

THIS CONSTRUCTION WORK WAS PERFORMED IN  
ACCORDANCE WITH THE PLANS AND CONTRACT.

DATE OF LETTING : 10-92  
DATE WORK BEGAN : 1-14-93  
DATE WORK COMPLETED: 6-4-93  
DATE WORK ACCEPTED : 6-8-93

**SUPPLEMENTAL AGREEMENT NO.1**  
**FIELD CHANGE NO.1**

ADDED BRIDLE MOUNT SIGN SUPPORT



NOTES: THE CONTRACTOR SHALL PROVIDE AND  
ERECT BARRICADES AND WARNING SIGNS  
IN ACCORDANCE WITH BC(1)-(9)-92  
AT POINTS INDICATED IN THE PLANS  
AND AT OTHER POINTS AS DIRECTED BY  
THE ENGINEER.

FEDERAL AID PROJECTS  
IM 35E-6 (309)412 & Im 35E-6(310)418

**CONSTRUCTION OF MISCELLANEOUS WORK  
CONSISTING OF SEQUENTIAL SIGNING, SIGN  
STRUCTURES, SIGN REMOVALS, RELOCATIONS  
AND MODIFICATIONS**

NET LENGTH OF PROJECT: 34,512.28 FEET = 6.536 MILES

LIMITS: FROM ELLIS COUNTY LINE  
TO 300' NORTH OF PARKERVILLE RD.

CONTROL: 442-02-99 = 10,599.01 FT. = 2.007 MILES

LIMITS: FROM 1H 20  
TO US 67

CONTROL: 442-02-100 = 23,913.27 FT. = 4.529 MILES

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	GENERAL NOTES AND SPECIFICATION DATA
3	ESTIMATE AND QUANTITY SHEET
4	TRAFFIC CONTROL PLAN
5-1A18	SUMMARY OF LARGE SIGNS
9	CROSS, SIGN, ELECTRICAL & SERVICE POLE SUMMARY
10-23	SIGNING LAYOUT
24-25A	GUIDE SIGN DETAILS
26-39A	OVERHEAD SIGN STRUCTURE DETAILS
40	CONDUIT PLACEMENT ON BRIDGE AND M.B.G.F. DETAILS

41	IE(2)
42-43	IM(1) & IM(2)
44	SMD(P-1)
45	WV & 12
46	COSS-SE
47	COSS-Z3 & Z31
48	COSS-Z4 & Z41
49	COSSD
50	COSSF(DAL)
51	COSS-FD
52	SL(1)
53	SL(MV)
54	SNW(1)
55	SB(SWL-1)
56-60D	BC(1) THRU BC(9)-92
61	TRAFFIC CONTROL PLAN SHEET GENERAL NOTES
62	TCP(1-4) DALLAS
63-66	ED(1)-92, ED(2)-92 & ED(3)-92 & ED(4)-92
67	MBGF-91
68	GET-91A
69	RID(6)-88(DPL)(MOD)
70	D & OM(1)-92
71	D & OM(2)-92
72	GREAT-89
73	SPECIAL SIGN MOUNT DETAILS

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

Yvonne D. Irvine July 16, 1992  
YVONNE D. IRVINE, P.E. DATE

**NOTE:**

SPECIFICATIONS ADOPTED BY THE STATE DEPARTMENT OF  
HIGHWAYS AND PUBLIC TRANSPORTATION, SEPTEMBER 1, 1982,  
AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS:  
SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISION,  
ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM 1273, AUGUST 1989)  
AND ADDENDUM TO FHWA FORM FHWA 1273, REQUIRED CONTRACT  
PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS (AUGUST 1992)

### STATION EQUATIONS

STA. 92+99.57 Bk. = 93+00.56 Fwd.  
STA. 403+15.65 Bk. = STA. 403+13.34 Fwd.  
STA. 453+81.47 Bk. = STA. 453+76.86 Fwd.  
STA. 479+29.59 Bk. = STA. 479+27.17 Fwd.  
STA. 527+13.96 Bk. = STA. 527+10.03 Fwd.

STA. 600+00 END PROJ. IM 35-E-6(310)418  
END CONTROL: 442-02-100  
REFERENCE MARKER NO. 423+0.365

STA. 361+00 BEGIN PROJ. Jm 35E-6(3/4)418  
BEGIN CONTROL: 442-02-100  
REFERENCE MARKER NO. 418+0.843

STA. 106+00 END PROJ. IM 35E-6(309)412  
END CONTROL: 442-02-99  
REFERENCE MARKER NO. 413+1.003

STA. 0+00 BEGIN PROJ. IM 35E-6(309)412  
BEGIN CONTROL: 442-02-99  
REFERENCE MARKER NO. 412+0.000

TEXAS DEPARTMENT OF TRANSPORTATION

RECOMMENDED  
FOR LETTING: July 92  
Melanie Blum P.E.  
for TRAFFIC PROJECTS ENGINEER.

RECOMMENDED  
FOR LETTING: 7/16 1992  
*Leroy Walker*, P.E.  
DIRECTOR OF TRANSPORTATION OPERATIONS

RECOMMENDED  
FOR LETTING: 7/16 1992  
John A. Keffner, P.E.  
DISTRICT ENGINEER

APPROVED  
FOR LETTING: 9/3 1992

John W. Hunter, P.E.  
FOR CHIEF ENGINEER OF  
MAINTENANCE AND OPERATIONS

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_  
DIVISION ADMINISTRATOR

**238BUD**

IM 35E-6(310)418, etc.  
DALLAS

F.R. DIV.6	TEXAS	IN 35E-6(310)410 ,ETC	SHEET 2
DALLAS	COUNTY	HWY IN 35E	CONT 0442-2-100,ETC

GENERAL NOTES AND SPECIFICATION DATA--

GENERAL

THE CONSTRUCTION, OPERATION AND MAINTENANCE OF THIS PROPOSED PROJECT WILL BE CONSISTENT WITH THE STATE IMPLEMENTATION PLAN AS PREPARED BY THE TEXAS AIR CONTROL BOARD.

THESE PLANS PROVIDE FOR A COMPLETE SYSTEM OF SEQUENTIAL SIGNING. ALL MATERIAL AND SERVICES NOT EXPRESSLY CALLED FOR IN THE SPECIFICATIONS OR NOT SHOWN IN THE PLANS, WHICH MAY BE NECESSARY FOR COMPLETE AND PROPER CONSTRUCTION, SHALL BE PERFORMED, FURNISHED AND INSTALLED.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THERE MAY HAVE BEEN CHANGES IN THE EXISTING SIGNING SINCE THE PLANS WERE PREPARED. THE ENGINEER WILL WORK WITH THE CONTRACTOR TO DETERMINE ANY REDUCTION OR ADDITION TO THE ESTIMATED WORK CAUSED BY THESE CHANGES. PAYMENT WILL BE MADE FOR THE ACTUAL WORK PERFORMED UNDER THE VARIOUS ITEMS OF WORK AT THEIR RESPECTIVE BID PRICES.

UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL CLEAN AND REMOVE ALL EXCESS DIRT AND ALL RUBBISH FROM THE LOCATION, RESTORE IN AN ACCEPTABLE MANNER ALL PROPERTY, BOTH PUBLIC AND PRIVATE, WHICH HAS BEEN DAMAGED DURING THE PROSECUTION OF THE WORK, AND LEAVE EACH WORK SITE IN A NEAT AND PRESENTABLE CONDITION THROUGHOUT THE DURATION OF THE CONTRACT.

NO EXTRA COMPENSATION WILL BE ALLOWED FOR FULFILLING THE REQUIREMENTS STATED ABOVE.

ITEMS 416 AND 650:

DRILLED SHAFT FOUNDATIONS FOR OVERHEAD SIGN STRUCTURES SHALL EXTEND FIVE FEET INTO ROCK AT LOCATIONS WHERE ROCK IS ENCOUNTERED AT A DEPTH LESS THAN THE DRILLED SHAFT LENGTHS SHOWN IN THE PLANS.

THE CONTRACTOR SHALL PROBE BEFORE DRILLING FOUNDATIONS TO DETERMINE THE LOCATIONS OF ALL UTILITIES AND STRUCTURES. HE SHALL BE PAID FOR DRILLING THE SHAFT ONCE ONLY REGARDLESS OF THE EXTRA WORK CAUSED BY THE OCCURRENCE OF THESE OBSTRUCTIONS.

ALL DRILLED SHAFTS WHICH EXTEND ABOVE THE GROUND LINE SHALL BE FORMED. THIS WORK WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS OF THE CONTRACT.

SPECIFICATION DATA

09/03 SHEET A

F.R. DIV.6	TEXAS	IN 35E-6(310)410 ,ETC	SHEET 2
DALLAS	COUNTY	HWY IN 35E	CONT 0442-2-100,ETC

GENERAL NOTES AND SPECIFICATION DATA--

ITEMS 416 AND 650: CONT'D

ALL DRILLED SHAFT FOUNDATIONS FOR SIGN SUPPORTS WILL BE BASED ON THE LENGTHS SHOWN ON THE PLANS OR THOSE ESTABLISHED IN WRITING BY THE ENGINEER. ADEQUATE CALCULATIONS FOR MEASUREMENTS OF FOUNDATIONS HAVE BEEN MADE IN ACCORDANCE WITH ARTICLE 9.1 OF THE STANDARD SPECIFICATIONS. INCREASES OR DECREASES IN THE QUANTITIES REQUIRED BY CHANGES IN DESIGN WILL BE MEASURED AS SPECIFIED AND THE REVISED QUANTITIES WILL BE THE BASIS FOR PAYMENT.

ITEM 421:

ALL CONCRETE FOR DRILLED SHAFTS SHALL BE CLASSIFIED AS CLASS C CONCRETE.

THE COARSE AGGREGATE FROM EACH SOURCE MUST COMPLY WITH THE SPECIFIED QUALITY TESTS.

THE ENGINEER WILL SAMPLE ALL CONCRETE AND MAKE AND TEST ALL TEST BEAMS AND CYLINDERS IN ACCORDANCE WITH TEST METHODS TEX-410-A AND TEX-420-A.

ALL TEST MOLDS WILL BE FURNISHED BY THE ENGINEER AND THE CONTRACTOR SHALL MAINTAIN THEM IN THE PROPER CONDITION. FOR ALL CONCRETE ITEMS, THE CONTRACTOR SHALL HAVE A WHEELBARROW, OR OTHER CONTAINER ACCEPTABLE TO THE ENGINEER, AVAILABLE TO USE IN THE SAMPLING OF THE CONCRETE. ALL LABOR AND EQUIPMENT FURNISHED BY THE CONTRACTOR WILL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS AND SHALL NOT BE PAID FOR DIRECTLY.

TYPE II CEMENT SHALL BE REQUIRED IN CLASS "C" CONCRETE.

ITEM 437:

HIGH RANGE WATER REDUCERS WILL BE USED ONLY TO MEET SPECIAL REQUIREMENTS AND WILL REQUIRE THE WRITTEN APPROVAL OF THE ENGINEER ON EACH SPECIFIC PROJECT. A SATISFACTORY WORK PLAN FOR CONTROL SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL AND AN EVALUATION OF THE CONCRETE CONTAINING THE ADMIXTURE WILL BE PERFORMED BY THE ENGINEER.

SPECIFICATION DATA

09/03 SHEET B

F.R. DIV.6	TEXAS	IN 35E-6(310)410 ,ETC	SHEET 2
DALLAS	COUNTY	HWY IN 35E	CONT 0442-2-100,ETC

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 502:

THE TRAFFIC CONTROL PLAN (TCP) FOR THIS PROJECT SHALL BE AS DETAILED ON STANDARD SHEETS TCP(1-4) (DAL), BC(1) THRU BC(9)-92 AND AS PROVIDED FOR IN THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS".

ALL BARRICADES SHALL HAVE TV C HIGH INTENSITY SHEETING.

ITEM 620:

THE CONTRACTOR WILL BE REQUIRED TO PAY ALL HOOK-UP COST.

INSTALLATION OF NEW CIRCUIT BREAKERS ON EXISTING SERVICE POLES WILL BE CONSIDERED SUBSIDIARY TO THE BID ITEM, "SERVICE POLES" AND WILL NOT BE PAID FOR DIRECTLY.

SILK SCREENING OR OTHER ACCEPTABLE METHOD SHALL BE USED TO LABEL THE SERVICE ENCLOSURES INDICATING THAT THE POWER PROVIDED IS FOR SIGN LIGHTING. LABELING SERVICE ENCLOSURES WILL BE CONSIDERED SUBSIDIARY TO THE BID ITEM, "SERVICE POLES" AND WILL NOT BE PAID FOR DIRECTLY.

ITEM 620:

TIMBER POSTS WILL BE REQUIRED. THE POSTS WILL BE UNPAINTED WITH DOME TOPS.

ITEMS 634 AND 636:

ALL SIGN QUANTITIES WILL BE BASED ON THE DIMENSIONS AND AREAS SHOWN ON THE PLANS OR THOSE ESTABLISHED IN WRITING BY THE ENGINEER. ADEQUATE CALCULATIONS FOR MEASUREMENT OF SIGN AREAS HAVE BEEN MADE IN ACCORDANCE WITH ARTICLE 9.1 OF THE STANDARD SPECIFICATIONS. INCREASES OR DECREASES IN QUANTITIES REQUIRED BY CHANGES IN DESIGN, WILL BE MEASURED AS SPECIFIED AND THE REVISED QUANTITIES WILL BE THE BASIS FOR PAYMENT.

ANY SIGNS REQUIRED THAT ARE NOT DETAILED IN THE STANDARD SHEETS SHALL BE IN CONFORMANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AND THE "STANDARD HIGHWAY SIGN

SPECIFICATION DATA

09/03 SHEET C

F.R. DIV.6	TEXAS	IN 35E-6(310)410 ,ETC	SHEET 2
DALLAS	COUNTY	HWY IN 35E	CONT 0442-2-100,ETC

GENERAL NOTES AND SPECIFICATION DATA--

ITEMS 634 AND 636: CONT'D

DESIGNS FOR TEXAS".

A SIGN IDENTIFICATION DECAL SHALL BE AFFIXED TO THE BACK OF ALL SIGNS IN ACCORDANCE WITH ITEM 6154.

ITEM 650:

THE STATION LOCATIONS SHOWN FOR SIGNS AND/OR SIGN SUPPORT STRUCTURES MAY BE ADJUSTED BY THE ENGINEER TO FIT FIELD CONDITIONS. THE LOCATIONS OF ALL SIGNS AND/OR SIGN SUPPORT STRUCTURES SHALL BE VERIFIED BY THE ENGINEER PRIOR TO THE CONTRACTOR TAKING ELEVATIONS TO DETERMINE LENGTHS FOR SIGN POSTS AND SIGN SUPPORT TOWERS FOR FABRICATION.

ALL SIGN SUPPORT QUANTITIES, PIPE AND STRUCTURAL STEEL, WILL BE BASED ON THE DIMENSIONS SHOWN ON THE APPROVED SHOP DRAWINGS OR THOSE ESTABLISHED IN WRITING BY THE ENGINEER. CALCULATIONS FOR MEASUREMENT OF THE SIGN SUPPORT QUANTITIES WILL BE MADE FROM THE APPROVED SHOP DRAWING IN ACCORDANCE WITH ARTICLE 9.1 OF THE STANDARD SPECIFICATIONS. INCREASES OR DECREASES IN QUANTITIES CAUSED BY CHANGES IN DESIGN AFTER THE SHOP DRAWINGS ARE APPROVED, WILL BE MEASURED AS SPECIFIED AND THE REVISED QUANTITIES WILL BE THE BASIS FOR PAYMENT.

THE CONTRACTOR SHALL PROVIDE FIELD GALVANIZING AND METALLIZING EQUIPMENT, ASTM A780 (STICK ONLY) OR APPROVED ALTERNATES AT ALL TIMES AND MAKE REPAIRS TO GALVANIZED SURFACES ACCORDING TO THE ABOVE SPECIFICATION ITEMS AT INTERVALS AS DIRECTED BY THE ENGINEER.

ALL TOWERS AND TRUSSES WILL BE MATCH MARKED FOR ERECTION BY THE FABRICATOR.

THE TOWER AND COLUMN HEIGHTS SHOWN IN THE SIGN SUMMARIES AND ON THE PLANS ARE TO BE USED FOR BIDDING PURPOSES ONLY. PRIOR TO FABRICATION, THE CONTRACTOR, IN COOPERATION WITH THE ENGINEER, SHALL TAKE FINISHED GRADE ELEVATIONS AT THE TOWER AND COLUMN LOCATIONS AND SHALL DETERMINE THEIR EXACT HEIGHTS FOR FABRICATION IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS.

ITEMS 634, 636 AND 650:

AFTER SIGN SUPPORTS WITH SIGNS ATTACHED HAVE BEEN ERECTED, INDIVIDUAL UNITS REQUIRING CLEANING SHALL BE WASHED WITH A CLEANING SOLUTION,

SPECIFICATION DATA

09/03 SHEET D

F.R. DIV.6	TEXAS	IN 35E-6(310)410 ,ETC	SHEET 2
DALLAS	COUNTY	HWY IN 35E	CONT 0442-2-100,ETC

GENERAL NOTES AND SPECIFICATION DATA--

ITEMS 634, 636 AND 650: CONT'D

APPROVED BY THE ENGINEER, TO REMOVE ALL GREASE, OIL, DIRT, SHEARS, STREAKS AND OTHER FOREIGN PARTICLES.

ITEM 652:

FINAL ACCEPTANCE OF THE SIGN LIGHTING SYSTEM WILL NOT BE MADE UNTIL THE SYSTEM HAS OPERATED SATISFACTORILY FOR A PERIOD OF 14 DAYS (THIS INCLUDES ENERGIZING AND DE-ENERGIZING THE SIGN LIGHTING CIRCUITS AT DUSK AND DAWN).

THE CONTRACTOR SHALL ENSURE THAT ALL EXISTING SIGN LIGHTING AND ROADWAY LIGHTING FIXTURES ARE WORKING BEFORE BEGINNING ANY WORK. AFTER COMPLETION OF THE PROJECT, ALL SIGN LIGHTS SHALL BE FULLY OPERATIONAL AND THE ROADWAY ILLUMINATION SHALL BE LEFT IN A CONDITION ACCEPTABLE TO THE PROJECT ENGINEER.

ITEM 654:

CONTINUOUS SIGN WALKWAYS SHALL BE PROVIDED FOR ON THE OVERHEAD SIGN BRIDGE STRUCTURES AS SHOWN ON THE PLANS. ADDITIONAL LIGHTING BRACKETS REQUIRED TO SUPPORT THE WALKWAYS SHALL BE PROVIDED AT THE SPACINGS SHOWN ON THE PLANS.

THE ADDITIONAL BRACKETS REQUIRED TO SUPPORT THE CONTINUOUS SIGN WALKWAYS WILL NOT BE PAID FOR DIRECTLY AND THEIR COST SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FOOT OF "SIGN WALKWAYS".

ITEM 6060:

THE CONTRACTOR WILL BE REQUIRED TO REMOVE EXISTING SIGN LIGHTS NOT TO BE USED FROM EXISTING OVERHEAD SIGN STRUCTURES. THESE FIXTURES SHALL BE REMOVED IN A MANNER SUCH AS TO PREVENT DAMAGE AND WILL BE STOCKPILED AT THE TRAFFIC PROJECTS OFFICE, AT 9700 EAST R.L. THORNTON FREEWAY IN DALLAS, TEXAS.

SPECIFICATION DATA

09/03 SHEET E

2

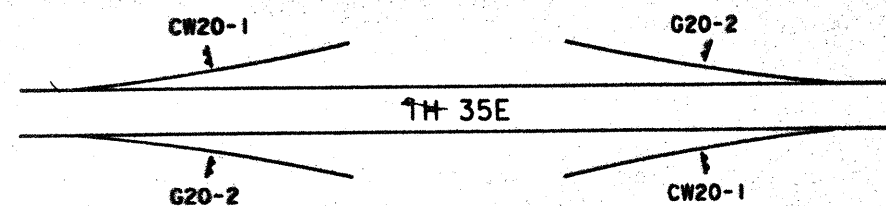
# ESTIMATE SUMMARY

SEQUENTIAL SIGNING										ALT	ITEM-CODE			DESCRIPTION	UNIT	TOTAL	
IM 35E-6(310)418		IM 35E-6(309)412									ITEM NO	DESC CODE	SP NO			EST.	FINAL
442-2-100		442-2-99															
EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL								
		20.000								416	011	002	DRILL SHAFT (24 IN)(SIGN MTS)	LF	20.000	20.000	
		15.000								416	014	002	DRILL SHAFT (42 IN)(SIGN MTS)	LF	15.000	15.000	
111.000										416	015	002	DRILL SHAFT (48 IN)(SIGN MTS)	LF	111.000	97.000	
209.000		137.000								416	022	002	DRILL SHAFT (54 IN)(SIGN MTS)	LF	346.000	345.000	
4.000										502	001	021	BARCD,SIGN AND TRAF HANDLING	MO	4.000	4.000	
2.000										540	001		TERM-ANCH SECT	EA	2.000	2.000	
125.000										540	003		METAL BEAM GD FENCE (12 GA)	LF	125.000	125.200	
1047.000		306.000								618	029		CONDT (ENT)(1 1/2 IN)	LF	1353.000	1395.600	
		72.000								618	046		CONDT (PVC)(SCH 40)(1 1/2 IN)	LF	72.000	99.800	
376.000		202.000								618	081		CONDT (PVC)(SCH 80)(2 IN)(BORED)	LF	578.000	605.100	
80.000		30.000								618	106		CONDT (PVC)(SCH 80)(4 IN)(BORED)	LF	110.000	104.700	
1047.000		378.000								620	001		ELEC CONDR (NO. 8 BAR)	LF	1425.000	1531.100	
2094.000		756.000								620	031		ELEC CONDR (NO. 8)(TY XHHW)	LF	2850.000	3062.200	
11628.000		4893.000								622	009	004	DUCT CABLE (1 IN)(8-3)(1 BAR-2 INSU)	LF	16521.000	17527.300	
21.000		9.000								624	022		GROUND BOX (RPM)(TY A)(122311) APRON	EA	30.000	30.000	
		5.000								628	036		SERV POLE TYA 240/480 060 NS GS TP T(O)	EA	5.000	5.000	
10.000										628	040		SERV POLE(TYE(240/480)060(NS)GS(T)TP(O)	EA	10.000	10.000	
3334.750		1653.000								634	002	001	PLYWOOD SIGNS (TYPE A) REMOVABLE COPY	SF	4987.750	4987.750	
87.480		27.510								636	001		ALUMINUM SIGNS (TYPE A)	SF	114.990	114.990	
		634.000								648	001		RDSO TRAF SGN SUPPT (STRUCTURAL STEEL)	LB	634.000	634.000	
		1.000								650	003	011	OVHD SGN SUPPT(CANT)(25FT SPAN)(17-6HT)	EA	1.000	1.000	
1.000										650	004	011	OVHD SGN SUPPT(CANT)(30FT SPAN)(17-6HT)	EA	1.000	1.000	
3.000		1.000								650	005	011	OVHD SGN SUPPT(CANT)(35FT SPAN)(17-6HT)	EA	4.000	4.000	
15.000		7.000								650	006	011	OVHD SGN SUPPT(CANT)(40FT SPAN)(17-6HT)	EA	22.000	21.000	
66.000		27.000								652	001	001	HWY SGN LIGHTING FIXTURE (MV)(100 WATT)	EA	93.000	91.000	
775.000		340.000								654	001		SIGN WALKWAYS	LF	1115.000	1059.000	
1.000										5641	001		MOBILIZATION	LS	1.000	1.000	
1.000										5653	035		GD RAIL EN ABS TERM (3 FT)(8 BAY)(TY C)	EA	1.000	1.000	
2.000										5694	001		GUARDRAIL EXTRUDER TERMINALS	EA	2.000	2.000	
		7.000								6057	002		REMOV EXIST ROADSIDE TRAF SIGNS (LARGE)	EA	7.000	7.000	
4.000										6060	001		REMOV OVHD GUIDE SIGNS	EA	4.000	4.000	
3.000										6136	001		REVISE SIGN LEGEND (OVHD)	EA	3.000	3.000	
7.000										6141	001	001	REMOV, MOD & INSTAL EXT SGN PN (O S B)	EA	7.000	7.000	
2.000										6475	002		FL PT DEL & OBJ MK ASM (DRV) OM-2SR 7FT	EA	2.000	2.000	
										9001	001		ANCHOR BOLTS	LS	0.000	1.000	
										9001	002		BRIDGE MOUNT SIGN SUPPORT	EA	0.000	1.000	

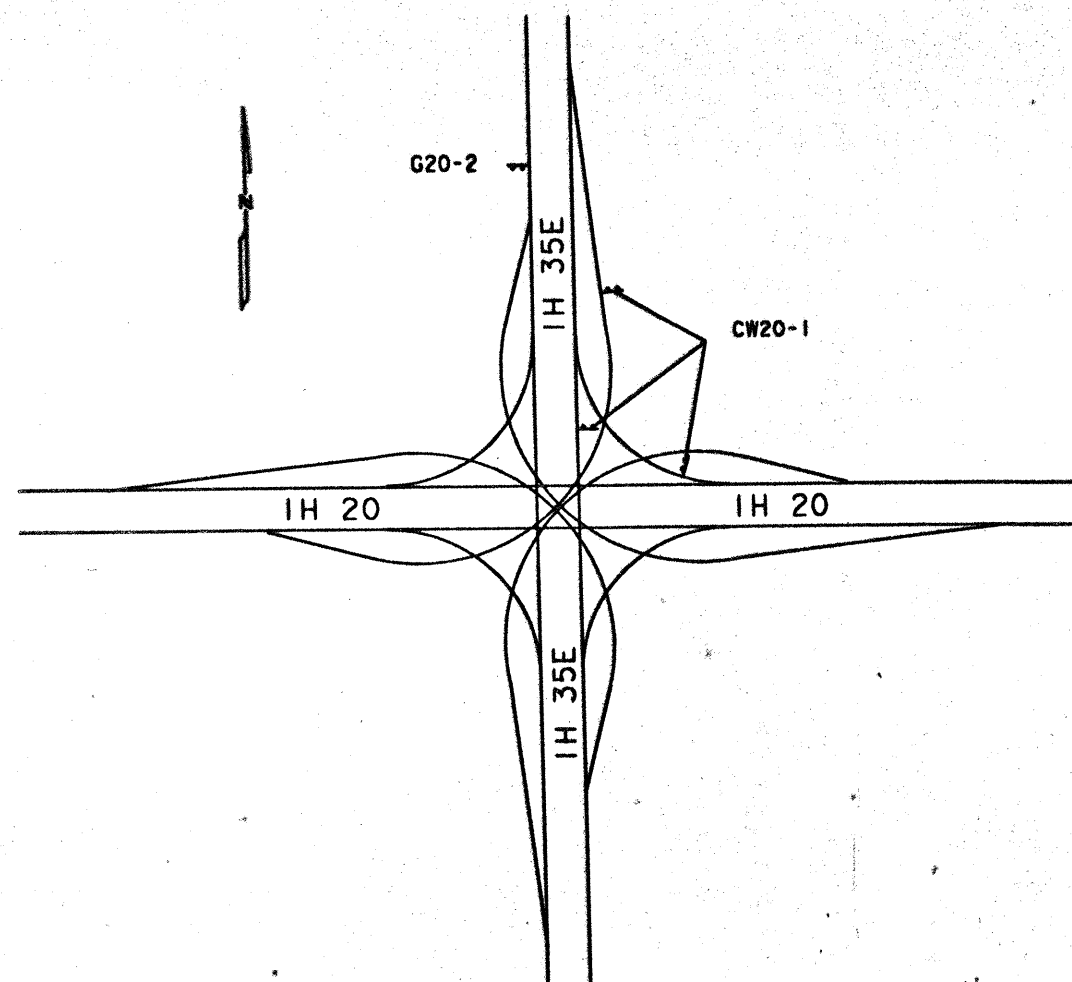
# ESTIMATE & QUANTITY SHEET

STATE DIST. NO.	COUNTY	PROJECT NO.	SHEET NO.
18	DALLAS	IM 35E-6(810)418, ET	3

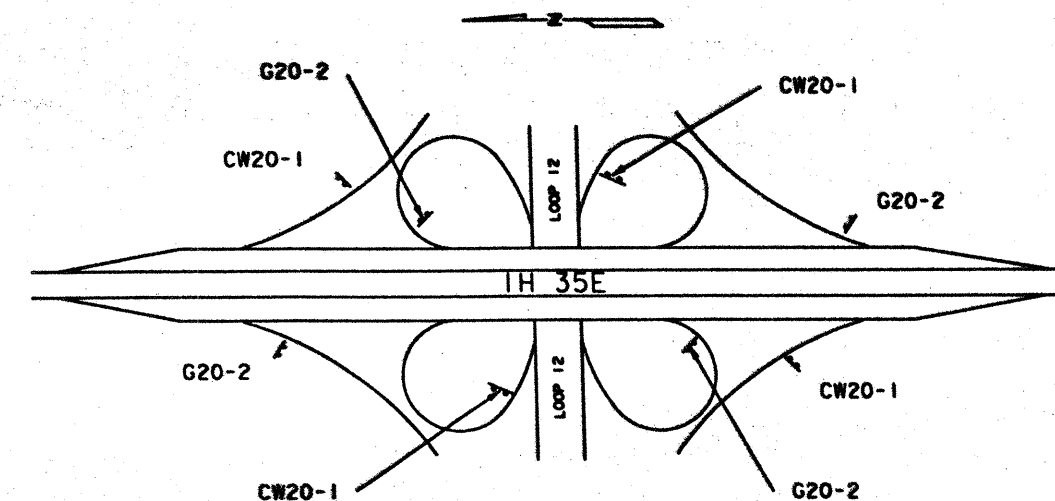
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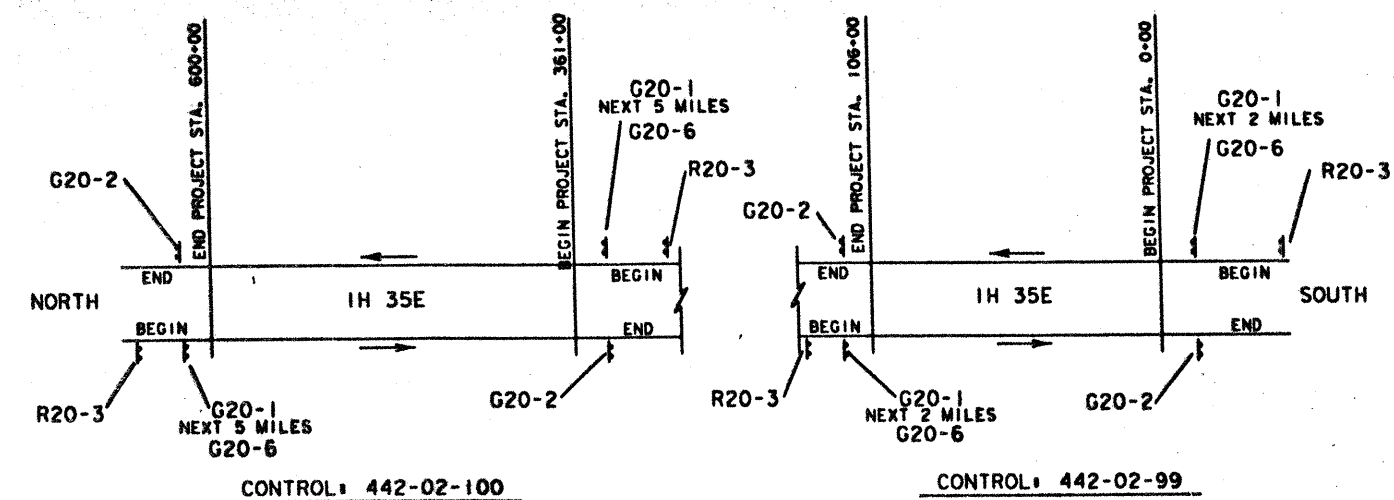
TYPICAL ENTRANCE RAMP AND EXIT RAMP



IH 35E AND IH 20 INTERCHANGE



IH 35E AND LOOP 12 INTERCHANGE



CONTROL: 442-02-100

CONTROL: 442-02-99

## MAIN LANE BARRICADES

(SEE BARRICADE AND CONSTRUCTION STANDARD SHEETS FOR DESCRIPTION OF SIGNS AND SPACING)

## NOTE:

PROJECT REQUIRES TWO (2) SETS OF BEGINNING AND ENDING BARRICADES.

## Traffic Control Plan

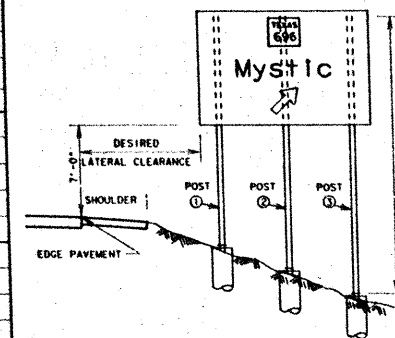
SHEET 1 OF 1

DATE	STATE	FEDERAL AID PROJECT NO.	PROJECT NO.
6	TEXAS	1H 35E-6 (MD 442, ETC)	1H 35E
STATE DIST. NO.	COUNTY	NO. 10	NO. 10
10	DALLAS	442	02 99 0



# SUMMARY OF LARGE SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN BACK-GROUND COLOR	SIGN TEXT	SIGN SIZE	REFLECTIVE SHEETING TYPE	GROUND MOUNT SUBSTRATE TYPE A SQUARE FEET		OVERHEAD SUBSTRATE SQUARE FEET		ROUTE MARKERS ATTACHED TO GUIDE SIGNS *TYPE A* ALUM	TYPE OF MOUNT	GALVANIZED PIPE POSTS				GALVANIZED STRUCTURAL STEEL				DRILLED SHAFT									
						PLYWOOD	ALUMINUM	ALUMINUM	TYPE "A" PLYWOOD			LINEAR FEET				SIZE	LINEAR FEET			TOTAL WEIGHT LBS.	NON-REINF 12"φ	REINFORCED							
												1 1/2"φ	2"φ	2 1/2"φ	3"φ		post 1	post 2	post 3			LINEAR FEET							
																						24"φ	30"φ	36"φ	42"φ	48"φ	54"φ	60"φ	
3	3	Grn	Parkerville Rd Belt Line Rd - 1382 Pleasant Run Rd	3/4 1 1/2 2 1/2	A A A				240.00		COSS # 6																		17.0
										9.17																			
4	1	Grn	Glenn Heights EXIT 412	15'-6" x 5'-6"	A	85.25					320			W6 x 9	14.60	14.09	324.0		10.0										
4	2	Grn	EXIT 412 Bear Creek Rd 3/4 MILE	9'-0" x 2'-0" 19'-0" x 6'-0"	A A				18.00 114.00		COSS # 7																	15.0	
4	3	Grn	Belt Line Rd - 1382 Pleasant Run Rd Wintergreen Rd	3/4 1 1/2 2 3/4	A A A				240.00	9.17	COSS # 8																	18.0	
4	4	Grn	EXIT 413 Parkerville Rd	9'-0" x 8'-0" 14'-6" x 7'-0"	A A				18.00 101.50		COSS # 9																	17.0	
Sheet 2 of 4 Total						85.25			731.50	18.34								324.0		10.0						15.0	52.0		
CSJ No. 442-02-93 Total						170.50			1482.50	27.51								634.0		20.0						15.0	137.00		



## GENERAL NOTES:

SIGNS SHOWN ON THIS SHEET ARE GENERALLY THOSE WITH REMOVEABLE LEGEND TEXTS, ALTHOUGH SCREENED LEGEND SIGNS MAY ALSO BE SHOWN (SEE SIGN TYPE).

SIGN LOCATIONS SHOWN ON THE PLANS ARE DIAGRAMATIC. SIGNS WILL BE PLACED IN CONFORMANCE WITH THE 1980 TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.

THE CONTRACTOR, IN COOPERATION WITH THE ENGINEER WILL STAKE EACH SIGN LOCATION BEFORE TAKING ELEVATIONS FOR FABRICATION OF SIGN POST OR SIGN BRIDGE TOWERS.

SIGN POST AND SIGN BRIDGE TOWER HEIGHTS SHALL BE VERIFIED WITH THE ENGINEER BEFORE FABRICATION.

REFLECTIVE SHEETING WILL BE DESIGNATED AS:

TYPE A - ENGINEER GRADE  
TYPE B - SUPER ENGINEER GRADE  
TYPE C - HIGH SPECIFIC INTENSITY

## SUMMARY OF LARGE SIGNS

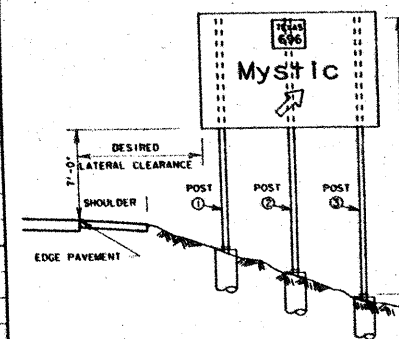
SHEET 2 OF 4

FEDERAL REGION	STATE	FEDERAL AID PROJECT	ROUTE
6	TEXAS	FM 355-6 (810)	1435E
COUNTY	COUNTY	CONTRACT NO.	SHEET
18	Dallas	442-02-93	6



# SUMMARY OF LARGE SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN BACK-GROUND COLOR	SIGN TEXT	SIGN SIZE	REFLECTIVE SHEETING TYPE	GROUND MOUNT SUBSTRATE TYPE A SQUARE FEET		OVERHEAD SUBSTRATE SQUARE FEET		ROUTE MARKERS ATTACHED TO GUIDE SIGNS *TYPE A* ALUM	TYPE OF MOUNT	GALVANIZED PIPE POSTS LINEAR FEET				GALVANIZED STRUCTURAL STEEL LINEAR FEET				DRILLED SHAFT LINEAR FEET									
						PLYWOOD	ALUMINUM	ALUMINUM	TYPE "A" PLYWOOD			1 1/2" Φ	2" Φ	2 1/2" Φ	3" Φ	SIZE	LINEAR FEET			TOTAL WEIGHT LBS.	NON-REINF 12" Φ	REINFORCED							
																	post ①	post ②	post ③			24" Φ	30" Φ	36" Φ	42" Φ	48" Φ	54" Φ	60" Φ	
5	1	Grn	Camp Wisdom Rd Laureland Rd	3/4 1 1/2	26'-6" x 10'-6"	A		278.25			COSS # 10																		18.0
			EXIT 117 EAST (MI-102A) Ann Arbor Ave	2 1/4	24' x 27"					1.50																			
7	EXISTING SIGN RELOCATED FROM S.B. STA. 430+30		EXIT 417-418C Wheatland Rd Danieldale Rd 1/4 MILE	EXIST. EXIST.	EXIST. EXIST.			EXIST.			COSS # 11																		17.0
7	EXISTING SIGN Re-located from N.B. STA. 488+75		EXIT 419 Camp Wisdom Rd 1/4 MILE	EXIST. EXIST.	EXIST. EXIST.						COSS # 12																		17.0
8	1	Grn	Wheatland Rd Danieldale Rd	1	22'-6" x 13'-6"	A		303.75			COSS # 13																		15.0
			20 EAST (MI-102)	1 1/4	45" x 36"	C				9.41																			
			20 WEST (MI-102)	1 1/2	45" x 36"	C				9.41																			
8	EXIST. SIGN Relocated from S.B. STA. 478+75		EXIT 419 Camp Wisdom Rd 1/4 MILE	EXIST. EXIST.	EXIST. EXIST.			EXIST. EXIST.			COSS # 14																		17.0
8	EXIST. SIGN Relocated from N.B. STA. 412+50		EXIT 420 Laureland Rd 1/4 MILE	EXIST. EXIST.	EXIST. EXIST.			EXIST. EXIST.			COSS # 15																		17.0
8	2	Grn	Laureland Rd	1/2	24'-0" x 9'-0"	A		216.00			BRIDGE MOUNT																		
			EXIT 117 EAST (MI-102A) Ann Arbor Ave	1 1/4	24' x 27"	A				1.50																			
9	1	Grn	Camp Wisdom Rd Wheatland Rd Danieldale Rd	1/2 1 1/2	26'-6" x 12'-6"	A		331.25			COSS # 17																		17.0
			20 EAST (MI-102)	1 3/4	45" x 36"	C				9.41																			17.0
10	EXISTING SIGN Relocated from S.B. STA. 517+50		EXIT 420 Laureland Rd 1/4 MILE	EXIST. EXIST.	EXIST. EXIST.			EXIST. EXIST.			COSS # 18																		
10	1	Grn	Laureland Rd Camp Wisdom Rd Wheatland Rd Danieldale Rd	1/2 1 1/4 2 1/4	26'-6" x 10'-0"	A		265.00			COSS # 19																		16.0
Sheet 3 of 4 Total								1394.25		37.23																			48.0 120.0



## GENERAL NOTES:

SIGNS SHOWN ON THIS SHEET ARE GENERALLY THOSE WITH REMOVEABLE LEGEND TEXTS, ALTHOUGH SCREENED LEGEND SIGNS MAY ALSO BE SHOWN (SEE SIGN TYPE).

SIGN LOCATIONS SHOWN ON THE PLANS ARE DIAGRAMATIC. SIGNS WILL BE PLACED IN CONFORMANCE WITH THE 1980 TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.

THE CONTRACTOR, IN COOPERATION WITH THE ENGINEER WILL STAKE EACH SIGN LOCATION BEFORE TAKING ELEVATIONS FOR FABRICATION OF SIGN POST OR SIGN BRIDGE TOWERS.

SIGN POST AND SIGN BRIDGE TOWER HEIGHTS SHALL BE VERIFIED WITH THE ENGINEER BEFORE FABRICATION.

REFLECTIVE SHEETING WILL BE DESIGNATED AS:

TYPE A - ENGINEER GRADE  
TYPE B - SUPER ENGINEER GRADE  
TYPE C - HIGH SPECIFIC INTENSITY

## SUMMARY OF LARGE SIGNS

SHEET 3 OF 4

FEDERAL REGION	STATE	FEDERAL AID PROJECT	HIGHWAY
6	TX	IM 35E-6(B10)	7
STATE DISTRICT	COUNTY	CONTRACT	SHEET
13	Dallas	442-02-994	7

100



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CUT HERE FOR 34" SHEET



SIGNS SHOWN ON THIS SHEET ARE  
GENERALLY THOSE WITH REMOVABLE  
LEGEND TEXTS, ALTHOUGH SCREENED  
LEGEND SIGNS MAY ALSO BE SHOWN  
(SEE SIGN TYPE).

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## SUMMARY OF LARGE SIGNS

SHEET 3A OF 4

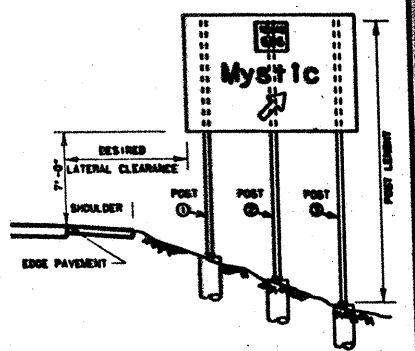
FEDERAL REGION	STATE	FEDERAL AID PROJECT				SECTION
6	TEXAS	IM 35E-6(310)				IN35
STATE DISTRICT	COUNTY	CONTROL	SECTION	JOB	DATE	
10	Seall	142	6	98	7A	



238BUD

SUMMARY OF LARGE SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN BACK-GROUND COLOR	SIGN TEXT	SIGN SIZE	REFLECTIVE SHEETING TYPE	GROUND MOUNT SUBSTRATE TYPE A SQUARE FEET		OVERHEAD SUBSTRATE SQUARE FEET		ROUTE MARKERS & PANELS ATTACHED TO GUIDE SIGNS TYPE A ALUM	TYPE OF MOUNT	GALVANIZED PIPE POSTS LINEAR FEET				GALVANIZED STRUCTURAL STEEL				DRILLED SHAFT LINEAR FEET										
						PLYWOOD	ALUMINUM	ALUMINUM	TYPE "A" PLYWOOD			1 1/2"	2"	2 1/2"	3"	SIZE	LINEAR FEET			TOTAL WEIGHT LBS.	NON-REINF 12"	REINFORCED								
																	POST 1	POST 2	POST 3			24"	30"	36"	42"	48"	54"	60"		
11	1	Grn	Beckley Ave Overton Rd  Kiest Blvd Saner Ave	1/2  1 1 3/4	21'0"x10'0"	A			210.00		COSS # 21																			18.0
12	2	Grn	Kiest Blvd Saner Ave Illinois Ave	1/4 1 1 1/2	21'0"x7'6"	A			157.50		COSS # 23																			15.0
12	1	Grn	(E-150)→EXIT 422A	10'6"x2'0"	A				21.00		COSS # 24																			18.0
	1	Grn	Beckley Ave Overton Rd 1/4 MILE		16'0"x8'6"	A			136.00																					
13	1	Grn	Saner Blvd Illinois Ave * (Reserved for future text) *	1/2 1	21'0"x7'6"	A			157.50		COSS # 25																			18.0
14	Existing Sign Relocated From N.B. STA 569+00		EXIT 423B Saner Ave 1/4 MILE (Just Mod. from 3/4 MILE To 1/4 MILE)	EXIST. EXIST. EXIST.	EXIST. EXIST. EXIST.				EXIST. EXIST. EXIST.		COSS # 26																			17.0
14	1	Grn	(E-150)→EXIT 424	9'0"x2'0"	A				18.00		Mount On Existing OSB @ N.B. STA. 241+75.3 IH 35E																			
	1	Grn	Illinois Ave 1/2 MILE	15'6"x6'0"	A				23.00																					
14	2	Grn	(E-150)→EXIT 423B	10'6"x2'0"	A				21.00		Mount On Existing OSB @ N.B. STA. 241+75.3 IH 35E																			
	2	Grn	Saner Ave  D (E-4)	14'0"x7'0"	A				28.00																					
Sheet 4 of 4 Totals									912.00	-0-																			15.0	71.0
CST No. 442-02-99 Totals									170.50	1482.50	27.51								634.00		20.0			15.0				137.0		
CST No. 442-02-100 Totals										3334.75	87.48																	111.0	209.0	
PROJECT TOTALS									170.50	4817.25	114.99								634.00		20.0			15.0	111.0			346.0		



GENERAL NOTES:

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SUMMARY OF LARGE SIGNS

SHEET 4 OF 4

FEDERAL REGION	STATE	FEDERAL AID PROJECT	ROUTE
6	TEXAS	IM 35E-6(310)	IM 35E
STATE DISTRICT	COUNTY	SECTION	SHEET
10	Dallas	442-02	99/ 4

BE FOR 1/4" SHEET



## PROPOSED COSS SUMMARIES OF QUANTITIES

COSS NO.	APPROX. STATION	SPAN LENGTH				100 WATT MV SIGN LIGHTS EACH	SIGN WALKWAY L.F.	M.B.G.F. L.F.	G.E.T.	G.R.E.A.T. 8 - BAY (EACH)	T.A.S. (EACH)
		25'-0"	30'-0"	35'-0"	40'-0"						
1	0+50 N.B.					4	40				
2	16+50 N.B.					3	40				
3	31+50 N.B.					2	40				
4	63+50 S.B.					2	40				
5	70+00 N.B.					3	40				
6	52+50 N.B.					4	40				
7	100+75 S.B.					3	25				
8	104+00 N.B.					4	35				
9	90+00 N.B.					2	40				
SUB TOTAL CSJ NO. 442-02-99						27	340	-0-	-0-	-0-	-0-
10	369+90 N.B.					4	35	EXIST.			
11	397+50 S.B.					3	40				
12	399+25 N.B.					3	40				
13	421+00 S.B.					3	40				
14	441+75 S.B.					3	40				
15	439+50 N.B.					3	40				
BRIDGE MOUNT						4	24				
17	451+00 S.B.					4	40	62.50			
18	490+00 S.B.					3	35	62.50			
19	504+50 S.B.					4	30				
OMIT											
21	529+00 N.B.					3	40				
22	562+50 S.B.					3	40				
23	559+50 N.B.					3	40				
24	537+50 N.B.					3	40				
25	582+50 N.B.					3	40				
26	591+75 N.B.					2	40				
27	464+00 N.B.					4	40				
28	475+00 N.B.					5	40				
29	580+35 S.B.					4	35				
SUB TOTAL CSJ NO. 442-02-100						64	719	125	2	1	2
PROJECT TOTALS						91	1059	125	2	1	2

## SIGN REMOVAL AND MODIFICATION SUMMARY

SIGNING LAYOUT SHEET	SIGN NUMBER	APPROX. STATION	REMOVE		MODIFY (ITEM 6136)	REMOVE, RELOCATE & MODIFY (ITEM 6141)
			OVHD	GRND MOUNT		
1 OF 14	R-1	SEE SHT. #1	-0-		-0-	-0-
2 OF 14	R-1	29+50 N.B.	-0-		-0-	-0-
2 OF 14	R-2	43+00 N.B.	-0-		-0-	-0-
3 OF 14	R-1	65+50 S.B.	-0-		-0-	-0-
4 OF 14	R-1	89+25 N.B.	-0-		-0-	-0-
4 OF 14	R-2	107+00 N.B.	-0-		-0-	-0-
4 OF 14	R-3	105+00 S.B.	-0-		-0-	-0-
TOTAL CSJ NO. 442-02-99			-0-	7	-0-	-0-
6 OF 14	M-1	376+00 S.B.	-0-	-0-		-0-
6 OF 14	RRM-1	389+00 N.B.	-0-	-0-	-0-	
7 OF 14	RRM-1	412+25 N.B.	-0-	-0-	-0-	
8 OF 14	R-1	430+50 S.B.		-0-	-0-	-0-
8 OF 14	RRM-1	430+50 S.B.	-0-	-0-	-0-	
9 OF 14	M-1	450+25 N.B.	-0-	-0-		-0-
9 OF 14	RRM-1	473+75 S.B.	-0-	-0-	-0-	
10 OF 14	R-1	502+50 N.B.		-0-	-0-	-0-
11 OF 14	RRM-1	517+50 S.B.	-0-	-0-	-0-	
12 OF 14	M-1	547+50 S.B.	-0-	-0-		-0-
13 OF 14	RRM-1	569+20 N.B.	-0-	-0-	-0-	
14 OF 14	RRM-1	586+50 S.B.	-0-	-0-	-0-	
14 OF 14	R-1	241+75 N.B.		-0-	-0-	-0-
14 OF 14	R-2	241+75 N.B.		-0-	-0-	-0-
TOTAL CSJ NO. 442-02-100			4	-0-	3	7
PROJECT TOTALS			4	7	3	7

## ELECTRICAL SUMMARY

SIGNING LAYOUT SHEET NUMBER	SERVICE POLE TYPE A (EA)	SERVICE POLE TYPE E (EA)	GROUND BOX (EA)	DUCT CABLE (LF)	ELECTICAL CONDUCTION (LF)		CONDUIT (LF)			
					#8 BARE	#8 XHHW	1 1/2" EMT	1 1/2" PVC	2" PVC BORED	4" PVC BORED
1	1		2	1745	-0-	-0-	-0-	-0-	-0-	30
2	1		1	91	-0-	-0-	-0-	-0-	30	-0-
3	2		4	1416	126	252	92	34	90	-0-
4	1		2	1641	252	504	214	38	82	-0-
442-02-99 TOTALS	5	-0-	9	4893	378	756	306	72	202	30
5		-0-	-0-	285	151	302	151	-0-	-0-	-0-
7		1	2	1162	172	344	172	-0-	32	40
8		3	5	3489	310	620	310	-0-	110	40
9		1	4	1583	62	124	62	-0-	66	-0-
10		2	6	2103	-0-	-0-	-0-	-0-	140	-0-
11		1	2	1134	-0-	-0-	-0-	-0-	30	-0-
12		1	-0-	224	272	544	272	-0-	-0-	-0-
13		1	2	1628	130	260	130	25	30	-0-
442-02-100 TOTALS	-0-	10	21	11,608	1,097	2,194	1,097	25	408	80
PROJECT TOTALS	5	10	30	16,501	1,475	2,950	1,403	97	610	110

## DELINEATION SUMMARY

STATION	OM-2HP
451+00 S.B.	1
490+00 S.B.	1
TOTAL	2



The seal appearing on this document was authorized by  
Yvonne D. Irvine,  
P.E. 66806, on  
September 12, 1992  
Yvonne D. Irvine

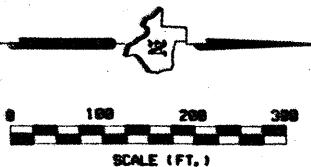
## SERVICE POLE SUMMARY

Service Pole No.	Sheet No.	Service Pole Description (See ED (3) - 92)	Service Conduit Size	Service Conductors No./Size	Safety Switch Amps	Main Disconnect Switch Amp/Fuse	Ckt. Bkr. Pole/Amp	Two-Pole Contactor Amps	Panel Board/ Loadcenter Amp Rating (min)	Circuit No.	Branch Circuit Breaker Pole/Amps	KVA Load
1	1	TYA (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	A	2P/20A	1.07
2	1	TYA (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	B	2P/20A	
3	2	TYA (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	C	2P/20A	0.31
4	3	TYA (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	D	2P/20A	0.92
5	3	TYA (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	E	2P/20A	
6	4	TYA (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	F	2P/20A	0.46
7	4	TYA (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	G	2P/20A	1.38
EXIST.		EXISTING SERVICE POLE			N/A		N/A		N/A	H		2.53
6	7	TYE (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	I	2P/20A	0.92
7	8	TYE (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	J	2P/20A	
8	8	TYE (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	K	2P/20A	1.65
9	8	TYE (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	L	2P/20A	1.52
10	8	TYE (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	M	2P/20A	1.07
11	10	TYE (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	N	2P/20A	
12	10	TYE (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	O	2P/20A	1.52
13	12	TYE (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	P	2P/20A	0.61
14	13	TYE (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	Q	2P/20A	0.92
15	13	TYE (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	R	2P/20A	
13	12	TYE (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	S	2P/20A	0.92
14	13	TYE (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	T	2P/20A	1.38
15	9	TYE (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	U	2P/20A	
15	9	TYE (240/480) 060 (NS) GS (T) TP (O)	1 1/4"	3/#6	N/A	60A/35A	N/A	60A	N/A	V	2P/20A	1.38

## COSS, SIGN, ELECTRICAL &amp; SERVICE POLE SUMMARY

SHEET 1 OF 1

STATE	FEDERAL AID PROJECT NO.	IN 356-6 (S) 04040, ETC.	IN 356
TEXAS			
COUNTY	ROUTE	BRIDGE NO.	IN 356
DALLAS	442	02	99 8 8

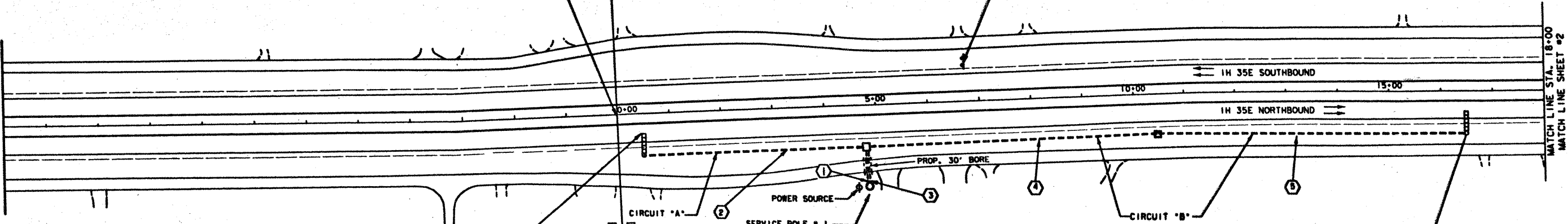


238BUD

BEGIN PROJECT: IM 35E-6 ( )  
CONTROL: 442-02-099  
STATION: 0+00

DALLAS COUNTY STA. 0+00  
ELLIS COUNTY STA. 0+01.2

EXIT 411  
664  
Ovilia Rd  
1 MILE



CIRCUIT "A"  
CIRCUIT "B"  
POWER SOURCE  
SERVICE POLE # 1  
TYPE "A" (240/480) 060 (NS) 05 (T) TP 100

EXIT 412  
Glenn Heights  
Bear Creek Rd  
1 MILE  
EXISTING SIGN 2100 FEET SOUTH  
OF COUNTY LINE

Bear Creek Rd 1/2  
Parkerville Rd 1 3/4  
Belt Line Rd - 1382 2 1/2

PROPOSED COSS # 1  
IH 35E NORTHBOUND  
APPROX. STA. 0+50  
4 (100 WATT MV) SIGN LIGHTS

RUN NO.	CONDUCTORS NO. & LENGTH (FEET)		DUCT CABLE SIZE/LENGTH		CONDUIT (FEET)	
	# 8 BARE	# 8 XHHW	8-3	6-3	1 1/2" EMT	4" PVC BORED
1			18			
2			473			30
3			18			
4			833			
5			803			
TOTAL			1745			30

GROUND BOX	2
SERVICE POLE	1

SIGNING AND DELINEATION LEGEND

- (21) NEW SIGN TO BE INSTALLED
- (E) EXISTING SIGN TO REMAIN IN PLACE
- (R-2) EXISTING SIGN TO BE REMOVED
- (M-2) EXISTING SIGN TO BE MODIFIED
- (RM-2) EXISTING SIGN TO BE REMOVED, REPLACED & MODIFIED
- PROPOSED POWER RUN
- - - EXISTING POWER RUN
- PROPOSED GROUND BOX
- POWER RUN NUMBER
- ⬢ JUNCTION BOX
- SERVICE POLE
- DUCT CABLE INSIDE CONDUIT

EXIT 412  
Bear Creek Rd  
1/4 MILE

PROPOSED COSS # 2  
IH 35E NORTHBOUND  
APPROX. STA. 16+50  
3 (100 WATT MV) SIGN LIGHTS

10

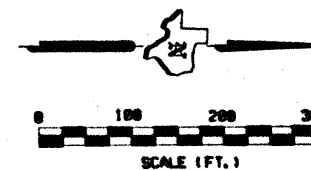


The seal appearing on this document was authorized by Yvonne D. Irvine, P.E. 66806, on July 16, 1992

SIGNING LAYOUT  
SHEET 1 OF 14

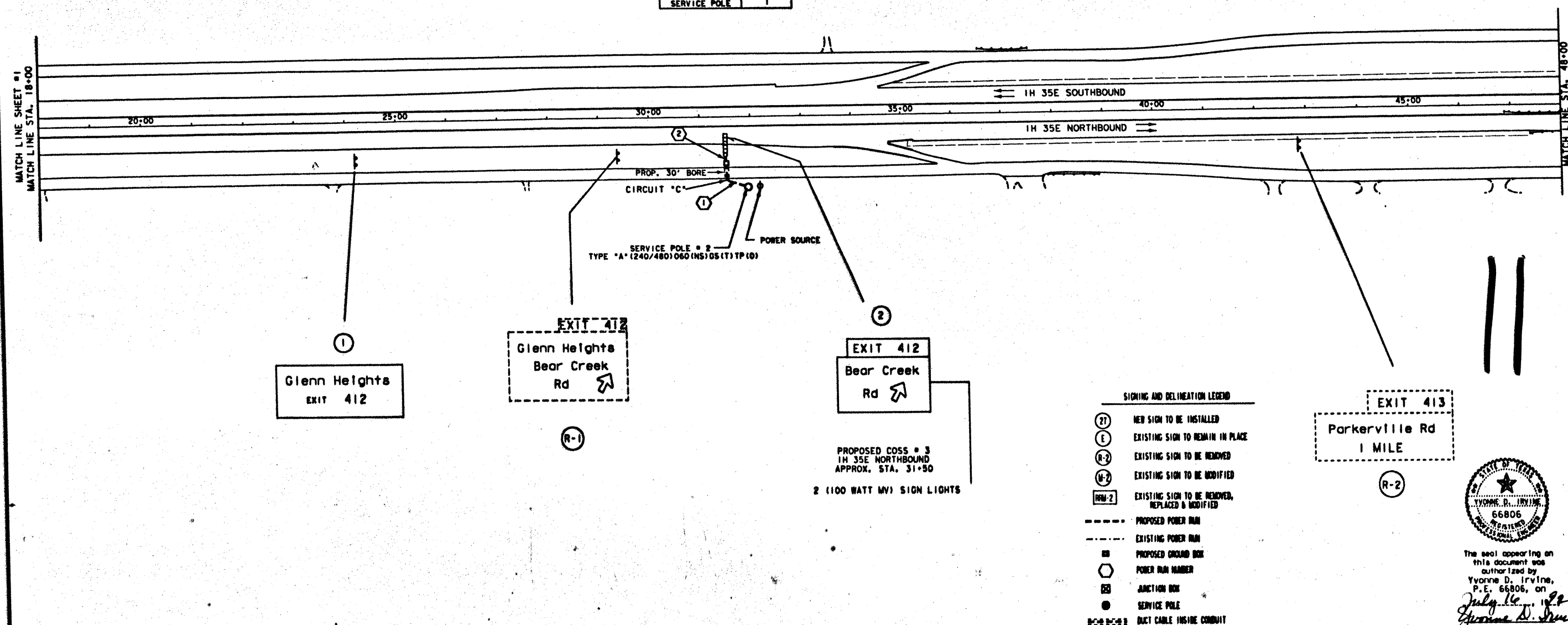
STATE	STATE	FEDERAL AID PROJECT NO.	IM 35E
6	TEXAS	IM 35E-6 (34014) 060	IM 35E
COUNTY	ROUTE	SECTION	POST MILE
13	DALLAS	442	02 99.5 10

238BUD



RUN NO.	CONDUCTORS NO. & LENGTH (FEET)		DUCT CABLE SIZE/LENGTH		CONDUIT (FEET)	
	# 8 BARE	# 8 XHHW	8-3	6-3	1 1/2" EMT	2" PVC BORED
1			73			30
2			18			
TOTAL			91			30

