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GENERAL NOTES

- For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
- For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
- For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
- Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
- The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

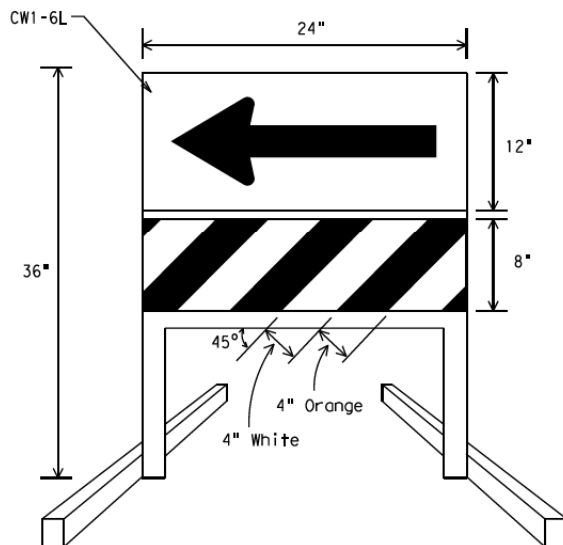
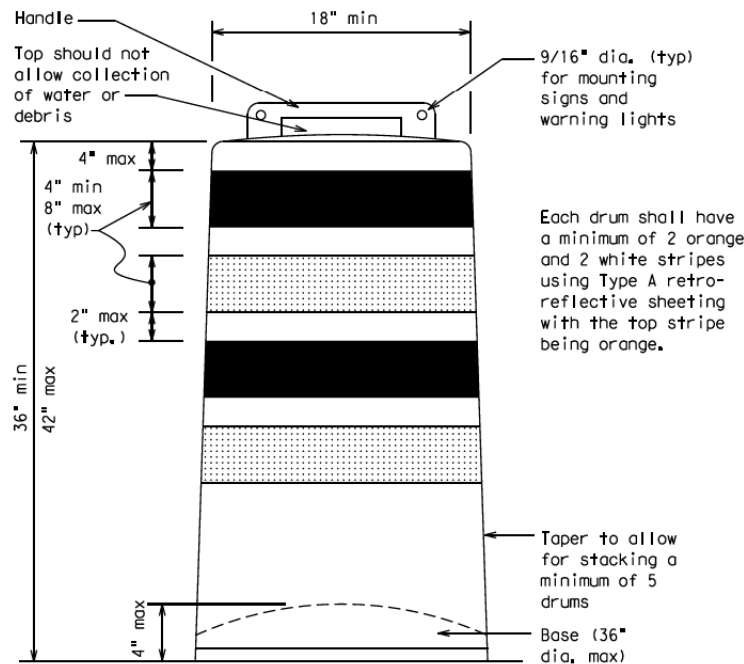
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
- Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
- Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
- The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
- The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectORIZED space between any two adjacent stripes shall not exceed 2 inches in width.
- Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
- Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
- Drum body shall have a maximum unballasted weight of 11 lbs.
- Drum and base shall be marked with manufacturer's name and model number.

RETROREFLECTIVE SHEETING

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

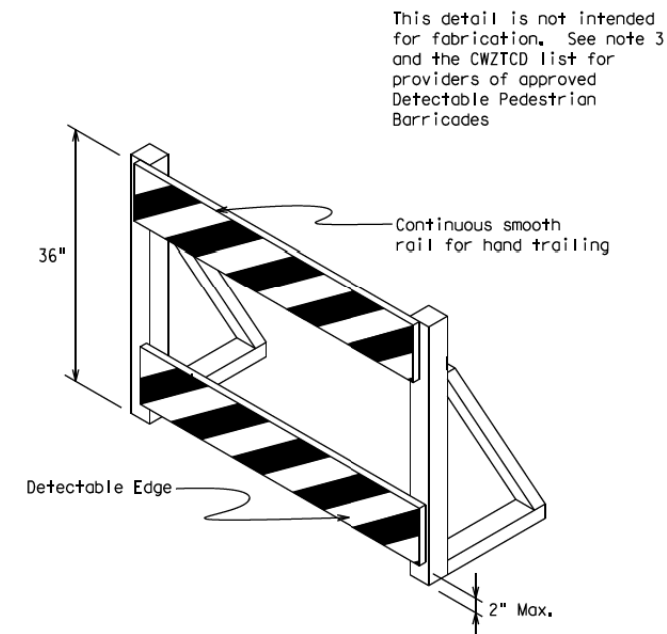
BALLAST

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



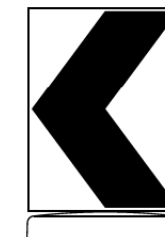
DIRECTION INDICATOR BARRICADE

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

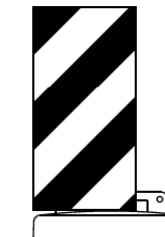


DETECTABLE PEDESTRIAN BARRICADES

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



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



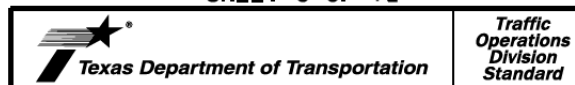
12" x 24"
Vertical Panel
mount with diagonals
sloping down towards
travel way

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

SHEET 8 OF 12



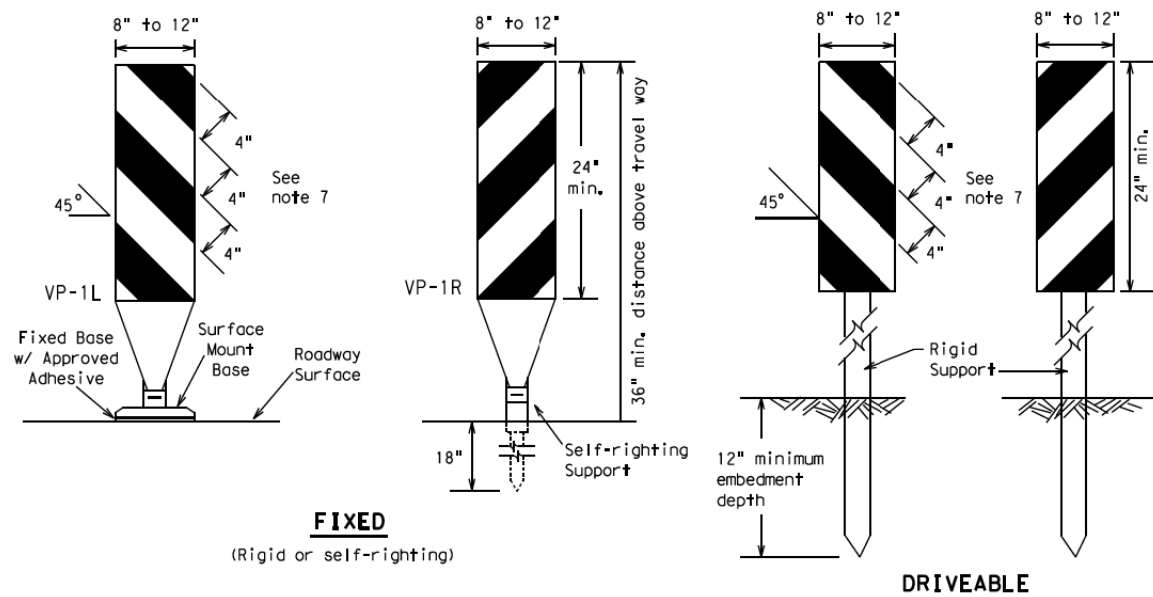
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (8) - 14

FILE#	bc-14.dgn	DWN	TxDOT	CHK	TxDOT	DWN	TxDOT	CHK	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0902	90	119	McCART				
4-03	7-13	DIST	COUNTY	SHEET NO.					
9-07	8-14	FTW	TARRANT	61					

DATE: FILE:

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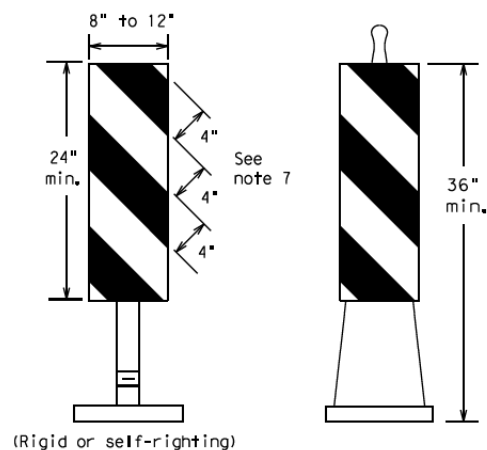


FIXED

(Rigid or self-righting)

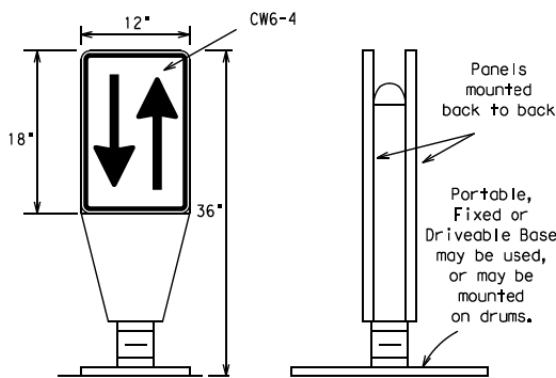
DRIVEABLE

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



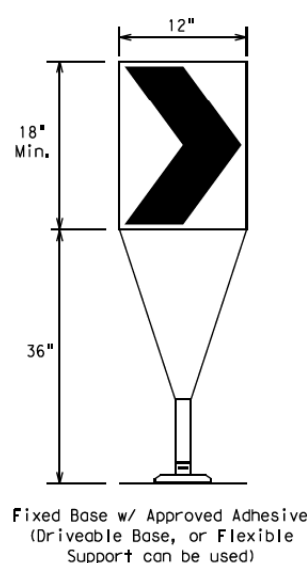
PORTABLE

VERTICAL PANELS (VPs)



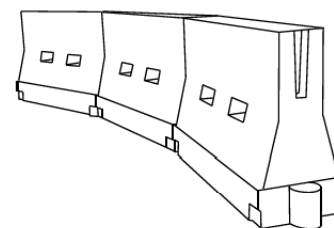
- Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
- The OTLD may be used in combination with 42" cones or VPs.
- Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
- 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)



- The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
- 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.
- 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.
- To be effective, the chevron should be visible for at least 500 feet.
- 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.
- For Long Term Stationary use on tapers or transitions on freeways and divided highways self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS



LONGITUDINAL CHANNELIZING DEVICES (LCD)

