

# INDEX OF SHEETS

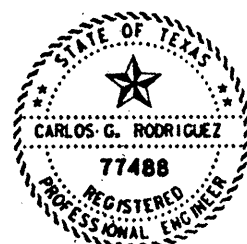
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STORM WATER POLLUTION PREVENTION PLAN (SWP3)
3-8	PROJECT SUMMARY
9	SUMMARY OF ILLUMINATION POLE REMOVAL
10-14	SUMMARY OF HMI POLE LOCATIONS & DRILLED SHAFT LENGTH
15	SUMMARY OF CONDUIT AND CONDUCTOR RUNS
16-17	SUMMARY OF ELECTRICAL SERVICES
18-19C	SUMMARY OF GROUND BOXES
20	GENERAL NOTES
21-24	ESTIMATE & QUANTITY SHEET
25-45	HORIZONTAL ALIGNMENT DATA
46-65	EXISTING ILLUMINATION LAYOUT
	PROPOSED HMI ILLUMINATION LAYOUT

## STANDARD SHEETS

66-69	RID(1)-(4) 93
70-76	ED(1)-(7) 93
77-86	HMID(1)-(10)-86
87-88A	HMIP
88-88A	HMIF
89	SL(1) 93
90	SL(MV) 93
91-92	LC(16) 182
93-101	BC(1)-94 - BC(9)-94
102	MBGF-94
103-104	SGT(1) & (2)-95

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

*Carlos G. Rodriguez, P.E.* 2-6-95  
CARLOS G. RODRIGUEZ P.E. DATE



The seal appearing on this document was authorized by Carlos G. Rodriguez, P.E. 77488, on 2-6-95.

*Carlos G. Rodriguez, P.E.*

ATTACHMENT NO. TO SPECIAL AGREEMENT FOR CONSTRUCTION, MAINTENANCE AND OPERATING OF CONTINUOUS HIGHWAY ILLUMINATION SYSTEM WITHIN MUNICIPALITIES, DATED \_\_\_\_\_ THE CITY-STATE CONSTRUCTION, MAINTENANCE AND OPERATION RESPONSIBILITIES SHALL BE AS HERETOFORE AGREED TO, ACCEPTED, AND SPECIFIED IN THE AGREEMENT TO WHICH THESE PLANS ARE MADE A PART.

SPECIFICATIONS ADOPTED BY THE STATE DEPARTMENT OF HIGHWAYS & PUBLIC TRANSPORTATION OF TEXAS, MARCH 1, 1993 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: SPECIAL REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA-1273, APRIL 1993) AND ADDENDUM TO FHWA FORM FHWA-1273, REQUIRED CONTRACT PROVISIONS, FEDERAL-AID CONSTRUCTION CONTRACTS AUGUST 1992.

# STATE OF TEXAS DEPARTMENT OF TRANSPORTATION PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT NO. 1M37-1(103)000  
NUCES COUNTY - HIGHWAY NO. 1H 37  
LIMITS : FROM WACO STREET TO LANTANA IN CORPUS CHRISTI  
PROJECT LENGTH - 24518.54 FT. = 4.643 MILES  
MISCELLANEOUS WORK CONSISTING OF UPGRADE ILLUMINATION SYSTEM

## FINAL PLANS

### CERTIFICATION FOR FINAL PLANS

THIS PROJECT WAS BUILT ACCORDING TO THE PLANS AND SPECIFICATIONS. THESE FINAL PLANS REFLECT THE WORK DONE AND THE QUANTITIES SHOWN THEREON AND ON THE FINAL ESTIMATE ARE FINAL QUANTITIES.

### FINAL PLANS

CONTRACTOR ----- V.C. HUFF, INC.  
DATE WORK BEGAN ----- SEPTEMBER 18, 1995  
DATE WORK COMPLETED ----- NOVEMBER 14, 1996  
CONTRACT AMOUNT ----- \$ 1,678,668.50  
FINAL ESTIMATE AMOUNT ----- \$ 1,716,158.00  
WORKING DAYS ALLOTTED ----- 210  
WORKING DAYS USED ----- 204

### PLANS CORRECTED AS BUILT:

*Martin K. Timmerman, P.E.* 7/28/97  
TITLE: AREA ENGINEER DATE  
*Interim*

BEGIN PROJECT  
B-L STA 0+00  
CONT. 0074-06-179  
M.P. = 0.000

END PROJECT  
B-L STA 245+18.54  
CONT. 0074-06-179  
M.P. = 4.64

8392-04

CORRECT: 2-7 1995

*[Signature]*  
AREA ENGINEER

NO EQUATIONS  
NO EXCEPTIONS

## TEXAS DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR LETTING: 15 Feb 95  
*[Signature]*  
DIRECTOR OF TRANS. PLANNING AND DEVELOPMENT

RECOMMENDED FOR LETTING: 2-15 1995  
*[Signature]*  
DISTRICT ENGINEER

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
APPROVED: \_\_\_\_\_ 19\_\_\_\_  
DIVISION ADMINISTRATOR DATE

APPROVED: \_\_\_\_\_ 19\_\_\_\_  
DIRECTOR OF DESIGN DIVISION

APPROVED: \_\_\_\_\_ 19\_\_\_\_  
DIRECTOR OF TRAFFIC OPERATIONS

CITY OF CORPUS CHRISTI  
APPROVED: *[Signature]* 2/28/95  
GROUP MANAGER/PUBLIC WORKS

## SITE DESCRIPTION

PROJECT LIMITS: From Waco  
To Lantana

PROJECT DESCRIPTION: Upgrade & Maintenance of Illumination System

MAJOR SOIL DISTURBING ACTIVITIES: Soil disturbing activities will include  
Trenching & Foundation Drilling

TOTAL PROJECT AREA: 203 ac.

TOTAL AREA TO BE DISTURBED: 0.56 ac (0.27%)

WEIGHTED RUNOFF COEFFICIENT  
(AFTER CONSTRUCTION): 0.50

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

Most of the soil in the area is black clay with 99% of the project area covered with vegetation.  
Primarily grasses and weeds.

NAME OF RECEIVING WATERS: Corpus Christi Ship Channel will receive all 0.56  
acres of drainage.  
Segment number for Nueces Bay #2482

## EROSION AND SEDIMENT CONTROLS

### SOIL STABILIZATION PRACTICES:

- ☐ TEMPORARY SEEDING
- ☐ PERMANENT PLANTING, SODDING, OR SEEDING
- ☐ MULCHING
- ☐ SOIL RETENTION BLANKET
- ☐ BUFFER ZONES
- ☐ PRESERVATION OF NATURAL RESOURCES

OTHER: Disturbed areas on which construction activity has ceased (temporarily or permanently)  
shall be stabilized within 14 days unless activities are scheduled to resume and do within 21  
days.

### STRUCTURAL PRACTICES:

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

OTHER: \_\_\_\_\_

### NARRATIVE - SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES:

1. Immediately after the trenching and foundation drilling operations are completed, backfill the  
trenches and reshape the work areas used for drilling foundations. Place silt fences  
around these work areas or trenches as needed.

2. Where all construction activity is complete and the site is stabilized and approved by  
the Engineer, remove all structural controls and stabilize any areas disturbed by the removal.

STORM WATER MANAGEMENT: Storm water drainage will be provided by existing grass V ditches  
which will carry drainage within the right-of-way to the Corpus Christi Ship Channel

### OTHER EROSION AND SEDIMENT CONTROLS:

MAINTENANCE: All erosion and sediment controls will be maintained in good working order. If a  
repair is necessary, it will be done at the earliest date possible, but no later than  
7 calendar days after the surrounding exposed ground has dried sufficiently to prevent  
further damage from heavy equipment. The areas adjacent to creeks and drainageways shall  
have priority.

INSPECTION: An inspection will be performed by a TxDOT Inspector every week as well as after  
every half inch or more of rain (as recorded on a rain gauge to be located at the Project Site).  
An Inspection and Maintenance Report will be made per each inspection. Based on the inspection  
results, the controls shall be revised per the inspection report.

WASTE MATERIALS: Contractor shall provide a wash out area for concrete trucks. This area  
shall be at a location that will not allow any debris or contamination to enter the  
project ditches. All measures shall be taken to protect the surrounding areas  
from contamination. Wash out area shall be restored upon project completion.  
All waste material shall be collected and securely stored until removal from the jobsite.  
No construction waste material shall be buried on site.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING): At a minimum, any products  
in the following categories are considered to be hazardous: paints, acids for  
cleaning masonry surfaces, cleaning solvents, asphalt products, chemical additives  
for soil stabilization, or concrete curing compounds and additives. In the event  
of a spill which may be hazardous, the Spill Coordinator shall be contacted immediately.

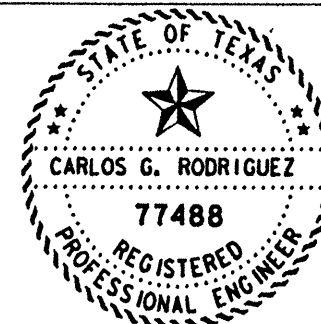
SANITARY WASTE: All sanitary waste will be collected by a licensed sanitary waste management contractor,  
from the portable units as necessary or as required by local regulation

### OFFSITE VEHICLE TRACKING:

- ☐ HAUL ROADS DAMPENED FOR DUST CONTROL
- ☐ LOADED HAUL TRUCKS TO BE COVERED WITH TARPULIN
- ☒ EXCESS DIRT ON ROAD REMOVED DAILY
- ☐ STABILIZED CONSTRUCTION ENTRANCE

OTHER: \_\_\_\_\_

REMARKS: Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will  
minimize and control the amount of sediment that may enter receiving waters. Disposal  
areas shall not be located in any wetland, waterbody or streambed.  
Construction staging areas and vehicle maintenance areas shall be constructed by the  
Contractor in a manner to minimize the runoff of pollutants.  
All waterways shall be cleared as soon as practicable of temporary embankment, temporary  
bridges, matting, falsework, piling, debris or other obstructions placed during construction  
operations that are not part of the finished work.



The seal appearing on  
this document was  
authorized by  
Carlos G. Rodriguez,  
P.E. 77488, on  
2-6-1995

Carlos G. Rodriguez, P.E.

## TxDOT STORM WATER POLLUTION PREVENTION PLAN (SW3P)

2

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	IM 37-1(103)000		2
STATE	STATE DIST. NO.	COUNTY	
TEXAS	16	NUECES	
CONT.	SECT.	JOB	HIGHWAY NO.
0074	06	179	1H 37

EXISTING POLE NUMBER	EXISTING ASSEMBLY DESCRIPTION	MOUNTING TYPE	ASSEMBLY LOCATION BASELINE STATION	ITEM 611 REMOV * RDWY ILL ASSEM		ITEM 611 REMOV * RDWY ILL ASSEM (BR MOUNT)		ITEM 611 REMOV * RDWY ILL ASSEM (U/P)		SIGN * LIGHT REMOVAL	
				E	F	E	F	E	F	E	F
IH37 - WACO TO PEABODY (S.P. located on Brownlee St., behind old police station)											
A-1	SA 25T-6	CONC. FNDT.	BROWNLEE BLVD STA 7+75	I							
A-2	SA 30T-12	CONC. FNDT.	BASELINE STA 22+37	I							
A-3	SA 30T-12	CONC. FNDT.	BASELINE STA 20+75	I							
S4	S4-SIGN-OSB		REMOVE & REPLACE FIXTURES							7	
A-4	SA 30T-12	CONC. FNDT.	BASELINE STA 19+53	I							
A-5	SA 30T-12	CONC. FNDT.	BASELINE STA 18+03	I							
S3	S3-SIGN-COSS		REMOVE & REPLACE FIXTURES							3	
A-6	SA 25T-15	CONC. FNDT.	BASELINE STA 14+85	I							
A-7	SA 25T-15	CONC. FNDT.	BASELINE STA 12+50	I							
A-8	SA 25T-15	CONC. FNDT.	BASELINE STA 10+84	I							
A-9	SA 25T-15	CONC. FNDT.	BASELINE STA 9+15	I							
A-10	SA 25T-15	CONC. FNDT.	BASELINE STA 7+50	I							
A-11	SA 25T-15	CONC. FNDT.	BASELINE STA 5+82	I							
A-12	SA 25T-15	CONC. FNDT.	BASELINE STA 4+12	I							
A-13	SA 25T-15	CONC. FNDT.	BASELINE STA 2+46	I							
S2	S2-SIGN-OSB		REMOVE & REPLACE FIXTURES							8	
A-14	SA 25T-15	CONC. FNDT.	BASELINE STA 0+80	I							
A-15	SA 25T-12	CONC. FNDT.	STAPLES ST. STA 6+85	I							
A-16	SA 25T-10	CONC. FNDT.	ALAMEDA ST. STA 6+90	I							
A-17	SA 30T-12	CONC. FNDT.	BASELINE STA 21+20	I							
A-18	SA 30T-12	CONC. FNDT.	BASELINE STA 20 + 75	I							
A-19	SA 30T-12	CONC. FNDT.	BASELINE STA 19+50	I							
A-20	SA 30T-12	CONC. FNDT.	BASELINE STA 17+10	I							
A-21	SA 30T-12	CONC. FNDT.	BASELINE STA, 15+85	I							
A-22	SA 30T-12	CONC. FNDT.	BASELINE STA, 14+10	I							
A-23	SA 30T-4	BRACKET MT.	BASELINE STA 24+00			I					
A-24	SA 30T-4	BRACKET MT.	BASELINE STA 25+95			I					
A-25	SA 30T-4	BRACKET MT.	BASELINE STA 27+60			I					
A-26	SA 30T-4	BRACKET MT.	BASELINE STA 28+85			I					
A-27	SA 30T-4	BRACKET	BASELINE STA 29+35			I					
B-1	SA 30T-10	BRACKET MT.	BASELINE STA 24+00			I					
B-2	U/P	WALL PACK	BASELINE STA 24+50					I			
B-3	U/P	WALL PACK	BASELINE STA 24+92					I			
B-4	SA 30T-12	CONC. FNDT.	BASELINE STA 25+85	I							
B-5	SA 30T-12	CONC. FNDT.	BASELINE STA 27+50	I							
B-6 & B-25	SA 30T-12-6	CONC. FNDT.	BASELINE STA 29+30	I							
B-7	SA 30T-10	CONC. FNDT.	BASELINE STA 30+70	I							
B-8	SA 30T-10	CONC. FNDT.	BASELINE STA 32+40	I							
B-9	SA 30T-8	BRACKET MT.	BASELINE STA 33+95			I					
B-10	SA 30T-8	BRACKET MT.	BASELINE STA 36+10			I					
B-11	SA 30T-4	BRACKET MT.	BASELINE STA 39+00			I					
B-12	U/P	WALL PACK	BASELINE STA 39+50					I			
B-13	SA 30T-4	BRACKET MT.	BASELINE STA 40+80			I					
B-14	SA 30T-4	BRACKET MT.	BASELINE STA 42+40			I					
B-15	U/P	WALL PACK	BASELINE STA 42+65					I			
B-16	U/P	WALL PACK	BASELINE STA 43+70					I			
B-17	SA 30T-4	BRACKET MT.	BASELINE STA 44+00			I					
B-18	SA 30T-12	CONC. FNDT.	BASELINE STA 45+50	I							
S5	S5-SIGN-COSS		REMOVE & REPLACE FIXTURES							3	
B-19	SA 30T-4	CONC. FNDT.	BASELINE STA 47+20	I							
B-20	SA 30T-4	CONC. FNDT.	BASELINE STA 48+90	I							
B-21	SA 30T-4	CONC. FNDT.	LINE 'A' STA 50+48	I							
B-24	SA 25T-10	CONC. FNDT.	PORT AVE. STA 8+60	I							
B-26	SA 25T-6	CONC. FNDT.	BASELINE STA 27+40	I							
B-27	SA 25T-10	CONC. FNDT.	BUFFALO ST. STA 25+60	I							
SHEET TOTALS				34		12		5		21	

LEGEND:

E - ESTIMATED  
F - FINAL  
\* - FOR CONTRACTORS INFORMATION ONLY

NOTES:

- 1) USE THIS SUMMARY WITH "EXISTING ILLUMINATION LAYOUT - IH37".
- 2) EXISTING LUMINAIRES TO BE REMOVED ARE REFERENCED BY THE CIRCUIT I.D. NUMBER ON THE POLES IN THE FIELD.
- 3) ALL LUMINAIRES WILL BE VERIFIED IN THE FIELD AND APPROVED BY THE TXDOT REPRESENTATIVE BEFORE REMOVING. UNDER "EXISTING ASSEMBLY DESCRIPTION", CIRCLE THE "S" OR "A" TO DESIGNATE WHETHER THE POLE WAS VERIFIED TO BE A STEEL OR AN ALUMINUM POLE.
- 4) ALL LUMINAIRES ON THIS SUMMARY WILL BE MAINTAINED BY THE CONTRACTOR IN AN OPERATIVE CONDITION UNTIL REMOVED. THIS COST WILL BE REFLECTED IN THE VARIOUS BID ITEMS.
- 5) REMOVAL AND REPLACEMENT OF SIGN LIGHTING DISCONNECT, CONDUIT AND CONDUCTORS WILL BE SUBSIDIARY TO BID ITEM 618, 620 AND 628.
- 6) REMOVAL OF SIGN LIGHTING FIXTURES WILL BE SUBSIDIARY TO BID ITEM 652.

# PROJECT SUMMARY SUMMARY OF ILLUMINATION POLE REMOVAL

3

SHEET 1 OF 6 SHEETS					
SHEET NO.	6	FEDERAL AID PROJECT NO.	1M37-1(103)000	SHEET NO.	3
STATE	TEXAS	DIST.	16	COUNTY	NUECES
CONT.	074	SECT.	06	JOB	179
				HIGHWAY NO.	IH 37

EXISTING POLE NUMBER	EXISTING ASSEMBLY DESCRIPTION	MOUNTING TYPE	ASSEMBLY LOCATION BASELINE & STATION	ITEM 611 REMOV * RDWY * ILL ASSEM		ITEM 611 REMOV * RDWY * ILL ASSEM (BR MOUNT)		ITEM 611 REMOV * RDWY * ILL ASSEM (U/P)		SIGN LIGHT * REMOVAL	
				E	F	E	F	E	F	E	F
IH37 - WACO TO PEABODY (S.P. located on Brownlee St., behind old police station)											
C-1	SA 20T-10	BRACKET MT.	BASLINE STA 24+00				I				
C-2	SA 30T-12	CONC. FNDT.	BASLINE STA 26+89	I							
C-3	SA 30T-12	CONC. FNDT.	BASLINE STA 30+47	I							
C-4	SA 30T-12	CONC. FNDT.	BASLINE STA 33+40	I							
C-5	SA 30T-10	CONC. FNDT.	BASLINE STA 33+60	I							
C-6	SA 30T-12	CONC. FNDT.	BASLINE STA 35+12	I							
C-7	SA 30T-12	CONC. FNDT.	BASLINE STA 37+65	I							
C-8	SA 30T-12	BRACKET MT.	BASLINE STA 39+00				I				
C-9	UP	WALL PACK	BASLINE STA 40+20						I		
C-10	SA 30T-4	BRACKET MT.	BASLINE STA 41+00				I				
C-11	SA 30T-4	BRACKET MT.	BASLINE STA 42+65				I				
C-12	UP	WALL PACK	BASLINE STA 43+30						I		
C-13	UP	WALL PACK	BASLINE STA 44+10						I		
C-14	SA 30T-4	BRACKET MT.	BASLINE STA 44+30				I				
C-15	SA 30T-12	CONC. FNDT.	BASLINE STA 46+00	I							
C-16	SA 30T-12	CONC. FNDT.	BASLINE STA 47+80	I							
C-17	SA 30T-12	CONC. FNDT.	BASLINE STA 49+50	I							
C-18	SA 30T-12	CONC. FNDT.	BASLINE STA 51+40	I							
C-21	SA 25T-10	CONC. FNDT.	PORT AVE, STA 4+21	I							
C-22	SA 25T-10	CONC. FNDT.	PORT AVE, STA 4+87	I							
C-23	SA 25T-10	CONC. FNDT.	PORT AVE, STA 8+14	I							
C-24	SA 30T-10	CONC. FNDT.	BASLINE STA 31+31	I							
C-25	SA 30T-10	CONC. FNDT.	BASLINE STA 29+90	I							
C-26	UP	WALL PACK	BASLINE STA 24+55						I		
C-27	UP	WALL PACK	BASLINE STA 25+15						I		
C-28	SA 30T-6	BRACKET MT.	BASLINE STA 25+40				I				
S97	S97-SIGN-COSS		REMOVE & REPLACE FIXTURES								2
C-29	SA 30T-6	BRACKET MT.	BASLINE STA 28+69				I				
C-30	SA 30T-12	CONC. FNDT.	BASLINE STA 32+00	I							
C-31	SA 30T-12	CONC. FNDT.	BASLINE STA 34+95	I							
C-32	SA 30T-12	CONC. FNDT.	BASLINE STA 36+15	I							
S96	S96-SIGN-COSS		REMOVE & REPLACE FIXTURES								6
C-20			BASLINE STA 54+20	I							
D-1	SA 25T-10	CONC. FNDT.	BROWNLEE BLVD, STA 2+92	I							
D-2	SA 30T-10	CONC. FNDT.	BASLINE STA 22+70	I							
D-3	SA 30T-10	CONC. FNDT.	BASLINE STA 21+09	I							
D-4	SA 30T-10	CONC. FNDT.	BASLINE STA 19+43	I							
D-5	SA 25T-6	CONC. FNDT.	BASLINE STA 17+95	I							
D-6	SA 25T-15	CONC. FNDT.	BASLINE STA 15+90	I							
D-7	SA 25T-15	CONC. FNDT.	BASLINE STA 14+40	I							
D-8	SA 25T-15	CONC. FNDT.	BASLINE STA 12+70	I							
D-9	SA 25T-15	CONC. FNDT.	BASLINE STA 11+00	I							
D-10	SA 25T-15	CONC. FNDT.	BASLINE STA 9+40	I							
D-11	SA 25T-15	CONC. FNDT.	BASLINE STA 7+60	I							
S98	SIGN	ON BRIDGE	REMOVE & REPLACE FIXTURES								7
D-12	SA 25T-15	CONC. FNDT.	BASLINE STA 6+00	I					I		
D-13	SA 25T-15	CONC. FNDT.	BASLINE STA 4+78	I							
D-14 & D-15	SA 25T-15-15	CONC. FNDT.	BASLINE STA 3+30	I							
D-16 & D-17	SA 25T-15-15	CONC. FNDT.	BASLINE STA 1+50	I							
D-18	SA 25T-10	CONC. FNDT.	STAPLES ST, STA 3+92	I							
D-19	SA 25T-10	CONC. FNDT.	ALAMEDA ST, STA 3+98	I							
D-20	SA 30T-4	BRACKET MT.	BASLINE STA 24+44				I				
D-21	UP	WALL PACK	BASLINE STA 24+50						I		
D-22	UP	WALL PACK	BASLINE STA 25+00						I		
D-23	SA 30T-4	BRACKET MT.	BASLINE STA 25+70				I				
D-24	SA 30T-10	CONC. FNDT.	BASLINE STA 26+90	I							
D-25	SA 30T-10	CONC. FNDT.	BASLINE STA 29+40	I							
D-26	SA 30T-10	CONC. FNDT.	BASLINE STA 27+90	I							
D-27	SA 25T-10	CONC. FNDT.	BASLINE STA 31+16	I							
D-28	SA 30T-12	CONC. FNDT.	BASLINE STA 33+20	I							
D-29	SA 30T-12	CONC. FNDT.	BASLINE STA 34+80	I							
D-30	SA 30T-12	CONC. FNDT.	BASLINE STA 37+40	I							
SHEET TOTALS				43		9		7		15	

LEGEND:

E - ESTIMATED  
F - FINAL  
\* - FOR CONTRACTORS INFORMATION ONLY

NOTES:

- 1) USE THIS SUMMARY WITH "EXISTING ILLUMINATION LAYOUT - IH37".
- 2) EXISTING LUMINAIRES TO BE REMOVED ARE REFERENCED BY THE CIRCUIT I.D. NUMBER ON THE POLES IN THE FIELD.
- 3) ALL LUMINAIRES WILL BE VERIFIED IN THE FIELD AND APPROVED BY THE TXDOT REPRESENTATIVE BEFORE REMOVING. UNDER "EXISTING ASSEMBLY DESCRIPTION", CIRCLE THE "S" OR "A" TO DESIGNATE WHETHER THE POLE WAS VERIFIED TO BE A STEEL OR AN ALUMINUM POLE.
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- 5) REMOVAL AND REPLACEMENT OF SIGN LIGHTING DISCONNECT, CONDUIT AND CONDUCTORS WILL BE SUBSIDIARY TO BID ITEM 618, 620 AND 628.
- 6) REMOVAL OF SIGN LIGHTING FIXTURES WILL BE SUBSIDIARY TO BID ITEM 652.

# PROJECT SUMMARY SUMMARY OF ILLUMINATION POLE REMOVAL

4

SHEET 2 OF 6 SHEETS			
FED. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	IM37-1(103)000		4
STATE	DIST.	COUNTY	
TEXAS	16	NUECES	
CONT.	SECT.	JOB	HIGHWAY NO.
074	06	179	1H 37



EXISTING POLE NUMBER	EXISTING ASSEMBLY DESCRIPTION	MOUNTING TYPE	ASSEMBLY LOCATION BASELINE & STATION	ITEM 611 REMOV * RDWY ILL ASSEM		ITEM 611 REMOV * RDWY ILL ASSEM (BR MOUNT)		ITEM 611 REMOV * RDWY ILL ASSEM (U/P)		SIGN * LIGHT REMOVAL	
				E	F	E	F	E	F	E	F
IH37 - PEABODY TO UP RIVER RD. (S.P. located on Lawrence St.)											
A-1	SA 30T-15	CONC. FNDT.	BASELINE STA 97+60	I							
A-2	SA 30T-15	CONC. FNDT.	BASELINE STA 95+90	I							
A-3	SA 30T-15	CONC. FNDT.	BASELINE STA 94+10	I							
A-4	SA 30T-15	CONC. FNDT.	BASELINE STA 92+30	I							
A-5	SA 30T-15	CONC. FNDT.	BASELINE STA 91+60	I							
A-6	SA 30T-15	CONC. FNDT.	BASELINE STA 88+80	I							
A-7	SA 30T-15	CONC. FNDT.	BASELINE STA 87+00	I							
A-8	SA 30T-15	CONC. FNDT.	BASELINE STA 85+30	I							
A-9	SA 30T-15	CONC. FNDT.	BASELINE STA 83+60	I							
A-10	SA 30T-15	CONC. FNDT.	BASELINE STA 81+90	I							
A-11	SA 30T-15	CONC. FNDT.	BASELINE STA 80+10	I							
A-12	UP	WALL PACK	BASELINE STA 79+00					I			
A-13	SA 30T-15	BRCKT. MT.	BASELINE STA 78+50			I					
A-14	UP	WALL PACK	BASELINE STA 78+40					I			
A-15	SA 30T-15	CONC. FNDT.	NUECES BAY BLVD. STA 4+30	I							
A-16	SA 30T-15	CONC. FNDT.	BASELINE STA 76+70	I							
A-17	SA 30T-15	CONC. FNDT.	BASELINE STA 74+80	I							
A-18	SA 30T-15	CONC. FNDT.	BASELINE STA 73+00	I							
A-19	SA 30T-15	CONC. FNDT.	BASELINE STA 71+30	I							
A-20	SA 30T-15	CONC. FNDT.	BASELINE STA 69+90	I							
A-21	SA 30T-15	CONC. FNDT.	BASELINE STA 68+00	I							
S6	S6-SIGN-OSB		REMOVE & REPLACE FIXTURES							8	
A-22	SA 30T-15	CONC. FNDT.	BASELINE STA 66+50	I							
A-23	SA 30T-15	CONC. FNDT.	BASELINE STA 64+60	I							
A-25	SA 30T-15	CONC. FNDT.	BASELINE STA 60+80	I							
A-26	SA 30T-15	CONC. FNDT.	BASELINE STA 59+04	I							
A-27	SA 30T-15	CONC. FNDT.	BASELINE STA 57+28	I							
A-28	SA 30T-15	CONC. FNDT.	BASELINE STA 55+53	I							
A-29	SA 30T-15	CONC. FNDT.	BASELINE STA 53+70	I							
IH37 - PEABODY TO UP RIVER RD. (S.P. located on Lawrence St.)											
B-1	SA 30T-15	CONC. FNDT.	BASELINE STA 98+00	I							
B-2	SA 30T-15	CONC. FNDT.	BASELINE STA 96+30	I							
B-3	SA 30T-15	CONC. FNDT.	BASELINE STA 94+50	I							
B-4	SA 30T-15	CONC. FNDT.	BASELINE STA 92+70	I							
B-5	SA 30T-15	CONC. FNDT.	BASELINE STA 90+90	I							
B-6	SA 30T-15	CONC. FNDT.	BASELINE STA 89+20	I							
B-7	SA 30T-15	CONC. FNDT.	BASELINE STA 87+50	I							
B-8	SA 30T-15	CONC. FNDT.	BASELINE STA 85+80	I							
B-9	SA 30T-15	CONC. FNDT.	BASELINE STA 83+80	I							
B-10	SA 30T-15	CONC. FNDT.	BASELINE STA 82+00	I							
S94	S94-SIGN-OSB	ON BRIDGE SIGN	REMOVE & REPLACE FIXTURES							5	
B-11	SA 30T-15	CONC. FNDT.	BASELINE STA 80+40	I							
B-12	SA 30T-15	CONC. FNDT.	NUECES BAY BLVD. STA 2+03	I							
B-13	UP	WALL PACK	BASELINE STA 79+00					I			
B-14	SA 30T-12	BRACKET MT.	BASELINE STA 78+60			I					
B-15	UP	WALL PACK	BASELINE STA 78+20					I			
B-16	SA 30T-15	CONC. FNDT.	BASELINE STA 76+80	I							
B-17	SA 30T-15	CONC. FNDT.	BASELINE STA 75+20	I							
B-18	SA 30T-15	CONC. FNDT.	BASELINE STA 73+48	I							
B-19	SA 30T-15	CONC. FNDT.	BASELINE STA 71+70	I							
B-20	SA 30T-15	CONC. FNDT.	BASELINE STA 70+00	I							
B-21	SA 30T-15	CONC. FNDT.	BASELINE STA 68+10	I							
B-22	SA 30T-15	CONC. FNDT.	BASELINE STA 65+80	I							
B-23	SA 30T-15	CONC. FNDT.	BASELINE STA 64+60	I							
B-24	SA 30T-15	CONC. FNDT.	BASELINE STA 62+80	I							
B-25	SA 30T-15	CONC. FNDT.	BASELINE STA 61+00	I							
B-26	SA 30T-15	CONC. FNDT.	BASELINE STA 59+00	I							
B-27	SA 30T-15	CONC. FNDT.	BASELINE STA 57+50	I							
B-28	SA 30T-15	CONC. FNDT.	BASELINE STA 55+90	I							
B-29	SA 30T-15	CONC. FNDT.	BASELINE STA 54+20	I							
S95	S95-SIGN-OSB		REMOVE & REPLACE FIXTURES							5	
B-30		CONC. FNDT.	BASELINE STA 52+50	I							
SHEET TOTALS				52		2		4		18	

LEGEND:

E - ESTIMATED  
F - FINAL  
\* - FOR CONTRACTORS INFORMATION ONLY

NOTES:

- 1) USE THIS SUMMARY WITH "EXISTING ILLUMINATION LAYOUT - IH37".
- 2) EXISTING LUMINAIRES TO BE REMOVED ARE REFERENCED BY THE CIRCUIT I.D. NUMBER ON THE POLES IN THE FIELD.
- 3) ALL LUMINAIRES WILL BE VERIFIED IN THE FIELD AND APPROVED BY THE TXDOT REPRESENTATIVE BEFORE REMOVING. UNDER "EXISTING ASSEMBLY DESCRIPTION", CIRCLE THE "S" OR "A" TO DESIGNATE WHETHER THE POLE WAS VERIFIED TO BE A STEEL OR AN ALUMINUM POLE.
- 4) ALL LUMINAIRES ON THIS SUMMARY WILL BE MAINTAINED BY THE CONTRACTOR IN AN OPERATIVE CONDITION UNTIL REMOVED. THIS COST WILL BE REFLECTED IN THE VARIOUS BID ITEMS.
- 5) REMOVAL AND REPLACEMENT OF SIGN LIGHTING DISCONNECT, CONDUIT AND CONDUCTORS WILL BE SUBSIDIARY TO BID ITEM 618, 620 AND 628.
- 6) REMOVAL OF SIGN LIGHTING FIXTURES WILL BE SUBSIDIARY TO BID ITEM 652.

# PROJECT SUMMARY SUMMARY OF ILLUMINATION POLE REMOVAL

5

SHEET 3 OF 6 SHEETS			
FED. RD. DIST. NO.	FEDERAL AID PROJECT NO.	SHEET NO.	
6	1M37-(163)000	5	
STATE	DIST.	COUNTY	
TEXAS	16	NUECES	
CONT.	SECT.	JOB	HIGHWAY NO.
074	06	179	IH 37

EXISTING POLE NUMBER	EXISTING ASSEMBLY DESCRIPTION	MOUNTING TYPE	ASSEMBLY LOCATION BASELINE & STATION	ITEM 611 REMOV * RDWY * ILL ASSEM		ITEM 611 REMOV * RDWY * ILL ASSEM (BR MOUNT)		ITEM 611 REMOV * RDWY * ILL ASSEM (U/P)		SIGN LIGHT REMOVAL	
				E	F	E	F	E	F	E	F
IH37 - PEABODY TO UP RIVER RD. (S.P. located on Lawrence St.)											
C-1	SA 30T-12	CONC. FNDT.	BASLINE STA 100+07	I							
C-2	UP	WALL PACK	BASLINE STA 100+20					I			
C-3	UP	WALL PACK	BASLINE STA 100+99					I			
C-4	SA 30T-15	CONC. FNDT.	BASLINE STA 101+70	I							
C-5	SA 30T-15	CONC. FNDT.	LAWRENCE DR. STA 100+90	I							
C-6	SA 30T-15	CONC. FNDT.	BASLINE STA 103+40	I							
C-7	SA 30T-15	CONC. FNDT.	BASLINE STA 105+20	I							
C-8	SA 30T-15	CONC. FNDT.	BASLINE STA 106+90	I							
C-9	SA 30T-15	CONC. FNDT.	BASLINE STA 108+70	I							
C-10	SA 30T-15	CONC. FNDT.	BASLINE STA 110+20	I							
S93	S93-SIGN-OSB	CONC. FNDT.	REMOVE & REPLACE							4	
C-11	SA 30T-15	CONC. FNDT.	BASLINE STA 111+70	I							
C-12	SA 30T-15	CONC. FNDT.	BASLINE STA 113+30	I							
C-13	SA 30T-15	CONC. FNDT.	BASLINE STA 115+00	I							
C-14	SA 30T-15	CONC. FNDT.	BASLINE STA 116+70	I							
C-15	SA 30T-15	CONC. FNDT.	BASLINE STA 118+40	I							
C-16	SA 30T-15	CONC. FNDT.	BASLINE STA 120+20	I							
C-17	SA 30T-15	CONC. FNDT.	BASLINE STA 121+90	I							
C-18	SA 30T-15	CONC. FNDT.	BASLINE STA 123+70	I							
C-19	SA 30T-15	CONC. FNDT.	BASLINE STA 125+40	I							
C-20	SA 30T-15	CONC. FNDT.	BASLINE STA 126+90	I							
C-21	SA 30T-15	CONC. FNDT.	BASLINE STA 128+80	I							
C-22	SA 30T-12	CONC. FNDT.	BASLINE STA 130+40	I							
C-23	SA 40T-8-.4KW	CONC. FNDT.	BASLINE STA 131+90	I							
C-24	SA 40T-8-.4KW	CONC. FNDT.	BASLINE STA 134+10	I							
C-25	SA 40T-8-.4KW	CONC. FNDT.	BASLINE STA 136+30	I							
C-26	SA 40T-8-.4KW	CONC. FNDT.	BASLINE STA 138+50	I							
C-27	UP	WALL PACK	BASLINE STA 138+80					I			
C-28	SA 40T-8-.4KW	CONC. FNDT.	BASLINE STA 137+50	I							
C-29	UP	WALL PACK	BASLINE STA 140+10					I			
C-30	SA 40T-8-.4KW	CONC. FNDT.	UP RIVER RD. STA. 5+23	I							
IH37 - PEABODY TO UP RIVER RD. (S.P. located on Lawrence St.)											
D-1	SA 30T-15	CONC. FNDT.	LAWRENCE DR. STA 12+62	I							
D-2	SA 30T-15	CONC. FNDT.	BASLINE STA 99+50	I							
D-3	U/P	WALL PACK	BASLINE APROX. STA 100+30					I			
D-4	U/P	WALL PACK	BASLINE STA 100+77					I			
D-5	SA 30T-12	BRACKET MT.	BASLINE STA 101+05			I					
D-6	SA 30T-15	CONC. FNDT.	BASLINE STA 102+90	I							
D-7	SA 30T-15	CONC. FNDT.	BASLINE STA 104+60	I							
D-8	SA 30T-15	CONC. FNDT.	BASLINE STA 106+38	I							
D-9	SA 30T-15	CONC. FNDT.	BASLINE STA 108+15	I							
D-10	SA 30T-15	CONC. FNDT.	BASLINE STA 110+00	I							
D-11	SA 30T-15	CONC. FNDT.	BASLINE STA 111+45	I							
D-12	SA 30T-15	CONC. FNDT.	BASLINE STA 113+13	I							
D-13	SA 30T-15	CONC. FNDT.	BASLINE STA 114+85	I							
D-14	SA 30T-15	CONC. FNDT.	BASLINE STA 116+70	I							
D-15	SA 30T-15	CONC. FNDT.	BASLINE STA 118+40	I							
D-16	SA 30T-15	CONC. FNDT.	BASLINE STA 120+10	I							
D-17	SA 30T-15	CONC. FNDT.	BASLINE STA 121+78	I							
D-18	SA 30T-15	CONC. FNDT.	BASLINE STA 123+70	I							
D-19	SA 30T-15	CONC. FNDT.	BASLINE STA 125+40	I							
S7	S7-SIGN-OSB	CONC. FNDT.	REMOVE & REPLACE FIXTURES							5	
D-20	SA 30T-15	CONC. FNDT.	BASLINE STA 127+07	I							
D-21	SA 30T-15	CONC. FNDT.	BASLINE STA 128+61	I							
D-22	SA 30T-15	CONC. FNDT.	BASLINE STA 129+94	I							
D-23	SA 40T-8-.4KW	CONC. FNDT.	BASLINE STA 132+10	I							
D-24	SA 40T-8-.4KW	CONC. FNDT.	BASLINE STA 134+50	I							
D-25	SA 40T-8-.4KW	CONC. FNDT.	BASLINE STA 136+90	I							
D-26	SA 40T-8-.4KW	CONC. FNDT.	UP RIVER RD. STA. 7+60	I							
D-27	U/P	WALL PACK	BASLINE STA 139+14					I			
D-28	SA 40S--8-.4KW	BRACKET MT.	BASLINE STA 139+23			I					
D-29	U/P	WALL PACK	BASLINE STA 140+61					I			
D-30	SA 40S--8-.4KW	CONC. FNDT.	UP RIVER RD. STA. 9+00	I							
SHEET TOTALS				50		2		8		9	

LEGEND:

E - ESTIMATED  
F - FINAL  
\* - FOR CONTRACTORS INFORMATION ONLY

NOTES:

- 1) USE THIS SUMMARY WITH "EXISTING ILLUMINATION LAYOUT - IH37".
- 2) EXISTING LUMINAIRES TO BE REMOVED ARE REFERENCED BY THE CIRCUIT I.D. NUMBER ON THE POLES IN THE FIELD.
- 3) ALL LUMINAIRES WILL BE VERIFIED IN THE FIELD AND APPROVED BY THE TXDOT REPRESENTATIVE BEFORE REMOVING. UNDER "EXISTING ASSEMBLY DESCRIPTION", CIRCLE THE "S" OR "A" TO DESIGNATE WHETHER THE POLE WAS VERIFIED TO BE A STEEL OR AN ALUMINUM POLE.
- 4) ALL LUMINAIRES ON THIS SUMMARY WILL BE MAINTAINED BY THE CONTRACTOR IN AN OPERATIVE CONDITION UNTIL REMOVED. THIS COST WILL BE REFLECTED IN THE VARIOUS BID ITEMS.
- 5) REMOVAL AND REPLACEMENT OF SIGN LIGHTING DISCONNECT, CONDUIT AND CONDUCTORS WILL BE SUBSIDIARY TO BID ITEM 618, 620 AND 628.
- 6) REMOVAL OF SIGN LIGHTING FIXTURES WILL BE SUBSIDIARY TO BID ITEM 652.

# PROJECT SUMMARY

## SUMMARY OF ILLUMINATION POLE REMOVAL

SHEET 4 OF 6 SHEETS					
SHEET NO.	FEDERAL AID PROJECT NO.	SHEET NO.	STATE	DIST.	COUNTY
6	1M37-1(103)000	6	TEXAS	16	MIJECES
CON.	SECT.	JOB	HIGHWAY NO.		
074	06	174	1437		

EXISTING POLE NUMBER	EXISTING ASSEMBLY DESCRIPTION	MOUNTING TYPE	ASSEMBLY LOCATION BASELINE & STATION	ITEM 611		ITEM 611		ITEM 611		SIGN LIGHT REMOVAL	
				REMOV * RDWY ILL ASSEM		REMOV * RDWY ILL ASSEM (BR MOUNT)		REMOV * RDWY ILL ASSEM (U/P)		E	F
1H-37 UP RIVER RD. TO MCBRIDE (S.P. located on Navigation Blvd. )											
A-1 & A-2	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 177+00								
A-3 & A-4	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 179+30								
S91	S91-SIGN-OSB	CONC. FNDT.	REMOVE & REPLACE FIXTURES								5
A-5 & A-6	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 181+60								
A-7 & A-8	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 183+90								
A-9 & A-10	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 186+30								
A-11 & A-12	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 188+70								
A-13 & A-14	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 190+90								
A-15 & A-16	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 193+60								
A-17 & A-18	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 195+90								
S10	S10-SIGN-OSB	CONC. FNDT.	REMOVE & REPLACE FIXTURES								3
A-19 & A-20	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 198+30								
A-21 & A-22	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 200+80								
A-23 & A-24	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 203+00								
S11	S11-SIGN ON BRIDGE	ON BRIDGE	REMOVE & REPLACE FIXTURES								6
S90	S90-ON BRIDGE		REMOVE & REPLACE FIXTURES								5
A-25	AL 40T-6B-.4KW CONC.	FNDT	BASELINE STA 2+73								
A-26	AL 40T-6B-.4KW	CONC. FNDT.	McBRIDE LANE STA. 7+27								
A-27 & A-28	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 205+20								
A-29 & A-30	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 207+40								
A-31 & A-32	AL 40T-6B-6B-.4KW	CONC. FNDT.	BASELINE STA 209+60								
S12	S12-SIGN-OSB	CONC. FNDT.	REMOVE & REPLACE FIXTURES								9
1H-37 UP RIVER RD. TO MCBRIDE (S.P. located on Navigation Blvd. )											
B-1 & B-2	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 174+65								
B-3 & B-4	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 172+40								
S9	S9-SIGN-OSB	CONC. FNDT.	REMOVE & REPLACE FIXTURES								2
B-5 & B-6	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 170+15								
B-7 & B-8	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 167+92								
S8	S8-SIGN-OSB	CONC. FNDT.	REMOVE & REPLACE FIXTURES								5
B-9 & B-10	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 165+68								
B-11 & B-12	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 163+43								
B-13 & B-14	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 161+20								
B-15 & B-16	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 158+93								
B-17 & B-18	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 156+68								
B-19 & B-20	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 154+46								
SIGN	SIGN	ON BRIDGE	REMOVE & REPLACE FIXTURES								5
B-21 & B-22	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 152+26								
B-23 & B-24	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 149+95								
B-25 & B-26	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 147+70								
B-27 & B-28	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 145+60								
B-29 & B-30	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 143+25								
B-31 & B-32	AL 40S-6B-6B-.4KW	CTB	BASELINE STA 141+13								
1H-37 UP RIVER RD. TO MCBRIDE (S.P. located on Navigation Blvd. )											
C-1	AL 40T-6B-6B-.4KW	CONC. FNDT.	NAVIGATION STA. 6+00								
C-2	U/P	WALL PACK	N. FRT. ST. STA. 173+00								
C-3	AL 40T-6B-6B-.4KW	CONC. FNDT.	NAVIGATION STA. 3+30								
C-4	AL 40T-6B-6B-.4KW	CONC. FNDT.	BASELINE STA 173+90								
C-5	U/P	WALL PACK	BASELINE APPROX. STA 174+15								
C-6	AL 40T-6B-6B-.4KW	CONC. FNDT.	NAVICA. STA 6+00								
C-7	U/P	WALL PACK	BASELINE STA 174+00								
C-8	U/P	WALL PACK	BASELINE STA 173+10								
SHEET TOTALS				37		0		4		40	

EXISTING POLE NUMBER	EXISTING ASSEMBLY DESCRIPTION	MOUNTING TYPE	ASSEMBLY LOCATION BASELINE & STATION	ITEM 611 REMOV RDWY * ILL ASSEM		ITEM 611 REMOV RDWY * ILL ASSEM (BR MOUNT)		ITEM 611 REMOV RDWY * ILL ASSEM (U/P)		SIGN LIGHT REMOVAL *	
				E	F	E	F	E	F	E	F
IH-37 MCBRIDE TO LANTANA (Including IH37/SH358 Interchange) (S.P. located at Lantana St.)											
J-1	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA. 228+60	I							
J-2	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 229+60	I							
J-3	SA 40S-8B-.4KW	CONC. FNDT.	BASELINE STA 229+45	I							
J-4	SA 40S-8B-.4KW	CONC. FNDT.	BASELINE STA 231+70	I							
J-5	SA 40S-8B-.4KW	CONC. FNDT.	BASELINE STA 234+00	I							
J-6	SA 40S-8B-.4KW	CONC. FNDT.	BASELINE STA 231+80	I							
J-7	SA 40S-8B-.4KW	CONC. FNDT.	BASELINE STA 234+00	I							
J-8 & J-9	SA 40T-6-6-.4KW	CTB.	BASELINE STA 236+00	I							
J-10 & J-11	SA 40T-6-6-.4KW	CTB.	BASELINE STA 238+30	I							
J-12 & J-13	SA 40S-6-6-.4KW	CTB.	BASELINE STA 240+50	I							
J-14 & J-15	SA 40S-6-6-.4KW	CTB.	BASELINE STA 242+75	I							
S88	S88-SIG-OSB	CONC. FNDT.	REMOVE & REPLACE FIXTURES							8	
J-16 & J-17	SA 40S-6-6-.4KW	CTB.	BASELINE STA 244+80	I							
K-1	SA 40S-8-.4KW	CONC. FNDT.	BASELINE STA 229+60	I							
K-2	U/P	WALL PACK	BASELINE STA 228+00					I			
K-3	U/P	WALL PACK	BASELINE STA 228+44					I			
K-4	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 227+90	I							
K-5	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 225+30	I							
K-6	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 223+10	I							
K-7	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 220+90	I							
K-8	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 218+70	I							
K-9	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 216+60	I							
K-10	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 214+30	I							
K-11	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 227+30	I							
S89	OSB-S7-SIGN	CONC. FNDT.	REMOVE & REPLACE FIXTURES							6	
K-12	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 225+50	I							
K-13	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 223+80	I							
K-14	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 222+30	I							
K-15	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 221+60	I							
K-16	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 221+30	I							
L-1	SA 40T-8-.4KW	CONC. FNDT.	LANTANA RD. STA. 4+30	I							
L-2	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA. 227+80	I							
L-3	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 224+40	I							
L-4	SA 40S-6-.4KW	BRACKET MT.	BASELINE STA 222+30			I					
L-5	SA 40S-6-.4KW	BRACKET MT.	BASELINE STA 221+00			I					
L-6	SA 40S-6-.4KW	BRACKET MT.	BASELINE STA 220+00			I					
L-7	U/P	WALL PACK	BASELINE STA 220+20					I			
L-8	SA 40S-6-.4KW	BRACKET MT.	BASELINE STA 219+80			I					
L-9	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 219+70	I							
L-10	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 219+60	I							
L-11	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 219+00	I							
L-12	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 218+90	I							
L-13	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 218+20	I							
L-14	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 217+50	I							
L-15	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 216+30	I							
L-16	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 214+60	I							
L-17	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 212+80	I							
L-18	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 211+10	I							
M-1	U/P	WALL PACK	BASELINE STA 228+65					I			
M-2	U/P	WALL PACK	BASELINE STA 228+06					I			
M-3	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 227+20	I							
M-4	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 224+95	I							
M-5	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 222+70	I							
M-6	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 220+45	I							
M-7	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 218+20	I							
M-8	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 215+95	I							
M-9	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 213+70	I							
M-10	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 211+50	I							
M-11	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 211+90	I							
M-12	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 214+30	I							
M-13	SA 40S-8-.4KW	BRACKET MT.	BASELINE STA 216+37			I					
M-14	U/P	WALL PACK	BASELINE STA 217+55					I			
M-15	SA 40S-8-.4KW	CONC. FNDT.	BASELINE STA 218+40	I							
M-16	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 219+70	I							
M-17	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 220+60	I							
M-18	SA 40T-8-.4KW	CONC. FNDT.	BASELINE STA 221+00	I							
SHEET TOTALS				53		5		6		14	
PROJECT TOTAL				269		30		34		117	
PROJECT TOTAL (FINAL ESTIMATE)				271		30		34		117	

LEGEND:

- E - ESTIMATED
- F - FINAL
- - FOR CONTRACTORS INFORMATION ONLY

NOTES:

- 1) USE THIS SUMMARY WITH "EXISTING ILLUMINATION LAYOUT - IH37".
- 2) EXISTING LUMINAIRES TO BE REMOVED ARE REFERENCED BY THE CIRCUIT I.D. NUMBER ON THE POLES IN THE FIELD.
- 3) ALL LUMINAIRES WILL BE VERIFIED IN THE FIELD AND APPROVED BY THE TXDOT REPRESENTATIVE BEFORE REMOVING. UNDER "EXISTING ASSEMBLY DESCRIPTION", CIRCLE THE "S" OR "A" TO DESIGNATE WHETHER THE POLE WAS VERIFIED TO BE A STEEL OR AN ALUMINUM POLE.
- 4) ALL LUMINAIRES ON THIS SUMMARY WILL BE MAINTAINED BY THE CONTRACTOR IN AN OPERATIVE CONDITION UNTIL REMOVED. THIS COST WILL BE REFLECTED IN THE VARIOUS BID ITEMS.
- 5) REMOVAL AND REPLACEMENT OF SIGN LIGHTING DISCONNECT, CONDUIT AND CONDUCTORS WILL BE SUBSIDIARY TO BID ITEM 618, 620 AND 628.
- 6) REMOVAL OF SIGN LIGHTING FIXTURES WILL BE SUBSIDIARY TO BID ITEM 652.

## PROJECT SUMMARY

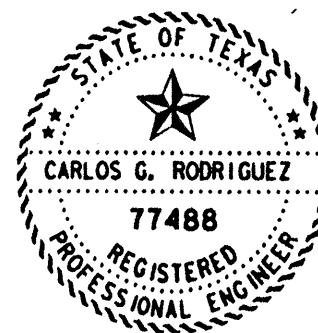
### SUMMARY OF ILLUMINATION POLE REMOVAL

SHEET 6 OF 6 SHEETS			
FED. RD. DIST. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	IM37-1 (1031000)		8
STATE	DIST.	COUNTY	
TEXAS	16	NUECES	
CONT.	SECT.	JOB	HIGHWAY NO.
074	06	179	IH 37



HIGH MAST POLE LOCATIONS AND DRILLED SHAFT LENGTH														
POLE LOCATIONS			ELEVATIONS			AVG. N	POLE	DRILLED SHAFT		COORDINATES		REF LINE	FIXTURE 1 (TYPE & NO.)	
HM NO.	STA	OFFSET	EXISTING	FINISHED	TOP SHAFT	BLOWS/F7	HEIGHT	DIA.	LENGTH (FT)	X (EAST)	Y (NORTH)	BEARING (1) (2)	SYMMETRIC	ASYMMETRIC
HM 1	4+72	165.54 LT	37.00	37.00	40.00	30	150	60"	28	2354994.47	775969.48	PARALLEL TO CL		12-400W TY B
HM 2	12+10	134.55 LT	27.93	27.93	30.93	30	150	60"	28	2354221.73	775968.63	PARALLEL TO CL		12-400W TY B
HM 3	19+98	124.36 LT	14.66	14.66	17.66	30	175	60"	32	2353434.36	775987.56	PARALLEL TO CL		12-400W TY B
HM 4	28 +01	63.25 RT	11.81	11.81	14.81	30	175	60"	32	2352668.01	776183.71	PARALLEL TO CL	12-400W	
HM 5	27 +67	326.41 LT	24.97	24.97	27.97	30	175	60"	32	2352629.83	775794.44	PARALLEL TO CL		12-400W TY B
HM 6	35+41	13.77 LT	33.19	33.19	36.19	30	175	60"	32	2351893.07	776115.30	PARALLEL TO CL		12-400W TY B
HM 7	44+61	130.54 RT	24.54	24.54	27.54	30	175	60"	32	2350974.20	776269.82	PARALLEL TO CL		12-400W TY B
HM 8	52+64	108.43 RT	21.85	21.85	24.85	30	150	60"	28	2350171.34	776256.63	PARALLEL TO CL		12-400W TY B
HM 9	60+79	99.85 LT	25.37	25.37	28.37	30	150	60"	28	2349329.99	776158.42	PARALLEL TO CL		12-400W TY B
HM 10	67+48	87.58 LT	24.83	24.83	27.83	30	150	60"	28	2348749.05	776526.03	PARALLEL TO CL		12-400W TY B
HM 11	74+59	90.80 LT	30.80	30.80	33.80	30	150	60"	28	2348156.25	776908.77	PARALLEL TO CL		12-400W TY B
HM 12	82+80	91.60 LT	27.26	27.26	30.26	30	150	60"	28	2347430.63	777257.75	PARALLEL TO CL		12-400W TY B
HM 13	91+09	82.71 LT	23.11	23.11	26.11	35	150	60"	25	2346652.06	777491.43	PARALLEL TO CL		12-400W TY B
HM 14	99+28	111.36 LT	28.16	28.16	31.16	35	150	60"	25	2345852.47	777552.95	PARALLEL TO CL		12-400W TY B
HM 15	107+39	81.36 LT	29.65	29.65	32.65	35	150	60"	25	2345041.78	777606.94	PARALLEL TO CL		12-400W TY B
HM 16	117+60	88.29 LT	39.55	39.55	42.55	35	150	60"	25	2344021.68	777630.19	PARALLEL TO CL		12-400W TY B
HM 17	126+77	88.37 LT	42.10	42.10	45.10	35	150	60"	25	2343104.38	777657.24	PARALLEL TO CL		12-400W TY B
HM 18	135+35	102.98 LT	43.86	43.86	46.86	35	150	60"	25	2342246.38	777667.99	PARALLEL TO CL		12-400W TY B
HM 19	144+54	89.49 LT	46.42	46.42	49.42	35	150	60"	25	2341324.66	777748.36	PARALLEL TO CL		12-400W TY B
HM 20	153+77	80.65 LT	45.62	45.62	48.62	35	150	60"	25	2340407.05	777852.92	PARALLEL TO CL		12-400W TY B
HM 21	161+82	88.47 LT	45.91	45.91	48.91	35	150	60"	25	2339605.65	777928.61	PARALLEL TO CL		12-400W TY B
HM 22	169+73	110.33 RT	49.23	49.23	52.23	35	150	60"	25	2338839.28	778208.39	PARALLEL TO CL		12-400W TY B
HM 23	177+70	89.55 RT	53.43	53.43	56.43	35	150	60"	25	2338045.20	778270.28	PARALLEL TO CL		12-400W TY B
HM 24	185+31	84.85 LT	48.54	48.56	51.56	35	150	60"	25	2337270.10	778175.76	PARALLEL TO CL		12-400W TY B
HM 25	192+04	91.71 RT	48.06	48.06	51.06	48	150	60"	23	2336606.94	778393.95	PARALLEL TO CL		12-400W TY B
HM 26	199+83	121.81 RT	37.37	37.37	40.37	48	150	60"	23	2335823.86	778392.34	PARALLEL TO CL		12-400W TY B
HM 27	207+14	80.74 RT	32.89	32.89	35.89	48	150	60"	23	2335095.23	778318.43	PARALLEL TO CL		12-400W TY B
HM 28	215+10	68.33 RT	36.75	36.75	39.75	48	175	60"	27	2334300.01	778270.21	PARALLEL TO CL	12-400W	
HM 29	219+74	532.28 LT	40.45	40.45	43.45	48	175	60"	27	2333864.27	777649.38	PARALLEL TO CL	12-400W	
HM 30	222+35	53.37 RT	45.61	45.61	48.61	48	175	60"	27	2333576.42	778222.67	PARALLEL TO CL	12-400W	
HM 31	229+41	121.60 LT	45.84	45.84	48.84	48	150	60"	23	2332867.04	778048.02	PARALLEL TO CL		12-400W TY B
HM 32	239+66	90.97 LT	41.90	41.90	44.90	48	150	60"	23	2331845.23	778139.40	PARALLEL TO CL		12-400W TY B
HM 33	249+24	88.64 LT	43.22	43.22	46.22	48	150	60"	23	2330889.03	778202.51	PARALLEL TO CL		12-400W TY B
TOTAL									875.00					
FINAL ESTIMATE TOTAL									881.00					

- (1) FIXTURE ORIENTATION FOR ASYMMETRIC FIXTURES WILL BE 90° TO REFERENCE LINE BEARINGS.  
 (2) REFERENCE LINE FOR SYMMETRIC FIXTURES SHALL BE PARALLEL TO THE MAJOR ROADWAY OR AS DIRECTED BY THE ENGINEERS.



The seal appearing on  
 this document was  
 authorized by  
 Carlos G. Rodriguez,  
 P.E. 77488, on  
 2-6-1995

Carlos M. Rodriguez, P.E.

# HIGH MAST ILLUMINATION SUMMARY

SHEET 1 OF 1 SHEETS			
FED. RD. DIST. NO.	FEDERAL AID PROJECT NO.	SHEET NO.	
6	1M 37-1(103)000	9	
STATE	DIST.	COUNTY	
TEXAS	16	NUECES	
CONT.	SECT.	JOB	HIGHWAY NO.
0074	06	170	10 17

LEGEND:  
\* - FOR CONTRACTORS INFORMATION ONLY.

NOTES:

1) USE THIS SUMMARY WITH "PROPOSED ILLUMINATION LAYOUT - IH37".

2) INSTALL ALUMINUM CONDUIT UNDER BRIDGE STRUCTURES, ABUTEMENTS OR BENTS SO THAT IT IS NOT NOTICEABLE TO THE TRAVELING PUBLIC BUT IS EASILY ACCESSIBLE AND MAINTAINABLE. CONDUIT PLACEMENT WILL BE APPROVED BY THE ENGINEER.

CIRCUIT RUN SUMMARY																	
CIRCUIT RUN NUMBER	*GROUNDED CONDUCTOR					* SIZE, TYPE & LENGTH OF CONDUCTORS							* SIZE, TYPE AND LENGTH OF CONDUIT				
	ITEM 620 (L.F.) *4 BARE	ITEM 620 (L.F.) *6 BARE	ITEM 620 (L.F.) *8 BARE	ITEM 620 (L.F.) *10 BARE	ITEM 620 (L.F.) *12 BARE		ITEM 620 (L.F.) *4 INSULATED	ITEM 620 (L.F.) *6 INSULATED	ITEM 620 (L.F.) *8 INSULATED	ITEM 620 (L.F.) *10 INSULATED	ITEM 620 (L.F.) *12 INSULATED		CIRCUIT RUN NUMBER	ITEM 618 (L.F.) ¾" AL	ITEM 618 (L.F.) 1" RM	ITEM 618 (L.F.) 2" PVC SCH 80 BORED	ITEM 618 (L.F.) 2" PVC SCH 40
1			45						2- 45				1				45
2			215						2- 215				2				215
2A			45						2- 45				2A			45	
2B			160						2- 160				2B				160
2C			160						2- 160				2C				160
2D			45						2- 45				2D			45	
2E			165						2- 165				2E				165
3				40						2- 40			3			40	
3A				195						2- 195			3A				195
4				45						2- 45			4			45	
4A				40						2- 40			4A				40
5				30						2- 30			5				30
5A				60						2- 60			5A			60	
5B				15						2- 15			5B				15
6	35						2- 35		2- 35				6				35
6A	55						2- 55		2- 55				6A			55	
6B			150						2- 150				6B				150
6C			195						2- 195				6C				195
7	75						2- 75						7				75
7A	225						2- 225						7A		225		
7B	40						2- 40						7B		40		
7C	125						2- 125						7C				125
7D	35						2- 35						7D			35	
7E	80						2- 80						7E				80
8	160						2- 160						8				160
8A	60						2- 60						8A			60	
8B	125						2- 125						8B				125
9	250						2- 250						9				250
9A	200						2- 200						9A				200
9B	165						2- 165						9B				165
9C	25						2- 25						9C			25	
9D	170						2- 170						9D				170
10				80							2- 80		10				80
10A				60							2- 60		10A			40	20
10B				20							2- 20		10B				20
10C				120							2- 120		10C	120			
10D				30							2- 30		10D	30			
11				30							2- 30		11	30			
11A				70							2- 70		11A	70			
11B				30							2- 30		11B	30			
12				25							2- 25		12				25
12A				150							2- 150		12A	150			
12B				180							2- 180		12B	180			
12C				25							2- 25		12C	25			
SHEET TOTALS	1825.0	0	1180	425.0	820.0	0	3650.0	0	2360.0	850.0	1640.0	0		635	265	450.0	2,900.0

10  
PROJECT SUMMARY  
SUMMARY OF CIRCUIT RUNS  
AND CONDUCTOR RUNS

CIRCUIT RUN SUMMARY																	
CIRCUIT RUN NUMBER	• GROUNDING CONDUCTOR					• SIZE, TYPE & LENGTH OF CONDUCTORS						• SIZE, TYPE AND LENGTH OF CONDUIT					
	ITEM	ITEM	ITEM	ITEM	ITEM		ITEM	ITEM	ITEM	ITEM	ITEM		CIRCUIT	ITEM 618	ITEM 618	ITEM 618	ITEM 618
	620	620	620	620	620		620	620	620	620	620		RUN	618	618	618	618
	(L.F.)	(L.F.)	(L.F.)	(L.F.)	(L.F.)		(L.F.)	(L.F.)	(L.F.)	(L.F.)	(L.F.)		NUMBER	(L.F.)	(L.F.)	(L.F.)	(L.F.)
	#4	#6	#8	#10	#12		#4	#6	#8	#10	#12			¾"	1"	2"	2"
	BARE	BARE	BARE	BARE	BARE		INSULATED	INSULATED	INSULATED	INSULATED	INSULATED			AL	RM	PVC	PVC
																SCH 80	SCH 40
																BORED	
13					80						2- 80		13	80			
13A					25						2- 25		13A	25			
14					10						2- 10		14	10			
14A					85						2- 85		14A	85			
14B					35						2- 35		14B	35			
15					100						2- 100		15				100
15A					70						2- 70		15A	70			
15B					30						2- 30		15B	30			
16					30						2- 30		16	30			
17					30						2- 30		17	30			
17A					60						2- 60		17A				60
17B					20						2- 20		17B				20
18					90						2- 90		18	90			
18A					20						2- 20		18A	20			
19				25						2- 25		19					25
19A				45						2- 45		19A				45	
19B				10						2- 10		19B					10
19C				20						2- 20		19C				20	
19D				30						2- 30		19D					30
19E				50						2- 50		19E				50	
19F				120						2- 120		19F					120
19G				10						2- 10		19G					10
20				35						2- 35		20				35	
20A				80						2- 80		20A					80
21			45					2- 45				21				45	
21A			25					2- 25				21A					25
22			45					2- 45				22					45
22A					80						2- 80	22A	80				
22B					30						2- 30	22B	30				
23					100						2- 100	23	100				
23A					30						2- 30	23A	30				
24					145						2- 145	24	145				
24A					180						2- 180	24A	180				
24B					30						2- 30	24B	30				
25					30						2- 30	25	30				
25A					85						2- 85	25A				85	
25B					25						2- 25	25B	25				
26					165						2- 165	26	165				
26A					145						2- 145	26A	145				
26B					25						2- 25	26B	25				
27					100						2- 100	27	100				
27A					25						2- 25	27A	25				
28			215					2- 215				28					215
28A			250					2- 250				28A					250
28B			15					2- 15				28B			15		
28C			180					2- 180				28C					180
28D			150					2- 150				28D					150
29				10						2- 10		29					10
29A				55						2- 55		29A			55		
29B				60						2- 60		29B					60
30				50						2- 50		30			50		
30A				100						2- 100		30A					100
30B				10						2- 10		30B					10
31			40					2- 40				31			40		
31A			215					2- 215				31A					215
31B			250					2- 250				31B					250
32			225					2- 225				32					225
33			210					2- 210				33					210
33A			15					2- 15				33A			15		
33B			250					2- 250				33B					250
33C			250					2- 250				33C					250
34			220					2- 220				34					220
34A			80					2- 80				34A					80
34B			55					2- 55				34B		55			
34C					30					2- 30		34C	30				
35					30					2- 30		35	30				
35A					20					2- 20		35A					20
35B					30					2- 30		35B	30				
SHEET TOTALS	0	0	2735.0	710	1990.0		0	0	5470.0	1420	3980.0			1760	0	370	3305

LEGEND:

• - FOR CONTRACTORS INFORMATION ONLY.

NOTES:

- 1) USE THIS SUMMARY WITH "PROPOSED ILLUMINATION LAYOUT - IH37".
- 2) INSTALL ALUMINUM CONDUIT UNDER BRIDGE STRUCTURES, ABUTEMENTS OR BENTS SO THAT IT IS NOT NOTICEABLE TO THE TRAVELING PUBLIC BUT IS EASILY ACCESSIBLE AND MAINTAINABLE. CONDUIT PLACEMENT WILL BE APPROVED BY THE ENGINEER.

PROJECT SUMMARY

SUMMARY OF CIRCUIT RUNS  
AND CONDUCTOR RUNS

SHEET 2 OF 5 SHEETS									
STATE	TEXAS	FEDERAL AID PROJECT NO.	1M37-1(103)000	IN	37				
COUNTY	MIKECES	0074	06	179	11				

CIRCUIT RUN SUMMARY																	
CIRCUIT RUN NUMBER	• GROUNDED CONDUCTOR					• SIZE, TYPE & LENGTH OF CONDUCTORS						• SIZE, TYPE AND LENGTH OF CONDUIT					
	ITEM 620 (L.F.) #4	ITEM 620 (L.F.) #6	ITEM 620 (L.F.) #8	ITEM 620 (L.F.) #10	ITEM 620 (L.F.) #12		ITEM 620 (L.F.) #4	ITEM 620 (L.F.) #6	ITEM 620 (L.F.) #8	ITEM 620 (L.F.) #10	ITEM 620 (L.F.) #12		CIRCUIT RUN NUMBER	ITEM 618 (L.F.) ¾" AL	ITEM 618 (L.F.) 1" RM	ITEM 618 (L.F.) 2" PVC SCH 80 BORED	ITEM 618 (L.F.) 2" PVC SCH 40
	BARE	BARE	BARE	BARE	BARE		INSULATED	INSULATED	INSULATED	INSULATED	INSULATED						
36					70						2- 70		36	70			
36A					30						2- 30		36A	30			
37					30						2- 30		37	30			
37A					20						2- 20		37A				20
37B					30						2- 30		37B	30			
38				35					2- 35				38		35		
38A				30					2- 30				38A				30
39				40					2- 40				39		40		
39A				45					2- 45				39A				45
40		35					2- 35	2- 35					40		35		
40A		220					2- 220						40A				220
40B		80					2- 80						40B				80
41		260					2- 260						41				260
41A		270					2- 270						41A				270
41B		270					2- 270						41B				270
42		270					2- 270						42				270
42A		200					2- 200						42A				200
42B		180					2- 180						42B				180
42C		165					2- 165						42C				165
43			50					2- 50					43				50
43A					70						2- 70		43A	70			
43B					25						2- 25		43B	25			
44					25						2- 25		44	25			
45					25						2- 25		45	25			
45A					135						2- 135		45A	135			
45B					25						2- 25		45B	25			
46					70						2- 70		46	70			
46A					25						2- 25		46A	25			
47			70					2- 70					47		70		
47A			110					2- 110					47A				110
47B			270					2- 270					47B				270
47C			280					2- 280					47C				280
48			35						2- 35				48		35		
48A			10						2- 10				48A				10
49			35					2- 35					49		35		
49A			250					2- 250					49A				250
49B			270					2- 270					49B				270
50			215					2- 215					50				215
50A			185					2- 185					50A				185
51				35					2- 35				51		35		
51A				10					2- 10				51A				10
52			35					2- 35					52		35		
52A			300					2- 300					52A				300
52B			220					2- 220					52B	220			
52C			110					2- 110					52C	110			
52D			200					2- 200					52D				220
53					40						2- 40		53	40			
54					40						2- 40		54	40			
54A					85						2- 85		54A	85			
54B					85						2- 85		54B	85			
54C					40						2- 40		54C	40			
55					130						2- 130		55	130			
55A					40						2- 40		55A	40			
56					130						2- 130		56	130			
56A					40						2- 40		56A	40			
57			90					2- 90					57				90
58				35					2- 35				58		35		
58A				100					2- 100				58A				100
59			35					2- 35					59		35		
59A			260					2- 260					59A				260
59B			270					2- 270					59B				270
60			275					2- 275					60				275
61				35					2- 35				61		35		
61A				10					2- 10				61A				10
62				40					2- 40				62		40		
62A				60					2- 60				62A				60
SHEET TOTALS	0	1950.0	3530	475	1210.0		0	3900	7130	950	2420			1520.0	0	465	5245

NOTES:

1) USE THIS SUMMARY WITH "PROPOSED ILLUMINATION LAYOUT - IH37".

2) INSTALL ALUMINUM CONDUIT UNDER BRIDGE STRUCTURES, ABUTMENTS OR BENTS SO THAT IT IS NOT NOTICEABLE TO THE TRAVELING PUBLIC BUT IS EASILY ACCESSIBLE AND MAINTAINABLE. CONDUIT PLACEMENT WILL BE APPROVED BY THE ENGINEER.

# FOR CONTRACTOR'S INFORMATION ONLY

PROJECT SUMMARY  
SUMMARY OF CIRCUIT RUNS  
AND CONDUCTOR RUNS



CIRCUIT RUN NUMBER	• GROUNDED CONDUCTOR					• SIZE, TYPE & LENGTH OF CONDUCTORS					• SIZE, TYPE AND LENGTH OF CONDUIT					
	ITEM 620 (L.F.) #4	ITEM 620 (L.F.) #6	ITEM 620 (L.F.) #8	ITEM 620 (L.F.) #10	ITEM 620 (L.F.) #12	ITEM 620 (L.F.) #4	ITEM 620 (L.F.) #6	ITEM 620 (L.F.) #8	ITEM 620 (L.F.) #10	ITEM 620 (L.F.) #12	CIRCUIT RUN NUMBER	ITEM 618 (L.F.) ¾" AL	ITEM 618 (L.F.) 1" RM	ITEM 618 (L.F.) 2" PVC SCH 80 BORED	ITEM 618 (L.F.) 2" PVC SCH 40	
						INSULATED	INSULATED	INSULATED	INSULATED	INSULATED						
63			50					2- 50			63				50	
63A			80					2- 80			63A					80
63B			170					2- 170			63B	170				
63C			265					2- 265			63C					265
64					30					2- 30	64	30				
65					30					2- 30	65	30				
65A					90					2- 90	65A	90				
65B					30					2- 30	65B	30				
66					70					2- 70	66	70				
66A					70					2- 70	66A	70				
66B					30					2- 30	66B	30				
67					90					2- 90	67	90				
67A					30					2- 30	67A	30				
68			105					2- 105			68					105
68A			200					2- 200			68A					200
69				40					2- 40		69			40		
69A				10					2- 10		69A					10
70			25					2- 25			70			25		
70A			15					2- 15			70A					15
71				25					2- 25		71			25		
71A				15					2- 15		71A					15
72			45					2- 45			72			45		
72A			210					2- 210			72A					210
72B			115					2- 115			72B					115
72C			20					2- 20			72C			20		
72D			210					2- 210			72D					210
72E			260					2- 260			72E					260
73			100					2- 100			73					100
74			145					2- 145			74					145
74A			60					2- 60			74A			60		
74B			200					2- 200			74B					200
74C			220					2- 220			74C					220
74D			130					2- 130			74D					130
75			40						2- 40		75			40		
75A			30						2- 30		75A					30
76			40					2- 40			76			40		
76A			40					2- 40			76A					40
76B			40					2- 40			76B			40		
76C			160					2- 160			76C					160
77			170					2- 170			77					170
77A			40					2- 40			77A			40		
77B			155					2- 155			77B					155
77C			170					2- 170			77C					170
77D			260					2- 260			77D					260
78			270					2- 270			78					270
78A			180					2- 180			78A					180
78B			145					2- 145			78B					145
79			185					2- 185			79					185
79A					25				2- 25		79A	25				
80					60				2- 60		80	60				
80A					25				2- 25		80A	25				
81					265				2- 265		81	265				
81A					200				2- 200		81A	200				
81B					75				2- 75		81B	75				
81C					35				2- 35		81C	35				
82					35				2- 35		82	35				
83					130				2- 130		83	130				
83A					150				2- 150		83A	150				
83B					210				2- 210		83B	210				
83C					50				2- 50		83C	50				
84					70				2- 70		84	70				
84A					35				2- 35		84A	35				
85				40					2- 40		85			40		
85A				50					2- 50		85A					50
86			30					2- 30			86			30		
86A			15					2- 15			86A					15
SHEET TOTALS	0	0	4595	180	1835.0	0	0	9050.0	500	3670.0		2005.0	0	415		4050

NOTES:

- 1) USE THIS SUMMARY WITH "PROPOSED ILLUMINATION LAYOUT - IH37".
- 2) INSTALL ALUMINUM CONDUIT UNDER BRIDGE STRUCTURES, ABUTEMENTS OR BENTS SO THAT IT IS NOT NOTICEABLE TO THE TRAVELING PUBLIC BUT IS EASILY ACCESSIBLE AND MAINTAINABLE. CONDUIT PLACEMENT WILL BE APPROVED BY THE ENGINEER.

\* - FOR CONTRACTORS INFORMATION ONLY.

PROJECT SUMMARY  
SUMMARY OF CIRCUIT RUNS  
AND CONDUCTOR RUNS



ELECTRICAL SERVICE SUMMARY												
Service Pole No.	Sheet No.	Service Pole Description (See ED (3)-93)	Service Conduit Size	Service Conductors No. / Size	Safety Switch Amps	Main Disconnect Switch Amp/Fuse	Ckt. Bkr. Pole / Amp	Two-Pole Contactor Amps	Panelbd./ Loadcenter Amp Rating (min)	Circuit No.	Branch Ckt. Bkr. Pole / Amps	KVA Load
1	65	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	13.82
2	65	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	1.15
3	64	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	.43
4	64	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	1.01
5	63	ELEC. SERV. TY A (240/480) 090 (NS) NM (E) TP (O)	1 1/2	3/ #4	NS	NA	2P/100A	100	NA	A B	2P/100A	20.74
6	63	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) EX (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	2.16
7	63	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	.29
8	62	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	.86
9	62	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A B	2P/30A	15.26
10	62	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	.43
11	61	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	.72
12	60	ELEC. SERV. TY A (240/480) 070 (NS) NM (E) TP (O)	1 1/2	3/ #4	NS	NA	2P/70A	70	NA	A B	2P/100A	21.70
13	60	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	1.15
14	59	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	.72
15	57	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) EX (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A B	2P/40A	28.61
16	57	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	.58
17	56	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/40A	13.82
18	56	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/40A	.72
19	54	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/40A	14.78
20	53	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	.72
21	53	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	13.82
22	53	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	.72
23	52	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	.29
24	52	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) EX (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	14.78
25	51	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	.72
26	51	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	6.91
27	50	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	.43
28	50	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/60A	20.74
29	49	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	1.30
30	49	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/50A	22.18
31	48	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	.86
32	48	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) EX (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/40A	7.87
33	46	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	1.15
34	46	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) EX (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	13.82
35	65	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	1.01
36	50	ELEC. SERV. TY A (240/480) 060 (NS) NM (E) TP (O)	1 1/2	3/ #6	NS	NA	2P/60A	60	NA	A	2P/20A	1.58

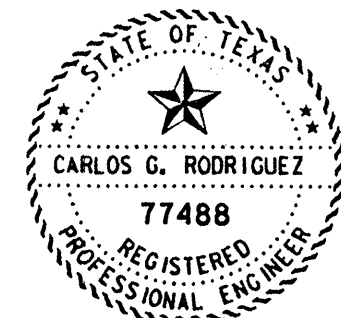
NOTE: ALL SERVICE POLES SHALL BE EQUIPPED WITH FOUR BRANCH CIRCUIT BREAKERS. THE FOUR BREAKERS SHALL INCLUDE THE SIZES SHOWN UNDER THE BRANCH CIRCUIT BREAKER COLUMN ABOVE AND SHALL INCLUDE ADDITIONAL BREAKERS SIZED AS DIRECTED BY THE ENGINEER. THE ADDITIONAL BREAKERS WILL NOT BE REQUIRED TO BE LARGER THAN 100 AMPS.

#### NOTES:

1. ED (3) - 93 REQUIRES THAT THE ENCLOSURE AND DISCONNECT COMBINATION BE RATED AS SERVICE ENTRANCE EQUIPMENT. THE MERE ASSEMBLY OF UL LISTED COMPONENTS DOES NOT MEET THIS SPECIFICATION AND WILL NOT BE ACCEPTED. THE ENCLOSURE AND DISCONNECT COMBINATION MUST HAVE A UL LABEL STATING "ENCLOSED CONTROL PANEL" OR OTHER WORDING INDICATING THAT THE PANEL ASSEMBLY IS UL LISTED.

