



## WORK PLAN – UPRR

PLAN COMPLETED BY: Josh Laney

JOB: Northpark Dr. Project Overpass Project 2215

OPERATION: UPRR NW, NE, SW, and SE Quadrant of railroad tracks and Northpark

OPERATION LOCATION:

- DOT # 975518B (WB Northpark Dr.) Lufkin Sub. – MP 22.14 Porter, TX
- DOT # 975516M (EB Northpark Dr.) Lufkin Sub. – MP 22.112 Porter, TX

### SCOPE OF WORK

- **Concrete Paving**

HBC will be constructing the new permanent concrete paving on the 4 quadrants of the UPRR Crossing @ Northpark Dr. HBC has opted to utilize the 15" Fasttrack paving option in lieu of the 12" conventional paving that would include 6" of subgrade treatment, 6" of cement treated base, 1" of asphalt bondbreaker and the 12" of CRCP concrete paving. This option gives 15" of concrete paving with #7 transverse and longitudinal reinforcing steel placed on stable, but untreated subgrade.

HBC will be utilizing a combination of both steel and wood forms braced and set with pins to anchor them in place. Grade checks will be performed prior to pouring concrete to ensure proper depth of paving is placed. ***HBC/HNTB/Benesch will be required to be on site during these pre-pour grade checks***

HBC will be placing concrete pavement up to 4' from the edge of the concrete rail panel, which is greater than the 2' minimum specified on UPRR Engineering Standards sheet *Installation of Road Crossings W/ Precast Concrete Panels* (attached for reference). In this 4' area, HBC will be placing asphalt paving meeting TXDOT standards in 3-4" loose lifts and compacted before placing the next lift. We will utilize a 48" double drum roller to compact the asphalt rolling parallel with the crossing per the UPRR Standard.

- **Concrete Sidewalk/Curb/Curb Ramps**

HBC will also be working on the permanent sidewalks both north and south of Northpark with accompanying curb ramps, and bollards within the UPRR ROW

See attached plan sheets and specifications that will be followed for construction.

### EQUIPMENT:

Supervisory Pick up trucks  
CAT 299D3 TRACK SKID STEER  
CAT 420F BACKHOE  
48" Double Smooth Drum Roller

### SUPPLIERS:

Concrete – HES Mix – Texan Concrete  
Concrete – Class A & B (CURB) - Sidewalk/Ramps/Curb – Rocket Ready Mix



**NOTES:**

Work activities associated with this work plan should not require any excavation of any material below pre-existing grades, if any at all.

HBC will adhere to all UPRR requirements and guidelines laid out in the CROE

No equipment will be parked in UPRR ROW overnight, it will be moved off property and stored overnight along with all materials not in use for construction.

HBC will ensure that the work site remains clear of tripping hazards and remove all trash and debris from construction operations.

HBC will follow the signed and sealed plans of the project and will not deviate from them without notifying LHRA (HNTB), and will notify Benesch (UPRR) before proceeding.

This plan has been reviewed/ approved by the onsite HNTB team.

**General Requirements**

*Work within 25' of track and/or over track and/or with potential to foul will require Railroad flagging.*

*All equipment, materials, and personnel shall remain outside the Minimum Construction Clearance Envelope.*

*All personnel must clear the area within 25 feet of track centerline when trains pass the work site.*

*When trains pass the work site, all work within 50 feet of centerline of track(s) shall cease with all equipment properly secured.*

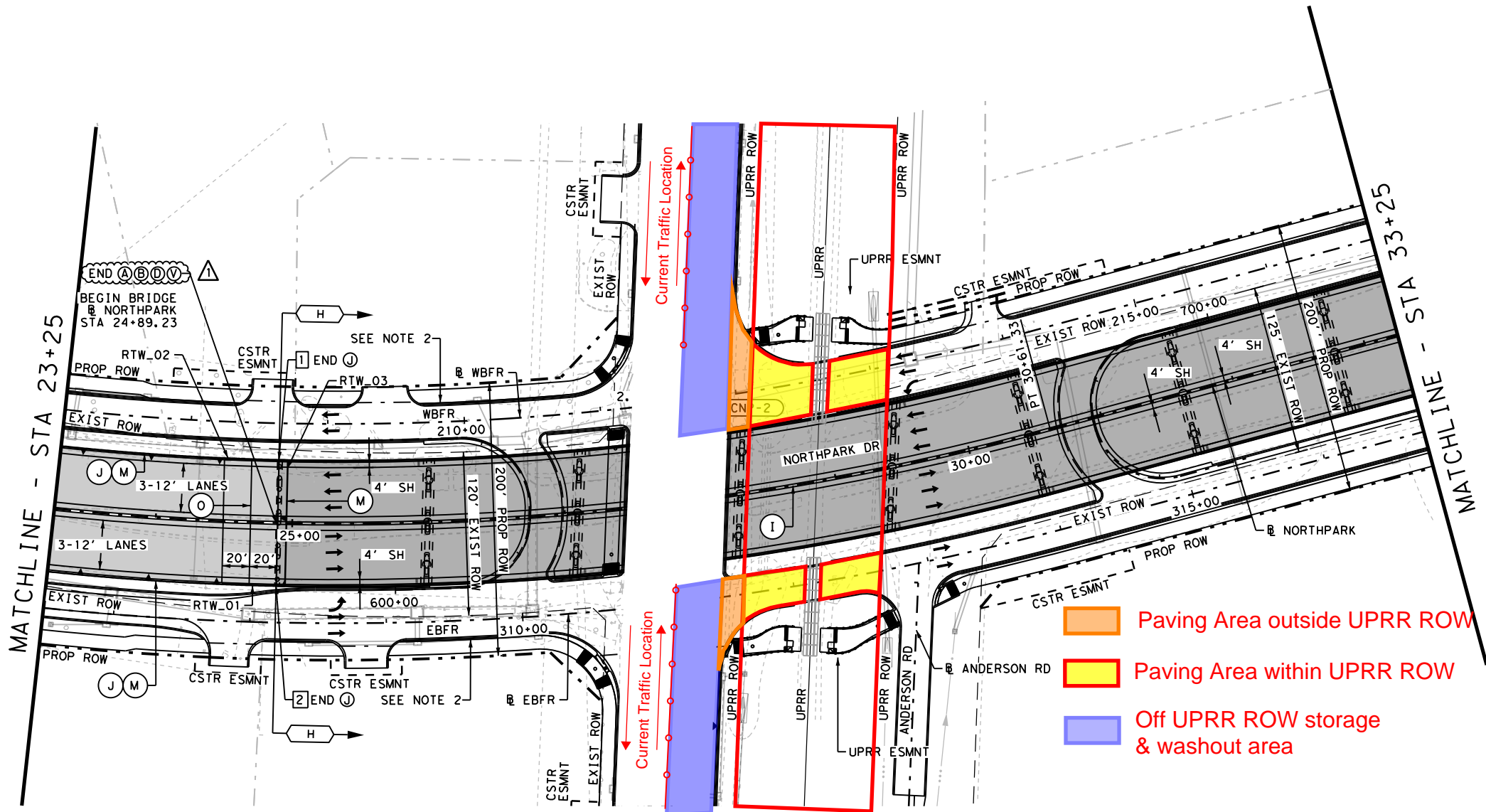
Figure 1



**Figure 2**

NORTH PARK ML P&P 03			
#	STATION	LT/RT	OFFSET
1	24+89.23	LT	46.21
2	24+89.23	RT	46.21

LEGEND	
	PROP ROADWAY
	TEMP PAVEMENT
	PROP BRIDGE
	PROP SIDE PATH
(A)	12" REINF CONCRETE PAVMENT
(B)	1" ASPHALT STAB BASE (GR 4) (PG 64)
(C)	6" CEMENT TREATED BASE
(D)	6" LIME TREATED BASE
(E)	5" REINF CONCRETE SIDE PATH
(F)	12" MONO CURB
(G)	BLOCK SODDING
(H)	MOW STRIP
(I)	42" BARRIER (SSCB)
(J)	36" RAIL (TY SSTR)
(K)	CONCRETE RIP RAP
(L)	CURB RAMP (TY 7)
(M)	MSE RETAINING WALL
(N)	U-TURN CURB
(O)	WIDE FLANGE PAVEMENT TERMINAL
(P)	CRASH CUSHION ATTENUATOR
(Q)	LOOSE AGGR FOR GROUND COVER (TY 1)
(X)	TYPICAL SECTION LABEL
(XXX)	CURVE NUMBER LABEL
(X)	CONTROL POINT
(R)	MBGF
(S)	SINGLE GUARDRAIL TERMINAL (SGT)
(T)	MBGF TRANSITION (MBGF-TR)
(U)	CURB RAMP (TY 20)
(V)	6" CEMENT TREATED SUBGRADE
(W)	PROPOSED TRAVEL LANE
(X)	EXISTING TRAVEL LANE
(Y)	IRRIGATION SLEEVE (SEE NOTE 4)
(Z)	PROP ROW
(AA)	EXIST/UPRR ROW
(AB)	CONSTRUCTION EASEMENT
(AC)	15" FAST TRACK CONC PVMT



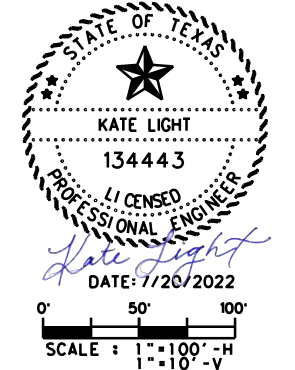
- Paving Area outside UPRR ROW
- Paving Area within UPRR ROW
- Off UPRR ROW storage & washout area

During the concrete pours, trucks will back into UPRR ROW, drop their chute and pull forward out of the UPRR ROW as to not cross, damage, or drop concrete onto the new concrete rail panels. HBC will be utilizing the proposed NB lanes of LP 494 not currently in use by the traveling public as storage and areas for the concrete washouts bins.

No material will be stored in UPRR ROW.

**NOTES:**

1. ALL 500-YEAR WATER SURFACE ELEVATIONS (WSEL) SHOWN IN THIS PLAN SET ARE PROJECTED FROM BEN'S BRANCH BASED ON THE FEMA EFFECTIVE FIRM PANELS AND FLOOD PROFILES FOR BEN'S BRANCH IN MONTGOMERY COUNTY.
2. FOR ALIGNMENT INFORMATION SEE HORIZONTAL ALIGNMENT DATA SHEET. SIDEWALK ALIGNMENT IS ALONG INSIDE EDGE OF SIDEWALK.
3. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.
4. FOR CONTRACTOR INFORMATION ONLY, REFER TO LANDSCAPING SHEETS FOR MORE INFORMATION.
5. ALL CONTROL POINT STATIONS AND OFFSETS REFERENCE NORTH PARK BASELINE.



NO.	REVISIONS	BY	DATE
1	UPDATE THICKNESS FOR LTB	MA	07/14/22

**HNTB** Corporation  
The HNTB Companies  
Infrastructure Solutions  
Firm Registration Number 420

**LH RA**  
LAKE HOUSTON REDEVELOPMENT AUTHORITY & TRZ 10  
600 HUNTON ANDREWS KURTH LLP  
600 TRAVIS, SUITE 4200  
HOUSTON, TX 77002

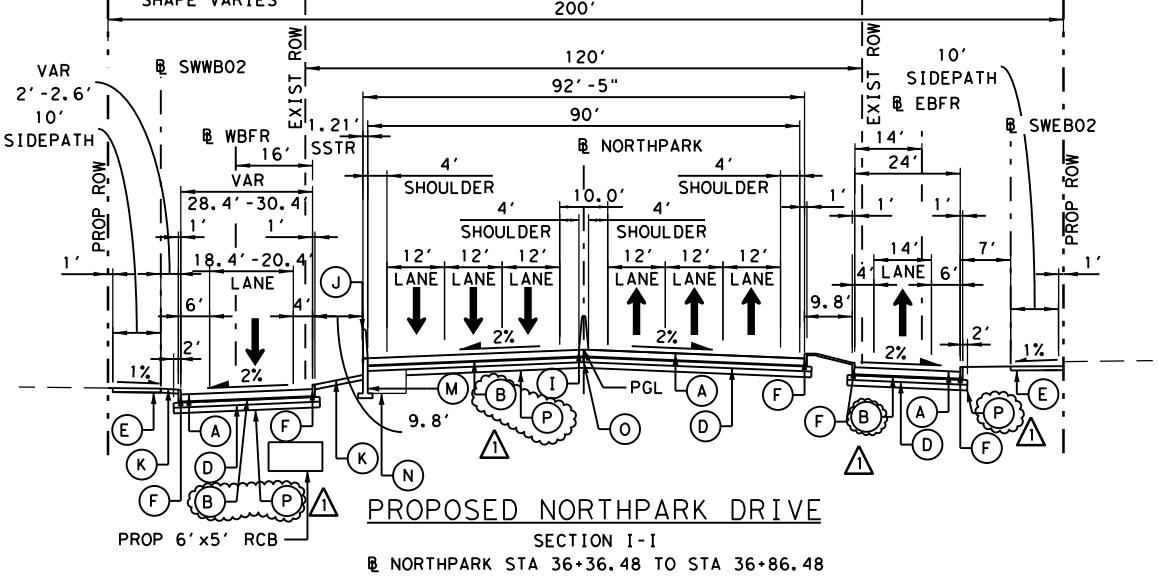
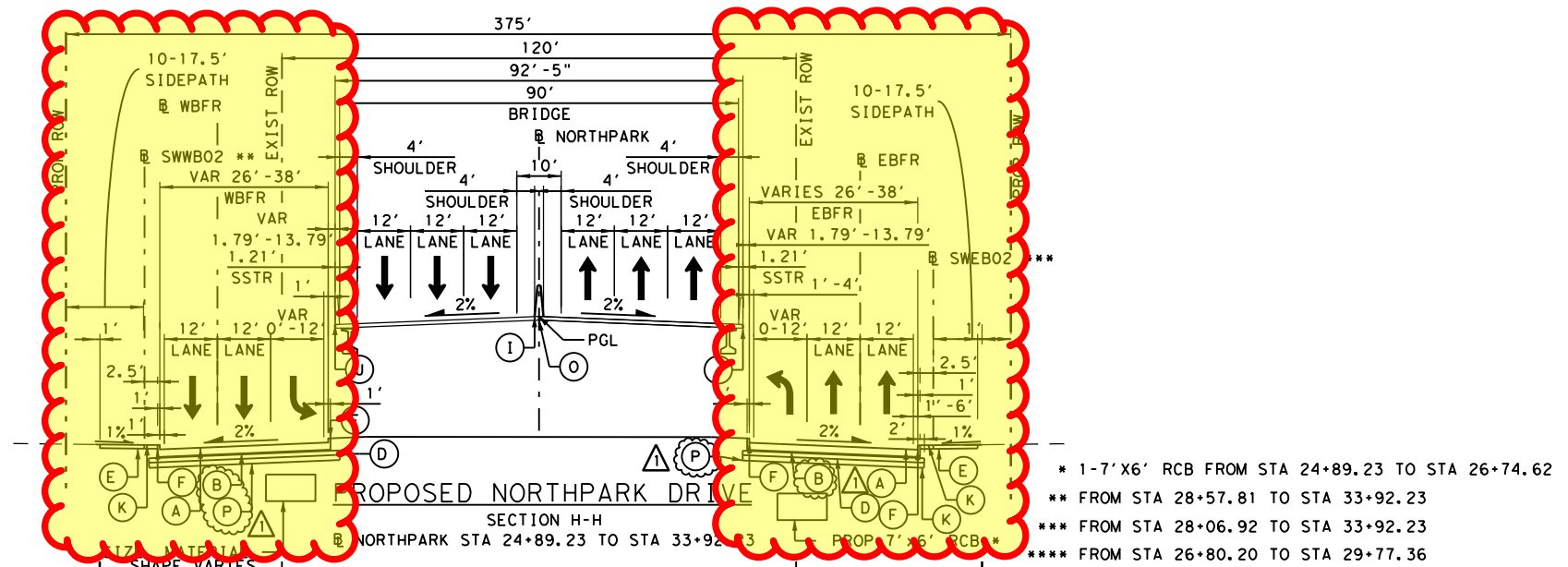
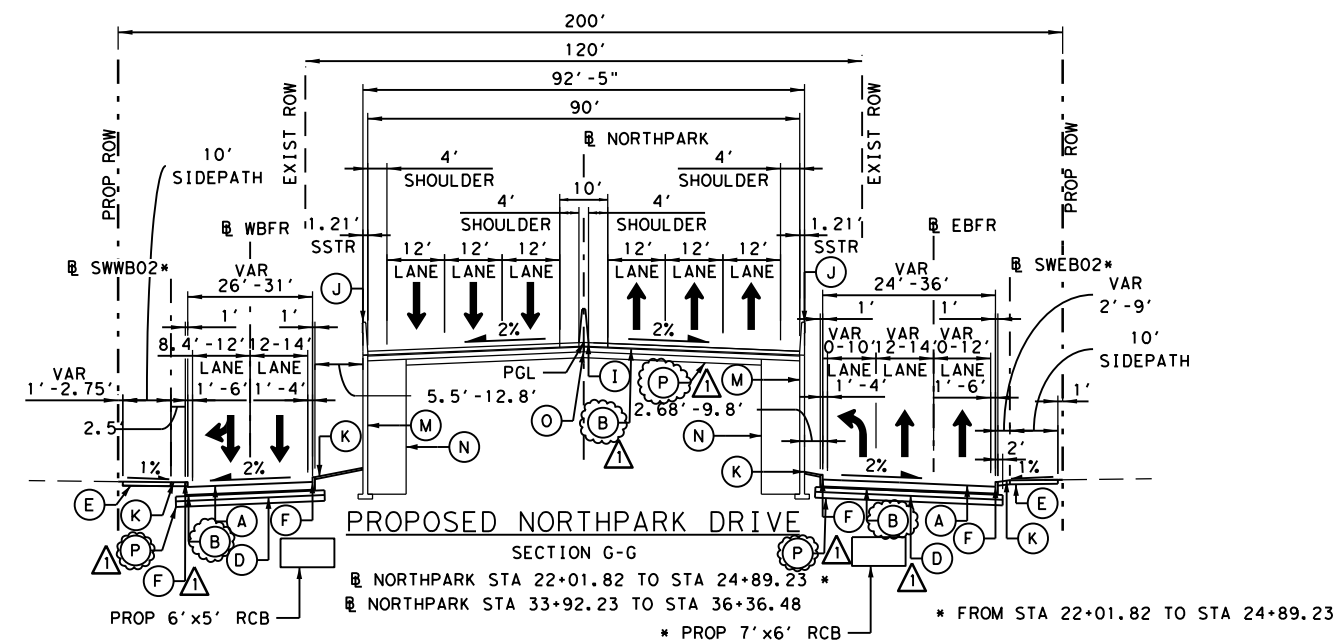
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