- 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.
- LCDs may be used instead of a line of cones or drums.
- LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
- LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
- LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10) placed near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

- Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
- 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.
- 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.
- 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.
- When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

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

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

GENERAL NOTES

- 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).
- 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.
- 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).
- 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.
- Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
- 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.
- The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent
30	L = WS 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



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (9) - 14

FILE#	bc-14.dgn	DWN	TxDOT	CHK	TxDOT	DWN	TxDOT	CHK	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
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9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13		FTW	TARRANT	62					

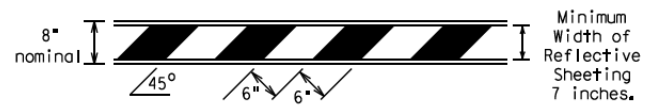
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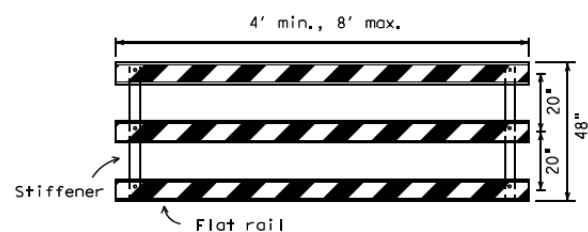
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



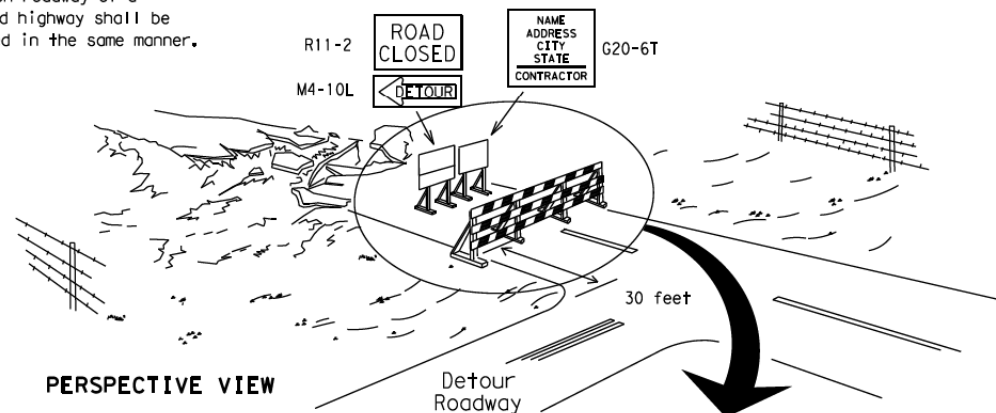
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

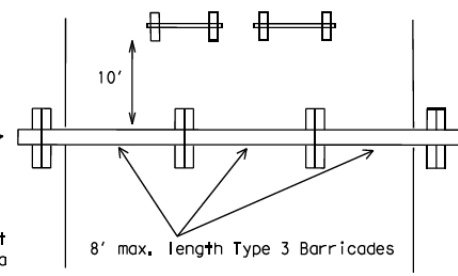
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

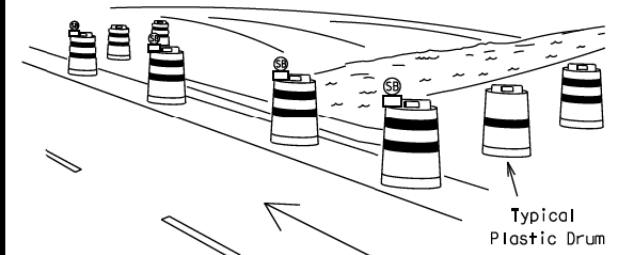
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



PLAN VIEW

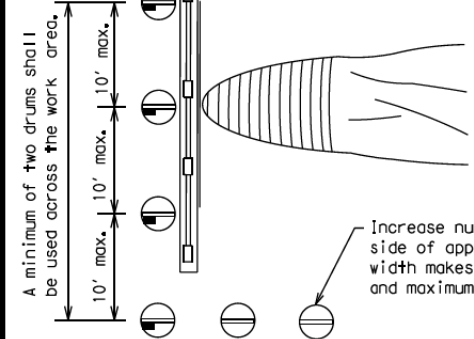
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

These drums are not required on one-way roadway



PLAN VIEW

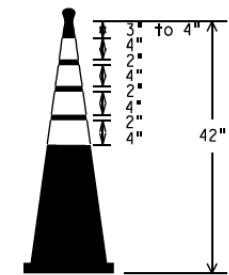
Increase number of plastic drums on the side of approaching traffic if the crown width makes it necessary, (minimum of 2 and maximum of 4 drums)

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

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

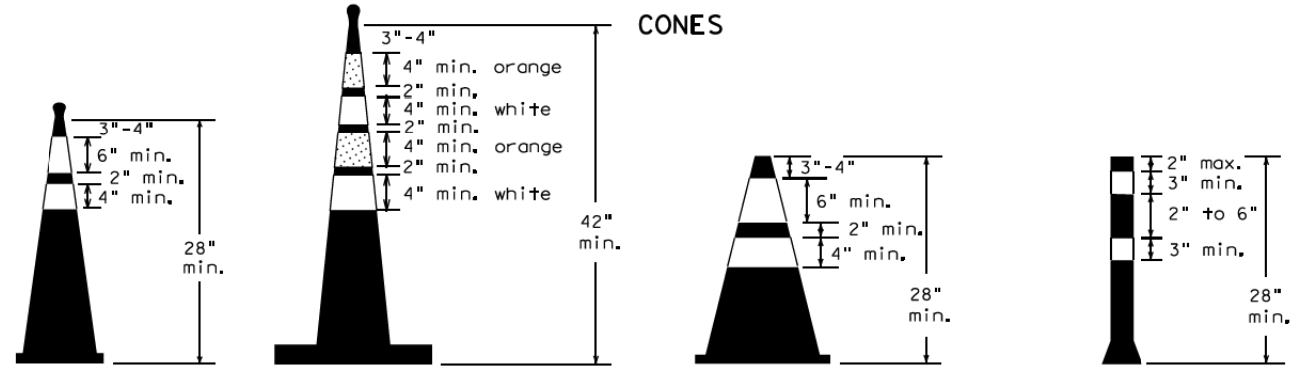
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

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



EDGE LINE CHANNELIZER

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



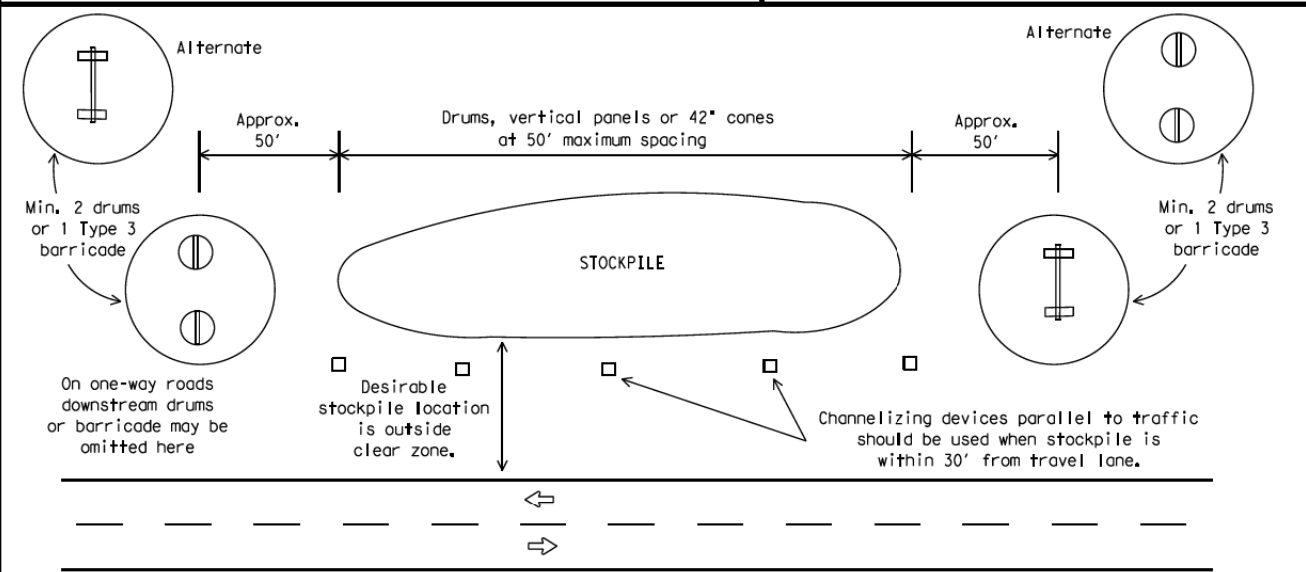
Two-Piece cones

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 used at night shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-14

FILE#	bc-14.dgn	DWN	TxDOT	CHK	TxDOT	DWN	TxDOT	CHK	TxDOT
©TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0902	90	119	McCART				
0902	192	DIST		COUNTY	SHEET NO.				
9-07	8-14	FTW		TARRANT	63				
7-13									

WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

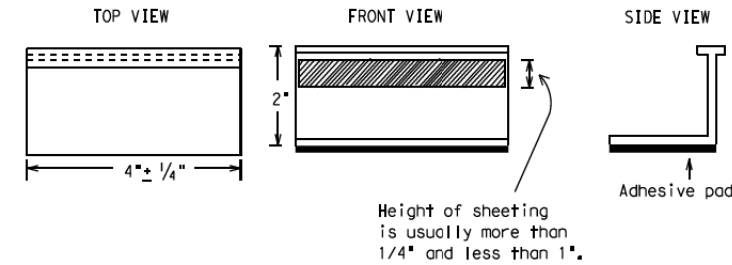
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

SHEET 11 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-14

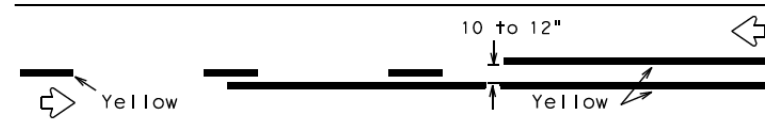
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© TxDOT	February 1998	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0902	90	119	McCART				
2-98	9-07								
1-02	7-13	DIST	COUNTY		SHEET NO.				
11-02	8-14	FTW	TARRANT		64				

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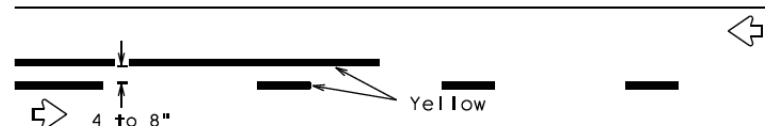
DATE:
FILE:

