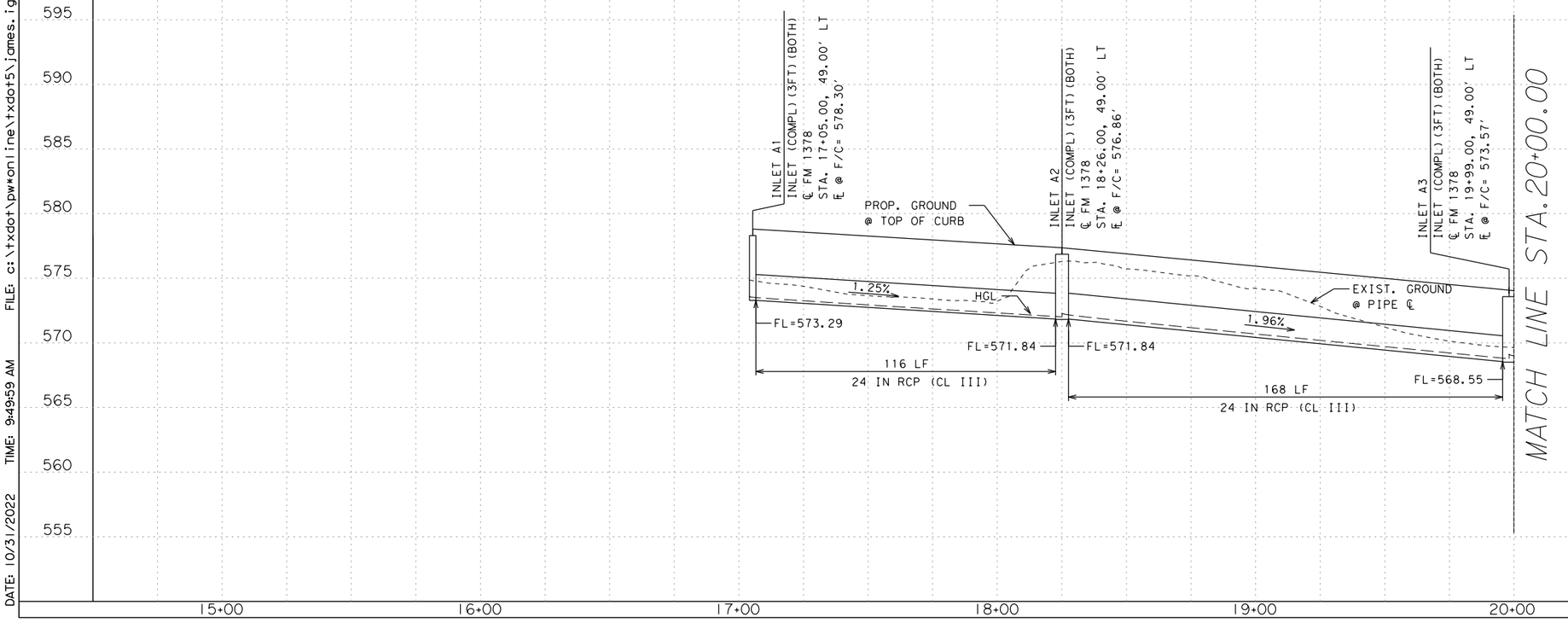
FM 1378
AT FM 3286

STORM SEWER CALCULATIONS

SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JI	TEXAS	DAL	COLLIN	162
CHECK	CONTROL	SECTION	JOB	
IIE	1392	01	044, ETC.	
CHECK				





0 25 50

LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
464 6005	RC PIPE (CL III) (24 IN)	LF	284
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3

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142049
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FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK A1

SCALE: 1"=50'-H
1"=10'-V

SHEET 1 OF 2

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK JI	TEXAS	DAL	COLLIN	163
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

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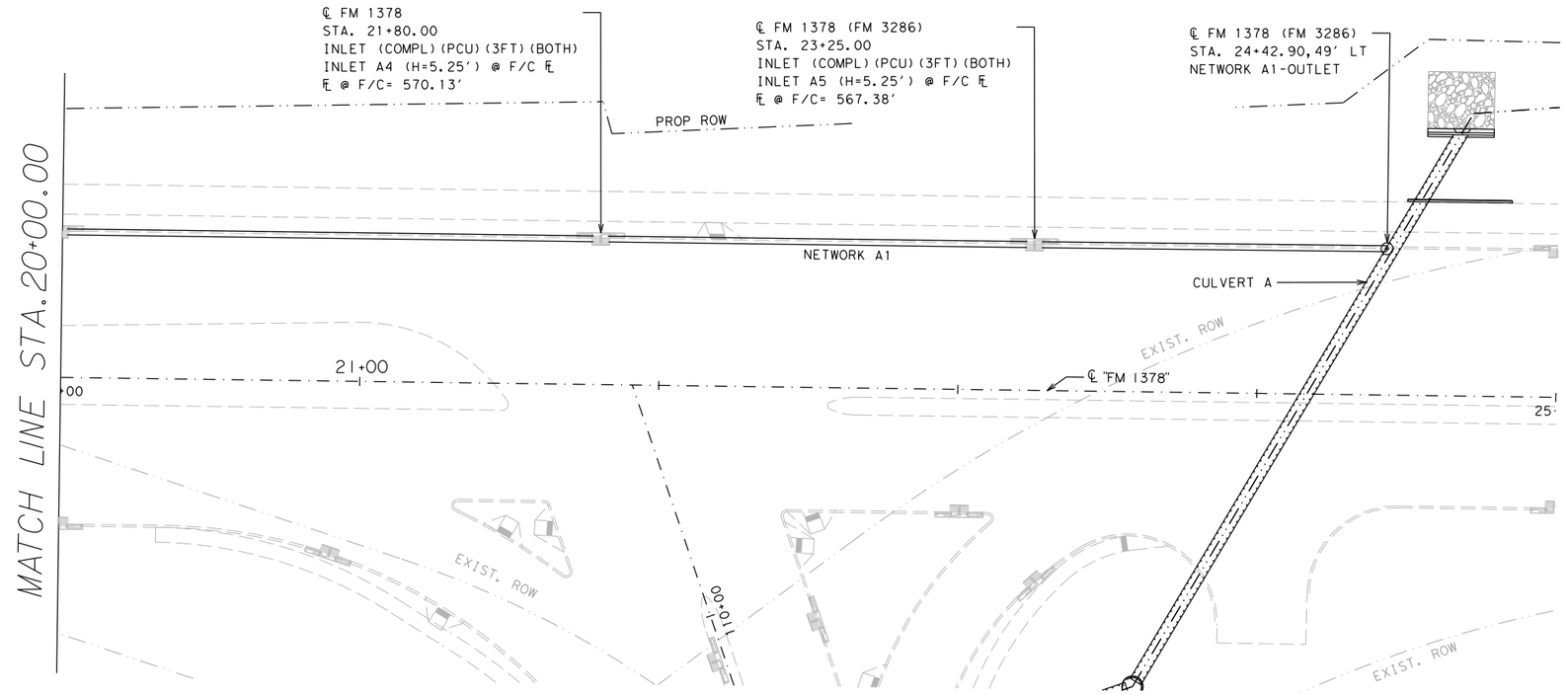

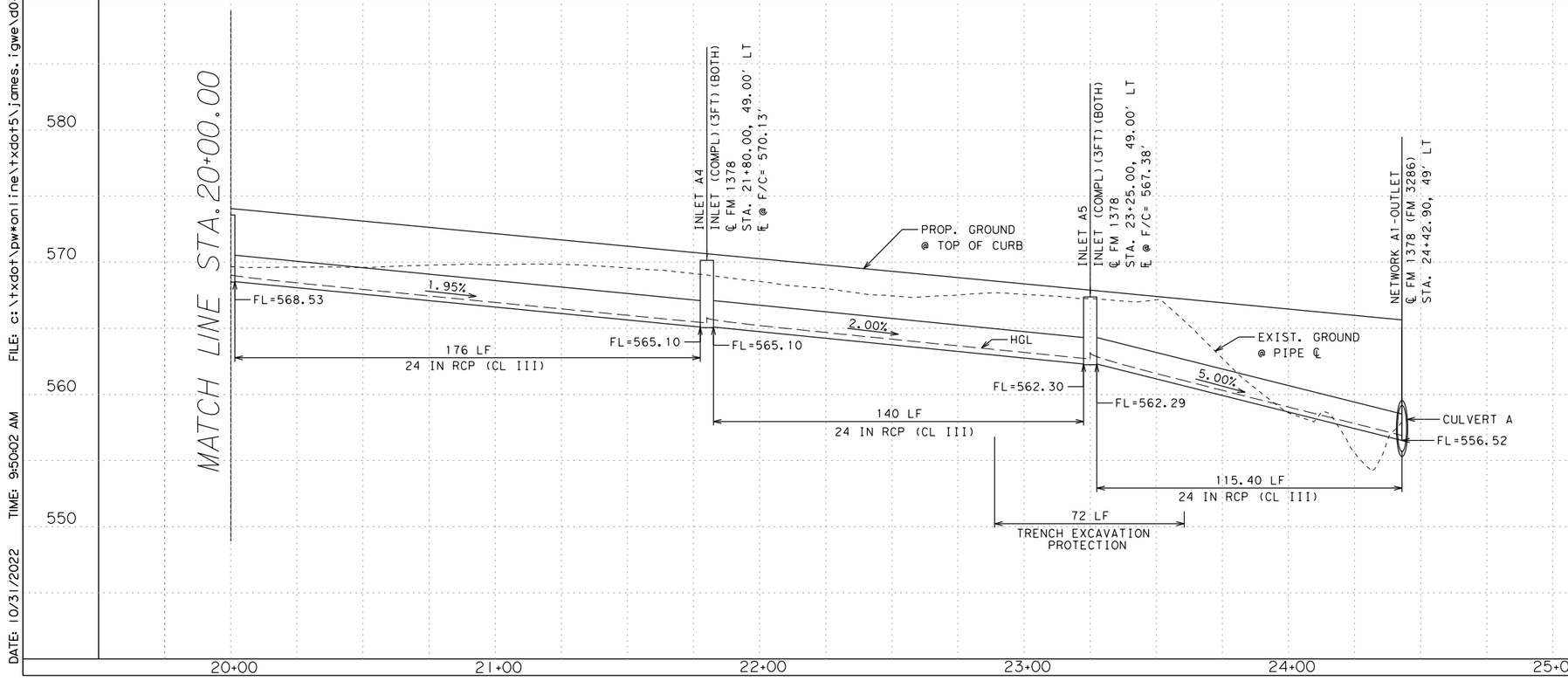

0 25 50

LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL)(PCU)(3FT)(RIGHT)
- INLET (COMPL)(PCU)(3FT)(LEFT)
- INLET (COMPL)(PCU)(3FT)(BOTH)
- INLET (COMPL)(PAZD)(SL)(4FTX4FT)

NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	72
464 6005	RC PIPE (CL III) (24 IN)	LF	432
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	2

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FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK A1

SCALE: 1"=50'-H
1"=10'-V

SHEET 2 OF 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378,ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	164
CHECK	CONTROL	SECTION	JOB	
JI	1392	01	044, ETC.	
CHECK				