GROUND BOX	1
SERVICE POLE	1



- SIGNING AND DELINEATION LEGEND
- (N) NEW SIGN TO BE INSTALLED
  - (E) EXISTING SIGN TO REMAIN IN PLACE
  - (R-2) EXISTING SIGN TO BE REMOVED
  - (M-2) EXISTING SIGN TO BE MODIFIED
  - (RM-2) EXISTING SIGN TO BE REMOVED, REPLACED & MODIFIED
  - PROPOSED POWER RUN
  - EXISTING POWER RUN
  - PROPOSED GROUND BOX
  - POWER RUN HARBOR
  - JUNCTION BOX
  - SERVICE POLE
  - DUCT CABLE INSIDE CONDUIT

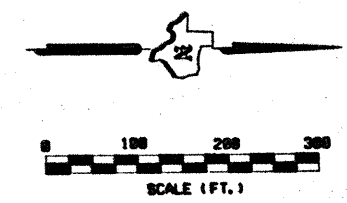


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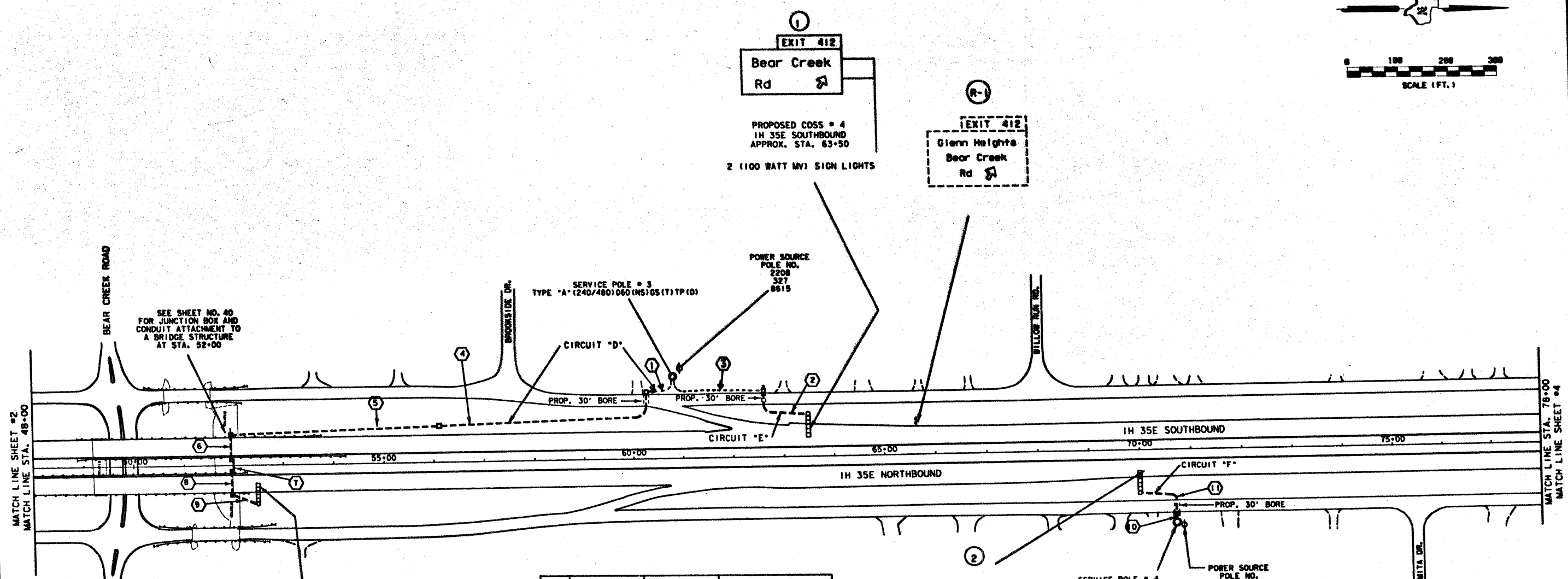
# SIGNING LAYOUT

SHEET 2 OF 14

DIST.	STATE	FEDERAL AID PROJECT NO.	IN 35E
6	TEXAS	1H 35E-6 (BAY 4/4/8, 6/9)	IN 35E
COUNTY	THANKS	DATE	BY
13	DALLAS	442	02 99 0 11



238BUD



SEE SHEET NO. 40  
FOR JUNCTION BOX AND  
CONDUIT ATTACHMENT TO  
A BRIDGE STRUCTURE  
AT STA. 52+00

Parkerville Rd 3/4  
Belt Line Rd - 1382 1 1/2  
Pleasant Run Rd 2 1/2

PROPOSED COSS = 6  
IN 35E NORTHBOUND  
APPROX. STA. 52+50  
4 (100 WATT MV) SIGN LIGHTS

RUN NO.	CONDUCTORS NO. & LENGTH (FEET)		DUCT CABLE SIZE/LENGTH		CONDUIT (FEET)		
	# 8 BARE	# 8 XHHW	8-3	6-3	1 1/2" EMT	2" PVC BORED	1 1/2" PVC
1			13				
2			123			30	
3			228				
4			456			30	
5			418				
6	1-46	2-46			46		
7	1-34	2-34					34
8	1-46	2-46			46		
9			54				
10			13				
11			111			30	
TOTAL	126	252	1416		92	90	34

GROUND BOX	4
SERVICE POLE	2

EXIT 413  
Parkerville Rd  
1/2 MILE  
  
PROPOSED COSS = 5  
IN 35E NORTHBOUND  
APPROX. STA. 70+00  
3 (100 WATT MV) SIGN LIGHTS

- SIGNING AND DELINEATION LEGEND
- (21) NEW SIGN TO BE INSTALLED
  - (E) EXISTING SIGN TO REMAIN IN PLACE
  - (R-2) EXISTING SIGN TO BE REMOVED
  - (M-2) EXISTING SIGN TO BE MODIFIED
  - (RM-2) EXISTING SIGN TO BE REMOVED, REPLACED & MODIFIED
  - PROPOSED POWER RUN
  - EXISTING POWER RUN
  - PROPOSED GROUND BOX
  - POWER RUN NUMBER
  - ⊠ JUNCTION BOX
  - SERVICE POLE
  - DUCT CABLE INSIDE CONDUIT



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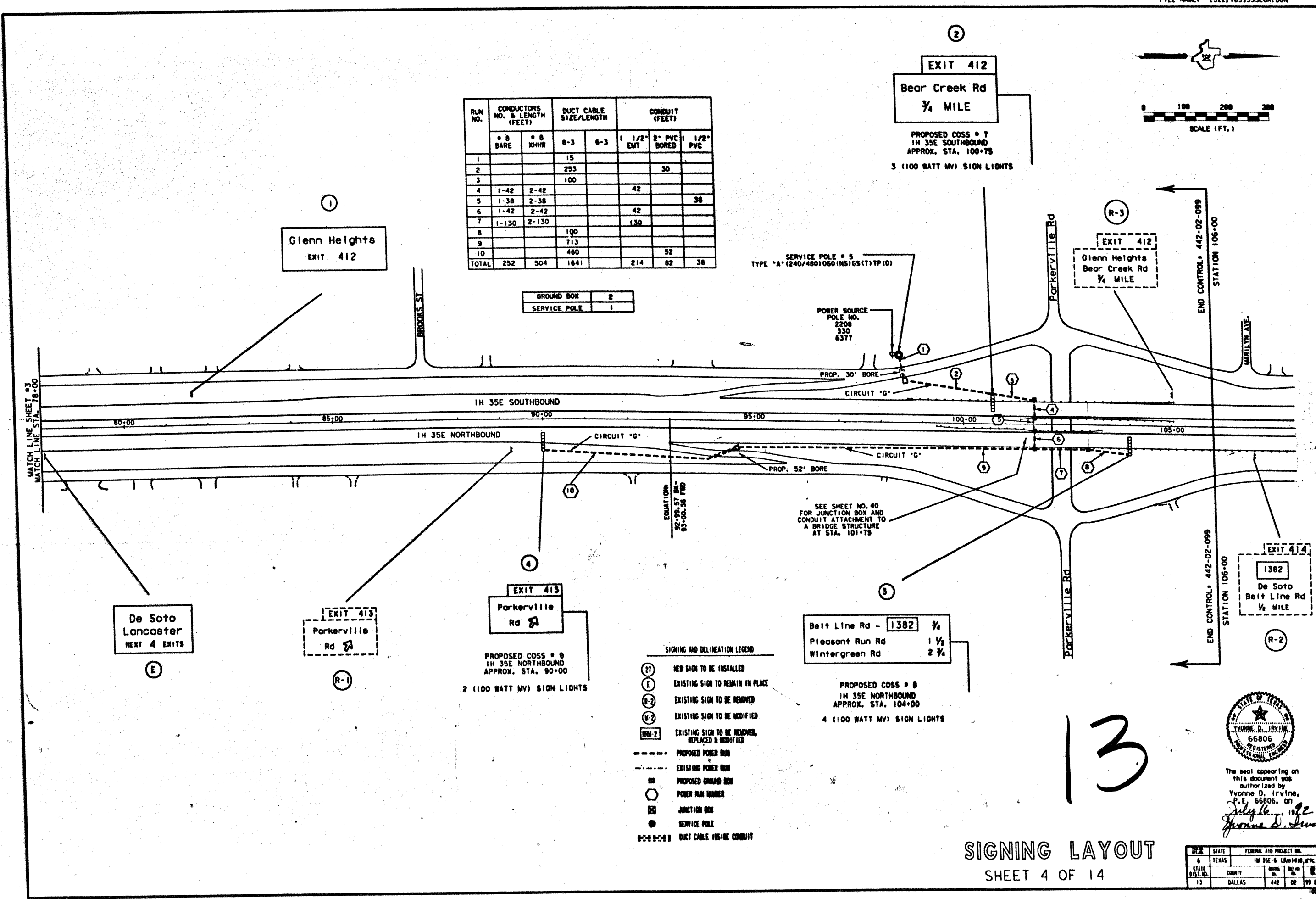
# SIGNING LAYOUT

SHEET 3 OF 14

STATE	FEDERAL AID PROJECT NO.	IN 35E
TEXAS	IM 35E-6 (940140, etc.)	IN 35E
COUNTY	SECTION	POST MILE
DALLAS	442 02	99.8 12



238R11D



RUN NO.	CONDUCTORS NO. & LENGTH (FEET)		DUCT CABLE SIZE/LENGTH		CONDUIT (FEET)		
	# 8 BARE	# 8 XHHW	8-3	6-3	1 1/2" EMT	2" PVC BORED	1 1/2" PVC
1			15				
2			253			30	
3			100				
4	1-42	2-42			42		
5	1-38	2-38					38
6	1-42	2-42			42		
7	1-130	2-130			130		
8			190				
9			713				
10			460			52	
TOTAL	252	504	1641		214	82	38

GROUND BOX	2
SERVICE POLE	1

- SIGNING AND DELINEATION LEGEND**
- (Z) NEW SIGN TO BE INSTALLED
  - (E) EXISTING SIGN TO REMAIN IN PLACE
  - (R-2) EXISTING SIGN TO BE REMOVED
  - (M-2) EXISTING SIGN TO BE MODIFIED
  - (RM-2) EXISTING SIGN TO BE REMOVED, REPLACED & MODIFIED
  - PROPOSED POWER RUN
  - - - EXISTING POWER RUN
  - PROPOSED GROUND BOX
  - POWER RUN NUMBER
  - JUNCTION BOX
  - SERVICE POLE
  - DUCT CABLE INSIDE CONDUIT

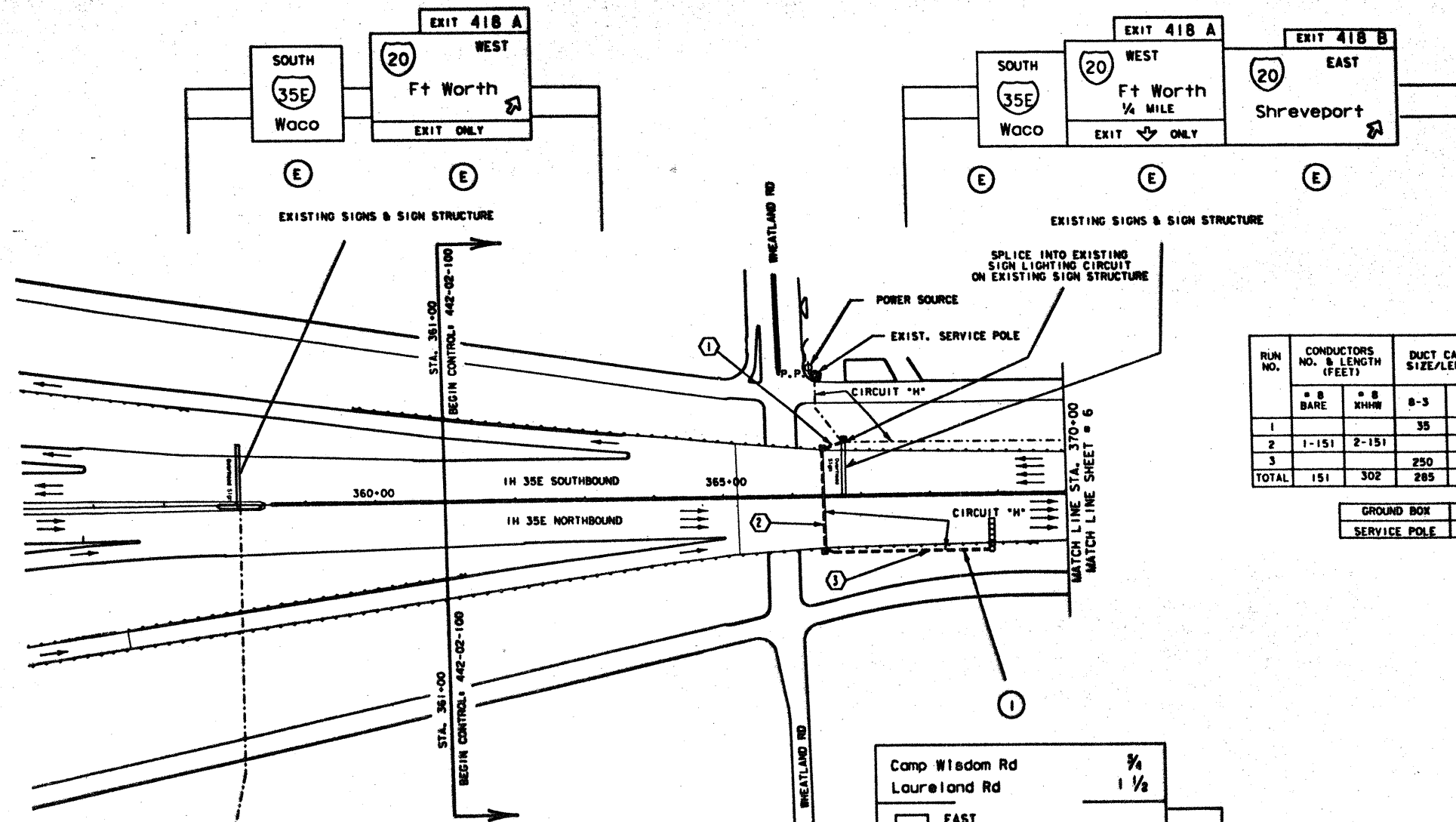
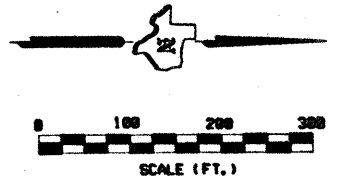
13

**SIGNING LAYOUT**  
SHEET 4 OF 14

DIST.	STATE	FEDERAL AID PROJECT NO.	
6	TEXAS	1M 35E-6 (1961-1966)	IN 35E
13	DALLAS	442 02 99 8	13



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RUN NO.	CONDUCTORS NO. & LENGTH (FEET)		DUCT CABLE SIZE/LENGTH		CONDUIT (FEET)	
	# BARE	# XHHW	8-3	6-3	1 1/2" EMT	2" PVC BORED
1			35			
2	1-151	2-151			151	
3			250			
TOTAL	151	302	285		151	

GROUND BOX	-0-
SERVICE POLE	-0-

Camp Wisdom Rd	3/4
Laureland Rd	1 1/2
12 EAST	2 1/4
Ann Arbor Ave	

- SIGNING AND DELINEATION LEGEND**
- (27) NEW SIGN TO BE INSTALLED
  - (E) EXISTING SIGN TO REMAIN IN PLACE
  - (R-2) EXISTING SIGN TO BE REMOVED
  - (M-2) EXISTING SIGN TO BE MODIFIED
  - (RM-2) EXISTING SIGN TO BE REMOVED, REPLACED & MODIFIED
  - PROPOSED POWER RUN
  - EXISTING POWER RUN
  - PROPOSED GROUND BOX
  - POWER RUN HANDBOOK
  - JUNCTION BOX
  - SERVICE POLE
  - ===== DUCT CABLE INSIDE CONDUIT

PROPOSED COSS = 10  
 IN 35E NORTHBOUND  
 APPROX. STA. 369+00  
 4(100 WATT MV) SIGN LIGHTS

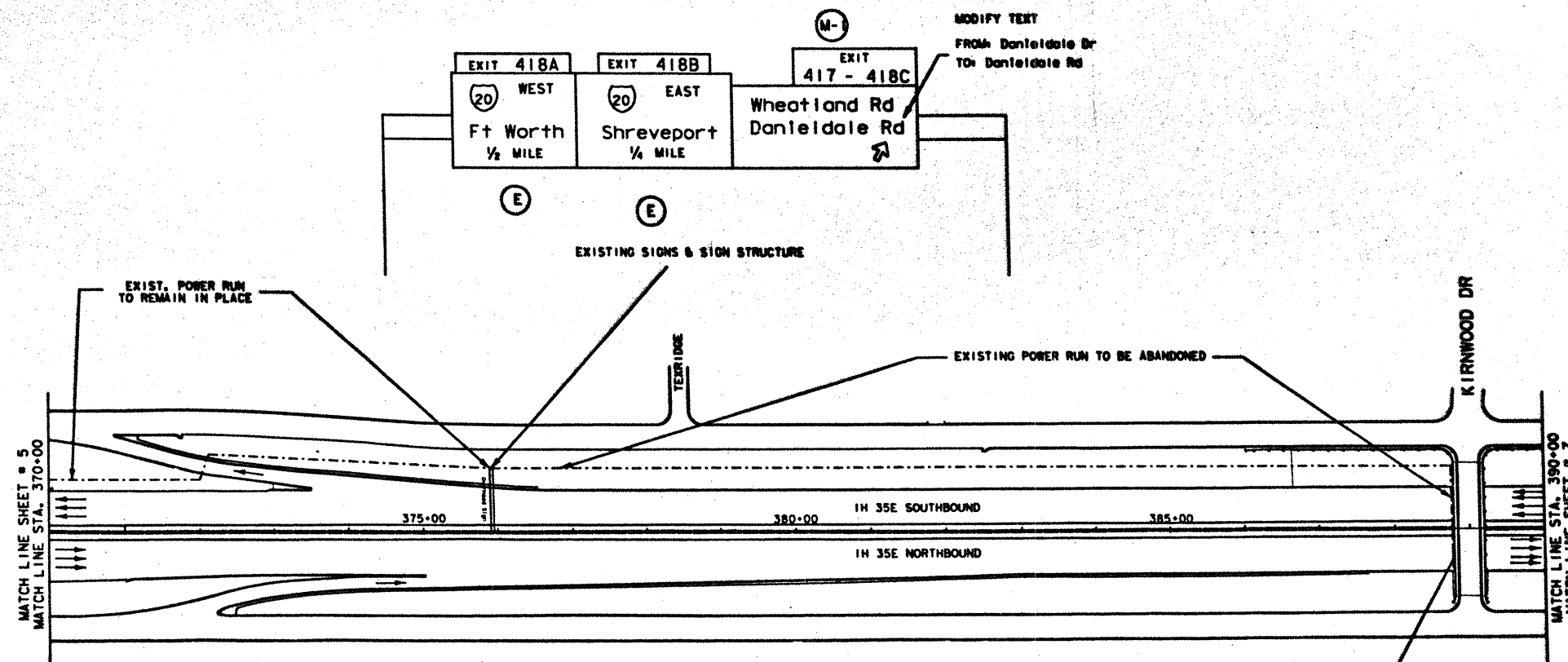
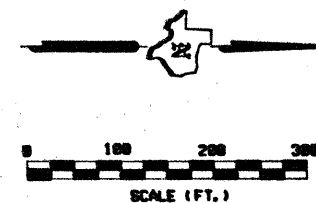
14



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 Yvonne D. Irvine

# Signing Layout SHEET 5 OF 14

STATE	FEDERAL AID PROJECT NO.	DATE
TEXAS	IM 35E-6 (S) 40410, ETC.	IM 35E
COUNTY		
DALLAS	442 02 09 8	14



SIGNING AND DELINEATION LEGEND

- (27) NEW SIGN TO BE INSTALLED
- (E) EXISTING SIGN TO REMAIN IN PLACE
- (R-2) EXISTING SIGN TO BE REMOVED
- (M-2) EXISTING SIGN TO BE MODIFIED
- (RRM-2) EXISTING SIGN TO BE REMOVED, REPLACED & MODIFIED
- PROPOSED POWER RUN
- - - EXISTING POWER RUN
- PROPOSED GROUND BOX
- POWER RUN HANDBOOK
- JUNCTION BOX
- SERVICE POLE
- DUCT CABLE INSIDE CONDUIT

EXIT 419  
Camp Wisdom Rd  
1/2 MILE

RRM-1

REMOVE AND RELOCATE  
THIS SIGN TO  
PROP. COSS # 12  
MODIFY TEXT TO  
1/4 MILE



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*Yvonne D. Irvine*

Signing Layout  
SHEET 6 OF 14

DIST.	STATE	FEDERAL AID PROJECT NO.	
5	TEXAS	10 35E-6 (840140, 840141, 840142)	10 35E
DIST.	COUNTY	SECTION	DATE
10	DALLAS	442	02 09 92

GROUND BOX	2
SERVICE POLE	1



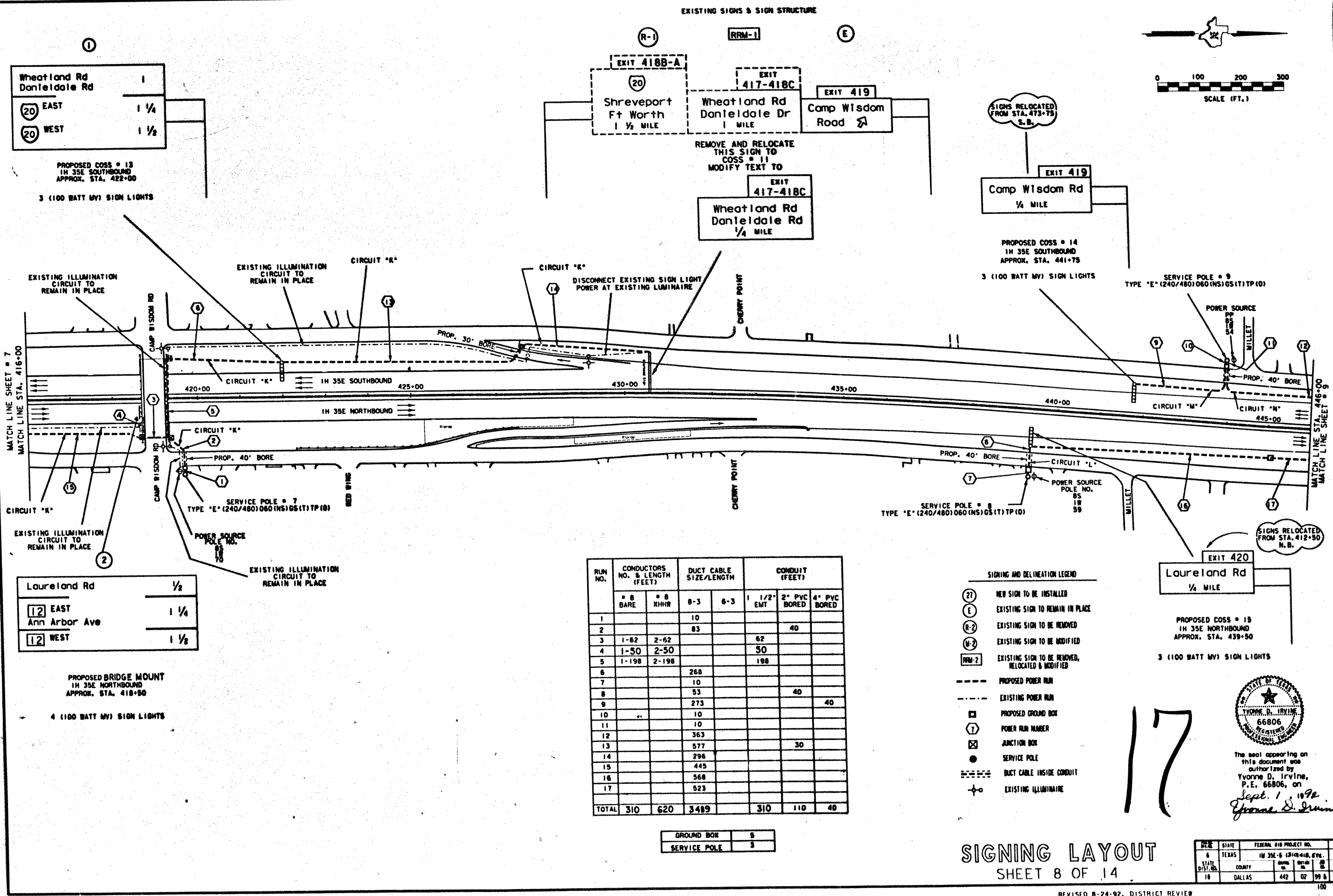
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Yvonne D. Irvine

# Signing Layout

SHEET 7 OF 14

STATE	FEDERAL AID PROJECT NO.
6 TEXAS	10 35E-6 (310)40, 87C.
STATE DIST. NO.	COUNTY
10 DALLAS	442 122





①

Wheatland Rd	1
Danleide Rd	
20 EAST	1 1/4
20 WEST	1 1/2

PROPOSED COSS = 13  
1H 35E SOUTHBOUND  
APPROX. STA. 422+00  
3 (100 WATT MV) SIGN LIGHTS

MATCH LINE SHEET # 7  
MATCH LINE STA. 416+00

Laureland Rd	1/2
12 EAST	1 1/4
Ann Arbor Ave	
12 WEST	1 1/2

PROPOSED BRIDGE MOUNT  
1H 35E NORTHBOUND  
APPROX. STA. 418+50  
4 (100 WATT MV) SIGN LIGHTS

RUN NO.	CONDUCTORS NO. & LENGTH (FEET)		DUCT CABLE SIZE/LENGTH		CONDUIT (FEET)		
	# B BARE	# B XHHW	8-3	6-3	1 1/2" EMT	2" PVC BORED	4" PVC BORED
1			10				
2			83			40	
3	1-62	2-62			62		
4	1-50	2-50			50		
5	1-198	2-198			198		
6			268				
7			10				
8			53			40	
9			273				40
10			10				
11			10				
12			363				
13			577			30	
14			296				
15			445				
16			568				
17			523				
TOTAL	310	620	3489		310	110	40

GROUND BOX	5
SERVICE POLE	3

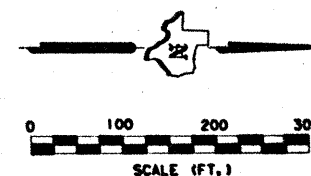
- SIGNING AND DELINEATION LEGEND
- (27) NEW SIGN TO BE INSTALLED
  - (E) EXISTING SIGN TO REMAIN IN PLACE
  - (R-2) EXISTING SIGN TO BE REMOVED
  - (M-2) EXISTING SIGN TO BE MODIFIED
  - (RRM-2) EXISTING SIGN TO BE REMOVED, RELOCATED & MODIFIED
  - PROPOSED POWER RUN
  - EXISTING POWER RUN
  - PROPOSED GROUND BOX
  - ⑦ POWER RUN NUMBER
  - ⊗ JUNCTION BOX
  - SERVICE POLE
  - DUCT CABLE INSIDE CONDUIT
  - + EXISTING ILLUMINAIRE

17

SIGNING LAYOUT  
SHEET 8 OF 14

STATE OF TEXAS  
TYNNE D. IRVINE  
66806  
REGISTERED PROFESSIONAL ENGINEER  
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Yvonne D. Irvine

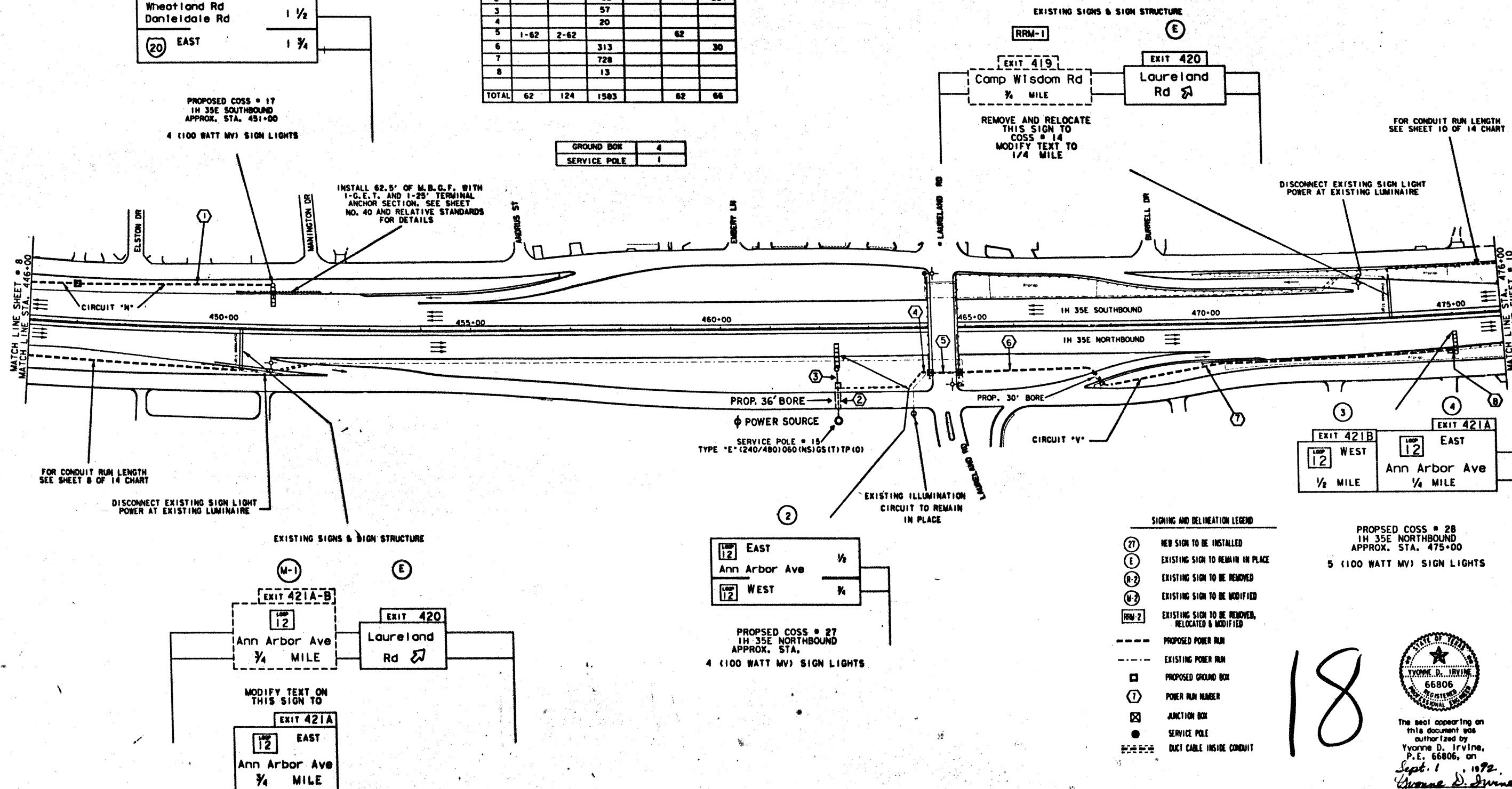
DIST.	STATE	FEDERAL AID PROJECT NO.	IN 35E
6	TEXAS	1H 35E-6 (241H-418, 419, 420)	IN 35E
COUNTY	CONTRACT NO.	DATE	BY
10	DALLAS	442 02 99 &	17



Camp Wisdom Rd	1/2
Wheatland Rd	1 1/2
Danleida Rd	1 3/4

RUN NO.	CONDUCTORS NO. & LENGTH (FEET)		DUCT CABLE SIZE/LENGTH		CONDUIT (FEET)	
	# 8 BARE	# 8 XHHW	8-3	6-3	1 1/4" ENT	2" PVC BORED
1			400			38
2			52			
3			57			
4			20			
5	1-62	2-62			62	
6			313			30
7			728			
8			13			
TOTAL	62	124	1503		62	68

GROUND BOX	4
SERVICE POLE	1



- SIGNING AND DELINEATION LEGEND**
- (27) NEW SIGN TO BE INSTALLED
  - (E) EXISTING SIGN TO REMAIN IN PLACE
  - (R-2) EXISTING SIGN TO BE REMOVED
  - (M-2) EXISTING SIGN TO BE MODIFIED
  - (RRM-2) EXISTING SIGN TO BE REMOVED, RELOCATED & MODIFIED
  - PROPOSED POWER RUN
  - EXISTING POWER RUN
  - PROPOSED GROUND BOX
  - ⑦ POWER RUN NUMBER
  - ⊗ JUNCTION BOX
  - SERVICE POLE
  - DUCT CABLE INSIDE CONDUIT



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# **SIGNING LAYOUT** SHEET 9 OF 14

REVISED 8-24-92, DIB-TE REVIEW

STATE	FEDERAL AID PROJECT NO.	IN 35E
TEXAS	10 35E-6 (S100400, etc.)	IN 35E
COUNTY	SECTION	POST MILE
DALLAS	442	02 00 5



238

RUN NO.	CONDUCTORS NO. & LENGTH (FEET)		DUCT CABLE SIZE/LENGTH		CONDUIT (FEET)	
	# 8 BARE	# 8 XHHW	6-3	6-3	1 1/2" ENT	2" PVC BORED
1			13			
2			90			40
3			13			
4			96			40
5			226			30
6			36			30
7			767			
8			393			
9			469			
TOTAL			2103			140

GROUND BOX	6
SERVICE POLE	2

SIGNS RELOCATED FROM STA. 517+50 S.B.

EXIT 420  
Laureland Rd  
1/4 MILE

PROPOSED COSS # 18  
1H 35E SOUTHBOUND  
APPROX. STA. 490+00

3 (100 WATT MV) SIGN LIGHTS

SERVICE POLE # 10  
TYPE "E" (240/480) 060 (NS) GS (T) TP (0)

POWER SOURCE  
POLE NO. 75  
2W  
124

CIRCUIT "O"

INSTALL 62.5' OF M.B.G.P. WITH  
1-C.E.T. AND 1-25' TERMINAL  
ANCHOR SECTION. SEE SHEET  
NO. 40 AND RELATIVE STANDARDS  
FOR DETAILS

Laureland Rd 1/2  
Camp Wisdom Rd 1 1/4  
Wheatland Rd 2 1/4  
Danieldale Rd

PROPOSED COSS # 19  
1H 35E SOUTHBOUND  
APPROX. STA. 504+50

4 (100 WATT MV) SIGN LIGHTS

SERVICE POLE # 11  
TYPE "E" (240/480) 060 (NS) GS (T) TP (0)

POWER SOURCE  
POLE NO. 75  
2W  
124

CIRCUIT "P"

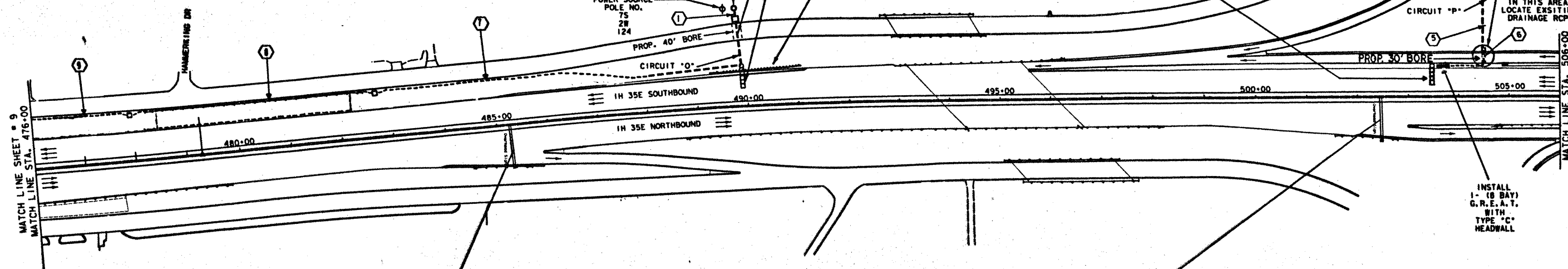
PROP. 30' BORE

NOTE: BEFORE BORING  
IN THIS AREA,  
LOCATE EXISTING  
DRAINAGE RCP.

CIRCUIT "P"

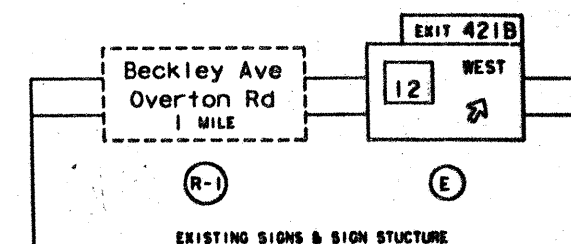
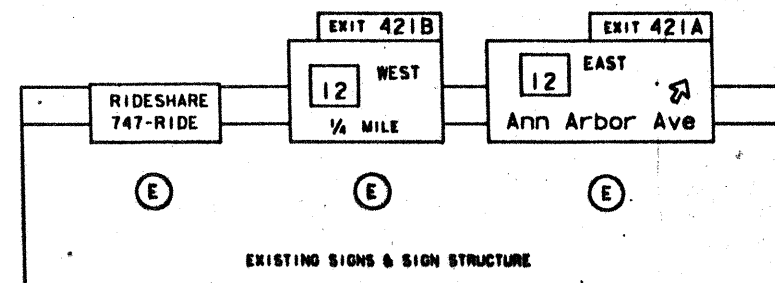
PROP. 30' BORE

INSTALL  
1-18 BAY  
G.R.E.A.T.  
WITH  
TYPE "C"  
HEADWALL



SIGNING AND DELINEATION LEGEND

- (21) NEW SIGN TO BE INSTALLED
- (E) EXISTING SIGN TO REMAIN IN PLACE
- (R-2) EXISTING SIGN TO BE REMOVED
- (M-2) EXISTING SIGN TO BE MODIFIED
- (RM-2) EXISTING SIGN TO BE REMOVED, RELOCATED & MODIFIED
- PROPOSED POWER RUN
- EXISTING POWER RUN
- PROPOSED GROUND BOX
- ① POWER RUN NUMBER
- ⊠ JUNCTION BOX
- SERVICE POLE
- DUCT CABLE INSIDE CONDUIT

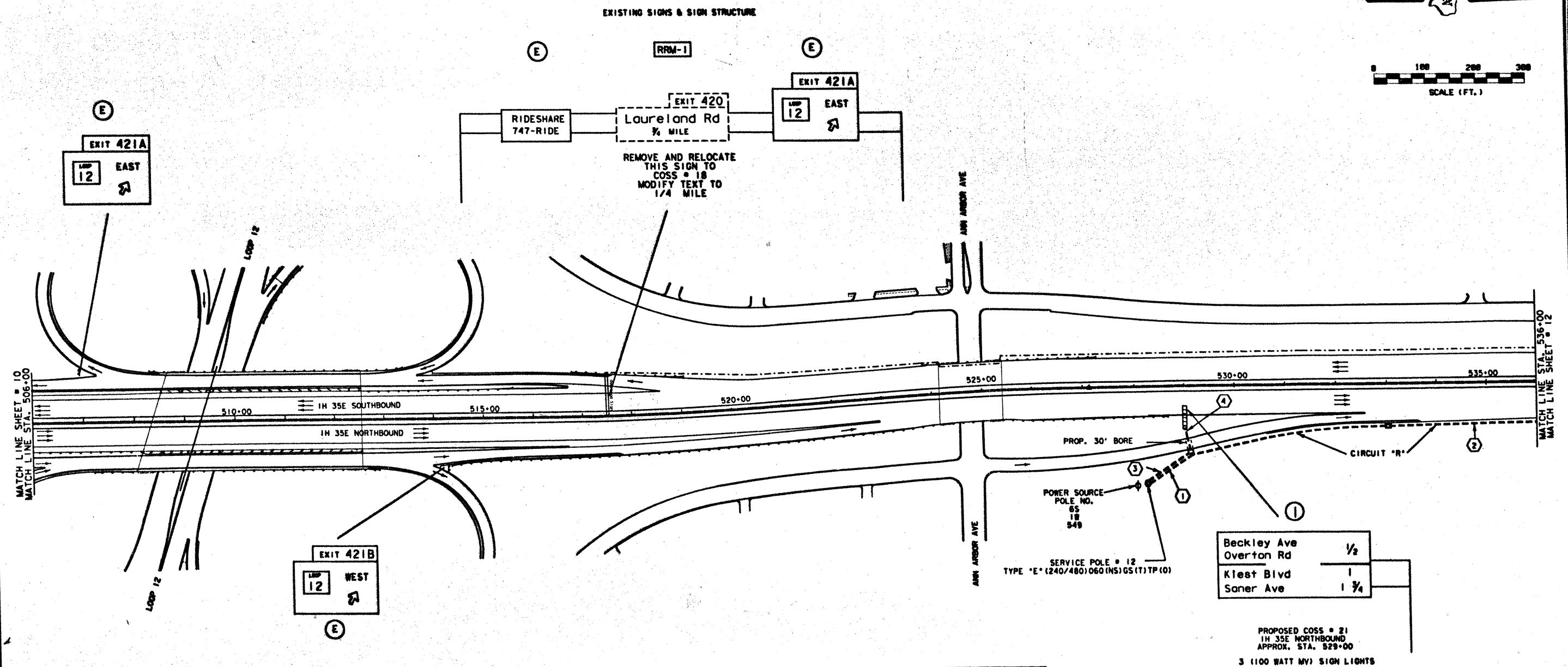


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Sept 1, 1992  
Yvonne D. Irvine

SIGNING LAYOUT  
SHEET 10 OF 14

STATE	FEDERAL AID PROJECT NO.	IN 35E
6 TEXAS	1H 35E-6 (210+410, ETC.)	IN 35E
COUNTY	SECTION	POST MILE
18 DALLAS	447	02 99.8 10

238



## SIGNING AND DELINEATION LEGEND

- (21) NEW SIGN TO BE INSTALLED
- (E) EXISTING SIGN TO REMAIN IN PLACE
- (R-2) EXISTING SIGN TO BE REMOVED
- (M-2) EXISTING SIGN TO BE MODIFIED
- RRM-2 EXISTING SIGN TO BE REMOVED, RELOCATED & MODIFIED
- PROPOSED POWER RUN
- EXISTING POWER RUN
- PROPOSED GROUND BOX
- ① POWER RUN NUMBER
- ⊗ JUNCTION BOX
- SERVICE POLE
- DUCT CABLE INSIDE CONDUIT

RUN NO.	CONDUCTORS NO. & LENGTH (FEET)		DUCT CABLE SIZE/LENGTH		CONDUIT (FEET)	
	# 8 BARE	# 8 XHHW	8-3	6-3	1 1/2" EMT	2" PVC BORED
1			520			
2			453			
3			110			30
4			51			
TOTAL			1134			30

GROUND BOX	2
SERVICE POLE	1

SIGNING LAYOUT  
SHEET 11 OF 14

REVISED 8-24-92, DIB-TE REVIEW



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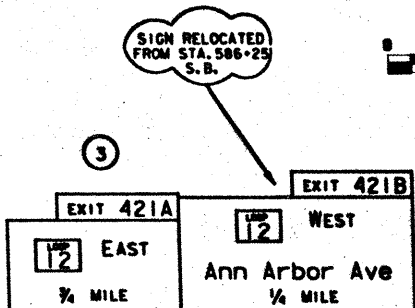
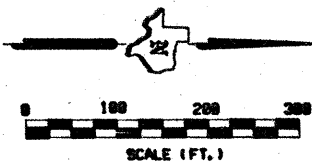
DIST.	STATE	FEDERAL AID PROJECT NO.	PROJECT NO.
6	TEXAS	1M 35E-6 (BIO) 416, 676	1M 35E
COUNTY	ROUTE NO.	SECTION NO.	SHEET NO.
18	DALLAS	442	02 99 & 20



238.

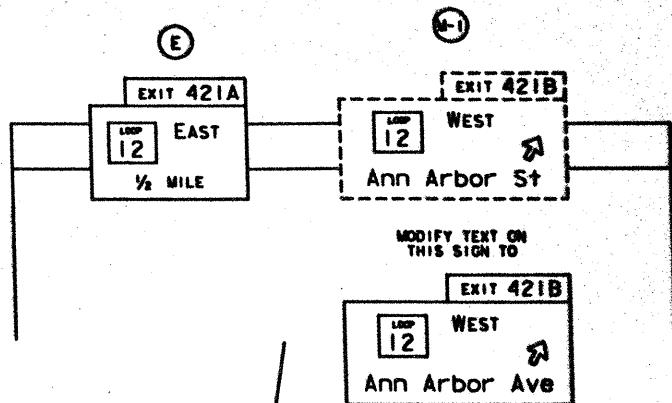
RUN NO.	CONDUCTORS NO. & LENGTH (FEET)		DUCT CABLE SIZE/LENGTH (FEET)		CONDUIT (FEET)	
	# 8 BARE	# 8 XHHW	8-3	6-3	1 1/2" EMT	2" PVC BORED
1			56			
2	1-62	2-62			62	
3			20			
4	1-210	2-210			210	
5			148			
TOTAL	272	544	224		272	

GROUND BOX	-0-
SERVICE POLE	1

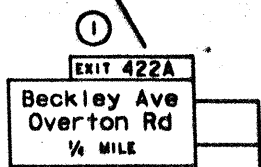
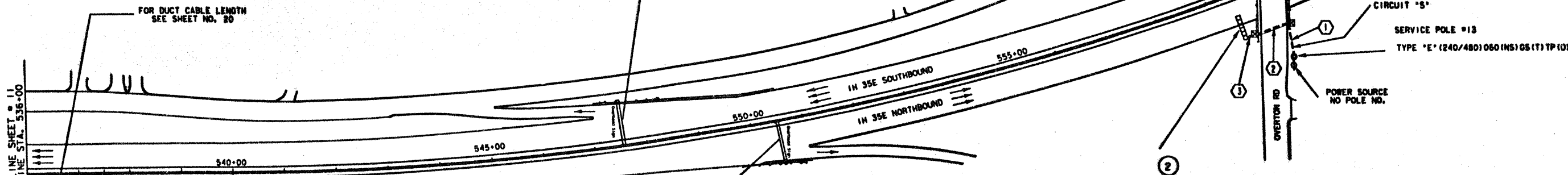


PROPOSED COSS = 22  
1H 35E SOUTHBOUND  
APPROX. STA. 542+50  
3 (100 WATT MW) SIGN LIGHTS

EXISTING SIGNS & SIGN STRUCTURE

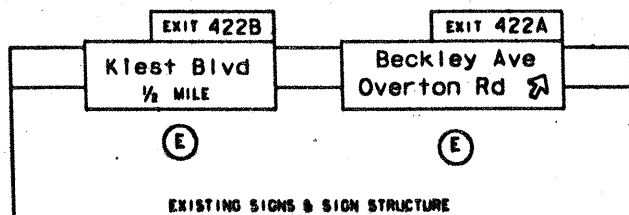


FOR DUCT CABLE LENGTH  
SEE SHEET NO. 20



PROPOSED COSS = 24  
1H 35E NORTHBOUND  
APPROX. STA. 537+50

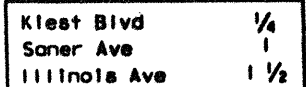
3 (100 WATT MW) SIGN LIGHTS



EXISTING SIGNS & SIGN STRUCTURE

SIGNING AND DELINEATION LEGEND

- (27) NEW SIGN TO BE INSTALLED
- (E) EXISTING SIGN TO REMAIN IN PLACE
- (R-2) EXISTING SIGN TO BE REMOVED
- (M-2) EXISTING SIGN TO BE MODIFIED
- (RM-2) EXISTING SIGN TO BE REMOVED, RELOCATED & MODIFIED
- PROPOSED POWER RUN
- EXISTING POWER RUN
- PROPOSED GROUND BOX
- (1) POWER RUN NUMBER
- (O) JUNCTION BOX
- (S) SERVICE POLE
- DUCT CABLE INSIDE CONDUIT



PROPOSED COSS = 23  
1H 35E NORTHBOUND  
APPROX. STA. 538+50

3 (100 WATT MW) SIGN LIGHTS

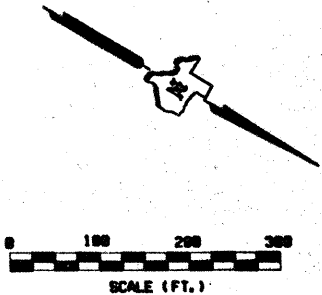


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21

SIGNING LAYOUT  
SHEET 12 OF 14

STATE	FEDERAL AID PROJECT NO.	IN 35E
TEXAS	1H 35E-6 (S101416, 87%)	1H 35E
COUNTY	SECTION	POST MILE
DALLAS	442	02 99.9 21

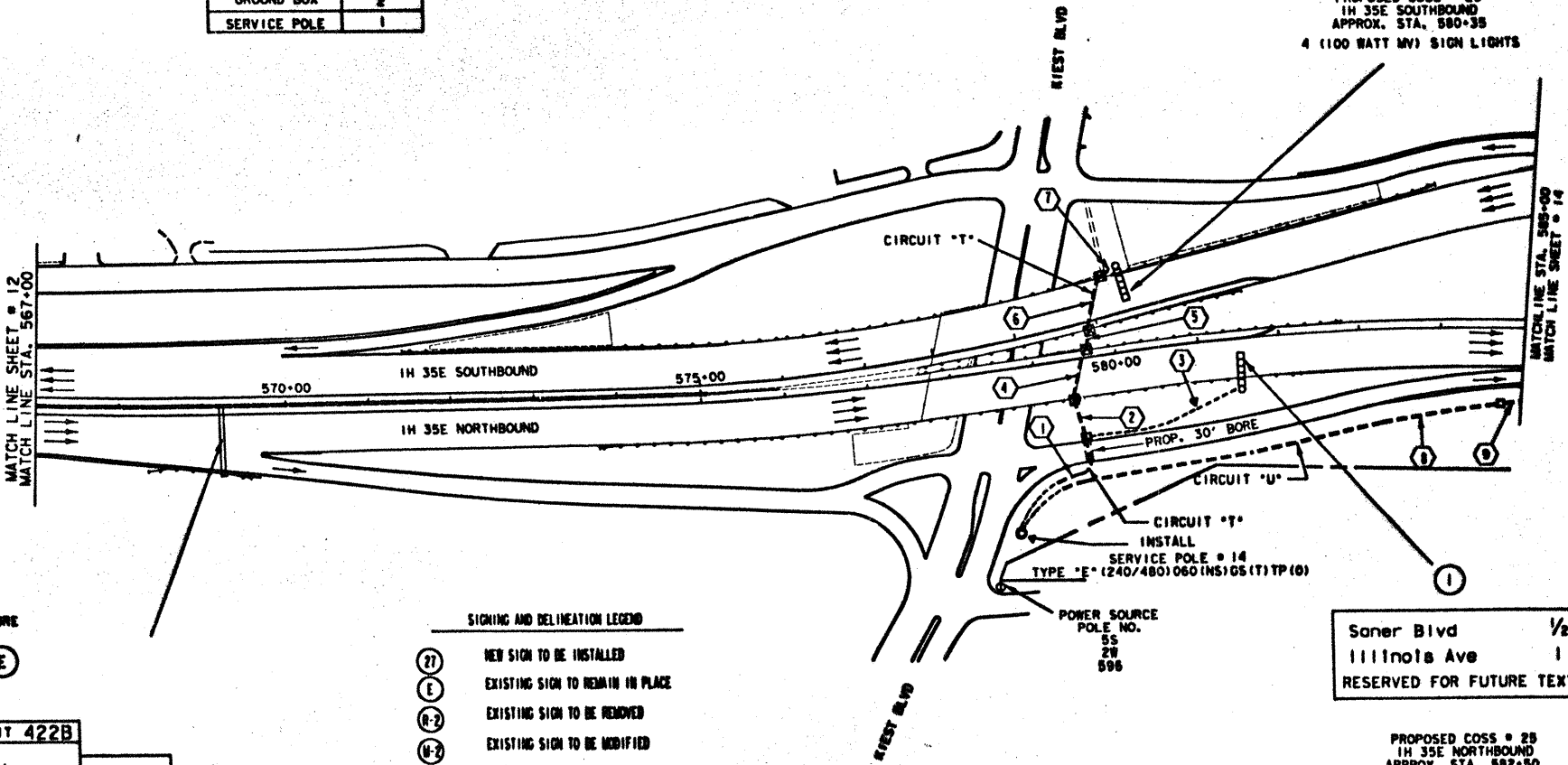


RUN NO.	CONDUCTORS NO. & LENGTH (FEET)		DUCT CABLE SIZE/LENGTH		CONDUIT (FEET)		
	# 8 BARE	# 8 XHHW	8-3	6-3	1 1/4" EMT	2" PVC BORED	1 1/2" PVC
1			93			30	
2			50				
3			200				
4	1-64	2-64			64		
5							25
6	1-66	2-66			66		
7			22				
8			555				
9			683				
TOTAL	130	260	1628		130	30	25

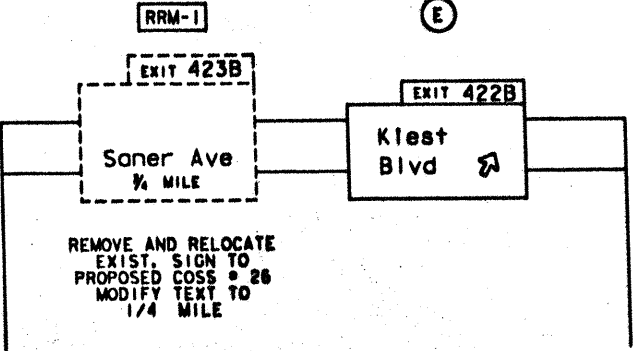
GROUND BOX	2
SERVICE POLE	1

12	WEST	1/2
	Ann Arbor Ave	
12	EAST	1/4
	Laureland Rd	2

PROPOSED COSS = 29  
1H 35E SOUTHBOUND  
APPROX. STA. 580+35  
4 (100 WATT MW) SIGN LIGHTS



EXISTING SIGNS & SIGN STRUCTURE



SIGNING AND DELINEATION LEGEND

- (21) NEW SIGN TO BE INSTALLED
- (E) EXISTING SIGN TO REMAIN IN PLACE
- (R-2) EXISTING SIGN TO BE REMOVED
- (M-2) EXISTING SIGN TO BE MODIFIED
- (RM-2) EXISTING SIGN TO BE REMOVED, RELOCATED & MODIFIED
- PROPOSED POWER RUN
- - - EXISTING POWER RUN
- PROPOSED GROUND BOX
- ① POWER RUN NUMBER
- JUNCTION BOX
- SERVICE POLE
- DUCT CABLE INSIDE CONDUIT

Saner Blvd	1/2
Illinois Ave	1
RESERVED FOR FUTURE TEXT	

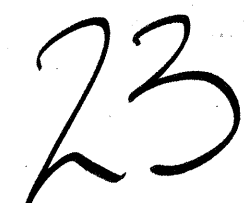
PROPOSED COSS = 28  
1H 35E NORTHBOUND  
APPROX. STA. 592+50  
3 (100 WATT MW) SIGN LIGHTS



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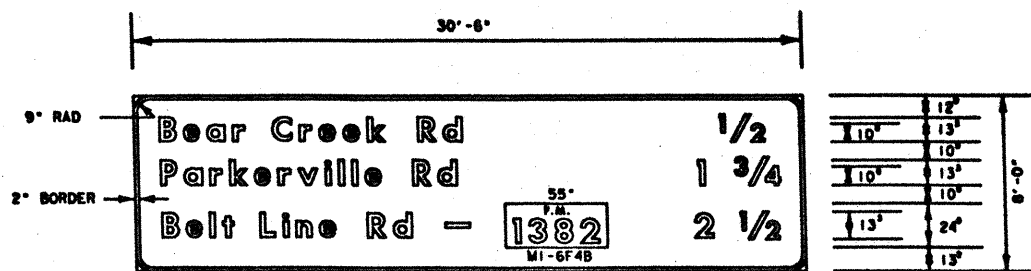
SIGNING LAYOUT  
SHEET 13 OF 14

DIST	STATE	FEDERAL AID PROJECT NO.	1H 35E
6	TEXAS	1H 35E-6 (1992-93, etc.)	1H 35E
STATE	COUNTY	ROUTE	POST MILE
10	DALLAS	442	02 99.8 22

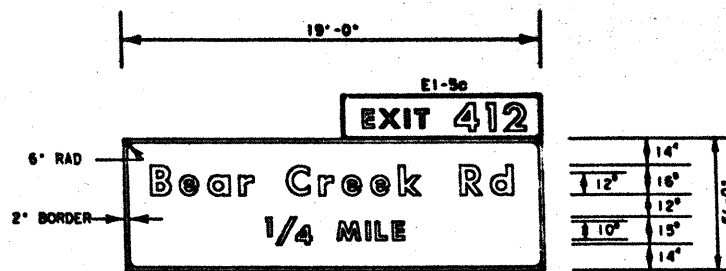


STATE	STATE	FEDERAL AID PROJECT NO.				
6	TEXAS	IN 35E-6 (310)416, ETC.	IN 35E-6			
STATE FED. AID	COUNTY	LOCALITY	ROUTE NO.	SECTION	SECTION	SECTION
18	DALLAS	442	02	99 6	23	

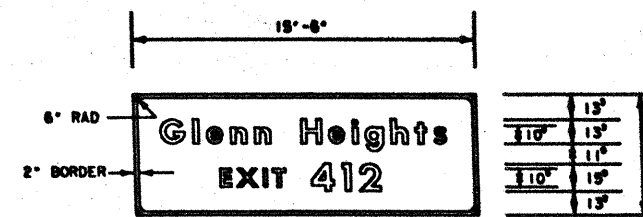
238BUD



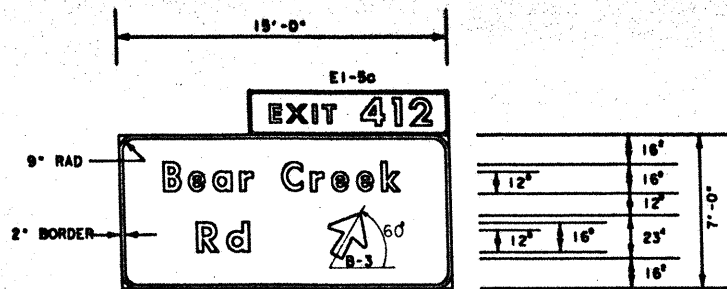
SIGN 1 SHEET 1



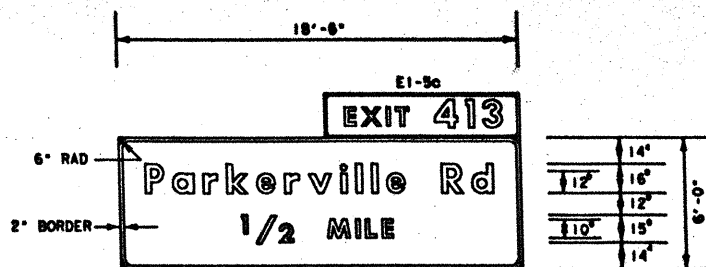
SIGN 2 SHEET 1  
SIGN 2 SHEET 4 EXCEPT 3/4 MILE



