STATE OF TEXAS
STATE HIGHWAY DEPARTMENT

PLANS OF ~~PROPOSED~~ FINAL
STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT.
I45-1(146) 010

SCALES: PLAN: 1 IN. = 50 FT. PROFILE: 1 IN. HOR. = 50 FT. 1 IN. VERT. = 5 FT. OTHERS AS NOTED.

NET LENGTH OF PROJECT=13,232.870 FT.=2.505 MI.

CONTROL 500-4-55			URBAN PROJECT	
Roadway	12,795.3'	FT.=	2.421	MI.
Bridge	437.46	FT.=	0.084	MI.

INTERSTATE HIGHWAY 45
GALVESTON COUNTY

FROM 0.6 MILE NORTHWEST OF FM 519, SOUTH TO 0.16 MILE NORTHWEST OF T.C.T. RAILROAD
GRADING, STRUCTURES, CEM STAB BASE, ASPH STAB BASE, CONC PAV, CONC PAV WIDENING & OVERLAY, STORM SEWER, CONC MED BARR. FE. GD FE, LIME STAB FLEX BASE, ASPH CONC PAV, ONE CRSE SURF TREAT, FLEX BASE, LIME, PTLND CEM, TRAFFIC CONTROL SIGNALS, SIGNING, DELINEATION, PAV MARKING, & SAFETY LIGHTING

500-4-55
Comp l 1980

7441
07

	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	I45-1(146)010	1
12	Galveston	500-4-55	

Comp 12-2-80
Accpt 12-2-80

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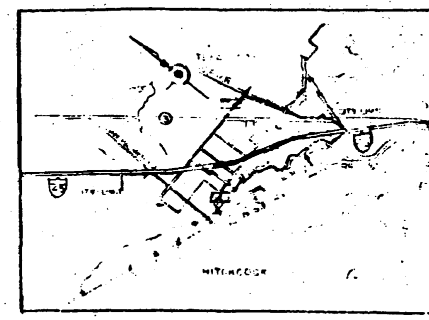
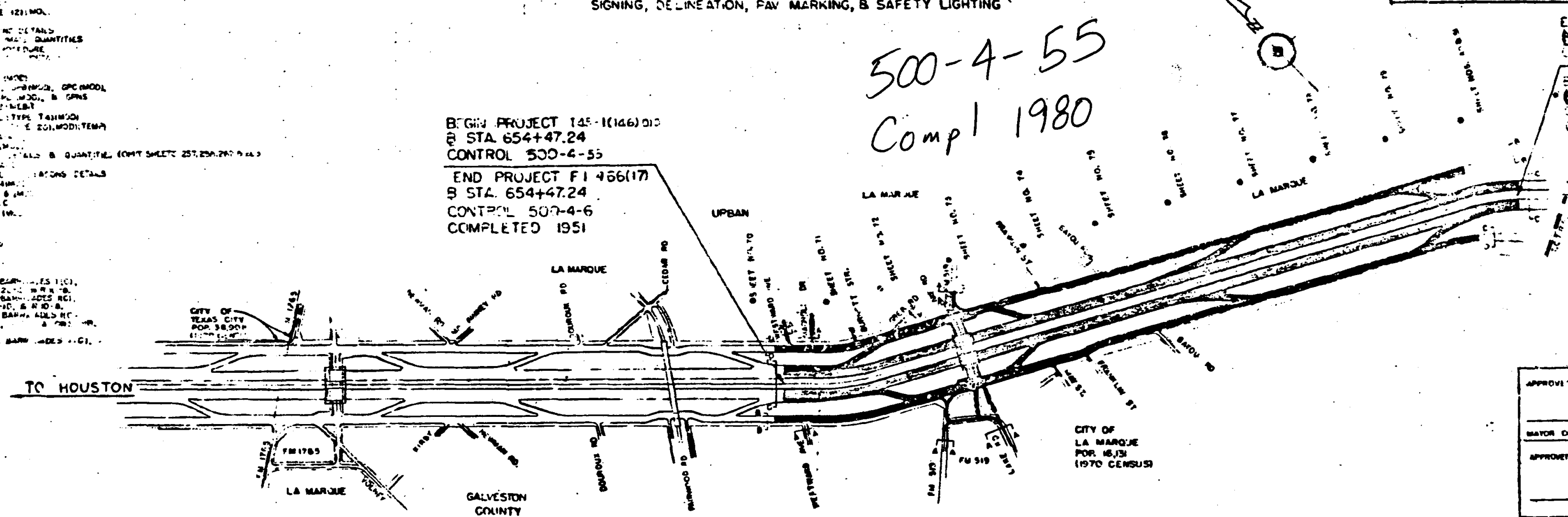




ALL MODIFIED CURB OPENINGS ON THIS PROJECT ARE IN ACCORDANCE WITH ESTABLISHED HIGHWAY COMMISSION POLICY OR HIGHWAY CONNECTION POLICY MODIFIED TO CONFORM TO CURRENT MUNICIPAL POLICIES.

DELIVERY POINTS FOR MATERIALS SHALL BE ARRANGED BY THE CONTRACTOR.

SPECIFICATIONS ADOPTED BY THE STATE HIGHWAY DEPARTMENT OF TEXAS, JANUARY 3, 1972 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS SHALL GOVERN ON THIS PROJECT. REQUIRED CONTRACT PROVISIONS, ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FHWA-1273 APRIL 1974).

EQUATION: NONE

EXCEPTION: NONE

RAILROAD CROSSING: NONE

LAYOUT SCALE: 1 IN. = 1000 FT. ALONG ℄
1 IN. = 200 FT. PERPENDICULAR TO ℄

CONVENTIONAL SIGNS
STATE OR NATIONAL LINE
CITY OR VILLAGE LINE
COUNTY LINE
BASE OR SURVEY LINE
RIGHT OF WAY LINE
RIGHT OF WAY MARKERS
FENCE LINE
RAILROAD
TRAVELLED WAY
CULVERT OR BRIDGE
POWER LINE
TELEGRAPH OR TELEPHONE
ALL CURVE DATA BASED UPON ARC DEFINITION

STATE HIGHWAY DEPARTMENT

28 Feb 74 — 9-19-74 — 7-8-74

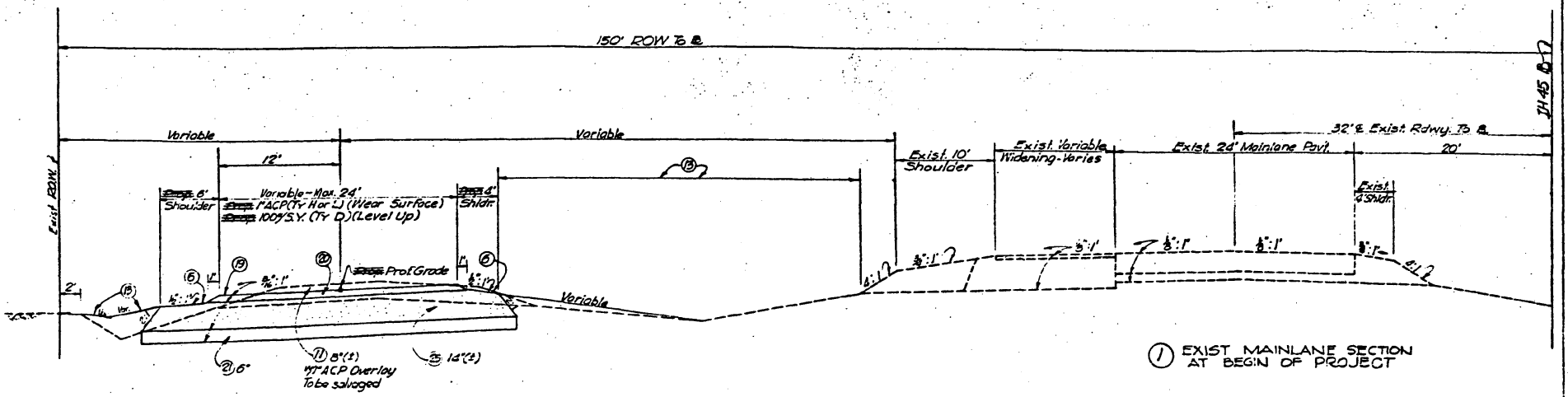
APPROVED: ____ DATE ____
MAYOR OF LA MARQUE

APPROVED: ____ DATE ____

I CERTIFY THAT THE GRADE SEPARATION STRUCTURES SHOWN HEREIN ARE SO LOCATED TO ALLOW ... COUNTY'S PLANNED ... SYSTEM.

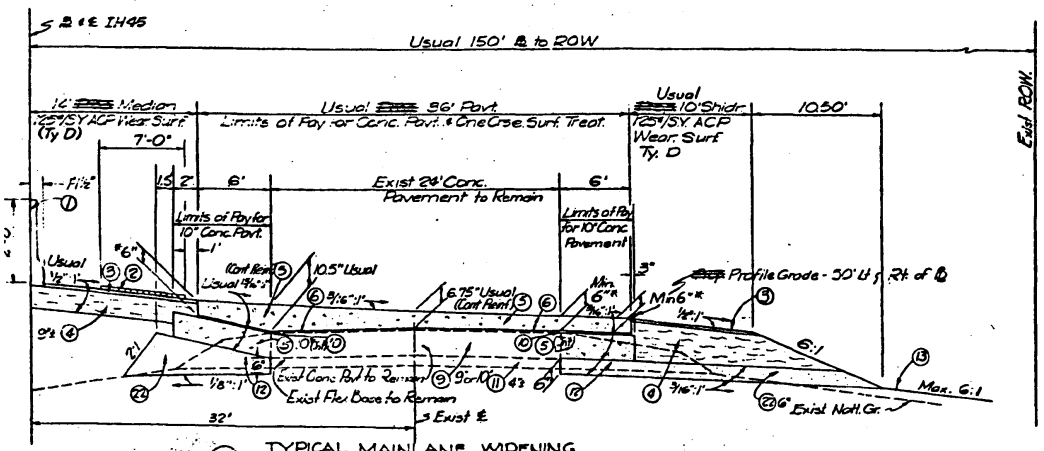
Aug 5, 1974

DATE ACCEPTED DEC 3 1980



① EXIST MAINLANE SECTION AT BEGIN OF PROJECT

② FRONT ROAD TEMP TRANSITION TYPICAL SECTION AT BEGIN OF PROJECT



③ TYPICAL MAINLANE WIDENING SECTION FOR 36 FT. PVT BEFORE FM 519

SYMBOLS LEGEND

1. Headlight Barrier Fence and Concrete Median Barrier
2. Jiggle Bars
3. ACP Wearing Surface (Ty D)
4. Asphalt Stabilized Base
5. Concrete Pavement
6. One Crse. Surface Treat
7. 3/4" Asphalt Stabilized Base
8. Cement Stabilized Base (Var. depth)
9. Exist Concrete Pavement
10. Note: Tie Prop Pvmt. To Exist. Pvmt
11. Exist Flexible Base
12. Note: Exist Flexible Base Shoulders To Be Salvaged
13. Broadcast Seeding
14. Block Sodding
15. Steel Beam Guard Fence
16. Retaining Wall
17. 2' Gutter Drain (w/ Ret. Wall)
18. Riprap (R.P.9 Modified)
19. ACP Wearing Surface (Ty Hot L)
20. Level-Up (Ty D)
21. Lime Treated Subgrade
22. Salvaged Flex Base
23. Perforated 6" Drain Pipe
24. Select Borrow (Ty "C", Cl 3)
25. Lime Stabilized Flexible Base (Ty 1, 2, 3, or 4)