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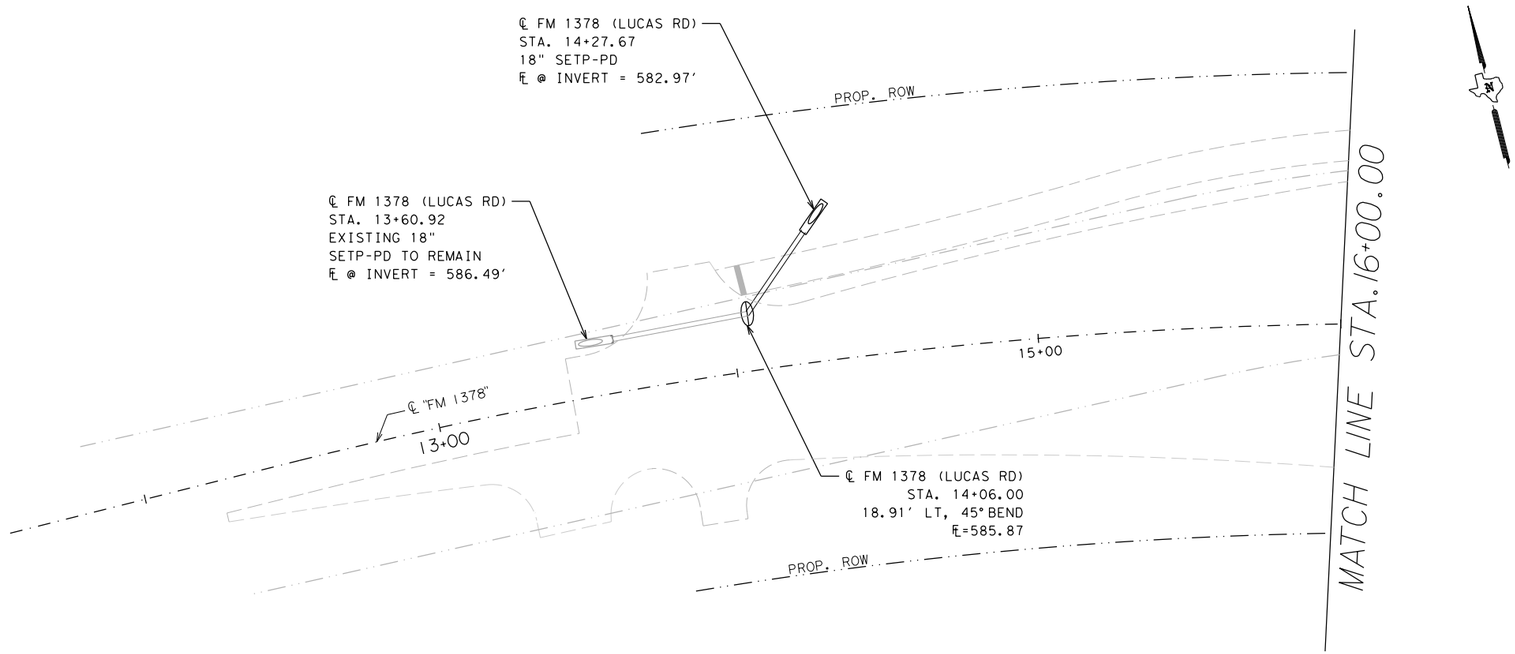
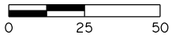




LEGEND

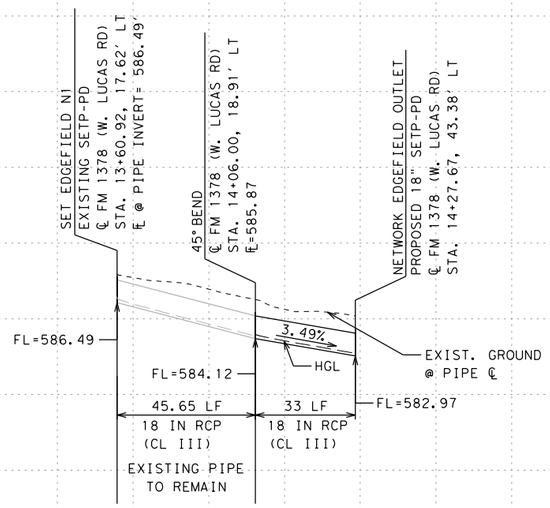
- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTX4FT)

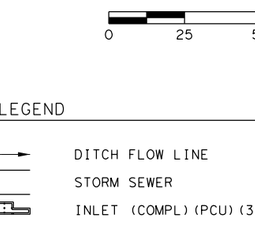
NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: SEE SUMMARY OF DRIVEWAY DRAINAGE			
ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
464 6003	RC PIPE (CL III) (18 IN)	LF	33
467 6356	SET (TY II) (18 IN) (RCP) (3:1) (P)	EA	1





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FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
EDGEFIELD LATERAL

SCALE: 1"=50'-H
1"=10'-V

SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK JI	TEXAS	DAL	COLLIN	165
CHECK	CONTROL	SECTION	JOB	
	1392	01	044, ETC.	

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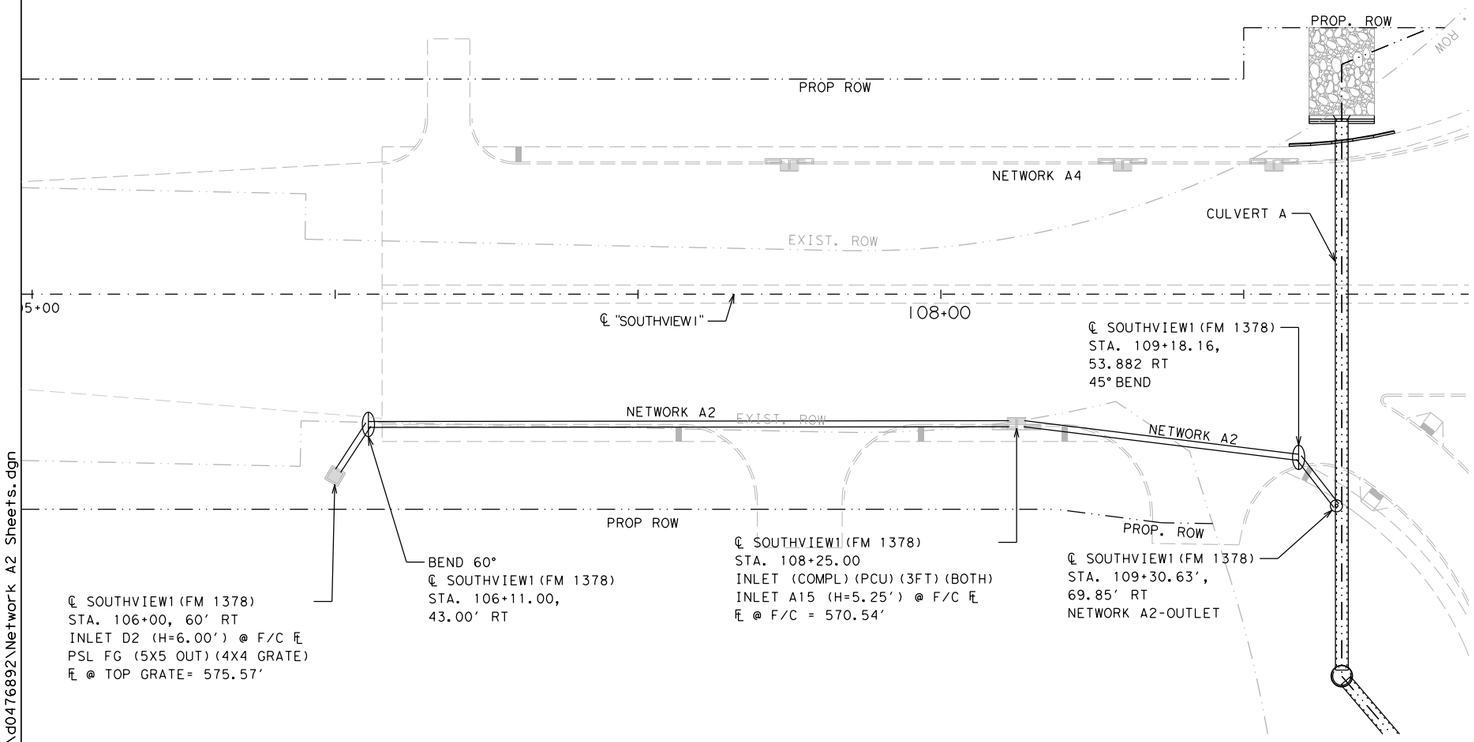

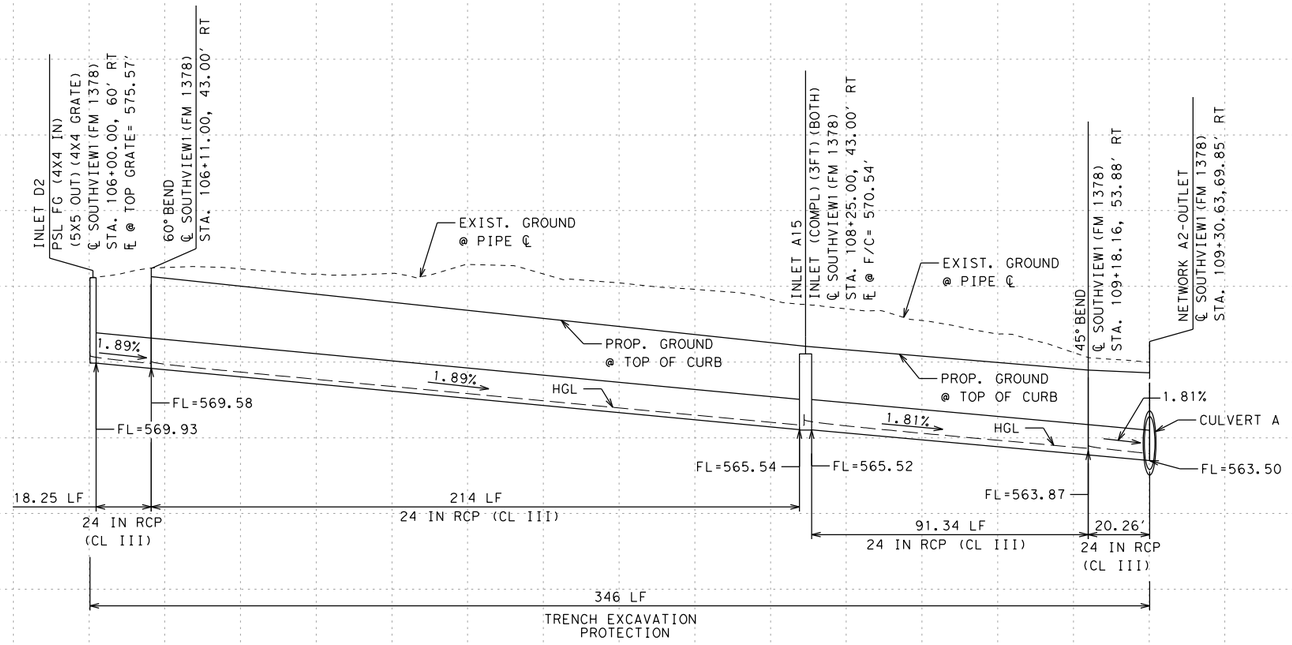

0 25 50

LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	346
464 6005	RC PIPE (CL III) (24 IN)	LF	344
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	1
465 6135	INLET (COMPL)(PSL)(FG)(5FTX5FT-4FTX4FT)	EA	1

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142049
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FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK A2