2. ALL HIGH MAST FIXTURES SHALL BE NATURAL ALUMINUM OR SHALL BE PAINTED GRAY.

3. THE CONTRACTOR SHALL VERIFY WIRE SIZES AND CIRCUIT BREAKER SIZES PRIOR TO BEGINNING WORK.



APRIL 13, 1995  
Carlos G. Rodriguez P.E.

SUMMARY OF ELECTRICAL SERVICES  
REVISED 4-27-95

SHEET 1 OF 1 SHEETS			
FED. AID PROJECT NO.	IM 37 -1(103) 000	SHEET NO.	15
STATE	DIST.	COUNTY	
TEXAS	16	NUECES	
CONT.	SECT.	JOB	HIGHWAY NO.
0074	06	094	1H 37

GROUND BOX SUMMARY			
PROPOSED GROUND BOX NUMBER	PROPOSED GROUND BOX DESCRIPTION	APPROX STATION	ITEM 624
	GROUND BOX (TY A) (122311)W/ APRON	249+10	I
GB1	GROUND BOX (TY A) (122311)W/ APRON	247+00	I
GB2	GROUND BOX (TY A) (122311)W/ APRON	245+00	I
GB3	GROUND BOX (TY A) (122311)W/ APRON	243+80	I
GB4	GROUND BOX (TY A) (122311)W/ APRON	243+20	I
GB5	GROUND BOX (TY A) (122311)W/ APRON	242+00	I
GB6	GROUND BOX (TY A) (122311)W/ APRON	242+00	I
GB7	GROUND BOX (TY A) (122311)W/ APRON	240+00	I
GB8	GROUND BOX (TY A) (122311)W/ APRON	229+30	I
GB9	GROUND BOX (TY A) (122311)W/ APRON	229+20	I
GB10	GROUND BOX (TY A) (122311)W/ APRON	227+00	I
GB11	GROUND BOX (TY A) (122311)W/ APRON	222+20	I
GB12	GROUND BOX (TY A) (122311)W/ APRON	221+00	I
GB13	GROUND BOX (TY A) (122311)W/ APRON	219+80	I
GB14	GROUND BOX (TY A) (122311)W/ APRON	219+20	I
GB15	GROUND BOX (TY A) (122311)W/ APRON	219+00	I
GB16	GROUND BOX (TY A) (122311)W/ APRON	218+00	I
GB17	GROUND BOX (TY A) (122311)W/ APRON	216+80	I
GB18	GROUND BOX (TY A) (122311)W/ APRON	216+50	I
GB19	GROUND BOX (TY A) (122311)W/ APRON	216+50	I
GB20	GROUND BOX (TY A) (122311)W/ APRON	216+20	I
GB21	GROUND BOX (TY A) (122311)W/ APRON	215+50	I
GB22	GROUND BOX (TY A) (122311)W/ APRON	215+50	I
GB23	GROUND BOX (TY A) (122311)W/ APRON	215+20	I
GB24	GROUND BOX (TY A) (122311)W/ APRON	210+00	I
GB25	GROUND BOX (TY A) (122311)W/ APRON	207+00	I
GB26	GROUND BOX (TY A) (122311)W/ APRON	206+00	I
GB27	GROUND BOX (TY A) (122311)W/ APRON	203+95	I
GB28	GROUND BOX (TY A) (122311)W/ APRON	202+00	I
GB29	GROUND BOX (TY A) (122311)W/ APRON	201+20	I
GB30	GROUND BOX (TY A) (122311)W/ APRON	200+00	I
GB31	GROUND BOX (TY A) (122311)W/ APRON	199+80	I
GB32	GROUND BOX (TY A) (122311)W/ APRON	198+00	I
GB33	GROUND BOX (TY A) (122311)W/ APRON	196+50	I
GB34	GROUND BOX (TY A) (122311)W/ APRON	196+50	I
GB35	GROUND BOX (TY A) (122311)W/ APRON	195+20	I
GB36	GROUND BOX (TY A) (122311)W/ APRON	193+00	I
GB37	GROUND BOX (TY A) (122311)W/ APRON	192+20	I
GB38	GROUND BOX (TY A) (122311)W/ APRON	185+50	I
GB39	GROUND BOX (TY A) (122311)W/ APRON	185+20	I
GB40	GROUND BOX (TY A) (122311)W/ APRON	182+00	I
GB41	GROUND BOX (TY A) (122311)W/ APRON	177+50	I
GB42	GROUND BOX (TY A) (122311)W/ APRON	175+50	I
GB43	GROUND BOX (TY A) (122311)W/ APRON	176+50	I
GB44	GROUND BOX (TY A) (122311)W/ APRON	172+20	I
GB45	GROUND BOX (TY A) (122311)W/ APRON	169+90	I
GB46	GROUND BOX (TY A) (122311)W/ APRON	162+20	I
GB47	GROUND BOX (TY A) (122311)W/ APRON	161+80	I
GB48	GROUND BOX (TY A) (122311)W/ APRON	159+00	I
GB49	GROUND BOX (TY A) (122311)W/ APRON	156+50	I
GB50	GROUND BOX (TY A) (122311)W/ APRON	153+90	I
	TOTAL		50

GROUND BOX SUMMARY			
PROPOSED GROUND BOX NUMBER	PROPOSED GROUND BOX DESCRIPTION	APPROX STATION	ITEM 624
GB51	GROUND BOX (TY A) (122311)W/ APRON	153+50	I
GB52	GROUND BOX (TY A) (122311)W/ APRON	144+50	I
GB53	GROUND BOX (TY A) (122311)W/ APRON	143+50	I
GB54	GROUND BOX (TY A) (122311)W/ APRON	140+60	I
GB55	GROUND BOX (TY A) (122311)W/ APRON	137+20	I
GB56	GROUND BOX (TY A) (122311)W/ APRON	135+50	I
GB57	GROUND BOX (TY A) (122311)W/ APRON	126+80	I
GB58	GROUND BOX (TY A) (122311)W/ APRON	126+00	I
GB59	GROUND BOX (TY A) (122311)W/ APRON	125+00	I
GB60	GROUND BOX (TY A) (122311)W/ APRON	122+80	I
GB61	GROUND BOX (TY A) (122311)W/ APRON	120+20	I
GB62	GROUND BOX (TY A) (122311)W/ APRON	117+80	I
GB63	GROUND BOX (TY A) (122311)W/ APRON	112+00	I
GB64	GROUND BOX (TY A) (122311)W/ APRON	107+20	I
GB65	GROUND BOX (TY A) (122311)W/ APRON	104+50	I
GB66	GROUND BOX (TY A) (122311)W/ APRON	102+00	I
GB67	GROUND BOX (TY A) (122311)W/ APRON	101+00	I
GB68	GROUND BOX (TY A) (122311)W/ APRON	100+10	I
GB69	GROUND BOX (TY A) (122311)W/ APRON	100+00	I
GB70	GROUND BOX (TY A) (122311)W/ APRON	100+00	I
GB71	GROUND BOX (TY A) (122311)W/ APRON	99+10	I
GB72	GROUND BOX (TY A) (122311)W/ APRON	96+50	I
GB73	GROUND BOX (TY A) (122311)W/ APRON	91+00	I
GB74	GROUND BOX (TY A) (122311)W/ APRON	88+20	I
GB75	GROUND BOX (TY A) (122311)W/ APRON	86+20	I
GB76	GROUND BOX (TY A) (122311)W/ APRON	84+50	I
GB77	GROUND BOX (TY A) (122311)W/ APRON	83+00	I
GB78	GROUND BOX (TY A) (122311)W/ APRON	80+00	I
GB79	GROUND BOX (TY A) (122311)W/ APRON	76+80	I
GB80	GROUND BOX (TY A) (122311)W/ APRON	74+50	I
GB81	GROUND BOX (TY A) (122311)W/ APRON	72+00	I
GB82	GROUND BOX (TY A) (122311)W/ APRON	69+50	I
GB83	GROUND BOX (TY A) (122311)W/ APRON	69+50	I
GB84	GROUND BOX (TY A) (122311)W/ APRON	68+00	I
GB85	GROUND BOX (TY A) (122311)W/ APRON	67+50	I
GB86	GROUND BOX (TY A) (122311)W/ APRON	65+50	I
GB87	GROUND BOX (TY A) (122311)W/ APRON	63+00	I
GB88	GROUND BOX (TY A) (122311)W/ APRON	61+00	I
GB89	GROUND BOX (TY A) (122311)W/ APRON	53+20	I
GB90	GROUND BOX (TY A) (122311)W/ APRON	52+50	I
GB91	GROUND BOX (TY A) (122311)W/ APRON	52+20	I
GB92	GROUND BOX (TY A) (122311)W/ APRON	51+00	I
GB93	GROUND BOX (TY A) (122311)W/ APRON	49+20	I
GB94	GROUND BOX (TY A) (122311)W/ APRON	49+20	I
GB95	GROUND BOX (TY A) (122311)W/ APRON	46+80	I
GB96	GROUND BOX (TY A) (122311)W/ APRON	46+00	I
GB97	GROUND BOX (TY A) (122311)W/ APRON	46+00	I
GB98	GROUND BOX (TY A) (122311)W/ APRON	46+00	I
GB99	GROUND BOX (TY A) (122311)W/ APRON	44+50	I
GB100	GROUND BOX (TY A) (122311)W/ APRON	44+50	I
	TOTAL		50

GROUND BOX SUMMARY  
REVISED 4-27-95

SHEET 1 OF 2 SHEETS

FED. AID PROJECT NO.	STATE	DIST.	COUNTY
IMM37-1(103)000	TEXAS	16	NUECES
	CONT.	SECT.	JOB
			HIGHWAY NO.





F.R. DIV.6	TEXAS	IM 37-1(103)000	SHEET 18
NUECES	COUNTY	HWY IH 37	CONT 0074-6-179

GENERAL NOTES AND SPECIFICATION DATA--

GENERAL:

THIS PROJECT CONSISTS OF FURNISHING AND INSTALLING ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY TO UPGRADE AND CONVERT THE EXISTING 2-WIRE 480V CONTINUOUS ILLUMINATION AND SIGN LIGHTING SYSTEM TO A COMPLETE AND FULLY OPERATIONAL 3-WIRE 240/480V CONTINUOUS ILLUMINATION AND SIGN LIGHTING SYSTEM CONSISTING OF HIGH MAST ASSEMBLIES AND STANDARD ROADWAY ILLUMINATION ASSEMBLIES.

MATERIALS FURNISHED BY THE CONTRACTOR WILL BE NEW AND UNDEPRECIATED STOCK. ELECTRICAL MATERIALS AND FITTINGS COVERED BY THE PLANS AND SPECIFICATIONS FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH NEMA STANDARDS. THE INSTALLATIONS SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF THE NATIONAL ELECTRICAL CODE. BEFORE BEGINNING WORK ON ANY ELECTRICAL SYSTEM, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN THAT THE POWER IS DISCONNECTED AND THAT THE CIRCUIT IS LOCKED OPEN AND DEENERGIZED, SATISFACTORILY.

FOR OSB'S AND COSS'S THE CONTRACTOR SHALL REMOVE ALL CONDUIT, CONDUCTOR, CLAMPS, SIGN LIGHTING FIXTURES, CIRCUIT PROTECTORS AND ANY OTHER APPURTENANCES AS DIRECTED BY THE ENGINEER FROM THE GROUND TO THE SIGN LIGHT FIXTURE. THE CONTRACTOR SHALL INSTALL NEW CONDUIT, CONDUCTOR, CLAMPS, SIGN LIGHTING FIXTURES, ETC. AS SHOWN IN THE PLANS NECESSARY TO SECURE A COMPLETE OPERATIONAL SYSTEM IN PLACE. THIS WORK WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.

THROUGHOUT THE ENTIRE PROJECT, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE EXISTING AND PROPOSED ILLUMINATION AND SIGN LIGHTING SYSTEMS. ALL EQUIPMENT, LABOR AND MATERIALS FOR THIS MAINTENANCE SHALL BE PROVIDED BY THE CONTRACTOR AND SHALL BE CONSIDERED SUBSIDIARY TO VARIOUS BID ITEMS. A MUTUAL AGREEMENT MUST BE MADE WITH THE ENGINEER BEFORE ANY CIRCUIT CAN REMAIN INOPERATIVE DURING NORMAL OPERATING HOURS.

THE CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS TO PROTECT TRAFFIC FROM FALLING OBJECTS WHEN WORKING ON OVERHEAD SIGN STRUCTURES. SAFETY NETS SHALL BE USED AS OVERHEAD PROTECTION WHERE TRAFFIC IS MOVING UNDERNEATH THE WORK AREA. A MINIMUM CLEARANCE OF 16'-6" SHALL BE MAINTAINED AT ALL TIMES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MARKING STATIONS EVERY 100 FEET AND SHALL MAINTAIN THE MARKINGS FOR THE DURATION OF THE PROJECT.

SEQUENCE OF WORK AND PROJECT SCHEDULE:

SPECIFICATION DATA

04/04

SHEET A

F.R. DIV.6	TEXAS	IM 37-1(103)000	SHEET 18
NUECES	COUNTY	HWY IH 37	CONT 0074-6-179

GENERAL NOTES AND SPECIFICATION DATA--

GENERAL:, CONT'D

PRIOR TO BEGINNING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL PROVIDE TWO (2) COPIES OF A PROPOSED SEQUENCE OF CONSTRUCTION OF THE ENTIRE PROJECT AND PROJECT SCHEDULE (CPM, PRECEDENCE DIAGRAM METHOD) COVERING ALL ITEMS OF WORK. THIS SCHEDULE WILL BE DIVIDED INTO LOGICAL STAGES WITH SCHEDULING OF DELIVERY OF MATERIALS, INSTALLATION DATES AND COMPLETION DATES INDICATED. THIS SCHEDULE WILL ALSO INCLUDE THE PROCUREMENT OF MATERIALS AND THE INSTALLATION AND TESTING REQUIREMENTS. SUFFICIENT DETAIL WILL BE SHOWN TO PERMIT MONITORING OF PROGRESS IN WEEKLY INTERVALS.

UPON APPROVAL OF THE ENGINEER, THE SCHEDULE AND SEQUENCE OF WORK SHALL CONSTITUTE THE CONSTRUCTION PROCEDURE FOR THIS PROJECT. CHANGES WILL BE PERMITTED IN THE APPROVED SEQUENCE WHEN APPROVED BY THE ENGINEER IN WRITING.

1) THE CONTRACTOR WILL SCHEDULE WORK SO THAT THE ILLUMINATION SYSTEM IS OPERATIVE THROUGHOUT THE ENTIRE PROJECT, UNLESS APPROVED BY THE ENGINEER.

2) IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO NOT INTERMIX CONDUCTORS OR VOLTAGES WHILE CONVERTING THE SYSTEMS.

3) UPON COMPLETION OF WORK AND BEFORE FINAL PAYMENT IS MADE, THE CONTRACTOR SHALL REMOVE ANY EXCESS MATERIAL FROM EXCAVATION AND RESHAPE ANY PORTION OF THE ROADWAY OR RIPRAP THAT MAY HAVE BEEN DISTURBED BY CONSTRUCTION OPERATIONS AND LEAVE THE PROJECT IN A CONDITION THAT IS APPROVED BY THE ENGINEER.

PRIOR TO BEGINNING ANY EXCAVATION WORK IN THE AREA OF EXISTING UTILITIES, THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANIES FOR EXACT LOCATIONS TO PREVENT ANY DAMAGE OR INTERFERENCE WITH PRESENT FACILITIES. THE TEXAS ONE CALL SYSTEM SHALL BE NOTIFIED AT THE FOLLOWING TOLL FREE NUMBER: (1-800-245-4545). THIS ACTION, HOWEVER, SHALL IN NO WAY BE INTERPRETED AS RELIEVING THE CONTRACTOR OF HIS RESPONSIBILITIES UNDER THE TERMS OF THE CONTRACT AS SET OUT IN THE PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY HIS OPERATIONS AT HIS OWN EXPENSE AND SHALL RESTORE FACILITIES TO SERVICE IN A TIMELY MANNER. THE CONTRACTOR WILL BE RESPONSIBLE FOR MAKING THE NECESSARY PROJECT ADJUSTMENTS CAUSED BY CONFLICTING UTILITIES.

ITEM 5: CONTROL OF THE WORK

FOR REVIEW, WORKING DRAWINGS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER AS FOLLOWS:

SPECIFICATION DATA

04/04

SHEET B

18

F.R. DIV.6	TEXAS	IM 37-1(103)000	SHEET 19
NUECES	COUNTY	HWY IH 37	CONT 0074-6-179

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 5: CONTROL OF THE WORK, CONT'D

(1) 5 EACH 11" X 17" COPIES; SIGNED, SEALED AND DATED BY A REGISTERED PROFFESIONAL ENGINEER.

FOR FINAL APPROVED FORM, WORKING DRAWINGS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER AS FOLLOWS:

- (1) 1 EACH 11" X 17" MYLAR OR PLASTIC SHEET; SIGNED, SEALED & DATED BY A REGISTERED PROFESSIONAL ENGINEER.  
(2) 5 EACH 11" X 17" BLUELINE COPIES.

ITEM 8: PROSECUTION AND PROGRESS

THE CONTRACTOR'S ATTENTION IS BROUGHT TO THE FACT THAT OTHER CONTRACTED PROJECTS ARE TO BE CONSTRUCTED CONCURRENTLY WITHIN THE SAME LIMITS OF THIS PROJECT.

THE CONTRACTOR FOR THIS PROJECT WILL NOT BE ALLOWED TO REQUIRE AND/OR OBTAIN A SIGNED INDEMNIFICATION AGREEMENT OR ANY OTHER LEGAL SAVE HARMLESS AGREEMENT FROM ANOTHER CONTRACTOR UNDER CONTRACT WITH TXDOT WHO IS REQUIRED TO DO WORK CONCURRENTLY WITHIN THESE PROJECT LIMITS.

THE AREA ENGINEER RESERVES THE RIGHT TO MAKE FINAL DECISIONS/APPROVAL FOR WORK TO BE ACCOMPLISHED/SCHEDULED BY ANY AND ALL CONTRACTORS, WITHIN THE STATE R.O.W., ON ANY AND ALL PROJECTS.

ITEM 9: MEASUREMENT AND PAYMENT

THE CONTRACTOR MUST SUBMIT MATERIALS-ON-HANDS PAYMENT REQUESTS, AT LEAST THREE WORKING DAYS PRIOR TO THE END OF THE MONTH FOR PAYMENT ON THAT MONTHS ESTIMATE. ALL REQUEST SHALL BE MADE THROUGH THE PRIME CONTRACTOR.

ITEM 502: BARRICADES, SIGNS AND TRAFFIC HANDLING

BARRICADES ARE TO BE SET PRIOR TO THE FOLLOWING PROJECT LIMITS , FROM STA 0+00 TO STA 245+20. TRAFFIC HANDLING SHALL BE DONE IN ACCORDANCE WITH THE BC SHEETS AND LC(16)-1 & 2. THE CONTRACTOR WILL INSTALL BARRICADES IN ACCORDANCE TO BC(1)-94 - BC(9)94. THIS WORK WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE CONSIDERED SUBSIDIARY TO ITEM 502, "BARRICADES, SIGNS AND TRAFFIC HANDLING."

FOR PEDESTRIAN SAFETY, PLASTIC CONSTRUCTION FENCING, A MINIMUM OF 4 FEET HIGH, SHALL BE USED AROUND OPEN EXCAVATIONS.

SPECIFICATION DATA

04/04

SHEET C

F.R. DIV.6	TEXAS	IM 37-1(103)000	SHEET 19
NUECES	COUNTY	HWY IH 37	CONT 0074-6-179

GENERAL NOTES AND SPECIFICATION DATA--

PROTECTION OF TRAFFIC:

ALL WORK INVOLVED WILL BE SCHEDULED TO INTERFERE AS LITTLE AS POSSIBLE WITH TRAFFIC. TRAFFIC-CARRYING LANES WILL NOT BE CLOSED BEFORE 9:00 A.M. OR AFTER 4:00 P.M., UNLESS OTHERWISE APPROVED BY THE ENGINEER. DURING OPERATIONS AND BEFORE BLOCKING TRAFFIC LANES, THE CONTRACTOR WILL USE FLAGGERS AND WARNING DEVICES AS DIRECTED BY THE ENGINEER. THE REQUIRED BARRICADES MAY BE MODIFIED SO THAT VEHICLE OR PEDESTRIAN MOVEMENTS AND SIGHT DISTANCES ARE NOT BLOCKED.

ITEM 610: ROADWAY ILLUMINATION ASSEMBLIES

1) TRANSFORMER BASE COVERS SHALL BE CONSTRUCTED OF FIBERGLASS.

2) GROUND RODS WILL BE INSTALLED AND CONNECTED AT THE ENDS OF ALL BRIDGE STRUCTURES. ADDITIONAL GROUND RODS WILL BE REFLECTED IN THE BID PRICE.

3) CIRCUIT IDENTIFICATION NUMBERS WILL BE FURNISHED BY THE CONTRACTOR AND PERMANENTLY INSTALLED ON ALL LUMINAIRE AND HMI POLES. CIRCUIT I.D. NUMBERS WILL REFLECT THE FINAL AS BUILT CIRCUIT INSTALLATION. PLAN LAYOUTS SHALL REFLECT THESE CHANGES ALSO. TYPE AND SIZE OF LETTERS AND NUMBERS WILL BE APPROVED BY THE ENGINNER. THIS WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE CONSIDERED SUBSIDIARY TO ITEM 610.

IT IS THE INTENT OF THESE PLANS TO PROVIDE FOR A COMPLETE ILLUMINATION SYSTEM INSTALLED, CONNECTED, TESTED AND READY FOR OPERATION.

WHEN PULLING CABLES OR CONDUCTORS THROUGH CONDUIT, MANUFACTURER'S RECOMMENDED PULLING TENSIONS SHALL NOT BE EXCEEDED AND THE CABLES OR CONDUCTORS SHALL BE LUBRICATED WITH A LUBRICANT AS RECOMMENDED BY THE CABLE MANUFACTURER.

AFTER SATISFACTORY COMPLETION OF ALL TESTS, ALL NEW LIGHTING FIXTURES SHALL BE PLACED IN OPERATION. FINAL ACCEPTANCE WILL NOT BE MADE UNTIL THE FIXTURES HAVE OPERATED SATISFACTORILY FOR A PERIOD OF NOT LESS THAN 14 DAYS. THE 14 DAY TEST PERIOD WILL BE INCLUDED IN THE WORKING DAYS ALLOWED FOR THE PROJECT.

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE NEW LIGHTING FIXTURES DURING THE TEST PERIOD AND HE SHALL MAKE ANY ADJUSTMENTS OR REPAIRS WHICH MAY BE REQUIRED AND REMEDY ANY DEFECTS OR DAMAGES THAT MAY OCCUR AT HIS OWN EXPENSE.

THE CONTRACTOR WILL NOT BE REQUIRED TO PAY FOR ELECTRICAL ENERGY CONSUMED BY THE FIXTURES DURING THE PERIOD OF TRIAL OPERATION.

SPECIFICATION DATA

04/04

SHEET D

19

F.R. DIV.6	TEXAS	IM 37-1(103)000	SHEET 19A
NUECES	COUNTY	HWY IH 37	CONT 0074-6-179

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 611: REMOVING ROADWAY ILLUMINATION ASSEMBLIES

- 1) INTERNAL COMPONENTS OF MERCURY VAPOR LUMINAIRES MAY CONTAIN PCB'S. THE CONTRACTOR WILL BE RESPONSIBLE FOR DISPOSING OF ALL COMPONENTS CONTAINING PCB'S ACCORDING TO OSHA AND APPLICABLE REGULATIONS. BID PRICE SHALL REFLECT THE COST OF THIS DISPOSAL. TXDOT SHALL PROVIDE BARRELS AND THE CONTRACTOR SHALL DELIVER BARRELS AND CONTENTS TO THE DISTRICT COMPLEX LOCATED AT 1701 SOUTH PADRE ISLAND DRIVE.
- 2) ALL ALUMINUM AND STEEL POLES, T-BASES, T-BASE COVERS, AND FIXTURE HOUSINGS WILL BE STOCKPILED ON THE RIGHT OF WAY AS DIRECTED BY THE ENGINEER IN SEPARATE ALUMINUM AND STEEL PILES FOR SALVAGING. THE ENGINEER WILL INVENTORY THESE POLES IN THE FIELD BEFORE THE CONTRACTOR HAULS THE LOADS FOR SALVAGING. SALVAGE VALUE WILL BE REFLECTED IN THE BID PRICE.
- 3) SQUASH POLES WILL BE DELIVERED TO NUECES MAINTENANCE OFFICE LOCATED AT 844 NORTH PADRE ISLAND DRIVE. CONTACT ROBERT BEDOLLA AT (512) 289-1400. EXISTING HPS LUMINAIRE FIXTURES APPROVED BY THE ENGINEER WILL BE TRANSFERRED TO THE NUECES MAINTENANCE OFFICE LOCATED AT 844 NORTH PADRE ISLAND DRIVE.
- POLE SHAFTS, MAST ARMS AND ALL ASSEMBLY HARDWARE SHALL BECOME THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL PAY TO THE TEXAS DEPARTMENT OF TRANSPORTATION \$25.00 PER ASSEMBLY, IN ACCORDANCE WITH ITEM 497, "DISPOSAL OF SALVAGEABLE MATERIAL."

ALL MATERIALS SHALL BE INSTALLED AND ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF ITEMS(416), (420), (421), (432), (437), (440), (441), (442), (445), (446), (448), (449), (476), (500), (502), (520), (522), (524), (526), (611), (613), (614), (616), (618), (620), (624), (627), (628), (629), (656).

ITEM 613: HIGH MAST ILLUMINATION POLES

- PRIOR TO THE ERECTION OF THE HIGH MAST POLES, THE CONTRACTOR SHALL NOTIFY THE ENGINEER 3 WORKING DAYS (MIN) IN ADVANCE TO ALLOW FOR THE SCHEDULING OF THE INSPECTION OF EACH ASSEMBLED HIGH MAST POLE AND HIGH MAST ASSEMBLY.
- IT IS THE INTENT OF THESE PLANS AND SPECIFICATIONS TO PLACE ALL HIGH MAST ILLUMINATION POLES IN A LOCATION WHERE THE LIGHT MOUNTING AND SUPPORT ASSEMBLY CAN BE LOWERED AND MAINTAINED FROM GROUND LEVEL WITHOUT INTERFERENCE WITH BRIDGES OR RETAINING WALLS. ANY AND ALL CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

SPECIFICATION DATA

04/04

SHEET E

F.R. DIV.6	TEXAS	IM 37-1(103)000	SHEET 19A
NUECES	COUNTY	HWY IH 37	CONT 0074-6-179

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 613: HIGH MAST ILLUMINATION POLES, CONT'D  
THE TOP FOURTEEN INCHES OF ALL HIGHMAST POLE ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-153, REPAIR GALVANIZING WITH ZINC-RICH PAINT AFTER TACK WELDING.

ITEM 614: HIGH MAST ILLUMINATION ASSEMBLIES

TO PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC PASSING THROUGH THIS PROJECT, THE CONTRACTOR SHALL ERECT AND PLACE IN OPERATION ALL HIGH MAST ILLUMINATION POLES PROVIDED FOR IN THIS CONTRACT PRIOR TO REMOVING EXISTING LIGHT FACILITIES.

IN ADDITION TO THE OTHER REQUIREMENTS SHOWN ON THE PLANS, THE REFLECTOR OF A SYMMETRIC OR ASYMMETRIC HIGH MAST FIXTURE SHALL BE PROTECTED BY A PERMANENT OUTER FIXTURE HOUSING OF SUFFICIENT STRENGTH TO PROTECT THE REFLECTOR FROM DENTING BY ROUTINE HANDLING DURING INSTALLATION AND BY HAIL, I.E. THE REFLECTOR SHALL NOT ALSO BE THE HOUSING. ANY REFLECTORS THAT ARE DAMAGED SHALL BE REPLACED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

ITEM 616: PERFORMANCE TESTING OF LIGHTING SYSTEMS

THIS ITEM SHALL GOVERN FOR PERFORMANCE TESTING OF LIGHTING SYSTEMS. LIGHTING SYSTEMS TO BE TESTED ARE ROADWAY LIGHTING, HIGH MAST LIGHTING, AND SIGN LIGHTING.

ITEM 618: CONDUIT

- 1) CONDUIT PLACED IN NON-TRAFFIC AREAS WILL BE PLACED BY THE OPEN TRENCH METHOD AT A MINIMUM OF 24 INCHES.
- 2) JACKING OF CONDUIT WILL NOT BE PERMITTED.
- 3) INSTALL EXPANSION JOINTS ON CONDUIT ATTACHED TO BRIDGE STRUCTURES.
- 4) REUSE EXISTING PVC CONDUIT EMBEDDED IN US-181 BRIDGE STRUCTURE WHERE SHOWN ON THE SUMMARY SHEETS AND/OR AS APPROVED BY THE FIELD ENGINEER.
- 5) BRONZE CONDUIT MARKERS WILL BE PLACED WHERE CONDUIT CROSSES UNDER ROADWAY OR RIPRAP. MARKERS WILL BE IMPRINTED "LIGHTING" FOR ILLUMINATION AND "SIGNS" FOR SIGN LIGHTING.
- 6) ALL EXISTING RIGID METAL CONDUIT IN BRIDGE STRUCTURES, CROSSING UNDER RIPRAP OR ROADWAYS WILL BE ABANDONED AND RUN ACCORDING TO THE PROPOSED LAYOUTS AND SUMMARIES.

SPECIFICATION DATA

04/04

SHEET F

19A



F.R. DIV.6	TEXAS	IM 37-1(103)000	SHEET 198
NUECES	COUNTY	HWY IH 37	CONT 0074-6-179

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 618: CONDUIT, CONT'D

7) ALL ABANDONED CONDUIT AND CASING SHALL BE PERMANENTLY SEALED TO PREVENT USE OF ABANDONED CONDUIT RUNS.

8) ALL CONDUIT INSTALLED ABOVE GROUND OR ON BRIDGE STRUCTURES WILL BE ALUMINUM.

9) THE CONTRACTOR SHALL INSTALL PVC/ALUMINUM CONNECTORS AT GROUND LEVEL.

10) ALL PROPOSED CONDUIT TERMINATING IN GROUND BOXES, AND POLE FOUNDATIONS SHALL BE SEALED WITH A SEALANT TO BE MADE OF A POLYURETHANE OR EQUIVALENT MATERIAL OF A COMPOSITION THAT WILL CURE IN THE PRESENCE OF MOISTURE. SEALANT SHALL BE SUITABLE FOR USE IN SEALING ENDS OF PVC OR ALUMINUM CONDUIT WITH ELECTRICAL CONDUCTORS RUNNING THROUGH THE CONDUIT. THE SEALANT SHALL ENCAPSULATE AND PROTECT ELECTRICAL CONDUCTORS AND SEAL ENDS OF PVC OR ALUMINUM CONDUIT FROM MOISTURE AND DIRT. THE CONDUIT SHALL BE SEALED A MINIMUM OF 3".

11) EXISTING SIDEWALK, ROADWAY, CURB OR RIPRAP THAT IS DESTROYED DURING CONSTRUCTION, WILL BE REPLACED WITH A NEW SIDEWALK, ROADWAY, CURB OR RIPRAP OF LIKE THICKNESS AND DESIGN. REPAIRS WILL BE MADE TO THE SATISFACTION OF THE ENGINEER AND SHALL BE SUBSIDIARY TO ITEM 618.

WHEN BACKFILLING BORE PITS, THE CONTRACTOR MUST ENSURE THAT THE CONDUIT DOES NOT BECOME DAMAGED DURING INSTALLATION OR DUE TO ANY SETTLING OF THE BACKFILL MATERIAL. THE CONTRACTOR MUST COMPACT SELECT BACKFILL IN THREE EQUAL LIFTS TO THE BOTTOM OF THE CONDUIT; OR IF SAND IS USED, IT MUST BE PLACED TO A POINT TWO INCHES ABOVE THE CONDUIT. BACKFILL DENSITY SHALL BE EQUAL TO THE EXISTING SOIL. DUE CARE SHOULD BE EXERCISED TO PREVENT ANY MATERIAL FROM ENTERING THE CONDUIT.

IT WILL BE NECESSARY TO PLACE CONDUIT UNDER EXISTING PAVEMENT IN ORDER TO REACH SERVICE POLES. THIS CONDUIT SHALL BE BORED IN PLACE AND EXTENDED A MINIMUM DISTANCE OF TWO AND ONE HALF FEET OUT FROM THE EDGE OF SHOULDER OR BACK OF CURB.

IF CASING IS REQUIRED TO PLACE BORED CONDUIT, CASING SHALL BE INCIDENTAL TO CONDUIT.

BORE PIT LOCATIONS FOR RAMPS SHALL BE NO CLOSER THAN 16 FEET FROM THE EDGE OF PAVEMENT OF THE RAMP. BORE PIT LOCATIONS FOR MAIN LANES SHALL BE NO CLOSER THAN 30 FEET FROM THE EDGE OF THE TRAVELWAY EXCEPT IN CURBED SECTIONS WHERE THEY WILL BE 3 FOOT, PLUS ANY ADDITIONAL WIDTH TO CLEAR SIDEWALK FOR LOW SPEED LESS THAN 40 MPH AND 30 FOOT FOR HIGH SPEED FACILITIES UNLESS OTHERWISE APPROVED BY THE ENGINEER IN WRITING.

SPECIFICATION DATA

04/04

SHEET G

F.R. DIV.6	TEXAS	IM 37-1(103)000	SHEET 198
NUECES	COUNTY	HWY IH 37	CONT 0074-6-179

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 618: CONDUIT, CONT'D

FOR THESE LOCATIONS THE CONTRACTOR SHALL FURNISH THE ENGINEER A TRAFFIC CONTROL PLAN SHOWING HOW THEY PLAN ON PROTECTING THE BORE PIT LOCATION SUBJECT TO THE ENGINEERS APPROVAL PRIOR TO BEGINNING WORK AT THE BORE PIT LOCATION.

ALL EXPOSED CONDUIT SHALL BE RIGID METAL CONDUIT (RMC).

PULLING CONDUCTORS IN PVC CONDUIT SHALL BE ACCOMPLISHED WITH NONMETALLIC PULL ROPE.

ALL CONDUCTOR AND CONDUIT TO BE ABANDONED SHALL BE REMOVED TO 1 FT. BELOW GROUND LEVEL. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS BID ITEMS AND WILL NOT BE PAID FOR DIRECTLY.

ITEM 620: ELECTRICAL CONDUCTORS

1) IT WILL BE THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT THE CONDUCTORS OR DUCT CABLE ON THE ABANDONED 2-WIRE 480V SYSTEMS ARE DISCONNECTED AND NOT PART OF THE PROPOSED 3-WIRE 240/480V SYSTEM. ALL ABANDONED CONDUCTORS OR DUCT CABLE WILL BE METERED TO ENSURE THAT POWER HAS BEEN COMPLETELY DISCONNECTED AND IS NOT A PART OF THE NEW ELECTRICAL SYSTEM.

2) ALL ABANDONED CONDUCTORS AND DUCT CABLE SHALL BE REMOVED OR CUT BACK 12" FROM THE SURFACE.

3) A MINIMUM LENGTH OF TWO AND ONE HALF FEET OF CONDUCTOR SHALL BE LEFT IN EACH GROUND BOX AND METAL POLE BASE.

4) ALL CONDUCTORS #6 AND LARGER SHALL BE STRANDED.

ALL ELECTRICAL WORK DONE SHALL BE IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE. THE NEUTRAL CONDUCTOR SHALL BE WHITE OR MARKED WITH WHITE TAPE. WHITE SHALL NOT BE USED FOR ANY OTHER CONDUCTOR. THE GROUNDING CONDUCTOR SHALL BE BARE OR GREEN. GREEN SHALL NOT BE USED FOR ANY OTHER CONDUCTOR.

5) ALL GROUNDING AND CURRENT CARRYING CONDUCTORS SHALL BE INSULATED.

ALL INSULATED CONDUCTORS SHALL BE COLOR CODED IN ACCORDANCE WITH EACH WIRE OF EACH CABLE OR CONDUCTOR SHALL BE TESTED AFTER INSTALLATION BY THE CONTRACTOR. ANY INCOMPLETE CIRCUIT OR ANY DAMAGE TO ANY WIRE OR ANY CABLE WILL BE CAUSE FOR IMMEDIATE REJECTION OF THE ENTIRE CABLE BEING TESTED. THE CONTRACTOR SHALL REMOVE AND REPLACE THE ENTIRE CABLE AT THE CONTRACTOR'S EXPENSE, AND THE REPLACEMENT CABLE SHALL ALSO BE

SPECIFICATION DATA

04/04

SHEET H

198

F.R. DIV.6	TEXAS	IM 37-1(103)000	SHEET 19C
NUECES	COUNTY	HWY IH 37	CONT 0074-6-179

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 620: ELECTRICAL CONDUCTORS, CONT'D  
TESTED AFTER INSTALLATION.

ALL CIRCUITS SHALL TEST CLEAR OF FAULTS, GROUNDS AND OPEN CIRCUITS TO THE SATISFACTION OF THE ENGINEER.

THE CONTRACTOR MAY USE A GREEN INSULATED ELECTRICAL CONDUCTOR IN LIEU OF ELECTRICAL CONDUCTOR (BARE).

ITEM 624: GROUND BOXES

1) ALL GROUND BOX LIDS WILL BE PERMANENTLY LABELED TO IDENTIFY THEIR APPROPRIATE ELECTRICAL SYSTEMS. ALL GROUND BOX LIDS WILL BE IMPRINTED "LIGHTING" FOR ILLUMINATION CIRCUITS AND "SIGNING" FOR SIGN CIRCUITS.

2)GROUND BOX LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE INSTALLATION. THE GROUND BOXES SHALL NOT BE PLACED IN SIDEWALKS OR DRIVEWAYS. ALTERNATE GROUND BOX LOCATIONS SHALL BE AS DIRECTED BY THE ENGINEER. PLACEMENT OF ALL GROUND BOXES WILL BE APPROVED BY THE FIELD ENGINEER.

3) ABANDONED GROUND BOXES WILL BE REMOVED OR FILLED WITH CONCRETE IF THE BOX EXISTS ON A CONCRETE SURFACE, TO ELIMINATE CONFUSING THE NEW ELECTRICAL SYSTEM PULL POINTS WITH THE ABANDONED ELECTRICAL SYSTEM'S PULL POINTS. THIS WORK WILL BE APPROVED BY THE FIELD ENGINEER BEFORE FILLING OR REMOVING EXISTING GROUND BOXES. EXISTING GROUND BOXES WILL BE REUSED WHEN APPROVED BY THE ENGINEER. REMAINING HOLES FROM PULLED GROUND BOXES WILL BE BACKFILLED WITH SUITABLE SOIL.

ITEM 628: ELECTRICAL SERVICES

SERVICE POLES SHALL BE GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE. THE COST OF SUCH GROUNDING SHALL BE INCLUDED IN THE UNIT PRICE FOR THIS ITEM.

THE CONTRACTOR SHALL VERIFY AND COORDINATE SERVICE POLE LOCATIONS AND CHANGEOUT OF TRANSFORMERS WITH CP&L. CONTACT AL CARMAZZI AT (512) 850-5603.

ANY AND ALL COST ASSOCIATED WITH THE INSTALLATION AND CONNECTION OF SERVICE POLE TO THE ELECTRICAL UTILITY COMPANY WILL BE CONSIDERED INCIDENTAL TO THE SERVICE POLE. THIS INCLUDES CONDUIT, CONDUIT FITTINGS, AND ELECTRICAL CONDUCTORS.

SERVICE POLE ADDRESS NUMBERS AND LETTERS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. TYPE AND SIZE OF LETTERS AND NUMBERS

SPECIFICATION DATA

04/04

SHEET I

F.R. DIV.6	TEXAS	IM 37-1(103)000	SHEET 19C
NUECES	COUNTY	HWY IH 37	CONT 0074-6-179

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 628: ELECTRICAL SERVICES, CONT'D  
SHALL BE APPROVED BY THE ENGINEER.

ITEM 652: HIGHWAY SIGN LIGHTING FIXTURES

1) REMOVE AND REPLACE SIGN LIGHTING FIXTURES, DISCONNECTS, CONDUIT, WIRING AND ENCLOSURES ACCORDING TO SL(1) DIST. 16, SL(MV), AND PLAN LAYOUTS. REMOVAL OF SIGN LIGHT FIXTURES WILL BE SUBSIDIARY TO THIS ITEM.

2) INTERNAL COMPONENTS OF MERCURY VAPOR LUMINAIRES MAY CONTAIN PCB'S. THE CONTRACTOR WILL BE RESPONSIBLE FOR DISPOSING OF ALL COMPONENTS CONTAINING PCB'S ACCORDING TO OSHA AND APPLICABLE REGULATIONS. BID PRICE SHALL REFLECT THE COST OF THIS DISPOSAL. THIS COST WILL BE SUBSIDIARY TO ITEM 652.

SPECIFICATION DATA

04/04

SHEET J

19C

## SUMMARY

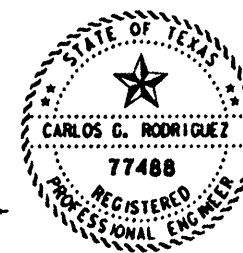
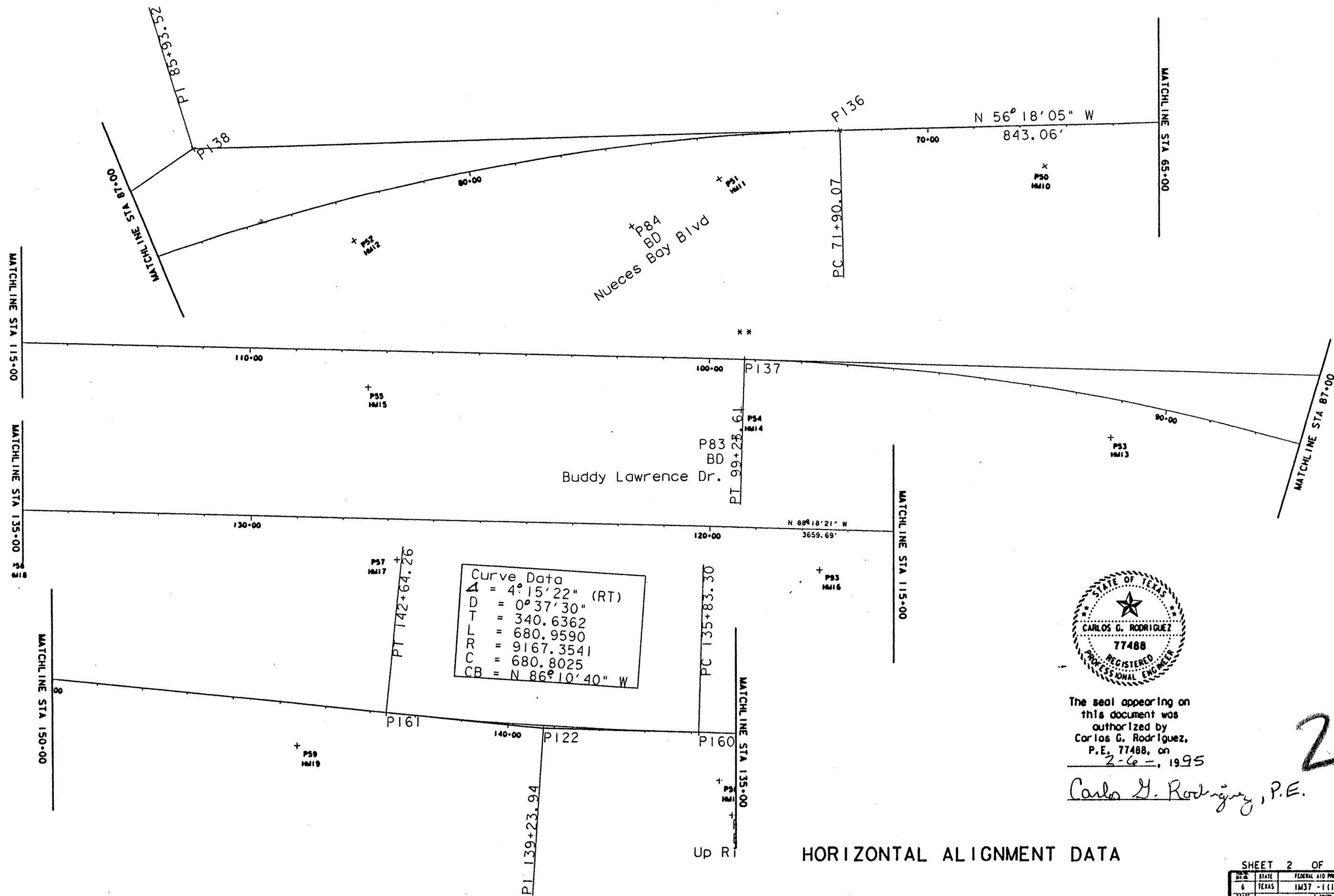
COTROL 74-6-179

COTROL 74-6-179										ALT	ITEM-CODE			DESCRIPTION	UNIT	TOTAL	
EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL		ITEM NO	DESC CODE	SP NO			EST.	FINAL
								875.000			416	0524	001	DRILL SHAFT (60 IN)(HIGH MAST POLE)	LF	875.000	875.000
								96.000			432	0501		RIPRAP (CONC)(CL B)	CY	96.000	87.360
								1.000			497	0501		SALV MATRL (CREDIT ITEM)	LS	1.000	1.000
								1.000			500	0501		MOBILIZATION	LS	1.000	1.000
								10.000			502	0501	003	BARRICADES, SIGNS AND TRAF HANDLE	MO	10.000	10.000
								5.000			540	0505		TERM ANCHOR SECT (12 GA)	EA	5.000	9.000
								1200.000			540	0506		MTL BEAM GD FEN (12 GA)(TIM POST)	LF	1200.000	2525.000
								475.000			542	0501		REMOV METAL BEAM GUARD FENCE	LF	475.000	675.000
								6.000			542	0503		REMOV TERMINAL-ANCHOR SECTION	EA	6.000	8.000
								41.000			610	0517		RDWY ILL AM U/P(TY SPL-CO)(.16KW)(SY1)	EA	41.000	41.000
								269.000			611	0501		REMOV RDWY ILL ASSEM	EA	269.000	271.000
								30.000			611	0502		REMOV RDWY ILL ASSEM (BR MOUNT)	EA	30.000	30.000
								34.000			611	0503		REMOV RDWY ILL ASSEM (U/P)	EA	34.000	34.000
								25.000			613	0510		HIGH MAST ILL POLE (150 FT) (100 MPH)	EA	25.000	25.000
								8.000			613	0511		HIGH MAST ILL POLE (175 FT) (100 MPH)	EA	8.000	8.000
								4.000			614	0502		HI MST ILL ASM (12-400 WATT)(SYM)	EA	4.000	4.000
								29.000			614	0505		HI MST ILL ASM (12-400 WATT)(ASYM)(TYB)	EA	29.000	29.000
								450.000			618	0502		CONDUIT (RM)(1 ")	LF	450.000	0
								16785.000			618	0511		CONDUIT (PVC)(SCHD 40)(2 ")	LF	16785.000	15602.000
								1765.000			618	0539		CONDUIT (PVC)(SCHD 80)(2 ")(BORE)	LF	1765.000	2629.000
								6190.000			618	0561		CONDUIT (AL)(3/4 ")	LF	6190.000	3100.000
								6225.000			620	0501		ELEC CONDUCTOR (NO. 12) BARE	LF	6225.000	2500.000
								2135.000			620	0502		ELEC CONDUCTOR (NO. 10) BARE	LF	2135.000	2818.000
								13130.000			620	0503		ELEC CONDUCTOR (NO. 8) BARE	LF	13130.000	13130.000
								1950.000			620	0504		ELEC CONDUCTOR (NO. 6) BARE	LF	1950.000	1950.000
								1825.000			620	0505		ELEC CONDUCTOR (NO. 4) BARE	LF	1825.000	1825.000
								12450.000			620	0507		ELEC CONDUCTOR (NO. 12) INSULATED	LF	12450.000	1200.000
								4410.000			620	0508		ELEC CONDUCTOR (NO. 10) INSULATED	LF	4410.000	5636.000
								26190.000			620	0509		ELEC CONDUCTOR (NO. 8) INSULATED	LF	26190.000	26190.000
								3900.000			620	0510		ELEC CONDUCTOR (NO. 6) INSULATED	LF	3900.000	3900.000

20







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Carlos G. Rodriguez, P.E.

22

# HORIZONTAL ALIGNMENT DATA

SHEET 2 OF 4 SHEETS			
STATE	FEDERAL AID PROJECT NO.	SHEET	
TEXAS	1M37 - 1 (103) 000	22	
STATE DIST. NO.	COUNTY	SECTION NO.	SECTION NO.
16	NUECES	0074	06 179 37

MATCHLINE STA 77+00

Navigation  
+P36  
5/81r/cap

+P62  
HA22

N 84°02'53" W  
4434.85'

+P61  
HA21

+P60  
HA20

MATCHLINE STA 150+00

MATCHLINE STA 202+00

+P66  
HA26

+P65  
HA25

PI 190+40.92  
P153

P159

190+00

P158

+P64  
HA24

180+00

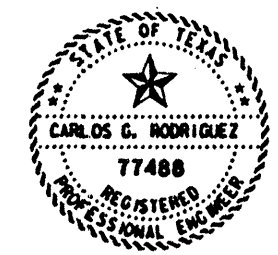
+P63  
HA23

MATCHLINE STA 77+00

Curve Data  
Δ = 8°31'46" (LT)  
D = 1°14'60"  
T = 341.8140  
L = 682.3650  
R = 4583.7500  
C = 681.7351  
CB = N 88°18'46" W

PT 193+81.48

PC 186+99.11



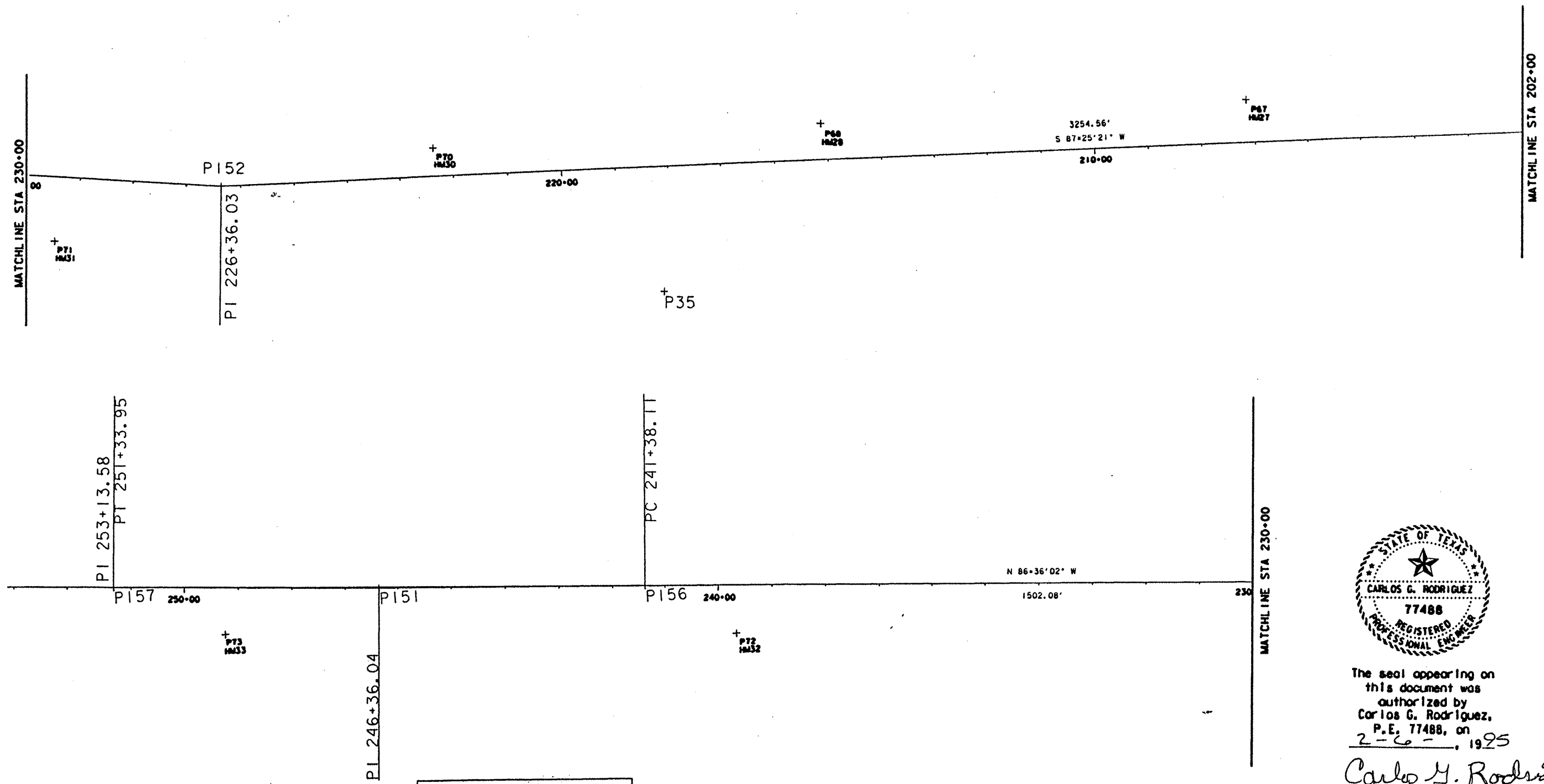
The seal appearing on  
this document was  
authorized by  
Carlos G. Rodriguez,  
P.E. 77488, on  
2-6-1995

23

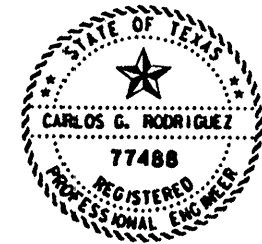
Carlos G. Rodriguez, P.E.

HORIZONTAL ALIGNMENT DATA

SHEET 3 OF 4 SHEETS			
DIST.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	1M37 - (1103) 000	23
STATE DIST. NO.	COUNTY	SECTION NO.	SHEET NO.
16	MUECES	0074 06 179	37



Curve Data	
A	= 0°43'57" (RT)
D	= 0°04'25"
T	= 497.9221
L	= 995.8306
R	= 77893.5100
C	= 995.8238
CB	= N 86°14'04" W



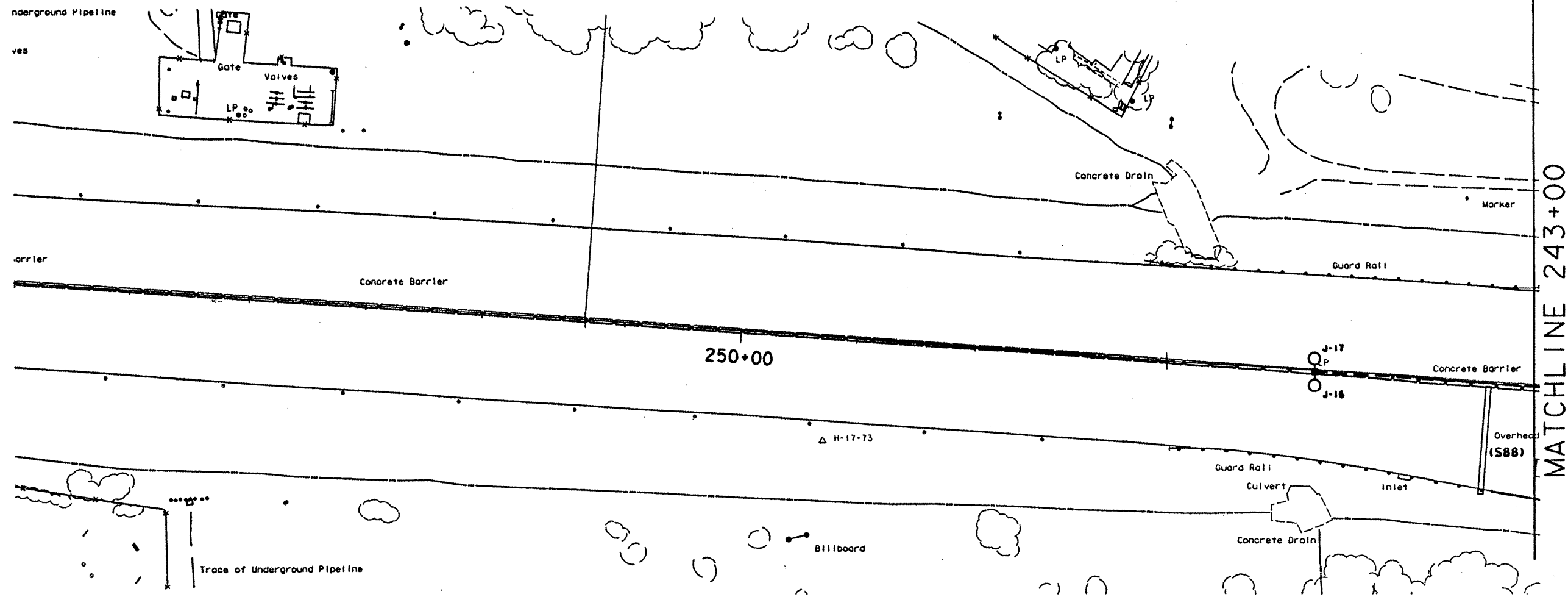
The seal appearing on  
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2-6-1995

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24

# HORIZONTAL ALIGNMENT DATA

SHEET 4 OF 4 SHEETS			
STATE	FEDERAL AID PROJECT NO.	DATE	
6 TEXAS	1M37 - 1(103) 000	24	
COUNTY	SECTION	DATE	
15	170	95	



# LEGEND

- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- EXISTING UNDERPASS LUMINAIRE
- EXISTING SERVICE POLE
- EXISTING GROUND BOX
- EXISTING SIGN ON BRIDGE STRUCTURE
- EXISTING OVERHEAD SIGN BRIDGE (OSB)
- EXISTING CANTILEVER SIGN STRUCTURE (COSS)

## EXISTING ILLUMINATION LAYOUT IH37- WACO TO LANTANA

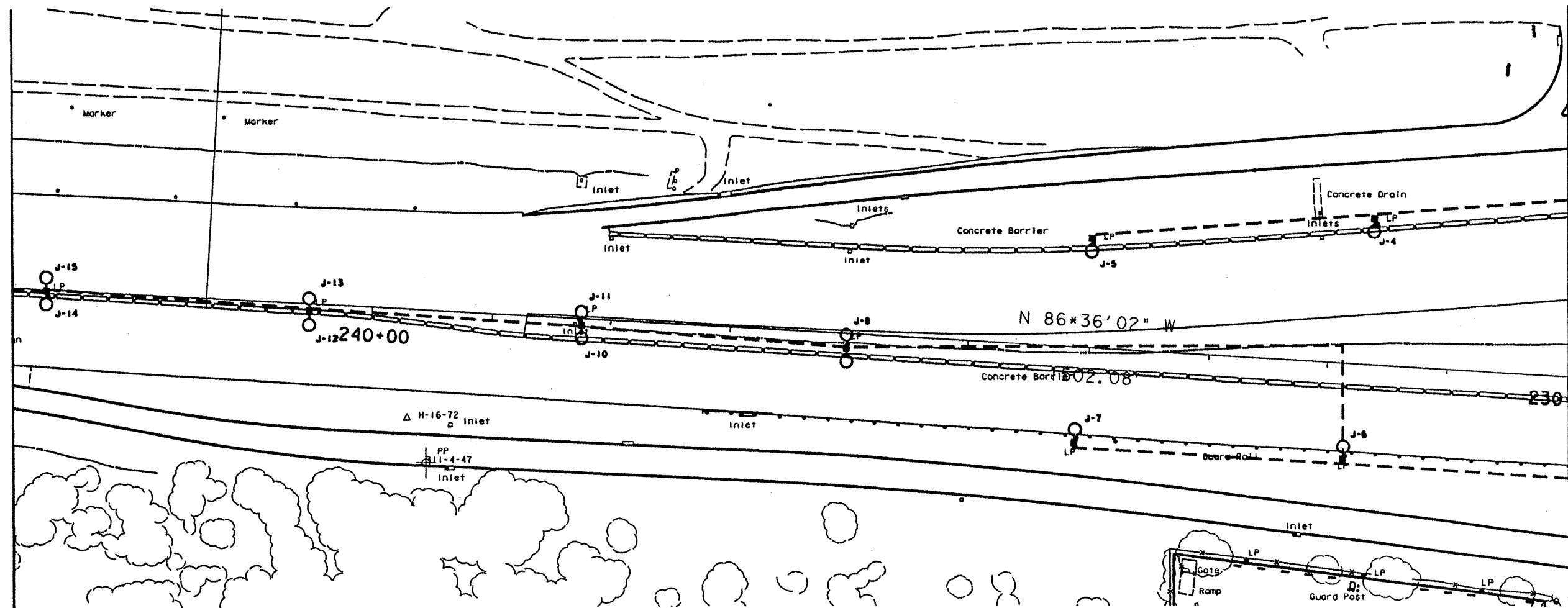
SCALE - 1"=100'

SHEET 1 OF 21 SHEETS									
NO.	STATE	FEDERAL AID PROJECT NO.			SHEET NO.				
6	TEXAS	IM 37 - 1(103) 000			25				
DATE	COUNTY	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.
16	NUECES	0074	06	179	113				



MATCHLINE 243+00

MATCHLINE 230+00



**LEGEND**

- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- EXISTING UNDERPASS LUMINAIRE
- EXISTING SERVICE POLE
- EXISTING GROUND BOX
- EXISTING SIGN ON BRIDGE STRUCTURE
- EXISTING OVERHEAD SIGN BRIDGE (OSB)
- EXISTING CANTILEVER SIGN STRUCTURE (COSS)

**EXISTING ILLUMINATION LAYOUT**  
IH37- WACO TO LANTANA

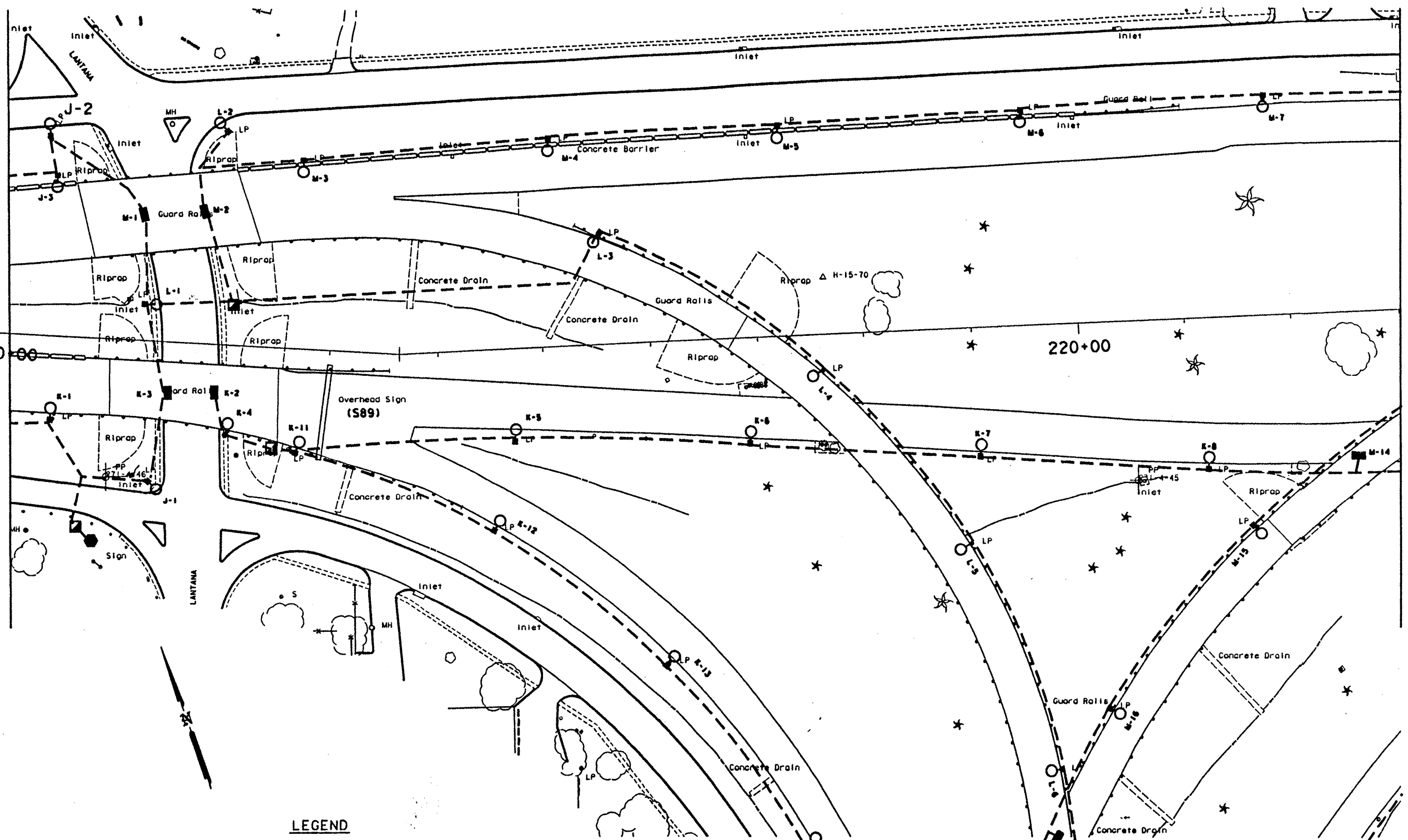
26

Scale 1"=100'

SHEET 2 OF 21 SHEETS		FEDERAL AID PROJECT NO.		SHEET	
STATE	TEXAS	IM 37 - (103) 000	26	16	179
COUNTY	NIJECES	0074 06	179	1H3	

MATCHLINE 230+00

MATCHLINE 217+00



LEGEND

- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- EXISTING UNDERPASS LUMINAIRE
- EXISTING SERVICE POLE
- EXISTING GROUND BOX
- EXISTING SIGN ON BRIDGE STRUCTURE
- EXISTING OVERHEAD SIGN BRIDGE (OSB)
- EXISTING CANTILEVER SIGN STRUCTURE (COSS)

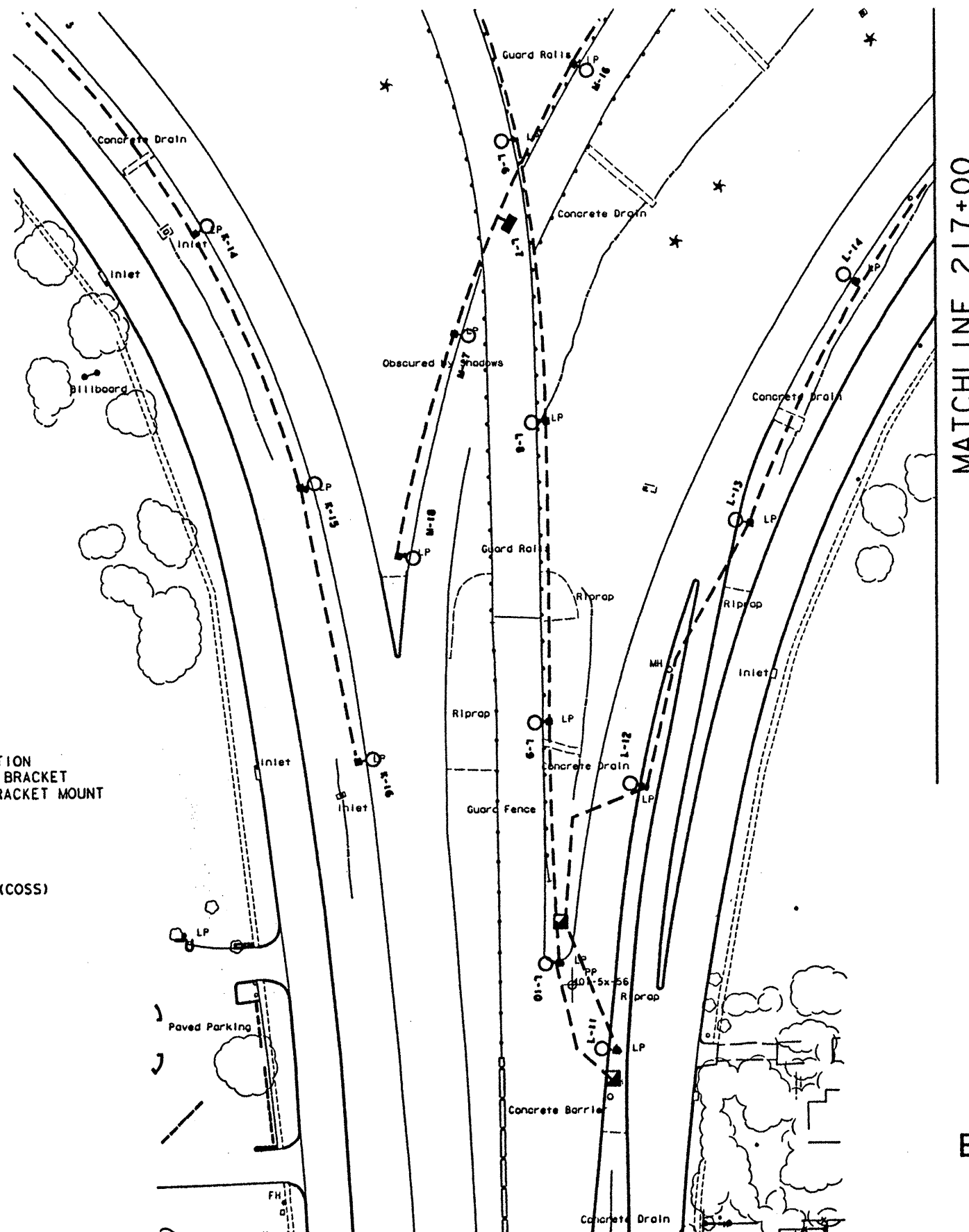
EXISTING ILLUMINATION LAYOUT  
IH37- WACO TO LANTANA

27

scale 1"=100'

SHEET 3 OF 21 SHEETS									
STATE	COUNTY	FEDERAL AID PROJECT NO.							
6	TEXAS	IM37 - (1103) 000							
STATE DIST. NO.	COUNTY	FEDERAL AID PROJECT NO.	SECTION NO.	SHEET NO.	TOTAL SHEETS	DATE	BY	CHECKED	APPROVED
0074	MIJECES	0074	06	179	37				

- LEGEND**
- EXISTING T-BASE LUMINAIRE ON FOUNDATION
  - EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
  - EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
  - EXISTING UNDERPASS LUMINAIRE
  - EXISTING SERVICE POLE
  - EXISTING GROUND BOX
  - EXISTING SIGN ON BRIDGE STRUCTURE
  - EXISTING OVERHEAD SIGN BRIDGE (OSB)
  - EXISTING CANTILEVER SIGN STRUCTURE (COSS)



MATCHLINE 217+00

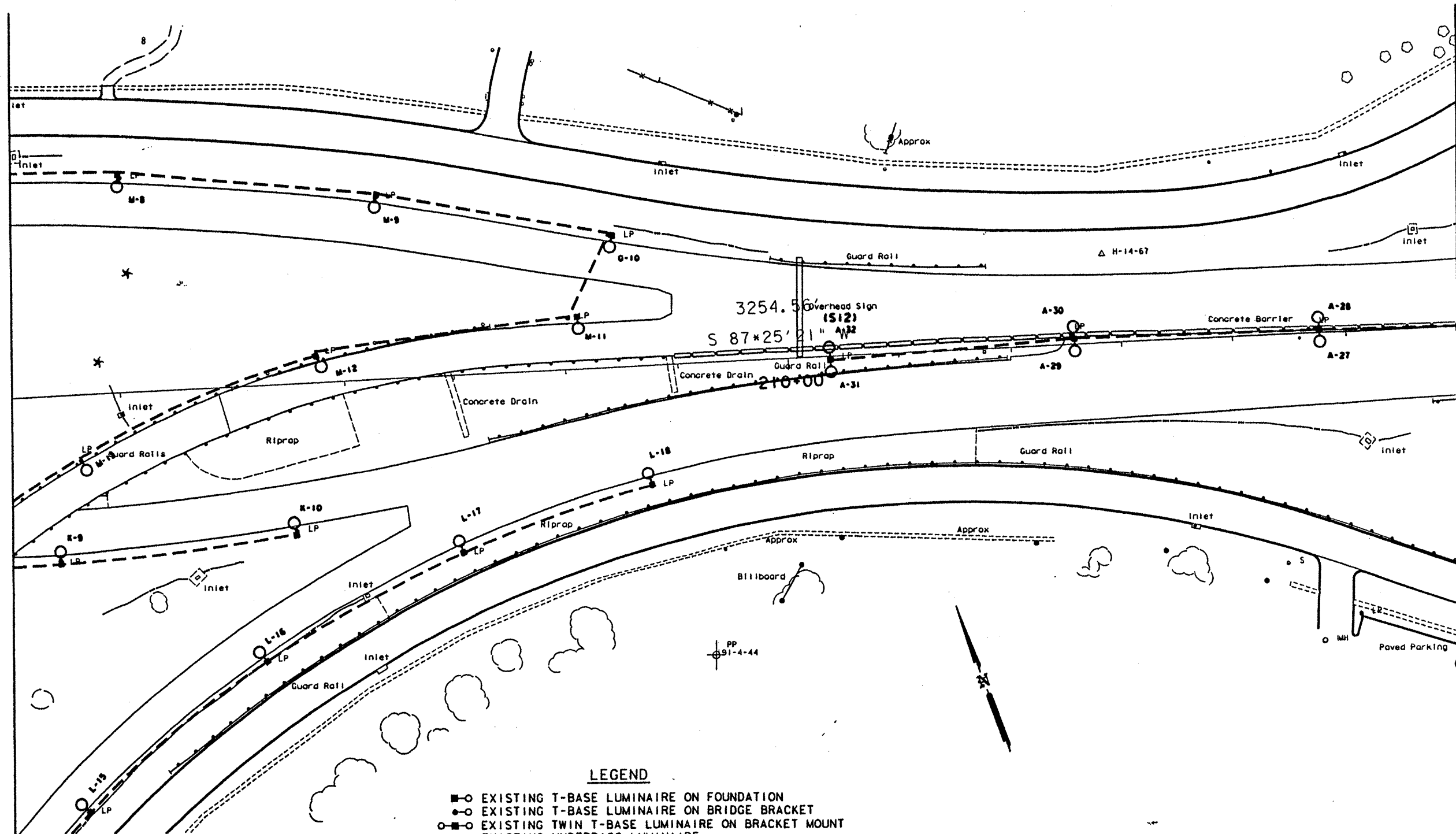
28

EXISTING ILLUMINATION LAYOUT  
IH37- WACO TO LANTANA

SCALE - 1" = 100'

SHEET 4 OF 21 SHEETS									
DATE	STATE	FEDERAL AID PROJECT NO.							
6	TEXAS	Im37 -111031 000 28							
STATE	COUNTY	DIST. NO.	SECTION	AS	BY	DATE	DATE	DATE	DATE
16	NUECES	0074	06	179	37				

MATCHLINE 217+00



MATCHLINE 204+00

**LEGEND**

- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- |— EXISTING UNDERPASS LUMINAIRE
- EXISTING SERVICE POLE
- EXISTING GROUND BOX
- |— EXISTING SIGN ON BRIDGE STRUCTURE
- |— EXISTING OVERHEAD SIGN BRIDGE (OSB)
- |— EXISTING CANTILEVER SIGN STRUCTURE (COSS)

**EXISTING ILLUMINATION LAYOUT  
IH37- WACO TO LANTANA**

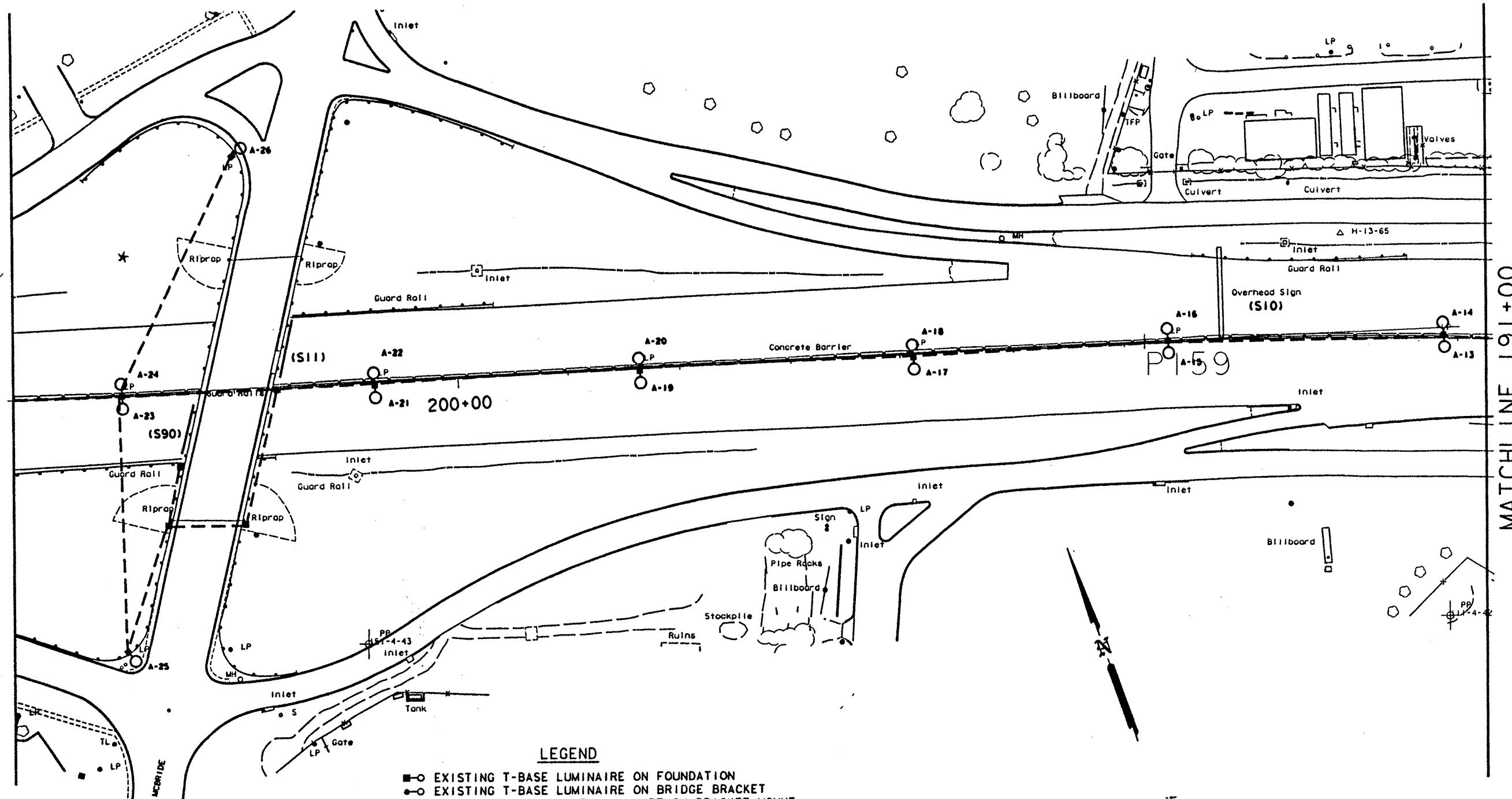
29

SCALE - 1" = 100'

SHEET 5 OF 21 SHEETS					
DIST.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.		
6	TEXAS	1M37-1(103) 000	29		
DIST. NO.	COUNTY	DIST. NO.	DIST. NO.	DIST. NO.	DIST. NO.



