CONSTRUCTION PLANS FOR
CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS

COPPERAS COVE, CORYELL CO., TEXAS
KTMPO ID: C40-05
STP 2019(364)TAPS

REGISTERED ACCESSIBILITY SPECIALIST (RAS)
INSPECTION REQUIRED
TDLR NO. TABS2020003326

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	INDEX OF SHEETS

Copperas Cove

CITY OF COPPERAS COVE, TEXAS

MAYOR _____ DATE

_____

FM 116
CSJ 3128-01-013

FOR THE CONSTRUCTION OF MISCELLANEOUS WORK CONSISTING OF CONCRETE SIDEWALKS, RAMPS, CONCRETE PAVEMENT STRUCTURES, AND SIGNAGE ALONG FM 116
NET LENGTH OF PROJECT= 3,725 ft = 0.7055 mi

FM 3046
CSJ 3131-01-007

FOR THE CONSTRUCTION OF MISCELLANEOUS WORK CONSISTING OF CONCRETE SIDEWALKS, RAMPS, CONCRETE PAVEMENT STRUCTURES, DRAINAGE STRUCTURES, AND SIGNAGE ALONG FM 116
NET LENGTH OF PROJECT= 1,260.88 ft = 0.2388 mi

TEXAS DEPARTMENT OF TRANSPORTATION

APPROVED FOR LETTING: _____ DATE

_____
DISTRICT ENGINEER

RECOMMENDED FOR LETTING: _____ DATE

_____
DIRECTOR OF TRANSPORTATION, PLANNING, AND DEVELOPMENT

RECOMMENDED FOR LETTING: _____ DATE

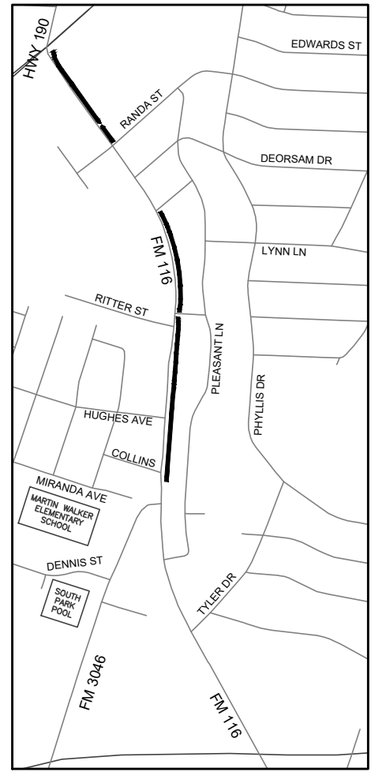
_____
AREA ENGINEER

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

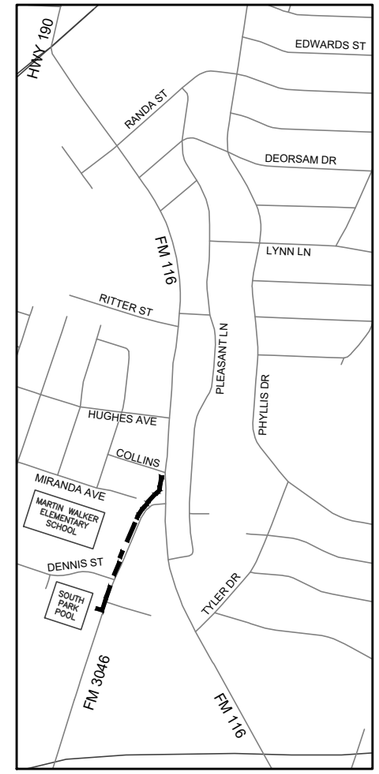
BSP engineers
F - 7587

DATE: 10-17-2019
PROJECT NO. 172384.00

Anthony D. Beach
SIGNATURE



PROJECT VICINITY MAP



PROJECT VICINITY MAP

SPECIFICATION ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION NOVEMBER 1, 2014, AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS SHALL GOVERN THIS PROJECT:
REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, MAY 2012)

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KTMPO ID: C40-05 for COPPERAS COVE, TEXAS

TITLE SHEET

FED. RD. DIV. NO.	FEDERAL AID PROJECT NUMBER	SHEET NO.
	STP 2019(364)TAPS	1.1

STATE	DISTRICT	COUNTY
TEXAS	WACO	CORYELL

CONT.	SECT.	JOB	HIGHWAY NO.
3128	01	013, ETC.	FM 116 & FM 3046

INDEX OF SHEETS

FM 116 (CSJ 3128-01-013) AND FM 3046 (CSJ 3131-01-007)

* THE STANDARD SHEETS SPECIFICALLY IDENTIFIED IN THE SHEET INDEX OF THE PLAN SET HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

ANTHONY D. BEACH, P.E.
PROJECT ENGINEER
BSP ENGINEERS, INC.

GENERAL

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1.2	INDEX OF SHEETS
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1.13-1.15	TRAFFIC CONTROL PLAN, FM 116
1.16	TRAFFIC CONTROL PLAN, FM 3046
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1.18	REMOVAL PLAN FM 116 STA. 9+50 - 19+50
1.19	REMOVAL PLAN FM 116 STA. 19+50 - 29+50
1.20	REMOVAL PLAN FM 116 STA. 29+50 - END
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2.3	SIDEWALK PLAN FM 116 STA. 19+50 - 29+50
2.4	SIDEWALK PLAN FM 116 STA. 29+50 - END
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2.6	SIDEWALK PLAN FM 3046 STA. 5+50 - END

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4.5	SW3P FM 116 STA. 19+50 - 29+50
4.6	SW3P FM 116 STA. 29+50 - END
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4.8	SW3P FM 3046 STA. 5+50 - END

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10.6	MISCELLANEOUS PROJECT DETAILS
10.7	SIDEWALK DRAIN DETAILS

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE

BSP engineers
TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

Copperas Cove
COPPERAS COVE, TEXAS

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CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

INDEX OF SHEETS

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.2
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

PROJECT QUANTITY SUMMARY

Item Number	Desc. Code	Description	Unit	Est. Qty
100	2002	PREPARING ROW	STA	44
*		* PREPARING ROW (LOCATE EXISTING UTILITIES)		
*		* PREPARING ROW (REMOVE CHAIN LINK FENCE)		
104	6017	REMOVING CONC (DRIVEWAY)	SY	400
104	6029	REMOVING CONC (CURB OR CURB AND GUTTER)	LF	140
104	6036	REMOVING CONC (SIDEWALK OR RAMP)	SY	1900
105	6015	REMOVING STAB BASE AND ASPH PAV	SY	400
110	6003	EXCAVATION (SPECIAL)	CY	1920
132	6002	EMBANKMENT (FINAL)(DENS CONT)(TY A)	CY	400
160	6003	FURNISHING AND PLACING TOPSOIL (4")	SY	4000
162	6002	BLOCK SODDING	SY	4000
168	6001	VEGETATIVE WATERING	MG	315
340	6011	D-GR HMA(SQ) TY-B PG64-22	TON	78
340	6106	D-GR HMA(SQ) TY-D PG64-22	TON	5
450	6050	RAIL (HANDRAIL)(TY D)	LF	330
500	6001	MOBILIZATION / INSURANCE	LS	1
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	12
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	2750
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	2750
506	6047	TEMP SDMT CONT FENCE (INLET PROTECTION)	EA	6
529	6008	CONC CURB AND GUTTER (TYII) (REINF)	LF	80
530	6010	INTRSCT, DRVWAYS, & TURNOUTS (CONC)	SY	850
531	6002	CONC SIDEWALKS (5")	SY	3700
531	6005	CURB RAMPS (TYP 2)	EA	2
531	6013	CURB RAMPS (TYP 10)	EA	11
644	6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	11
CC-1		SIDEWALK DRAIN	EA	2

* FOR CONTRACTOR'S INFORMATION

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

Anthony D. Beach
SIGNATURE

BSP engineers
TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

PROJECT QUANTITY SUMMARY

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.3
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

PROJECT LAYOUT FM 116 / CSJ 3128-01-013

200 100 0 200 400

SCALE IN FEET

LEGEND

10' PED/BIKE SHARED PATH

CONCRETE DRIVEWAY

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE

BSP engineers

TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

PROJECT LAYOUT FM 116

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.4
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

200 100 0 200 400

SCALE IN FEET

LEGEND

10' PED/BIKE SHARED PATH

6' PEDESTRIAN SIDEWALK

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE

BSP engineers

TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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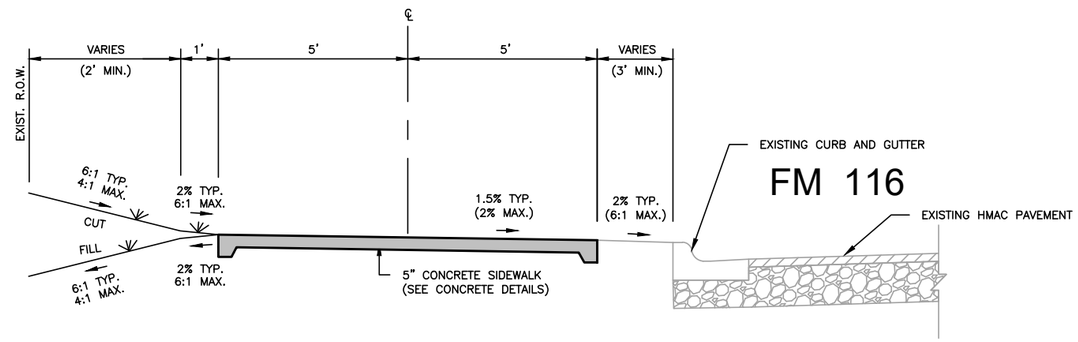
CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

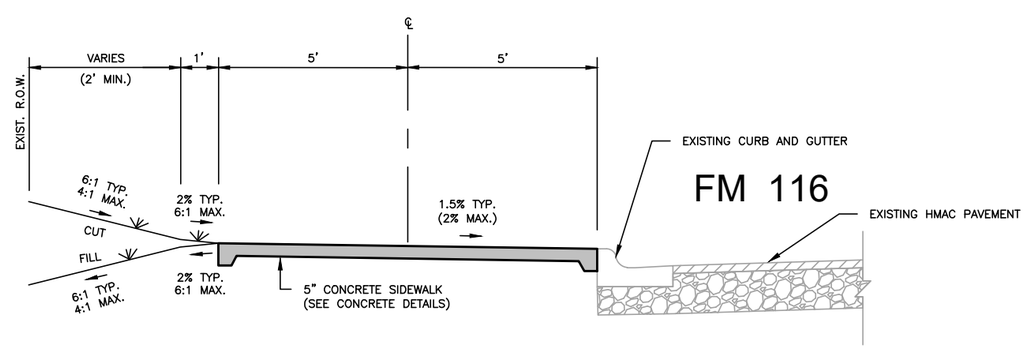
PROJECT LAYOUT FM 3046

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.5
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

PROJECT LAYOUT FM 3046 / CSJ 3131-01-007



TYPICAL SECTION "A"



TYPICAL SECTION "B"

CONSTRUCTION NOTES

1. ALL SIDEWALK IMPROVEMENTS AND ACCESSIBLE ROUTES SHALL BE IN COMPLIANCE WITH CURRENT TEXAS ACCESSIBILITY STANDARDS (TAS).

2. ALL ACCESSIBLE ROUTES SHALL HAVE A MAXIMUM RUNNING SLOPE OF 5% (1:20) AND A MAXIMUM CROSS SLOPE OF 2% (1:50) PER TAS 4.3.7. ALL ACCESSIBLE RAMPS SHALL HAVE A MAXIMUM SLOPE OF 8.33% (1:12) PER TAS 4.8.2.

3. TREES OR SHRUBS SHALL BE REMOVED OR PRUNED TO MAINTAIN AN ADDITIONAL CLEARANCE OF 12" FROM THE OUTER EDGE OF THE 2' RECOVERY ZONE. MINIMUM HEIGHT CLEARANCE SHALL BE 7' ABOVE THE SURFACE OF THE SIDEWALK.

4. GRADE CONTROL FOR THE NEW CONCRETE SIDEWALK IS BASED UPON THE CENTERLINE PROFILE ELEVATIONS AND SLOPES SHOWN ON THE PLAN AND PROFILE SHEETS.

10-17-2019

SIGNATURE

BSP engineers

TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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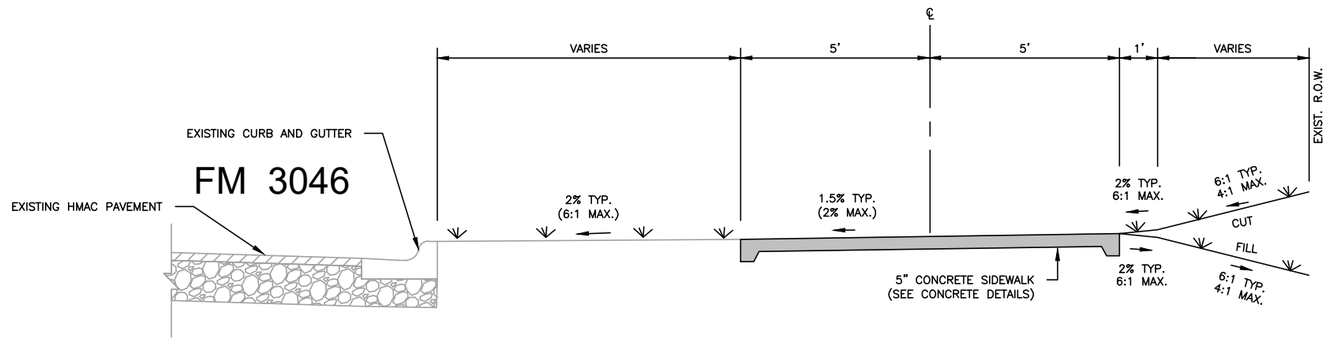
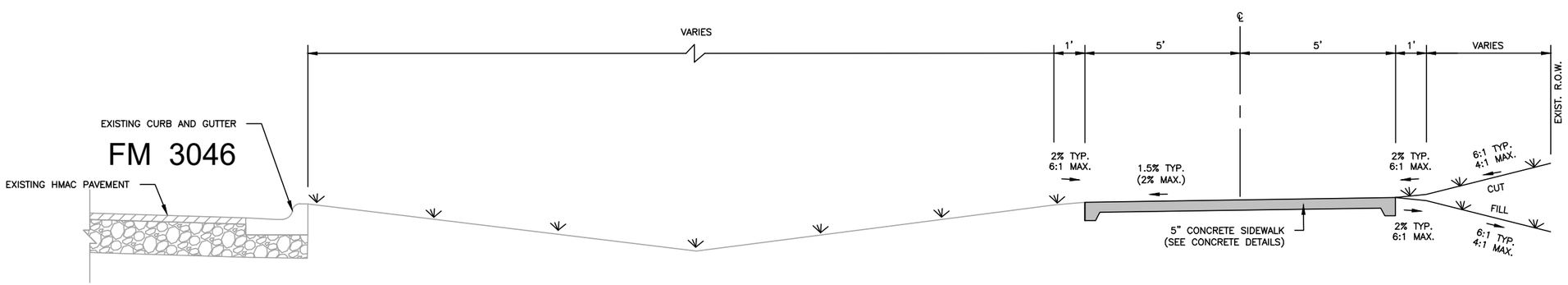
CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

TYPICAL SECTIONS FM 116

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.6
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046



TYPICAL SECTION "C"



TYPICAL SECTION "D"

CONSTRUCTION NOTES

1. ALL SIDEWALK IMPROVEMENTS AND ACCESSIBLE ROUTES SHALL BE IN COMPLIANCE WITH CURRENT TEXAS ACCESSIBILITY STANDARDS (TAS).

2. ALL ACCESSIBLE ROUTES SHALL HAVE A MAXIMUM RUNNING SLOPE OF 5% (1:20) AND A MAXIMUM CROSS SLOPE OF 2% (1:50) PER TAS 4.3.7. ALL ACCESSIBLE RAMPS SHALL HAVE A MAXIMUM SLOPE OF 8.33% (1:12) PER TAS 4.8.2.

3. TREES OR SHRUBS SHALL BE REMOVED OR PRUNED TO MAINTAIN AN ADDITIONAL CLEARANCE OF 12" FROM THE OUTER EDGE OF THE 2' RECOVERY ZONE. MINIMUM HEIGHT CLEARANCE SHALL BE 7' ABOVE THE SURFACE OF THE SIDEWALK.

4. GRADE CONTROL FOR THE NEW CONCRETE SIDEWALK IS BASED UPON THE CENTERLINE PROFILE ELEVATIONS AND SLOPES SHOWN ON THE PLAN AND PROFILE SHEETS.

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE

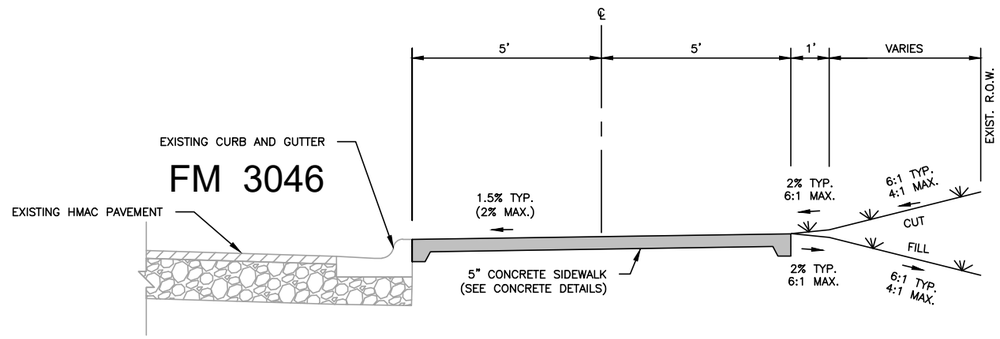
BSP engineers
TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

Copperas Cove
COPPERAS COVE, TEXAS

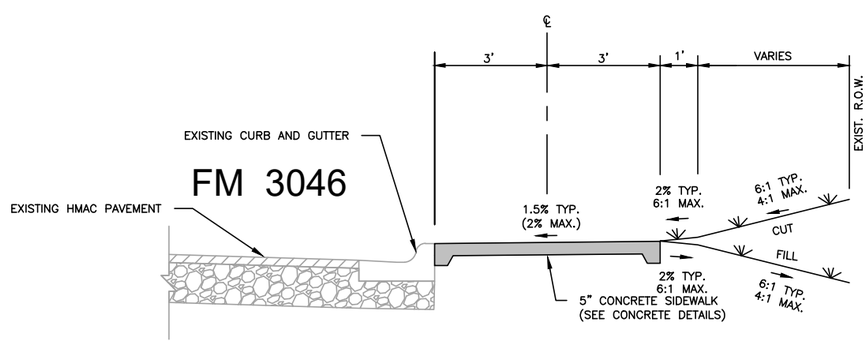
2019
Texas Department of Transportation

CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05
TYPICAL SECTIONS FM 3046
SHEET 1

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.7
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046



TYPICAL SECTION "E"



TYPICAL SECTION "F"

CONSTRUCTION NOTES

1. ALL SIDEWALK IMPROVEMENTS AND ACCESSIBLE ROUTES SHALL BE IN COMPLIANCE WITH CURRENT TEXAS ACCESSIBILITY STANDARDS (TAS).

2. ALL ACCESSIBLE ROUTES SHALL HAVE A MAXIMUM RUNNING SLOPE OF 5% (1:20) AND A MAXIMUM CROSS SLOPE OF 2% (1:50) PER TAS 4.3.7. ALL ACCESSIBLE RAMPS SHALL HAVE A MAXIMUM SLOPE OF 8.33% (1:12) PER TAS 4.8.2.

3. TREES OR SHRUBS SHALL BE REMOVED OR PRUNED TO MAINTAIN AN ADDITIONAL CLEARANCE OF 12" FROM THE OUTER EDGE OF THE 2' RECOVERY ZONE. MINIMUM HEIGHT CLEARANCE SHALL BE 7' ABOVE THE SURFACE OF THE SIDEWALK.

4. GRADE CONTROL FOR THE NEW CONCRETE SIDEWALK IS BASED UPON THE CENTERLINE PROFILE ELEVATIONS AND SLOPES SHOWN ON THE PLAN AND PROFILE SHEETS.

10-17-2019

Anthony D. Beach
SIGNATURE

BSP engineers
TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

Copperas Cove
COPPERAS COVE, TEXAS

Texas Department of Transportation

CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05
TYPICAL SECTIONS FM 3046
SHEET 2

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.8
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

GENERAL NOTES

GENERAL NOTES AND SPECIFICATION DATA

SPECIFICATION DATA

Basis of Estimate

Item	Description	Rate	Basis	Quantities
168	VEGETATIVE WATERING			
	(24 APPLICATIONS - PERM)	13,100 GAL/AC/APP	1.00 AC	315 MG
340	DENSE-GRADED HOT MIX ASPHALT (SQ)			
	TY-B PG 64-22	440 LB / SY	44 SY	78 TON
	TY-D PG 64-22	110 LB / SY	44 SY	5 TON

LIST OF MODIFIED STANDARDS

ITEM 4: SCOPE OF WORK

All new and existing concrete adjacent to the roadway must be free of stains, dirt, tire marks, etc., at the time of final acceptance. These items include but are not limited to sidewalks, ramps, curb and gutter, inlets and riprap. Blast cleaning of these items will be required to achieve acceptance of the project and will be considered subsidiary to the applicable bid items.

ITEM 5: CONTROL OF THE WORK

All elevations are based on USC & GS datum.

All elevations are based on an assumed benchmark elevation. Benchmark locations and elevations are shown on the plan profile sheets.

Prior to beginning work in the area of existing utilities, the contractor will consult with the utility companies for exact locations to prevent any damage or interference with present facilities. This action will in no way be interpreted as relieving the contractor of his responsibilities, under the terms of the contract and as set out in the plans and specifications. The contractor will repair any damage caused by his operations, at his own expense and will restore facilities to service in a timely manner.

Submit all fabrication and shop drawings to the Area Engineer for review and approval, unless otherwise directed.

ITEM 6: CONTROL OF MATERIALS

References to manufacturer's trade name or catalog numbers are for the purpose of identification only and the contractor will be permitted to furnish like materials of other manufacturers provided they are of equal quality and comply with specifications for this project.

ITEM 7: LEGAL RELATIONS AND RESPONSIBILITIES

Where existing pavement adjoins new pavement, saw the existing pavement to a neat transverse and/or longitudinal line to permit adequate joining. This will not be paid for directly, but will be considered subsidiary to the various bid items.

Protect all adjoining pavement sections during all phases of construction. Any damages incurred due to contractor's operation will be repaired and/or replaced at the contractor's expense.

Personal vehicles of the contractor's employees will not be parked within the right of way at any time including any section closed to public traffic, unless the vehicle is being utilized for construction procedures. However, the contractor's employees may park on the right of way at the sites where the contractor has his office, equipment and materials storage yard.

The total area disturbed for this project is ___ acres. The disturbed area in this project, all project locations in the Contract, and the Contractor project specific locations (PSLs), within one (1) mile of the project limits, for the Contract will further establish the authorization requirements for storm water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain required authorization from the TCEQ for Contractor PSLs for construction support activities on or off the ROW. When the total area disturbed in the Contract and PSLs within one (1) mile of the project limits exceeds five (5) acres, provide a copy of the Contractor NOI to the Engineer and to the local government that operates a separate storm sewer system.

Throughout the course of the project, when in the opinion of the Engineer, tall grass and weeds affect the safety of the public by restricting visibility, interfere with normal traffic flow or appear unsightly, the contractor will be required to mow same. Final cleanup will include mowing of grass and weeds. This work will not be paid for directly but will be considered as subsidiary to the various bid items.

Care will be taken by the contractor and its subcontractors to protect and avoid disturbance to the right of way monumentation.

If right of way monumentation is disturbed by the contractor, or its subcontractor, the contractor will notify the inspector. Monuments which are disturbed by the contractor, or its subcontractor, will be restored by a Registered Professional Land Surveyor designated by the Texas Department of Transportation District Surveyor at the expense of the contractor.

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE

BSP engineers
TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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COPPERAS COVE, TEXAS

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CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05
GENERAL NOTES
SHEET 1 OF 4

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.9
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

GENERAL NOTES

ITEM 100: PREPARING RIGHT OF WAY

Prune trees designated for preservation as directed. All work required in preserving and pruning trees will be included in the price bid for Item 100, "Preparing Right Of Way".

The removal of trees and vegetation will be subsidiary to Item 100, "Preparing Right Of Way". Contractor will preserve all trees designated for preservation by whatever means necessary. The removal of any existing fence will not be paid for directly, but will be considered subsidiary to the bid Item 100, "Preparing Right Of Way".

All trees and brush removed each day will be disposed of within the same day of removal unless otherwise approved.

The Contractor is prohibited from removing grass vegetation throughout the entire project limits and then ceasing construction for long periods, typically over three weeks. The Contractor schedule will be developed based on staged vegetation removal, limiting disturbed soil to no more than 25 percent at one time, unless otherwise approved. Should the Contractor not be able to adequately control sediment and erosion for areas disturbed, TxDOT will substantially reduce the size of areas that the Contractor may disturb soil. Should the project be evaluated to have sediment control problems as a result of the Contractor disturbing excessive amounts of soil, the Contractor will be required to immediately re-vegetate (seed and water) those disturbed areas at no cost to TxDOT.

ITEM 160: TOPSOIL

Salvage the existing topsoil from the cut/fill areas. Stockpile the salvaged topsoil material at locations as approved. Topsoil will not be used for general fill, unless there is an excess quantity of topsoil and use is approved by TxDOT. Topsoil stockpiles or topsoil placed along the ROW lines in windrows will be temporarily seeded to meet storm water permit requirements

Topsoil not stored in small windrows will be stockpiled in locations with heights no greater than four (4) feet and dumped loose from Contractor equipment. The Contractor will minimize topsoil compaction and limit equipment being driven over stockpiled topsoil. Dozers may be used for limited shaping. Weeds will be periodically removed and grass vegetation established by broadcast seeding. For the best re-vegetation performance, stockpiled topsoil should be used within one year of stockpiling. Prior to stockpiled topsoil being re-distributed on the project, the soil will be mixed and tilled at the stockpile location. Contractor will adequately plan for the additional land requirements for topsoil storage. All stockpiled topsoil activities will be subsidiary to Item 160, "Topsoil".

ITEM 168: VEGETATIVE WATERING

Watering between December 1st and February 1st can begin on seeded areas upon planting and before a natural rainfall. During other planting periods, unless approved by TxDOT, vegetation watering by means of water trucks will not be started on newly planted seeds until a natural rain of one-half (½) inch has occurred after planting.

COUNTY: CORYELL

HIGHWAY: FM 116 & FM 3046 CSJ: 3128-01-013, ETC.

ITEM 360: CONCRETE PAVEMENT

Contractor personnel performing job-control testing on concrete must be ACI-Certified. Provide a copy of the certification paper to the Engineer upon arrival and before testing at job site. Furnish hard copies of calibration reports for testing equipment when non-TxDOT approved equipment is used to test concrete.

Maintain on the job site sufficient polyethylene fabric, as approved, to cover a minimum area of concrete pavement six hundred (600) feet long and twenty-five (25) feet wide.

Place construction, sawed, and construction joints in accordance with the pavement detail sheet and as shown on the plans. Joint locations, other than as shown on the plans, are subject to approval. Pavement leaveouts are required on this project as necessary to provide for traffic at driveways and side streets as shown in the plans. The cost of providing these leaveouts, including the construction of a suitable crossover connection at each site, will not paid for directly but will be considered subsidiary to this Item.

Concrete curing compounds will not be applied in a manner that the chemical will be spilled, dripped or be discharged into streams. Containers and rags used during application of curing compound will be properly disposed of off project. Do not store curing compound containers and drums on TxDOT ROW.

ITEM 440: REINFORCEMENT FOR CONCRETE

Uncoated steel reinforcement storage on the ground will be supported by nominal dimension four (4) inch by four (4) inch solid lumber or round posts spaced closely where any portion of the steel does not touch the ground. Larger timber is acceptable. As an alternate, new or used sound wooden pallets may be used. Broken supports will be replaced.

Prior to concrete placement, all dried mortar and splashed concrete, in addition to any other contaminates, will be removed from all steel reinforcement.

ITEM 502: BARRICADES, SIGNS AND TRAFFIC HANDLING

A meeting between the contractor and Engineer to discuss upcoming changes in construction phasing and traffic switches is required at least fourteen (14) days prior to the phase change. Items to be discussed at this meeting include temporary signing, traffic control, pavement markings, the processes necessary for the phase change and subcontractor scheduling.

Construction Speed Zones will be required for this project. Adjust the location of the construction speed zone throughout the duration of the project as necessary. The speed zone will only be applicable for the length of roadway section physically being constructed and will not exceed a length of two (2) miles.

All signs, delineators, object markers, and route markers must be in place prior to opening each phase of construction to traffic.

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE

BSP engineers
TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05
GENERAL NOTES
SHEET 2 OF 4

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.10
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

GENERAL NOTES

When a culvert extension, inlet construction and/or safety end treatment and open excavation, etc. is within thirty (30) feet of a travel lane then delineate these areas as shown on the BC standard sheets. In addition a four (4) foot high plastic construction fence will be required at or around any structure or obstruction that would be a hazard to pedestrians unless otherwise approved. This fence will be erected in a manner acceptable to the Engineer. Construction fencing will not be paid for separately, but will be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling".

The Contractor Responsible Person(s) (CRP) for Work Zone Traffic Controls will inspect and ensure any deficiencies are corrected each and every day throughout the duration of this contract. Any misaligned or damaged traffic control devices will be repaired as soon as practical after deficiency is discovered.

In addition to providing a Contractor's Responsible Person and a phone number for emergency contact, have an employee(s) available to respond on the project for emergencies and for taking corrective measures within thirty (30) minutes.

Place advisory speed plates (CW13-1) in accordance with the TMUTCD and as directed. Signs (CW13-1) will not be used with any signs other than a warning sign, nor will it be used alone. Sign mounting height will be seven (7) feet minimum to the bottom of the speed plate.

Cover work zone speed limit signs with a commercial grade sign cover or remove signs when work activities allow as directed. Turning signs from view, laying signs over or down will not be allowed. The contractor will coordinate changes in speed limit signs with law enforcement.

Projects that include "T" Intersection at the project limits will include "OBEY WARNING SIGNS STATE LAW" (R20-3T) AND "STAY ALERT TALK OR TEXT LATER" (G20-10T) signs as shown on BC(2)-14 sheet. These signs will be placed at locations as directed. Payment for the supply and installation of these signs will be subsidiary to Item 502, "Barricades, Signs and Traffic Handling".

Remove all material stockpiles, equipment left overnight or any obstruction within thirty (30) feet of a travel way or clearly mark by warning lights and barricades.

Arrange construction operations to prevent the hauling of materials through the completed pavement sections unless otherwise approved.

Unless otherwise shown on plans, where there is excavation adjacent to the pavement edge, provide adequate warning signs, vertical panels, drums and reflectors at the pavement edge. Treat pavement drop-offs created by ACP operations in a similar manner and in accordance with the details shown on the plans.

When excavation is required next to a travel lane carrying traffic and widening is not completed by the end of the day's operation, and unless otherwise permitted in the plans, place sufficient backfill against the edge of the travel lane in order to provide a 3:1 slope. The backfill used will be durable crushed

stone type of flexible base or other materials approved. When work is resumed on this excavated area this backfill material will be incorporated into the road work or disposed of as approved. Materials and labor for this work will not be paid for directly but will be subsidiary to the various bid items.

Prior to beginning work, the Contractor and Engineer will agree on the allowable length of lane closure.

Place Type III barricades and road closed signs as shown on BC standard sheets across the closed roadway or the new location at each road, street and/or closed bridge and along the closed roadway or new location at three-quarter (¾) mile intervals.

When operations require a sidewalk closure, use traffic control devices controlling pedestrian flows as necessary to route pedestrians around the closed sidewalk.

Equip all construction equipment involved in roadway work with a permanently mounted warning light with amber lens as approved.

ITEM 506: TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENTAL CONTROLS

No soil disturbing activities will begin on any section of TxDOT ROW without adequate sedimentation controls first being installed and functioning at adjacent drainage outfalls. Begin and continuously prosecute the repairs, additions and maintenance of erosion and sedimentation control devices within seven days after the Contractor receives each Form 2118, Field Inspection and Maintenance Report, from the Engineer. Failure of the Contractor to fulfill either of the above requirements places TxDOT in potential non-compliance with permit requirements and may result in withholding estimates or stopping work or both until all environmental permit requirements are fulfilled.

Furnish one SW3P permit posting sign and sign support as detailed in the plans. Install this sign in an approved location. The sign and support should be removed upon completion of the project and is the property of the Contractor. The purchase of the sign and support, installation, relocation(s) if determined necessary and removal at project end will be subsidiary to Item 506, 'Temporary Erosion, Sedimentation and Environmental Controls".

The SW3P for this contract will consist of using, as directed, any erosion or water pollution control measure deemed necessary. Any erosion or water pollution control measure deemed necessary will be implemented by the Contractor as prescribed by this item and in accordance with the applicable specification.

ITEM 644: SMALL ROADSIDE SIGN ASSEMBLIES

Bolt Clamp type will be used on Texas Triangular Slip Base System.

Sign placement heights are a minimum of seven (7) feet and a maximum of seven feet six inches (7ft.-6in.) to the bottom of the sign or plaque.

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
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LICENSED
PROFESSIONAL ENGINEER

SIGNATURE

BSP engineers
TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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COPPERAS COVE, TEXAS

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CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

GENERAL NOTES
SHEET 3 OF 4

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.11
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

GENERAL NOTES

COUNTY: CORYELL

HIGHWAY: FM 116 & FM 3046 **CSJ: 3128-01-013, ETC.**

Leave the existing sign assemblies in place until the proposed foundation, post and sign are in installed, and then remove the old sign assemblies.

Do not leave any sign foundation holes open overnight. Ensure all holes drilled are at least the minimum required depth with no loose material remaining in the hole.

Stake proposed sign locations and receive approval before installation of sign foundations.

Tighten the slip base and the locking collar as shown on standard Sign Mounting Details for Small Signs. Do not tighten bolts greater than eighty (80) foot pounds except to clean threads. Over-torque bolts to clean the threads of any galvanization that might cause an incorrect torque reading. Then loosen the nuts and tighten to the required torque of eighty (80) foot pounds. Tighten bolts incrementally in a sequential manner such that the load is applied uniformly to the locking collar.

Cut the bottom of all posts level.

Removed material that is deemed salvageable (signs and posts) will be the property of TxDOT. Deliver salvageable material to the TxDOT Maintenance Office. Remove unsalvageable material.

The Contractor will relocate the existing double-sided street name signs and furnish the post mounted brackets for the street name signs to be paid for as part of the proposed Stop Signs (R1-1). Existing street name signs will be mounted above Stop signs. If damaged while being relocated, the Contractor will furnish new double-sided street name sign at their own expense.

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
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PROFESSIONAL ENGINEER

Anthony D. Beach
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BSP engineers
TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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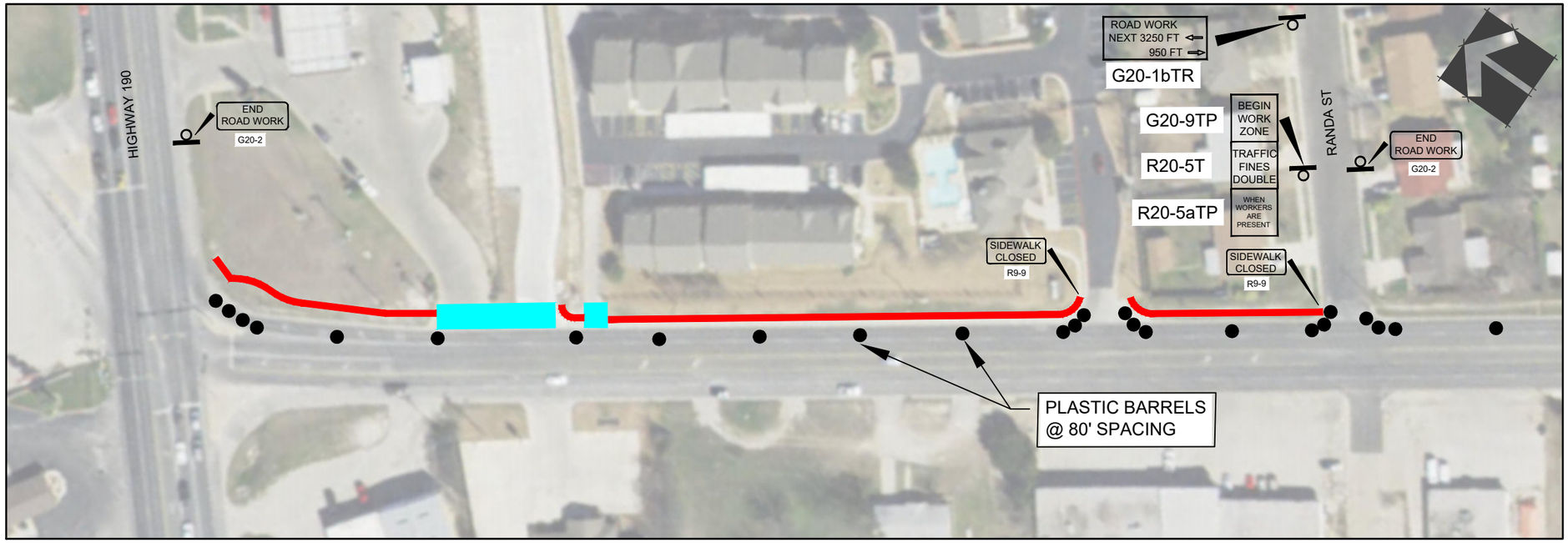
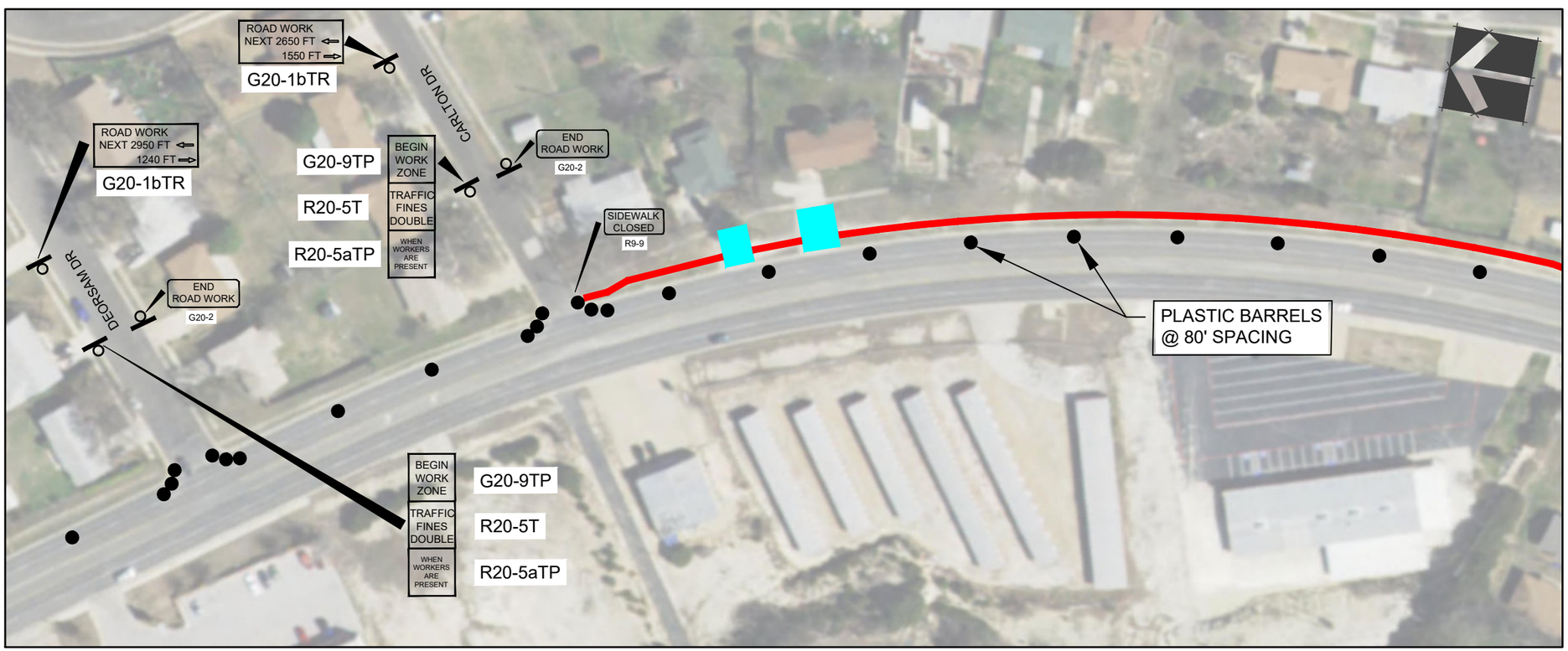
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05
GENERAL NOTES
SHEET 4 OF 4

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.12
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046





TRAFFIC CONTROL FM 116 / CSJ 3128-01-013

50 25 0 50 100

SCALE IN FEET

LEGEND

10' PED/BIKE SHARED PATH

CONCRETE DRIVEWAY

NOTE:

TRAFFIC CONTROL TO BE IN ACCORDANCE WITH TxDOT APPLICABLE STANDARD

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
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BSP PROJECT: 172384.00

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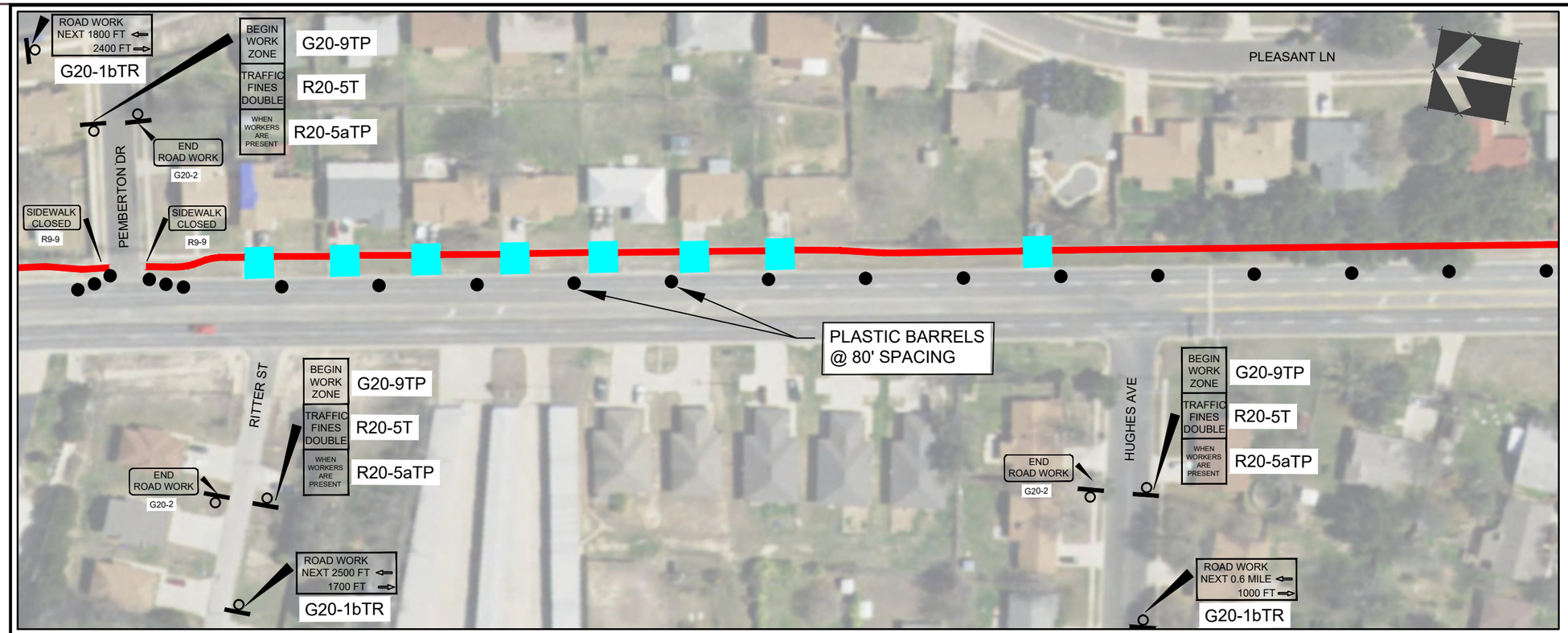
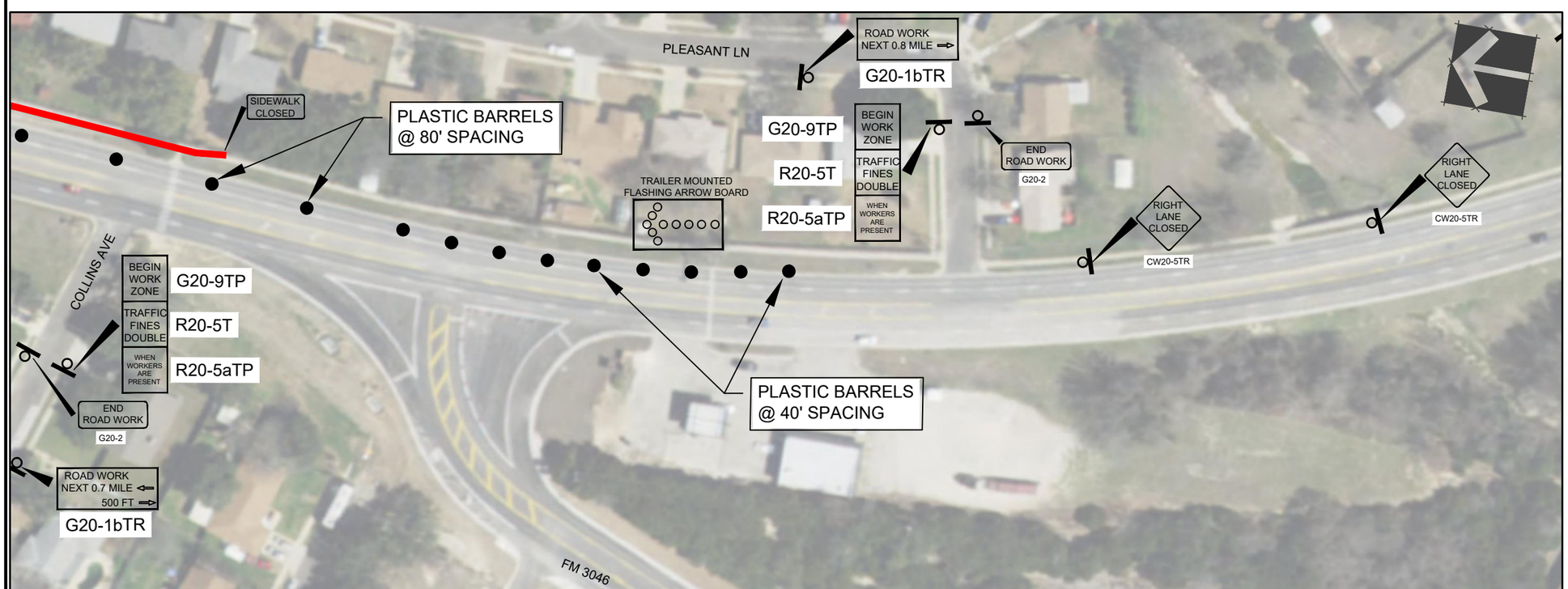
CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05
TRAFFIC CONTROL PLAN
FM 116, SHEET 1 OF 3

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.13
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046





TRAFFIC CONTROL FM 116 / CSJ 3128-01-013

SCALE IN FEET: 50 25 0 50 100

LEGEND

10' PED/BIKE SHARED PATH

CONCRETE DRIVEWAY

NOTE:

TRAFFIC CONTROL TO BE IN ACCORDANCE WITH TxDOT APPLICABLE STANDARD

10-17-2019

STATE OF TEXAS
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BSP PROJECT: 172384.00

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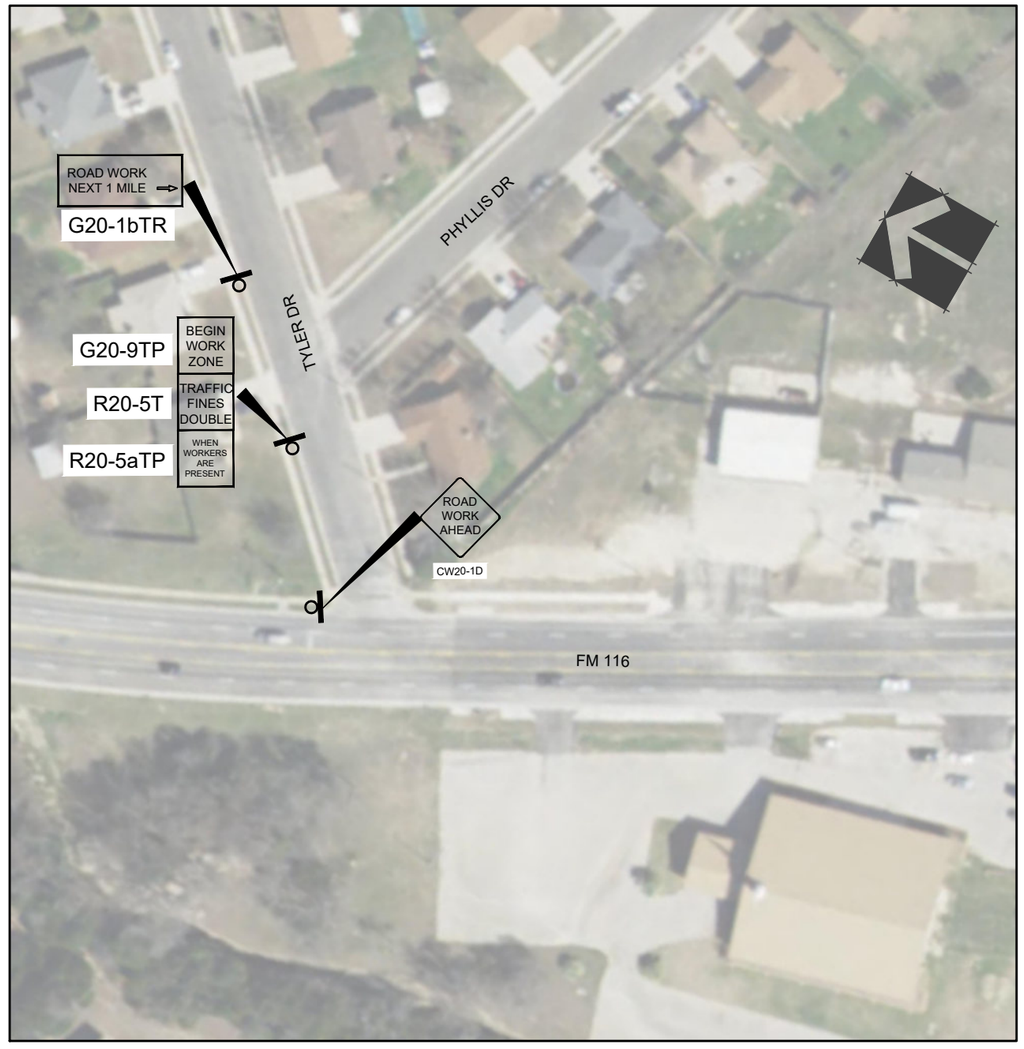
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05
TRAFFIC CONTROL PLAN
FM116, SHEET 2 OF 3

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.14
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046



TRAFFIC CONTROL FM 116 / CSJ 3128-01-013

50 25 0 50 100

SCALE IN FEET

LEGEND

10' PED/BIKE SHARED PATH

CONCRETE DRIVEWAY

NOTE:

TRAFFIC CONTROL TO BE IN ACCORDANCE WITH TxDOT APPLICABLE STANDARD

10-17-2019

STATE OF TEXAS
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BSP PROJECT: 172384.00

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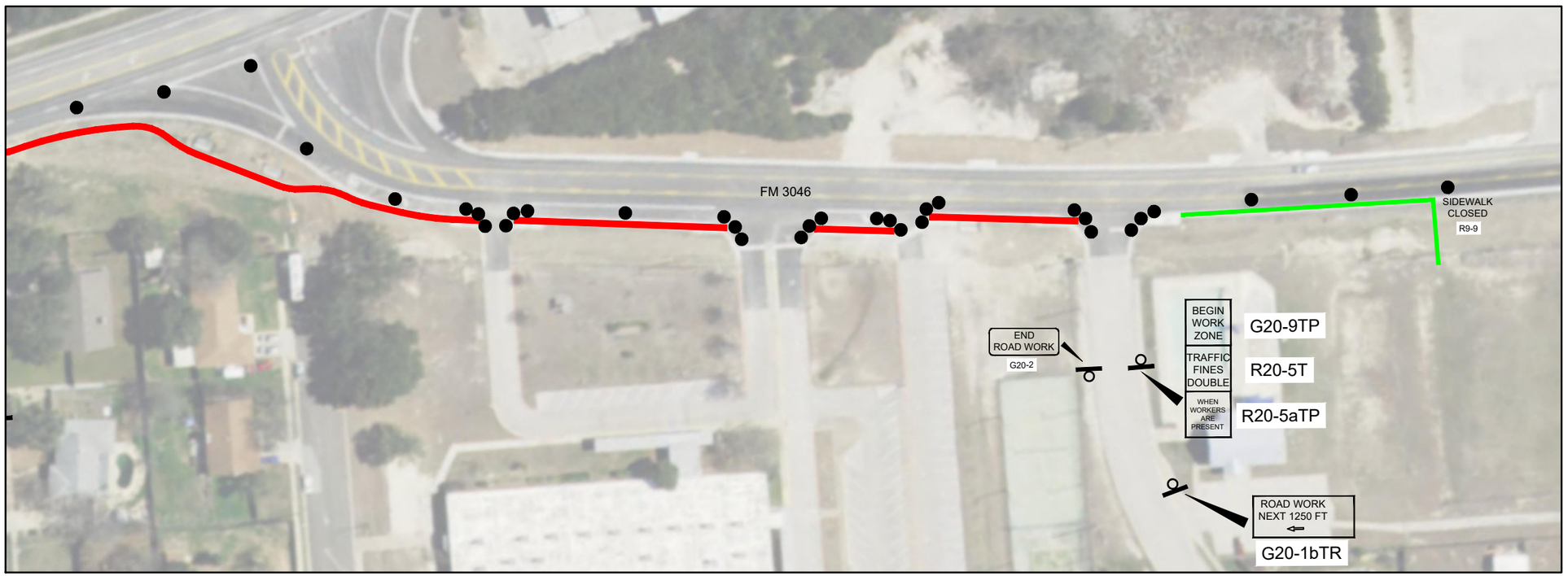
CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05
TRAFFIC CONTROL PLAN
FM 116, SHEET 3 OF 3

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.15
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046



50 25 0 50 100

SCALE IN FEET

LEGEND

- 10' PED/BIKE SHARED PATH
- CONCRETE DRIVEWAY
- 6' PEDESTRIAN SIDEWALK

NOTE:

TRAFFIC CONTROL TO BE IN ACCORDANCE WITH TxDOT APPLICABLE STANDARD

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
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BSP PROJECT: 172384.00

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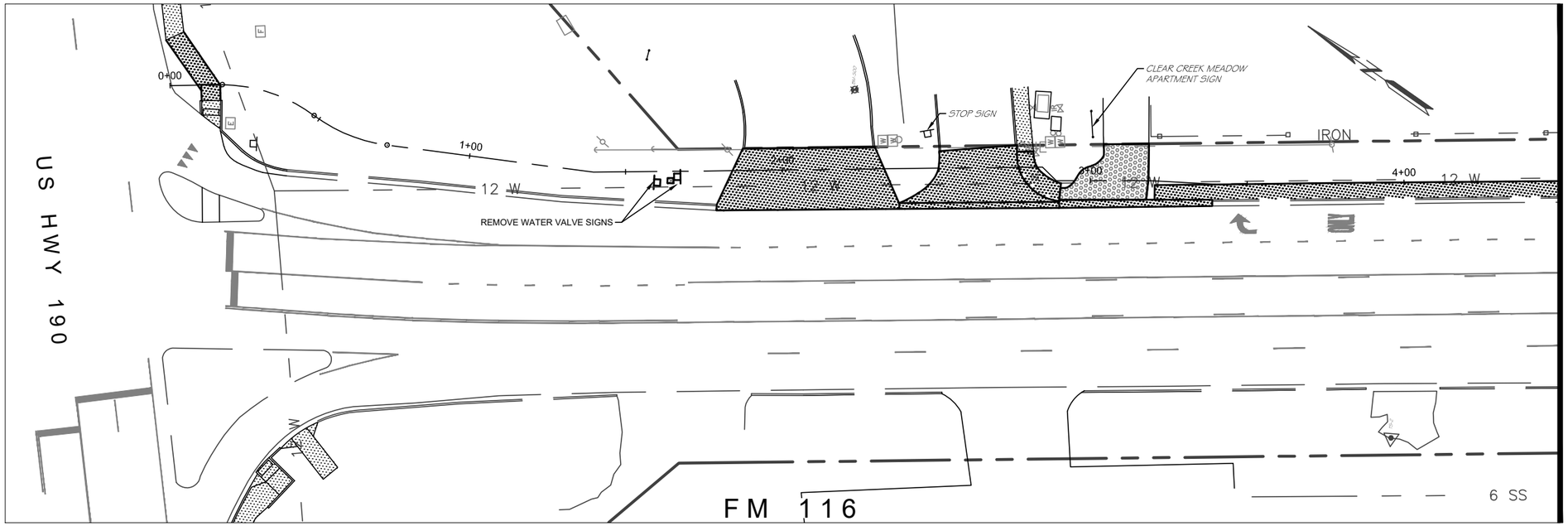
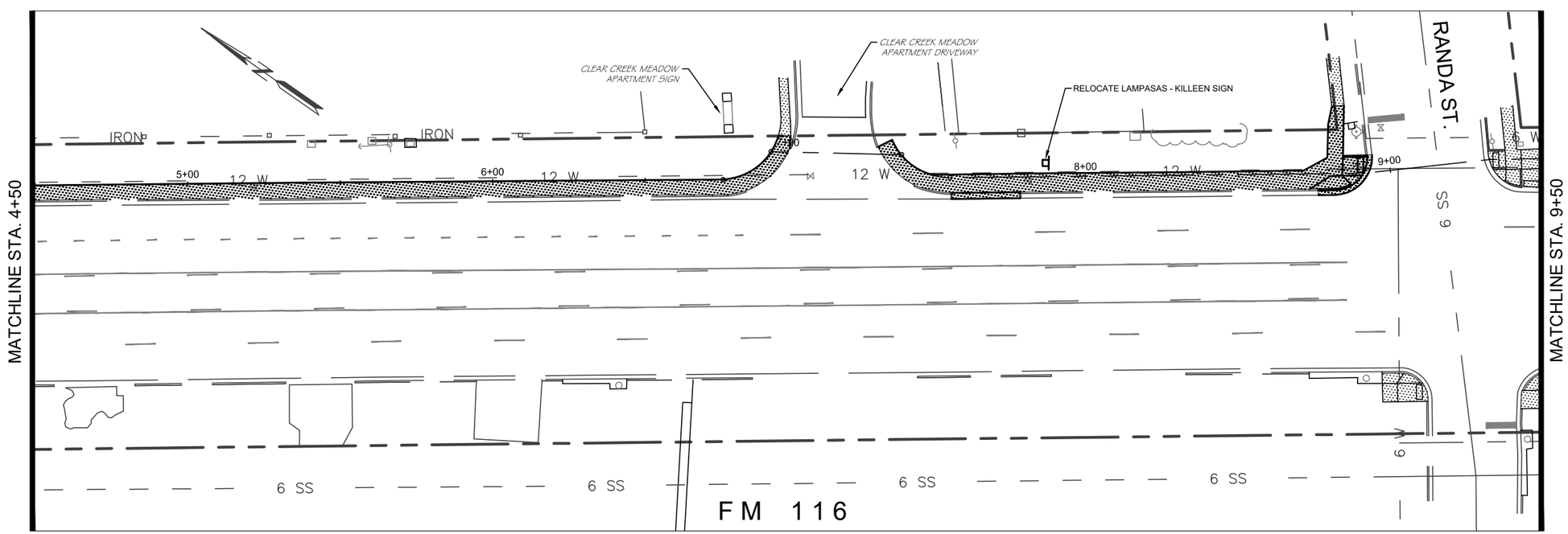
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05
TRAFFIC CONTROL PLAN
FM 3046

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.16
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

TRAFFIC CONTROL FM 3046 / CSJ 3131-01-007





20 10 0 20 40

SCALE IN FEET

LEGEND:

- LIMITS OF CONCRETE REMOVAL
- LIMITS OF ASPHALT PAVEMENT REMOVAL
- LIMITS OF BRICK PAVER REMOVAL
- EXISTING ROW

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
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BSP engineers

TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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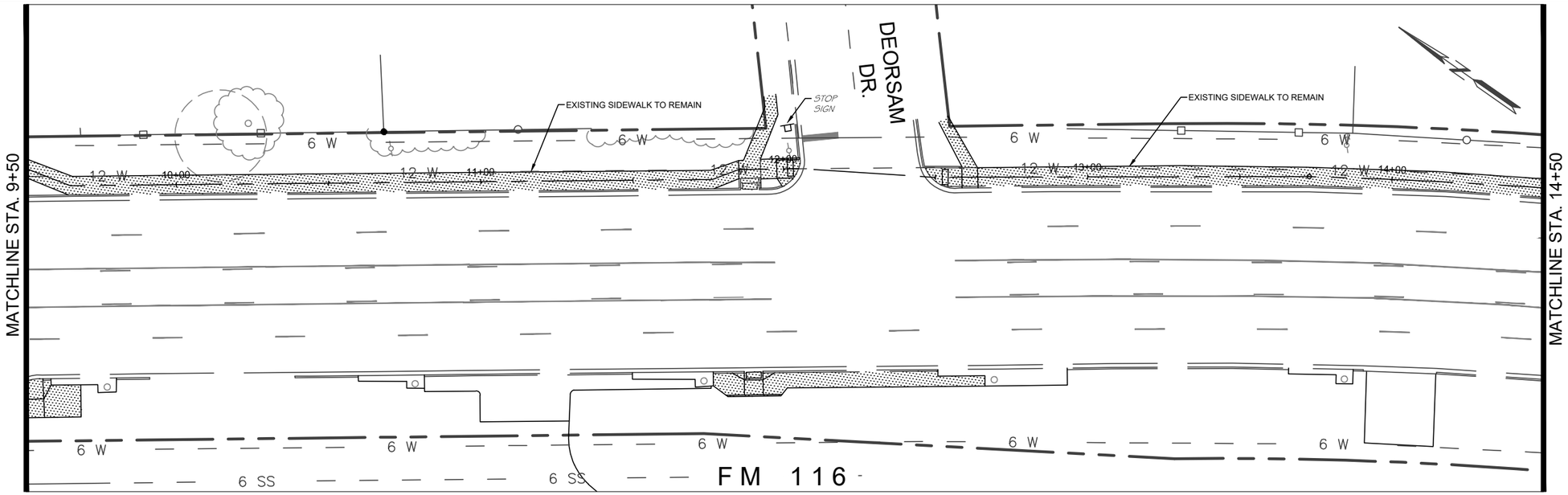
CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

REMOVAL PLAN FM 116
STA. 0+00-9+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.17
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046



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SCALE IN FEET

LEGEND:

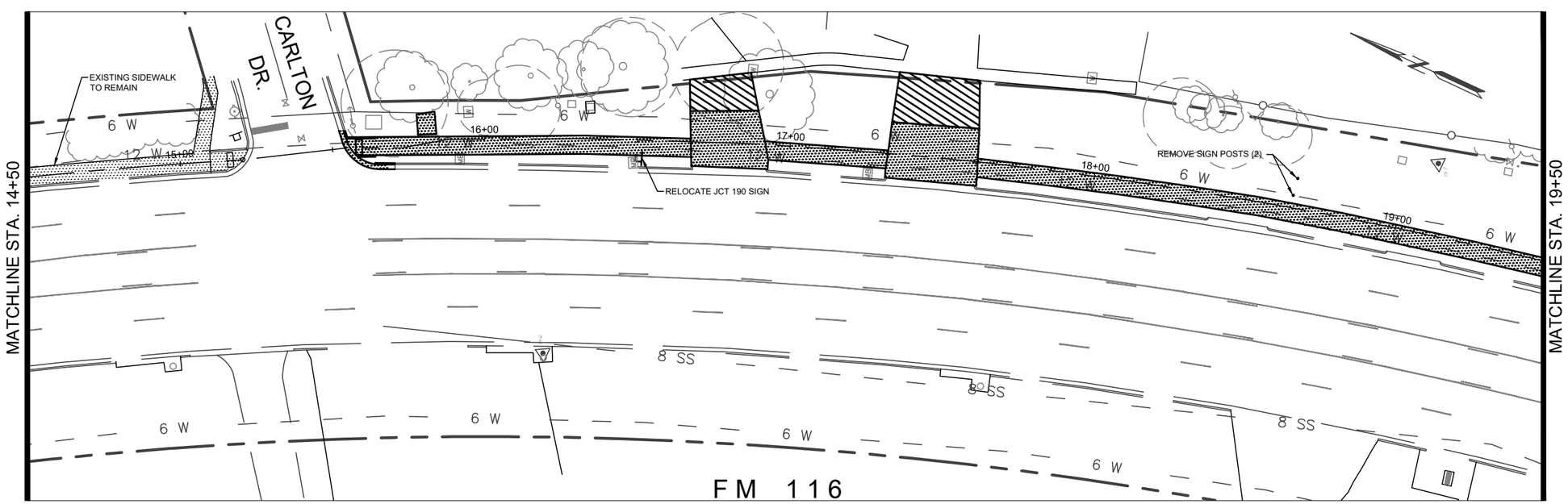
- LIMITS OF CONCRETE REMOVAL
- LIMITS OF ASPHALT PAVEMENT REMOVAL
- LIMITS OF BRICK PAVER REMOVAL
- EXISTING ROW

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

NOTE:

NO SIDEWALK IMPROVEMENTS ARE PLANNED IN THIS PROJECT BETWEEN RANDA STREET AND CARLTON DRIVE.



