FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.		SHEET NO.
6	TEXAS			7
STATE DIST. NO.	COUNTY		STATE CONTROL NO.	HIGHWAY NO.
12	Galveston		500-4	IH45

311

7476/16

STATE OF TEXAS

STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

PLANS OF FINAL STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT.
I 45-1(50)011

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

NET LENGTH OF PROJECT = 9,783.24 FT. = 1.853 MI.

CONTROL 500-4-56		URBAN PROJECT
Roadway = 9,748.79	FT. = 1.760	MI.
Bridge 34.45	FT. = 0.064	MI.

INTERSTATE HIGHWAY 45

GALVESTON COUNTY

FROM 0.4 MILE NORTHWEST OF FM 1765, SOUTH TO 0.6 MILE NORTHWEST OF F.M. 519
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 SUFF TREAT, FLEX BASE, LIME, PTLND CEM, SIGNING, DELINEATION, PAV MARKING, & SAFETY LIGHTING.

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
	TITLE SHEET
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	TYPICAL CROSS SECTIONS
	ESTIMATE AND QUANTITY
	SPECIFICATION DATA
	PLAN PROFILE
	CHANNEL LAYOUT
	RAMP DETAILS
	INTERSECTION DETAILS
	DRAINAGE AREA MAPS & HYDRAULIC COMPUTATIONS
	STORM SEWER LAYOUTS
	BRIDGE LAYOUTS & RETAINING WALL LAYOUTS
	CONCRETE PAVEMENT DETAILS
	BRIDGE APPROACH DETAILS
	GUARD FENCE DETAILS
	CONCRETE MEDIAN BARRIER DETAILS
	STRUCTURE DETAILS & STANDARDS
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	STRUCTURE DIMENSION CHARTS
	EXCAVATION & BACKFILL DIAGRAMS
69-170	RIPRAP DETAILS
	CURB DETAILS
	SPECIAL CULVERT & BRIDGE DETAILS
	INLET & JUNCTION BOX DETAILS
	SPECIAL DETAILS
	STANDARDS
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89	STORM SEWER MANHOLES
90	GRATE INLETS
	TEMPORARY EROSION CONTROL DETAILS
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19	MC 8-2 (MOD)
199	MCW-P-45
	RAIL (TYPE 12)(MOD)
	BRIDGE DETAILS
	SHEET PILING DETAILS
20	BRIDGE ESTIMATE QUANTITIES
206	STAGING PROCEDURE
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	STANDARDS
21	BPA (MOD)
	GPA, JPB(MOD), GPC(MOD), GPD(MOD), & GFNS
21	PCB-MESH
	RAIL (TYPE T4)(MOD)
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222	OPA-4
	CP (MOD)
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	6F(U)-16(MOD)
	6F,7D(B-16(MOD)
	6F(SU)-70(MOD)
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245A	CST-[illegible]
246	RR-9(MOD)
247-249	RPM (1) SPL (RPM (2) SPL
249	REC (CH169A)(MOD)
250	RCD-69 (MOD)
251	M-75
252-257	BC (1-6)76
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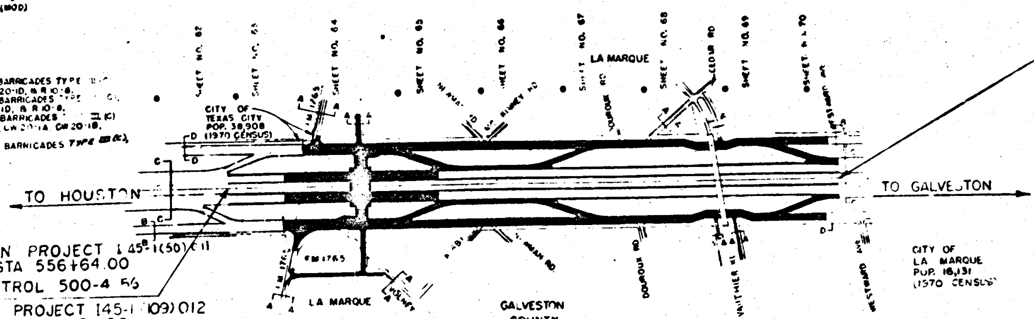
260-264	SMALL SIGN TABULATION
265	PLAN LAYOUTS
279-280	OVERHEAD SIGN SUPPORT DETAILS
281-283	GUIDE SIGN DETAILS
284-285	MISC. ELECTRICAL DETAILS
	STANDARDS
289	LC (1)MOD
290-298	[illegible]
300-311	SMD [illegible]
312-313	DBM(1), & DBM(2)
314-315	OSB-A 66(1) & OSB-A 66(2)
316	OSBT-A (MOD)
317-319	SL(1), SL(2), SL(FL-1)
320	SL(FL-2)
321	SWW (1)

SHEET NOS. OMITTED 103, 117, 118, 164, 167, 193, 196

322 FIELD CHANGE NO. 11

NOTES: MARKED A-A, PLACE BARRICADES TYPE [illegible] SIGNS CW 13-4, G20-2, CW 20-1D, & R10-6. NOTES MARKED B-B, PLACE BARRICADES [illegible]. SIGNS G20-1, G20-6, CW 20-1D, & R10-6. NOTES MARKED C-C, PLACE BARRICADES [illegible] SIGNS G20-1, G20-6, G20-2, CW 20-1A, CW 20-1B, 20-1C, & R10-1. NOTES MARKED D-D, PLACE BARRICADES TYPE III (C), SIGN G20-2.



END PROJECT I 45-1(50)011
℄ STA 654+47.24
CONTROL 500-4-56
BEGIN PROJECT [illegible]
℄ STA 654+47.24
CONTROL 500-4-[illegible]

BEGIN PROJECT I 45-1(50)011
℄ STA 556+64.00
CONTROL 500-4-56
END PROJECT I45-1(109)012
℄ STA 556+64.00
CONTROL 500-4-43

GALVESTON COUNTY

ALL MODIFIED CURB OPENINGS ON THIS PROJECT ARE IN ACCORDANCE WITH ESTABLISHED HIGHWAY COMMISSION POLICY OR HIGHWAY COMMISSION 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, FEDERAL-AID CONSTRUCTION CONTRACTS (FORM PR-1273, SEPT 1975).

EQUATION: NONE

EXCEPTION: NONE

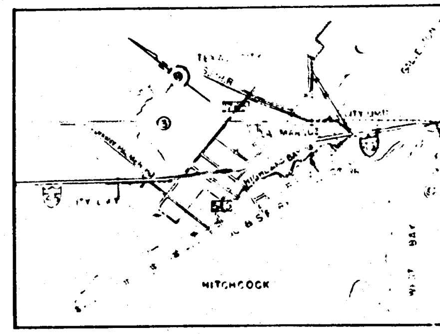
RAILROAD CROSSING NONE

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

DATE ACCEPTED



500-4-56
Comp l 1978 (4L)