MATCHLINE 204+00



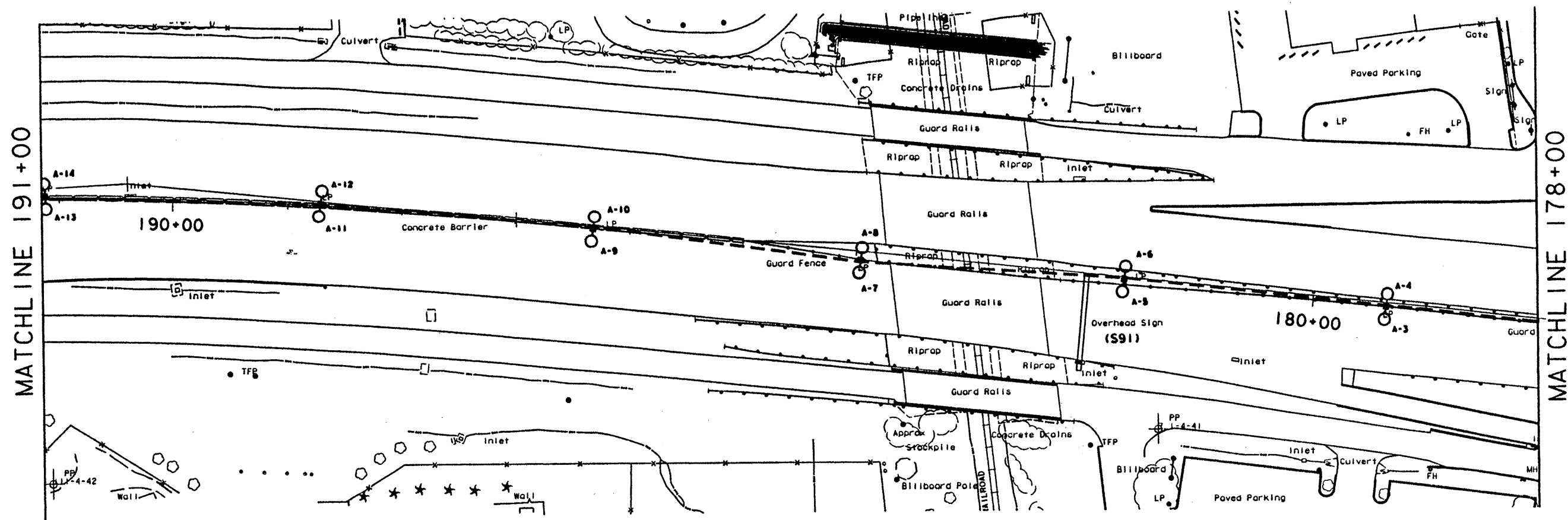
MATCHLINE 191+00

- LEGEND**
- EXISTING T-BASE LUMINAIRE ON FOUNDATION
  - EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
  - EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
  - EXISTING UNDERPASS LUMINAIRE
  - EXISTING SERVICE POLE
  - EXISTING GROUND BOX
  - EXISTING SIGN ON BRIDGE STRUCTURE
  - EXISTING OVERHEAD SIGN BRIDGE (OSB)
  - EXISTING CANTILEVER SIGN STRUCTURE (COSS)

EXISTING ILLUMINATION LAYOUT  
IH37 - WACO TO LANTANA

scale 1"=100' 30

SHEET 6 OF 21 SHEETS									
STATE	STATE	FEDERAL AID PROJECT NO.							
6	TEXAS	1M37 - (1103) 000							
STATE DIST. NO.	COUNTY	SECTION	SUBSECTION	SECTION	SUBSECTION	SECTION	SUBSECTION	SECTION	SUBSECTION
	NUECES	0074	06	179	37				



# LEGEND

- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- EXISTING UNDERPASS LUMINAIRE
- EXISTING SERVICE POLE
- EXISTING GROUND BOX
- EXISTING SIGN ON BRIDGE STRUCTURE
- EXISTING OVERHEAD SIGN BRIDGE (OSB)
- EXISTING CANTILEVER SIGN STRUCTURE (COSS)

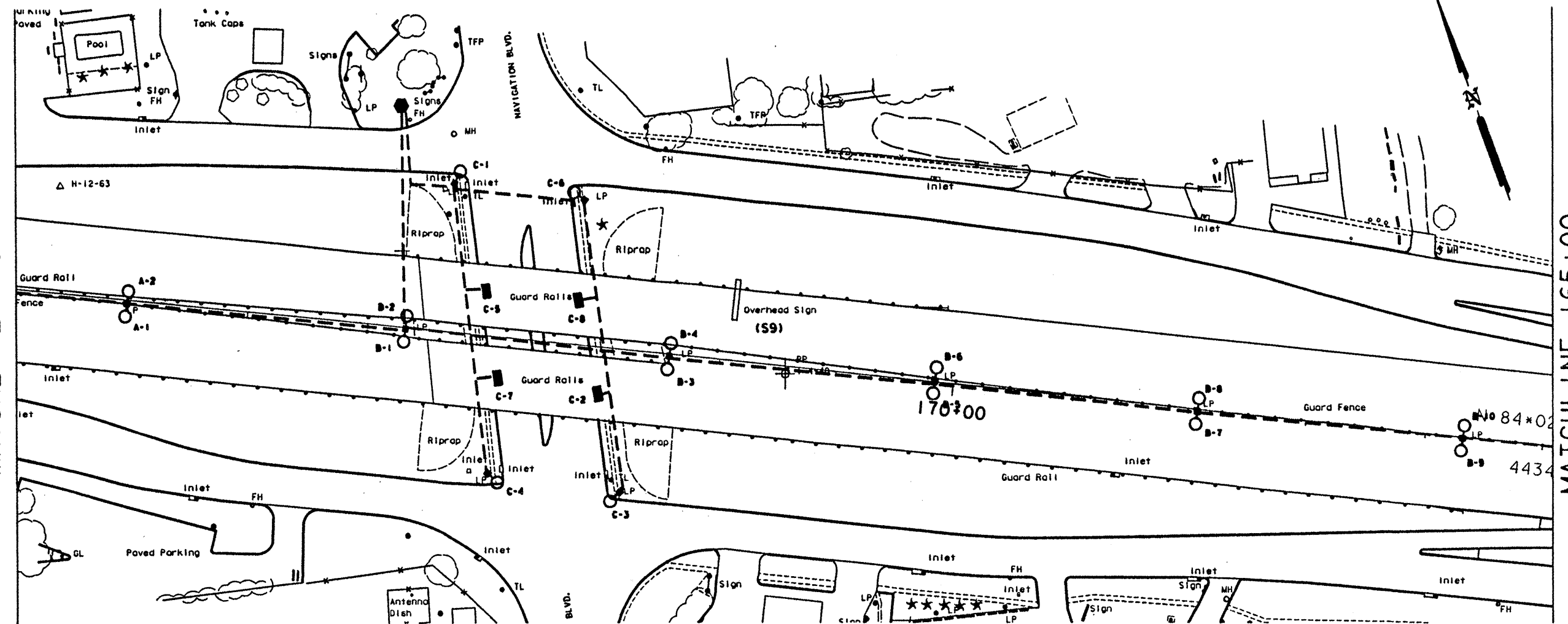
## EXISTING ILLUMINATION LAYOUT IH37- WACO TO LANTANA

31

SCALE - 1" = 100'

SHEET 7 OF 21 SHEETS					
NO.	STATE	FEDERAL AID PROJECT NO.			
6	TEXAS	1M37	-1	(103)	000
STATE DIST. NO.	COUNTY	CDIST.	CDIST.	CDIST.	CDIST.
	NUECES	0074	06	179	37

MATCHLINE 178 +00



MATCHLINE 165 +00

**LEGEND**

- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- || EXISTING UNDERPASS LUMINAIRE
- EXISTING SERVICE POLE
- EXISTING GROUND BOX
- EXISTING SIGN ON BRIDGE STRUCTURE
- || EXISTING OVERHEAD SIGN BRIDGE (OSB)
- || EXISTING CANTILEVER SIGN STRUCTURE (COSS)

**EXISTING ILLUMINATION LAYOUT  
IH37 - WACO TO LANTANA**

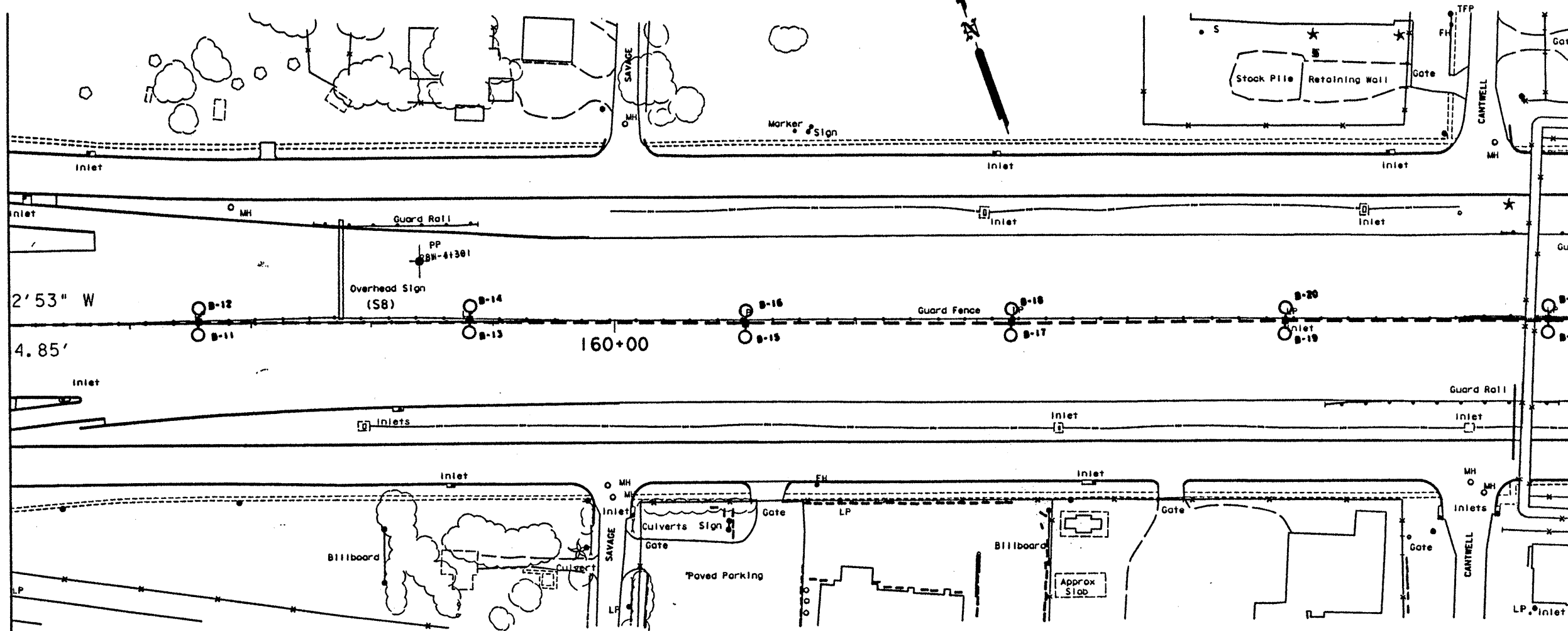
32

SCALE - 1" = 100'

SHEET 8 OF 21 SHEETS									
NO.	STATE	FEDERAL AID PROJECT NO.							
6	TEXAS	1M37 - 1 (103) 000	32						
STATE DIST. NO.	COUNTY	SECTION	SHEET NO.						
16	MUECES	0074	06	179	37				

MATCHLINE 165+00

MATCHLINE 152+00



**LEGEND**

- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- EXISTING UNDERPASS LUMINAIRE
- EXISTING SERVICE POLE
- EXISTING GROUND BOX
- EXISTING SIGN ON BRIDGE STRUCTURE
- EXISTING OVERHEAD SIGN BRIDGE (OSB)
- EXISTING CANTILEVER SIGN STRUCTURE (COSS)

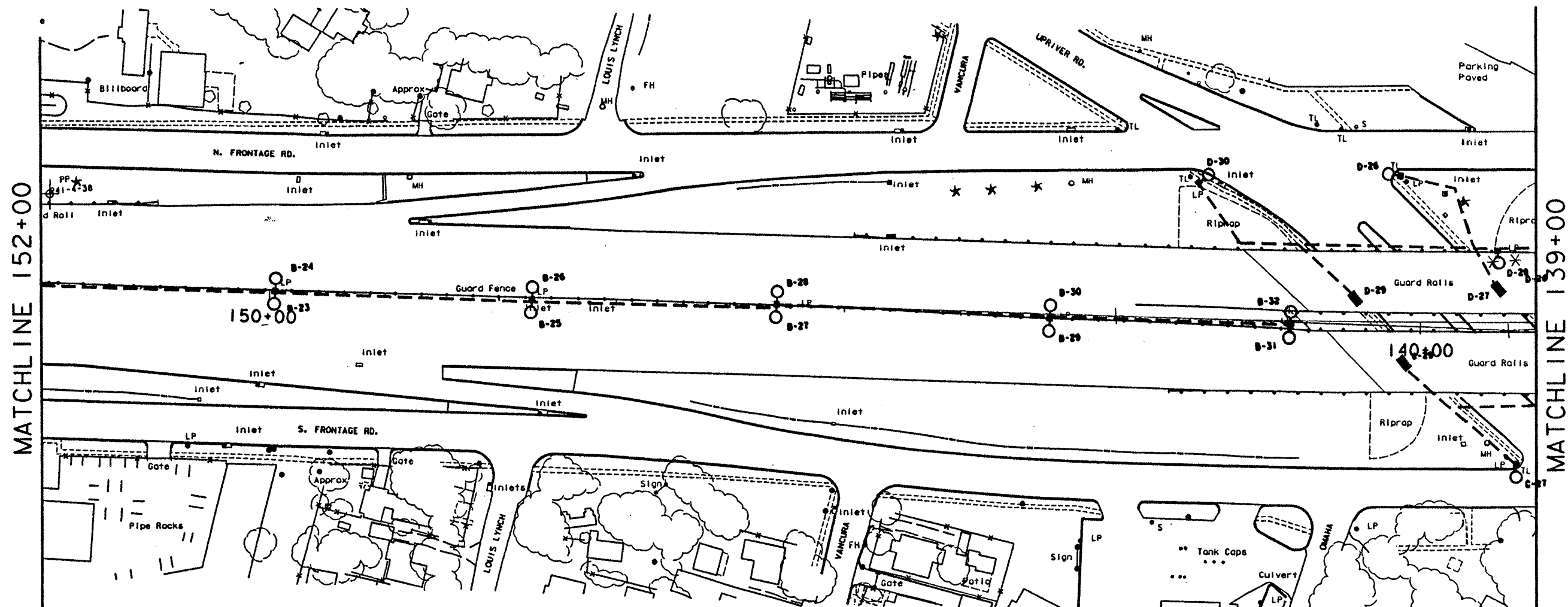
**EXISTING ILLUMINATION LAYOUT  
IH37 - WACO TO LANTANA**

33

SCALE - 1" = 100'

SHEET 9 OF 21 SHEETS						
DATE	STATE	FEDERAL AID PROJECT NO.				
6	TEXAS	IM37 - 1(103) 000				
STATE DIST. NO.	COUNTY	DIST. NO.	SECTION	SECTION	SECTION	SECTION
16	MUECES	0074	06	179	37	





# LEGEND

- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- ⊕ EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- EXISTING UNDERPASS LUMINAIRE
- EXISTING SERVICE POLE
- EXISTING GROUND BOX
- EXISTING SIGN ON BRIDGE STRUCTURE
- EXISTING OVERHEAD SIGN BRIDGE (OSB)
- EXISTING CANTILEVER SIGN STRUCTURE (COSS)

## EXISTING ILLUMINATION LAYOUT

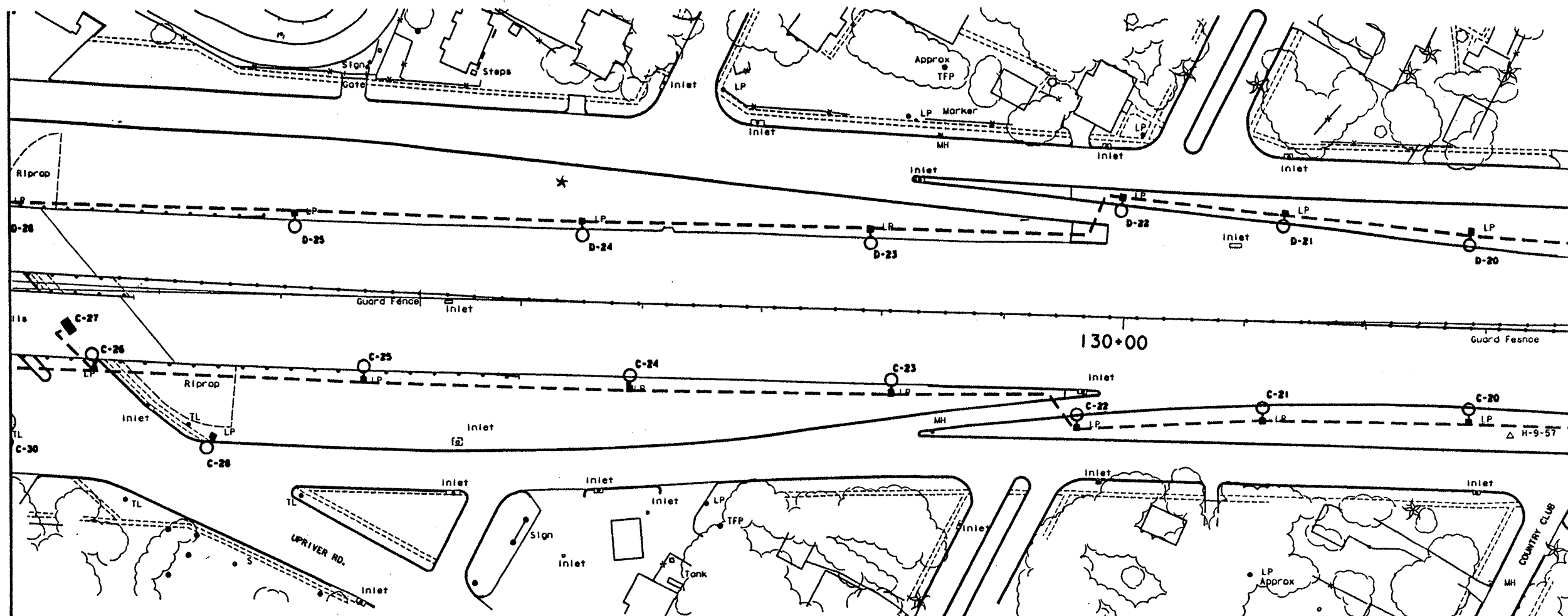
IH37 - WACO TO LANTANA

34

SCALE - 1" = 100'

SHEET 10 OF 21 SHEETS						
STATE	FEDERAL AID PROJECT NO.					
6 TEXAS	1M37 - (1103) 000	34				
COUNTY	SECTION	DATE	BY	CHECKED	APPROVED	
16 NUECES	0074 06	179	37			

MATCHLINE 139+00



MATCHLINE 126+00

**LEGEND**

- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- ⊕ EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- ⊖ EXISTING UNDERPASS LUMINAIRE
- ⊙ EXISTING SERVICE POLE
- ⊔ EXISTING GROUND BOX
- ⊕ EXISTING SIGN ON BRIDGE STRUCTURE
- ⊖ EXISTING OVERHEAD SIGN BRIDGE (OSB)
- ⊙ EXISTING CANTILEVER SIGN STRUCTURE (COSS)

**EXISTING ILLUMINATION LAYOUT**

IH37 - WACO TO LANTANA

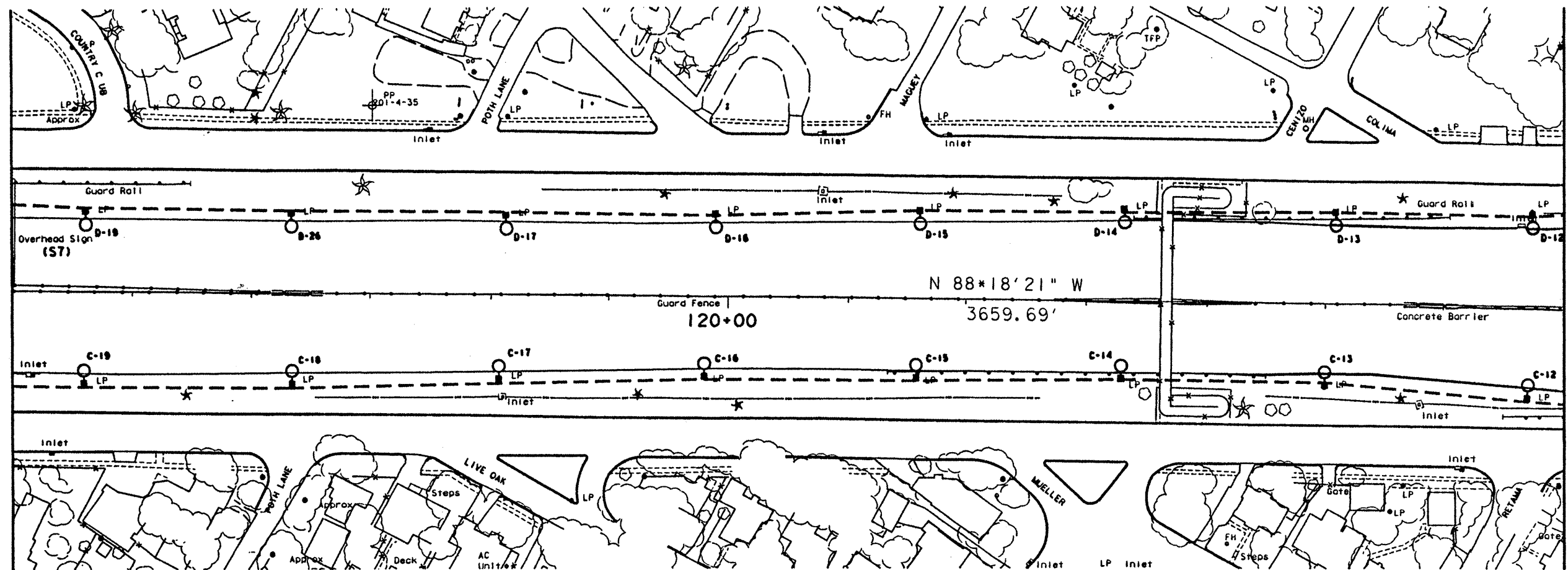
35

SCALE - 1" = 100'

SHEET 11 OF 21 SHEETS				
NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	
6	TEXAS	1M37 - 1(103) 000	35	
STATE DIST. NO.	COUNTY	SECTION	SHEET NO.	
16	MUECES	0074 06 179	37	

MATCHLINE 126+00

MATCHLINE 113+00



**LEGEND**

- ⊕ EXISTING T-BASE LUMINAIRE ON FOUNDATION
- ⊕ EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- ⊕ EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- ⊕ EXISTING UNDERPASS LUMINAIRE
- ⊕ EXISTING SERVICE POLE
- ⊕ EXISTING GROUND BOX
- ⊕ EXISTING SIGN ON BRIDGE STRUCTURE
- ⊕ EXISTING OVERHEAD SIGN BRIDGE (OSB)
- ⊕ EXISTING CANTILEVER SIGN STRUCTURE (COSS)

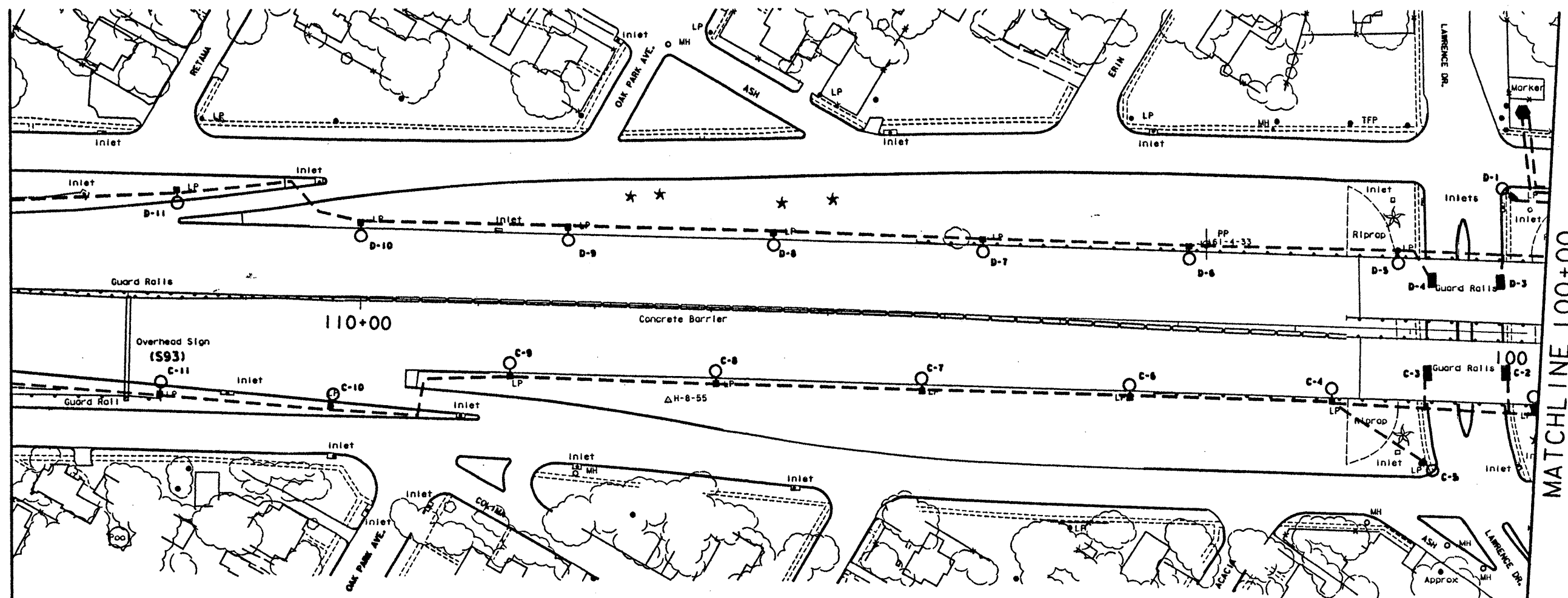
36

**EXISTING ILLUMINATION LAYOUT  
IH37 - WACO TO LANTANA**

SCALE - 1" = 100'

SHEET 12 OF 21 SHEETS					
DIST.	STATE	FEDERAL AID PROJECT NO.			
6	TEXAS	IM37 - (1103) 000			
STATE DIST. NO.	COUNTY	SECTION	SUBSECTION	POST MILE	SHEET NO.
16	NUECES	0074	06	179	37

MATCHLINE 113+00



MATCHLINE 100+00

# LEGEND

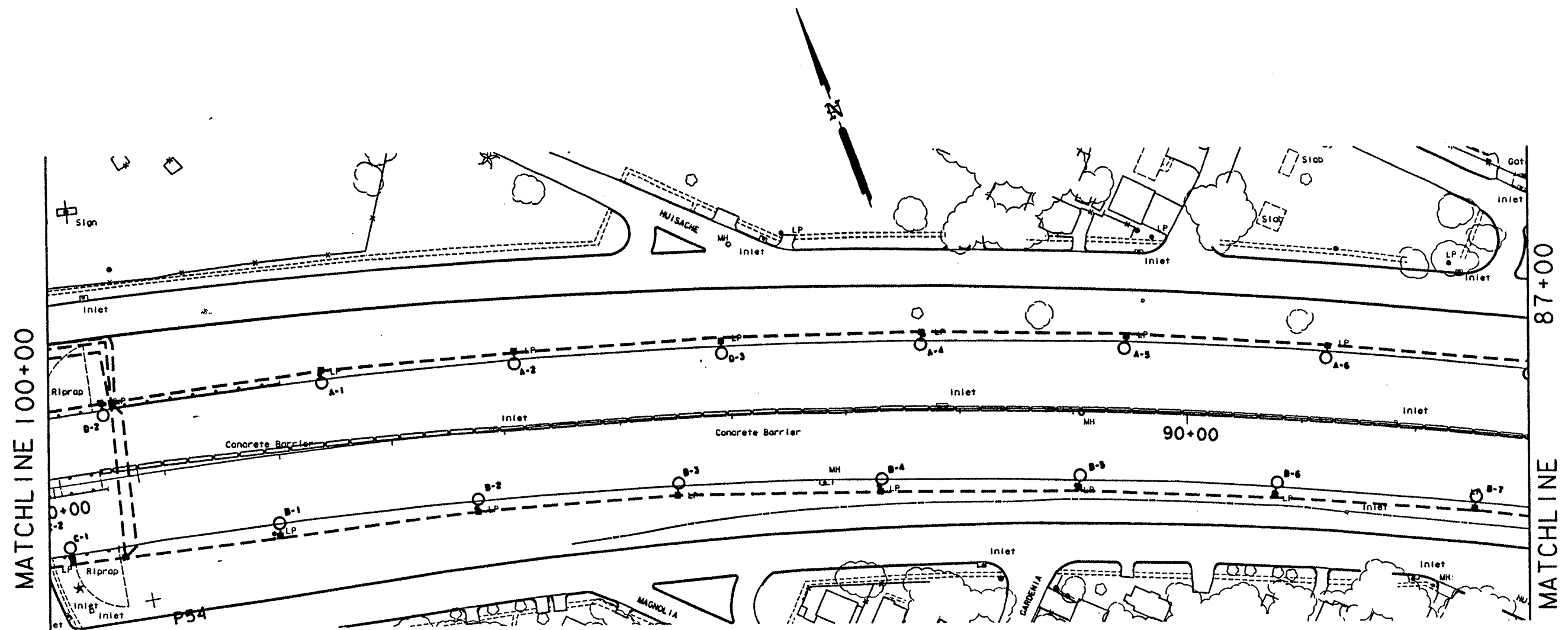
- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- EXISTING UNDERPASS LUMINAIRE
- EXISTING SERVICE POLE
- EXISTING GROUND BOX
- EXISTING SIGN ON BRIDGE STRUCTURE
- EXISTING OVERHEAD SIGN BRIDGE (OSB)
- EXISTING CANTILEVER SIGN STRUCTURE (COSS)

37

## EXISTING ILLUMINATION LAYOUT IH37 - WACO TO LANTANA

SCALE - 1" = 100'

SHEET 13 OF 21 SHEETS						
NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.			
6	TEXAS	IM37 - 1(1103) 000	37			
STATE DIST. NO.	COUNTY	DIST. NO.	DIST. NO.	DIST. NO.	DIST. NO.	DIST. NO.
16	MUECES	0074	06	179	37	



# LEGEND

- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- EXISTING UNDERPASS LUMINAIRE
- EXISTING SERVICE POLE
- EXISTING GROUND BOX
- EXISTING SIGN ON BRIDGE STRUCTURE
- EXISTING OVERHEAD SIGN BRIDGE (OSB)
- EXISTING CANTILEVER SIGN STRUCTURE (COSS)

## EXISTING ILLUMINATION LAYOUT

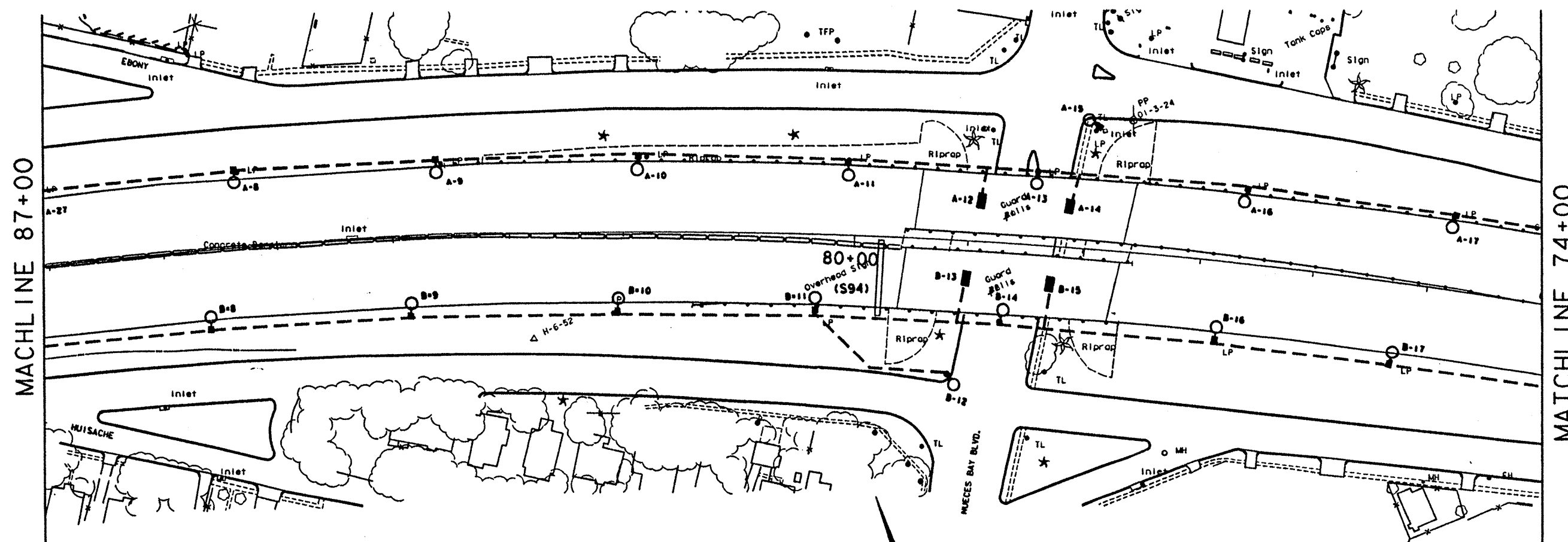
IH37 - WACO TO LANTANA

38

SCALE - 1" = 100'

SHEET 14 OF 21 SHEETS									
NO.	STATE	FEDERAL AID PROJECT NO.		NO.	STATE	FEDERAL AID PROJECT NO.		NO.	STATE
6	TEXAS	1M37 - 1(103) 000		38	TEXAS	1M37 - 1(103) 000		38	TEXAS
COUNTY		NO.	DATE	COUNTY		NO.	DATE	COUNTY	
MUECES		0074	06 179	MUECES		0074	06 179	MUECES	





**LEGEND**

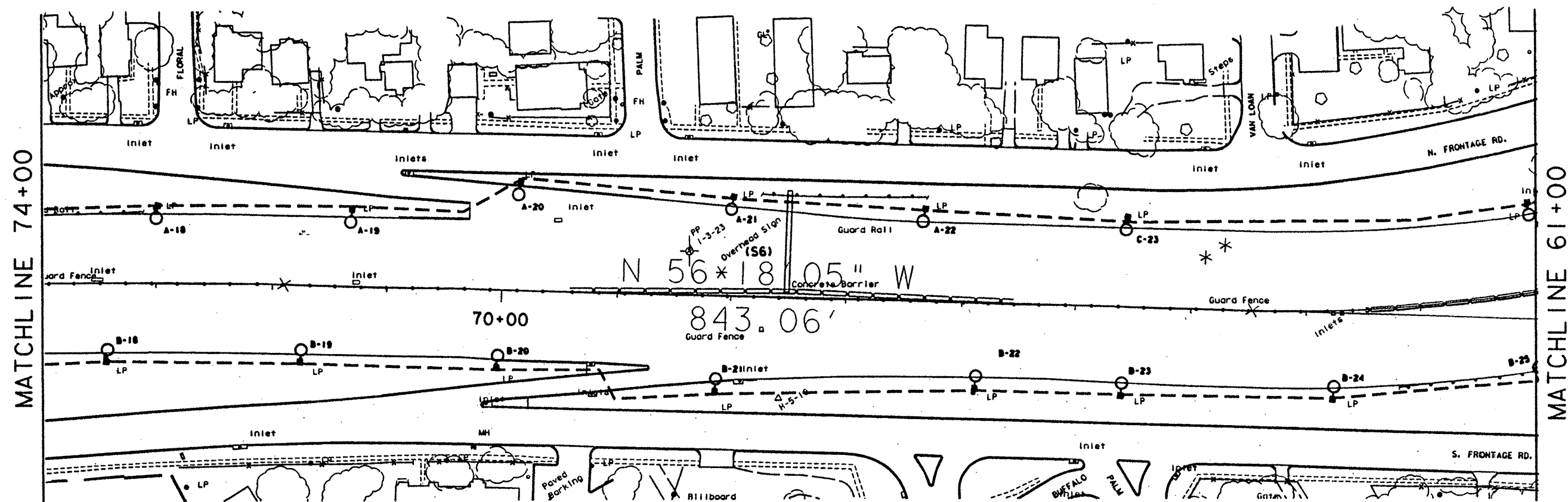
- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- EXISTING UNDERPASS LUMINAIRE
- EXISTING SERVICE POLE
- EXISTING GROUND BOX
- EXISTING SIGN ON BRIDGE STRUCTURE
- EXISTING OVERHEAD SIGN BRIDGE (OSB)
- EXISTING CANTILEVER SIGN STRUCTURE (COSS)

**EXISTING ILLUMINATION LAYOUT**  
**IH37 - WACO TO LANTANA**

39

SCALE - 1" = 100'

SHEET 15 OF 21 SHEETS					
NO.	STATE	FEDERAL AID PROJECT NO.			
6	TEXAS	1M37 - 1(103) 000	39		
STATE	COUNTY	NO.	NO.	NO.	NO.
16	NUECES	0074	06	179	37



# LEGEND

- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- EXISTING UNDERPASS LUMINAIRE
- EXISTING SERVICE POLE
- EXISTING GROUND BOX
- EXISTING SIGN ON BRIDGE STRUCTURE
- EXISTING OVERHEAD SIGN BRIDGE (OSB)
- EXISTING CANTILEVER SIGN STRUCTURE (COSS)

## EXISTING ILLUMINATION LAYOUT

IH37 - WACO TO LANTANA

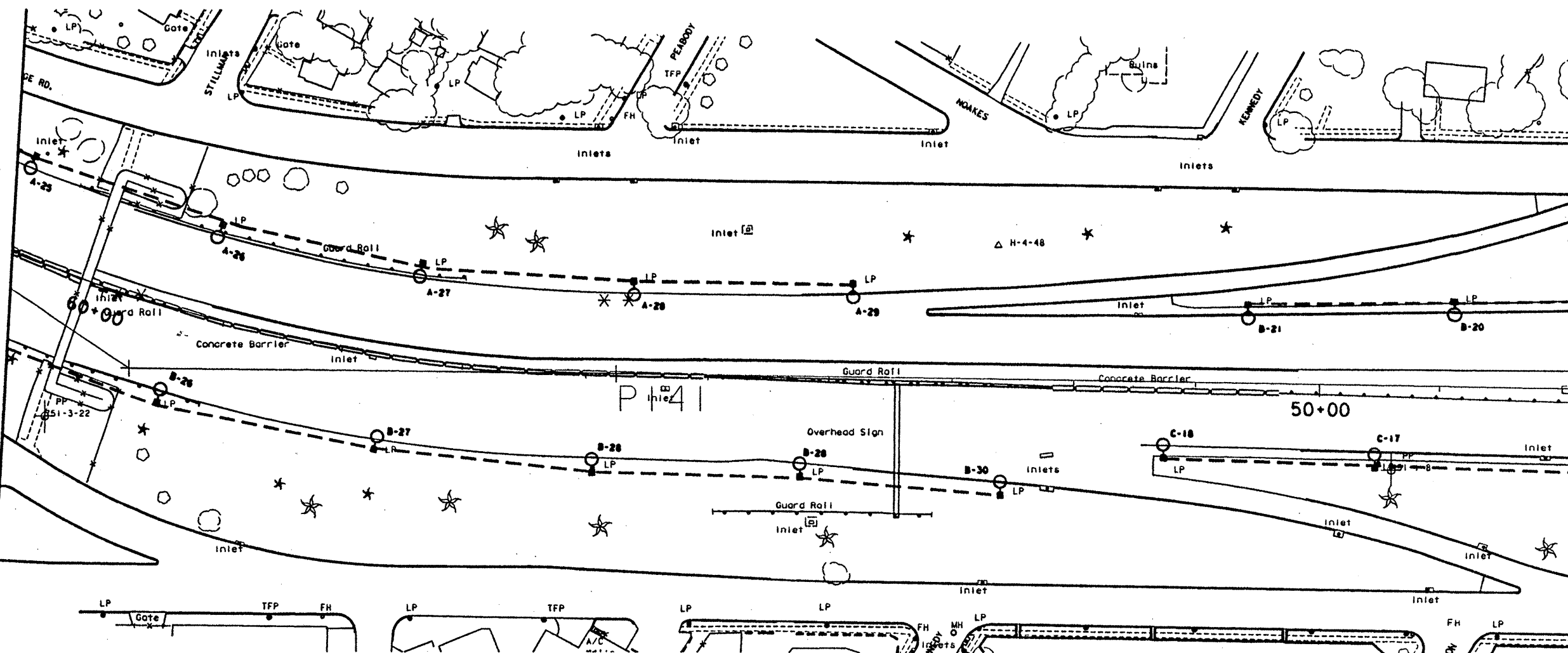
40

SCALE - 1" = 100'

SHEET 16 OF 21 SHEETS									
STATE	STATE	FEDERAL AID PROJECT NO.							
6	TEXAS	IM37 - 1(103) 000		40					
SHEET	COUNTY	GENERAL	SECTION	NO.	SHEET	NO.	NO.	SHEET	NO.
16	NUECES	0074	06	179	37				

MATCHLINE 61+00

MATCHLINE 48+00



**LEGEND**

- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- ⊕ EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- EXISTING UNDERPASS LUMINAIRE
- EXISTING SERVICE POLE
- EXISTING GROUND BOX
- EXISTING SIGN ON BRIDGE STRUCTURE
- EXISTING OVERHEAD SIGN BRIDGE (OSB)
- EXISTING CANTILEVER SIGN STRUCTURE (COSS)

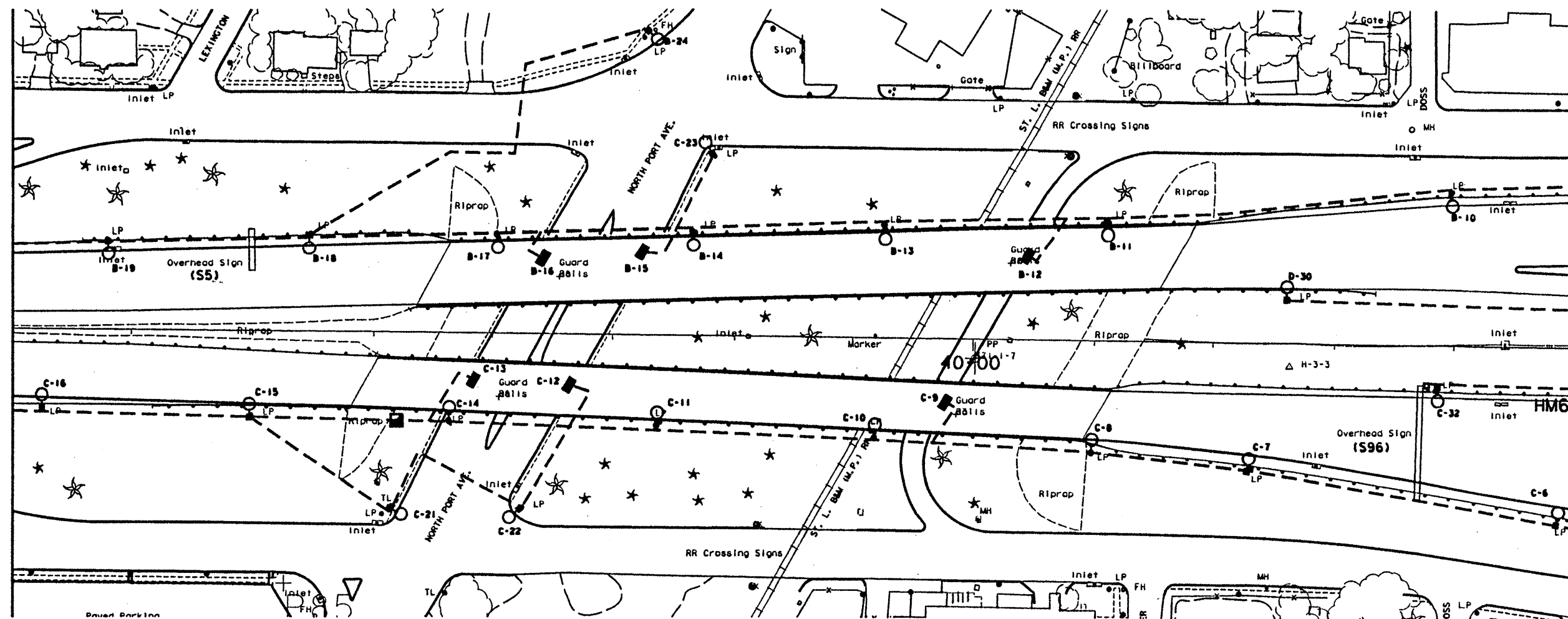
**EXISTING ILLUMINATION LAYOUT**  
IH37 - WACO TO LANTANA

41

SCALE - 1" = 100'

SHEET 17 OF 21 SHEETS					
NO.	STATE	FEDERAL AID PROJECT NO.		SHEET NO.	
6	TEXAS	1M37	-1(103) 000	41	
STATE	COUNTY	DIST. NO.	SECTION	SECTION	SECTION
16	HUECES	0074	06	179	37

MACHLINE 48+00



MATCHLINE 35+00

**LEGEND**

- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- ⊕ EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- ⊖ EXISTING UNDERPASS LUMINAIRE
- ⊙ EXISTING SERVICE POLE
- ⊘ EXISTING GROUND BOX
- ⊙ EXISTING SIGN ON BRIDGE STRUCTURE
- ⊙ EXISTING OVERHEAD SIGN BRIDGE (OSB)
- ⊙ EXISTING CANTILEVER SIGN STRUCTURE (COSS)

**EXISTING ILLUMINATION LAYOUT**

1H37 - WACO TO LANTANA

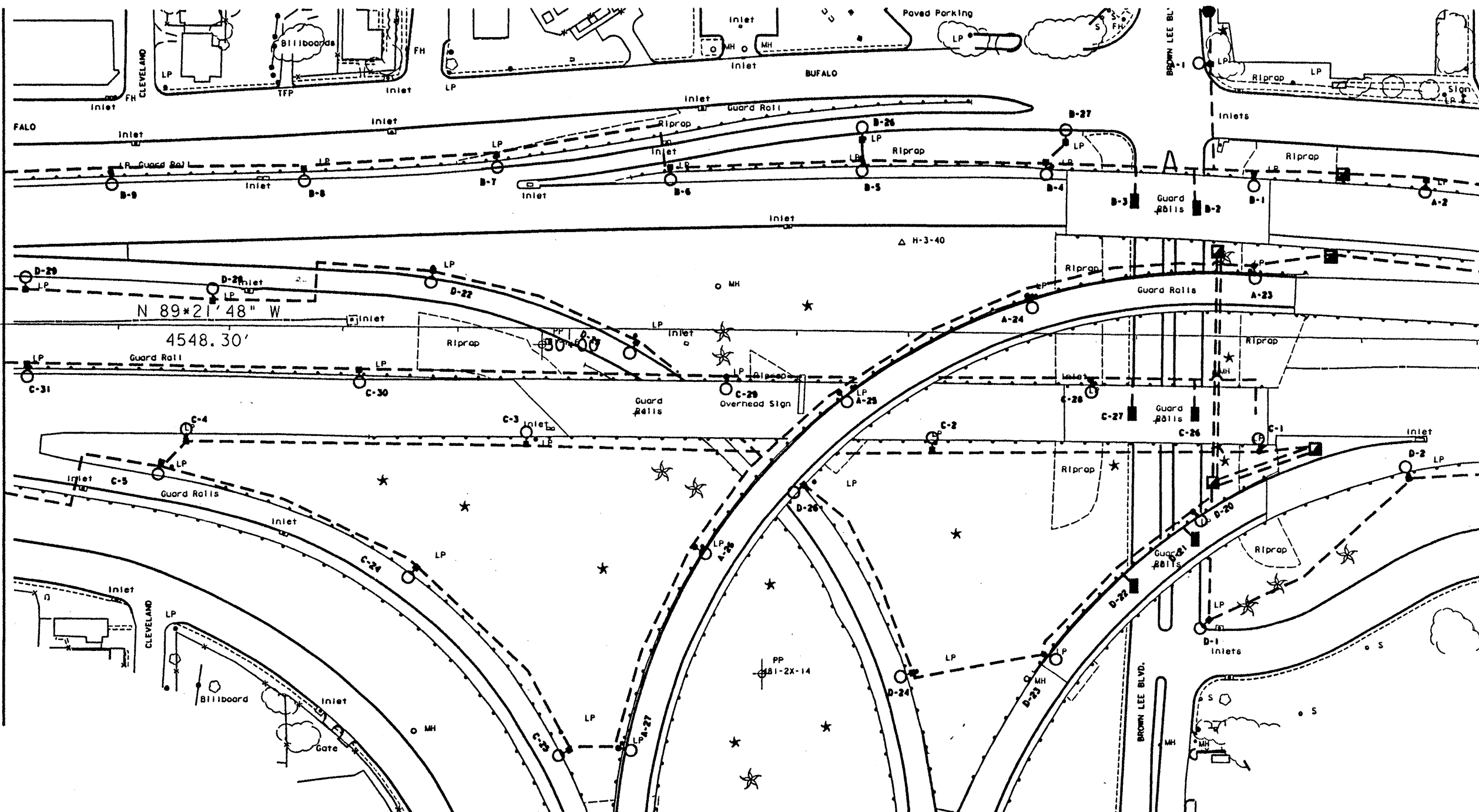
42

SCALE - 1" = 100'

SHEET 18 OF 21 SHEETS									
SHEET	STATE	FEDERAL AID PROJECT NO.							
6	TEXAS	1M37 1 (103) 000							
STATE	COUNTY	SECTION	NO.	DATE	BY	DATE	BY	DATE	BY
16	NUECES	0074	06	179	37				

MACHLINE 35+00

MATCHLINE 22+00



LEGEND

- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- ⊕ EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- EXISTING UNDERPASS LUMINAIRE
- EXISTING SERVICE POLE
- EXISTING GROUND BOX
- ⊕ EXISTING SIGN ON BRIDGE STRUCTURE
- ⊕ EXISTING OVERHEAD SIGN BRIDGE (OSB)
- ⊕ EXISTING CANTILEVER SIGN STRUCTURE (COSS)

43

EXISTING ILLUMINATION LAYOUT

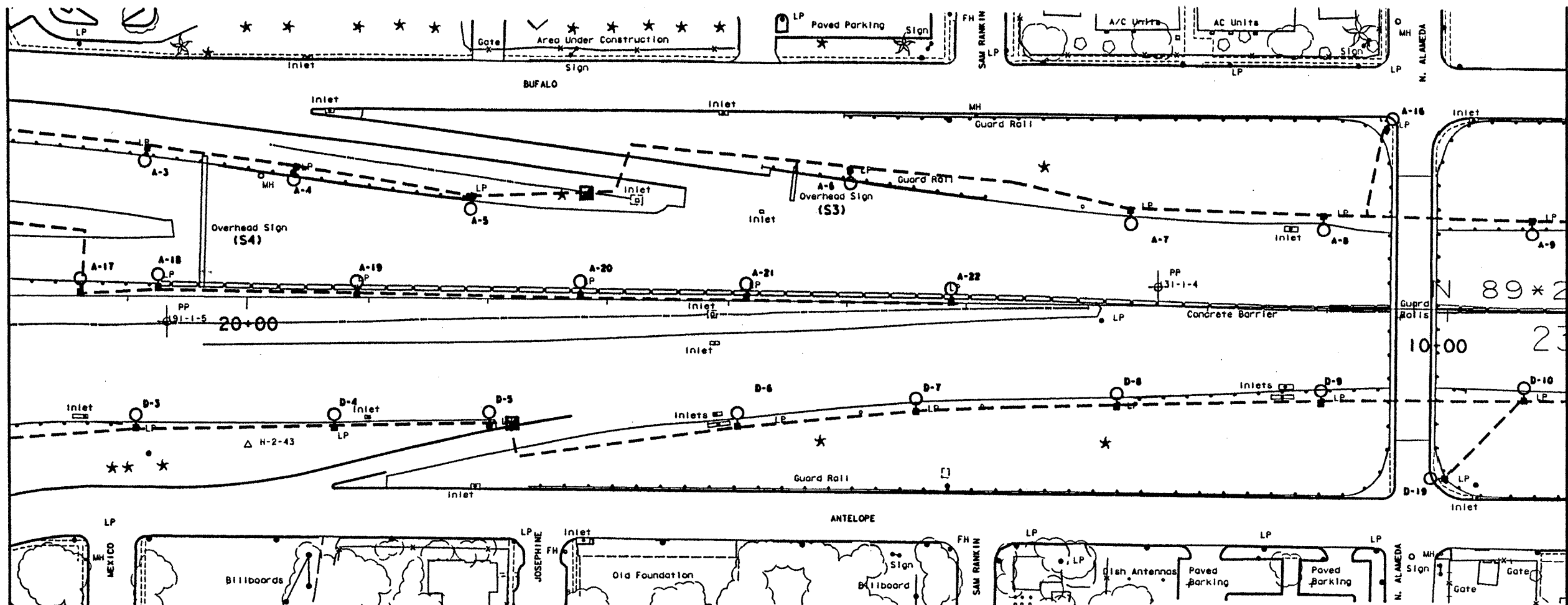
IH37 - WACO TO LANTANA

SCALE - 1" = 100'

SHEET 19 OF 21 SHEETS									
SHEET	STATE	FEDERAL AID PROJECT NO.							
6	TEXAS	IM37 - 1(103) 000		43					
STATE	COUNTY	SECTION	SHEET						
16	NUECES	0074	06	179	37				



MATCHLINE 22+00



MATCHLINE 9+00

**LEGEND**

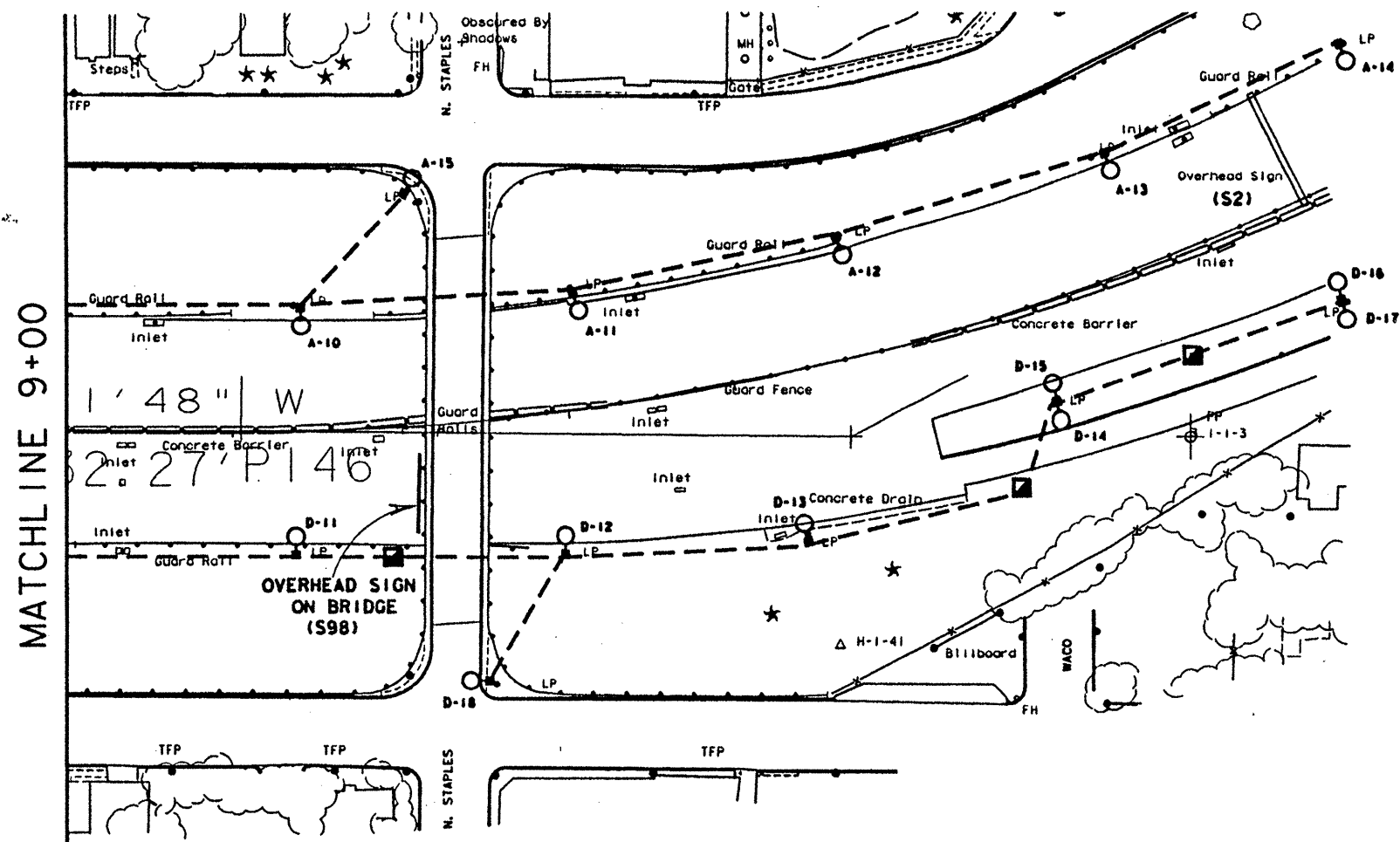
- EXISTING T-BASE LUMINAIRE ON FOUNDATION
- EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- ⊕ EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- ⊥ EXISTING UNDERPASS LUMINAIRE
- EXISTING SERVICE POLE
- EXISTING GROUND BOX
- ⊥ EXISTING SIGN ON BRIDGE STRUCTURE
- ⊥ EXISTING OVERHEAD SIGN BRIDGE (OSB)
- ⊥ EXISTING CANTILEVER SIGN STRUCTURE (COSS)

**EXISTING ILLUMINATION LAYOUT**  
IH37 - WACO TO LANTANA

SCALE - 1" = 100'

SHEET 20 OF 21 SHEETS

STATE	COUNTY	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	1M 37 - (103) 000	44
STATE	COUNTY	DISTRICT	SECTION
16	NUJECES	0074	06 179



# LEGEND

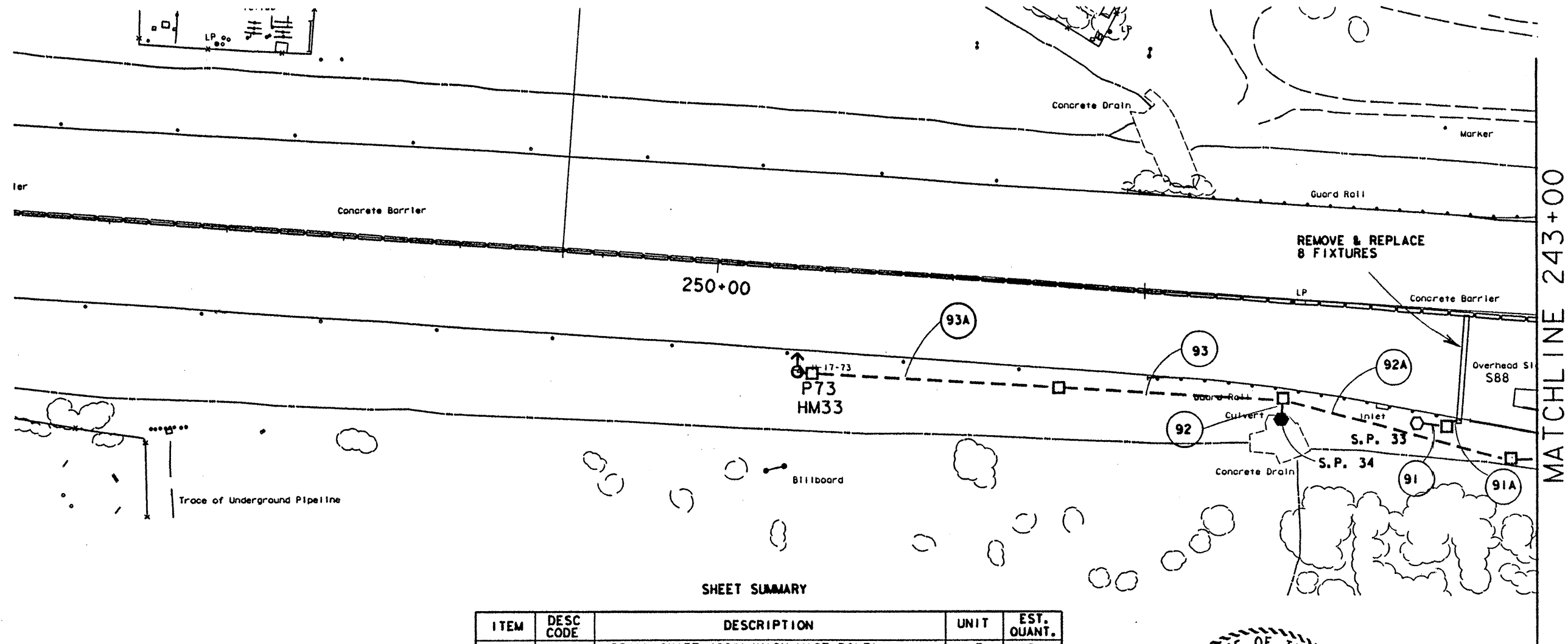
- ⊕ EXISTING T-BASE LUMINAIRE ON FOUNDATION
- ⊕ EXISTING T-BASE LUMINAIRE ON BRIDGE BRACKET
- ⊕ EXISTING TWIN T-BASE LUMINAIRE ON BRACKET MOUNT
- ⊕ EXISTING UNDERPASS LUMINAIRE
- ⊕ EXISTING SERVICE POLE
- ⊕ EXISTING GROUND BOX
- ⊕ EXISTING SIGN ON BRIDGE STRUCTURE
- ⊕ EXISTING OVERHEAD SIGN BRIDGE (OSB)
- ⊕ EXISTING CANTILEVER SIGN STRUCTURE (COSS)

## EXISTING ILLUMINATION LAYOUT IH37 - WACO TO LANTANA

45

SCALE - 1" = 100'

SHEET 21 OF 21 SHEETS					
STATE	COUNTY	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS	DATE
TEXAS	WICKE	1137-111031-000	45	45	1978
16	WICKE	0074	06	170	37

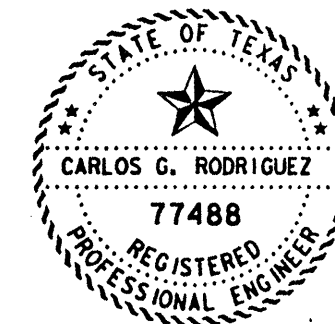


#### SHEET SUMMARY

ITEM	DESC CODE	DESCRIPTION	UNIT	EST. QUANT.
0416	0524	DRILL SHAFT (60") (HIGH MAST POLE)	L.F.	23
0613	0510	HIGH MAST ILL POLE (150 FT) (100MPH)	EA.	1
614	505	HIGH MAST ILL ASM (12-400 WATT) (ASYM) (TYB)	EA.	1
618	511	CONDUIT (PVC) (SCH 40) (2")	L.F.	620
620	503	ELEC. CONDUCTOR (NO. 8 ) BARE	L.F.	620
628	567	ELEC. SERV. TY A (240/480) 060 (N.S.) NM (E) EX (O)	EA.	1
620	509	ELEC. CONDUCTOR (NO. 8 ) INSULATED	L.F.	1240
624	501	GROUND BOX TY A (122311) W/APRON	EA.	5
652	501	HIGHWAY SIGN LIGHT FIXT. (MV) (100W)	EA.	8

#### LEGEND

- ▲ PROPOSED UNDERPASS LUMINAIRE
- PROPOSED SERVICE POLE
- PROPOSED 12"X 23"X 11" RPM GROUND BOX
- ▣ PROPOSED JUNCTION BOX OR CONDULET (SEE DETAIL)
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8) (.25KW) S
- PROPOSED RDWY ILL ASSEM (TY SA 40S-8) (.25KW) S
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8-8) (.25KW) S
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (ASYM)
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (SYM)
- ⊞ PROPOSED DISCONNECT SWITCH
- PROPOSED TRENCHED CONDUIT
- PROPOSED CONDUIT ABOVE GRADE
- === PROPOSED BORED CONDUIT
- EXIST SIGN ON BRIDGE
- EXIST OVERHEAD SIGN
- EXIST SERVICE POLE



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*Carlos G. Rodriguez, P.E.*

### PROPOSED ILLUMINATION LAYOUT

IH37- WACO TO LANTANA

SHEET 1 OF 20 SHEETS

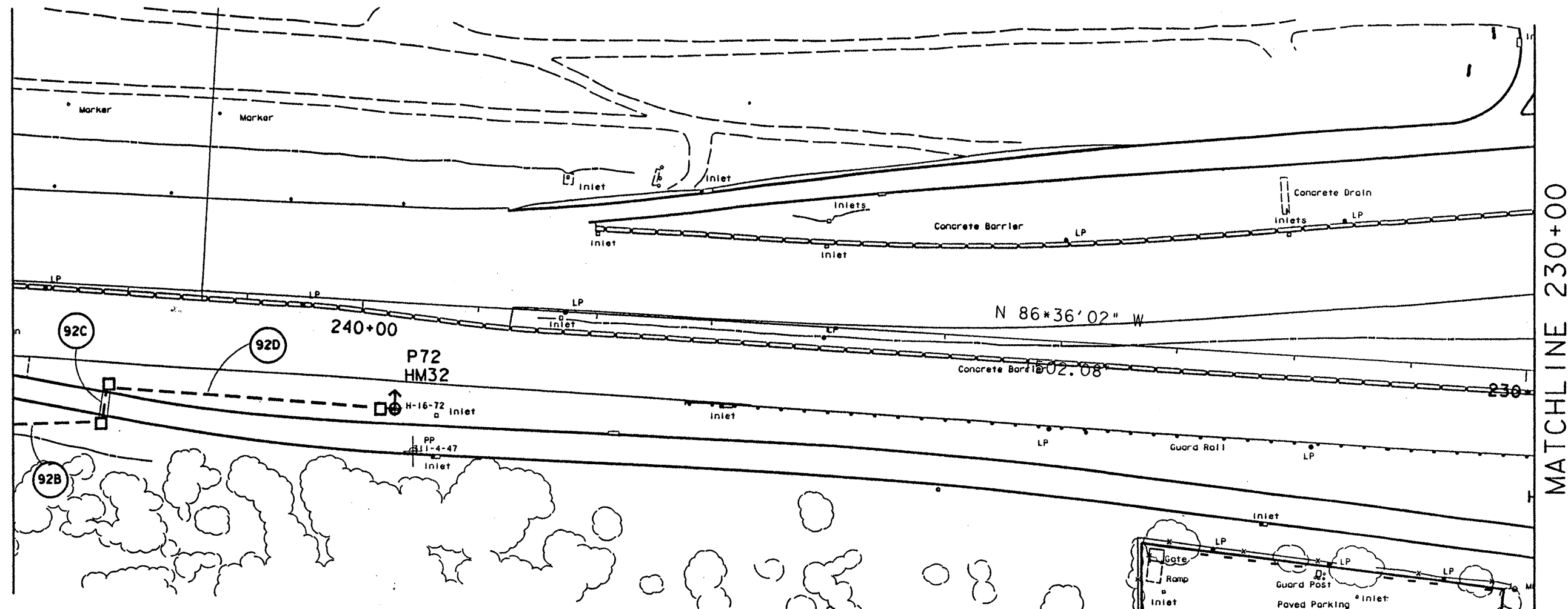
STATE	FEDERAL AID PROJECT NO.	SHEET NO.
TEXAS	IM 37 - 1 (103) 000	46
COUNTY	SECTION	DATE
MUECES	0074	06 179

Revised 4-27-95

SCALE - 1" = 100'

46

MATCHLINE 243+00



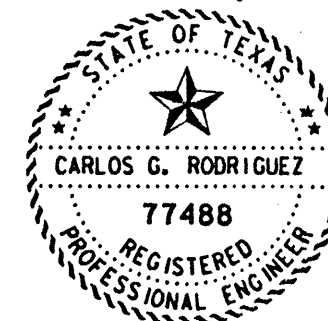
MATCHLINE 230+00

## LEGEND

- ▲ PROPOSED UNDERPASS LUMINAIRE
- PROPOSED SERVICE POLE
- PROPOSED 12"X 23"X 11" RPM GROUND BOX
- ⊠ PROPOSED JUNCTION BOX OR CONDULET (SEE DETAIL)
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40S-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8-8) (.25KW)S
- ⊙ PROPOSED HIGH MAST ILLUMINATION POLE (ASYM)
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (SYM)
- ⊞ PROPOSED DISCONNECT SWITCH
- - - PROPOSED TRENCHED CONDUIT
- - - PROPOSED CONDUIT ABOVE GRADE
- ≡≡≡ PROPOSED BORED CONDUIT
- EXIST SIGN ON BRIDGE
- EXIST OVERHEAD SIGN
- EXIST SERVICE POLE

## SHEET SUMMARY

ITEM	DESC CODE	DESCRIPTION	UNIT	EST. QUANT.
0416	0524	DRILL SHAFT (60") (HIGH MAST POLE)	L.F.	23
0613	0510	HIGH MAST ILL POLE (150 FT) (100MPH)	EA.	1
614	505	HIGH MAST ILL ASM (12-400 WATT) (ASYM) (TYB)	EA.	1
618	511	CONDUIT (PVC) (SCH 40) (2")	L.F.	250
618	539	CONDUIT (PVC) (SCH 80) (2") BORE	L.F.	25
620	503	ELEC. CONDUCTOR (NO. 8) BARE	L.F.	275
620	509	ELEC. CONDUCTOR (NO. 8) INSULATED	L.F.	550
624	501	GROUND BOX TY A (122311) W/APRON	EA.	3



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APRIL 13, 1995

Carlos G. Rodriguez P.E.