Anthony D. Beach
SIGNATURE

BSP engineers
TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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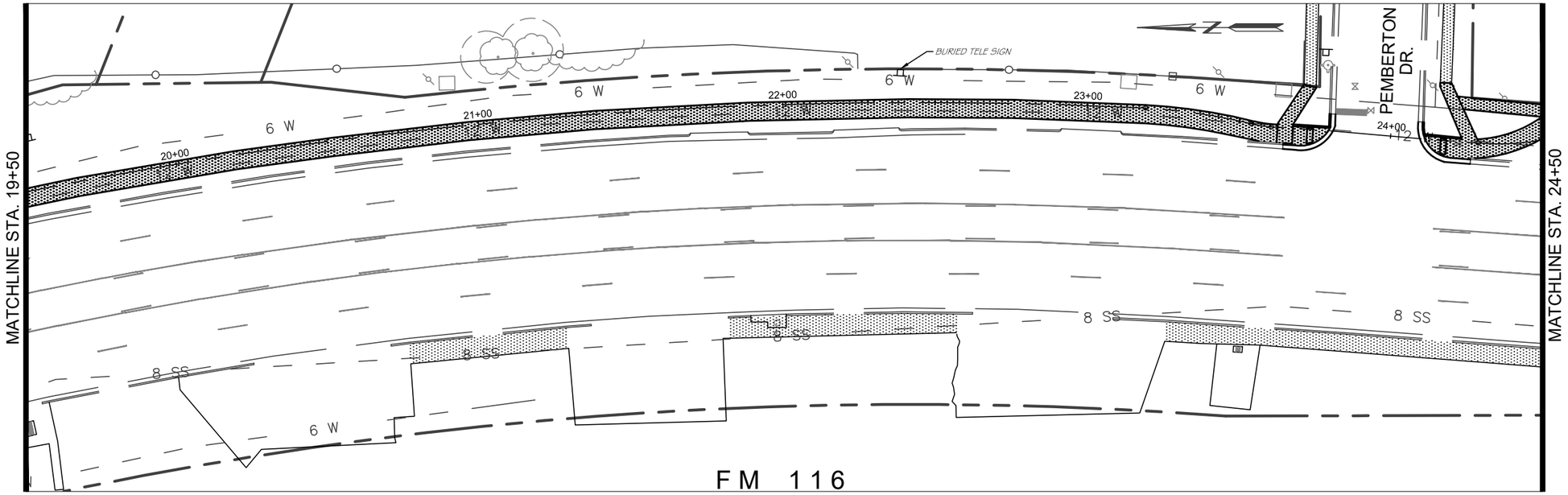
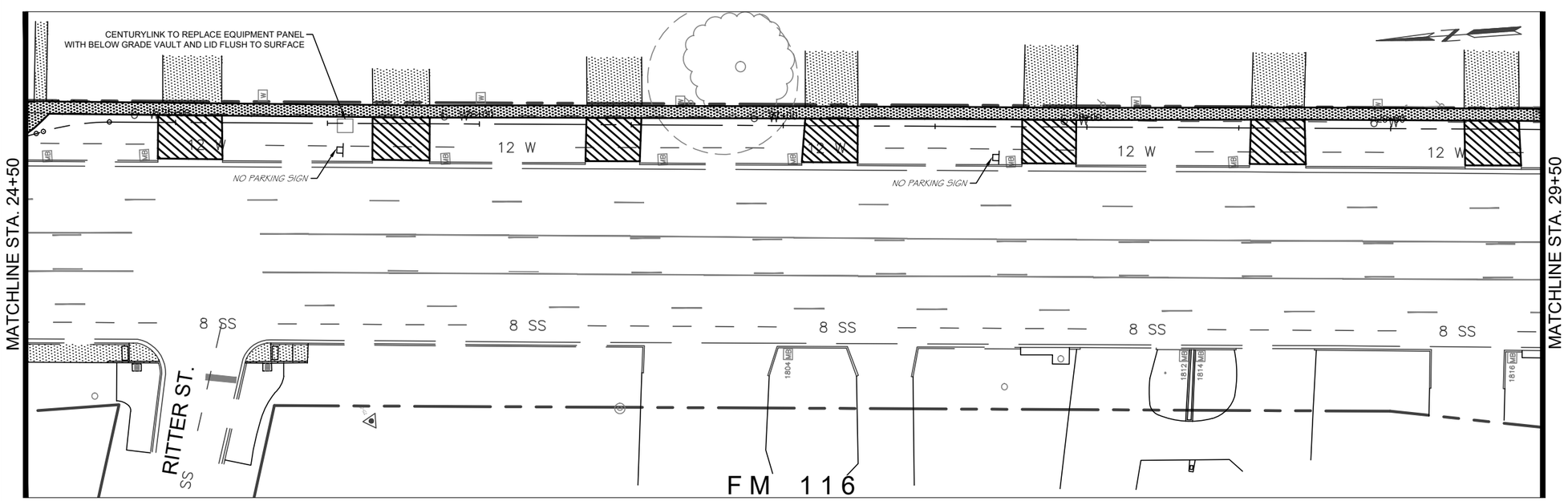
CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

REMOVAL PLAN FM 116
STA. 9+50-19+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.18
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046





20 10 0 20 40

SCALE IN FEET

LEGEND:

- LIMITS OF CONCRETE REMOVAL
- LIMITS OF ASPHALT PAVEMENT REMOVAL
- LIMITS OF BRICK PAVER REMOVAL
- EXISTING ROW

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
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Anthony D. Beach
SIGNATURE

BSP engineers

TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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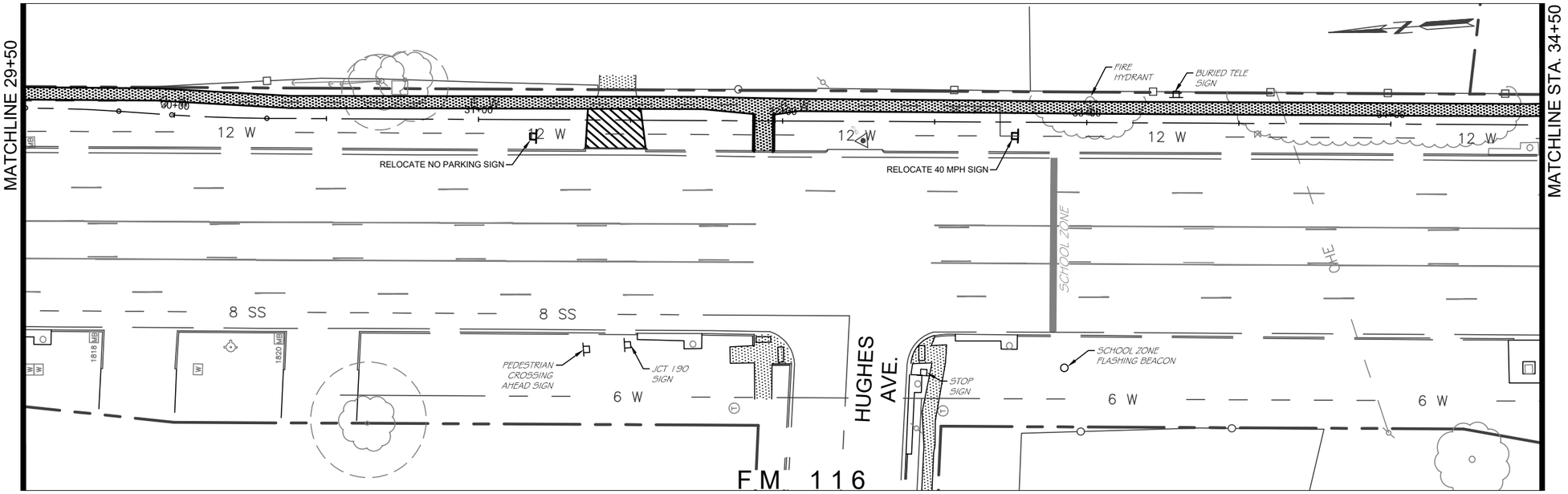
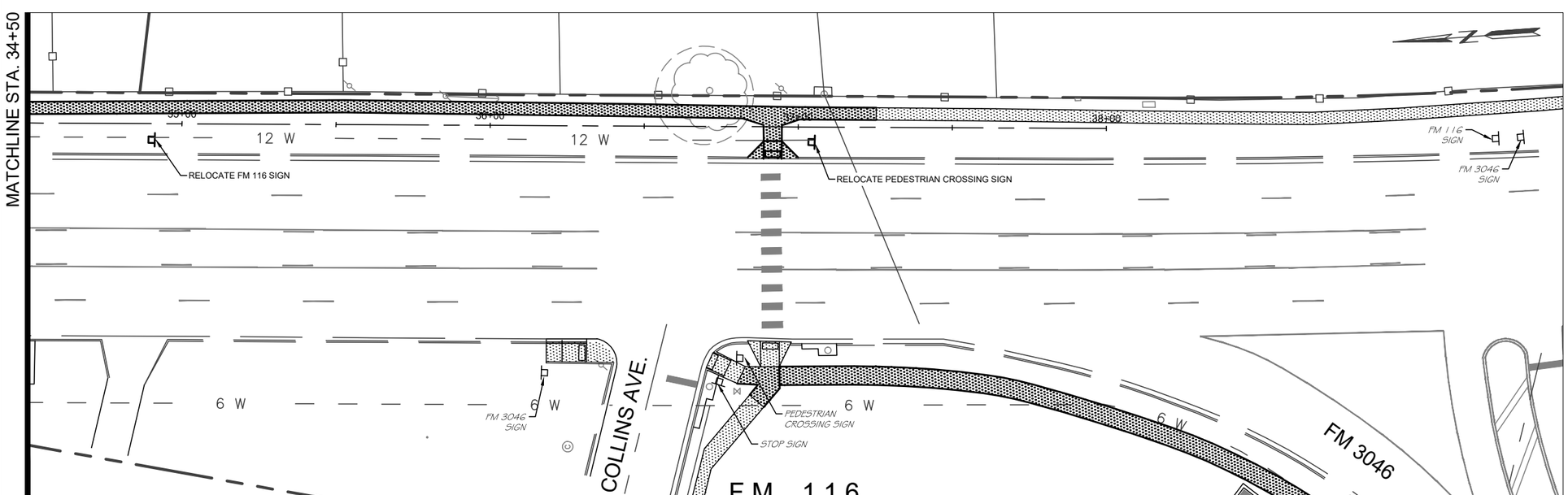
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

REMOVAL PLAN FM 116
STA. 19+50-29+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.19
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046





20 10 0 20 40

SCALE IN FEET

LEGEND:

- LIMITS OF CONCRETE REMOVAL
- LIMITS OF ASPHALT PAVEMENT REMOVAL
- LIMITS OF BRICK PAVER REMOVAL
- EXISTING ROW

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE

BSP engineers

TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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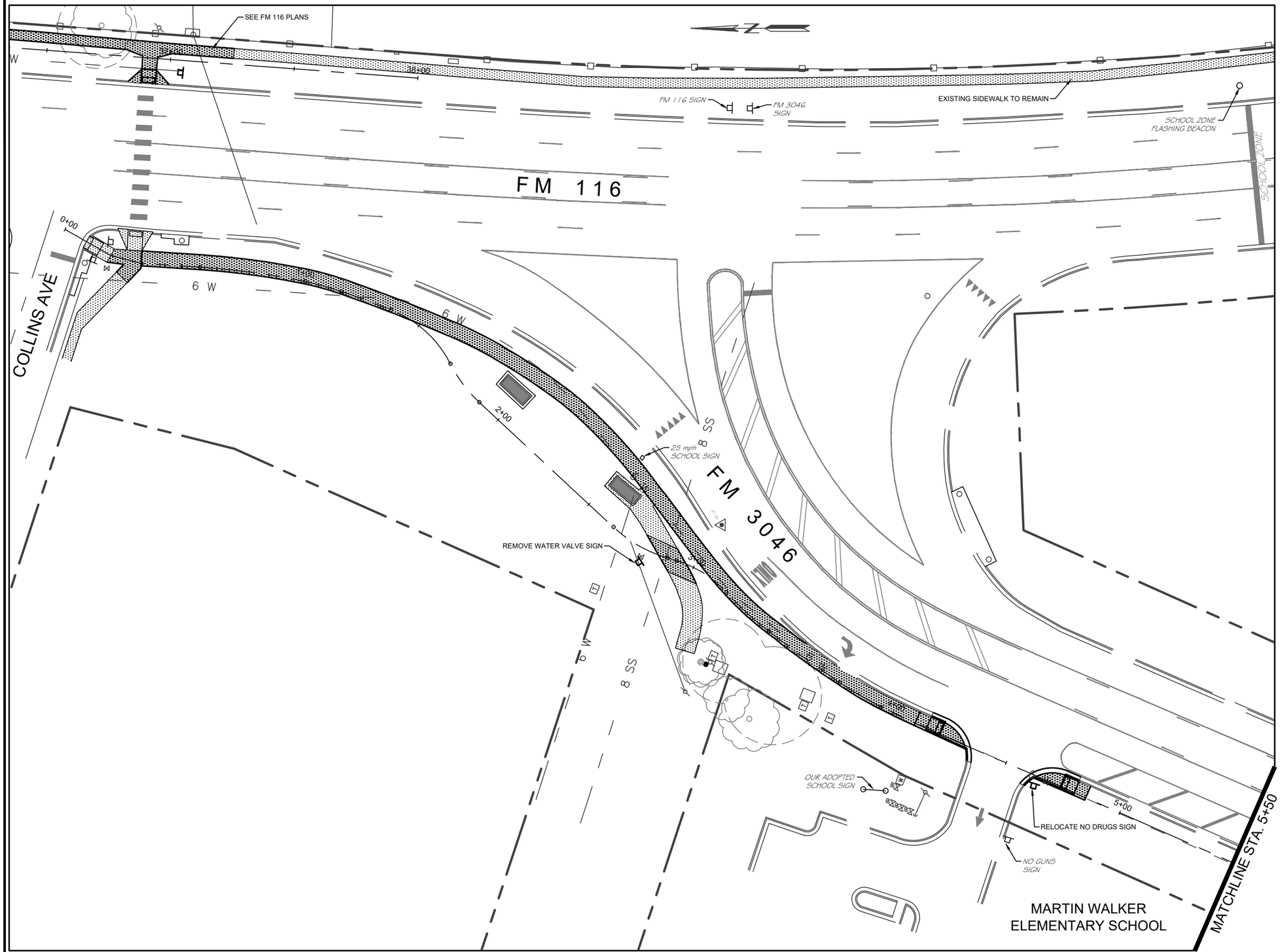
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

REMOVAL PLAN FM 116
STA. 29+50-END

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.20
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046



20 10 0 20 40

SCALE IN FEET

LEGEND:

LIMITS OF CONCRETE REMOVAL

LIMITS OF ASPHALT PAVEMENT REMOVAL

EXISTING ROW

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED PROFESSIONAL ENGINEER

Anthony D. Beach
SIGNATURE

BSP engineers

TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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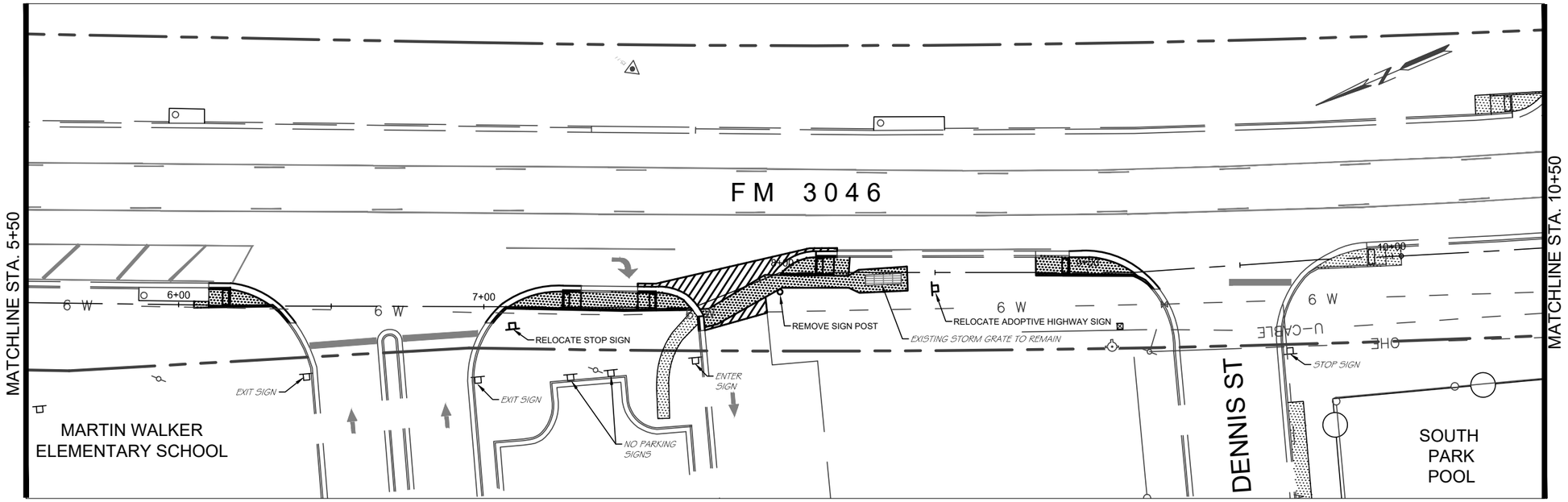
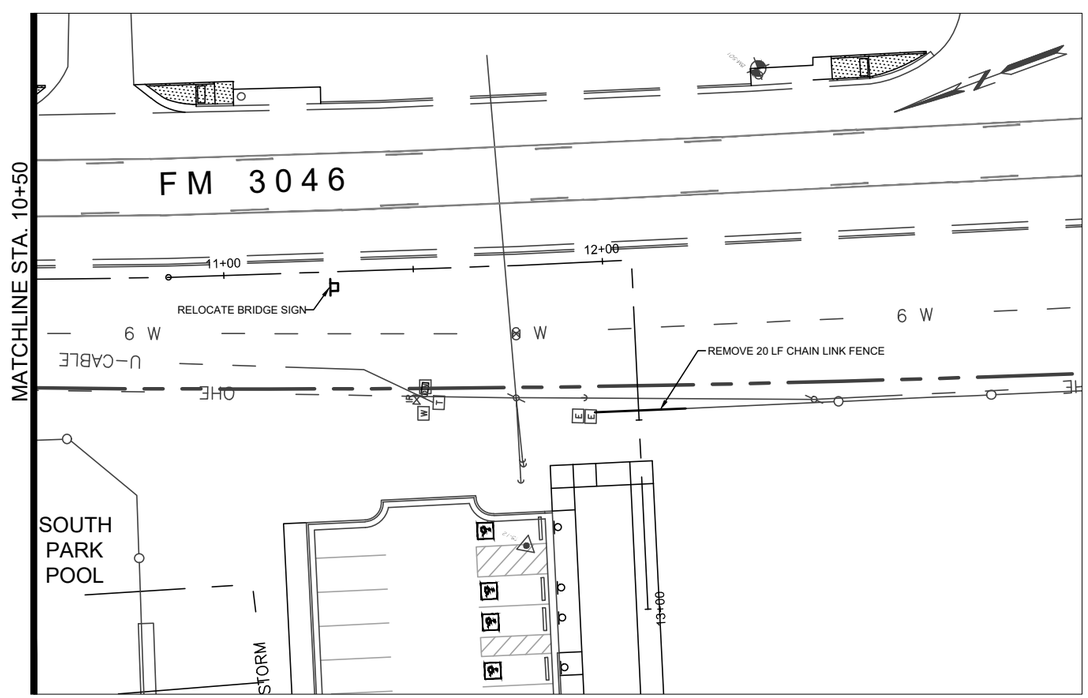
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

REMOVAL PLAN FM 3046
STA. 0+00-5+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.21
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046





20 10 0 20 40

SCALE IN FEET

LEGEND:

LIMITS OF CONCRETE REMOVAL

LIMITS OF ASPHALT PAVEMENT REMOVAL

EXISTING ROW

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE

BSP engineers

TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

Copperas Cove

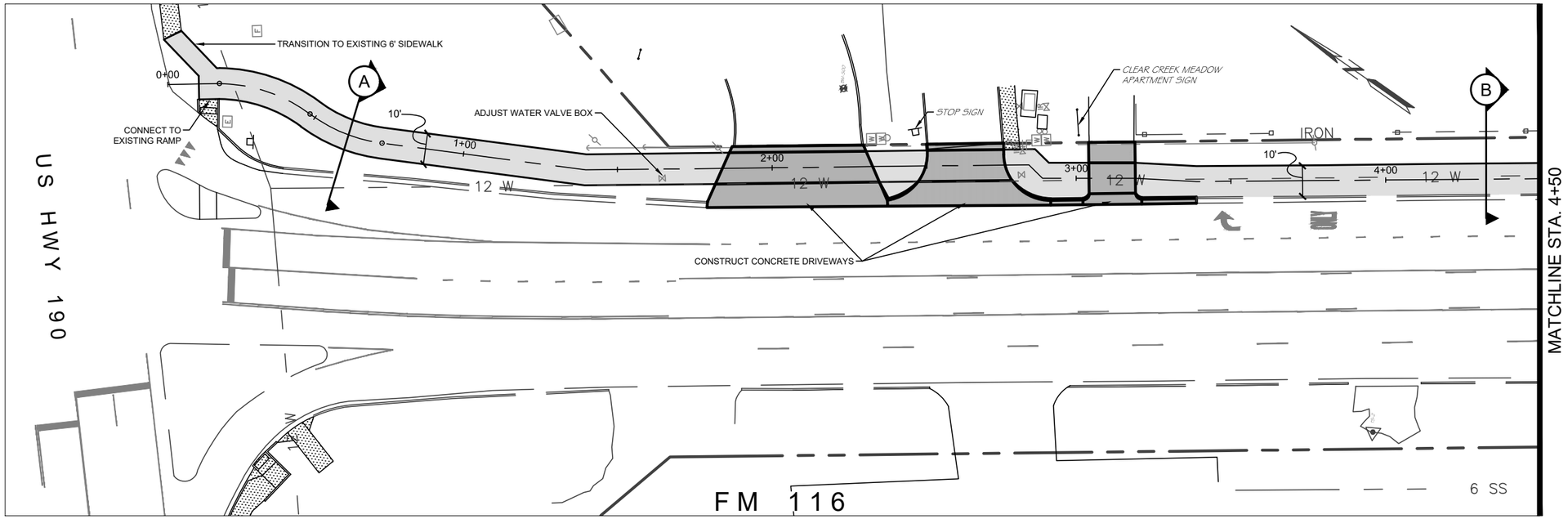
COPPERAS COVE, TEXAS

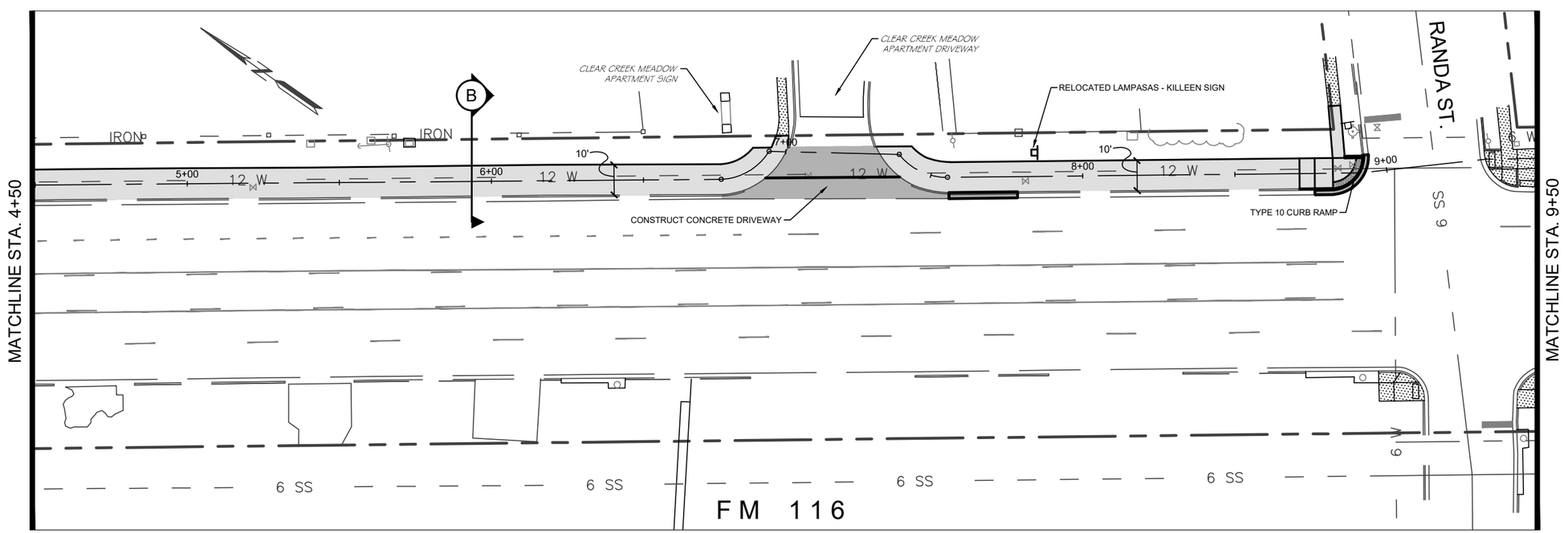
Texas Department of Transportation

CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

REMOVAL PLAN FM 3046
STA. 5+50-END

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		1.22
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046





20 10 0 20 40

SCALE IN FEET

LEGEND:

- EXTENTS OF PROPOSED SIDEWALK
- EXTENTS OF CONCRETE DRIVEWAY
- EXISTING CONCRETE SIDEWALK
- EXISTING ROW
- A — TYPICAL SECTION

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE

BSP engineers

TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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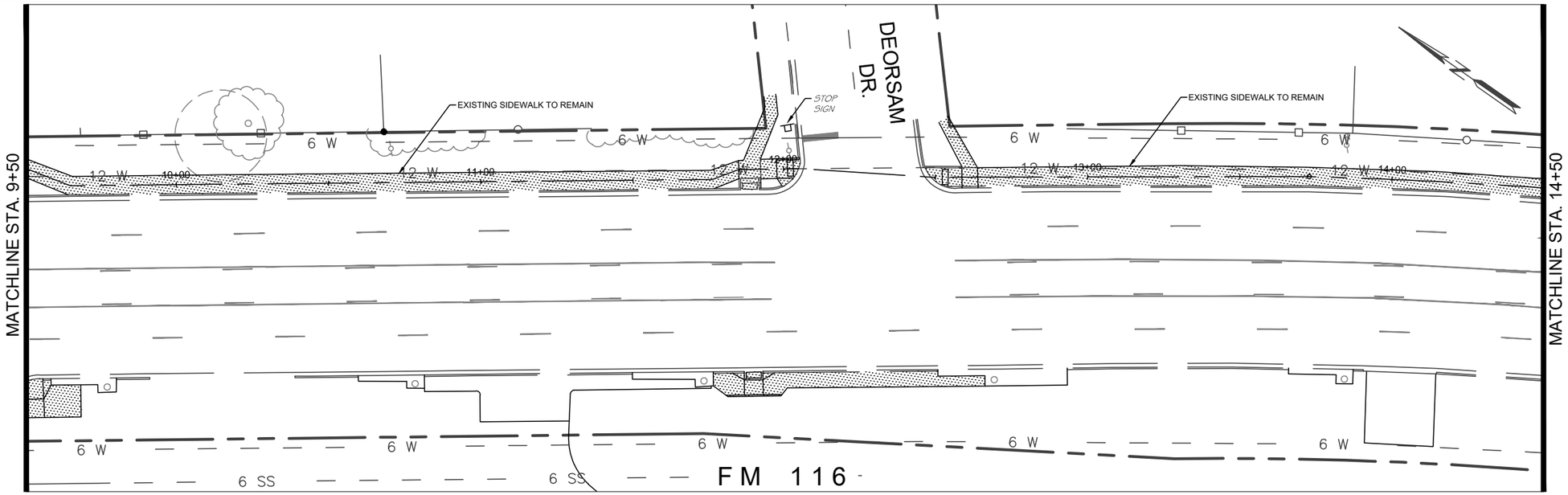
CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

SIDEWALK PLAN FM 116
STA. 0+00-9+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		2.1
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046



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SCALE IN FEET

LEGEND:

- EXTENTS OF PROPOSED SIDEWALK
- EXTENTS OF CONCRETE DRIVEWAY
- EXISTING CONCRETE SIDEWALK
- EXISTING ROW
- (A) TYPICAL SECTION

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
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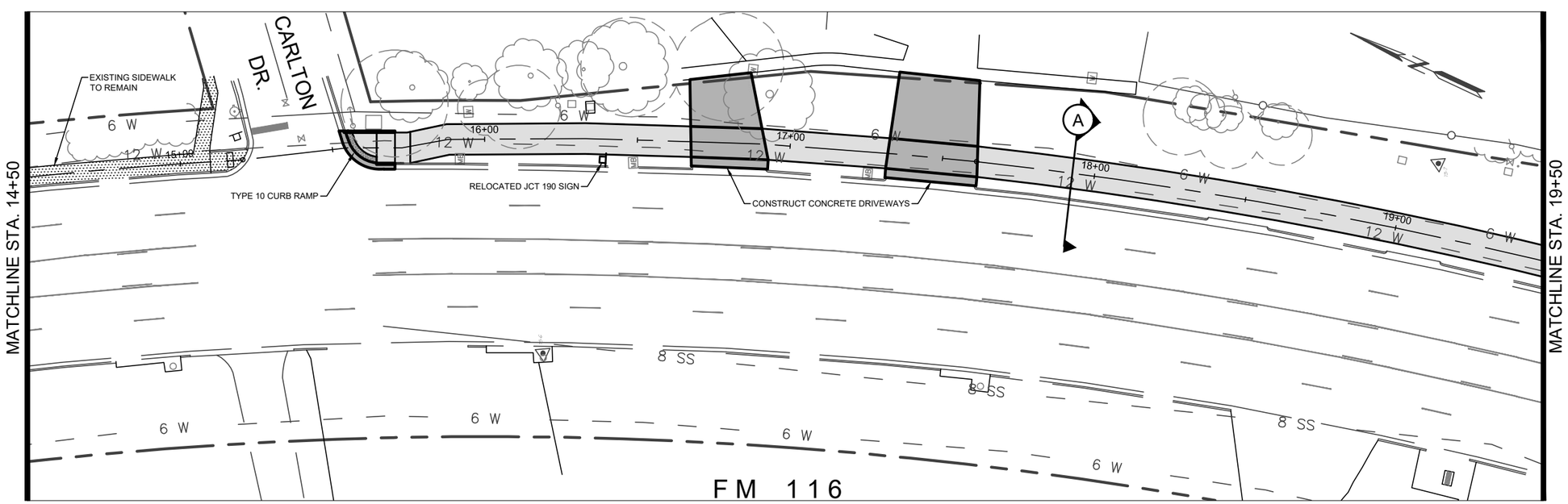
PROFESSIONAL ENGINEER

NOTE:

NO SIDEWALK IMPROVEMENTS ARE PLANNED IN THIS PROJECT BETWEEN RANDA STREET AND CARLTON DRIVE.



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BSP PROJECT: 172384.00

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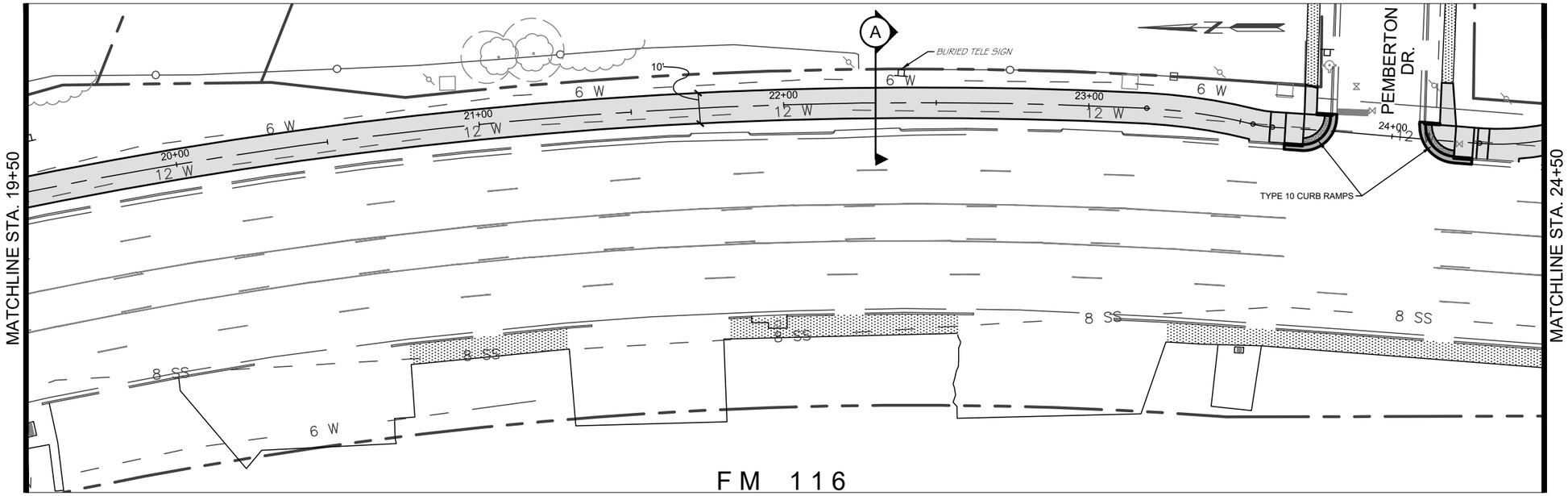
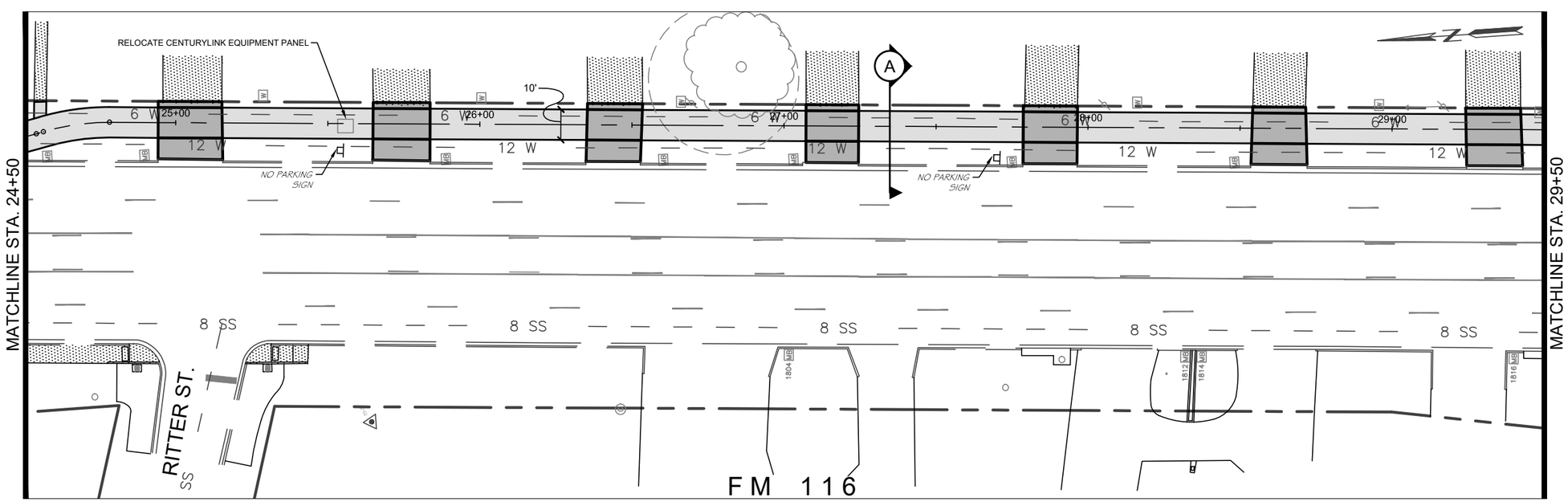
CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

SIDEWALK PLAN FM 116
STA. 9+50-19+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		2.2
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046





20 10 0 20 40

SCALE IN FEET

LEGEND:

- EXTENTS OF PROPOSED SIDEWALK
- EXTENTS OF CONCRETE DRIVEWAY
- EXISTING CONCRETE SIDEWALK
- EXISTING ROW
- (A) TYPICAL SECTION

10-17-2019

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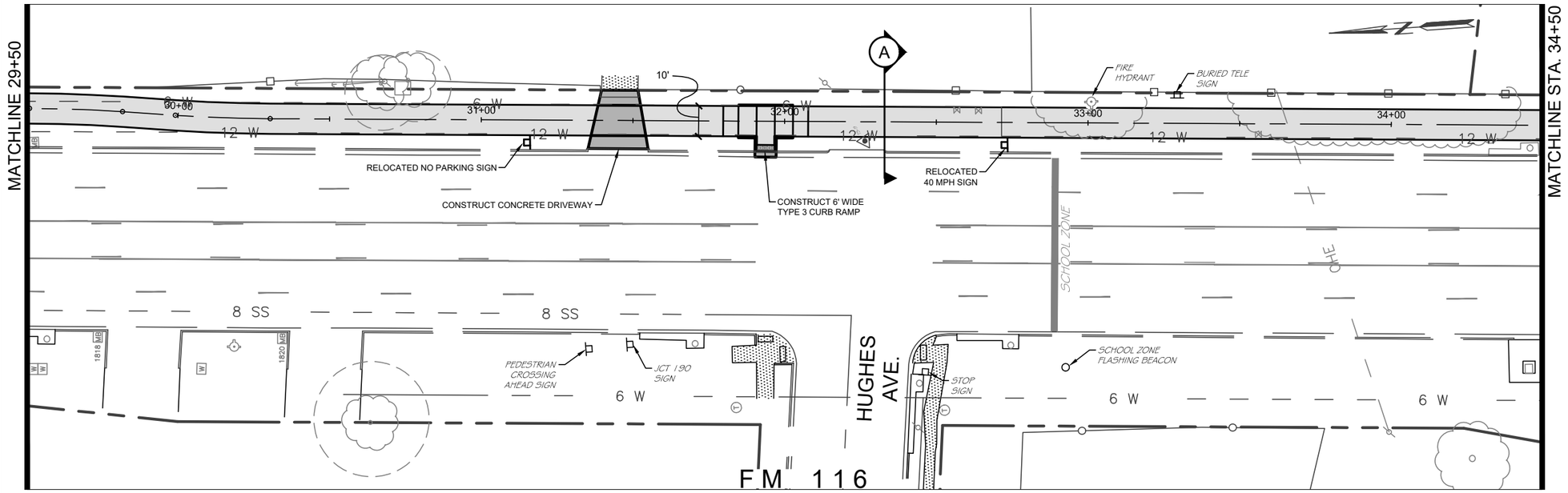
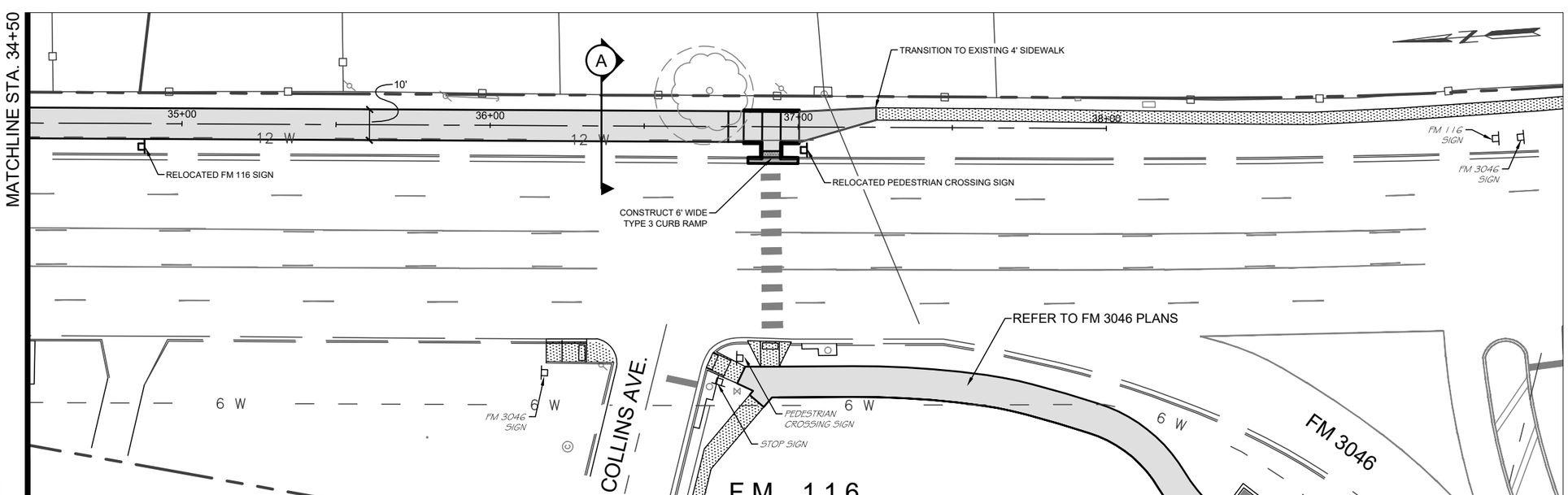
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

SIDEWALK PLAN FM 116
STA. 19+50-29+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		2.3
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046





20 10 0 20 40

SCALE IN FEET

LEGEND:

- EXTENTS OF PROPOSED SIDEWALK
- EXTENTS OF CONCRETE DRIVEWAY
- EXISTING CONCRETE SIDEWALK
- EXISTING ROW
- A TYPICAL SECTION

10-17-2019

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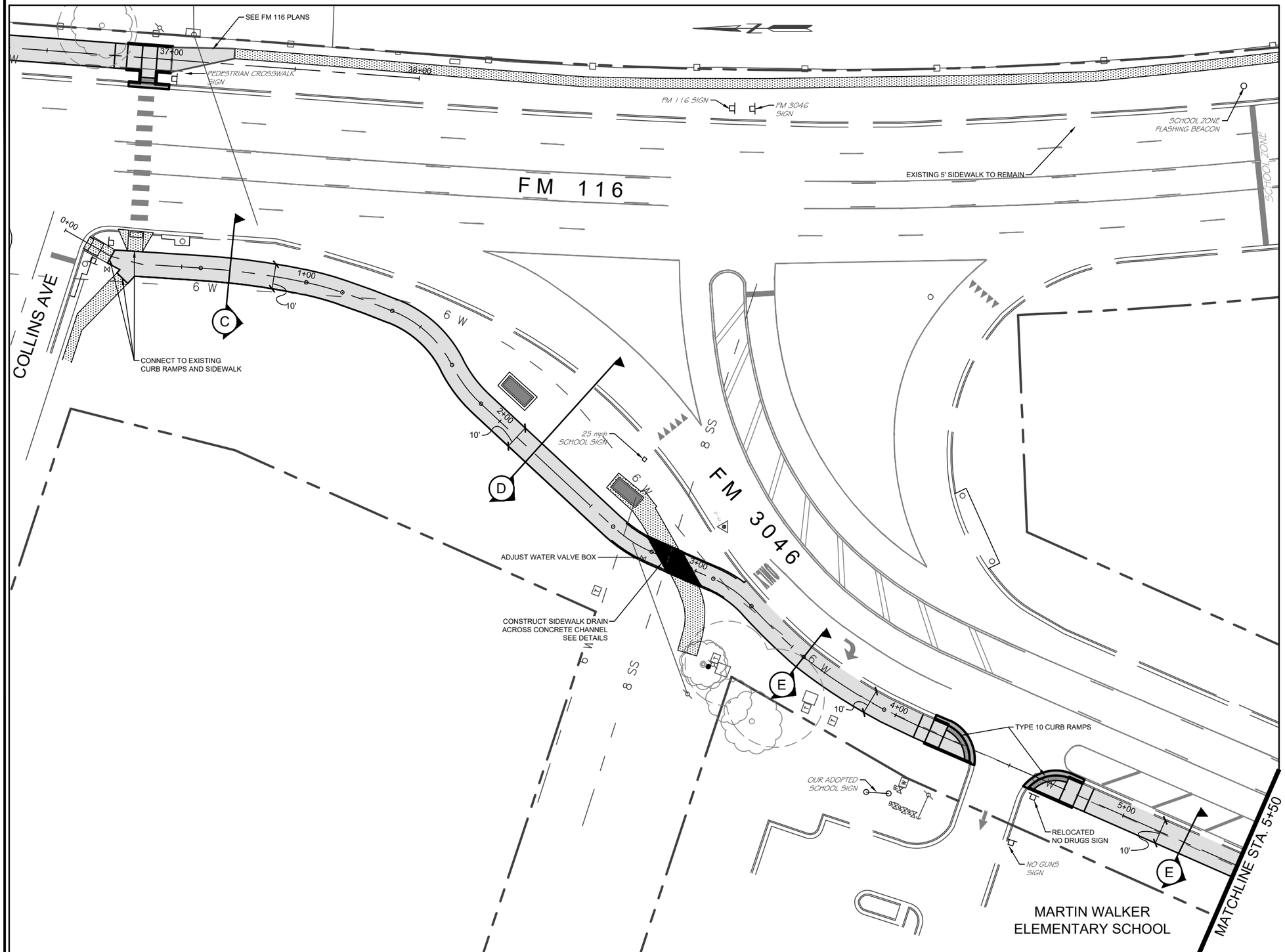
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

SIDEWALK PLAN FM 116
STA. 29+50-END

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		2.4
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046



20 10 0 20 40

SCALE IN FEET

LEGEND:

- EXTENTS OF PROPOSED SIDEWALK
- EXTENTS OF CONCRETE DRIVEWAY
- EXISTING CONCRETE SIDEWALK
- EXISTING ROW
- (A) TYPICAL SECTION

10-17-2019

STATE OF TEXAS
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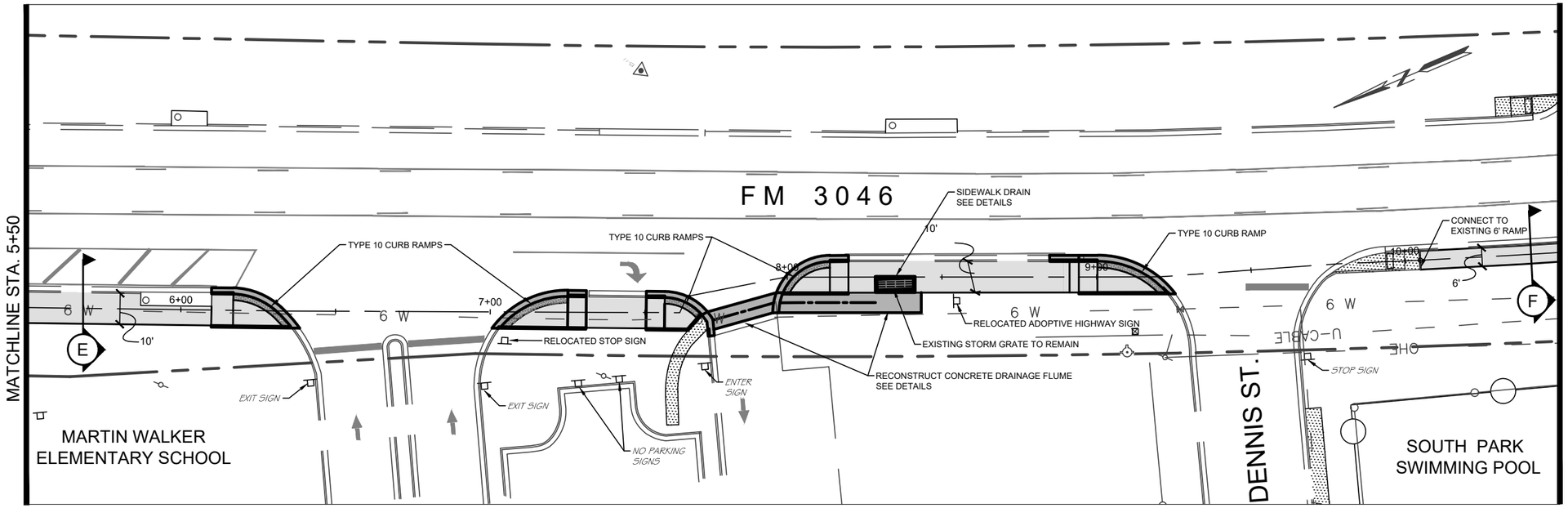
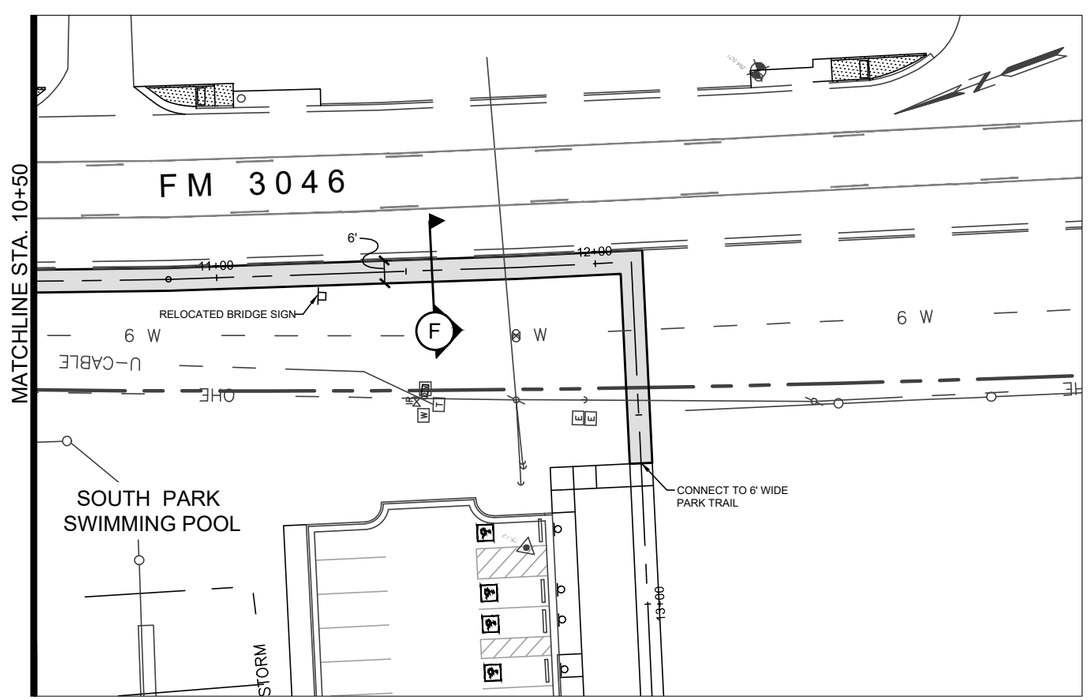
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

SIDEWALK PLAN FM 3406
STA. 0+00-5+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		2.5
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046





20 10 0 20 40

SCALE IN FEET

LEGEND:

- EXTENTS OF PROPOSED SIDEWALK
- EXTENTS OF CONCRETE DRIVEWAY
- EXISTING CONCRETE SIDEWALK
- EXISTING ROW
- (A) TYPICAL SECTION

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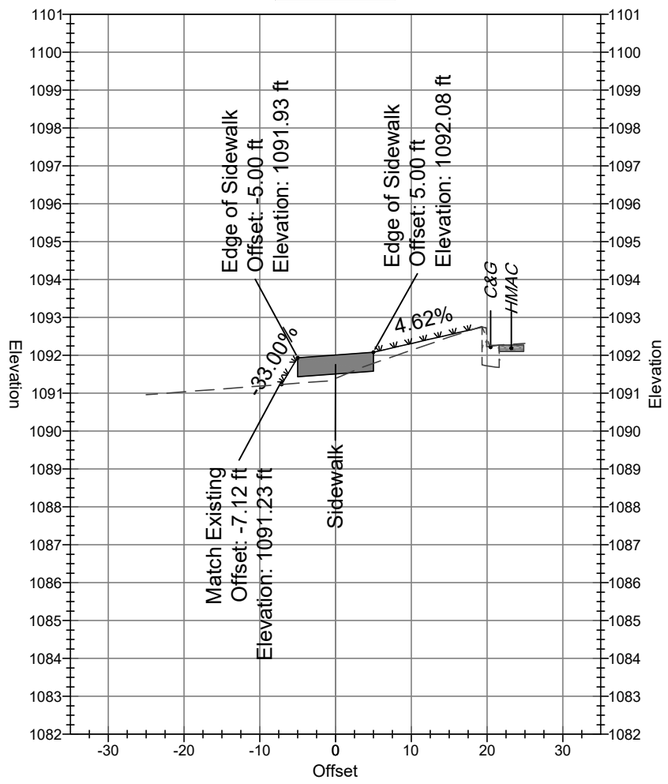
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

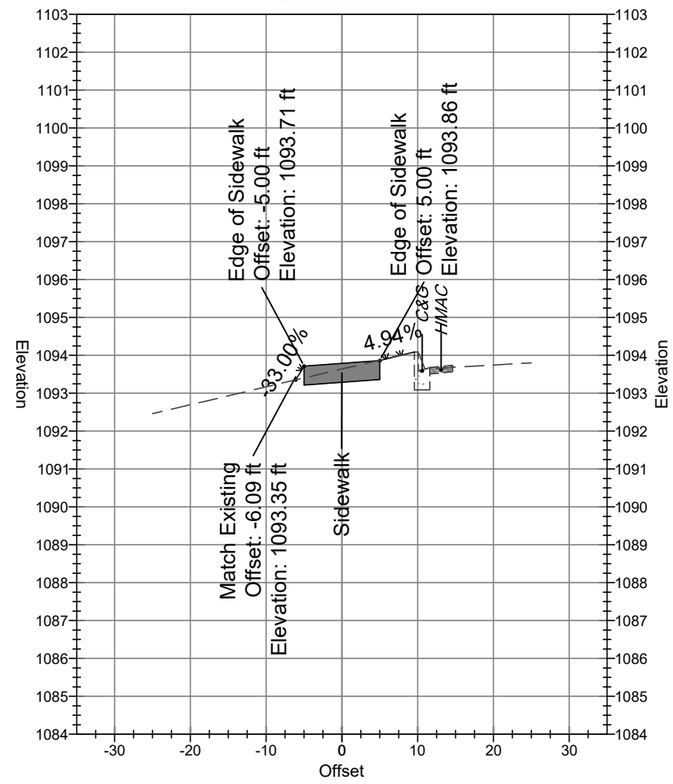
SIDEWALK PLAN FM 3406
STA. 5+50-END

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		2.6
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

0+50.00



1+00.00



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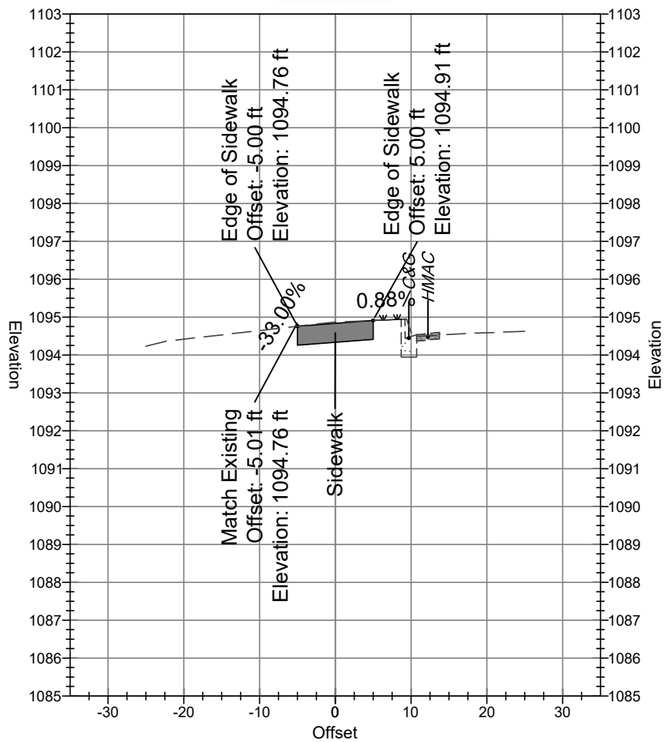
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

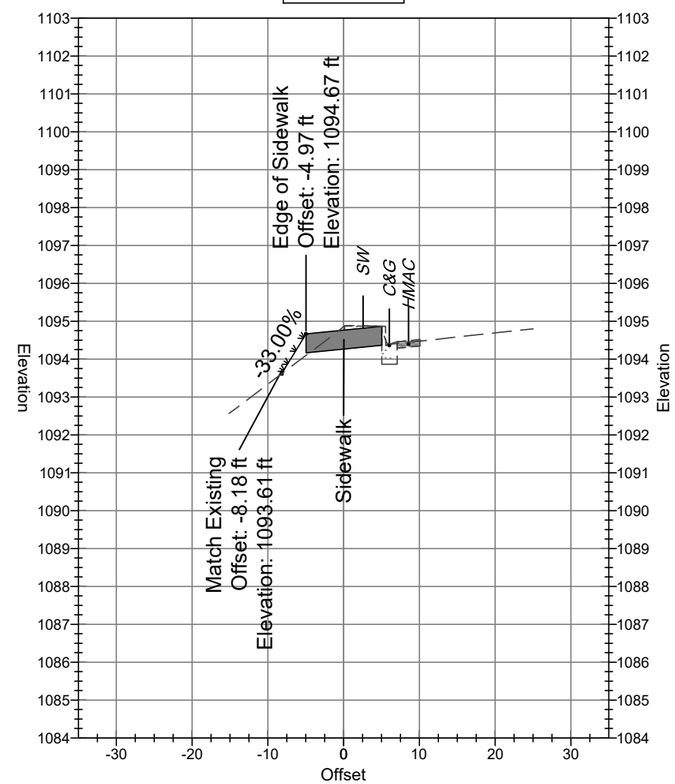
CROSS SECTIONS FM 116
STA. 0+50 - STA. 1+00

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.1
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

1+50.00



3+50.00



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STATE OF TEXAS
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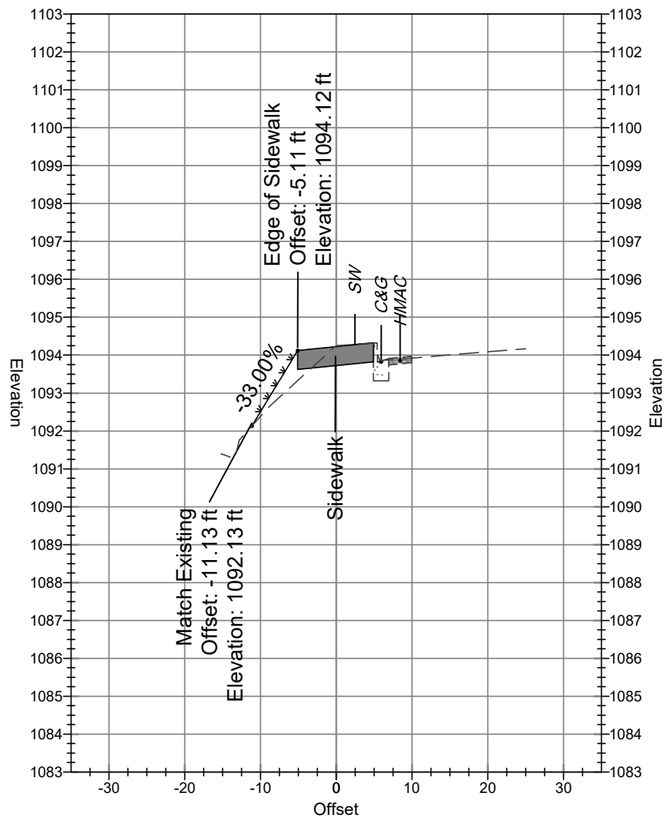
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