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

4 March 75 APPROVED

CHIEF ENGINEER HIGHWAY DESIGN

APPROVED

3/31 75

APPROVED

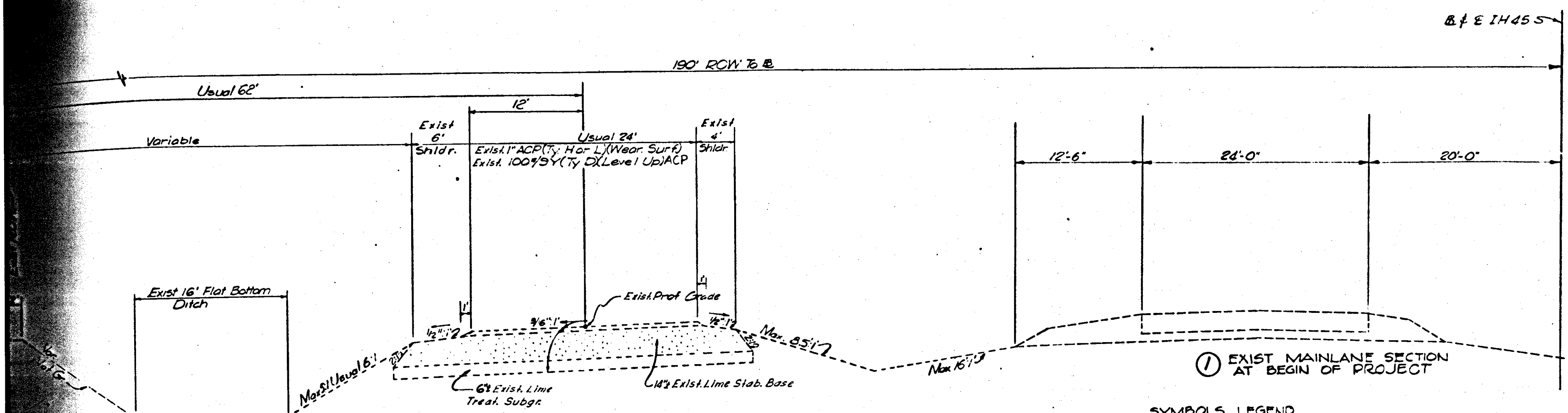
MAYOR OF LA MARQUE DATE

APPROVED

MAYOR OF TEXAS CITY DATE

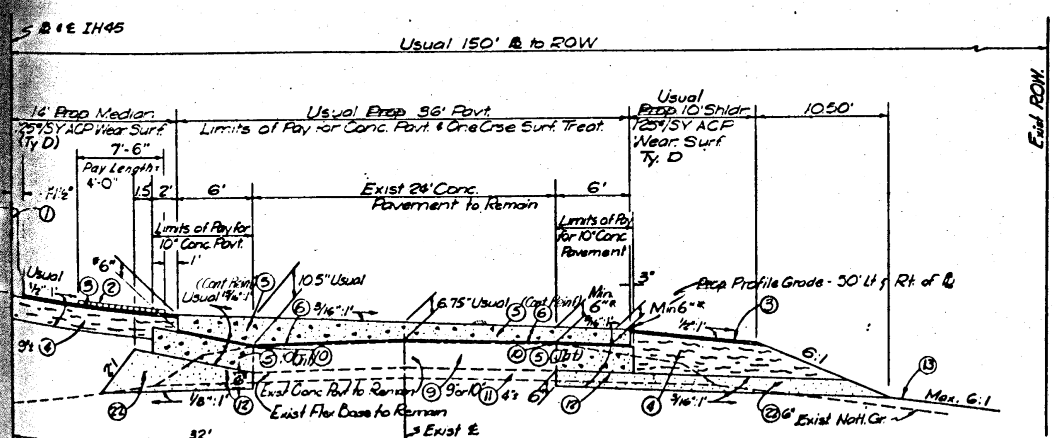
I CERTIFY THAT THE GRADE SEPARATION STRUCTURES SHOWN HEREIN ARE SO LOCATED TO ACCOMMODATE GALVESTON COUNTY'S PLANNED OR PROJECTED LATERAL ROAD SYSTEM.

Ray Holbrook Apr. 9, 1975
COUNTY JUDGE DATE



① EXIST MAINLANE SECTION AT BEGIN OF PROJECT

② EXIST RURAL FRONT ROAD TYPICAL SECTION AT BEGIN OF PROJECT



③ TYPICAL MAINLANE WIDENING SECTION FOR 36 FT. PROP. PVT. AT BEGIN PROJECT AND FROM FM 1765 TO END OF PROJECT

SYMBOLS LEGEND

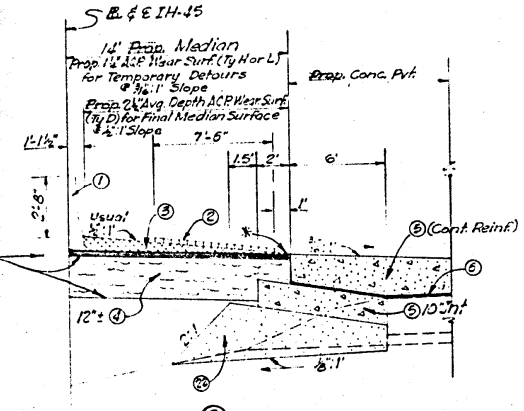
① ~~Prop Headlight Barrier Fence and~~ Concrete Median Barrier
② Prop Jiggle Bars
③ Prop ACP Wearing Surface (Ty D)
④ Prop Asphalt Stabilized Base
⑤ Prop Concrete Pavement
⑥ Prop One Crse. Surface Treat.
⑦ Prop 3/4" Asphalt Stabilized Base
⑧ Prop Cement Stabilized Base
⑨ Exist Concrete Pavement
⑩ Note: Tie Prop Pavt. To Exist. Pavt.
⑪ Exist. Flexible Base To be salvaged
⑫ Note: Exist Flexible Base Shoulders To Be Salvaged
⑬ Prop. Broadcast Seeding
⑭ Prop Block Sodding
⑮ Prop Steel Beam Guard Fence
⑯ Prop Retaining Wall
⑰ Prop 2' Gutter Drain (w/ Ret. Wall)
⑱ Prop Riprap (RR9 Modified)
⑲ Prop ACP Wearing Surface (Ty H or L)
⑳ Prop Level-Up (Ty D)
㉑ Prop Lime Treated Subgrade
㉒ Prop Salvaged Flex Base
㉓ Prop Perforated 6" Drain Pipe
㉔ Prop Select Borrow (Ty "C", Cl 3)
㉕ Prop Lime Stabilized Flexible Base (Ty 1, 2, 3, or 4)
* 6" Measured From Top of One Course Surf. Treatment
Prop Traffic Buttons and Pavement Markers (Ty II)

TYPICAL SECTIONS

18

SHEET 1 OF 15 SHEETS

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.				SHEET NO.
6	TEXAS	I-45-1(50) 011				18
STATE DIST. NO.	COUNTY		CONT.	SECT.	JOB	
12	Galveston		500	4	56	11-45



③

TYPICAL MAINLANE WIDENING

SECTION FOR 36 FT. PROP PVT. AT BEGIN PROJECT

(Showing Median Modification)

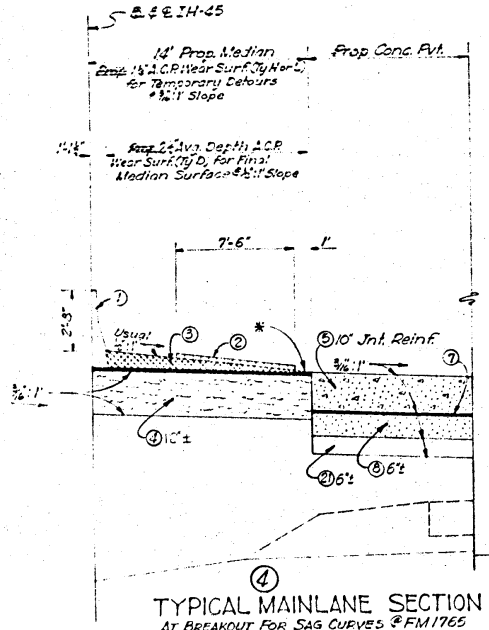
Note:
Modify Median Slope, Asph. Stab. Base Depth, and Asph. Conc. Pvt. of Typical Section No. 3 Median between the following Stations:

Typical Section ③

Left of ℄ = ℄ Sta. 560+00 to ℄ Sta. 564+69

Right of ℄ = ℄ Sta. 560+00 to ℄ Sta. 564+69.30

* Remove portion of detour A.C.P. Wear Surf. (Ty H or L) as required to maintain a minimum depth of 1" for the final median surface A.C.P. Wear Surf. (Ty D). Removal of detour A.C.P. as required, shall be considered incidental to various bid items.