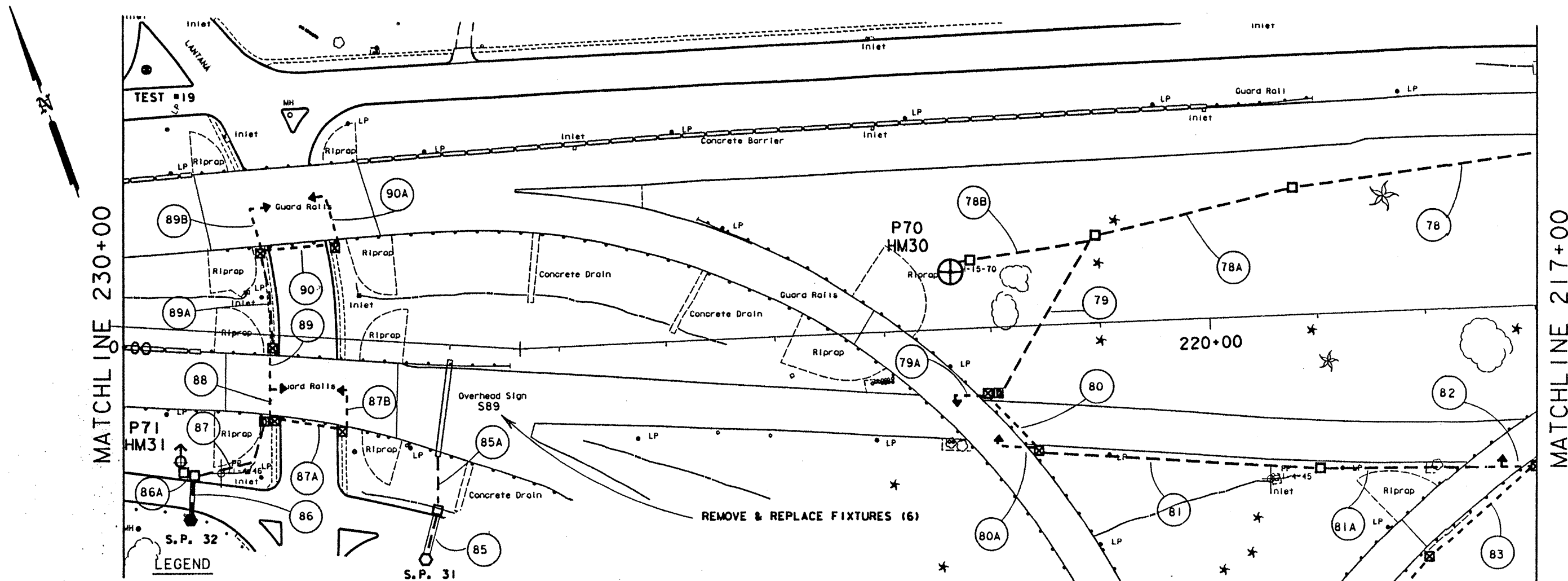
# PROPOSED ILLUMINATION LAYOUT IH37- WACO TO LANTANA

REVISED 4-27-95

SCALE = 1" = 100'

SHEET 2 OF 20 SHEETS

STATE	FEDERAL AID PROJECT NO.	SHEET
TEXAS	1M 37 -1 (103) 000	47
COUNTY	ROUTE	SECTION
NIJECES	0074	06 179



- LEGEND**
- ▲ PROPOSED UNDERPASS LUMINAIRE
  - PROPOSED SERVICE POLE
  - PROPOSED 12"X 23"X 11" RPM GROUND BOX
  - ⊕ PROPOSED JUNCTION BOX OR CONDUIT (SEE DETAIL)
  - PROPOSED RDWY ILL ASSEM (TY SA 40T-8) (.25KW)S
  - PROPOSED RDWY ILL ASSEM (TY SA 40S-8) (.25KW)S
  - PROPOSED RDWY ILL ASSEM (TY SA 40T-8-8) (.25KW)S
  - ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (ASYM)
  - ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (SYM)
  - ⊕ PROPOSED DISCONNECT SWITCH
  - PROPOSED TRENCHED CONDUIT
  - PROPOSED CONDUIT ABOVE GRADE
  - PROPOSED BORED CONDUIT
  - EXIST SIGN ON BRIDGE
  - EXIST OVERHEAD SIGN
  - EXIST SERVICE POLE

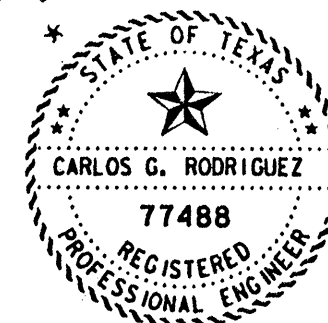
TEST MOLE #19  
ELEV. = 44.92

- 0-4 LIGHT BROWN SANDY LOAM
- 4-8 TAN CLAYEY SILT, SAND W/T CAL. MOD. (PLASTIC)
- 8-30 TAN FINE SILTY SAND (LOOSE AND MOIST)
- 1" TO 2" LAYERS OF SANDY CLAY INTERMITTENTLY THROUGHOUT STRATUM.
- 30-33 GRAY & TAN SANDY CLAY W/T CAL. MOD. (PLASTIC)
- 33-54 GRAY SILTY SAND (LOOSE & MOIST)
- 54-55.5 GRAY & TAN CLAYEY SILTY SAND W/T CAL. MOD. (PLASTIC)
- 55.5-58 TAN FINE SILTY SAND (LOOSE & MOIST)
- 58-61 GRAY & TAN SILTY CLAY W/T CAL. MOD. (PLASTIC)
- 61-63 TAN SILTY SANDY GRAVELLY CLAY (LOOSE & MOIST)
- 63-66 GRAY CLAYEY SILTY SAND (PLASTIC)
- 66-70 GRAY SILTY SAND (LOOSE & MOIST W/ LAMINATED LAYERS OF CLAY)

**SHEET SUMMARY**

ITEM	DESC CODE	DESCRIPTION	UNIT	EST. QUANT.
0416	0524	DRILL SHAFT (60") (HIGH MAST POLE)	L.F.	77
0613	0510	HIGH MAST ILL POLE (150 FT) (100MPH)	EA.	1
0613	511	HIGH MAST ILL POLE (175 FT) (100MPH)	EA.	2
614	505	HIGH MAST ILL ASM (12-400 WATT) (ASYM) (TY B)	EA.	1
618	511	CONDUIT (PVC) (SCH 40) (2")	L.F.	1250
618	539	CONDUIT (PVC) (SCH 80) (2") BORE	L.F.	30
620	503	ELEC. CONDUCTOR (NO. 8 ) BARE	L.F.	1180
620	501	ELEC. CONDUCTOR (NO. 12 ) BARE	L.F.	840
610	517	RDWY ILL AM U/P (TY SPL-CO) (.15KW)S (TY I)	EA.	9
614	502	HIGH MAST ILL ASM (12-400 WATT) (SYM)	EA.	2
620	507	ELEC. CONDUCTOR (NO. 12 ) INSULATED	L.F.	1680
620	509	ELEC. CONDUCTOR (NO. 8 ) INSULATED	L.F.	2360
618	561	CONDUIT (AL) (3/4 IN)	L.F.	1525
624	501	GROUND BOX TY A (122311) W/APRON	EA.	9
628	567	ELEC. SERV. TY A (240/480) 060 (N.S.)	EA.	1
		NM(E) EX (O)		
652	501	HIGH WAY SIGN LIGHT FIXT. (MV) (100W)	EA.	6
		• JUNCTION BOX	EA.	12

\* FOR CONTRACTOR'S INFORMATION ONLY



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*Carlos G. Rodriguez*

**PROPOSED ILLUMINATION LAYOUT**

**IH37- WACO TO LANTANA**

**REVISED 4-27-95**

SCALE - 1" = 100'

SHEET 3 OF 20 SHEETS			
STATE	FEDERAL AID PROJECT NO.	COUNTY	SHEET NO.
TEXAS	1M37 - 1(103) 000	MUECES	37
16	0074 06 179		



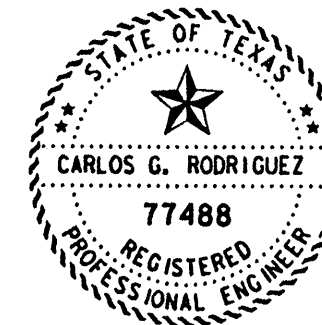
MATCHLINE 217+00

MATCHLINE 204+00

## LEGEND

- ▲ PROPOSED UNDERPASS LUMINAIRE
- PROPOSED SERVICE POLE
- PROPOSED 12"X 23"X 11" RPM GROUND BOX
- ⊠ PROPOSED JUNCTION BOX OR CONDULET (SEE DETAIL)
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40S-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8-8) (.25KW)S
- ⊠ PROPOSED HIGH MAST ILLUMINATION POLE (ASYM)
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (SYM)
- ⊠ PROPOSED DISCONNECT SWITCH
- PROPOSED TRENCHED CONDUIT
- PROPOSED CONDUIT ABOVE GRADE
- === PROPOSED BORED CONDUIT
- EXIST SIGN ON BRIDGE
- EXIST OVERHEAD SIGN
- EXIST SERVICE POLE

SHEET SUMMARY				
ITEM	DESC CODE	DESCRIPTION	UNIT	EST. QUANT.
0416	0524	DRILL SHAFT (60") (HIGH MAST POLE)	L.F.	50
0613	0510	HIGH MAST ILL POLE (150 FT) (100MPH)	EA.	1
614	502	HIGH MAST ILL ASM (12-400 WATT) (SYM)	EA.	1
618	561	CONDUIT (AL) (3/4IN)	L.F.	110
613	511	HIGH MAST ILL POLE (175 FT) (100MPH)	EA.	1
614	505	HIGH MAST ILL ASM (12-400 WATT) (ASYM) (TYB)	EA.	1
618	511	CONDUIT (PVC) (SCH 40) (2")	L.F.	1005
618	539	CONDUIT (PVC) (SCH 80) (2") BORE	L.F.	160
620	503	ELEC. CONDUCTOR (NO. 8) BARE	L.F.	1165
620	501	ELEC. CONDUCTOR (NO. 12) BARE	L.F.	110
610	517	RWDY ILL AM U/P (TY SPL-CO) (.15KW)S (TYI)	EA.	1
620	507	ELEC. CONDUCTOR (NO. 12) INSULATED	L.F.	220
620	509	ELEC. CONDUCTOR (NO. 8) INSULATED	L.F.	2330
624	501	GROUND BOX TY A (122311) W/APRON	EA.	10
628	568	ELEC. SERV. TY A (240/480) 060 (NS) NM (E)	EA.	2
		TP (O)		
652	501	HIGHWAY SIGN LIGHT FIXT. (MV) (100W)	EA.	9
		* JUNCTION BOX	EA.	1



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P.E. 77488, on  
APRIL 13, 1995

*Carlos G. Rodriguez, P.E.*

## PROPOSED ILLUMINATION LAYOUT IH37- WACO TO LANTANA

SCALE - 1" = 100'

\* FOR CONTRACTOR'S INFORMATION ONLY

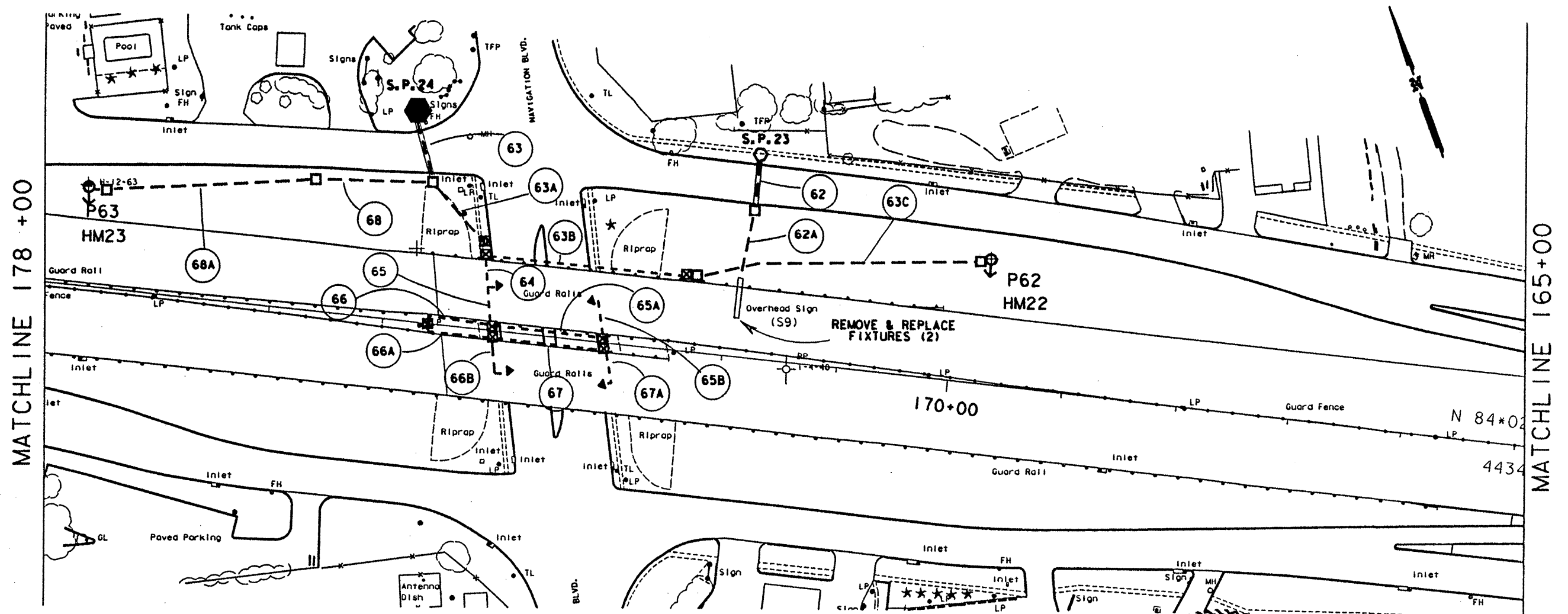
SHEET 4 OF 20 SHEETS

NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
6	TEXAS	1M37-1(103) 000	49
STATE	COUNTY	CONTRACT NO.	SECTION NO.
16	NUECES	0074	06
			179
			37

REVISED 4-27-95







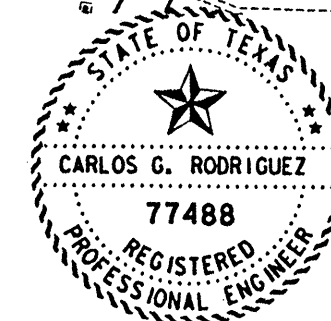
# LEGEND

## SHEET SUMMARY

- ▲ PROPOSED UNDERPASS LUMINAIRE
- PROPOSED SERVICE POLE
- PROPOSED 12"X 23"X 11" RPM GROUND BOX
- ⊠ PROPOSED JUNCTION BOX OR CONDULET (SEE DETAIL)
- ⊡ PROPOSED RDWY ILL ASSEM (TY SA 40T-8) (.25KW)S
- ⊢ PROPOSED RDWY ILL ASSEM (TY SA 40S-8) (.25KW)S
- ⊣ PROPOSED RDWY ILL ASSEM (TY SA 40T-8-8) (.25KW)S
- ⊤ PROPOSED HIGH MAST ILLUMINATION POLE (ASYM)
- ⊥ PROPOSED HIGH MAST ILLUMINATION POLE (SYM)
- ⊦ PROPOSED DISCONNECT SWITCH
- PROPOSED TRENCHED CONDUIT
- PROPOSED CONDUIT ABOVE GRADE
- === PROPOSED BORED CONDUIT
- EXIST SIGN ON BRIDGE
- EXIST OVERHEAD SIGN
- EXIST SERVICE POLE

\* FOR CONTRACTOR'S INFORMATION ONLY

ITEM	DESC CODE	DESCRIPTION	UNIT	EST. QUANT.
0416	0524	DRILL SHAFT (60") (HIGH MAST POLE)	L.F.	50
0613	0510	HIGH MAST ILL POLE (150 FT) (100MPH)	EA	2
618	561	CONDUIT (AL) (3/4")	L.F.	640
614	505	HIGH MAST ILL ASM (12-400 WATT) (ASYM) (TYB)	EA	2
618	511	CONDUIT (PVC) (SCH 40) (2")	L.F.	710
618	539	CONDUIT (PVC) (SCH 80) (2") BORE	L.F.	90
620	501	ELEC. CONDUCTOR (NO. 12 ) BARE	L.F.	470
620	502	ELEC. CONDUCTOR (NO. 10 ) BARE	L.F.	100
620	503	ELEC. CONDUCTOR (NO. 8 ) BARE	L.F.	565
620	507	ELEC. CONDUCTOR (NO. 12 ) INSULATED	L.F.	940
620	508	ELEC. CONDUCTOR (NO. 10 ) INSULATED	L.F.	200
620	509	ELEC. CONDUCTOR (NO. 8 ) INSULATED	L.F.	1130
624	501	GROUND BOX TY A (122311) W/APRON	EA	6
628	568	ELEC. SERV. TY A (240/480) (N.S.)	EA	1
		NM(E) TP (0)		
652	501	HIGHWAY SIGN LIGHT FIXT. (MV) (100 W)		2
		* JUNCTION BOX	EA	7
628	567	ELEC. SERV. TYA (240/480) 060 (NS)	EA	1
		NM (E) EX (0)		
610	517	Rdwy ILL AM U/P (ty SPL-CO) (18KW) (5 ty)	EA	4



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*Carlos G. Rodriguez, P.E.*

## PROPOSED ILLUMINATION LAYOUT IH37 - WACO TO LANTANA

REVISED 4-27-95

SCALE - 1" = 100'

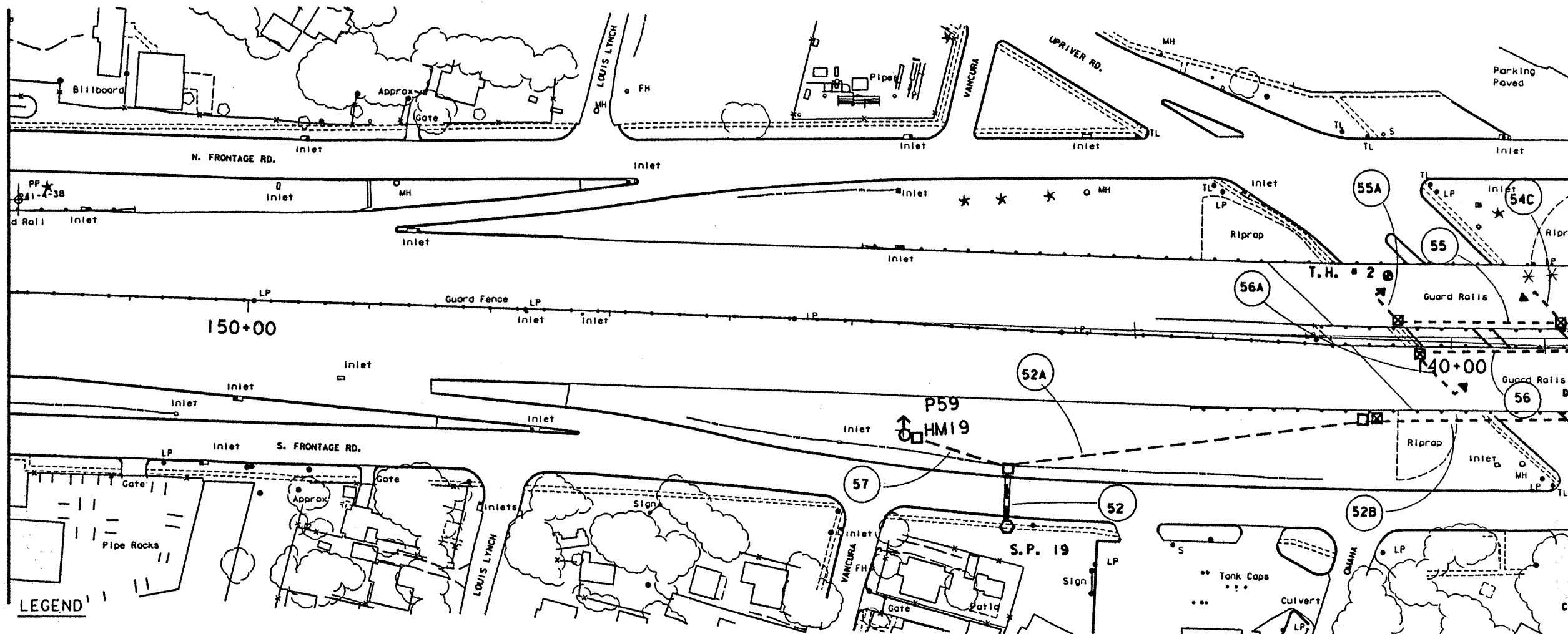
SHEET 7 OF 20 SHEETS				
STATE	COUNTY	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
6	TEXAS	1M37 - 1 (103) 000	52	
16	NUECES	100741 06 179	37	





MATCHLINE 152+00

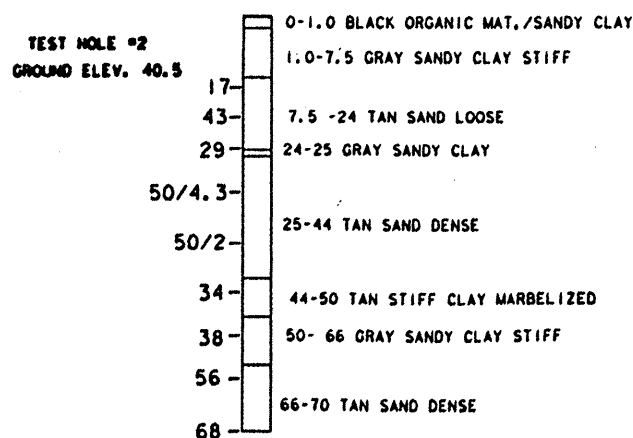
MATCHLINE 139+00



LEGEND

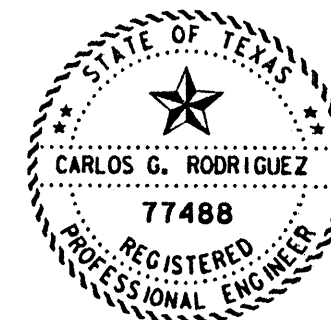
SHEET SUMMARY

- ▲ PROPOSED UNDERPASS LUMINAIRE
- PROPOSED SERVICE POLE
- PROPOSED 12"X 23"X 11" RPM GROUND BOX
- ⊠ PROPOSED JUNCTION BOX OR CONDULET (SEE DETAIL)
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40S-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8-8) (.25KW)S
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (ASYM)
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (SYM)
- ⊠ PROPOSED DISCONNECT SWITCH
- PROPOSED TRENCHED CONDUIT
- PROPOSED CONDUIT ABOVE GRADE
- === PROPOSED BORED CONDUIT
- EXIST SIGN ON BRIDGE
- EXIST OVERHEAD SIGN
- EXIST SERVICE POLE



ITEM	DESC CODE	DESCRIPTION	UNIT	EST. QUANT.
0416	0524	DRILL SHAFT (60") (HIGH MAST POLE)	L.F.	25
0613	0510	HIGH MAST ILL POLE (150 FT) (100MPH)	EA.	1
618	561	CONDUIT (AL) (3/4IN)	L.F.	600
614	505	HIGH MAST ILL ASM (12-400 WATT) (ASYM) (TYB)	EA.	1
618	511	CONDUIT (PVC) (SCH 40) (2")	L.F.	390
618	539	CONDUIT (PVC) (SCH 80) (2") BORE	L.F.	35
620	503	ELEC. CONDUCTOR (NO. 8 ) BARE	L.F.	555
620	501	ELEC. CONDUCTOR (NO. 12 ) BARE	L.F.	380
610	517	RWDY ILL AM U/P (TY SPL-CO) (.15KW)S (TY1)	EA.	3
620	507	ELEC. CONDUCTOR (NO. 12 ) INSULATED	L.F.	760
620	509	ELEC. CONDUCTOR (NO. 8 ) INSULATED	L.F.	1110
624	501	GROUND BOX TY A (122311) W/APRON	EA.	3
628	568	ELEC. SERV. TY A (240/480) 060 (N.S.)	EA.	1
		NM(E) TP (0)		
		• JUNCTION BOX	EA.	4

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APRIL 13, 1995

*Carlos G. Rodriguez, P.E.*

PROPOSED ILLUMINATION LAYOUT

IH37 - WACO TO LANTANA

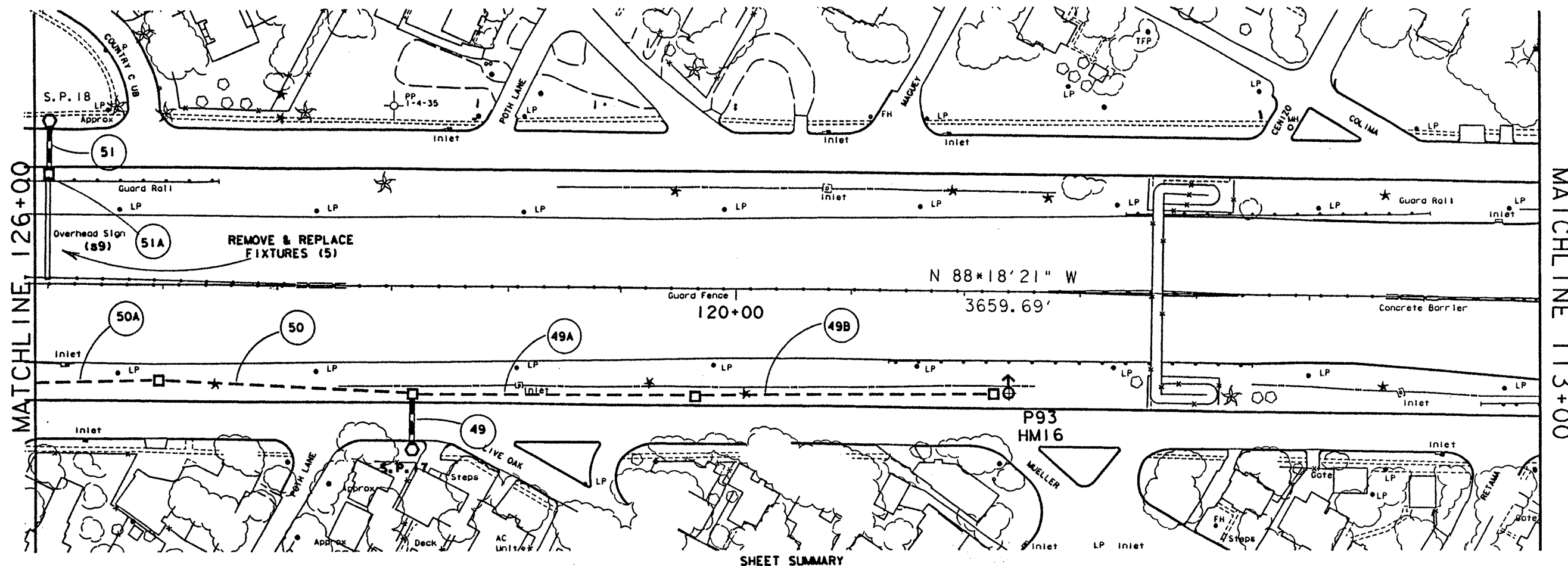
REVISED 4-27-95

SCALE = 1" = 100'

SHEET 9 OF 20 SHEETS

STATE	FEDERAL AID PROJECT NO.	SHEET
TEXAS	1M37 - (103) 000	54
COUNTY	SECTION	DATE
16 NUECES	0074 06 179	37

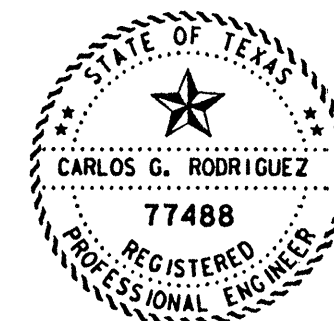




# LEGEND

- ▲ PROPOSED UNDERPASS LUMINAIRE
- PROPOSED SERVICE POLE
- PROPOSED 12"x 23"x 11" RPM GROUND BOX
- PROPOSED JUNCTION BOX OR CONDULET (SEE DETAIL)
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40S-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8-8) (.25KW)S
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (ASYM)
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (SYM)
- ⊞ PROPOSED DISCONNECT SWITCH
- PROPOSED TRENCHED CONDUIT
- PROPOSED CONDUIT ABOVE GRADE
- === PROPOSED BORED CONDUIT
- EXIST SIGN ON BRIDGE
- EXIST OVERHEAD SIGN
- EXIST SERVICE POLE

ITEM	DESC CODE	DESCRIPTION	UNIT	EST. QUANT.
0416	0524	DRILL SHAFT (60") (HIGH MAST POLE)	L.F.	25
0613	0510	HIGH MAST ILL POLE (150 FT) (100MPH)	EA.	1
614	505	HIGH MAST ILL ASM (12-400 WATT) (ASYM) (TYB)	EA.	1
618	511	CONDUIT (PVC) (SCH 40) (2")	L.F.	930
618	539	CONDUIT (PVC) (SCH 80) (2") BORE	L.F.	70
620	503	ELEC. CONDUCTOR (NO. 8 ) BARE	L.F.	955
620	502	ELEC. CONDUCTOR (NO. 10 ) BARE	L.F.	45
620	508	ELEC. CONDUCTOR (NO. 10 ) INSULATED	L.F.	90
620	509	ELEC. CONDUCTOR (NO. 8 ) INSULATED	L.F.	1910
624	501	GROUND BOX TY A (122311) W/APRON	EA.	5
628	568	ELEC. SERV. TY A (240/480) 060 (N.S.) NM(E) TP (0)	EA.	2
652	501	HIGHWAY SIGN LIGHT FIXT. (MV) (100W)	EA.	5



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Carlos G. Rodriguez, P.E.

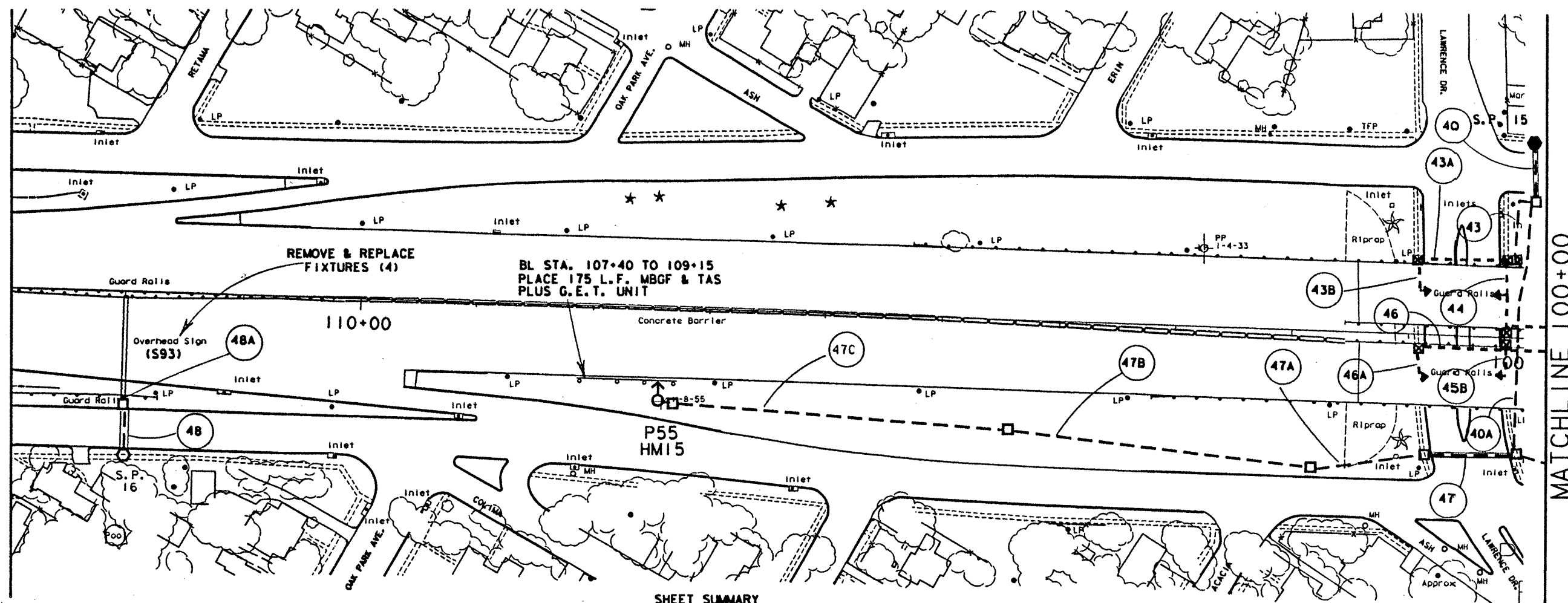
## PROPOSED ILLUMINATION LAYOUT IH37 - WACO TO LANTANA

REVISED 4-27-95

SCALE = 1" = 100'

SHEET 11 OF 20 SHEETS					
STATE	FEDERAL AID PROJECT NO.	SHEET			
TEXAS	1M37 - 1(103) 000	56			
COUNTY	DIST. NO.	SECTION	PLAN	ALTERNATE	REVISION
MUECES	0074	06	179	37	

MATCHLINE 113+00



MATCHLINE 100+00

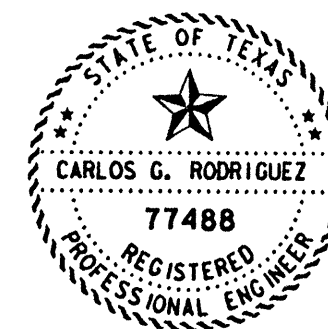
SHEET SUMMARY

## LEGEND

- ▲ PROPOSED UNDERPASS LUMINAIRE
- PROPOSED SERVICE POLE
- PROPOSED 12"X 23"X 11" RPM GROUND BOX
- PROPOSED JUNCTION BOX OR CONDULET (SEE DETAIL)
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40S-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8-8) (.25KW)S
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (ASYM)
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (SYM)
- ⊕ PROPOSED DISCONNECT SWITCH
- PROPOSED TRENCHED CONDUIT
- PROPOSED CONDUIT ABOVE GRADE
- === PROPOSED BORED CONDUIT
- EXIST SIGN ON BRIDGE
- EXIST OVERHEAD SIGN
- EXIST SERVICE POLE

\* FOR CONTRACTOR'S INFORMATION ONLY

ITEM	DESC CODE	DESCRIPTION	UNIT	EST. QUANT.
0416	0524	DRILL SHAFT (60") (HIGH MAST POLE)	L.F.	25
0613	0510	HIGH MAST ILL POLE (150 FT) (100MPH)	EA.	1
540	501	MTL BEAM GUARDFENCE (12 GA)	L.F.	175
540	503	TERM-ANCHOR SECT (12 GA)	EA.	1
618	561	CONDUIT (AL) (3/4 IN)	L.F.	265
620	512	ELEC. CONDUCTOR (NO. 2) INSULATED	LF	300
614	505	HIGH MAST ILL ASM (12-400 WATT) (ASYM) (TYB)	EA.	1
618	511	CONDUIT (PVC) (SCH 40) (2")	L.F.	930
618	539	CONDUIT (PVC) (SCH 80) (2") BORE	L.F.	105
620	503	ELEC. CONDUCTOR (NO. 8) BARE	L.F.	85
620	504	ELEC. CONDUCTOR (NO. 6) BARE	L.F.	255
620	501	ELEC. CONDUCTOR (NO. 12) BARE		265
610	517	RWDY ILL AM U/P (TY SPL-CO) (.15KW)S (TY1)	EA.	4
620	507	ELEC. CONDUCTOR (NO. 12) INSULATED	L.F.	530
620	509	ELEC. CONDUCTOR (NO. 8) INSULATED	L.F.	170
620	510	ELEC. CONDUCTOR (NO. 6) INSULATED		510
624	501	GROUND BOX TY A (122311) W/APRON	EA.	7
628	567	ELEC. SERV. TY A (240/480) 060 (N.S.)	EA.	1
		NM(E) EX (O)		
652	501	HIGHWAY SIGN LIGHT FIXT. (MV) (100 W)	EA.	4
		* JUNCTION BOX	EA.	5
5016	501	GUARDRAIL EXTRUDER TERMINAL	EA.	1



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57  
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PROPOSED ILLUMINATION LAYOUT  
IH37 - WACO TO LANTANA

REVISED 4-27-95

SCALE = 1" = 100'

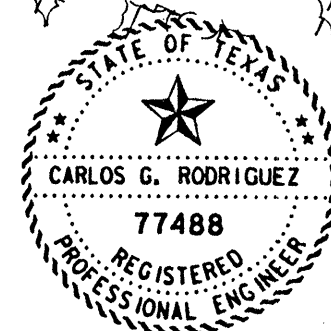
SHEET 12 OF 20 SHEETS									
STATE	FEDERAL AID PROJECT NO.								
6 TEXAS	1M37 - (1103) 000								
STATE	COUNTY	SECTION	SECTION	SECTION	SECTION	SECTION	SECTION	SECTION	SECTION
16	MUECES	10074	06	170					57



MATCHLINE 87+00

- ▲ PROPOSED UNDERPASS LUMINAIRE
- PROPOSED SERVICE POLE
- PROPOSED 12"X 23"X 11" RPM GROUND BOX
- ☒ PROPOSED JUNCTION BOX OR CONDULET (SEE DETAIL)
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8) (.25KW) S
- PROPOSED RDWY ILL ASSEM (TY SA 40S-8) (.25KW) S
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8-8) (.25KW) S
- ↵ PROPOSED HIGH MAST ILLUMINATION POLE (ASYM)
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (SYM)
- ⓧ PROPOSED DISCONNECT SWITCH
- — PROPOSED TRENCHED CONDUIT
- - - PROPOSED CONDUIT ABOVE GRADE
- ≡≡≡ PROPOSED BORED CONDUIT
- EXIST SIGN ON BRIDGE
- ▭ EXIST OVERHEAD SIGN
- EXIST SERVICE POLE

ITEM	DESC CODE	DESCRIPTION	UNIT	EST. QUANT.
0416	0524	DRILL SHAFT (60") (HIGH MAST POLE)	L.F.	50
0613	0510	HIGH MAST ILL POLE (150 FT) (100MPH)	EA.	2
618	561	CONDUIT (AL) (3/4IN)	L.F.	135
614	505	HIGH MAST ILL ASM (12-400 WATT) (ASYM) (TYB)	EA.	2
618	511	CONDUIT (PVC) (SCH 40) (2")	L.F.	1350
620	504	ELEC. CONDUCTOR (NO. 6 ) BARE	L.F.	1350
620	501	ELEC. CONDUCTOR (NO. 12 ) BARE	L.F.	135
620	507	ELEC. CONDUCTOR (NO. 12 ) INSULATED	L.F.	270
620	510	ELEC. CONDUCTOR (NO. 6 ) INSULATED	L.F.	2700
624	501	GROUND BOX TY A (122311) W/APRON	EA.	5



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Carlos H. Rodriguez, P.E.

## PROPOSED ILLUMINATION LAYOUT

REVISED 4-27-95

SCALE = 1" = 100'

SHEET 13 OF 20 SHEETS					
STATE DIST. NO.	STATE	FEDERAL AID PROJECT NO.			SHEET NO.
6	TEXAS	1M37 - 1(103) 000			58
STATE DIST. NO.	COUNTY	ORIGINAL NO.	SECTION NO.	AND NO.	SECTION NO.
	WILCOX				



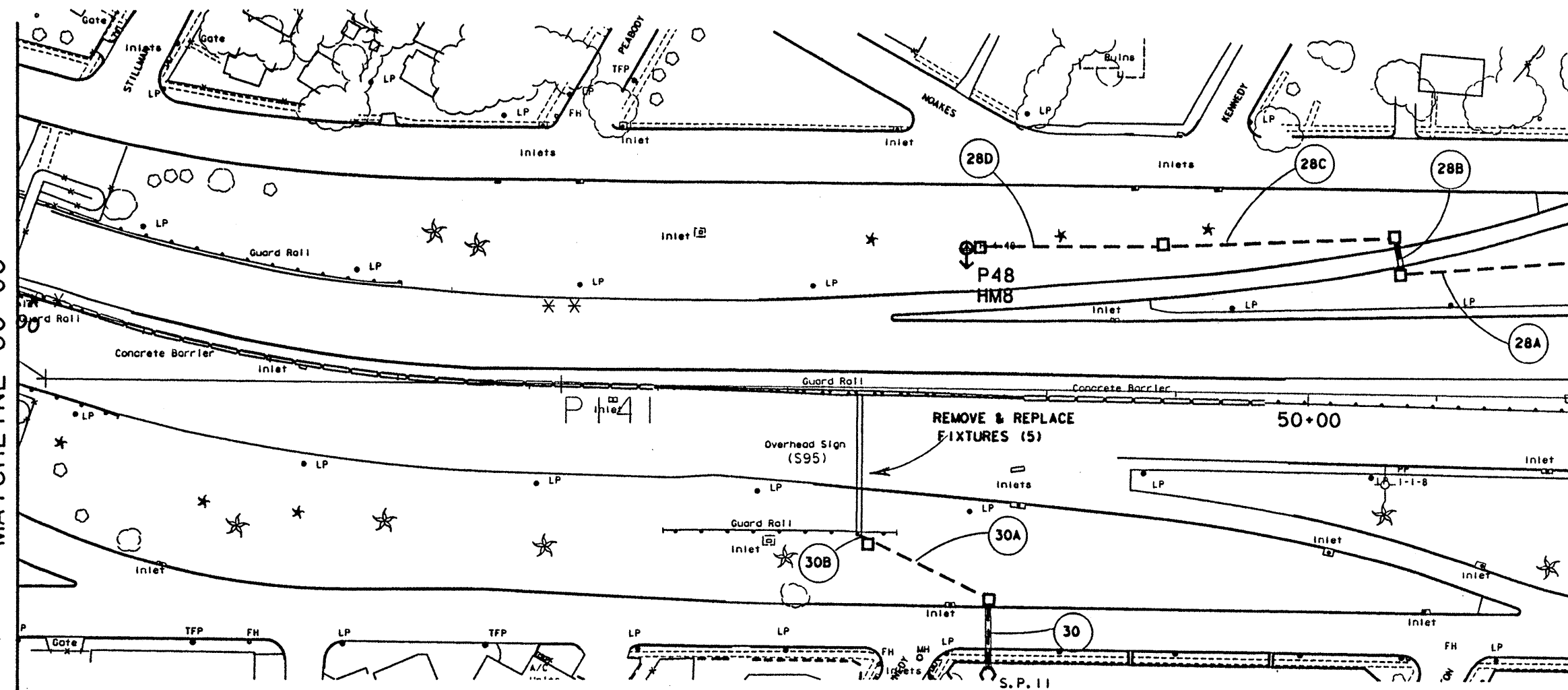






MATCHLINE 60+00

MATCHLINE 48+00

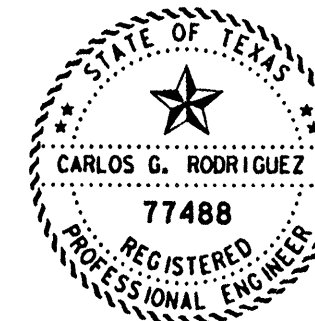


## SHEET SUMMARY

## LEGEND

- ▲ PROPOSED UNDERPASS LUMINAIRE
- PROPOSED SERVICE POLE
- PROPOSED 12"X 23"X 11" RPM GROUND BOX
- ⊠ PROPOSED JUNCTION BOX OR CONDULET (SEE DETAIL)
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40S-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8-8) (.25KW)S
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (ASYM)
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (SYM)
- ⊠ PROPOSED DISCONNECT SWITCH
- PROPOSED TRENCHED CONDUIT
- PROPOSED CONDUIT ABOVE GRADE
- === PROPOSED BORED CONDUIT
- EXIST SIGN ON BRIDGE
- EXIST OVERHEAD SIGN
- EXIST SERVICE POLE

ITEM	DESC CODE	DESCRIPTION	UNIT	EST. QUANT.
0416	0524	DRILL SHAFT (60") (HIGH MAST POLE)	L.F.	28
0613	0510	HIGH MAST ILL POLE (150 FT) (100MPH)	EA.	1
614	505	HIGH MAST ILL ASM (12-400 WATT) (ASYM) (TYB)	EA.	1
618	511	CONDUIT (PVC) (SCH 40) (2")	L.F.	690
618	539	CONDUIT (PVC) (SCH 80) (2") BORE	L.F.	65
620	503	ELEC. CONDUCTOR (NO. 8 ) BARE	L.F.	595
620	502	ELEC. CONDUCTOR (NO. 10 ) BARE	L.F.	160
620	507	ELEC. CONDUCTOR (NO. 10 ) INSULATED	L.F.	320
620	509	ELEC. CONDUCTOR (NO. 8 ) INSULATED	L.F.	1190
624	501	GROUND BOX TY A (122311) W/APRON	EA.	6
628	568	ELEC. SERV. TY A (240/480) 060 (N.S.)	EA.	1
		NM(E) TP (0)		
652	501	HIGHWAY SIGN LIGHT FIXT. (MV) (100 W)	EA.	5



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## PROPOSED ILLUMINATION LAYOUT

### IH37 - WACO TO LANTANA

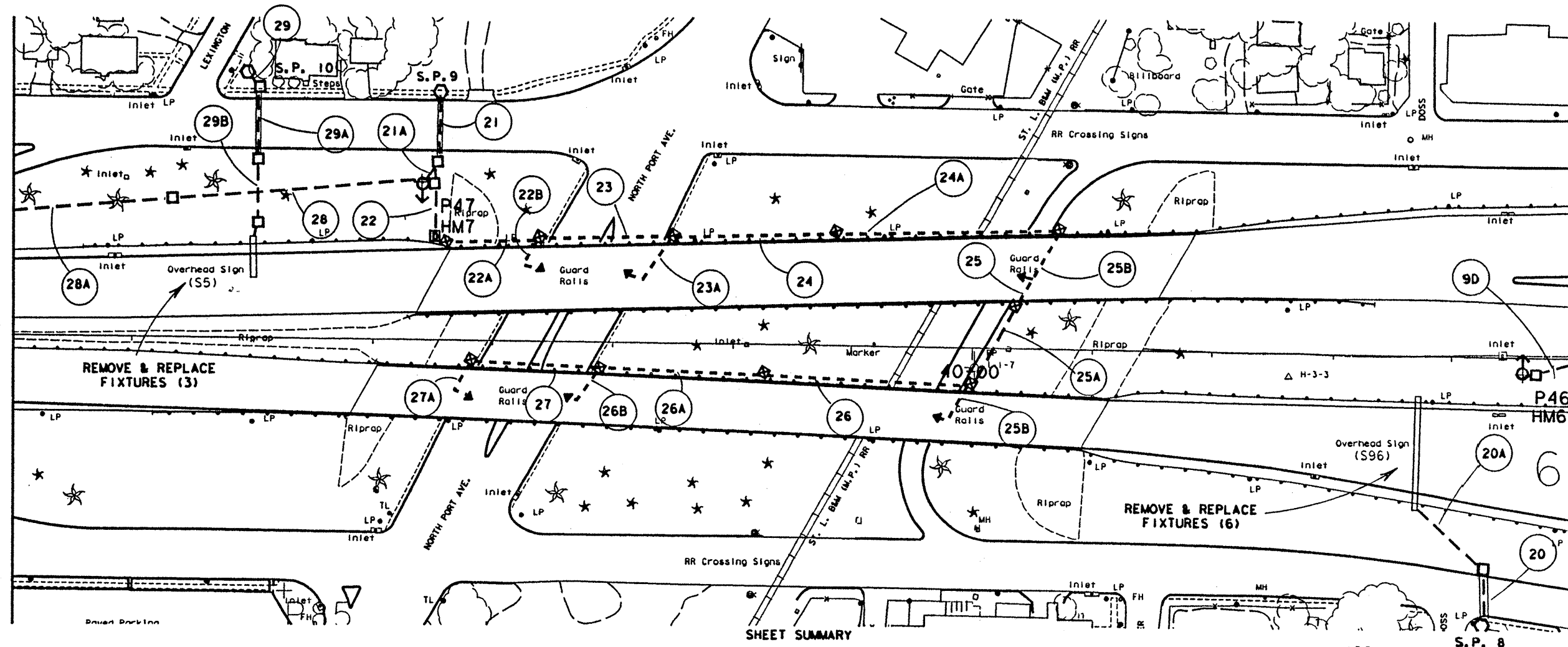
REVISED 4-27-95

SCALE = 1" = 100'

SHEET 16 OF 20 SHEETS					
STATE	FEDERAL AID PROJECT NO.	DATE	BY	CHKD	APP'D
TEXAS	1M37 37 - 111031 000	61			
COUNTY	SECTION	DATE	BY	CHKD	APP'D
WILCOX	0074 06 179	37			

MATCHLINE 48+00

MATCHLINE 35+00

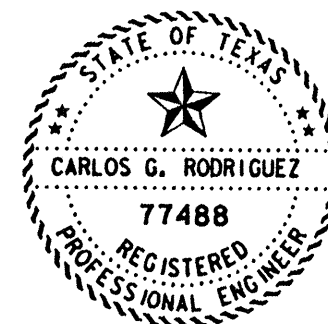


## LEGEND

- ▲ PROPOSED UNDERPASS LUMINAIRE
- PROPOSED SERVICE POLE
- PROPOSED 12"X 23"X 11" RPM GROUND BOX
- PROPOSED JUNCTION BOX OR CONDULET (SEE DETAIL)
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40S-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8-8) (.25KW)S
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (ASYM)
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (SYM)
- ⊕ PROPOSED DISCONNECT SWITCH
- PROPOSED TRENCHED CONDUIT
- PROPOSED CONDUIT ABOVE GRADE
- === PROPOSED BORED CONDUIT
- EXIST SIGN ON BRIDGE
- EXIST OVERHEAD SIGN
- EXIST SERVICE POLE

\* FOR CONTRACTOR'S INFORMATION ONLY

ITEM	DESC CODE	DESCRIPTION	UNIT	EST. QUANT.
0416	0524	DRILL SHAFT (60") (HIGH MAST POLE)	L.F.	64
618	561	CONDUIT (AL) (3/4 IN)	L.F.	1110
613	511	HIGH MAST ILL POLE (175 FT) (100MPH)	EA.	2
614	505	HIGH MAST ILL ASM (12-400 WATT) (ASYM) (TYB)	EA.	2
618	511	CONDUIT (PVC) (SCH 40) (2")	L.F.	440
618	539	CONDUIT (PVC) (SCH 80) (2") BORE	L.F.	100
620	503	ELEC. CONDUCTOR (NO. 8 ) BARE	L.F.	330
620	501	ELEC. CONDUCTOR (NO. 12 ) BARE	L.F.	1195
620	502	ELEC. CONDUCTOR (NO. 10 ) BARE	L.F.	125
610	517	RWDY ILL AM U/P (TY SPL-CO) (.15KW)S (TYI)	EA.	6
620	507	ELEC. CONDUCTOR (NO. 12 ) INSULATED	L.F.	2390
620	509	ELEC. CONDUCTOR (NO. 8 ) INSULATED	L.F.	660
620	508	ELEC. CONDUCTOR (NO. 10 ) INSULATED	L.F.	250
624	501	GROUND BOX TY A (122311) W/APRON	EA.	8
628	568	ELEC. SERV. TY A (240/480) 060 (N.S.)	EA.	3
		NM(E) TP (O)		
652	501	HIGHWAY SIGN LIGHT FIXT. (MV) (100 W)	EA.	9
		* JUNCTION BOX	EA.	10



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PROPOSED ILLUMINATION LAYOUT

IH37 - WACO TO LANTANA

SHEET 17 OF 20 SHEETS

STATE	FEDERAL AID PROJECT NO.	SHEET NO.
TEXAS	1M37-1(103) 000	62
COUNTY	CONTRACT NO.	DATE
WILCOX	1072	11/70

Revised 4-27-95

SCALE = 1" = 100'

MATCHLINE 35+00

MATCHLINE 22+00

ITEM	DESC CODE	DESCRIPTION	UNIT	EST. QUANT.
0416	0524	DRILL SHAFT (60") (HIGH MAST POLE)	L.F.	64
618	502	CONDUIT (RM) (1")	L.F.	265
614	502	HIGH MAST ILL ASM (12-400 WATT) (SYM)	EA.	1
618	561	CONDUIT (AL) (3/4 IN)	L.F.	1140
613	511	HIGH MAST ILL POLE (175 FT) (100MPH)	EA.	2
614	505	HIGH MAST ILL ASM (12-400 WATT) (ASYM) (TYB)	EA.	1
618	511	CONDUIT (PVC) (SCH 40) (2")	L.F.	1980
618	539	CONDUIT (PVC) (SCH 80) (2") BORE	L.F.	330
620	503	ELEC. CONDUCTOR (NO. 8) BARE	L.F.	240
620	501	ELEC. CONDUCTOR (NO. 12) BARE	L.F.	820
620	502	ELEC. CONDUCTOR (NO. 10) BARE	L.F.	310
620	505	ELEC. CONDUCTOR (NO. 4) BARE	L.F.	1825
620	507	ELEC. CONDUCTOR (NO. 12) INSULATED	L.F.	1640
620	509	ELEC. CONDUCTOR (NO. 8) INSULATED	L.F.	480
620	508	ELEC. CONDUCTOR (NO. 10) INSULATED	L.F.	620
620	511	ELEC. CONDUCTOR (NO. 4) INSULATED	L.F.	3650
628	568	ELEC. SERV. TY A (240/480) 060 (N.S.)	EA.	1
		NM(E) TP (0)		
628	567	ELEC. SERV. TY A (240/480) 060 (N.S.)	EA.	1
		NM(E) EX (0)		
620	609	ELEC. SERV. TY A (240/480) 090 (N.S.)	EA.	1
		NM(E) TP (0)		
652	501	HIGHWAY SIGN LIGHT FIXT. (MV) (100 W)	EA.	2
624	501	GROUND BOX TY A (122311) W/APRON	EA.	20
610	517	RWDY ILL AM U/P (TY SPL-CO) (.15KW) S (TY1)	EA.	9
		■ JUNCTION BOX		

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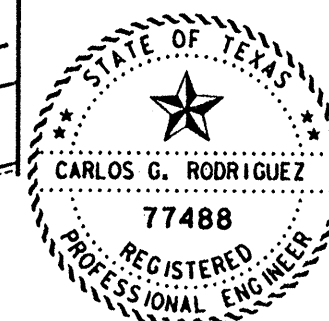
REMOVE & REPLACE  
FIXTURES (2)

0-2	CLAY, DENSE, DARK, TOPSOIL
2-18	FIN, GARBAGE, & TOPSOIL SILT, BLACK, SOFT, SHELL CLAY, SAND, MUCK.
18-28.5	SAND COARSE WATER-BEARING W/T CALOAREOUS NADULUS
28.5-30	CLAY, SAND, W/T ORG. MAT. SILTY CAL. NOD. SAND LOOSE LAMINATED STIFF
30-76	CLAY, TAN, MOIST, HARD SANDY, W/T ORG. MAT. SILTY, W/T CAL. NOD. SLICKEN SIDED COLOR CHANGE AT 68' TO GRAY
76-80	CLAY SANDY BLUE HARD, MOIST

TEST HOLE #8

## LEGEND

- ▲ PROPOSED UNDERPASS LUMINAIRE
- PROPOSED SERVICE POLE
- PROPOSED 12" X 23" X 11" RPM GROUND BOX
- ⊠ PROPOSED JUNCTION BOX OR CONDULET (SEE DETAIL)
- ⊡ PROPOSED RDWY ILL ASSEM (TY SA 40T-8) (.25KW) S
- ⊢ PROPOSED RDWY ILL ASSEM (TY SA 40S-8) (.25KW) S
- ⊣ PROPOSED RDWY ILL ASSEM (TY SA 40T-8-8) (.25KW) S
- ⊤ PROPOSED HIGH MAST ILLUMINATION POLE (ASYM)
- ⊥ PROPOSED HIGH MAST ILLUMINATION POLE (SYM)
- ⊦ PROPOSED DISCONNECT SWITCH
- PROPOSED TRENCHED CONDUIT
- - - PROPOSED CONDUIT ABOVE GRADE
- === PROPOSED BORED CONDUIT
- EXIST SIGN ON BRIDGE
- EXIST OVERHEAD SIGN
- EXIST SERVICE POLE



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*Carlos G. Rodriguez, P.E.*

# PROPOSED ILLUMINATION LAYOUT

IH37 - WACO TO LANTANA

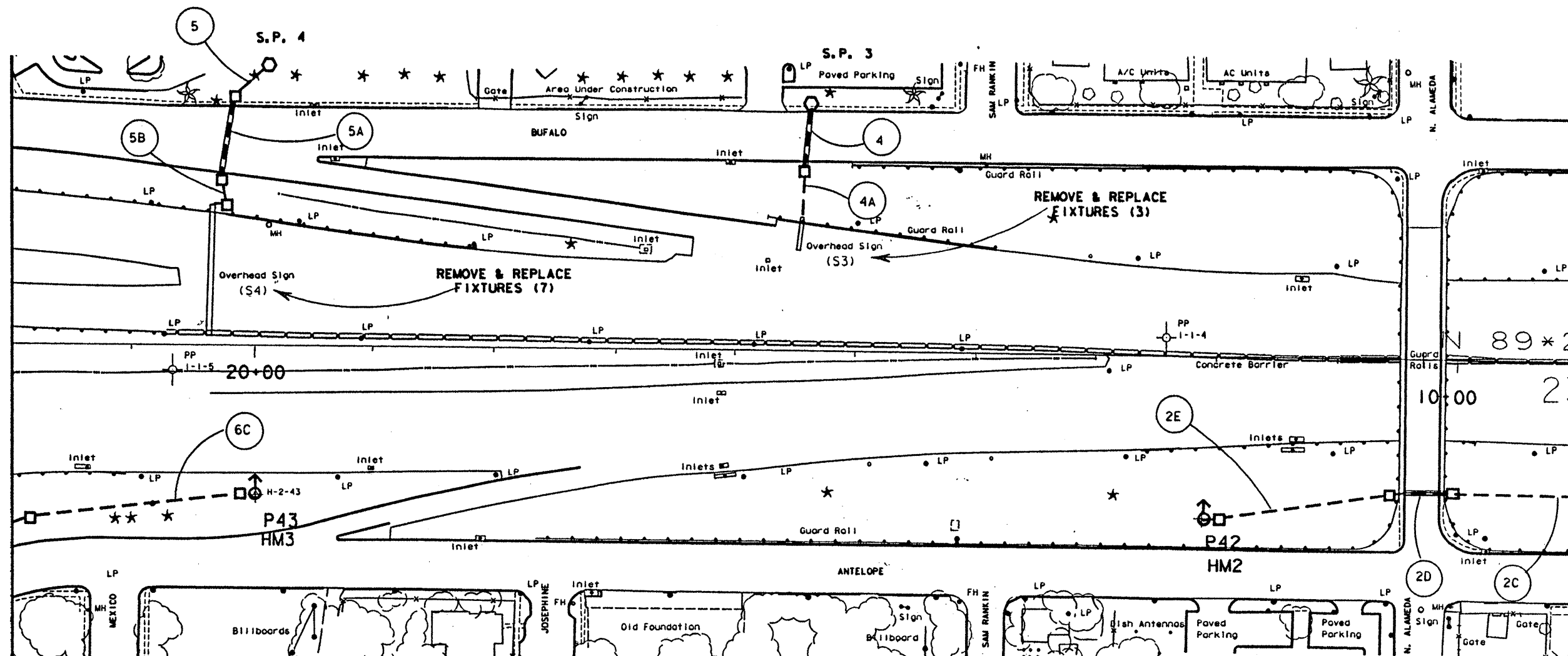
SHEET 18 OF 20 SHEETS

STATE	FEDERAL AID PROJECT NO.	SHEET NO.
TEXAS	IM 37 - 1(103) 000	63
COUNTY	DATE	BY
BLISS	1/7/95	EV

SCALE - 1" = 100'

Revised 4-27-95

MATCHLINE 22+00



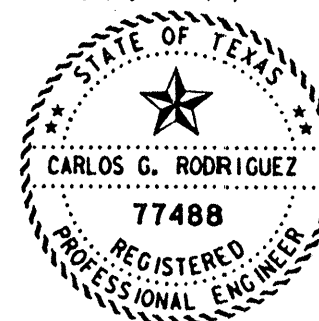
MATCHLINE 9+00

## SHEET SUMMARY

ITEM	DESC CODE	DESCRIPTION	UNIT	EST. QUANT.
0416	0524	DRILL SHAFT (60") (HIGH MAST POLE)	L.F.	60
0613	0511	HIGH MAST ILL POLE (175 FT) (100MPH)	EA.	1
0613	0510	HIGH MAST ILL POLE (150 FT) (100MPH)	EA.	1
614	505	HIGH MAST ILL ASM (12-400 WATT) (ASYM) (TYB)	EA.	2
618	511	CONDUIT (PVC) (SCH 40) (2")	L.F.	605
618	539	CONDUIT (PVC) (SCH 80) (2") BORE	L.F.	150
620	503	ELEC. CONDUCTOR (NO. 8) BARE	L.F.	565
620	502	ELEC. CONDUCTOR (NO. 10) BARE	L.F.	190
620	508	ELEC. CONDUCTOR (NO. 10) INSULATED	L.F.	380
620	509	ELEC. CONDUCTOR (NO. 8) INSULATED	L.F.	1130
624	501	GROUND BOX TY A (122311) W/APRON	EA.	9
628	568	ELEC. SERV. TY A (240/480) 060 (N.S.) NM(E) TP (O)	EA.	2
652	501	HIGHWAY SIGN LIGHT FIXT. (MV) (100 W)	EA.	10

## LEGEND

- ▲ PROPOSED UNDERPASS LUMINAIRE
- PROPOSED SERVICE POLE
- PROPOSED 12"X 23"X 11" RPM GROUND BOX
- ⊠ PROPOSED JUNCTION BOX OR CONDULET (SEE DETAIL)
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40S-8) (.25KW)S
- PROPOSED RDWY ILL ASSEM (TY SA 40T-8-8) (.25KW)S
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (ASYM)
- ⊕ PROPOSED HIGH MAST ILLUMINATION POLE (SYM)
- ⊠ PROPOSED DISCONNECT SWITCH
- PROPOSED TRENCHED CONDUIT
- PROPOSED CONDUIT ABOVE GRADE
- === PROPOSED BORED CONDUIT
- EXIST SIGN ON BRIDGE
- EXIST OVERHEAD SIGN
- EXIST SERVICE POLE



The seal appearing on this document was authorized by Carlos G. Rodriguez, P.E. 77488, on APRIL 13, 1995

*Carlos G. Rodriguez P.E.*

## PROPOSED ILLUMINATION LAYOUT

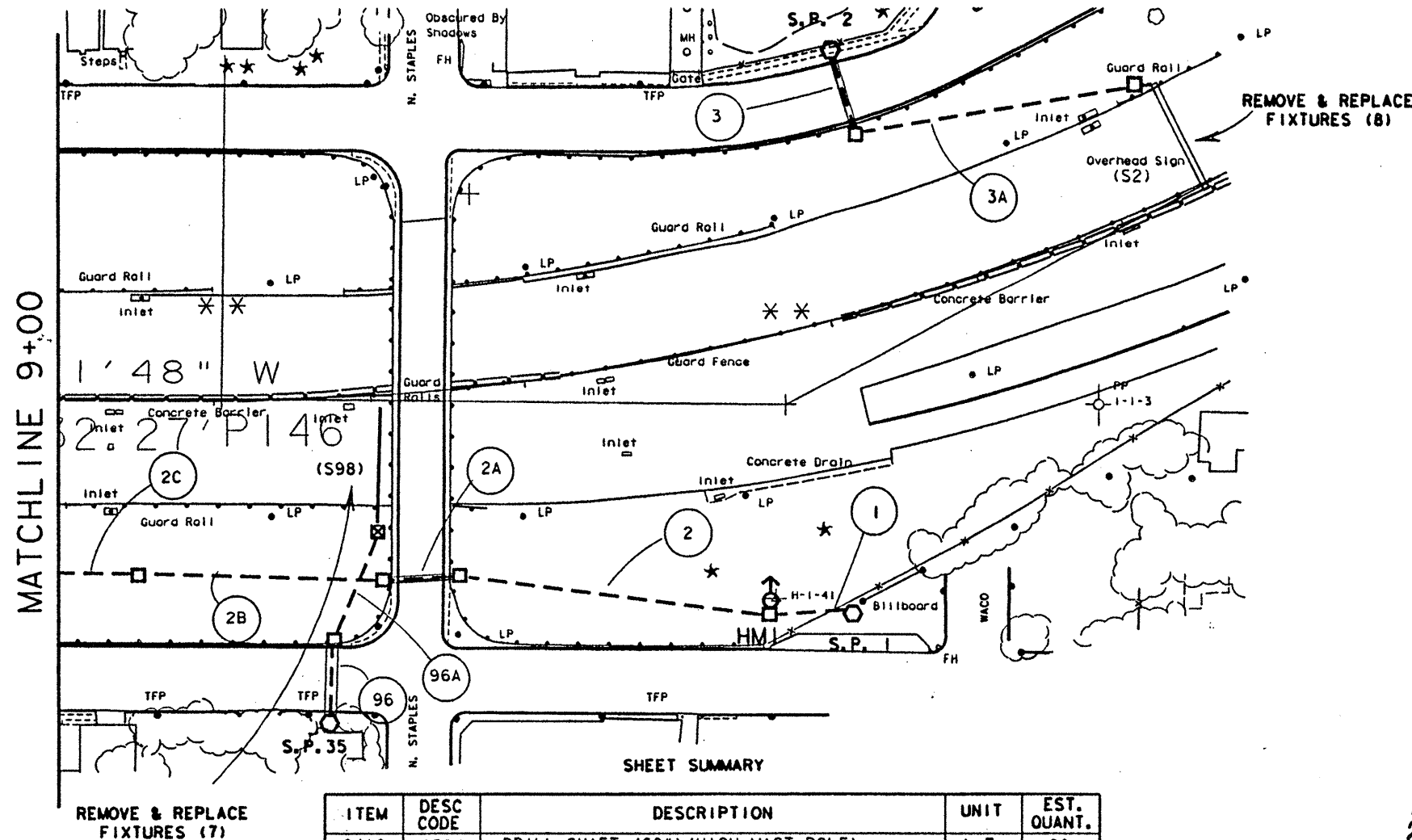
IH37 - WACO TO LANTANA

Revised 4-27-95

SCALE = 1" = 100'

SHEET 19 OF 20 SHEETS									
STATE	TEXAS	FEDERAL AID PROJECT NO.	1M37 - 1 (103) 000	SHEET	19	OF	20	DATE	4/13/95
COUNTY	TRAVIS	DIST. NO.	10074	06	179	37			



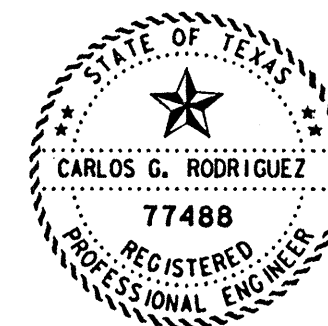


# LEGEND

- ▲ PROPOSED UNDERPASS LUMINAIRE
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- PROPOSED CONDUIT ABOVE GRADE
- === PROPOSED BORED CONDUIT
- EXIST SIGN ON BRIDGE
- EXIST OVERHEAD SIGN
- EXIST SERVICE POLE

ITEM	DESC CODE	DESCRIPTION	UNIT	EST. QUANT.
0416	0524	DRILL SHAFT (60") (HIGH MAST POLE)	L.F.	28
0613	0510	HIGH MAST ILL POLE (150 FT) (100MPH)	EA.	1
614	505	HIGH MAST ILL ASM (12-400 WATT) (ASYM) (TYB)	EA.	1
618	511	CONDUIT (PVC) (SCH 40) (2")	L.F.	615
618	539	CONDUIT (PVC) (SCH 80) (2") BORE	L.F.	85
620	503	ELEC. CONDUCTOR (NO. 8) BARE	L.F.	465
620	502	ELEC. CONDUCTOR (NO. 10) BARE	L.F.	235
620	508	ELEC. CONDUCTOR (NO. 10) INSULATED	L.F.	470
620	509	ELEC. CONDUCTOR (NO. 8) INSULATED	L.F.	930
624	501	GROUND BOX TY A (122311) W/APRON	EA.	7
628	568	ELEC. SERV. TY A (240/480) 060 (N.S.)	EA.	3
		NM(E) TP (O)		
652	501	HIGHWAY SIGN LIGHT FIXT. (MV) (100 W)	EA.	15
		* JUNCTION BOX	EA.	1

\* FOR CONTRACTOR'S INFORMATION ONLY



The seal appearing on this document was authorized by Carlos G. Rodriguez, P.E. 77488, on April 13, 1995

*Carlos G. Rodriguez, P.E.*

## PROPOSED ILLUMINATION LAYOUT IH37 - WACO TO LANTANA

Revised 4-27-95

SCALE = 1" = 100'

SHEET 20 OF 20 SHEETS					
STATE	COUNTY	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS	DATE
TEXAS	HUECOES	1W37-1(103)-000	65	79	37



# GENERAL :

## I. SCOPE

Details herein apply to roadway lighting installations bid under the following Specification Items: Roadway Illumination Assemblies, Relocate Roadway Illumination Assemblies, Foundations for Signs, Traffic Signals and Roadway Illumination Assemblies, and Special Specifications relating to roadway lighting. All work, materials and services not shown on the plans which may be necessary for complete and proper construction shall be performed, furnished and installed by the Contractor. Faulty fabrication or poor workmanship in any material, equipment or installation will be considered justification for rejection. Materials and installation shall comply with the applicable provisions of the National Electrical Code and National Electrical Manufacturers Association standards. Where manufacturer's provide warranties or guarantees as a customary trade practice, Contractor shall furnish to the State such warranties or guarantees.

The location of poles and fixtures are diagrammatic only and may be shifted by the Engineer to accommodate local conditions. Erection and/or removal of poles and luminaires located near any overhead electrical lines shall be accomplished using established industry and utility safety practices and in accordance with laws governing such work. The Contractor shall consult with the appropriate utility company prior to beginning such work.

## II. ROADWAY ILLUMINATION ASSEMBLIES

### A. General

1. **Structural Support Design for Luminaires.** Lighting standards shall be designed in accordance with the latest issue of the AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals." All poles shall be designed for 80 mph wind loads. An additional 1.3 gust factor shall be applied to the wind loads. For transformer base poles, fabricator shall include transformer base and connecting hardware in design calculations and shop drawing submittals. Manufacturer's shop drawings shall include the ASTM designations for all material to be used. See paragraph II.b. for additional requirements for the transformer base.
2. **Slip Joint Poles.** Poles may be fabricated in two sections and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint. The longitudinal seam weld on the outer shaft at the slip joint end shall be a full penetration weld for a minimum of the slip joint length plus 6 inches.
3. **Mast Arm Attachments.** All poles and attachments shall be structurally designed to support two 12-foot mast arms and luminaires. Poles shall be supplied with mast arm combinations as shown in the plans. All mast arms shall be designed for a 55-pound luminaire having an effective projected area of 1.4 square feet.
4. **Minor Damage Repair.** The finished pole shall have a smooth, uniform finish free of pits, blisters, or other defects. Scratched, chipped, or damaged areas on galvanized poles and mast arms shall be thoroughly cleaned by wire brushing. The cleaned area shall be painted with two coats of zinc rich paint containing a minimum of 84% metallic zinc.
5. **Pole Bonding Means.** All shoe base poles, including poles on concrete traffic barriers, shall have a grounding lug with 1/2-13 NC female threads inside the pole near the hand hole, minimum of 3 full threads.
6. **Hand Holes.** All shoe base poles shall have hand holes with reinforcing frames and covers. The openings on all poles shall be approximately 4 inches x 10 inches located approximately 10 inches from the bottom of the pole and, except for poles mounted on concrete traffic barrier, shall be placed 90 degrees to mast arm unless otherwise noted on the plans. For poles mounted on concrete median barrier, all hand holes shall be on the same side of the median.
7. **CTB Poles.** Poles installed on concrete traffic barrier shall also meet the requirements of CTB details.
8. **J-Hooks.** All poles shall be equipped with a J-hook inside the pole, near the top for supporting vertical conductors.
9. **Base Plate Bolt Circle.** For bolt circles for poles mounted on CTB, see CTB (4). For poles placed on existing bridge brackets or existing foundations, bolt circle shall be coordinated with anchor bolts in place. For other bolt circles, see RID (3).
10. **Steel Poles.**
  - a. Steel poles shall be fabricated in accordance with the item "Steel Structures." Longitudinal seam welds for pole sections shall have 60% minimum penetration, except that weld shall be full penetration within 6 inches of circumferential base plate welds. All welding shall be in accordance with the ANSI AWS Structural Code D1.1. Two-section poles joined by circumferential welds will not be permitted, unless otherwise shown on the plans. Unless otherwise shown on the plans, poles and hardware shall be galvanized in accordance with item 445. "Galvanizing".
  - b. Pole components shall be constructed using the following materials:
 

Shaft: ASTM A-572 Grade 50 or ASTM A-595 Grade A (50 KSI min. yield) or ASTM A-36M50.

Base Plate: ASTM A-27 Grade 65-35 or ASTM A-36.

Mast Arm Connector: ASTM A-27 Grade 65-35.

Mast Arms: Steel Pipe ASTM A-53 Grade A or B or ASTM A-501 or A-513 TY 1 with minimum 30 KSI yield and 20% elongation in 2 inches.

Pole Cap: Pole cap shall be zinc die-cast, aluminum, or galvanized metal, secured by three stainless steel or galvanized screws.

Pole Hardware: All bolts except mast arm connection bolts shall be stainless steel or standard steel galvanized ASTM A-153 Class C or D, or B-695 Class 50. Mast arm connection bolts shall be ASTM A-325, ASTM A-321 or ASTM A-193 Grade B-7, galvanized as above. Nuts and washers shall be compatible with the bolts and shall be stainless steel or steel, galvanized as above. Lock washers shall be provided on all bolted connections.

### 11. Aluminum Poles.

- a. Aluminum poles shall be fabricated in accordance with "Structural Welding, Aluminum" ANSI/AWS D1.2.
- b. Pole components shall be constructed using the following materials:
 

Shaft: ASTM B-221 or B-241 Alloy 6063-T6, ASTM B-209 Alloy 5086-H34, ASTM B-221 Alloy 6005-T5

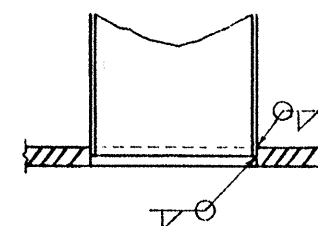
Base Flange: ASTM B-26 Alloy 356.0-T6 or ASTM B-108 Alloy A356.0-T6 (Structural strength test required).

Mast Arm Fitting: ASTM B-209 Alloy 6061-T6 or ASTM B-221 Alloy 6005-T5.

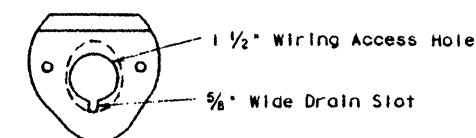
Mast Arms: ASTM B-241 Alloy 6061-T6 or Alloy 6063-T6

Pole Cap: ASTM B-209 Alloy 5086-H32 or ASTM B-108 or B-26 Alloy 356.0-T6

Bolts: Stainless Steel AISI 300. Bolts threading into aluminum threads shall be treated with anti-seize compound, Never-Seize Compound, Permatex 133K or equal.

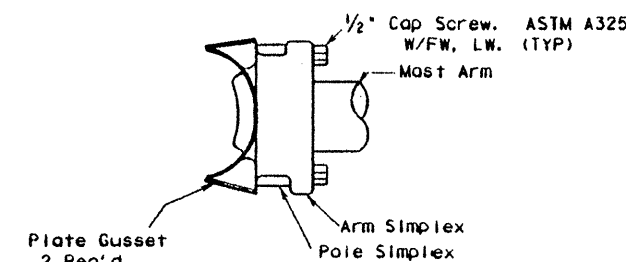


SECTION  
POLE SHAFT TO BASE PLATE



MAST ARM CONNECTOR

Steel Poles Only  
Aluminum Pole Connector  
Shall Be Clamp-on Type



MAST ARM TO POLE SHAFT CONNECTION

## EXPLANATION OF ROADWAY ILLUMINATION ASSEMBLY DESIGNATIONS

(TYPE SA 50 T - 8 - 8 ) ( 4 KW ) S

SA: Pole and mast arm may be steel or aluminum.  
ST: Pole and mast arm must be steel.  
AL: Pole and mast arm must be aluminum.  
SP: Special (ovalized) steel pole for installing on CTB. See standard sheet CTB (4).

Two numerical digits denote mounting height in feet.

Next letter denotes type of base, (S- Shoe Base, T-Transformer Base or X-Base, B-Shoe Base Bridge Mount)

First number denotes length of mast arm in feet.

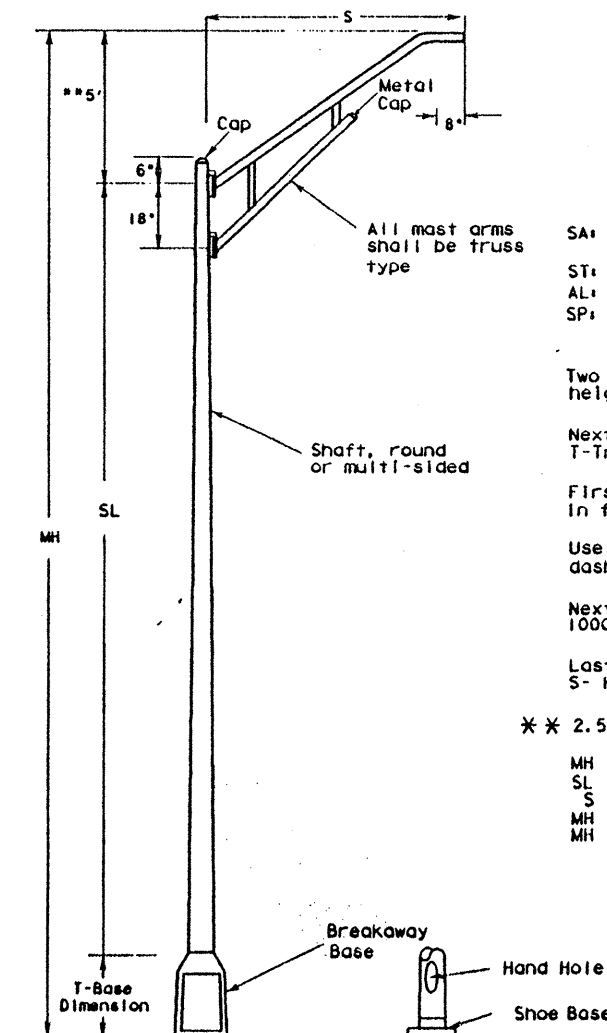
Use of second mast arm is indicated by second dashed number which denotes length in feet.

Next three figures indicate luminaire rating (1 KW= 1000 watts, .4 KW= 400 watts, etc.)

Last letter indicates the type of lamp (M- Mercury, S- High Pressure Sodium, L- Low Pressure Sodium).

\*\* 2.5' for poles with 4' mast arms.

MH = Mounting Height  
SL = Shaft Length  
S = Spread (Mast arm length)  
MH = SL + 5' + (T-Base dimension)  
MH = SL + 5' (Shoe Base)



ROADWAY ILLUMINATION ASSEMBLY

STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION  
ROADWAY ILLUMINATION DETAILS  
RID (1) - 93

ORIGINAL DRAWING NAME	DATE	REVISION	PERSONAL AND PROJECT	DATE
01-92	1/90	6	VM37-1103000	6/90
REVISIONS				
1. 5-93 K.A.B.				
2. 10-93 K.A.B.				
3. 11-93 K.A.B.				
4. 12-93 K.A.B.				
5. 1-94 K.A.B.				
6. 2-94 K.A.B.				
7. 3-94 K.A.B.				
8. 4-94 K.A.B.				
9. 5-94 K.A.B.				
10. 6-94 K.A.B.				
11. 7-94 K.A.B.				
12. 8-94 K.A.B.				
13. 9-94 K.A.B.				
14. 10-94 K.A.B.				
15. 11-94 K.A.B.				
16. 12-94 K.A.B.				
17. 1-95 K.A.B.				
18. 2-95 K.A.B.				
19. 3-95 K.A.B.				
20. 4-95 K.A.B.				
21. 5-95 K.A.B.				
22. 6-95 K.A.B.				
23. 7-95 K.A.B.				
24. 8-95 K.A.B.				
25. 9-95 K.A.B.				
26. 10-95 K.A.B.				
27. 11-95 K.A.B.				
28. 12-95 K.A.B.				
29. 1-96 K.A.B.				
30. 2-96 K.A.B.				
31. 3-96 K.A.B.				
32. 4-96 K.A.B.				
33. 5-96 K.A.B.				
34. 6-96 K.A.B.				
35. 7-96 K.A.B.				
36. 8-96 K.A.B.				
37. 9-96 K.A.B.				
38. 10-96 K.A.B.				
39. 11-96 K.A.B.				
40. 12-96 K.A.B.				
41. 1-97 K.A.B.				
42. 2-97 K.A.B.				
43. 3-97 K.A.B.				
44. 4-97 K.A.B.				
45. 5-97 K.A.B.				
46. 6-97 K.A.B.				
47. 7-97 K.A.B.				
48. 8-97 K.A.B.				
49. 9-97 K.A.B.				
50. 10-97 K.A.B.				
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54. 2-98 K.A.B.				
55. 3-98 K.A.B.				
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59. 7-98 K.A.B.				
60. 8-98 K.A.B.				
61. 9-98 K.A.B.				
62. 10-98 K.A.B.				
63. 11-98 K.A.B.				
64. 12-98 K.A.B.				
65. 1-99 K.A.B.				
66. 2-99 K.A.B.				
67. 3-99 K.A.B.				
68. 4-99 K.A.B.				
69. 5-99 K.A.B.				
70. 6-99 K.A.B.				
71. 7-99 K.A.B.				
72. 8-99 K.A.B.				
73. 9-99 K.A.B.				
74. 10-99 K.A.B.				
75. 11-99 K.A.B.				
76. 12-99 K.A.B.				
77. 1-00 K.A.B.				
78. 2-00 K.A.B.				
79. 3-00 K.A.B.				
80. 4-00 K.A.B.				
81. 5-00 K.A.B.				
82. 6-00 K.A.B.				
83. 7-00 K.A.B.				
84. 8-00 K.A.B.				
85. 9-00 K.A.B.				
86. 10-00 K.A.B.				
87. 11-00 K.A.B.				
88. 12-00 K.A.B.				
89. 1-01 K.A.B.				
90. 2-01 K.A.B.				
91. 3-01 K.A.B.				
92. 4-01 K.A.B.				
93. 5-01 K.A.B.				
94. 6-01 K.A.B.				
95. 7-01 K.A.B.				
96. 8-01 K.A.B.				
97. 9-01 K.A.B.				
98. 10-01 K.A.B.				
99. 11-01 K.A.B.				
100. 12-01 K.A.B.				

11. A.12. Alternate material equal to or better than material specified may be substituted with the approval of the Engineer.
13. Installation of high strength bolts. The tightening of nuts on high strength bolts shall be in accordance with the item "Structural Bolting."
14. Roadway illumination assembly poles shall be erected plumb and true. Top of foundation shall be struck level and shims used to plumb pole, except that for shoe base poles leveling nuts may be used. Leveling nuts shall not be used under transformer bases. Grout shall not be placed between base plate or flange and the foundation.
15. In each pole, continuous color-coded stranded No. 12 AWG copper Type XHHW or other approved XLP conductors shall be connected to the line side of each ballast.
16. Acorn nuts will not be allowed for attaching pole to transformer base or foundation. Nut covers will not be allowed.
17. Fabrication tolerances shall be as shown on Fabrication Tolerances Table.

#### B. Transformer Base

1. Transformer base shall be cast from aluminum, ASTM B-108 or B-26 Alloy 356.0-T6, or other material approved by the Engineer, and shall be furnished or with four washers or lugs as recommended by the manufacturer. Transformer base bolt circles (top and bottom) shall match bolt circles for poles and foundations shown on RID(3).
2. Transformer base shall be approximately 15-20 inches high and shall have a door approximately 13 inches x 8 inches x 9 1/4 inches or as otherwise approved by the Engineer. Screw or bolts for attachment of door to base shall be stainless steel. Four machine bolts with four nuts, eight flat washers and four lock washers, galvanized ASTM A-153 Class C or D, or B-695 Class 50, shall be provided with each transformer base for connecting the pole. Bolts shall be ASTM A325 or approved equal. Nuts shall be ASTM A-563 grade DH galvanized. A 1/2-13 NC female threaded grounding lug shall be provided inside the transformer base near the bottom.
3. The X-base shall be made from extruded aluminum channel and aluminum plate. The base breakaway features shall rely on bolt shear and not on bolt torque. Bolt shall have torque controlled break-off hex-head. Bolt shall be Aluminum Association type 2024-T4 aluminum. X-base channel shall be connected with aluminum bolts. Bolt shall be left hand thread and shall not be interchangeable with any other bolt not designed specifically for use with the X-base.
4. All breakaway bases shall meet the breakaway requirements of the AASTHO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," 1985 edition, and shall have been tested by FHWA-approved methods. All bases shall have been structurally tested to meet or exceed the full designed plastic moment capacity of the pole. Certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished shall be submitted with shop drawings. Shop drawings shall show breakaway base model number and manufacturer's name or logo.
5. Bases shall be stamped, incised or by other approved permanent means, marked to show fabricator's name or logo, and model number. Such information shall be placed in a readily seen location, inside or outside the base, but shall not be placed on the door.
6. Doors for transformer bases shall be made of plastic, fiberglass or other non-aluminum material approved by the Engineer. Transformer bases shall be cleaned by grit blast cleaning after heat treatment. Certification by the manufacturer of heat treatment shall be furnished with transformer bases. The certification shall show the metal alloy and temper and that the base meets those requirements, chemical and physical. The certification shall also show the material ASTM specification. Transformer bases shall be cast with a removable tab bar for material testing. Some bars may have been removed by the manufacturer for testing.