SCALE: 1"=50'-H
1"=10'-V

SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	166
CHECK	CONTROL	SECTION	JOB	
JI	1392	01	044, ETC.	
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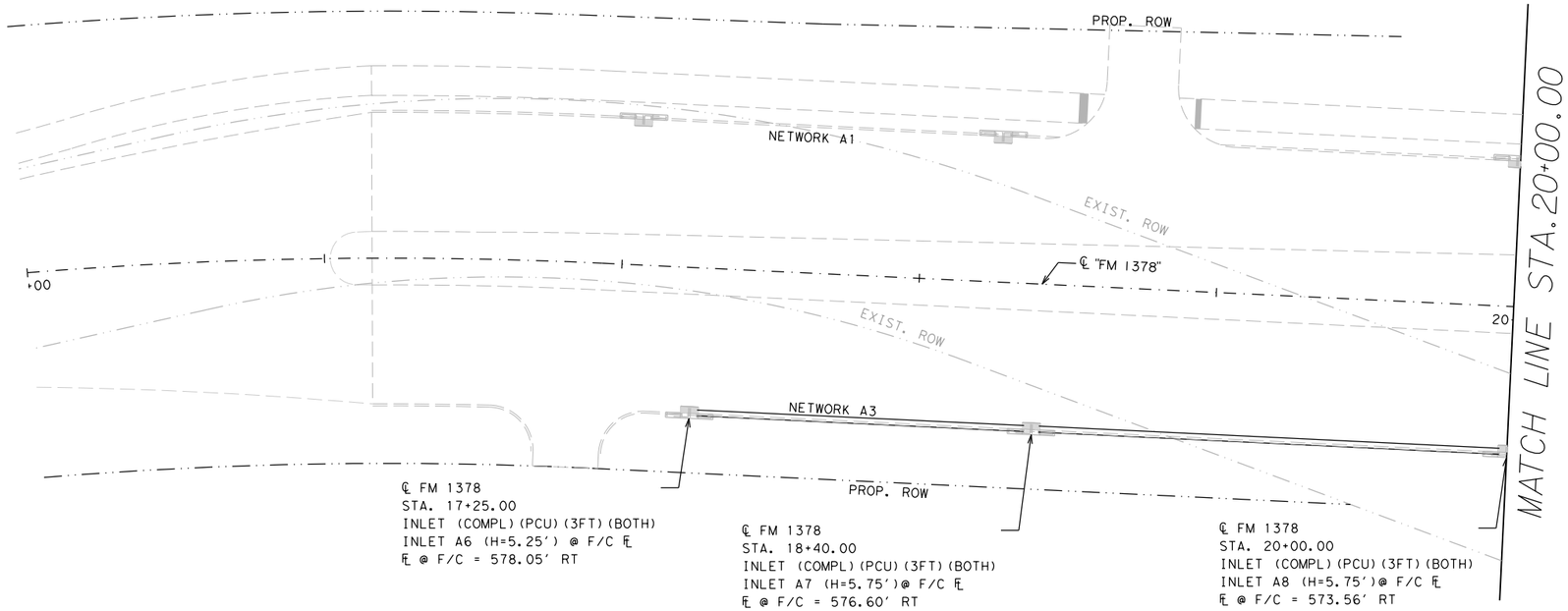


0 25 50

LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTX4FT)

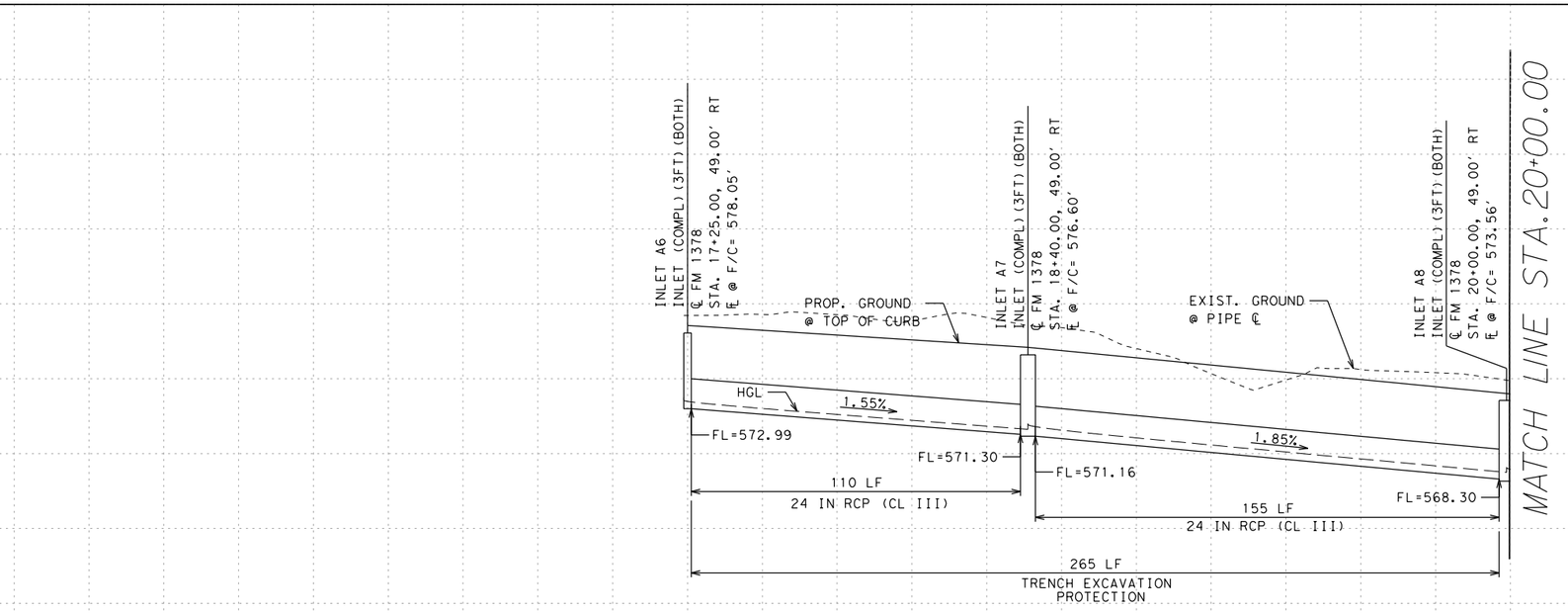
NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	265
464 6005	RC PIPE (CL III) (24 IN)	LF	265
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3



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FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK A3

SCALE: 1"=50′-H
1"=10′-V

SHEET 1 OF 2

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	167
CHECK	CONTROL	SECTION	JOB	
JI	1392	01	044, ETC.	
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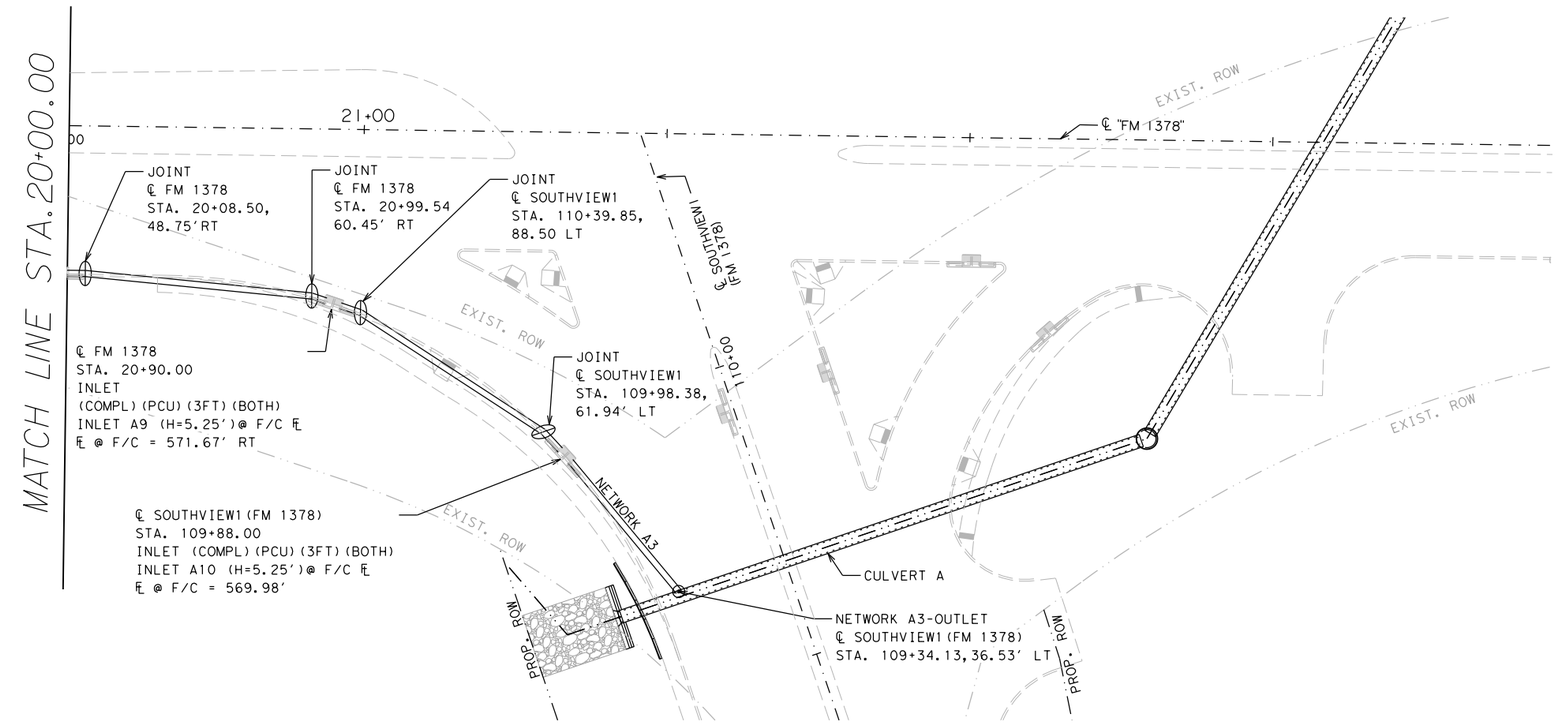

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LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTX4FT)

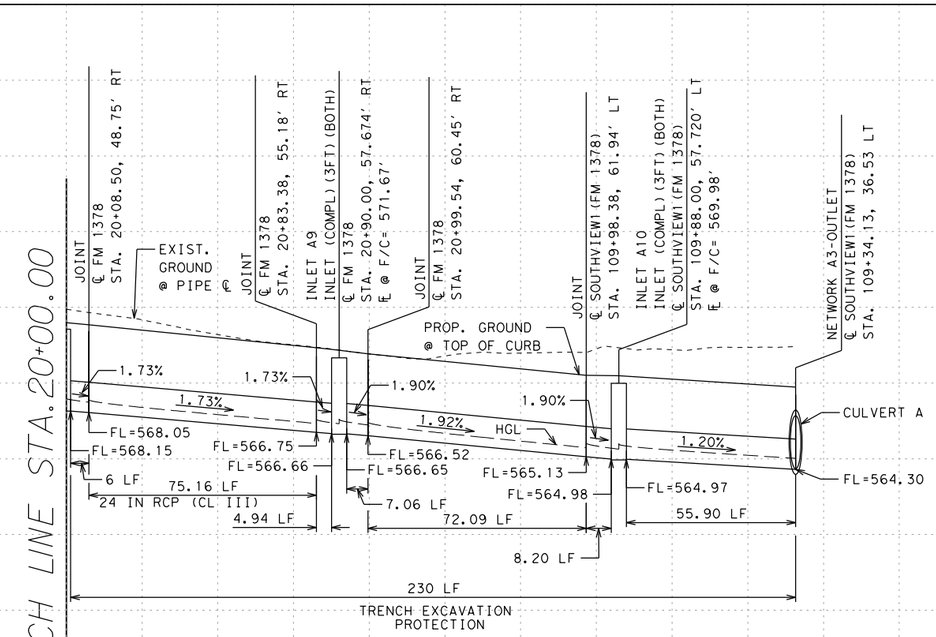
NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	230
464 6005	RC PIPE (CL III) (24 IN)	LF	230
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	2



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FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK A3