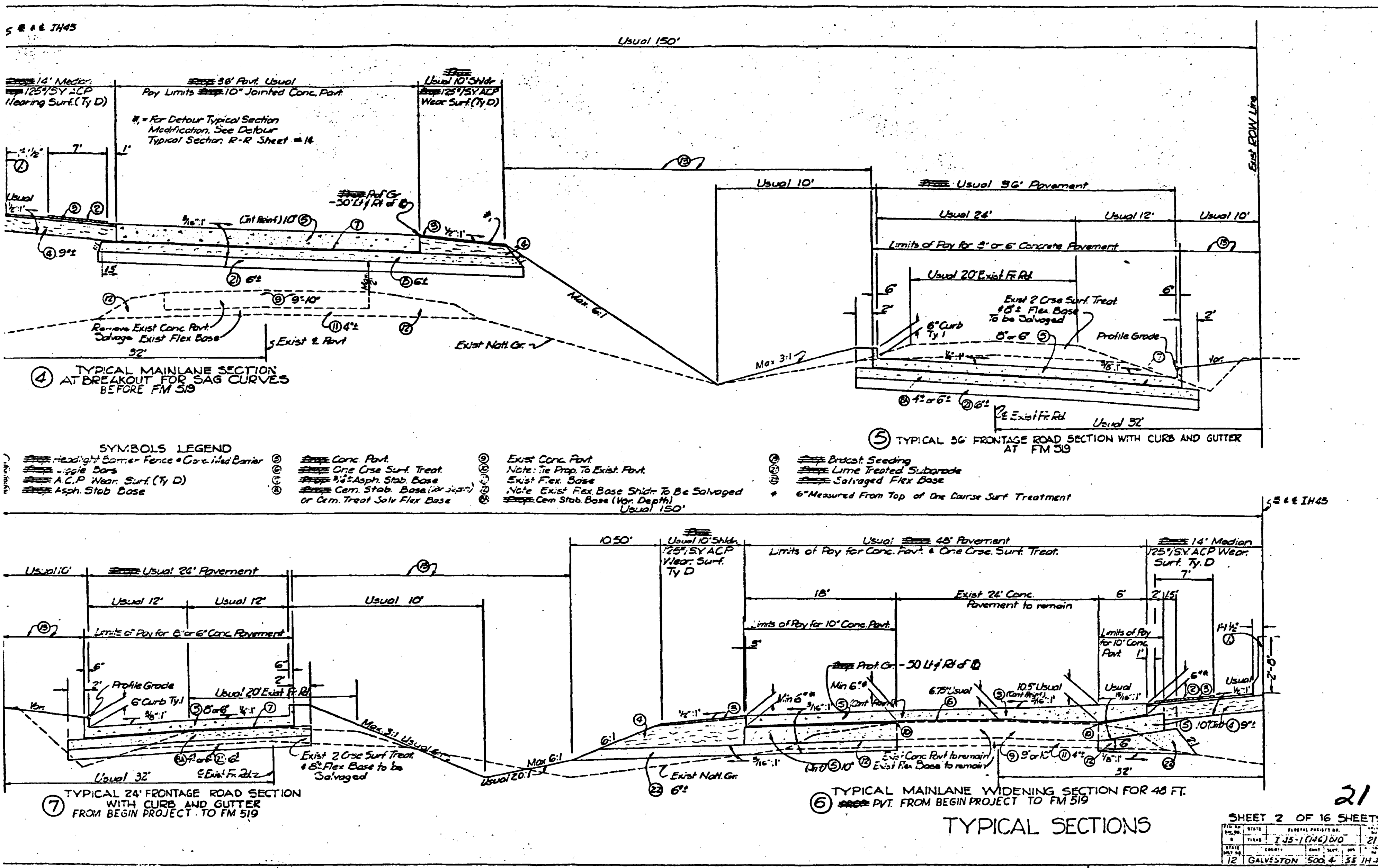
* 6" Measured From Top of 'One Course Surf. Treatment