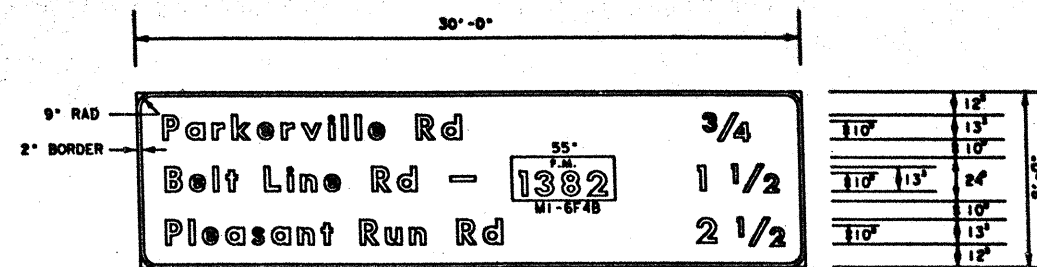
SIGN 1 SHEET 2  
SIGN 1 SHEET 4



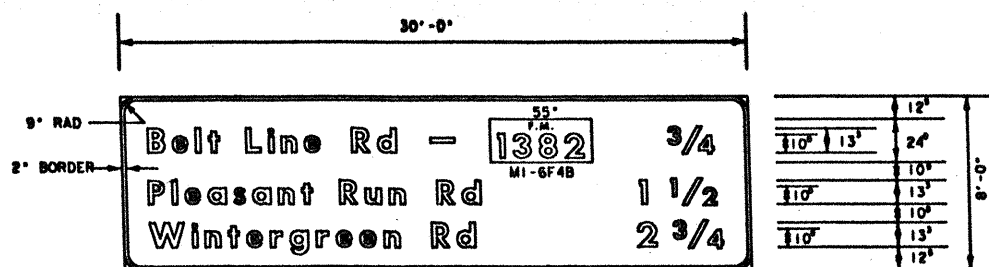
SIGN 2 SHEET 2  
SIGN 1 SHEET 3



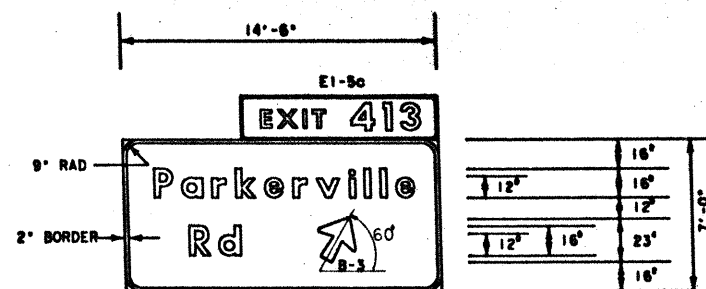
SIGN 2 SHEET 3



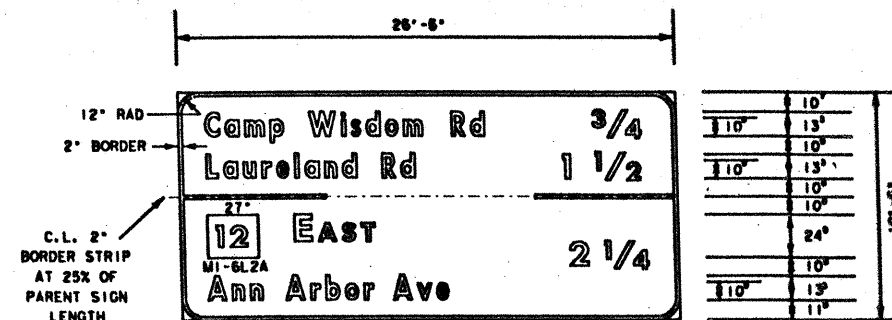
SIGN 3 SHEET 3



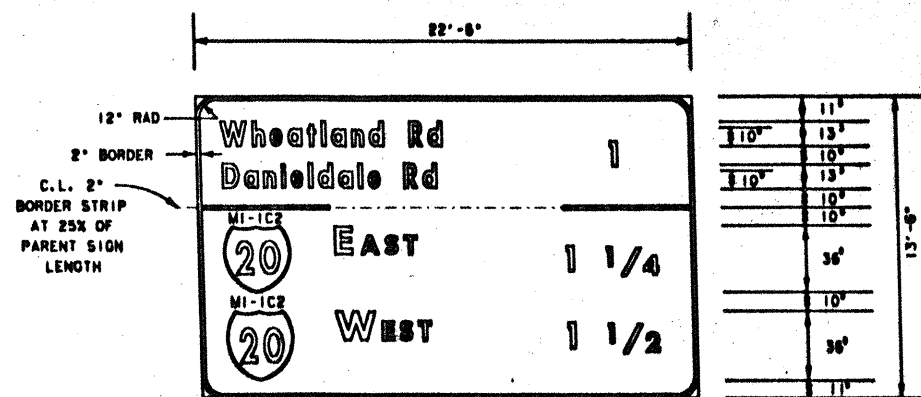
SIGN 3 SHEET 4



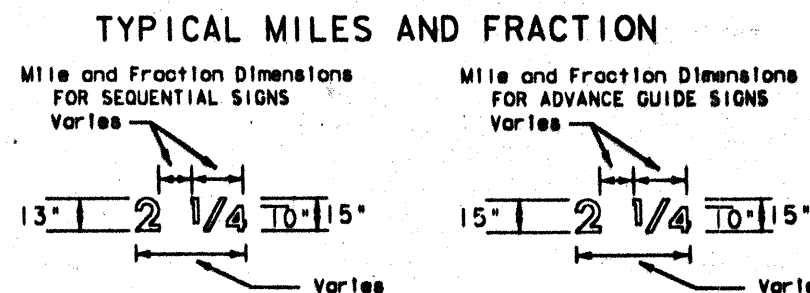
SIGN 4 SHEET 4



SIGN 1 SHEET 5



SIGN 1 SHEET 8



TYPICAL CARDINAL DIRECTION TEXT

15° EAST 12°

Guide Sign Detail Sheet  
SHEET 1 OF 3

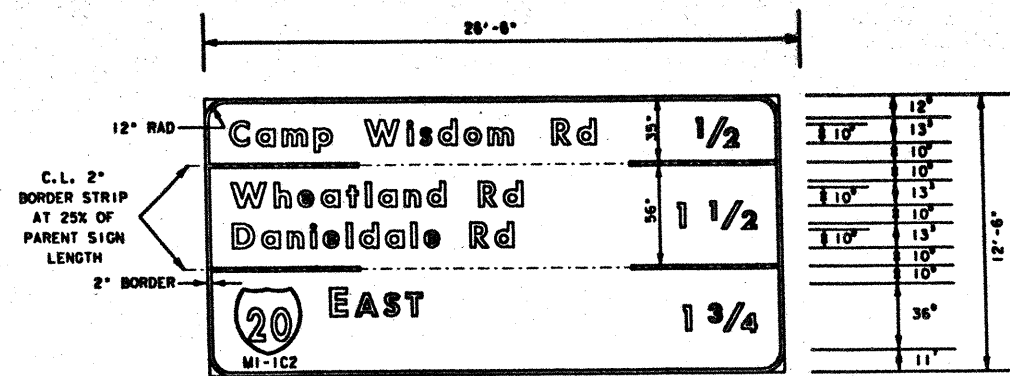


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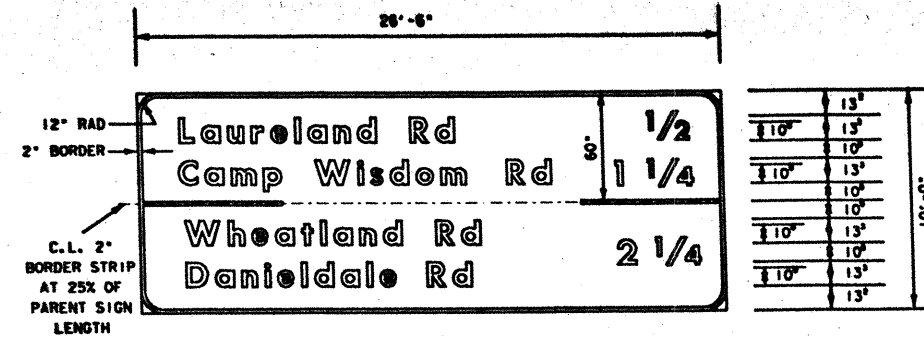
STATE	FEDERAL AID PROJECT NO.
TEXAS	10 35E-0 (2004)10, EYE
COUNTY	DATE
DALLAS	02 00 0 24



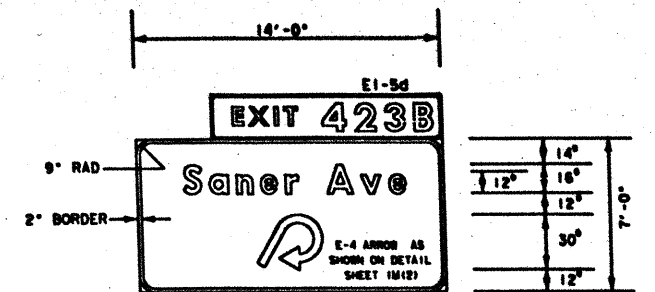
238BUD



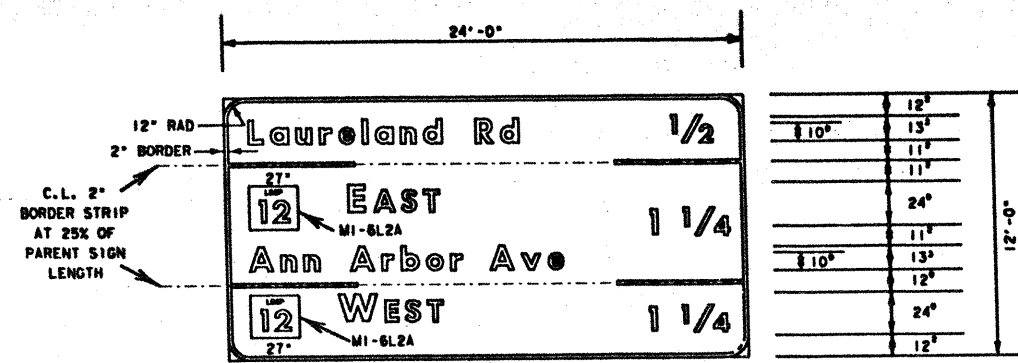
SIGN 1 SHEET 9



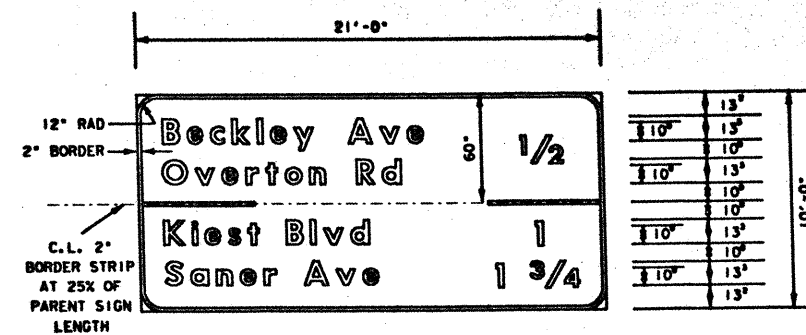
SIGN 1 SHEET 10



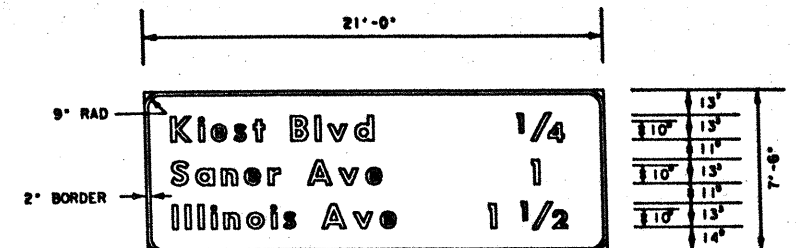
SIGN 2 SHEET 14



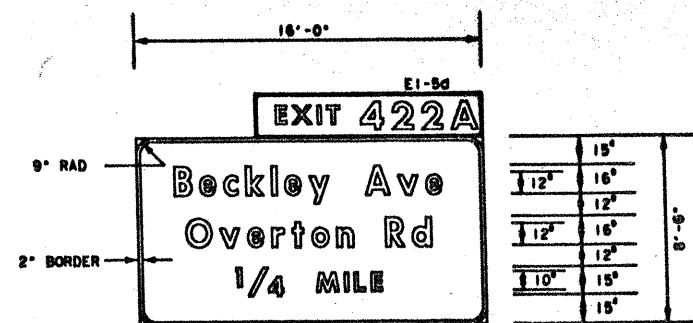
SIGN 2 SHEET 8



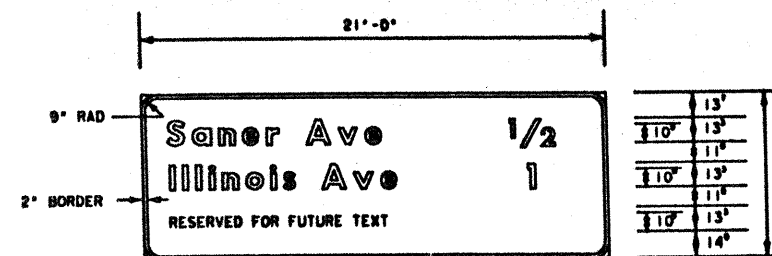
SIGN 1 SHEET 11



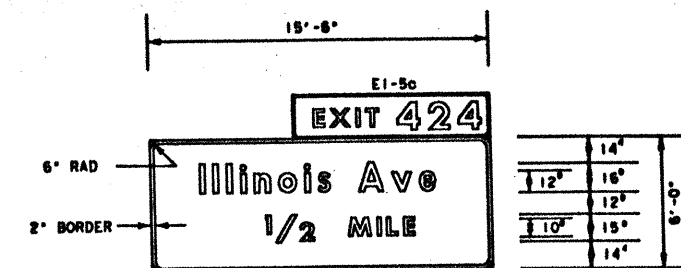
SIGN 2 SHEET 12



SIGN 1 SHEET 12



SIGN 1 SHEET 13

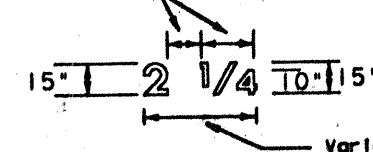


SIGN 1 SHEET 14

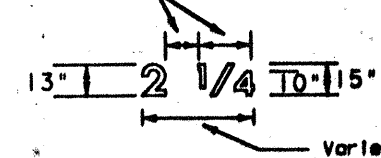
TYPICAL CARDINAL DIRECTION TEXT

15° EAST 12°

Mile and Fraction Dimensions  
FOR ADVANCE GUIDE SIGNS  
Varies



Mile and Fraction Dimensions  
FOR SEQUENTIAL SIGNS  
Varies



Guide Sign Detail Sheet

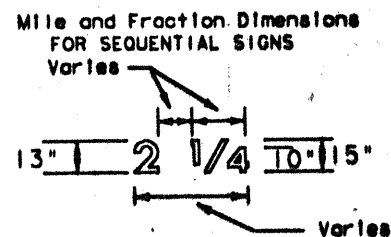
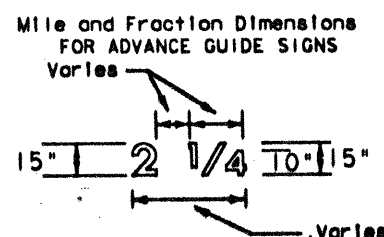
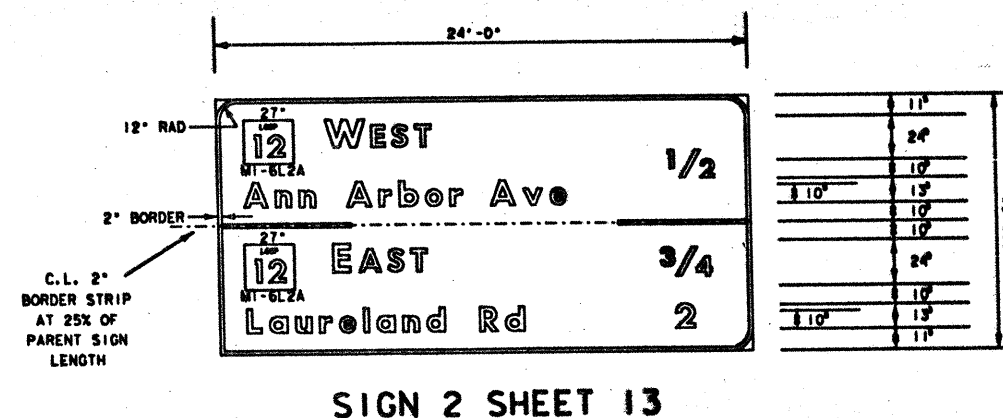
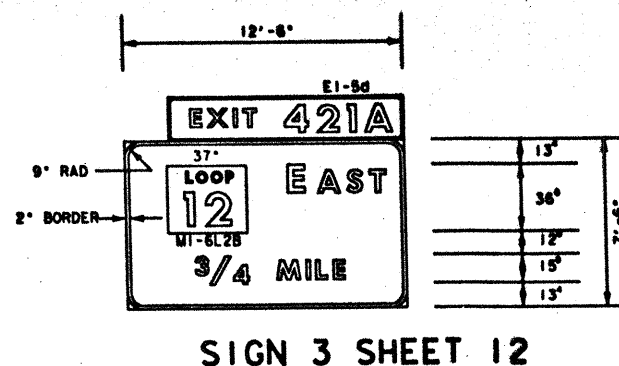
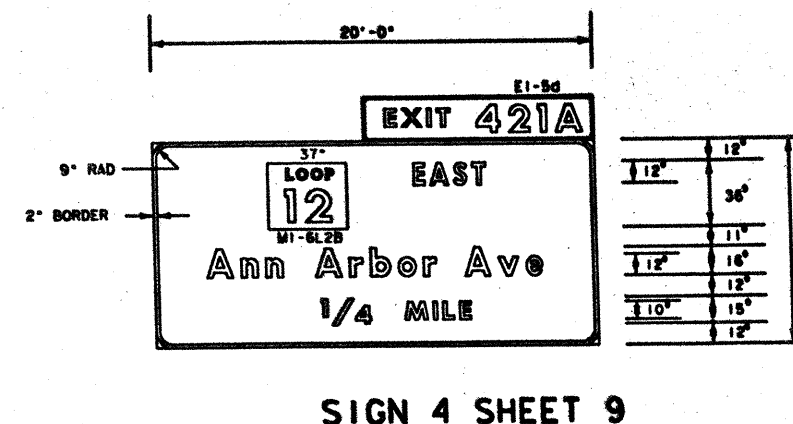
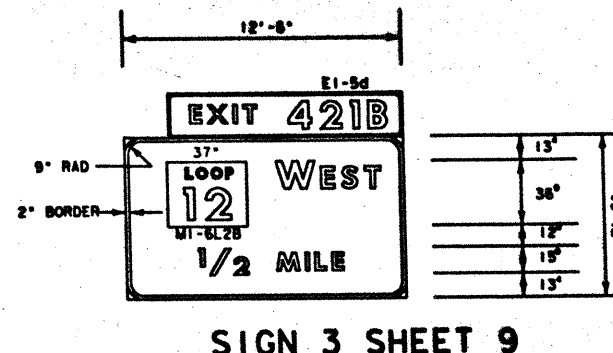
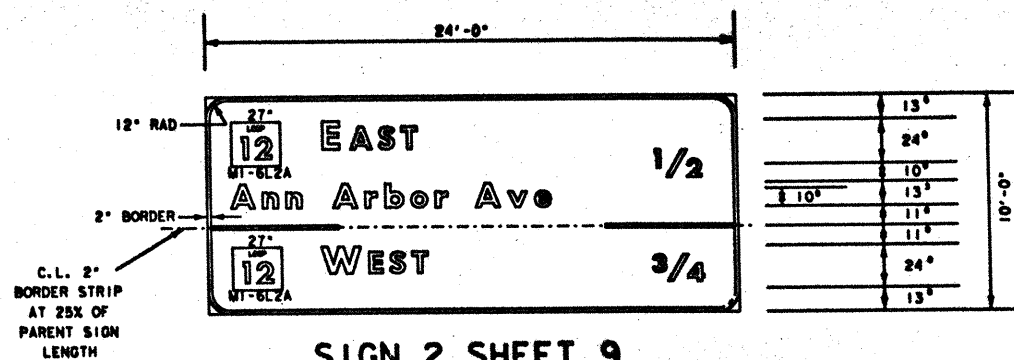
SHEET 2 OF 3



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Sept. 1, 1992  
Yvonne D. Irvine

STATE	FEDERAL AID PROJECT NO.	IN USE
TEXAS	IN 35E-6 (R01)4-10, P.V.	IN USE
COUNTY	DAVIS	NO. 2
DALLAS	442	02 90 8 25

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TYPICAL CARDINAL DIRECTION TEXT

15° EAST 12°

Guide Sign Detail Sheet

SHEET 3 OF 3

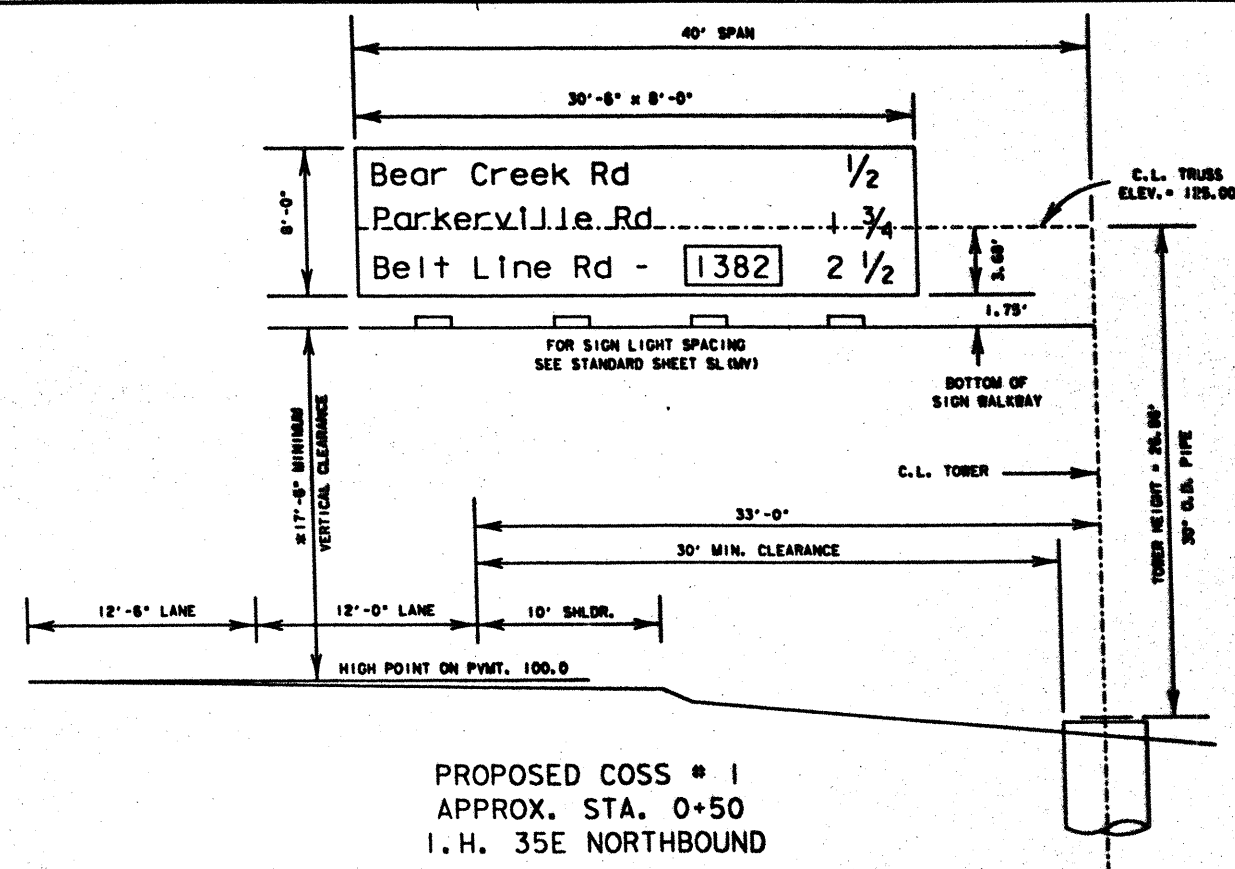
REVISED 8-24-92, DIBTE REVIEW



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Sept. 1, 1992  
Yvonne D. Irvine

25A

STATE	FEDERAL AID PROJECT NO.	IN 356
TEXAS	IM 356-6 (940140, 070)	IM 356
COUNTY	ROUTE	POST MILE
DALLAS	442	02 99 5



TRUSS ELEVATION 125.00

COSS-Z41

DESIGN DATA		
SPAN LENGTH	40.0	FT
DESIGN HEIGHT	UNDER 30	FT
TOWER HEIGHT	26.86	FT
DESIGN SIGN AREA	400	SF
ACTUAL SIGN AREA	244	SF
PENETROMETER VALUE	ASSUME 15	
DESIGN LOADS	TORSION	211.94 K-FT
	MOMENT	329.18 K-FT

STRUCTURE DATA	
STRUCTURE CODE	COSS-241
TRUSS SIZE	4.0X4.0
TOWER SIZE	30" Ø PIPE

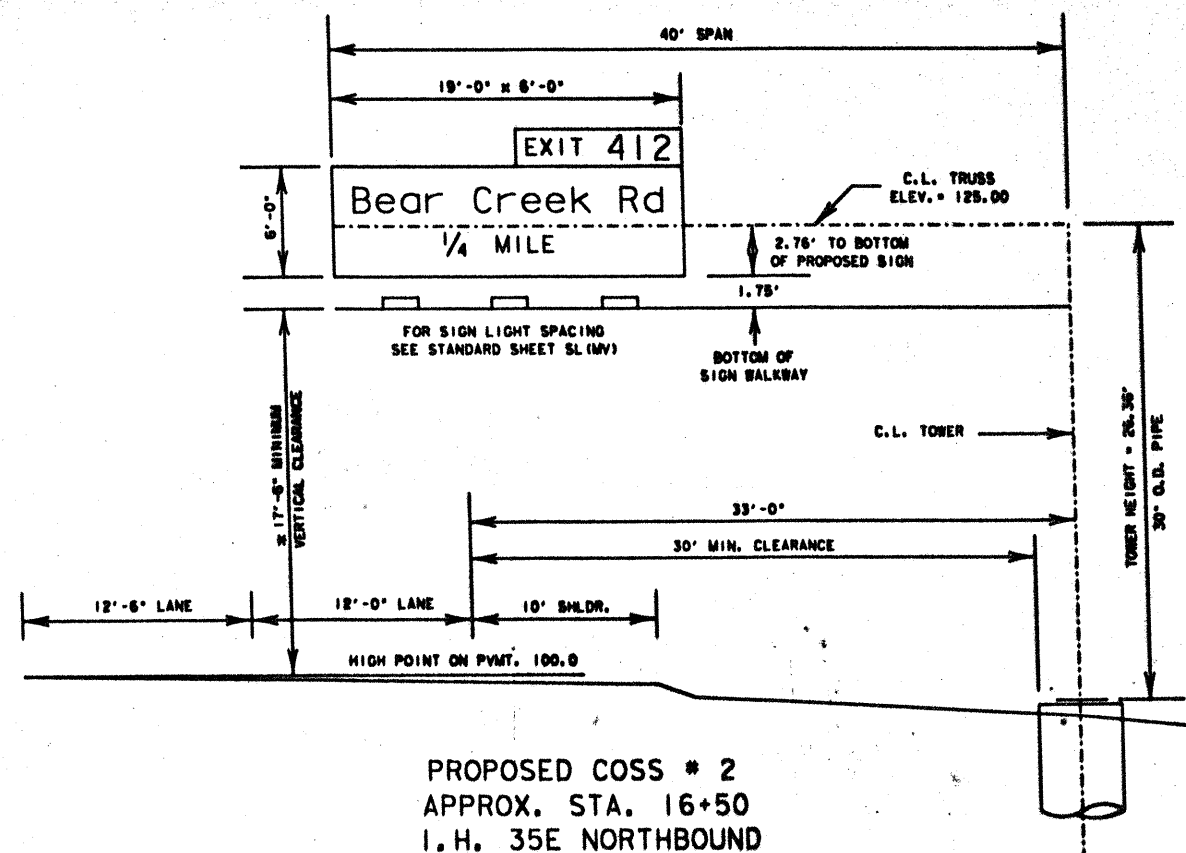
SUMMARY OF DRILLED SHAFT  
17 LF. OF 54 IN. DIA. DRILLED SHAFT

**SUMMARY OF SIGN LIGHTS**  
4 EACH

SUMMARY OF SIGN WALKWAY  
40.0 L.F.

BOTTOM BASE PLATE ELEV. 98.14  
TOP DRILLED SHAFT ELEV. 97.89  
GROUND ELEV. 97.14  
BOTTOM DRILLED SHAFT ELEV. 80.89

26



TRUSS ELEVATION 125.00

COSS-Z41

DESIGN DATA		
SPAN LENGTH	40.0	FT
DESIGN HEIGHT	UNDER 30	FT
TOWER HEIGHT	28.36	FT
DESIGN SIGN AREA	400	SF
ACTUAL SIGN AREA	114	SF
PENETROMETER VALUE	ASSUME 18	
DESIGN LOADS	TORSION	211.04 R-F-T
	MOMENT	318.55 R-F-T

STRUCTURE DATA

STRUCTURE CODE	C055-Z41
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" PIPE

SUMMARY OF DRILLED SHAFT  
17 LF. OF 54 IN. DIA. DRILLED SHAFT

**SUMMARY OF SIGN LIGHTS**  
3 EACH

SUMMARY OF SIGN WALKING  
49.0 L.F.

BOTTOM BASE PLATE ELEV. 99.64  
TOP DRILLED SHAFT ELEV. 99.39  
GROUND ELEV. 97.6  
BOTTOM DRILLED SHAFT ELEV. 81.39



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July 16, 1977  
Yvonne D. Irvine

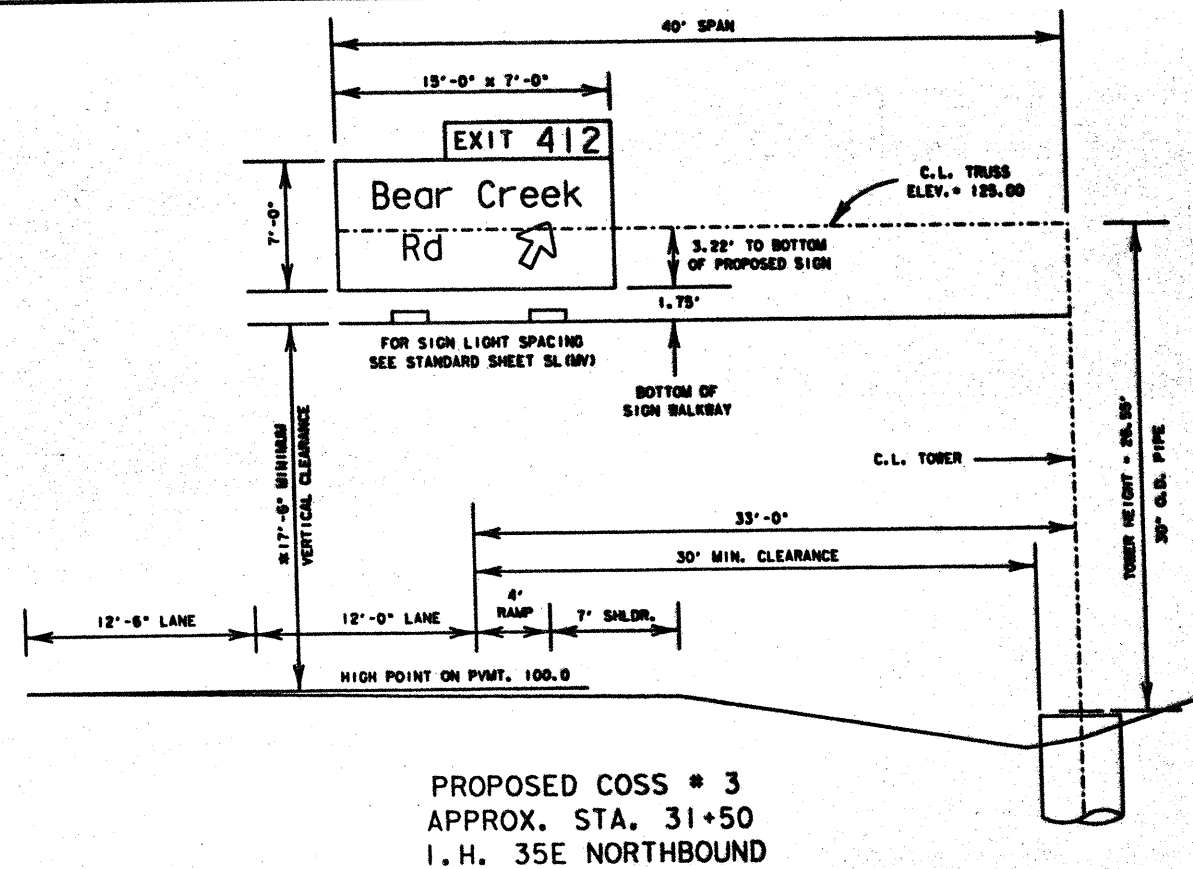
\* 17'-6" MINIMUM VERTICAL CLEARANCE  
FOR FUTURE 12'-6" SIGN HEIGHT

## OVERHEAD SIGN STRUCTURE DETAILS

SHEET 1 OF 5

STATE	STATE	FEDERAL AID PROJECT NO.	
6	TEXAS	HW 334-6 (340)404, 476.	IN 3
STATE DIST. NO.	COUNTY	ROUTE NO.	SECTION NO.
IN	DALLAS	442	02

238RLIN



TRUSS ELEVATION 125.00

COSS-Z41

DESIGN DATA	
SPAN LENGTH	40 FT
DESIGN HEIGHT	UNDER 30 FT
TOWER HEIGHT	26.50 FT
DESIGN SIGN AREA	400 SF
ACTUAL SIGN AREA	105 SF
PENETROMETER VALUE	ASSUME 15
DESIGN LOADS	TORSION 211.94 K-FT
	MOMENT 329.18 K-FT

STRUCTURE DATA	
STRUCTURE CODE	COSS-Z41
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" PIPE

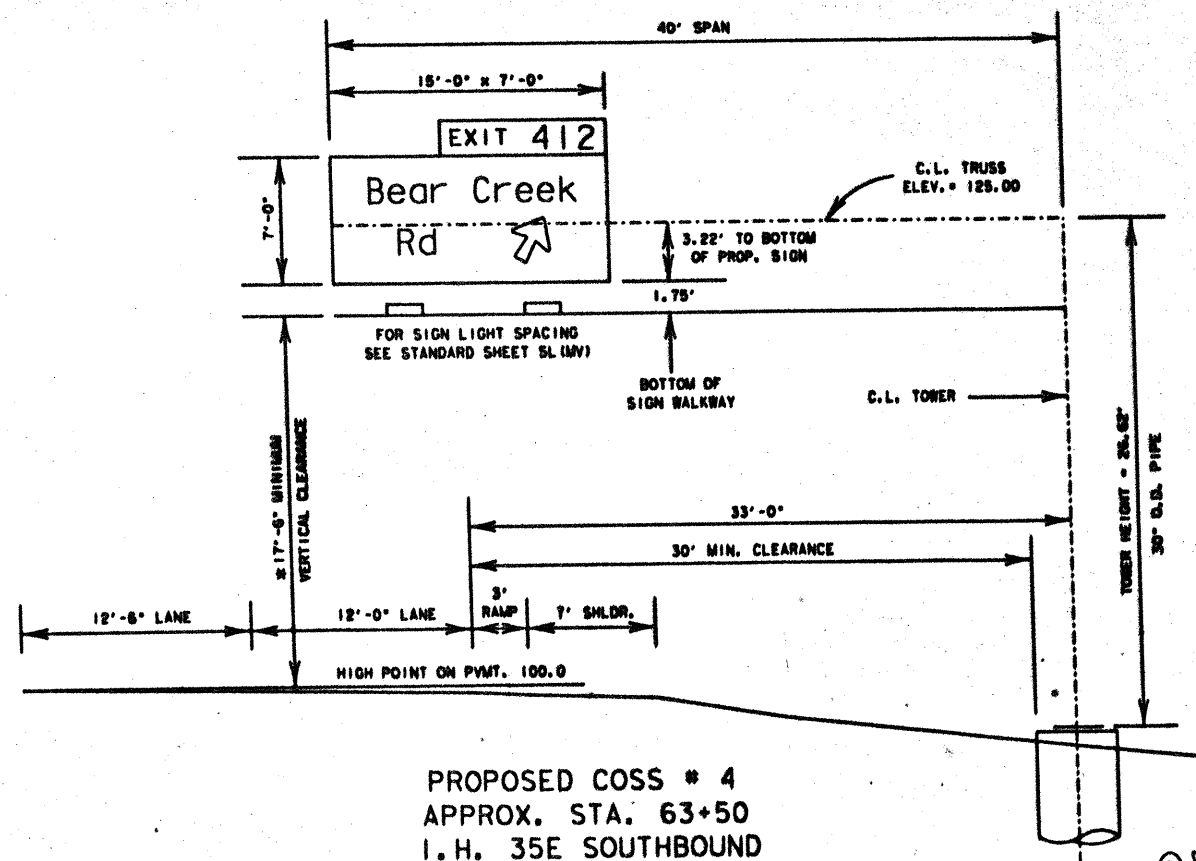
SUMMARY OF DRILLED SHAFT	
17 LF. OF 54 IN. DIA. DRILLED SHAFT	

SUMMARY OF SIGN LIGHTS	
2 EACH	

SUMMARY OF SIGN WALKWAY	
40 L.F.	

BOTTOM BASE PLATE ELEV.	98.45
TOP DRILLED SHAFT ELEV.	98.20
GROUND ELEV.	97.00
BOTTOM DRILLED SHAFT ELEV.	81.20

27



TRUSS ELEVATION 125.00

COSS-Z41

DESIGN DATA	
SPAN LENGTH	40 FT
DESIGN HEIGHT	UNDER 30 FT
TOWER HEIGHT	26.50 FT
DESIGN SIGN AREA	400 SF
ACTUAL SIGN AREA	105 SF
PENETROMETER VALUE	ASSUME 15
DESIGN LOADS	TORSION 211.94 K-FT
	MOMENT 329.18 K-FT

STRUCTURE DATA	
STRUCTURE CODE	COSS-Z41
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" PIPE

SUMMARY OF DRILLED SHAFT	
17 LF. OF 54 IN. DIA. DRILLED SHAFT	

SUMMARY OF SIGN LIGHTS	
2 EACH	

SUMMARY OF SIGN WALKWAY	
40 L.F.	

BOTTOM BASE PLATE ELEV.	98.38
TOP DRILLED SHAFT ELEV.	97.13
GROUND ELEV.	96.38
BOTTOM DRILLED SHAFT ELEV.	80.13



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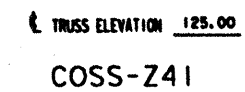
\*17'-6" MINIMUM VERTICAL CLEARANCE FOR FUTURE 12'-6" SIGN HEIGHT

# OVERHEAD SIGN STRUCTURE DETAILS

SHEET 2 OF 15

STATE	FEDERAL AID PROJECT NO.	IN 33E
6 TEXAS	10 33E-6 (2001-040, 070)	IN 33E
COUNTY	ROUTE	POST MILE
10 DALLAS	442	02 00 0 27



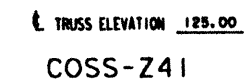


STRUCTURE DATA	
STRUCTURE CODE	COSS-Z41
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" PIPE

**SUMMARY OF SIGN LIGHTS**  
3 EACH

BOTTOM BASE PLATE ELEV. 96.35  
TOP DRILLED SHAFT ELEV. 96.10  
GROUND ELEV. 95.10  
BOTTOM DRILLED SHAFT ELEV. 79.10

PROPOSED COSS # 5  
APPROX. STA. 70+00  
I.H. 35E NORTHBOUND

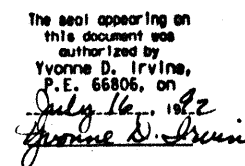


STRUCTURE DATA

STRUCTURE CODE	COSS-Z41
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" $\Phi$ PIPE

SUMMARY OF SIGN LIGHTS  
4 EACH

BOTTOM BASE PLATE ELEV. 97.16  
TOP DRILLED SHAFT ELEV. 96.91  
GROUND ELEV. 96.16  
BOTTOM DRILLED SHAFT ELEV. 79.91



\*17'-6" MINIMUM VERTICAL CLEARANCE  
FOR FUTURE 12'-6" SIGN HEIGHT

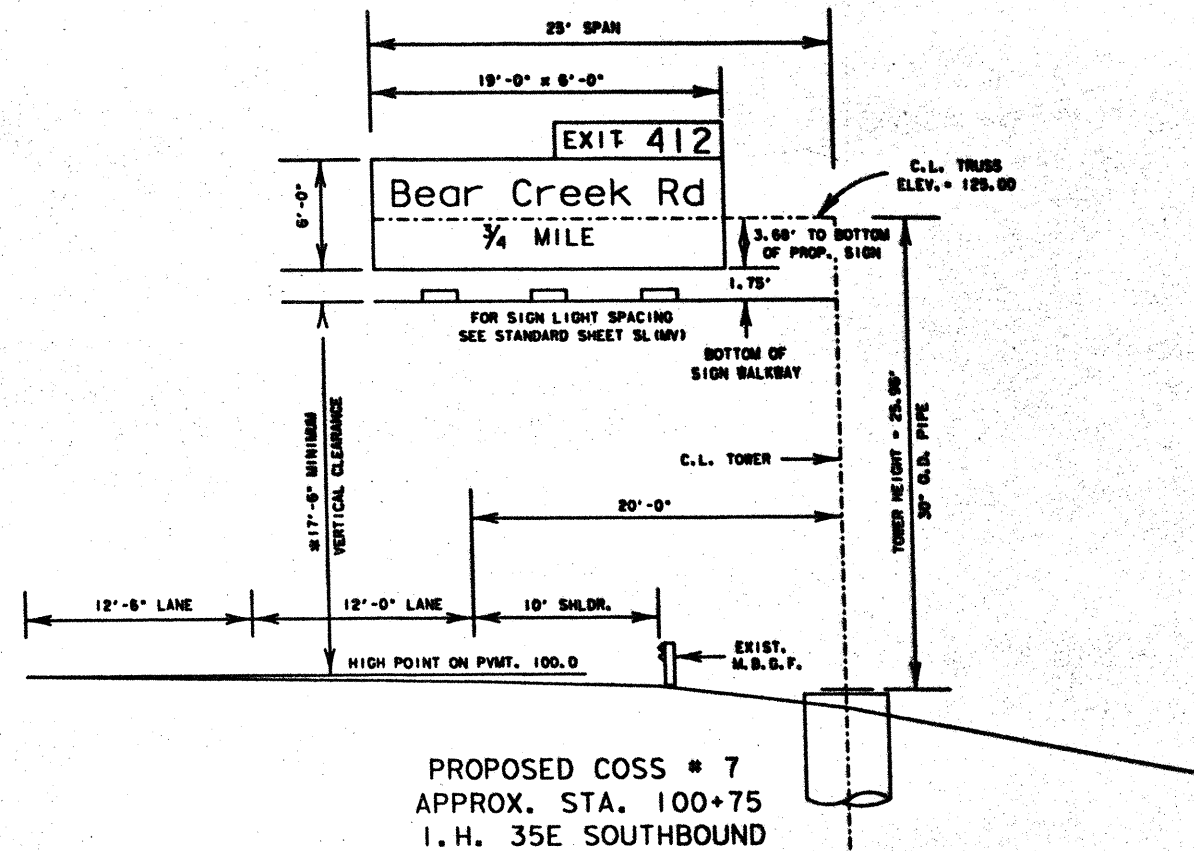
## OVERHEAD SIGN STRUCTURE DETAILS

SHEET 3 OF 15

STATE DIST. NO.	STATE	FEDERAL AID PROJECT NO.			ROUTE NO.
6	TEXAS	IM 356-6 (340)440, 470.			IM 356
STATE DIST. NO.	COUNTY	ROUTE NO.	ROUTE NO.	JOB NO.	ROUTE NO.
10	DALLAS	442	02	09 8	20

100

238BUD



TRUSS ELEVATION 125.00

COSS-Z31

DESIGN FOR COSS-Z31 IS  
USED BECAUSE THE DESIGN  
HEIGHT IS OVER 30'

## DESIGN DATA

SPAN LENGTH	25	FT
DESIGN HEIGHT	OVER 30	FT
TOWER HEIGHT	25.98	FT
DESIGN SIGN AREA	250	SF
ACTUAL SIGN AREA	114	SF
PENETROMETER VALUE	ASSUME 15	
DESIGN LOADS	TORSION 197.58	K-FT
	MOMENT 245.10	K-FT

## STRUCTURE DATA

STRUCTURE CODE	COSS-Z31
TRUSS SIZE	4.0X4.0
TOWER SIZE	20" # PIPE

## SUMMARY OF DRILLED SHAFT

15 LF. OF 42 IN. DIA. DRILLED SHAFT

## SUMMARY OF SIGN LIGHTS

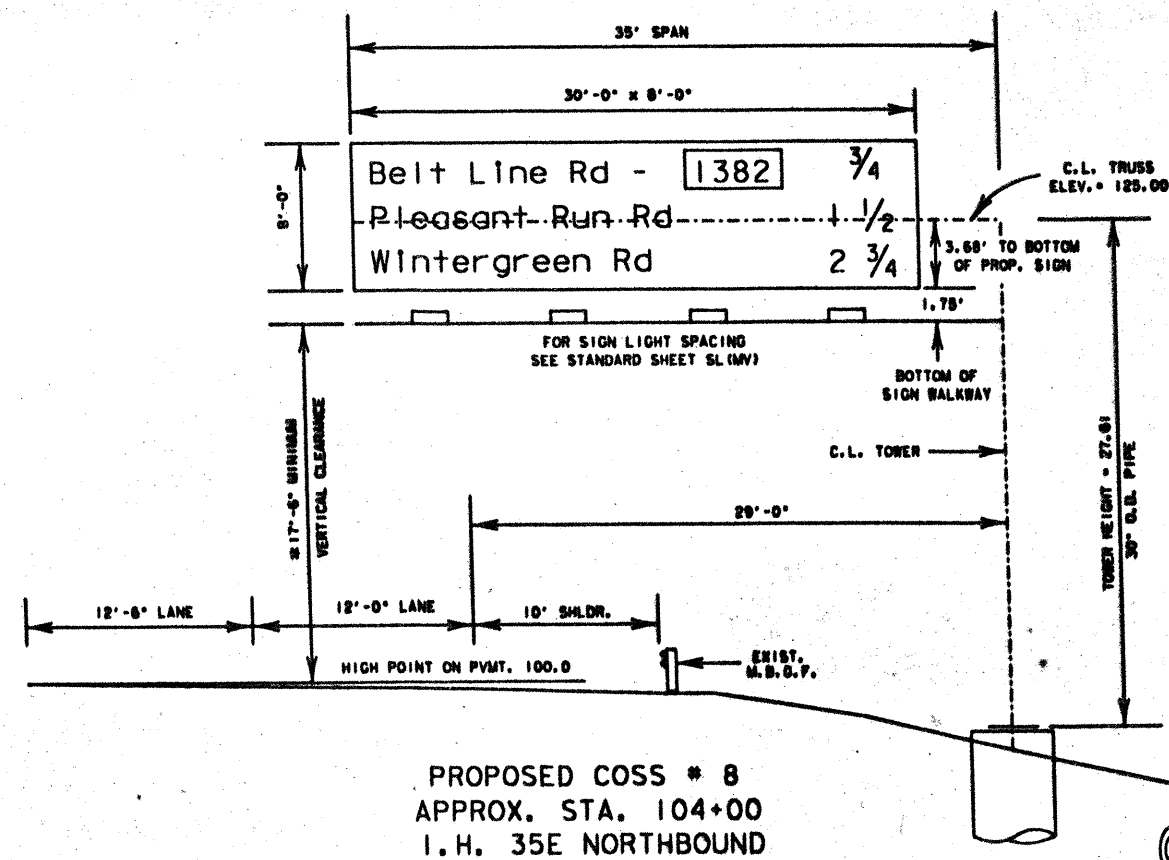
3 EACH

## SUMMARY OF SIGN WALKWAY

25 L.F.

BOTTOM BASE PLATE ELEV.	99.04
TOP DRILLED SHAFT ELEV.	98.79
GROUND ELEV.	98.04
BOTTOM DRILLED SHAFT ELEV.	83.79

29



TRUSS ELEVATION 125.00

COSS-Z31

DESIGN FOR COSS-Z31 IS  
USED BECAUSE THE DESIGN  
HEIGHT IS OVER 30'

## DESIGN DATA

SPAN LENGTH	35	FT
DESIGN HEIGHT	OVER 30	FT
TOWER HEIGHT	27.61	FT
DESIGN SIGN AREA	350	SF
ACTUAL SIGN AREA	240	SF
PENETROMETER VALUE	ASSUME 15	
DESIGN LOADS	TORSION 211.58	K-FT
	MOMENT 374.53	K-FT

## STRUCTURE DATA

STRUCTURE CODE	COSS-Z31
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" # PIPE

## SUMMARY OF DRILLED SHAFT

18 LF. OF 54 IN. DIA. DRILLED SHAFT

## SUMMARY OF SIGN LIGHTS

4 EACH

## SUMMARY OF SIGN WALKWAY

35 L.F.

BOTTOM BASE PLATE ELEV.	97.39
TOP DRILLED SHAFT ELEV.	97.14
GROUND ELEV.	96.14
BOTTOM DRILLED SHAFT ELEV.	79.14



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P.E. 66806, on  
July 16, 1982

*Yvonne D. Irvine*

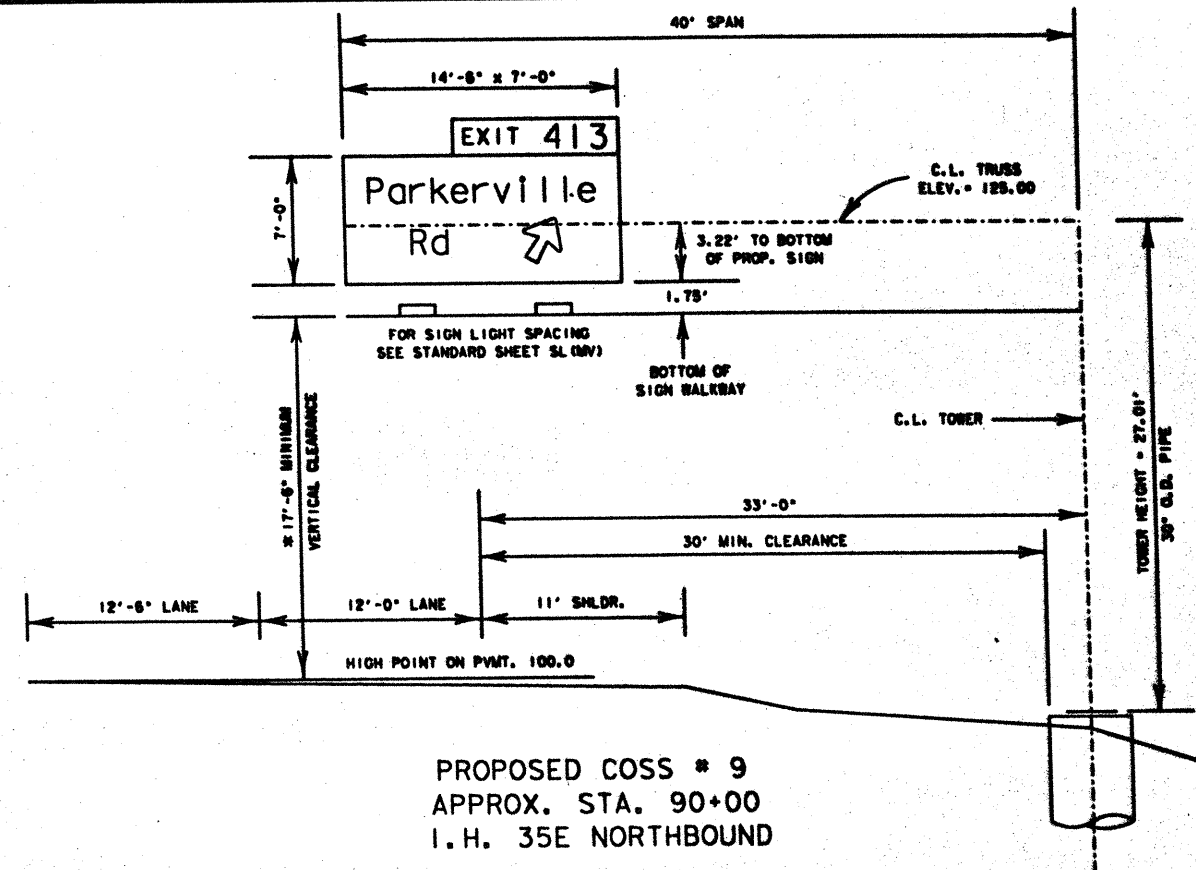
\* 17'-6" MINIMUM VERTICAL CLEARANCE  
FOR FUTURE 12'-6" SIGN HEIGHT

## OVERHEAD SIGN STRUCTURE DETAILS

SHEET 4 OF 15

STATE	FEDERAL AID PROJECT NO.	IN TSP
TEXAS	10 35E-6 (1040+10) 6V	IN TSP
COUNTY	DATE	BY
DALLAS	442 02 90 8	29

238BU.D



TRUSS ELEVATION 125.00

COSS-Z41

<u>DESIGN DATA</u>		
SPAN LENGTH	<u>40</u>	FT
DESIGN HEIGHT	<u>UNDER 30</u>	FT
TOWER HEIGHT	<u>27.01</u>	FT
DESIGN SIGN AREA	<u>400</u>	SF
ACTUAL SIGN AREA	<u>101.50</u>	SF
PENETRATOR VALUE	<u>ASSUME 15</u>	
DESIGN LOADS		
	TORSION	<u>811.84</u> K-FT
	MOMENT	<u>329.18</u> K-FT

STRUCTURE DATA	
STRUCTURE CODE	COSS-241
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" Ø PIPE

SUMMARY OF DRILLED SHAFT  
17 LF. OF 54 IN. DIA. DRILLED SHAFT

SUMMARY OF SIGN LIGHTS  
2 EACH

SUMMARY OF SIGN WALKDAY  
40 L.F.

BOTTOM BASE PLATE ELEV. 97.79  
TOP DRILLED SHAFT ELEV. 97.54  
GROUND ELEV. 96.94  
BOTTOM DRILLED SHAFT ELEV. 90.54

30

TRUSS ELEVATION \_\_\_\_\_

<u>DESIGN DATA</u>		
SPAN LENGTH	_____	FT
DESIGN HEIGHT	_____	FT
TOWER HEIGHT	_____	FT
DESIGN SIGN AREA	_____	SF
ACTUAL SIGN AREA	_____	SF
PENETROMETER VALUE	_____	
DESIGN LOADS		
	TORSION	K-FT
	MOMENT	K-FT

STRUCTURE DATA

STRUCTURE CODE \_\_\_\_\_  
TRUSS SIZE \_\_\_\_\_  
TOWER SIZE \_\_\_\_\_

SUMMARY OF DRILLED SHAFT  
       LF. OF        IN. DIA. DRILLED SHAFT

SUMMARY OF SIGN LIGHTS  
EACH

SUMMARY OF SIGN WALKWAY  
L.F.