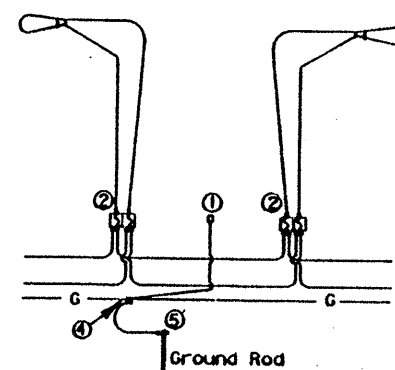
#### C. All Luminaires

1. The luminaire housing shall be cast or drawn from a non-ferrous alloy and shall be free of cracks and excessive porosity. All nuts, screws, clips, washers and attaching hardware shall be made of stainless steel, steel electro-zinc-plated, minimum thickness 0.0002 inch with olive green drab or yellow chromate conversion coating, steel coated with an acidic chromate-phosphate-binder system primer, top coated with a polytetrafluoroethylene modified silicon primer, bright metallic in color, meeting the requirements of General Motors automotive specification GM 164M, or other approved conversion coatings except that brackets may be made from pre-galvanized steel. All threaded surfaces used in the housing shall be lubricated with a silicone grease.
2. The slipfitter shall securely clamp the luminaire to the mast arm. A positive means of vertical adjustments shall be provided. The refractor or lens shall be clear glass. The optic assembly shall be provided with resilient gaskets and so constructed that a positive seal against weather and other contaminants will be maintained. The luminaire shall be designed to permit easy removal of the refractor from the luminaire but shall provide a positive means of preventing an unintentional separation. The latch shall provide a positive means of maintaining closure of the luminaire. The socket shell shall be nickel plated and shall be rigidly attached to a high grade porcelain mogul base which shall extend and enclose the metal shell. A locking means shall be incorporated in the shell of the socket to positively resist the removal of the lamp. Reflectors shall be polished aluminum with Alzak or equal coating and shall not be painted.
3. Mast-arm mounted luminaires shall be provided with a leveling indicator which is clearly visible from the ground. Leveling indicator shall be sensitive to one (1) degree (maximum) changes in position at any point within five (5) degrees (minimum) of the level position. Leveling indicator shall have one or more concentric circular marks, the center of which is the level position. Unless otherwise directed by the Engineer, mast-arm mounted luminaires will be installed in the level position.
4. Underpass luminaires shall be fused internally. Fuses shall be 10 amp time-delay type.

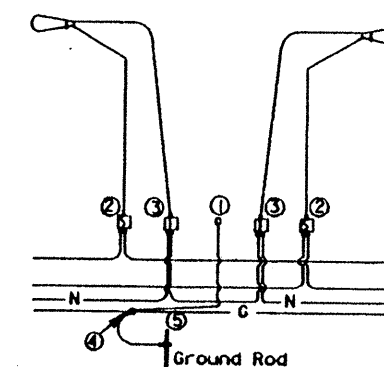
#### D. High Pressure Sodium Vapor Luminaires

1. Photometrics
  - a. The U/P (SPL-CO) (.15KW)S (TY 1) and (TY 2) underpass luminaires shall be 150 watt high pressure sodium, IES TYPE M-C with flat tempered glass lens. The fixtures shall provide a minimum measured intensity of .2 footcandle in a rectangular area measuring 80 feet x 30 feet, when mounted 20 feet above the midpoint of either long side of the surface area.
  - b. The 250-watt mast arm mounted luminaire shall be IES Type semi-cutoff or cutoff and, when mounted 40 feet above the midpoint of either long side of a rectangular area 200 feet by 70 feet, shall provide a measured minimum intensity of 0.2 footcandle at any point on the surface of this area. Light intensities measured in footcandle along a line parallel to and 20 feet in from the long side of the previously defined rectangular area above which the luminaire is mounted shall decrease at a rate not to exceed 0.8 footcandle in any ten-foot interval along the aforementioned line from 10 to 70 feet on both sides of the luminaire and shall not be less than 0.6 footcandle at any point along such line.  
The maximum to minimum footcandle uniformity ratio shall not exceed 20:1 within the above mentioned rectangular area.
  - c. The 400-watt mast arm mounted luminaire shall be IES Type semi-cutoff or cutoff and, when mounted 50 feet above the midpoint of either long side of a rectangular area 240 feet by 70 feet, shall provide a measured minimum intensity of 0.2 footcandle at any point on the surface of this area. Light intensities measured in footcandle along a line parallel to and 30 feet in from the long side of the previously defined rectangular area above which the luminaire is mounted shall decrease at a rate not to exceed 0.8 footcandle in any ten-foot interval along the aforementioned line from 10 to 90 feet on both sides of the luminaire and shall not be less than 0.6 footcandle at any point along such line.  
The maximum to minimum footcandle uniformity ratio shall not exceed 20:1 within the above mentioned rectangular area.
  - d. The luminaires shall meet the photometric requirements shown above, when energized at 100 percent of rated line voltage. Test will be run with the fixture in the level position as indicated on leveling indicator.

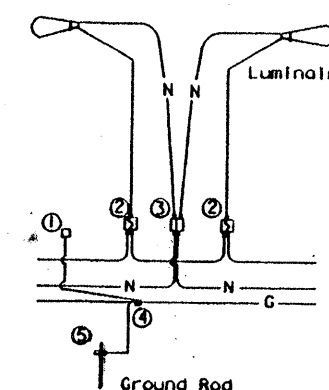
Fabrication Tolerances Table		
Part	Dimension	Tolerance
Pole Assembly	Shaft length	± 1 in.
	I.D. of outside piece of slip fitting pieces	+1/8 in., -1/16 in.
	O.D. of inside piece of slip fitting pieces	+1/32 in., -1/8 in.
	Shaft diameter, other	+3/16 in.
	Out of "round"	1/4 in.
	Straightness of shaft	± 1/4 in. in 10 ft.
	Twist in shaft	4" in 50 ft.
	Perpendicular to baseplate	1/8 in. in 24 in.
Arm Assembly	Pole centered on baseplate	± 1/4 in.
	Location of Attachments	± 1/4 in.
	Arm Length	± 3 in.
	Arm Rise	± 1 3/4 in. in 10 ft.
	Arm Diameter	± 3/16 in.
	Overall length or width	± 1/4 in.
	Thickness	+1/4 in., -1/16 in.
	Deviation from flat	1/8 in. in 12 in.
Anchor Bolt	Spacing between holes	± 3/32 in.
	Anchor bolt hole size	± 1/16 in.
	Length	+ 1 in., -1/4 in.
	Threaded length	+1 1/2 in., -1/8 in.
Miscellaneous	Galvanized length (if required)	+8 in., -1/4 in.
	Bolt hole spacing	± 1/16 in.
	Strut location in truss arms	± 1 1/2 in.



FOR THREE-WIRE CIRCUIT-CENTER GROUNDED  
LUMINAIRES SERVED AT 480V ON 240/480 VOLT  
SERVICE OR LUMINAIRES SERVED AT 240V FOR  
FOR 120/240 VOLT SERVICE.



FOUR-WIRE CIRCUIT-CENTER GROUNDED  
LUMINAIRES SERVED AT 240V  
(240/480 VOLT SERVICE)



THREE WIRE CIRCUIT-OUTSIDE GROUNDED  
LUMINAIRES SERVED AT 480V ON 480 VOLT  
2 WIRE SERVICE OR LUMINAIRES SERVED  
AT 240V ON 240 VOLT 2 WIRE SERVICE.

#### NOTES:

- ① Pole Bonding Connector Blackburn TTC3 or Weaver TGC3 or equal.
- ② Fused Connector- Homac Flood Seal Series; Busman HEB Series; Gould GEB Series, or equal. All fuses shall be time-delay types, 10 Amp (Littlefuse FLO, Busman FNO or equal).
- ③ Un-fused Connector- Homac Flood Seal Series; Busman HEB Series; Gould GEB Series, or equal. Dummy/Neutral fuse shall be Busman NTS-R-30 or equal.
- ④ Split Bolt or other connector.
- ⑤ Ground Rod Clamp - Blackburn GG58H, Burndy GKP635, or equal.

\*For Transformer Base Poles. On Shoe Base Poles omit un-fused connector for neutral conductor.

		STANDARD PLANS	
		TEXAS DEPARTMENT OF TRANSPORTATION	
ROADWAY ILLUMINATION DETAILS			
RID (2) - 93 <b>67</b>			
ORIGINAL DRAWING DATE: 1-92 DESIGNED BY: E.A.B. CHECKED BY: T.B. DATE: 5-93 E.A.B. DATE: 10-93 E.A.B.	REVISIONS 10 6 11M 37-1103000 67 NIECES 10/4/06 179 11/13/07	FEDERAL AID PROJECT 10 6 11M 37-1103000 67	SHEET 67

## 2. Ballasts

- All ballasts shall be isolated-winding lag-type magnetic regulators designed to operate high pressure sodium lamps unless otherwise shown on the plans.
- When the circuit voltage indicated on the plans is applied, the ballast input wattage during fluctuations of the test voltage of +10 and -10 percent shall not exceed the following:
 

Nominal Lamp Rating, Watts	Maximum Wattage Input
150	220
250	400
400	552
- During fluctuation of the test voltage of +10 and -10 percent, the lamp wattage fluctuation shall not exceed a total of 20 percent and ballast shall maintain lamp wattage within the following limits:
 

Nominal Lamp Watts	Minimum Lamp Watts	Maximum Lamp Watts
150	110	180
250	175	370
400	280	475
- The power factor of any ballast when tested at the circuit voltage indicated in the plans shall be not less than 90 percent.
- The electronic starting aid shall provide a starting pulse with an amplitude of 2500 volts minimum, 4000 volts maximum. The pulse width shall be a minimum of 0.8 microseconds at 2250 volts. The pulse shall occur when the open-circuit voltage is equal to or greater than 90 percent of peak open-circuit voltage. Pulse repetition rate shall be a minimum of one per cycle and pulse current shall be a minimum of 0.18 amperes. Electronic starting aids for mast-arm mounted poles shall be replaceable without the use of tools. The starting aid shall discontinue to pulse when the lamp starts.
- Luminaires will be tested for satisfactory operation of the starter board under open-circuit (lamp-out) condition for a minimum of 72 hours. Any failures of starter boards will be considered grounds for rejection of the model starter board being supplied.
- Ballasts shall permanently and clearly indicate the following: lamp type, catalog number, voltage rating, connection diagram, and manufacturer. Capacitors in all luminaires shall be non-PCB type.

## 3. Lamps

- All lamps shall be new and shall be of recent manufacture.
- High pressure sodium vapor lamps in the wattage range of 200 to 400 watts inclusive shall have a lamp voltage not greater than 108 volts when tested after thirty minutes burn-in. 150 watt lamps shall be rated for 55 volts.
- All lamps shall have nickel plated mogul bases.

## 4. Testing

- Ballasts and luminaires will be tested using a lamp furnished for the same project.
- Luminaires, ballasts, and lamps will be sampled and tested in accordance with the TXDOT Materials and Test Division's Manual of Testing Procedures.

## III. ROADWAY ILLUMINATION ASSEMBLY FOUNDATIONS

- Foundations will be paid for under the item "Foundations for Signs, Traffic Signals and Roadway Illumination Assemblies", unless otherwise shown on the plans. Top 6 inches of foundation shall be formed and struck level.
- Anchor bolts for all poles, except CTB-mounted poles, shall be A-36M55 Anchor Bolts. Anchor bolts for CTB-mounted poles shall be steel, ASTM A-325 or A-321 threaded rod. Nuts for CTB anchor bolts shall be ASTM A-563 Grade D heavy hex, galvanized. The top 8 inches of all anchor bolts shall be galvanized per ASTM A-153. Anchor bolts in foundations shall be 1 1/4 inches x 30 inches for mounting heights 40 feet and greater, 1 inch x 30 inches for mounting heights less than 40 feet. Anchor bolts shall have top end threaded not less than 5 inches and furnished with galvanized hex nuts, flat and lock washers and template. The lower end of the bolt shall be threaded and furnished with nut and template. When bolts with rolled threads are furnished, bolt body need not be full size. See CTB details for anchor bolts in CTB. Anchor bolts and nuts shall have Class 2A and 2B fit. Nuts shall be tapped or chased after galvanizing.
- Concrete shall be Class A or C.
- A minimum of two conduits shall be installed in each foundation. See lighting layout sheets for locations of foundations with more than two conduits. Any unused conduits in foundations shall be capped on both ends.
- Unless otherwise dimensioned on the plans, breakaway roadway illumination assemblies should be located as shown in the placement table. Non-breakaway illumination assemblies should be protected from vehicular impact (i.e. 2 ft. behind guard rail or mounted atop traffic barrier) or located outside the clear zone, except that 2.5 ft. from curb face is minimum desired for light poles on city streets, 45 mph or less, see design guidelines for further information.

\* Except that anchor bolts shall be 1 inch x 30 inches for all X-base poles.

Breakaway Pole Placement, see Para. III. E.	
Roadway Functional Classification	**Pole Offset (distance to transformer base, tolerance + 6 in.)
Freeway mainlanes (roadways with full control of access)	15 ft. (minimum and typical from lane edge)
All curbed, 45 MPH or less design speed	2.5 ft., minimum (15 ft. desirable) from curb face
All others	10 ft., minimum (15 ft. desirable) from lane edge

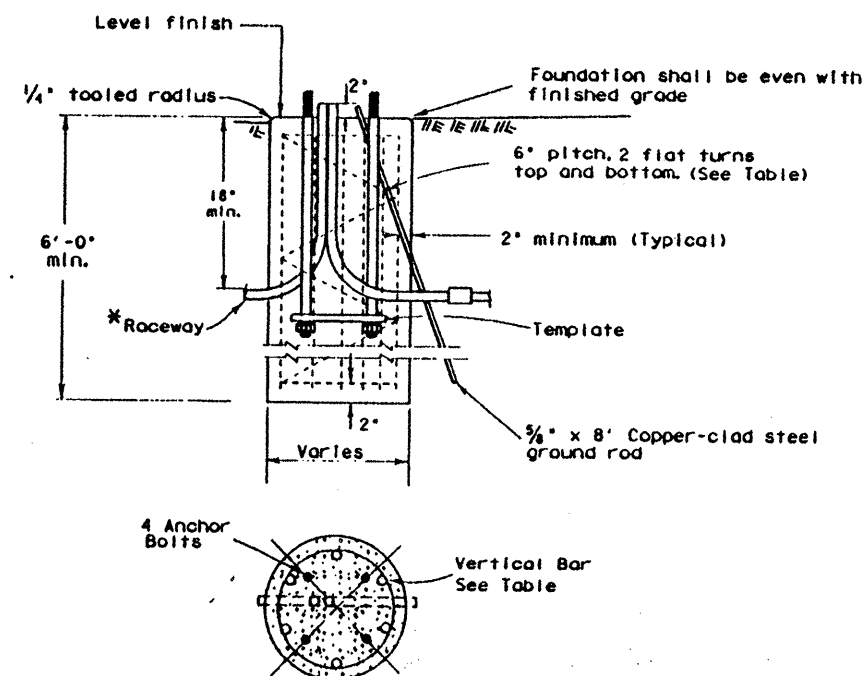
\*or as close to ROW line as is practical

\*\*all breakaway poles should have 2/5 of the luminaire mounting height behind the pole for "falling area" to prevent encroachment on other travel lanes. See design guidelines.

BOLT CIRCLES AND ANCHOR BOLTS				
MOUNTING HEIGHT	POLE BASE PLATE	BOLT CIRCLE SHOE BASE	T-BASE	BOLT SIZE
LESS THAN 40 FEET	13 IN.	13 IN.	14 IN.	1 IN. X 30 IN.
40 FEET OR GREATER	15 IN.	15 IN.	17 1/4 IN.	** 1 1/4 IN. X 30 IN.

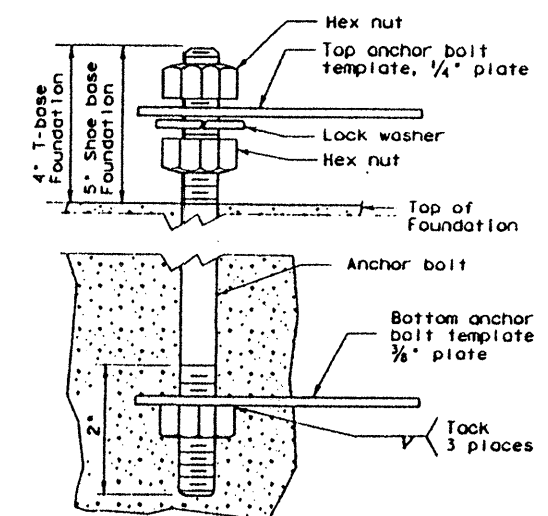
\* AND X-BASE  
\*\* 1" FOR X-BASE

FOUNDATIONS				
FND. TYPE	DRILL DIA.	SHAFT LENGTH	REINFORCING BAR	SPIRAL
A	30 IN.	6 FT.	6-#4	#2
B	30 IN.	8 FT.	6-#5	#2
C	30 IN.	10 FT.	6-#6	#3



FOUNDATION DETAIL

\* Min. 2" Dia. for duct cable, 18" radius bends. For conductor in conduit system, same size as system conduit with standard radius bends.



ANCHOR BOLT DETAIL

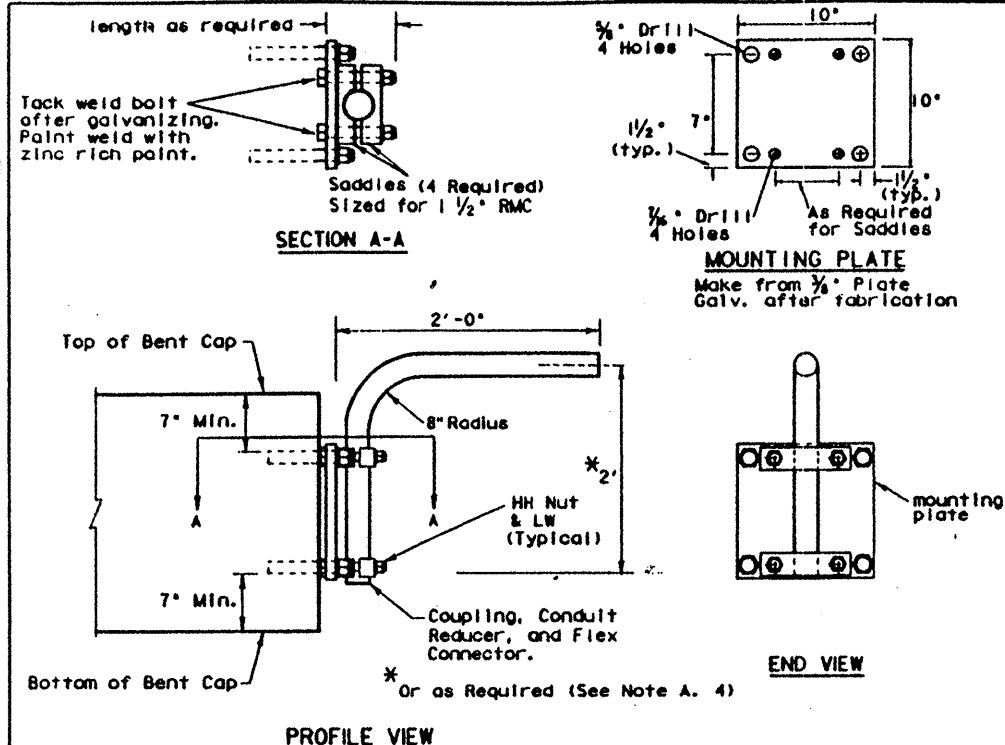


STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION

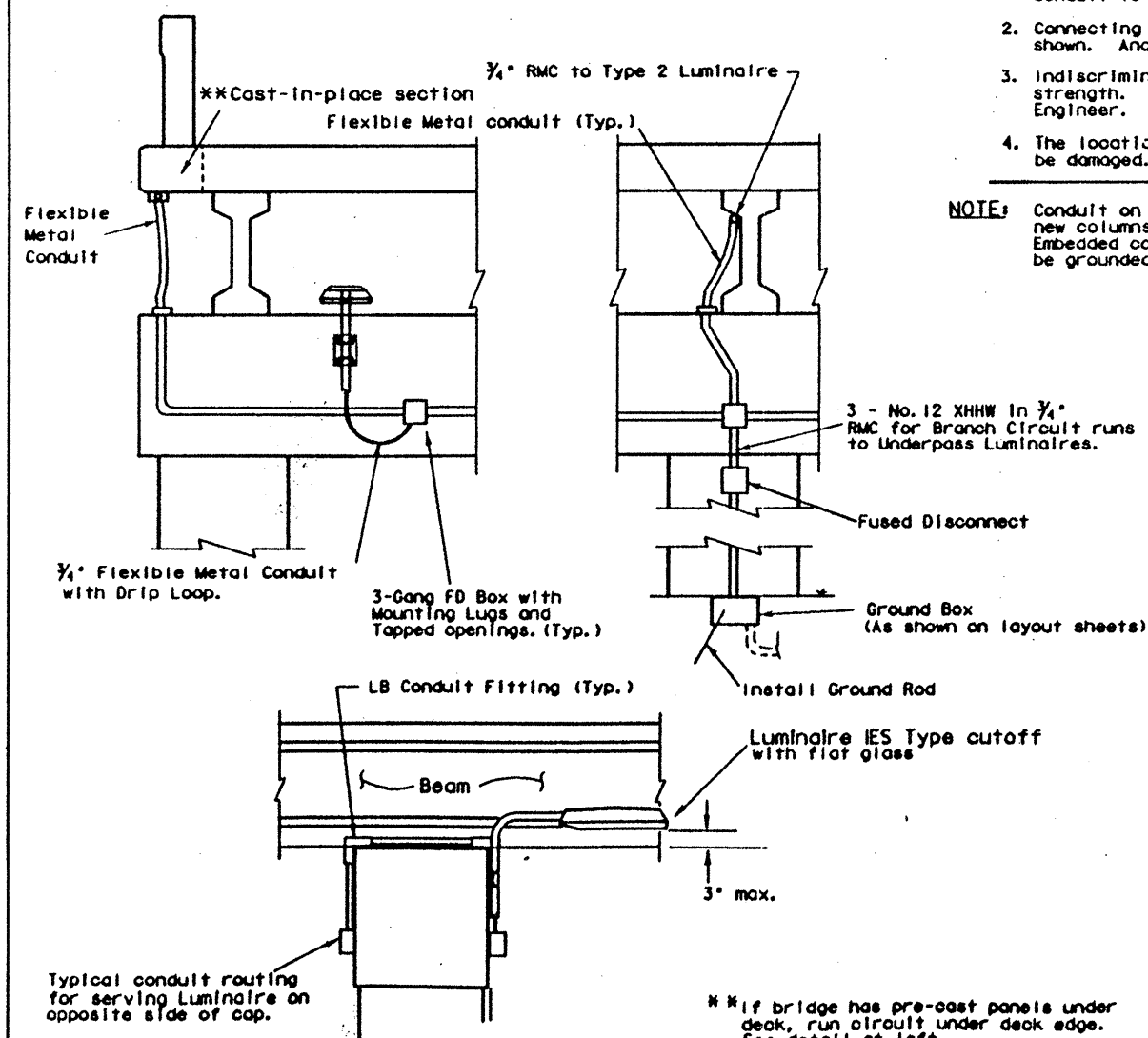
## ROADWAY ILLUMINATION DETAILS

RID (3) - 93

ORIGINAL DRAWING DATE: 01-92	STATE PROJECT: 116	FEDERAL AID PROJECT: 10-03 K.A.B.	SHEET: 68
REVISIONS:	DATE: 10-93	BY: 10-03 K.A.B.	REVISION: 10-03 K.A.B.
DATE: 10-03	BY: 10-03	DATE: 10-03	BY: 10-03



### UNDERPASS LIGHTING ARM TYPE 1



U/P (SPL-CO) (.15 KW)S (TYPE 1)

### NOTES:

#### A. ALL LUMINAIRES

1. Luminaire locations, conduit and conductor sizes and routing are typical and diagrammatic only. See project layout sheets for specific details.
2. All conductors and conduit will be paid for under the items "Conduit" and "Electrical Conductor", unless otherwise shown on the plans. See lighting layout sheets.
3. A ground rod shall be installed and attached to the equipment grounding conductor in all ground boxes containing conduit that extends above ground. All RMC in these boxes shall have grounding bushings and shall be properly bonded.
4. Adjust conduit in saddles to place fixture height and orientation as required. See fixture orientation detail and layout sheet. Where practical place luminaires so that bottom of luminaire is above bottom of beam, maximum of 3 inches. (See detail).
5. All bolts, nuts and washers shall be galvanized, ASTM A-153.
6. Fabrication of brackets and support arms will not be paid for directly but shall be subsidiary to item 610, "Roadway Illumination Assemblies."
7. A Heavy Duty, 480 volt or 600 volt, 30 amp fused disconnect switch in NEMA 3R enclosure shall be installed in circuits to switch underpass luminaires. Switch shall be mounted ten foot (minimum) above grade on columns or bent caps as approved by the Engineer. Contractor shall modify switch to allow padlocking in the "ON" and in the "OFF" positions. 20 amp fuses shall be installed.

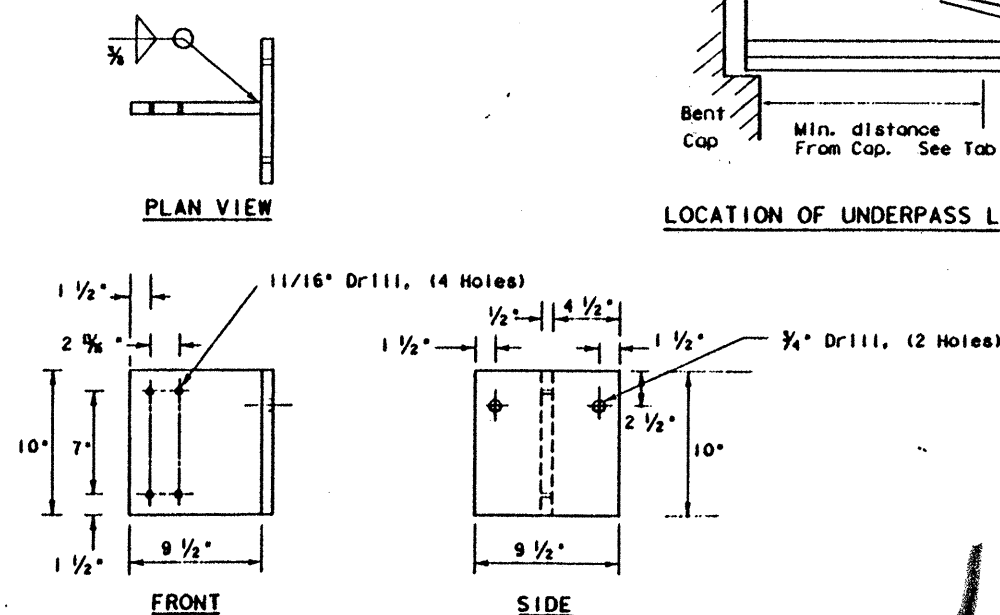
#### B. TYPE 1

1. Type 1 arm shaft shall be 1 1/2" rigid metal conduit (1.90" O.D., .145" wall).
2. Anchor bolts for Type 1 luminaire shall be 3/8 inch bolt or stud expansion anchors with minimum pull out of 3000 lb each, with 4 inch minimum embedment, and lock washers.
3. Attach conduit to plate with 4 saddles, four 3/8" (min.) bolts, HHN & LW.

#### C. TYPE 2

1. Type 2 arm shaft shall be 2 inch rigid metal conduit (2.375" O.D., .154" wall). Reduce conduit length for Type C concrete beams. Field cutting and threading will be permitted. Paint out and treated areas with zinc rich paint after conduit is connected to adjacent fittings.
2. Connecting conduit may be strapped to tapered section only of precast beams as shown. Anchor as approved by the Engineer. Maximum anchor depth is 1 inch.
3. Indiscriminate drilling into precast concrete beams may result in reduced beam strength. Drilling location and method shall be only as directed by the Engineer. See location of underpass lighting mounting bracket detail.
4. The locations given in the table are such that reinforcing strands will not be damaged.

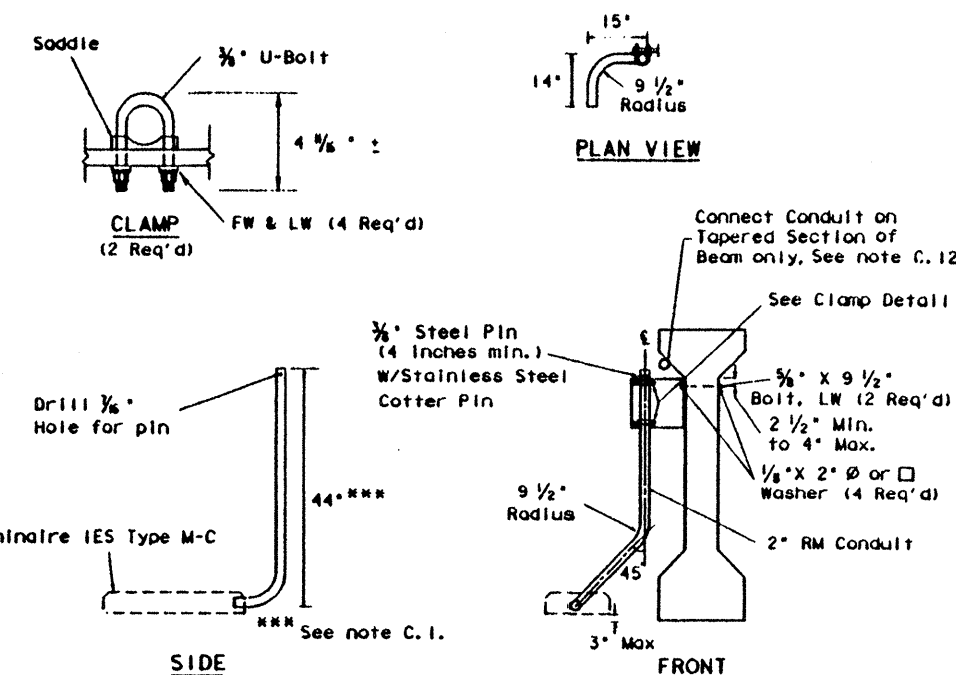
**NOTE:** Conduit on Columns, Caps, and Slab is shown surface mounted. For all new columns and caps, Contractor shall embed conduit in concrete. Embedded conduit shall be PVC. Metal junction boxes and conduit shall be grounded.



### BRACKET DETAIL

Make From 1/2" Plate (ASTM A-36)  
Galvanize after fabrication, ASTM A-123

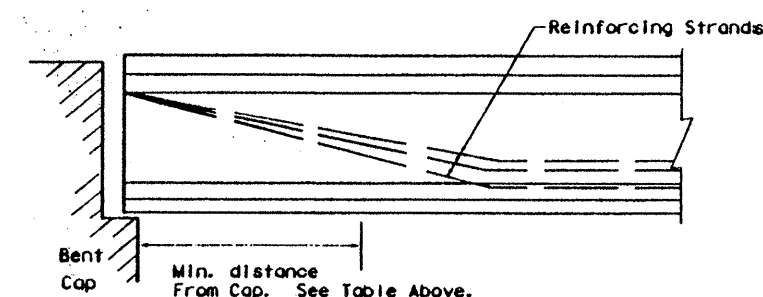
U/P (SPL-CO) (.15 KW)S (TYPE 2)



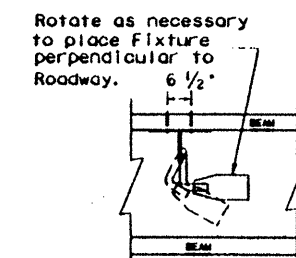
### UNDERPASS LIGHTING ARM TYPE 2

Bridge Span Length	Minimum Distance From Bent Cap to Fixture Mounting Arm
≤ 50'	10'
50' - 70'	15'
70' - 90'	20'
> 90'	25'

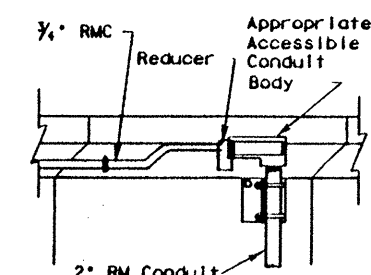
See detail below.



LOCATION OF UNDERPASS LIGHT MOUNTING BRACKET



### FIXTURE ORIENTATION



CONDUIT CONNECTION PROFILE (TYPICAL)



STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION

### ROADWAY ILLUMINATION DETAILS

RID (4) - 93

DESIGNED: 01-92	DATE: 1/92	PROJECT: 37-1(103)002	SHEET: 69
BY: E.A.B.	BY: T.B.	BY: E.A.B.	BY: T.B.
10-93 E.A.B.	10-93 E.A.B.	10-93 E.A.B.	10-93 E.A.B.
10-93 E.A.B.	10-93 E.A.B.	10-93 E.A.B.	10-93 E.A.B.
10-93 E.A.B.	10-93 E.A.B.	10-93 E.A.B.	10-93 E.A.B.



I. GENERAL REQUIREMENTS FOR ALL ELECTRICAL WORK

Faulty fabrication or poor workmanship in any material, equipment, or installation will be considered justification for rejection. Materials and installation shall comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Where manufacturers provide warranties or guarantees as a customary, trade practice Contractor shall furnish to the State such warranties or guarantees. The location of conductors, conduit, junction boxes, duct cable, ground boxes, transformer stations, and service poles are diagrammatic only and may be shifted by the Engineer to accommodate local conditions.

Grounding shall be as shown on the plans and in accordance with the NEC. Metallic conduit, lighting poles, and luminaires on bridge structures shall be grounded by connection to the grounding conductor and by installing a ground rod in each ground box or junction box, as shown on the plans, at bridge ends and in each ground box installed for underpass lighting. The bonding jumper shall be bare or, if insulated, shall be green. Ground rods, connectors, and bonding jumpers will not be paid for separately, but will be subsidiary to the various bid items.

II. CONDUIT

A. Materials.

1. Conduit must be UL-approved for the intended use shown on plan sheets. Aluminum conduit will not be permitted unless shown elsewhere on the plans. EMT and IMC will not be permitted unless shown on the plans.
2. Fittings for steel conduit shall be steel or malleable iron, threaded or compression type threadless and rain-tight. Die cast, set screw, indenter or push-on (socks) fittings will not be permitted.
3. Expansion joints for metallic conduit shall be provided with a grounding strap. Expansion joints for metallic conduit shall be Appleton UNYL 50 Series, OZ AX Series, or equal.
4. Junction boxes in rigid metal conduit systems shall be cast iron, hot-dipped galvanized, or cast aluminum (surface-mounted only) unless otherwise shown on the plans.
5. Surface-mounted junction boxes for Rigid Metal conduit 1 1/4 inches and larger shall have a minimum wall thickness of 3/8 inch, Crouse Type WAB, O-Z Type YS, Adalot Type 3R, or approved equal, with mounting lugs, minimum size 6 inches x 6 inches x 4 inches, or as otherwise required by the NEC, or as shown elsewhere on the plans. For conduit one inch or smaller, surface-mounted boxes may be 4 1/2 inches (min.), round, square, or rectangular, and approximately 3 inches deep, Crouse Hinds Type GRFX, Appleton Type JBOX, two-gang FD, or approved equal, unless otherwise required by the NEC or the plans.
6. For rigid metal conduit systems flush-mounted junction boxes installed in concrete structures shall be minimum 6 in. x 6 in. x 4 in., or as required by the NEC, Crouse Hinds Type WGB, O-Z Type YR, or approved equal.
7. Unless otherwise shown elsewhere on the plans, junction boxes in EMT conduit systems shall be made from galvanized sheeting and shall be UL listed as approved for outdoor use. Sheet metal junction boxes shall be sized in accordance with the NEC.
8. Unless otherwise shown elsewhere on the plans, junction boxes in PVC conduit systems shall be PVC, UL listed for outdoor use, and sized in accordance with the NEC.

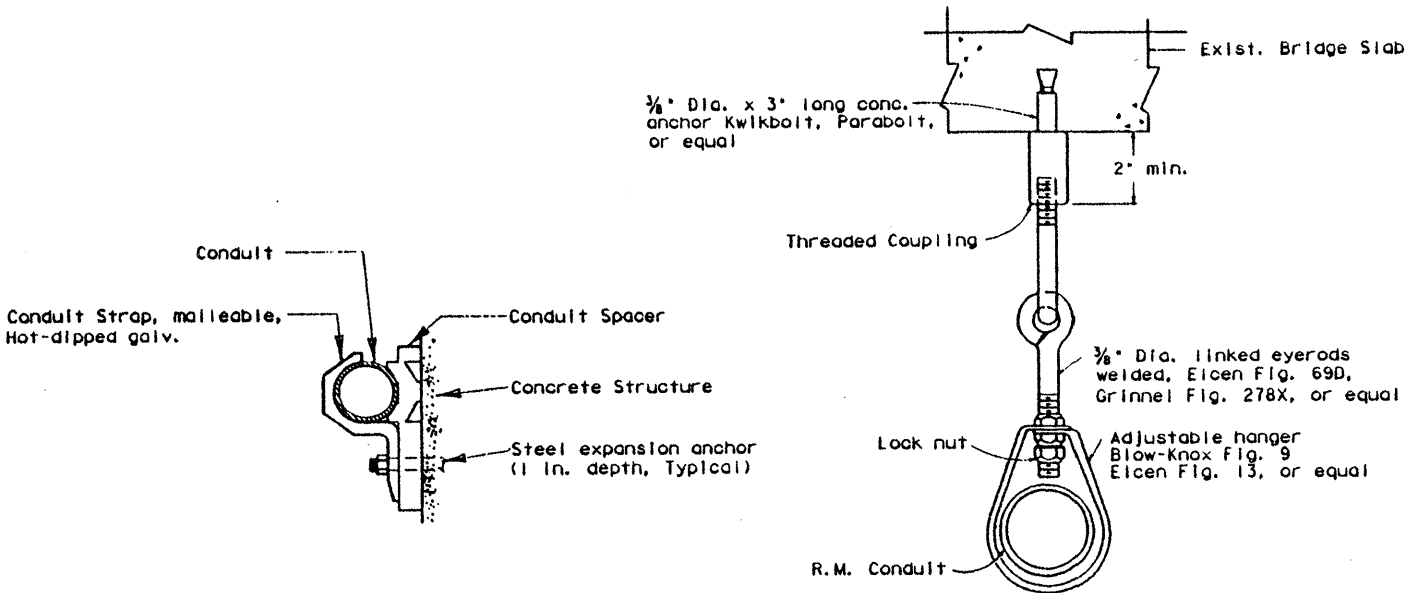
B. Construction Methods.

1. Continuous runs of conduit in excess of 150 feet attached to structures shall have expansion joints at mid-span or 150-foot intervals. Conduit in structures shall have expansion joints at structure expansion joints or as shown in plans.
2. Conduit hangers or straps shall be spaced at maximum intervals of 5 feet. When shown on the plans, hangers shall be used when hanging conduit from horizontal surfaces (See detail). Conduit spacers shall be used with metal conduit placed on surfaces of concrete structures (See conduit detail).
3. Conduit hangers or straps shall not be attached directly to prestressed concrete beams except as shown in the plans and approved by the Engineer.
4. Conduit placement beneath existing roadways, driveways or sidewalks shall be accomplished by jacking or boring, unless otherwise noted on the plans or directed by the Engineer. The Contractor shall backfill and compact the bore pits to bottom of conduit prior to installing connecting conduit or duct cable, to prevent bending of this connection. Duct cable shall be extended through conduit casings in one continuous length.
5. With approval of the Engineer, conduit placed under new roadways may be trenched in subgrade and backfilled with excavated material. When approved by the Engineer, conduit may be trenched in sub-base but must be backfilled with cement-stabilized base. Conduit placed after base or surfacing operation has begun must be jacked or bored.
6. Open ends of all conduit and raceways shall be fitted with temporary caps or plugs to prevent entry of dirt, debris and rodents during construction.
7. Conduit entry into the top of junction boxes shall be made weathertight using threaded fittings into hubs, or with sealing locknuts inside and out.
8. A bonding jumper shall be installed from grounding bushing to nearest rod, grounding lug, or grounding conductor. At service poles, bonding jumper shall be AWC Size No. 6. All other jumpers shall be minimum size AWC No. 8. Conduit used as casing under roadways for duct cable need not be grounded if duct extends full length through the casing.
9. Conduit ends shall be sealed with heat shrink boots or tubes with sealant, silicone caulking or shall be sealed by other methods approved by the Engineer. Sealing shall be done after completion of any required pull tests.
10. Where called for on the plans, trenched conduit shall be placed on a 2-inch sand cushion and backfilled with a minimum of 6 additional inches of sand fill.
11. Conduits entering ground boxes shall be placed so that the conduit ends shall be not less than 5 inches nor more than 9 inches from the box cover (See ground box detail).
12. Metal junction boxes shall be bonded to the grounding conductor.

III. ELECTRICAL CONDUCTORS

A. Materials.

1. Insulated conductors NEC Type XHHW or USE (XLP). Conductors in circuits containing two or more insulated conductors shall be color-coded at each accessible point (i.e., ground boxes, pole bases, junction boxes). Color-coding for No. 10 and smaller shall be by continuous jacket color. Color-coding of electrical conductors No. 8 or larger may be by continuous jacket color or colored tape. Colored tape marker shall consist of a half-lap layer of tape covering a six inch length of conductor.
2. Bonding conductors No. 8 and smaller, tied to ground rods, shall be solid. Connection of bonding conductor to ground rod shall be made using UL listed connectors designed for such purpose.

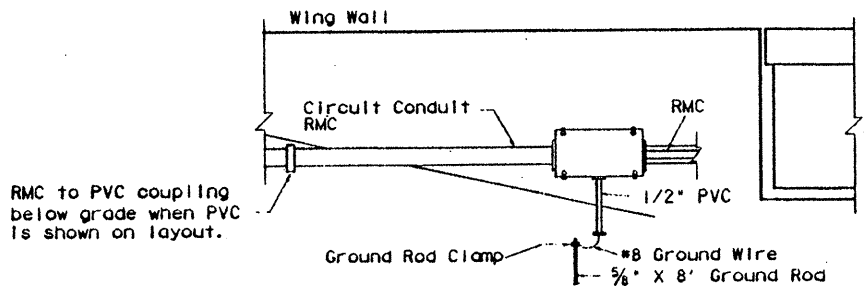


CONDUIT STRAP DETAIL

(Attachment to concrete surfaces)  
(See para. II.B.2)

CONDUIT HANGER DETAIL

(Attachment to horizontal surfaces)  
(See II.B.2)



NOTES

1. Conduit shall be 2" RMC for duct cable entry to junction box.
2. Ground rod clamp to be Blackburn GC 5/8H, Weaver W5/8 or equal.
3. Surface mounting shown, for conduit to be placed in structure use flush-mounted box.
4. Bond junction box to grounding conductor.

TYPICAL CONDUIT ENTRY TO BRIDGE STRUCTURE DETAIL

CONDUIT  
CONDUCTORS



STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION

ELECTRICAL DETAILS

ED (1) - 93

10-19 93 2FAZ (122, 101) EDIVS, STD			
ORIGINAL DRAWING NAME: G1-92	STATE: TEXAS	FEDERAL AID PROJECT:	SHEET:
DATE: 5-93 R.A.B.	16	6	103700070
DATE: 10-93 R.A.B.	CONTRACT:	SECTION:	REVISION:
DATE:	11/22/93	02/24/96	11/19/93

## B. CONSTRUCTION METHODS.

1. A non-metallic pull rope shall be used in pulling conductor in non-metallic conduit.
2. After conductor is placed in conduit, a pull test will be made on conductors. When any length of conductor cannot be freely pulled the Contractor shall make any needed alterations or repairs at the Contractor's expense.
3. Conductors in illumination poles shall be supported by a J-hook in top of pole.
4. A sufficient length of conductor shall be left in ground boxes (two feet minimum to point of splice, three feet minimum when conductor is pulled through with no splice), enclosures, and pole bases (one foot minimum) for making up connections.
5. Except for overhead wiring, splices shall be made only in junction boxes, ground boxes, pole bases, or electrical enclosures and shall be made with approved compression sleeves or split bolt connectors. Splices shall be insulated with heavy wall heat shrink tubing containing factory applied sealant. Heat shrink sleeves shall lap conductors insulation a minimum of 2 inches on both sides of the splices.
6. When approved by the Engineer, wire nuts may be used for No. 8 and smaller conductors in above-ground junction boxes, but not in pole bases or ground boxes. Wire nuts shall be positioned upright to prevent the accumulation of water.

## IV. DUCT CABLE.

- A. Duct cable shall be placed by the open trench method, except where otherwise noted, at a minimum depth of 18 inches unless otherwise indicated. Bends in duct cable shall be made in the manner recommended by the manufacturer. Minimum bending radius shall be 15 inches for 1-inch duct and 18 inches for 1-1/4 inch duct. Handling of duct cable reels and installation of duct shall be as recommended by the manufacturer. Duct entering ground boxes shall be placed so that the duct ends are not less than 5 inches or more than 9 inches from the box cover. Duct for duct cable is designed as a conduit system and shall be considered as such in NEC interpretations. Duct shall not be spliced. Ends of duct shall be cut neat and straight and shall be reamed to remove sharp edges.
- B. After duct cable has been installed, a pull test will be made on conductors. If conductors cannot be freely pulled, Contractor shall replace or otherwise adjust installation to free up the conductors. Duct cable ends shall be sealed with approved compound or with heat-shrink material after pull test is completed.
- C. Where noted on plans, duct cable shall be placed on a 2-inch sand cushion and backfilled with a minimum 6 additional inches of sand.
- D. Duct cable shall be encased in conduit when shown on the plans. Duct cable shall be extended through the conduit casing in one continuous length.

## V. GROUND BOX.

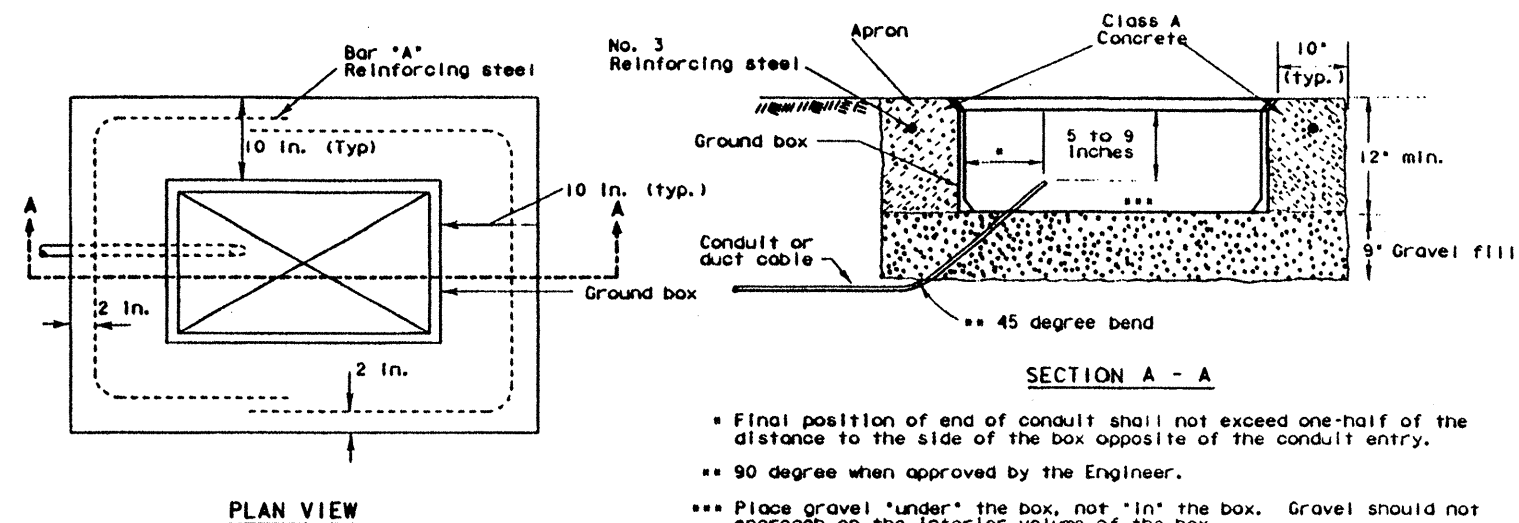
### A. MATERIALS.

1. Ground boxes shall be concrete or polymer concrete, as required by the descriptive code shown elsewhere.
2. All precast ground boxes and covers shall be permanently marked with manufacturer's name or logo and manufacturer's model number.
3. Covers shall be bolted down. Bolt holes shall be arranged to drain dirt.
4. When steel covers are required, covers shall be provided with a grounding lug with 1/2 - 13 NC female threads on the underside of the cover.
5. Polymer Concrete boxes shall meet the following requirements:
  - a. Boxes shall be manufactured from Reinforced Polymer Concrete (RPM) composed of borosilicate glass fiber, a catalyzed polyester resin and an aggregate. Side walls may be fiber reinforced polymer.
  - b. Minimum inside dimensions shall be as follows (width x length x depth):
 

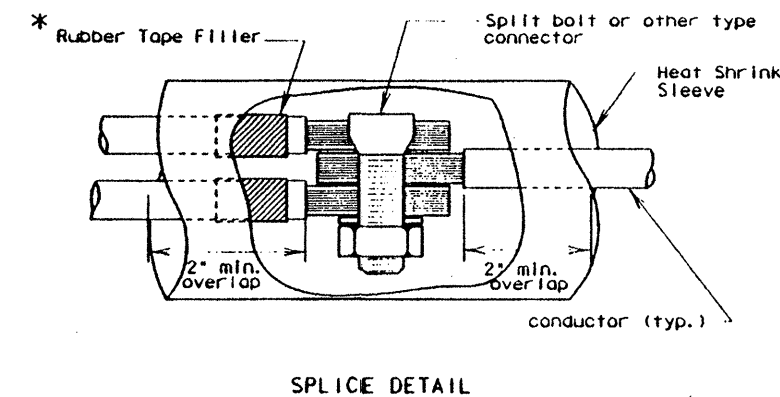
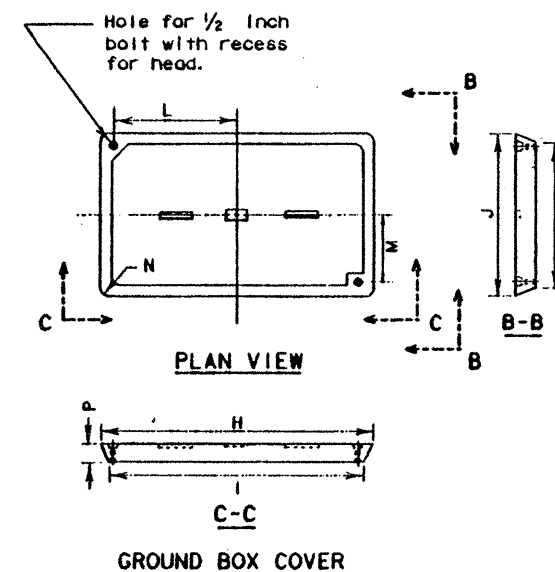
Type A shall be 11.5 inches x 21 inches x 10 inches	(122311)
Type B shall be 11.5 inches x 21 inches x 20 inches	(122322)
Type C shall be 15.25 inches x 28.25 inches x 10 inches	(162911)
Type D shall be 15.25 inches x 28.25 inches x 20 inches	(162922)
Type E shall be 11.5 inches x 21 inches x 16 inches	(122317)
  - c. Bottom edge of box or extension shall be footed with a minimum 1/4 inch flange.
  - d. Ground boxes shall withstand a test loading of 20,000 lbs. over a 10 in. by 10 in. area centered on the lid and 600 lbs. per sq ft. applied over the entire side wall. The model of ground box proposed shall have been tested by a laboratory independent of the manufacturer to meet loading requirements. Certification of such tests shall be submitted to the Engineer for approval.
  - e. Covers shall be 2 inch (nominal) thick polymer concrete. Cover shall be secured with two 1/2 inch stainless steel bolts. Bolts shall be captive and shall withstand a minimum of 70 ft-lbs torque and shall have a minimum 750 lbs straight pull out strength. Covers shall be skid resistant, minimum 0.5 coefficient of friction. Covers shall be interchangeable between manufacturers and shall conform to the dimensions shown below. Cover shall be legibly imprinted with the words "Danger, High Voltage," in minimum 2 inch letters. When required, other cover lettering shall be as shown elsewhere on the plans.

### B. CONSTRUCTION METHODS.

1. Steel covers shall be bonded to grounding conductor with a 3 foot jumper.
2. Where indicated on the plans, ground box will be encased in concrete apron as detailed below. Construction of apron including concrete and reinforcing steel shall not be paid for directly but shall be subsidiary to the ground box. Field bending of reinforcing steel will be allowed.
3. A minimum gravel fill of 9 inches shall be placed under each ground box. Gravel shall be coarse aggregate grade No. 1 in accordance with Item 421.
4. The Contractor may cut the necessary conduit holes in box extensions only. Holes must be 18 inches or more below the cover.
5. Concrete for aprons shall be considered miscellaneous concrete for testing purposes.



APRON FOR GROUND BOXES  
(Where required)



\* Tape filler required where two or more conductors enter one heat shrink tube to ensure watertight splice.

GROUND BOX COVER DIMENSIONS								
BOX	DIMENSIONS (INCHES)							
SIZE (WXL)	H	I	J	K	L	M	N	P
12 in x 23 in	2 3/4	23	13 3/4	13 1/2	9 3/4	5 3/8	1 3/8	2
16 in x 29 in	3 3/4	30 3/4	17 1/2	17 1/4	13 3/4	6 3/8	1 3/8	2

ELECTRICAL CONDUCTORS  
DUCT CABLE  
GROUND BOXES



STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION

ELECTRICAL DETAILS  
ED (2) - 93

10-19-93 21A2 (122, 101) (0293) STD	SCALE	REVISION	PROJECT	SHEET
10-19-93 21A2 (122, 101) (0293) STD	1/6	6	10-19-93 21A2 (122, 101) (0293) STD	71
DR: E. A. B.	5-93 E. A. B.	10-93 E. A. B.	10-93 E. A. B.	10-93 E. A. B.
DR: T. B.	DR: T. B.	DR: T. B.	DR: T. B.	DR: T. B.
DR: T. B.	DR: T. B.	DR: T. B.	DR: T. B.	DR: T. B.



## ELECTRICAL SERVICES NOTES

Faulty fabrication or poor workmanship in any material, equipment, or installation will be considered justification for rejection. Materials and installation shall comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Where manufacturers provide warranties or guarantees as a customary trade practice, Contractor shall furnish to the State such warranties or guarantees. The location of conductors, conduit, junction boxes, duct cable, ground boxes, transformer stations, and service poles are diagrammatic only and may be shifted by the Engineer to accommodate local conditions.

All material shall be new and unused. Alternate material equal to or better than those specified may be substituted with the approval of the Engineer. The Contractor shall contact the utility company for metering requirements and any additional requirements and shall comply with all utility company requirements.

All work, materials, services, and incidentals, whether or not specifically shown on the plans, which may be necessary to obtain electrical power and for a complete and proper electrical service installation as shown on the plans, shall be performed, furnished and installed by the Contractor except that the costs involved in extending primary lines to electrical service locations will be paid for under Force Account work. When primary line extensions are required, the Contractor shall consult with the appropriate utility company to determine costs and requirements and shall coordinate the utility company's work as approved by the Engineer.

Lugs on circuit breakers and contactors shall be large enough to accept branch circuit conductors sized as shown on the plans. Where branch circuit conductors are enlarged to reduce voltage drop beyond the capacity of lugs, the lugs shall be changed or distribution blocks shall be installed in the service enclosure to splice branch circuit conductors to the maximum wire size for which the circuit breaker or lighting contactor is rated to accept.

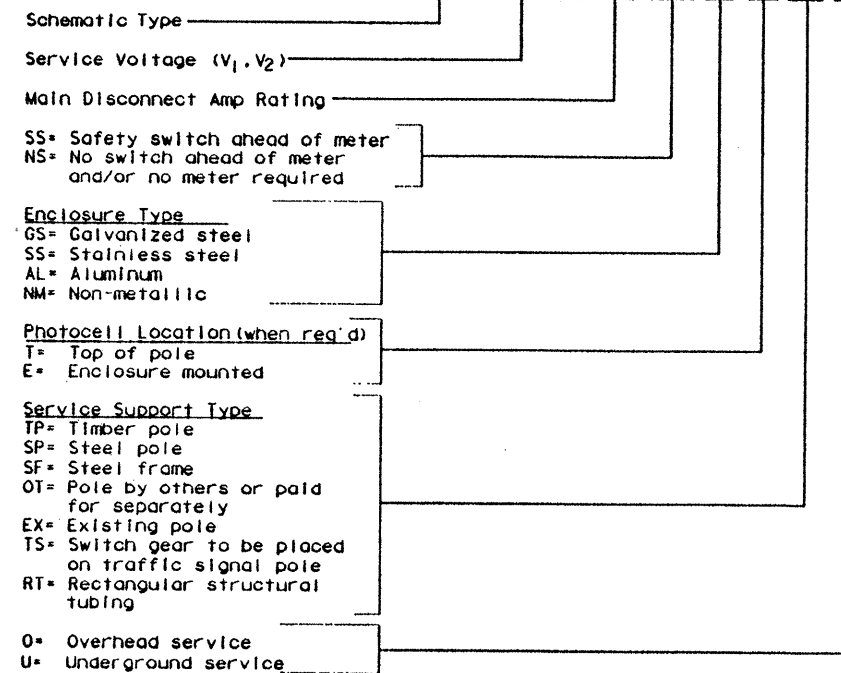
1. **Safety switch.** Shall be placed ahead of meter, when switch is required. The switch shall be of the heavy duty type, unfused, NEMA 3R enclosure and equipped with a solid neutral (s/n) assembly. Switch shall be UL listed. Switches shall be rated 480 VAC (min.) for 240/480V services and rated 240 VAC (min.) for 120/240V services. The Contractor shall modify switch to allow padlocking in the "on" position.
2. **Meter.** Where metering is required, utility company will provide the meter base. The Contractor shall install the meter base.
3. **Service Assembly Enclosure, for Type A, B, and C.** Enclosure shall be sized to provide adequate wiring space in accordance with NEC. All external screws shall be type 302 stainless steel. All enclosures shall be fitted with equipment-mounting panels installed inside enclosure on collar studs or tapped bosses. Panels shall be 12-gauge steel or 0.10"-thick aluminum, primed and painted white. All enclosure doors shall have stainless steel closure clamps and provisions for padlocking. Conduit entries into the top of enclosures shall have threaded hubs. Enclosure disconnect combination shall be UL listed and rated as service entrance equipment. Two 1/2 inch drain holes shall be placed in bottom of enclosure at opposite corners. All enclosures shall be permanently labeled "Danger High Voltage" on the front of the door, minimum one inch letters. The service pole descriptive code specifies that the enclosure shall be one of the following types:
  - a. GS: Galvanized steel enclosures shall be NEMA 3R-rated, constructed of 14-gauge galvanized steel, with piano hinged door, and drip shield.
  - b. SS: Stainless steel enclosure shall be NEMA 3R-rated, with piano hinged door, constructed of 14 gauge Type 304 stainless steel. All hardware including hinge pin shall be stainless steel.
  - c. AL: Aluminum enclosures shall be NEMA 3R-rated, with piano hinged door, constructed from 0.08 inch thick aluminum. All hardware including hinge pin shall be stainless steel.
  - d. NM: Non-metallic enclosures shall conform to NEMA standard for Type 3R enclosures and shall be constructed of molded fiberglass, PVC, or other material approved by the Engineer.
- \* A two or three point heavy duty hinge with stainless steel hinge pins may be used for load centers when approved by the Engineer.
4. **Main Disconnect.** Main disconnect device shall be a fusible switch or circuit breaker, as shown on Electrical Service Data Sheet. Switch shall be UL and NEMA-rated Type HD (heavy duty), flange mounted or front mounted in the service assembly enclosure. Switch shall be two pole, rated 240 volts or 480 volts as required. Switch shall have clips for Class R fuses. Circuit breaker shall be UL and NEMA-rated thermal-magnetic circuit breaker, flange-mounted or front mounted in the service assembly enclosure. Breaker shall be two-pole, (one-pole 480V for Ty. B), rated 480 volts or 240 volts as required. Circuit breakers shall have a minimum interrupting rating of 14,000 Amps. Voltage and amperage rating of switches and breakers shall be as shown elsewhere on Electrical Service Data Sheet. Switch and breaker handles shall be capable of padlocking in "On" and in "Off" positions. Main disconnect shall be operable from the outside of the enclosure and shall be interlocked to prevent the service assembly enclosure door from being opened with disconnect in the "On" position. The interlock shall have a manual override such that the main disconnect is capable of being turned "On" with the enclosure door open.
5. **Lightning Arrester.** Arresters shall be MOV-type secondary surge arresters rated 650 volts for 480V services and 175 volts for 120/240V services and shall meet ANSI, IEEE, UL, and NEMA Standards. Mounting brackets shall be provided for mounting the arresters inside the service assembly enclosures. Lightning arrester leads shall be run as straight and short as practical.
6. **Fuse Blocks.** Fuse blocks shall be rated 600 volts (min.) and shall accept a 13/32 in. x 1/2 in. fuse. Fuse blocks shall be furnished with integral insulated fusepuller and be suitable for mounting to the back panel of the enclosure. Fuse for 120/240 volt service shall be rated 250 volts (min.) and fuses for 480 volt service shall be rated 500 volts (min.). Fuses shall be 3 amp, dual-element (time-delay) fuses.
7. **Control Transformer.** Control transformer shall be rated 250 sealed VA and a minimum inrush rating of 1200 VA at 30 percent power factor. Voltage rating shall be 480-120 volts.
8. **Control Station ("H-O-A" Switch).** Control station shall be a maintained-contact, three position selector switch in a NEMA 1 enclosure. Switch shall be rated 600 volts and shall be fitted with "Hand-Off-Auto" legend.
9. **Photo Electric Control.** shall consist of a photocell, internal lightning arrester and relay mounted inside a weatherproof enclosure with standard 3-prong twist lock photocell plug and receptacle. The enclosure shall be made of poly-acrylic with clear acrylic window. Enclosure chassis shall be molded phenolic plastic. The photocell shall have a polyethylene gasket, and shall have a hermetically sealed cadmium sulfide cell. The arrester shall have an enclosed type expulsion arrester rated 2.0 kV sparkover with 10,000 amps follow-through. Relay shall be time delay type with normally closed contacts. Photo electric control shall be rated 1800 VA, 105-285 volts. Enclosure mounted photocells shall be the same as above except that the photocell shall be mounted inside the enclosure. The enclosure shall have two acrylic windows, or other material approved by the Engineer, one on each side of the enclosure. Each window shall be approximately one inch by two inches or as otherwise approved by the Engineer. The photocell shall be mounted in a position to receive light from one window.

The Contractor shall be responsible for proper operation of the photo-electric control. The Contractor shall move and/or adjust or shield the photocell from stray or ambient nighttime light or shall make any other adjustments required for proper operation. The photocell shall face North when practicable. The photocell shall turn on the illumination system at 1.0 (-) 0.5 footcandle and turn off the illumination system at two (2) footcandles higher than turn on.
10. **Lighting Contactor.** Lighting contactor shall be a NEMA lighting contactor, two-pole, electrically held type designed to control high pressure sodium lighting loads, with silver alloy double break contacts rated at 480 volts or 600 volts.
11. **Power Distribution Terminal Blocks.** Power distribution terminal blocks shall be rated for 600 volts and shall be used for line side connections to branch circuit breakers where more than one circuit breaker is required. Lugs on blocks shall be properly sized for conductors being used. Only one conductor shall be placed under each lug.
12. **Neutral/Ground Bus.** Neutral/ground bus shall be a factory-made insulated, groundable bus with properly sized lugs for grounding and neutral conductors.

13. **Branch Circuit Breakers.** Unless otherwise shown on the plans, circuit breakers shall be the molded case thermal-magnetic type. Circuit breaker voltage shall be compatible with their use. Single pole circuit breakers mounted on high voltage (600V min) insulating fabric shall be used for 480 volt type B service. Circuit breakers shall have a minimum interrupting capacity of 10,000 amps.
14. **Circuit Breaker Panelboard.** Panelboard shall be a commercial/industrial type with bolt-on branch circuit breakers in a NEMA 3R enclosure. Panelboard for Type C service shall be a MLO (Main Lugs Only) three-wire single phase, S/N panelboard. Panelboards shall be UL-listed and shall meet Federal Specification W-P-115b, Type I, Class 1 requirements and shall have a minimum of 12 one-pole spaces. Tandem and half-width breakers will not be allowed. Conduit entries into the top of enclosure shall have threaded hubs. Panelboards shall have dead front trim.
15. **Load Center.** Load center shall be a circuit breaker panelboard rated 120/240 volts three wire, single phase, S/N in NEMA 3R enclosure with main breaker. Load center shall have a minimum rating of 70 amps and shall have space for a minimum of six full size breakers. Tandem and half-width breakers will not be allowed. Load centers shall be UL listed, and shall meet Federal Specification W-P-115c, Type I, Class 2 requirements. Load center shall have a threaded hub conduit entry for conduit entering the top of the enclosure. Load centers shall have dead front trim and shall be rated as service entrance equipment. Load center enclosures shall meet the requirements of Note 3 paragraph a,b,c, or d above. External operating handle shall not be installed. Closure clamps will not be required.

### EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X (XXX/XXX) XXX (XX) XX (X) XX (X)



Example: ELEC SERV TYD (120/240) 070 (NS) GS (T) TP (O)

## ELECTRICAL SERVICES NOTES

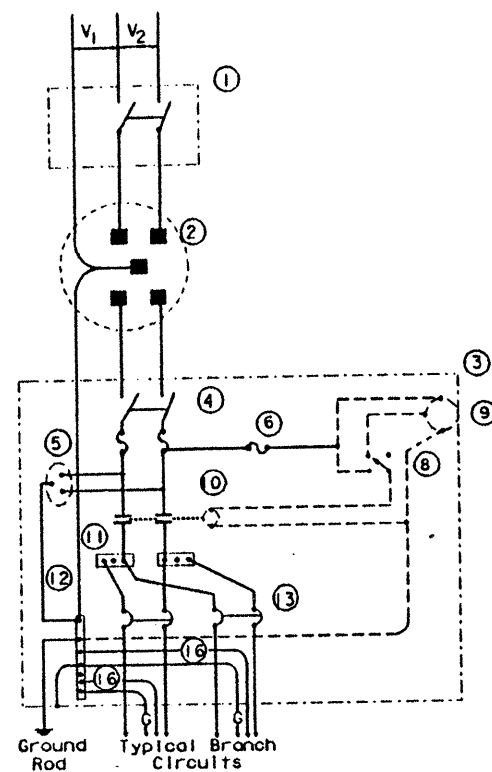


STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION

### ELECTRICAL DETAILS

ED (3) - 93

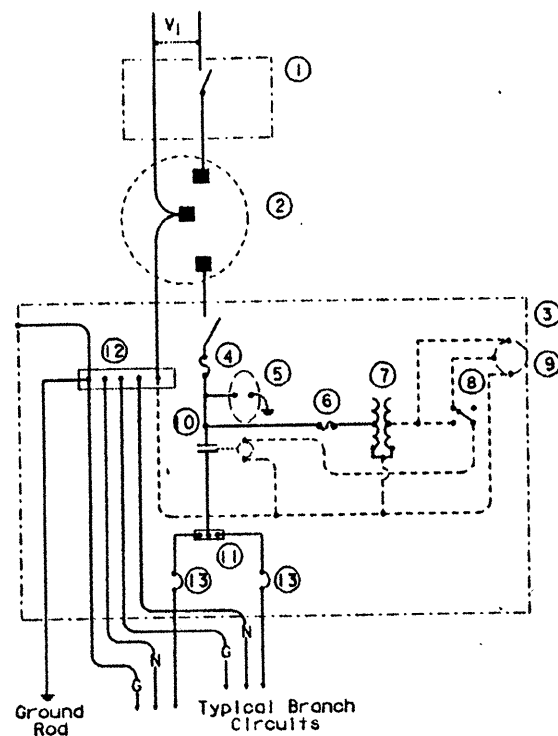
ORIGINAL DRAWING DATE: 01-92	STATE DISTRICT	PROJECT NO.	FEDERAL AID PROJECT	SHEET
5-93 K.A.B.	16	6	1M37-1(103)000	72
10-93 K.A.B.	CONTROL SECTION	NO.	SECTION	NO.
11/15/92	11/15/92	11/15/92	11/15/92	11/15/92



**SCHEMATIC TYPE A**

**THREE WIRE**

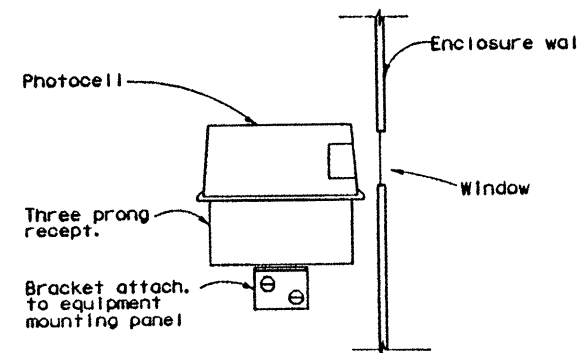
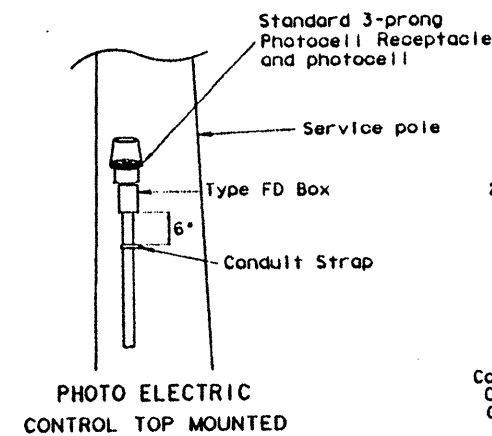
Maximum branch circuit size: 100 amps for two pole 480V, 125 amps for one or two pole 120V or 240V.



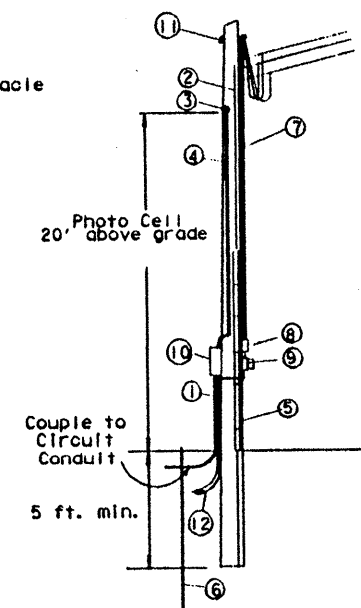
**SCHEMATIC TYPE B**

**TWO WIRE**

Maximum branch circuit size: 50 amps for one pole 480V, 125 amps for one pole 120V or 240V.



**ENCLOSURE MOUNTED PHOTOCELL**



**SERVICE SUPPORT TYPE TP (O)**

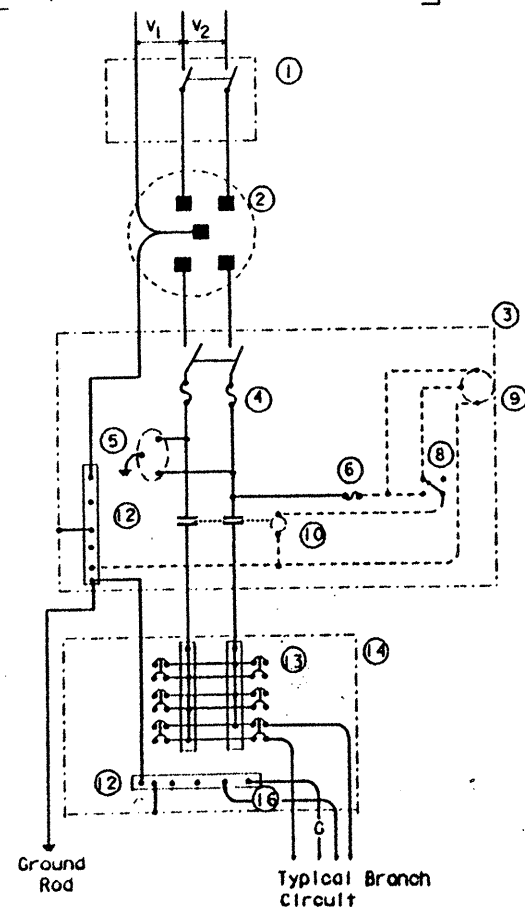
(timber pole, overhead service, typical arrangement)

**TIMBER POLE NOTES**

1. Conduit and conductors attached to service pole and underground within 12 inches of service pole shall not be paid for directly but shall be subsidiary to the service pole.
2. Install photo electric control on North side of pole or in service enclosure as required.
3. Attach service enclosure with galvanized channel (Unistrut, Kindorf, or equal). Gain pole two places to provide flat surfaces. Paint ends of channel with zinc rich paint.

**SCHEMATIC LEGEND**

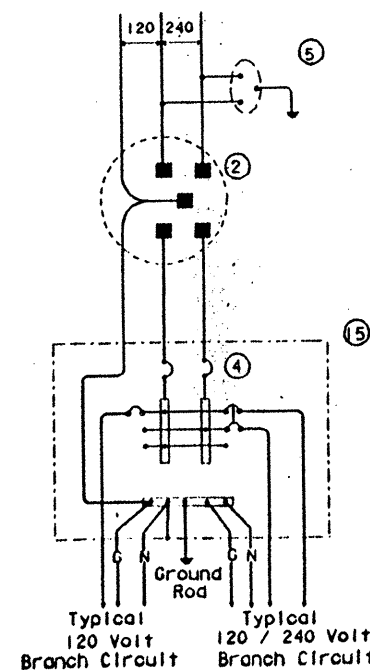
1. Safety Switch (when required)
  2. Meter (when required)
  3. Service Assembly Enclosure
  4. Main Disconnect (Switch or Breaker, See Electrical Service Data Sheet)
  5. Lightning Arrestor
  6. Fuse Block
  7. Control Transformer (480-120 Volts) (for Type B only)
  8. Control Station ("H-O-A" Switch)
  9. Photo Electric Control (enclosure-mounted shown)
  10. Lighting Contactor
  11. Power Distribution Terminal Blocks
  12. Neutral/Ground Bus
  13. Branch Circuit Breaker (See Electrical Service Data Sheet)
  14. Circuit Breaker Panelboard (See Electrical Service Data Sheet)
  15. Load Center
  16. Neutral conductor (when required)
- Power Wiring  
----- Control Wiring



**SCHEMATIC TYPE C**

**THREE WIRE**

Maximum branch circuit size: 100 amps for two pole 480V, 125 amps for two pole 120V or 240V.



**SCHEMATIC TYPE D**

**120/240 VOLTS - THREE WIRE**

Install photocell and lighting contactor when shown on Electrical Service Data Sheet.