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PAVEMENT MARKING PATTERNS

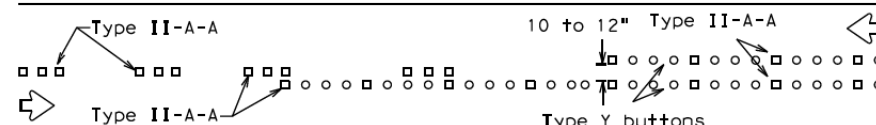


REFLECTORIZED PAVEMENT MARKINGS - PATTERN A

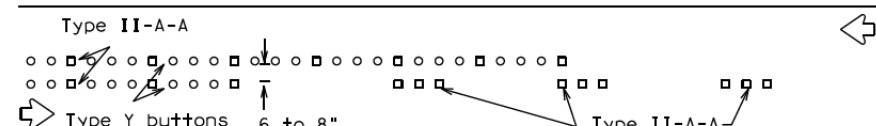


REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

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

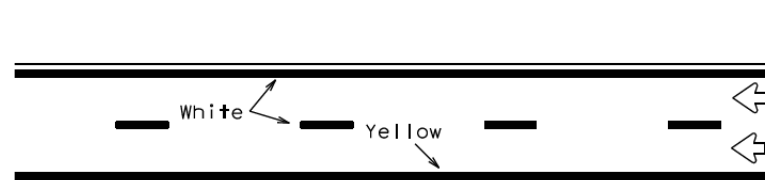


RAISED PAVEMENT MARKERS - PATTERN A



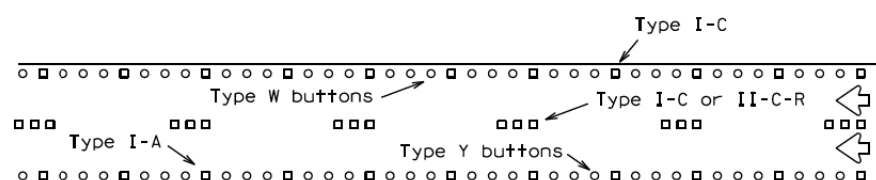
RAISED PAVEMENT MARKERS - PATTERN B

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



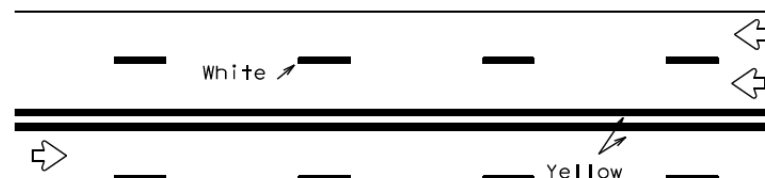
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



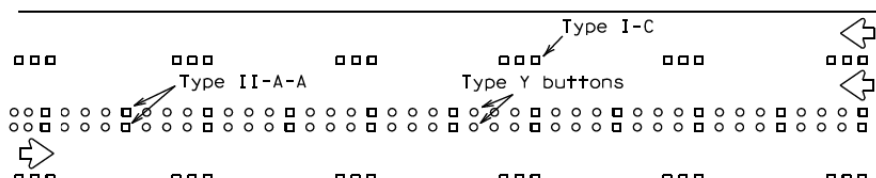
RAISED PAVEMENT MARKERS

EDGE & LANE LINES FOR DIVIDED HIGHWAY



REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



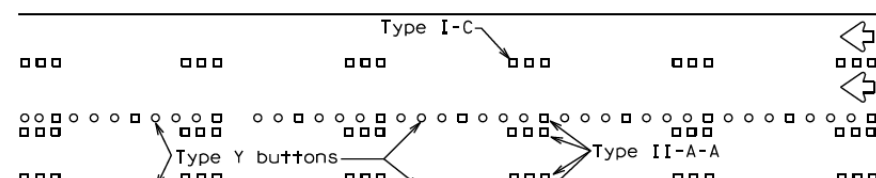
RAISED PAVEMENT MARKERS

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

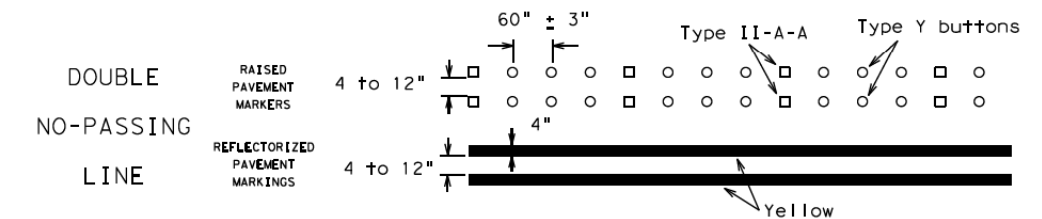
Prefabricated markings may be substituted for reflectorized pavement markings.



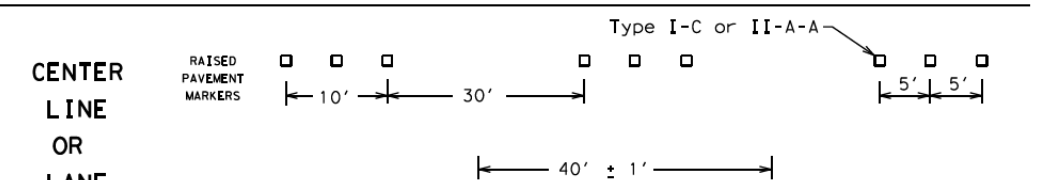
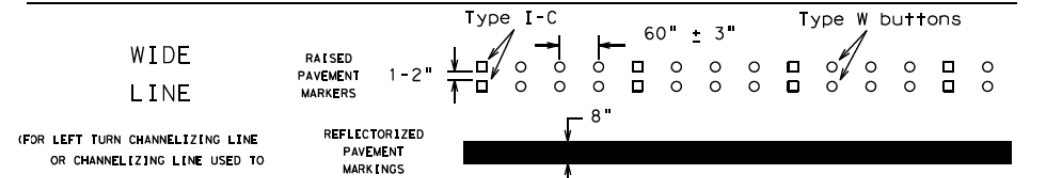
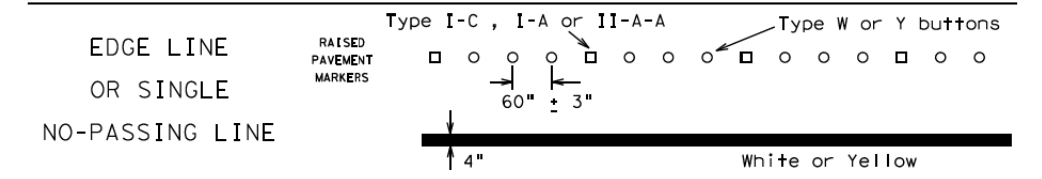
RAISED PAVEMENT MARKERS

TWO-WAY LEFT TURN LANE

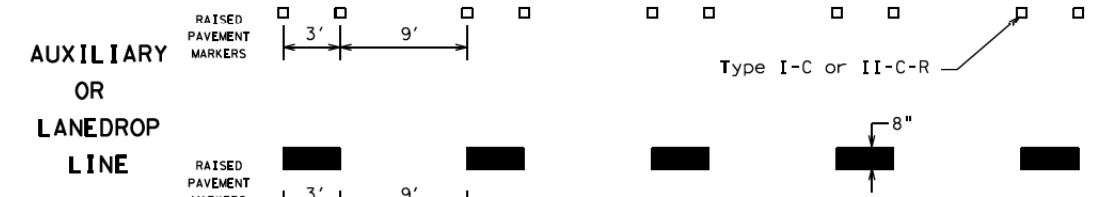
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



SOLID LINES

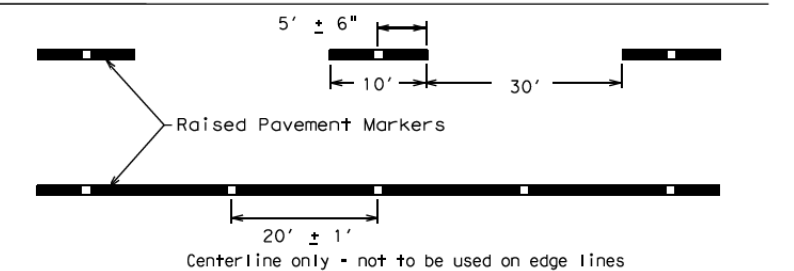


BROKEN LINES



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.



SHEET 12 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

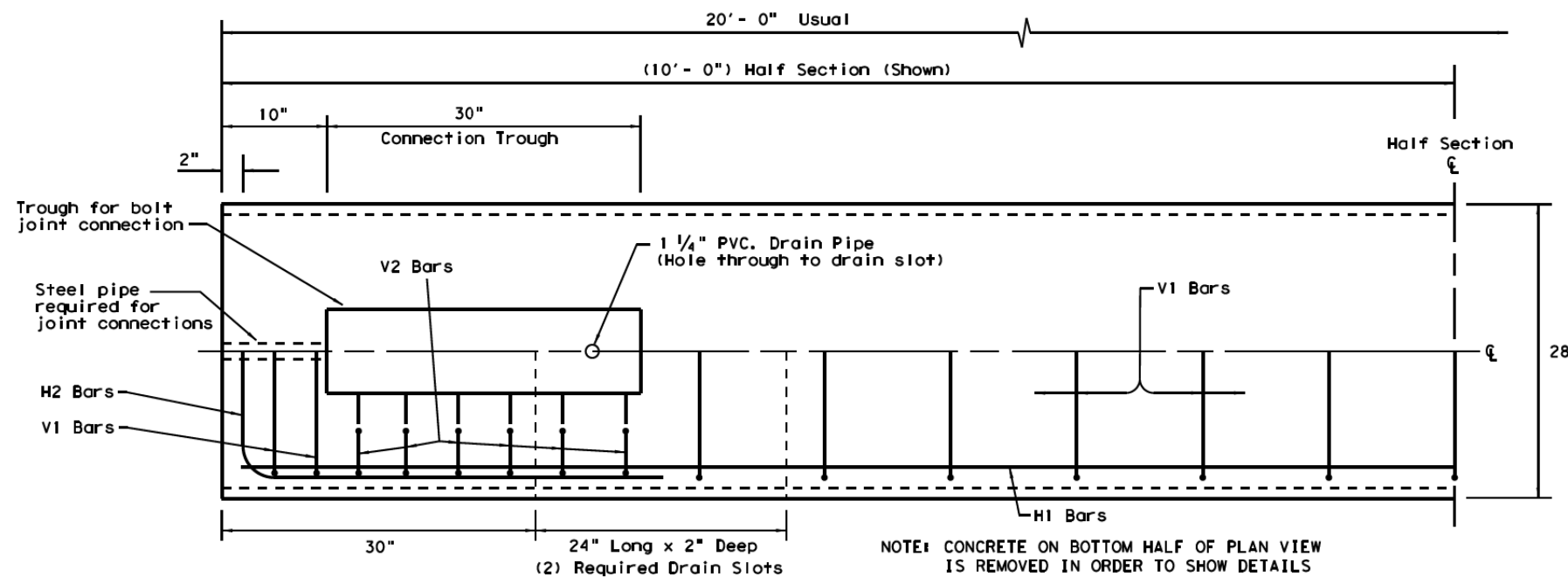
BC(12)-14

FILE#	bc-14.dgn	DW	TxDOT	CHK	TxDOT	DWG	TxDOT	CK	TxDOT
© TxDOT	February 1998	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0902	90	119	McCART				
1-97	9-07	DIST	COUNTY	SHEET NO.					
2-98	7-13	FTW	TARRANT	65					
11-02	8-14								