④

TYPICAL MAINLANE SECTION

AT BREAKOUT FOR SAG CURVES @ FM 1765

(Showing Median Modification)

Note:
Modify Median Slope, Asph. Stab. Base depth, and Asph. Conc. Pvt. of Typical Section No. 4 Median between the following Stations:

TYPICAL SECTION ④

Left of ℄ = ℄ Sta. 564+69 to ℄ Sta. 567+16.22

Right of ℄ = ℄ Sta. 564+69.30 to ℄ Sta. 567+33.12

TYPICAL SECTION ⑧

Left of ℄ = ℄ Sta. 567+16.22 to ℄ Sta. 567+96.

Right of ℄ = ℄ Sta. 567+33.12 to ℄ Sta. 567+96.

⑧

TYPICAL MAINLANE HIGHFILL SECTION

AT FM 1765

(Showing Median Modification)

SYMBOL LEGEND

① ~~Prop. Headlight Barrier Fence Type~~ Conc. Median Barrier
② Prop. Jiggle Bars
③ Prop. A.C.P. Wearing Surface (Ty D)
④ Prop. Asphalt Stabilized Base
⑤ Prop. Concrete Pavement
⑥ Prop. One Course Surface Treatment
⑦ Prop. 9" ± Asphalt Stabilized Base
⑧ Prop. Cement Stabilized Base
⑨ Prop. Lime Treated Subgrade
⑩ Prop. Salvaged Flex. Base

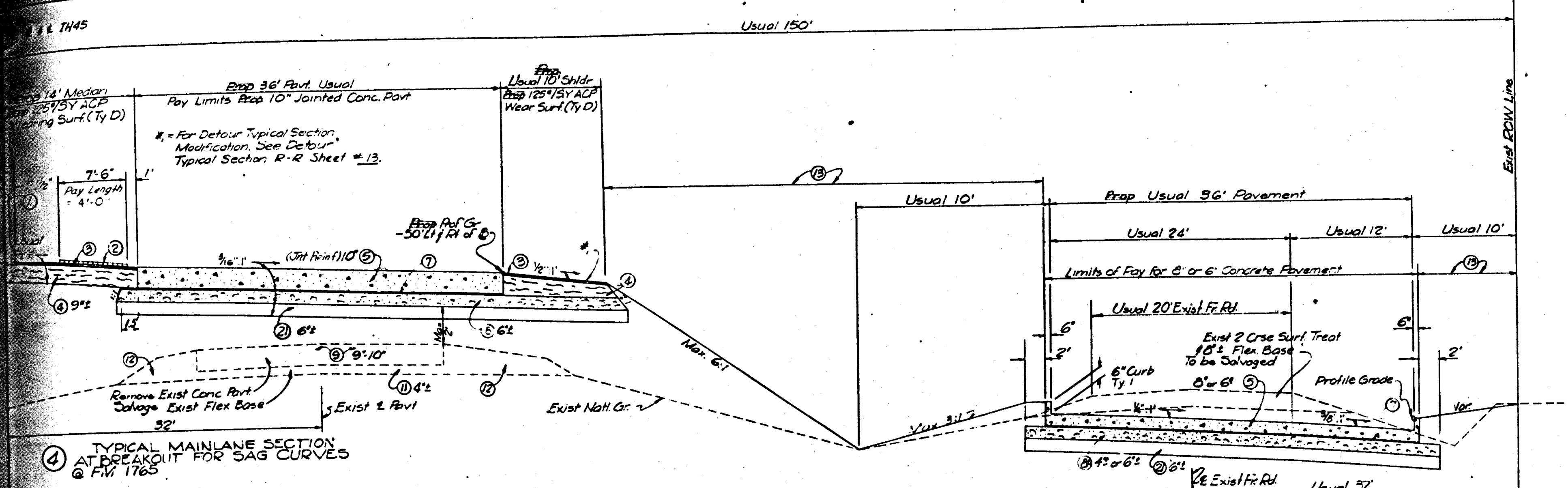
Sketch No. 15
To Accompany Field Change No. 3
IH45 Project I45-1(650)011
Control 500-4-56
Galveston County

TYPICAL SECTIONS

FIELD CHANGE No. 3

18A

	I45-1(650)011		18A
12	Galveston	500 4 56	IH45

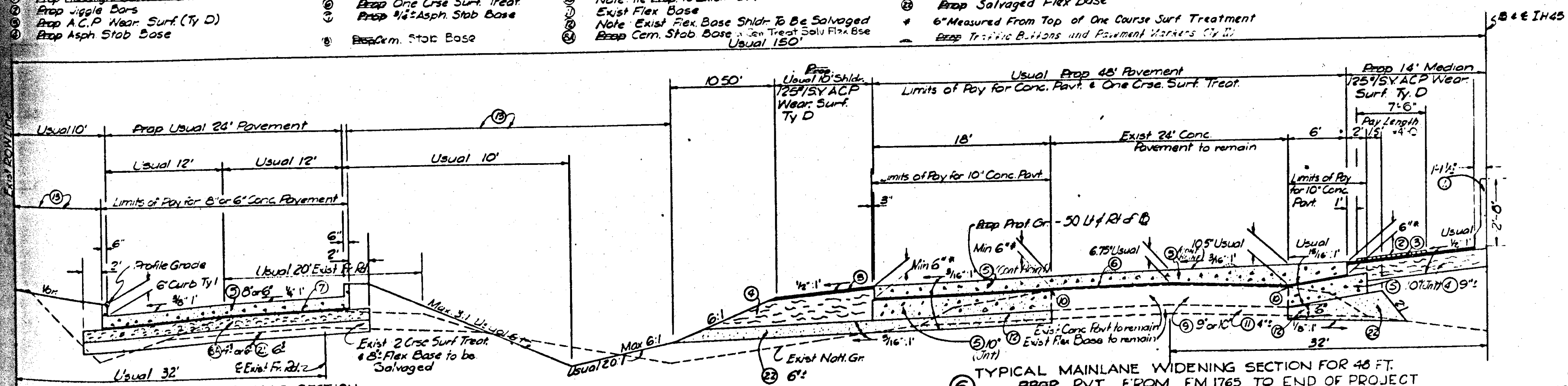


④ TYPICAL MAINLANE SECTION AT BREAKOUT FOR SAG CURVES @ F.M. 1765

⑤ TYPICAL 36' FRONTAGE ROAD SECTION WITH CURB AND GUTTER AT FM 1765

SYMBOLS LEGEND

- ① Prop ~~Headlight Barrier Fence~~ Conc. Med Barrier
- ② Prop Jiggle Bars
- ③ Prop A.C.P. Wear. Surf. (Ty D)
- ④ Prop Asph. Stab Base
- ⑤ Prop Conc Pavt.
- ⑥ Prop One Crse Surf. Treat.
- ⑦ Prop 3/4"± Asph. Stab Base
- ⑧ Prop Cem. Stab Base
- ⑨ Exist Conc. Pavt
- ⑩ Note: Tie Prop. To Exist. Pavt.
- ⑪ Exist Flex Base
- ⑫ Note: Exist Flex. Base Shldr. To Be Salvaged
- ⑬ Prop Cem. Stab Base or Cem Treat Salv Flex Bse
- ⑱ Prop Brdcst. Seeding
- ㉑ Prop Lime Treated Subgrade
- ㉒ Prop Salvaged Flex Base
- \# 6" Measured From Top of One Course Surf. Treatment
- Prop Traffic Buttons and Pavement Markers (Ty II)