**NORTH PARK DRIVE**  
**PLAN**  
**NORTH PARK DRIVE**  
STA 23+25 TO STA 33+25

DESIGNED:	FED. RD. DIV. NO. 6	STATE TEXAS	CITY OF HOUSTON WBS	HIGHWAY NO.
CHECKED:			SEE TITLE SHEET	CS
DRAWN:	STATE DISTRICT HOU	COUNTY MONTGOMERY	CONTROL NO. 0912	SECTION 37
CHECKED:				JOB SHEET NO. 232 222

**Figure 3**

PDF Filename: 0018 - PROPOSED TYPICAL SECTIONS NORTH PARK DRIVE SHEET 3 OF 5.pdf



- LEGEND**
- (A) 12" REINF CONCRETE PAVEMENT
  - (B) 1" ASPHALT STAB BASE (GR 4) (PG 64)
  - (C) 6" CEMENT TREATED BASE
  - (D) (6") LIME TREATED BASE
  - (E) 5" REINF CONCRETE SIDE PATH
  - (F) 12" MONO CURB
  - (G) BLOCK SODDING
  - (H) MOW STRIP
  - (I) 42" BARRIER (SSCB)
  - (J) 36" RAIL (TY SSTR)
  - (K) CONCRETE RIP RAP
  - (L) TEMPORARY PAVEMENT
  - (M) MSE RETAINING WALL
  - (N) REINFORCED VOLUME
  - (O) LONGITUDINAL JOINT
  - (P) 6" CEMENT TREATED SUBGRADE
  - ← PROP TRAVEL LANE
  - ← EXIST TRAVEL LANE
  - EBML = EASTBOUND MAIN LANES
  - WBML = WESTBOUND MAIN LANES
  - NBML = NORTHBOUND MAIN LANES
  - SBML = SOUTHBOUND MAIN LANES



\* 1-7'X6' RCB FROM STA 24+89.23 TO STA 26+74.62  
 \*\* FROM STA 28+57.81 TO STA 33+92.23  
 \*\*\* FROM STA 28+06.92 TO STA 33+92.23  
 \*\*\*\* FROM STA 26+80.20 TO STA 29+77.36

- NOTES:**
- SEE BRIDGE LAYOUT SHEETS FOR BRIDGE TYPICAL SECTIONS AND LIMITS.
  - SEE ROADWAY PLAN PROFILE SHEET FOR PAVEMENT TRANSITIONS.

NOT TO SCALE

NO.	REVISIONS	BY	DATE
1	UPDATE THICKNESS FOR LTB	MA	07/15/22

**HNTB** Corporation  
 The HNTB Companies  
 Infrastructure Solutions  
 Firm Registration Number 420

**LH RA**  
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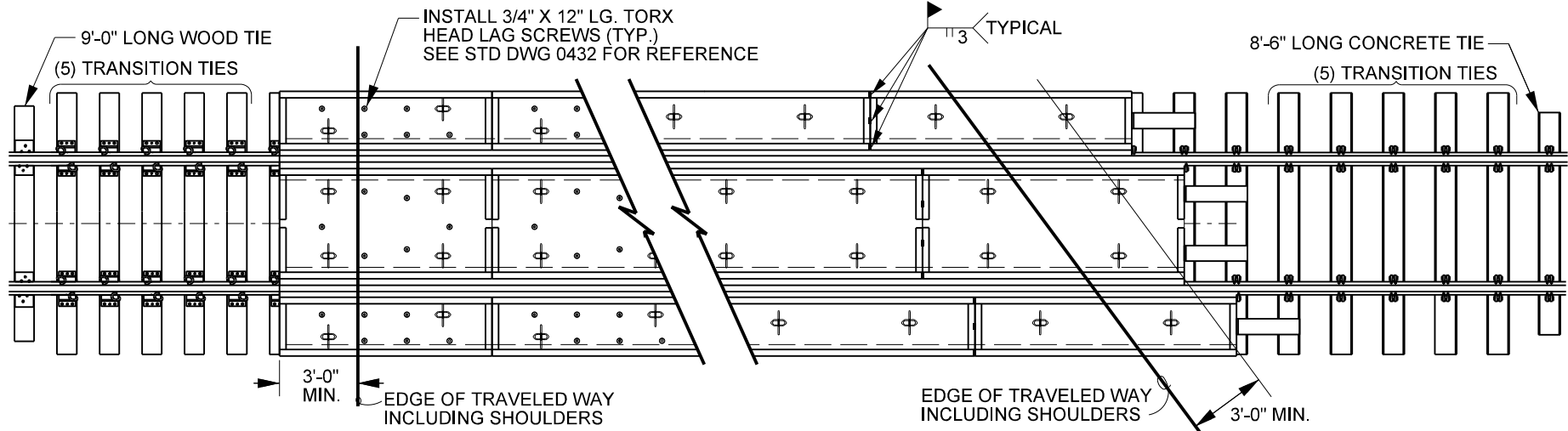
**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS  
 NORTH PARK DRIVE  
 PROPOSED TYPICAL SECTIONS  
 NORTH PARK DRIVE

SHEET 3 OF 5

DESIGNED:	FED. RD. DIV. NO.:	STATE:	CITY OF HOUSTON:	WBS:	HIGHWAY NO.:
CHECKED:	6	TEXAS	SEE TITLE SHEET	CS	
DRAWN:	STATE DISTRICT:	COUNTY:	CONTROL SECTION:	JOB NO.:	SHEET NO.:
CHECKED:	HOU	MONTGOMERY	0912 37	232	18

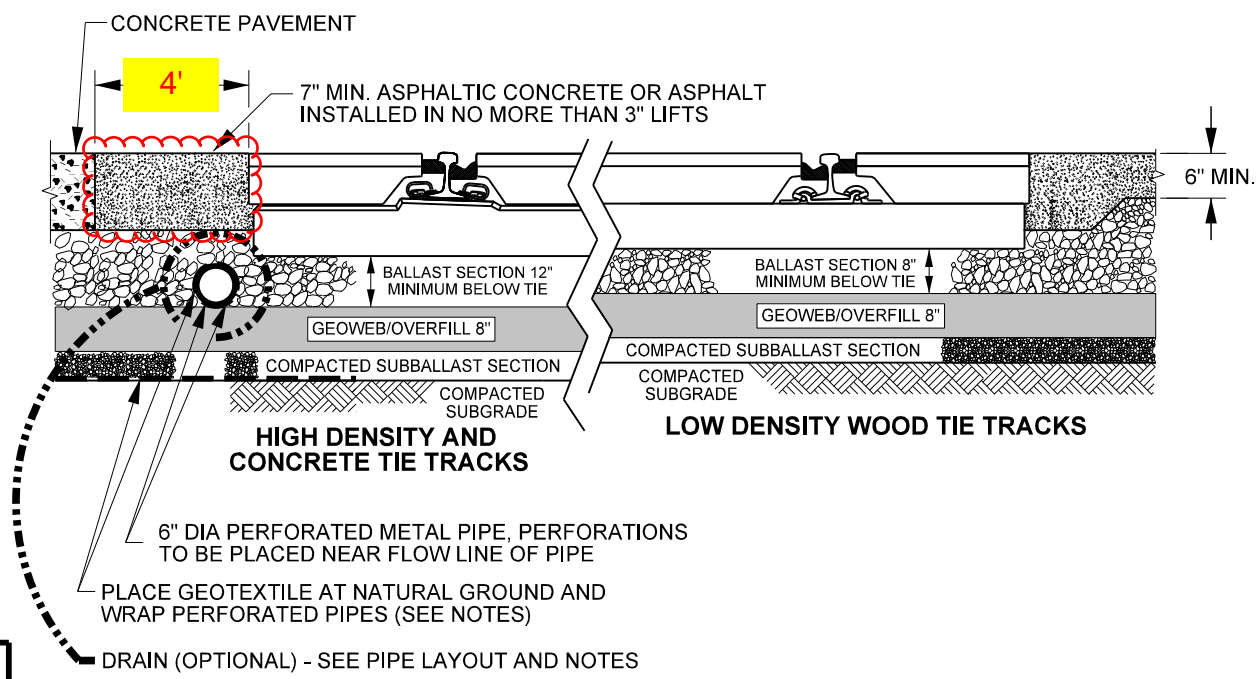
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**Figure 4**




**PLAN VIEW OF PANEL WITH TIMBER TIES**

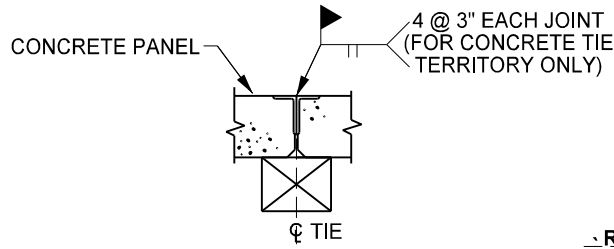
**PLAN VIEW OF PANEL & JOINT  
WELD LOCATION W/CONCRETE TIES**



**TYPICAL BALLAST AND ASPHALT DETAIL**

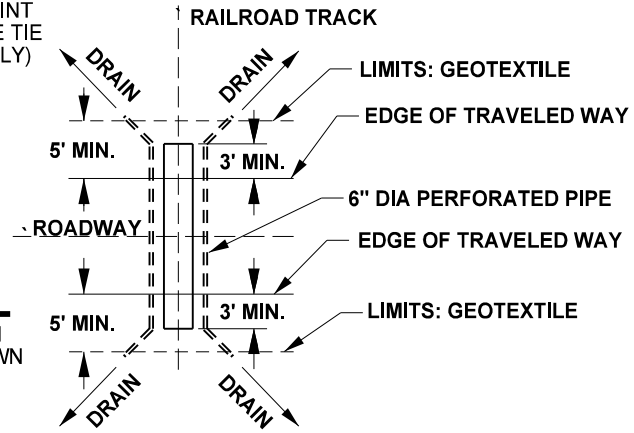
NOTES:  
SEE PAGE 2 FOR NOTES AND MORE DETAILS.

<b>UNION PACIFIC RAILROAD ENGINEERING STANDARDS</b>	
<b>INSTALLATION OF ROAD CROSSINGS W/ PRECAST CONCRETE PANELS</b>	
	ADOPTED: SEP. 21, 2020 REVISED: FILE NO.: 0304
STD DWG 0304 PAGE 1 OF 2	STD DWG 0304 PAGE 1 OF 2



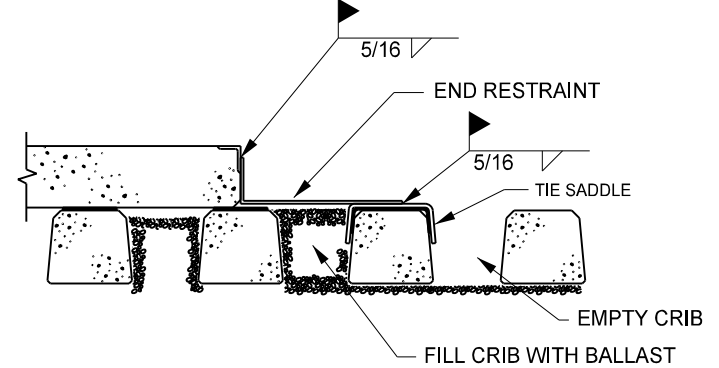
**JOINT BETWEEN PANELS**

INTERIOR JOINTS BETWEEN PANELS MUST REST ON CENTER LINE OF A WOOD OR CONCRETE TIE AS SHOWN



**TYPICAL PIPE LAYOUT**

**NOTE:**  
GEOTEXTILE & PIPE TO BE INSTALLED ONLY AT LOCATIONS WHERE REQUIRED BY STATE OR LOCAL AGENCIES OR WHERE DESIGNATED BY CHIEF ENGINEER.



**END RESTRAINT DETAIL (FOR CONCRETE TIES ONLY)**

**NOTES:**

1. CROSSING PANEL SUPPORT THROUGH THE CROSSING MUST BE UNIFORM. CONCRETE TIE SPACING IS TO BE A MAXIMUM OF 24" CENTER TO CENTER. WOOD TIE SPACING TO BE MAXIMUM OF 19 1/2" CENTER TO CENTER. TIE SPACING MUST BE ADJUSTED TO SUPPORT THE ENDS OF THE PANELS
2. CROSSING SITE IS TO BE INSPECTED PRIOR TO START OF INSTALLATION TO DETERMINE THAT PROPER DRAINAGE AND SURFACE SUPPORT IS PROVIDED, TRACK GRADE IS UNIFORM AND EXISTING TIES ARE AT LEAST 10' LONG.
3. IF CONDITIONS WARRANT, SITE IS TO BE OVER-EXCAVATED AND CROSSING DRAINAGE SYSTEM INSTALLED USING COMPACTED, WELL GRADED GRANULAR FILL; SUBBALLAST, GEOTEXTILE AND PERFORATED DRAINAGE PIPE (IF REQUIRED) INSTALLED PER DETAILS OF THIS DRAWING.
4. GEOWEB UNDERLAYMENT RECOMMENDED FOR ALL ROAD CROSSING INSTALLATIONS.
5. ADDITIONAL SITE DRAINAGE INCLUDING PROPER DRAINAGE AT EACH QUADRANT OF CROSSING SHALL BE COMPLETED TO ENSURE CROSSING DRAINAGE.
6. PRECAST PANELS ARE TO BE HANDLED AND SUPPORTED AT SPECIFIED LIFTING INSERT LOCATIONS ONLY. LIFTING EQUIPMENT AND CONNECTION INSERTS ARE TO BE PROPERLY SIZED TO HANDLE THE LENGTH OF PANELS BEING INSTALLED. RING LIFTING DEVICES ARE AVAILABLE FROM COMPANY WAREHOUSE.
7. APPROACH ASPHALT ROADWAY PAVING IS TO MEET STATE DOT HIGHWAY SPECIFICATIONS AND INSTALLED ACCORDINGLY. ASPHALT IS TO BE INSTALLED WITH PAVER WITH MAXIMUM 3" LIFTS AND LAID PARALLEL TO CROSSING TO MINIMIZE APPROACH SETTLEMENTS.
8. GEOTEXTILE AND PIPE TO BE INSTALLED ONLY AT LOCATIONS WHERE REQUIRED BY STATE OR LOCAL AGENCIES OR WHERE DESIGNATED BY CHIEF ENGINEER.
9. GALVANIZED ELASTIC FASTENERS ARE TO BE USED WITHIN THE CROSSING AREA. PANDROL E-CLIPS TO BE USED ON WOOD TIE CROSSINGS AND SAFELOK CLIPS ON CONCRETE TIE CROSSINGS.
10. ALL RAIL JOINTS IN CROSSING AREA TO BE WELDED, DO NOT INSTALL BOLTED JOINT BARS.