SCALE: 1"=50'-H
1"=10'-V

SHEET 2 OF 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	168
CHECK	CONTROL	SECTION	JOB	
JI	1392	01	044, ETC.	
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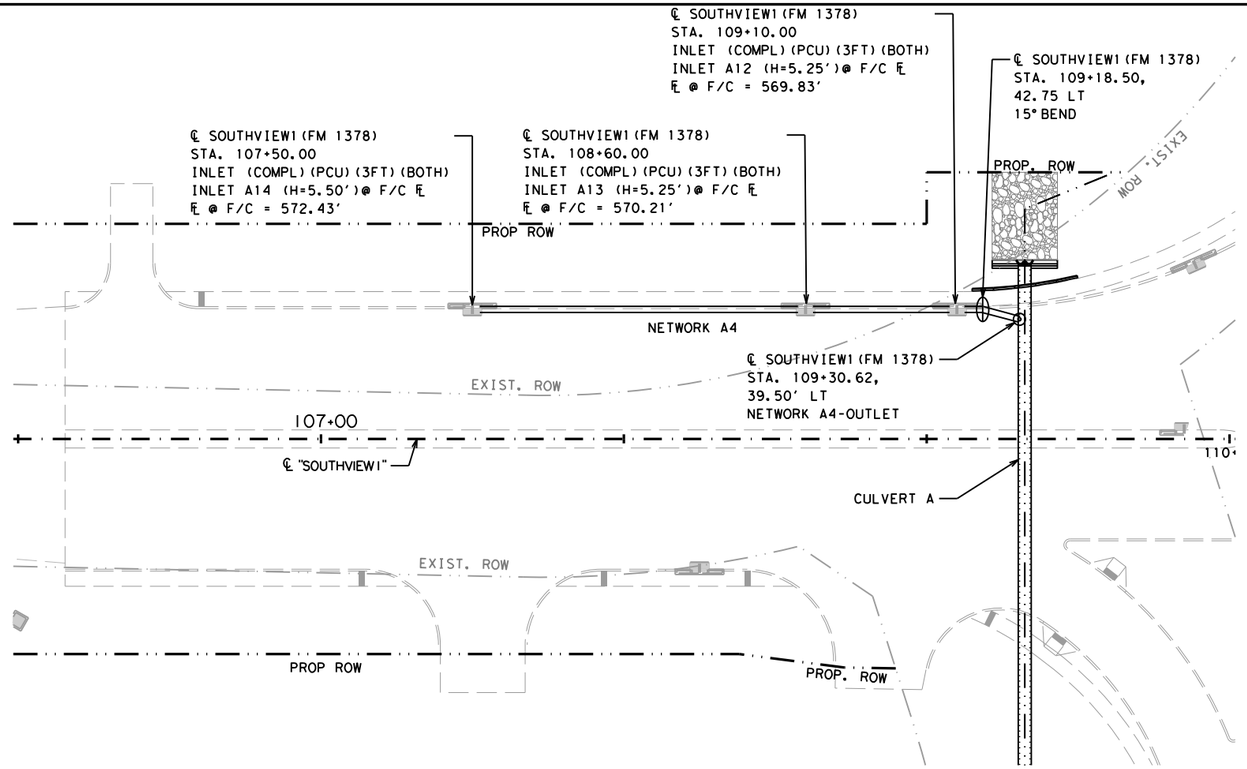


0 25 50

LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTX4FT)

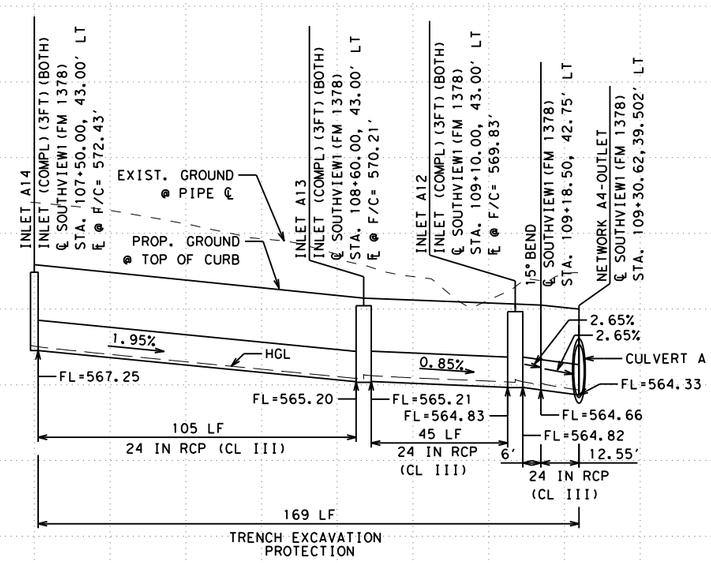
NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	169
464 6005	RC PIPE (CL III) (24 IN)	LF	169
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3



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FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK A4

SCALE: 1"=50'-H
1"=10'-V

SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
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CHECK	CONTROL	SECTION	JOB	
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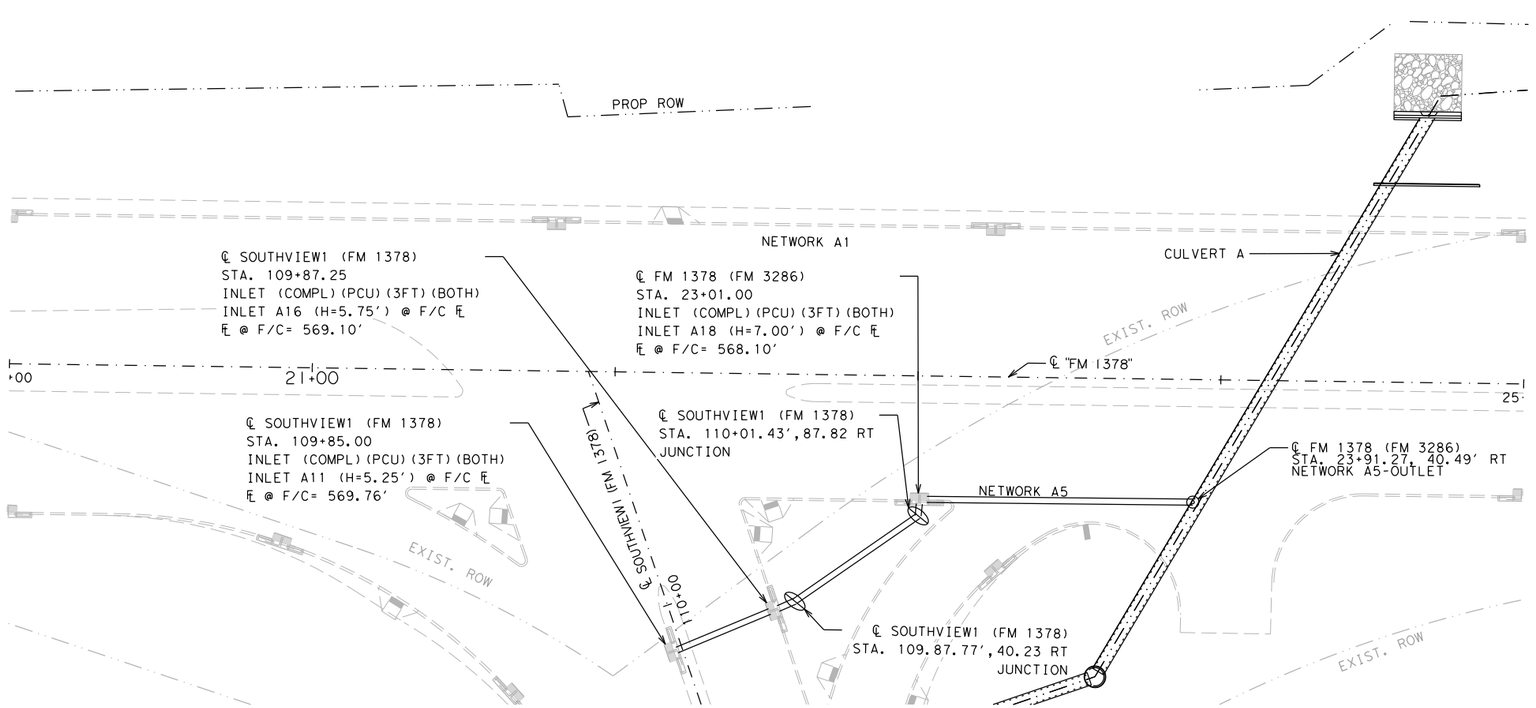

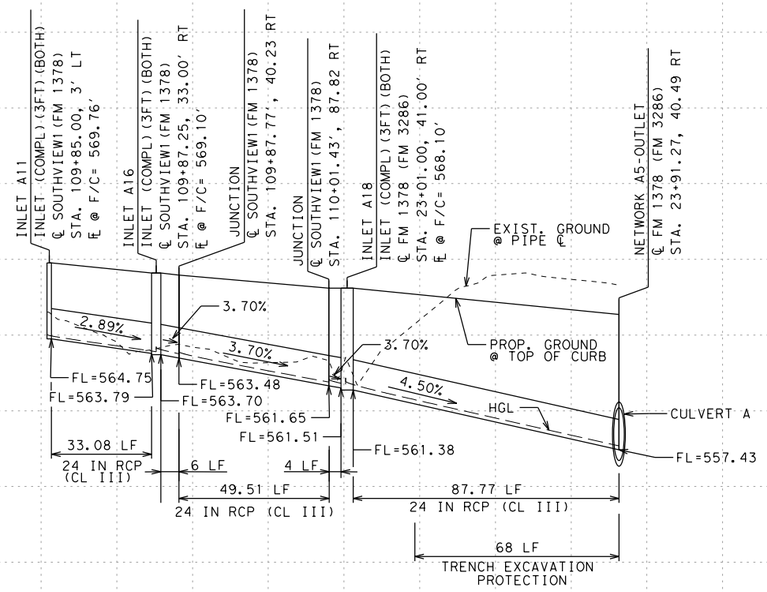

0 25 50

LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL)(PCU)(3FT)(RIGHT)
- INLET (COMPL)(PCU)(3FT)(LEFT)
- INLET (COMPL)(PCU)(3FT)(BOTH)
- INLET (COMPL)(PAZD)(SL)(4FTX4FT)

NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	68
464 6005	RC PIPE (CL III) (24 IN)	LF	181
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 11-7-22
Signature of Registrant & Date