⑦ TYPICAL 24' FRONTAGE ROAD SECTION WITH CURB AND GUTTER FROM FM 1765 TO END OF PROJECT

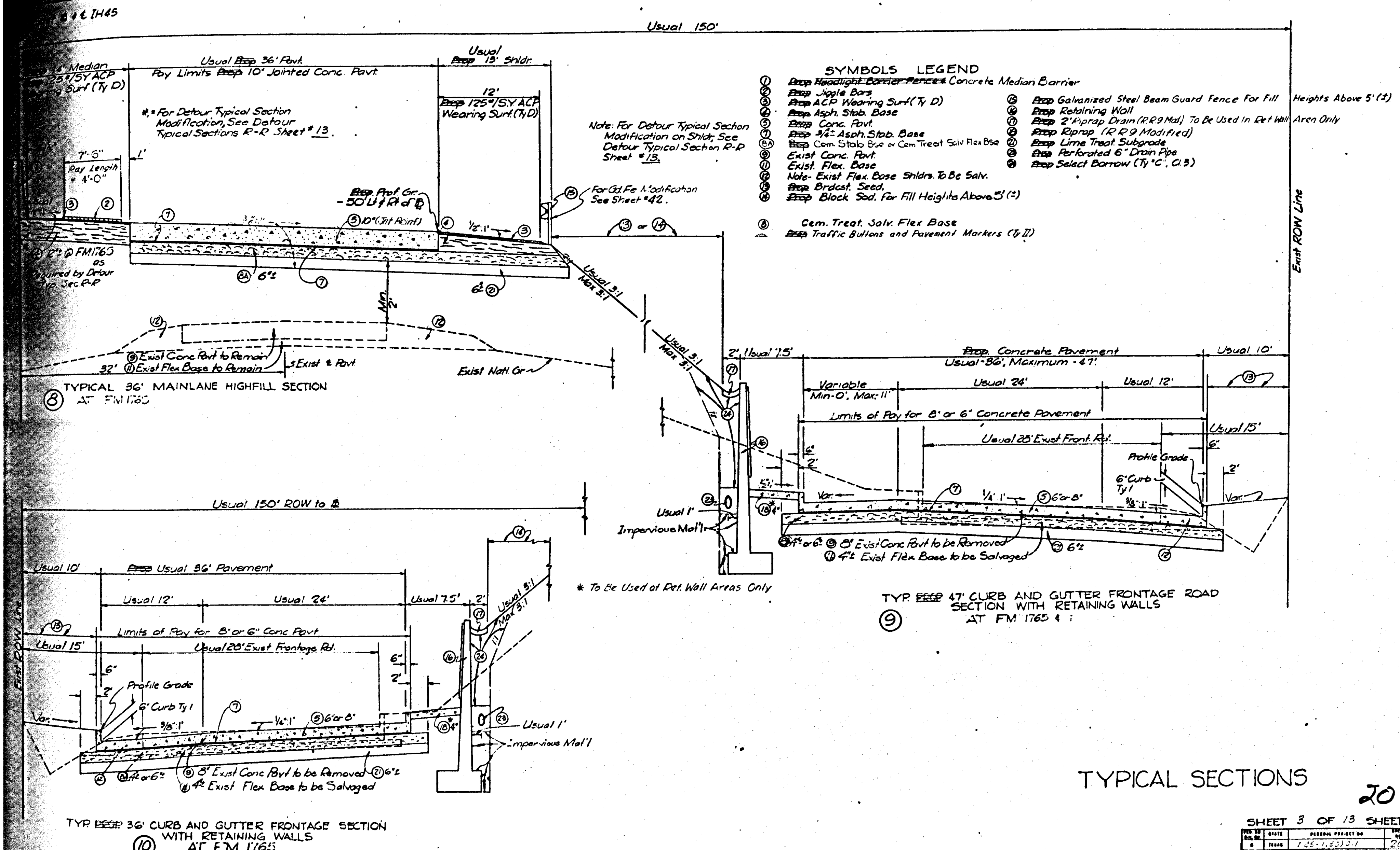
⑥ TYPICAL MAINLANE WIDENING SECTION FOR 48 FT. PROP PVT. FROM FM 1765 TO END OF PROJECT

TYPICAL SECTIONS

19

SHEET 2 OF 13 SHEETS

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.
6	TEXAS	I-45-1(60)611	19
STATE DIST. NO.	COUNTY	CONT. / SECT. / JOB	HIGHWAY NO.
12	GALVESTON	500 / 4 / 56	IH 45