REQUIRED COMPONENTS	
RING LIFTING DEVICE	410-1371
3/4" TORX SCREW FOR WOOD TIES (STD DWG 131500)	130-5400
ELASTOMERIC BEARING PAD FOR 141 LB. RAIL ON WOOD TIES	540-0203
CONFORMAL ELASTOMERIC BEARING PAD FOR 10'-0" CONCRETE TIES	503-6315
CONFORMAL ELASTOMERIC BEARING PAD FOR 8'-6" CONCRETE TIES	503-6312
END RESTRAINT FOR CONCRETE TIES (ONLY)	540-1925

OPTIONAL COMPONENTS	
20' SECTION 6" PERFORATED PIPE	510-3201
6" ADJUSTABLE ELBOW	510-3557
6" PIPE BANDS	510-3379
100' ROLL GEOTEXTILE	550-0119
GEOWEB PANEL	550-0120
ATRA KEY (BOX OF 450)	550-0122

**UNION PACIFIC RAILROAD ENGINEERING STANDARDS**

**INSTALLATION OF ROAD CROSSINGS W/ PRECAST CONCRETE PANELS**

ADOPTED: SEP. 21, 2010  
REVISED:  
FILE NO.: 0304

STD DWG  
**0304**  
PAGE 2 OF 2

STD DWG  
**0304**  
PAGE 2 OF 2

**Figure 6**

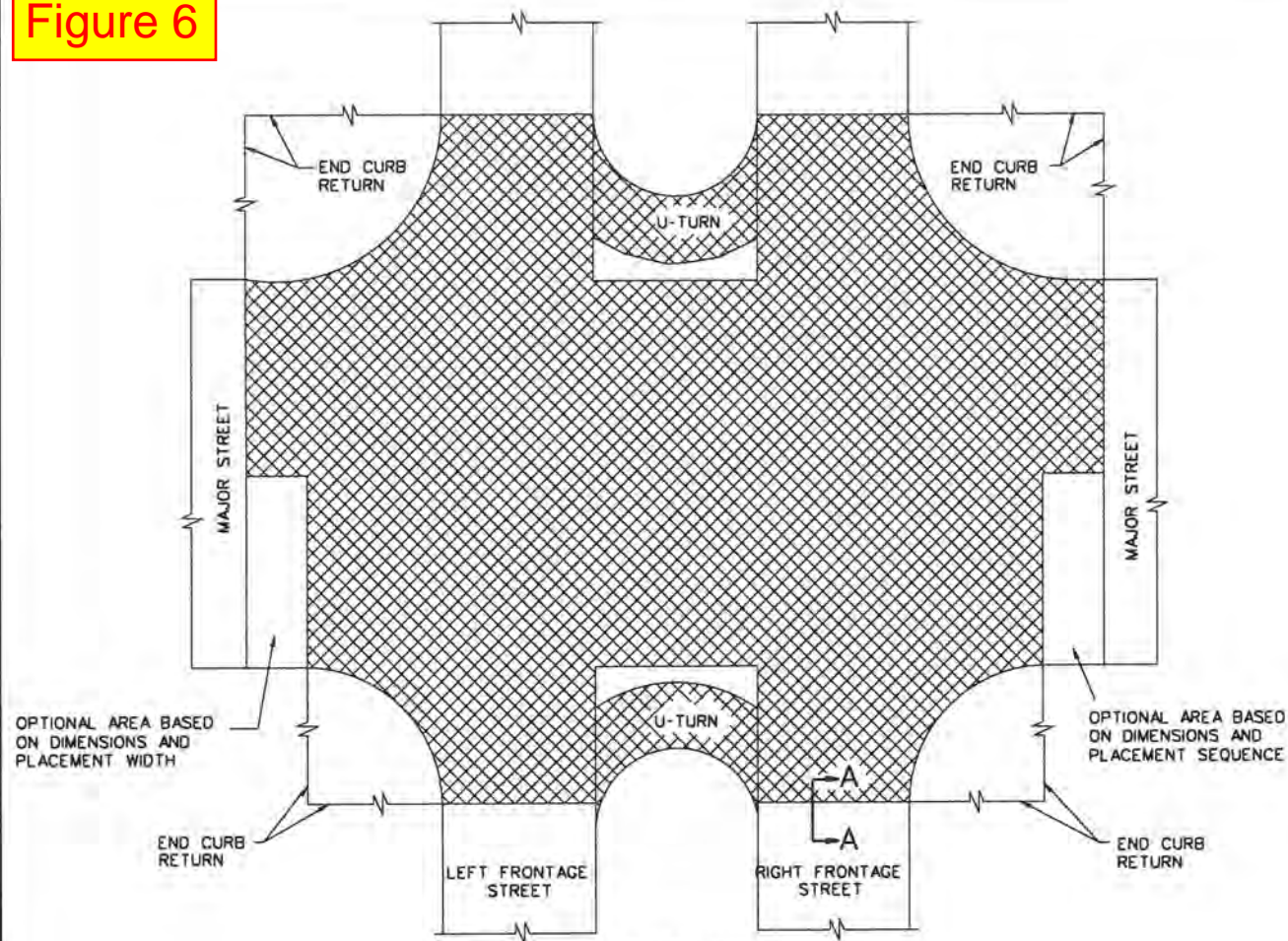


FIGURE 2  
INTERSECTION OF MAJOR STREET  
WITH FRONTAGE STREET

FAST TRACK  
PAVING AREA

TYPICAL PAVING PLANS

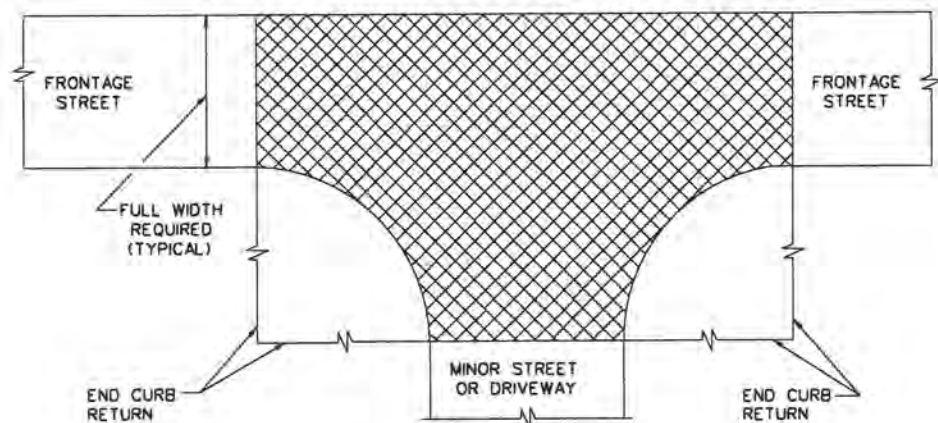


FIGURE 3  
INTERSECTION OF MINOR STREET OR  
DRIVEWAY WITH FRONTAGE STREET

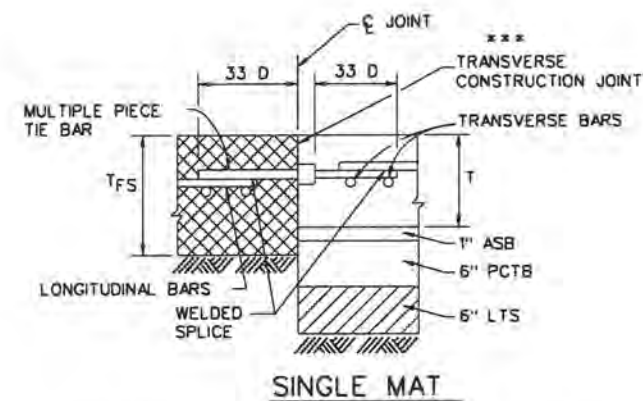
TABLE 1  
EQUIVALENT  
PAVEMENT THICKNESS

T (IN.)	T <sub>FS</sub> (IN.)
< 12"	T + 3"
> 12"	15"

\* WITH BASE STRUCTURE OF:  
1" ASPHALT STABILIZED BASE  
6" PORTLAND CEMENT TREATED BASE  
6" LIME TREATED SUBGRADE

\*\* ON AS CUT SUBGRADE

\*\*\* SEE JOINT SEALING DETAILS  
ON CRCP STANDARDS



TRANSVERSE CONSTRUCTION JOINTS

SECTION A - A  
FIGURE 1

GENERAL NOTES

1. DEFINITION OF TERMS

T<sub>FS</sub> - FAST TRACK CONCRETE PAVING DEPTH AT INTERSECTIONS AND LEAVE OUTS.  
T - NOMINAL CONCRETE PAVING DEPTH AS SHOWN IN THE PLANS.  
DETERMINE FAST TRACK CONCRETE PAVING DEPTH USING TABLE 1 AND THE NOMINAL CONCRETE PAVING DEPTH "T" SHOWN IN THE PLANS.

2. AT INTERSECTIONS AND LEAVE-OUT LOCATIONS USE THE SAME LONGITUDINAL AND TRANSVERSE BAR SPACING FOR THE FAST TRACK PAVING AREA AS THAT USED FOR THE ADJACENT CONCRETE PAVING DEPTH "T" (EXCEPT BAR SIZE SHALL BE #7 ON SINGLE MAT). FOR SINGLE MAT FAST TRACK PAVING, PLACE THE LONGITUDINAL AND TRANSVERSE BARS FOR THE FAST TRACK PAVING AREA AT THE HORIZONTAL PLANE ELEVATION THAT IS TWO TIE-BAR DIAMETERS LOWER THAN THAT USED FOR THE ADJACENT CONCRETE PAVING DEPTH "T", AS SHOWN IN FIGURE 1. USE SINGLE MAT STEEL IN FAST TRACK PAVING AREAS ADJACENT TO PAVEMENT SLABS WITH SINGLE MAT REINFORCING. USE DOUBLE MAT STEEL IN FAST TRACK PAVING AREAS ADJACENT TO PAVEMENT SLABS WITH DOUBLE MAT REINFORCING.

3. THE REQUIRED FAST TRACK PAVING AREAS WILL BE SHOWN ON THE PLANS. THE CONTRACTOR HAS THE OPTION TO UTILIZE FAST TRACK CONCRETE PAVING AT U-TURNS, AT INTERSECTIONS, AT MINOR STREETS, AND AT DRIVEWAYS WITH FRONTAGE ROAD LEAVE-OUT AREAS THAT ARE NOT SHOWN ON THE PLANS, WITH PRIOR WRITTEN APPROVAL FROM THE ENGINEER. TYPICAL PAVING PLANS FOR THE INTERSECTION OF A MAJOR STREET WITH THE FRONTAGE ROAD ARE SHOWN AS FIGURE 2, AND FOR THE INTERSECTION OF A MINOR STREET OR DRIVEWAY WITH THE FRONTAGE ROAD AS FIGURE 3. FAST TRACK PAVE THE FRONTAGE ROAD FOR THE FULL FRONTAGE ROAD WIDTH AND PLACE IN STAGES AS REQUIRED.

4. USE ADDITIONAL #6 REINFORCING STEEL BARS (MINIMUM 42 INCHES LONG) AND SPACE THEM MIDWAY BETWEEN ALTERNATE LONGITUDINAL BARS ALONG THE TRANSVERSE CONSTRUCTION JOINT FORMED AT THE FAST TRACK PAVING INTERFACE (T<sub>FS</sub> WITH THE ADJACENT PAVEMENT SLAB (T)).

5. SPLICE LENGTH IS A MINIMUM OF 33 TIMES THE NOMINAL STEEL DIAMETER.

6. PLACE THE CONCRETE PLACEMENT AT A UNIFORM DEPTH THROUGHOUT THE FAST TRACK CONCRETE PAVING AREA.

7. FOR CONTINUOUS SECTIONS OF ROADWAY WHERE FAST TRACK PAVING IS THE PRIMARY PAVEMENT TYPE, USE THE BAR SIZE AND SPACING FROM THE CRCP STANDARDS THAT CORRESPONDS TO THE FAST TRACK SLAB THICKNESS.

8. USE LONGITUDINAL TIE-BARS OF THE SAME SIZE DIAMETER AND SPACING AS THE LONGITUDINAL BAR. A SINGLE PIECE TIE-BAR MAY BE USED IF THE 33 TIMES DIAMETER TIE-BAR PROJECTION DOES NOT INTERFERE WITH THE SAFE HANDLING OF TRAFFIC.

9. BASE THE DEPTH OF SAW CUTS FOR SAWED JOINTS ON THE FAST TRACK CONCRETE PAVEMENT THICKNESS.

10. THIS STANDARD IS NOT INTENDED TO REPLACE OTHER STANDARDS EXCEPT WHERE SPECIFICALLY STATED HEREIN. FOR PAVING DETAILS NOT SHOWN ON THIS DRAWING, REFER TO THE STANDARD SHEETS FOR CONTINUOUSLY REINFORCED CONCRETE PAVEMENT SHOWN ELSEWHERE IN THE PLANS.

LEGEND

- ASB - ASPHALT STABILIZED BASE
- CRCP - CONTINUOUSLY REINFORCED CONCRETE PAVEMENT
- D - DIAMETER
- LTS - LIME TREATED SUBGRADE
- PCTB - PORTLAND CEMENT TREATED BASE

SHEET 1 OF 1

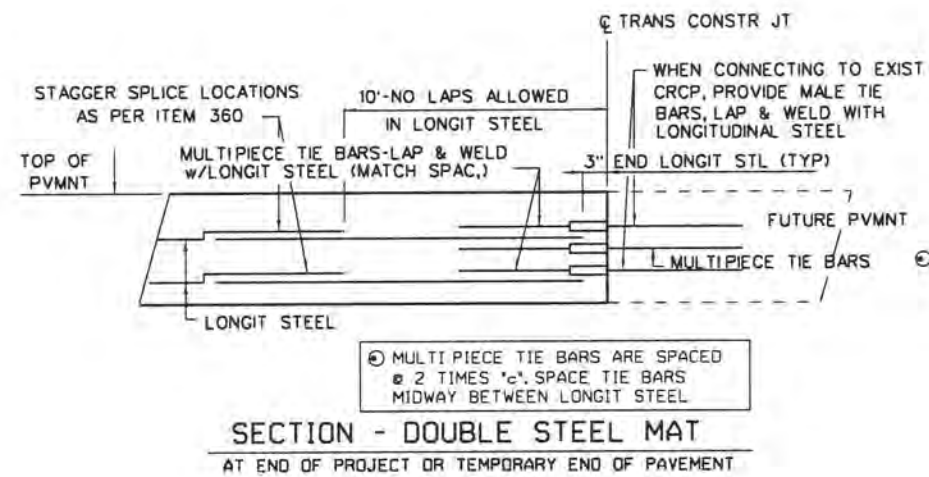
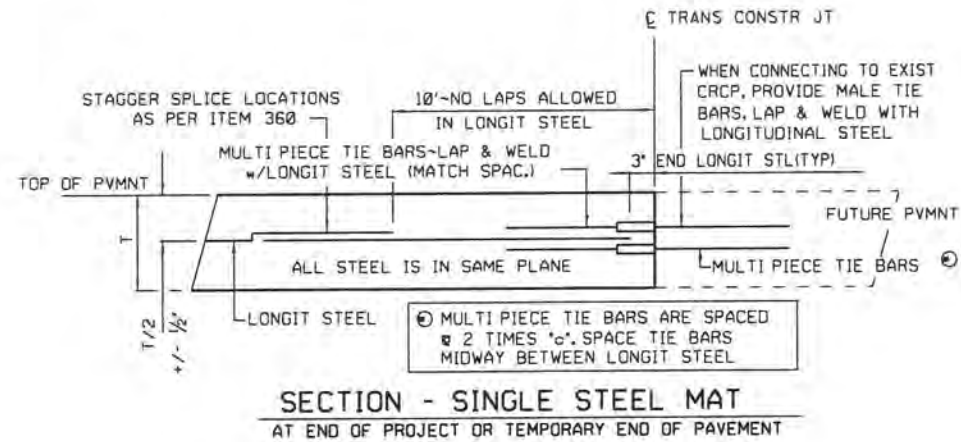
Texas Department of Transportation  
Houston District

FAST TRACK  
CONTINUOUSLY REINFORCED  
CONCRETE PAVEMENT  
DETAILS  
CRCP-FT



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© TxDOT DEC. 2009	DIST	FED REG	PROJECT NO.	SHEET
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	MONTGOMERY	912	37	232
				CS

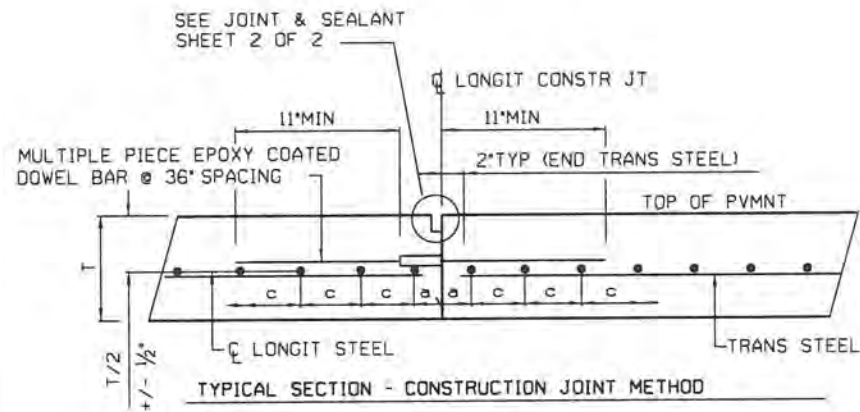
**Figure 7**



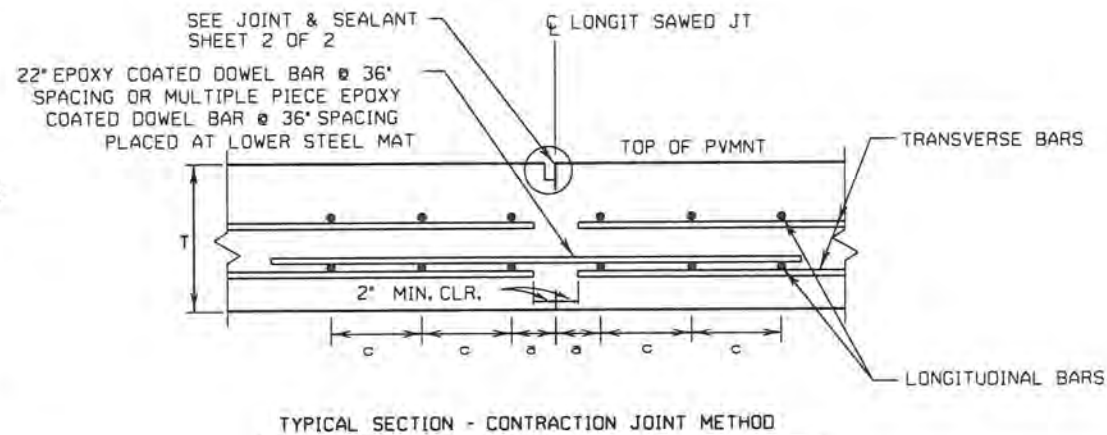
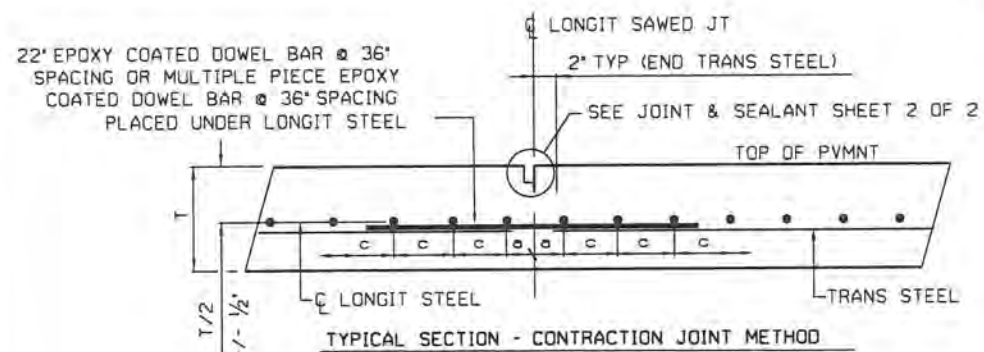
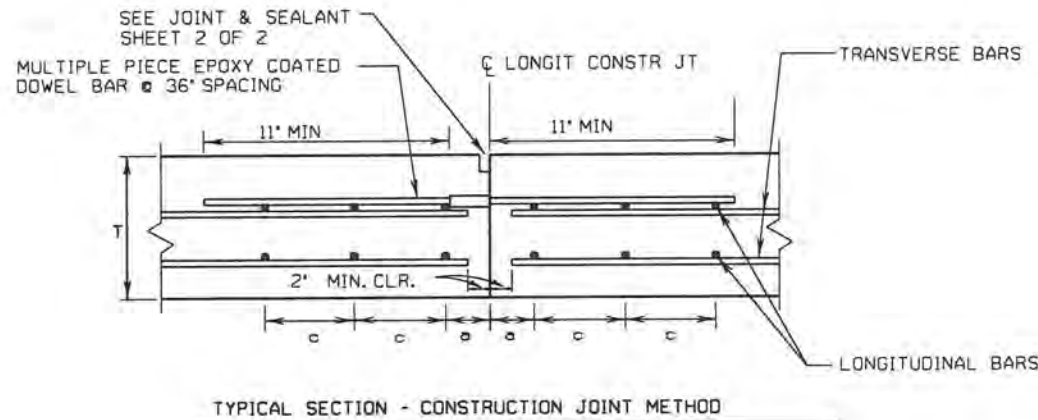
**LONGITUDINAL DOWEL JOINT DETAILS**