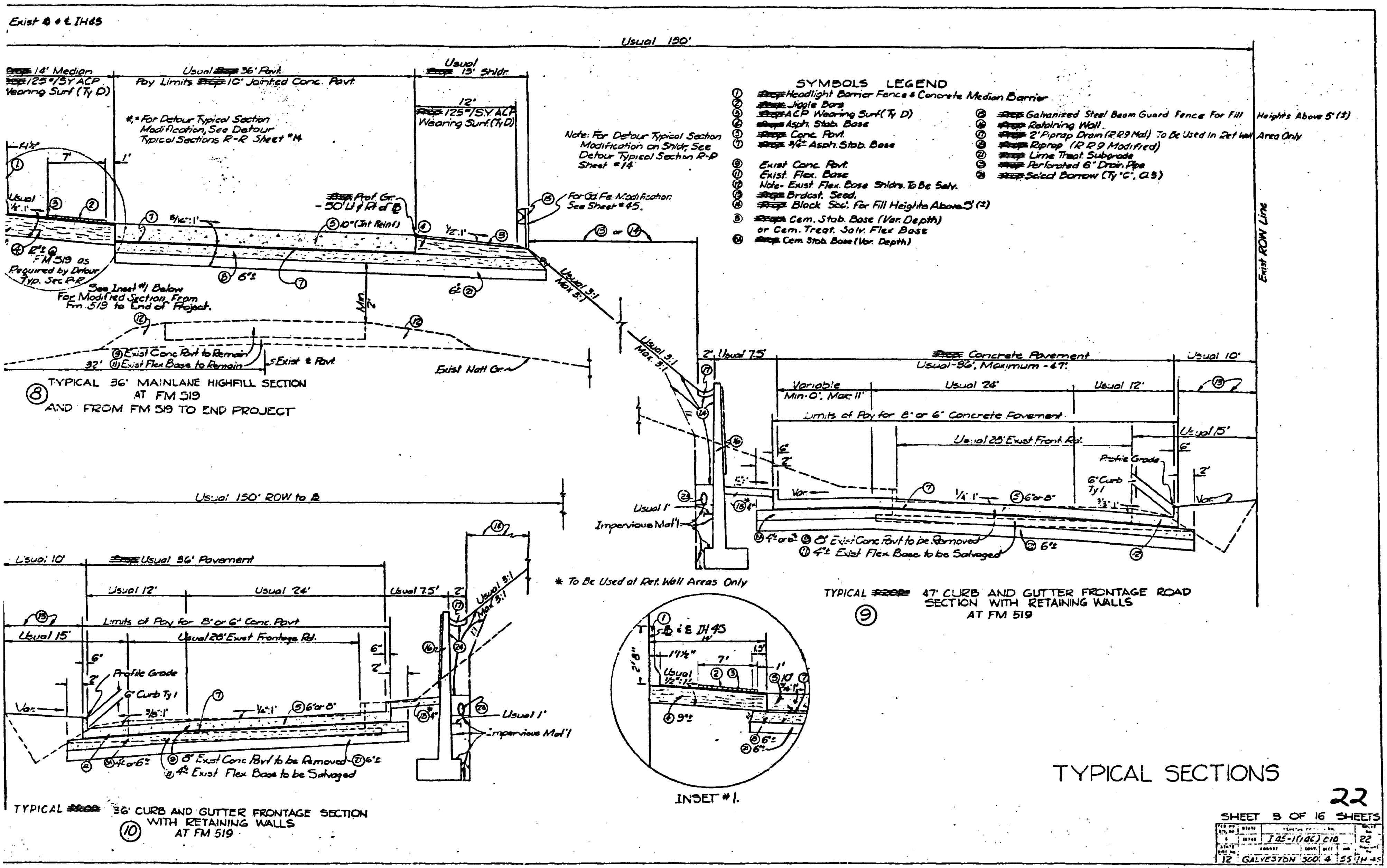
TYPICAL SECTIONS

20

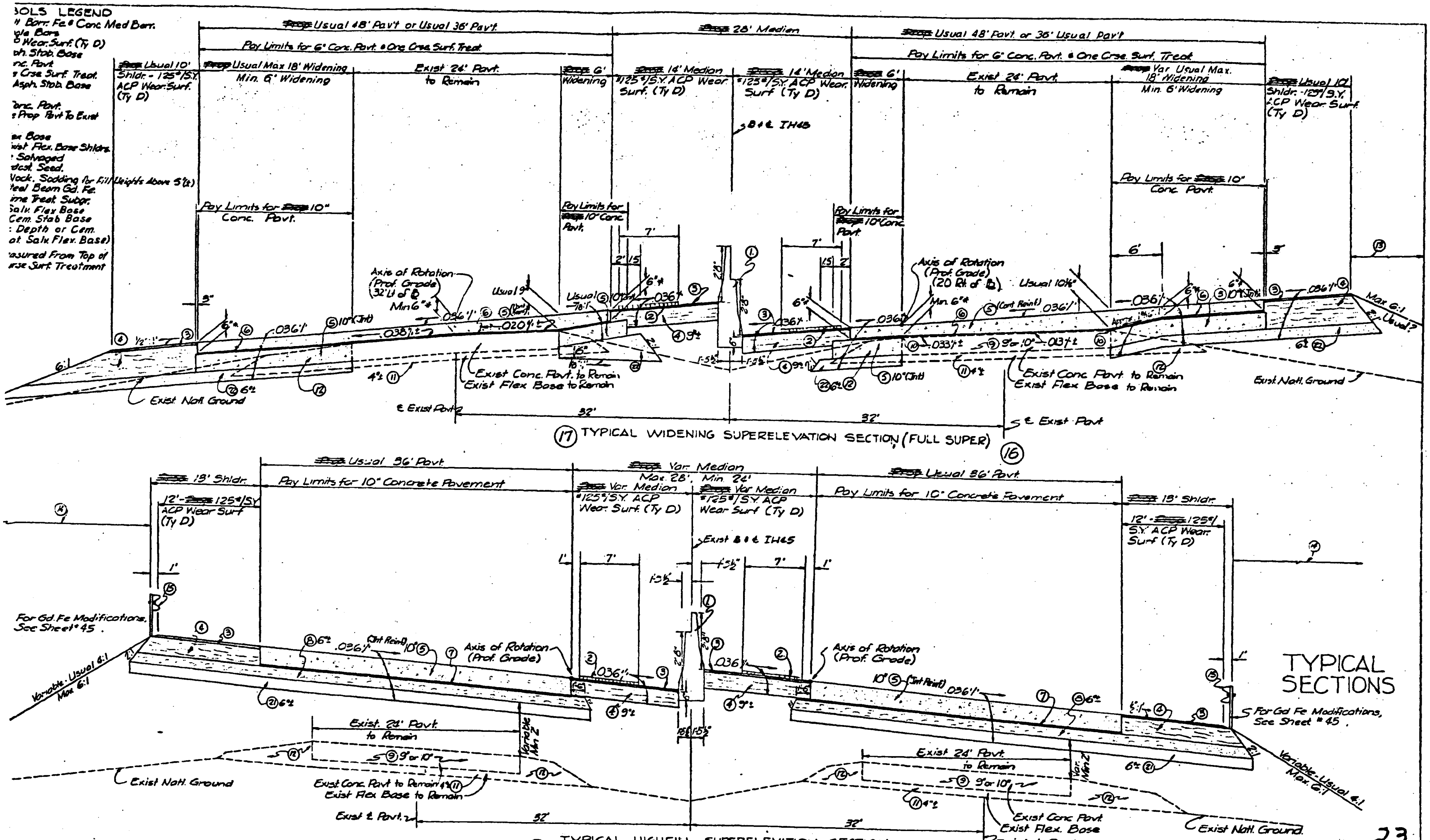
SHEET 1 OF 16 SHEETS

DIST	COUNTY	FEDERAL PROJECT NO.	SHEET
12	GALVESTON	I 45-1(162)010	20


Usual 150'
14' Median 125#/SY ACP Wearing Surf. (Ty D)
36' Pavt. Usual
Pay Limits 10" Jointed Conc. Pavt.
Usual 10' Shldr. 125#/SY ACP Wear Surf. (Ty D)
#, = For Detour Typical Section Modification, See Detour Typical Section R-R Sheet # 14
Exist ROW Line
Max. 6:1
Max 3:1
Exist Natl. Gr.
Remove Exist Conc Pavt. Salvage Exist Flex Base
Exist ℄ Pavt
④ TYPICAL MAINLANE SECTION AT BREAKOUT FOR SAG CURVES BEFORE FM 519
Usual 10'
Usual 36' Pavement
Usual 24'
Usual 12'
Limits of Pay for 8" or 6" Concrete Pavement
Usual 20' Exist Fr. Rd.
Exist 2 Crse Surf. Treat. & 8"± Flex. Base To be Salvaged
6" Curb Ty. I
Profile Grade
Usual 32'
⑤ TYPICAL 36' FRONTAGE ROAD SECTION WITH CURB AND GUTTER AT FM 519
SYMBOLS LEGEND
Headlight Barrier Fence • Conc. Med Barrier
Jiggle Bars
A.C.P. Wear. Surf. (Ty D)
Asph. Stab Base
Conc. Pavt.
One Crse Surf. Treat.
3/4" Asph. Stab. Base
Cem. Stab. Base or Cem. Treat Salv Flex Base
Exist Conc. Pavt.
Note: Tie Prop. To Exist. Pavt.
Exist Flex. Base
Note: Exist Flex Base Shldr. To Be Salvaged
Cem Stab. Base (Var. Depth)
Brdcst. Seeding
Lime Treated Subgrade
Salvaged Flex Base
* 6" Measured From Top of One Course Surf. Treatment
℄ & ℄ IH45
Usual 24' Pavement
Limits of Pay for 8" or 6" Conc. Pavement
Usual 20' Exist Fr. Rd.
Exist 2 Crse Surf. Treat. & 8"± Flex Base to be Salvaged
⑦ TYPICAL 24' FRONTAGE ROAD SECTION WITH CURB AND GUTTER FROM BEGIN PROJECT TO FM 519
Usual 10' Shldr. 125#/SY ACP Wear. Surf. Ty D
Usual 48' Pavement
Limits of Pay for Conc. Pavt. & One Crse. Surf. Treat.
14' Median 125#/SY ACP Wear. Surf. Ty. D
Exist 24' Conc. Pavement to remain
Limits of Pay for 10" Conc. Pavt.
Prof. Gr. -50 Lt. Rt. of ℄
Exist Conc Pavt to remain
Exist Flex Base to remain
Exist Natl. Gr.
⑥ TYPICAL MAINLANE WIDENING SECTION FOR 48 FT. PVT. FROM BEGIN PROJECT TO FM 519
TYPICAL SECTIONS
SHEET 2 OF 16 SHEETS
21
TEXAS
I 45-1(146)010
GALVESTON
500 4 55 IH 45



Exist ℄ & ℄ IH45
Usual 150'
14' Median
125#/SY ACP Wearing Surf (Ty D)
Usual 36' Pavt.
Pay Limits 10" Jointed Conc. Pavt.
Usual 13' Shldr.
12'
125#/SY ACP Wearing Surf (Ty D)
*- For Detour Typical Section Modification, See Detour Typical Sections R-R Sheet #14
Note: For Detour Typical Section Modification on Shldr. See Detour Typical Section R-R Sheet #14
For Gd Fe. Modification See Sheet #45.
Prof. Gr. - 50' Lt & Rt of ℄
10" (Jnt Reinf)
Usual 3:1
Max 3:1
See Inset #1 Below For Modified Section From Fm 519 to End of Project.
FM 519 as Required by Detour Typ. Sec R-R
Exist Conc Pavt to Remain
Exist Flex Base to Remain
Exist ℄ Pavt
Exist Natl Gr.
TYPICAL 36' MAINLANE HIGHFILL SECTION AT FM 519 AND FROM FM 519 TO END PROJECT
SYMBOLS LEGEND
1 Headlight Barrier Fence & Concrete Median Barrier
2 Jiggle Bars
3 ACP Wearing Surf (Ty D)
4 Asph. Stab. Base
5 Conc. Pavt.
7 3/4" Asph. Stab. Base
9 Exist Conc. Pavt.
11 Exist. Flex. Base
12 Note- Exist Flex. Base Shldrs. To Be Salv.
13 Brdcst. Seed.
14 Block Sod. For Fill Heights Above 5' (*)
8 Cem. Stab. Base (Var. Depth) or Cem. Treat. Salv. Flex Base
Cem. Stab. Base (Var. Depth)
15 Galvanized Steel Beam Guard Fence For Fill Heights Above 5' (*)
16 Retaining Wall.
17 2' Riprap Drain (RR9 Mod) To Be Used In Ret Wall Area Only
18 Riprap (RR9 Modified)
21 Lime Treat. Subgrade
Perforated 6" Drain Pipe
Select Borrow (Ty "C", Cl 3)
Exist ROW Line
Concrete Pavement
Usual-36', Maximum - 47'
Usual 10'
Variable Min-0', Max 11'
Usual 24'
Usual 12'
Limits of Pay for 8" or 6" Concrete Pavement
Usual 28' Exist Front. Rd.
Usual 15'
Profile Grade
6" Curb Ty I
Usual 1'
Impervious Mat'l
8" Exist Conc Pavt to be Removed
4" Exist Flex Base to be Salvaged
* To Be Used at Ret. Wall Areas Only
TYPICAL 47' CURB AND GUTTER FRONTAGE ROAD SECTION WITH RETAINING WALLS AT FM 519
Usual 150' ROW to ℄
Usual 36' Pavement
Usual 7.5'
Limits of Pay for 8" or 6" Conc. Pavt
Usual 28' Exist Frontage Rd.
TYPICAL 36' CURB AND GUTTER FRONTAGE SECTION WITH RETAINING WALLS AT FM 519
INSET #1.
TYPICAL SECTIONS
22
SHEET 3 OF 16 SHEETS
I45-1(46) C10
12 GALVESTON 500 4 55 IH 45



(17) TYPICAL WIDENING SUPERELEVATION SECTION (FULL SUPER) (16)

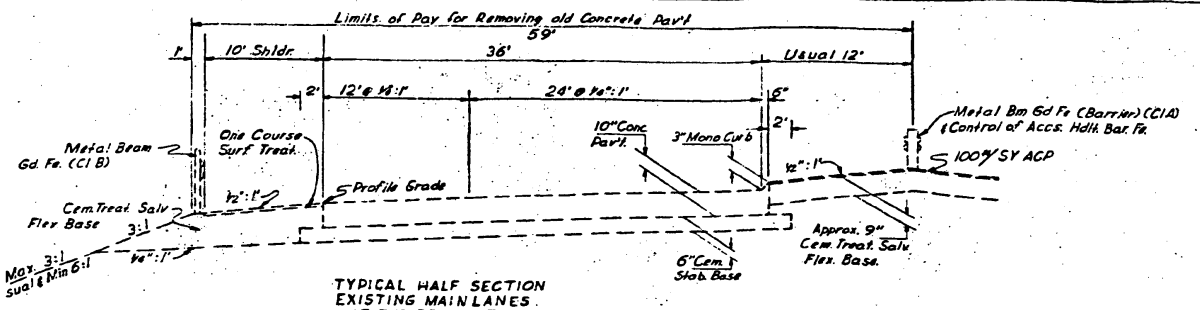
(15) TYPICAL HIGHFILL SUPERELEVATION SECTION (FULL SUPER) AT END PROJECT (14)

TYPICAL SECTIONS

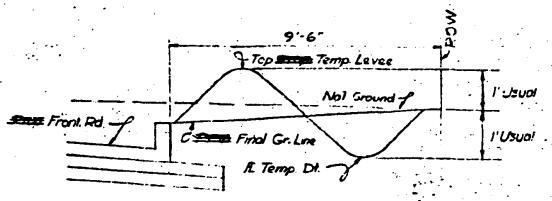
23

SHEET 4 OF 16 SHEETS

6	TEXAS	I 45-1(146)010	23
12	GALVESTON	500 2	35



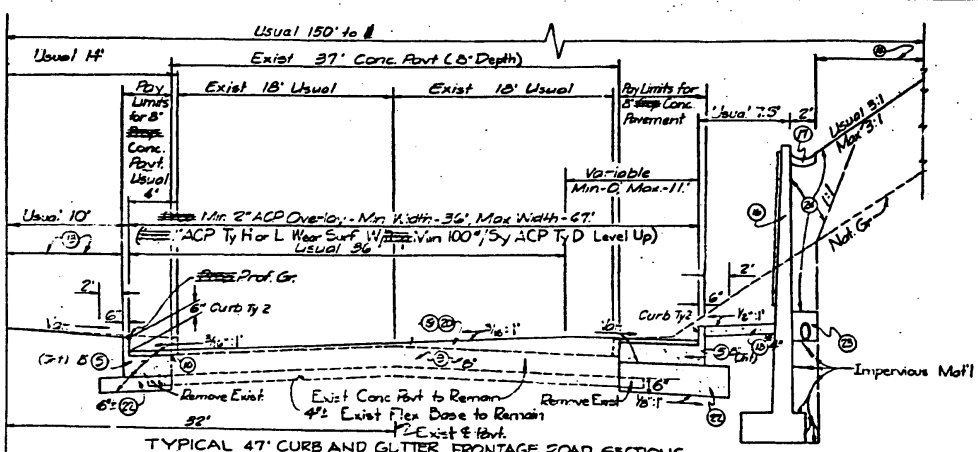
TYPICAL HALF SECTION
EXISTING MAINLANES
AT END PROJECT