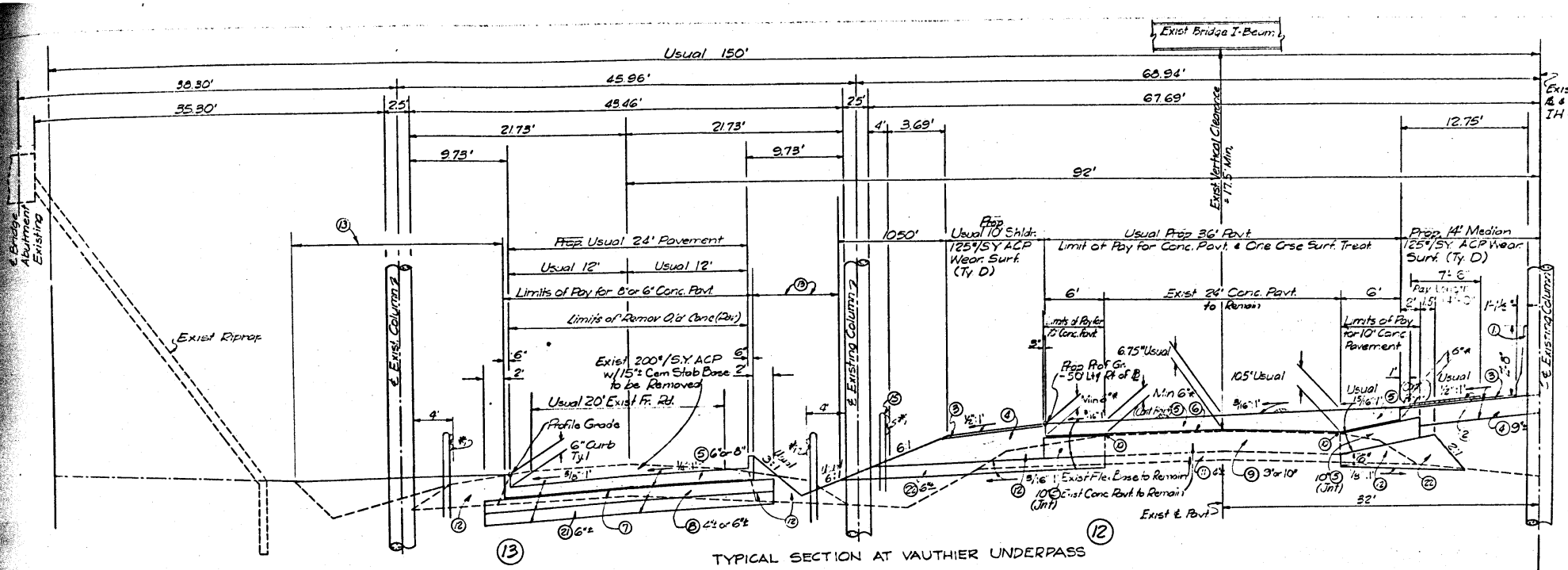
IH45
Usual 150'
Median
125#/SY ACP
Surf (Ty D)
Usual Prop 36' Pavt.
Pay Limits Prop 10" Jointed Conc. Pavt.
*= For Detour Typical Section Modification, See Detour Typical Sections R-R Sheet # 13.
7'-6"
Pay Length = 4'-0"
1'
Usual 15' Shldr.
12'
Prop 125#/SY ACP Wearing Surf. (Ty D)
Prop. Prof. Gr. -50' Lt & Rt of ℄
10" (Jnt. Reinf.)
1/2":1'
R" @ FM 1765 as Required by Detour Typ. Sec R-R
6"±
Min. 2'
Usual 3:1 Max 3:1
For Gd. Fe. Modification See Sheet # 42.
Note: For Detour Typical Section Modification on Shldr. See Detour Typical Section R-R Sheet # 13.
13 or 14
Exist Conc Pavt. to Remain
Exist Flex Base to Remain
32'
Exist ℄ Pavt.
Exist Natl. Gr.
TYPICAL 36' MAINLANE HIGHFILL SECTION AT FM 1765
SYMBOLS LEGEND
1 Prop Headlight Barrier Fence Concrete Median Barrier
2 Prop Jiggle Bars
3 Prop ACP Wearing Surf. (Ty D)
4 Prop Asph. Stab. Base
5 Prop Conc. Pavt.
7 Prop 3/4" Asph. Stab. Base
8A Prop Cem. Stab Base or Cem Treat Salv Flex Base
9 Exist Conc. Pavt.
11 Exist. Flex. Base
12 Note- Exist Flex. Base Shldrs. To Be Salv.
13 Prop Brdcst. Seed.
14 Prop Block Sod. For Fill Heights Above 5' (±)
15 Prop Galvanized Steel Beam Guard Fence For Fill Heights Above 5' (±)
16 Prop Retaining Wall
17 Prop 2" Riprap Drain (RR9 Mod.) To Be Used In Ret. Wall Area Only
18 Prop Riprap (RR9 Modified)
21 Prop Lime Treat. Subgrade
23 Prop Perforated 6" Drain Pipe
24 Prop Select Borrow (Ty "C", Cl. 3)
8 Cem. Treat. Salv. Flex Base
Prop Traffic Buttons and Pavement Markers (Ty II)
Exist ROW Line
2'
Usual 7.5'
Prop 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 15'
Usual 28' Exist Front. Rd.
6"
2'
Profile Grade
6" Curb Ty I
Var.
1/4":1'
6" or 8"
3/8":1'
Usual 1'
Impervious Mat'l
4"
6" or 6"
8" Exist Conc Pavt to be Removed
4" Exist Flex Base to be Salvaged
6"±
* To Be Used at Ret. Wall Areas Only
TYP. PROP 47' CURB AND GUTTER FRONTAGE ROAD SECTION WITH RETAINING WALLS AT FM 1765
Usual 150' ROW to ℄
Usual 10'
Prop Usual 36' Pavement
Usual 12'
Usual 24'
Usual 7.5'
Limits of Pay for 8" or 6" Conc Pavt
Usual 15'
Usual 28' Exist Frontage Rd.
Exist ROW Line
6"
2'
Profile Grade
6" Curb Ty I
3/8":1'
1/4":1'
6" or 8"
Var.
8" Exist Conc Pavt to be Removed
4" Exist Flex Base to be Salvaged
6"±
Usual 3:1 Max 3:1
Usual 1'
Impervious Mat'l
TYP. PROP 36' CURB AND GUTTER FRONTAGE SECTION WITH RETAINING WALLS AT FM 1765

TYPICAL SECTIONS

20

SHEET 3 OF 13 SHEETS

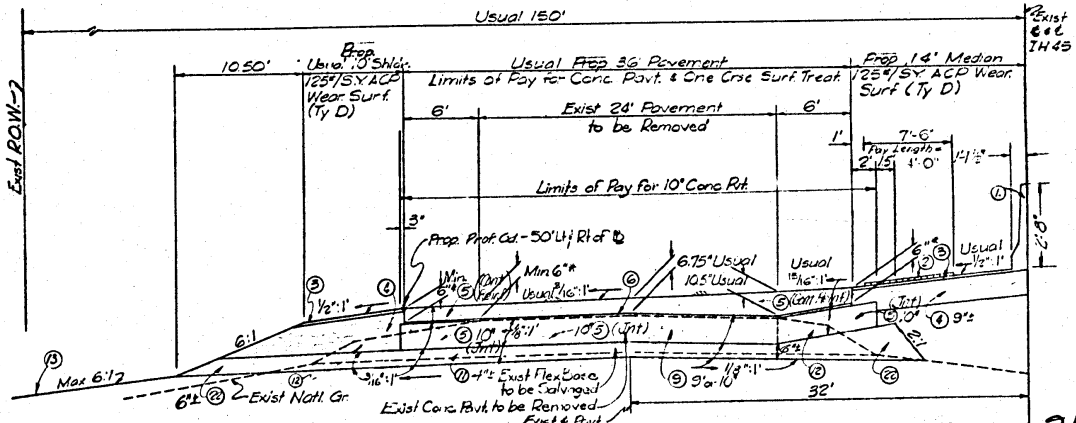
FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.			SHEET NO.
6	TEXAS	I 45-1 (50) 3 1			20
STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
12	GALVESTON	500	4		IH 45



TYPICAL SECTION AT VAUTHIER UNDERPASS

(13) (12)

#1 = For Prop Gd Fe. Modification or Detail, See Sheet # 43.



TYPICAL MAINLANE BREAKOUT SECTION AT CROSS DRAINAGE STRUCTURES (11)

SYMBOLS LEGEND

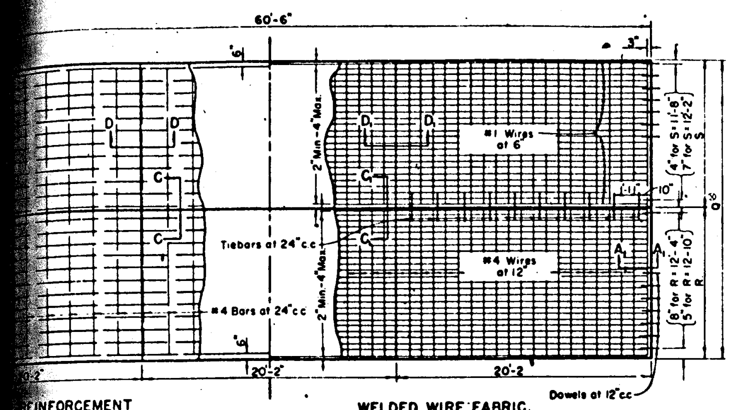
- ① Prop ~~Headlight Barrier Fence~~ Concrete Median Barrier
- ② Prop Jiggle Bars
- ③ Prop ACP Wearing Surface (Ty D)
- ④ Prop Asph. Stab. Base
- ⑤ Prop Concrete Pavement
- ⑥ Prop One Crse Surf. Treat.
- ⑦ Prop Cem. Treat. Salv. Flex. Base or Cem. Stab Bse
- ⑧ Exist Conc. Pavement
- ⑨ Note: Tie Prop. Pavt. To Exist Pavt.
- ⑩ Exist. Flex. Base
- ⑪ Note: Exist. Flex. Base Shldrs. To Be Salv.
- ⑫ Prop. Brdcst. Seed.
- ⑬ Prop Steel Beam Gd. Fe.
- ⑭ Prop. Lime Treat Subgrade
- ⑮ Prop Salvaged Flex Base
- ⑯ Prop 3/4" Asph. Stab. Base (L)
- * 6" Measured From Top of One Course Surf Treatment
- Prop. Traffic Buttons and Pavement Markers (Ty II)