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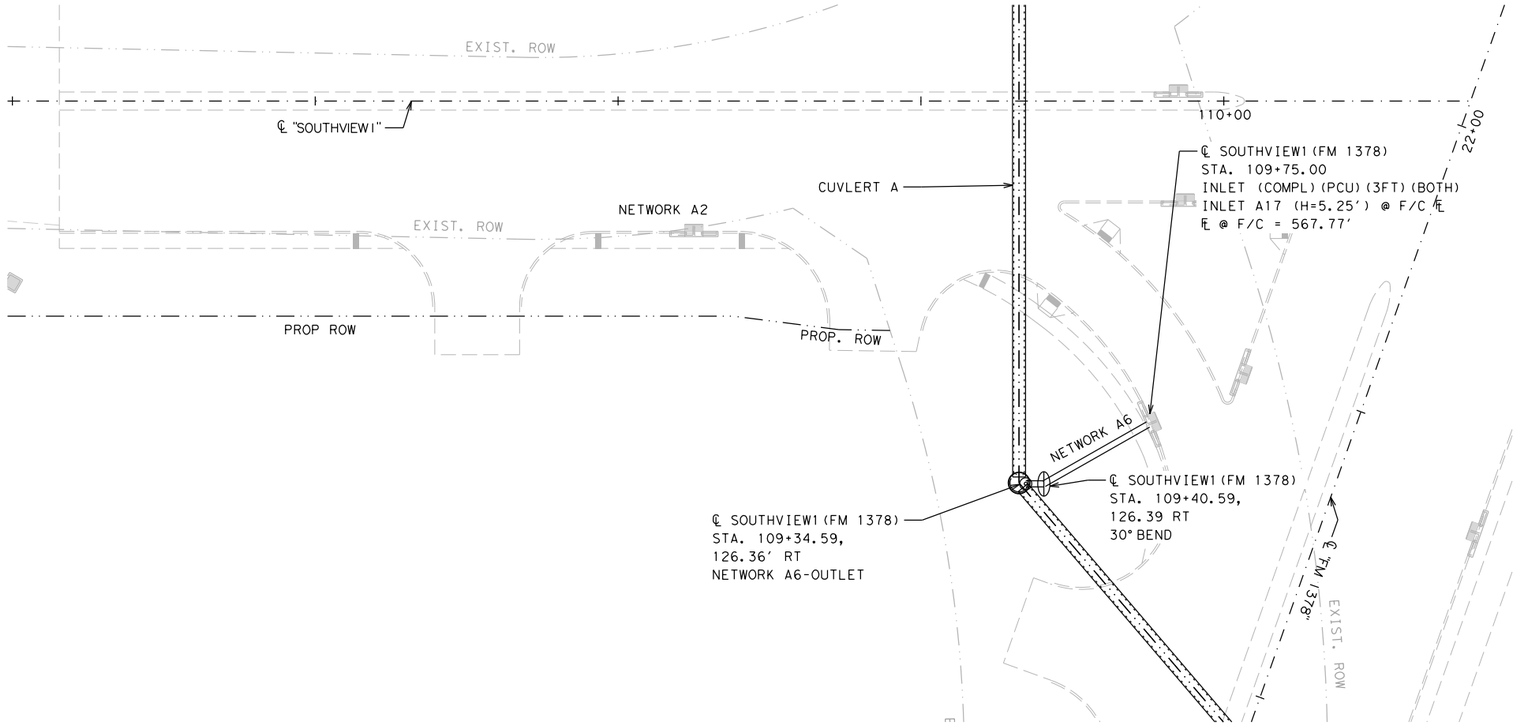
FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK A5

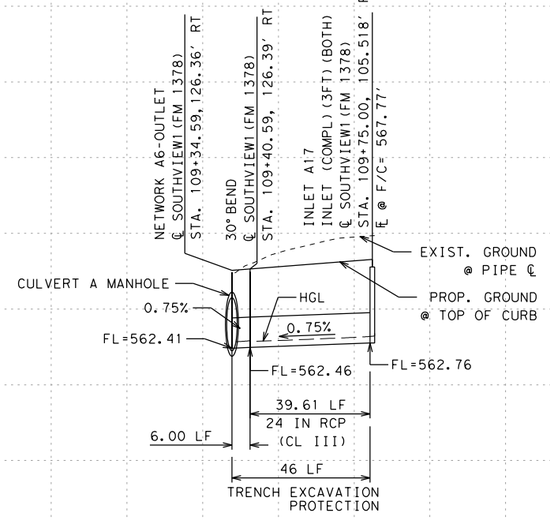
SCALE: 1"=50'-H
1"=10'-V

SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	170
CHECK	CONTROL	SECTION	JOB	
JI	1392	01	044, ETC.	
CHECK				

DATE: 10/29/2022 TIME: 7:45:33 PM FILE: c:\txdot\pw*online\txdot5\james.igwe\d0476892\Network A5 Sheets.dgn





0 25 50

LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	46
464 6005	RC PIPE (CL III) (24 IN)	LF	46
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	1

STATE OF TEXAS
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FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK A6

SCALE: 1"=50'-H
1"=10'-V

SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	171
CHECK	CONTROL	SECTION	JOB	
JI	1392	01	044, ETC.	
CHECK				

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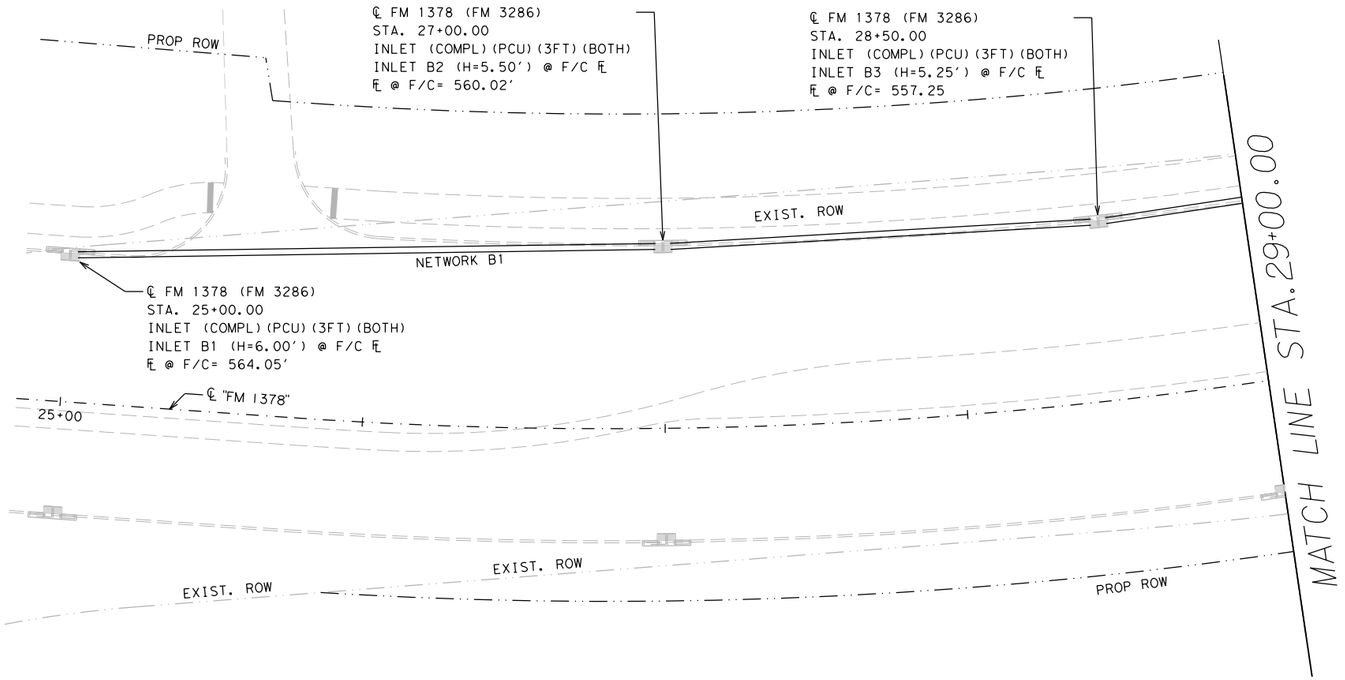


0 25 50

LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL)(PCU)(3FT)(RIGHT)
- INLET (COMPL)(PCU)(3FT)(LEFT)
- INLET (COMPL)(PCU)(3FT)(BOTH)
- INLET (COMPL)(PAZD)(SL)(4FTX4FT)

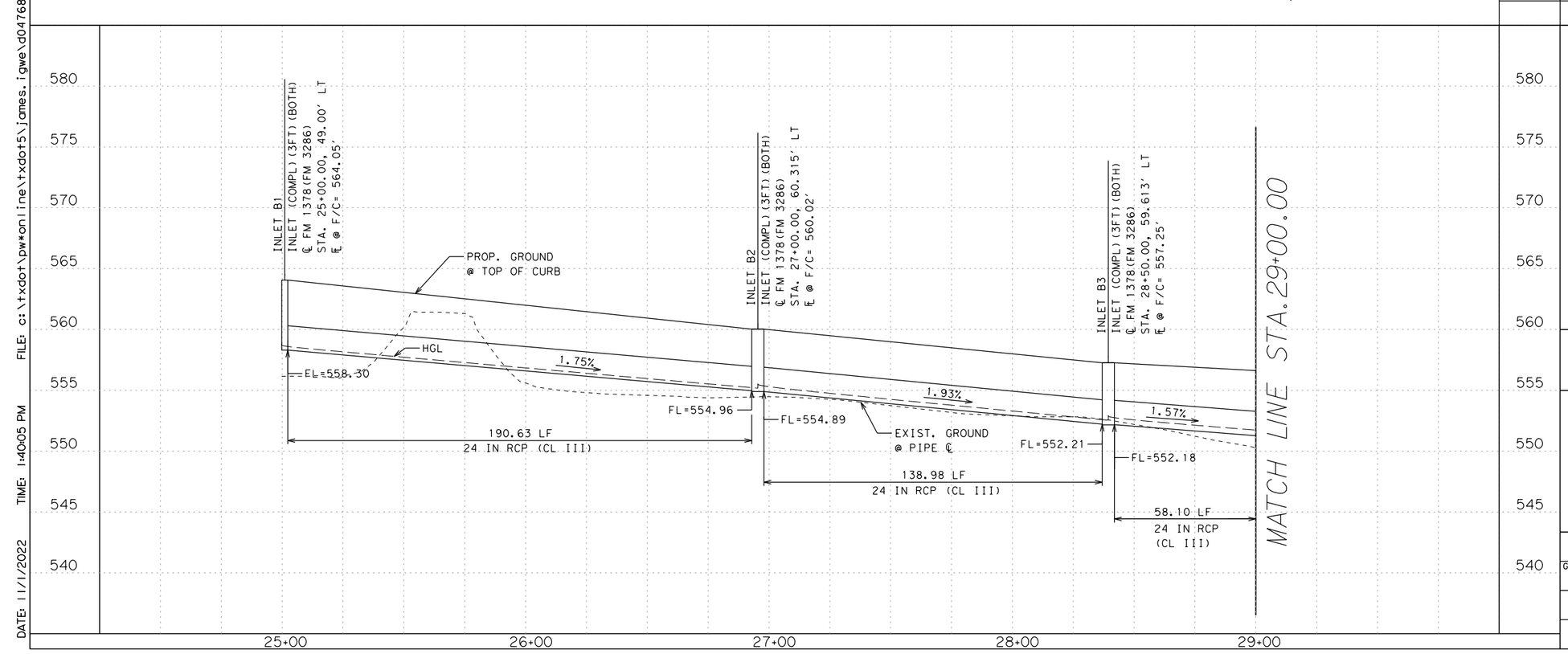
NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

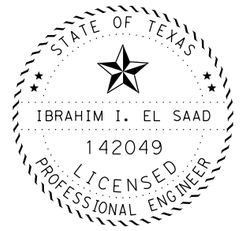
QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 3476-02-013

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
464 6005	RC PIPE (CL III) (24 IN)	LF	388
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3





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FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK B1

SCALE: 1"=50'-H
1"=10'-V

SHEET 1 OF 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	172
CHECK	CONTROL	SECTION	JOB	
JI	1392	01	044, ETC.	
CHECK				