BOTTOM BASE PLATE ELEV. \_\_\_\_\_  
TOP DRILLED SHAFT ELEV. \_\_\_\_\_  
GROUND ELEV. \_\_\_\_\_  
BOTTOM DRILLED SHAFT ELEV. \_\_\_\_\_



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July 16, 1993  
Yvonne D. Irvine

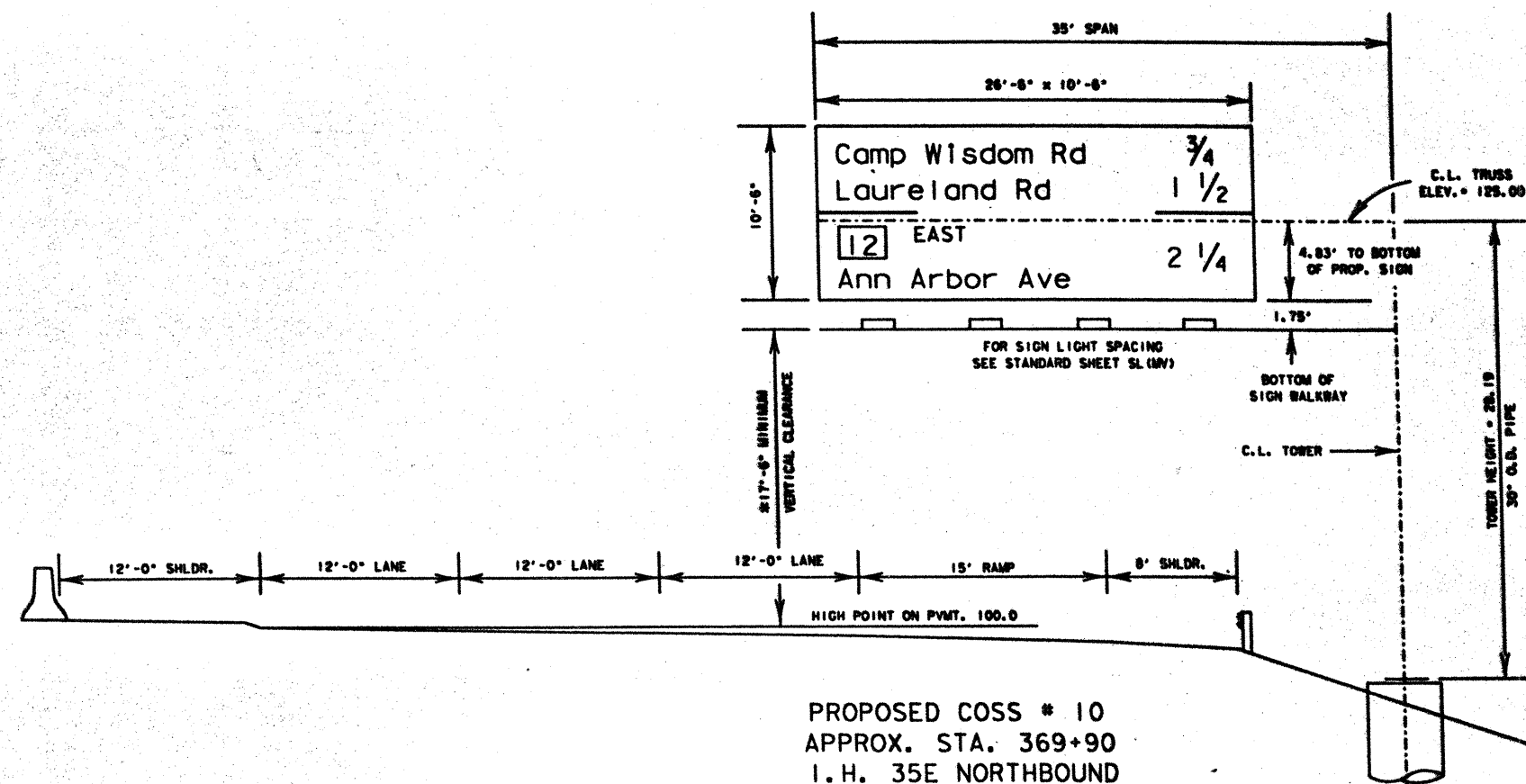
\* 17'-6" MINIMUM VERTICAL CLEARANCE  
FOR FUTURE 12'-6" SIGN HEIGHT

# OVERHEAD SIGN STRUCTURE DETAILS

SHEET 5 OF 15

IN STATE	STATE	FEDERAL AID PROJECT NO.			IN STATE
6	TEXAS	IM 35E-6 (340)408, 676.			IN 35E
STATE DIST. NO.	COUNTY	ROUTE NO.	SECTION NO.	20 NO.	SECTION NO.
10	DALLAS	442	02	09 6	30

238BUD



E TRUSS ELEVATION 125.00

COSS-Z31

DESIGN FOR COSS-Z31 IS  
USED BECAUSE THE DESIGN  
HEIGHT IS OVER 30'

## DESIGN DATA

SPAN LENGTH	35	FT
DESIGN HEIGHT	OVER 30	FT
TOWER HEIGHT	25.19	FT
DESIGN SIGN AREA	350	SF
ACTUAL SIGN AREA	278.25	SF
PENETROMETER VALUE	ASSUME 15	
DESIGN LOADS	TORSION 211.58	K-FT
	MOMENT 387.45	K-FT

## STRUCTURE DATA

STRUCTURE CODE	COSS-Z31
TRUSS SIZE	4.5 X 4.5
TOWER SIZE	30" PIPE

## SUMMARY OF DRILLED SHAFT

18 LF. OF 34 IN. DIA. DRILLED SHAFT

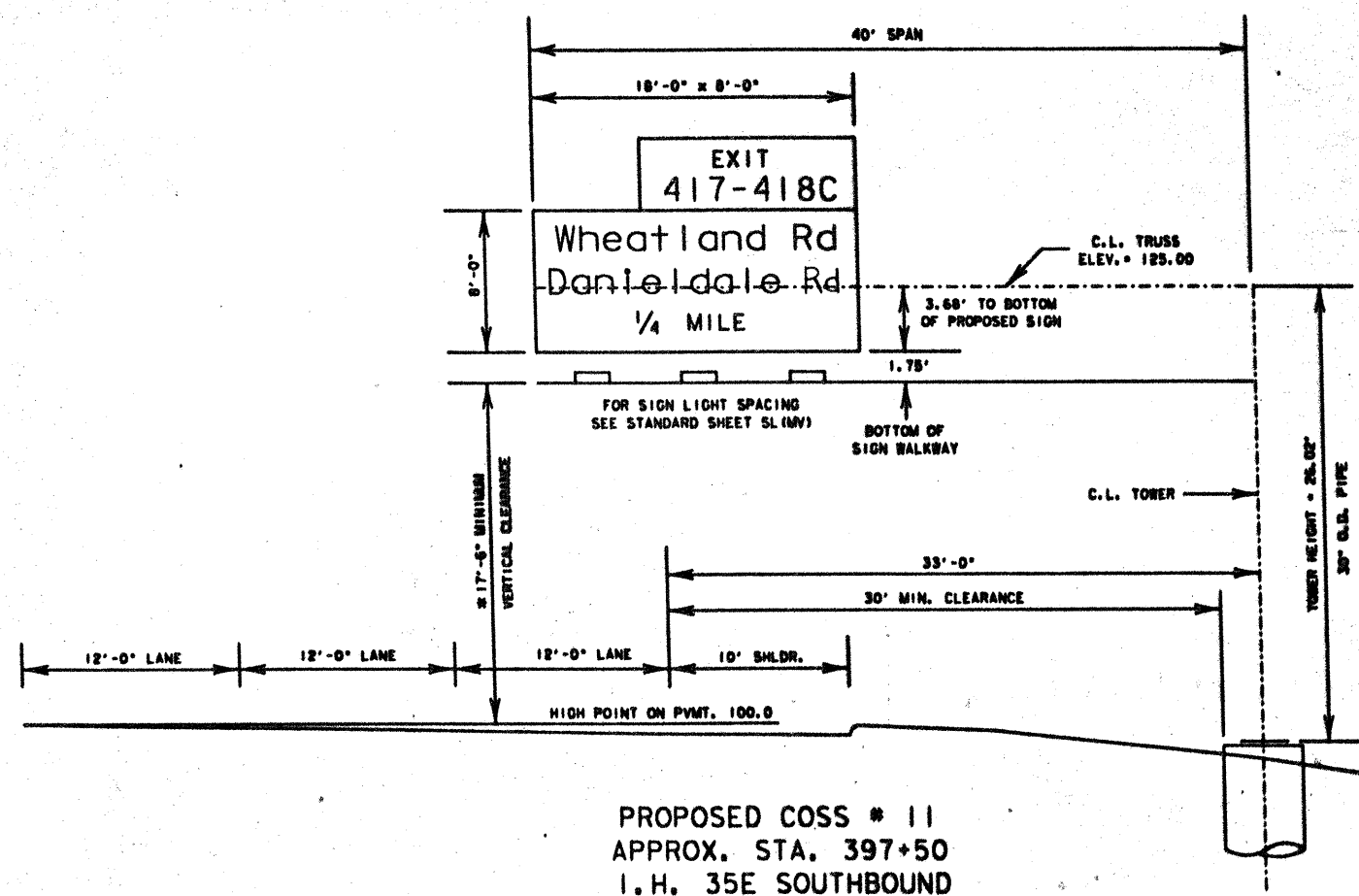
## SUMMARY OF SIGN LIGHTS

4 EACH

## SUMMARY OF SIGN BALKWAY

35 L.F.

BOTTOM BASE PLATE ELEV.	96.81
TOP DRILLED SHAFT ELEV.	96.56
GROUND ELEV.	95.31
BOTTOM DRILLED SHAFT ELEV.	78.56



E TRUSS ELEVATION 125.00

COSS-Z41

## DESIGN DATA

SPAN LENGTH	40	FT
DESIGN HEIGHT	UNDER 30	FT
TOWER HEIGHT	25.02	FT
DESIGN SIGN AREA	400	SF
ACTUAL SIGN AREA	144	SF
PENETROMETER VALUE	ASSUME 15	
DESIGN LOADS	TORSION 211.94	K-FT
	MOMENT 318.55	K-FT

## STRUCTURE DATA

STRUCTURE CODE	COSS-Z41
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" PIPE

## SUMMARY OF DRILLED SHAFT

17 LF. OF 34 IN. DIA. DRILLED SHAFT

## SUMMARY OF SIGN LIGHTS

3 EACH

## SUMMARY OF SIGN BALKWAY

40 L.F.

BOTTOM BASE PLATE ELEV.	98.98
TOP DRILLED SHAFT ELEV.	98.73
GROUND ELEV.	97.98
BOTTOM DRILLED SHAFT ELEV.	81.73



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\*17'-6" MINIMUM VERTICAL CLEARANCE  
FOR FUTURE 12'-6" SIGN HEIGHT

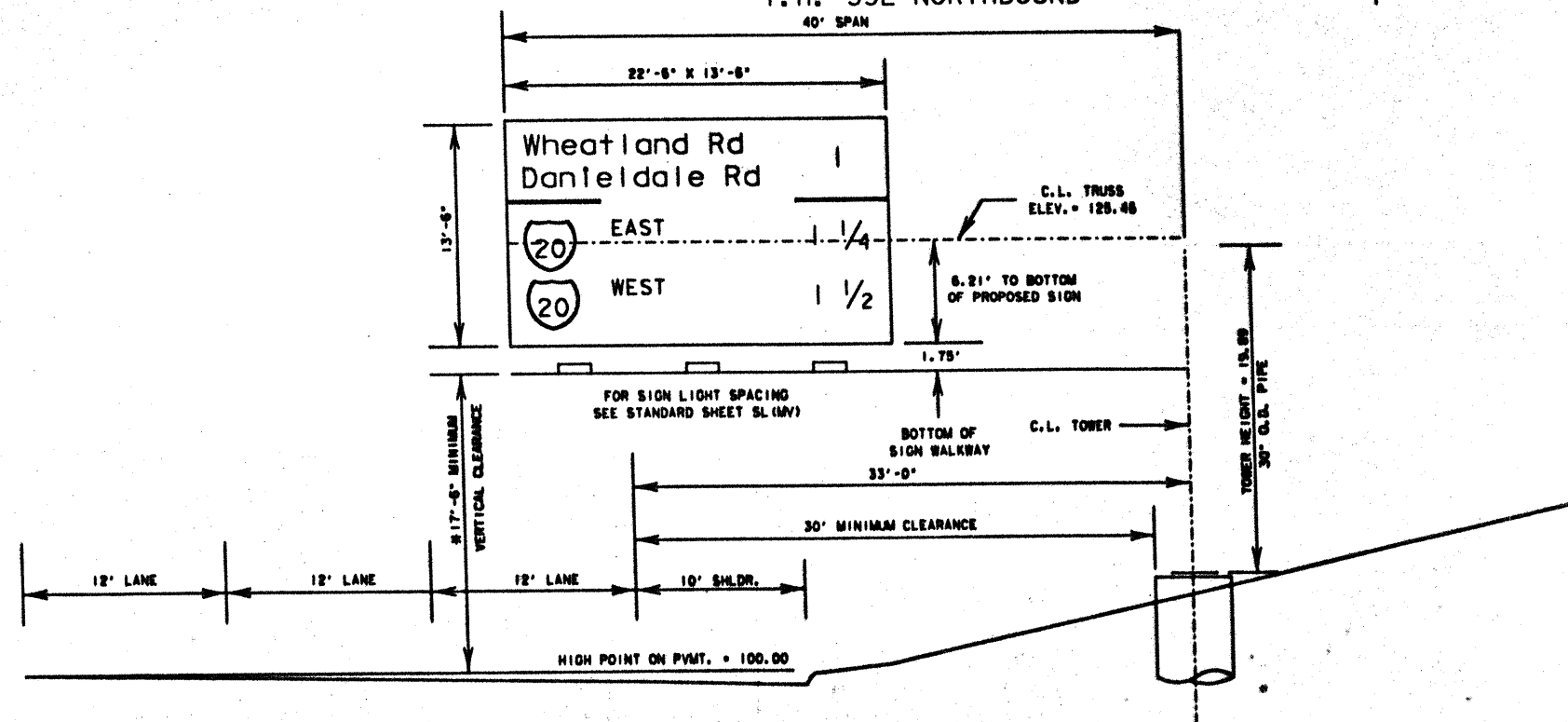
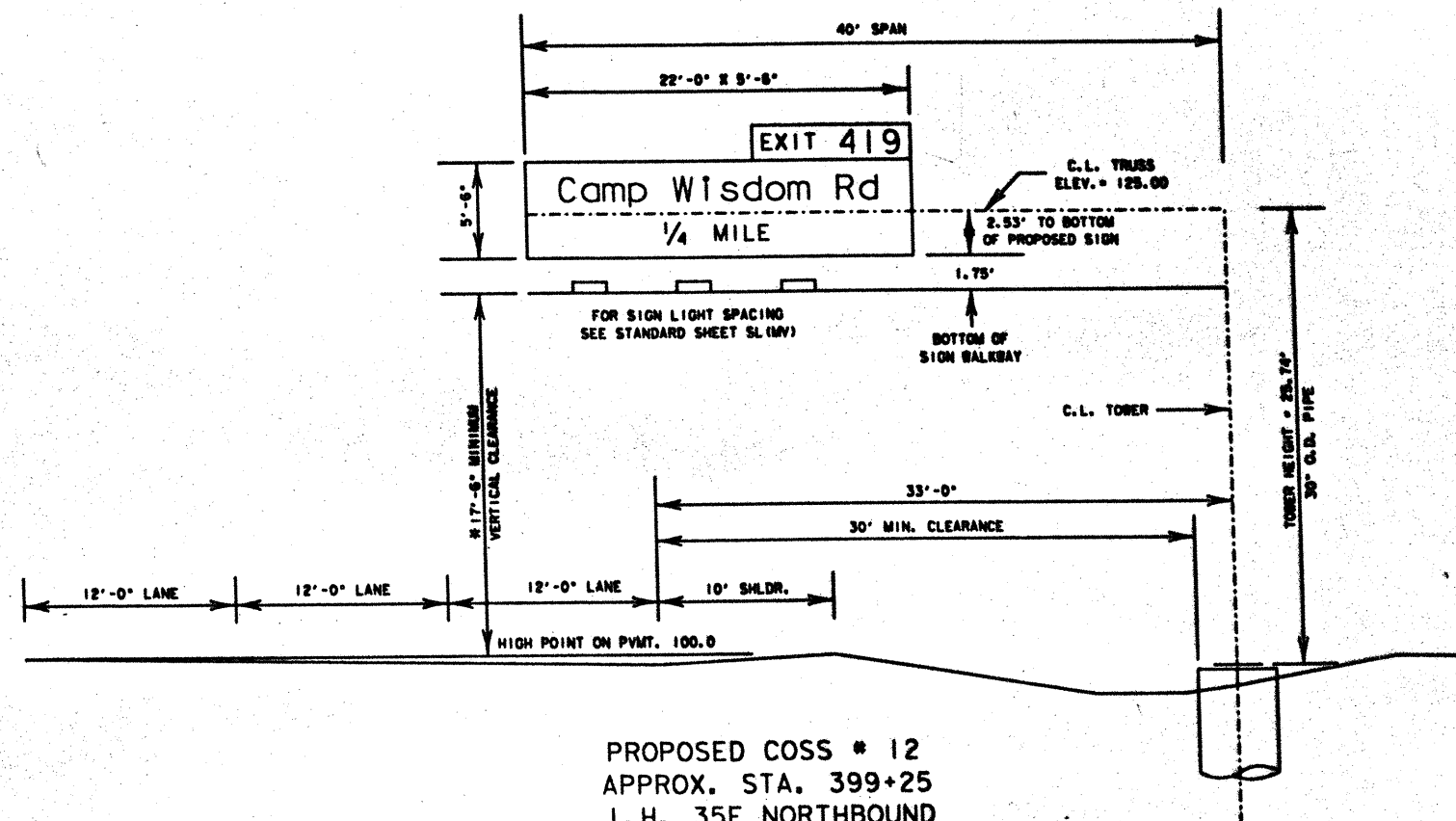
# OVERHEAD SIGN STRUCTURE DETAILS

SHEET 6 OF 15

DIST.	STATE	FEDERAL AID PROJECT NO.	DIST.
6	TEXAS	TM 35E-6 (210) 144,000	TM 35E
DIST. NO.	COUNTY	SECTION	POST MILE
18	DALLAS	442	02 99 31



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\*17'-6" MINIMUM VERTICAL CLEARANCE  
FOR FUTURE 12'-6" SIGN HEIGHT

TRUSS ELEVATION 125.00

COSS-Z41

## DESIGN DATA

SPAN LENGTH	40	FT
DESIGN HEIGHT	UNDER 30	FT
TOWER HEIGHT	25.74	FT
DESIGN SIGN AREA	400	SF
ACTUAL SIGN AREA	121	SF
PENETROMETER VALUE	ASSUME 15	
DESIGN LOADS	TORSION	211.94 K-FT
	MOMENT	318.55 K-FT

## STRUCTURE DATA

STRUCTURE CODE	COSS-Z41
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" PIPE

## SUMMARY OF DRILLED SHAFT

17 LF. OF 54 IN. DIA. DRILLED SHAFT

## SUMMARY OF SIGN LIGHTS

3 EACH

## SUMMARY OF SIGN WALKWAY

40 L.F.

BOTTOM BASE PLATE ELEV.	99.26
TOP DRILLED SHAFT ELEV.	99.01
GROUND ELEV.	98.01
BOTTOM DRILLED SHAFT ELEV.	82.01

32

TRUSS ELEVATION 125.46

COSS-Z41

## DESIGN DATA

SPAN LENGTH	40	FT
DESIGN HEIGHT	UNDER 30	FT
TOWER HEIGHT	19.89	FT
DESIGN SIGN AREA	400	SF
ACTUAL SIGN AREA	303.75	SF
PENETROMETER VALUE	ASSUME 15	
DESIGN LOADS	TORSION	211.94 K-FT
	MOMENT	256.86 K-FT

## STRUCTURE DATA

STRUCTURE CODE	COSS-Z41
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" PIPE

## SUMMARY OF DRILLED SHAFT

15 LF. OF 48 IN. DIA. DRILLED SHAFT

## SUMMARY OF SIGN LIGHTS

3 EACH

## SUMMARY OF SIGN WALKWAY

40 L.F.

BOTTOM BASE PLATE ELEV.	108.87
TOP DRILLED SHAFT ELEV.	108.32
GROUND ELEV.	104.22
BOTTOM DRILLED SHAFT ELEV.	90.32



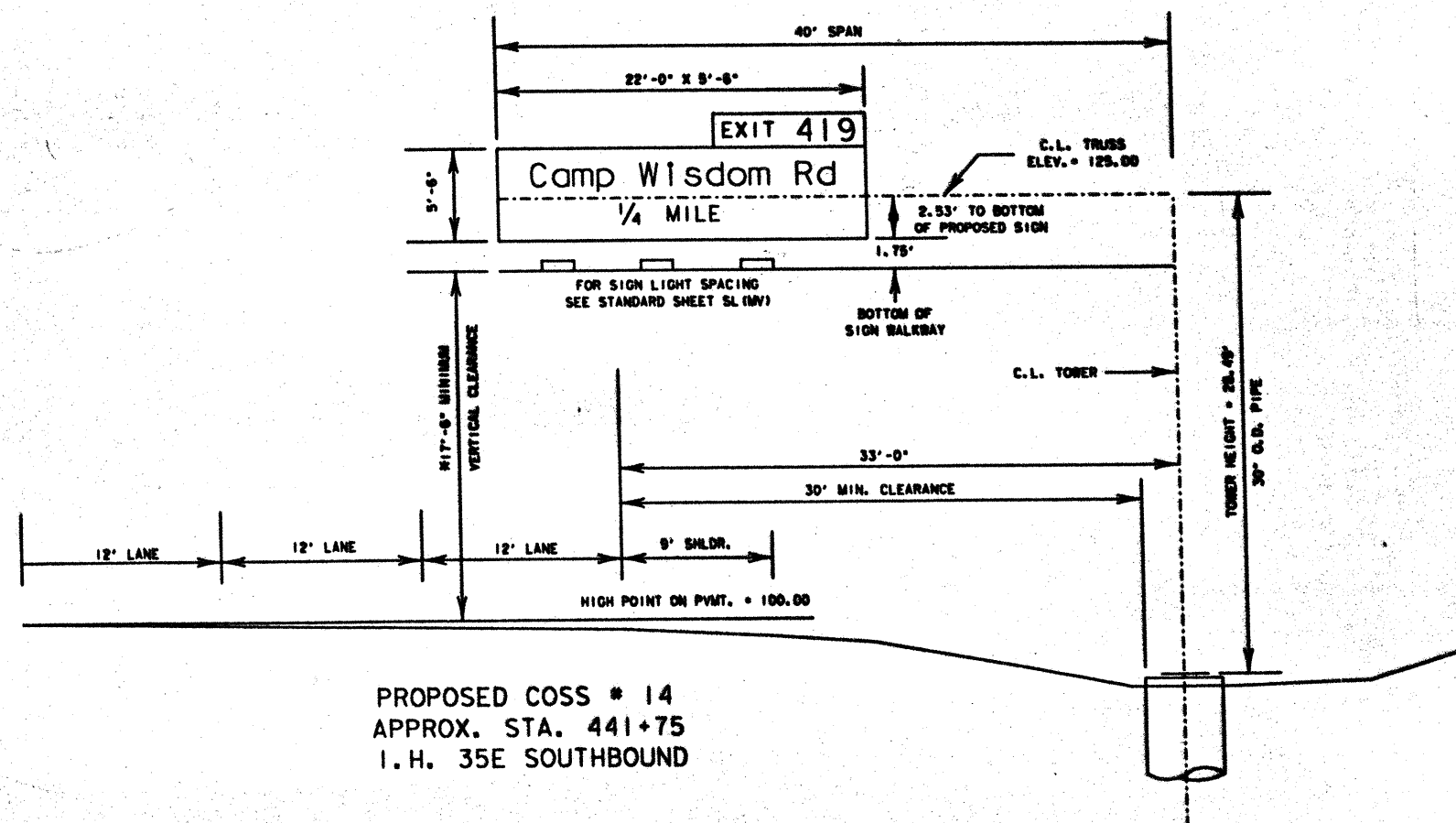
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# OVERHEAD SIGN STRUCTURE DETAILS

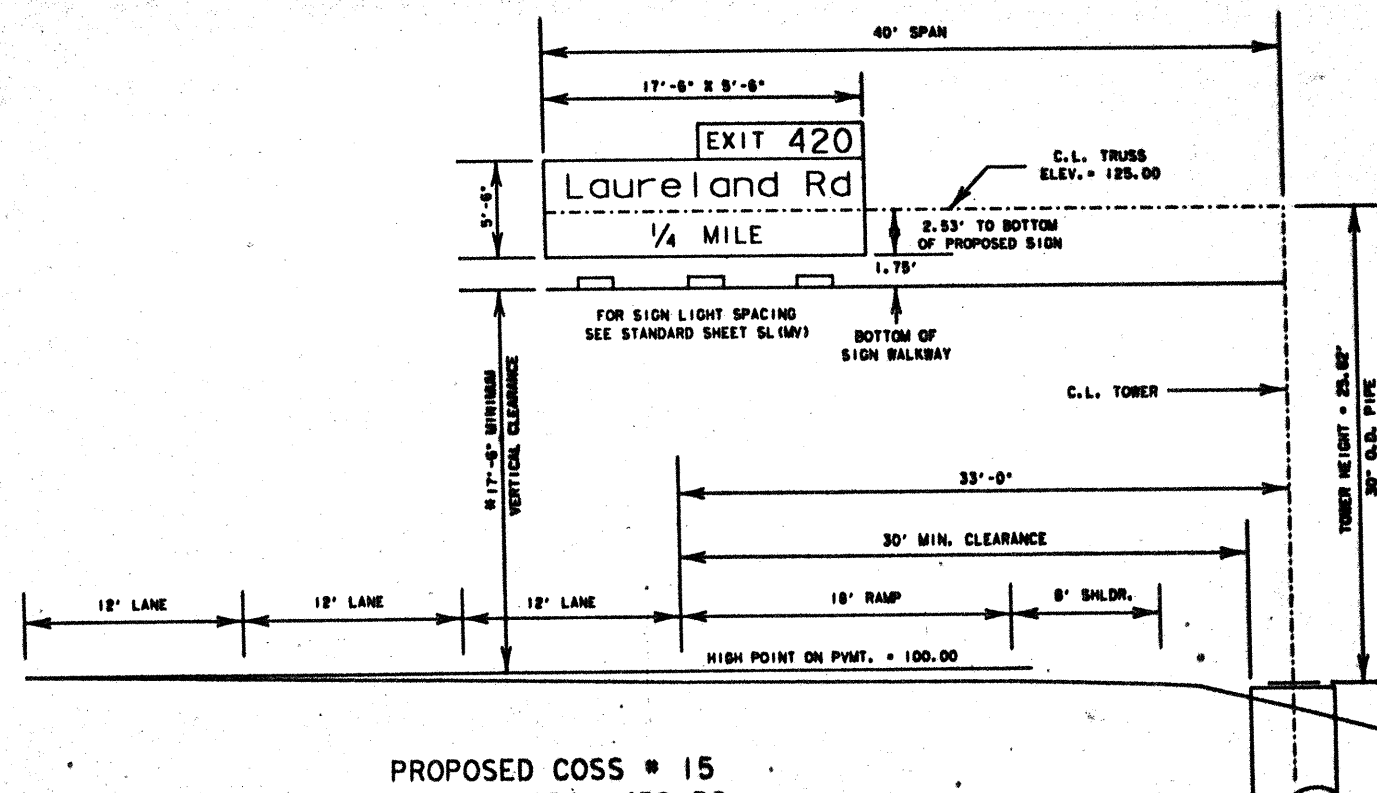
SHEET 7 OF 15

STATE	FEDERAL AID PROJECT NO.	DATE
TEXAS	IM 35E-6 (310) 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200	
COUNTY		
DALLAS	442 02 998 32	

238BUD



PROPOSED COSS # 14  
APPROX. STA. 441+75  
I.H. 35E SOUTHBOUND



PROPOSED COSS # 15  
APPROX. STA. 439+50  
I.H. 35E NORTHBOUND

COSS-ELEVATION 125.0  
COSS-Z41

DESIGN DATA	
SPAN LENGTH	40
DESIGN HEIGHT	UNDER 30
TOWER HEIGHT	25.49
DESIGN SIGN AREA	400
ACTUAL SIGN AREA	121
PENETROMETER VALUE	ASSUME 15
DESIGN LOADS	TORSION 211.94 K-FT
	MOMENT 339.89 K-FT

STRUCTURE DATA	
STRUCTURE CODE	COSS-Z41
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" PIPE

SUMMARY OF DRILLED SHAFT	
17	LF. OF 54 IN. DIA. DRILLED SHAFT

SUMMARY OF SIGN LIGHTS	
3	EACH

SUMMARY OF SIGN BALKWAY	
40	L.F.

BOTTOM BASE PLATE ELEV.	96.91
TOP DRILLED SHAFT ELEV.	96.26
GROUND ELEV.	95.76
BOTTOM DRILLED SHAFT ELEV.	79.26

COSS-ELEVATION 125.00  
COSS-Z41

DESIGN DATA	
SPAN LENGTH	40
DESIGN HEIGHT	UNDER 30
TOWER HEIGHT	25.82
DESIGN SIGN AREA	400
ACTUAL SIGN AREA	96.25
PENETROMETER VALUE	ASSUME 15
DESIGN LOADS	TORSION 211.94 K-FT
	MOMENT 318.99 K-FT

STRUCTURE DATA	
STRUCTURE CODE	COSS-Z41
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" PIPE

SUMMARY OF DRILLED SHAFT	
17	LF. OF 54 IN. DIA. DRILLED SHAFT

SUMMARY OF SIGN LIGHTS	
3	EACH

SUMMARY OF SIGN BALKWAY	
40	L.F.

BOTTOM BASE PLATE ELEV.	98.18
TOP DRILLED SHAFT ELEV.	98.93
GROUND ELEV.	97.78
BOTTOM DRILLED SHAFT ELEV.	81.93

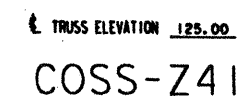


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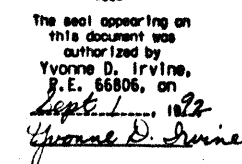
\* 17'-6" MINIMUM VERTICAL CLEARANCE FOR FUTURE 12'-6" SIGN HEIGHT

# OVERHEAD SIGN STRUCTURE DETAILS SHEET 8 OF 15

DIST.	STATE	FEDERAL AID PROJECT NO.	FED. ROAD DIST. NO.	STATE DIST. NO.
18	TEXAS	1M 35E-6 (RD 1404) IN 35E	442	02
			996	33



BOTTOM BASE PLATE ELEV. 99.10  
TOP DRILLED SHAFT ELEV. 98.93  
GROUND ELEV. 97.68  
BOTTOM DRILLED SHAFT ELEV. 81.93

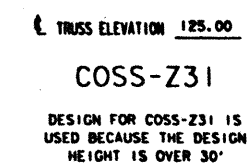


\*17'-6" MINIMUM VERTICAL CLEARANCE  
FOR FUTURE 12'-6" SIGN HEIGHT

# OVERHEAD SIGN STRUCTURE DETAILS

SHEET 9 OF 15

STATE	STATE	FEDERAL AID PROJECT NO.	
6	TEXAS	IM 35E-6	1910 1410, 60
STATE DIST. NO.	COUNTY	ROUTE NO.	SECTION NO.
108	DALLAS	442	02



STRUCTURE DATA

STRUCTURE CODE	COSS-731
TRUSS SIZE	4.5 X 4.5
TOWER SIZE	30" Ø PIPE

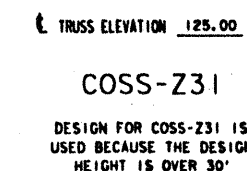
SUMMARY OF DRILLED SHAFT  
17 LF. OF 54 IN. DIA. DRILLED SHAFT

SUMMARY OF SIGN LIGHTS  
3 EACH

SUMMARY OF SIGN WALKWAY  
35 L.F.

BOTTOM BASE PLATE ELEV. 100.88  
TOP DRILLED SHAFT ELEV. 100.63  
GROUND ELEV. 99.63  
BOTTOM DRILLED SHAFT ELEV. 83.63

35



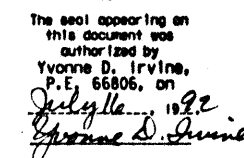
STRUCTURE DATA	
STRUCTURE CODE	COSS-Z31
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	24" $\phi$ PIPE

SUMMARY OF DRILLED SHAFT  
16 LF. OF 48 IN. DIA. DRILLED SHAFT

SUMMARY OF SIGN LIGHTS  
4 EACH

SUMMARY OF SIGN WALKWAY

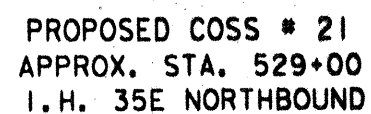
BOTTOM BASE PLATE ELEV. 100.05  
TOP DRILLED SHAFT ELEV. 99.80  
GROUND ELEV. 99.30  
BOTTOM DRILLED SHAFT ELEV. 83.80



\* 17'-6" MINIMUM VERTICAL CLEARANCE  
FOR FUTURE 12'-6" SIGN HEIGHT

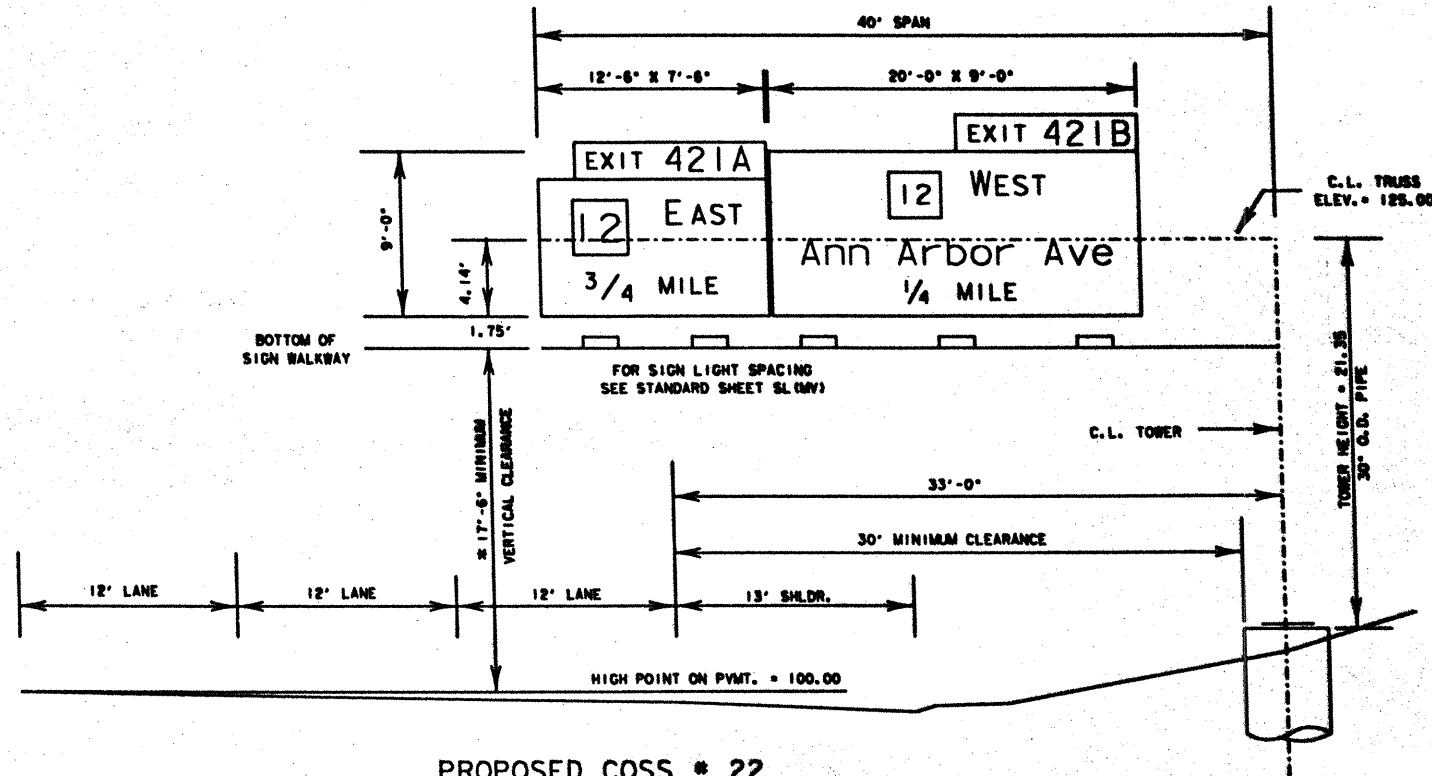
STATE	STATE	FEDERAL AID PROJECT NO.	IN 35
6	TEXAS	1W 35E-6 (BIO 144,000)	IN 35
STATE DIST. NO.	COUNTY	LOCAL NO.	SECTION NO.
18	DALLAS	442	02



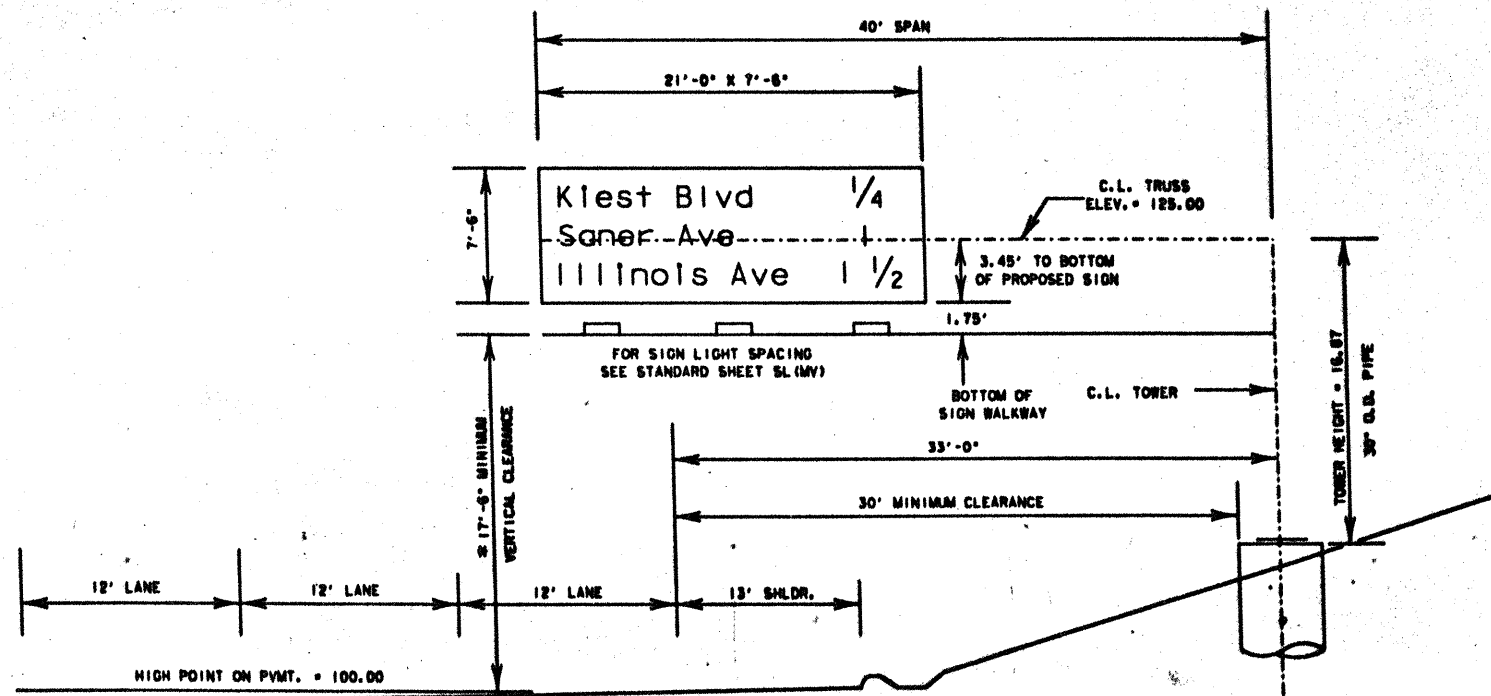


36

STATE DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SECTION NO.	DATE	TIME
8	TEXAS	IR 35E-8 (310) 1418, 89E	IN 35E		
10	DALLAS	442	02	906	36



PROPOSED COSS # 22  
APPROX. STA. 562+50  
I.H. 35E SOUTHBOUND



PROPOSED COSS # 23  
APPROX. STA. 559+50  
I.H. 35E NORTHBOUND

TRUSS ELEVATION 125.00

COSS-Z41

DESIGN DATA

SPAN LENGTH	40	FT
DESIGN HEIGHT	UNDER 30	FT
TOWER HEIGHT	21.35	FT
DESIGN SIGN AREA	400	SF
ACTUAL SIGN AREA	273.75	SF
PENETROMETER VALUE	ASSUME 18	
DESIGN LOADS	TORSION 211.94	K-FT
	MOMENT 266.86	K-FT

STRUCTURE DATA

STRUCTURE CODE	COSS-Z41
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" # PIPE

SUMMARY OF DRILLED SHAFT

17 LF. OF 48 IN. DIA. DRILLED SHAFT

SUMMARY OF SIGN LIGHTS

5 EACH

SUMMARY OF SIGN WALKWAY

40 L.F.

BOTTOM BASE PLATE ELEV.	103.65
TOP DRILLED SHAFT ELEV.	103.40
GROUND ELEV.	102.19
BOTTOM DRILLED SHAFT ELEV.	86.40

37

TRUSS ELEVATION 125.00

COSS-Z41

DESIGN DATA

SPAN LENGTH	40	FT
DESIGN HEIGHT	UNDER 30	FT
TOWER HEIGHT	16.87	FT
DESIGN SIGN AREA	400	SF
ACTUAL SIGN AREA	157.50	SF
PENETROMETER VALUE	ASSUME 18	
DESIGN LOADS	TORSION 211.94	K-FT
	MOMENT 227.32	K-FT

STRUCTURE DATA

STRUCTURE CODE	COSS-Z41
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" # PIPE

SUMMARY OF DRILLED SHAFT

15 LF. OF 48 IN. DIA. DRILLED SHAFT

SUMMARY OF SIGN LIGHTS

3 EACH

SUMMARY OF SIGN WALKWAY

40 L.F.

BOTTOM BASE PLATE ELEV.	109.22
TOP DRILLED SHAFT ELEV.	107.97
GROUND ELEV.	108.72
BOTTOM DRILLED SHAFT ELEV.	92.97



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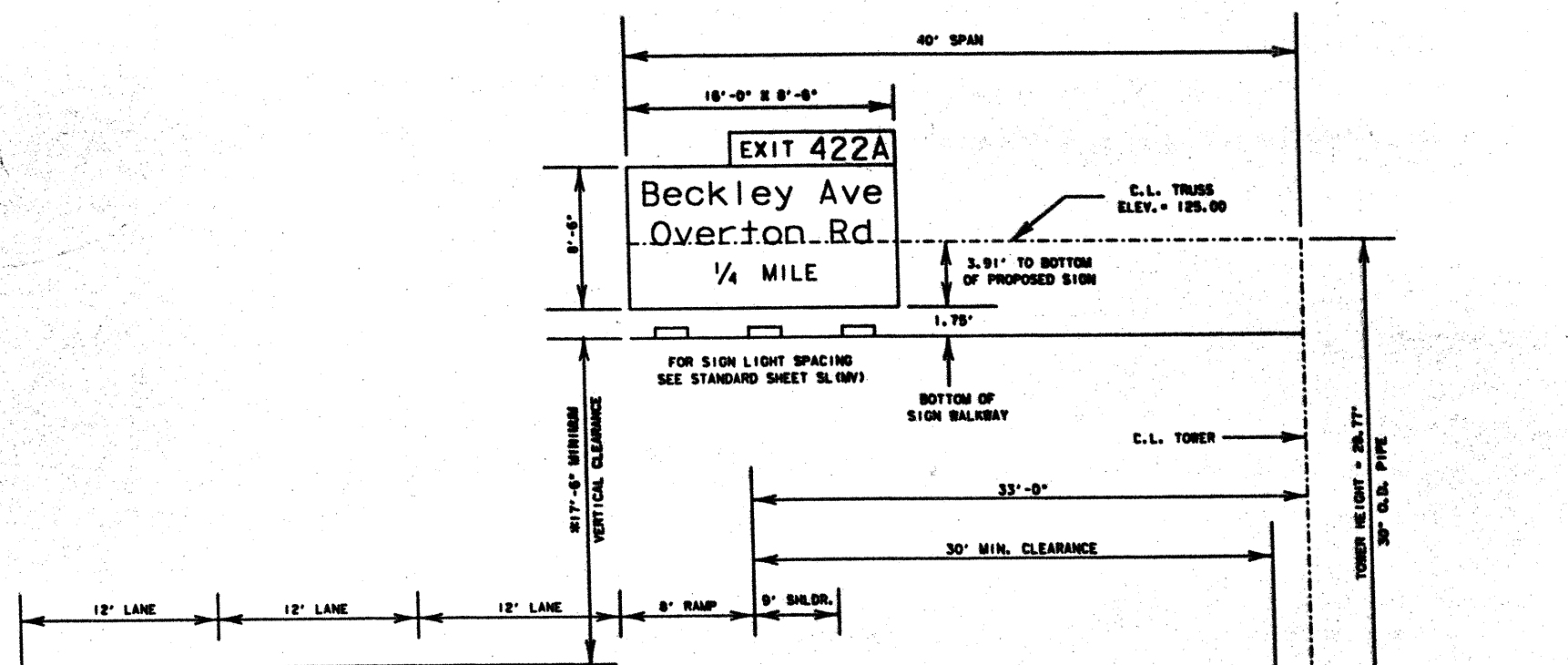
\* 17'-6" MINIMUM VERTICAL CLEARANCE  
FOR FUTURE 12'-6" SIGN HEIGHT

# OVERHEAD SIGN STRUCTURE DETAILS

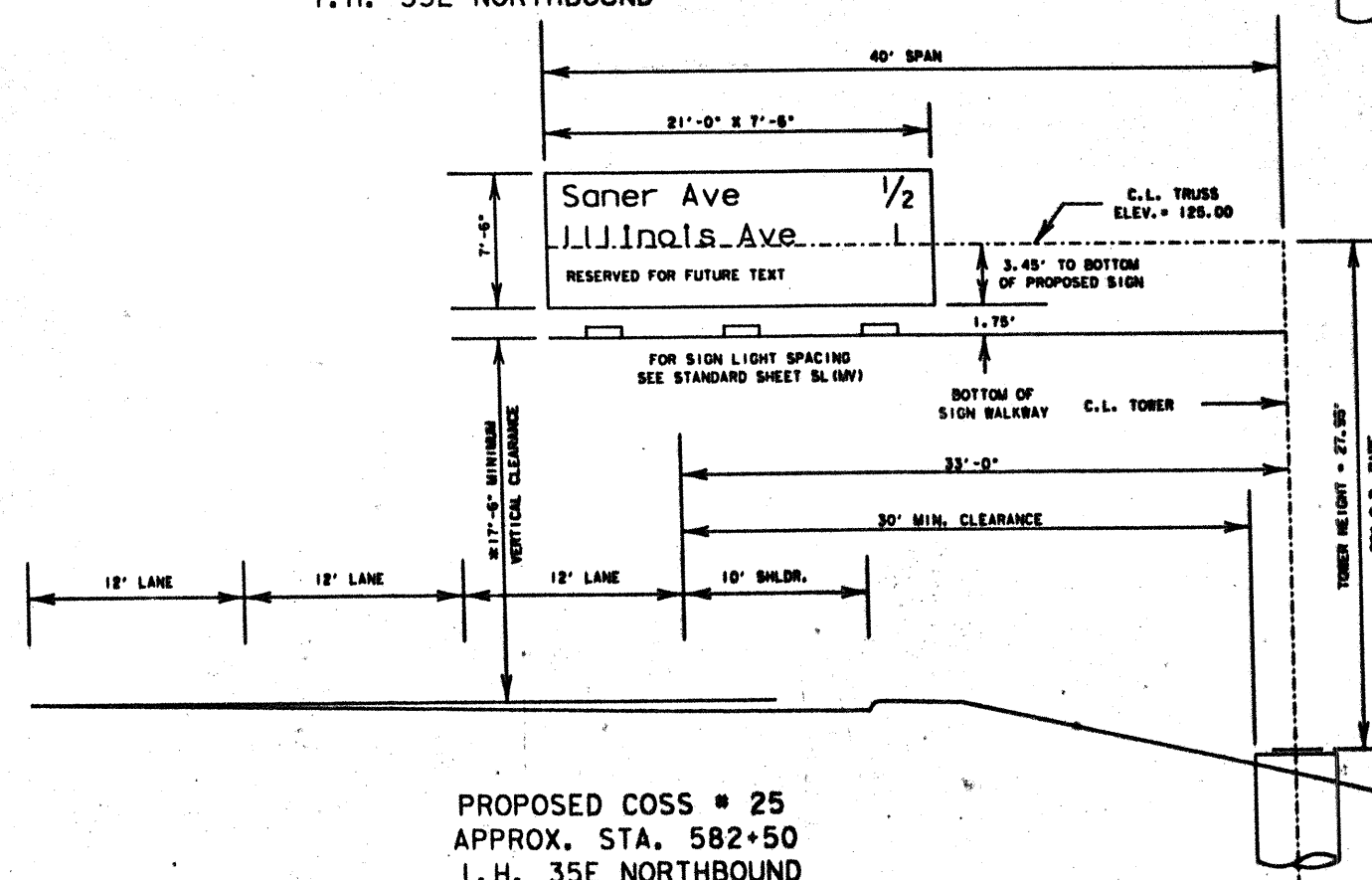
SHEET 12 OF 15

STATE	STATE	FEDERAL AID PROJECT NO.	PROJECT NO.
6	TEXAS	IR 35E-6 (340 144, etc.)	IR 35E
STATE DIST. NO.	COUNTY	SECTION	SHEET NO.
18	DALLAS	442	02 996 17

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PROPOSED COSS # 24  
APPROX. STA. 537+50  
I.H. 35E NORTHBOUND



PROPOSED COSS # 25  
APPROX. STA. 582+50  
I.H. 35E NORTHBOUND

TRUSS ELEVATION 125.00

COSS-Z31

DESIGN FOR COSS-Z31 IS  
USED BECAUSE THE DESIGN  
HEIGHT IS OVER 30'

## DESIGN DATA

SPAN LENGTH	40	FT
DESIGN HEIGHT	OVER 30	FT
TOWER HEIGHT	28.77	FT
DESIGN SIGN AREA	400	SF
ACTUAL SIGN AREA	136	SF
PENETROMETER VALUE	ASSUME 18	
DESIGN LOADS	TORSION 276.72	K-FT
	MOMENT 447.01	K-FT

## STRUCTURE DATA

STRUCTURE CODE	COSS-Z31
TRUSS SIZE	4.5 X 4.5
TOWER SIZE	30" PIPE

## SUMMARY OF DRILLED SHAFT

18 LF. OF 54 IN. DIA. DRILLED SHAFT

## SUMMARY OF SIGN LIGHTS

3 EACH

## SUMMARY OF SIGN BALKWAY

40 L.F.

BOTTOM BASE PLATE ELEV.	95.23
TOP DRILLED SHAFT ELEV.	95.00
GROUND ELEV.	95.00
BOTTOM DRILLED SHAFT ELEV.	78.90

38

TRUSS ELEVATION 125.00

COSS-Z31

DESIGN FOR COSS-Z31 IS  
USED BECAUSE THE DESIGN  
HEIGHT IS OVER 30'

## DESIGN DATA

SPAN LENGTH	40	FT
DESIGN HEIGHT	OVER 30	FT
TOWER HEIGHT	27.95	FT
DESIGN SIGN AREA	400	SF
ACTUAL SIGN AREA	157.5	SF
PENETROMETER VALUE	ASSUME 18	
DESIGN LOADS	TORSION 276.72	K-FT
	MOMENT 432.57	K-FT

## STRUCTURE DATA

STRUCTURE CODE	COSS-Z31
TRUSS SIZE	4.5 X 4.5
TOWER SIZE	30" PIPE

## SUMMARY OF DRILLED SHAFT

18 LF. OF 54 IN. DIA. DRILLED SHAFT

## SUMMARY OF SIGN LIGHTS

3 EACH

## SUMMARY OF SIGN BALKWAY

40 L.F.

BOTTOM BASE PLATE ELEV.	97.08
TOP DRILLED SHAFT ELEV.	96.80
GROUND ELEV.	95.00
BOTTOM DRILLED SHAFT ELEV.	78.00



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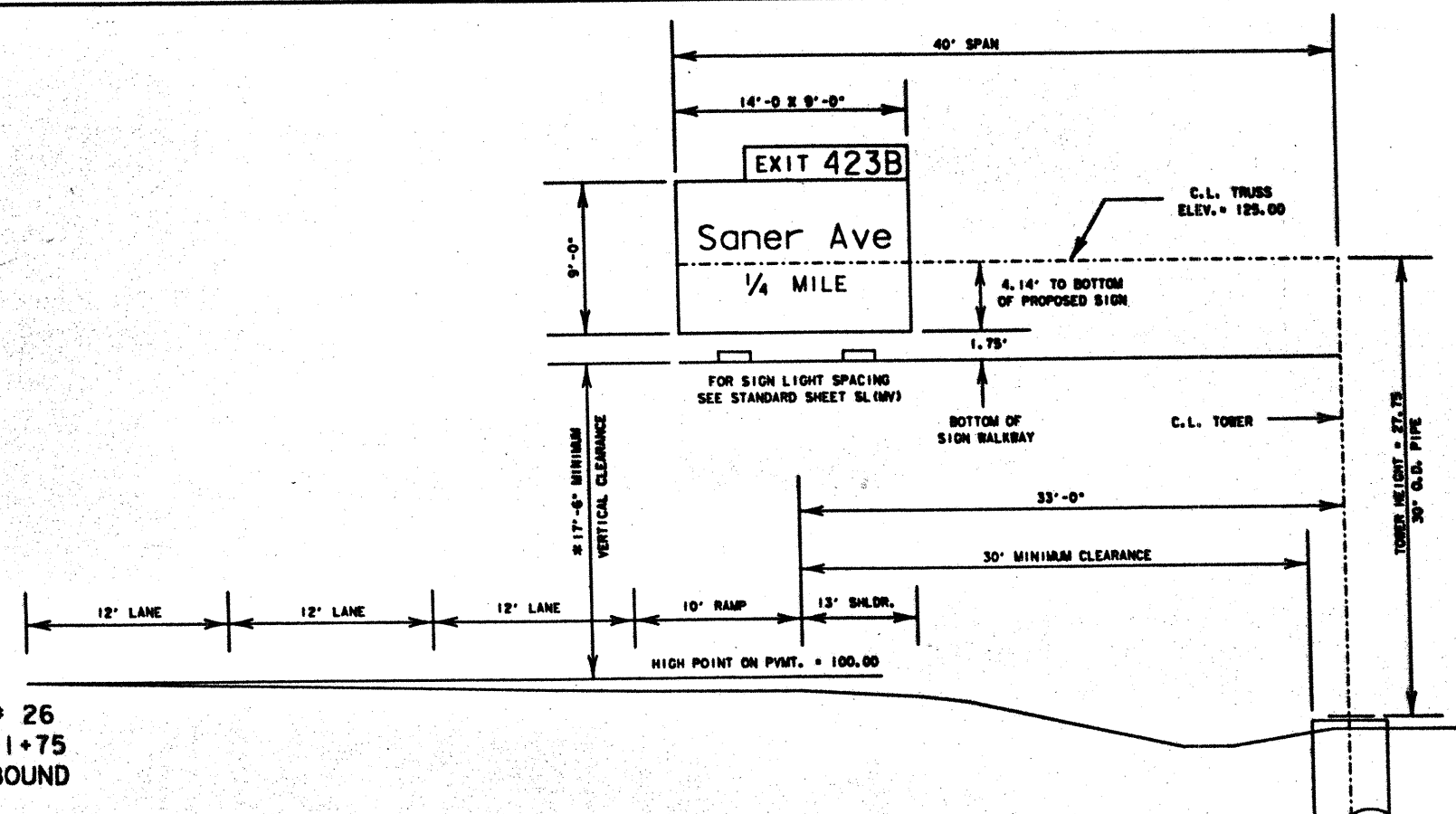
\* 17'-6" MINIMUM VERTICAL CLEARANCE  
FOR FUTURE 12'-6" SIGN HEIGHT

# OVERHEAD SIGN STRUCTURE DETAILS

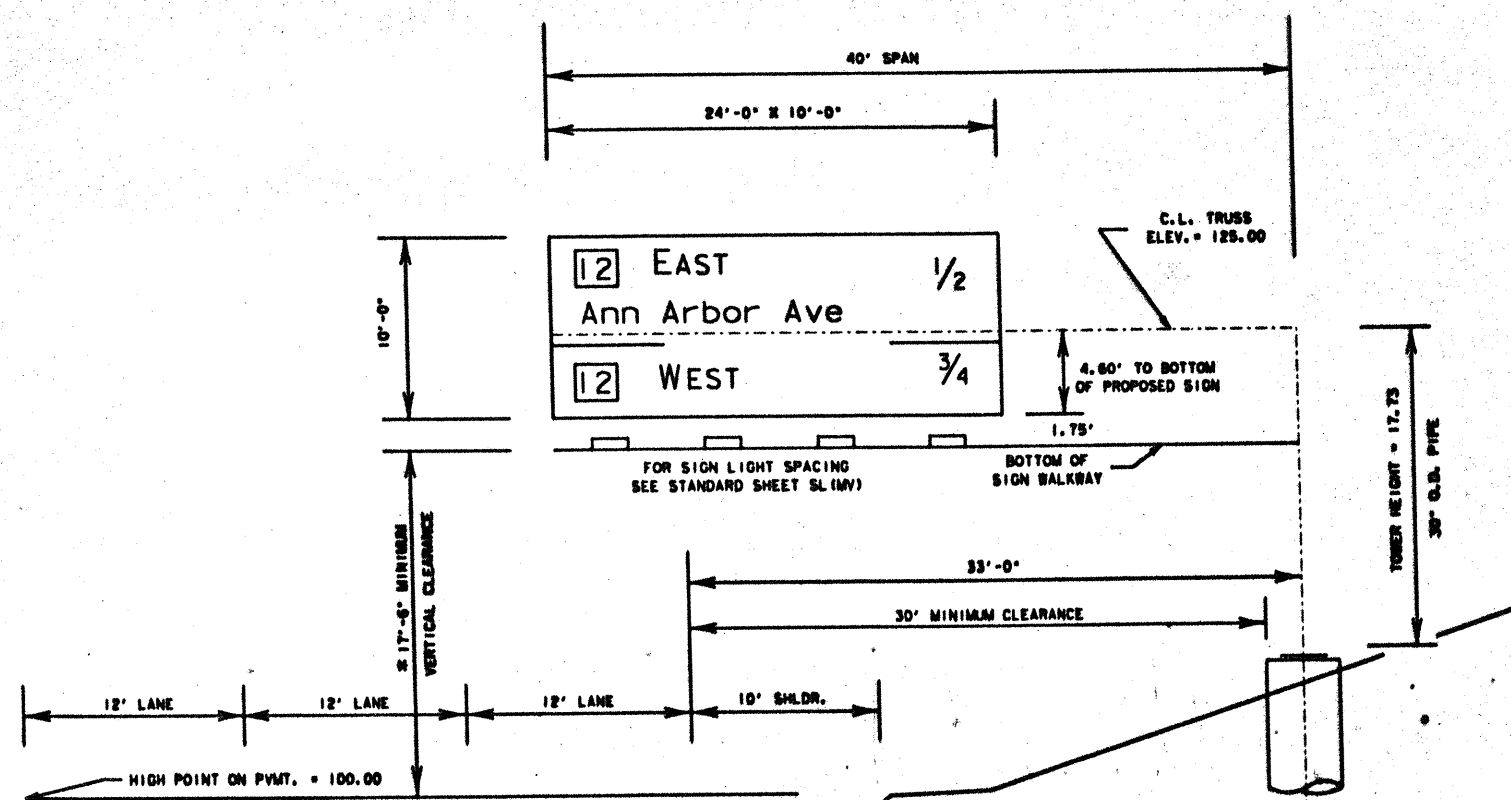
SHEET 13 OF 15

STATE	FEDERAL AID PROJECT NO.	DATE	BY	CHKD	APP'D
TEXAS	35E-6 (2010) 140,000	07/16/92	YD	YD	YD
DALLAS	442	02	996	30	

238BUD



PROPOSED COSS # 26  
APPROX. STA. 591+75  
I.H. 35E NORTHBOUND



PROPOSED COSS # 27  
APPROX. STA. 464+00  
I.H. 35E NORTHBOUND

TRUSS ELEVATION 125.00

COSS-Z41

DESIGN DATA

SPAN LENGTH	40	FT
DESIGN HEIGHT	UNDER 30	FT
TOWER HEIGHT	27.75	FT
DESIGN SIGN AREA	400	SF
ACTUAL SIGN AREA	84	SF
PENETROMETER VALUE	ASSUME 15	
DESIGN LOADS	TORSION 211.94	K-FT
	MOMENT 339.89	K-FT

STRUCTURE DATA

STRUCTURE CODE	COSS-Z41
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" PIPE

SUMMARY OF DRILLED SHAFT

17 LF. OF 34 IN. DIA. DRILLED SHAFT

SUMMARY OF SIGN LIGHTS

2 EACH

SUMMARY OF SIGN WALKWAY

40 L.F.

BOTTOM BASE PLATE ELEV.	97.25
TOP DRILLED SHAFT ELEV.	97.00
GROUND ELEV.	95.50
BOTTOM DRILLED SHAFT ELEV.	80.00

TRUSS ELEVATION 125.00

COSS-Z41

DESIGN DATA

SPAN LENGTH	40	FT
DESIGN HEIGHT	UNDER 30	FT
TOWER HEIGHT	17.75	FT
DESIGN SIGN AREA	400	SF
ACTUAL SIGN AREA	240.00	SF
PENETROMETER VALUE	ASSUME 15	
DESIGN LOADS	TORSION 211.94	K-FT
	MOMENT 237.32	K-FT

STRUCTURE DATA

STRUCTURE CODE	COSS-Z41
TRUSS SIZE	4.0 X 4.0
TOWER SIZE	30" PIPE

SUMMARY OF DRILLED SHAFT

17.00 LF. OF 48" IN. DIA. DRILLED SHAFT

SUMMARY OF SIGN LIGHTS

4 EACH

SUMMARY OF SIGN WALKWAY

40.00 L.F.

BOTTOM BASE PLATE ELEV.	107.27
TOP DRILLED SHAFT ELEV.	107.05
GROUND ELEV.	105.80
BOTTOM DRILLED SHAFT ELEV.	90.05



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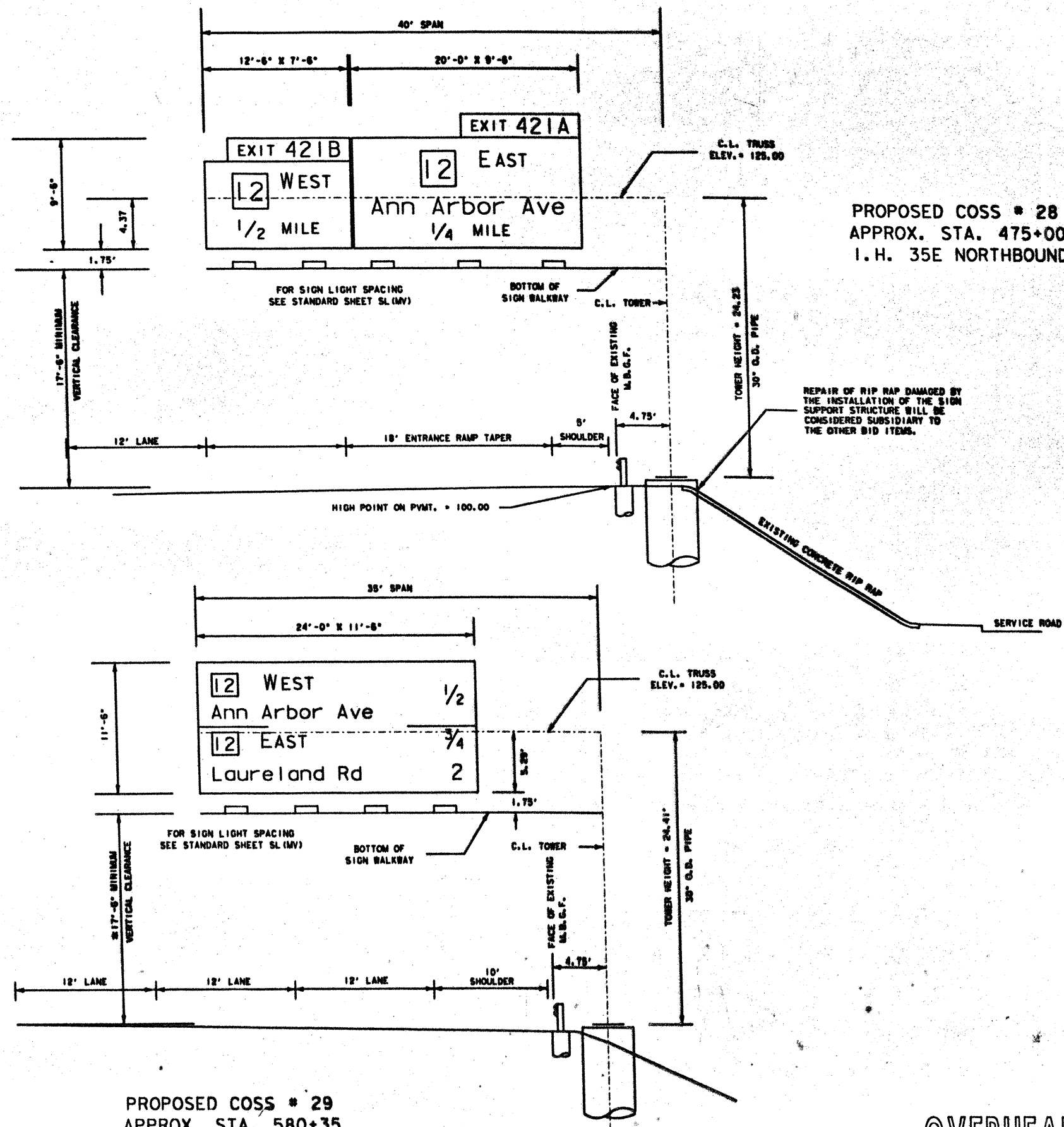
\* 17'-6" MINIMUM VERTICAL CLEARANCE  
FOR FUTURE 12'-6" SIGN HEIGHT

OVERHEAD SIGN STRUCTURE DETAILS  
SHEET 14 OF 15

STATE	FEDERAL AID PROJECT NO.	DATE
6 TEXAS	1R 35E-6 (750)418,012,1M 35E	
COUNTY	SECTION	DATE
18 DALLAS	442 02	996 39

(REV 8-24-92)  
(D-BITE REVIEW)





TRUSS ELEVATION 125.00  
COSS-Z41

DESIGN DATA	
SPAN LENGTH	40.00 FT
DESIGN HEIGHT	UNDER 30 FT
TOWER HEIGHT	24.23 FT
DESIGN SIGN AREA	400.00 SF
ACTUAL SIGN AREA	283.75 SF
PENETROMETER VALUE	ASSUME 15
DESIGN LOADS	TORSION 211.84 K-FT MOMENT 297.57 K-FT

STRUCTURE DATA	
STRUCTURE CODE	COSS-Z41
TRUSS SIZE	4.0' X 4.0'
TOWER SIZE	30" PIPE

SUMMARY OF DRILLED SHAFT  
17.00 LF. OF 48 IN. DIA. DRILLED SHAFT

SUMMARY OF SIGN LIGHTS  
5 EACH

SUMMARY OF SIGN WALKWAY  
40.00 L.F.

BOTTOM BASE PLATE ELEV. 100.77  
TOP DRILLED SHAFT ELEV. 100.50  
GROUND ELEV. 100.00  
BOTTOM DRILLED SHAFT ELEV. 83.50

TRUSS ELEVATION 125.00  
COSS-Z31

DESIGN FOR COSS-Z31 IS  
USED BECAUSE THE DESIGN  
HEIGHT IS OVER 30'

DESIGN DATA	
SPAN LENGTH	35.00 FT
DESIGN HEIGHT	OVER 30 FT
TOWER HEIGHT	24.41 FT
DESIGN SIGN AREA	350.00 SF
ACTUAL SIGN AREA	276.00 SF
PENETROMETER VALUE	ASSUME 15
DESIGN LOADS	TORSION 211.84 K-FT MOMENT 323.51 K-FT

STRUCTURE DATA	
STRUCTURE CODE	COSS-Z31
TRUSS SIZE	4.5' X 4.5'
TOWER SIZE	30" PIPE

SUMMARY OF DRILLED SHAFT  
17.00 LF. OF 54 IN. DIA. DRILLED SHAFT

SUMMARY OF SIGN LIGHTS  
4 EACH

SUMMARY OF SIGN WALKWAY  
35.00 L.F.