**ELECTRICAL SERVICE SCHEMATICS  
ELECTRICAL SERVICE SUPPORT  
TYPE TP (OVERHEAD)**

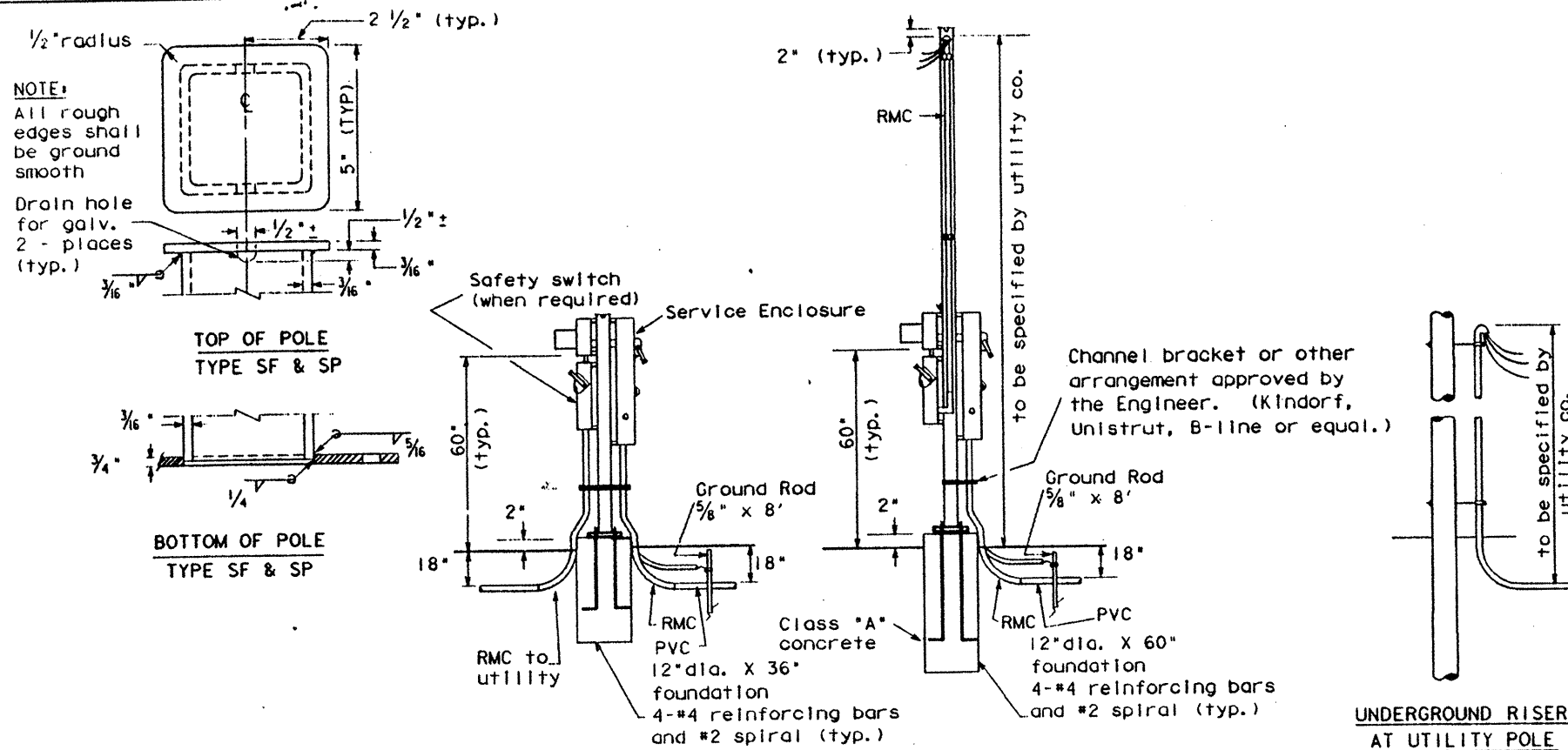


**STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION**

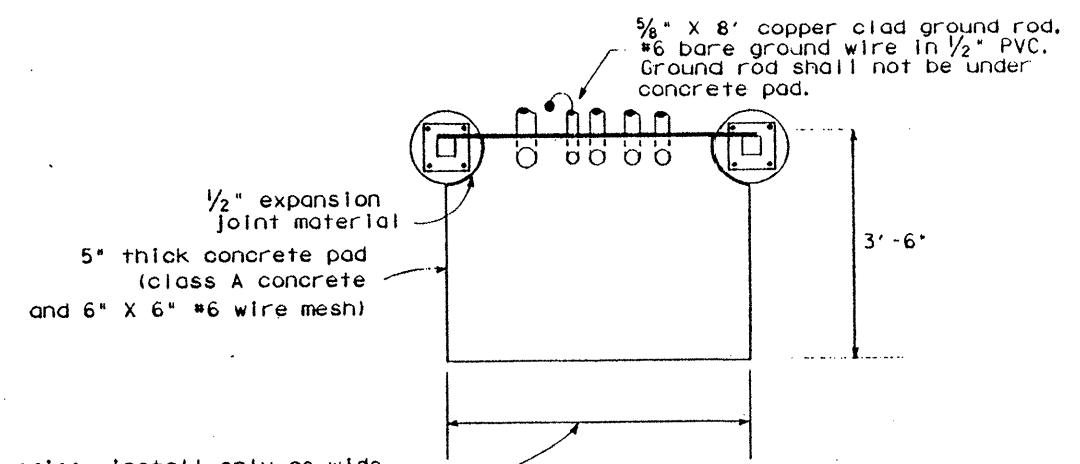
**ELECTRICAL DETAILS**

**ED (4) - 93**

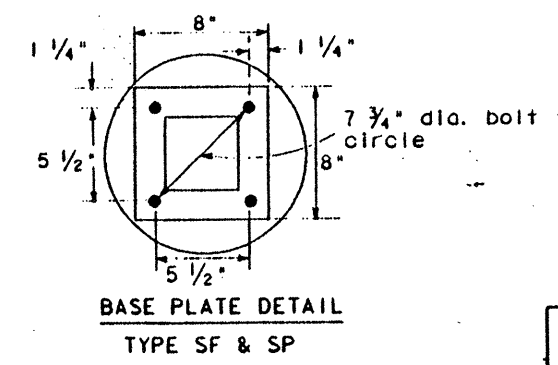
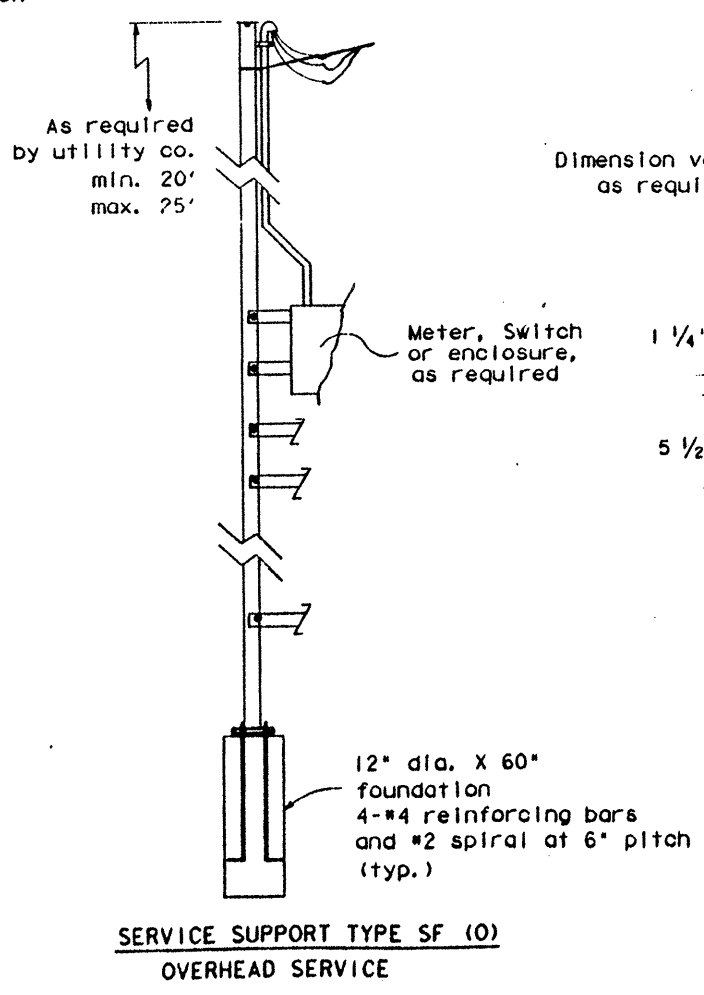
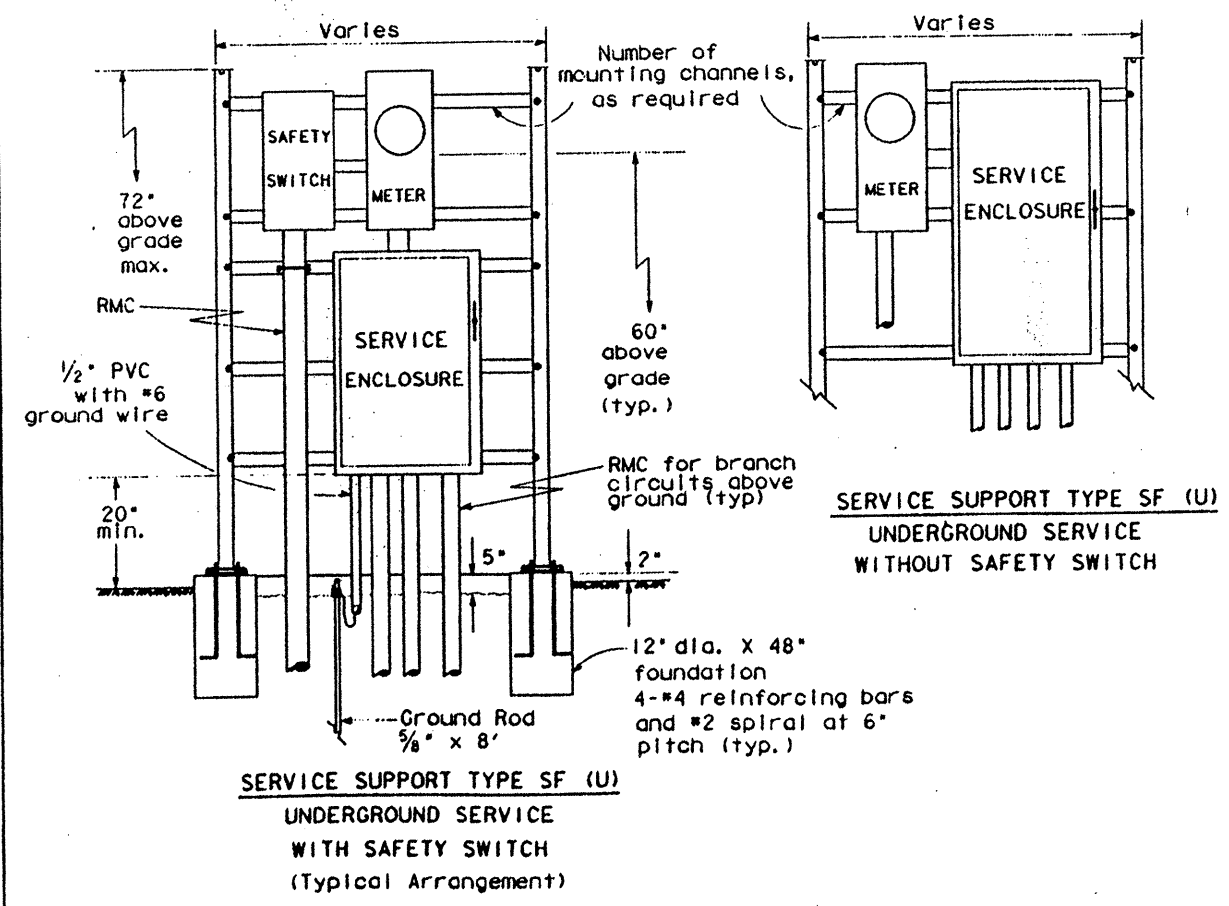
ORIGINAL DRAWING DATE: 01-92	STATE	FEDERAL	FEDERAL AID PROJECT	DATE
01-92	TX	6	1037-1(103)000	73
01-92	TX	6	1037-1(103)000	73
01-92	TX	6	1037-1(103)000	73
01-92	TX	6	1037-1(103)000	73



- NOTES:**
1. Support Type SP & SF: Fabricated from 4 inch x 4 inch x 3/8 inch square structural tubing, ASTM A500, Grade A or B or equal. Base plate shall be 3/4 inch plate, ASTM A36 or equal. All equipment and conduit shall be mounted on galvanized channel strut, 1 1/2 inch x 1 1/2 inch x 12 gauge or 1 3/8 inch x 1 3/8 inch x 12 gauge galvanized steel channel (Unistrut, Kindorf, B-line or equal), clamped with channel hardware, bolted, or welded to vertical member as approved by the Engineer.
  2. Paint end of all channels with zinc-rich paint.
  3. All Steel Poles (SP and SF) shall be hot-dip galvanized after fabrication. Poles for overhead service shall be fitted with eyebolt or similar fitting, as approved by the utility company, for attachment of service drop to the pole.
  4. All conduit and conductors attached to the service pole and within 12 inches of the service pole will not be paid for directly, but shall be subsidiary to the service pole. All conduit and conductors from the utility company pole to a point 12 inches from the service pole, including conduit and conductors required for the utility pole riser when furnished by the Contractor, will be paid for separately.
  5. All mounting hardware and installation details of services shall be in accordance with utility company specifications.
  6. Anchor bolts for underground service supports shall be 3/4 inch x 18 inch x 4 inch (dia. x length x hook length). Anchor bolts for overhead services shall be 3/4 inch x 56 inch x 4 inch. Anchor bolts shall be provided with leveling nuts.
  7. All conduit on service poles shall be rigid metal conduit except that conduit for grounding electrode conductor (ground rod wire) shall be 1/2 inch PVC. Service entrance conduit size shall be as shown elsewhere. Conduit for branch circuit entry to enclosure shall be the same size as that shown on the layout sheets for branch circuit conduit. Rigid metal conduit shall extend a minimum of six (6) inches underground and then coupled to the type conduit shown on the layout for that particular branch circuit. RMC shall have grounding bushings in enclosures.



**SERVICE SUPPORT TY SF (O) & SF (U) TOP VIEW**



**ELECTRICAL SERVICE SUPPORT TYPES SF & SP**

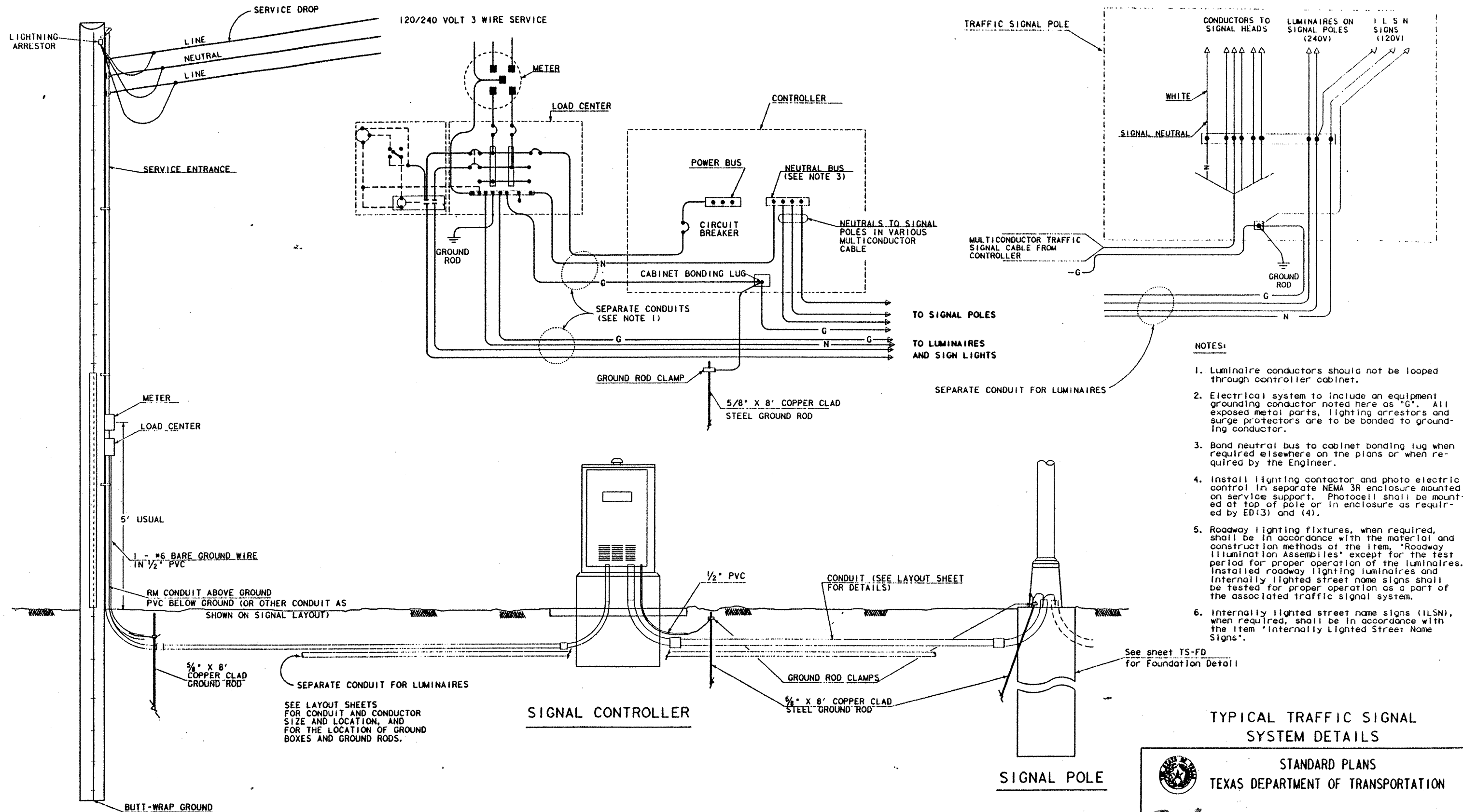
**STANDARD PLANS TEXAS DEPARTMENT OF TRANSPORTATION**

**ELECTRICAL DETAILS**

**ED (5) - 93**

ORIGINAL DRAWING DATE: 01-92	STATE DISTRICT	FEDERAL AID PROJECT	SHEET
REVISED	10-93 K.A.B.	16 6 11M 37-1(103)000	74
DR: T.B.	CH: T.B.	DATE: 11/24/96	BY: T.B.





## TYPE D SERVICE POLE

(TIMBER POLE SHOWN. SEE ELECTRICAL DETAILS, LAYOUT SHEETS, AND ELECTRICAL SERVICE DATA SHEET FOR SERVICE REQUIRED AND FOR DETAILS.)

## TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS



STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION

## ELECTRICAL DETAILS

ED (7) - 93

ORIGINAL DRAWING DATE	STATE	FEDERAL AID PROJECT	SHEET
11-92	TX	16 6 IM 37-1(103)000	76
DESIGNED BY	REVISION	COUNTY	SECTION
5-93 K.A.B.	10-93 K.A.B.	DAWSON	106/119
CHECKED BY	DATE	APPROVED BY	DATE
11/27	11/27		

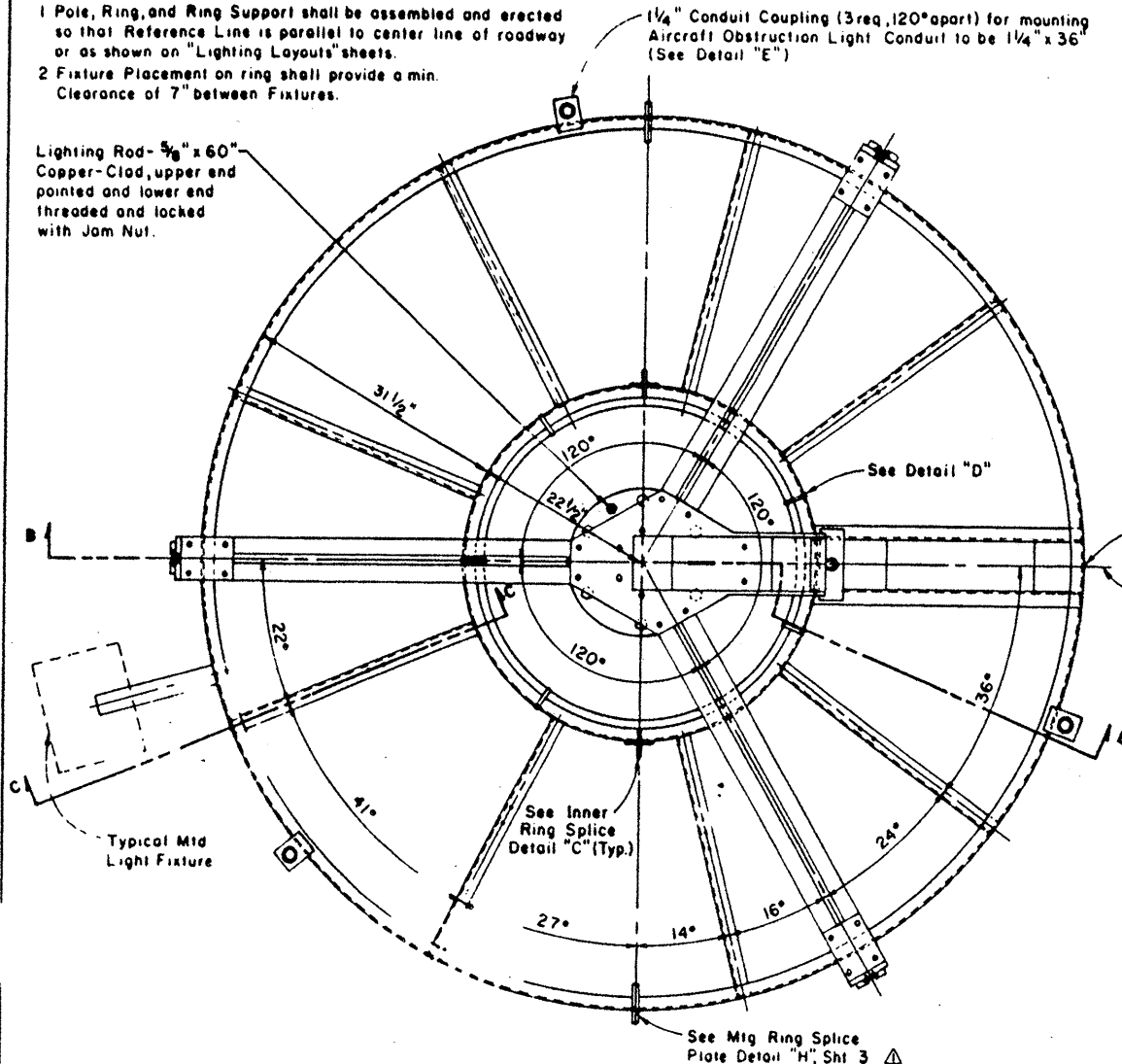


# NOTES:

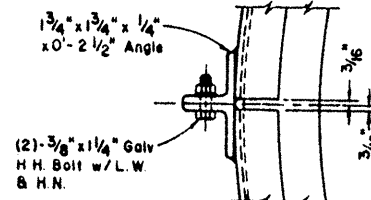
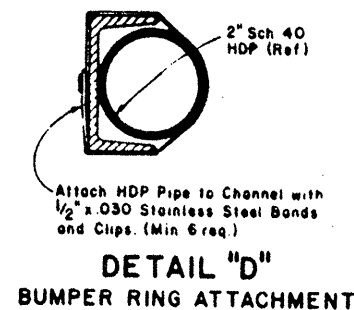
- 1 Pole, Ring, and Ring Support shall be assembled and erected so that Reference Line is parallel to center line of roadway or as shown on "Lighting Layouts" sheets.
- 2 Fixture Placement on ring shall provide a min. Clearance of 7" between Fixtures.

Lighting Rod- $\frac{5}{8}$ " x 60"  
Copper-Clad, upper end  
pointed and lower end  
threaded and locked  
with Jam Nut.

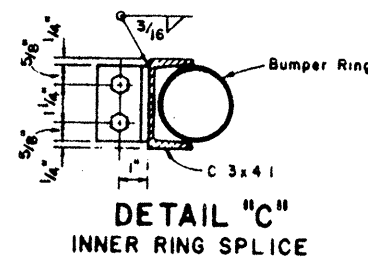
$\frac{1}{4}$ " Conduit Coupling (3 req. 120° apart) for mounting  
Aircraft Obstruction Light Conduit to be  $\frac{1}{4}$ " x 36"  
(See Detail "E")



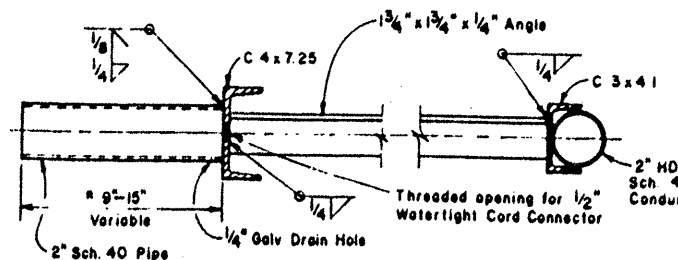
**LIGHT MOUNTING RING & SUPPORT ASSEMBLY**



**PLAN**

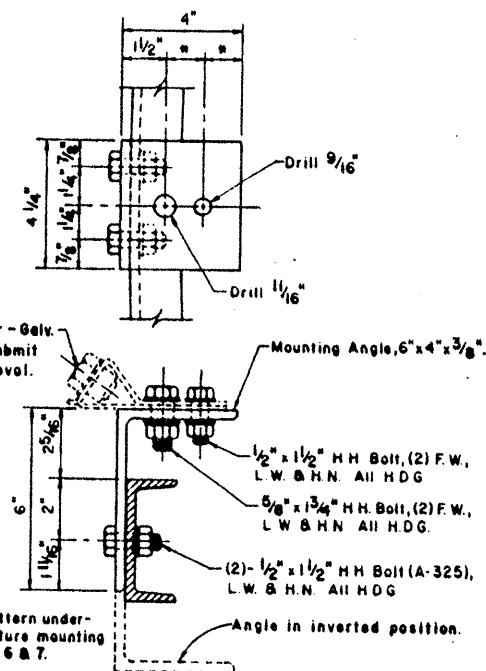


\* Note: Tenon Length to be Determined by  
Fixture Used and Required Clearance



**SECTION C-C  
(FOR AREALIGHTS)**

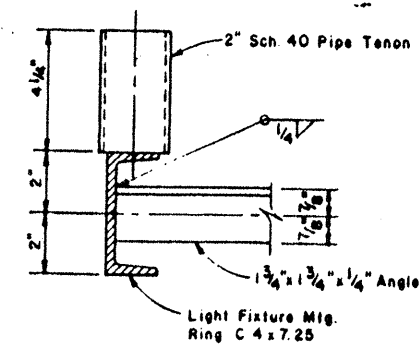
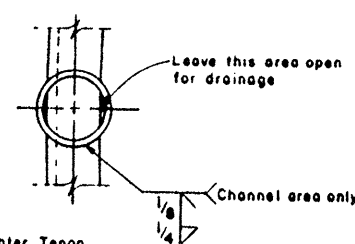
\* As required by Trunnion  
Adapter supplied



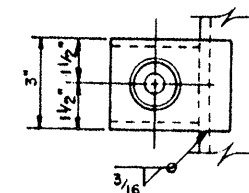
NOTE: Aiming capabilities may be by method shown or by  
Steel Mounting-Aiming Device as approved by the  
Engineer. Mark position of fixture with center punch  
or drill after fixture has been aligned to the right  
position on the roadway, as directed by the Engineer.

**SECTION C-C  
(FOR TRUNNION MOUNT)**

NOTE: Provide S S or galv. cable safety lanyard for  
Light Fixture when Trunnion Mount is used

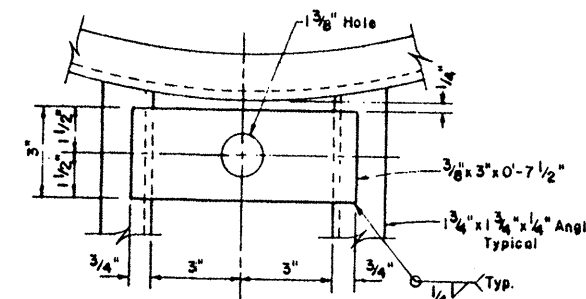


**SECTION C-C  
(FOR FLOODLIGHTS)**

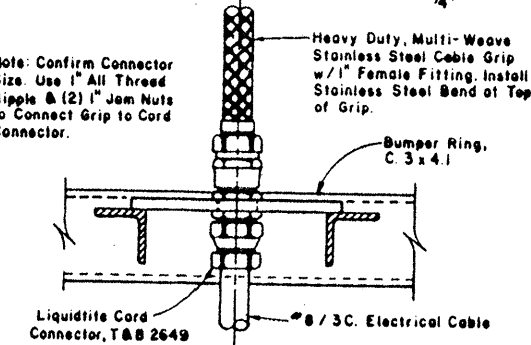


**DETAIL "E"**

(CONDUIT ATTACHMENT FOR OBSTRUCTION  
LIGHTS. TYPICAL (3) PLACES)



Note: Confirm Connector  
Size. Use 1" All Thread  
Nipple & (2) 1" Jam Nuts  
to Connect Grip to Cord  
Connector.



**SECTION D-D**

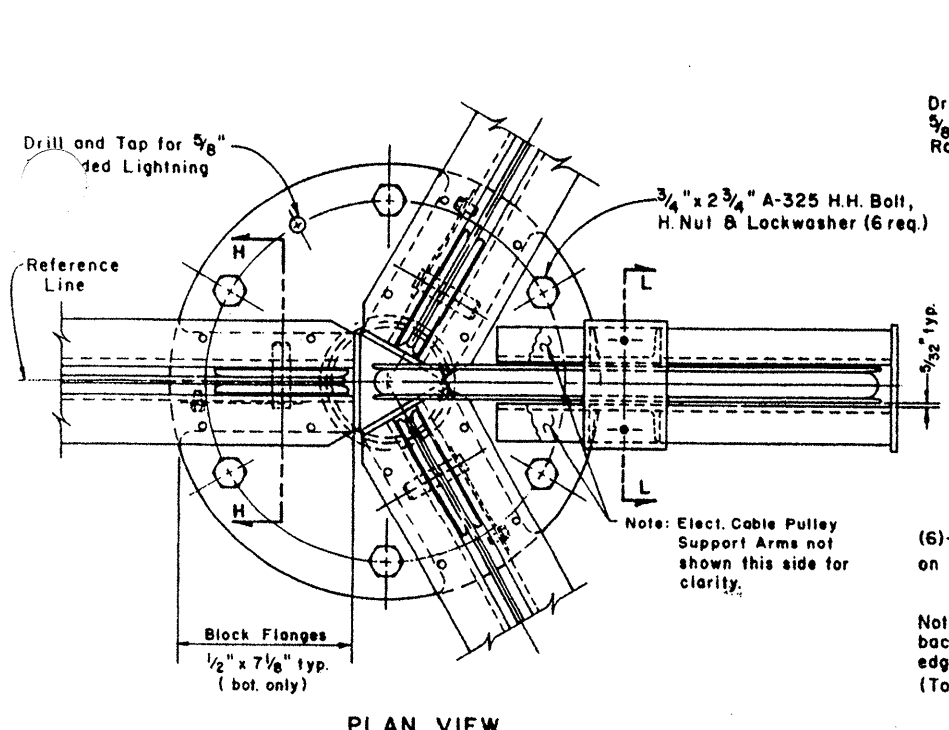
NOTE: COVER CORD WITH HEAT SHRINK TUBING FROM CABLE GRIP  
TO WITHIN ONE INCH OF GRIP TO CONNECTOR TRANSITION PRIOR  
TO INSTALLING CABLE GRIP.

STATE DEPARTMENT OF HIGHWAYS  
AND PUBLIC TRANSPORTATION

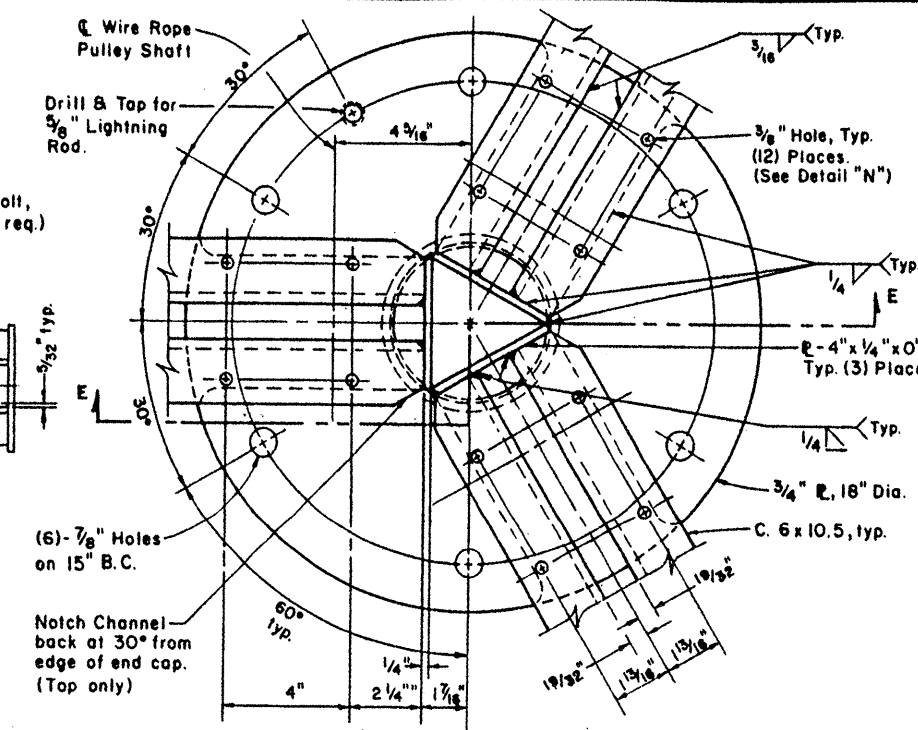
**HIGH MAST ILLUMINATION  
DETAILS  
HMD (I)-86**

DATE	REVISION	BY	CHKD	DATE	STATE	FEDERAL PROJECT NO.	INVENTORY NO.
10-14-93	1	XAB		10-14-93	TEXAS	1M 37-1(103)000	1437
10-14-93	2	XAB		10-14-93	TEXAS	1M 37-1(103)000	1437
10-14-93	3	XAB		10-14-93	TEXAS	1M 37-1(103)000	1437
10-14-93	4	XAB		10-14-93	TEXAS	1M 37-1(103)000	1437
10-14-93	5	XAB		10-14-93	TEXAS	1M 37-1(103)000	1437
10-14-93	6	XAB		10-14-93	TEXAS	1M 37-1(103)000	1437
10-14-93	7	XAB		10-14-93	TEXAS	1M 37-1(103)000	1437
10-14-93	8	XAB		10-14-93	TEXAS	1M 37-1(103)000	1437
10-14-93	9	XAB		10-14-93	TEXAS	1M 37-1(103)000	1437
10-14-93	10	XAB		10-14-93	TEXAS	1M 37-1(103)000	1437

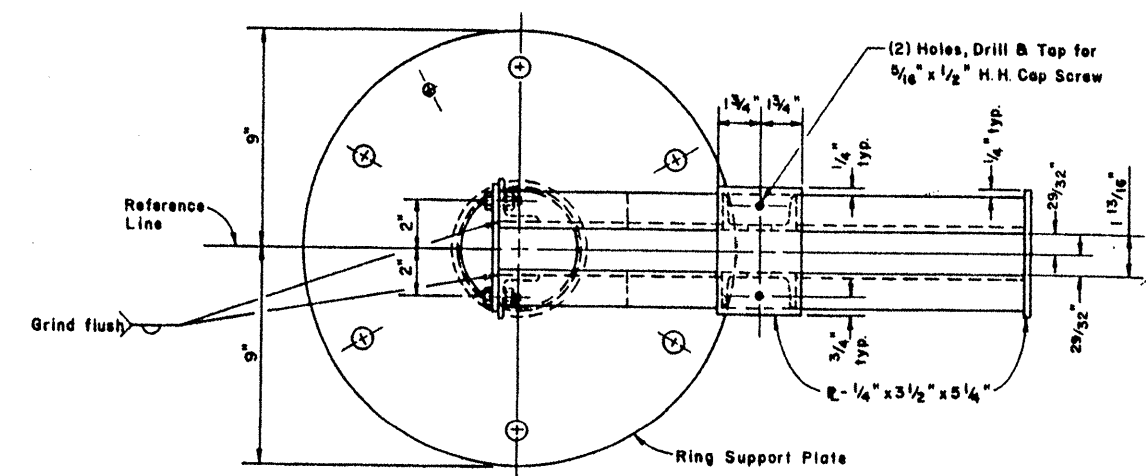




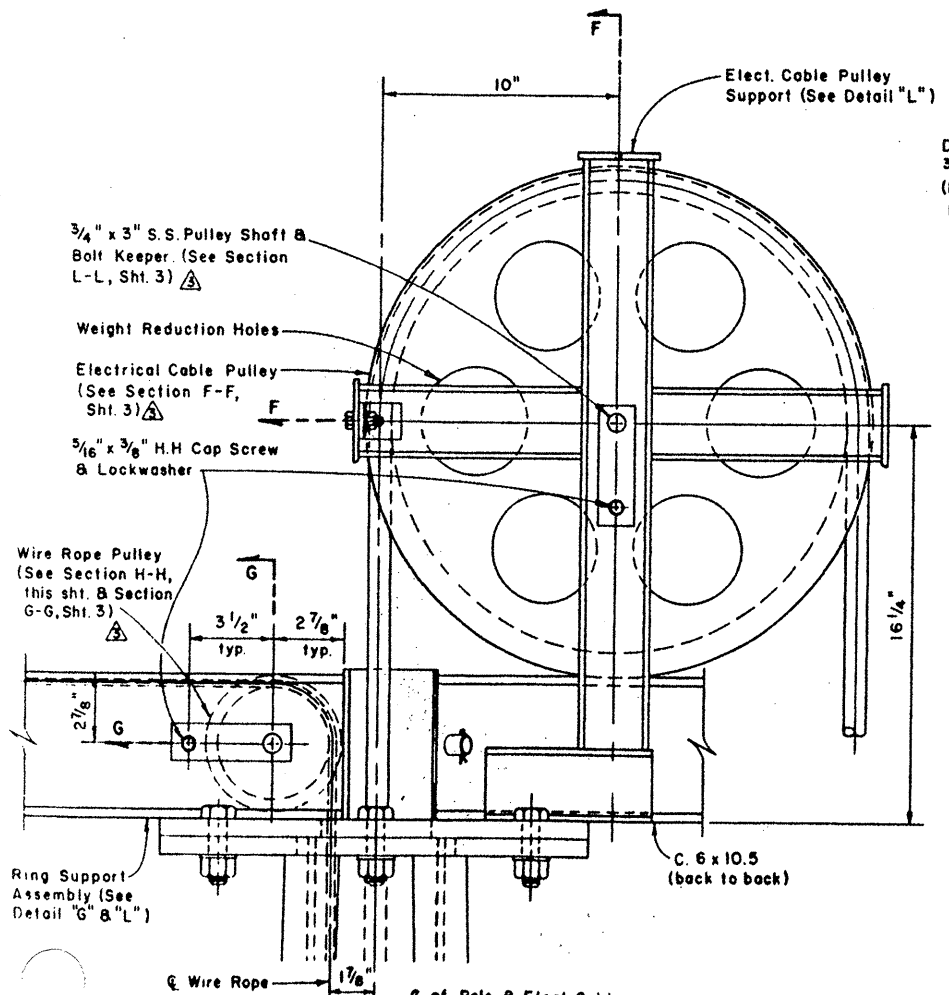
PLAN VIEW



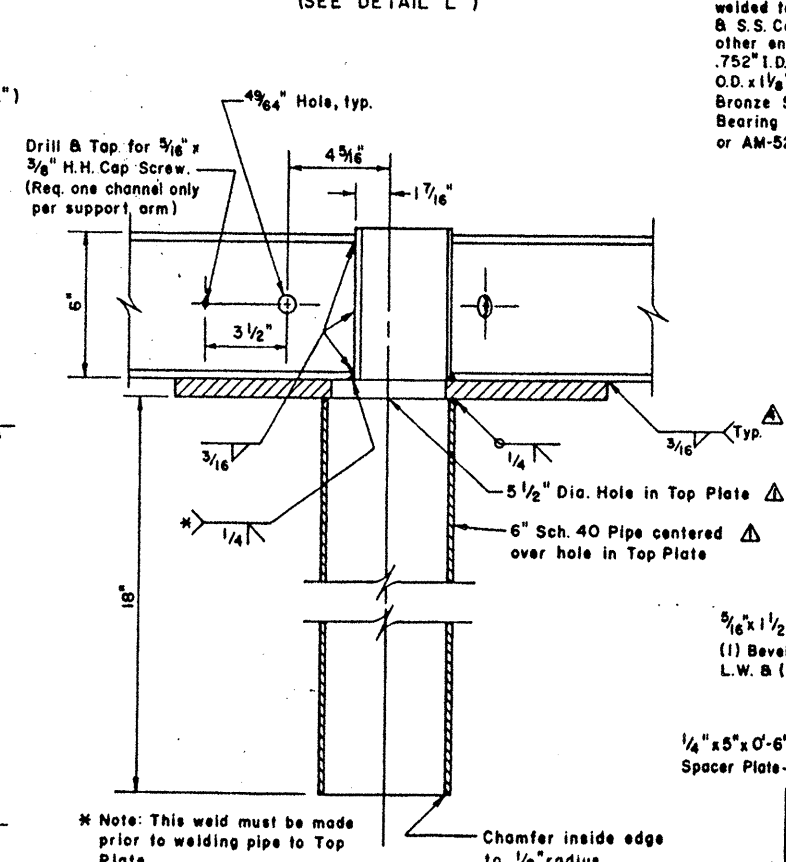
DETAIL "G"  
TOP PLATE CONNECTION  
(LESS ELECT. CABLE PULLEY SUPPORT)  
(SEE DETAIL "L")



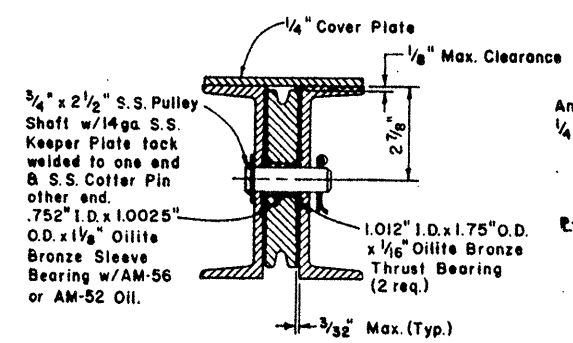
PLAN VIEW



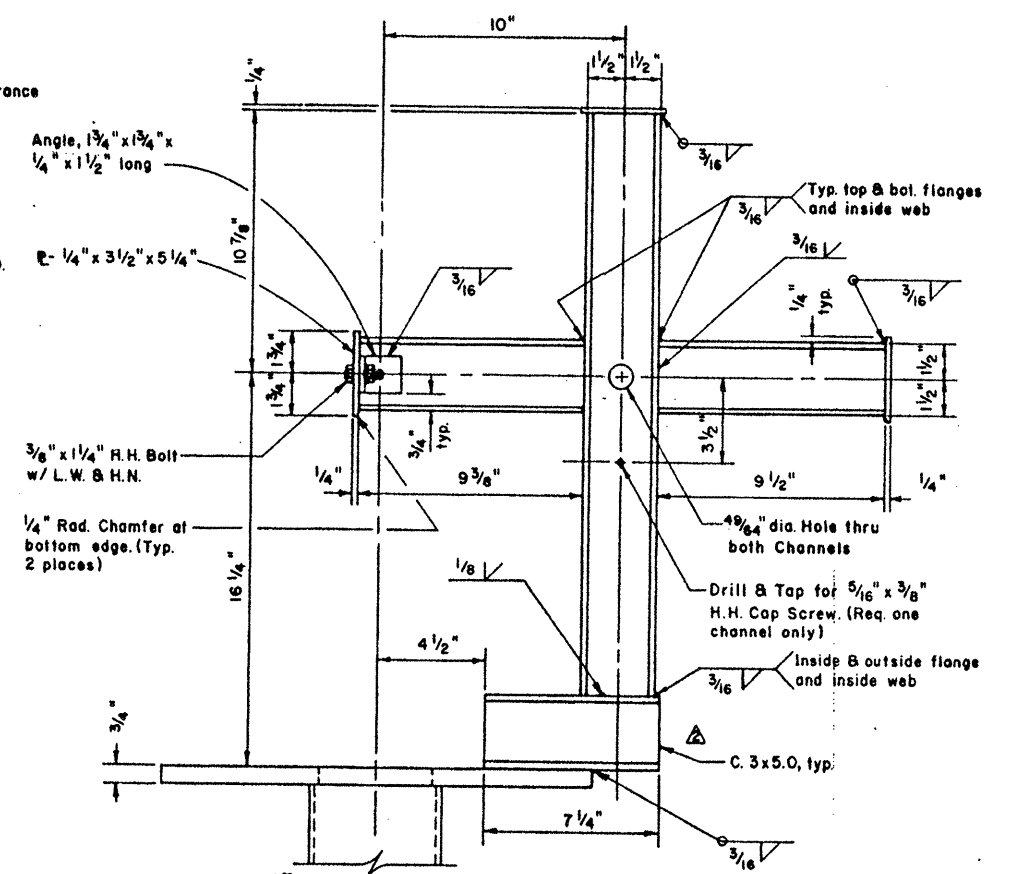
DETAIL "F"  
RING SUPPORT ASSEMBLY  
(NEAR SIDE SUPPORT ARM & ELECT. CABLE PULLEY COVER NOT SHOWN FOR CLARITY)



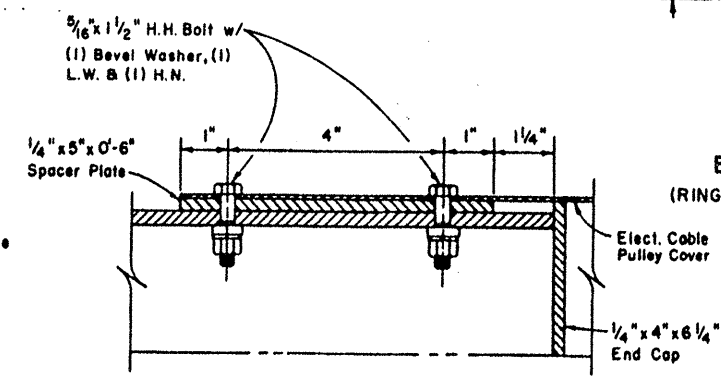
SECTION "E-E"



SECTION "H-H"  
PULLEY MOUNTING FOR RING SUPPORT ARMS



DETAIL "L"  
ELECT. CABLE PULLEY SUPPORT  
(RING SUPPORT ARMS NOT SHOWN FOR CLARITY)

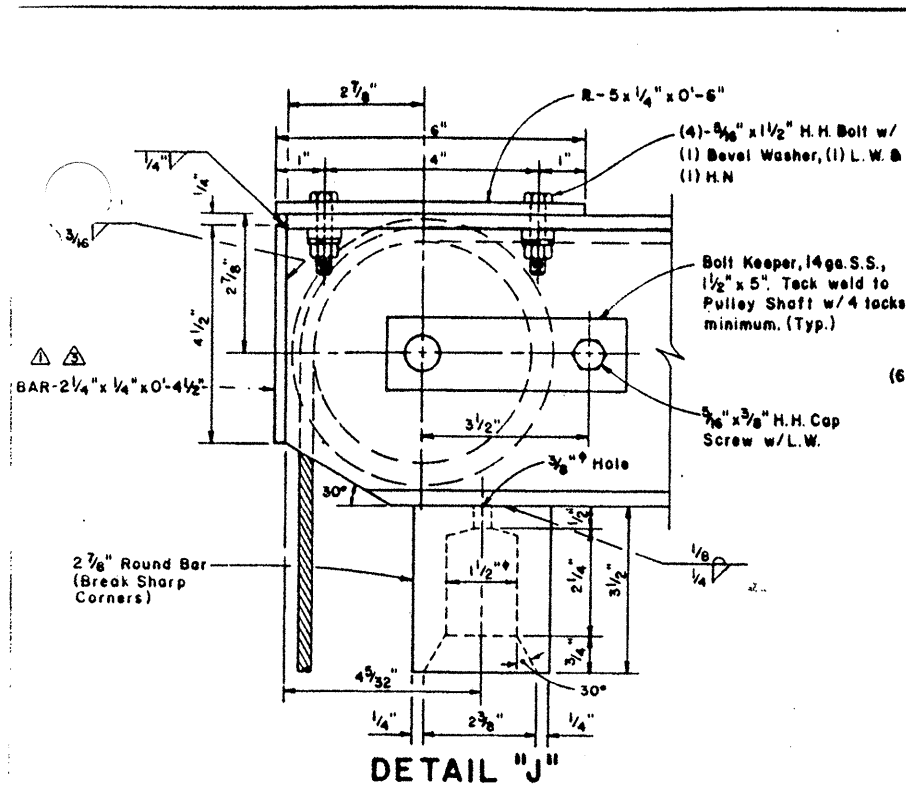


DETAIL "N"

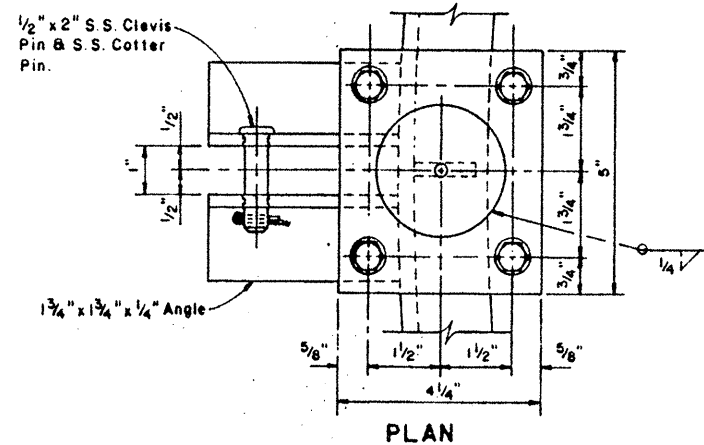
78

STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION									
HIGH MAST ILLUMINATION DETAILS									
HMD (2)-86									
DN	DRAWING	DATE	FED. NO.	STATE	FEDERAL PROJECT NO.	HIGHWAY NO.			
CK DW	ORIGINAL	1-6-86		TEXAS	1M37-7C1031002	11137			
DW	H.P.	4-29-86	CHG. PIPE & HOLE SIZE.						
CK DW		5-22-86	CHG. CHANNEL						
TR									
CK TR									

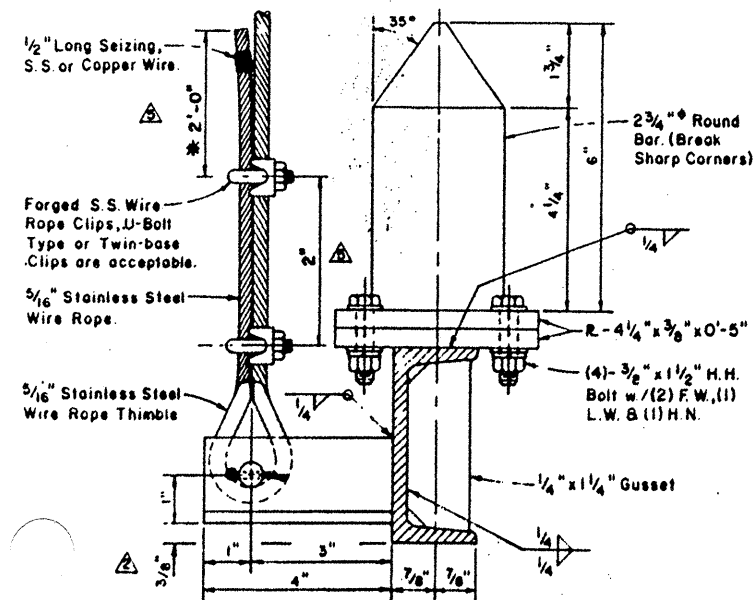
12-22-87 ADDED WELD  
5-26-87 CHG. SHT. NO.



DETAIL "J"



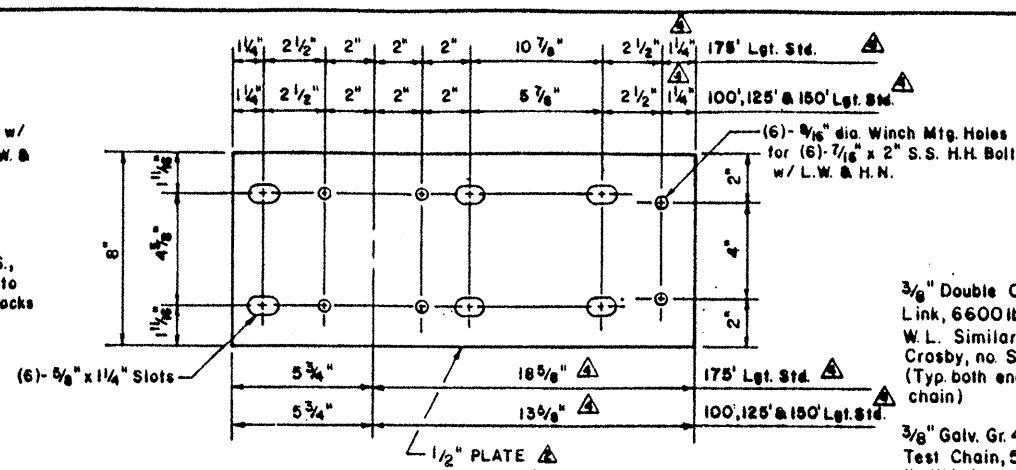
PLAN



DETAIL "K"

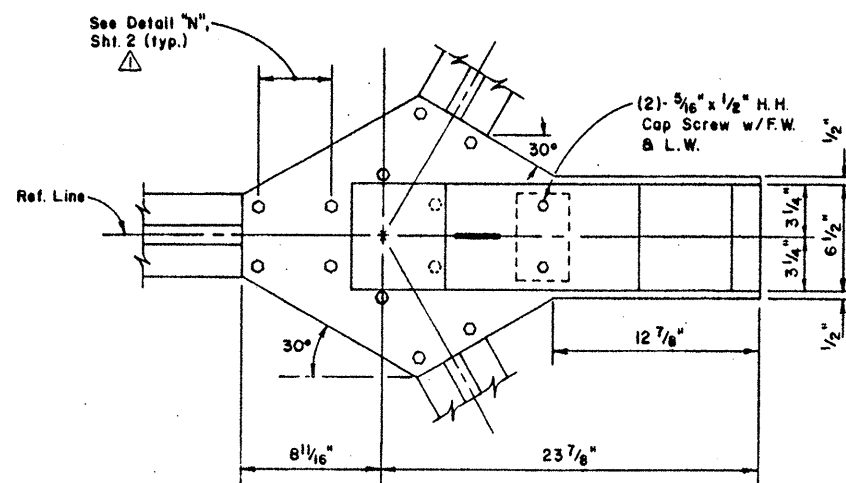
MOUNTING RING CONNECTION & STABILIZER

\* EXTRA 2'-0" of wire cable to be attached to ring with SS Bands as directed by the Engineer.



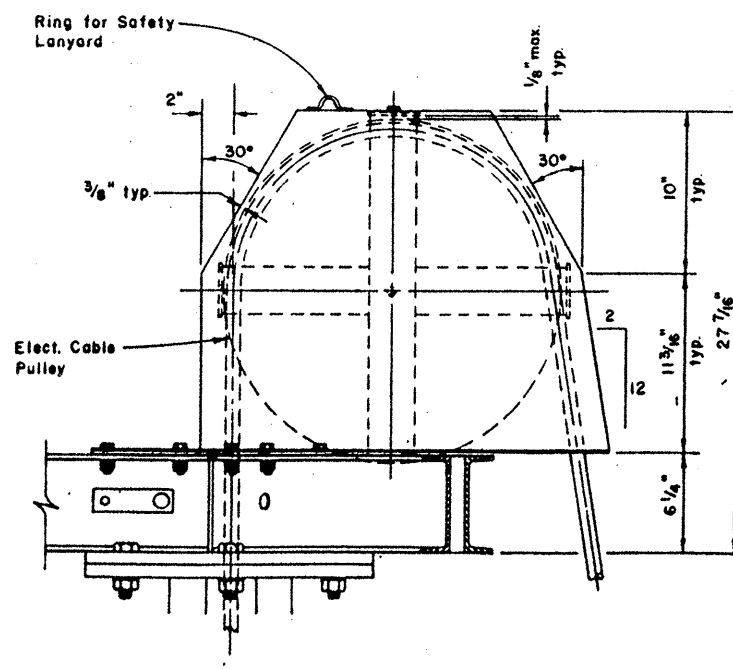
DETAIL "V"  
WINCH MOUNTING PLATE

NOTE: Dimensions may vary-Verify with winch manufacturer.

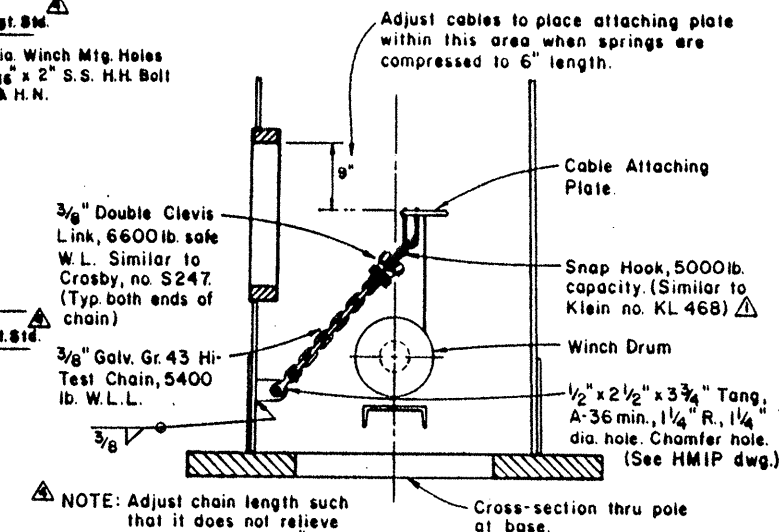


PLAN

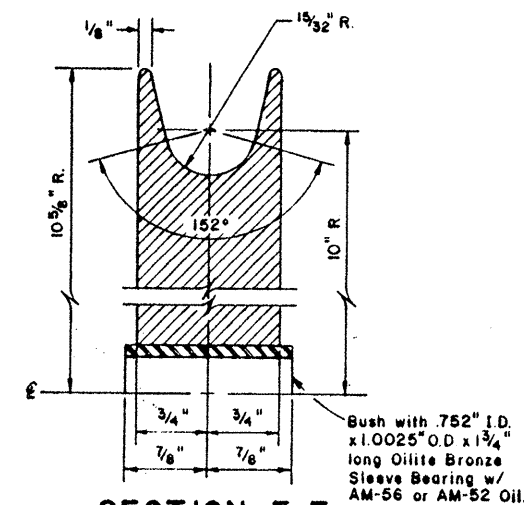
NOTE: Cover to be 14 ga. galv. sht. metal or 0.10" anodized aluminum sheet.



DETAIL "M"  
COVER CAP ASSEMBLY

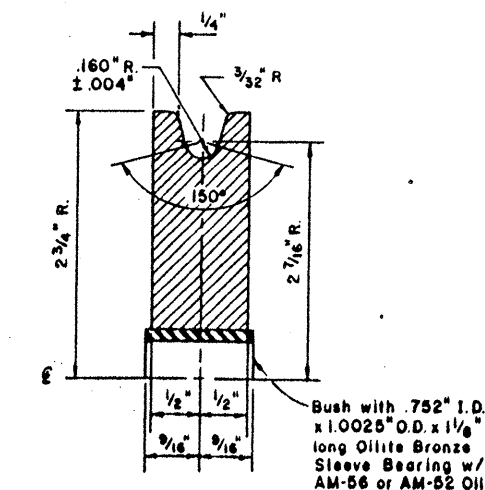


SAFETY LANYARD DETAIL



SECTION F-F  
ELECTRICAL CABLE PULLEY

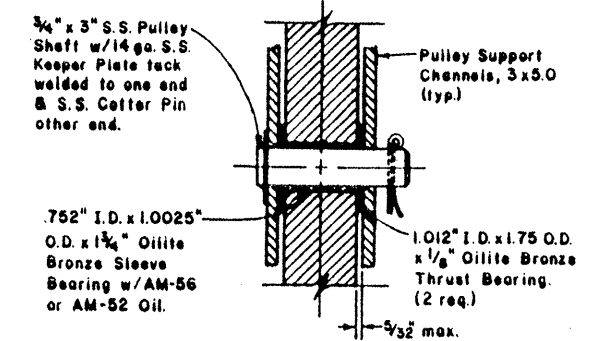
(Pulley material to be aluminum alloy, type 356-T6 or equal.)



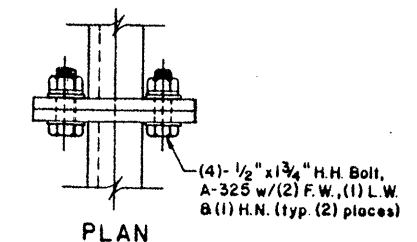
SECTION G-G  
WIRE ROPE PULLEY

(Pulley material to be plated steel or Stainless Steel)

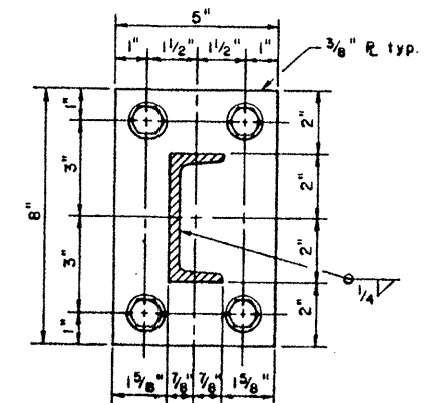
REV. 10-88 HR. 10-27-87, CHG. DIM. 5-10-86, CHG. END CAP SIZE



SECTION L-L  
ELECTRICAL CABLE  
PULLEY MOUNTING



PLAN



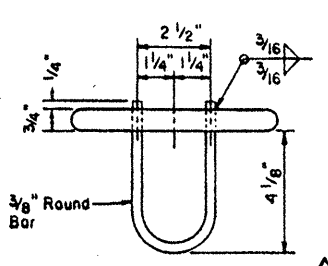
DETAIL "H"  
MOUNTING RING  
SPLICE PLATE

79

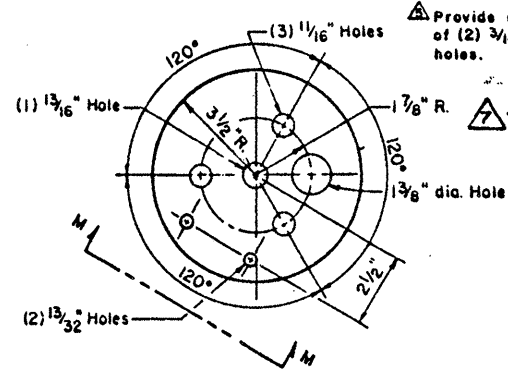
STATE DEPARTMENT OF HIGHWAYS  
AND PUBLIC TRANSPORTATION

HIGH MAST ILLUMINATION  
DETAILS  
HMD (3)-86

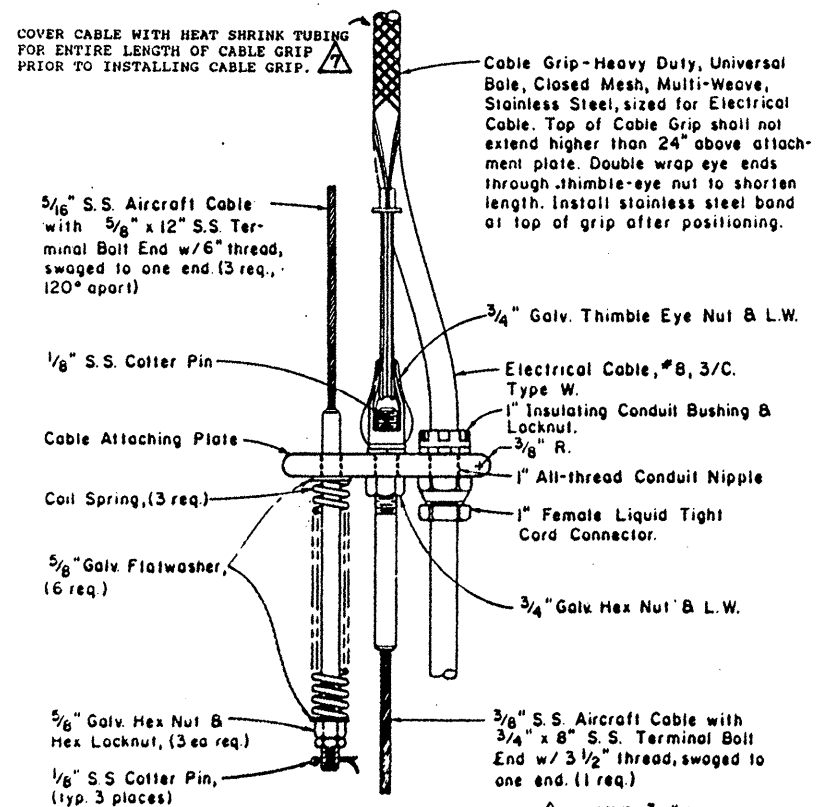
DR	DRAWING	DATE	FED. RD. DIST. NO.	STATE	FEDERAL PROJECT NO.	ISSUANCE
CH	ORIGINAL	1-8-88	10	TEXAS	M37-1103	1037
CH	H. P.	CHG KLEIN NO., SHT NO				
CH	END CAP SIZE					
TR	5-5-86 ADD DIM.					
CH						



VIEW "M-M"

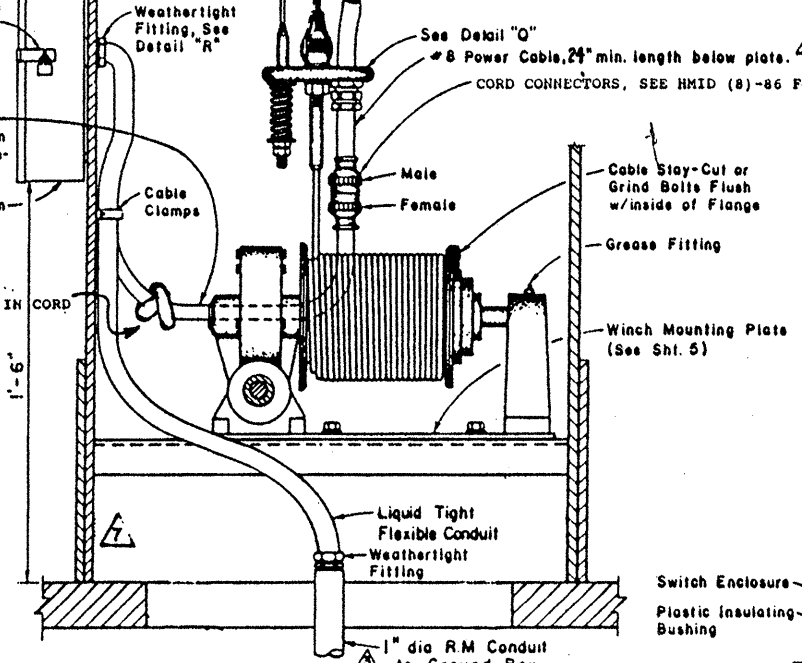


PLAN VIEW

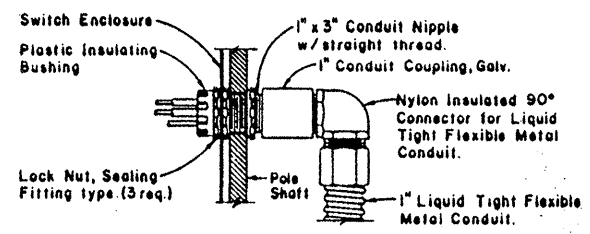


DETAIL "Q"  
(CABLE ATTACHING PLATE)

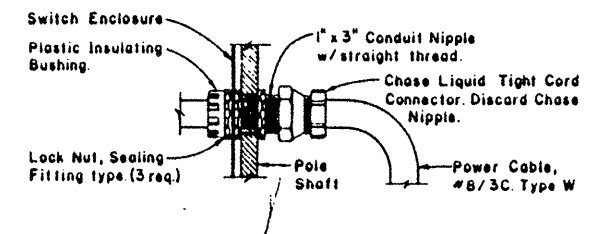
50A., 480V. Circuit Breaker, NEMA 4 for total lamp watts exceeding 9000. 30A., 480V. Circuit Breaker, NEMA 4 for 9000 or less total lamp watts. Enclosure shall be stainless steel, 14 ga., weatherproof with full length vertical door hinge, welded hasp, lock and two sets of keys. Hinge pin shall be tack-welded to prevent removal. Lock (Master #2195) and keys shall be furnished by the contractor and shall be the same type as used for the type "A" service pole enclosures. Enclosure dimensions shall be approx. 20" high x 5" wide x 5" deep. Breakers are to be mounted on a dielectric mounting board.



SECTION J-J  
(WINCH ASSEMBLY)

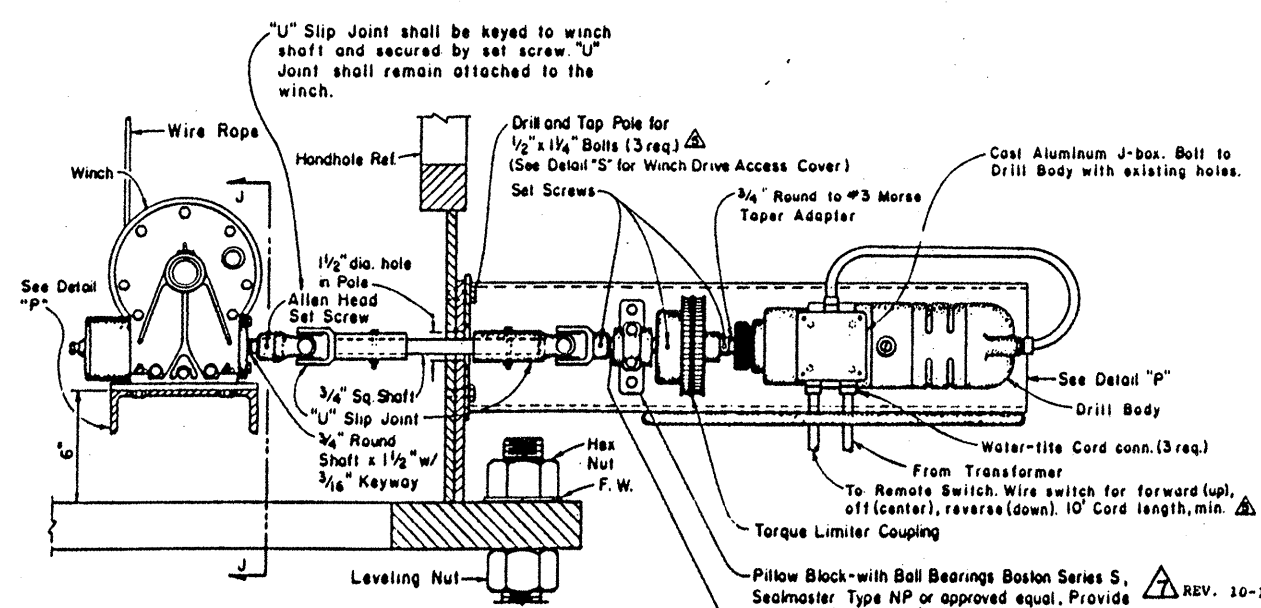


(POWER FEED FROM GROUND BOX)

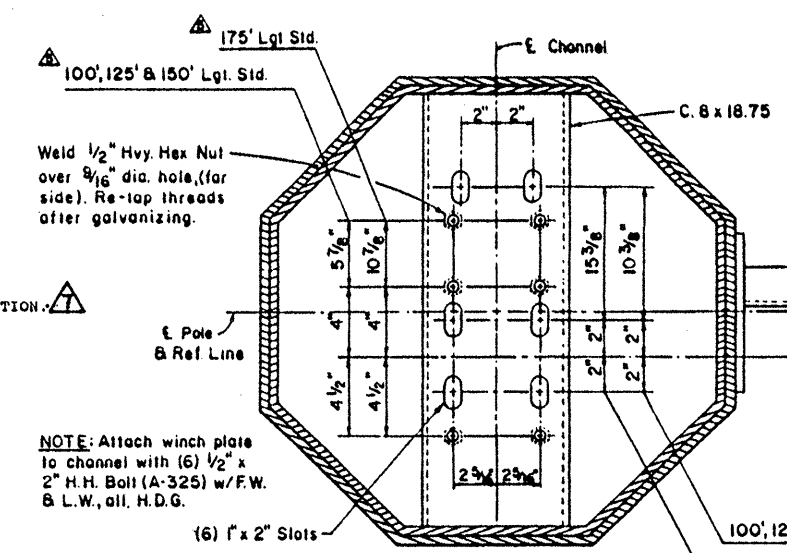


(POWER OUT TO LIGHT RING)

DETAIL "R"  
ENCLOSURE ENTRANCES



POWER DRIVE ASSEMBLY



DETAIL "P"  
(WINCH MOUNTING CHANNEL)  
Dimensions may vary-Verify with winch manufacturer.

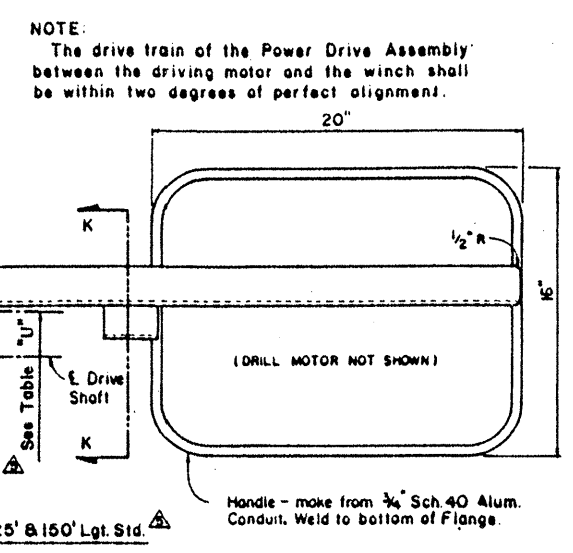
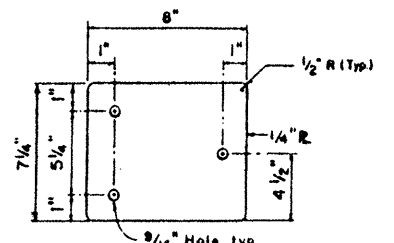
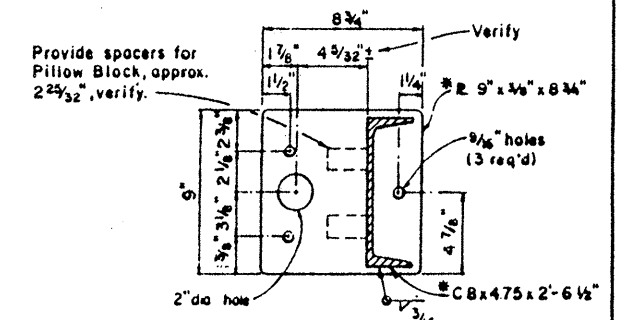


TABLE OF "U" DIMENSIONS

Pole Ht. Ft.	8 Sided 80 MPH	8 Sided 100 MPH	12 Sided 80 MPH	12 Sided 100 MPH
100	3 1/2"	3 1/2"	2 1/2"	2 1/2"
125	3 1/2"	3 1/2"	2 1/2"	2 1/2"
150	3 1/2"	3 1/2"	2 1/2"	2 1/2"
175	4 1/2"	4 1/2"	3 1/2"	3 1/2"



DETAIL "S"  
(WINCH DRIVE ACCESS COVER)



SECTION K-K  
(DRILL MOTOR MOUNTING PLATE)

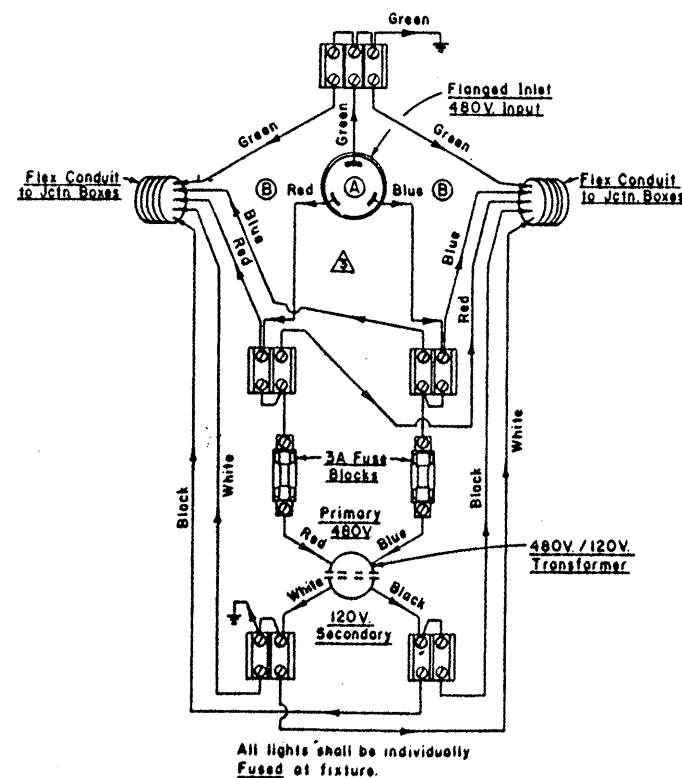
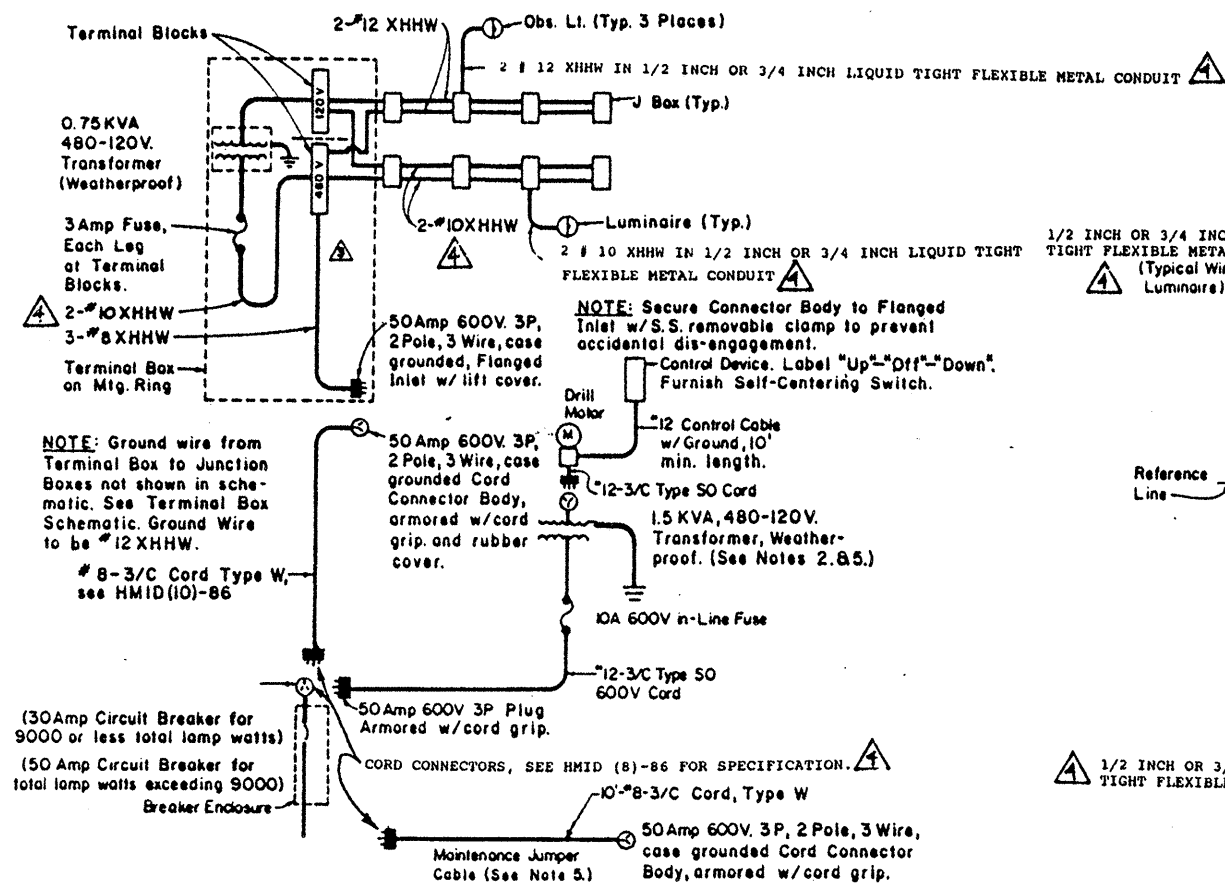
\* Make from 6061-T6 Aluminum

80

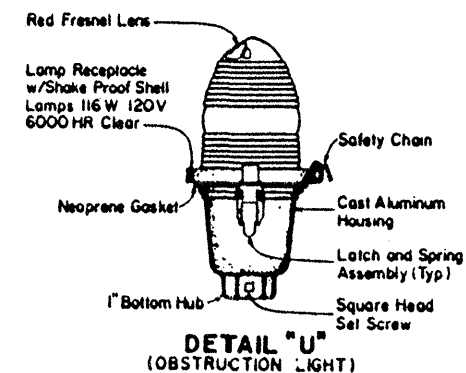
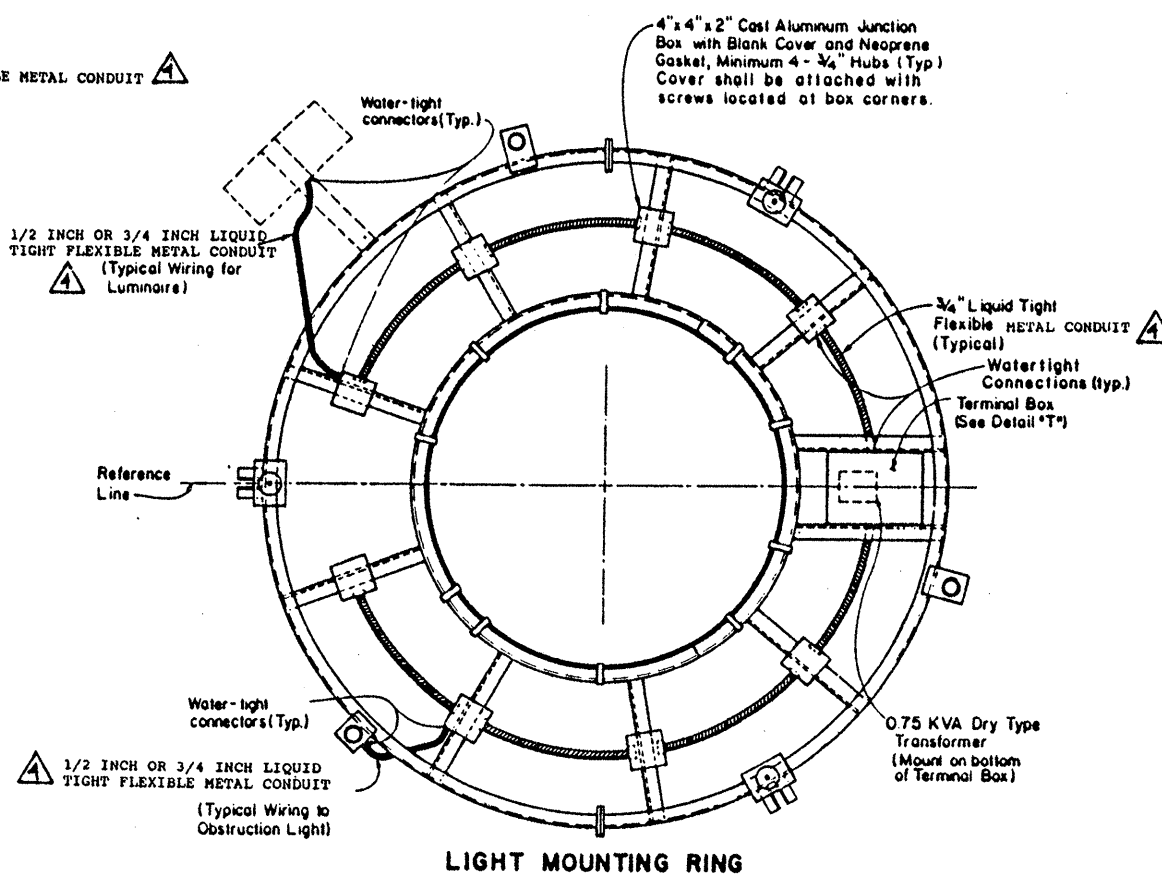
# HIGH MAST ILLUMINATION DETAILS HMID (4)-86

REV. 10-14-93 KAB  
4-14-89 ADD BREAKER NOTE  
12-22-87 VARIOUS REVISIONS, H.R.  
12-8-86, CHG. DRILL & MTS. PLATE  
REV. 12-3-86, H.R.