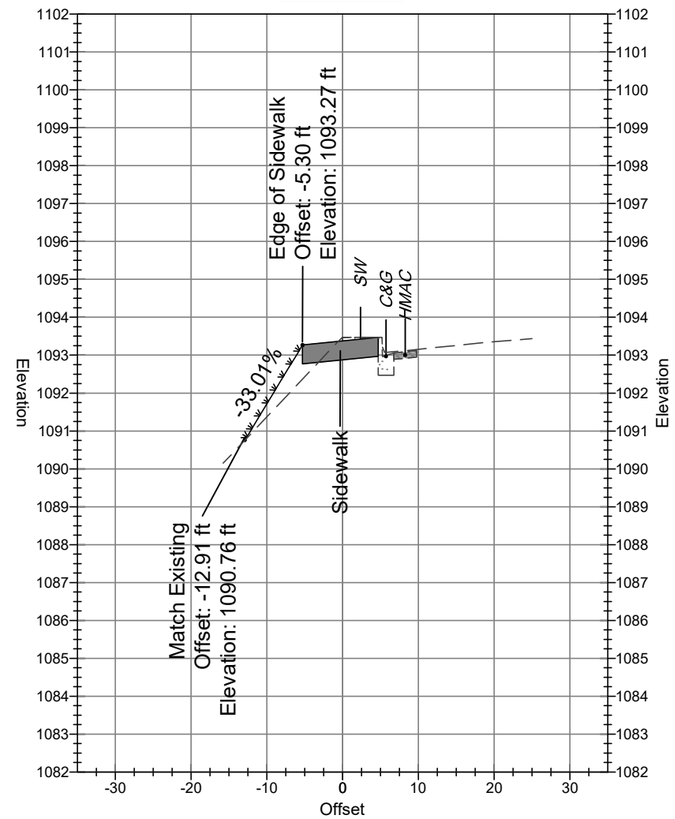
CROSS SECTIONS FM 116
STA. 1+50 - STA. 3+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.2
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

4+00.00



4+50.00



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STATE OF TEXAS
ANTHONY D. BEACH
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BSP PROJECT: 172384.00

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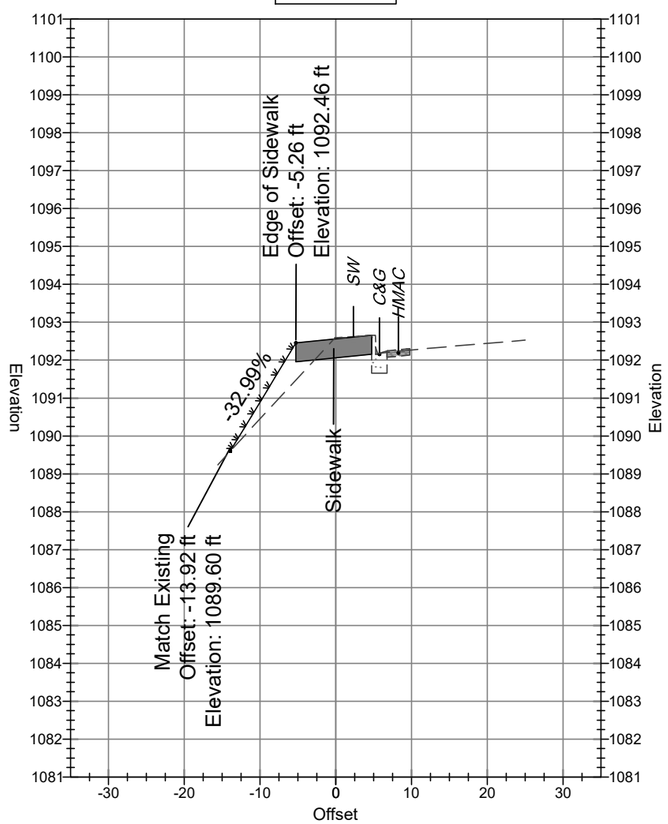
CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

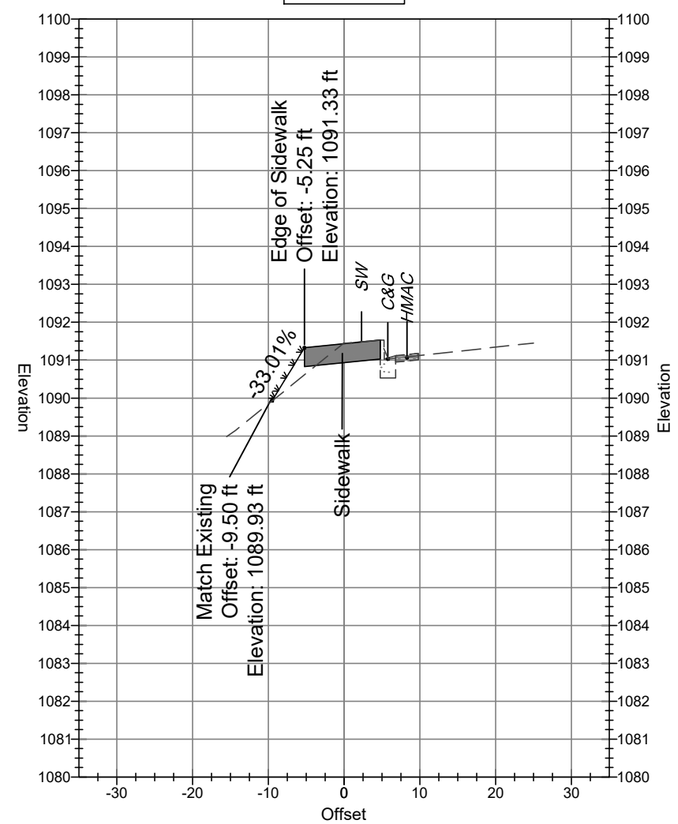
CROSS SECTIONS FM 116
STA. 4+00 - STA. 4+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.3
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

5+00.00



5+50.00



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STATE OF TEXAS
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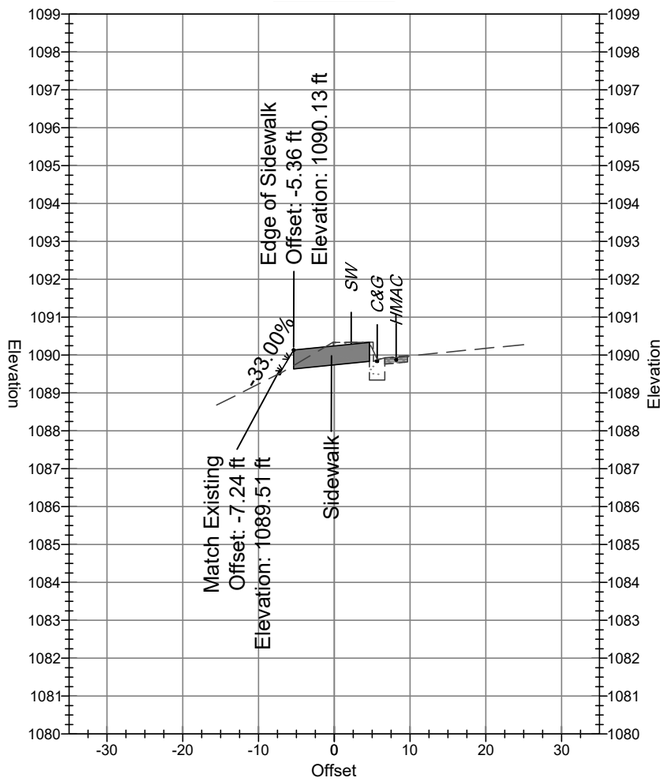
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

CROSS SECTIONS FM 116
STA. 5+00 - STA. 5+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.4
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

6+00.00



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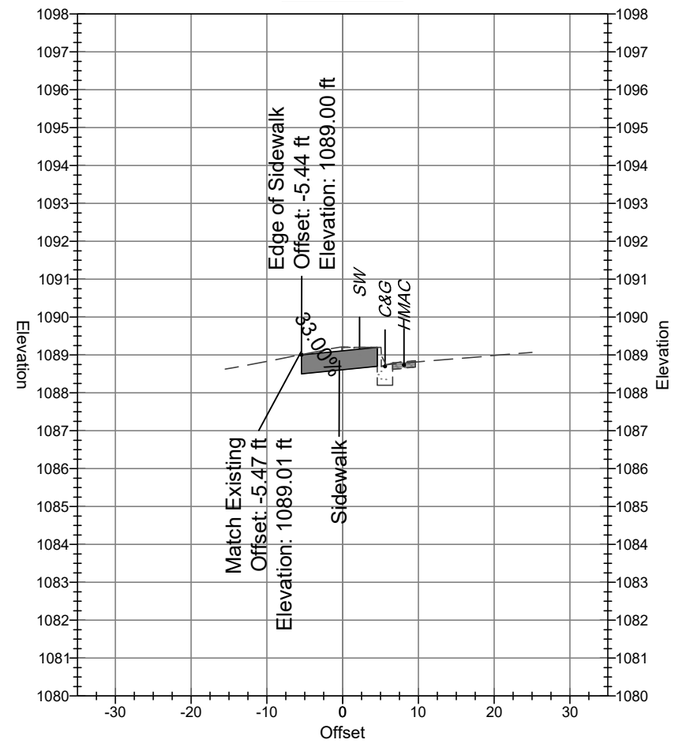

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STATE OF TEXAS
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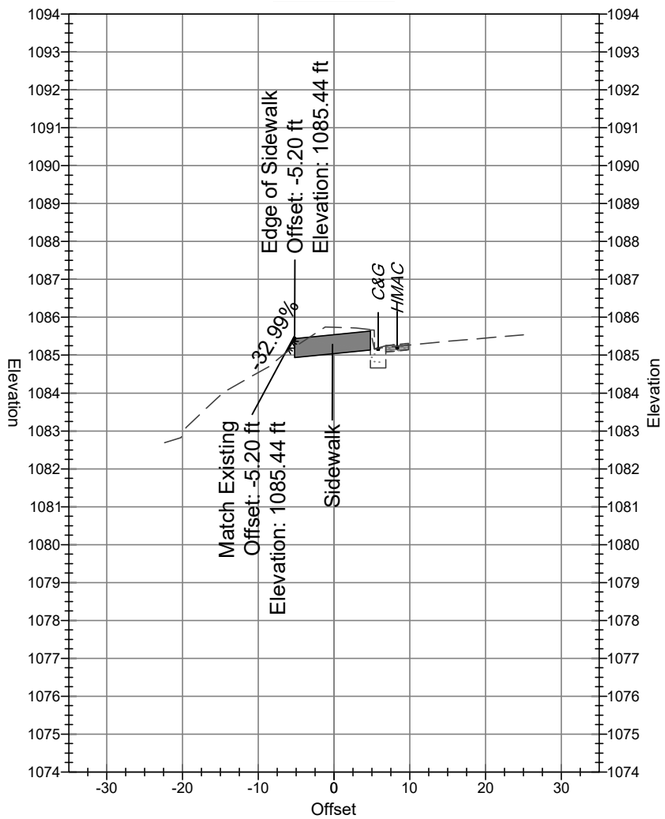
KTMPO ID: C40-05

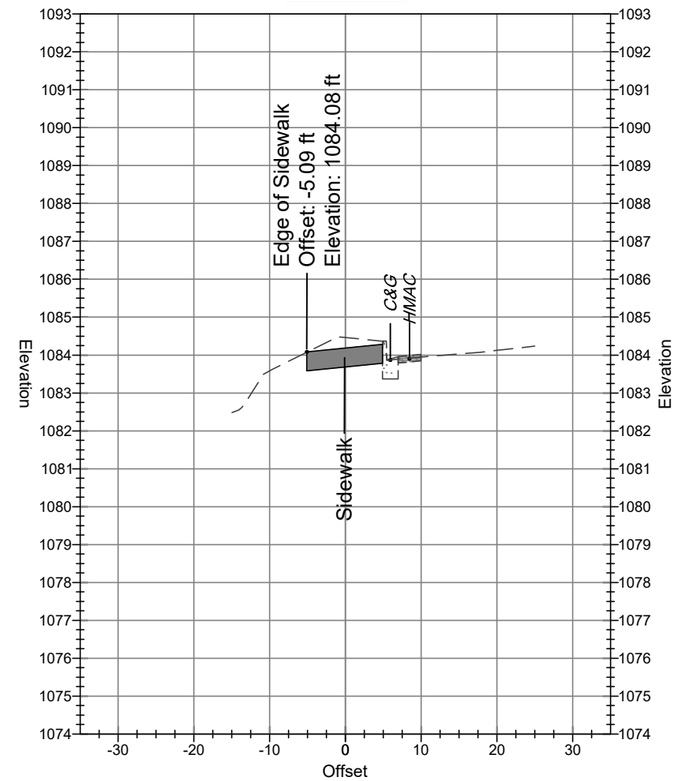
CROSS SECTIONS FM 116
STA. 6+00 - STA. 6+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.5
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

8+00.00



8+50.00



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STATE OF TEXAS
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TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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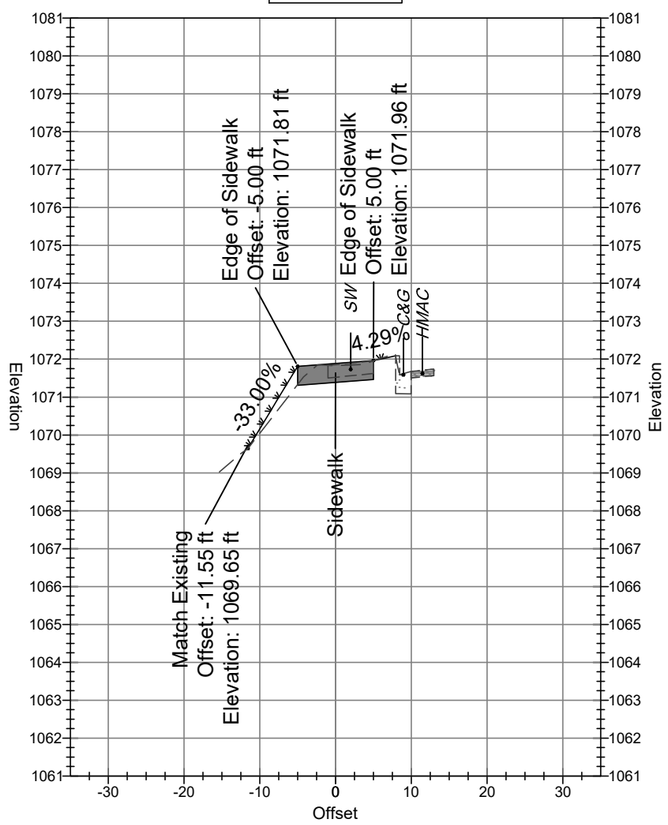
KTMPO ID: C40-05

CROSS SECTIONS FM 116
STA. 8+00 - STA. 8+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.6
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

16+00.00



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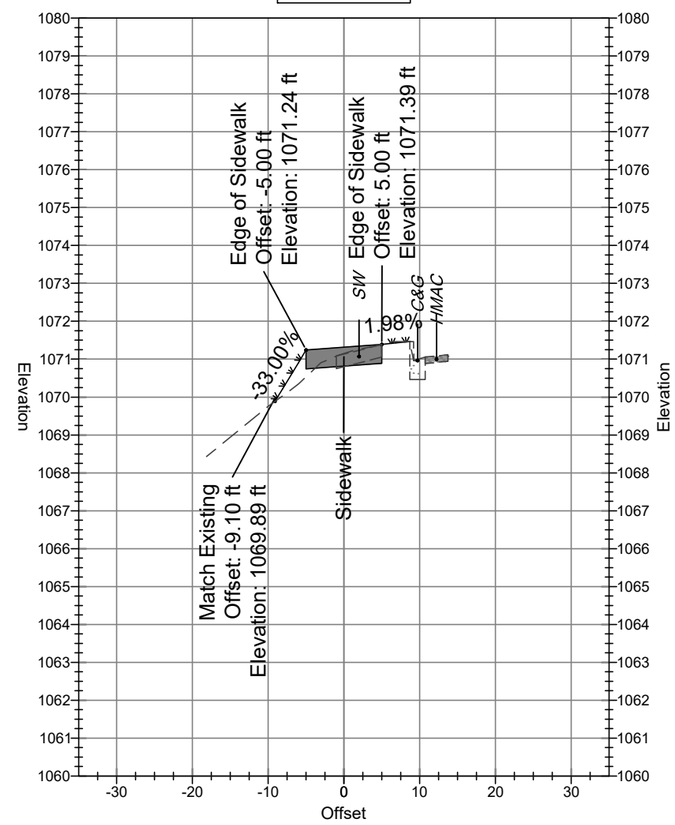

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STATE OF TEXAS
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BSP PROJECT: 172384.00

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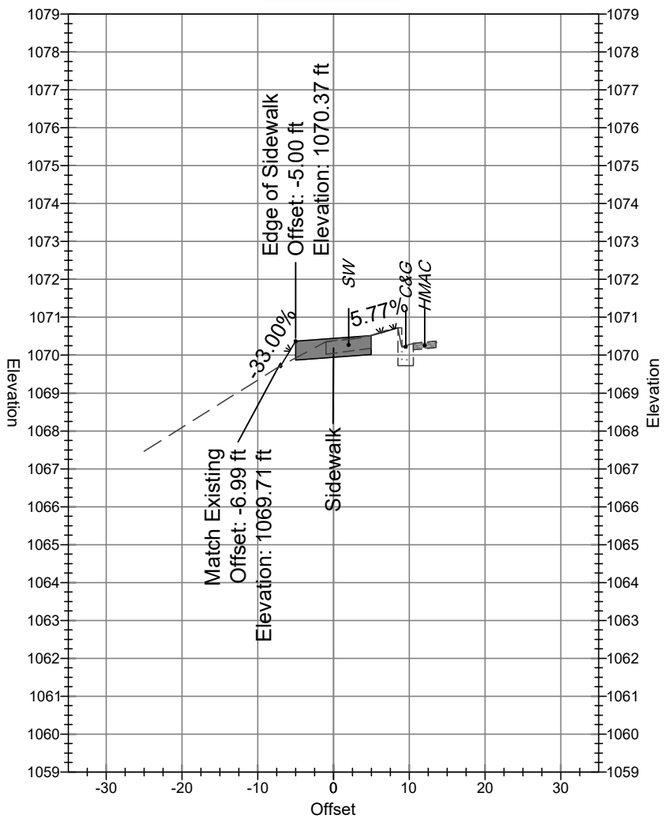
KTMPO ID: C40-05

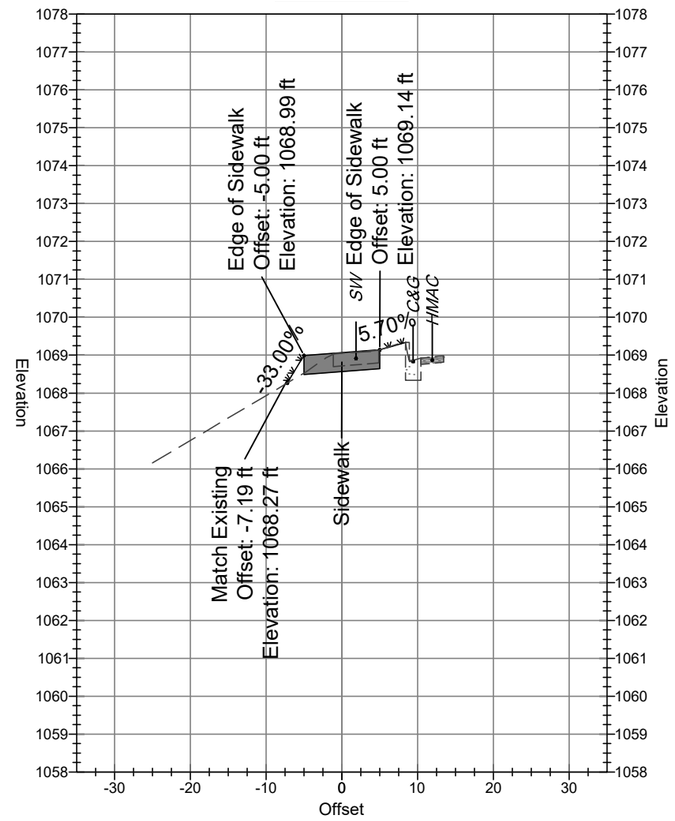
CROSS SECTIONS FM 116
STA. 16+00 - STA. 16+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.7
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

17+00.00



18+00.00



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STATE OF TEXAS
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PROFESSIONAL ENGINEER

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SIGNATURE

BSP engineers
TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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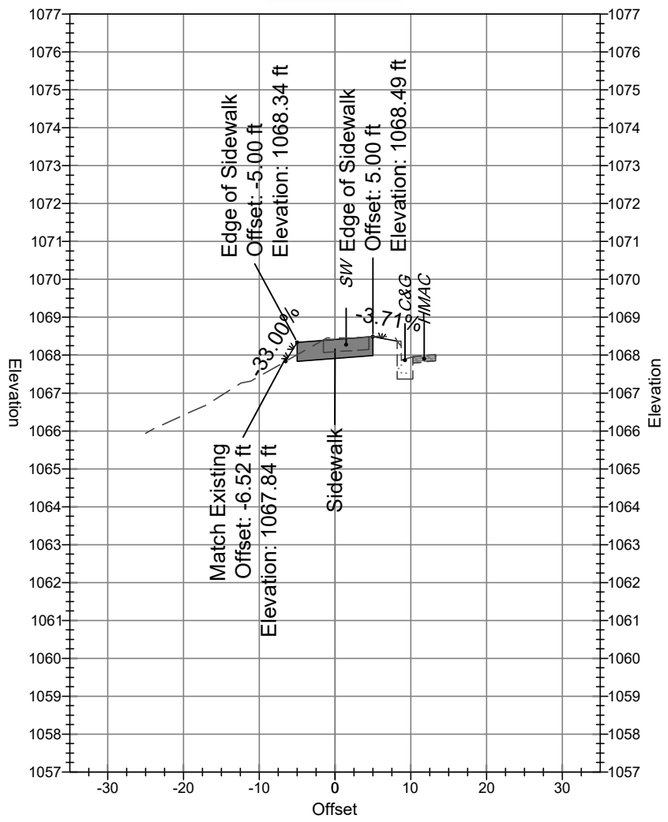
CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

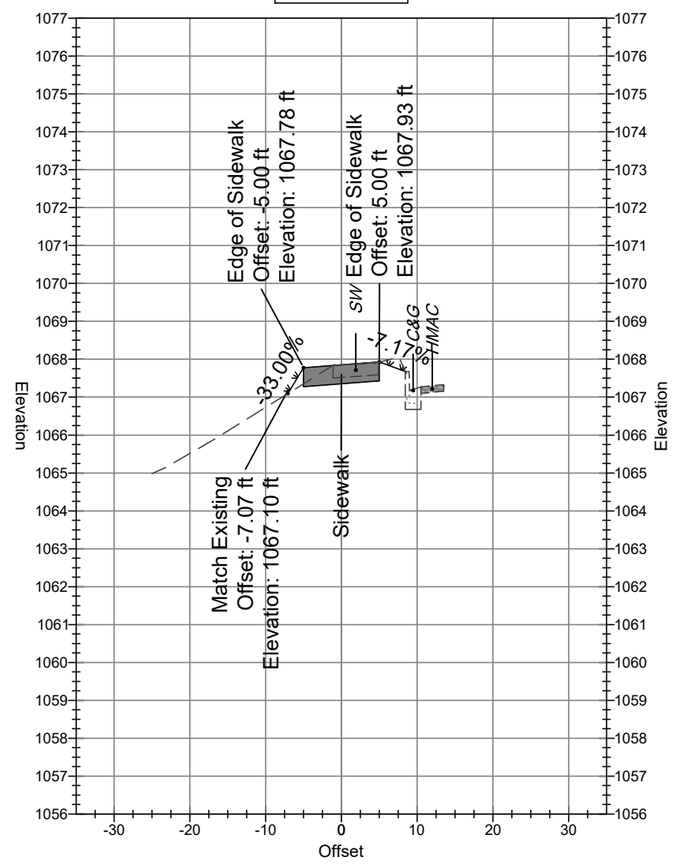
CROSS SECTIONS FM 116
STA. 17+00 - STA. 18+00

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.8
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

18+50.00



19+00.00



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PROFESSIONAL ENGINEER

Anthony D. Beach
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BSP engineers
TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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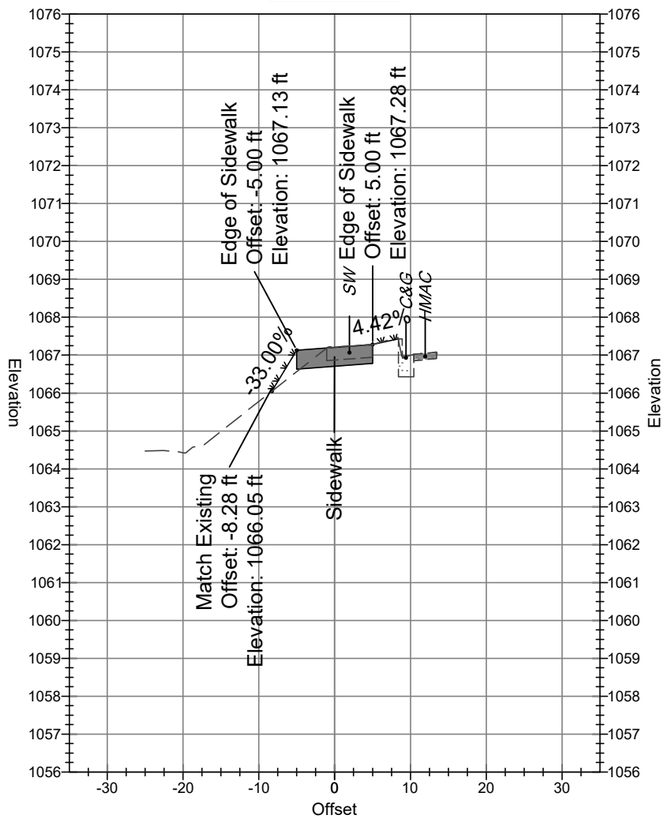
CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

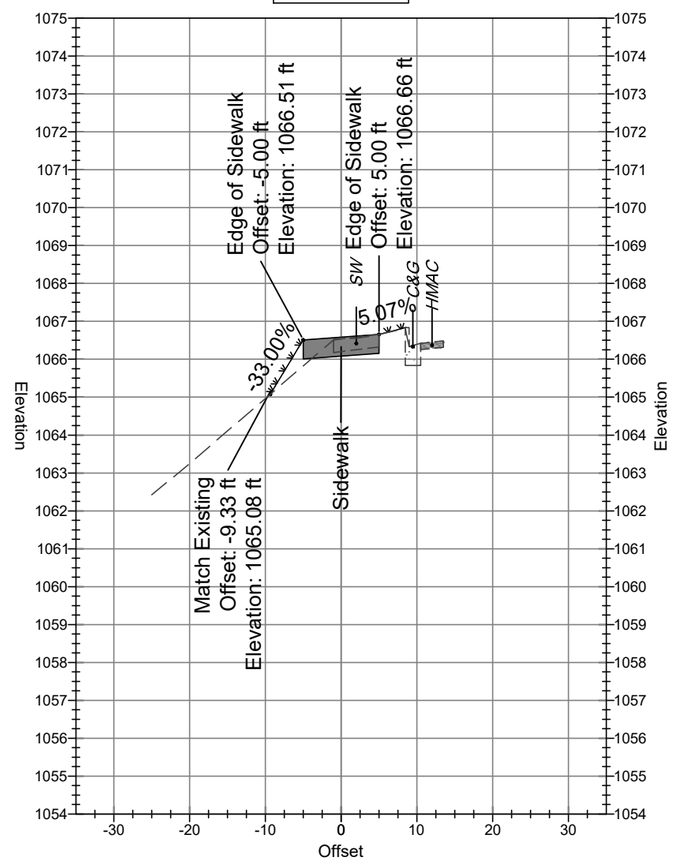
CROSS SECTIONS FM 116
STA. 18+50 - STA. 19+00

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.9
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

19+50.00



20+00.00



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64801
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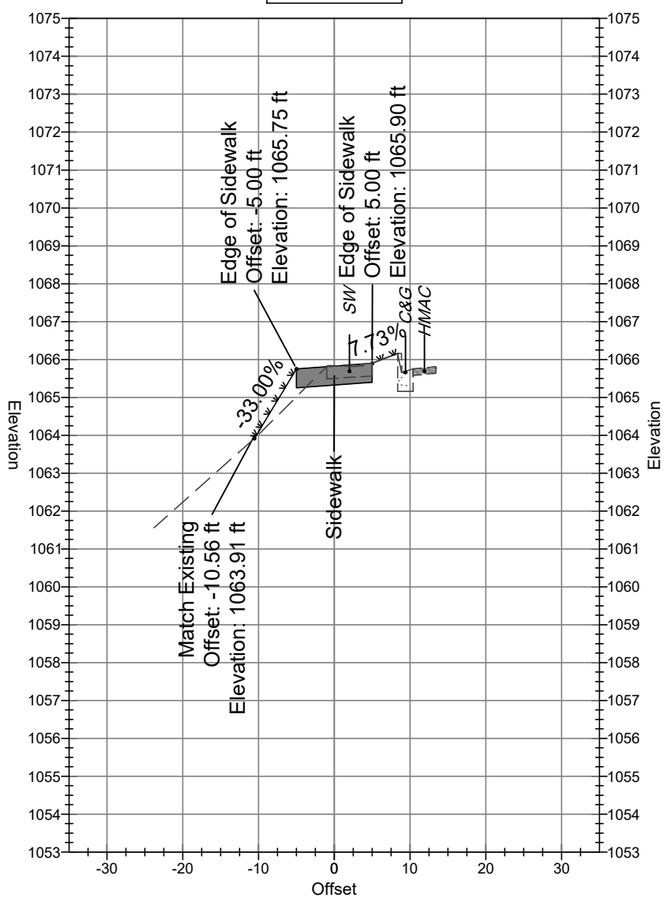
KTMPO ID: C40-05

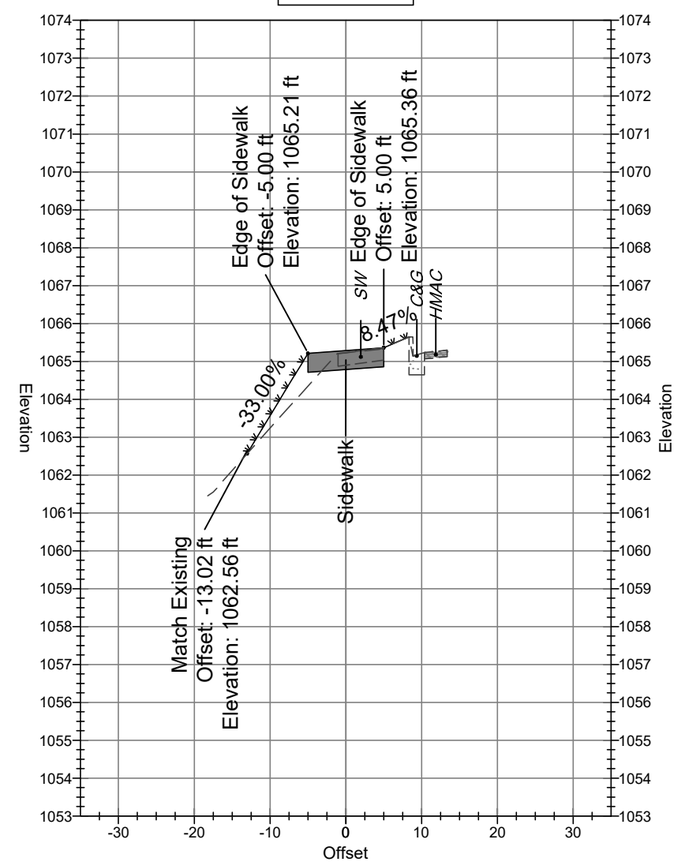
CROSS SECTIONS FM 116
STA. 19+50 - STA. 20+00

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.10
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

20+50.00



21+00.00



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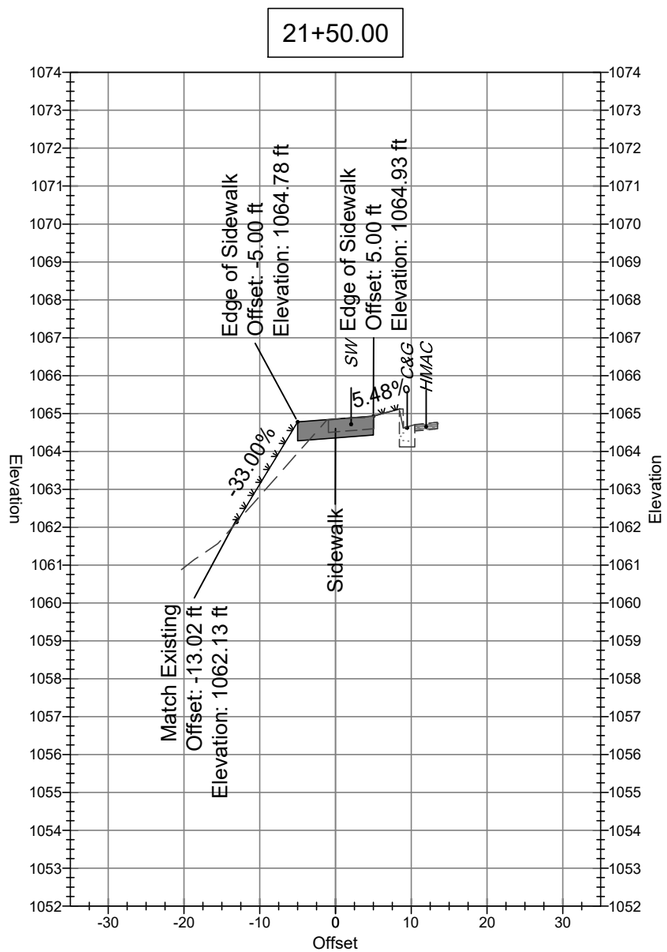
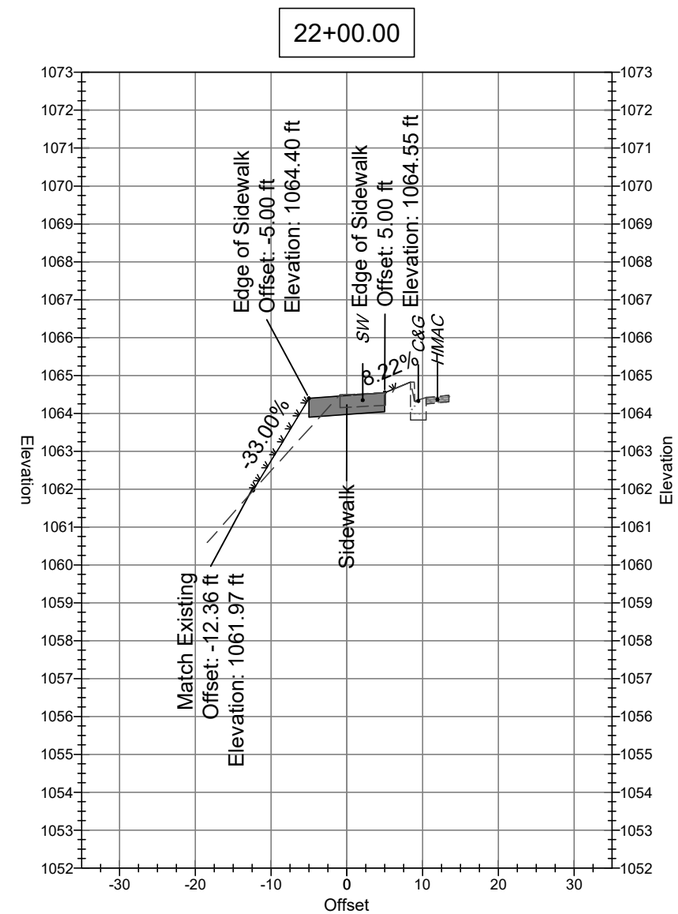
KTMPO ID: C40-05

CROSS SECTIONS FM 116
STA. 20+50 - STA. 21+00

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.11
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046





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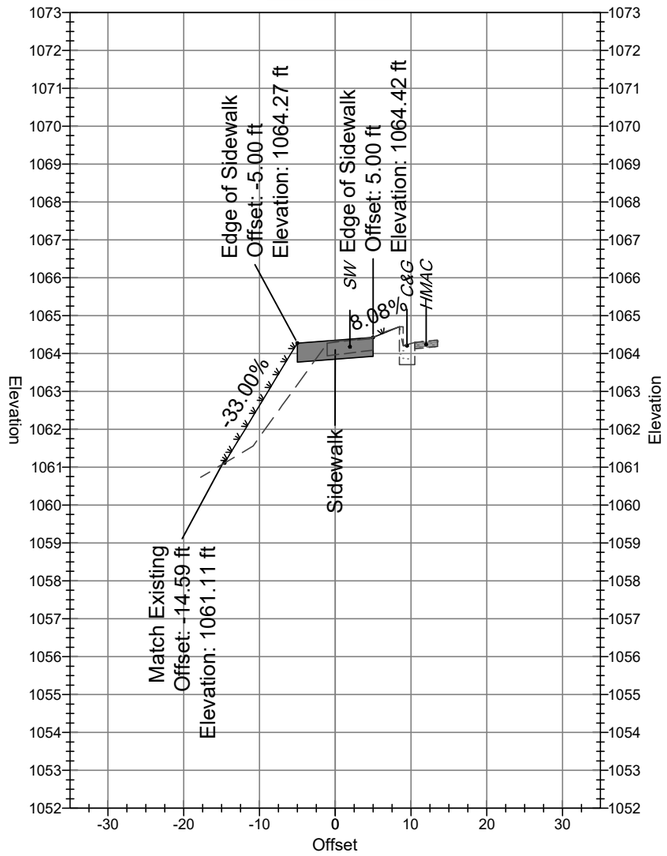
KTMPO ID: C40-05

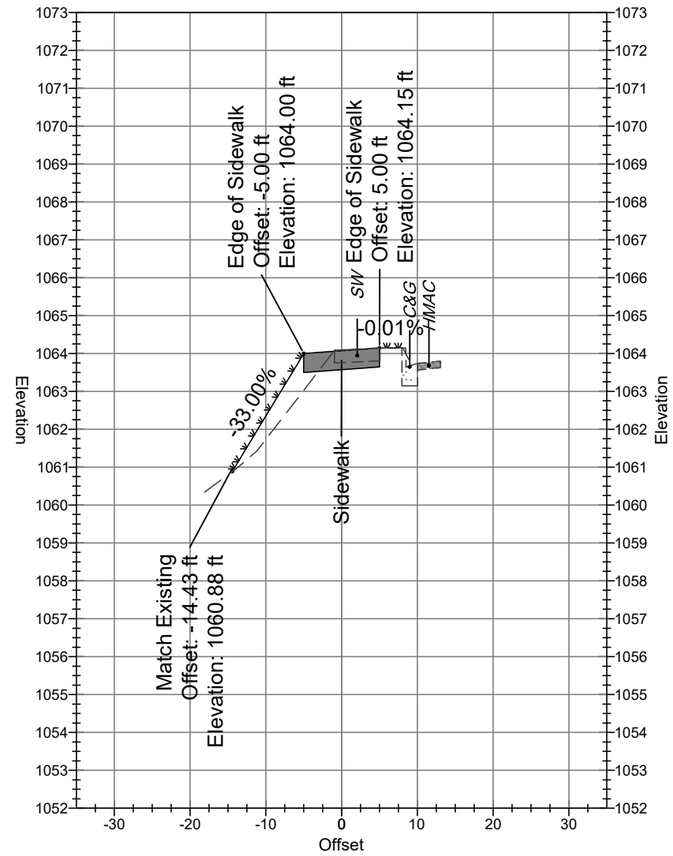
CROSS SECTIONS FM 116
STA. 21+50 - STA. 22+00

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.12
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

22+50.00



23+00.00



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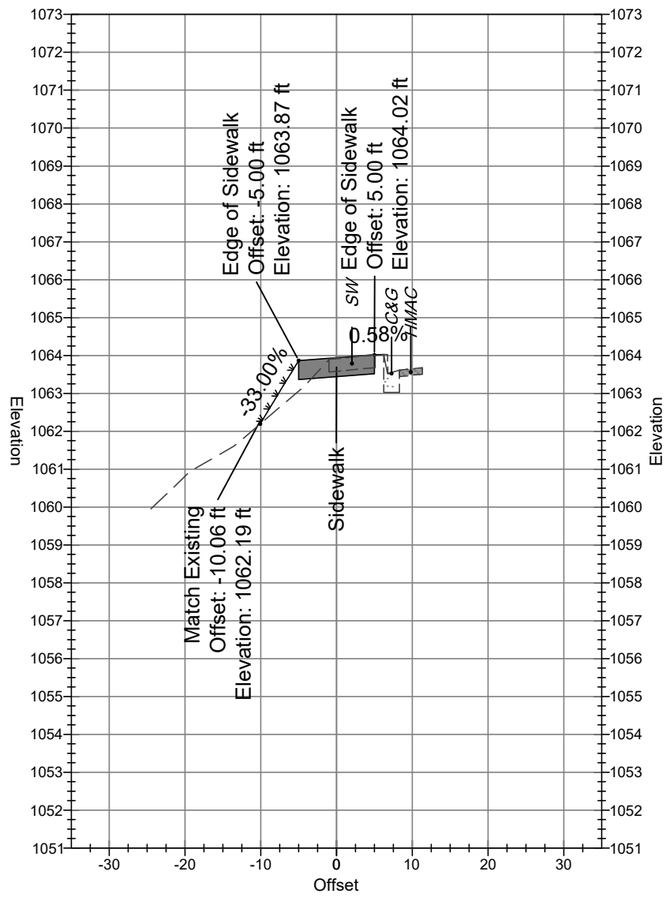
KTMPO ID: C40-05

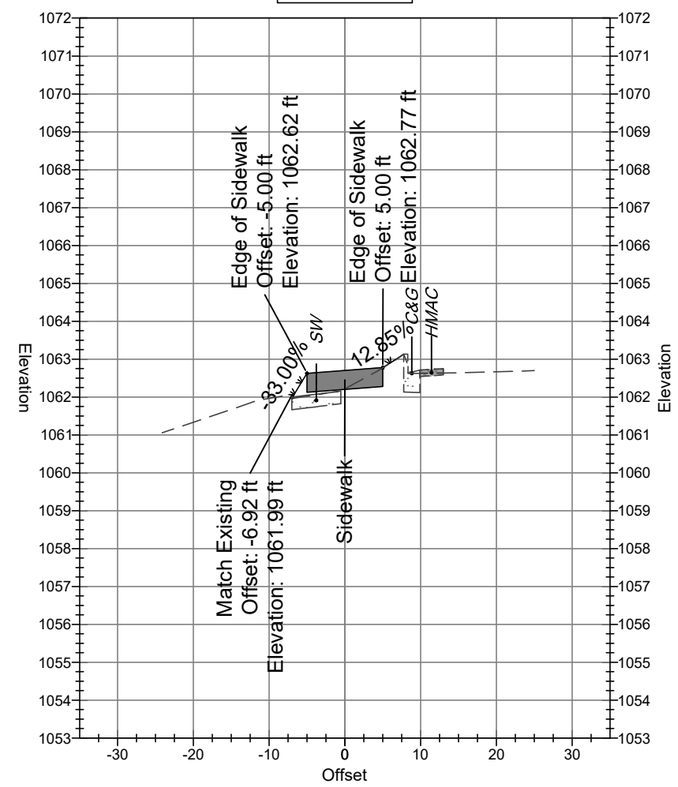
CROSS SECTIONS FM 116
STA. 22+50 - STA. 23+00

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.13
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

23+50.00



24+50.00



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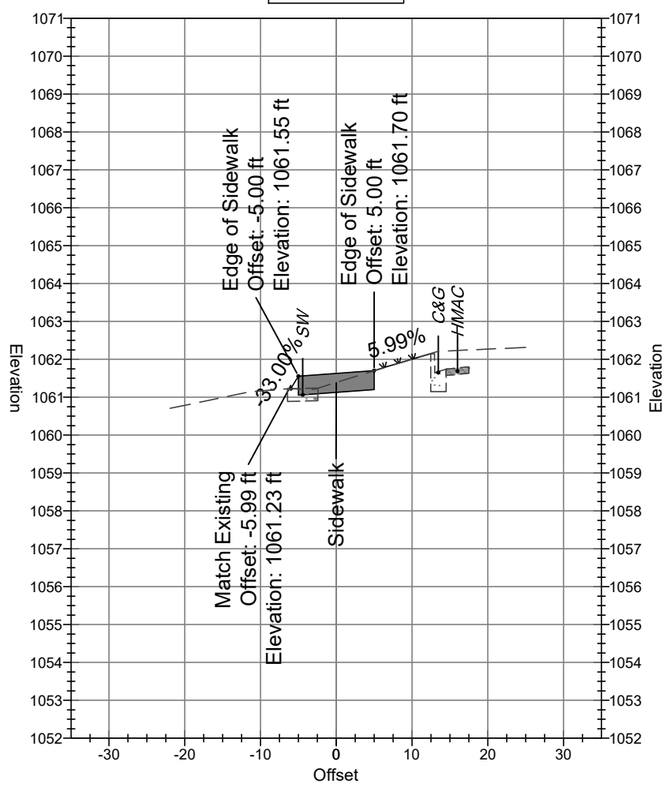
KTMPO ID: C40-05

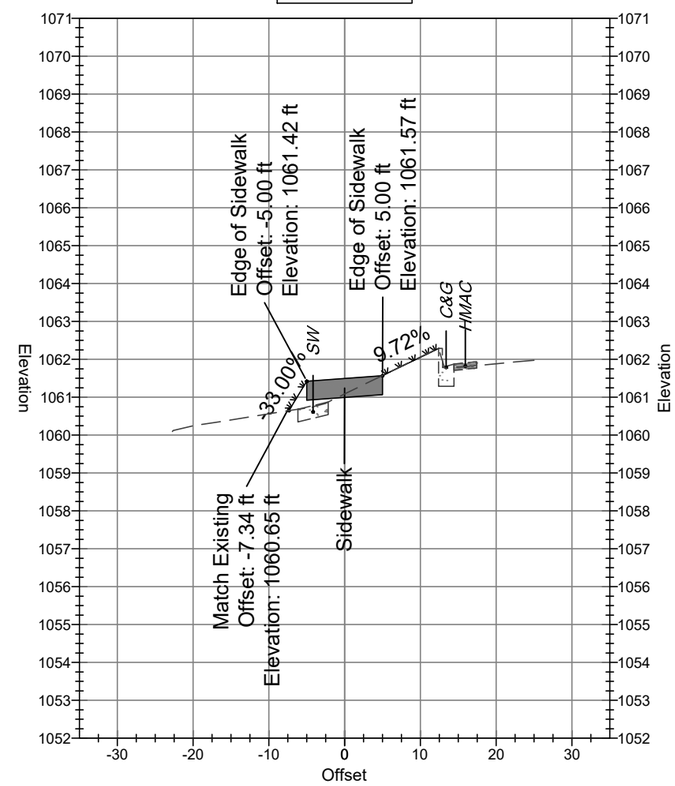
CROSS SECTIONS FM 116
STA. 23+50 - STA. 24+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.14
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

25+00.00



25+50.00



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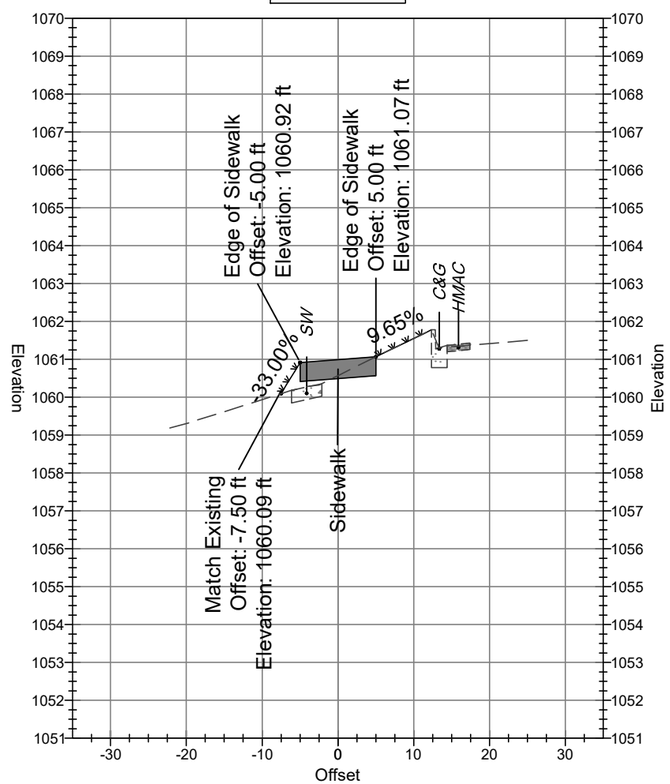
KTMPO ID: C40-05

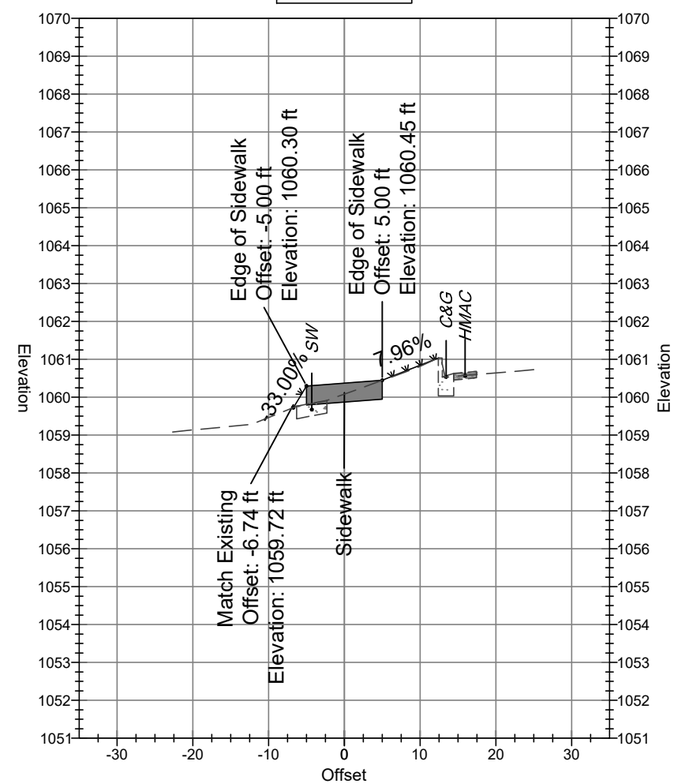
CROSS SECTIONS FM 116
STA. 25+00 - STA. 25+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.15
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

26+00.00



26+50.00



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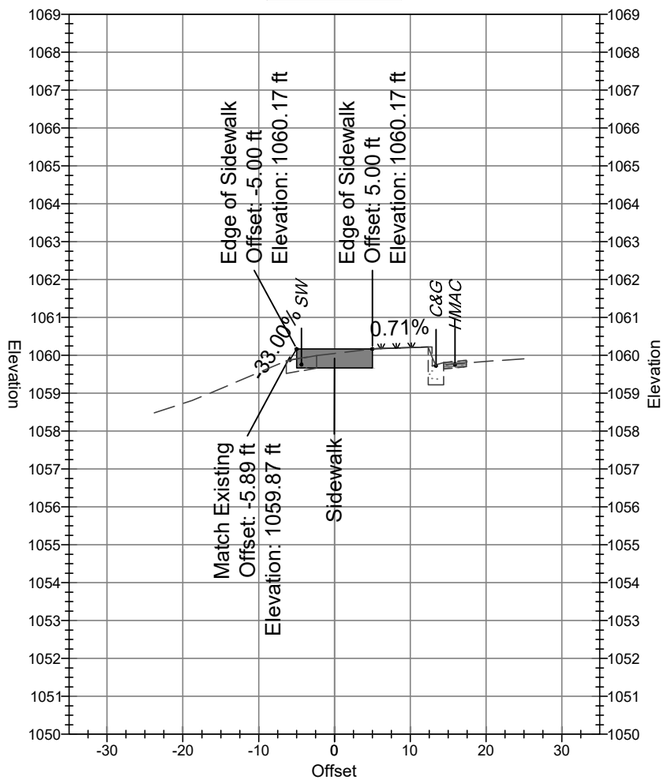
KTMPO ID: C40-05

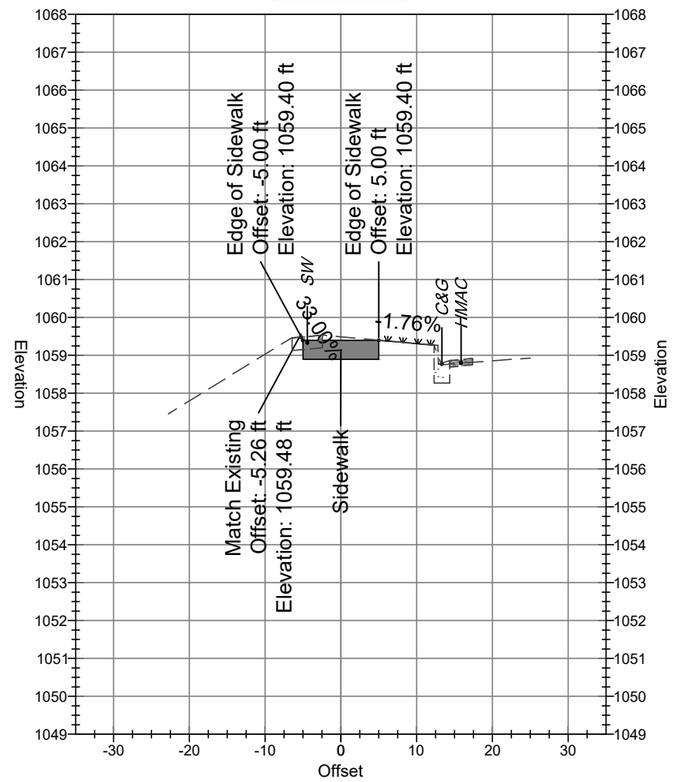
CROSS SECTIONS FM 116
STA. 26+00 - STA. 26+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.16
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

27+00.00



27+50.00



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STATE OF TEXAS
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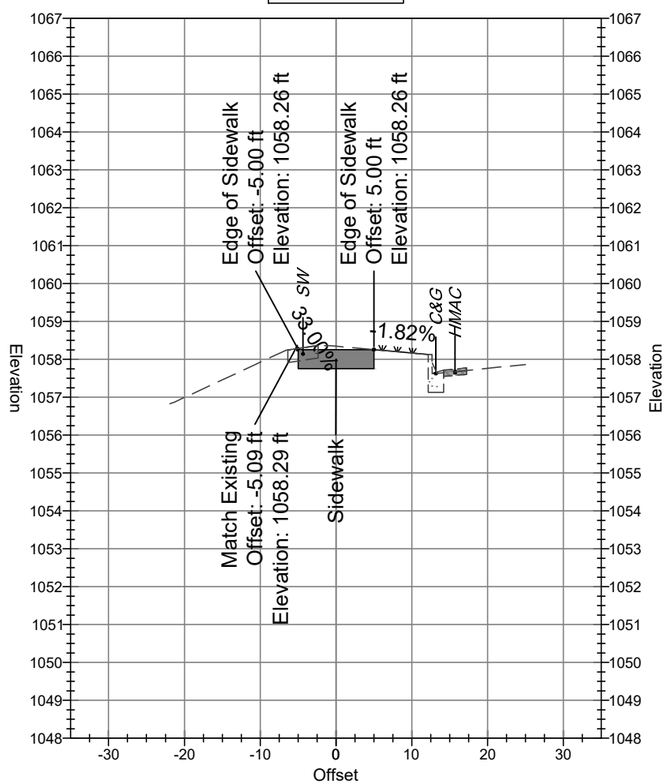
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

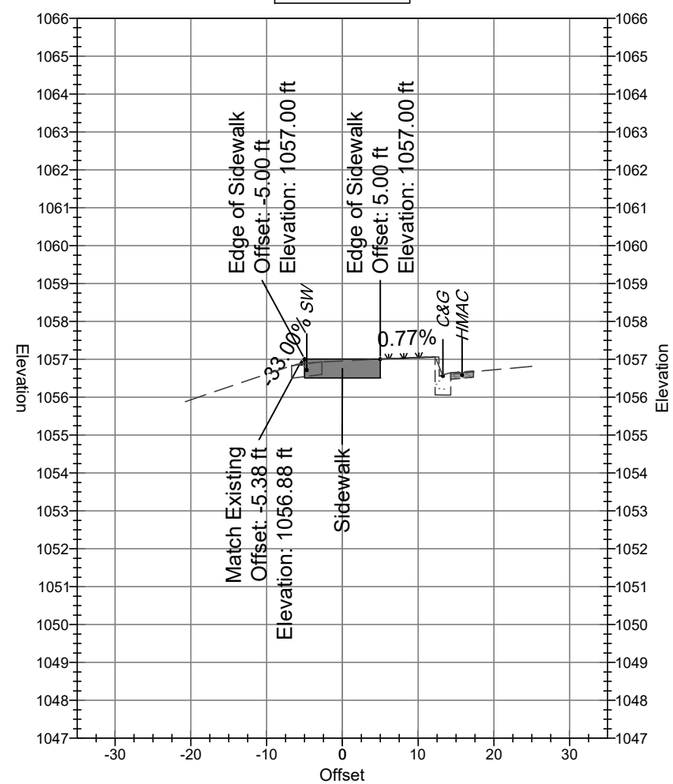
CROSS SECTIONS FM 116
STA. 27+00 - STA. 27+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.17
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

28+00.00



28+50.00



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STATE OF TEXAS
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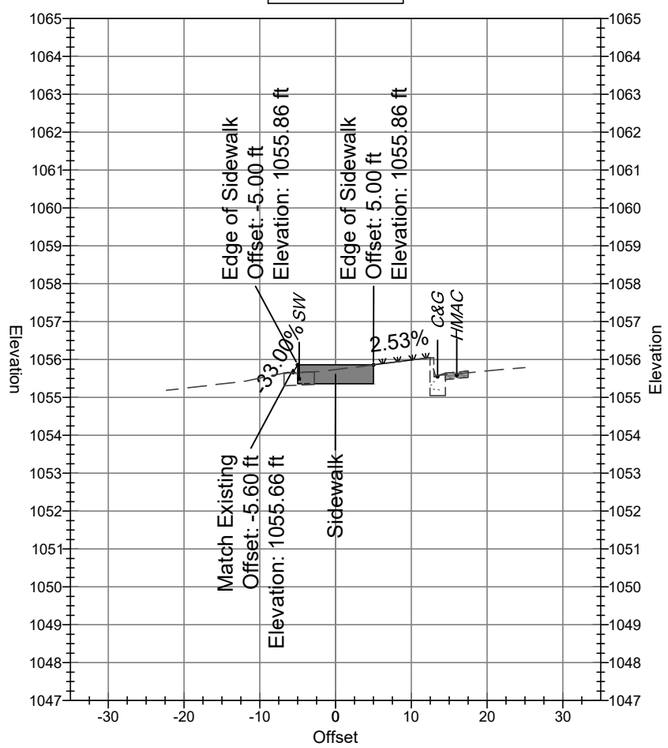
KTMPO ID: C40-05

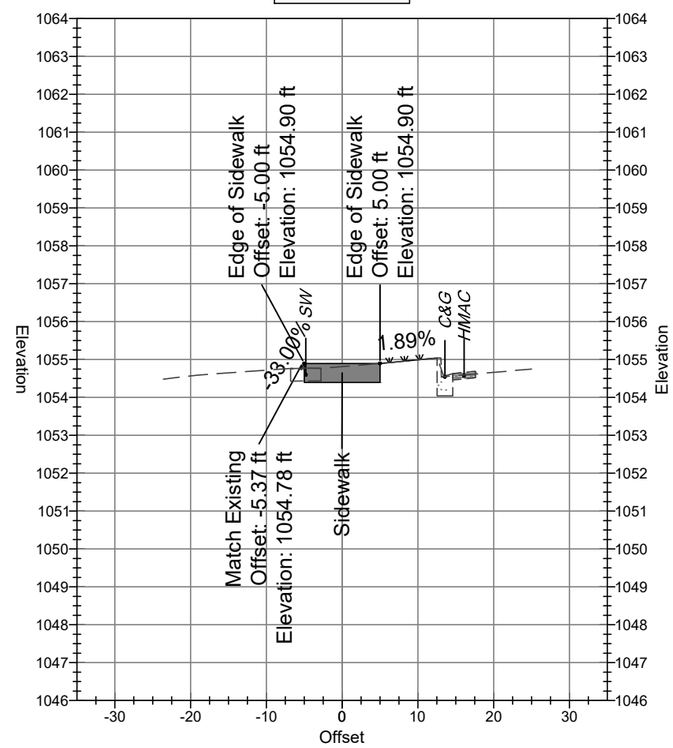
CROSS SECTIONS FM 116
STA. 28+00 - STA. 28+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.18
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

29+00.00



29+50.00



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STATE OF TEXAS
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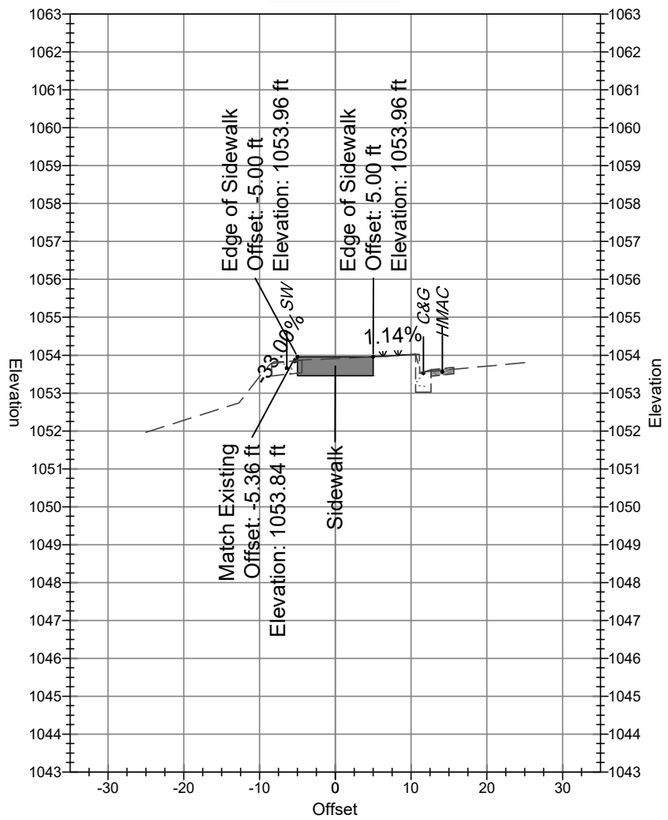
KTMPO ID: C40-05

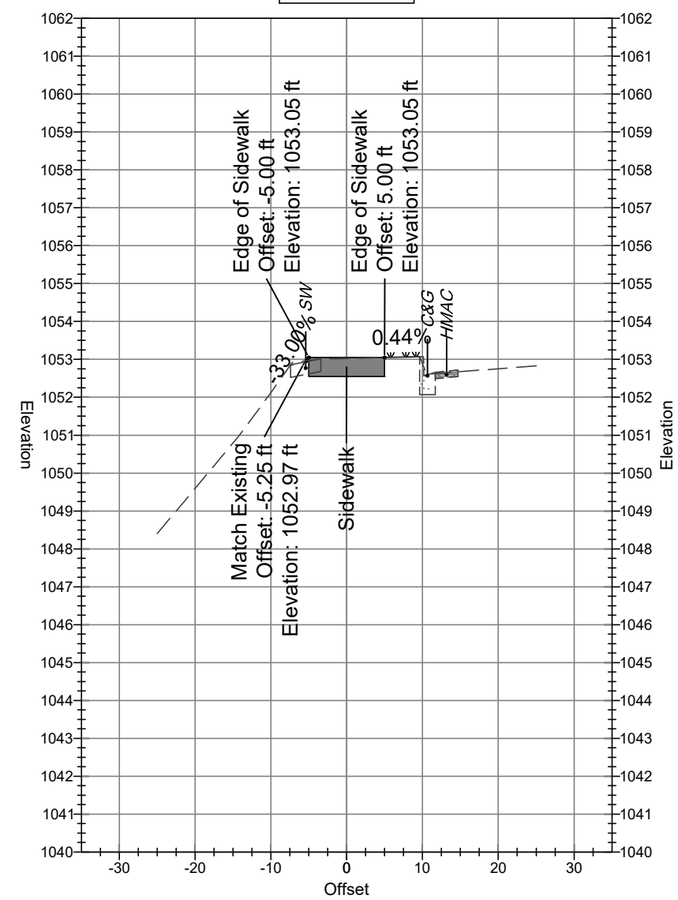
CROSS SECTIONS FM 116
STA. 29+00 - STA. 29+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.19
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