BOTTOM BASE PLATE ELEV. 100.89  
TOP DRILLED SHAFT ELEV. 100.36  
GROUND ELEV. 99.00  
BOTTOM DRILLED SHAFT ELEV. 83.36



The seal appearing on  
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Yvonne D. Irvine,  
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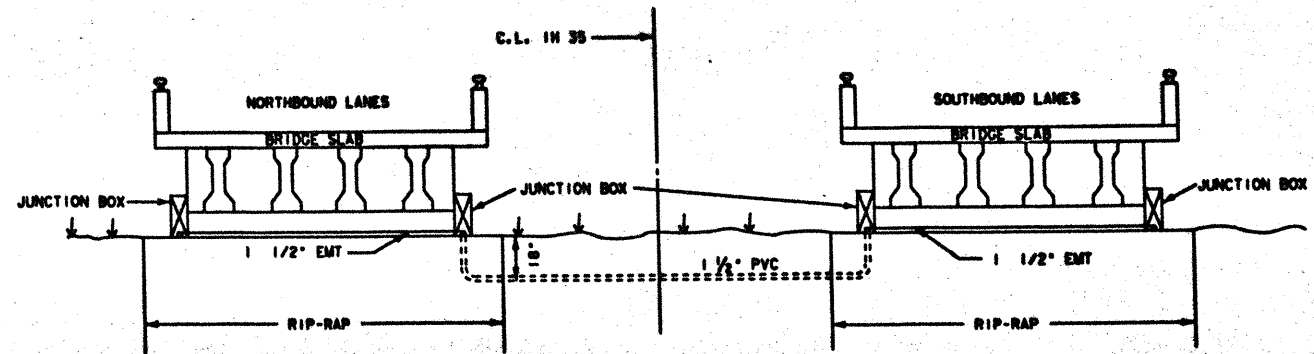
Yvonne D. Irvine

\* 17'-6" MINIMUM VERTICAL CLEARANCE \*  
FOR FUTURE 12'-6" SIGN HEIGHT

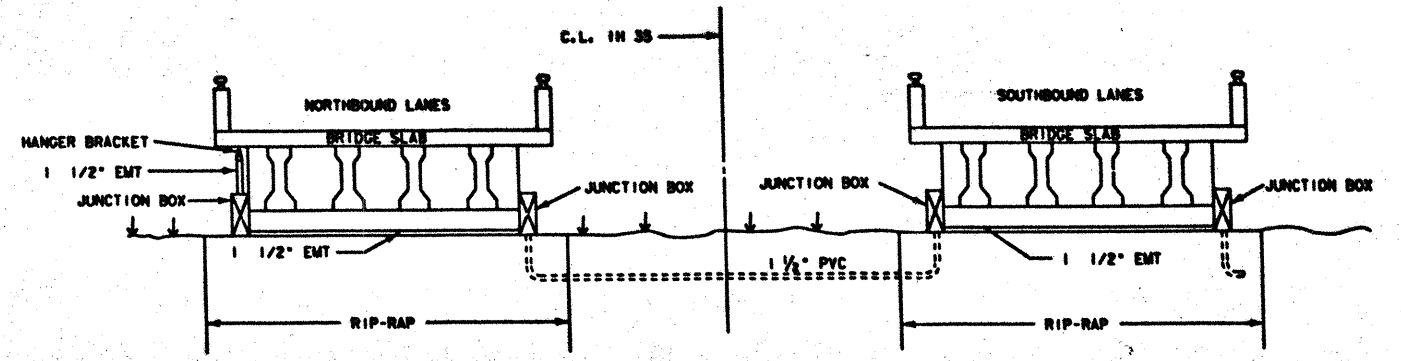
OVERHEAD SIGN STRUCTURE DETAILS  
SHEET 15 OF 15

STATE	FEDERAL AID PROJECT NO.	IN
TEXAS	IR 35E-8 (210) JAW, ENE. IN 35E	
COUNTY	SECTION	POST MILE
DALLAS	442	02.998 39.4

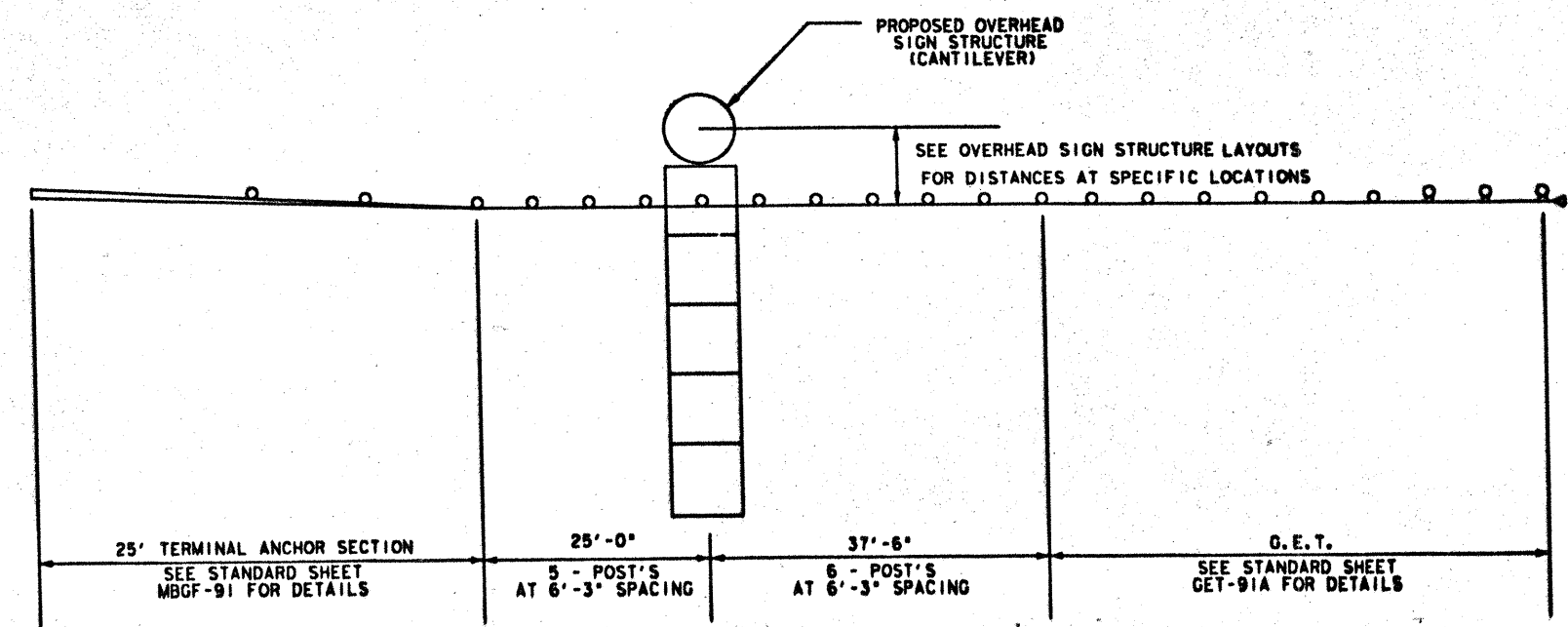
238BUD



PROPOSED CONDUIT ATTACHMENT  
TO BRIDGE STRUCTURE AT  
I.H. 35 C.L. STA. 52+00  
AND KEST BLVD STR



PROPOSED CONDUIT ATTACHMENT  
TO BRIDGE STRUCTURE AT  
I.H. 35 C.L. STA. 101+70



40

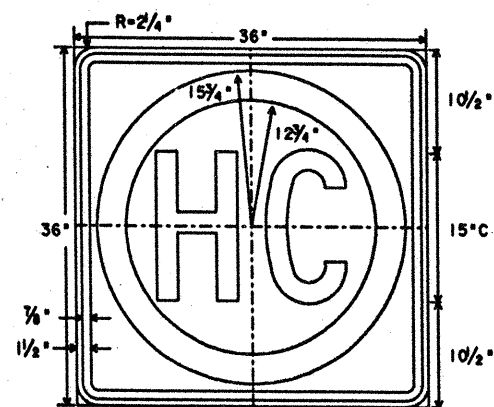


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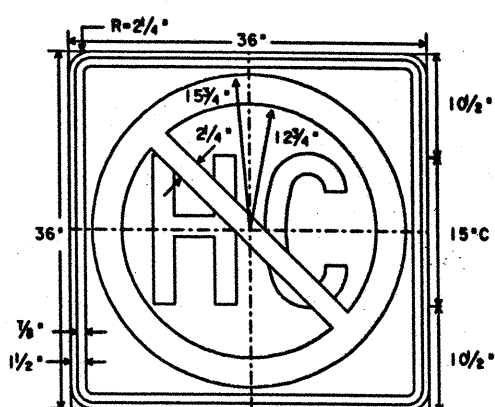
### Conduit Placement on Bridge And M.B.G.F. Details

SHEET 1 OF 1

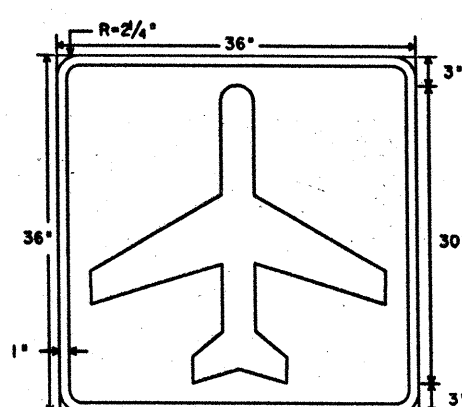
STATE	FEDERAL AID PROJECT NO.	DATE
TEXAS	IM 35E-6 (24014)B.P.C.	10 48
COUNTY	SECTION	POST MILE
DALLAS	442 02	99.6 40



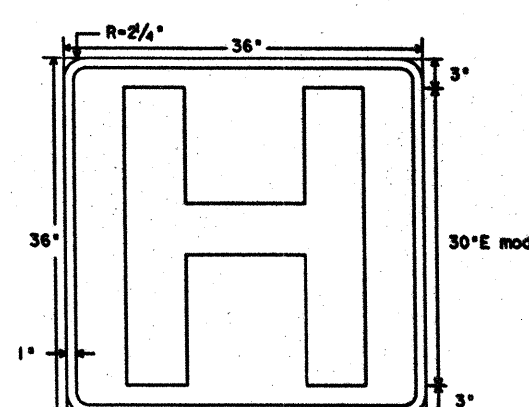
ER14-2  
36" X 36"  
Letters - Black  
Border - Black  
Ring - Green Reflective  
Background - White Reflective



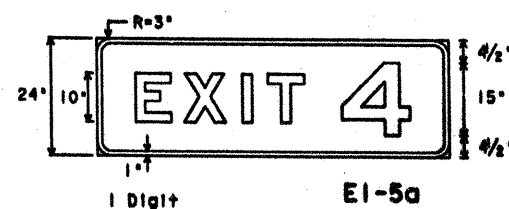
ER14-3  
36" X 36"  
Letters - Black  
Border - Black  
Ring/Slash - Red Reflective  
Background - White Reflective



F1-5  
36" X 36"  
Symbol - White Reflective  
Border - White Reflective  
Background - Green Reflective



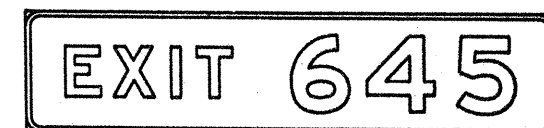
FD9-2  
36" X 36"  
Symbol - White Reflective  
Border - White Reflective  
Background - Blue Reflective



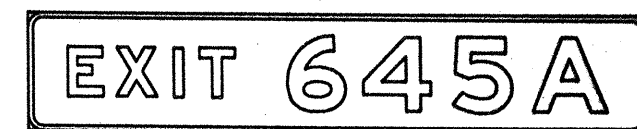
E1-5a  
72" X 24"



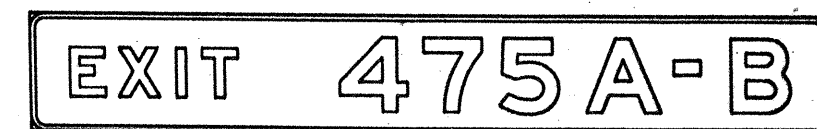
E1-5b  
90" X 24"



E1-5c  
108" X 24"



E1-5d  
126" X 24"

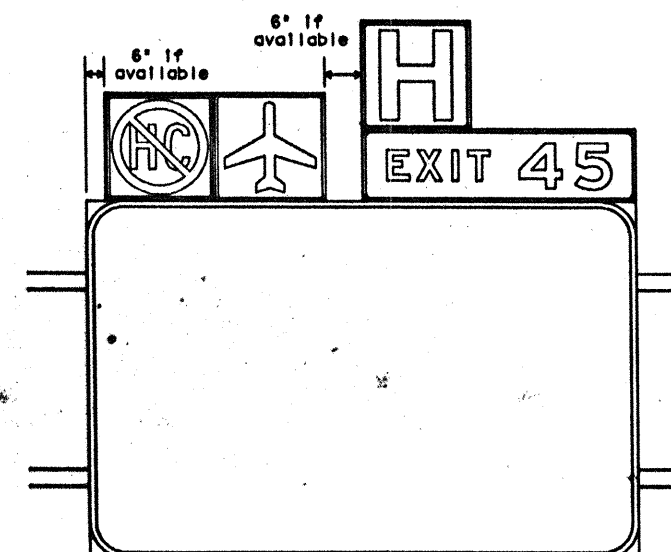
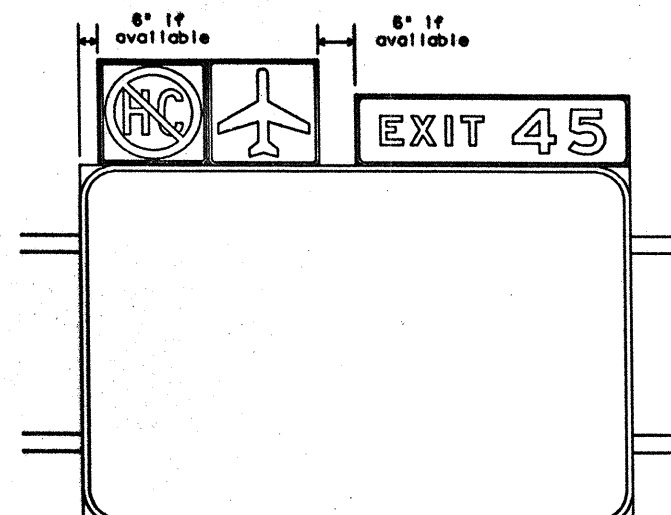
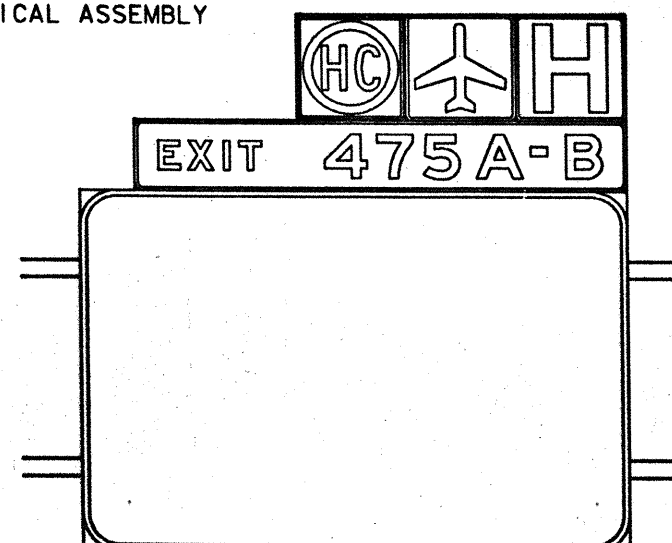


E1-5e  
165" X 24"

#### GUIDE SIGN NUMBER PANELS

Legend - White Reflective  
Border - White Reflective  
Background - Green (See General Notes)

#### OVERHEAD GUIDE SIGN TYPICAL ASSEMBLY



SPECIFICATION REFERENCE TABLE	
MATERIALS AND TEXT SPECIFICATIONS (D-9)	
PLYWOOD SIGN BLANKS	D-9-7100
ALUMINUM SIGN BLANKS	D-9-7110
REFLECTIVE SHEETING, TYPE A	D-9-8300 (ENGINEER GRADE)
REFLECTORIZED REMOVABLE LEGEND	D-9-8400

#### GENERAL NOTES FOR GUIDE SIGNS:

THE ALPHABETS AND LATERAL SPACING BETWEEN LETTERS AND NUMERALS SHALL CONFORM WITH THE TEXAS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", LATEST EDITION, AND ANY APPROVED CHANGES THERETO. LATERAL SPACING OF TEXT SHALL BE SUCH AS TO PROVIDE A BALANCED APPEARANCE.

LEGEND AND BORDERS FOR GREEN AND BLUE BACKGROUND GUIDE SIGNS SHALL HAVE REFLECTORIZED REMOVABLE LEGEND WITH BORDERS CONFORMING WITH DEPARTMENT SPECIFICATION, UNLESS OTHERWISE NOTED ELSEWHERE IN THE PLANS. DIMENSIONS SHOWN FOR REMOVABLE BORDERS AND CORNER RADI ARE NOMINAL. REMOVABLE BORDERS MAY VARY IN WIDTH AS MUCH AS ONE-HALF INCH. CORNER RADI ABOVE THREE INCHES MAY VARY IN RADIUS PLUS OR MINUS ONE INCH. BORDERS AND CORNER RADI MUST BE OF MATCHING WIDTHS. THE SIGN AREA OUTSIDE THE CORNER RADI NEED NOT BE TRIMMED.

ROADSIDE MOUNTED GUIDE SIGNS SHALL BE MADE OF 5/8 INCH PLYWOOD (TYPE A) UNLESS OTHERWISE NOTED IN THE SIGN TABULATION. OVERHEAD GUIDE SIGN BLANKS SHALL BE MADE OF TYPE O ALUMINUM OR PLYWOOD AS SPECIFIED IN THE SIGN TABULATION. SIGNS AND PANELS ATTACHED ABOVE OR BELOW A PARENT SIGN SHALL BE MADE OF THE SAME MATERIAL AS THE PARENT SIGN.

MOUNTING DETAILS FOR ROADSIDE MOUNTED GUIDE SIGNS ARE SHOWN ON STANDARD PLAN SHEETS SMD SERIES. MOUNTING DETAILS FOR OVERHEAD SIGNS SHALL BE AS DETAILED ELSEWHERE IN PLANS OR THE SUPPLIER'S CHOICE SUBJECT TO APPROVAL BY THE ENGINEER.

#### GENERAL NOTES FOR SIGNS AND PANELS ON THIS SHEET:

SIGNS AND PANELS SHOWN ARE USUAL AND STANDARD SIZES. INDIVIDUAL PANEL SIZES MAY BE ADJUSTED DURING PLAN PREPARATION TO FIT ACTUAL PARENT SIGN SIZES WHERE NECESSARY. PANEL SIZES TO BE FURNISHED SHOULD BE AS DETAILED ELSEWHERE IN PLANS AND/OR AS SHOWN ON SIGN TABULATION. PANELS ATTACHED ABOVE OR BELOW A PARENT SIGN SHALL BE MADE OF THE SAME MATERIAL AS THE PARENT SIGN.

LEGEND FOR ER14-2 AND ER14-3 SHALL BE APPLIED TO REFLECTIVE SHEETING BY SCREENING. F1-5 AND FD9-2 SHALL HAVE COLORED TRANSPARENT INK APPLIED BY THE REVERSE SCREEN PROCESS. THE BACKGROUND SHALL BE WHITE REFLECTIVE SHEETING CONFORMING WITH DEPARTMENT SPECIFICATION.



STATE DEPARTMENT OF HIGHWAYS  
AND PUBLIC TRANSPORTATION

#### GUIDE SIGN ATTACHMENTS SERVICES/EXIT PANELS

IE (2)

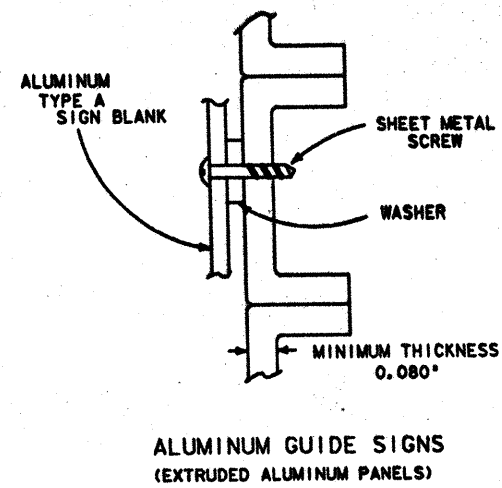
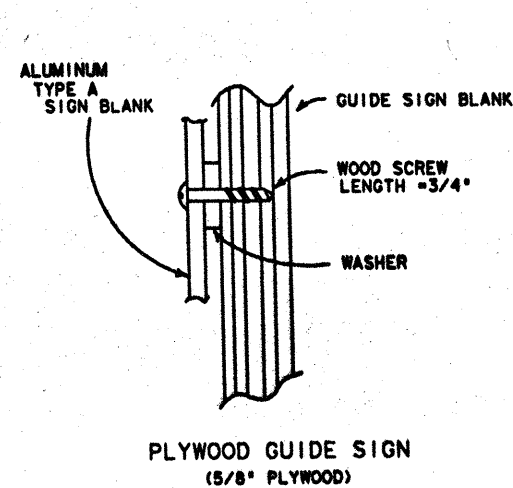
ORIGINAL DRAWING DATE: 7-90	STATE FEDERAL DISTRICT	FEDERAL AID PROJ-DET	DIST
REV. 1 - DN	18	6	11M35E-6 (310) 418.84
REV. 2 - LR			
REV. 3 -	COUNTY	SECTION	AD
REV. 4 -	DALLAS	0442 02	049VH356



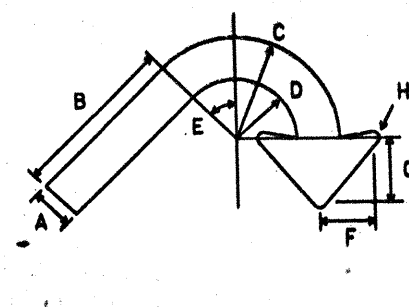
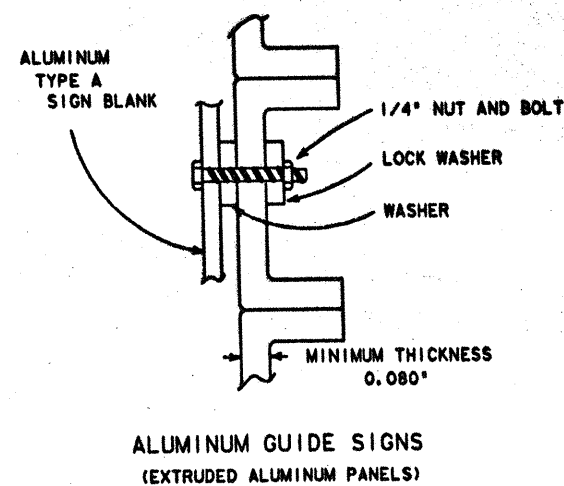
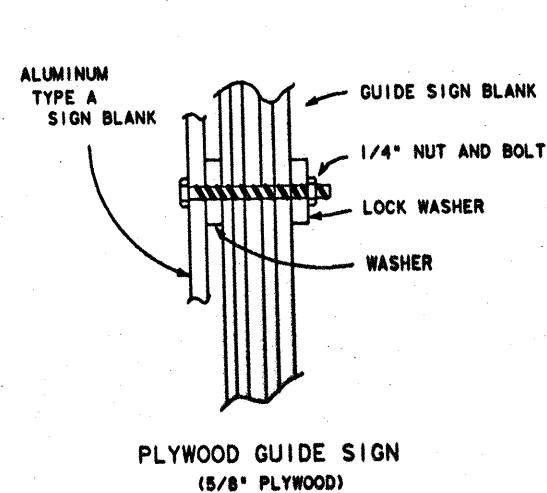


# TYPICAL ATTACHMENT OF ROUTE MARKERS AND "EXIT ONLY" PANELS TO GUIDE SIGNS

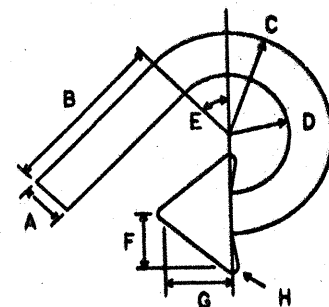
## SCREW ATTACHMENT



## NUT/BOLT ATTACHMENT



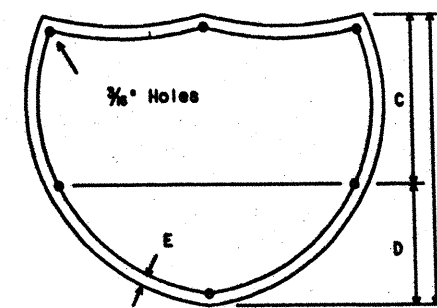
E3 and E3a



E4 and E4a

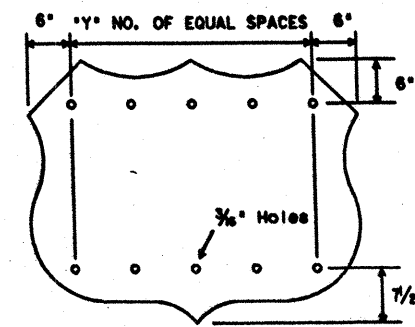
CODE	USED ON SIGN NO.	A	B	C	D	E	F	G	H
E-3 & E-4	E5-3 and E5-4	5	20	12	7	450	6 1/2	8	3/4
E-3a & E-4a	E5-3a and E5-4a	3 1/2	14	8 1/2	5	450	4 1/2	5 1/2	1/2

# SIGN BLANK PUNCHING DETAILS FOR ROUTE MARKERS WHEN ATTACHED TO GUIDE SIGN



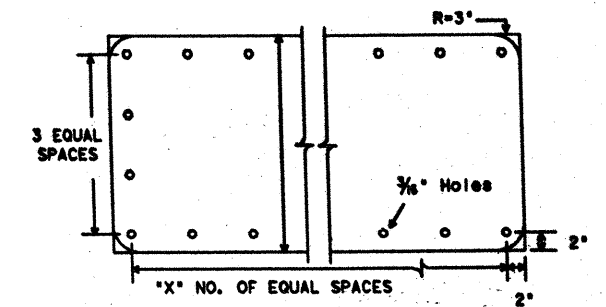
INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4



U.S. ROUTE MARKERS

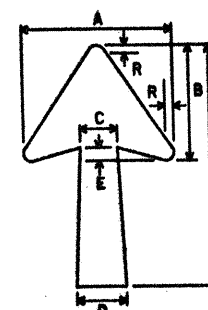
Sign Type	"Y" NO. OF EQUAL SPACES
MI-4D2	2
MI-4D3	3
MI-4E2	3
MI-4E3	4
MI-4F2	4
MI-4F3	5



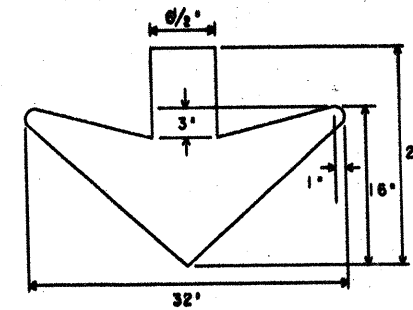
STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5

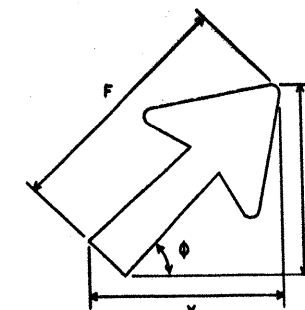
## ARROW DIMENSION DETAILS



Type A or Type B



Type C



CODE	LETTER SIZE	ARROW DIMENSIONS IN INCHES											
		A	B	C	D	E	F	R	Φ = 30°	Φ = 45°	Φ = 60°		
A-1	8" Caps	15 1/8	11 9/16	3 3/4	5	15 1/16	24 1/4	13 1/16	15 5/8	22 1/4	19 1/8	19 1/8	22 3/8
A-2	13 1/3" U.C., 10-12" Caps	18 1/4	14	4 1/2	6	1 1/2	29 1/4	3/4	18 1/2	27	23	23	27
A-3	16" U.C.	22 1/4	17	5 3/8	7 1/8	1 3/4	35 5/8	1	22 5/8	32 3/4	28	28	32 3/4
B-1	8-10" Caps	14 1/4	9 13/16	3 3/8	4 1/2	15 1/16	17 1/4	3/4	12 1/2	16 1/4	14	14	16 1/8
B-2	13 1/3" U.C., 12" Caps	17 1/2	11 3/4	4 3/8	5 5/8	1 1/2	20 1/4	7/8	15 1/2	19 1/8	16 5/8	16 5/8	19
B-3	16" U.C.	21 7/8	14 1/4	5	6 3/4	1 3/4	25	1	19 1/8	23 1/2	20 3/8	20 3/8	23 1/2

WHERE A REMOVABLE REFLECTORIZED ARROW IS REQUIRED ON A GUIDE SIGN WHICH HAS A DEPTH OF 2'-0" AND WHICH IS USUALLY ERRECTED ON RAMP AND CROSSROADS AT INTERCHANGES, THE ARROW SHALL BE A TYPE B-1.

\* RECOMMENDED DIMENSIONS: TAPER SHOULD BE HELD CONSTANT FOR LONGER OR SHORTER SHAFT LENGTHS.

SPECIFICATION REFERENCE TABLE	
MATERIALS AND TEXT SPECIFICATIONS (D-9)	
ALUMINUM SIGN BLANKS	D-9-7110
SIGN HARDWARE	D-9-7120
REFLECTORIZED REMOVABLE LEGEND	D-9-8400

## GENERAL NOTES:

- ROUTE MARKERS ATTACHED TO GUIDE SIGNS SHALL BE TYPE A ALUMINUM, AS REQUIRED BY THE PLANS. SKETCHES SHOWN ARE EXAMPLES ONLY.
- SCREWS OR BOLTS, NUTS AND WASHERS SHALL BE EITHER STAINLESS STEEL OR ALUMINUM.
- THE SCREWS FOR PLYWOOD SIGNS SHALL NOT PROTRUDE THROUGH THE BACK OF THE SIGN. ALL HOLES REQUIRED IN THE PUNCHING DETAIL OF THE BLANK SHALL HAVE SCREWS OR NUTS AND BOLTS.
- SCREWS AND WASHERS SHALL BE USED UNLESS OTHERWISE NOTED IN THE PLANS.

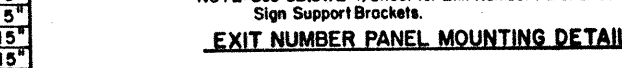
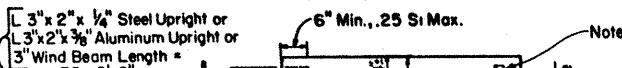
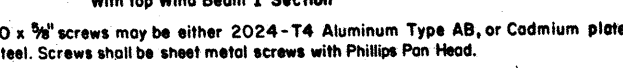


STATE DEPARTMENT OF HIGHWAYS  
AND PUBLIC TRANSPORTATION

## ARROW AND ROUTE MARKER ATTACHMENT DETAILS FOR GUIDE SIGNS

IM(2)

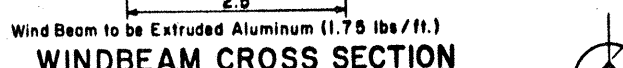
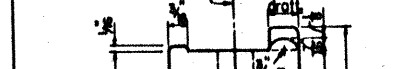
ORIGINAL DRAWING DATE: 7-90	STATE: 18	FEDERAL: 6	FEDERAL AID PROJECT: 1M35E-6(310)	ROUTE: 418, 870	SHEET: 43
DESIGNED BY: DN	CHECKED BY: LR	DATE: 0442	SECTION: 02	REVISION: 1099	IN: 35E
COUNTY: DALLAS			SHEET: 3B		



Size and spacing of Step Bolts shall be shown on the Contractor's working drawing.



---



HEAD STEP BOLT (ASTM A307)				
H	O	P	Q	R



44


**GENERAL NOTES:**

Materials, fabrication, construction and erection shall conform with the requirements of the Departments Material Specifications.

Step Bolt spacing(SBS) should be selected to provide least interference with sign message, and to give most efficient use of plywood and supporting members.

All structural steel, bolts, nuts and washers shall be galvanized after fabrication.

to Sheet S.B.(SW)-1 for details not shown.

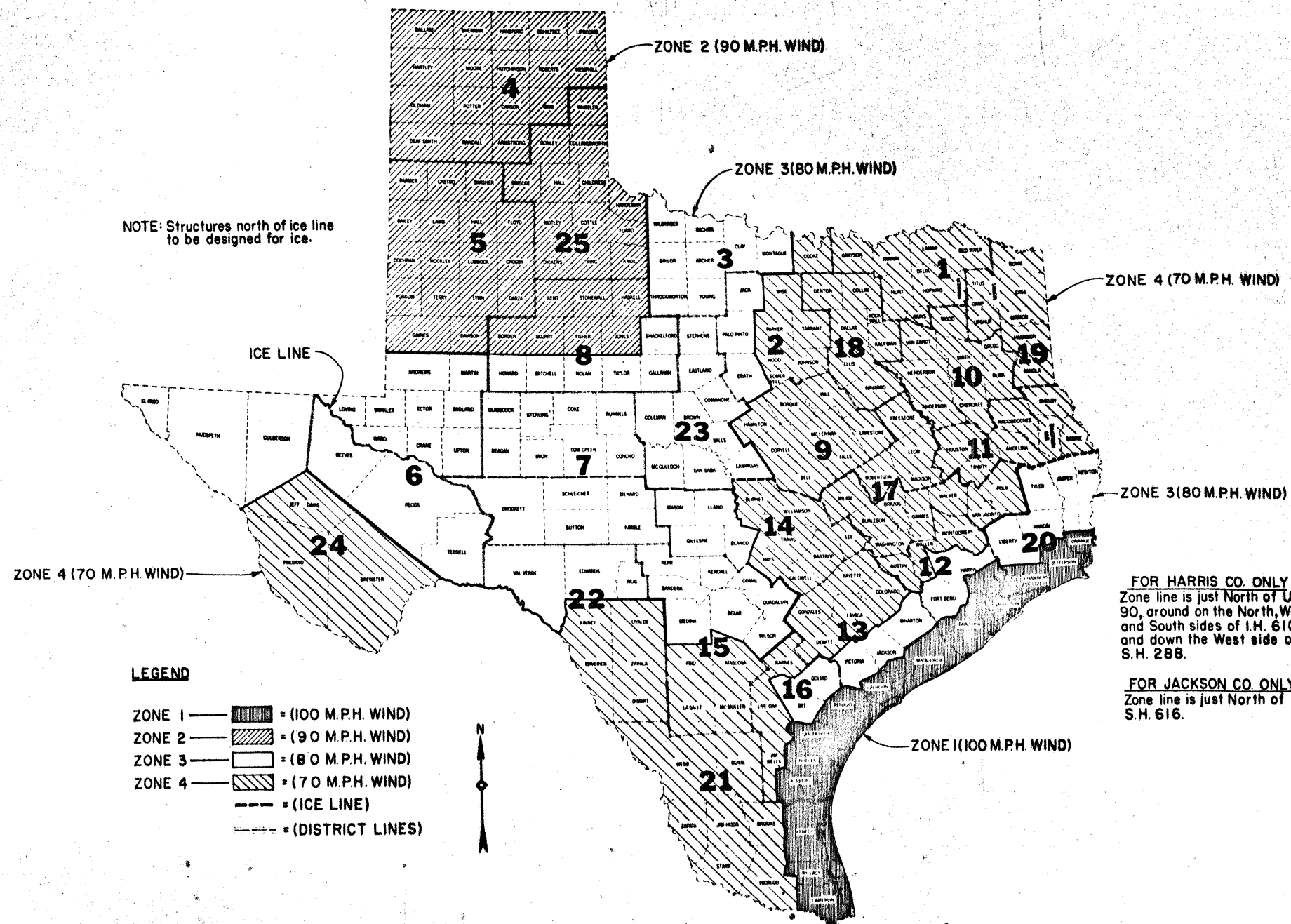


# STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

## STRUCTURAL MOUNTING DETAILS FOR OVERHEAD SIGN BRIDGES

### PLYWOOD SMD(P-I)

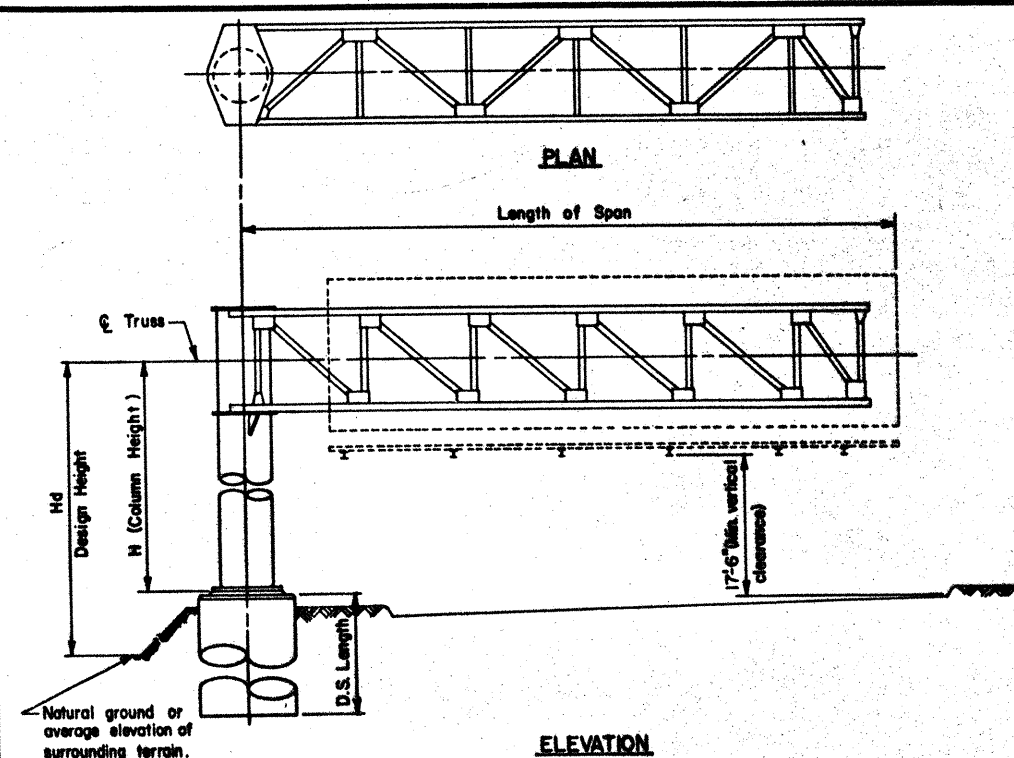
ORIGINAL DRAWING DATE <b>2-82</b>		STATE PROJECT	FEDERAL PROJECT	FEDERAL AID PROJECT	DISTRICT
REVISONS		<b>18</b>	<b>6</b>	<b>1M 396-6 (\$10) 4M, ETC</b>	<b>44</b>
BY <b>CWC</b>	<b>7-83</b>	COUNTY			SECTION
CHK <b>LEH</b>					
DW <b>EDS</b>					
CH <b>CWC</b>		<b>DALLAS</b>			<b>0412 02 099 1135</b>



**WIND VELOCITY & ICE ZONES FOR  
OVERHEAD SIGN BRIDGES**  
Based on 50 Year Mean Recurrence Interval

45

		STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION	
		<b>WIND VELOCITY AND ICE ZONES</b>	
DRAWING DATE 2-1-77		FEDERAL AID PROJECT NO. 45	
REVISIONS		COUNTY DALLAS	
SHEET 45		TOTAL SHEETS 100	

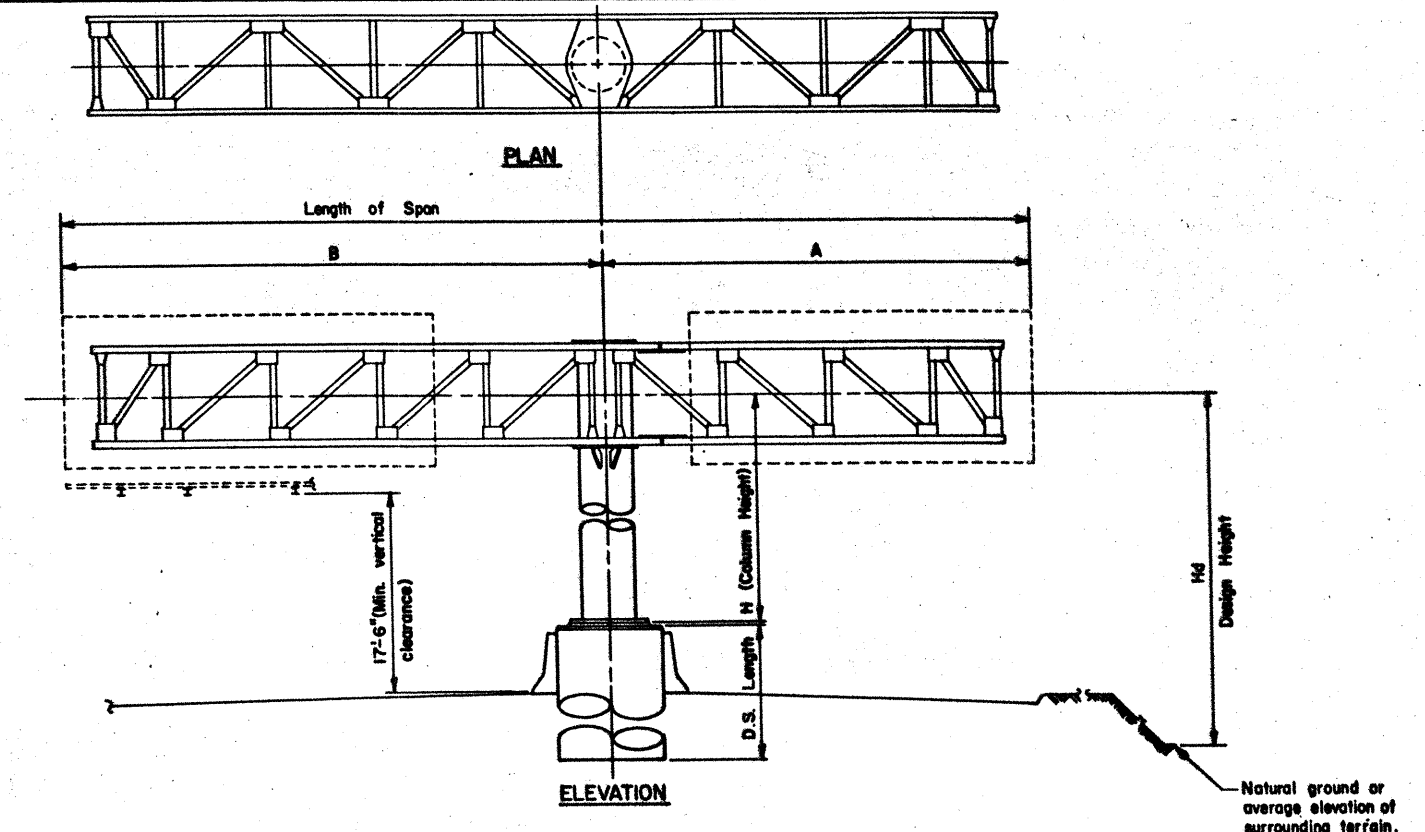


#### SELECTION EXAMPLE CANTILEVER SPAN

- Given: Cantilever Span = 33', Column Height, H = 23.3, Design Height, Hd = 27', Avg. Penetrometer Value, N = 15 (clay type soil), Hill County
- Step 1: Select applicable COSS Standard.  
From wind velocity and ice zone sheet determine that Hill County is in zone 4 (70 mph) and is above the ice line. Since design height is less than 30', use standard COSS-Z4 & Z4I. If design height is more than 30', use COSS-Z3 & Z3I. NOTE: In Zone 1 if design height is greater than 30' use HCOSS-Z1.
- Step 2: Determine tower details from COSS-Z4 & Z4I. Use column height to nearest foot, i.e., 23'. Round span length up to the next 5' span, i.e., 35'.  
Tower details are:  
Tower Pipe 24" with min. wall thickness = 0.312"  
Base Plate 33 1/2" x 1 1/2"  
Anchor Bolts 8-1 1/2" on 29 1/2" bolt circle  
Horizontal deflection of tower at Q truss = 0.889". During installation, double nuts at base plate may be used to plumb tower to compensate for horizontal deflection.  
Design Moment = 244 ft-kips  
Design Torsion = 162 ft-kips
- Step 3: Determine truss details from COSS-Z4 & Z4I.  
Read from small table at bottom of sheet for span = 35':  
Truss Design Width, W and Depth, D = 4.0' x 4.0'.  
Chord 2 1/2 x 3 x 3/8 (HS50) with 6 bolts connection at tower  
D.L. Diag. 2 1/2 x 1 1/2 x 3/8 with 2 bolts connection  
W.L. Diag. 2 1/2 x 3 x 3/8 " 2 " "  
D.L. Vert. 2 1/2 x 1 1/2 x 3/8 " 2 " "  
W.L. Strut. 2 x 2 x 3/8 " 1 " "  
Bolts are 5/8" high strength with 3-3/4" bolt alternate for chord connection at tower.  
D.L. of truss = 50 lb/ft  
Truss deflection at free end = 3.2". The Fabricator shall compensate for this deflection by offsetting bolt holes between the upper and lower chords at the truss-to-tower connection.
- Step 4: Determine foundation details. Use standard COSSF.

From COSSF with 24" pipe and 1 1/2" anchor bolts.

- Anchor Bolts 1 1/2" x 3'-10"  
Drilled Shaft Dia 42"  
Vertical Reinforcing 12 #10 bars  
Spiral C = 4 at 6" pitch Grade 60.  
Misc. handhole, base plate, anchor bolt and foundation details are shown on COSSF.
- Step 5: Determine drilled shaft length from COSS-FD.  
Enter the appropriate graph (for 42" drilled shaft in clay soil) from the bottom with N=15. Proceed upward interpolating moment curves (solid lines) to locate 244'k.  
Project to the left side of the graph to determine the required embedment length, i.e., 12'.  
Repeat the procedure for torsion curves (dashed lines) to locate 162'k. The embedment length required to satisfy torsion is 14'.  
Add 3'-0" to the longer length to obtain a required drilled shaft length of 17'.



#### SELECTION EXAMPLE DOUBLE CANTILEVER SPAN

- Given: Short Span, A = 9', Long Span, B = 25', Total Cantilever Span = 34', Column Height, H = 24', Design Height, Hd = 26', Avg. Penetrometer Value, N = 20 (clay type soil), Wheeler County
- Step 1: Select applicable COSS standard.  
From wind velocity and ice zone sheet determine that Wheeler County is in Zone 2 (90 mph) and is above the ice line. Since design height is less than 30' use standard COSS-Z2I. If design height is more than 30', use COSS-Z1.
- Step 2: Determine tower details from COSS-Z2I.  
Use column height = 24'. Round total span length up to the next longer 5' span, i.e., 35'. If total span length is greater than 40', a special design would be required.  
Tower details are:  
Tower Pipe 30" with min. wall thickness = 0.310"  
Base Plate 40 1/2" x 1 1/2"  
Anchor Bolts 8-2" on 35 1/2" bolt circle  
Horizontal defl of tower at Q truss = 0.574-0.316 = 0.26".  
During installation, double nuts at base plate may be used to plumb tower and compensate for horizontal deflection.  
Design Moment = 403 ft-kips (use total span = 35')  
Design Torsion = 136 ft-kips (use long span = 25')
- Step 3: Determine truss details from COSS-Z2I.  
Read from small table at bottom of sheet for Span A = 9' (use 10'):  
Chord 2 1/2 x 3 x 3/8 with 3 bolt connection at splice  
D.L. Diag. 2 1/2 x 1 1/2 x 3/8 with 2 bolt connection  
W.L. Diag. 2 1/2 x 3 x 3/8 " 2 " "  
D.L. Vert. 2 1/2 x 1 1/2 x 3/8 " 2 " "  
W.L. Strut. 2 x 2 x 3/8 " 1 " "  
Bolts are 5/8" high strength.  
D.L. of truss = 42 lb/ft  
Span B = 25'  
Chord 2 1/2 x 3 x 3/8 with 4 bolt connection at tower  
D.L. Diag. 2 1/2 x 1 1/2 x 3/8 with 2 bolt connection  
W.L. Diag. 2 1/2 x 3 x 3/8 " 2 " "  
D.L. Vert. 2 1/2 x 1 1/2 x 3/8 " 2 " "  
W.L. Strut. 2 x 2 x 3/8 " 1 " "  
Bolts are 5/8" high strength with 3-3/4" bolt alternate for chord connection at tower.  
D.L. of truss = 47 lb/ft  
Truss defl. at free end = 0.2" for span A, = 1.3" for span B.

- The Fabricator shall compensate for deflections by offsetting bolt holes between upper and lower cords at splice and at truss-to-tower connection. Top cord shall be shortened between the tower and the splice to achieve the required offset.
- Step 4: Determine foundation details. Use standard COSSF.

- From COSSF with 30" pipe and 2" anchor bolts.  
Anchor bolts 2" x 4'-3"  
Drilled Shaft Dia. 54"  
Vertical Reinforcing 18 #10 bars  
Spiral C = 4 at 6" pitch Grade 60  
Misc. handhole, base plate, anchor bolt and foundation details are shown on COSSF.
- Step 5: Determine drilled shaft length from COSS-FD.  
Enter the appropriate graph (for 54" drilled shaft in clay type soil) from the bottom with N=20. Proceed upward interpolating moment curves (solid lines) to locate 403'k. Project to the left side of graph to determine required embedment length, i.e., 13'.  
Repeat the procedure for the torsion curves (dashed lines) to locate 136'k. Embedment length required to satisfy torsion is 9'.  
Add 3' to the longer length to obtain required drilled shaft length of 16'.



STATE DEPARTMENT OF HIGHWAYS  
AND PUBLIC TRANSPORTATION

### CANTILEVER OVERHEAD SIGN SUPPORTS SELECTION EXAMPLES COSS-SE

ORIGINAL DRAWING DATE 7-83	STATE PROJECT NO. 18	FEDERAL AID PROJECT NO. 6	SHEET 46
DESIGNED BY LEH	REVISIONS	IM 35E-6 (SIO) AIRER	
CHECKED BY MRJ		COUNTY	
APPROVED BY JWK		DALLAS	4442 02 039/11356
CHECKED BY LEH			

PREPARED BY AUSTIN FOR THE  
USE OF TEXAS SD&PT.



# ZONE 3 WITH AND WITHOUT ICE 80 M.P.H. WIND

TOWER	10' SPAN											15' SPAN											20' SPAN											25' SPAN											TOWER		
	TOWER PIPE				ANCHOR BOLTS		BASE PLATE	TRUSS	DESIGN LOADS				TOWER PIPE				ANCHOR BOLTS		BASE PLATE	TRUSS	DESIGN LOADS				TOWER PIPE				ANCHOR BOLTS		BASE PLATE	TRUSS	DESIGN LOADS														
	HGT. FT.	QD. IN.	WALL THICK. IN.	DEFL. Δ IN.	SIZE	NO.	BOLT CIRCLE DIA.	SIZE IN.	DEFL. Δ IN.	SHEAR V KIPS	TORSION T K-FT	MOMENT M K-FT	OD IN.	WALL THICK. IN.	DEFL. Δ IN.	SIZE	NO.	BOLT CIRCLE DIA.	SIZE IN.	DEFL. Δ IN.	SHEAR V KIPS	TORSION T K-FT	MOMENT M K-FT	OD IN.	WALL THICK. IN.	DEFL. Δ IN.	SIZE	NO.	BOLT CIRCLE DIA.	SIZE IN.	DEFL. Δ IN.	SHEAR V KIPS	TORSION T K-FT	MOMENT M K-FT	OD IN.	WALL THICK. IN.	DEFL. Δ IN.	SIZE	NO.	BOLT CIRCLE DIA.	SIZE IN.	DEFL. Δ IN.	SHEAR V KIPS	TORSION T K-FT		MOMENT M K-FT	HGT. FT.
14'	16	0.250	0.105	1 1/4"	6	20 1/2"	24 X 1 1/4"	0.2	3.59	16.19	49.87	16	0.250	0.235	1 3/8"	8	20 3/4"	24 1/2 X 1 3/8"	0.5	5.40	37.56	76.63	20	0.250	0.213	1 1/4"	8	24 1/2"	28 X 1 1/4"	0.7	7.43	69.08	107.16	20	0.281	0.308	1 1/2"	8	25"	29 X 1 1/2"	1.3	9.14	107.68	135.49	14'		
15'			0.120						3.61		53.42			0.270					0.6	5.41		81.91			0.244	1 1/4"		24 1/2"	28 X 1 1/4"	0.7	7.43		113.96		0.281	0.354				1.4	9.17		144.13	15'			
16'			0.137						3.62		57.00			0.308					0.6	5.43		87.23			0.278	1 3/8"		24 1/2"	28 1/2 X 1 3/8"	0.8	7.45		121.17		0.281	0.403				1.4	9.19		152.86	16'			
17'			0.154						3.64		60.59			0.347					0.7	5.45		92.57			0.314			24 1/2"	28 1/2 X 1 3/8"	0.8	7.47		128.42		0.281	0.455	1 1/2"	8	25"	29 X 1 1/2"	1.5	9.21		161.65	17'		
18'			0.173						3.66		64.21			0.389				24 1/2 X 1 3/8"	0.7	5.46		97.94			0.352			24 1/2"	28 1/2 X 1 3/8"	0.9	7.49		135.72		0.312	0.460	1 3/4"	8	25 1/2"	29 1/2 X 1 3/4"	1.5	9.23		170.51	18'		
19'			0.193		6				3.67		67.85			0.434				24 1/2 X 1 1/2"	0.7	5.48		103.33			0.392	1 3/8"		24 3/4"	28 1/2 X 1 3/8"	0.9	7.51		143.06		0.312	0.513				1.5	9.25		179.43	19'			
20'			0.214		8				3.69		71.51			0.481					0.8	5.50		108.75			0.435	1 1/2"		25"	29 X 1 1/2"	1.0	7.53		150.43		0.312	0.568				1.6	9.27		188.39	20'			
21'			0.235						3.71		75.18	0.250	0.530						5.51			114.19			0.479					1.0	7.55		157.84		0.312	0.627				1.6	9.29		197.41	21'			
22'			0.258					0.2	3.73		78.88	0.281	0.521	1 3/8"			20 3/4"	24 1/2 X 1 1/2"		5.53		119.66			0.526					1.1	7.57		165.28		0.344	0.628				1.6	9.31		206.47	22'			
23'			0.282					0.3	3.74		82.59	0.281	0.569	1 1/2"			21"	25 X 1 1/2"		5.55		125.14	0.250	0.575							1.7	7.60		172.75		0.344	0.686				1.7	9.34		215.57	23'		
24'			0.308						3.76		86.33	0.281	0.620						5.56			130.65	0.281	0.560							1.7	7.62		180.26		0.344	0.747				1.7	9.36		224.71	24'		
25'			0.334				24 X 1 1/4"		3.78		90.08	0.312	0.610						5.58			136.18	0.281	0.607	1 1/2"		25"	29 X 1 1/2"				1.7	7.64		187.79		0.375	0.748				1.8	9.40		233.89	25'	
26'			0.361				24 X 1 3/8"		3.79		93.85	0.312	0.660					25 X 1 1/2"		5.60		141.73	0.281	0.657	1 3/4"		25 1/2"	29 1/2 X 1 3/4"				1.7	7.66		195.35		0.375	0.809	1 3/4"	8	25 3/4"	29 3/4 X 1 3/4"	1.7	9.42		243.10	26'
27'			0.389						3.81		97.64	0.312	0.711					25 X 1 3/4"		5.62		147.30	0.310	0.640							1.8	7.68		202.94		0.375	0.872	2"	8	25 3/4"	30 1/2 X 2"	1.8	9.46		252.34	27'	
28'			0.419						3.83		101.44	0.344	0.699						5.63			152.89	0.310	0.688							1.8	7.70		210.55		0.406	0.870				1.8	9.44		261.62	28'		
29'			0.449						3.84		105.26	0.344	0.750						5.65			158.50	0.310	0.738							1.8	7.72		218.20		0.406	0.933				1.8	9.46		270.93	29'		
30'			0.481						3.86		109.11	0.344	0.802	1 1/2"			21"	25 X 1 3/4"		5.67		164.12	0.340	0.721							1.8	7.74		225.86		0.406	0.999				1.8	9.48		280.27	30'		
31'			0.513				24 X 1 3/8"		3.88		112.96	0.375	0.791	1 3/4"			21 1/2"	26 X 1 3/8"		5.68		169.77	0.340	0.770							1.8	7.77		233.56		0.441	0.992				1.8	9.50		289.64	31'		
32'	16	0.250	0.547	1 1/4"	8	20 1/2"	24 X 1 1/2"	0.3	3.89	16.19	116.84	16	0.375	0.843	1 3/4"	8	21 1/2"	26 X 1 1/2"	0.8	5.70	37.56	175.43	20	0.340	0.821	1 3/4"	8	25 3/4"	29 3/4 X 1 3/4"	1.1	7.79	69.08	241.27	20	0.441	1.057	2"	8	25 3/4"	30 1/2 X 2 1/4"	1.8	9.53	107.68	299.04	32'		

TOWER HGT. FT.	30' SPAN										35' SPAN										40' SPAN										TOWER HGT. FT.				
	TOWER PIPE		ANCHOR BOLTS		BASE PLATE SIZE IN.	TRUSS DEFL. Δ IN.	DESIGN LOADS			TOWER PIPE		ANCHOR BOLTS		BASE PLATE SIZE IN.	TRUSS DEFL. Δ IN.	DESIGN LOADS			TOWER PIPE		ANCHOR BOLTS		BASE PLATE SIZE IN.	TRUSS DEFL. Δ IN.	DESIGN LOADS										
	OD. IN.	WALL THICK. IN.	DELTA IN.	SIZE			NO.	BOLT CIRCLE DIA.	SHEAR V KIPS	TORSION T K-FT	MOMENT M K-FT	OD. IN.	WALL THICK. IN.			DELTA IN.	SIZE	NO.	BOLT CIRCLE DIA.	SHEAR V KIPS	TORSION T K-FT	MOMENT M K-FT			OD. IN.	WALL THICK. IN.	DELTA IN.	SIZE	NO.	BOLT CIRCLE DIA.		SHEAR V KIPS	TORSION T K-FT	MOMENT M K-FT	
14'	24	0.250	0.289	1 1/2"	8	29"	33 X 1 1/2"	1.6	11.00	155.44	167.11	30	0.250	0.210	1 3/4"	8	35 3/8"	39 3/4 X 1 1/2"	1.5	12.87	211.58	202.48	30	0.280	0.260	1 3/4"	8	35 3/8"	39 3/4 X 1 1/2"	2.1	14.65	276.72	242.20	14'	
15'		0.250	0.331	1 1/2"		29"	33 X 1 1/2"	1.6	11.03		177.27			0.241					1.6	12.90		213.97			0.298	1 3/4"		35 3/8"	39 3/4 X 1 1/2"	2.2	14.68		254.69	15'	
16'		0.281	0.338	1 3/4"		29 3/8"	33 3/4 X 1 1/2"	1.6	11.05		187.54			0.275					1.6	12.93		225.63			0.339	1 3/4"		35 3/8"	39 3/4 X 1 1/2"	2.3	14.71		267.44	16'	
17'			0.381				33 3/4 X 1 1/2"	1.7	11.08		197.93	0.250	0.310						1.7	12.97		237.46			0.383	2"		35 3/4"	40 1/2 X 1 1/2"	2.4	14.75		280.40	17'	
18'			0.428				33 3/4 X 1 1/2"	1.8	11.10		208.40	0.281	0.310						1.7	13.00		249.43			0.429			35 3/4"	40 1/2 X 1 1/2"	2.5	14.78		293.56	18'	
19'		0.281	0.477				33 3/4 X 1 1/2"		11.13		218.97			0.346					1.7	13.03		261.52	0.280	0.478							2.6	14.81		306.90	19'
20'		0.312	0.477				33 3/4 X 1 1/2"		11.15		229.60			0.383					1.8	13.06		273.72	0.312	0.478							2.6	14.84		320.39	20'
21'			0.526				33 3/4 X 1 1/2"	1.8	11.18		240.31			0.422					1.8	13.09		286.04			0.527						2.6	14.87		334.02	21'
22'			0.577				33 3/4 X 1 1/2"	1.9	11.20		251.08			0.463					1.9	13.12		298.44			0.578						2.7	14.90		347.79	22'
23'			0.631				33 3/4 X 1 1/2"	2.0	11.23		261.91			0.507	1 3/4"	8	35 3/8"	39 3/4 X 1 1/2"	2.0	13.16		310.94			0.632						2.8	14.94		361.67	23'
24'		0.312	0.687	1 3/4"		29 3/8"	33 3/4 X 1 1/2"		11.25		272.80			0.552	2"				2.0	13.19		323.51			0.688						2.9	14.97		375.66	24'
25'		0.344	0.679	2"		29 3/8"	34 1/2 X 1 1/2"		11.28		283.74			0.598					2.1	13.22		336.16	0.312	0.747							3.0	15.00		389.75	25'
26'			0.735				34 1/2 X 2"	2.0	11.30		294.73			0.647					2.2	13.25		348.89	0.340	0.736							3.0	15.03		403.94	26'
27'			0.792					2.1	11.33		305.77			0.698					2.2	13.28		361.68			0.794	2"		35 3/8"	40 1/2 X 2"	3.0	15.06		418.22	27'	
28'			0.852					2.2	11.36		316.85	0.281	0.751						2.3	13.31		374.53			0.854	2 1/4"		36"	41 X 2"	3.1	15.09		432.57	28'	
29'		0.344	0.914						11.38		327.97	0.310	0.726						2.2	13.35		387.45			0.916						3.2	15.13		447.01	29'
30'		0.375	0.901						11.41		339.13			0.777					2.2	13.38		400.42	0.340	0.980							15.16		461.52	30'	
31'		0.375	0.962						11.43		350.34			0.830					2.3	13.41		413.45	0.375	0.963							15.19		476.10	31'	
32'	24	0.375	1.023	2"	8	29 3/8"	34 1/2 X 2"	2.2	11.44	155.44	361.13	30	0.310	0.884	2"	8	35 3/8"	40 1/2 X 1 1/2"	2.4	13.44	211.58	426.53	30	0.375	1.026	2"	8	36"	41 X 2"	3.2	15.22	276.72	490.75	32'	