LOCATE WHERE SHOWN IN THE PLANS OR AS APPROVED. CONTRACTOR MAY USE EITHER METHOD

**SINGLE STEEL MAT**



**DOUBLE STEEL MAT**



**GENERAL NOTES**

1. DETAILS FOR 7.0 IN. TO 13.0 IN. THICK CONCRETE PAVEMENT ARE SHOWN ON STANDARD CRCP(1)-17. DETAILS FOR 14 IN. TO 15 IN. THICK CONCRETE PAVEMENT ARE SHOWN ON STANDARD CRCP(2)-17.
2. DOWELS AND TIE BARS - DOWELS ARE ONE INCH MINIMUM DIAMETER. ENSURE DOWELS ARE FREE OF GREASE AND ARE EPOXY COATED. DO NOT SHEAR CUT DOWELS DURING FABRICATION. PROVIDE TIE BARS PER ITEM 360. FURNISH MULTIPIECE TIE BARS AND DOWELS WITH STOP COUPLINGS AND WITH THREADS ON THE BARS.
3. USE CHAIRS OF SUFFICIENT STRUCTURAL QUALITY AND NUMBER TO SUPPORT THE MAT TO THE VERTICAL TOLERANCES. CHAIRS WILL BE APPROVED BY THE ENGINEER AND DO NOT REQUIRE GALVANIZING.
4. MECHANICALLY PLACING REINFORCING STEEL IS NOT ALLOWED. NO BARS, DOWELS OR TIE BARS MAY BE VIBRATED INTO POSITION.
5. WHERE DIFFERENT THICKNESS PAVEMENTS MEET, TRANSITION THE THINNER SECTION TO THE THICKER SECTION OVER A DISTANCE OF 20 FT. PLACE REINFORCING STEEL WITHIN THE TRANSITION THE SAME AS IN THE THICKER PAVEMENT.
6. PERFORM WELDING PER ITEM 448. FURNISH WELDABLE REBAR PER ITEM 440.



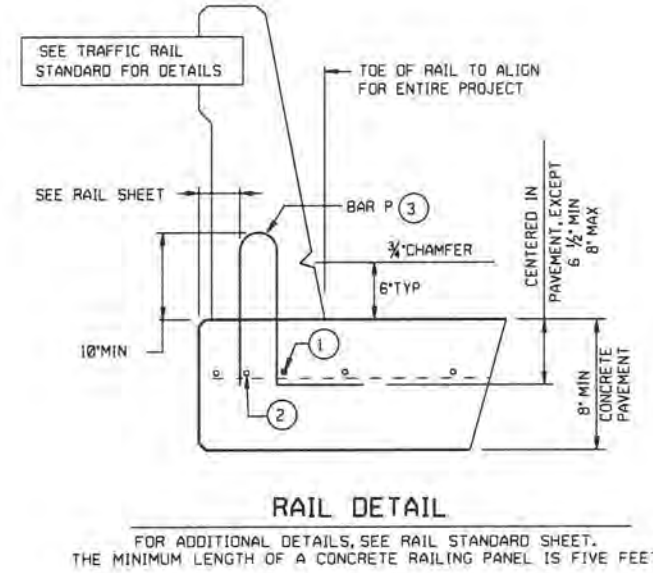
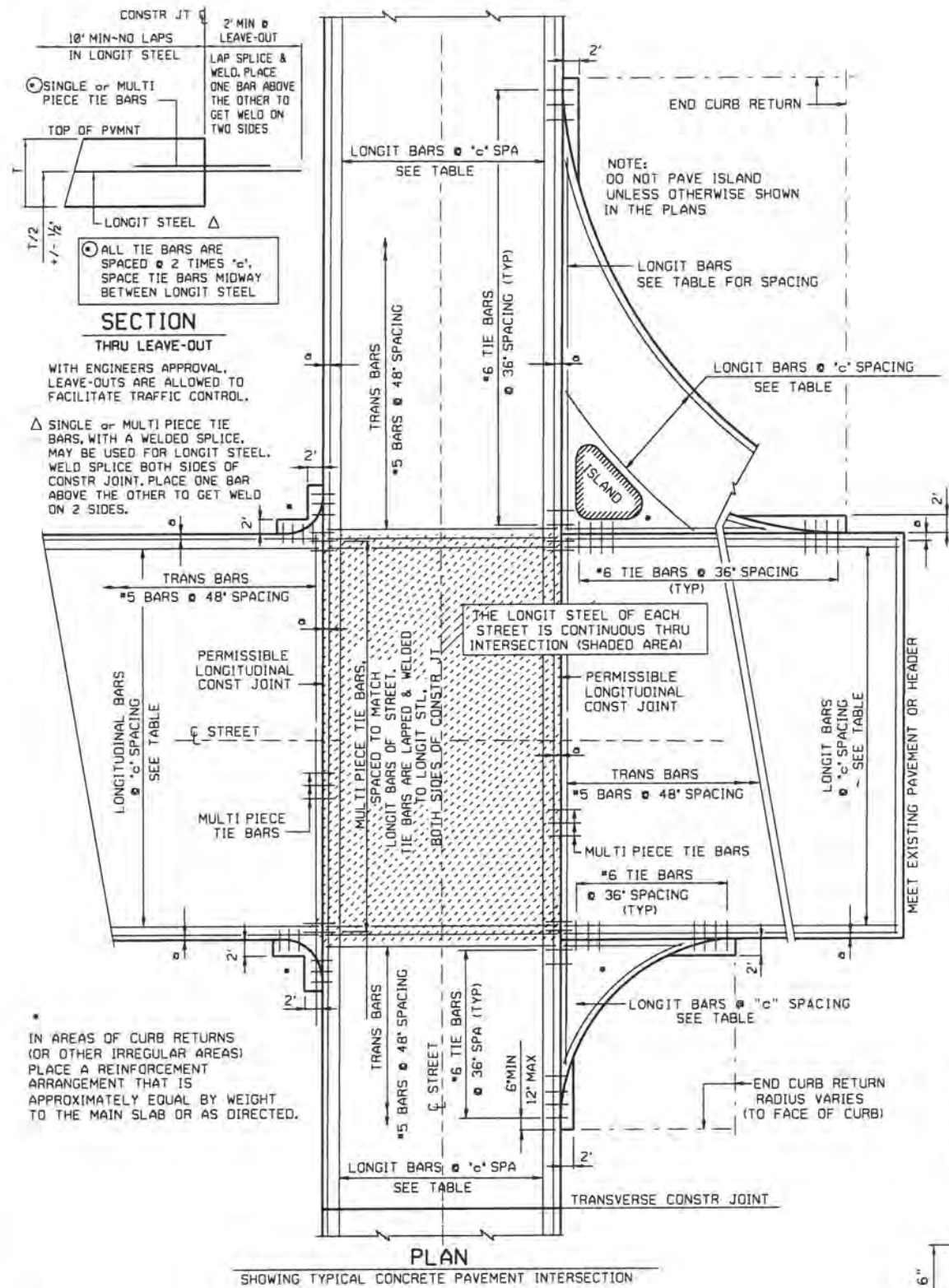
SHEET 1 OF 2

Texas Department of Transportation  
Houston District

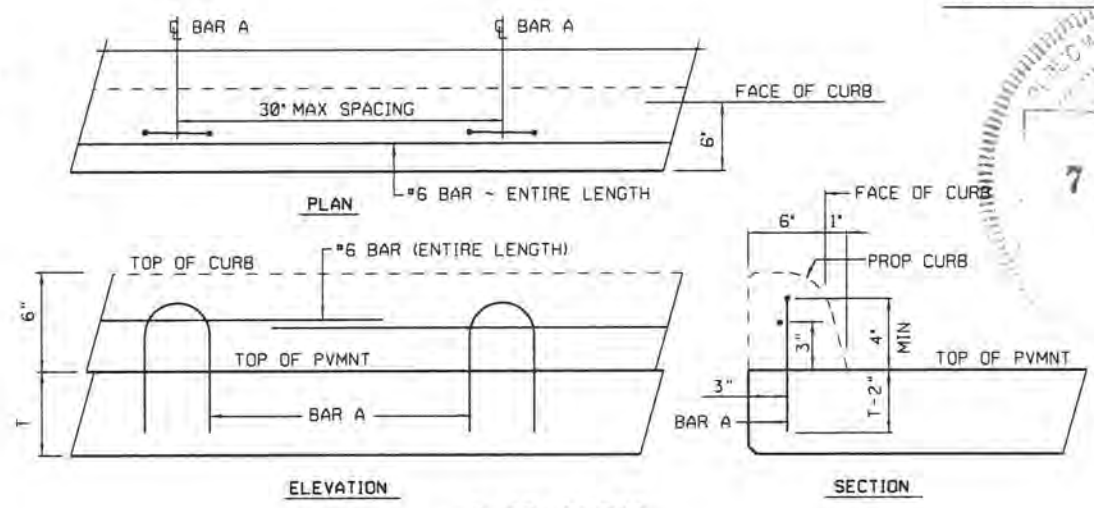
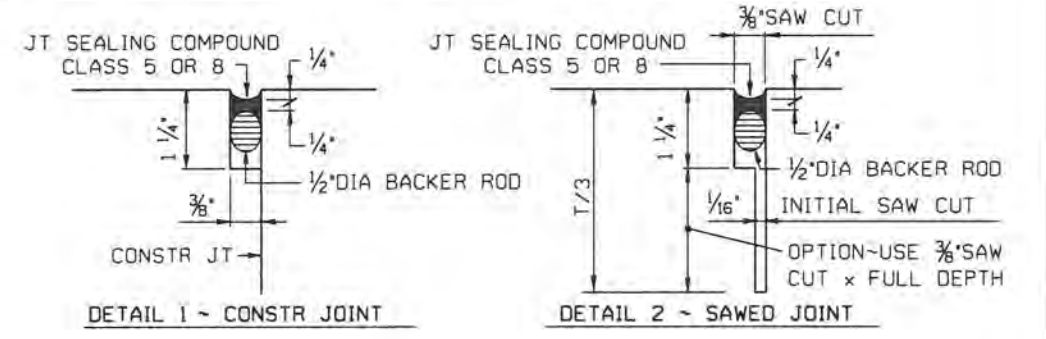
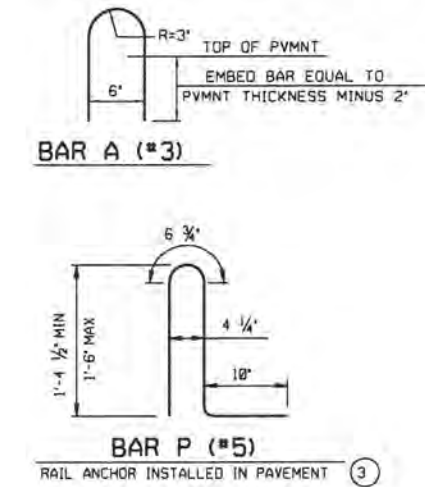
**CONTINUOUSLY REINFORCED  
CONCRETE PAVEMENT  
HOUSTON SUPPLEMENT  
CRCP-HS**

© TxDOT APR. 2012	REV	DATE	BY	CHK	PROJECT NO.	SHEET
REVISED GENERAL NOTES, MINOR CORRECTIONS					HOU	275
					COUNTY	JOB
					MONTGOMERY	912 37 232 CS

**Figure 8**



- AS AN AID IN SUPPORTING REINFORCEMENT, ADDITIONAL LONGITUDINAL BARS MAY BE USED IN THE SLAB WITH THE APPROVAL OF THE ENGINEER. FURNISH SUCH BARS AT NO EXPENSE TO THE DEPARTMENT.
- LONGITUDINAL SLAB BAR MAY BE ADJUSTED LATERALLY 3" +/- TO TIE REINFORCING.
- ANCHORAGE BAR SHOWN IS FOR AN S5TR OR T551 RAIL. SEE RAILING DETAIL SHEET FOR SPACING OF BAR P. FOR OTHER RAIL TYPES SEE RAILING DETAIL SHEET.



**JOINT AND SEALANT DETAILS**



SHEET 2 OF 2

Texas Department of Transportation  
Houston District

**CONTINUOUSLY REINFORCED  
CONCRETE PAVEMENT  
HOUSTON SUPPLEMENT  
CRCP-HS**

© 1.001 APR. 2012		REVISED	PROJECT NO.	SHEET
REVISED CTD FROM 8.0 TO 5.0 (SEE SHEET 8 OF 8) WITH CORRECTIONS		HOU		276
COUNTY	CONTROL SECTION	JOB	HIGHWAY	
MONTGOMERY	912 37	232	CS	