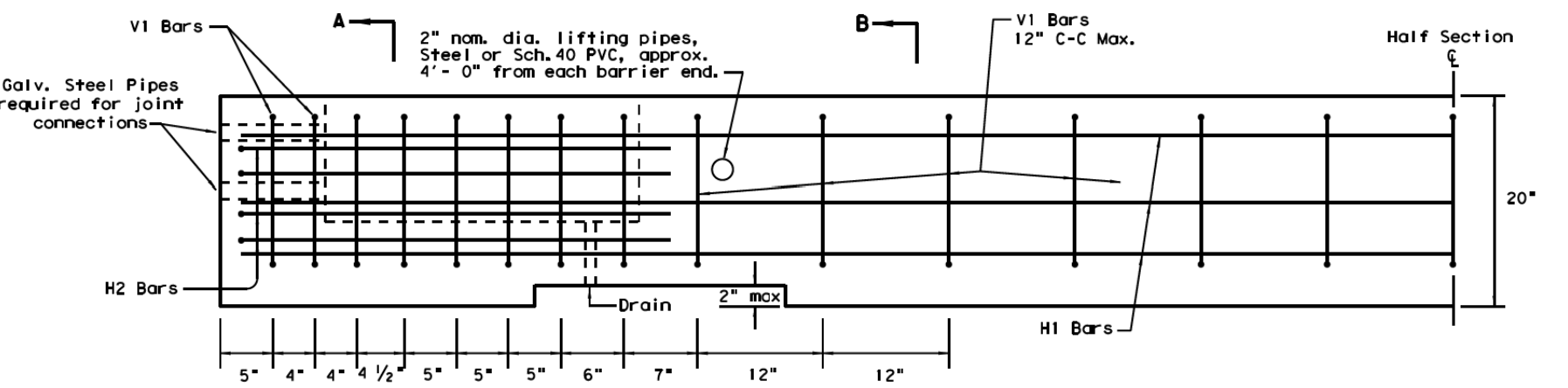
Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

DATE: FILE:

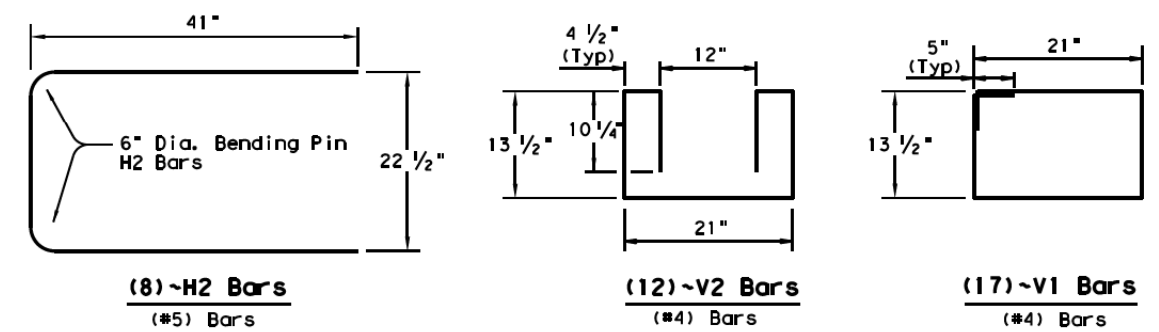
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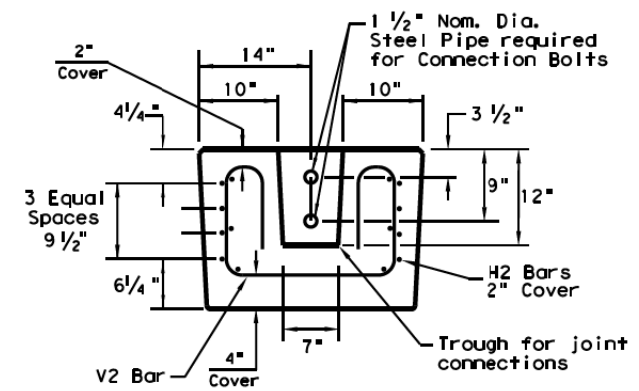
PLAN
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)



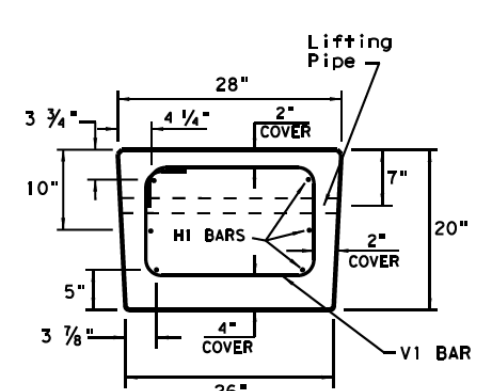
ELEVATION
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)



REINFORCING STEEL DETAILS
TYPE 1 - BARRIER SEGMENT



SECTION A-A



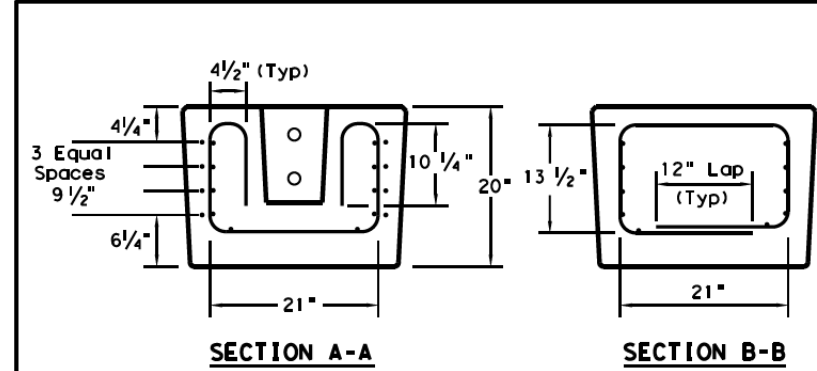
SECTION B-B

GENERAL NOTES

1. Low Profile Concrete Barrier (LPCB), is approved for use in temporary work zone locations, where the posted speed is 45 mph, or less.
2. Concrete shall be Class H for precast barrier with a minimum compressive strength of 3,600 psi.
3. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
4. Precast LPCB barrier length shall be 20 ft.
5. All barrier edges shall have 3/4" chamfer or a tool radius.
6. Joint connection hardware shall be in accordance with Item 449, "Anchor Bolts," and is considered subsidiary.
7. Steel pipe required for joint connection bolts shall be galvanized in accordance with Item 445, "Galvanizing."
8. Welded wire reinforcement (WWR) may be used in lieu of conventional reinforcement for Type 1 barrier, and shall meet the requirements shown.

FOR CONTRACTORS INFORMATION ONLY

(TYPE 1) APPROX. QUANTITIES 20 FT. SECTION		
CONCRETE	CY	2.6
REINFORCING STEEL	LBS	330
TOTAL BARRIER WT.	LBS	11000



SECTION A-A

SECTION B-B

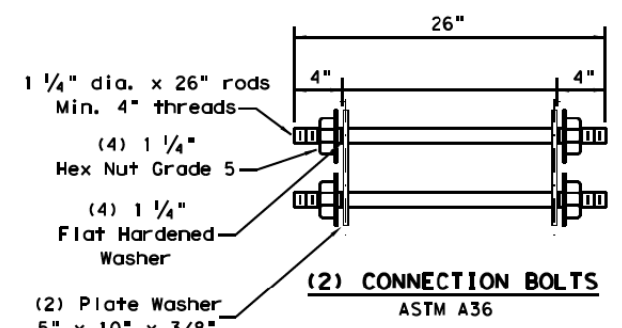
WELDED WIRE REINFORCEMENT (WWR) - OPTIONAL REINFORCING

(WWR) GENERAL NOTES

1. Deformed Welded Wire Reinforcement shall conform to ASTM A497.
2. Welded wire cage may be cut or bent, if necessary, but must be approved by the Engineer.
3. Combinations of reinforcing steel and WWR are permitted, as directed by the Engineer. The dimensions from the end of the barrier section to the first wire shall not exceed 3".