ZONE 4 WITH AND WITHOUT ICE 70 M.P.H. WIND			
TEST NO.	TEST DATE	TEST TIME	TEST LOCATION
1	10/10/54	10:00	1000 YD
2	10/10/54	10:15	1000 YD
3	10/10/54	10:30	1000 YD
4	10/10/54	10:45	1000 YD
5	10/10/54	11:00	1000 YD
6	10/10/54	11:15	1000 YD
7	10/10/54	11:30	1000 YD
8	10/10/54	11:45	1000 YD
9	10/10/54	12:00	1000 YD
10	10/10/54	12:15	1000 YD
11	10/10/54	12:30	1000 YD
12	10/10/54	12:45	1000 YD
13	10/10/54	13:00	1000 YD
14	10/10/54	13:15	1000 YD
15	10/10/54	13:30	1000 YD
16	10/10/54	13:45	1000 YD
17	10/10/54	14:00	1000 YD
18	10/10/54	14:15	1000 YD
19	10/10/54	14:30	1000 YD
20	10/10/54	14:45	1000 YD
21	10/10/54	15:00	1000 YD
22	10/10/54	15:15	1000 YD
23	10/10/54	15:30	1000 YD
24	10/10/54	15:45	1000 YD
25	10/10/54	16:00	1000 YD
26	10/10/54	16:15	1000 YD
27	10/10/54	16:30	1000 YD
28	10/10/54	16:45	1000 YD
29	10/10/54	17:00	1000 YD
30	10/10/54	17:15	1000 YD
31	10/10/54	17:30	1000 YD
32	10/10/54	17:45	1000 YD
33	10/10/54	18:00	1000 YD
34	10/10/54	18:15	1000 YD
35	10/10/54	18:30	1000 YD
36	10/10/54	18:45	1000 YD
37	10/10/54	19:00	1000 YD
38	10/10/54	19:15	1000 YD
39	10/10/54	19:30	1000 YD
40	10/10/54	19:45	1000 YD
41	10/10/54	20:00	1000 YD
42	10/10/54	20:15	1000 YD
43	10/10/54	20:30	1000 YD
44	10/10/54	20:45	1000 YD
45	10/10/54	21:00	1000 YD
46	10/10/54	21:15	1000 YD
47	10/10/54	21:30	1000 YD
48	10/10/54	21:45	1000 YD
49	10/10/54	22:00	1000 YD
50	10/10/54	22:15	1000 YD
51	10/10/54	22:30	1000 YD
52	10/10/54	22:45	1000 YD
53	10/10/54	23:00	1000 YD
54	10/10/54	23:15	1000 YD
55	10/10/54	23:30	1000 YD
56	10/10/54	23:45	1000 YD
57	10/10/54	24:00	1000 YD
58	10/10/54	24:15	1000 YD
59	10/10/54	24:30	1000 YD
60	10/10/54	24:45	1000 YD
61	10/10/54	25:00	1000 YD
62	10/10/54	25:15	1000 YD
63	10/10/54	25:30	1000 YD
64	10/10/54	25:45	1000 YD
65	10/10/54	26:00	1000 YD
66	10/10/54	26:15	1000 YD
67	10/10/54	26:30	1000 YD
68	10/10/54	26:45	1000 YD
69	10/10/54	27:00	1000 YD
70	10/10/54	27:15	1000 YD
71	10/10/54	27:30	1000 YD
72	10/10/54	27:45	1000 YD
73	10/10/54	28:00	1000 YD
74	10/10/54	28:15	1000 YD
75	10/10/54	28:30	1000 YD
76	10/10/54	28:45	1000 YD
77	10/10/54	29:00	1000 YD
78	1		

TOWER	10' SPAN																15' SPAN																20' SPAN																25' SPAN																TOWER
	TOWER PIPE			ANCHOR BOLTS			BASE PLATE		TRUSS				DESIGN LOADS				TOWER PIPE			ANCHOR BOLTS			BASE PLATE		TRUSS				DESIGN LOADS				TOWER PIPE			ANCHOR BOLTS			BASE PLATE		TRUSS				DESIGN LOADS																				
	HGT. FT.	O.D. IN.	WALL THICK. IN.	DEFL. Δ IN.	SIZE	NO.	BOLT CIRCLE DIA.	SIZE IN.	DEFL. Δ IN.	SHEAR V KIPS	TORSION T K-FT	MOMENT M K-FT	O.D. IN.	WALL THICK. IN.	DEFL. Δ IN.	SIZE	NO.	BOLT CIRCLE DIA.	SIZE IN.	DEFL. Δ IN.	SHEAR V KIPS	TORSION T K-FT	MOMENT M K-FT	O.D. IN.	WALL THICK. IN.	DEFL. Δ IN.	SIZE	NO.	BOLT CIRCLE DIA.	SIZE IN.	DEFL. Δ IN.	SHEAR V KIPS	TORSION T K-FT	MOMENT M K-FT	O.D. IN.	WALL THICK. IN.	DEFL. Δ IN.	SIZE	NO.	BOLT CIRCLE DIA.	SIZE IN.	DEFL. Δ IN.	SHEAR V KIPS	TORSION T K-FT	MOMENT M K-FT																				
14'	16	0.250	0.104	1 1/4"	6	20 1/2"	24 X 1 1/4"	0.2	2.75	12.39	38.53	16	0.250	0.234	1 3/8"	6	20 3/4"	24 1/2 X 1 1/4"	0.5	4.13	28.76	59.63	16	0.250	0.419	1 3/4"	6	21 1/2"	26 X 1 3/4"	1.3	5.59	52.67	83.06	20	0.250	0.333	1 3/8"	8	24 3/4"	28 1/2 X 1 1/4"	1.4	7.00	82.44	107.23	14'																				
15'			0.119						2.76		41.23			0.268				24 1/2 X 1 1/4"	0.6	4.14		63.62		0.250	0.481							1.5	5.61		88.34		0.382					1.5	7.02		113.64	15'																			
16'			0.136						2.77		43.94			0.305				24 1/2 X 1 1/4"	0.6	4.16		67.63		0.250	0.547							1.5	5.62		93.66		0.435					1.6	7.03		120.14	16'																			
17'			0.153						2.79		46.68			0.345	1 3/8"	20 3/4"		24 1/2 X 1 1/4"	0.6	4.17		71.67		0.281	0.549							1.4	5.63		99.03		0.491					1.7	7.05		126.71	17'																			
18'			0.172						2.80		49.43			0.386	1 1/2"	21"		25 X 1 1/2"	0.7	4.18		75.74			0.615						1.5	5.64		104.44		0.550	1 3/8"	24 3/4"	28 1/2 X 1 1/4"	1.7	7.07		133.34	18'																					
19'			0.191						2.81		52.20			0.431				25 X 1 1/2"	0.7	4.20		79.83			0.685						1.5	5.66		109.88		0.613	1 1/2"	25"	29 X 1 1/2"	1.8	7.08		140.03	19'																					
20'			0.212						2.83		54.99			0.477					0.7	4.21		83.94			0.759						1.6	5.67		115.36		0.679					1.9	7.10		146.77	20'																				
21'			0.234						2.84		57.79			0.526					0.8	4.22		88.08		0.310	0.759						1.5	5.68		120.86		0.749					2.0	7.12		153.56	21'																				
22'			0.257					0.2	2.85		60.61			0.577		6		25 X 1 1/2"	0.8	4.23		92.23			0.834						1.6	5.70		126.40		0.735					7.13		160.39	22'																					
23'			0.280					0.3	2.87		63.45			0.631		8		25 X 1 1/2"	0.9	4.25		96.40			0.911						1.7	5.71		131.96		0.803					7.15		167.26	23'																					
24'			0.305						2.88		66.30			0.687					0.9	4.26		100.60		0.310	0.992							1.7	5.72		135.12		0.812					7.16		171.47	24'																				
25'			0.331	1 1/4"		20 1/2"	24 X 1 1/4"		2.89		69.16			0.745					0.9	4.27		104.81		0.340	0.990							1.7	5.73		143.15	0.281	0.949	1 3/4"	25 3/8"		7.18		181.12	25'																					
26'			0.358	1 3/8"		20 3/4"	24 1/2 X 1 1/2"		2.90		72.04			0.806					1.0	4.29		109.03		0.340	1.071						1.7	5.75		148.78	0.312	0.920					7.20		188.02	26'																					
27'			0.386						2.92		74.93			0.869						4.30		113.28		0.340	1.155						1.8	5.76		154.43		0.992					7.21		195.03	27'																					
28'			0.416						2.93		77.84		0.250	0.935					4.31		117.54		0.375	1.139						1.7	5.77		160.10			1.067				7.23		202.07	28'																						
29'			0.446						2.94		80.76		0.280	0.988					4.33		121.82		0.375	1.221						1.8	5.79		165.79		0.312	1.145					7.24		209.14	29'																					
30'			0.477	1 1/2"		20 3/4"	24 1/2 X 1 1/2"		2.96		83.69			0.961					4.34		126.11		0.375	1.307							1.8	5.80		171.49		0.344	1.119					7.26		216.23	30'																				
31'			0.509	1 5/8"		21"	25 X 1 1/2"		2.97		86.64			1.026					4.35		130.42		0.410	1.297							1.8	5.81		177.22		0.344	1.194					7.28		223.35	31'																				
32'	16	0.250	0.543	1 1/2"	6	21"	25 X 1 1/2"	0.3	2.98	12.39	89.61	16	0.280	1.094	1 1/2"	8	21"	25 X 1 1/2"	1.1	4.36	28.76	134.74	16	0.410	1.382	1 3/4"	8	21 1/2"	26 X 2"	1.8	5.83	52.67	182.97	20	0.344	1.273	1 3/4"	8	25 3/8"	29 3/4 X 2"	2.2	7.29	82.44	230.50	32'																				

TOWER	30' SPAN											35' SPAN											40' SPAN											TOWER HGT. FT.												
	TOWER PIPE			ANCHOR BOLTS			BASE PLATE	TRUSS				DESIGN LOADS				TOWER PIPE			ANCHOR BOLTS			BASE PLATE	TRUSS				DESIGN LOADS				TOWER PIPE				ANCHOR BOLTS			BASE PLATE	TRUSS				DESIGN LOADS			
	HGT. FT.	OD IN.	WALL THICK IN.	DEFL. Δ IN.	SIZE	NO.	BOLT CIRCLE DIA.	SIZE IN.	DEFL. Δ IN.	SHEAR V KIPS	TORSION T K-FT	MOMENT M K-FT	OD IN.	WALL THICK IN.	DEFL. Δ IN.	SIZE	NO.	BOLT CIRCLE DIA.	SIZE IN.	DEFL. Δ IN.	SHEAR V KIPS	TORSION T K-FT	MOMENT M K-FT	OD IN.	WALL THICK IN.	DEFL. Δ IN.	SIZE	NO.	BOLT CIRCLE DIA.	SIZE IN.	DEFL. Δ IN.	SHEAR V KIPS	TORSION T K-FT		MOMENT M K-FT	OD IN.	WALL THICK IN.	DEFL. Δ IN.	SIZE	NO.	BOLT CIRCLE DIA.	SIZE IN.	DEFL. Δ IN.	SHEAR V KIPS	TORSION T K-FT	MOMENT M K-FT
14'	24	0.250	0.285	1 1/2"	8	29"	33 X 1 1/2"	1.6	8.42	119.01	134.48	24	0.250	0.406	1 3/4"	8	29 3/8"	33 3/4 X 1 1/2"	2.6	9.77	161.98	165.20	30	0.250	0.280	1 1/2"	8	35 3/8"	39 3/4 X 1 1/2"	2.4	11.22	211.94	200.44	14'												
15'			0.327					1.6	8.44		141.90			0.467					2.7	9.79		173.37				0.322						2.5	11.24		209.33	15'										
16'			0.372					1.7	8.46		149.44			0.531					2.8	9.81		181.71				0.366						2.6	11.27		218.45	16'										
17'			0.420					1.8	8.48		157.10		0.250	0.599				33 3/4 X 1 1/2"	3.0	9.83		190.21				0.413						2.7	11.29		227.79	17'										
18'			0.471					1.9	8.50		164.85		0.281	0.602				33 3/4 X 1 1/2"	2.9	9.85		198.85				0.463						2.8	11.32		237.32	18'										
19'			0.524					2.0	8.52		172.68			0.671					3.0	9.87		207.61		0.250	0.516							2.9	11.34		247.01	19'										
20'			0.581					2.1	8.54		180.60			0.743					3.1	9.89		216.48		0.281	0.510							2.8	11.37		256.86	20'										
21'			0.641	1 1/2"		29"	33 X 1 1/2"	2.2	8.56		188.59			0.820				33 3/4 X 1 1/2"	3.2	9.91		225.46				0.562						2.9	11.39		266.86	21'										
22'			0.703	1 3/4"		29 3/8"	33 3/4 X 1 1/2"	2.2	8.58		196.65		0.281	0.900				33 3/4 X 1 1/2"	3.4	9.93		234.52				0.617						3.0	11.41		276.98	22'										
23'			0.768				33 3/4 X 1 1/2"	2.3	8.60		204.76		0.312	0.889				33 3/4 X 1 1/2"	3.2	9.95		243.67				0.675				39 3/4 X 1 1/2"	3.1	11.44		287.22	23'											
24'			0.837				33 3/4 X 1 1/2"	2.4	8.62		212.93		0.968	0.868	1 3/4"	29 3/8"		33 3/4 X 1 1/2"	3.3	9.96		252.90		0.735	1 3/4"		35 3/8"	39 3/4 X 1 1/2"	3.2	11.46		297.57	24'													
25'			0.908				33 3/4 X 1 1/2"	2.5	8.64		221.15			1.050	2"	29 3/4"		34 1/2 X 1 1/2"	3.5	9.98		262.20		0.797	2"		35 3/8"	40 1/2 X 1 1/2"	3.3	11.49		308.01	25'													
26'		0.250	0.982				33 3/4 X 1 1/2"	2.6	8.66		229.42			1.136					3.6	10.00		271.57				0.862						3.4	11.51		318.55	26'										
27'		0.281	0.949				33 3/4 X 1 1/2"	2.4	8.67		237.74		0.312	1.225					3.7	10.02		280.99				0.930						3.5	11.54		329.18	27'										
28'			1.021				33 3/4 X 1 1/2"	2.5	8.69		246.10		0.340	1.200				34 1/2 X 1 1/2"	3.5	10.04		290.48				1.000						3.6	11.56		339.89	28'										
29'			1.095	1 3/4"		29 3/8"	33 3/4 X 1 1/2"	2.6	8.71		254.49			1.287				34 1/2 X 2"	3.6	10.06		300.02				1.073						3.7	11.58		350.68	29'										
30'			1.172	2"		29 3/4"	34 1/2 X 1 1/2"	2.7	8.73		262.93			1.377					3.7	10.08		309.61				1.148						3.8	11.61		361.53	30'										
31'			1.251	2"		29 3/4"	34 1/2 X 1 1/2"	2.8	8.75		271.41			1.471					3.8	10.10		319.25				1.226						3.9	11.63		372.46	31'										
32'	24	0.281	1.333	2"	8	29 3/4"	34 1/2 X 1 1/2"	2.8	8.77	119.01	279.92	24	0.340	1.567	2"	8	29 3/4"	34 1/2 X 2"	3.9	10.12	161.98	328.93	30	0.281	1.306	2"	8	35 3/8"	40 1/2 X 1 1/2"	4.0	11.68	211.94	384.26	32'												

**GENERAL NOTES:**

Steel for tower pipe shall conform to ASTM A53 Grade B or to ASTM A501. Tower pipe wall thickness shown is the minimum allowable. Fabricator may use the wall thickness shown or pipe of the same diameter with greater wall thickness.

All other structural steel shall conform to ASTM A36 except where noted HS 50 which shall be ASTM A441, ASTM A572 or ASTM A588. All connection bolts shall conform to ASTM A325 or ASTM A449. All structural steel, connection bolts, nuts and washers shall be galvanized in accordance with the Specifications.

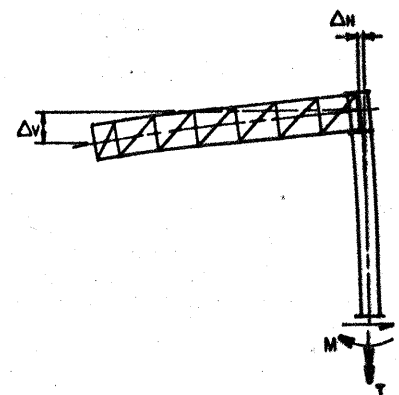
Compensate for truss deflection at free end by offsetting upper and lower bolt holes at truss-to-tower connection.

For truss details see sheet 2 of 3.  
For base and foundation details see sheet 3 of 3.

For cantilever truss lengths falling between those shown use sizes called for in the next longer span.

Towers for cantilever sign supports are designed for the equivalent area of a 10 foot deep sign panel over 100% of the span length. Design includes 3 lb./sq' for sign panel and 20 lb./lin. ft. for lights and 50 lb./lin. ft. for walkways all placed as specified for the design sign panel.

Details called for hereon are applicable for Design Wind Heights up to 30' inclusive.



ELEVATION

(SHOWING DESIGN LOADS AND DEAD LOAD DEFLECTIONS)

TRUSS DETAILS										
SPAN	10'15' & 20'		25'		30'		35'		40'	
W x D = WIDTH x DEPTH	4.0 x 4.0		4.0 x 4.0		4.0 x 4.0		4.0 x 4.0		4.0 x 4.0	
CHORD	3 X 3 X $\frac{3}{16}$	(4)	3 X 3 X $\frac{3}{16}$	(4)	3 X 3 $\frac{1}{4}$ (HS50)	(6)	3 X 3 X $\frac{1}{4}$ (HS50)	(6)	3 X 3 X $\frac{3}{8}$ (HS50)	(6)
DEAD LOAD DIAGONAL	2 $\frac{1}{2}$ X $1\frac{1}{2}$ X $\frac{3}{16}$	(2)	2 $\frac{1}{2}$ X $1\frac{1}{2}$ X $\frac{3}{16}$	(2)	2 $\frac{1}{2}$ X $1\frac{1}{2}$ X $\frac{3}{16}$	(2)	2 $\frac{1}{2}$ X $1\frac{1}{2}$ X $\frac{3}{16}$	(2)	2 $\frac{1}{2}$ X 2 X $\frac{3}{16}$	(2)
WIND LOAD DIAGONAL	2 $\frac{1}{2}$ X 2 X $\frac{3}{16}$	(2)	2 $\frac{1}{2}$ X 2 $\frac{1}{2}$ X $\frac{3}{16}$	(2)	2 $\frac{1}{2}$ X 2 $\frac{1}{2}$ X $\frac{3}{16}$	(2)	3 X 3 X $\frac{3}{16}$	(2)	3 X 3 X $\frac{3}{16}$	(2)
DEAD LOAD VERTICAL	2 $\frac{1}{2}$ X $1\frac{1}{2}$ X $\frac{3}{16}$	(2)	2 $\frac{1}{2}$ X $1\frac{1}{2}$ X $\frac{3}{16}$	(2)	2 $\frac{1}{2}$ X $1\frac{1}{2}$ X $\frac{3}{16}$	(2)	2 $\frac{1}{2}$ X $1\frac{1}{2}$ X $\frac{3}{16}$	(2)	2 $\frac{1}{2}$ X $1\frac{1}{2}$ X $\frac{3}{16}$	(2)
WIND LOAD STRUT	2 X 2 X $\frac{3}{16}$	(1)	2 X 2 X $\frac{3}{16}$	(1)	2 X 2 X $\frac{3}{16}$	(1)	2 X 2 X $\frac{3}{16}$	(1)	2 X 2 X $\frac{3}{16}$	(1)
TRUSS DEAD LOAD	37 $\frac{5}{16}$ #		38 $\frac{5}{16}$ #		43 $\frac{5}{16}$ #		50 $\frac{5}{16}$ #		56 $\frac{5}{16}$ #	
SIZE H.S. BOLTS IN CONN.	$\frac{5}{8}$ #		$\frac{5}{8}$ #		$\frac{5}{8}$ #		$\frac{5}{8}$ #		$\frac{5}{8}$ #	
NO. & SIZE OF H.S. BOLTS IN CHORD ANGLE TO TOWER CONNECTION PLATE	4 ~ $\frac{5}{8}$ #		4 ~ $\frac{5}{8}$ # or 3 ~ $\frac{3}{4}$ # ea.		6 ~ $\frac{5}{8}$ # or 5 ~ $\frac{3}{4}$ # ea.		6 ~ $\frac{5}{8}$ # or 5 ~ $\frac{3}{4}$ # ea.		9 ~ $\frac{5}{8}$ # or 7 ~ $\frac{3}{4}$ # ea.	

All truss members are angles.  
Number of High Strength bolts required in truss connection or splice are indicated thus ③ after the member size.  
Deflections shown include the design loads for Truss, Sign Panel, Lights and Walkways.

PREPARED BY AND FOR THE  
USE OF TEXAS SDHAPT.

**SHEET 1 OF 3**

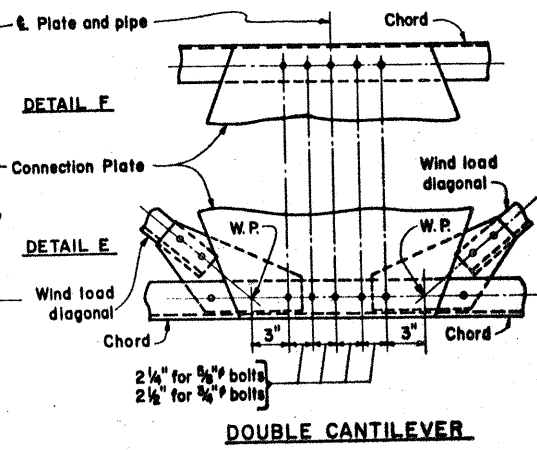
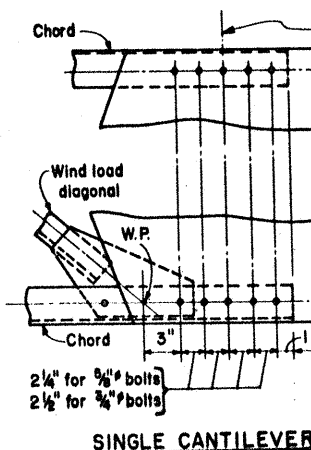
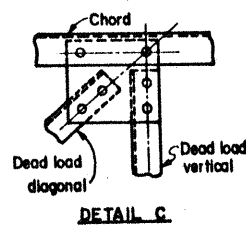
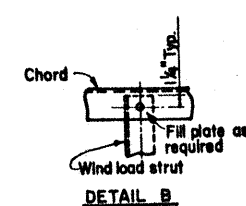
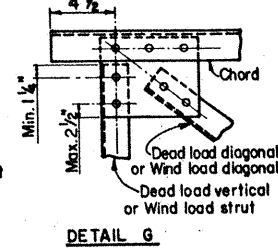
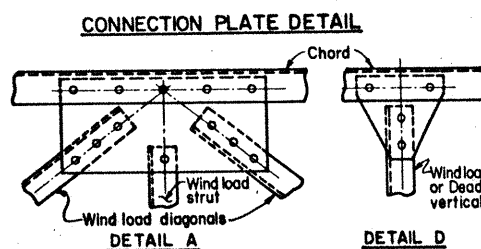
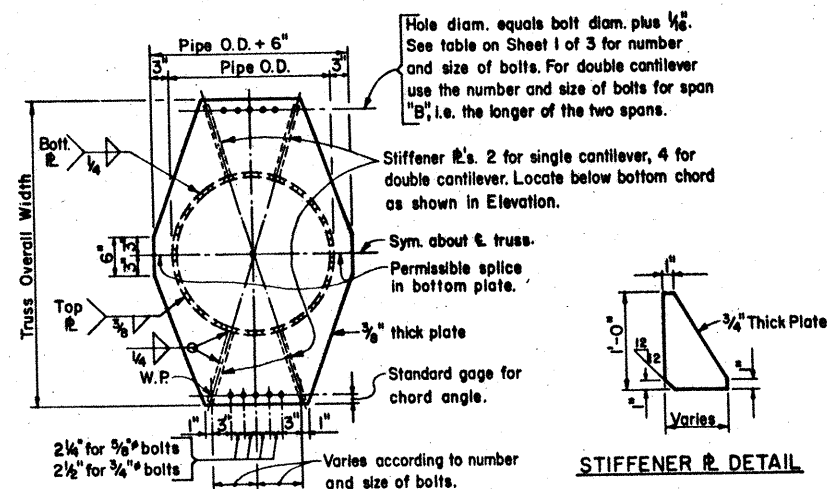
STATE DEPARTMENT OF HIGHWAYS  
AND PUBLIC TRANSPORTATION

## CANTILEVER OVERHEAD SIGN SUPPORTS

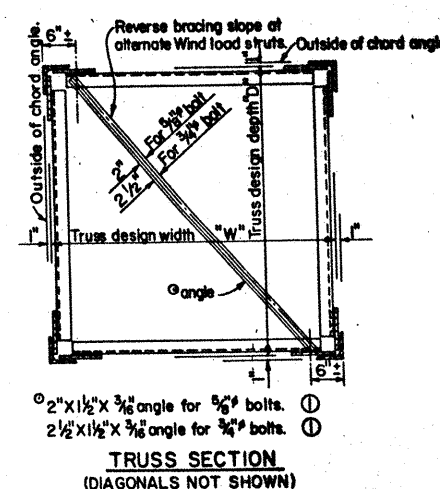
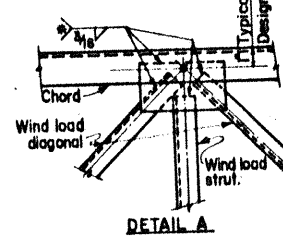
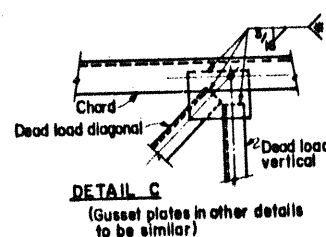
COSS-Z4 & Z41

ORIGINAL DRAWING DATE: 7-85		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		0	SWRT
DN: CWC	REVISIONS	18	6	1M35E-6		110	418, ETC.
CR: LEH		COUNTY		CENTRAL	SECTION	400	NONPORT
DN: EDB		DALLAS		0442	02	099	1M35E
CR: LEH							

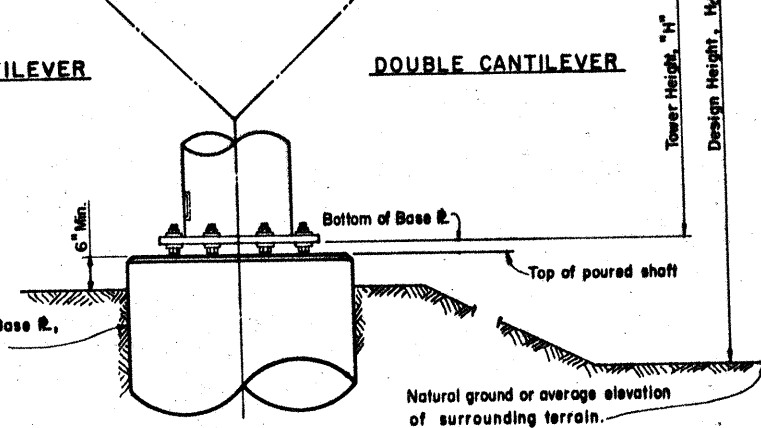
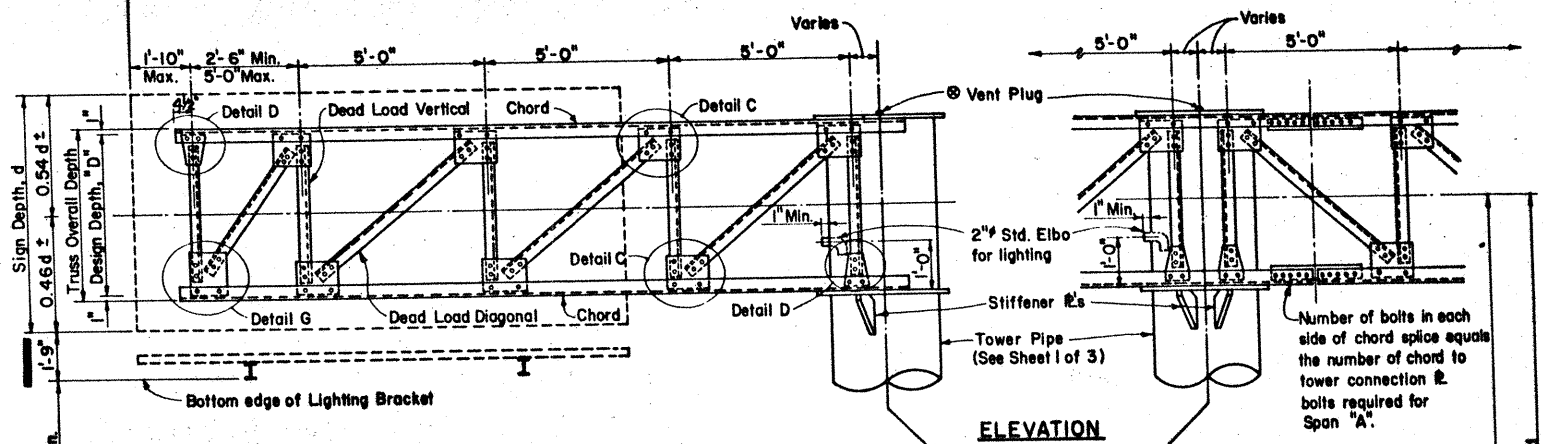
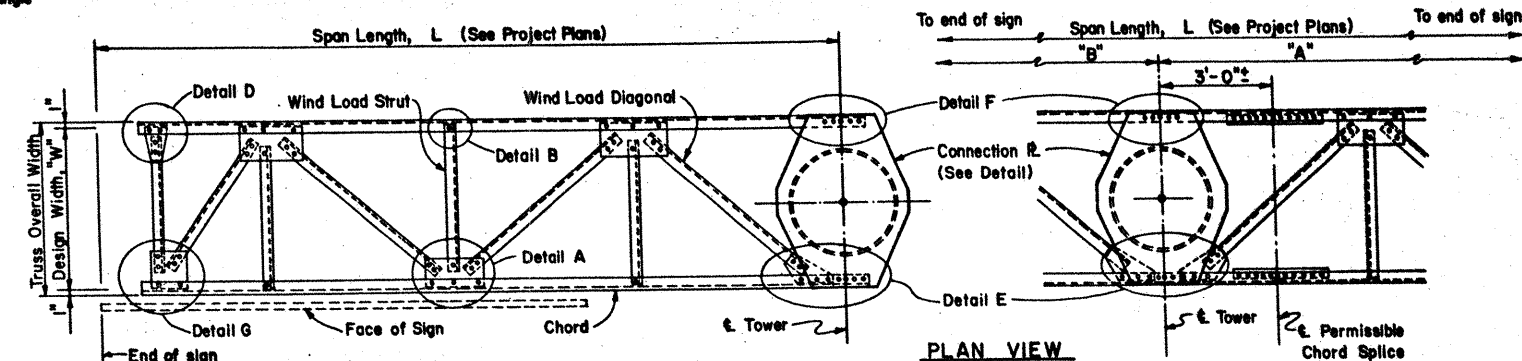




* MINIMUM LENGTH OF $\frac{5}{16}$ FILLET WELD REQUIRED		
NUMBER OF BOLTS	TO REPLACE $\frac{5}{8}$ " BOLTS	TO REPLACE $\frac{3}{4}$ " BOLTS
1	2"	3"
2	4"	6"
3	6"	9"
4	8"	11 1/2"
5	10"	14 1/2"
6	12"	17 1/2"
7	14"	20"

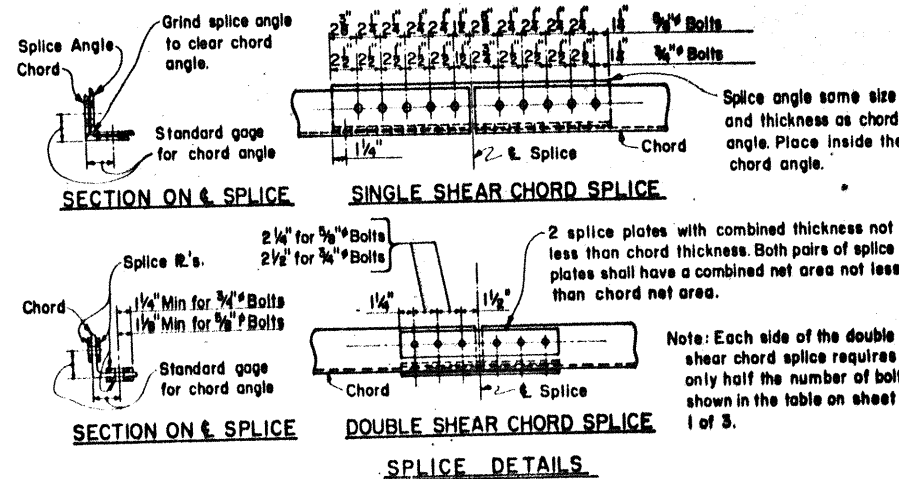


TOTAL NO. OF BOLTS IN DIA.G. IN JOINT	NUMBER OF BOLTS REQD. IN GUSSET P. TO CHORD CONNECTION	
	0	2
2		2
3		3
4		3
5		4
6		4
8		5
10		6




⊗ NOTE: Cap shall be solid steel sheet  $\frac{3}{8}$ " nominal thickness. Drill, tap and plug galvanizing vent. Weld plate to pipe with  $\frac{3}{8}$ " weld all around.

See Sheet 3 of 3 for Hand Hole, Base R,  
Anchor Bolt and Foundation Details.



**GENERAL NOTES:**  
Design conforms to 1975 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and Interim revisions thereto. Connection details are typical only. Actual size of member and number of bolts will vary. The details on this sheet are intended as a guide only. See Sheet 1 of 3 for number of bolts and size of members.  
Gusset plates to be same thickness as thickest web member in connection.

 **STATE DEPARTMENT OF HIGHWAYS  
AND PUBLIC TRANSPORTATION**

**CANTILEVER OVERHEAD  
SIGN SUPPORT DETAILS**

COSSD SHEET 2 OF 3

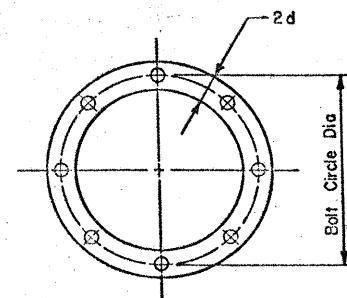
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CR - THD	7-86	COUNTY		DISTRICT SECTION	JOB NUMBER
DN - EDB		DALLAS		0442.02.099	H356
CR - LEH					
					\$100 66

PIPE OUTSIDE DIAMETER											
16"			20"			24"			30"		
ANCHOR BOLT SIZE	BOLT CIRCLE DIA.	DR. SHAFT SIZE	DR. SHAFT REINF.	BOLT CIRCLE DIA.	DR. SHAFT SIZE	DR. SHAFT REINF.	BOLT CIRCLE DIA.	DR. SHAFT SIZE	DR. SHAFT REINF.	BOLT CIRCLE DIA.	DR. SHAFT REINF.
1 1/4" x 2'-11"	20 1/2"	36"	14-#8 (A)	24 1/2"	36"	14-#8 (A)					
1 3/8" x 3'-1"	20 3/4"	36"	12-#9 (A)	24 3/4"	36"	12-#9 (A)					
1 1/2" x 3'-4"	21"	36"	12-#9 (A)	25"	42"	14-#9 (A)	29"	42"	14-#9 (C)		
1 3/4" x 3'-10"	21 1/2"	36"	10-#10 (A)	25 3/8"	42"	12-#10 (B)	29 3/8"	42"	12-#10 (C)	35 3/8"	48"
2" x 4'-3"	22"	36"	12-#10 (A)	25 3/4"	42"	12-#10 (B)	29 3/4"	48"	15-#10 (C)	35 3/4"	54"
2 1/4" x 4'-9"	22 1/2"	36"	10-#11 (A)	26"	42"	10-#11 (B)	30"	48"	14-#11 (C)	36"	54"
2 1/2" x 5'-2"				26 1/2"	42"	12-#11 (B)	30 1/2"	48"	15-#11 (C)	36 1/2"	54"
2 3/4" x 5'-8"							31 1/2"	48"	15-#11 (C)	37"	54"
3" x 6'-1"										37 1/2"	54"

A = #3 Plain Spiral at 6" pitch (Grade 40)  
B = #4 Plain Spiral at 6" pitch (Grade 40)  
C = #4 Plain Spiral at 6" pitch (Grade 60)  
D = #4 Plain Spiral at 5 1/2" pitch (Grade 60)

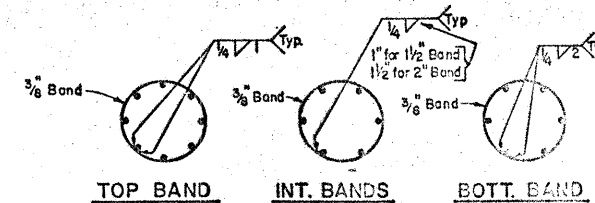
Washers shall conform to ASTM F436-76b.

ANCHOR BOLT DIA. d	WASHER DIMENSIONS				HOLE IN BASE PLATE
	OUTSIDE DIAMETER	HOLE DIAMETER	THICKNESS		
			MIN.	MAX.	
1½" or less	2d	d + ⅛"	0.136"	0.177"	d + ¼"
1¾"	2d - ⅛"	d + ⅛"	0.178"	0.280"	d + ⅝ <sub>16</sub> "
2"	2d - ⅛"	d + ⅛"	0.178"	0.280"	d + ⅝ <sub>16</sub> "
Over 2"	2d - ½"	d + ⅛"	0.240"	0.340"	d + ⅝ <sub>16</sub> "



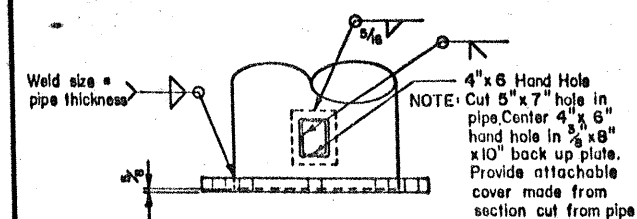
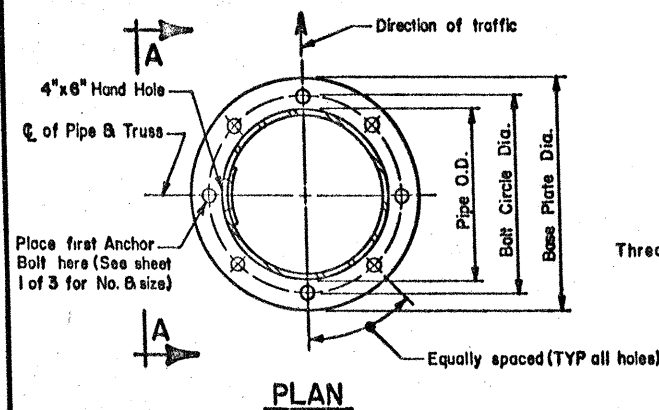
ANCHOR BOLT SIZE	DIA.	LENGTH	PROJ. & THREAD
1 1/4"	2'-11"	5"	
1 3/8"	3'-1"	5 1/2"	
1 1/2"	3'-4"	6"	
1 3/4"	3'-10"	7"	
2"	4'-3"	8"	
2 1/4"	4'-9"	9"	
2 1/2"	5'-2"	10"	
2 3/4"	5'-8"	11"	
3"	6'-1"	12"	

\* Minimum dimensions are given.

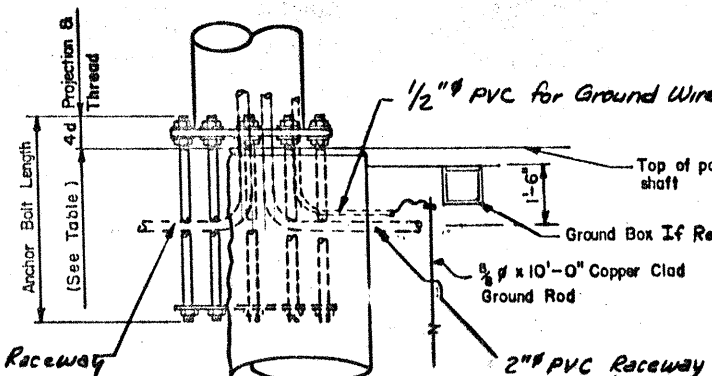
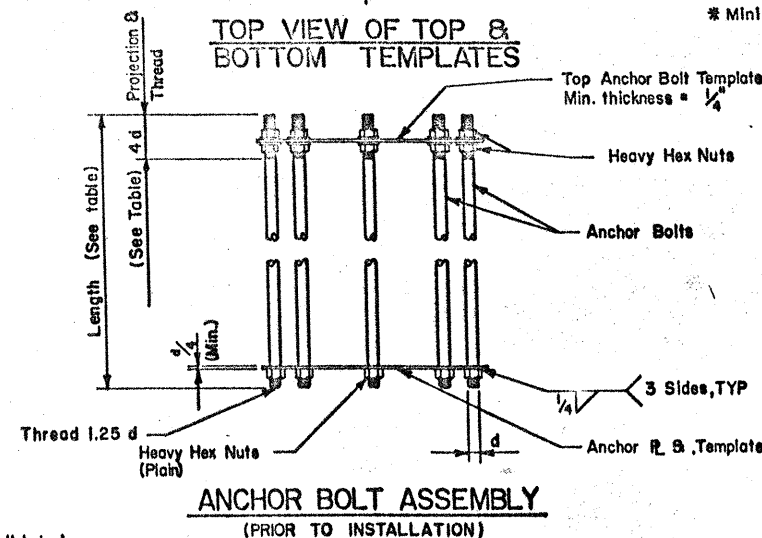


#### GENERAL NOTES:

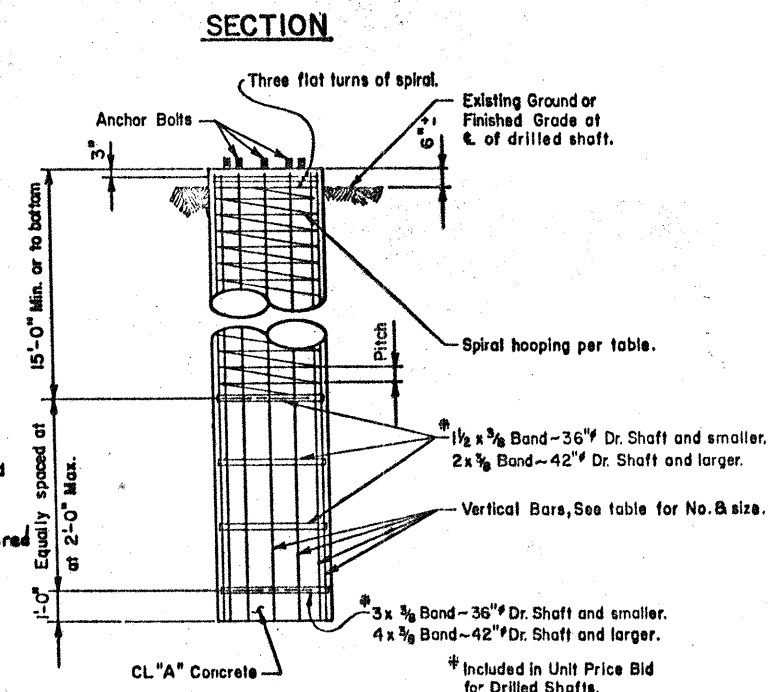
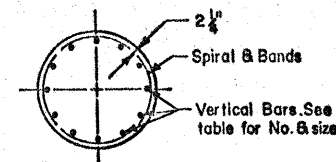
Concrete shall be Class "C".  
Reinforcing shall conform to item 440.  
Anchor bolts shall conform to ASTM A193-B7. Nuts for anchor bolts shall be heavy hex and shall conform to ASTM A194-2H. Thread for anchor bolts and nuts shall be 8 UN. Unless noted otherwise, anchor bolt top end projection plus 6" shall be galvanized. Nuts and washers at the base plate shall be galvanized. Nuts shall be topped or chased after galvanizing. Bolts and nuts shall have Class 2A and 2B fit tolerances.  
Anchor bolts shall be rigidly held in position during concrete placement using steel templates at the top and bottom. The top templates shall be removed after the concrete has set.  
After the structure has been aligned in its final position, tack weld anchor bolt nuts to washer, and tack weld washers to base plate. Galvanizing in welded area shall be repaired in accordance with the Specification.  
Unless shown otherwise welded steel bands may be replaced with spiral as noted on the foundation detail.  
All vertical reinforcing shall be carried to the bottom of the Dr. Shaft.



BASE PLATE & HANDHOLE DETAILS  
(SEE SHEET 1 OF 3 FOR DIAMETER & THICKNESS OF BASE PLATE)



BEARING SEAT ELEVATION



FOUNDATION DETAIL

DISTRICT 18 STANDARD  
Modified - Changed Class "A" Concrete to Class "C" (92)  
- Added 1/2" PVC for Grounding (92)  
- Added 2-2" PVC Raceways (92)



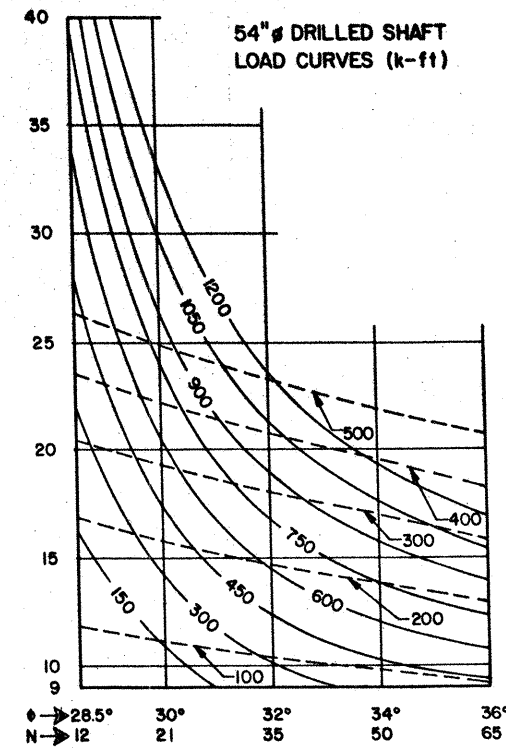
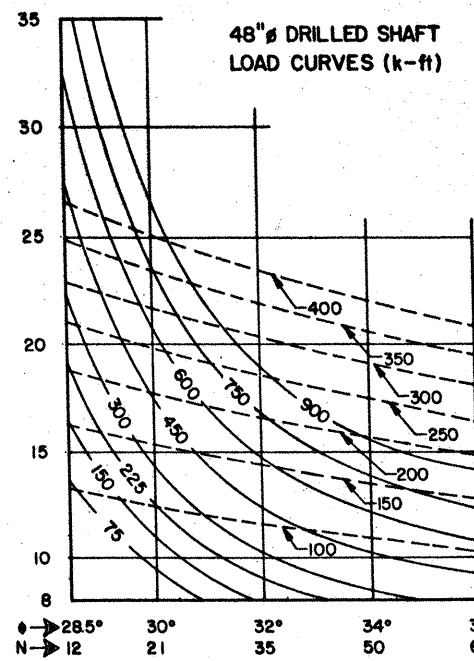
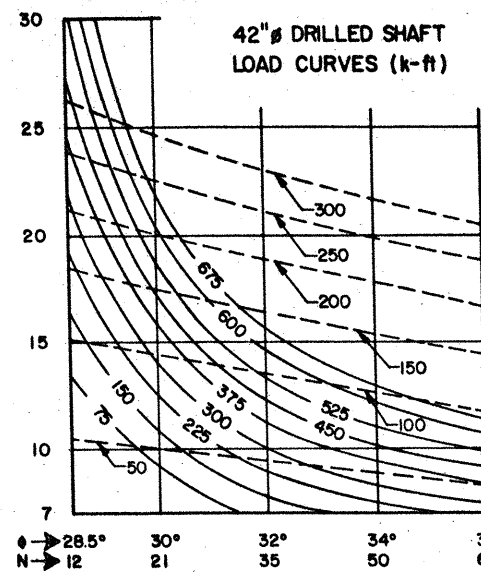
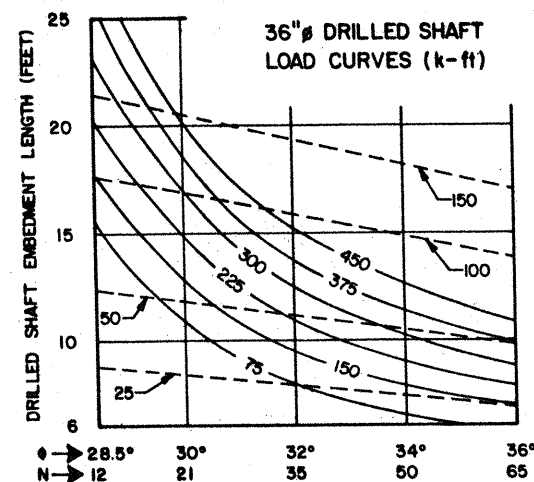
STATE DEPARTMENT OF HIGHWAYS  
AND PUBLIC TRANSPORTATION

CANTILEVER OVERHEAD  
SIGN SUPPORT FOUNDATION

COSSF(DAL) SHEET 3 OF 3

ORIGINAL DRAWING DATE 7-83	STATE PROJECT 18	FEDERAL AID PROJECT 6	SHEET 3 OF 3
DESIGNED BY T.H.	REVISIONS	18 6	EM 356-6(910) 53
CHECKED BY T.H.		COUNTY	
DR. BY J.W.		DALLAS	442 02 291 24355
CHECKED BY T.H.			100

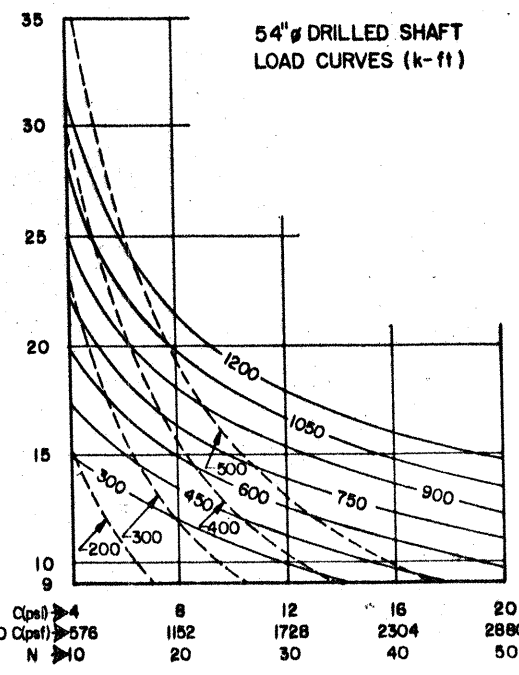
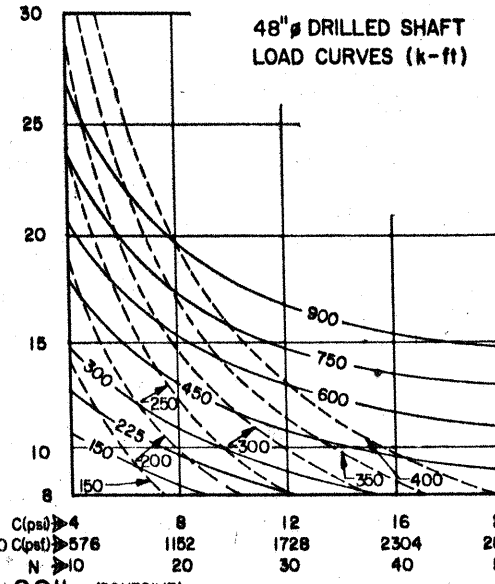
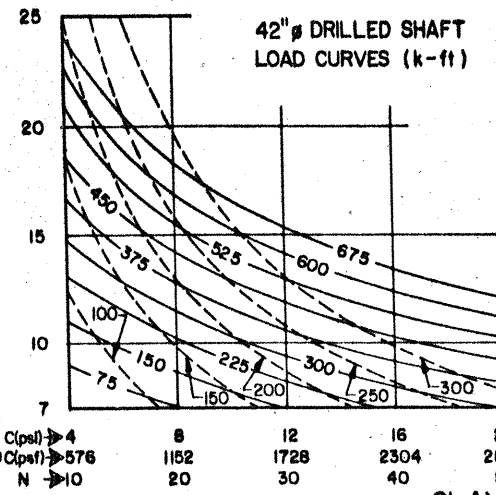
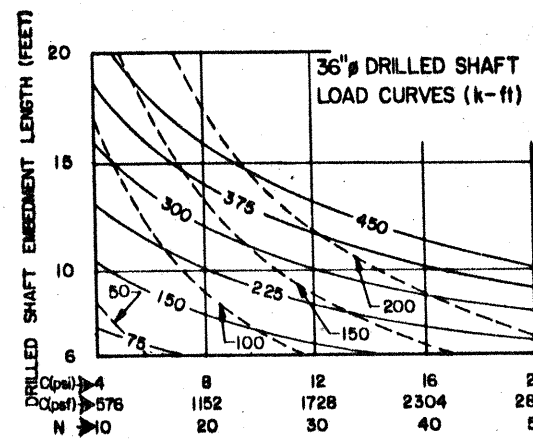




**SUBMERGED SAND SOIL (COHESIONLESS) \***

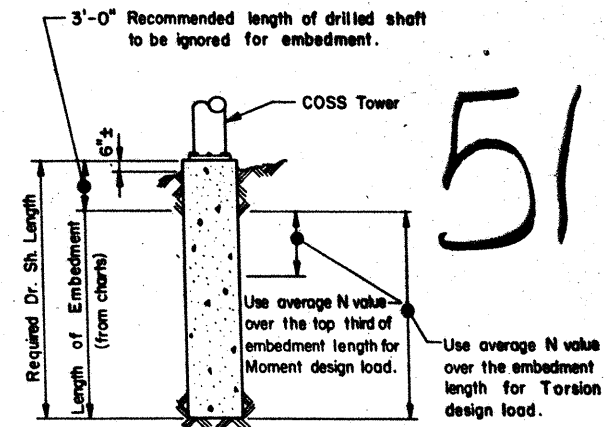
MOMENT —————  
TORSION - - - - -

**\* NOTE:**  
For unsubmerged sands and clayey sands the charts for clay soil will give a conservative foundation design.



**CLAY SOIL (COHESIVE)**

MOMENT —————  
TORSION - - - - -



- PROCEDURE:**
- Determine design moment and torsion, and the required drilled shaft diameter as outlined in the selection example sheet COSS-SE.
  - Make an initial estimate of the required embedment length.
  - From soil exploration data determine type of soil and average N value or soil property along the upper third of the drilled shaft.
  - Enter chart (for the correct shaft diameter and soil type) from the bottom of the average N value or soil property determined in Step 3.
  - Proceed vertically into chart and locate intersection with design moment. Interpolate between moment curves (solid lines) as needed.
  - From intersection point turn 90° to left and read embedment length along vertical scale.
  - If embedment length differs significantly from estimated value return to Step 3 with the embedment length determined in Step 6.
  - From soil exploration data determine average N value or soil property over the entire length of the embedment.
  - Enter chart (for correct shaft diameter and soil type) from the bottom of the average N value or soil property determined in Step 8.
  - Proceed vertically into chart and locate intersection with design torsion. Interpolate between torsion curves (dashed lines) as needed.
  - From intersection point turn 90° to left and read embedment length along vertical scale.
  - Compute the required length of drilled shaft by adding 3'-0" to longer embedment length required for moment or torsion.

**GENERAL NOTES:**

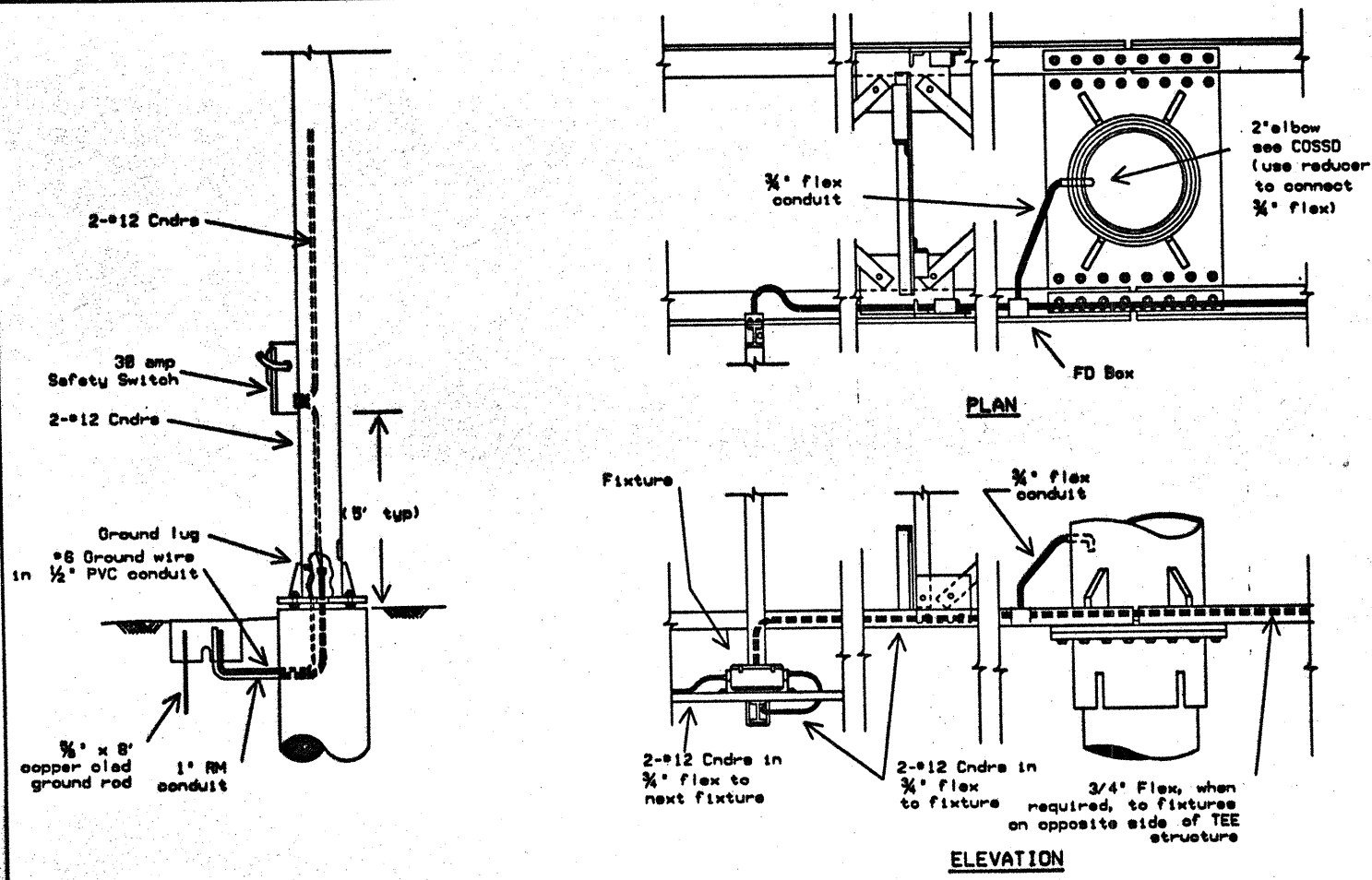
These charts are for use with Cantilever Overhead Sign Supports with one shaft per tower.

Solid curves are base moment in k-ft.  
Dash curves are base torsion in k-ft.

C = Cohesive shear strength of soil (psf or psi)  
 $\phi$  = Angle of internal friction of soil (degrees)  
N = Texas Cone Penetrometer value (blows per ft)  
Minimum embedment of drilled shaft is two diameters.  
Add 3'-0" to the required embedment length to determine the required length of drilled shaft.