30+00.00



30+50.00



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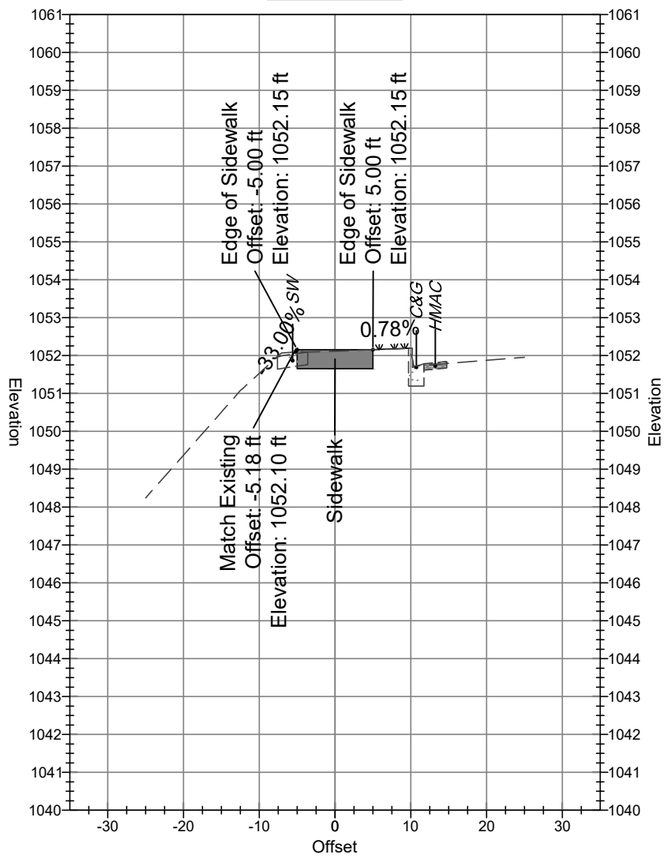
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

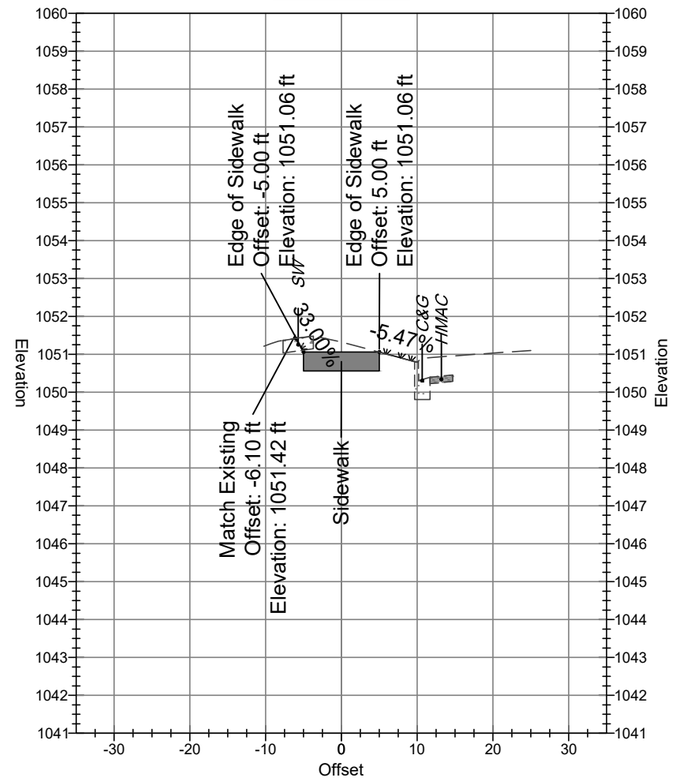
CROSS SECTIONS FM 116
STA. 30+00 - STA. 30+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.20
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

31+00.00



31+50.00



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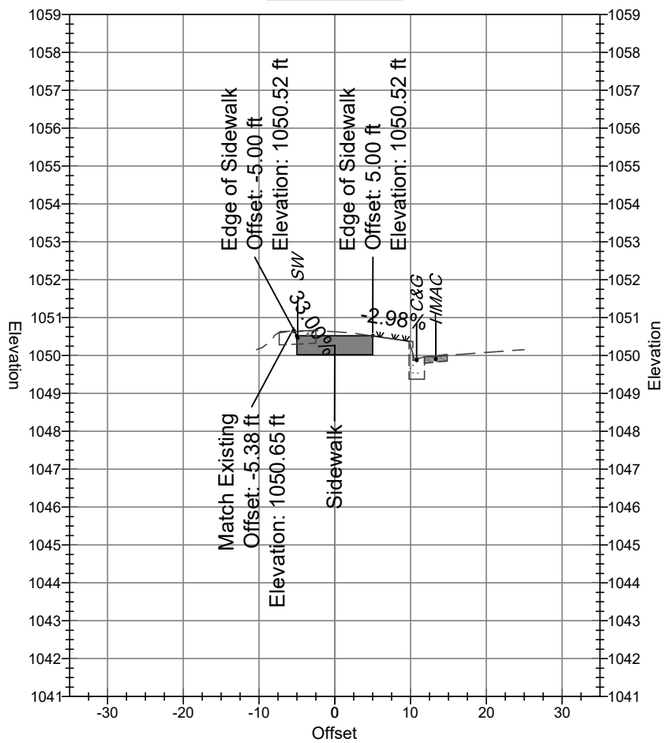
KTMPO ID: C40-05

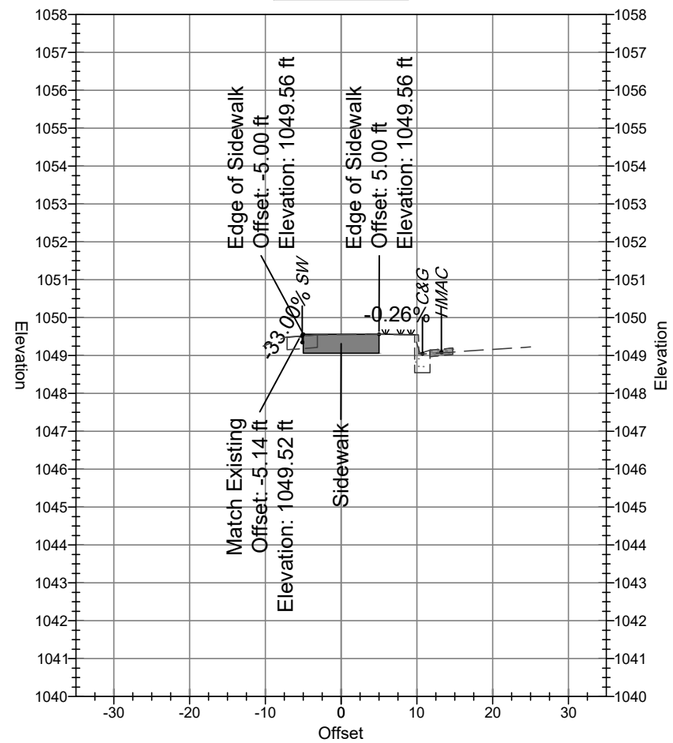
CROSS SECTIONS FM 116
STA. 31+00 - STA. 31+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.21
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

32+00.00



32+50.00



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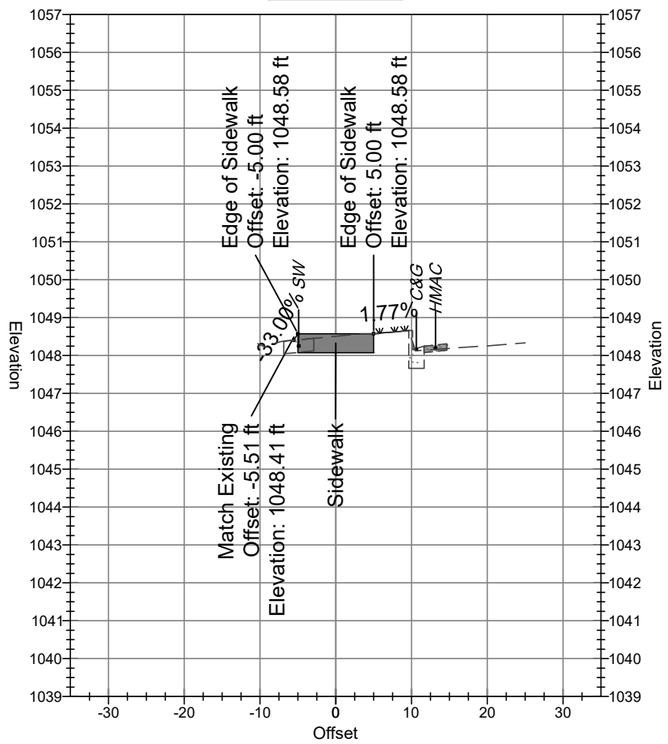
KTMPO ID: C40-05

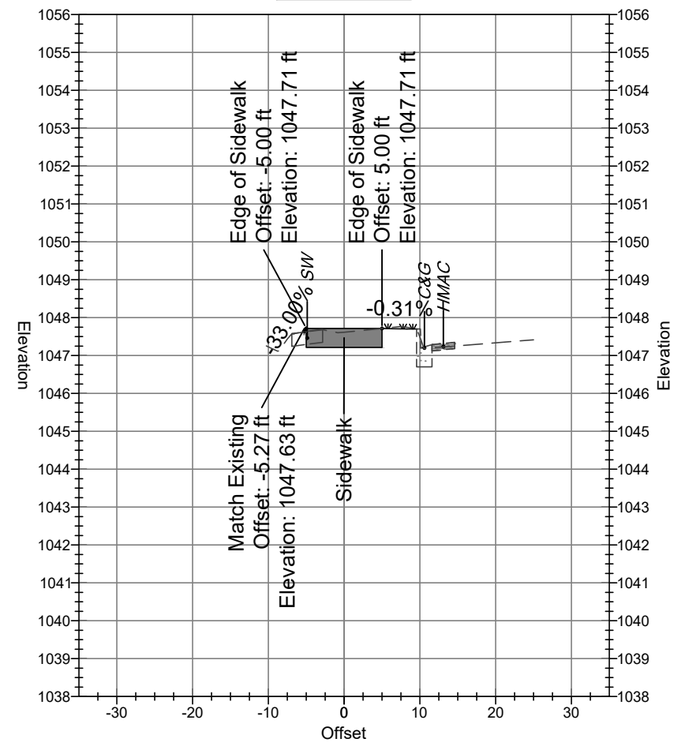
CROSS SECTIONS FM 116
STA. 32+00 - STA. 32+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.22
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

33+00.00



33+50.00



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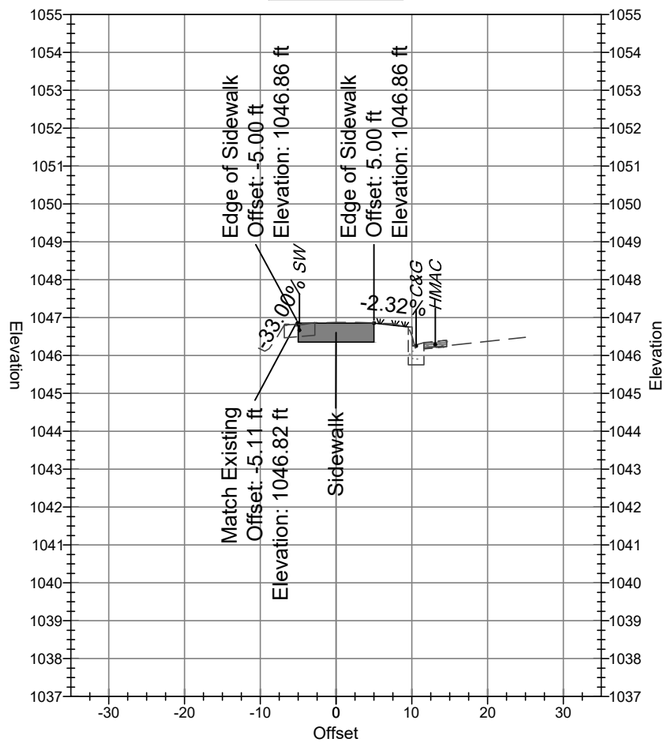
KTMPO ID: C40-05

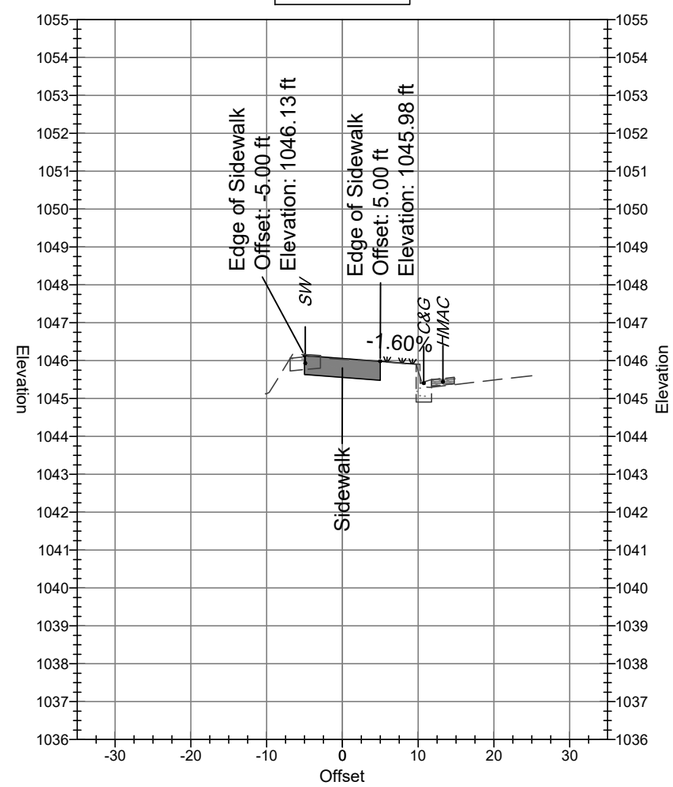
CROSS SECTIONS FM 116
STA. 33+00 - STA. 33+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.23
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

34+00.00



34+50.00



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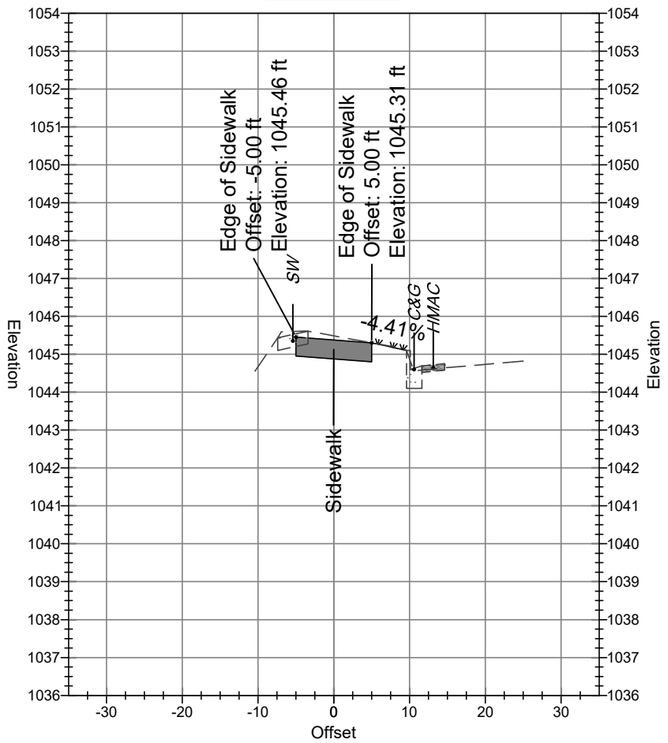
KTMPO ID: C40-05

CROSS SECTIONS FM 116
STA. 34+00 - STA. 34+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.24
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

35+00.00



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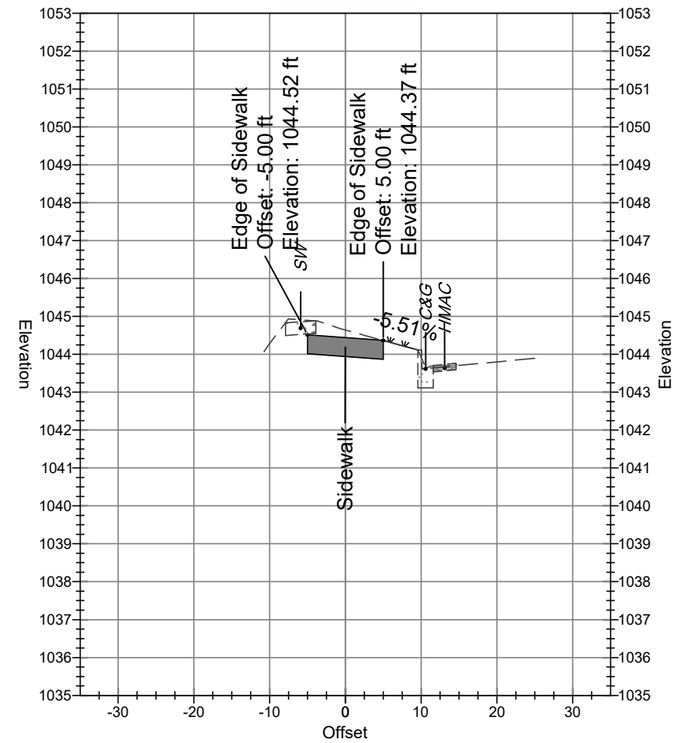

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE

BSP engineers

TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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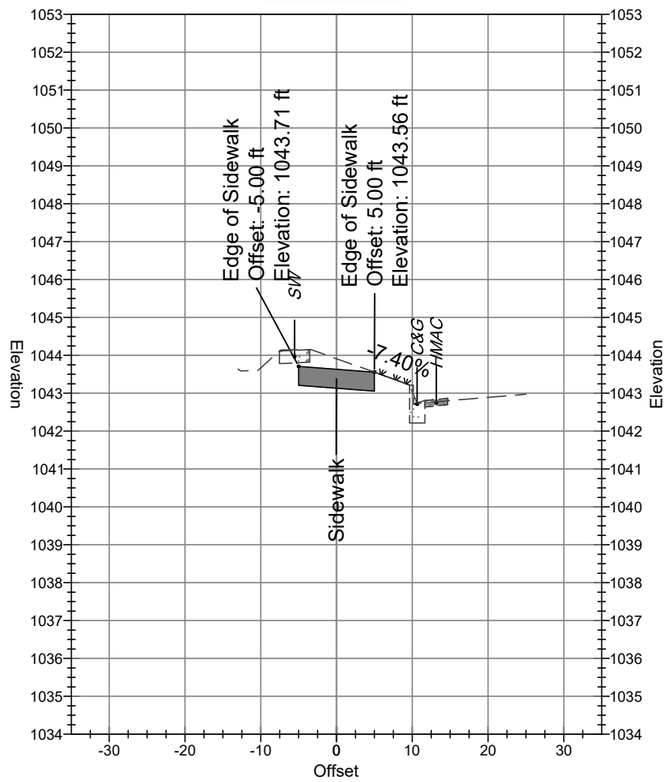
CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

CROSS SECTIONS FM 116
STA. 35+00 - STA. 35+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.25
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

36+00.00



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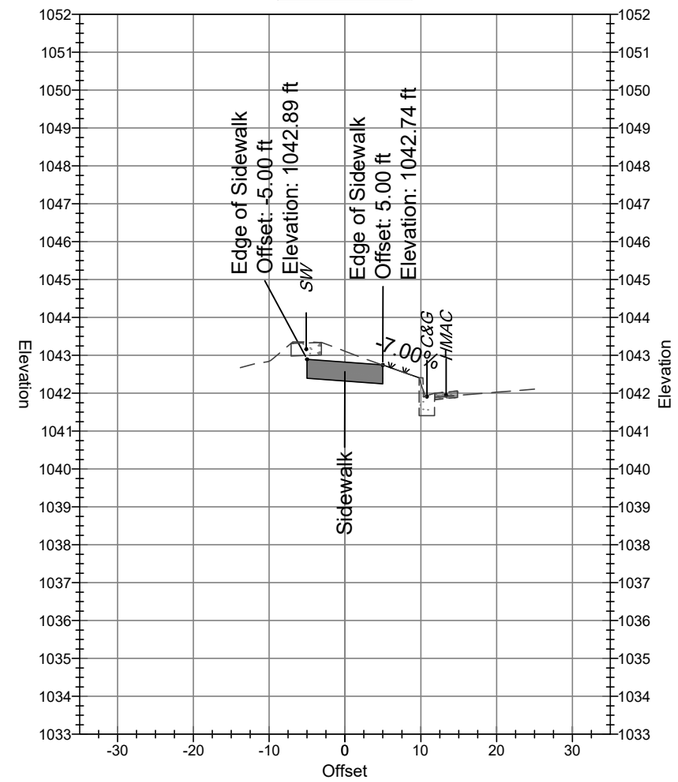

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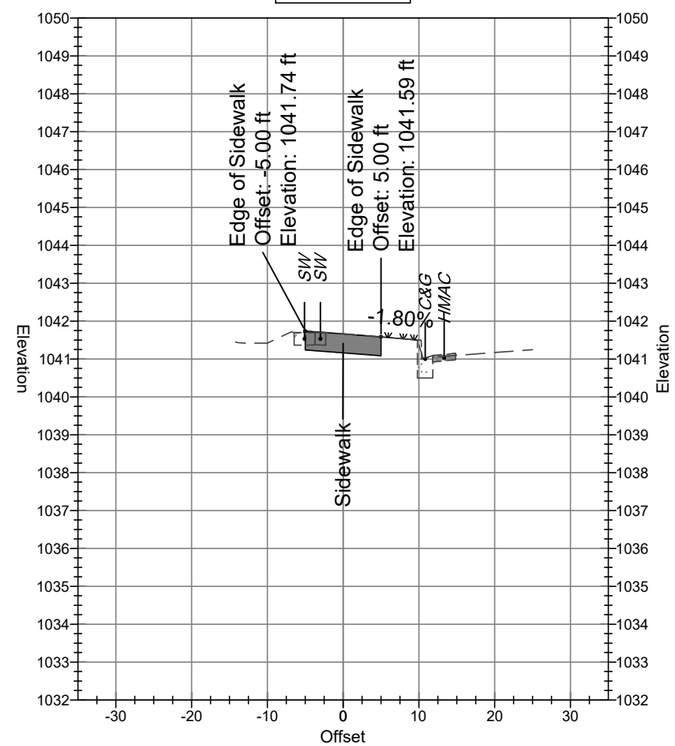
CROSS SECTIONS FM 116
STA. 36+00 - STA. 36+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.26
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

37+00.00



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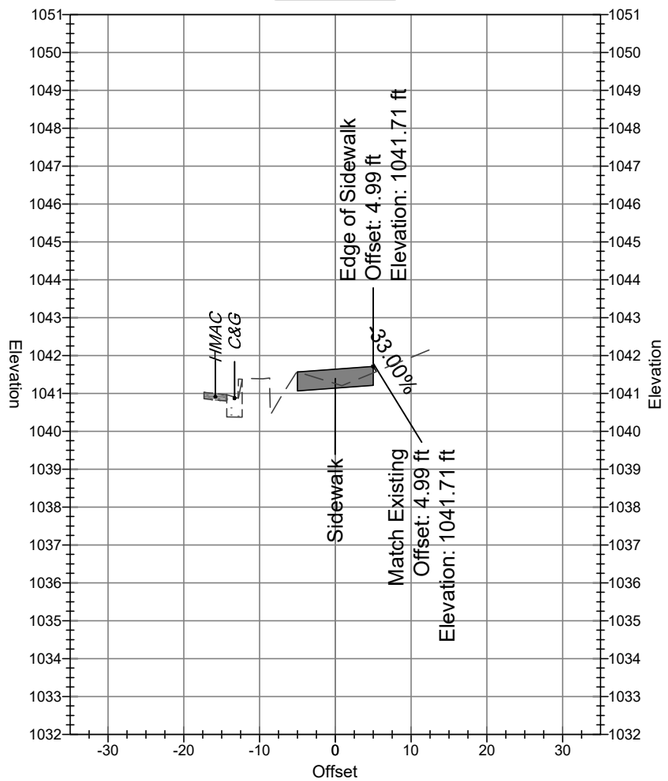
CROSS SECTIONS FM 116
STA. 37+00

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.27
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

0+50.00



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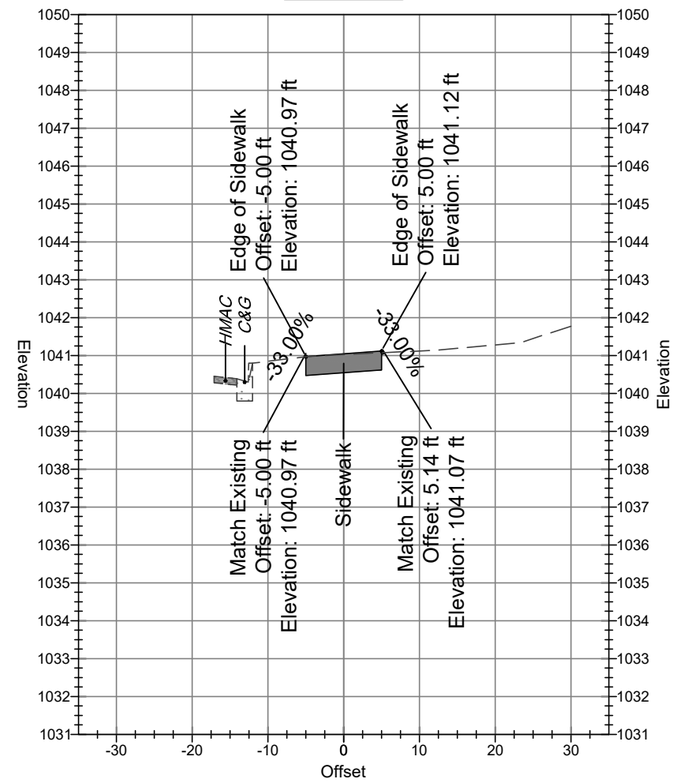

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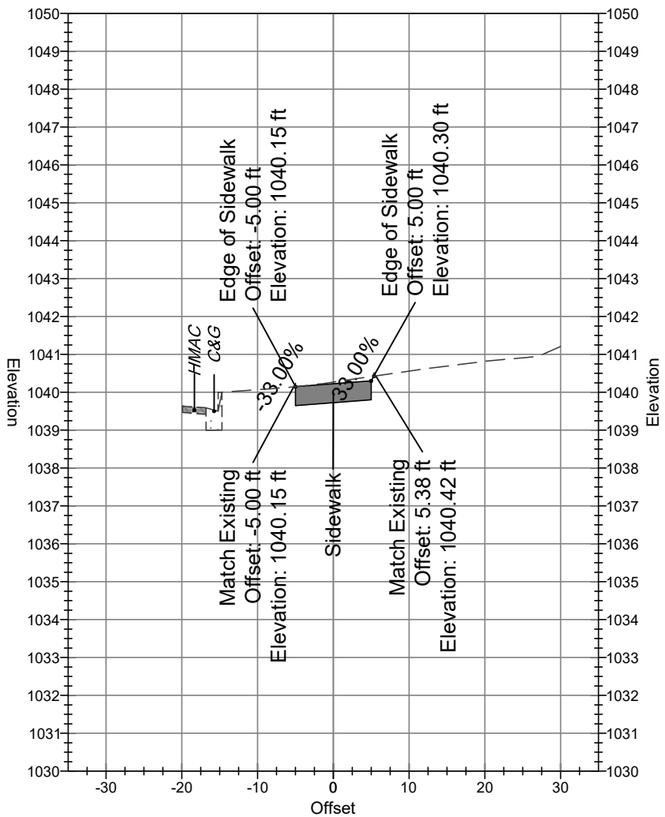
CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

CROSS SECTIONS FM 3046
STA. 0+50 - STA. 1+00

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.28
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

1+50.00



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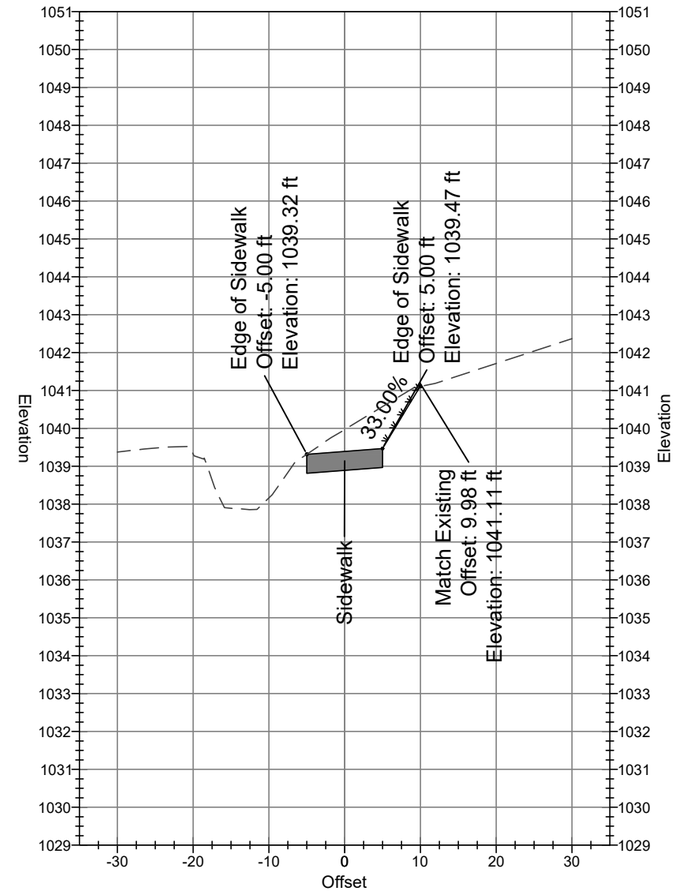

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TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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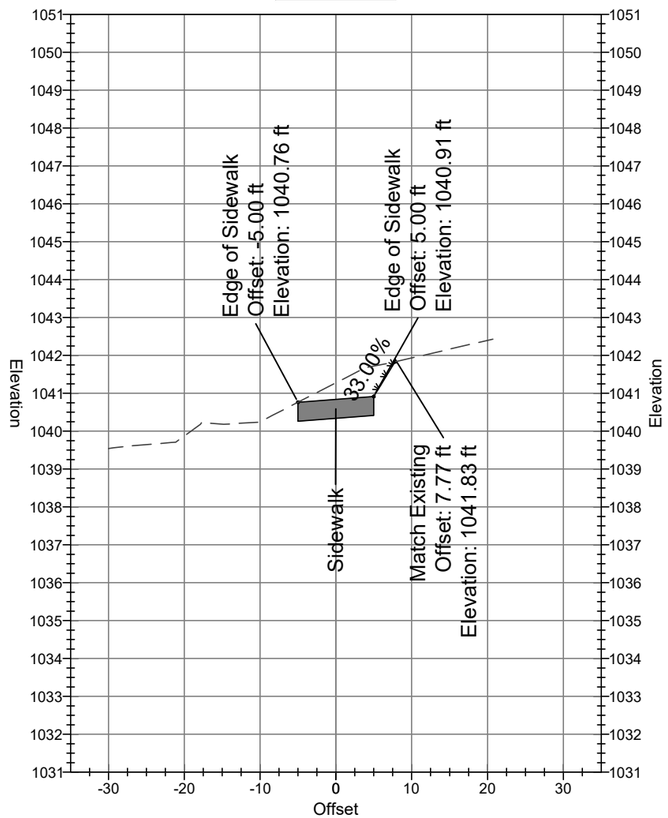
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

CROSS SECTIONS FM 3046
STA. 1+50 - STA. 2+00

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.29
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

2+50.00



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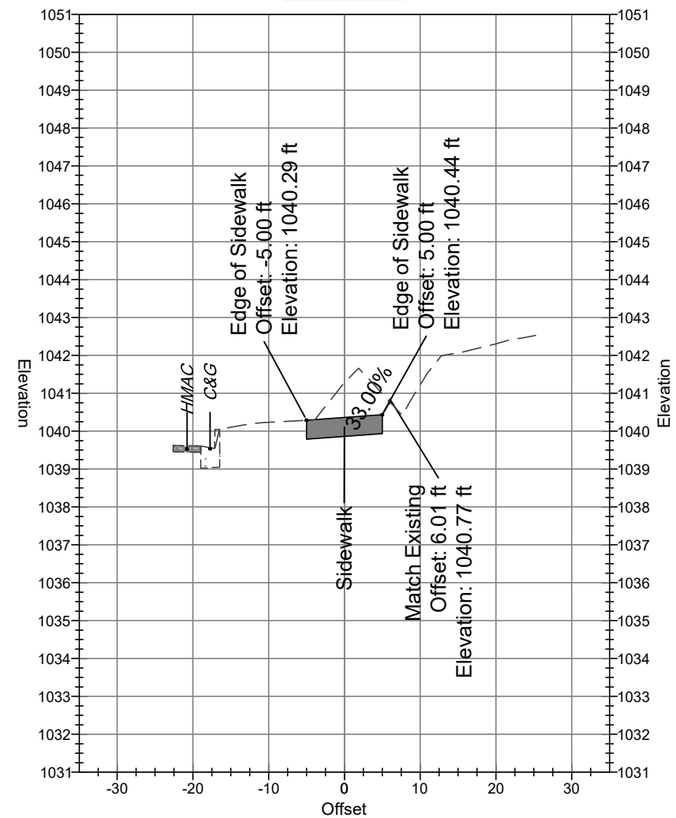

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TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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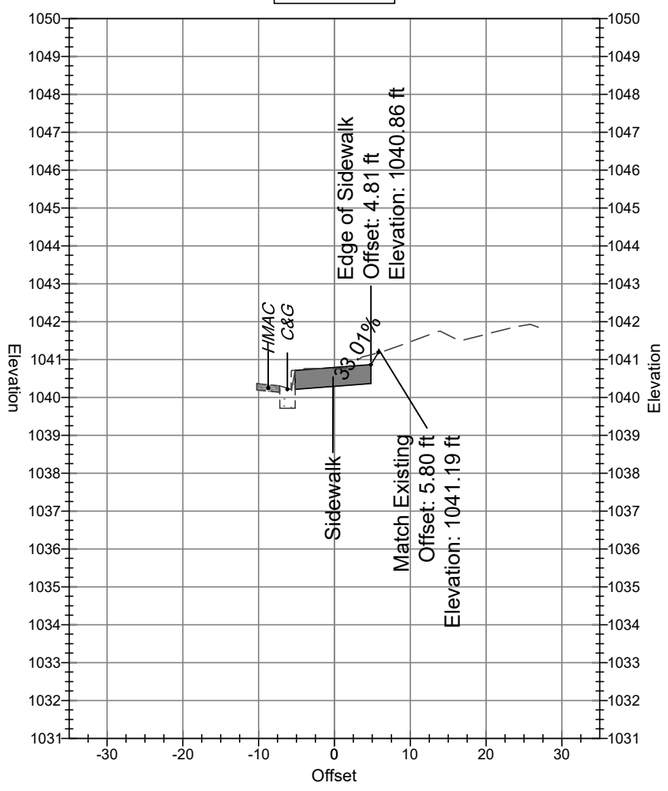
KTMPO ID: C40-05

CROSS SECTIONS FM 3046
STA. 2+50 - STA. 3+00

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.30
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

3+50.00



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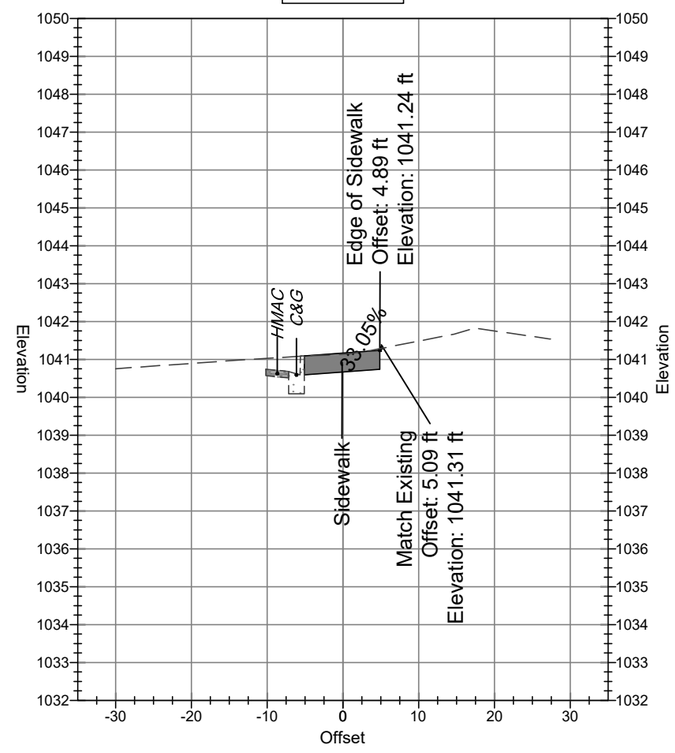

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BSP PROJECT: 172384.00

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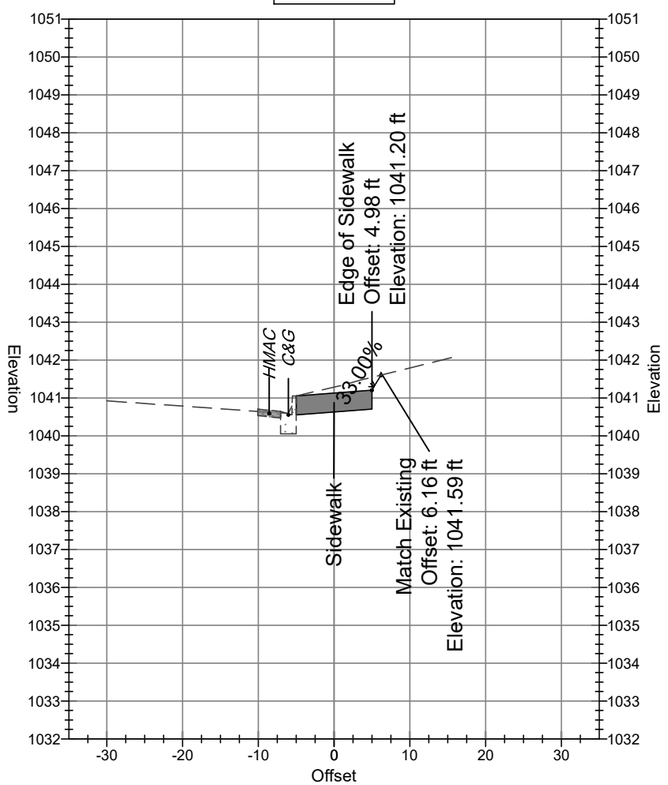
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

CROSS SECTIONS FM 3046
STA. 3+50 - STA. 4+00

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.31
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

5+00.00



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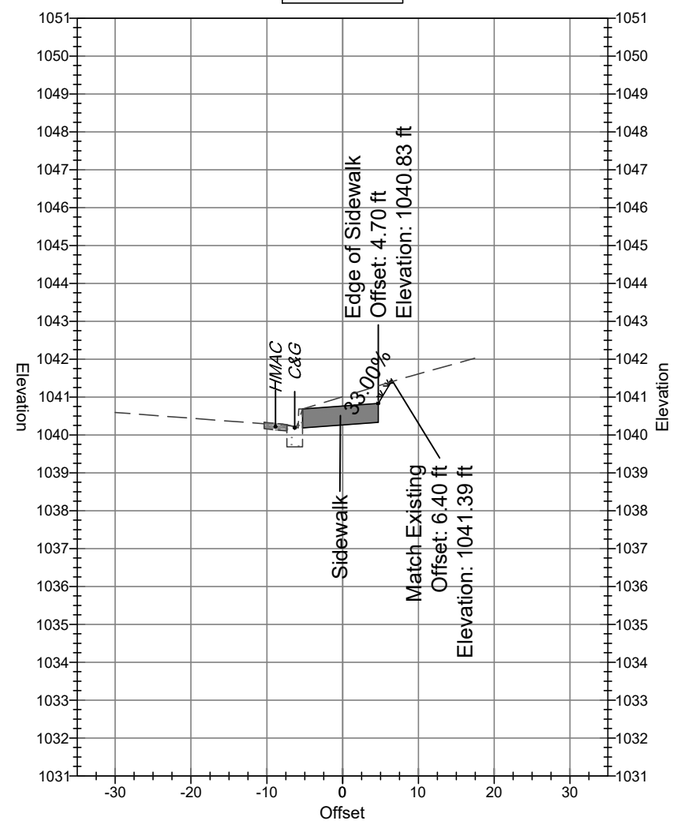

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

Anthony D. Beach
SIGNATURE

BSP engineers
TBPE REGISTRATION: F- 7587
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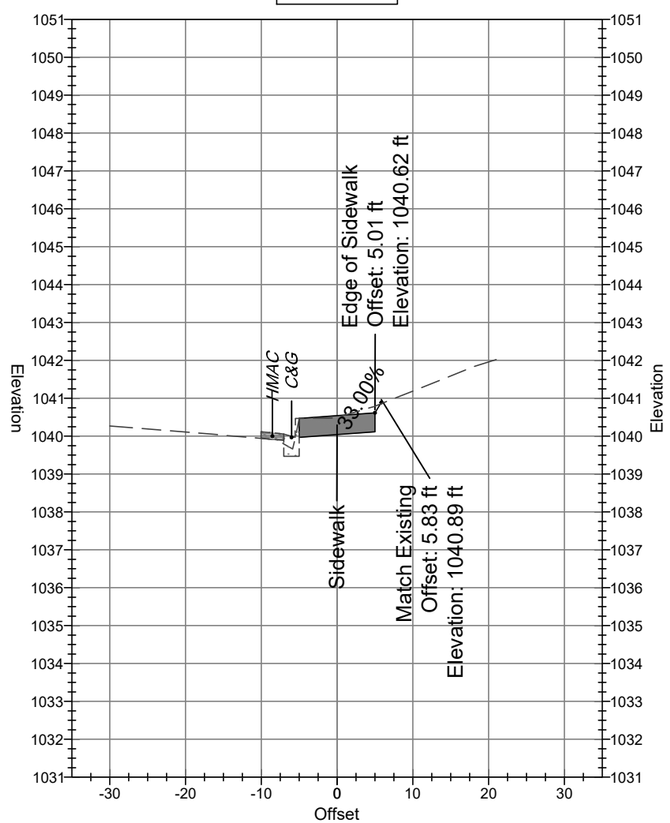
KTMPO ID: C40-05

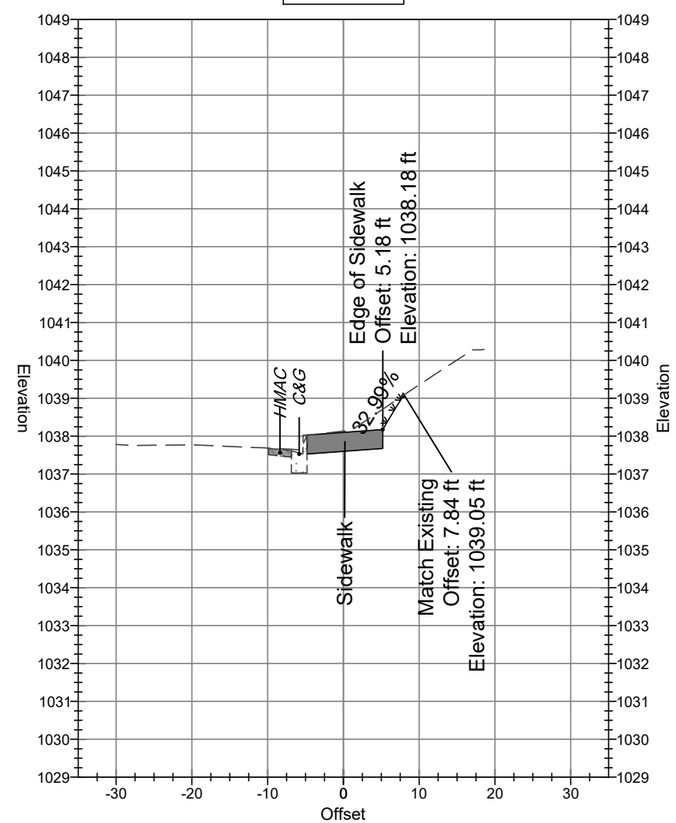
CROSS SECTIONS FM 3046
STA. 5+00 - STA. 5+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.32
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

6+00.00



7+50.00



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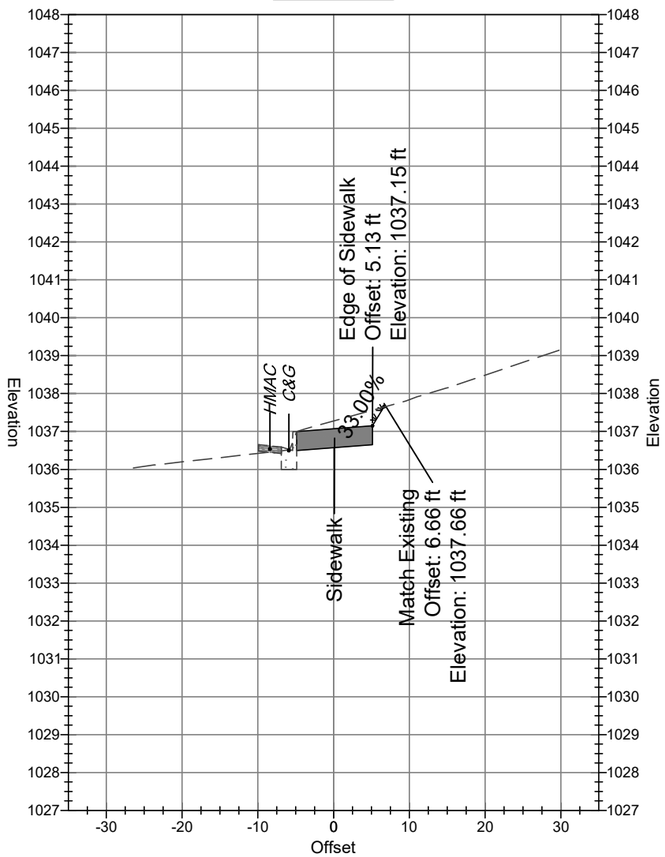
KTMPO ID: C40-05

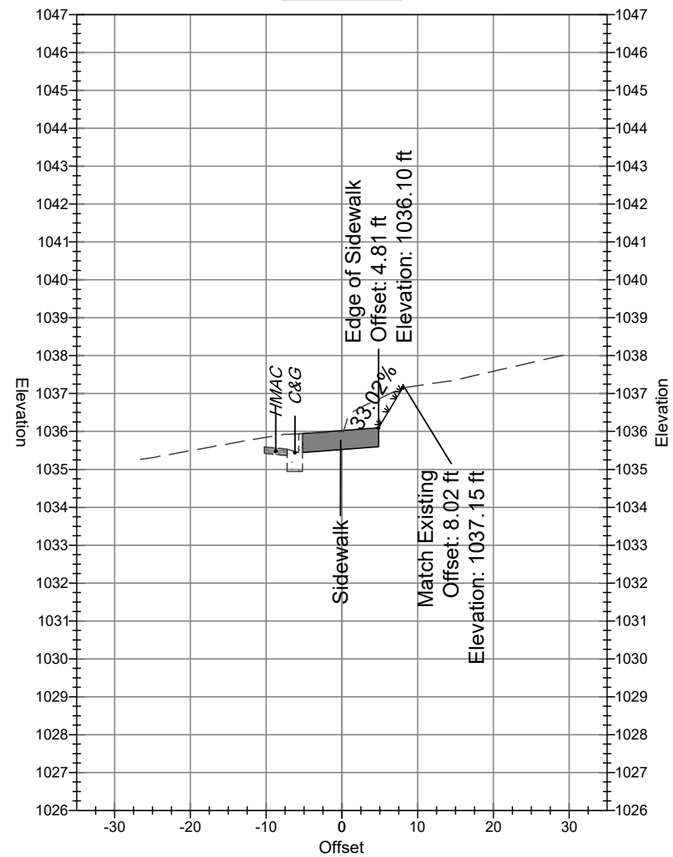
CROSS SECTIONS FM 3046
STA. 6+00 - STA. 7+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.33
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

8+50.00



9+00.00



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STATE OF TEXAS
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TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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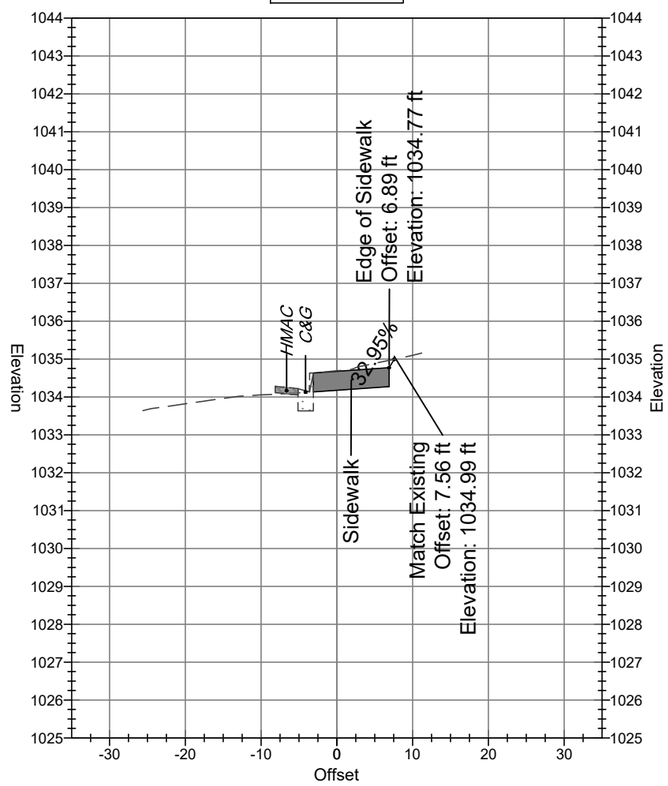
KTMPO ID: C40-05

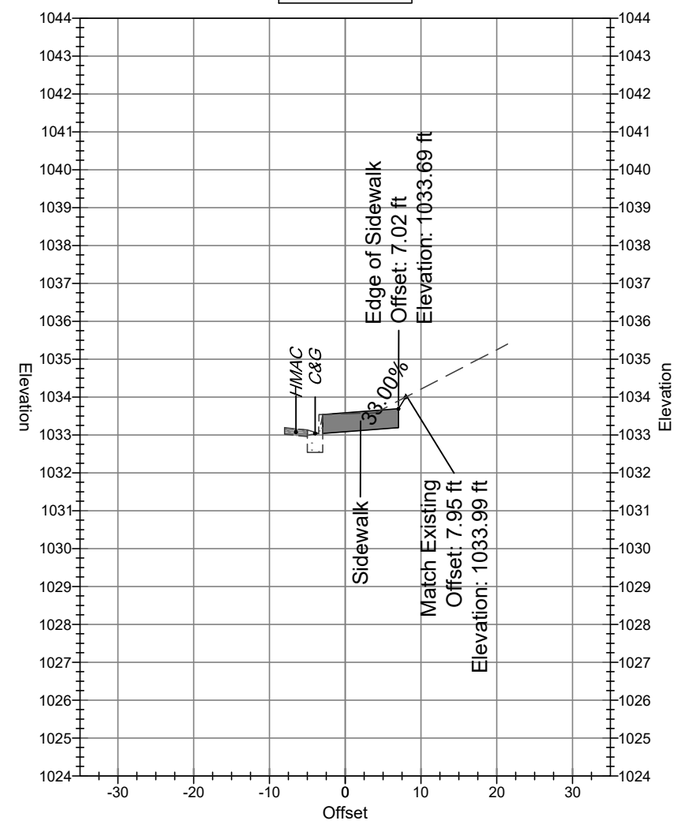
CROSS SECTIONS FM 3046
STA. 8+50 - STA. 9+00

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.34
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

10+00.00



10+50.00



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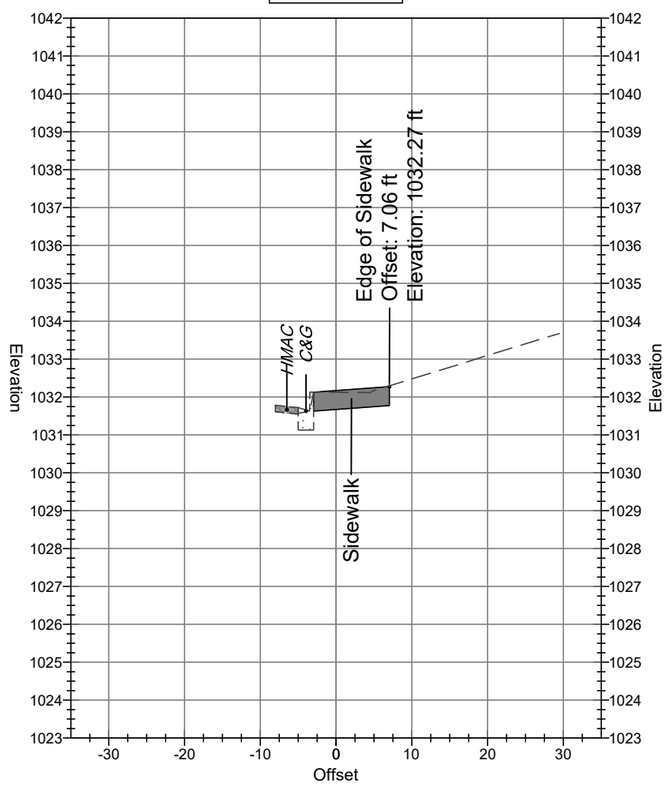
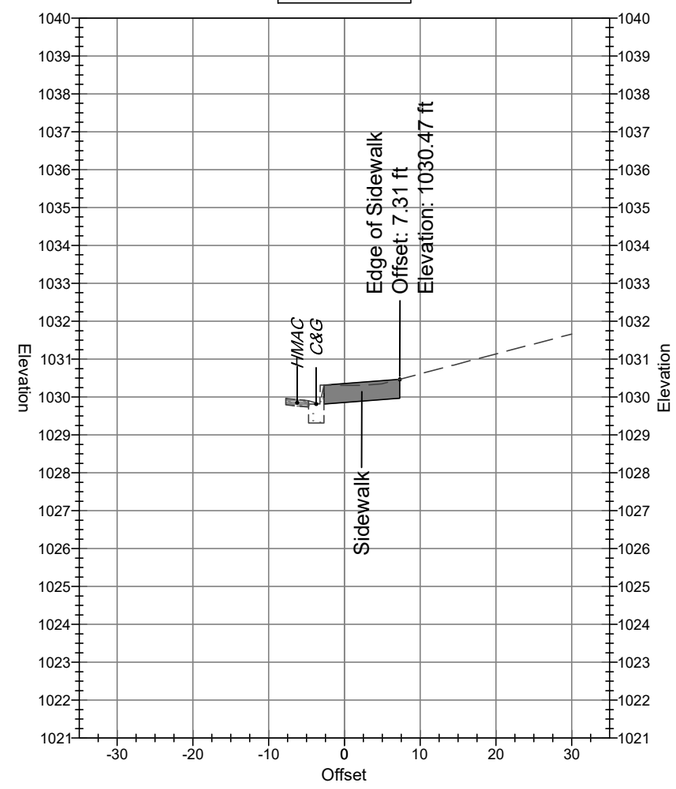
CROSS SECTIONS FM 3046
STA. 10+00 - STA. 10+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.35
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

11+00.00



11+50.00



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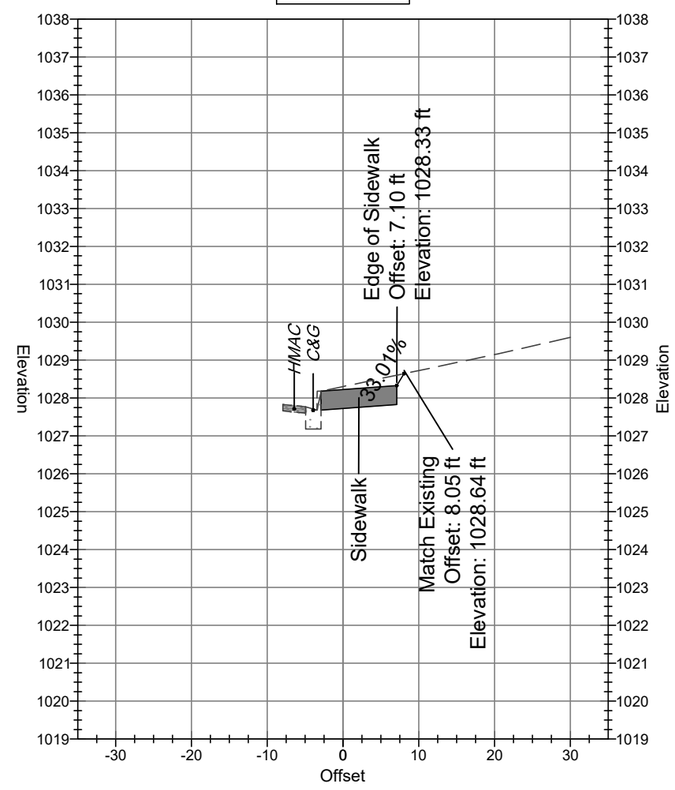
KTMPO ID: C40-05

CROSS SECTIONS FM 3046
STA. 11+00 - STA. 11+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.36
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

12+00.00



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KTMPO ID: C40-05

CROSS SECTIONS FM 3046
STA. 12+00

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		3.37
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

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DATE:
FILE:

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

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

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

1. City of Copperas Cove

2.

☐ No Action Required ☒ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000

2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.

3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.

4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

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

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

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

☒ No Permit Required

☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)

☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)

☐ Individual 404 Permit Required

☐ Other Nationwide Permit Required: NWP# _____

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

1.

2.

3.

4.

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

Best Management Practices:

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

III. CULTURAL RESOURCES

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

☐ No Action Required ☒ Required Action

Action No.

1. SEE STATEMENT ABOVE

2.

3.

4.

IV. VEGETATION RESOURCES

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

☐ No Action Required ☒ Required Action

Action No.

1. SEE STATEMENT ABOVE

2.

3.

4.

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

☐ No Action Required ☒ Required Action

Action No.

1. SEE STATEMENT BELOW

2.

3.

4.

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

LIST OF ABBREVIATIONS

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

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

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

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

Contact the Engineer if any of the following are detected:

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

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

☐ Yes ☒ No

If "No", then no further action is required.
If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

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

☐ Yes ☐ No

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

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

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

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

☒ No Action Required ☐ Required Action

Action No.

1.

VII. OTHER ENVIRONMENTAL ISSUES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Texas Department of Transportation — Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-12-2011 (DS) 05-07-14 ADDED NOTE SECTION IV. 01-23-2015 SECTION I. CHANGED ITEM 1122 TO ITEM 506. ADDED GRASSY SWALES. 02-18-2015 SECTION VI CHANGED WORDING FROM SHALL TO WILL	3128	01	013, ETC.	FM 116
	DIST	COUNTY		SHEET NO.
	WACO	CORYELL		4.1

SITE DESCRIPTION

PROJECT LIMITS:

On FM 116 Between US Hwy. 190 and FM 3046. On FM 3046 Between FM 116 and Dennis Drive.

LOCATION MAPS:

Refer to title sheet for project location map.

PROJECT DESCRIPTION:

Construction of 10' wide Bike/Ped shared pathway, including curb ramps. Modifications to existing storm structures.

MAJOR SOIL DISTURBING ACTIVITIES:

The major soil disturbing activities for this project will consist of demolition, grading and construction of proposed sidewalks and curb ramps.

TOTAL PROJECT AREA:	2.00 AC
TOTAL AREA TO BE DISTURBED:	2.00 AC

EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER:

The predominate soil type is Topsey Clay Loam.

The extents of the project are primarily covered with existing sidewalks and **concrete or asphalt driveways.**

Existing vegetative cover is approximately 25%.

NAME OF RECEIVING WATERS:

Drainage from this project is received by Clear Creek --> Lampasas River and into Stillhouse Hollow Lake.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

____ TEMPORARY SEEDING
X PERMANENT PLANTING, SODDING, OR SEEDING
____ MULCHING
____ SOIL RETENTION BLANKET
____ NATURAL BARRIERS OR BUFFER ZONES
X PRESERVATION OF NATURAL RESOURCES

OTHER: TXR 150000, Part III, Section G, 2 Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating, or other earth disturbing activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. Temporary stabilization must be completed no more than 14 calendar days after initiation of soil stabilization measures, and final stabilization must be achieved prior to termination of permit coverage.

STRUCTURAL PRACTICES:

T SILT FENCES
____ HAY BALES
____ SANDBAG OR ROCK BERMS
____ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
____ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
____ DIVERSION DIKE AND SWALE COMBINATIONS
____ PIPE SLOPE DRAINS
P PAVED FLUMES
____ ROCK BEDDING AT CONSTRUCTION EXIT
____ TIMBER MATTING AT CONSTRUCTION EXIT
____ CHANNEL LINERS
____ SEDIMENT TRAPS
____ SEDIMENT BASINS
T STORM INLET SEDIMENT TRAP
____ STONE OUTLET STRUCTURES
P CURBS AND GUTTERS
P STORM SEWERS
____ VELOCITY CONTROL DEVICES

OTHER: ____

NARRATIVE – SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES:

The order of activities will be as follows:

1. Preserve existing vegetative cover as much as possible.
2. Install temporary sediment control fencing, storm inlet sediment traps, and other items as shown on plans prior to any soil disturbing activities.
3. Remove existing flatwork and asphalt, construct proposed sidewalk/curb and gutter.
4. Place sod as shown in the plans and as directed.

STORM WATER MANAGEMENT:

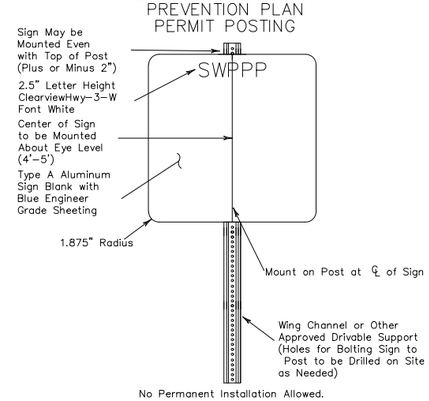
An integral part of the SWPPP for this project includes the EPIC Sheet, Item 506, Waco District Waters of the US Notes, Waco District Typical Applications for Best Management Practices, Form 2118 TxDOT inspection forms, Contractor daily inspection forms, miscellaneous general notes on environmental requirements, TxDOT EC Standards, 2014 Standard Specifications, TxDOT roadway design drawings, SWPPP design and working BMP drawings, Site Manager Data Base, EMS Stage Gate Inspections and the Waco District environmental folders. The requirements of the TxDOT EMS will be fully implemented including training requirements for Contractors and TxDOT staff.