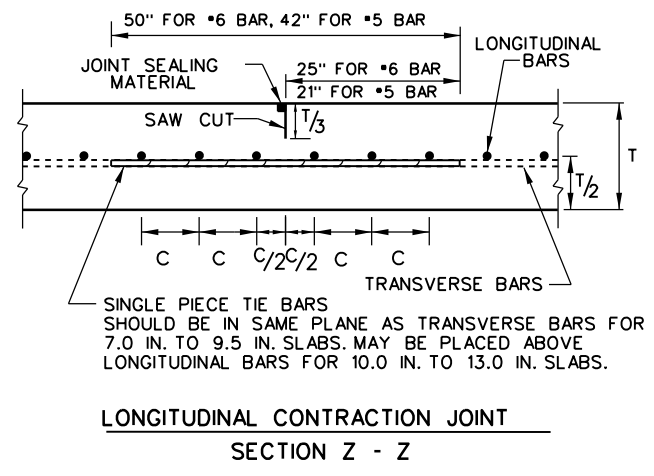
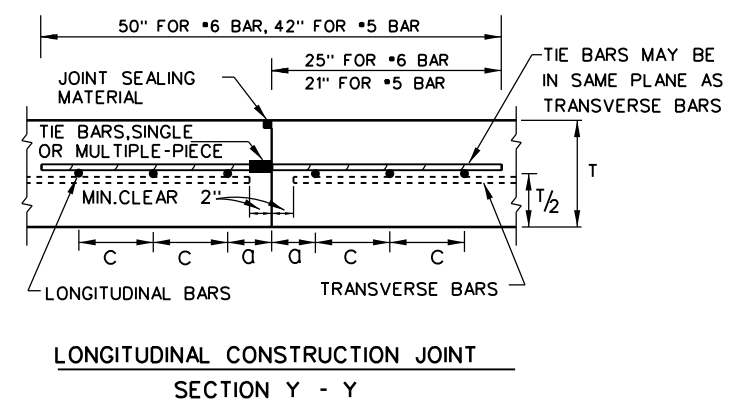
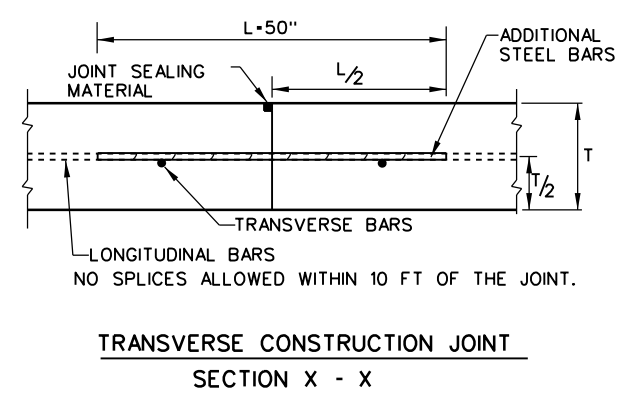
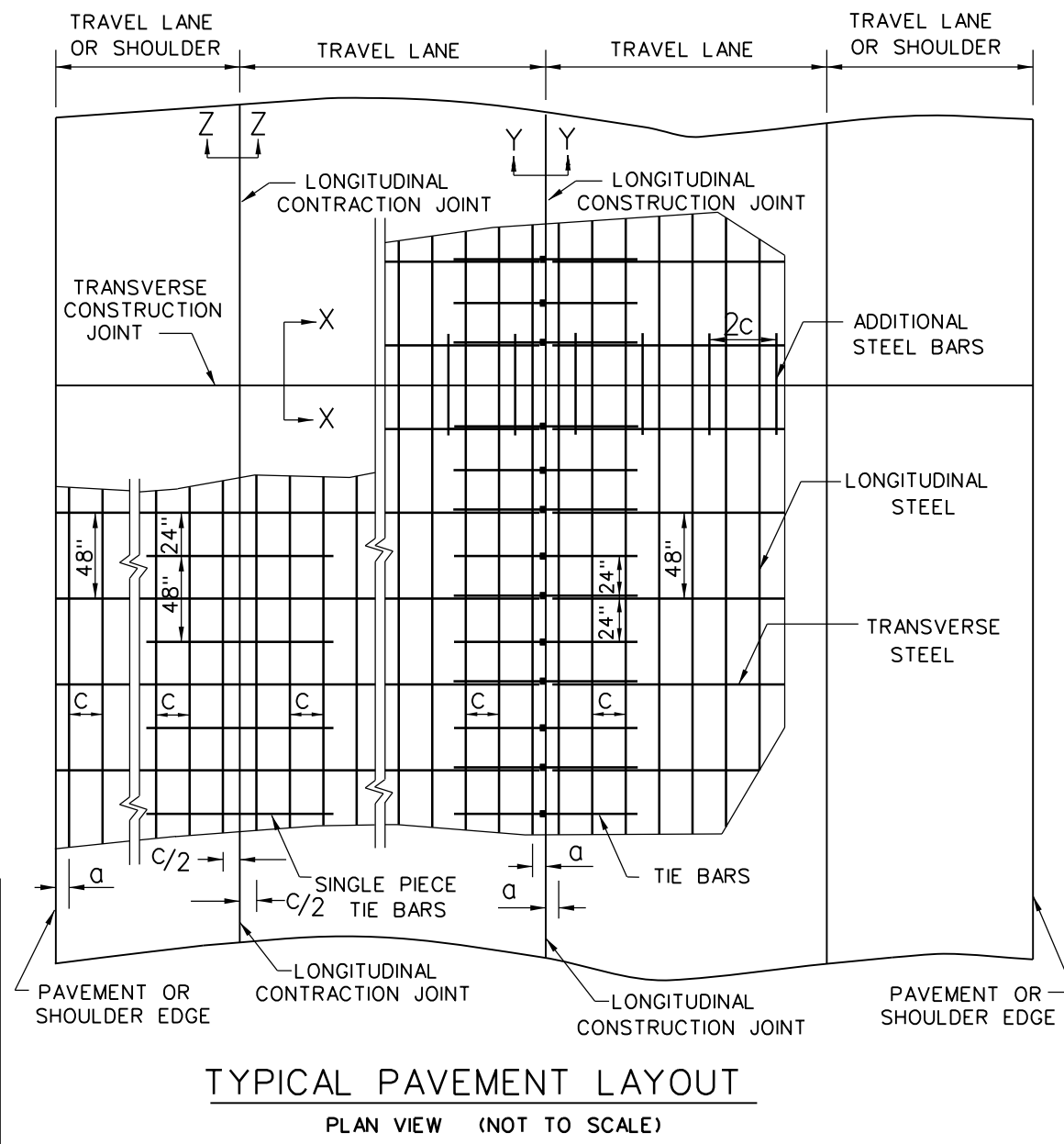
**Figure 9**

**GENERAL NOTES**

1. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS. PAVEMENTS WIDER THAN 100 FT. WITHOUT A FREE LONGITUDINAL JOINT ARE NOT COVERED BY THIS STANDARD.
2. USE COARSE AGGREGATES WITH A RATED COEFFICIENT OF THERMAL EXPANSION ( $C_{OTE}$ ) OF NOT MORE THAN  $5.5 \times 10^{-6}$  IN./IN. °F AS LISTED IN THE CONCRETE RATED SOURCE QUALITY CATALOG (CRSQC).
3. ALL THE REINFORCING STEEL AND TIE BARS SHALL BE DEFORMED STEEL BARS CONFORMING TO ASTM A 615 (GRADE 60) OR ASTM A 996 (GRADE 60) OR ABOVE. STEEL BAR SIZES AND SPACINGS SHALL CONFORM TO TABLE NO.1 AND TABLE NO.2.
4. STEEL BAR PLACEMENT TOLERANCE SHALL BE  $\pm 1$  IN. HORIZONTALLY AND  $\pm 0.5$  IN. VERTICALLY. CALCULATED AVERAGE BAR SPACING (CONCRETE PLACEMENT WIDTH / NUMBER OF LONGITUDINAL BARS) SHALL CONFORM TO TABLE NO.1
5. PAVEMENT WIDTHS OF MORE THAN 15 FT. SHALL HAVE A LONGITUDINAL JOINT (SECTION Z-Z OR SECTION Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6 IN. OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON THE PLANS.
6. THE SAW CUT DEPTH FOR THE LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z) SHALL BE ONE THIRD OF THE SLAB THICKNESS ( $T/3$ ).
7. WHEN TYING CONCRETE GUTTER AT A LONGITUDINAL JOINT, THE TIE BAR LENGTH OR POSITION MAY BE ADJUSTED. PROVIDE 3 IN. OF CONCRETE COVER FROM THE BACK OF GUTTER TO THE END OF TIE BAR.
8. REPLACE MISSING OR DAMAGED TIE BARS WITHOUT ADDITIONAL COMPENSATION BY DRILLING MIN. 10 IN. DEEP AND GROUTING TIE BARS WITH TYPE III, CLASS C EPOXY. MEET THE PULL-OUT TEST REQUIREMENTS IN ITEM 361.
9. OMIT TIE BARS LOCATED WITHIN 18-IN. OF THE TRANSVERSE CONSTRUCTION JOINTS (SECTION X-X). USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL FORMED JOINTS.
10. LONGITUDINAL REINFORCING STEEL SPLICES SHALL BE A MINIMUM OF 25 IN. STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT.
11. THE DETAIL FOR THE JOINT SEALANT AND RESERVOIR IS SHOWN ON STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."

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

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



SHEET 1 OF 2

**Design Division Standard**

CONTINUOUSLY REINFORCED  
CONCRETE PAVEMENT

ONE LAYER STEEL BAR PLACEMENT  
T - 7 to 13 INCHES

CRCP(1)-20

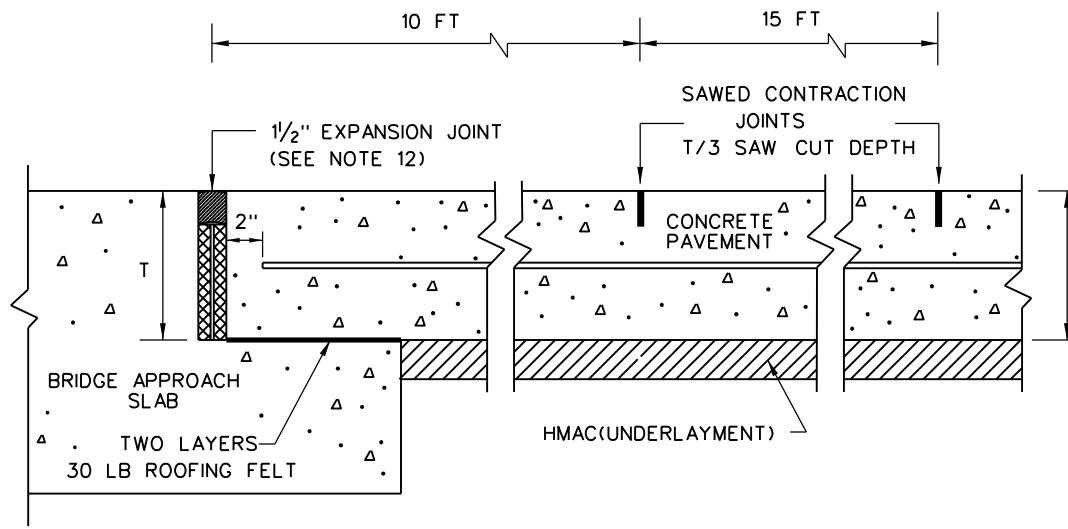
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© TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY
10/10/2011 ADD CN #12	912	37	232	CS
04/09/2013 REMOVE 6" AND 6.5" ADD CTE REQUIREMENTS	DIST	COUNTY		SHEET NO.
05/05/2017 CoTE AS RATED 4.3	HOU	MONTGOMERY		276A

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

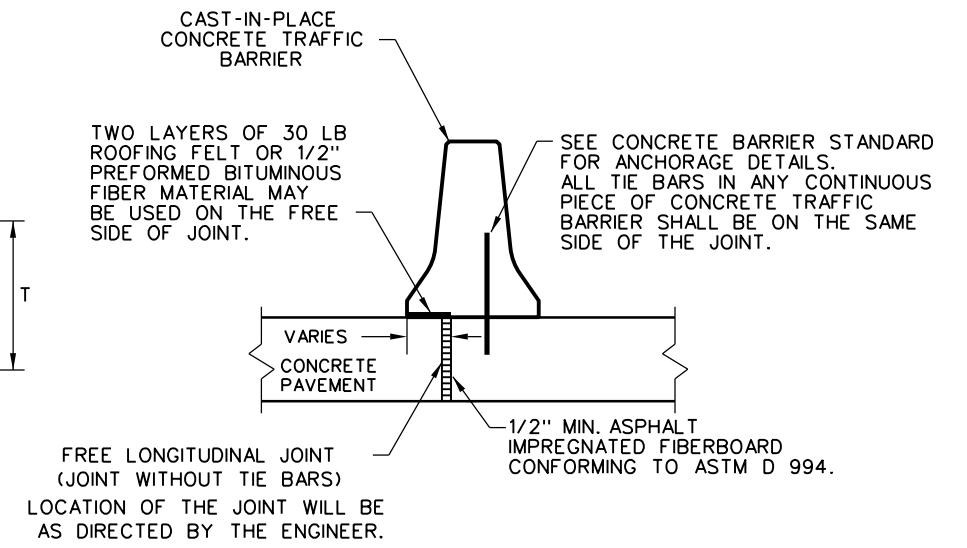
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**Figure 10**

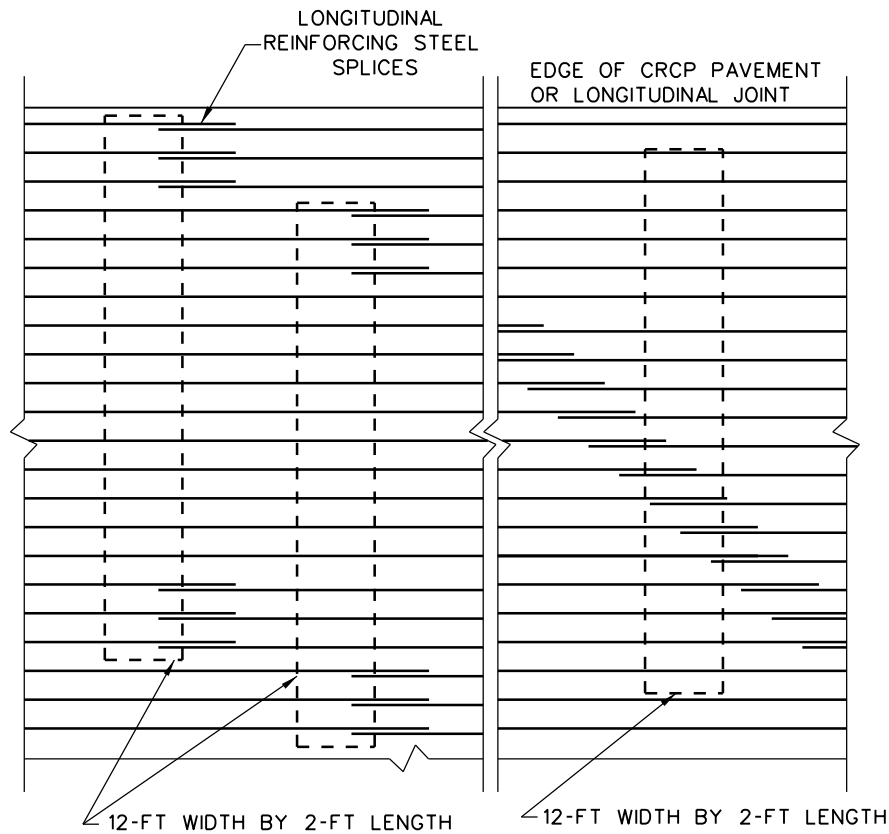
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**TRANSVERSE EXPANSION JOINT DETAIL  
AT BRIDGE APPROACH**

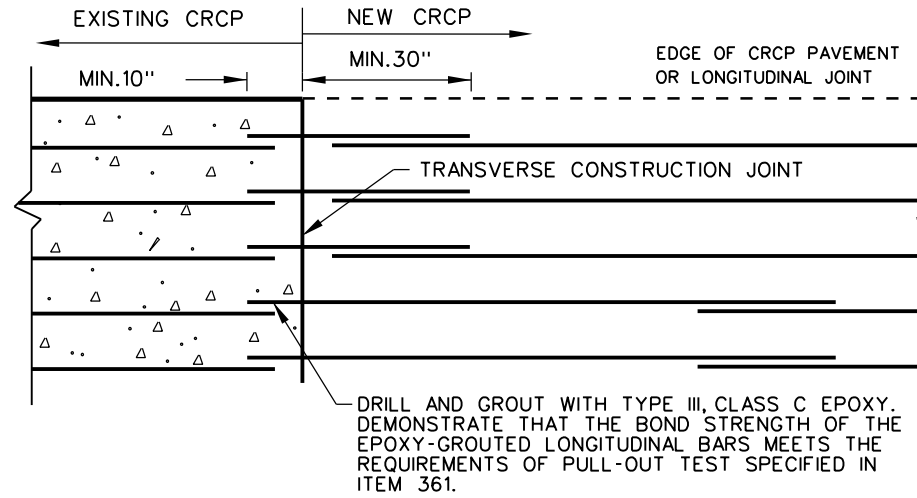


**FREE LONGITUDINAL JOINT DETAIL**

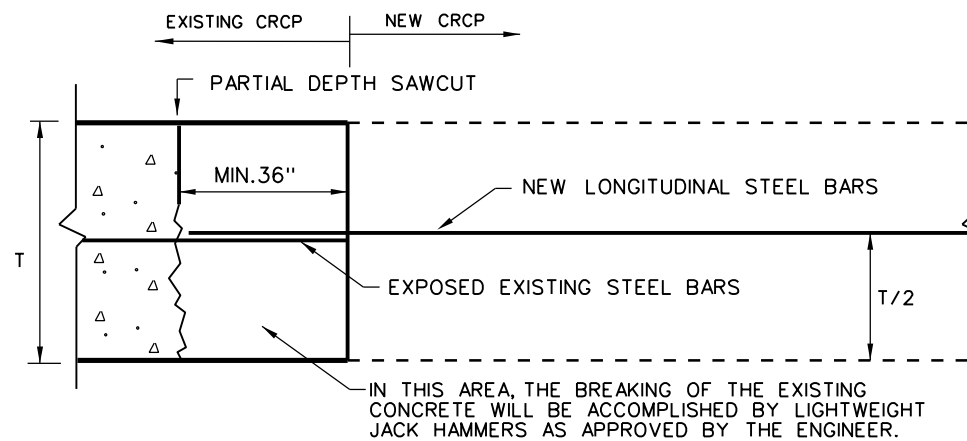


STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT. ANY OTHER LAP CONFIGURATION MEETING THIS REQUIREMENT WILL BE ALLOWED.