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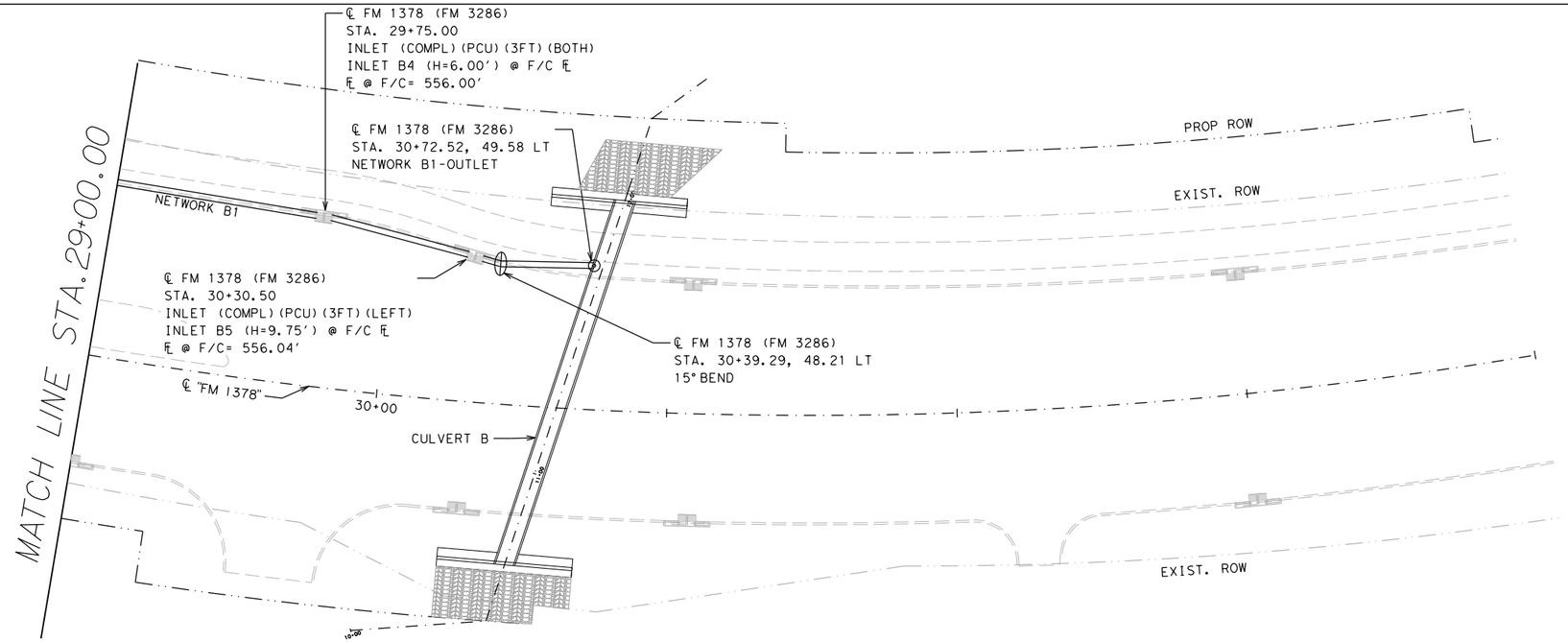

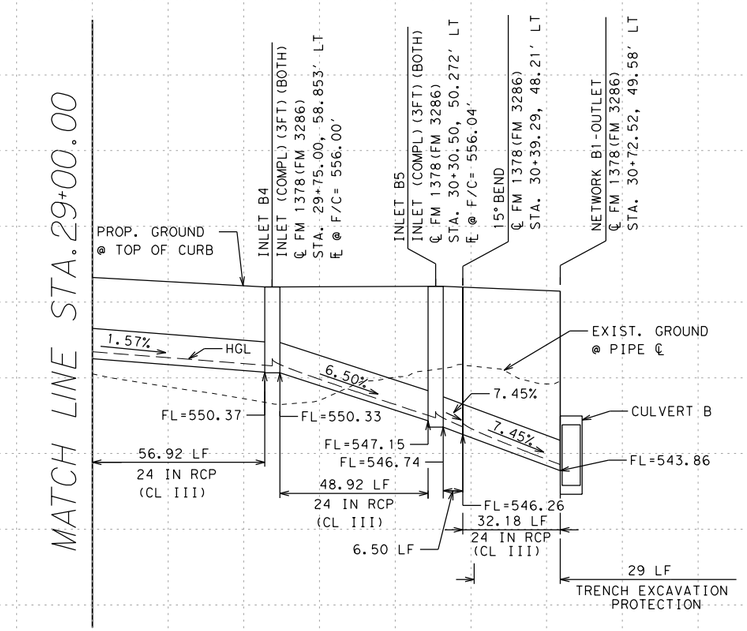

0 25 50

LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 3476-02-013

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	29
464 6005	RC PIPE (CL III) (24 IN)	LF	145
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	2

IBRAHIM I. EL SAAD
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FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK B1

SCALE: 1"=50'-H
1"=10'-V

SHEET 2 OF 2

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	173
CHECK	CONTROL	SECTION	JOB	
JI	1392	01	044, ETC.	
CHECK				

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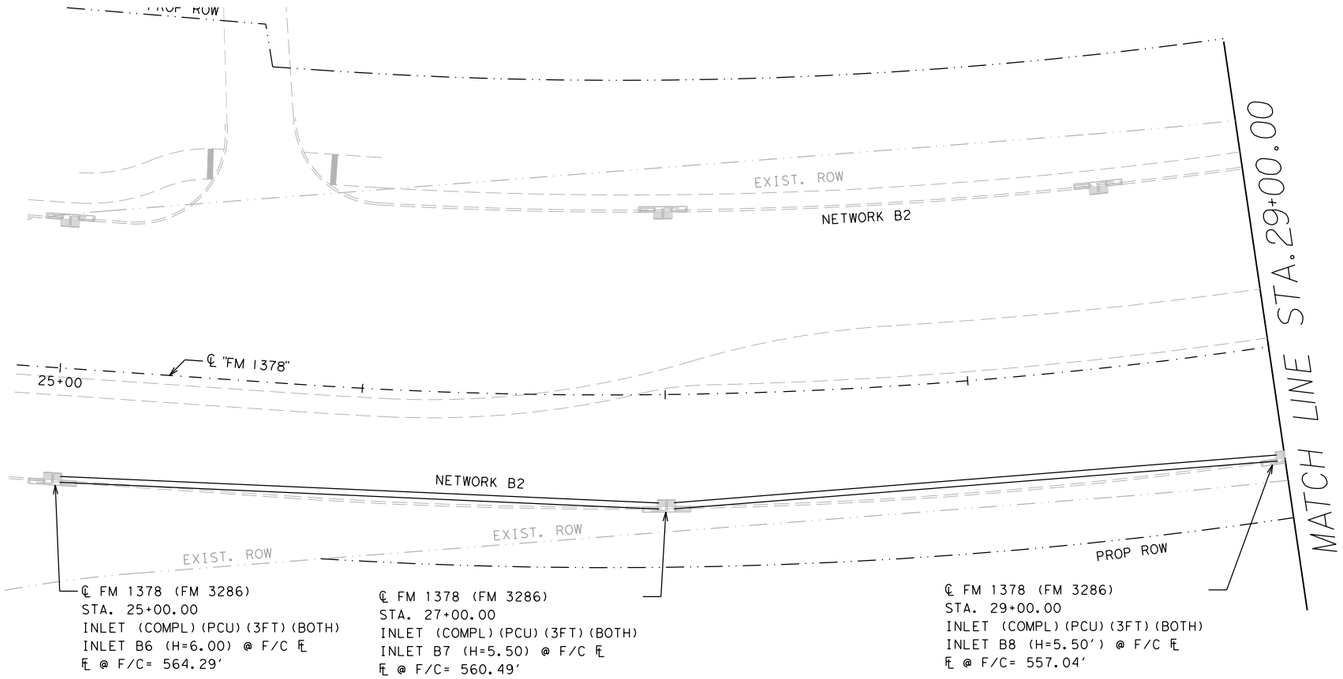


0 25 50

LEGEND

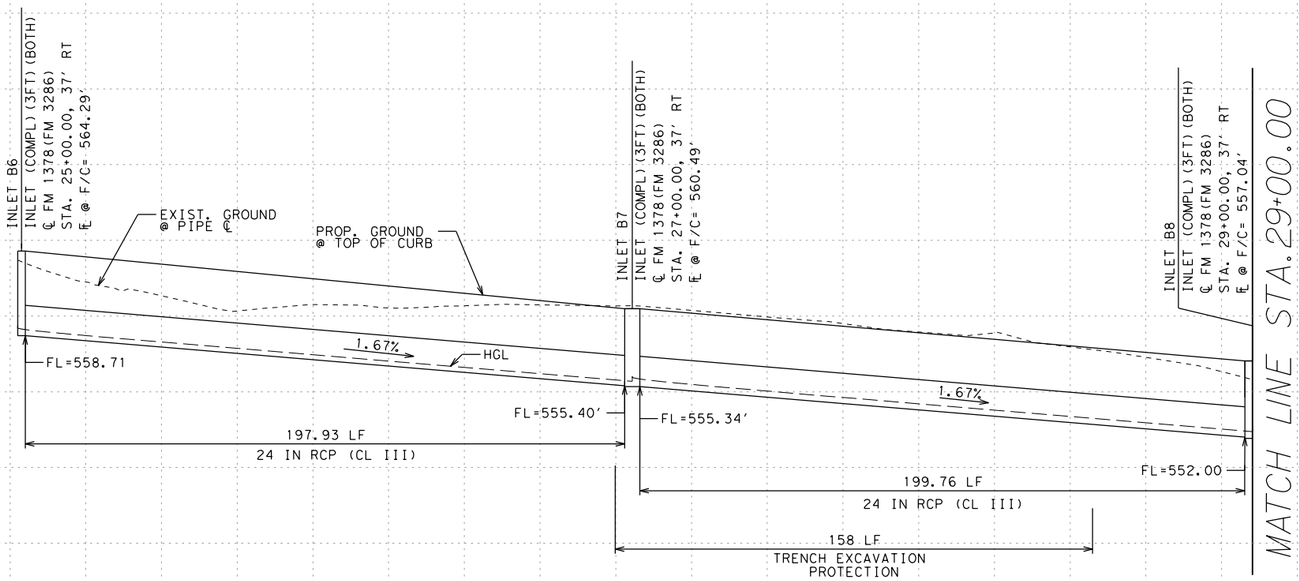
- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 3476-02-013			
ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	158
464 6005	RC PIPE (CL III) (24 IN)	LF	398
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3



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AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK B2

SCALE: 1"=50'-H
1"=10'-V

SHEET 1 OF 2

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	174
CHECK	CONTROL	SECTION	JOB	
JI	1392	01	044, ETC.	
CHECK				