TYPICAL SECTION FOR TEMP. LEVEES

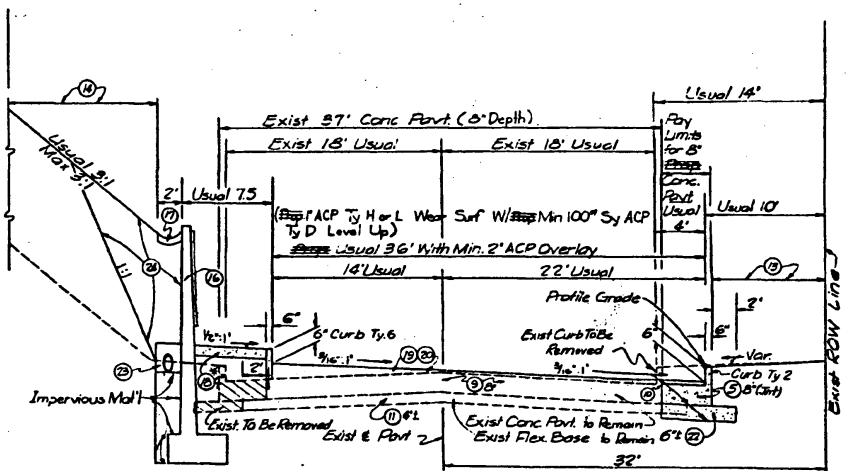
LOCATION OF TEMP. LEVEES

STATION	TO	STATION
℄ Sta 659+70 Lt.		℄ Sta 668+92 Lt.
℄ Sta 669+40 Lt.		℄ Sta 675+80 Lt.
℄ Sta 674+00 Lt.		℄ Sta 701+40 Lt.



TYPICAL 47' CURB AND GUTTER FRONTAGE ROAD SECTIONS WITH RETAINING WALLS AT FM 519

(19)



TYPICAL 36' CURB AND GUTTER FRONTAGE ROAD SECTION WITH RETAINING WALLS AT FM 519

(18)

SYMBOLS LEGEND

1. Headlight Barrier Fence And Concrete Median Barrier
2. Jiggle Bars
3. ACP Wearing Surf. (Ty. D)
4. Asph. Stab. Base
5. Conc. Pavement
6. ½" Asph. Stab. Base
7. Cem. Stab. Base (Var. depth)
8. Exist Conc. Pavement
   Note: Tie Prop Pavement To Exist. Pavement
9. Exist Flex. Base
   Note: Exist Flex. Base Shldrs To Be Salv.
10. Brdcst. Seed
11. Block. Sodding (for Fill Heights Above 5'@)
12. Retaining Wall
13. 2" Riprap Drain (RR9 Mod) To Be Used In Ret. Wall Area Only
14. Riprap (RR9 Modified)
15. ACP Wear. Surf (Ty. Hor L) or ACP (Ty. D Mod.)
16. Level-Up (Ty D)
17. Lime Treat. Subgr.
18. Flex. Base (Ty A, C, or D)
19. Perforated 6" Drain Pipe
20. Select Borrow (Ty "C", CI B)

Exist. To Be Removed

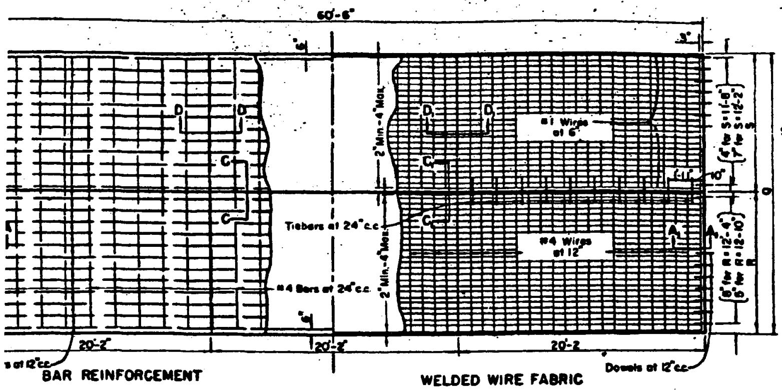
* To Be Used At Retaining Wall Areas Only

TYPICAL SECTIONS

24

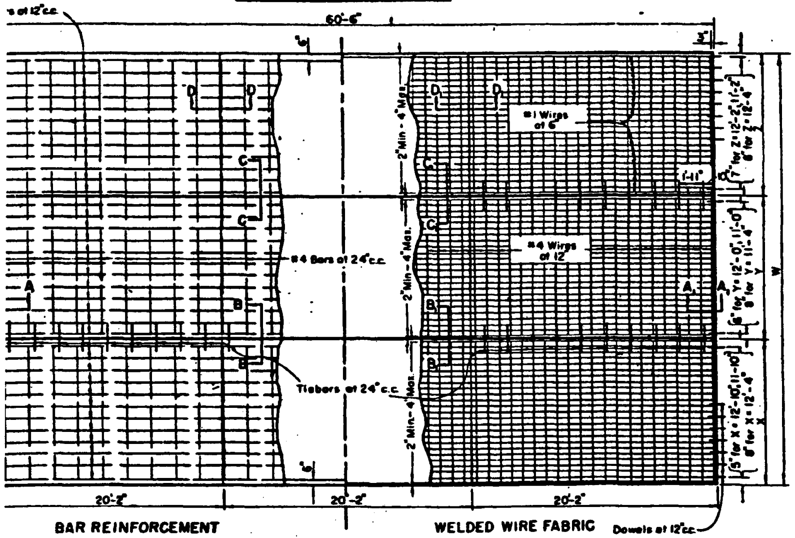
SHEET 5 OF 16 SHEETS

DIST.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
12	GALVESTON	500	4	55	IH 45



TWO LANE PAVEMENT PLAN

Q	24'-0"	24'-6"	25'-0"
R	12'-4"	12'-4"	12'-10"
S	11'-8"	12'-2"	12'-2"

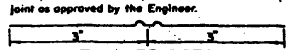


THREE LANE PAVEMENT PLAN

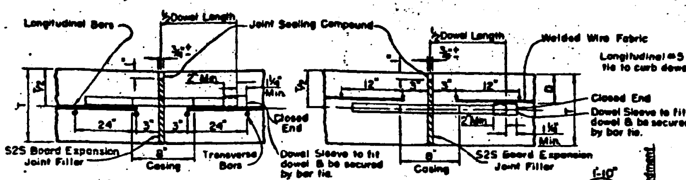
DOWEL & REINFORCING STEEL DATA			
SLAB THICKNESS "T"	8"	9"	10"
DOWEL SIZE	1"	1⅛"	1¼"
DOWEL LENGTH	14"	16"	18"
REINFORCING WIRE DEPTH "D"	3"	3½"	4"

W	37'-0"	36'-0"	34'-0"
X	12'-10"	12'-4"	11'-10"
Y	12'-0"	11'-4"	11'-0"
Z	12'-2"	12'-4"	11'-2"

Note: Joint plate shall be crimped and nailed to board joint as approved by the Engineer.



JOINT PLATE DETAIL



SECTION A-A
BAR REINFORCEMENT

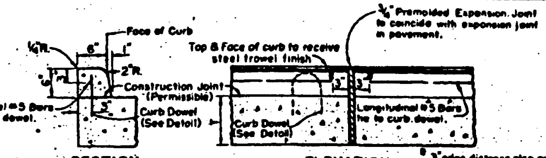
SECTION A₁-A₁
WELDED WIRE FABRIC

TRANSVERSE EXPANSION JOINTS

Note: For Dowel Bars either Grade 60 in A.S.T.M. designation: A 615 or A 306 will be acceptable.

CURB DOWEL

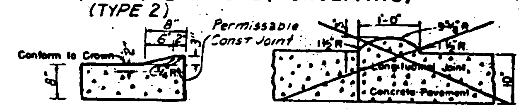
No. 3 Bars on 2'-6" ctrs. shall be of intermediate grade stl.



SECTION

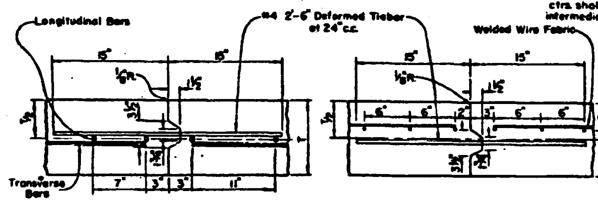
ELEVATION

TYPICAL 6" CURB (MONOLITHIC)
(TYPE 2)



LAYDOWN CURB
(TYPE 5)

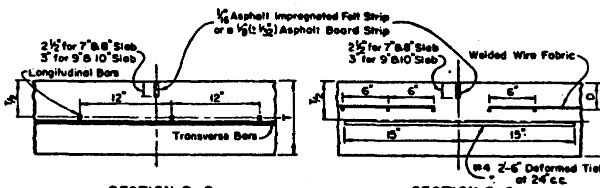
~~CONCRETE CURB (TYPE 1)~~



SECTION B-B
BAR REINFORCEMENT

SECTION B₁-B₁
WELDED WIRE FABRIC

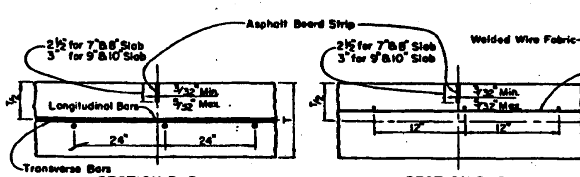
LONGITUDINAL CONSTRUCTION JOINTS



SECTION C-C
BAR REINFORCEMENT

SECTION C₁-C₁
WELDED WIRE FABRIC

LONGITUDINAL WEAKENED PLANE JOINTS



SECTION D-D
BAR REINFORCEMENT

SECTION D₁-D₁
WELDED WIRE FABRIC.