REQUIRED (WWR) WIRE DESIGN

- 8 ~ (D31) Horizontal Wires (Equally spaced)
- 10 ~ (D20) Horizontal Wires (Equally spaced)
- 29 ~ (D20) Vertical Wires (Spaced as shown in Elevation View)



(2) CONNECTION BOLTS
ASTM A36

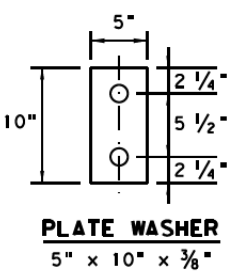


PLATE WASHER
5" x 10" x 3/8"

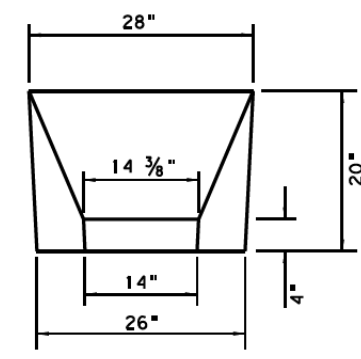
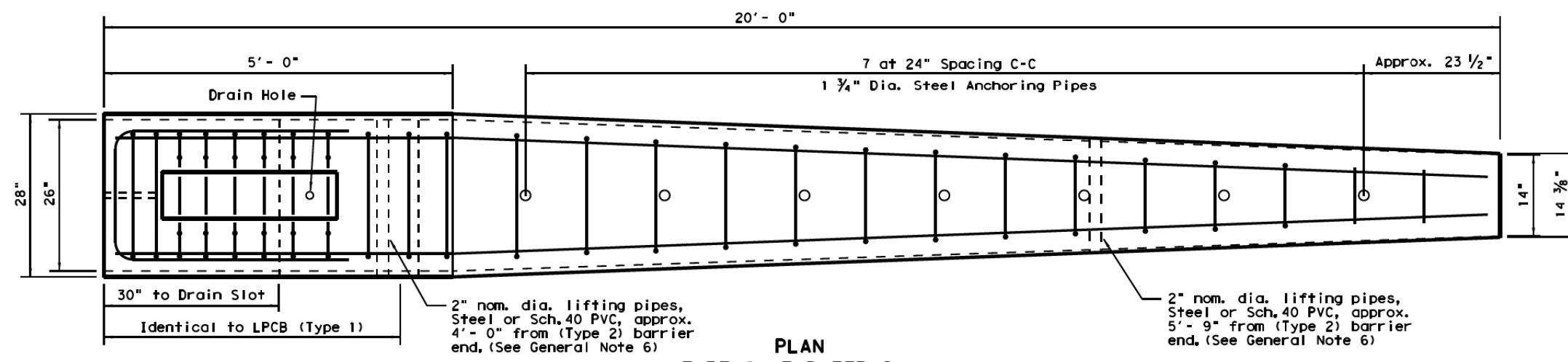


LOW PROFILE CONCRETE BARRIER PRECAST BARRIER (TYPE 1) LPCB-13

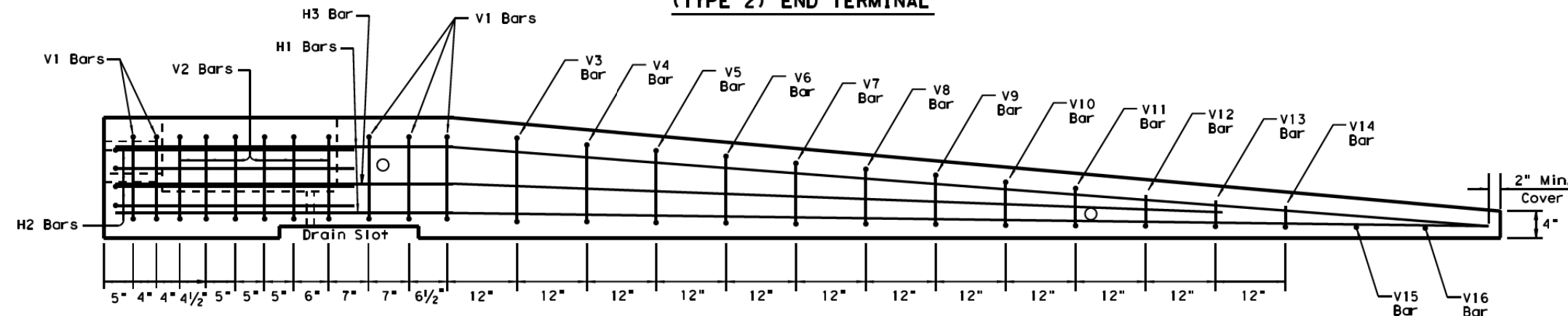
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© TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	119	MCCART
	DIST	COUNTY	SHEET NO.	
	FTW	TARRANT	66	

DATE: FILE:

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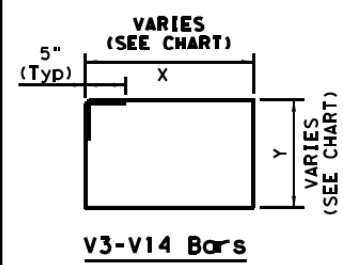
APPROACH VIEW



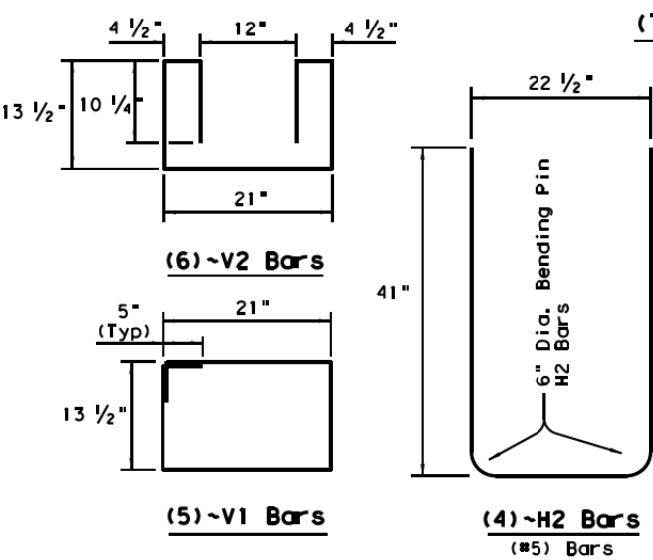
PLAN (TYPE 2) END TERMINAL

ELEVATION (TYPE 2) END TERMINAL

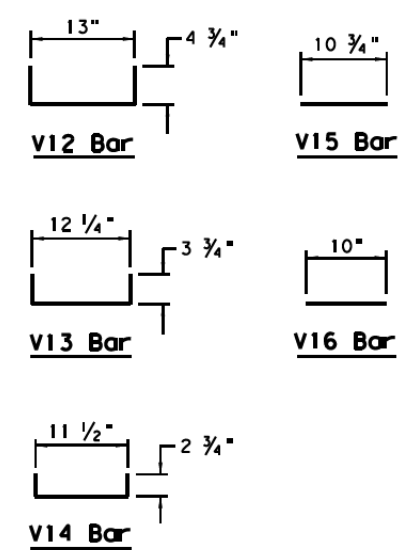
- TYPE 2 - NOTES**
1. Welded wire reinforcement (WWR) is "not" an option for Type 2 Barrier.
 2. Type 2 Barrier shall be used as an end treatment for the Type 1 barrier segments, when applicable.
 3. The end treatment can be used without the anchor pins in locations that can accommodate approximately 4 ft. of lateral displacement of the end treatment. The use of non-pinned end treatment does not affect the performance or the deflection of the Low-Profile barrier system.
 4. The anchor pins are all the same length and are to be driven flush with the top of the (Type 2) barrier surface.
 5. The bends in the H3 and H1 bars are slight, no formal bend is necessary.
 6. The Type 2 barrier segment must be lifted from the rear first, to prevent cracking of sloped section.
 7. See LPCB sheet 1 for additional information.



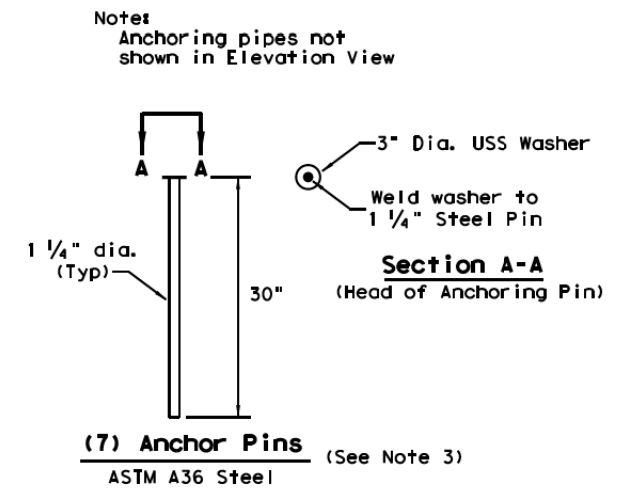
BAR (#4)	X (IN.)	Y (IN.)
V3 BAR	20 1/4	14 1/2
V4 BAR	19 1/2	13 1/2
V5 BAR	18 1/2	12 1/4
V6 BAR	17 1/2	11 1/4
V7 BAR	17	10 1/4
V8 BAR	16 1/4	9
V9 BAR	15 1/2	8
V10 BAR	14 1/2	7
V11 BAR	13 3/4	6



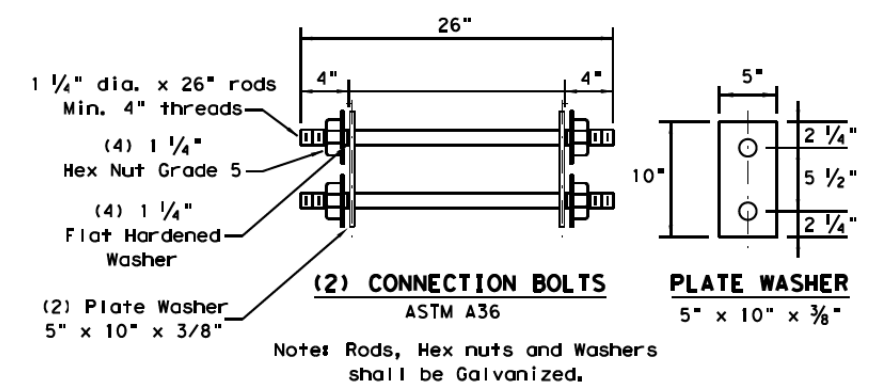
REINFORCING STEEL DETAILS
TYPE 2 - END TERMINAL



Note: All V Bars are (#4)

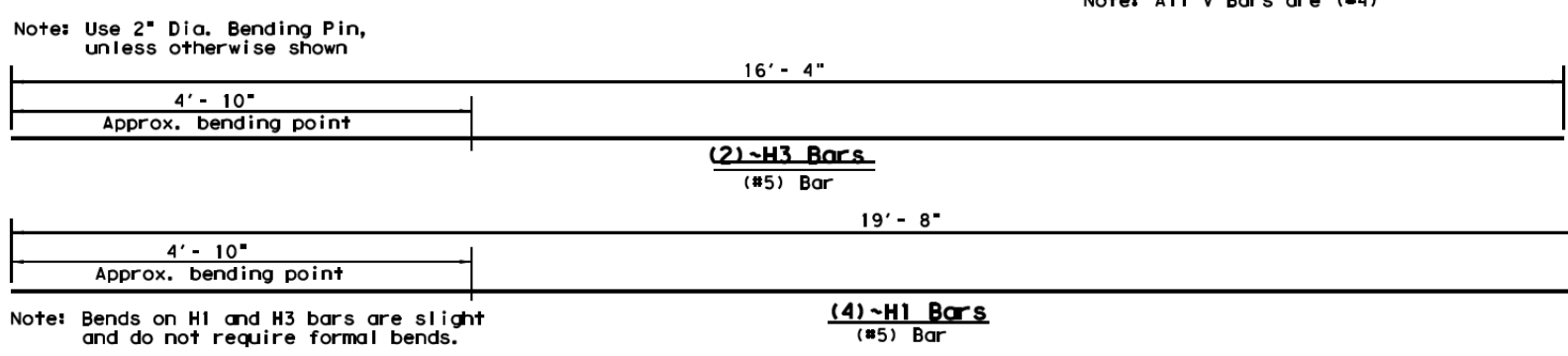


(7) Anchor Pins
ASTM A36 Steel



FOR CONTRACTORS INFORMATION ONLY

(TYPE 2)		
APPROX. QUANTITIES 20 FT. SECTION		
CONCRETE	CY	1.65
REINFORCING STEEL	LBS	240
TOTAL BARRIER WT.	LBS	7000






LOW PROFILE CONCRETE BARRIER PRECAST BARRIER (TYPE 2) LPCB-13

FILE# Ipcb13.dgn	DATE TxDOT	CHK AM	OWN VP	CRK
© TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902 0902	90 90	119 192	McCART
DIST	COUNTY	SHEET NO.		
FTW	TARRANT	67		