TYPICAL SECTIONS

21

SHEET 4 OF 13 SHEETS

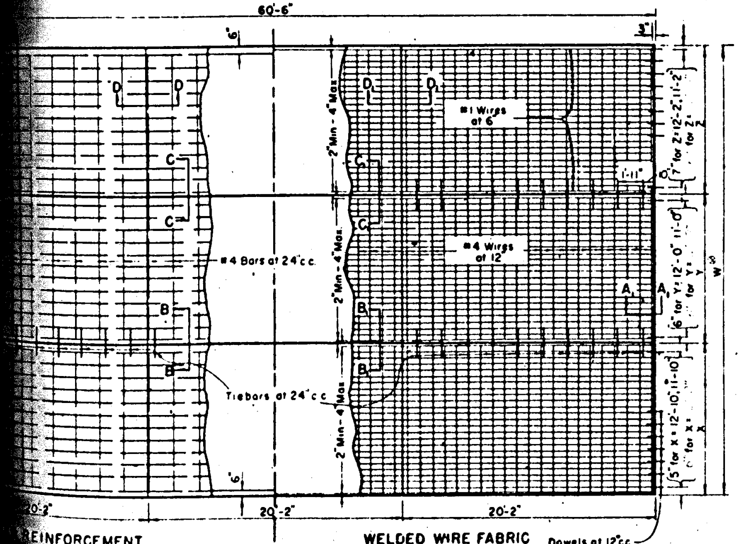
	I 45-1(50)011	21
12	GALVESTON	5:0 4 56 111 45



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"

*Use variable widths at ramp locations and at auxiliary lanes for ~~widened~~ widening of existing mainlanes.



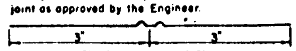
THREE LANE PAVEMENT PLAN

	8"	9"	10"
	1"	1⅛"	1¼"
	14"	16"	18"
DEPTH "D"	3"	3½"	4"

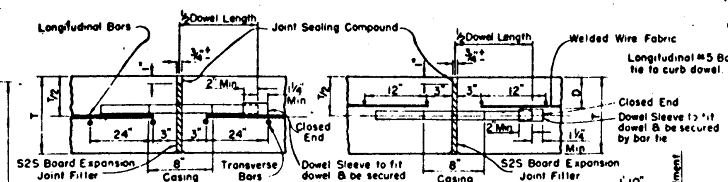
REINFORCING STEEL DATA

W*	37'-0"	36'-0"	34'-0"
X	12'-10"	12'-2"	11'-10"
Y	12'-0"	12'-6"	11'-0"
Z	12'-2"	12'-2"	11'-2"

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



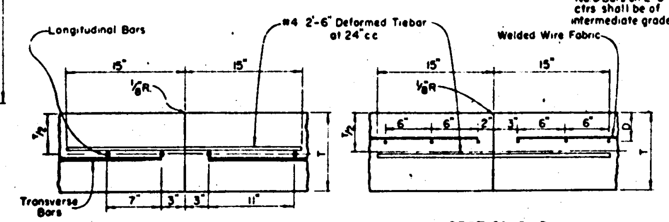
JOINT PLATE DETAIL



SECTION A-A
BAR REINFORCEMENT

SECTION A₁-A₁
WELDED WIRE FABRIC

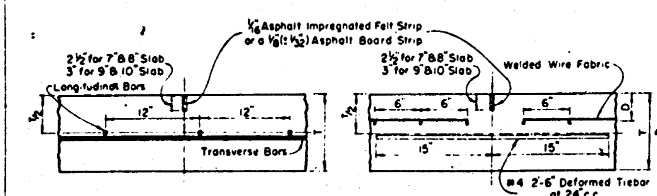
TRANSVERSE EXPANSION JOINTS



SECTION B-B
BAR REINFORCEMENT

SECTION B₁-B₁
WELDED WIRE FABRIC

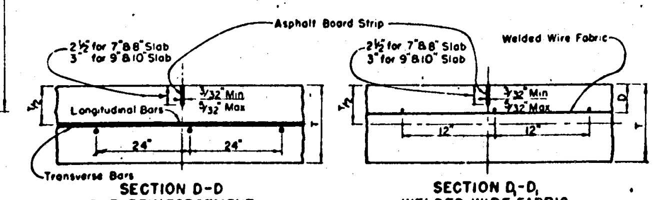
LONGITUDINAL CONSTRUCTION JOINTS



SECTION C-C
BAR REINFORCEMENT

SECTION C₁-C₁
WELDED WIRE FABRIC

LONGITUDINAL WEAKENED PLANE JOINTS

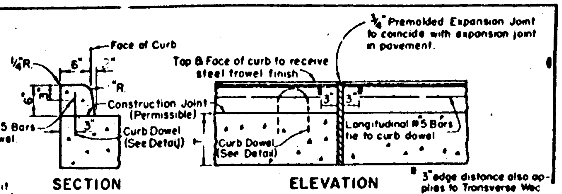


SECTION D-D
BAR REINFORCEMENT

SECTION D₁-D₁
WELDED WIRE FABRIC

TRANSVERSE WEAKENED PLANE JOINTS

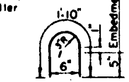
Note: Asphalt Board Strip for Sections D-D & D₁-D₁ held in an approved continuous metal shield shall be installed by an approved device operating behind but not attached to the longitudinal float.



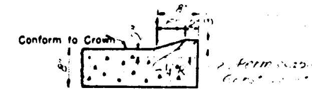
SECTION

ELEVATION

TYPICAL 6" CURB (MONOLITHIC)
(TYPE 2)



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



LAYDOWN CURB (TYPE 5)

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 [illegible] FROM THE [illegible] 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 A176-54 AND 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.
24. THIS STANDARD IS TO BE USED FOR 8" & 10" - JOINTED CONCRETE PAVEMENT ONLY.
25. THE FINAL POSITION OF THE WELDED WIRE FABRIC SHALL BE SUBJECT TO A VERTICAL TOLERANCE OF ONE INCH UPWARD AND ONE INCH DOWNWARD FROM THE POSITION DIMENSIONED ON THE PLANS BUT NOT LESS THAN TWO INCHES FROM THE PAVEMENT SURFACE.

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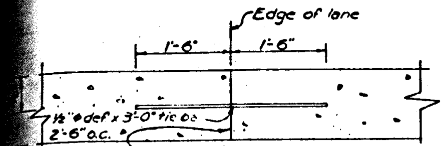
STATE	FEDERAL PROJECT NO.	SHEET NO.
COUNTY	CONT. / SECT. / JOB	HIGHWAY NO.
GALVESTON	500	[illegible]

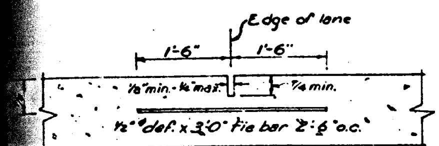
CONCRETE PAVEMENT DETAILS | SHEET 1 OF 8 SHEETS

LONGITUDINAL JOINTS

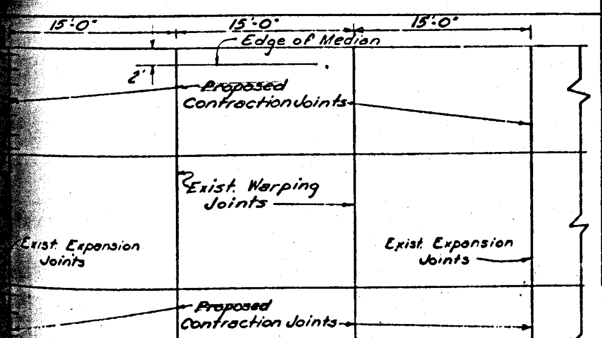
Note: For reinforcing steel and other details not shown here, see sheet No. 140



TYPE 1 - CONSTRUCTION



TYPE 2 - GROOVED
(Formed with Tie Bars)



For Type B joint use 1"x20" smooth dowel bar at 12" o.c. Weight = 4.45 lbs/lin.ft of transverse joint.