TRANSVERSE WEAKENED PLANE JOINTS

Note: Asphalt Board Strip for Sections D-D & D₁-D₁ held in an approved continuous metal shield shall be installed, by an approved device operating behind but not attached to the longitudinal float.

GENERAL NOTES

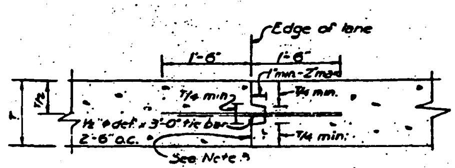
1. CONSTRUCTION JOINTS MAY BE FORMED WITH METAL OR WOOD FORMS EQUAL IN DEPTH TO THE NOMINAL DEPTH OF THE PAVEMENT OR BY OTHER MEANS WHICH HAVE BEEN APPROVED BY THE ENGINEER PRIOR TO THEIR USE.
2. LONGITUDINAL JOINTS ARE SHOWN OFFSET FOUR INCHES FROM THE THEORETICAL CENTER LINE AND MAY BE OFFSET TO EITHER SIDE IF THE WIDTH OF THE WIRE FABRIC IS PROPERLY ADJUSTED.
3. ONE OF THE LONGITUDINAL JOINTS OF PAVEMENT SLABS WIDER THAN TWO LANES MAY BE A CONSTRUCTION JOINT. PAVEMENT SLABS WIDER THAN 15 FEET SHALL HAVE A LONGITUDINAL WEAKENED PLANE JOINT UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
4. JOINTS IN MONOLITHIC CURBS SHALL COINCIDE WITH TRANSVERSE WEAKENED PLANE JOINTS IN THE PAVEMENT AND SHALL BE FORMED BY THE USE OF A 1/4 INCH TEMPLATE PLACED FULL DEPTH OF THE CURB AND INTO THE JOINT SEAL SPACE. THE TEMPLATE SHALL BE LOOSENED AS SOON AS THE CONCRETE WILL RETAIN ITS SHAPE AND THE EDGES SHALL BE EDGED WITH AN APPROVED EDGING TOOL.
5. THE JOINT SEAL SPACE AT TRANSVERSE EXPANSION JOINTS SHALL BE FORMED BY A STRAIGHT FORM PLACED BEHIND THE LONGITUDINAL FLOAT, THE FORM SHALL BE LOOSENED AS SOON AS THE CONCRETE WILL RETAIN ITS SHAPE AND THE EDGES SHALL BE EDGED WITH AN APPROVED EDGING TOOL. LONGITUDINAL CONSTRUCTION JOINTS SHALL HAVE BOTH EDGES TOOLED TO A 1/8" RADIUS AT THE PAVEMENT SURFACE.
6. WHEN SLIP FORM PAVING IS USED, THE FOLLOWING SHALL ALSO APPLY A) THE JOINT SEAL SPACE FOR TRANSVERSE JOINTS SHALL BE FORMED AND PLACED AS APPROVED BY THE ENGINEER, B) SEALING AND EDGING OF LONGITUDINAL CONSTRUCTION JOINTS WILL NOT BE REQUIRED, C) EDGING OF LONGITUDINAL PAVEMENT EDGES WILL NOT BE REQUIRED.
7. THE JOINT PLATE SHALL BE 20 GAGE ASPHALT COATED GALVANIZED STEEL WITH A USUAL MINIMUM LENGTH OF 6 FEET. JOINT PLATES MAY BE BUTTED AT THE LONGITUDINAL CONSTRUCTION JOINT OTHERWISE THEY SHALL BE LAPPED 3 INCHES. JOINT PLATE SHALL EXTEND TO WITHIN 1/2 INCH OF THE OUTSIDE FORM LINE.
8. ON THOSE SECTIONS WHERE THE CONCRETE PAVEMENT IS OF VARIABLE WIDTH AND THE LONGITUDINAL PLANE OF WEAKNESS CANNOT BE FORMED AS SHOWN, THE CONTRACTOR WILL BE REQUIRED TO FURNISH AND INSTALL A METAL PARTING STRIP OF ACCEPTABLE DESIGN.
9. TRANSVERSE EDGES OF SHEETS OF WELDED WIRE FABRIC SHALL BE LAPPED 12 INCHES EXCEPT AT TRANSVERSE JOINTS. LONGITUDINAL EDGES SHALL BE LAPPED 6 INCHES EXCEPT AT LONGITUDINAL JOINTS.
10. DOWEL BARS SHALL BE TIGHTLY ENCASED IN STAINLESS STEEL OR MONEL METAL. THE CASING SHALL CONFORM TO THE REQUIREMENTS OF ONE OF THE GRADES OF ASTM A167-70 OR A176-71 & SHALL BE NOT LESS THAN 0.010 INCH THICK. THE CASING SHALL BE AT LEAST 8 INCHES LONG AND SHALL COVER THE MIDDLE 8 INCHES OF THE DOWEL.
11. DOWELS SHALL BE SECURED PARALLEL TO THE PAVEMENT SURFACE AND PERPENDICULAR TO THE JOINT WITH THE AID OF APPROVED WELDED WIRE BASKET ARRANGEMENTS. WELDED WIRE BASKET ARRANGEMENTS SHALL NOT CROSS THE EXPANSION JOINT. DOWELS SHALL BE UNIFORMLY COATED WITH A THIN COAT OF OIL ASPHALT.
12. TO PREVENT DISPLACEMENT OF WIRE FABRIC BY CONCRETE PLACEMENT, THE FABRIC PANELS SHALL BE TIED TOGETHER AND/OR THE INITIAL FABRIC PANELS OF EACH SLAB SHALL BE TIED TO THE DOWEL BASKET IF SO DIRECTED BY THE ENGINEER.
13. PAVEMENT EDGES SHALL BE EDGED TO A RADIUS OF 1/8 INCH WITH AN APPROVED EDGING TOOL.
14. DETAILS AS TO PAVEMENT WIDTH, PAVEMENT THICKNESS, AND THE CROWN-SLOPE SHALL BE AS SHOWN ELSEWHERE ON PLANS.
15. LONGITUDINAL AND TRANSVERSE BARS SHALL BE OF INTERMEDIATE OR HARD GRADE STEEL.
16. THE CONTRACTOR SHALL HAVE THE OPTION OF USING WELDED WIRE FABRIC OR BAR REINFORCEMENT.
17. FOR LANE WIDTHS NOT SHOWN HEREON OR FOR VARIABLE PANEL LENGTHS AND WIDTHS, REINFORCING STEEL AND DOWEL SPACING SHALL BE AS DIRECTED BY THE ENGINEER.
18. THE LONGITUDINAL WEAKENED PLANE JOINT SHALL BE FORMED BY AN ASPHALT BOARD STRIP HELD IN AN APPROVED CONTINUOUS METAL SHIELD OR AN ASPHALT IMPREGNATED FELT STRIP PLACED CONTINUOUSLY BEHIND BUT NOT ATTACHED TO THE LONGITUDINAL FLOAT BY A MACHINE OF THE FLEX PLANE TYPE.
19. BAR MAT CHAIRS SHALL BE AS APPROVED BY THE ENGINEER. CHAIR SPACING SHALL NOT EXCEED 30"c-c (TRANSVERSE) AND 48"c-c (LONGITUDINAL). GALVANIZING OF CHAIRS WILL NOT BE REQUIRED.
20. BOARDS FOR EXPANSION JOINT FILLER SHALL BE OBTAINED FROM REDWOOD TIMBER.
21. LAYDOWN CURB AS DIRECTED BY THE ENGINEER SHALL BE PAID FOR UNDER THE ITEM OF MONOLITHIC CURB (6 INCHES).
22. JOINT SEALING MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF CLASS 2.
23. WITH THE WRITTEN APPROVAL OF THE ENGINEER, A JOINT PLATE OF A DIFFERENT MATERIAL AND DESIGN MAY BE USED IN LIEU OF THE JOINT PLATE SHOWN HEREIN.

CONCRETE PAVEMENT DETAILS 143

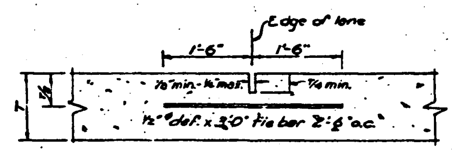
SHEET 1 OF 8 SHEETS
Revised: 3-14-75

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.			SHEET NO.
6	TEXAS	I 25-1(146) 010			143
STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
12	GALVESTON	500	4	55	IH45

LONGITUDINAL JOINTS

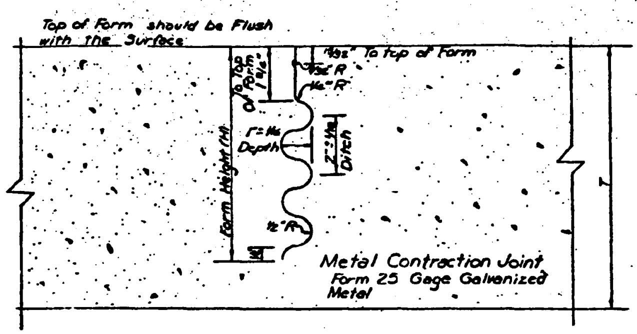


TYPE 1- CONSTRUCTION
(Tongue and Groove with Tie bar)



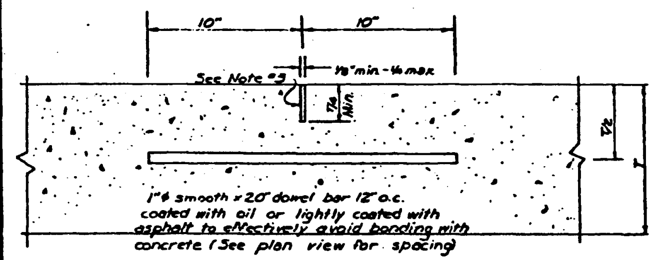
TYPE 2 - GROOVED
(Formed with Tie Bars)

TRANSVERSE CONTRACTION JOINTS

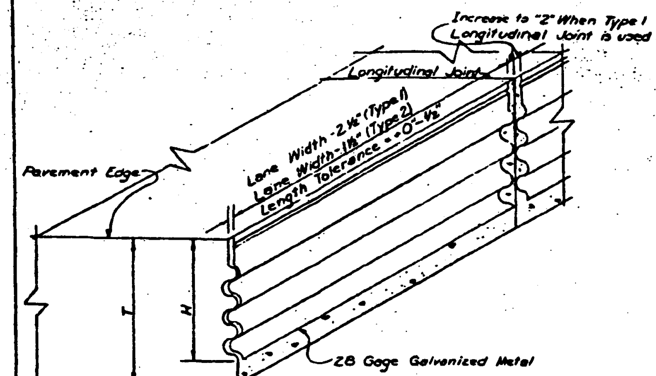


TYPE A (CORRUGATED METAL)

Note: Permissible Fabrication Tolerance: The semicircular segments shall be connected at a common point of tangency on the vertical axis of the joint or by a segment not exceeding one fourth of an inch (1/4") in length at right angles to and symmetrical with the vertical axis of the joint.