DATE	BY	CHKD BY	STATE	FEDERAL PROJECT NO.	SHEET NO.
4-29-86	H.R.	KAB	TEXAS	1M37-1103000	1/37
5-30-86	H.R.	KAB	TEXAS	16 NUCR 25	0020617980

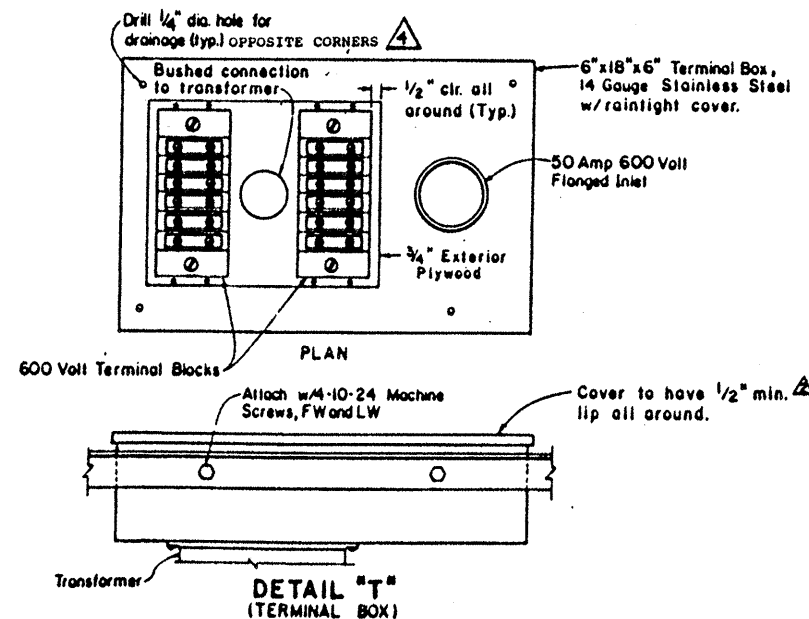


- NOTES:**
- Obstruction Lights Color Code: From secondary side of transformer through-out-circuit to socket. White-Neutral, Black-Load, Green-Case Ground.
  - Power Supply Cord to Flanged Inlet: Green-ground, White-line, Black-line. From Flanged Inlet (A) to Terminal Blocks: Green-ground, Red-line, Blue-line. From there on all 480V circuit wires to be Red and Blue to junction boxes.
  - Wire size from Power Supply to Terminal Blocks shall be no. 8 AWG - See (B).
  - Wire size from Terminal Blocks to Junction Boxes shall be no. 12 AWG
  - Mount Terminal Blocks on 1/4" exterior grade plywood.
  - For 2-Wire, 480V. Service, omit fuse in grounded conductor.



**NOTES:**

- PLUGS, CONNECTOR BODIES AND FLANGED INLETS AT CORD TO RING CONNECTION SHALL BE "TWIST LOCK" TYPE, 3-PRONG, RATED 50 AMPS AT 600 V AND 20 AMPS FOR 120 V. 50 AMP CONNECTORS SHALL BE 3 WIRE CASE GROUNDED, ARMORED, WITH CORD GRIP. 20 AMP CONNECTORS SHALL BE 3 WIRE GROUNDING WITH CORD GRIP, NEMA TYPE LS-20.
- Provide handle on 1.5 KVA transformer for portability. (See One-Line Schematic above)
- Circuit breakers shall be ITE #E43B030 or #E43B050, Square "D" #FAL24030 S/N or #FAL24050 S/N, or equal.
- Conduit entries into Terminal Box shall be made with hubs in the side of the box.
- A minimum of one (1) Maintenance Jumper Cable shall be supplied for each project. Supply one (1) Portable Transformer for each Power Drive Unit required for project.



**81**


STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

**HIGH MAST ILLUMINATION DETAILS**

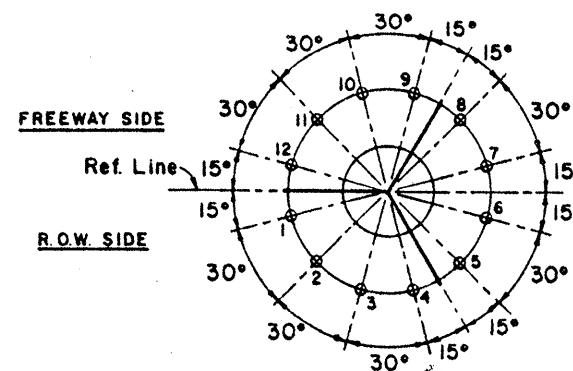
**HMID (5)-86**

DATE	DRAWING	DATE	REV.	STATE	FEDERAL PROJECT NO.	INVENTORY NO.
6-15-87	ORIGINAL	1-8-88		TEXAS	11031000	1437
11-13-87	REV. H.P.					
10-3-88	REV. H.P.					

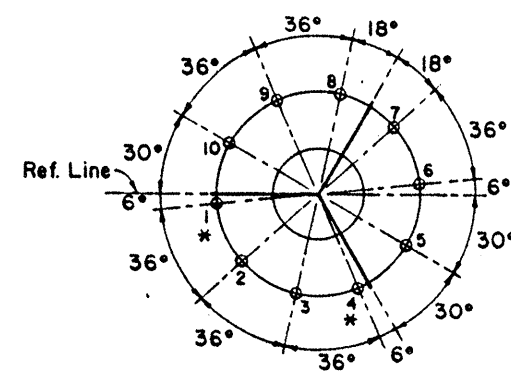
REV. 10-14-93 KAP

		STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION				
<h1 style="text-align: center;">HIGH MAST ILLUMINATION</h1> <h2 style="text-align: center;">DETAILS</h2> <h3 style="text-align: center;">HMID (6)-86</h3>						
DN CK DN DW H.P. CH DW CR TR CR IN	DRAWING <b>ORIGINAL</b> 7-15-86 REV. ANGLE 6-12-87 ADD DETAIL; M.R.	DATE <del>1-8-88</del>	FED. H.A. DIV. NO. 6	STATE TEXAS	FEDERAL PROJECT NO. HM 37-1(103)000	INVENTORY NO. 1137 SHEET 10
		COUNTY 16	COUNTY NUECES	CONT. SECT. 27406	JOB 17982	

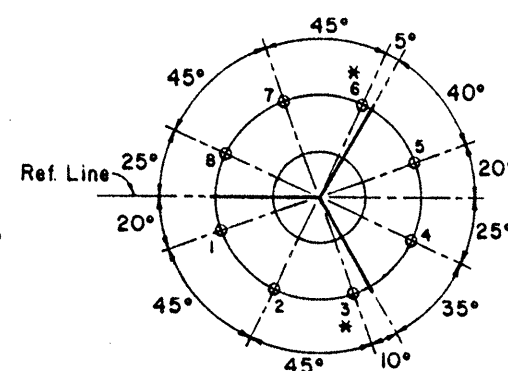




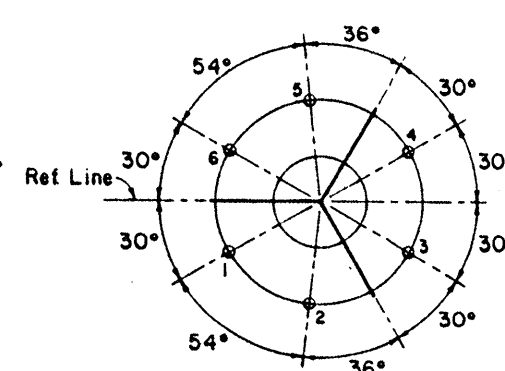
12-LIGHT SETTING



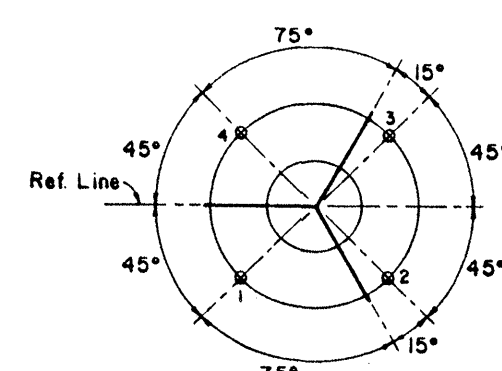
10-LIGHT SETTING



8-LIGHT SETTING



6-LIGHT SETTING



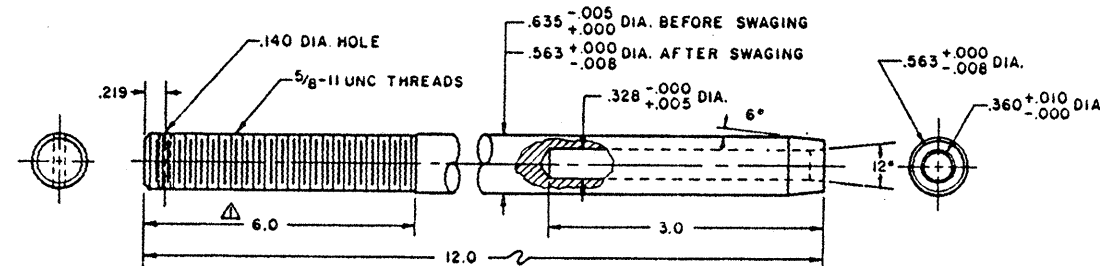
4-LIGHT SETTING

### LUMINAIRE LOCATIONS

\*-NOTE: FIXTURES AT THESE LOCATIONS MAY HAVE TO BE UNDERSLUNG TO CLEAR SUPPORT ARM. THIS WILL BE DETERMINED BY FIXTURE SUPPLIED AND MOUNTING REQUIREMENTS.

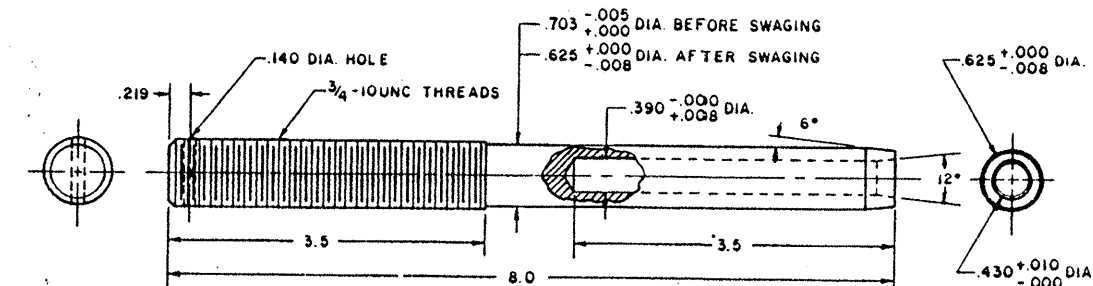
NOTE: Aircraft Obstruction Light locations not shown. Three are required located approx. 120° apart. Locations will vary dependent on the light setting used.

NOTE: MIN. SWAGE LENGTH = 2.06  
MAX. SWAGE LENGTH = 2.94

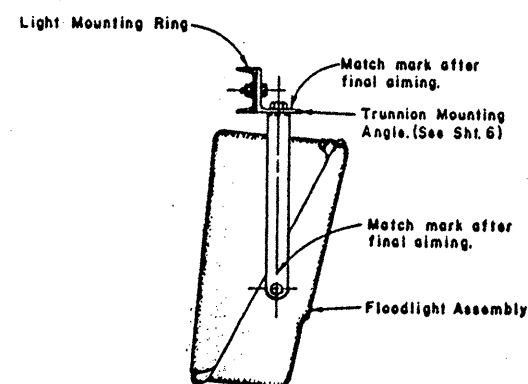


TERMINAL FOR 5/16" WIRE ROPE  
MATERIAL: STAINLESS STEEL, TYPE 303SE OR 304  
WITH 115,000 p.s.i. MAX. ULTIMATE TENSILE STRENGTH.

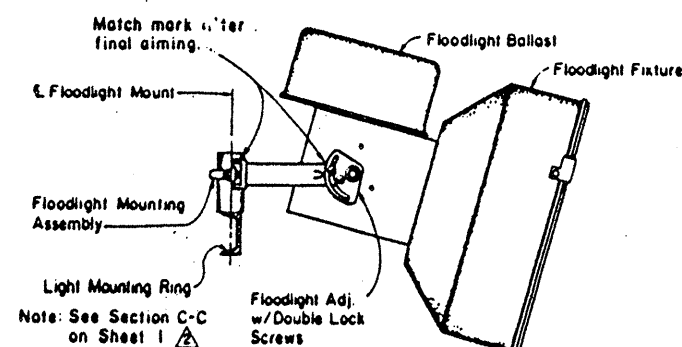
NOTE: MIN. SWAGE LENGTH = 3.12  
MAX. SWAGE LENGTH = 3.44



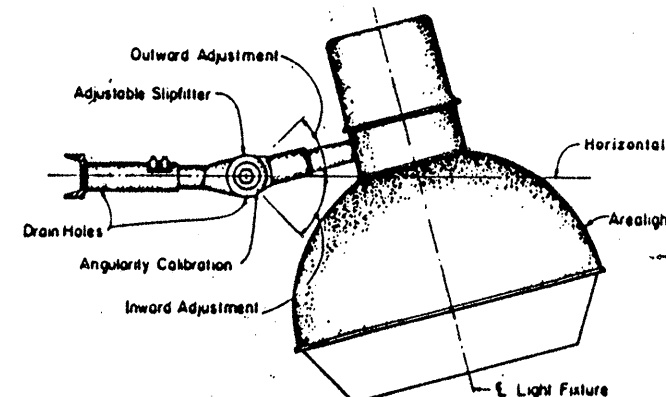
TERMINAL FOR 3/8" WIRE ROPE  
MATERIAL: STAINLESS STEEL, TYPE 303SE OR 304  
WITH 115,000 p.s.i. MAX. ULTIMATE TENSILE STRENGTH.



FLOODLIGHT MOUNTING ASSEMBLY  
(UNDERSLUNG TRUNNION TYPE)



FLOODLIGHT MOUNTING ASSEMBLY  
(METHOD OF MOUNTING MAY VARY)



AREALIGHT MOUNTING ASSEMBLY  
(SYMMETRIC AND ASYMMETRIC)

NOTES: Adjustable Slipfitter to be furnished only on Arealight Units noted and only if aiming capabilities are not built into lighting units provided for this project. See schedule for Light Fixtures to be adjusted. Final adjustment shall be made in the field as directed by the Engineer.

If Asymmetric Fixtures are used, the Refractors shall be oriented to properly illuminate the adjacent roadways. Orientation shall be as shown in plans.

### GENERAL NOTES:

1. After final aiming has been completed and approved by the Engineer, fixtures must be locked in position. Contractor must submit proposed locking scheme with the fixture submittal. (FLOODLIGHTS ONLY).

83

REV. 10-14-93 KAB



STATE DEPARTMENT OF HIGHWAYS  
AND PUBLIC TRANSPORTATION

## HIGH MAST ILLUMINATION DETAILS HMD (7)-86

DATE	DRAWING	DATE	REV.	STATE	FEDERAL PROJECT NO.	INVENTORY
04-29-86	ORIGINAL	1-8-88	1	TEXAS	16-37-1103032	1437
04-29-86	CHG. THREAD		2	TEXAS		
04-29-86	LENGTH FROM 3' TO 6'		3	TEXAS		
04-29-86	REV. H.P.		4	TEXAS		
04-29-86	REV. H.P.		5	TEXAS		



## 1. AREA LIGHTING

- A. Area lighting shall be Symmetric, Asymmetric or Area Floodlights. The number and wattages of the fixtures on each pole shall be as shown on the lighting layouts. The lighting pattern for symmetric fixtures shall be IES Type V, for asymmetric fixtures, IES Type II, III, OR IV.
- B. The lighting systems shall meet the following requirements unless otherwise approved by the Engineer. The lighting systems shall produce an average initial horizontal footcandle level of 0.8 on the travelways with the pole spacing and mounting heights shown on layouts. The average to minimum ratio shall be no greater than 3 to 1 nor shall the average to maximum ratio exceed 3 to 1. Light intensities along the travelways shall not decrease at a rate less than 0.7 nor increase at a rate greater than 1.4 based on a 30 ft. grid. Contractor shall furnish aiming charts and lighting footcandle arrays. Photometric performance will be determined on the roadway after installation, or at the Engineer's option, will be tested at the Department's test facility. Minimum initial light level shall be 0.3 footcandle.
- C. Symmetric and Asymmetric fixtures shall meet the following requirements unless otherwise approved by the Engineer:
- (1) Omitted
  - (2) The optic assembly shall be a sealed unit with aluminum alzak reflector and equipped with a tempered door glass or prismatic glass. The optic assembly shall be provided with resilient gaskets and so constructed that a positive seal against weather and other contaminants will be maintained.
  - (3) Lamp sockets shall be mogul nickel plated and porcelain-enclosed with a lamp-gripping device. 1000 watt fixture shall include an end lamp support opposite the base.
  - (4) The luminaire housing shall be cast or drawn from a non-ferrous alloy and shall be free of cracks and excessive porosity. All nuts, screws, clips, washers and attaching hardware shall be made of stainless steel; steel coated with an acidic chromate-phosphate-blender system primer, top coated with a polytetrafluoroethylene modified silicone primer, bright metallic in color, meeting the requirements of General Motors automotive specification GM 164M, or other approved conversion coatings except that brackets may be made from pre-galvanized steel. All threaded surfaces used in the housing shall be lubricated with a silicone grease.
  - (5) Fixture weight, including ballast, shall not exceed 70 pounds and effective projected area shall not exceed 2.5 square feet.
- D. Area floodlights shall meet the following requirements:
- (1) Area floodlights shall meet the photometric requirements stated in paragraph 1.8 above, using 12 - 400 watt HPS units per pole or other number of fixtures shown on the plans. Vertical aiming angles and candela distribution shall be such as to restrict maximum candela at 80 degrees above nadir to 12,500. Contractor shall submit for approval iso-candela curves and candela traces showing vertical and horizontal distribution through the zero axis of the floodlights. Where less than 12 floodlights are used, Contractor shall provide counterweights to balance the support ring.
  - (2) Floodlights shall have permanently marked scales for horizontal and vertical aiming. Scales will be in 5° increments. Contractor shall, after all aiming adjustments are made, mark final aiming settings on all floodlights.
  - (3) Floodlights shall be NEMA Class HDB (heavy duty with integral ballast), except that floodlights with fiberglass housings may be used. Lens retainer, slipfitter trunnion-mounting bolts and all machine screws exterior and interior shall be stainless steel. Floodlights shall have silicone rubber or elastomer gasket between door and housing and shall be arranged to drain water when positioned in the final proposed aiming position. Lens shall be fully gasketed with high-temperature non-hardening pressure-applied mastic to insure a positive seal. Lens shall be heat and impact-resistance tempered glass. Reflector shall be removable. Lamp sockets shall be nickel plated, mogul base, porcelain with lamp-gripping device.

Lens shall be fully gasketed with high-temperature non-hardening

- (4) Floodlight mounting may be trunnion or slipfitter types. Trunnions shall be constructed of 2" x 1/4" steel, hot-dipped galvanized or painted with two coats of ZRC paint. Trunnion length shall be as approved by the Engineer. Floodlights shall be fitted with a watertight cord connector for #16/3 portable cord or 1/2 inch non-metallic flexible conduit connector. A grounding terminal shall be provided inside fixture housing.
- (5) Area floodlights shall have an effective projected area not to exceed 3.3 square feet, except where floodlight with fiberglass housing is permitted, EPA may be 4.3 square feet.



## 2. GENERAL

- A. ALL MATERIAL SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE NEC. ALL CONDUIT AND CONDUCTORS SHALL BE IN ACCORDANCE WITH THE MATERIALS AND CONSTRUCTION METHODS REQUIREMENTS OF ITEMS 618 AND 620. HEAT SHRINK TUBING FOR USE WITH CABLE GRIPS AND CABLE SPLICING SHALL MEET THE REQUIREMENTS OF ITEM 620.
- B. WHERE STAINLESS STEEL BANDS ARE CALLED FOR ON THE HMID SHEETS STAINLESS STEEL HOSE CLAMPS MAY BE PROVIDED. STAINLESS STEEL BANDS AND STAINLESS STEEL HOSE CLAMPS SHALL BE PROVIDED WITH STAINLESS STEEL CLIPS OR STAINLESS STEEL SCREWS.
- C. OBSTRUCTION LIGHTS ARE NOT REQUIRED UNLESS SHOWN OTHERWISE ON THE LIGHTING LAYOUT SHEETS, SUMMARY SHEETS OR GENERAL NOTES. WHEN OBSTRUCTION LIGHTS ARE NOT REQUIRED, ELIMINATE THE THREE (3) OBSTRUCTION LIGHT FIXTURES, THREE (3) FT. MOUNTING POSTS, 480/120 VOLT TRANSFORMER, 120 VOLT WIRING, AND THREE (3) MOUNTING POST SUPPORT CONNECTIONS SHOWN ON DETAIL "E" (HMID (1)-86). WHEN OBSTRUCTION LIGHTS ARE REQUIRED, THE PHOTOCELL SHALL MEET ALL THE REQUIREMENTS SHOWN ON ED (3) EXCEPT THAT THE PHOTOCELL SHALL TURN ON AT 35 FOOTCANDLES AND SHALL TURN OFF AT 58 FOOTCANDLES IN ACCORDANCE WITH FAA REQUIREMENTS. A PERMANENT PLACARD SHALL BE INSTALLED INSIDE THE SERVICE POLE ENCLOSURE, ON THE DOOR, TO INDICATE THAT AN FAA APPROVED PHOTOCELL IS REQUIRED.
- D. THE MALE CORD CONNECTOR FOR THE TYPE W CORD RUNNING UP THE POLE, THE FEMALE CORD CONNECTOR FOR THE TYPE W CORD RUNNING TO THE CIRCUIT BREAKER ENCLOSURE AND THE MALE CONNECTOR ON THE MAINTENANCE JUMPER SHALL MEET THE FOLLOWING OR APPROVED EQUAL SPECIFICATIONS:
1. THE CONNECTOR SHALL BE A 480 VOLT, 30 AMP-OR 50 AMP (TO MATCH CIRCUIT BREAKER SIZE, SEE HMID (5)-86) POLARIZED THREE (3) WIRE CONNECTOR WITH A MOLDED ELASTOMER BODY MADE FROM THERMOSETTING SYNTHETIC POLYMER WHICH REMAINS FLEXIBLE OVER THE TEMPERATURE RANGE OF -40 DEGREES C TO 90 DEGREES C. THE PINS ON THE CONNECTOR SHALL BE OVERMOLDED 1.25 INCHES FROM THE FACE OF THE CONNECTOR TOWARD THE TIPS OF THE PINS WITH THE SAME MATERIAL USED IN THE CONSTRUCTION OF THE CONNECTOR BODY. THIS OVERMOLDING OF THE PINS SHALL PROVIDE A NON-CONDUCTIVE DOUBLE TAPER WHICH PREVENTS THE INTRUSION OF WATER INTO THE CONNECTION WHEN THE CONNECTORS ARE FULLY ENGAGED. THE PIN RECEPTORS SHALL HAVE CURRENT CARRYING BARRELS RECESSED 1.50 INCHES FROM THE FACE OF THE CONNECTOR AND SURROUNDED BY BERYLLIUM COPPER SPRING SLEEVES. THE PLUG/RECEPTACLE COMBINATION SHALL BE LISTED BY AN APPROVED TESTING FACILITY (UL OR FACTORY MUTUAL) AS SUITABLE FOR OUTDOOR USE, AND SHALL HAVE SATISFACTORILY PASSED A RAIN TEST AND A WATERTIGHT (IMMERSION) TEST AS APPROVED BY THE ENGINEER.
  2. THE FEMALE CONNECTOR SHALL BE INTEGRALLY MOLDED TO A FIVE (5) FT. LENGTH OF TYPE W CORD. THE OPPOSITE END OF THIS PIECE OF CORD SHALL BE RUN TO THE CIRCUIT BREAKER WITHOUT BEING SPLICED. A KNOT SHALL BE TIED IN THIS PIECE OF CORD AS CLOSE TO THE ENCLOSURE AS PRACTICABLE AS A MEASURE OF LIGHTNING PROTECTION.
  3. THE MALE CONNECTOR FOR USE WITH THE TYPE W CORD RUNNING UP THE POLE SHALL BE INTEGRALLY MOLDED TO A THREE (3) FT. LENGTH OF TYPE W CORD. THE END OF THE CABLE OPPOSITE THE CONNECTOR SHALL BE STRIPPED BACK, TINNED AND EQUIPPED WITH THREE (3) ELECTRICAL BUTT SPLICES CRIMPED IN PLACE (ONE PER CONDUCTOR). A PACKAGE INCLUDING AN 8/3 SEPARATOR/INSULATOR CORE AND INSTRUCTIONS FOR SPLICING TO ANOTHER PIECE OF TYPE W CORD WITH HEAT SHRINK TUBING SHALL BE ATTACHED TO EACH MALE CONNECTOR. A KNOT SHALL BE TIED IN THIS PIECE OF CORD BELOW THE CABLE ATTACHING PLATE AS A MEASURE OF LIGHTNING PROTECTION.
  4. THE MALE CONNECTOR FOR USE WITH THE TYPE W MAINTENANCE JUMPER SHALL BE INTEGRALLY MOLDED TO A TEN (10) FT. LENGTH OF TYPE W CORD. THE CONTRACTOR SHALL ATTACH A 50 AMP TWIST LOCK RECEPTACLE TO THE OPPOSITE END OF THE MAINTENANCE JUMPER TO MATCH THE FLANGE MOUNTED PLUG ON THE RING AND THE PORTABLE TRANSFORMER.
  5. THE CONTRACTOR SHALL MAKE A BROCHURE SUBMITTAL ON THE CORD CONNECTORS.
- E. IN ADDITION TO THE REQUIREMENTS SHOWN IN 1. ABOVE, THE CONTRACTOR SHALL SUBMIT A COMPUTER GENERATED FOOTCANDLE ARRAY OF THE AREA TO BE LIGHTED BY HIGH MAST POLES AND ALSO OF ONE POLE USING 12 - 400 WATT FIXTURES OF THE TYPE OR TYPES OF ASYMMETRIC FIXTURES REQUIRED BY THE PLANS. ALL COMPUTER GENERATED ARRAYS SHALL HAVE 400 WATT FIXTURES DERATED TO 40,000 LUMENS PER LAMP. ASYMMETRIC FIXTURES SHALL MEET THE FOLLOWING PHOTOMETRIC SPECIFICATIONS:
1. THE TYPE "A" 400 WATT ASYMMETRIC FIXTURE, WHEN MOUNTED IN THE LEVEL POSITION 50 FT. ABOVE THE MIDPOINT AND 20 FT. OUTSIDE OF EITHER LONG SIDE OF A RECTANGULAR AREA MEASURING 340 FT. BY 50 FT., SHALL PROVIDE THE FOLLOWING:
    - A MEASURED MINIMUM INTENSITY OF 0.2 HORIZONTAL FOOTCANDLES AT ANY POINT ON THE SURFACE OF THIS AREA.
    - A MEASURED MAXIMUM TO MINIMUM LIGHT INTENSITY RATIO, BASED ON HORIZONTAL FOOTCANDLES, OF LESS THAN 20.
    - AN AVERAGE MEASURED INTENSITY OF 0.6 HORIZONTAL FOOTCANDLES ON THE SURFACE AREA.
    - LIGHT INTENSITIES MEASURED IN HORIZONTAL FOOTCANDLES ALONG A LINE PARALLEL TO AND 30 FT. IN FROM THE LONG SIDE OF THE PREVIOUSLY DEFINED RECTANGULAR AREA ABOVE WHICH THE FIXTURE IS MOUNTED SHALL NOT BE LESS THAN 0.35 FOOTCANDLES AT ANY POINT FROM ZERO TO 155 FT. ON BOTH SIDES OF THE FIXTURE.
  2. THE TYPE "B" 400 WATT ASYMMETRIC FIXTURE SHALL BE IES TYPE MEDIUM SEMI-CUTOFF OR CUTOFF WITH TYPE II, III, OR IV LIGHT DISTRIBUTION PATTERN AND, WHEN 12 FIXTURES ARE MOUNTED 150 FT. ABOVE THE MIDPOINT AND 50 FT. OUTSIDE OF EITHER LONG SIDE OF A RECTANGULAR AREA MEASURING 900 FT. BY 170 FT., SHALL PROVIDE A MINIMUM INTENSITY OF 0.2 HORIZONTAL FOOTCANDLE AT ANY POINT ON THE SURFACE OF THIS AREA.
  3. THE TYPE "C" 400 WATT ASYMMETRIC FIXTURE SHALL BE IES TYPE MEDIUM SEMI-CUTOFF OR MEDIUM CUTOFF WITH TYPE II, III, OR IV LIGHT DISTRIBUTION PATTERN AND, WHEN 12 FIXTURES ARE MOUNTED 150 FT. ABOVE THE MIDPOINT AND 50 FT. OUTSIDE OF EITHER LONG SIDE OF A RECTANGULAR AREA MEASURING 800 FT. BY 250 FT., SHALL PROVIDE A MINIMUM INTENSITY OF 0.2 HORIZONTAL FOOTCANDLE AT ANY POINT ON THE SURFACE OF THIS AREA.
- F. WHEN SHOWN ON THE PLANS, SPILL LIGHT SHALL BE RESTRICTED TO LESS THAN .15 HORIZONTAL FOOTCANDLES.



STATE DEPARTMENT OF HIGHWAYS  
AND PUBLIC TRANSPORTATION

HIGH MAST ILLUMINATION  
DETAILS  
HMID (8)-86

ORIGINAL DRAWING DATE:	REVISED	REVISIONS	DATE	BY	CHK.	DATE	BY	CHK.	DATE	BY	CHK.
1-12-87											
5-82-91											
9-28-91											
10-14-93											

REV. 10-14-93 KAB

Revised: Various; Revised C. para.

Revised: Fixtures, IES Types; Removed Z-Pattern

3. BALLASTS

- A. Ballasts for 1000 watt HPS lamps shall be regulated auto-transformer type (CWA) rated 480 volts. Ballasts for 400 watt HPS lamps shall be regulated isolated winding type (CW) rated 480 volts. Ballasts shall be capable of starting lamps at an ambient temperature of -20 F. Ballast wiring shall include a grounding terminal bonded to metal housing. Ballasts shall be fused with time-delay fuses in insulated fuse holders, 8 amp for 1000 watt, 5 amp for 400 watt. Fuse holders shall be internal to the housing. Ballast wiring to terminal board shall be through a quick-disconnect plug. Ballast nameplate shall permanently and clearly indicate the following: Manufacturer's name, catalog number, voltage rating, lamp type, and connection diagram.
- B. When the circuit voltage indicated on the plans is applied, the ballast input wattage during fluctuations of the test voltage of plus 5 percent and minus 10 percent shall not exceed the following:

Lamp Wattage	Maximum Wattage Input
400	552 Watts
1000	1400 Watts

- C. During fluctuation of the line voltage of plus 5 percent or minus 10 percent, the lamp wattage fluctuation shall not exceed a total of 20 percent and ballast shall maintain lamp wattage within the following limits:

Nom. Lamp Watts	Minimum Lamp Watts	Maximum Lamp Watts
400	280	475
1000	750	1200

- D. The power factor for all ballasts when tested at nominal line voltage shall be not less than 90 percent.

- E. The electronic starting aid shall meet the following requirements:

	400 Watts	1000 Watts
Starting pulse amplitude, volts	2500 - 4000	3000 - 5000
Pulse width, minimum	1.0 micro-sec. at 2250 volts	4 micro-sec. at 2700 volts
Pulse peak current, min. amps	0.2	0.2
Pulse repetition rate, min.	50 per sec.	50 per sec.

Starting pulse position shall be between 90 percent of peak open circuit voltage (leading edge) and 20 electrical degrees beyond center of open circuit wave form, measured at 70 percent of peak voltage.

4. LAMPS

- A. Lamps shall be high pressure sodium, 400 watt or 1000 watt as specified in the plans. Lamps shall have been manufactured no earlier than six months prior to date contract was awarded.
- B. High pressure sodium lamps shall have the following characteristics:
- | Wattage | Average Initial Lumens | Average Rated Life (Hrs.) |
|---------|------------------------|---------------------------|
| 400     | 50,000                 | 24,000                    |
| 1000    | 140,000                | 24,000                    |
- C. When tested after 30 minutes burn-in, 400 Watt HPS lamps shall not have a lamp voltage greater than 108 volts. Lamp voltage for 1000 Watt HPS lamps shall be 250 Watts  $\pm$  10 %.

5. TESTING

- A. Fixtures, lamps and ballasts will be sampled and tested in accordance with the Department Manual of Testing Procedures except as noted in these specifications.
- B. Ballasts and fixtures will be tested using lamps furnished for the same project.

- C. The Department will bear the cost of all testing of equipment that complies with the specification requirements. However, the source of supply of fixtures and ballasts must be approved as required in Article 6.1 of the Standard Specifications. Such approval will be contingent on the supplier agreeing to bear the cost of testing any equipment that fails to comply with the specification requirements listed in this specification.

- D. All other equipment will be tested in accordance with Item 614 of the Standard Specifications and Materials and Test Division Test Standards.

- E. After High Mast Assembly has been completely assembled, the Engineer may require to fully lower and raise each HM ring one time to demonstrate proper operation of the lowering mechanism. If any malfunction occurs, the problem shall be corrected at the Contractor's expense and the lowering test will be repeated.

6. MOUNTING RING AND SUPPORT ASSEMBLY

- A. Ring and support assembly shall be fabricated from steel having a minimum yield strength of 36 KSI.
- B. Cover assemblies, fittings and miscellaneous parts shall be as outlined on the plans.
- C. All hardware shall be hot-dipped galvanized per ASTM A153 or shall be stainless steel, unless noted otherwise on plans.

\* 7. WINCH

- A. Housing shall be high tensile strength die-cast silicon aluminum. Cable drum shall be fabricated from seamless steel tubing with stamped steel flanges and shall be hot-dipped galvanized. Drum shall have a minimum diameter of 4.5 inches. Drum shall be keyed to drum shaft. Drum and flanges shall be sized so that, when the floodlight mounting ring is in the raised position, the cable including one full layer will fill the drum to no more than two-thirds of full capacity. Drum shaft shall be ground from stainless steel and mounted on lubricated bronze bearings with seals. Wormgear shall be made of nickel-bronze and worm shaft shall be high-strength stress-proofed steel, ground and polished and supported by tapered roller bearings.

- B. Gear ratio shall be 36:1 with safe hoisting capacity of not less than 4000 pounds.

- C. Winch shall incorporate adjustable automatic brake to assure positive load suspension. Brake shall be multiple disc with friction plates running in oil bath and one-direction clutch which operates only when load is suspended or lowered. Winch shall not have throw-out clutch.

8. WIRE ROPE AND TERMINALS

2

- A. Wire rope shall be 7x19 IWRC stainless steel, (Fed. Spec. RR-W-410D, Type VI, class 3), except, where shown on plans, wire rope for winch shall be 19x7 Rotation Resistant IWRC stainless steel. Where 19x7 rotation resistant is specified, it shall meet the construction requirements of Fed. Spec. RR-W-410D, Type IX, class 2, modified for stainless steel with a nominal breaking strength of 11,100 lbs. All wire rope shall be pre-formed and factory lubricated. Wire rope shall meet the requirements of the applicable specification except where modified. Quality Assurance testing shall be the responsibility of the manufacturer and shall meet recognized wire rope industry standards. No special tensile or torsion testing will be required. Mill Test Reports shall be furnished.

3

- B. Winch cable shall be of sufficient length to leave a minimum of one full layer of cable on the drum when the floodlight mounting ring is in the full down position.

- C. Wire rope terminals shall be stainless steel, solid stud type as shown on HMID (7)-86 drawing. All terminals shall be drilled for cotter pin. Material to be 303 SE or 304 stainless steel with a maximum tensile strength of 115,000 p.s.i. Mill Test Reports shall be furnished.

NOTE: ANY WINCH THAT IS OPERATED WITHOUT OIL SHALL BE CONSIDERED DAMAGED AND SHALL BE REPLACED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

85



STATE DEPARTMENT OF HIGHWAYS  
AND PUBLIC TRANSPORTATION

HIGH MAST ILLUMINATION  
DETAILS  
HMID (9)-86

ORIGINAL DRAWING DATE:	REVISIONS	DATE	BY	CHKD.	APP'D.
1-12-86	16	11/10/86	1000	85	
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4-18-89					

REV. 10-14-93 KAB

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- D. All terminals shall be proof-tested by the manufacturer to 40% of rated strength of the wire rope. Each terminal shall be identified by manufacturer's logo permanently incised on terminal. Manufacturer shall furnish certification of tests. Contractor shall also furnish one sample of each size of terminal with 5' of wire rope for load tests by the State. Samples tested must withstand test load not less than 100 percent of rated breaking strength of wire rope. If sample fails test, all terminals of same size will be rejected.

#### 9. SPRINGS

- A. Provide three steel springs as shown on plans.
- B. Springs shall have an uncompressed length of approximately 8 inches and shall compress 3 inches under 700-pound load.
- C. Springs shall contain approximately 19 total coils with ID of 0.875 and OD of 1.375 inches. Ends shall be closed and ground. Springs shall be zinc-plated.
- D. Springs shall be made from 1/4" diameter oil-tempered MB Steel treated for overstress. Springs shall not develop permanent set from 3-inch compression.

#### 10. ELECTRICAL POWER CABLE

- Power cable shall be No. 8 AWG three-conductor round Type W, rated 90° C, 600 volt or 2000 volt. Each conductor shall be copper and shall consist of 133 wires. Insulation shall be ethylene propylene rubber. Jacket shall be chlorosulfonated polyethylene or neoprene with glass fiber or nylon mesh reinforcing. Nominal diameter shall be 0.91". Filler shall be rubber compound or other approved non-hygroscopic compound.

#### 4.11. ~~TERMINAL ELECTRICAL POWER~~

- ~~A. Portable cord for connecting luminaires to junction boxes shall be No. 16 AWG three-conductor portable cord rated 90° C and 600 volts.~~
- ~~B. Each conductor shall be copper and shall consist of a minimum of 26 No. 30 wires.~~
- ~~C. Insulation shall be ethylene propylene rubber. Jacket shall be chlorosulfonated polyethylene.~~

#### 4.12. POWER DRIVE ASSEMBLY (ONE ONLY THIS CONTRACT UNLESS OTHERWISE SHOWN ELSEWHERE ON THE PLANS)

- A. Drive Motor
- (1) Drive motor shall be 1-1/4" heavy-duty reversible portable electric drill modified as shown on plans.
- △ (2) Shall have a minimum of 6 radial ball bearings, one thrust bearing, and one needle bearing.
- (3) Shall have No. 3 Morse Taper socket.
- (4) Shall be designed for 115 volt 60 Hertz single phase operation 250 RPM at no load.
- △ (5) Shall be designed for continuous rated duty of 160 RPM and 15 amperes at 115 volts with delivery of 33-pound-feet of torque. Drill motor to be operated only at low speed range. (i.e. 150 TO 160 RPM)
- △ (6) Shall develop 240 pound-feet of torque at stalled rotor condition.
- B. Torque Limiter Coupling
- (1) Torque limiter coupling shall consist of standard torque limiter with Type A sprocket center member coupled to a Type B sprocket by an ASA double strand roller chain. Type A sprocket shall be chrome-plated.
- (2) Coupling shall have torque capacity minimum of 15 pound-feet and a maximum of 55 pound-feet.
- (3) Limiter section of coupling shall consist of integral hub and pressure plate, two friction facings, sintered iron bushing, pilot plate, disk spring, lock washer and hex adjustment nut. All major components except spring and friction facings shall be cadmium-plated with dichromate treatment.

- (4) Type A center sprocket shall have ground face (63 micro-inch) and shall be run-in for 4 minutes at approximately 60 RPM at a torque setting of 70% to 80% of spring rating. Contractor shall provide written certification that run-in has been accomplished.
- (5) The torque limiter coupling shall, after run-in, be set to a torque limit of 35 pound-feet or as directed by the Engineer. The proper setting of the coupling shall be demonstrated to the Engineer.

#### C. Universal Joints

- (1) Shall be slip-type with 4-inch barrel. A grease fitting shall be so located in the spider that all caps and needle bearings will be adequately serviced. The assembly shall be disassembled and zinc-plated, then reassembled and properly lubricated.
- (2) Shall have a minimum torque rating of 1270 inch-pounds at 200 RPM.
- (3) Shall have set screw and keyed coupling as shown on plans.

#### 13. CONSTRUCTION METHODS

##### A. Fabrication

- (1) Fabrication and welding shall be in accordance with the Item "Steel Structures", and Department Bulletin C-5.
- (2) All holes supporting pulley shafts shall be drilled (not punched) prior to galvanizing.
- (3) All component parts shall be galvanized where galvanizing is applicable, after fabrication.
- (4) Galvanizing on all parts which have become scratched, chipped or otherwise damaged shall be thoroughly cleaned and the cleaned area painted with two coats of zinc dust-zinc oxide paint conforming to the requirements of repair compounds meeting Federal Specification TT-P-641b.
- (5) Mounting rings and ring support assemblies shall be fabricated with the use of jigs that have been inspected and approved by Material and Test Division personnel prior to their usage.
- △ (6) The fabricator shall submit his proposed welding procedures in accordance with bulletin C-5.

##### B. Installing Wire Rope

- (1) Prior to installation of winches and wire ropes, all wire ropes shall be extended full length in a clean area. Any wire rope that does not lie straight or that has other evidence of set, kinks, or other damage shall be rejected.
- (2) Extreme care shall be used to prevent wire rope from kinking, nicking, or from sustaining other damage during installation. Rope shall not be installed by pulling from flat coil, but shall be carefully unrolled its full length or placed on a horizontal axis and unreel according to wire rope industry standards.
- (3) For right lay rope, the rope shall be attached to the drum on the end opposite the winch gear train, and wound on drum so that the free end of the rope comes off the backside of the drum during normal operation of the winch. Rope must be unreel carefully as stated above. Care must be taken to insure that all layers lay full and tight on drum.
- (4) Installation of all wire rope shall be accomplished only under direct supervision of the Engineer or his authorized representative. Contractor shall not remove wire rope from manufacturer's reel until authorized by the Engineer. Installation of wire rope on winch shall be in accordance with the above and accepted industry practice. Installation of the three hoist cables shall be made from the top end of the pole and as directed by the Engineer or his representative.

##### C. Installing Wire Rope Clips

- (1) Turn back approx. 2'-3' of rope, measured from the top of thimble. Apply seizing to pilot end of wire rope prior to cutting to length. See detail "K", HMID(3)-86. Apply first clip approx. 3' from the dead end of the wire rope with U-bolt over dead end and live end in clip saddle. Tighten nuts evenly to 30 pound-feet of torque, or as recommended by manufacturer.
- (2) Install second clip as near loop as possible, take out slack and torque nuts evenly to 30 pound-feet or as recommended by manufacturer.
- (3) After final erection and assembly of the pole and HM assembly, retighten nuts to required torque.

86



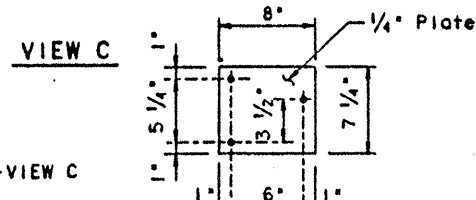
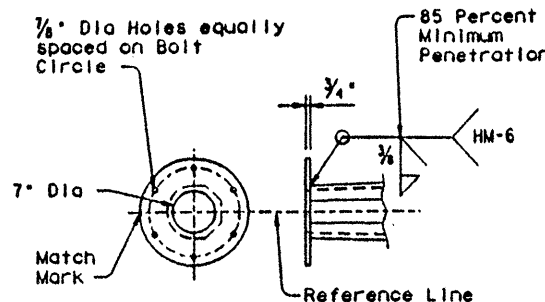
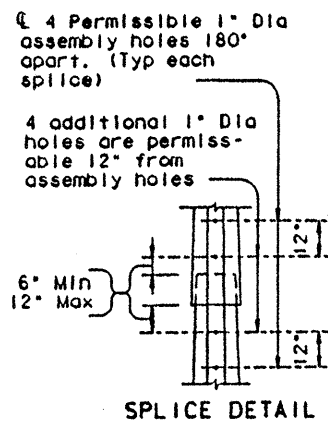
STATE DEPARTMENT OF HIGHWAYS  
AND PUBLIC TRANSPORTATION

HIGH MAST ILLUMINATION  
DETAILS  
HMID (10)-86

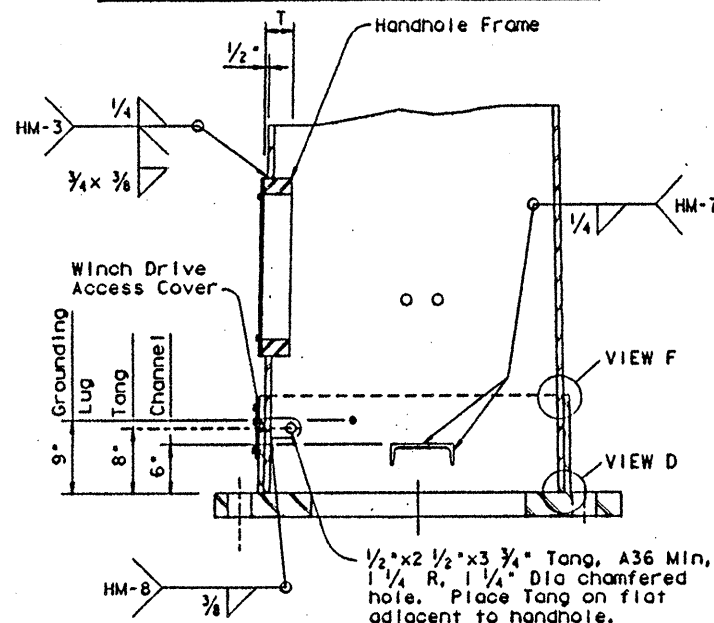
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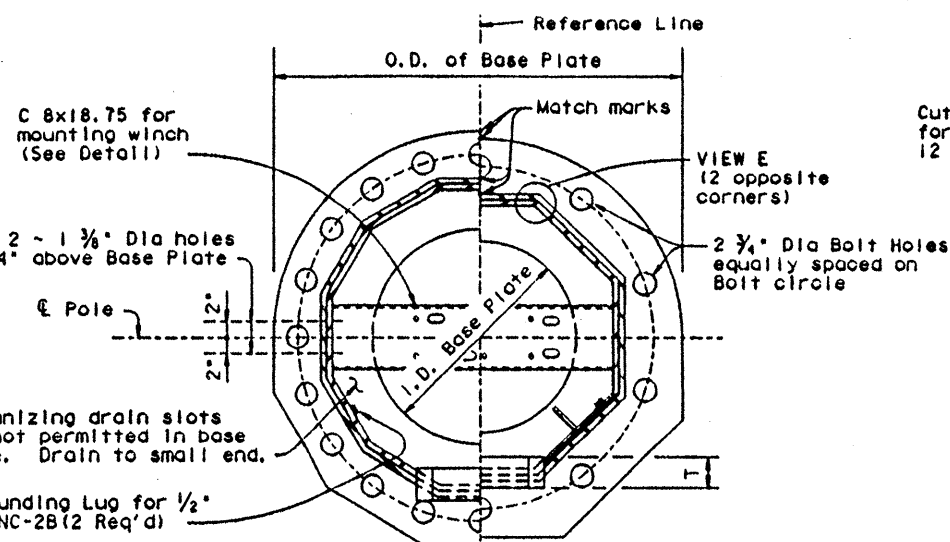
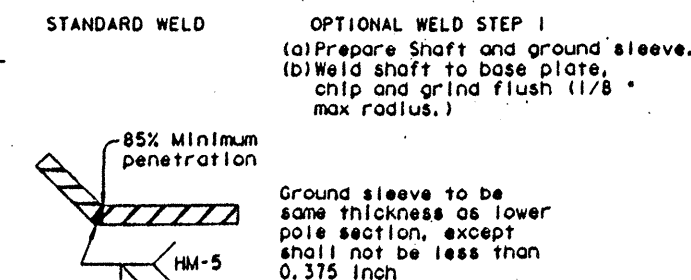
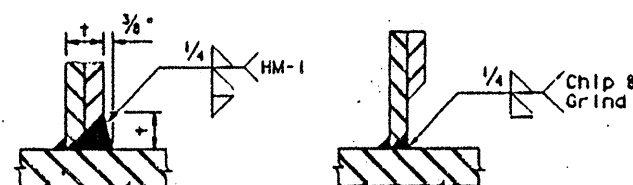
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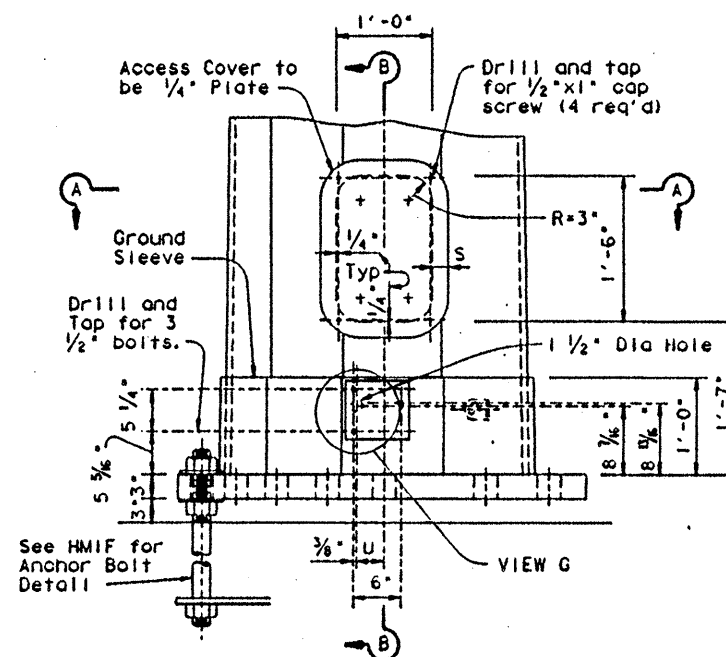
### WINCH DRIVE ACCESS COVER



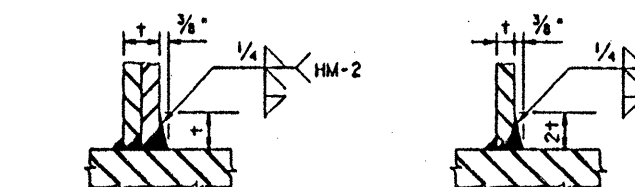
### SECTION B-B



### ELEV OF POLE BASE



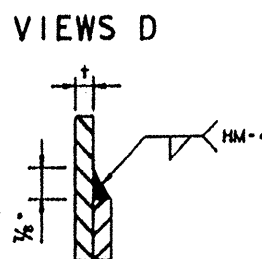
### OPTIONAL WELD STEP 2



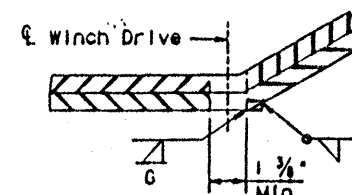
OPTIONAL WELD STEP 2

(a) Position ground sleeve.

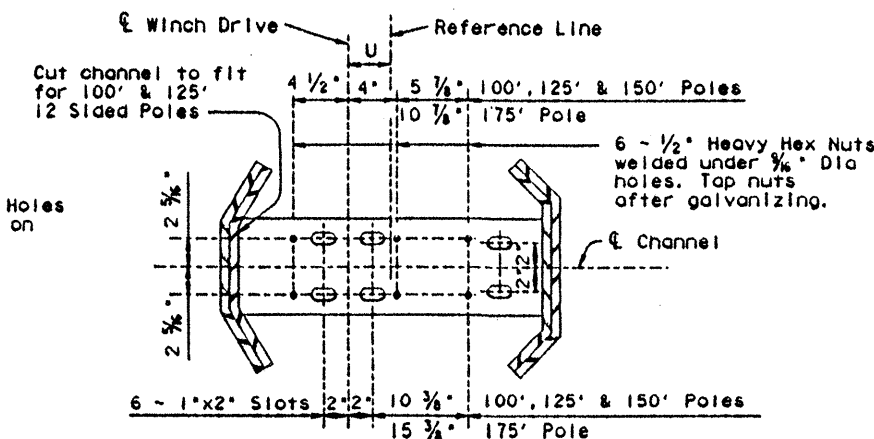
(d) Weld to base plate with tapered reinforcement.



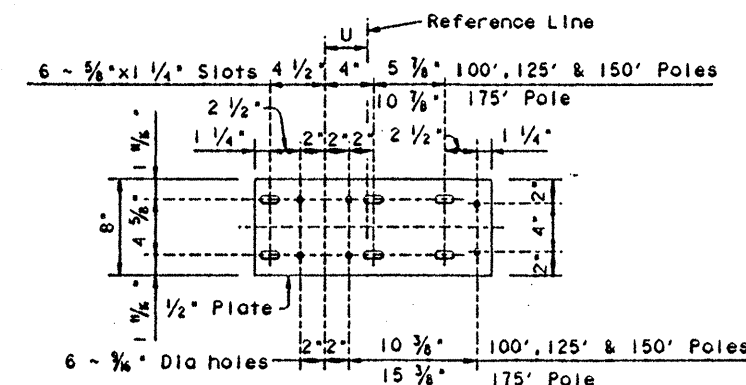
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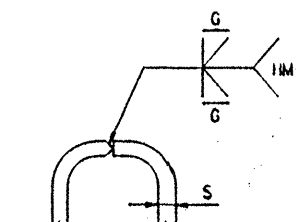
Provide welded and ground filler or cover plate where winch drive conflicts with bend line in ground sleeve for the 8 sided, 80 mph, 100' pole, the 12 sided, 100 mph, 100' pole, and the 12 sided, 80 mph, 175', 125' and 100' poles.



### WINCH MOUNTING CHANNEL



### WINCH MOUNTING PLATE



A bent and welded handhole frame is permissible. Heating, bending, and finish grinding must be approved with the HM-9 weld procedure.

### OPTIONAL HANDHOLE FRAME

87

SHEET 1 OF 2

Texas Department of Transportation  
Design Division (Bridge Section)

**HIGH MAST  
ILLUMINATION POLES  
100' - 125' - 150' - 175'**

**HMIP**

DATE: NOVEMBER 1994	BY: THD	CHK: JJP	APP: LW	DES: LDS	REV: B285
REVISIONS	DATE	BY	CHK	APP	REV
1	10/16/94	THD	JJP	LW	B285
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9	11/16/94	THD	JJP	LW	B285
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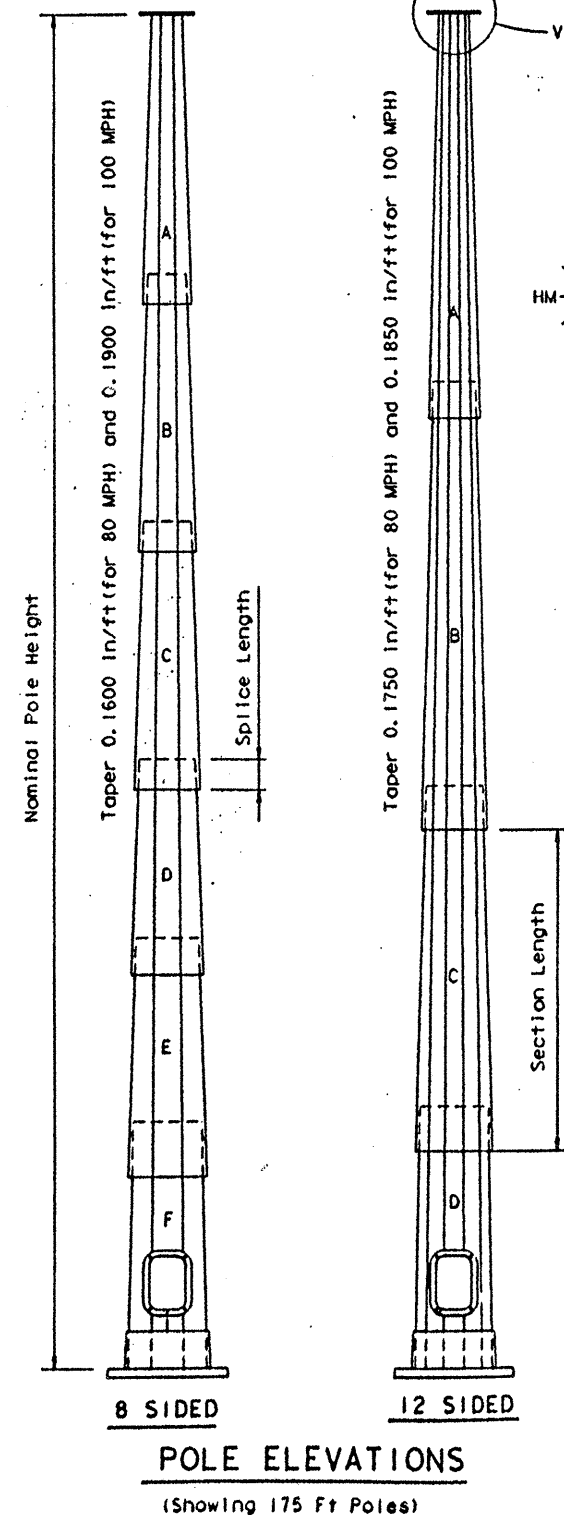




TABLE OF VARIABLE POLE DIMENSIONS												
8 SIDED POLE							12 SIDED POLE					
Ht (ft)	Section	Diameter (Inches)		Thickness (Inches)	Length (feet)	Splice (Inches)	Diameter (Inches)		Thickness (Inches)	Length (feet)	Splice (Inches)	
		Bottom	Top				Bottom	Top				
80 MPH DESIGNS	175	A	13.083	7.750	.250	33.33	19	16.792	7.750	.250	51.67	24
		B	17.792	12.205	.375	34.92	25	24.858	15.817	.313	51.67	36
		C	22.250	16.583	.375	35.42	32	32.625	23.583	.313	51.67	48
		D	25.375	20.948	.438	27.67	36	36.250	31.175	.375	29.00	~
		E	28.375	23.895	.500	28.00	41					
		F	31.250	25.703	.500	28.42	~					
150	A	13.083	7.750	.250	33.33	19	16.792	7.750	.250	51.67	24	
	B	17.792	12.205	.375	34.92	25	24.858	15.817	.313	51.67	36	
	C	22.250	16.583	.375	35.42	32	32.625	23.583	.313	51.67	~	
	D	25.375	20.948	.438	27.67	36						
125	A	13.083	7.750	.250	33.33	19	16.792	7.75	.250	51.67	24	
	B	17.792	12.205	.375	34.92	25	24.858	15.817	.313	51.67	36	
	C	22.250	16.583	.375	35.42	32	28.250	23.583	.313	26.67	~	
	D	25.375	20.948	.438	27.67	~						
100	A	13.083	7.750	.250	33.33	19	16.792	7.750	.250	51.67	24	
	B	17.792	12.205	.375	34.92	25	24.625	15.817	.313	50.33	~	
	C	22.250	16.583	.375	35.42	~						
100 MPH DESIGNS	175	A	14.208	7.875	.313	33.33	20	17.433	7.875	.375	51.67	25
		B	19.792	13.142	.375	35.00	28	25.747	16.173	.438	51.75	37
		C	25.250	18.473	.438	35.67	36	33.375	24.176	.438	51.75	49
		D	29.000	23.680	.500	28.00	42	37.375	31.995	.500	29.08	~
		E	32.625	27.210	.563	28.50	47					
		F	36.125	30.631	.563	28.92	~					
	150	A	14.208	7.875	.313	33.33	20	17.433	7.875	.375	51.67	25
		B	19.792	13.142	.375	35.00	28	25.747	16.173	.438	51.75	37
		C	25.250	18.473	.438	35.67	36	33.750	24.176	.438	51.75	~
		D	29.00	23.680	.500	28.00	42					
	125	E	32.625	27.210	.563	28.50	~					
		A	14.208	7.875	.313	33.33	20	17.433	7.875	.375	51.67	25
		B	19.792	13.142	.375	35.00	28	25.747	16.173	.438	51.75	37
		C	25.250	18.473	.438	35.67	36	29.176	24.176	.438	26.75	~
	100	D	29.00	23.680	.500	28.00	~					
		A	14.208	7.875	.313	33.33	20	17.433	7.875	.375	51.67	25
		B	19.792	13.142	.375	35.00	28	25.500	16.173	.375	50.42	~
		C	25.250	18.473	.438	35.67	~					

TABLE OF VARIABLE BASE DIMENSIONS							
Ht (ft)	O.D. (Inches)	I.D. (Inches)	Bolt Ctr (Inches)	No. Bolts	S (Inches)	T (Inches)	U (Inches)
80 MPH DESIGNS							
8 SIDED POLE							
175'	46	22	40	16	2.00	3.75	4.50
150'	42	18	36	12	2.00	4.00	3.50
125'	39	16	33	8	2.00	4.50	3.50
100'	36	14	30	6	2.00	5.00	3.50
12 SIDED POLE							
175'	48	24	42	12	1.75	3.50	3.50
150'	46	22	40	10	1.75	3.50	2.50
125'	42	18	36	8	1.75	3.75	2.50
100'	37	13	31	6	1.75	4.00	2.50
100 MPH DESIGNS							
8 SIDED POLE							
175'	52	27	46	20	1.75	3.50	4.50
150'	48	23	42	16	1.75	4.00	3.50
125'	44	21	38	12	1.75	4.50	3.50
100'	40	17	34	10	1.75	4.50	3.50
12 SIDED POLE							
175'	52	27	46	16	1.75	3.25	3.50
150'	50	25	44	12	1.75	3.50	2.50
125'	46	22	40	10	1.75	3.75	2.50
100'	42	19	36	6	1.75	4.00	2.50

NOTE: Base Plate may be round or with 8 or 12 equal segments matching the pole.

#### GENERAL NOTES:


Design conforms to AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. The Design Wind Speed is 80 mph or 100 mph.

The required design height and wind speed shall be as shown elsewhere in the plans.

Each pole section, top flange plate and base plate shall be permanently marked on the reference line. The required mark locations are shown on the baseplate, top plate, and foundation plan details. These marks shall be used in pole assembly and erection alignment. The reference line and anchor bolt orientation shall be parallel to roadway centerline unless otherwise shown on Lighting Layouts.

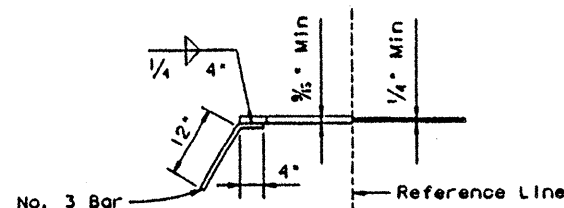
# 87A

SHEET 2 OF 2

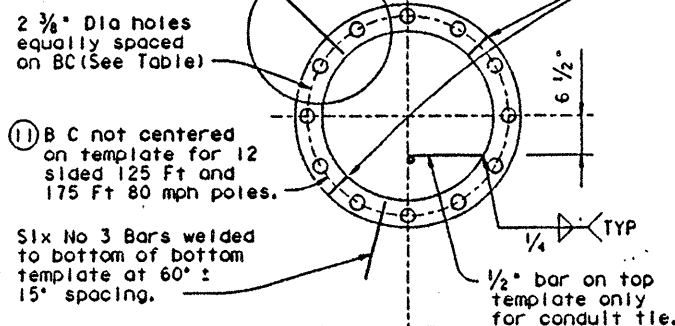
 <b>Texas Department of Transportation</b> Design Division (Bridge Section)							
<b>HIGH MAST ILLUMINATION POLES</b> 100' - 125' - 150' - 175'							
<b>HMIP</b>							
DATE: NOVEMBER 1994    DESIGNED: THD    CHECKED: JJP    APPROVED: LW    DESIGNED: LDS    REVISED: B285							
REVISIONS:							
16		6		1M37-1(103)000		87A	
COUNTY:		SECTION:		AND:		SHEET:	
NHECES		70		6		1/79/11/37	

No 3 Bars may be bent inside and in plane of nuts for shipping of lower template.

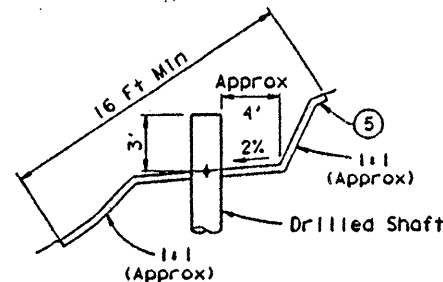
VIEW F



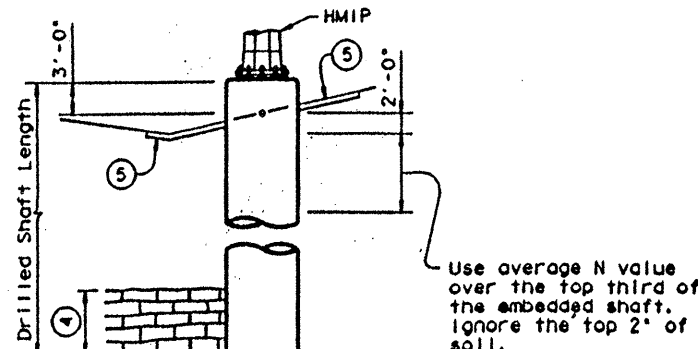
VIEW F



ANCHOR BOLT TEMPLATES

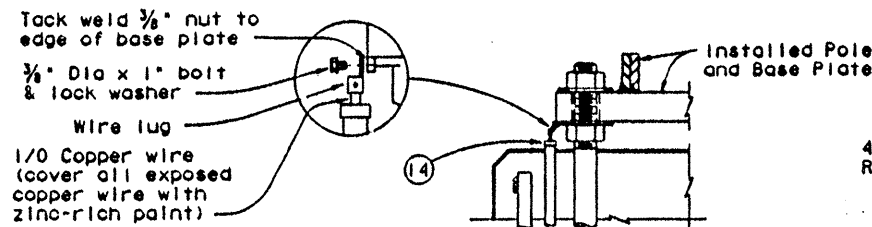


RIPRAP ON SLOPES

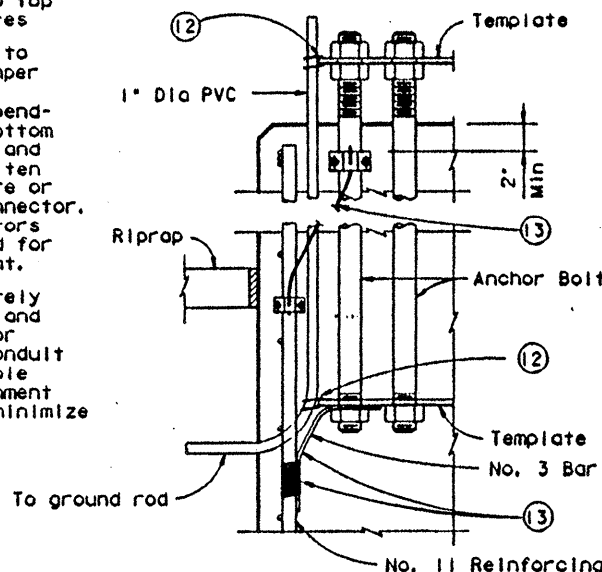


⑤ Match slope of finished ground if slope is less than approx 4 to 1. For steeper slopes, bench to provide work area with approx 2% slope around pole base. Other configurations may be shown elsewhere on the plans.

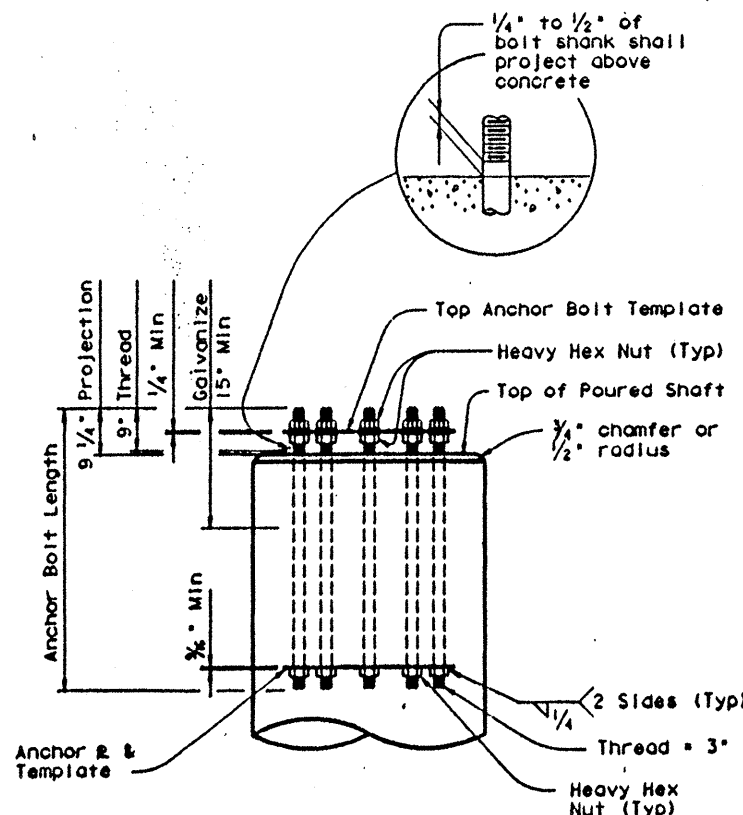
④ If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.



- ⑫ Wire 1" Dia PVC to top and bottom templates
- ⑬ Bond anchor bolts to rebar with 1/0 jumper and two mechanical connectors or by bending No 3 bar on bottom template as shown and wire tightly with ten turns of No 10 wire or one mechanical connector. Mechanical connectors shall be UL listed for concrete encasement.
- ⑭ Cut PVC approximately 1" above concrete and install bell and/or bushing. Align conduit as close as possible to point of attachment to base plate to minimize bends in 1/0 wire.

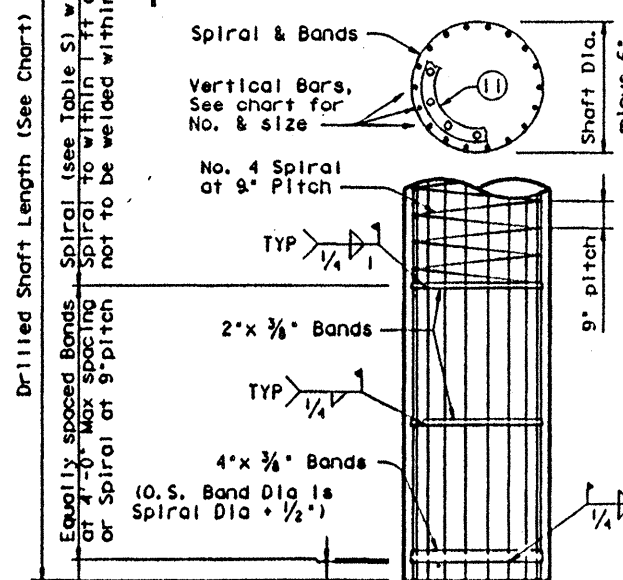
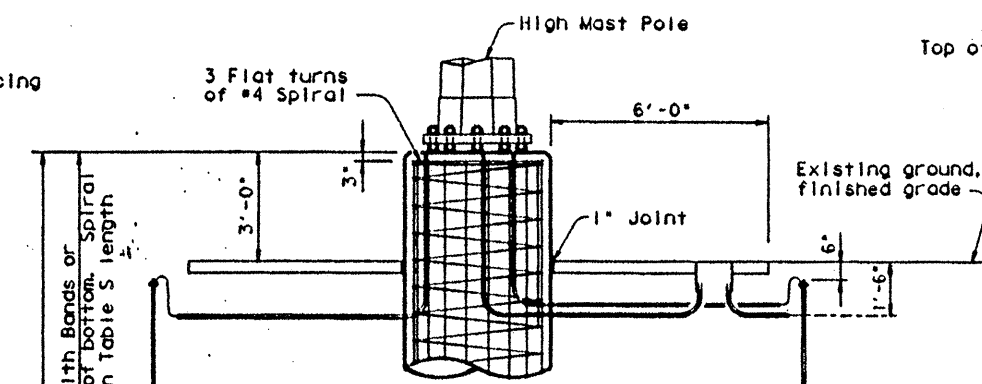
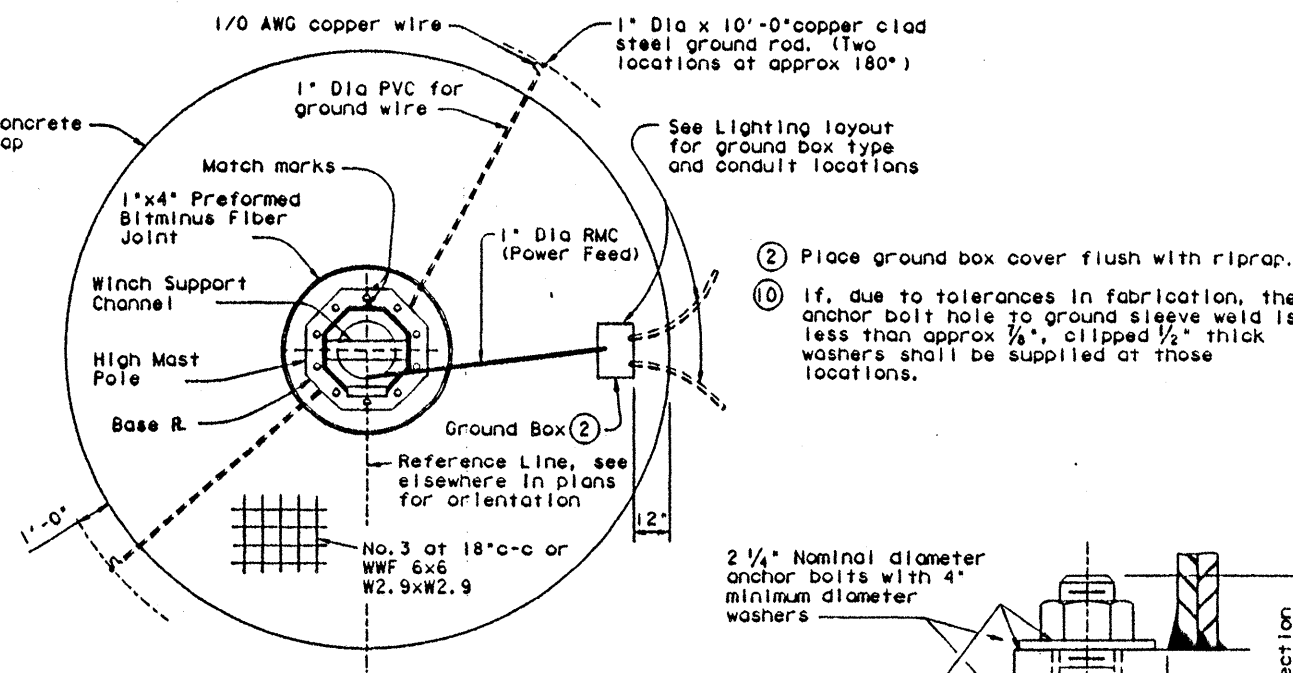


LIGHTNING PROTECTION SYSTEM



ANCHOR BOLT ASSEMBLY

(See Anchor Bolt Table for number of bolts required)



Vertical bars may be supported on bottom of drilled hole if material is firm enough to do so when concrete is placed

DRILLED SHAFT FOUNDATION DETAIL

Lower Template for 12 sided, 125 Ft & 175 Ft 80 mph poles is tight within the reinforcing cage. Care in assembling the upper part of reinforcing cage is necessary. ⑪

Shaft Dia (Inches)	Min Spiral Length (feet)
48	19
54	21
60	23

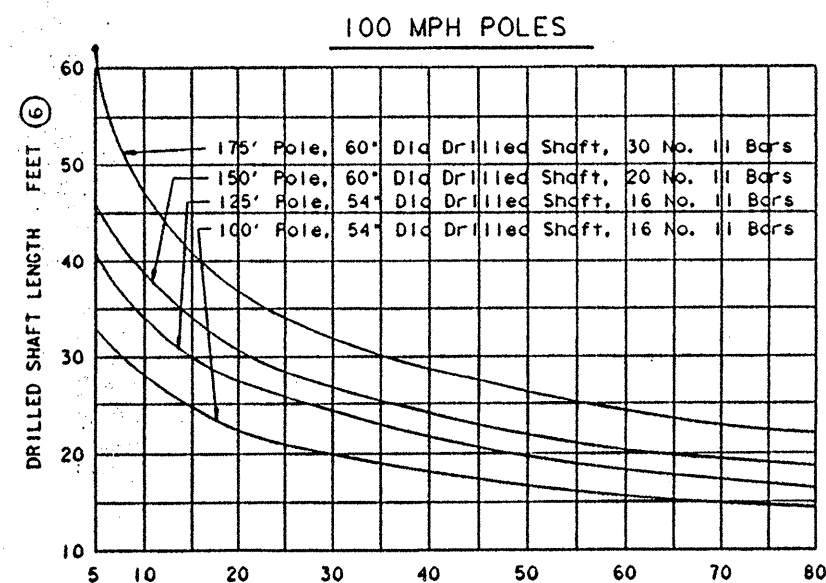
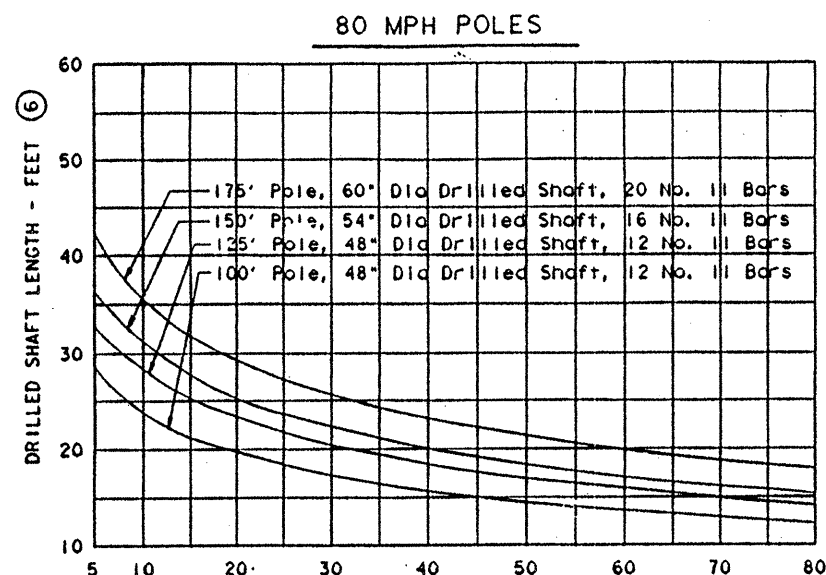
88

SHEET 1 OF 2

Texas Department of Transportation Design Division (Bridge Section)	
HIGH MAST ILLUMINATION POLE FOUNDATIONS	
HMIF	
DATE: NOVEMBER 1994	DESIGN: TMD
CONTRACT: 116	PROJECT: 116
SECTION: 116	NO. 116
DATE: 11/6	NO. 116



- ⑥ Includes normal 3 Ft exposure  
Shafts with more than 3 Ft  
exposure must have additional  
length.