DATE: FILE:

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LEGEND

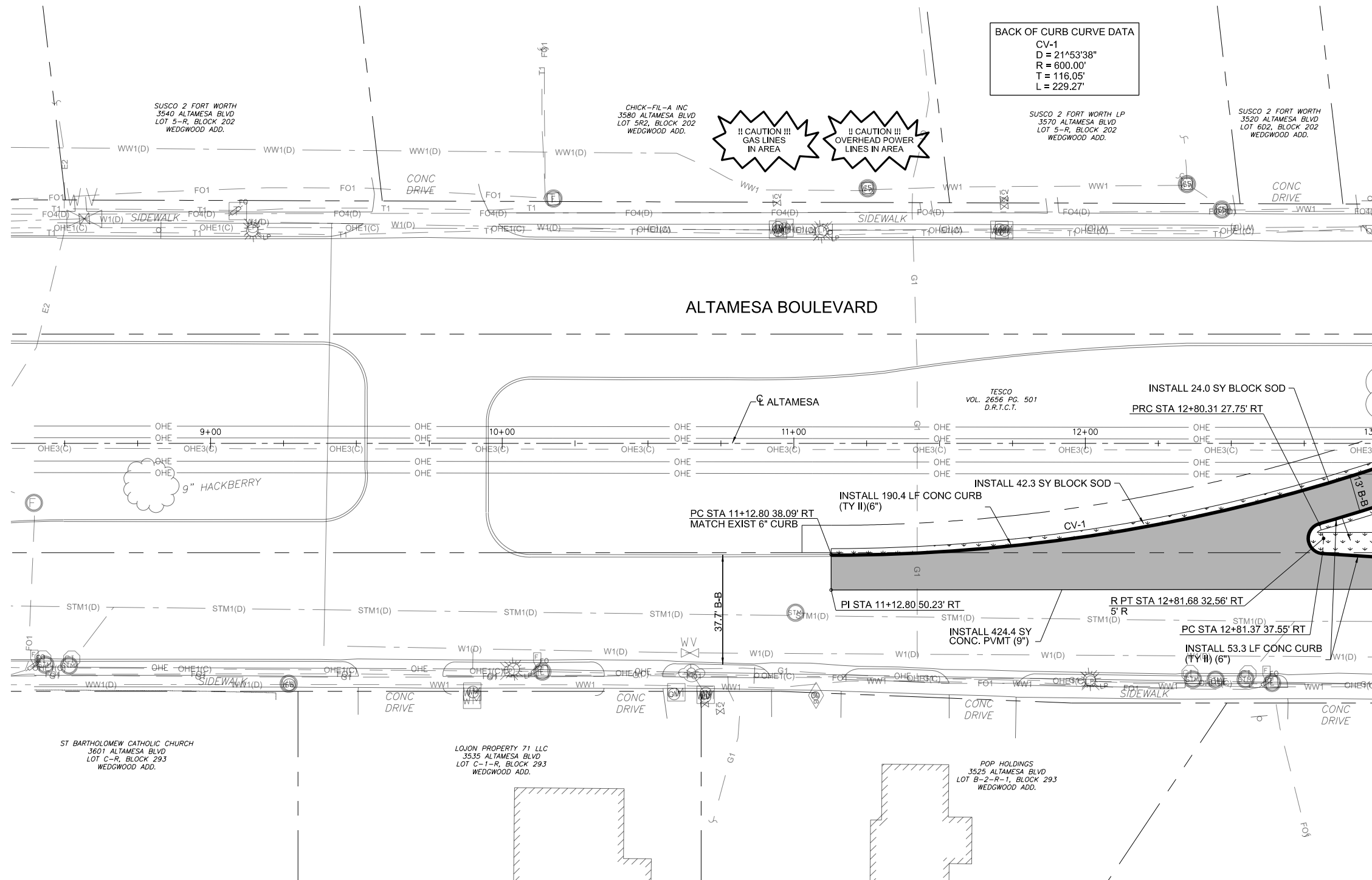
-  CONC PVMT (JOINTED-CPCD) (9")
-  CONC SIDEWALK (4")
-  BLOCK SODDING

NOTES:
 1. TYPICAL SECTION STATIONS ARE FROM CENTERLINE McCART AVE UNLESS OTHERWISE NOTED.

NOTE:
 CONCRETE PAVEMENT IS TO HAVE 3600 PSI 28-DAY MIN. COMPRESSIVE STRENGTH WITH NO. 4 BARS SPACED ON 18-INCH INTERVALS IN BOTH DIRECTIONS.

- CFW MON 8309
 N 6919862.06
 E 2318060.05
 EL = 743.06
- CP #52
 CAPPED IRON ROD SET
 N 6921683
 E 2317470
 EL = 745.02
- CP #50
 CAPPED IRON ROD SET
 N 6921187
 E 2317157
 EL = 749.04
- CP #53
 CAPPED IRON ROD SET
 N 6921270
 E 2316408
 EL = 769.59
- CP #51
 CAPPED IRON ROD SET
 N 6921134
 E 2317579
 EL = 738.81
- CP #54
 CAPPED IRON ROD
 N 6920747
 E 2316690
 EL = 758.90

BACK OF CURB CURVE DATA
 CV-1
 D = 21°53'38"
 R = 600.00'
 T = 116.05'
 L = 229.27'



- ROW AND MEDIANS**
- CONTRACTOR WILL USE CLEAN TOP SOIL WITH NO ROCKS TO BACK FILL BEFORE LAYING SOD OR HYDRO SEEDING.
 - ROCKS LARGER THAN 1" SHALL BE REMOVED IN AREAS TO BE GRASSES, IF EXISTING TOP SOIL SHALL BE USED.
 - ALL DIRT MOUNDS SHALL BE REMOVED FROM ROWS, CORNER CLIPS AND TRAFFIC DIVIDERS PRIOR TO SEEDING AFTER CONSTRUCTION IS COMPLETE.
 - ANY ROWS, CORNER CLIPS AND TRAFFIC DIVIDERS THAT WERE DISTURBED DURING CONSTRUCTION WILL BE PUT BACK IN THEIR ORIGINAL STATE OR BETTER.
 - IN THE EVENT GRASS HAS BEEN DISTURBED IN THE ROWS, CORNER CLIPS OR TRAFFIC DIVIDERS, CONTRACTOR WILL RESTORE GRASS. GRASS WILL BE ESTABLISHED AT 100% BY THE CONTRACTOR.
 - ROWS, CORNER CLIPS AND TRAFFIC DIVIDERS WILL BE MAINTAINED AND MOWED BY THE CONTRACTOR FOR HIGH GRASS AND WEEDS EVERY 14 DAYS.

(THE DEPARTMENT OF PARK AND RECREATION SHALL HAVE JURISDICTION AUTHORITY, CONTROL AND SUPERVISION OVER ALL TREES, PLANTS AND SHRUBS PLANTED OR GROWING IN OR UPON THE PUBLIC HIGHWAYS AND PUBLIC PLACES IN THE CITY, AND THE PLANTING, REMOVAL, CARE, MAINTENANCE AND PROTECTION THEREOF) (CODE 1964, 36-1) (ORD. 11541, 1(c), PASSED 4-12-1994)

---NOT FOR CONSTRUCTION---

THIS DOCUMENT HAS BEEN RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF ERIC A. CANALES P.E. 90103 IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES.

---NOT FOR CONSTRUCTION---



2821 WEST 7TH ST
 SUITE 400
 FORT WORTH, TEXAS 76107
 (817) 877-5571
 TBPE Reg #F351




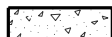

**PAVING IMPROVEMENT PLAN
 ALTAMESA BLVD
 BEGIN PROJECT TO STA 13+00**

SHEET 1 OF 4

REVISIONS	FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
	6	SEE TITLE SHEET		
	STATE	DISTRICT	COUNTY	
	TEXAS	FTW	TARRANT	
	CONTROL	SECTION	JOB	
	0902	90	119	HIGHWAY NO. McCART
	0902	90	192	