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED PROFESSIONAL ENGINEER

Anthony D. Beach
SIGNATURE

Texas Department of Transportation
Waco District Office
Advanced Project Development
100 South Loop Drive
Waco Texas, 76704-2858

STORM WATER POLLUTION PREVENTION PLAN PERMIT POSTING



No Permanent Installation Allowed.
Sign to be Removed After Project Completion.

OTHER EROSION AND SEDIMENT CONTROLS:

MAINTENANCE: All erosion and sediment best management practices (BMPs)will be maintained in good working order per the environmentalnotes, details and standards included as part of the project plans and contract documents. BMP repairs will be made at the earliest possible date, but no later than seven calendar days after the inspection report has been completed and immediately after the ground has dried sufficiently to allow equipment access. BMPs damaged by the Contractor will be repaired or replaced immediately. The installation and repair of BMPs at creeks and outfalls will be given priority.

INSPECTION: TxDOT Form 2118 inspections to support TXR150000 and 404 permits will be conducted on a seven day interval on the same day of the week, until permits are terminated. The Contractor will provide daily BMP inspection reports on work days. Stage Gate Inspections and other BMP inspections will be conducted by the District and Area Office Staff based on requirements of the TxDOT Environmental Management System (EMS).

WASTE MATERIALS: Any waste materials generated during construction will be disposed of in accordance with existing federal, state, and local laws.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING):

At a minimum, any products in the following categories are considered to be hazardous: Fuels, Lubricating products, Asphalt products, or Concrete curing compounds and any additives. In the event of a spill which may be hazardous, clean-up will be done in accordance with federal, state, and local regulations. The Contractor will maintain a list of all chemicals and wastes required for the project; including chemicals used by sub-contractors, and will implement written spill prevention and clean-up plans.

SANITARY WASTE: Sanitary waste from portable units will be collected by a licensed sanitary waste management contractor.

OFF SITE VEHICLE TRACKING:

____ HAUL ROADS DAMPENED FOR DUST CONTROL
X LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
X EXCESS DIRT ON ROAD REMOVED DAILY
____ STABILIZED CONSTRUCTION ENTRANCE

REMARKS: Disposal areas, stockpiles, and haul roads will be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas will not be located in any wetland, waterbody or streambed. Construction staging area and vehicle maintenance area will be constructed by the contractor in a manner to minimize the runoff pollutants.

Furnish one SW3P permit posting sign and sign support as detailed on the SW3P Sheet. Install this sign in a location selected by the Engineer. The sign and support should be removed upon completion of the project and is the property of the Contractor. The purchase of the sign and support, installation, relocation(s) if determined necessary by the Engineer and removal at project end will be subsidiary to Item 506.

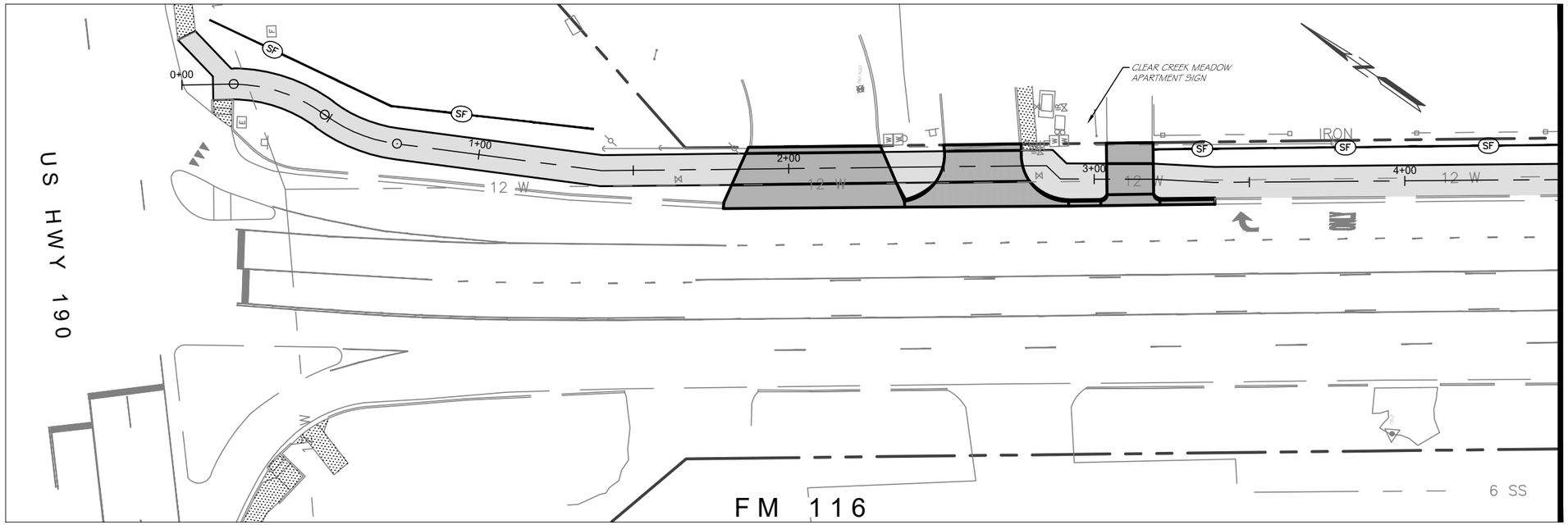
Sedimentation Basins – Since the area disturbed is less than 10 acres, per outfall location, a sedimentation basin is not required.

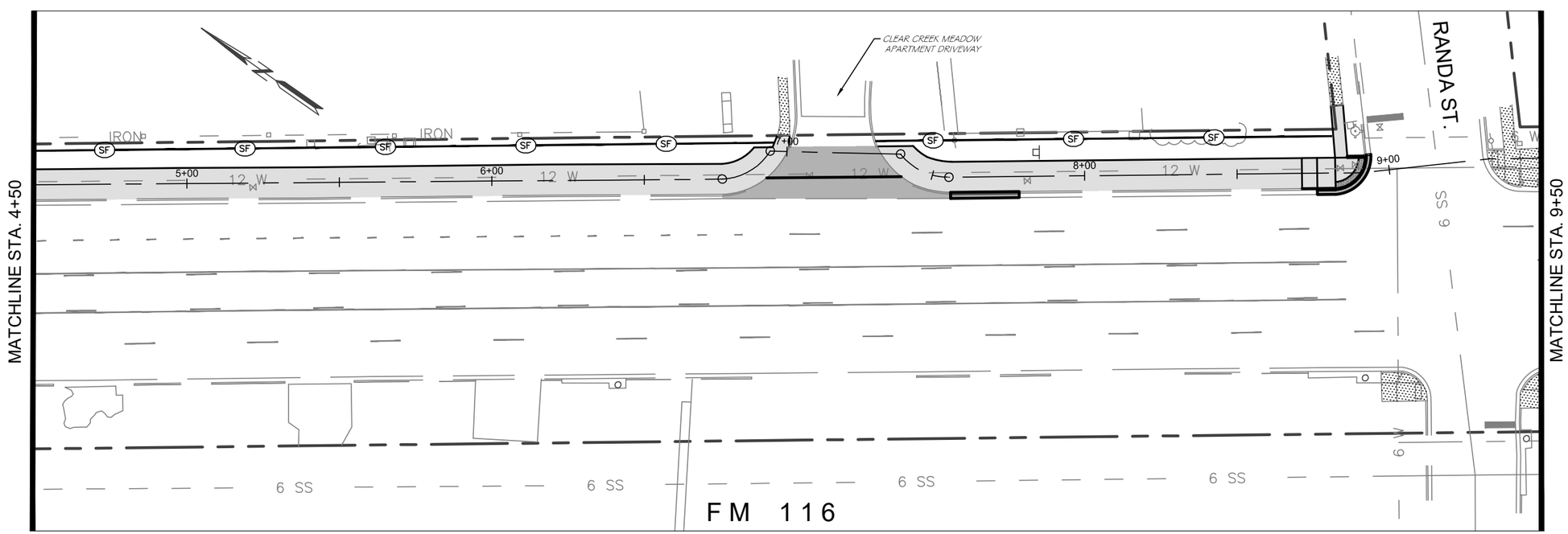
WACO DISTRICT STORM WATER POLLUTION PREVENTION PLAN (SW3P)

Texas Department of Transportation © 2015

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			4.2
STATE	DIST.	COUNTY	
TEXAS	WACO	CORYELL	
CONT.	SECT.	JOB	HIGHWAY NO.
3128	01	013, ETC.	FM 116

$FILE$





20 10 0 20 40

SCALE IN FEET

LEGEND:

EXISTING ROW

SF

SEDIMENT CONTROL SILT FENCE

ST-CI (CURB INLET SEDIMENT TRAP)

ST-DI (DROP INLET SEDIMENT TRAP)

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE

BSP engineers

TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

Copperas Cove

COPPERAS COVE, TEXAS

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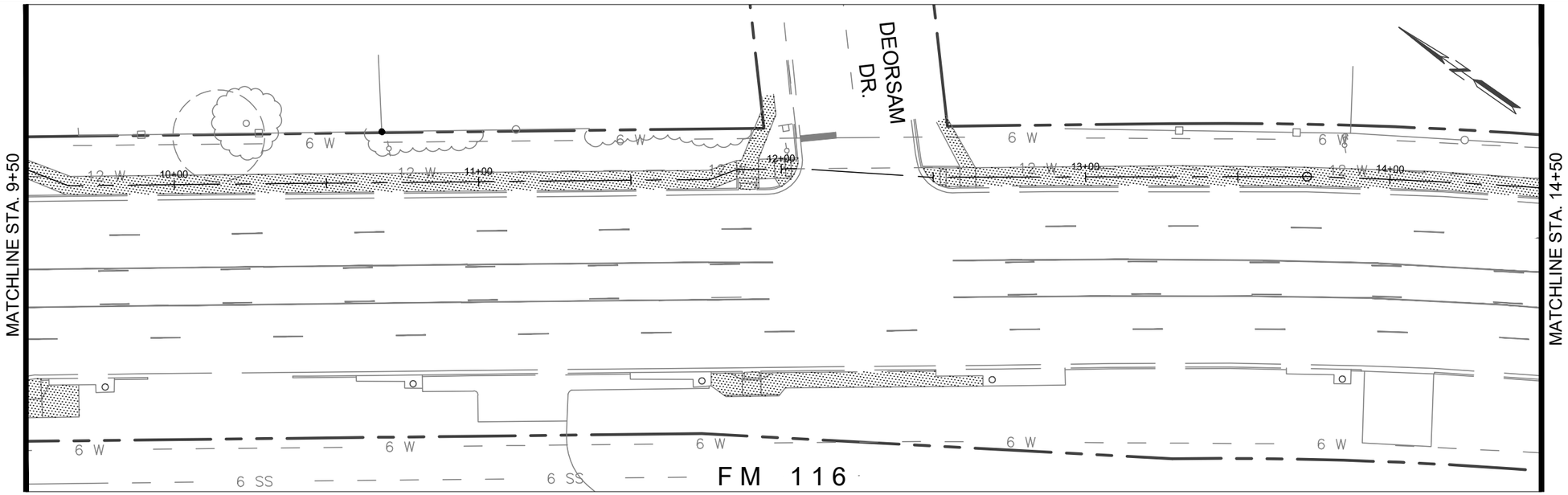
CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

SW3P FM 116
STA. 0+00 - 9+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		4.3
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046



20 10 0 20 40
SCALE IN FEET

LEGEND:

EXISTING ROW

SF
SEDIMENT CONTROL SILT FENCE

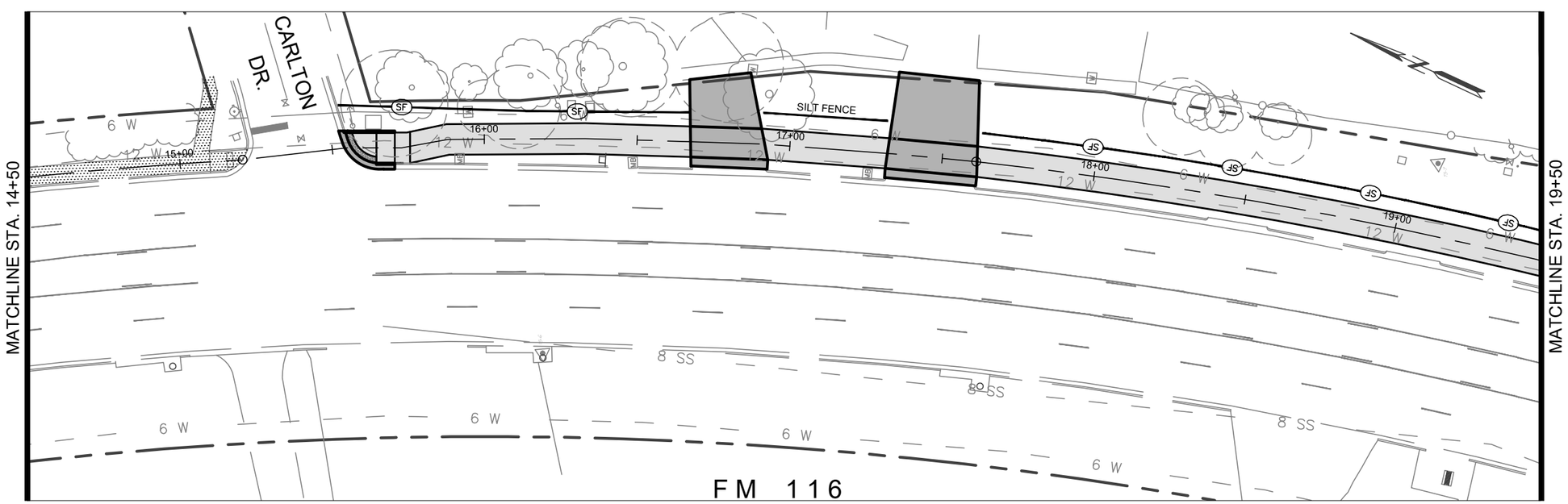
ST-CI (CURB INLET SEDIMENT TRAP)
ST-DI (DROP INLET SEDIMENT TRAP)

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

NOTE:

NO SIDEWALK IMPROVEMENTS ARE PLANNED IN THIS PROJECT BETWEEN RANDA STREET AND PEMBERTON STREET.



Anthony D. Beach
SIGNATURE

BSP engineers
TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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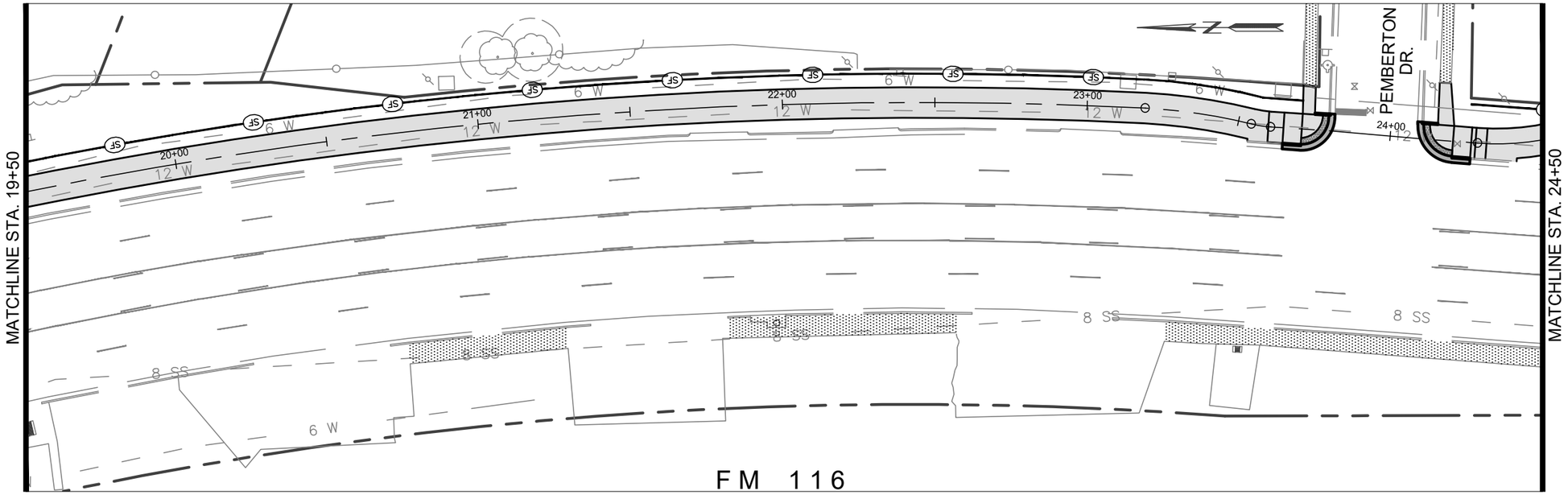
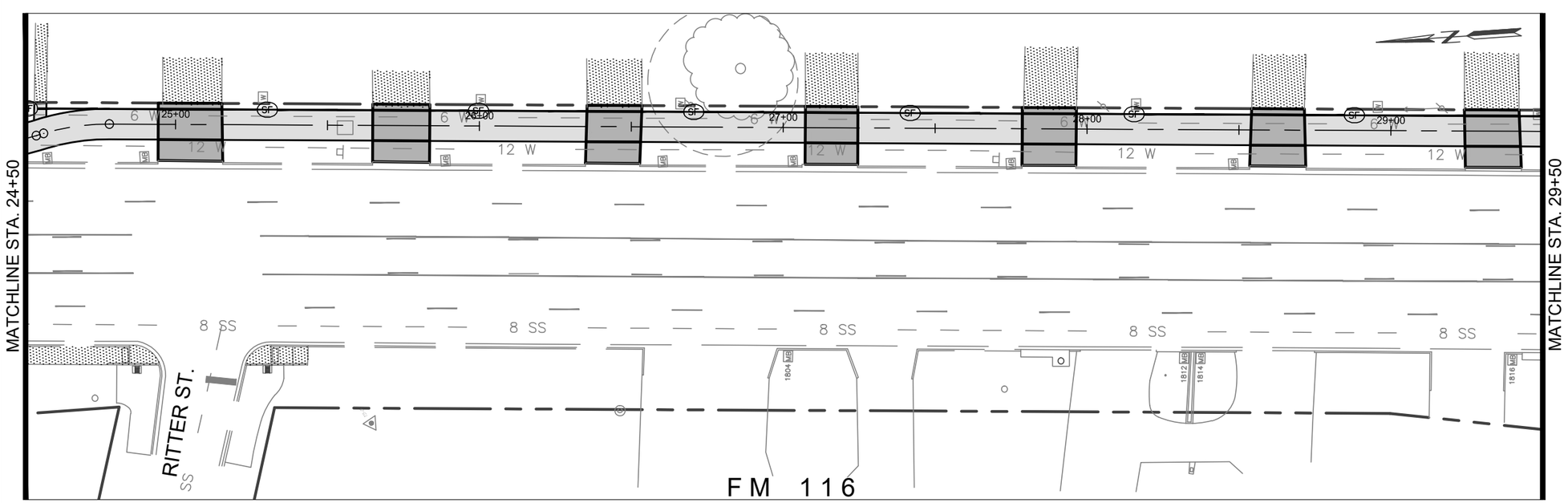
KTMPO ID: C40-05
SW3P FM 116
STA. 9+50 - 19+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		4.4
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046





20 10 0 20 40

SCALE IN FEET

LEGEND:

EXISTING ROW

SF SEDIMENT CONTROL SILT FENCE

ST-CI (CURB INLET SEDIMENT TRAP)

ST-DI (DROP INLET SEDIMENT TRAP)

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
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BSP PROJECT: 172384.00

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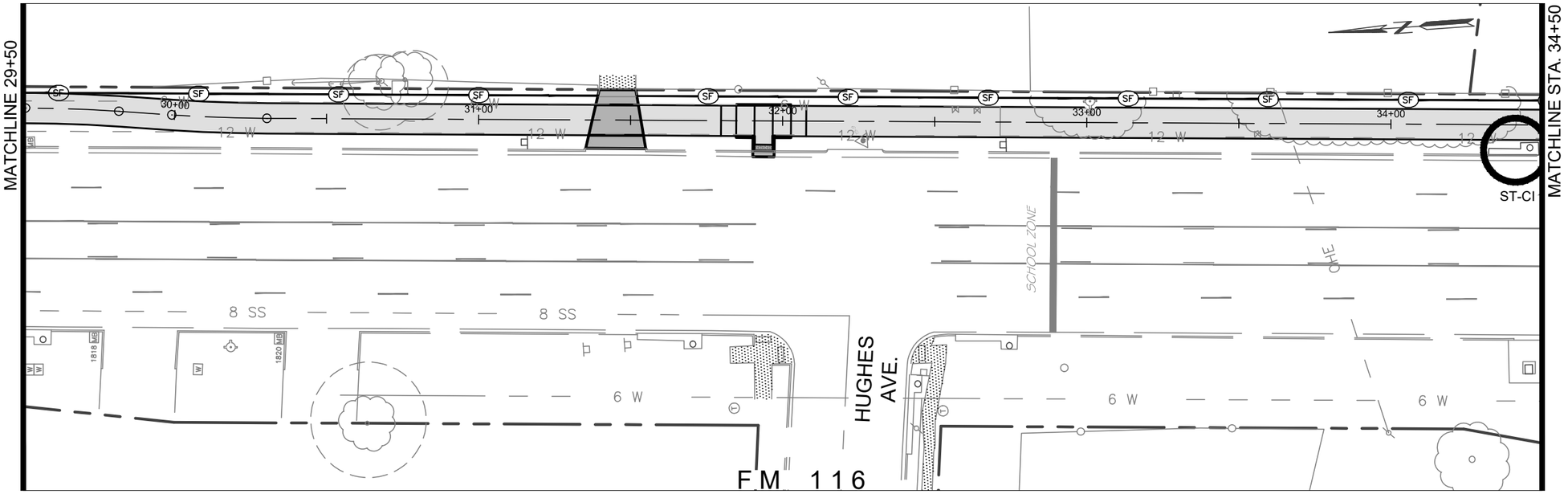
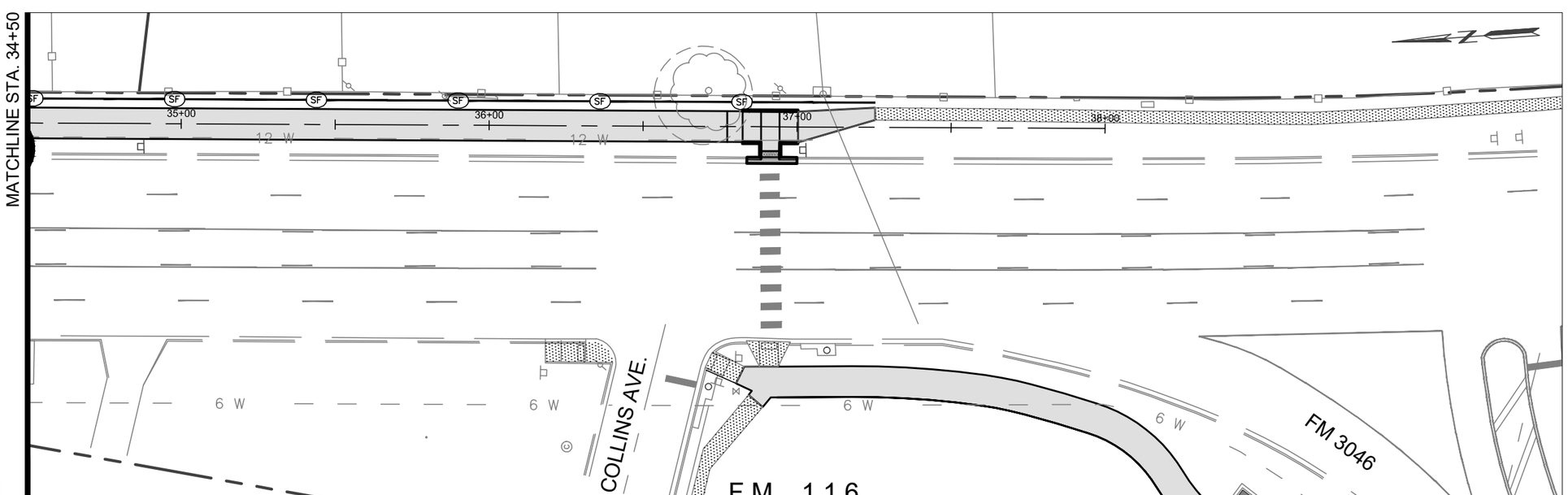
KTMPO ID: C40-05

SW3P FM 116
STA. 19+50 - 29+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		4.5
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046





20 10 0 20 40

SCALE IN FEET

LEGEND:

EXISTING ROW

SF

SEDIMENT CONTROL SILT FENCE

ST-CI (CURB INLET SEDIMENT TRAP)

ST-DI (DROP INLET SEDIMENT TRAP)

10-17-2019

STATE OF TEXAS
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TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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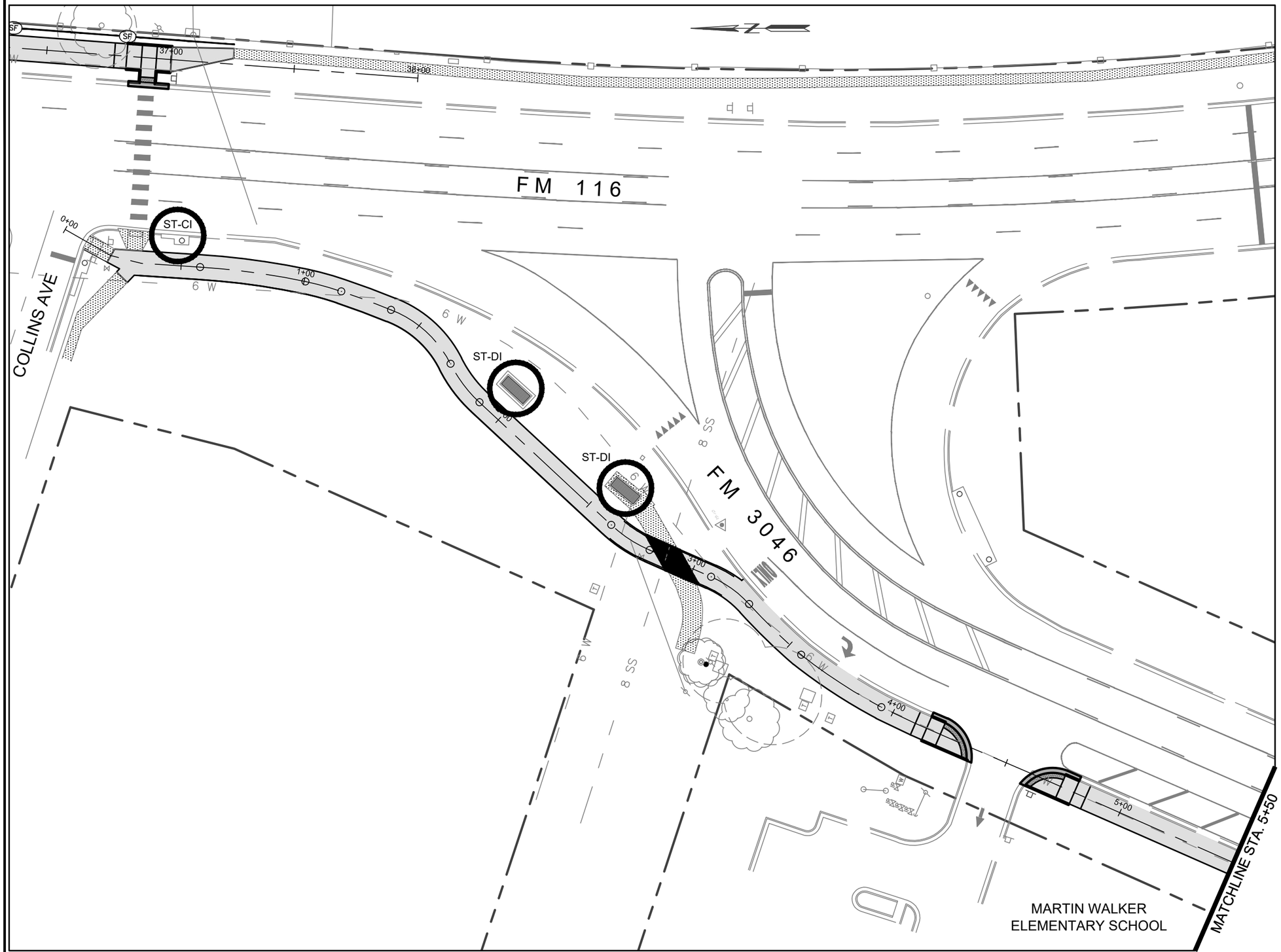
SW3P FM 116
STA. 29+50 - END

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		4.6
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046



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SCALE IN FEET

LEGEND:

EXISTING ROW

SEDIMENT CONTROL SILT FENCE

ST-CI (CURB INLET SEDIMENT TRAP)

ST-DI (DROP INLET SEDIMENT TRAP)

10-17-2019

STATE OF TEXAS
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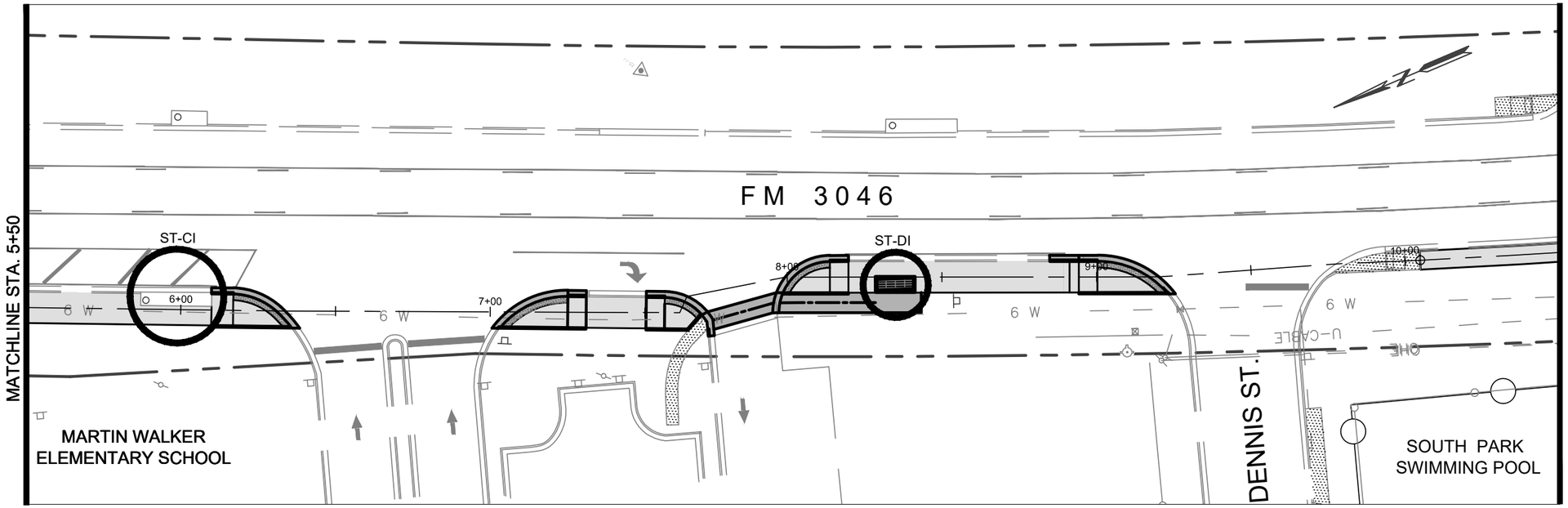
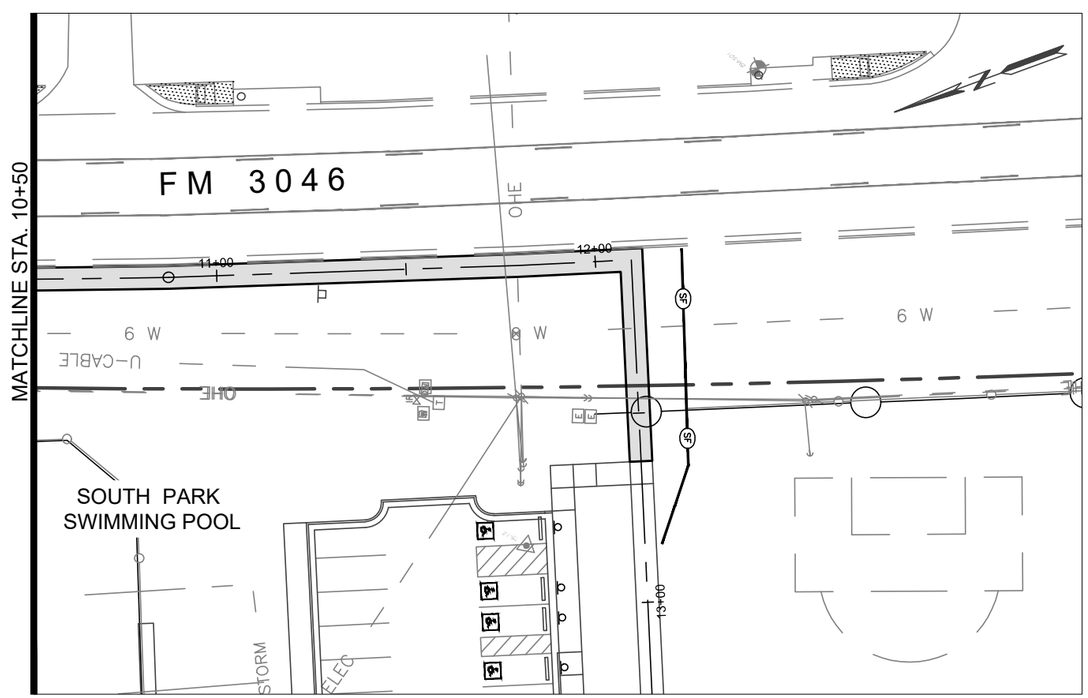
KTMPO ID: C40-05

SW3P FM 3046
STA. 0+00 - 5+50

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		4.7
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046





20 10 0 20 40

SCALE IN FEET

LEGEND:

EXISTING ROW

SF

SEDIMENT CONTROL SILT FENCE

ST-CI (CURB INLET SEDIMENT TRAP)

ST-DI (DROP INLET SEDIMENT TRAP)

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE

BSP engineers

TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

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CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05
SW3P FM 3046
STA. 5+50 - END

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		4.8
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).

2. The development and design of the Traffic Control Plan (TCP)is the responsibility of the Engineer.

3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.

4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.

5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.

6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.

7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.

8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.

10. As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER (see Sign Detail G20-10T) and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.

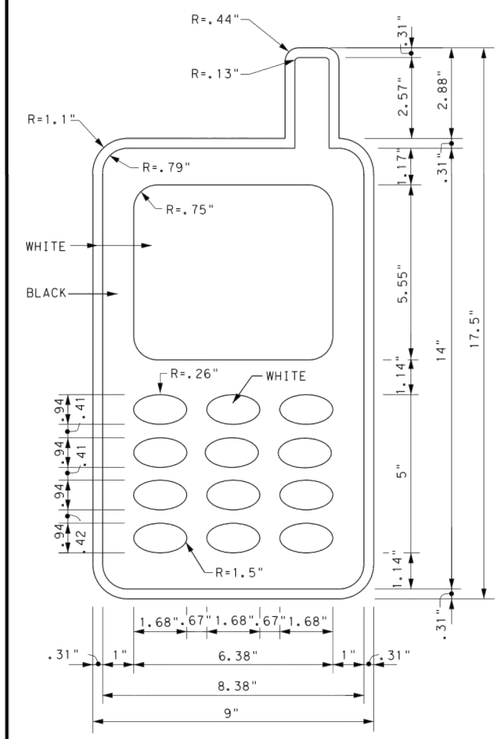
11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

12. The Engineer has the final decision on the location of all traffic control devices.

13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY APPAREL NOTES:

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



3.0" Radius, 1.25" Border, 0.75" Indent, Black on Yellow;
[STAY ALERT] Font: D
3.0" Radius, 1.25" Border, 0.75" Indent, Black on Orange;
[TALK OR TEXT LATER] Font: C specified length;

SIGN DETAIL (G20-10T)

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

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

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

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DATE:
FILE:

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	3128	01	013, ETC.	FM 116
4-03 5-10 8-14 9-07 7-13	DIST	COUNTY		SHEET NO.
	WACO	CORYELL		5.1

95

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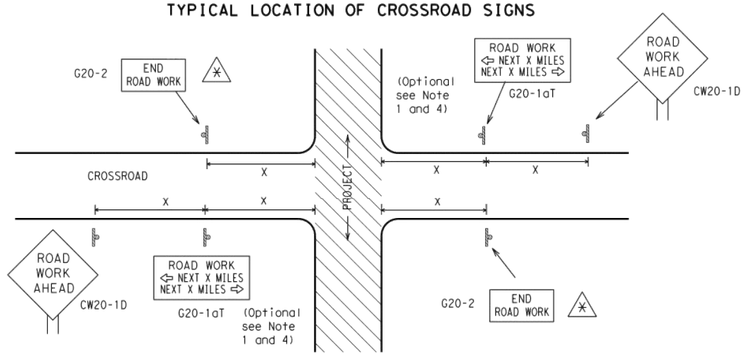
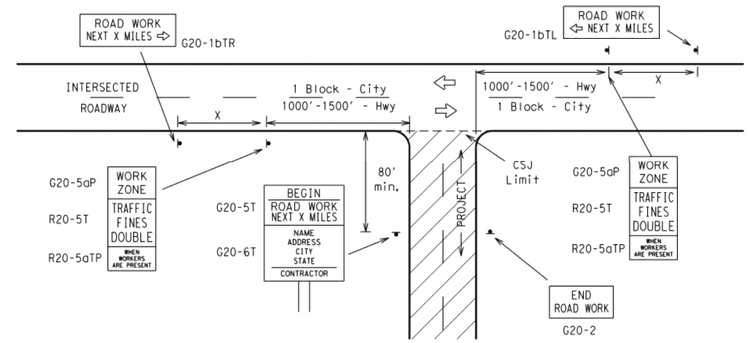
TYPICAL LOCATION OF CROSSROAD SIGNS



✱ May be mounted on back of "ROAD WORK AHEAD"(CW20-1D) sign with approval of Engineer. (See note 2 below)

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D)sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK"(G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The "ROAD WORK NEXT X MILES"(G20-1aT)sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-intersection the Contractor shall place the "CONTRACTOR NAME"(G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow(G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR)" signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING[1,5,6]

SIZE

Sign Number or Series	Conventional Road	Expressway/ Freeway
CW20[4] CW21 CW22 CW23 CW25	48" x 48"	48" x 48"
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"

SPACING

Posted Speed	Sign Spacing "X" △
MPH	Feet (Apprx.)
30	120
35	160
40	240
45	320
50	400
55	500[2]
60	600[2]
65	700[2]
70	800[2]
75	900[2]
80	1000[2]
✱	✱[3]

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

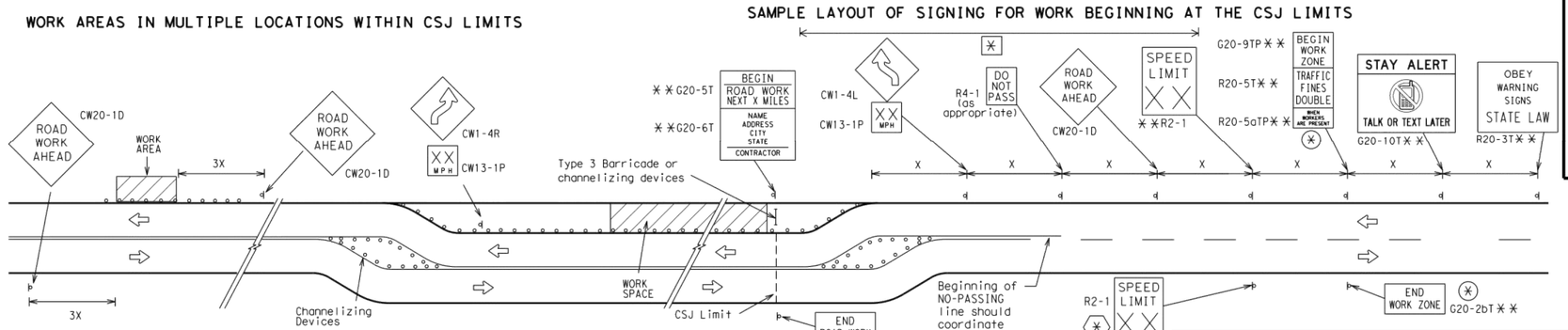
△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

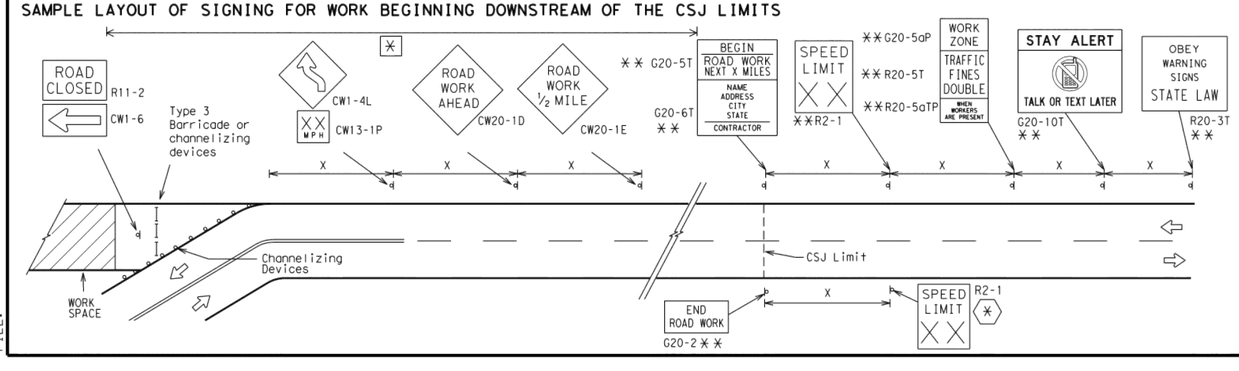
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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

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



NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

(✱) The "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.

✱✱ Required CSJ Limit signing. See Note 10 on BC(1). TRAFFIC FINES DOUBLE signs will not be required on projects consisting solely of mobile operations work.

[✱] Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

(✱) Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

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

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Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-14

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9-07 8-14	DIST		COUNTY	SHEET NO.
7-13	WACO		CORYELL	5.2

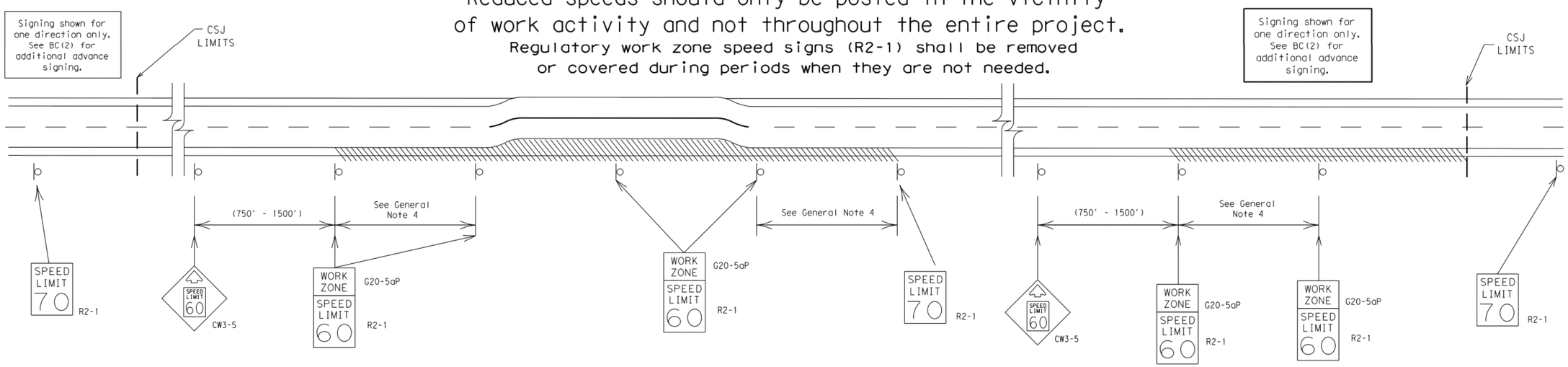
DATE:
FILE:

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project.

Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be:
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the "ADVANCE SPEED LIMIT" (CW3-5) sign, "WORK ZONE" (G20-5aP) plaque and the "SPEED LIMIT" (R2-1) signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

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SHEET 3 OF 12

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-14

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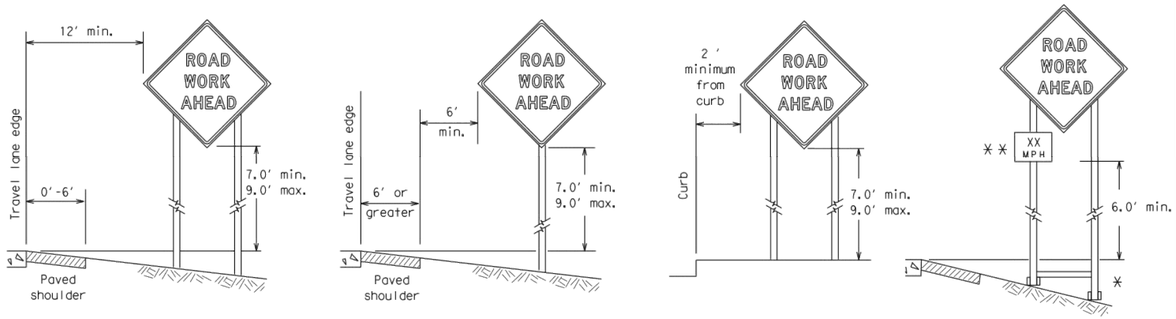
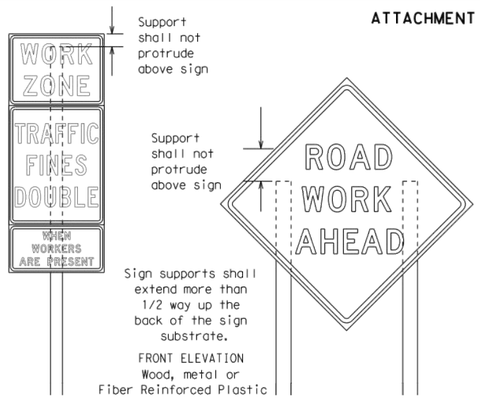
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



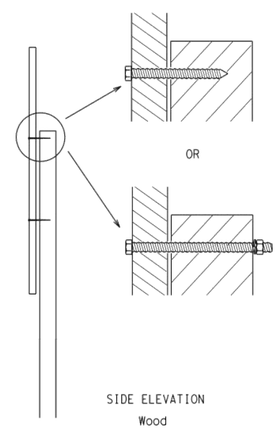
✱ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS



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

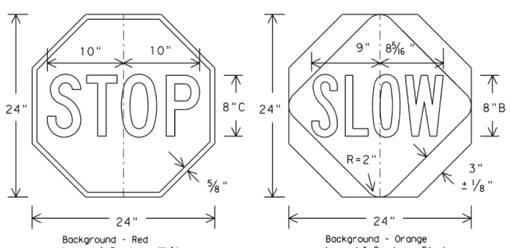


Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

STOP/SLOW PADDLES

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



CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-14

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	WACO		CORYELL	5.4

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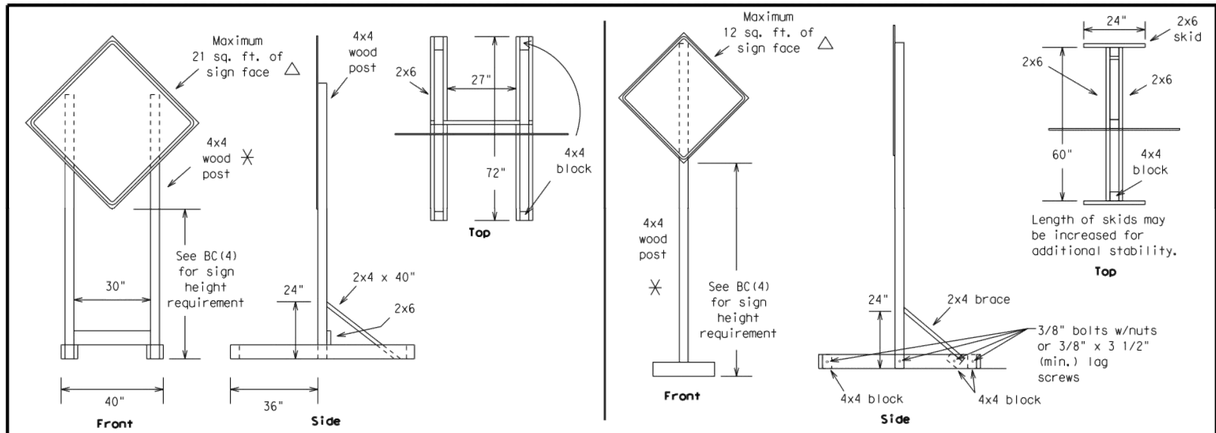
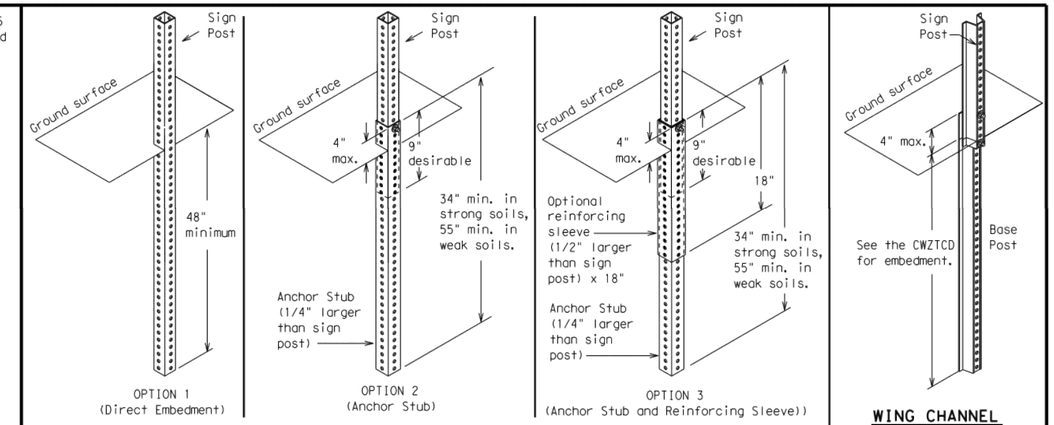


SKID MOUNTED WOOD SIGN SUPPORTS

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

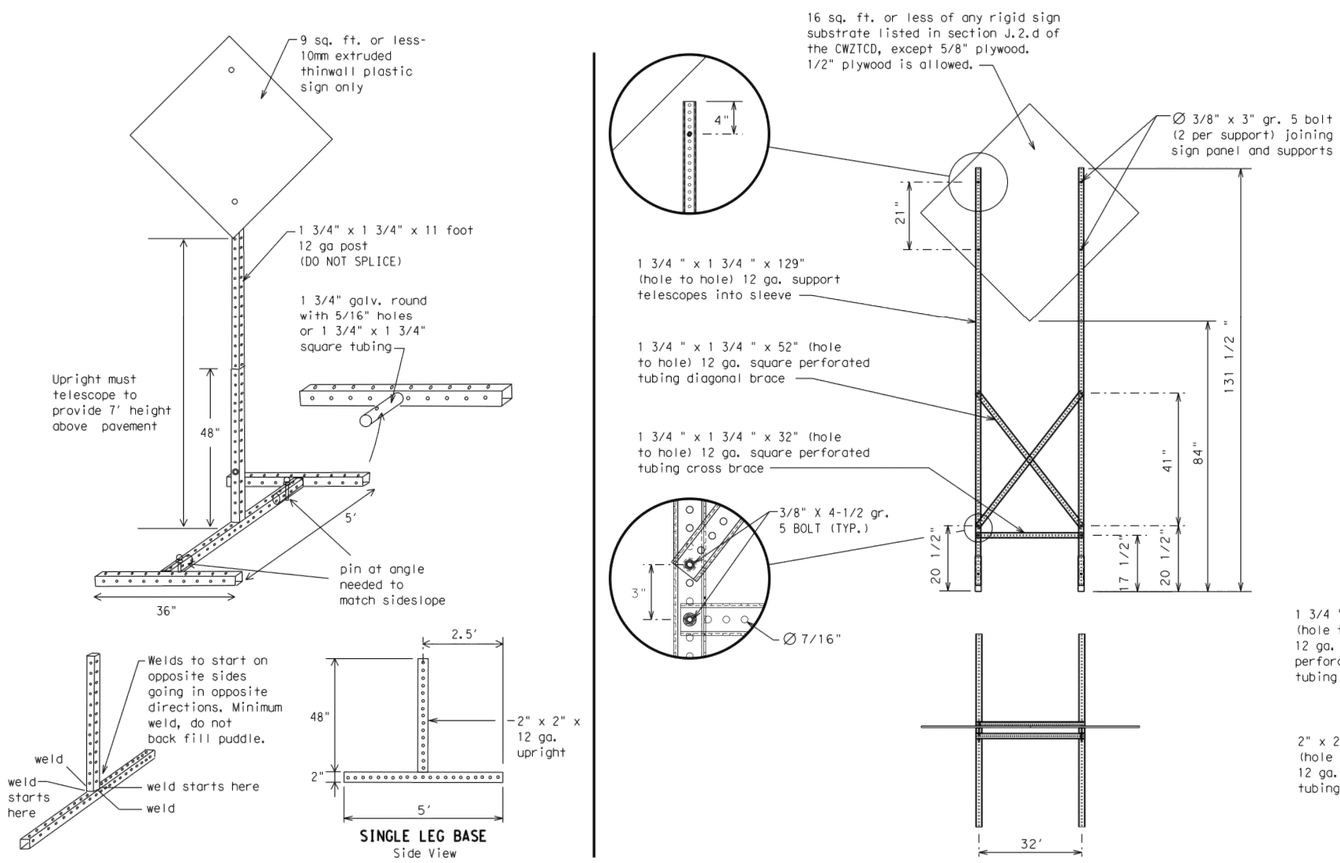


PERFORATED SQUARE METAL TUBING

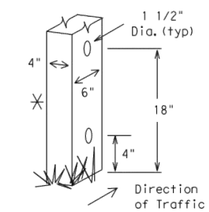
WING CHANNEL
Lap-splice/base bolted anchor

GROUND MOUNTED SIGN SUPPORTS

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



SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS



Nominal Post Size	Number of Posts	Maximum Sq. feet of Sign Face	Minimum Soil Embedment	Drilled Hole(s) Required
4 x 4	1	12	36"	NO
4 x 4	2	21	36"	NO
4 x 6	1	21	36"	YES
4 x 6	2	36	36"	YES

WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

□ See BC(4) for definition of "Work Duration."

✳ Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

△ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

SHEET 5 OF 12

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-14

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD
Alternate	ALT
Avenue	AVE
Best Route	BEST RTE
Boulevard	BLVD
Bridge	BRDG
Cannot	CANT
Center	CTR
Construction Ahead	CONST AHD
CROSSING	XING
Detour Route	DETOUR RTE
Do Not	DONT
East	E
Eastbound	(route) E
Emergency	EMER
Emergency Vehicle	EMER VEH
Entrance, Enter	ENT
Express Lane	EXP LN
Expressway	EXPWY
XXXX Feet	XXXX FT
Fog Ahead	FOG AHD
Freeway	FRWY, FWY
Freeway Blocked	FWY BLKD
Friday	FRI
Hazardous Driving	HAZ DRIVING
Hazardous Material	HAZMAT
High-Occupancy	HOV
Vehicle Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT

WORD OR PHRASE	ABBREVIATION
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
Will Not	WONT

Roadway designation # IH-number, US-number, SH-number, FM-number

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT
RIGHT X LANES CLOSED	RIGHT X LANES OPEN
CENTER LANE CLOSED	DAYTIME LANE CLOSURES
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE
EXIT CLOSED	RIGHT LN TO BE CLOSED
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI
XXXXXXXX BLVD CLOSED	

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

MERGE RIGHT	FORM X LINES RIGHT
DETOUR NEXT X EXITS	USE XXXXX RD EXIT
USE EXIT XXX	USE EXIT I-XX NORTH
STAY ON US XXX SOUTH	USE I-XX E TO I-XX N
TRUCKS USE US XXX N	WATCH FOR TRUCKS
WATCH FOR TRUCKS	EXPECT DELAYS
EXPECT DELAYS	PREPARE TO STOP
REDUCE SPEED XXX FT	END SHOULDER USE
USE OTHER ROUTES	WATCH FOR WORKERS
STAY IN LANE *	

Location List

AT FM XXXX
BEFORE RAILROAD CROSSING
NEXT X MILES
PAST US XXX EXIT
XXXXXXX TO XXXXXXX
US XXX TO FM XXXX

Warning List

SPEED LIMIT XX MPH
MAXIMUM SPEED XX MPH
MINIMUM SPEED XX MPH
ADVISORY SPEED XX MPH
RIGHT LANE EXIT
USE CAUTION
DRIVE SAFELY
DRIVE WITH CARE

** Advance Notice List

TUE-FRI XX AM- X PM
APR XX- XX X PM-X AM
BEGINS MONDAY
BEGINS MAY XX
MAY X-X XX PM - XX AM
NEXT FRI-SUN
XX AM TO XX PM
NEXT TUE AUG XX
TONIGHT XX PM- XX AM

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

FULL MATRIX PCMS SIGNS

1. When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
2. When symbol signs, such as the "Flagger Symbol"(CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
3. When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
4. A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

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Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	3128	01	013, ETC.	FM 116
9-07 8-14	DIST		COUNTY	SHEET NO.
7-13	WACO		CORYELL	5.6

100

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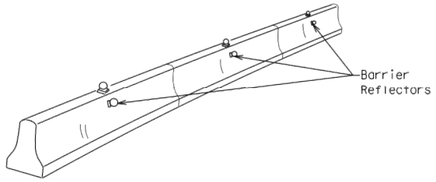
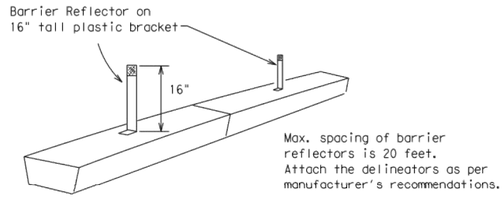
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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

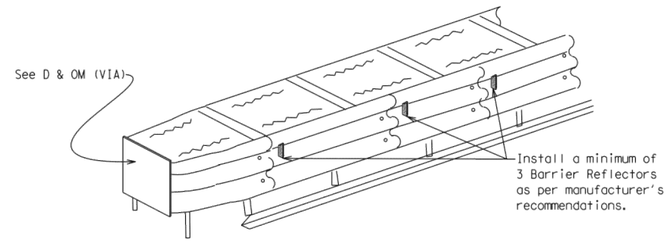


CONCRETE TRAFFIC BARRIER (CTB)

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



LOW PROFILE CONCRETE BARRIER (LPCB)

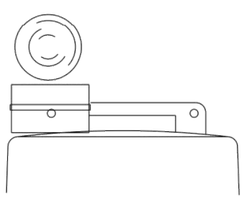


DELINEATION OF END TREATMENTS

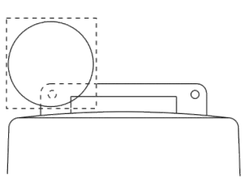
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

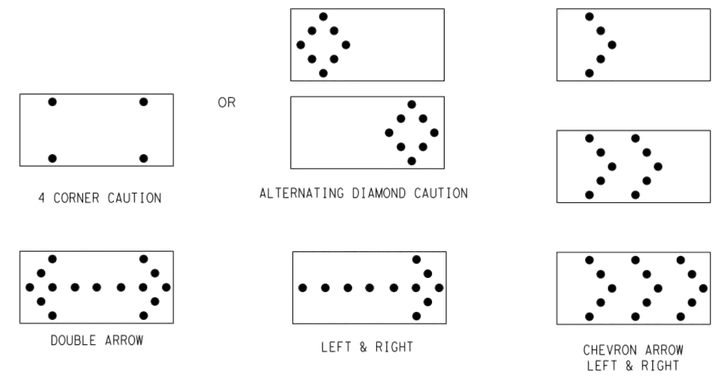
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
4. Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

1. A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
2. The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
3. The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
6. The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

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

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



5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
8. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential Chevron display may be used during daylight operations.
11. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
14. Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

REQUIREMENTS

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350) or the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

Texas Department of Transportation — Traffic Operations Division Standard

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

BC(7)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 9-07 8-14 7-13	3128	01	013, ETC.	FM 116
	DIST		COUNTY	SHEET NO.
	WACO		CORYELL	5.7

DATE:
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GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. 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.
3. 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.
4. 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).
5. 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.
6. 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:

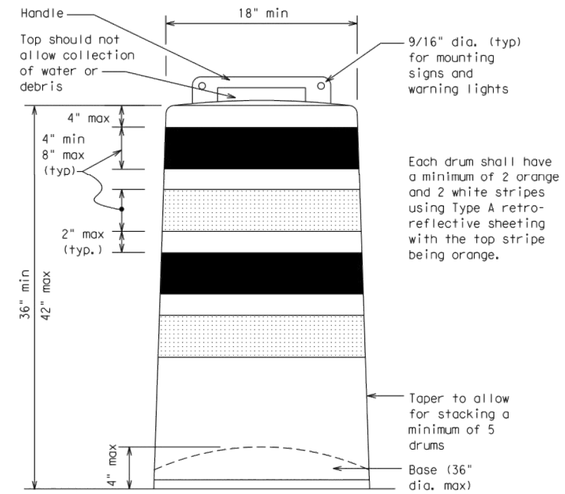
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
9. Drum body shall have a maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

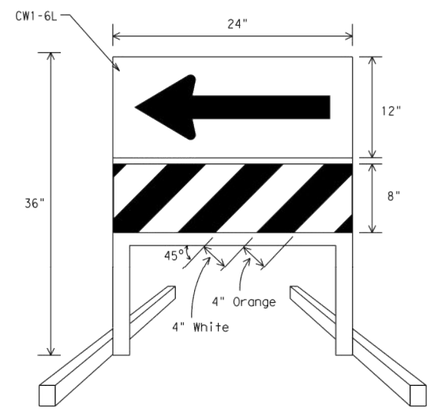
RETROREFLECTIVE SHEETING

1. 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.
2. 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

1. 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.
2. 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.
3. Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
4. 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.
5. 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.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.

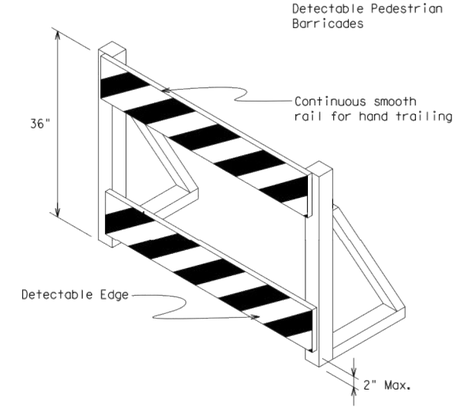




DIRECTION INDICATOR BARRICADE

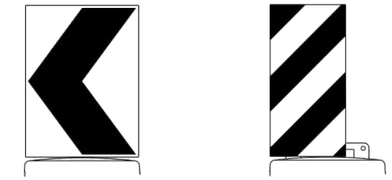
1. The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
2. If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
3. 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. Sheeting types shall be as per DMS 8300.
4. Double arrows on the Direction Indicator Barricade will not be allowed.
5. Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.