**ANCHOR BOLT TABLE**

80 MPH DESIGNS

Pole Height (feet)	Bolt Diameter (Inches)	Bolt Length (feet)	Bolt Templates		No. of Bolts ~	Bolt Circle B C (Inches)
			O D (Inches)	I D (Inches)		
8 SIDED POLE						
175'	2.25	4.83	44.5	35.5	16	40
150'	2.25	4.83	40.5	31.5	12	36
125'	2.25	4.83	37.5	28.5	8	33
100'	2.25	4.83	34.5	25.5	6	30
12 SIDED POLE * (See (1))						
175'	2.25	4.83	46.0*	37.0*	12	42*
150'	2.25	4.83	44.5	35.5	10	40
125'	2.25	4.83	40.0*	31.0*	8	36*
100'	2.25	4.83	35.5	26.5	6	31

100 MPH DESIGNS

8 SIDED POLE						
175'	2.25	4.83	50.5	41.5	20	46
150'	2.25	4.83	46.5	37.5	16	42
125'	2.25	4.83	42.5	33.5	12	38
100'	2.25	4.83	38.5	29.5	10	34
12 SIDED POLE						
175'	2.25	4.83	50.5	41.5	16	46
150'	2.25	4.83	48.5	39.5	12	44
125'	2.25	4.83	44.5	35.5	10	40
100'	2.25	4.83	40.5	31.5	6	36

**MISCELLANEOUS QUANTITIES - ONE HMIF**

Shaft Diameter (In) (7)	48	54	60
Concrete Riprap (CY)	2.33	2.44	2.56
Reinforcing (Lbs) (8)	94	99	103
Ground Box (ea)	1	1	1
R O W Marker (ea) (9)	1	1	1

- ⑦ See elsewhere on plans for length of Drilled Shaft required.  
⑧ For Contractors Information only.  
⑨ Designated elsewhere on plans if required.

**GENERAL NOTES:**

Unless otherwise noted, the welded steel  
bands may be replaced with spiral as shown on  
the foundation details.

Anchor bolts shall be placed in foundation  
so there are always two bolts on reference line.

Drilled shaft lengths as determined from  
the foundation design chart or other acceptable  
methods are to be as shown elsewhere on the  
plans.

ODSR may not be used for HMIF drilled  
shafts.

Concrete for drilled shafts shall be  
Class C.

Repair welded areas with zinc-rich paint.

All Anchor Bolts, Nuts and Washers shall  
be galvanized in accordance with Item 445,  
"Galvanizing".

88A

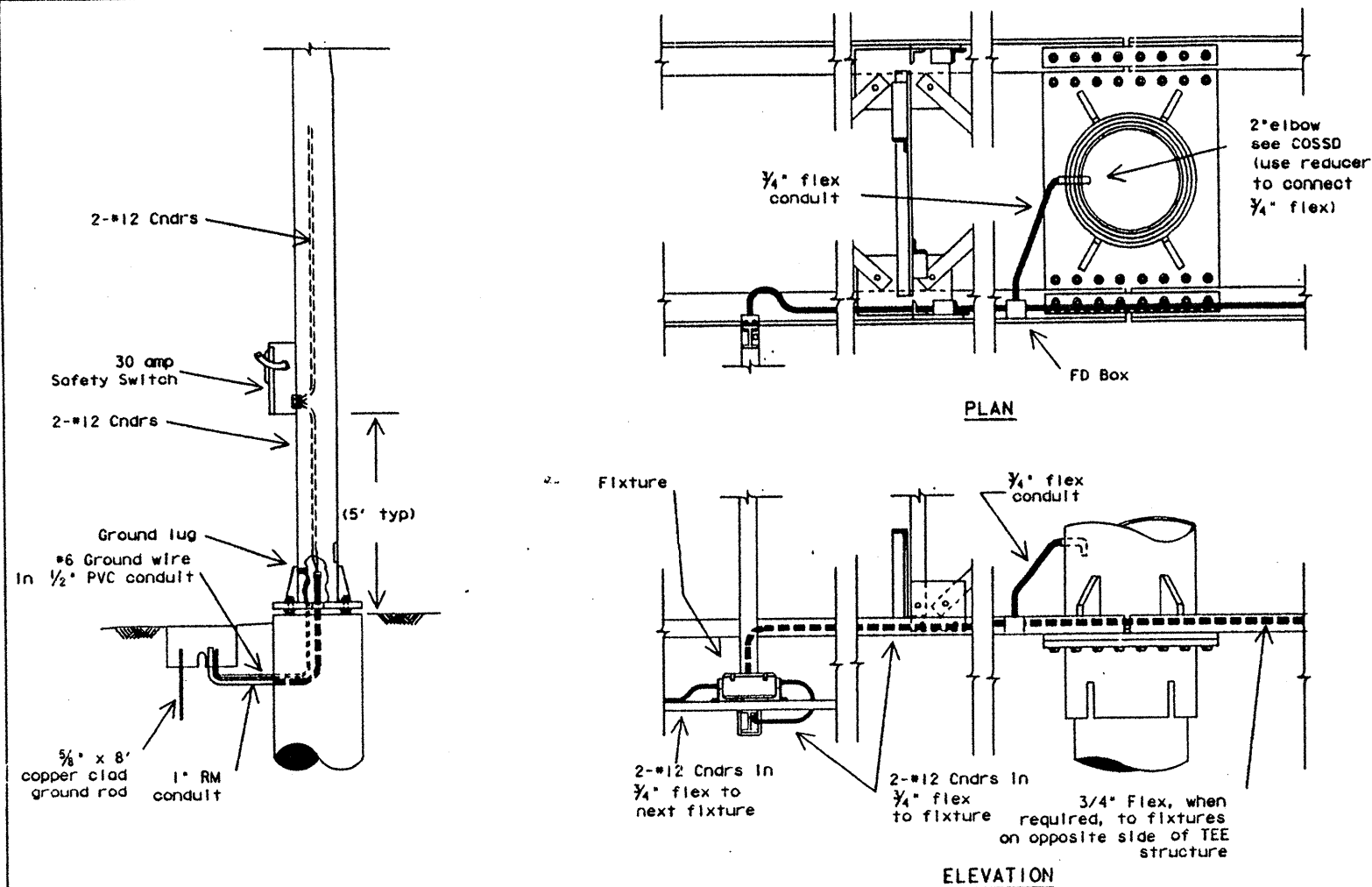
SHEET 2 OF 2

**Texas Department of Transportation**  
Design Division (Bridge Section)

**HIGH MAST  
ILLUMINATION POLE  
FOUNDATIONS**

**HMIF**

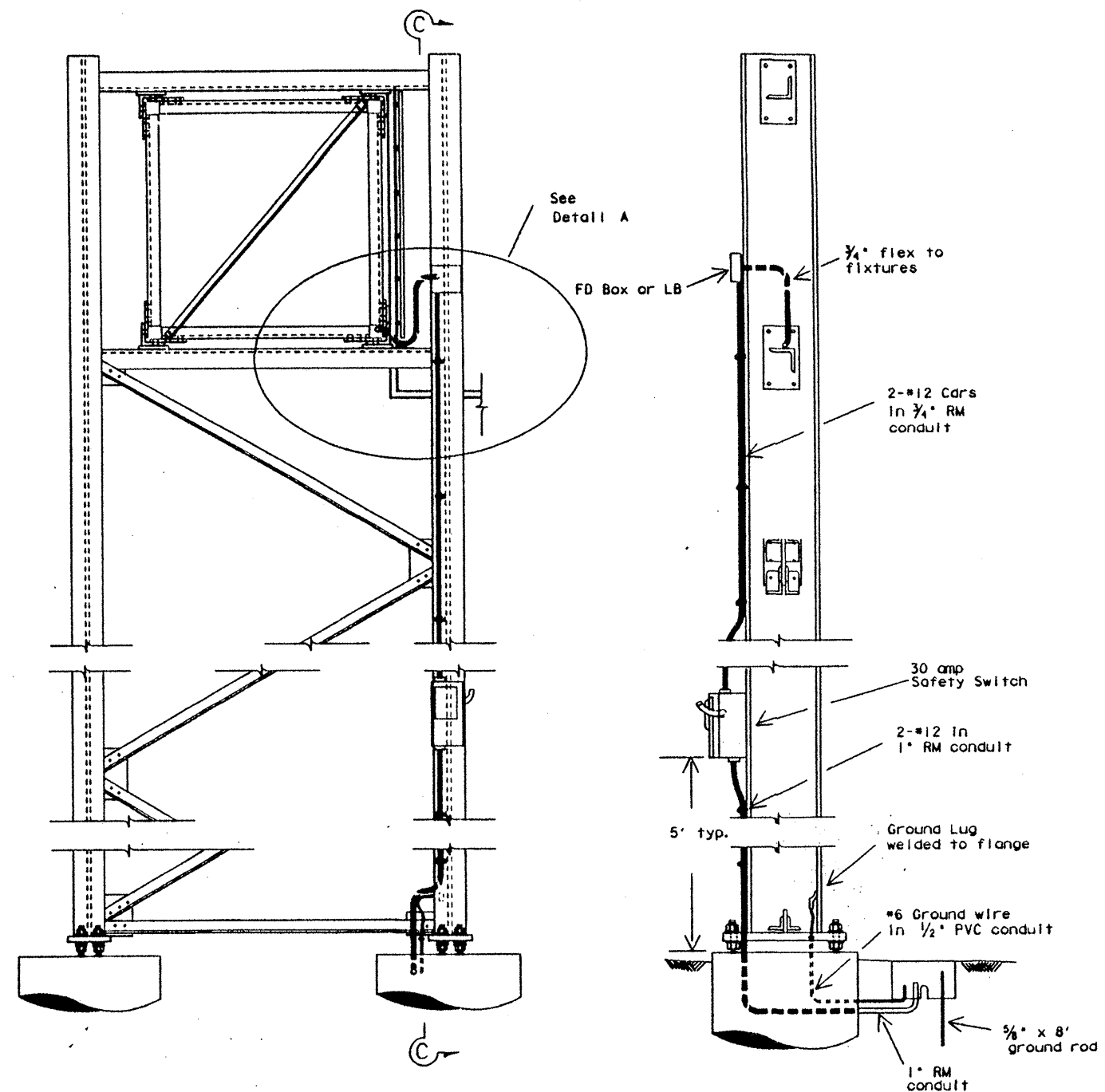
DATE: NOVEMBER 1994	BY: THD	CHK: THD	APP: LW	DES: LDS	REV: 0286
PROJECT: FM 37-1 (103) 000	SHEET: 88A	COUNT: 1	SECTION: 1	AS BUILT: 1/1/97	



TYPICAL ELECTRICAL DETAILS  
SIGN STRUCTURE

NOTES:

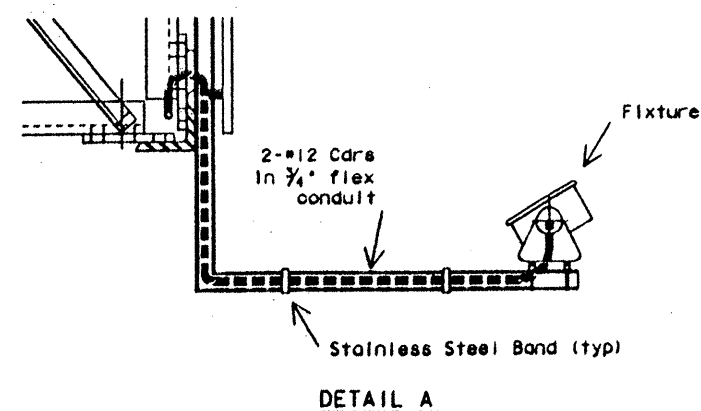
1. See OSBT and COSSD for additional foundation details.
2. Furnish and install grounding lugs on sign structures as shown.
3. Safety switch shall be a 30 amp 240, 480, or 600 volt, as required. Fusible safety switch shall be in a NEMA 3R enclosure and shall be heavy duty. DO NOT switch the grounded conductor. Install 20 amp fuses.
4. Circuit conductors shall be two insulated conductors (Type XHHW).
5. Flex conduit shall be liquid-tight flexible metal conduit. All fittings shall be NEC and NEMA approved for outdoor use.
6. Ends of all rigid metal conduit not terminating in a threaded hub shall be fitted with a grounding bushings. Conduit (flex and rigid) shall be strapped to sign structures using stainless steel strapping or galvanized malleable iron conduit straps. The maximum spacing for straps shall be 5 feet for RMC and 3 feet for flexible conduit.
7. The No. 6 grounding conductor (bonding jumper) shall be continuous, without splice, from the sign structure to the ground rod and shall be run as straight as possible (do not coil wire). Connect the grounding conductor from the branch circuit to the No. 6 bonding jumper and to the conduit bushing in the ground box.
8. The Contractor shall modify safety switch to allow padlocking in the 'ON' and in the 'OFF' positions.
9. Unless otherwise shown on the plans, Safety switch will not be paid for directly but shall be subsidiary to item 652, 'Highway Sign Lighting Fixtures'. Unless otherwise shown on the plans, Conduit, Conductor and miscellaneous items from ground box to sign lights will not be paid for separately but will be subsidiary to the various bid items.



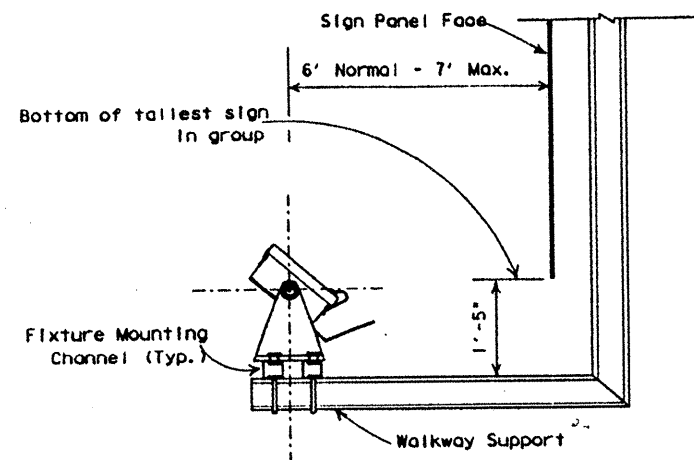
TYPICAL ELECTRICAL DETAILS  
OVERHEAD SIGN BRIDGE

SECTION C-C

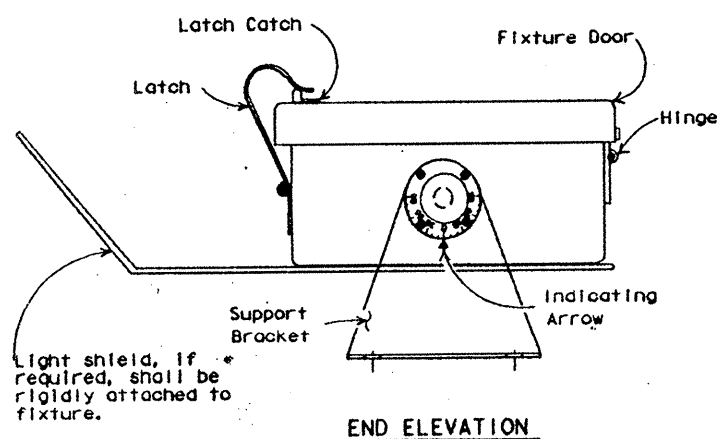
89



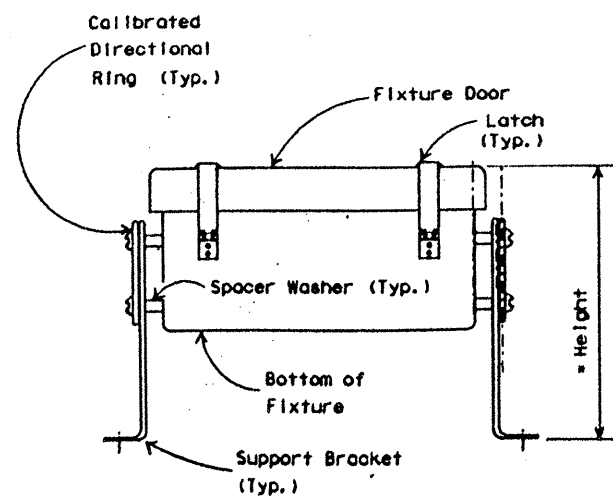
STANDARD PLANS		TEXAS DEPARTMENT OF TRANSPORTATION	
SIGN LIGHTING ELECTRICAL DETAILS			
SL(1)-93			
REVISIONS	DATE	BY	CHKD
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68	10-93 K.A.B.	16	6
69	10-93 K.A.B.	16	6
70	10-93 K.A.B.	16	6
71	10-93 K.A.B.	16	6
72	10-93 K.A.B.	16	6
73	10-93 K.A.B.	16	6
74	10-93 K.A.B.	16	6
75	10-93 K.A.B.	16	6
76	10-93 K.A.B.	16	6
77	10-93 K.A.B.	16	6
78	10-93 K.A.B.	16	6
79	10-93 K.A.B.	16	6
80	10-93 K.A.B.	16	6
81	10-93 K.A.B.	16	6
82	10-93 K.A.B.	16	6
83	10-93 K.A.B.	16	6
84	10-93 K.A.B.	16	6
85	10-93 K.A.B.	16	6
86	10-93 K.A.B.	16	6
87	10-93 K.A.B.	16	6
88	10-93 K.A.B.	16	6
89	10-93 K.A.B.	16	6
90	10-93 K.A.B.	16	6
91	10-93 K.A.B.	16	6
92	10-93 K.A.B.	16	6
93	10-93 K.A.B.	16	6
94	10-93 K.A.B.	16	6
95	10-93 K.A.B.	16	6
96	10-93 K.A.B.	16	6
97	10-93 K.A.B.	16	6
98	10-93 K.A.B.	16	6
99	10-93 K.A.B.	16	6
100	10-93 K.A.B.	16	6



**MOUNTING DETAILS**



**END ELEVATION**



**FRONT ELEVATION**

		END OF SIGN PANEL Light Fixtures			
		ES	SL	SL	ES
9'-0" Wide	2'-0"	5'-0"	2'-0"		
10'-0"	2'-3"	5'-3"	2'-3"		
10'-6"	2'-6"	5'-6"	2'-6"		
11'-0"	2'-9"	5'-9"	2'-9"		
11'-6"	3'-0"	6'-0"	3'-0"		
12'-0"	3'-3"	6'-3"	3'-3"		
12'-6"	3'-6"	6'-6"	3'-6"		
13'-0"	3'-9"	6'-9"	3'-9"		
13'-6"	4'-0"	7'-0"	4'-0"		
14'-0"	4'-3"	7'-3"	4'-3"		
14'-6"	4'-6"	7'-6"	4'-6"		
15'-0"	4'-9"	7'-9"	4'-9"		
15'-6"	5'-0"	8'-0"	5'-0"		

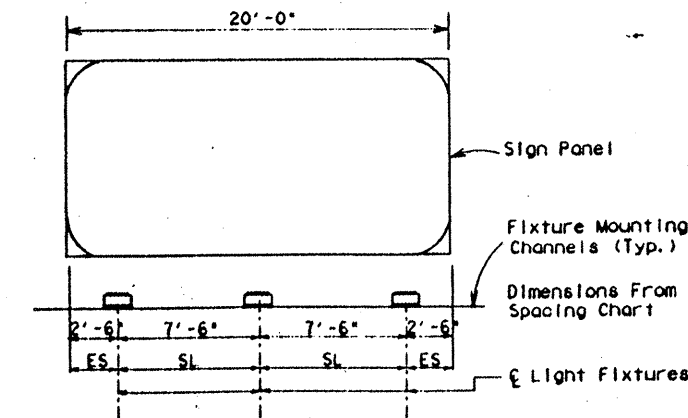
  

		Light Fixtures			
		ES	SL	SL	ES
16'-0"	2'-6"	5'-6"	2'-6"		
16'-6"	2'-9"	5'-9"	2'-9"		
17'-0"	3'-0"	6'-0"	3'-0"		
17'-6"	3'-3"	6'-3"	3'-3"		
18'-0"	3'-6"	6'-6"	3'-6"		
18'-6"	3'-9"	6'-9"	3'-9"		
19'-0"	4'-0"	7'-0"	4'-0"		
19'-6"	4'-3"	7'-3"	4'-3"		
20'-0"	4'-6"	7'-6"	4'-6"		
20'-6"	4'-9"	7'-9"	4'-9"		
21'-0"	5'-0"	8'-0"	5'-0"		
21'-6"	5'-3"	8'-3"	5'-3"		
22'-0"	5'-6"	8'-6"	5'-6"		
22'-6"	5'-9"	8'-9"	5'-9"		
23'-0"	6'-0"	9'-0"	6'-0"		

		Light Fixtures			
		ES	SL	SL	ES
23'-6"	2'-9"	6'-9"	2'-9"		
24'-0"	3'-0"	7'-0"	3'-0"		
24'-6"	3'-3"	7'-3"	3'-3"		
25'-0"	3'-6"	7'-6"	3'-6"		
25'-6"	3'-9"	7'-9"	3'-9"		
26'-0"	4'-0"	8'-0"	4'-0"		
26'-6"	4'-3"	8'-3"	4'-3"		
27'-0"	4'-6"	8'-6"	4'-6"		
27'-6"	4'-9"	8'-9"	4'-9"		
28'-0"	5'-0"	9'-0"	5'-0"		
28'-6"	5'-3"	9'-3"	5'-3"		
29'-0"	5'-6"	9'-6"	5'-6"		
29'-6"	5'-9"	9'-9"	5'-9"		

**SPACING FOR 100W MERCURY  
VAPOR LIGHT FIXTURES PER SIGN PANEL**



**EXAMPLE OF TYPICAL FIXTURE PLACEMENT  
(FOR 20'-0" SIGN PANEL WIDTH)**

**NOTES**

**I. Fixtures.**

A. Fixtures shall be constructed of aluminum, galvanized steel or other approved weather-resistant materials and so constructed as to form a weather-tight unit of sufficient strength to withstand normal installation and maintenance operations. The fixture shall not exceed 2.0 square feet in effective projected area nor exceed 35.0 pounds in gross weight, including ballast.

B. The fixture shall have aiming provisions that are continuously variable through all aiming angles for 15 degrees either side of the optimum aiming angle. Aiming shall be marked in 5-degree increments. Provisions shall be incorporated to positively lock the fixture in the desired position. Mounting provisions shall rigidly support the fixture and be compatible with mounting requirements shown on the plans. When aimed at any of the required angles, the overall height of the fixture above a plane passing through and parallel to the mounting base shall not exceed 11 inches.

C. The optic assembly shall be fitted with resilient gaskets to maintain a positive seal against weather and other contaminants. The lens of the optic assembly shall be tempered glass. Removable covers and lens for fixture and ballast shall be so designed to be opened for routine maintenance without the use of tools. A keeper shall be provided to prevent unintentional separation of lens assemblies or covers from the fixture housing. The metal socket shall incorporate a means to positively resist lamp removal and shall include a porcelain base that completely encases the metal shell. The socket shall be UL-approved.

D. When shown on the plans or required by the Engineer, light shields shall be installed on fixtures to prevent glare to the motorists. All fixtures that are to be installed on bridge-mounted signs shall be equipped with vandal guards approved by the Engineer. Guards and/or light shields will not be paid for directly but will be considered incidental to the item "Highway Sign Lighting Fixtures".

E. The lighting fixture shown is an example only and is not intended to specify a certain manufacturer's product. Other comparable designs which meet the requirements of the specifications and approved by the Engineer, will be accepted.

**II. Ballasts.**

A. The fixture may be internally or externally ballasted with a regulated output-type ballast (CW) designed to operate mercury vapor lamps. External ballast shall be in weatherproof enclosure.

B. During fluctuation of the primary voltage to the ballast of up to 13 percent of rated voltage, the input wattage to the ballast shall not vary more than 8 percent, nor exceed 150 per cent of the lamp's rated wattage. At rated voltage, the power factor shall be not less than 90 per cent. Each ballast shall permanently and clearly indicate the following: ballast type, lamp type, catalog number, voltage rating and wiring diagram. When stick-on or glue-on label is used, permanency will be considered satisfactory when no more than 25 per cent of the label can be removed in one piece. Ballast shall be individually fused with easily accessible in-line 10 amp time-delay fuses.

**III. Lamps.**

A. Lamps shall be 100 watt phosphor-coated mercury vapor with a rated average life of not less than 24,000 hours.

**IV. Photometric Requirements.**

A. The 100 watt fixture, when mounted vertically six feet (to midpoint of mounting channels) above and horizontally 18 in. below the midpoint of either short side of a horizontal rectangular area measuring eight feet by ten feet, with the fixture facing the center of the opposite short side, and when aimed at the optimum angle, shall provide measured intensities of not less than 3.0 nor greater than 50 footcandles on any point within the rectangular area. Measured intensities on the surface of the rectangular area shall change at a rate not to exceed 2.6 footcandles in any one foot interval.

B. Optimum angle is that angle which produces equal measured footcandles on all four corners of the rectangular area. The supplier shall state the optimum angle or the indicator mark shall be centered on 0 at the optimum angle.

**V. Testing.**

A. Sampling and testing will be in accordance with TxDOT's Division of Materials and Test Manual of Testing Procedures. The fixture will be tested using a lamp furnished for the same project.

B. The Department will bear the cost of testing all materials meeting the requirements of this drawing and the specifications. The Contractor will bear the cost of testing all materials failing to meet the above requirements. Costs for testing failed materials will be deducted from amounts due the Contractor on monthly and final estimates.

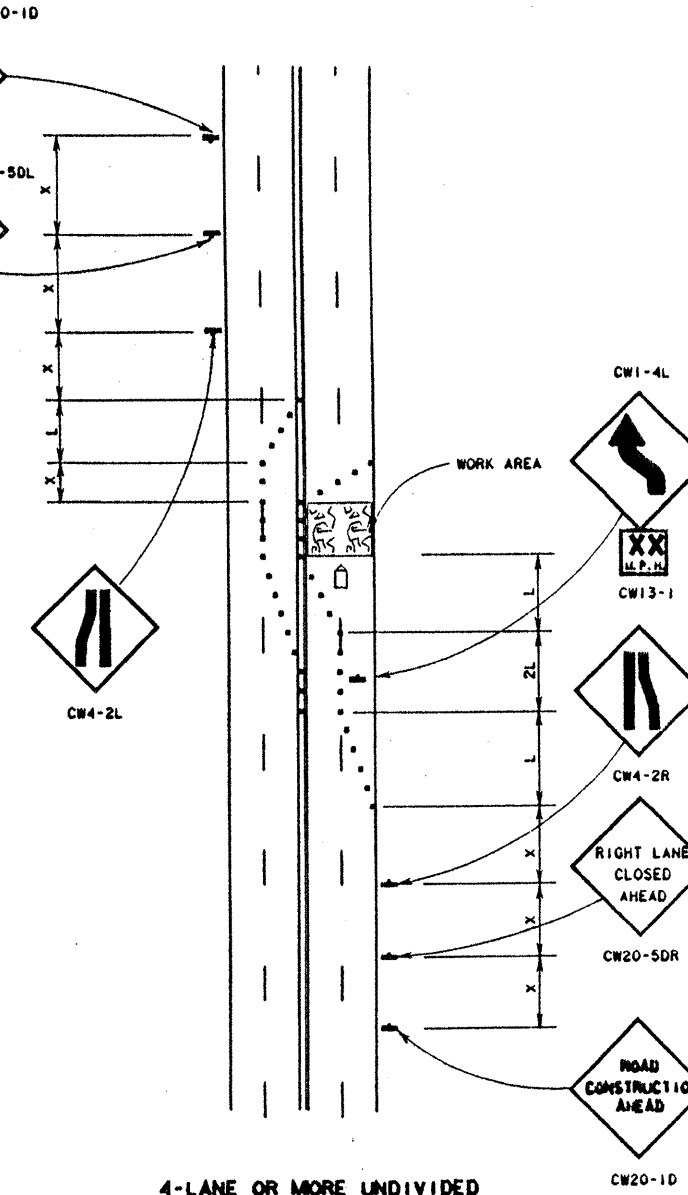
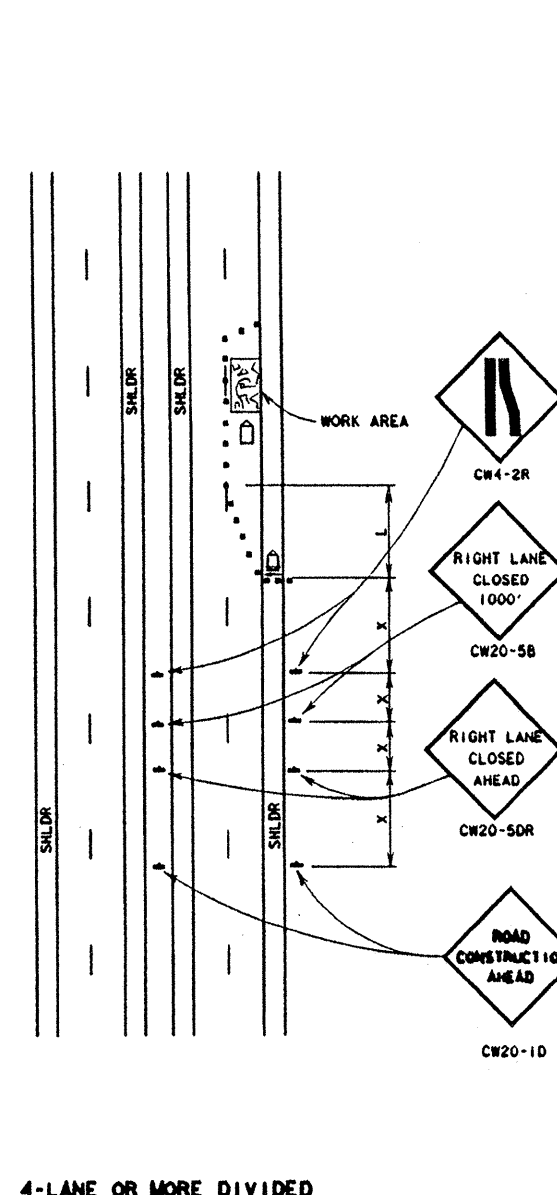
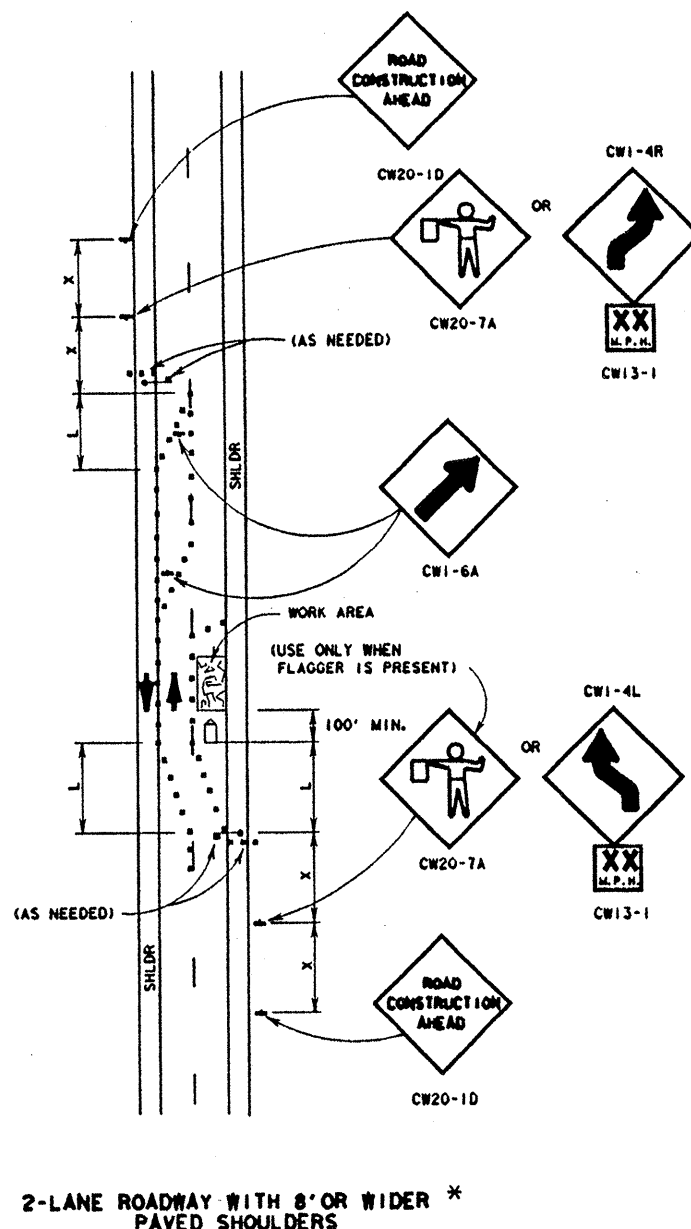
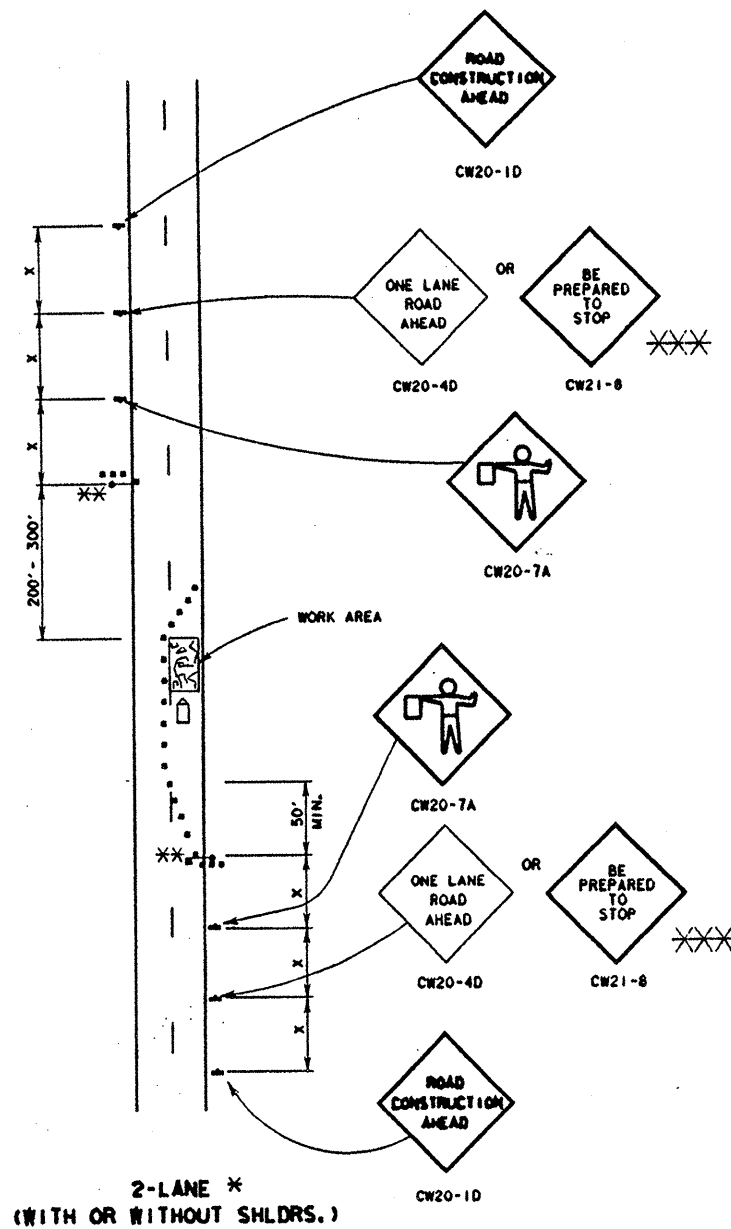
**VI. Conduit and Conductors.**

A. Conduit and fittings furnished and installed under this item shall be in accordance with the item "Conduit", except for measurement and payment.

B. Conductors furnished and installed under this item shall be in accordance with the item "Electrical Conductors", except for measurement and payment.

90

STANDARD PLANS TEXAS DEPARTMENT OF TRANSPORTATION			
MERCURY VAPOR SIGN LIGHTING FIXTURE SL (MV)-93			
ORIGINAL DATE: 01-82	STATE: TEXAS	FEDERAL AID PROJECT: 10-53 K.A.B.	INSET: 10-53 K.A.B.
REVISION: 10-83 K.A.B.	QUANTITY: 104	SECTION: 104	REMARKS: 104
NIPCES 104 104 104 104			



#### LEGEND :

- ... CHANNELIZING DEVICES
- FLAGGER
- TRAILER OR TRUCK MOUNTED ARROW PANEL
- BARRICADE OR TRUCK WITH ORANGE FLAGS OR WARNING SIGNS

#### GENERAL NOTES

- TRAFFIC WILL NOT BE ALLOWED TO PASS ON BOTH SIDES OF THE WORK AREA, UNLESS APPROVED BY THE ENGINEER IN LOW SPEED AREAS.
- THE TRAFFIC CONTROL DEVICES SHOWN ARE THE MINIMUM REQUIRED. ADDITIONAL TRAFFIC CONTROL DEVICES MAY BE NECESSARY TO ROUTE TRAFFIC AROUND THE WORK AREA.
- THE FOLLOWING TRAFFIC CONTROL DEVICES SHALL BE PLACED IN ADVANCE OF THE PROJECT LIMITS. OBSERVE WARNING SIGNS STATE LAW (R20-3), END CONSTRUCTION (G20-2), CONTRACTORS NAME (G20-6), ROAD CONSTRUCTION NEXT XX MILES (G20-1), AND TYPE III (C) BARRICADES.
- ASPHALT AND AGGREGATE DISTRIBUTORS, ROLLERS, OR ANY OTHER EQUIPMENT REQUIRED BY THE ENGINEER SHALL HAVE FLAG CLUSTERS AND BEACONS MOUNTED TO VEHICLE.
- SIGNS SHALL BE MOVED PERIODICALLY SO AS TO RELATE POSITIVELY TO THE WORK AREA.
- ARROW PANEL SHALL BE TYPE C (15 LAMPS, MINIMUM SIZE OF 48" X 96").
- ONE OR MORE FLAGGERS ARE TO BE USED WHERE TRAFFIC, ROAD CONDITIONS, OR TERRAIN WARRANT THEIR USE.

TABLE FOR DIMENSION "X"  
(SIGN SPACING)

POSTED SPEED OR 85% SPEED (MPH)	X MIN. DISTANCE (FEET)
30 OR LESS	80
35	120
40	160
45	240
50	320
* 55	500
* 65	750

\* ROADS WITH A 55 OR 65 MPH POSTED SPEED LIMIT, SHOULD HAVE THE FIRST ADVANCE WARNING SIGNS PLACED AT LEAST 1500 FT. IN ADVANCE OF THE CONDITION TO WHICH THEY ARE CALLING ATTENTION. WHERE A SERIES OF ADVANCE WARNING SIGNS ARE USED, THE WARNING SIGN NEAREST THE WORK SITE SHOULD BE PLACED NO CLOSER THAN THE "X" DISTANCE SPECIFIED IN THE TABLE ABOVE.

POSTED SPEED *	FORMULA	MINIMUM DESIRABLE TAPER LENGTHS **			SUGGESTED MAXIMUM SPACING OF DEVICE	
		10' OFFSET	11' OFFSET	12' OFFSET	ON A TAPER	ON A TANGENT
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60' - 75'
35		205'	225'	245'	35'	70' - 90'
40		265'	295'	320'	40'	80' - 100'
45	L = WS	450'	495'	540'	45'	90' - 110'
50		500'	550'	600'	50'	100' - 125'
55		550'	605'	660'	55'	110' - 140'
60		600'	660'	720'	60'	120' - 150'
65		650'	715'	780'	65'	130' - 175'

\* 85TH PERCENTILE SPEED MAY BE USED ON ROADS WHERE TRAFFIC SPEEDS NORMALLY EXCEED THE POSTED SPEED LIMIT.

\*\* TAPER LENGTHS HAVE BEEN ROUNDED OFF.

L = LENGTH OF TAPER (FT)  
W = WIDTH OF OFFSET (FT)  
S = POSTED SPEED (MPH)

\* - PILOT VEHICLE MAY BE USED.

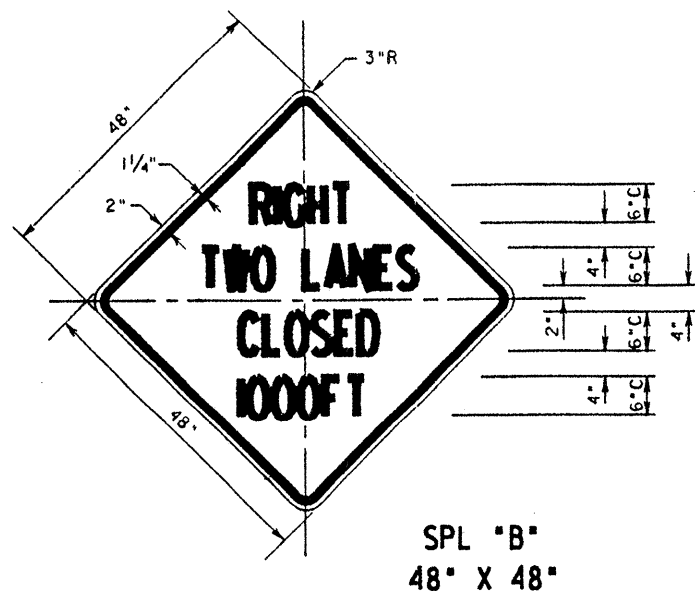
\*\* - A POSITIVE MEANS OF CONTACT BETWEEN FLAGMEN MUST BE MAINTAINED.

\*\*\* - WHEN WORKING FULL WIDTH THE "BE PREPARED TO STOP" SIGN (CW21-8) SHALL BE USED IN PLACE OF "ONE LANE ROAD AHEAD" SIGN (CW20-4D).

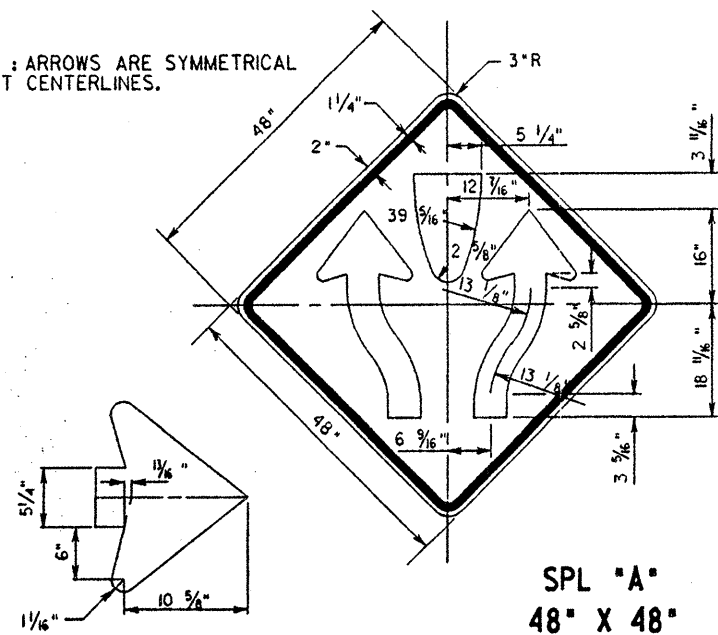
## TRAFFIC CONTROL FOR LANE CLOSURES LC(16)-1

SHEET		OF		SHEETS	
6	TEXAS	1737-1103	000	242	97
16	NEEDS	00706	18	97	

DISTRICT 16



NOTE: ARROWS ARE SYMMETRICAL ABOUT CENTERLINES.



#### GENERAL NOTES

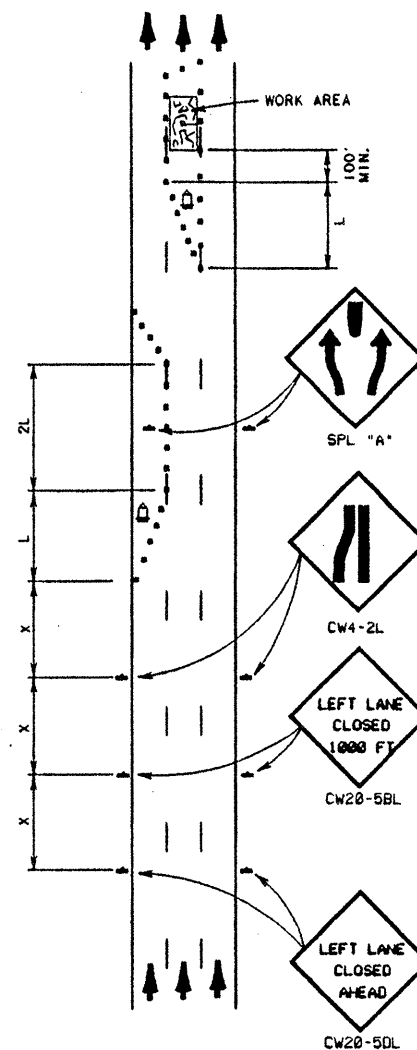
1. THE TRAFFIC CONTROL DEVICES SHOWN ARE THE MINIMUM REQUIRED. ADDITIONAL TRAFFIC CONTROL DEVICES MAY BE NECESSARY TO ROUTE TRAFFIC AROUND THE WORK AREA.
2. THE FOLLOWING TRAFFIC CONTROL DEVICES SHALL BE PLACED IN ADVANCE OF THE PROJECT LIMITS. OBSERVE WARNING SIGNS STATE LAW (R20-3), END CONSTRUCTION (G20-2), CONTRACTORS NAME (G20-6), ROAD CONSTRUCTION NEXT XX MILES (G20-1), AND TY III (C) BARRICADES.
3. SIGNING SHOWN FOR ONE DIRECTION ONLY.
4. CONES SHALL BE A MINIMUM HEIGHT OF 28\".
5. ARROW PANEL SHALL BE TYPE C (15 LAMPS, MINIMUM SIZE OF 48\" x 96\").
6. ONE OR MORE FLAGGERS ARE TO BE USED WHERE TRAFFIC, ROAD CONDITIONS, OR TERRAIN WARRANT THEIR USE.

TABLE FOR DIMENSION "X"  
(SIGN SPACING)

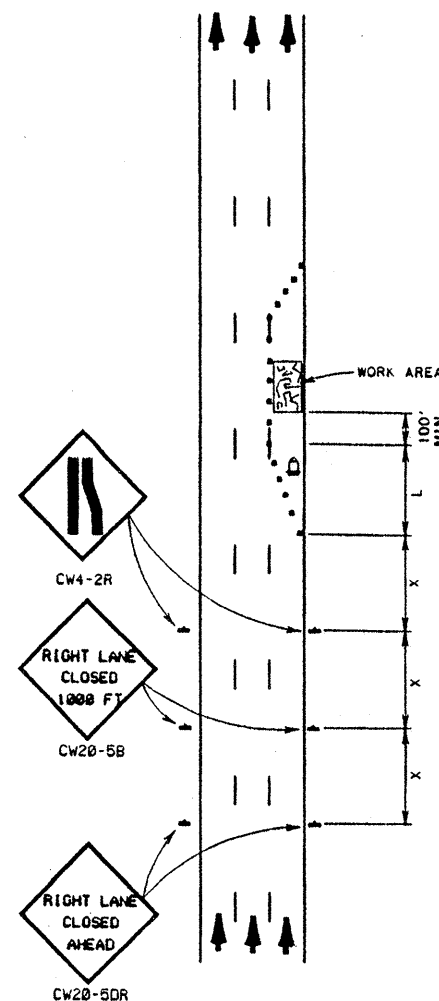
POSTED SPEED OR 85% SPEED (MPH)	X MIN. DISTANCE (FEET)
30 OR LESS	80
35	120
40	160
45	240
50	320
55	500

#### LEGEND:

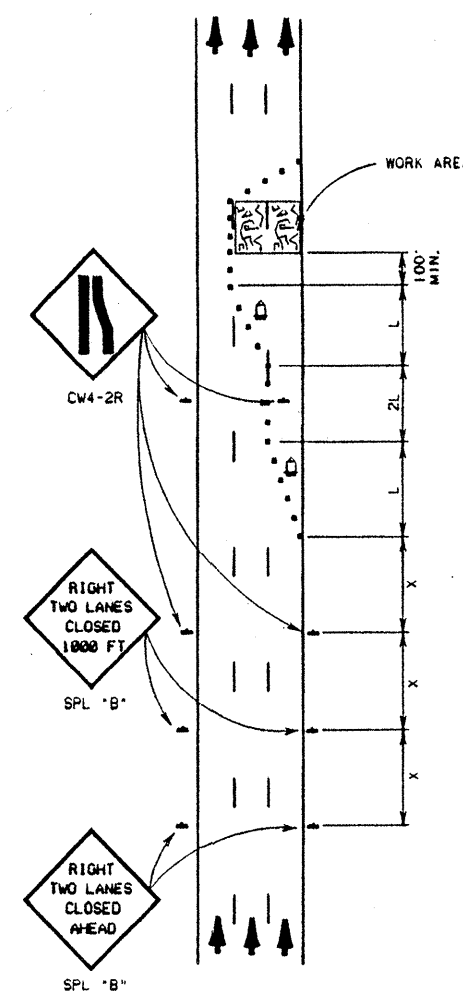
- CHANNELIZING DEVICES
- FLAGGER
- TRAILER OR TRUCK MOUNTED ARROW PANEL TYPE C



MIDDLE LANE CLOSURE



SINGLE LANE CLOSURE



TWO LANE CLOSURE

POSTED SPEED	FORMULA	MINIMUM DESIRABLE TAPER LENGTHS **			SUGGESTED MAXIMUM SPACING OF DEVICE	
		10' OFFSET	11' OFFSET	12' OFFSET	ON A TAPER	ON A TANGENT
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60' - 75'
35		205'	225'	245'	35'	70' - 90'
40		265'	295'	320'	40'	80' - 100'
45		450'	495'	540'	45'	90' - 110'
50	L = WS	500'	550'	600'	50'	100' - 125'
55		550'	605'	660'	55'	110' - 140'
60		600'	660'	720'	60'	120' - 150'

\* 85TH PERCENTILE SPEED MAY BE USED ON ROADS WHERE TRAFFIC SPEEDS NORMALLY EXCEED THE POSTED SPEED LIMIT.

\*\* TAPER LENGTHS HAVE BEEN ROUNDED OFF.

L = LENGTH OF TAPER (FT)

W = WIDTH OF OFFSET (FT)

S = POSTED SPEED (MPH)

#### TRAFFIC CONTROL FOR LANE CLOSURES LC(16)-2

92

DISTRICT 16

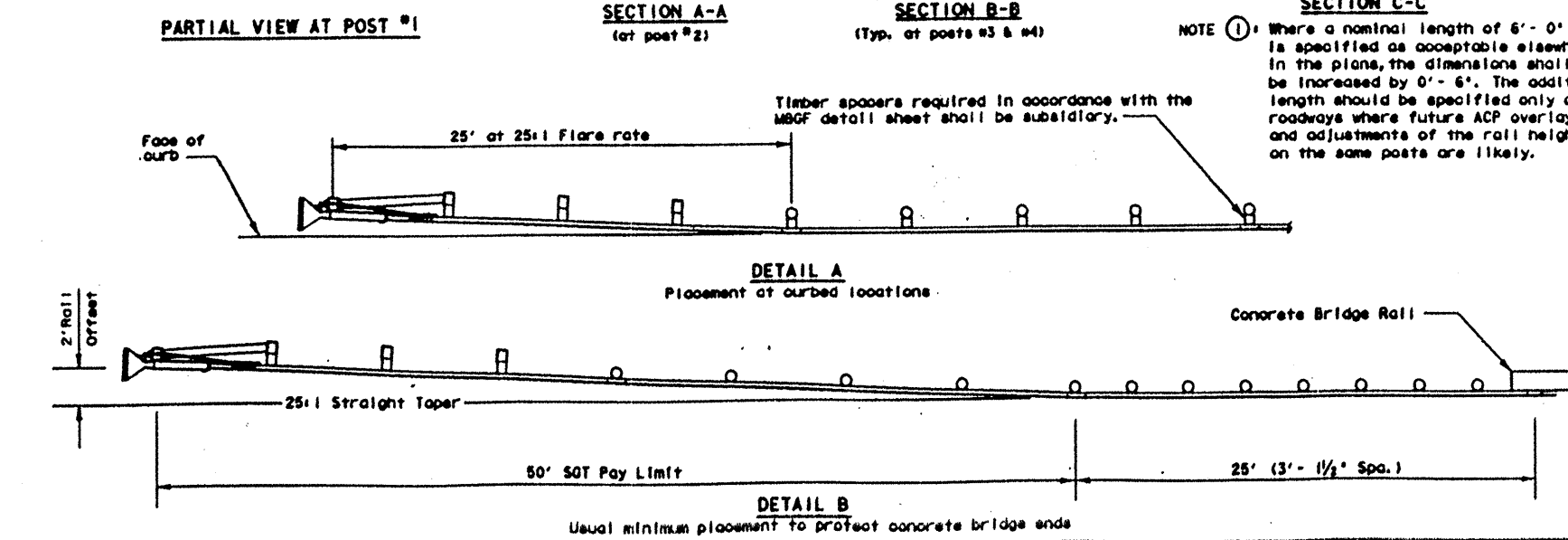
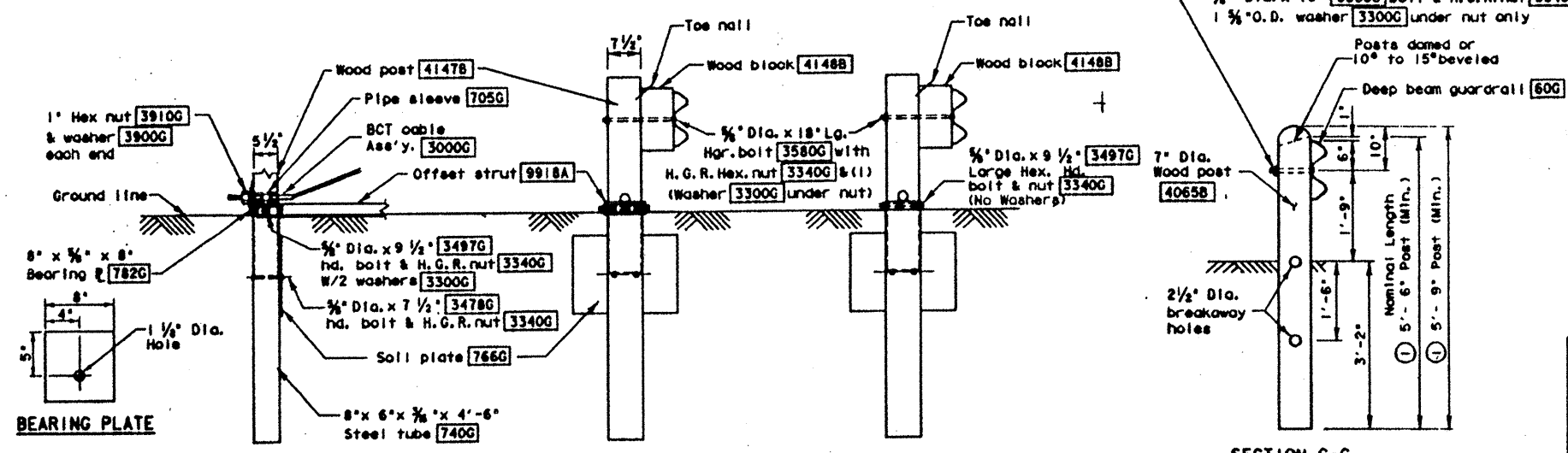
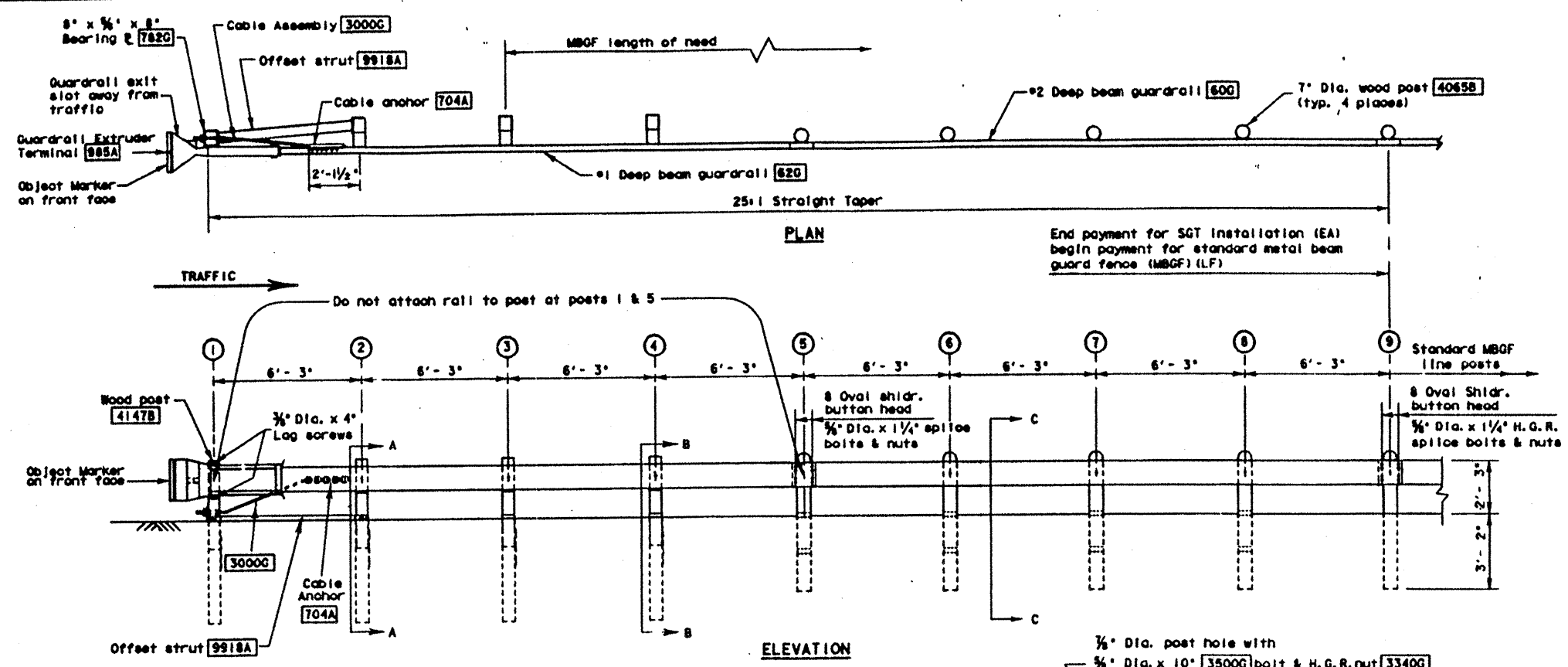
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COUNTY	SECTION	SHEET	TOTAL
Nueces	0074	06	17





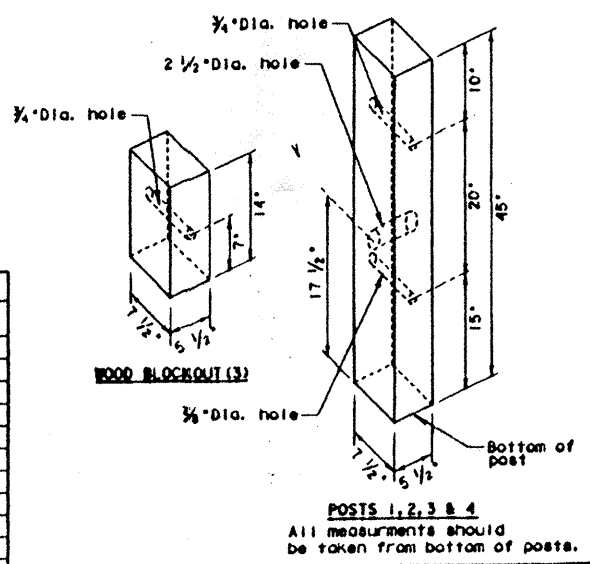


ACC: /URC/G481303  
FILE: SGT195.DGN  
LEVEL DISPLAYED



# GENERAL NOTES

1. Wood posts are required with the Guardrail Extruder Terminal (GET).
2. All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
3. When the Guardrail Extruder Terminal is specified as the end treatment for MBOF installation, the MBOF will be flared at a rate of 25:1 over the 50 foot GET system, to prevent the extruder head from encroaching on the shoulder. The flare may be decreased or eliminated for specific installations if directed by the Engineer. A 25:1 flare rate will be used at curb sections, beginning at post number five and ending at post number one.
4. The steel tubes shall not protrude more than 4 inches above ground (measured along a 5 foot cord). Site grading may be necessary to meet this requirement.
5. The steel tubes may be driven with an approved driving head. They shall not be driven with the wood post in the tube. If the steel tubes are placed in drilled holes, the backfill material must be satisfactorily compacted to prevent tube settlement.
6. When rock excavation is encountered, a 12 inch diameter post hole, 20 inches deep may be used if approved by the Engineer. Granular material will be placed in the bottom of the hole approximately 2 1/2 inches deep to provide drainage. The steel tube sleeves will be field cut to 20 inches in length, placed in the hole and backfilled with adequately compacted material excavated from the hole.
7. The breakaway cable assembly must be taut. A locking device, (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening the nuts.
8. The wood blockouts shall be "toe nailed" to the rectangular wood posts to prevent them from turning when the wood shrinks.
9. When block outs are required on round posts, the upper portion of the post shall be notched 1/2" to provide a flat surface for timber spacer. A tolerance of +/- 1/8" will be permitted on the notched portion of the post. Routing of the timber spacer may be used in lieu of notching the post. The depth of routing shall be 1/4" at the center of radius +/- 1/8".
10. For curb installations, the soil tubes and posts shall be installed at the proper ground elevation behind the curb. The posts will then require field drilling new holes to accommodate the rail to post connection bolt to maintain the proper height of the rail above the gutter pan. The excess post length above the rail will be removed if directed by the Engineer.
11. An object marker shall be installed on the front of the extruder, as detailed on D&CM(VIA).
12. A special site evaluation should be considered, prior to using the GET where there is less than 25 feet between the extrusion side of the GET and any adjacent driving lane.



(GET) BILL OF MATERIAL		
Code	QTY.	DESCRIPTION
62G	1	#1 Deep Beam Guardrail (12 Ga.)
60G	1	#2 Deep Beam Guardrail (12 Ga.)
740G	4	Steel Tube - 6"x 8"x 54"x 1/2"
766G	4	Soil Plate - 18"x 24"x 1/2"
4147B	4	Wood Posts - 8 1/2"x 7 1/2"x 45"
4065B	4	Round Wood Posts - 7" Dia.
4148B	3	Wood Block - 5 1/2"x 7 1/2"x 14"
705G	1	Pipe Sleeve - 2" std. pipe x 5 1/2"
782G	1	Bearing Plate - 8"x 8"x 1/2"
704A	1	Cable Anchor
3000G	1	Cable Assembly
9918A	1	Offset Strut
985A	1	Guardrail Extruder Terminal
HARDWARE		
3478G	8	1/2"x 7 1/2" Hex Hd. Bolt (Soil Plates)
3479G	4	1/2"x 8 1/2" Hex Hd. Bolt (Top of tubes)
3300G	11	1/2" Washer (2 ea. at Tubes 1 & 2, 7 Posts)
3580G	3	1/2"x 18" H.G.R. Post Bolt (Posts 2, 3 & 4)
3580G	3	1/2"x 10" H.G.R. Post Bolt (Posts 6, 7 & 8)
3360G	16	1/2"x 1 1/2" H.G.R. Splice Bolt
3340G	34	1/2" H.G.R. Nut (SPL-16, Tubes-12, OR-6)
4228G	2	1/2"x 4" Lag Screw
3910G	2	1" Hex Nut (Anchor Cable)
3900G	2	1" Washer (Anchor Cable)
	1	Object Marker

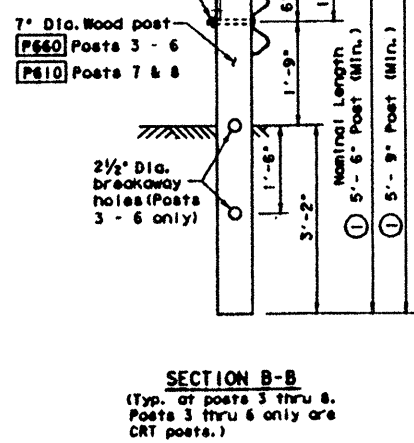
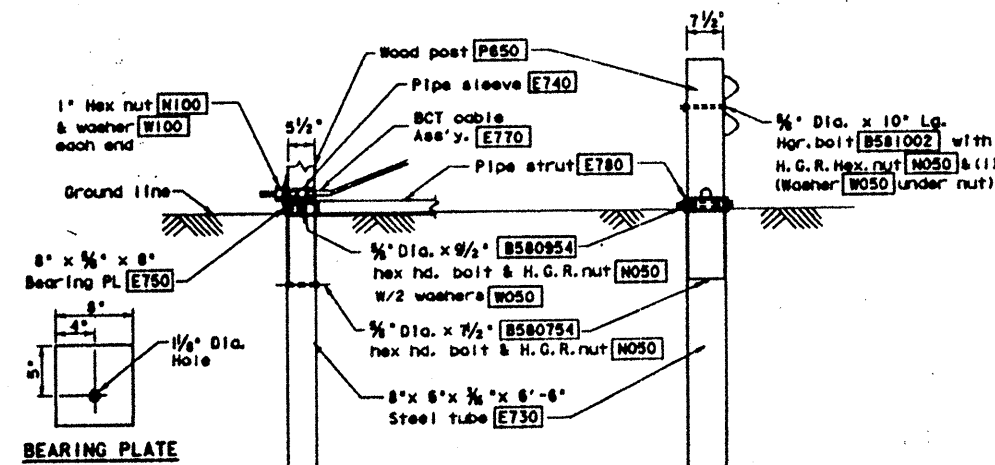
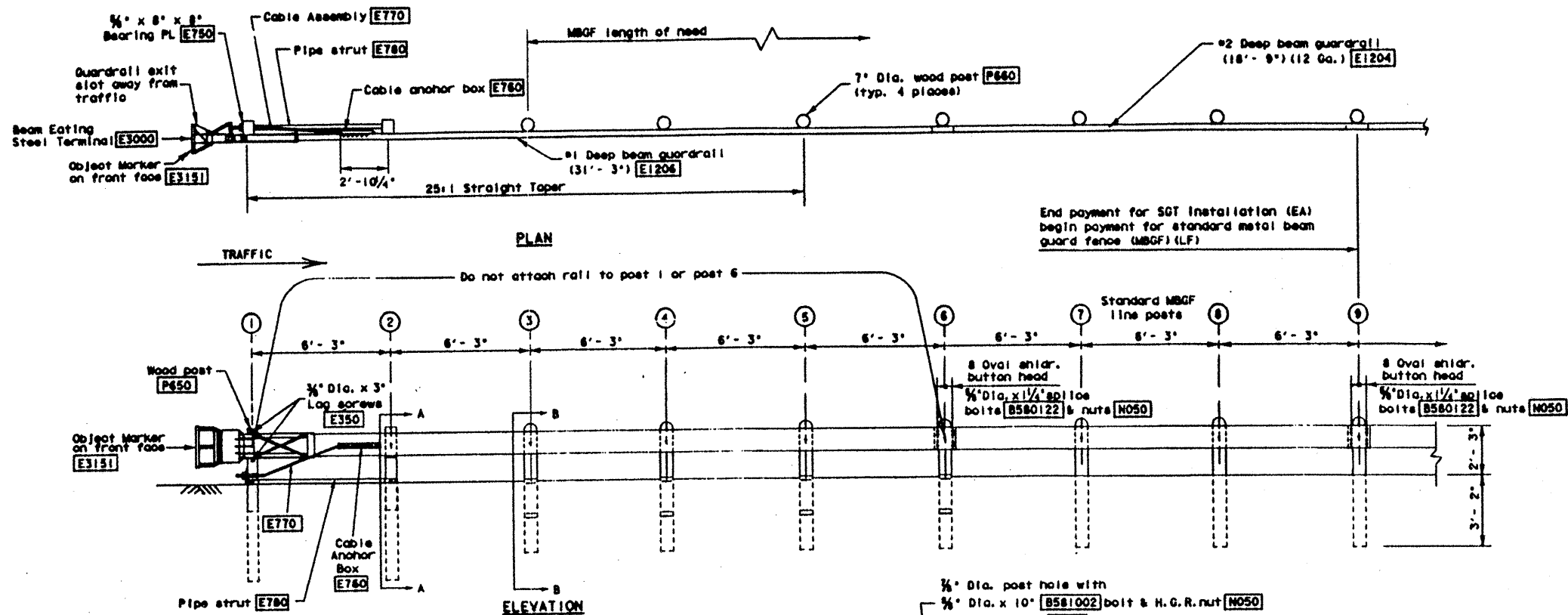
Texas Department of Transportation  
Design Division (Roadway)

## SINGLE GUARDRAIL TERMINAL (Guardrail Extruder Terminal)

SGT(1)-95

DATE: JUNE 1994	BY: MAM	CH: MAM	IN: BGD	CD:	USE NO.: R0000
REVISION	16	6	1M37-103000	103	
QUANTITY	112625	0024	00179	11132	

103

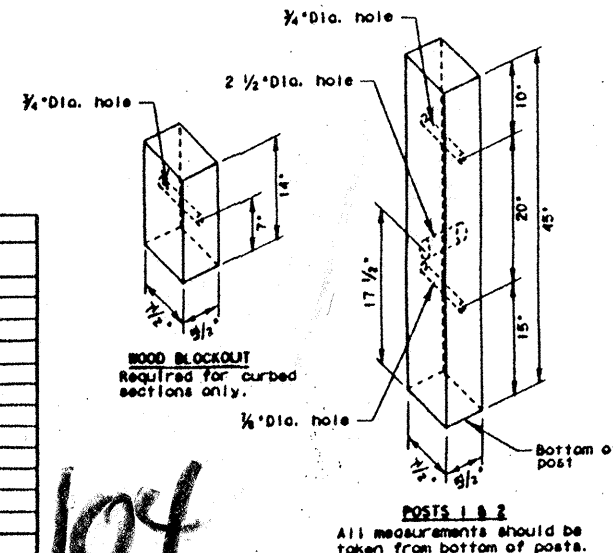


NOTE ①: Where a nominal length of 6'-0" is specified as acceptable elsewhere in the plans, the dimensions shall be increased by 0'-6". The additional length should be specified only on roadways where future ACP overlays and adjustments of the rail height on the same posts are likely.

(BEST) BILL OF MATERIAL		
Code	QTY.	DESCRIPTION
E1206	1	#1 Deep Beam Guardrail (31'-3") (12 Ga.)
E1204	1	#2 Deep Beam Guardrail (18'-9") (12 Ga.)
E730	2	Steel Tube - 6"x 8"x 6'-6"x 1/2"
P610	2	Round Wood Posts - 7" Dia.
P650	2	Wood Posts - 5 1/2"x 7 1/2"x 45"
P660	4	Round Wood CRT Posts - 7" Dia.
E740	1	Pipe Sleeve - 2" std. pipe x 5 1/2"
E750	1	Bearing Plate - 1/2"x 8"x 8"
E760	1	Cable Anchor Box
E770	1	Cable Assembly
E780	1	Pipe Strut
E3000	1	Beam Eating Steel Terminal
HARDWARE		
B580754	2	1/2"x 7 1/2" Hex Hd. Bolt
B580954	2	1/2"x 8 1/2" Hex Hd. Bolt (Top of tubes)
W050	10	1/2" Washer (2 ea. at Tubes 1 & 2 - 6 Posts)
B581002	6	1/2"x 10" H.G.R. Post Bolt (Posts 2,3,4,5,7,& 8)
B580122	16	1/2"x 1 1/4" H.G.R. Splice Bolt
N050	28	1/2" H.G.R. Nut (SPL-16, Tubes-4, CR-6)
E350	2	1/2"x 3" Lag Screw
W100	2	1" Hex Nut (Anchor Cable)
E3151	1	Object Marker (Anchor Cable)

# GENERAL NOTES

- Wood posts are required with the Beam Eating Steel Terminal (BEST).
- All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
- When the Beam Eating Steel Terminal is selected as the end treatment for MBGF installation, the MBGF will be flared at a rate of 25:1 over the first 50 feet of the system to prevent the BEST head from encroaching on the shoulder. The flare may be decreased or eliminated for specific installations if directed by the Engineer. A 25:1 flare rate will be used at curb sections, beginning at post number five and ending at post number one.
- The steel tubes shall not protrude more than 4 inches above ground (measured along a 5 foot cord). Site grading may be necessary to meet this requirement.
- The steel tubes may be driven with an approved driving head. They shall not be driven with the wood post in the tube. If the steel tubes are placed in drilled holes, the backfill material must be satisfactorily compacted to prevent tube settlement.
- When rock excavation is encountered, a 12 inch diameter post hole, 20 inches deep may be used if approved by the Engineer. Granular material will be placed in the bottom of the hole approximately 2 1/2 inches deep to provide drainage. The steel tube sleeves will be field cut to 20 inches in length, placed in the hole and backfilled with adequately compacted material excavated from the hole.
- The breakaway cable assembly must be tight. A locking device, (vise grips or channel lock pliers) should be used to prevent the cable from twisting when tightening the nuts.
- When block cuts are required on round posts, the upper portion of the post shall be notched 1/4" to provide a flat surface for timber spacer. A tolerance of 1/8" will be permitted on the notched portion of the post. Routing of the timber spacer may be used in lieu of notching the post. The depth of routing shall be 1/4" at the center of radius 1/8".
- For curb installations, the soil tubes and posts shall be installed at the proper ground elevation behind the curb. The posts will then require field drilling new holes to accommodate the rail to post connection bolt to maintain the proper height of the rail above the gutter pan. The excess post length above the rail will be removed if directed by the Engineer.
- An object marker shall be installed on the front of the BEST as detailed on DeOM(VIA).
- A special site evaluation should be considered, prior to using the BEST where there is less than 25 feet between the extrusion side of the BEST and any adjacent driving lane.



Texas Department of Transportation  
Design Division (Roadway)

## SINGLE GUARDRAIL TERMINAL (Beam Eating Steel Terminal)

SGT (2) - 95

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