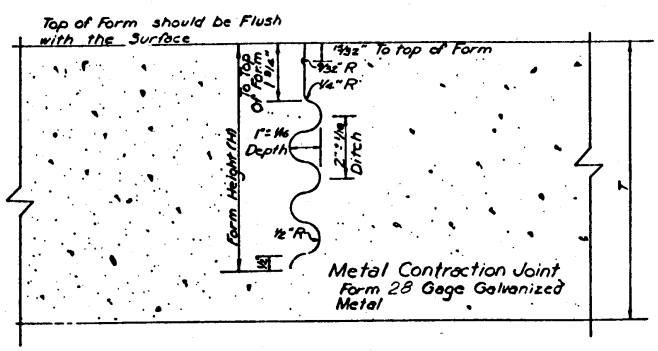
Longitudinal Joint at Ramps Where Width of Widening Exceeds 15'

PLAN VIEW OF LONGITUDINAL AND TRANSVERSE CONTRACTION JOINTS

Variable widths at ramp locations and auxiliary lanes for ~~proposed~~ widening of existing mainlanes

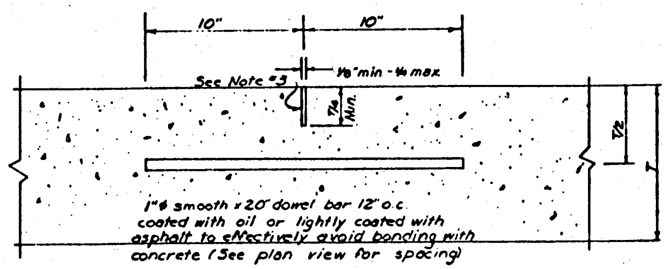
TRANSVERSE CONTRACTION JOINTS

Note: For reinforcing steel and other details not shown here, see sheet No. 140.

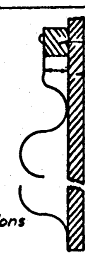


TYPE A (CORRUGATED METAL)

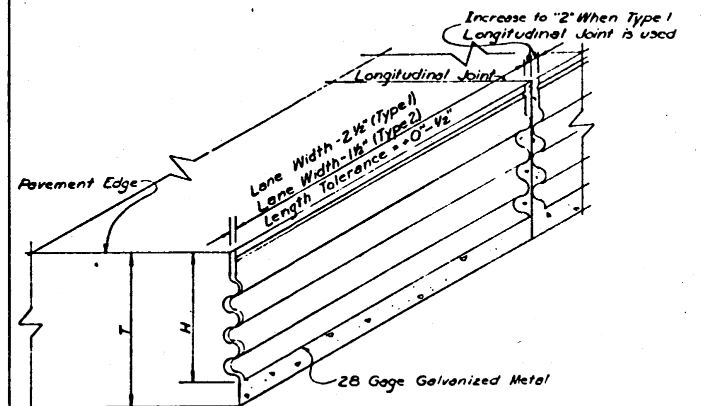
Note: Permissible Fabrication Tolerance: The semicircular segments shall be connected at a common point of tangency on the vertical axis of the joint or by a segment not exceeding one fourth of an inch (¼") in length at right angles to and symmetrical with the vertical axis of the joint.



TYPE B (GROOVED)
(Formed with Coated Dowel)



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



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*	5⅝*	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.

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. For reinforcing steel and other details not shown here, see sheet No. 140.
10. 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.
11. Unless otherwise specified by the Engineer, the minimum length of Metal Contraction Joint Form shall be lane width minus 1½". 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.
12. Expansion Joints shall be provided only at structure ends as shown elsewhere in plans.
13. 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.
14. Where 6'-3" or 8'-0" widening is ~~proposed~~ contiguous to existing concrete pavement, a butt type joint shall be provided.

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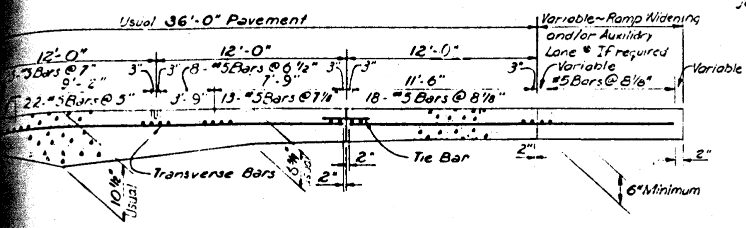
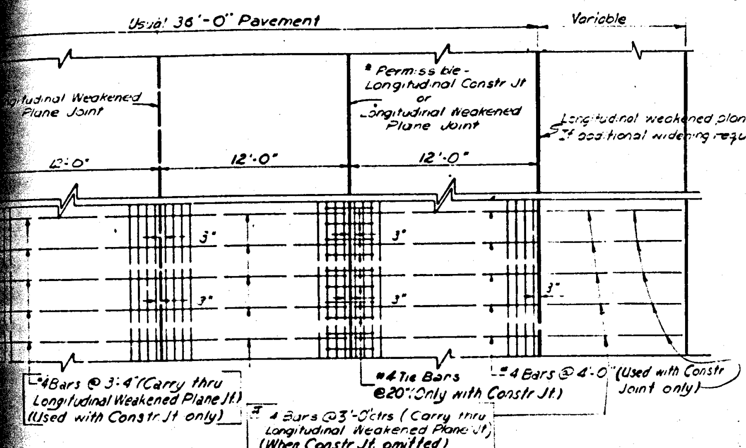
CONCRETE MAIN LANE PAVEMENT WIDENING DETAILS
JOINT DESIGN

SHEET 2 OF 8 SHEETS

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.			SHEET NO.
6	TEXAS	[illegible]			1?1
STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
12	Galveston	500	4	-	IH 45

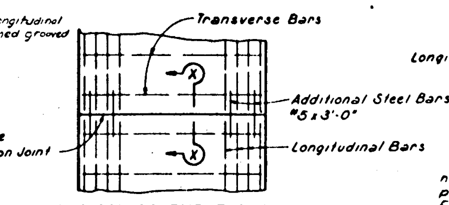


OVERLAY SECTION - VARIABLE DEPTH

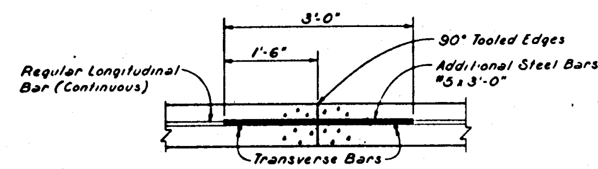


FREEWAY PAVEMENT PLAN

* Max. 15' Between Longitudinal Construction or formed grooved joints.



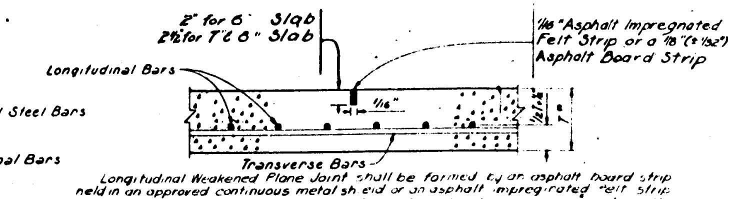
TYPICAL PAVEMENT PLAN (ONE LANE)



SECTION X-X

TRANSVERSE CONSTRUCTION JOINT

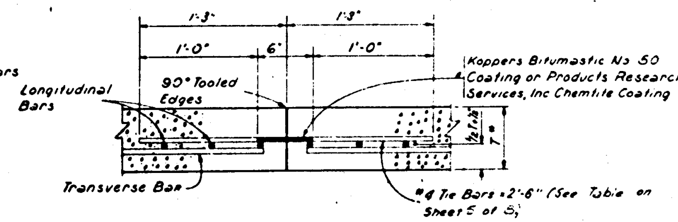
Note:
* If Longitudinal weakened Plane Joint is used to accommodate 36'-0" width monolithic placement, omit tie bars and carry transverse steel through joint.