TYPE B (GROOVED)
(Formed with Coated Dowel)



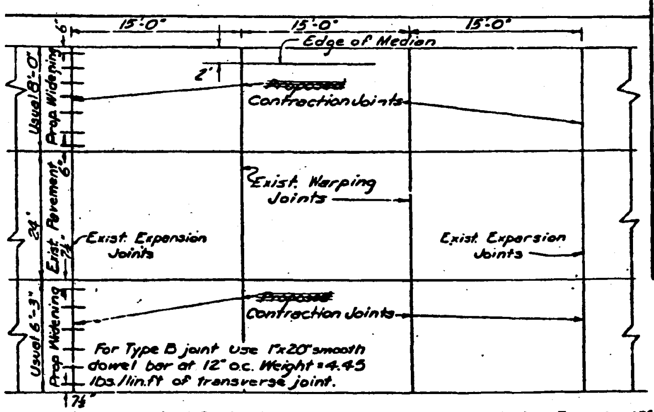
OBLIQUE SECTION SHOWING METAL CONTRACTION JOINT FORM IN PLACE

Table of Form (H)

Slab Thickness (T)(in)	6	7	8	9	10	11	12
Form Height (H)(in)	5¼	5¼*	5¾	6¼	7¼	8¼	9¼

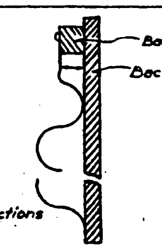
The values shown above are applicable when form is installed by machine. When form is staked out in advance of concrete placement, these values are to be considered as minimum heights.

* Can not be placed by machine.



Provide Longitudinal Joint at Ramps Where Width of Widening Exceeds 15'

PLAN VIEW OF LONGITUDINAL AND TRANSVERSE CONTRACTION JOINTS



SECTION SHOWING BACKING PLATE AND SHIM TO BE PROVIDED IF METAL CONTRACTION JOINT FORM IS INSTALLED BY VIBRATING MACHINE

GENERAL NOTES:

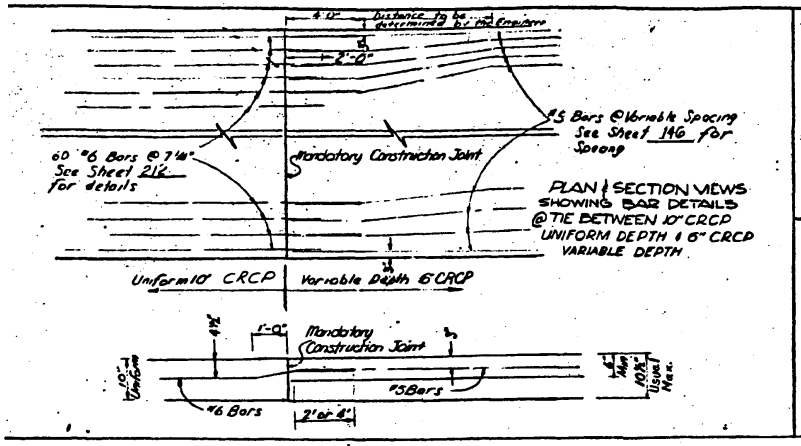
1. Crown, pavement width and pavement thickness shall be as shown on typical sections elsewhere in plans. Where more than two lanes are shown on the typical sections the Ty. 1 longitudinal joint shall be used as a construction joint.
2. The use of Ty. A & B transverse contraction joints is optional. Other means of load transfer may be used when approved by the Engineer.
3. The weakened plane in types 1, 2, A & B shall be true to line, vertical and of the depth shown. For types 2 & B the weakened plane may be formed by - (A) an asphalt board strip held in a continuous metal shield and placed continuously in a groove cut in the concrete by an approved mechanical device operating behind the longitudinal float, or (B) an asphalt impregnated felt strip, or (C) any alternate method which, prior to its use, has been approved by the Engineer. The minimum thickness of the weakened plane as shown in Types 2 & B, does not apply to Construction Joint Methods (B) & (C) above.
4. Ty. 1 Longitudinal Joint may be formed by a metal form, wood form or means, which prior to its use, has been approved by the Engineer.
5. The Contractor will be required to vibrate the metal contraction joint Form or concrete adjacent to the form to the extent necessary that all corrugations are filled with concrete. Over vibration shall be avoided in all cases.
6. Tie bars shall be secured parallel to the pavement surface and perpendicular to the center line by a bar chair or accurately placed in position on the screeded concrete by means of an approved template and forced to the proper position with suitable tool, or other means, approved in advance by the Engineer.
7. Dowel Bars shall be secured parallel to the pavement surface and centerline by a dowel bar chair, or placed by a machine which will accurately position the bars by vibrating them into the full depth concrete slab prior to the pass of the final finishing equipment.
8. When work is stopped due to breakdown or other causes, remove concrete beyond last contraction joint in place and install header.
9. On two lane Pavements where circular or parabolic crown is specified, the Metal Contraction Joint Form shall be placed with ends flush with pavement surface. Cutting crown in top of form is not necessary.
10. Unless otherwise specified by the Engineer, the minimum length of Metal Contraction Joint Form shall be lane width minus 1 1/4". Where shorter lengths are permitted, they shall be held together by any means which holds adjoining sheets in line and which is approved by the Engineer.
11. Expansion Joints shall be provided only at structure ends as shown elsewhere in plans.
12. The Contractor shall hold and save harmless the State, its officers, its agents and its employees, liability of any nature or kind, including costs and expenses for or on account of any patent or unpatented invention, article or appliance manufactured or used in accordance with the details of these plans.
13. Where 6'-3" or 8'-0" widening is proposed contiguous to existing concrete pavement, a butt type joint shall be provided.

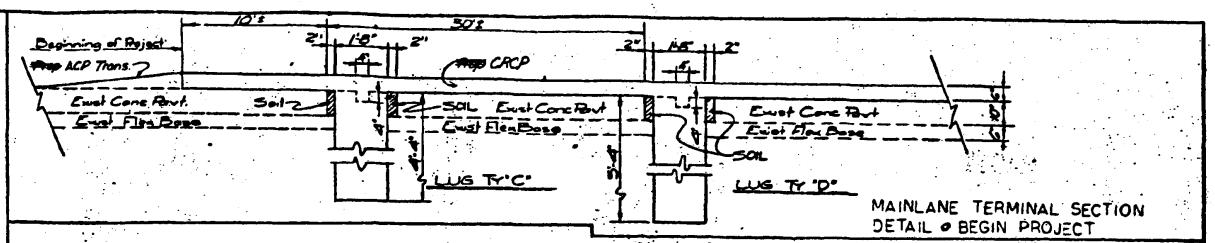
CONCRETE MAIN LANE PAVEMENT WIDENING DETAILS CONTRACTION DESIGN

144

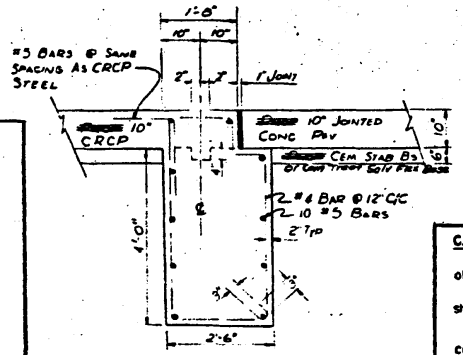
SHEET 2 OF 8 SHEETS

6		F 25-1(26) C/O			144
12	Galveston	500	4		11H45





MAINLANE TERMINAL SECTION DETAIL @ BEGIN PROJECT



LUG TY "G"

C.R.C. Pav't (6" & 10")

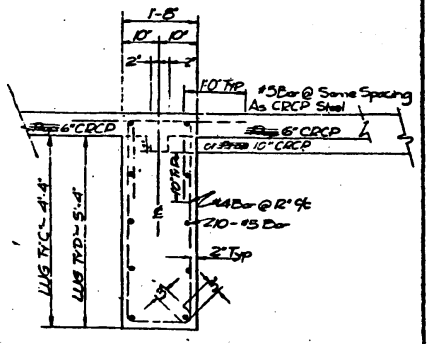
Longitudinal Bars to be positioned 3" from surface of pavement.

See *Terminal* Anchorage Standard for details not shown here.

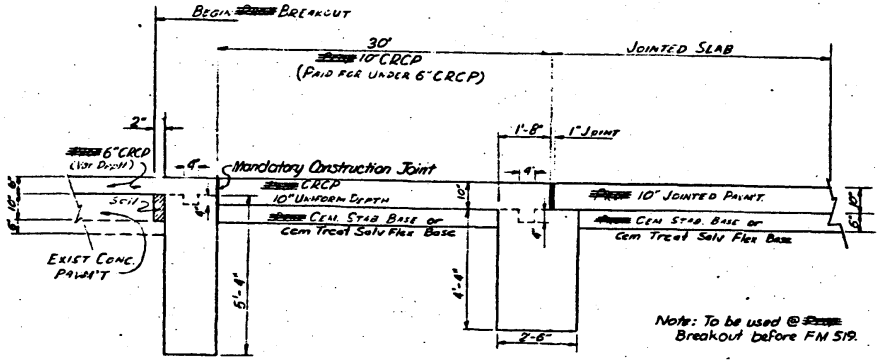
Reinforcing Steel size and placement not shown shall conform to 6" C.R.C.P. pavement shown elsewhere in the plans.

NOTE: Terminal Anchors Shall be Considered Incidental to the Bids Item for 6" CRCP (Variable Depth)

Terminal Section to be Incidental to Various other Bid Items



LUG TY "C" & LUG TY "D"



LUG TY. "D" LUG TY. "G"

Note: To be used @ Breakout before FM 519.