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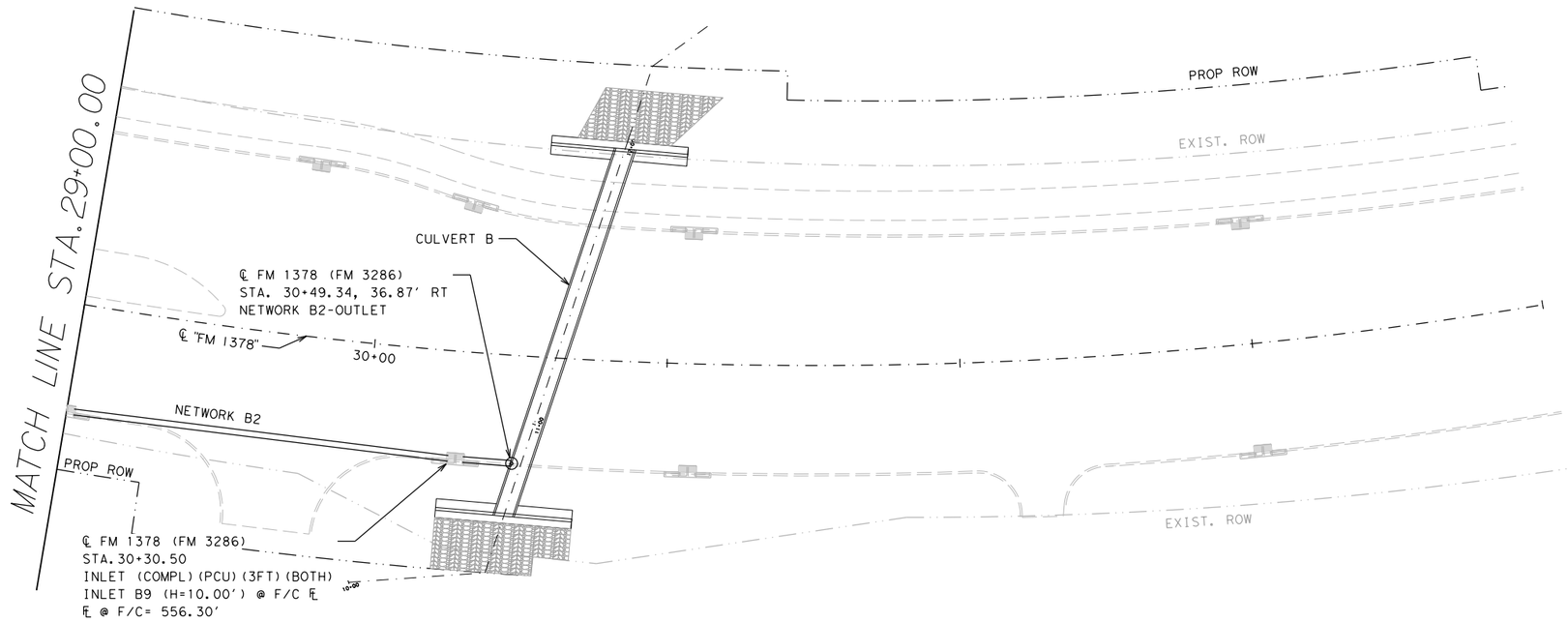

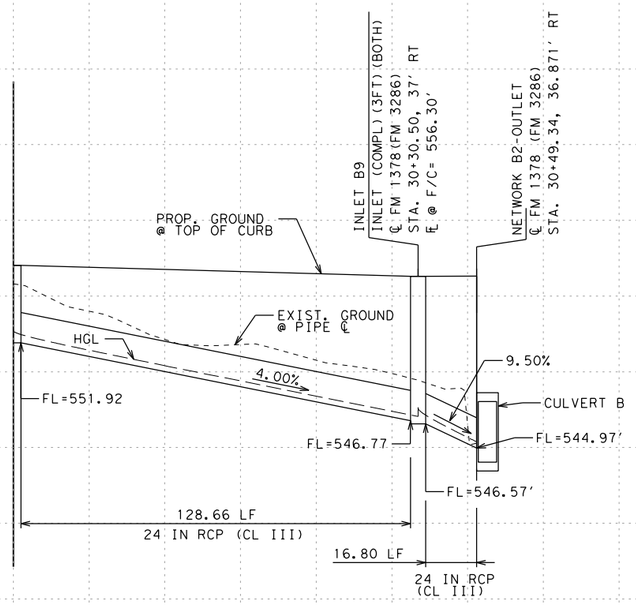

0 25 50

LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 3476-02-013

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
464 6005	RC PIPE (CL III) (24 IN)	LF	146
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	1

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

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FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK B2

SCALE: 1"=50'-H
1"=10'-V

SHEET 2 OF 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	175
CHECK	CONTROL	SECTION	JOB	
JI	1392	01	044, ETC.	
CHECK				

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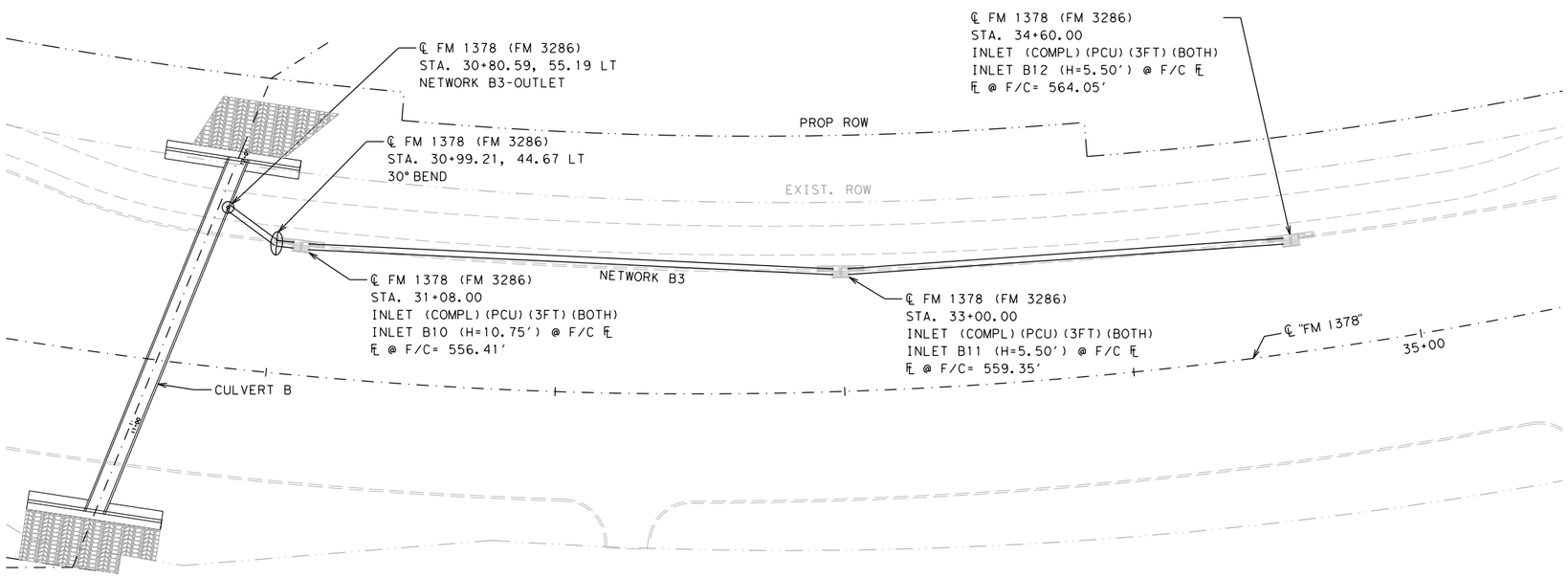

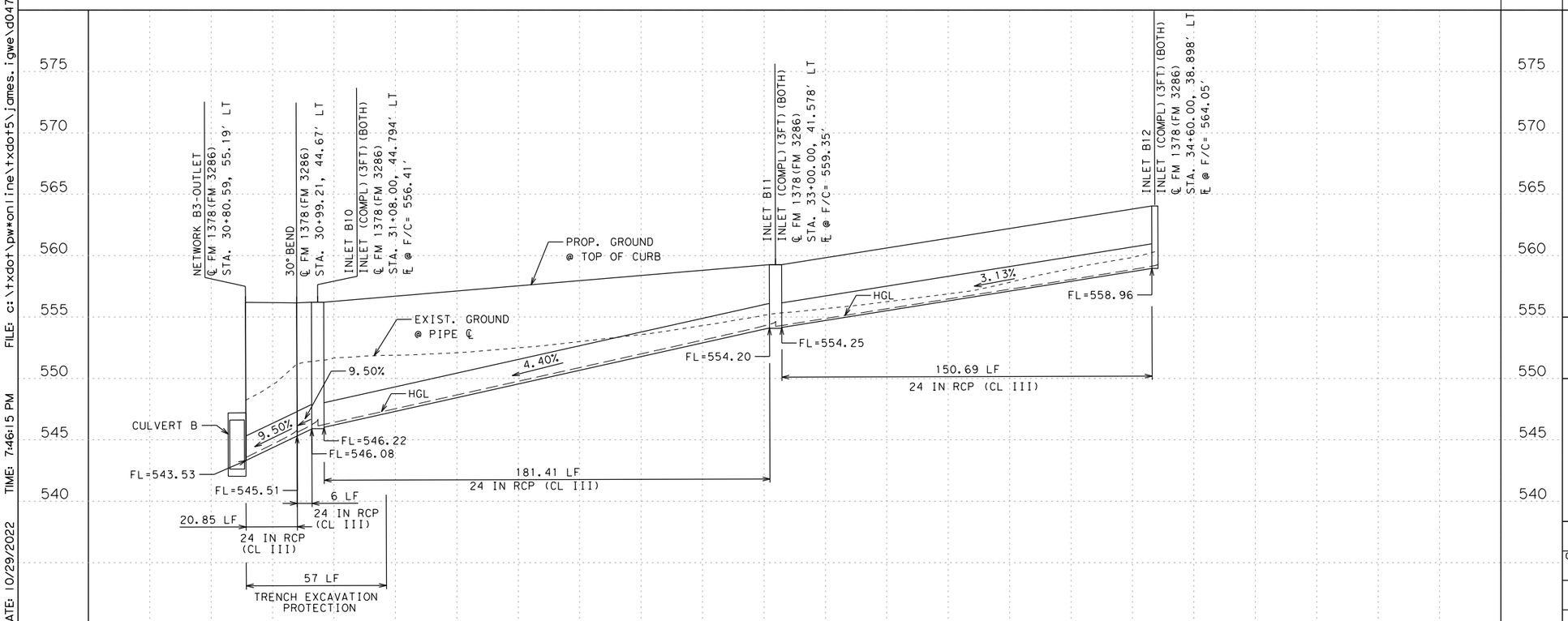

0 25 50

LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTX4FT)

NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 3476-02-013

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	57
464 6005	RC PIPE (CL III) (24 IN)	LF	359
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
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PROFESSIONAL ENGINEER

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Signature of Registrant & Date

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FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK B3

SCALE: 1"=50'-H
1"=10'-V

SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	176
CHECK	CONTROL	SECTION	JOB	
JI	1392	01	044, ETC.	
CHECK				

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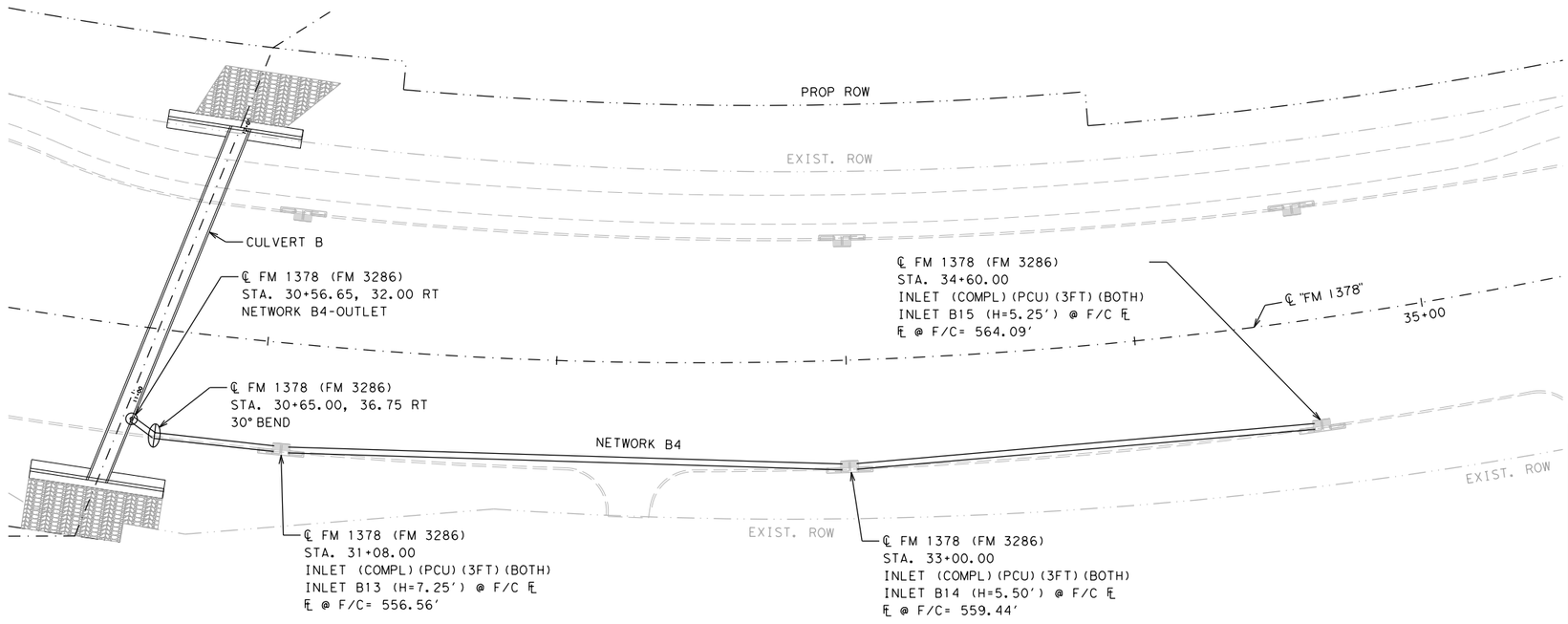