This detail is not intended for fabrication. See note 3 and the CWZTCD list for providers of approved Detectable Pedestrian Barricades



DETECTABLE PEDESTRIAN BARRICADES

1. 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.
2. 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.
3. 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.
4. 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.
5. Warning lights shall not be attached to detectable pedestrian barricades.
6. 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

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. 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.
3. 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.
4. 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.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. 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.
8. 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.

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-14

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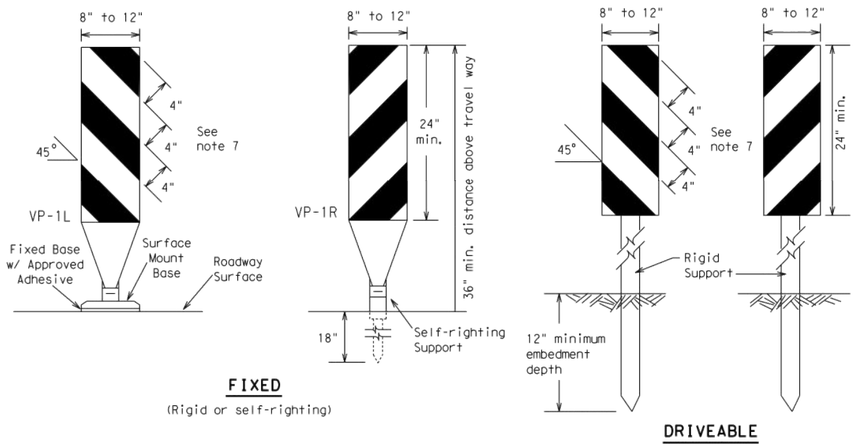
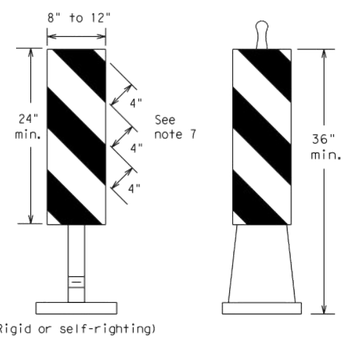


FIXED

(Rigid or self-righting)

DRIVEABLE

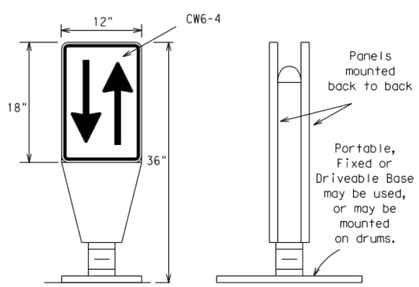


(Rigid or self-righting)

PORTABLE

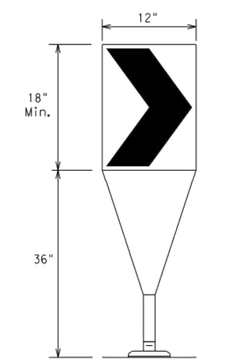
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual Appendix B "Treatment of Pavement Drop-offs in Work Zones" for additional guidelines on the use of VP's for drop-offs.
3. VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
4. VP's used on expressways and freeways or other high speed roadways, 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 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)



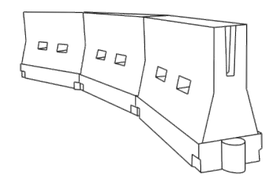
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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) placed 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 NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to 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 ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices 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

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-14

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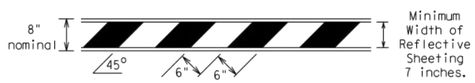
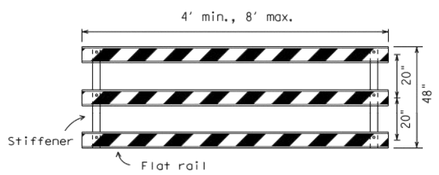
TYPE 3 BARRICADES

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.



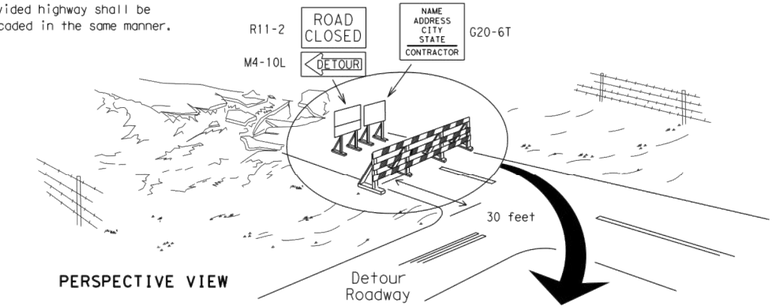
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

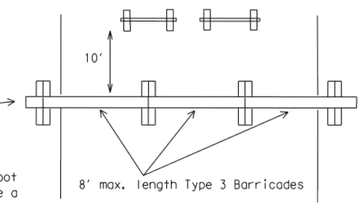
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

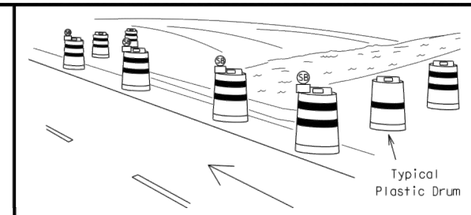
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

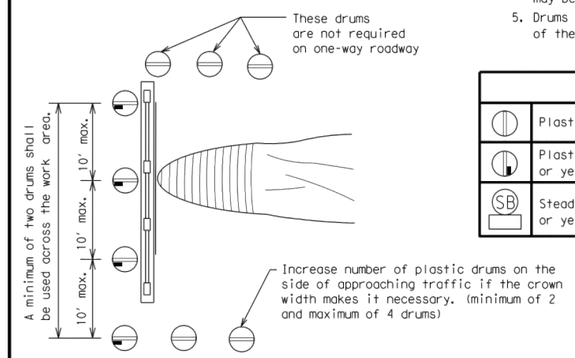
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

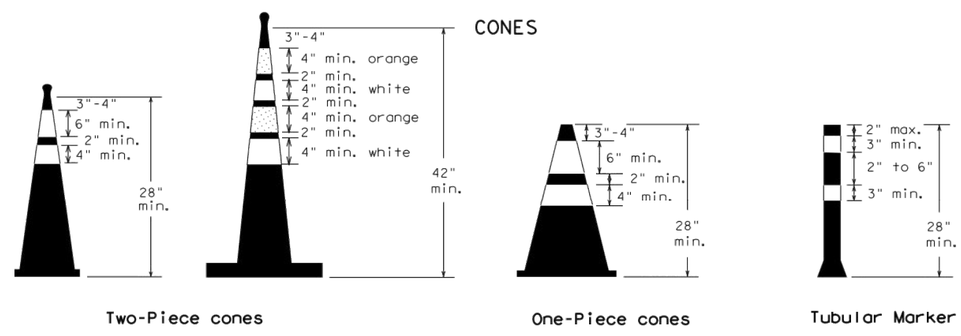
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder 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



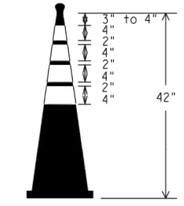
Two-Piece cones | One-Piece cones | Tubular Marker

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.

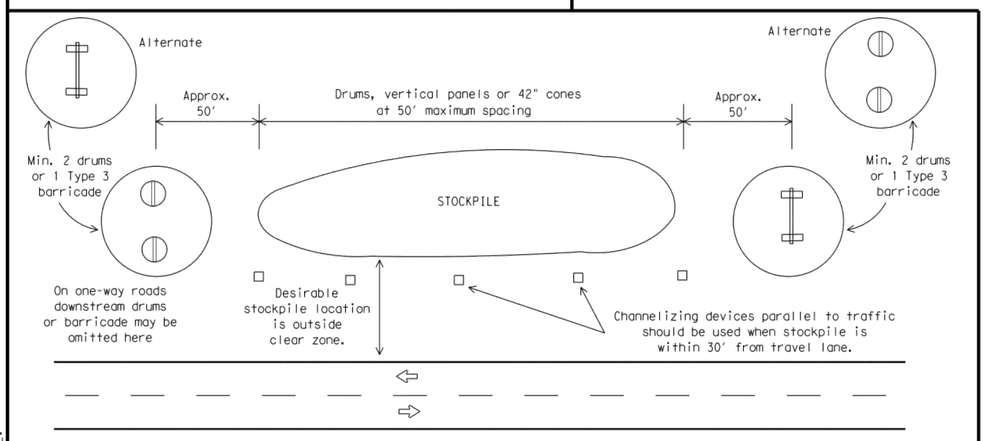
1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added 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 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.

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



EDGELINE 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.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-14

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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.

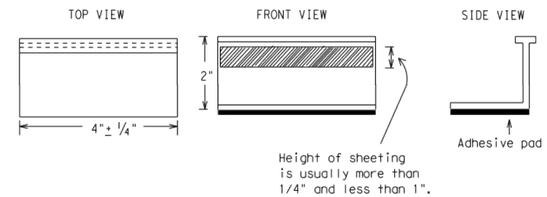
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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 Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

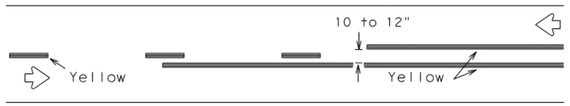
BC(11)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	3128	01	013, ETC.	FM 116
2-98 9-07	DIST		COUNTY	SHEET NO.
1-02 7-13	WACO		CORYELL	5.11
11-02 8-14				

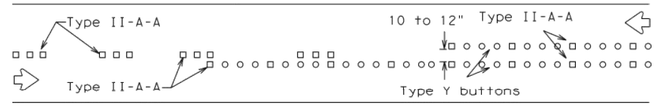
105

DATE:
FILE:

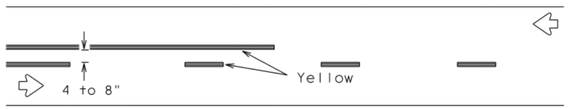
PAVEMENT MARKING PATTERNS



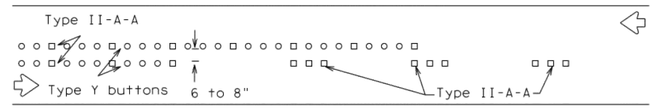
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



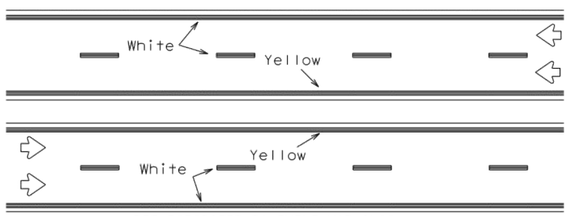
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



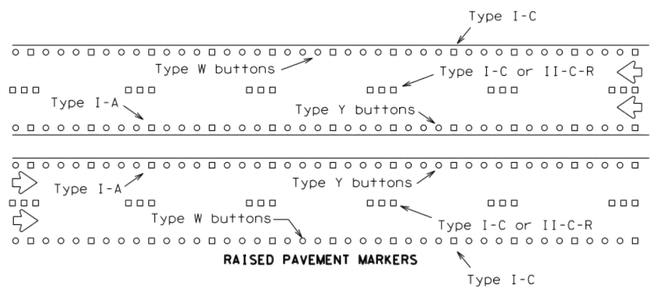
RAISED PAVEMENT MARKERS - PATTERN B

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



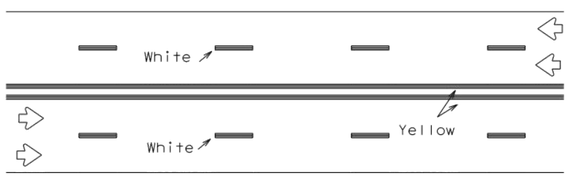
REFLECTORIZED PAVEMENT MARKINGS



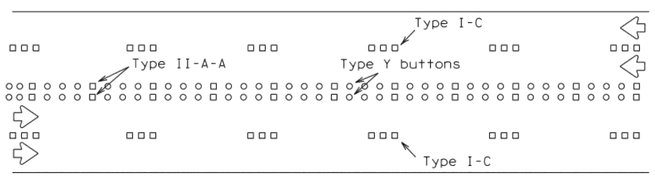
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



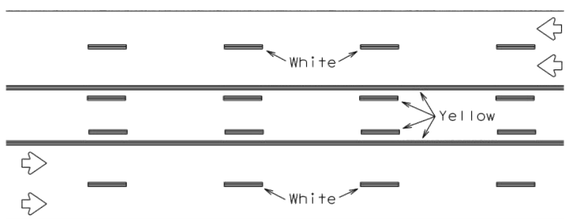
REFLECTORIZED PAVEMENT MARKINGS



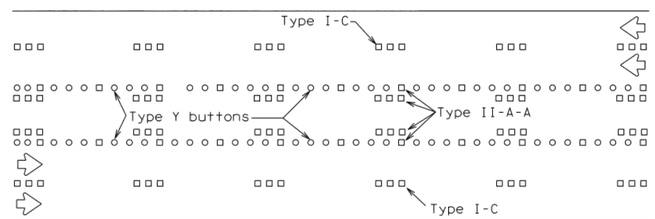
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

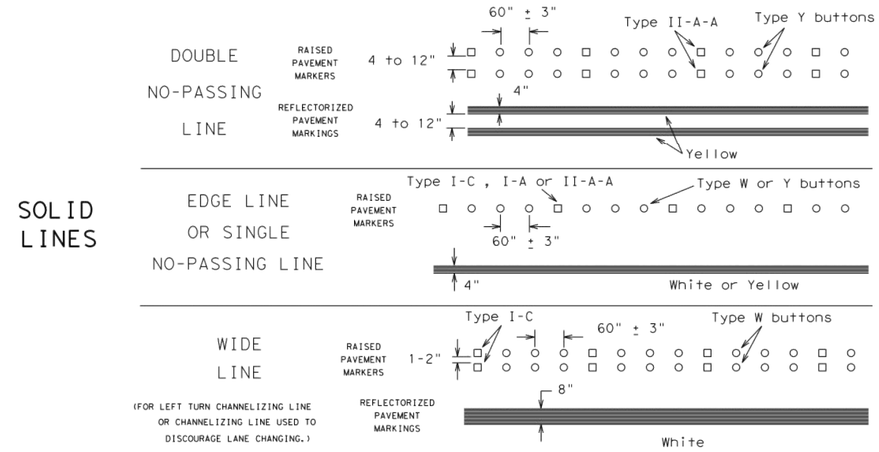


RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

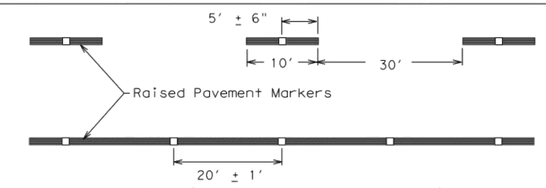
TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



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

SHEET 12 OF 12

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 Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	3128	01	013, ETC.	FM 116
1-97 9-07	DIST		COUNTY	SHEET NO.
2-98 7-13	WACO		CORYELL	5.12
11-02 8-14				

106

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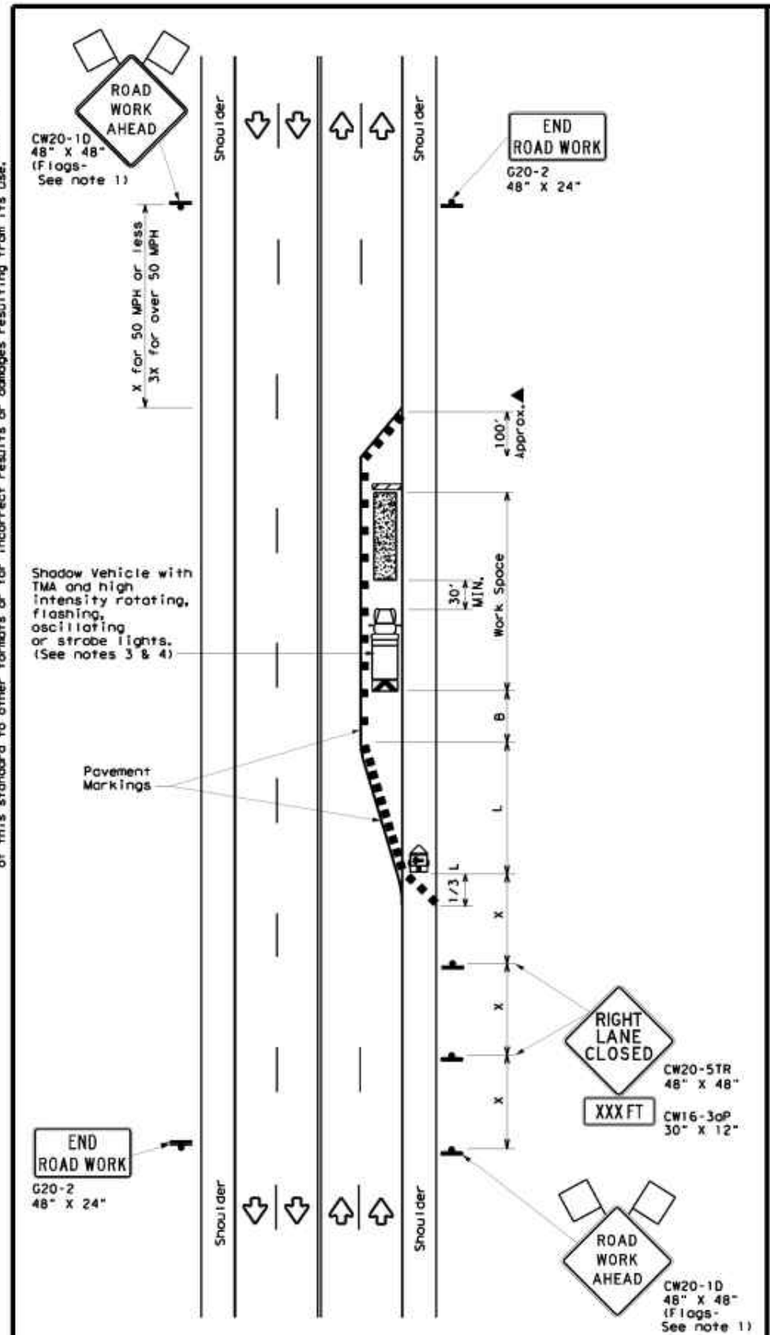
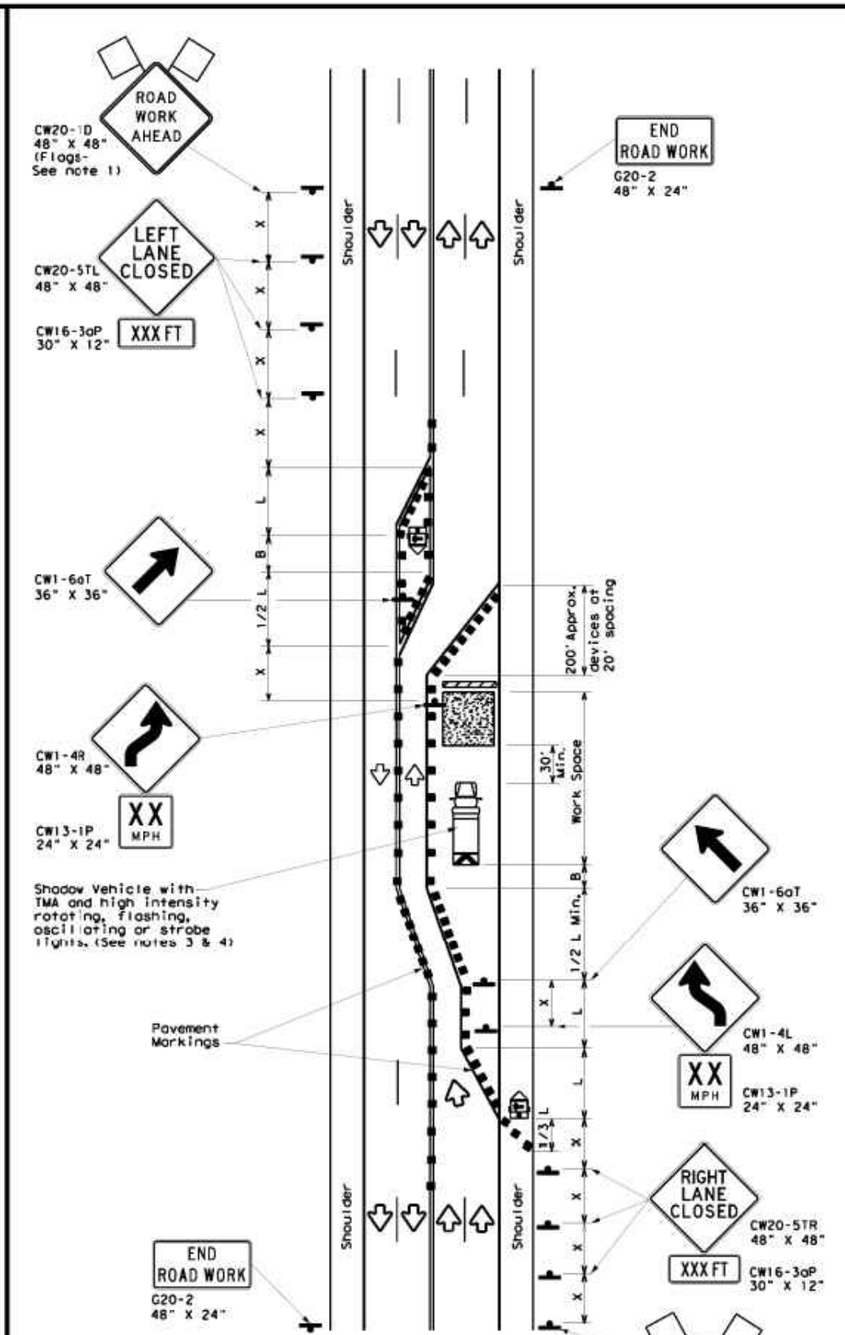


TCP (2-5a)

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 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 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:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 2-12	3128	01	013, ETC.	FM 116
1-97 3-03	DIST		COUNTY	SHEET NO.
4-98 2-18	WACO		CORYELL	6.1

DATE:
FILE:

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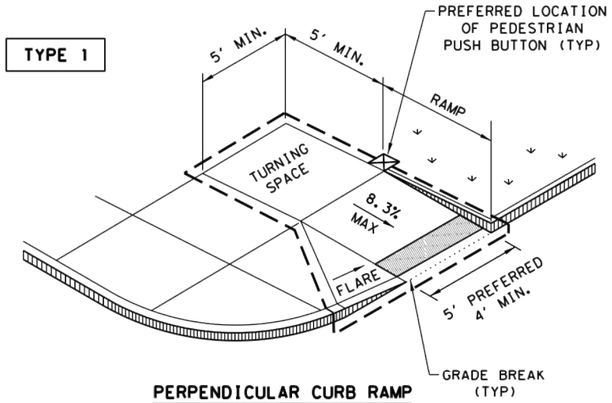
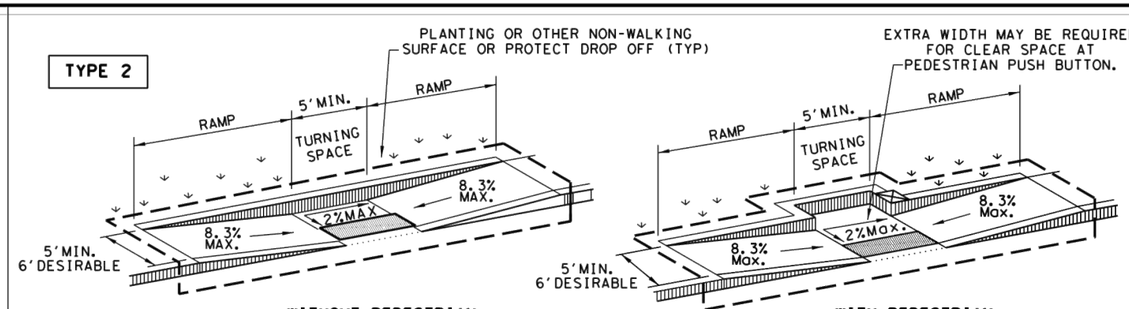
DATE:
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

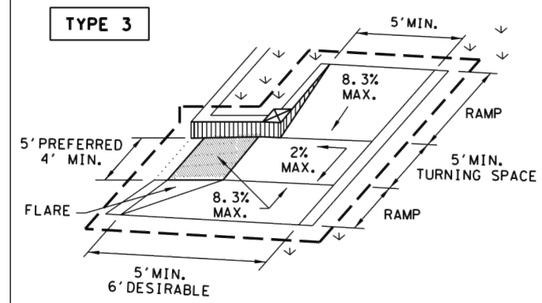


WITHOUT PEDESTRIAN PUSH BUTTON

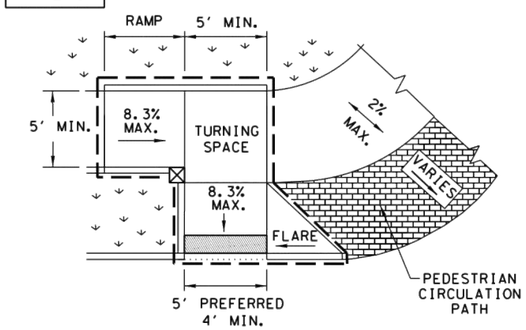
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

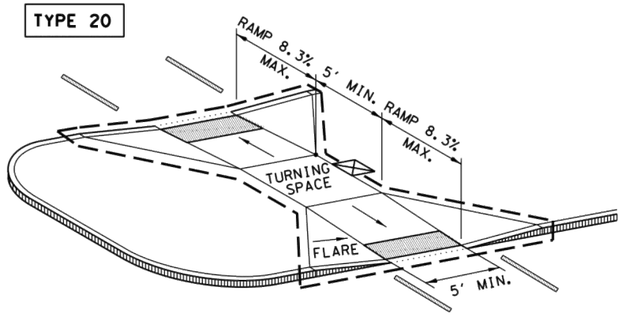


TYPE 6



COMBINATION CURB RAMPS

TYPE 20

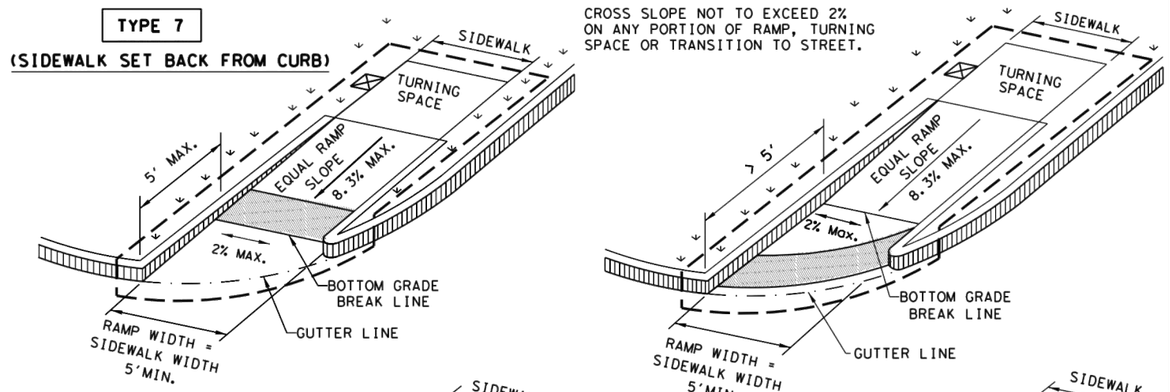


CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

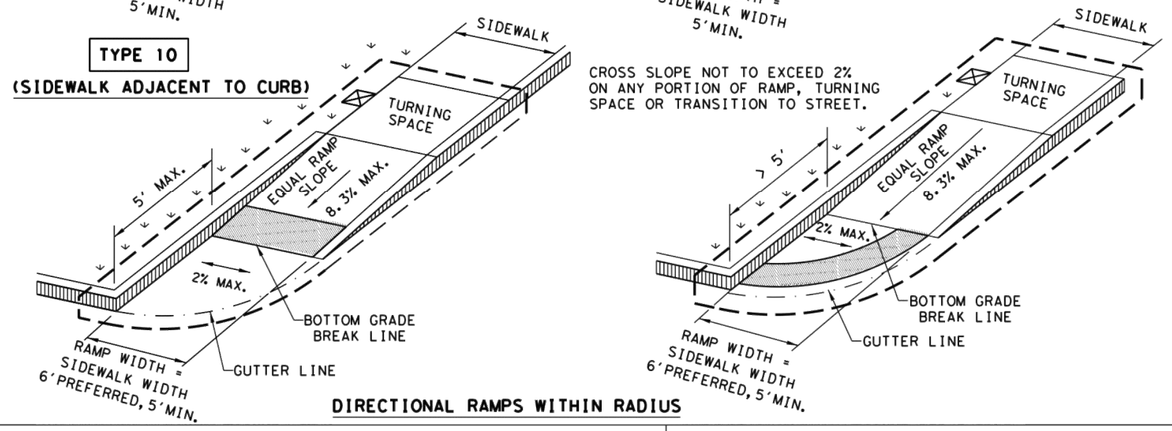
CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



TYPE 10

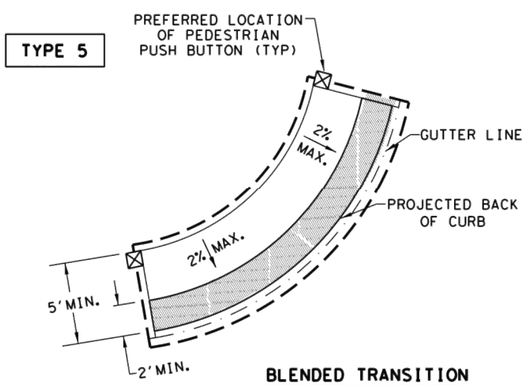
(SIDEWALK ADJACENT TO CURB)

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



DIRECTIONAL RAMPS WITHIN RADIUS

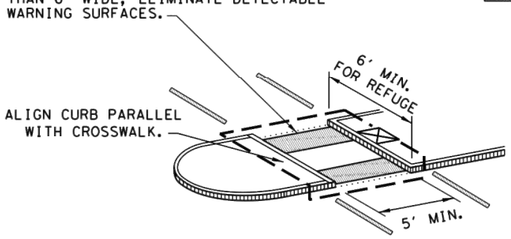
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

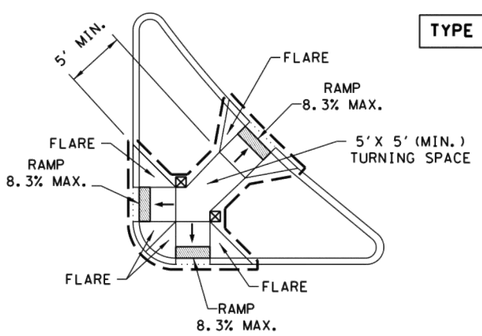
TYPE 21

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.



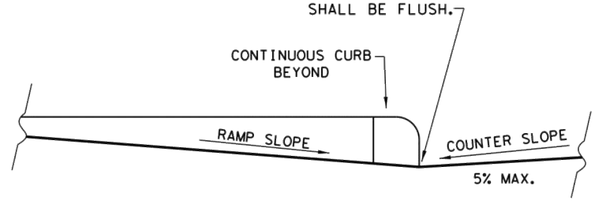
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

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.

GUTTER LINE

DETECTABLE WARNING SURFACE

GRADE BREAK

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

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	3128	01	013, ETC.	FM 116
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST		COUNTY	SHEET NO.
	WACO		CORYELL	7.1

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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

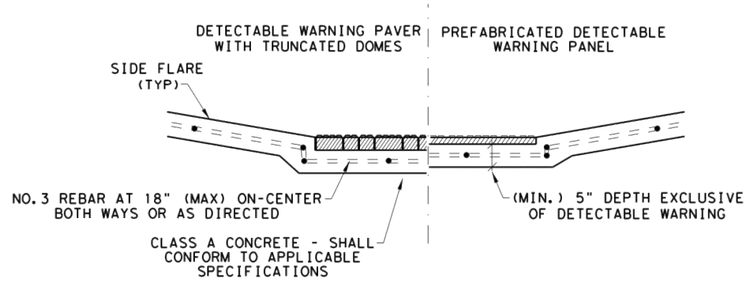
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material 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.

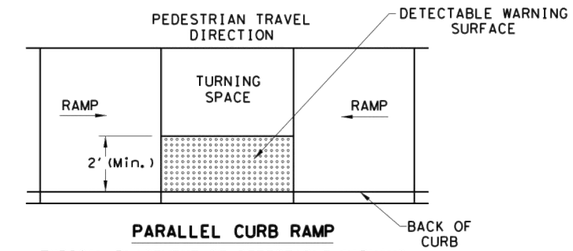
SIDEWALKS

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.

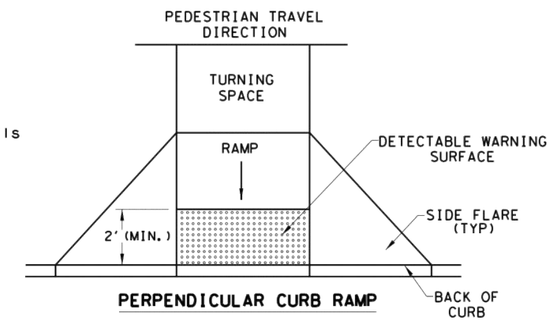


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

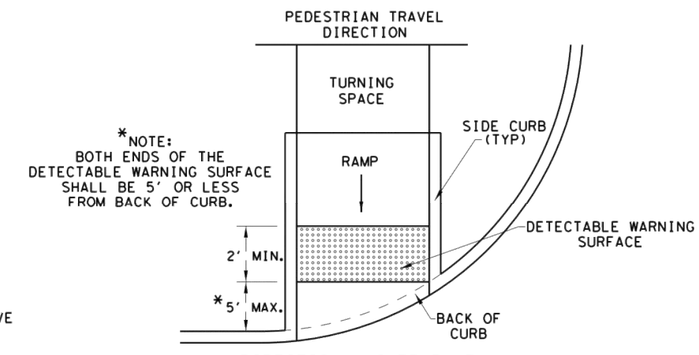
DETECTABLE WARNING SURFACE DETAILS



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.

SHEET 2 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	CK: KM	DW: VP	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	3128	01	013, ETC.	FM 116
	DIST		COUNTY	SHEET NO.
	WACO		CORYELL	7.2

DATE:
FILE:

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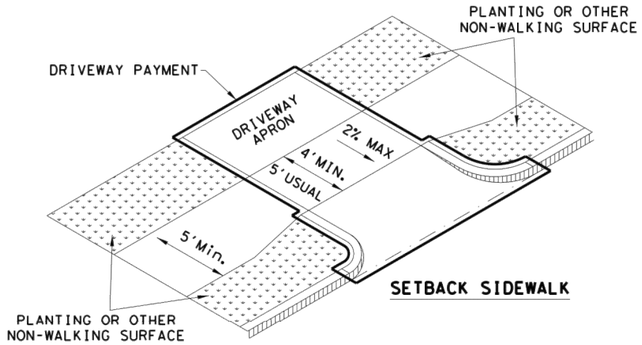
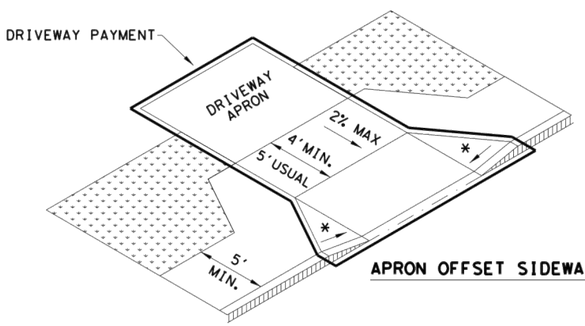
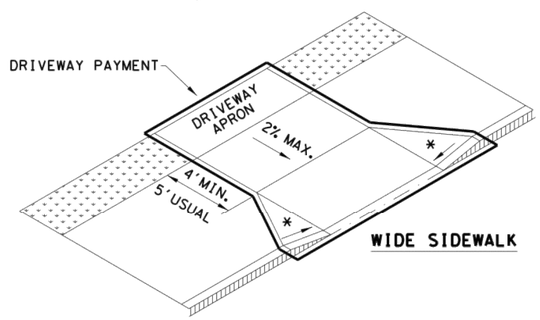
SIDEWALK TREATMENT AT DRIVEWAYS



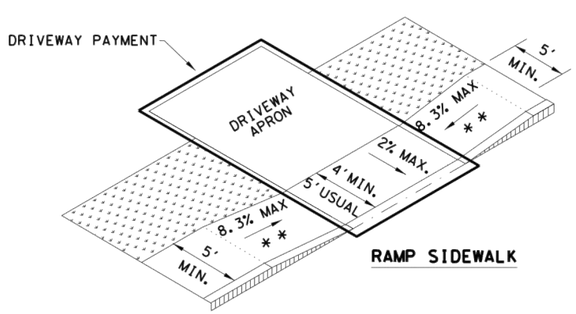
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

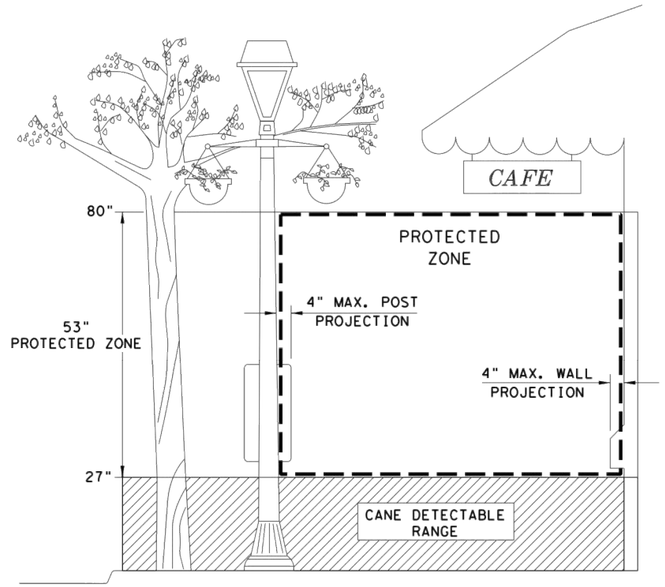


RAMP SIDEWALK

NOTES:

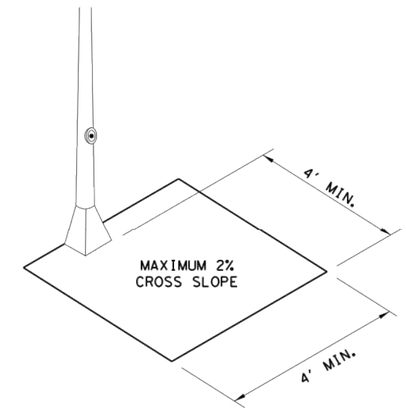
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

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

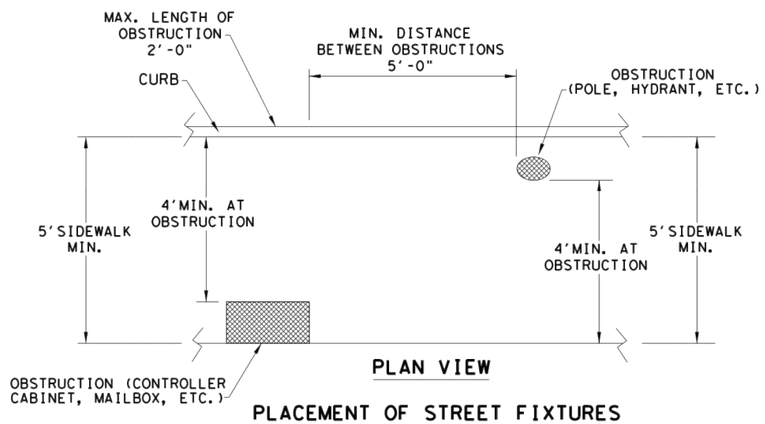


PROTECTED ZONE

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



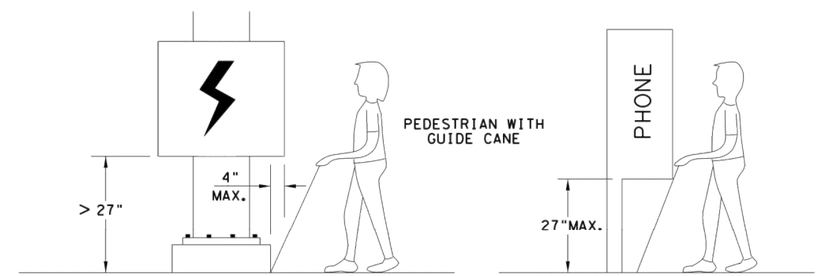
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



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.



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"

SHEET 3 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	CK: KM	CK: PK & JG	
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	3128	01	013, ETC.	FM 116
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST		COUNTY	SHEET NO.
	WACO		CORYELL	7.3

DATE:
FILE:

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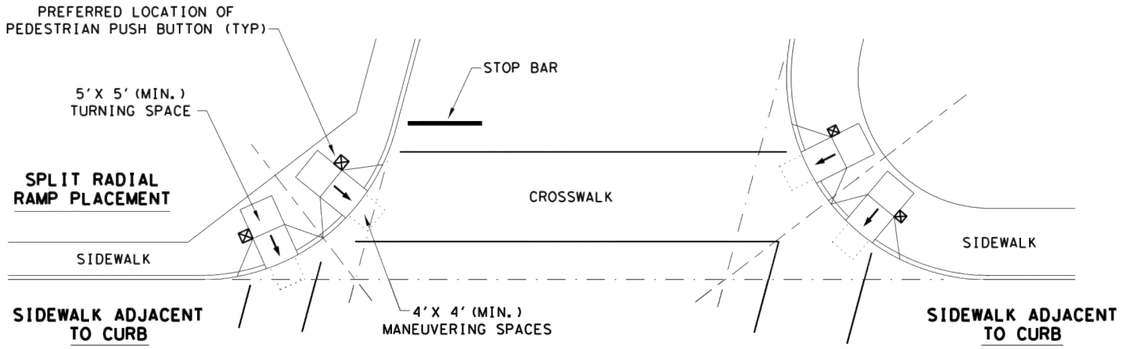
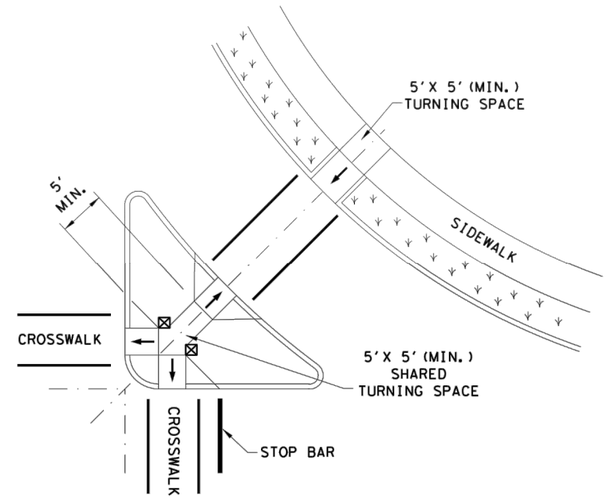
TYPICAL CROSSING LAYOUTS

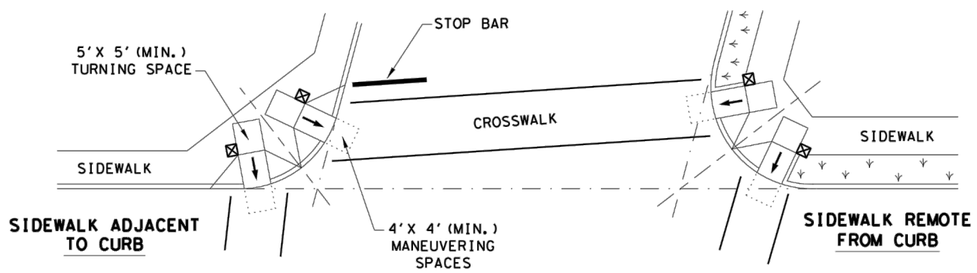
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



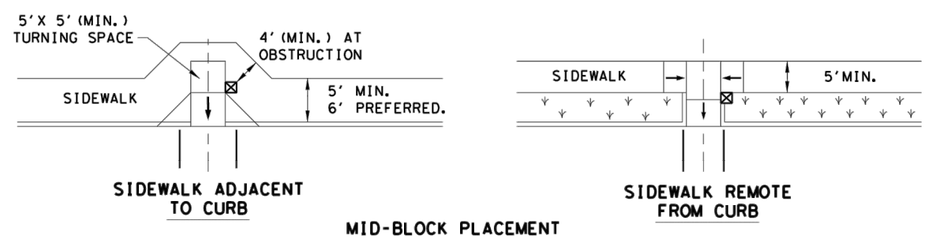
SKEWED INTERSECTION WITH "LARGE" RADIUS



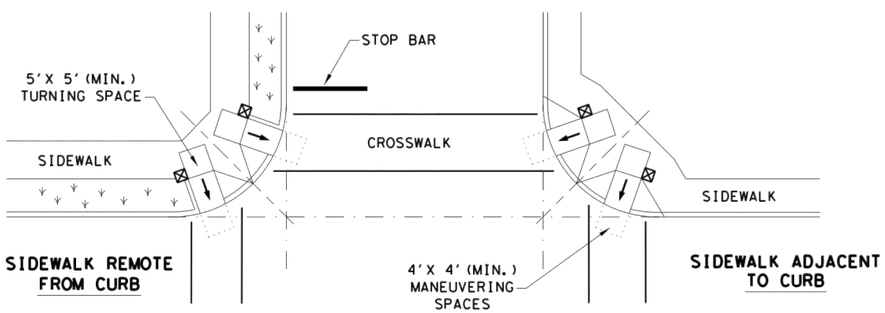
AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



SKEWED INTERSECTION WITH "SMALL" RADIUS



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS



NORMAL INTERSECTION WITH "SMALL" RADIUS

LEGEND:

SHOWS DOWNWARD SLOPE. →

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

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

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	3128	01	013, ETC.	FM 116
	DIST	COUNTY		SHEET NO.
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DATE:
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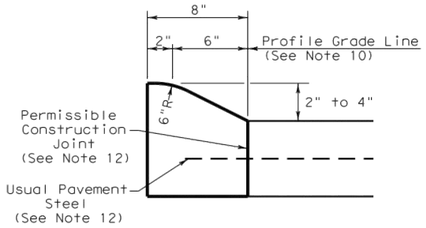
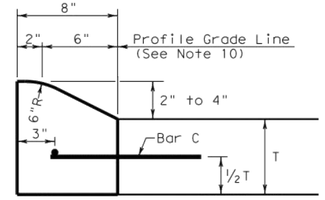
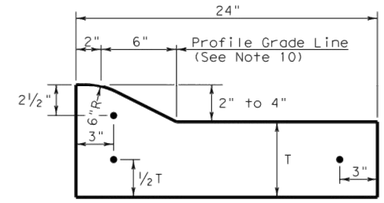


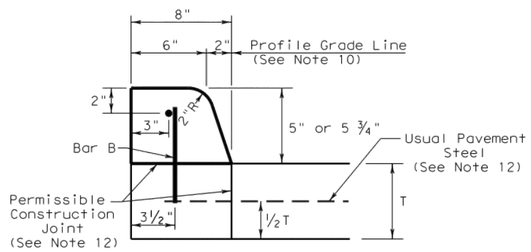
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



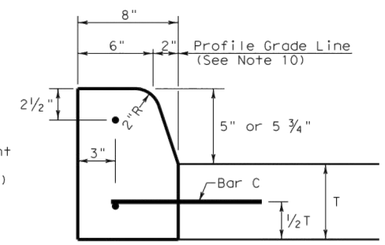
TYPE I CURB
2" - 4" HEIGHT



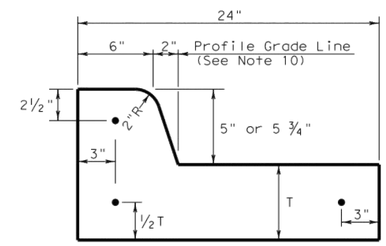
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



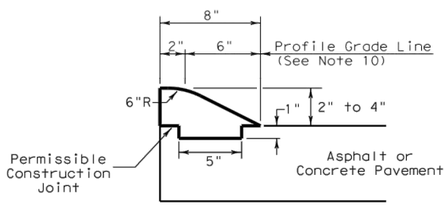
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



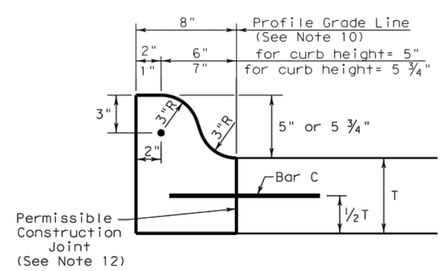
TYPE II CURB
5" - 5 ¾" HEIGHT



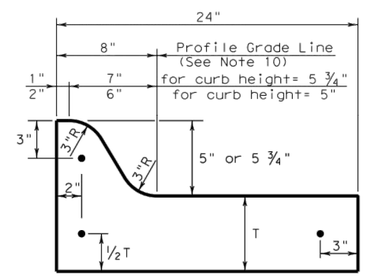
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



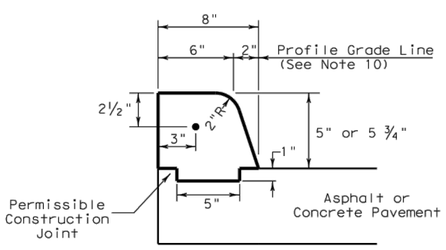
TYPE III CURB (KEYED)
2" - 4" HEIGHT



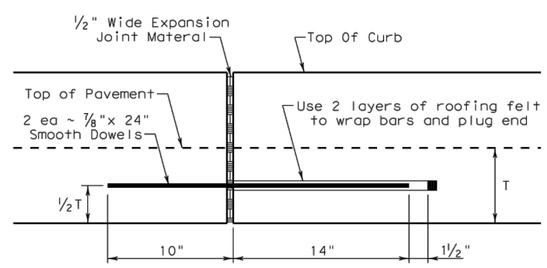
TYPE IIa CURB
5" - 5 ¾" HEIGHT



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

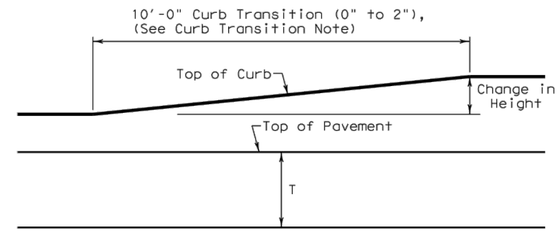


TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

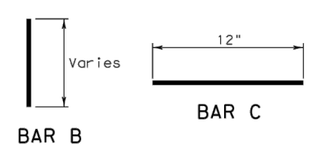
Curb Transition Note:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



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 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 ¼ 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. 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 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.



Texas Department of Transportation — Design Division Standard

CONCRETE CURB AND CURB AND GUTTER

CCCG-12

FILE: cccg12	DN: TxDOT	CK: AM	DW: VP	CK:
©TxDOT 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	3128	01	013, ETC.	FM 116
	DIST		COUNTY	SHEET NO.
	WACO		CORYELL	7.5

DATE:
FILE:

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

Post Type

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

Number of Posts (1 or 2)

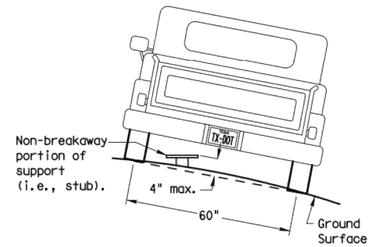
Anchor Type

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

Sign Mounting Designation

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

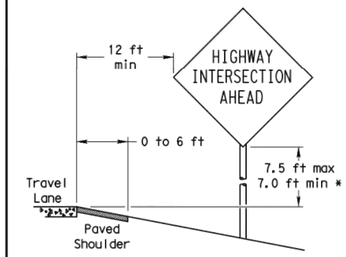
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

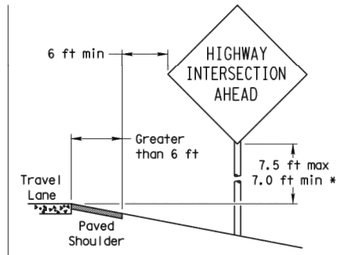
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

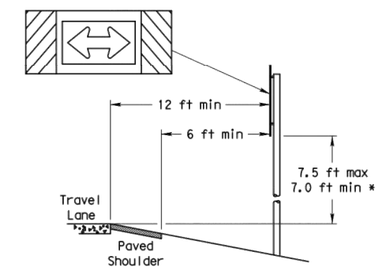
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



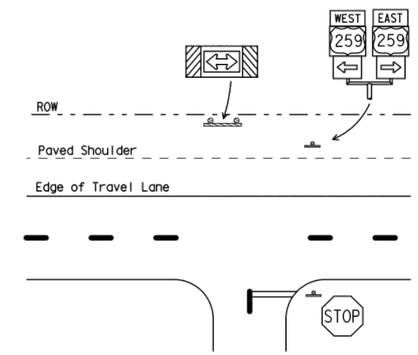
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

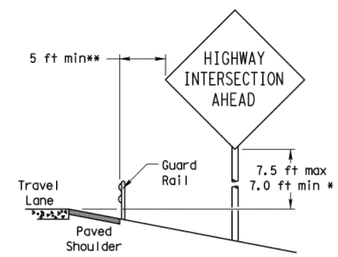
T-INTERSECTION



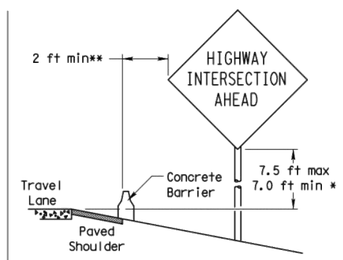
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

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

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

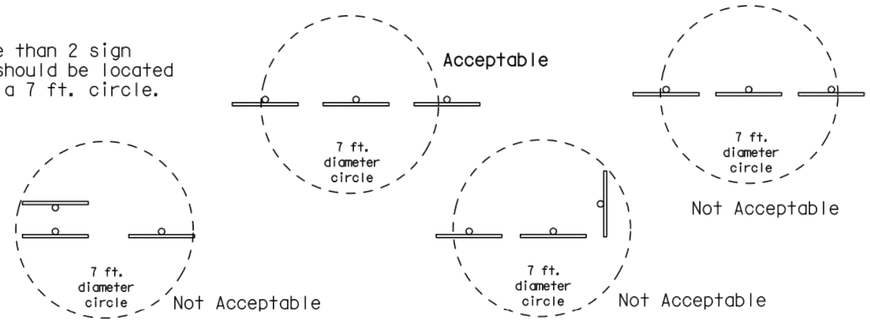
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

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

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

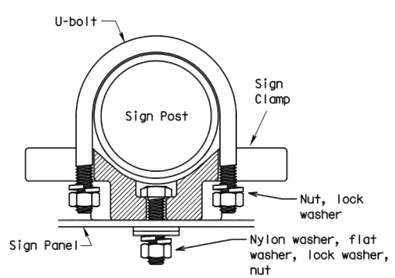
The website address is:
http://www.txdot.gov/publications/traffic.htm

No more than 2 sign posts should be located within a 7 ft. circle.



TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

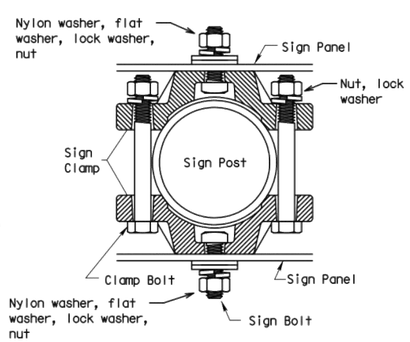


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

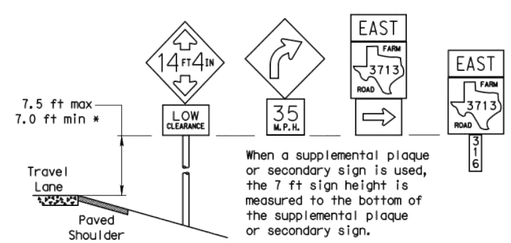
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



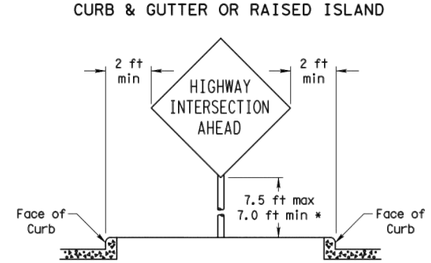
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



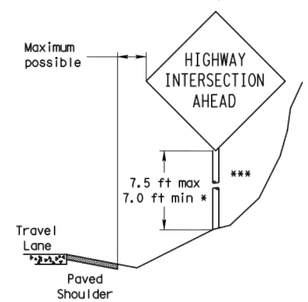
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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DATE: 9-08	FILE: REVISIONS	FILE: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
		CONT	SECT	JOB	HIGHWAY
		3128	01	013, ETC.	FM 116
		DIST		COUNTY	SHEET NO.
		WACO		CORYELL	8.1

26A

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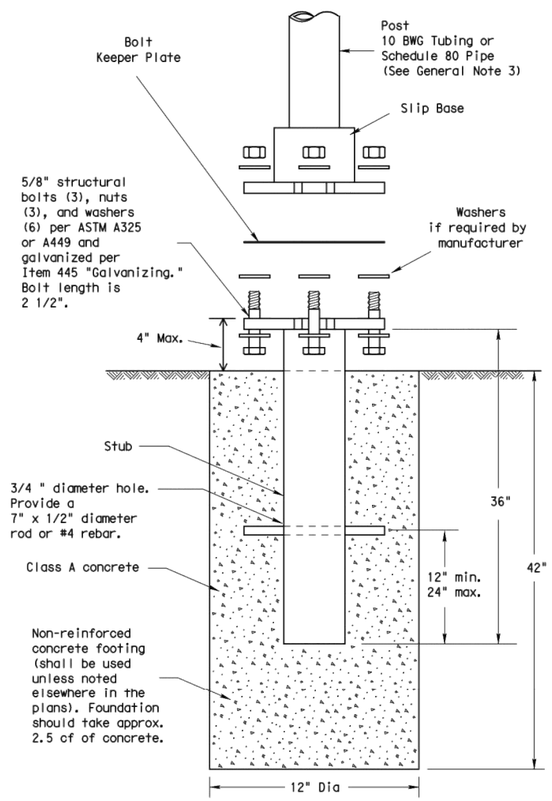
TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



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

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

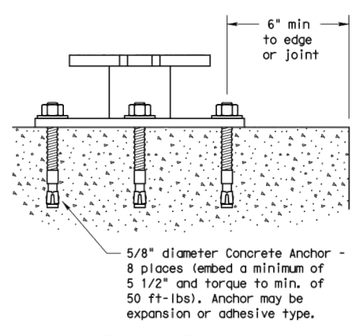
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is:
   http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

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

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

CONCRETE ANCHOR



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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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FILE: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08	3128	01	013, ETC.	FM 116

DIST	COUNTY	SHEET NO.
WACO	CORYELL	8.2

DATE:
FILE:

26B

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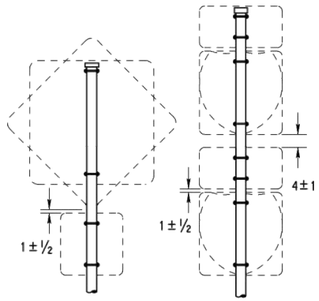
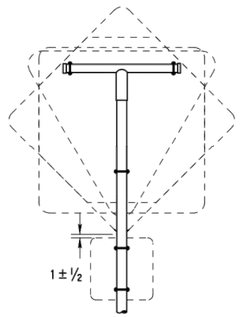
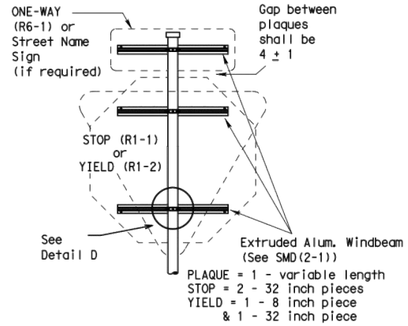


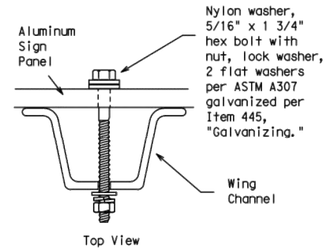
SM RD SGN ASSM TY XXXXX(1)XX(P)



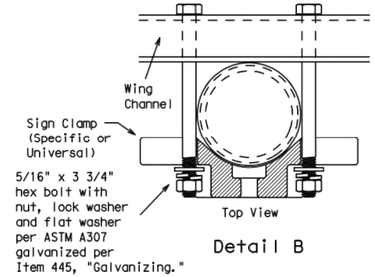
SM RD SGN ASSM TY XXXXX(1)XX(T)



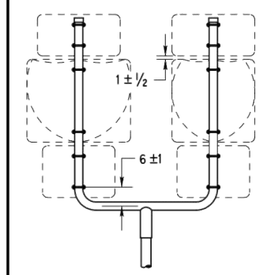
SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



Detail A



Detail B



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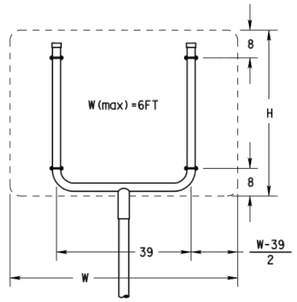
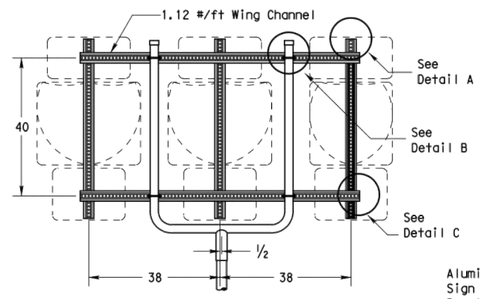
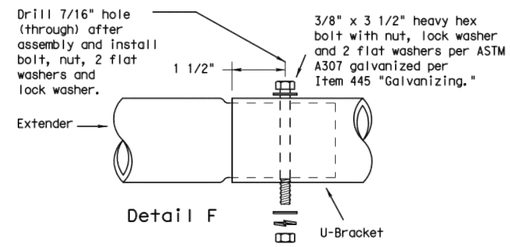


SM RD SGN ASSM TY XXXXX(1)XX(U)

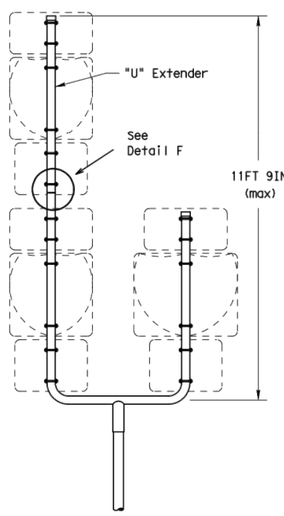


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

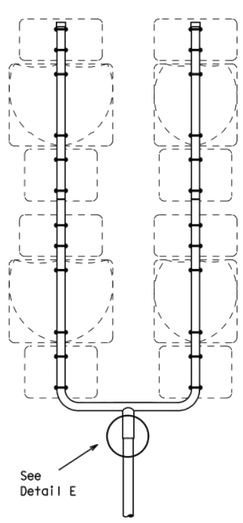


Detail F

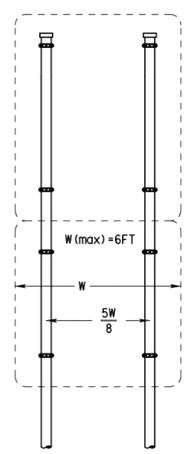
Splices shall only be allowed behind the sign substrate.