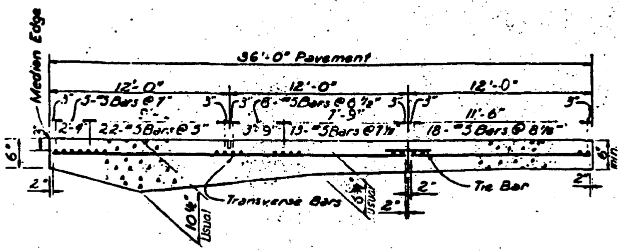
MAINLANE TERMINAL SECTION DETAIL @ TIE BETWEEN 6" & 10" CRCP & 10" JOINTED PAVEMENT

MAINLANE
CONCRETE PAVEMENT CONTINUOUSLY REINFORCED
WITH TERMINAL SECTIONS

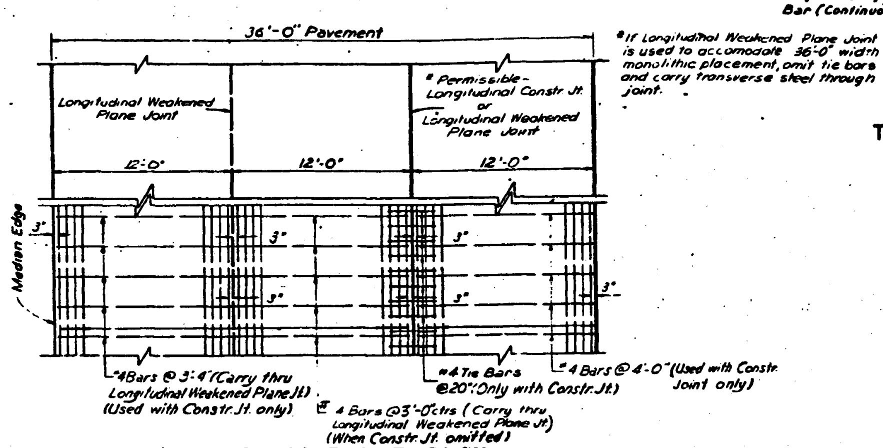
145

SHEET 3 OF 8 SHEETS

DIST. NO.	COUNTY	FEDERAL PROJECT NO.				SHEET NO.
0	TEXAS	I-45-1(146)C10				145
STATE	CONTROL		SECT.	JOB		PROJECT NO.
12	GALVESTON		SCC	4	25	IH 45

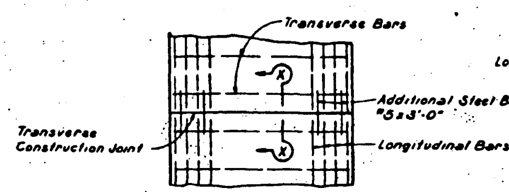


OVERLAY SECTION - VARIABLE DEPTH

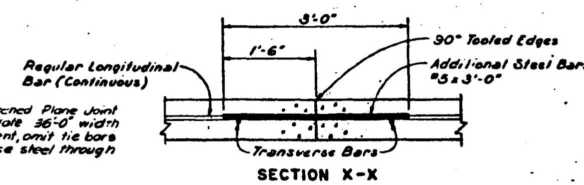


FREEWAY PAVEMENT PLAN

*If Longitudinal Weakened Plane Joint is used to accomodate 36'-0" width monolithic placement, omit tie bars and carry transverse steel through joint.

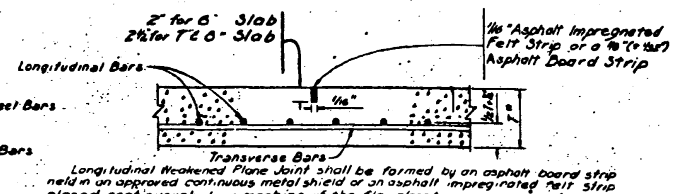


TYPICAL PAVEMENT PLAN
(ONE LANE)



SECTION X-X

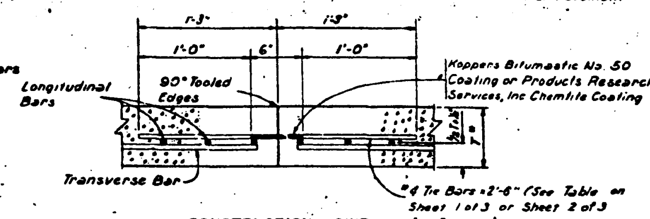
TRANSVERSE CONSTRUCTION JOINT



Longitudinal Weakened Plane Joint shall be formed by an asphalt board strip held in an approved continuous metal shield or an asphalt impregnated felt strip placed continuously by a machine of the flex plane type or as approved by the Engineer

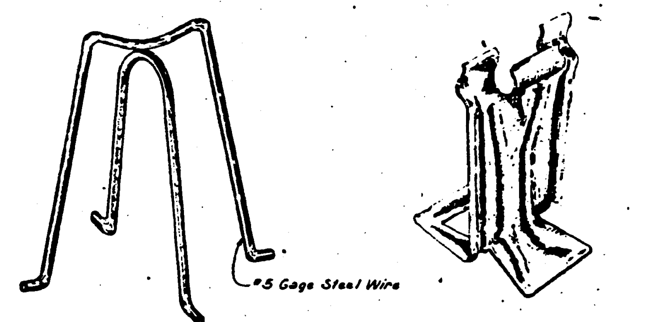
WEAKENED PLANE JOINT

*Thickness of Pavement



CONSTRUCTION JOINT
SHOWING PAVEMENT TIE BAR

LONGITUDINAL JOINTS



Bar Mat Chairs of these types or equal as approved by the Engineer, may be used to support reinforcing steel to dimension shown. Chair spacing shall not exceed 34" c-c (transverse) and 48" (longitudinal) unless otherwise directed by engineer. Galvanizing of chairs will not be required.

SUGGESTED CHAIR DETAILS

[GEN]ERAL NOTES

ALL LONGITUDINAL AND TRANSVERSE REINFORCING BARS, (EXCEPT THOSE WHICH ARE TO BE BENT) SHALL BE "HIGH [YI]ELD" STEEL CONFORMING TO ASTM DESIGNATION 615, GRADE 60. TRANSVERSE TIE BARS AND BARS WHICH REQUIRE [BEN]DING SHALL CONFORM TO ASTM DESIGNATION 615, GRADE 40.

WITHIN ANY TWO FEET OF PAVEMENT LENGTH, MEASURED PARALLEL TO THE CENTERLINE, NOT OVER ONE OF THE [LON]GITUDINAL BARS SHALL BE SPLICED WITHIN EACH TWELVE FOOT WIDE SECTION. BAR SPLICES SHALL BE A MINIMUM [OF] 24 TIMES THE NOMINAL DIAMETER OF THE BAR. LONGITUDINAL STEEL SHALL BE FURNISHED IN CONVENIENT LENGTHS. [L]AP STEEL SHALL NOT BE USED.

LONGITUDINAL CONSTRUCTION JOINTS MAY BE DELETED PROVIDED THAT TRANSVERSE [RE]INFORCING STEEL IS ADJUSTED ACCORDINGLY AS DIRECTED BY THE ENGINEER. IN NO CASE SHALL LONGITUDINAL CON[ST]RUCTION OR FORMED GROOVED JOINTS BE MORE THAN 17 FT APART ON FREEWAY PAVEMENT OR FRONTAGE STREET PAVEMENT MEASURED TRANSVERSELY.

THE NUMBER OF TRANSVERSE CONSTRUCTION JOINTS INSTALLED SHALL BE KEPT TO AN ABSOLUTE MINIMUM AS APPROVED [BY] THE ENGINEER. IF PLACEMENT IS STOPPED AT THE END OF THE DAY OR FOR OTHER REASONS, PLACE BOARD HEADER [AN]D EXTEND EACH OF THE LONGITUDINAL BARS IN CONSECUTIVE INCREMENTS OF 2' BEYOND THE BOARD HEADER. REMOVE [BO]ARD HEADER BEFORE COMMENCING NEW PLACEMENT. UNDER CERTAIN JUSTIFIABLE CONDITIONS, AS DETERMINED BY THE [EN]GINEER, WELDED BAR LAP SPLICES MAY BE USED IN LIEU OF EXTENDING LONGITUDINAL BARS BEYOND THE BOARD HEADER. [TH]E REINFORCING STEEL FURNISHED FOR WELDING SHALL BE NEW BILLET STEEL ONLY. SEE ITEM 440 FOR REQUIREMENTS [FO]R WELDING REINFORCING STEEL.

DETAILS AS TO PAVEMENT WIDTH, THICKNESS, AND CROWN SLOPE SHALL BE AS SHOWN ELSEWHERE IN THE PLANS OR DIRECTED BY THE ENGINEER.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO TAKE ALL NECESSARY PRECAUTIONS TO INSURE THAT THE FINAL POSITION OF THE STEEL IS WITHIN TOLERANCE OF ½" HORIZONTAL & VERTICALLY ½" UP & 1" DOWN FROM THE THEORETICAL POSITIONS SHOWN WITH A MIN 2" FROM BOTTOM OF STEEL TO BOTTOM OF SLAB.

EXPANSION JOINT SHALL BE REQUIRED AT MAINLANE RAMP GORE AT JUNCTION WITH JOINTED CONCRETE PAVEMENT.

"LEAVE-OUTS" IN CONTINUOUSLY REINFORCED CONCRETE PAVEMENT SHOULD BE AVOIDED BY PLACING PAVEMENT IN THESE AREAS FIRST, BUT, IF THEY ARE NECESSARY, THEY SHALL BE KEPT TO A MINIMUM.

WHEN A "LEAVE-OUT" IS NECESSARY, 50 PERCENT MORE LONGITUDINAL DEFORMED BARS OF THE SAME NOMINAL SIZE AS THE REGULAR REINFORCEMENT SHALL BE REQUIRED. THE ADDITIONAL MEMBERS SHALL BE BONDED AT LEAST 3 FEET IN THE PAVEMENT ENDS ADJACENT TO THE "LEAVE-OUTS" AND ALL LONGITUDINAL MEMBERS SHALL EXTEND INTO THE "LEAVE-OUT" A MINIMUM DISTANCE OF 7 FEET.

BEFORE PAVING A SECTION WHERE A "LEAVE-OUT" WAS NECESSARY, SUCH AS A MAJOR STREET CROSSING, AN ATTEMPT SHALL BE MADE TO STABILIZE THE TEMPERATURE OF THE FREE ENDS OF THE EXISTING PAVEMENTS. TEMPERATURE STABILIZATION MAY BE ACCOMPLISHED BY PLACING WET COTTON MATS FOR A DISTANCE OF 200' ON EACH SIDE OF THE "LEAVE-OUT" 24 HOURS PRIOR TO CONCRETE PLACEMENT AND CONTINUED UNTIL 60 HOURS AFTER PLACEMENT.