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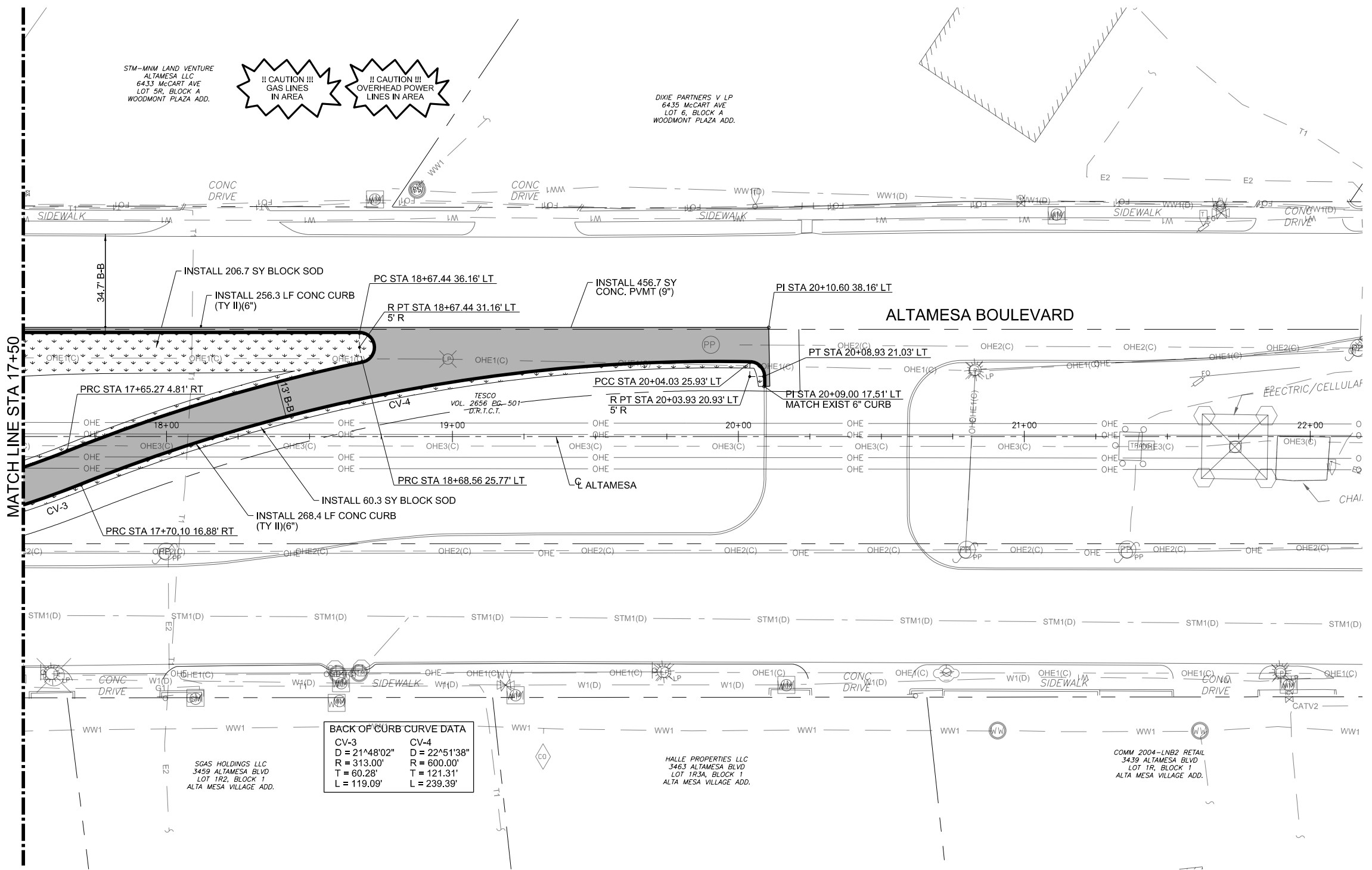
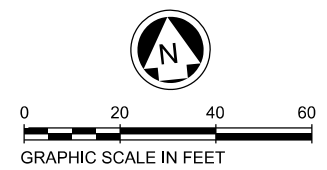
LEGEND

-  CONC PVMT (JOINTED-CPCD) (9")
-  CONC SIDEWALK (4")
-  BLOCK SODDING

NOTES:
 1. TYPICAL SECTION STATIONS ARE FROM CENTERLINE McCART AVE UNLESS OTHERWISE NOTED.

NOTE:
 CONCRETE PAVEMENT IS TO HAVE 3600 psi 28-DAY MIN. COMPRESSIVE STRENGTH WITH NO. 4 BARS SPACED ON 18-INCH INTERVALS IN BOTH DIRECTIONS.

- CFW MON 8309
 N 6919862.06
 E 2318060.05
 EL = 743.06
- CP #50
 CAPPED IRON ROD SET
 N 6921187
 E 2317157
 EL = 749.04
- CP #51
 CAPPED IRON ROD SET
 N 6921134
 E 2317579
 EL = 738.81
- CP #52
 CAPPED IRON ROD SET
 N 6921683
 E 2317470
 EL = 745.02
- CP #53
 CAPPED IRON ROD SET
 N 6921270
 E 2316408
 EL = 769.59
- CP #54
 CAPPED IRON ROD
 N 6920747
 E 2316690
 758.90



- ROW AND MEDIANS**
1. CONTRACTOR WILL USE CLEAN TOP SOIL WITH NO ROCKS TO BACK FILL BEFORE LAYING SOD OR HYDRO SEEDING.
 2. ROCKS LARGER THAN 1" SHALL BE REMOVED IN AREAS TO BE GRASSES, IF EXISTING TOP SOIL SHALL BE USED.
 3. ALL DIRT MOUNDS SHALL BE REMOVED FROM ROWS, CORNER CLIPS AND TRAFFIC DIVIDERS PRIOR TO SEEDING AFTER CONSTRUCTION IS COMPLETE.
 4. ANY ROWS, CORNER CLIPS AND TRAFFIC DIVIDERS THAT WERE DISTURBED DURING CONSTRUCTION WILL BE PUT BACK IN THEIR ORIGINAL STATE OR BETTER.
 5. IN THE EVENT GRASS HAS BEEN DISTURBED IN THE ROWS, CORNER CLIPS OR TRAFFIC DIVIDERS, CONTRACTOR WILL RESTORE GRASS. GRASS WILL BE ESTABLISHED AT 100% BY THE CONTRACTOR.
 6. ROWS, CORNER CLIPS AND TRAFFIC DIVIDERS WILL BE MAINTAINED AND MOWED BY THE CONTRACTOR FOR HIGH GRASS AND WEEDS EVERY 14 DAYS.

(THE DEPARTMENT OF PARK AND RECREATION SHALL HAVE JURISDICTION AUTHORITY, CONTROL AND SUPERVISION OVER ALL TREES, PLANTS AND SHRUBS PLANTED OR GROWING IN OR UPON THE PUBLIC HIGHWAYS AND PUBLIC PLACES IN THE CITY, AND THE PLANTING, REMOVAL, CARE, MAINTENANCE AND PROTECTION THEREOF) (CODE 1964, 36-1) (ORD. 11541, 1(c), PASSED 4-12-1994)


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BACK OF CURB CURVE DATA

CV-3	CV-4
D = 21'48"02"	D = 22'51"38"
R = 313.00'	R = 600.00'
T = 60.28'	T = 121.31'
L = 119.09'	L = 239.39'



2821 WEST 7TH ST
 SUITE 400
 FORT WORTH, TEXAS 76107
 (817) 877-5571
 TBPE Reg #F351

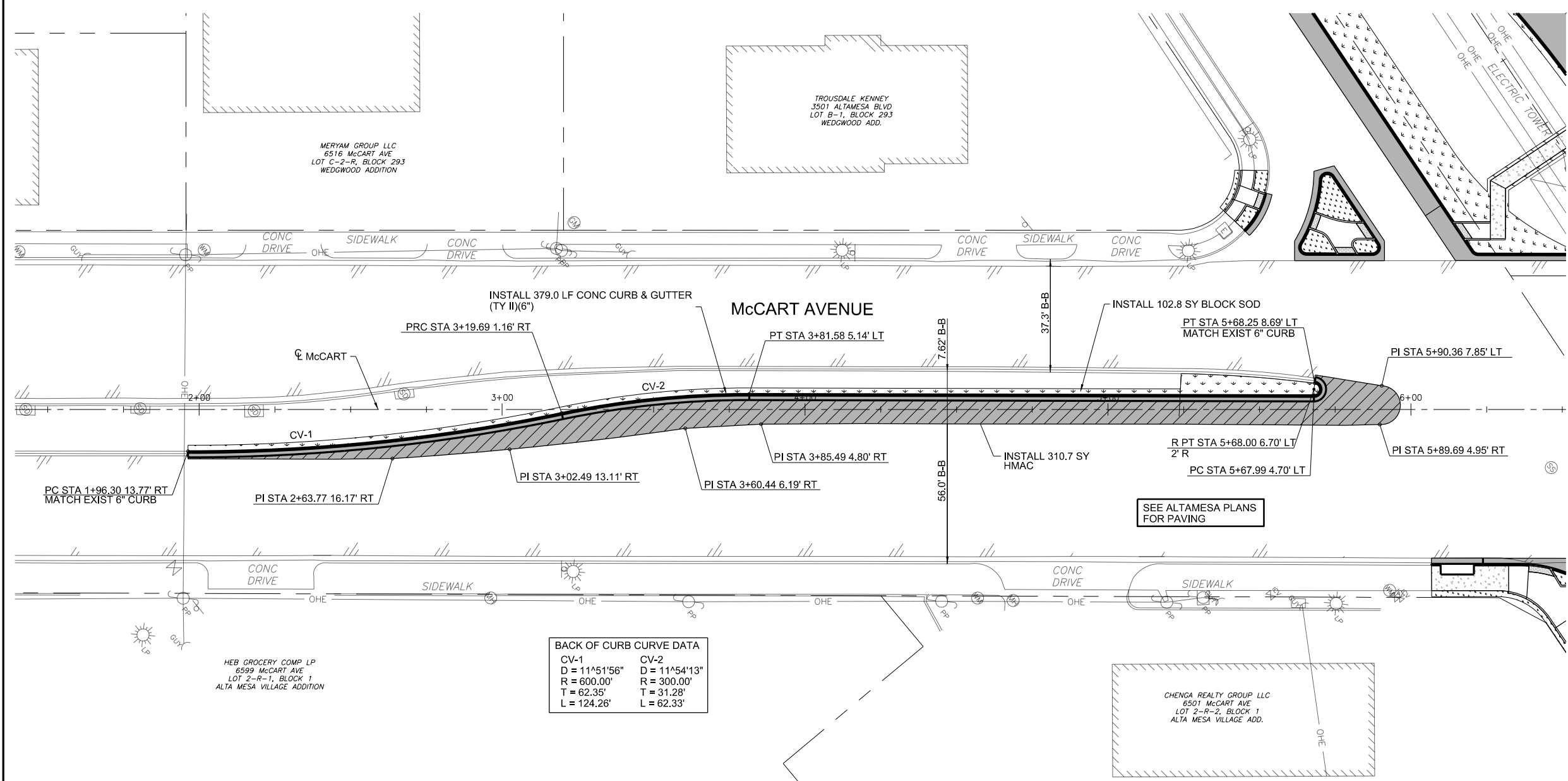
Texas Department of Transportation

**PAVING IMPROVEMENT PLAN
 ALTAMESA BLVD
 STA 17+50 TO END PROJECT**

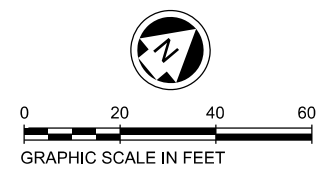
SHEET 3 OF 4

REVISIONS	FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
	6	SEE TITLE SHEET		71
	TEXAS	FTW	TARRANT	
	CONTROL	SECTION	JOB	
	0902 0902	90 90	119 192	HIGHWAY NO. McCART