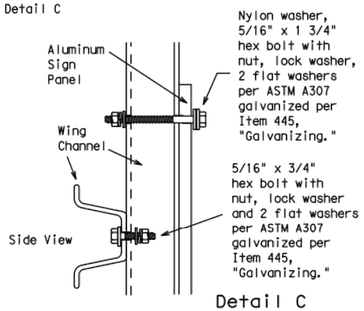
SM RD SGN ASSM TY S80(1)XX(U-1EXT)



SM RD SGN ASSM TY S80(1)XX(U-2EXT)

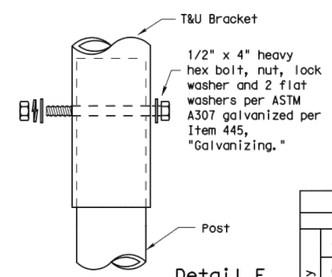


SM RD SGN ASSYM TY XXXXX(2)XX(P)

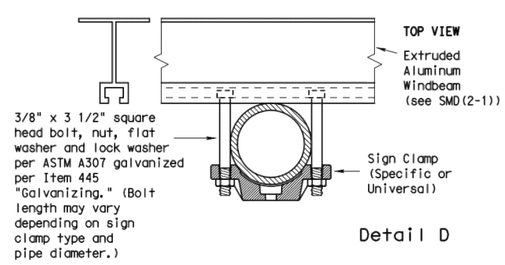


SIDE VIEW

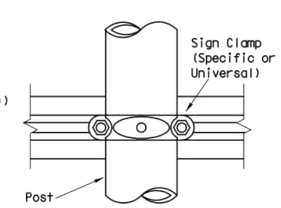
Detail C

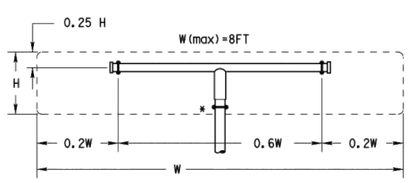


Detail E



Detail D

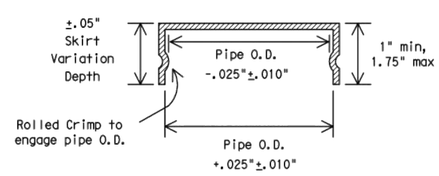




All dimensions are in english
unless detailed otherwise.

SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

GENERAL NOTES:

1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

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DATE:	FILE:	CONT	SECT	JOB	HIGHWAY
9-08 REVISIONS		3128	01	013, ETC.	FM 116
		DIST		COUNTY	SHEET NO.
		WACO		CORYELL	8.3

26C

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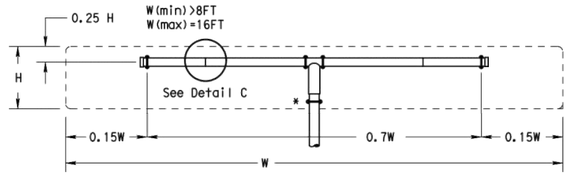
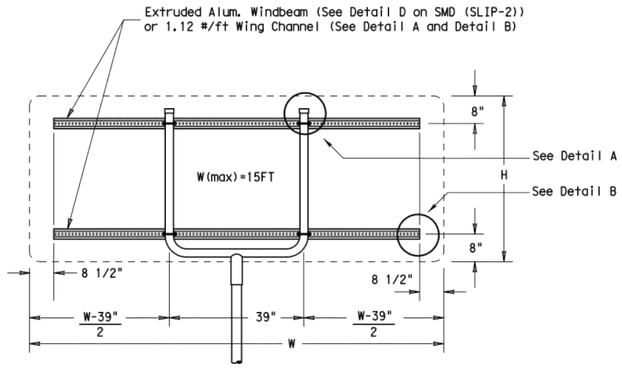


SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



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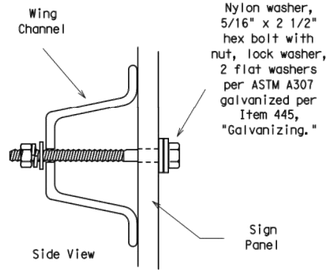
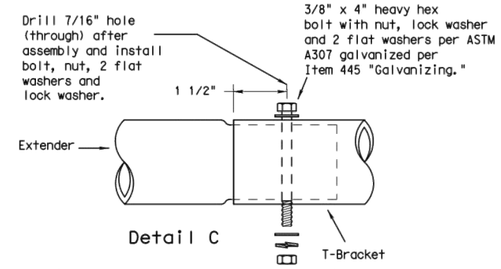
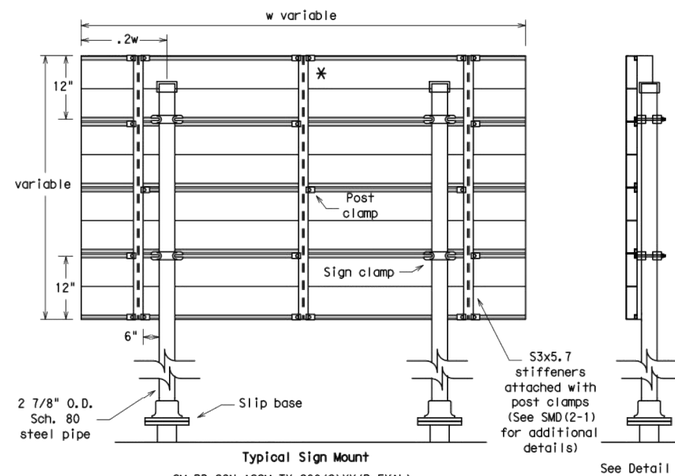


Detail B



Detail C

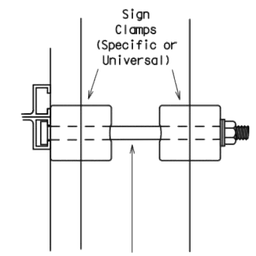
Splices shall only be allowed behind the sign substrate.



Typical Sign Mount

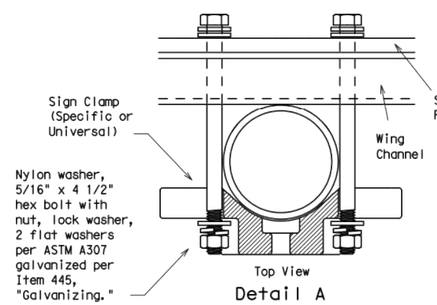
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

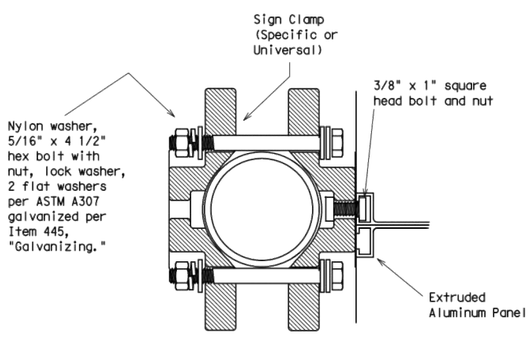


3/8" x 4 1/2" square head bolt, nut, flat washer and lock washer per ASTM A307 galvanized per Item 445, "Galvanizing."

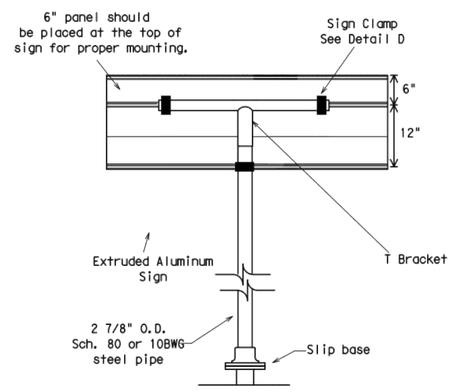
Detail E



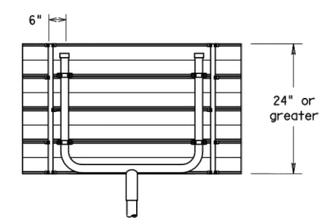
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

GENERAL NOTES:

1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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DATE:	FILE:	REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08			3128	01	013, ETC.	FM 116

DIST	COUNTY	SHEET NO.
WACO	CORYELL	8.4

26D

BEST MANAGEMENT PRACTICE (BMP) GENERAL NOTES

1. Prior to TxDOT allowing the Contractor to start construction, the Contractor will provide the required storm water and 404 permit documentation and support activities, including but not limited to the following:

   - Provide a list of all chemicals, construction and waste products that will be generated, stored or brought upon TxDOT ROW. The list includes expected construction debris, sanitary wastes, construction chemicals and petroleum products used or generated by the Contractor and sub-contractors. Along with the list, the Contractor will supply a spill prevention plan and clean up procedures that will include each of these chemical products or generated waste.

   - Provide in the construction schedule the necessary line items that will comply with the schedule and planning requirements of the storm water permit.

   - Post the TxDOT storm water permit and any Contractor permits, per permit requirements.

   - Provide copies of storm water permits for Contractor PSL(s). As new PSL(s) may be obtained for the project, provide copies of new or amended permits to TxDOT. The Contractor will not disturb soil without the proper permits.

   - Provide scale drawings of off ROW PSL's within one mile of the project, for field offices, borrow sources, plant sites or other uses.

   - Provide permit information on any Contractor batch plants or concrete crushing plants to be located at a Contractor PSL(s) within one mile of the project limits or boundaries. Copies of the air and water permits are to be provided to TxDOT before materials will be used on the project. No asphalt or concrete batch plants or concrete crushing plants will be located on TxDOT ROW.

   - Provide a letter indicating a Contractor Responsible Person for environmental compliance (CRP) for the project, and maintain a CRP throughout the project duration.

   - Provide all environmental documentation including certification of compliance and EMS training documents/certificates prior to starting work. The Contractor is to provide daily BMP inspection reports that document all field BMPs needing repair or replacement. The Contractor is to clearly document specific BMPs needing repair and location each work day. The Contractor is encouraged to be proactive in fixing BMPs without TxDOT direction.

   - Provide documentation required for Waters of the US, Note #3 and submittals for Item 496 bridge removal. Bridge removal methods submitted will follow all Waters of the US note requirements. The Contractor is not to start construction within the Ordinary High Water Marks of any stream until receiving approval for stream channel construction methods from TxDOT.

   - Provide a written procedure for managing all chemicals and construction items placed in vertical containment structures. Also, provide methods to be used for the treatment, disposal, collection or release of storm water.

   - Provide an estimated date by letter, for the submittal of marked up bridge drawings, indicating cut locations for any structural steel requiring cutting or torching of steel, coated with lead containing paints.

2. Place and maintain trash cans and portable sanitary facilities at locations where there is active construction. Worker generated trash and construction debris will be kept from being transported by storm water and will be collected daily from the ground and routinely hauled from the work area.

3. Contractor will provide TxDOT copies of all correspondence with MS4s, TCEQ, EPA, DSHS and Corps of Engineers regarding activities on this project.

4. Contractor to conduct storm water inspections and develop SWPPP documents to support Contractor permits obtained for the project including PSL(s).

5. Contractor will maintain written documentation of locations of all portable sanitary facilities. The Contractor is required to document the location and disposition of all spills and cleanups from portable sanitary facilities.

6. Contractor will not store chemicals on TxDOT ROW, unless chemicals are stored following all environmental and safety regulations. Fuels for construction equipment will not be stored on TxDOT ROW.

7. The Contractor will store fuels and bulk chemicals on Contractor PSL(s) using a secondary containment method, such as double lined tanks and/or free standing containment reservoirs made of plastic or steel designed to hold bulk chemicals or drums.

8. The Contractor will not remove sediment controls without the prior approval of TxDOT, except for a sediment control that may back up water and cause safety or traffic problems.

SCALE = NTS SHEET 1 OF 10

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

TA-BMP

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	CORYELL	3128	01	013, ETC.	FM 116	

BEST MANAGEMENT PRACTICE (BMP) GENERAL NOTES

9. Any sediment controls removed by the Contractor must be re-installed before the next rainfall event or by the end of day, as approved in advance.

10. Vegetative buffer strips may be used in place of temporary sediment controls such as silt fences and rock filter dams. The amount of disturbed soil area will be limited to 1/3 of an acre or less for a minimum of 50 feet of grassed ditch and 2/3 of an acre of disturbed soil for a minimum of 100 feet of grassed ditch.

11. Construction equipment found to be leaking oil, fuel or coolant will be immediately stopped, the leaking fluid collected and the equipment fixed. Equipment continuing to leak will be removed from the project at no cost to TxDOT. Leaking fluids from equipment will be collected and removed from the project or PSL.

12. Earth berms or mounds typically used to stockpile topsoil and used in place of boundary silt fence will be seeded upon being constructed. Long term use of earth berms or mounds will not be continued without establishing grass on the control.

13. The Contractor will inform TxDOT of new areas where soil will be disturbed to facilitate planning for new sediment controls. Areas of vegetated soil will not be disturbed by the Contractor, unless adequate sediment controls can be installed before the next rainfall event. The Contractor will assist TxDOT in keeping an accurate set of working SWPPP drawings that show the locations of all temporary sediment and erosion controls.

14. The Contractor will maintain an adequate amount of temporary sediment controls on hand at the field office or project staging area for critical SWPPP maintenance, including silt fence (minimum of 200 feet) and rock / fabric for rock filter dams (minimum for 100 feet of Type III dams).

    The requirement for BMP rock quantities on hand is waived for small projects for on and off system bridge installations. The Contractor having a BMP Subcontractor does not eliminate the requirement for the Contractor to have the required silt fence and rock on hand, typically stored at the Contractor PSL.

15. Failure of a sub-contractor to complete storm water work on time will require the Contractor to start storm water sediment control work immediately and complete the work with high priority, or be subject to stop work on the entire project.

16. Earth materials on roads as a result of soil tracking will not be allowed to be transported off ROW in storm water. Soil or rock material found on roadways deposited from Contractor equipment will be removed daily.

17. Unless approved, completed concrete curb inlets will not be blocked by sediment controls. The contractor will frequently sweep the completed or partially completed roadway to keep sediment out of drainage pipes.

18. The Contractor will be responsible for proper dust control and will route construction traffic in a manner that minimizes dust generation.

19. Water for dust control will contain no pollutants, but may be non-potable from upland stock ponds. No quantity of water to be used for construction purposes may be taken from a 404 stream, prior to the proper authorizations or permits being obtained by the Contractor.

20. Contractor is to direct workers and sub-contractors to use portable sanitary facilities provided by the Contractor and not to trespass off ROW.

21. Contractor will provide written verification to TxDOT that earth borrow pits and disposal sources meet environmental and regulatory requirements, prior to use. Excavations will meet all OSHA requirements and the current safety guidelines established for TxDOT Quarries and Pits.

22. Boundary silt fences that are terminated down slope, with one end being at the lowest elevation, will be installed with an L - hook to contain sediment. Boundary silt fences that are installed on flat ground will have L-hooks on both ends.

23. Rock filter dams across ditches will be constructed where the rock filter dam ends are embedded within the ditch side slopes and ditch bottom. The top center elevation of the rock filter dam will be at least 6 inches lower than the elevations on the rock filter dam ends.

24. Silt fence will be constructed in a U or V pattern across ditch lines and up the ditch side slope to keep storm water from flowing around the ends of the silt fence. Small silt fences that do not adequately span the ditch and allows storm water around the end(s) will not be used. Where there is adequate space, large U pattern silt fences are preferred to facilitate sediment collection and sediment removal with equipment.

25. Sediment controls (RFDs or silt fences) will be located along road ditches as marked on the SWPPP drawings. Modifications to the sediment control spacing will be adjusted during the project based on sediment control effectiveness. The installation and maintenance of sediment controls at or near outfalls, where storm water leaves TxDOT ROW, takes persistent over ditch line sediment controls.

SCALE = NTS SHEET 2 OF 10

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

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BEST MANAGEMENT PRACTICE (BMP) GENERAL NOTES

26. Storm water draining sheet flow over disturbed soil sloped towards the ROW property line, will be intercepted by a boundary silt fence typically installed with L-shaped ends.

27. For ditch grading and shoulder up work, the Contractor is limited during good weather to remove up to one mile (limited to five acres of disturbed soil) of ditch line sediment controls; on one side of the roadway. Outfall controls cannot be removed during this activity. Ditch line controls must be replaced upon completion of work and before the next rain event.

28. Sediment controls damaged by the Contractor, as defined by permit, must be fixed or replaced immediately upon discovery.

29. Notches in silt fences are not typically allowed. Specific silt fences that back up water onto lanes of traffic may be notched if approved.

30. For silt fence maintenance, the Contractor will leave approximately 4 inches of deposited sediment up stream of silt fences and not over excavate around silt fences or rock filter dams.

31. The Contractor will inform TxDOT of new construction areas and where soil is planned to be disturbed. Sediment controls will be installed at outfalls prior to the Contractor beginning soil disturbing activities up slope from the outfall.

32. Water from concrete saw cutting, concrete grinding and concrete coring activities; or fine materials from concrete chipping and salvage will not be allowed to enter storm drains or enter streams.

33. Storm water containing suspended sediment and turbidity needing to be removed from excavations or low areas will be pumped or gravity drained through vegetated buffer strips (50 foot minimum) or placed in ditches with temporary sediment controls, prior to the water being discharged into a stream.

34. Uncontaminated water from natural groundwater seepage, springs, foundations and drains that does not contain suspended sediment or any pollutants may be discharged without storm water controls.

35. Lime or cement if spilled in ditches or outside the defined limits of application is considered a pollutant and will be excavated and removed the same day, to avoid contaminating streams.

36. If located along the project ROW, RAP stockpiles will be located where there is a minimum 100 feet of vegetative buffer strip before storm water will reach a stream. RAP will not be used as a construction material within the Ordinary High Water Marks of a stream channel of a 404 designated stream.

37. If allowed on the project, concrete truck wash out areas will have adequate volume to allow 12 inch freeboard for rain and will be lined with 6 mils of plastic. No concrete will be stored higher than the 12 inch freeboard. Cleaning of truck chutes and equipment does not constitute concrete truck wash out and this activity may be completed at the concrete placement location. Wash out areas will not be located closer than 50 ft from down slope inlets or stream channels.

38. For outfalls near stock ponds closer than 50 foot from disturbed soil at the ROW line, redundant sediment controls will be provided, typically a combination of rock filter dam and a silt fence constructed in line of the flow.

39. Earth stockpiles will utilize silt fence sediment controls, positioned on the low end of the stockpile drainage area with L-hooks or silt fence installed around the entire stockpile.

40. Sediment controls including rock filter dams and silt fences will not be installed across any 404 streams. Sediment controls at 404 streams will be positioned to limit sediment entering the stream from the banks and around structures/culverts, and will allow free flow of storm water to pass through the ROW without being dammed by any sediment controls. Remove loose materials from stream channels prior to each rain event.

41. Sediment controls for non-404 streams may be constructed across the drainage channel in unlimited locations. It is appropriate to use sediment control details typically used for 404 streams for non-404 streams when flow velocities are high. Remove loose material from stream channels prior to each rain event.

42. Incomplete drainage pipe installation across the roadway does not remove the requirement for having sediment controls around the ends of the pipe. To stay within permit requirements, sediment controls should be installed over and around the terminated end and along each side of the banks as soon as construction on the pipe has been completed. Remove loose material from stream channels prior to each rain event.

43. Safety end / headwall construction temporarily will require the removal of part of the sediment control placed over and around the pipe end. Retain in place as much functioning sediment control as possible. Replace the silt fence over and around the top of the pipe, immediately upon concrete placement and form removal. Do not remove culvert sediment controls that cannot be replaced before the next rain event. Sediment control at the ends of culverts must be in place and available for any rain event until the disturbed soil areas are re-vegetated.

SCALE = NTS SHEET 3 OF 10

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TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

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BEST MANAGEMENT PRACTICE (BMP) GENERAL NOTES

44. Between the Ordinary High Water Marks of a 404 stream channel, the Contractor will disturb only the minimum amount of stream channel that is necessary to complete the work.

45. Rock riprap for erosion control does not replace the requirements to maintain sediment control until vegetation is re-established. Replace sediment controls immediately after installing erosion rock.

46. At the direction of TxDOT, sediment deposited into existing and new culverts will be removed subsidiary to Item 506. Sediment to be removed is either pre-existing material before construction starts or sediment generated as a part of this project.

47. Provide treated 2X4 cross bracing for rectangular inlet silt fence, subsidiary to Item 506.

48. Loose or granular earth materials will not be used to repair silt fence undercuts. Silt fence undercut repairs will be conducted with well compacted soils or the silt fence will be reset in a nearby location.

49. Silt fence steel T posts of approximately 1.25 pounds per foot are allowed at a spacing of 8 feet or less. Silt fence steel T posts between approximately 1.25 pounds per foot and 0.85 pounds per foot are allowed for T post spacing of 5 feet or less.

50. Silt fence to be used to slow the flow of storm water down slopes will be positioned approximately horizontal (on the contour) with L hooks on the ends and limited to approximately 200 feet in length. Multiple sections and levels of silt fence may be required in addition to temporary / permanent erosion control flumes.

51. Soil retention blankets will be installed rolled down the slope with the small dimension side embedded at the top of slope, unless recommended otherwise by the manufacturer. Excess grass, rocks, trash, debris or clods will be removed before seeding and installing soil retention blankets. All installations will be by the manufacturer recommendations. Contractor equipment, including tractor mowers will be kept off areas with soil retention blankets until the grass is established.

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Texas Department of Transportation
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TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

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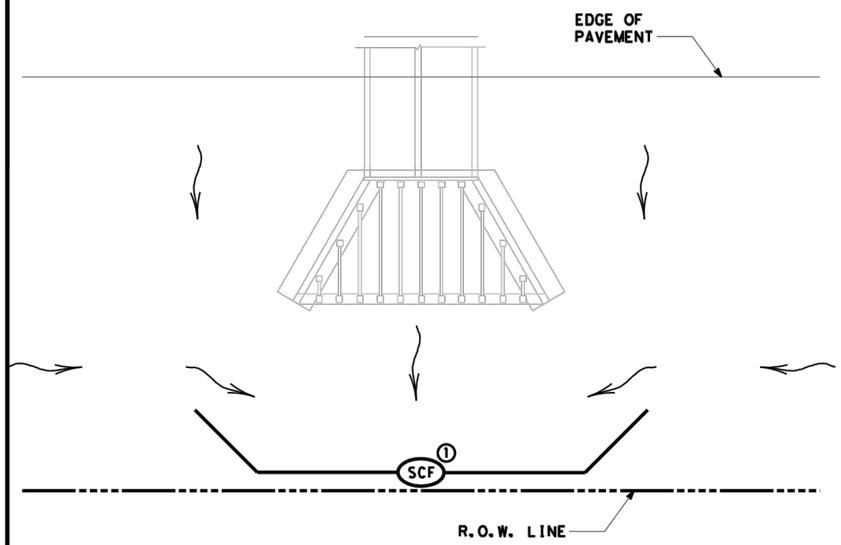
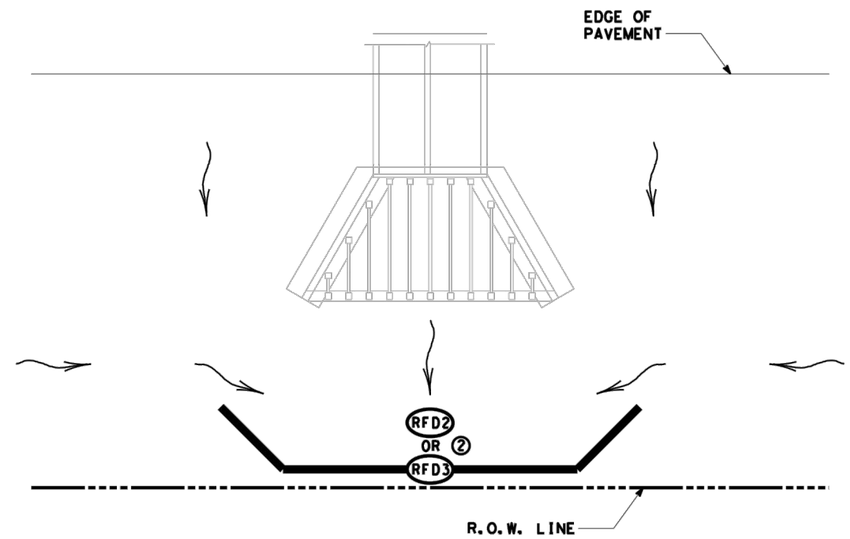


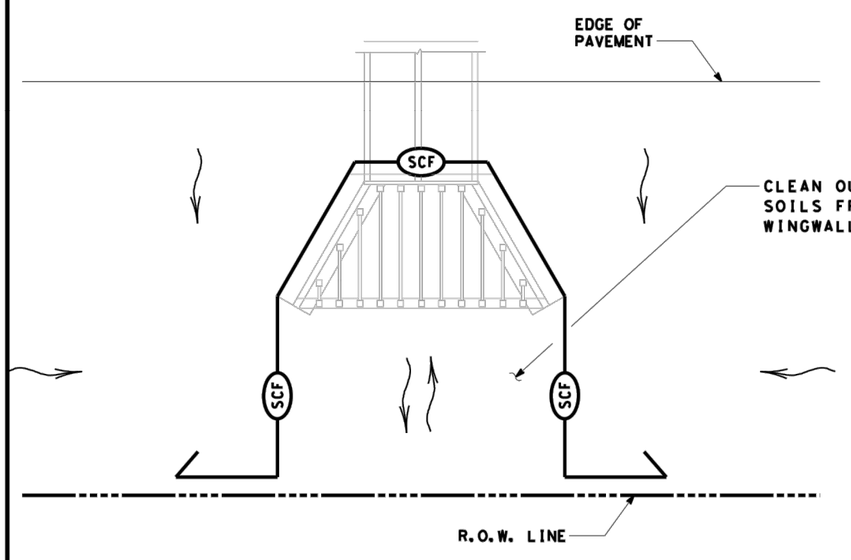
BEST MANAGEMENT PRACTICE (BMP) #1

FOR NON-404 STREAMS ONLY ~ SEDIMENT CONTROL AT EXIT OF CULVERT



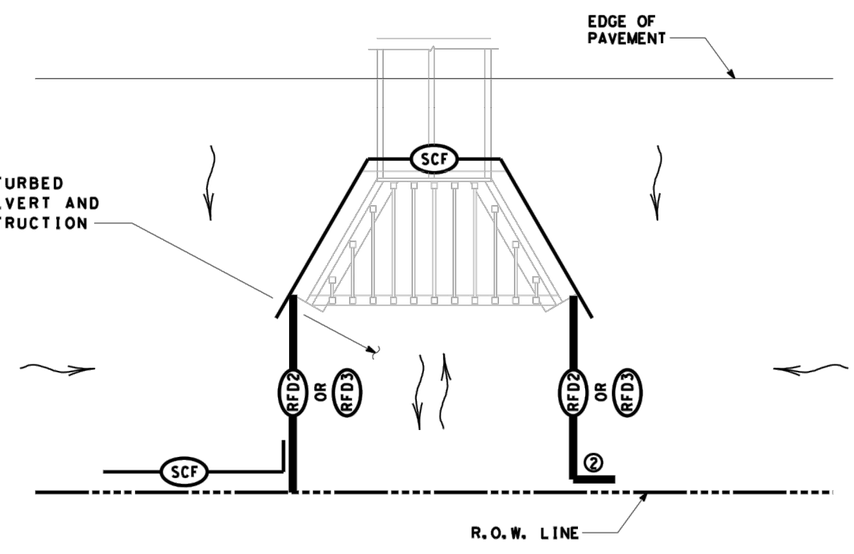
BEST MANAGEMENT PRACTICE (BMP) #2

FOR NON-404 STREAMS ONLY ~ SEDIMENT CONTROL AT EXIT OF CULVERT



BEST MANAGEMENT PRACTICE (BMP) #3

FOR 404 OR NON-404 STREAMS ~ SEDIMENT CONTROL AT EXIT OR ENTRANCE OF CULVERT



BEST MANAGEMENT PRACTICE (BMP) #4

FOR 404 OR NON-404 STREAMS ~ SEDIMENT CONTROL AT EXIT OR ENTRANCE OF CULVERT

SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
RFD3	ROCK FILTER DAM (TY 3)
	DIRECTION OF FLOW

NOTES:

1. EXTEND SILT FENCE SO STORM WATER DOES NOT GO AROUND THE ENDS. USE L-HOOKS ON ENDS AS REQUIRED.
2. EXTEND ROCK FILTER DAM SO STORM WATER DOES NOT GO AROUND THE ENDS.

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TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

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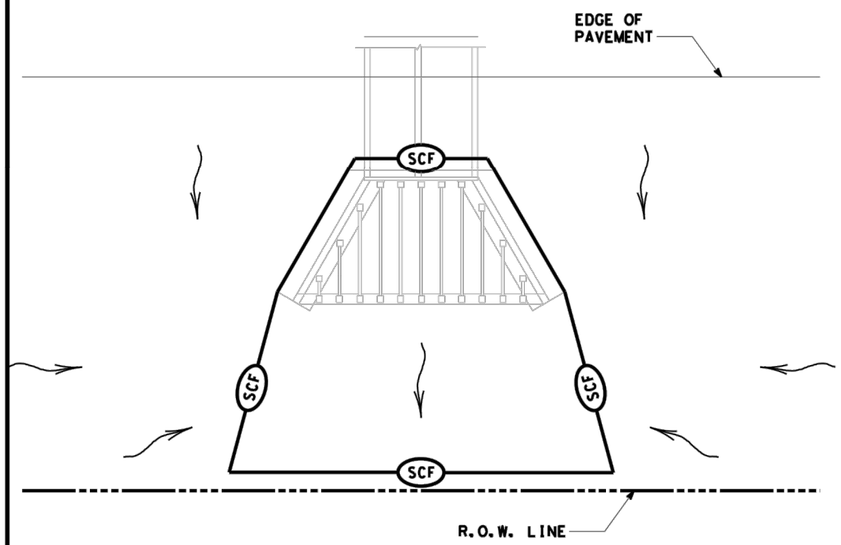
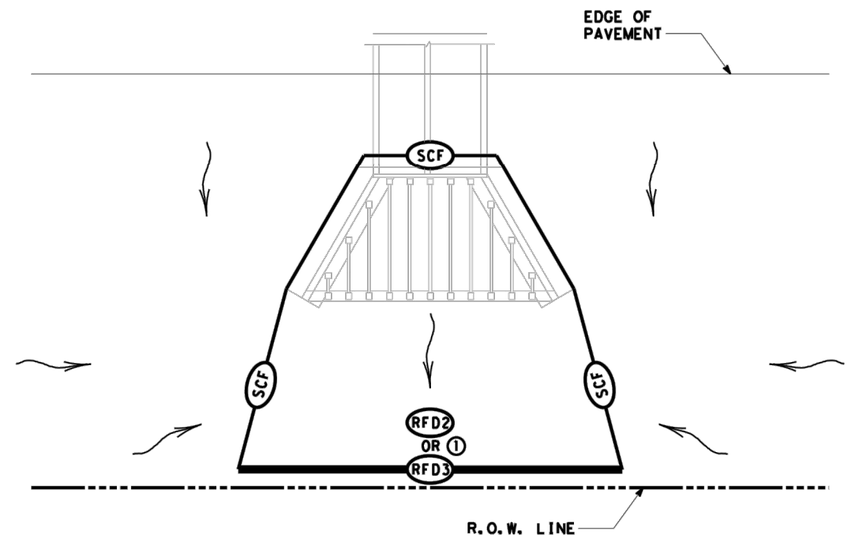


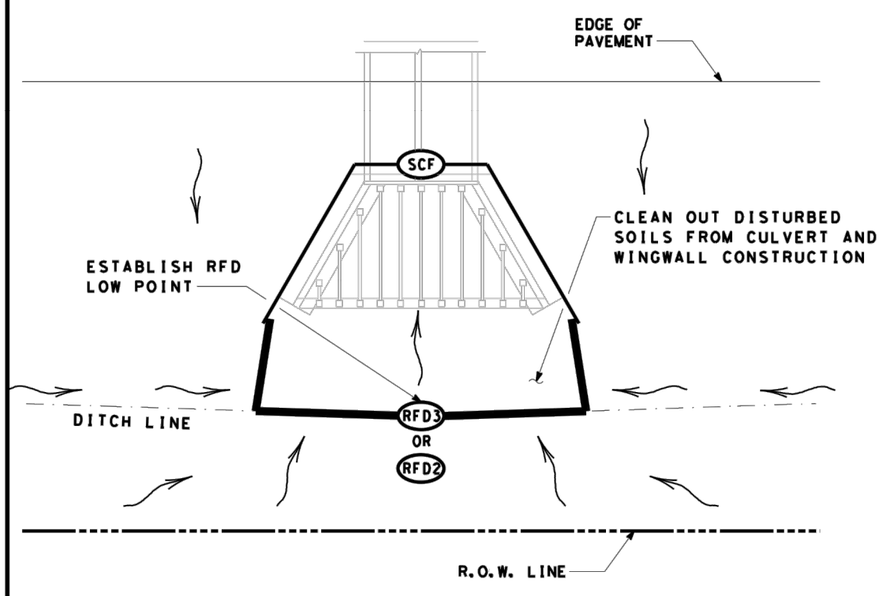
BEST MANAGEMENT PRACTICE (BMP) #5

FOR NON-404 STREAMS ONLY ~ SEDIMENT CONTROL AT EXIT OF CULVERT



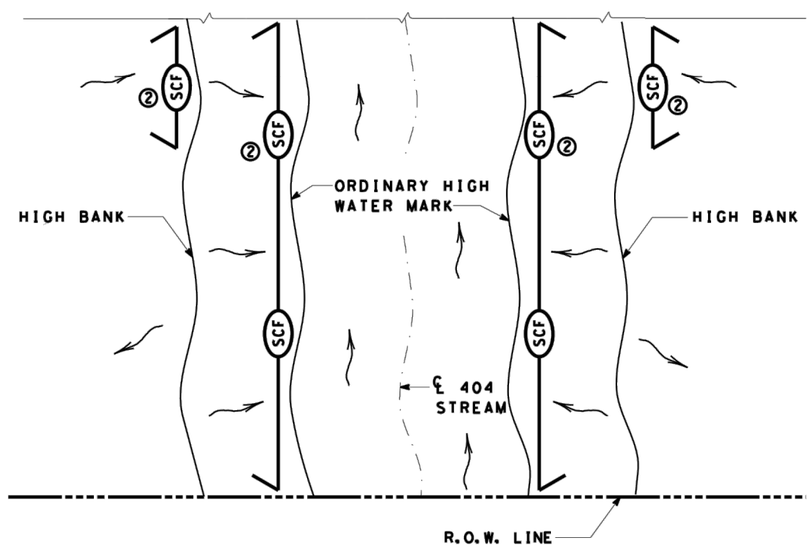
BEST MANAGEMENT PRACTICE (BMP) #6

FOR NON-404 STREAMS ONLY ~ SEDIMENT CONTROL AT EXIT OF CULVERT



BEST MANAGEMENT PRACTICE (BMP) #7

FOR NON-404 STREAMS ONLY ~ SEDIMENT CONTROL AT ENTRANCE OF CULVERT



BEST MANAGEMENT PRACTICE (BMP) #8

FOR 404 STREAMS ~ SEDIMENT CONTROL DURING PROJECT CLEARING AND GRUBBING

SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
RFD3	ROCK FILTER DAM (TY 3)
	DIRECTION OF FLOW

NOTES:

1. PROVIDE OVERLAP OF SILT FENCE WITH ROCK FILTER DAM.
2. USE SILT FENCE L-HOOKS ON ENDS TO BLOCK STORM WATER SEDIMENT

SCALE = NTS SHEET 6 OF 10

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

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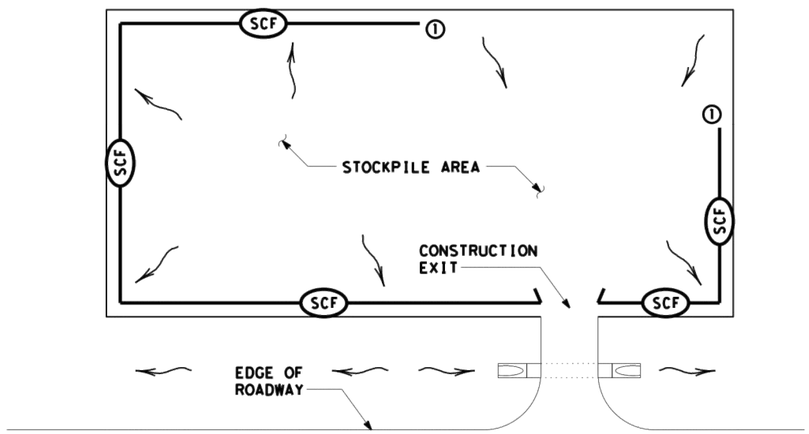
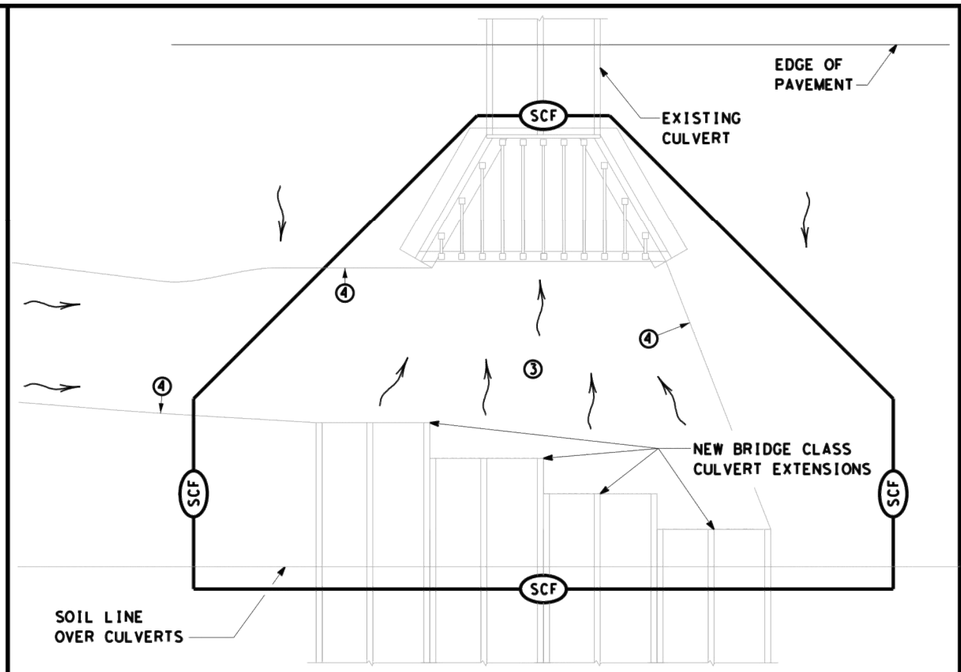


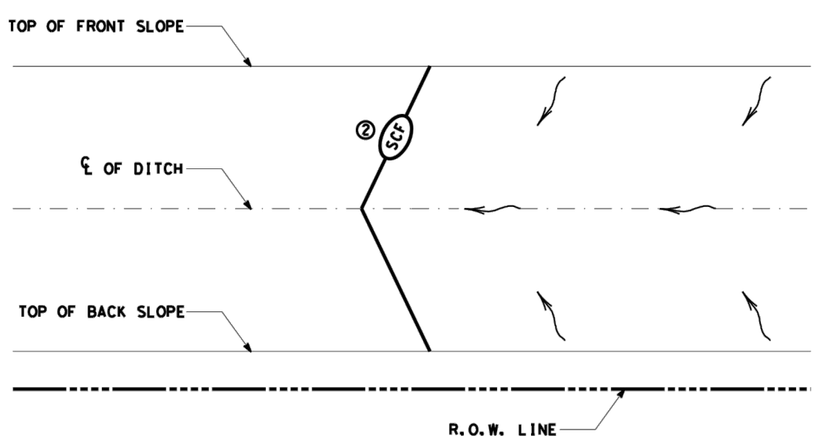
BEST MANAGEMENT PRACTICE (BMP) #9

STOCKPILE SEDIMENT CONTROL



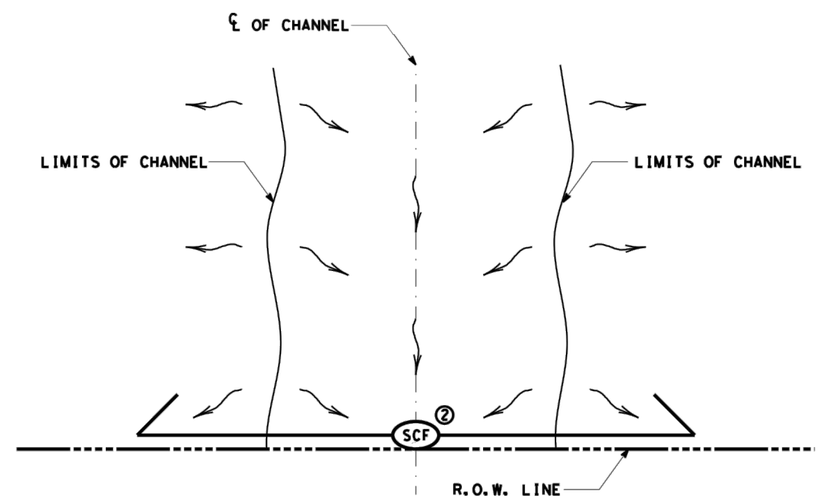
BEST MANAGEMENT PRACTICE (BMP) #10

FOR 404 OR NON-404 STREAMS ONLY ~
SEDIMENT CONTROL AT PHASED CONSTRUCTION OF BRIDGE CLASS CULVERTS



BEST MANAGEMENT PRACTICE (BMP) #11

BOUNDRY SEDIMENT CONTROL ~ BOTH ENDS OF CONTROL TERMINATED UP SLOPE



BEST MANAGEMENT PRACTICE (BMP) #12

BOUNDRY SEDIMENT CONTROL ~ BOTH ENDS OF CONTROL TERMINATED DOWN SLOPE

SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
RFD3	ROCK FILTER DAM (TY 3)
	DIRECTION OF FLOW

NOTES:

① START SEDIMENT CONTROL AT LOCATION SO ALL STORM WATER WITH SEDIMENT IS COLLECTED

② ROCK FILTER DAMS OR EARTH/GRASSED EMBANKMENTS CAN BE SUBSTITUTED AS DIRECTED.

③ PROVIDE A SMOOTH TRANSITION FROM THE INVERT ELEVATIONS BETWEEN CULVERTS. REMOVE LOOSE SOIL FROM EXCAVATED AREA BETWEEN CULVERTS.

④ PROVIDE AND INSTALL PNEUMATICALLY PLACED CONCRETE ON THE DITCH BOTTOM AND SIDE SLOPES BETWEEN TEMPORARY TERMINATIONS BETWEEN OLD AND NEW CULVERTS. PNEUMATICALLY PLACED CONCRETE WILL BE PLACED TO THE HEIGHT OF THE LARGEST CULVERT ON THE DITCH SIDE SLOPES; AND TO A LIMIT 10 FEET OUTSIDE THE LOCATION OF BMPS ALONG THE DITCH BOTTOM. CEMENT STABILIZED SAND MAY BE SUBSTITUTED FOR PNEUMATICALLY PLACED CONCRETE, IN AREAS WHERE INSTALLATION WORKS AND AT THE OPTION OF TXDOT.

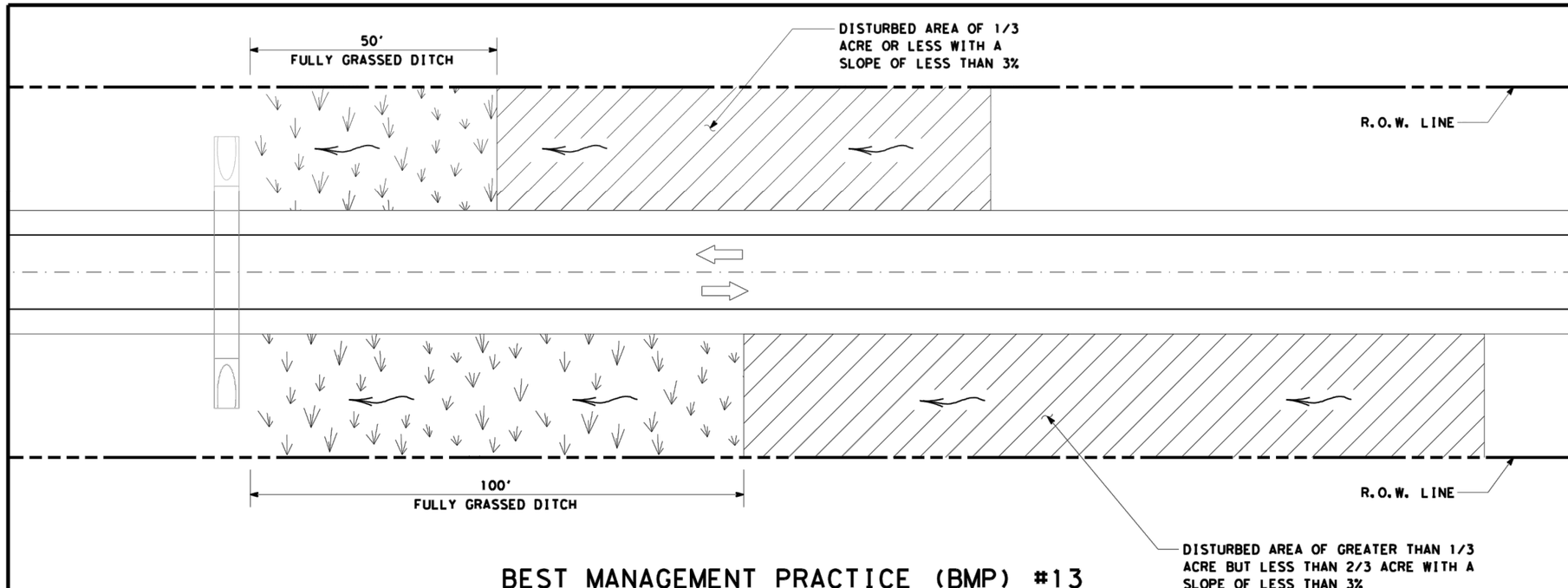
SCALE = NTS SHEET 7 OF 10

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

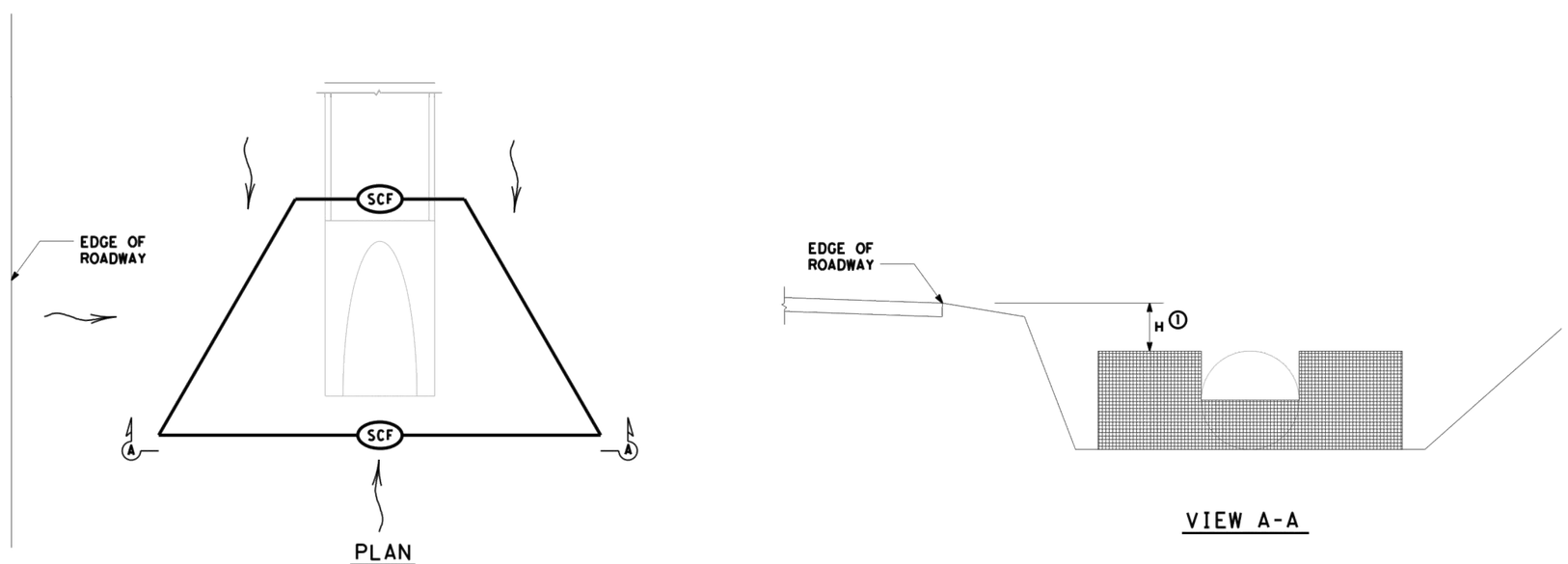
TA-BMP

FILE: BMPLAYOUTS.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT	
© TxDOT 2009	DIST	FED REG	FEDERAL AID PROJECT		SHEET
REVISIONS DEC 2013 FEB 2015	WACO	6			9.7
	COUNTY	CONTROL	SEC	JOB	HIGHWAY
	CORYELL	3128	01	013, ETC.	FM 1113



BEST MANAGEMENT PRACTICE (BMP) #13

USE OF VEGETATIVE BUFFERS IN PLACE OF TEMPORARY SEDIMENT CONTROLS SUCH AS SILT FENCE AND ROCK FILTER DAMS



BEST MANAGEMENT PRACTICE (BMP) #14

NON-404 STREAMS AND DITCHES ONLY ~ SEDIMENT CONTROL AT PARALLEL DRAINAGE STRUCTURE ENTRANCE ②

	FULLY GRASSED DITCH
	DISTURBED AREA
	DIRECTION OF FLOW
SCF	SEDIMENT CONTROL FENCE

① FOR H DIMENSIONS LESS THAN 1.5' SILT FENCE MAY NEED TO BE NOTCHED AS SHOWN IN VIEW A-A. ADD EXTRA POSTS AT NOTCH.

② BMP #14 MAY BE USED AT CROSS DRAINAGE STRUCTURES AS DIRECTED.

SCALE = NTS SHEET 8 OF 10

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

TA-BMP

FILE: BMPLAYOUTS.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT	
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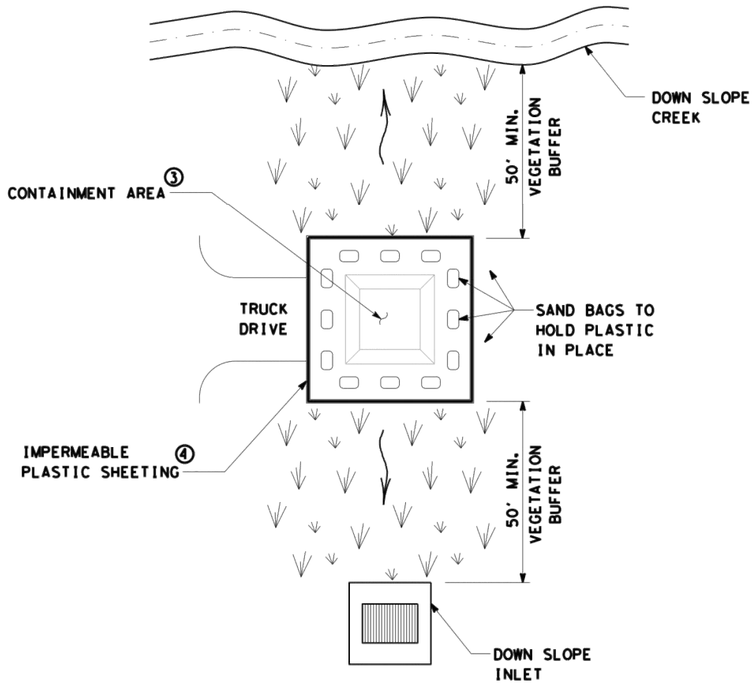
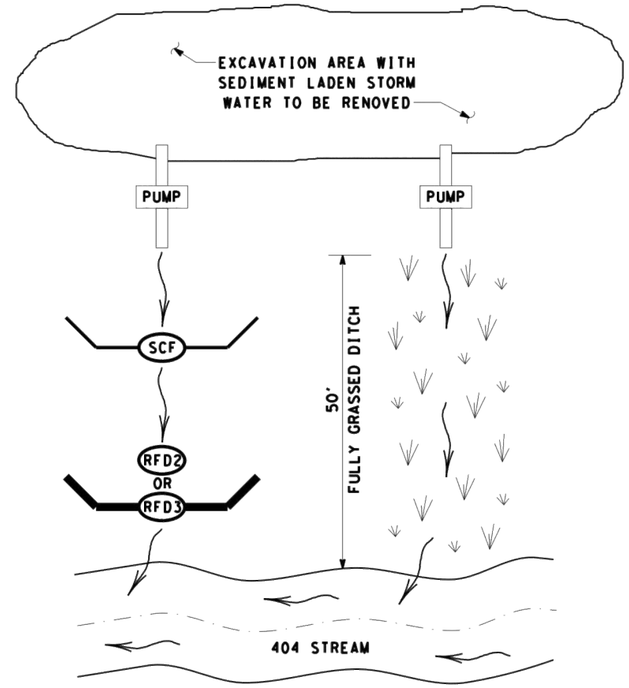
REVISIONS	WACO	6			9.8
DEC 2013 FEB 2015	COUNTY	CONTROL	SEC	JOB	HIGHWAY
	CORYELL	3128	01	013, ETC.	FM 1113



BEST MANAGEMENT PRACTICE (BMP) #15

CONCRETE TRUCK WASHOUT AREA



BEST MANAGEMENT PRACTICE (BMP) #16

PUMPED STORM WATER SEDIMENT CONTROLS ①

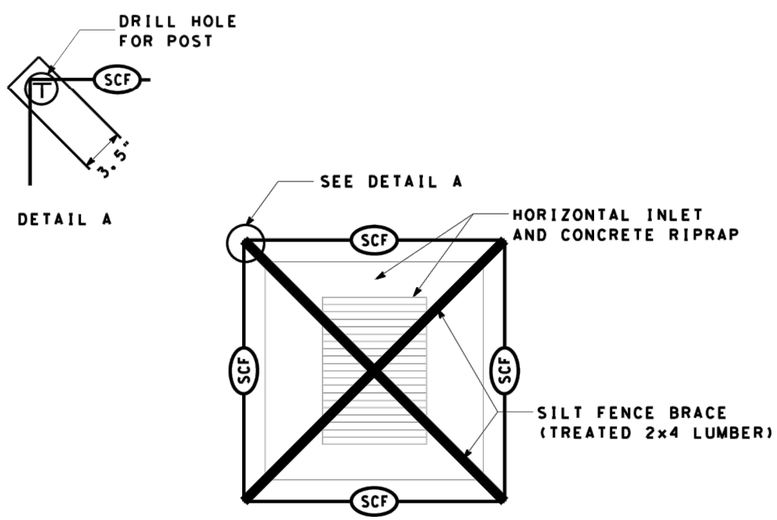
	FULLY GRASSED DITCH
	DIRECTION OF FLOW
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
RFD3	ROCK FILTER DAM (TY 3)

① PUMPED STROM WATER FROM AN EXCAVATION AREA SHOULD BE DISCHARGED IN A 50' VEGETATIVE BARRIER OR THROUGH TWO TEMPORARY SEDIMENT CONTROLS BEFORE ENTERING A 404 STREAM.

② FOR LANDOWNER STOCKPONDS WITHIN 50' OF THE RIGHT OF WAY LINE, PROVIDE REDUNDANT SEDIMENT CONTROLS AT THE CONVEYANCE OF THE POND. MINIMUM OF TWO SEDIMENT CONTROLS.

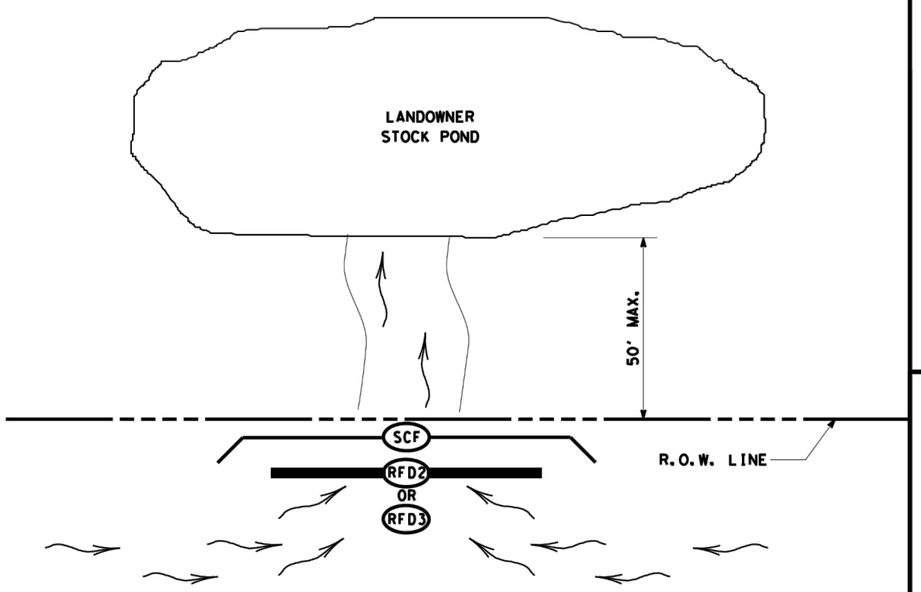
③ WHEN CONTAINMENT AREA REACHES 1' FREEBOARD, DISCONTINUE WASHOUT PLACEMENT AND REMOVE MATERIAL UPON SOLIDIFICATION.

④ EACH TIME SOLIDIFIED MATERIAL IS REMOVED REPLACE PLASTIC SHEETING.



BEST MANAGEMENT PRACTICE (BMP) #17

HORIZONTAL INLET SEDIMENT CONTROL



BEST MANAGEMENT PRACTICE (BMP) #18

LANDOWNER STOCKPOND SEDIMENT CONTROL ②

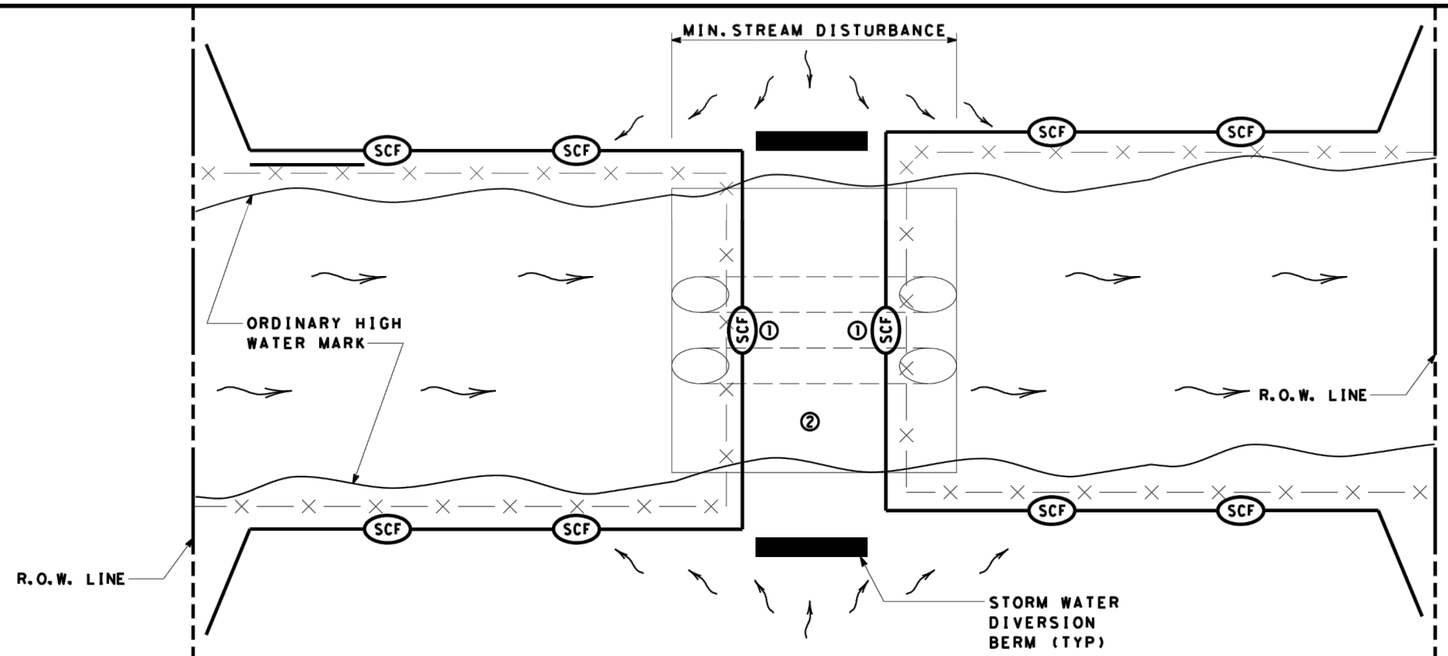
SCALE = NTS SHEET 9 OF 10

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

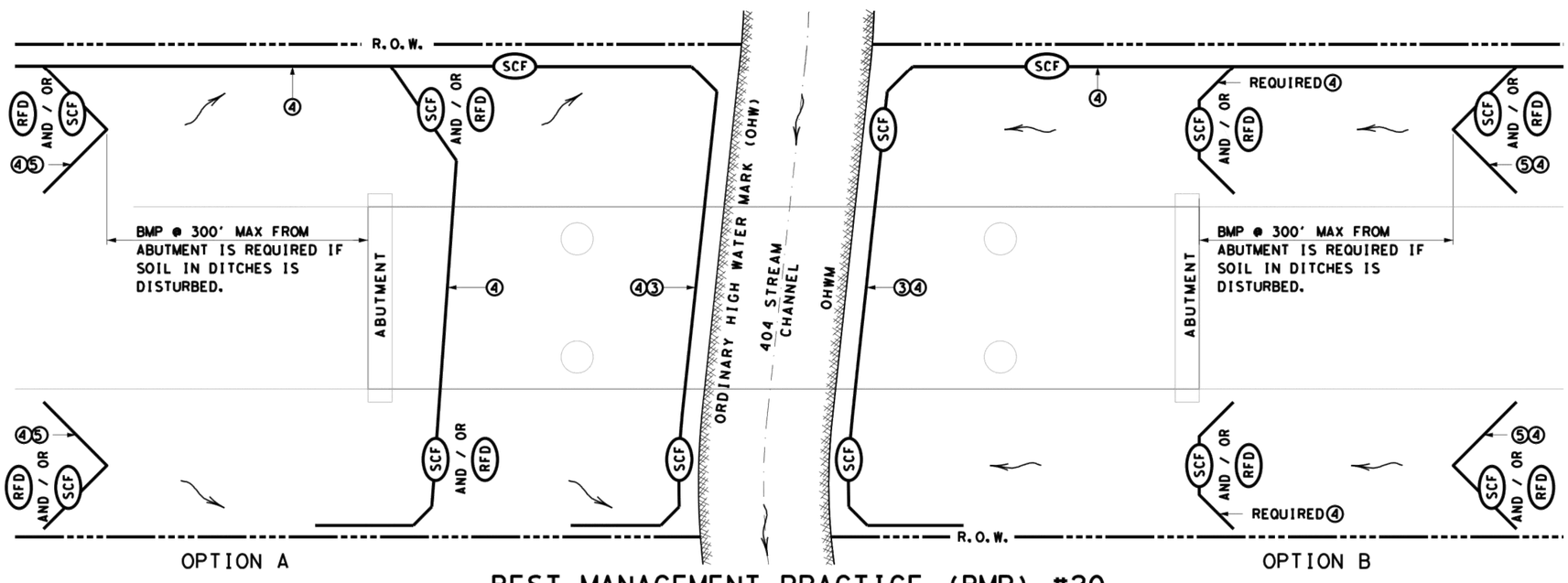
TA-BMP

FILE: BMPLAYOUTS.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT 2009	DIST	FED REG	FEDERAL AID PROJECT #	SHEET
REVISIONS DEC 2013 FEB 2015	WACO	6		9.9
	COUNTY	CONTROL	SEC / JOB	HIGHWAY
	CORYELL	3128	01 013, ETC.	FM 1113



BEST MANAGEMENT PRACTICE (BMP) #19

TYPICAL 404 STREAM CROSSING (SEDIMENT CONTROL AT CROSSING)



BEST MANAGEMENT PRACTICE (BMP) #20

FOR 404 STREAMS ~ BMP'S AT BRIDGES

	DIRECTION OF FLOW
SCF	SEDIMENT CONTROL FENCE
RFD	ROCK FILTER DAM
	SECURITY FENCING

1. HAY BALES MAY BE SUBSTITUTED FOR SILT FENCE OVER THE STREAM CROSSING.
2. CROSSING WILL BE AS PER REQUIREMENTS OF THE WATERS OF THE US GENERAL NOTES.
3. INSTALL SILT FENCE SLIGHTLY UP FROM OHW MARK FROM R.O.W. TO R.O.W.
4. USE SILT FENCE L-HOOKS ON LEVEL OR DOWN SLOPING ENDS TO BLOCK STORM WATER SEDIMENT
5. INSTALL LARGE V OR U SHAPED BMP'S FROM ABUTMENT AS SHOWN. IF THERE IS STEEP DITCH CONDITIONS DECREASE SPACING AND CONSIDER RFD'S. ADD ADDITIONAL BMP'S IF GRADE IS STEEP OR IF FLOW IS HIGH.