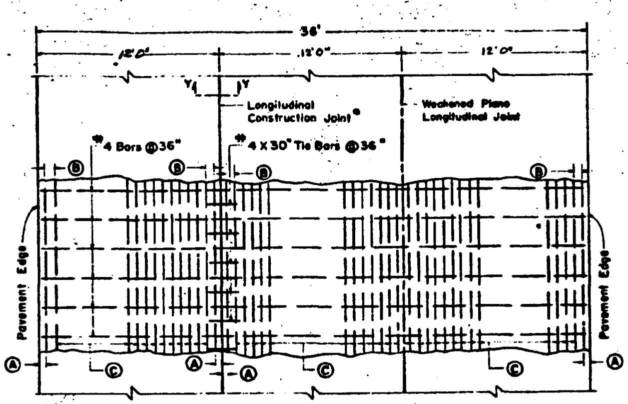
IF THE "LEAVE-OUT" IS LESS THAN 6' LONG, THE LAPS OF THE LONGITUDINAL STEEL SHALL BE WELDED. THE FACES OF THE FREE ENDS SHALL BE CLEANED SO THAT ADEQUATE BOND WILL DEVELOP BETWEEN NEW AND OLD CONCRETE.

THE REQUIRED PLAN THICKNESS OF MAINLANE PAVEMENT FOR DETERMINING THE PENALTY FOR DEFICIENT PAVEMENT THICKNESS SHALL BE CONSTRUED TO MEAN 6" FOR THE FULL WIDTH OF THE SLAB, IRRESPECTIVE OF THE PROPOSED VARIABLE DEPTH OF PAVEMENT.

TEXAS HIGHWAY DEPARTMENT
HOUSTON URBAN PROJECT

CONCRETE PAVEMENT DETAILS
CONTINUOUSLY REINFORCED
146
STEEL BARS
MAINLANES 6" CRCP (VAR. DEPTH)
SHEET 4 OF 8 SHEETS

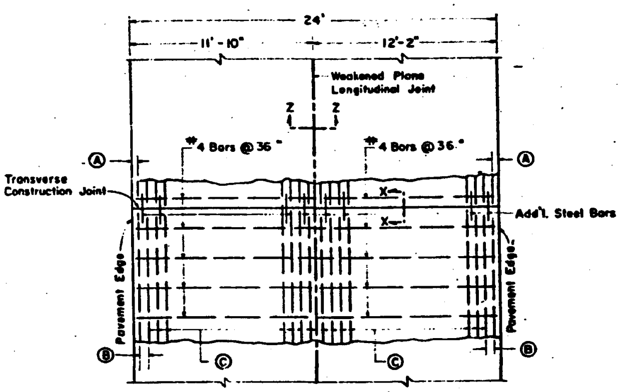
SEPT. 1967
JULY 1968
145-1(146)010
IH45
12 GALVESTON 500 4 146



THREE LANE PAVEMENT PLAN

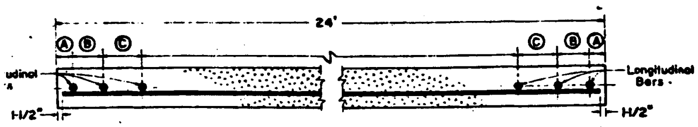
(12ft. and 24ft. Placement)

* WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY PLACE THE PAVEMENT THE FULL ROADWAY WIDTH AS ONE PLACEMENT. IF SO PLACED, THE LONGITUDINAL CONSTRUCTION JOINT SHOWN SHALL BE REPLACED BY THE GROOVED LONGITUDINAL JOINT.



TWO LANE PAVEMENT PLAN

(24ft. Placement)*



TYPICAL SECTION

(24ft. Placement)

*LANE WIDTHS ARE FOR ILLUSTRATIVE PURPOSES ONLY AND SHOULD NOT BE USED IF IN CONFLICT WITH TYPICAL CROSS SECTIONS SHOWN ELSEWHERE IN THE PLANS

Per Cent Long. Steel	Pavement Thickness in.	Bar Size	24 ft Placement Width: Spacing c-c (A) in	(B) in	(C) in	No. of Bars	Steel #/sy (1)	12 ft Placement Width: Spacing c-c (A) in	(B) in	(C) in	No. of Bars	Steel #/sy (1)	Add'l Steel @ Trans. Const. Jt.: Size	Avg. spa. in.	(2) No. per Lane	Weight #/ft
0.5	9	No. 5	3	4.5	6.5	45	19.60	3	4	6.5	23	17.99	5/8"φ x 36"	13	10	2.61
	8	No. 5	3	6	7.5	30	17.25	3	5.25	7.5	20	17.64	5/8"φ x 36"	14	10	2.61
	7	No. 4	3	5	6.5	35	15.69	4	8.5	8.5	17	15.30	5/8"φ x 36	14	10	2.61
	6	No. 4	3	4.[illegible]	7	42	12.52	3	6	7	21	12.52	1/2"φ x 36"	14	10	1.67
0.6	9	No. [illegible]	3	5	8	37	22.8[illegible]	3	5	8	17	22.40	3/4"φ x 36	16.5	8	[illegible]
	8	No. [illegible]	3	6.25	6.25	46	19.99	3	3.5	6.25	24	20.77	5/8"φ x 36	17	10	2.61
	7	No. 5	3	7.25	7.25	40	17.65	3	7.25	7.25	20	17.65	5/8"φ x 36"	16	10	2.61
	6	No. 5	3	6	6.5	35	15.[illegible]	3	5.25	8.5	18	16.06	5/8"φ x 36	17	9	2.09
	10	No. 6	3	7.25	7.25	40	24.91	3	7.25	7.25	20	24.49	3/4"φ x 36"	14.5	10	3.76

GENERAL NOTES

All longitudinal and transverse reinforcing bars, (except those which are to be bent) shall be "High Yield" steel conforming to ASTM Designation 615, grade 60. Transverse tie bars and bars which require bending shall conform to ASTM Designation 615, grade 40.

Within any two feet of pavement length, measured parallel to the centerline, not over one of the longitudinal bars shall be spliced within each twelve foot wide section. Bar splices shall be a minimum of 24 times the nominal diameter of the bar. Longitudinal steel shall be furnished in convenient lengths. Scrap steel shall not be used.

It shall be the responsibility of the Contractor to take all necessary precautions to insure that the final position of the steel is within a vertical and horizontal tolerance of 1/2" from the theoretical position shown.

Longitudinal weakened plane joints and construction joints may be interchanged provided that transverse reinforcing steel is adjusted accordingly as directed by the Engineer. In no case shall longitudinal construction or weakened plane joints be more than 17 ft apart on freeway pavement or frontage street pavement as measured transversely.

The number of transverse construction joints installed shall be kept to an absolute minimum as approved by the Engineer. If placement is stopped at the end of the day or for other reasons, place board header and extend each of the longitudinal bars in consecutive increments of 2' beyond the board header. Remove board header before commencing new placement. Under certain justifiable conditions, as determined by the Engineer, welded bar lap splices may be used in lieu of extending longitudinal bars beyond the board header. The reinforcing steel furnished for welding shall be new billet steel only. See Item 448 for requirements for welding reinforcing steel. Welded lap splices will be required at all points where new pavement meets existing continuously reinf. pavt.

GENERAL NOTES

"LEAVE-OUTS" IN CONTINUOUSLY REINFORCED CONCRETE PAVEMENT SHOULD BE AVOIDED BY PLACING PAVEMENT IN THESE AREAS FIRST, BUT IF THEY ARE NECESSARY, THEY SHALL BE KEPT TO A MINIMUM. WHEN A "LEAVE-OUT" IS NECESSARY, 50 PERCENT MORE LONGITUDINAL DEFORMED BARS OF THE SAME NOMINAL SIZE AS THE REGULAR REINFORCEMENT SHALL BE REQUIRED. THE ADDITIONAL MEMBERS SHALL BE BONDED AT LEAST 3 FEET IN THE PAVEMENT ENDS ADJACENT TO THE "LEAVE-OUTS" AND ALL LONGITUDINAL MEMBERS SHALL EXTEND INTO THE "LEAVE-OUT" A MINIMUM DISTANCE OF 7 FEET.

BEFORE PAVING A SECTION WHERE A "LEAVE-OUT" WAS NECESSARY, SUCH AS A MAJOR STREET CROSSING, AN ATTEMPT SHALL BE MADE TO STABILIZE THE TEMPERATURE OF THE FREE ENDS OF THE EXISTING PAVEMENTS. TEMPERATURE STABILIZATION MAY BE ACCOMPLISHED BY PLACING WET COTTON MATS FOR A DISTANCE OF 200' ON EACH SIDE OF THE "LEAVE-OUT" 24 HOURS PRIOR TO CONCRETE PLACEMENT AND CONTINUED UNTIL 60 HOURS AFTER PLACEMENT.

IF THE "LEAVE-OUT" IS LESS THAN 6' LONG THE LAPS OF THE LONGITUDINAL STEEL SHALL BE WELDED. THE FACES OF THE FREE END SHALL BE CLEANED SO THAT ADEQUATE BOND WILL DEVELOP BETWEEN NEW AND OLD CONCRETE.

NOTE: THE SPACINGS (B) SHOWN IN THE ABOVE PLACEMENT TABLE ARE THE MAXIMUM ALLOWABLE SPACINGS. WHERE THE PROPOSED PLACEMENT WIDTHS VARY FROM THE BASIC DESIGN WIDTH SHOWN, THE SPACING (B) AND THE ADJACENT SPACING (C) SHALL BE ADJUSTED TO ACCOMMODATE A REINFORCEMENT ARRANGEMENT EQUAL TO OR SLIGHTLY HEAVIER THAN THAT SHOWN AS DIRECTED BY THE ENGINEER.

(1) INCLUDES BOTH REGULAR LONGITUDINAL AND TRANSVERSE BARS BASED UPON 1 FOOT PAVEMENT LENGTHS FOR THE WIDTH INDICATED. ALL TRANSVERSE STEEL IS #4 BARS AT 36" CENTERS.

(2) THIS SHALL BE THE MINIMUM NUMBER OF ADDITIONAL STEEL BARS TO BE PLACED PER LANE. THE SPACING OF THE ADDITIONAL STEEL BARS SHALL BE VARIED AS DIRECTED IN ORDER TO PROVIDE A MINIMUM CLEARANCE OF 2 1/2" FROM EACH REGULAR LONGITUDINAL REINFORCING BAR.

REVISED DEC. 1, 1969

1. SPACING OF TRANSVERSE STEEL CHANGED FROM 30" TO 36".
2. STEEL SCHEDULE REVISED SHOWING POUNDS PER SQUARE YARD OF STEEL FOR 24' AND 12' PLACEMENT WIDTHS TO CONFORM TO REVISED TRANSVERSE STEEL SPACING.

CONCRETE PAVEMENT DETAILS CONTINUOUSLY REINFORCED

STEEL BARS

MAINLANES 10" CRCP

SHEET 5 OF 8 SHEETS

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	DRAWING	DATE		FEDERAL PROJECT NO.	SHEET
DN.	ORIGINAL	FEB. 1969		I 45-1(46) 010	147
CK. DN.	REVISED	DEC. 1, 1969			
DN.					
CK. DN.					
TR.					
CK. TR.			12	GALVESTON	500 4 55 IH45