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CFW MON 8309 N 6919862.06 E 2318060.05 EL = 743.06	CP #52 CAPPED IRON ROD SET N 6921683 E 2317470 EL = 745.02
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CP #51 CAPPED IRON ROD SET N 6921134 E 2317579 EL = 738.81	CP #54 CAPPED IRON ROD N 6920747 E 2316690 EL = 758.90



HEB GROCERY COMP LP
6599 McCart Ave
LOT 2-R-1, BLOCK 1
ALTA MESA VILLAGE ADDITION

CV-1 D = 11°51'56" R = 600.00' T = 62.35' L = 124.26'	CV-2 D = 11°54'13" R = 300.00' T = 31.28' L = 62.33'
---	--

SEE ALTAMESA PLANS FOR PAVING

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LEGEND

	HMA TYPE D SURFACE COURSE (1-1/2")
	HMA TYPE B BASE COURSE (6")
	FLEXBASE (14")
	CONC SIDEWALK (4")
	BLOCK SODDING

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Texas Department of Transportation




PAVING IMPROVEMENT PLAN McCart AVE

SHEET 4 OF 4

REVISIONS	FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
	6	SEE TITLE SHEET		72
	STATE	DISTRICT	COUNTY	
	TEXAS	FTW	TARRANT	
CONTROL	SECTION	JOB	HIGHWAY NO.	
0902	90	119	192	McCart

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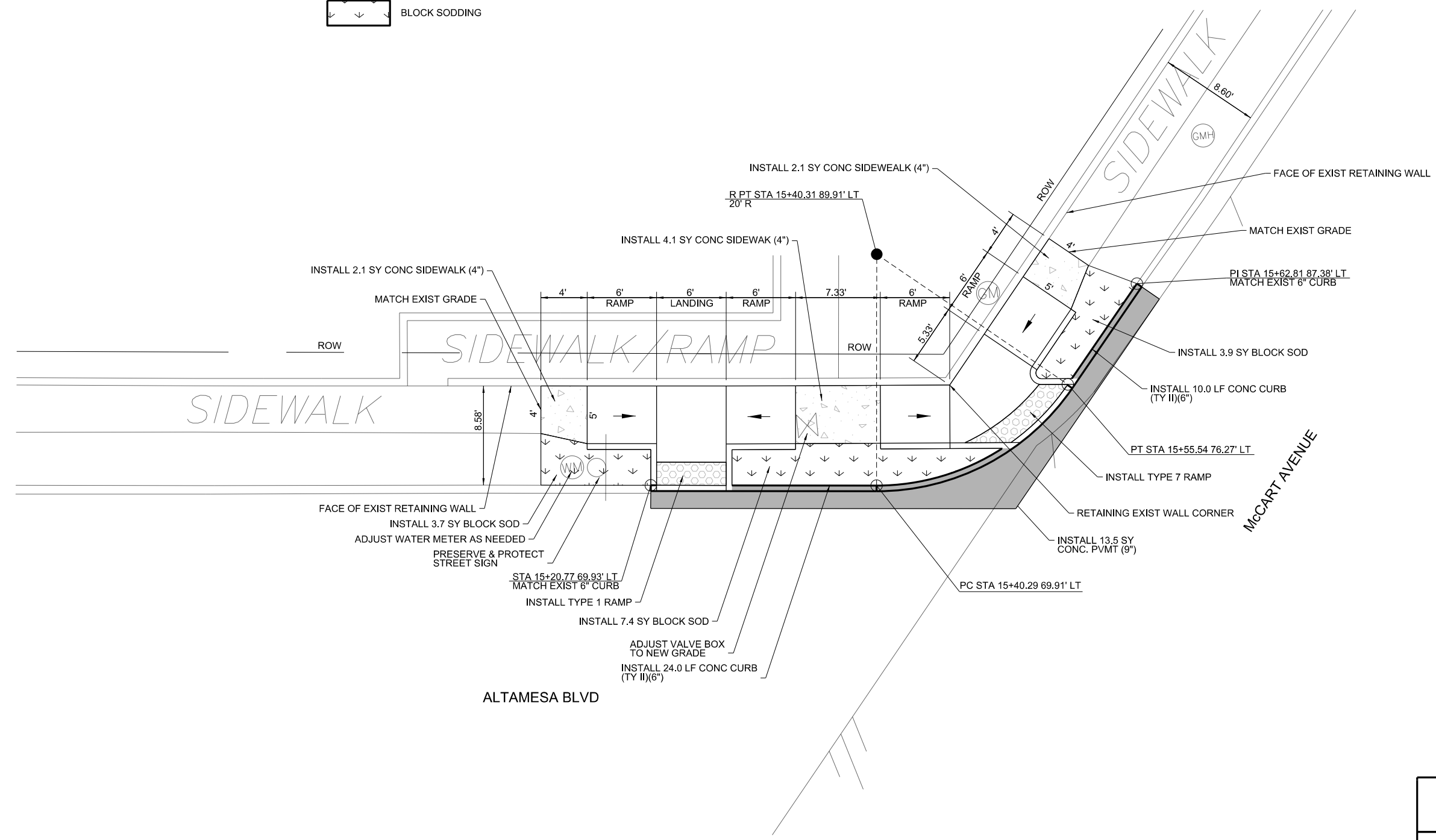
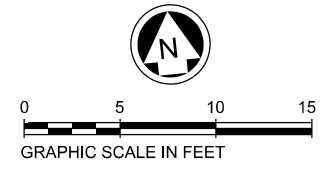
LEGEND

	CONC PVMT (JOINTED-CPCD) (9")
	CONC SIDEWALK/RAMP (4")
	BLOCK SODDING

NOTES:
 1. TYPICAL SECTION STATIONS ARE FROM CENTERLINE McCART AVE UNLESS OTHERWISE NOTED.

NOTE:
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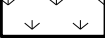
**SIDEWALK & RAMP DETAIL
 NORTHWEST CORNER**

SHEET 1 OF 4

REVISIONS	FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
	6	SEE TITLE SHEET		73
	STATE	DISTRICT	COUNTY	
	TEXAS	FTW	TARRANT	
	CONTROL	SECTION	JOB	HIGHWAY NO.
	0902	90	119	McCART
		0902	192	

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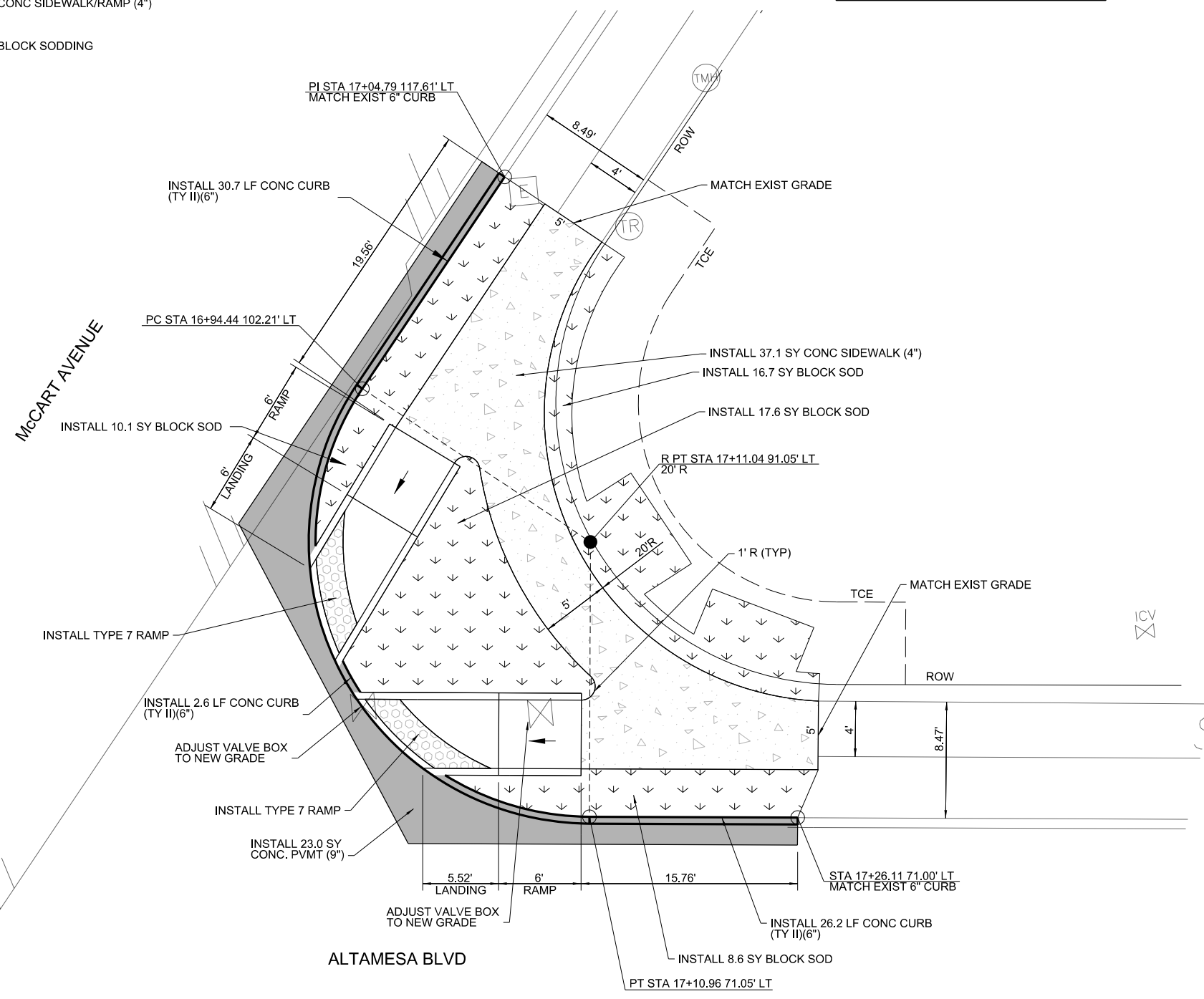
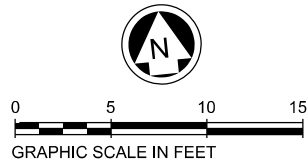
LEGEND

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**SIDEWALK & RAMP DETAIL
 NORTHEAST CORNER**

SHEET 2 OF 4

REVISIONS	FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
	6	SEE TITLE SHEET		74
	STATE	DISTRICT	COUNTY	
	TEXAS	FTW	TARRANT	
CONTROL	SECTION	JOB	HIGHWAY NO.	
0902	90	119	McCART	
0902	90	192		