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LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL) (PCU) (3FT) (RIGHT)
- INLET (COMPL) (PCU) (3FT) (LEFT)
- INLET (COMPL) (PCU) (3FT) (BOTH)
- INLET (COMPL) (PAZD) (SL) (4FTX4FT)

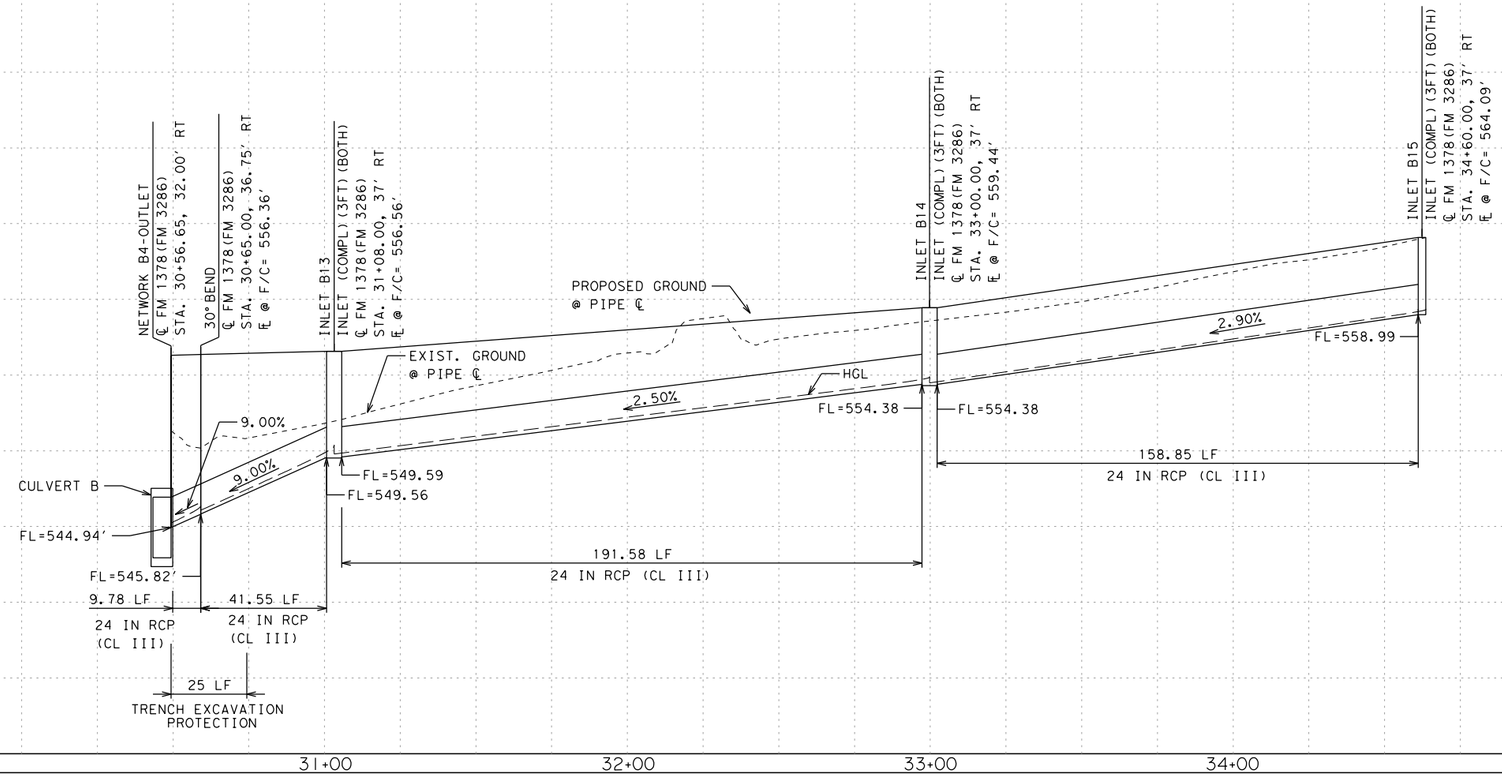
NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 3476-02-013

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
402 6001	TRENCH EXCAVATION PROTECTION	LF	25
464 6005	RC PIPE (CL III) (24 IN)	LF	402
465 6032	INLET (COMPL) (PCU) (3FT) (BOTH)	EA	3



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142049
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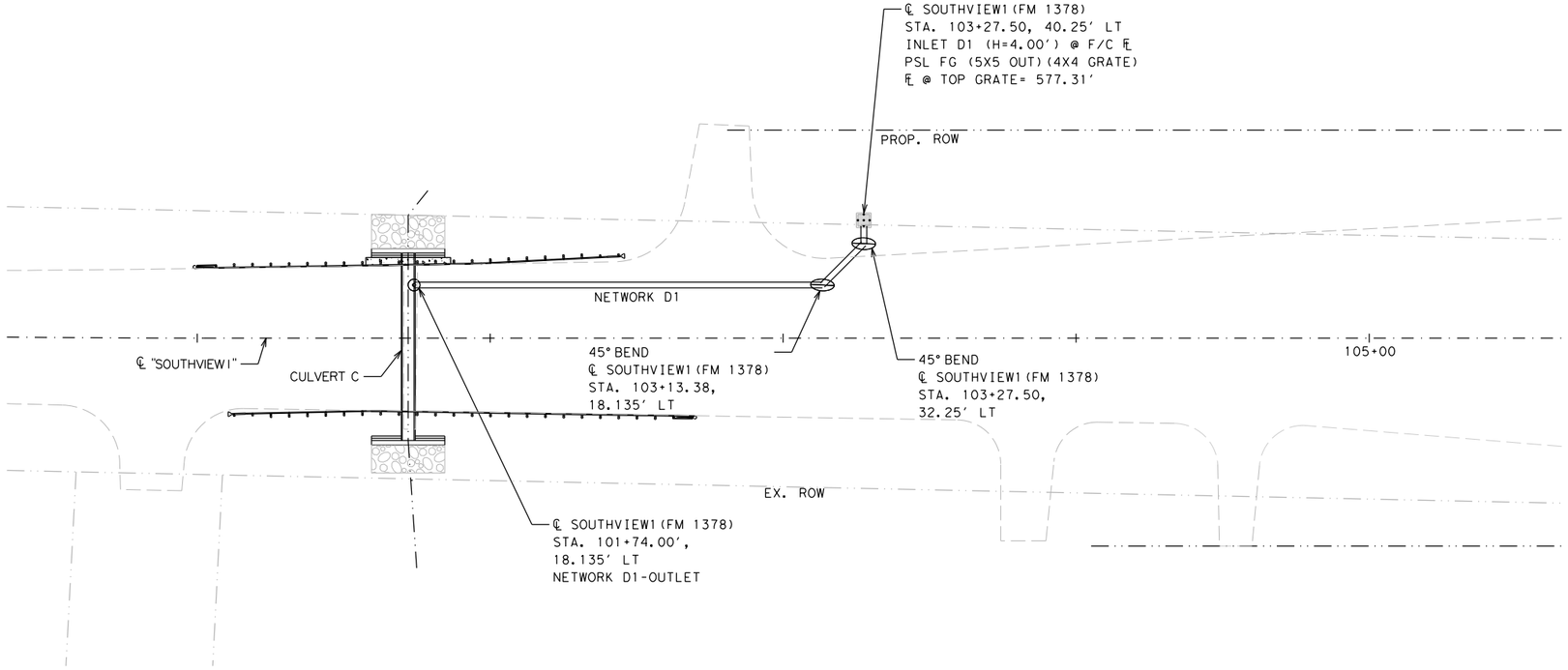
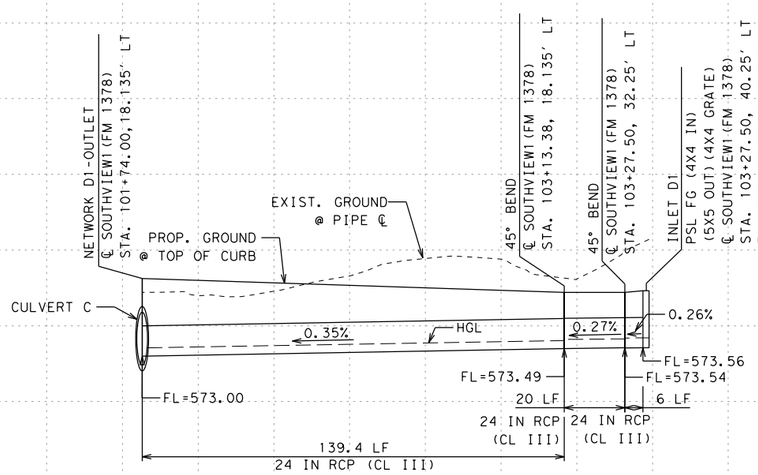
FM 1378
AT FM 3286
STORM SEWER PLAN/PROFILE
NETWORK B4

SCALE: 1"=50'-H
1"=10'-V

SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	177
CHECK	CONTROL	SECTION	JOB	
JI	1392	01	044, ETC.	
CHECK				





0 25 50

LEGEND

- DITCH FLOW LINE
- STORM SEWER
- INLET (COMPL)(PCU)(3FT)(RIGHT)
- INLET (COMPL)(PCU)(3FT)(LEFT)
- INLET (COMPL)(PCU)(3FT)(BOTH)
- INLET (COMPL)(PAZD)(SL)(4FTX4FT)

NOTES:
SEE CULVERT LAYOUTS FOR CULVERT PLAN AND PROFILE INFORMATION.

QUANTITIES INCLUDE LATERALS.

ALL INLETS CALLED OUT AT THE FLOWLINE ELEVATION AT THE FACE OF CURB.

NOTE: QUANTITIES BASED ON CSJ: 1392-01-044

ITEM #	DESCRIPTION	UNIT	SHEET TOTAL
464 6005	RC PIPE (CL III) (24 IN)	LF	166
465 6135	INLET (COMPL)(PSL)(FG)(5FTX5FT-4FTX4FT)	EA	1

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STORM SEWER PLAN/PROFILE
NETWORK D1

SCALE: 1"=50'-H
1"=10'-V

SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		FM 1378, ETC.
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
IIE	TEXAS	DAL	COLLIN	178
CHECK	CONTROL	SECTION	JOB	
CHECK	1392	01	044, ETC.	

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