STATE OF TEXAS		FEDERAL AID PROJECT #		SHEET	
STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION		FEDERAL PROJECT #		SHEET #	
FOUNDATION EMBEDMENT SELECTION CHARTS					
COSS-FD					
ORIGINAL DRAWING DATE 7-63	REVISIONS	DATE	BY	CHKD	APP'D
		12/6	IM	35	6(310) 51
COUNTY		CITY		PROJECT NO.	
DALLAS		DALLAS		0442 02 049 11351	
SCALE		SHEET		68	

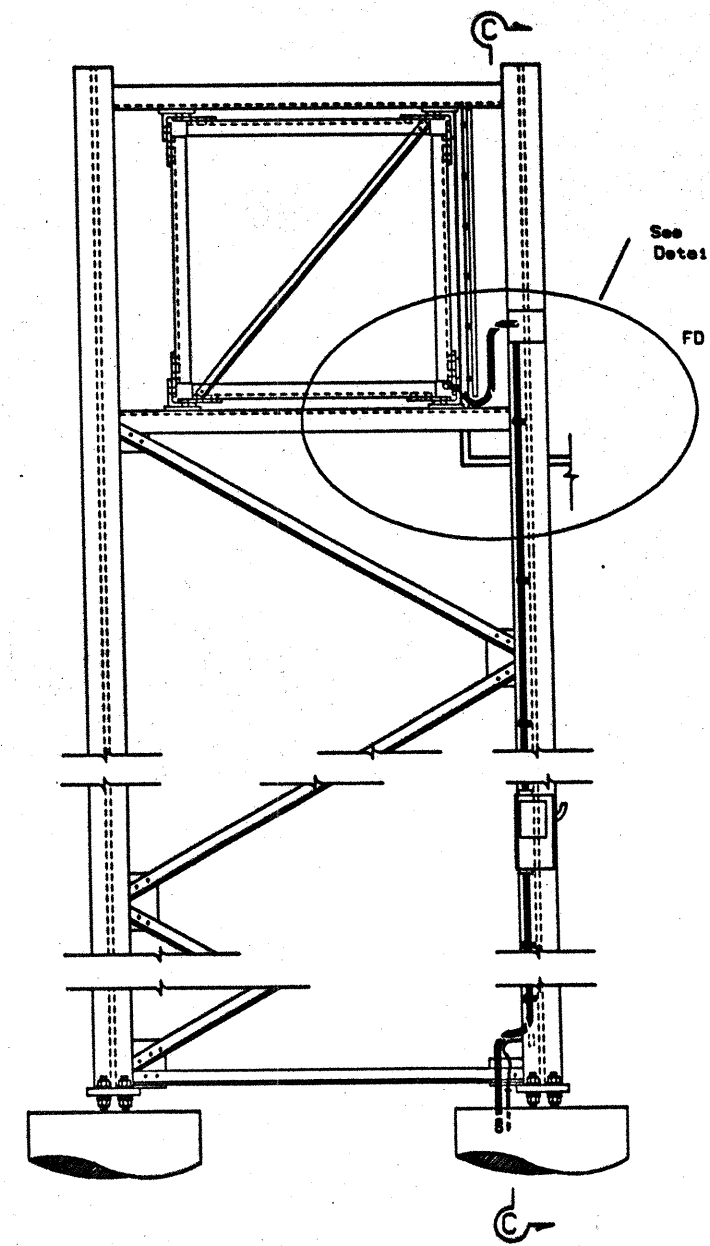
52



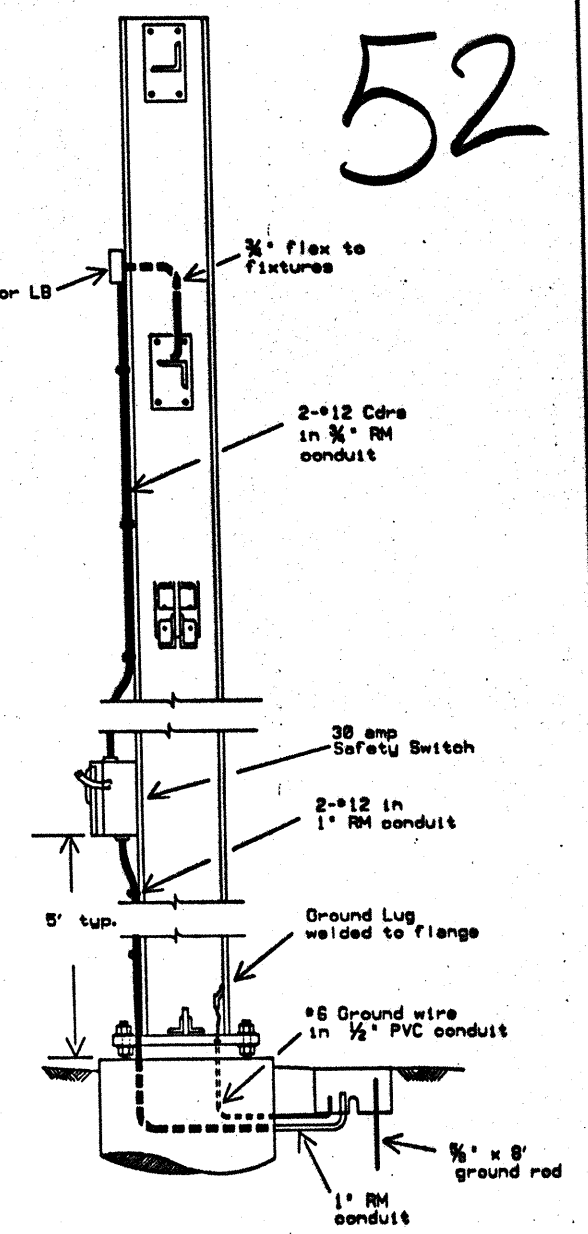
TYPICAL ELECTRICAL DETAILS  
SIGN STRUCTURE

NOTES:

1. See OSBT and COSSD for additional foundation details.
2. Furnish and install grounding lugs on sign structures as shown herein.
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 or liquid-tight flexible non-metallic 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 bushing. Conduit (flex and rigid) shall be strapped to sign structures using stainless steel strapping or galvanized malleable iron conduit straps at 5 foot increments (maximum).
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 end 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. Safety switch will not be paid for directly but shall be subsidiary to Item 652, "Highway Sign Lighting Fixtures". 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.

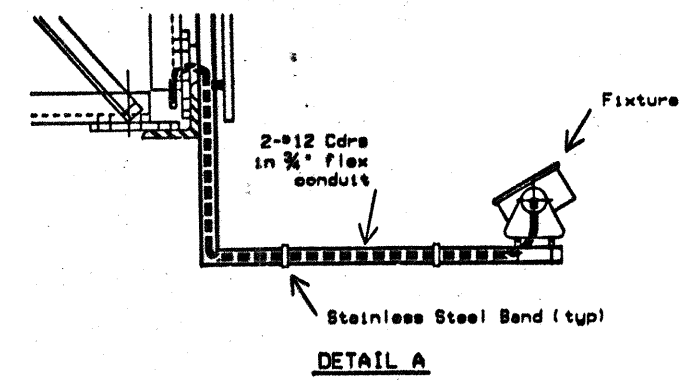


TYPICAL ELECTRICAL DETAILS  
OVERHEAD SIGN BRIDGE



SECTION C-C

(ITEM 652)



DETAIL A

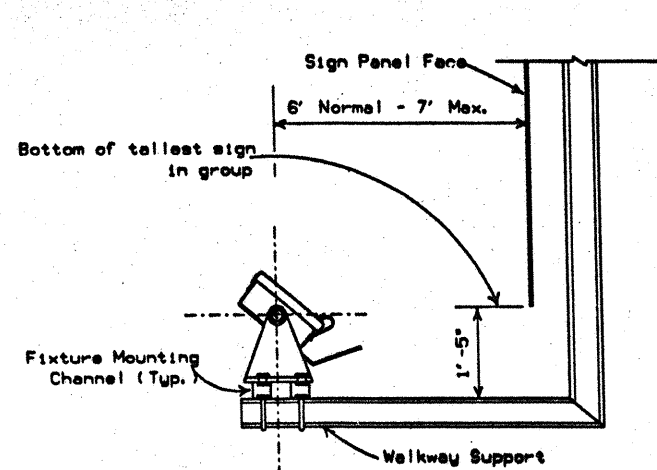


STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION

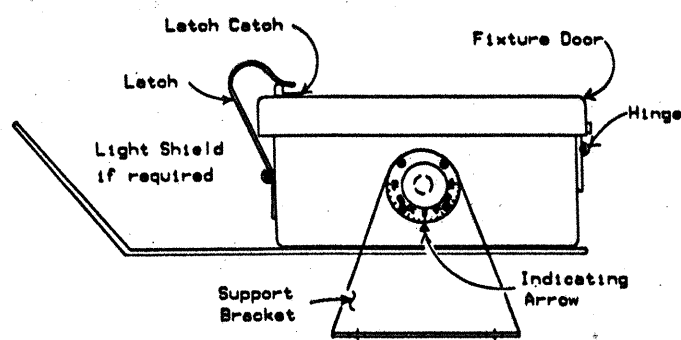
SIGN LIGHTING  
ELECTRICAL DETAILS  
SL(1)

ORIGINAL DATE	REVISION	STATE	FEDERAL AID PROJECT	DATE
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01-92		01	01	442.02 99 IN 86
01-92		DALLAS		

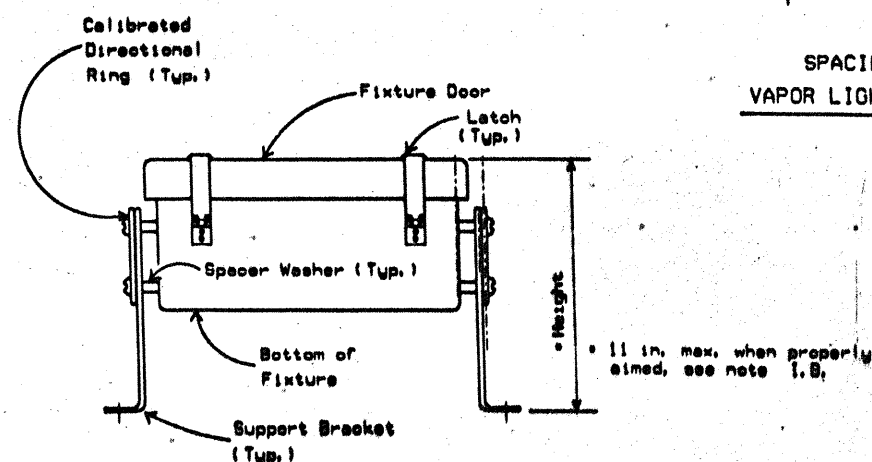
Maintenance and Operations Division (D-18) ZPA3-1122, 1061 SL1.DGN



### MOUNTING DETAILS



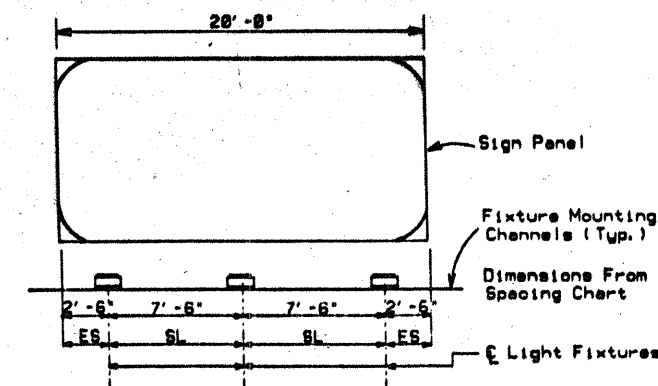
END ELEVATION



**FRONT ELEVATION**

[illegible]

SPACING FOR 100W MERCURY  
VAPOR LIGHT FIXTURES PER SIGN PANEL



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

## NOTES

**L. Fixtures.**

1. 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 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 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.

11. 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 encasement.

8. During fluctuation of the primary voltage to the ballast up to 13 percent of rated voltage, the input wattage to the ballast shall not vary more than 8 percent, nor exceed 90 per cent of the lamp's rated wattage. At rated voltage, the power factor shall be not less than 98 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, permanence 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 an easily accessible in-line 10 amp fuse.

### 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.

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.

V. Testing.  
A. Sampling and testing will be in accordance with the SDHPT Materials and Test Division's 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. Conduct 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.

53

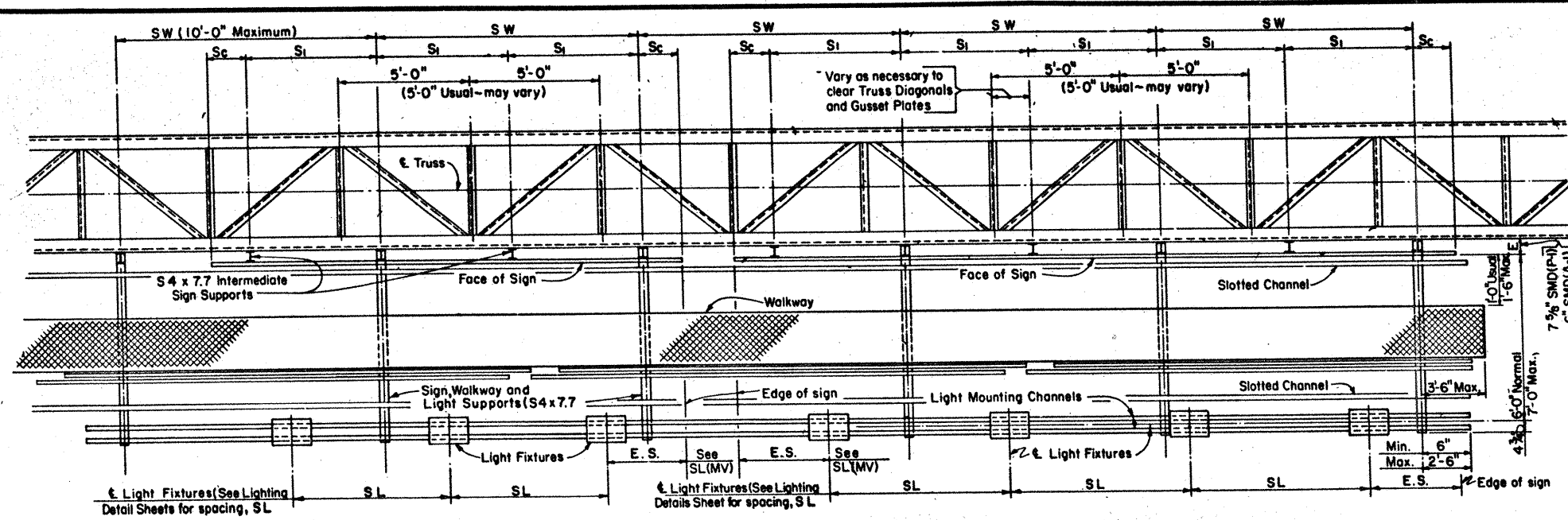
( ITEM 652 )

STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION

MERCURY VAPOR  
SIGN LIGHTING FIXTURE  
SL (MV)

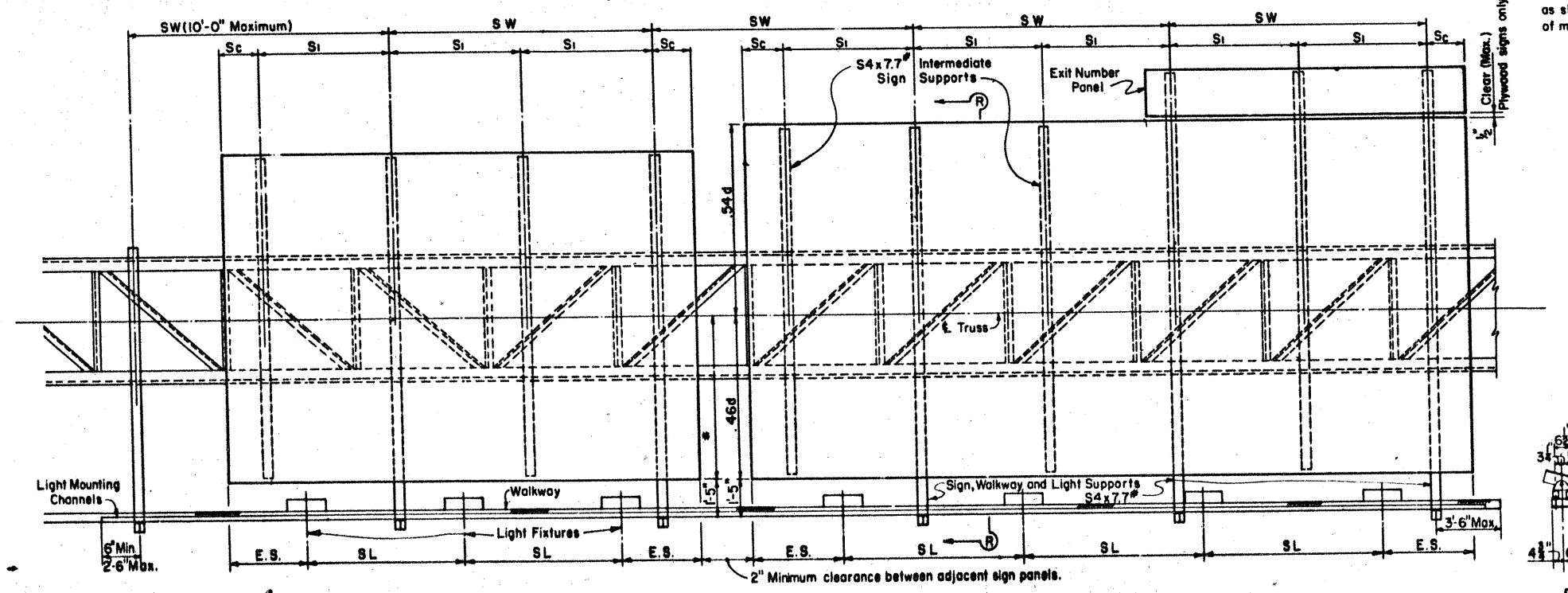
ORIGINAL DRAWING DATE: B1-92		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	DATE
DRG. - K, A, B,	REVISION	18	6	IM 355-6(304) 412,62	5/82
DRG. - T, B,		COUNTY		CONTROL SECTION JOB	W/ST
DRG. - R, L, S,		DALLAS		142 02 99	IN





**PART PLAN**

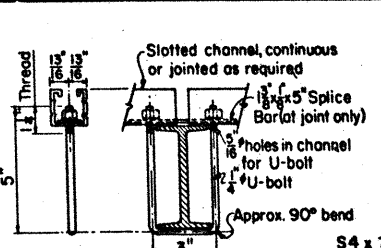
(Showing Truss, Signs, Walkways and Lights)



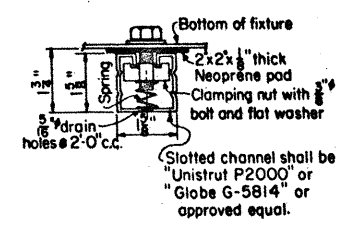
**PART ELEVATION**

Where signs of different depths are used, the bottom edges of all signs may be placed in line. Where this is done, all signs should be so positioned that the bottom edges are approximately 0.46 of the depth of the deepest sign below the  $\ell$  of the truss. When signs are spaced thusly,  $S_i$  is determined by the deepest sign.

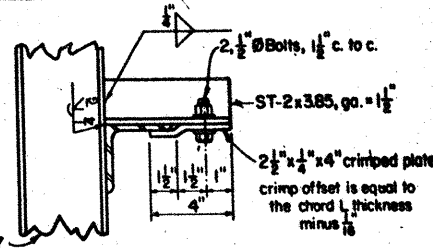
See Sheet SL (MV-1) for Lighting Details & Spd S.L. & E.S.  
See Sheet SWW(1) for Walkway Details.  
See Sheet SMD(A-1) for Aluminum Sign Details & Max. Spd. for  $S_i$ .  
See Sheet SMD(P-1) for Plywood Sign Details & Max. Spd. for  $S_i$ .  
 $S_c$  = 6" Minimum, .25  $S_i$  Maximum.



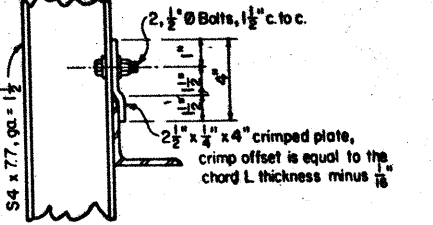
**SECTION A-A**



**TYPICAL SLOTTED CHANNEL CONNECTED TO LIGHTING FIXTURE**



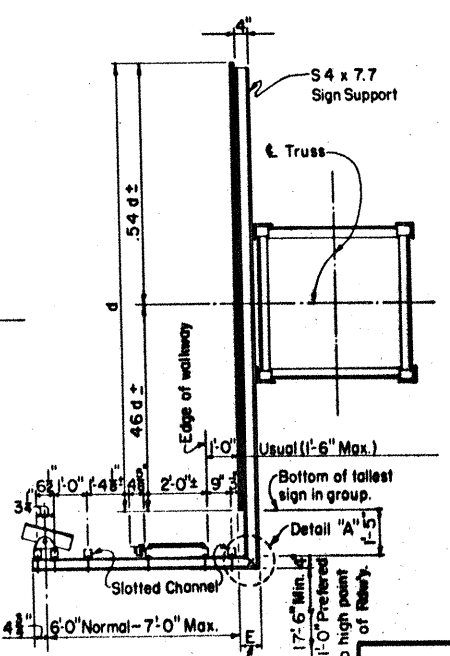
**TOP CHORD**



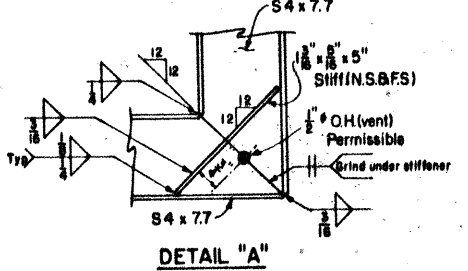
**BOTTOM CHORD**

**SUPPORT TO TRUSS CONNECTION**

NOTE: Exit Panel may be supported by sign support brackets as shown hereon, or may be supported as shown on sheets SMD(P-1) & SMD(A-1). Regardless of method used spacing of supports shall not exceed  $S_i$ .



**SECTION R-R**



**DETAIL 'A'**

**GENERAL NOTES:**  
Design conforms to the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.  
Materials, Fabrication, Construction and Erection shall conform with the requirements of specifications for Interstate Signage and Delineation Projects and Texas Department of Highways and Public Transportation Standard Specifications for Construction of Highways, Streets and Bridges. Structural Steel shall conform with A.S.T.M. Specification A36 unless noted otherwise.  
Bolts shall have Hexagon Heads and Nuts and conform with A.S.T.M. Specification A307.  
All parts shall be galvanized after fabrication.

55

STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION		SUPPORT BRACKETS FOR SIGNS, WALKWAY & LIGHTS		SB (SWL-1)	
ORIGINAL DRAWING DATE 2-82	STATE DISTRICT	FEDERAL AID PROJECT	SHEET		
CH - CWC	18	6	1135E-6/810	55	
CH - EDS					
CH - CWC					
DALLAS			04021099	1135E	
			100	84	



D-18 Safety and Traffic Operations ZF42-1122-1001 Working Units Feet, 12 inches, 10000 Full Scale Plot Ratio 12:1 Questions Dian Naumann 256-8337

GENERAL NOTES

- 1. The Traffic control Standard sheets are intended to provide minimum traffic control measures for typical work zone operations. Additional traffic control devices may be used if the basic principles governing the design and placement of the supplemental devices are maintained.
- 2. Additional details may be provided in the plans concerning sign size, type of channelizing devices, sequence of work details, and required measures needed to control traffic during changes in the sequence of work.
- 3. Minor Operation is defined as a work zone that will require traffic control devices to warn or direct traffic during day time conditions. At the end of each work day all work zone traffic control devices should be removed from the view of all motorists and no unusual conditions or potential hazards should exist that require advance warning to the driving public.
- 4. All distances and spacings shown on the TCP Standard Sheets are approximate.
- 5. Vehicles within 30' of traveled way should have strobes or rotating beacons in use.

WORKER SAFETY

- 1. When vehicles are used to shadow the work area, the vehicle should be parked 30' or more in advance of the work area, engine turned off, transmission in gear (or set in PARK), emergency brake set on.
- 2. Vehicle mounted attenuators may be installed on vehicles used to shadow the work area.
- 3. Vehicles and equipment parked at the work site that are not used to shadow the work area should be parked as close to the right of way line as possible.
- 4. Workers exposed to traffic should wear vests.

BARRICADES

- 1. Barricades may be used to support signs; however, no more than two information or guide type signs may be placed on a barricade and only one regulatory or warning sign shall be placed on a barricade. Minimum mounting height of a sign on Type I Barricade is 1 foot.
- 2. Barricades shall NOT be placed (horizontal rails) parallel to traffic within 30' of the travelled way.
- 3. Type III Barricades should not be used for channelizing devices.
- 4. Type III Barricades shall have reflective stripes on one side if it is facing traffic one direction only and on both sides if it serves traffic in two directions.

DROP OFFS

- 1. When the work area involves a pavement drop off and the nearest vehicle wheel path is within 12' of the drop off reference should be made to additional details for traffic control plan for pavement drop-offs.

FLAGGER CONTROL

- 1. For one lane, two-way traffic control, one or more flaggers should be used where traffic, road conditions, or terrain warrant their use. If flaggers are used the taper may be reduced to 50' minimum. When flaggers are used to control traffic the symbol "Advance Flagger" sign shall be used. When flaggers are used the "BE PREPARED TO STOP" sign should be used. Proper spacing between signs shall be maintained.
- 2. When flaggers are used to draw attention to traffic control devices the symbol "Advance Flagger" sign should be used. Proper spacing between signs shall be maintained.
- 3. Flaggers may carry hand held air horns to alert work crew of an emergency condition.
- 4. When more than one flagger is used, a chief flagger should be assigned the responsibility of making all decisions concerning traffic control.
- 5. Flaggers shall wear vests and shall use flags and/or paddles to signal traffic.
- 6. Flaggers may wear hard hats to provide a professional image to the motorists and to protect the head from flying materials.
- 7. Flaggers may work behind cones to draw attention to the flagger position.
- 8. Flaggers should be neatly attired and well groomed.

SIGNS

- 1. The selection of sign size should be based on Table I.
- 2. Flashing warning lights, channelizing devices, and/or flags may be used to call attention to the advance warning lights.
- 3. The word, "AHEAD" may be substituted for the actual distance on the advance warning signs where applicable. When used, distances on warning signs should be rounded to the nearest 500 feet.
- 4. The word "UTILITY", "SIGNAL", "BRIDGE", "LIGHTING", "SIGN", "STREET", or "RAMP" may be substituted for "ROAD" in all signs where applicable.
- 5. Appropriate advisory speed signs may be used in conjunction with warning signs. Speeds shall be determined in the field by the Engineer.
- 6. Advance warning signs may be mounted on portable sign supports with a 1' minimum mounting height. A 3' mounting height is desirable.
- 7. Regulatory signs should be mounted on supports with a 5' minimum mounting height.

CHANNELIZING DEVICES

- 1. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit (S).
- 2. When channelizing devices are used to direct traffic across existing lane line or edge lines the spacing between channelizing devices may be reduced by as much as 50%.
- 3. Channelizing device spacing should be reduced when placed on curves, hills, or next to potential hazards. At least three channelizing devices should be in view at any one time.
- 4. Lane closure taper length is equal to "L". Shoulder closure taper length is equal to "1/2 L".
- 5. Tapers down stream from the work area are optional and when used should be 50'-100' long.
- 6. Tapers may be 50 feet long when placed downstream of a flagger, YIELD sign, or STOP sign.
- 7. The selection of channelizing devices should be based on the degree of hazard associated with the work area. The selection priority of channelizing devices, in the order of increasing hazard recognition are:

- portable mounted delineators
- 28" cones
- 36" or more tubular cones
- portable mounted vertical panels
- 36" cones
- Type I Barricade
- Type II Barricade
- Plastic Drums
- MBGF, fixed or drum mounted
- Concrete Barrier Rail

- 8. Flashing arrow panels used on two-way, two-lane roadways should flash in the caution mode.

Table I  
TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING

Roadway Classification	Posted Speed	Sign Spacing	Major Construction or Major Maintenance Approach Warning Signs		Major Construction or Major Maintenance Approach Warning Signs		Other Warning Signs
			CW 20n Series And CW 22-1 Sign	Standard Inches	Minimum Inches	Standard Inches	Minimum Inches
Conven.	30	80	48X48	36X36	30X30 or 36X36	25X24 or 30X30	30X30 or 36X36
	35	120	Use Standard Size	Use Standard Size	Use Standard Size	Use Standard Size	Use Standard Size
	40	160					
	45	240					
	50	320					
Exp or Frwy	55	500 <sup>1</sup>	Use Standard Size	Use Standard Size	Use Standard Size	Use Standard Size	Use Standard Size
	55	500 <sup>3</sup>					

<sup>1</sup>Minimum distance from work to 1st Advance Warning sign and/or distance between each additional sign.  
<sup>2</sup>Smaller sign sizes may be used where sign designs have not been included in the Standard Traffic Signs Design Booklet.  
General Notes:  
1. Special or larger size signs may be used as may be necessary.  
2. Distance between signs should be increased as required to have 1800' advance warning.  
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.  
4. For use only on secondary roads or city streets where speeds are low.  
5. Only diamond shaped warning sign sizes are indicated.  
6. See sign listing in TSMUTCD, Appendix A for complete list of all available sign design sizes.  
7. Where two sizes are listed, see sign size list in TSMUTCD, Appendix A for proper size.

Table III

SUGGESTED MAXIMUM SPACING for HIGHWAY DELINEATORS on HORIZONTAL CURVES	
(Distance in Feet Rounded to the Nearest 5 Feet)	
Radius of Curve (in feet)	Spacing on Curve (in feet)
50	20
100	30
150	35
200	40
250	45
300	50
400	55
500	60
600	65
700	70
800	75
900	80
1,000	85
	90

Spacing for specific radii not shown may be interpolated from table. The minimum spacing should be 20 feet. The spacing on curves should not exceed 300 feet. In advance of or beyond a curve, and proceeding away from the end of the curve, the spacing of the first delineator approaching a curve is 2 S, the second 3 S, and the third 5 S but not to exceed 300 feet. S refers to the delineator spacing for specific radii computed from the formula  $S = \sqrt{R-50}$ .

Table II  
TYPICAL TRANSITION LENGTHS AND SUGGESTED MAXIMUM SPACING OF DEVICES

Posted Speed	Formula	Minimum Desirable Taper Lengths <sup>**</sup>			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'








<sup>1</sup>85th Percentile Speed may be used on roads where traffic speeds normally exceed the posted speed limit.  
<sup>\*\*</sup>Taper lengths have been rounded off.

61

STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION  
TRAFFIC CONTROL PLAN SHEET

10/89		DRAWN	CHKD	STATE	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CHECKED	6	TEXAS	IM 35E-6 (310) 418, etc.		IH 35E		
TRACED	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.	
CHECKED	18	DALLAS	0442	02	099	61	



	Barricade		Channelizing devices		Flag
	Heavy Work Vehicle		Truck Mounted Attenuator (optional)		
	Trailer mounted flashing arrow board		Flagger		

Posted Speed or 85% Speed (MPH)	X Min. Distance (feet)
30 or less	80
35	120
40	160
45	240
50	320
55	500

**Taper Formula:**

$L = (S) \cdot (W)$  for speeds of 45 or more.  
 $L = (W) \cdot (S) \cdot (S) / 60$  for speeds of 40 or less.

**Where:**

$L$  = Minimum length of taper.  
 $S$  = Numerical value of posted speed limit prior to work or 85% speed.  
 $W$  = Width of taper offset.

Taper length for the closure of a 12 foot lane with 55 MPH posted speed limit will be:  
 $L = 55 \cdot 12$   
 $L = 660 \text{ feet}$

1. The FORM ONE LANE XXXX sign may be used following the LANE CLOSED sign, however, the X min. distance between signs must be maintained.
2. The ROAD WORK AHEAD sign may be repeated if visibility is less than 1500 feet.

62

TCP (1-4) DALLAS

12/85		TCP (1-4) DALLAS					HIGHWAY NO.	
DRAWN	TBL NO. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.	
CHECKED		TEXAS	IM 35E-6 (810) 48				I-735	
TRACED	STATE DIST. NO.	COUNTY	CONTRACT NO.	SECTION NO.	SHEET NO.			
CHECKED	18	Dallas	442	02	994	62		

## 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.

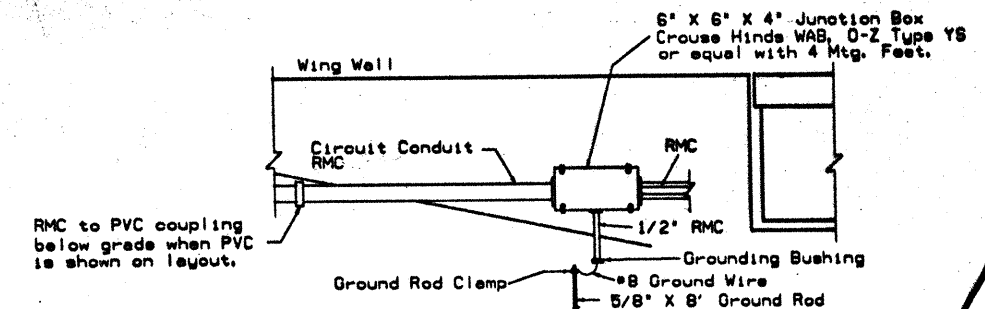
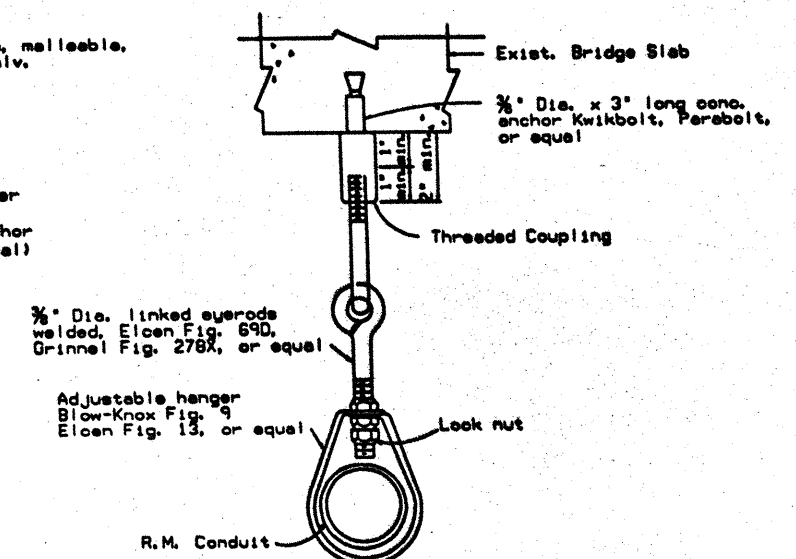
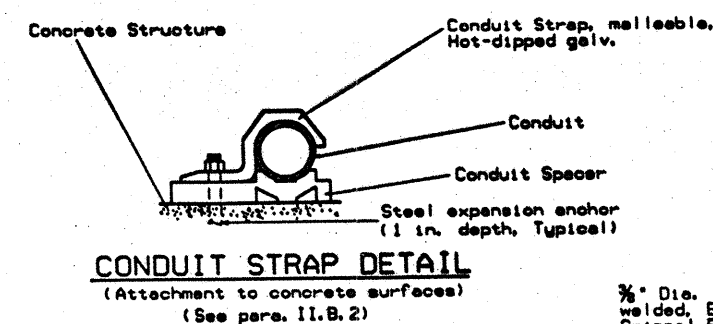
## II. CONDUIT (ITEM 618)

### A. Materials.

- Conduit must be UL-approved for the intended use shown on plan sheets. Aluminum conduit will not be permitted unless shown on the plans.
- Fittings for steel conduit shall be steel or malleable iron, threaded or compression type threadless, rain-tight. Die cast, set screw, indenter or push-on (socks) fittings will not be permitted.
- 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.
- Junction boxes shall be cast iron, hot-dipped galvanized, or cast aluminum (surface-mounted only) unless otherwise noted on plans.
- Surface-mounted junction boxes for conduit 1-1/4 inches and larger shall have a minimum wall thickness of 3/16 inch, Crouse Hinds Type WAB, O-Z Type YS, Adalet Type 3R, or approved equal, with mounting lugs, minimum size 6 inches x 6 inches x 4 inches, or as shown 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.
- Flush-mounted junction boxes installed in concrete structures shall be minimum 6 in. x 6 in. x 4 in., Crouse Hinds Type WGB, O-Z Type YR, or approved equal.
- Metal junction boxes shall be bonded to the grounding conductor.

### B. Construction Methods.

- 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.
- 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).
- Conduit hangers or straps shall not be attached directly to prestressed concrete beams except as shown in the plans and approved by the Engineer.
- Conduit placement beneath existing paved surfaces shall be accomplished by jacking or boring in accordance with the pertinent provisions of Article 476.3 "Construction" of the Item "Jacking, Boring, or Tunneling Pipe," unless otherwise noted on the plans. Jacking, boring, or tunneling will not be paid for directly but will be subsidiary to the Item "Conduit." 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.
- For all conduit placed by trenching, trenching and backfilling shall be in accordance with the Item, "Excavation and Backfill for Sewers," except for measurement and payment. Trenching depth shall provide a minimum of 18 inch cover over conduit, unless noted otherwise on the plans.
- 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. Conduit placed under existing roadways, driveways or sidewalks shall be placed as directed by the Engineer or as shown on plans.
- 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.
- Conduit entry into junction boxes shall be made weathertight using threaded fittings into hubs, or with sealing locknuts inside and out.
- The ends of all metallic conduit terminating in a ground box, enclosure, junction box or light pole base shall be fitted with insulated grounding bushings unless bossed hubs are used. A bonding jumper shall be installed from grounding bushing to nearest ground rod, grounding lug, or grounding conductor. At service poles, bonding jumper shall be AWG Size No. 8. All other jumpers shall be minimum size AWG No. 8. Conduit used as casing under roadways for duct cable need not be grounded if duct extends full length through the casing.
- 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.
- All conduit entering ground boxes and pole bases and used to carry individual conductors shall be furnished with bell and fittings or bushings.
- 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.
- 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).



### NOTES

- Conduit shall be 2" RMC for duct cable entry to junction box.
- Ground rod clamp to be Blackburn GG 5/8H, Weaver W5/8 or equal.
- Conduit for ground wire shall have grounding type bushing.
- Surface mounting shown, for conduit to be placed in structure use flush-mounted box, Crouse Hinds WGB, O-Z Type YU or equal.
- Bond junction box to grounding conductor.

## CONDUIT ENTRY TO BRIDGE STRUCTURE DETAIL

## CONDUIT (ITEM 618)



STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION

## ELECTRICAL DETAILS

ED (1) - 92

ORIGINAL DRAWING DATE	REVISION	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
01-92		18	6	IM 35F-6(310)418, 63	63
DATE: K. A. B.		COUNTY	SECTION	JOB	REMARKS
DATE: T. B.		DALLAS	442	02	TH-DO
DATE: R. E. B.					
DATE: T. B.					

Maintenance and Operations Division (D-18) 2FA2(122, 186) ED192.D04

### III. ELECTRICAL CONDUCTORS (ITEM 620).

#### A. MATERIALS

1. All conductors shall be of annealed copper meeting the requirement of ASTM B-3 or B-8 and the NEC.
2. Insulated conductors shall be NEC Type XHHW or Type 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. Tape marker shall consist of half-lap layer of tape covering a six inch length of jacket.
3. Insulated conductors shall be marked in accordance with Article 310 of the NEC, and shall meet the requirements of Underwriters Laboratories' Standards.
4. 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.
5. Neutral conductors shall be insulated and shall be white, or black with white tape marking. White shall not be used for any other conductor. Grounding conductors shall be bare or if insulated shall have green jacket or green tape marking. Green shall not be used for any other conductor.

#### B. CONSTRUCTION METHODS.

1. A non-metallic pull rope shall be used in pulling conductor in non-metallic conduit.
2. After installation and prior to connecting ends, each continuous run of insulated conductor shall have a minimum D.C. insulation resistance of five megohms when tested at 1000 volts D.C. All or part of conductor system may be tested at the Engineer's option. Conductors exhibiting an insulation resistance of less than five megohm shall be replaced or otherwise corrected by the Contractor at his own expense.
3. 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 his expense.
4. Conductors in illumination poles shall be supported by a J-hook in top of pole.
5. 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.
6. Splices shall be made only at locations permitted by the Engineer 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 conductor insulation a minimum of 2 inches on both sides of the splice. If split bolt connectors are used, connectors shall be covered with two half-lap layers of rubber tape or heat shrink tape before insulation is applied.
7. 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 (ITEM 622).

#### A. MATERIALS.

Duct cable shall be the type manufactured by extruding the duct around the conductors in one operation at the manufacturing plant. Duct cable consisting of conductors pulled into the duct after the duct is extruded will be rejected. Wire in duct cable shall be type XHHW in accordance with the material requirement of Item 620, "Conductors".

#### B. CONSTRUCTION METHODS.

1. 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 shall be not less than 5 inches nor 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.
2. All ducts entering ground boxes shall be securely lashed together in vertical position. 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.
3. Where noted on plans, duct cable shall be placed on a 2-inch sand cushion and backfilled with a minimum 8 inches of sand.
4. 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 (ITEM 624).

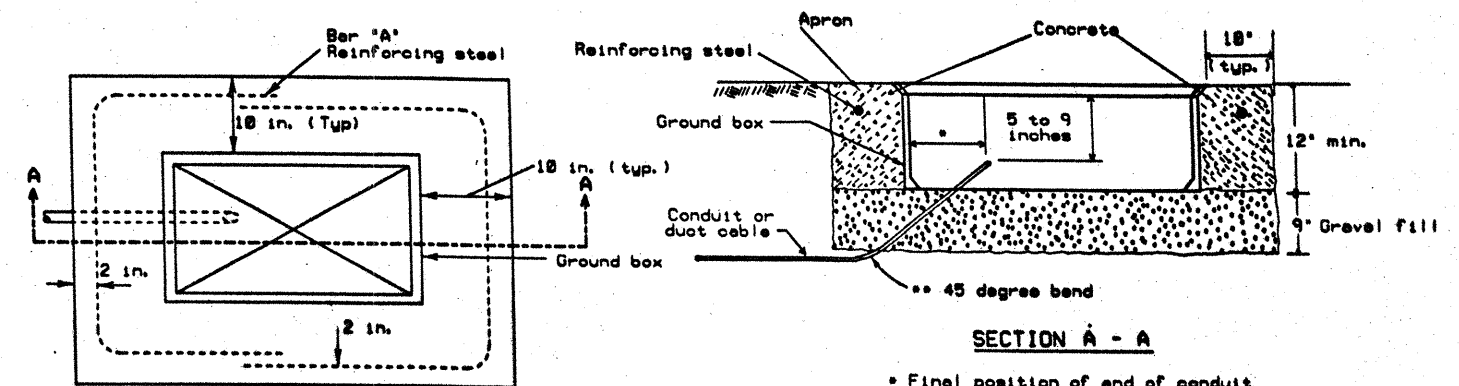
#### A. MATERIALS.

1. Ground boxes shall be concrete or polymer concrete, as required by the descriptive code shown elsewhere.
2. All 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. Concrete ground boxes shall be constructed of reinforced concrete as detailed elsewhere on the plans. Concrete shall be in accordance with Item 421, "Concrete for Structures", except for measurement and payment. Reinforcing steel shall be in accordance with Item 440, "Reinforcing Steel", except for measurement and payment.
6. 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 12 inches x 23 inches x 11 inches, (122311)
    - Type B shall be 12 inches x 23 inches x 22 inches, (122322)
    - Type C shall be 16 inches x 29 inches x 11 inches, (162911)
    - Type D shall be 16 inches x 29 inches x 22 inches, (162922)
    - Type E shall be 12 inches x 23 inches x 17 inches, (122317)

- a. Bottom edge of box or extension shall be footed with a minimum 1 1/4 inch flange.
- d. Ground boxes shall be rated for heavy duty loading (20,000 lbs. over a 10 in. by 10 in. area of the lid and 600 lbs. per sq. ft. 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, Blackburn TTC4 or Burndy KC22B2 connector and split bolt connector.
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.
4. The Contractor may cut the necessary conduit holes in box extensions only. Holes must be 18 inches or more below the cover.



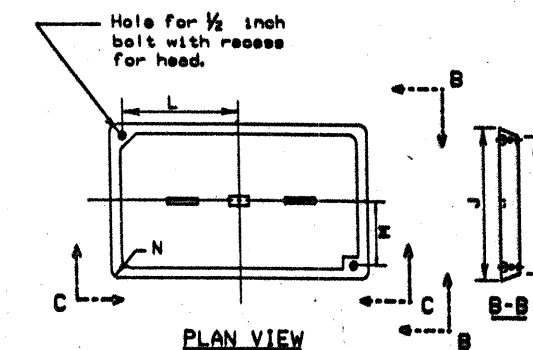
PLAN VIEW

SECTION A - A

- \* Final position of end of conduit shall not exceed one-half of the distance to the side of the box opposite of the conduit entry.
- \*\* 90 degree when approved by the Engineer.

#### APRON FOR GROUND BOXES (Where required by plan note)

Class A  
concrete apron  
reinforced with No. 3  
reinforcing steel.  
Subsidiary to Item 624.



PLAN VIEW

C-C

GROUND BOX COVER

GROUND BOX COVER DIMENSIONS

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

ELECTRICAL CONDUCTORS (ITEM 620)  
DUCT CABLE (ITEM 622)  
GROUND BOXES (ITEM 624)



STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION

ELECTRICAL DETAILS  
ED (2) - 92

ORIGINAL DRAWING DATE: 01-92	STATE: TEXAS	FED. AID PROJECT: 11A 35 E-6(3)D410, ETC	SHEET: 64
DESIGNED BY: T. B.	REVISIONS:	CHECKED BY: T. B.	APPROVED BY: T. B.
DATE: 11/85	BY: T. B.	DATE: 11/85	BY: T. B.

Maintenance and Operations Division (D-18) 2FA3(122, 186) 80292.DWG



## SERVICE POLE 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 service pole 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 service pole 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.

All conduit and conductors required for service poles shall be in accordance with the materials and construction methods articles of the Items, "Conduit" and "Electrical Conductors" respectively.

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 and shall be rated as service entrance equipment. Switches shall be rated 480VAC (min.) for 240/480V services and rated 240VAC (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.** 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 1/8 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.
4. **Main Disconnect.** Main disconnect device shall be a fusible switch or circuit breaker, as shown on Service Pole Summary. 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 Service Pole Summary. 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 or at the top of pole, as required elsewhere.
6. **Fuse Blocks.** Fuse blocks shall be rated 600 volts (min.) and shall accept a 13/32" x 1/2" fuse. Fuse blocks shall be furnished with integral insulated fusepullers and be suitable for mounting to the back panel of the enclosure. Fuses 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 polyacrylic 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. Turn-on range shall be 1 ± 0.5 footcandles, turn-off range two footcandles higher than turn-on. Photo electric control for enclosure mounting shall consist of a hermetically sealed cadmium sulfide photocell and thermal relay in a polycarbonate housing. The photocell window shall be designed to fit a 1/2 inch knock-out. Control shall be rated for 120 volts or 240 volts as required, with a load rating of 1000 VA, and shall be UL listed. Enclosure mounted photocell shall be mounted in the side of the enclosure.
- 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. Blocks shall have line lugs for one (min.) conductor per phase and load lugs for four (min.) conductors per phase.
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 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 breakers in a NEMA 3R enclosure. Panelboard for 480 volt service shall be a MLO (Main Lugs Only) 240/480 or 277/480 volt three-wire single phase, S/N panelboard. Panelboards shall be UL-listed and shall meet Federal Specification W-P-115b, Type 1, 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.
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. Main breaker 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-115b, Type 1, Class 2 requirements. Load center shall have a threaded hub conduit entry for conduit entering the top of the enclosure. Load centers shall be rated as service entrance equipment.

### EXPLANATION OF SERVICE POLE DESCRIPTIVE CODE

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

Schematic Type

Service Voltage (V<sub>1</sub>, V<sub>2</sub>)

Main Disconnect Amp Rating

SS= Safety switch ahead of meter  
NS= No switch ahead of meter  
and/or no meter required

Enclosure Type

GS= Galvanized steel  
SS= Stainless steel  
AL= Aluminum  
NM= Non-metallic

Photocell (when req'd) and  
Lightning Arrester Location

T= Top of pole

E= Enclosure mounted

Service Support Type

TP= Timber pole  
SP= Steel pole  
SF= Steel frame  
OT= Pole by others  
EX= Existing pole  
TS= Switch gear to be placed  
on traffic signal pole  
RT= Rectangular structural  
tubing

O= Overhead service

U= Underground service

Example: SERV POLE TYA (240/480) 060 (NS) OS (T) TP (O)

65

SERVICE POLES NOTES

( ITEM 628 )

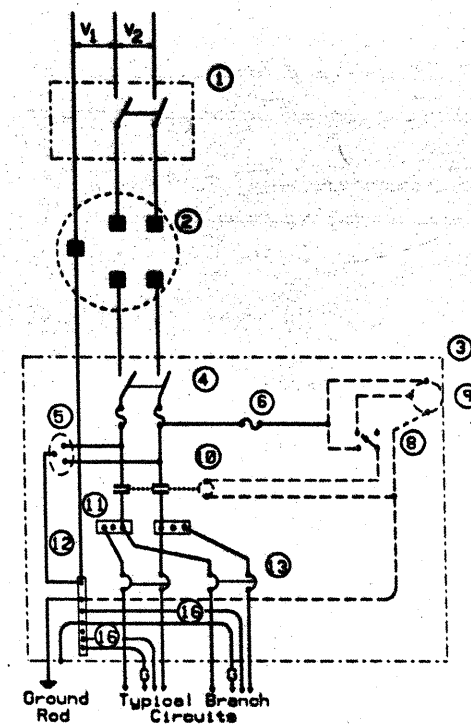


STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION

ELECTRICAL DETAILS  
ED (3) - 92

ORIGINAL DRAWING DATE: 01-92	STATE	FEDERAL	FEDERAL AID PROJECT	REVISION
DATE: 01-92	TX	6	IM 356-6(309)4088	65
DATE: 01-92	DAVIS	442	02	99
DATE: 01-92	DALLAS	442	02	99

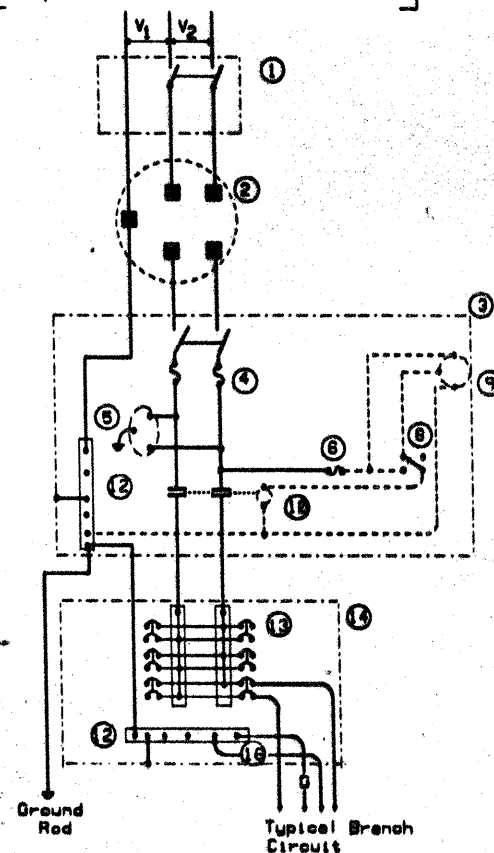
Map: (reference) operations Division (D-18) 2FA21(122,188) ED92.004



SCHEMATIC TYPE A

## THREE WIRE

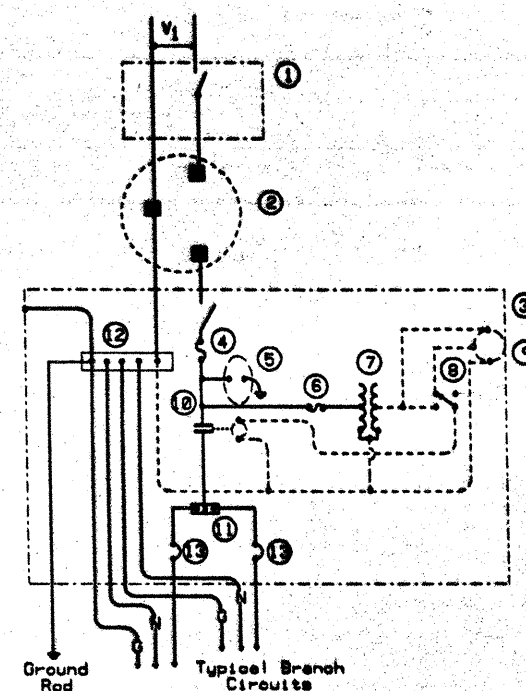
Maximum branch circuit size: 100 amps for two pole 480V, 125 amps for one or two pole 120V or 240V.



SCHEMATIC TYPE C

## THREE WIRE

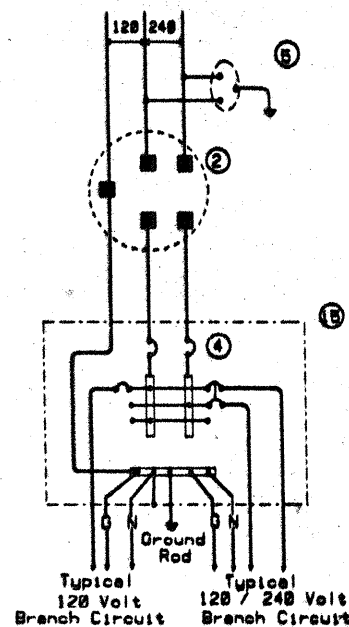
Maximum branch circuit size: 100 amps for two pole 480V, 125 amps for two pole 120V or 240V.



SCHEMATIC TYPE B

## TWO WIRE

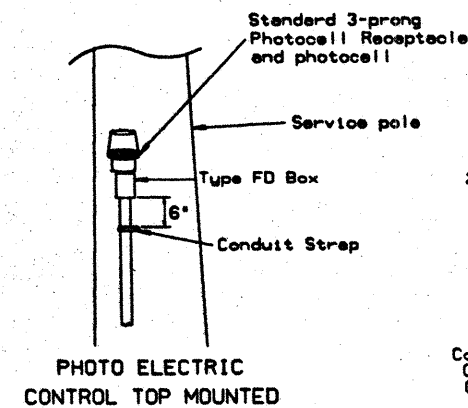
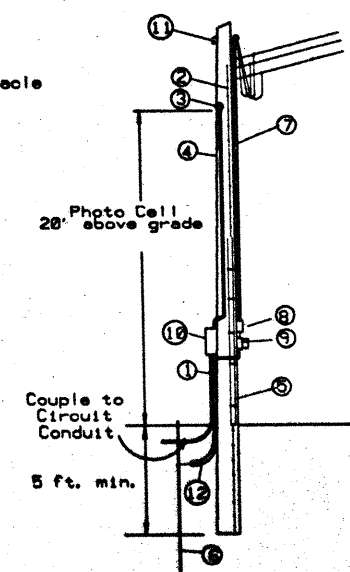
Maximum branch circuit size: 50 amps for one pole 480V, 125 amps for one pole 120V or 240V.



SCHEMATIC TYPE D

## 120/240 VOLTS - THREE WIRE

Install photocell and lighting contactor when shown on service pole summary.