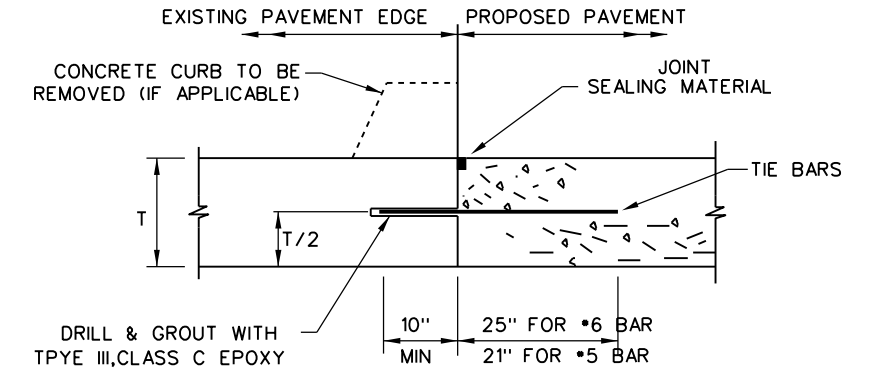
**EXAMPLES OF LAP CONFIGURATION  
PLAN VIEW (NOT TO SCALE)**



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



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



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

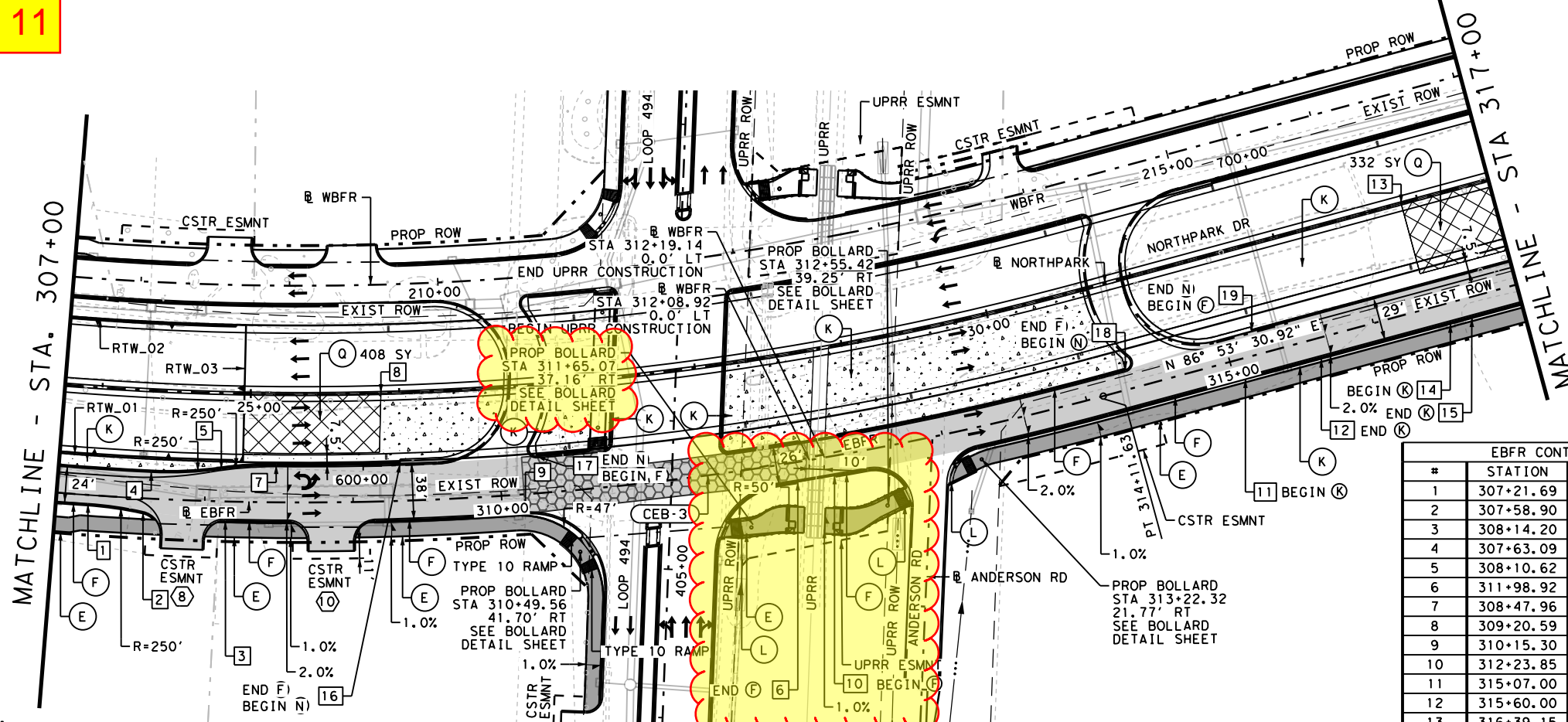
**LONGITUDINAL WIDENING JOINT DETAIL**

SHEET 2 OF 2

		<b>Design Division Standard</b>		
<b>CONTINUOUSLY REINFORCED CONCRETE PAVEMENT</b> <b>ONE LAYER STEEL BAR PLACEMENT</b> <b>T - 7 to 13 INCHES</b> <b>CRCP(1)-20</b>				
FILE: crcp120.dgn	DN: TxDOT	CK: KM	DW: AN	CK: VP
© TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	912	37	232	CS
03/16/2020 REMOVED TABLE 1A	DIST	COUNTY	SHEET NO.	
	HOU	MONTGOMERY	276B	

DATE: FILE:

**Figure 11**



**NOTES:**

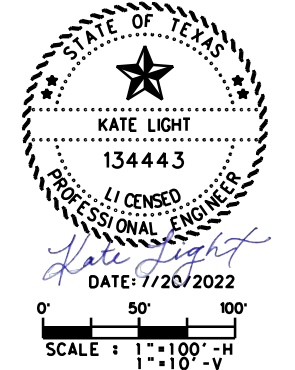
1. ALL 500-YEAR WATER SURFACE ELEVATIONS (WSEL) SHOWN IN THIS PLAN SET ARE PROJECTED FROM BEN'S BRANCH BASED ON THE FEMA EFFECTIVE FIRM PANELS AND FLOOD PROFILES FOR BEN'S BRANCH IN MONTGOMERY COUNTY.
2. FOR ALIGNMENT INFORMATION SEE HORIZONTAL ALIGNMENT DATA SHEET.
3. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.
4. FOR CONTRACTOR INFORMATION ONLY, REFER TO LANDSCAPING SHEETS FOR MORE INFORMATION.
5. ALL CONTROL POINT STATIONS AND OFFSETS REFERENCE EBFR BASELINE.
6. FOR CONCRETE PANEL INFORMATION, REFER TO CONCRETE PANEL LAYOUTS

**LEGEND**

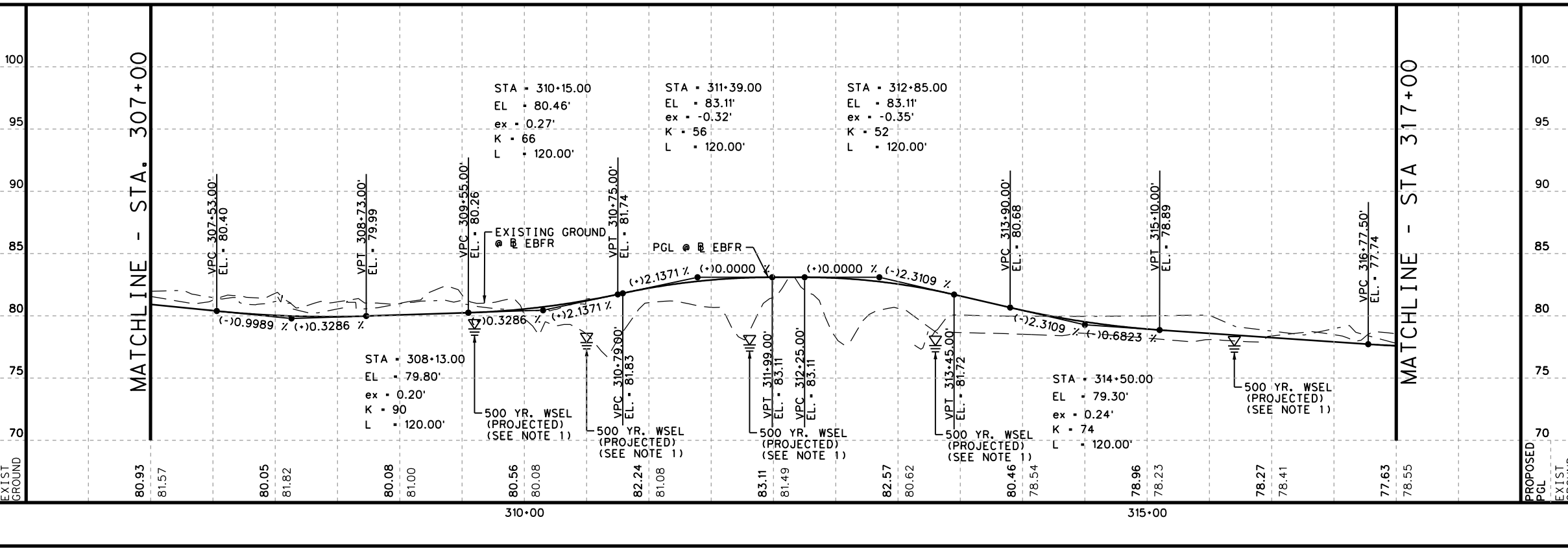
	PROP ROADWAY		PROP BRIDGE
	TEMP PAVEMENT		PROP SIDE PATH
(A)	12" REINF CONCRETE PAVMENT	(R)	MBGF
(B)	1" ASPHALT STAB BASE (GR 4) (PG 64)	(S)	SINGLE GUARDRAIL TERMINAL (SGT)
(C)	6" CEMENT TREATED BASE	(T)	MBGF TRANSITION (MBGF-TR)
(D)	6" LIME TREATED BASE	(U)	CURB RAMP (TY 20)
(E)	5" REINF CONCRETE SIDE PATH	(V)	6" CEMENT TREATED SUBGRADE
(F)	12" MONO CURB	(W)	PROPOSED TRAVEL LANE
(G)	BLOCK SODDING	(X)	EXISTING TRAVEL LANE
(H)	MOW STRIP	(Y)	IRRIGATION SLEEVE (SEE NOTE 4)
(I)	42" BARRIER (SSCB)	(Z)	CONCRETE RIP RAP
(J)	36" RAIL (TY SSTR)	(AA)	CONCRETE RIP RAP
(K)	CONCRETE RIP RAP	(AB)	LOOSE AGGR FOR GROUND COVER (TY 1)
(L)	CURB RAMP (TY 7)	(AC)	PROPOSED TRAVEL LANE
(M)	MSE RETAINING WALL	(AD)	EXISTING TRAVEL LANE
(N)	U-TURN CURB	(AE)	CONSTRUCTION EASEMENT
(O)	WIDE FLANGE PAVEMENT TERMINAL	(AF)	15" FAST TRACK CONC PVMT
(P)	CRASH CUSHION ATTENUATOR		
(Q)	LOOSE AGGR FOR GROUND COVER (TY 1)		
(X)	TYPICAL SECTION LABEL		
(Y)	DRIVEWAY ID LABEL		
(XXX)	CURVE NUMBER LABEL		
(X)	CONTROL POINT		

**EBFR CONTROL POINTS**

#	STATION	LT/RT	OFFSET
1	307+21.69	RT	6.00
2	307+58.90	RT	9.15
3	308+14.20	RT	13.00
4	307+63.09	LT	18.00
5	308+10.62	LT	21.92
6	311+98.92	RT	13.00
7	308+47.96	LT	25.00
8	309+20.59	LT	73.00
9	310+15.30	RT	13.00
10	312+23.85	RT	13.00
11	315+07.00	RT	14.00
12	315+60.00	RT	14.00
13	316+39.15	LT	73.00
14	316+50.00	RT	14.00
15	316+65.00	RT	14.00
16	309+32.43	LT	25.00
17	310+25.64	LT	25.00
18	314+30.54	LT	13.00
19	315+19.53	LT	16.00



PDF File name: 0234 - PLAN AND PROFILE EBFR STA 307+00 TO STA 317+00 SHEET 2 OF 3.pdf



1	UPDATE THICKNESS FOR LTB	MA	07/13/22
NO.	REVISIONS	BY	DATE

**HNTB**  
HNTB Corporation  
The HNTB Companies  
Infrastructure Solutions  
Firm Registration Number 420

**LH RA**  
LAKE HOUSTON REDEVELOPMENT AUTHORITY & TRIZ 10  
600 HUNTON ANDREWS KURTH LLP  
600 TRAVIS, SUITE 4200  
HOUSTON, TX 77002

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
NORTH PARK DRIVE  
PLAN AND PROFILE  
EBFR  
STA 307+00 TO STA 317+00

SHEET 2 OF 3

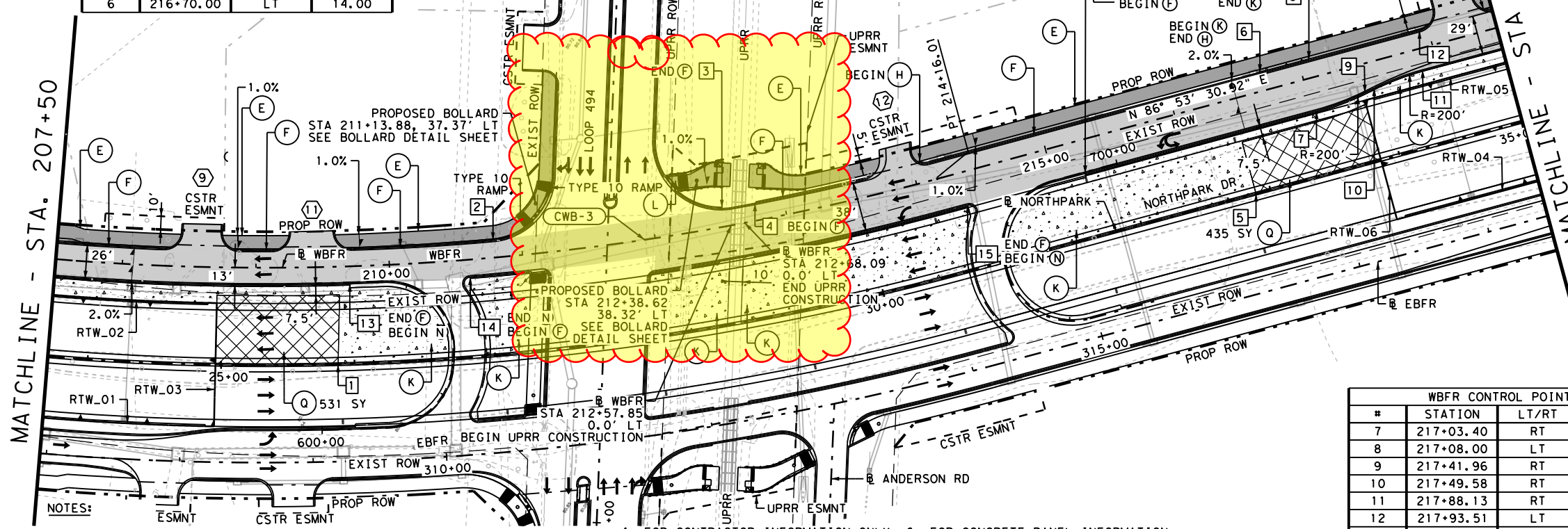
DESIGNED:	FED. RD. DIV. No.	STATE	CITY OF HOUSTON WBS	HIGHWAY No.
CHECKED:	6	TEXAS	SEE TITLE SHEET	CS
DRAWN:	STATE DISTRICT	COUNTY	CONTROL SECTION	JOB SHEET No.
CHECKED:	HOU	MONTGOMERY	0912 37	232 234

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Figure 12

WBFR CONTROL POINTS			
#	STATION	LT/RT	OFFSET
1	209+59.56	RT	73.00
2	210+78.89	LT	13.00
3	212+53.18	LT	13.69
4	212+78.42	LT	13.00
5	216+43.53	RT	73.00
6	216+70.00	LT	14.00

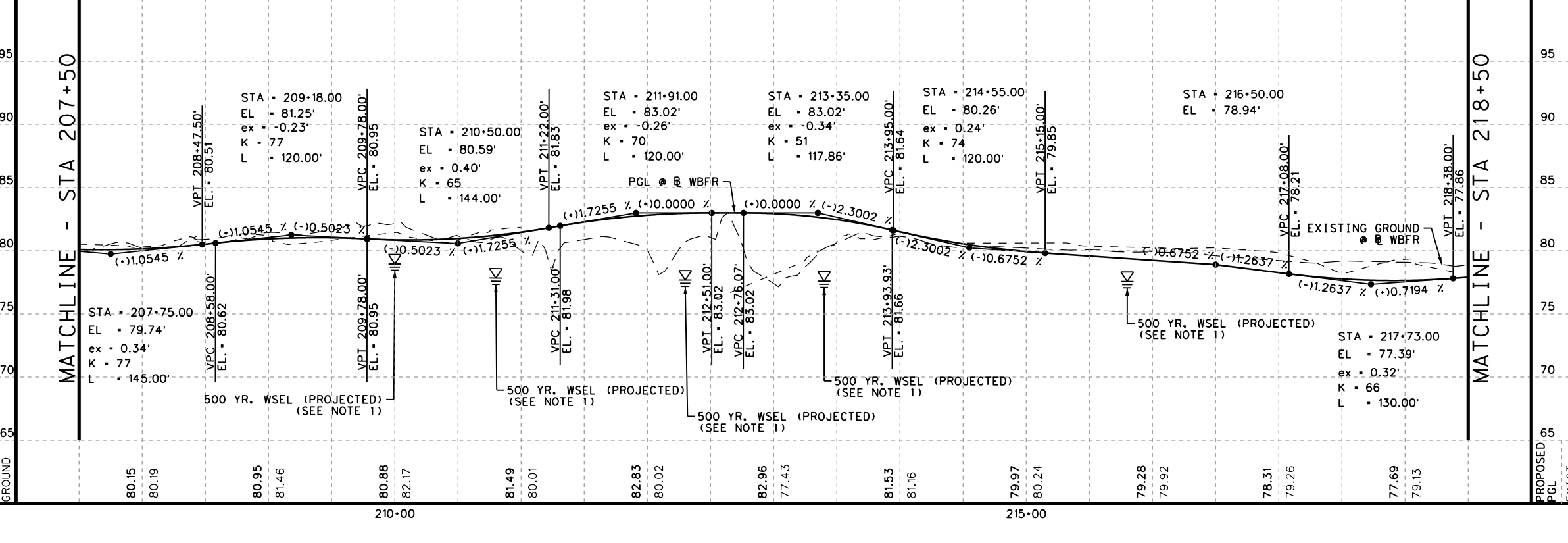
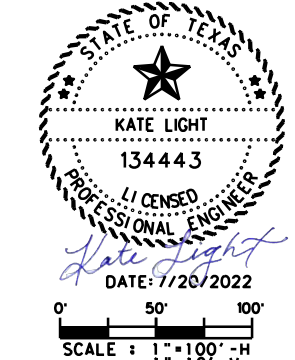


- NOTES:
- ALL 500-YEAR WATER SURFACE ELEVATIONS (WSEL) SHOWN IN THIS PLAN SET ARE PROJECTED FROM BEN'S BRANCH BASED ON THE FEMA EFFECTIVE FIRM PANELS AND FLOOD PROFILES FOR BEN'S BRANCH IN MONTGOMERY COUNTY.
  - FOR ALIGNMENT INFORMATION SEE HORIZONTAL ALIGNMENT DATA SHEET.
  - ALL DIMENSIONS ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.
  - FOR CONTRACTOR INFORMATION ONLY, REFER TO LANDSCAPING SHEETS FOR MORE INFORMATION.
  - ALL CONTROL POINT STATIONS AND OFFSETS REFERENCE WBFR BASELINE.
  - FOR CONCRETE PANEL INFORMATION, REFER TO CONCRETE PANEL LAYOUTS FOR MORE INFORMATION.