SCALE = NTS SHEET 10 OF 10

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

TA-BMP

FILE: BMPLAYOUTS.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT	
© TxDOT 2009	DIST	FED REG	FEDERAL AID PROJECT		SHEET
REVISIONS DEC 2013 FEB 2015	WACO	6			9.10
	COUNTY	CONTROL	SEC	JOB	HIGHWAY
	CORYELL	3128	01	013, ETC.	FM 1113

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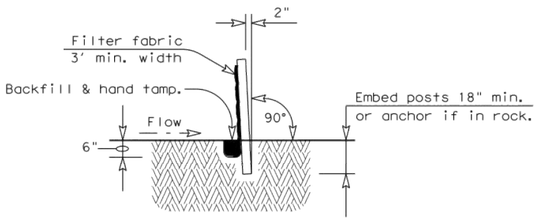


SECTION A-A

GENERAL NOTES

1. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

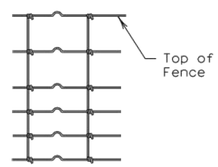
Sediment Control Fence —— SCF ——

SEDIMENT CONTROL FENCE USAGE GUIDELINES

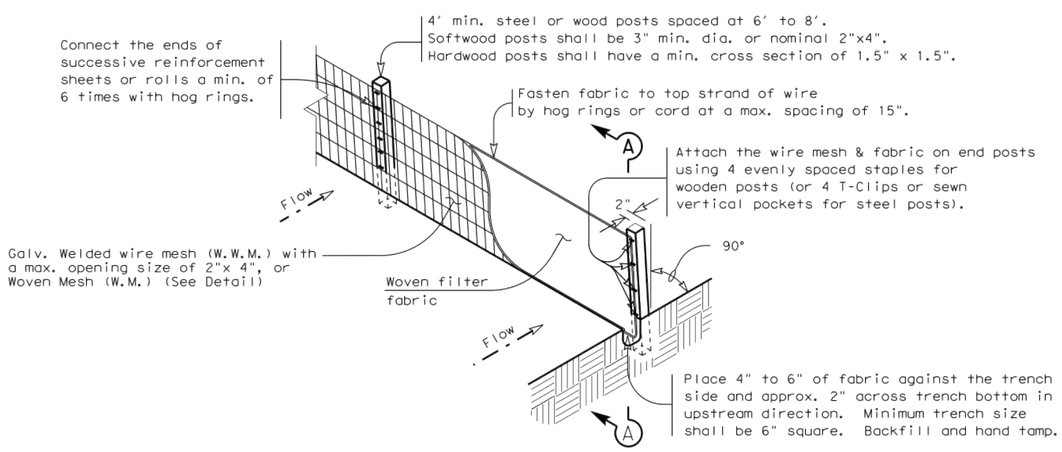
A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a max. flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

Galv. Hinge joint knot woven mesh (12.5 Ga. Min.) requires a minimum of five horizontal wires spaced at a max.12 inches apart and all vertical wires spaced at a max. 12 inches apart.

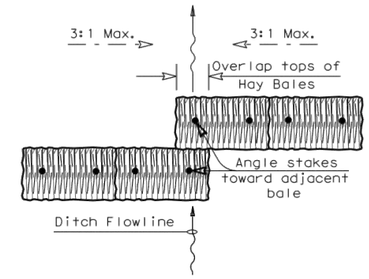


Hinge Joint Knot Woven Mesh (Option)

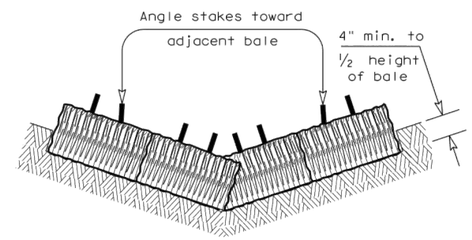


TEMPORARY SEDIMENT CONTROL FENCE

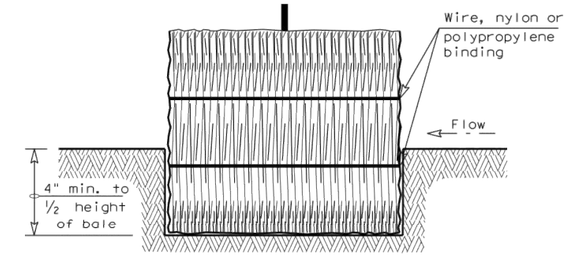
—— SCF ——



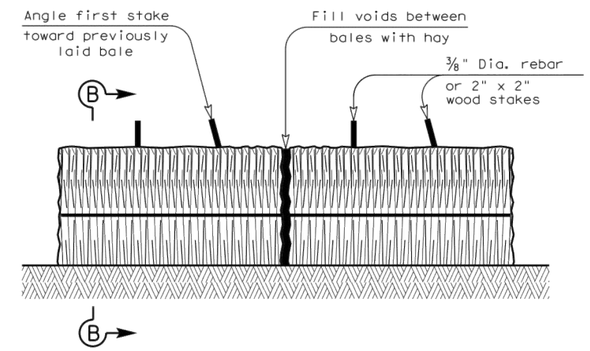
PLAN VIEW



PROFILE VIEW



SECTION B-B



BALED HAY FOR EROSION CONTROL

—— BH ——

PLANS SHEET LEGEND

Baled Hay —— BH ——

BALED HAY USAGE GUIDELINES

A Baled Hay installation may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A two year storm frequency may be used to calculate the flow rate to be filtered. The installation should be sized to filter a maximum flow thru rate of 5 GPM/FT^2 of cross sectional area. Baled hay may be used at the following locations:

1. Where the runoff approaching the baled hay flows over disturbed soil for less than 100'. If the slope of the disturbed soil exceeds 10%, the length of slope upstream the baled hay should be less than 50'.
2. Where the installation will be required for less than 3 months.
3. Where the contributing drainage area is less than ½ acre.

For Baled Hay installations in small ditches, the additional following considerations apply:

1. The ditch sideslopes should be graded as flat as possible to maximize the drainage flowrate thru the hay.
2. The ditch should be graded large enough to contain the overtopping drainage when sediment has filled to the top of the baled hay.

Bales should be replaced usually every 2 months or more often during wet weather when loss of structural integrity is accelerated.

GENERAL NOTES

1. Hay bales shall be a minimum of 30" in length and weigh a minimum of 50 Lbs.
2. Hay bales shall be bound by either wire or nylon or polypropylene string. The bales shall be composed entirely of vegetative matter.
3. Hay bales shall be embedded in the soil a minimum of 4" and where possible ½ the height of the bale.
4. Hay bales shall be placed in a row with ends tightly abutting the adjacent bales. The bales shall be placed with bindings parallel to the ground.
5. Hay bales shall be securely anchored in place with ⅜" Dia. rebar or 2" x 2" wood stakes, driven through the bales. The first stake shall be angled towards the previously laid bale to force the bales together.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & BALED HAY

EC(1)-09

FILE: ec109.dgn	DN: TxDOT	CK: AM	DW: TV	CK: BD
© TxDOT June 1993	CONT	SECT	JOB	HIGHWAY
REVISIONS	3128	01	013, ETC.	FM 116
	DIST		COUNTY	SHEET NO.
	WACO		CORYELL	9.11

DATE:
FILE:

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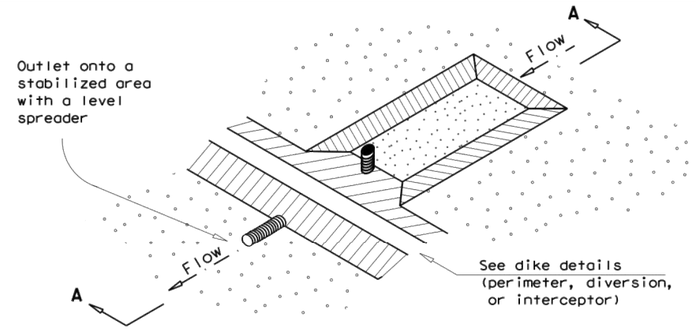
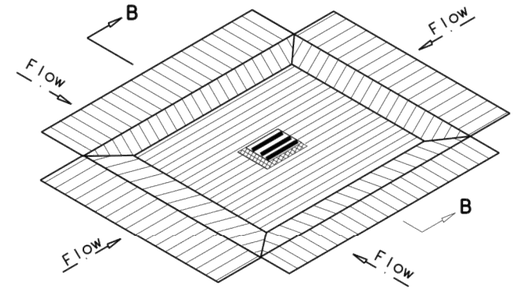


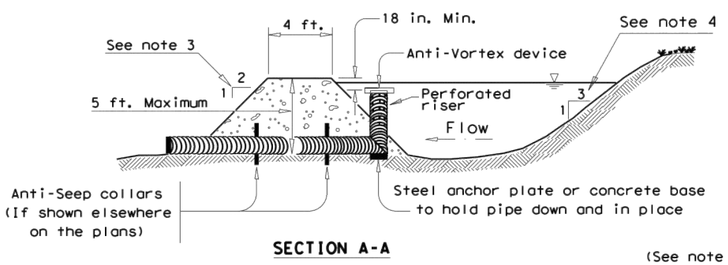
SEDIMENT BASIN AND/OR TRAP WITH PIPE OUTLET

ST/PO

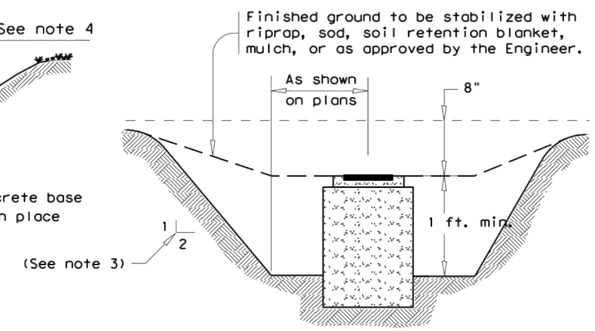


DROP INLET SEDIMENT TRAP

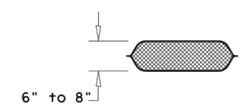
ST-DI



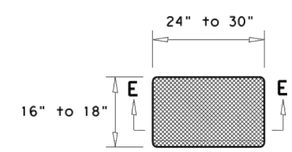
SECTION A-A



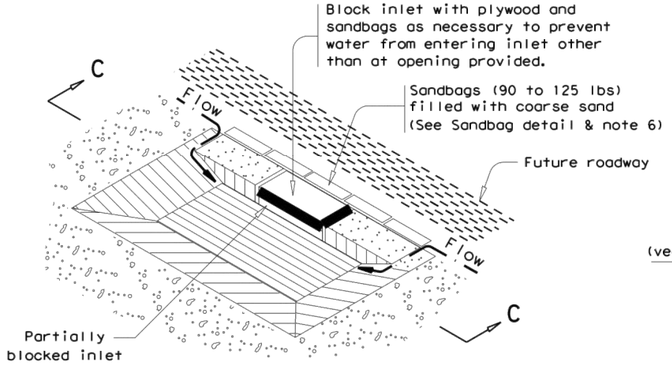
SECTION B-B



SECTION E-E

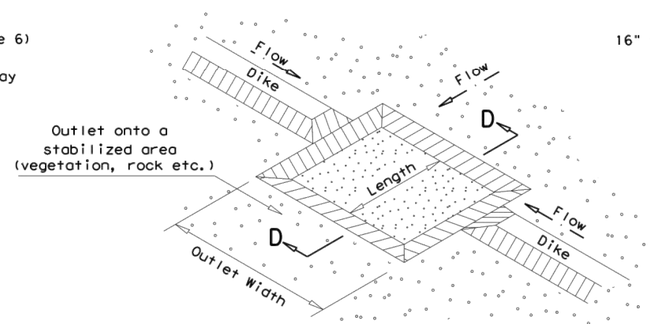


SANDBAG DETAIL



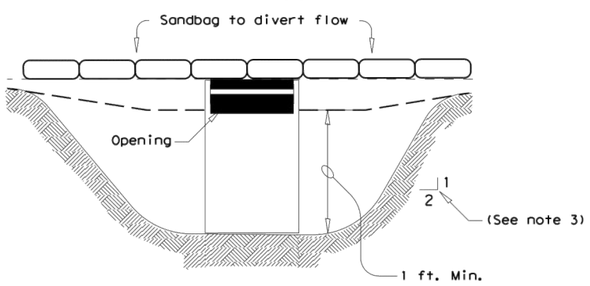
CURB INLET SEDIMENT TRAP

ST-CI

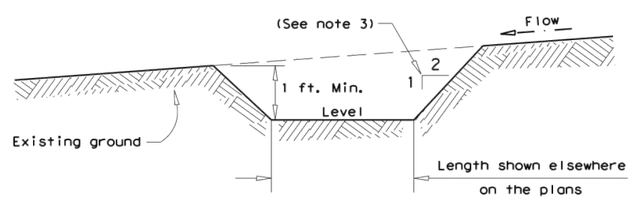


SEDIMENT TRAP WITH LEVEL STABILIZED OUTLET

ST



SECTION C-C



SECTION D-D

GENERAL NOTES

1. Pipe outlet material shall conform to the Item "Pipe Underdrains" or as accepted by the Engineer.
2. All pipe connections shall be watertight.
3. Side slopes within the safety clear zone of a roadway shall be 6:1 or flatter. Protect the traveling public from inlet stacks within the clear zone.
4. Sediment basins shall have side slopes of 3:1 or flatter.
5. The dimensions and limits of excavation for sediment basins and traps will be as shown elsewhere on the plans.
6. The sandbag material shall be made of polypropylene, polyethylene or polyamide woven fabric, min. unit weight 4 ounces /SY, Mullen burst strength exeeding 300 psi and ultraviolet stability exeeding 70%.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

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

Basins: The drainage area for a sediment basin should not exceed 100 acres. The basin capacity shall be at least 1800 CF/Acre of drainage area (0.5" over the drainage area). If the disturbed area draining to the basin is larger than 10 acres, the basin capacity should be 3600 CF/Acre (1.0" over the drainage area).

The basin should have a 40 hour draw-down time with an emergency spillway. The spillway may be designed to pass the peak rate of runoff from a 25 year frequency storm. The 100 year storm should be investigated to consider possible flooding impacts.

The entrance into the basin should be protected from erosion. The basin should be cleaned when the capacity has been reduced by 1/3.

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

Sediment traps should be placed in the following locations:
1. Within drainage ditches spaced @ 500'± on center
2. Immediately preceding ditch inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way

The trap outlet may either be through a perforated riser and pipe assembly designed to achieve a 40 hour draw-down time or over a level stabilized area (vegetation, rock, etc.).

The trap should be cleaned when the capacity has been reduced by ½ or the sediment has accumulated to a depth of 1', whichever is less.

PLANS SHEET LEGEND

ST/PO — Sediment Basin and / or Trap with Pipe Outlet

ST-DI — Drop Inlet Sediment Trap

ST-CI — Curb Inlet Sediment Trap

ST — Sediment Trap with Level Stabilized Outlet

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

SEDIMENT BASINS AND TRAPS (EARTHWORK FOR EROSION CONTROL)

EC(6)-16

FILE: ec616	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
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	DIST		COUNTY	SHEET NO.
	WACO		CORYELL	9.12

DATE:
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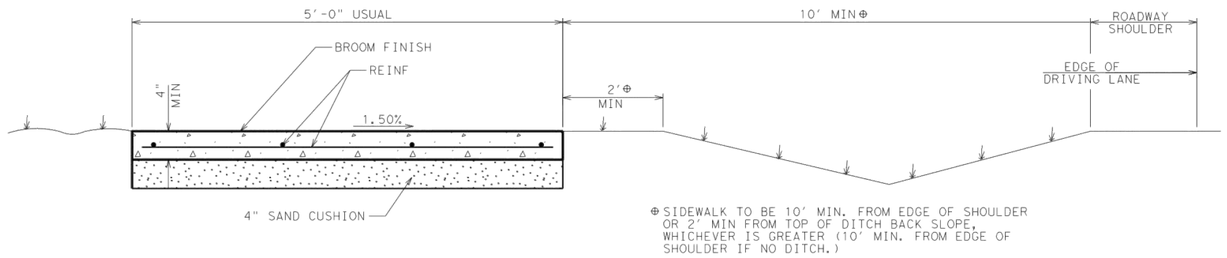
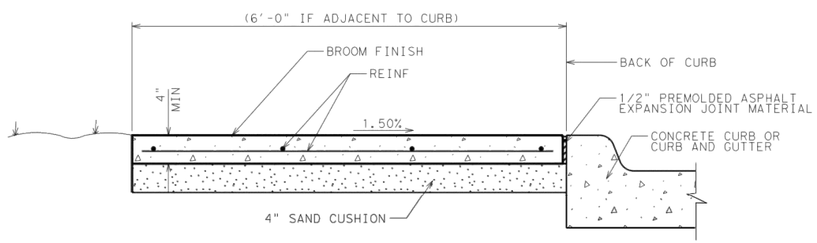
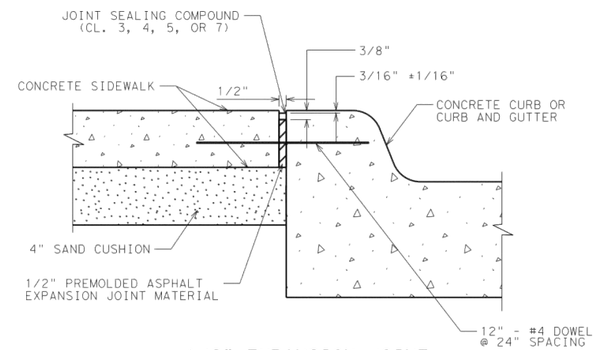


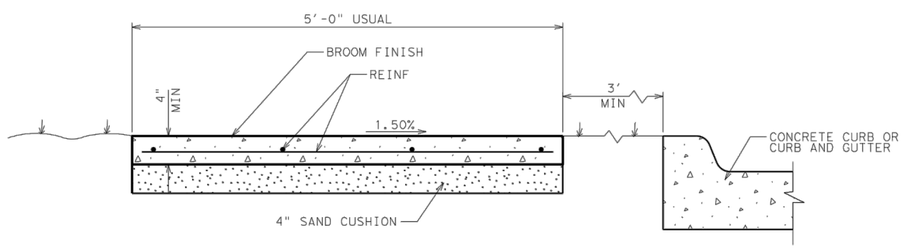
CONCRETE SIDEWALK
(ROADWAY W/O CURB)



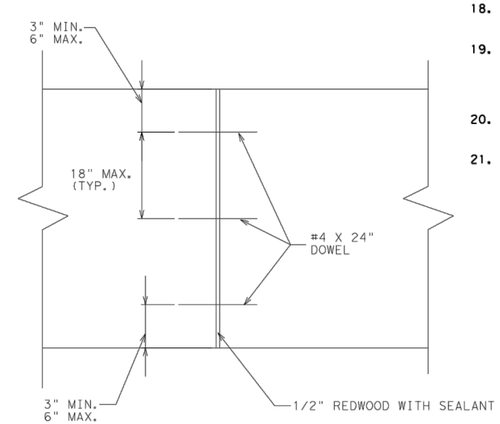
CONCRETE SIDEWALK
(ADJACENT TO CURB)



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



CONCRETE SIDEWALK
(OFFSET FROM CURB)



TRANSVERSE EXPANSION JOINT

GENERAL NOTES

1. SEE PLAN SHEETS FOR LOCATIONS OF SIDEWALKS AND RETAINING WALLS.
2. SEE TXDOT PED STANDARD FOR ADDITIONAL PEDESTRIAN ELEMENT CRITERIA.
3. CONSTRUCT SIDEWALK IN ACCORDANCE WITH ITEM #531.
4. UNLESS SPECIFIED ELSEWHERE IN THE PLANS TO BE ONLY REINFORCING BARS, THE REINFORCEMENT MAY BE COMPOSED OF REINFORCING BARS, WELDED WIRE REINFORCEMENT (WWR) OR ANY SUITABLE COMBINATION OF BOTH TYPES. UNLESS SPECIFIED ELSEWHERE IN THE PLANS, REINFORCING BARS SHALL BE #3 @ 18" C-C, GRADE 40 WITH LAP SPLICES 40 BAR DIAMETERS LONG. WELDED WIRE REINFORCEMENT (WWR) SHALL BE 6x6-#6 WIRE MESH.
5. ALL DOWELS SHALL BE ADEQUATELY SUPPORTED TO RETAIN PROPER ALIGNMENT.
6. REBAR CHAIRS SHALL BE PLACED ON 4" MAXIMUM SPACING EACH WAY.
7. DRILL & DOWEL INTO EXISTING CURB & GUTTER #4 BARS, 12" @ 24" SPACING.
8. CURING MEMBRANE SHALL BE APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
9. PLACE EXPANSION JOINTS EVERY 40'.
10. EXPANSION JOINTS SHALL ALIGN WITH CURB AND GUTTER JOINTS.
11. PLACE CONTRACTION OR DUMMY JOINTS AT A SPACING EQUAL TO THE WIDTH OF THE WALK.
12. TYPICAL SIDEWALKS SHALL BE FORMED AND POURED AT A MAXIMUM CROSS-SLOPE OF 1.5%. ANY CROSS-SLOPES EXCEEDING 2% WILL NOT BE ACCEPTED.
13. LOGITUDINAL SLOPE OF SIDEWALKS SHALL NOT EXCEED 5% EXCEPT IN CASES WHERE THE ADJACENT ROADWAY SLOPE EXCEEDS 5%. IF ROADWAY SLOPE EXCEEDS 5%, LONGITUDINAL SLOPE OF SIDEWALKS MAY MATCH THAT OF ROADWAY.
14. CHANGES IN LEVEL GREATER THAN 1/4 INCH ARE NOT PERMITTED ALONG SIDEWALKS.
15. NEW SIDEWALK SHALL BE CONNECTED TO ALL EXISTING ADJACENT WALKS AND STEPS.
16. MINIMUM COVER OVER REINF SHOULD BE 2". MAXIMUM LATERAL COVER OVER REINF IS 3".
17. WHERE SIDEWALK OR WHEELCHAIR RAMP ADJOINS BACK OF CURB, INLET, POLE OR ANY STRUCTURE, APPROVED EXPANSION MATERIAL SHALL BE USED.
18. IF SIDEWALK WIDTH IS LESS THAN 5', PROVIDE 5' X 5' PASSING AREAS AT INTERVALS NOT TO EXCEED 200' SPACING.
19. WHERE SIDEWALK WITH RETAINING WALL IS SPECIFIED, RETAINING WALL WILL BE SUBSIDIARY TO THE ITEM, "CONCRETE SIDEWALK (SPECIAL)(RETAINING WALL)", WITH LIMITS OF PAY AS SHOWN HEREON.
20. SIDEWALK EXPANSION JOINTS SHOULD EXTEND THROUGH ADJACENT CONCRETE STRUCTURES SUCH AS CURB AND CURB AND GUTTERS.
21. BRICK SAND UNDER SIDEWALK WILL BE UNACCEPTABLE.

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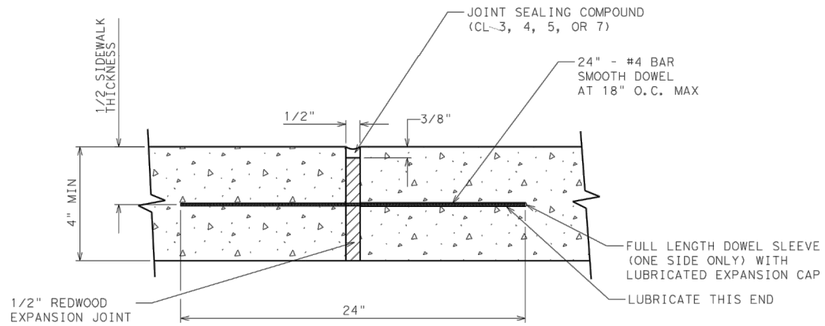
WACO DISTRICT STANDARD

CONCRETE SIDEWALK DETAILS

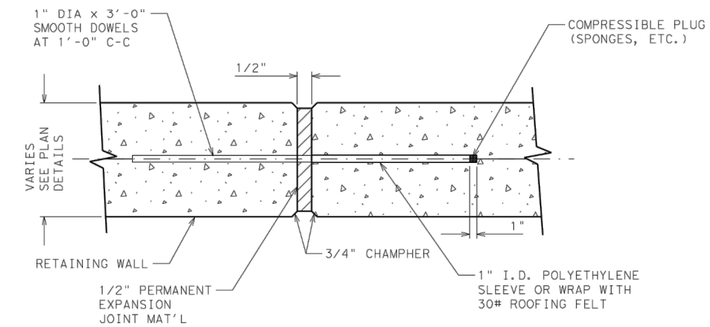
SHEET 1 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			10.1
STATE	DIST.	COUNTY	
TEXAS	WACO	CORYELL	
CONT.	SECT.	JOB	HIGHWAY NO.
3128	01	013	FM 116

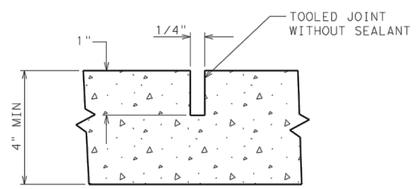
CONCRETE SIDEWALK DETAILS



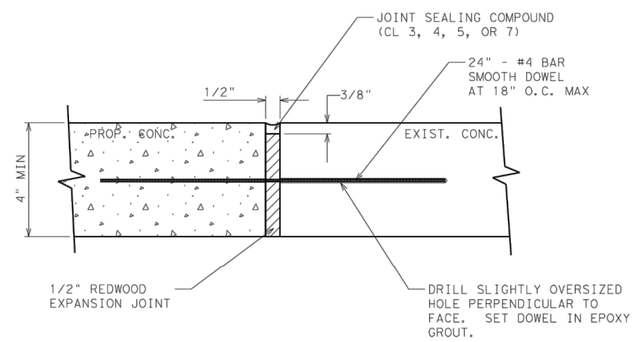
EXPANSION JOINT
(SIDEWALK)



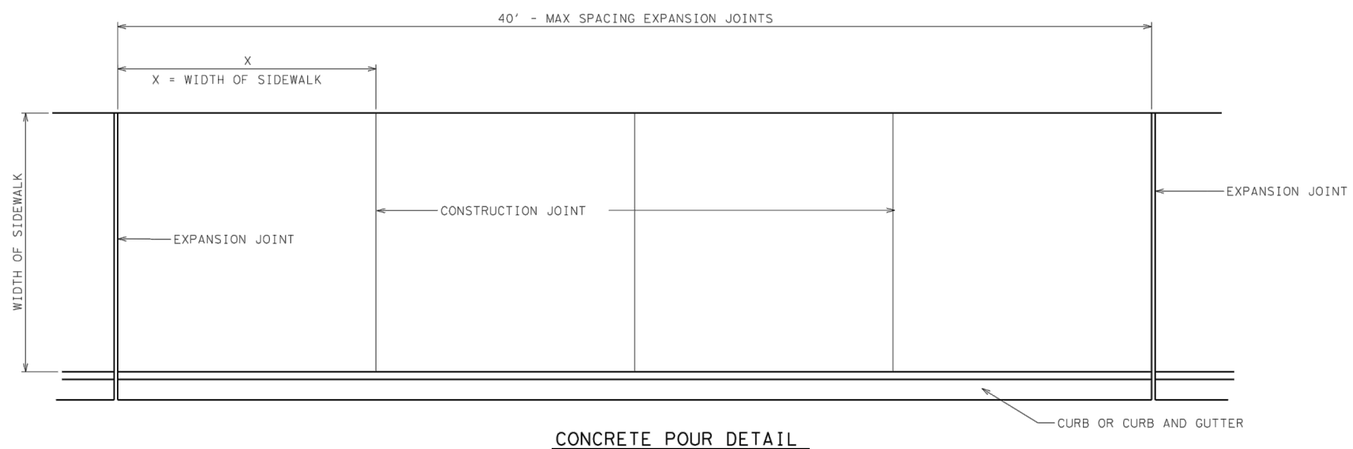
EXPANSION JOINT
(RETAINING WALL)



CONTRACTION JOINT



DOWEL TO EXISTING DETAIL



CONCRETE POUR DETAIL

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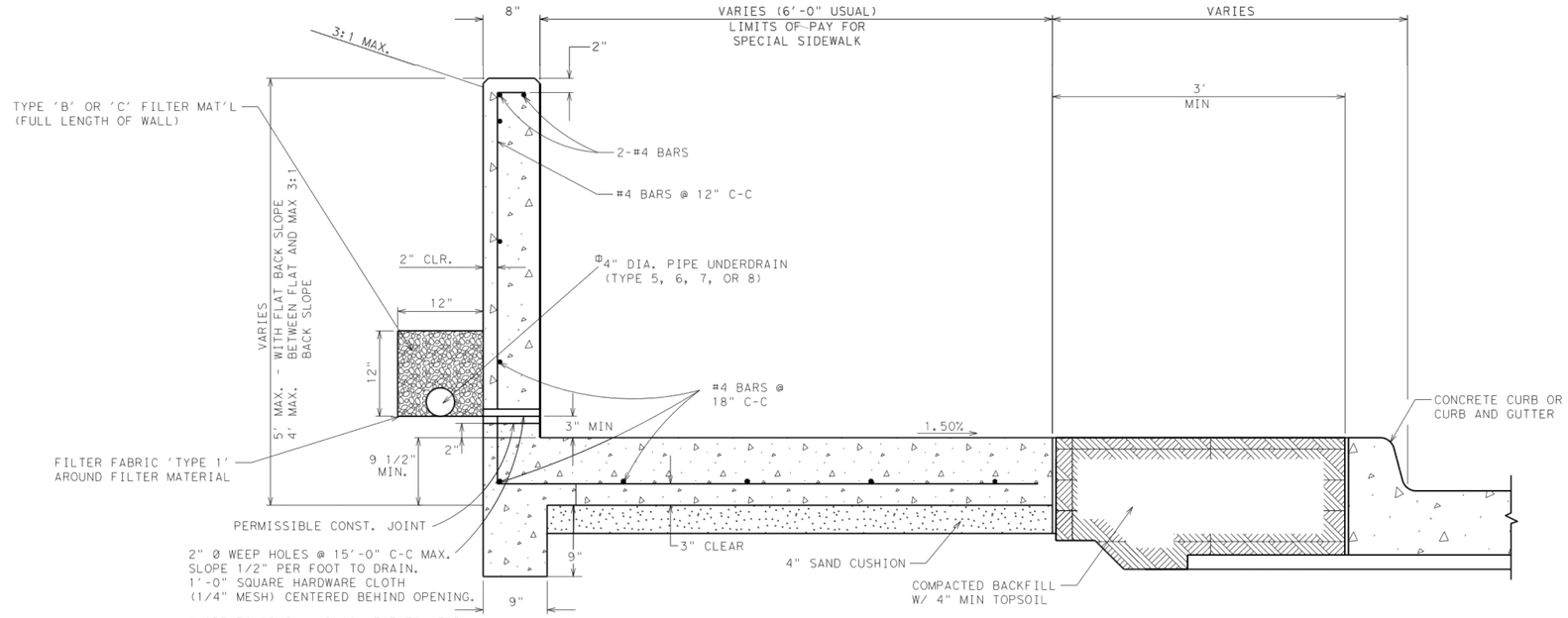
WACO DISTRICT STANDARD

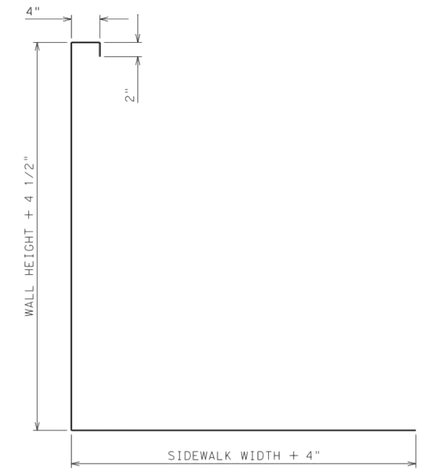
CONCRETE SIDEWALK DETAILS

SHEET 2 OF 3

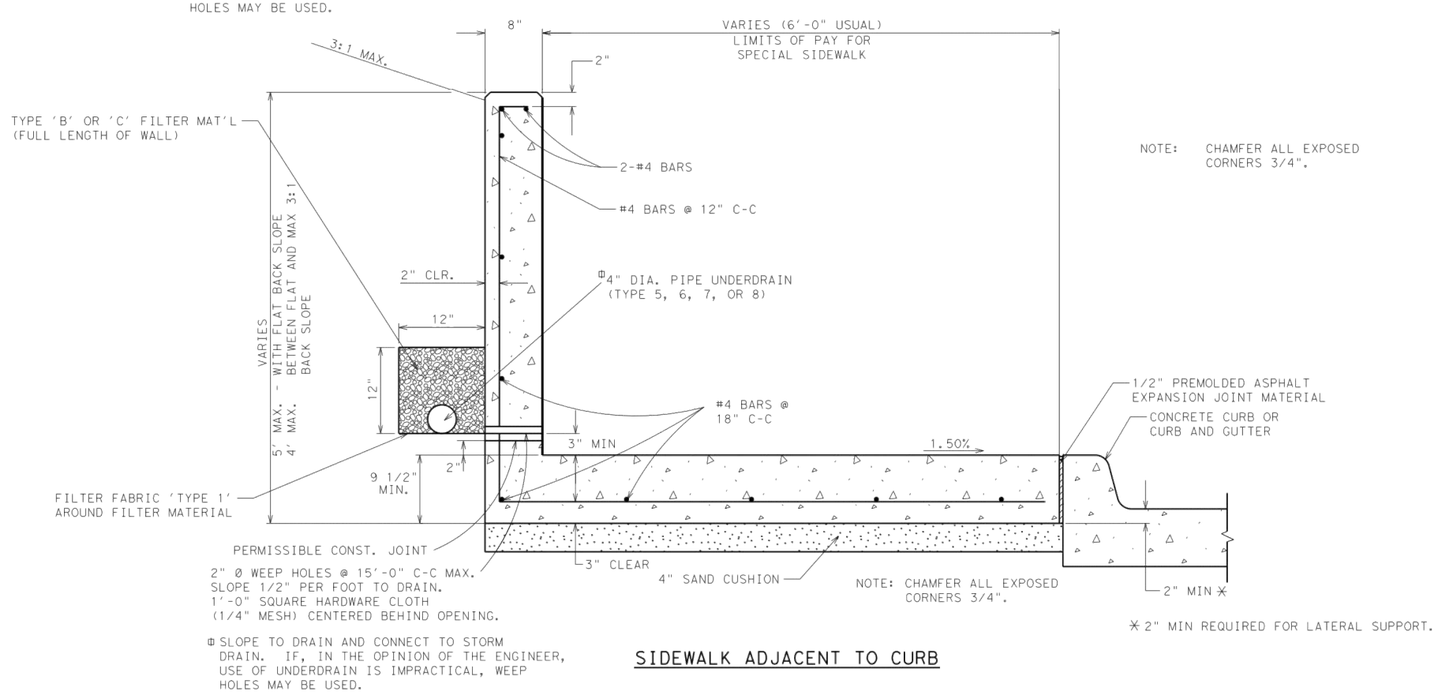
FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			10.2
STATE	DIST.	COUNTY	
TEXAS	WACO	CORYELL	
CONT.	SECT.	JOB	HIGHWAY NO.
3128	01	013	FM 1113



SIDEWALK REMOTE FROM CURB



REINFORCING STEEL DETAIL



NOTE: CHAMFER ALL EXPOSED CORNERS 3/4".

NOTE: CHAMFER ALL EXPOSED CORNERS 3/4".

✳ 2" MIN REQUIRED FOR LATERAL SUPPORT.

SIDEWALK ADJACENT TO CURB

SPECIAL CONCRETE SIDEWALK W/RETAINING WALL

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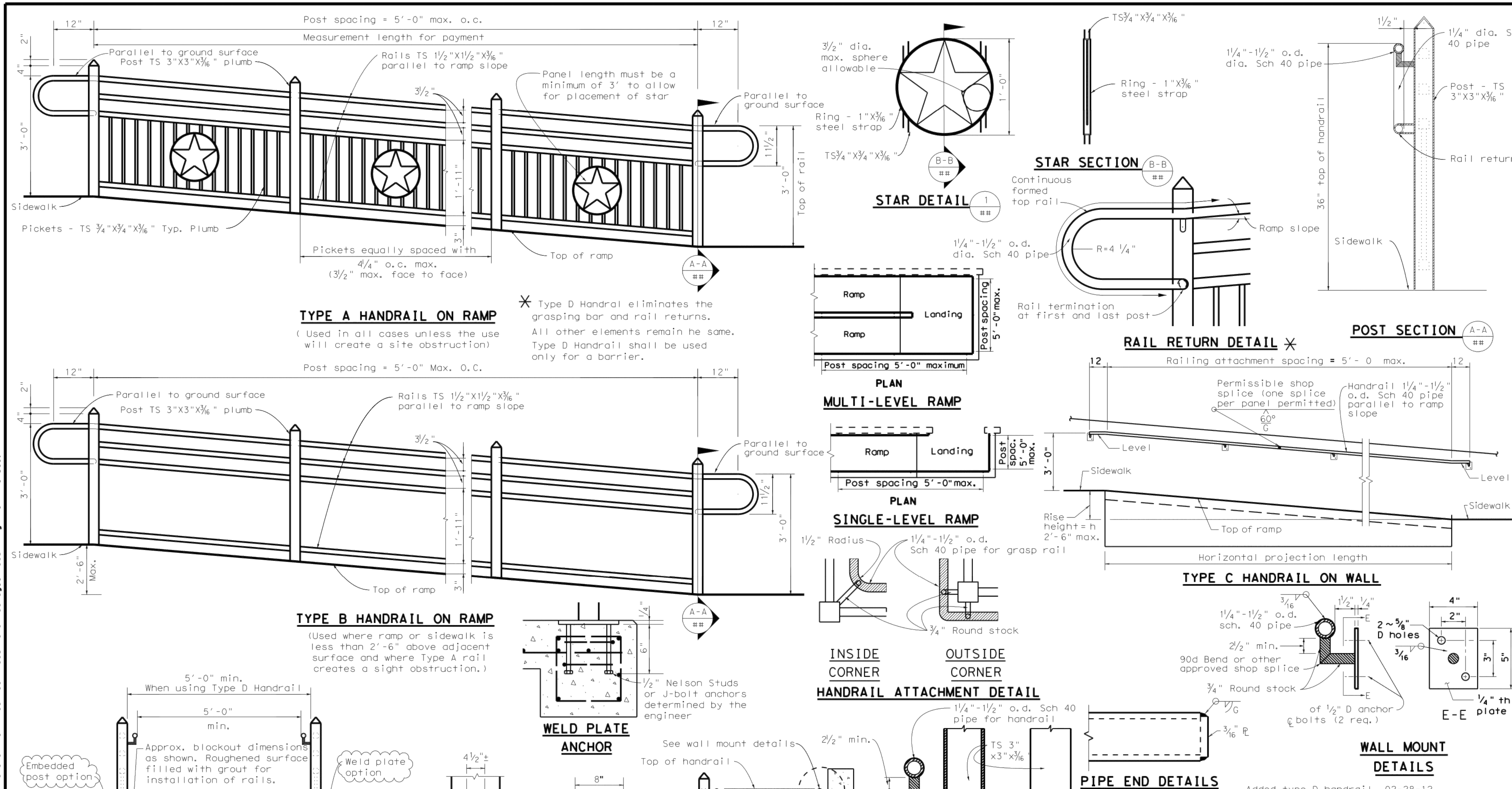
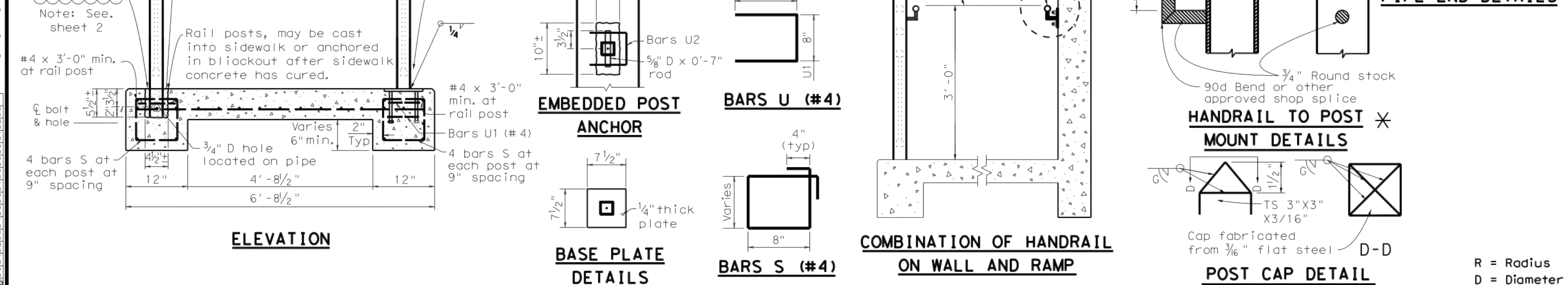
WACO DISTRICT STANDARD

CONCRETE SIDEWALK DETAILS

SHEET 3 OF 3

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			10.3
STATE	DIST.	COUNTY	
TEXAS	WACO	CORYELL	
CONT.	SECT.	JOB	HIGHWAY NO.
3128	01	013	FM 116





R = Radius
D = Diameter

Texas Department of Transportation

✳WACO DISTRICT HANDRAIL DETAIL

MISCELLANEOUS DETAILS
SHEET 1 OF 2

FILE:	DN:	CK:	DW:	CK:	NEG:
©TxDOT 2006	DIST	FED REG	FEDERAL AID PROJECT		SHEET
REVISIONS	WACO	6			10.4
	COUNTY		CONTROL	SECT	JOB HIGHWAY
	3128		01	013,	ETC.

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LEVELS DISPLAYED

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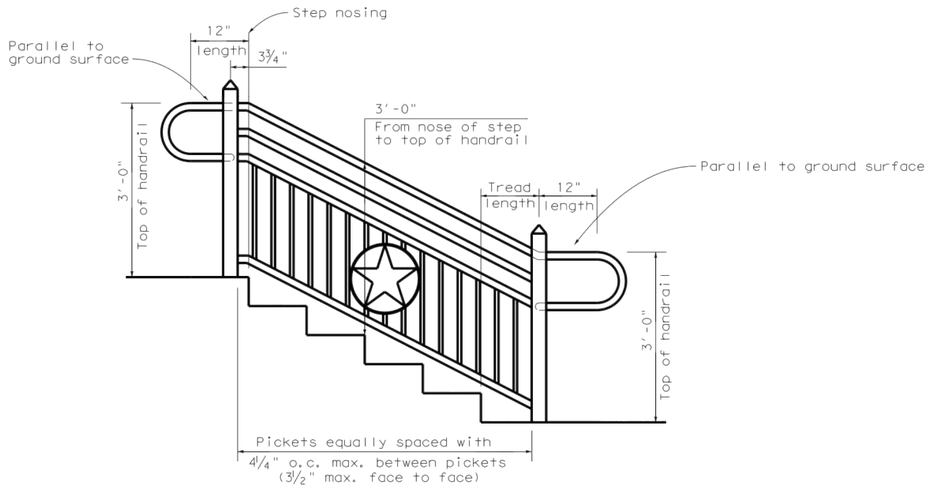

GENERAL NOTES

1. The designer should carefully evaluate the site conditions to determine the necessity and extent of the warrant for handrail.
2. The designer should use careful judgment in specifying the type of handrail to be used.
3. Type 'A' handrail is to be used in all cases, unless its use will create a site obstruction, or it is adjacent to the wall of a building or a retaining wall.
4. Type handrail is to be used in cases where the Type 'A' handrail creates a site obstruction. If Type 'B' handrail is used, the ramp and/or sidewalk height above any adjacent surface shall not be more than 2'-6". Type 'B' handrail can be used adjacent to Concrete Block Retaining Walls ("Keystone ®" or similar type wall construction).
5. △2 Type D handrail is to be used only as a barrier.
6. Where handrail is placed adjacent to the wall of a building, Type 'B' handrail is to be used unless there is an agreement with the building owner to use Type 'A' handrail.
7. Handrail 'C' is to be used on concrete retaining walls, provided the retaining wall is TxDOT property. Otherwise, use handrail 'B', or for screening purposes, use handrail 'A'.
8. If handrail is placed on a retaining wall or the wall of a building, and the wall surface is irregular, ensure there is a minimum of 1½" clearance between the wall surface and the handrail.
9. If handrail is used on a ramp for its intended purpose of accessibility assistance, it must be placed on both sides of the ramp. If handrail is used only as a drop off or fall barrier to pedestrian traffic, it may be used as necessary on only one side of a ramp or sidewalk.
10. Design conforms to Texas Department of Licensing and Regulation (TDLR) Texas Accessibility Standards (TAS), Americans with Disabilities Act Accessibility guidelines (ADAAG), and AASHTO Specifications. Handrail must be installed in compliance with these standards and guidelines.
11. Handrails shall not rotate within their fittings.
12. Handrails shall be at a consistent height above ramp surface.
13. See Sidewalk and Ramp details and/or plan drawings for ramp slopes, dimensions, configurations, and reinforcing steel. This standard shows additional reinforcing steel required for handrail.
14. Posts are to be attached to the concrete utilizing weld plates or embedded posts. Bolt down anchor plates are not acceptable. Weld plates are specifically to be used where there is a high possibility the handrail can be damaged by vehicles.
15. Measurement for payment will be the dimension between the centerline of the outside posts. The dimension of the rail return will not be included in the measurement for payment, but will be considered subsidiary to Item 450.
16. Material for posts and handrails shall be ASTM A53 Gr B, or A501. Weld plates shall be A36.
17. If the rail return creates a hazard or obstruction, it may be turned outward 90° to the direction of the handrail.
18. △1 All components shall be painted in strict accordance to TxDOT specification Item 446, Cleaning and Painting Steel, System II, Class A Blast Cleaning. The paint shall be acrylic latex. Primer and paint shall be from the same manufacturer. The surface preparation shall meet the requirements of SSPC-SP 10. The paint color shall be selected by the TxDOT District Landscape Architect. A list of pre-approved structural steel paint manufacturers can be found on TxDOT's website.
18. All welds shall be 3/16" x 3/16" fillet full perimeter on all connections, unless otherwise shown on the plans.
19. Anchor bolts for handrail attached to a retaining wall shall be placed using an adhesive doweling system approved by the engineer. Anchor bolts shall have an allowable capacity of 2400 lbs in tension and 2300 lbs in shear. Installation of the anchor bolts, including hole depth and diameter, shall be in accordance with the manufacturer's recommendation. If required by the engineer, 3 of the first 10 anchors, and 5% of the remaining anchors shall be tested to 70% of the minimum yield. The contractor shall provide a suitable ram, pump, pressure gauge, and reaction system.
20. Anchor bolts for the attachment of handrail to concrete retaining wall shall conform to ASTM A36 or approved equal. Nuts for anchor bolts shall conform to ASTM A563 Gr A or better heavy hex. Threads for anchor bolts and nuts shall be rolled or cut threads of unified national coarse (UNC) thread series. Bolts and nuts shall have class 2A and 2B fit tolerances. Washers shall be included with each bolt.
21. Exposed edges of handrail and posts shall be rounded or chamfered to approximately 1/8" by grinding. Finished handrail system shall have no burrs.
22. Weld plates, other anchoring systems, rail returns, post caps, star emblem, and painting are to be including in the unit bid price for railing.
23. Erection drawings showing panel lengths, splice locations, rail post spacing, star emblem placement, and anchoring selection shall be submitted to the engineer for approval prior to installation of any handrail component. Any handrail component installation prior to approval of erection drawings will be subject to rejection.

△2 - CHANGED ON 2/28/2012
△1 - CHANGED ON 4/7/2006

Texas Department of Transportation

WACO DISTRICT HANDRAIL DETAIL

MISCELLANEOUS DETAILS
SHEET 2 OF 2

FILE:	DN:	CK:	DW:	CK:	NEG:	
©TxDOT 2006	DIST	FED REG	FEDERAL AID PROJECT •			SHEET
REVISIONS 4/7/2006 - NOTE #17 CHANGED (BRL)	WACO	6				10.5
	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	3128		01	013,	ETC.	

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LEVELS DISPLAYED
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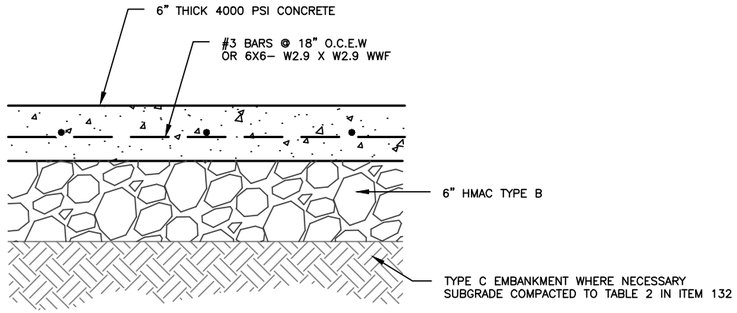
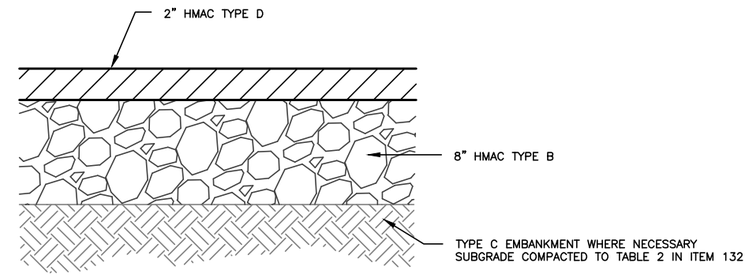
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63



TYPICAL SECTION – INTERSECTION AND DRIVEWAY

SCALE: nts



TYPICAL SECTION – HMAC PAVEMENT

SCALE: nts

TREE PROTECTION NOTES:

1. THE CONTRACTOR SHALL PROVIDE STRAPPED ON PLANKING TO A HEIGHT OF EIGHT FEET (8'–0"), OR TO THE LIMITS OF THE LOWER BRANCHING, UPON ALL TREES THAT ARE LOCATED WITHIN THE VICINITY OF ANY PROPOSED CONSTRUCTION.

2. ANY ROOTS EXPOSED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL. BACK FILL ROOT AREAS WITH GOOD QUALITY TOP SOIL AS SOON AS POSSIBLE. IF EXPOSED AND ROOT AREA IS NOT BACK FILLED WITHIN TWO (2) DAYS, COVER WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE, AND MINIMIZES WATER LOSS DUE TO EVAPORATION.

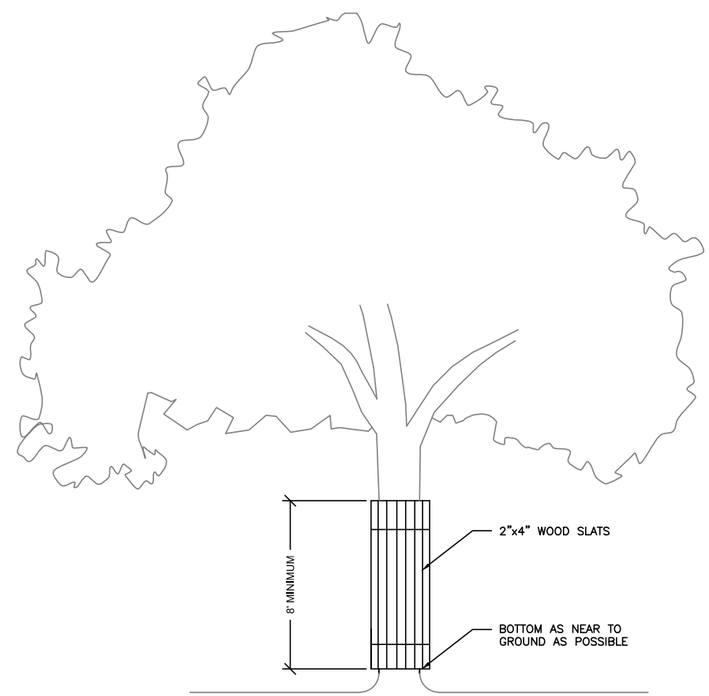
3. PRIOR TO EXCAVATION OR GRADE CUTTING WITHIN TREE DRIPLINE. MAKE A CLEAN CUT BETWEEN DISTURBED AND UNDISTURBED ROOT ZONES WITH A ROCK SAW OR SIMILAR EQUIPMENT TO MINIMIZE DAMAGE TO REMAINING ROOTS.

4. TREES MOST HEAVILY IMPACTED BY CONSTRUCTION ACTIVITIES SHOULD BE WATERED DEEPLY ONCE A WEEK DURING PERIODS OF HOT, DRY WEATHER. TREE CROWNS SHOULD BE SPRAYED WITH WATER PERIODICALLY TO REDUCE DUST ACCUMULATION.

5. ANY TRENCHING REQUIRED FOR THE INSTALLATION OF LANDSCAPE IRRIGATION SHALL BE PLACED AS FAR FROM EXISTING TREE TRUNK AS POSSIBLE.

6. NO LANDSCAPE TOPSOIL GREATER THAN FOUR INCHES (4") SHALL BE PERMITTED WITHIN THE DRIPLINE OF A TREE. NO SOIL IS PERMITTED ON THE ROOT FLARE OF ANY TREE.

7. PRUNING TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC, AND EQUIPMENT SHALL TAKE PLACE BEFORE CONSTRUCTION BEGINS.



TREE PROTECTION DETAIL

SCALE: NTS

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE

BSP engineers

TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

Copperas Cove

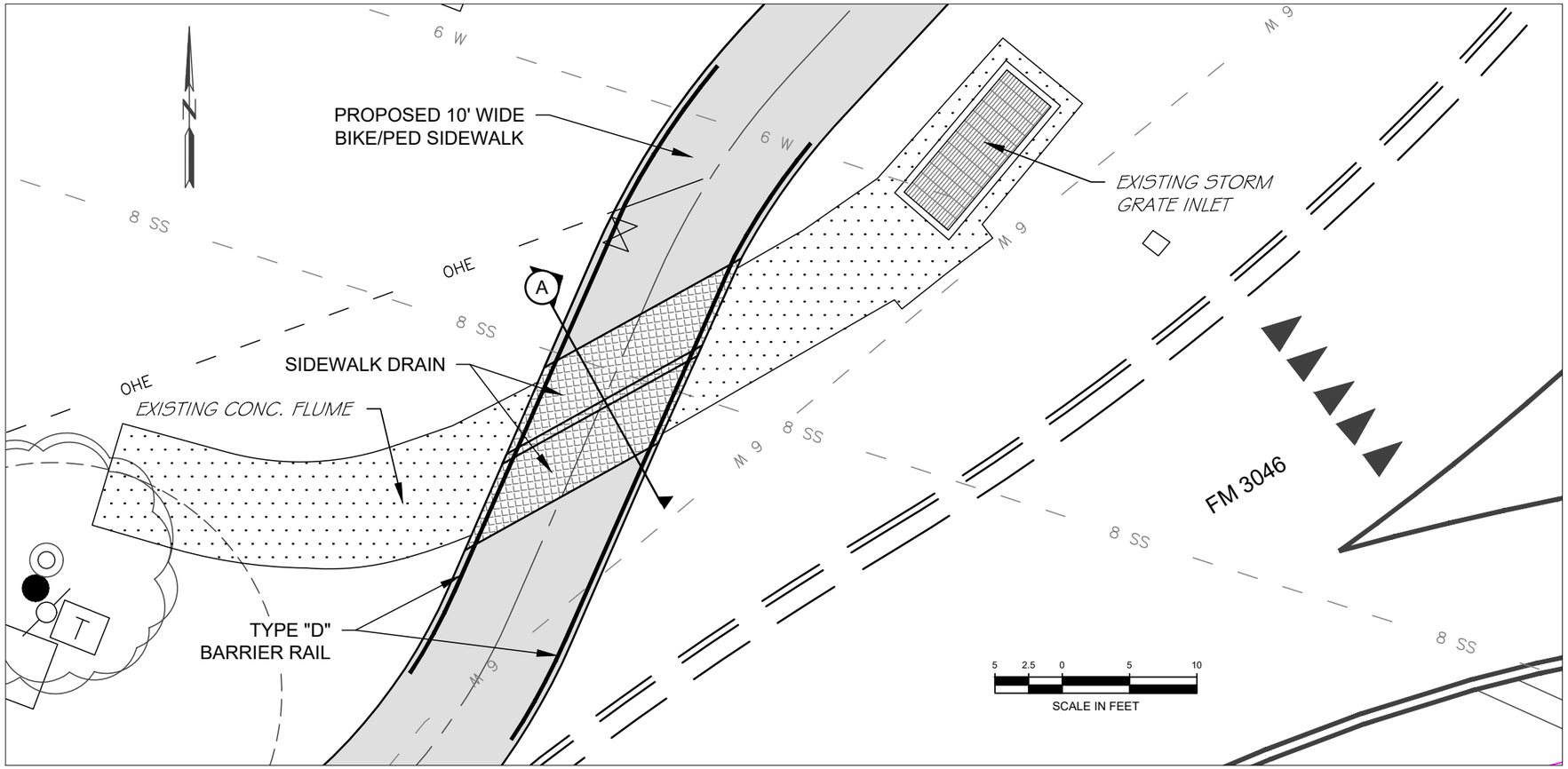
COPPERAS COVE, TEXAS

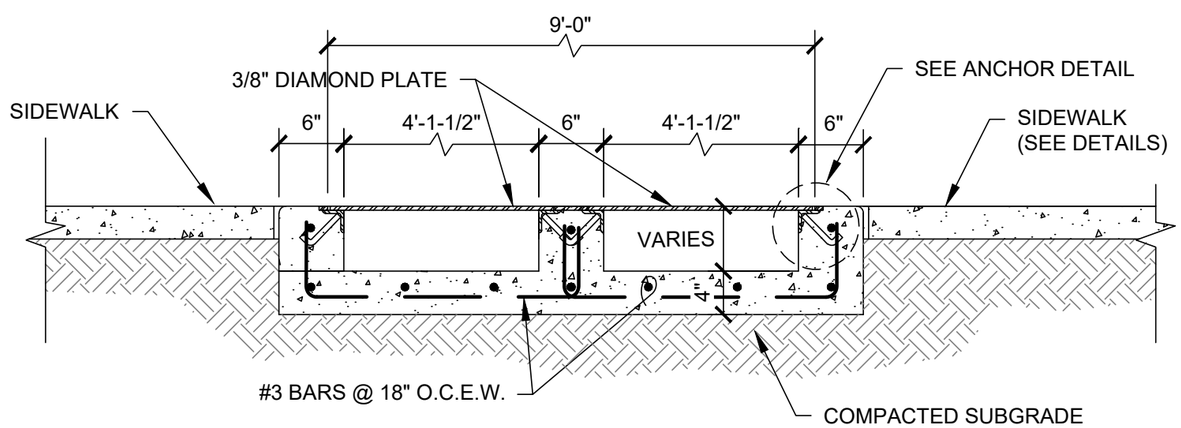
2019 Texas Department of Transportation

CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

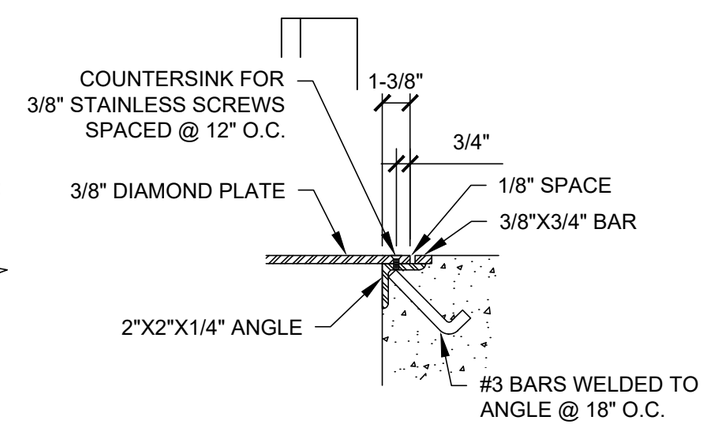
MISCELLANEOUS DETAILS

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		10.6
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046





SECTION "A"



ANCHOR DETAIL

SIDEWALK DRAIN DETAIL
SCALE: NTS

10-17-2019

STATE OF TEXAS
ANTHONY D. BEACH
64801
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE

BSP engineers
TBPE REGISTRATION: F- 7587
BSP PROJECT: 172384.00

Copperas Cove
COPPERAS COVE, TEXAS

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CITY OF COPPERAS COVE
FM 116 & FM 3046 SIDEWALKS
KTMPO ID: C40-05

SIDEWALK DRAIN DETAILS

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NO.
	STP 2019(364)TAPS		10.7
STATE	DISTRICT	COUNTY	
TEXAS	WACO	CORYELL	
CONT	SECT	JOB	HIGHWAY NO
3128	01	013, ETC.	FM 116 & FM 3046