PHOTO ELECTRIC  
CONTROL TOP MOUNTEDService Drop from Utility  
Three Wire Service Shown -  
Omit One Conductor for  
Two Wire Service

- 1 - RM conduit - same size as branch circuit conduit
- 2 - No. 6 bare ground wire to butt-wrap ground
- 3 - Photo Electric Control and 1/2" RM conduit - See detail
- 4 - Class 5 pole, 30' minimum or as otherwise required by NESC and utility company
- 5 - Ground wire moulding - 8' min.
- 6 - 5/8" X 8" Copper clad ground rod
- 7 - Service conduit and conductors - See Summary shown elsewhere
- 8 - Safety switch (when required)
- 9 - Meter (when required)
- 10 - Service enclosure
- 11 - Lightning arrester (top mounted)
- 12 - No. 6 bare grounding electrode conductor in 1/2" PVC to ground rod

SERVICE SUPPORT TYPE TP (D)

(timber pole, overhead service, typical arrangement)

## TIMBER POLE NOTES

1. For projects requiring more than 10 timber transformer and/or service poles, poles shall be preservative-treated in accordance with the Item 'Timber Preservative and Treatment'.
2. For projects requiring 10 or fewer timber poles, treatment shall be as stated above. Contractor may purchase poles locally, provided that preservative treatment meets requirements stated above, the source and treatment are documented and the poles are marked in accordance with ANSI 05.1.
3. 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.
4. Install photo electric control on North side of pole or in service enclosure as required.
5. 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 Summary, shown elsewhere)
5. Lightning Arrester
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 Summary shown elsewhere)
14. Circuit Breaker Panelboard (See Summary shown elsewhere)
15. Load Center
16. Neutral conductor (when required)

Power Wiring  
Control Wiring

66

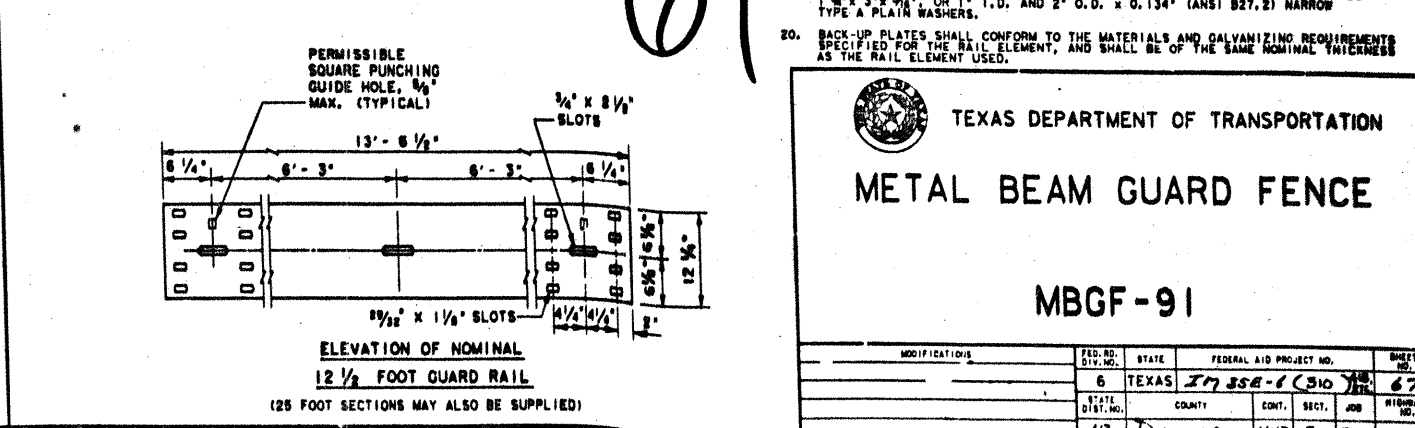
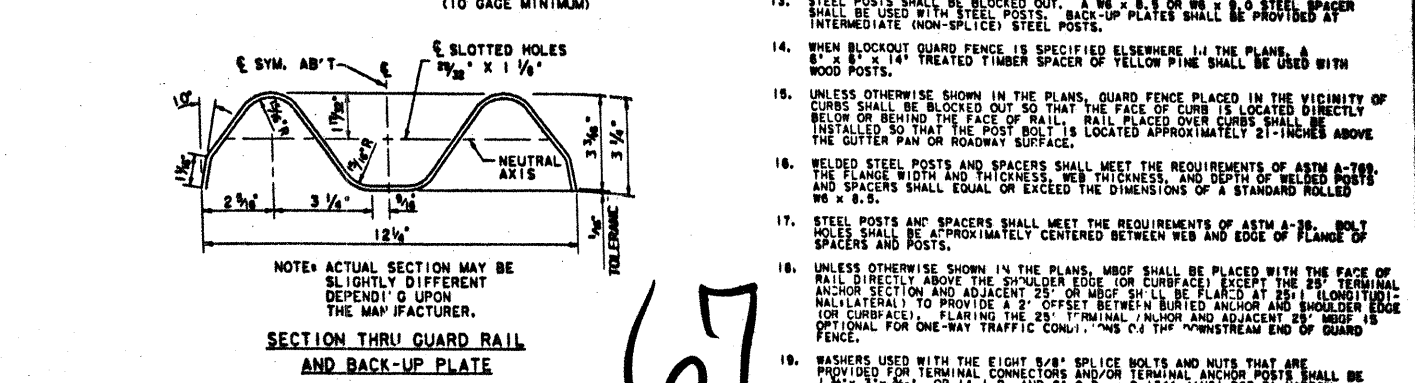
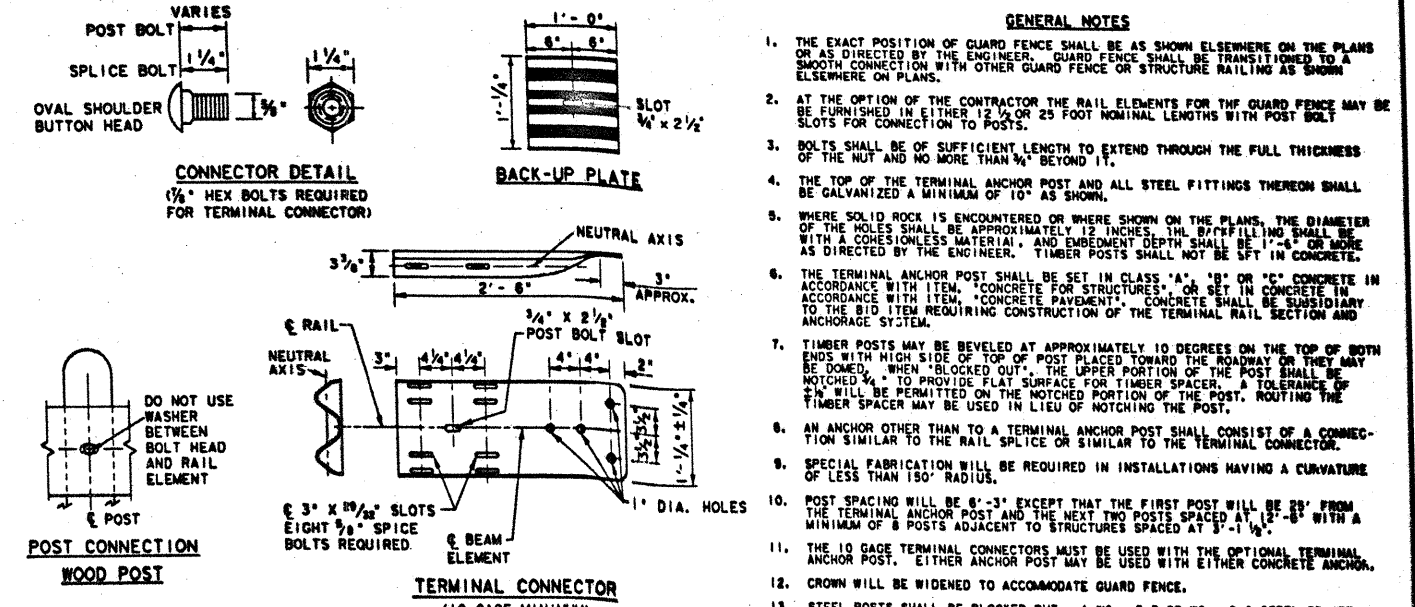
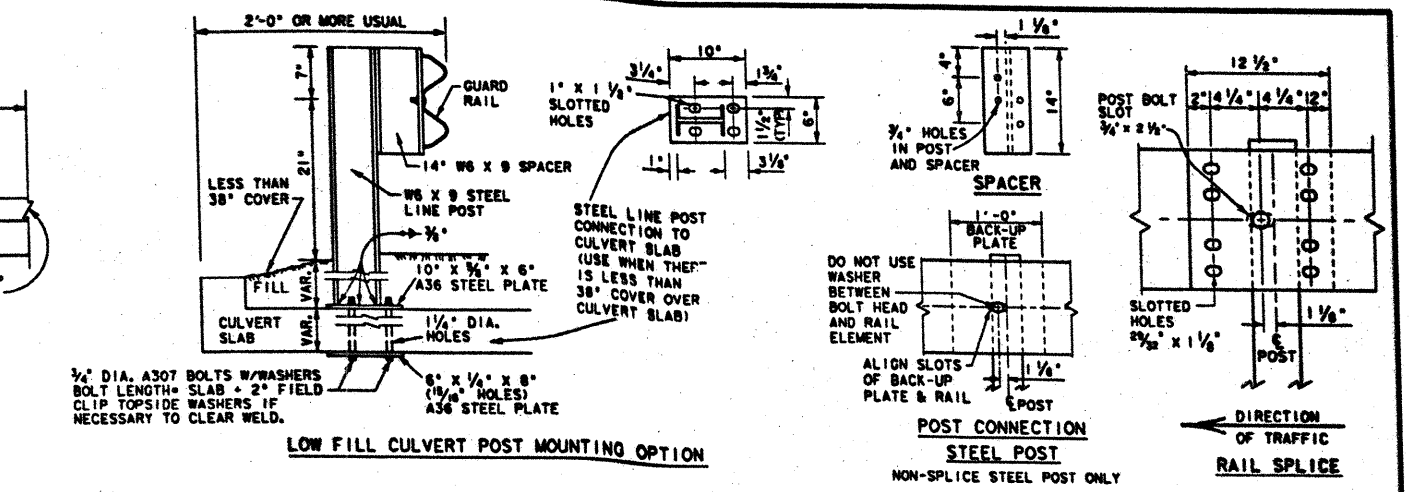
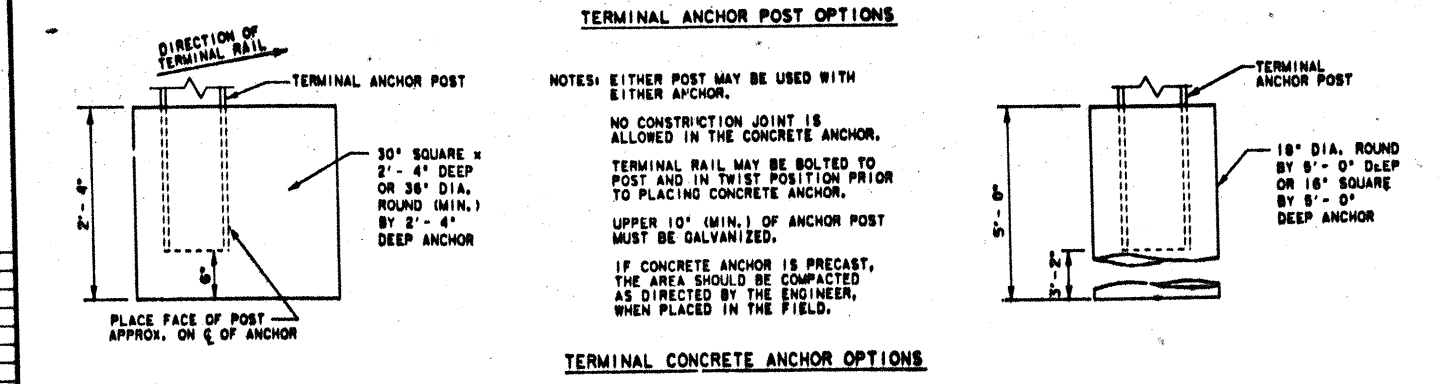
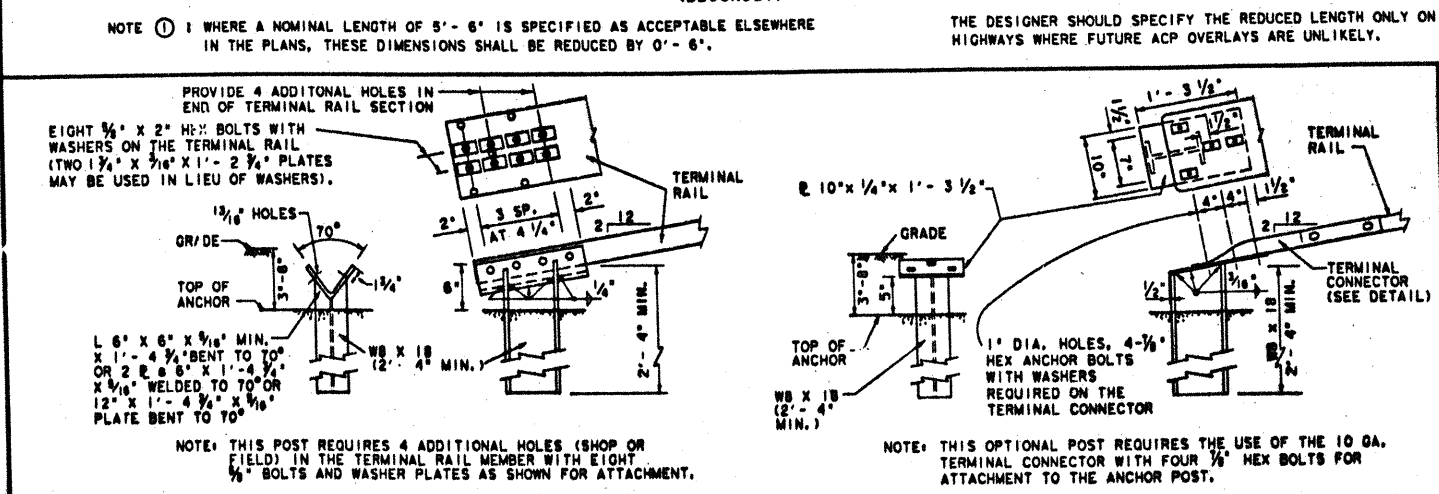
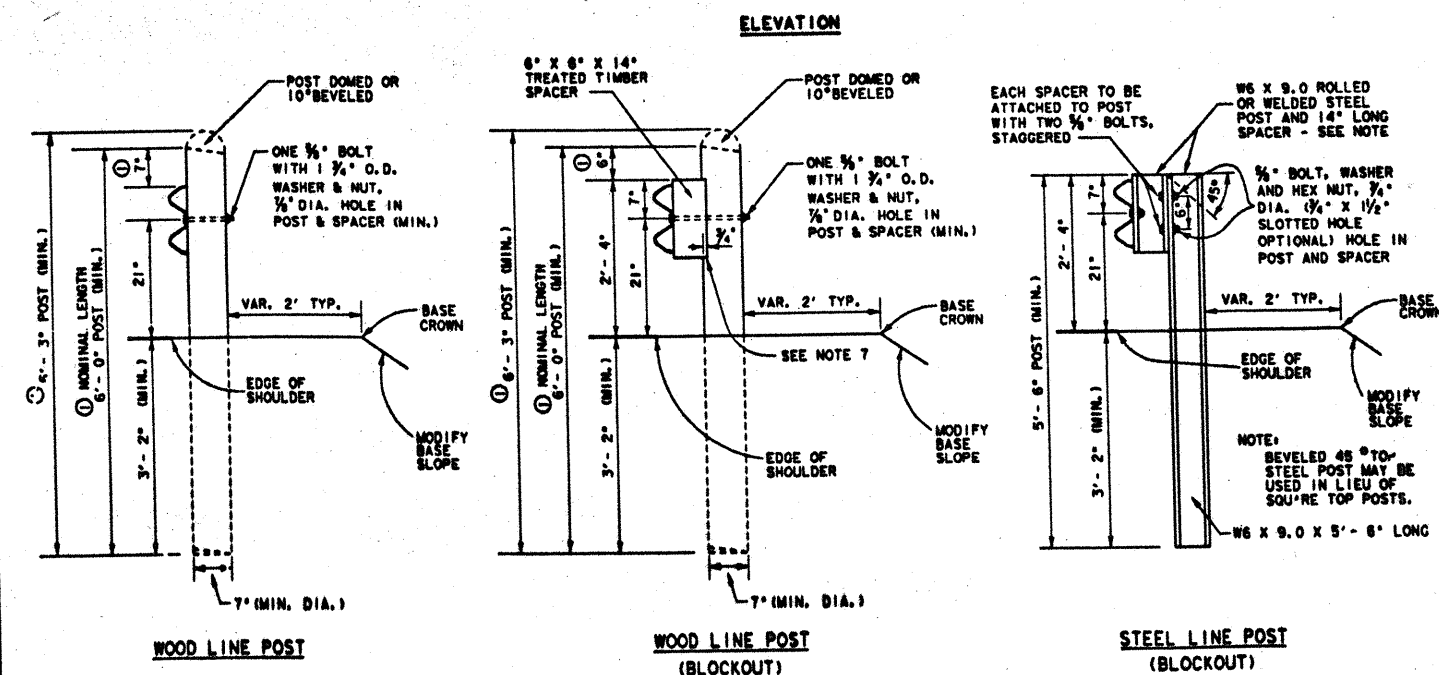
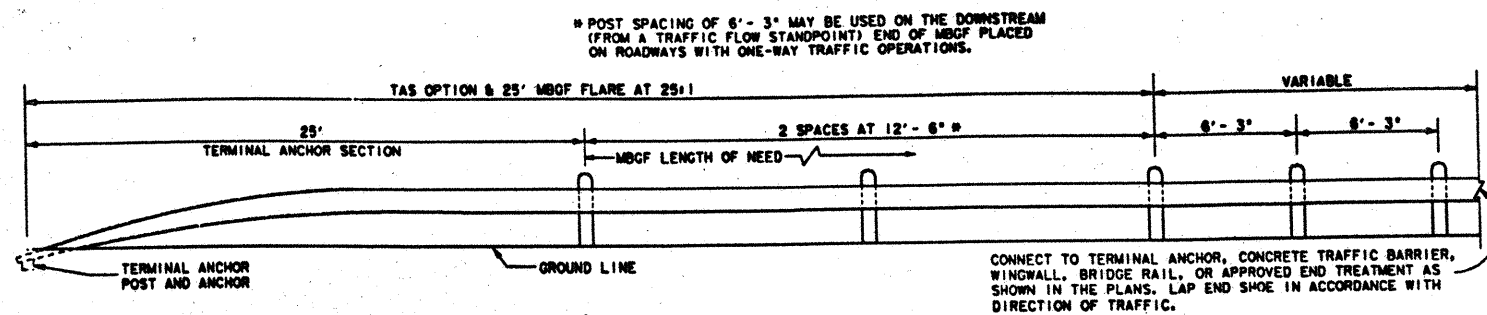
SERVICE POLE SCHEMATICS  
SERVICE SUPPORT TYPE TP (OVERHEAD)  
(ITEM 628)

STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION

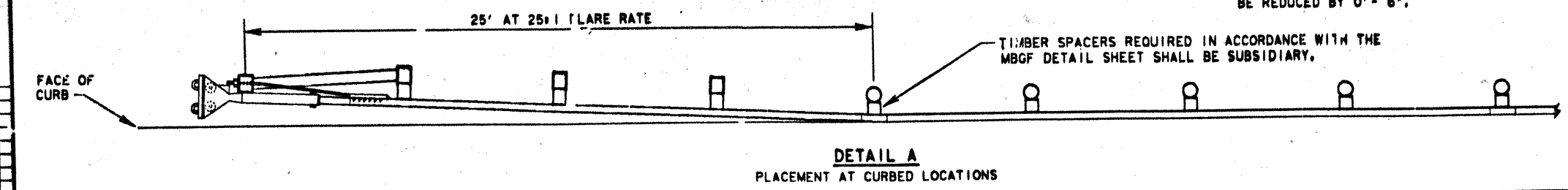
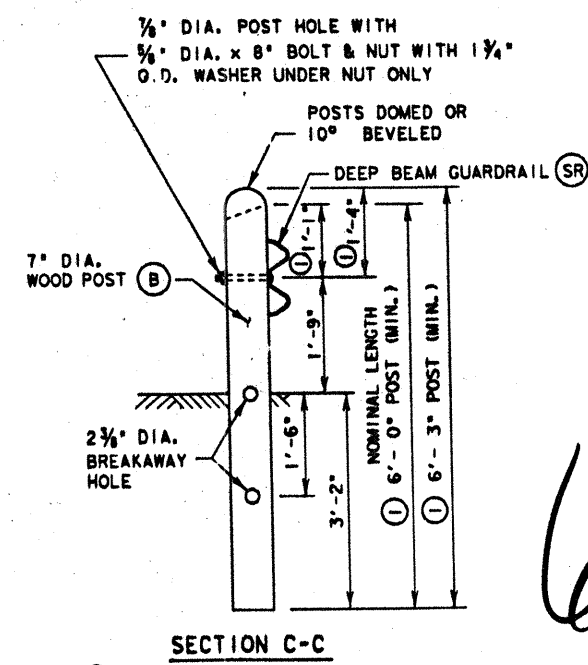
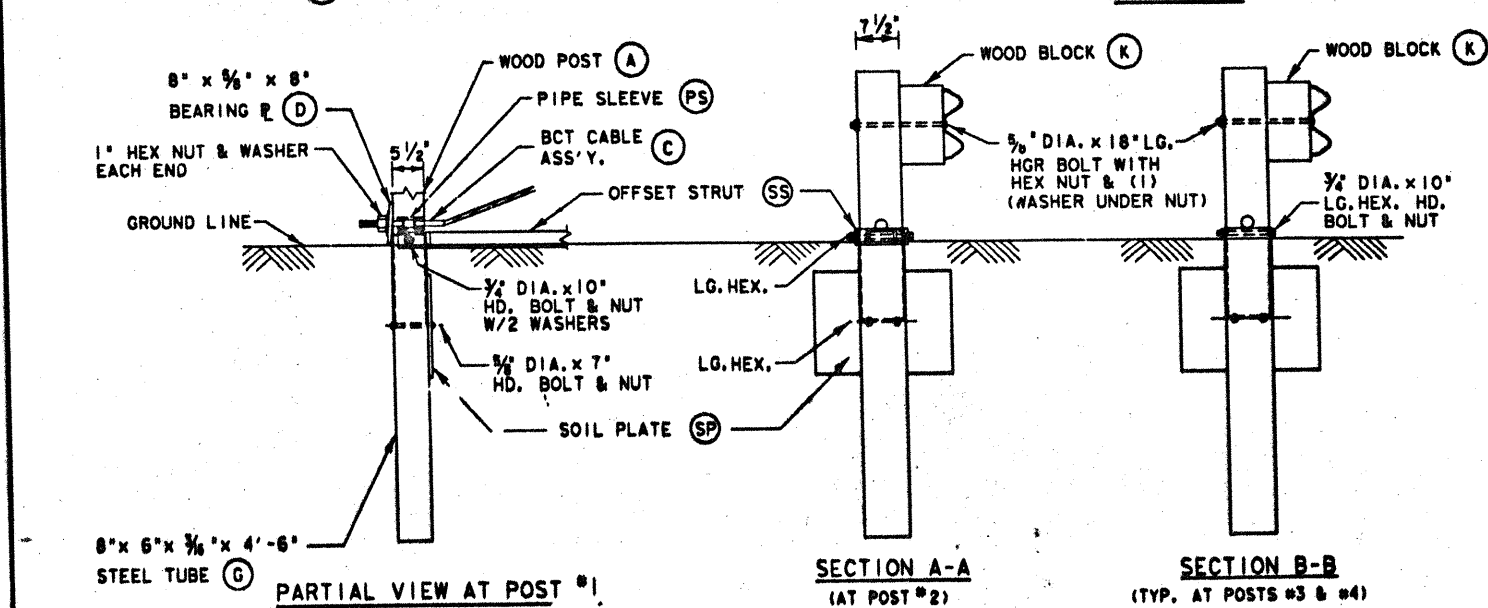
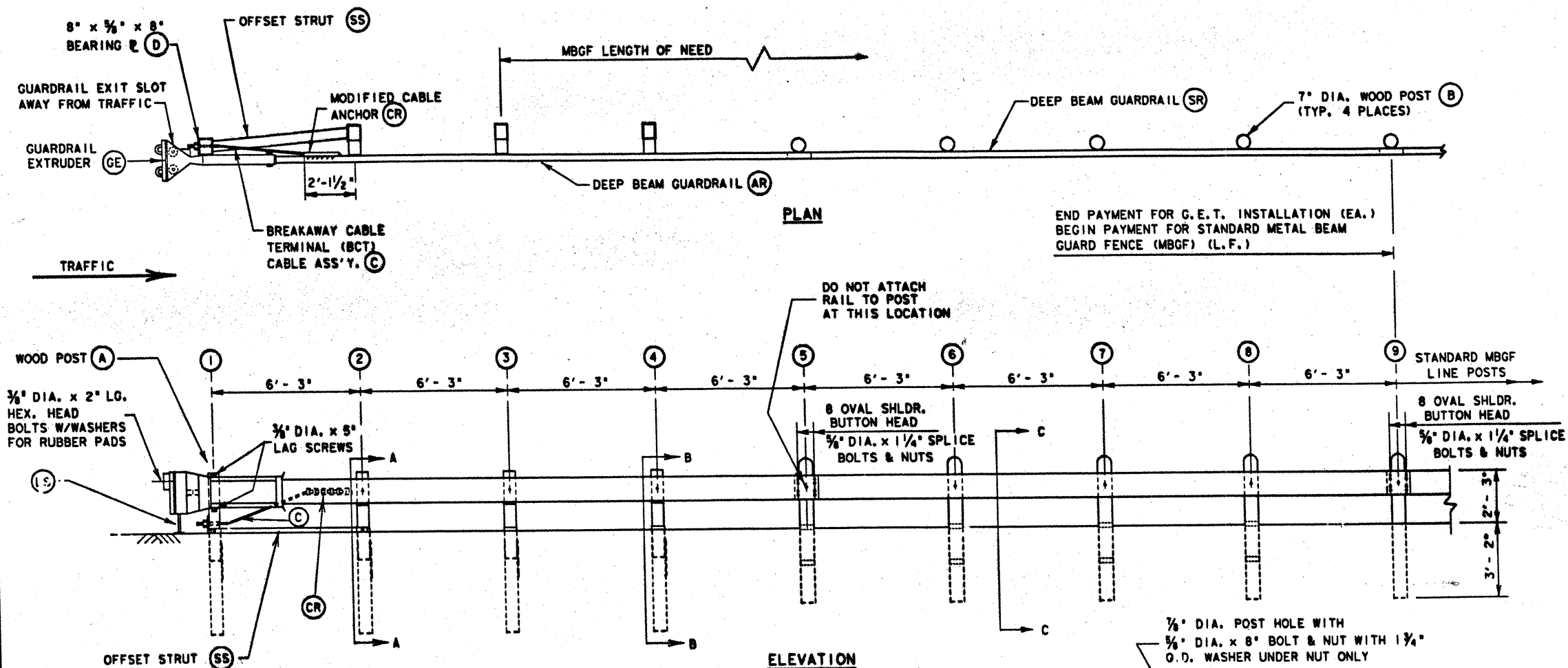
ELECTRICAL DETAILS  
ED (4) - 92

ORIGINAL DRAWING DATE: 01-92	STATE	FEDERAL	FEDERAL AID PROJECT	DATE
01-92	TX	6	IM 352-6 (3M) 413, 87	66
01-92	TX	6	IM 352-6 (3M) 413, 87	66
01-92	TX	6	IM 352-6 (3M) 413, 87	66
01-92	TX	6	IM 352-6 (3M) 413, 87	66

Maintenance and Operations Division (D-10) ZFASH (122,186) ED492, CON







# GENERAL NOTES

1. THE POSTS REQUIRED WITH THE GUARDRAIL EXTRUDER TERMINAL SHALL BE TIMBER POSTS.
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 A MBGF INSTALLATION, THE MBGF WILL NOT BE FLARED, UNLESS IT IS PLACED OVER A CURB. IN SUCH CASE, A 25:1 FLARE RATE BEGINNING AT POST (5) AND ENDING AT THE EXTRUDER WILL BE REQUIRED. THE 7" DIA. WOOD POSTS WILL ALSO REQUIRE TIMBER SPACERS IN ACCORDANCE WITH THE MBGF STANDARD DETAIL SHEET. THESE SPACERS SHALL BE CONSIDERED SUBSIDIARY ITEMS (SEE DETAIL A).
4. A TYPE II OBJECT MARKER, IN CONFORMANCE WITH THE TEXAS MUTCD, SHALL BE MOUNTED SEPARATELY WITHIN 6 FEET OF THE FRONT OF THE EXTRUDER SUBJECT TO THE APPROVAL OF THE ENGINEER. THE OBJECT MARKER SHALL BE SUBSIDIARY TO THE INSTALLATION OF THE GUARDRAIL EXTRUDER TERMINAL.

BILL OF MATERIAL		
ITEM	QTY.	DESCRIPTION
(A)	4	5 1/2" x 7 1/2" WOOD POST
(AR)	1	DEEP BEAM GUARDRAIL 12 GA. x 25' - 0" CONTINUOUS SECTION
(B)	4	7" DIA. WOOD POST
(C)	1	BCT CABLE ASSEMBLY
(CR)	1	MODIFIED CABLE ANCHOR
(D)	1	8" x 3/8" x 8" BEARING PL.
(G)	4	S.T. 8" x 6" x 3/8" x 4' - 6" LG.
(GE)	1	GUARDRAIL EXTRUDER
(K)	3	WOOD BLOCK 5 1/2" x 7 1/2" x 14"
(LS)	2	LEG SUPPORT
(PS)	1	PIPE SLEEVE
(SP)	4	SOIL PLATE 18" x 24"
(SR)	1	DEEP BEAM GUARDRAIL 12 GA. x 25' - 0" CONTINUOUS SECTION
(SS)	1	OFFSET STRUT

TEXAS DEPARTMENT OF TRANSPORTATION

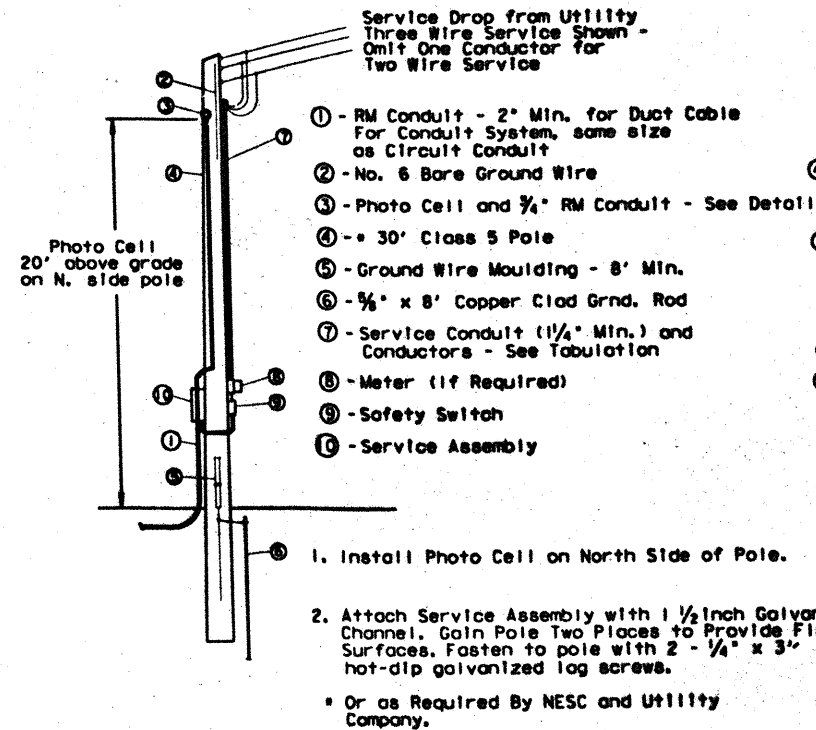
GUARDRAIL EXTRUDER TERMINAL DETAILS

GET-91A

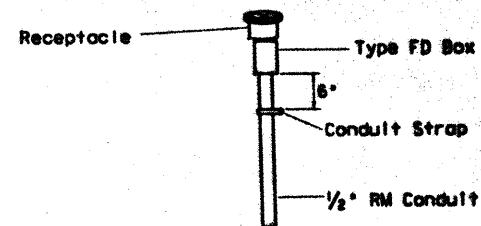
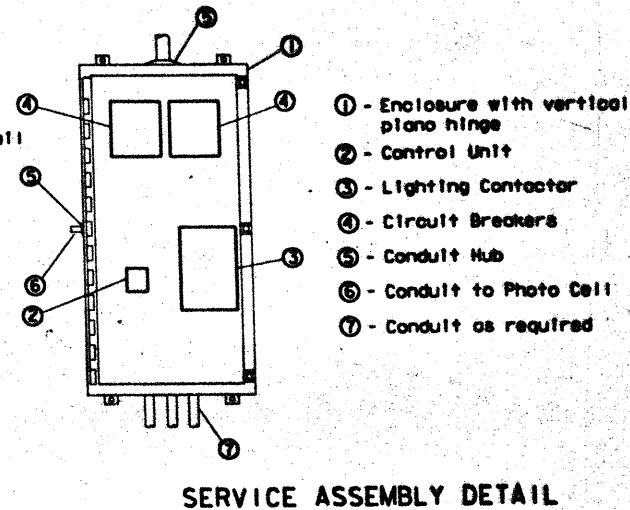
MODIFICATIONS	FED. RD. DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
	6	TEXAS	17 358-6 (310) 18	68
		COUNTY	CONTRACT	SECTION
		18 DALLAS	442 2	93 18 358
DIVISION OF HIGHWAY DESIGN (D-8)				A-5



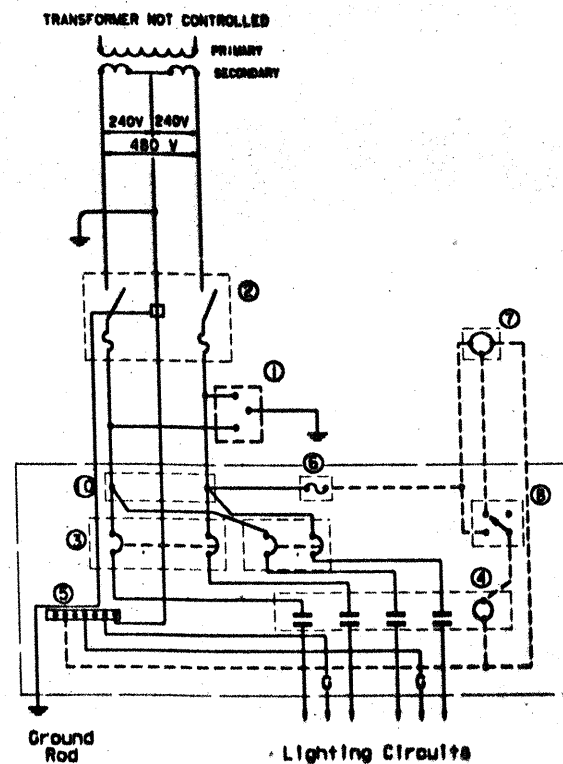
238BUD



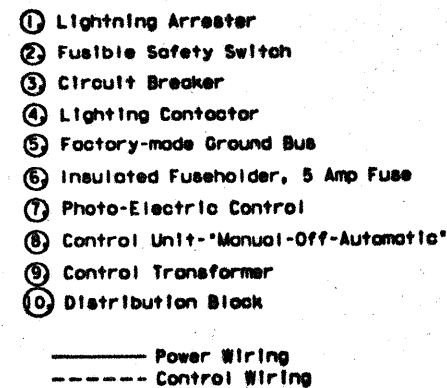
**TYPICAL SERVICE POLE**  
See Service Pole Schematic For Types.



**DETAIL  
PHOTO CELL MOUNTING**

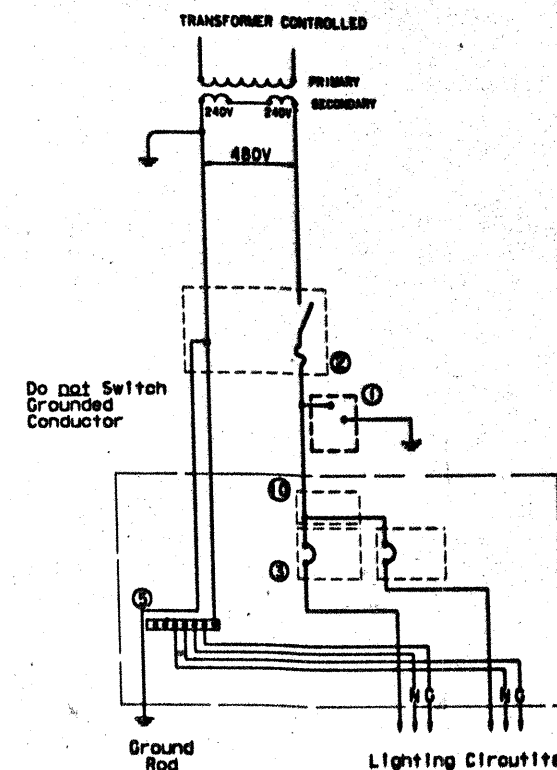


**SERVICE POLE TYPE E**  
240 / 480 VOLTS - THREE WIRE  
SIGN BRIDGE LIGHTING  
Luminaires Served at 480V



**SERVICE POLE SCHEMATIC**

NO SERVICE POLE REQUIRED  
ON CONTROL: 442-02-100



**SERVICE POLE TYPE B**  
480 VOLTS - THREE WIRE  
ROADWAY LIGHTING



July 16, 1992  
J. D. Irvine, P.E.

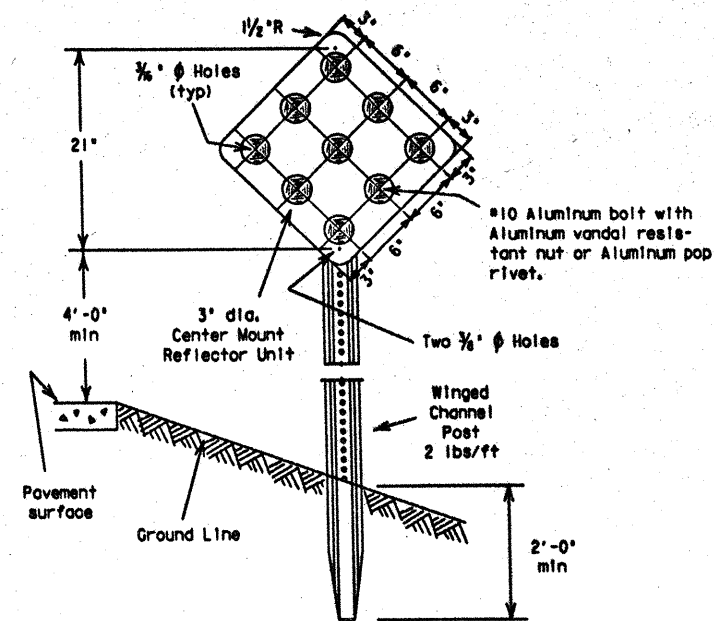
69

MOD. - GENERAL NOTES REMOVED FROM THIS SHEET  
SERVICE POLE SUMMARY REMOVED FROM THIS SHEET

TEXAS DEPARTMENT OF TRANSPORTATION									
ROADWAY ILLUMINATION DETAILS									
RID (6)-88 (DPL) (MOD)									
DR	DATE	BY	STATE	FEDERAL AID PROJECT NO.	SECTION	DATE	BY	STATE	FEDERAL AID PROJECT NO.
DR	1-88	J. D. Irvine	TEXAS	1M 356-8 (1901408.07C)	50				
DR	8-88	J. D. Irvine	TEXAS	1M 356-8 (1901408.07C)	50				
CR	4-89	J. D. Irvine	TEXAS	1M 356-8 (1901408.07C)	50				
TR	10	J. D. Irvine	DALLAS	0442	02	99	0	1M 356	

8-88 Reduced to 34" Sheet.

## OBJECT MARKER TYPES 1 and 4



TYPE 1 and 4 Object Markers shall consist of Type (b) Center Mount Reflector Units mounted on 0.080" thick sheet aluminum conforming with ASTM B-209 Alloy 6061-T6.

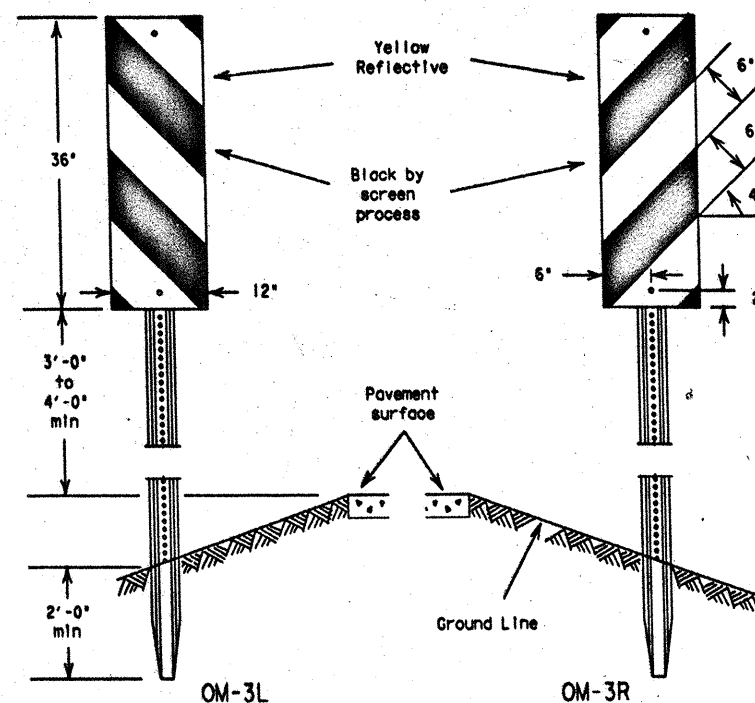
## TYPE 1 OM-1R

18" x 18"  
Reflector Unit - YELLOW  
Background - (YELLOW - Non-Reflective)

## TYPE 4 OM-4R

18" x 18"  
Reflector Unit - RED  
Background - (RED - Non-Reflective)

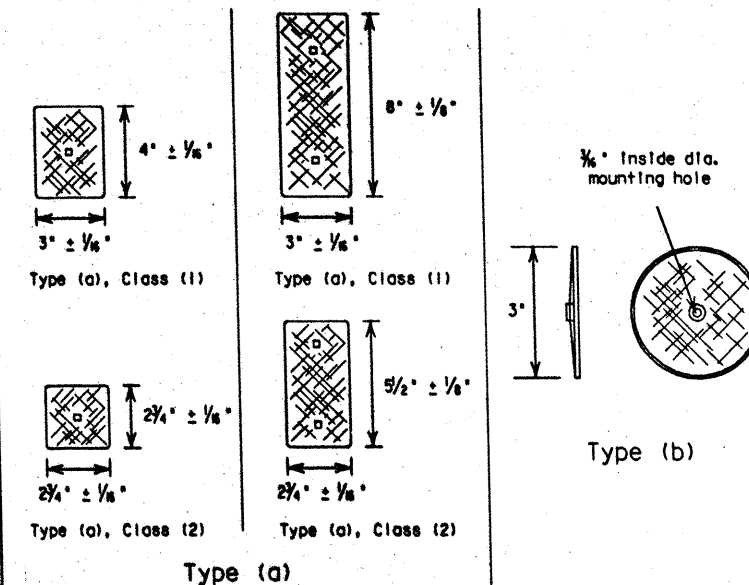
## OBJECT MARKER TYPE 3



Sign blank to be .080" thick sheet aluminum conforming to ASTM B-209 Alloy 6061-T6.

Reflective sheeting shall be in accordance with Department Material Specification, D-9-8300, Type C.

## TYPICAL REFLECTOR UNITS



Type (a) - Reflective sheeting with pressure sensitive backing. For certain (non-flexible post) applications, reflective sheeting may be directly applied to approved metal, plastic or fiberglass backplate with 17/64" square mounting hole.

It is the contractor's option to provide Class (1) or Class (2) reflective sheeting in accordance with Department Material Specification D-9-8600. All reflector units per delineator or object marker shall be of the same type and class of reflective sheeting.

Type (b) - Centermount acrylic plastic prismatic reflector.

SPECIFICATION REFERENCE TABLE	
MATERIALS AND TEST SPECIFICATIONS (D-9)	
FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (DRIVEABLE & SURFACE MOUNT TYPES)	D-9-4400
FLAT SURFACE REFLECTIVE SHEETING, TYPE C (HIGH SPECIFIC INTENSITY)	D-9-8300
NON-REFLECTIVE BACKGROUND COATING	D-9-8500
DELINEATOR AND OBJECT MARKER	D-9-8600

## GENERAL NOTES:

- 1) Delineators shall be uniformly placed not less than 2 feet nor more than 8 feet from the edge of shoulder or the face of unmountable curb. They may be placed in line with guardrail where guardrail is used.
- 2) Object markers shall be located at points designated on the plan.  
When used for marking objects in the roadway or 8 feet or less from the shoulder or curb, the mounting height to the bottom of the object marker should normally be 4 feet above the surface of the nearest traffic lane. When used to mark objects more than 8 feet from the shoulder or curb, the mounting height to the bottom of the object marker may be 4 feet above the ground line.
- 3) Hardware shall be galvanized steel, stainless steel, or aluminum, except as noted.
- 4) Posts for supporting delineators and object markers shall be in accordance with the Department Material Specification D-9-7130 and details on Standard Sheet D & OM (2).
- 5) Type 1, 3 and 4 object marker posts shall be 2 lbs/ft winged channel in accordance with Department Material Specification D-9-7130.
- 6) Delineator and object markers shall be in accordance with Department Material Specification D-9-8600.

## OBJECT MARKERS TYPE 2

YELLOW (R-reflector unit, P-panel)

Type	OM-2SR				OM-2VP	
	a	b	a	b	a	b
Class	1	1	2	2	n/a	1
Post	WC	FLEX	WC	FLEX	WC	FLEX

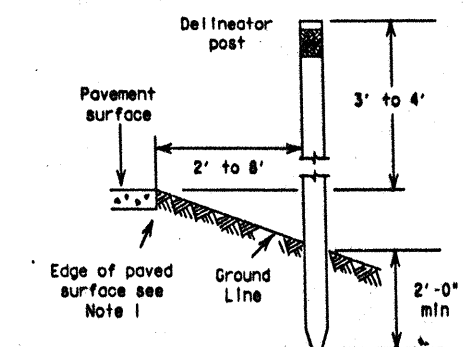
WC-wing channel post (1.12 lbs/ft)  
FLEX-flexible post (driveable and semi-driveable)

## DELINEATORS

Type	SINGLE D-SY, D-SW or D-SR					DOUBLE D-DY or D-DW				
	Double delineators may be constructed of one large or two small reflector units.									
Class	1	1	2	2	n/a	1	1	2	2	n/a
Post	WC	FLEX	WC	FLEX	WC	WC	FLEX	WC	FLEX	WC

Length of post may vary to meet field conditions.

REFLECTOR UNITS: W-white, Y-yellow, R-red  
WC-wing channel post (1.12 lbs/ft)  
FLEX-flexible post (driveable and semi-driveable)



## TYPICAL INSTALLATION



STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION

DELINEATORS &  
OBJECT MARKERS

(1 of 2)

D & OM(1)-92

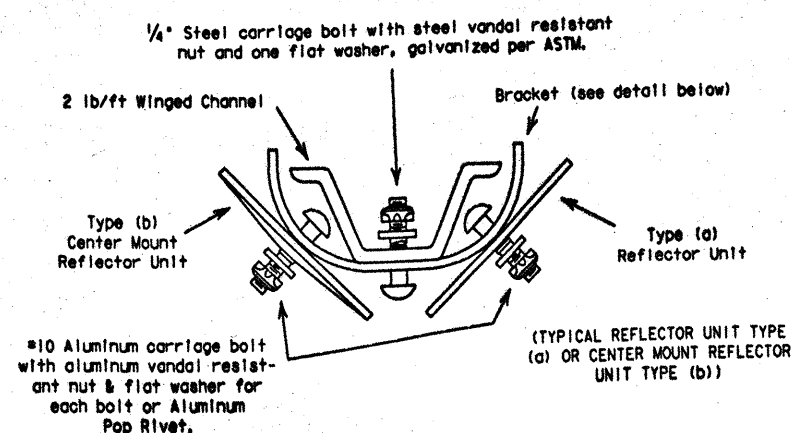
ORIGINAL DATE: 1-81	STATE: 18	FEDERAL: 6	FEDERAL AID PROJECT: 1M35E-6(310)408,274	SHEET: 70
BY: DN	1-82	4-92	COUNTY: DALLAS	CONTROL SECTION: 0442 02 399H35E
DATE: 1-82	4-92			100 20A

Division of Maintenance and Operations

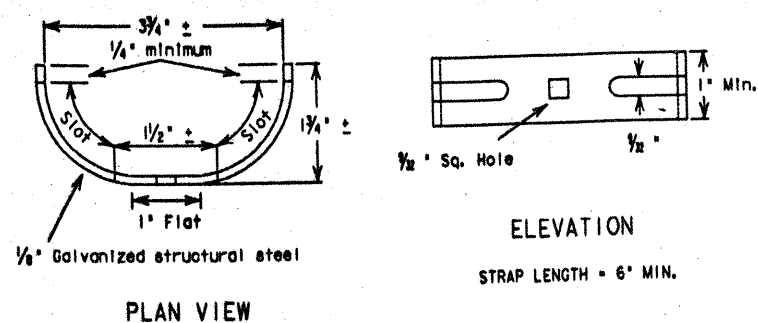
# PLAN VIEW OF BIDIRECTIONAL MOUNTING

For Single Delineators Only

Post oriented as directed by Engineer



## BIDIRECTIONAL BRACKET

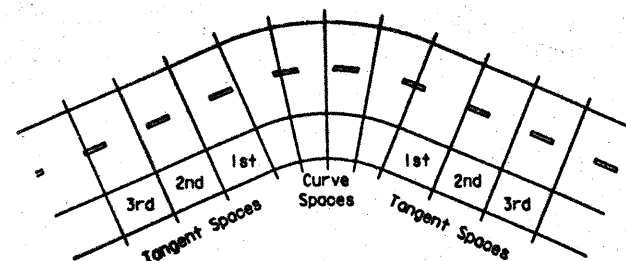


PLAN VIEW

ELEVATION

STRAP LENGTH = 6" MIN.

# DELINEATORS FOR CURVES OR TANGENT SECTIONS

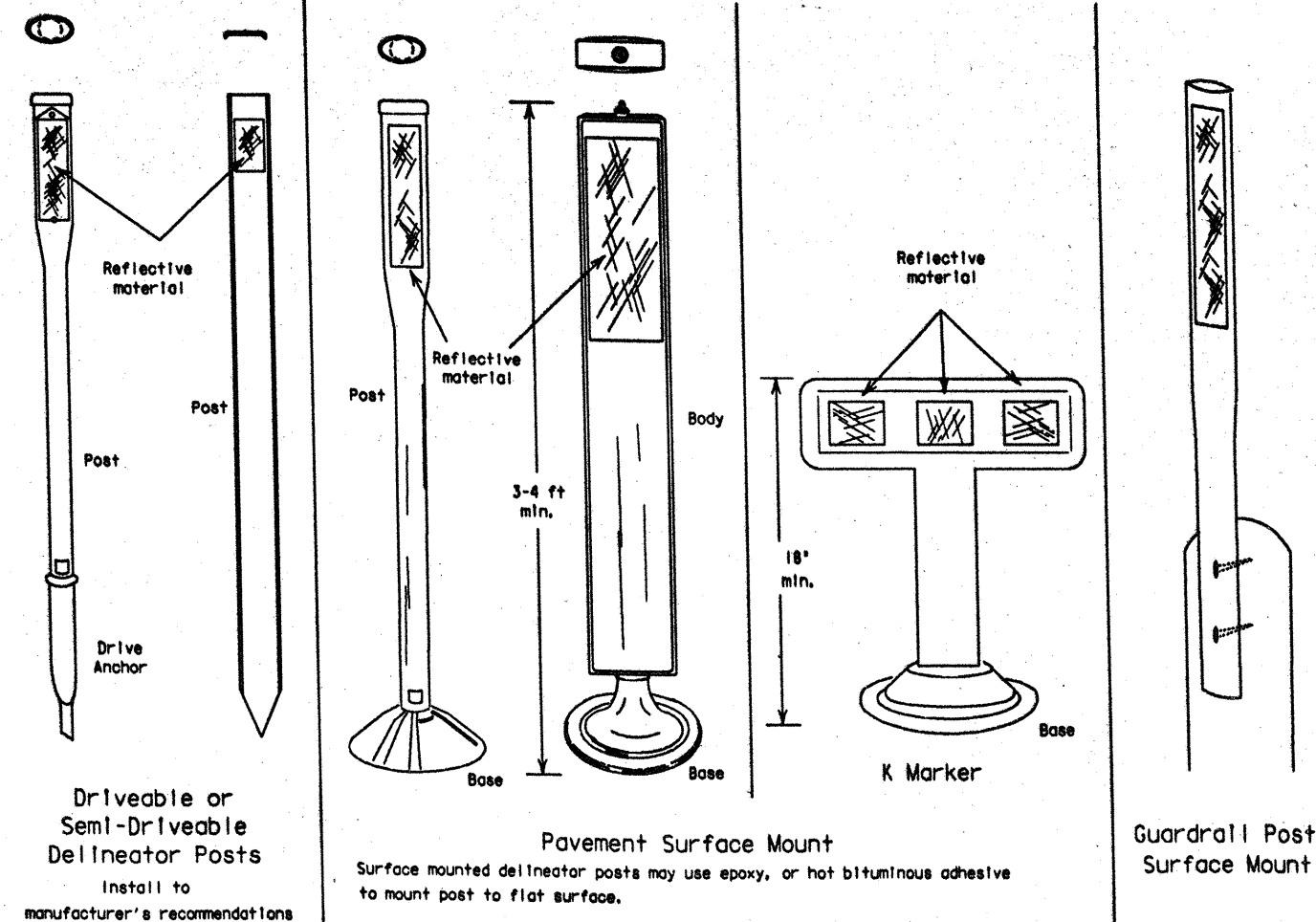


The delineator spacing,  $S$ , on the curve is found from the formula  $S = 3R/50$ , where  $R$  is the radius of the curve in feet. The first spaces immediately in advance of and beyond the curve are  $2.0S$ , the second spaces are  $3.0S$ , and the third spaces are  $6.0S$  but not to exceed 300 feet. Distance for spaces rounded to nearest 5 feet.

Spacing for Highway Delineators on Horizontal Curve

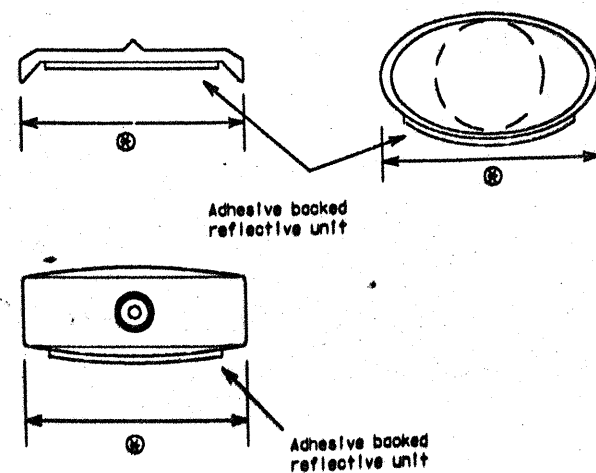
Degree of Curve	Radius on Curve	Spacing on Curve	Spacing in Advance of and Beyond Curves		
	Feet	Feet	First Space	Second Space	Third Space
1	5730	225	300	300	300
2	2865	160			
3	1910	130	260		
4	1433	110	225		
5	1146	100	200		
6	955	90	185	275	
7	819	85	165	250	
8	716	75	155	230	
9	637	75	145	220	
10	573	70	135	205	
11	521	65	130	195	
12	478	60	125	185	

# FLEXIBLE POSTS



# PLAN VIEW OF MONODIRECTIONAL MOUNTINGS

For Single and Double Delineators and Object Marker types OM-2YP(a) & OM-2SR

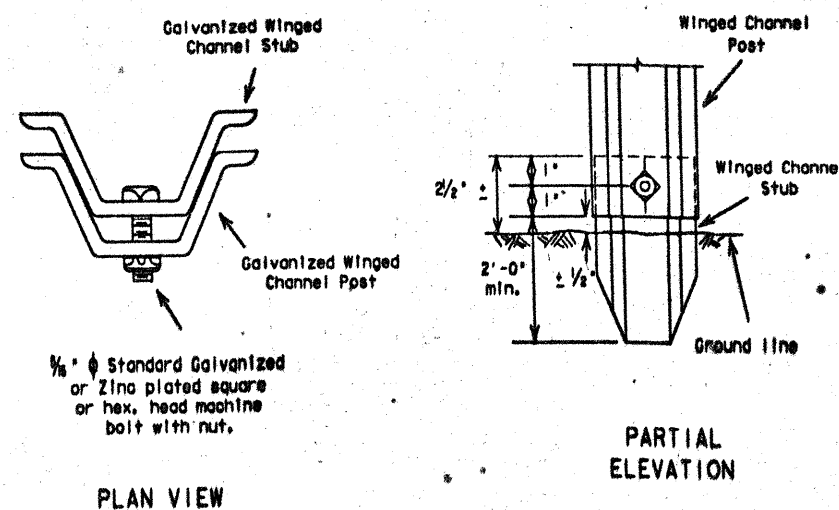


Not less than 3 1/4"

Various Cross Sections may be furnished if projected width of reflective unit appears to be 3' ± 1/4"

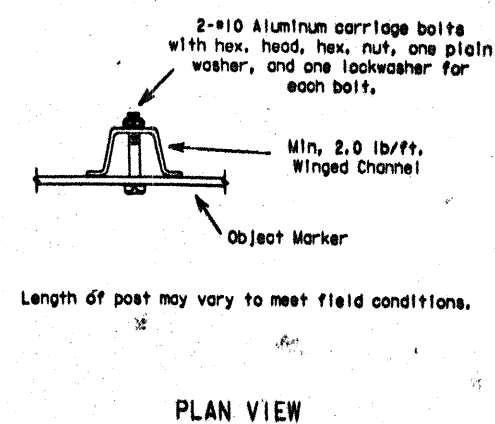
# BREAK AWAY CHANNEL POST

For Object Marker Types 1, 3 and 4  
(where specified in the plans)



PLAN VIEW

PARTIAL ELEVATION



PLAN VIEW



STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION

## DELINEATORS & OBJECT MARKERS

(2 of 2)

D & OM(2)-92

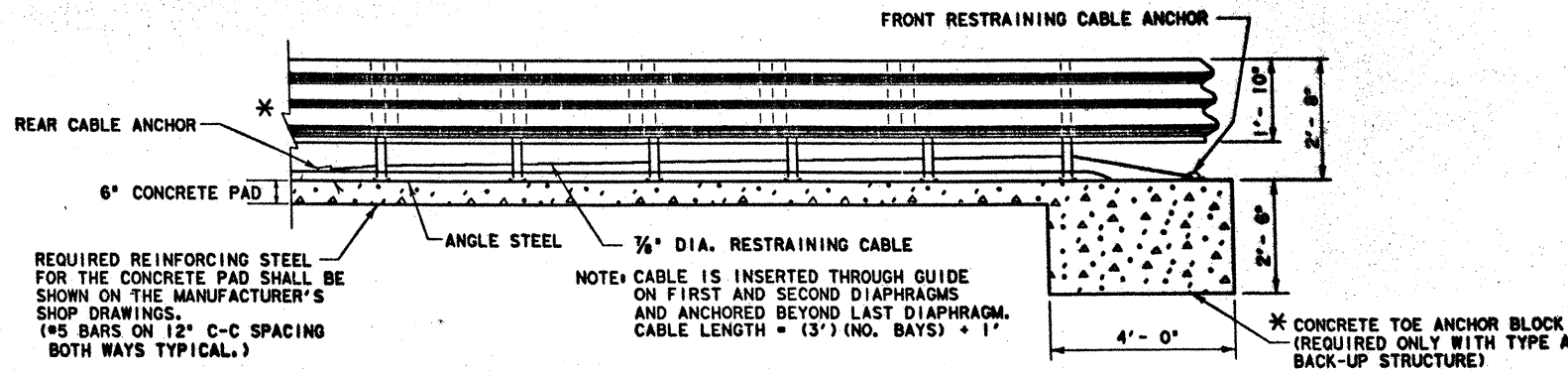
ORIGINAL DRAWING DATE	REVISIONS	STATE	FEDERAL AID PROJECT	SHEET
1-81		18	6	71
2-82		18	6	71
4-92		18	6	71
DALLAS	044202	099	11356	208

Division of Maintenance and Operations

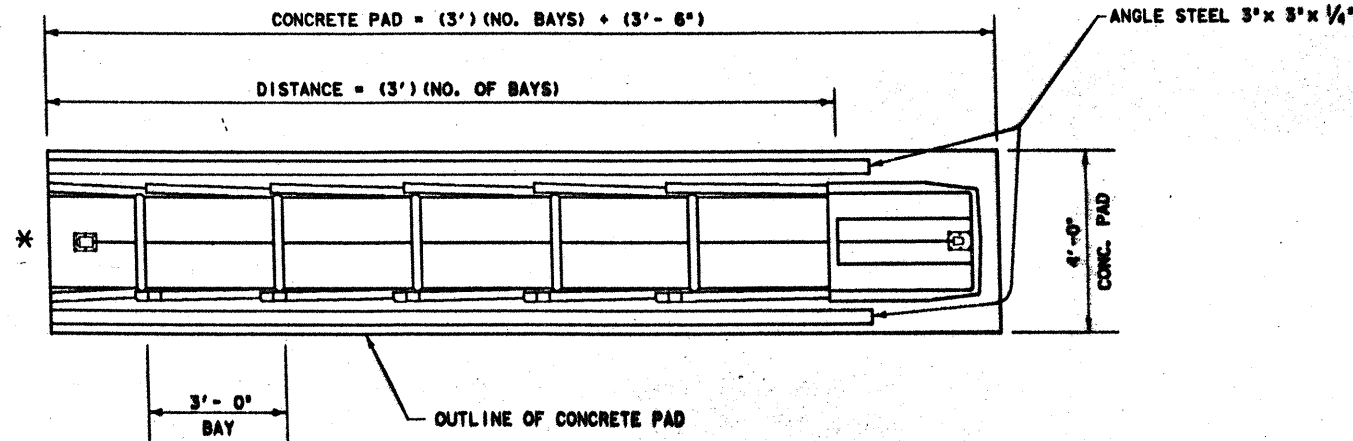
# 100

# STRUCTURAL INFORMATION

EACH FRONT AND REAR ANCHOR TO BE SECURED TO CONCRETE PAD USING SIX 3/4" DIA. x 6 1/4" CONC. ANCHOR BOLTS, 3/4" HEX HEAD NUTS AND 3/4" FLAT WASHERS



ELEVATION



PLAN

\* SEE NOTE FOR BACK-UP STRUCTURE INFORMATION

**TYPE A** TENSION STRUT: CONSISTS OF DIAGONAL STRUTS, CONNECTIONS, AND ACCESSORIES, AS DETAILED BY THE MANUFACTURER, LOCATED AT REAR OF G.R.E.A.T. UNIT. WHEN USED, A 4' x 4' x 2'-6\"/>

**TYPE B** CAST-IN-PLACE CONCRETE WALL BACKUP: WHEN A TYPE B BACKUP IS SPECIFIED, THE BACKUP WALL SHALL BE DETAILED ELSEWHERE IN THE PLANS. IF CAST-IN-PLACE STRUCTURES SUCH AS CONCRETE TRAFFIC BARRIER, BRIDGE PARAPETS, COLUMNS, OR SPECIAL WALLS ARE USED AS BACKUP STRUCTURES, THEN INTERMEDIATE WALLS AS DETAILED ELSEWHERE IN THE PLANS SHALL BE PROVIDED BETWEEN THESE STRUCTURES AND THE G.R.E.A.T. UNIT. THE INTERMEDIATE WALLS SHALL BE EQUAL IN HEIGHT AND WIDTH TO THAT OF THE G.R.E.A.T. UNIT. THE INTERMEDIATE WALLS SHALL BE REINFORCED WITH A STEEL CAGE. PRECAST CONCRETE MEDIAN BARRIER SHALL NOT BE USED AS A BACKUP STRUCTURE FOR THE G.R.E.A.T. UNIT.

**TYPE C** WIDE FLANGE BACK-UP: CONSISTS OF TWO 6WF25 x 6'-2\"/>

**TYPE CZ** CONSTRUCTION ZONE BACK-UP: CONSISTS OF A STEEL BASE AND BACK-UP AS INTEGRAL PARTS OF THE G.R.E.A.T. UNIT. ANCHORAGE PROVIDED BY ANCHOR BOLTS WHERE THE UNIT IS PLACED ON CONCRETE OR BY DRIVEN STEEL ANGLE ANCHOR PINS FOR PLACEMENT ON OTHER THAN CONCRETE. THE TYPE CZ UNIT IS ONLY AVAILABLE IN 2' OR 2.5' WIDTHS WITH 3 OR 6 BAYS.

**NOTES:** TYPE OF BACK-UP STRUCTURE FOR EACH LOCATION SPECIFIED ELSEWHERE IN THE PLANS.

DETAILS OF COMPONENTS TO THE GUARD RAIL ENERGY ABSORBING TERMINAL WILL BE SHOWN ON SHOP DRAWINGS FURNISHED TO THE ENGINEER BY THE MANUFACTURER.

DESIGN SPEED (MPH)	NO. OF BAYS ①
40 OR LESS	3
45	4
50	5
55	6
60	8
65	10

① BASED ON MAXIMUM DECELERATION FORCE OF 6 G's

IF TYPE CZ UNIT IS USED, REFER TO STRUCTURAL INFORMATION FOR WIDTHS AND NUMBER OF BAYS.



STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

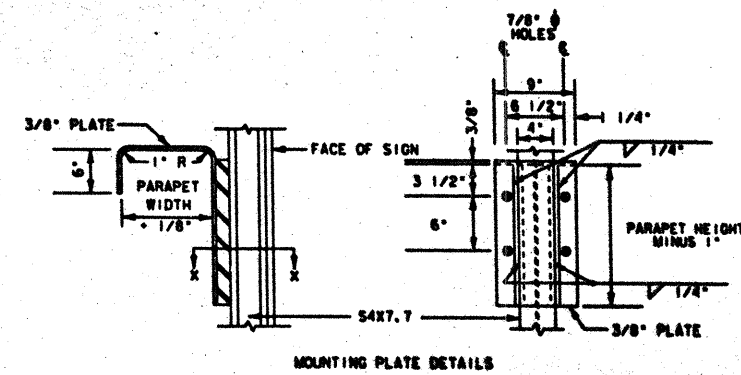
GUARD RAIL ENERGY ABSORBING TERMINAL

GREAT-89

REVISIONS	FED. DIST. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
	6	TEXAS	FM 358-6 (310)	72

72



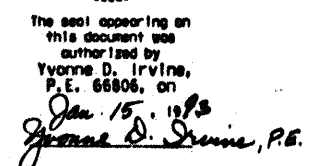


SECTION "X-X"

[illegible]

8/56-09

1. WEDGE TYPE ANCHORS SHALL BE APPROVED BY THE ENGINEER.
2. POSITION SIGN BRACKETS TO CLEAR PARAPET WALL JOINTS 1'-6" MINIMUM, 3'-0" PREFERABLE.
3. STRUCTURAL STEEL SHALL CONFORM TO SPECIFICATION ITEM 441.
4. THE MOUNTING PLATE FOR RAIL TYPES T-2 AND T-5 SHALL BE TWO PIECE. THE TOP SECTION SHALL BE 9' LONG FOR TYPE 1, 2 AND 12' LONG FOR TYPE T-5. THE SPACERS ARE ATTACHED TO THE TOP SECTION ONLY. THE BOTTOM SECTION SHALL BE 8' LONG. EACH SECTION SHALL BE ATTACHED WITH TWO WEDGE TYPE ANCHORS.



73

SHEET 1 OF 1

STATE	FEDERAL AID PROJECT NO.	
6 TEXAS	1M 38E - 813101418, ETC	1M38E
STATE DIST. NO.	COUNTY	
18	DALLAS	442-2-99 & 100 73