WBFR CONTROL POINTS			
#	STATION	LT/RT	OFFSET
7	217+03.40	RT	25.00
8	217+08.00	LT	14.00
9	217+41.96	RT	21.25
10	217+49.58	RT	19.75
11	217+88.13	RT	16.00
12	217+93.51	LT	13.00
13	209+69.92	RT	13.00
14	210+59.66	RT	13.00
15	214+32.81	RT	25.00
16	215+23.96	RT	25.00

**LEGEND**

- PROP ROADWAY
- TEMP PAVEMENT
- PROP BRIDGE
- PROP SIDE PATH
- (A) 12" REINF CONCRETE PAVMENT
- (B) 1" ASPHALT STAB BASE (GR 4) (PG 64)
- (C) 6" CEMENT TREATED BASE
- (D) 6" LIME TREATED BASE
- (E) 5" REINF CONCRETE SIDE PATH
- (F) 12" MONO CURB
- (G) BLOCK SODDING
- (H) MOW STRIP
- (I) 42" BARRIER (SSCB)
- (J) 36" RAIL (TY SSTR)
- (K) CONCRETE RIP RAP
- (L) CURB RAMP (TY 7)
- (M) MSE RETAINING WALL
- (N) U-TURN CURB
- (O) WIDE FLANGE PAVEMENT TERMINAL
- (P) CRASH CUSHION ATTENUATOR
- (Q) LOOSE AGGR FOR GROUND COVER (TY 1)
- (X) TYPICAL SECTION LABEL
- (XXX) CURVE NUMBER LABEL
- (X) CONTROL POINT
- (R) MBGF
- (S) SINGLE GUARDRAIL TERMINAL (SGT)
- (T) MBGF TRANSITION (MBGF-TR)
- (U) CURB RAMP (TY 20)
- (V) IRRIGATION SLEEVE (SEE NOTE 4)
- (W) 6" CEMENT TREATED SUBGRADE
- (Y) PROPOSED TRAVEL LANE
- (Z) EXISTING TRAVEL LANE
- (AA) 15" FAST TRACK CONC PVMT



1	UPDATE THICKNESS FOR LTB	CG 07/13/22
NO.	REVISIONS	BY DATE

**HNTB**  
HNTB Corporation  
The HNTB Companies  
Infrastructure Solutions  
Firm Registration Number 420

**LH RA**  
LAKE HOUSTON REDEVELOPMENT AUTHORITY & TRIZ 10  
600 HUNTON ANDREWS KURTH LLP  
600 TRAVIS, SUITE 4200  
HOUSTON, TX 77002

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
NORTH PARK DRIVE  
PLAN AND PROFILE  
WBFR  
STA 207+50 TO STA 218+50

DESIGNED: \_\_\_\_\_  
CHECKED: \_\_\_\_\_  
DRAWN: \_\_\_\_\_  
STATE: TEXAS  
COUNTY: MONTGOMERY  
CITY OF HOUSTON WBS  
SEE TITLE SHEET  
CONTROL SECTION  
JOB SHEET NO.  
232 231

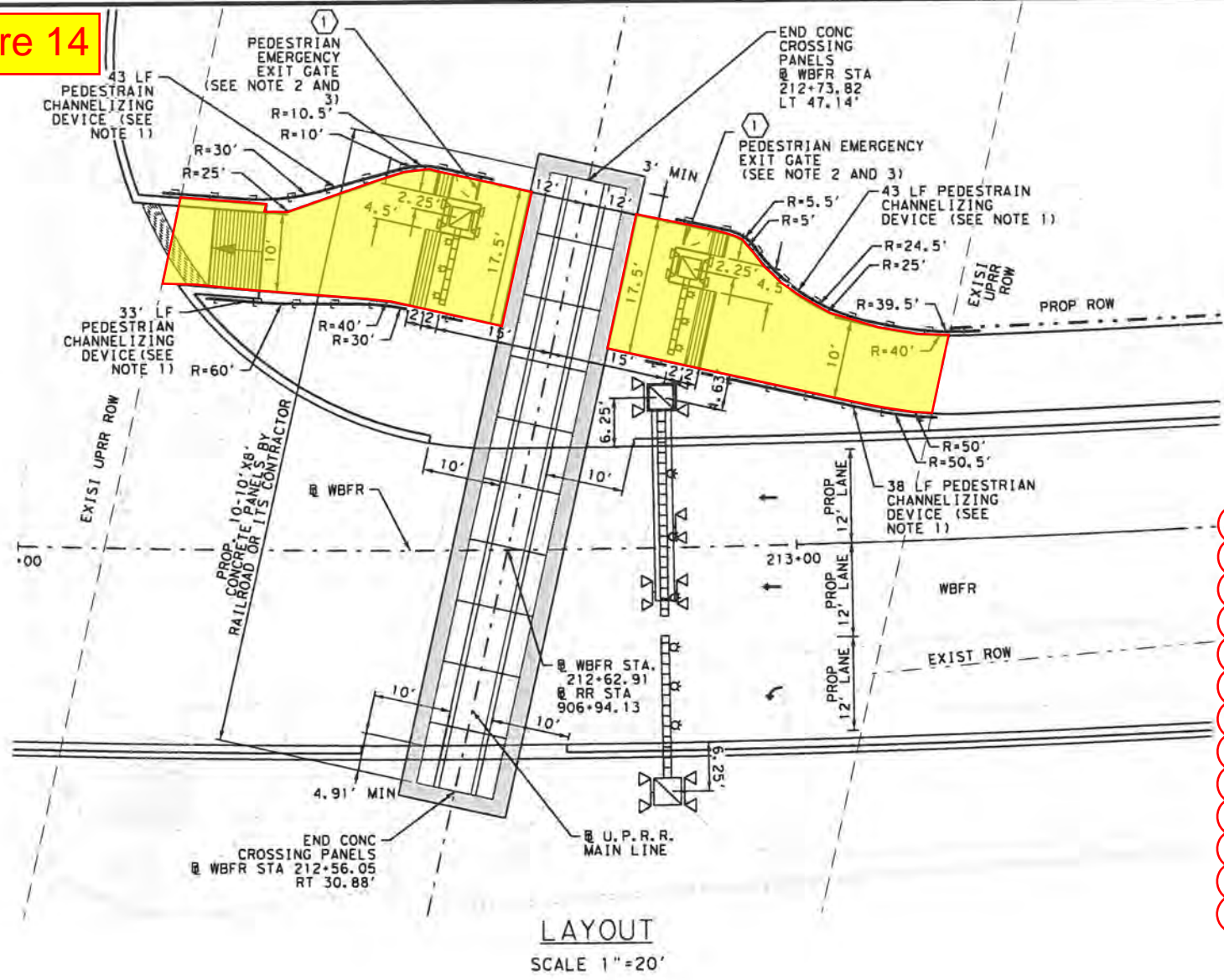
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**Figure 14**

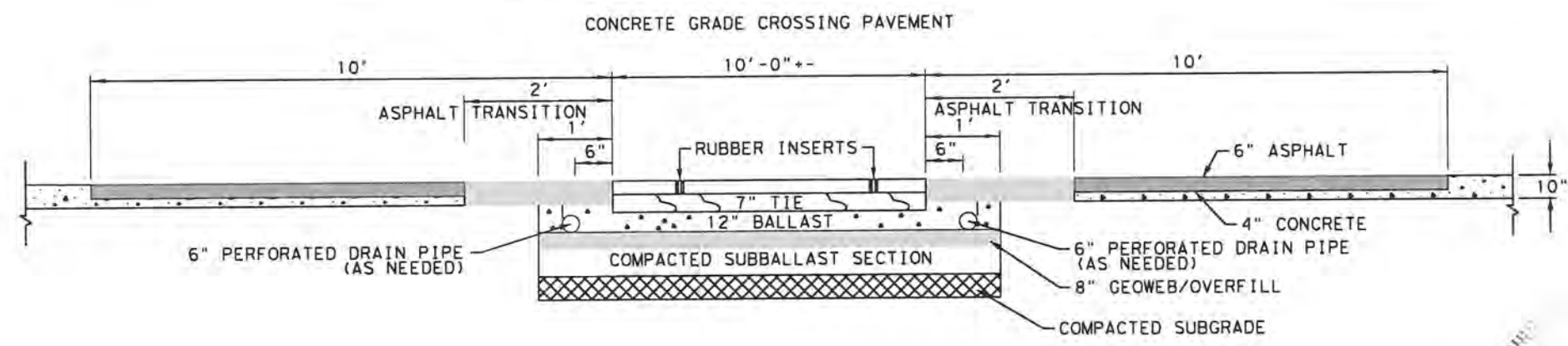
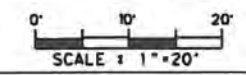
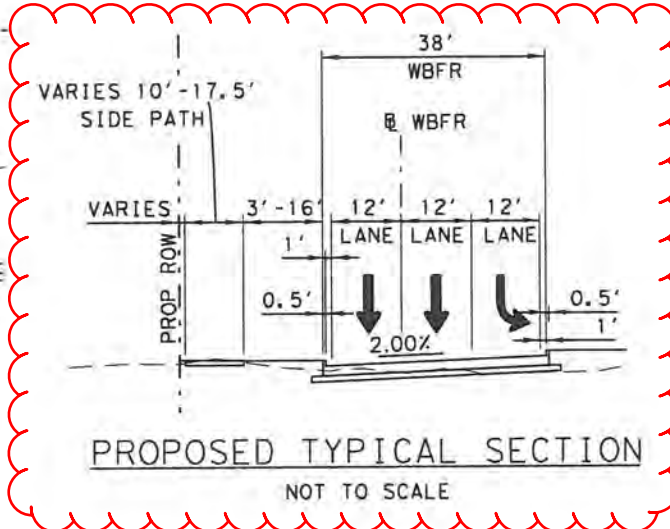
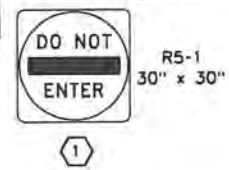


NOTE 1: TYPE C PEDESTRIAN HANDRAIL AT 5'-C-C SPACING BETWEEN POSTS. REFER TO PRD-13 FOR PEDESTRIAN CHANNELIZATION DEVICE DETAILS. SUBMIT SHOP DRAWINGS TO ENGINEER FOR APPROVAL.

NOTE 2: 36" WIDE SELF-ACTUATING, SELF-CLOSING GATE WITH A CLEAR OPENING OF AT LEAST 32" MEASURED BETWEEN THE FACE OF GATE AND THE STOP, WITH THE GATE OPEN 90 DEGREES. "DO NOT ENTER" SIGN (R5-1) ATTACHED DIRECTLY TO GATE, FACING AWAY FROM CENTER OF TRACK. SUBMIT SHOP DRAWINGS TO ENGINEER FOR APPROVAL. POTENTIAL FABRICATORS LISTED BELOW.

NOTE 3: SELF-CLOSING GATE SHALL NOT REQUIRE MORE THAN 5 LBF TO PUSH OPEN.

SUPPLIER	ITEM NAME	ITEM/MODEL NUMBER
FABENCO BY TRACTEL	A SERIES CARBON STEEL GALVANIZED, SELF-CLOSING SAFETY GATE, FITS OPENING 34-36.5"	A71-33
EGA PRODUCTS, INC.	INDUSTRIAL SWING SAFETY GATE (24"-40" WIDE OPENINGS), GALVANIZED	SCG-W-G



TYPICAL SECTION UNION PACIFIC RAILROAD NOT TO SCALE 10' WOOD CROSS TIES



NO.	REVISIONS	BY	DATE

**HNTB**  
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The HNTB Companies  
Infrastructure Solutions  
Firm Registration Number 420

**LH RA**  
LAKE HOUSTON REDEVELOPMENT AUTHORITY & TRZ 10  
600 TRAVIS SUITE 4200  
HOUSTON, TX 77002

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
NORTH PARK DRIVE  
CONCRETE PANEL  
CROSSING LAYOUT WBFR  
UPRR DOT NO. 975518B

SHEET 1 OF 1

DESIGNED:	PED. DIV. NO.	STATE	CITY OF HOUSTON BBS	W/OSBY NO.
	6	TEXAS	SEE TITLE SHEET	CS

DRAWN:	STATE DISTRICT	COUNTY	CONTRACT NO.	SECTION NO.	JOB NO.	SHEET NO.
	HOU	MONTGOMERY	0912	37	232	584

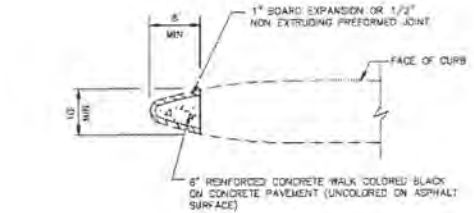
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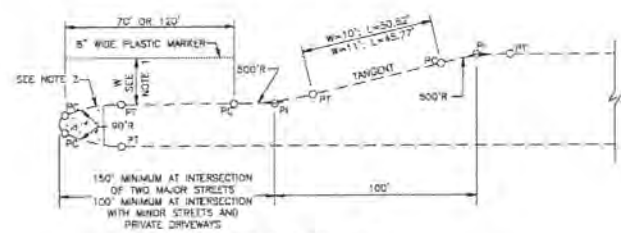
D:\p - int. hntb.org\PCentral\Div\Documents\Houston Projects\65885 Northpark Drive Overpass Project\Design and Engineering\04 HNTB\09 Rail Road\Sheet DGN\WBFR\_PLANKING 01.dgn

Figure 15

02772-01



ESPLANADE NOSE



DETAIL OF LEFT TURN LANE

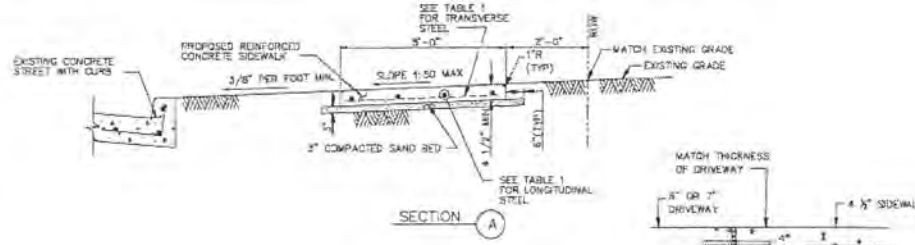
CURVE DATA

W=10'	W=11'
R=500'	R=500'
$\Delta = 54'23.14"$	$\Delta = 5'18'28.27"$
L = 49.63'	L = 54.78'
T=24.94'	T=27.42'

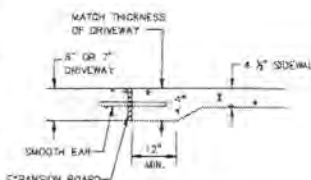
- NOTES
1. 10 FT FOR 80 FT ROW; 11 FT FOR 100 FT ROW.
  2. FOR MEDIANS WITH BULLET NOSE CONFIGURATION, PAINT CURB WITH YELLOW REFLECTORIZED PAINT AROUND THE ESPLANADE NOSE TO THE PT OF THE 80 FT R. FOR MEDIANS WITHOUT BULLET NOSE CONFIGURATION, PAINT CURB FROM 80 TO 11 FT AND 30 FT BACK OF PC/PT.