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.

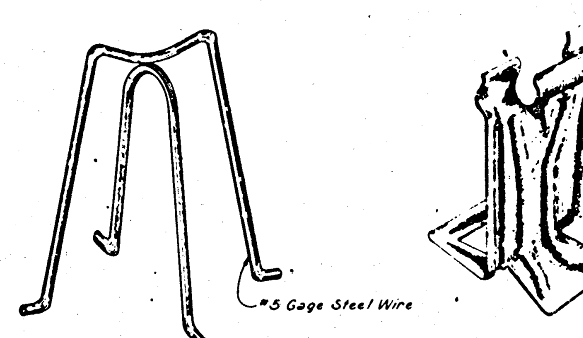
WEAKENED PLANE JOINT

* 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 dimensions 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

...AND TRANSVERSE REINFORCING BARS, (EXCEPT THOSE WHICH ARE TO BE BENT) SHALL BE HIGH ...ING TO ASTM DESIGNATION 615, GRADE 60. TRANSVERSE TIE BARS AND BARS WHICH REQUIRE ...ORM TO ASTM DESIGNATION 615, GRADE 40.
... FEET OF PAVEMENT LENGTH, MEASURED PARALLEL TO THE CENTERLINE, NOT OVER ONE OF THE ...SHALL BE SPLICED WITHIN EACH TWELVE FOOT WIDE SECTION. BAR SPLICES SHALL BE A MINIMUM ...INAL DIAMETER OF THE BAR. LONGITUDINAL STEEL SHALL BE FURNISHED IN CONVENIENT LENGTHS. ...OT BE USED.

LONGITUDINAL CONSTRUCTION JOINTS MAY BE DELETED PROVIDED THAT TRANSVERSE ...IS ADJUSTED ACCORDINGLY AS DIRECTED BY THE ENGINEER. IN NO CASE SHALL LONGITUDINAL CON... ...D GROOVED JOINTS BE MORE THAN 15 FT APART ON FREEWAY PAVEMENT OR FRONTAGE STREET PAVEMENT ...ERSELY.
...TRANSVERSE CONSTRUCTION JOINTS INSTALLED SHALL BE KEPT TO AN ABSOLUTE MINIMUM AS APPROVED ...F PLACEMENT IS STOPPED AT THE END OF THE DAY OR FOR OTHER REASONS, PLACE BOARD HEADER ... THE LONGITUDINAL BARS IN CONSECUTIVE INCREMENTS OF 2' BEYOND THE BOARD HEADER. REMOVE ... COMMENCING NEW PLACEMENT. UNDER CERTAIN JUSTIFIABLE CONDITIONS, AS DETERMINED BY THE ...AR LAP SPLICES MAY BE USED IN LIEU OF EXTENDING LONGITUDINAL BARS BEYOND THE BOARD HEADER. ...TEEL FURNISHED FOR WELDING SHALL BE NEW BILLET STEEL ONLY. SEE ITEM 440 FOR REQUIREMENTS ...RCING STEEL.

...PAVEMENT WIDTH, THICKNESS, AND CROWN SLOPE SHALL BE AS SHOWN ELSEWHERE IN THE PLANS OR ... 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 1/2" HORIZONTAL & VERTICALLY 1/2" 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

STEEL BARS
MAINLANES 6" CRCP (VAR. DEPTH)

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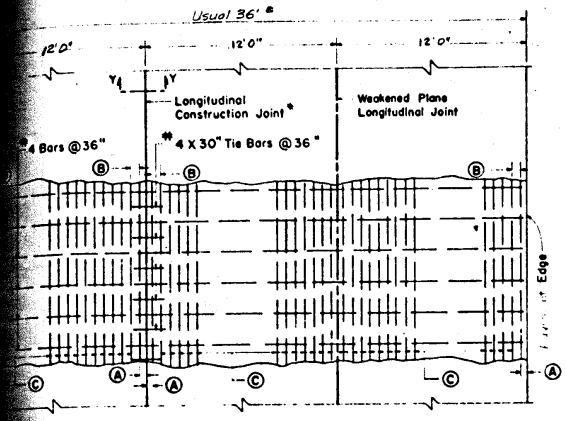
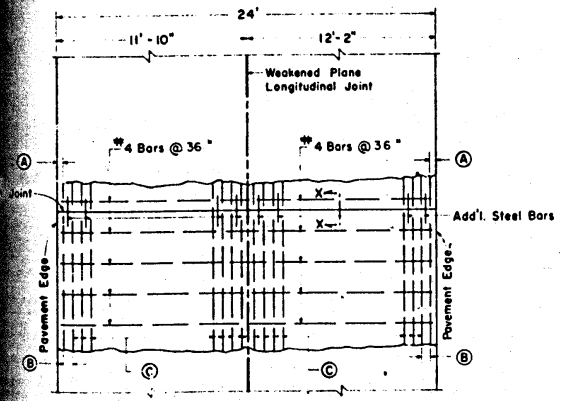
SEPT. 1967
JULY 1968
GALVESTON 500 4

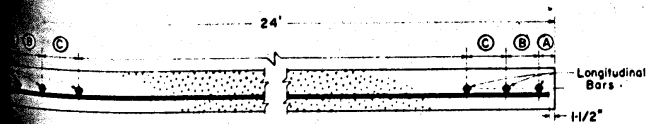


THREE LANE PAVEMENT PLAN
(12ft. and 24ft. Placement)

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 in Trans. Const. Jt.: Size	Avg. spa. in.	② No. per Lane	Weight #/ft
0.8	6	No. 5	3	4.5	6.5	45	19.60	3	4	6.5	24	19.99	5/8 ø x 36	13	10	2.61
	8	No. 5	3	6	7.5	30	12.25	3	5.25	7.5	20	17.64	5/8 ø x 36	14	10	2.61
	7	No. 5	3	5	8.5	35	15.09	3	6.5	8.5	17	15.30	5/8 ø x 36	14	10	2.61
	6	No. 4	3	4.5	7	42	13.52	3	6	7	21	12.52	1/2 ø x 36	14	10	1.67
0.6	11	No. 6	3	5	8	37	22.84	3	5	8	19	23.40	3/4 ø x 36	16.5	8	3.00
	8	No. 5	3	6.25	8.25	40	19.99	3	6.5	8.25	24	20.77	5/8 ø x 36	13	10	2.61
	7	No. 5	3	7.25	9.25	40	17.65	3	7.25	9.25	20	17.65	5/8 ø x 36	14	10	2.61
	6	No. 5	3	6	9.5	35	15.01	3	5.25	8.5	18	16.06	5/8 ø x 36	17	8	2.09
	10	No. 6	3	7.25	7.25	40	24.91	3	7.25	7.25	20	24.49	3/4" ø x 36"	14.5	10	3.76

& Use variable widths at ramp locations and at auxiliary lanes. Steel placement and dimensions shall be the same as the usual 36' placement.

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 25 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 reinforced pavement

GENERAL NOTES

"LEAVE-OUTS" IN CONTINUOUSLY REINFORCED CONCRETE PAVEMENT SHALL 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 BENT 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 100' 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.

For Section X-X, See Sheet No. 143.

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 #6 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

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SHEET 5 OF 8 SHEETS

DN	DRAWN	DATE			SHEET
CK DN	ORIGINAL	FEB 1969			144
DW	REVISED	DEC 1, 1969			
CK DW					
TR			12	GALVESTON 500 4	IH45
CK TR					