ESPLANADE NOSE AND LEFT TURN DETAILS  
NTS

02775-01



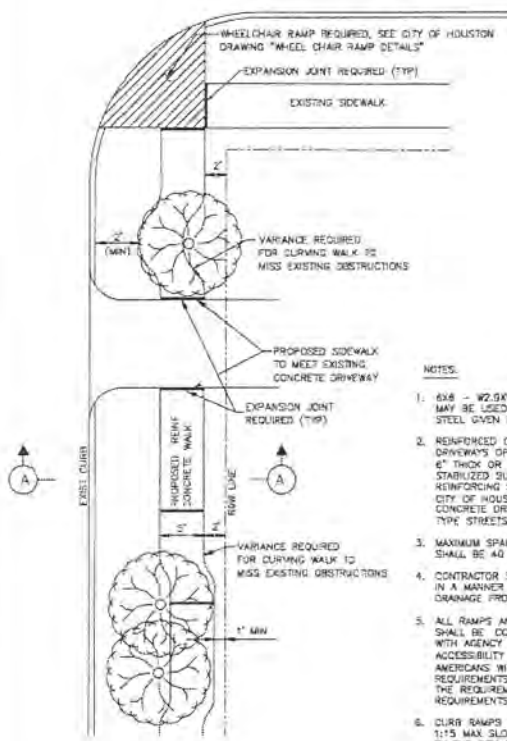
SECTION A



DRIVEWAY/SIDEWALK  
HEADER DETAIL

TABLE 1  
REINFORCING STEEL INFORMATION  
FOR 4\"/>

SIDEWALK THICKNESS (IN)	SIDEWALK WIDTH (FT)	LONGITUDINAL STEEL		TRANSVERSE STEEL	
		NUMBER OF BARS	SPACING (IN)	NUMBER OF BARS	SPACING (IN)
4.5	5	3	27	3	48
6.5	6	4	22	3	48



CONCRETE SIDEWALK DETAILS FOR STREETS WITH CURBS  
NTS

- NOTES
1. #16 - W2.0XV3.9 WELDED WIRE FABRIC MAY BE USED IN LIEU OF THE REINFORCING STEEL GIVEN IN TABLE 1.
  2. REINFORCED CONCRETE SIDEWALKS THRU DRIVEWAYS OPENINGS SHALL BE EITHER 4\"/>

CITY OF HOUSTON  
HOUSTON PUBLIC WORKS

STREET PAVING AND SIDEWALK  
02772-01 THROUGH 02775-01

APPROVED: *[Signature]* CITY ENGINEER  
APPROVED: *[Signature]* DEPUTY DIRECTOR  
APPROVED: *[Signature]* DIRECTOR OF HOUSTON PUBLIC WORKS

EFFECTIVE DATE: 4/5-01-2020  
FOR CITY OF HOUSTON USE ONLY



NO.	REVISIONS	BY	DATE

**HNTB**  
HNTB Corporation  
The HNTB Companies  
Infrastructure Solutions  
Firm Registration Number 420

CITY OF HOUSTON  
HOUSTON PUBLIC WORKS

NORTH PARK DRIVE

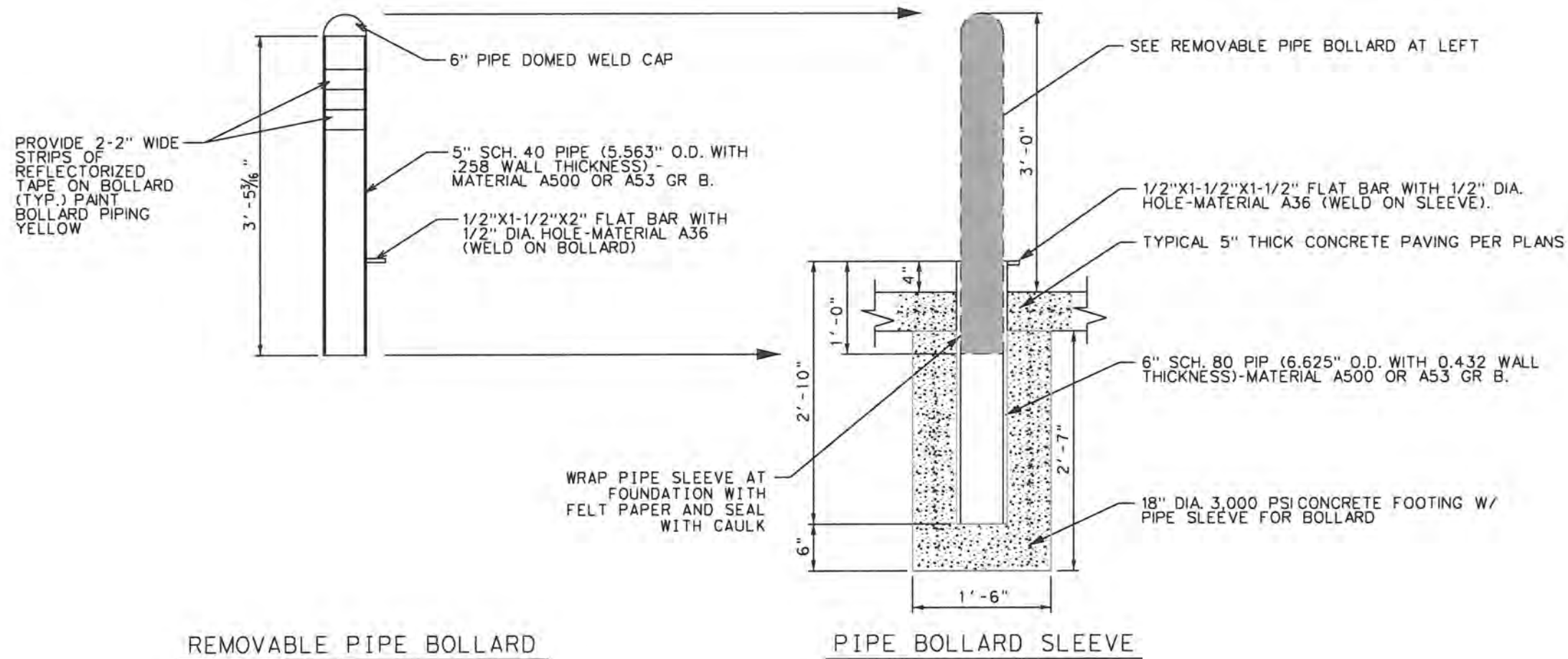
STANDARD DETAIL  
SIDEWALK

DESIGNED BY	FED. DIST. NO.	STATE	CITY OF HOUSTON MBS	HIGWAY NO.
	6	TEXAS	SEE TITLE SHEET	CS
CHECKED BY	STATE DISTRICT	COUNTY	CONTRACT NO.	SECTION NO.
	HOU	MONTGOMERY	0912	37
JOB NO.	SHEET NO.	TOTAL SHEETS		
282A	282A	282A		

SHEET 1 OF 1

4/5/2021 11:23:03 AM

Figure 16



NTS

NO.	REVISIONS	BY	DATE

**HNTB**  
HNTB Corporation  
 The HNTB Companies  
 Infrastructure Solutions  
 Firm Registration Number 420

**LWA**  
LAKE HOUSTON REDEVELOPMENT AUTHORITY & TRC 13  
 c/o HUNTON ANDREWS KURTH LLP  
 600 TRAVIS SUITE 4200  
 HOUSTON, TX 77002

**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

**NORTH PARK DRIVE**  
**BOLLARD DETAIL**

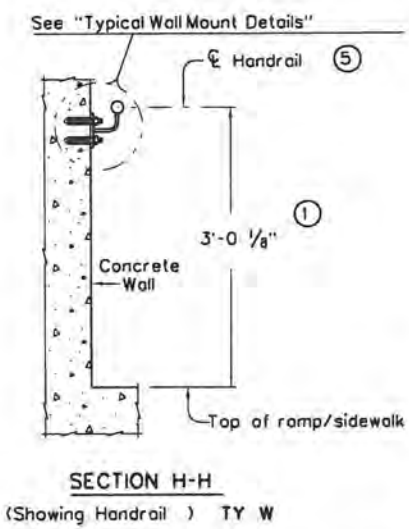
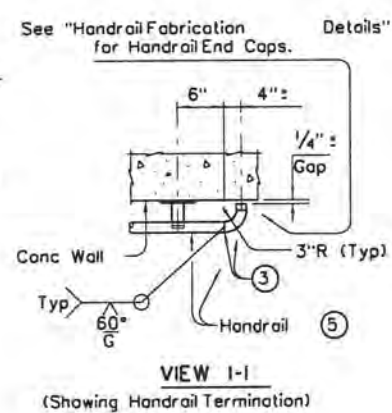
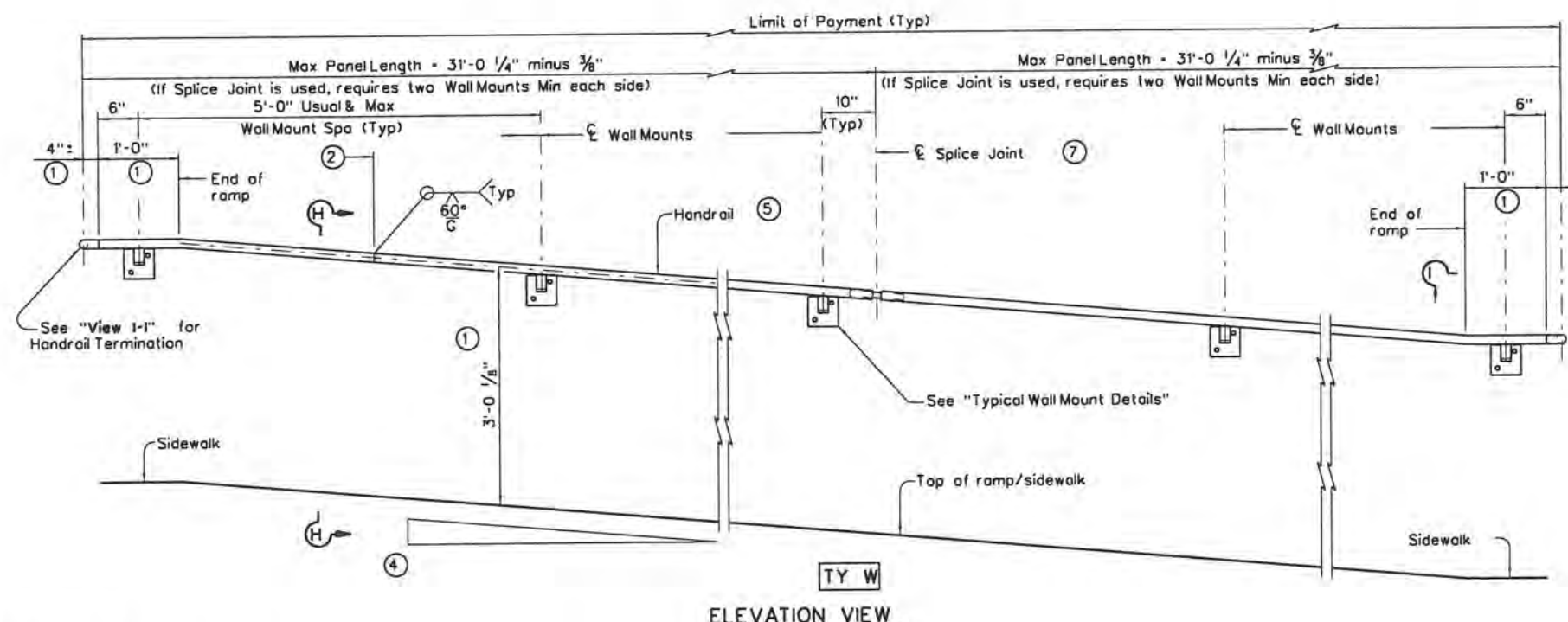
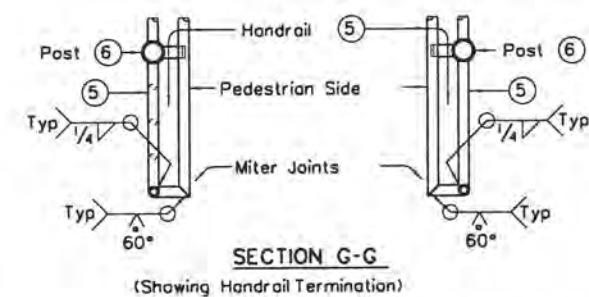
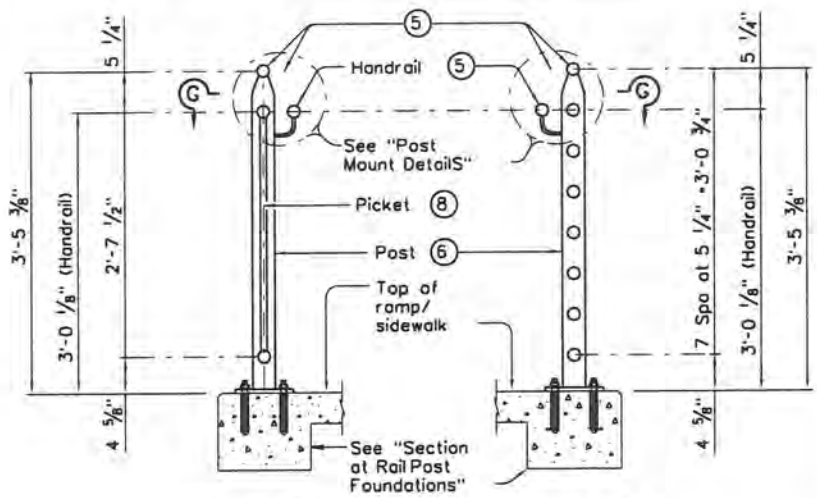
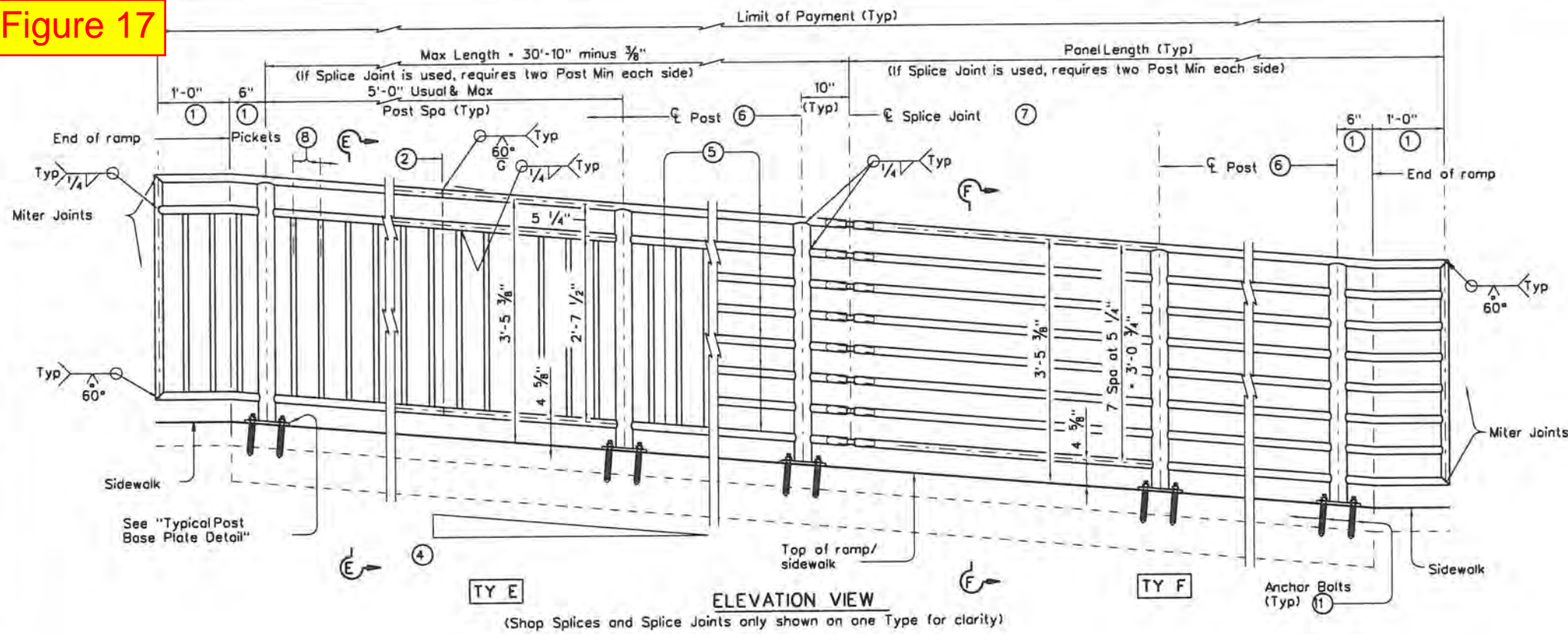
SHEET 1 OF 1

DESIGNED BY	FED. RD. DIST. NO.	STATE	CITY OF HOUSTON	HWYS	HIGHWAY NO.
CHECKED BY	6	TEXAS	SEE TITLE SHEET		CS
DRAWN BY	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.
CHECKED BY	HOU	MONTGOMERY	0912	37	232

4/5/2021 3:50:18 PM



**Figure 17**



SHEET 2 OF 3

Texas Department of Transportation  
Design Division Standard

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

FILE: prd13.dgn	DR: TxDOT	CHK: AM	DES: JTR	CHK: CGL
© TxDOT December 2006	CONT: SECT	JOB:	HIGHWAY:	
REVISIONS	912	37	232	CS
REVISED MAY, 2013 (VPI)	DIST:	COUNTY:	SHEET NO.:	
	HOU	MONTGOMERY	587C	

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

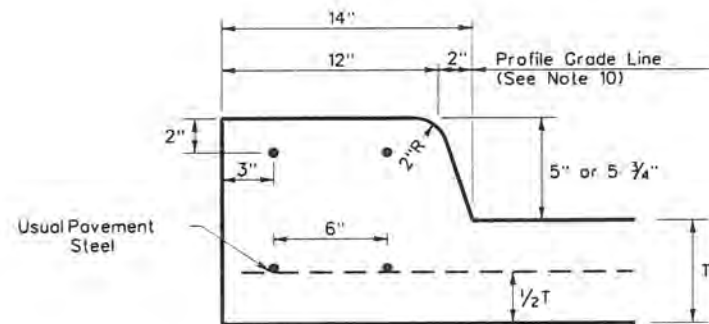
DATE: FILE:

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



**Figure 18**

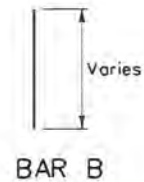
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TYPE II CURB (MONOLITHIC) (MOD)  
5" - 5 3/4" HEIGHT

**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. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
4. Round exposed sharp edges with a rounding tool, to a minimum radius of 1/4 inch.
5. All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
6. Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and the grouted in place, or may be inserted into fresh concrete.
7. Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
8. Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C-C.
9. Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
10. Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
11. One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
12. When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
13. Bar B used as needed to support curb reinforcing steel during concrete placement.
14. See Standard CCCG-21 for additional notes and details.



Texas Department of Transportation		Bridge Division Standard	
<b>CONCRETE CURB AND GUTTER</b>			
<b>CCCG-21 (MOD)</b>			
FILE: cccg21.dgn	DN: TXDOT	DR: AN	DS: SS
© TxDOT: FEBRUARY 2021	CONT: SECT	JOB:	HWAY:
REVISIONS			
DATE:	COUNTY:	SHEET NO.	
		262A	